SLIDE HAZARD MAPPING

SKAMOKAWA CREEK, MIDDLE VALLEY WATERSHED

Assembled By Paul Ludwig, Resource Planner
With Assistance From
Kathleen Kilian, S.C.S. State Geologist

Prepared by the Wahkiakum Conservation District With Funds From the Centennial Clean Water Fund Under a Grant From the Washington State Conservation Commission For Implementation of the Skamokawa, Middle Valley Watershed Management Plan

MAP PREPARATION METHODOLOGY

The classes of hazard, slight, moderate and high, were determined by soil type and steepness of slope. If a given soil type is known to have slippage problems based on geologic origin, field observations and soil texture, it was included as a slide prone soil. Most soils found in this category were then placed in the low , moderate or high hazard class by virtue of slope steepness. Those classes are: **low** - 8% to 30%, **moderate** - 30% to 65% and **high** - 65% to 90%.

These classes of hazard indicate a potential of slippage or slides. It does not mean that slides will occur in these areas though historic evidence would indicate their probability. If an area considered for use falls within a high hazard zone, it should automatically trigger a field evaluation of that site for its intended purpose by a qualified person.

Information in this mapping is intended for land use planning , evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

SLOPE STABILITY

The physical and engineering properties of the soil materials are directly affected by their mode or origin and deposition. The marginal areas of the till are defined by landslides and slump materials. A slope stability map was developed for the watershed based upon slope and several soil and geologic formation factors which include density, gradation, cohesiveness and thickness. Assessment classifications range from low hazard to moderate and high hazard. These ratings reflect potential hazards based on land use and other elements of land management and do not necessarily reflect the presence of slope failures.

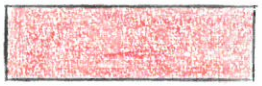
The slope stability map is intended for general planning purposes. Therefore the map is intended to show general geographic regions within the watershed that can be used to target areas of slope stability concerns for site specific investigation.

SLIDE PRONE SOILS - SKAMOKAWA WATERSHED

MAP SYMBOL	SOIL NAME	SLOPE %	HAZARD CLASS
16	Bunker	5%-30%	L
17	Bunker	30%-65%	M
18	Bunker	65%-90%	H
37	Elochoman	8%-30%	L
38	Elochoman	30%-65%	M
56	Katula	5%-30%	L
58	Katula	65%-90%	H
63	Lates	30%-65%	M
64	Lates	65%-90%	H
73	Lyteli	8%-30%	L
74	Lyteli	30%-65%	M
75	Lyteli	65%-90%	H
86	Murnen	5%-30%	L
87	Murnen	30%-65%	M
136	Squally	5%-30%	L
137	Squally	30%-65%	M
163	Zenkner	8%-30%	L
164	Zenkner	30%-65%	M
165	Zenkner	65%-90%	H

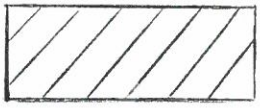
LOW HAZARD

MODERATE HAZARD



HIGH HAZARD

HIGH HAZARD, ROCK FALL AREA



QLS, LANDSLIDE DEPOSIT, HIGH HAZARD
(Regardless of Slope or Soil Type)

Slide or Slip (Tips point upslope)

Marsh or Swamp

Wet Spot

Rock Outcrop

MAP COPIES for the COLUMBIA RIVER

T8N, R4W
Sections 18 & 19

T8N, R5W
Sections 7, 13, 17, 18, 19, 20, 21, 23, 24, 26, 27, 28, 29 & 30

T8N, R6W
Sections 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 22, 23, 25 & 26

T9N, R6W
Sections 7, 8 (2 maps), 17 (3 maps), 18, 20, 21, 27, 28, 33, 34 & 35

T9N, R7W
Sections 11, 12, 13, 14, 15, 16, 17 & 18

T9N, R8W
Sections 4, 5, 6, 7, 8, 9, 13, 14, 15, 16, 17, 18, 20, 21 & 22

T10N, R8W
Sections 31, 32 & 33

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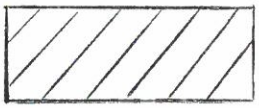
LOW HAZARD

MODERATE HAZARD

HIGH HAZARD

HIGH HAZARD, ROCK FALL AREA



QLS, LANDSLIDE DEPOSIT, HIGH HAZARD
(Regardless of Slope or Soil Type)

Slide or Slip (Tips point upslope)

Marsh or Swamp

Wet Spot

Rock Outcrop

SLIDE PRONE SOILS

MAP SYMBOL	SOIL NAME	SLOPE %	HAZARD CLASS
7	Astoria	30-65	M
16	Bunker	5-30	L
17	Bunker	30-65	M
18	Bunker	65-90	H
26	Cathlamet	30-65	M
37	Elochoman	8-30	L
38	Elochoman	30-65	M
56	Katula	5-30	L
58	Katula	65-90	H
63	Lates	30-65	M
64	Lates	65-90	H
73	Lytell	8-30	L
74	Lytell	30-65	M
75	Lytell	65-90	H
86	Murnen	5-30	L
87	Murnen	30-65	M
123	Raught	30-65	M
136	Squally	5-30	L
137	Squally	30-65	M
148	Umbric Dystrochrepts	-----	H (bluffs-rock falls)
163	Zenker	8-30	L
164	Zenker	30-65	M
165	Zenker	65-90	H

N

(Joins sheet 80)

R. 4 W.

1 330 000 FEET

CHEHALIS

Black

River

INDIAN

RESERVATION

CHICAGO MILWAUKEE ST PAUL AND PACIFIC

CHEHALIS RIVER

Balch

(Joins sheet 87)

1 540 000 FEET

1 315 000 FEET

LEWIS COUNTY

550 000 FEET

T. 15 N.

THURSTON COUNTY

(Joins inset, sh 80)

1 313 000 FEET

380 000 FEET

T. 8 N.

COWLITZ COUNTY

(Joins sheet 164)

