FRIENDS OF THE PLEISTOCENE

ANNUAL MEETING

International Rapids Section

St. Lawrence Power and Seaway Projects

May 25 & 26, 1957

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Leaders

John N. Harris & Dr. Paul MacClintock

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Uhl, Hall & Rich, Consultants to the
Power Authority of the State of New York

Headquarters, Arlington Inn, Potsdam, N. Y.

FIELD TRIP AGENDA

First Day - Saturday May 25, 1957

Two Power City buses will be available for loading at the front entrance to the Hotel at 7:30 a.m. Buses will depart to view the glacial till exposures in the second stage excavation for the construction of Massena Intake located south of Long Sault Island and the South Channel of the St. Lawrence River.

First Exposure: Massena Intake, 2nd Stage Excavation - 8:15 to 9:30 a.m.

A deep section of glacial drift is exposed from approximately elevation 260 to elevation 160 at the bottom of the Power Canal. A basal till is exposed below approximate elevation 175' extending some 30 feet to bedrock. The striations on bedrock as exposed in first stage excavation for the completed structure has a trend of S. 60° W.

Directly above the basal till there appears a 5 to 10 foot layer of sand with disturbed bedding overlain by stratified subaqueous till, lake sediments, and varved deposits in a complex relationship.

- Dr. Paul

Above this middle deposit, at about elevation 230' at the bend in the haul road, there is an exposure of upper till, showing a trend (by till fabric) from the north to northwest while the till in the middle deposit has a trend from the northeast, the same as the basal till.

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On the south side of the ridge, at the top, there is an exposure of upper till and reworked material while on the top of the ridge, adjacent to the river road, there is an exposure of beach gravels with marine shells.

Second Exposure: East Guide Wall Area - Eisenhower Lock- 10:15 a.m. to 11:15 a.m.

At this location, a power shovel is excavating a central block of till remaining in the canal and lock entrance exposing a section from the basal till floor to a height of about 50 feet.

The bedrock in the lock excavation is striated at S. 60° West and the basal till fabric orientation is in the same direction.

The middle till is completely absent on the south side of the excavation and the upper till drapes down over the lower till under the clay filled valley to the south. Above the upper till on the south face of the exposure, there is a layer of sorted sands and gravel and till-like material from 5 to 10 feet in thickness, overlain by varved lake clays, which in turn is covered by 20 feet or more of marine clay deposits in the canal excavations in the valley a few hundred feet south.

On the north side of the lock excavation some 200 feet away the middle till is exposed approximately 20 feet above the floor of the cut overlain by a middle till complex of sediments capped with upper till. The upper till shows some 10 to 15 feet of oxidation and weathering at this exposure. At the top of the hill, where the present road is located, approximately 10 feet of gravel and poorly sorted materials have been removed which contained marine shells.

#5 rapids

Stop 1-A - 15 minute stop, Long Sault Overlook - 11:30 to 11:45

Stop 2-A - Long Sault Canal Twin Slide Area - Sta. 420+00 on Long Sault Canal between Eisenhower and Grasse River Locks - 12:00 to 12:30 p.m.

6, 7, 8, 9 slides + drawing of stability analysis

At this location good examples of local slide failures are to be seen. These failures have occured on a construction face of the canal excavation adjacent to the existing highway. This bank is some 35 feet in height above the bottom of the canal at Elev. 170', with a construction slope slightly under 1 on 1, and the failures exhibit clear cut examples of unstable slopes due to a combination of steep slopes and the intrinsic failure zone within the clay, the unbalanced forces having been aggravated by frost action.

A brief discussion of the stability analysis and testing of the clay foundation will be reviewedon the site. There will also be a demonstration of vane testing for in situal clay shearing strength evaluation.

Luncheon: 1:15 p.m. Hepburn Memorial Library Community Room, Waddington
Sponsored by Waddington-Madrid Central School P.T.A.
85 cents - Salads, sandwiches, coffee and cake.
(Cost of luncheon included in registration fee for those registering)

Afternoon

Third Exposure: Iroquois Dam and Lock excavations - 2:30 to 4:00 p.m. # 10, 11 dam

The buses will travel across the first stage section of the dam, now spilling the complete flow of the St. Lawrence River, over part of the second stage cofferdam, through the construction site of the second stage portion of the dam and along the upstream cofferdam to the site of the Iroquois Lock on the Canadian side. This lock is being constructed by the St. Lawrence Seaway Authority of Canada.

