

WATER-RIGHT DOCKET

Olympic National Park

Docket No: 26

WELL #1. KALALOCH.

Supporting Hydro Data

10-05-1967: ground water: state of washington; lab. no. 56132

[illegible]

UNPUBLISHED RECORDS SUBJECT TO REVISION

GPO 971-386

analysis performed at Sacramento USGS

Other Supporting Information



IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Water Resources Division
1305 Tacoma Avenue South
Tacoma, Washington 98402

September 14, 1966

Mr. Manuel Morris, Hydraulic Engineer
Western Regional Office
National Park Service
450 Golden Gate Avenue
San Francisco, California 94102

Dear Mr. Morris:

I wish to furnish you a report on the construction of a well at Kalaloch, Washington as part of our program to investigate sources for water supplies in Olympic National Park. Mr. Ken Walters of this office took part in this construction and data he obtained is summarized below.

The well was drilled in the SW $\frac{1}{4}$, sec. 3, T. 24 N., R. 13 W. The site is in a poorly drained area about 1/8 mile north of Kalaloch Creek and 3/4 mile from the Pacific Ocean. Access to the site from U.S. Highway 101 is by forest access roads 1420 and 1422. The terrace surface on which the well is located is about 50 feet above mean sea level. Drilling was started by the Stoican Drilling Company of Sequim, Washington, on July 7, and testing of the well was completed on July 28, 1966. The upper 10 feet of hole was cased with 16-inch diameter steel casing, which was removed after placement of the concrete surface grout after completion of the well. The well was drilled by the cable-tool method; 10-inch steel casing was used before bedrock was encountered. No casing was used in the part of the well that penetrated bedrock. The well log is enclosed. The description of the materials in this log was prepared by Mr. Walters and the determinations of depth are principally by the driller.

Of the three water-bearing zones penetrated (21-26 ft., 36-40 ft., and 54 $\frac{1}{2}$ -65 $\frac{1}{2}$ ft.) the upper and lower appeared to be potentially the most productive. The original intention was to obtain water from only the lower zone on the assumption that the quality of water in that zone would be affected least by decomposing vegetation in the poorly drained area surrounding the well, and more drawdown could be induced without exposing the screen or perforations. On the basis of sieve analyses of the material from the lower zone (54 $\frac{1}{2}$ to 65 $\frac{1}{2}$ ft.), a .060-inch slot screen was installed opposite the upper part of the zone (from 56 to 61 ft.), and a .030-inch slot screen opposite the lower part, but extending 1 foot into the underlying sandy clay (from 61 $\frac{1}{2}$ to 66 $\frac{1}{2}$ ft.). The bottom 11 $\frac{1}{2}$ feet of the well (from 66 $\frac{1}{2}$ to 78 ft.), was backfilled with gravel.

The well was then developed by bailing for about three hours, but very little fine material was removed. When development with a surge block was attempted, much fine material was removed but the materials overlying the screened zone started to erode along the outside of the casing. Gravel was added to the annular space outside the casing to fill any voids that had formed above the screened zone, and the casing was pushed down 3 feet to cover the upper part of the screen and prevent further erosion. Probably because of the weathered nature of the lower water-bearing zone, not enough fine material could be removed from the aquifer to develop an adequate quantity of water through the screen. Therefore, the casing was perforated from 24½ to 27 feet opposite the upper water-bearing zone also. A series of pumping tests was run after the casing was perforated opposite the shallow zone.

The pumping tests are summarized below and detailed plots of the data obtained are enclosed.

<u>Duration</u>	<u>Rate (gpm)</u>	<u>Static level*</u>	<u>Drawdown feet</u>
3 hrs. 20 min.	15	9.0	9.5
2 hrs. 7 min.	20	15.17	5.61
8 hrs. 15 min.	30	14.25	14.25
24 hrs. 35 min.	20	14.79	9.00

*Level in well when pump started in feet below land surface

Prior to the first pumping test (pumping rate 15 gpm) static water level in the well was 9 feet below the land surface; during the remainder of the testing the water level did not recover to above 14.25 feet below the land surface. The higher water level was probably supported by slow downward seepage of water from the material that overlies the upper water-bearing zone. The water level did not stabilize during the shorter 20-gpm test, but enough data were obtained to indicate that 20 gpm would be the highest feasible pumping rate. At 30 gpm the water level was drawn down below the perforations, an undesirable condition in view of the high iron content of the water. The 24-hour test indicates that the well can be pumped for extended periods with little or no exposure of the perforations to the atmosphere. The specific capacity of the well based on the 24-hour test is about 2.2 gallons per minute per foot of drawdown. Irregularities on the curves (especially noticeable on the drawdown part of the 24-hour test) are probably caused by tidal influence.