320 000 FEET

COLUMBIA RIVER

1 310 000 FEET

3000 AND 5000-FOOT GRID TICKS

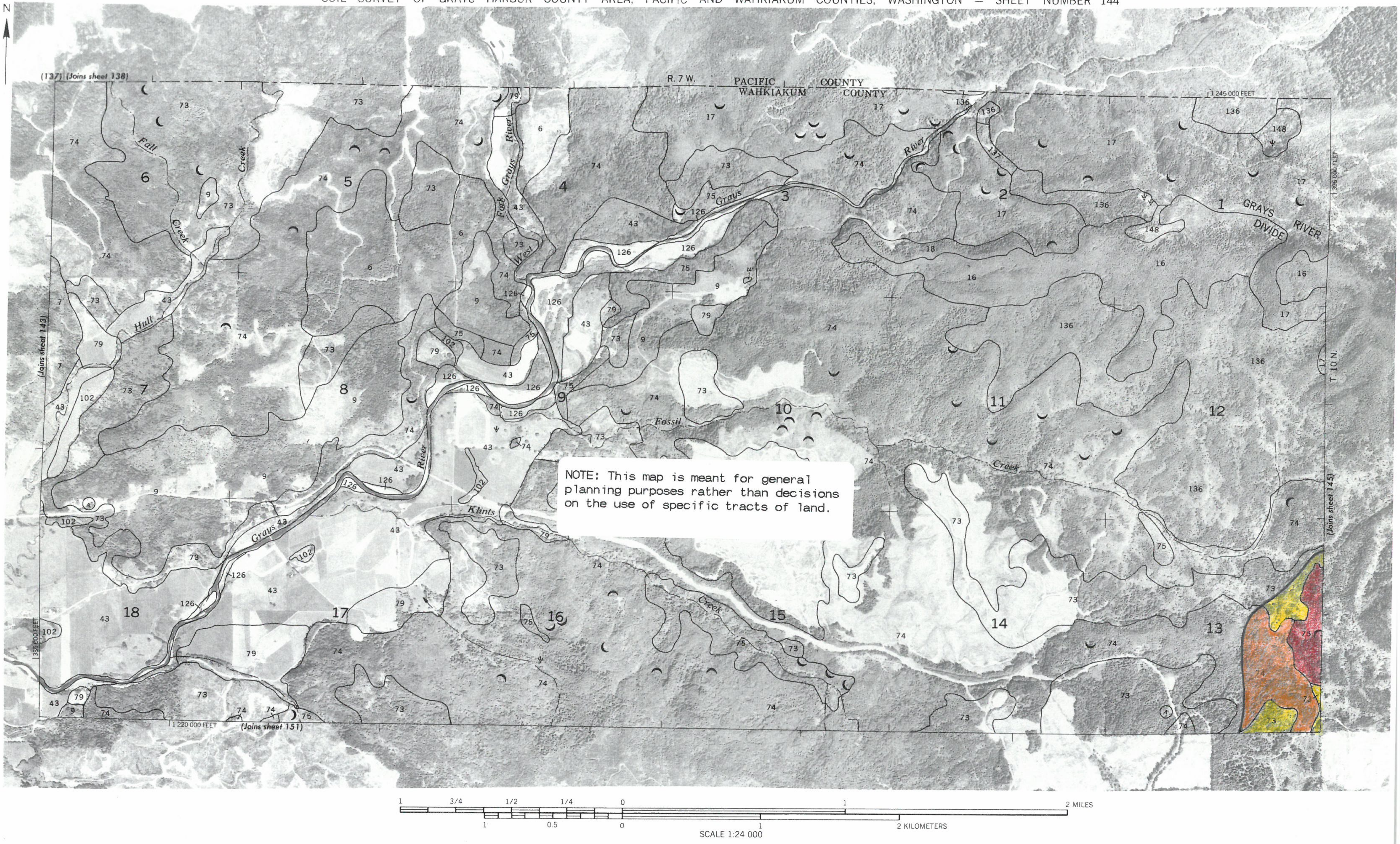
NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF GRAYS HARBOR COUNTY AREA, PACIFIC AND WAHKIAKUM COUNTIES, WASHINGTON — SHEET NUMBER 144


N
(137) (Joins sheet 138)
R. 7 W.
PACIFIC COUNTY
WAHKIAKUM COUNTY
1 245 000 FEET
395 000 FEET
T. 10 N.
(Joins sheet 143)
(Joins sheet 145)
(Joins sheet 151)
1 220 000 FEET
385 000 FEET
Fall Creek
Hull Creek
Grays River
West Fork Grays River
GRAYS RIVER DIVIDE
Fossil Creek
Klints Creek
NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

N

NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.

R. 6 W.

WAHKIAKUM COUNTY

PACIFIC COUNTY

(Joins sheet 139)

1 250 000 FEET

1 395 000 FEET

T. 10 N.

GRAYS RIVER

South Fork

Grays River

DIVIDE

Quarry Creek

McDonald Creek

(Joins sheet 144)

(Joins sheet 146)

(Joins sheet 152)

1 275 000 FEET

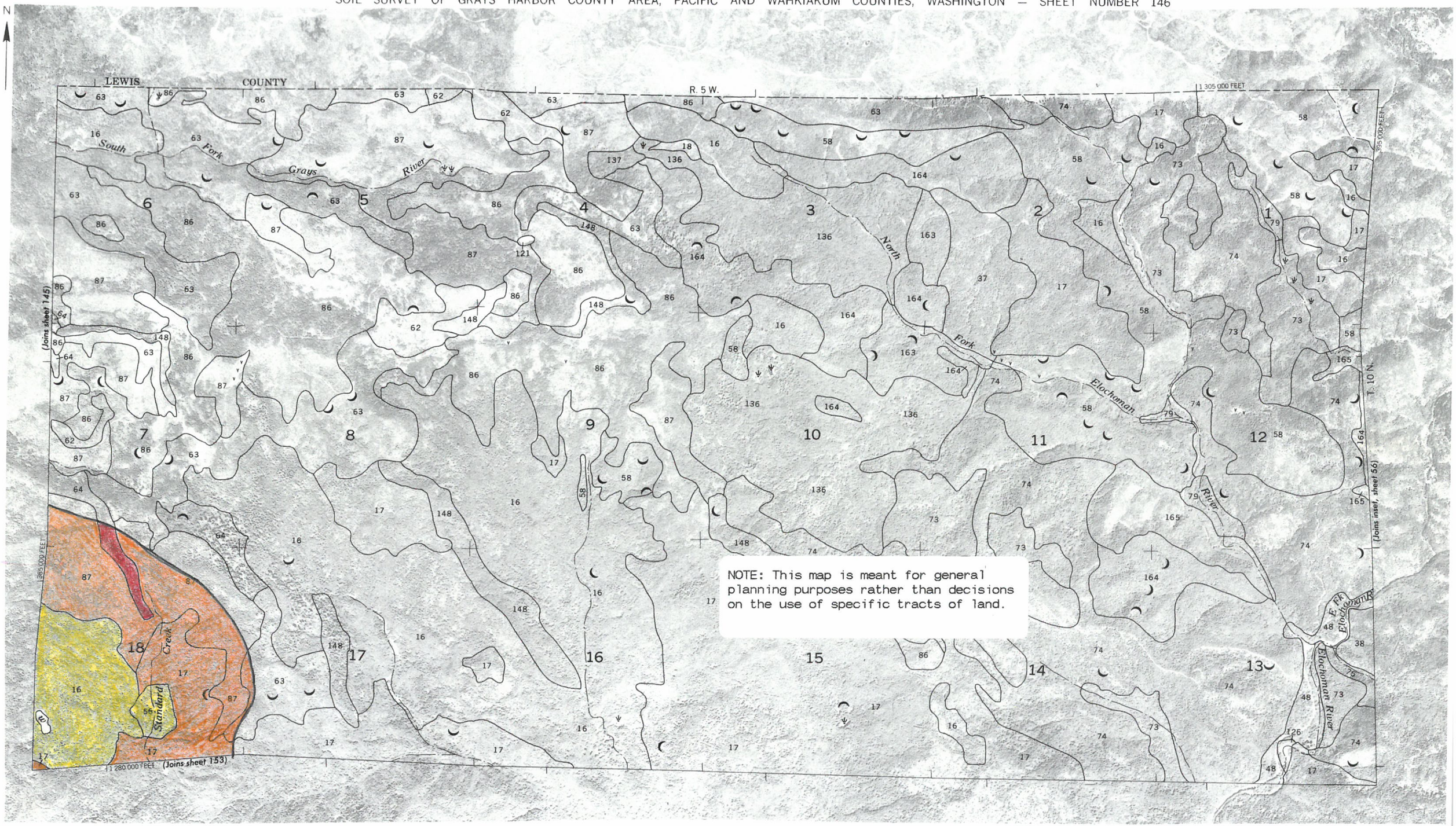
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF GRAYS HARBOR COUNTY AREA, PACIFIC AND WAHKIAKUM COUNTIES, WASHINGTON — SHEET NUMBER 146

