



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

December 29, 1993

Pete - FYI

Den

Reply to
Attn of: ES-097

Mr. Jeff Anderson
Alaska Department of Environmental Conservation
410 Willoughby Avenue, Suite 105
Juneau, Alaska 99801-1795

Dear Jeff:

As you requested, I have reviewed the modified downwash modeling protocol proposed by Dames & Moore in a letter dated October 15, 1993, from Sam Sanchez and Susan K. Aha of Dames & Moore to Gerald Guay of your office. It is my recommendation that you not allow the use of this protocol for the Westward Seafood Facility in Captain's Bay, Alaska, without further justification based on field and/or wind tunnel studies.

The general approach in EPA's guidance¹ is to perform field or wind tunnel studies to define the downwash problem and/or appropriate stack heights to avoid downwash. Recognizing, however, that field or wind tunnel studies may be resource intensive, the Good Engineering Practice (GEP) stack height formula is offered to develop a first-order estimate of the downwash effects. Furthermore, the guidance recommends that structure heights for determining downwash effects with the GEP formula be "measured from the ground level elevation at the base of the stack." Thus, for the Westward Facility, since the base of the stack is at sea level, the structure heights for assessing downwash must be the sum of the elevation of the building plus the building height. Dames & Moore's proposal to use only the building height is inconsistent with guidance. To be considered further, their proposal must be supported by field studies or wind tunnel studies of the downwash conditions at the Westward facilities.

In support of their proposal, Dames & Moore contended that the GEP stack height formula is envisioned to be applied to building/structure heights perpendicular to the wind flow, and in the Westward case, the critical wind flow may be down the slope, so that structure heights should not include the height (above

¹ "Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document For the Stack Height Regulations) (Revised)," EPA-450-4-80-023R, U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC, June 1985.

stack base) of the terrain on which the structure is located. However, characterizing wind flow and dispersion in the vicinity of structures such as the Westward Facility is a complicated problem, which should in general, according to EPA guidance, require a field or wind tunnel analysis. The addition of upwind terrain to the problem simply adds to the complexity of the problem, and reinforces the need to develop a technical understanding based on field or wind tunnel studies, rather than relying on a simple formula.

I have confirmed this position in a telephone conference with our Model Clearinghouse on November 17, 1993. If you have any questions, please give me a call.

Sincerely,



Robert B. Wilson
Regional Meteorologist

cc: D. Wilson, OAQPS