

## EIM Help – Stormwater and Combined Sewer Data

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This document covers **municipal stormwater permit and general stormwater study data**. It DOES NOT apply to municipal wastewater (sanitary sewer), industrial wastewater or construction stormwater monitoring data. Definitions of terms used in this document are found at the end.

**Stormwater** is that portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, channels, or pipes into a defined surface water channel or a constructed infiltration facility (*U.S. Code of Federal Regulations 40 CFR, part 122.26(2)(13)*). Stormwater can include rain and snow melt that runs off surfaces such as rooftops, paved streets, highways, lawns, and parking lots. As water runs off these surfaces, it can pick up pollution such as oil, fertilizers, pesticides, soil, trash, and animal waste. From here, the water might flow directly into a local stream, bay, or lake. Or, it may go into a storm drain and continue through storm pipes until it is released untreated into a local waterway. In recent years there has been an increase in the use of stormwater treatment practices such as ponds and swales, which provide treatment and help decrease stormwater flows.

**What is the definition of a stormwater sample?** If you collected your water sample *before* it reached a waterbody, it is stormwater. If you collected your sample directly from a stream, river, lake or canal, it is not considered stormwater.

**Combined Sewer Systems (CSS)** are sewer systems that collect stormwater runoff, sanitary sewage and other expressly allowed wastewaters in the same pipe. During peak rainfall events they may overflow a mixture of untreated sewage, expressly allowed wastewater, and stormwater into surface waters. When these systems overflow they are referred to as **Combined Sewer Overflows (CSO)** at the point of discharge into surface water.

### Entering your data

The information below provides guidance on filling out the data fields in EIM.

### How to enter your Study information

Enter per below (in addition to the standard required fields):

**Study Type:** Recommended choices for stormwater and CSO data:

- “Municipal Stormwater Permit Monitoring” – data collected under a municipal stormwater permit
- “Source Control” - identifying and managing sources of contamination
- “General Environmental Study” – general stormwater study
- “Total Maximum Daily Load (TMDL) development” - stormwater study as part of a TMDL

For more Study Type choices and information on entering your study, see [helpStudyV2013.01.xls](#) (in zip file). Talk to your EIM Data Coordinator if you need help choosing a Study Type.

## How to enter your Location information

Enter per below for the following fields (in addition to the standard required fields):

**Location ID** (Column A, 15 characters): Use the outfall name or manhole cover ID for the Location ID. We suggest using “STW” (to indicate stormwater) in the name if there isn’t a manhole cover ID or other existing name. Examples:

- “1000124ST” for a manhole cover ID
- “STADIUM STW” for stormwater at Stadium Way
- “CS\_STMWTR\_S4” for Conklin Street stormwater swale #4
- “TAC001S8D\_OUT” for municipal stormwater permit data

**Location Name** (Column B, 40 characters): Use this field to give a more descriptive name to the location. Examples:

- “Stormwater manhole cover ID 1000124ST”
- “Stadium Way storm drain catch basin @ Main Street”
- “BMP bioretention swale S4”

**Location Setting** (Column C):

- Use “Source-ManMade” for most stormwater locations. Includes industrial, municipal, agricultural, ditch line stormwater or other discharge, or lagoon.

**Exception:** If you took samples from a *waterbody* during a storm event, they are not considered stormwater. When creating locations for these samples, choose the Location Setting that best describes the waterbody. Valid value examples:

- “Canal/Ditch” – use for mixed irrigation and stormwater running in irrigation canal. (*See definition of Canal below*).
- “Stream/River” – use for in-stream water samples that contain mixed surface water and stormwater.
- For more choices, see [helpLocationV2013.01.doc](#) (in zip file)

**Location Description** (Column D - 254 characters): Specify the type of stormwater or CSO site, or specific type of BMP, such as retention pond, and describe where it is located. Examples:

- “Stormwater manhole at 36<sup>th</sup> and Lincoln Ave”
- “Catch basin 12 ft east of intersection of Stadium Way and Main St”
- “Outlet of the primary stormwater treatment pond S4 before it reaches the infiltration pond”

## How to enter your Result data

Enter per below for the following fields (in addition to the standard required fields). Additional information may be required based on permits, QAPPs or grants.