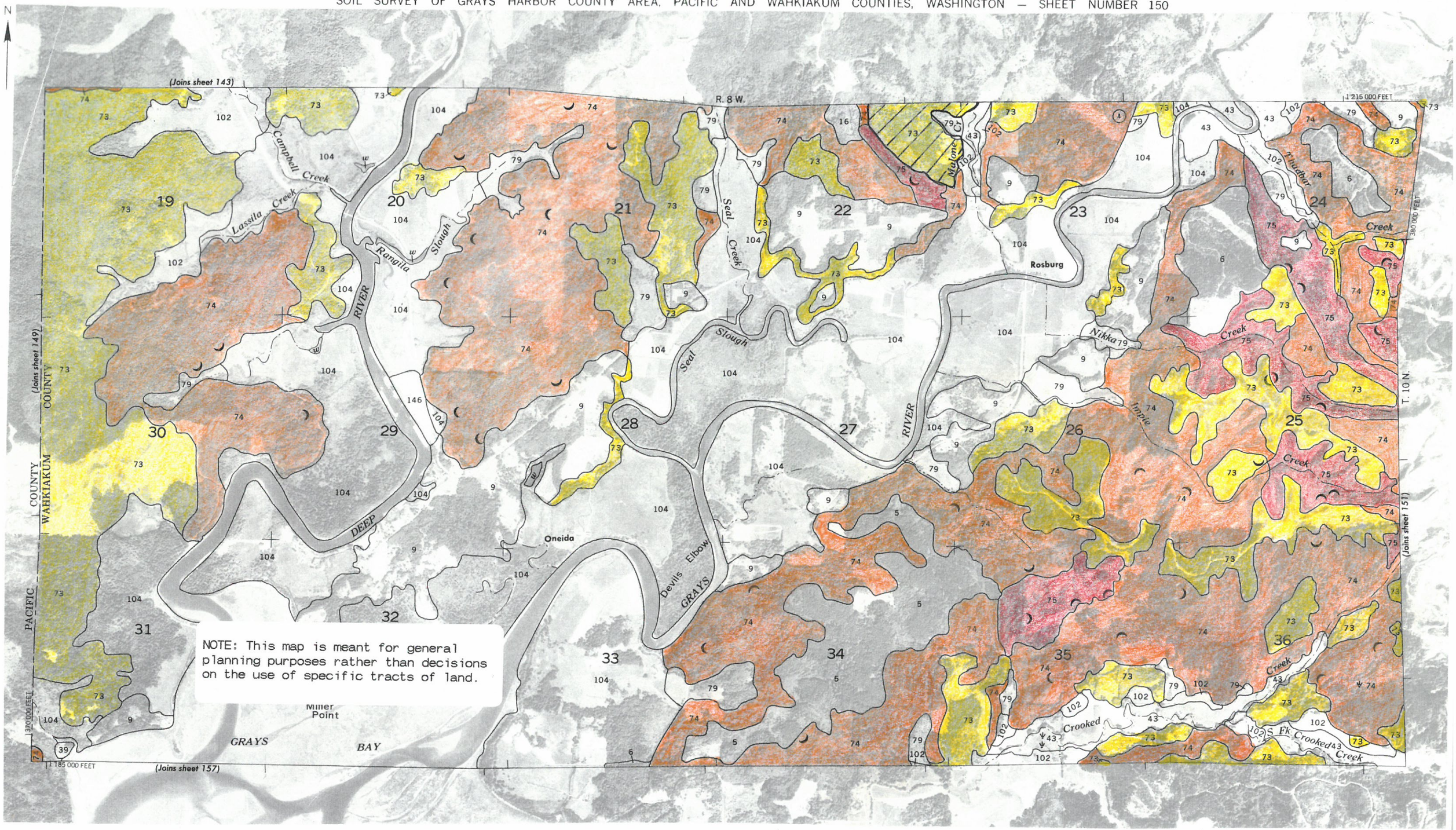
N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000


N
(Joins sheet 143)
R. 8 W.
1 215 000 FEET
380 000 FEET
T. 10 N.
(Joins sheet 151)
(Joins sheet 149)
COUNTY
WAHKIAKUM
PACIFIC
370 000 FEET
1 185 000 FEET
(Joins sheet 157)
Campbell Creek
Lassila Creek
RIVER
Rangila Slough
Seal Creek
Seal Slough
Malone Cr
Rosburg
Nikka Creek
Impie Creek
Thadbar Creek
DEEP
Oneida
Devils Elbow
GRAYS
Miller Point
GRAYS BAY
Crooked Creek
S Fk Crooked Creek
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

N

(Joins sheet 143)

R. 8 W.

1 215 000 FEET

380 000 FEET

T. 10 N.

(Joins sheet 149)

(Joins sheet 151)

320 000 FEET

1 185 000 FEET

(Joins sheet 157)

COUNTY

WAHKIAKUM

PACIFIC

Campbell Creek

Lassila Creek

Rangila Slough

RIVER

Seal Creek

Seal Slough

Malone Ck

Rosburg

Nikka Creek

Innie Creek

Headbar Creek

Crooked Creek

S Fk Crooked Creek

DEEP RIVER

Oneida

Devils Elbow

GRAYS RIVER

Miller Point

GRAYS BAY

19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 39

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

1 220 000 FEET

980 000 FEET

R. 7 W.

T. 10 N.

(Joins sheet 150) (143)

