

SHELLFISH INVESTIGATION  
PROGRESS REPORT NO. 19

February 21, 1950

PROPOSED DREDGING OPERATIONS IN COOS BAY AND THEIR PROBABLE AFFECT  
ON CLAM POPULATIONS (AREAS UPBAY FROM THE RAILROAD BRIDGE,  
WITH NOTES ON THE OTHER DISPOSAL AREAS.)

The purpose of this report is to bring up to date all data collected regarding clam populations in proposed dredging areas in Coos Bay.

Informed of the Army Engineers' dredging and dumping plans, a number of inspections of the areas in question have been made by the biologists of this laboratory. The enclosed maps (see Chart No. 1, Chart No. 2) show 11 proposed dumpage areas, or an approximate acreage total of 920 acres. The dumpage areas upbay from the railroad bridge have been covered as far as the clam populations warrant. While the dumpage areas downbay from the railroad bridge are briefly mentioned here they will be more completely covered at a future date in another report.

A similar Army Engineers' operation was carried on last year in Coos Bay, (see Special Report No. 12) resulting in the destruction of a good part of a commercially important horseclam bed. Despite objection of local residents, commercial clam diggers, and the Fish Commission that phase of the program was carried out to completion.

This year, with an earlier start and more data, it is hoped the clam populations can be protected.

The following is a key to the dumpage areas which will be used as reference throughout this report:

Table No. 1 Dumpage Areas

<u>Dumpage Area Number</u>	<u>Approximate Acreage</u>	<u>Percent of Total</u>
1	140	15%
2	410	45
3	115	13
4	30	3
5	20	2
6	10	1
7	5	0.5
8	10	1
9	90	10
10	35	4
11	55	6
TOTAL 920 acres		100.5%

Refer to Chart No. 1 for location of these areas.

Area No. 1

Area No. 1, near Eastside, Oregon, was investigated for clam populations last fall, July 22, 1949, and whereas a few clams (Eastern soft-shell -- Mya arenaria) were found, it was not advisable to object to dikes and log boom construction because of the overall picture of clams in the area in question. No further clam populations have been found in this area. In the opinion of the biologists of this station there is no objection to the dumpage of wastes on this area. (See Special Report No. 11 for further details.) Counts in the area yielded 6.2 clams per 100 square feet, and the size of the clams was extremely small. (Average 39.5 mm. in length.)

Area No. 2

The largest of the 11 areas, Area No. 2, which contains approximately 410 acres, or 45 percent of the total dumpage areas, was surveyed February 15 through February 17 of this year on tides of -0.9 foot, +2.4 feet, and -0.8 foot. The area is bounded by Kooston Channel on the north, by the Marshfield Channel on the south, by the Main Channel on the west, and extends 2,000 feet eastward from its west boundary. The

area has been and is now being used as log boom area and spoils area. For convenience sake it has been divided into sections "B, C, and D", the surrounding sections being "A and E".

In general the clam populations present, the Eastern soft-shell, Mya arenaria, were on the higher ground, the lower portion being very soft mud and void of clams.

Taking the sections in letter order, the various sections will be discussed:

Section A: Although this area is outside the dumpage area it was felt to be near enough to warrant an investigation. Local residents stated that clams used to be dug here years ago, but that no digging had occurred in recent years. Mr. Fred Mortenson, a moorage operator directly across from this section, stated, "There used to be clams there in good numbers until the log booms were constructed."

On the evening of February 15, 1950, during a -0.9 foot low tide a trip was made to this area. No clams were seen until the inner channel was reached. A fair but restricted population was surviving on the west side of this channel. The east side of the channel had an abrupt slope and no clams. Samples No. 1, 2, and 3 (see Chart No. 2) were taken that night with sample No. 4 being taken the following morning at a +2.4 foot tide. Results were for the four samples 1.6 clams per square foot, averaging 57.8 millimeters in length. It is interesting to note that a trip to this same area December 20, 1949 resulted in clams of the same average length.

Table No. 2 Clam Counts per Area

Section	No. of Square Feet Examined	Clams Counted	Clams Dug	Clams per Square Foot	Average Length (Millimeters)
A-1	5	17*	17		
A-2	5	14	21		
A-3	5	85	--		
A-4	100	73	--		
Total	115	189	--	1.6	57.8
--Another sample December 20, 1949 same area.					57.8

B No counts made, clams very scarce. Random digging - 47.5

C-1	375	143	--		
C-2	600	392	--		
C-3	162	135	--		
C-4	10	17	16		
C-5	140	12	--		
C-6	140	82	--		
Total	1,427	781	--	.55	64.1

D No counts made, for practical purposes same as section C. 75.3

E No clams seen.

