

File OFFICE

NPSEN-PL-ER

Skagit River Project - Environmental Input to Design of Downstream Levees.

XX THRU: Ch, Plng Br

Ch, Env Res Sec

5 September 1978  
Mettling/pb/3624

TO: Ch, Reg Plng Sec  
Ch, Des Br

1. Purpose. As a result of concerns raised during the 29 August 1978 Resource Agency Workshop for the subject project and the follow-up field trip on 30 August 1978, we request that the recommendations discussed below be considered in the final design of the downstream levees. Preliminary information regarding the alignments and riprap locations was obtained from the scoping analysis performed by Entranco Engineers and was made available to the agencies at the 29 August workshop.

2. Recommendations. Of major concern to the resource agencies is the placement of riprap into the river as it modifies shoreline habitat and can be detrimental to salmon resources for which the shore zone is the primary migration and rearing area. A second major concern is the removal of existing riparian vegetation which provides food cover and other benefits to fish and wildlife. These concerns are the basis for which the following recommendations are made. In developing them, it has been assumed that there will be no channel improvements on the North Fork or on Freshwater Slough.

a. General. These recommendations pertain to the entire downstream levee reach in general.

(1) That a minimal amount of riprap be placed into the river. Consideration should be given to avoiding the placement of riprap into the river in areas where levees are set back and will be riprapped and in areas where riprap already exists along the river bank. Where feasible, consideration should also be given to the substitution of riprap by another erosion control method such as the placement of sod.

(2) That in certain cases where the placement of riprap is necessary, a relatively large size be utilized in the river to provide some replacement of habitat for fish. A few locations where such would be desirable are pointed out below under specific recommendations. Additional areas may be indicated when the final locations of the riprap are available.

(3) That riprap placement be avoided on the inside bank of bends in the river. These areas provide shallow, lower velocity resting and rearing areas for migrating juvenile salmonids.

(4) That in cases where the river bank slope is gradual under existing conditions and where the placement of riprap into the river cannot be avoided, the riprap be sloped (e.g., 3:1) to minimize impacts to the shore zone, as well as to provide fishermen access.

(5) That where riprap must be placed in areas of public access to the river, and where the slope cannot be altered from 2:1, that the riprap be gradated to provide places for fishermen to fish from the river's edge.

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Levees

(6) That in the design of the levees, consideration be given to minimal encroachment on riparian vegetation; only necessary removal of rootballs and snags in the shore zone; and only necessary removal of mature trees.

b. Specific. These recommendations were developed for the areas examined during the 30 August field trip. Additional environmental data for each area is provided in inclosure 1. For the general location of each area discussed, refer to inclosure 2. Station references were taken from Skagit River orthophotos (copy available in ERS).

Area 1. North Fork, Stations 280 - 313, left bank. In selected locations within this reach, that riprap be designed to allow fishermen access to the river.

(a) Stations 295 - 313. If placement of riprap in the river is unavoidable, that large riprap be used to offset adverse impacts to fisheries by providing some replacement of cover.

Area 2. North Fork, Stations 180 - 240, left bank, and Stations 960 - 974, right bank.

(a) Stations 180 - 240. That the dense stands of vegetation along the river's edge be preserved. That placement of riprap and removal of snags and rootballs in this reach be minimized to the extent possible. If placement in the river is unavoidable, in selected areas, large riprap is recommended.

(b) Station (approximately) 220. That this island and the channel around it be left undisturbed.

(c) Station 960 - 974. That no riprap be placed riverward in this area. If such is unavoidable, that the slope of the riprap be gradual to allow fishermen access and to minimize impacts to the shore zone.

(d) Station (approximately) 190. That, if riprap is necessary, fishermen access be provided at the public use area located at this station.

Area 3. North Fork, Stations 80 - 140, left bank, and Stations 860 - 910, right bank. That removal of snags and rootballs be avoided to the extent possible within this reach.

(a) Stations 900 - 910. That no riprap be placed in the river in this reach.

(b) Stations 80 - 100. That no riprap be placed in the river in this reach.

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Area 4. Main Stem, Stations 680 - 720, left bank; Stations 680 - 725, right bank.

(a) Station 680 - 725, right bank. That the necessity for adding additional riprap riverward at this bend be reexamined. If such placement is necessary, that fishermen access be provided on the riprap and that large riprap be selectively placed in the river.

(b) Station (approximately) 720, left bank. That placement of riprap in the river be avoided and that rootball and snag removal be minimized.

Area 5. South Fork, Stations 110 - 160, right bank. That no additional riprap be placed in the river in this reach and that the dense stand of trees along the river be left undisturbed. The contractor's drawings indicated that no riprap would be placed at this location.

Area 6. South Fork, Tom Moore Slough. Stations 1055 - 1120. That minimal encroachment riverward be considered in levee design. This is one area where mitigation planting may be necessary to restore the prime riparian habitat lost to the levee right-of-way. It is noted that the contractor's analysis indicated that no riprap would be placed either on the levees or into the river in this reach.

3. Request that we meet at your earliest convenience to discuss these recommendations and their incorporation into the downstream levee project. If any of the recommendations require further clarification, please contact Ms. Karen Mettling, extension 3624.