(Joins sheet 144)

(Joins sheet 152)

(Joins sheet 158)

Elk Mountain

Creek

Crooked Creek

North Fork of South Fork Crooked Creek

Jim Creek

Eggman Creek

West Fork Skamokawa Creek

Cadman Creek

NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

(Joins sheet 145)

R. 6 W.

1 275 000 FEET

370 000 FEET

T. 10 N.

(Joins sheet 151)

(Joins sheet 153)

1 250 000 FEET (Joins sheet 159)

Left Fork Creek

Quarry Creek

McDonald Creek

Standard Creek

Kelly Creek

Skamokawa Creek

West Fork Skamokawa Creek

Pollard Creek

Falk Creek

Wilson Creek

NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

R. 5 W.

(Joins sheet 146)

T. 10 N.

(Joins sheet 152)

(Joins inset, sheet 63)

(Joins sheet 160)

280 000 FEET

PASS

Standard Creek

SKAMOKAWA

West Fork Elochoman River

19 20 21 22 23 24

30 29 28 27 26 25

31 32 33 34 35 36

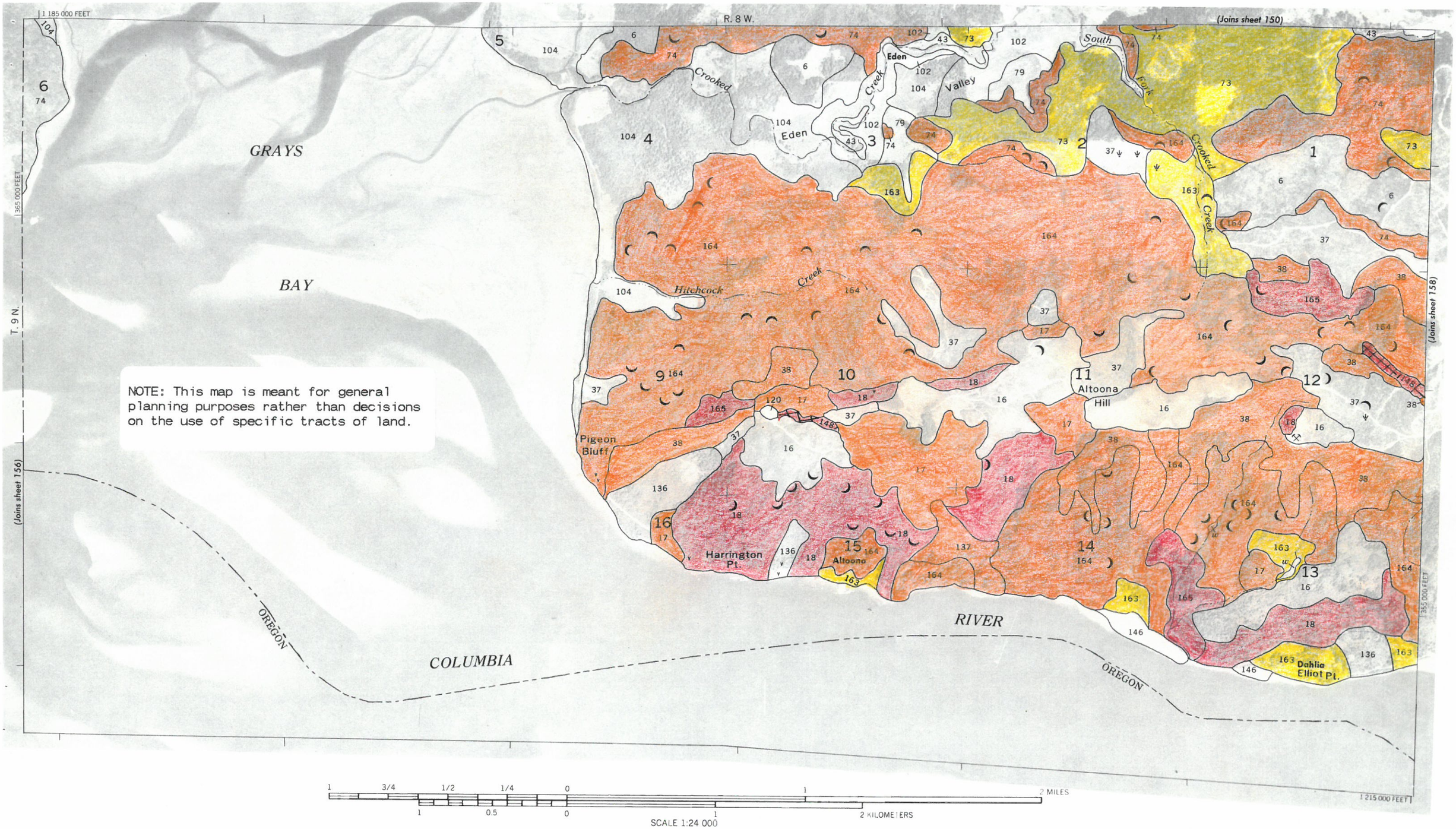
NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.

