MEMORANDUM STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Quality
South Central Regional Office
3601 C Street, Suite 1334
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DATE: February 24, 1992

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FROM: Robert Dolan, ADEC/SCRO

SUBJECT: Westward Seafoods AK-004978-6
Captains Bay Water Quality Study

As part of Westward Seafoods NPDES permit issued last April they were required to perform a one year water quality/impact study of Captains Bay. The study was to involve sampling twice per month at the 18 locations identified in the permit, see attachment (note station #18 in Unalaska Bay is a control station), the parameters to be sampled were dissolved oxygen (DO), pH, salinity and temperature. These samples were to be taken at six depths (1,3,5,10,30 meters below the surface and 1 meter off the bottom). At two depths (above thermocline and below thermocline) samples were to be collected and analyzed for BOD_5, BOD_{10}, BOD_{15} and BOD_{20}. To date Westward has submitted six months worth of data (July 1991-December 1991), unfortunately the language in the NPDES permit did not require Westward to summarize, analyze or prepare a final report of any kind, so raw data is all that is being submitted to ADEC and EPA.

I have recently put this data in an EXCEL worksheet and created graphs of the sampled parameters at the 18 sampling locations. Enclosed are the graphs for the eighteen stations for the parameters DO, salinity and temperature. Some preliminary conclusions can be made from the data and they are as follows:

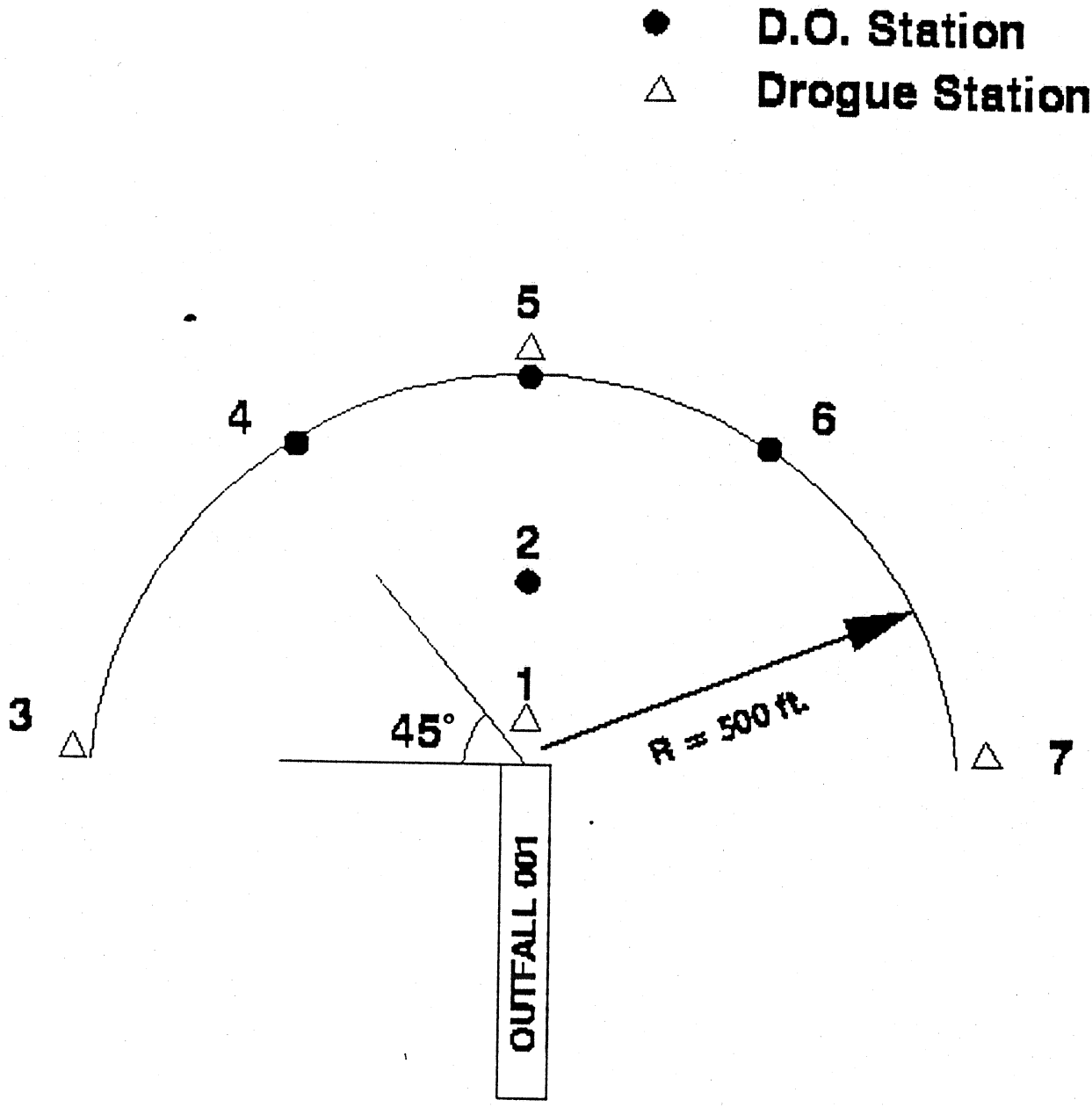
1. temperature charts----shows summer stratification with warmest water at surface and decreasing with depth, winter temperatures are coolest at the surface and warmer with depth with small range of variation (note temperature values are in degrees Celsius).

