BSC GROUP

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Nature-Based Solutions Implementation Resource Guide

NEXT STEPS: PLANNING AND PERMITTING YOUR NbS PROJECT

OVERVIEW & DISCLAIMERS

The information below outlines a general project planning process for NbS projects and identifies a number of permit applications that may be required for any given NbS project.

This information is intended to assist in the initial stages of project planning. Since no two projects are exactly alike, the project planning and permitting processes will differ for each project, based on the unique characteristics of the particular project; the local and regional context; and the goals and priorities of the community at that time.

GENERALIZED PLANNING PROCESS

For all NbS projects suggested in the NbS Tool (Matrix) and associated deliverables, a multi-step planning process would be required, likely entailing the following elements:

- Identification of project goals and priorities, in collaboration with community leaders, stakeholders, property owners, potential partners, and community members.
- Identification of project scope.
- General feasibility assessment (considering budget, size, and schedule).
- Development of the specific project and design plans and sequencing, including:
  - feasibility and constructability studies,
  - stakeholder, community, and volunteer outreach and involvement,
  - permit planning and implementation,
  - assessment and resolution of subsidiary issues that are identified during planning process (such as disposal of contaminated sediments, historical, archaeological, and rare species issues, etc.),
  - define performance standards and measures of project success,
  - plans for post-construction or post-implementation monitoring, and
  - plans for long-term maintenance, where necessary.
- Project construction and implementation.
- Post-project monitoring, assessment, and reporting.
- Plus, long-term maintenance, where necessary.

GENERALIZED PERMITTING PROCESS

With regard to permitting, numerous federal, state and local laws and regulations often apply to NbS projects.

Once a specific project design has been selected and developed, the permit requirements specific to that project will be more clearly identifiable. As general guidance, projects should be screened for permits/authorizations required under the following laws and regulations:

- Section 401 Clean Water Act/Water Quality Certification Program
- Section 404 of the Clean Water Act
- Section 10 of the Rivers and Harbors Act
- National Pollutant Discharge Elimination System (NPDES) Permit Program
- Federal Endangered Species Act
- Massachusetts Endangered Species Act
- Section 106 of the National Historic Preservation Act of 1966
- Massachusetts General Laws Chapter 9, Sections 26-27c (Massachusetts Historical Commission - Historical and Archaeological Review/Authorization)
- Massachusetts Environmental Policy Act (MEPA)
- Massachusetts Wetlands Protection Act
- Local Wetlands Protection Bylaws
- Local Zoning Bylaws
- *Plus, other local bylaws and regulations that could pertain to a specific project.*

Additionally, potential soil/sediment contamination issues would need to be considered where soil or sediment removal/disturbance occurs.

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ORGANIZATION OF RESOURCE GUIDES

Resource guides are organized according to the following headings and sub-headings:

Name of NbS
Refers to the name of the individual NbS or the general category of related NbS strategies (e.g., Architecture, Regulatory).

Project Number Per Matrix (NbS Tool)
Refers to the appropriate row or rows in the NbS Tool (also referred to as the "matrix") that was provided to your municipality or organization, detailing the

Prerequisites
Refers to the conditions that must be addressed before any project can be executed. This discussion point is intended to bring these factors to bear before significant investment of time and effort. These are notes for discussion to ensure limiting prerequisite factors are addressed before any project is considered or pursued. Of course, other limiting factors of an individual project may be discovered through analysis and design.

Recommended Implementation Steps (Project Planning and Administration, NbS Installation, & Maintenance)
This section provides a simplified list of significant activities that will likely be part of the implementation process and should be considered in relation to prerequisites, environmental impacts, volunteer opportunities, and other relevant considerations. Constraints are also noted.

Nature-based Solution Specs, Budget Estimate & Schedule Estimate
On Budget Order of Magnitude
Budget estimates are often the aspect of planning where limited information is available, especially in the early stages of planning when it would be helpful to reference for comparison, feasibility, and scope assessment. As such, these budget estimates, presented as estimate ranges or orders of magnitude, provide some basis for development of preliminary budget (per a designer's opinion) – costs are broken down to minimum practical units.

Some of these resource guides were first drafted in 2021 and updated each subsequent year. It is recommended to consider an estimated escalation cost of 2% per year from this point forward, or appropriate inflation/deflation. Additionally, costs are subject to change based on factors such as the project location, subsurface information, observed conditions, and more – all of which would be fleshed out in greater detail if the individual NbS project is selected and scoped for implementation.

On Units
Unit information has been provided as an opinion of the minimum practical unit(s) for any project. Unit recommendations (as well as budget estimates) are affected by factors such as full truckloads of material, an average amount of labor per unit, and practical limits of ecological function or critical mass needed for effective establishment.

In some resource guides, additional series of bullets further describe the key units of measure that drive the bulk of the budget estimate. They are provided with the intention of helping users understand the primary drivers and variables associated with project costs.

On Schedule
This describes the core construction schedule for one NbS project. Users should also consider local and regional factors such as weather patterns, time of year, mobilization to site, bidding process, design schedule, environmental testing, follow up monitoring, establishment of vegetation and maintenance

constraints.

QUESTIONS TO CONSIDER WHEN SELECTING AN NBS PROJECT FOR A GIVEN SITE

Questions that we recommend the user(s) should bring to the planning group when choosing an NbS project are as follows. They relate to the appropriateness of the NbS project for the site, impact and feasibility, co-benefits, unintended consequences, and opportunities for imbuing additional resilience and sustainability into the final project design.

Opportunity:

- Does it increase resource value, size, potential?
- Is it self-sustaining once set in motion?
- Does it avoid or prevent catastrophic loss, or long-term degradation?
- Does it benefit a sensitive species, and/or multiple species?
- Does it provide stability or value to an economic resource?
- Does it provide an opportunity for future profit from local resources?
- Is this the best available investment for our current resources?
- Can we use the material on site to solve a problem or add a benefit?
- Could this be both useful for habitat and profitable to an owner?
- Does it restore a function that historic uses have removed?

Avoidance:

- Is it easily reversible if a problem arises?
- Will it result in rapid or potentially destructive change?
- Could it conflict with private use?
- Could it conflict with infrastructure?
- Could this be misperceived? Does it need interpretation?

Social:

- Can this be replicated by others?
- Could this be turned into a standard requirement for development or maintenance without adding cost?
- Could this be done by volunteers instead?
- Will this raise awareness and appreciation?
- Does adding access threaten ecological integrity?
- Does adding access mean this area will be appreciated and easier to observe and protect?

Efficiency:

- Is there a more efficient method or material?
- Isolated/ divided resources are at risk, does this connect two resource areas?
- Is it already functioning without intervention?
- Could it be improved by intervention and by how much?
- Could this block an undesirable outcome?