

LAW OFFICES OF  
JOHNSON & KLOOS

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MEMORANDUM

To: Jim Hurst; Wilbur TERNYIK  
Fr: Bill Kloos  
Dt: April 8, 1992 *BK*  
Re: Phase 2 Riprap; Section 111 Project

Florence Land Use Approvals for Phase 2 Rip Rap *NOT PART OF RE-ZONE*

Laura Gillespie and I have puzzled through the applicable plan and zoning code documents to determine what procedures and approval standards govern your getting a city ok for the fill on the Phase 2 lots. The picture looks like this: As the city views it, your project is subject to the following zoning designations of the city: (1) provisions of the "Restricted Residential" zone, and (2) the "Natural Resources Conservation Combining District" zone. The project is also subject to the "Natural Resources Conservation (Florence Urban and Urbanizable Area) Management Unit" of the Coastal Resources Management Plan (1982), which was jointly adopted by the City and the County.

The federal and state agencies require a showing of compliance with the city land use laws in order to issue their permits. Our task is to get the required city approval and then inject that approval into the federal and state review process, which is underway.

The Coastal Resources Management Plan section that applies states the following:

Artificial bank stabilization shall be used only to protect public and private roads, bridges or railroads or when natural erosion processes are threatening a structure which existed on October 7, 1977.

The Natural Resources Conservation Combining District of the zoning code that applies (Code section 10-19-4 D.1.) allows, as a conditional use,

Artificial bank stabilization adjacent to estuaries and lakes.

Bank stabilization is allowed consistent with the general standards that apply to conditional use permits and the following special criteria:

The stabilization is necessary to protect structures existing on or before October 7, 1977, or to protect public or private roads, bridges or railroads, or to protect uses permitted outright or conditionally in the underlying zoning district. [Emphasis mine.]

Natural bank stabilization methods are unfeasible.

The general standards stated in the zoning code (Code section 10-4-9) that apply to all conditional use permits (CUPs) are numerous, but only the following is problematic:

Conformity with the Florence Comprehensive Plan.

Conditional use approval requires an application, public notice, and a hearing before the planning commission. Excerpts from the relevant documents that include the above provisions are enclosed with the mailed copies of this memo, but not the faxed copies.

Looking at all the above together, our trouble spot is the CUP standard that requires conformity with the comprehensive plan. The plan language only allows artificial stabilization for dwelling that predate 1977. The zoning code language, in contrast, is more generous, and allows artificial stabilization to protect uses allowed by the underlying zoning, not just existing uses.

Our quickest strategy would be to apply for the CUP, gloss over the plan language, focus on the zoning code language as implementing the plan, and encourage the city to adopt findings that the project complies with the plan. So long as no sharp opponents show up at the hearing, and so long as the city (meaning primarily staff Gillespie) remains supportive, as I think they will, we should get the approval. The worst that could happen is the following: Opponents appear and allege the CUP standard is compliance with the plan, the plan only allows artificial stabilization for 1977 structures, and we are proposing the project for new structures. From my experience with the caselaw, that would be a solid theory. The only sure way around this would be to amend the zoning code to change the standards for CUPs to something like the following: "Conformity with the Florence Comprehensive Plan, as implemented through the zoning Code." This would probably be doable, but not quickly.

Laura has sent me the application forms for a CUP. I recommend we file the application promptly with the city and that it consist of: the application form, a brief letter from me, and a copy of the riprap application filed with the Corps. The hearing and decision will be by the planning commission. If it approves the project, and no party appeals to the city council within 15 days, then the approval is final and beyond challenge.

#### Section 111 Project Status

The person doing the initial assessment of the project for the corps is:

Cheryl Carrubba  
PO Box 2946  
Portland 97208-2946  
CENPP-OP-NWP

Ref: Siuslaw North Jetty Sec 111 Project  
Phone 326-6085

# COASTAL RESOURCES MANAGEMENT PLAN (1982)

10. Only developments and activities which do not pose a threat to life or property from land instability, erosion or other natural hazards shall be allowed. Where the property is zoned for timber production, it is the responsibility of the Forest Practices Act to ensure that timber harvest activities pose no hazard to life or property.
11. Improvements to ocean shore areas (as defined in ORS 390.605) are subject to a permit from the Oregon Department of Transportation.

## Natural Resources Conservation: (Florence Urban and Urbanizable Area)

This designation, when applied to lands within the Urban Growth Boundary of the City of Florence, is provided to allow for human activities consistent with long-term use of natural resources in harmony with natural systems of the coastal shorelands and waters. This designation is meant to ensure that all changes occur with recognition of and respect for those natural systems. Activities which conserve or enhance resources are encouraged, as well as recreation and public access to the coastal waters.

### Policies (Florence Urban and Urbanizable Area):

1. Uses shall fall within and respect Priorities 1-5 of the General Priority Statement (page 51).
2. Dredge spoil disposal must provide adequate runoff protection and, wherever possible, maintenance of a riparian strip along the water. Those sites adopted as part of the Siuslaw River Dredged Material Disposal Plan are automatically Approved.
- \* 3. Artificial bank stabilization shall be used only to protect public and private roads, bridges or railroads or when natural erosion processes are threatening a structure which existed on October 7, 1977.
4. Construction or expansion of single-family, single-purpose piers is discouraged in favor of multiple-use, public or commercial piers. Mooring buoys, floating piers, launching ramps and dry land storage are potential alternatives. If this MU exists adjacent to a natural estuarine MU, no pier development shall be allowed. Recently destroyed or damaged piers may be replaced if destroyed.
5. Filling in coastal lakes adjacent to this MU shall be allowed only in very rare instances and after a complete study of potential physical or biological impacts on the lake. The cumulative effects of all such fills shall be considered. Positive benefits must outweigh negative effects.
6. Forestry and agricultural practices shall take place in such a manner as to retain the flexibility of future shoreland uses and to maintain the natural integrity of the estuary.
7. Land division, including subdivisions and major and minor partitions shall be allowed, providing the division and the subsequent use is consistent with the Comprehensive Plan designation, the requirements of the corresponding zoning district and upon an affirmative finding that the land division and subsequent use are consistent with shoreland values as identified in this report and by on site evaluation.

FLORENCE ZONING CODE  
NATURAL RESOURCES CONSERVATION  
COMBINED DISTRICT  
§ 10-19-4 D.1.

Criteria:

- a. It can be clearly determined that the trees are hazard to life or existing property.

5. Uses:

- a. All permitted buildings and uses allowed in the respective district with which the /NRC is combined.

Criteria:

- a. Surface, subsurface and aquifer waters are protected from pollution and sedimentation.
- b. The use will not adversely affect the resource use of adjacent timber or agricultural lands.

D. Conditional Uses: If found subject to the requirements of the /NRC District based on the results of the preliminary investigation specified by Section 10-19-6, the following specified uses and no others are permitted, subject to approval by the Planning Commission. The Planning Commission, subject to the procedures and conditions set forth in Chapter 4 of this Title, may grant a Conditional Use Permit for the following uses, upon satisfaction of the applicable criteria.

1. Uses:

- a. Artificial bank stabilization adjacent to estuaries and lakes.

Criteria:

- a. The stabilization is necessary to protect structures existing on or before October 7, 1977, or to protect public or private roads, bridges or railroads, or to protect uses permitted outright or conditionally in the underlying zoning district.
- b. Natural bank stabilization methods are unfeasible.

2. Uses:

- a. Fills in coastal lakes adjacent to the /NRC District.

# FLORENCE ZONING CODE

## § 10-4-9.

However, within the allowed time period for commencement, the Planning Commission may, with a written request from the applicant and without further notice, extend the expiration date for periods of up to six (6) months, but not beyond the date which is eighteen (18) months from the original date that the conditional use permit became effective.

10-4-8: REVOCATION: The Planning Commission, after notice and public hearing, may revoke a conditional use permit for any of the following reasons:

- A. Failure to comply with any prescribed requirement of the conditional use permit.
- B. Violation of any of the provisions of this Title.
- C. The use for which the permit was granted has ceased to exist or has been suspended for six (6) consecutive months or for eighteen (18) months during any three (3) year period.
- D. The use for which the permit was granted has been so exercised as to be detrimental to the public health, safety or general welfare, or so as to constitute a nuisance. (Ord. 625, 6-30-80).

10-4-9: GENERAL CRITERIA: A conditional use permit may be granted only if the proposal conforms to all the following general criteria: (Ord. 669, 5-17-82)

- A. Conformity with the Florence Comprehensive Plan. \*
- B. Compliance with special conditions established by the Planning Commission to carry out the purpose of this Chapter.
- C. Findings that adequate land is available for uses which are permitted outright in the district where the conditional use is proposed. Available land can be either vacant land or land which could be converted from another use within the applicable zoning district. Land needs for permitted uses may be determined through projections contained in the Florence Comprehensive Plan or other special studies.
- D. Conditional uses are subject to design review under the provisions of Chapter 6 of this Title, except single family and duplex residential use. (Ord. 625, 6-30-80) See Code Section 10-6-3 for Design Review requirements.
- E. Adequacy of public facilities, public services and utilities to service the proposed development.

June 10, 1992

Dana Siegfried  
Division of State Lands  
775 Summer Street NE  
Salem, OR 97310

DEPARTMENT  
LAND  
CONSERVATION  
AND  
DEVELOPMENT

Re: State Permit No. SP 3292 (James Hurst)  
Corps Public Notice No. 92-316  
(Siuslaw River - Erosion Protection)

Dear Ms. Siegfried:

The Department of Land Conservation and Development has reviewed the above referenced permit to place 2800 cubic yards of sand and rock riprap along 700 linear feet of bank in the Siuslaw River in Lane County at Florence, Oregon.

The proposed project would be located in an area recently annexed to the City of Florence, in an area zoned for rural residential development, within the coastal shorelands and beaches and dunes overlay zones. The riprap would be placed within a conservation management unit in the Siuslaw Estuary.

Riprap is permitted in the conservation estuary management unit for the "protection of uses existing as of October 7, 1977, unique natural resources, historical and archeological values, and public facilities" (City of Florence Zoning Code Section 10-19-2-B (11)). Any use or activity in the estuary which requires dredging or filling must also meet additional criteria which address water-dependency, need, alternatives and adverse impacts." (City of Florence Zoning Code Section 10-19-2-E)

The proposed subdivision on the property to be revetted has only recently received approval from the City of Florence. Since the use did not exist as of 1977, the proposed subdivision does not qualify for riprap in this management unit. As noted above, however, riprap may also be permitted in the conservation management unit (subject to the dredge/fill criteria) to protect unique natural resources, historical and archeological values and public facilities.

It is our understanding that the City of Florence believes that the riprap will protect a unique natural resource in an adjacent natural management unit. According to the city, a significant clam bed in the vicinity of the proposed riprap is being negatively impacted by the eroding shoreline. If this is true and the clam bed is a unique natural resource, it could be the basis for the approval of this permit,

Barbara Robert  
Governor



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however, the Department believes that there is insufficient information available at this time to support the city's conclusion.

Since a significant resource is not the same as a "unique" resource, the applicant must first demonstrate whether the clam beds are "unique." The applicant should determine whether these clam beds were included in the ODFW inventory of unique natural resources, or must independently obtain confirmation the these clam beds are "unique." In addition, to justify approval of riprap to protect a unique natural resource, the applicant must demonstrate that: (1) the clam beds are in fact being negatively impacted; (2) the sand eroding from the project site is the cause of the problem; and (3) there is reason to believe that placing riprap on the shoreline will improve the situation and not cause other problems by changing the hydrographic dynamics at the clam beds.

The Oregon Department of Fish and Wildlife (ODFW) has done a preliminary review of the resource impacts at the site, at our request. According to ODFW, there is no indication that the project would be beneficial for the natural resources at the site, the site has been historically eroding and the clam beds have apparently adapted to the sediment load.

If the justification for the approval of this permit is for the protection of natural values, it is the applicants' responsibility to demonstrate, with substantial evidence, that a "unique" natural resource exists and that the natural resources in the area would benefit. It is not sufficient to merely make the assertion.

In addition to the estuary plan requirements, the project would be located in the coastal shorelands management unit, Natural Resource Conservation 1 (Lane County Coastal Resource Management Plan). The purpose of the Natural Resource Conservation zone is:

"to encourage long-term human use of these coastal resources in a manner which protects the qualities of coastal water bodies and respects the natural systems. Activities which protect or enhance renewable resources are encouraged, as are recreation and public access to coastal water" (City of Florence Zone Code, Section 10-19-4).

Artificial bank stabilization adjacent to estuaries and lakes is a conditionally permitted use in this overlay zone, subject to the following criteria:

- a. "The stabilization is necessary to protect structures existing on or before October 7, 1977, or to protect public or private roads, bridges or railroads or to protect uses permitted outright or conditionally in the underlying zoning district.

b. Natural bank stabilization methods are infeasible."

