401 Permit Decision-Making
Sea-Tac International Airport, Third Runway

DRAFT MEETING NOTES

LOW FLOW ANALYSIS

June 12, 2001
1:00 – 4:30

These final draft meeting notes have been prepared by Kate Snider, Floyd & Snider Inc.

ATTENDEES

Ann Kenny, Dept. of Ecology
John Drabeck, Dept. of Ecology
Kelly Whiting, King County
Keith Smith, Port of Seattle
Paul Fendt, Parametrix
Charles Ellingson, Pacific Groundwater Group

MEETING SCOPE AND AGENDA

This meeting was scheduled as a status meeting regarding Low Stream Flow related tasks. Previous meetings regarding low stream flow evaluation were held on April 25 and May 9. The agenda of the meeting included:

1) Modeling status
2) Modeling deliverables regarding low stream flow impact
    - Non-hydrologic effects
    - Response to public comment related to low stream flow
3) Mitigation and Operational Plan
4) Schedule and process expectations

MODELING STATUS

1. HSPF and embankment seepage modelers have agreed on the area that will be modeled for embankment seepage and treated differently in HSPS (per the 5/9 meeting notes). Mapping has been prepared that shows the area and configuration of impervious within the area.

2. Hydrus modeling has been completed. 10 and 20' thicknesses were included in the Hydrus modeling effort to better define areas of thin fill.

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3. Slice cross-sections have been developed and digitized, slice modeling is beginning.

4. Since the 5/9 Low Flow meeting, it was agreed that precipitation would occur on HSPF, not directly to Hydrus. Initial HSPF models have been run to determine recharge – used as input to the Hydrus model.

5. Instead of scaling precipitation as described in the 5/9 meeting notes, Recharge (R) was scaled up based on the amount of impervious to determine an Effective Recharge (ER) used in Hydrus.

   It was determined that a conference call would be scheduled as soon as possible, including Joe Brascher, Pony Ellington, Paul Fendt, Kelly Whiting, Ann Kenny and Kate Snider to allow Joe Brascher to discuss the rationale and implications for this adjustment to the proposed approach to the modeling.

6. It is anticipated that output files from the embankment seepage modeling (as defined in the 5/9 meeting) will be provided to Joe Brascher before the end of June.

MODELING DELIVERABLES

1. Estimation of non-hydrologic effects has been revised per SMP comments. It will be submitted as a deliverable D-11 (pink) under the SMP process, anticipated submittal to Ecology and King County on 6/13. Deliverable D-11 includes a revised Low Stream Flow Non-Hydrologic Effects appendix. Ecology and King County will provide comments on D-11 at the 6/18 SMP meeting.

2. Following completion of embankment seepage modeling by PGG, Aquaterra will aggregate all low stream flow inputs. Modeling results will be provided to Ecology and King County that incorporate HSPF, embankment seepage and non-hydrologic effects. These modeling results will be provided in the form of pre- and post-project hydrographs for the 1991 – 1994 dry year period. Modeling input files should be submitted with the hydrographs.

3. Accompanying the hydrographs defined above, the Port will submit a proposal regarding how the hydrographs should be interpreted to determine the magnitude and duration of low stream flow impact. A group meeting will be held between Ecology, King County and the Port team to jointly review the hydrographs and reach agreement regarding impact determination. It is assumed that agreement could be reached regarding impact determination approximately one week following submittal of the hydrographs, proposal for hydrograph interpretation and input files. It is anticipated this material would be submitted to Ecology and King County the first week in July.

MITIGATION AND OPERATIONAL PLAN, FINAL LOW FLOW DELIVERABLES

1. A revised, stand-alone, low stream flow report will be submitted. The anticipated title of the report is "Low Stream Flow Analysis / Flow Impact Offset Facility Report". This report will include the Low Stream Flow Impact Evaluation, Mitigation Plan and Operations Plan.

2. The components and level of detail of the report were discussed.

3. It was agreed that it would be highly advantageous for as many portions of the report as possible to be submitted for review as interim draft deliverables, as they become available. The following interim draft deliverables were specifically discussed:

   - Hydrus modeling results and backup including mapping of the embankment study area
   - Operational plan sections on water quality and performance monitoring.

4. The Port team is moving forward to preliminarily size and locate stormwater retention vaults to be used for mitigation. Initial sizing will be based on a potential mitigation requirement judged to be larger than necessary. At the point when hydrographs are reviewed to determine the mitigation requirement, this work will assist the group to determine the feasibility of mitigation using retained stormwater.

5. Public comments submitted relative to low stream flow issues were briefly discussed. It was determined that a meeting would be held on 6/14, from 1:00 – 4:00, to review public comment relative to low stream flow, and adequacy of low stream flow deliverables in addressing public comment.

FOLLOW-UP CONFERENCE CALL

A conference call was scheduled for 6/13, at 3:30 pm, to discuss the issue raised in item number 5 of the Modeling Status section above. Participants on the call included: A. Kenny, K. Whiting, K. Smith, P. Ellington, J. Brascher, P. Fendt. The following was determined:

- The methodology used by the Port team to develop input to the Hydrus model is acceptable. In this method, precipitation was entered to HSPF and recharge output provided from HSPF. Recharge (R) was scaled up based on the amount of impervious to determine an Effective Recharge (ER), used as input to Hydrus. Note: this input to Hydrus was called "Recharge 1" for purposes of communication on the call.

- To support the conference call, Aquaterra and Pacific Groundwater calculated what the alternate numbers input to Hydrus would have been if precipitation had been scaled up to account for impervious areas prior to "raining" on HSPF, with recharge output from HSPF used as input to Hydrus. This input to Hydrus was called "Recharge 2" for purposes of communication on the call.

- Evaluation of the two alternate approaches determined that the volume of water entering the embankment over the 10-year "wet-up" and dry-year period was larger with "Recharge 2" than "Recharge 1", because the "Recharge 1" method estimates a greater amount of evapotranspiration. It was agreed that use of the "Recharge 1" method was acceptable and conservative for purposes of evaluating embankment seepage, and that pervious embankment areas appear to have suitable infiltration capacity to handle infiltration from impervious areas.

- The comparative set of recharge calculations will be submitted to Ecology and King County as back up to these meeting notes.
- An additional discussion was held relative to the Slice model – HSPF interface. It was determined that although there may be limited areas where there is a potential for upward groundwater flow into the embankment, at those locations the Slice model will assume 0 vertical flow, consistent with modeling previously performed for Ecology.