Appendix B

Template – Source Control Measures and Performance Monitoring Workplan

From: *DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites*

DEQ

State of Oregon
**Department of
Environmental
Quality**

APPENDIX B:
TEMPLATE – SOURCE CONTROL MEASURES
AND PERFORMANCE MONITORING WORKPLAN

The following is an outline for a workplan that would follow implementation of a stormwater assessment pathway workplan when results indicate a need for additional source control measures.

This workplan begins with a summary and evaluation of data and other information collected during the initial assessment phase. The evaluation provides the basis for identifying source control measures that should be effective at controlling sources. The workplan describes how these measures will be implemented and how they will be evaluated to determine their effectiveness (i.e., performance monitoring).

Section 1   Sampling and Source Control Activities

➢ Report on sampling activity and any deviations from the stormwater assessment workplan or other issues encountered during implementation of the workplan.

➢ For each sampling event, provide a hydrograph that charts rainfall per hour, starting 24 hours prior to storm initiation, and the time of sample collection. Also indicate the time when flow was first observed at the sample locations, if known.

  Online access to Portland-area rain gages can be found at: https://or.water.usgs.gov/non-usgs/bes/raingage_info/clickmap.html. Note that rain gage times on this website are always in Pacific Standard Time (PST). If samples are collected during Daylight Savings Time (DST), field notes and sampling documentation should note whether sample times are in PST or DST. Additional Rain gage data for Oregon is available at: https://waterdata.usgs.gov/or/nwis/current/?type=precip&group_key=county_cd. An example hydrograph is attached.

➢ Indicate which sampling events represent "first flush" samples. In instances where target storm event criteria were not met but the sample was considered to be representative of runoff from the site, describe how this was determined.

➢ Describe any source control measures, BMPs, or preventative measures designed to protect stormwater quality that have been implemented in conjunction with this stormwater pathway evaluation.

Section 2   Data Summary and Evaluation

➢ Present the analytical results for both catch basin and stormwater samples using DEQ's data summary and screening tables (Appendix D). Both relevant historic data and data collected pursuant to sampling plan should be reported.

➢ Provide a data summary discussion that describes chemicals detected, chemicals detected above relevant SLVs and magnitude of the exceedances.

➢ Provide an evaluation of the data and other pertinent site information (e.g., source control measures or BMPs implemented) to identify probable and potential contaminant sources and determine source control needs.

The evaluation should include an interpretation of the hydrographs that discusses the presumed representativeness of the sampling data (i.e., based upon variables such as the activities occurring on the site preceding the sampling event, the antecedent dry period, the timing of sample collection during a storm event, etc., how well is the data likely to represent typical or average contaminant concentrations in stormwater runoff from the site?).

The evaluation should clearly state the rationale for determining source control <u>is or is not</u> needed for all portions of the site and for each potential stormwater contaminant pathway, including:
- erosion of contaminated sediments into stormwater conveyances;
- the potential for spills of hazardous substances that could result in releases to the stormwater conveyance system;
- infiltration of contaminated groundwater into stormwater conveyances; and
- preferential pathway for contaminated groundwater along stormwater conveyances or other underground utilities.

Section 3 Recommended Stormwater Source Control Measures

➢ Describe source control measures and/or BMPs that will be implemented to address stormwater source control needs.

➢ Provide a workplan and implementation schedule for each source control measure and indicate frequency of reoccurrence for ongoing measures.

➢ Describe the anticipated results (e.g., preventing contaminants from entering stormwater system; expected % reduction in contaminant concentration, etc.) and timeline for achieving those results.

Section 4 Performance Monitoring Workplan

➢ Present a Performance Monitoring Workplan that describes how data will be collected to evaluate the effectiveness of source control measures implemented at the site.

The approach should generally follow the instructions provided in Appendix A for developing a stormwater sampling workplan unless the DEQ Project Manager has requested an alternative approach.