2 Incl

Steven F. Dice

as

BUSH

cc w/incl:

DICE/s/

Dice

Bush/Mettling

ED PL FILE

Reg Plng (Brooks)

Reg Plan (Worthington)

Des Br (Cook)

Des Br (Jump) *Hanson*

Ch, Plng Br

Ch, E&SES

Ch, H&H

Ch, F&M

ERS RP File (Skagit River Levees)

5 September 1978

## SKAGIT RIVER LEVEE AND CHANNEL IMPROVEMENT PROJECT

Field Notes from the 30 August 1978 Field Trip to  
the Downstream Project Reach1. Participants.

Karen Mettling	Environmental Resources Section
John Garrett	Washington Department of Game
Art Stendal	" " "
Gary Engman	" " "
Russ Orrell	Washington Department of Fisheries
Bert Barlin	Washington Department of Natural Resources
Bob Wunderlich	U.S. Fish and Wildlife Service
Jon Linvog	National Marine Fisheries Service
Steve Fransen	Skagit System Cooperative

2. Description of Areas Examined. (See inclosure 2 of DF for location.)

a. Area 1. (North Fork, at Phil's Boathouse). This reach is a prime fishing area utilized by sport fishermen as well as by commercial fishermen (particularly of the Swinomish tribe). Snags and rootballs in the shore zone provide cover and protection for migrating fish and overhanging vegetation provides a source of food (insects), as well as cover. Where levees to be improved are close to the river and placement of riprap is necessary, it was recommended that relatively large riprap be selectively placed in the river to replace some of the lost cover provided by the snags and rootballs that would be removed. Also suggested was that the riprap be graded in certain areas to provide fishermen access to the river. It was pointed out that this reach is one of the potential locations for channel widening. The possibility of restoring vegetation lost due to levee construction west of Phil's Boathouse was discussed.

b. Area 2. (North Fork at the North Fork Bridge). This reach of the North Fork is also a prime fishing area for sport and commercial fishermen. The area supports dense stands of vegetation along the river's edge which serve as prime habitat for fish and wildlife. Levees to be improved are set back. Sloping beaches on both banks of this reach and an island and surrounding channel on the right bank provide areas in high water for juvenile salmonids to retreat from the high velocity current and thus avoid being prematurely swept out to Skagit Bay. The shore zone is also important as rearing habitat for the juvenile fish and offers protection from predators. Modification of the shoreline habitat through conversion of the shore zones to rock

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riprap ~~at~~<sup>and</sup> increasing the slope of the beach is potentially detrimental to salmon resources. It was recommended that removal of snags and rootballs and riparian vegetation, and the placement of riprap in this reach be minimized. Where riprap currently exists and additional riprap must be added in the river, it was suggested that larger riprap be utilized. Where riprap must be added to beach areas, it should have a gradual slope to minimize the impact to shore zone and to allow fishermen access. At the public access area, north of the bridge on the left bank, it was requested that any riprap placement be designed to allow fishermen access to the river's edge. The need for additional riprap in this reach where levees are set back a distance from the river was questioned.

c. **Area 3. (North Fork at river mile 5-6).** This reach provides lesser quality fish and wildlife habitat than Areas 1 and 2. Levees are close to the river and have been grazed by cows to the extent that the levees and surrounding area support little shrubby vegetation and few mature trees. Adjacent to the levees on the landward side are agricultural fields. Snags in the river provide cover to fish in an area where overhanging vegetation is sparse. It was thus recommended that removal of these snags be minimized and, if riprap in the river is necessary, that large riprap be selectively placed to provide some replacement of the cover that the snags provided. Also recommended was that the inside banks of the two river bends in this reach not be riprapped as these provide shallow, lower velocity resting and rearing areas for salmonids. **It was noted that this reach is an area of potential channel widening.**

d. **Area 4. (Mainstem)** This is a public fishing area, particularly good for cutthroat fishing. Overhanging vegetation and snags and rootballs provide good cover for fish. Dense stands of vegetation along the river's edge also represent prime habitat for wildlife, primarily birds. The necessity for placement of additional riprap was questioned. If such is necessary, it was recommended that fishermen access be provided and that large riprap be selectively placed to provide some replacement of cover lost as a result of snag removal.