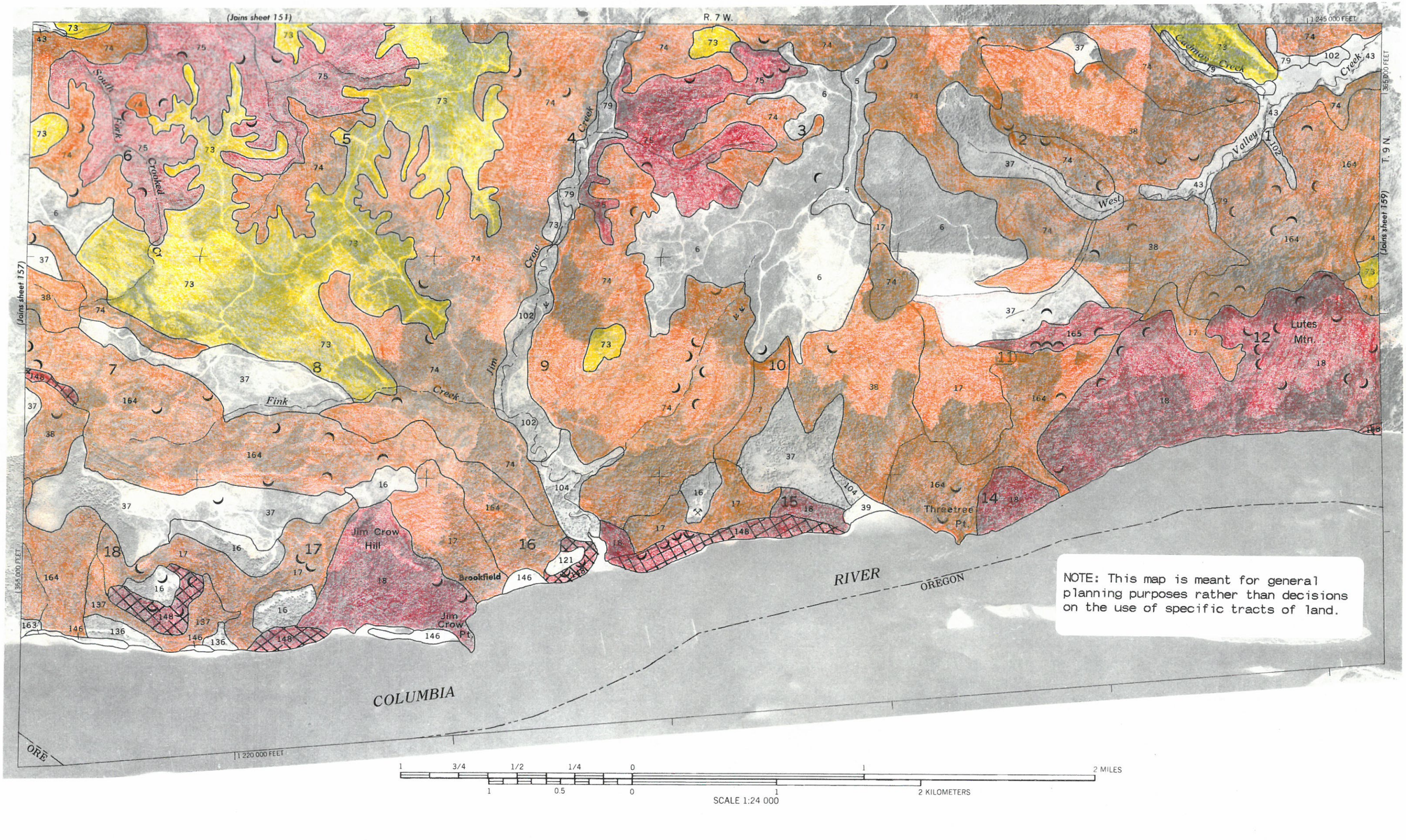
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N


1 185 000 FEET
R. 8 W.
(Joins sheet 150)
T. 9 N.
365 000 FEET
(Joins sheet 156)
(Joins sheet 158)
355 000 FEET
1 215 000 FEET
GRAYS
BAY
COLUMBIA
RIVER
OREGON
OREGON
Crooked Creek
Eden
Eden Valley
South Fork Crooked Creek
Hitchcock Creek
Pigeon Bluff
Harrington Pt.
Altoona
Altoona Hill
Dahlia
Elliot Pt.
NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000


(Joins sheet 151)
R. 7 W.
1 245 000 FEET
365 000 FEET
T. 9 N.
(Joins sheet 159)
(Joins sheet 157)
South Fork Crooked Cr
Fink Creek
Jim Crow Creek
Cashmere Creek
Valley Creek
West
Lutes Mtn.
Jim Crow Hill
Brookfield
Jim Crow Pt.
Threetree Pt.
RIVER
OREGON
COLUMBIA
ORE
1 220 000 FEET
NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

N

NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.

(Joins sheet 152)

(Joins sheet 158)

(Joins sheet 160)

(Joins sheet 161)

1 250 000 FEET

365 000 FEET

1 275 000 FEET

R. 6 W.

T. 9 N.

West Valley Cr.

West Fork Skamokawa Creek

Falk Creek

Pollard Creek

Wilson Creek

Bell Canyon Creek

Skamokawa Creek

Moe Hill

Sleepy Hollow

Skamokawa

Brooks Slough

Steamboat Island

Price Slough

Alger Creek

Risk Creek

Longlain Creek

COLUMBIA RIVER

OREGON

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

1 250 000 FEET

R. 6 W.

(Joins sheet 152)

365 000 FEET

T. 9 N.

(Joins sheet 158)

(Joins sheet 160)

West Valley Creek

West Fork Skamokawa Creek

Falk Creek

Pollard Creek

Wilson Creek

Bell Canyon Creek

Skamokawa Creek

Moe Hill

Sleepy Hollow

Skamokawa

COLUMBIA RIVER

OREGON

Brooks Slough

Steamboat Price Island Slough

Alger Creek

Risk Creek

Longtain Creek

(Joins sheet 161)

1 279 000 FEET

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1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

(Joins sheet 153)

R. 5 W.

1 305 000 FEET

350 000 FEET

T. 9 N.

(Joins sheet 159)

Crown Point

Wilson Creek

Rock Creek

Creek

River

Elochoman

Mill Creek

Nelson Creek

Duck Creek

(Joins sheet 72)

1 280 000 FEET

(Joins sheet 162)

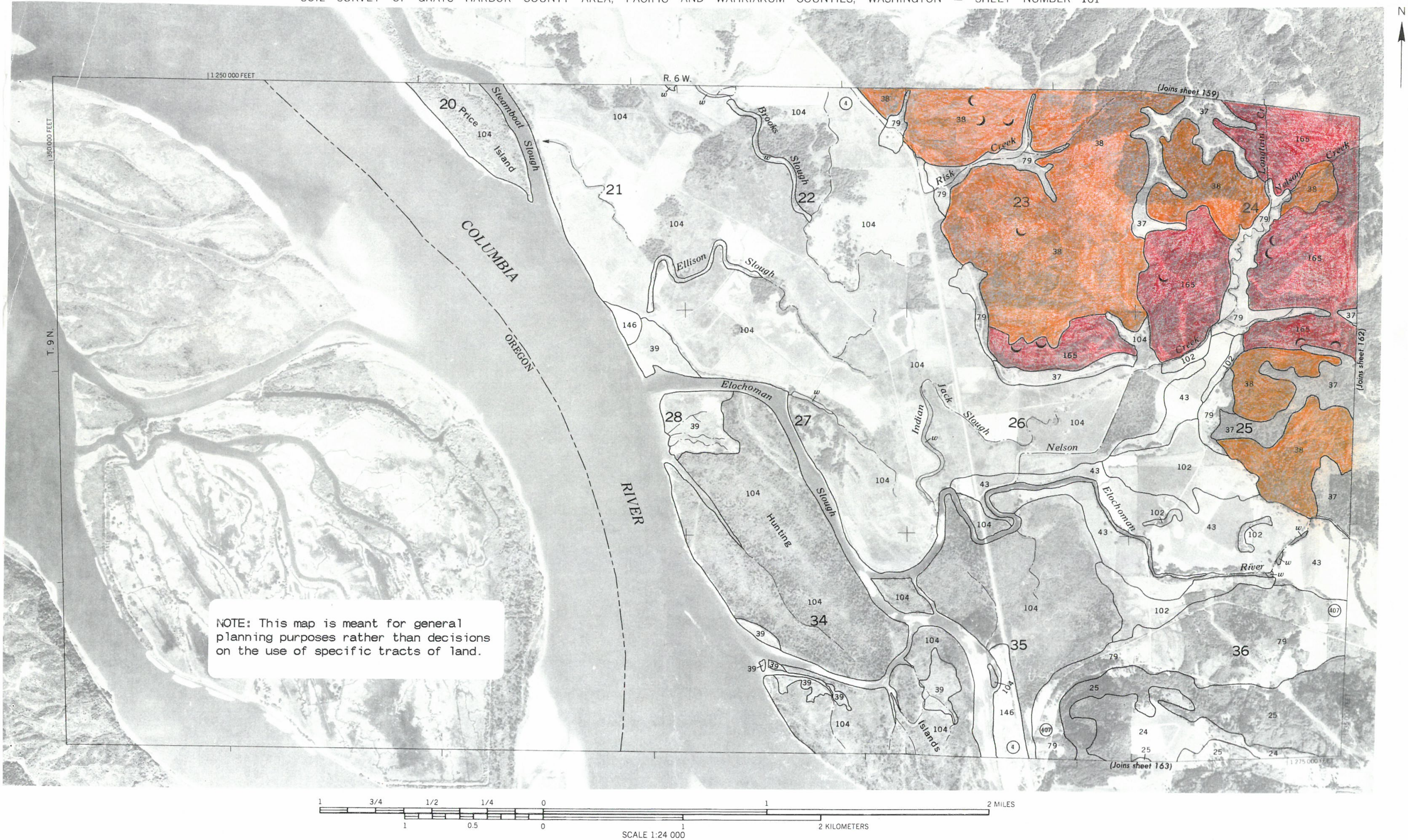
NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.