The excavation at the east end of the Lock exposes 10 to 15 feet of basal till resting on bedrock that has been striated S. 45° West. #12

The middle till containing thick stratified Lacustrine deposits, mainly of sands and gravels and some sediments with imbedded boulders. This exposure presents a vertical 60 foot face.

This middle till is again capped with an upper till that has been deeply oxidized. At the west end of the Lock there is a similar exposure now in the process of being excavated. A third exposure within the rim dikes of the Ontario Hydro excavation between the Lock and the Dam construction, exhibits stratified lacustrine deposits with some relatively clean sands and gravels extending to the bottom of the excavation.

4th Exposure: Point Three Points on the New York Side of the St. Lawrence 4:30 to 5:30 p.m.

Point Three Points can be seen from the East End of Iroquois Lock, approximately 3 miles downstream. The channel improvements excavation at this site have been completed for the first 2000 feet of the excavation.

The exposures at Point Three Points consist of several drainage channels eroded down the completed slope to the bottom of the cut, which extends some 25 feet below the river level. These excavations consist mainly of the middle till complex capped by a thin layer of upper till. No basal till is exposed at the bottom of the excavation. The overall exposure is etched by the water of the erosions channels to display the complex relationship of the members in the middle till complex. #13 dragline

Sunday May 26, 1957: Bus departs from Arlington Hotel 7:30 a.m.

We will travel to the Long Sault Rapids via the new Barnhart Island Bridge, passing over the Powerhouse Cofferdam along the Canadian side of Sheek Island up the revetment between the dry river bed (Long Sault Rapids) and the Cornwall Canal to Cofferdam "E" and to Cut "F". These latter two features divert the full flow of the north channel of the St. Lawrence River, controlled by the first stage of Long Sault Dam. #14 Long Sault Dam

Cut "F" Exposure

(a) The Cut "F" exposure consists of two test pits (approximately 1000 yards each) exposing the upper and middle tills down to the lower till. Test Pit #1 has a 12' x 12' pit extended into the lower till, revealing a good exposure for approximately 15 feet below the river bed.

(b) From Cut "F" we will proceed on foot downstream to the first Borrow for Cofferdam "E" on Long Sault Island where exposures of upper and lower till occur. #15

(c) We will continue down the dry river bed, past the till flows from spoil to the old Indian encampment site where the artifacts displayed in the Hotel Lobby were found.