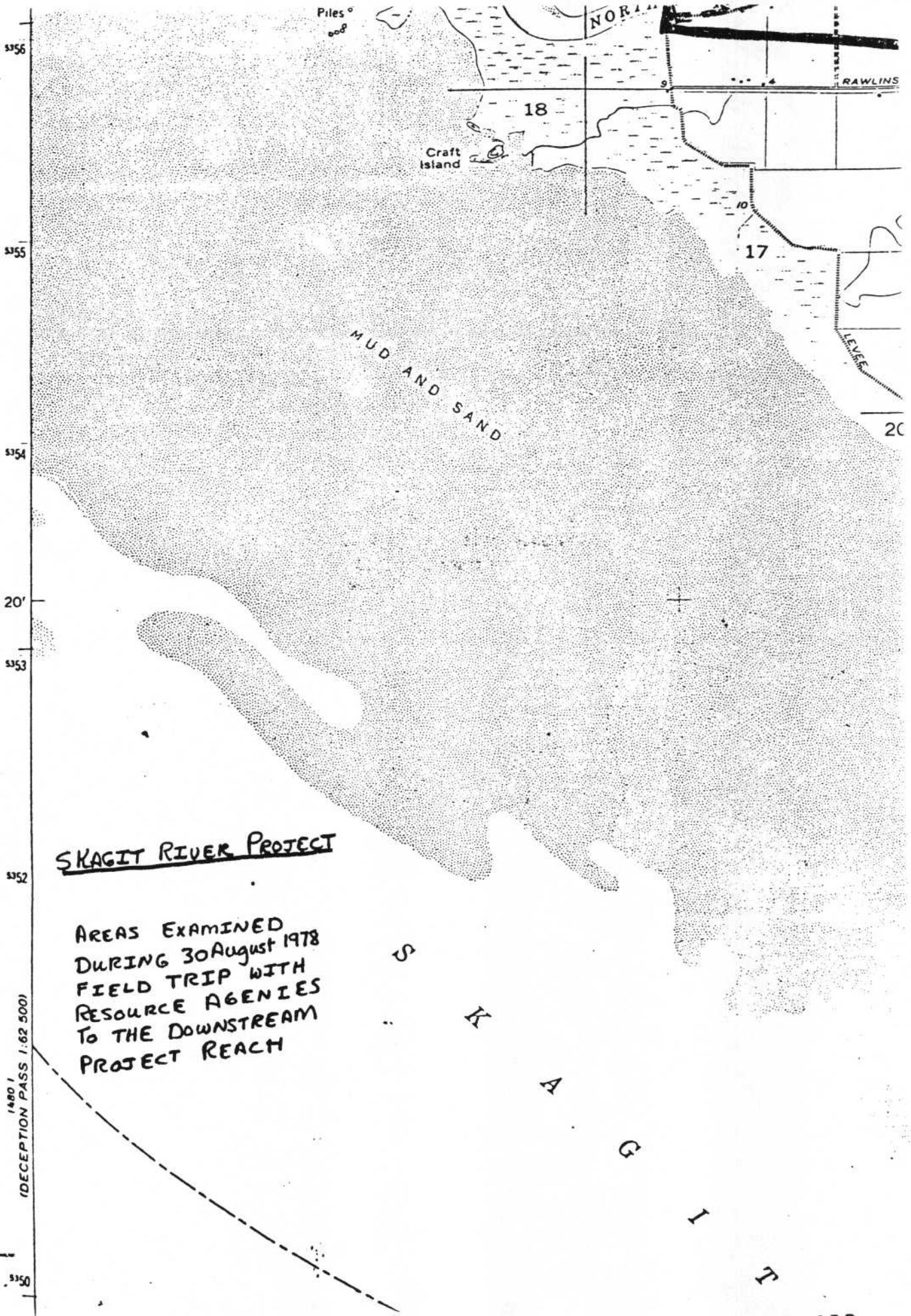
e. **Area 5. (South Fork)** This area also supports good riparian habitat for fish and wildlife. It was noted that no riprap placement is anticipated here. Concern was expressed that the dense stand of vegetation along the right bank not be disturbed by levee construction.

f. **Area 6. (Tom Moore Slough)** The levees in this reach are close to the river and are flanked on both the riverward and landward side by a zone of dense vegetation including shrubs and mature trees. The levees themselves are grass covered. Between the landward side and the railroad is a stretch of wetland habitat which parallels the levee for most of the reach examined. Tom Moore Slough is the eastern boundary of the Skagit Wildlife Recreation Area owned and managed by the Washington Game Department. This area is an

important wildlife wintering area, primarily for waterfowl. The freshwater riparian habitat is especially important for waterfowl productivity in the Skagit Estuary. Shorebirds and birds of prey (e.g., bald eagle) are also present in large numbers. To mitigate for adverse impacts to these species as a result of project encroachment on prime habitat, a restoration planting program of selected species on the levees was recommended. It was noted that no placement of riprap is indicated in this reach.

3. **Remarks.** There is no spawning in the project reach of the Skagit River. The reach is a route for the immigration of pre-spawning salmonids and the out migration of juveniles. The peak downstream migration period is March, April, May and June; although, juveniles continue to occupy the shore zone year 'round as a resting and rearing habitat. The recommendations discussed for in-river activities related to the Skagit project pertain to minimizing adverse impacts to the shore zone. These impacts include loss of cover (snags, rootballs, and overhanging vegetation); loss of food sources; and loss of shallow, low velocity areas for rearing and resting.

Recommendations also relate to the minimization of riparian habitat loss due to levee encroachment and the subsequent impact of this loss to wildlife, primarily the diverse bird species that inhabit the project area.

