



# Allen Brook Restoration Project

## Final Report

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## 1.0 Introduction and Background

This report documents the planning, design, coordination, and implementation for the restoration of permanently conserved vegetated riparian buffer areas along segments of the Allen Brook and its tributaries. The Allen Brook Restoration Project was conducted by the KAS Project Team on behalf of the Town of Williston (Town). KAS Inc. was the Project Team Leader and worked with the Town to accomplish project site selection, property owner education and outreach, municipal control of conservation easements on privately owned property, mapping, restoration design, general contracting and construction management. KAS subcontracted with Ambler Design to plan and implement the replanting of riparian buffer areas, Lamourex and Dickinson for survey services, and Don Weston Excavating for the excavation of stream bank cuts. KAS also coordinated with Town-hired sub-consultants for specific services including the following: Fitzgerald Environmental Associates, LLC who provided stream profile survey services; Mr. Collin Smythe who managed a computer model that predicts sediment loading to the Brook and prepared Stormwater Offset Permit Applications and associated supporting documentation; University of Vermont Archeology Program to provide archeological Phase 1 site investigation surveys for sites with bank cuts; and the Larson Appraisal Company to determine fair compensation for the purchase of conservation easements on privately owned property.

The Allen Brook is currently on the State of Vermont's 303(d) list of impaired waters due to stormwater runoff and bacteria. Historical agricultural grazing and cropping activities have left a robust perennial grass meadow throughout the brook's riparian corridor. Beyond that, an urbanized residential and mixed-use development pattern is continuing to



grow. Stream geomorphic studies indicate that a number of stream reaches are dominated by a lack of forested riparian buffer that has resulted in bank failure and incision, which in turn has caused devastating habitat loss for fish and aquatic insects. The Town is committed to restoring the quality of the Allen Brook Watershed through a strategy of acquiring conservation easements and reforesting riparian buffer corridors along impaired portions of the Allen Brook and its tributaries. Riparian buffers are vegetated areas next to water resources that protect them from stormwater pollution, provide bank stabilization, and support aquatic and wildlife habitat. Riparian buffer zones cumulatively play a significant role in moderating storm flows to streams thereby reducing downstream flooding, providing flood storage capacity and increasing groundwater recharge. The size of the desired riparian buffers for the project range from 50 to 150-feet from the top of channel bank of the Allen Brook and its tributaries landward. The Town's restoration strategy is supported by multiple studies that have reported that the brook as a whole and ultimately Lake Champlain would benefit greatly if the riparian buffer zone and stream banks along the brook were re-vegetated with trees and shrubs.

The Allen Brook Restoration Project is an ongoing effort that began in 2007 when a land use computer model was developed by New Hampshire company Haley and Aldrich to calculate

sediment and hydrologic offsets from riparian buffer revegetation projects in the Allen Brook watershed. By using this model and incorporating the model results in state stormwater offset permits, the Town can generate funds for future riparian revegetation projects within the Allen Brook watershed. The offset permit acts as a sediment bank, which provides developers with the offset credits they need to comply with state stormwater discharge permits. Funds from the sale of these offsets are returned to the Town for additional buffer restoration and conservation projects within the Allen Brook watershed. In order to properly obtain stormwater credits it is necessary to establish municipal control via conservation easements or outright ownership for restoration projects located on private or other non-municipal property.

In 2008 the Town implemented a small scale restoration project consisting of replanting 0.77 acres of riparian buffer area on 14.76 acres of land acquired by the Town from LNP, Inc., and 0.67 acres on the Williston Central School property (adjacent to the Williston Bike Path). In 2009 and 2010 the Town implemented additional small scale restoration projects on the South Ridge Common Space and Williston Limited Partnership properties consisting of replanting a total of 2.3 acres of riparian buffer zone and excavation of 148 cubic yards of sediment for the stabilization of 4 bank cuts. Please refer to Appendix A for an overview of the project and additional information regarding prior restoration projects including follow up reporting regarding tree survivability.

Momentum from the prior restoration work led the Town to the planning and implementation of a large scale riparian buffer restoration effort in 2011. The initial 2011 project goals were to restore 10 acres of vegetated riparian buffer area along Allen Brook and its tributaries, and establish conservation easements and stormwater offset credits for the impaired segments of the Allen Brook Watershed. The final project results met or exceeded initial goals by restoring approximately 15.8 acres of



vegetated riparian buffer, establishing municipal control of approximately 22.3 acres of private property through conservation easements, and submitting offset credits for the removal of approximately 2,560 lbs of sediment annually. In addition, 5 bank cuts were performed totaling approximately 505 feet in length and excavating approximately 111 cubic yards of sediment from the stream banks. A summary of the restoration work performed on the Allen Brook from 2008 through 2011 is provided in Table 1.

Funding for all restoration work was made possible through a combination of funding sources including a federal State Tribal Assistance Grant (STAG); the state Stormwater Impaired Restoraton Fund (SWIRF); a state Clean and Clear grant and Section 319 grant; a Lake Champlain Basin Program grant; a monetary contribution from the South Ridge Homeowners Association; and the Town of Williston Capital Fund and Environmental Reserve Fund.

**Table 1: Allen Brook Restoration Work Summary from 2008 through 2011.**

Project Site Description	Town Acquired Land (Acres)	Restoration						Total (Acres)
		Bank Cuts (Yards <sup>3</sup> )	Fall 2008 (Acres)	Summer 2009 (Acres)	Spring 2010 (Acres)	Spring 2011 (Acres)	Fall 2011 (Acres)	
Reed	2.90	31	0.0	0.0	0.0	0.0	3.0	3.0
Brennan Woods	4.71	0	0.0	0.0	0.0	0.0	0.0	0.0
Former Senecal Property	14.76	0	0.77	0.0	0.0	0.0	0.0	0.77
WLP East	1.80	0	0.0	0.0	0.0	2.0	0.0	2.0
WLP West	3.90	80	0.0	0.30	0.45	0.2	2.6	3.55
Bryan	1.14	0	0.0	0.0	0.0	1.2	0.0	1.2
Rec Path	0.0	0	0.67	0.0	0.0	0.0	0.0	0.67
Fire Station	0.0	0	0.0	0.50	0.50	0.0	2.5*	2.5
South Ridge West	5.50	117	0.0	0.35	0.15	0.2	2.1	2.8
South Ridge East	2.34	0	0.0	0.0	0.0	2.0	0.0	2.0
<b>Project Total</b>	<b>37.1</b>	<b>228</b>	<b>1.44</b>	<b>1.15</b>	<b>1.10</b>	<b>5.6</b>	<b>10.2</b>	<b>18.49</b>

\*Includes replanting 1.0 acres of area planted in previous project.

## 2.0 Previous Studies

The following list of previous studies were reviewed by KAS prior to selecting project sites to ensure the 2011 large scale restoration efforts were consistent with prior work and associated recommendations:

- *Watershed Improvement Plan and Recommendations for a Total Maximum Daily Load (TMDL) for Sediment*, dated March 30, 2003, by Lori Barg, et.al. The report presents a watershed restoration plan and recommendations for a sediment TMDL for the Allen Brook.
- *Allen Brook Phase 2 Documentation and QA/QC Notes*, dated August 8, 2006, by Evan Fitzgerald. This study documents key geomorphic processes and adjustments occurring in the Allen Brook watershed at the reach scale.
- *Allen Brook Watershed Departure Analysis and Project Identification Summary*, dated April 11, 2008, by Evan Fitzgerald. This report presents the results of the stressor and departure analysis and provides prioritized recommendations for restoration projects.
- *Total Maximum Daily Load to Address Biological Impairment in Allen Brook (VT08-02) Chittenden County Vermont*, dated September 2008, by Vermont Department of Environmental Conservation. This report establishes Total Maximum Daily Loads (TMDLs) from pollutants of concern from all contributing sources at a level necessary to attain the applicable water quality standards for the Allen Brook.

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### 3.0 Project Site Selection

In total, 158 parcels contain property within the 150' buffer corridor along the impaired portion of the Allen Brook and its tributaries. To initially determine the parcels that were best suited for restoration, KAS developed Parcel Prioritization Matrix Spreadsheets. Due to the variety of data available, different matrix spreadsheets were developed for the parcels along the main branch versus those along the tributary streams.

The basic function of the matrix spreadsheets is to rank all 158 parcels that contain area within the desired riparian buffer corridor for the impaired portion of the main branch of the Allen Brook and its tributaries. Utilizing existing data available, each parcel was ranked based on suitability, need, and feasibility for restoration within the 2011 calendar year. The matrix spreadsheets were linked to GIS mapping software. Wherever possible, KAS utilized available data and analysis already developed by the Town to avoid duplication of efforts. The selected parcel ranking criteria were buffer zone area, location within the priority corridor (Main Branch only), landowner interest, quality of buffer, channel erosion (Main Branch only), soil erosion potential, agricultural use, visibility, and connection to Town or Conserved Land. The factors developed for ranking parcels gave priority to lower values (i.e. the lower the number, the higher the priority).

The matrix spreadsheets were utilized as a tool to identify a short list of 30 parcels (20 parcels along the Main Branch and 10 parcels along tributaries). Field investigations were conducted on the short list project sites and the spreadsheet was further refined. The resultant short list of recommended project sites was checked versus the prioritized list of project sites contained within the *Allen Brook Watershed Departure Analysis and Project Identification Summary*. Both lists were in close agreement, confirming the prioritization results of the matrix spreadsheet analysis.

In general, parcels on the short list tended to have larger riparian buffer areas (over an acre), incised stream banks, poor riparian buffer quality, and erodible soils. The project concentrated initial efforts on privately owned parcels, knowing Town owned properties would be available if needed. For additional information regarding the development, results and data used for the Parcel Prioritization Matrix Spreadsheets, please refer Appendix B. Following Town's concurrence with the parcel short list, KAS and Town initiated outreach to property owners.

### 4.0 Project Owner Outreach

KAS reviewed Town notes from an initial outreach effort that began in fall 2010 with a letter from the Town to Williston property owners with land along Allen Brook. KAS followed up and continued the property owner outreach effort through a combination of phone conversations, emails, letters, and meetings. The goal of the outreach effort was to educate property owners to the current impairment of the brook, and the goals and opportunities of the restoration project. Initial contact with a property owner was generally accomplished through a letter or phone conversation with a brief overview of the project. After the initial communication, follow up emails or letters were provided that included additional project information and preliminary mapping. Follow up meetings were then scheduled with interested property owners where more detailed restoration and conservation easement mapping, sample conservation easement language, and further explanation of the restoration project was provided to help facilitate with decision making. Meetings ranged from one on one meetings with individual property owners and developers to meetings with Home Owners Associations. Sample outreach letters and mapping utilized for the outreach effort are provided in Appendix C. Multiple articles by the

Williston Observer local weekly paper have also ultimately benefited the projects outreach efforts. Please refer to Appendix L for copies of the newspaper articles covering the restoration of the Allen Brook in Williston.

A special informational meeting was set for agricultural property owners on March 11, 2011 at the USDA/NRCS office in Williston, VT. The intent of this meeting was to inform Williston farmers and other agricultural land owners of financial incentives available through the Town of Williston, USDA, and NRCS to help encourage participate in the restoration of the Allen Brook riparian buffer corridor. This meeting was initiated due to agricultural property being exempt from local zoning that protects riparian buffer area. All meeting attendees were provided with preliminary maps illustrating the area of their property that would be affected by the proposed riparian restoration. Follow-up phone calls were made to meeting attendees. Overall, interest was low among property owners who were actively utilizing their land for agricultural purposes.

The short list of properties was updated based on property owner feedback and interest. Owners with continued interest in the project were asked for permission to allow Evan Fitzgerald of Fitzgerald Environmental Associates to provide Phase 3 stream profiling surveys on their property.

## 5.0 Stream Profile Surveys

Stream profile surveys were conducted on high priority restoration project sites with land owner approval. The Stream Geomorphic Assessment (SGA) Phase 3 stream profile surveys augmented the previously collected SGA Phase 2 survey data. The stream profile surveys include a longitudinal profile of the channel, multiple cross-sections, and substrate sampling along the sections of interest. The data provided the basis for better understanding of bed and bank stability, and the potential effectiveness of passive (e.g., buffer plantings) versus active (e.g. floodplain lowering) channel restoration strategies. The results determined the potential for minor, localized restoration strategies to increase floodplain access and encourage the establishment of native woody vegetation. Please refer to Appendix D for the results of the stream profiling surveys.

The results of the stream profile surveys were provided and explained to property owners. Property owners were then asked for their permission to implement the recommended bank or floodplain cuts shown on the surveys. Bank cuts were recommended to provide stability of incised stream banks and increase the rate of



survivability of newly planted trees and shrubs. Bank cuts are accomplished by excavation of the stream bank above the ordinary high water mark to shallower slopes of at least 3H:1V. Floodplain cuts were recommended to reconnect the brook to its floodplain. Floodplain cuts are

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accomplished by excavation of stream bank fill deposited between an incised bank and the flood plain above the ordinary high water mark.

## 6.0 Conservation Easements

After coordinating with interested property owners, homeowners associations and development association leaders, KAS began the process of negotiating easements. Sample conservation easement language was developed by adapting a template utilized by the New Jersey Department of Environmental Protection (NJDEP) to meet the Allen Brook Restoration Project needs. The sample easement language was provided for review to Mr. Paul Gillies, Town Attorney, and Mr. Jim Pease, Water Quality Division Ecosystem Restoration Program, and updated accordingly per comments received.

KAS conducted face-to-face meetings and email correspondence with property owners to negotiate easement limits and further refine the conservation easement language. Agreed upon final easement limits were preliminarily mapped by KAS, then provided to Larson Appraisal Company and Lamoureux and Dickinson. Larson Appraisal Company provided land appraisals for the riparian buffer zone conservation easement, which established fair and just compensation the property owner received for granting the easement. Lamoureux and Dickinson provided final mapping and monument boundary survey services for each conservation easement. In total, approximately 22.3 acres of conservation easement were provided to the Town by five different property owners. An example of a complete final conservation easement is provided in Appendix E. All final conservation easement maps by Lamoureux and Dickinson are provided in Appendix F.

## 7.0 Permitting

No significant permits were required for this restoration project, and the permitting effort was led by the Town. After research and coordination with Vermont Agency of Natural Resources staff, it was determined that a sign off from the State Wetlands Department, and a NEPA Categorical Exclusion was required to perform the restoration work.

The NEPA Categorical Exclusion checklist was completed and contained information as necessary pertaining to natural and cultural resources, project impacts, hazardous wastes, etc. To obtain the Categorical Exclusion, a Phase I Archeology Survey was required for the bank/floodplain cut areas on the Reed, South Ridge and Williston Limited Partnership properties. The conclusions of the archaeological survey were as follows:

- Sites were identified and no additional archaeological work was recommended within the tested bank and floodplain cuts;
- Within the Reed/Lefebvre parcel, two precontact era Native American lithic debitage specimens were recovered from a probable modern flood stratum along the terrace edge proposed for bank cutting. The recovery of historic era artifacts from several test pits around the original find-spot in deeper alluvial strata than that which produced the artifacts indicates that the site's stratigraphic integrity is poor. Based on their context, the artifacts appear to have been transported from somewhere upstream. Given this poor and uncertain context, the site was not considered significant and no further archaeological study was recommended within the proposed cut areas within the Reed/Lefebvre parcel.
- The proposed bank and floodplain cuts within the Southridge and Lefebvre portions of the restoration project will have no effect on significant cultural resources.

The Office of Ecosystem Protection reviewed the NEPA Categorical Exclusion checklist and supporting documentation. The proposed actions of the project were determined to help restore the water quality in the Allen Brook, and help protect against further degradation. The project was granted the Categorical Exclusion since the intended actions met the criteria set forth in 40 CFR Part 6, Subpart 6.204 (a) (1) (ii).

The local Wetlands Program Manager was provided with the Allen Brook Corridor Restoration Plan for review. The Restoration Plan was reviewed and approved as an Allowed Use under Section 6.23 of the revised Vermont Wetland Rules. The approval provided recommendations that the proposed bank and floodplain cuts work should be under the supervision of an experienced engineer or restoration consultant with special attention to site stabilization, and plantings should be of native species only.

Please refer Appendix G for the Wetland's sign off letter and Categorical Exclusion. The Archaeological Report supporting the Categorical Exclusion is also provided in Appendix G. The Archaeological Report was required for the project sites that required bank cuts for stream bank stabilization.

## **8.0 Planning and Implementing Spring Restoration Projects**

The restoration project was implemented in the spring and fall of 2011 due to more favorable conditions for survival of the various planting stock utilized. The spring plantings were from bare root tree stock and performed by the Vermont Youth Conservation Corps (VYCC) under the supervision of Ambler Design. The intent of the spring restoration planting was to plant approximately 3 to 5 acres of riparian buffer area. Early spring is an ideal time to plant bare root plantings since they need to be planted while the plants are dormant and the ground is not frozen. However, due to a lingering heavy snow cover from the 2011 winter and VYCC availability, the spring plantings occurred the last week of April, 2011.

Due to the aggressive project schedule for the spring restoration, project sites were selected that involved replanting the buffer area only and did not involve bank/floodplain cuts. KAS provided mapping and NRCS soil surveys of the sites to Ambler Design to develop planting plans. Native tree species for each site were selected based on soil types, topography, flooding frequency, and field inspections. Trees were installed with 48" tree protection tubes, and 2-foot square brush mats.

In total approximately 5.3 acres of conservation easement were granted for the project sites that were implemented in the Spring of 2011 (April), and 5.2 acres of riparian buffer area were replanted with approximately 1,100 bare root trees for an average density of approximately 210 trees per acre. The spring restoration sites included the Bryan Parcel, South Ridge East and Williston Limited Partnership East properties with 1.2 acre, 2.0 acres, and 2.0 acres reforested, respectively. Conservation easement areas granted for spring restoration sites were 1.14 acres for the Alden Bryan Property, 2.35 acres for South Ridge East, and 1.80 acres for Williston Limited Partnership East. Please refer Appendix H for locations of spring restoration project sites. Additional information for each site is provided within this section, and planting plans (with Vicinity Maps) are provided in Appendix H. Photo documentation of the spring restoration sites is provided in a CD attached to this report.

### **8.1 Bryan Parcel**

The Bryan Parcel is located along North Williston Road and owned by Alden and Phoebe Bryan. The southwestern corner of the property borders approximately 300 linear feet of the main branch of the Allen Brook. An existing boardwalk bridge that connects walking trails to the Williston Bike Path and Williston Central School ball fields is located in the vicinity of the southwest corner of the property. A tributary stream also traverses the property from east to northwest.



An approximate 150-foot buffer accounting for 1.2 acres was replanted in the southwest corner of the property along the Allen Brook. This area of the property was completely devoid of woody vegetation, and left a noticeable gap between forested areas north and south of the property. This property had agricultural use, and is still hayed once a year. The current property owner and Snyder Homes currently have an informal agreement in place to subdivide and redevelop the site when approved through Williston's growth management process. The conservation easement for this property is 1.14 acres in area.

While planning the replanting for this property, the tributary stream was observed to have been previously piped via a French drain below grade. The tributary stream enters the project site from the east from the Williston Golf Course, then traverses northwest across the property. The project offered to remove the French drain, restore the channel section, and replant a 50-foot buffer area. Due to the future planned development of the property and wetlands adjacent to the piped tributary, the property owner was concerned that the wetlands may expand if the French drain was removed, thereby reducing the amount of developable land on the property. The property owner was open to replanting the 50-foot buffer of the piped tributary, but the Town felt it was only appropriate to replant the buffer if the stream channel was restored. An agreeable solution could not be reached for the restoration of the tributary stream so it was left out of the project.

### **8.2 South Ridge East**

The South Ridge East Parcel is the South Ridge Common Land located east of South Ridge Road along the north of the main branch of the Allen Brook. This property had a poor quality riparian buffer with scarce and sporadic natural woody vegetation. Channel incision through this property is moderate to severe (stage II channel evolution) in response to historical channel straightening and filling of floodplain. Consequently, no bank or floodplain cuts were recommended as the channel is predicted to migrate laterally in the near future. Plantings were recommended to begin 20' from the top of channel bank to accommodate later channel migration.

A buffer ranging from approximately 120 to 140 feet accounting for a total area of approximately 2 acres was replanted across the property, except for an existing 30' pedestrian and sewer easement running through the buffer area. The conservation easement for this property is a total of 2.34 acres.

### **8.3 Williston Limited Partnership East**

The Williston Limited Partnership East Parcel is the land retained by Snyder Homes after the development of South Ridge, and is located east of South Ridge Road along the south of the main branch of the Allen Brook. This property is located directly south of South Ridge East with the Allen Brook acting as the property line. Consequently, channel geomorphic properties and associated recommendations are the same as presented under Section 8.2.



After meeting with Mr. Chris Snyder from Snyder Homes, the project team learned that future commercial development is planned for this property on the high ground along Route 2 (Williston Road). The plantings were planned for areas well outside of the developable area on the site. In total, a buffer ranging from approximately 110 to 130 feet accounting for approximately 2 acres was replanted across the property. The conservation easement for this property is a total of 1.8 acres.

### **9.0 Planning and Implementing Fall Restoration Projects**

In total approximately 10.6 acres of riparian buffer area were replanted, 17.0 acres of conservation easements were granted, and 5 stream bank/floodplain cuts were provided for the fall project sites. The fall restoration sites were the Reed, South Ridge West, Williston Limited Partnership West, and the Williston Fire Station properties with 3.0 acres, 2.3 acres, 2.8 acres, and 2.5 acres replanted, respectively. In total, approximately 2,730 trees from potted stock were planted in the fall of 2011 (October – November) with an average density of approximately 257 trees per acre. Conservation easement areas granted for fall sites were 2.90 acres for the Reed Property, 5.5 acres for South Ridge West, 3.9 acres for Williston Limited Partnership West, and 4.71 acres for the Brennan Woods Common Area. The Williston Fire Station property is already under Town control and did not require the purchase of a conservation easement, and the Brennan Wood Common area was not restored as part of this project. Please refer Appendix H for locations of fall project sites.

Recommended stream stabilization bank/floodplain cuts were also implemented on the Reed, South Ridge West, and Williston Limited Partnership West properties. Through a competitive bidding process that also included bank excavation on the Griswold Property (a similar restoration project along the Allen Brook managed by the Friends of the Winooski River), Don Weston Excavating was selected to perform excavation services for the stream bank cuts. Ambler Design implemented erosion control measures to stabilize the bank/floodplain cuts consisting of SC 150 Erosion Control Blankets, wetland seed, live willow stakes, and fascines. Hay and mulch were also provided in conformance with Vermont Erosion Control Standards to stabilize areas through the winter disturbed during excavation activities. Channel bank excavation work was performed under the supervision of a KAS engineer with experience in erosion control and site stabilization. Please refer to Appendix I for a copy of the Request for Bids for excavation services, and a list of local contractors that received the request.

The planning and implementation for replanting the fall restoration project sites was performed by Ambler Design and some volunteer groups including local cub scouts and school groups. KAS provided mapping and NRCS soil surveys of the sites to Ambler Design to develop planting plans. Native tree species for each site were selected based on soil types, topography, flooding frequency, and field inspections. The fall plantings were from larger potted stock and installed in mid to late November. Trees were installed with 48" tree protection tubes, and 2-foot square brush mats. Buckthorn invasive species management services were also provided by Ambler Design for the South Ridge West, Williston Limited Partnership West, and Reed Properties. Buckthorn trees were cut at the base and covered with a trap. Invasive trees were placed in burn piles. After restoration funds were exhausted for the project, the Town with assistance from Ambler Design organized volunteer crews to finish the minor amount of planting work that remained. Additional information for each site is provided within this section, and planting plans (with Vicinity Maps) are provided in Appendix H. Photo documentation of the fall restoration sites is provided in a CD attached to this report.

### **9.1 Reed Parcel**

The Reed Parcel is located at 8384 Williston Road and owned by Richard and Karen Reed. This property is located between Williston Road and Interstate 89 with the Allen Brook flowing through the western portion of the property. A majority of the riparian buffer had little to no woody vegetation. Sometime within the last few years the channel partially avulsed (i.e., changed course) just upstream of the property, and began to cut a deeper secondary channel to the east. The channel flow is currently split approximately in half between to the two channels. The greater flow in the eastern channel is currently causing significant bed and bank erosion that is expected to worsen over time. Per the recommendations of the stream profile survey, there is not much that can or should be done to stabilize the erosion in the new channel at this point, as that level of work would be well beyond the scope of machinery work the Town has in mind for the 2011 project. However, the bed and bank erosion in this new channel is a very large sediment source and could be dealt with in the future with a natural channel stabilization approach. Greater flow may move back into the original channel (to the west) over time because of debris jams upstream of the split that tend to push bankfull flows back into the original channel.

In total, two bank stabilization cuts were recommended and implemented along the main channel of the Allen Brook on the lower reach of the property. Plantings were recommended and implemented at a 10 to 20 foot setback in the lower site where erosion is moderate to severe and bank cuts were not proposed. An



approximate 130 to 150-foot buffer was replanted for the main channel, and an approximate 50-foot buffer was replanted for the newly formed secondary eastern channel. The total area replanted on the property was 3.0 acres. Invasive species management of Buckthorn was provided on this property throughout the Allen Brook Corridor. The two bank stabilization cuts provided had a total length of approximately 140-feet and removed approximately 31 cubic yards of sediment from the brook's edge. Based on an Allen Brook specific model produced by

the NRCS, the sediment reduction of 31 cubic yards is equal to 39.2 lbs of phosphorous. This project site is currently one of the most geometrically active sections of the Allen Brook. Over time as the plantings begin to take root and the channel returns to a more stable flow regime, the amount of sediment currently being transported from the project site will likely be greatly reduced.

This project site was previously used for agricultural purposes, and there are plans for the site to have future agricultural use. The neighboring Lewis Farm to the east intends to utilize the high ground on the property for rotational cow grazing. The property owner has agreed to have the newly replanted areas fenced off from the potential future grazing to help protect the Town's investment. KAS and the Town met with the property owner on numerous occasions to discuss the limits of the conservation easement on the property. Past and future agricultural uses were discussed at length, and the limits of the conservation easement were adjusted accordingly. Due to the extremely wet conditions on the western part of the property, the property owner felt the final delineated 2.90 acre conservation easement was in an area that had little to no current or future agricultural use. Per the NRCS soil survey, the Winooski Very Fine Sand Loam is designated as prime agricultural area within the conservation easement on the Reed Property. In reality, this area is poorly suited for agricultural use due to poor access and extremely wet soils / wetlands. The high ground east and outside of the easement is the actual area for prime agricultural use on this property. The conservation easement will have no impact on the anticipated future agricultural use on the property.

During a recent site visit in late December to gather photo documentation, recent beaver activity was observed on the upstream limits of the property. All restoration sites were prescreened for beaver activity prior to commencing restoration work. The property owner said that the beaver moved in after the restoration work was completed, and that it was the first time he could remember seeing beavers on his land. Beavers have created a long shallow dam on the eastern channel. The beaver activity is currently affecting only a small group (20 to 30) of newly planted trees. The property owner, Town, and KAS discussed management options for the beavers, and decided to monitor the beaver activity through the winter. If the beaver activity expands and begins to negatively affect the recently performed restoration work, a biologist will be consulted to determine the best way to proceed to protect the Town's investment.



## **9.2 South Ridge West**

The South Ridge West Parcel is the South Ridge Common Land located west of South Ridge Road along the north of the main branch of the Allen Brook. The channel on the eastern half of the property has moderate channel incision, stage III to IV channel evolution, and occupies a belt width approximating stable conditions (150-feet). A floodplain cut was recommended at the time the stream profile survey occurred. Due to the dynamic nature of the brook within the eastern half of the property, channel conditions changed over the course of the spring and summer. Consequently, the recommended floodplain cut was no longer recommended, but a

bank cut was recommended in a different location instead. The riparian buffer quality for the eastern half of the property was in average to poor condition, and plantings were recommended. The western half of the property has limited channel incision, advanced channel evolution (stage IV to V) and good floodplain access. No floodplain or bank cuts were recommended for this area. Natural revegetation was occurring, but additional plantings were recommended and implemented within the corridor. Please refer the planting plan for this property in Appendix H for additional information regarding the locations of the bank cuts and replanting areas.



A buffer ranging from approximately 50 to 150 feet accounting for a total area of approximately 2.8 acres was replanted across the property (2.3 acres in 2011). The conservation easement on the property encompasses approximately 5.5 acres. Invasive species management of Buckthorn was provided on this property throughout the Allen Brook Corridor. The one bank stabilization cut was provided (in 2011) that had a total length of approximately 100-feet and removed approximately 22 cubic yards of sediment (27.8 lbs of phosphorous) from the brook's edge. Three previous bank cuts were provided on this property removing approximately 148 cubic yards of sediment (187.1 lbs of phosphorous) from the brook's edge.

### **9.3 Williston Limited Partnership West**

The Williston Limited Partnership West Parcel is the land retained by Snyder Homes after the development of South Ridge, and is located west of South Ridge Road along the south of the main branch of the Allen Brook. This property is located directly south of South Ridge West with the Allen Brook acting as the property line. Consequently, channel geomorphic properties and associated recommendation are the same as presented under Section 9.2. The only exception is that two bank cuts were recommended. Please refer the planting plan for this property in Appendix H for additional information regarding the locations of the bank cuts and replanting areas.

After meeting with Mr. Chris Snyder from Snyder Homes, the project team learned that future commercial development is possible for this property along Route 2 (Williston Road). The plantings were planned for areas well outside of the developable area on the site. In total, a buffer ranging from approximately 50 to 120 feet accounting for approximately 3.6 acres (2.8 acres in 2011) was replanted across the property. The conservation easement on this property encompasses approximately 3.9 acres.

### **9.4 Williston Fire Station**

The Williston Fire Station site is located at 645 Talcott Road. The Allen Brook essentially cuts the lower portion of the property in half. Through field visits and a review of the existing Phase 2 geomorphic investigation, the channel was determined to be stable through the property and a stream profile survey was not conducted. The Fire Station property was a high priority Town owned site that was utilized as a reserve site when the negotiations over the Pecor property

broke down. A buffer of approximately 150 feet was planted on both sides of the brook for a total replanted area of approximately 2.5 acres. Since the property was already under Town ownership, a conservation easement was not required.

This parcel was initially replanted with bare root stock in 2009 and 2010 by volunteers but because of the challenging soil conditions (clay on the north bank and sand on the south bank) approximately half of the bare root plant stock didn't survive. Since the supplemental 2011 planting was implemented with carefully selected potted stock and by a paid professional planting crew, the plants are expected to persevere.



### **9.5 Brennan Woods Common Area**

Restoration work was not performed on the Brennan Woods Common Property. The Allen Brook traverses the south western corner of the property, with riparian buffer area located on the on both sides of the brook. The channel section is stable through the property and the riparian buffer corridor is naturally reestablishing woody vegetation. Consequently, this site was an easement project only with approximately 4.71 acres of conservation easement granted. It is recommended that this property is monitored yearly to evaluate the rate of natural reforestation. If natural revegetation stalls, it is recommended additional plantings be provided when funding allows. The habitation of invasive species will also be carefully monitored as this site continues to revegetate naturally.

### **10.0 Stormwater Offset Permit Applications**

Stormwater Offset Permit Applications were submitted for all sites where restoration work was performed. The Town subcontracted with Mr. Collin Smythe to run the Williston Watershed Sediment Model to determine sediment reductions for each site due to the restoration work. Mr. Smythe also prepared all necessary permit applications and required supporting documentation. A summary of the Stormwater Offsets results are provided in Appendix J.

### **11.0 Recommendations**

Based on the work performed over the course of the 2011 portion of the Allen Brook Restoration Project, KAS has developed a prioritized list of recommended project sites. Please refer to the map provided in Appendix K for locations of recommended project sites: The project site list is broken down by individual properties as follows:

- LNP Parcel (Tax Number - 10:099:049.000) and Chatham Woods Holdings (Tax Number – 10:099:073.000): Develop conservation easements for both parcels and develop plans for the full restoration of a significant tributary stream that runs through the LNP Parcel and the downstream extent of the Chatham Woods Holding Property. Based on the stream profile survey conducted on the property (attached in Appendix D), the following restoration work is recommended at a minimum:

- A total of 12 cuts are recommended for this 3,600 foot stretch of tributary. Most of the cuts are concentrated in the middle section of the reach.
  - A short stretch of incised channel is found close to the confluence with the main stem of Allen Brook. No bank cuts are recommended there due to the active lateral channel movement towards the main stem channel, and the abundance of saturated wetlands in this larger floodplain.
  - A beaver dam and pond is found in the lower reach. The current and historical beaver activity has helped keep the channel bed of this lower section from downcutting and the banks are relatively stable in this area.
  - Bank cuts 1 through 5 will need to be planned carefully so not as to disturb the small saplings that are established (appear to have been planted) in the area, especially along the north bank.
  - Multiple cross-sections were surveyed in a concentrated area in the middle reach around where the "head-cut" is found. This was done to better model the hydraulics of the site to understand the different restoration interventions that could be carried out to improve channel stability and habitat in the long-term.
  - There is a washed out culvert in the channel that should be removed as part of any project to improve stability. It is located just upstream from station 2,000ft.
  - Near the Michael Lane crossing the stream channel becomes much smaller with less erosion potential. No cuts are recommended upstream of the crossing. One cut is recommended just downstream from the crossing (#12), but I consider this one and cut #11 lower priority compared with the others in the middle and lower reach.
- Taft Farms H.O.A. (Tax Number – Com.006) and Allen Brook Development Inc. (Tax Number – 08:087:002.000): These properties ranked at the top of the Matrix Spreadsheet and were also identified for restoration in the *Allen Brook Watershed Departure Analysis and Project Identification Summary*. KAS has met with the Taft Farm Master Association and Mr. Al Senecal (owner of Allen Brook Development Inc.), and both parties are interested in participation in the restoration project. KAS will continue to work with both property owners to negotiate easement limits and establish municipal control. Both properties have significant area in need of reforestation (approximately 4 to 5 acres total), and a bank cut is recommended per the stream profile survey conducted on the property.
  - Pecor Properties (Tax Numbers – 08:143:004.000 and 08:143:010.000): These properties are the proposed location for the Finney Crossings mix use development by Snyder Homes. The Pecor properties are an ideal candidate for restoration and currently have areas completely devoid of woody vegetation adjacent to the Allen Brook. It appeared that this project site would be a part of the 2011 Restoration Project, but negotiations unexpectedly broke down. The property owner was receptive to restoration on the property, but was worried about the timing of the project given the proposed development. However, after Finney Crossing is developed it is recommended that the Town initiate correspondence with Chris Snyder to restart easement negotiations.
  - Williston Central School (Tax Number – 09:112:052.000): Approximately 1.5 acres of riparian buffer area were identified on this property that could use replanting. KAS met with representatives from the school and they are open to a planting project, but not a conservation easement. This site is recommended as a planting project only and should be implemented when funding allows.

- 
- State of Vermont (08:289:000:000): This property ranked near the top of the Matrix Spreadsheet and was also identified for restoration in the *Allen Brook Watershed Departure Analysis and Project Identification Summary*. This property is the proposed location of the Circ Highway and is proposed for future restoration by VTrans. Due to the dynamic nature of the Circ Highway project, it is recommended that the Town periodically check in with VTrans regarding the status of the project. If at some point the project appears to be heading for a long delay or is completely stopped, the Town should discuss options for restoration of the property in areas well outside of the proposed road alignment.
  - Siple Farm (21:004:040:001): This property also ranked near the top of the Matrix Spreadsheet and was also identified for restoration in the *Allen Brook Watershed Departure Analysis and Project Identification Summary*. This property is utilized as an active dairy farm and has large areas mostly devoid of woody vegetation adjacent to the Allen Brook. The stream riparian buffer should be replanted with native woody vegetation, and fencing is recommended to exclude grazing live stock from the stream channel. The property owners attended the informational meeting at the USDA/NRCS offices on March 11, but did not return attempts for follow up correspondence. It is recommended that the Town work with the local USDA office to periodically check in with the land owners, and continue to educate them to the various funding opportunities that may be available to restore the riparian corridor through the property.

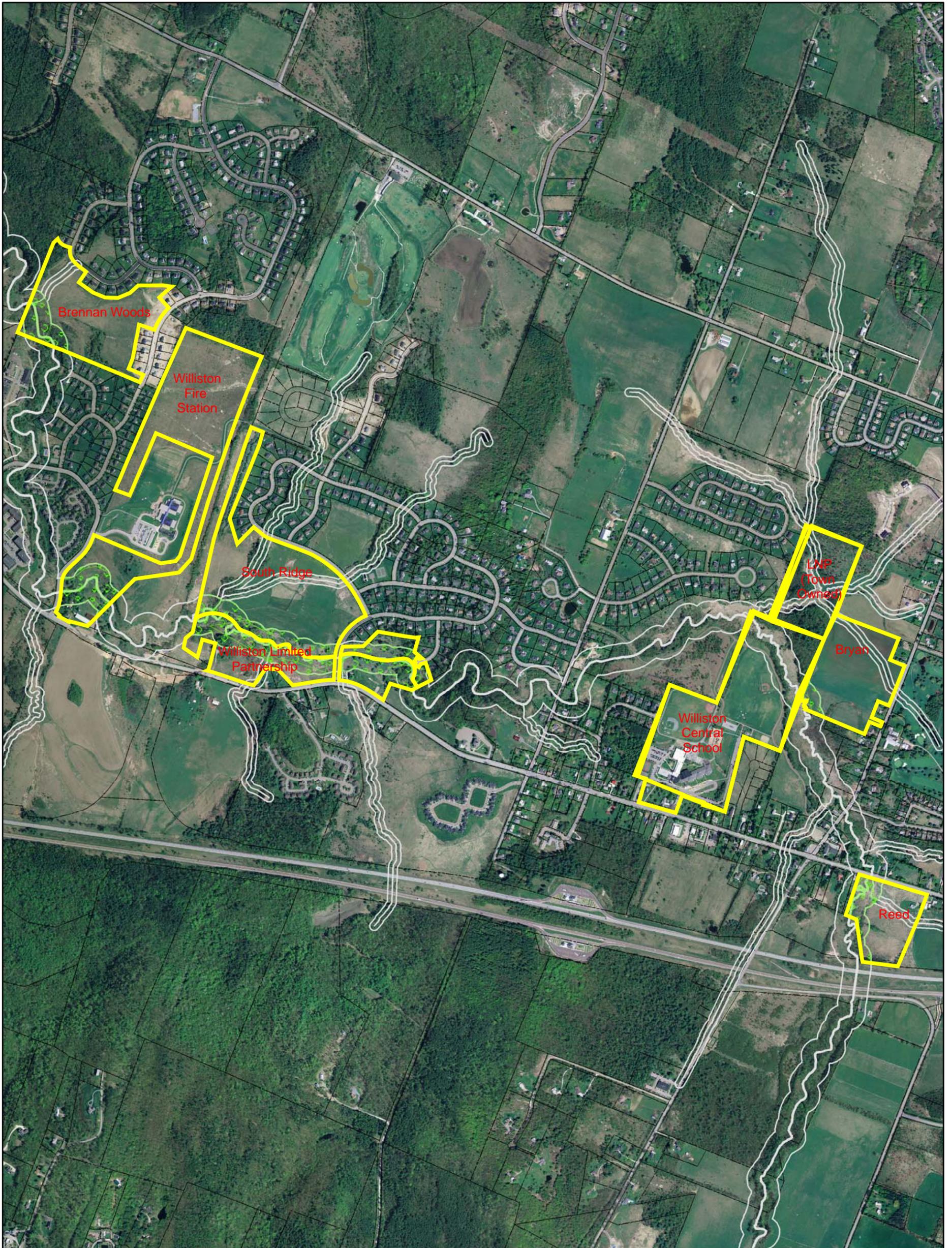


# Appendix A

## **Project Overview/Summary of Prior Restoration Work**



# Overview Map of Allen Brook Restoration Project Sites (2008-2011)



Created by KAS, Inc.

0 1,150 2,300 4,600 Feet



## Legend

-  Restoration Area
-  Williston Parcels
-  Restoration Sites



Allen Brook Riparian Corridor Enhancement Project  
Results 2008 - 2011

	Easement/Land Purchase				Restoration									
	Actual Value	Actual Acres	Appraisal Estimate	Appraisal Value	Fall 2008	Summer 2009	Spring 2010	Spring 2011	Fall 2011	Acres Total	Miles Main	Miles Trib	Linear Ft Main	Linear Ft Trib
Easement: Southridge TOTAL	\$11,760	7.84	7.70	\$11,550		0.35	0.15	2.20	2.10	4.80	0.67		3537.60	
Easement: Southridge East		2.34						2.00		2.00	0.20		1056.00	
Easement: Southridge West		5.50				0.35	0.15	0.20	2.10	2.80	0.47		2481.60	
Easement: Reed	\$4,350	2.90	2.90	\$4,350					3.00	3.00	0.13	0.10	686.40	528.00
Easement: Brennan Woods	\$7,167	4.71	4.60	\$7,000										
Land Purchase: Senecal/LNP	\$25,184	14.76*		\$25,184	0.77					0.77		0.13		686.40
Easement: WLP TOTAL	\$8,550	5.70	11.60	\$17,400		0.30	0.45	2.20	2.60	5.55	0.67		3537.60	
Easement: WLP East		1.80						2.00	0.00	2.00	0.20		1056.00	
Easement: WLP West		3.90				0.30	0.45	0.20	2.60	3.55	0.47		2481.60	
Easement: Bryan	\$1,900	1.14	1.50	\$2,500				1.20		1.20	0.04		211.20	
Rec Path	\$0				0.67					0.67	0.09		475.20	
Fire Station	\$0					0.50	0.50		2.50**	2.50	0.15		792.00	
<b>TOTAL</b>	<b>\$58,911</b>	<b>37.05</b>	<b>28.30</b>	<b>\$67,984</b>	<b>1.44</b>	<b>1.15</b>	<b>1.10</b>	<b>5.60</b>	<b>10.20</b>	<b>18.49</b>	<b>1.08</b>	<b>0.23</b>	<b>5702.40</b>	<b>1214.40</b>

Note: So not to be repetative, shaded areas are not included in totals.

\* Land purchase - private land conveyed to town.

\*\* 1.5 + replanting of the previously planted 1-acre



Town of Williston  
Allen Brook Riparian Corridor Enhancement Sites  
Site Location Map



**Bear Creek**  
Environmental

1 inch equals 400 feet



**Legend**

 Allen Brook 2008 Riparian Enhancement Sites

**Vermont Significant Wetland Inventory**

**Class**

 2

 3

 Allen Brook and Tributaries



**Town of Williston - Riparian Buffer Enhancement Project  
Allen Brook Watershed**

Location	Area (Acres)	Flood Frequency	Planting Types/Heights	Planting Density per acre	Number of Shrubs less than 10 feet	Number of Trees and Shrubs from 10 to 25 feet	Number of Trees >25 feet
A	0.53	None	20% shrubs and trees from 10 to 25 feet in height, 80% trees greater than 25 feet in height	450 for shrubs and trees from 10 to 25 feet in height; 200 for trees greater than 25 feet in height (average spacing is 13.2 feet on center)	0	48	85
B	0.24	Frequent	20% shrubs less than 10 feet, 80% shrubs and trees from 10 to 25 feet	1742 for shrubs less than 10 feet, 450 for shrubs and trees from 10 to 25 (spacing is 7.8 feet on center)	84	86	0
<b>TOTAL</b>					<b>84</b>	<b>134</b>	<b>85</b>

**Recommendation for Species**

		<b>Average Planting Densities:</b>	
<b>Location A:</b>	Shrubs between 10 and 25 feet: Nannyberry	Number of plants	133
	Trees greater than 25 feet: Red Maple and Gray Birch	Plants per acre	250
		Square footage	23086.8
	48 Nannyberry, 35 Red Maple, 35 Gray Birch, 8 White Pine, 7 Basswood	Plants per sq. feet	174.2
		Average spacing	13.2

		<b>Average Planting Densities:</b>	
<b>Location B:</b>	Shrubs less than 10 feet: Silky Dogwood	Number of plants	170
	Shrubs and trees from 10 feet to 25 feet: Speckled Alder, Live Willow Stakes	Plants per acre	708.4
		Square footage	10454.4
	84 Silky Dogwood, 60 Live Willow Stakes, 26 Speckled Alder	Plants per sq. feet	61.5
		Average spacing in feet	7.8

Town of Williston - Riparian Buffer Enhancement Project  
 Allen Brook adjacent to Bike Path  
 Prepared by Mary Nealon of Bear Creek Environmental

Location	Area (Acres)	Flood Frequency	Planting Types/Heights	Planting Density per acre	Number of Shrubs less than 10 feet	Number of Trees and Shrubs from 10 to 25 feet	Number of Trees >25 feet
C	0.34	None	5% shrubs less than 10 feet, 25% shrubs and trees from 10 to 25 feet in height, 70% trees greater than 25 feet in height	2732 for shrubs less than 10 feet; 1210 for shrubs and trees from 10 to 25 feet in height; 303 for trees greater than 25 feet in height (average spacing is 8.2 feet on center)	46	103	72
D	0.33	None	5% shrubs less than 10 feet, 25% shrubs and trees from 10 to 25 feet in height, 70% trees greater than 25 feet in height	2732 for shrubs less than 10 feet; 1210 for shrubs and trees from 10 to 25 feet in height; 303 for trees greater than 25 feet in height (average spacing is 8.2 feet on center)	45	100	70
<b>Total</b>					<b>92</b>	<b>203</b>	<b>142</b>

**Recommendation for Species:**

Location C and D: Shrubs less than 10 feet - silky dogwood; Shrubs and trees between 10 feet and 25 feet - highbush cranberry, chokecherry; Trees greater than 25 feet - Red maple, gray birch, white birch

**Average Planting Densities:**

Location A:

Number of plants	221
Plants per acre	651.2
Square footage	14810.4
Plants per sq. feet	66.9
Average spacing	8.2

Location A:

Number of plants	215
Plants per acre	651.2
Square footage	14374.8
Plants per sq. feet	66.9
Average spacing in feet	8.2

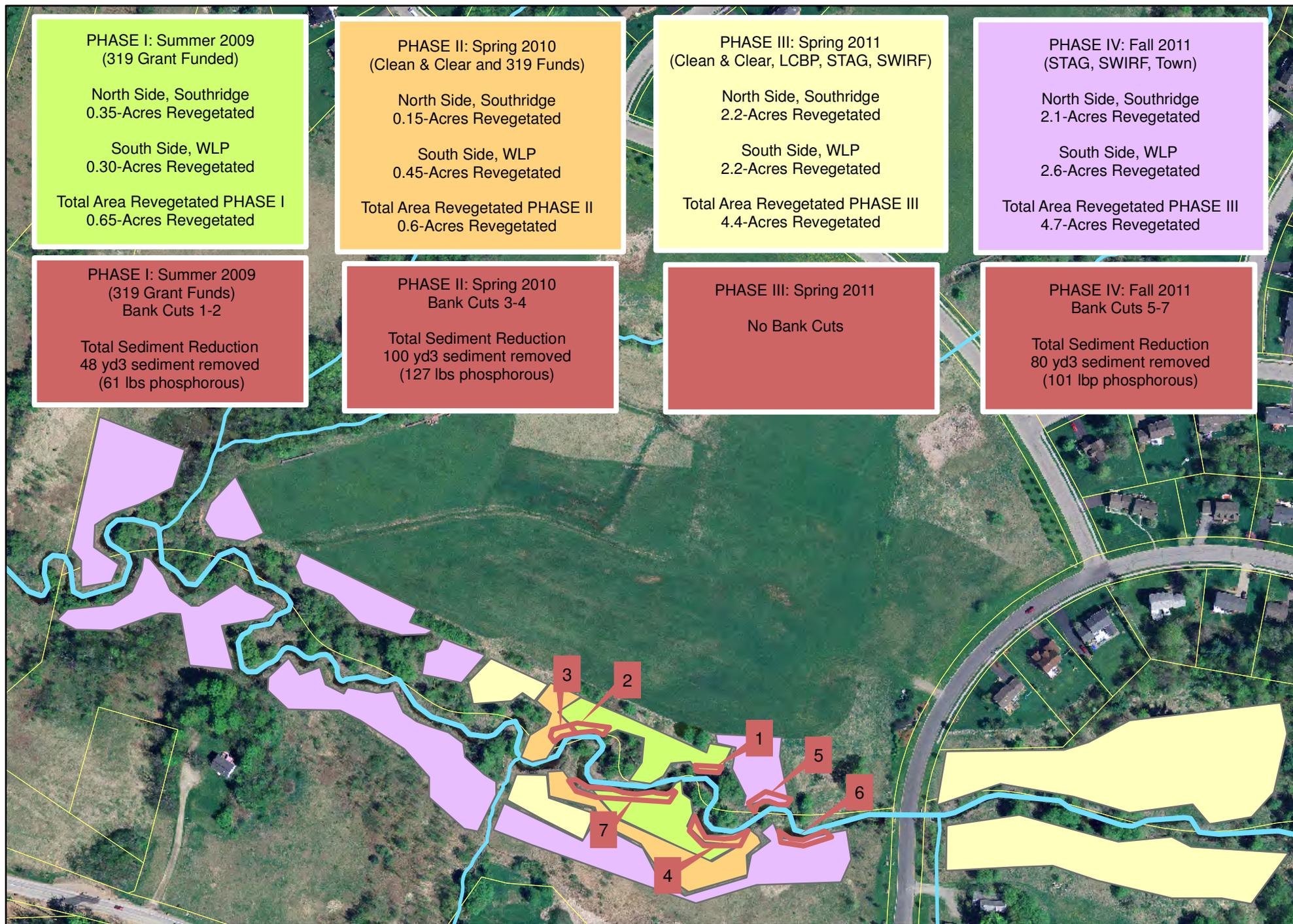
Plant Quantities for Allen Brook Buffer Enhancement Project  
 Town of Williston  
 Prepared by Bear Creek Environmental

Site	Shrubs less than 10 feet Silky Dogwood	Shrubs and Trees between 10 and 25 feet						Trees greater than 25 feet					Total
		Nannyberry	Shrub Willow	Speckled Alder	Highbush Cranberry	Serviceberry	Choke cherry	Red Maple	Gray Brich	White Pine	Basswood	White Birch	
A	0	48	0	0	0	0	0	35	35	8	7	0	133
B	84	0	60	26	0	0	0	0	0	0	0	0	170
C	46	0	0	0	18	35	50	30	30	0	0	12	221
D	45	0	0	0	15	35	50	30	30	0	0	10	215
<b>Total</b>	<b>175</b>	<b>48</b>	<b>60</b>	<b>26</b>	<b>33</b>	<b>70</b>	<b>100</b>	<b>95</b>	<b>95</b>	<b>8</b>	<b>7</b>	<b>22</b>	<b>739</b>

# Allen Brook Restoration Project Map A: Southridge/WLP Site

## PHASES I - IV

0 75 150 300 Feet



**PHASE I: Summer 2009**  
(319 Grant Funded)

North Side, Southridge  
0.35-Acres Revegetated

South Side, WLP  
0.30-Acres Revegetated

Total Area Revegetated PHASE I  
0.65-Acres Revegetated

**PHASE II: Spring 2010**  
(Clean & Clear and 319 Funds)

North Side, Southridge  
0.15-Acres Revegetated

South Side, WLP  
0.45-Acres Revegetated

Total Area Revegetated PHASE II  
0.6-Acres Revegetated

**PHASE III: Spring 2011**  
(Clean & Clear, LCBP, STAG, SWIRF)

North Side, Southridge  
2.2-Acres Revegetated

South Side, WLP  
2.2-Acres Revegetated

Total Area Revegetated PHASE III  
4.4-Acres Revegetated

**PHASE IV: Fall 2011**  
(STAG, SWIRF, Town)

North Side, Southridge  
2.1-Acres Revegetated

South Side, WLP  
2.6-Acres Revegetated

Total Area Revegetated PHASE III  
4.7-Acres Revegetated

**PHASE I: Summer 2009**  
(319 Grant Funds)

Bank Cuts 1-2

Total Sediment Reduction  
48 yd3 sediment removed  
(61 lbs phosphorous)

**PHASE II: Spring 2010**  
Bank Cuts 3-4

Total Sediment Reduction  
100 yd3 sediment removed  
(127 lbs phosphorous)

**PHASE III: Spring 2011**

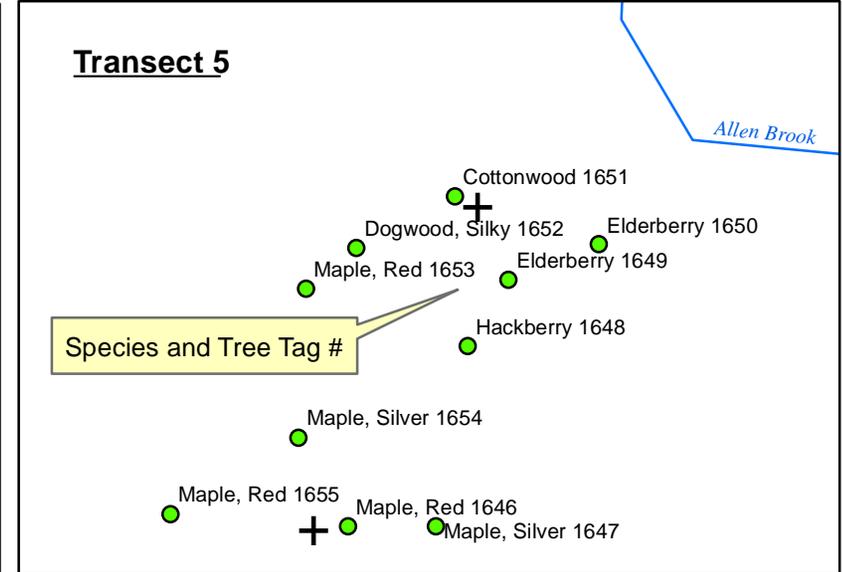
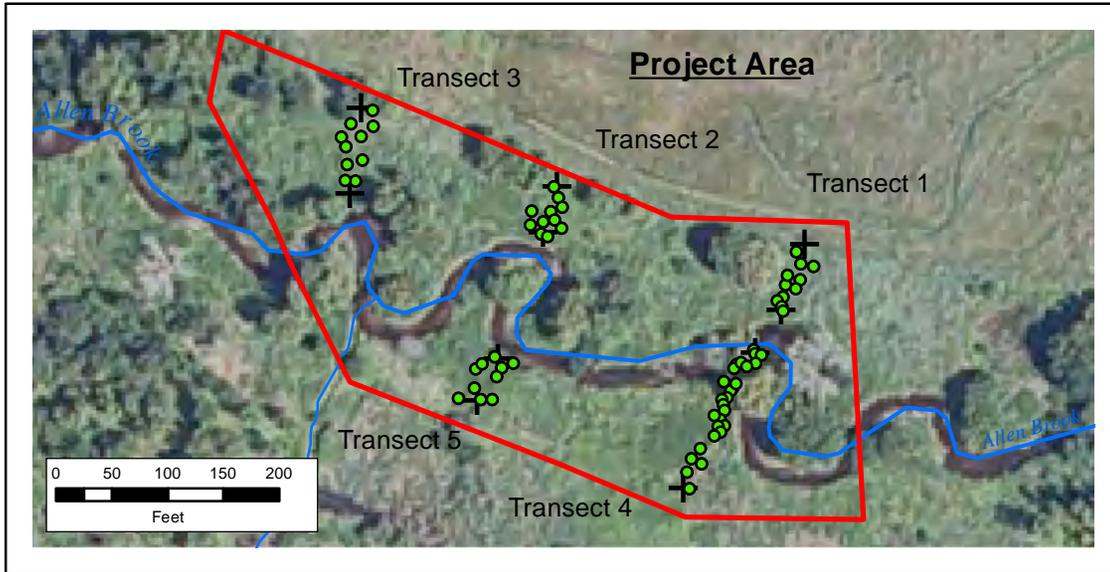
No Bank Cuts

**PHASE IV: Fall 2011**  
Bank Cuts 5-7

Total Sediment Reduction  
80 yd3 sediment removed  
(101 lbp phosphorous)



# Riparian Habitat Restoration Monitoring: Allen Brook



### Summary:

The riparian restoration monitoring project is a collaborative effort between the Intervale Center and the US Fish and Wildlife Service. We have collected data at restoration project sites, throughout Vermont, each growing season 2008-2010. This summary is meant to help inform the planning process by sharing the results from individual sites and collective results from 14 monitored sites and 2,095 stems. We will continue to monitor into 2011 and beyond. A more detailed report, with all of our findings will be prepared at the end of the 2012 season. Please provide us with any feedback you have, this is our first attempt at summarizing this information and sharing it with our partners. Attached you will find our protocol and a data sheet (associated only with this project) which may be helpful to better understand the results.

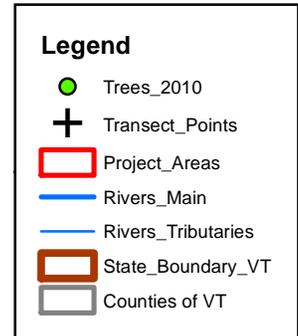
The Allen Brook planting project, at the South Ridge Development, was planted by the Williston Elementary School in May of 2009 and by VYCC in August of 2009. Two hundred bareroot and four hundred potted plants were planted within a 10.35 acre parcel. This study was set up shortly after VYCC completed planting in the fall of 2009. In 2009 and 2010 we collected data at the site which includes 5 transects and 69 monitored stems. All of the plant material at this site received plastic mats, with the exception of live stakes; all trees received tree tubes, shrubs did not. The plant material was provided by the Intervale Conservation Nursery. The following species were planted: cottonwood and silky dogwood bareroot; speckled alder, green ash, highbush cranberry, red osier dogwood, silky dogwood, elderberry, American elm, hackberry, red maple, silver maple, and willow containers; and willow spp. live stakes.

Our preliminary findings indicate that overall tree survival, at this site in year two, was 85% which is comparable to the statewide average (Figures 1 & 2). In general the survivorship and overall health condition of this site is better than the statewide average (Figures 3 & 4). The average growth of all stems at this project, one year after planting, was also better than the statewide average (Figure 5 & 6). After one year, nine species were taller, two species were shorter, and dogwoods showed no change (Figure 7). Alders grew the most averaging 23 inches, and willow stakes decreased the most at 7 inches. The understory at this site was variable throughout. Reed canary was dominant in many areas and goldenrod, sedge, and brambles are also notable vegetative covers. It was apparent that some flooding occurred due to silt on the tree mats and leaf debris on the tree branches. Flooding also caused some bank erosion, which led to the loss of several trees. Overall established vegetation at this site appears to be doing well and is comparable to other monitored restoration sites.

### Project Details:

Allen Brook

HUC 8 = Winooski River  
6500 ft stream frontage  
5.2 ac riparian, 0 ac wetland,  
5.1 ac upland





## Allen Brook: Riparian Habitat Restoration Monitoring Results 2011

### Survivorship:

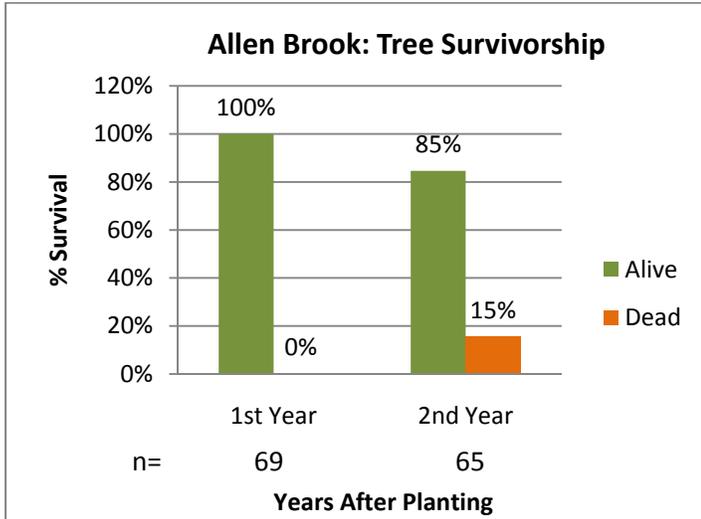


Figure 1.

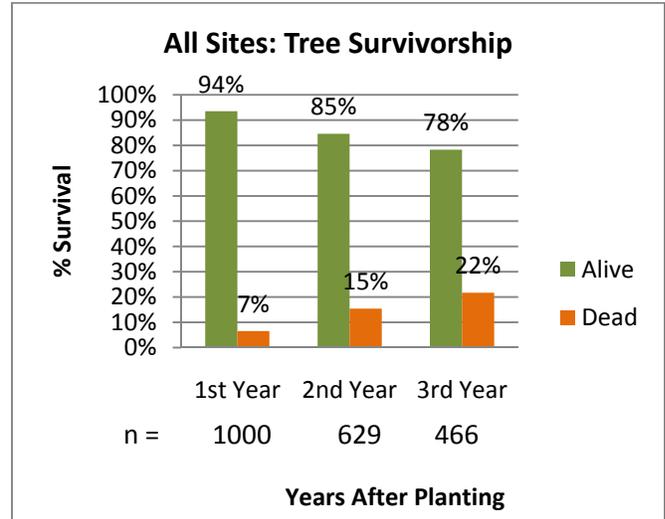


Figure 2.

