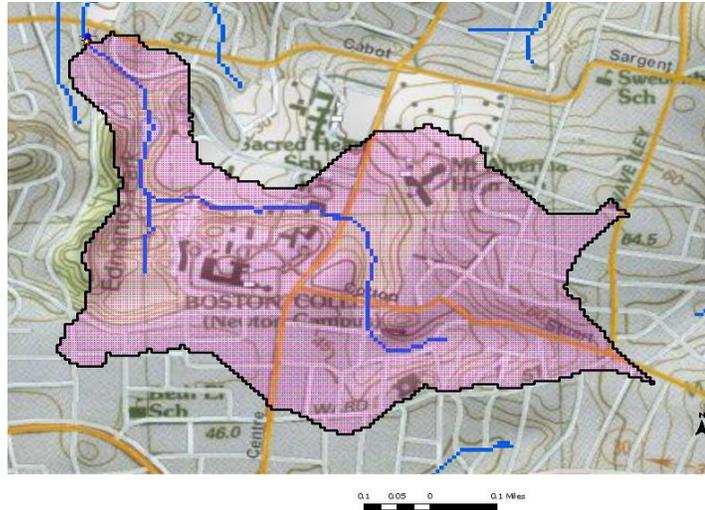


Edmands Park Stream Restoration

GE 312 River Restoration and Management Final Project

Summary: Stream restoration is a billion dollar industry in the United States. Many projects are implemented with little to no monitoring and reporting of project success or failure. The design and implementation of an effective restoration plan begins with identifying appropriate restoration goals. Goals can be as diverse as optimizing an area for recreational use to restoring the stream aquatic habitat. The first step to any rehabilitation plan involves a



thorough analysis of the fluvial geomorphology, hydrology, sediment transport, and vegetative history of the basin to produce a picture of the past, present, and likely future state of the basin. All the many catchment stakeholders should be included in this stage of the planning. Sometimes, no action is taken if funds are limited for a basin. More often a balance between complete structural stabilization and no action is adopted. You will learn how to approach a stream restoration project by developing your own project for a small stream in Edmands Park. Each group will develop a project based on different overall goals for how the channel and surrounding area will be used. Currently Edmands Park is used as an outdoor research laboratory for high school students and for dog walking.



Purpose: You will learn how to apply what you have learned in class by developing and presenting a proposal for a stream restoration project. You will learn to set project goals, assess the current and past condition of the watershed, identify problems and potential actions, review and select appropriate restoration techniques, and develop a design plan for restoration. You will consider each aspect of developing a stream restoration project including identifying stakeholders and developing a budget. Stream restoration projects are a collaborative effort, therefore you will **work in groups of 4** and collaborate on the development of your restoration proposal.

Potential Project Goals:

Each group will choose one project from the list of project goals to focus their efforts for restoration of Edmands Park Stream:

Group 1 - Optimize area for recreational use

Group 2 - Restore and improve ecologic function

Group 3 - Restore natural flow regime

Group 4 - Improve water quality

Group 5 – Optimize channel stability

Group 6 – Reduce or restore sediment supply



Assignment Details:

Each group will development a watershed assessment, determine their project goals/priorities, discuss who the stakeholders are and how they will be incorporated into the project plan, outline their project design, discuss the plan for implementation and monitoring, and develop a budget.

1) Introduction and Watershed Assessment (draft due October 31)

The introduction of the paper should set up the basis for your restoration project. You should include any pertinent background information about the region and about other similar restoration projects. Before restoration can occur evaluation of the entire watershed needs to be undertaken to determine if any treatment is actually necessary and where are the best locations to apply those treatments. During each phase of considering a stream restoration project it is important to continue to ask if any course of action is actually needed, or if the best course of action is none. The data needed to characterize a watershed can be broken up into the following categories: hydrology, basin geology, erosion and sediment yield, floodplain/riparian vegetation, channel processes, water quality, aquatic and riparian species and critical habitats, stream corridor dimensions, and land use.

2) Project objectives and stakeholders (draft due November 7)

Once you have chosen a restoration goal, you will need to identify restoration objectives. The objectives may vary based on the spatial scale of your project, whether it is a watershed, stream corridor, reach, or local-scale approach. A watershed-scale approach is a comprehensive approach where data is gathered on the geology, hydrology, vegetation, and land use for the entire watershed. Sites of current and future instabilities are identified along the main channel and its tributaries and considered when planning the rehabilitation project. A watershed-scale approach is the most likely to be successful in the long term since it addresses some of the root causes of channel incision. This approach is also the most intensive and costly. It includes both structural and non-structural in-channel and land treatment techniques. A watershed-scale approach may be the most effective, but may also have the longest lag time between treatment and rehabilitation due to lags in sediment transport and storage. The stream corridor scale includes both the stream and surrounding riparian zone along with its associated wildlife. A reach-scale approach focuses efforts on a single channel reach,

which can be defined as a stream segment between 20 to 100 channel widths long and may be that it is the most appropriate approach after a full watershed-scale evaluation has been undertaken. Consider carefully over what scale you will be implementing your project.

3) Project Design (draft due November 14)

Your group will need to propose a design that describes which restoration techniques will be applied and where they will be applied. You should include pictures and tables and describe any pertinent information such as sediment size, channel dimensions, and riparian zone dimensions for your restored stream.

4) Implementation and Monitoring plan (draft due November 21)

Data that is needed for monitoring after restoration in the restored reach also needs to be collected pre-restoration. **We will go to the Newton Campus on Sunday, September 22 to collect some preliminary data.** Each group will collect data for a subsection of the stream and share the data with other groups.

5) Budget and Justification (draft due November 21)

Restoration projects will only be implemented if the budget is considered reasonable. Your group will develop a budget with a justification for each expenditure for your project.

6) Presentation of restoration project plan (due Dec. 3 and Dec. 5)

The ability to effectively communicate the why and how you will implement your restoration project is essential for gaining support within the community and among stakeholders. Each group will spend 10 – 15 minutes presenting their projects to the class on December 3rd and December 5th.

Some notes about each section of your project proposal:

Format: Your project proposal needs to be single-spaced, with a readable 12-point font, with 1-inch margins, title page, page numbers, and a works cited page. Your title page should include a title, each group member's name, and the date. *If possible when printing out the paper, please print on both sides.* The page numbers for each section do not include figures and tables.

Introduction: 1 – 2 pages

Watershed Assessment: 2 – 3 pages

Project Objectives and Stakeholders: 2 – 3 pages

Project Design: 3 – 5 pages

Implementation and Monitoring plan: 2 – 3 pages

Budget and Justification: 1 – 2 pages

References: Each subsection of your project proposal should include references. References need to be cited in the text and should be used to provide a context for your work. Do not simply review or summarize everything in related references. Discuss only the aspects of the references that relate to your project plan.

- Every reference listed in the bibliography needs to be cited somewhere in the text, tables, or figure captions.
- Any information in the text that is not either common knowledge (e.g. the Earth is round), or a product of your own research, should have a citation.

Final Paper for Stream Restoration Project due on December 10

On December 10, you will turn in your final project plan. You will need to include references, figures and tables (with captions), and an outline of how the tasks were divided among your group.

Worth: 30% of final grade (the final paper will be worth 20% and the presentation 10%)



Brevity is the soul of wit. Pay attention to page limits. No matter what form of employment you have after graduation, you will have to write concisely.