STORMWATER FACILITIES
O&M COST ESTIMATE

Instructions
In accordance with Section 3.8.4 of Volume I of the Thurston County Drainage Design and Erosion Control Manual (2009) an estimate of the average annual cost of maintenance shall be included in the Maintenance Plan for projects meeting specific thresholds for compliance with Minimum Requirement #10, Operation and Maintenance. The annual cost shall include the annualized cost of major items such as sediment removal from ponds, etc.

A complete cost estimate for O&M shall include the following:

1. **Cost of Construction**: Provide an estimate of the cost of construction of the stormwater system for the project. This may have been completed as part of the project permitting to obtain a maintenance bond, if so, this may be indicated and the construction estimate attached.

2. **Facilities Inventory**: List all stormwater facilities associated with the project including data necessary to estimate costs such as pond bottom area and lineal feet of swale.

3. **Assumptions**: State overall assumptions. Include in this section what the assumed labor rate is, inflation rate, interest rate, cost of sediment disposal, whether inspections/minor maintenance will be volunteer labor or contracted, whether a maintenance/landscape contract is to be used, how frequently CB’s are to be vectored, streets swept, wet pond and detention pond sediment removed, etc.

4. **Non-Contracted Routine Inspections & Maintenance**: Identify and estimate the cost and time associated with inspections and maintenance which will be performed by the Property Owners Association (or property owner for commercial projects) and administration.
   - a. List estimated annual hours for inspections and administration
   - b. Cost of complying with reporting requirements
   - c. Apply appropriate labor rate to estimate.
   - d. Equipment or supplies purchased to support routine maintenance.

5. **Contracted Routine Maintenance**: Identify and estimate the cost of routine maintenance items that will likely be performed by an outside contractor such as a landscape company, sewer maintenance service, or other contracted entity. Note: Routine maintenance is maintenance that is anticipated to be performed annually, or more frequently.
   - a. Landscape contractor – mowing, trimming, pruning, etc.
   - b. Street sweeping (especially for porous pavements).
   - c. Catch Basin pumping
   - d. Fence maintenance and repair.
   - e. Inlet/outlet protection refurbishment (riprap installation, fix erosion problems)
f. Swale/ditch maintenance (seeding, sodding, fix erosion problems)
g. Removal of trash and debris – include cost of disposal
h. Removal of invasive plants (e.g. scotch broom, alder, cattails).
i. Proprietary device maintenance contract costs.

1. **Non-Routine Maintenance**: Identify major maintenance items that will be performed infrequently (i.e. greater than annually) and provide an estimate of cost and estimated frequency of occurrence. Convert to an annual amount by dividing cost by frequency. Cost of infrequent maintenance such as pond sediment removal; fence repair, replacement and painting; pipe replacements; catch basin and control structure replacement; infiltration pond and bioretention facility refurbishment, etc.
   a. Indicate anticipated frequency of activity.
   b. Provide a breakdown of cost of the infrequent activity
      i. Mobilization cost
      ii. Cost of sediment excavation and disposal
      iii. Cost of replanting or restoration
      iv. Assume a sediment depth and actually calculated estimated sediment volume for removal/disposal.
   c. Divide the estimated cost by the estimated frequency to annualize the cost.

6. **Facility Replacement Fund**: Establish a replacement fund to allow for future major restoration or replacement of stormwater facilities. A target for the replacement fund is to have 20% of the cost of construction available after 20 years. This amount should be set aside to provide for unexpected costs and major repair/replacement of facilities.

The attached Annual Maintenance Estimate is provided as an example to be used in preparing the average annual cost of maintenance.
EXAMPLE
Average Annual Cost of Maintenance
Example Acres – Subdivision

Cost of Construction

Cost of Construction = $80,000 (from maintenance bond estimate, see attached)

Facility Inventory

1. Biofiltration swales – 1800 lineal feet
2. Infiltration pond – 5,000 square foot bottom area
   a. Pond information sign
   b. Fencing – 300 lineal feet chain link, 1 gate
   c. Overflow spillway
   d. Inlet Pipe with trash rack – 12-inch
   e. Access Road – 200 lineal feet
3. Catch Basin Storm Filters – two - 2 cartridge units
4. Bioretention Facility – 1500 square feet
5. Catch Basins – 4 Type 1
6. Driveway Culverts – eight 12” culverts
7. Pond Fencing – 300 lineal feet chain link, 1 gate
8. Road Crossing Culverts – two 12” culverts
9. Outfalls – two 12-inch outfall pipes with riprap outlet protection

Assumptions

- Contract Labor Cost: $25/hour
- Volunteer Labor (HOA) for routine inspections and routine maintenance
- Pump out catch basins once every two years.
- Replace storm filter cartridges once every two years (Contract).
- Refurbish infiltration pond bottom once every 10 years
  o Assume 2” sediment removal = 31 cubic yards
  o Sediment disposal off site - $20 per cubic yard
  o Excavator – 8 hours at $150/hour
  o Dump Truck – 8 hours at $100/hour
- Mulch Rain Garden annually – 2 inches x 1500 sf = 9.25 cubic yards
- Refurbish bioretention facility every 10 years
  o Excavate bioretention soil mix – 18”x1500sf = 83 cubic yards
  o Replace bioretention soil mix – 83 cubic yards
- Landscape Maintenance Contract - $200/month (April – September)
  o Mow pond and swale areas
  o Edging, trimming and pruning
  o Remove trash and debris and dispose
  o Minor replanting and reseeding.
## EXAMPLE ACRES SUBDIVISION – STORMWATER FACILITIES
### AVERAGE ANNUAL COST OF MAINTENANCE

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>ACTIVITY</th>
<th>Frequency</th>
<th>Units</th>
<th>Quantity</th>
<th>Unit Price*</th>
<th>Cost</th>
<th>Cost per Year</th>
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<tbody>
<tr>
<td>All</td>
<td>Annual &amp; Routine Inspections by HOA</td>
<td>3x per year</td>
<td>HRS</td>
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<tr>
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<td>Annual Report</td>
<td>Annual</td>
<td>HRS</td>
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<td>Each</td>
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</table>

### SUBTOTAL:

| Cost | $4,223 |

### TOTAL:

| Cost | $5,023 |

*Unit prices for information purposes – project engineer shall verify unit prices for materials and labor.

**Alternatively, sinking fund could be based on estimated inflation rate and rate of return using PV/FV methods.*