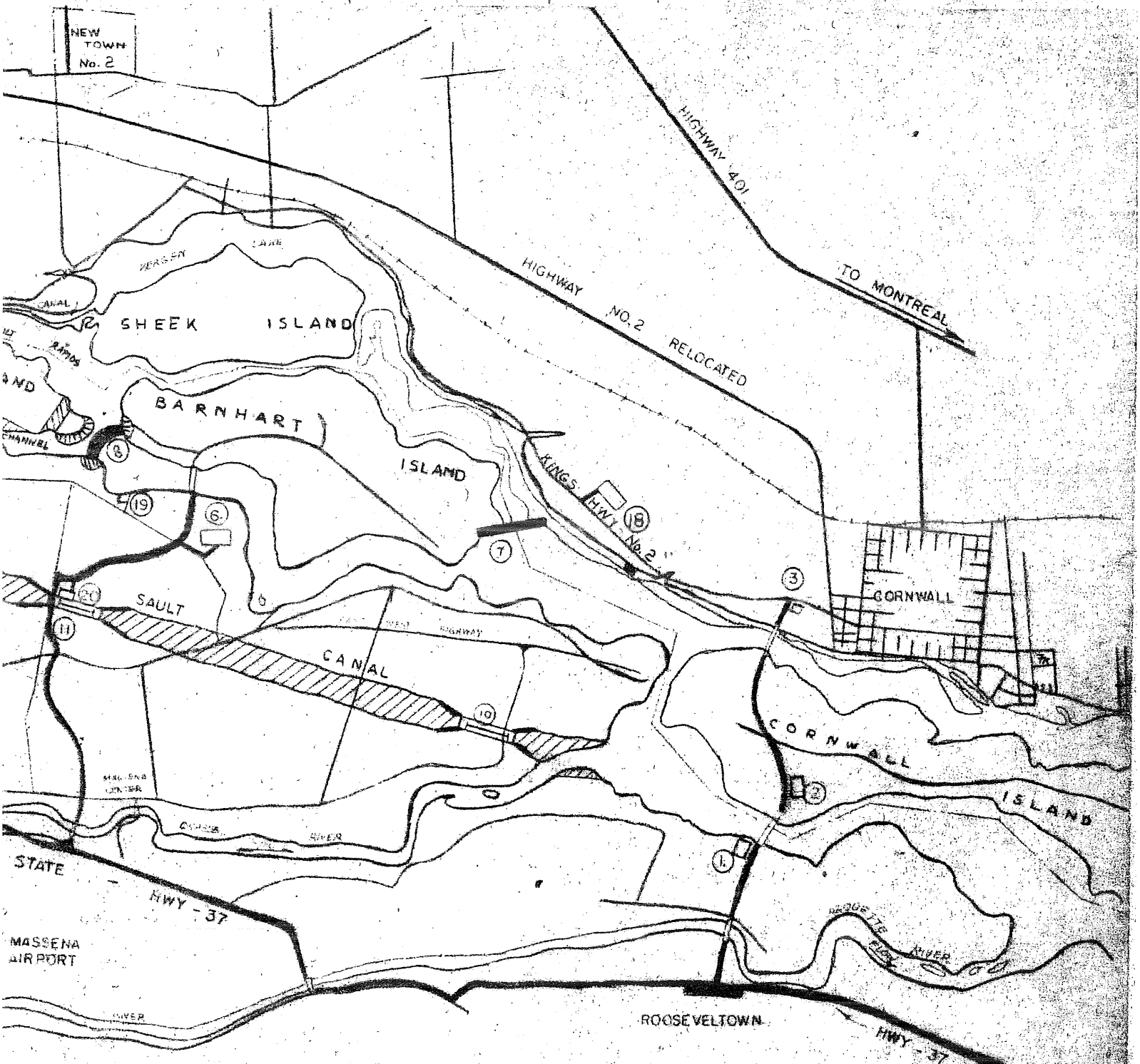
(d) The next point of interest is the channel of Cut "C" which was the diversion channel during first stage construction. It now displays a full section of lower till, capped with upper till and clay withinteresting erosion features found in the lower till.

(e) At this point we will cross the river to the North Abutment of Long Sault Dam. This location displays a complete section from striated bedrock overlaid with basal till through the middle till complex, topped with upper till, including a marine beach development.

This new exposure demonstrates the presence of varved silts within the lower till, displaying all the characteristics of the flow till within the sediments of the middle till and demonstrates the action of the upper ice in mixing the top 5 to 10 feet of sediments to form a sandy phase of the upper till.

Also demonstrated at this exposure is a location where the upper ice thrust stony till down into and through the middle till causing plastic flow and reorientation of the fabric of the lower till, which in turn striated bedrock across the original lower till striae.

NOTE: Bus leaves for Potsdam at approximately 12:30 p.m. arriving in Potsdam at 1;30 p.m. (Custom clearance will take place before bus leaves for Potsdam.) Luncheon will be available at the Arlington Hotel before your departure. The Management would appreciate advance information as to your luncheon plans.