### Tree Health:

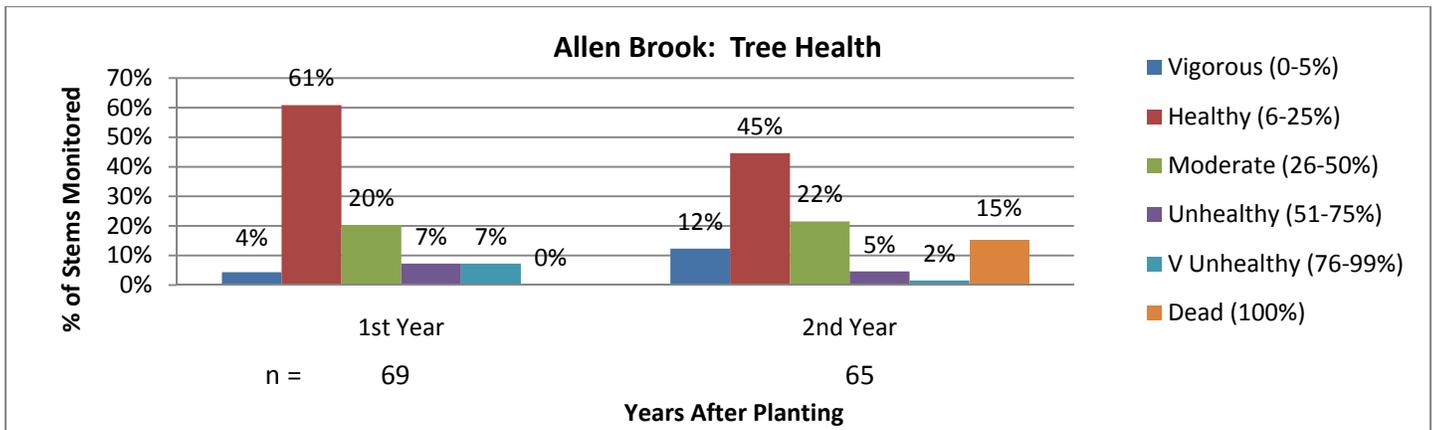


Figure 3.

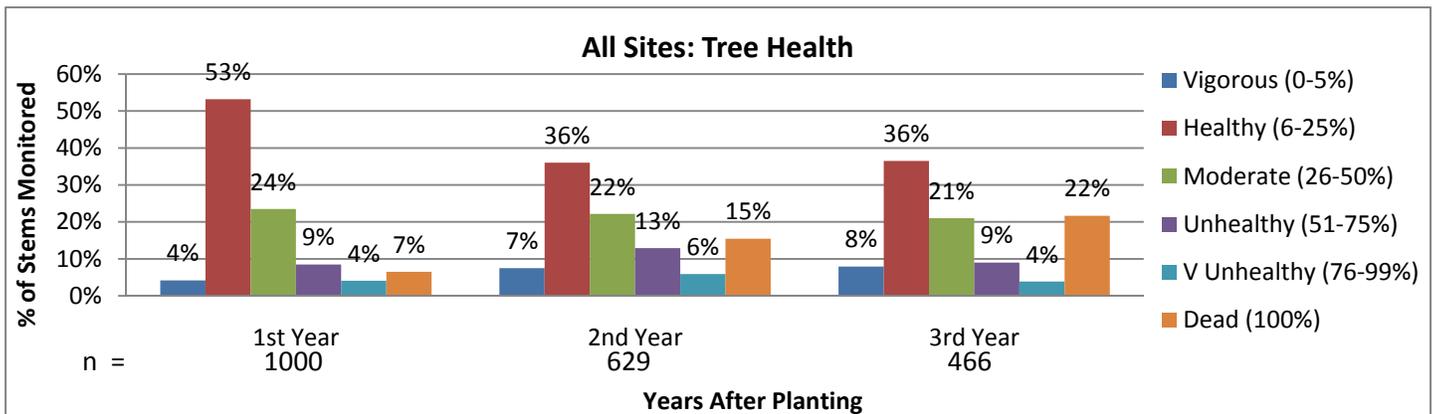


Figure 4.

Tree Height and Growth (All dead stems were removed for these calculations):

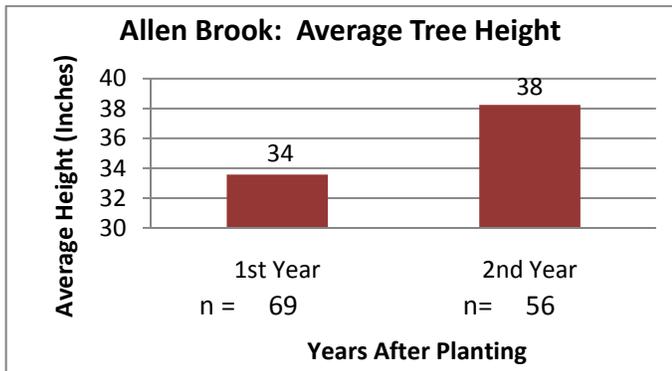


Figure 5.

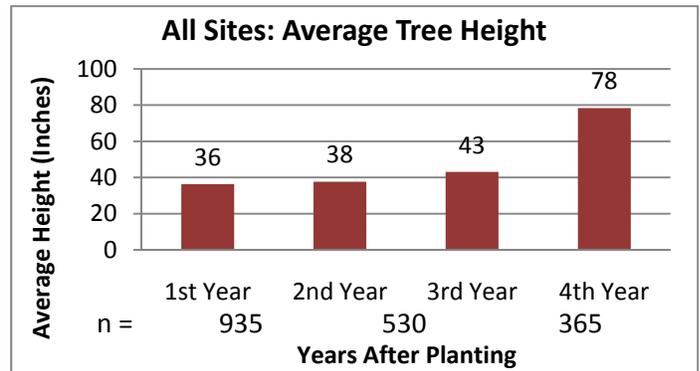


Figure 6.

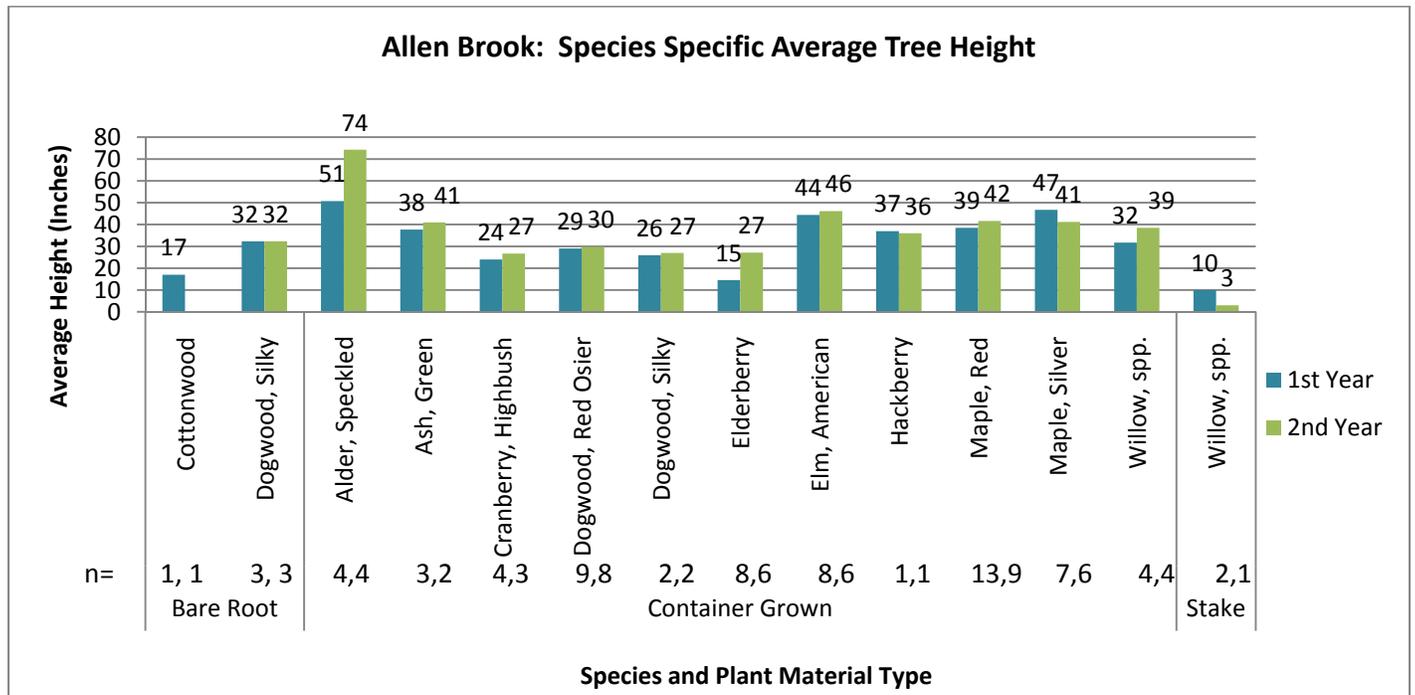


Figure 7.

Allen Brook: Photo time line 2009-2010



Highbush cranberry in 2009 ...



...again in 2010.



Willow fascines in 2010, 1yr after installation.

Tree Tag	Species	Height in Inches	Date Monitored	Project Name	Condition	Planting type	Mat	Tube	Stem Browse	Leaf Browse	Girdled	Height Dead Leader	Inches Below Tube	Comp. Species	Comp. Cover	Comp. Height	Browse
1001	Elderberry	15	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1002	Dogwood, Silky	35	9/23/2009	Allen Brook	Healthy (6-25%)	Bare Root	Green	None			None	0	0		0	0	None
1003	Dogwood, Silky	35	9/23/2009	Allen Brook	Healthy (6-25%)	Bare Root	Green	None			None	0	0		0	0	None
1004	Ash, Green	40	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1005	Alder, Speckled	50	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1006	Willow, spp.	16	9/23/2009	Allen Brook	Healthy (6-25%)	Stake	None	None			None	0	0		0	0	None
1007	Maple, Red	24	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1008	Elm, American	31	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1009	Elm, American	54	9/23/2009	Allen Brook	V Unhealthy (76-99%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1010	Ash, Green	33	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1011	Dogwood, Red Osier	26	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1012	Dogwood, Silky	27	9/23/2009	Allen Brook	Healthy (6-25%)	Bare Root	Green	Blue-X			None	0	0		0	0	None
1013	Elm, American	33	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1014	Maple, Silver	50	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	10-20%
1015	Elm, American	38	9/23/2009	Allen Brook	V Unhealthy (76-99%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1016	Elm, American	43	9/23/2009	Allen Brook	V Unhealthy (76-99%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1646	Maple, Red	40	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1647	Maple, Silver	60	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1648	Hackberry	37	9/23/2009	Allen Brook	Unhealthy (51-75%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1649	Elderberry	14	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1650	Elderberry	17	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1651	Cottonwood	14	9/23/2009	Allen Brook	Moderate (26-50%)	Bare Root	Green	None			None	0	0		0	0	None
1652	Dogwood, Silky	29	9/23/2009	Allen Brook	V Unhealthy (76-99%)	Container Grown	Green	None			None	0	0		0	0	40-50%
1653	Maple, Red	46	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1654	Maple, Silver	40	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1655	Maple, Red	30	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1656	Maple, Red	<Null>	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1657	Maple, Red	43	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1658	Willow, spp.	29	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X			None	0	0		0	0	30-40%
1659	Elderberry	16	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1660	Dogwood, Red Osier	25	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	20-30%
1661	Cranberry, Highbush	32	9/23/2009	Allen Brook	Vigorous (0-5%)	Container Grown	Green	None			None	0	0		0	0	1-10%
1662	Alder, Speckled	35	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1663	Willow, spp.	31	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	None			None	0	0		0	0	20-30%
1664	Dogwood, Red Osier	32	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	1-10%
1665	Dogwood, Red Osier	35	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	None			None	0	0		0	0	30-40%
1666	Cranberry, Highbush	27	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1667	Willow, spp.	30	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1668	Cranberry, Highbush	22	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	10-20%
1669	Dogwood, Red Osier	26	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	20-30%
1670	Elderberry	10	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1671	Dogwood, Red Osier	34	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1672	Dogwood, Red Osier	37	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1673	Elderberry	21	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1674	Elderberry	16	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1675	Elm, American	65	9/23/2009	Allen Brook	Unhealthy (51-75%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1676	Elm, American	28	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	None			None	0	0		0	0	None
1677	Maple, Silver	50	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	10-20%
1678	Cranberry, Highbush	15	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1679	Maple, Red	32	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1682	Ash, Green	40	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1683	Maple, Red	31	9/23/2009	Allen Brook	Vigorous (0-5%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1684	Elm, American	63	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1685	Alder, Speckled	63	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1686	Maple, Silver	37	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1687	Maple, Silver	43	9/23/2009	Allen Brook	Unhealthy (51-75%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1688	Maple, Red	51	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1689	Dogwood, Red Osier	25	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	None			None	0	0		0	0	20-30%
1690	Dogwood, Red Osier	21	9/23/2009	Allen Brook	Moderate (26-50%)	Container Grown	Green	None			None	0	0		0	0	30-40%
1691	Alder, Speckled	55	9/23/2009	Allen Brook	Vigorous (0-5%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1692	Maple, Red	37	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1693	Maple, Red	31	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	None
1694	Maple, Silver	47	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1695	Maple, Red	50	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	1-10%
1696	Maple, Red	47	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X			None	0	0		0	0	10-20%
1697	Dogwood, Silky	23	9/23/2009	Allen Brook	Unhealthy (51-75%)	Container Grown	Green	None			None	0	0		0	0	10-20%
1698	Willow, spp.	37	9/23/2009	Allen Brook	V Unhealthy (76-99%)	Container Grown	Green	Blue-X			None	0	0		0	0	70-80%
1699	Elderberry	10	9/23/2009	Allen Brook	Healthy (6-25%)	Container Grown	Green	None			None	0	0		0	0	None
1700	Willow, spp.	4	9/23/2009	Allen Brook	Unhealthy (51-75%)	Stake	None	None			None	0	0		0	0	None
1006	Willow, spp.	<Null>	7/27/2010	Allen Brook	Unknown	Stake	None	None			None	0	0		0	0	None
1007	Maple, Red	32	7/27/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	None	20-30%	1-10%	None	0	0	Reed Canarygrass	Thick (67-100%)	0	0
1008	Elm, American	35	7/27/2010	Allen Brook	Dead (100%)	Container Grown	Green	Blue-X	None	None	None	34	0		0	0	0
1009	Elm, American	43	7/27/2010	Allen Brook	Unhealthy (51-75%)	Container Grown	Green	None	None	30-40%	None	52	0		0	0	0
1010	Ash, Green	40	7/27/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	1-10%	None	None	0	0		0	0	0
1011	Dogwood, Red Osier	25	7/27/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	10-20%	None	None	0	0		0	0	0
1012	Dogwood, Silky	22	7/27/2010	Allen Brook	Healthy (6-25%)	Bare Root	Green	Blue-X	10-20%	None	None	32	0		0	0	0

1013	Elm, American	0	7/27/2010	Allen Brook	Dead (100%)	Container Grown	Green	None	None	None	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1014	Maple, Silver	0	7/27/2010	Allen Brook	V Unhealthy (76-99%)	Container Grown	Green	Blue-X	None	None	None	46	0			0	
1015	Elm, American	34	7/27/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X	None	30-40%	None	35	0			0	
1016	Elm, American	42	7/27/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X	1-10%	10-20%	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1001	Elderberry	0	8/2/2010	Allen Brook	Dead (100%)	Container Grown	None	None	None	None	None	0	0			0	
1002	Dogwood, Silky	35	8/2/2010	Allen Brook	Moderate (26-50%)	Bare Root	Green	None	30-40%	1-10%	None	0	0			0	
1003	Dogwood, Silky	40	8/2/2010	Allen Brook	Healthy (6-25%)	Bare Root	Green	None	None	1-10%	None	0	0	Reed Canarygrass	Medium (34-66%)	0	
1004	Ash, Green	42	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	None	1-10%	None	0	0	See Notes	Thick (67-100%)	0	
1005	Alder, Speckled	70	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	None	30-40%	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1685	Alder, Speckled	81	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	None	30-40%	None	0	0			0	
1686	Maple, Silver	31	8/2/2010	Allen Brook	Dead (100%)	Container Grown	Green	Blue-X	1-10%	None	90-100%	31	0	See Notes		0	
1687	Maple, Silver	42	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	1-10%	1-10%	None	0	0	Goldenrod	Thick (67-100%)	0	
1688	Maple, Red	50	8/2/2010	Allen Brook	Dead (100%)	Container Grown	Green	Blue-X	None	None	90-100%	50	0	Reed Canarygrass	Medium (34-66%)	0	
1689	Dogwood, Red Osier	29	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	None	1-10%	None	0	0	Reed Canarygrass	Medium (34-66%)	0	
1690	Dogwood, Red Osier	36	8/2/2010	Allen Brook	Vigorous (0-5%)	Container Grown	Green	None	1-10%	None	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1601	Alder, Speckled	73	8/2/2010	Allen Brook	Vigorous (0-5%)	Container Grown	Green	Blue-X	None	1-10%	None	0	0	Goldenrod	Thick (67-100%)	0	
1602	Maple, Red	36	8/2/2010	Allen Brook	Dead (100%)	Container Grown	Green	Blue-X	None	None	90-100%	36	0	Reed Canarygrass	Thick (67-100%)	0	
1603	Maple, Red	40	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	10-20%	10-20%	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1604	Maple, Silver	54	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	30-40%	20-30%	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1605	Maple, Red	49	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	10-20%	10-20%	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1606	Maple, Red	36	8/2/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X	30-40%	40-50%	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1607	Dogwood, Silky	22	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	30-40%	1-10%	None	0	0	Reed Canarygrass	Thick (67-100%)	0	
1608	Willow, spp.	23	8/2/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	None	None	None	29	0	Reed Canarygrass	Sparse (0-33%)	0	
1700	Willow, spp.	3	8/2/2010	Allen Brook	Unhealthy (51-75%)	Stake	None	None	None	None	None	0	0		Sparse (0-33%)	0	
1646	Maple, Red	43	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	None	20-30%	None	None	0	0	Goldenrod	Thick (67-100%)	0	
1647	Maple, Silver	59	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X	50-60%	1-10%	None	0	0	See Notes	Thick (67-100%)	0	
1648	Hackberry	36	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	None	10-20%	None	0	0	Goldenrod	Thick (67-100%)	0	
1649	Elderberry	26	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	None	None	30-40%	None	0	0	Goldenrod	Thick (67-100%)	0	
1650	Elderberry	15	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	None	None	None	0	0	Goldenrod	Thick (67-100%)	0	
1651	Cottonwood	<Null>	8/9/2010	Allen Brook	Unknown	Bare Root	Green	None	None	None	None	0	0			0	
1652	Dogwood, Silky	32	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	10-20%	None	None	0	0	Goldenrod	Thick (67-100%)	0	
1653	Maple, Red	72	8/9/2010	Allen Brook	Vigorous (0-5%)	Container Grown	Green	Blue-X	1-10%	1-10%	None	0	0	Goldenrod	Thick (67-100%)	0	
1654	Maple, Silver	40	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	20-30%	1-10%	None	0	0	Goldenrod	Thick (67-100%)	0	
1655	Maple, Red	32	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	None	30-40%	None	None	0	0	See Notes	Thick (67-100%)	0	
1656	Maple, Red	25	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X	60-70%	1-10%	None	0	0			0	
1657	Maple, Red	46	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X	50-60%	70-80%	None	0	0			0	
1658	Willow, spp.	45	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	None	None	None	0	0			0	
1659	Elderberry	38	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	None	10-20%	None	0	0	Other Invasive	Thick (67-100%)	0	
1660	Dogwood, Red Osier	34	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	30-40%	1-10%	None	0	0	See Notes	Thick (67-100%)	0	
1661	Cranberry, Highbush	29	8/9/2010	Allen Brook	Vigorous (0-5%)	Container Grown	Green	None	1-10%	None	None	0	0	See Notes	Medium (34-66%)	0	
1662	Alder, Speckled	73	8/9/2010	Allen Brook	Vigorous (0-5%)	Container Grown	Green	Blue-X	None	None	None	0	0	See Notes	Thick (67-100%)	0	
1663	Willow, spp.	43	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	None	None	None	0	0	See Notes	Sparse (0-33%)	0	
1664	Dogwood, Red Osier	24	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	50-60%	1-10%	None	0	0	Other Invasive	Thick (67-100%)	0	
1665	Dogwood, Red Osier	14	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	None	60-70%	1-10%	None	32	0	Other Invasive	Medium (34-66%)	0	
1666	Cranberry, Highbush	31	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	50-60%	1-10%	None	0	0			0	
1667	Willow, spp.	43	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	10-20%	1-10%	None	0	0			0	
1668	Cranberry, Highbush	<Null>	8/9/2010	Allen Brook	Unknown	Container Grown	Green	None	None	None	None	0	0			0	
1669	Dogwood, Red Osier	<Null>	8/9/2010	Allen Brook	Unknown	Container Grown	Green	None	None	None	None	0	0			0	
1670	Elderberry	20	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	1-10%	10-20%	None	0	0	Goldenrod	Medium (34-66%)	0	
1671	Dogwood, Red Osier	34	8/9/2010	Allen Brook	Vigorous (0-5%)	Container Grown	Green	None	None	1-10%	None	0	0	Goldenrod	Thick (67-100%)	0	
1672	Dogwood, Red Osier	42	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	None	1-10%	1-10%	None	0	0	Goldenrod	Medium (34-66%)	0	
1673	Elderberry	30	8/9/2010	Allen Brook	Vigorous (0-5%)	Container Grown	Green	None	1-10%	1-10%	None	0	0			0	
1674	Elderberry	34	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	None	None	20-30%	None	None	0	0	Goldenrod	Sparse (0-33%)	0	
1675	Elm, American	73	8/9/2010	Allen Brook	Healthy (6-25%)	Container Grown	Green	Blue-X	1-10%	1-10%	None	0	0	Goldenrod	Medium (34-66%)	0	
1676	Elm, American	21	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	None	30-40%	1-10%	None	0	0	Other Invasive	Medium (34-66%)	0	
1677	Maple, Silver	52	8/9/2010	Allen Brook	Moderate (26-50%)	Container Grown	Green	Blue-X	50-60%	1-10%	None	0	0			0	
1678	Cranberry, Highbush	20	8/9/2010	Allen Brook	Vigorous (0-5%)	Container Grown	Green	None	None	1-10%	None	0	0	Other Invasive	Thick (67-100%)	0	
1679	Maple, Red	0	8/9/2010	Allen Brook	Dead (100%)	Container Grown						0	0			0	
1682	Ash, Green	0	8/9/2010	Allen Brook	Dead (100%)	Container Grown	Green	Blue-X	None	None	None	34	0	See Notes	Thick (67-100%)	0	
1683	Maple, Red	0	8/9/2010	Allen Brook	Dead (100%)	Container Grown	Green	Blue-X	None	None	60-70%	22	0			0	
1684	Elm, American	64	8/9/2010	Allen Brook	Unhealthy (51-75%)	Container Grown	Green	Blue-X	1-10%	20-30%	10-20%	0	0			0	
1690	Elderberry	0	8/9/2010	Allen Brook	Dead (100%)	Container Grown	Green	None				0	0			0	

# Appendix B

## Parcel Prioritization Matrix Spreadsheets and Maps



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January 28, 2011 (Revised February 11, 2011)

Ms. Jessica Andreoletti  
Town of Williston – Planning and Zoning Department  
7900 Williston Road  
Williston, VT 05495

**RE: Development of Parcel Prioritization Matrix Spreadsheets and Preliminary Parcel Lists**

Dear Ms. Andreoletti:

The purpose of this letter is document the data, methods, and logic utilized to create the updated Parcel Prioritization Matrix Spreadsheets and to present the subsequent Preliminary Parcel Lists. KAS' ultimate goal for the Allen Brook Restoration Project is to implement the re-vegetation of approximately 10-acres of riparian buffer zone, and provide bank cutting and stabilization as necessary. Based on the funding source, this project must be implemented within this calendar year. Consequently, it is important to concentrate efforts on the parcels that not only are in most need of restoration, but are also feasible for implementation within this calendar year. The Matrix spreadsheets developed by KAS are tools to help determine project locations that will meet the desired project goals. Two separate Matrix spreadsheets were developed, one for the parcels along the Main Branch of the Allen Brook and one for the parcels along the tributary streams to the Allen Brook.

The basic functions of the Matrixes are to rank the estimated 158 parcels that contain area within the desired riparian buffer corridor for the impaired portion of the Main Branch of the Allen Brook and its tributaries. The Matrixes were designed to rank parcels based on suitability, need, and feasibility for restoration based on analyses of the existing data available. The Matrix spreadsheets are linked to GIS mapping software, which is a powerful analytical tool for processing and analyzing geo-referenced data. Wherever possible, KAS utilized available data and analysis already developed by the Town to avoid duplication of efforts. The selected parcel ranking criteria were buffer zone area, location within a priority corridor (Main Branch only), landowner interest, quality of buffer, channel erosion (Main Branch only), soil erosion potential, agricultural use, location along main road, and connection to Town or Conserved Land. The factors developed for ranking parcels gave priority to lower values (i.e. the lower the number, the higher the priority). GIS mapping software in conjunction with existing shapefiles developed by others were utilized to calculate the ranking criteria factors as follows:

- **Parcel Buffer Area Scale Factor:** This factor was selected to give priority to parcels that contained more area within the buffer zone. Values for this factor were assigned as follows: parcels containing 5.5 acres and more of buffer zone were given a value of 1, parcels containing between 2.5 acres to 5.49 acre received a value of 2, parcels containing between 1 acre and 2.49 acres received a value of 2, and parcels with less than an 1 acre were given a value of 4. The riparian buffer zone area contained within a parcel was calculated utilizing GIS mapping software in conjunction with the following shapefiles:
  - *Allen\_156ft\_EPA\_BUFF.shp* - A digitized delineation of Allen Brook buffer zone with classification and ranking based on buffer use and quality. This layer was created by Collin Smythe.
  - *TRIBS\_50ft9in\_EPA\_BUFF.shp* - A digitized delineation of the Allen Brook tributary buffer zones with classification and ranking based on buffer use and quality. This layer was created by Collin Smythe.
  - *Buffer\_Parcel.shp* – Contains only the parcels that have area within the desired buffer zone along the impaired portion of the Allen Brook. This layer was created by KAS consulting utilizing the *Parcels\_05.shp* shapefile provided by the Town.
  
- **Priority Corridor Factor:** This factor was selected to give priority to parcels located along the main branch of the Allen Brook between Industrial Avenue and Interstate 89. Parcels located within the priority corridor were given a value of 1, and all other parcels were given a value of 2. This factor was created utilizing *impaired\_waters\_05.shp* and the *Buffer\_Parcel.shp*. The *impaired\_waters\_05.shp* delineates the impaired waters within Vermont, and was acquired through the Town. This factor was not utilized for Tributary Matrix.
  
- **Landowner Interest Factor:** This factor was selected to give priority to parcels with owners interested in the project as described in the letter mailed out by the Town dated September 15, 2010. Parcels with interested owners received a value of 1, parcels with unknown owner interest received a value of 3, and parcels with uninterested owners received a value of 5. This data was provided by the Town based on responses received in the mail, over the phone, and at meetings and will be updated through outreach efforts.
  
- **Existing Buffer Quality Factor:** This factor was selected to give priority to parcels that contain riparian buffer zones with poor quality. KAS calculated weighted averages of the buffer zone quality for each parcel based on the information contained in the *Allen\_156ft\_EPA\_BUFF.shp* and *TRIBS\_50ft9in\_EPA\_BUFF.shp* shapefiles in conjunction with the *Buffer\_Parcel.shp*. The values assigned for buffer quality are as

follows: non-existent buffers received a value of 1, poor buffer received a value of 2, moderate buffers received a value of 3, good buffer received a value of 4 and great buffers received a value of 5. For additional information, please refer the attached letter composed by Collin Smythe.

- **Channel Erosion Factor:** This factor was selected to give priority to parcels that contained eroded channel reaches along the main branch of the Allen Brook. KAS utilized the *Allen\_SGA\_shape.shp* file created by Fitzgerald Environmental, LLC, which contained geomorphic assessment data for the main branch of the Allen Brook, in conjunction with the *Parcel\_05.shp*. Based on the geomorphic data collected on the main branch, a general rank of erosion was assigned to each reach of the main branch. A value of 1 was assigned to parcels containing main branch stream reaches with high channel erosion, a value of 2 was assigned to parcels with moderate channel erosion, and a value of 3 was assigned to parcels with low channel erosion along the main branch. Channel erosion data was not available for tributary channel sections and consequently this factor was not included in the Tributary Matrix.
- **Soil Buffer Erosion Factor:** This factor was selected to give priority to parcels that contain erosive soils. When this factor is combined with the *Existing Buffer Quality Factor*, it provides a better understanding of a given parcel's erosion potential. For instance, a parcel with a poor buffer quality and highly erosive soils will likely produce a higher annual sediment load when compared to a parcel with a poor buffer and non-erodible soils. KAS utilized the *Williston\_Soils.shp* file provided by the Town in conjunction with the *Parcel\_05.shp* file to calculate weighted averages for soil erosion potential for the buffer area within a given parcel. Soil erosion factors were assigned to soils as follows: soils designated as highly erodible were given a value of 1, soils designated as potentially highly erodible were given a value of 2, and soils designated as not erodible were given a value of 3.
- **Agricultural Factor:** This factor was selected to give priority to parcels that are currently utilized for agricultural purposes. This factor was selected due to agricultural parcels being exempt from the Town zoning ordinances that protects riparian buffer zones. The *Polygon\_Parcel.shp*, which provides a designation for a parcels use, was utilized to determine which parcels are currently agricultural. A parcel currently used as agricultural was assigned a value of 1, while all other parcels were assigned a value of 2.
- **Connected to Arterial Road Factor:** This factor was selected to give priority to parcels that are located along one of Williston's major roads. Project visibility is important to promote the restoration effort, and can

also provide a chance for additional public outreach and educational. *Williston\_Road.shp* file in conjunction with the *Parcel\_05.shp* file were utilized to determine the parcels located along the main town roads. Parcels located along a main road were assigned a value of 1, while all other parcels were assigned a value of 2.

- **Connected to Town or Conserved Land Factor:** This factor was selected to give priority to parcels that are located adjacent to a parcel that is owned by the Town or is currently conserved. The logic behind this factor is to identify areas where longer lengths of stream restoration could be provided. *Conservedland.shp* file in conjunction with the *Parcel\_05.shp* file were utilized to determine the parcels located adjacent to Town or conserved land. Parcels located adjacent to Town or conserved land were given a value of 1, while all other parcels were given a value of 2.

The Matrix spreadsheets summed up the above factors, and the parcels with the lowest cumulative score were given the highest priority. A copy of the Matrix spreadsheets are attached to this letter for reference.

The Matrix rankings were utilized in conjunction with KAS' local knowledge and feedback from the Town to develop the attached short lists of potential project sites. KAS has also included a mapping generated in GIS that illustrates the matrixes results and the Parcel short lists. Please review the attached project site short lists for your comment and approval.

Following concurrence with the list, KAS will initiate outreach to the identified parcel owners. KAS will contact and meet with property owners to educate them about the benefits of granting a conservation easement to the Town and attempt to obtain preliminary approval for an easement. Should you have any questions, or require additional information please do not hesitate to call us at (802) 383-0486.

Sincerely,



Stephen Diglio, PE  
Project Engineer



Erik Sandblom, PE  
Principal Engineer

cc: 812100038 KAS Project File  
Ian Ambler, Ambler Design

Parcel ID	Parcel Ownership	Calculated Parcel Area (Acres)	Calculated Buffer Area (Acres)	Estimated Planting in Buffer Area (Acres)	Parcel Buffer Area Scale Factor (1-4)	Priority Corridor Factor (1-2)	Landowner Interest Factor (1,3,5)	Existing Buffer Quality Factor (1-5)	Channel Erosion Factor (1-3)	Buffer Soil Erosion Factor (1-3)	Agricultural Factor (1-2)	Connected to Arterial Road Factor (1-2)	Connected to Town/Conserved Land Factor (1-2)	Total for Parcel Criteria Ranking (9-28)
1059	TAFT FARMS H.O.A.	18.3	6.4	5.1	1	1	1	2.4	1	1.3	2	1	1	11.7
2278	BRYAN ALDEN T & PHOEBE E	25.7	3.8	3.4	2	1	1	1.6	1	2.5	2	1	1	13.0
2175	TOWN OF WILLISTON	53.3	8.0	5.0	1	1	1	2.9	1	2.8	2	1	1	13.7
2796	BRUCE, MICHAEL A	164.9	10.6	10.3	1	2	1	1.3	3	2.7	1	1	1	13.9
1207	TOWN OF WILLISTON	106.4	4.6	0.5	2	1	1	3.7	1	1.3	2	1	1	14.1
1429	WILLISTON LIMITED PARTNERSHIP	22.2	3.9	3.1	2	1	1	2.4	1	1.9	2	1	2	14.3
2991	TOWN OF WILLISTON SCH DIST	22.3	6.7	4.1	1	1	1	3.0	1	2.5	2	2	1	14.4
525	TOWN OF WILLISTON	7.1	5.8	0.3	1	1	1	4.1	1	2.5	2	1	1	14.6
1513	SOUTH RIDGE H.O.A.	72.4	11.7	5.5	1	1	1	3.0	1	2.7	2	1	2	14.7
2795	BRUCE, MICHAEL A	164.9	11.7	10.7	1	2	1	1.8	3	2.8	1	1	1	14.7
2297	REED, RICHARD A JR & KAREN	14.1	4.9	4.4	2	1	1	2.0	1	2.7	2	1	2	14.7
2282	TOWN OF WILLISTON	15.0	6.9	4.1	1	1	1	3.0	1	2.8	2	2	1	14.8
1428	WILLISTON LIMITED PARTNERSHIP	22.2	7.9	3.9	1	1	1	2.9	1	3.0	2	1	2	14.9
2661	SIPLE WALDO JR & ARLENE D	318.7	17.3	13.5	1	2	3	2.3	2	1.8	1	1	1	15.1
1238	PECOR JEAN G	49.5	14.1	4.6	1	1	1	3.6	1	2.6	2	1	2	15.1
1586	OLD STAGE ESTATES H.O.A.	49.5	7.6	4.7	1	1	3	2.9	1	2.5	2	1	1	15.4
1052	ALLEN BROOK DEVELOPMENT INC	13.6	6.1	4.6	1	1	3	2.5	1	2.3	2	1	2	15.8
1517	SOUTH RIDGE H.O.A.	72.4	3.3	2.8	2	1	1	2.2	1	2.6	2	2	2	15.9
2150	THIBAUT RENE J	9.1	3.2	0.9	2	1	3	4.1	1	1.1	2	1	1	16.1
1237	PECOR JEAN G	7.4	1.4	0.8	3	1	1	3.0	1	1.3	2	2	2	16.3
3069	STATE OF VERMONT	137.6	9.4	8.4	1	1	5	2.0	1	2.4	2	1	1	16.4
2281	LEFEBVRE NELSON A & BEVERLY T	12.0	3.0	2.7	2	1	3	2.0	1	2.5	2	1	2	16.5
506	BRISSON DONALD P & BERNICE	1.3	1.0	0.7	3	1	3	2.5	1	2.2	2	1	1	16.6
2283	TURBO M & PIOTR	3.8	2.5	1.6	2	1	3	2.9	1	3.0	2	1	1	16.9
2108	BROOKSIDE PROPERTIES, LLC	3.9	2.3	1.4	3	1	3	3.0	1	2.0	2	1	1	17.0
1058	MBF PROPERTIES LLC	13.7	6.6	3.8	1	1	3	3.1	1	2.1	2	2	2	17.1
1359	GERMAINE ARTHUR R & NELLIE C	2.8	2.1	1.5	3	1	3	2.5	1	2.7	2	1	1	17.2
2106	MARINOVICH MIA R	1.3	0.6	0.4	4	1	3	3.0	1	1.3	2	1	1	17.3
2594	TOWN OF WILLISTON	140.5	26.6	3.6	1	2	1	4.0	3	2.4	2	1	1	17.4
2107	JAQUISH FREDERICK & JUNE	1.8	1.5	0.9	3	1	3	3.0	1	1.4	2	1	2	17.4
1062	INDIAN RIDGE H.O.A.	5.6	4.3	2.6	2	1	3	3.0	1	1.6	2	2	2	17.6
1389	REVILLA CRAIG & KATHLEEN	2.9	2.4	1.3	3	1	3	3.3	1	1.3	2	1	2	17.6
2147	IMMACULATE HEART OF MARY CHURCH	18.5	9.0	0.0	1	1	3	5.0	1	1.8	2	1	2	17.8
2133	WORTHHEIM MARY ESTATE	65.6	14.9	0.1	1	1	3	4.9	2	1.9	2	1	1	17.8
1060	Community/HOA	18.3	0.8	0.1	4	1	3	3.7	1	1.1	2	1	1	17.8
1170	ALLEN BROOK INVESTMENTS LLP	43.5	7.9	0.0	1	1	3	5.0	1	2.2	2	1	2	18.1
507	BISACCIA JOHN J & MARNIA	1.2	0.8	0.7	4	1	3	2.1	1	3.0	2	1	1	18.1
2296	GIBNEY FRANK A	10.5	4.4	1.0	2	1	3	3.6	1	2.7	2	1	2	18.3
293	LARSEN PETER & ANN	0.6	0.4	0.3	4	1	3	2.4	1	2.0	2	2	1	18.4
490	Community/HOA	28.5	5.5	1.0	2	1	3	4.4	1	2.1	2	1	2	18.5
2112	DUMONT RICHARD D & RHIA A	0.6	0.5	0.3	4	1	3	2.5	1	2.0	2	1	2	18.5
2650	BOUTIN BEVERLY	41.2	6.7	0.3	1	2	3	4.2	2	2.3	2	1	1	18.5
1340	Brennan Woods (HOA)	94.6	5.4	2.9	2	1	3	3.2	1	2.4	2	2	2	18.6
2858	ST HILAIRE ROGER & JANE	118.2	21.0	5.6	1	2	3	4.1	2	2.5	2	1	1	18.6
2270	PHILLIPS RAYMOND & BARBARA	2.6	2.1	0.4	3	1	3	3.7	1	3.0	2	1	1	18.7
2136	FINNEGAN ROBERT J & PHYLLIS P	10.7	2.9	0.9	2	2	3	3.4	2	1.6	2	2	1	19.0
2629	TOWN OF WILLISTON	9.9	3.6	0.0	2	2	1	4.0	3	2.0	2	2	1	19.0
2656	PLAUT RENATE R, TRUSTEE OF THE	38.9	7.9	0.0	1	2	3	5.0	2	2.0	2	1	1	19.0
1178	BEAUDRY RAYMOND & JUDY	10.2	4.6	0.1	2	1	3	5.0	1	1.1	2	2	2	19.0
3096	SIPLE WALDO JR & ARLENE D	318.7	2.3	1.9	3	2	3	2.3	3	2.8	1	1	1	19.1
253	LANG WILLIAM & GAIL	0.7	0.1	0.1	4	1	3	2.1	3	2.4	2	1	1	19.5
2114	HARK THOMAS L & DANA H	1.2	0.7	0.5	4	1	3	2.6	1	2.0	2	2	2	19.6
2289	JORDAN MARY L	1.1	0.9	0.6	4	1	3	2.7	1	3.0	2	1	2	19.7
254	JARO MARK M & PATRICIA A	1.1	0.4	0.3	4	1	3	2.5	3	2.4	2	1	1	19.9
294	CHAVE DANIEL & ELLEN	0.8	0.6	0.0	4	1	3	3.9	1	2.0	2	2	1	19.9
295	WELLS PAUL S & TERESA L	0.7	0.4	0.0	4	1	3	4.0	1	2.0	2	2	1	20.0
2222	BLAIR GREGORY A	1.7	0.6	0.5	4	1	3	2.0	3	3.0	2	1	1	20.0
2110	KRUPP OSCAR A & NANCY J	0.2	0.1	0.1	4	1	3	2.0	3	2.0	2	1	2	20.0
2269	MILES SHIRLEY	0.3	0.3	0.3	4	1	3	2.0	3	3.0	2	1	1	20.0
2291		0.7	0.5	0.3	4	1	3	3.0	1	3.0	2	1	2	20.0
1390	GILMAN C SCOTT & NANCY	2.2	1.3	0.0	3	1	3	5.0	1	1.0	2	2	2	20.0
1095	JACKSON KAREN L & LARRY L	0.6	0.6	0.5	4	1	3	2.0	3	1.0	2	2	2	20.0
302	CONDOS EDWARD & LOIS	0.5	0.3	0.1	4	1	3	2.8	3	2.3	2	1	1	20.1
505	PERRY ROBERT J & SHIRLEY A	0.6	0.1	0.1	4	1	3	3.0	3	2.2	2	1	1	20.2
526	BOOSKA DAVID & MARLENE L	0.7	0.4	0.2	4	1	3	3.2	3	2.0	2	1	1	20.2
2294	HALL STUART B & HELEN E	0.7	0.7	0.6	4	1	3	2.0	3	2.3	2	1	2	20.3
300	RAYMOND BRENT J & ALNASRAWI LEYLA	0.4	0.3	0.2	4	1	3	2.3	3	2.1	2	2	1	20.4
2268	SHOOK JOHN	0.4	0.2	0.2	4	1	3	2.5	3	3.0	2	1	1	20.5
2793	SKIFF WILLIAM B & RUTH A TRUSTEES	23.7	9.5	3.5	1	2	3	3.5	3	2.1	2	2	2	20.6
2794	PILLSBURY LARRY K & CAROLYN W	4.2	2.4	1.2	3	2	1	2.9	3	2.8	2	2	2	20.7
2819	FORTIN LARRY & ILENE	41.0	5.1	2.4	2	2	3	3.1	3	2.6	2	1	2	20.7
301	HIMBERG HENRY E & JOHANNA M	0.4	0.2	0.2	4	1	3	2.5	3	2.4	2	2	1	20.9
292	FRIESTAD GREGORY K & KATHLEEN K	0.6	0.3	0.2	4	1	3	2.9	3	2.0	2	2	1	20.9
2293	SWETT PHILIP JR & THERESA	1.0	0.7	0.6	4	1	3	2.0	3	3.0	2	1	2	21.0
2274	GROVER WILLIAM F	3.6	0.9	0.5	4	1	3	3.0	3	3.0	2	1	1	21.0
1094	KARSTENS IV WILLIAM & KARLA	0.5	0.5	0.4	4	1	3	2.0	3	2.0	2	2	2	21.0
1107	MARTIN GREGORY JOHN	0.6	0.3	0.3	4	1	3	2.0	3	2.0	2	2	2	21.0
290	CARPENTER DOUGLAS J	0.7	0.4	0.1	4	1	3	3.3	3	2.0	2	2	1	21.3
1056	Community/HOA	2.5	0.1	0.1	4	1	3	2.0	3	2.4	2	2	2	21.4
288	CARPENTER BRENDA C	0.9	0.4	0.1	4	1	3	3.6	3	2.0	2	2	1	21.6
1057	VERMONT RESPITE HOUSE	2.3	0.4	0.3	4	1	3	2.0	3	2.6	2	2	2	21.6
252	LANG WILLIAM R & GAIL S	7.8	2.5	0.0	3	1	3	4.3	3	2.4	2	2	1	21.6
2630	HANUDEL ANTHONY L & SUSAN M	23.1	3.7	0.0	2	2	3	4.7	3	2.0	2	2	1	21.8
1182	POON S LAI AS AGENT FOR CORP TO BE	1.0	0.2	0.1	4	1	3	3.4	3	2.5	2	1	2	21.8
299	FRANKENBURG PETER J	0.6	0.3	0.0	4	1	3	4.0	3	2.0	2	2	1	22.0
1427	LONGENBACH KORT & LINDA	0.6	0.3	0.3	4	1	3	2.0	3	3.0	2	2	2	22.0
2507	KRAUSE HANS J	24.2	3.1	0.0	2	2	3	5.0	3	2.0	2	2	1	22.0
1361	GERMAINE ARTHUR R & NELLIE C	0.5	0.1	0.1	4	1	3	2.0	3	3.0	2	2	2	22.0
2976	BERGER RUSSELL & CHARLOTTE G	4.0	1.5	1.0	3	2	3	2.8	3	2.4	2	2	2	22.1
1108	JOHNSON GINO & MARGO	0.5	0.4	0.4	4	1	3	2.2	3	3.0	2	2	2	22.2
2994	WILLISTON FEDERATED CHURCH	0.7	0.3	0.1	4	1	3	3.3	3	3.0	2	1	2	22.3
2857	KENNEDY BRUCE K & PATRICIA A	9.8	0.1	0.1	4	2	3	2.0	3	3.0	2	2	2	23.0
492	Community/HOA	13.7	1.5	0.1	3	1	3	4.8	3	2.4	2	2	2	23.2
2977	SKIFF WILLIAM II AND	16.7	0.7	0.1	4	2	3	3.8	3	2.0	2	2	2	23.8
1179	PALMER CHARONE E & KRIS S	1.2	0.4	0.0	4	1	3	5.0	3	2.0	2	2	2	24.0
2660	WAAG SARAH	21.2	1.2	0.0	3	2	3	5.0	3	2.0	2	2	2	24.0

Highlighted parcels have been selected for preliminary property list.

Estimated Planting in Buffer Area calculated using Buffer Quality Ranking Layer provided by town with values of 1 assumed to require 100% planting, 2 require 90% planting, 3 require 60% planting, and 4 and 5 requiring 0%.

Parcel Buffer Area Scale Factor: 1 = 5.5 acres and greater, 2 = 2.5 acres to 5.5 acres, 3 = 1 acre to 2.5 acres, 4 = 1 acre and less

Priority Corridor Factor: 1 = within corridor, 2 = outside of corridor. (Priority Corridor is considered to be the main branch of the Allen Brook between Interstate 89 and Industrial Ave.)

Owner Interest Factor: 1 = Interested, 3 = Unkown, 5 = Not Interested

Existing Buffer Quality Factor: 1 = Non Existent Buffer, 2 = Poor Buffer, 3 = Moderate Buffer, 4 = Good Buffer, 5 = Great Buffer (calculated weighted averages shown for each parcel)

Channel Erosion Factor: 1 = high, 2 = moderate, 3 = low

Parcel ID	Parcel Ownership	Calculated Parcel Area (Acres)	Calculated Buffer Area (Acres)	Estimated Planting in Buffer Area (Acres)	Parcel Buffer Area Scale Factor (1-4)	Landowner Interest Factor (1,3,5)	Existing Buffer Quality Factor (1-5)	Buffer Soil Erosion Factor (1-3)	Agricultural Factor (1-2)	Connected to Arterial Road (1-2)	Connected to Town/Conserved Land (1-2)	Total for Parcel Criteria Ranking (7-23)
2228	LEWIS ARMON D & KATHY J TRUSTEES	210.7	3.07	2.76	2	1	2.0	2.6	1	1	1	10.6
1369	Wildflower Cir HOA (assumed)	23.1	5.61	4.17	1	1	2.5	2.5	2	1	2	12.0
2226	LEWIS ARMON D & KATHY J TRUSTEES	210.7	1.24	1.12	3	1	2.0	3.0	1	1	1	12.0
1803	LNP INC (PARCEL DIVIDED)	32.5	7.32	5.75	1	3	2.3	2.4	2	1	1	12.6
1820	CONANT DAVID L DEBORAH &	90.1	7.22	7.22	1	3	1.0	3.0	2	1	2	13.0
2146	H.O.A. (FORMERLY GOODRICH)	8.3	1.41	1.27	3	1	2.0	2.0	2	1	2	13.0
1201	LAPIERRE MAURICE & PAULINE (Andy Cochran)	79.6	3.80	0.76	2	1	4.3	2.6	2	1	1	13.9
1206	TOWN OF WILLISTON	106.4	3.60	0.88	2	1	4.2	2.8	2	1	1	14.0
2151	WILLISTON COMMONS H.O.A.	59.7	3.96	3.57	2	3	2.0	2.0	2	1	2	14.0
2052	BURNETT WILLIAM S	90.0	2.13	1.72	3	3	2.3	2.0	1	1	2	14.3
1813	CHATHAM WOODS HOLDINGS LLC	38.3	3.42	2.99	2	3	2.1	2.4	2	1	2	14.5
1904	MCCULLOUGH JAMES & LUCILLE	304.5	4.15	2.15	2	1	3.3	2.9	2	2	2	15.2
1371	GLASER JACOB R & CAITLIN	100.3	1.33	1.20	3	3	2.0	2.5	2	1	2	15.5
1732	Community/HOA	96.9	2.00	1.80	3	3	2.0	2.8	2	1	2	15.8
2134	TCHC REALTY LLC	4.7	0.20	0.13	4	3	2.8	2.0	2	1	1	15.8
2632	LEMIRE MARC E & RITA	20.2	3.89	0.17	2	3	4.9	2.0	2	1	1	15.9
1827	LAVALLEE LUCILLE	102.2	1.40	1.26	3	3	2.0	3.0	2	1	2	16.0
1720	PARKER EVELYN	1.2	0.11	0.10	4	3	2.0	2.0	2	1	2	16.0
1814	TERRY ANDREW D	2.1	0.55	0.49	4	3	2.0	2.0	2	1	2	16.0
1812	PALMER SHELLEY D & DIANNA JO	1.0	0.48	0.44	4	3	2.0	2.0	2	1	2	16.0
2132	LYON H WARREN	54.1	0.43	0.26	4	3	3.0	2.0	2	1	1	16.0
1552	WOOD MATTHEW H	1.9	0.66	0.59	4	3	2.0	2.1	2	1	2	16.1
2104	BOURGEOIS TIMOTHY C & PENNY O	0.8	0.49	0.18	4	3	3.2	2.0	2	1	1	16.2
1742	PORTELANCE JOHN F	10.1	1.52	0.91	3	3	3.0	2.2	2	1	2	16.2
1722	FONTAINE STEPHEN R & PAMELA B	1.2	0.37	0.34	4	3	2.0	2.2	2	1	2	16.2
1366	SAVAGE WILLIAM & GAIL	44.1	3.09	1.41	2	3	3.1	2.2	2	2	2	16.3
1727	BOISVERT LAURETTE P	5.7	0.40	0.36	4	3	2.0	2.4	2	1	2	16.4
2280	WILLISTON GOLF COURSE INC	117.0	3.91	1.17	2	3	3.5	2.9	2	1	2	16.4
3002	WILLIAMS ANDREW & ORALIA	1.5	0.43	0.39	4	3	2.0	2.6	2	1	2	16.6
3053	SHORTSLEEVES GEORGE H.	0.7	0.32	0.29	4	3	2.0	2.6	2	1	2	16.6
2143	Community/HOA	39.5	1.58	0.41	3	3	3.6	2.0	2	1	2	16.6
2264	WILLISTON FEDERATED CHURCH	0.8	0.14	0.10	4	3	2.6	3.0	2	1	1	16.6
1806	OSBORNE LYNWOOD M	1.0	0.35	0.32	4	3	2.0	3.0	2	1	2	17.0
1825	BROOKS STEPHEN E & LOUISE	11.1	1.33	1.20	3	3	2.0	3.0	2	2	2	17.0
2227	JOHNSON MONA ESTATE OF	210.7	0.76	0.00	4	3	4.0	3.0	1	1	1	17.0
2164	CARROLL TIMOTHY J	2.4	0.93	0.00	4	1	4.0	2.0	2	2	2	17.0
1746	RANCOURT RUSSELL	1.7	0.83	0.74	4	3	2.0	2.0	2	2	2	17.0
1759	RANDALL BRYAN N	1.6	0.24	0.22	4	3	2.0	2.0	2	2	2	17.0
3050	Community/HOA	13.9	1.55	0.80	3	3	2.8	2.5	2	2	2	17.3
1346	BIG THREE THE	59.8	0.70	0.56	4	3	2.3	3.0	2	1	2	17.3
1726	LITCHFIELD GREGORY & SALLYRAE	7.3	0.50	0.45	4	3	2.0	2.5	2	2	2	17.5
2822	LACKEY LARRY	4.0	0.76	0.21	4	3	3.4	2.3	2	1	2	17.7
1740	DUELL RUFUS/TRUSTEE FOR RUFUS DUELL	5.1	0.52	0.31	4	3	3.0	2.9	2	1	2	17.9
2802	DEVITA L FRANK & CHRISTEL	43.0	1.51	0.05	3	3	4.9	2.0	2	2	1	17.9
2831	KOCHAN GERALDINE	28.5	2.26	0.05	3	3	4.9	2.0	2	1	2	17.9
2359	STIRN JON & LORRAINE	0.7	0.14	0.08	4	3	3.0	3.0	2	1	2	18.0
1741	KING TIMOTHY	4.9	0.65	0.39	4	3	3.0	3.0	2	1	2	18.0
2854	DRIEBELBIS JEFFREY H & LORRAINE G	14.7	1.96	0.00	3	3	5.0	2.0	2	2	1	18.0
1516	Community/HOA	72.4	2.27	0.65	3	3	4.0	2.0	2	2	2	18.0
2220	BRADISH ROBERT & DONNA	3.6	0.38	0.15	4	3	3.3	2.9	2	1	2	18.2
2299	GRIFFITH MAXINE F TRUSTEE OF THE	3.1	0.44	0.00	4	3	4.0	2.3	2	1	2	18.3
2218	BRADISH BETTY	1.0	0.39	0.12	4	3	3.4	3.0	2	1	2	18.4
2285	OWENS RICHARD C JR	1.7	0.62	0.10	4	3	3.7	3.0	2	1	2	18.7
2814	HANSON ROSE TRUSTEE	135.3	0.55	0.04	4	3	4.8	2.0	2	1	2	18.8
1515	Community/HOA	72.4	0.32	0.03	4	3	3.8	2.0	2	2	2	18.8
1747	OWEN GORDON N SR & ELEANOR	4.4	0.20	0.13	4	3	2.8	3.0	2	2	2	18.8
3051	Community/HOA	13.9	0.85	0.52	4	3	3.0	3.0	2	2	2	18.9
1518	Community/HOA	72.4	0.37	0.00	4	3	4.0	2.0	2	2	2	19.0
1514	Community/HOA	72.4	2.03	0.00	3	3	5.0	2.0	2	2	2	19.0
1473	HOLLY DONALD M & CATHERINE M	0.6	0.16	0.00	4	3	4.0	2.0	2	2	2	19.0
2936	YANDOW MARK A	56.4	0.84	0.00	4	3	5.0	2.0	2	1	2	19.0
2867	GOODRICH C JOSEPH & CYNTHIA	5.2	0.83	0.05	4	3	4.8	2.0	2	2	2	19.8
1745	BARROWS MARDEAN & GERTRUDE	1.3	0.38	0.10	4	3	4.0	3.0	2	2	2	20.0
2866	KAMINSKY DAVID	6.5	0.77	0.00	4	3	5.0	2.0	2	2	2	20.0

Highlighted parcels have been selected for preliminary property list.

Estimated Planting in Buffer Area calculated using Buffer Quality Ranking Layer provided by town with values of 1 assumed to require 100% planting, 2 require 90% planting, 3 require 60% planting, and 4 and 5 requiring 0%.

Parcel Buffer Area Scale Factor: 1 = 5.5 acres and greater, 2 = 2.5 acres to 5.5 acres, 3 = 1 acres to 2.5 acres, 4 = 1 acre and less

Owner Interest Factor: 1 = Interested, 3 = Unknown, 5 = Not Interested

Existing Buffer Quality Factor: 1 = Non Existent Buffer, 2 = Poor Buffer, 3 = Moderate Buffer, 4 = Good Buffer, 5 = Great Buffer (calculated weighted averages shown for each parcel)

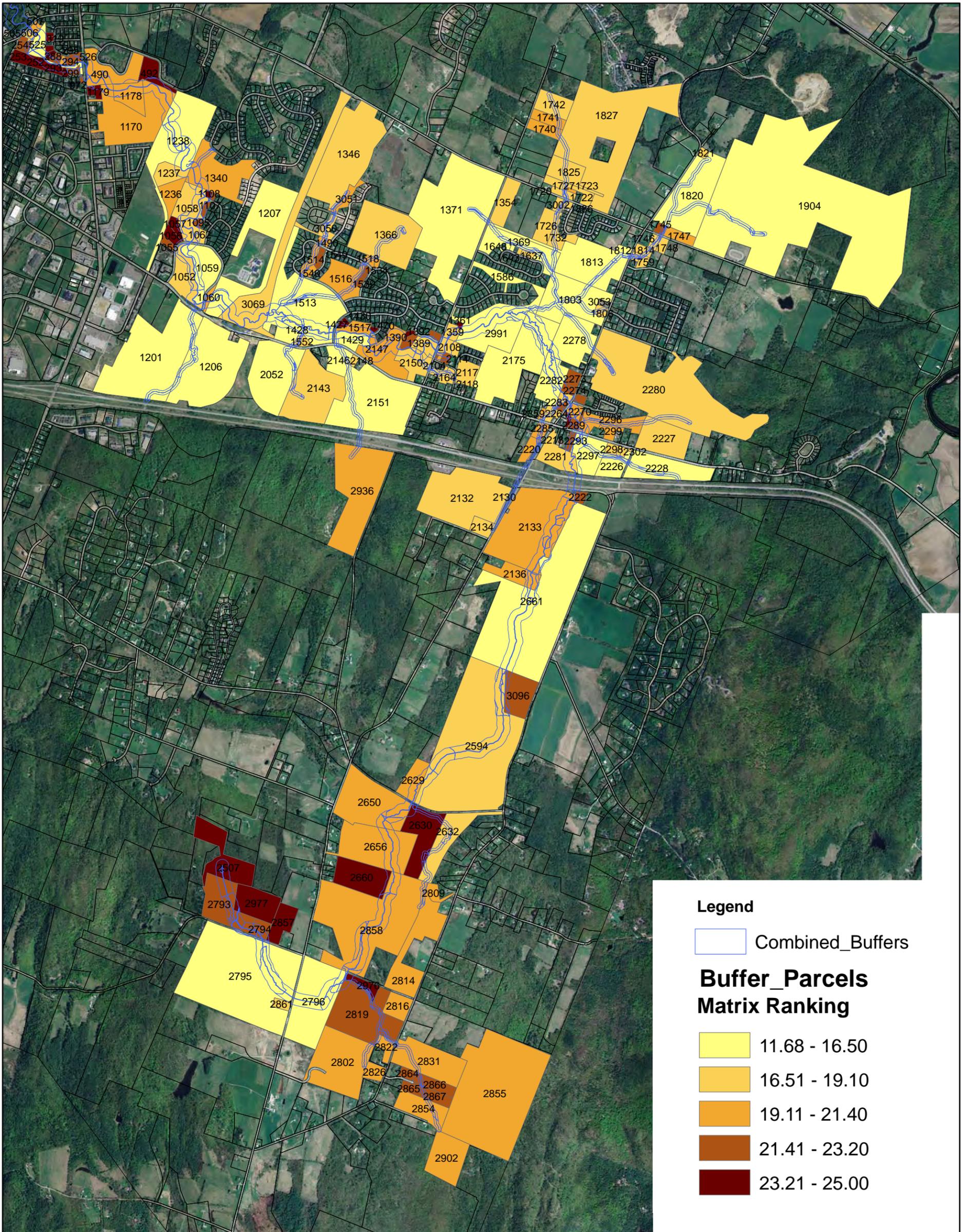
Buffer Soil Erosion Factor: 1 = highly erodible, 2 = potentially highly erodible, 3 = not erodible (calculated weighted averages shown for each parcel)

Connected to Town/Conserved Land Factor: 1 = yes, 2 = no

Argricultural Factor: currently agricultural = 1, not currently agricultural = 2

Connected to Arterial Road, Highway, or Freeway: yes = 1, no = 2

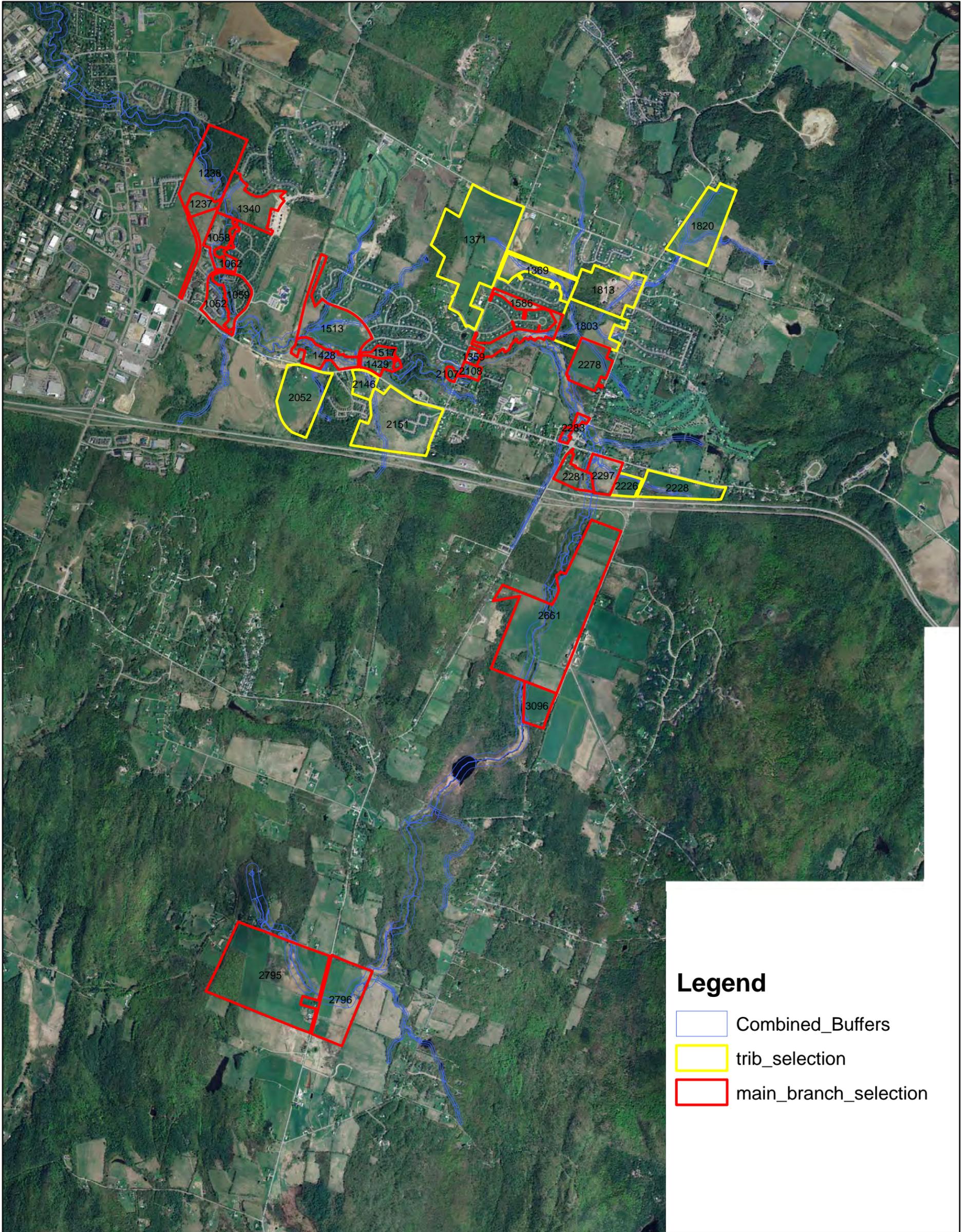
# Allen Brook Restoration Project Parcel Prioritization Matrixes Results



Created by KAS, Inc.