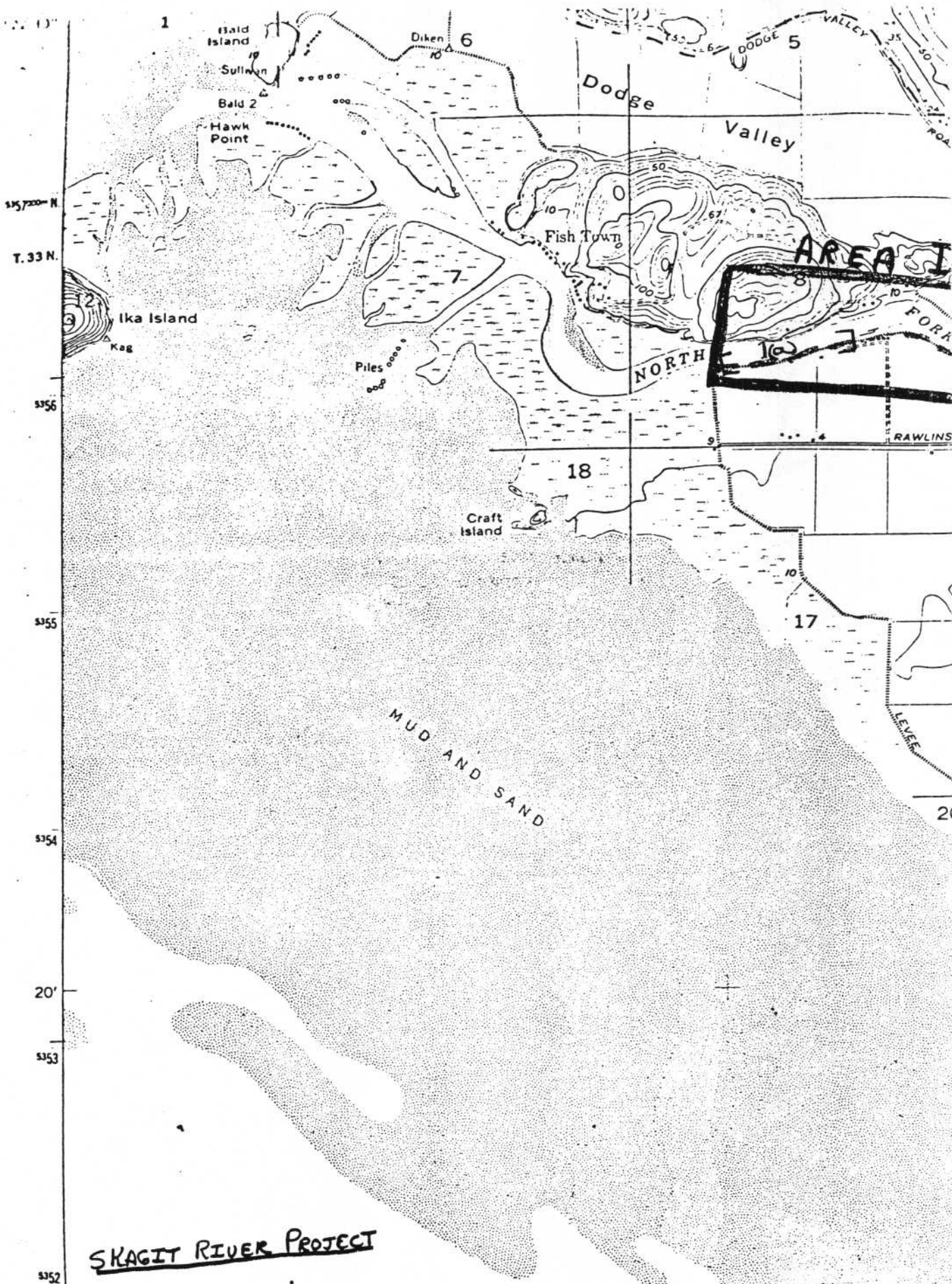


SKAGIT RIVER PROJECT

AREAS EXAMINED  
DURING 30 August 1978  
FIELD TRIP WITH  
RESOURCE AGENIES  
TO THE DOWNSTREAM  
PROJECT REACH

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SKAGIT RIVER PROJECT