ENTRY

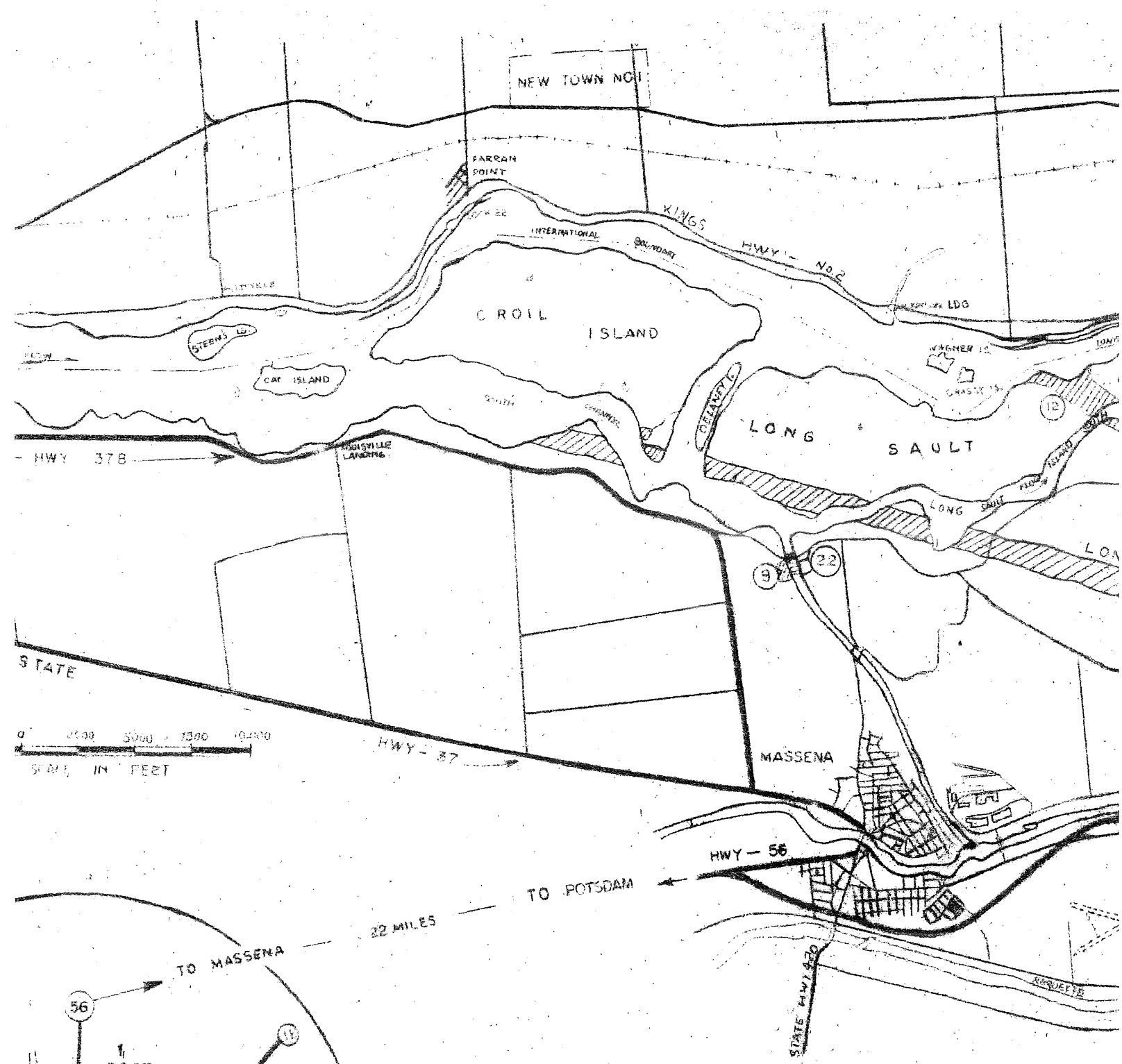
OOSEVELTOWN
CORNWALL
H ROOSEVELT BRIDGE
RESCOTT
)ENSBURG

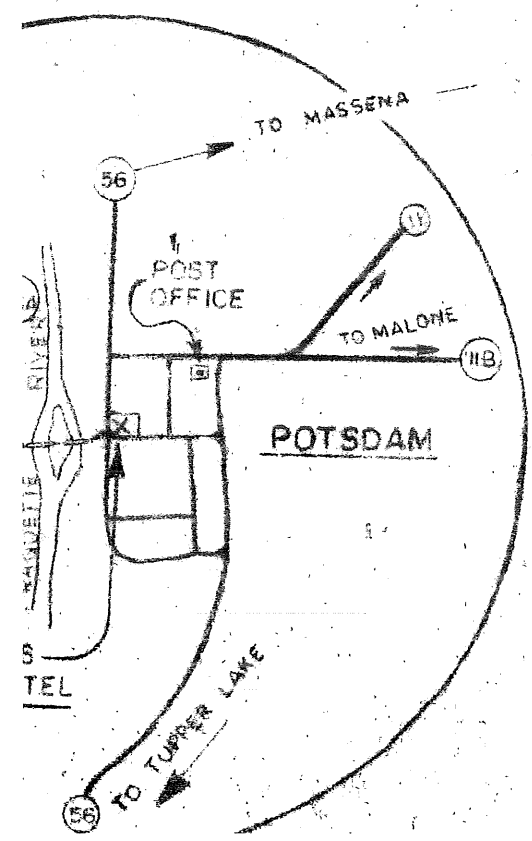
FEATURES

(7) BARNHART ISLAND POWERHOUSE
(8) LONG SAULT DAM
(9) MASSENA INTAKE
(10) GRASSE RIVER LOCK
(11) DWIGHT D. EISENHOWER LOCK
