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|--|--|--|--|-------------------------------|--------------------|---|--|---|--|
| STORMWATER LOCAL ASSISTANCE FUND (SLAF): PROJECT CALCULATIONS WORKSHEET | | | | | | | | | |
| #1: PROJECT TYPE: STRUCTURAL BMPs | | | | | | | | | |
| Project Calculations Submitted at SLAF Application | | | | | | | | | |
| Type of Stormwater Retrofit: | | | | | | | | | |
| Initial Pollutant Loading | | | | | | | | | |
| Method Used: | | | | | | | | | |
| BMP Drainage Basin Information (acres) | | | | | | | | | |
| Pervious Cover= | | Impervious Cover= | | Time of Concentration (hrs.)= | | Contributing Drainage Area= | | | |
| Starting Pollutant Load in Drainage Area (lbs/yr) | | | | | | | | | |
| Total Phosphorus= | | | | Total Nitrogen= | | | | Total Suspended Solids= | |
| Existing BMP Type: | | | | | Proposed BMP Type: | | | | |
| | | | | | | | | | |
| Existing BMP Efficiency (%) | | Downward Modification(s) | | Downward Modification (%) | | Revised Existing Efficiency Modification(s) (%) | | Proposed BMP Efficiency (%) | |
| | | Select All that Apply (Maximum of 5): | | Select the Total Percentage: | | Existing Efficiency (%) - (Downward Modification (%) x Existing Efficiency (%)) | | Proposed BMP Efficiency (%) - Revised Existing Efficiency Modification(s) (%) | |
| TP = | | <input type="checkbox"/> No Sediment Forebay <input type="checkbox"/> No Micro-pool | | | | TP = | | TP = | |
| TN= | | <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Short-Circuiting | | | | TN= | | TN= | |
| TSS= | | <input type="checkbox"/> Undersized TV <input type="checkbox"/> Other(describe below) | | | | TSS= | | TSS= | |
| Final Pollutant Load Reduction Drainage Area (lbs/yr) | | | | | | | | | |
| *Total Phosphorus = | | | | *Total Nitrogen = | | | | *Total Suspended Solids = | |
| Offset Requirements Addressed: | | | | | | | | | |
| Project Calculations at Final Plan Design | | | | | | | | | |
| Type of Stormwater Retrofit: | | | | | | | | | |
| Initial Pollutant Loading | | | | | | | | | |
| Method Used: | | | | | | | | | |
| BMP Drainage Basin Information (acres) | | | | | | | | | |
| Pervious Cover= | | Impervious Cover= | | Time of Concentration (hrs.)= | | Contributing Drainage Area= | | | |
| Starting Pollutant Load in Drainage Area (lbs/yr) | | | | | | | | | |
| *Total Phosphorus = | | | | *Total Nitrogen = | | | | *Total Suspended Solids = | |
| Removal Efficiency Calculations | | | | | | | | | |
| Existing BMP Type: | | | | | Proposed BMP Type: | | | | |
| | | | | | | | | | |
| Existing BMP Efficiency (%) | | Downward Modification(s) | | Downward Modification (%) | | Revised Existing Efficiency Modification(s) (%) | | Proposed BMP Efficiency (%) | |
| | | Select All that Apply (Maximum of 5): | | Select the Total Percentage: | | Existing Efficiency (%) - (Downward Modification (%) x Existing Efficiency (%)) | | (Proposed BMP Efficiency (%) - (Revised Existing Efficiency Modification(s) (%) | |
| TP= | | <input type="checkbox"/> No Sediment Forebay <input type="checkbox"/> No Micro-pool | | | | TP= | | TP= | |
| TN= | | <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Short-Circuiting | | | | TN= | | TN= | |
| TSS= | | <input type="checkbox"/> Undersized TV <input type="checkbox"/> Other(describe below) | | | | TSS= | | TSS= | |
| Final Pollutant Load Reduction Drainage Area (lbs/yr) | | | | | | | | | |
| *Total Phosphorus = | | | | *Total Nitrogen = | | | | *Total Suspended Solids = | |
| Offset Requirements Addressed (DEQ Guidance Memo GM20-2003; Appendix III): | | | | | | | | | |
| Comments | | | | | | | | | |
| | | | | | | | | | |
| *Final Pollutant Load Reduction Credit = (Starting Pollutant Load) x (Net Increase in Retrofit Efficiency (%)) | | | | | | | | | |