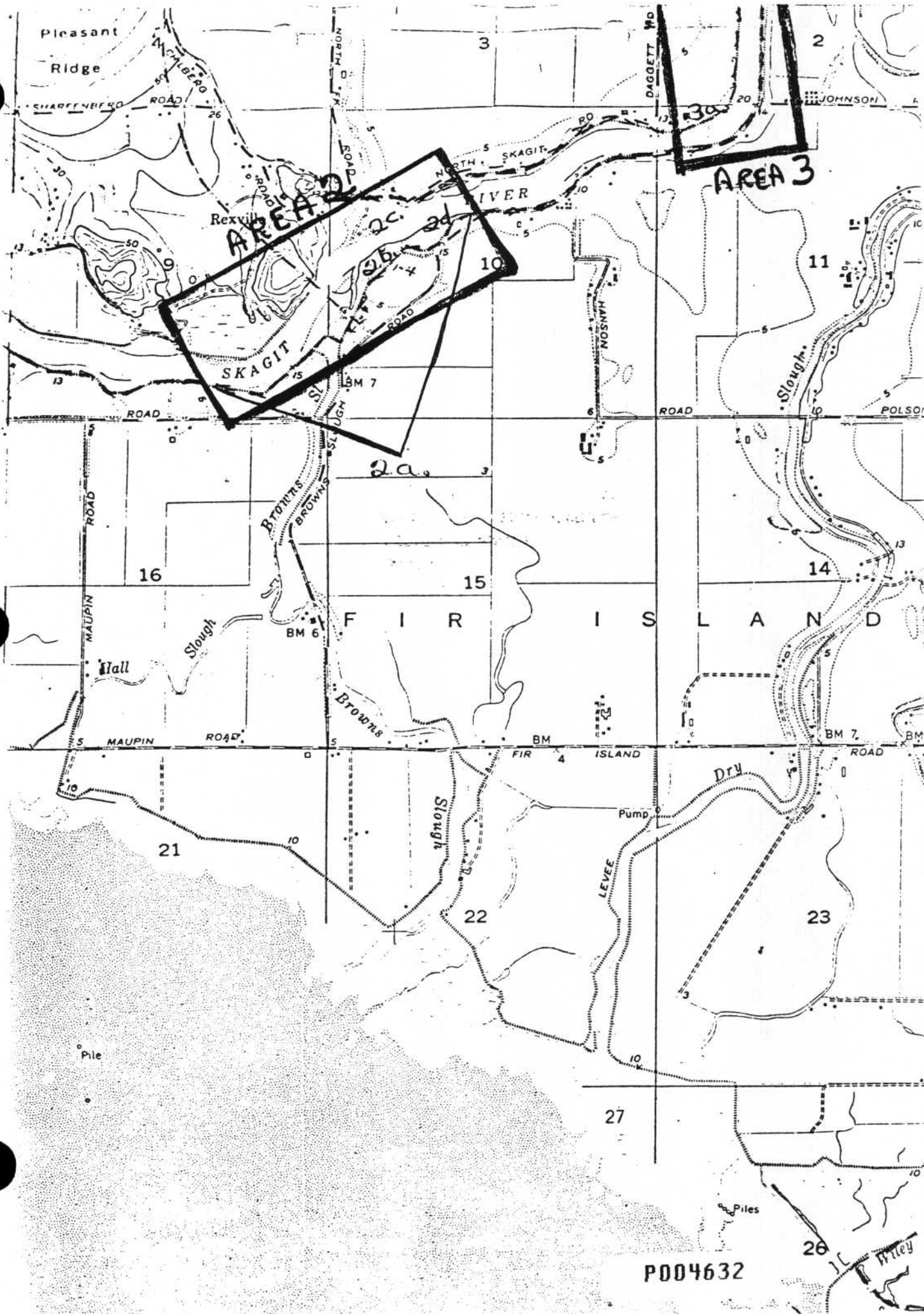
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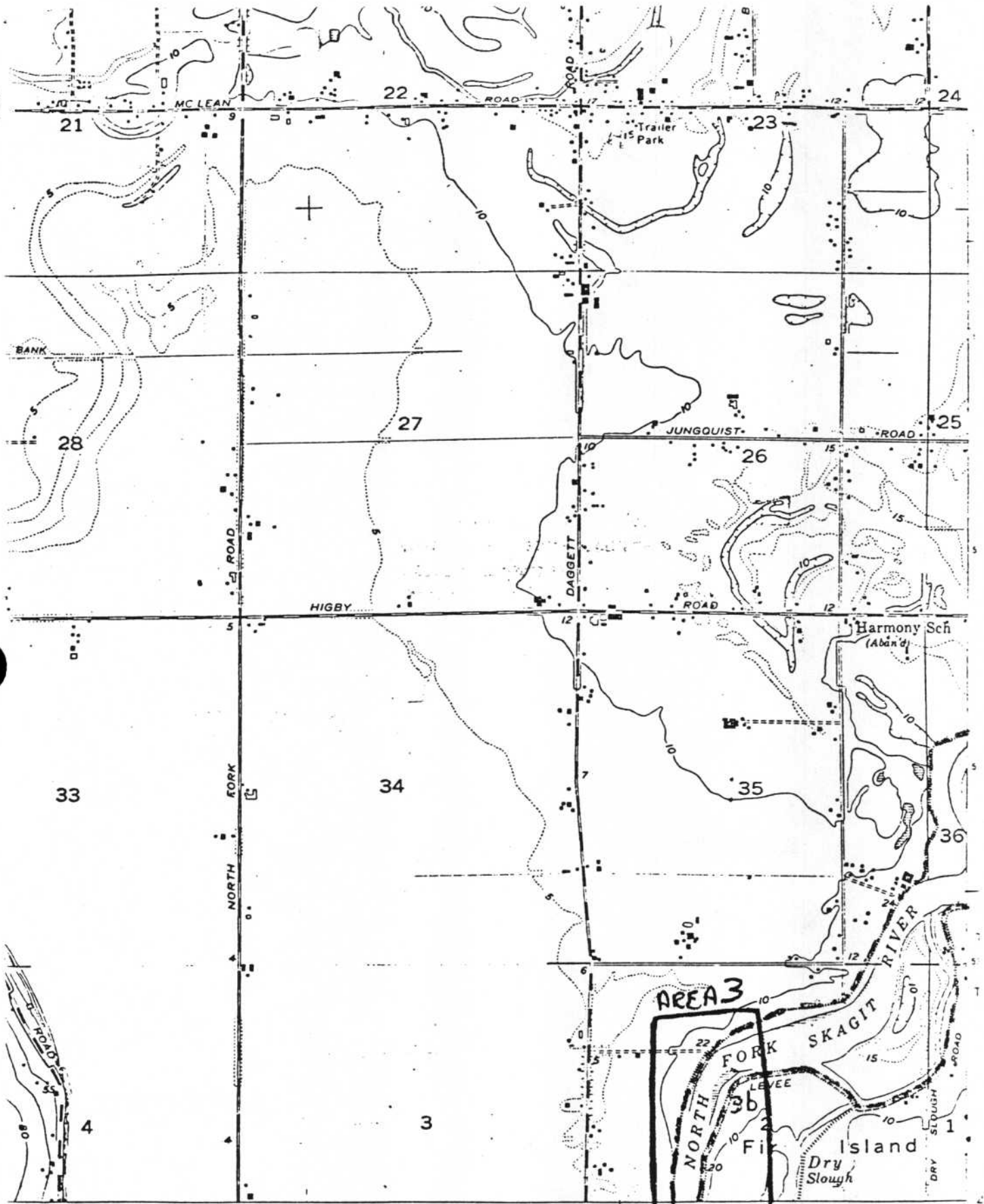
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CONWAY 6.5 MI.  
EVERETT 34 MI.

