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|  | Project Work Plan  **Attachment A**  *Doc Type: Contract* |

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|  | | **MPCA Use Only** | |
|  | | Swift #: |  |
|  | | CR #: |  |
|  | |  | |
| **Project Title:** | | Minnesota Stormwater Manual Updates (Filter strips as pretreatment practices) | | |

1. **Project Summary:**

|  |  |
| --- | --- |
| **Organization:** | RESPEC |
| **Contractor contact name:** | Lee Rosen |
| **Title:** | Project Manager |
| **Address:** | 1935 W County Road B2, Ste. 230 |
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| **Fax:** | 651-305-2281 |
| **E-mail:** | lee.rosen@respec.com |

**Subcontractor(s)/Partner(s):**

|  |  |
| --- | --- |
| **Organization:** | Geosyntec |
| **Project manager:** | Scott Struck |
| **Address:** | 1455 Dixon Ave., Ste #320 |
|  | Lafayette, Colorado 80026 |
| **Phone:** | 720-545-7518 |
| **Fax:** |  |
| **E-mail:** | sstruck@geosyntec.com |
| **Organization:** | John Gulliver and Andy Erickson |
| **Project manager:** | John Gulliver |
| **Address:** | St. Anthony Falls Laboratory |
|  | 2 Third Ave SE, Minneapolis, MN 55414 |
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**MPCA contact(s):**

|  |  |
| --- | --- |
| **MPCA project manager:** | Mike Trojan |
| **Title:** | Hydrologist |
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|  |  |
| **Phone:** | 651-757-2790 |
| **Fax:** | 651-297-2343 |
| **E-mail:** | Mike.trojan@state.mn.us |

**Project information**

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| --- | --- | --- | --- |
| **Latitude/Longitude:** |  | | |
| **\*County:** | Ramsey | | |
| **Start date:** | 06/01/2016 | **End date:** | 12/31/2016 |
|  | *(mm/dd/yyyy)* |  | *(mm/dd/yyyy)* |
| **Total cost:** | $23,389.72 | | |
| **\*Full time equivalents:** | 0.100 | | |

**\*Major watershed(s):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Statewide | Kettle River | Miss Rvr – GrandRpds | Rainy Rvr – Baudette | So Fork Crow River |
| Big Fork River | Lac Qui Parle River | Miss Rvr –Headwaters | Rainy Rvr – Black Rvr | Lower St. Croix Rvr |
| Upper Big Sioux Rvr | Lake of the Woods | Miss Rvr –LaCrescent | Rainy Rvr – Rainy Rvr | Upper St. Croix Rvr |
| Lower Big Sioux Rvr | Lake Superior – North | Miss Rvr – Reno | Rapid River | St. Louis River |
| Blue Earth River | Lake Superior – South | Miss Rvr – Sartell | Red Lake River | Red Rvr of the North Tamarac River |
| Bois de Sioux River | Le Sueur River | Miss Rvr – St. Cloud | Upper Red Rvr | Thief River |
| Buffalo River | Leech Lake River | Miss Rvr – Twin Cities | Redeye River | Two Rivers |
| Cannon River | Little Fork River | Miss Rvr – Winona | Redwood River | Upper/Lower Red Lk |
| Cedar River | Little Sioux River | Miss Rvr – Lake Pepin | Rock River | Upper Iowa River |
| Chippewa River | Long Prairie River | Mustinka River | Root River | Vermillion River |
| Clearwater River | Red Rvr of the North Marsh River | Nemadji River | Roseau River | Upper Wapsipinicon River |
| Cloquet River | MN Rvr – Yellow Medicine River | No Fork Crow River | Rum River | Watonwan River |
| Cottonwood River | MN Rvr – Headwaters | Otter Tail River | Red Rvr of the North Sandhill River | DesMoines Rvr Hdwtrs |
| Crow Wing River | MN Rvr – Mankato | Pine River | Sauk River | Lower DesMoines Rvr |
| E Fork DesMoines Rvr | Lower MN River | Pomme de Terre Rvr | Shell Rock River | Wild Rice River |
| Red Rvr of the North Grand Marais Creek | Miss Rvr – Brainerd | Rainy Rvr – Hdwtrs | Snake River | Winnebago River  Zumbro River |

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| **\*Organization type:** | Federal government  For-profit  Individual  Non-profit | Local/Regional government  Private college/university  Public college/university  State government | |
| **\*Project type:** | Analysis/Interpretation  Assessment/Evaluation  Demo/Pilot project  Education/Outreach/Engagement | Modeling  Monitoring  Planning | Research  Restoration/Enhancement  Technical assistance |

1. **Statement of Problems, Opportunities, and Existing Conditions**

This project will result in updates to existing information and incorporation of new information into the Minnesota Stormwater Manual. The information is used by stormwater practitioners to implement the most effective and cost-efficient practices for managing stormwater runoff volume and pollutants, and to meet regulatory requirements associated with stormwater permits.

1. **Goals, Objectives, Tasks, and Subtasks**

**\*Goal:** Gather information for eventual incorporation into the Minnesota Stormwater Manual. The Stormwater Manual is used by stormwater practitioners to make decisions related to stormwater management, such as selecting appropriate Best Management Practices, meetings stormwater regulatory requirements, and determining pollutant and stormwater volume reductions associated with implementation of different stormwater management practices.