# Allen Brook Restoration Project Project Short List



Created by KAS, Inc.

0 1,200 2,400 4,800 7,200 9,600 Feet



# Appendix C

## Sample Owner Outreach Letters and Maps



PO Box 787  
368 Avenue D  
Suite 15  
Williston, VT 05495  
Ph. 802.383.0486  
Fax 802.383.0490



February 15, 2011

Landowner  
Street Address  
Williston, VT 05495

**RE: Allen Brook Riparian Buffer Zone Restoration**

Dear Landowner:

This letter is a follow up to the letter sent by the Town of Williston on September 15, 2010. The purpose of this letter is to provide further information regarding the benefits of riparian buffer zones, and to ask for your assistance with ongoing restoration efforts by the Town of Williston to develop a permanent vegetated riparian buffer zone along the Allen Brook and its tributaries.

Riparian buffers are vegetated areas next to water resources that protect them from stormwater pollution, and provide bank stabilization and aquatic and wildlife habitat. Riparian buffer zones cumulatively play a significant role in moderating storm flows to streams thereby reducing downstream flooding, provide flood storage capacity and increase groundwater recharge.

The Allen Brook is currently on the State of Vermont's 303(d) list of impaired waters for non-support of aquatic life due to stormwater pollution. Historical agricultural grazing and cropping activities have left a robust land cover of perennial grasses throughout the brook's riparian corridor making it very difficult for trees and other native woody vegetation to naturally re-establish themselves. Furthermore, an urbanized residential and mixed-use development pattern is continuing to grow, thereby increasing the amount of stormwater runoff conveyed to the brook. The excess stormwater runoff combined with a lack of adequate vegetated riparian buffer has led to the increased bank failures, channel erosion, and sediment transport, which in turn has caused devastating habitat loss for fish and aquatic insects. Consequently, multiple studies have reported that the brook as a whole and ultimately Lake Champlain would benefit greatly if the banks along the brook were re-vegetated with trees and shrubs.

The Town currently has funding to implement the restoration of approximately 10-acres of riparian buffer zone within the 2011 calendar year, and has retained the services of KAS, Inc. and Ambler Design, LLC for this effort. In total, 158 parcels contain property along the Allen Brook and/or its tributaries. These parcels were ranked based on suitability, need, and feasibility for restoration through an analysis of existing data available. All parcels in the top 30 are being carefully considered for the 2011 restoration work. This includes your parcel.

To participate, the Town is asking if you are interested in the following:

1. Are you willing to allow the Town and its volunteers to replant the banks of the Allen Brook within your property?

The size of the desired riparian buffer ranges from 150-feet to 50-feet from the top of bank for the Allen Brook and its tributaries, respectively. However, depending on your level of comfort and existing site conditions the riparian buffer can be adjusted.

2. Are you willing to provide a conservation easement to the Town of Williston, which would permanently protect the newly planted buffer and allow the Town to monitor and maintain the new plantings?

The easement would not limit your use of your land any more than it is already limited by Williston's Development Bylaws. Sample easement language has been developed and can be provided for your review.

The Town cannot improve the health of the Allen Brook on its own. Since most of the brook and its tributaries run through private land, community participation is vital to the success of restoration and conservation efforts. Please contact me or Erik Sandblom at (802) 383-0486 or [stephend@kas-consulting.com](mailto:stephend@kas-consulting.com) or [eriks@kas-consulting.com](mailto:eriks@kas-consulting.com) if you have any questions, comments or concerns. The contact person for the Town is Jessica Andreoletti at (802) 878-6704 x4 or [jandreoletti@willistontown.com](mailto:jandreoletti@willistontown.com).

We are more than willing to set up a meeting with you at a convenient location and time to discuss this project in more detail and present additional information such as a map showing where the easement would be located on your property and sample easement language. Due to the spring planting season rapidly approaching, a quick response would greatly be appreciated.

Sincerely,

  
Stephen Diglio, PE  
Project Engineer

cc: Jessica Andreoletti

March 1, 2011

Landowner  
Street Address  
Williston, VT 05495

**RE: Stream Restoration Informational Meeting for Owners of  
Agricultural Properties in Williston, VT**

Dear Landowner:

This letter is a follow up to our recent phone conversation, and to confirm an informational meeting on March 11, 2011 at 12:00 PM at the USDA/NRCS office at 1193 South Brownell Road in Williston, VT. The intent of this meeting is to inform Williston Farmers and other agricultural land owners of financial incentives available through the Town of Williston and the USDA to encourage participation in the restoration efforts for Allen Brook Riparian Buffer corridor.

As you may already know, the Allen Brook is currently on the State of Vermont's 303(d) list of impaired waters due to stormwater pollution. To address this issue, Williston has developed a strategy to acquire and reforest portions of the riparian buffer zone along the Allen Brook and its tributaries. Forested buffer widths of 50-feet to 150-feet will intercept, detain, and treat stormwater flow to the Brook and its tributaries. The Town of Williston currently has grant funding to purchase Riparian Buffer Zone conservation easements at appraised values from participating landowners.

The USDA also has funding through the Conservation Reserve Enhancement Program (CREP) for restoration of the Riparian Buffer Zone. CREP is a voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. By combining CREP resources with Town Grant Funding, there is an opportunity for participating landowners to be provided a sound financial package for conserving and enhancing the natural resources of their land.

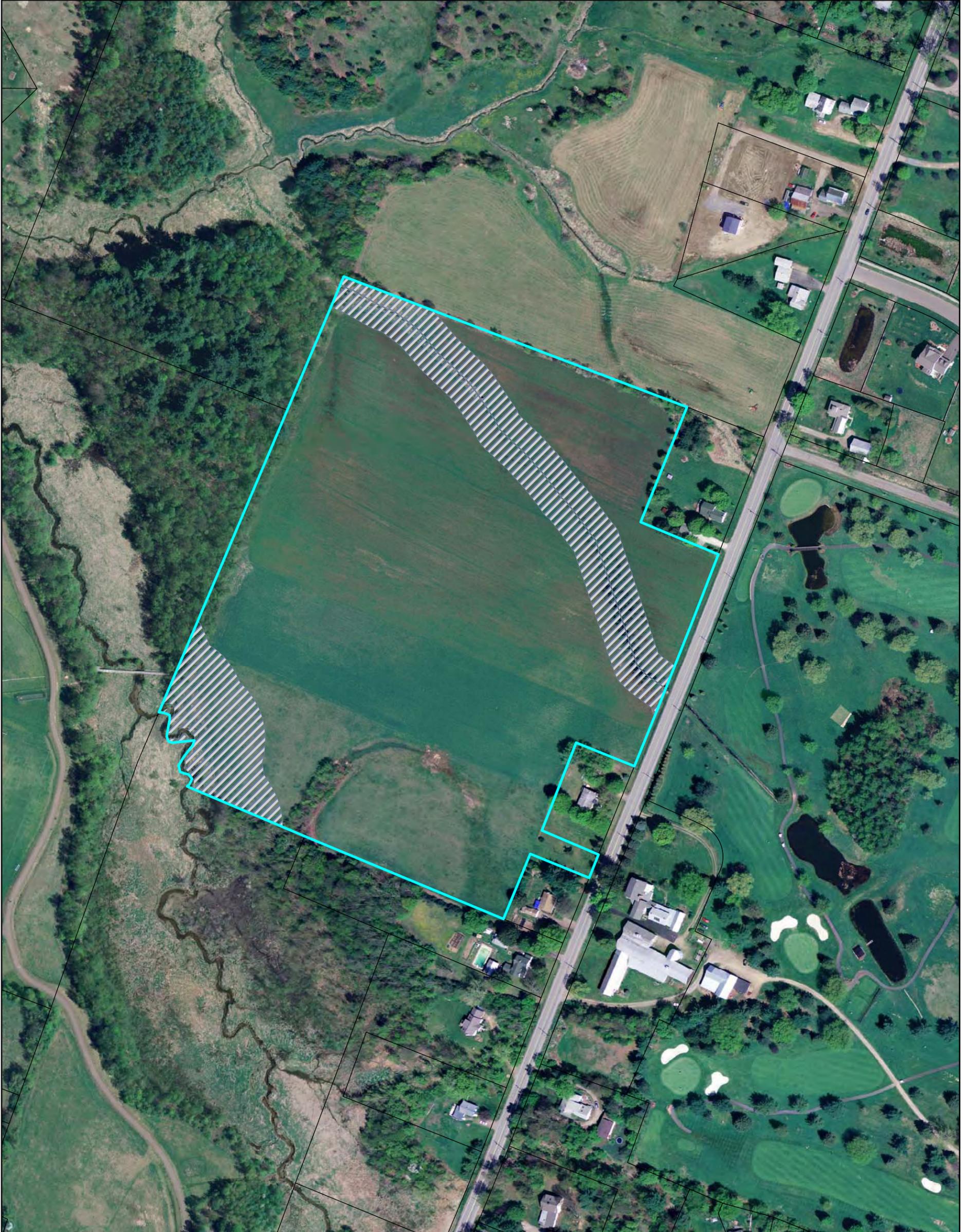
The Town cannot improve the health of the Allen Brook on its own, and understands the value associated with your agricultural land. Consequently, we are hoping you will attend this meeting to be informed of these potential win/win opportunities.

Sincerely,

Jessica Andreoletti  
Planner, Town of Williston  
Williston Conservation Commission Staff Liaison



# Allen Brook Restoration Project Approximate Riparian Buffer Zone Easement for Bryan Parcel



Created by KAS, Inc.



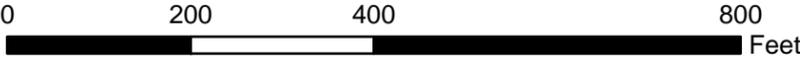
## Legend

 easement

# Allen Brook Restoration Project Approximate Limits of Riparian Buffer Zone within the Reed Parcel

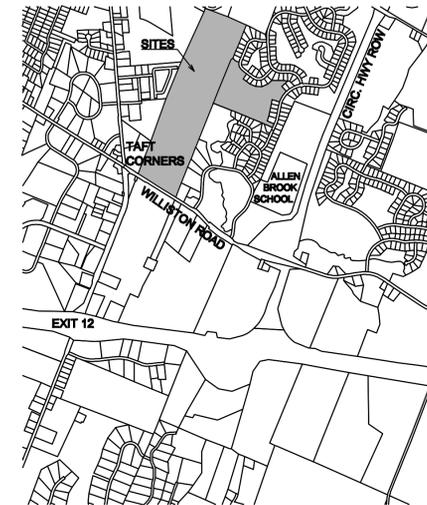
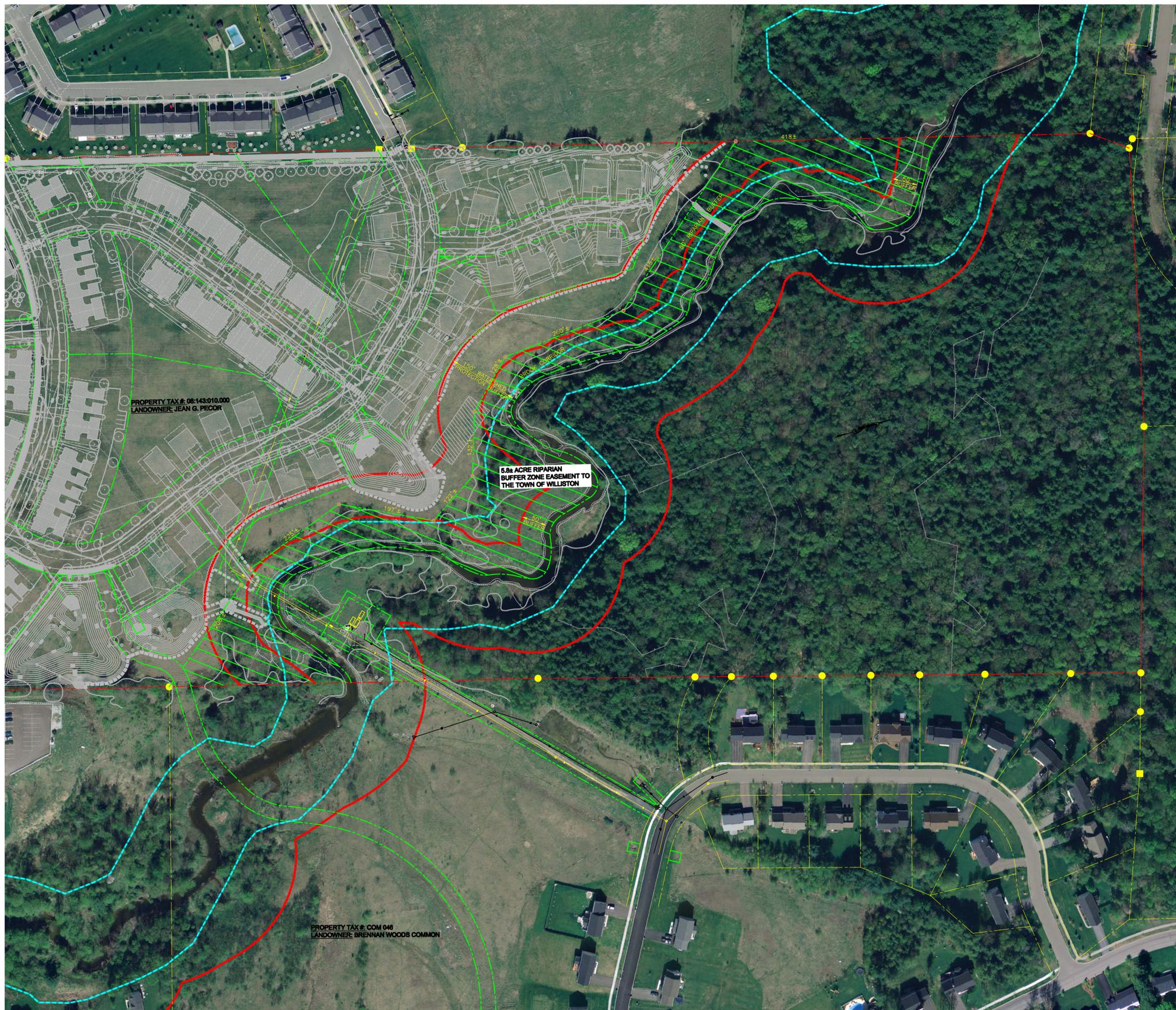


Created by KAS, Inc.



### Legend

 Buffer\_Zone



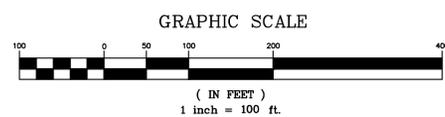
**LOCATION PLAN**  
1"=2000' (OBTAINED FROM LAMOUREUX AND DICKINSON)

**GENERAL NOTES:**

1. THIS DRAWING ILLUSTRATES THE APPROXIMATE RIPARIAN BUFFER ZONE EASEMENTS ON THE PECOR PROPERTIES. PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT CONSTITUTE A BOUNDARY SURVEY. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT ADEQUATE FOR PROPERTY CONVEYANCE.
2. THE ORTHOPHOTO WERE OBTAINED FROM THE 2004 CHITTENDEN COUNTY ORTHOIMAGERY PROJECT.
3. THE PLAN VIEW HAS BEEN MODIFIED FROM A SITE PLAN MAP FOR THE PROPOSED FINNEY CROSSING COMMERCIAL DEVELOPMENT PREPARED BY LAMOUREUX AND DICKINSON CONSULTING ENGINEERS INC. FOR THE SNYDER GROUP, INC.
4. THE BROOK CORRIDOR SHOWN ON THESE PLANS WAS PROVIDED TO KAS BY THE VTDEC AND IS A DELINEATION OF THE LIMITS WHERE THE ALLEN BROOK IS ASSUMED TO MEANDER OVER TIME.
5. THE RIPARIAN BUFFER ZONE EASEMENTS WERE DELINEATED TO INCLUDE AT A MINIMUM A 50' BUFFER FROM THE CURRENT ASSUMED TOP OF BANK OF THE ALLEN BROOK AND THE BROOK CORRIDOR.

**LEGEND**

- PROPOSED EASEMENT LINE
- ALLEN BROOK CORRIDOR
- 50' RIPARIAN BUFFER
- PROPOSED EASEMENT TO TOWN
- TOWN



REVISIONS	BY



**EASEMENT MAP FOR PECOR PROPERTIES  
ALLEN BROOK WATERSHED RESTORATION PROJECT  
WILLISTON, VERMONT**

DRAWN  
SD  
CHECKED  
SD  
DATE  
10/5/11  
SCALE  
1"=100'  
JOB NO.  
812100038  
SHEET

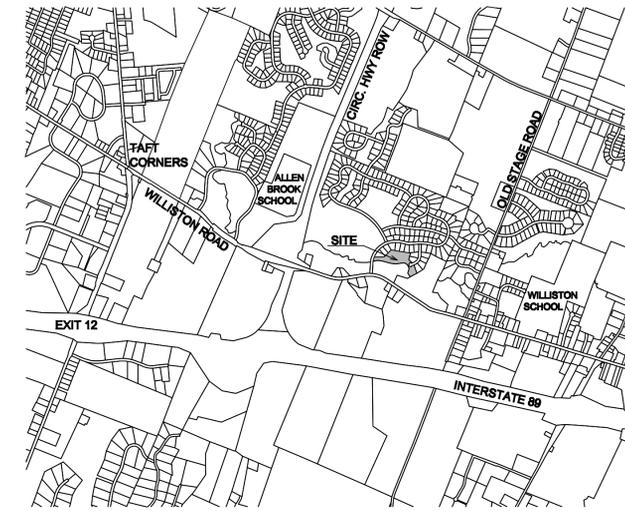
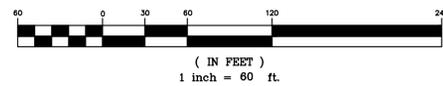
**EA-1**



**LEGEND**

- PROPOSED EASEMENT LINE
- PROPERTY BOUNDARY
- EDGE OF WETLAND
- TREELINE
- WATERSHED PROTECTION BUFFER
- EXISTING CONTOUR

**GRAPHIC SCALE**



**LOCATION PLAN**  
N.T.S. (OBTAINED FROM LAMOUREUX AND DICKINSON)

**GENERAL NOTES:**

1. THIS DRAWING IS TO ILLUSTRATE THE APPROXIMATE RIPARIAN BUFFER ZONE EASEMENTS ON THE SOUTH RIDGE HOMEOWNERS ASSOCIATION AND WILLISTON LIMITED PARTNERSHIP PROPERTIES. PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT CONSTITUTE A BOUNDARY SURVEY. CONSEQUENTLY, THIS MAP SHOULD BE CONSIDERED FOR INFORMATIONAL PURPOSES ONLY AND IS NOT ADEQUATE FOR PROPERTY CONVEYANCE.
2. THE CONTOUR DATA AND ORTHOPHOTO WERE OBTAINED FROM THE 2004 CHITTENDEN COUNTY ORTHOIMAGERY PROJECT.
3. WETLAND LIMITS SHOWN ARE BASED UPON LIMITED FIELD RECONNAISSANCE, AND HAVE NOT BEEN FIELD DELINEATED AND SURVEYED BY THIS OFFICE. WETLAND LIMITS ARE SUBJECT TO CHANGE BASED UPON A FUTURE FIELD DELINEATION.
4. THE PLAN VIEW HAS BEEN MODIFIED FROM A SKETCH PLAN MAP PREPARED BY LAMOUREUX AND DICKINSON CONSULTING ENGINEERS INC. FOR THE SNYDER GROUP, INC.

REVISIONS	BY

**KAS**  
INC.  
P.O. BOX 787, WILLISTON, VT, 05495  
WWW.KAS-CONSULTING.COM

**SOUTH RIDGE H.O.A EAST  
APPROXIMATE RIPARIAN BUFFER  
ZONE EASEMENT MAP  
ALLEN BROOK WATERSHED  
RESTORATION PROJECT  
WILLISTON, VERMONT**

DRAWN  
**SD**  
CHECKED  
**SD**  
DATE  
**7/29/11**  
SCALE  
**1"=60'**  
JOB NO.  
**812100038**  
SHEET

**LP-1**

# Appendix D

## Stream Profile Surveys



# Allen Brook Watershed: Summary of Channel Profiling and Restoration Recommendations

## Southridge and Talcott Road Sites

February 1, 2011



Prepared by:

Evan P. Fitzgerald  
Principal Watershed Scientist

and

Samuel P. Parker  
Staff Scientist



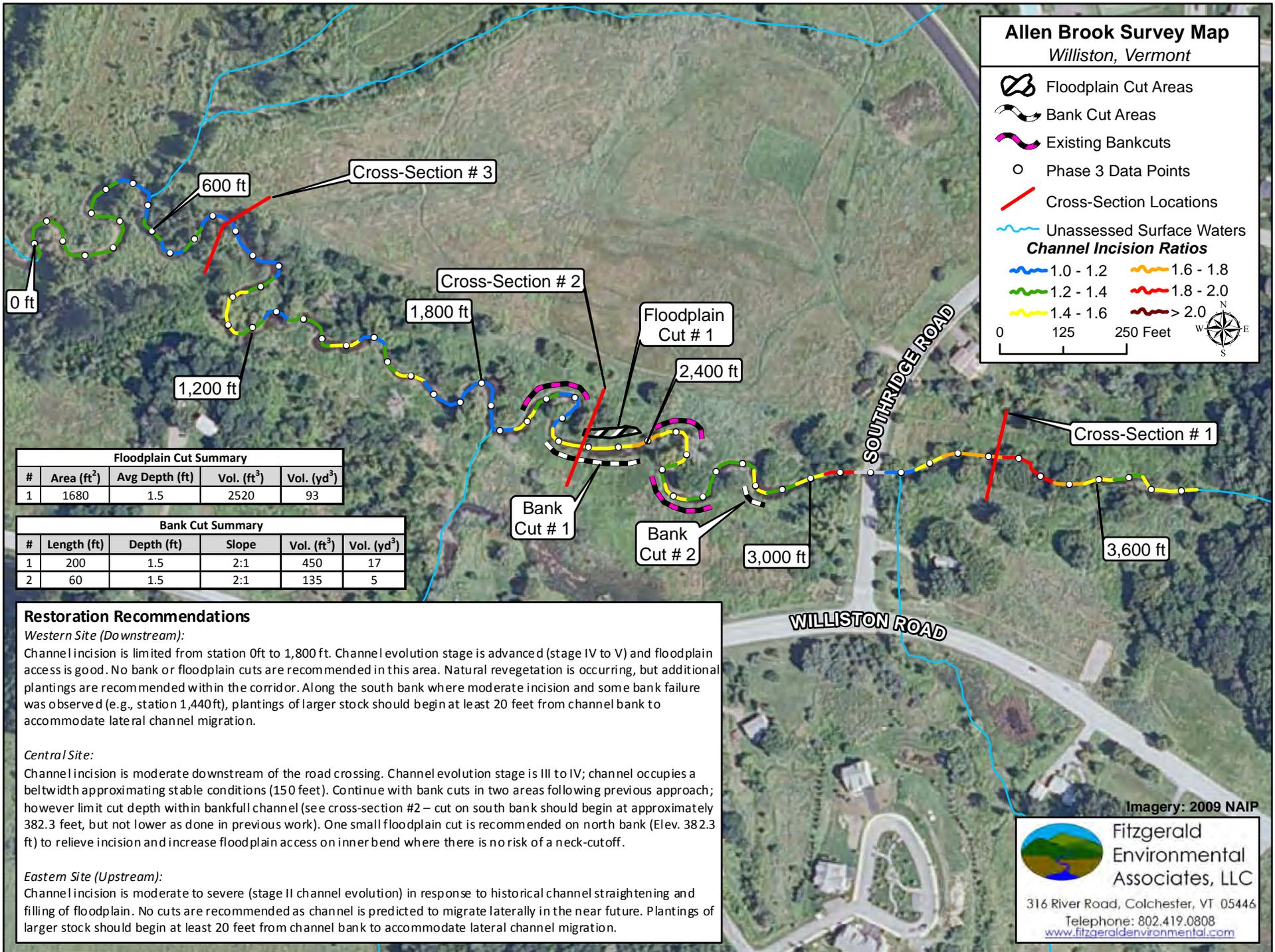
**Fitzgerald Environmental Associates, LLC.**

Applied Watershed Science & Ecology

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Prepared under contract to:

Town of Williston  
Department of Planning & Zoning  
7900 Williston Road  
Williston, VT 05495



### Allen Brook Survey Map

Williston, Vermont

- Floodplain Cut Areas
- Bank Cut Areas
- Existing Bankcuts
- Phase 3 Data Points
- Cross-Section Locations
- Unassessed Surface Waters

**Channel Incision Ratios**

- 1.0 - 1.2
- 1.2 - 1.4
- 1.4 - 1.6
- 1.6 - 1.8
- 1.8 - 2.0
- > 2.0 symbol"/> > 2.0

0 125 250 Feet

#	Area (ft <sup>2</sup> )	Avg Depth (ft)	Vol. (ft <sup>3</sup> )	Vol. (yd <sup>3</sup> )
1	1680	1.5	2520	93

#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd <sup>3</sup> )
1	200	1.5	2:1	450	17
2	60	1.5	2:1	135	5

#### Restoration Recommendations

##### Western Site (Downstream):

Channel incision is limited from station 0ft to 1,800 ft. Channel evolution stage is advanced (stage IV to V) and floodplain access is good. No bank or floodplain cuts are recommended in this area. Natural revegetation is occurring, but additional plantings are recommended within the corridor. Along the south bank where moderate incision and some bank failure was observed (e.g., station 1,440ft), plantings of larger stock should begin at least 20 feet from channel bank to accommodate lateral channel migration.

##### Central Site:

Channel incision is moderate downstream of the road crossing. Channel evolution stage is III to IV; channel occupies a beltwidth approximating stable conditions (150 feet). Continue with bank cuts in two areas following previous approach; however limit cut depth within bankfull channel (see cross-section #2 – cut on south bank should begin at approximately 382.3 feet, but not lower as done in previous work). One small floodplain cut is recommended on north bank (Elev. 382.3 ft) to relieve incision and increase floodplain access on inner bend where there is no risk of a neck-cutoff.

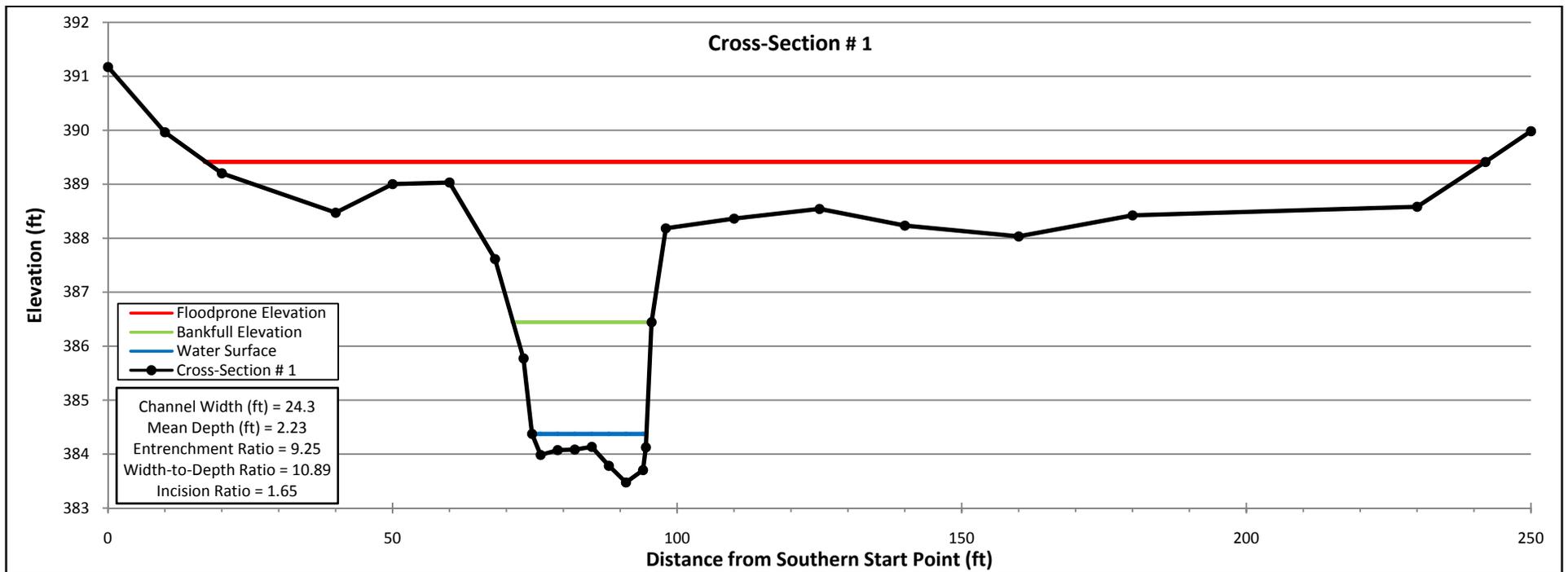
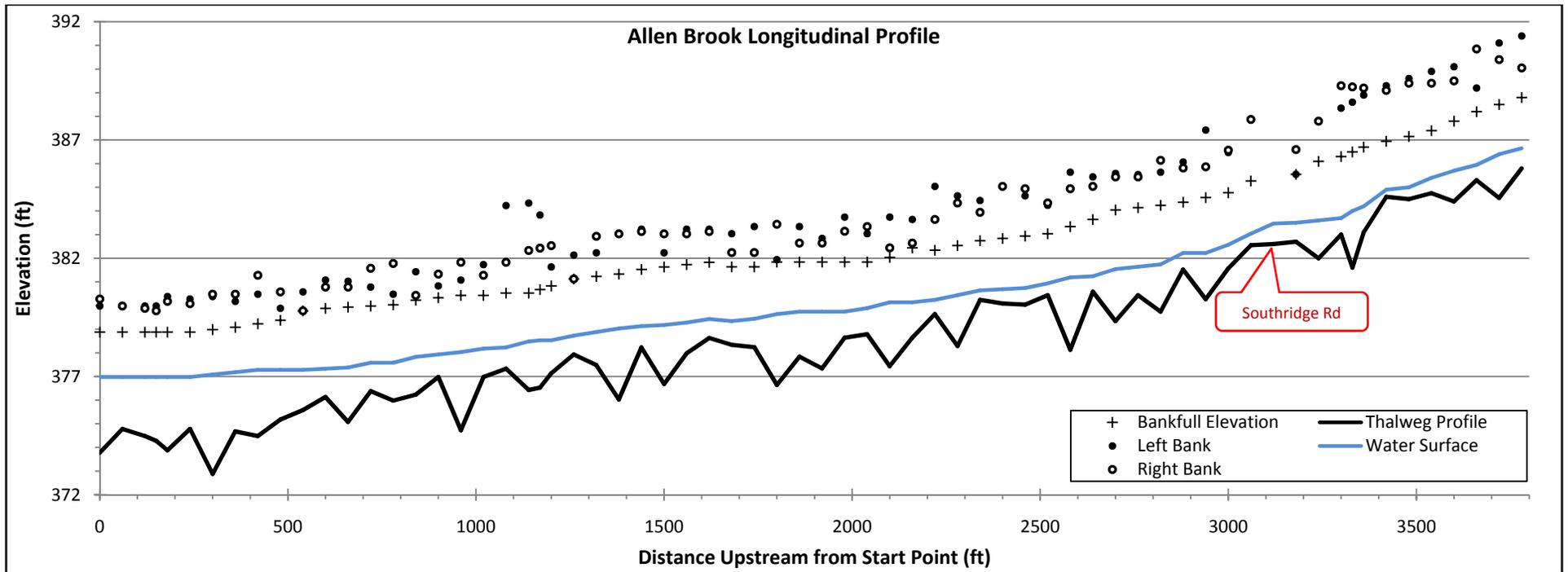
##### Eastern Site (Upstream):

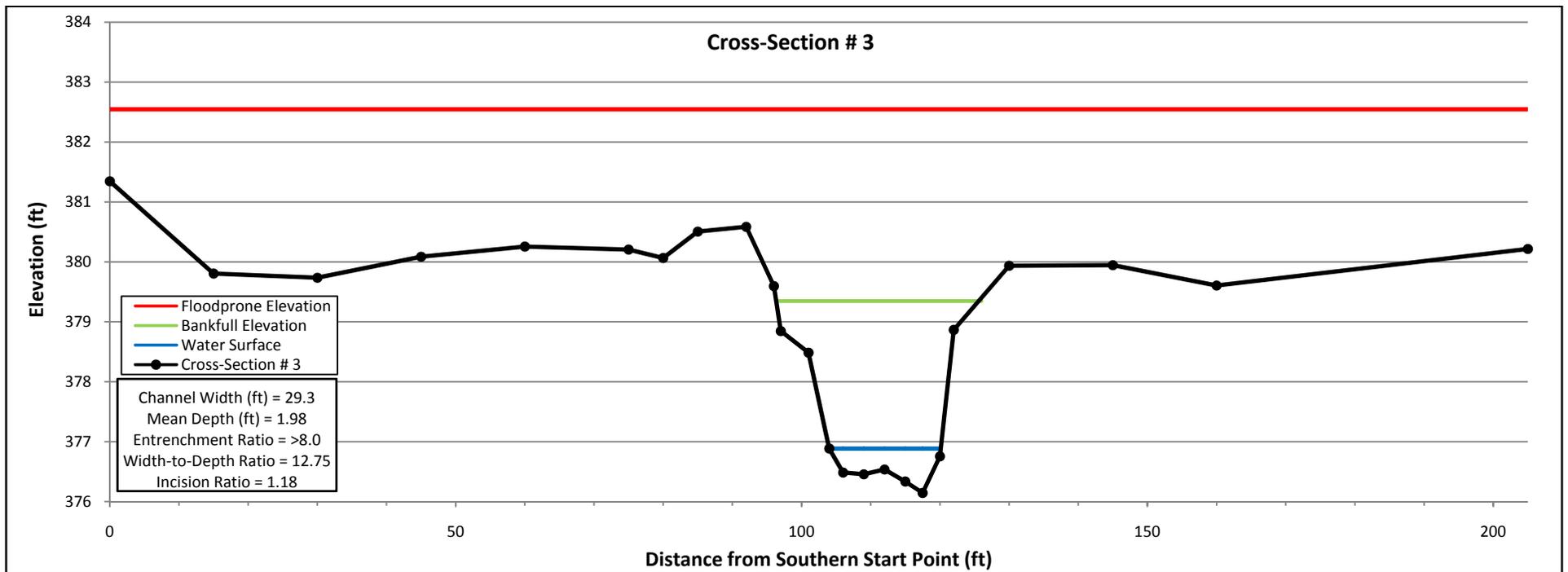
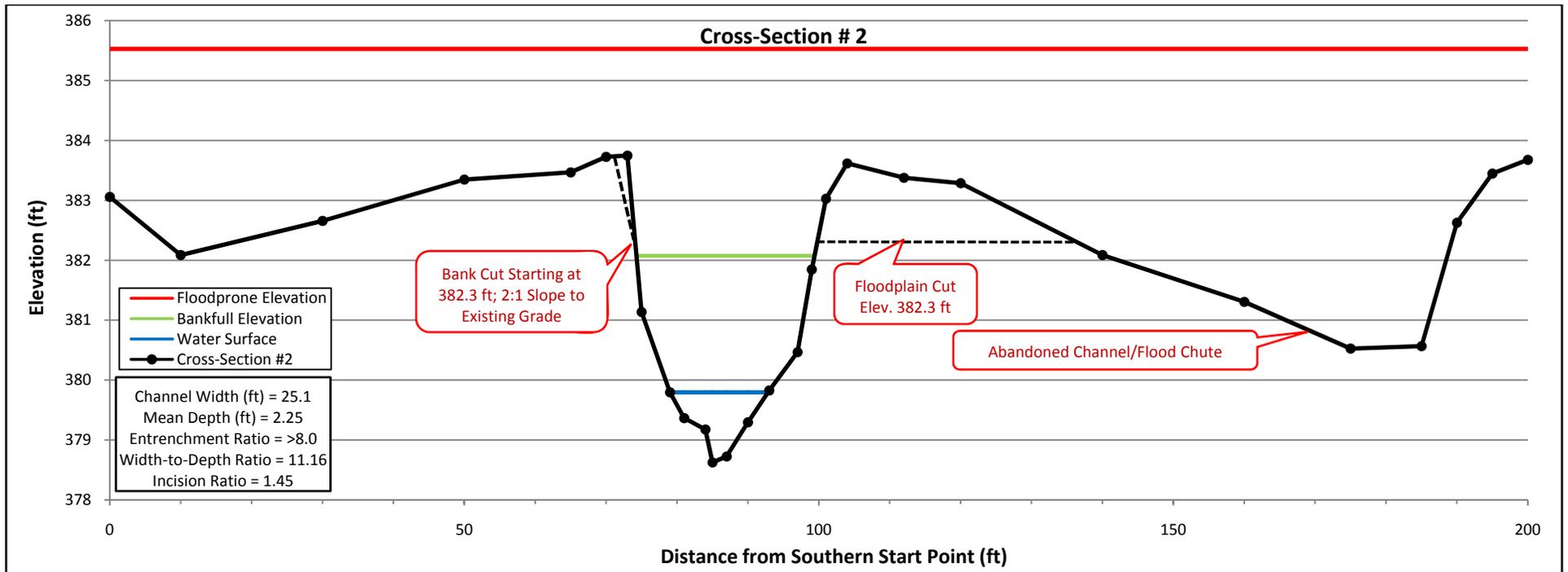
Channel incision is moderate to severe (stage II channel evolution) in response to historical channel straightening and filling of floodplain. No cuts are recommended as channel is predicted to migrate laterally in the near future. Plantings of larger stock should begin at least 20 feet from channel bank to accommodate lateral channel migration.

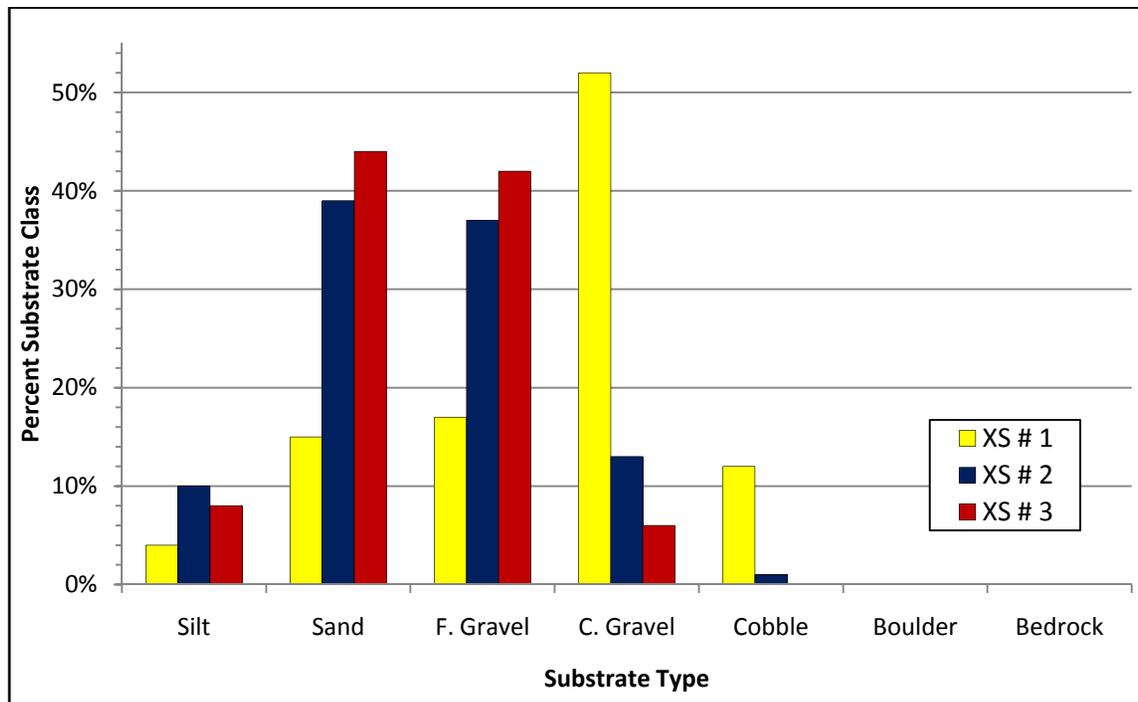
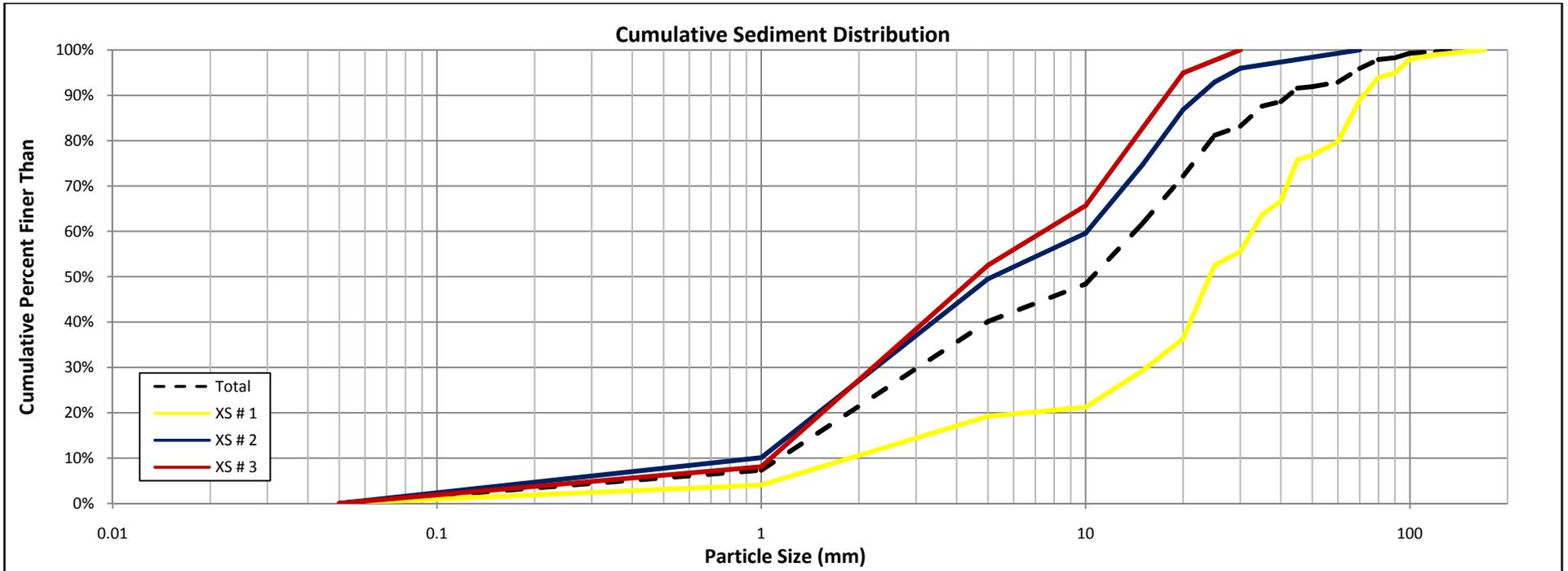
Imagery: 2009 NAIP

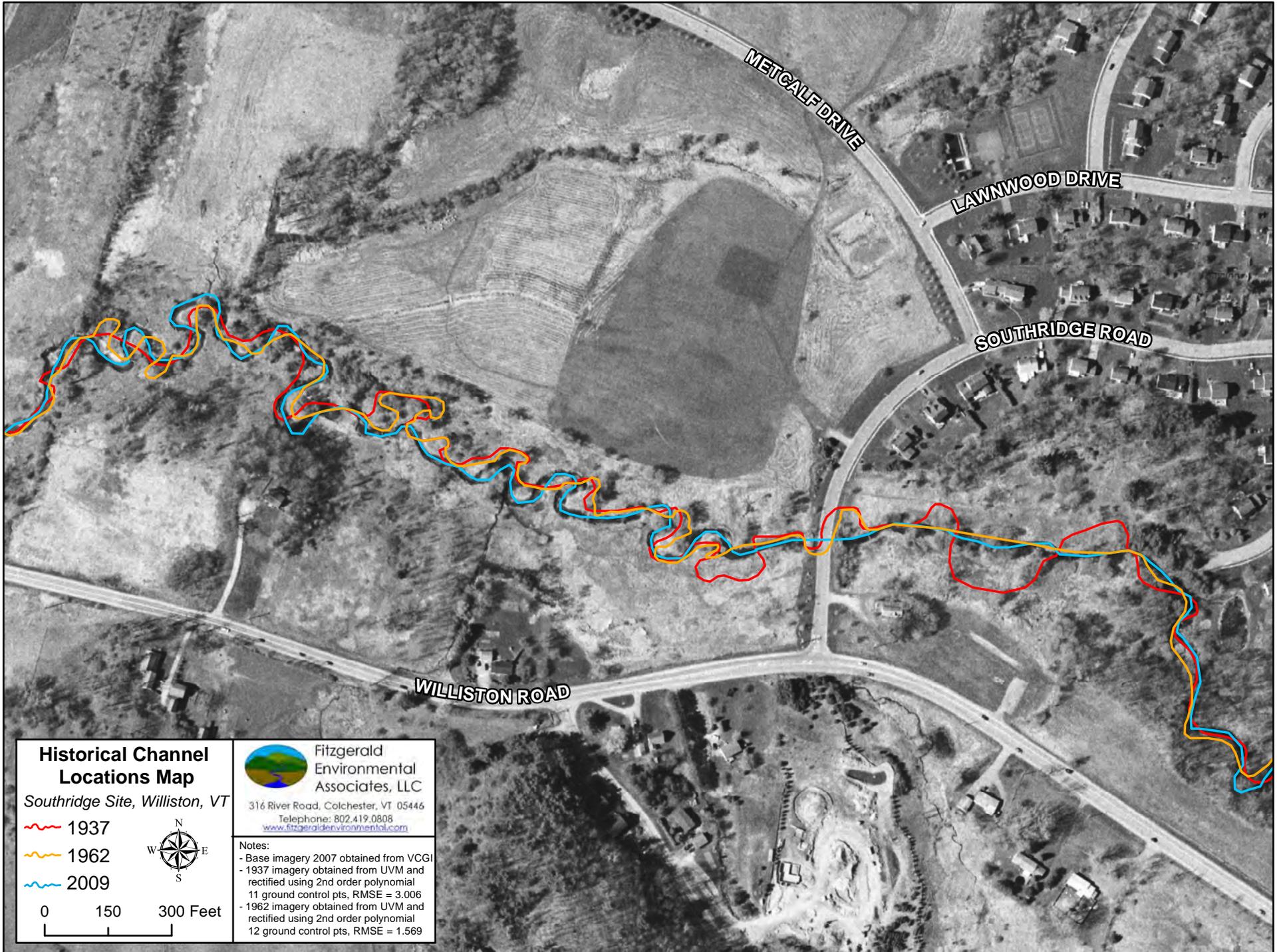
**Fitzgerald Environmental Associates, LLC**

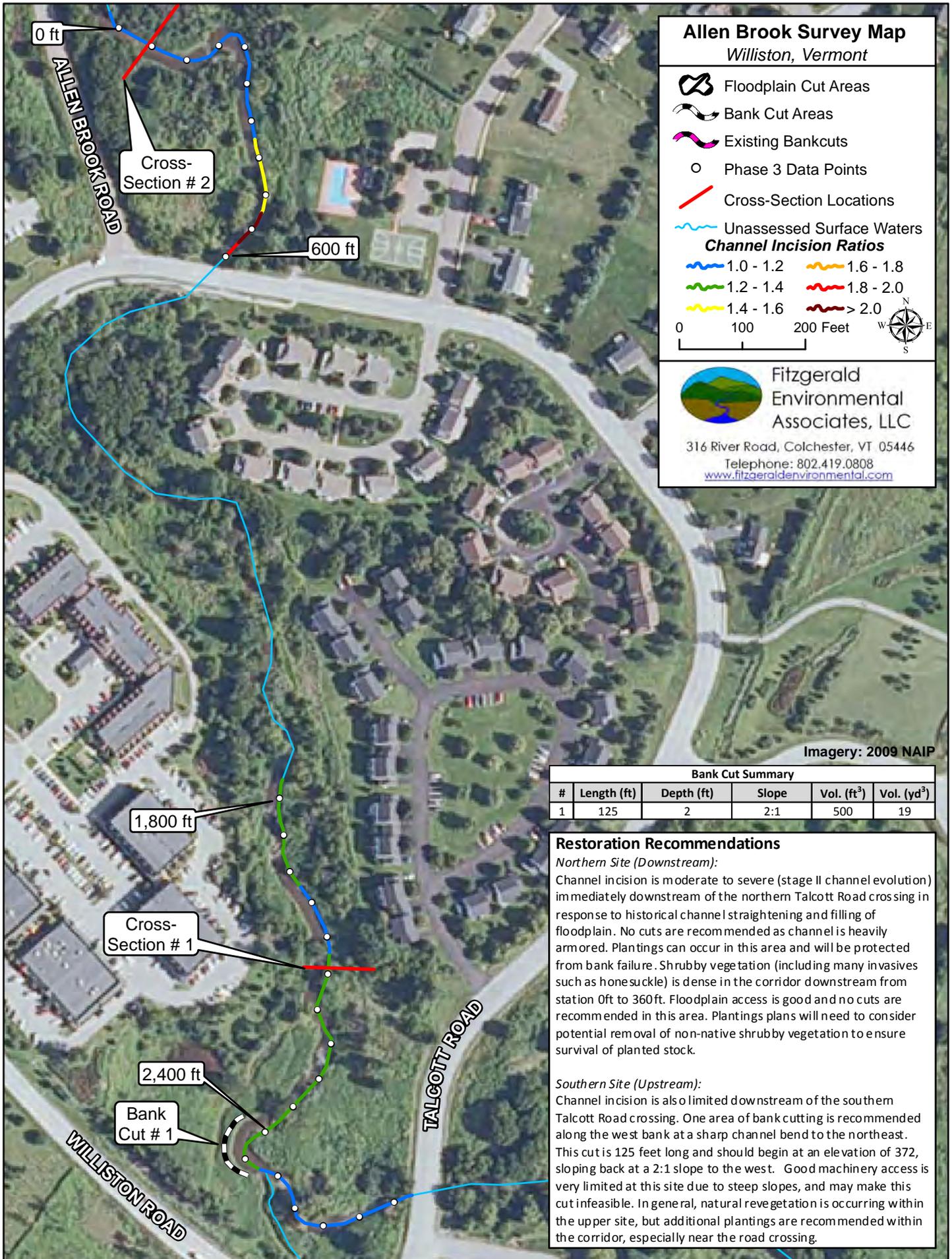
316 River Road, Colchester, VT 05446  
 Telephone: 802.419.0808  
[www.fitzgeraldenvironmental.com](http://www.fitzgeraldenvironmental.com)











### Allen Brook Survey Map

Williston, Vermont

- Floodplain Cut Areas
  - Bank Cut Areas
  - Existing Bankcuts
  - Phase 3 Data Points
  - Cross-Section Locations
  - Unassessed Surface Waters
- Channel Incision Ratios**
- 1.0 - 1.2
  - 1.2 - 1.4
  - 1.4 - 1.6
  - 1.6 - 1.8
  - 1.8 - 2.0
  - > 2.0 ratio symbol"/> > 2.0
- 0 100 200 Feet



Fitzgerald  
Environmental  
Associates, LLC

316 River Road, Colchester, VT 05446  
Telephone: 802.419.0808  
[www.fitzgeraldenvironmental.com](http://www.fitzgeraldenvironmental.com)

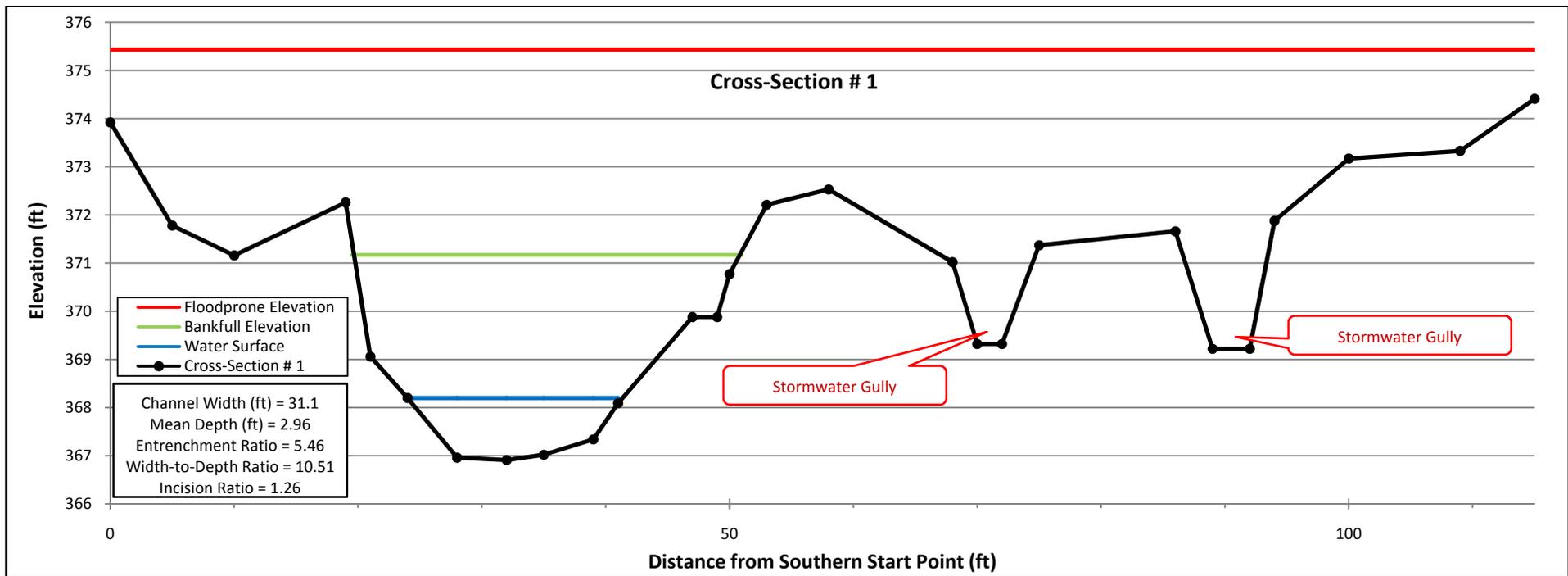
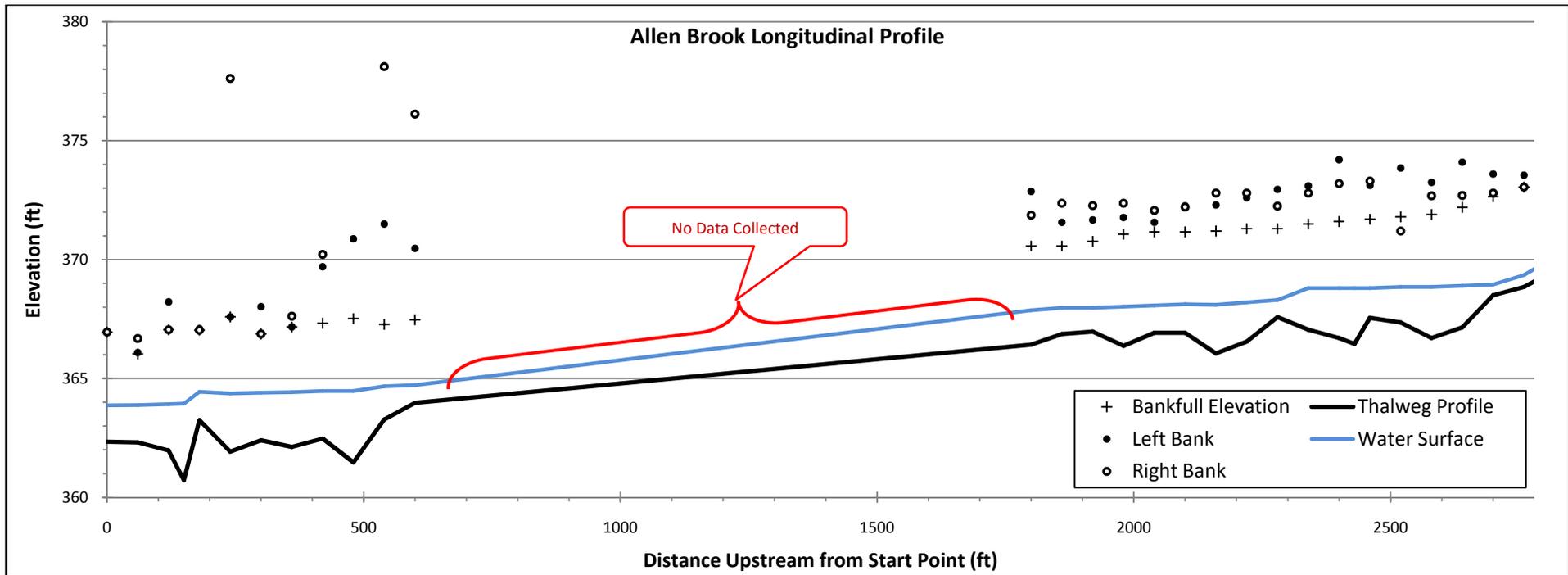
Imagery: 2009 NAIP