\*Two areas were first counted visibly as to the number of siphon holes showing and then were completely dug out. In general the ratio of clams showing to clams dug was 1:1. The figure shown (17) was merely transferred from "Clams Dug" section.

In both trips it was noted, and is noted throughout the whole dumpage area, that the populations of clams were restricted to along the inside channels and immediately around the higher "islands" in all sections. At no time was there seen any extensive bed of clams.

It is estimated by the writers that the band of clams along this inner channel was 1,500 feet long and 20 feet wide, or a total of 30,000 square feet. This area having an average

of 1.6 clams per square foot would then have 48,000 clams or 2,650 pounds of live clams (using 25 gm. per clam averaging 58 mm.). To assign a value to these clams from a commercial standpoint would be questionable because of the small size of the clams. They would be of some value to the sportsmen, their value being limited somewhat, however, due to their restricted occurrence in a relatively inaccessible area.

Section B: As indicated by the map the majority of this piece of ground is grass and brush, the northern portion giving way to mud flats but covered with log booms. A trip to this area (see Chart No. 2) February 16, 1950 brought to light a negligible clam population. For the entire area traversed only six very small clams were dug. These averaged 47.5 millimeters in length.

There are no significant populations of clams in Section B to the best of our knowledge, nor is there any reason to suspect the existence of any.

Section C:

At an extreme low tide this section would undoubtedly be all one mud flat as shown on the map. However, there are a number of "islands", higher points of the flat, that can be seen at almost any stage of tide. The samples were taken about the perimeter of these "islands", the surrounding areas being too low and soft for clams. Some of the "islands" were so encircled with log booms and piling that it was impossible to examine the immediate perimeters of them.

Two island were examined on Section C, four samples taken on one and two on another. These are numbered one through six and can be seen on Chart No. 2. The results as listed in Table 2 showed the area to be averaging 0.55 clams per square foot, and the clams averaging 64.1 millimeters in length. Over two-thirds of Section C consists of soft mud and wood waste (bark, sticks, sawdust, etc.). As was found before, the clams were found in a narrow band around the higher areas. Out of the three island on Section C, two were investigated. The clam-bearing strip about the perimeters was ten yards wide. The diameter of the islands investigated were 150 yards, and 70 yards respectively. Calculation showed the perimeter of the islands to have roughly 1.3 acres of clam flats. To account for one island not surveyed, it seemed reasonable to double this acreage figure giving a total of 2.6 acres (11,325 square feet) of clam flats for Section C. At 0.55 clams per square foot this would give 6,230 clams for this area or roughly 410 pounds of clams (using 30 gm. per clam).

As in the preceding Section A, a set commercial value would be questionable because of the small size of the clams. Similarly it would be difficult to assign a sports value as the clam beds are spotty in this area.

Section D: Very similar to Section C in appearance, Section D is interspersed with "islands" and piling. No actual counts were made but the area was looked over and was adjudged to be like Section C.

A survey August 5, 1948 up Kooston Channel showed the clams to be very scarce, (six clams were dug in fifteen minutes of searching) on the south bank but a little larger--averaging 75.3 millimeters in length.

Section E: The shaded area on the map (Chart No. 2) shows the area traversed. This ground is much lower than the adjoining Section B. The mud gives way to shifting sand. No clams were seen in the course of the entire -0.8 foot tide the night of February 16, 1950.

### Area No. 3

This area lying under the U.S. 101 highway bridge and extending around into the adjacent downbay cove to just past the railroad trestle was surveyed the morning of February 17, 1950 on a +2.0 daylight tide which bared the entire cove (excepting channels). The area is soft sand on the main channel edge, changing to very soft mud back in the cove. Much of the leading edge near the highway bridge is covered with up to a foot of sawdust and wood chips. Virtually all of the area was examined, excepting spots too soft to walk on, during the tide. Some ghost shrimp were found in the sandy portions but no clams of any kind were found anywhere.

