Appendix F

Long Term (Post-Construction) Stormwater Management Program-MCM 5

*Post Construction (Long term) Plan*

*Commercial Post Construction SWMP*

*Residential Post Construction SWMP*

*Residential Private Post Construction Inspection form for SWMP*

*80th percentile spreadsheet MSD (0.55’average depth)*
Standard Operating Procedures (SOPs) for Post-Construction Stormwater Permit Requirements

I. Purpose
This SOP outlines procedures and responsibilities for meeting the post-construction and permanent BMP requirements in the Greater Salt Lake Municipal Services District (MSD) stormwater discharge permit. The post-construction requirements include:

1. Inspection and maintenance of public and private BMPs
2. Certification of design of permanent BMPs

II. References
1. Greater Salt Lake Municipal Services General Permit for Stormwater Discharges Associated with Municipal Separate Storm Sewer Systems (MS4s), Authorization to Discharge under the State of Utah Discharge Permit System (UPDES); UPDES Permit Number UTS0000003.
2. Municipal Services Code Chapter 17.22, Stormwater Illicit Discharges and Permit Requirements
3. Salt Lake County Public Works and Flood Control Engineering: Public Improvement Design Standards and Construction Specifications (most recent revision)

III. Definitions/Abbreviations
1. BMP: Best Management Practice
2. SLCOHD: Salt Lake County Health Department and Environment
3. UPDES: Utah Pollution Discharge Elimination System
4. EPA: Environmental Protection Agency
5. GIS: Geographic Information System
6. MS4: Municipal Separate Storm Sewer System
7. PWOPS: Public Works Operations Division
8. NOV: Notice of Violation
9. SLCOPW: Salt Lake County Public Works
10. SOP: Standard Operating Procedure
11. SWMP: Stormwater Management Plan
12. GSLMSD: Greater Salt Lake Municipal Services District
13. MSD: Municipal Services District
IV. Prerequisites

1. Training and Certification
   1.1 Internal training for the Municipal Services District personnel on maintenance and safety procedures. Use of
   1.2 Permits EProcess360 database
   1.3 Use of City Works, including database.
   1.4 Basic GIS functions

2. Support Functions or documents
   2.1 Municipal Services District Permit Application
   2.2 As-built development plans including BMP designs
   2.3 SWMP Review Checklist
   2.4 EProcess360 permits tracking and record-keeping
   2.5 System & Enforcement response plan

V. Standard Operating Procedures

1. As-built plans, operating agreements and BMP inspections
   1.1 Owner submits as-built plans and certification by a professional engineer verifying that permanent BMPs have been installed per approved plans and specifications to the MSD.
   1.2 Owner submits inspection and maintenance agreement as required by the Municipal Services to the Stormwater Construction Supervisor.
   1.3 Development Review Inspectors & Engineer (when applicable) inspect permanent BMPs to insure compliance with as-built plans.
   1.4 Stormwater Construction Supervisor files the plans, Maintenance agreement and Management plan in the project file.
   1.5 Stormwater Construction Supervisor provides a copy of plans and Agreements to the staff for mapping on the Utilisync program.
   1.6 A copy of the inspection and maintenance agreement will be maintained on the Utilisync program as part of post construction inspection program.
   1.7 Engineering Construction Inspectors notify the Bonding Coordinator that financial security can be released.

2. Mapping and inventory
   2.1 Flood Control Engineering staff enters BMP locations and sizing information into the stormwater GIS for tracking.
   2.2 MSD staff link BMP information and maintenance agreements into Utilisync.
   2.3 MSD maintains records of inspections and agreements in Utilisync
3. **BMP Inspection and Maintenance – County Owned Facilities**
   3.1 PWOPs staff schedules, assigns and completes annual inspections of BMPs
   3.2 PWOPs staff schedules and performs maintenance of BMPs based on inspections
   3.3 PWOPs staff tracks and records maintenance activities.
   3.4 PWOPs staff keeps database of maintenance records

4. **BMP Inspection and Maintenance – Privately Owned Facilities**
   4.1 Municipal Services District staff sends certification forms to owners of private systems once per year
   4.2 Owner submits copy of annual inspection and maintenance records and a signed certification that BMPs are being inspected and maintained according to the approved maintenance agreement once per year
   4.3 MSD staff annually inspects a representative sample of private BMPs each year to determine compliance with maintenance agreements and completes inspection of all private BMP’s a minimum of once every five years.
   4.4 MSD staff documents results of inspections and initiates enforcement for non-compliance in accordance with enforcement response plan
   4.5 MSD staff provides inspection data to the Program Manager for inclusion in Annual Report to the EPA
   4.6 Municipal Services staff maintains a database of facilities and records of maintenance agreements and annual certifications

5. **Violations and Enforcement**
   5.1 MSD certified Inspection staff documents violations of inspection and maintenance agreements or the Owners’ failure to submit annual certifications
   5.2 MSD Inspection staff provides documentation to the Stormwater Construction Supervisor and Program Management staff
   5.3 Stormwater Construction Supervisor & Program Manager prepares and issues NOVs, penalty assessments or other enforcement actions per Enforcement Response Plan

Post Construction SOP
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6. **third party or public reports of BMP malfunction or improper maintenance**

6.1 Public or third-party reports of inadequate maintenance or malfunctions of BMPs are routed to PWOPs, Flood Control Engineering or Salt Lake County Health Department and the Stormwater Construction Supervisor.

