

**ESSEX JUNCTION 2017-ERP-M-11  
REQUEST FOR QUALIFICATIONS  
Engineering Studies, Design and Permitting**

**ESSEX JUNCTION 2017-ERP-M-11**

The Village of Essex Junction is requesting Statements of Qualifications (SOQs) and a Cost Proposal from engineering firms (Consultants) for engineering services for converting a natural depression into a gravel wetland with water quality treatment bays located at the corner of Fairview Drive and Main Street. This project is under a tight timeframe due to grant requirements with the project having to be brought from 30% engineer drawings to a final design and implementation of Phase 1 of the project by December 31, 2018. It is important to note the Village has requested a one year extension with the State which is under review. The Village is seeking a Consultant with expertise in designing, engineering and permitting such a project as outlined herein. The procurement process for selection of the Consultant will be a Qualifications Based Selection (QBS).

The successful Consultant will be selected based upon their demonstrated ability to provide the highest qualified team to achieve the goals of the project through their SOQ and possible interview with the selection committee.

The Statement of Qualifications should be a narrative that best represents the firm's qualifications to perform the work. The submittal must include the proposed project team, demonstration of technical abilities that qualify you for the work requested, examples of previous projects of a similar nature, breakdown of time proposed for components of the project, references with current contact names and phone numbers, and any other information that is considered appropriate to the work. The submittals should not contain peripheral information on other projects or work not related to the type of work requested under this RFQ.

**Project Development**

Through a grant agreement between the Village and the Department of Environmental Conservation (DEC), the Village will manage the project while the DEC administers funding based on performance measures laid out in the grant scope of work. *See Appendix A for grant agreement.*

The owner of the project is the Village and the sole authority for the Consultant during the project rests with the Village of Essex Junction Trustees.

The Municipal Project Manager (MPM) for the Village of Essex Junction will be James Jutras, and can be contacted at, Village of Essex Junction, 2 Lincoln Street, Essex Junction, Vermont 05452. Phone (802) 878-6943 x101 or email [jim@essexjunction.org](mailto:jim@essexjunction.org). The consultant will work directly with the Municipal Project Manager or designee throughout the development process.

The project will be developed according to performance based measures laid out in the grant scope of work and Village planning and zoning requirements etc.

**All technical questions related to this RFQ shall be directed to the MPM.**

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**Project Requirements**

All work will be accomplished in accordance with the following:

- CADD Manual / MicroStation format
- Specifications for Contractor Services detailed in grant agreement (Appendix B)
- Ecosystem Restoration Project Design Terminology and Guidance (Appendix C)
- Village of Essex Junction Planning & Zoning regulations, Land Development Code and Stormwater Ordinance

**Project Description**

This project is to convert a natural detention area into a gravel wetland with water quality treatment bays. Currently this project is designed to 30% Engineer Drawings and will need to be brought to Final Design as a two phase project with implementation of the Phase 1 of the project by December 31, 2018. Phase 2 implementation will require a future funding source and will not be implemented under this project.

Currently the 30% engineer design is to take an existing natural detention, controlled by a 12" culvert and convert it to a gravel wetland with water quality treatment bays. The natural depression and 12" culvert captures runoff from developed lands upstream from Village-owned land and Main Street. Since initial project design, 1213 square feet of impervious surface was removed from the project area and the design will need to be evaluated for the impact of this removal of impervious surface. In addition, the project design will be adjusted if needed for phasing. Phase 1 would convert the natural detention area into a gravel wetland with water quality treatment bays infiltrating the current flow the area receives. Phase 2 of the project will consist of intercepting and directing runoff from the northwest side of Main Street into the gravel wetland system via a new 18" culvert off of catch basin 623 (located on hill). Runoff collected in the gravel wetland system would be allowed to infiltrate through the water quality treatment bays with overflow exiting back under Main Street via the current 12" culvert which will be upgraded to a 30" culvert during Phase 2 of the project. Hydraulic separation will be maintained until Phase 2 of the project is implemented at a later date.

Currently, the proposed systems mitigate 7.22 lbs. of phosphorus. Because the Village is required to reduce the amount of phosphorus entering the Lake by 20%, we would like to ensure that options are explored that will maximize phosphorus removal for this given project.

**History of the Project**

This project is located in the Indian Brook watershed which is currently listed on the State of Vermont's impaired waters (EPA 303(d)) list due to stormwater runoff. A flow-based Total Maximum Daily Load (TMDL) was developed, which outlines required reductions in stormwater high flows and increase in baseflow and is the basis for the Flow Restoration Plan (FRP) developed in accordance with the MS4 General Permit Subpart IV.C.1 as a required part of the MS4 Stormwater Management Program.

The FRP outlines a plan for the retrofit of existing impervious cover with stormwater management Best Management Practices (BMPs) to meet the TMDL flow targets and reduce phosphorus to the maximum extent practical. This project has been identified as one of the top four FRP projects. The current 30% design of this project manages 5.24 impervious acres and 27.5% of the high flow target.

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**Qualifications - Based Selection Process (QBS)**

Engineering services for this project will be procured through a qualifications-based selection process (QBS) as determined by the Brooks Act (Public Law 92-582). This Request for Qualifications (RFQ) is a solicitation for a Statement of Qualifications (SOQ), scope of work and cost proposal from qualified firms.

**Submission Requirements**

Please furnish six (6) copies of the Statement of Qualifications with pages numbered consecutively. Statement of Qualifications (SOQ) should be a narrative proposal that best represents your firm's qualifications to perform planning, permitting, designing and engineering services for the ESSEX JUNCTION 2017 ERP-M-11.

SOQ's should include the following items:

- Proposed Project Team
- Technical Abilities
- Examples of Previous Projects
- References
- Proposed Schedule
- Provisions for the Archeological and Historic Review Components of the Project
- Qualifications of all Proposed Sub-Consultants
- Any other information that you consider important

The successful consultant will be selected based upon their demonstrated ability to provide the highest qualified team with available hours to complete the task list above. All Statements of Qualification will become the property of the Village upon submission. The cost of preparing, submitting and presenting is the sole expense of the firm. The Village reserves the right to reject any and all Statements of Qualification received as a result of this solicitation, to waive any formality and any technicalities or to cancel this RFQ in part or in its entirety if it is in the best interests of the Village. This Request for Qualifications in no way obligates the Village to award a contract.

In order to reduce the time involved in the selection process, firms will be required to submit a Statement of Qualifications and a sealed Cost Proposal with estimated costs for this project. The selection process will consist of two phases with the first being an evaluation of the Statement of Qualifications and a rating of those proposals. Upon completion of Phase 1, the sealed Cost Proposals will be opened and evaluated.

