STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
Suite 965, 800 NE Oregon St., #28
Portland, Oregon 97232

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EXPLANATION OF

CHRONIC GEOLOGIC HAZARD MAPS AND EROSION RATE DATABASE, COASTAL LINCOLN COUNTY, OREGON: SALMON RIVER TO SEAL ROCKS

Prepared by
George R. Priest, Ingmar Saul, and Julie Diebenow
Oregon Department of Geology and Mineral Industries
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INTRODUCTION

This report explains how to use and interpret the nineteen 1:4,800 (1" = 400')-scale geologic hazard maps (Open-File Reports O-94-12 to O-94-30) and a digital erosion rate database (Appendices 2 and 3; enclosed disk) that cover the 31 miles of the Lincoln County coastline from the Salmon River on the north to Seal Rocks on the south. The maps depict the shoreline geology and the chronic hazards of mass movement (rock toppling, landslides, slumps, and soil or rock flows) and shoreline erosion on photographic base maps (see Figures 1a and 1b for map locations). The database lists estimated erosion rates and other information at a series of points spaced approximately 150 ft apart along the shoreline.

The data were collected by the Oregon Department of Geology and Mineral Industries (DOGAMI) during 1991-1993 investigations supported by the Federal Emergency Management Administration (FEMA) as a pilot study of coastal erosion rates for the National Flood Insurance Program. This initial pilot study was expanded to include map depiction of shoreline geology and slope stability (mass wasting) hazards with support from the Department of Land Conservation and Development (DLCD) under the auspices of the National Oceanographic and Atmospheric Administration (NOAA) Coastal 309 program. The FEMA study was aimed at developing criteria for implementing Section 544 (Upton/Jones Amendment) of the National Flood Insurance Act, which allows payment of flood insurance claims for undamaged structures that are threatened by erosion and subject to imminent collapse. DLCD is interested in use of the erosion and slope stability data for land use planning. Results of the study were reported in DOGAMI Open-File Report 0-93-10 (Priest and others, 1993). This report replaces and updates the erosion rate data from that early report.

A brief explanation of the maps and database is given below. A more technical explanation of the mass movement (landslides, etc.) hazards and the erosion rate database is given in Appendix 1. Explanation of the file formats and individual data field abbreviations in the digital erosion rate database are given in Appendix 2 and an abbreviated version of the erosion rate database is given in Appendix 3. The enclosed digital disk has the full database, including a number of fields with geology and geomorphology at each transect.

METHODOLOGY

EROSION RATES

Introduction

Shoreline positional change toward land (erosion) is indicated by negative rates in feet per year; positive numbers indicate change toward the sea (accretion). All erosion rates are for the bluff or sea cliff top. Erosion rates for active or potentially active sea cliff landslides and slide blocks are for the headwall (top edge of the stable bluff behind the landslide or slide block). No rate of erosion is estimated for the headwall areas of prehistoric landslides or slide blocks.

Estimation of erosion rates for non-bluffed shorelines (spits and dune-backed beaches) requires special oceanographic data that are beyond the scope of this study. Non-bluffed beaches or other areas without erosion rate data have "NO DATA" listed for the rate.

Areas with shoreline protection structures (riprap, sea walls, etc.) probably have erosion rates near zero until the structures fail (see maps for location of these structures), but the detailed engineering analysis needed to

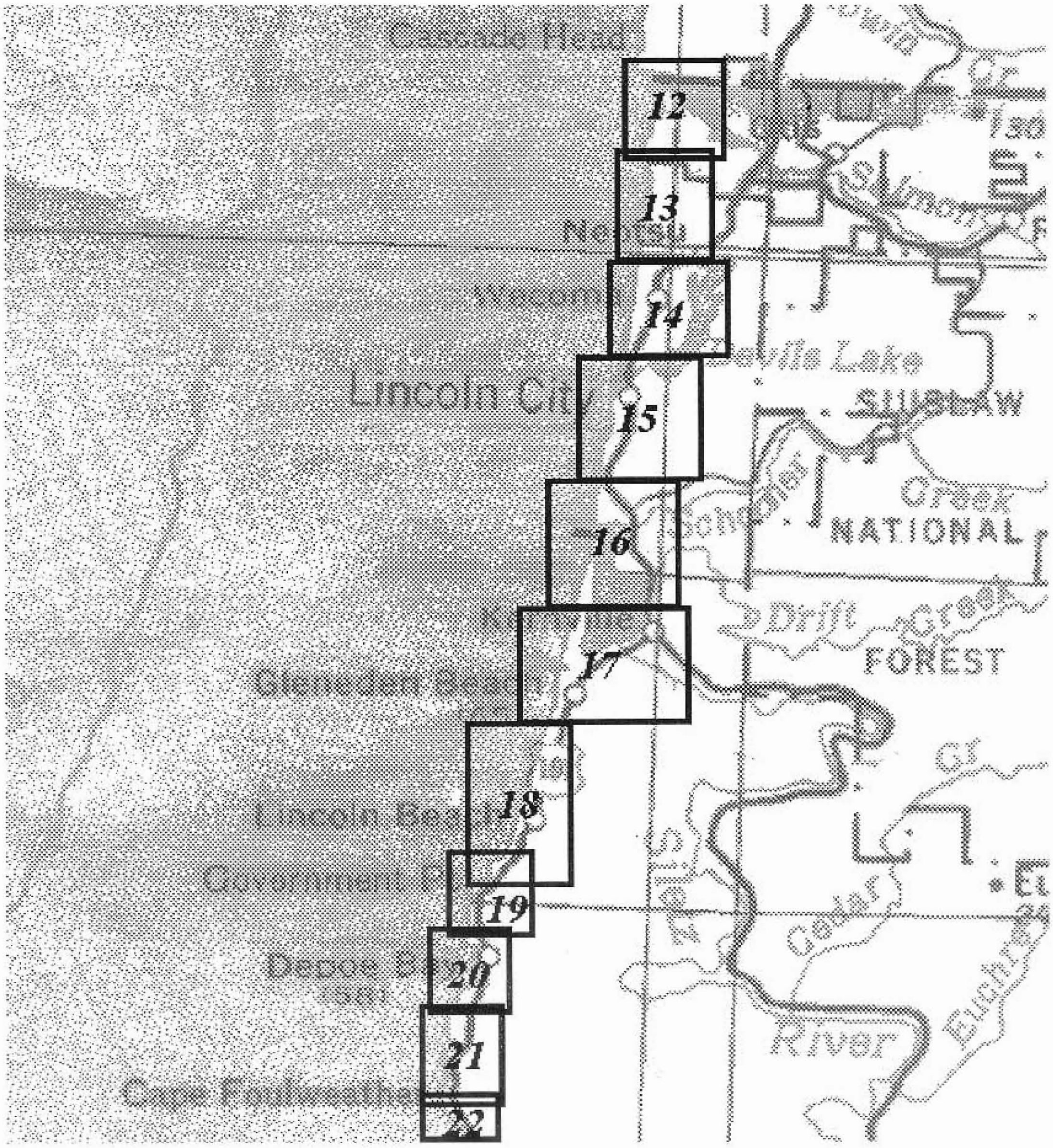

Figure 1a

Map index to geologic hazard maps. Numbers are the last number in the DOGAMI Open-File Report series O-94-12 through 22.

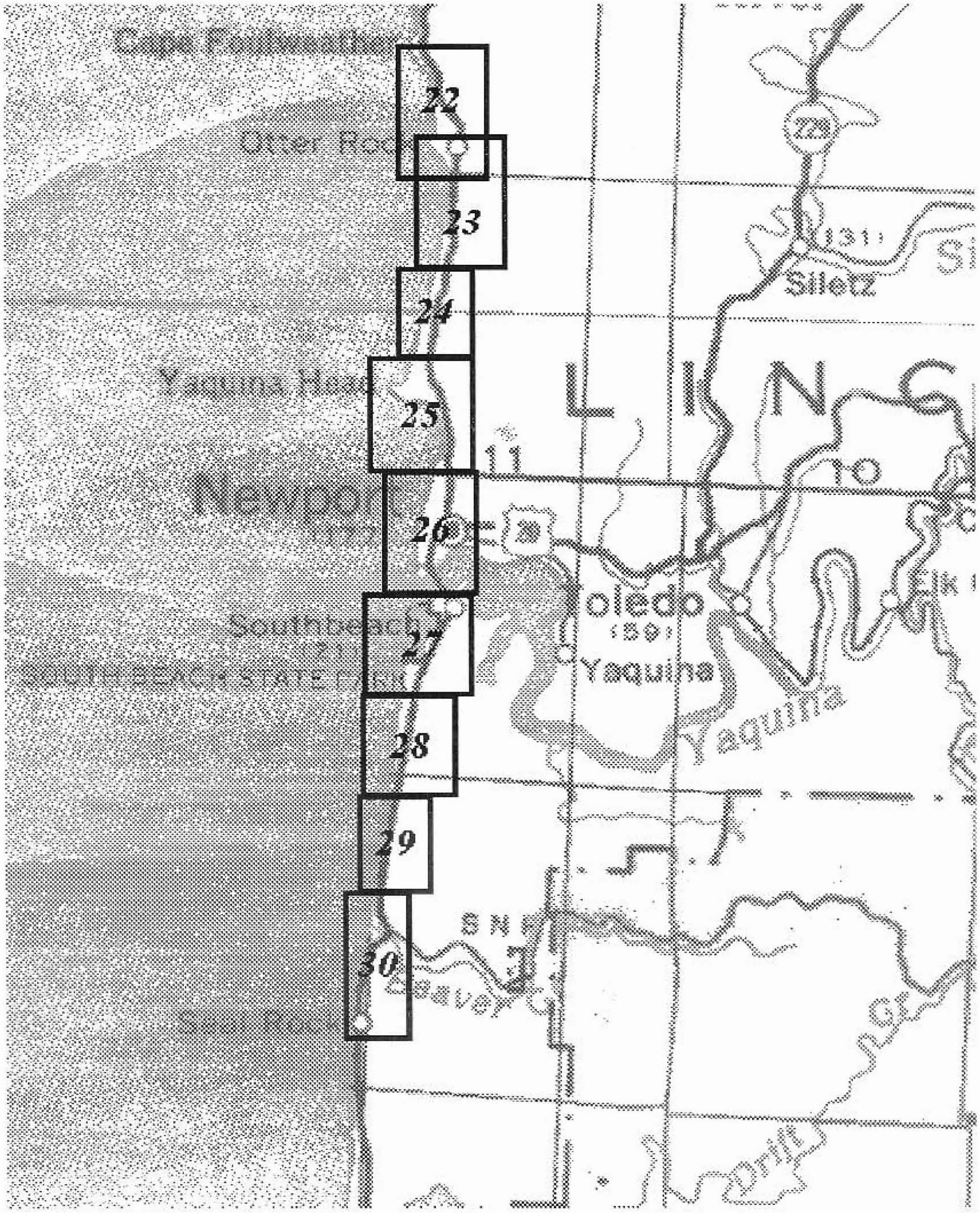

Figure 1b

Map index to geologic hazard maps. Numbers are the last number in the DOGAMI Open-File Report series 0-94-12 through 22.

predict the likelihood of failure was beyond the scope of this study. Shoreline protection structures are indicated on the maps and in the database. The database shows a blank field for erosion rates in these areas.

Generalized Erosion Rates on the Maps

Arrows drawn on the maps perpendicular to the shoreline demarcate segments of similar erosion rate. These generalized rates are listed on the maps. An approximate mean rate is in parentheses. The range of rates is listed below the mean rate for each segment. The range of rates at the 68 percent level of confidence is listed for bluffed beaches and headlands (see Appendix 1 for more information on the interpretation and calculation of error in the rates).

Erosion Rate Transects and Database

Tick marks shown along the shoreline are places where erosion rates were estimated for the accompanying database (Appendix 3; digital database). This rate database was developed to meet the requirements of the FEMA flood insurance program and to provide tabulated digital data for those users needing it. The database lists the rates and information concerning where and how rates were measured. Transect location in State Plane coordinates (NAD27), open-file report number of the hazard map at the transect, geography, geology, geomorphology, and presence or absence of shoreline protection structures at each transect are also given (see Appendix 2 for a summary of the database fields).

Individual rates calculated from measuring differences between a current house-to-bluff distance and the same distance on a 1939 or 1967 vertical aerial photo are given in the "HOUSE/BLUFF" column. Individual rates calculated from analysis of differences in position of the bluff top on the 1868 topographic map (T map) of the Newport area to 1990 aerial photos are given in the "1868 BLUFF" column. The house-to-bluff and 1868-1990 rates are most of the data used for the generalized rates in the "BEST_FT/YR" column. The rates in the "BEST_FT/YR" column of the database are the same as the generalized mean rates shown in parentheses on the hazard maps, except that the database rates are shown to two decimal places whereas the maps generally show one decimal place. See Appendix 1 or Priest and others (1993) for a full explanation of the methodology, error analysis, and technical use of the erosion rate data.

Landslide Erosion Rate

Because deeply penetrating landslides and slide blocks generally move in discreet episodes separated by long periods with no erosion, generalized rates in these areas could be measured accurately only where the headwall position could be tracked for a 100 years or more. This limited direct measurement of these erosion rates to the Moolack Beach-Newport area, where there was coverage from the 1868 T map. Rates in that area were derived from comparison of landslide headwall change from the 1868 T map to modern aerial photos. For long shoreline segments with the same erosion rate, that rate was listed on the maps and in the "BEST_FT/YR" column of the database. For areas with a common geology but highly variable local rates of change, a mean rate, weighted for the amount of shoreline affected by each local rate, is listed in the "BEST_FT/YR" column of the database and on the maps. The mean rate of -1.4 ft/yr at Newport and -1.6 ft/yr at Moolack Beach were derived in this way. A weighted mean rate of erosion was calculated for all areas of the 1868 T map that also appeared to have suffered erosion primarily by landsliding. This overall mean of -1.2 ft/yr was assigned to areas not covered by the 1868 T map but with an analogous tendency to erode by landsliding.

CRITERIA FOR ASSIGNING AGE AND ACTIVITY LABELS TO MASS MOVEMENTS

Introduction

Mass movement is natural downslope displacement of the land surface. It occurs by a process called mass wasting which refers to downslope transport of soil or rock by gravity. Rock falls, landslides, flows of soil or rock, and displacement of large blocks (slide blocks or slumps) are all forms of mass wasting.

Prehistoric Mass Movements (PHls, PHb, PHf)

Many of the largest landslides and slide blocks appear to be prehistoric (older than about 150 years for historical observations on the Oregon coast). They are deeply eroded and have no evidence of recent activity. Many sea cliffs with active landslides and slide blocks are surrounded by larger prehistoric slide blocks and slumps. The Jumpoff Joe landslide in Newport (Open-File Report O-94-26) and the northern end of the Moolack Beach landslide complex (Open-File Report O-94-25) are particularly good examples. These areas illustrate that, in the prehistoric past, slide blocks and slumps much larger than the modern ones have become unstable. Unusual amounts of rainfall, a large earthquake, removal of material supporting the base of the slope, or some combination of these factors may have caused these mass movements.

Potentially Active Mass Movements (PAls, PAb, PAf)

A number of areas have mass movements that are currently stable (no bowed trees or cracked soil and pavement) but with evidence of recurrent movement in the last 150 years. Unlike the prehistoric slides, these features are generally not extensively eroded and have well-preserved topography indicative of recent movement. Many show no evidence of movement since 1939 or 1967 aerial photography but are probably more likely to have movements than the prehistoric slide areas.

Active Mass Movements (Als, Ab, Af)

These areas have evidence such as bowed trees and cracked soil or pavement that indicate ongoing downslope movement of large masses of soil or rock.

SHORELINE GEOLOGY

Formation names are taken from Schlicker and others (1973). Contacts (boundaries) between differing rock and soil types were mapped in the field in 1991, 1992, and 1993 and are shown on the maps at the shoreline and for variable distances inland. The distance inland varies because of time constraints, and, in some cases, lack of high-quality exposures necessary for detailed (1:4,800-scale) mapping.

Where highly reliable data was collected, a representative dip (inclination) and strike (trend across a horizontal surface) of rock units is depicted by a "T" shaped symbol." The top of the "T" is the strike direction; the bottom of the "T" points in the direction of dip. The number of degrees of dip is shown near the base of the "T."

Also shown are some of the larger fault zones with the dip, strike, and slip direction, if possible. In two cases the 80,000-year-old Pleistocene marine terrace was offset by youthful faults, one at Fogarty Creek and one at Fishing Rock near Lincoln Beach. The number of feet of vertical displacement of the marine terrace in these two areas is shown in parentheses next to the mapped fault traces (Open-File Reports O-94-18 and O-94-19).

MAP SYMBOLS

MASS MOVEMENT (LANDSLIDES, SLUMPS, SOIL OR ROCK FLOWS, ROCK FALLS)

PHls (Prehistoric complex landslide) refers to a typical complex landslide that is currently stable but probably formed in prehistoric times (>150 years ago).