(12) LONG SAULT ISLAND CUT "F"

THE ST LAWRENCE POWER AND SEAWAY PROJECT

FRIENDS OF THE PLEISTOCENE - POTSDAM, 1957





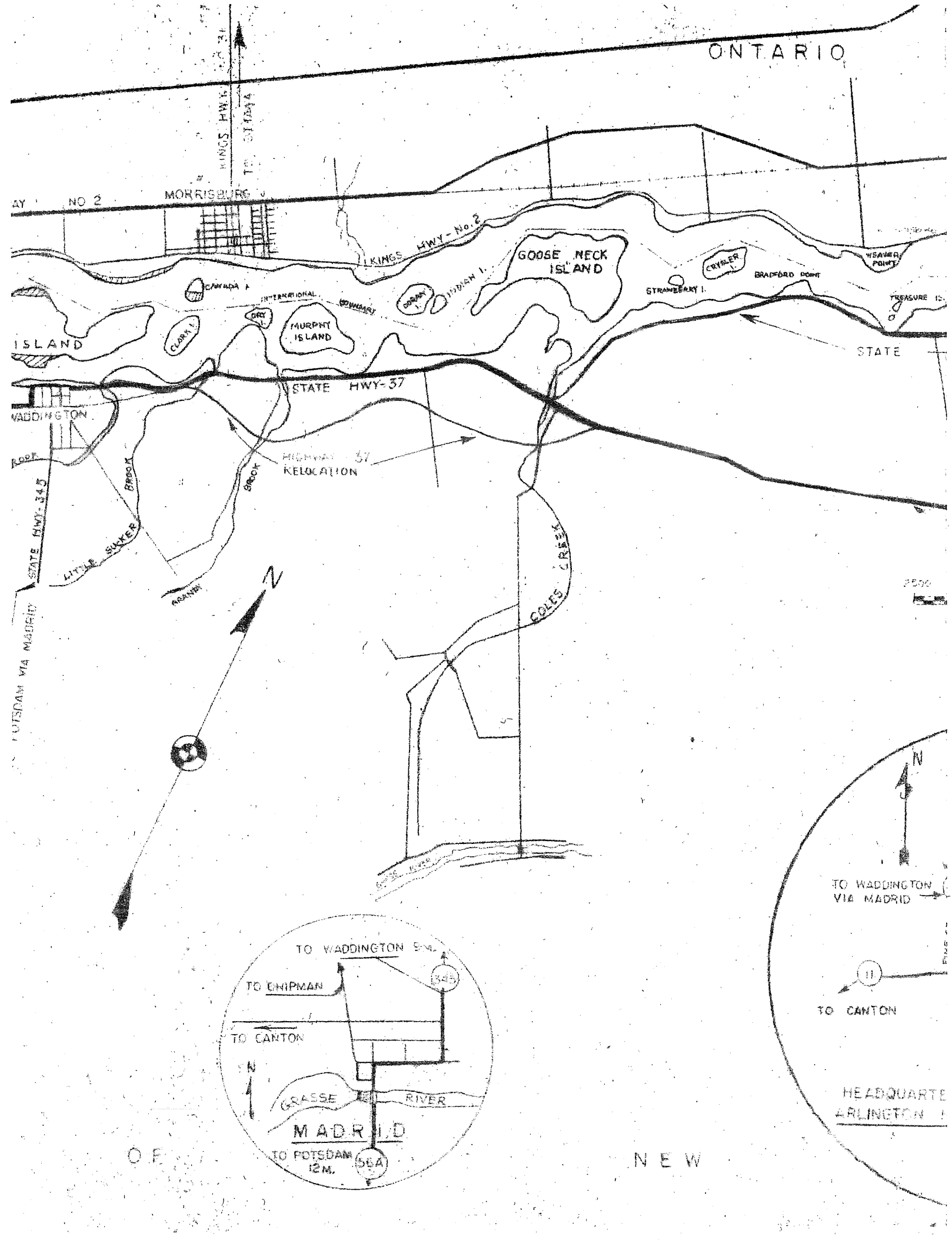
(6) ADMINISTRATION BUILDING, P.A.S.N.Y. & U.H.R.
(16) ADMINISTRATION BUILDING, ONTARIO HYDRO