**Submission Schedule**

Statements of Qualifications (SOQ) are to be submitted to:

Hand Delivery: **Village of Essex Junction**  
**Attn: James Jutras**  
**2 Lincoln Street**  
**Essex Junction, VT 05452**

By Mail: **Village of Essex Junction**  
**Attn: James Jutras**  
**2 Lincoln Street**  
**Essex Junction, VT 05452**

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SOQ's must be received at the Village offices no later than **4:00 p.m. on February 16, 2018**. SOQ's received after the deadline will not be accepted. Each submittal will be both date and time stamped. Questions will be answered up to February 9, 2018, after which a compiled list of all questions asked and answers will be furnished to all interested consultants. It is the goal of the Village to review the Statements of Qualifications and the Selection Committee to meet collectively and choose the three most qualified firms within two weeks of the submission deadline. Interviews with selected consultants may begin shortly afterward and the selection of the most qualified firm and negotiations with that firm is anticipated to conclude sometime on or before February 23, 2018. An anticipated start date for the project would be February 26, 2018. Notification to all responding firms of the selection will follow immediately upon the decision of the Village of Essex Trustees

**Selection**

The Selection Committee includes the MPM, Village and Town Stormwater staff who will review and evaluate each statement of qualifications, based on the criteria below and ranked accordingly. The Selection Committee may interview the top three firms if it is deemed necessary in order to choose the highest qualified firm. If a scope of work and fee cannot be agreed upon within a reasonable time, negotiations with the top-ranked firm will be concluded and negotiations with the second-ranked firm will be initiated. If a satisfactory contract is not worked out with this firm, then this procedure will be continued until a mutually satisfactory contract is negotiated

**Criteria for Selection**

The following criteria, as a minimum, will be used to evaluate qualifications:

Review Criteria	Weight	Maximum Points	Weighted Points
Understanding of the Project	3	5	15
Knowledge of the Project Area	2	5	10
Availability of Technical Disciplines	4	5	20
Qualifications / Experience of Proposed Staff	2	5	10
Ability to Meet Schedules & Budgets	2	5	10
Past Performance on Similar Projects	5	5	25
Knowledge of Federal and State Standards and Policies	2	5	10
<b>TOTAL</b>			<b>100</b>

**Contract Requirements**

The Consultant, prior to being awarded a contract, shall apply for registration with the Vermont Secretary of State's Office to do business in the State of Vermont, if not already so registered. The registration form may be obtained from the Vermont Secretary of State, 109 State Street, Montpelier, VT 05609-1104. The fee is \$20.00. The telephone number is (802) 828-2386. The contract will not be executed until the Consultant is registered with the Secretary of State's Office. The successful Consultant will be expected to execute sub-agreements for each sub-consultant named in the proposal upon award of this contract.

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The Consultant awarded this contract shall be responsible for furnishing the Village with independently prepared, properly supported indirect cost rates in accordance with the cost principles contained in 48 CFR Part 31 for all time periods covered by the contract.

It is expected that all consultants will make good faith efforts to solicit DBE sub-consultants.

Prior to beginning any work, the Consultant shall obtain Insurance Coverage in accordance with the Consultant Contract Provisions located in the Ecosystem Restoration grant agreement (Appendix A). The certificate of insurance coverage shall be documented on forms acceptable to the Village.

**Appeal Process**

If the award of the contract aggrieves any firms, they may appeal in writing to the Village of Essex Junction Trustees, 2 Lincoln Street, Essex Junction, Vermont 05452. The appeal must be post-marked within fourteen (14) calendar days following the date of written notice to award the contract. Any decision of the Village Trustees is final.

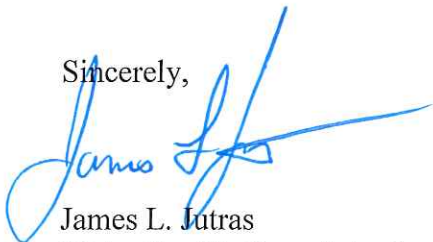
All questions related to this RFQ shall be directed to the MPM, James Jutras., Village of Essex Junction, 2 Lincoln Street, Essex Junction 05452, Phone (802) 878-6943 or by email, [jim@essexjunction.org](mailto:jim@essexjunction.org). Other than very routine questions, all questions will be answered in writing and distributed to all prospective firms.

**Appendices**

The following information is provided as Appendices to this document:

- Appendix A: ESSEX JUNCTION 2017 ERP-M-11 scope of work
- Appendix B: Ecosystem Restoration Project Design Terminology and Guidance
- Appendix C: 30% Engineer Drawings of project & associated info from FRP
- Appendix D: Village Stormwater Infrastructure map of the project area

Sincerely,



James L. Jutras  
Water Quality Superintendent  
Municipal Project Manager

January 17, 2018

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**SCOPE OF WORK**

**General Scope of Work**

1. **Background and Reference Materials:** This scope of work covers all the requirements noted in the grant agreement.
2. **Project Limits:** The Village owns the land where the project is being implemented. Work will occur within the Village right-of-way and the surrounding infrastructure is municipally owned.
3. **Coordination/Documentation:** All project meetings and telecommunications will be documented and sent to the MPM and possibly others as directed. A project file will be maintained with all pertinent correspondence.
4. **Project Status Updates:** Monthly project updates will be generated and sent by email to the Municipal Project Manager (MPM), MAB Project Manager (MABPM), the Village, Project Team and any other individuals the Village is asked to add to the copy list. A project status update shall also be submitted at the time of each monthly invoice.
5. **Contract Updates:** The Municipal Project Manager (MPM), MAB Project Manager (MABPM), and all members of Project Team shall be notified immediately of any design issue that will create any change to the executed contract. Any additional cost required to address the change would be agreed upon before any further design work takes place.

**Project Definition and Work Task**

1. **Pre-design Conference:** An initial meeting with the MPM, MABPM and Project Team will take place on or before March 1, 2018, where the anticipated scope of services will be discussed and clarified.
2. **Local Concerns Meeting:** A public meeting will be held to solicit input from abutters and other interested parties on the project, and to get further input on other issues that will be considered during the design process. A Notice of the Meeting will be created and mailed to the abutters. The Village will be asked to update the abutter mailing list prior to the notices being sent out. The selected consultant will be responsible for advertising the meeting in local media.
3. **Data Collection:**
  - a. **Topographic Survey:** will be collected by the selected consultant and/or by his or her sub consultant and followed by the plotting of a base plan. Prior to the survey, letter written on Village letterhead that introduces the surveyors and informs the abutting property owners of the survey schedule will be used to notify individual property owners. The survey data will include the utility poles

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and existing culverts as well as any utilities that are present within the immediate project limits. Location of adjacent dwellings and sill elevations shall also be shown on the plans.

- b. The survey will be performed to VTrans Standards. The survey data will be imported into MicroStation and/or CADD using current VTRANS Standards and will create a 3-dimensional digital terrain model (DTM) as well as an annotated base plan showing all the existing detail.
  - c. Three copies of the survey plots will be provided to the MPM at a 1" = 50' scale. After the initial plot, an engineering field review will be completed to verify the survey plot and to identify additional engineering related survey needs. The existing Right-of-Way (ROW) and limit of Village owned property will be depicted on the plan. Approximate existing property lines and owners names will be added to the base plan based on available electronic tax map information.
  - d. After the wetlands are flagged, a second survey request will be developed to collect the wetland flag information and other data along the project that is needed for engineering purposes. The survey plan and DTM will then be updated.
  - e. Federal review of the wetland designation by the Army Corp of Engineers is needed. In 2017, the State of Vermont made a determination that the wetlands are Class III non-jurisdiction.
4. **Soils Investigations/Hydrogeological Survey:** Soil borings shall be appropriately spaced throughout the site. The soil data collected will be used to aid in storm water design. A hydrogeological survey shall be completed to determine how the installation of the water treatment bays and storage system will affect the water table. In addition, the survey will help identify any potential impacts the system might have to the roadway and its base or subbase. Ground water monitors shall be installed at the limit of the site boundary on the west, north and south sides for use throughout the design and construction process.
5. **Critical Environmental Resources and Permit Requirements:** Complete field research and a site review to identify potential constraints such as historic districts, structures or properties, hazardous waste, archaeologically sensitive areas and wetlands. If archaeological field investigations become necessary, a separate budget request will be made at the time the required scope is identified. Wetlands will be flagged in the spring. Act 250 and other permit related needs will be investigated to determine the implications related to various design options, cost and the project schedule.
6. **Conceptual Plans:** Upon completion of the field survey, conceptual plans for both Phase I and Phase II will be completed according to the ERP grant and Village requirements. This work will include creating a template that will allow for modeling and developing proposed slope limits then completing several critical cross sections to depict potential impacts to utility poles, trees, fences etc that will need to be addressed.
7. **Village and Utility Officials Meeting:** Arrange a meeting with key Village officials. A representative(s) from the affected utility companies, if impacted, will need to be