### Summary

All of the proposed spoils areas in the present Coos Bay dredging program above (upbay from) the railroad bridge have been examined to date. The spoils location directly off the towns of Coos Bay and Eastside has been found to have, at the best, sub-marginal populations of Eastern soft-shell clams; the same being true of the area around and between the

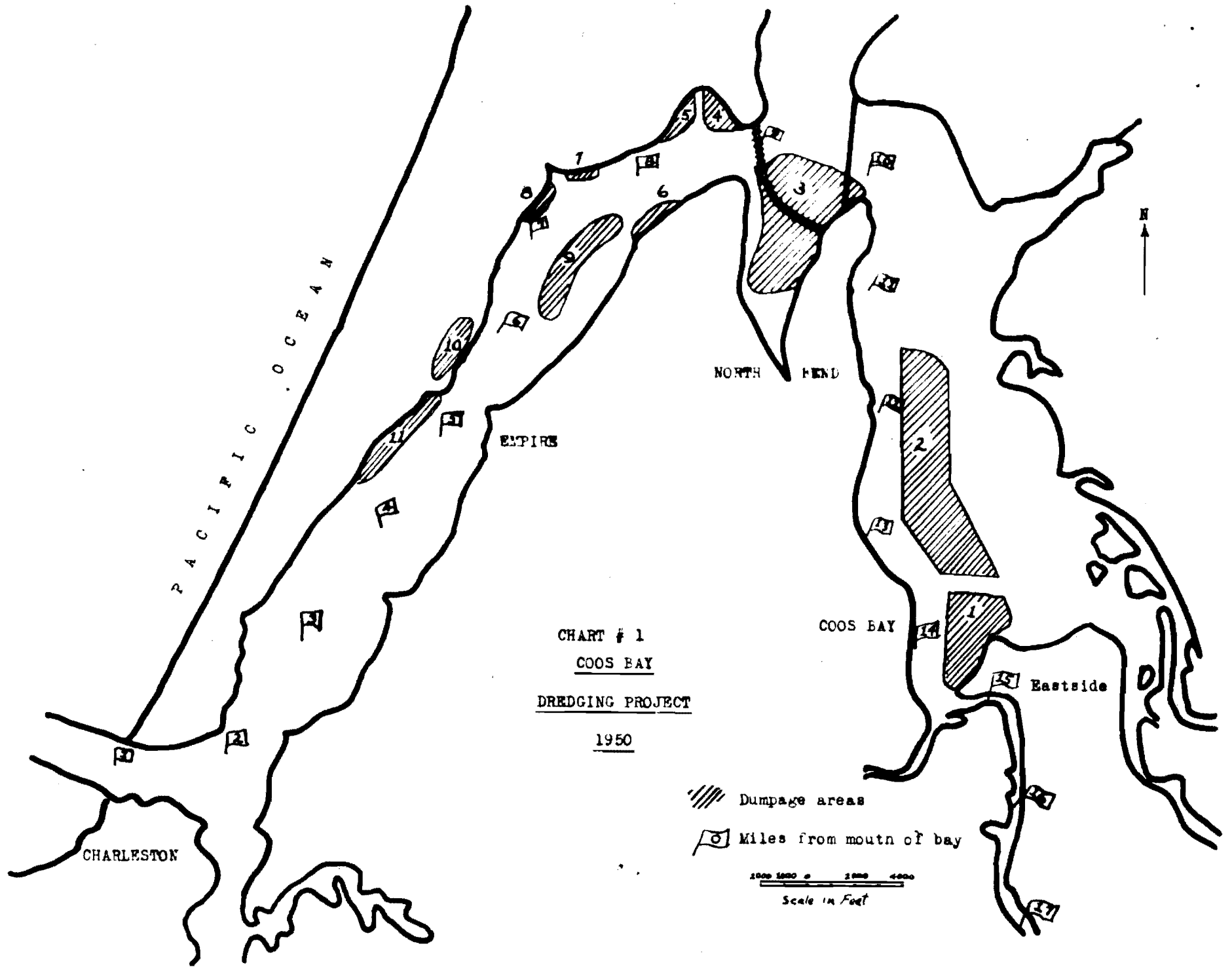
railroad bridge and the highway bridge. No objection whatsoever is entered against the use of these locations for dumping.