25' 544

INTERIOR-GEOLOGICAL SURVEY, RESTON, VIRGINIA-1978  
546000m E. 122° 22'

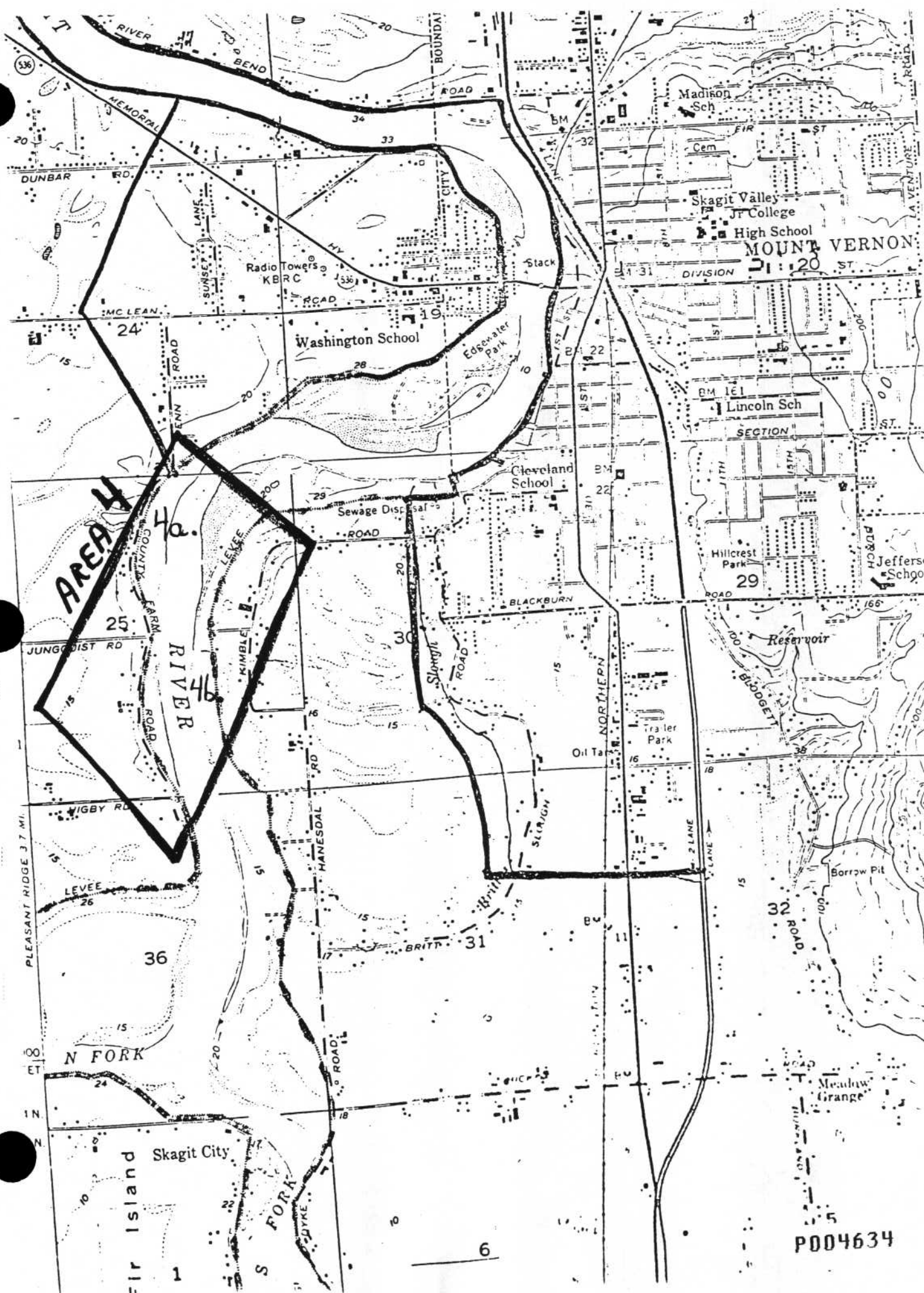
ROAD CLASSIFICATION

Heavy-duty ——— Light-duty - - - - -

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1 MILE

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**AREA 4**

**MOUNT VERNON**

Skagit City  
N Fork  
S Fork

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6

PLEASANT RIDGE 3.7 MI.