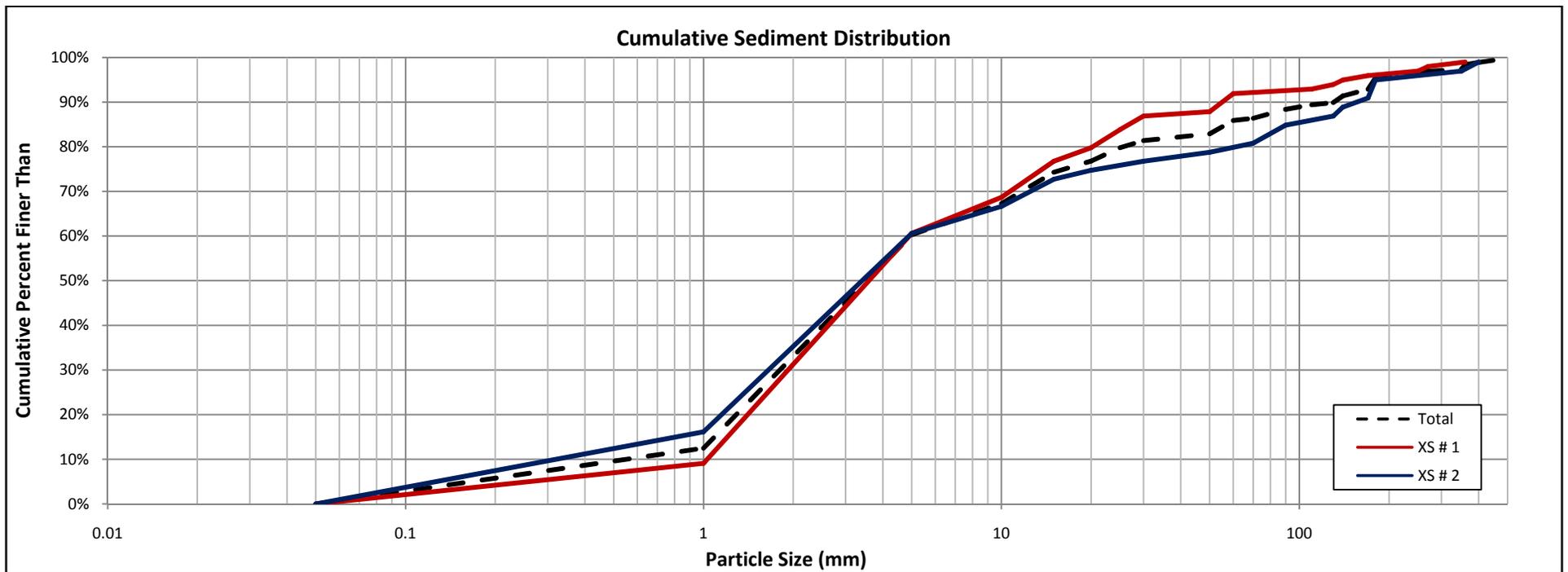
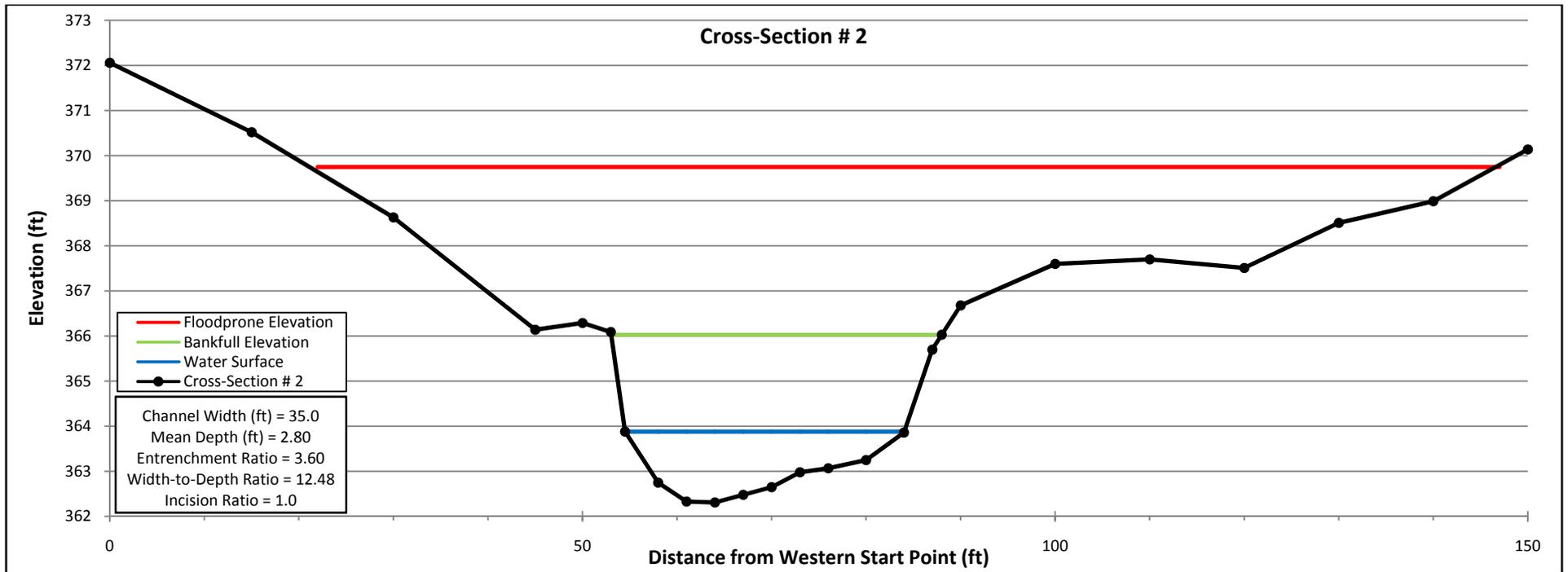
Bank Cut Summary					
#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd <sup>3</sup> )
1	125	2	2:1	500	19

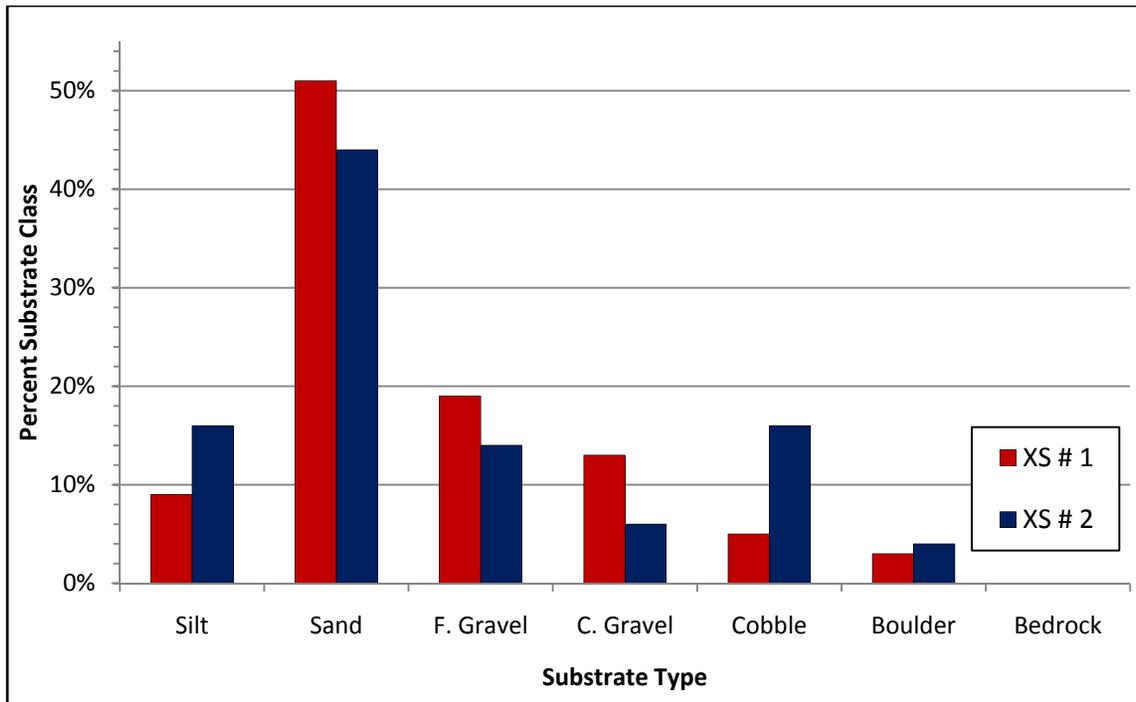
#### Restoration Recommendations

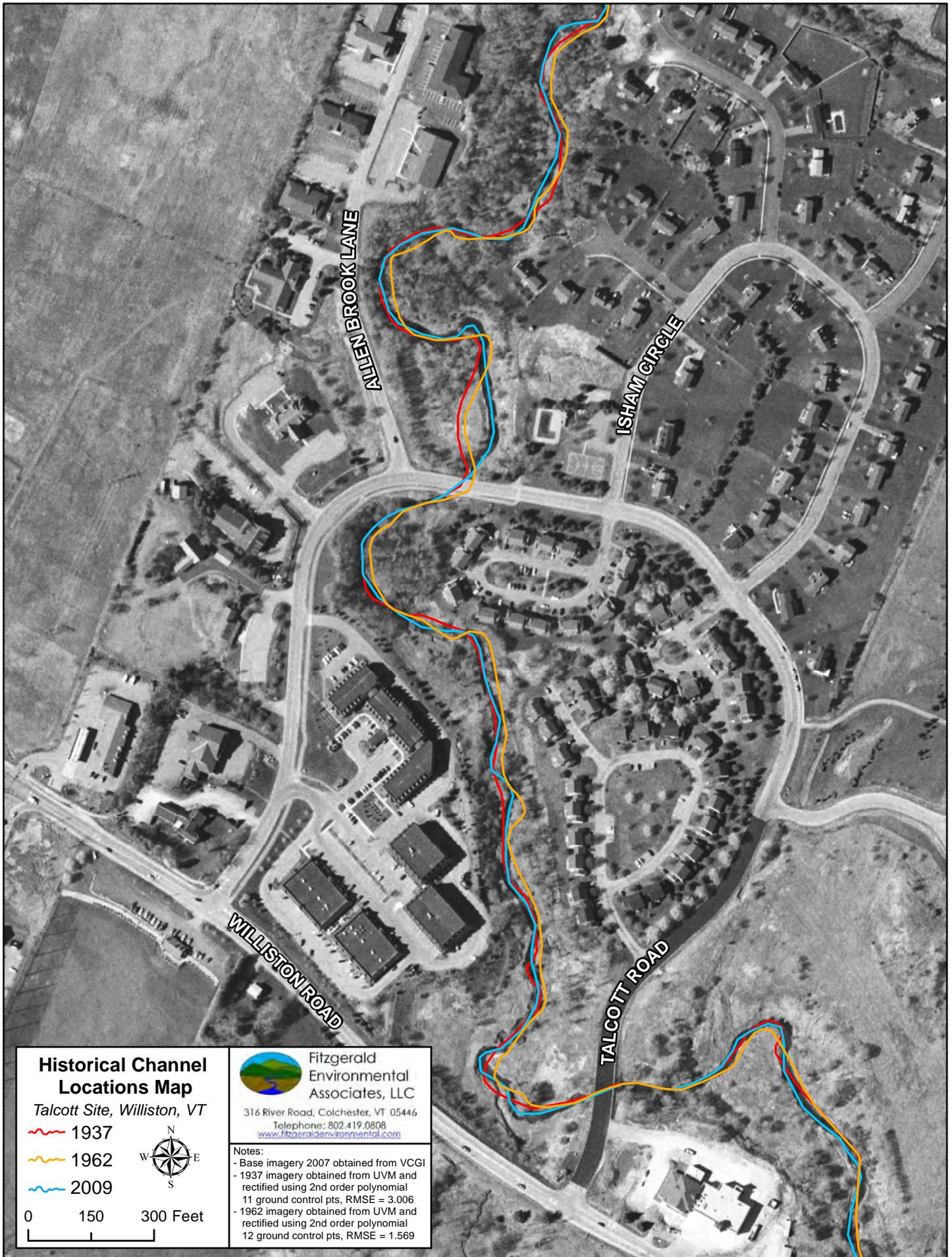
**Northern Site (Downstream):**  
Channel incision is moderate to severe (stage II channel evolution) immediately downstream of the northern Talcott Road crossing in response to historical channel straightening and filling of floodplain. No cuts are recommended as channel is heavily armored. Plantings can occur in this area and will be protected from bank failure. Shrubby vegetation (including many invasives such as honeysuckle) is dense in the corridor downstream from station 0ft to 360ft. Floodplain access is good and no cuts are recommended in this area. Plantings plans will need to consider potential removal of non-native shrubby vegetation to ensure survival of planted stock.

**Southern Site (Upstream):**  
Channel incision is also limited downstream of the southern Talcott Road crossing. One area of bank cutting is recommended along the west bank at a sharp channel bend to the northeast. This cut is 125 feet long and should begin at an elevation of 372, sloping back at a 2:1 slope to the west. Good machinery access is very limited at this site due to steep slopes, and may make this cut infeasible. In general, natural revegetation is occurring within the upper site, but additional plantings are recommended within the corridor, especially near the road crossing.



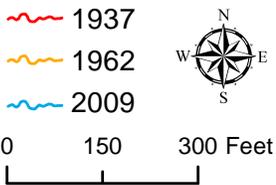






**Historical Channel Locations Map**

Talcott Site, Williston, VT



Fitzgerald Environmental Associates, LLC

316 River Road, Colchester, VT 05446  
 Telephone: 802.419.0808  
[www.fitzgeraldenvironmental.com](http://www.fitzgeraldenvironmental.com)

Notes:  
 - Base imagery 2007 obtained from VCGI  
 - 1937 imagery obtained from UVM and rectified using 2nd order polynomial 11 ground control pts, RMSE = 3.006  
 - 1962 imagery obtained from UVM and rectified using 2nd order polynomial 12 ground control pts, RMSE = 1.569





Fitzgerald  
Environmental  
Associates, LLC.

316 River Rd., Colchester, VT 05446  
Tel. 802.419.0808  
www.fitzgeraldenvironmental.com

**Bank Cut Summary**

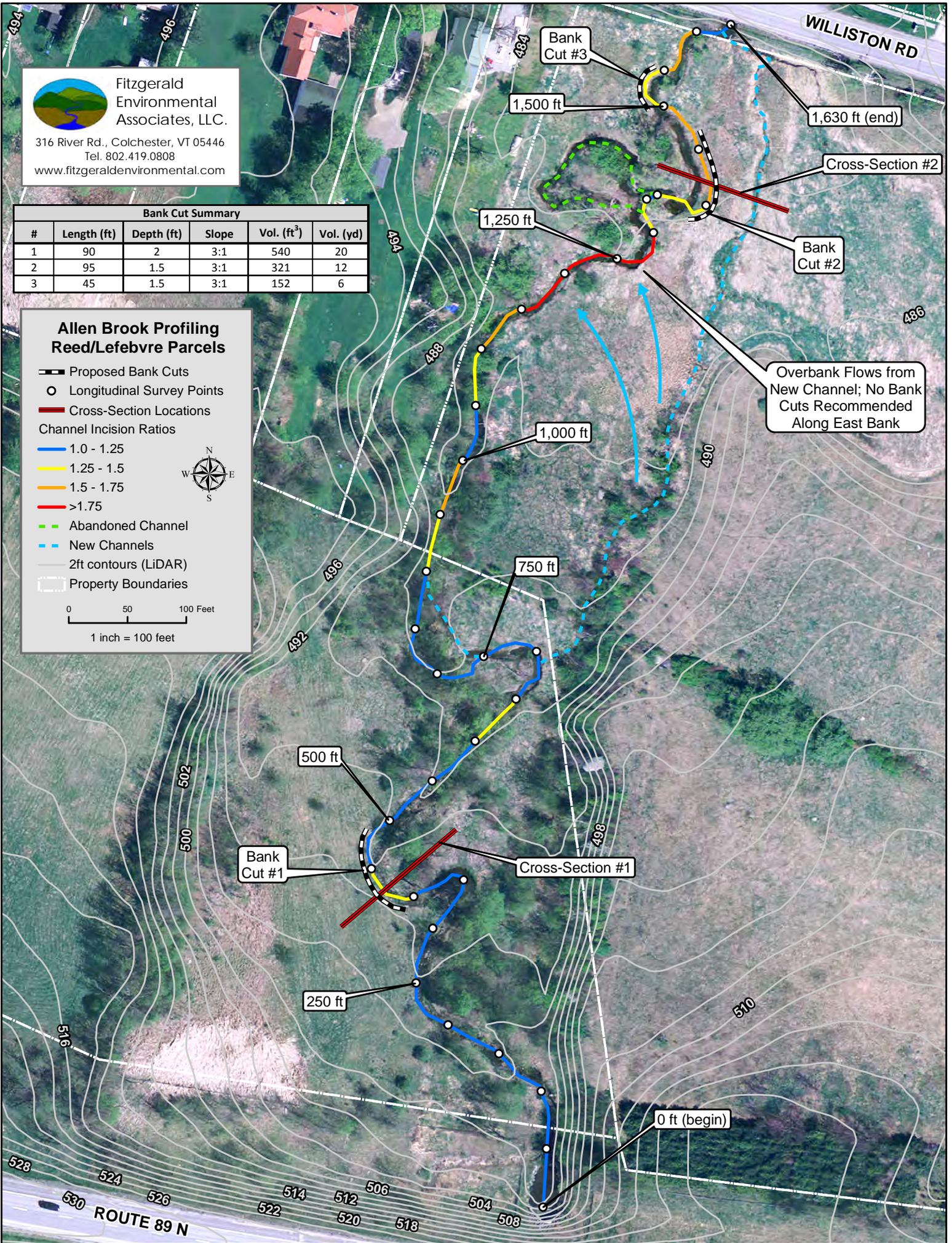
#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd)
1	90	2	3:1	540	20
2	95	1.5	3:1	321	12
3	45	1.5	3:1	152	6

**Allen Brook Profiling  
Reed/Lefebvre Parcels**

- Proposed Bank Cuts
- Longitudinal Survey Points
- Cross-Section Locations
- Channel Incision Ratios
- 1.0 - 1.25
- 1.25 - 1.5
- 1.5 - 1.75
- >1.75
- Abandoned Channel
- New Channels
- 2ft contours (LiDAR)
- Property Boundaries



0 50 100 Feet  
1 inch = 100 feet



Bank Cut #3

1,500 ft

1,630 ft (end)

Cross-Section #2

Bank Cut #2

Overbank Flows from  
New Channel; No Bank  
Cuts Recommended  
Along East Bank

1,250 ft

1,000 ft

750 ft

500 ft

Bank Cut #1

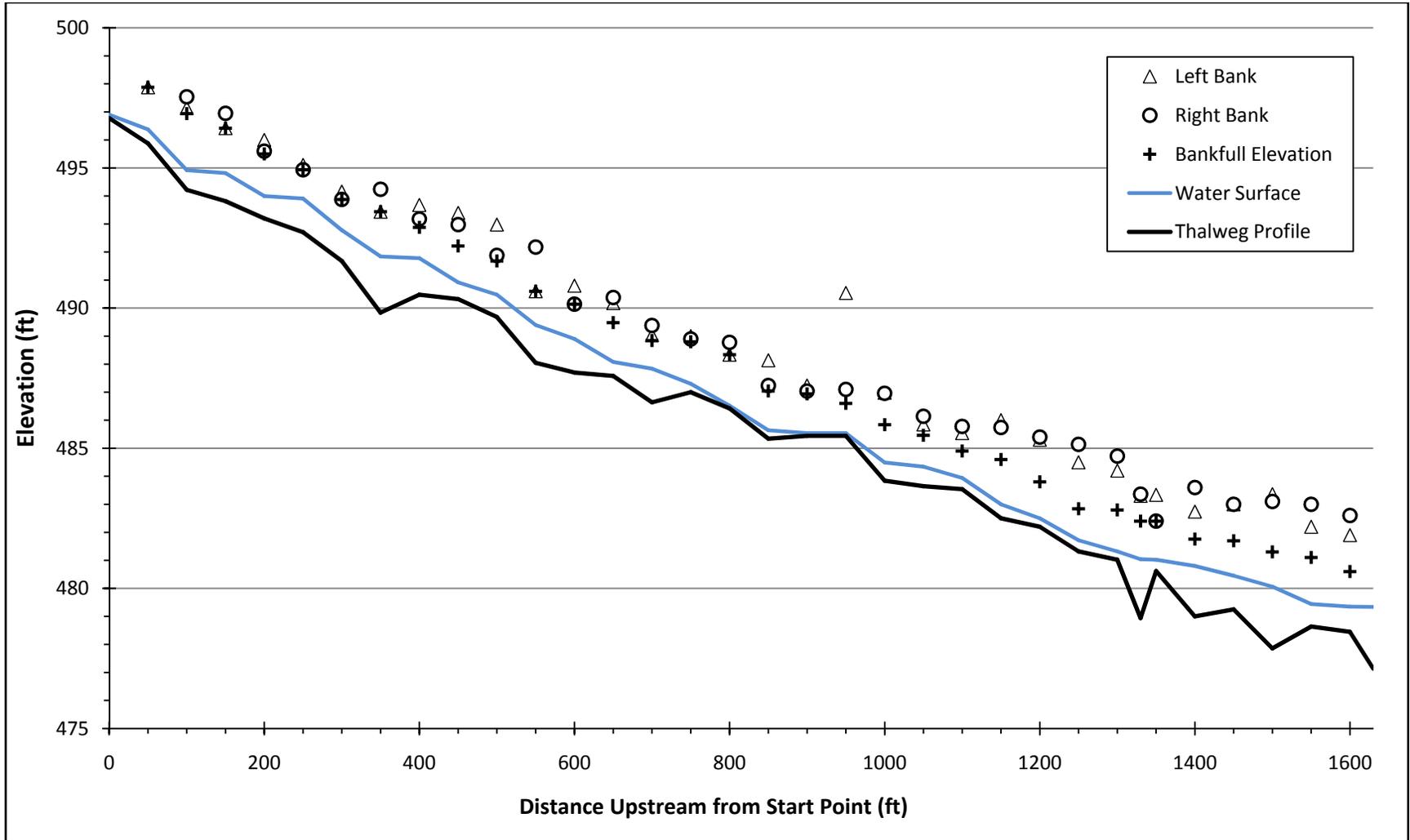
Cross-Section #1

250 ft

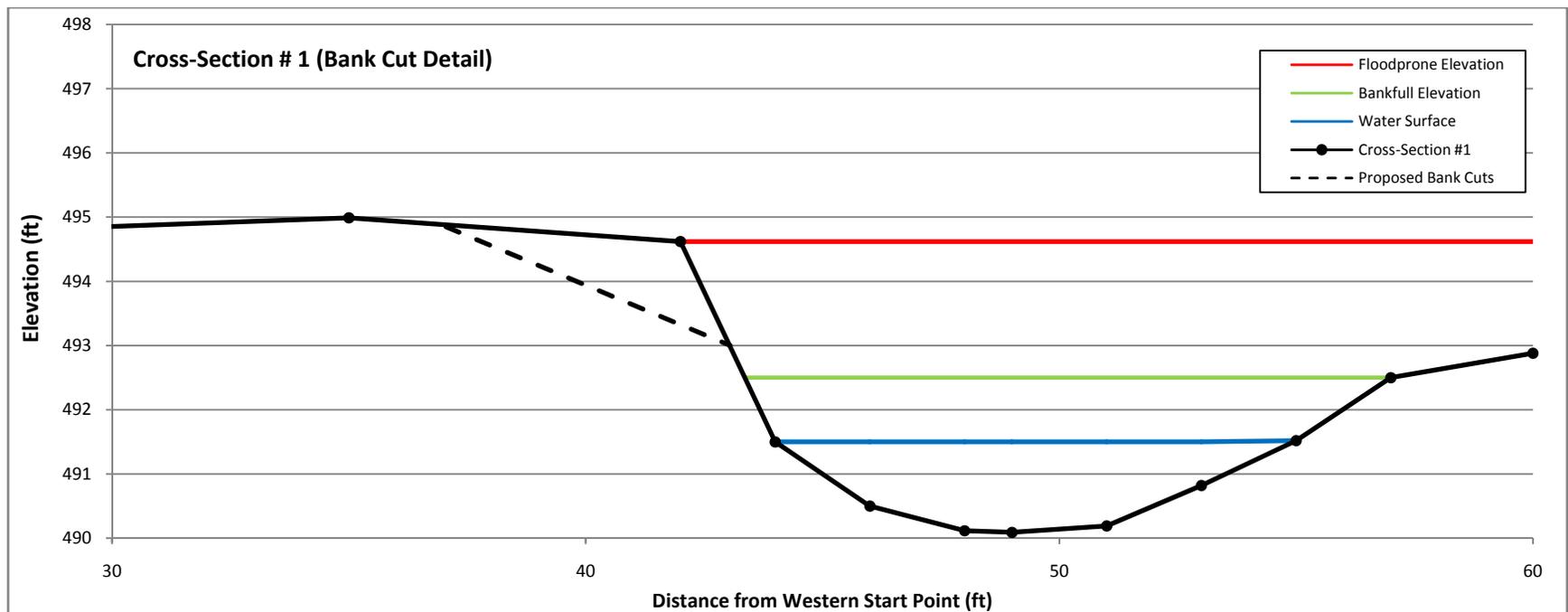
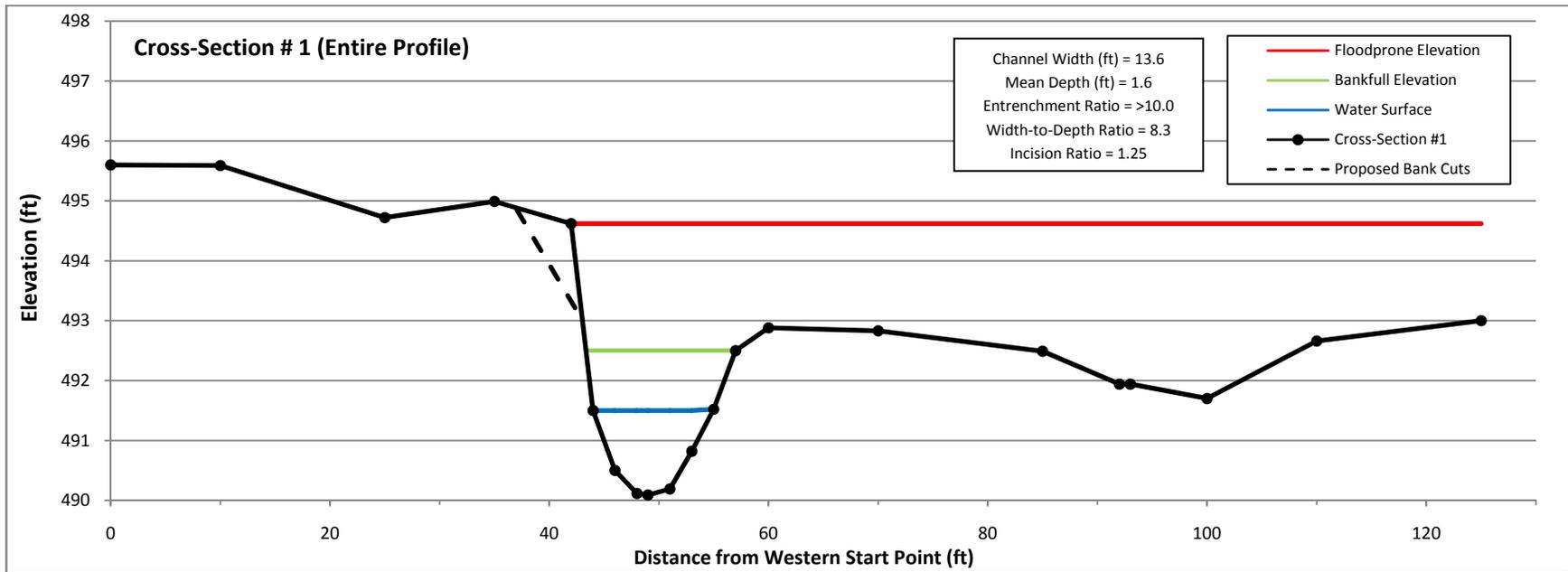
0 ft (begin)

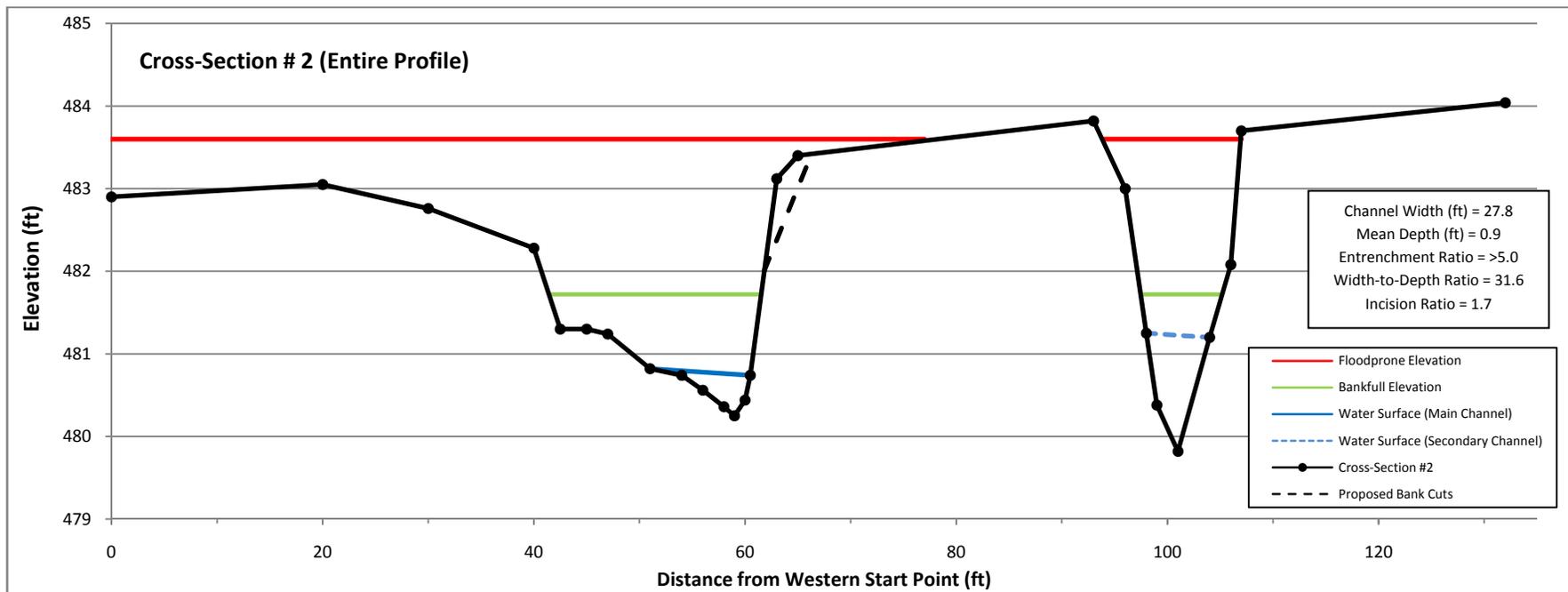
ROUTE 89 N

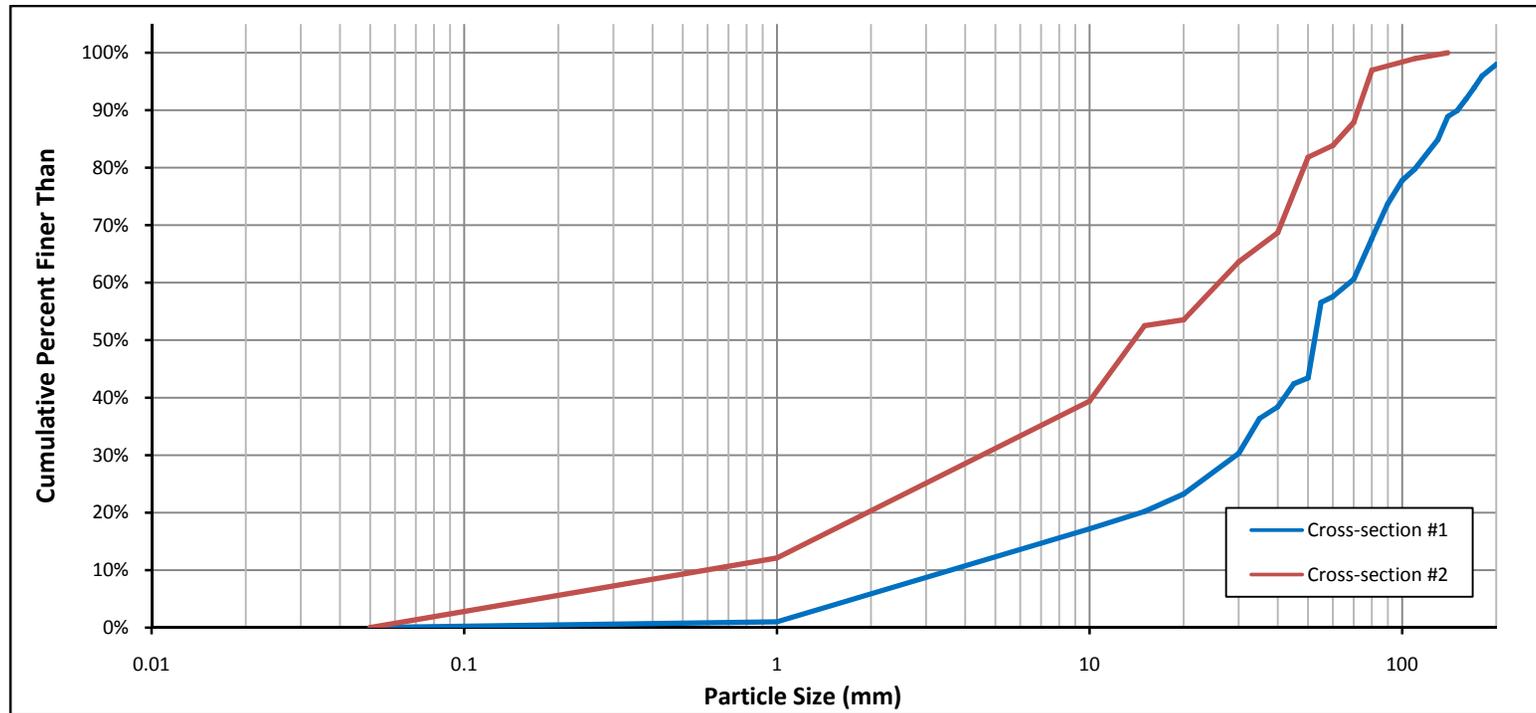
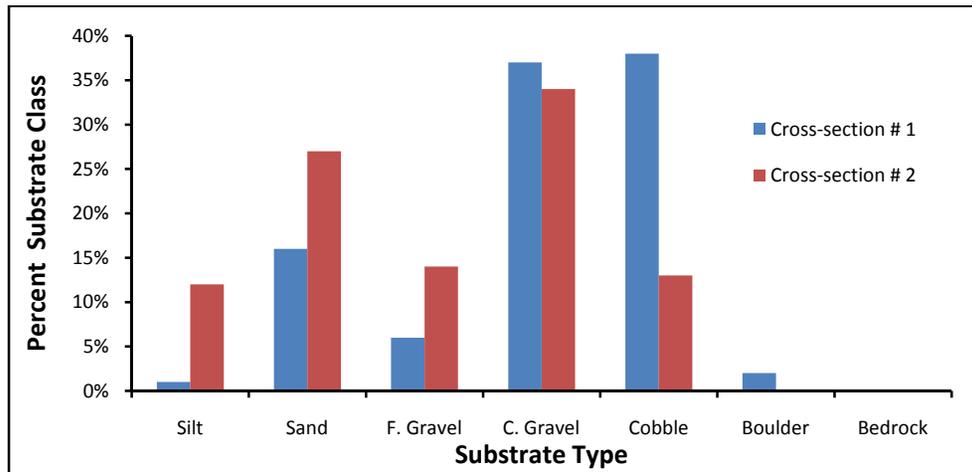
WILLISTON RD



Longitudinal Profile from I-89 Culvert Outlet to Williston Road Culvert Inlet









### Allen Brook Tributary: Channel/Floodplain Profiling

-  Proposed Bank Cuts
-  Longitudinal Survey Points
-  Cross-section (XS) Locations
- Channel Incision Ratios
-  N/A (Culvert)
-  0.0 - 1.25
-  1.25 - 1.5
-  1.5 - 1.75
-  1.75 - 2.0
- > 2.0 symbol" data-bbox="42 265 65 280"/> > 2.0
-  2ft Contours (LiDAR)
-  Property Boundaries

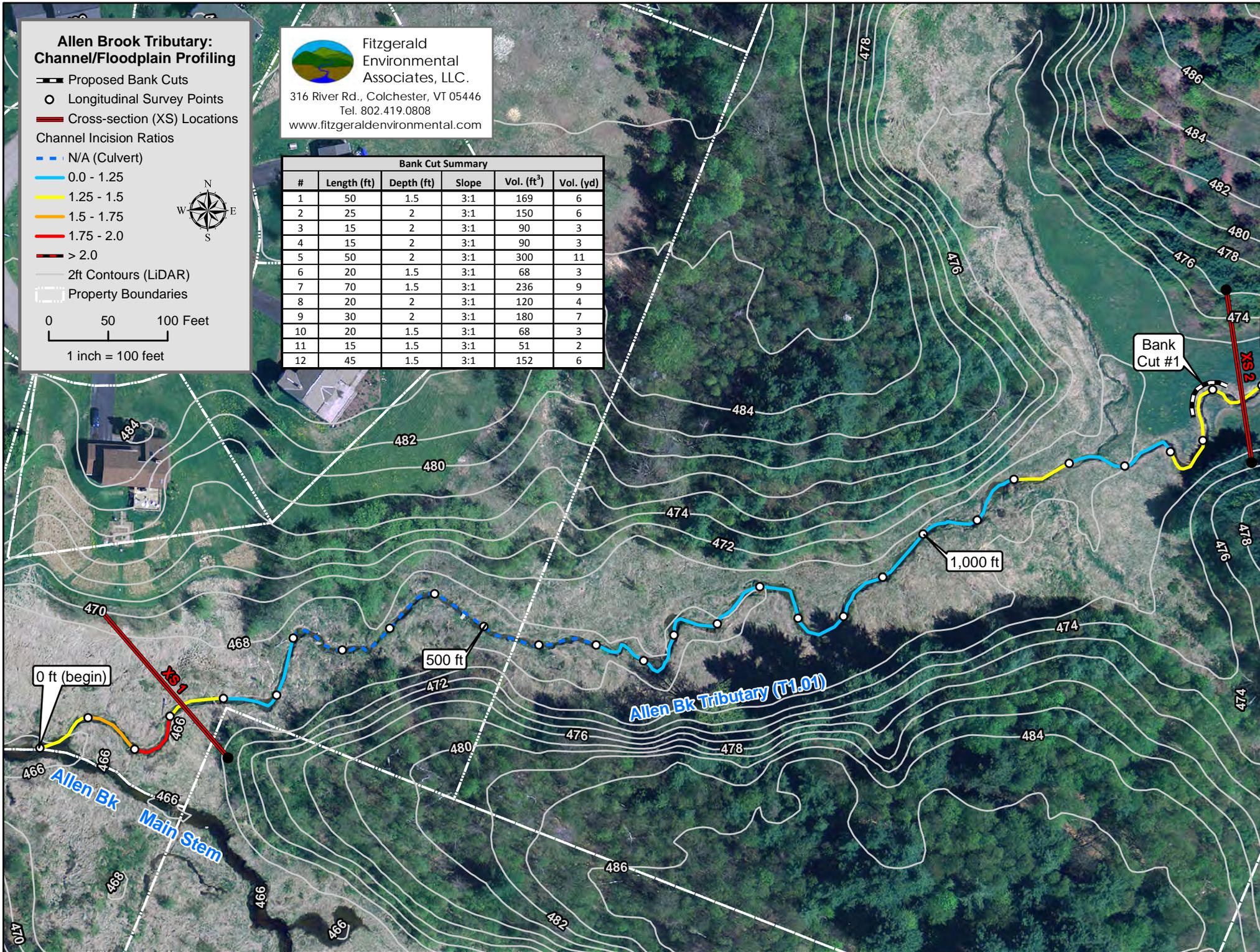


0 50 100 Feet  
1 inch = 100 feet



Fitzgerald  
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316 River Rd., Colchester, VT 05446  
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www.fitzgeraldenvironmental.com

Bank Cut Summary					
#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd)
1	50	1.5	3:1	169	6
2	25	2	3:1	150	6
3	15	2	3:1	90	3
4	15	2	3:1	90	3
5	50	2	3:1	300	11
6	20	1.5	3:1	68	3
7	70	1.5	3:1	236	9
8	20	2	3:1	120	4
9	30	2	3:1	180	7
10	20	1.5	3:1	68	3
11	15	1.5	3:1	51	2
12	45	1.5	3:1	152	6

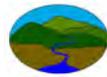


### Allen Brook Tributary: Channel/Floodplain Profiling

-  Proposed Bank Cuts
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-  Cross-section (XS) Locations
- Channel Incision Ratios
-  N/A (Culvert)
-  0.0 - 1.25
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-  1.5 - 1.75
-  1.75 - 2.0
- > 2.0 symbol" data-bbox="42 265 65 280"/> > 2.0
-  2ft Contours (LiDAR)
-  Property Boundaries

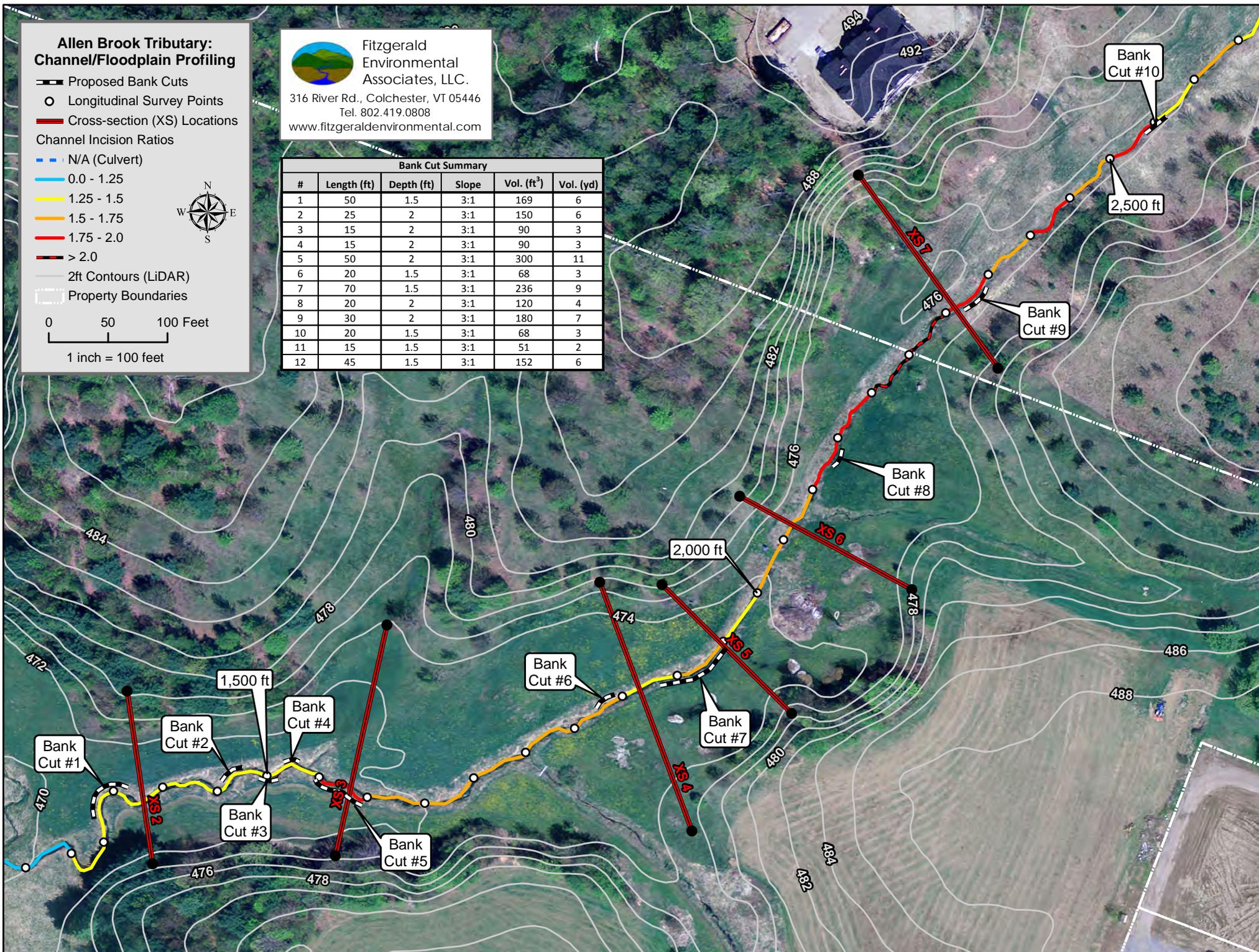


0 50 100 Feet  
1 inch = 100 feet



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Bank Cut Summary					
#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd)
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6	20	1.5	3:1	68	3
7	70	1.5	3:1	236	9
8	20	2	3:1	120	4
9	30	2	3:1	180	7
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12	45	1.5	3:1	152	6

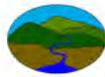


### Allen Brook Tributary: Channel/Floodplain Profiling

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-  1.75 - 2.0
- > 2.0 symbol" data-bbox="42 270 65 286"/> > 2.0
-  2ft Contours (LiDAR)
-  Property Boundaries

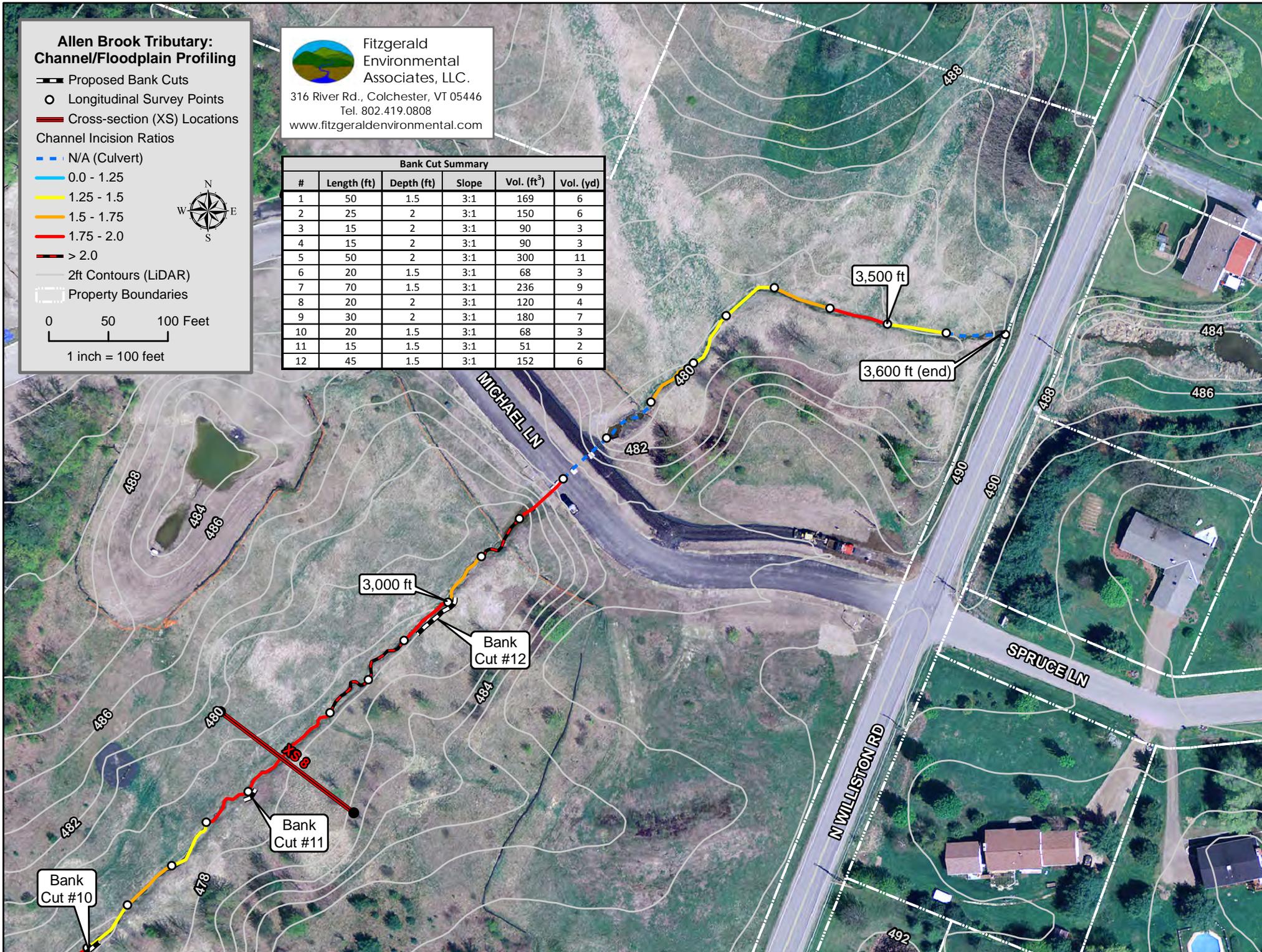


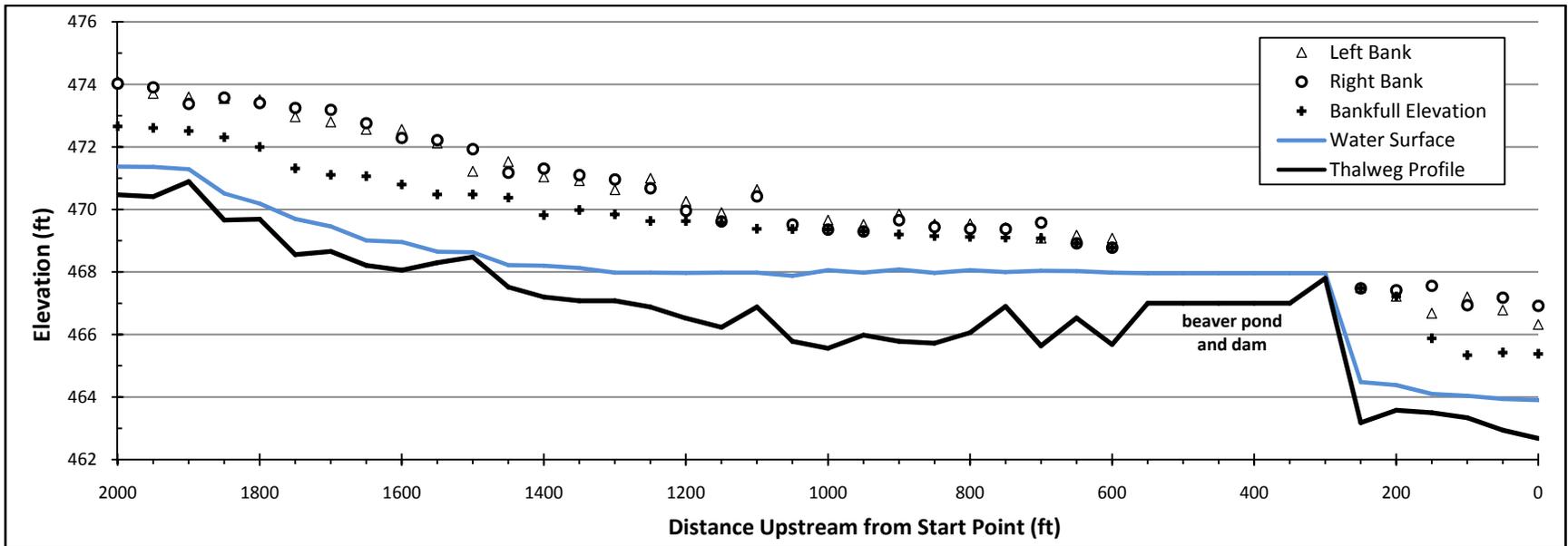
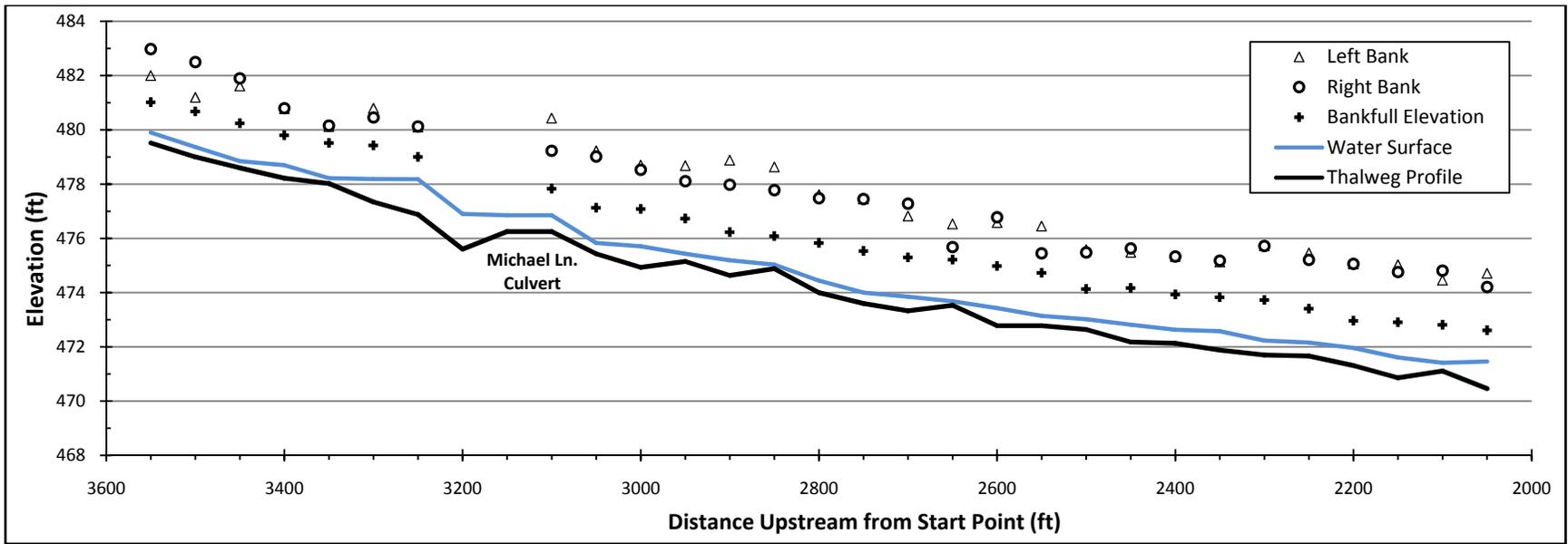
0 50 100 Feet  
1 inch = 100 feet