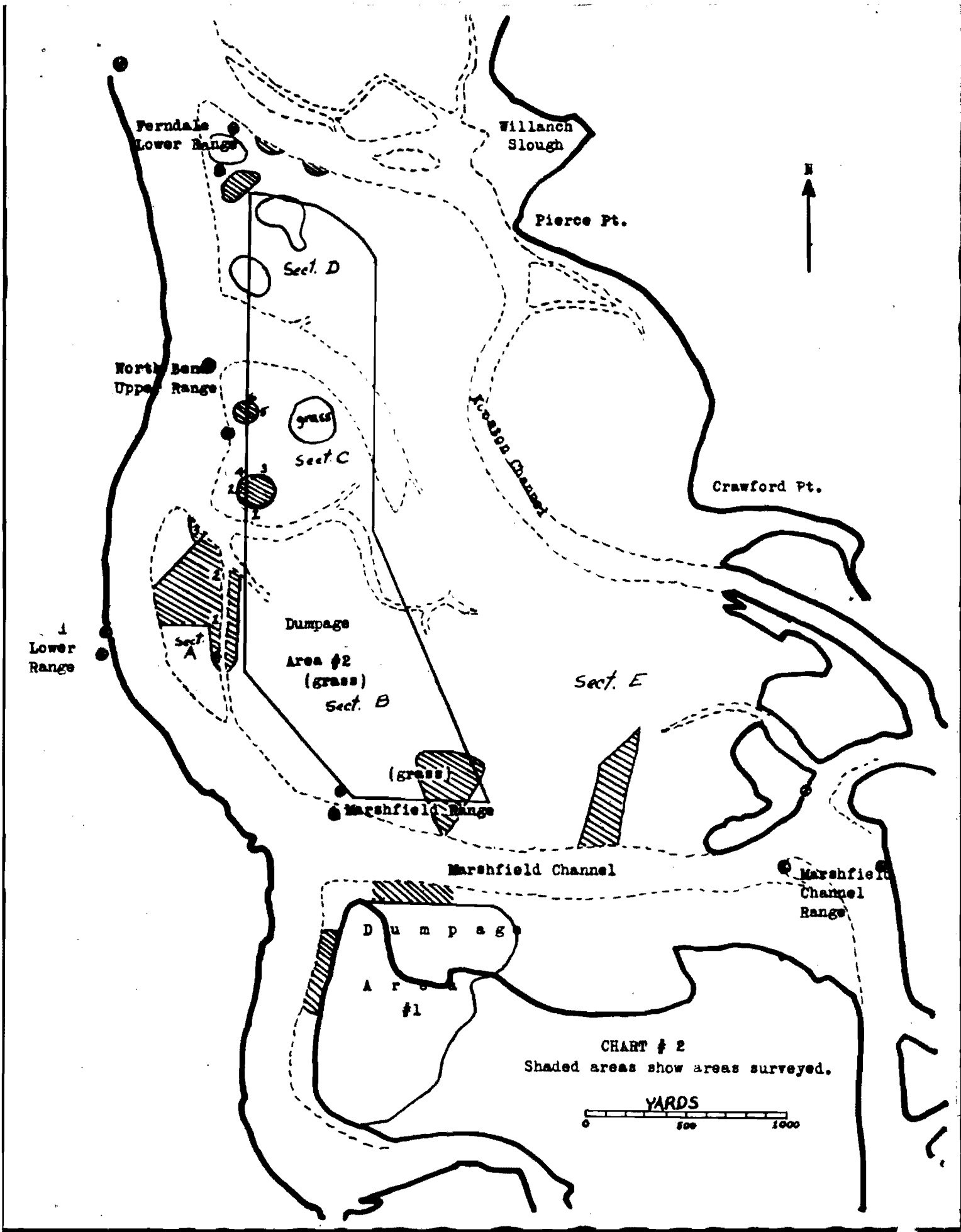
A very small, spotty population of small clams was found on the northern end and west side of the largest spoils area across from the town of North Bend. It is possible that this area may have once supported better beds but no hope of possible improvement can be seen as long as the land is used for booming purposes as is now the case. It would be preferable to have the spoils proposed for this area dumped, instead, back on Section E, or as near as possible. However, in view of the distance that would be required to pipe to there (roughly two miles) it is felt unreasonable to request such.

Accordingly, no objection is felt justified by this laboratory to any of the three proposed spoils areas upbay from the railroad bridge as now planned. Only one suggestion might be made: namely, that dumping on the northern half of area No. 2 be consolidated onto as small an area as possible and as far removed from the main channels as practical, rather than be allowed to spread out over an undue territory.

At least partial inspections of most of the remaining areas in the lower bay have been made in the past, but these should be rechecked more accurately before a final report is made for them. At the present no serious objections are visualized. Further, according to information given by the dredging company, their time table does not call for arrival of the work below the bridge until July 4, 1950 (dredging now starting at Eastside working downbay). Thus a final report in March on the entire project would still give sufficient time to make any corrections that might be needed.







SECTION II PROGRESS REPORT NO. 19

March 31, 1950

Proposed Dredging Operations in Coos Bay and Their Probable Affect on Clam Populations (Downbay from the Railroad Bridge)

Further investigation in the Coos Bay area concerning dredging operations as affecting clam populations was carried on during the months of February and March.