**Sample Matrix** (Column X): **Required.** Valid value choices:

- “Water” or
- “Solid/Sediment”

**Sample Source** (Column Y): **Required.** Valid value choices:

- “Stormwater Catch Basin”
- “Stormwater In-Line” – e.g. ditch or pipe
- “Stormwater Outfall”
- “Stormwater Sheetflow”
- “Stormwater BMP Influent”
- “Stormwater BMP Mid” – e.g. stormwater pond
- “Stormwater BMP Effluent”
- “CSS In-Line” – only if known CSS
- “CSS Catch Basin” – only if known CSS
- “CSO Outfall” – only if known CSO
- “Precipitation” – only for event totals

**Sample Collection Method** (Column AA): **Required.** Examples:

- SEDTRAP - sediment trap, type undifferentiated
- HANDGRAB - hand grab
- PONAR-PET - petite ponar, dredge sampler, grab sampler

For more collection methods, [log in to the EIM Data Loader](#) to see Method Reference Table. We can also add new collection methods to EIM.

For municipal stormwater permits:

- COMP-CT-VPFR - constant time/volume proportional to flow rate\*
- COMP-CV-CFVI - constant volume/constant flow volume increment\*
- COMP-CT-VPFVI - constant time/volume proportional to flow volume increment\*
- COMP-CT-CV - constant time/constant volume\*

\*Compositing methods established in [Ecology SOP for Automatic Sampling for Stormwater Monitoring](#). Also see definitions at end of this document.

**Sample Composite Flag** (Column V): **Required** (Y or N). For all composite samples enter “Y” and fill out the **Field Collection Start and End Dates** (Columns F & H) and **Field Collection Start and End Times** (Columns G & I). Also see the [EIM Help - Composite Samples](#) guidance document.

**Fraction Analyzed** (Column AT), **Sample Preparation Method** (AB), and **Field Filtered Flag** (AU):

- Enter “Dissolved” if the sample was filtered as part of the analysis method.
- Enter “Dissolved” if the sample is field filtered. Also fill out the Sample Preparation Method (ex. “FILTER.45M”) and Field Filtered Flag as “Y.”

**Result Basis** (Column AV): Basis is the physical state in which the chemistry of the sample is *reported*. “Dry” or “Wet.”

**Additional requirements for Municipal Stormwater Permit data**

Note: See Ecology’s [Stormwater Monitoring Report Guidance, Phase I Municipal Stormwater Permit Reporting Requirements for Special Condition S8](#) for more information on these requirements:

**Precipitation** – enter storm event totals

- **Result Parameter Name** (Column AH) – “Precipitation”
- **Field Collection Type** (Column D) – “Measurement”
- **Field Collection Start Date** (Column F) and **Field Collection Start Time** (Column G)
- **Field Collection End Date** (Column H) and **Field Collection End Time** (Column I)
- **Sample Source** (Column Y) – “Precipitation”
- **Result Method** (Column AY) – “RAINGAGE” or other applicable method

**Flow**

- **Result Parameter Name** (Column AH) – **Submit both** “Storm Event Flow Volume” and “Sample Event Flow Volume”
- **Field Collection Type** (Column D) – “Measurement”
- **Field Collection Start Date** (Column F) and **Field Collection Start Time** (Column G)
- **Field Collection End Date** (Column H) and **Field Collection End Time** (Column I)
- **Result Value Units** (Column AN) – units should represent a volume, like “m3”
- **Result Method** (Column AY) – “CALC-FLOW-VOLUME”

**Storm Event Qualifier** (Column W) – If your sampling event *did NOT* meet storm event criteria and you are submitting non-qualifying event data, you must enter one of these codes (see [Phase 1 Municipal Stormwater Permit](#) for expanded descriptions). Otherwise enter “Q”:

- **NQ1** - non-qualifying antecedent. There was not a long enough dry period before sampling (antecedent dry period).
- **NQ2** - non-qualifying rainfall. There was not enough total rain during the sampling period.
- **NQ3** - non-qualifying inter-event. The inter-event was either too long or too short.
- **NQ4** - non-qualifying sample aliquots. Minimum number of aliquots were not obtained.
- **NQ5** - non-qualifying hydrograph. Minimum percentage of hydrograph not collected.
- **NQC** - combination of any NQ1-NQ5 codes. Must also enter **Result Value Comment** (Column BH).
- **Q** - meets criteria for qualifying storm event as defined in the Municipal Stormwater Permit.