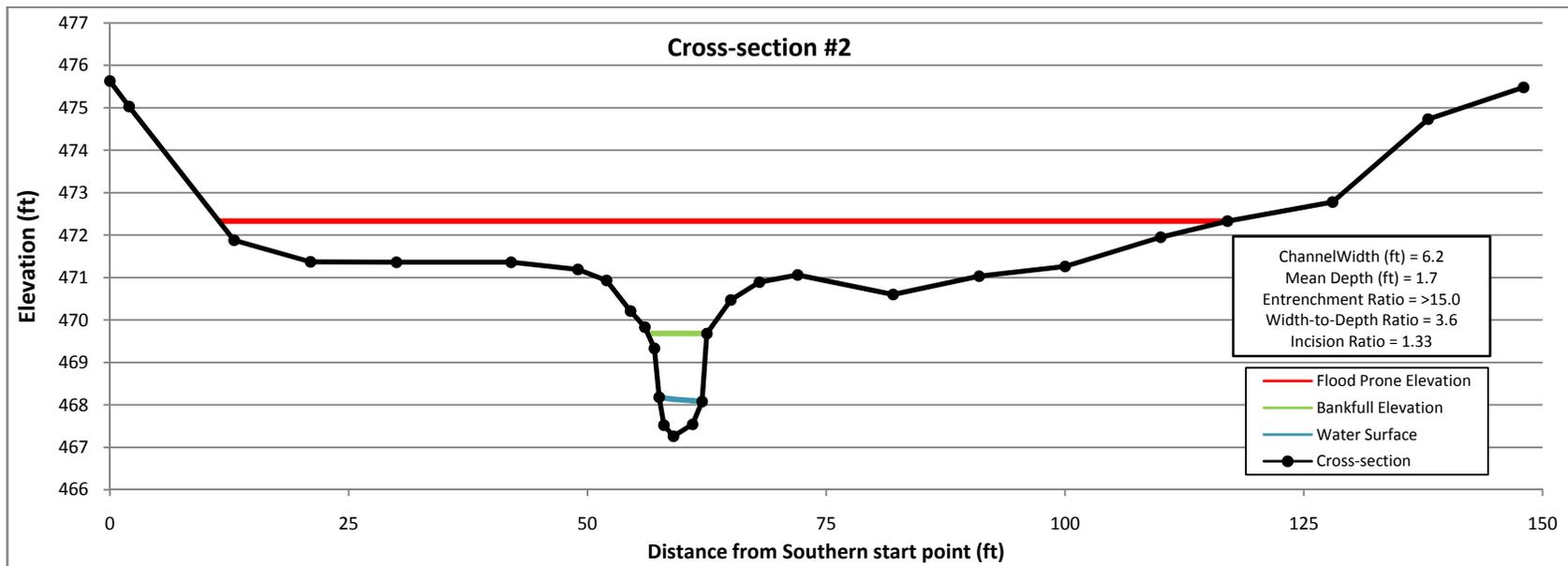


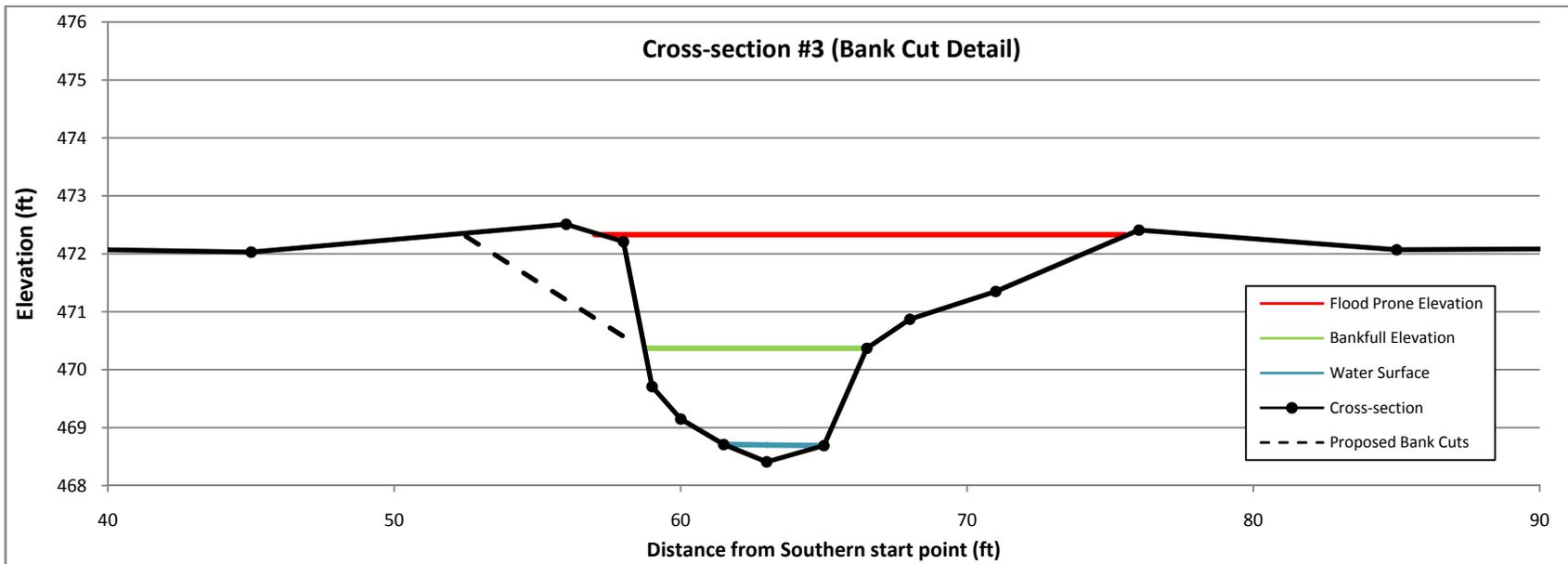
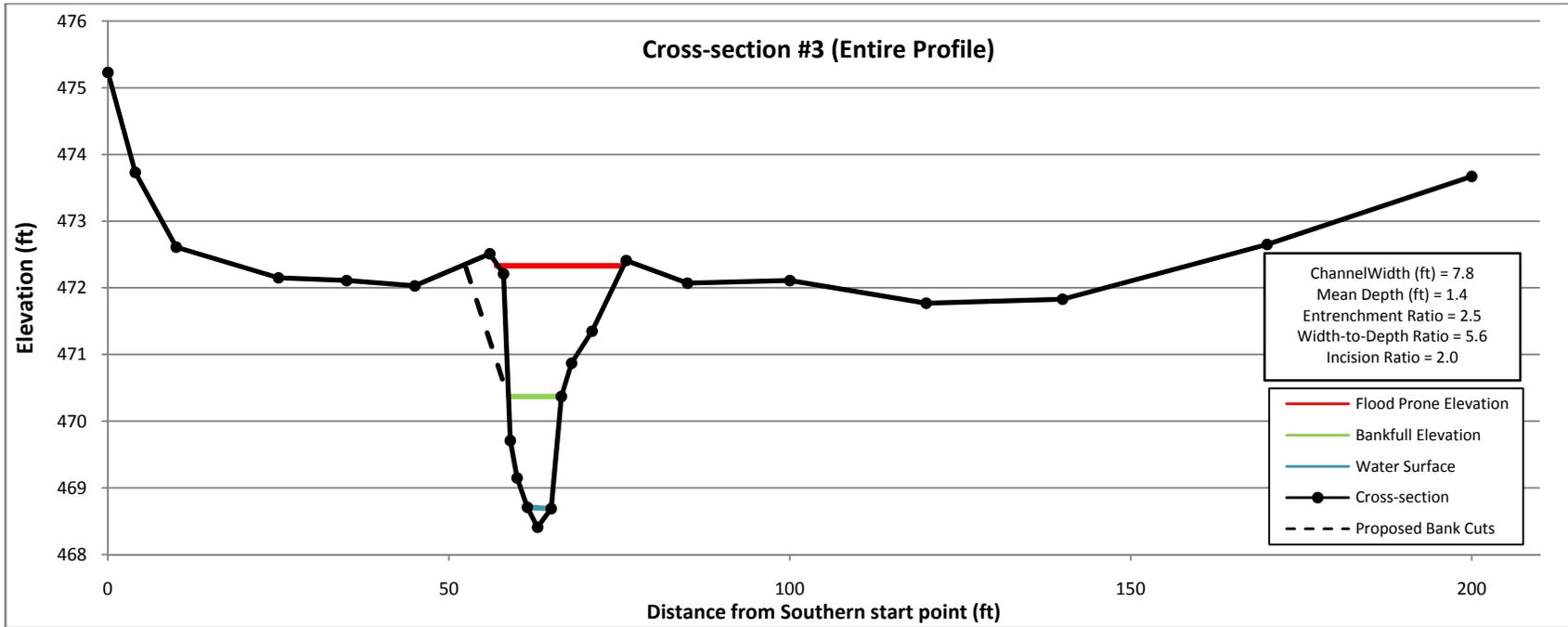
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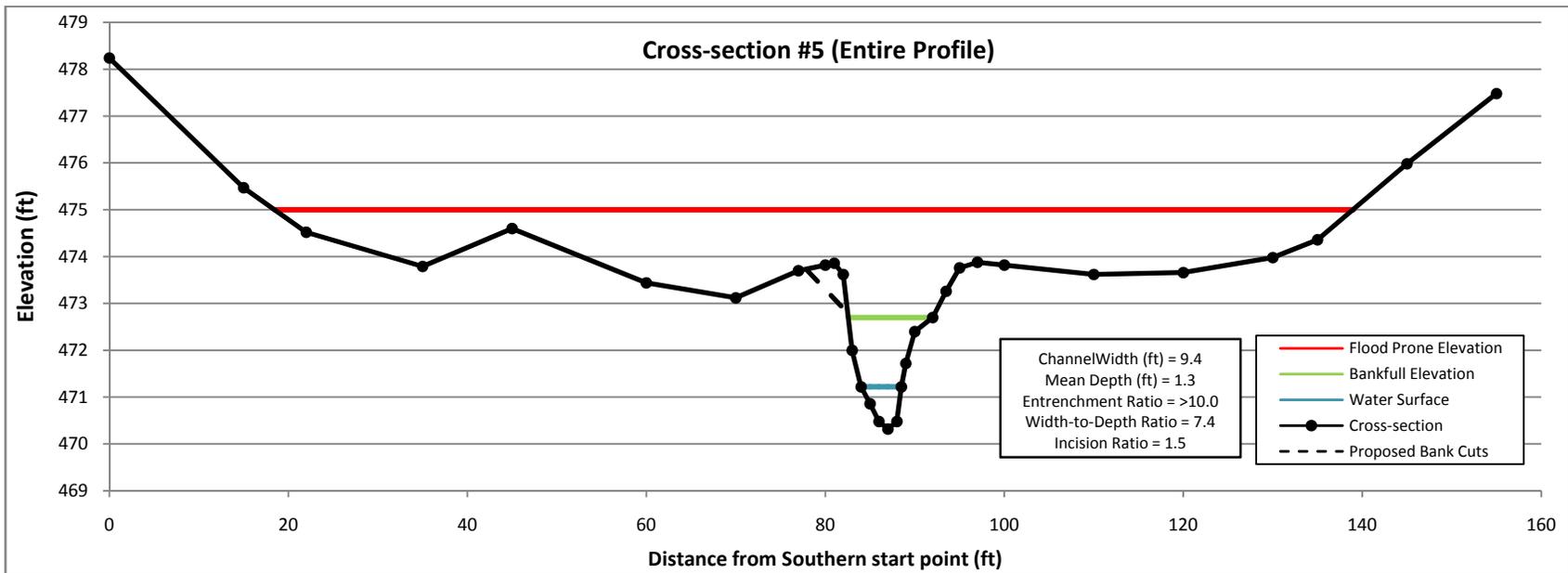
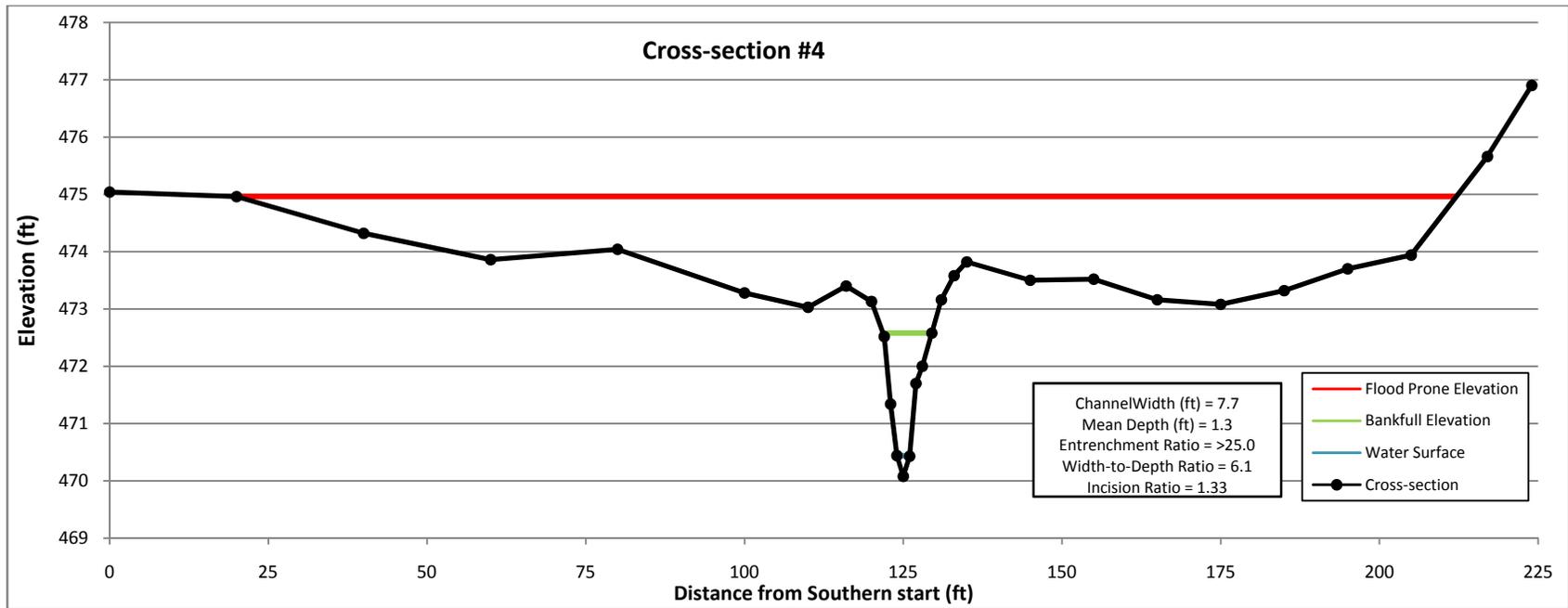
Bank Cut Summary					
#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd)
1	50	1.5	3:1	169	6
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11	15	1.5	3:1	51	2
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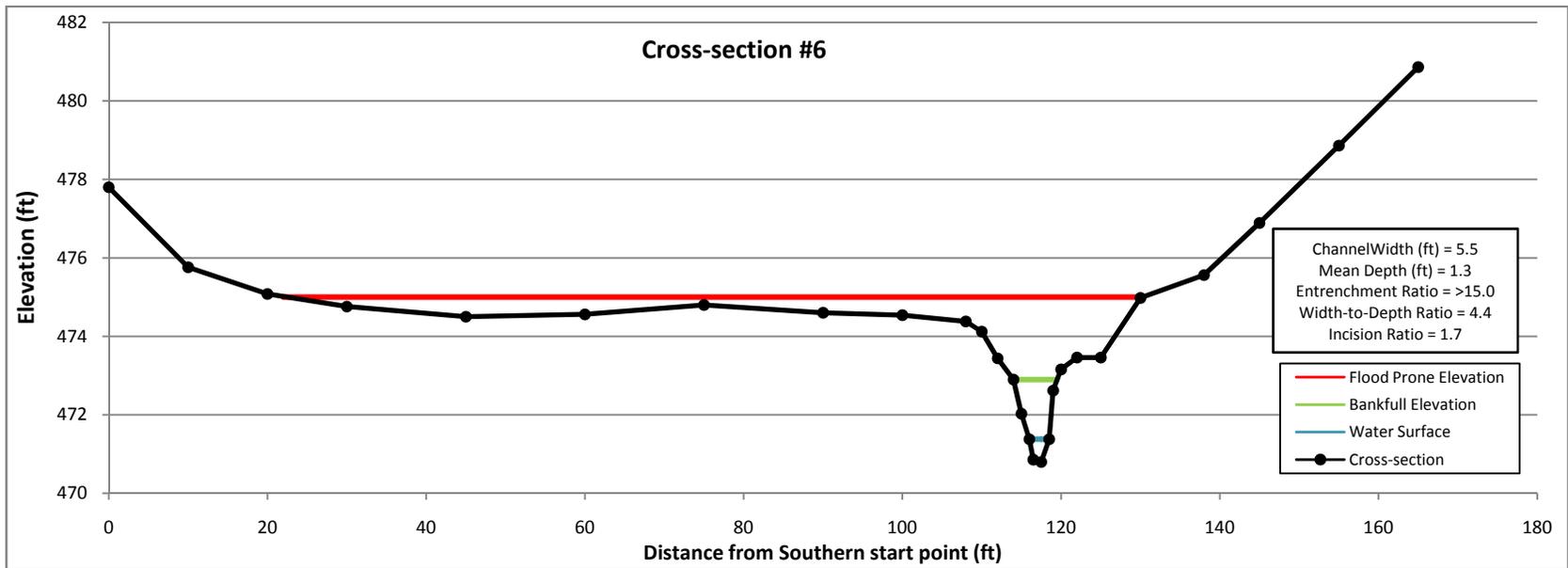
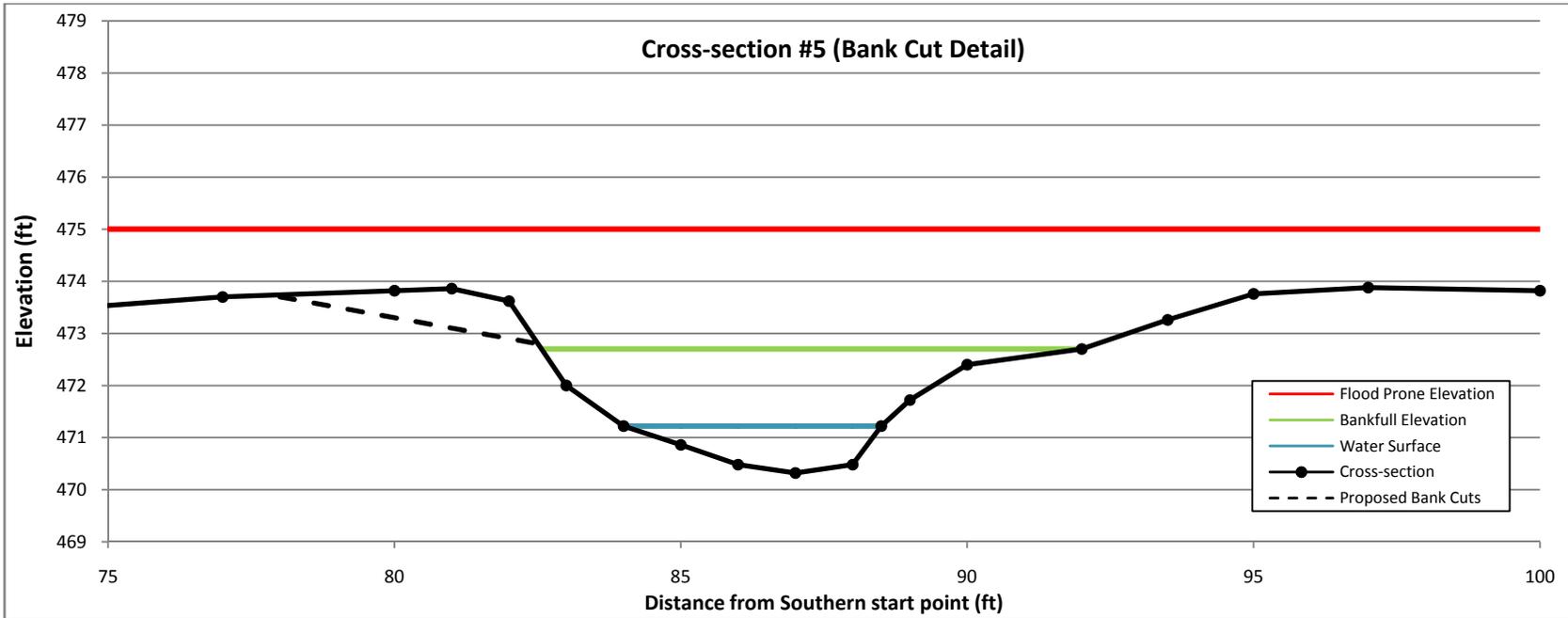


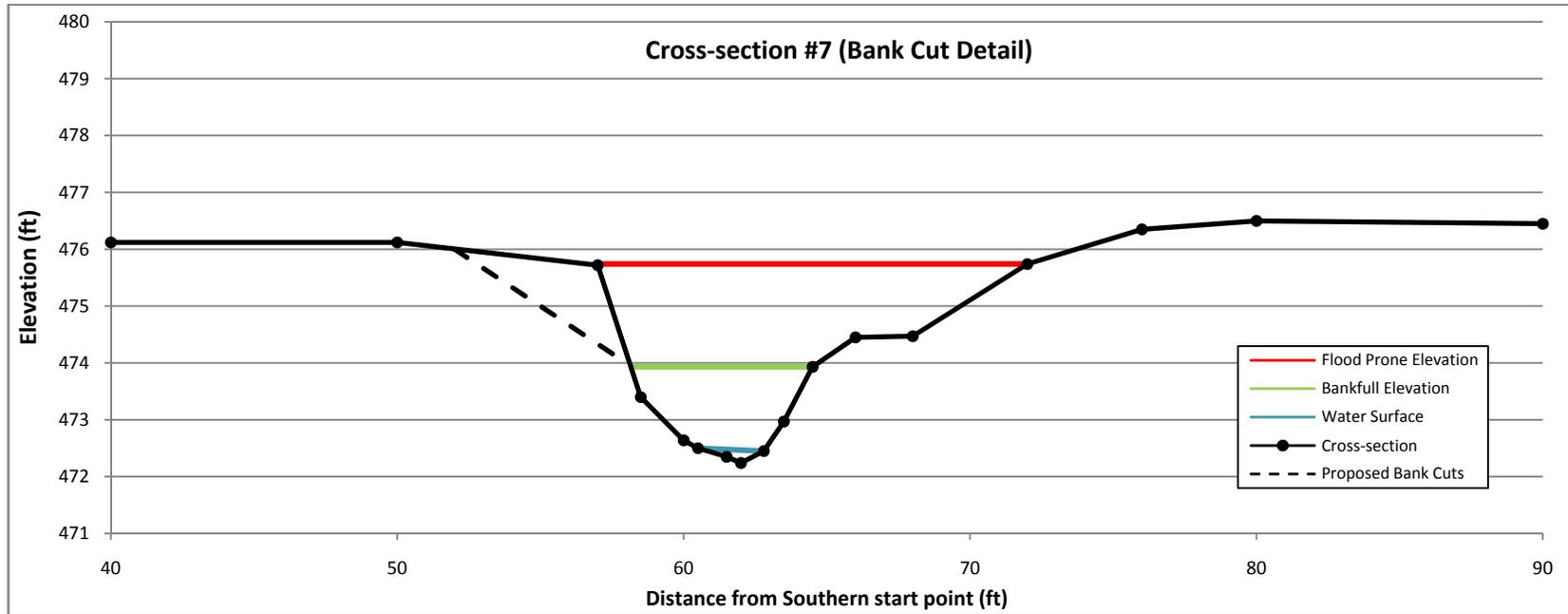
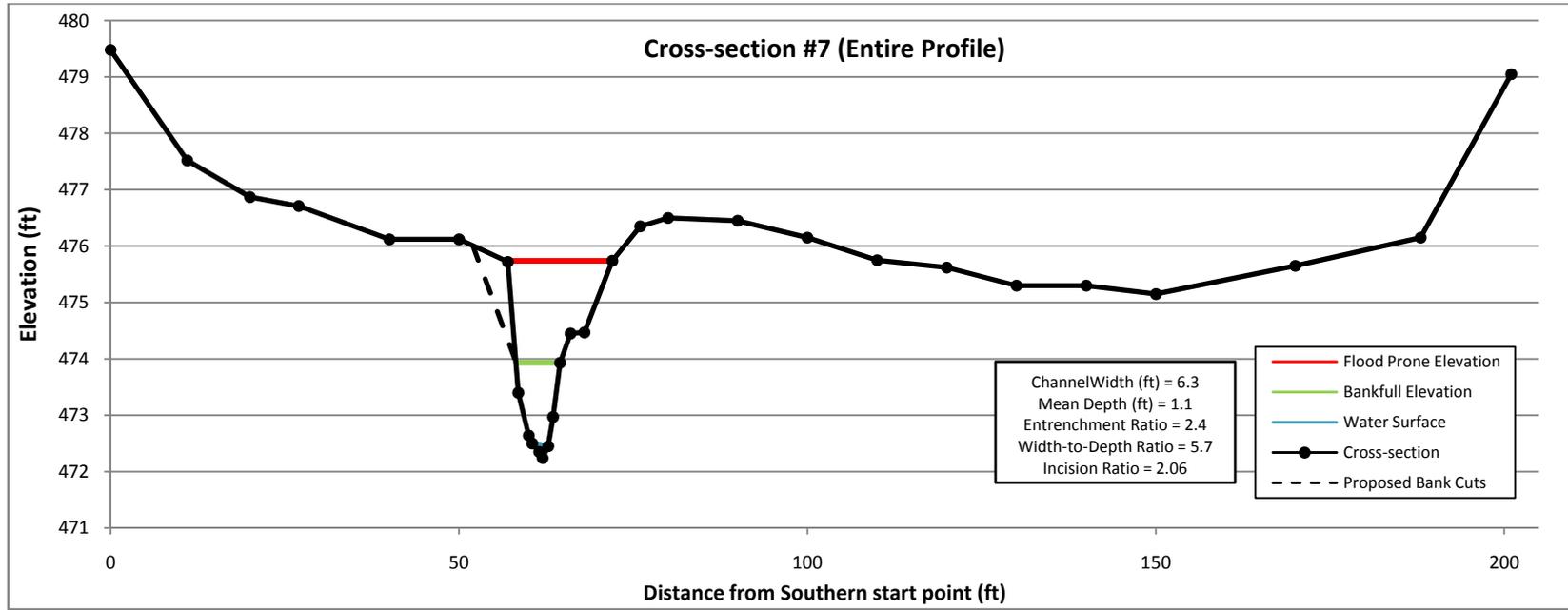


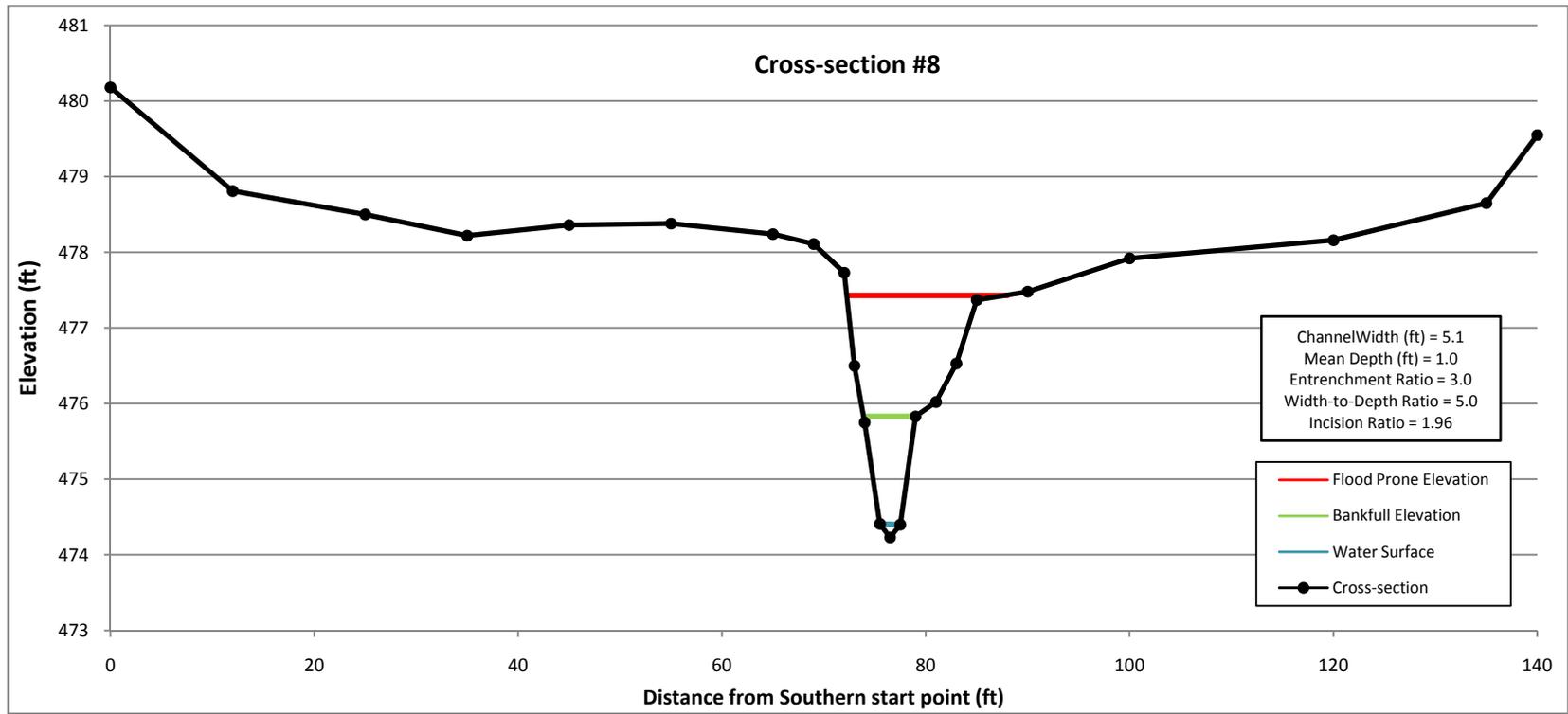




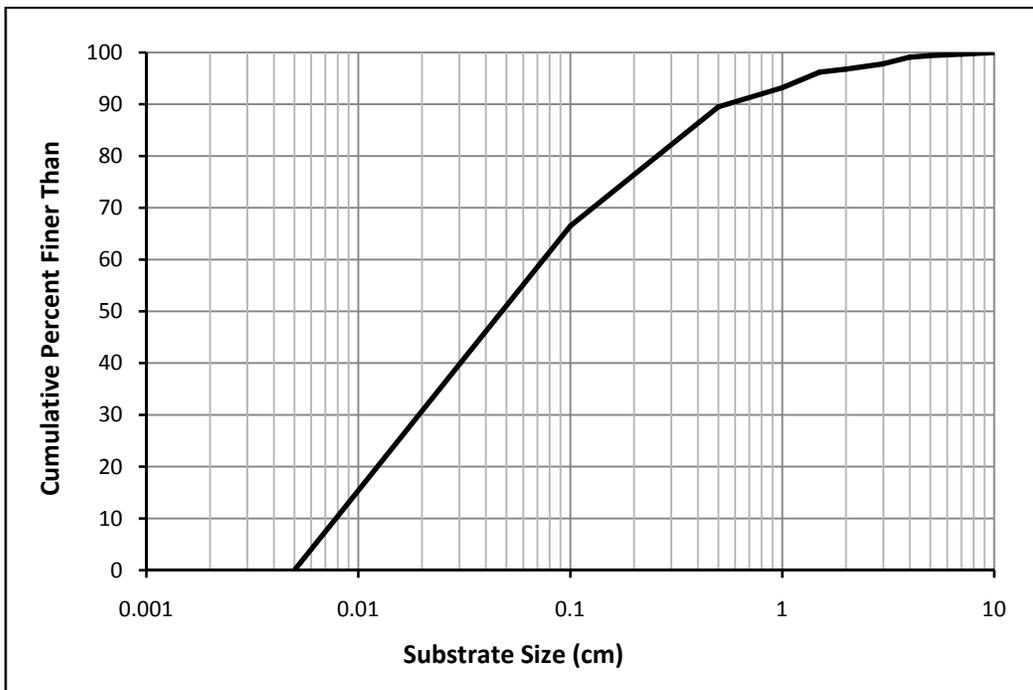
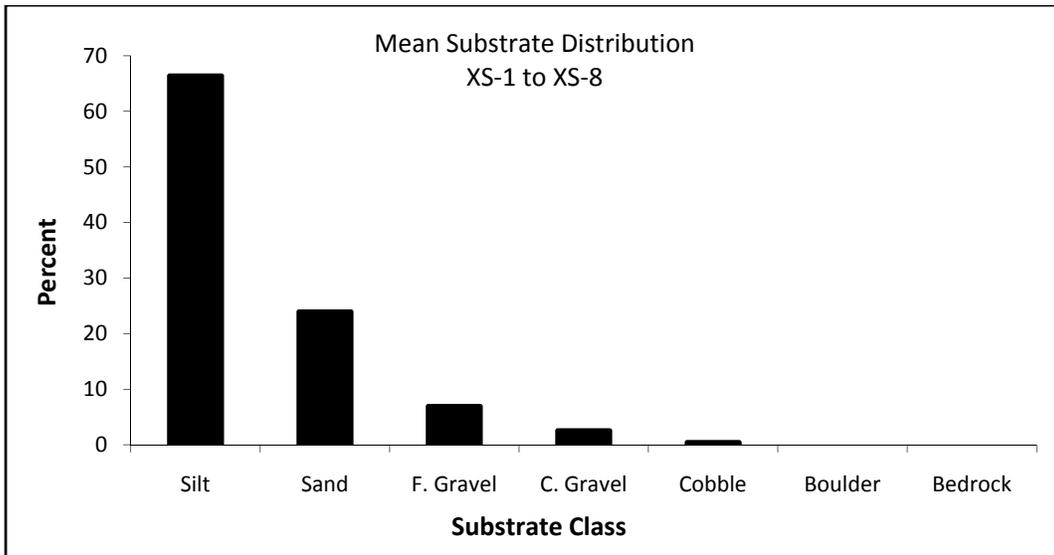








Class	Range (mm)	XS-1	XS-2	XS-3	XS-4	XS-5	XS-6	XS-7	XS-8	Average
Silt	< 0.06	66	80	64	66	71	72	60	52	66.4
Sand	0.06 - 2	30	12	29	28	29	15	25	23	23.9
F. Gravel	2 - 16	4	7	7	5	0	7	10	15	6.9
C. Gravel	16 - 64	0	1	0	1	0	4	4	10	2.5
Cobble	64 - 256	0	0	0	0	0	2	1	0	0.4
Boulder	256 - 4096	0	0	0	0	0	0	0	0	0.0
Bedrock	> 4096	0	0	0	0	0	0	0	0	0.0





# Appendix E

## Sample Conservation Easement



Grant of Conservation Easement

**GRANT OF PERMANENT RIPARIAN BUFFER ZONE CONSERVATION EASEMENT**

This Grant of Permanent Riparian Buffer Zone Conservation Easement is made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by Richard A. and Karen S. Reed, whose address is 8384 Williston Road, Town of Williston, County of Chittenden, State of Vermont, hereinafter referred to as "Grantor", in favor of the Town of Williston, hereinafter referred to as the "Grantee".

**WITNESSETH:**

**WHEREAS**, the Grantor is the owner in fee simple of certain real property located in the Town of Williston, County of Chittenden, Vermont, as described in **Exhibit A** per Recorder's Deed Volume 74, Page Number 459, (hereinafter "the Property"); and

**WHEREAS**, riparian buffer zones play a significant role in the maintenance of water quality by reducing and removing nutrients and pollutants from surface water runoff, trapping sediments, and stabilizing soil; and

**WHEREAS**, riparian buffer zones cumulatively play a significant role in moderating storm flows to streams thereby reducing downstream flooding, provide flood storage capacity and groundwater recharge, and provide shade to the water body providing a more stable aquatic habitat for a variety of aquatic and terrestrial species, for the benefit of the public; and

**WHEREAS**, the Allen Brook is currently on the State of Vermont's 303(d) list of impaired waters due to stormwater pollution; and

**WHEREAS**, the Grantor and Grantee recognize the principal goal within the riparian buffer zone is the re-establishment of native woody vegetation, the re-establishment of the natural meander pattern of the Allen Brook and its tributaries, the reconnection of the Allen Brook and its tributaries to their natural flood plains, and the stabilization of the stream banks of the Allen Brook and its tributaries for the purpose of reducing erosion hazards, reducing sediment loading and transport, improving water quality, and to conserve and enhance natural communities, aquatic and wildlife habitats and the natural processes associated with the Protected Property now and in the future.

**NOW, THEREFORE**, for and in consideration of the covenants and representations contained herein and for other good and valuable consideration, the receipt and legal sufficiency of which is hereby acknowledged, Grantor hereby unconditionally and irrevocably grants and conveys unto Grantee, its heirs, successors and assigns, forever and in perpetuity a Conservation Easement of the nature and character and to the extent hereinafter set forth, over the Property described on **Exhibit A**, together with the right to re-establish, preserve and protect the conservation values thereof, as follows:

1. Duration of Easement: This Conservation Easement shall be perpetual. This Conservation Easement is an appurtenant easement, runs with the land and is enforceable by Grantee against Grantor, Grantor's personal representatives, heirs, successors and assigns, lessees, agents and licensees. Grantor hereby conveys, transfers, assigns and grants to the Grantee a Permanent Riparian

Buffer Zone Conservation Easement with respect to that portion of the Property as designated as the Riparian Buffer Zone as shown in **Exhibit B** and as described in **Exhibit C**.

2. Riparian Buffer Zone Conservation Easement Restrictions: Except as provided to the contrary hereinafter, the Riparian Buffer Zone shall be subject to the following restrictions:

- a. **Vegetation.** Riparian Buffer Zone shall remain in native or cultivated vegetation that serves as an effective filter for surface runoff. Where effective filtering vegetation is not present, the buffer shall be restored to a combination of wetland, riparian, and/or forest vegetation appropriate to the site by the Grantee, its successors and assigns; this shall not be an obligation of Grantor, their heirs and assigns. Removal or cutting of live or dead vegetation from Riparian Buffer Zone is prohibited except where a hazardous tree is present, where it is necessary to control invasive species, or if a tree exceeds a height of 20-feet within 75' of the Route 2 Right of Way. All native vegetation cut within the buffer should be left in place whenever possible.
- b. **Lawns.** Conventional turf grass lawns do not provide an effective filter for surface runoff and may not be included in the Riparian Buffer Zone.
- c. **Impervious Surfaces.** Development within Riparian Buffer Zone shall be limited to utility crossings; trails and trail crossings, with minor related facilities like signs and benches; and runoff and erosion control measures.
- d. **Outdoor Storage.** Outdoor storage is not permitted within Riparian Buffer Zone.
- e. **Lawn Chemicals.** No lawn chemicals, including fertilizers and compost, herbicides, and pesticides may be used in the Riparian Buffer Zone. An exception to this restriction is for the control of invasive plants by, or under the direction, of a public agency.
- f. **Alteration of topography** through excavation, grading and/or placement of fill is not allowed unless permitted per Section 2 (c). Excavation for impervious surfaces and/or development allowed per Section 2 (c) shall limit the disturbed area to the extent possible, and shall be conducted in accordance with applicable low impact development best management practices per the standard of care at the time the work is conducted.

3. Conservation Easement Boundary: The boundary of the Riparian Buffer Zone will be considered as shown in **Exhibit B** and as described in **Exhibit C**.

4. Grantor's Reserved Rights: The Grantor expressly reserves for himself, his personal representatives, heirs, successors or assigns, the right to continue the use of the property for all purposes not inconsistent with this Conservation Easement, including, but not limited to, the right to quiet enjoyment of the Property, the rights of ingress and egress, the right to hunt, fish, trap, and hike on the Property, the right to sugaring, the right to sell, transfer, gift or otherwise convey the Property, in whole or in part, provided such sale, transfer or gift conveyance is subject to the terms of, and shall specifically reference, this Conservation Easement. The Grantor shall reserve the right to maintain a view from the existing residence on the property towards the Historic Church located on the northeast corner of the intersection of Route 2 and North Williston Road, and has requested plantings within 75-feet of the current Route 2 (Williston Road) Right of Way have a maximum full

grown height of 20-feet. The Grantor shall reserve the right to remove or trim planting that exceed a height of 20-feet within 75-feet of the current Route 2 Right of Way to maintain this view.

5. Grantee's Reserved Rights: The Grantee or its authorized representatives, successors and assigns shall have the right to enter upon the Property in a reasonable manner and at reasonable times so as to assure compliance with the provisions of this Conservation Easement, and to maintain and inspect plantings; and for the purpose of inspecting said property to determine if the Grantor, or his personal representatives, heirs, successors, or assigns, is complying with the terms, conditions, restrictions, and purposes of this Conservation Easement. The Grantee shall also have the right to enter and go upon the Property for purposes of making scientific or educational observations and studies, and taking samples. The easement rights granted herein do not include public access rights. In exercising these rights, Grantee shall undertake no activity that will interfere with or compromise the use of the remaining property by Grantor, their heirs and assigns, in a quiet, peaceful and safe manner.

6. Enforcement and Remedies:

- a. To accomplish the purposes of this Easement, Grantee is allowed to prevent any activity on or use of the Property that is inconsistent with the purposes of this Easement and to require the restoration of such areas or features of the Property that may be damaged by such activity or use. Upon any breach of the terms of this Conservation Easement by Grantor that comes to the attention of the Grantee, the Grantee shall notify the Grantor in writing of such breach. The Grantor shall have 30 days after receipt of such notice to correct the conditions constituting such breach. If the breach remains uncured after 30 days, the Grantee may enforce this Conservation Easement by appropriate legal proceedings including damages, injunctive and other relief. Notwithstanding the foregoing, the Grantee reserves the immediate right, without notice, to obtain a temporary restraining order, injunctive or other appropriate relief if the breach of the term of this Conservation Easement is or would irreversibly or otherwise materially impair the benefits to be derived from this Conservation Easement. The Grantor and Grantee acknowledge that under such circumstances damage to the Grantee would be irreparable and remedies at law will be inadequate. The rights and remedies of the Grantee provided hereunder shall be in addition to, and not in lieu of, all other rights and remedies available to Grantee in connection with this Conservation Easement. The costs of a breach, correction or restoration, including the Grantee's expenses, court costs, and attorneys' fees, shall be paid by Grantor, provided Grantor is determined to be responsible for the breach. The enforcement right and remedies set forth in this paragraph 6(a) shall be available for Grantor in the event Grantee allows activities or use of the property in a manner that is inconsistent with the purposes of this easement or infringes reserved rights under this grant.
- b. No failure on the part of the Grantee or Grantor to enforce any covenant or provision hereof shall discharge or invalidate such covenant or any other covenant, condition, or provision hereof or affect the right to Grantee or Grantor to enforce the same in the event of a subsequent breach or default.
- c. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Property resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, war,

acts of God or third parties, except Grantor's lessees or invitees; or from any prudent action taken in good faith by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life, damage to property or harm to the Property resulting from such causes.

7. Compensation: Riparian Buffer Zone Conservation Easement compensation shall be a lump sum payment of four thousand, three hundred and fifty dollars (\$4,350) to the Grantor at the signing of this grant. Fair and just compensation for this grant is based on the appraisal by Richard R. Larson of Larson Appraisal Company dated October 21, 2011. The Grantor shall be provided a copy of this appraisal and the Letter of Transmittal summarizing the appraisal results is attached hereto as **Exhibit D**.

8. Miscellaneous:

- a. Warranty. Grantor warrants, covenants and represents that it owns the Property in fee simple, and that Grantor either owns all interests in the Property which may be impaired by the granting of this Conservation Easement or that there are no outstanding mortgages, tax liens, encumbrances, or other interests in the Property which have not been expressly subordinated to this Conservation Easement. Grantor further warrants that Grantee shall have the use of and enjoy all the benefits derived from and arising out of this Conservation Easement, and that Grantor will warrant and defend title to the Property against the claims of all persons.
- b. Subsequent Transfers. The Grantor agrees to incorporate the terms of this Conservation Easement in any deed or other legal instrument that transfers any interest in all or a portion of the Property. The Grantor agrees to provide written notice of such transfer at least thirty (30) days prior to the date of the transfer. The Grantor and Grantee agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof and shall not be amended, modified or terminated without the prior written consent and approval of the Grantee.
- c. Entire Agreement and Severability. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings or agreements relating to the Conservation Easement. If any provision is found to be void or unenforceable by a court of competent jurisdiction, the remainder shall continue in full force and effect.
- d. Obligations of Ownership. Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Property. Grantor shall keep the Property free of any liens or other encumbrances for obligations incurred by Grantor. Grantee shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Property, except as expressly provided herein. Nothing herein shall relieve the Grantor of the obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.
- e. Extinguishment. In the event that changed conditions render impossible the continued use of the Property for the conservation purposes, this Conservation Easement may only be extinguished, in whole or in part, by judicial proceeding.

- f. Eminent Domain. Whenever all or part of the Property is taken in the exercise of eminent domain so as to substantially abrogate the Restrictions imposed by this Conservation Easement, Grantor and Grantee shall join in appropriate actions at the time of such taking to recover the full value of the taking, and all incidental and direct damages due to the taking.
- g. Proceeds. This Conservation Easement constitutes a real property interest immediately vested in Grantee. In the event that all or a portion of this Property is sold, exchanged, or involuntarily converted following an extinguishment or the exercise of eminent domain, Grantee shall be entitled to the fair market value of this Conservation Easement. The parties stipulate that the fair market value of this Conservation Easement shall be determined by multiplying the fair market value of the Property unencumbered by this Conservation Easement (minus any increase in value after the date of this grant attributable to improvements) by the ratio of the value of this easement at the time of this grant to the value of the Property (without deduction for the value of this Conservation Easement) at the time of this grant. The values at the time of this grant shall be the values used, or which would have been used, to calculate a deduction for federal income tax purposes, pursuant to Section 170(h) of the Internal Revenue Code (whether eligible or ineligible for such a deduction). Grantee shall use its share of the proceeds in a manner consistent with the purposes of this Conservation Easement.
- h. Notification. Any notice, request for approval, or other communication required under this Conservation Easement shall be sent by registered or certified mail, postage prepaid, to the following addresses (or such address as may be hereafter specified by notice pursuant to this paragraph):

**To Grantor:**

Richard A. and Karen S. Reed,  
8384 Williston Road  
Williston, VT 05495

**To Grantee:**

Town of Williston  
7900 Williston Road  
Williston, VT 05495  
Fax: 802.764.1140

- i. Failure of Grantee. If at any time Grantee is unable or fails to enforce this Conservation Easement, or if Grantee ceases to be a qualified grantee, and if within a reasonable period of time after the occurrence of one of these events Grantee fails to make an assignment pursuant to this Conservation Easement, then the Grantee's interest shall become vested in another qualified grantee in accordance with an appropriate proceeding in a court of competent jurisdiction.
- j. Amendment. This Conservation Easement may be amended, but only in a writing signed by all parties hereto, and provided such amendment does not affect the qualification of this Conservation Easement or the status of the Grantee under any applicable laws, and is consistent with the conservation purposes of this grant.

TO HAVE AND TO HOLD the said rights and easements perpetually unto Grantee for the aforesaid purposes.

IN TESTIMONY WHEREOF, the Grantor has hereunto set his hand and seal, the day and year first above written.

IN WITNESS WHEREOF, the Grantor has caused this instrument to be subscribed, this \_\_\_\_ day of \_\_\_\_\_, 2011, by \_\_\_\_\_ and duly authorized agent.

\_\_\_\_\_  
Grantor's Signature

\_\_\_\_\_  
Grantor's Signature

Richard A. and Karen S. Reed,  
8384 Williston Road  
Williston, VT 05495

STATE OF VERMONT  
CHITTENDEN COUNTY, SS.

At Williston, Vermont in Chittenden County, this \_\_\_\_ day of \_\_\_\_\_, 2011, personally appeared Grantor acknowledged the foregoing instrument by them as owner and duly authorized agent of the \_\_\_\_\_ subscribed, to be their free act and deed and the free act and deed of the \_\_\_\_\_.

Before me: \_\_\_\_\_  
NOTARY PUBLIC

My commission expires: \_\_\_\_\_

**EXHIBIT A: Property Deed**



# Know all Persons by These Presents

That I,

DIANA B. FARRELL (formerly Diana B. Reed)

of Centerville in the County of Barnstable  
and State of Commonwealth of Massachusetts Grantor, in the consideration of  
- - - Ten and More - - - Dollars  
paid to my full satisfaction by

RICHARD A. REED, JR. and KAREN S. REED

of Colchester in the County of Chittenden  
and State of Vermont Grantees, by these presents, do  
freely Give, Grant, Sell, Convey and Confirm unto the said Grantees

RICHARD A. REED, JR. and KAREN S. REED,  
Husband and Wife, as Tenants by the Entirety,

and their heirs and assigns forever, a  
certain piece of land in Williston in the  
County of Chittenden and State of Vermont, described as  
follows, viz:

Being a parcel of land situated on Route 2 in the Town of Williston,  
and being all and the same lands and premises conveyed to Diana B.  
Reed (now Diana B. Farrell) by Quit Claim Deed of Richard A. Reed  
dated April 18, 1985 and recorded in Volume 74, Pages 72-74 of the  
Williston Town Land Records; ALSO, being a portion of the lands and  
premises conveyed to Richard A. Reed and Diana B. Reed (now Diana B.  
Farrell) by Executor's Deed of David W. Yandell, Executor under Will  
of Grant W. Miles dated August 28, 1974 and recorded in Volume 50,  
Pages 178-180 of said Williston Town Land Records.

Reference is hereby made to the above instruments and to their records  
and to all deeds and records therein referred, in further aid of this  
description.

The within conveyance is no part of my homestead premises.

Vermont Property Transfer Tax  
32 V.S.A. Chap. 231

**—ACKNOWLEDGMENT—**

Return Rec'd. Tax Paid—Board of Health Cert. Rec'd.—  
and the 3 Development Plans Act Cert. Rec'd.

Return No. 1718938  
Signed Arlene H. Demaree Clerk  
Date October 16, 1985

To have and to hold said granted premises, with all the privileges and appurtenances thereof, to the said Grantee s

RICHARD A. REED, JR. and KAREN S. REED,  
Husband and Wife, as Tenants by the Entirety,  
their

And I heirs and assigns, to their own use and behoof forever;  
the said Grantor

DIANA B. FARRELL

executors and administrators, do for myself and my heirs,  
covenant with the said Grantee s

RICHARD A. REED, JR. and KAREN S. REED, their

heirs and assigns, that until the ensembling of these presents I am  
the sole owner of the premises, and have good right and title to convey the same in  
manner aforesaid, that they are Free from every encumbrance;  
except as above-mentioned; and I

hereby engage to Warrant and Defend the same against all lawful claims  
whatever, except as above-mentioned.

In Witness Whereof, I hereunto set my hand and seal  
this 12th day of October A. D. 19 85.

In Presence of

D. Parker

Diana B. Farrell  
Diana B. Farrell  
(formerly Diana B. Reed)



Am. J. Rawette



Commonwealth of Massachusetts  
State of Vermont,  
Bennington, County

ss. At 12th day of October A. D. 19 85 this

DIANA B. FARRELL

personally appeared, and SHE acknowledged this instrument, by  
HER sealed and subscribed, to be HER free act and deed.

Before me Mantell J. Lorne

Notary Public  
(Title)

My Commission expires Sept 22, 1989

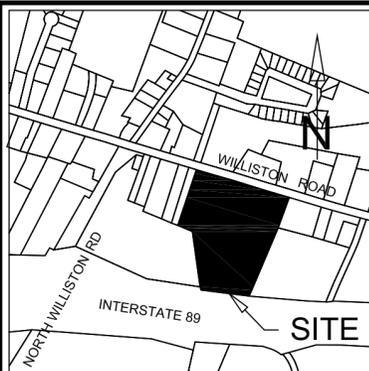
Wilmington town clerks office  
Received for Record

October 16 A. D. 19 85

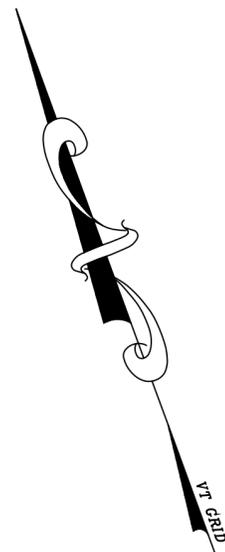
at 4 o'clock 50 minutes 8 M  
and recorded in Book 74 Pages 459-460

Attest:  
Arlene H. Degree Town Clerk

**EXHIBIT B: Allen Brook Riparian Buffer Easement Plan**

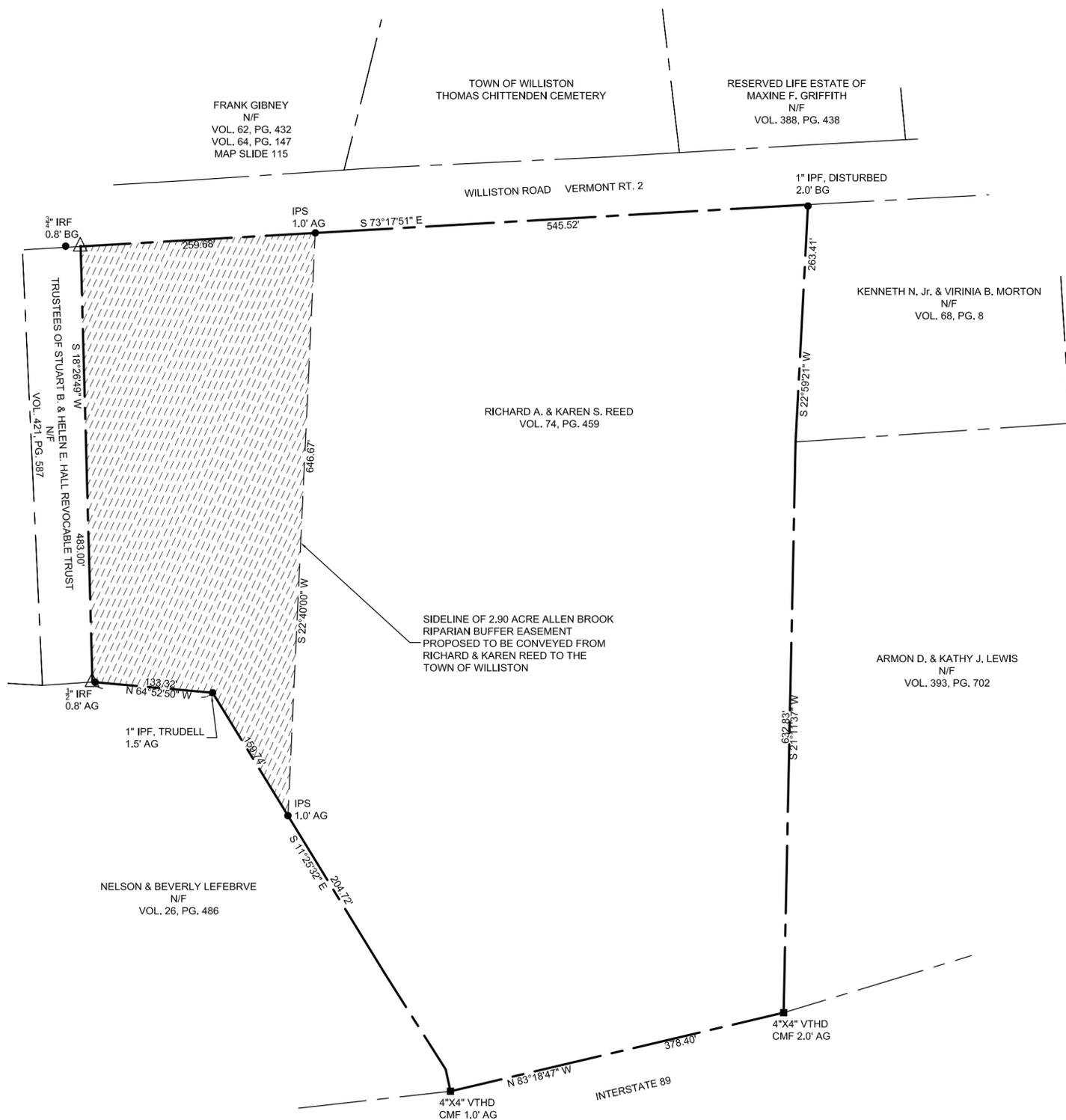


**LOCATION PLAN**  
N.T.S.



**LEGEND**

- — — — — PROJECT PROPERTY LINE
- - - - - SIDELINE OF EASEMENT
- N/F NOW OR FORMERLY
- IPF IRON PIPE FOUND
- IRF IRON ROD FOUND
- IPS 1" IRON PIPE, 1.0' AG, WITH A METAL FENCE POST WITNESS
- VTHD VERMONT HIGHWAY DEPARTMENT CONCRETE MONUMENT FOUND
- CMF
- AG ABOVE GRADE
- BG BELOW GRADE
- △ SURVEY POINT - NO MARKER SET

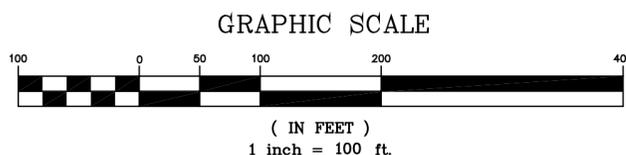


**NOTES:**

1. THIS EASEMENT PLAN IS BASED ON A PLAN ENTITLED "PLAT OF LAND OF RICHARD & KAREN REED, U.S. ROUTE 2, WILLISTON, VERMONT, PROPERTY PLAT", DATED 7-21-87, BY TRUDELL CONSULTING ENGINEERS, INC. AS RECORDED IN SLIDE 218.
2. THE PURPOSE OF THIS PLAN IS TO DEPICT RIPARIAN BUFFER EASEMENTS PROPOSED TO BE CONVEYED FROM RICHARD & KAREN REED TO THE TOWN OF WILLISTON.
3. THE CORNERS OF THE PROPOSED EASEMENT WILL BE MONUMENTED AS DEPICTED ON THIS PLAN BY 1" DIAMETER IRON PIPES WITH PLASTIC CAPS MARKED LS 656, SET IN THE GROUND WITH STEEL FENCE POSTS SET IN THE GROUND WITHIN 1' OF THE IRON PIPES.

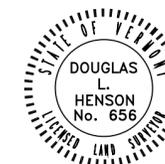
**OWNERS**

RICHARD A. & KAREN S. REED  
WILLISTON, VT 05495  
VOL. 74, PG. 459



TO THE BEST OF MY KNOWLEDGE, THIS PLAT IS BASED ON INFORMATION ABSTRACTED FROM PERTINENT DEEDS AND/OR OTHER OFFICIAL RECORDS, AND MARKERS EVIDENT ON THE PROPERTY, AND CONFORMS WITH THE REQUIREMENTS OF 27 VSA & 1403. DATED

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2011



**TOWN CLERK'S OFFICE**

TOWN OF WILLISTON, VT.  
RECEIVED FOR RECORD AT \_\_\_\_\_ O'CLOCK \_\_\_\_ M.,  
\_\_\_\_\_, 2011 AND RECORDED IN SLIDE# \_\_\_\_\_  
ATTEST: \_\_\_\_\_

TOWN CLERK

date	description	by
<b>REVISIONS</b>		
THESE PLANS WITH LATEST REVISIONS SHOULD ONLY BE USED FOR THE PURPOSE SHOWN BELOW:		# OF SHEETS
<input type="checkbox"/> SKETCH/CONCEPT		
<input type="checkbox"/> PRELIMINARY		
<input checked="" type="checkbox"/> FINAL		1
<input type="checkbox"/> RECORD DRAWING		
<b>RICHARD A. AND KAREN S. REED</b>		proj. no. 11084C
US ROUTE 2 WILLISTON, VERMONT		survey ADP
<b>ALLEN BROOK RIPARIAN BUFFER EASEMENT PLAN</b>		design DLH
		drawn DLH
		checked DJG/DLH
		date 10-27-11
		scale 1" = 100'
		sht. no. PL
<b>LAMOUREUX &amp; DICKINSON</b> Consulting Engineers, Inc. 14 Morse Drive Essex Junction, VT 05452 Tel: 802-878-4450		11084C-PL.DWG

**EXHIBIT C: Description of Riparian Buffer Zone Conservation Easement**

Description of an Easement parcel  
of lands of Richard and Karen Reed  
proposed to be conveyed to the Town of Williston, Vt.

Being a 2.90 acre easement parcel located on the southerly side of US Route 2, and being more particularly described as follows:

Beginning at point in the southerly sideline of US Route 2, said point being marked by an iron pipe, and being the northeasterly corner of lands of the Trustees of the Stuart and Helen Hall Revocable Trust.

Thence proceeding S 73<sup>0</sup> 17' 51" E along the southerly sideline of US Route 2 for a distance of 259.68' to a point, said point being marked by an iron pipe and being in the southerly sideline of US Route.

Thence proceeding S 22<sup>0</sup> 40' 00" W for a distance of 646.67' to a point, said point being marked by an iron pipe.

Thence proceeding N 11<sup>0</sup> 25' 32" W for a distance of 159.74' to a point, said point being marked by an iron pipe.

Thence proceeding N 64<sup>0</sup> 52' 50" W for a distance of 133.32' to a point, said point being marked by an iron pipe.

Thence proceeding N 18<sup>0</sup> 26' 49" E for a distance of 483.00' to the point of beginning.

Said lands are depicted on a plan entitled "Lands of Richard and Karen Reed, US Route 2, Williston, Vermont, Allen Brook Riparian Buffer Easement Plan" dated 10-27-11, by Lamoureux & Dickinson Consulting Engineers, Inc., 14 Morse Drive, Essex Junction, VT.

**EXHIBIT D: Conservation Easement Land Appraisal Letter of Transmittal**

**Letter of Transmittal**

Richard R. Larson  
Larson Appraisal Company  
69 South Street  
Wells, Vermont 05774  
Phone/FAX 802-645-0865

October 21, 2011

Jessica Andreoletti  
Town Planner  
Town of Williston  
7900 Williston Road  
Williston, Vermont 05495

**RE: 2.9-acre portion of the Richard and Karen Reed property**  
8384 Williston Road  
Town of Williston  
Chittenden County, Vermont

Dear Ms. Andreoletti,

As requested, I am pleased to submit the attached appraisal of a portion of the Richard and Karen Reed property, reported in a summary report. The appraisal is prepared in anticipation of the purchase by the town of a conservation easement on a 2.9-acre portion of the Reed land that is on the south side of Williston Road, also known as Vermont Route 2. The opinion of market value is rendered as of the date of physical inspection: October 5, 2011. Jessica Andreoletti, Williston Town Planner, provided specific property information and informed me that she has a letter from the landowner granting permission to inspect the property.

The subject is a portion of a 14.1-acre parcel of land improved with a dwelling on the south side of the road. It is the intent of the town to make an offer to purchase a conservation easement on a 2.9-acre parcel on the western edge of the 14.1-acre parcel.

The appraisal was made and reported in conformity with the Uniform Standards of Professional Appraisal Practice (2010-2011). The appraiser made a personal inspection of the appraised property which is the subject of this report and inspected the comparable sales used in developing the opinion of market value.

To this end, I have conducted an analysis of the physical aspects of the subject property, and have reviewed relevant market and economic considerations that affect the value of the real estate. Enclosed are descriptions of the approaches relied upon in arriving at the valuation estimates.

Based on my analysis of the subject property, it is my opinion that the loss in market value of the 14.1-acre Reed parcel due to the establishment of the proposed conservation easement, as of October 5, 2011, is estimated at \$4,350.

**Conclusion of Easement Value**

Contributory Value, 2.9-Acres, Before Easement:	\$4,350
Contributory Value, 2.9-Acres, After Easement:	<u>\$ 0</u>
Loss in Market Value due to the Easement:	\$4,350

Thank you for the opportunity to provide my professional services. If I can be of further assistance in this matter, please do not hesitate to contact me.

Respectfully,



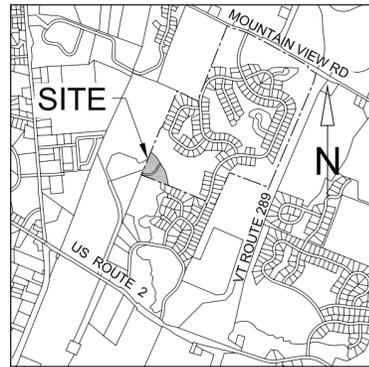
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Richard R. Larson  
Vermont Certified General Real Estate Appraiser, License #80-0000177

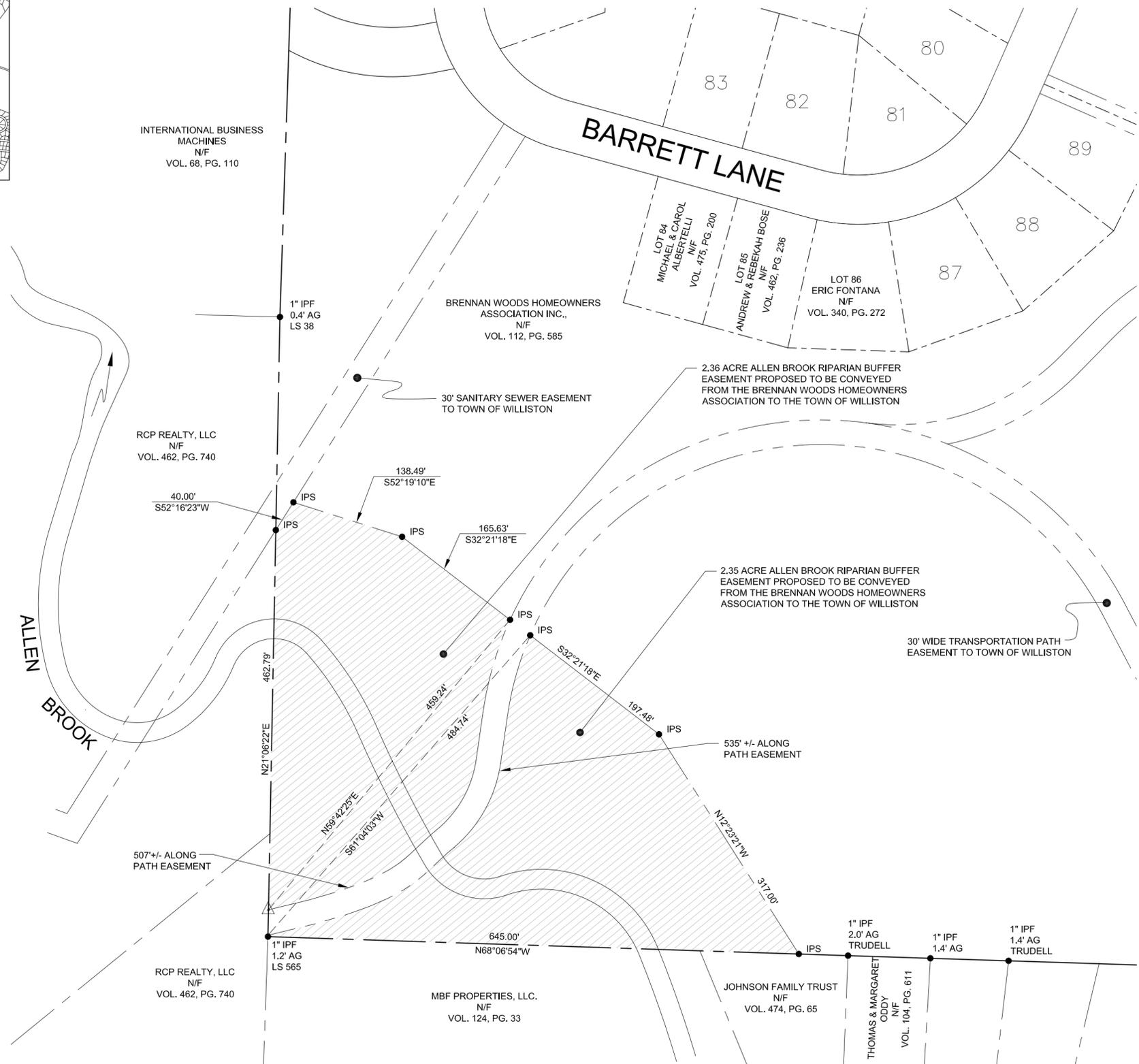
# Appendix F

## Conservation Easement Mapping





LOCATION PLAN  
N.T.S.



**LEGEND**

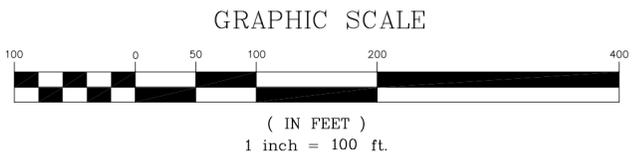
- PROJECT PROPERTY LINE
- - - SIDELINE OF EASEMENT
- N/F NOW OR FORMERLY
- IPF IRON PIPE FOUND
- IPS IRON PIPE TO BE SET
- AG ABOVE GRADE
- BG BELOW GRADE
- △ SURVEY POINT - NO MARKER SET

**NOTES:**

1. THIS EASEMENT PLAN IS BASED ON A PLAN ENTITLED "BRENNAN WOODS, A PLANNED RESIDENTIAL DEVELOPMENT, MOUNTAIN VIEW ROAD, WILLISTON, VERMONT, REVISED OVERALL PROPERTY PLAT", DATED 5-9-95, LAST REVISED 8-16-02, BY LAMOUREUX, STONE & O'LEARY AS RECORDED IN SLIDE XXX.
2. THE PURPOSE OF THIS PLAN IS TO DEPICT RIPARIAN BUFFER EASEMENTS PROPOSED TO BE CONVEYED FROM THE BRENNAN WOODS HOMEOWNERS ASSOCIATION TO THE TOWN OF WILLISTON.
3. THE CORNERS OF THE PROPOSED EASEMENT WILL BE MONUMENTED AS DEPICTED ON THIS PLAN BY 1" DIAMETER IRON PIPES WITH PLASTIC CAPS MARKED LS 656, SET IN THE GROUND WITH STEEL FENCE POSTS SET IN THE GROUND WITHIN 1' OF THE IRON PIPES.