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- invited. The meeting purpose will be to discuss project challenges and agree upon resolutions.
8. **Environmental Impact Resolution:** After acceptance of the Conceptual Plans by the Village, documentation will be submitted that is necessary to obtain the Act 250 Jurisdictional Determination.
  9. **Utility Locations:** Initiate coordination with the utility companies, and locate all existing utility locations on the conceptual plans. The plans shall include but not be limited to the following, guy poles and wires, utility poles, natural gas lines, privately-owned utilities in the public right of way and underground communication lines. The Village of Essex will provide the selected consultant with all known municipal utilities including water, sanitary sewer, and storm sewer within the project corridor.
  10. **Project Right-of-Way Required:** The selected consultant shall provide all Right of Way data on the completed conceptual plans, including the limits of actual construction disturbance, and locations of any potential easements required for construction. These locations shall be clearly marked on the drawings.
  11. **Final Plans:** The Village of Essex reserves the right to amend the contract with the selected consultant to provide further design services on this project including but not limited to the following; Final Plans for both Phase I and Phase II, Contract Plans for both Phase I and Phase II, Project Bid Documents for Phase I, and Construction Services for Phase I.



# Appendix A

ESSEX JUNCTION 2017 ERP-M-11 scope of work

## Attachment A Scope of Work to be Performed

### Part or All of the Scope May be Subcontracted with Written Prior Approval from the State

As part of the State's Clean Water Initiative Program's annual competitive grant process, a Project Selection Committee elected to award the Grantee \$133,069 to implement the Fairview/Main Street Gravel Wetland Retrofit, which will serve to reduce high stormwater flows and decrease phosphorous and sediment, serving the dual purpose of protecting the State's water quality and supporting the Grantee's goal.

#### **Performance Measure(s) for this Grant:**

Acres of impervious area treated: 5.2  
Number of drainage culverts improved: 2

#### **Phase 1:**

Acres of impervious area treated: 3.94  
Number of drainage culverts improved: 0

#### **Phase 2:**

Acres of impervious area treated: 1.30  
Number of drainage culverts improved: 2

The project area located on the corner of Fairview Drive and Main Street is part of the Indian Brook watershed. A flow based Total Maximum Daily Load (TMDL) was established for Indian Brook requiring reductions in stormwater high flows and increase in baseflow. This project helps address these issues by infiltrating stormwater runoff through Green Stormwater Infrastructure (GSI) practices. At the current 30% design, this project would remove 2,734 lbs total suspended solids and 7.22 lbs total phosphorus annually managing 5.24 impervious acres.

The grantee will bring the project from 30% Engineer Drawings to Final Design and complete implementation of the Phase 1 of the project. Phase 2 implementation will require a future funding source. The design is to take an existing natural detention, controlled by a 12" culvert and convert it to a gravel wetland with water quality treatment bays. The natural depression and 12" culvert captures runoff from developed lands upstream, covered under permit #1-1074, Village-owned land and Main Street. This project is being split into two phases due to recent paving of Main Street. It is important to note that during the paving 1213 square feet of impervious surface was removed. As part of the project the design will be evaluated for the impact of this removal of impervious surface and the project design will be adjusted if needed for phasing. Phase 1 would convert the natural detention area into a gravel wetland with water quality treatment bays infiltrating the current flow the area receives. Runoff from the northwest side of Main Street would be intercepted and directed into the gravel wetland system via a new 18" culvert off of catch basin 623 (located on hill) during Phase 2 of the project. Runoff collected in the gravel wetland system would be allowed to infiltrate through the water quality treatment bays with overflow exiting back under Main Street via the current 12" culvert which will be upgraded to a 30" culvert during Phase 2 of the project. Hydraulic separation will be maintained until Phase 2 of the project.

At project completion, the Grantee is required to submit a final Performance Report for each project (Attachment E). All tasks, deliverables, payments and estimated deadlines associated with this grant are outlined in the table below. At project completion, the Grantee is also required to issue a press release to local or area news publications informing readership of the receipt of the State of Vermont, Agency of Natural Resources, Department of Environmental Conservation funded grant along with details on the project's purpose, actions, and results, including before and after photos. Grantee will submit a copy of the press release as well as a list of the entities to whom the press release was sent as a deliverable for milestone #9 below. The Grantee shall submit a

Request for Approval to Subcontract Form for any subcontracts associated with this grant. The form must be approved before a subcontractor can start work.

	<b>Milestone</b>	<b>Deliverable(s)</b>	<b>Due Date</b>	<b>Payment</b>
1	90% design completed	90% Drawings and Specifications	12/1/2017	\$15,000
2	100% design completed	100% Drawings, specifications	1/15/2018	\$3,500
3	100% cost estimate	Contract bidding documents prepared	2/15/2018	\$1,500
4	Request for proposals developed	Issued RFP	3/1/2018	\$1,000
5	Contractor selected	Signed agreement	5/1/2018	\$750
6	Submit interim report	Interim report with available photos	7/15/2018	\$500
7	Practice installed	As-built plans and project photos	9/1/2018	\$108,969
8	O & M plan developed	Maintenance plan (approved by the State)	10/1/2018	\$750
9	Submit press release	Copy of press release	10/19/2018	\$100
10	Submit final report	Final report with before and after photos (taken from same perspective with minimum resolution 300ppi submitted as JPEG)	10/26/2018	\$1,000
	<b>Total</b>			<b>\$133,069</b>

# Appendix B

Ecosystem Restoration Project Design Terminology and  
Guidance

## Ecosystem Restoration Program Project Design Terminology and Guidance

### Introduction

The Ecosystem Restoration Program (ERP) Project Design Terminology and Guidance standardizes the project design process, provides clarity in terminology, and helps applicants demonstrate project quality and success. This guidance is meant to be a reference and is intended to be scalable based on the complexity and scope of a project. For example, small-scale riparian restoration projects can likely be assessed, designed and constructed with minimal project planning, design, and construction oversight. As a result, very few of the steps below will be required. Large-scale stormwater projects, however, often require in-depth project planning, detailed design consistent with the Vermont Stormwater Management Manual, ([volume 1](#) and [volume 2](#)), significant oversight and permitting. At their most complex, these projects will require the majority, if not all, of the steps outlined in this document.

See below for a quick summary of the typical route projects follow when seeking ERP funding.

**Simple** – Simple projects involve very little in terms of feasibility and design, and as a result, the steps outlined below will generally not apply. Costs are fairly predictable and there is not much deviation between what is recommended and what is installed. Given this, such projects are often accomplished with only one round of ERP grant funding. Projects in this category may include riparian buffer plantings and residential rain garden installations.

**Intermediate** – Intermediate projects involve a fair bit of feasibility and design before proceeding to construction but are not quite complex enough to require a full set of engineering steps (10% and 30% steps may be combined and or 60% and 90% steps may be combined). Applicants will often seek two rounds of ERP funding to complete these projects as denoted below. In either case, a well-prepared and accurate cost estimate is essential to securing a second round of funding.

