

HANSON

DERRICK

ED-DB FILE

NPSEN-DB-CI

2 February 1979

MEMORANDUM FOR: RECORD

SUBJECT: Field Reconnaissance of Nookachamps Area on Skagit River,
Washington

1. Upon verbal request from Vernon Cook of Design Branch, in a meeting on 25 January 1979, a mini task force was organized for the purpose of collecting field information and study possible alternatives to alleviate possible induced damages that could be caused by the proposed Skagit levee project at and downstream of Nookachamps area.
2. A field reconnaissance trip was undertaken on 29-30 January 1979 by Don Thompson (Economics), Bob Newbill (Foundations and Materials), Wayne Wagner (Hydraulics), Glen Stevens (Hydrology), Jack Morris (Real Estate), and Simon Yang (Civil Design).
3. During the field reconnaissance, visual inspection of the possible levee alignments were made, photographs taken, and high-water marks and information on past floods, as told by local residents and Mr. Don Nelson of the Skagit County Engineer's office, were related to contour map of the area. Based on several field sources and hydrological and hydraulic calculations made prior to the field trip, the 1975 winter high water was established to be at elevation 39 feet + within the accuracy limits of the available contour map. Pending completion of remaining portion of the contour map, at least one additional field reconnaissance trip will be needed to assess and verify field conditions as well as to complete calculations needed to evaluate some of the alternatives.
4. Alternative solutions of structural and nonstructural nature besides levees were also field investigated for the Nookachamps area in general, as well as west Mount Vernon, Sterling, and Clear Lake areas. Guided by Mr. Don Nelson, a number of local residents were visited by the reconnaissance team. Their views of the flood problems and solutions, as well as historical flood information, were sought. The information obtained is listed by name of source as follows:

NPSEN-DB-CI

SUBJECT: Field Reconnaissance of Nookachamps Area on Skagit River,
Washington

a. Mr. Moore, who lives in the house located on high ground at northwest corner of Swan Road bridge over Nookachamps Creek, told the team of the benchmark on the southeast corner of the bridge. Benchmark elevation is 39.62 feet. He also pointed out the 1975 highwater marks painted on power poles along Swan Road. He mentioned that raising Swan Road as a method of floodproofing was considered by local residents, but found it impractical because the height required. Based on the benchmark elevation, using a hand level, the 1975 high-water mark is pegged at an approximate elevation of 39 feet. (See photographs of the general area of Swan Road Bridge.)

b. Mrs. Gadbois was interviewed at the Gadbois meat business located on the east side of Mud Lake Road about 1,000 feet northeast of the T intersection with Swan Road. She indicated that the 1975 high water reached within 2 inches of the road surface in front of their business and was on the porch of Mr. Gadbois Senior's house located southwest of the T intersection. Field check of these elevation points confirmed high-water marks observed on the power poles along Swan Road.

c. Mrs. Ward indicated that during the 1975 high water, there were 7 inches of water on the concrete ground floor slab of the house which has estimated elevation of 39 feet. It has elevated living spaces on the second floor level. However, the horse barn had about 2-1/2 feet of water. Based on this information and field level check, the 1975 high-water elevation at this location is estimated to be 39.6 feet. This house is well floodproofed against an estimated 100-year flood. Photographs of the house were taken.

d. Discussion with Mr. Ken Johnson on his dairy farm revealed that in the 1951 flood his father had housed the cattle on the second floor of the barn. Since then the herd required to operate a viable dairy farm has grown steadily from the maximum number of 80 head that Mr. Johnson's father owned to his present herd of 300, with 150 milk cows, 130 of which are being milked. This increase in herd size also precludes the possibility of neighboring farms assisting each other by providing temporary shelter or high ground during floods. Besides, the moving of cattle during floods is extremely difficult and causes unrest and loss of milk production. Each relocation takes about a week. During the 1975 high water, Mr. Johnson had accommodated the cows on high ground near the machine shed and on the front lawn of his house. He felt what was needed was some simple milking facility with concrete slab and overhead shelter to accommodate milking each cow at least once every 24 hours to avoid damage to cow's health and capacity for future milk production. A cattle pad of 1-1/2 to 2 acres in size

NPSEN-DB-CI

SUBJECT: Field Reconnaissance of Nookachamps Area on Skagit River,
Washington

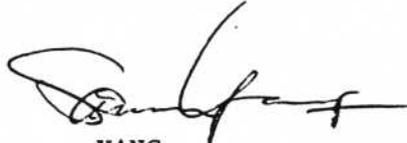
will be needed to accommodate 300 cows during floods, based on the minimum need of about 50 square feet per cow or 8-foot by 16-foot space per three cows. In 1975 he suffered minor damage because milk delivery was made just before isolation due to flooding occurred. Mr. Johnson indicated the high-water levels on the milk barn (see photographs). Based on this information and contour map, available natural ground elevation near the milk barn is about 39 feet. The high-water elevations were estimated to be about 41.7 feet for 1951 high water and 39.8 feet for 1975. (Estimated water levels are: 42.5 feet for 100-year flood without project, 44 feet for 100-year flood with project at day 1, and 44.5 feet for 100-year flood at end of project life.) Mr. Johnson also indicated that 1975 high water came within 2-1/2 feet of first floor of his house, but various essential machinery and facilities such as electric pumps, water heater, furnace, etc. are all above the 1951 highwater level which is the level of protection he would prefer. Mr. Johnson also discussed flood history of the area. He indicated that during the 1975 high water only one home had water in the first floor and in 1951 three homes had flooding of the first floor that was consistent with field observations that most homes were floodproofed to at least a ten-year event. He had also rejected the idea of ring diking around the farm facilities since it will be costly involving extensive diking and offer little security due to constant fear of breaching of the dike which would be disastrous. He echoed opinion of some of the other local residents that the Burlington Northern Railroad Bridge is a major bottleneck.

e. Mr. and Mrs. Don Austin told about having 3 inches of water in their house in 1951 and in 1921 water was up to the window sill (about 2 feet of water in the house). In 1975 the water level was at third of the four concrete block steps leading from the walk to the porch (about 1 foot below floor of house or 2 feet above the walk and 5 feet above the field to the west of the house. They told about hearing the roar of the water coming up the east fork of the Nookachamps Creek at the Highway 9 bridge which is a serious constriction point. Mrs. Austin realized they are in a flood area, but still likes their house and surroundings (they were making extensive repairs and remodeling their house.) Mrs. Austin's main concerns about the Skagit levee project are: (1) will the project increase flood level on their property by leveeing off other former outlets that could have offered relief to their area (e.g. Samish and Burlington areas; Burlington dikes were breached offering some relief in 1951 high water.). (2) she's concerned about at what frequency flood would they begin to sustain induced damages? She shared with other local residents the misconception that the 2 feet of additional water we projected for the 100-year flood can be expected for all flood events. She also had questions about the accuracy of our study methods and prediction

NPSEN-DB-CI

SUBJECT: Field Reconnaissance of Nookachamps Area on Skagit River,
Washington

of high-water levels. More study of the possible induced damage water levels for various flood events is urged by this reconnaissance team. Team members also suggested that due to his familiarity with the area, Mr. Don Nelson of the Skagit County engineer's office could provide additional input. Therefore, he should be asked to review these field notes.



YANG

cc:

Cook (Proj Mgr)

~~Brooks (Skagit Study)~~

Thompson (Economics)

Newbill (F & M Br)

Wagner (Hydraulics)

Stevens (Hydrology)

Morris (RE)

Yang/Hanson (Civ Des Sec)