6.2 MSD Inspection staff verifies problems and, if immediate action is not required, submits documentation to the Program Manager & the Stormwater Construction Supervisor for follow-up.

6.3 The Stormwater Construction Supervisor and/or Program Manager issues an NOV informing Owner(s) of their responsibilities and requiring the situation to be corrected.

6.4 If Owner(s) do not comply, the Program Manager may follow up with additional enforcement as outlined in the Enforcement Action Plan.

7. **Abatement of violations**

7.1 MSD Inspections and PWOPs staff responds to BMP maintenance problems or malfunctions that require immediate resolution because of public safety or welfare.

7.2 County staff abates violation using County resources or contract services.

7.3 County staff records cost of abatement and submits to either the Salt Lake County District Attorney's Office or the Greater Salt Lake Municipal Services District Attorney for reimbursement.

7.4 The Program Manager and/or the Stormwater Construction Supervisor will issue NOVs and penalty assessments, to the Salt Lake District Attorney's or the Greater Salt Lake Municipal Services District Attorneys Office for collection.
Commercial Post Construction SWMP

Post Construction Storm Water Management Plan

Commercial Best Management Practices (BMPs) are those measures and/or practices to be maintained by the property owner or operator to prevent illicit discharges, pollutants and other contaminants from entering the MSD storm water system. These measures and practices are to be implemented upon completion of construction activities, to be conducted and maintained in perpetuity and will typically address the following:

* Inspection and cleaning of oil/water separator and catch basin - Oil/water separator and catch basin are to be inspected monthly and oil/water separator is to be cleaned at least every six months.

* Parking area cleaning and sweeping - Parking lots are to be cleaned and swept at least quarterly to prevent pollutants from entering the storm drain system.

* Waste management and disposal - Wastes will be limited to standard trash and recycling materials that will be disposed of in covered standard waste bins and disposed of by a licensed waste removal company.

* Landscape maintenance - Owner is responsible for general landscape maintenance. The landscape maintenance will consist primarily of grooming & watering.

* Employee training - Property owner is to provide or require training in storm water quality management and required BMPs. Employee training in storm water quality management and required BMPs shall be integrated with any other existing employee training programs.

* Record of inspection, maintenance and training activities - These shall be kept on site and made available for review by Municipal Services and/or State Officials upon request. An inspection of the site will be conducted by the MSD annually, or more frequently as may be deemed necessary.

The objectives of the plan are to:

1. Control soil erosion
2. Control discharge of sediment into storm drainage facilities or off-site
3. Prevent illicit discharge into on-site soil s. into storm drainage facilities or offsite

If the objectives of the plan are not being met, the site operator or owner shall make adjustments to the plan as needed to accomplish its purposes.
Residential Best Management Practices (BMPs) are those measures and/or practices to be maintained by the property owner or operator to prevent illicit discharges, pollutants and other contaminants from entering the city storm water system. These measures and practices are to be implemented upon completion of construction activities, to be conducted and maintained in perpetuity and will typically address the following:

* Inspection and cleaning of oil/water separator and catch basin - Oil/water separator and catch basin are to be inspected monthly and oil/water separator is to be cleaned at least every six months.

* Parking area cleaning and sweeping - Parking lots are to be cleaned and swept at least quarterly to prevent pollutants from entering the storm drain system.

* Waste management and disposal - Waste will be limited to standard trash and recycling materials that will be disposed of in standard waste bins and disposed of by a licensed waste removal company.

* Landscape maintenance - Owner is responsible for general landscape maintenance. The landscape maintenance will consist primarily of watering.

* Employee training - Property owner is to provide or require training in storm water quality management and required BMPs. Employee training in storm water quality management and required BMPs shall be integrated with any other existing employee training programs.

* Record of inspection, maintenance and training activities - These shall be kept on site and made available for review by county and/or state officials upon request. An inspection of the site will be conducted by the city annually, or more frequently as may be deemed necessary.

The objectives of the plan are to:

1. Control soil erosion

2. Control discharge of sediment into storm drainage facilities or off-site

3. Prevent illicit discharge into on-site soil or into storm drainage facilities or offsite

If the objectives of the plan are not being met, the site operator or owner shall make adjustments to the plan as needed to accomplish its purposes.
MAINTENANCE INSPECTION REPORT POST CONSTRUCTION PRIVATE STORMWATER BMP MAINTENANCE

INSPCTION PROCEDURE

These instructions and inspection report can serve as a standard operating procedure (SOP) to comply with The Utah Department of Environmental Quality mandate that private stormwater facilities that discharge to Salt Lake County Muds are properly inspected annually. At the discretion of the PW Engineer, some sites will require additional site-specific SOP in addition to the following:

Site Evaluation: Submit a copy of the inspection report to Salt Lake County Township office by July 31st of each year.