The number and type of sampling events will depend upon the level of certainty needed to determine source control has been achieved.

Figures (at a minimum)

Section 1: Sampling and Source Control Activities
- Location map
- Stormwater conveyance system map showing sampling locations

Section 3: Recommended Stormwater Source Control Measures
- Stormwater conveyance system map showing sampling locations

Section 4: Performance Monitoring Workplan
- Stormwater conveyance system map showing sampling locations

Tables (at a minimum)

Section 2: Data Summary and Evaluation
- Catch Basin Data Summary and Screening Table (see Appendix D)
- Stormwater Data Summary and Screening Table (see Appendix D)

Section 4: Performance Monitoring Workplan
- List of COIs, analytical methods, sample volume and target MRLs for Performance Monitoring sampling plan

Attachments (at a minimum)

Section 4: Performance Monitoring Workplan:
- Quality Assurance Project Plan for Performance Monitoring sampling plan

Appendices (at a minimum)

Section 2: Data Summary and Evaluation
- Field sampling reports
- Copies of original laboratory reports and chain-of-custody documentation

Example Hydrograph Showing Onset of Flow and Sample Time
Data obtained from http://or.water.usgs.gov/non-usgs/bes/precip.html

NOTE: To convert the website data into a column in Excel, highlight the data you want to import then copy and paste it into Excel. It will appear in one cell. Select that cell and go to Data, Text to Columns, and select Fixed Width. After completing this step, each data point will now occupy one cell in a row. To convert the row to a column, highlight and copy the data, place the cursor in an empty column, select Paste Special, and click on Transpose.

Date/Time*	# of tips	Inches
2/26/2007 0:00	0	0
2/26/2007 1:00	0	0
2/26/2007 2:00	0	0
2/26/2007 3:00	0	0
2/26/2007 4:00	0	0
2/26/2007 5:00	0	0
2/26/2007 6:00	0	0
2/26/2007 7:00	0	0
2/26/2007 8:00	0	0
2/26/2007 9:00	0	0
2/26/2007 10:00	0	0
2/26/2007 11:00	0	0
2/26/2007 12:00	0	0
2/26/2007 13:00	0	0
2/26/2007 14:00	0	0
2/26/2007 15:00	0	0
2/26/2007 16:00	0	0
2/26/2007 17:00	0	0
2/26/2007 18:00	0	0
2/26/2007 19:00	0	0
2/26/2007 20:00	0	0
2/26/2007 21:00	0	0
2/26/2007 22:00	0	0
2/26/2007 23:00	0	0
2/27/2007 0:00	0	0
2/27/2007 1:00	2	0.02
2/27/2007 2:00	11	0.11
2/27/2007 3:00	7	0.07
2/27/2007 4:00	11	0.11
2/27/2007 5:00	4	0.04
2/27/2007 6:00	5	0.05
2/27/2007 7:00	1	0.01
2/27/2007 8:00	1	0.01
2/27/2007 9:00	4	0.04
2/27/2007 10:00	8	0.08
2/27/2007 11:00	0	0
2/27/2007 12:00	3	0.03
2/27/2007 13:00	1	0.01
2/27/2007 14:00	0	0
2/27/2007 15:00	0	0
2/27/2007 16:00	0	0
2/27/2007 17:00	0	0
2/27/2007 18:00	0	0
2/27/2007 19:00	0	0
2/27/2007 20:00	0	0
2/27/2007 21:00	0	0
2/27/2007 22:00	0	0
2/27/2007 23:00	0	0

Each tip equals 0.01 inches of rainfall
Table and/or graph should provide rainfall data for min. of 24 hours preceeding storm
Onset of flow is generally obtained through observation (may not always be available)