PORT OF

(1) U.S. CUSTOM
(2) CAN. CUSTO
(3) ENTRY THR
(4) CAN. CUSTOM
(5) U.S. CUSTOM

OVERLOOKS

(19) LONG SAULT DAM
(20) DWIGHT D. EISENHOWER LOCK
(21) IROQUOIS DAM
(22) MASSENA INTAKE


ONTARIO
KINGS HWY. No. 2
MORRISBURG
KINGS HWY - No. 2
GOOSE NECK ISLAND
CRYSLER
BRADFORD POINT
STRAWBERRY I.
TREASURE IS.
CANADA
INTERNATIONAL BOUNDARY
GRAY I.
MURPHY ISLAND
CLARK I.
ISLAND
STATE HWY-37
STATE
WADDINGTON
HIGHWAY 37 RELOCATION
STATE HWY-345
LITTLE SUCKER BROOK
COLES CREEK
POTSDAM VIA MADRID
N
TO WADDINGTON VIA MADRID
TO CANTON
HEADQUARTE
ARLINGTON
TO WADDINGTON
TO ENIPMAN
TO CANTON
GRASSE RIVER
MADRID
TO POTSDAM 12 M.
345
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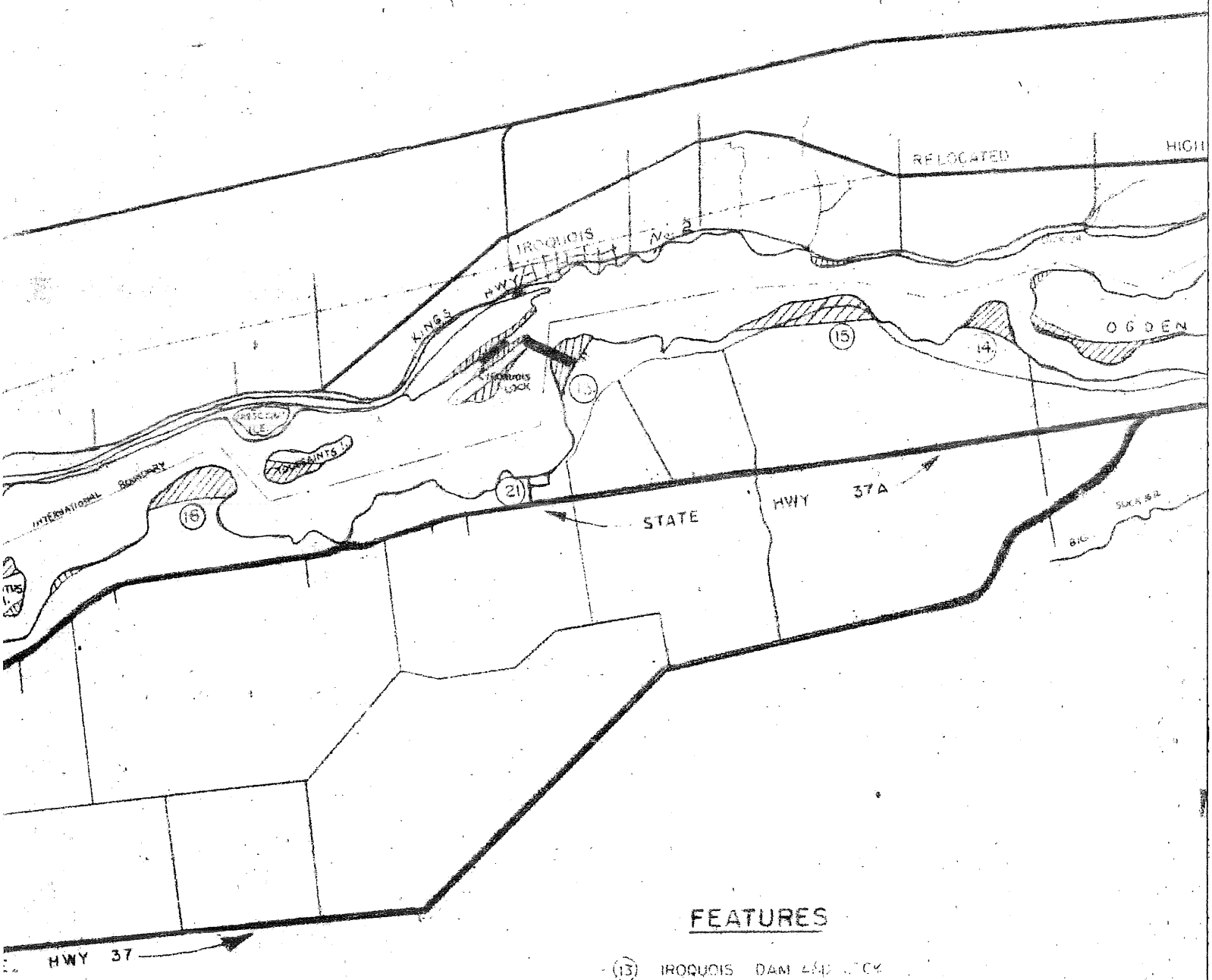
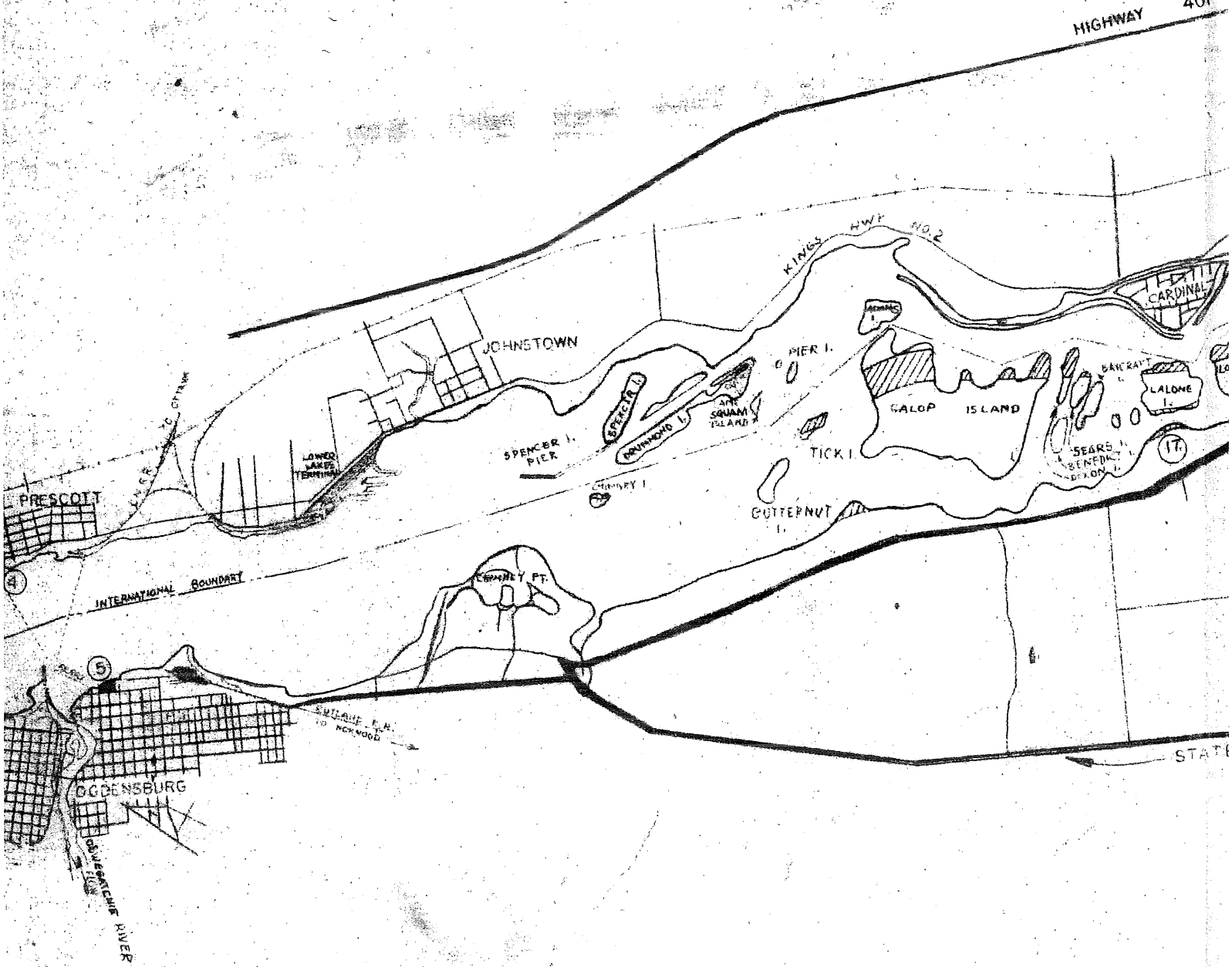