1. Dumping Evidence: Evaluate catch basins, inlets, manholes, gutters, etc., for the presence of stains from dumping or painting, thinners, oils, or other hazardous substances.

2. Spill Evidence: Evaluate pavements and walls for spills particularly for evidence of neglected spills.

3. General Site Exposure: Evaluate materials, devices, and operations that are exposed to weather. Inspect to verify that BMP’s are in place or that there are practices that will contain or minimize pollutants and pollutant sources. Look for uncontrolled waste materials, oil, surfactants, cleansers, and other materials and chemicals that could seep into the ground, enter the storm drain system, or affect water quality.

4. Other Pollution Sources: Evaluate any activity or operation that may pollute the environment.

5. Stormwater Storage: Inspect for proper maintenance and condition of detention/retention ponds, debris for proper capacity, debris or sediment accumulation, and the stormwater conveyance picking and/or in good condition, etc.

6. Inlets and catch basins: Inspect for proper maintenance and function of storm water inlets and catch basins. Inspect for pollutants, debris, and to ensure smooth flow of water. Inlets, basins, and covers should be in good working order.


9. Parking: Inspect parking areas for proper maintenance and condition. Inspect for pollutants, spills, etc. Pavement areas should include regular sweeping activity and maintenance.

10. Waste Collection System: Inspect for proper maintenance and function of waste collection facilities. Inspect for stains and leaks from containers. Ensure that lids are kept closed.

11. Landscaping: Inspect for condition, maintenance, and function. Inspect for excessive debris. Ensure proper application of chemicals by looking for accumulation of excess fertilizer, herbicides, and pesticides, etc.

12. Pre-Treatment Devices: Inspect pre-treatment devices for proper maintenance and condition. Pre-treatment devices are devices such as hooded outlet cover (Snout), grease and interceptors, or other devices designed to remove pollutants from stormwater.

13. Stormwater Collection: Inspect for proper maintenance and condition of stormwater drain systems, including underground devices designed to collect stormwater and convey it to the ground.


15. Site Specific SOP Items: Certain land uses require site-specific stormwater management SOP’s to ensure the quality of stormwater that is discharged from a site. Review site-specific SOP's for compliance with site-specific SOP’s and modify, update, or amend them as needed.

16. Other: Inspect other post construction stormwater items for proper function. This could include pumps, catch basins, backflow devices, bio-filters, bio-retention systems, permeable pavement, green roofs, etc.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection</td>
<td>Annually</td>
<td>It is recommended that the BMP Operation and Maintenance Inspection Report, referenced by this agreement, be submitted to Salt Lake County upon completion.</td>
</tr>
<tr>
<td>Mowing and maintenance of vegetation</td>
<td>Variable, depending on vegetation and desired aesthetics</td>
<td>Landscaping and vegetation should be cared for throughout the year to ensure that proper sediment removal and infiltration is maintained and the facilities remain aesthetically pleasing.</td>
</tr>
<tr>
<td>Remove trash and debris</td>
<td>As needed or following each storm</td>
<td>Trash and debris should be removed regularly to ensure the facilities function properly and operate effectively. Trash often collects at inlet and outlet structures.</td>
</tr>
<tr>
<td>Inspect and maintain inlet and outlet structures</td>
<td>Annually</td>
<td>The inlet and outlet structures should be inspected for damage and proper operation.</td>
</tr>
<tr>
<td>Sediment removal</td>
<td>Variable (5-10 years is typical)</td>
<td>The removal of sediment is necessary if the facilities begin to lose capacity or effectiveness.</td>
</tr>
</tbody>
</table>
Residential Private Inspection Form Example

**SMP Operation and Maintenance Inspection Report**

**POST CONSTRUCTION PRIVATE STORMWATER BMP MAINTENANCE**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Equipment Description</th>
<th>Maintenance Required</th>
<th>Action Taken</th>
<th>Observations and Remarks</th>
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<tr>
<td>1</td>
<td>Stormwater Access</td>
<td>Yes</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>2</td>
<td>Inlet Screen</td>
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<td>NA</td>
<td>NA</td>
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<tr>
<td>3</td>
<td>Outfall Screen</td>
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<td>NA</td>
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<tr>
<td>4</td>
<td>Outlet Screen</td>
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<td>NA</td>
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<tr>
<td>5</td>
<td>Stormwater Storage</td>
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<td>NA</td>
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<td>6</td>
<td>Stormwater Collection</td>
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</tr>
</tbody>
</table>

**Notes:**

**Signatures:**

- **Inspection:**
- **Owner:**

**Private Inspection forms**

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80th percentile Spreadsheet for MSD areas

Data was Calculated by Robert Thompson for various elevations of 4 areas in the MSD:

1. Brighton Cabin
2. Mt Dell
3. White City
4. Magna

The 70th percentile was 0.46 inches of rain

The 80th percentile was 0.56 inches of rain

The 90th percentile was 0.75 inches of rain

It was decided that averaged with all areas, 0.55 inches of rain, would correctly capture the 80th percentile storm for all MSD areas.