PHb (Prehistoric slide block or slump) refers to a block of rock that moved downslope in prehistoric times but is currently stable.

PHf (Prehistoric rock or soil flow) refers to a flow of soil and rock that moved downslope in prehistoric times but is currently stable.

PAls (Potentially active complex landslide) refers to a typical complex landslide that is currently stable but probably had recurrent movement in the last 150 years.

PAb (Potentially active slide block or slump) refers to a block of rock that is currently stable but probably had recurrent downslope movement in the last 150 years.

PAf (Potentially active soil or rock flow) refers to a flow of soil and rock that is currently stable but probably had recurrent downslope movement in the last 150 years (none are present in the map areas).

Als (Active complex landslide) refers to a typical complex landslide that is active.

Ab (Active slide block or slump) refers to a block of rock that is actively moving downslope.

Af (Active soil or rock flow) refers to a flow of soil and rock that is currently active (none are present in the map areas).

Rock fall hazard areas are shown only where particularly large unstable sections of cliff face can fall onto high-use beach areas. Only two are mapped: one at Fogarty Creek State Park and one at on the south side of the Otter Crest resort.

SHORELINE GEOLOGY

Fill: Artificial fill of rock or soil.

Qal (Alluvium): Unconsolidated clayey silt, silt, sand, and gravel in rivers, creeks, tidal flats and estuaries.

S (Vegetated dune sand): Unconsolidated but wholly or partially vegetated dune sand. Note that non-vegetated sand is not labeled on the maps.

S + Qal (Dune-covered alluvium): Unconsolidated river or estuary gravel and sand covered at shallow depth (sea level) by dune sand.

Qc (Colluvium): Semiconsolidated mass of soil with mudstone, siltstone, or sandstone fragments.

Qmt (Marine terrace deposits): Semiconsolidated beach sand and fine-grained dune deposits with local lenses of silty claystone and conglomerate (consolidated gravel).

Tmcf (Cape Foulweather Basalt): Hard resistant basaltic lava and well-cemented fragmental basalt that forms headlands.

Tmwc (Sandstone of Whale Cove): Moderately resistant sandstone generally found between units Tmcf and Tmdb in pocket beaches.

Tmdb (Depoe Bay Basalt): Hard resistant basaltic lava and well-cemented fragmental basalt that forms headlands.

Tma (Astoria Formation): Moderately resistant sandstone and siltstone that can become unstable where beds are inclined in the same direction as a slope.

Tmn (Nye Mudstone): Moderately resistant clayey siltstone and very fine-grained sandstone that is highly unstable where beds are inclined in the same direction as a slope.

Toym (Yaquina Formation, mudstone): Moderately resistant siltstone and mudstone with minor sandstone that can become highly unstable where beds are inclined in the same direction as a slope.

Toys (Yaquina Formation, sandstone): Moderately resistant sandstone with minor siltstone that can become unstable where beds are inclined in the same direction as a slope.

Tech (Basalt of Cascade Head): Hard resistant basaltic lava and well-cemented fragmental basalt that forms headlands.

Ten (Nestucca Formation): Moderately resistant sandstone and siltstone that can become unstable where beds are inclined in the same direction as a slope.

Tib (Intrusive basalt): Hard resistant basaltic rock of a variety of ages that was emplaced as magma into cracks and fissures in the surrounding rocks.

GRAPHICAL SYMBOLS

Thin line: Approximately located contact between rock and soil units and zones of mass movement (landslides, slide blocks, etc.).

Hachured line: Contact between area of mass movement and other areas. Approximately located. Encloses a general area of mass movement of one or several ages and types (landslides, slide blocks, etc.).

Zigzag line: Zone of particularly active landslides and slide blocks. Drawn parallel to parts of the shoreline with particularly active landslides that are vulnerable to episodic loss of large amounts (>40 ft) of the headwall areas.

Thick line: Fault zone with, where measured, the dip (angle of inclination of the fault plane) in the direction of the **arrow** and the rake (angle of inclination of fault movement measured within the fault plane) in the direction of the **diamond-headed arrow**. If known, the downthrown side of the fault is indicated by a **bar and ball**. Faults at Fishing Rock and Fogarty Creek (Open-File Reports O-94-18 and O-94-19) offset the local Pleistocene (80,000-year) marine terrace. In these two areas, the amount of vertical offset on the terrace in feet is shown in parentheses.

Dotted line: Fault covered by younger geologic units.

Line with square: Boundary of slide block within larger slide block. Approximately located. Indicates the downthrown side of block within a complex slide block. The symbol is used only in the Otter Rock area (Open-File Reports O-94-22 and O-94-23) to show a complex prehistoric graben (downdropped block) developed from pulling apart of a slide block.

Mosaic of irregular lines: Area of major rock fall hazard (shown only at high-use beaches).

Parentheses: Enclose rock unit label where the unit is within a prehistoric slide block or slump. Used to differentiate the prehistoric slide block label, Phb, from the rock unit label.

Brackets: Enclose label of rock unit at the base of sea cliff where the indicated unit makes up less than about 3 ft of the cliff base. Utilized to indicate that the unit has little control on cliff erosion.

?: Indicates uncertainty about a mass movement label, generally because the area was examined only by aerial photo analysis or had ambiguous field data.

Strike and dip (small "T"-shaped symbols): The elongated top of the "T" is the strike (trend) of inclined beds of resistant sandstone, siltstone, or mudstone. The short bottom of the "T" is in the direction of dip (inclination) of the beds. The dip angle is also listed, if known. If the dip direction is toward the sea in sea cliffs and mudstone or siltstone is present, landslides or slide blocks can form.

Erosion rate transects: Short line are drawn approximately every 150 ft along the shoreline. The estimated erosion rate at each can be found in the digital database by referring to the label which appears on every tenth transect. Every fifth transect is indicated by a longer line.

Wide-spaced double lines drawn offshore: These lines enclose the estimated generalized mean and range of erosion rates for a particular shoreline segment.

Arrow drawn approximately perpendicular to the shoreline: This arrow demarcates the end of a shoreline segment for which a generalized erosion rate was estimated.

Narrow rectangle drawn at the shoreline: This rectangle depicts an area with shoreline protection structures such as sea walls or riprap. Such an area probably has near zero erosion rates until the structure fails.

ADVICE TO USERS

The geologic hazard maps and erosion rate database are for generalized planning, not site-specific analysis. The geologic mapping that outlined the mass movement hazards (landslides, slump blocks, etc.) and erosion rates is reconnaissance level work and is not a substitute for detailed site analysis by a qualified geotechnical professional. Hazard areas and points where shoreline erosion rates are estimated are located within about 40 ft of the actual location. This level of accuracy is not, in general, adequate for analysis of individual building sites.

Read the section entitled "Interpretation of Error" in Appendix 1 before using the erosion rate data. This section gives the user a clear understanding of the limitations of the data, including the difference between precision and accuracy.

The mass-movement hazard areas are places where additional work is needed to investigate the nature of the hazard before development occurs. Areas mapped as active or potentially active mass movements should be a particular focus of careful geotechnical analysis prior to any development. Areas where only prehistoric mass movement has been mapped are of less concern but should still be examined to make sure that proposed development will not reactivate the mass movements. Critical or essential facilities such as hospitals, schools, or fire stations should probably be sited to minimize vulnerability to all of these hazards.

Lack of a mapped mass-movement hazard does not imply that a slope is stable. A reconnaissance level study can miss many mass-movement hazards, and any steep (>25 percent) slope can become unstable if the right conditions of rain fall, earthquake shaking, or undercutting are present. It is recommended that some level of geotechnical analysis precede any development, particularly in steep terrain. See Appendix 1 for a further discussion of this issue.

Detailed geotechnical analysis of developments near the shoreline of sand spits and other dune-backed beaches is needed. Estimation of erosion rates on these highly variable shorelines was beyond the scope of this investigation but is clearly needed before development occurs. Single storms can remove a hundred feet or more of some duned beaches under certain wave and wind conditions.

A large erosion rate (e.g. -1.2-1.6 ft/yr) at an active landslide or slide block does not mean that every year a foot or two of the bluff are lost to erosion. Deeply penetrating bedrock landslides and slide blocks have bedding or fault planes that become zones of slip when the right conditions of water pressure and slope are present. These deep bedrock mass movements usually occur episodically, with many years of little or no movement separating the episodes. **When an erosion episode commences, large masses (> 40 ft) of rock can break away and slide downslope**. That is why 100 years or more of observations may be necessary to estimate an overall erosion rate in areas with historic movement. Hundreds or thousands of years of observations would be necessary for prehistoric landslides. Structures should be set as far back as feasible from the headwalls of active mass movements, particularly those marked by the zigzag-line symbol on the maps.

Do not worry that some small active mass movements have a listed erosion rate that is small (< 1 ft/year) and equal to rates in adjacent areas without mass movements. In some cases, erosion is fairly gradual even though active mass movements may be present. In these areas, small-scale shallow landslides and slide blocks form from simple undercutting and over steepening of the bluff (sloughing). House-to-bluff data from adjacent areas without mass movements can be used to estimate erosion rates in these areas, if the geology and other factors are the same. Unlike the deep bedrock landslides, these areas seldom have single mass movements biting deep (>40 ft) into the bluff.

PHOTOGRAPHIC BASE MAPS

The base maps accompanying this report are rectified and nonrectified 1993 (late summer) vertical aerial photos at the 1:4,800 (1 in. = 400 ft) scale. Nonrectified photos (Open-File Reports O-94-12, -19, -20, -21, and -22) are not adjusted for scale distortions inherent in aerial photography, so **data plotted on the**

nonrectified maps cannot be directly transferred to geographic information systems. Rectified photos (orthophotos) are clearly labeled as such on the maps (Open-file Reports O-94-13, -14, -15, -16, -17, -18, -23, -24, -25, -26, -27, -28, -29, and -30). These photos have all distortions removed and can be treated exactly like maps for digitization into geographic information systems. All rectified maps have State Plane coordinates for geographic referencing. The coordinates are referenced to the North American Datum 1983, because this is the datum utilized for geopositional satellite control when the photography was taken. In general, all extensive sandy beach areas of the study area are covered by rectified photos.

Three of the rectified photos covering the Lincoln City-Siletz Bay area (Open-File Reports O-94-15, -16, and -17) also have elevation contours at 5-ft intervals. These contours were collected for a separate pilot project aimed at depiction of catastrophic earthquake and tsunami hazards.

All photogrammetric work was supervised by Spencer B. Gross, Inc., Portland, Oregon. Details of the photogrammetric data may be obtained from them.

ACKNOWLEDGMENTS

This study was supported by the Oregon Department of Geology and Mineral Industries (DOGAMI), Federal Emergency Management Agency Cooperative Agreement EMW-91-K-3576, and the Oregon Department of Land Conservation and Development (DLCD) utilizing support by the Coastal Zone Management 309 program of the National Oceanographic and Atmospheric Administration. Most of the house-to-bluff erosion rate measurements were made by Julie Diebenow and Ingmar Saul of DOGAMI. A number of house-to-bluff measurements were also made by Andrea C. Ansevin, Scott Allen, and Christine Valentine of Oregon State University (OSU) under the direction of Jim Good of OSU Sea Grant Extension. Most of the OSU measurements were checked and corrected for photo distortions by Diebenow and Saul. Mark Darienzo of Portland State University also measured a few house-to-bluff distances. Neil M. Woller, now with the Oregon Department of Environmental Quality, assisted for two days examining landslides and other geologic features of the Depot Bay area. Mark Neuhaus of DOGAMI utilized digital technology to draft all of the hazard data onto the base maps. Spencer B. Gross, Inc., produced the photographic base maps in cooperation with Bergman Photographic Services. James W. Good and Paul D. Komar of OSU, John J. Marra of Shoreline Solutions, and Emily Toby of DLCD reviewed the report.

REFERENCES

Priest, G.R., Saul, I., and Diebenow, J., 1993, Pilot erosion rate data study of the central Oregon coast, Lincoln County: Oregon Department of Geology and Mineral Industries Open-File Report 0-93-10, 228 p.

Schlicker, H.G., Deacon, R.J., Olcott, G.W., and Beaulieu, J.D., 1973, Environmental geology of Lincoln County, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 81, 171 p., 1:24,000 scale maps.

APPENDIX 1

TECHNICAL EXPLANATION OF MASS MOVEMENT MAPPING AND THE EROSION RATE DATABASE

Erosion Rate Database

Explanation

The shoreline change rates are shown as negative when the change is toward land (erosion) and positive when toward the ocean (accretion). The accompanying database (see Appendices 2 and 3 and enclosed disk) lists estimated erosion rates in feet per year for the points on the shoreline intercepted by the short lines (transects) drawn on the maps. **State Plane coordinates of the shoreline-transect intersection points are referenced to the 1927 North American Datum (NAD27)**, because this is the most widely used datum (e.g., for U.S. Geological Survey topographic maps). Each transect line on the hazard maps has a label such as "C400" that refers to the corresponding label in the database.

For a more detailed explanation of the methodology and sources of error in the database of shoreline change, see Priest and others (1993). Note also that some of the rates listed here differ from those of Priest and others (1993). The rates listed here should be used, since they reflect more refined mapping and locational data.

Methodology

Introduction

Rates of erosion and accretion were determined by dividing the amount of positional change of the shoreline or bluff by the amount of time separating the observations. The positional change was measured or estimated along a line (transect) perpendicular to an arbitrary base line drawn roughly parallel to the coast. Transects are located approximately every 150 ft along the coast. Because the base line follows the coast in only a general way, transects can be more or less than 150 ft apart where the coast becomes irregular. Any transect is within about plus or minus 40 ft of its actual location. This locational error is inherent in the scale of the base maps.

The House-To-Bluff Method

Erosion rates were estimated in most bluffed areas by comparing modern and historical house-to-bluff distances. The modern distance was measured with a tape in the field. In most cases the historical distance was taken from 1967 vertical air photos of the Oregon Department of Transportation. In rare cases distances were determined from 1939 photos of the U.S. Army Corps of Engineers. Corrections for radial and other photographic distortions on the 1967 and 1939 photos were determined by estimating photo scale near the erosion rate sites from field measurement between objects persisting since 1967 or 1939.

If an individual house-to-bluff measurement site fell within 40 ft of a transect, the accompanying database lists the rate measurement at that transect under the heading "**HOUSE/BLUFF.**" If it fell between two transects, the measurement is shown for both. This technique honors the individual house-to-bluff data points but preserves the focus of the database, which is for generalized planning rather than site specific analysis.

The generalized rates shown on the map and in the "**BEST_FT/YR**" column of the database were obtained in most cases by taking the average (mean) of house-to-bluff rates from geologically similar areas in Lincoln County. These rates are subject to great uncertainty, which is reflected, in part, by relatively large plus and minus errors listed with the rates. In a few cases where only one house-to-bluff measurement was available in a small area with unique geology (i.e., a pocket beach), that erosion rate was assigned to all transects in that area.

The 1868 T Map: Continuous Bluff Line Method

Transferal of continuous bluff lines from 1990 vertical air photos onto the 1868 1:10,000-scale topographic map (T map) allowed determination of continuous erosion rates. Scales were matched utilizing a zoom transfer scope, referencing scales from drainages and other features common to the photos and the map. In areas such as South Newport and Nye Beach that lack large numbers of these features, the estimated error was higher than in the rest of the map.

Rates listed on the map and in the "**BEST_FT/YR**" column of the database covered by the 1868 map are generally either locally measured rates or means weighted for the length of shoreline affected. Weighted means were employed in areas with highly variable local erosion rates but similar geology.

Where the measurement error on the 1868 map was greater than the change in bluff position from erosion (i.e., a zero erosion rate was measured between 1868 and 1990), the house-to-bluff technique was used. This was the case in the Agate Beach area, where erosion is slowed by bluffs composed of resistant sandstone and siltstone with bedding that dips nearly perpendicular to the slope. Similarly, the resistant basalt of Yaquina Head also showed no measurable erosion.

Erosion Rates In Areas of Active Mass Movement (Landslides, etc.)

Because landslide erosion often occurs as catastrophic slope failure followed by long periods of little or no erosion, long (100 years plus) observation times are necessary to derive an accurate rate. The 1868 T map provided the only place where accurate data was available for landslide headwall positions (e.g., Moolack Beach and Newport). Generalized erosion rates on the maps and the rates in the "**BEST_FT/YR**" column of the database for these landslides were determined by plotting the landslide headwall position from 1990 vertical air photos onto the 1:10,000-scale topographic map.

Since the 1868 T map covers only the Newport-Moolack Beach area, erosion rates for other areas with active landslides or slide blocks are estimated if possible by analogy. If these other areas had geology analogous to Moolack Beach and Newport (i.e., Astoria Formation striking parallel to the bluff and dipping seaward), a weighted mean rate of -1.22 ± 0.95 ft/yr was assigned. This rate is the mean of rates weighted for length of shoreline affected in the 2.4 miles of landslide-prone coastline covered by the 1868 topographic map.

