

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

**FINAL DRAFT MEETING NOTES**

**LOW FLOW ANALYSIS**

**April 25, 2001  
10:00 – 12:30**

These draft meeting notes have been prepared by Kate Snider, Floyd & Snider Inc. Please reply to Kate at (206) 292-2078, fax (206) 682-7867, with comments on the accuracy of these notes by 5pm, Friday, 4/27/01.

**ATTENDEES**

Ann Kenny, Dept. of Ecology  
Kelly Whiting, King County  
Keith Smith, Port of Seattle  
Joe Brascher, AquaTerra  
Peter Schwartzman, Pacific Groundwater Group, by phone for part of the meeting  
Kate Snider, Floyd & Snider Inc.

**MEETING SCOPE AND AGENDA**

The purpose of this meeting was to discuss in further detail the water balance relationship between the HSPF and embankment modeling for the low-flow analysis and suggested revisions to the low flow analysis. This meeting is a follow up to the April 4 low-flow technical meeting.

**PRE-PROJECT LOW-FLOW CALCULATIONS**

1. Revised calculations of pre-project low stream flow will utilize the 1994 calibration files (1994 conditions with existing basin definition).

**POST-PROJECT LOW-FLOW CALCULATIONS**

1. Post-project low flow calculations for the Walker basin will be revised to address the change in pervious land cover in the offsite groundwater basin.
2. To achieve defensible compatibility between both the water-balance and the time-step characteristics of the Hydrous, Slice and HSPF modeling of the embankment area, the following changes are proposed:

**AR 029160**

- a. Rainfall will be removed from 2006 HSPF models for PERLND 45 (embankment) and the impervious area associated with PERLND 45. Rainfall in these areas will be input to the Hydrous model only.
  - b. After Hydrous and Slice models have been run to achieve steady-state flows, they will be run for 1991, 1992, 1993 and 1994. These years are the years in the precipitation record most representative of a dry, low period.
  - c. Slice model output will be provided on a daily basis (not average monthly basis) for the 1991-1994 period. Slice model outputs will include both the embankment outflow and the "seepage to till" components.
  - d. The "seepage to till" component of the Slice model will be used in the 2006 HSPF modeling as AGWO for PERLND 45. This will allow this deep groundwater component of the water balance to be accounted for, as it gets "lost" from the Slice model.
  - e. The daily records for embankment outflow from the Slice model and the HSPF models during the 1991- 1994 period will then be evaluated to determine the maximum low flow project impacts (at the comparison points discussed below). This methodology for evaluation will replace the definition of low flow impact as "2-year, 7-day low flow".
3. To revise the way water running off the runways into filter strips is evaluated, the following change is proposed:
- a. Precipitation values used as input to the Hydrous model will be "scaled up" so that all precipitation falling on both the pervious and impervious areas will fall only on the pervious area. For example, if there are 10 acres of pervious and 3 acres of impervious, all the precipitation would be caused to fall on the pervious area, so the precipitation value in the pervious area would be scaled to 130%.
  - b. In separate discussions, the Port and Ecology are discussing potential revisions to the embankment modeling approach regarding the representative nature of the one Hydrous-Slice model used. If those discussions result in multiple "cells" of the embankment being modeled, the "scaling up" of precipitation discussed above would need to be based on the percent impervious within each "cell" of the model area.

## LOCATIONS FOR PRE-PROJECT VS. POST-PROJECT FLOW COMPARISON

1. The location used for pre vs. post project flow comparison will be revised for the Walker Creek basin. For Walker Creek, the comparison point will be at the gauge site at the outlet of the wetland. This is determined as the first point in the stream where all project effects (including those from the offsite groundwater basin) can be evaluated.

Locations for comparison evaluation in DesMoines and Miller basins will not be revised.

2. At the comparison points, the following information will be provided:

**AR 029161**

- Observed data
- Calibration flows
- Post-project flows

## NEXT STEPS

1. Port and Ecology will reach agreement on any proposed change or supplemental information requested relative to the representative nature of Slice model over embankment length.
2. Low-flow modeling will be re-done based on SMP revisions, revisions discussed in these meeting notes, revisions discussed relative to item 1 above, and comments provided in the April 4 meeting relative to non-hydrologic effects.
3. It is anticipated that the low-flow document will be fully revised and resubmitted. The revised low-flow document should provide additional documentation of the water balance determinations.

AR 029162