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|---|--------------------------|-----------------------|------------------------|-----------------------|-----------------------|---------------------------------|
| #2: PROJECT TYPE: URBAN STREAM RESTORATION & OUTFALL STABILIZATION | | | | | | |
| Project Calculations Submitted at SIAF Application | | | | | | |
| Watershed Size (ac): | | Impervious Cover (%): | | Managed Turf (%): | | Length of Restoration (lf): |
| Does restoration include changes in Pattern, Profile, and/or Dimension? YES <input type="checkbox"/> /NO <input type="checkbox"/> | | | | | | |
| Describe: | | | | | | |
| Soil Data | | | | | | |
| Number of Soil Borings: | | Stream Segment 1 | Stream Segment 2 | Stream Segment 3 | Stream Segment 4 | Stream Segment 5 |
| Composite Average | BD (lb/ft ³) | | | | | |
| | TP (lb/T) | | | | | |
| | TN (lb/T) | | | | | |
| Estimated Pollutant Reductions | | | | | | |
| Protocol 1 Credit for Prevented Sediment 50% Effectiveness (T/yr) = | | | | | | |
| | Protocol 1 (lb/yr) | Protocol 2 (lb/yr) | Protocol 3* (lb/yr) | Protocol 4 (lb/yr) | Protocol 5 (lb/yr) | TOTAL Load Reduction (lb/yr) |
| Sediment | | | | | | |
| TP | | | | | | |
| TN | | | | | | |
| Project Calculations at Final Plan Design | | | | | | |
| Watershed Size (ac): | | Impervious Cover (%): | | Managed Turf (%): | | Length of Restoration (lf): |
| Does restoration include changes in Pattern, Profile, and/or Dimension? YES <input type="checkbox"/> /NO <input type="checkbox"/> | | | | | | |
| Describe: | | | | | | |
| Soil Data | | | | | | |
| Number of Soil Borings: | | Stream Segment 1 | Stream Segment 2 | Stream Segment 3 | Stream Segment 4 | Stream Segment 5 |
| Composite Average | BD (lb/ft ³) | | | | | |
| | TP (lb/T) | | | | | |
| | TN (lb/T) | | | | | |
| Estimated Pollutant Reductions | | | | | | |
| Protocol 1 Credit for Prevented Sediment 50% Effectiveness (T/yr) = | | | | | | |
| | Protocol 1 (lb/yr) | Protocol 2 (lb/yr) | Protocol 3* (lb/yr) | Protocol 4 (lb/yr) | Protocol 5 (lb/yr) | TOTAL Load Reduction (lb/yr) |
| Sediment | | | | | | |
| TP | | | | | | |
| TN | | | | | | |

*Protocol 3: Application: Credit for Floodplain Reconnection Volume is an estimate; final credit determined with post-construction As-Built record drawing and modeled floodplain reconnection. Final: Credit for final Floodplain Reconnection Volume as determined by post-construction As-Built record drawing and modeled floodplain reconnection.

#3: PROJECT TYPE: LIVING SHORELINE

Project Calculations Submitted at SIAF Application

SELECT Type of Living Shoreline:

Does Project Meet the Qualifying Conditions? YES/NO

☐
☐ Site will be graded, vegetated, and excess sediment removed or used, and
☐ A marsh fringe habitat (for non-structural & hybrid system w/ sill) or a beach/dune habitat (for hybrid w/ breakwater) will be created, enhanced, or maintained

Is Submerged Aquatic Vegetation (SAV) present? YES/NO

☐ Is the presence of SAV based on VIMS SAV Monitoring Data? YES/NO
☐ Or on-site SAV Survey? YES/NO

Is a Slope Stability Analysis provided for shoreline grading steeper than the angle of repose? YES/NO

Is the Shoreline Sediment Erosion Rate (E, ft/yr) based on VIMS Shoreline Change Online Viewer? YES/NO

If No, Describe:

Are site-specific values used in place of 1 or more of the protocol default values for:

Sand Reduction Factor for sediment (0.337), Sediment Bulk Density (93.6 lb/ft3), P or N sediment concentration (0.000205 lb P/lb TSS or 0.000290 lb N/lb TSS), Denitrification load reduction (85 lb TN/ac of marsh plantings/yr), Sedimentation TP or TSS load reduction (5.289 lb TP or 6,959 lb TSS per ac of marsh plantings/yr), Marsh Redfield Ratio TP or TN load reduction (0.3 lb TP or 6.83 lb TN/ac of marsh plantings/yr)? YES/NO

If Yes - Provide attachments describing source and methods for site-specific values being used.