Rates for Shoreline Protection Structures (Sea Walls, etc.)

No erosion rates are listed in the database for areas armored by shoreline protection structures (SPS) such as sea walls or riprap, since these devices change the natural erosion rate to near zero until they are themselves eroded away. The likelihood of a SPS being eroded away varies dramatically depending on the type, quality of installation, and coastal setting. Judgments about appropriate erosion rates in areas with SPS should be made in consultation with appropriate experts in engineering and coastal geology.

Rates for Dune-Backed (Nonbluffed) Beaches

As a pilot effort to apply the standard FEMA erosion rate analysis to the Oregon coast, the variability of rates of shoreline change for sand spits, dune-backed beaches, and foredunes in front of bluffed beaches was examined by studying the change of position of the storm surge penetration line on 1939, 1967, and 1991 vertical air photos. The storm surge penetration line is the furthest reach of typical winter storm waves and is marked in most areas by a line of flotsam. Photographic distortions of the 1939 and 1991 shorelines were partially removed by radial triangulation. The 1967 shoreline is the rectified 16-ft elevation contour corresponding approximately to the storm surge penetration line on the 1939 and 1991 photos. Rates of change measured from digital shorelines are listed for nearly every transect on sandy beaches and are given in the database under the headings "**R67-39**" (i.e., rate of change from 1939 to 1967), "**R91-67,**" and "**R91-39.**" The rates so determined may be used to study the variability of the soft sand shoreline but are not necessarily indicative of long-term rates of shoreline change. The errors in the technique are too large to determine the erosion rate for slowly eroding bluffed beaches or headlands. The technique is also unsuitable for measurement of erosion by mass movements (landslides, etc.), because it measures the rate of change at the foot of the slope rather than at the bluff top or headwall of the mass movement. Since the technique depends on "snap shots" of summer shorelines after winter erosion cycles of differing intensity, it is also not reliable for estimation of long-term change of sand spits and dune-backed beaches. In fact, long-term positional changes of sand spits are not likely to be significantly different than the rocky sea cliffs to which they are "pinned," whereas annual changes can be hundreds of feet under the right wind and wave conditions. See Priest and others (1993) for further discussion.

Error

The error listed for each measurement in the "**BEST_FT/YR**" field for areas with house-to-bluff data was calculated by taking the square root of the sum of the squares of the standard deviation and measurement errors. The error listed in the "**BEST_FT/YR**" field for areas with continuous shoreline data was found by first calculating the standard deviation of individual measurements weighted for the length of shoreline that each measurement represents. The total error was then calculated by taking the square root of the sum of the squares of the weighted standard deviation and the estimated measurement error. The error for individual measurements listed in the "**HOUSE/BLUFF"** and the "**1868 BLUFF**" fields was found by taking the square root of the sum of squares of the measurement errors, including field measurement error and errors inherent in the photo and map scales.

The rates derived from the 1868 T map had to be adjusted for an error in the map scale. Whereas the listed scale is 1:10,000, a check of the scale based on the distance between the Yaquina Head Lighthouse and the Yaquina Bay Lighthouse revealed that the actual scale was approximately 1:8,500. It is not known whether this scale correction applies equally to the entire map, but several checks between local points suggest that it probably does. This correction was not applied to the preliminary data in Priest and others (1993), so where the 1868 map was used as a reference, the rates listed there are somewhat higher than those in this report. However, the listed measurement error in this report is the same as that of Priest and others (1993). Therefore absolute measurement errors were calculated using a 1:10,000 rather than a 1:8,500 scale, effectively increasing them. Maximizing the measurement error is justified because of the uncertainty about scale consistency in the 1868 map.

Accurate erosion rate data are particularly rare for the sparsely populated shoreline bluffs at Beverly Beach and for the area south of South Beach. In the case of Beverly Beach, only one house-to-bluff measurement was available to Priest and others (1993). Subsequent field checking of this site by Diebenow and Saul revealed that the house itself had been moved, so there are no valid data there. The mean rate for the geologically similar Nye Beach-south Newport area was applied to Beverly Beach. Most of the area south of South Beach is either assigned the erosion rate from geological analogues in other areas or mean erosion rates from just a few house-to-bluff measurements.

Interpretation of Error

The error listed next to each erosion or accretion rate reflects the absolute measurement errors caused by photographic scales and field measurement problems, as well as the scatter of the data in multiple trials. In statistical terms, the listed rate is approximately one standard deviation from the mean (average). Therefore, assuming a normal probability distribution of possible values (bell-shaped curve), there is about a 68-percent chance that the actual rate lies between one extreme or the other of the error range. Expanding the range to two standard deviations (twice the listed plus or minus error) raises the chance to 95 percent. If the distribution is not normal, there is still at least a 75-percent chance that the actual rate is within two standard deviations of the mean (Chebyshev's theorem). For example, a bluff erosion rate of -0.10 ± 0.05 ft/year has a 75-percent chance of being between 0.00 ft/year and -0.20 ft/year, regardless of the shape of the frequency distribution of possible values.

Keep in mind that the listed error estimate is a measure of precision rather than accuracy. For example, an erosion rate measurement at a pocket beach based on comparison of the house-to-bluff distance on 1967 photo to the present distance may be very precise, showing up in the database with an error of $\pm$ 0.1 ft/year or less. If no other measurement were available for this small unique area, that measurement would be assigned to the transects crossing the pocket beach. A nearby pocket beach with different geology but an abundance of house-to-bluff data might have a listed error of ± 0.2 ft/year, based on the scatter of multiple measurements about a mean. In this case the most accurately determined rate is probably the one based on multiple measurements, even though it has the highest listed error.

In general, the most accurate erosion rates are those based on 100 years or more of observations (i.e., the Moolack Beach-Newport area). The least accurate rates are those for which there is little or no local data (e.g., the Beverly Beach area). Areas with only local house-to-bluff data from 1939 and later measurements fall somewhere in the middle.

Advice to Users

The house-to-bluff erosion rate database for this area is very sparse, so most of the erosion rates are estimated by averaging data from geologically similar areas. These rates and the individual house-to-bluff rates are only crude estimates of the order of magnitude of the actual erosion rates. As explained above, erosion rate estimates are particularly crude in sparsely populated areas like Beverly Beach and bluffed beaches south of South Beach. **The rate data presented here are for generalized planning only and must be augmented by detailed geotechnical studies for specific sites**.

Use of the mean erosion rate or the mean plus one or two standard deviations are possible choices for generalized planning, depending on the amount of caution thought appropriate. Use of mean erosion rates minus one or more standard deviations is not recommended for planning purposes, since this would have a high probability of underestimating the hazard.

In areas with deep bedrock landslides, as at Newport and Moolack Beach, the listed mean erosion rates are a fairly good guideline, but the user should be aware that 40 ft or more of the bluff could begin to slide downslope at any time. Over 100 ft of the bluff have broken away in individual episodes in Newport in the last 100 years (Stembridge, 1975; Sayre and Komar, 1988).

Mass Movement Mapping

Explanation of Map Symbols

Areas subject to landslides, slide blocks, and rock or earth flows were separated into three age categories:

PH (prehistoric): Currently stable but probably unstable in prehistoric times (>150 years before present), possibly during great (M8-9) earthquakes. If the probabilities of movement are approximately the same as those for great earthquakes, then there is approximately a 10- to 20-percent chance of movement in the next 50 years (Adams, 1990; Peterson and others, 1991). However, if they are disturbed by human activities, these areas could become unstable. Most of these areas are large-scale (hundreds of feet) slide blocks and landslides with no evidence of recent movement. Most are extensively eroded within and at the contacts of the disturbed ground. In some cases movement has not occurred for thousands of years.

The complexity of these prehistoric slides is illustrated by the large landslide complex on the south side of Millport Slough on the Siletz River (see the hazard map of Open-File Report O-94-17). A drill hole near the toe of the slide encountered numerous debris flows and small landslides that had come down a local drainage within the slide mass. A radiocarbon age on a soil buried by one of the last debris flows (22-ft depth) was 1,910 ± 60 radiocarbon years before present (unpublished data of Mei Mei Wang, 1994). Locally, soil is creeping down some water-saturated slopes within the slide mass, and some very small-scale debris flows may have been mobilized in some drainages in recent times. However, there is no evidence that deeply penetrating, large-scale movements have occurred in the last few hundred years. In fact, the bottom of the debris flow/slide mass complex at the drill site was encountered at about 90 ft below the surface and well below the top of the Holocene (<10,000 years before present) valley fill. The fill sits in the old Pleistocene valley cut by the Siletz River when sea level was hundreds of feet lower. It is likely that the slide had most major movement when the Holocene fill was not present to block the toe. Based on the radiocarbon age of a buried soil at the base of the

Holocene section at Siletz Spit (drill hole sample), the main mass of the slide may be older than 9,380 ± 80 radiocarbon years before present.

PA (potentially active): Currently stable (few, if any, bowed trees, and little evidence of current slope movement), but probably with recurrent movement in the last 150 years. Unlike the prehistoric slides, potentially active slides are generally not extensively eroded and have well-preserved topography indicative of recent mass movement. Many show no evidence of movement since 1939 or 1967 aerial photography but generally have measurable headwall erosion rates where covered by the 1868 T map. These areas are probably more likely to have movements than the prehistoric slide areas. Exact probabilities of movement are not known but are probably greater than or equal to the previously discussed probability for a great earthquake (10-20 percent in the next 50 years).

A (active): Currently unstable with evidence such as bowed trees, cracked pavement, and broken modern soil indicative of ongoing movement. These areas generally have relatively high headwall erosion rates.

Lower case letters are added to the age labels, *PH*, *PA*, and *A*, to indicate the nature of the mass movement:

f (flow): Indicates a highly broken-up mass of soil or rock that was deposited by a debris flow, earth flow, or rock flow. Only one large-scale rock and soil flow was recognized. It lies in the area immediately south of Depot Bay (see Open-File Report O-94-21) and was judged to be prehistoric in age.

b (slide block): Indicates that a block of rock has slipped down slope, rotating backward as a slump or slipping straight down slope as a translational rock slide.

ls (complex landslide): Indicates an area with a complex mixture of flows and blocks typical of most large landslides.

Zigzag line drawn parallel to the shoreline: Marks active mass movements with the highest headwall erosion. These mass movements generally involve slip planes penetrating deeply into bedrock along zones of tectonic or stratigraphic weakness.

?: Indicates uncertainty about the age or type of the mass movement. Uncertainty generally arises from ambiguous evidence as interpreted from air photos and field reconnaissance. Because of the reconnaissance nature of the hazard study, some inland areas with difficult access were mapped only by interpretation of air photos. Many of these areas were queried.

Methodology and Errors

Geological mapping in the field and on 1939, 1967, 1990, 1991, and 1993 vertical air photos was undertaken to define the boundaries of areas of mass movement. Boundaries are within about plus or minus 40 ft of their actual location. This error is inherent in the scale of the base maps and uncertainties in the field mapping.

Note that only large areas of mass movement were mapped. For example, areas with small scale (<40-ft-wide) sloughing of cliffs are not mapped.

Advice to Users

Areas of mass movement shown on the maps are located from reconnaissance level mapping. Such mapping should not be used as a substitute for site-specific geotechnical mapping. Each mapped mass movement area should be examined by a qualified professional before development occurs to determine the actual extent of the hazard.

Lack of a mapped large-scale mass movement on steep slopes does not indicate that there cannot be a mass movement there. It is possible to miss mass movements when utilizing reconnaissance mapping techniques. According to Keefer (1984, p. 406) in a study of 40 earthquakes world wide, "Few earthquake-induced landslides reactivate older landslides; most are in materials that have not previously failed." Hence many slopes without mapped landslides could pose a threat in the event of an earthquake. According to Sidle and others (1985), even without earthquakes, many soil laden slopes over 25° are subject to rapid mass movement. They found that the lower limits for initiation of slumps is 7 to 18°; those for earth flows are 4 to 20°.

Dragovich and others (1993) found that "a slope gradient of 50 percent (26.6°) or better delimits the onset of significant shallow landsliding on slopes prone to failure." They also note that deep-seated failures occur at lower slope gradients than shallow failures.

As a practical guide, it is recommended that any slope greater than about 25 percent (14°) be examined by a qualified professional before development. This detailed examination is especially essential in siltstones and mudstones. See Schlicker and others (1973) for complete maps of inland areas of mudstones and siltstones. See the hazard maps for shoreline geology. Schlicker and others (1973) also show crude maps of slopes greater than 25 percent, but these are interpreted from topographic contours at a 40-ft (vertical) spacing on USGS 7.5-minute quadrangles. These slope estimates are no substitute for field measurement of slope.

For **all categories of mass movement**, actions should be avoided that further destabilize the slope. Planning should therefore take into account effects of development. For example, excavating a steep slope or cutting the toe out of a stable landslide could cause slope failure. Similar failures can be caused by injecting waste water into an existing landslide or into a steep slope.

Mass movements can cause severe flooding hazards where they block streams. This flooding can be followed by renewed mass movement when the temporary lake spills over, cutting through the blockage (toe) of the displaced soil or rock mass and catastrophically flooding downstream. Evaluation of this hazard scenario may be advisable for unstable slopes poised above significant streams.

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APPENDIX 2

EXPLANATION OF FIELD LABELS AND ABBREVIATIONS IN THE EROSION RATE DATABASE

INTRODUCTION

This appendix explains the field labels (column headings) and abbreviations on the accompanying digital database of erosion rates for the study area. An abbreviated version of the database is given in Appendix 3. The database is intended to give the user access to the shoreline change data that were utilized to estimate generalized erosion rates listed on the accompanying maps.

The database on the accompanying floppy disk is in two file formats. The file labeled TRATENE4.WK1 is in Lotus 1-2-3 spreadsheet format. The file labeled TRATENE4.DBF is in dBase III plus format. Note that field labels for dBase files are modified slightly from the labels listed here to fit software requirements. Both files are for IBM PC compatible software.

DATABASE FIELD LABELS

TRANSECT: Identification label for the transect.

O-94-: Hazard map number at the transect. Column heading is the Oregon Department of Geology Open-File Report number prefix; the number in the column is the rest of the open-file report number; maps are numbered north to south from O-94-12 to O-94-30.

GEOGRAPHIC FEATURE: Geographic name of a feature at the transect.

BEST_FT/YR: Best erosion rate in feet per year, negative = erosion; positive = accretion. A blank field indicates that no rate could be accurately assigned because of the presence of a shoreline protection structure (see the *SPS?* field). NO DATA indicates that there are no data accurate enough to allow calculation of a rate.

ERROR: The expected plus or minus error (at the 68-percent confidence level) for the rate in the BEST_FT/YR column. NO DATA indicates that available information on the measurement error is not accurate enough to list the error quantitatively.

SPS?: The answer of yes or no to the question, is there a shoreline protection structure (riprap or sea wall) at the transect?

COMMENT ON BEST RATE: Explains the source of the rate.

HOUSE/BLUFF: Individual rates estimated by comparing modern and historic house-to-bluff distances. Means calculated from these rates for geologically similar areas are the source for most of the generalized rates in the BEST-FT/YR field.

ERROR: Plus or minus measurement error for the HOUSE/BLUFF field.

COMMENT ON HOUSE/BLUFF: Explains the source of the HOUSE/BLUFF rate. For example, the comment "No. 165-1, 67-93, Ingmar" means that the rate was measured by Ingmar Saul at field site number 165-1 in 1993 and compared to the same distance on a 1967 aerial photo at a scale of 1" = 100 ft. "Diebenow" refers to measurements by Julie Diebenow. "Good" refers measurements by Andrea C. Ansevin, Scott Allen, and Christine Valentine of Oregon State University (OSU) under the direction of Jim Good of OSU Sea Grant Extension. The first number in the field site number refers to the last number of the nearest legislatively defined reference point specifying the public beach boundary for the 1967 Beach Bill maps (see 1:1,200-scale photographic maps published by the Oregon Department of Transportation). The second number in the field site number is the number of the measurement accomplished between two Beach Bill reference points (e.g., "3" would mean the third measurement). The original field measurement sites are shown on copies of the 1967 maps that are available for viewing upon request.

1868 BLUFF: Rate calculated from the change of position of the landslide headwall or the top of the bluff from the 1868 T map to the 1990 aerial photo.

ERROR: Plus or minus measurement error for the 1868 BLUFF field.

R67-39: Rate of shoreline positional change based on the position of 1967 and 1939 digital shorelines.

R91-67: Rate of shoreline positional change based on the position of 1991 and 1967 digital shorelines.

R91-39: Rate of shoreline positional change based on the position of 1991 and 1939 digital shorelines.

FORMATIONS: Sequence of formations at the shoreline; top unit is on the left and bottom unit is on the right. Formation abbreviations are explained in the main body of the report.