February 26-27 Hydrograph
Swan Island Rain Gage
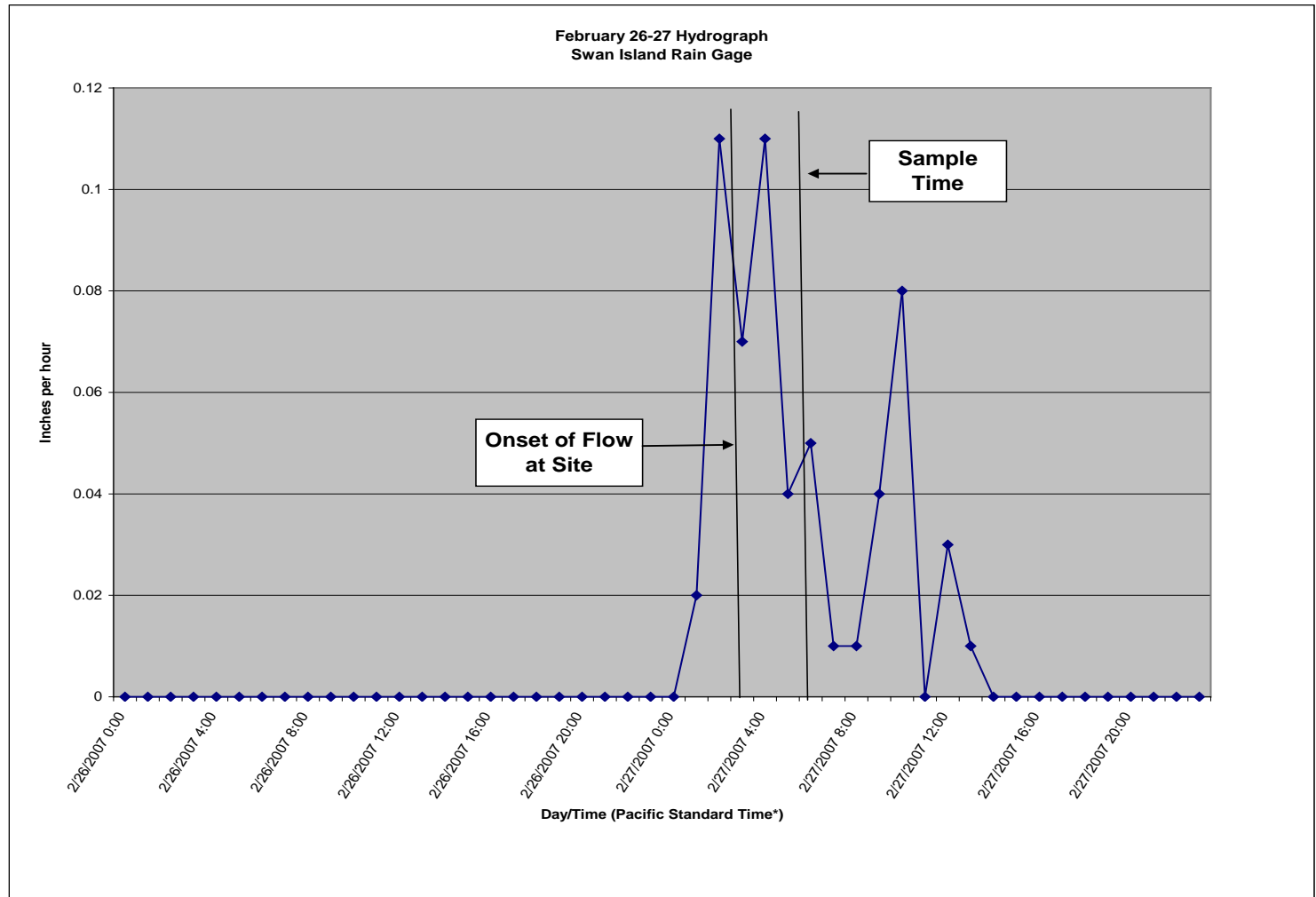
*Note that the website always reports rain gage times in Pacific Standard Time (PST). If samples are collected during Daylight Savings Time (DST), field notes and sampling documentation should note whether sample times are in PST or DST