

TO: Dick Cunningham

FROM: Roger Stanley/Greg Cloud

SUBJECT: BUDD INLET SURVEY OF AUGUST 27, 1975

DATE: August 28, 1975

State of
Washington
Department
of Ecology



On the morning of August 27, Greg Cloud noted excessively low dissolved oxygen concentrations (.3 mg/l) off the Olympia Yacht Club dock while on a regularly scheduled marine flight. In order to further investigate these concentrations Greg and I returned to the area in the afternoon of the same day and conducted a short receiving water survey via I.B.C. and Winkler dissolved oxygen determinations. The results of this survey have been summarized below.

Dissolved oxygen analyses conducted at various points throughout lower Budd Inlet confirmed the existence of the extremely low oxygen content noted earlier in the day. Tidal movement had however shifted the area of lowest concentration from near the Olympia Yacht Club to immediately off the port docks. Concentrations at this latter site were typically near or less than 1.0 mg/l with the lowest level encountered being .3 mg/l. Readings all along the port dock were somewhat erratic and it was obvious that "pockets" of varying oxygen content were present. This highly effected area appeared to extend northward to just slightly beyond KGY. Concentrations during this time off the Olympia Yacht Club and beneath the westside bridge were fairly low but had increased somewhat since the morning observation at BUD001. D.O.'s of 5.2 and 2.9 were recorded beneath the westside bridge and off the Yacht Club respectively. Dissolved oxygen content returned to normal summertime levels as Greg and I moved northward from KGY with 8.7 mg/l being encountered near the Westbay Marina and 13.4 mg/l recorded at the Olympia Shoals Dolphin (BUD005). Algal populations at this latter site were apparently elevating oxygen content.

The apparent source of the above noted low dissolved oxygen concentrations was the effluent of the Olympia Sewage Treatment Plant. This discharge was entering Budd Inlet near the Standard Oil dock just south of the port docks throughout the study period (1330-1530 hours). Visual observation of the STP's effluent roughly coincided with the effected area. Oxygen concentrations immediately adjacent to the above outfall were somewhat erratic but generally were near 8.0. This appeared odd at first but evidently it is not uncommon for the effects of an effluent's BOD to be not readily observable until after some dispersion has taken place. The Olympia STP is currently undergoing

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construction activities and has been bypassing relatively untreated sewage to the above mentioned discharge point for nearly two weeks. Prolonged existence of low quality water was evidenced by observation of mussel populations on pilings at the port dock. These populations appeared to be all either dead or dying. The Olympia STP currently plans to continue bypassing for approximately another 4 weeks. Water quality within southern Budd Inlet may also be being effected by the recent draw-down and refilling of Capitol Lake.