BASE: Bottom rock or soil type at the shoreline. Unit label in brackets indicates that it makes up less than about 3 ft of the bluff. Abbreviations are as follows:

1. FILL: Loose rock or soil dumped by human activities.
2. QAL: Unconsolidated gravel, sand, silt, and muddy silt.
3. QLS: Complex mixture of landslide debris.
4. QC: Semiconsolidated colluvium with mudstone, siltstone, or sandstone fragments.
5. QMT: Semiconsolidated marine terrace sands.
6. MS: More than 50 percent well-indurated mudstone or siltstone.
7. SS: More than 50 percent well-indurated sandstone.
8. BASALT: Hard resistant basalt or well-cemented fragmental basalt.

GEOMORPHOLOGY: Geomorphic feature at the transect. Data explanations are as follows:

1. SPIT: Sand spit.
2. BLUFFED BEACH: Sandy beach backed by a bluff of consolidated or semiconsolidated material.
3. DUNED BLUFF: Bluff protected by a vegetated dune.
4. HEADLAND: Sea cliff without a sandy beach.
5. POCKET BEACH: Short narrow beach surrounded by headlands.
6. BASALT-GUARDED POCKET BEACH: Pocket beach of sedimentary rock surrounded by basalt sea stacks and headlands.
7. BASALT-GUARDED BLUFFED BEACH: Bluffed beach of sedimentary rock with basalt sea stacks a few hundred feet offshore.
8. JETTY: Mass of resistant boulders dumped in a line roughly perpendicular to the shoreline at the mouth of a bay or estuary.
9. JETTY BEACH: Beach accreted next to a jetty by alteration of sedimentation by the jetty.
10. ALLUVIAL FAN-DUNE COMPLEX: Sands and gravels covered by a veneer of dune sand at the mouth of a creek or river.
11. CREEK MOUTH: Mouth of a creek.
12. ESTUARY: Mouth of a bay or estuary.
13. PREHISTORIC DEEP SLIDE BLOCK: Slide block or slump >150 years old with a deeply penetrating slide plane developed on tectonic or stratigraphic zones of weakness.
14. PREHISTORIC DEEP LANDSLIDE: Complex landslide >150 years old with a deeply penetrating slide plane developed on tectonic or stratigraphic zones of weakness.

15. POTENTIALLY ACTIVE DEEP SLIDE BLOCK: Currently inactive slide block or slump <150 years old with a deeply penetrating slide plane developed on tectonic or stratigraphic zones of weakness.

16. POTENTIALLY ACTIVE SHALLOW SLIDE BLOCK: Currently inactive slide block or slump <150 years old with a shallow slide plane developed from over steepening of a sea cliff by erosional forces.

17. POTENTIALLY ACTIVE DEEP LANDSLIDE: Currently inactive landslide <150 years old with a deeply penetrating slide plane developed on tectonic or stratigraphic zones of weakness.

18. ACTIVE DEEP SLIDE BLOCK: Active slide block or slump with a deeply penetrating slide plane developed on tectonic or stratigraphic zones of weakness.

19. ACTIVE SHALLOW SLIDE BLOCK: Active slide block or slump with a shallow slide plane developed from over steepening of a sea cliff by erosional forces.

20. ACTIVE DEEP LANDSLIDE: Active landslide with a deeply penetrating slide plane developed on tectonic or stratigraphic zones of weakness.

21. ACTIVE SHALLOW LANDSLIDE: Active landslide with a shallow slide plane developed from oversteepening of a sea cliff by erosional forces.

NORTHING/NAD27: State Plane Northing coordinate for the transect, referenced to North American Datum 1927.

EASTING/NAD27: State Plane Easting coordinate for the transect, referenced to North American Datum 1927.

SEGMENT: Segment number used to identify transects that share a common geology and geomorphology. Average (mean) house-to-bluff rates for some segments with abundant data were used to estimate the erosion rates at segments lacking data.

APPENDIX 3

ABBREVIATED EROSION RATE DATABASE

(see Appendix 2 for explanation of abbreviations)

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#b5	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b6	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b7	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b8	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b9	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b10	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b11	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b12	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b13	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b14	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b15	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b16	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b17	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b18	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b19	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b20	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b21	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b22	12	SALMON RIVER MOUTH	NO DATA	NO DATA	N
#b23	12		-0.25	0.21	N
#b24	12		-0.25	0.21	N
#b25	12		-0.25	0.21	N
#b26	12		-0.25	0.21	N
#b27	12		-0.25	0.21	N
#b28	12		-0.08	0.08	N
#b29	12		-0.08	0.08	N
#b30	12		-0.08	0.08	N
#b31	12		-0.09	0.16	N
#b32	12		-0.09	0.16	N
#b33	12		-0.09	0.16	N
#b34	12		-0.09	0.16	N
#b35	12		-0.09	0.16	N
#b36	12		-0.09	0.16	N
#b37	12		-0.09	0.16	N
#b38	12	COON LAKE	-0.08	0.08	N
#b39	12	COON LAKE	-0.08	0.08	N
#b40	12		-0.08	0.08	N
#b41	12		-0.08	0.08	N
#b42	12		-0.08	0.08	N
#b43	12		-0.08	0.08	N
#b44	12		-0.09	0.16	N
#b45	12		-0.09	0.16	N
#b46	12		-0.09	0.16	N
#b47	12		-0.09	0.16	N
#b48	12		-0.08	0.08	N
#b49	12		-0.08	0.08	N
#b50	12		-0.09	0.16	N
#b51	12		-0.09	0.16	N
#b52	12		-0.09	0.16	N
#b53	12		-0.09	0.16	N
#b54	12		-0.08	0.08	N
#b55	12		-0.08	0.08	N
#b56	12		-0.08	0.08	N
#b57	12		-0.09	0.16	N
#b58	12		-0.09	0.16	N
#b59	12		-0.09	0.16	N
#b60	12		-0.09	0.16	N
#b61	12		-0.09	0.16	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#b62	12,13	ROADS END	-0.25	0.21	N
#b63	12,13	ROADS END	-0.25	0.21	N
#b64	12,13	ROADS END	-0.25	0.21	N
#b65	12,13	ROADS END	-0.25	0.21	N
#b66	12,13	ROADS END	-0.25	0.21	N
#b67	12,13	ROADS END	-0.25	0.21	N
#b68	12,13	ROADS END	-0.25	0.21	N
#b69	12,13	ROADS END	-0.27	0.34	N
#b70	12,13	ROADS END	-0.27	0.34	N
#b71	13	ROADS END	-0.27	0.34	N
#b72	13	ROADS END	-0.27	0.34	N
#b73	13	ROADS END	-0.27	0.34	N
#b74	13	ROADS END	-0.27	0.34	N
#b75	13	ROADS END	-0.27	0.34	N
#b76	13	ROADS END			Y
#b77	13	ROADS END			Y
#b78	13	ROADS END			Y
#b79	13	ROADS END			Y
#b80	13	ROADS END			Y
#b81	13	ROADS END			Y
#b82	13	ROADS END			Y
#b83	13	ROADS END			Y
#b84	13	ROADS END			Y
#b85	13	ROADS END			Y
#b86	13	ROADS END			Y
#b87	13	ROADS END			Y
#b88	13	ROADS END			Y
#b89	13	ROADS END			Y
#b90	13	ROADS END			Y
#b91	13	ROADS END			Y
#b92	13	ROADS END			Y
#b93	13	ROADS END			Y
#b94	13	ROADS END			Y
#b95	13	ROADS END			Y
#b96	13	ROADS END			Y
#b97	13	ROADS END	-0.27	0.34	N
#b98	13	ROADS END	-0.27	0.34	N
#b99	13	ROADS END	-0.27	0.34	N
#b100	13	ROADS END	-0.27	0.34	N
#b101	13	ROADS END	-0.27	0.34	N
#b102	13	ROADS END	-0.27	0.34	N
#b103	13	ROADS END	NO DATA	NO DATA	N
#b104	13	ROADS END	-0.27	0.34	N
#b105	13	ROADS END	-0.27	0.34	N
#b106	13	ROADS END			Y
#b107	13	ROADS END			Y
#b108	13	ROADS END			Y
#b109	13	ROADS END	-0.27	0.34	N
#b110	13	ROADS END	-0.27	0.34	N
#b111	13	ROADS END	-0.27	0.34	N
#b112	13	ROADS END	-0.27	0.34	N
#b113	13	ROADS END	-0.27	0.34	N
#b114	13	ROADS END	-0.27	0.34	N
#b115	13	ROADS END	-0.27	0.34	N
#b116	13	ROADS END	-0.27	0.34	N
#b117	13	ROADS END	-0.27	0.34	N
#b118	14	ROADS END	-0.27	0.34	N
#b119	14	ROADS END	-0.27	0.34	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#b120	14	ROADS END	-0.27	0.34	N
#b121	14	ROADS END	-0.27	0.34	N
#b122	14	ROADS END	-0.27	0.34	N
#b123	14	ROADS END	-0.27	0.34	N
#b124	14	ROADS END	-0.27	0.34	N
#b125	14	ROADS END	-0.27	0.34	N
#b126	14	ROADS END	-0.27	0.34	N
#b127	14	ROADS END	-0.27	0.34	N
#b128	14	ROADS END	-0.27	0.34	N
#b129	14	ROADS END	-0.27	0.34	N
#b130	14	LINCOLN CITY	-0.27	0.34	N
#b131	14	LINCOLN CITY			Y
#b132	14	LINCOLN CITY	-0.27	0.34	N
#b133	14	LINCOLN CITY	-0.27	0.34	N
#b134	14	LINCOLN CITY	-0.27	0.34	N
#b135	14	LINCOLN CITY	-0.27	0.34	N
#b136	14	LINCOLN CITY	-0.27	0.34	N
#b137	14	LINCOLN CITY	-0.27	0.34	N
#b138	14	LINCOLN CITY	-0.27	0.34	N
#b139	14	LINCOLN CITY			Y
#b140	14	LINCOLN CITY			Y
#b141	14	LINCOLN CITY			Y
#b142	14	LINCOLN CITY			Y
#b143	14	LINCOLN CITY			Y
#b144	14	LINCOLN CITY			Y
#b145	14	LINCOLN CITY			Y
#b146	14	LINCOLN CITY			Y
#b147	14	LINCOLN CITY			Y
#b148	14	LINCOLN CITY			Y
#b149	14	LINCOLN CITY			Y
#b150	14	LINCOLN CITY			Y
#b151	14	LINCOLN CITY	-0.27	0.34	N
#b152	14	LINCOLN CITY			Y
#b153	14	LINCOLN CITY			Y
#b154	14	LINCOLN CITY			Y
#b155	14	LINCOLN CITY			Y
#b156	14	LINCOLN CITY			Y
#b157	14	LINCOLN CITY			Y
#b158	14	LINCOLN CITY			Y
#b159	14	LINCOLN CITY			Y
#b160	14	LINCOLN CITY			Y
#b161	14	LINCOLN CITY			Y
#b162	14	LINCOLN CITY			Y
#b163	14	LINCOLN CITY			Y
#b164	14	LINCOLN CITY	-0.27	0.34	N
#b165	14	LINCOLN CITY	-0.27	0.34	N
#b166	14	LINCOLN CITY	-0.27	0.34	N
#b167	14	LINCOLN CITY	-0.27	0.34	N
#b168	14	LINCOLN CITY	-0.27	0.34	N
#b169	14	LINCOLN CITY	-0.27	0.34	N
#b170	14	LINCOLN CITY	-0.27	0.34	N
#b171	14	LINCOLN CITY	-0.27	0.34	N
#b172	14	LINCOLN CITY			Y
#b173	14	LINCOLN CITY	-0.27	0.34	N
#b174	14	LINCOLN CITY	-0.27	0.34	N
#b175	14	LINCOLN CITY	-0.27	0.34	N
#b176	14	LINCOLN CITY	-0.27	0.34	N
#b177	14	LINCOLN CITY	-0.27	0.34	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#b178	14	LINCOLN CITY	-0.27	0.34	N
#b179	14	LINCOLN CITY	-0.27	0.34	N
#b180	14	LINCOLN CITY	-0.27	0.34	N
#b181	14	LINCOLN CITY			Y
#b182	14	LINCOLN CITY			Y
#b183	14	LINCOLN CITY	-0.27	0.34	N
#b184	14	LINCOLN CITY	-0.27	0.34	N
#b185	14	LINCOLN CITY	-0.27	0.34	N
#b186	14	LINCOLN CITY			Y
#b187	14	LINCOLN CITY			Y
#b188	14	LINCOLN CITY			Y
#b189	14	LINCOLN CITY			Y
#b190	14	LINCOLN CITY	-0.27	0.34	N
#b191	14	LINCOLN CITY	-0.27	0.34	N
#b192	14	LINCOLN CITY	-0.27	0.34	N
#b193	14	LINCOLN CITY	-0.27	0.34	N
#b194	14	LINCOLN CITY	-0.27	0.34	N
#b195	14	LINCOLN CITY	-0.27	0.34	N
#b196	15	LINCOLN CITY			Y
#b197	15	LINCOLN CITY			Y
#b198	15	LINCOLN CITY			Y
#b199	15	LINCOLN CITY			Y
#b200	15	LINCOLN CITY			Y
#b201	15	LINCOLN CITY			Y
#b202	15	D RIVER	NO DATA	NO DATA	N
#b203	15	D RIVER			Y
#b204	15	D RIVER			Y
#b205	15	D RIVER			Y
#b206	15	D RIVER			Y
#b207	15	LINCOLN CITY			Y
#b208	15	LINCOLN CITY			Y
#b209	15	LINCOLN CITY	-0.27	0.34	N
#b210	15	LINCOLN CITY	-0.27	0.34	N
#b211	15	LINCOLN CITY	-0.27	0.34	N
#b212	15	LINCOLN CITY	-0.27	0.34	N
#b213	15	LINCOLN CITY	-0.27	0.34	N
#b214	15	LINCOLN CITY	-0.27	0.34	N
#b215	15	LINCOLN CITY	-0.27	0.34	N
#b216	15	LINCOLN CITY	-0.27	0.34	N
#b217	15	LINCOLN CITY	-0.27	0.34	N
#b218	15	LINCOLN CITY	-0.27	0.34	N
#b219	15	LINCOLN CITY	-0.27	0.34	N
#b220	15	LINCOLN CITY	-0.27	0.34	N
#b221	15	LINCOLN CITY	-0.27	0.34	N
#b222	15	LINCOLN CITY	-0.27	0.34	N
#b223	15	LINCOLN CITY	-0.27	0.34	N
#b224	15	LINCOLN CITY	-0.27	0.34	N
#b225	15	LINCOLN CITY	-0.27	0.34	N
#b226	15	LINCOLN CITY	-0.27	0.34	N
#b227	15	LINCOLN CITY	-0.27	0.34	N
#b228	15	LINCOLN CITY	-0.27	0.34	N
#b229	15	LINCOLN CITY	-0.27	0.34	N
#b230	15	LINCOLN CITY	-0.27	0.34	N
#b231	15	LINCOLN CITY	-0.27	0.34	N
#b232	15	LINCOLN CITY	-0.27	0.34	N
#b233	15	LINCOLN CITY	-0.27	0.34	N
#b234	15	LINCOLN CITY	-0.27	0.34	N
#b235	15	LINCOLN CITY	-0.27	0.34	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#b236	15	LINCOLN CITY	-0.27	0.34	N
#b237	15	LINCOLN CITY	-0.27	0.34	N
#b238	15	LINCOLN CITY	-0.27	0.34	N
#b239	15	LINCOLN CITY	-0.27	0.34	N
#b240	15	LINCOLN CITY	-0.27	0.34	N
#b241	15	LINCOLN CITY	-0.27	0.34	N
#b242	15	LINCOLN CITY	-0.27	0.34	N
#b243	15	LINCOLN CITY	-0.27	0.34	N
#b244	15	LINCOLN CITY	-0.27	0.34	N
#b245	15	LINCOLN CITY	-0.27	0.34	N
#b246	15	LINCOLN CITY	-0.27	0.34	N
#b247	15	LINCOLN CITY	-0.27	0.34	N
#b248	15	LINCOLN CITY	-0.27	0.34	N
#b249	15	LINCOLN CITY	-0.27	0.34	N
#b250	15	LINCOLN CITY	-0.27	0.34	N
#b251	15	LINCOLN CITY	-0.27	0.34	N
#b252	15	LINCOLN CITY	-0.27	0.34	N
#b253	15	LINCOLN CITY			Y
#b254	15	LINCOLN CITY	-0.27	0.34	N
#b255	15	LINCOLN CITY	-0.27	0.34	N
#b256	15	LINCOLN CITY	-0.27	0.34	N
#b257	15	LINCOLN CITY	-0.27	0.34	N
#b258	15	LINCOLN CITY	-0.27	0.34	N
#b259	15	LINCOLN CITY	-0.27	0.34	N
#b260	15	LINCOLN CITY	-0.27	0.34	N
#b261	15	LINCOLN CITY	-0.27	0.34	N
#b262	15	LINCOLN CITY			Y
#b263	15	LINCOLN CITY			Y
#b264	15	LINCOLN CITY			Y
#b265	15	LINCOLN CITY			Y
#b266	15	LINCOLN CITY			Y
#b267	15	LINCOLN CITY			Y
#b268	15	LINCOLN CITY			Y
#b269	15	LINCOLN CITY			Y
#b270	15	LINCOLN CITY			Y
#b271	15	LINCOLN CITY			Y
#b272	15	LINCOLN CITY	-0.27	0.34	N
#b273	15	LINCOLN CITY	-0.27	0.34	N
#b274	15	LINCOLN CITY	-0.27	0.34	N
#b275	15	LINCOLN CITY	-0.27	0.34	N
#b276	16	LINCOLN CITY	-0.27	0.34	N
#b277	16	LINCOLN CITY	-0.27	0.34	N
#b278	16	LINCOLN CITY	-0.27	0.34	N
#b279	16	LINCOLN CITY	-0.27	0.34	N
#b280	16	LINCOLN CITY	-0.27	0.34	N
#b281	16	LINCOLN CITY	-0.27	0.34	N
#b282	16	LINCOLN CITY			Y
#b283	16	LINCOLN CITY			Y
#b284	16	LINCOLN CITY			Y
#b285	16	TAFT			Y
#b286	16	TAFT			Y
#b287	16	TAFT			Y
#b288	16	TAFT			Y
#b289	16	TAFT			Y
#b290	16	TAFT	-0.05	0.05	N
#b291	16	TAFT	-0.05	0.05	N
#b292	16	TAFT	-0.05	0.05	N
#b293	16	TAFT	-0.05	0.05	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#b294	16	TAFT	-0.05	0.05	N
#b295	16	TAFT	-0.05	0.05	N
#b296	16	TAFT	-0.05	0.05	N
#b297	16	TAFT	-0.05	0.05	N
#b298	16	TAFT	-0.05	0.05	N
#b299	16	TAFT	-0.05	0.05	N
#b300	16	TAFT	-0.05	0.05	N
#b301	16	TAFT	-0.05	0.05	N
#b302	16	TAFT	-0.05	0.05	N
#b303	16	TAFT	-0.05	0.05	N
#b304	16	TAFT	-0.05	0.05	N
#b305	16	TAFT	-0.05	0.05	N
#b306	16	TAFT	-0.05	0.05	N
#b307	16	TAFT	-0.05	0.05	N
#b308	16	TAFT	-0.05	0.05	N
#b309	16	TAFT	-0.05	0.05	N
#b310	16	TAFT	-0.05	0.05	N
#b311	16	TAFT	-0.05	0.05	N
#c1	16	SILETZ SPIT	NO DATA	NO DATA	N
#c2	16	SILETZ SPIT	NO DATA	NO DATA	N
#c3	16	SILETZ SPIT	NO DATA	NO DATA	N
#c4	16	SILETZ SPIT	NO DATA	NO DATA	N
#c5	16	SILETZ SPIT	NO DATA	NO DATA	N
#c6	16	SILETZ SPIT	NO DATA	NO DATA	N
#c7	16	SILETZ SPIT	NO DATA	NO DATA	N
#c8	16	SILETZ SPIT	NO DATA	NO DATA	N
#c9	16	SILETZ SPIT	NO DATA	NO DATA	N
#c10	16	SILETZ SPIT	NO DATA	NO DATA	N
#c11	16	SILETZ SPIT	NO DATA	NO DATA	N
#c12	16	SILETZ SPIT	NO DATA	NO DATA	N
#c13	16	SILETZ SPIT	NO DATA	NO DATA	N
#c14	16	SILETZ SPIT	NO DATA	NO DATA	N
#c15	16	SILETZ SPIT	NO DATA	NO DATA	N
#c16	16	SILETZ SPIT	NO DATA	NO DATA	N
#c17	16	SILETZ SPIT	NO DATA	NO DATA	N
#c18	16	SILETZ SPIT	NO DATA	NO DATA	N
#c19	16	SILETZ SPIT	NO DATA	NO DATA	N
#c20	16	SILETZ SPIT	NO DATA	NO DATA	N
#c21	16	SILETZ SPIT	NO DATA	NO DATA	N
#c22	16	SILETZ SPIT	NO DATA	NO DATA	N
#c23	16	SILETZ SPIT	NO DATA	NO DATA	N
#c24	16	SILETZ SPIT			Y
#c25	16	SILETZ SPIT			Y
#c26	16	SILETZ SPIT			Y
#c27	16	SILETZ SPIT			Y
#c28	16	SILETZ SPIT			Y
#c29	16	SILETZ SPIT			Y
#c30	16	SILETZ SPIT			Y
#c31	16	SILETZ SPIT			Y
#c32	16	SILETZ SPIT			Y
#c33	16	SILETZ SPIT			Y
#c34	16	SILETZ SPIT			Y
#c35	16	SILETZ SPIT			Y
#c36	16	SILETZ SPIT			Y
#c37	16	SILETZ SPIT			Y
#c38	16	SILETZ SPIT			Y
#c39	16	SILETZ SPIT			Y
#c40	16	SILETZ SPIT			Y