While bank stabilization may be conditionally permitted to protect the subdivision as a use permitted in the underlying district, this requirement must be interpreted in relation to the estuary requirements discussed above and with the city's comprehensive plan policies for shorelands and hazards.

The city's plan embodies the state policies in Goal 7 (Natural Hazards) and Goal 17 (Coastal Shorelands) to prefer land use management practices and nonstructural solutions to problems of erosion and flooding over structural solutions and to require that development not be planned or located in known natural hazard areas without appropriate safeguards. Avoidance of the hazard at this location would appear to be the most appropriate safeguard for the known erosion problem since protection of the proposed subdivision with riprap is not consistent with the estuarine requirements. This could be accomplished through zoning controls that limit the types and density of development; land development criteria that mitigate the hazards -- construction setbacks, safe building and siting standards for structures and septic systems, drainage controls, non-structural stabilization, including vegetative stabilization, bank sloping, dune-building, beach nourishment, or the use of soft structures.

In summary, the Department objects to the issuance of this permit unless the applicant demonstrates that it meets the applicable criteria in the city's plan. If the riprap is being installed to protect the unique natural values in the estuary, additional evidence must be presented to support this conclusion. The proposed subdivision, and future development at this site does not otherwise qualify for structural stabilization. The applicant should, through land use management techniques, including adequate setbacks and/or the redesign of the subdivision layout, avoid the known hazard.

Thank you for the opportunity to comment on the proposed application, please call Emily Toby at 373-0096 if you have any questions about our comments.

Sincerely



Richard P. Benner  
Director

RB:ET  
<per>

cc: Ron Marg, US Army Corps of Engineers  
Jim Turner, ODFW  
Laura Gillespie, City of Florence  
Glen Hale, DLCD



WAVE BEACH GRASS NURSERY  
WILBUR E. TERNYIK, CONSULTANT & OWNER  
Producers of Plant Materials for Sand Dune Stabilization  
Collectors of Native Plants for Marsh Creation & Restoration

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ONL #0008284 SAND EROSION CONTRACTOR OLCL #10120  
P.O. BOX 1190 - FLORENCE, OREGON 97439  
(503) 997-2401

November 12, 1992

Greg Lutje  
Schwabe, Williamson & Wyatt  
Pacwest Center, Suite 1600-1950  
1211 SW Fifth Avenue  
Portland, OR 97204-3795

Re: Shelter Cove Erosion Problem

Dear Greg:

Following our phone conversation of October 15, 1992, I feel it is imperative that I give you a little background on my knowledge and involvement.

Personal Knowledge of the Area - Since moving to the area 45 years ago my interest in the area has been extensive and ongoing. First, as a sportsman who loves to fish and go clamming, later as a scuba diver. The estuarine area just in front of the Shelter Cove Subdivision is unique in many ways. The only site for digging Pittock clams due to extensive sandstone formation, Cockles and Little Neck clams with largest concentration of the large gapers are accessible to digging. My average take of these gapers was 3 to 4 clams filling a 3 gallon bucket, some occasional razor clams on the mid river sand spit. This clam digging resource was dependable and consistent until the massive erosion behind the deteriorated Corp of Engineers jetty to the east started infilling the area with thousands of yards of sand. This infill does not stay in one place thus it moves with tidal currents and ocean turbulence smothering portions of the clam beds as it shifts. Second, is this small embayment has always served the off shore salmon fishermen as a waiting area until the Coast Guard says the bar passage to the ocean is safe. The wait was tempered by the early ever abundant schools of herring using the area. Jigging provided both fresh bait and recreation. One problem existed with the herring jigging and that was on some days you caught more silver salmon juveniles (5-6 inches) than herring.

In recent years this important asset of the lower estuary has virtually disappeared. My scuba diving was initially just to look around. Much to my surprise the embayment was covered with sandstone pockets of 6 to 20 feet in diameter and 2 to 4 feet deep. As you silently glided over them each pocket was literally full of fish. I would estimate that one-third of this area is now under 10 feet of sand infill from bank erosion. I also discovered a large population of Gaper clams in the down stream mouth of the embayment. We dug these clams with a long handled "plumber's friend" with one person standing in 4 to 5 feet of water and the other wearing the scuba gear guiding the direction of the hole. The largest clams were never obtained due to the extended clam necks being longer than my arm. Clams colonize quickly and the areas should increase production once the shore erosion is stopped and the natural flushing out takes place.

Policy Service Experience - First and foremost is my 26+ years as an elected Commissioner of the Port of Siuslaw. During this period of time I have represented the Port at hearings in Washington D.C. on a yearly basis and sometimes as many as four trips to D.C. to meet with Congressmen or Corp of Engineers officials. The main projects I worked on involved lower estuary systems. There was the restoration of the south jetty and then restoration of the north and riprap restoration of the upriver section of the deteriorated south jetty. These were long exhausting efforts by our Port to secure funds for planning and construction.

A supreme effort was made to obtain funds to plan and construct jetty extensions and modifications to actual design. Throughout all of this effort I met with every Governor, State Legislators, US Senators and Representatives starting with Senator Morse and Representative Harris Ellsworth. Hundreds of meetings were made where environmental concerns of the lower estuary were identified, debated and solutions found. In fact Colonel of the Portland District stated at our hearing held in the Pier Point Inn that it was the first time in his career that all parties testified in favor of a project.

Next, came the Port's attempt to locate a Harbor of Refuge north of the north jetty, just downstream from Shelter Cove and west of Lane County Harbor Vista Park. This effort was carried on over several years both in Oregon and Washington D.C. Engineering estimates and preliminary plans identified the need for further environmental studies. Numerous on site meetings were held with representatives of agencies having mandated authority in the area. A bird use study was conducted by Range D. Bayer, covering "Birds and Mammals at the Proposed Boat Basin Site and at Possible Mitigation Sites at Siuslaw Estuary." We hired CH<sub>2</sub>M Hill to do an overview of any other studies needed. This report came back in the form of a 28 page report stating we needed another study with projected cost of \$80 to 147,000, with another two year delay. Even then there was no assurance that more environmental studies would not be demanded. Even though the Port Commission still believes that this is a needed project, the cost to meet justified and frivolous concerns was beyond our financial capabilities. Intelligent long range planning seldom prevails in these situations on the Oregon Coast. In the midst of this confusion, Vicki Thompson, the activist enters the scene. Her-in-laws owned what is now the Shelter Cove property. She persuaded others to go to court claiming all of the DSL administered 240 acres of accreted lands. Lane County also entered this suit for accreted lands fronting Harbor Vista Park. Vickie also publicly made known that she was adamantly opposed to the Harbor of Refuge Project under any circumstances. The the beginning of her personal environmental crusade to stop anything from the Coast Guard Station to the river mouth on the north side of the river. She was very effective, not with any facts but rather with written and verbal suggestions of severe esturine value damage if anything was allowed to happen. She builds the record by testifying and sows seeds of doubt with Federal and State agency staff people. Being very careful to seek out agency personnel that shares her uninformed bias. Do not take her lightly. However, she somewhat destroys her environmental image by only objecting in this one area.

Policy Making Positions - As stated I have served on the Port of Siuslaw as an elected Commissioner for 26+ years. As such I also serve on the Lane Council of Government's Exective Board. I also serve on the Oregon Coastal Zone Management Association Executive Board and Board of Directors. This latter position was the result of my serving as elected Chairman of the Oregon Coastal

Conservation and Development Commission. This 30 member official State of Oregon Commission over a 3½ year period developed Oregon's much touted Coastal Zone Management Plans. This work was initially focused on estuary protection because of Governor Tom McCall's strong interest. Our inventories, debates, and special advisory committees developed both consensus and clear precise intent of our Goals. Most of the CZM program is now being implemented by Local Land Use Comprehensive Plan Ordinances in every Coastal County and City. Today's single purpose activist with fanatic fervor always reinterpret the original intent to their liking. Aiding and abetting their cause is a host of new agency employees with the same environmental bias and waiting on the sidelines like a feeding shark frenzy are the environmental consultants willing to work for either side. End result is that lawyers and judges are forced to make the land use decisions not the professional planners.

Some 18 years ago I was elected to the Florence City Council. I will shortly finish 16 years of service, six of those years as Mayor. As you know our small city is growing northward and Shelter Cove is a recent annexation. Even before this back in the early 80's we put input into downriver zoning as the area is in our Urban Growth Boundary. Even more important it is our entrance to the Pacific Ocean for our commercial and recreational fishing fleet. The health of our estuarine ecosystem is emphasized in our Land Use Comprehensive Plan Ordinances. The Port also does environmental cleanup and watches for any alleged illegal fill or removal activities. This is not a passive community when it comes to estuary protection. As Chairman of OCC&DC, I appointed a committee to develop a dredged material plan for every Oregon estuary where authorized COE or private project indicated continuing dredging. This process resulted in identification of long and short term dredged material disposal sites and more important Land Use Comprehensive Plan protective zoning that prohibits other uses.

When the Fill and Removal Law was stalled in legislative committee I was sent out to the room with Dick Angstrom and Rollie Rouseau to develop acceptable language that was then passed. Twice representing the Port I was appointed to DSL and DLCD mitigation committees along with Dr. Gonor of OSU and Richard Benner, now director of DLCD. Our task was to redefine the language so it could work. All of this background plus my personal business experience doing research and mitigation projects in estuaries tends to indicate considerable expertise in estuarine resource management.

Private Related Business Experience - My entire life from age 20 on has been spent in managing coastal resources. Ten early years with the Nursery Division of the Soil Conservation Service where I worked and trained under Robert L. Brown and Dr. Hafenrichter. The main focus was dune erosion control with vegetation. Our Warrenton Experimental Nurseries had several hundred plant species from all countries of the world. My work ranged from Vandenburg from Air Base Missile Sites northward into British Columbia. During the past forty years I have either planted by contract or supervised 1,800,000 plants. Then in 1976 I was selected by United States Corp of Engineers Water Experiment Station in Vicksburg, Mississippi to work as the principal investigator on the Millers Sand Island, a dredge material intertidal research site. My task was limited to plant selection plot layout planting and fertilizing. My plants were to be picked from a prepared list of 80 candidate species. The species locations were unknown and no nursery source existed. In fact I soon found out that no one had yet worked with these plants. I did a pilot study with my own selections from native stock. From this effort I collected the thousands of

of plants needed and adequate seed. Planting was from .5 of a foot above MLT Our site on this Island where we lived for two summers was along with Dr. Rheimolds site at Buttermilk Sound, Georgia, the two most successful research sites in this \$30,000,000 research program. This led to several workshop teaching assignments with federal agency personnel on the coast of Georgia, sponsored by U.S. Fish and Wildlife and the Corp of Engineers.

The Corp of Engineers at Waterways Experiment Station contracted with me to act in the same capacity at their Wallula Reservoir revegetation research site, one of three national sites. This time to identify by search 10 vascular species and ten woody species with the goal being to identify plant materials and develop planting techniques and specifications for restoring habitat to an estimated 186,000 miles of reservoir shorelines in the United States. This time the planting zone would be in a 5 foot power peaking daily fluctuating water level. Once more the long list of identified possible plants with no knowledge of where they were or which ones would work. This work scope included identifying, evaluating then growing or collecting 1,500 plants of 15 species of vascular plants and 10 upland woody species. I was allowed one full year to collect the plants and prepare for actual planting. My collection area was any where in eastern Oregon or Washington. This led to field visits more than 50 reservoirs, marshes and lakes. Again, there was a total lack of research material on these plants.

The scope of this experiment is more fully realized when you take into account that it took 5,000 stakes just to outline the plots. The success of this project led to further teaching assignments at Vicksburg, Mississippi for various reservoir managers. The end result is almost weekly telephone advice to federal agencies, Universities and State agencies on planning marsh creation or mitigation projects.

Because of these opportunities in wetland research I have contracted to do or supervise several lower estuary sites both Washington and Oregon. The following are some examples of success Corp of Engineers inter-tidal *Carex lynbyei* mitigation site at Grays Harbor, Washington, Oregon Department Transportation mitigation site lower Columbia River at Fort Stevens, Port of Everett Pentac Inc. mitigation research site, Jetty Island Everett, Washington, Ron Thom's Puyallup River mitigation site, Tacoma Washington, Simpson Timber inter-tidal mitigation site, Tacoma, Washington, Oregon Department of Transportation's lower Coos Bay mitigation site, Charleston, Oregon. I also do wetland delineations, design mitigation projects and write first time planting specifications for wetland species for federal, state and County projects.

With all this experience I now write reconnaissance reports for developers and cranberry growers, when it is needed testify at hearings or in court.