**TOWN CLERK'S OFFICE**

TOWN OF WILLISTON, VT.  
RECEIVED FOR RECORD AT \_\_\_\_\_ O'CLOCK \_\_\_\_ M.,  
\_\_\_\_\_, 2011 AND RECORDED IN SLIDE# \_\_\_\_\_  
ATTEST: \_\_\_\_\_  
TOWN CLERK

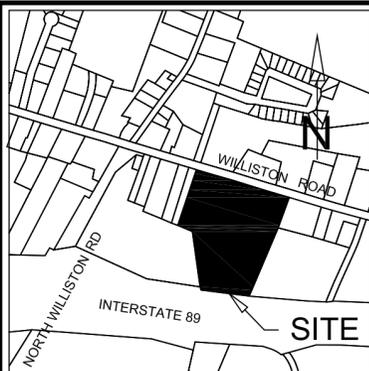


**OWNERS**

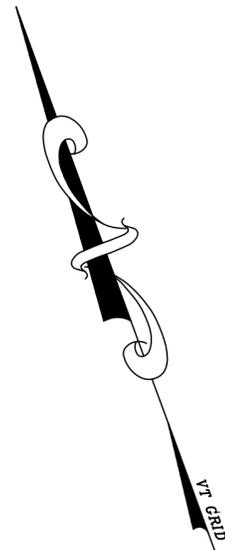
BRENNAN WOODS HOMEOWNERS ASSOCIATION INC., WILLISTON, VT 05495 VOL. 112, PAGE 585.

TO THE BEST OF MY KNOWLEDGE, THIS PLAT IS BASED ON INFORMATION ABSTRACTED FROM PERTINENT DEEDS AND/OR OTHER OFFICIAL RECORDS, AND MARKERS EVIDENT ON THE PROPERTY, AND CONFORMS WITH THE REQUIREMENTS OF 27 VSA & 1403. THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2011

Date	Description	By
REVISIONS		
THESE PLANS WITH LATEST REVISIONS SHOULD ONLY BE USED FOR THE PURPOSE SHOWN BELOW:		# OF SHEETS
<input type="checkbox"/>	SKETCH/CONCEPT	
<input type="checkbox"/>	PRELIMINARY	
<input checked="" type="checkbox"/>	FINAL	1
<input type="checkbox"/>	RECORD DRAWING	
LANDS OF BRENNAN WOODS HOMEOWNERS ASSOCIATION INC. COMMON SPACE MOUNTAINVIEW ROAD WILLISTON, VERMONT		proj. no. 11084D survey ADP design OTHERS
<b>RIPARIAN BUFFER EASEMENT PLAN</b>		drawn DLH checked ABR/DLH date 11-8-11 scale 1" = 100'
<b>LD LAMOUREUX &amp; DICKINSON</b> Consulting Engineers, Inc. 14 Morse Drive Essex Junction, VT 05452 Tel: 802-878-4450		sht. no. <b>PL</b> 11084D-PL-DWG

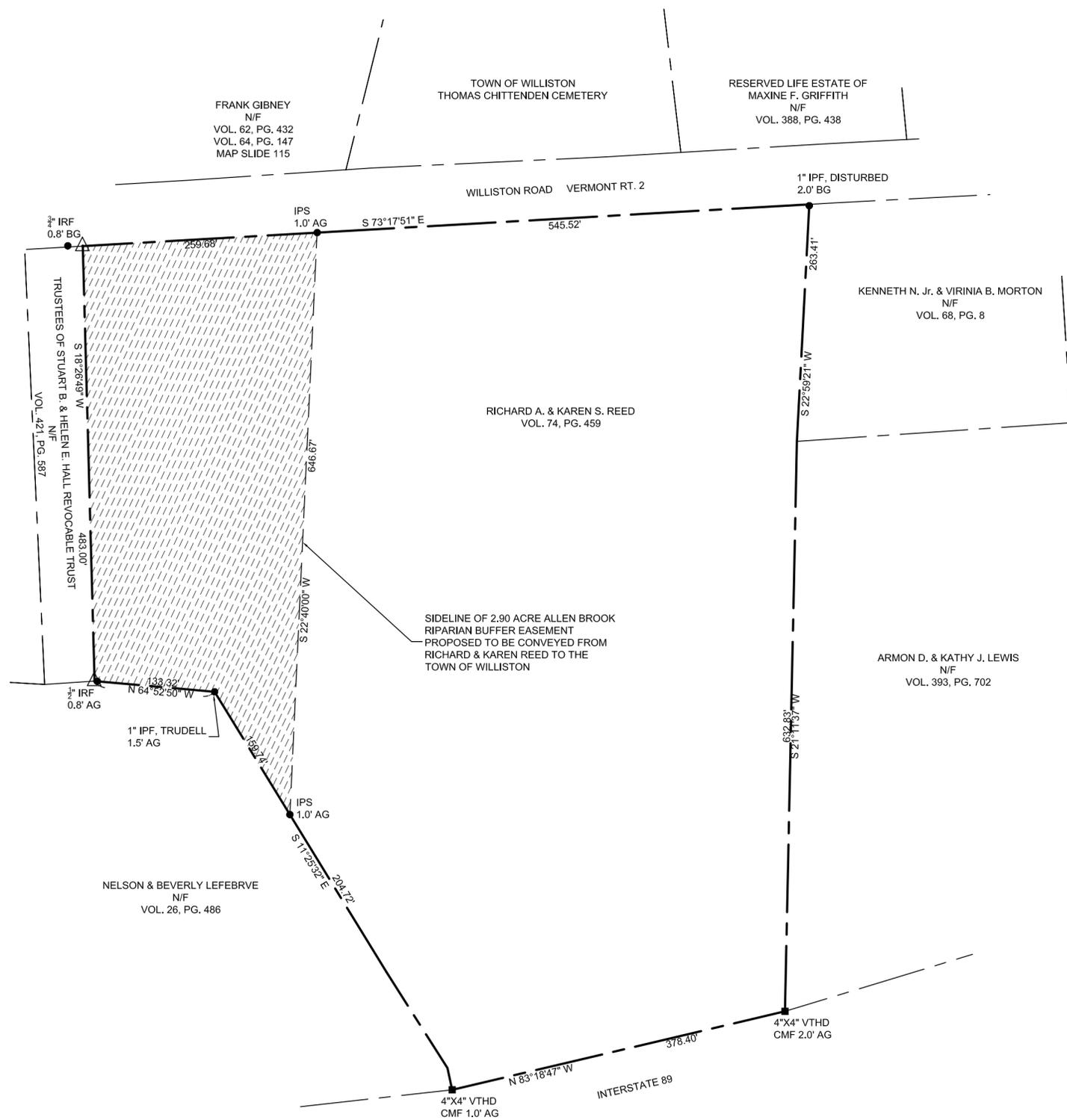


**LOCATION PLAN**  
N.T.S.



**LEGEND**

- — — — — PROJECT PROPERTY LINE
- - - - - SIDELINE OF EASEMENT
- N/F NOW OR FORMERLY
- IPF IRON PIPE FOUND
- IRF IRON ROD FOUND
- IPS 1" IRON PIPE, 1.0' AG, WITH A METAL FENCE POST WITNESS
- VTHD VERMONT HIGHWAY DEPARTMENT CONCRETE MONUMENT FOUND
- CMF
- AG ABOVE GRADE
- BG BELOW GRADE
- △ SURVEY POINT - NO MARKER SET

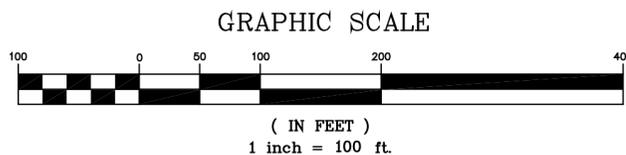


**NOTES:**

1. THIS EASEMENT PLAN IS BASED ON A PLAN ENTITLED "PLAT OF LAND OF RICHARD & KAREN REED, U.S. ROUTE 2, WILLISTON, VERMONT, PROPERTY PLAT", DATED 7-21-87, BY TRUDELL CONSULTING ENGINEERS, INC. AS RECORDED IN SLIDE 218.
2. THE PURPOSE OF THIS PLAN IS TO DEPICT RIPARIAN BUFFER EASEMENTS PROPOSED TO BE CONVEYED FROM RICHARD & KAREN REED TO THE TOWN OF WILLISTON.
3. THE CORNERS OF THE PROPOSED EASEMENT WILL BE MONUMENTED AS DEPICTED ON THIS PLAN BY 1" DIAMETER IRON PIPES WITH PLASTIC CAPS MARKED LS 656, SET IN THE GROUND WITH STEEL FENCE POSTS SET IN THE GROUND WITHIN 1' OF THE IRON PIPES.

**OWNERS**

RICHARD A. & KAREN S. REED  
WILLISTON, VT 05495  
VOL. 74, PG. 459



TO THE BEST OF MY KNOWLEDGE, THIS PLAT IS BASED ON INFORMATION ABSTRACTED FROM PERTINENT DEEDS AND/OR OTHER OFFICIAL RECORDS, AND MARKERS EVIDENT ON THE PROPERTY, AND CONFORMS WITH THE REQUIREMENTS OF 27 VSA & 1403. DATED

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2011

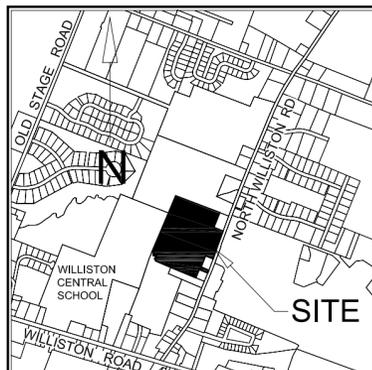


**TOWN CLERK'S OFFICE**

TOWN OF WILLISTON, VT.  
RECEIVED FOR RECORD AT \_\_\_\_\_ O'CLOCK \_\_\_\_ M.,  
\_\_\_\_\_, 2011 AND RECORDED IN SLIDE# \_\_\_\_\_  
ATTEST: \_\_\_\_\_

TOWN CLERK

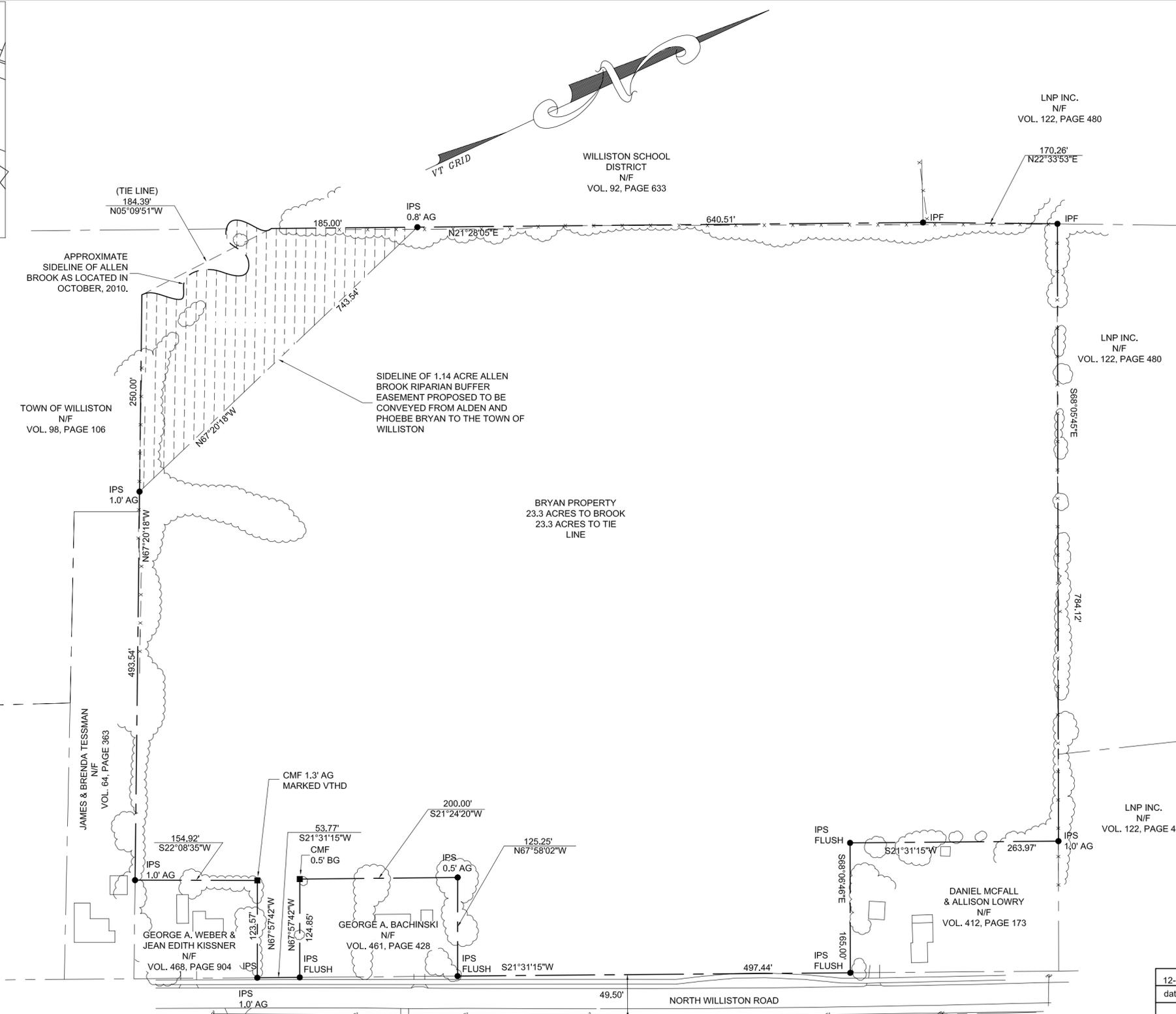
date	description	by
<b>REVISIONS</b>		
THESE PLANS WITH LATEST REVISIONS SHOULD ONLY BE USED FOR THE PURPOSE SHOWN BELOW:		# OF SHEETS
<input type="checkbox"/> SKETCH/CONCEPT		
<input type="checkbox"/> PRELIMINARY		
<input checked="" type="checkbox"/> FINAL		1
<input type="checkbox"/> RECORD DRAWING		
<b>RICHARD A. AND KAREN S. REED</b>		proj. no. 11084C
US ROUTE 2 WILLISTON, VERMONT		survey ADP
<b>ALLEN BROOK RIPARIAN BUFFER EASEMENT PLAN</b>		design DLH
		drawn DLH
		checked DJG/DLH
		date 10-27-11
		scale 1" = 100'
		sht. no. PL
<b>LAMOUREUX &amp; DICKINSON</b> Consulting Engineers, Inc. 14 Morse Drive Essex Junction, VT 05452 Tel: 802-878-4450		11084C-PL.DWG



**LOCATION PLAN**  
N.T.S.

**LEGEND**

- — — — — PROJECT PROPERTY LINE
- — — — — ABUTTING PROPERTY LINE
- — — — — SIDELINE OF EASEMENT
- N/F NOW OR FORMERLY
- IPF IRON PIPE FOUND
- IPS IRON PIPE SET
- CMF CONCRETE MONUMENT FOUND
- AG ABOVE GRADE
- x x x x x REMNANTS OF BARBED WIRE FENCE ON GROUND AND IN TREES



**NOTES:**

- THIS PLAT WAS COMPILED FROM FIELD SURVEYS AND RECORD RESEARCH INCLUDING THE USE OF THE FOLLOWING PLATS:  
 A. "SURVEY FOR ALDEN T. BRYAN IN TOWN OF WILLISTON." BY JOHN A. MARSH, L.S., DATED MARCH 8, 1965 AND RECORDED IN VOL. 30, PAGE 96 OF THE WILLISTON LAND RECORDS.  
 B. "LANDS OF JOHN K. LAMBERT, WILLISTON ROAD, WILLISTON, VT, TWO LOT SUBDIVISION" BY LAMOUREUX & STONE DATED 12-16-91, LAST REVISED 12-15-92 AS RECORDED IN SLIDE 353B.  
 C. "PROPERTY PLAT OF LANDS OF LNP INC." BY OLEARY-BURKE CIVIL ASSOCIATES, P.L.C. DATED 11-16-09.
- A SURVEY WAS COMPLETED IN JULY, 2006 AND OCTOBER, 2010, USING A COMBINATION OF GPS BASELINES AND CONVENTIONAL SURVEY EQUIPMENT. THE METHODS AND THE RESULTING ERROR MEET OR EXCEED THE MINIMUM PRECISION REQUIREMENTS FOR URBAN SURVEYS. BEARINGS ARE BASED ON SURVEY GRADE GPS OBSERVATIONS AT THE TIME OF THAT SURVEY.
- THE RIGHT-OF-WAY WIDTH FOR NORTH WILLISTON ROAD OF THREE RODS (49.5') IS BASED ON SURVEYS ALONG THE ROAD AND THE LOCATION OF PHYSICAL EVIDENCE.
- ALL IRON PIPES SET ARE 1" INSIDE DIAMETER, MONUMENTATION FOUND IS AS NOTED ON PLAN.

**GRAPHIC SCALE**



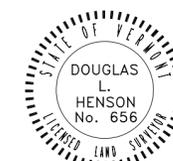
( IN FEET )  
1 inch = 100 ft.

**OWNERS**

ALDEN & PHOEBE BRYAN  
NORTH WILLISTON ROAD  
WILLISTON, VT 05495  
VOL. 30, PAGE 90

TO THE BEST OF MY KNOWLEDGE, THIS PLAT IS BASED ON INFORMATION ABSTRACTED FROM PERTINENT DEEDS AND/OR OTHER OFFICIAL RECORDS, AND MARKERS EVIDENT ON THE PROPERTY, AND CONFORMS WITH THE REQUIREMENTS OF 27 VSA & 1403. DATED

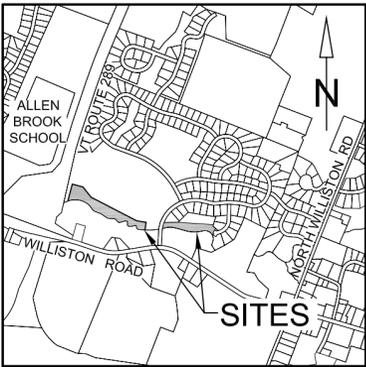
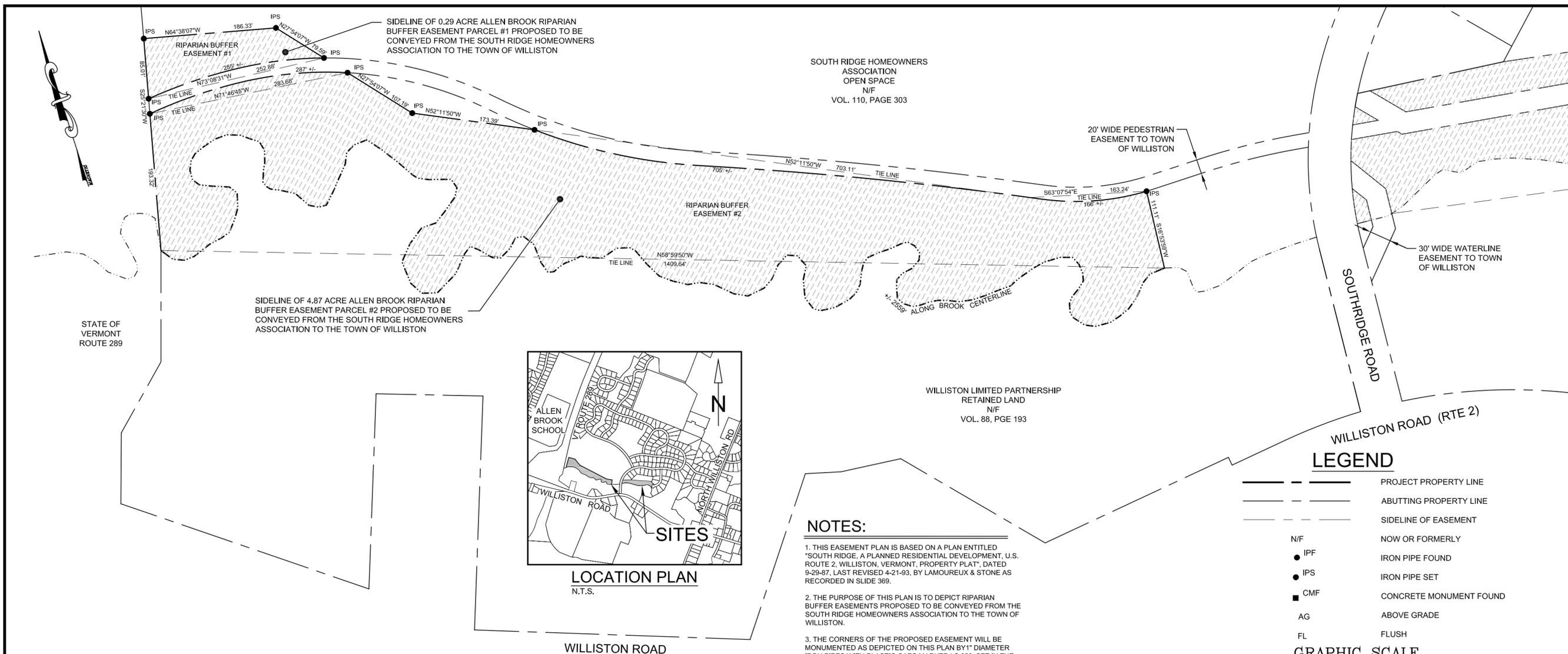
THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2011



**TOWN CLERK'S OFFICE**

TOWN OF WILLISTON, VT.  
RECEIVED FOR RECORD AT \_\_\_\_\_ O'CLOCK \_\_\_\_ M.,  
\_\_\_\_\_, 2011 AND RECORDED IN SLIDE# \_\_\_\_\_  
ATTEST: \_\_\_\_\_  
TOWN CLERK

12-12-11	GENERAL REVISIONS.	DLH
date	description	by
REVISIONS		
THESE PLANS WITH LATEST REVISIONS SHOULD ONLY BE USED FOR THE PURPOSE SHOWN BELOW:		# OF SHEETS
<input type="checkbox"/> SKETCH/CONCEPT		
<input type="checkbox"/> PRELIMINARY		
<input checked="" type="checkbox"/> FINAL		1
<input type="checkbox"/> RECORD DRAWING		
LANDS OF <b>ALDEN AND PHOEBE BRYAN</b>		proj. no. 11084B
NORTH WILLISTON ROAD WILLISTON, VERMONT		survey ADP
<b>BOUNDARY SURVEY</b>		design DLH
		drawn DLH
		checked DJG/DLH
		date 10-27-11
		scale 1"=100'
		sht. no. <b>PL</b>
 <b>LAMOUREUX &amp; DICKINSON</b> Consulting Engineers, Inc. 14 Morse Drive Essex Junction, VT 05452 Tel: 802-878-4450		11084B-PL.DWG



**NOTES:**

1. THIS EASEMENT PLAN IS BASED ON A PLAN ENTITLED "SOUTH RIDGE, A PLANNED RESIDENTIAL DEVELOPMENT, U.S. ROUTE 2, WILLISTON, VERMONT, PROPERTY PLAN", DATED 9-29-87, LAST REVISED 4-21-83, BY LAMOUREUX & STONE AS RECORDED IN SLIDE 369.
2. THE PURPOSE OF THIS PLAN IS TO DEPICT RIPARIAN BUFFER EASEMENTS PROPOSED TO BE CONVEYED FROM THE SOUTH RIDGE HOMEOWNERS ASSOCIATION TO THE TOWN OF WILLISTON.
3. THE CORNERS OF THE PROPOSED EASEMENT WILL BE MONUMENTED AS DEPICTED ON THIS PLAN BY 1" DIAMETER IRON PIPES WITH PLASTIC CAPS MARKED LS 656, SET IN THE GROUND WITH STEEL FENCE POSTS SET IN THE GROUND WITHIN 1' OF THE IRON PIPES.

**LEGEND**

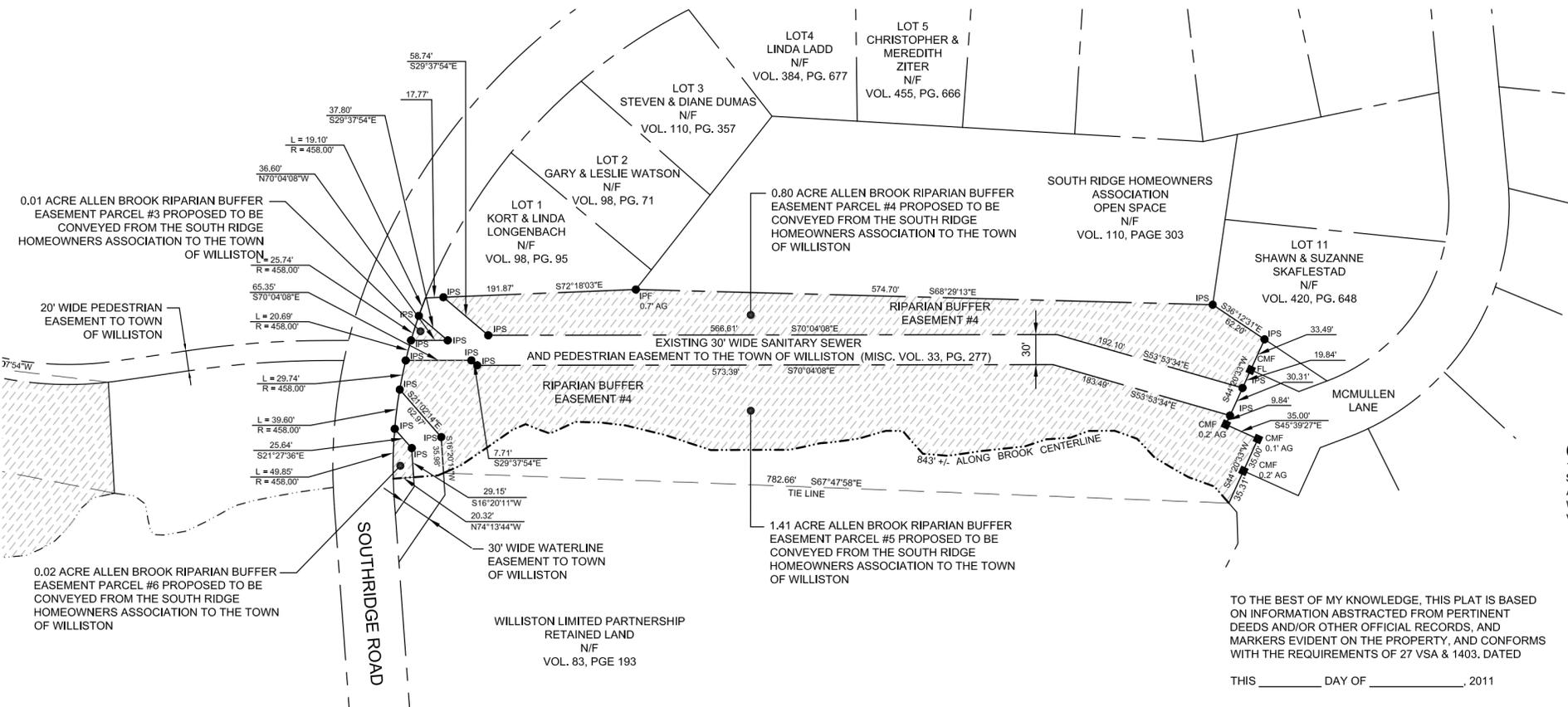
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---	ABUTTING PROPERTY LINE
---	SIDELINE OF EASEMENT
---	NOW OR FORMERLY
●	IRON PIPE FOUND
●	IRON PIPE SET
■	CONCRETE MONUMENT FOUND
AG	ABOVE GRADE
FL	FLUSH

**GRAPHIC SCALE**

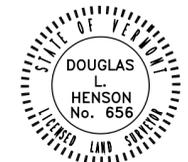
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( IN FEET )  
1 inch = 100 ft.

**TOWN CLERK'S OFFICE**  
TOWN OF WILLISTON, VT.  
RECEIVED FOR RECORD AT \_\_\_\_\_ O'CLOCK \_\_\_\_ M.,  
\_\_\_\_\_, 2011 AND RECORDED IN SLIDE# \_\_\_\_\_  
ATTEST: \_\_\_\_\_  
TOWN CLERK



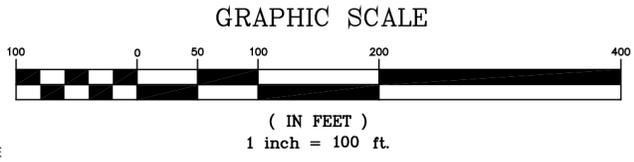
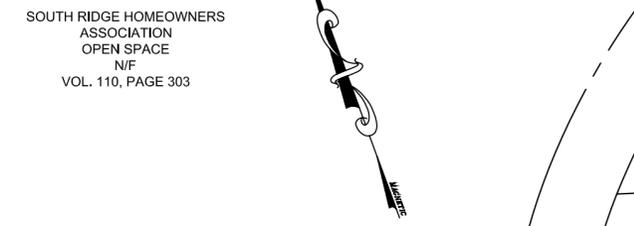
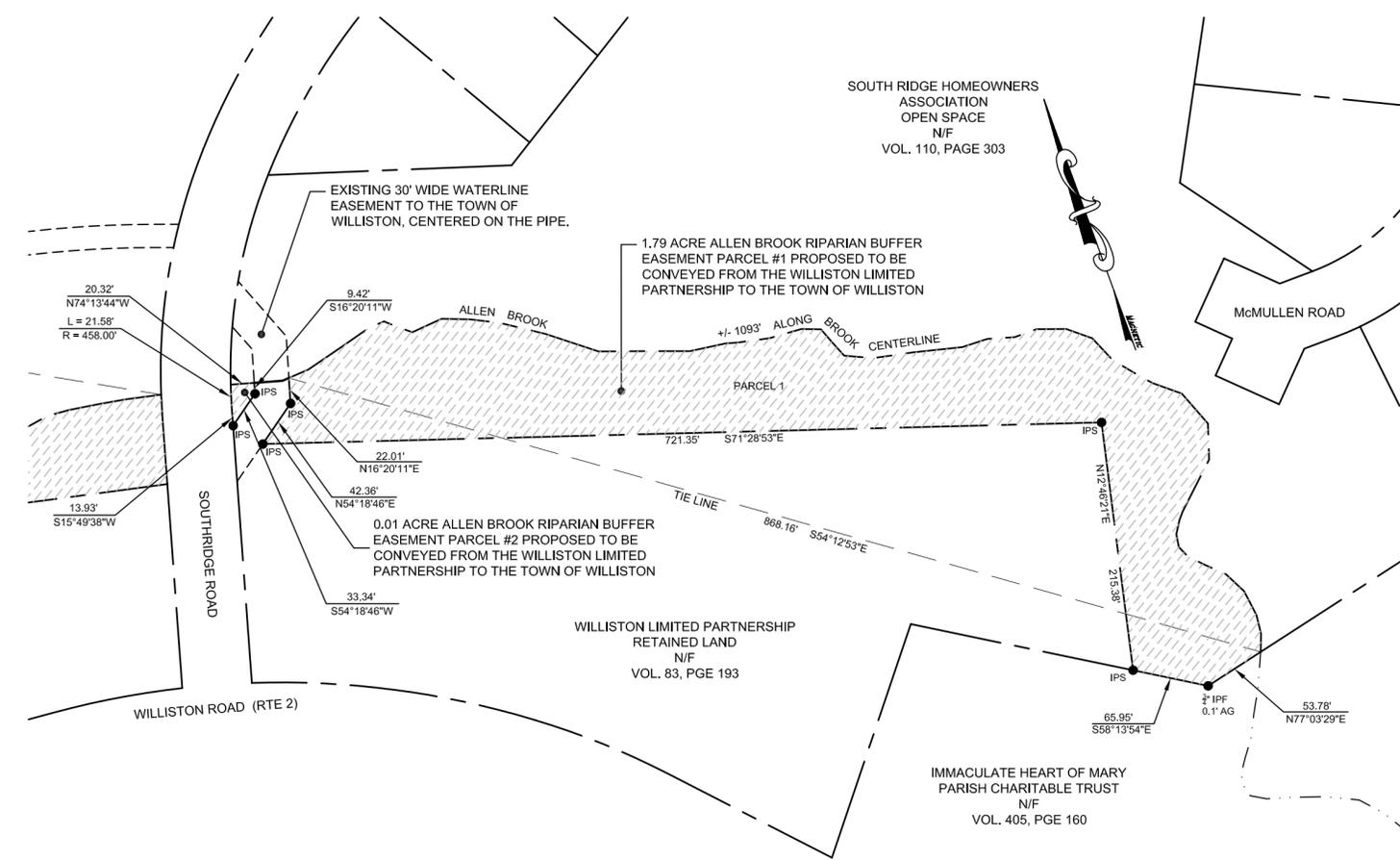
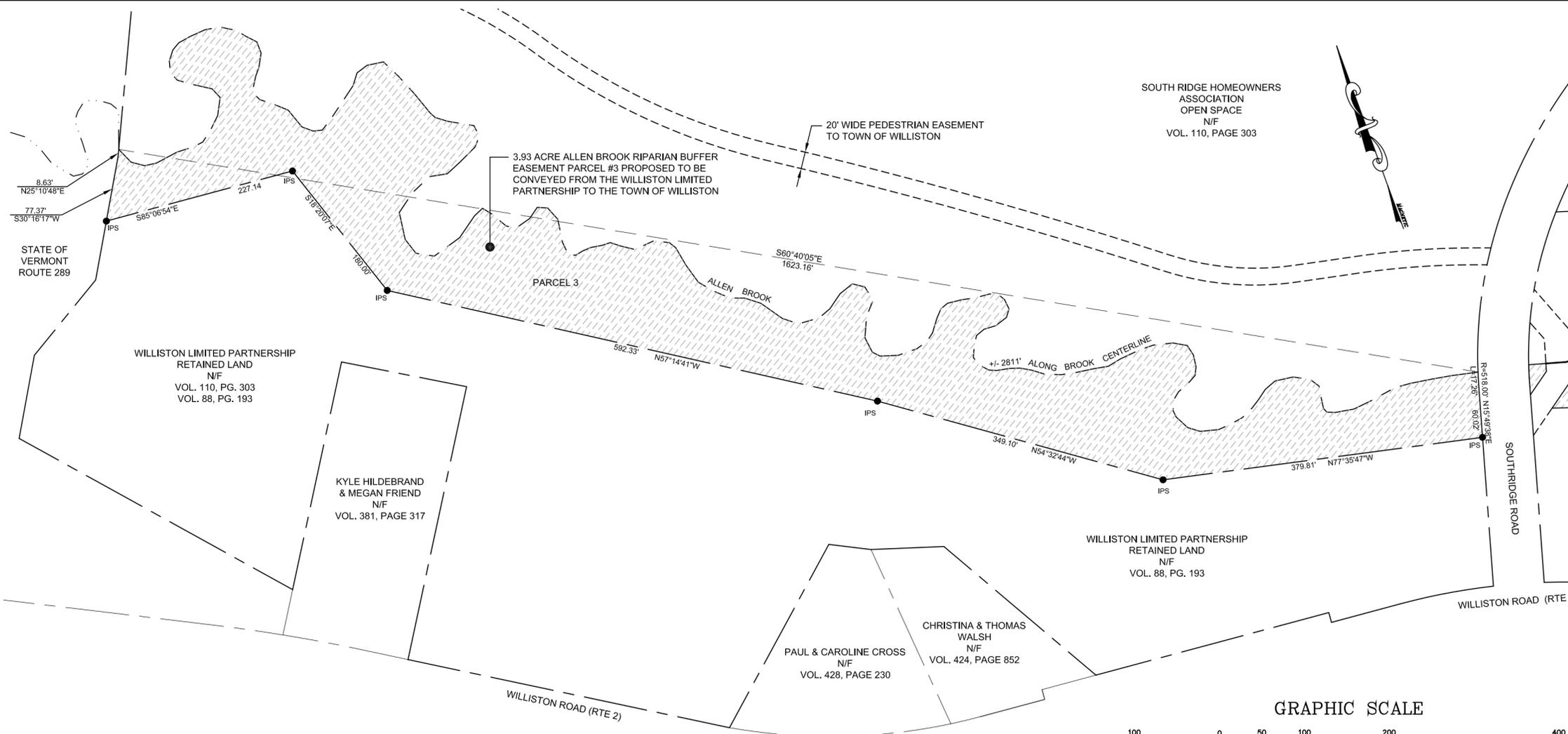
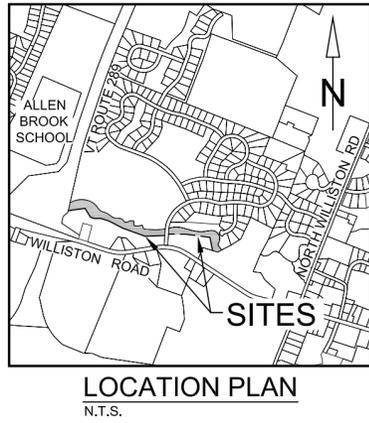
**OWNERS**  
SOUTH RIDGE HOMEOWNERS ASSOCIATION  
WILLISTON, VT 05495  
VOL. 110, PAGE 303.



TO THE BEST OF MY KNOWLEDGE, THIS PLAT IS BASED ON INFORMATION ABSTRACTED FROM PERTINENT DEEDS AND/OR OTHER OFFICIAL RECORDS, AND MARKERS EVIDENT ON THE PROPERTY, AND CONFORMS WITH THE REQUIREMENTS OF 27 VSA & 1403. DATED  
THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2011

date	description	by
<b>REVISIONS</b>		
THESE PLANS WITH LATEST REVISIONS SHOULD ONLY BE USED FOR THE PURPOSE SHOWN BELOW:		
<input type="checkbox"/>	SKETCH/CONCEPT	# OF SHEETS
<input type="checkbox"/>	PRELIMINARY	
<input checked="" type="checkbox"/>	FINAL	1
<input type="checkbox"/>	RECORD DRAWING	
LANDS OF		
<b>SOUTH RIDGE HOMEOWNERS ASSOCIATION</b>		proj. no. 11084A
SOUTH RIDGE ROAD WILLISTON, VERMONT		survey ADP
<b>RIPARIAN BUFFER EASEMENT PLAN</b>		design OTHERS
		drawn DLH
		checked ABR/DLH
		date 10-27-11
		scale 1" = 100'
		sht. no. <b>RB-1</b>
		11084A-PL DWG

**LAMOUREUX & DICKINSON**  
Consulting Engineers, Inc.  
14 Morse Drive  
Essex Junction, VT 05452  
Tel: 802-878-4450



**LEGEND**

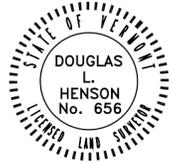
- PROJECT PROPERTY LINE
- ABUTTING PROPERTY LINE
- SIDELINE OF EASEMENT
- N/F NOW OR FORMERLY
- IPF IRON PIPE FOUND
- IPS IRON PIPE SET
- CMF CONCRETE MONUMENT FOUND
- AG ABOVE GRADE

**NOTES:**

1. THIS EASEMENT PLAN IS BASED ON A PLAN ENTITLED "SOUTH RIDGE, A PLANNED RESIDENTIAL DEVELOPMENT, U.S. ROUTE 2, WILLISTON, VERMONT, PROPERTY PLAT", DATED 9-29-87, LAST REVISED 4-21-93, BY LAMOUREUX & STONE AS RECORDED IN SLIDE 369.
2. THE PURPOSE OF THIS PLAN IS TO DEPICT RIPARIAN BUFFER EASEMENTS PROPOSED TO BE CONVEYED FROM THE WILLISTON LIMITED PARTNERSHIP TO THE TOWN OF WILLISTON.
3. THE CORNERS OF THE PROPOSED EASEMENT WILL BE MONUMENTED AS DEPICTED ON THIS PLAN BY 1" DIAMETER IRON PIPES WITH PLASTIC CAPS MARKED LS 656, SET IN THE GROUND WITH STEEL FENCE POSTS SET IN THE GROUND WITHIN 1" OF THE IRON PIPES.

**OWNERS**

WILLISTON LIMITED PARTNERSHIP  
WILLISTON, VT 05495  
VOL. 83, PAGE 193.



TO THE BEST OF MY KNOWLEDGE, THIS PLAT IS BASED ON INFORMATION ABSTRACTED FROM PERTINENT DEEDS AND/OR OTHER OFFICIAL RECORDS, AND MARKERS EVIDENT ON THE PROPERTY, AND CONFORMS WITH THE REQUIREMENTS OF 27 VSA & 1403. DATED

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2012

**TOWN CLERK'S OFFICE**

TOWN OF WILLISTON, VT.  
RECEIVED FOR RECORD AT \_\_\_\_\_ O'CLOCK \_\_\_\_\_ M.,  
\_\_\_\_\_, 2012 AND RECORDED IN SLIDE# \_\_\_\_\_  
ATTEST: \_\_\_\_\_  
TOWN CLERK

11-22-11	REDUCED EASEMENT AREAS	DLH
date	description	by
<b>REVISIONS</b>		
THESE PLANS WITH LATEST REVISIONS SHOULD ONLY BE USED FOR THE PURPOSE SHOWN BELOW:		# OF SHEETS
<input type="checkbox"/> SKETCH/CONCEPT		
<input type="checkbox"/> PRELIMINARY		
<input checked="" type="checkbox"/> FINAL		1
<input type="checkbox"/> RECORD DRAWING		
LANDS OF		proj. no.
<b>WILLISTON LIMITED PARTNERSHIP</b>		11084E
SOUTH RIDGE ROAD WILLISTON, VERMONT		survey
		ADP
		design
		OTHERS
		drawn
		DLH
		checked
		ABR/DLH
		date
		10-27-11
		scale
		1" = 100'
		sht. no.
		PL

**LAMOUREUX & DICKINSON**  
Consulting Engineers, Inc.  
14 Morse Drive  
Essex Junction, VT 05452  
Tel: 802-878-4450



# Appendix G

## Permitting and Supporting Documentation



October 11, 2011

Ms. Jessica Andreoletti  
Senior Environmental Planner  
Town of Williston  
7900 Williston Road  
Williston, Vermont 05495

Re: Restoration Plan for the Allen Brook Corridor  
Enhancement Project

Dear Ms. Andreoletti:

Thank you for providing me with the Allen Brook Corridor Restoration Plan September 2011 for our review. As noted, this review and approval will allow the project to be an Allowed Use under Sec. 6.23 of the revised Vermont Wetland Rules.

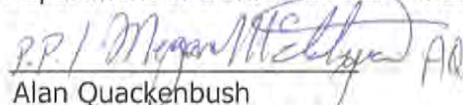
Based on the documentation provided, the planning process has been completed, and the project is ready for implementation: purchasing of land in the corridor; bank and floodplain cuts; and reforestation. We note that some reforestation/plantings have already been implemented. The bank and floodplain cuts are intended to re-connect the brook with the floodplain and associated wetlands. The riparian corridor conservation will also protect the wetlands from development encroachment.

The bank cuts and floodplain cuts work should be under the supervision of an experienced engineer or restoration consultant with special attention to site stabilization. Plantings should be of native species only, preferably from Vermont nurseries.

We also note that this is part of a stormwater management plan approved by our Department. Both the VT DEC Water Quality Division River management program and the US Army Corps of Engineers have no permit requirements for this project.

Therefore, the Vermont Wetlands Program approves the submitted "Restoration Plan for the Allen Brook Corridor Enhancement Project."

David K. Mears, Commissioner  
Department of Environmental Conservation

By:   
Alan Quackenbush  
Wetlands Program Manager





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 1  
1 CONGRESS STREET, SUITE 1100  
BOSTON, MASSACHUSETTS 02114-2023

SEP 22 2011

**Jim Fay**  
**General Manager**  
**Champlain Water District**  
**403 Queen City Park Road**  
**South Burlington, VT 05403**

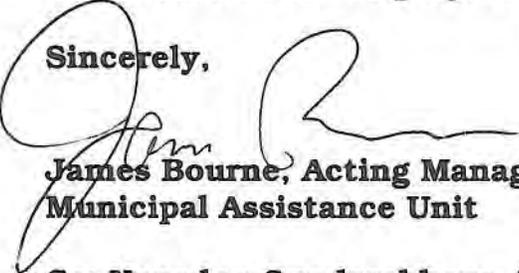
**Regarding: Chittendon County Stormwater Improvement Projects**  
**Allen Brook Corridor Enhancement Project**  
**EPA Projects XP-971226-01 and XP-97101101-01(Williston,**  
**VT)**

**Dear Mr. Fay:**

**This office has reviewed the environmental aspects of your proposed water pollution control project in compliance with 40 CFR Part 6, Procedures for Implementing the National Environmental Policy Act, Final Rule (Federal Register, September 19, 2007). We have determined that the project meets the criteria for a Categorical Exclusion.**

**We have prepared the required Categorical Exclusion and have distributed it in accordance with 40 CFR Part 6. We require that all applicants have a copy of this Categorical Exclusion and any supporting documentation in the office of their authorized representative for inspection by interested persons. If there is an indication of dissatisfaction with the way the environmental effects of the proposed project have been dealt with, our office should be notified immediately so that we can determine if modifications to the project are warranted.**

**Sincerely,**

  
**James Bourne, Acting Manager**  
**Municipal Assistance Unit**

**Cc: Nopadon Sundarabhaya, VTDEC**  
**U.S. Army Corps of Engineers**

**Enclosure**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 1  
1 CONGRESS STREET, SUITE 1100  
BOSTON, MASSACHUSETTS 02114-2023**

## **DETERMINATION OF CATEGORICAL EXCLUSION**

**To: All Interested Persons**

**Pursuant to 40 CFR Part 6, Procedures for implementing the National Environmental Policy Act, we have received an application for:**

**Champlain Water District  
EPA Project Number: XP-971226-01 and XP-97101101-01**

**to exempt a proposed action from the substantive environmental review requirements of EPA's National Environmental Policy Act.**

**The proposed action is for the Town of Williston, VT Allen Brook Corridor Enhancement Project located on the Allen Brook, an impaired stream that flows through the Town of Williston. This stormwater management project is a component of the overall Allen Brook Corridor Enhancement project .**

**The intended action meets the criteria for a Categorical Exclusion. Specifically, this action calls for the acquisition of land parcels, riparian corridor restoration and reforestation.**

**This action will help restore water quality in the Allen Brook. It will help protect the Allen Brook from further degradation due to continuing land development.**

**The estimated cost of this project is \$230,045.00.**

**Upon review of the submitted application, EPA has determined that the intended action meets the criteria for a Categorical Exclusion set forth in 40 CFR Part 6, Subpart B, Section 6.204 (a) (1) (ii). Specifically, the proposed "action relates to an existing infrastructure system that involves minor upgrading or minor expansion of system capacity or rehabilitation of the existing system and system components".**

**Furthermore, based on our review, none of the criteria which would result in the denial of a Categorical Exclusion are met.**

Therefore, I am granting the Categorical Exclusion from substantive environmental review as provided in 40 CFR Part 6, Subpart B, Section 6.204 (a) (1) (ii). This exclusion may be revoked at any time if:

- (1) The proposed action changes and fails to meet the requirements,
- (2) New evidence is presented which demonstrates serious local or environmental issues, or
- (3) Federal, State or Local laws are, or will be, violated .

Upon issuance of this determination, EPA may proceed with any appropriate administrative action. Comments relative to this decision may be submitted to EPA with a copy to the Vermont department of Environmental Conservation.

Further records in regard to this project are on file and are available for public review at the above office and at the offices of the Champlain Water District located in South Burlington, VT.



**Stephen S. Perkins, Director  
Office of Ecosystem Protection**

9/20/11

**Date**





The University of Vermont

July 27, 2011

Jessica Andreoletti  
Planner  
Town of Williston  
7900 Williston Road  
Williston, VT 05495

**RE: End of Field of Letter for Archaeological Phase I Site Identification Survey for the Proposed Allen Brook Restoration Project – Lefebvre-Southridge Cuts, Williston, Chittenden County, Vermont**

Dear Jessica:

From July 12-19, 2011, the University of Vermont Consulting Archaeology Program (UVM CAP) conducted an archaeological Phase I site identification survey for the proposed Allen Brook Restoration Project – Lefebvre-Southridge Cuts located in Williston, Chittenden County, Vermont (Figures 1 and 2). The proposed restoration project will accelerate the establishment of a stream forest buffer corridor, thereby reducing stormwater runoff and volume and providing food drops, shade, and habitat structure to the stream. The proposed project's Area of Potential Effects (APE) will include areas of bank and floodplain cutbacks and grading that are intended to rehabilitate the brook channel. A desk review by Dr. Charles Knight, Assistant Director of the UVM CAP, determined the proposed cut areas are archaeologically sensitive and therefore subsurface testing was recommended prior to any ground disturbance. As a result, the Phase I site identification survey was undertaken as part of the Section 106 permitting process for the project. A detailed description of the results of the Phase I survey, conclusions and recommendations are presented below.

## **Results**

### **Southridge Cuts**

The proposed Southridge cuts are located along a portion of Allen Brook north of Williston Road and west of Southridge Road (Figure 1). The proposed Southridge cuts include two bank cuts designated Bank Cut #1 and #2, and a Floodplain Cut #1 (see Figure 1). At the time of the Phase I survey, the location of the proposed bank and floodplain cuts were vegetated with tall brush and grass.

Bank Cut #1 is situated along a 1.5-2.0 m (4.9-6.6 ft) high terrace along the southern side of Allen Brook between approximate project distance 2,225 to 2,400 ft (see Figure 1). Two linear Transects, designated Transects 2 and 3, were used to sample Cut Bank 1. Transect 2 contained 6, 50 x 50 cm (20 x 20 in) in size, test pits spaced at 5 m (16 ft) intervals (Figure 3). Transect 3 was located 7.50 m (25 ft) to the northwest of the Transect 2 and contained 5 test pits spaced at 5.0 m (16 ft) intervals (see Figure 3). All of the test pits within Cut Bank #1 were excavated to

depths from 40-90 cm (16-36 in) below the ground surface. The schematic stratigraphic soil profiles excavated along Transect 2 included an uppermost 20-25 cm (8-10 in) thick dark grayish brown silt loam plowzone. Beneath the plowzone, a 5-7cm (2-3 in) thick light olive brown alluvial flood stratum was present. Olive brown, compact silt was encountered below the alluvial stratum. This soil unit was heavily oxidized. The test pits excavated along transect 3 contained a very thick, 38-68 cm (15-27 in) plowzone stratum of dark grayish brown silt loam. The alluvial flood deposit identified along Transect 2 was not present in the Transect 3 test pits. Beneath the plowzone, a dark grayish brown, heavily oxidized subsoil was encountered. No artifacts were recovered from the test pits excavated within Bank Cut #1.

Floodplain Cut #1 is located on the north side of Allen Brook opposite Bank Cut #1 (see Figure 1). One linear transect, designated Transect 4 and containing 2 test pits spaced 5 m (16 ft) apart, was excavated within this portion of the APE (see Figure 3). The stratigraphic soil profiles recorded for these two test pits include an uppermost recent light olive brown fine and medium sand flood deposit which sits atop a buried historic era plowzone. The plowzone extended to depths from 44 to 50 cm (17-20 in) below the ground surface. Beneath the plowzone, light olive brown fine sand and gravel was encountered to a depth of 1.0 m (3.3 ft). No artifacts were recovered from the test pits excavated along Transect 4.

Cut Bank #2 is located approximately 50 m (164 ft) east of Cut bank #1 along the south side of Allen Brook (see Figure 1). One linear transect, designated Transect 1 and containing 5 test pits spaced at 5m (16 ft) intervals was used to sample the terrace situated above a heavily eroded slope (see Figure 3). No artifacts were recovered from these test pits. The stratigraphic soil profiles recorded for these test pits include an uppermost dark grayish brown fine sandy loam plowzone underlain by yellowish brown fine sand. Beneath this “weathered” horizon, olive brown and grayish brown fine and very fine sands were encountered from 30-100 cm (12-40 in) below the ground surface.

### **Lefebvre Cuts**

The proposed Lefebvre cuts are located within a portion of the Allen Brook channel along the south side of Vermont Route 2, just west of its intersection with North Williston Road (see Figure 2). A tributary to the main stem of the brook joins the main stem after coursing through expansive wetlands along the eastern side of the brook. At the time of archaeological testing, the area was covered in wetland flora, tall grass, brush and a thin treeline. Potential bank cuts are proposed along large sections of the braided channels (see Figure 2).

Fourteen linear transects, containing a total of 28 test pits, were used to sample the potential bank cuts within the Lefebvre project parcel (Figure 4). In terms of soil stratigraphy, all of the test pits were derived from flood deposits. Evidence of former buried stable ground surfaces was not identified. In Transect 9, Test Pit 1, two quartzite lithic debitage specimens attributable to preContact Native American stone tool manufacture were recovered from the uppermost stratum. This stratum was difficult to characterize as either a plowzone or modern flood deposit. Its texture of fine sandy loam and brown color resembled a plowzone but given the location of this test pit within a “peninsula” between two branches of Allen Brook, it is unknown

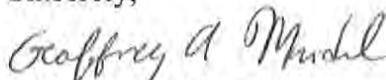
if this area was historically plowed. However, the recovery of the two debitage specimens warranted a site designation and the artifact location was designated VT-CH-1103 in the Vermont Archaeological Inventory (VAI). Beneath this uppermost stratum, a series of alluvial beds were present to a depth of 45 cm (18 in) below the ground surface. At this level, channel gravel and coarse sand was encountered. To better assess the nature of the landform, an additional nine test pits were excavated around Transect 9, Test Pit 1 at 5, 2.5 and 1 m intervals (see Figure 4). The soil stratigraphy was consistent within all of the test pits. The uppermost stratum contained fragments of glass and plastic. A golf ball was recovered from an alluvial stratum, 40-50 cm (16-20 in) below the ground surface, from test pit T15-1 located 3.5 m (11.5 ft) to the southeast of Transect 9, Test Pit 1 (see Figure 4). The recovery of the golf ball from an alluvial stratum beneath the stratum containing the two debitage specimens indicates that these artifacts were transported into the area and thus, their true, original provenience is unknown.

### **Conclusions and Recommendations**

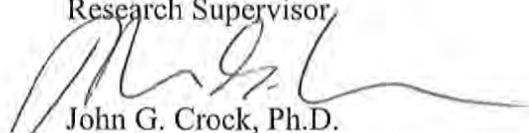
The UVM CAP conducted an archaeological Phase I site identification survey within the Southridge and Lefebvre parcels of the proposed Allen Brook Restoration Project located in Williston, Chittenden County, Vermont. No archaeological sites were identified in the Southridge parcel and no further archaeological work is recommended within the tested bank and floodplain cuts. Within the Lefebvre parcel, two preContact era Native American lithic debitage specimens were recovered from a probable modern flood stratum along the terrace edge proposed for bank cutting. The recovery of historic era artifacts from several test pits around the original find-spot in deeper alluvial strata than that which produced the artifacts indicates that the site's stratigraphic integrity is poor. Based on their context, the artifacts appear to have been transported from somewhere upstream. Given this poor and uncertain context, the site is not considered significant and no further archaeological study is recommended within the proposed cut areas within the Lefebvre parcel. The proposed bank and floodplain cuts within the Southridge and Lefebvre portions of the restoration project will have no effect on significant cultural resources.

Please feel free to contact us if you have any questions regarding this study. A copy of this letter will be sent to R. Scott Dillon of the Vermont Division for Historic Preservation (VDHP) for his review and concurrence.

Sincerely,



Geoffrey A. Mandel  
Research Supervisor



John G. Crock, Ph.D.  
Director

cc: R. Scott Dillon - VDHP

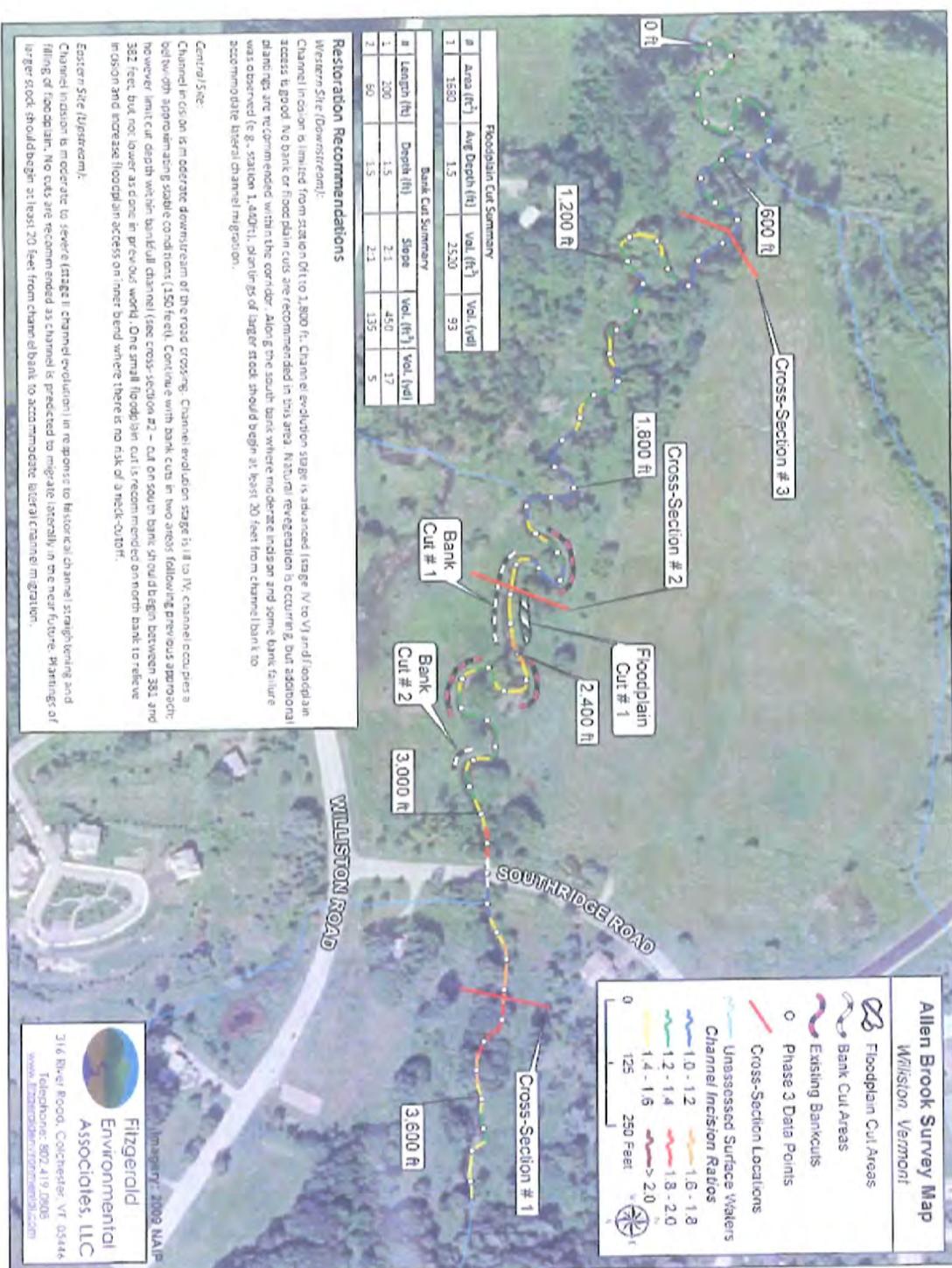


Figure 1. Map showing the location of the proposed Southridge WLP bank cuts for the proposed Allen Brook Restoration Project, Williston, Chittenden County, Vermont.

# Reed/Lefebvre Potential Cuts

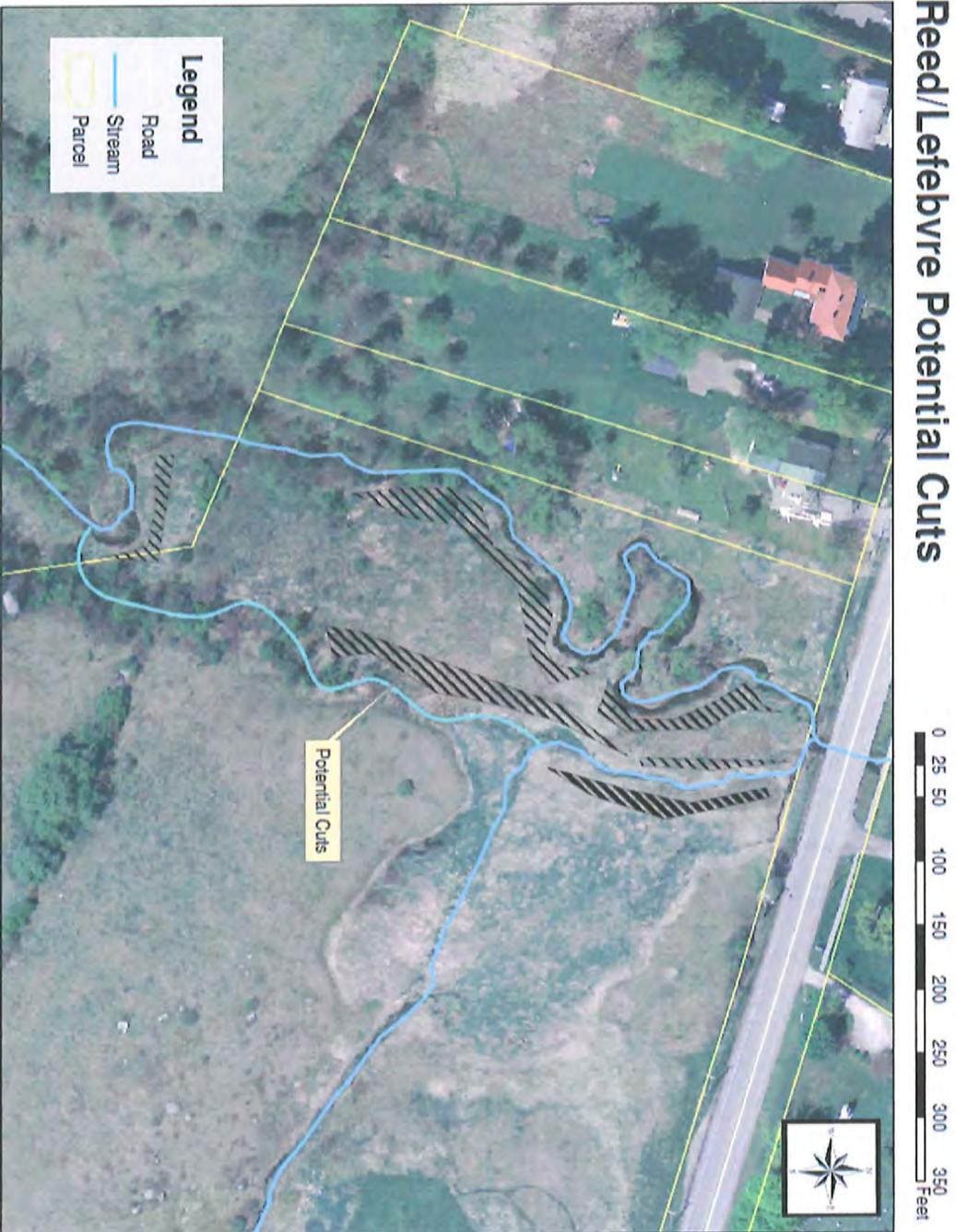


Figure 2. Map showing the location of the proposed Lefebvre bank cuts for the proposed Allen Brook Restoration Project, Williston, Chittenden County, Vermont.