Design Parameters (Provide additional sheets for additional shoreline segments as needed)

| Length of Shoreline (ft) | Estimated Shoreline Erosion Rate (ft/yr) | Average Bank Height (ft) | Estimated Bank Instability Reduction (%)** | Area of Marsh Plantings (ac) |
|--------------------------|--|--------------------------|--|------------------------------|
| | | | | |

Estimated Pollutant Reductions

| Pollutant | Protocol 1 (lb/yr) | Protocol 2 (lb/yr) | Protocol 3 (lb/yr) | Protocol 4 (lb/yr) | TOTAL (lb/yr) |
|-----------|--------------------|--------------------|--------------------|--------------------|---------------|
| TP | | | | | |
| TN | | | | | |
| TSS | | | | | |

Project Calculations at Final Plan Design

SELECT Type of Living Shoreline:

Does Project Meet the Qualifying Conditions? YES/NO

☐
☐ Site will be graded, vegetated, and excess sediment removed or used, and
☐ A marsh fringe habitat (for non-structural & hybrid system w/ sill) or a beach/dune habitat (for hybrid w/ breakwater) will be created, enhanced, or maintained

Is Submerged Aquatic Vegetation (SAV) present? YES/NO

☐ Is the presence of SAV based on VIMS SAV Monitoring Data? YES/NO
☐ Or on-site SAV Survey? YES/NO

Is a Slope Stability Analysis provided for shoreline grading steeper than the angle of repose? YES/NO

Is the Shoreline Sediment Erosion Rate (E, ft/yr) based on VIMS Shoreline Change Online Viewer? YES/NO

If No, Describe:

Are site-specific values used in place of 1 or more of the protocol default values for:

Sand Reduction Factor for sediment (0.337), Sediment Bulk Density (93.6 lb/ft3), P or N sediment concentration (0.000205 lb P/lb TSS or 0.000290 lb N/lb TSS), Denitrification load reduction (85 lb TN/ac of marsh plantings/yr), Sedimentation TP or TSS load reduction (5.289 lb TP or 6,959 lb TSS per ac of marsh plantings/yr), Marsh Redfield Ratio TP or TN load reduction (0.3 lb TP or 6.83 lb TN/ac of marsh plantings/yr)? YES/NO

If Yes - Provide attachments describing source and methods for site-specific values being used.

Design Parameters (Provide additional sheets for additional shoreline segments as needed)

| Length of Shoreline (ft) | Estimated Shoreline Erosion Rate (ft/yr) | Average Bank Height (ft) | Estimated Bank Instability Reduction (%)** | Area of Marsh Plantings (ac) |
|--------------------------|--|--------------------------|--|------------------------------|
| | | | | |

Estimated Pollutant Reductions

| Pollutant | Protocol 1 (lb/yr) | Protocol 2 (lb/yr) | Protocol 3 (lb/yr) | Protocol 4 (lb/yr) | TOTAL (lb/yr) |
|-----------|--------------------|--------------------|--------------------|--------------------|---------------|
| TP | | | | | |
| TN | | | | | |
| TSS | | | | | |

* If the project grading angle of repose exceeds the slope stability threshold a detailed site slope and bank stability analysis documenting that no additional sediment and associated pollutants will enter the nearshore waters, to include the following conditions: 1) the project was graded and vegetated so that the bank is stable, and 2) excess sediment was removed offsite so that the sediment does not enter the nearshore waters. Bank analysis can demonstrate the site is stable with a minimum risk of erosion. This should be coordinated with appropriate DEQ personnel to ensure proper methods, reporting, and requirements are met, and the project meets this basic qualifying condition. The local or state agency may decide not to issue the credit based on the information regarding site slope and stability assessment that is provided.