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c41	16	SILETZ SPIT			Y
#c42	16	SILETZ SPIT			Y
#c43	16	SILETZ SPIT			Y
#c44	16	SILETZ SPIT			Y
#c45	16	SILETZ SPIT			Y
#c46	16	SILETZ SPIT			Y
#c47	16	SILETZ SPIT			Y
#c48	16	SILETZ SPIT			Y
#c49	16	SILETZ SPIT			Y
#c50	16	SILETZ SPIT			Y
#c51	17	SILETZ SPIT			Y
#c52	17	SILETZ SPIT			Y
#c53	17	SILETZ SPIT			Y
#c54	17	SILETZ SPIT			Y
#c55	17	SILETZ SPIT			Y
#c56	17	SILETZ SPIT			Y
#c57	17	SILETZ SPIT			Y
#c58	17	SILETZ SPIT			Y
#c59	17	SILETZ SPIT			Y
#c60	17	SILETZ SPIT			Y
#c61	17	SILETZ SPIT			Y
#c62	17	SILETZ SPIT			Y
#c63	17	SILETZ SPIT			Y
#c64	17	SILETZ SPIT			Y
#c65	17	SILETZ SPIT			Y
#c66	17	SILETZ SPIT			Y
#c67	17	SILETZ SPIT			Y
#c68	17	SILETZ SPIT			Y
#c69	17	SILETZ SPIT			Y
#c70	17	SILETZ SPIT			Y
#c71	17	SILETZ SPIT			Y
#c72	17	SILETZ SPIT			Y
#c73	17	SILETZ SPIT			Y
#c74	17	SILETZ SPIT			Y
#c75	17	SILETZ SPIT			Y
#c76	17	SILETZ SPIT			Y
#c77	17	SILETZ SPIT	NO DATA	NO DATA	N
#c78	17	SILETZ SPIT	NO DATA	NO DATA	N
#c79	17	SILETZ SPIT			Y
#c80	17	SILETZ SPIT			Y
#c81	17	SILETZ SPIT			Y
#c82	17	SILETZ SPIT			Y
#c83	17	SILETZ SPIT			Y
#c84	17	SILETZ SPIT			Y
#c85	17	SILETZ SPIT			Y
#c86	17	SILETZ SPIT			Y
#c87	17	SILETZ SPIT			Y
#c88	17	SILETZ SPIT			Y
#c89	17	GLENEDEN BEACH			Y
#c90	17	GLENEDEN BEACH			Y
#c91	17	GLENEDEN BEACH			Y
#c92	17	GLENEDEN BEACH			Y
#c93	17	GLENEDEN BEACH			Y
#c94	17	GLENEDEN BEACH			Y
#c95	17	GLENEDEN BEACH			Y
#c96	17	GLENEDEN BEACH			Y
#c97	17	GLENEDEN BEACH			Y
#c98	17	GLENEDEN BEACH	-0.62	0.76	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c99	17	GLENEDEN BEACH	-0.62	0.76	N
#c100	17	GLENEDEN BEACH	-0.62	0.76	N
#c101	17	GLENEDEN BEACH	-0.62	0.76	N
#c102	17	GLENEDEN BEACH	-0.62	0.76	N
#c103	17	GLENEDEN BEACH	-0.62	0.76	N
#c104	17	GLENEDEN BEACH	-0.62	0.76	N
#c105	17	GLENEDEN BEACH			Y
#c106	17	GLENEDEN BEACH			Y
#c107	17	GLENEDEN BEACH	-0.62	0.76	N
#c108	17	GLENEDEN BEACH	-0.62	0.76	N
#c109	17	GLENEDEN BEACH	-0.62	0.76	N
#c110	17	GLENEDEN BEACH	-0.62	0.76	N
#c111	17	GLENEDEN BEACH	-0.62	0.76	N
#c112	17	GLENEDEN BEACH	-0.62	0.76	N
#c113	17	GLENEDEN BEACH	-0.62	0.76	N
#c114	17	GLENEDEN BEACH	-0.62	0.76	N
#c115	17	GLENEDEN BEACH	-0.62	0.76	N
#c116	17	GLENEDEN BEACH	-0.62	0.76	N
#c117	17	GLENEDEN BEACH			Y
#c118	17	GLENEDEN BEACH			Y
#c119	17	GLENEDEN BEACH			Y
#c120	17	GLENEDEN BEACH			Y
#c121	17	GLENEDEN BEACH	-0.62	0.76	N
#c122	17	GLENEDEN BEACH	-0.62	0.76	N
#c123	17	GLENEDEN BEACH	-0.62	0.76	N
#c124	17	GLENEDEN BEACH	-0.62	0.76	N
#c125	17	GLENEDEN BEACH	-0.62	0.76	N
#c126	17	GLENEDEN BEACH	-0.62	0.76	N
#c127	17	GLENEDEN BEACH	-0.62	0.76	N
#c128	17	GLENEDEN BEACH			Y
#c129	17	GLENEDEN BEACH	-0.62	0.76	N
#c130	18	GLENEDEN BEACH			Y
#c131	18	GLENEDEN BEACH	-0.62	0.76	N
#c132	18	GLENEDEN BEACH	-0.62	0.76	N
#c133	18	GLENEDEN BEACH			Y
#c134	18	GLENEDEN BEACH			Y
#c135	18	GLENEDEN BEACH			Y
#c136	18	GLENEDEN BEACH			Y
#c137	18	GLENEDEN BEACH			Y
#c138	18	GLENEDEN BEACH			Y
#c139	18	GLENEDEN BEACH			Y
#c140	18	GLENEDEN BEACH			Y
#c141	18	GLENEDEN BEACH	-0.62	0.76	N
#c142	18	GLENEDEN BEACH			Y
#c143	18	GLENEDEN BEACH			Y
#c144	18	GLENEDEN BEACH			Y
#c145	18	GLENEDEN BEACH			Y
#c146	18	GLENEDEN BEACH			Y
#c147	18	GLENEDEN BEACH			Y
#c148	18	GLENEDEN BEACH			Y
#c149	18	GLENEDEN BEACH			Y
#c150	18	GLENEDEN BEACH			Y
#c151	18	GLENEDEN BEACH			Y
#c152	18	GLENEDEN BEACH			Y
#c153	18	GLENEDEN BEACH			Y
#c154	18	GLENEDEN BEACH			Y
#c155	18	GLENEDEN BEACH	-0.62	0.76	N
#c156	18	GLENEDEN BEACH			Y