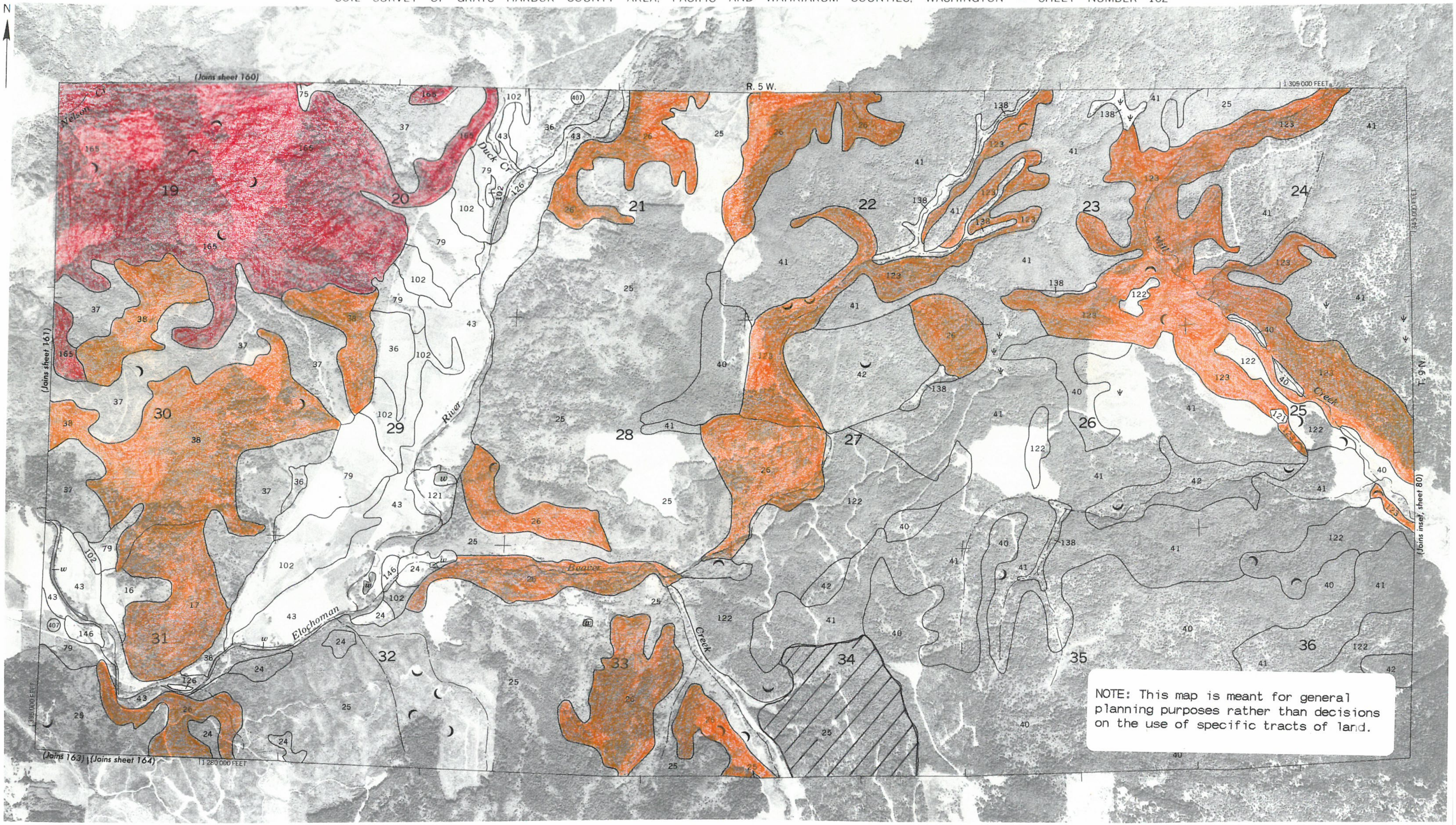
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF GRAYS HARBOR COUNTY AREA, PACIFIC AND WAHKIAKUM COUNTIES, WASHINGTON — SHEET NUMBER 161


N
R. 6 W.
T. 9 N.
1 250 000 FEET
1 350 000 FEET
1 275 000 FEET
(Joins sheet 159)
(Joins sheet 162)
(Joins sheet 163)
COLUMBIA
RIVER
OREGON
Price Island
Steamboat Slough
Brooks Slough
Ellison Slough
Risk Creek
Longtain Cr.
Nelson Creek
Elochoman Slough
Hunting Islands
Indian Jack Slough
Nelson Creek
Elochoman River
NOTE: This map is meant for general planning purposes rather than decisions on the use of specific tracts of land.
2 MILES
2 KILOMETERS
SCALE 1:24 000