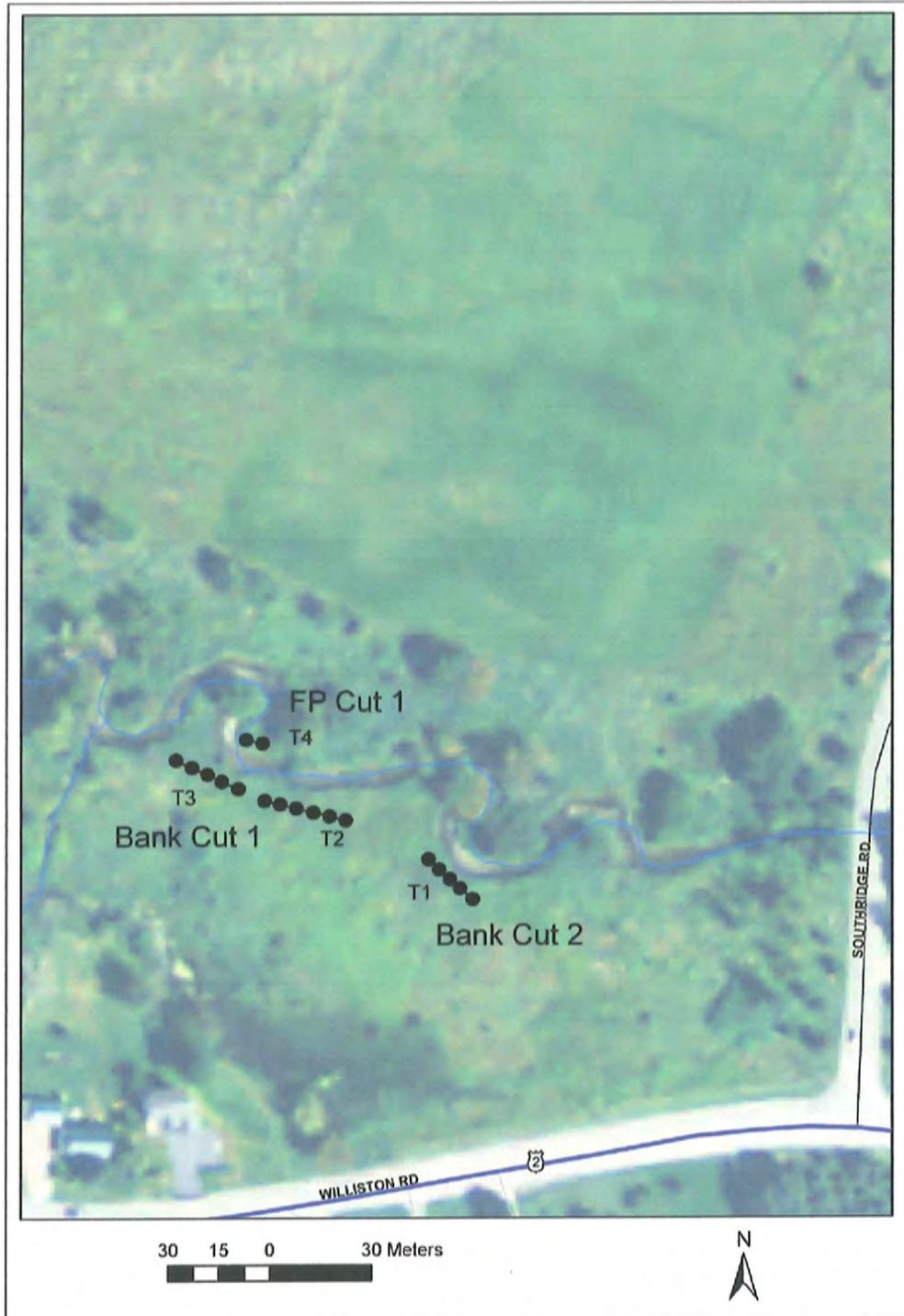


Figure 3. Map showing the location of Phase I Survey transects and negative test pits within the Southridge portion of the Allen Brook Restoration Project, Williston, Chittenden County, Vermont (base map source: vcgi.org).

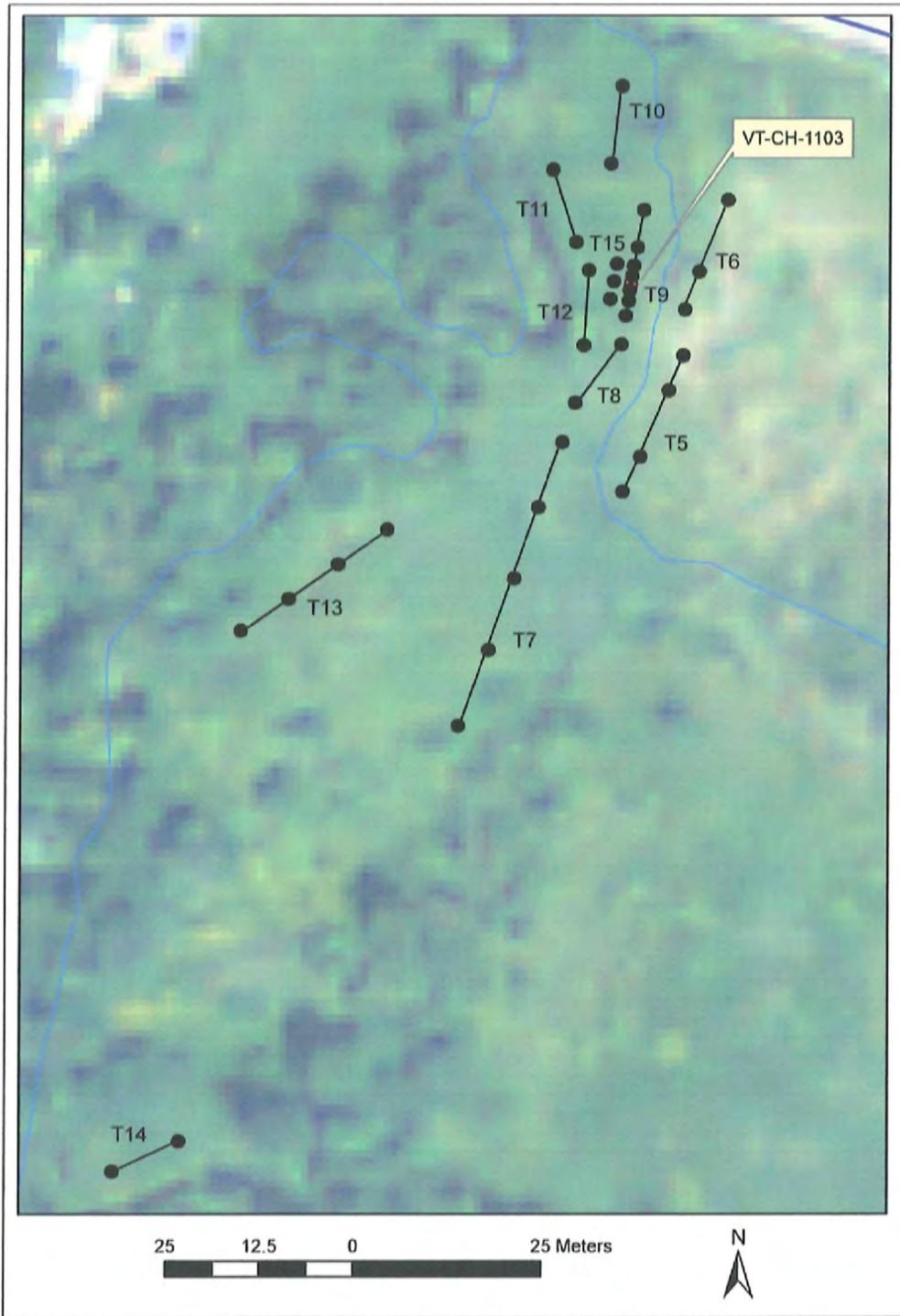


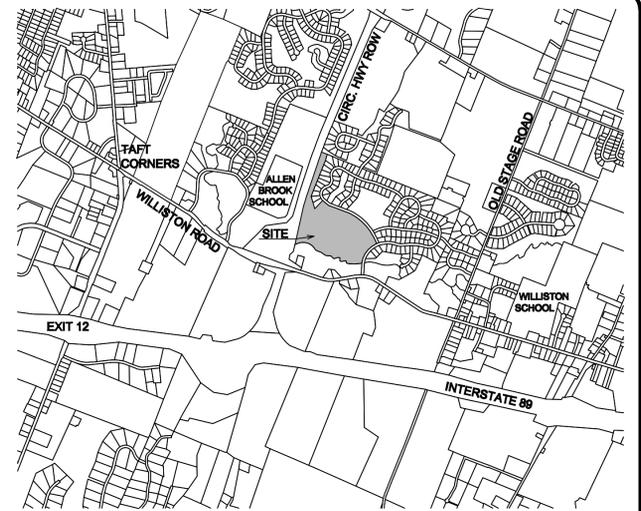
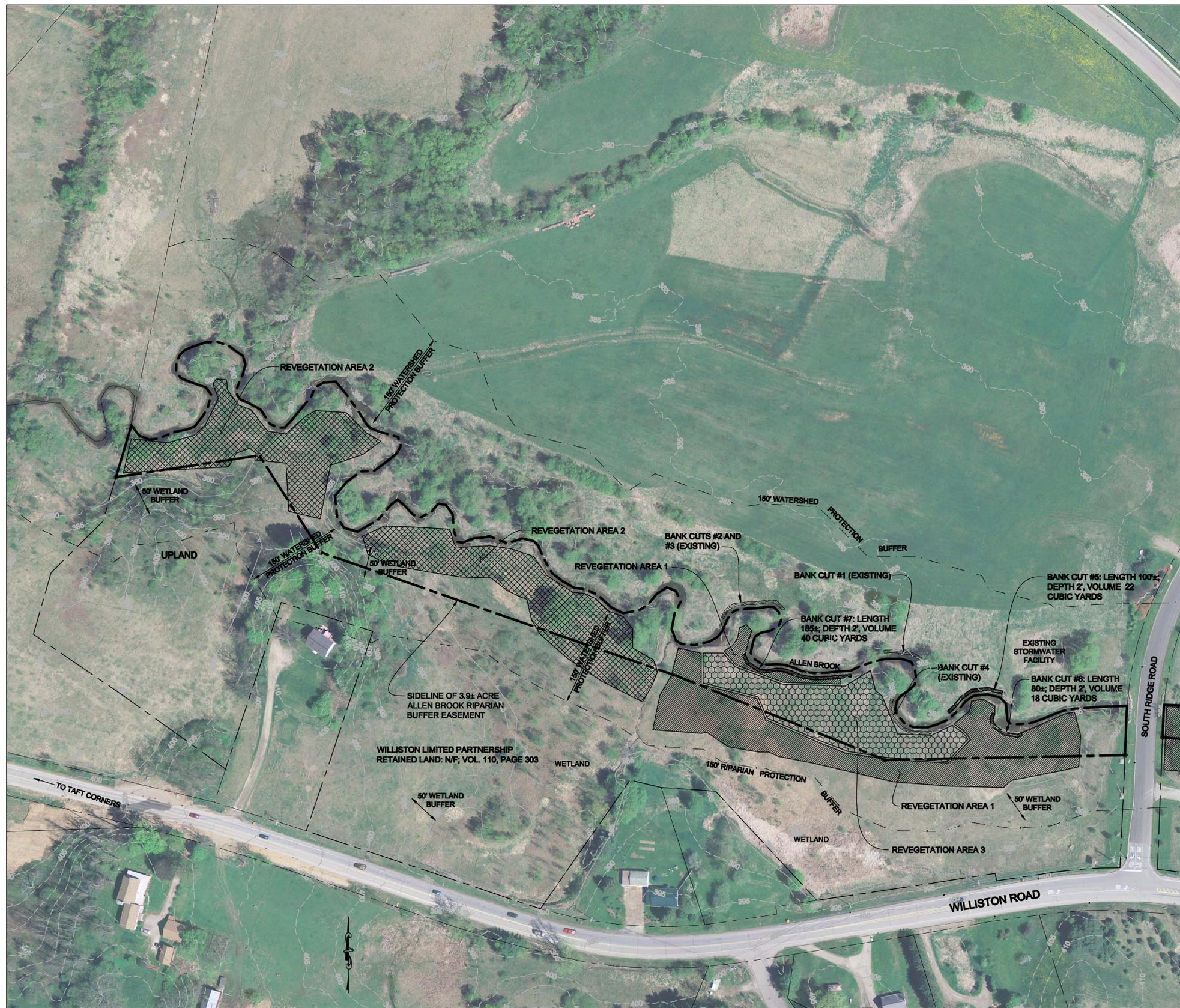
Figure 4. Map showing the location of Phase I Survey transects, negative test pits, and the location of positive test pit and site VT-CH-1103 within the Lefebvre portion of the Allen Brook Restoration Project, Williston, Chittenden County, Vermont (base map source: vcgi.org).



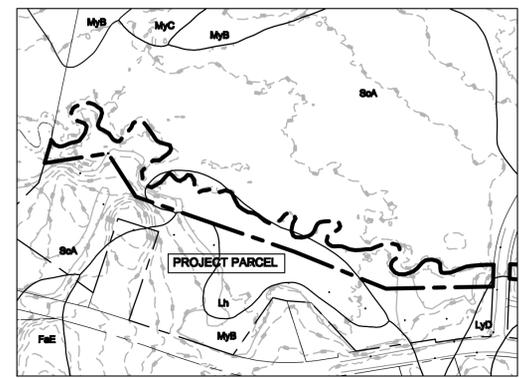
# Appendix H

## Planting Plans for Restoration Project Sites





**LOCATION PLAN**  
N.T.S. (OBTAINED FROM LAMOUREUX AND DICKINSON)



**SOILS MAP**

**SOIL MAPPING UNIT KEY:**  
 FaE - FARMINGTON EXTREMELY ROCKY LOAM  
 Lh - LIVINGSTON CLAY  
 LyD - LYMAN - MARLOW VERY ROCKY LOAMS  
 MyB & MyC - MUNSON AND RAYNHAM SILT LOAMS  
 MyD - MUNSON AND BELGRADE SILT LOAMS

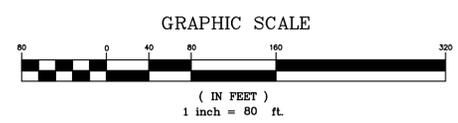
**PLANTING INFORMATION - WLP West**

REVEGATION AREA	SPECIES	SITE SPECIFICATIONS
REVEGATION AREA 1	72 Red Maple 50 Silver Maple 17 Buttonbush 50 Silky Dogwood 75 Eastern Cottonwood 50 Black Willow	Area: 1.2 acre Number of Plants: 314 Density: 261/acre Flooding Frequency: Seasonal
REVEGATION AREA 2	25 Boxelder 75 Gray Birch 50 Swamp White Oak 50 Silver Maple 50 Speckled Alder 25 Eastern Cottonwood 35 Black Willow 50 Red Osier Dogwood 90 Choke Cherry 75 Canadian Serviceberry	Area: 1.8 acre Number of Plants: 625 Density: 328/acre Flooding Frequency: Seasonal
REVEGATION AREA 3 (Installed prior to 2011)	American Elm Green Ash Hackberry Red Maple Silver Maple Chokecherry Elderberry Gray Birch Highbush Cranberry Red Osier Dogwood Shrub Willow Silky Dogwood Speckled Alder	Area: 0.75 acres Density: 335/acre

**SITE NOTES:**  
 1. 588 Live Willow Stakes and 270 linear feet of Fascines have been installed at stream edge. Bank cuts were stabilized with 50x150 Erosion Control Blankets and planted with Live Willow Stakes, Fascines, and Seed.  
 2. Weed Mats will disintegrate over time.  
 3. Tree Protection Tubes should be left on trees until they photo degrade to the point where they no longer provide structural support to trees (3-5 years)  
 4. Yearly Maintenance:  
 A. Vines may infiltrate tree protection tubes. It is recommended that vines be removed if possible.  
 B. Growth of other species (grasses and vines) may dislodge protection tubes from ground. During yearly observations, it is recommended to make sure tube bottom is secured to soil and fix as necessary.  
 5. The Town should explore the use of "Beaver Paint" once trees reach approximately 3" in diameter. The recommended mixture for "Beaver Paint" is 1 gallon of exterior latex grade paint mixed well with 20 ounces of playground sand. The trees should be painted starting at the ground line to 3' up the tree.

**LEGEND**

- PROPOSED EASEMENT LINE
- PROJECT SITE PROPERTY BOUNDARY
- ABUTTERS PROPERTY BOUNDARY
- EDGE OF WETLAND
- TREELINE
- WATERSHED PROTECTION BUFFER
- EXISTING CONTOUR



**GENERAL NOTES:**

- THIS DRAWING ILLUSTRATES THE APPROXIMATE RIPARIAN BUFFER ZONE EASEMENTS ON THE SOUTH RIDGE HOMEOWNERS ASSOCIATION COMMON PROPERTY. PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT CONSTITUTE A BOUNDARY SURVEY.
- THE CONTOUR DATA AND ORTHOPHOTO WERE OBTAINED FROM THE 2004 CHITTENDEN COUNTY ORTHOIMAGERY PROJECT.
- THE PLAN VIEW HAS BEEN MODIFIED FROM A SKETCH PLAN MAP PREPARED BY LAMOUREUX AND DICKINSON CONSULTING ENGINEERS INC. FOR THE SNYDER GROUP, INC. WETLAND LIMITS SHOWN ARE BASED UPON LIMITED FIELD RECONNAISSANCE, AND HAVE NOT BEEN FIELD DELINEATED AND SURVEYED BY THIS OFFICE. WETLAND LIMITS ARE SUBJECT TO CHANGE BASED UPON A FUTURE FIELD DELINEATION.

REVISIONS	BY

**ambler**  
 Landscape Architecture  
 Ecological Design  
 Ambler Design, LLC  
 38 North Hill Road, Stowe, VT 05672  
 www.amblerdesign.com

**KAS**  
 INC.  
 P.O. BOX 787, WILLISTON, VT, 05495  
 WWW.KAS-CONSULTING.COM

**WILLISTON LIMITED PARTNERSHIP  
 WEST EASEMENT MAP  
 AND PLANTING PLAN  
 ALLEN BROOK WATERSHED  
 RESTORATION PROJECT  
 WILLISTON, VERMONT**

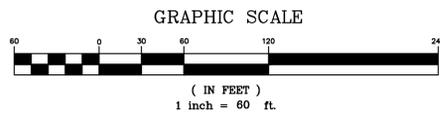
DRAWN  
SJD/JA  
CHECKED  
SJD  
DATE  
12/21/11  
SCALE  
1"=80'  
JOB NO.  
812100038  
SHEET

**EA-1**



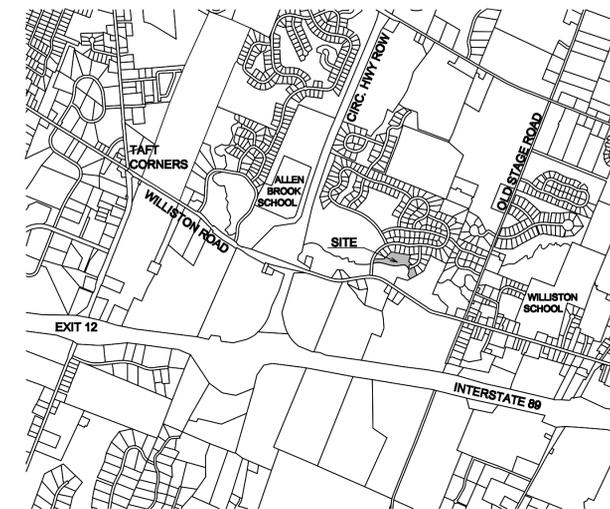
**LEGEND**

- PROPOSED EASEMENT LINE
- PROJECT SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WATERSHED PROTECTION BUFFER
- EXISTING CONTOUR

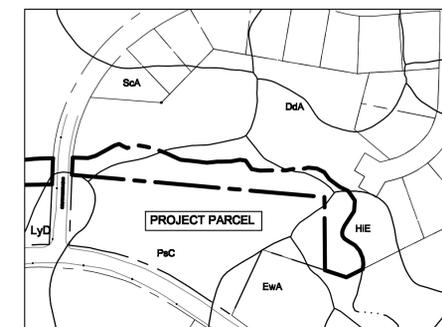


**GENERAL NOTES:**

1. THIS DRAWING ILLUSTRATES THE APPROXIMATE RIPARIAN BUFFER ZONE EASEMENTS ON THE SOUTH RIDGE HOMEOWNERS ASSOCIATION COMMON PROPERTY. PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT CONSTITUTE A BOUNDARY SURVEY.
2. THE CONTOUR DATA AND ORTHOPHOTO WERE OBTAINED FROM THE 2004 CHITTENDEN COUNTY ORTHOIMAGERY PROJECT.
3. THE PLAN VIEW HAS BEEN MODIFIED FROM A SKETCH PLAN MAP PREPARED BY LAMOUREUX AND DICKINSON CONSULTING ENGINEERS INC. FOR THE SNYDER GROUP, INC. WETLAND LIMITS SHOWN ARE BASED UPON LIMITED FIELD RECONNAISSANCE, AND HAVE NOT BEEN FIELD DELINEATED AND SURVEYED BY THIS OFFICE. WETLAND LIMITS ARE SUBJECT TO CHANGE BASED UPON A FUTURE FIELD DELINEATION.



**LOCATION PLAN**  
N.T.S. (OBTAINED FROM LAMOUREUX AND DICKINSON)



**SOILS MAP**

- SOIL MAPPING UNIT KEY:**
- CoA & CoB - COLTON GRAVELLY LOAMY SAND
  - CoD - COLTON AND STETSON SOILS
  - Le - LIMERICK SILT LOAM
  - MyB & MyC - MUNSON AND RAYNHAM SILT LOAMS
  - MyD - MUNSON AND BELGRADE SILT LOAMS
  - Wo - WINOOSKI VERY FINE SAND LOAM

**PLANTING INFORMATION - WLP East**

REVEGETATION AREA 1	SPECIES	SITE SPECIFICATIONS
	74 Silver Maple	Area: 2 acre Number of Plants: 446 Density: 223/acre Flooding Frequency: Seasonal in lower areas  Total Species on site: 446
	47 Boxelder	
	101 Swamp White Oak	
	25 Black Willow	
	59 Red Maple	
	50 Red Cedar Dogwood	
	20 River Birch	
	70 American Elm	

- SITE NOTES:**
1. 50 Live Willow Stakes have been installed at stream edge.
  2. Weed Mats will disintegrate over time.
  3. Tree Protection Tubes should be left on trees until they photo degrade to the point where they no longer provide structural support to trees (3-5 years)
  4. Yearly Maintenance:
    - A. Vines may infiltrate tree protection tubes. It is recommended that vines be removed if possible.
    - B. Growth of other species (grasses and vines) may dislodge protection tubes from ground. During yearly observations, it is recommended to make sure tube bottom is secured to soil and fix as necessary.
  5. The Town should explore the use of "Beaver Paint" once trees reach approximately 3' in diameter. The recommended mixture for "Beaver Paint" is 1 gallon of exterior latex grade paint mixed with 20 ounces of playground sand. The trees should be painted starting at the ground line to 3' up the tree.

REVISIONS	BY

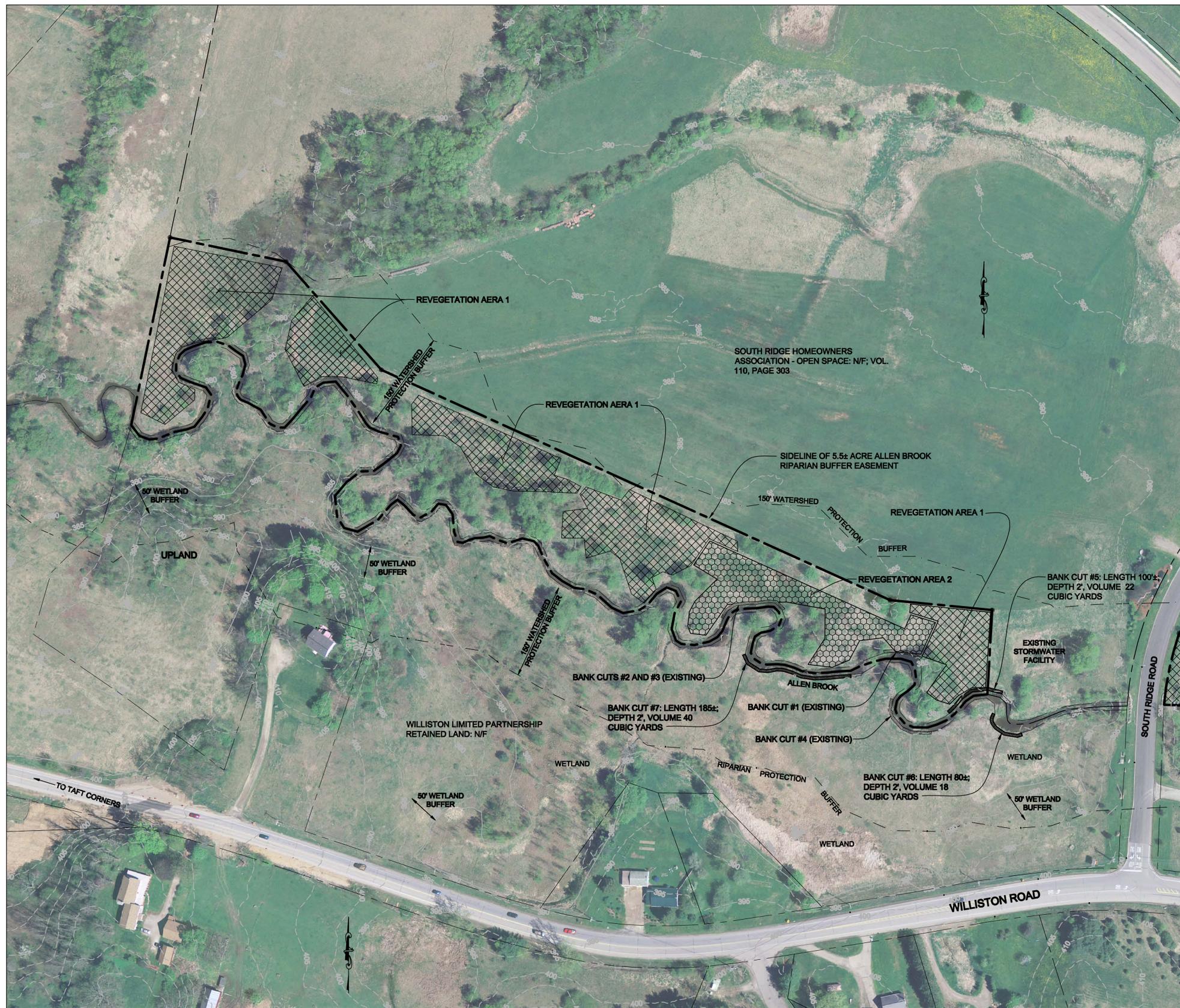
Landscape Architecture  
 Ecological Design  
 Ambler Design, LLC  
 38 North Hill Road, Stowe, VT 05672  
 www.amblerdesign.com

KAS INC.  
 P.O. BOX 787, WILLISTON, VT, 05495  
 WWW.KAS-CONSULTING.COM

**WILLISTON LIMITED PARTNERSHIP  
 EAST EASEMENT MAP  
 AND PLANTING PLAN  
 ALLEN BROOK WATERSHED  
 RESTORATION PROJECT  
 WILLISTON, VERMONT**

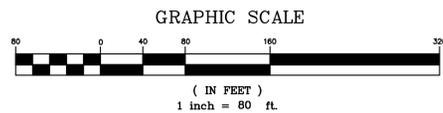
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CHECKED	SJD
DATE	12/20/11
SCALE	1"=60'
JOB NO.	812100038
SHEET	

EA-2



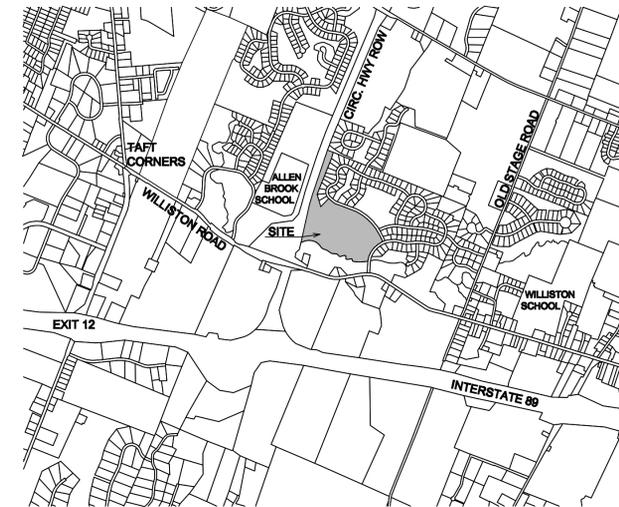
**LEGEND**

- PROPOSED EASEMENT LINE
- PROJECT SITE PROPERTY BOUNDARY
- ABUTTERS PROPERTY BOUNDARY
- EDGE OF WETLAND
- TREELINE
- WATERSHED PROTECTION BUFFER
- EXISTING CONTOUR

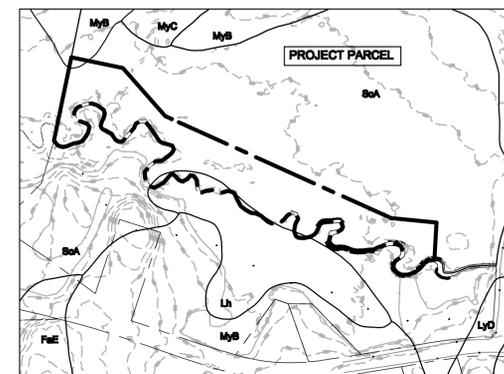


**GENERAL NOTES:**

1. THIS DRAWING ILLUSTRATES THE APPROXIMATE RIPARIAN BUFFER ZONE EASEMENTS ON THE SOUTH RIDGE HOMEOWNERS ASSOCIATION COMMON PROPERTY. PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT CONSTITUTE A BOUNDARY SURVEY.
2. THE CONTOUR DATA AND ORTHOPHOTO WERE OBTAINED FROM THE 2004 CHITTENDEN COUNTY ORTHOIMAGERY PROJECT.
3. THE PLAN VIEW HAS BEEN MODIFIED FROM A SKETCH PLAN MAP PREPARED BY LAMOUREUX AND DICKINSON CONSULTING ENGINEERS INC. FOR THE SNYDER GROUP, INC. WETLAND LIMITS SHOWN ARE BASED UPON LIMITED FIELD RECONNAISSANCE, AND HAVE NOT BEEN FIELD DELINEATED AND SURVEYED BY THIS OFFICE. WETLAND LIMITS ARE SUBJECT TO CHANGE BASED UPON A FUTURE FIELD DELINEATION.



**LOCATION PLAN**  
N.T.S. (OBTAINED FROM LAMOUREUX AND DICKINSON)



**SOILS MAP**

- SOIL MAPPING UNIT KEY:**
- FaE - FARMINGTON EXTREMELY ROCKY LOAM
  - Lh - LIVINGSTON CLAY
  - LyD - LYMAN - MARLOW VERY ROCKY LOAMS
  - MyB & MyC - MUNSON AND RAYNHAM SILT LOAMS
  - MyD - MUNSON AND BELGRADE SILT LOAMS

**PLANTING INFORMATION - South Ridge West**

	SPECIES	SITE SPECIFICATIONS
REVEGETATION AREA 1	<ul style="list-style-type: none"> <li>44 Swamp White Oak</li> <li>26 Boxelder</li> <li>75 Red Osler Dogwood</li> <li>26 River Birch</li> <li>96 Red Maple</li> <li>96 Silver Maple</li> <li>18 Buttonbush</li> <li>50 Silky Dogwood</li> <li>75 Eastern Cottonwood</li> <li>90 Black Willow</li> </ul>	<ul style="list-style-type: none"> <li>Area: 2.3 acres</li> <li>Number of Plants: 696</li> <li>Density: 259/plant/acre</li> <li>Flooding Frequency: Seasonal</li> </ul>
REVEGETATION AREA 2 (Installed prior to 2011)	<ul style="list-style-type: none"> <li>American Elm</li> <li>Green Ash</li> <li>Hackberry</li> <li>Red Maple</li> <li>Silver Maple</li> <li>Chokecherry</li> <li>Elderberry</li> <li>Highbush Cranberry</li> <li>Red Osler Dogwood</li> <li>Shrub Willow</li> <li>Silky Dogwood</li> <li>Speckled Alder</li> </ul>	<ul style="list-style-type: none"> <li>Area: 0.5 acres</li> </ul>

**SITE NOTES:**

1. 250 Live Willow Stakes and 150 linear feet of Fascines have been installed at stream edge. Bank cuts were stabilized with SC150 Erosion Control Blankets and planted with Live Willow Stakes, Fascines, and Seed.
2. Weed Mats will disintegrate over time.
3. Tree Protection Tubes should be left on trees until they photo degrade to the point where they no longer provide structural support to trees (3-5 years)
4. Yearly Maintenance:
  - A. Vines may infiltrate tree protection tubes. It is recommended that vines be removed if possible.
  - B. Growth of other species (grasses and vines) may dislodge protection tubes from ground. During yearly observations, it is recommended to make sure tube bottom is secured to soil and fix as necessary.
5. The Town should explore the use of "Beaver Paint" once trees reach approximately 3" in diameter. The recommended mixture for "Beaver Paint" is 1 gallon of exterior latex grade paint mixed well with 20 ounces of playground sand. The trees should be painted starting at the ground line to 3' up the tree.

REVISIONS	BY



**SOUTH RIDGE WEST EASEMENT MAP AND PLANTING PLAN**  
ALLEN BROOK WATERSHED RESTORATION PROJECT  
WILLISTON, VERMONT

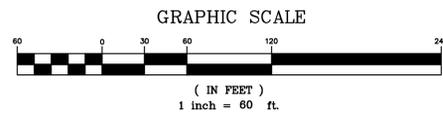
DRAWN: SJD/JA  
CHECKED: SJD  
DATE: 12/27/11  
SCALE: 1"=80'  
JOB NO.: 812100038  
SHEET

**EA-1**



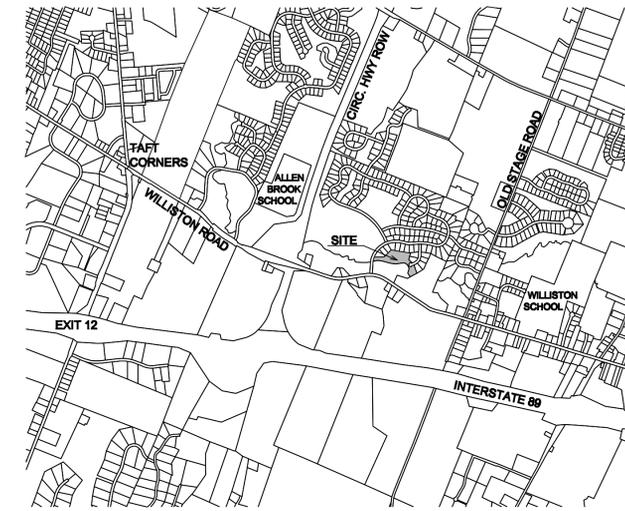
**LEGEND**

- PROPOSED EASEMENT LINE
- PROJECT SITE PROPERTY BOUNDARY
- ABUTTERS PROPERTY BOUNDARY
- WATERSHED PROTECTION BUFFER
- EXISTING CONTOUR

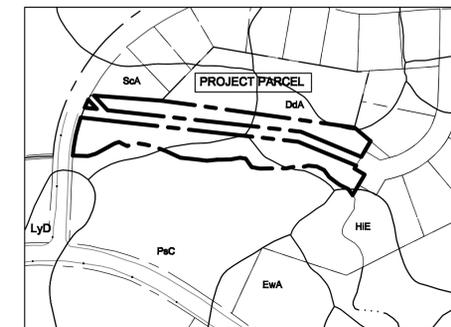


**GENERAL NOTES:**

1. THIS DRAWING ILLUSTRATES THE APPROXIMATE RIPARIAN BUFFER ZONE EASEMENTS ON THE SOUTH RIDGE HOMEOWNERS ASSOCIATION COMMON PROPERTY. PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT CONSTITUTE A BOUNDARY SURVEY.
2. THE CONTOUR DATA AND ORTHOPHOTO WERE OBTAINED FROM THE 2004 CHITTENDEN COUNTY ORTHOIMAGERY PROJECT.
3. THE PLAN VIEW HAS BEEN MODIFIED FROM A SKETCH PLAN MAP PREPARED BY LAMOUREUX AND DICKINSON CONSULTING ENGINEERS INC. FOR THE SNYDER GROUP, INC. WETLAND LIMITS SHOWN ARE BASED UPON LIMITED FIELD RECONNAISSANCE, AND HAVE NOT BEEN FIELD DELINEATED AND SURVEYED BY THIS OFFICE. WETLAND LIMITS ARE SUBJECT TO CHANGE BASED UPON A FUTURE FIELD DELINEATION.



**LOCATION PLAN**  
N.T.S. (OBTAINED FROM LAMOUREUX AND DICKINSON)



**SOILS MAP**

- SOIL MAPPING UNIT KEY:**
- CoA & CoB - COLTON GRAVELLY LOAMY SAND
  - CoD - COLTON AND STETSON SOILS
  - Le - LIMERICK SILT LOAM
  - MyB & MyC - MUNSON AND RAYNHAM SILT LOAMS
  - MyD - MUNSON AND BELGRADE SILT LOAMS
  - Wo - WINOOSKI VERY FINE SAND LOAM

**PLANTING INFORMATION - South Ridge East**

REVEGETATION AREA 1	SPECIES	SITE SPECIFICATIONS
	20 Silver Maple	Area: 2± acres Number of Plants: 365 Density: 182/acre Flooding Frequency: Seasonal
	25 Boxelder	
	90 Swamp White Oak	
	75 Black Willow	
	61 Red Maple	
	70 Red Osier Dogwood 24 River Birch	

Total Species on site: 365

**SITE NOTES:**

1. 100 Live Willow Stakes and 40 linear feet of Fascines have been installed at stream edge.
2. Weed Mats will disintegrate over time.
3. Tree Protection Tubes should be left on trees until they photo degrade to the point where they no longer provide structural support to trees (3-5 years)
4. Yearly Maintenance:
  - A. Vines may infiltrate tree protection tubes. It is recommended that vines be removed if possible.
  - B. Growth of other species (grasses and vines) may dislodge protection tubes from ground. During yearly observations, it is recommended to make sure tube bottom is secured to soil and fix as necessary.
5. The Town should explore the use of "Beaver Paint" once trees reach approximately 3" in diameter. The recommended mixture for "Beaver Paint" is 1 gallon of exterior latex grade paint mixed well with 20 ounces of playground sand. The trees should be painted starting at the ground line to 3' up the tree.

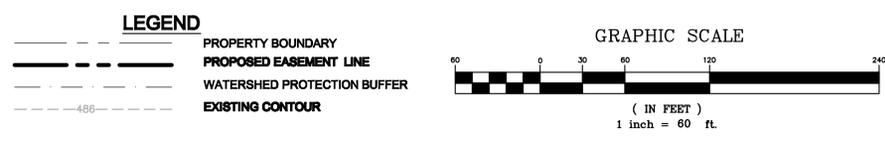
REVISIONS	BY



**SOUTH RIDGE EAST EASEMENT MAP AND PLANTING PLAN**  
ALLEN BROOK WATERSHED RESTORATION PROJECT  
WILLISTON, VERMONT

DRAWN	SJD
CHECKED	SJD
DATE	12/20/11
SCALE	1"=60'
JOB NO.	812100038
SHEET	EA-2

**EA-2**



**NOTES:**

- BOUNDARY INFORMATION SHOWN ON THIS PLAN IS BASED UPON TAX MAP PARCEL DATA AND IS NOT ADEQUATE FOR PROPERTY TRANSFER. THE INTENT OF THIS MAP IS TO ILLUSTRATE THE APPROXIMATE RIPARIAN BUFFER EASEMENT LOCATION FOR ESTIMATING, PLANTING, AND PLANNING PURPOSES.
- CONTOURS AND ORTHO-IMAGERY WERE OBTAINED FROM THE VCGI DATA WEBSITE.
- WOODY NATIVE VEGETATION IS TO BE PLANTED WITHIN THE CONSERVATION EASEMENT. PROPOSED PLANTINGS SHALL HAVE A MAXIMUM FULL GROWN HEIGHT OF 20' WITHIN 75' OF THE ROUTE TO RIGHT OF WAY, PER THE LANDOWNERS REQUEST TO MAINTAIN A VIEW SHED FROM THE EXISTING RESIDENCE TOWARDS THE EXISTING CHURCH ON THE NORTHEAST CORNER OF ROUTE 2 AND NORTH WILLISTON ROAD.
- WETLANDS ARE LOCATED ON THE PROPERTY, BUT HAVE NOT BEEN DELINEATE OR SHOWN ON THIS MAP.

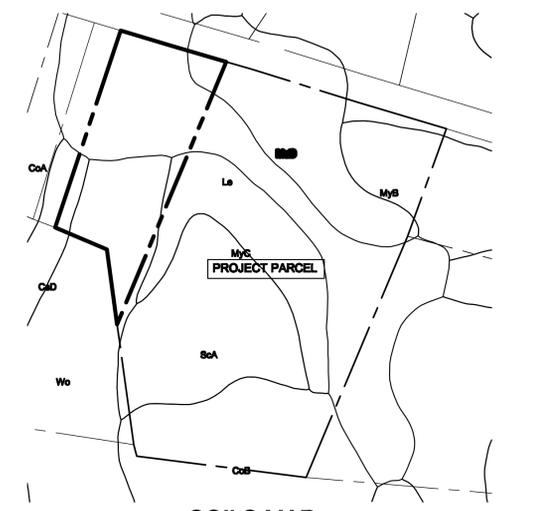
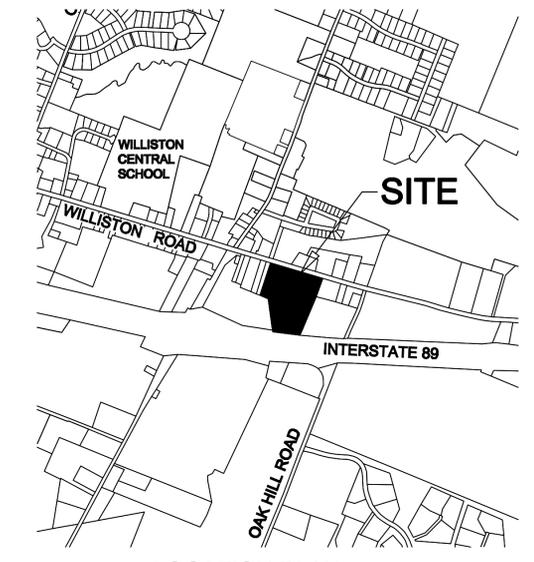
**ZONING DATA:**

TAX MAP PARCEL NUMBER - 015:104:197.00

PROJECT PARCEL AREA -14.1± ACRES

ZONING DISTRICT - RESIDENTIAL ZONING DISTRICT

OVERLAY DISTRICTS - WATERSHED PROTECTION BUFFERS



**PLANTING INFORMATION**

REVEGETATION AREA	SPECIES	SITE SPECIFICATIONS
REVEGETATION AREA 1	25 Red Osier Dogwood	Area: .25 acres Number of Plants: 25 Density: 100/acre Flooding Frequency: Occasional
REVEGETATION AREA 2	40 Buttonbush	Area: .5 acre Number of Plants: 40 Density: 80/acre Flooding Frequency: Frequent
REVEGETATION AREA 3	150 Red Maple 96 Red Osier Dogwood 5 Black Willow 5 Cottonwood 4 White Oak 85 American Elm 40 Boxelder	Area: 2.25 acre Number of Plants: 460 Density: 205/acre Flooding Frequency: Seasonal in lower areas

Total Species on site: 525

**SITE NOTES:**

- Revegetation Area 1 and 2 are planted with species under 20' mature height within 75' of road to preserve future view.
- 100 Live Willow Stakes and 40 linear feet of Fascines have been installed at stream edge. Bank cuts were stabilized with SC150 Erosion Control Blankets and planted with Live Willow Stakes, Fascines, and Seed
- Weed Mats will disintegrate over time.
- Tree Protection Tubes should be left on trees until they photo degrade to the point where they no longer provide structural support to trees (3-5 years)
- Yearly Maintenance:
  - A. Vines may infiltrate tree protection tubes. It is recommended that vines be removed if possible.
  - B. Growth of other species (grasses and vines) may dislodge protection tubes from ground. During yearly observations, it is recommended to make sure tube bottom is secured to soil and fix as necessary.
- The Town should explore the use of "Beaver Paint" once trees reach approximately 3" in diameter. The recommended mixture for "Beaver Paint" is 1 gallon of exterior latex grade paint mixed well with 20 ounces of playground sand. The trees should be painted starting at the ground line to 3' up the tree.

REVISIONS	BY

**ambler**  
Landscape Architecture  
Ecological Design  
Ambler Design, LLC  
38 North Hill Road, Stowe, VT 05672  
www.amblerdesign.com

**KAS**  
INC  
P.O. BOX 787, WILLISTON, VT, 05495  
WWW.KAS-CONSULTING.COM

**EASEMENT MAP AND PLANTING PLAN FOR REED PARCEL**

**ALLEN BROOK WATERSHED RESTORATION PROJECT**

**8384 WILLISTON ROAD**

**WILLISTON, VERMONT**

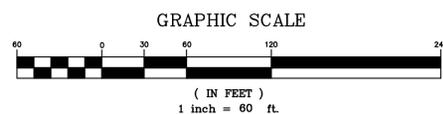
DRAWN: SD  
CHECKED: SD  
DATE: 12/27/11  
SCALE: 1"=60'  
JOB NO.: 812100038  
SHEET

**EA-1**



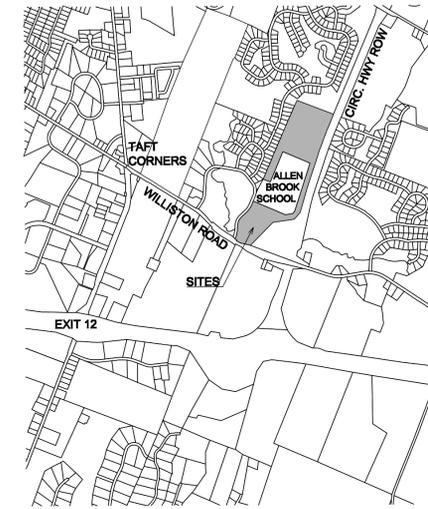
**LEGEND**

	PROPERTY BOUNDARY
	ABUTTERS PROPERTY BOUNDARIES
	WATERSHED PROTECTION BUFFER
	EXISTING CONTOUR



**GENERAL NOTES:**

- THIS DRAWING IS TO ILLUSTRATE THE APPROXIMATE RIPARIAN BUFFER ZONE AREA ON THE WILLISTON FIRE STATION PROPERTY. PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT CONSTITUTE A BOUNDARY SURVEY. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT ADEQUATE FOR PROPERTY CONVEYANCE.
- THE ORTHOPHOTO WERE OBTAINED FROM THE 2004 CHITTENDEN COUNTY ORTHOIMAGERY PROJECT.



**LOCATION PLAN**  
1"=200' (OBTAINED FROM LAMOUREUX AND DICKINSON)



**SOILS MAP**

**SOIL MAPPING UNIT KEY:**

- FeE - FARMINGTON & STOCKBRIDGE ROCKY LOAMS
- MyB & MyC - MUNSON AND RAYNHAM SILT LOAMS
- MyD - MUNSON AND BELGRADE SILT LOAMS
- Wo - WINOOSKI VERY FINE SAND LOAM

**PLANTING INFORMATION**

	SPECIES	SITE SPECIFICATIONS
REVEGETATION AREA 1	50 Red Maple 100 Silver Maple 75 Swamp White Oak 35 River Birch	Area: 1 acre Number of Plants: 260 Density: 260/acre Flooding Frequency: Infrequent
REVEGETATION AREA 2	50 American Sycamore 95 Eastern Cottonwood 100 Grey Dogwood 100 Quaking Aspen 70 Pitch Pine 30 Red Oak	Area: 1.5 acres Number of Plants: 445 Density: 296/acre Flooding Frequency: None/Infrequent

Total Species on site: 705

**SITE NOTES:**

- 100 Live Willow Stakes have been installed at stream edge.
- Weed Mats will disintegrate over time.
- Tree Protection Tubes should be left on trees until they photo degrade to the point where they no longer provide structural support to trees (3-5 years)
- Yearly Maintenance:
  - Vines may infiltrate tree protection tubes. It is recommended that vines be removed if possible.
  - Growth of other species (grasses and vines) may dislodge protection tubes from ground. During yearly observations, it is recommended to make sure tube bottom is secured to soil and fix as necessary.
- The Town should explore the use of "Beaver Paint" once trees reach approximately 3" in diameter. The recommended mixture for "Beaver Paint" is 1 gallon of exterior latex grade paint mixed well with 20 ounces of playground sand. The trees should be painted starting at the ground line to 3' up the tree.

REVISIONS	BY



**PLANTING PLAN FOR**  
**WILLISTON FIRE STATION**  
**ALLEN BROOK WATERSHED RESTORATION PROJECT**  
**645 TALCOTT ROAD**  
**WILLISTON, VERMONT**

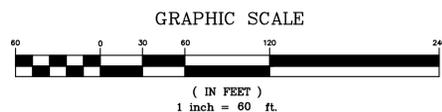
DRAWN	SJD
CHECKED	SJD
DATE	12/20/11
SCALE	1"=60'
JOB NO.	812100038
SHEET	

**SP-1**



**LEGEND**

	PROPERTY BOUNDARY
	PROPOSED EASEMENT LINE
	ZONING SETBACKS
	EDGE OF WETLAND
	TREELINE
	WATERSHED PROTECTION BUFFER
	EXISTING CONTOUR



**NOTES:**

- BOUNDARY INFORMATION SHOWN ON THIS PLAN IS BASED UPON TAX MAP PARCEL DATA AND A "SURVEY FOR ALDEN T. BRYAN IN TOWN OF WILLISTON" BY JOHN A. MARSH DATED AUGUST 3, 1965 AND RECORDED IN BOOK 30 ON PAGE 96 OF THE WILLISTON LAND RECORDS.
- CONTOURS, TREELINES, AND EXISTING BUILDINGS WERE OBTAINED FROM THE 2004 CHITTENDEN COUNTY ORTHOIMAGERY PROJECT AND LIDAR DATA.
- OTHER THAN THE PROPOSED RIPARIAN BUFFER ZONE EASEMENT AND ORTHO PHOTOGRAPHY, ALL INFORMATION SHOWN IN THE PLAN VIEW IS FROM A SKETCH PLAN MAP PREPARED BY LAMOUREUX AND DICKINSON CONSULTING ENGINEERS INC. FOR THE SNYDER GROUP, INC.

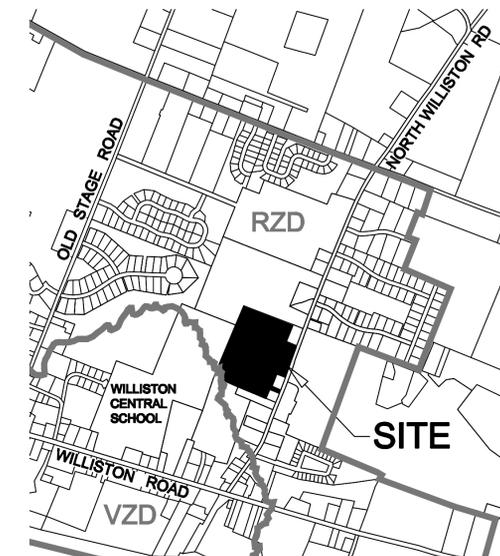
**ZONING DATA:**

TAX MAP PARCEL NUMBER - 015:099:033.00

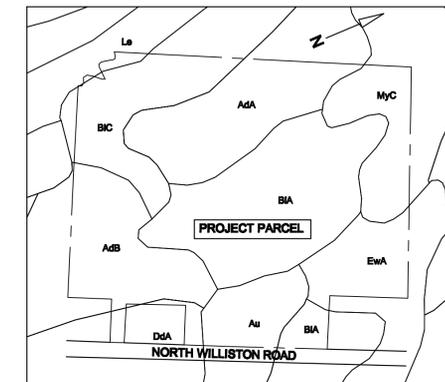
PROJECT PARCEL AREA - 22.9 ACRES

ZONING DISTRICT - RESIDENTIAL ZONING DISTRICT

OVERLAY DISTRICTS - WATERSHED PROTECTION BUFFER



**LOCATION PLAN**  
1"=2000' (OBTAINED FROM LAMOUREUX AND DICKINSON)



**SOILS MAP**  
N.T.S. (OBTAINED FROM LAMOUREUX AND DICKINSON)

**SOIL MAPPING UNIT KEY:**

AdA & ADB - ADAMS & WINDSOR LOAMY SAND

Au - AU GRES FINE SANDY LOAM

BIA & BIC - BELGRADE & ELDRIDGE FINE SANDY LOAM

DdA - DUANE & DEERFIELD LOAMY SAND

EwA - ENOSBURG & WHATELY SANDY LOAM

Le - LIMERICK SILT LOAM

MyC - MUNSON & RAYNHAM SILT LOAM

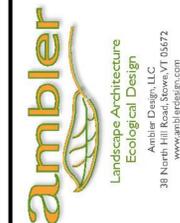
**PLANTING INFORMATION**

REVEGATION AREA	SPECIES	SITE SPECIFICATIONS
REVEGATION AREA 1	40 White Pine	Area: 2 acres Number of Plants: 40 Density: 200/acre Flooding Frequency: None
REVEGATION AREA 2	7 White Pine 60 Boxelder 100 American Elm 50 Red Maple 40 Swamp White Oak	Area: 1 acre Number of Plants: 247 Density: 247/acre Flooding Frequency: None

**SITE NOTES:**

- Revegetation 1 is planted as evergreen border to help delineate field from restoration planting.
- Weed Mats will disintegrate over time.
- Tree Protection Tubes should be left on trees until they photo degrade to the point where they no longer provide structural support to trees (3-5 years)
- Yearly Maintenance:
  - Vines may infiltrate tree protection tubes. It is recommended that vines be removed if possible.
  - After planting in May 2010, American Elm species had caterpillar infestation. It is recommended to examine health of this species and consider treatment if necessary.
- The Town should explore the use of "Beaver Paint" once trees reach approximately 3" in diameter. The recommended mixture for "Beaver Paint" is 1 gallon of exterior latex grade paint mixed well with 20 ounces of playground sand. The trees should be painted starting at the ground line to 3' up the tree.

REVISIONS	BY



**EASEMENT MAP AND PLANTING PLAN FOR BRYAN PARCEL**  
ALLEN BROOK WATERSHED RESTORATION PROJECT  
WILLISTON, VERMONT

DRAWN	SD
CHECKED	SD
DATE	12/15/11
SCALE	1"=60'
JOB NO.	812100038
SHEET	

**LP-1**



# Appendix I

## **Request for Bids for Channel Overbank Excavation**



## **TOWN OF WILLISTON**

Allen Brook Restoration Project  
September 22, 2011

### **Request for Bid – Channel Overbank Excavation for Bank and Floodplain Cuts on the Allen Brook at Various Project Sites.**

The Town of Williston is seeking contractors to provide channel overbank excavation for various project sites along the Allen Brook as part of a greater watershed restoration project. The overbank excavation is intended to stabilize channel banks and to reconnect the Allen Brook to its floodplain.

The project involves channel overbank excavation for approximately 9 bank cuts with a total estimated quantity of approximately 334 cubic yards, 4 flood plain cuts with a total estimated quantity of 398 cubic yards, clearing of excavation area, and removal of excavated soil at three of the four sites. Excavated soil will be spread and remain on site at the Griswold site, approximately 588 cubic yards. Due to the dynamic nature of the Allen Brook, the estimated quantities and number of bank cuts are subject to change. The selected contractor can sell any removed excavation material to help offset other costs and reduce their overall bid price. Due to the environmentally sensitive nature of the project areas, the contractors will be asked to take measures to reduce equipment impacts to the environment to the extent possible. The contractor will be expected to schedule the excavation work in early to mid October, depending on the Town obtaining pertinent permits.

Enclosed, please find three maps by Fitzgerald Environmental showing the four project sites, and approximate locations, sizes, depths, excavation quantity and lengths of the bank and flood plain cuts. Typical cross sections for the bank and floodplain cuts have also been attached for reference. The Town will be seeking bids from a short list of contractors. All bidders will be required to attend a mandatory pre-bid meeting on September 29, 2011 at 9:00am to walk through the project sites, discuss site access, and for additional details of the bank and floodplain overbank excavation. Meeting attendees will meet at the Town of Williston Planning Department (7900 Williston Rd, Williston, VT 05495) and then proceed to the project sites.

The excavation work will be divided into four sites as follows: South Ridge Project Site, Williston Limited Partnership Project Site, Griswold Project Site, and the Reed Project Site. Bids may be submitted in letter format. The excavation work shall be submitted as a lump sum price per site to include all labor, equipment, and materials needed to complete the project. Due to the nature of the project, a fifth site or additional bank cuts may be added to the scope of work so bidders are asked to provide hourly labor and equipment rates for the excavation and removal of material offsite. The Town may also ask for brush hogging services as part of this project. Consequently, prospective bidders should indicate as part of their submittal whether they can provide brush hogging services, and if so to provide a cost per acre. Contractors that cannot provide brush hogging services will not be excluded or penalized for selection to perform the channel overbank excavation work.

RFP – Channel Overbank Excavation

September 22, 2011

Page 2

Include with your bid a list of similar excavation projects completed and a minimum of three references. Prior to the execution of the contract, the bidder shall furnish bonds covering the faithful performance of the contract and the payment of all obligations arising there under as prescribed by the Town. Bonds may be secured under the bidders usual sources. A certificate of insurance is required before work begins.

Bids are due to KAS by the end of business (5:00 PM) October 4, 2011. Bids sent by fax or email must be followed by an original via US Mail. It is the responsibility of the bidder to make sure that the bid is received at KAS by the end of the day on October 4th. Please submit your bid to the attention of Mr. Stephen Diglio at P.O. Box 787, Williston, VT 05495, or fax number (802) 383-0490, or email [stephend@kas-consulting.com](mailto:stephend@kas-consulting.com). The Town of Williston will award the contract based on its review of the bid amount, experience of the contractor on similar projects, and contractor's reputation. The Town of Williston shall have the right to reject any or all bids and to reject a bid not accompanied by other data required or to reject a bid which is in any way incomplete or irregular. The Town of Williston shall have the right to limit or redefine the scope of work, thereby changing the contract amount.

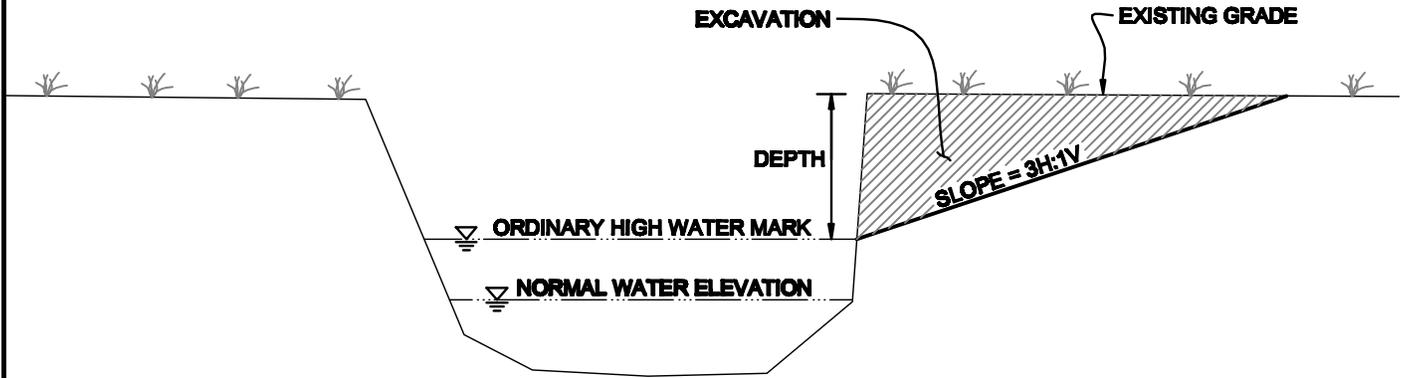
If you have any questions please feel free to contact our office at (802) 383-0486.