	<b>Option 1</b>	<b>Option 2</b>
<b>Round 1</b>	Feasibility through 100% design	Feasibility through 30% design
<b>Round 2</b>	Construction	From 30% design through construction

**Complex** – Complex projects are large in scope and require a full range of engineering services. Costs for such projects can easily exceed \$150,000. As such, ERP funds very few of these types of projects outright unless they are identified as very high priority. Generally, these projects are phased across three funding rounds as denoted below. Depending on the project, the Clean Water State Revolving Fund (CWSRF) or other funding sources might be more appropriate than ERP.

<b>Round 1</b>	Feasibility through 30% design
<b>Round 2</b>	From 30% design through 100% design
<b>Round 3</b>	Construction

Determining the route that a project will seek for funding will involve a conversation between the project sponsor, contractor/consultant, and Agency staff. In the end, specific criteria and agreed upon elements will be used in developing a project application and identifying specific deliverables within a scope of work.

## 1. **Feasibility Analysis**

Feasibility analysis, sometimes referred to as a preliminary engineering report, provides the basis and justification for further design work. It is based on a design professional's site evaluation, a process in which multiple options are considered, and it may result in a recommendation that the project is not feasible or that other options should be considered. A preliminary engineering report typically includes all of the following components:

- Cover page
- Executive summary
- Project need and objective(s)
  - References to reports or planning documents documenting the problem or impairment
  - Watershed description
- Project planning and existing conditions
  - Project location/address (including nearest cross street)
  - Current land use
  - USGS soil classification
  - Site topography
  - Stormwater flowpath (also consider adjacent sites)
  - Nearest/receiving waterbody
  - Other site considerations (wetlands, hotspots, brownfield remediation, etc.)
- Identification and conceptual design of alternatives
  - Description
  - Plan view drawing (including but not limited to)
    - Location map
    - Land ownership
    - Roads and other infrastructure
    - Drainage area
    - Site grading
    - Stormwater flowpath (also consider adjacent sites)
    - Design considerations and calculations
    - Practice sizing, hydrology/hydraulics, volume reduction, and water quality volume estimates
    - Name any design standards to be used and any variations required
- Evaluation of alternatives
  - Cost
  - Feasibility
  - Stakeholder comments
  - Pros and cons
  - Sustainability
    - Use of native and climate adapted species
    - Use of green infrastructure
    - Water efficiency
    - Planned for climate change impacts
    - Life of project/expected lifespan
    - Low carbon footprint
    - Affordable
  - Estimate of environmental improvement

- Quantitative
  - Qualitative
- Rough construction cost estimate, O&M cost estimate, and Net Present Value Calculations, stamped by a professional engineer or otherwise conforming to CWNS requirements
- Selection of alternative
  - Conceptual site plan (including but not limited to)
    - Engineer name, date and project title
    - North arrow/legend
    - Graphical scale (1 " = 10', 20', 30', 40', 50', 60' or 100')
    - Site features (wetlands, nearest waterbody, streets, buildings, etc.)
    - Practice location/layout w/ flowpath and preliminary grading
    - Location map
- Permitting considerations
- Funding considerations
- Stakeholder/public involvement summary
  - Description of current and future stakeholder involvement
  - Description of current and future public involvement

If Vermont Clean Water State Revolving Fund (CWSRF) or other federal funding might be desired for the project, use the jointly accepted USEPA/USDA RD/HUD Preliminary Engineering Report Format and follow the Environmental Review Procedures to complete an Environmental Information Document for use in NEPA review. This includes review of hazardous waste sites, archeological and cultural effects with sign off from the State Historic Preservation Office, and other considerations.

## **2. Design**

The development of a final construction level design is a series of steps that further define a solution and its ability to meet stated criteria. For complex projects, these steps provide an opportunity to re-evaluate the design based on changing project assumptions and stakeholder feedback. The majority of design projects funded through ERP will likely not involve this level of detail or many of the five steps outlined below. These steps are provided in full primarily as a reference. If CWSRF funding might be used for construction, please also follow the CWSRF Final Design Process.

### *a. 10% Design*

- Basis for design
  - Project purpose, goals, and objectives
  - Summary of existing conditions
  - Design considerations and preliminary analyses
    - Hydrologic-hydraulic analysis
    - Runoff modeling
    - Depth to bedrock/seasonal high water table from area wells, open test pit or soil cores
    - State any assumptions or variances required for the project

### *b. 30% Design*

- Design concept report
  - Updated conceptual site plan
  - Design criteria for all aspects of the design
  - Construction cost estimates

- Topographic and boundary survey
  - Property lines, right-of-ways, and easements
  - Topographic information and datum, flood elevations if applicable
  - Location of existing structures
  - Site survey
  - Invert elevations
- Geotechnical report
  - Vicinity map of project limits
  - Plot map-showing location of borings and soil tests
  - Detailed descriptions of surface and subsurface conditions, including seasonal high water table and observations of wetness
  - Summary of laboratory tests performed and test results
  - Summary of geotechnical recommendations for backfill and bedding of underground utilities, trench criteria, borrow material gradation requirements, foundation support, bearing capacity, pavement replacement, site development, material stability, slope stability, site preparation, grading procedures, and erosion potential
- Drawings and specifications
  - Cover sheet
  - General notes
  - Site plan
  - Plan view sheets
  - Sections and details of significant features
- c. *60% Design (includes updates to all elements required of a 30% design **plus** the following additional information)*
  - Stakeholder/public involvement summary
    - Description of current and future stakeholder involvement
    - Description of current and future public involvement
  - Overview of environmental and regulatory requirements (permits, etc.)
  - Cost estimate
    - Fees, as applicable, associated with land acquisition, permits and fees, engineering services, consulting services, excavation and grading, paving, utilities, utility relocation, equipment, structures, contingency, applicable allowances and contractor overhead and profit
  - Drawings and specifications (sufficient level of detail of significant project components and systems)
    - General notes including 30% comments and changes made to plans
    - Profile sheets
- d. *90% Design (includes updates to all elements required of a 60% design **plus** the following additional information)*
  - Drawings and specifications (complete and ready for agency and permitting authority review)
    - General notes including 60% comments and changes made to plans
    - Site plan (including site boundaries and construction limits)
  - Contract bidding documents
    - General conditions
    - Supplementary conditions



- Proposed project schedule
- Technical specifications
- Exceptions to standards
- e. *100% Design (includes updates to all elements required of a 90% design **plus** the following additional information)*
  - Actual environmental and regulatory requirements (permits, etc.)
  - Drawings and specifications (complete and ready for agency and permitting authority review)
    - General notes including 90% design review comments and changes made to plans
  - Contract bidding documents
    - Bid form
    - Definitions
    - Proposed agreement
  - Updated cost estimate with reduced contingency

### **3. Construction**

Design professionals/engineers play an important role during the construction phase of a project as they help ensure that installed practices are completed to specification. They also provide guidance when project conditions are different from what was expected or assumed. If CWSRF funding might be used for construction, please also follow the CWSRF Construction Process.

- a. *Pre-construction*
  - Control and tenure documentation
  - Proof of permits
  - Maintenance agreement(s)
  - Photos with a minimum resolution of 1600x1200
  - Easement agreements
- b. *Construction*
  - Construction oversight and inspection with reports
  - Photos with a minimum resolution of 1600x1200
- c. *Post-construction*
  - As-built drawings or original designs with a list of change orders describing construction changes
  - Maintenance checklist
  - Photos with a minimum resolution of 1600x1200
  - Brief project summary

# Appendix C

30% Engineer Drawings of project and associated info from  
FRP

## 5.2 Village of Essex Junction Proposed BMPs

### Fairview Dr./Main St. Retrofit (1-1074 S/N 001)

At the corner of Fairview Dr. and Route 15 (Main St), there is an existing natural detention area, controlled by a 12" culvert (Figure 6). The culvert captures runoff from the development above, covered under permit #1-1074, as well as Town land and Route 15, partially owned by VTRANS and the Village. The existing outfall on the North side of Route 15 is severely eroded due to high flows and runoff bypassing the catch basins and flowing over the bank, therefore capture of this runoff was assessed (Figure 7).



