



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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September 10, 2014

Kate Rhoads  
Seattle Public Utilities  
700 Fifth Avenue, Suite 4900  
PO Box 34018  
Seattle, WA 98124-4018

RE: Phase I Municipal Stormwater Permit #WAR04-4503  
Effectiveness Studies Option #3: Street Sweeping Water Quality Effectiveness QAPP  
Ecology comments and conditional approval

Dear Ms. Rhoads,

The Department of Ecology (Ecology) has reviewed the City of Seattle's Street Sweeping Water Quality Effectiveness draft Quality Assurance Project Plan (QAPP) for compliance with Special Condition S8.C.3.b of the Phase I Municipal Stormwater Permit (Permit).

Overall, the QAPP is well written and we look forward to the results of this study. Detailed comments on the QAPP are provided in the attached table. Comments shown with a "Yes" in the "Required Edit" column must be addressed in the final QAPP. Ecology therefore is conditionally approving the QAPP, provided each required change or addition is made. Please submit a revised final QAPP (hard copy and electronic form) for the permit file as soon as possible, but no later than the beginning of full implementation of the study.

In accordance with Special Condition S8.C.3.b.iii, Seattle must begin full implementation of the study no later than March 10, 2014 (6 months from Sept. 8). Ecology encourages you to start the study soon, in hopes that a seasonal first flush storm event may be sampled (see comment #7).

We would appreciate the opportunity to participate in a field day once the study is underway. If you have questions, please contact me at 425-649-7223 or [rachel.mccrea@ecy.wa.gov](mailto:rachel.mccrea@ecy.wa.gov).

Sincerely,

Rachel McCrea  
Municipal Stormwater Specialist

cc: Permit file





Ecology technical review comments:

Seattle Public Utilities 07102014 draft *Street Sweeping Water Quality Effectiveness QAPP*

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| # | Page  | Text or Section                        | Comment/Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Required Edit <sup>1</sup> | Suggestion <sup>2</sup> |
|---|-------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------|
| 1 | All   | Overall QAPP                           | This QAPP was well written overall. These comments primarily address clarity of intentions. Required edits are mandatory, but suggested edits can be made at the City's discretion.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NA                         | NA                      |
| 2 | Pg 1  | First paragraph                        | Revise the text "...independent effectiveness study per section S8.C of the 2013..." to specify S8.C.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | No                         | Yes                     |
| 3 | Pg 12 | Last sentence on page in section 5.3.1 | "Since no conclusions can be made until sweeping is ceased and the "after impact" samples are collected, no sample results will be presented in annual reports." This is not consistent with the permit requirement at S8.C.3.b.iv and the associated annual report question #84 (Appendix 12 of the Permit). Each annual report must include "interim results and a status of the study." Ecology agrees with the City that conclusions cannot be made until the project is complete. However "interim results" for annual reports must, at a minimum, summarize the sample results that became available during the relevant annual reporting year. This summary could be in tabular form (i.e., a data dump). Efficiency evaluations and statistics are not necessary for the annual report. Note that Ecology does agree with the language in Section 14.3.1 that states the Annual Report is primarily a project status report. Ecology also concurs that submission to EIM is not required. | Yes                        | No                      |
| 4 | Pg 18 | Table 11                               | The City could probably ask the lab for a better target reporting limit for TKN. Consider standard methods: SM4500-N <sub>org</sub> B/C and SM4500NH <sub>3</sub> -B/C/D/EF/G/H. The RL is closer to 0.3 mg/L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No                         | Yes                     |
| 5 | Pg 19 | 7.2                                    | Ecology likes the BACI design approach and believe the study will provide valuable results for this housekeeping BMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NA                         | NA                      |
| 6 | Pg 27 | 8.1.3.1                                | Clarify if the samples will be taken before the flow reading. This may negligibly affect the flow readings for medium to larger sized storms. But may need to be taken into account for very small storm volumes/flows. Clarify how you will account for the removed sample volume in the flow record. If it is negligible for event very small storm flows, then state as much.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Yes                        | No                      |

Ecology technical review comments:

Seattle Public Utilities 07102014 draft *Street Sweeping Water Quality Effectiveness QAPP*

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| #  | Page  | Text or Section       | Comment/Question                                                                                                                                                                                                                                                                                                                                                     | Required Edit <sup>1</sup> | Suggestion <sup>2</sup> |
|----|-------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------|
| 7  | Pg 27 | 8.1.3.1               | Has the City also considered more directly investigating the first flush of the storm runoff? This might be done on a sub-set of samples. Just a question of curiosity. The effectiveness of sweeping may influence the first flush concentrations most, and the signal in the full storm composite may/may not be a strong.                                         | No                         | Yes                     |
| 8  | Pg 30 | 8.1.4; last paragraph | It may be more cost effective to replace the tubing than testing it for the contaminants.                                                                                                                                                                                                                                                                            | No                         | Yes                     |
| 9  | Pg 32 | 8.3.5                 | Clarify how the city will flag the dissolved metals samples if they exceed the 15 minute holding time. Does the City add a "J" qualifier?                                                                                                                                                                                                                            | Yes                        | No                      |
| 10 | Pg 40 | 14.1                  | The proposed data qualifiers in Table 7 are fine, but the City should explicitly state how data that are below the detection limit and data that are between the detection limit and the quantitation limit will be used in analysis. Will the City report the data at the RL? Does the city also plan to use ½ the detection limit for analyses of non-detect data? | Yes                        | No                      |
| 11 | Pg 42 | 14.3.2                | In the discussion of results, include how antecedent moisture conditions (as well as street sweeping) might have influenced pollutant concentrations.                                                                                                                                                                                                                | Yes                        | No                      |

1= Comments marked as a required edits are deficiencies that must be addressed in the City's final QAPP.

2= Comments marked as a suggestion are intended for the City to consider for clarification.