2. salinity charts----shows fairly constant salinity with slightly lower surface values in Sept. and Oct. most likely due to heavy fall rains (salinity values are in parts per thousand).

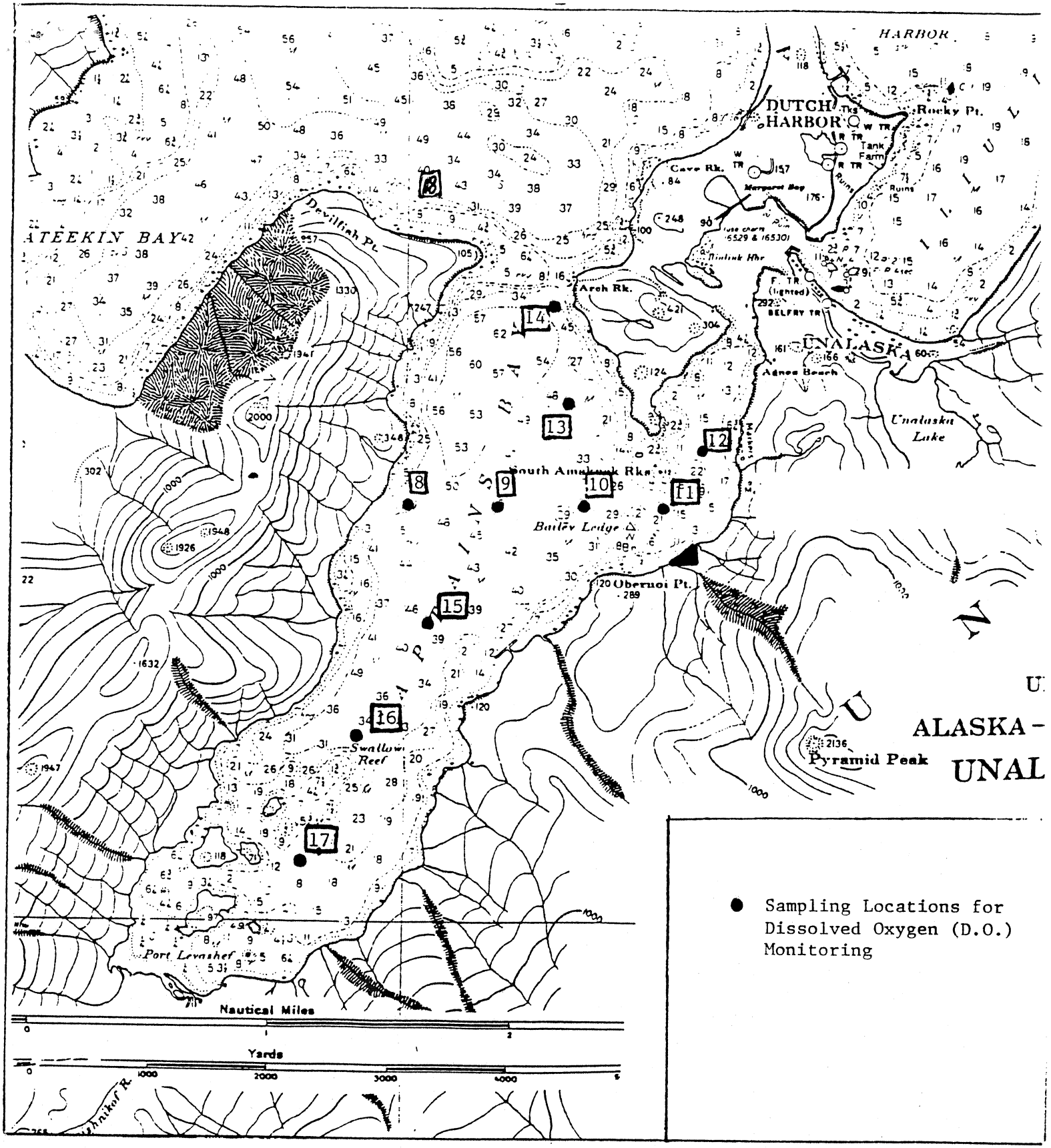
3. dissolved oxygen charts----shows stratification of DO decreasing with depth, there is a sag in the values during the summer with a rebound in the fall, this may be due to fish processing (Westward processed bottomfish from July thru Sept.), or the result of summer thermal stratification, the sampling for Jan. and Feb. may shed light on this since Westward was again processing bottomfish during those months. For background, Westward has a fishmeal plant with 5 mm screens on their effluent so they do not discharge large volumes of fish waste solids but do discharge stickwater with a very high BOD load, crab waste is still handle by 1/2 inch grind and dump, although no crab is processed during the summer (note DO values are in mg/l).

4. BOD charts----shows what appears to be a background level for BOD in Captains Bay to be approximately 2-3 mg/l, I'm not sure what other conclusions can be made at this time from the scattered data, there are many missing sample points due to logistic problems of collecting and getting samples to Seattle within allowed hold times. The BOD samples were generally collect at 5 meters depth and 1 meter off the bottom (note BOD values are in mg/l, BODs data are surface values and BODb data are bottom values).

The sampling data will be coming in for another six months and I will be adding it to my worksheets, after completion of the study I will generate another set of graphs to send out to interested persons, hopefully with more data points conclusions can be reached whether the Westward discharge with its high BOD load is impacting Captains Bay DO levels or if the environment is assimilating it.



Attachment 5: Stations in Vicinity of Outfall 001



ATTACHMENT 4

Far-field Locations for Dissolved Oxygen Monitoring