**OPERATION, Inspection, & MAINTENANCE Plan**

**Draft TEMPLATE**

**EWP STREAM RESTORATION PROJECT**

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| --- | --- | --- | --- |
| Landowner or Local Sponsor: |  | County: |  |
| Nearest Town: |  |  |  |
| Prepared by: |  | Date: |  |
|  |  |  |  |

**Overview**

A properly maintained streambank is an asset to your property. Estimated life span for this installation is at least 20 years. You can assure and usually increase the life span by effectively operating, inspecting, and maintaining the installation in a timely manner. This document is sometimes referred to as an O&M Plan or an OIM Plan.

**GENERAL RECOMMENDATIONS**

An effective operation, inspection, and maintenance program includes:

* Visually inspect the bank treatment and any installed structures at least annually, and after heavy rainfall occurs. Repair damages as soon as practical. Check in-stream structures from the bank or a dry location using digital photos and binoculars (if needed). You should not wade in stream or try to inspect the work from a raft or canoe. Key considerations:
	+ If one or more main structural rocks was displaced or washed away, replace or re-position as soon as possible.
	+ If water is eroding around the bank-side end of a structure, repair as soon as possible.
* Check all banks, rock, wood, and structures for accelerated weathering, displacement, or significant changes since the original construction. Replace to original grades if necessary.
* Check for scour or excessive erosion of streambanks and stream crossings. Repair back to design grades and lines as soon as possible.
* Inspect vegetation and plantings more frequently during the first year after construction. During the first part of the growing season, check the vegetation as frequently as possible, but not less than monthly during growing season. Maintaining good bank vegetation is important to the success of the project. For the first three years, monitor the bank vegetation and reseed based on the following criteria:
	+ During the first season on a non-irrigated site, reseed if bank area re-vegetated during the implementation phase is less than 35% vegetated,
	+ By the end of the second season, reseed if bank area revegetated during the implantation phase is less than 65% vegetated:
	+ By the end of the third season, reseed if bank area revegetated during the implantation phase is less than 80% vegetated:
* Maintain vigorous growth of desirable vegetation to obtain >80% ground coverage after the third year from project completion. This includes reseeding, watering, weeding by hand, replanting, mulching, and removal of invasive plants when necessary. See previous bullet regarding year 1 and year 2 ground cover recommendations.
* Investigate settlement or large cracks in the soil, streambanks, or structures to determine their cause and if repairs are needed.
* Maintain fences to control access (if applicable).
* Control livestock on unfenced areas. We recommend that you DO NOT allow animals to walk up and down streambanks or in the stream. If livestock needs water, consider alternate water sources. Your local NRCS office can assist you with determining alternate water sources.
* Removedebris that could cause damage to any installed structures or bank treatments. This applies to large debris and debris that is altering the flow in a manner that may damage the structure or cause bank erosion.
* Control burrowing animals that are causing damage. Repair any damage caused by their activity. This is most important on slopes of banks and within 10 feet of the top of bank. The concern is that runoff or stream flow could flow through the tunnels and accelerate erosion.
* Repair damages caused by vandalism, vehicles, erosion, wildlife, or livestock that effect the integrity of a structure or a streambank.
* We recommend that you DO NOT mow or fertilize the vegetation within 35 feet of the edge of normal water flow.
* Take photographs of the installation for your own records and to share with NRCS technical representatives. Your feedback will help NRCS improve future installations.
* Monitor the installation as required by permit conditions. Corps of Engineer permits may require you to submit monitoring information annually for a set time frame (sometimes up to 5-years after completion).

**SPECIFIC RECOMMENDATIONS FOR YOUR INSTALLATION**

* Follow the above general recommendations with emphasis on monitoring and maintaining all planted materials.
* Eradicate all state-listed noxious weeds. Onsite management will be used to develop a weed eradication plan.
* Maintain wildlife fencing. We recommend that the wildlife fence is removed once woody plants are fully established.
* The following is strongly recommended to achieve survival rates and ground cover following construction and during the O&M period of 3 years:
	+ The use of water-trucks and if possible, in combination with a drip-irrigation system for irrigation/watering of the installed plants.
	+ For the first year following installation, containerized plants should be watered three times a week for the first three weeks. After the first three weeks, the plants are recommended to be watered once a week between April 15th and September 1st, after September 1st, water once every other week until the first frost, depending on ambient air temperatures.

The recommendations above will be sufficient to prevent desiccation and promote good vigor for the implemented plant materials, as determined by ambient weather conditions

* If seed survival is below an acceptable rate of establishment, then additional seeding per the original design is recommended.
* A 20% survival for all cuttings and 65% survival for all container plants are required 1-year after planting. If survival is lower than this amount, replanting per the original species recommendation by zone is recommended.

**REFERENCES**:

O&M Plans from NRCS Offices in Colorado (2011), Vermont (2009), Oregon (1997), West Virginia, and Michigan.

**Operations and Maintenance Guidelines**

**EWP Phase 2:**

**Operation and Maintenance Summary:**

Competing vegetation will be controlled until the woody plants are established.

State-listed noxious weeds will be controlled.

Replanting will be required if survival is inadequate.

Supplemental water will be provided as needed and when/where feasible.

Plantings will be inspected periodically and protected from adverse impacts including

insects, diseases, competing vegetation, wildfire and damage from wildlife.

Periodic applications of nutrients may be needed to maintain desired plant vigor.

Wildlife fencing will be removed once woody plants are established.