100 FT

1 IN

1 IN

1 IN

1 IN

1 IN

MCLEAN ROAD

JUNGQUIST RD

WIGBY RD

PLEASANT RIDGE RD

Skagit River

Skagit River

Skagit River

Skagit River

Radio Towers  
KBRC

Washington School

Sewage Disposal

Cleveland School

Madison Sch

Skagit Valley  
Jr College

High School

Lincoln Sch

Hillcrest Park

Trailer Park

Meadow Grange

Jeffers Schgo

Borrow Pit

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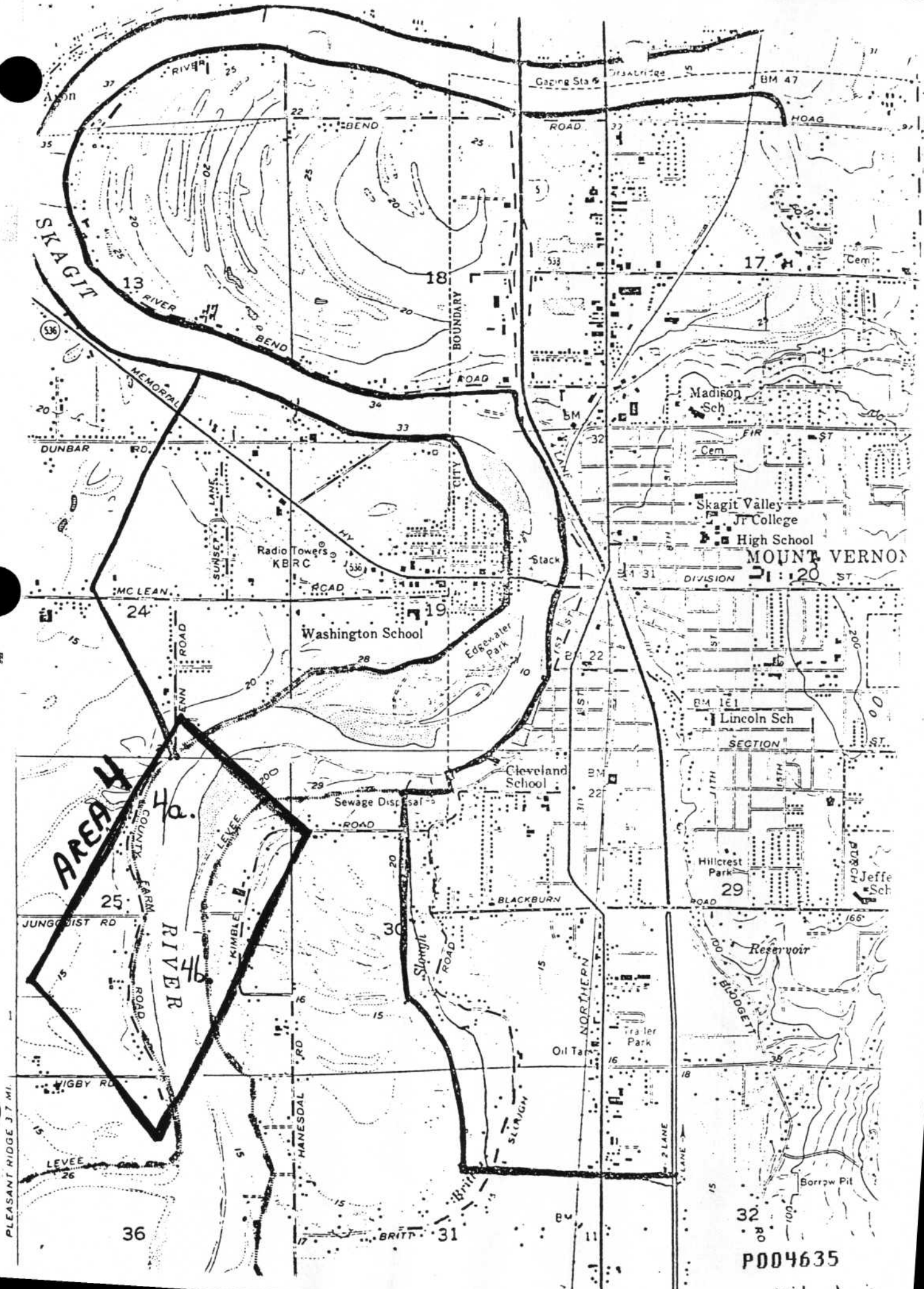
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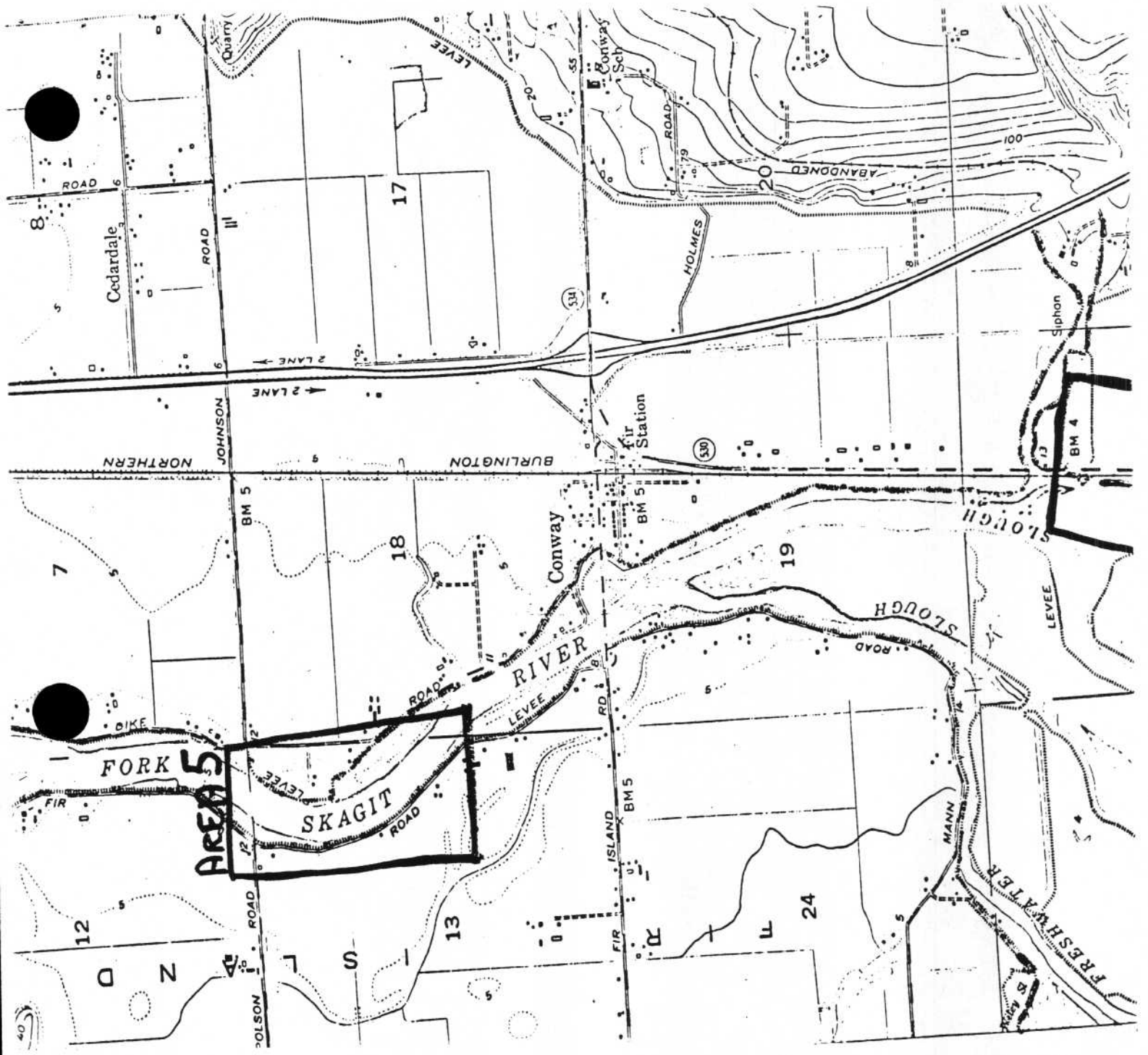
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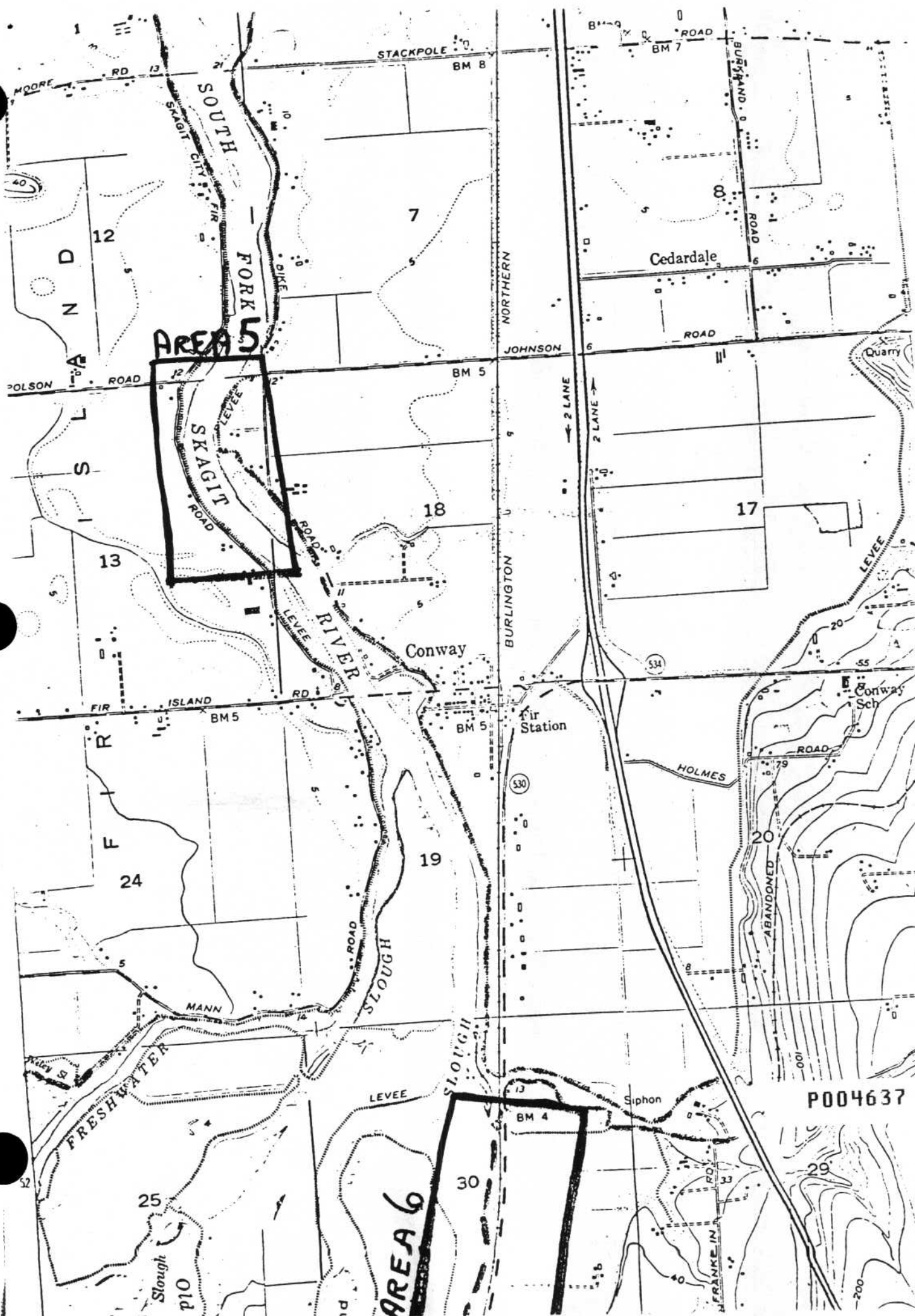
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AREA 5

AREA 6

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