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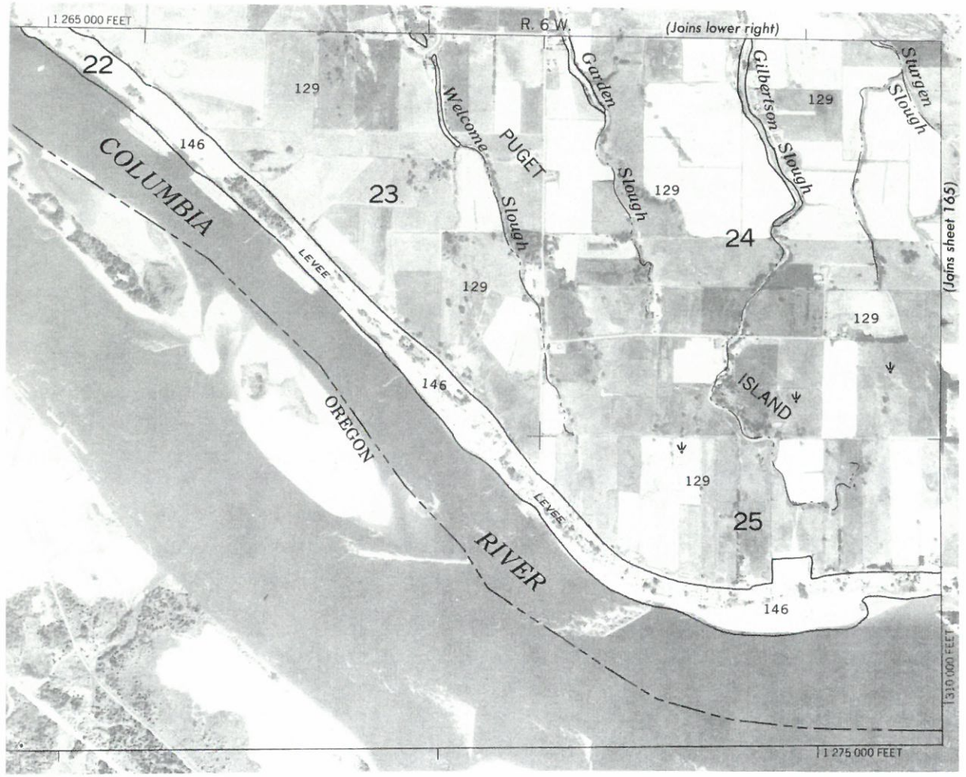
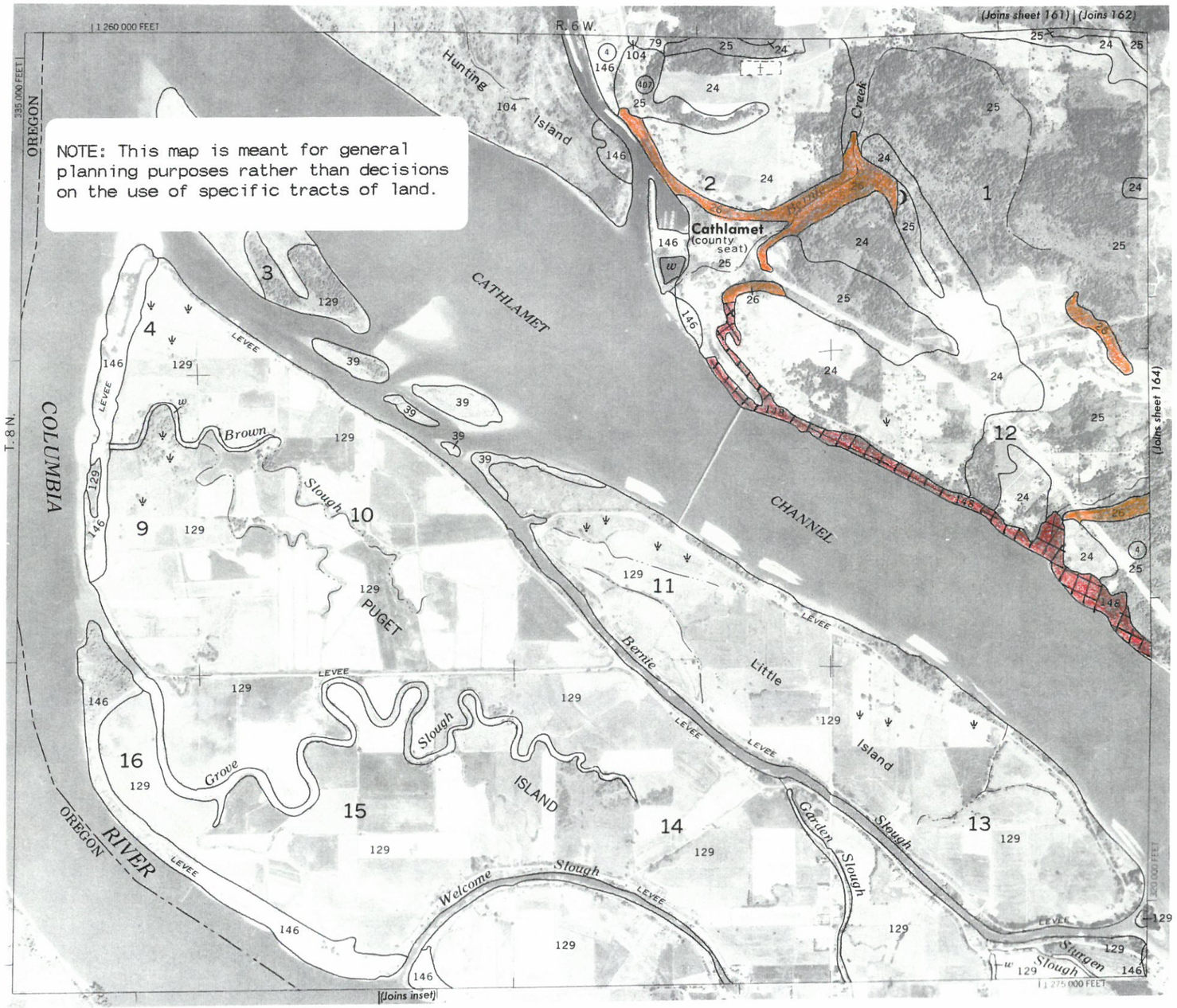
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000





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1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF GRAYS HARBOR COUNTY AREA, PACIFIC AND WAHKIAKUM COUNTIES, WASHINGTON — SHEET NUMBER 164

N

R. 5 W.

T. 8 N.

1 305 000 FEET

1 320 000 FEET

1 280 000 FEET

(Joins sheet 162) | (inset, 80)

(Joins sheet 163)

(Joins inset, sheet 88)

(Joins sheet 165)