Enclosed is a packet of photos showing both historic and current conditions of the lower Shelter Cove erosion area and lower portion of the Siuslaw River estuary. As in all other estuaries the inter-face of the ocean salt water with the river freshwater is vital to the productivity and health of the entire system. These same photos plus historic aerial photos from COE and ODOT show long continuing destruction of vital riparian habitat due to erosion at the toe of the slope. This massive amount of material then washes through the un-

maintained ruins of the COE upriver north jetty. This infills the nursery area and clam beds plus contributes to the annual COE dredging costs (See chart).

Though this area is currently zoned natural there is nothing natural about it. Massive jetties were constructed through it, river groins installed, fishing piers, salmon ranching facilities, etc. The natural zoning is appropriate for the lower estuary only because of it's unique role and function. This has and is continuing to be adversely impacted by man's neglect in not stopping the erosion taking place. In my opinion the upland values which are in the millions are second to the lower esturine nursery values. The inaction to correct this situation is in direct violation of the underlined portions of DLCD Statewide Goals enclosed.

Please, note enclosed pages of the Estuarine Mitigation The Oregon Process by the Division of State Lands showing salinity levels, fish population, plants species present in the area. Currently due to the massive erosion loss of upland riparian habitat and inter-tidal estuarine habitat this area is under stress. However, after jetty maintenance or riprap installation the following restoration can be accomplished.

1. Eroded slope riparian vegetation replanted.
2. Inter-tidal high saltwater marsh established.
3. Massive new marine growth on new stones plus herring spawning system.
4. Much needed protection for upland values now threatened such as roads, utilities and subdivisions.

This project is not only needed it is mandated for protection of estuarine values by U.S. Coastal Zone Management program, Department of Land Conservation Development Goals, City of Florence Comprehensive Land Use Plan.

I sincerely hope this information is of some help in moving this project forward using emergency procedures available to the COE. Unique natural values should weigh heavily in this cost benefit ratio, otherwise our supreme CZM planning started by Governor McCall was wasted effort. Please feel free to use this information in any way you see fit.

Sincerely,

  
Wilbur E. Ternyik

WET/jt

LCDC GOALS 16-17-18-19

CONSIDERATIONS AND FINDINGS RELATED TO  
SHELTER COVE SUBDIVISION, FLORENCE, OREGON

LCDC GOALS 16-17-18-19, CONSIDERATIONS AND FINDINGS RELATED TO  
SHELTER COVE SUBDIVISION, FLORENCE, OREGON

GOAL 16 ESTURINE RESOURCES:

GOAL -To recognize and protect the unique environmental, economic and social values of each estuary and associated wetlands; and to protect, maintain, where appropriate develop, and diversity and benefits of Oregon's estuaries.

COMPREHENSIVE PLAN REQUIREMENTS:

1. Identify each estuarine area;
2. Describe and maintain the diversity of important and unique environmental, economic and social features within the estuary;
3. Classify the estuary into management units; and
4. Establish policies and use priorities for each management unit using the standards and procedures set forth below.
5. Consider and describe in the plan the potential cumulative impacts of the alterations and development activities envisioned. Such a description may be general but shall be based on the best available information and projections.

MANAGEMENT UNITS

Diverse resources, values, and benefits shall be maintained by classifying the estuary into distinct water use management units. When classifying estuarine areas into management units, the following shall be considered in addition to the inventories.

1. Adjacent upland characteristics and existing land uses.
2. Compatibility with adjacent uses;

CURRENT MANAGEMENT UNIT CLASSIFICATION

The current management unit for this portion of the estuary is Natural as designated in Lane County Coastal Resource Management Plan adopted, June 19, 1990, revised in 1982. It is described as follows on pages 16 & 17.

Natural:

1. Extent, specifically indicated on estuary Map 1 in Appendix. Generally the north side of the river from Mile 1.2 to Cannery Hill.
2. Rationale
  - a. Fish rearing (particularly fall Chinook juveniles) and spawning.
  - b. Seal haul out at upriver portion.
  - c. Clam beds with species found only at this salinity level. (i.e., piddock, gaper, cockle, and littleneck) predominantly outside of jetty.
  - d. Seagrass and algae beds predominantly in Piddock Bay area;
  - e. Area of high quality biological habitat with unique consolidated substrate.
  - f. Low intensity recreational potential.
3. Discussion

The salinity range in this Management Unit near the mouth of the river is higher than the remainder of the estuary since the Siuslaw River has a strong riverine influence. This factor causes the organisms found here to be much different than those in the remainder of the estuary.

The seals are known to use the Cannery Hill area as a haul out and oceanic fishes can be found feeding here. The sand substrate is of high value for fish rearing, including fall Chinook juveniles. The recreational and economic importance of this area extends beyond the limits of the Management Unit because of this fish rearing capacity. The abundance of clams are also of high recreational value.

IMPLEMENTATION REQUIREMENTS:

3. State and federal agencies shall review, revise, and implement their plans, actions, and management authorities to maintain water quality and minimize man induced sedimentation in estuaries.
8. State and federal agencies shall assist local government in identifying areas for restoration. Restoration is appropriate in areas where activities have adversely affected some aspect of the estuarine system, and where it would contribute to a greater achievement



of the objective of this goal. Appropriate sites include areas of heavy erosion or sedimentation, degraded fish and wildlife habitat, anadromous fish spawning areas, abandoned diked estuarine marsh areas, and where water quality restricts use of estuarine waters for fish and shellfish harvest and production, or for human recreation.

A - Inventories

In detail appropriate to the level of development or alteration proposed, the inventories for estuarine features should include:

2. Biological characteristic  
Location, Description, and Extent of:
  - b. The fish and wildlife species, including part-time residents;
  - f. Fish and shellfish spawning areas;
3. Social and economic characteristics--  
Location, Description, and Extent of:
  - a. The importance of the estuary to the economy of the area;
  - b. Existing land uses surrounding the estuary;
  - c. Man-made alterations of the natural estuarine system;

GOAL 17 COASTAL SHORELANDS

GOAL - To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and

To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Land use plans, implementing actions and permit reviews shall include consideration of the critical relationships between coastal shorelands of coastal waters, and of the geologic and hydrologic hazards

associated with coastal shorelands. Local, state and federal agencies shall within the limit of their authorities maintain the diverse environmental, economic, and social values of coastal shorelands and water quality in coastal waters. Within those limits, they shall also minimize man-induced sedimentation in estuaries, nearshore ocean waters, and coastal lakes.

General priorities for the overall use of coastal shorelands (from highest to lowest) shall be to:

1. Promote uses which maintain the integrity of of estuaries and coastal waters;
5. Provide for development, including nondependent, nonrelated uses, in urban areas compatible with existing or committed uses;

#### IDENTIFICATION OF COASTAL SHORELANDS

Land contiguous with the ocean, estuaries, and coastal lakes shall be identified as coastal shorelands. The extent of shorelands shall include at least:

1. Areas subject to ocean flooding and lands within 100 feet of the ocean shore or within 50 feet of an estuary or a coastal lake;
2. Adjacent areas of geologic instability where the geologic instability is related to or will impact a coastal water body;

#### IMPLEMENTATION REQUIREMENTS

4. Because of the importance of the vegetative fringe adjacent to coastal waters to water quality, fish and wildlife habitat, recreational use and aesthetic resources, riparian vegetation shall be maintained; and where appropriate, restored and enhanced, consistent with water-dependent uses.

#### GUIDELINES

##### A - INVENTORIES

In coastal shoreland areas the following inventory needs should be reviewed. The level of detail of information needed will differ depending on the development or alteration proposed and the degree of conflict over the potential designation.

1. Hazard areas, including at least:
  - a. Areas the use of which may result in significant hydraulic alteration of other lands or water bodies;
  - b. Areas of geological instability in, or adjacent to shorelines;
6. Areas of vegetative cover which are riparian in nature or which function to maintain water quality and to stabilize the shoreline.

GOAL T8 BEACHES AND DUNES

To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and

To reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

A - INVENTORIES

Local government should begin the beach and dune inventory with a review of Beaches and Dunes of the Oregon Coast, USDA Soil Conservation Service and OCCDC, March 1975, and determine what additional information is necessary to identify and describe:

1. The geologic nature and stability of the beach and dune landforms;
2. Patterns of erosion, accretion, and migration;
3. Storm and ocean flood hazards;
4. Existing and projected use, development and economic activity on the beach and dune landforms; and
5. Areas of significant biological importance.

F - DUNE STABILIZATION

Dune stabilization programs should be allowed only when in conformance with the comprehensive plan, and only after assessment of their potential impact.

Avoiding or minimizing grading or deposition which could adversely affect surrounding properties by changing wind, ocean erosion, or flooding patterns;

GOAL 19 OCEAN RESOURCES

To conserve the long term values, benefits and natural resources, of the nearshore ocean and continental shelf.

All local, state, and federal plans, policies, projects, and activities which affect the territorial sea shall be developed, managed and conducted to maintain, and where appropriate, enhance and restore, the long-term benefits derived from the nearshore oceanic resources of Oregon. Since renewable ocean resources and uses, such as food production, water quality, navigation, recreation and aesthetic enjoyment, will provide greater long-term benefits than will nonrenewable resources, such plans and activities shall give clear priority to the proper management and protection of renewable resources.

B - INVENTORY

The goal does not intend that local government and state and federal agencies develop complete inventories of ocean resources. Rather, it requires that actions affecting the nearshore ocean and continental shelf areas be based upon a sound understanding of the resources and potential impacts. Therefore, the inventory should identify the affected ocean area and describe the extent and significance of:

3. Biological fetters, including fish and shellfish stocks; other biologically important species; important habitat areas including seagrass and algae beds; and other elements important to maintaining the biological resource such as plankton and benthos;

**DRAFT**

January 27, 1993

Mr. Paul Wemhoener  
U.S. Army Corps of Engineers  
Portland District

RE: Section 111 Request for Florence, Oregon

Dear Sir:

This letter reaffirms the City of Florence's willingness to be the local sponsor for a Section 111 project (the "Project") to halt the erosion that is occurring on the property along the Siuslaw River commonly known as Shelter Cove, and provide the Corps with additional information in the hope that the Project can be commenced and completed as quickly as possible. This letter is of an urgent nature because of recent severe storm influenced damage to the property.

On September 3, 1991, the City sent a letter to the District Engineer requesting that a reconnaissance study be conducted to define the river bank erosion problem and affirm the Federal interest in the Project. In a letter dated August 12, 1992 to Bill Kloos, Steve Stockton of the Corps affirmed the Corps' commitment to completing an initial appraisal to determine if the benefit/cost ratio is favorable enough to allow a reconnaissance study to be initiated.

The City is committed to doing everything it can to implement the Project in a timely manner. We are confident that upon review of the enclosed materials you will agree that the Project "pencils out" favorably, and we hope that you share our desire to preserve the valuable river estuary and protect Shelter Cove by halting further erosion.

There is particular urgency to this request because of the dramatic rate of erosion occurring at Shelter Cove. Not only is the property subject to erosion averaging in excess of five feet of land loss per year, but with the most recent storm conditions, erosion is threatening existing residences and City facilities. Therefore, it is imperative that this Project be

Paul Wemhoener  
January 27, 1993  
Page 2

processed in the most expedient manner possible.

As you are aware, the Corps previously conducted a Section 111 Initial Appraisal that concluded that the work was not economically justified because the "cost of an erosion protection plan exceeds the value of damages it would prevent." That Appraisal (the "1989 Appraisal"), was conducted prior to the recent residential development on the property and was done without the benefit of a verifiable Land Value Appraisal. The 1989 Appraisal did not consider the savings of dredging costs associated with sedimentation of the river or include the value of the benefit to the river and estuary obtained by halting further sedimentation of the unique clam and fish beds along this portion of the river.

The 1989 Appraisal notes that erosion has occurred at Shelter Cove since about the time of completion of the existing Federal project in the 1930's. The document states that over six acres of land was washed into the river between 1939 and 1988 and notes that, while currently occurring at the rate of about five feet per year, "[a]s time passes, the total amount of land that erodes will increase." From 1989 to 1999 another 1.8 acres will be lost unless corrective measures are taken to halt the erosion. The document states that:

[t]he Federal navigation project contributes to erosion at the site by keeping the channel confined to a location where it is constantly interfacing with the eroding bankline. Without the stable channel entrance provided by the navigation project, the river would be able to migrate away from the eroding right bank.

It is our understanding that you and members of your staff have recently met with representatives of James Hurst, the owner and developer of the Shelter Cove subdivision, to discuss the Project and the benefit/cost ratio analysis. Enclosed are the following materials that have been prepared for your use in that document's preparation:

1. Appraisal, dated December 10, 1992 prepared by Marineau and Associates. This Appraisal updates an appraisal dated January 21, 1991 that did not contain lot specific calculations of value. The chart on page 18 of the most recent Appraisal indicates that the 13 riverfront lots subject to the current erosion (see sketch on page 11) are valued from \$100,000 to \$125,000, with an average value in excess of \$113,000. Significant amounts of these lots have already eroded into the river and there is no indication the erosion will cease unless corrective measures are undertaken. We believe that the benefit

obtained by preserving these 13 lots alone should generate a positive benefit/cost ratio.