**EXAMPLES for entering different types of stormwater data:**

| Sampling Example  | Sample Matrix | Sample Source          | Location Setting |
|---|---------------|------------------------|------------------|
| Water from within the stormwater catch basin - either during a storm or not | Water         | Stormwater Catch Basin | Source-ManMade   |

|  |                |                         |                                      |
|--|----------------|-------------------------|--------------------------------------|
| Sediment in a catch basin  | Solid/Sediment | Stormwater Catch Basin  | Source-<br>ManMade                   |
| Sediment from the middle of a stormwater pond  | Solid/Sediment | Stormwater BMP MID      | Source-<br>ManMade                   |
| A storm pipe outflow to a stream   | Water          | Stormwater Outfall      | Source-<br>ManMade                   |
| Sediment trap deployed in stormwater pipe (also use Sample Method Code SEDTRAP)  | Solid/Sediment | Stormwater In-Line      | Source-<br>ManMade                   |
| Road ditch stormwater  | Water          | Stormwater In-Line      | Source-<br>ManMade OR<br>Canal/Ditch |
| Sampling a pipe that's contents include stormwater and sewage  | Water          | CSS In-Line             | Source-<br>ManMade                   |
| Rain event sampling from edge of pavement (sheet flow)   | Water          | Stormwater Sheetflow    | Source-<br>ManMade OR<br>Land        |
| Concentrated surface flow along a curb   | Water          | Stormwater In-Line      | Source-<br>ManMade OR<br>Land        |
| Stormwater entering bioswale   | Water          | Stormwater BMP Influent | Source-<br>ManMade                   |
| For BMPs in series, where BMP#1 <b>effluent</b> is BMP#2 <b>influent</b> and they <b>are not</b> in the exact same location. Create separate Location IDs for each location: |                |                         |                                      |
| BMP#1 <b>influent</b>  | Water          | Stormwater BMP Influent | Source-<br>ManMade                   |
| BMP#1 <b>effluent</b>  | Water          | Stormwater BMP Effluent | Source-<br>ManMade                   |
| BMP#2 <b>influent</b>  | Water          | Stormwater BMP Influent | Source-<br>ManMade                   |
| BMP#2 <b>effluent</b>  | Water          | Stormwater BMP Effluent | Source-<br>ManMade                   |
| For BMPs in series, where BMP#1 <b>effluent</b> is BMP#2 <b>influent</b> and they <b>are</b> in the exact same location. Create only one Location ID for that location:      |                |                         |                                      |
| BMP#1 <b>influent</b>  | Water          | Stormwater BMP Influent | Source-<br>ManMade                   |
| BMP#1 <b>effluent</b> and BMP#2 <b>influent</b>  | Water          | Stormwater BMP Mid      | Source-<br>ManMade                   |

|                |       |                         |                    |
|----------------|-------|-------------------------|--------------------|
| BMP#2 effluent | Water | Stormwater BMP Effluent | Source-<br>ManMade |
|----------------|-------|-------------------------|--------------------|

**EXAMPLES for entering non-stormwater data:**

| Sampling Examples   | Sample Matrix  | Sample Source       | Location Setting |
|---|----------------|---------------------|------------------|
| A sample taken from a stream during a storm event   | Water          | Fresh/Surface Water | Stream/River     |
| Mixed irrigation and stormwater running in irrigation canal   | Water          | Fresh/Surface Water | Canal/Ditch      |
| Sediments collected in a receiving water body, for example, sediments in a stream below an outfall location | Solid/Sediment | Freshwater Sediment | Stream/River     |

**Definitions**

**Best Management Practice (BMP):** Schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State. Example stormwater BMPs include retention ponds, swales, and catch basins.

**Canal:** A waterway that receives water from a separate waterbody for the conveyance and delivery of water (irrigation or human consumption), or for the passage of goods and people. A canal can receive non-point runoff, but the primary supply is from a larger waterbody.

**Catch Basin:** An underground structure, usually at the curb line, with either a closed or an open grate cover on the surface. It collects stormwater from the streets and right of way.

**Combined Sewer Overflow (CSO):** Discharge point or outfall of a combined sewer system during an overflowing event.

**Combined Sewer System (CSS):** Sewer system that collects stormwater runoff, sanitary sewage and other expressly allowed wastewaters in the same pipe. During dry weather, these "combined sewer systems" transport sanitary sewage and other types of allowed wastewater directly to the sewage treatment plant. In periods of rainfall or snowmelt the combined volume of stormwater and wastewater can exceed the capacity of the sewer system or treatment plant. For this reason, combined sewer systems are designed to occasionally overflow (CSO) and discharge the excess directly to nearby waterbodies. *NOTE:* the point at which sanitary sewage and stormwater are present in the same pipe can vary from system to system, or even within one city's combined system. Use the CSS/CSO sample sources only if this information is *known*, otherwise use one of the STMWTR sample source designations.