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c157	18	GLENEDEN BEACH			Y
#c158	18	GLENEDEN BEACH			Y
#c159	18	GLENEDEN BEACH			Y
#c160	18	GLENEDEN BEACH			Y
#c161	18	LINCOLN BEACH			Y
#c162	18	LINCOLN BEACH			Y
#c163	18	LINCOLN BEACH			Y
#c164	18	LINCOLN BEACH			Y
#c165	18	LINCOLN BEACH			Y
#c166	18	LINCOLN BEACH			Y
#c167	18	LINCOLN BEACH			Y
#c168	18	LINCOLN BEACH			Y
#c169	18	LINCOLN BEACH	−0.62	0.76	N
#c170	18	LINCOLN BEACH	−0.62	0.76	N
#c171	18	LINCOLN BEACH	−0.62	0.76	N
#c172	18	LINCOLN BEACH	−0.62	0.76	N
#c173	18	LINCOLN BEACH	−0.62	0.76	N
#c174	18	LINCOLN BEACH	−0.62	0.76	N
#c175	18	LINCOLN BEACH	−0.62	0.76	N
#c176	18	LINCOLN BEACH	−0.62	0.76	N
#c177	18	LINCOLN BEACH	−0.62	0.76	N
#c178	18	LINCOLN BEACH	−0.62	0.76	N
#c179	18	LINCOLN BEACH	−0.62	0.76	N
#c180	18	LINCOLN BEACH	−0.62	0.76	N
#c181	18	LINCOLN BEACH	−0.62	0.76	N
#c182	18	LINCOLN BEACH	−0.62	0.76	N
#c183	18	LINCOLN BEACH	−0.62	0.76	N
#c184	18	LINCOLN BEACH	−0.62	0.76	N
#c185	18	LINCOLN BEACH	−0.62	0.76	N
#c186	18	LINCOLN BEACH	−0.62	0.76	N
#c187	18	LINCOLN BEACH	−0.62	0.76	N
#c188	18	LINCOLN BEACH	−0.62	0.76	N
#c189	18	LINCOLN BEACH			Y
#c190	18	LINCOLN BEACH	−0.62	0.76	N
#c191	18	LINCOLN BEACH	−0.62	0.76	N
#c192	18	LINCOLN BEACH	−0.62	0.76	N
#c193	18	LINCOLN BEACH	−0.62	0.76	N
#c194	18	LINCOLN BEACH	−0.62	0.76	N
#c195	18	LINCOLN BEACH			Y
#c196	18	LINCOLN BEACH			Y
#c197	18	LINCOLN BEACH			Y
#c198	18	LINCOLN BEACH			Y
#c199	18	LINCOLN BEACH			Y
#c200	18,19	LINCOLN BEACH	−0.62	0.76	N
#c201	18,19	LINCOLN BEACH	−0.62	0.76	N
#c202	18,19	FISHING ROCK	−0.09	0.16	N
#c203	18,19	FISHING ROCK	−0.09	0.16	N
#c204	18,19	FISHING ROCK	−0.09	0.16	N
#c205	18,19	FISHING ROCK	−0.09	0.16	N
#c206	18,19	FISHING ROCK	−0.09	0.16	N
#c207	18,19	FISHING ROCK	−0.09	0.16	N
#c208	18,19	FISHING ROCK	−0.09	0.16	N
#c209	18,19	FISHING ROCK	−0.09	0.16	N
#c210	18,19	FISHING ROCK	−0.09	0.16	N
#c211	18,19		−0.09	0.16	N
#c212	18,19		−0.09	0.16	N
#c213	18,19		−0.03	0.07	N
#c214	18,19		−0.03	0.07	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c215	18,19		-0.03	0.07	N
#c216	18,19		-0.03	0.07	N
#c217	18,19		-0.03	0.07	N
#c218	18,19		-0.03	0.07	N
#c219	18,19		-0.03	0.07	N
#c220	18,19	FOGARTY CREEK	NO DATA	NO DATA	N
#c221	18,19		-0.03	0.07	N
#c222	18,19		-0.03	0.07	N
#c223	18,19		-0.03	0.07	N
#c224	18,19		-0.03	0.07	N
#c225	18,19		-0.03	0.07	N
#c226	18,19		-0.09	0.16	N
#c227	18,19		-0.09	0.16	N
#c228	18,19		-0.09	0.16	N
#c229	18,19		-0.09	0.16	N
#c230	18,19		-0.09	0.16	N
#c231	18,19		-0.09	0.16	N
#c232	18,19		-0.09	0.16	N
#c233	18,19		-0.09	0.16	N
#c234	18,19		-0.09	0.16	N
#c235	18,19		-0.09	0.16	N
#c236	18,19		-0.09	0.16	N
#c237	18,19		-0.09	0.16	N
#c238	18,19		-0.09	0.16	N
#c239	18,19		-0.09	0.16	N
#c240	18,19		-0.09	0.16	N
#c241	19		-0.09	0.16	N
#c242	19		-0.09	0.16	N
#c243	19		-0.09	0.16	N
#c244	19	BOILER BAY	-0.09	0.16	N
#c245	19	BOILER BAY	-0.09	0.16	N
#c246	19	BOILER BAY	-0.09	0.16	N
#c247	19	BOILER BAY	-0.09	0.16	N
#c248	19	BOILER BAY	-0.09	0.16	N
#c249	19	BOILER BAY	-0.08	0.08	N
#c250	19	BOILER BAY	-0.08	0.08	N
#c251	19	BOILER BAY	-0.08	0.08	N
#c252	19	BOILER BAY	-0.08	0.08	N
#c253	19	BOILER BAY	-0.08	0.08	N
#c254	19	BOILER BAY	-0.08	0.08	N
#c255	19		-0.09	0.16	N
#c256	19		-0.09	0.16	N
#c257	19		-0.09	0.16	N
#c258	19		-0.09	0.16	N
#c259	19		-0.09	0.16	N
#c260	19		-0.09	0.16	N
#c261	19		-0.09	0.16	N
#c262	19		-0.09	0.16	N
#c263	19		-0.09	0.16	N
#c264	19		-0.09	0.16	N
#c265	19		-0.09	0.16	N
#c266	19		-0.09	0.16	N
#c267	19		-0.09	0.16	N
#c268	19		-0.09	0.16	N
#c269	19		-0.09	0.16	N
#c270	19		-0.09	0.16	N
#c271	19		-0.09	0.16	N
#c272	19		-0.09	0.16	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c273	19		-0.09	0.16	N
#c274	19		-0.09	0.16	N
#c275	19		-0.09	0.16	N
#c276	19		-0.09	0.16	N
#c277	19		-0.09	0.16	N
#c278	19		-0.09	0.16	N
#c279	19		-0.09	0.16	N
#c280	19		-0.09	0.16	N
#c281	19		-0.09	0.16	N
#c282	19		-0.09	0.16	N
#c283	19,20		-0.09	0.16	N
#c284	19,20		-0.09	0.16	N
#c285	19,20		-0.09	0.16	N
#c286	19,20		-0.09	0.16	N
#c287	19,20		-0.09	0.16	N
#c288	19,20		-0.09	0.16	N
#c289	19,20		-0.09	0.16	N
#c290	19,20		-0.09	0.16	N
#c291	19,20		-0.09	0.16	N
#c292	19,20		-0.09	0.16	N
#c293	20		-0.09	0.16	N
#c294	20	PIRATE COVE	-0.07	0.10	N
#c295	20	PIRATE COVE	-0.07	0.10	N
#c296	20		-0.09	0.16	N
#c297	20		-0.09	0.16	N
#c298	20		-0.09	0.16	N
#c299	20		-0.09	0.16	N
#c300	20		-0.09	0.16	N
#c301	20		-0.09	0.16	N
#c302	20		-0.09	0.16	N
#c303	20		-0.09	0.16	N
#c304	20		-0.09	0.16	N
#c305	20		-0.09	0.16	N
#c306	20		-0.09	0.16	N
#c307	20		-0.09	0.16	N
#c308	20		-0.09	0.16	N
#c309	20		-0.09	0.16	N
#c310	20		-0.09	0.16	N
#c311	20		-0.09	0.16	N
#c312	20		-0.09	0.16	N
#c313	20	DEPOE BAY	-0.09	0.16	N
#c314	20	DEPOE BAY	-0.09	0.16	N
#c315	20	DEPOE BAY	-0.09	0.16	N
#c316	20	DEPOE BAY	-0.09	0.16	N
#c317	20	DEPOE BAY	-0.09	0.16	N
#c318	20	DEPOE BAY	-0.09	0.16	N
#c319	20	DEPOE BAY	-0.09	0.16	N
#c320	20	DEPOE BAY	-0.09	0.16	N
#c321	20	DEPOE BAY	-0.09	0.16	N
#c322	20	DEPOE BAY	-0.09	0.16	N
#c323	20	DEPOE BAY	-0.09	0.16	N
#c324	20	DEPOE BAY	-0.09	0.16	N
#c325	20	DEPOE BAY	-0.09	0.16	N
#c326	20	DEPOE BAY	-0.09	0.16	N
#c327	20	DEPOE BAY	-0.09	0.16	N
#c328	20	DEPOE BAY	-0.09	0.16	N
#c329	20	DEPOE BAY	-0.09	0.16	N
#c330	20	DEPOE BAY	-0.09	0.16	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c331	20	DEPOE BAY	-0.09	0.16	N
#c332	20	DEPOE BAY	-0.09	0.16	N
#c333	20	DEPOE BAY	-0.09	0.16	N
#c334	20	DEPOE BAY	-0.09	0.16	N
#c335	20	DEPOE BAY	-0.09	0.16	N
#c336	20	DEPOE BAY	-0.09	0.16	N
#c337	20	DEPOE BAY	-0.07	0.10	N
#c338	20		-0.09	0.16	N
#c339	20		-0.09	0.16	N
#c340	20		-0.09	0.16	N
#c341	20		-0.09	0.16	N
#c342	20		-0.09	0.16	N
#c343	20		-0.09	0.16	N
#c344	20		-0.09	0.16	N
#c345	20		-0.09	0.16	N
#c346	20		-0.09	0.16	N
#c347	20		-0.09	0.16	N
#c348	20		-0.09	0.16	N
#c349	20		-0.09	0.16	N
#c350	20		-0.09	0.16	N
#c351	20		-0.09	0.16	N
#c352	20		-0.09	0.16	N
#c353	20		-0.09	0.16	N
#c354	20		-0.09	0.16	N
#c355	20		-0.09	0.16	N
#c356	20		-0.09	0.16	N
#c357	20		-0.09	0.16	N
#c358	20		-0.09	0.16	N
#c359	20		-0.09	0.16	N
#c360	20		-0.09	0.16	N
#c361	20		-0.09	0.16	N
#c362	20		-0.09	0.16	N
#c363	20		-0.09	0.16	N
#c364	20		-0.09	0.16	N
#c365	20		-0.09	0.16	N
#c366	20,21		-0.09	0.16	N
#c367	20,21		-0.09	0.16	N
#c368	20,21		-0.09	0.16	N
#c369	20,21		-0.09	0.16	N
#c370	20,21		-0.09	0.16	N
#c371	20,21		-0.09	0.16	N
#c372	21		-0.09	0.16	N
#c373	21		-0.09	0.16	N
#c374	21		-0.09	0.16	N
#c375	21	LITTLE WHALE COVE	-0.17	0.09	N
#c376	21		-0.09	0.16	N
#c377	21		-0.09	0.16	N
#c378	21		-0.09	0.16	N
#c379	21	WHALE COVE	-0.17	0.09	N
#c380	21	WHALE COVE	-0.17	0.09	N
#c381	21	WHALE COVE	-0.17	0.09	N
#c382	21	WHALE COVE	-0.17	0.09	N
#c383	21	WHALE COVE	-0.17	0.09	N
#c384	21	WHALE COVE	-0.17	0.09	N
#c385	21	WHALE COVE	-0.09	0.16	N
#c386	21	WHALE COVE	-0.09	0.16	N
#c387	21	WHALE COVE	-0.09	0.16	N
#c388	21		-0.09	0.16	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c389	21		-0.09	0.16	N
#c390	21		-0.09	0.16	N
#c391	21		-0.09	0.16	N
#c392	21		-0.09	0.16	N
#c393	21		-0.09	0.16	N
#c394	21		-0.09	0.16	N
#c395	21		-0.09	0.16	N
#c396	21		-0.09	0.16	N
#c397	21		-0.09	0.16	N
#c398	21		-0.09	0.16	N
#c399	21		-0.09	0.16	N
#c400	21		-0.09	0.16	N
#c401	21		-0.09	0.16	N
#c402	21		-0.09	0.16	N
#c403	21		-0.09	0.16	N
#c404	21		-0.09	0.16	N
#c405	21		-0.09	0.16	N
#c406	21		-0.09	0.16	N
#c407	21		-0.09	0.16	N
#c408	21		-0.09	0.16	N
#c409	21		-0.09	0.16	N
#c410	21	CAPE FOULWEATHER	-0.09	0.16	N
#c411	21	CAPE FOULWEATHER	-0.09	0.16	N
#c412	21	CAPE FOULWEATHER	-0.09	0.16	N
#c413	21	CAPE FOULWEATHER	-0.09	0.16	N
#c414	21	CAPE FOULWEATHER	-0.09	0.16	N
#c415	21	CAPE FOULWEATHER	-0.09	0.16	N
#c416	21	CAPE FOULWEATHER	-0.09	0.16	N
#c417	21	CAPE FOULWEATHER	-0.09	0.16	N
#c418	21	CAPE FOULWEATHER	-0.09	0.16	N
#c419	21	CAPE FOULWEATHER	-0.09	0.16	N
#c420	21	CAPE FOULWEATHER	-0.09	0.16	N
#c421	21	CAPE FOULWEATHER	-0.09	0.16	N
#c422	21	CAPE FOULWEATHER	-0.09	0.16	N
#c423	21	CAPE FOULWEATHER	-0.09	0.16	N
#c424	21	CAPE FOULWEATHER	-0.09	0.16	N
#c425	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c426	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c427	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c428	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c429	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c430	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c431	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c432	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c433	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c434	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c435	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c436	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c437	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c438	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c439	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c440	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c441	21,22	CAPE FOULWEATHER	-0.09	0.16	N
#c442	21,22		-0.09	0.16	N
#c443	21,22		-0.09	0.16	N
#c444	21,22		-0.09	0.16	N
#c445	22		-0.09	0.16	N
#c446	22		-0.09	0.16	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c447	22		-0.09	0.16	N
#c448	22		-0.09	0.16	N
#c449	22		-0.09	0.16	N
#c450	22		-0.09	0.16	N
#c451	22		-0.09	0.16	N
#c452	22	OTTER CREST	-0.09	0.16	N
#c453	22	OTTER CREST	-0.09	0.16	N
#c454	22	OTTER CREST	-0.09	0.16	N
#c455	22	OTTER CREST	-0.09	0.16	N
#c456	22	OTTER CREST	-0.09	0.16	N
#c457	22	OTTER CREST	-0.09	0.16	N
#c458	22	OTTER CREST	-0.09	0.16	N
#c459	22	OTTER CREST	-0.09	0.16	N
#c460	22	OTTER CREST	-0.09	0.16	N
#c461	22	OTTER CREST	-0.09	0.16	N
#c462	22	OTTER CREST	-0.09	0.16	N
#c463	22	OTTER CREST	-0.09	0.16	N
#c464	22	OTTER CREST	-0.09	0.16	N
#c465	22	OTTER CREST	-0.09	0.16	N
#c466	22	OTTER CREST	-0.09	0.16	N
#c467	22	OTTER CREST	-0.09	0.16	N
#c468	22		-0.09	0.16	N
#c469	22		-0.09	0.16	N
#c470	22		-0.09	0.16	N
#c471	22		-0.09	0.16	N
#c472	22		-0.09	0.16	N
#c473	22		-0.09	0.16	N
#c474	22		-0.09	0.16	N
#c475	22	OTTER CREST RESORT	-0.09	0.16	N
#c476	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c477	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c478	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c479	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c480	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c481	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c482	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c483	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c484	22	OTTER CREST RESORT	-0.09	NO DATA	N
#c485	22		-1.22	0.95	N
#c486	22	CITY OF OTTER ROCK	-1.22	0.95	N
#c487	22	CITY OF OTTER ROCK	-1.22	0.95	N
#c488	22,23	CITY OF OTTER ROCK	-1.22	0.95	N
#c489	22,23	CITY OF OTTER ROCK	-1.22	0.95	N
#c490	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c491	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c492	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c493	22,23	DEVILS PUNCH BOWL	-0.09	NO DATA	N
#c494	22,23	DEVILS PUNCH BOWL	-0.09	NO DATA	N
#c495	22,23	DEVILS PUNCH BOWL	-0.09	NO DATA	N
#c496	22,23	DEVILS PUNCH BOWL	-0.09	NO DATA	N
#c497	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c498	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c499	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c500	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c501	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c502	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c503	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c504	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#c505	22,23	CITY OF OTTER ROCK	-0.09	NO DATA	N
#c506	22,23	CITY OF OTTER ROCK	-1.22	0.95	N
#c507	22,23	CITY OF OTTER ROCK	-1.22	0.95	N
#c508	22,23	CITY OF OTTER ROCK	-1.22	0.95	N
#c509	22,23	CITY OF OTTER ROCK	-0.87	0.68	N
#c510	22,23	CITY OF OTTER ROCK	-0.87	0.68	N
#c511	22,23	CITY OF OTTER ROCK	-0.87	0.68	N
#c512	22,23	CITY OF OTTER ROCK	-0.87	0.68	N
#c513	22,23	CITY OF OTTER ROCK	-0.87	0.68	N
#c514	22,23	CITY OF OTTER ROCK	-0.87	0.68	N
#c515	22,23	BEVERLY BEACH	-0.87	0.68	N
#c516	22,23	BEVERLY BEACH	-0.87	0.68	N
#c517	22,23	BEVERLY BEACH	-1.22	0.95	N
#c518	23	BEVERLY BEACH	-1.22	0.95	N
#c519	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c520	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c521	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c522	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c523	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c524	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c525	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c526	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c527	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c528	23	JOHNSON CREEK	-0.25	0.21	N
#c529	23	JOHNSON CREEK	-0.25	0.21	N
#c530	23	BEVERLY BEACH	-0.25	0.21	N
#c531	23	BEVERLY BEACH	-0.25	0.21	N
#c532	23	BEVERLY BEACH	-0.25	0.21	N
#c533	23	BEVERLY BEACH	-0.25	0.21	N
#c534	23	BEVERLY BEACH	-0.87	0.68	N
#c535	23	BEVERLY BEACH	-0.87	0.68	N
#c536	23	BEVERLY BEACH	-0.87	0.68	N
#c537	23	BEVERLY BEACH	-0.87	0.68	N
#c538	23	BEVERLY BEACH	-0.87	0.68	N
#c539	23	BEVERLY BEACH	-0.87	0.68	N
#c540	23	BEVERLY BEACH	-0.87	0.68	N
#c541	23	BEVERLY BEACH	-0.87	0.68	N
#c542	23	BEVERLY BEACH	-0.87	0.68	N
#c543	23	BEVERLY BEACH	-0.87	0.68	N
#c544	23	BEVERLY BEACH	-0.87	0.68	N
#c545	23	BEVERLY BEACH	-0.87	0.68	N
#c546	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c547	23	SPENCER CREEK	NO DATA	NO DATA	N
#c548	23	SPENCER CREEK	NO DATA	NO DATA	N
#c549	23	SPENCER CREEK	NO DATA	NO DATA	N
#c550	23	BEVERLY BEACH	NO DATA	NO DATA	N
#c551	23	BEVERLY BEACH	-0.87	0.68	N
#d1	23	BEVERLY BEACH	-0.87	0.68	N
#d2	23	BEVERLY BEACH	-0.87	0.68	N
#d3	23	BEVERLY BEACH	-0.87	0.68	N
#d4	23	BEVERLY BEACH	-0.87	0.68	N
#d5	23	BEVERLY BEACH	-0.87	0.68	N
#d6	23	BEVERLY BEACH	-0.87	0.68	N
#d7	23	BEVERLY BEACH	-0.87	0.68	N
#d8	23	BEVERLY BEACH	-0.87	0.68	N
#d9	23	BEVERLY BEACH	-0.87	0.68	N
#d10	23	BEVERLY BEACH	-0.87	0.68	N
#d11	23	BEVERLY BEACH	-0.87	0.68	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#d12	23	BEVERLY BEACH	-0.87	0.68	N
#d13	23	BEVERLY BEACH	-0.87	0.68	N
#d14	23	BEVERLY BEACH	-0.87	0.68	N
#d15	23	BEVERLY BEACH	-0.87	0.68	N
#d16	23	BEVERLY BEACH	-0.87	0.68	N
#d17	23	BEVERLY BEACH	-0.87	0.68	N
#d18	23	BEVERLY BEACH	-0.87	0.68	N
#d19	23	BEVERLY BEACH	-0.87	0.68	N
#d20	23	BEVERLY BEACH	-0.87	0.68	N
#d21	23	BEVERLY BEACH	-0.87	0.68	N
#d22	23	BEVERLY BEACH	-0.87	0.68	N
#d23	23	BEVERLY BEACH	-0.87	0.68	N
#d24	23	BEVERLY BEACH	-0.87	0.68	N
#d25	24	BEVERLY BEACH	-0.87	0.68	N
#d26	24	BEVERLY BEACH	-0.87	0.68	N
#d27	24	BEVERLY BEACH	-0.87	0.68	N
#d28	24	BEVERLY BEACH	-0.87	0.68	N
#d29	24	BEVERLY BEACH	-0.87	0.68	N
#d30	24	WADE CREEK	NO DATA	NO DATA	N
#d31	24	WADE CREEK	-0.87	0.68	N
#d32	24	MOOLACK BEACH	-0.87	0.68	N
#d33	24	MOOLACK BEACH	-0.87	0.68	N
#d34	24	MOOLACK BEACH	-0.87	0.68	N
#d35	24	MOOLACK BEACH	-0.87	0.68	N
#d36	24	MOOLACK BEACH	-0.87	0.68	N
#d37	24	MOOLACK BEACH	-0.87	0.68	N
#d38	24	MOOLACK BEACH	-0.87	0.68	N
#d39	24	MOOLACK BEACH	-0.87	0.68	N
#d40	24	MOOLACK BEACH	-0.87	0.68	N
#d41	24	MOOLACK BEACH	-0.87	0.68	N
#d42	24	MOOLACK BEACH	-0.87	0.68	N
#d43	24	MOOLACK BEACH	-0.87	0.68	N
#d44	24	MOOLACK BEACH	-0.87	0.68	N
#d45	24	MOOLACK BEACH	-0.87	0.68	N
#d46	24	MOOLACK BEACH	-0.87	0.68	N
#d47	24	MOOLACK BEACH	-0.87	0.68	N
#d48	24	MOOLACK BEACH	-0.87	0.68	N
#d49	24	MOOLACK BEACH	-0.87	0.68	N
#d50	24	MOOLACK BEACH	-0.87	0.68	N
#d51	24	MOOLACK BEACH	-0.87	0.68	N
#d52	24	COAL CREEK	NO DATA	NO DATA	N
#d53	24	MOOLACK BEACH	-0.87	0.68	N
#d54	24	MOOLACK BEACH	-0.87	0.68	N
#d55	24	MOOLACK BEACH	-0.87	0.68	N
#d56	24	MOOLACK BEACH	-0.87	0.68	N
#d57	24	MOOLACK BEACH	-0.87	0.68	N
#d58	24	MOOLACK BEACH	-0.87	0.68	N
#d59	24	MOOLACK CREEK	NO DATA	NO DATA	N
#d60	24	MOOLACK CREEK	NO DATA	NO DATA	N
#d61	24	MOOLACK CREEK	NO DATA	NO DATA	N
#d62	24	MOOLACK BEACH	-0.87	0.68	N
#d63	24	MOOLACK BEACH	-0.87	0.68	N
#d64	24	MOOLACK BEACH			Y
#d65	24	MOOLACK BEACH	-0.87	0.68	N
#d66	24	MOOLACK BEACH	-0.87	0.68	N
#d67	24	MOOLACK BEACH	-0.87	0.68	N
#d68	24	MOOLACK BEACH	-0.87	0.68	N
#d69	24	MOOLACK BEACH	-0.87	0.68	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#d70	24	MOOLACK BEACH	-0.87	0.68	N
#d71	24	MOOLACK BEACH	-0.87	0.68	N
#d72	24	MOOLACK BEACH	-0.87	0.68	N
#d73	24	MOOLACK BEACH	-1.22	0.95	N
#d74	24	MOOLACK BEACH	-1.22	0.95	N
#d75	24	MOOLACK BEACH	-1.22	0.95	N
#d76	24	MOOLACK BEACH	-1.22	0.95	N
#d77	24	MOOLACK BEACH	-1.22	0.95	N
#d78	24	MOOLACK BEACH	-1.22	0.95	N
#d79	24	MOOLACK BEACH	-1.22	0.95	N
#d80	24	MOOLACK BEACH	-1.22	0.95	N
#d81	24	MOOLACK BEACH	-1.22	0.95	N
#d82	24	MOOLACK BEACH	-1.22	0.95	N
#d83	24	MOOLACK BEACH	-1.22	0.95	N
#d84	24	MOOLACK BEACH	-1.22	0.95	N
#d85	24	MOOLACK BEACH	-1.22	0.95	N
#d86	24	MOOLACK BEACH	-1.22	0.95	N
#d87	24	MOOLACK BEACH	-1.22	0.95	N
#d88	24	MOOLACK BEACH	-1.22	0.95	N
#d89	24	MOOLACK BEACH	-1.22	0.95	N
#d90	24	MOOLACK BEACH	-1.22	0.95	N
#d91	24	SCHOONER POINT	-0.87	0.68	N
#d92	24	SCHOONER POINT	-0.87	0.68	N
#d93	24	SCHOONER POINT	-0.87	0.68	N
#d94	24	MOOLACK BEACH	-0.87	0.68	N
#d95	24	MOOLACK BEACH	-0.87	0.68	N
#d96	24	MOOLACK BEACH	-0.87	0.68	N
#d97	24	MOOLACK BEACH	-0.87	0.68	N
#d98	24	SCHOONER CREEK	-0.87	0.68	N
#d99	24	SCHOONER CREEK	-0.87	0.68	N
#d100	24	MOOLACK BEACH	-1.63	1.04	N
#d101	24	MOOLACK BEACH	-1.63	1.04	N
#d102	24	MOOLACK BEACH	-1.63	1.04	N
#d103	24	MOOLACK BEACH	-1.63	1.04	N
#d104	25	MOOLACK BEACH	-1.63	1.04	N
#d105	25	MOOLACK BEACH	-1.63	1.04	N
#d106	25	MOOLACK BEACH	-1.63	1.04	N
#d107	25	MOOLACK BEACH	-1.63	1.04	N
#d108	25	MOOLACK BEACH	-1.63	1.04	N
#d109	25	MOOLACK BEACH	-1.63	1.04	N
#d110	25	MOOLACK BEACH	-1.63	1.04	N
#d111	25	MOOLACK BEACH	-1.63	1.04	N
#d112	25	MOOLACK BEACH	-1.63	1.04	N
#d113	25	MOOLACK BEACH	-1.63	1.04	N
#d114	25	MOOLACK BEACH	-1.63	1.04	N
#d115	25	MOOLACK BEACH	-1.63	1.04	N
#d116	25	MOOLACK BEACH	-1.63	1.04	N
#d117	25	MOOLACK BEACH	-1.63	1.04	N
#d118	25	MOOLACK BEACH	-1.63	1.04	N
#d119	25	MOOLACK BEACH	-1.63	1.04	N
#d120	25	MOOLACK BEACH	-0.58	0.07	N
#d121	25	MOOLACK BEACH	-0.58	0.07	N
#d122	25	MOOLACK BEACH	0.00	0.34	N
#d123	25	MOOLACK BEACH	0.00	0.34	N
#d124	25	MOOLACK BEACH	0.00	0.34	N
#d125	25	YAQUINA HEAD	-0.09	0.16	N
#d126	25	YAQUINA HEAD	-0.09	0.16	N
#d127	25	YAQUINA HEAD	-0.09	0.16	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#d128	25	YAQUINA HEAD	-0.09	0.16	N
#d129	25	YAQUINA HEAD	-0.09	0.16	N
#d130	25	YAQUINA HEAD	-0.09	0.16	N
#d131	25	YAQUINA HEAD	-0.09	0.16	N
#d132	25	YAQUINA HEAD	-0.09	0.16	N
#d133	25	YAQUINA HEAD	-0.09	0.16	N
#d134	25	YAQUINA HEAD	-0.09	0.16	N
#d135	25	YAQUINA HEAD	-0.09	0.16	N
#d136	25	YAQUINA HEAD	-0.09	0.16	N
#d137	25	YAQUINA HEAD	-0.09	0.16	N
#d138	25	YAQUINA HEAD	-0.09	0.16	N
#d139	25	YAQUINA HEAD	-0.09	0.16	N
#d140	25	YAQUINA HEAD	-0.09	0.16	N
#d141	25	YAQUINA HEAD	-0.09	0.16	N
#d142	25	YAQUINA HEAD	-0.09	0.16	N
#d143	25	YAQUINA HEAD	-0.09	0.16	N
#d144	25	YAQUINA HEAD	-0.09	0.16	N
#d145	25	YAQUINA HEAD	-0.09	0.16	N
#d146	25	YAQUINA HEAD	-0.09	0.16	N
#d147	25	YAQUINA HEAD	-0.09	0.16	N
#d148	25	YAQUINA HEAD	-0.09	0.16	N
#d149	25	YAQUINA HEAD	-0.09	0.16	N
#d150	25	YAQUINA HEAD	-0.09	0.16	N
#d151	25	YAQUINA HEAD	-0.09	0.16	N
#d152	25	YAQUINA HEAD	-0.09	0.16	N
#d153	25	YAQUINA HEAD	-0.09	0.16	N
#d154	25	YAQUINA HEAD	-0.09	0.16	N
#d155	25	YAQUINA HEAD	-0.09	0.16	N
#d156	25	YAQUINA HEAD	-0.09	0.16	N
#d157	25	YAQUINA HEAD	-0.09	0.16	N
#d158	25	YAQUINA HEAD	-0.09	0.16	N
#d159	25	YAQUINA HEAD	-0.09	0.16	N
#d160	25	YAQUINA HEAD	-0.09	0.16	N
#d161	25	YAQUINA HEAD	-0.09	0.16	N
#d162	25	YAQUINA HEAD	-0.09	0.16	N
#d163	25	YAQUINA HEAD	-0.09	0.16	N
#d164	25	YAQUINA HEAD	-0.09	0.16	N
#d165	25	YAQUINA HEAD	-0.09	0.16	N
#d166	25	YAQUINA HEAD	-0.09	0.16	N
#d167	25	YAQUINA HEAD	-0.09	0.16	N
#d168	25	YAQUINA HEAD	-0.09	0.16	N
#d169	25	YAQUINA HEAD	-0.09	0.16	N
#d170	25	YAQUINA HEAD	-0.09	0.16	N
#d171	25	YAQUINA HEAD	-0.09	0.16	N
#d172	25	YAQUINA HEAD	-0.09	0.16	N
#d173	25	YAQUINA HEAD	-0.09	0.16	N
#d174	25	YAQUINA HEAD	-0.09	0.16	N
#d175	25	YAQUINA HEAD	-0.09	0.16	N
#d176	25	YAQUINA HEAD	-0.09	0.16	N
#d177	25	YAQUINA HEAD	-0.09	0.16	N
#d178	25	AGATE BEACH	-0.58	0.34	N
#d179	25	AGATE BEACH	-0.58	0.34	N
#d180	25	AGATE BEACH	-0.25	0.21	N
#d181	25	AGATE BEACH	-0.25	0.21	N
#d182	25	AGATE BEACH	-0.25	0.21	N
#d183	25	AGATE BEACH	-0.25	0.21	N
#d184	25	AGATE BEACH	-0.25	0.21	N
#d185	25	AGATE BEACH	-0.25	0.21	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#d186	25	AGATE BEACH	-0.25	0.21	N
#d187	25	AGATE BEACH	-0.25	0.21	N
#d188	25	AGATE BEACH	-0.25	0.21	N
#d189	25	AGATE BEACH	-0.25	0.21	N
#d190	25	AGATE BEACH	-0.25	0.21	N
#d191	25	AGATE BEACH	-0.25	0.21	N
#d192	25	AGATE BEACH	-0.25	0.21	N
#d193	25	AGATE BEACH	-0.25	0.21	N
#d194	25	AGATE BEACH	-0.25	0.21	N
#d195	25	AGATE BEACH	-0.25	0.21	N
#d196	25	AGATE BEACH	-0.25	0.21	N
#d197	25	AGATE BEACH	-0.25	0.21	N
#d198	25	AGATE BEACH	-0.25	0.21	N
#d199	25	AGATE BEACH	-0.25	0.21	N
#d200	25	LITTLE CREEK	-0.25	0.21	N
#d201	25	LITTLE CREEK			Y
#d202	25	AGATE BEACH	-0.25	0.21	N
#d203	25	AGATE BEACH			Y
#d204	25	AGATE BEACH			Y
#d205	25	AGATE BEACH	-0.25	0.21	N
#d206	25	AGATE BEACH	-0.25	0.21	N
#d207	25	AGATE BEACH	-0.25	0.21	N
#d208	25	AGATE BEACH	-0.25	0.21	N
#d209	25	AGATE BEACH	-0.25	0.21	N
#d210	25	AGATE BEACH	-0.25	0.21	N
#d211	25	AGATE BEACH	-0.25	0.21	N
#d212	25	AGATE BEACH	-0.25	0.21	N
#d213	25	BIG CREEK	-0.25	0.21	N
#d214	25	BIG CREEK	-0.25	0.21	N
#d215	25	BIG CREEK	-0.25	0.21	N
#d216	25	BIG CREEK	-0.25	0.21	N
#d217	25	NEWPORT			Y
#d218	25	NEWPORT			Y
#d219	25	NEWPORT			Y
#d220	25	NEWPORT			Y
#d221	25	NEWPORT			Y
#d222	25	NEWPORT	-0.18	0.09	N
#d223	25	NEWPORT	-0.18	0.09	N
#d224	25	NEWPORT	-0.18	0.09	N
#d225	26	NEWPORT	-0.18	0.09	N
#d226	26	NEWPORT	-0.18	0.09	N
#d227	26	NEWPORT	-0.44	0.08	N
#d228	26	NEWPORT	-0.44	0.08	N
#d229	26	NEWPORT	-0.44	0.08	N
#d230	26	NEWPORT	-0.57	0.34	N
#d231	26	NEWPORT	-1.35	0.63	N
#d232	26	NEWPORT	-1.35	0.63	N
#d233	26	NEWPORT	-1.35	0.63	N
#d234	26	NEWPORT	-1.35	0.63	N
#d235	26	NEWPORT	-1.35	0.63	N
#d236	26	NEWPORT	-1.35	0.63	N
#d237	26	NEWPORT	-1.35	0.63	N
#d238	26	NEWPORT	-1.35	0.63	N
#d239	26	NEWPORT	-1.35	0.63	N
#d240	26	NEWPORT	0.00	0.34	N
#d241	26	NEWPORT	0.00	0.34	N
#d242	26	NEWPORT	-1.35	0.63	N
#d243	26	JUMPOFF JOE	-1.35	0.63	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#d244	26	JUMPOFF JOE	-1.35	0.63	N
#d245	26	JUMPOFF JOE	-1.35	0.63	N
#d246	26	JUMPOFF JOE	-1.35	0.63	N
#d247	26	JUMPOFF JOE	-1.35	0.63	N
#d248	26	JUMPOFF JOE	-1.35	0.63	N
#d249	26	JUMPOFF JOE	-1.35	0.63	N
#d250	26	JUMPOFF JOE	-1.35	0.63	N
#d251	26	NYE BEACH	-1.35	0.63	N
#d252	26	NYE BEACH	-1.35	0.63	N
#d253	26	NYE BEACH	-1.35	0.63	N
#d254	26	NYE BEACH	-1.35	0.63	N
#d255	26	NYE BEACH	-1.35	0.63	N
#d256	26	NYE BEACH	-1.35	0.63	N
#d257	26	NYE BEACH	-1.35	0.63	N
#d258	26	NYE BEACH	-1.35	0.63	N
#d259	26	NYE BEACH	-1.35	0.63	N
#d260	26	NYE BEACH	-0.68	0.68	N
#d261	26	NYE BEACH	-0.42	0.68	N
#d262	26	NYE BEACH	-0.42	0.68	N
#d263	26	NYE BEACH			Y
#d264	26	NYE BEACH			Y
#d265	26	NYE BEACH	-0.25	0.68	N
#d266	26	NYE BEACH	-0.25	0.68	N
#d267	26	NYE BEACH	-0.25	0.68	N
#d268	26	NYE BEACH			Y
#d269	26	NYE BEACH			Y
#d270	26	NYE BEACH			Y
#d271	26	NEWPORT	-0.87	0.68	N
#d272	26	NEWPORT	-0.87	0.68	N
#d273	26	NEWPORT	-0.87	0.68	N
#d274	26	NEWPORT	-0.87	0.68	N
#d275	26	NEWPORT			Y
#d276	26	NEWPORT	-0.87	0.68	N
#d277	26	NEWPORT			Y
#d278	26	NEWPORT			Y
#d279	26	NEWPORT	-0.87	0.68	N
#d280	26	NEWPORT	-0.87	0.68	N
#d281	26	NEWPORT	-0.87	0.68	N
#d282	26	NEWPORT	-0.87	0.68	N
#d283	26	NEWPORT	-0.87	0.68	N
#d284	26	NEWPORT	-0.87	0.68	N
#d285	26	NEWPORT	-0.87	0.68	N
#d286	26	NEWPORT	-0.87	0.68	N
#d287	26	NEWPORT	-0.87	0.68	N
#d288	26	NEWPORT	-0.87	0.68	N
#d289	26	NEWPORT	-0.87	0.68	N
#d290	26	NEWPORT	-0.87	0.68	N
#d291	26	NEWPORT	-0.87	0.68	N
#d292	26	NEWPORT	-0.87	0.68	N
#d293	26	NEWPORT	-0.87	0.68	N
#d294	26	NEWPORT	-0.87	0.68	N
#d295	26	NEWPORT	-0.87	0.68	N
#d296	26	NEWPORT	-0.87	0.68	N
#d297	26	NEWPORT	-0.87	0.68	N
#d298	26	YAQUINA BAY STATE PARK	0.00	0.05	N
#d299	26	YAQUINA BAY STATE PARK	0.00	0.05	N
#d300	26	YAQUINA BAY STATE PARK	0.00	0.05	N
#d301	26	YAQUINA BAY STATE PARK	0.00	0.05	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#d302	26	YAQUINA BAY STATE PARK	0.00	0.05	N
#d303	26	YAQUINA BAY STATE PARK	0.00	0.05	N
#d304	26	YAQUINA BAY STATE PARK	0.00	0.05	N
#d305	26	YAQUINA BAY STATE PARK	0.00	0.05	N
#d306	26	YAQUINA BAY STATE PARK	0.00	0.05	N
#d307	27	YAQUINA BAY STATE PARK	NO DATA	NO DATA	N
#d308	27	YAQUINA BAY STATE PARK	NO DATA	NO DATA	N
#d309	27	YAQUINA BAY STATE PARK	NO DATA	NO DATA	N
#d310	27	YAQUINA BAY STATE PARK	NO DATA	NO DATA	N
#d311	27	NORTH YAQUINA BAY JETTY			Y
#d312	27	YAQUINA BAY	NO DATA	NO DATA	N
#d313	27	YAQUINA BAY	NO DATA	NO DATA	N
#e1	27	SOUTH YAQUINA BAY JETTY			Y
#e2	27	SOUTH YAQUINA BAY JETTY			Y
#e3	27	SOUTH YAQUINA BAY JETTY			Y
#e4	27	SOUTHBEACH	NO DATA	NO DATA	N
#e5	27	SOUTHBEACH	NO DATA	NO DATA	N
#e6	27	SOUTHBEACH	NO DATA	NO DATA	N
#e7	27	SOUTHBEACH	NO DATA	NO DATA	N
#e8	27	SOUTHBEACH	NO DATA	NO DATA	N
#e9	27	SOUTHBEACH	NO DATA	NO DATA	N
#e10	27	SOUTHBEACH	NO DATA	NO DATA	N
#e11	27	SOUTHBEACH	NO DATA	NO DATA	N
#e12	27	SOUTHBEACH	NO DATA	NO DATA	N
#e13	27	SOUTHBEACH	NO DATA	NO DATA	N
#e14	27	SOUTHBEACH	NO DATA	NO DATA	N
#e15	27	SOUTHBEACH	NO DATA	NO DATA	N
#e16	27	SOUTHBEACH	NO DATA	NO DATA	N
#e17	27	SOUTHBEACH	NO DATA	NO DATA	N
#e18	27	SOUTHBEACH	NO DATA	NO DATA	N
#e19	27	SOUTHBEACH	NO DATA	NO DATA	N
#e20	27	SOUTHBEACH	NO DATA	NO DATA	N
#e21	27	SOUTHBEACH	NO DATA	NO DATA	N
#e22	27	SOUTHBEACH	NO DATA	NO DATA	N
#e23	27	SOUTHBEACH	NO DATA	NO DATA	N
#e24	27	SOUTHBEACH	NO DATA	NO DATA	N
#e25	27	SOUTHBEACH	NO DATA	NO DATA	N
#e26	27	SOUTHBEACH	NO DATA	NO DATA	N
#e27	27	SOUTHBEACH	NO DATA	NO DATA	N
#e28	27	SOUTHBEACH	NO DATA	NO DATA	N
#e29	27	SOUTHBEACH	NO DATA	NO DATA	N
#e30	27	SOUTHBEACH	NO DATA	NO DATA	N
#e31	27	SOUTHBEACH	NO DATA	NO DATA	N
#e32	27	SOUTHBEACH	NO DATA	NO DATA	N
#e33	27	SOUTHBEACH	NO DATA	NO DATA	N
#e34	27	SOUTHBEACH	NO DATA	NO DATA	N
#e35	27	SOUTHBEACH	NO DATA	NO DATA	N
#e36	27	SOUTHBEACH	NO DATA	NO DATA	N
#e37	27	SOUTHBEACH	NO DATA	NO DATA	N
#e38	27	SOUTHBEACH	NO DATA	NO DATA	N
#e39	27	SOUTHBEACH	NO DATA	NO DATA	N
#e40	27	SOUTHBEACH	NO DATA	NO DATA	N
#e41	27	SOUTHBEACH	NO DATA	NO DATA	N
#e42	27	SOUTHBEACH	NO DATA	NO DATA	N
#e43	27	SOUTHBEACH	NO DATA	NO DATA	N
#e44	27	SOUTHBEACH	NO DATA	NO DATA	N
#e45	27	SOUTHBEACH	NO DATA	NO DATA	N
#e46	27	SOUTHBEACH	NO DATA	NO DATA	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#e47	27	SOUTHBEACH	NO DATA	NO DATA	N
#e48	27	SOUTHBEACH	NO DATA	NO DATA	N
#e49	27	SOUTHBEACH	NO DATA	NO DATA	N
#e50	27	SOUTHBEACH	NO DATA	NO DATA	N
#e51	27	SOUTHBEACH	NO DATA	NO DATA	N
#e52	27	SOUTHBEACH	NO DATA	NO DATA	N
#e53	27	SOUTHBEACH	NO DATA	NO DATA	N
#e54	27	SOUTHBEACH	NO DATA	NO DATA	N
#e55	27	SOUTHBEACH	NO DATA	NO DATA	N
#e56	27		-0.36	0.45	N
#e57	27		-0.36	0.45	N
#e58	27		-0.36	0.45	N
#e59	28		-0.36	0.45	N
#e60	28	HENDERSON CREEK	-0.36	0.45	N
#e61	28				Y
#e62	28		-0.36	0.45	N
#e63	28		-0.36	0.45	N
#e64	28		-0.36	0.45	N
#e65	28		NO DATA	NO DATA	N
#e66	28		NO DATA	NO DATA	N
#e67	28		NO DATA	NO DATA	N
#e68	28		NO DATA	NO DATA	N
#e69	28		NO DATA	NO DATA	N
#e70	28		-0.36	0.45	N
#e71	28		-0.36	0.45	N
#e72	28		-0.36	0.45	N
#e73	28		-0.36	0.45	N
#e74	28		-0.36	0.45	N
#e75	28		NO DATA	NO DATA	N
#e76	28		-0.36	0.45	N
#e77	28		-0.36	0.45	N
#e78	28		-0.36	0.45	N
#e79	28		-0.36	0.45	N
#e80	28		-0.36	0.45	N
#e81	28		-0.36	0.45	N
#e82	28	GRANT CREEK	-0.36	0.45	N
#e83	28	GRANT CREEK	-0.36	0.45	N
#e84	28		-0.36	0.45	N
#e85	28		-0.36	0.45	N
#e86	28		-0.36	0.45	N
#e87	28		-0.36	0.45	N
#e88	28				Y
#e89	28				Y
#e90	28				Y
#e91	28		NO DATA	NO DATA	N
#e92	28		NO DATA	NO DATA	N
#e93	28		NO DATA	NO DATA	N
#e94	28		-0.36	0.45	N
#e95	28		-0.36	0.45	N
#e96	28		-0.36	0.45	N
#e97	28		-0.36	0.45	N
#e98	28		-0.36	0.45	N
#e99	28		-0.36	0.45	N
#e100	28		-0.36	0.45	N
#e101	28		-0.36	0.45	N
#e102	28	MOORE CREEK			Y
#e103	28	HOLIDAY BEACH	-0.36	0.45	N
#e104	28	HOLIDAY BEACH	-0.36	0.45	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#e105	28	HOLIDAY BEACH	-0.36	0.45	N
#e106	28	HOLIDAY BEACH	-0.36	0.45	N
#e107	28	HOLIDAY BEACH	-0.36	0.45	N
#e108	28	HOLIDAY BEACH	-0.36	0.45	N
#e109	28	HOLIDAY BEACH	-0.36	0.45	N
#e110	28	HOLIDAY BEACH	-0.36	0.45	N
#e111	28	HOLIDAY BEACH	NO DATA	NO DATA	N
#e112	28	HOLIDAY BEACH	NO DATA	NO DATA	N
#e113	28	HOLIDAY BEACH	-0.36	0.45	N
#e114	28	HOLIDAY BEACH	-0.36	0.45	N
#e115	28	HOLIDAY BEACH	NO DATA	NO DATA	N
#e116	28	HOLIDAY BEACH	NO DATA	NO DATA	N
#e117	28	HOLIDAY BEACH	-0.36	0.45	N
#e118	28	HOLIDAY BEACH	-0.36	0.45	N
#e119	28		-0.36	0.45	N
#e120	28	THIEL CREEK	-0.36	0.45	N
#e121	28	THIEL CREEK	-0.36	0.45	N
#e122	28	THIEL CREEK	-0.36	0.45	N
#e123	28		-0.36	0.45	N
#e124	28		-0.36	0.45	N
#e125	28		-0.36	0.45	N
#e126	28		-0.93	0.09	N
#e127	28		-0.93	0.09	N
#e128	28		-0.36	0.45	N
#e129	28		-1.67	0.09	N
#e130	28		-1.67	0.09	N
#e131	28		-0.36	0.45	N
#e132	28		-0.36	0.45	N
#e133	28		-0.36	0.45	N
#e134	28		-0.36	0.45	N
#e135	28		-0.36	0.45	N
#e136	28		-0.36	0.45	N
#e137	29		-0.36	0.45	N
#e138	29		-0.36	0.45	N
#e139	29		-0.36	0.45	N
#e140	29		-0.36	0.45	N
#e141	29		-0.36	0.45	N
#e142	29		-0.36	0.45	N
#e143	29		-0.36	0.45	N
#e144	29		-0.36	0.45	N
#e145	29		-0.36	0.45	N
#e146	29		-0.36	0.45	N
#e147	29		-0.36	0.45	N
#e148	29		-0.36	0.45	N
#e149	29		-0.36	0.45	N
#e150	29		-0.36	0.45	N
#e151	29		-0.36	0.45	N
#e152	29		-0.36	0.45	N
#e153	29		-0.36	0.45	N
#e154	29		-0.36	0.45	N
#e155	29		-0.36	0.45	N
#e156	29		-0.36	0.45	N
#e157	29		-0.36	0.45	N
#e158	29		-0.36	0.45	N
#e159	29		-0.36	0.45	N
#e160	29		-0.36	0.45	N
#e161	29		-0.36	0.45	N
#e162	29		-0.36	0.45	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#e163	29		-0.36	0.45	N
#e164	29		-0.36	0.45	N
#e165	29		-0.36	0.45	N
#e166	29		-0.36	0.45	N
#e167	29	LOST CREEK STATE WAYSIDE	-0.36	0.45	N
#e168	29	LOST CREEK STATE WAYSIDE	-0.36	0.45	N
#e169	29	LOST CREEK STATE WAYSIDE	-0.36	0.45	N
#e170	29	LOST CREEK STATE WAYSIDE	-0.36	0.45	N
#e171	29	LOST CREEK STATE WAYSIDE	-0.36	0.45	N
#e172	29	LOST CREEK	NO DATA	NO DATA	N
#e173	29	LOST CREEK	NO DATA	NO DATA	N
#e174	29		-0.36	0.45	N
#e175	29		-0.36	0.45	N
#e176	29		-0.36	0.45	N
#e177	29		-0.36	0.45	N
#e178	29		-0.36	0.45	N
#e179	29		-0.36	0.45	N
#e180	29		-0.36	0.45	N
#e181	29		-0.36	0.45	N
#e182	29		-0.36	0.45	N
#e183	29		-0.36	0.45	N
#e184	29				Y
#e185	29		-0.36	0.45	N
#e186	29				Y
#e187	29		-0.36	0.45	N
#e188	29		-0.36	0.45	N
#e189	29		-0.36	0.45	N
#e190	29		-0.36	0.45	N
#e191	29		-0.36	0.45	N
#e192	29		-0.36	0.45	N
#e193	29		-0.36	0.45	N
#e194	29		-0.36	0.45	N
#e195	29		-0.36	0.45	N
#e196	29				Y
#e197	29		-0.36	0.45	N
#e198	29		-0.36	0.45	N
#e199	29		-0.36	0.45	N
#e200	29		-0.36	0.45	N
#e201	29		-0.36	0.45	N
#e202	29		-0.36	0.45	N
#e203	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e204	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e205	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e206	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e207	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e208	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e209	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e210	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e211	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e212	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e213	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e214	29	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e215	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e216	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e217	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e218	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e219	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e220	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N