Beaver Creek

Abe Creek

CATHLAMET CHANNEL

water

Eagle Cliff

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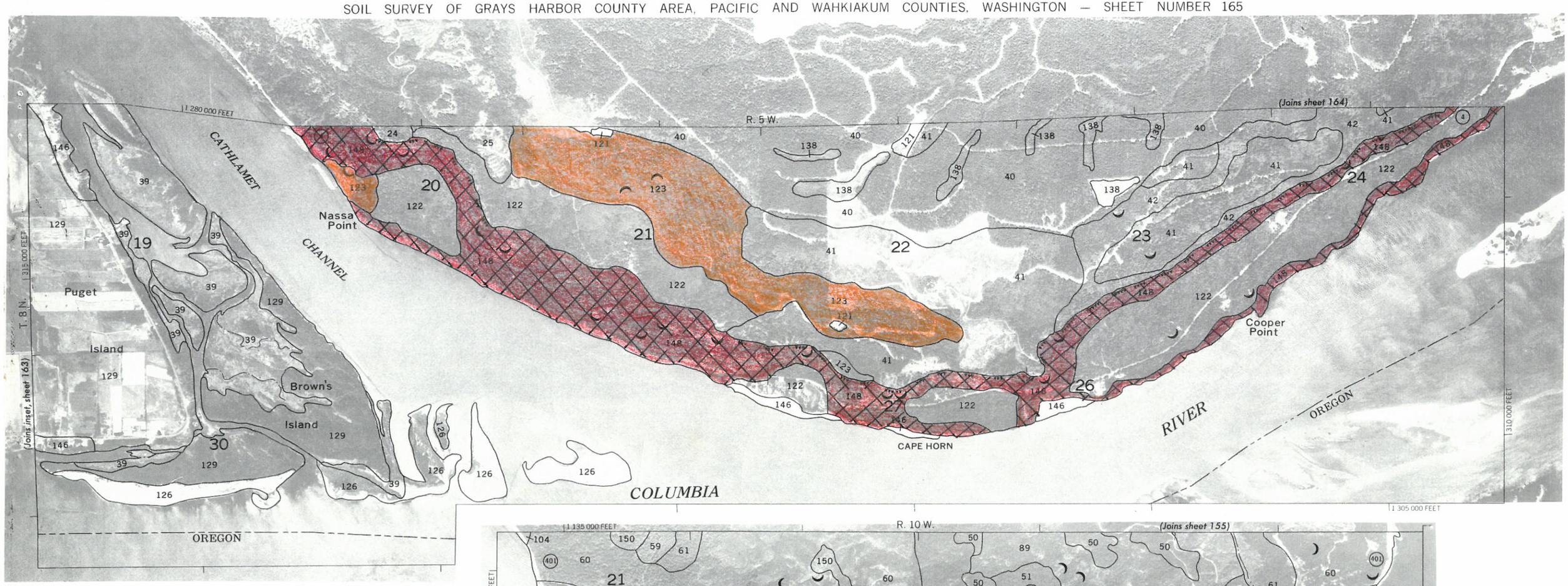
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000



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1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

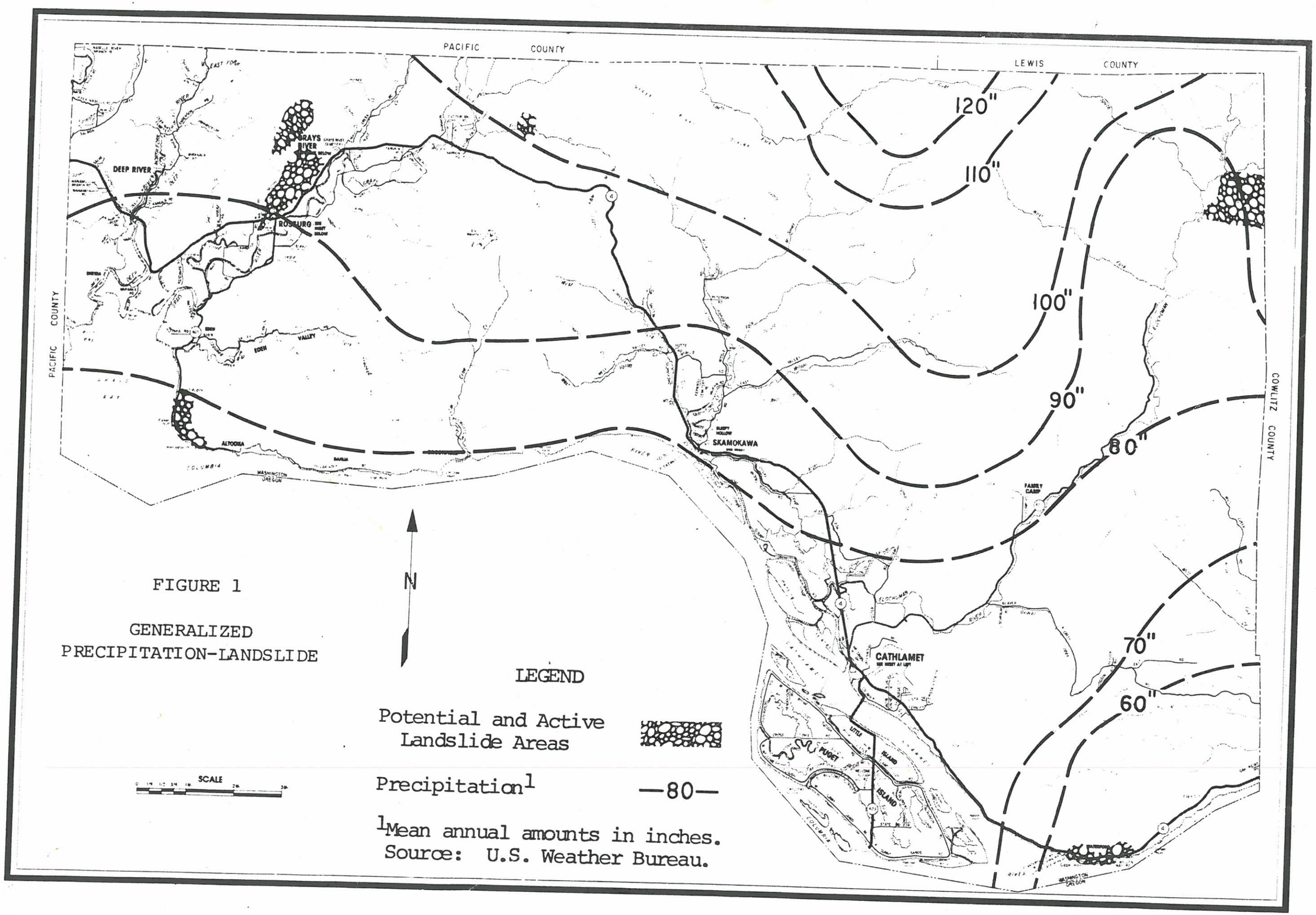

FIGURE 1

GENERALIZED
PRECIPITATION-LANDSLIDE

[1]Mean annual amounts in inches.
Source: U.S. Weather Bureau.