2. Report on Causation, prepared by Ogden Beeman & Associates entitled "Causes of the Erosion Problem at Shelter Cove". Mr. Beeman has been retained by Mr. Hurst to assist in implementing the Project. Mr. Beeman's conclusion that "there can be little doubt about the causative relationship between the navigation project and the loss of property at Shelter Cove" is fully consistent with comments contained in an initial appraisal conducted by the Corps in 1989 that states, "[t]he Federal navigation project contributes to erosion at the site by keeping the channel confined to a location where it is constantly interfacing with the eroding bankline."

3. Report on Sedimentation Issues, also prepared by Ogden Beeman & Associates. This Report supports another "benefit" factor in the analysis by concluding that between 28,000 and 56,000 cubic yards of material requiring dredging enters the navigable channel of the Siuslaw River each year. Eliminating the annual costs to the Corps for this element alone will provide a "benefit" of between \$84,000 and \$168,000 per year.

4. Bid for Rip-Rap, dated January 6, 1993 from Hockema, Inc. The Bid indicates as savings of nearly \$40,000 from the cost for 11,600 cy of Class IV riprap used by the Corps in the 1989 Appraisal, and suggests that the cost for the Shelter Cove Project could be reduced by using less expensive rip-rap that has been successfully used just up-river from Shelter Cove.

The City believes that upon reexamination the benefits obtained by the Project will far outweigh the costs. The benefits include: (i) the value of the Shelter Cove land that will be saved with the Project in place; (ii) the value of the City's threatened in-place facilities such as roads, and sewer and water lines; (iii) the river dredging cost savings obtained by halting further sedimentation; and (iv) the benefit obtained by protecting the estuary's significant fish and wildlife habitats and preserving the biological productivity of the estuary.

In sum, we are anxious to get the Project done in the shortest amount of time possible. We request that you do every thing within your power to put this Project on a fast track. Please let us know if we can do anything further to assist you or

Paul Wemhoener  
January 27, 1993  
Page 4

your staff. We look forward to your response.

Very truly yours,

CITY OF FLORENCE

by: \_\_\_\_\_

**DRAFT**

Encl. —  
cc: Ogden Beeman  
    Wilbur Ternyik  
    James Hurst  
    Jay Waldron.



**Exhibit J**

**CAUSES OF THE EROSION PROBLEM AT SHELTER COVE**

**INTRODUCTION.**

Shelter Cove is a subdivision on the north bank of the Siuslaw River between River mile 0+3000' and mile 1+0000, (reference Corps of Engineers survey sheets, Siuslaw River Entrance Channel). The land area of the subdivision lies between the Corps of Engineers right of way for the inner extension of the North Jetty and Rhododendron Drive, an arterial connecting the City of Florence to the north estuary and beach areas.

The North Jetty was built and rehabilitated by the Corps of Engineers under various Congressional authorizations. The inner end of the north jetty which fronts the subject property was apparently the first section of the jetty and was constructed in the 1890's under authorization of September 19, 1890. Further jetty extensions were made after the turn of the century and the project is listed as completed in 1930. The completed north jetty was 7790' long and extended from the ocean inland to approximately river mile 1+00, at Cannery Hill which is the easterly boundary of the Shelter Cove development.

The original North Jetty was constructed from Cannery Hill and ran due north for about 2000' until it turned west, cutting off the channel to the north and directing the river into the ocean. The inner end of the jetty acts as a training structure to turn the river. At the same time, it protected the north bank from erosion from the river as well as wave energy through the newly stabilized and deepened entrance. Prior to the extension of the jetty into the ocean, the entrance channel was shoaled to 6 to 10'. The jetty extension opened the entrance channel allowing increased penetration of ocean wave energy.

**PRESENT SITUATION.**

The original jetty was apparently built from sandstone available from local quarries. The deterioration of this rock and the jetty section lead to the rehabilitation of 1700' of the outer north jetty in 1958. The inner end of the jetty was left to deteriorate under the forces of nature and the constant impact of ocean wave forces. From approximately mile 0 +3700 to mile 1 +00 the jetty has deteriorated to the extent that essentially none of it is visible at high tide. Much of the rock has deteriorated in size and sunk into the surrounding sand. Downstream from mile 0+3700 the jetty is generally above the high tide line. Although this section is also severely deteriorated, there is still a significant cross section and sizeable rocks are visible for most of the length of this section. The noticeable difference in the sections up and downstream of Station 0+ 3700 is either due to a difference in original rock size or origin, or difference in the wave attack at the two sites.

As a result of the deteriorated jetty section, waves from the ocean which penetrate into the estuary either refract or are reflected directly onto the Shelter Cove site. At high tide and high wave conditions, the toe of slope is reportedly taking a direct wave attack from ocean waves. The result of this has been the creation of two large "cusps" in the land form of the north bank.

The downstream or larger cusp is about 1200' long. The toe of slope is some 300' from the jetty which is probably a fair measure of erosion assuming the jetty was originally built at or near the toe of slope. The upstream or small cusp is about 600' long. The top of bank is about elevation 75' while the elevation at the toe of slope is around 10' sloping off to the 0' contour in the vicinity of the remnants of the jetty. The slope on the face of the eroded area can be estimated at between 50' and 65' vertical to 100' horizontal.

It is assumed that the points at the upstream and downstream ends, and between the erosion points is probably a more dense or rocky material which has prevented or retarded erosion in those areas.

#### **CAUSE OF THE EROSION PROBLEM.**

The purpose of the jetty construction and channel deepening was to improve navigation into the Siuslaw River. By stabilizing the shifting entrance sands to a single, deep opening, the opportunity for wave energy penetration into the estuary was either created or significantly increased. It would appear that the original jetty length of nearly 7800' was for the purpose of redirecting the river and protecting the erodible north bank of the river from the forces of the ocean waves entering the estuary.

It is probable that erosion of the north bank started even when the jetty was in good condition due to wave energy penetration through the rubble mound jetty. As the jetty deteriorated over time, the wave energy was able to pass through the jetty without reduction. In the present situation, the waves can attack the toe of the slope directly, particularly at high tide.

Given the situation of the original jetty construction and purpose, and subsequent deterioration of the jetty and accompanying slope erosion and failure, there can be little doubt about the causative relationship between the navigation project and the loss of property at Shelter Cove.

#### **CORRECTION OF THE PROBLEM.**

The obvious correction to the problem is to restore the deteriorated section of the jetty, at least the sections fronting the erosion areas at Shelter Cove. Since this entails essentially creating an entire new jetty cross section to an elevation above high tide, it is assumed to be prohibitively expensive in relationship to the benefits to be achieved.

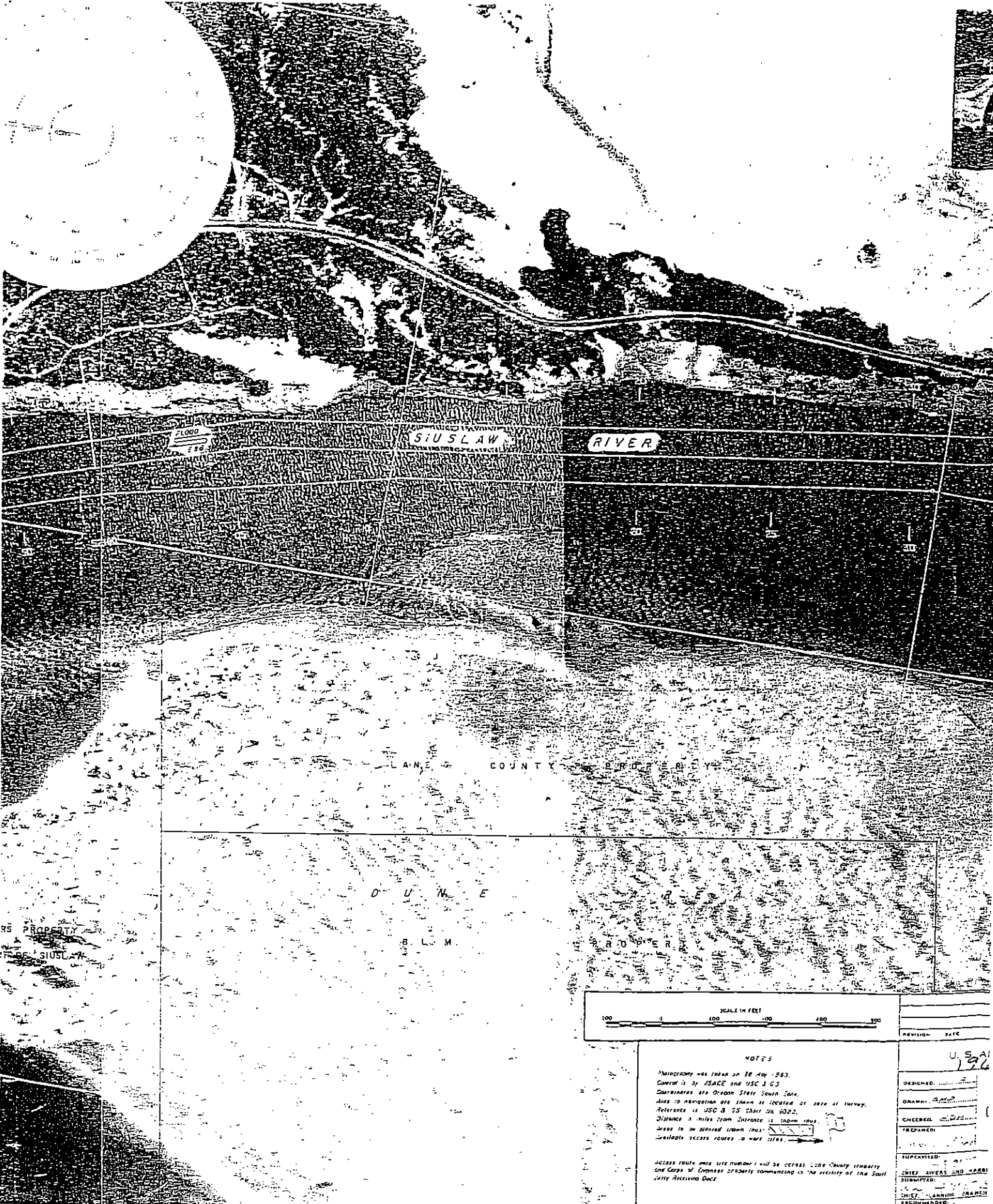
A less expensive alternative is to provide a revetment along the toe of slope of the eroding areas. This solution will directly protect the eroding area and should cost substantially less than creation of an entire jetty cross section. This solution, however, will do nothing to restore the large land area which has already been lost to erosion.

EXHIBIT 2

CORPS OF ENGINEERS 1969

SIUSLAW RIVER PROJECT MAP

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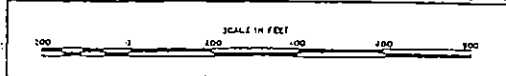