TRANSECT	0-94-	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#e221	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e222	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e223	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e224	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e225	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e226	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e227	30	ONA BEACH; BEAVER CREEK	NO DATA	NO DATA	N
#e228	30		−0.36	0.45	N
#e229	30		−0.36	0.45	N
#e230	30		−0.36	0.45	N
#e231	30		−0.36	0.45	N
#e232	30		−0.36	0.45	N
#e233	30		−0.36	0.45	N
#e234	30		−0.36	0.45	N
#e235	30		−0.36	0.45	N
#e236	30		−0.36	0.45	N
#e237	30		−0.36	0.45	N
#e238	30		−0.36	0.45	N
#e239	30		−0.36	0.45	N
#e240	30		−0.36	0.45	N
#e241	30		−0.36	0.45	N
#e242	30		−0.36	0.45	N
#e243	30		−0.36	0.45	N
#e244	30		−0.36	0.45	N
#e245	30		−0.36	0.45	N
#e246	30		−0.36	0.45	N
#e247	30		−0.36	0.45	N
#e248	30		−0.36	0.45	N
#e249	30		−0.36	0.45	N
#e250	30		−0.36	0.45	N
#e251	30		−0.36	0.45	N
#e252	30		−0.36	0.45	N
#e253	30		−0.36	0.45	N
#e254	30		−0.36	0.45	N
#e255	30		−0.36	0.45	N
#e256	30		−0.36	0.45	N
#e257	30		−0.36	0.45	N
#e258	30		NO DATA	NO DATA	N
#e259	30		NO DATA	NO DATA	N
#e260	30		NO DATA	NO DATA	N
#e261	30		NO DATA	NO DATA	N
#e262	30		−0.36	0.45	N
#e263	30		−0.36	0.45	N
#e264	30		−0.36	0.45	N
#e265	30		−0.36	0.45	N
#e266	30		−0.24	0.45	N
#e267	30		−0.24	0.45	N
#e268	30		−0.24	0.45	N
#e269	30		−0.24	0.45	N
#e270	30		−0.24	0.45	N
#e271	30		−0.24	0.45	N
#e272	30		−0.11	0.08	N
#e273	30		−0.11	0.08	N
#e274	30		−0.11	0.08	N
#e275	30		−0.11	0.08	N
#e276	30		−0.11	0.08	N
#e277	30		−0.11	0.08	N
#e278	30	CITY OF SEAL ROCK	−0.11	0.08	N