**Composite Sample - Constant Time/Constant Volume (COMP-CT-CV):** Samples of equal volume are taken at equal increments of time and composited to make time-composite an average sample. This method is the simplest and does not require flow measurement, but it does not yield a flow-weighted composite. This type of method may be well suited for certain special studies including toxicity assessments. However, this method is not consistent with the current stormwater permit application regulations (EPA, 1992) (Appendix A, Figure 4). This is also known as a time composite sample.

**Composite Sample - Constant Time/Volume Proportional to Flow Rate (COMP-CT-VPFR):** Samples are taken at equal increments of time and are composited proportional to the flow rate at the time each sample was taken. This type of composite sample would typically require manual compositing of sub-samples taken from each time-series aliquot (collected manually or by auto sampler) based on a flow meter record, and require using only the instantaneous flow rate at the time each aliquot was collected (a spreadsheet is needed to do this). A fully-automatic flow weighted composite sample of this type is not typically used or even possible with an auto-sampler/flowmeter. This is also commonly referred to as a flow weighted composite sample.

**Composite Sample - Constant Time/Volume Proportional to Flow Volume Increment (COMP-CT-VPFVI):** Samples are taken at equal increments of time and are composited proportional to the volume of flow since the last sample was taken (Appendix A, Figure 1). This type of composite sample would typically require manual compositing of sub samples from time-series aliquots (collected manually or by auto sampler) based on a flow meter record, and require totaling the flow volume increments between sampling (a spreadsheet is needed to do this). A fully-automatic flow weighted composite sample of this type is not typically used or even possible with an auto-sampler/flow meter. This is also commonly referred to as manual flow proportional compositing.

**Composite Sample - Constant Volume/Constant Flow Volume Increment (COMP-CV-CFVI):** Samples of equal volume are taken at equal increments of flow volume and composited. This type of composite sample is most often used and can be completely automated using conventional auto sampler and flow meter pairs, and does not require manual compositing of sub-sample aliquots unless for other special purposes, such as a paired set of time-series samples to complement the composite sample. This is also commonly referred to as a flow proportional composite sample.

**Ditch:** A human made channel used for drainage, to drain water from low lying areas, alongside roadways or fields, or to channel water for plant irrigation. A ditch receives water infiltration sources and runoff (non-point), but would not receive water diverted from a larger waterbody.

**In-Line:** Point of sampling within conveyance or drainage system such as stormwater pipe or canal/ditch. CSS In-line is a pipe that's contents include stormwater and sewage.

**Outfall:** Point where stormwater or a CSO discharges to waters of the State, often the end of the pipe.

**Sheetflow:** Water that flows in a thin continuous film across a flat surface like a road, lawn or parking lot.

**Concentrated Surface Flow:** Stormwater that is flowing along a curb or along the intersection of two opposed sloped surfaces such as the center of a travel lane between two rows of parking stalls.

**Stormwater Pond:** A pond that stores, infiltrates, and/or treats stormwater runoff. Four types of ponds include retention, detention, treatment, and combination treatment/detention ponds.

**Document Revision History**

| <b>Revision Date</b> | <b>Revision No.</b> | <b>Summary of Changes</b>   | <b>Section(s)</b>           | <b>Reviser(s)</b> |
|----------------------|---------------------|---|-----------------------------|-------------------|
| 12/15/09             | 1.0                 | Original Document   |                             |                   |
| 3/16/10              | 1.1                 | Sediment from the middle of a stormwater pond – sample changed from “water” to “solid/sediment”   | Examples of Stormwater Data | CN, KC            |
| 6/11/10              | 1.2                 | Added Sample Source “CSS – Catch Basin” and changed Sample Collection Method “SEDTRAP-INLINE” to “SEDTRAP”  | Entering Result Data        | CN, BL, KC, JL    |
| 6/13/11              | 1.3                 | Dropped the “User” from Location ID and other data model and valid value changes for locations.   | Entering Location Data      | CN                |
| 11/2/12              | 2.0                 | Added information specific to Phase I Municipal Stormwater Permits. Changed Parameter from “Precipitation, Total Storm Event” to “Precipitation”. Added a few Examples. | ALL                         | KC, BL, AO, CN    |
| 8/1/13               | 2.1                 | Updated field names per data model changes  | ALL                         | CN                |