Figure 6: Fairview Dr. natural detention area (6/27/14)

The proposed retrofit is to convert the natural depression to a gravel wetland with water quality treatment bays. This retrofit will benefit the high flow target, as well as water quality treatment which will benefit future phosphorus TMDL goals. Runoff from the northwest side of Route 15 (Main St.) would be intercepted and directed into the system via a new culvert, represented as the "Fairview Add-on" drainage" in Figure 7. This would eliminate most runoff to the highly eroded outfall. Runoff would exit the system back under Route 15 via an upgraded pipe (12" to 30").

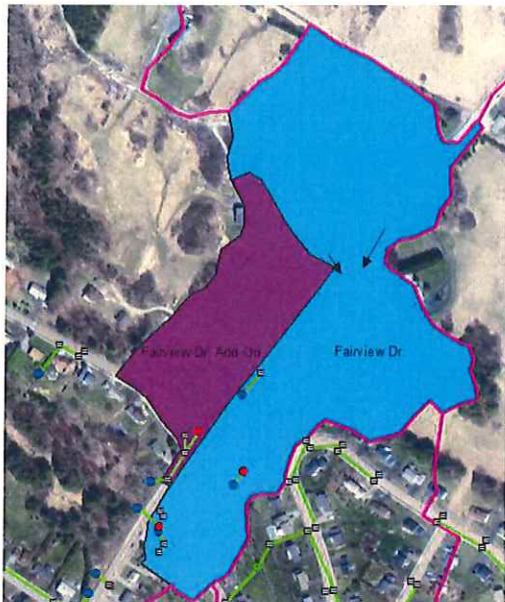
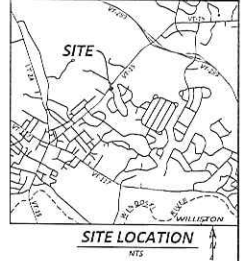
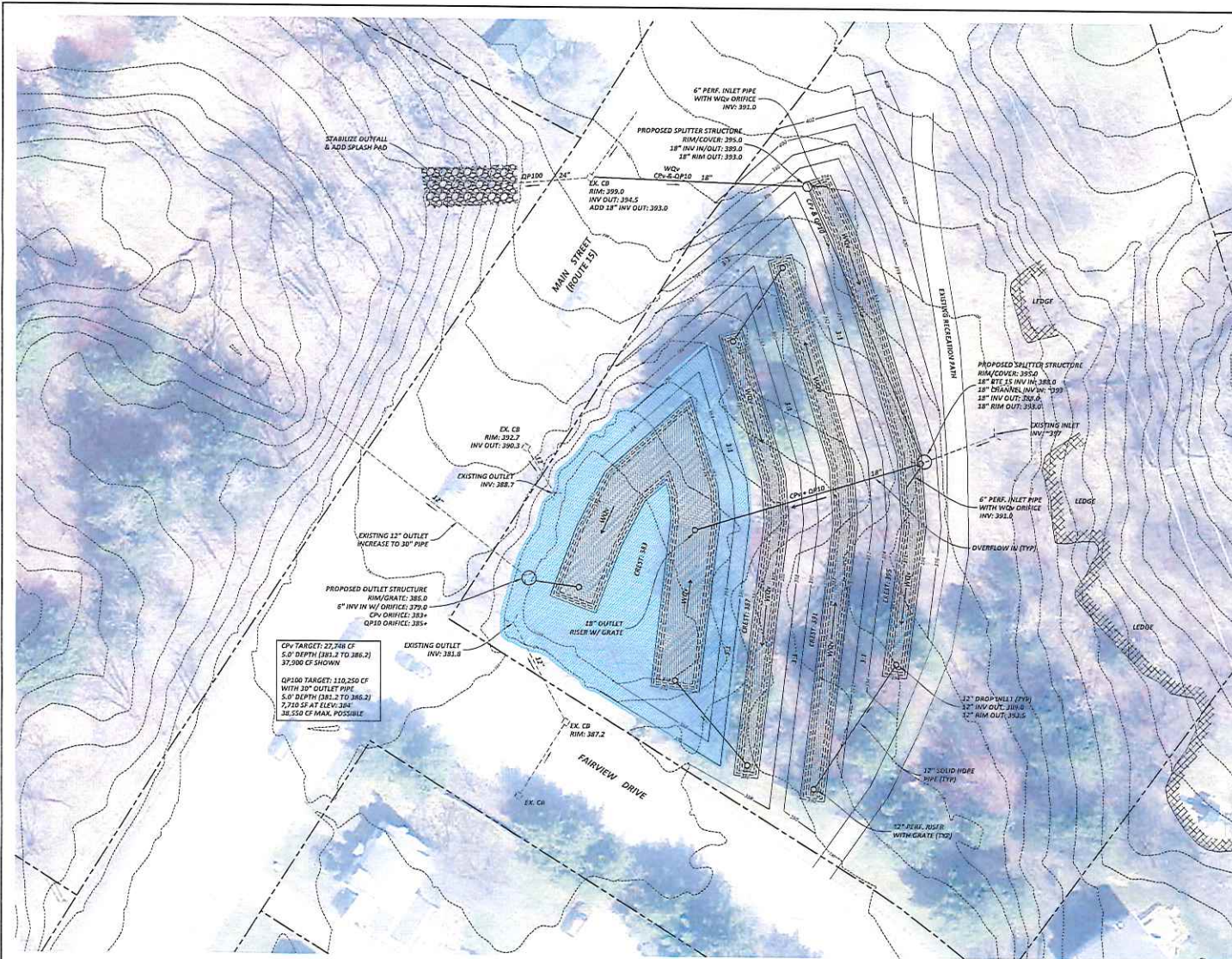


Figure 7: Drainage area map for Fairview Dr. Retrofit Options.

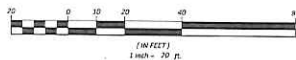


**LEGEND**

- PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING STORM LINE
- PROPOSED STORM LINE
- DRAINAGE COURSE

**NOTES**

1. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION IS FROM TOWN TAX MAPS.
2. EXISTING TOPOGRAPHY WAS CREATED FROM CHITTENDEN COUNTY LIDAR (2004).