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SIU SLAW RIVER

D U N E

B L M



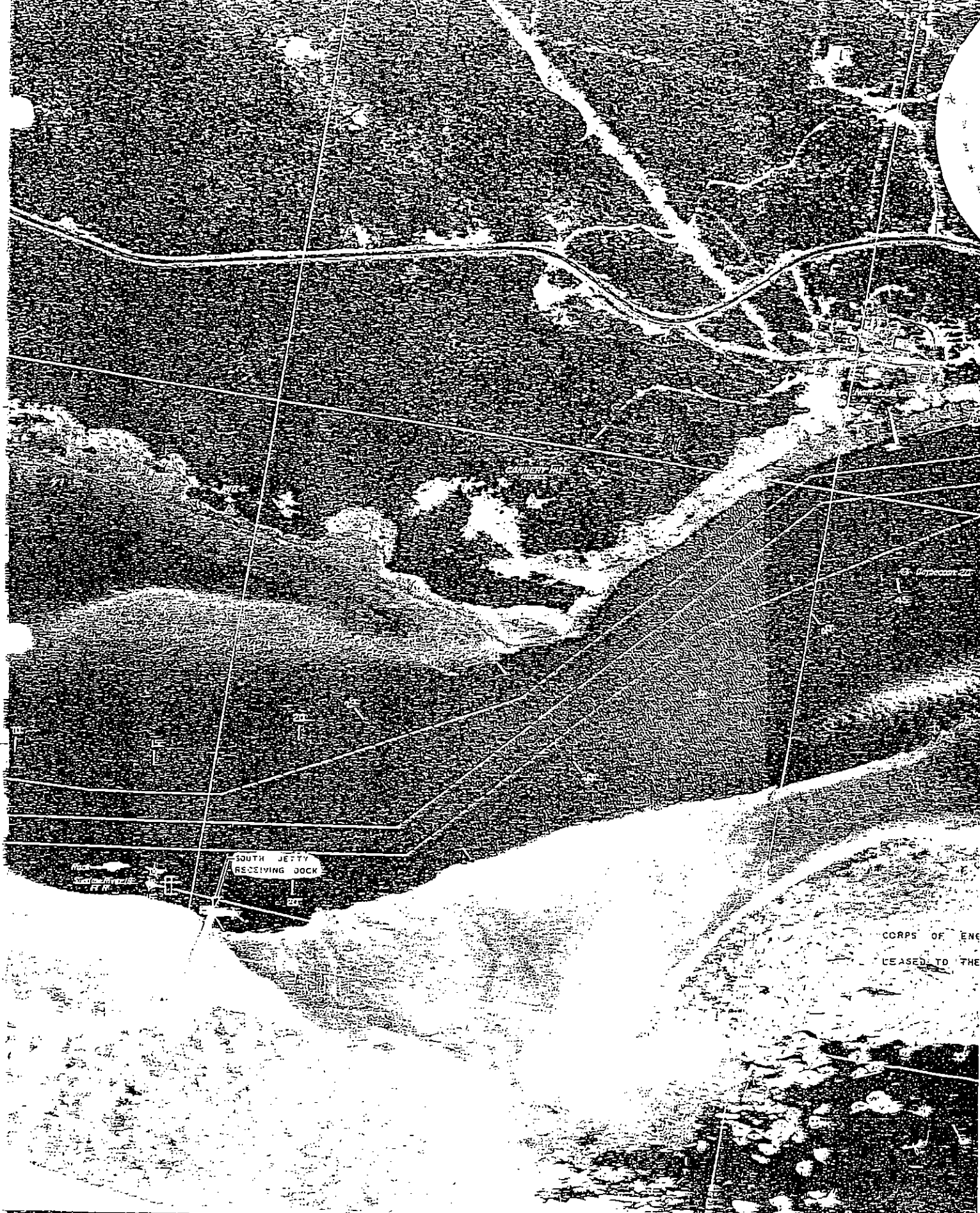
**NOTES**

Photography was taken on 18 May 1963.  
Control is by ISACE and USC 1 G3  
Contours are Green State Four Cont.  
Airs to navigation are shown as located at date of survey.  
Reference is USC 8 75 Chart No. 3022.  
Distance 1 mile from Inshore is shown 1963.  
Data to be plotted shown only.   
Magnetic declination values to use 1963.

Access route with site number 1 will be across Lane County property  
and Corps of Engineers property commencing in the vicinity of the South  
City Accessing Gate

DESIGNED:	
DRAWN:	
CHECKED:	
PREPARED:	
SUPERVISED:	
CHIEF ENGINEER AND MAJOR:	
ENGINEER:	
CHIEF PLANNING ENGINEER:	
RECOMMENDED:	

U.S.A.I.  
132



SOUTH JETTY  
RECEIVING DOCK

CORPS OF ENGINEERS  
LEASED TO THE

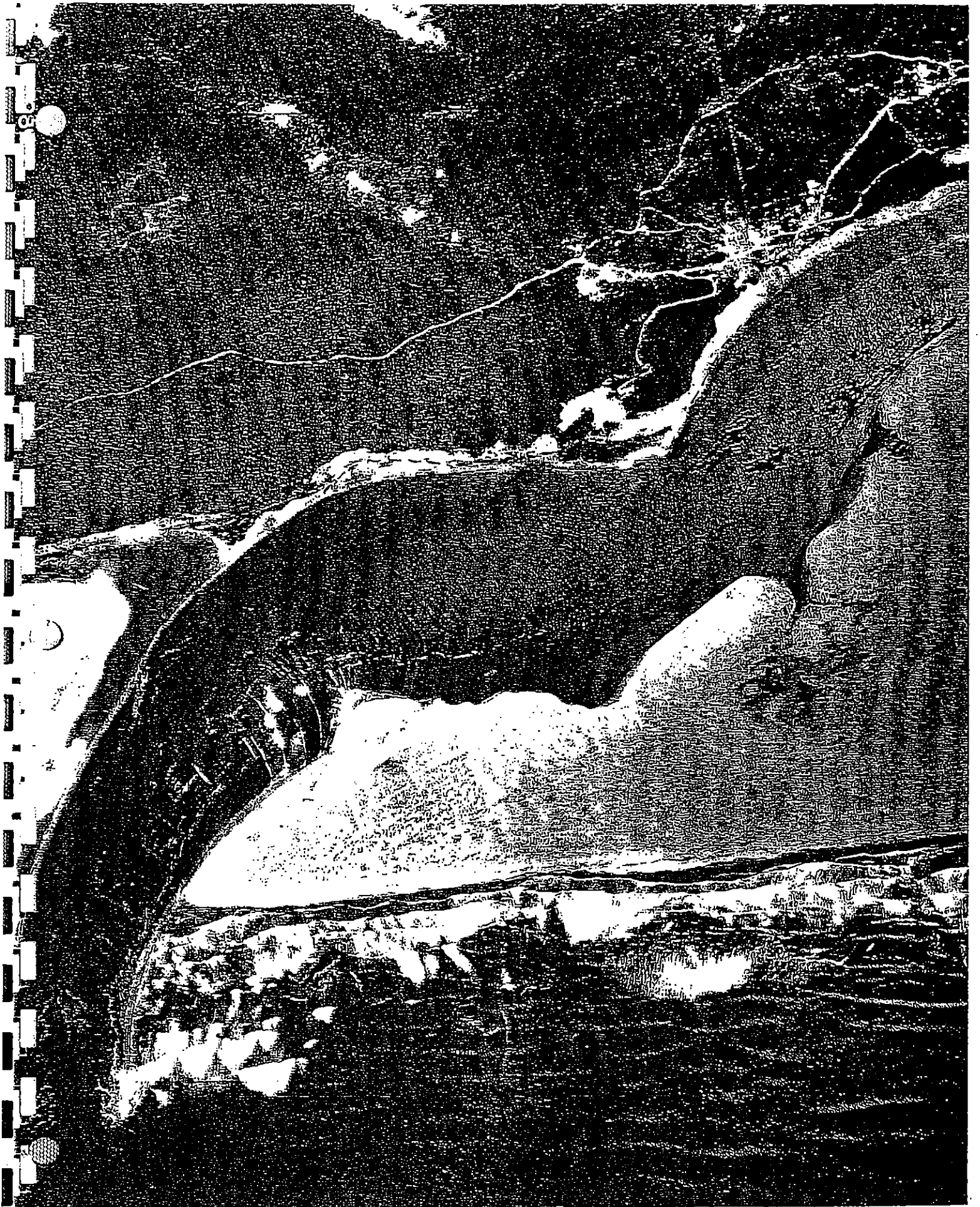


Photo 1 US Army Corps of Engineers photo - Illustrating conditions of the Siuslaw in 1939. Red dotted line denotes erosion study area.



SHELTER COVE EROSION

Winter Season -1992/1993





Photo 2 (Taken in 1991)

Lower Siuslaw River estuary, Lane County, Oregon. Shelter Cove subdivision erosion area outlined in white. Photo 2



Photo 3 by Wilbur E. Ternyik August 1991

Aerial photo looking east at Siuslaw River entrance to lower bend of river. Entire lower stretch subject to off shore wave surge. Note eroded areas 1 and 2 north of deteriorated north jetty.



Photo 4 by Wilbur E. Ternyik August 1991

Aerial view looking southeast towards Hurst property erosion site (3). Note Corps of Engineers installed groins (4) on south side of river directing river channel flow to north bank. Erosion site subject to ocean storm wave surge and southwest winter waves over completely deteriorated jetty.



Photo 5

by Wilbur E. Ternyik

August 1991

Location: North bank of the Siuslaw River looking east from deteriorated jetty. Note sand bank devoid of vegetation due to wave erosion at the base of the slope and wind erosion on the face. Planned *Ammophila arenaria* planting will stop the bank surface erosion.



Photo 6

by Wilbur E. Ternyik

August 1991

North bank of the Siuslaw River. Illustrating severe wind erosion and sloughing as a result of river erosion at the toe of the slope. Face of erosion slope is currently the Corps of Engineers property.

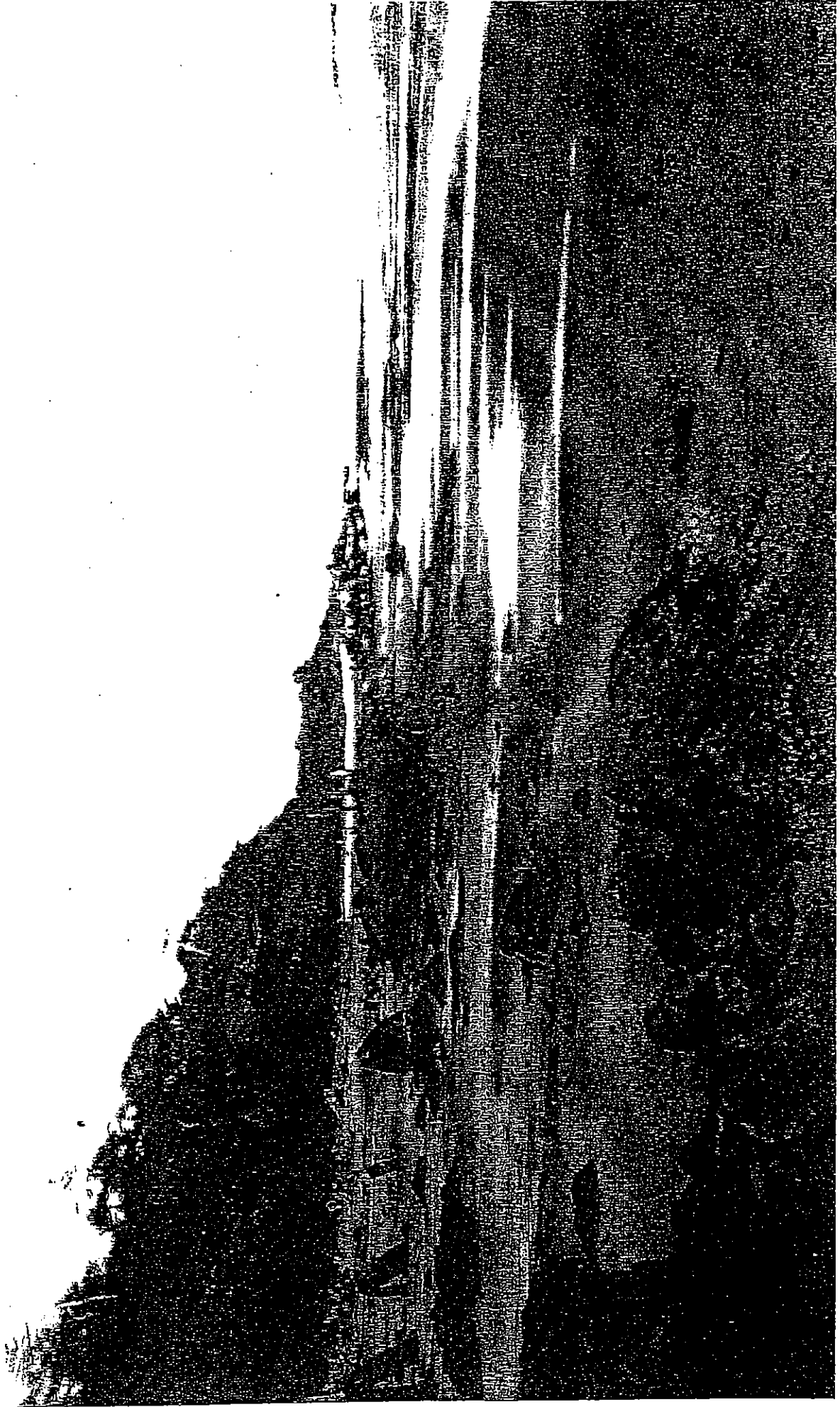
Photo 7 by Wilbur E. Temyik 1992



Photo 8

by Wilbur E. Ternyik

1992



Location: Shelter Cove, another illustration of the continued deterioration of the jetty.