FEATURES

(13) IROQUOIS DAM AND LOCK
(14) LEISHMAN'S POINT & OGDEN ISLAND EXCAV.
(15) POINT THREE POINTS EXCAV.
(16) SPARROWHAWK POINT
(17) GALOP ISLAND EXCAVATION

STATE

PROVINCE


HIGHWAY 401
KINGS HWY NO. 2
CARDINAL
JOHNSTOWN
PIER I.
SPENCER I.
SPENCER PIER
DRUMMOND I.
SQUAW ISLAND
GALOP ISLAND
TICK I.
BANKRATT I.
LALONE I.
SEARS I.
BENEDICT I.
DIXON I.
17
LOWER LAKES TERMINAL
PRESCOTT
CHIMNEY I.
GUTTERNUT I.
INTERNATIONAL BOUNDARY
CHIMNEY PT.
4
5
OGDENSBURG
ST. LAWRENCE RIVER
STATE

Massena, New York
May 4, 1957

Friends of the Pleistocene - May 25 and 26 - Second Announcement

The Arlington Inn will serve as our headquarters at Potsdam, New York. Please write directly to the hotel for your reservations. The accomodations and rates for our group are as follows:

Single without Bath	$ 3.00
" with	5.00
Double with Bath	7.00
Double without Bath	5.00
Twin Beds with Bath	10.00
Twin Beds without Bath	7.00
Limited number of students (sleeping bags on floor in an upstairs setting room)	.50

The dinner Saturday night will be $2.75 per person. Please indicate what other meals you will wish to take at the Arlington Inn in your letter to them. A box lunch Saturday will be supplied at Waddington at 85¢ per person.

Enclosed you will find a map of the project area. Transportation around the project will be by bus at a nominal cost. Buses will leave the Arlington Inn at 7:30 a.m. Saturday morning and proceed to the Highland Hotel in Massena at 8:00 a.m. and from there upstream to the Iroquois Dam Overlook at 8:45 a.m. Any latecomers or people coming from the North may join the party at either the Highland Hotel or the Iroquois Dam Overlook at the time specified. There is ample parking space at both those locations for private vehicles which would then be left and picked up later in the day.

Hard hats are required - bring if you can - about a dozen will be available for issue. Waterproof foot wear will be in order.

NOTE: Long Sault Rapids are virtually dewatered now and the north abutment of Long Sault Dam exposes a splendid stratigraphic section which will be open to inspection on Sunday.

John N. Harris