**CONCEPT**

**INDIAN BROOK FLOW RESTORATION PLAN**  
ESSEX, VERMONT

**FAIRVIEW DRIVE STORMWATER IMPROVEMENT PLAN**



Stormwater Management | Water Quality | Erosion Control  
432 Chittenden Road P.O. Box 4413  
Essex, VT 05609  
PHONE: 802.822.8271 | FAX: 802.497.2287  
www.watershedcs.com

APPROVED BY:	AT	DRAWN BY:	SMS/ATS	SCALE:	NOTED
DATE:	3-28-15	CHECKED BY:	AT	SHEET:	1 OF 1

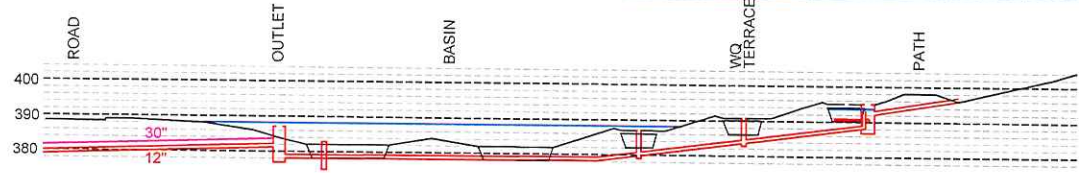




Table A-5-4 Total Phosphorus and TSS Reduction Benefits from Proposed BMPs

Site Name	MS4 Imp. Owner	Owner of BMP Land	BMP Type (Key <sup>1</sup> )	Permit # <sup>2</sup>	Runoff Area (acres)	Impervious Acres Managed (ac)	Channel Protection Volume (CPv) Managed above Base Condition <sup>3</sup>		WQ Results				Retrofit Description
							CF	Ac-ft	Annual TSS Yield Mitigated w/ control (lbs)	% TSS reduction	Annual TP Yield Mitigated w/ control (lbs)	% TP Reduction	
LDS Church North Pond Retrofit (Outfall 204)- Option 5: Underground Storage with Perforated Pipe System	Town	Private	USC	1-1319, 2-0631, 2-0613	29.59	12.00	44431	1.02	576.00	20.7%	2.69	27.1%	Route outfalls North and South of LDS pond to retrofit. Option 5: Convert pond to expanded underground stone gallery with 48" Perforated Pipe.
Fairview Dr./Main St. w/ Add-On	Village/VTRANS	Public	GW	1-1074 SN002	22.53	3.94	19384	0.45	887.00	30.2%	3.21	26.3%	Regrade existing detention area, add terraced WQ bays, and replace existing culvert. Stabilize eroded outfall on North side of Main St.
Fairview Dr. Add-on	Village/VTRANS	Public	GW	1-1074 SN002	6.87	1.30	9583	0.22	1847.00	46.5%	4.01	41.3%	Install new culvert under Main St. to direct North side of Main St. to basin.
Brickyard/North, South, East Creek Condos	Village	Private	GW	2-0952	8.7	4.68	24960	0.57	234.00	8.6%	0.49	6.5%	Convert existing detention area at the corner of Mansfield/Brickyard to gravel wetland with CPv storage.
Woodlands (Detention Pond 139)	Town	Public	UIB	1-1186	32.80	4.04	15682	0.36	1502.00	86.0%	5.79	80.6%	Retrofit existing detention pond to an underground stone gallery with 48" perforated pipe.
Densmore Dr.	Village	Private	UIB	2-1103	38.28	11.73	14985	0.34	2126.00	100%	6.29	100%	Install StormTech Chamber System on Densmore Dr. Verify high groundwater elevation.
East Creek Condominiums	Village	Private	DB	2-0289/2-0317	48.2	14.40	13721	0.32	0.00	0.0%	0*	0.0%	Retrofit outlet structure for CPv control. Rearmour spillway.
The Commons P1 (Outfall 131)	Town	Private	USC	1-1381	7.91	2.07	8668	0.199	680.89	88.53	2.67	87%	Convert existing detention pond to StormTech chamber system. Improve aesthetics and landscaping.
Grove St.	Village/VTRANS	ROW	UIB	2-0187	23.39	8.71	5576	0.13	1595.30	92%	2.34	80%	Install two underground storage basins in series for detention and infiltration of the CPv storm.
I-289/Route 15 North	Vtrans	ROW	MF	NP	2.78	0.90	5271	0.12	879.00	100%	1.99	100%	Retrofit existing median swale with CPv volume control sand filter.
Countryside Dr Intersection	Village	ROW	USC	2-0155	5.25	1.95	4704	0.11	411.31	88%	1.86	87%	Stabilize outfall and bank. Install underground detention chamber at intersection of Countryside Dr./Brickyard. Add Stormwater planters in ROW on Countryside Dr.
LDS Church South P1 (Outfall 209)	Town	Private	DB	1-1319	1.34	1.01	4400	0.101	494.07	92.07	0.65	92%	Retrofit existing detention pond to an underground stone gallery with 48" perforated pipe.
I-289/Route 15 South	Vtrans	ROW	MF	NP	2.15	0.96	4443	0.10	649.90	100%	1.82	100%	Retrofit existing median swale with CPv volume control sand filter.
Essex Union High School-Rain Garden- Regrade Parking Lot	Village	School District	GSI	NP	1.61	1.07	2222	0.05	13.34	99%	0.04	98%	Regrade parking lot to increase capture. Garden has capacity for more runoff without expansion.
Briar Lane Cul-de-sac Impervious Removal	Village	No Practice	No Practice	2-0855 (Village Knoll)	na	0.11	900	0.02	<20	----	0.00	----	Eliminate cul-de-sac to reduce plowing needs. Small impact.
<b>Total:</b>						<b>68.86</b>		<b>4.11</b>					

1- BMP Type: DB: Detention Basin, USC = Underground Storage Chamber, UIB= Underground Inf  
2- Key: \* NP = No permit  
3- Channel Protection Volume Managed above Base condition = New Storage Volume - Existing Volume pre2002  
\* WinSLAMM model result showed export of TP from wet pond (negative TP mitigated). Value was changed to 0, as there is "0" TP mitigated.

Fairview Pond Retrofit Opinion of Probable Construction Cost (30% Design)  
As of January 14, 2014