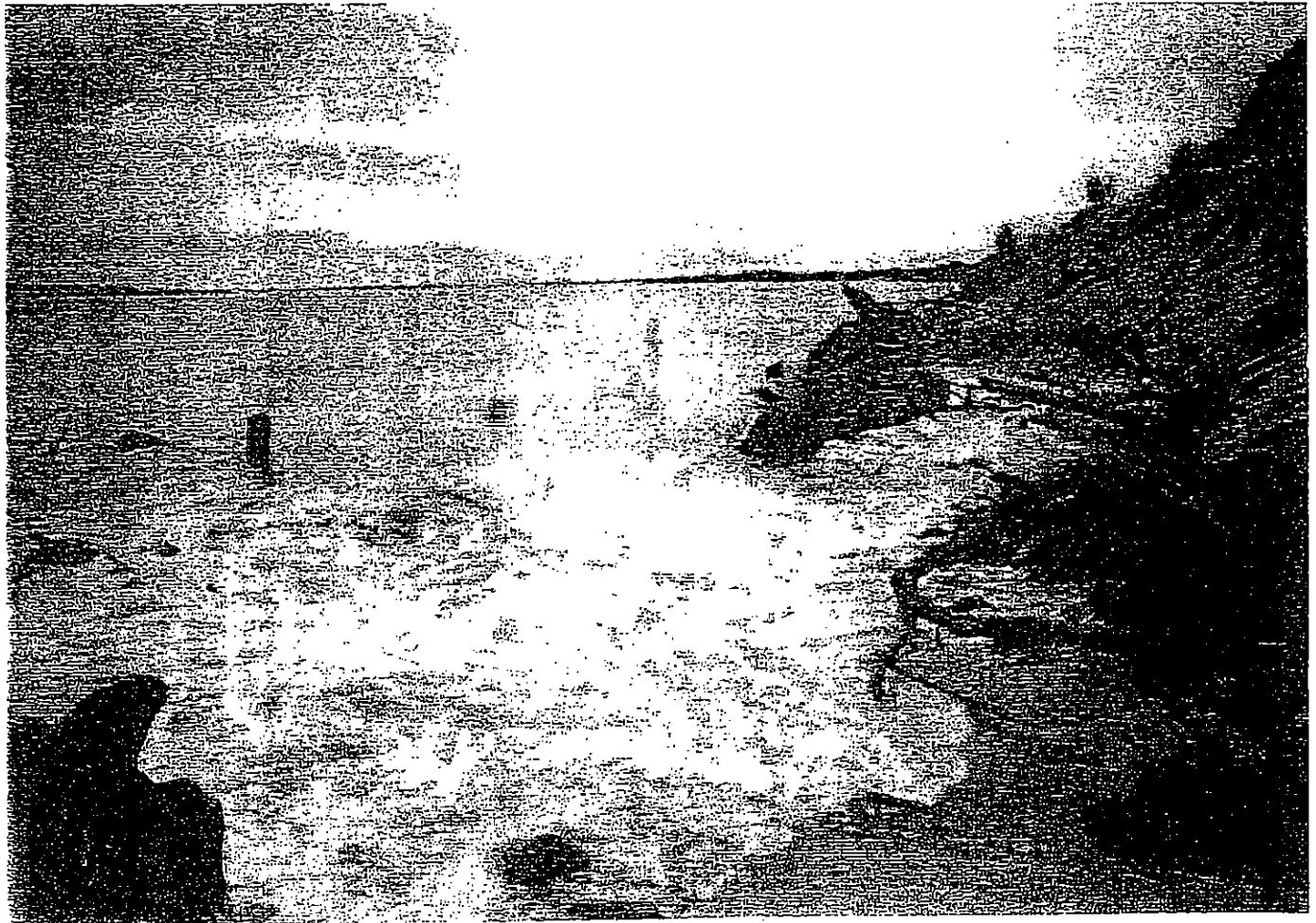
Photo 9 by Wilbur E. Ternyik 1992



Location: Shelter Cove, north erosion area, illustrating large erosion scarp. It continues to pose a threat to Lane County Harbor Vista Park facilities to the north.



Location: Shelter Cove, north erosion area south end. Illustrating severe toe of the slope erosion caused by ocean wave surge.



SHELTER COVE EROSION

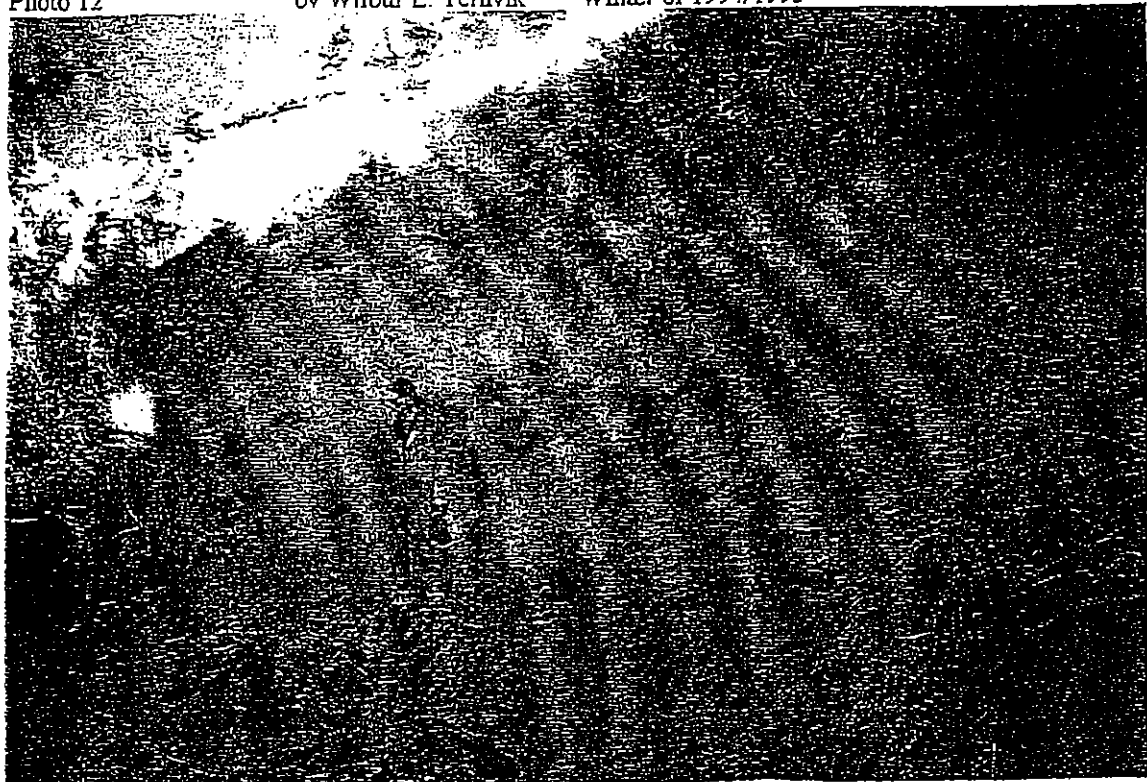
Winter Season - 1994/1995



Photo 12

by Wilbur E. Ternvik

Winter of 1994/1995



Location: Shelter Cove lower slope erosion caused by wave action and super saturation sand flows.

Photo 13

by Wilbur E. Ternvik

Winter of 1994/1995



Location: Shelter Cove, further evidence of annual massive erosion at the toe of the slope next to estuary shoreline.

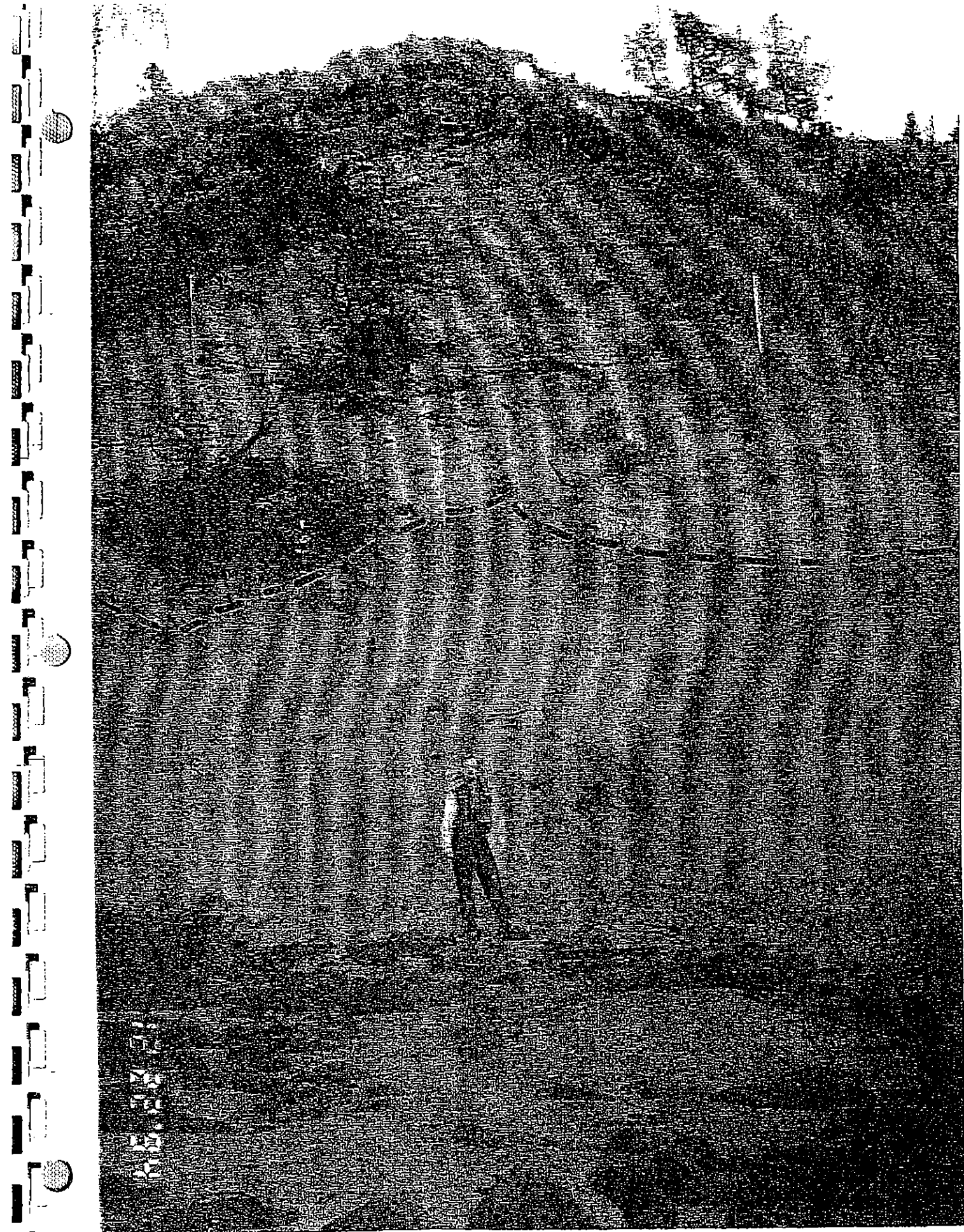


Photo 14 by Wilbur E. Terryik Winter 1994/1995  
Shelter Cove, looking east at erosion slope fronting Lot 23. Note massive one-year erosion process caused by unprotected toe of the

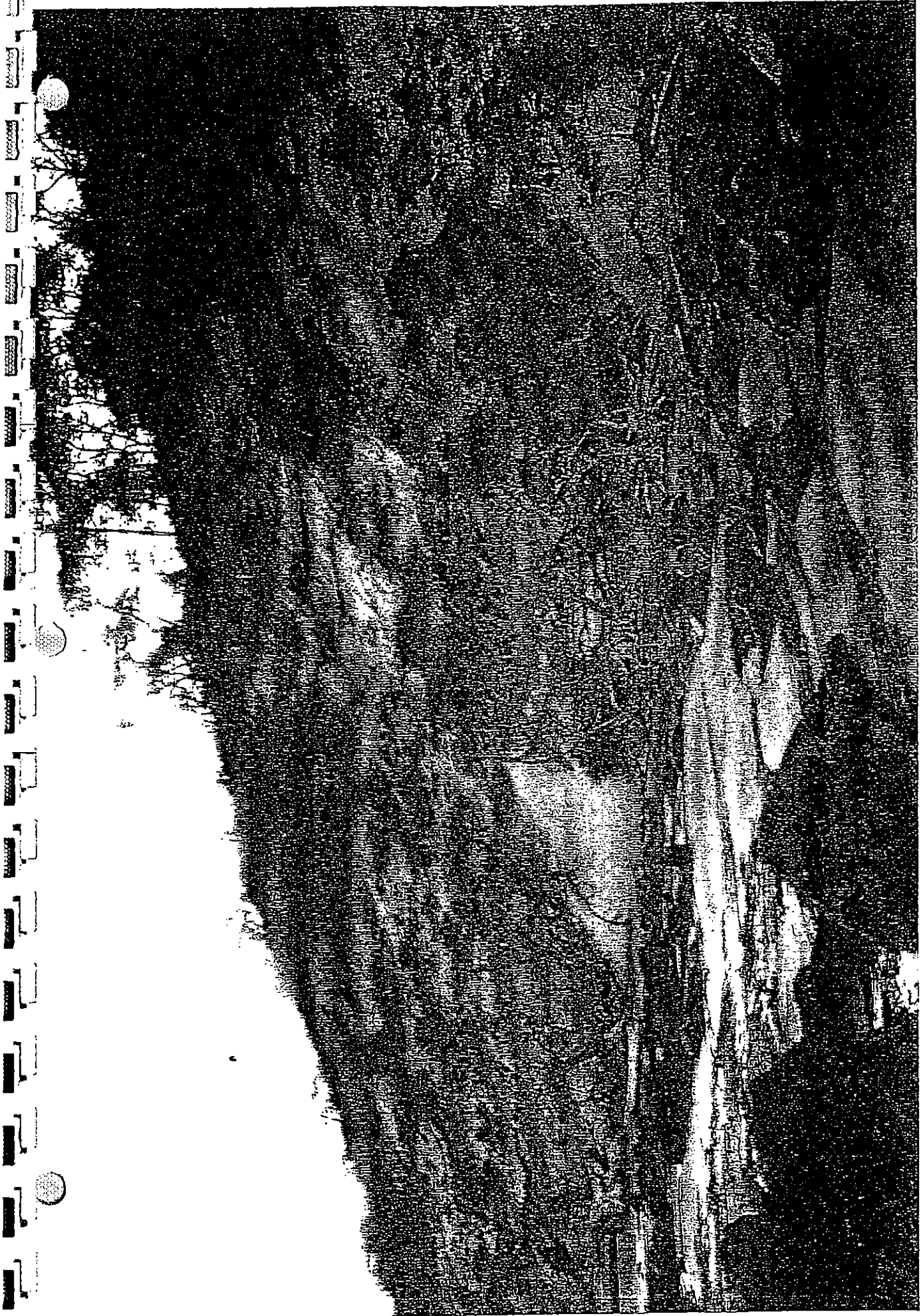


Photo 15 by Wilbur E. Terryk - Winter 1994/1995 - Shelter Cove, again looking east at slope failure caused by storm wave attack to the toe of the slope.