TRANSECT	0–94–	GEOGRAPHIC FEATURE	BEST_FT/YR	ERROR	SPS?
#e279	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e280	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e281	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e282	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e283	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e284	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e285	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e286	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e287	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e288	30	SEAL ROCKS	−0.09	0.16	N
#e289	30	SEAL ROCKS	−0.09	0.16	N
#e290	30	SEAL ROCKS	−0.09	0.16	N
#e291	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e292	30	CITY OF SEAL ROCK	−0.11	0.08	N
#e293	30	CITY OF SEAL ROCK	−0.11	0.08	N

These are the corner coordinates (Eastings, Northings) for the rectified maps Open File O-94-13 through O-94-18 and O-94-22 through O-94-30 as mentioned in the text, Open File O-94-11.

Name	Southeast	Southwest	Northwest	Northeast
O-95-13	7291200.00, 506896.25	7291200.00, 517696.25	7306400,00, 517696.25	7306400.00, 506896.25
O-95-14	7288800.00, 495296.25	7288800.00, 506896.25	7304000.00, 506896.25	7304000.00, 495296.25
O-95-15	7286400.00, 483696.25	7286400.00, 495296.25	7301600.00, 495296.25	7301600.00, 483696.25
O-95-16	7284400.00, 472096.25	7284400,00, 483696.25	7299600.00, 483696.25	7299600.00, 472096.25
O-95-17	7284400.00, 460496.25	7284400.00, 472096.25	7299600.00, 472096.25	7299600.00, 460496.25
O-95-18	7289718.72, 446496.25	7277718.72, 446496.25	7277718.72, 460496.25	7289718.72, 460496.25
O-95-23	7282231.46, 403668.83	7271831.46, 403668.83	7271831.46, 415268.83	7282231.46, 415268.83
O-95-24	7281831.46, 392068.83	7271431.46, 392068.83	7271431.46, 403668.83	7281831.46, 403668.83
O-95-25	7281431,46, 380468.83	7270631.46, 380468.83	7270631.46, 392068.83	7281431.46, 392068.83
O-95-26	7280631.46, 368868.83	7270231.46, 368868.83	7270231.46, 380468.83	7280631.46, 380468.83
O-95-27	7279031.46, 357268.83	7269431.46, 357268.83	7269431.46, 368868.83	7279031.46, 368868.83
O-95-28	7277831.46, 345668.83	7268663.57, 345668.83	7268663.57, 357268.83	7277831.46, 357268.83
O-95-29	7275831.46, 334068.48	7267016.42, 334068.48	7267016.42, 345668.83	7275831.46, 345668.83
O-95-30	7273331.46, 322553.32	7264454.17, 322553.32	7264454.17, 334068.83	7273331.46, 334068.83