**Objective:** The Contractor will provide information on design, construction, and maintenance of vegetated filter strips that are utilized as pretreatment practices. Note that [the Stormwater Manual has a section](http://stormwater.pca.state.mn.us/index.php/Vegetated_filter_strips) on vegetated filter strips and an on-going work order is addressing general aspects of pretreatment practices. The MPCA Project Manager will work with the Contractor to ensure consistency and accuracy between these different sources of information.

**Task A:** Provide information on design criteria and design considerations for vegetated filter strips. Include photos, schematics, CAD drawings, or other images as necessary. Include a design sequence. Include guidelines or specifications for the following.

* Acceptable or recommended contributing drainage area to the practice
* Acceptable or recommended slopes for the practice
* Recommended or required soils/media, including recommendations for compost amendment. If applicable to the practice, ensure the information is consistent with information provided for [filter media specifications for bioretention practices](http://stormwater.pca.state.mn.us/index.php/Design_criteria_for_bioretention#Materials_specifications_-_filter_media).
* Recommended or required discharge velocities
* Sizing criteria (primarily length and width of the practice) adequate to protect downstream BMP(s); consider drainage area, land use, downstream BMP, and ability to enhance the practice to achieve the desired level of pretreatment. Include an example sizing calculation.
* Vegetation and landscaping, including acceptable vegetation types, planting and establishment criteria, and a discussion of aesthetic considerations.
* Guidance and recommendations on how to achieve sheet flow within the practice. Include a discussion on the use of level spreaders, including definition of level spreader, types/variants of level spreader, applicable practices, and design guidelines and specifications.
* Material recommendations and specifications (e.g. use of a pea gravel diaphragm consisting of washed aggregate 3 to 10 mm in diameter)

**Task B:** Provide information on construction specifications and construction considerations for vegetated filter strips. Include photos, schematics, CAD drawings, or other images as necessary. Include a construction sequence. Include guidelines or specifications for the following.

* Necessary or recommended grading at the site
* Methods or precautions necessary for protecting the practice during construction
* Methods for stabilizing the site during construction
* Requirements or recommendations for ensuring site access, such as an easement
* Ensuring compaction does not occur or is alleviated following construction (see [Alleviating compaction from construction activities](http://stormwater.pca.state.mn.us/index.php/Alleviating_compaction_from_construction_activities))
* Vegetation establishment, including soil/media, seeding/planting, and initial care and stabilization

**Task C:** Provide information on recommendations and requirements for maintenance of vegetated filter strips. Include photos, schematics, CAD drawings, or other images as necessary. Include guidelines or specifications for the following.

* Frequency of inspections
* Develop a maintenance checklist for the practice
* Education requirements if the practice will be maintained by a private entity
* Necessary or recommended maintenance agreements, easements, and/or deed restrictions. If appropriate include examples or links to examples.
* Practices for minimizing and removing sediment buildup
* Practices for preventing or minimizing washout
* Practices for preventing and mitigating erosion of the practice
* Maintaining vegetation, including maintaining necessary coverage, watering, mowing, pruning, fertilization, mulch addition/replacement, and re-establishment. Where applicable, the information shall be consistent with information on operation and maintenance for bioretention practices. See <http://stormwater.pca.state.mn.us/index.php/Operation_and_maintenance_of_bioretention#Recommended_maintenance_activities_for_bioretention_areas>.
* Removal of trash and debris

**Responsible Party(ies)**: Contractor, MPCA

**Objective 1 Timeline:** June 1, 2016 – December 31, 2016

**Objective 1 Cost:** $23,389.72

**Objective 1 Deliverables:** Contractor will provide for MPCA

1. **Measurable Outcomes**

Work products delivered by the Contractor will be incorporated by MPCA staff into the Minnesota Stormwater Manual, where it becomes accessible to stormwater practitioners. Stormwater practitioners are responsible for identifying and implementing stormwater control practices that are cost-effective and that are efficient in removing stormwater volume and pollutants from receiving waters. Typical measures of success for the work described in this document include the following.

1. A large number of “hits” on web pages containing the information delivered by the Contractor. We have identified from surveys that the majority of web views are from engineers, stormwater managers, and other stormwater practitioners that access the information in the Manual for the purpose of stormwater management.
2. Comments and inquiries received from practitioners. Stormwater practitioners frequently communicate with MPCA staff regarding interpretation of information in the Manual and application of information to a particular stormwater issues.
3. Incorporation of information from the Manual into state and local guidance and regulations.
4. Continued updates to the information in response to communications with practitioners. The Manual is frequently updated when stormwater practitioners that use the Manual provide additional information for the Manual, including but not limited to specifications, case studies, photos, and data.

**5.** [**Gantt charts**](file:///C:\Users\agelbman\AppData\Local\Agency_Files\OSD\Contract%20Team\Indirect%20Cost%20Overview_files\New\Intranet\B1_B2_Gantt_Budget_%20Examples.xlsx)**- Attached**

**6.** [**Project Budget**](file:///C:\Users\agelbman\AppData\Local\Agency_Files\OSD\Contract%20Team\Indirect%20Cost%20Overview_files\New\Intranet\B1_B2_Gantt_Budget_%20Examples.xlsx) **- Attached**