Photo 16 by Wilbur E. Temyik - Winter 1994/1995 - Shelter Cove, looking from deteriorated jetty to bank. Note loss of beachgrass planting shown by bare sand area after storm wave attack.



Photo 17 by Wilbur E. Temyik - Winter 1995\1996 - Shelter Cove, looking north over erosion area prior to use of massive root mat applications on bank face.

SHELTER COVE EROSION

Winter Season - 1995/1996



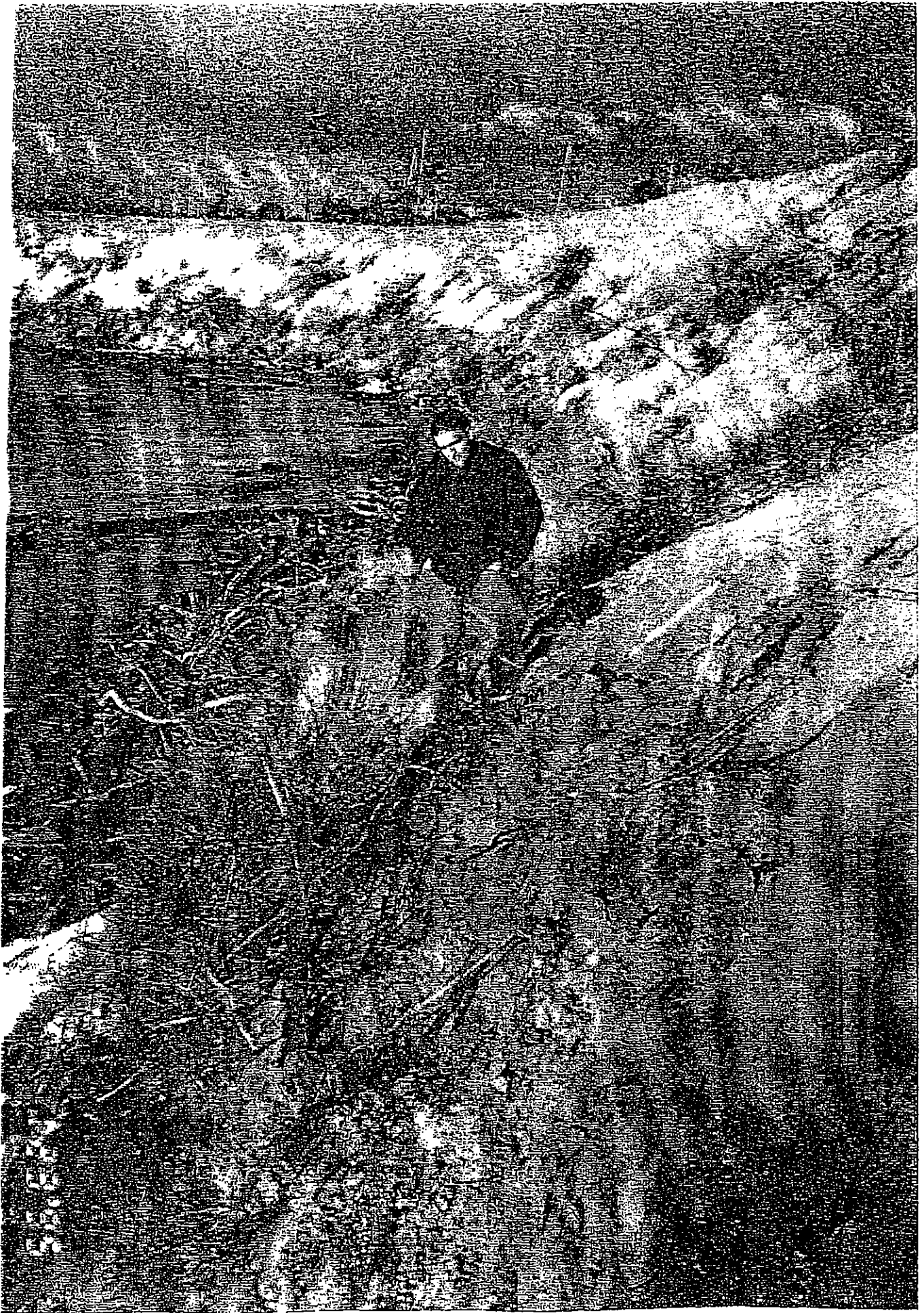


Photo 18 by Wilbur E. Ternyik - Winter 1995/1996 - Shelter Cove, looking north at Matt Ternyik near upper bank slope failure due to the toe of the slope wave and water saturation erosion.



Photo 19 by Wilbur E. Ternyik - Winter 1995/1996 - Shelter Cove, again Matt Ternyik illustrating lower bank slope failure from water exiting about 12 feet above the toe of the slope causing liquefaction. This is a direct result of agency directive not allowing development surface water to be tight-lined to the toe of the slope.



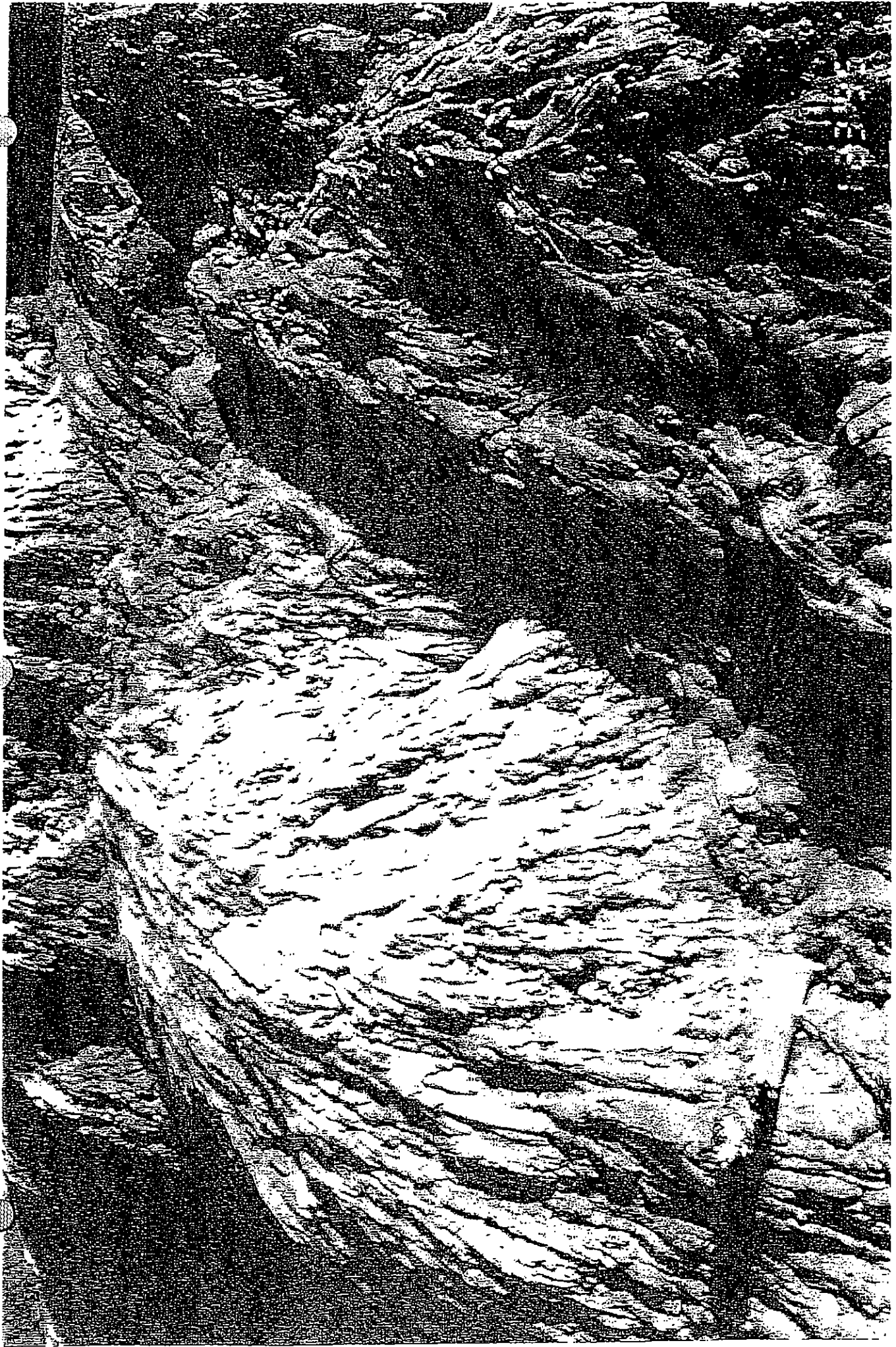


Photo 20 by Wilbur E. Terryik - Winter 1995/1996 - Shelter Cove, looking east into bank of super saturation flow at the toe of the slope, in north erosion area. Ground water escaping from impervious iron sandstone layer is the cause of the flow.

SHELTER COVE EROSION

WINTER SEASON - 1998/1999



Photo 21 by Wilbur E. Terryik Winter 1998/1999

... ..



Photo 22 by Wilbur E. Ternyik Winter 1998/1999  
Shelter Cove, with Matt Ternyik surveying the massive ongoing slope failure. Caused by super saturation and wave erosion of the toe of  
the slope





Photo 23 by Wilbur E. Ternyik Winter 1998/1999 - Shelter Cove, further illustration of water caused super saturation slope



5 2 299

Photo 24 by Wilbur E. Ternyik Winter 1998/1999 Shelter Cove, illustrating both super saturation and wave erosion areas below the northwest lots. Note tree stump: evidence of previous earthquake subsidence event

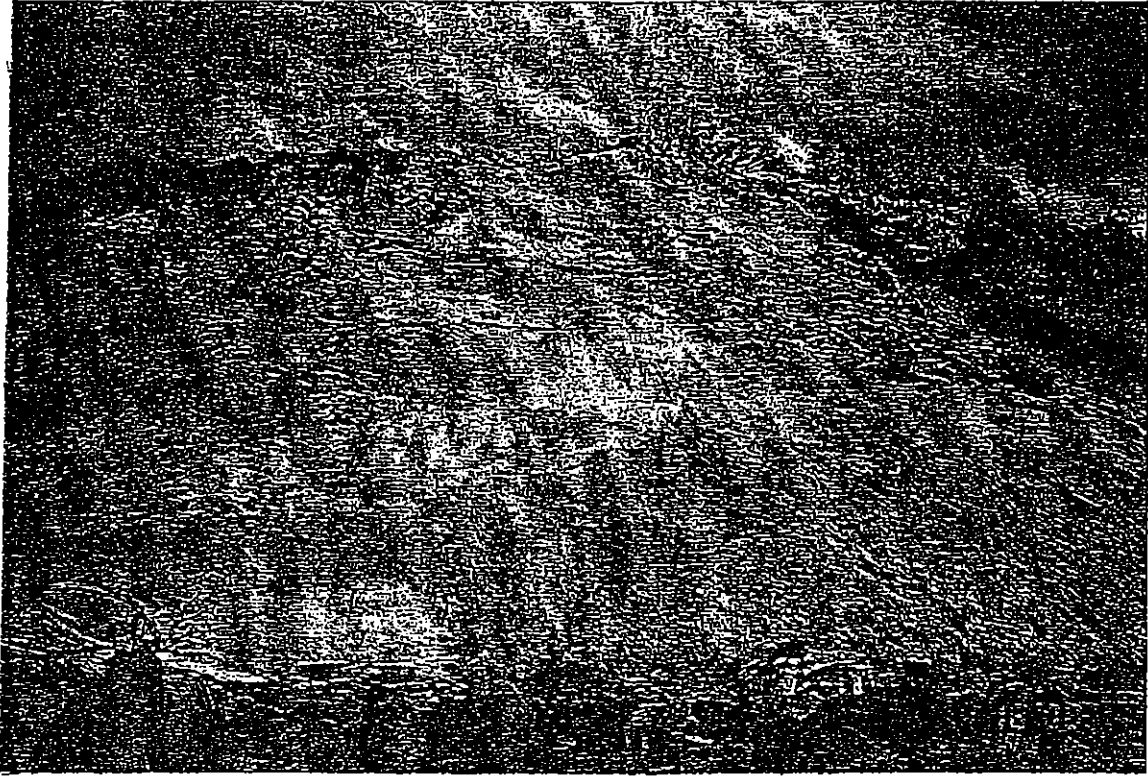
SHELTER COVE EROSION

Winter Season - 1999/2000

Photo 25

by Wilbur E. Ternyik

Winter of 1999/2000



Location: Shelter Cove, more massive slope failure caused by toe of the slope erosion.