Areas 4 and 5 (20 and 30 acres respectively)

Dumpage Areas 4 and 5 (see attached maps) are located in a cove known as Jordan Cove. Whereas, according to local residents, there "used to be clams here", (Eastern soft shell), Jordan Cove yielded no clams after an exhaustive search. Nearly the entire area is one of very soft mud, in some places hazardously so. In its present physical condition it is an atypical clam area. There are possibly some higher areas along the bank that might be classes as marginal clam land for the Eastern soft shell but the fact remains that no clam beds exist there at the present. In the opinion of the writers there could be no harm done in filling this area with dredge waste.

Area 6 (ten acres)

Area 6, downbay and across from Jordan Cove, consists of shifting sand. No clams or other shellfish populations of importance are present in this area, hence, there can be seen no objection to using this as a spoils area.

Areas 7 and 8 (5 and 10 acres respectively)

The bank is very narrow at this location, the main Coos Bay channel cutting close to the bank. The proposed spoils Areas 7 and 8 are similarly narrow. No clam beds exist within these areas.

Area 9 (90 acres)

Area 9 appears to include the upper bay limit for the existence of horseclams in Coos Bay. Eel grass has established itself over the lower (downbay) portion of the flats in this area and the horseclams may be found in small numbers on the side channels and lower edges of the tide flats. The entire area, at present, is exposed only at the lower low tide series, zero feet or below. Chart No. 3 indicates the approximate limit of existence of the horseclam upbay, and locates the beds of clams in this area. An occasional little-neck, Venerupis staminea, may also be found in conjunction.

Although the numbers of clams in the stippled area are not large, it is felt they should not be destroyed, if practical to avoid doing so. Therefore, it is suggested that, if at all possible, the placement of wastes in Area 9 should be confined to the upper (upbay) portion above the line of horseclam existence. The area above this line is very similar to Area 6 previously discussed, being composed of shifting sand, and not supporting any valuable shellfish populations.

One sample of horseclams taken in Area 9 March 8, 1950 averaged 118 millimeters in length and resulted in a 26.3 percent recovery of usable meat as compared with the whole weights in the shell. This percent recovery, as well as visual inspection of the gonads, showed the clams to be very fat, the majority showing evidence of spawning. This evidence of spawning agrees very nicely with the spawning time of horseclams in the other areas of Coos Bay. There is reason to believe that this bed of clams would increase in numbers if given a chance to do so.

Area 10 (35 acres)

As this proposed dumpage area is above high water line there can be no damage done to shellfish populations in this area.

Area 11 (55 acres)

Across from Empire, Oregon, are the commercially important horseclam beds where much digging takes place during the open season. Last year one of these beds was badly treated when dredge waste was allowed to be dumped atop the bed. The resulting waste covered one-third of the clam bed in question with approximately a five-foot mat of rock, silt, and mud. Numerous inspections of this area have shown a silting or washing action taking place, the result being that the remainder of the bed to the northeast has been silted over with five inches of soft mud. This action has greatly reduced the number of clams in that area. A sample of horseclams taken from this area March 8, 1950 resulted in a 22.5 percent recovery of useable meat from whole live weight. Directly across a small back channel from this bed is dumpage Area 11. It was first thought that there might be danger in allowing the waste to be dumped there through washing and silting. But the direction of washing appears to be northeasterly or bankward and if this be the case no damage is expected to adjoining clam bed. However, it is imperative that the spoils be held within the present proposed area.

Summary

The importance of saving the remaining clam bed in Coos Bay cannot be over-stressed. Both numbers and average size of at least

the horseclam have decreased in the past several years. Any additional blows to the dwindling population of clams would certainly be ill-advised. With the more complete knowledge of clam flats as to location, species present, approximate abundance, and other important factors, better protection will be offered to the beds by not allowing maltreatment of this natural resource.

Whether by accident or by deliberation the dredging program as outlined for 1949-1950 by the Army Engineers would not do an extensive amount of damage even if no changes were made in the dumpage areas. However, by careful investigation of the areas it would be advisable, and is suggested, that in dumpage Area 9 the waste be held upbay towards the North Bend Airport as much as possible to avoid the killing of the horseclam population on the lower flats of that region. To the best of our knowledge Areas 4, 5, 6, 7, 8, 10, and 11 can be used without fear of doing any damage to shellfish populations, providing the spoils are held within the designated boundaries.

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