Sincerely,

Stephen Diglio, PE  
Project Engineer

Enclosure

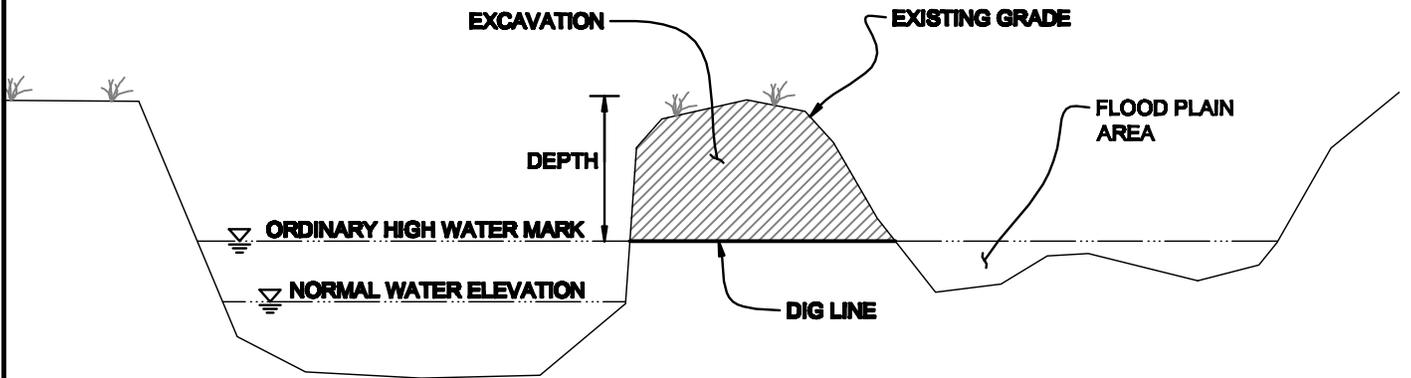
c: KAS Project File: 812100038  
Jessica Andreoletti (Town Planner)



**A**  
1

**TYPICAL BANK CUT CROSS-SECTION**

N.T.S.



**B**  
1

**TYPICAL FLOODPLAIN CUT CROSS-SECTION**

N.T.S.

KAS #: 81210038



**ALLEN BROOK RESTORATION PROJECT**  
**Williston , VT**

**TYPICAL CHANNEL OVERBANK  
EXCAVATION CROSS-SECTIONS**

DATE: 8/24/11

DWG #: 1

SCALE N.T.S

DRN.:SJD

APP.:

# South Ridge/Williston Limited Partnership Project Site

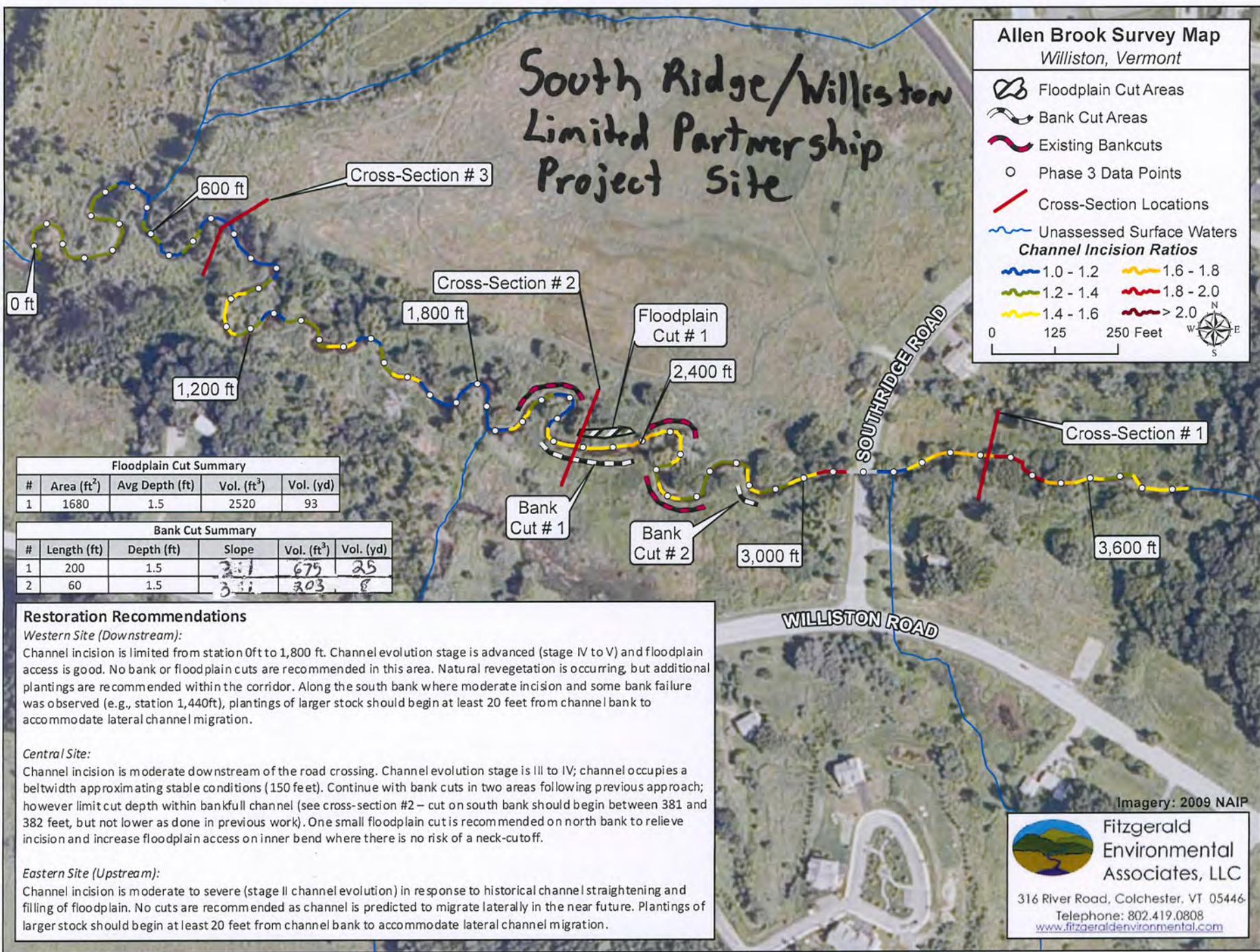
### Allen Brook Survey Map Williston, Vermont

- Floodplain Cut Areas
- Bank Cut Areas
- Existing Bankcuts
- Phase 3 Data Points
- Cross-Section Locations
- Unassessed Surface Waters

#### Channel Incision Ratios

	1.0 - 1.2		1.6 - 1.8
	1.2 - 1.4		1.8 - 2.0
	1.4 - 1.6		> 2.0

0 125 250 Feet



#	Area (ft <sup>2</sup> )	Avg Depth (ft)	Vol. (ft <sup>3</sup> )	Vol. (yd)
1	1680	1.5	2520	93

#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd)
1	200	1.5	3:1	675	25
2	60	1.5	3:1	303	8

### Restoration Recommendations

**Western Site (Downstream):**  
Channel incision is limited from station 0ft to 1,800 ft. Channel evolution stage is advanced (stage IV to V) and floodplain access is good. No bank or floodplain cuts are recommended in this area. Natural revegetation is occurring, but additional plantings are recommended within the corridor. Along the south bank where moderate incision and some bank failure was observed (e.g., station 1,440ft), plantings of larger stock should begin at least 20 feet from channel bank to accommodate lateral channel migration.

**Central Site:**  
Channel incision is moderate downstream of the road crossing. Channel evolution stage is III to IV; channel occupies a beltwidth approximating stable conditions (150 feet). Continue with bank cuts in two areas following previous approach; however limit cut depth within bankfull channel (see cross-section #2 – cut on south bank should begin between 381 and 382 feet, but not lower as done in previous work). One small floodplain cut is recommended on north bank to relieve incision and increase floodplain access on inner bend where there is no risk of a neck-cut-off.

**Eastern Site (Upstream):**  
Channel incision is moderate to severe (stage II channel evolution) in response to historical channel straightening and filling of floodplain. No cuts are recommended as channel is predicted to migrate laterally in the near future. Plantings of larger stock should begin at least 20 feet from channel bank to accommodate lateral channel migration.

Imagery: 2009 NAIP

**Fitzgerald  
Environmental  
Associates, LLC**

316 River Road, Colchester, VT 05446  
Telephone: 802.419.0808  
[www.fitzgeraldenvironmental.com](http://www.fitzgeraldenvironmental.com)



Fitzgerald  
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Bank Cut Summary					
#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd)
1	90	1.5	3:1	540	20
2	95	1.5	3:1	321	12
3	45	1.5	3:1	152	6

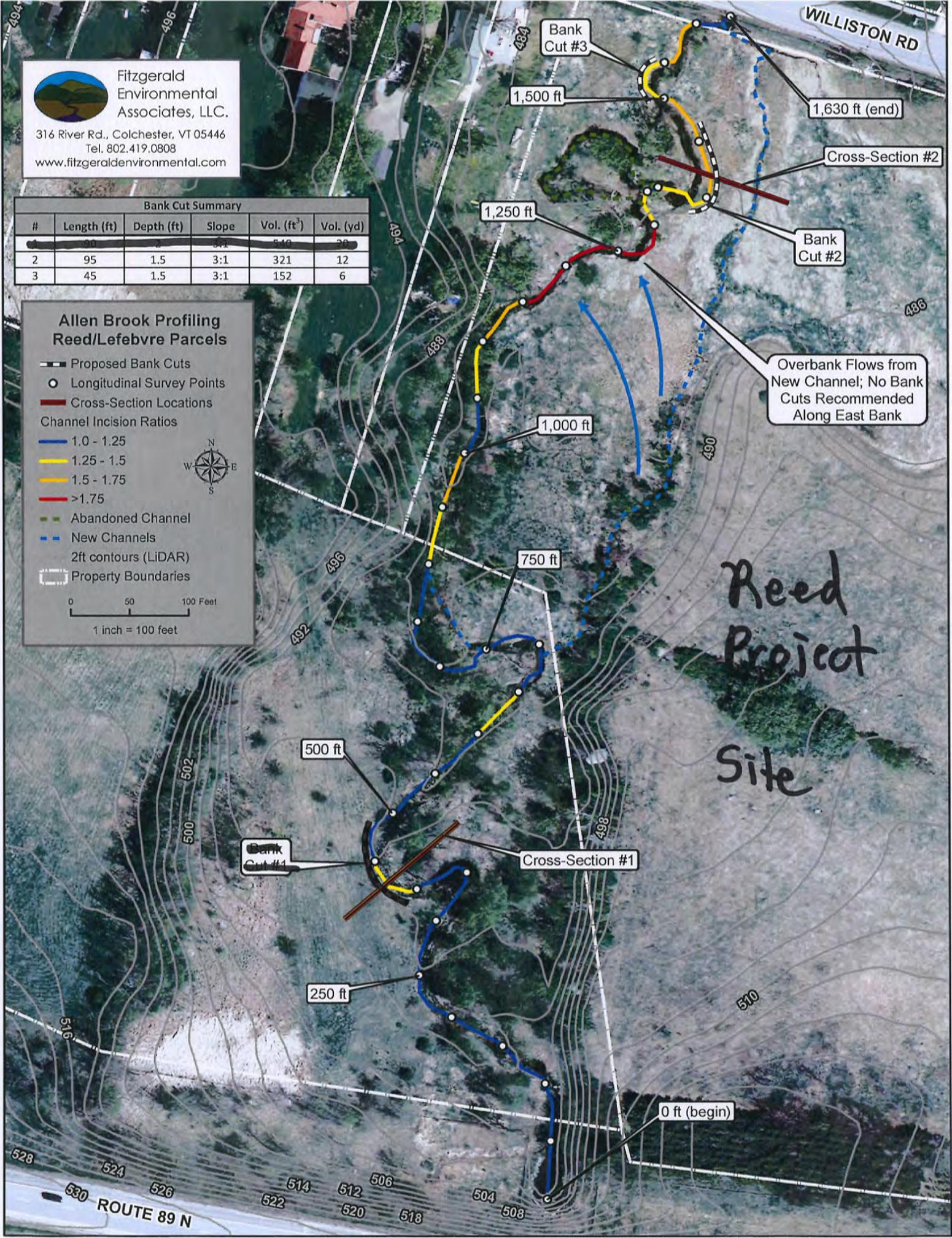
### Allen Brook Profiling Reed/Lefebvre Parcels

- Proposed Bank Cuts
- Longitudinal Survey Points
- Cross-Section Locations
- Channel Incision Ratios
- 1.0 - 1.25
- 1.25 - 1.5
- 1.5 - 1.75
- >1.75
- Abandoned Channel
- New Channels
- 2ft contours (LIDAR)
- Property Boundaries



0 50 100 Feet

1 inch = 100 feet



Reed  
Project  
Site

Overbank Flows from  
New Channel; No Bank  
Cuts Recommended  
Along East Bank

Bank  
Cut #3

WILLISTON RD

1,500 ft

1,630 ft (end)

Cross-Section #2

Bank  
Cut #2

1,250 ft

1,000 ft

750 ft

500 ft

Bank  
Cut #1

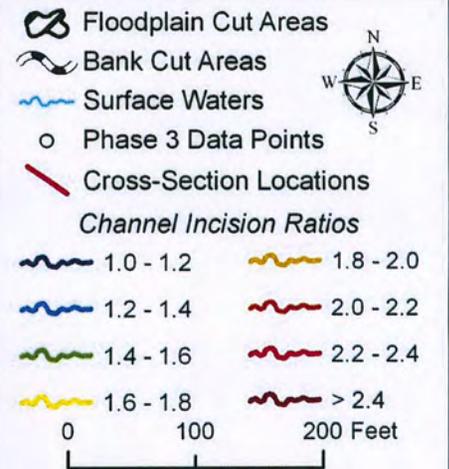
Cross-Section #1

250 ft

0 ft (begin)

ROUTE 89 N

**Allen Brook: Griswold Site Plan**  
Williston, Vermont



Bank Cut Summary					
#	Length (ft)	Depth (ft)	Slope	Vol. (ft <sup>3</sup> )	Vol. (yd)
1	95	4	3:1	2280	84
2	140	4	3:1	3360	124
3	75	3	3:1	1012.5	38
5A	110	2	3:1	660	24
5B	60	2	3:1	360	13

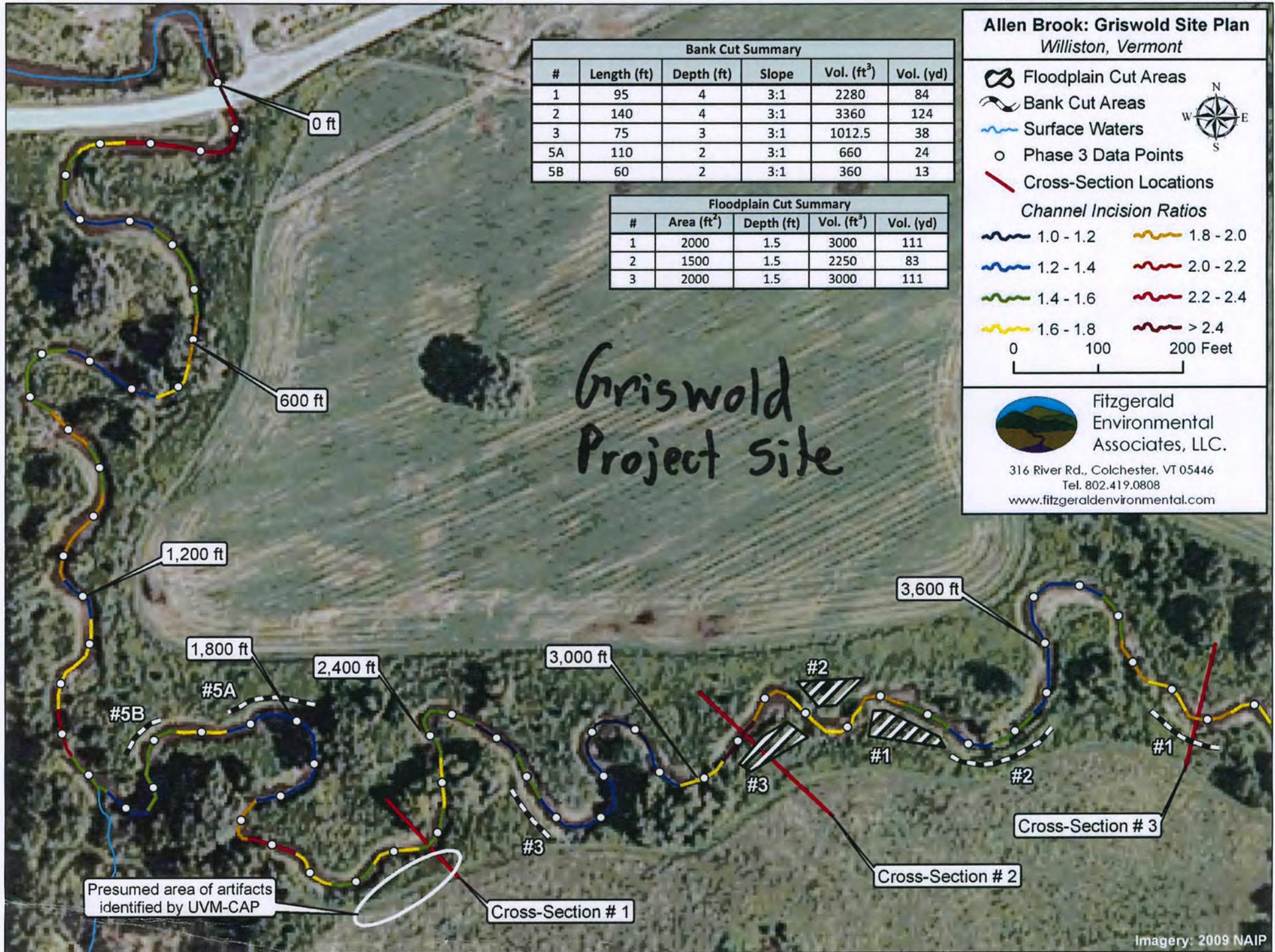
Floodplain Cut Summary				
#	Area (ft <sup>2</sup> )	Depth (ft)	Vol. (ft <sup>3</sup> )	Vol. (yd)
1	2000	1.5	3000	111
2	1500	1.5	2250	83
3	2000	1.5	3000	111

Griswold  
Project Site



Fitzgerald  
Environmental  
Associates, LLC.

316 River Rd., Colchester, VT 05446  
Tel. 802.419.0808  
www.fitzgeraldenvironmental.com



## **RFB Mailing List**

**John Scott Excavating, Inc.  
1486 Main Road  
Huntington, VT**

**Grzywna Construction, Inc.  
264 Sherwood Forest Road  
Richmond, VT 05477**

**Ronald Weston Excavating Inc  
143 Towers Road  
Essex Junction, VT 05452**

**Germaine Excavating  
300 Old Stage Rd  
Williston, VT 05495**

**Don Weston Excavating, Inc  
349 Commerce Street  
Williston, VT 05495-7154**

**Omega Construction  
Attn: Mr. Al Senecal  
25 Omega Drive, Suite 201  
Williston, Vermont 05495**

**Omega Excavation  
Attn: Mr. Al Senecal  
378 Commerce Street  
Williston, VT 05495-7155**

**All Seasons Excavating, Inc.  
1607 Malletts Bay Ave  
Colchester, VT 05446**

**R J Weston Excavating  
175 Towers Rd  
Essex Junction, VT 05452**

**Richard L. Antone  
306 Willow Brook Ln  
Williston, VT 05495**



# Appendix J

## **Stormwater Offset Permits Results Summary**





## Simulation Scenarios Results

Land Use		Land Input Files					
		Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Index (1-25)	Land Use	Area (ha)	Original CN	KLSCP	Area (ha)	Original CN	KLSCP
1	Crop	42.7	79.6	0.022846374	42.7	79.6	0.022846374
2	Pasture	77.7	77.7	0.003298558	77.7	77.7	0.003298558
3	Rural Open Land	6.8	78.4	0.009858564	5.5	78.0	0.008249009
4	Forest	76.3	72.7	0.003733079	77.6	72.8	0.003754118
5	Residential	30.4	91.0	0	30.4	91.0	0
6	Commercial	0.0	50.0	0	0.0	50.0	0
7	Industrial	0.0	50.0	0	0.0	50.0	0
8	Transportation	20.7	98.0	0	20.7	98.0	0

Monthly			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
June-05	0.0190	4.8786	June-05	0.0190	4.8432
July-05	0.0263	15.4062	July-05	0.0262	15.2554
August-05	0.0027	0.4364	August-05	0.0027	0.4360

Annual			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
2005	0.0180	20.7212	2005	0.0180	20.5346

Conclusion		
	Total Sediment (Mg)	Total Sediment (Lbs)
BASE DATA	20.7212	45,682.6
SCENARIO DATA	20.5346	45,271.2
<b>TOTAL REDUCTION PER YEAR</b>	0.1866	411.4
	<b>Decrease in Sediment load: 0.90%</b>	



## Simulation Scenarios Results

Land Use		Land Input Files					
		Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Index (1-25)	Land Use	Area (ha)	Original CN	KLSCP	Area (ha)	Original CN	KLSCP
1	Crop	17.4	75.2	0.047113467	17.4	75.2	0.047113467
2	Pasture	7.3	74.8	0.004781416	7.3	74.8	0.004781416
3	Rural Open Land	1.3	73.6	0.014856577	0.8	73.4	0.013595515
4	Forest	25.7	68.6	0.0026352	26.1	68.6	0.002676474
5	Residential	61.7	86.7	0	61.7	86.7	0
6	Commercial	8.5	91.8	0	8.5	91.8	0
7	Industrial	0.0	50.0	0	0.0	50.0	0
8	Transporation	21.7	98.0	0	21.7	98.0	0

Monthly			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
June-05	0.0195	2.2267	June-05	0.0195	2.2097
July-05	0.0225	8.9332	July-05	0.0225	8.8874
August-05	0.0029	0.0904	August-05	0.0029	0.0903

Annual			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
2005	0.0166	11.2503	2005	0.0166	11.1874

Conclusion		
	Total Sediment (Mg)	Total Sediment (Lbs)
BASE DATA	11.2503	24,802.7
SCENARIO DATA	11.1874	24,664.0
<b>TOTAL REDUCTION PER YEAR</b>	0.0629	138.8
	<b>Decrease in Sediment load: 0.56%</b>	



## Simulation Scenarios Results

Land Use		Land Input Files					
		Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Index (1-25)	Land Use	Area (ha)	Original CN	KLSCP	Area (ha)	Original CN	KLSCP
1	Crop	39.8	79.5	0.024177284	39.8	79.5	0.024177284
2	Pasture	72.5	77.6	0.00319283	72.5	77.6	0.00319283
3	Rural Open Land	15.1	79.3	0.004994803	13.9	79.2	0.004818275
4	Forest	77.1	72.7	0.003664505	78.3	72.8	0.003640326
5	Residential	30.2	91.0	0	30.2	91.0	0
6	Commercial	0.0	50.0	0	0.0	50.0	0
7	Industrial	0.0	50.0	0	0.0	50.0	0
8	Transporation	20.7	98.0	0	20.7	98.0	0

Monthly			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
June-05	0.0185	4.8670	June-05	0.0185	4.8439
July-05	0.0259	15.0872	July-05	0.0259	15.0281
August-05	0.0026	0.4566	August-05	0.0026	0.4535

Annual			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
2005	0.0177	20.4108	2005	0.0177	20.3256

Conclusion		
	Total Sediment (Mg)	Total Sediment (Lbs)
BASE DATA	20.4108	44,998.2
SCENARIO DATA	20.3256	44,810.3
<b>TOTAL REDUCTION PER YEAR</b>	0.0852	187.9
	<b>Decrease in Sediment load: 0.42%</b>	



## Simulation Scenarios Results

Land Use		Land Input Files					
		Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Index (1-25)	Land Use	Area (ha)	Original CN	KLSCP	Area (ha)	Original CN	KLSCP
1	Crop	17.3	75.2	0.047113467	17.3	75.2	0.047113467
2	Pasture	7.3	74.8	0.004781416	7.3	74.8	0.004781416
3	Rural Open Land	1.2	71.2	0.01679983	0.9	71.5	0.015628849
4	Forest	26.1	68.5	0.00269585	26.3	68.4	0.002732661
5	Residential	61.0	86.8	0	61.0	86.8	0
6	Commercial	8.5	91.8	0	8.5	91.8	0
7	Industrial	0.0	50.0	0	0.0	50.0	0
8	Transporation	21.7	98.0	0	21.7	98.0	0

Monthly			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
June-05	0.0194	2.2282	June-05	0.0194	2.2149
July-05	0.0224	8.9616	July-05	0.0224	8.9255
August-05	0.0029	0.0906	August-05	0.0029	0.0905

Annual			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
2005	0.0165	11.2803	2005	0.0165	11.2309

Conclusion		
	Total Sediment (Mg)	Total Sediment (Lbs)
BASE DATA	11.2803	24,869.0
SCENARIO DATA	11.2309	24,759.9
<b>TOTAL REDUCTION PER YEAR</b>	0.0495	109.0
	<b>Decrease in Sediment load: 0.44%</b>	



## Simulation Scenarios Results

Land Use		Land Input Files					
		Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Index (1-25)	Land Use	Area (ha)	Original CN	KLSCP	Area (ha)	Original CN	KLSCP
1	Crop	15.1	78.4	0.039390355	15.1	78.4	0.039381654
2	Pasture	32.0	74.4	0.008390509	31.6	74.4	0.008440587
3	Rural Open Land	1.4	75.0	0.008596208	1.4	75.0	0.008596208
4	Forest	53.8	71.0	0.003693543	54.2	70.9	0.003677808
5	Residential	40.4	88.4	0	40.5	88.4	0
6	Commercial	0.0	50.0	0	0.0	50.0	0
7	Industrial	0.0	50.0	0	0.0	50.0	0
8	Transportation	35.8	98.0	0	35.8	98.0	0

Monthly			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
June-05	0.0214	2.2513	June-05	0.0214	2.2483
July-05	0.0239	10.5517	July-05	0.0239	10.5438
August-05	0.0031	0.1204	August-05	0.0031	0.1203

Annual			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
2005	0.0178	12.9234	2005	0.0178	12.9125

Conclusion		
	Model Results	
	Total Sediment (Mg)	Total Sediment (Lbs)
BASE DATA	12.9234	28,491.2
SCENARIO DATA	12.9125	28,467.2

TOTAL REDUCTION PER YEAR	0.0109	24.0
	Decrease in Sediment load: 0.08%	



## Simulation Scenarios Results

\* There is no active agricultural land being converted but due to the poor resolution of the land use data used in the creation of the model a small amount of area identified as "CROP" was converted.

Land Use		Land Input Files					
		Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Index (1-25)	Land Use	Area (ha)	Original CN	KLSCP	Area (ha)	Original CN	KLSCP
1	Crop	12.0	81.0	0.068315729	11.7	81.0	0.066916718
2	Pasture	7.0	79.5	0.008796659	5.9	79.4	0.005968957
3	Rural Open Land	0.1	79.0	0.000935309	0.1	79.0	0.000935309
4	Forest	0.6	74.8	0.001348799	1.9	74.9	0.005621323
5	Residential	0.6	92.0	0	0.6	92.0	0
6	Commercial	0.0	50.0	0	0.0	50.0	0
7	Industrial	0.0	50.0	0	0.0	50.0	0
8	Transporation	2.2	98.0	0	2.2	98.0	0

Monthly			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
June-05	0.0024	3.0084	June-05	0.0024	2.8183
July-05	0.0033	8.9853	July-05	0.0033	8.4500
August-05	0.0005	0.3295	August-05	0.0005	0.3067

Annual			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
2005	0.0023	12.3233	2005	0.0023	11.5749

Conclusion		
	Total Sediment (Mg)	Total Sediment (Lbs)
BASE DATA	12.3233	27,168.3
SCENARIO DATA	11.5749	25,518.4
<b>TOTAL REDUCTION PER YEAR</b>	0.7484	1,649.9
	<b>Decrease in Sediment load: 6.07%</b>	



## Simulation Scenarios Results

\* There is no active agricultural land being converted but due to the poor resolution of the land use data used in the creation of the model a small amount of area identified as "CROP" was converted.

Land Use		Land Input Files					
		Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Index (1-25)	Land Use	Area (ha)	Original CN	KLSCP	Area (ha)	Original CN	KLSCP
1	Crop	10.1	71.0	0.021332935	10.0	71.1	0.021386131
2	Pasture	9.1	64.5	0.003088326	8.0	65.0	0.003231421
3	Rural Open Land	2.8	65.2	0.00591103	2.8	65.2	0.00591103
4	Forest	7.3	58.7	0.001600485	8.4	58.2	0.001467924
5	Residential	7.3	85.4	0	7.3	85.4	0
6	Commercial	11.0	90.1	0	11.0	90.1	0
7	Industrial	0.0	50.0	0	0.0	50.0	0
8	Transportation	2.5	98.0	0	2.5	98.0	0

Monthly			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
June-05	0.0051	0.5468	June-05	0.0051	0.5468
July-05	0.0056	2.5243	July-05	0.0056	2.5088
August-05	0.0008	0.0190	August-05	0.0008	0.0189

Annual			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
2005	0.0042	3.0900	2005	0.0042	3.0744

Conclusion		Model Results	
	Total Sediment (Mg)	Total Sediment (Lbs)	
BASE DATA	3.0900	6,812.3	
SCENARIO DATA	3.0744	6,778.0	
<b>TOTAL REDUCTION PER YEAR</b>	0.0156	34.3	<b>Decrease in Sediment load: 0.50%</b>



## Simulation Scenarios Results

Land Use		Land Input Files					
		Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Index (1-25)	Land Use	Area (ha)	Original CN	KLSCP	Area (ha)	Original CN	KLSCP
1	Crop	28.7	79.7	0.015094855	28.1	79.8	0.014236014
2	Pasture	13.8	77.6	0.003727594	13.4	77.7	0.003533593
3	Rural Open Land	0.1	79.2	0.002016156	0.1	79.2	0.002016156
4	Forest	8.2	67.3	0.000962882	9.2	67.6	0.001208032
5	Residential	21.6	90.8	0	21.6	90.8	0
6	Commercial	8.6	93.6	0	8.6	93.6	0
7	Industrial	0.0	50.0	0	0.0	50.0	0
8	Transportation	7.4	98.0	0	7.4	98.0	0

Monthly			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
June-05	0.0136	1.6876	June-05	0.0135	1.5632
July-05	0.0152	4.9606	July-05	0.0151	4.6254
August-05	0.0021	0.1973	August-05	0.0021	0.1849

Annual			Model Results		
Allen Brook Watershed BASE DATA			Allen Brook Watershed SCENARIO DATA		
Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)	Date	Average Flow (m <sup>3</sup> /s)	Total Sediment (Mg)
2005	0.0114	6.8455	2005	0.0114	6.3735

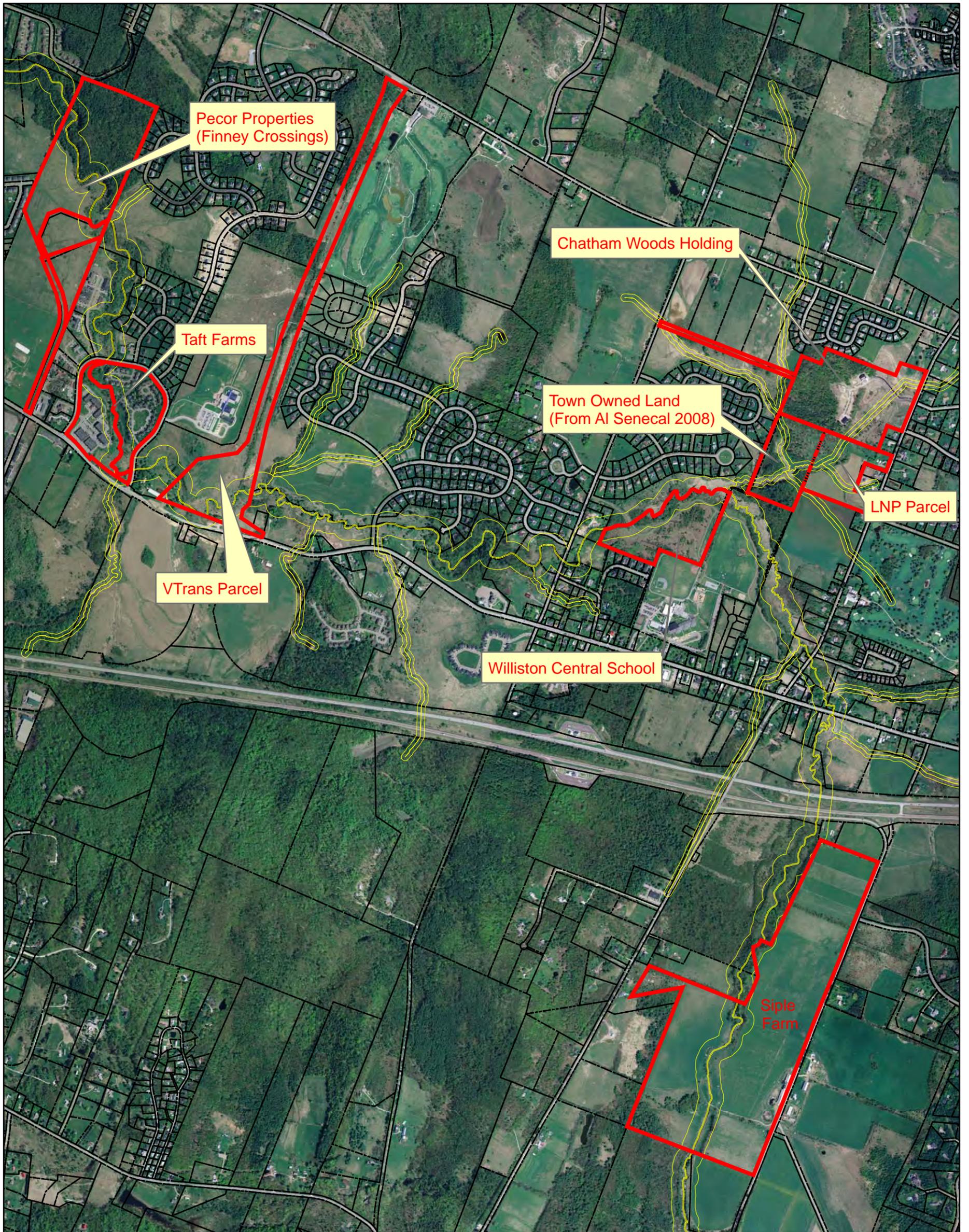
Conclusion		
	Total Sediment (Mg)	Total Sediment (Lbs)
BASE DATA	6.8455	15,091.9
SCENARIO DATA	6.3735	14,051.1
<b>TOTAL REDUCTION PER YEAR</b>	0.4721	1,040.8
	<b>Decrease in Sediment load: 6.90%</b>	

# Appendix K

## Recommendations



# Allen Brook Restoration Project Recommended Restoration Sites



Created by KAS, Inc.



## Legend

-  Stream Buffer
-  Recommend Project Site



# Appendix L

## Newspaper Articles





Ian Ambler, owner of Stowe-based Ambler Landscape Architecture & Ecological Design, shows the Bear Cub Scout Den Williston Pack 692 how to plant tree seedlings. The scouts planted the trees in a field along the Allen Brook, between Williston village and North Williston Road, on Nov. 1 to help with restoration efforts. (Observer photo by Steven Frank)

Williston has yet to see a significant snowfall this year, but there's still a lot of white around town.

Instead of the fluffy stuff, the color has blanketed the banks of the Allen Brook in the form of ubiquitous tree tubes that represent significant progress in the restoration of a watershed that has long been relegated to the state's list of impaired waters.

"I'm very proud of the work that we've been able to do," said Williston Conservation Commission member Jude Hersey. "I really feel when driving around the town that we're making an impact."

Hersey and her commission cohorts are indeed making an impact, as Stephen **Diglio**, project manager with the environmental consulting firm KAS Inc., attests.

According to **Diglio**, 17 acres, with an average of 200 to 250 trees per acre, have been planted along the Allen Brook — a sprawling watershed located entirely within the town's boundaries.

"The initial goal for the project was to do the restoration of 10 acres, so we actually exceeded those goals," said **Diglio**.

As Williston senior planner Jessica Andreoletti explained, the restoration of the Allen Brook has been an ongoing, multi-year process.

"There have been multiple phases to the project, and this is the culmination phase," Andreoletti said. "The whole point is to keep sediment out of the Allen Brook, and the only way to do that is to plant trees and provide habitat. What we're trying to do is bring back fish and bugs. The reason why it hasn't passed the state's stormwater standards is because there's not enough fish or bugs."

In order for the tree planting to commence, however, Andreoletti and **Diglio** first had to convince landowners to give up land within the brook's 150-foot riparian buffer by signing conservation easements over to the town in exchange for cash compensation.

"Really the biggest challenge we had was getting land owners to commit, because it is an easement on their property," **Diglio** said. "It doesn't really provide any more restrictions than the local town zoning, but it's a perpetual thing. The zoning could one day disappear, but the easement will stay."

"But all in all," continued **Diglio**, "most of the land is undevelopable anyway, so it's a net benefit for everybody. They're getting money for land they couldn't really do anything with, plus we're improving the water quality and health of the brook in hopes to eventually get it off the impaired water (list), and that's the ultimate goal of the restoration project."

Rick and Karen Reed, whose 14-acre plot on Williston Road abuts the brook, were more than happy to allow an easement on the western edge of their property.

"It's not land that has any commercial value anyway and (it has) sort of marginal agricultural value, so I couldn't see really a reason not to participate," said Rick Reed. "I thought it was great."

Doug Goulette, a member of the homeowner's association in Williston's Southridge neighborhood, said his community is unified in its support of the Allen Brook restoration.

"We wanted to do everything we could to improve the water quality of Allen Brook, at least where it passes through our property," Goulette said. "It seemed like a win-win situation for all parties."

There are two components to the Allen Brook project: land acquisition and restoration. Andreoletti said that while 2011 restoration funds have been exhausted and the final 70 trees were planted on Nov. 19, additional land acquisition dollars remain.

Funding for land acquisition and restoration was made possible by a federal grant the town secured through Jim Fay of the Champlain Water District. Under the terms of the State Tribal Assistance Grant — recently extended through July 1, 2012 — the grant will pay 55 percent (up to \$220,243) of total project costs, if the town comes up with the 45-percent match.

With \$66,080 in matching grant monies already in tow from a variety of sources — including the state's Stormwater Impaired Restoration Fund — the Williston Selectboard authorized the use of up to \$114,119 of the town's Environmental Reserve Fund to satisfy the match.

Besides the environmental benefits of the Allen Brook restoration, Hersey said the project serves as a way to unite the community and to teach the value of conservation to local youths.

“Both of our schools border the Allen Brook, so you can have kids at a young age be a part of protecting the environment,” Hersey said.

Andreoletti observed that in addition to preserving the long-term welfare of Williston’s primary watershed, the brook’s restoration also sends a symbolic message to residents.

“Williston gets a bad rep for being the box store capital of Vermont, and this (project) shows there’s more to Williston than just that,” said Andreoletti.

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# Williston students work to improve Allen Brook

By **Stephanie Choate**  
Observer staff

As the temperature approached 90 degrees Tuesday, seventh grade student Brad Kennedy dug a hole for a box elder sapling along the banks of the Allen Brook.

Chris Reiss, also in seventh grade, lugged a bucket of water up from the brook.

"It's hard work, but it's fun," Reiss said.

"It's for a good cause," Kennedy added.

A group of Williston Central School seventh and eighth grade students planted nearly 90 trees on the banks of the Allen Brook behind the Williston fire station Monday and Tuesday. The trees were all native species, including willow, silky dogwood and box elder.

The project is a partnership between Williston Central, the town of Williston and the University of Vermont's Watershed Alliance Program. The town purchased the trees from Intervale Conservation Nursery in Burlington using a grant from the Vermont Clean and Clear program.

Students also planted trees in the area last year.

"What we're trying to do is stabilize the stream bank," Full House science teacher Tad Dippel said.

Since there are no trees along



Observer photo by Stephanie Choate

## Williston Central School seventh graders Samara Bissonette (left) and Kayla Ashley get ready to plant a box elder tree near the Allen Brook.

the banks in that area, high water washes away the soil.

"The trees will also provide shade and lower the water temperature," Dippel said.

The section of the brook, which winds through an open field, gets extremely hot, Dippel said as the sun blazed overhead. Since there is no shade on the brook, the

water temperature rises, making it inhospitable to some creatures.

"It can only play host to smaller organisms," Dippel said.

Town Planner Jessica Andreoletti said the trees will help control the flow of water during storms. They will also help keep phosphorus out of Lake Champlain by reducing erosion. Eroston

brings runoff from roads, lawns and farmland — major sources of phosphorus — into the lake.

Kennedy and Reiss said planting trees was worth the hard work, since they will help improve the ecosystem in the area.

"So more species of animals can live in the Allen Brook," Reiss said.

outside

# Students work to improve Williston's Allen Brook



LYNN MONTY, Free Press

Williston Central School teacher Tad Dippel carried shovels for his students to use on the banks of Allen Brook. Students from the Full House unit planted trees to help improve the habitat behind the Williston Fire Department last week.

"It's good to have the kids make a difference in their community," Dippel said. "What they are doing is helping the Allen Brook improve itself because it's an impaired stream."

Watershed Alliance Outreach and Education Coordinator Bethany Hanna teamed up with Williston Planner Jessica Andreoletti to teach students about ways to improve the habitat along the Allen Brook.

"Today they are going to be planting different saplings and removing honeysuckle which is an invasive species," Hanna said. In June they are planning to work with the fifth- and sixth-graders on the project.

Andreoletti said she does a lot of the natural resource planning for the town. "The Allen Brook is on the 303(d) list of impoverished waters," she said of the brook and its failure to meet government-mandated water quality standards. "Our office writes grants to restore the river to get it off the list. We are able to do this project today through town funds and a Clean and Clear program grant."

Andreoletti said the habitat has be-

come degraded from the stormwater runoff, which has created sedimentation resulting in a loss of bug habitat. "The fish don't have anything to eat. There's not enough fish habitat, not enough pools, riffles or enough gravel for bugs to live under. The fish here are pretty small and are not a very diverse group."

Since there so few trees in the area the stormwater runoff erodes the banks. Adding trees will secure the banks and shade the brook. Less sediment will allow for a pool riffle habitat (or shallow stretch of river) that is needed for oxygen, Andreoletti said.

— Lynn Monty, Free Press

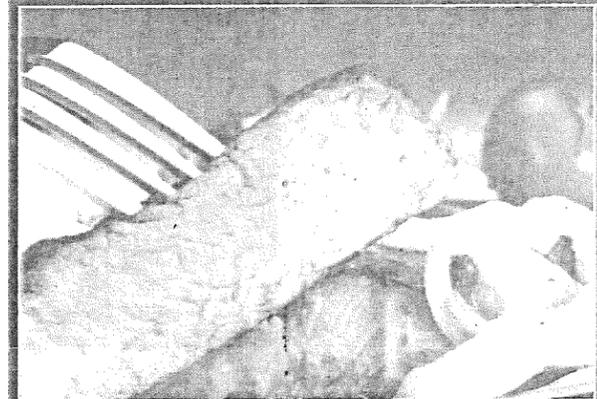
Williston Planner Jessica Andreoletti teaches Williston Central School's Full House about natural resource planning at Allen Brook behind the Williston Fire Department on May 24. She and Bethany Hanna, the University of Vermont's Watershed Alliance outreach and education coordinator, have teamed up to educate students about rebuilding stream banks.

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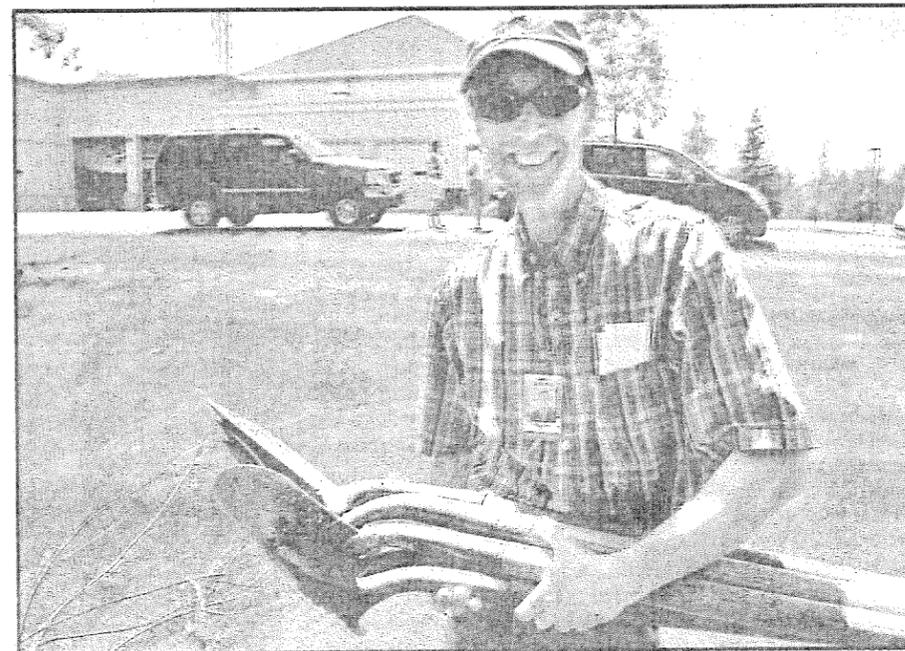


Williston Planner Jessica Andreoletti and University of Vermont Watershed Alliance Outreach and Education Coordinator Bethany Hanna lead Williston Central School students to Allen Brook to rebuild its banks behind the Williston Fire Department on May 24.

Photos by LYNN MONTY, Free Press



Williston Planner Jessica Andreoletti



Williston Central School teacher Tad Dippel carries shovels to help build up the banks of Allen Brook.

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# Williston OBSERVER

APRIL 22, 2010

WILLIS

## Crews help restore impaired Allen Brook

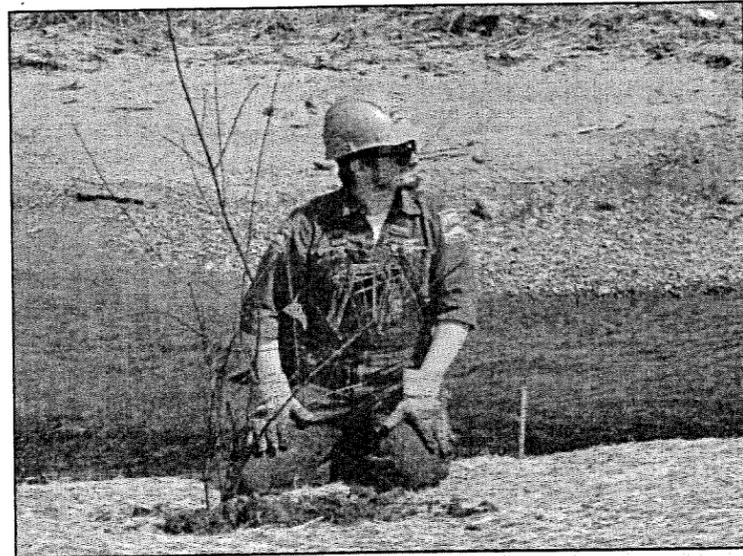
By Greg Duggan  
Observer staff

Standing on the shore of the Allen Brook last week, Jessica Andreoletti pointed to a sloped bank at a spot upstream, where freshly planted young shrubs sat in the earth. The bank stood in stark contrast to a 5-foot cliff just downstream at a bend in the brook.

Andreoletti, who works for Williston as a town planner, said the Allen Brook was long ago channelized to create good farmland. As the brook wends its way through Williston, it flows up against the steep banks, carving out sediment that chokes fish and bug habitat.

"The river is now trying to reestablish its floodplain," Andreoletti said.

The town is trying to help, which is why it is overseeing efforts to level the banks of the stream. Erosion and the subsequent degradation of fish and insect habitat have



Observer photo by Greg Duggan

**Cliff DesMarais, a school instructor for a Vermont Youth Conservation Corps group, plants a silky dogwood shrub on a bank of the Allen Brook last week. The VYCC crew spent a week working on the brook as part of an ongoing effort to reduce erosion.**

landed the Allen Brook on a state list of impaired waterways. plantings along the shores and surveys of fish populations.

Past efforts to improve and monitor the brook have included Last week, a crew of two instructors and five students from

the Vermont Youth Conservation Corps, or VYCC, continued the restoration efforts by planting shrubs and trees along a southern bank of the Allen Brook. Richmond-based Grzywna Construction had created graded slopes at a section of the brook near the intersection of South Ridge Road and U.S. 2. By planting trees and shrubs, as well as spreading grass seed and laying down a biodegradable mat of hay, the VYCC crew hoped to hold the soil in place.

Andreoletti said the spot was chosen for restoration work based on a stream assessment that determined the area to be a high priority site.

The VYCC was brought in with a \$2,530 grant from the state. The Southridge Neighborhood Association, which lies to the north of that section of the Allen Brook, donated additional funds. Grzywna

SEE RESTORATION PAGE 2



Observer photo by Greg Duggan

**Crews from the Vermont Youth Conservation Corps worked on the banks of the Allen Brook last week, planting trees and shrubs in an effort to prevent erosion.**

### RESTORATION

CONTINUED FROM PAGE 1

Construction also contributed by doing some of its work without pay, Andreoletti said. The Snyder Group, which owns the land on the south side of the brook, allowed the crews to work on the property.

The VYCC works with high school students from the state, allowing them to obtain credit through public and school partnerships. The organization has worked with Williston in the past.

A different VYCC crew did an initial planting last summer on the north side of the Allen Brook. Last Thursday, Andreo-

letti pointed out areas where the brook had already eroded restored parts of the northern bank, and acknowledged the trial and error nature of the effort.

Despite the learning process of the restoration, Andreoletti noted that the project has become a bit of a community effort: on Saturday, a group of Williston Cub Scouts planted trees and shrubs at the site.

The new plants could improve not only the Allen Brook's water quality, but also its aesthetic quality.

"It looks like if you give it a year or two you'll want to spread out a blanket and have a picnic," said Cliff DesMarais, one of the VYCC instructors.

# Caring for the Allen Brook

By Greg Duggan  
Observer staff

Williston recently received nearly \$10,000 to continue restoration efforts along the Allen Brook.

Williston was one of 22 organizations and towns to receive a grant from the Lake Champlain Basin Program, or LCBP, which doled out \$135,778 for projects that benefit the Lake Champlain watershed.

Of that money, \$9,513 will help Williston continue its efforts to create a vegetated riparian buffer along an impaired portion of the Allen Brook. The brook is included on the state's list of impaired waterways for stormwater management and bacteria, said Eric Howe, technical coordinator for the Lake Champlain Basin Program.

Most of the money going to

Williston will fund the purchase of trees, shrubs and other supplies, Howe said. Some of the money will be used to hire a consultant to review parts of the project.

"Prior to doing the actual plantings, however, the recipients will use a watershed model specific to Williston to prioritize parcels along Allen Brook for revegetation, in order to optimize their resources," Howe wrote in an e-mail to the Observer.

Williston planner Jessica Andreoletti submitted the grant application. She could not be reached for comment prior to press deadline.

Howe explained that a review committee of experts from around the Lake Champlain Basin reviewed the grant applications. More than \$275,000 was requested under the category of Aquatic Invasive Species/Pollution Prevention, and Williston

was chosen to receive some of the nearly \$60,000 available in the category.

"This project addresses one of the highest LCBP priorities in the LCBP Lake Champlain Management Plan, *Opportunities for Action*, which is to reduce phosphorus pollution to Lake Champlain," Howe wrote in his e-mail. "It also addresses another LCBP priority, to protect and restore stream, wetland and riparian habitat."

Howe said the plantings along the Allen Brook could begin in April 2011. Eventually, Howe wrote, the goal is for the plants to "mature, and provide shade and habitat structure for the waterway, stabilize the streambanks to prevent eroding and reduce sedimentation in the tributary, and possibly even help to restore some of the fish populations and other critters that were in this system before it was degraded."

# Residents may help restore Allen Brook

By Tim Simard  
Observer correspondent

Andreoletti made her first presentation to the public on Sept. 23. Approximately 20 residents turned up at a meeting at the Williston Fire Department to learn what the restorative project could mean for their properties. Andreoletti also sent letters to about 60 landowners with the largest tracts of properties along the brooks. She plans to contact more property owners in coming weeks.

One Williston resident, whose neighborhood borders the Allen Brook, said the town's proposals are reasonable and will go a long way in removing stormwater and pollutants commonly found in the stream.

"I can't see any negatives to it," said Jude Hersey, who lives in the Heritage Meadows neighborhood and is a member of the Conservation Commission.

In the letter, Andreoletti asks the property owners two questions. The first is if they'd be willing

SEE ALLEN BROOK PAGE 4

## ALLEN BROOK CONTINUED FROM PAGE 3

to allow trees and shrubs to be planted on their property on a 50-foot or 150-foot buffer extending back from the Allen Brook or its tributaries.

The second piece asks if landowners would be interested in providing the town with a conservation easement on the newly planted buffer, and allowing town officials to monitor the easement from time to time.

"(Landowners) aren't going to lose access to their property," she said. "They're not going to be able to do anything less than they can do right now."

Williston's development by-law already limits landowners from developing within the Allen Brook buffer zones.

"It's not like they're losing their

land, it's just that there will be some restrictions," she said.

Andreoletti said people can donate their land; however, there are funds available for property owners who might want to sell their land to the town as part of the easement. She hopes citizens would be more inclined to donate. With limited grant money that expires at the end of 2011, Andreoletti said she would like the bulk of the funds to go to restorative measures.

The restoration project will have several benefits for the town, Andreoletti said. Besides the benefits of a less polluted Allen Brook, town taxes would decrease if the stream is removed from the state's impaired waterway list.

Also, more improvements to the brook mean more stormwater offset credits the town might see for future development.

"There are a lot of pluses here," she said.

Developers who build in Williston must have a detailed stormwater management plan and purchase offset credits to help the town deal with increased sediment in the waterways. The town's development has brought sediment, stormwater and other pollutants into the Allen Brook in recent years. But there have been improvements.

Led by Andreoletti, the town has planted trees and shrubs in different parts of the brook's floodplain, including behind the fire station and near the entrance to the Southridge neighborhood. Also at Southridge, the town cut back part of a steep bank to allow the brook better access to its floodplain. It's that restorative work that Andreoletti wants to see completed all along the brook.

So does Hersey. She suggested inviting Andreoletti to speak before the Heritage Meadows Homeowners Association's board of directors. She hopes the board and neighborhood residents will be receptive to a conservation easement on their common land. "I'd be interested to walk along the brook down there and see the status of the banks and the wetland area," Hersey said.

Since the Allen Brook is located wholly within Williston, the town has a "unique opportunity" to help restore the Winooski River watershed and, in turn, improve Lake Champlain, Andreoletti said.

Andreoletti intends to conduct more meetings with residents and neighborhood associations in the coming months. For more information, contact the Williston Planning and Zoning Office at 878-6704.

In an effort to continue restoring Williston's Allen Brook, classified by the state as an impaired stream, town officials are asking residents to help. Williston planners hope residents with land directly abutting the polluted brook will allow for further restorative efforts and possibly grant conservation easements on their land.

Planner Jessica Andreoletti says continued improvements to the Allen Brook benefit all Williston residents. She hopes the 158 landowners whose property directly abuts the brook and its tributaries, which are on a state list of impaired waterways, will be receptive to the ideas she's presented.

"This is a community effort," Andreoletti said. "We're all going to have to work together to get this stream off that list."

# Local planting project to take root on Earth Day

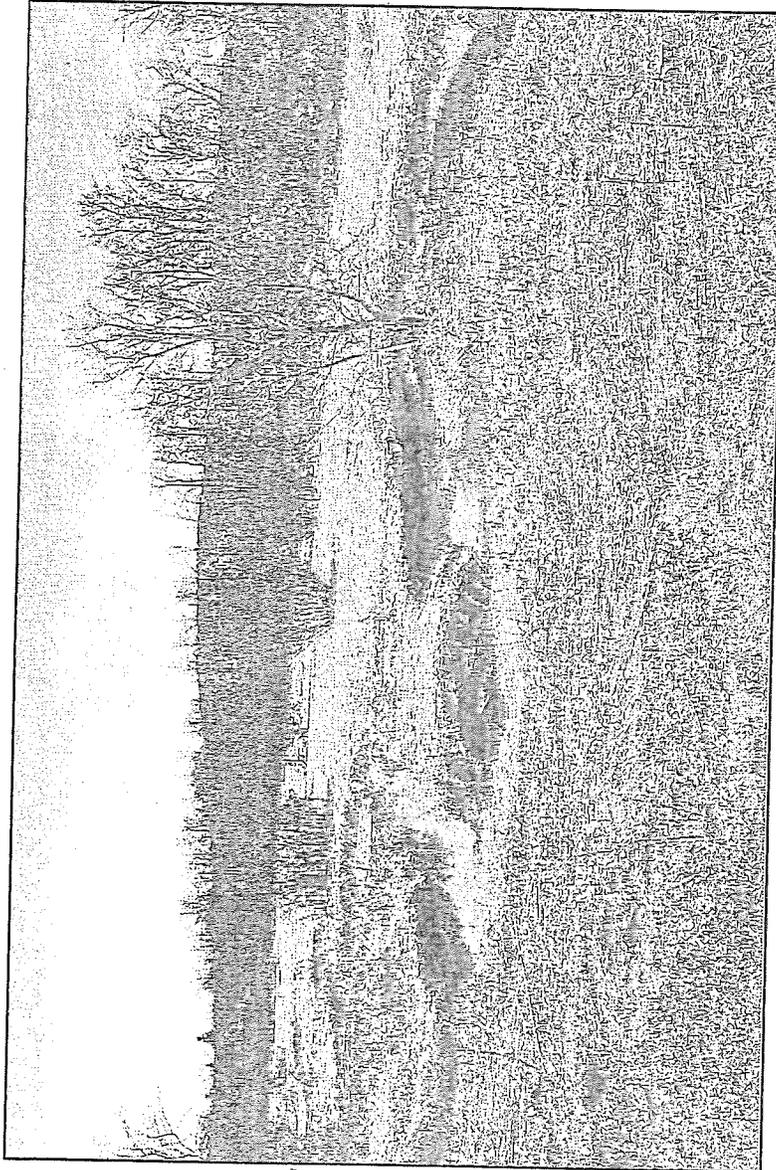
By Adam White  
Observer staff

Earth Day turns 41 on Apr. 22, and organizers hope to mark the occasion with “A Billion Acts of Green” around the globe. That ambitious goal will be addressed on a local level by two projects aimed at adding more green to the natural landscape.

Williston has planned a special planting effort to coincide with Earth Day. Preparations will be finalized on Friday for the vegetative restoration of 3.5 acres of land that borders Allen Brook, a process that will generate stormwater offset credits through the planting and transplanting of various tree species.

“It’s a big kick-off project,” said Jessica Andreoletti, town planner and staff liaison to the Williston Conservation Commission. “We plan to duplicate this restoration effort over multiple parcels with interested landowners throughout 2011.”

The Allen Brook Restoration Project will entail planting strips of vegetation up to 150 feet long along the main body of the brook and 50 feet long along its tributaries. The strips will comprise native shrubs and trees including silver and hard maple, box elder



Observer photo by Adam White

**Nine species of trees and shrubs will be planted along this section of the Allen Brook in Williston as part of the global Earth Day initiative. The vegetation will form a riparian buffer zone to help protect the brook from excessive soil erosion along its banks and runoff from nearby agricultural operations.**

and numerous live willows that were donated to the project by private and corporate landowners in town.

“Willows have deep-binding root systems that can help hold together streambeds and other areas prone to erosion,” said Ian Ambler, a Stowe-based landscape

designer and contractor hired by the town to work on the project. Ambler said that measures will be taken to give the newly planted saplings “a leg up” on competing flora and natural predators, including polypropylene brush mats on the ground and collars around the bases of the trees.

In order for the project to generate stormwater offset credits, the land must be under municipal control. Andreoletti said the town is in the process of securing easements for the parcel involved in the Allen Brook project. She said that independent appraisers will determine the value of the land

being converted from field to forest, and that the end result of the entire process will benefit all parties involved.

“It’s a win-win-win situation,” Andreoletti said. “It helps improve the water quality in the Allen Brook, which is a major goal for the town of Williston. Landowners can receive funds for their easements, for land that is already undevelopable because of town ordinances. And the credits will go into a bank, where future developers of projects in the Allen Brook watershed could use them to meet stormwater offset requirements.”

Gaylord Nelson, then a U.S. Senator from Wisconsin, created Earth Day in 1970. Originally conceived as a “national teach-in on the environment,” the first Earth Day was essentially a nationwide protest against corporate America’s lack of environmental responsibility.

Last year’s 40th anniversary Earth Day saw 225,000 people participate in a Climate Rally at the National Mall in Washington, D.C. The annual event’s national organizing body, the Earth Day Network, currently reports its online membership at more than 900,000 people.