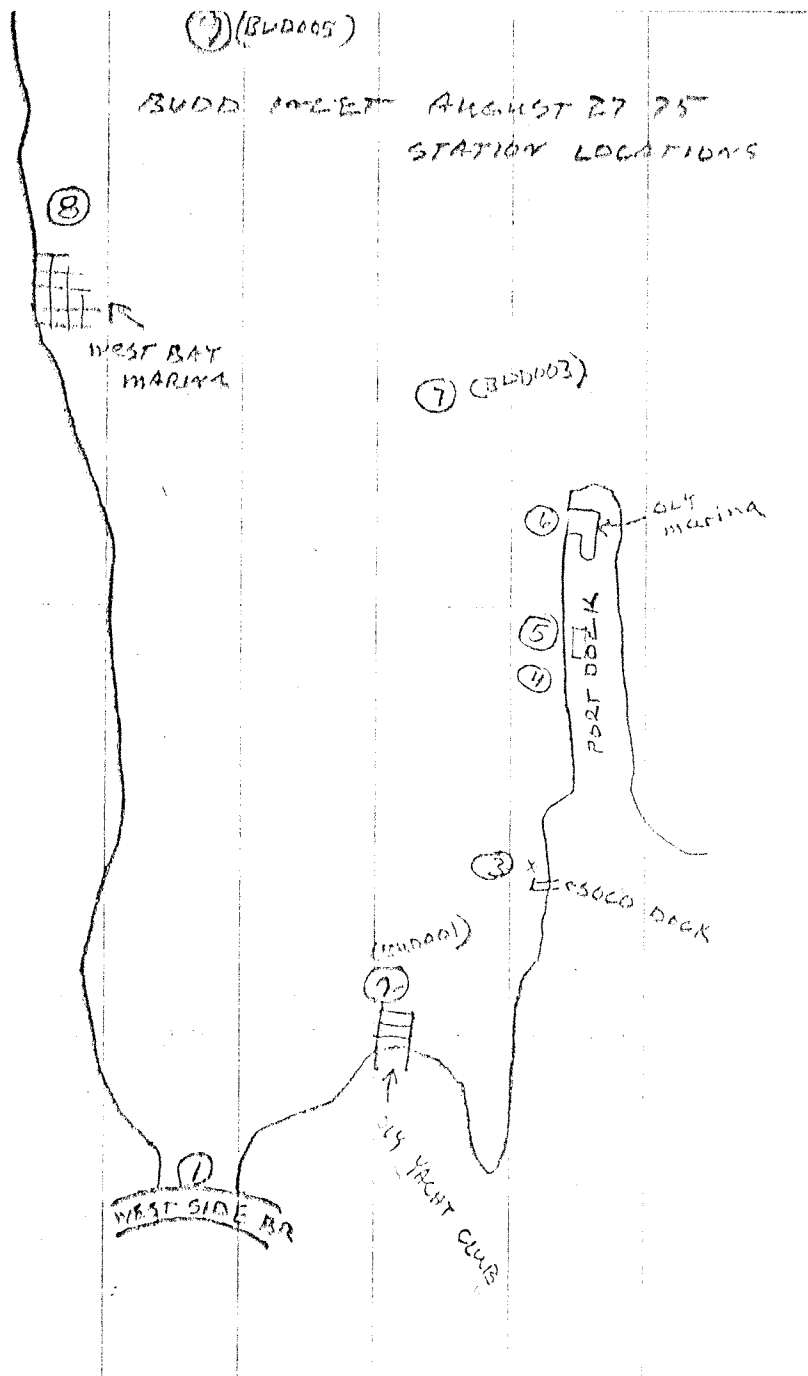
cc: Ron Robinson

AUGUST 27 1975 BUDD INLET
R. STANLEY G. CLOUD

SHORT D.O. RECEIVING WATER
SURVEY CONDUCTED ON LOWER
BUDD INLET TO FURTHER
INVESTIGATE LOW D.O. OF
13 NOTED AT BUDDOI THIS
MORNING BY G. CLOUD (MARINE
FLIGHT)

D.O. ANALYSES BY IBC PROBE
AND WINKLER - READINGS
TAKEN BETWEEN 1330 AND
1530 HOURS ON OUTGOING
TIDE

OLYMPIA STP DISCHARGING
NEAR STANDARD OIL DOCK
THROUGHOUT AND PRIOR TO
STUDY. CAPITAL LAKE NOT
DRAWN DOWN



BUDD INLET / AUGUST 27-75

DISSOLVED OXYGEN OBSERVATIONS

STATION	IBC	WINKLER
1	5.2	5.6
2	2.9	3.1
3	8.0*	6.4
4	1.2*	
5	.3*	.4
6	.3*	1.5
7	4.2	
8	10.2	8.7
9	>15**	13.4

* ERRATIC READINGS DUE TO
SHIFTING "POCKETS" OF LOW
DO.

** ALGAE BLOOM ELEVATING
D.O.

✓ UNCORRECTED DO'S - SALINITY
SAMPLES NOT TAKEN. IBC DO'S
WOULD BE LOWERED SOMEWHAT

IN DIRECT RELATIONSHIP
TO NACl CONTENT. GREATEST
CHANGE WOULD OCCUR AT
STATIONS 3 & 9 AND THE
LEAST AT 1 & 2 (FRESH
H2O from CAPITOL LAKE)

IBC meter check on
return probe 7.9 WINKLER 8.2