Item #	Vtrans Item	Description	Estimated Quantity	Unit	Material	Labor	Equipment	Unit Cost	Total Cost (ENR 9900) <sup>(1)</sup>	Total Cost (ENR 10000) <sup>(2)</sup>
<b>I. CONSTRUCTION COST</b>										
1	201.15	Clearing and Grubbing	1	LS	\$ -			\$ 15,000.00	\$ 15,000.00	\$ 15,151.52
2	203.15	Common Excavation	1,800	CY	\$ -	\$ 5.00	\$ 7.00	\$ 12.00	\$ 21,600.00	\$ 21,818.18
3	204.20	Trench Excavation of Earth	500	CY	\$ -	\$ 5.00	\$ 7.00	\$ 12.00	\$ 6,000.00	\$ 6,060.61
4	204.22	Trench Excavation of Earth, Exploratory	100	CY	\$ 15.00	\$ 25.00	\$ 25.00	\$ 65.00	\$ 6,500.00	\$ 6,565.66
5	204.25	Structure Excavation	30	CY	\$ -	\$ 5.00	\$ 15.00	\$ 20.00	\$ 600.00	\$ 606.06
6	204.30	Granular Backfill for Structures	20	CY	\$ 22.00	\$ 5.00	\$ 7.00	\$ 34.00	\$ 680.00	\$ 686.87
7		Bituminous Pavement	130	SY				\$ 58.24	\$ 7,571.20	\$ 7,647.68
8	601.09	CPEP (15")	290	LF	\$ 17.00	\$ 16.00	\$ 14.00	\$ 47.00	\$ 13,630.00	\$ 13,767.68
9	601.09	CPEP (12")	110	LF	\$ 14.00	\$ 16.00	\$ 14.00	\$ 44.00	\$ 4,840.00	\$ 4,888.89
10	601.09	CPEP (30")	110	LF	\$ 33.00	\$ 16.00	\$ 14.00	\$ 63.00	\$ 6,930.00	\$ 7,000.00
11		Manhole with wier and drain valve and piping	10	LF	\$ 400.00	\$ 40.00	\$ 75.00	\$ 515.00	\$ 5,150.00	\$ 5,202.02
12		3/4" Crushed Stone for WQV Bays	900	CY	\$ 18.00	\$ 5.00	\$ 7.00	\$ 30.00	\$ 27,000.00	\$ 27,272.73
13		3/4" Crushed Stone for Pipe	280	CY	\$ 18.00	\$ 5.00	\$ 7.00	\$ 30.00	\$ 8,400.00	\$ 8,484.85
14	635.11	Mobilization/Demobilization	1	LS	\$ 15,000.00			\$ 15,000.00	\$ 15,000.00	\$ 15,151.52
15	649.31	Geotextile for WQV Bays	1,500	LY	\$ 1.00	\$ 3.00	\$ -	\$ 4.00	\$ 6,000.00	\$ 6,060.61
16	649.51	Geotextile for Silt Fence	400	SY	\$ 2.50	\$ 2.50		\$ 5.00	\$ 2,000.00	\$ 2,020.20
17	651.15	Seed	10	LB	\$ 5.00	\$ 5.00		\$ 10.00	\$ 100.00	\$ 101.01
18	651.28	Hydraulic Mulch	50	Gal	\$ 5.00	\$ 5.00	\$ 2.00	\$ 12.00	\$ 600.00	\$ 606.06
19	651.35	Topsoil	500	CY	\$ 25.00	\$ 10.00	\$ 5.00	\$ 40.00	\$ 20,000.00	\$ 20,202.02
20	652.10	Erosion Prevention Sediment Control Plan	1	LS	\$ 1,500.00			\$ 1,500.00	\$ 1,500.00	\$ 1,515.15
21	652.20	Monitoring Erosion Prevention Sediment Control Plan	40	HR		\$ 60.00		\$ 60.00	\$ 2,400.00	\$ 2,424.24
22	652.30	Maintenance of EPSCP	1	LS	\$ 3,500.00			\$ 3,500.00	\$ 3,500.00	\$ 3,535.35
23	653.20	Temporary Erosion Matting	1,500	SY	\$ 5.00	\$ 2.50		\$ 7.50	\$ 11,250.00	\$ 11,363.64
24	653.35	Vehicle Tracking Pad	150	CY	\$ 30.00	\$ 5.00	\$ 7.00	\$ 42.00	\$ 6,300.00	\$ 6,363.64
25	653.55	Project Demarcation Fence	900	LF	\$ 1.00	\$ 1.00		\$ 2.00	\$ 1,800.00	\$ 1,818.18
26		Bonds (2.0%)	1	LS				\$ 3,155.02	\$ 3,155.02	\$ 3,186.89
SUBTOTAL CONSTRUCTION:									\$ 199,501.24	
USE:									\$ 200,000.00	
<b>II. CONSTRUCTION CONTINGENCY</b>										
1		Construction Contingency (15%)	1					\$ 30,000.00		\$ 30,000.00
SUBTOTAL CONSTRUCTION CONTINGENCY:									\$ 30,000.00	
<b>III. FINAL DESIGN ENGINEERING<sup>(3)</sup></b>										
1		Final Design and Permitting (excluding geotechnical)	1					\$ 15,750.00		\$ 15,750.00
2		Geotechnical	0					\$ 2,000.00		\$ -
SUBTOTAL FINAL DESIGN ENGINEERING:									\$ 15,750.00	
<b>IV. CONSTRUCTION PHASE ENGINEERING<sup>(3)</sup></b>										
1		Construction Phase Engineering	1					\$ 28,875.00		\$ 28,875.00
SUBTOTAL CONSTRUCTION PHASE ENGINEERING:									\$ 28,875.00	
<b>V. OTHER COSTS</b>										
1		Administrative	1					\$ 1,000.00		\$ 1,000.00
2		Easement Assistance	1					\$ 3,000.00		\$ 3,000.00
3		Land Acquisition	0	Acre				\$ 120,000.00		\$ -
4		Legal	1					\$ 3,000.00		\$ 3,000.00
5		Bond Vote Assistance						\$ 1,000.000		\$ -
6		Short Term Interest	0					\$ 5,000.000		\$ -
SUBTOTAL OTHER COSTS:									\$ 7,000.00	
<b>TOTAL PROJECT COST:</b>									\$ 281,625.00	
<b>USE:</b>									\$ 290,000.00	

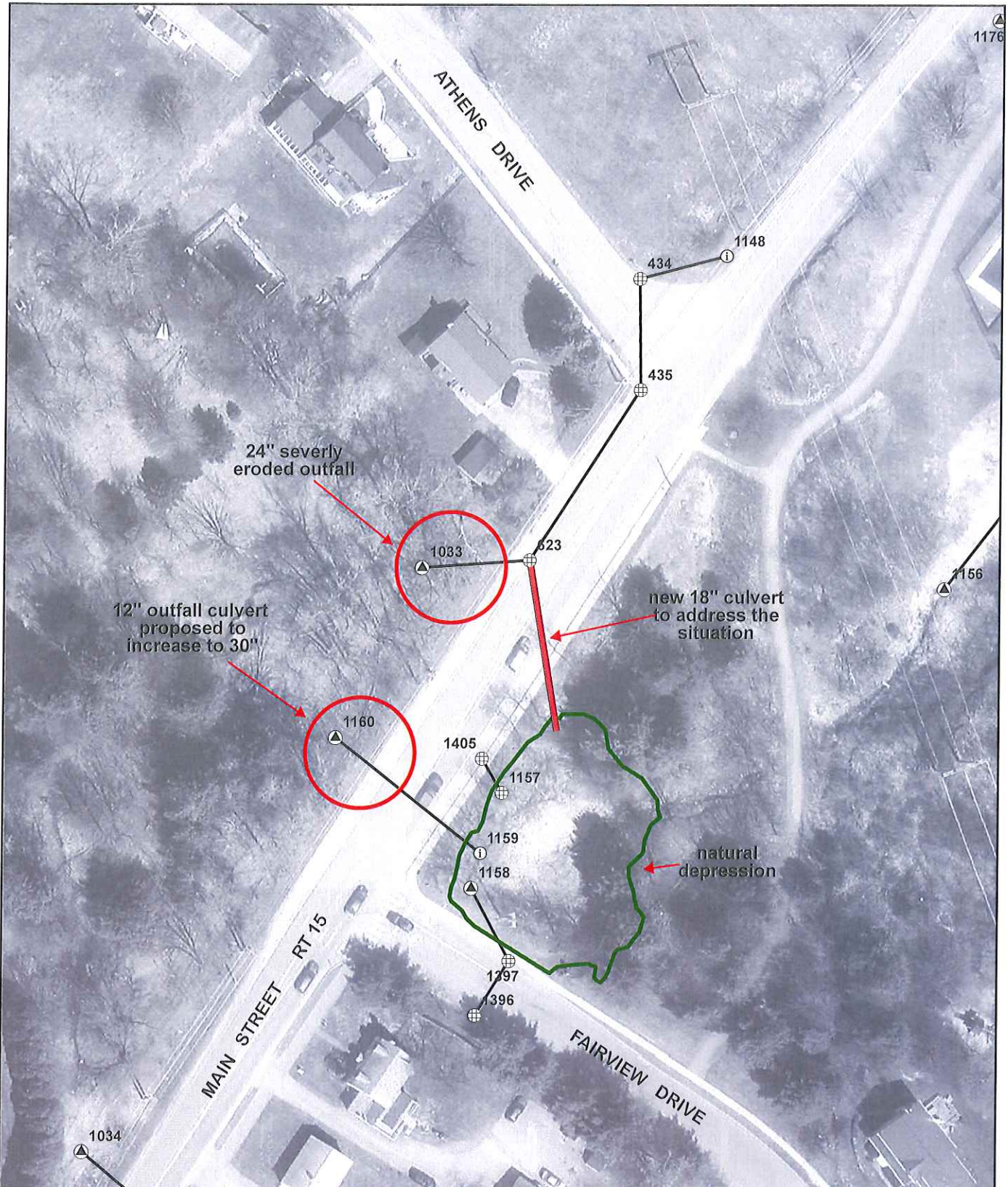
Notes:

- ENR 9900 = November 2014
- ENR 10,000 = June 2015
- Engineering costs for Final Design and Construction are based on the VT DEC Facilities Engineering Fee Curve Allowance

# Appendix D

Stormwater Infrastructure map of project area



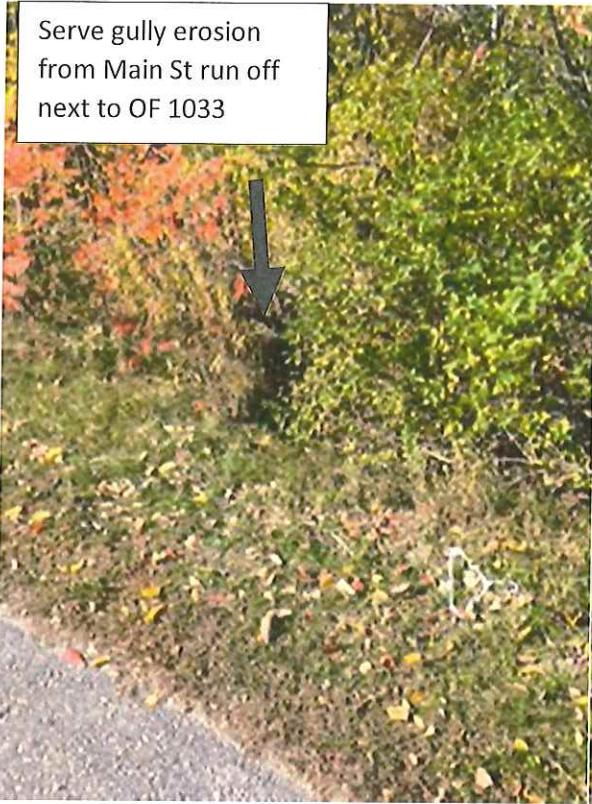


### Fairview Dr. / Main St. Gravel Wetland Retrofit: Project Area

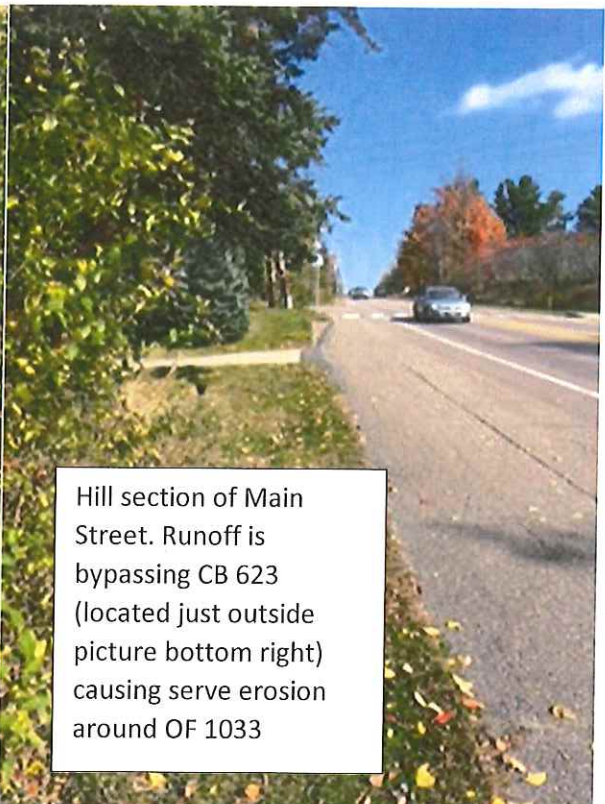


— STORM LINE    ⊕ CATCHBASIN    ⊙ INLET    ▲ OUTLET



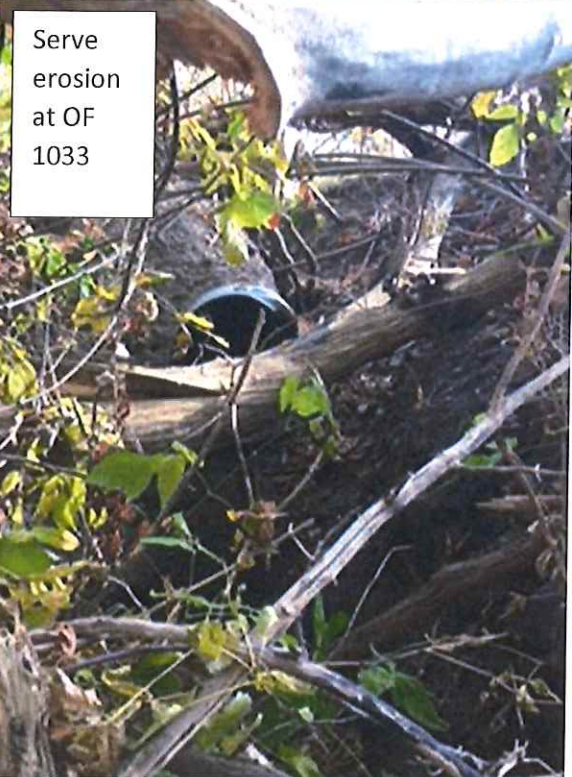
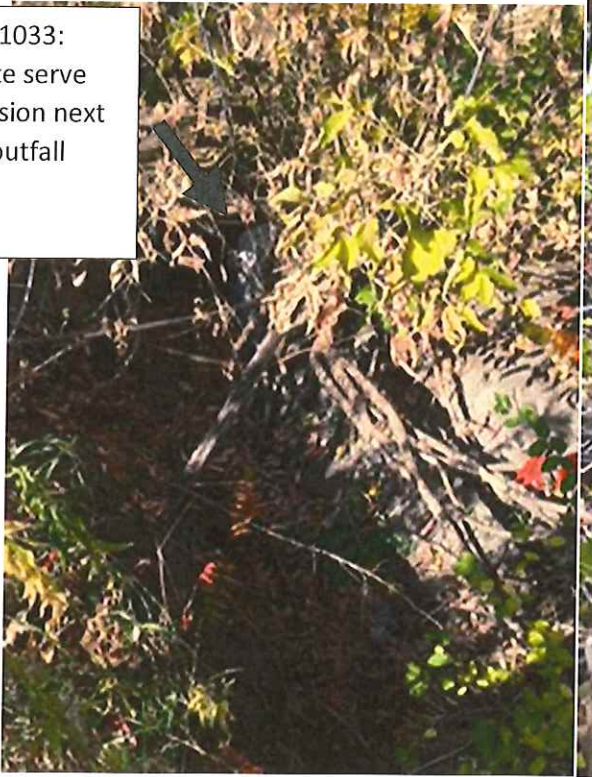


Serve gully erosion from Main St run off next to OF 1033



Hill section of Main Street. Runoff is bypassing CB 623 (located just outside picture bottom right) causing serve erosion around OF 1033

OF 1033: Note serve erosion next to outfall



Serve erosion at OF 1033



Proposed area for gravel wetland with water quality treatment bays. Left is view of natural depression from Fairview Drive. Right is view of natural depression from Main Street.



12 inch culvert proposed to be increased to 30 inch. Far left- OF 1159 inlet located in proposed gravel wetland, Center-Outfall 1160 on other side of Main Street, Right-Outfall 1160 daylight