Photo 26

by Wilbur E. Ternyik

Winter of 1999/2000



Location: Shelter Cove, looking northwest at continuous slope failures. The sand measuring in the thousands of yards deposits in the sandstone estuary cove, smothering the benthic community and clambeds.



SHELTER COVE EROSION

2001



Location: Shelter Cove Phase II, riverfront lots with slope failure caused by the toe of the slope erosion.

**AN EVALUATION OF EFFECTS OF SEVERE BANK EROSION ON  
THE BENTHIC MACROINVERTEBRATE COMMUNITY AND  
GENERAL HABITAT CONDITIONS NEAR SHELTER COVE  
SIUSLAW RIVER ESTUARY, OREGON**

Prepared for:

Hurst Companies of Oregon, Inc.  
56 Spyglass Lane  
Florence, OR 97439

Prepared by:

Robert H. Ellis, Ph.D  
Ellis Ecological Services, Inc.  
20988 S. Springwater Rd.  
Estacada, Oregon 97023

October, 2001

## EXECUTIVE SUMMARY

The Coastal Goals, specifically Goal 16, require that estuary management units be designated natural, conservation, or development. Within management Area C (zoned natural) in the lower Siuslaw Estuary, a small cove has developed since the late 1930s on the inside of the north jetty adjacent to the Shelter Cove bluffs. The cove has grown through time as erosion of the sand bluffs has moved the toe of the sand bluffs further inland. During the last 15 to 20 years, erosion of the bluffs has accelerated and sand from the bluffs has blanketed much of the unique siltstone outcrop offshore from the bluffs. This sand blanket has smothered most of a large piddock clam bed, which was described as one of the unique natural resources within Area C. Continued erosion of the sand bluffs is threatening homes, utilities, and streets within the Shelter Cove subdivision on top of the bluffs. A plan to stop the bank erosion through riprapping the base of the bank and using revegetation techniques to stabilize the upper portions of the banks has been recommended. However, the placement of rock riprap is not permitted in an area zoned natural.

A change in the zoning from natural to conservation would allow the use of rock riprap. The cove adjacent to the Shelter Cove bluffs lies on the inner side of the inner north jetty. Two other small coves located on the inner side of the north jetty just west of Shelter Cove (Area B) were classified as a conservation management district after a site-specific study of the area was conducted in 1980. An initial inspection of the area between the inner jetty and the Shelter Cove bluffs (hereafter referred to as Sub-Area C1) indicated that few of the attributes used to classify Area C as a natural management district appeared to be present in Sub-Area C1. In May 2001, a more detailed survey was conducted to provide quantitative information regarding the natural resource conditions within Sub-Area C1. Quantitative benthic macroinvertebrate samples were collected from sandy substrates within as well as from outside of Sub-Area C1. In addition, a qualitative survey of conditions within both Area C and Sub-Area C1 was conducted to characterize existing habitat conditions. Results of the May 2001 studies indicated the following:

1. Sub-Area C1 contained significantly ( $P < 0.05$ ) lower numbers and fewer taxa of benthic macroinvertebrates than nearby control sites (zoned natural) on the outside of the jetty. However, no significant difference was found in total number of benthic organisms or total number of taxa when sample data from Sub-Area C1 were compared with sample data collected from Area B (zoned conservation).
2. Abundance of salmonid food organisms in the benthic samples was low in all areas but lowest in Sub-Area C1.
3. Inspection of siltstone outcroppings within Sub-Area C1 revealed that very few benthic organisms were present on the siltstone. No evidence of living piddock clams was found.
4. No eelgrass was present within Sub-Area C1.
5. No seal haul out area was observed within Sub-Area C1.

Based on the survey results, the natural resource conditions present in Sub-Area C1 do not warrant the natural classification. Sub-Area C1 more closely resembles the conditions present in Area B, which is zoned conservation. Inclusion of Sub-Area C1 into Area B would be consistent with previous zoning of coves isolated by the inner jetty along the north side of the estuary. The results of this study support the rezoning of Sub-Area C1 from natural to conservation.

We noted during this study that there has been a rapid reduction in the sand shoal that until recently blanketed the siltstone outcropping offshore from the Shelter Cove bluffs. This reduction appears to be a response to the unusually mild winter conditions and low river flows which prevailed during the winter of 2000-2001 and the spring of 2001. These unusual conditions greatly reduced the rate of bank erosion at the bluffs. This has apparently allowed tidal currents and wave action to remove much of the sand shoal during the course of the spring and summer of 2001. These unusual conditions demonstrated how quickly the sand shoal can be removed if the major source of sand is removed. The recent exposure of the siltstone habitat is expected to be short lived as winter weather and winter river flow conditions return to normal. If the bank erosion could be stopped, the unique siltstone habitat would likely be re-established in a short period of time. Piddock clams, which were abundant when Area C was established, would likely recolonize the exposed siltstone within a short period of time since remnant populations of two species of piddock clam still occur in a small part of the siltstone outcrop.

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## APPENDICES

APPENDIX A -PHOTOGRAPH LOG

APPENDIX B - BENTHIC MACROINVERTEBRATE SAMPLE DATA

## INTRODUCTION

The Siuslaw River Estuary was zoned in 1980 into natural, conservation, and development management districts following Statewide Planning Goals and Guidelines Sections 16, 17, 18 and 19 for Coastal Resources. The lower 1.5 miles of the estuary was divided into natural and conservation districts as shown in Figure 1. Determination of whether an area belonged in the natural or conservation category was based, in part, on a resource inventory conducted in 1978 (Wilsey & Ham 1978). An area designated as "natural" was considered to contain unique natural resource qualities and was provided the highest level of protection from human development. An area designated as "conservation" provided for the long-term use of the estuary's renewable resources in ways that do not require major alteration of the estuary. Area C (Figure 1) was zoned natural and extends along the north side of the Siuslaw River channel from approximately river mile (RM) 0 +3700 to Cannery Hill at RM 1 + 00. Rationale given for the natural designation of Area C were:

- Fish rearing (particularly fall chinook juveniles) and spawning;
- Seal haulout at upriver portion;
- Clam beds with species found only at this salinity level (i.e., piddock, gaper, cockle, and littleneck) predominately outside of jetty;
- Seagrass and algae beds predominately in Piddock Bay area;
- Area of high quality habitat with unique consolidated substrate; and
- Low-intensity recreational potential.

The shoreline slope adjacent to the central portion of Area C (Figure 1) is a 65- to 85-ft high sand bluff that is undergoing massive erosion. The Shelter Cove subdivision is located along the top of the bank. Historic photographs of the bluff indicate that most of the erosion at this location has occurred since the late 1930s. Between 1980 and the present, the bank erosion has accelerated and large quantities of sand have been washed onto the estuary floor. Two large "cusps" have formed in the bank where the erosion is taking place. As will be discussed below, the bank erosion appears to be the result of changes in the estuary brought about by human actions.

The accelerated deposition of sand on Area C since the mid 1980s has altered ecological conditions by covering the majority of a unique outcropping of siltstone with a thick layer of sand. Most of the exposed siltstone was located riverward from the remnants of the inner jetty (Figure 1). The siltstone provided a stable and variable surface, which was used by piddock clams and many other benthic invertebrates and fishes (Ternyik pers com. August 2001). If the bank erosion is allowed to continue, this component of the unique resource values of Area C could be lost permanently.

The bank erosion is threatening roads, utilities, and homes in the Shelter Cove subdivision. Several attempts to stabilize the bank with plantings of vegetation have failed. Placement of rock riprap at the toe of the bank in conjunction with revegetation of the upper portions of the bank appears to be a viable solution for preventing further



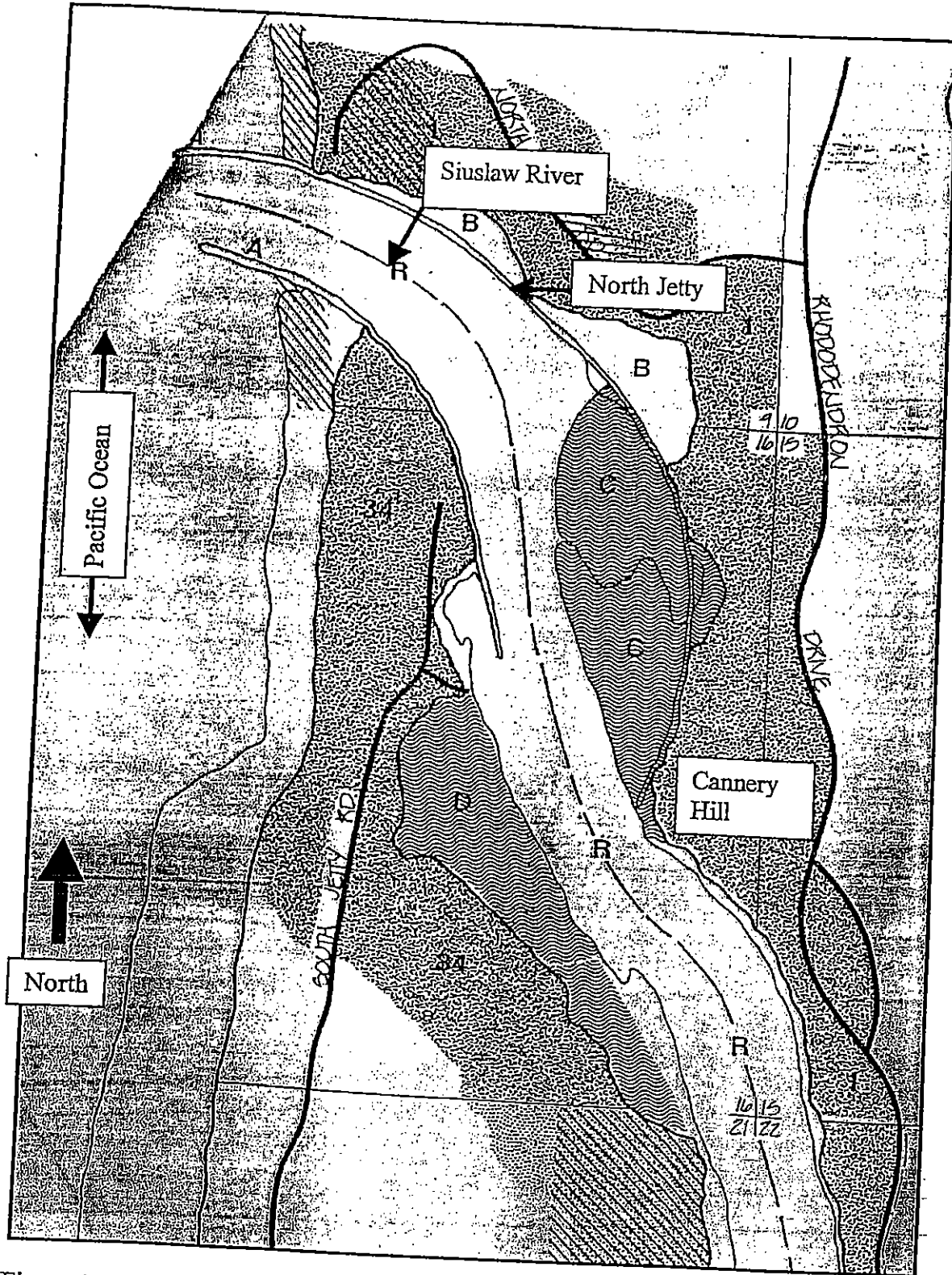


Figure 1. Study Area showing natural zones C and D and conservation zone B in the lower Siuslaw River Estuary near Florence, Oregon.