On the basis of the substantial drawdown produced during the 24-hour test, the well probably should not be pumped for extended periods at a rate greater than 20 gpm. Pumping at a higher rate will expose the perforations to the atmosphere, and could result in serious encrustation in the well.

Quality of water analyses of samples from the well are enclosed. The turbidity is rather high and iron and manganese are also above desirable concentrations. The turbidity may cause some objections in using the water for drinking purposes and the iron and manganese will probably stain any porcelain fixtures where it is used continually and also may produce problems if used for laundering of clothes. It may be desirable to employ a small filtration unit for this supply depending upon the major uses of the water.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "L. B. Laird".

L. B. Laird
District Chief

Enclosures

MR. M. MORRIS
L & W USE

Mr. B. Gale, Superintendent

10-11-66

P. Duggan, Project Supv.

Well No. 1, Kalaloch, location of
Contract No. 14-10-4-149-001

RECEIVED	
San Francisco Planning and Service Center	
Office of Land and Water Rights	
NATIONAL PARK SERVICE	
OCT 12 1966	
ACT. INFO.	INITIALS/DATE
CHIEF	
ASST. CHIEF	
S.P.V. APPR.	

Attached for your use in securing State of Washington permit,
and per Mr. Zachwieja's request, are four copies of a sketch
showing the location of the well No. 1, Kalaloch.

If there are any further details involved in securing the permit,
and we may be of assistance at this end, please let us know.

Phil Duggan

SIGNED

PROJECT SUPERVISOR DCSSC
KALALOC RANGER STA. RT. #1
CLEARWATER, WASH. 98309

Attach shown

cc Mr. A. Heubner-D. Bressler
Mr. M. Morris

CCSSC
LWSSC

10-876

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPUTATION SHEET

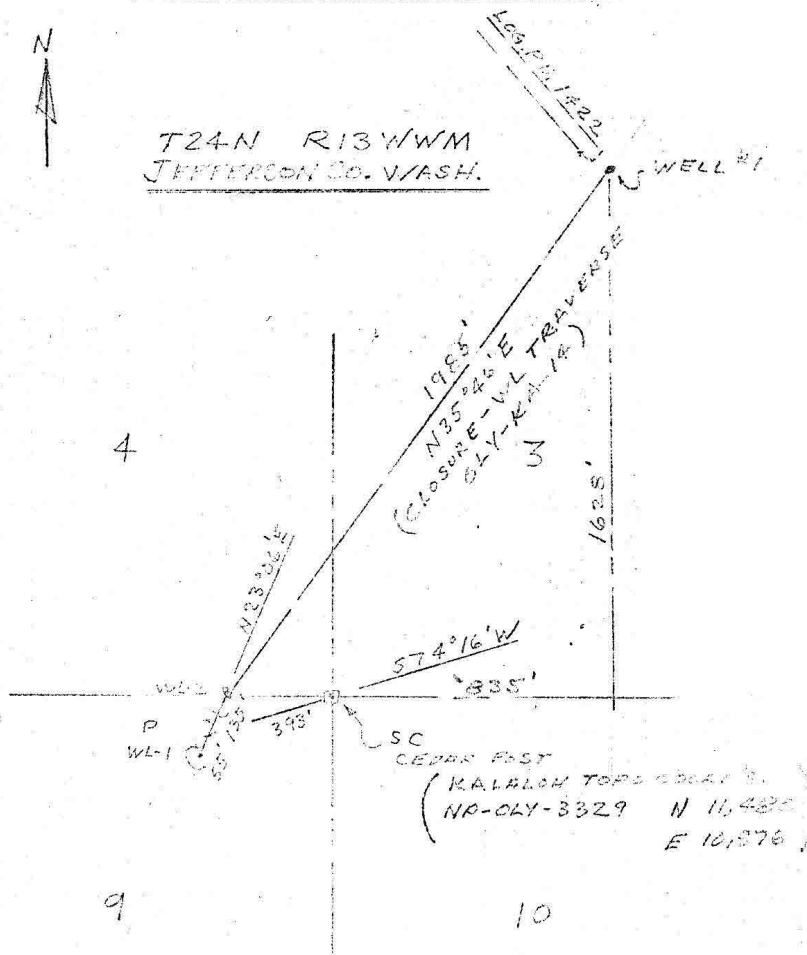
SHEET 1 OF 1

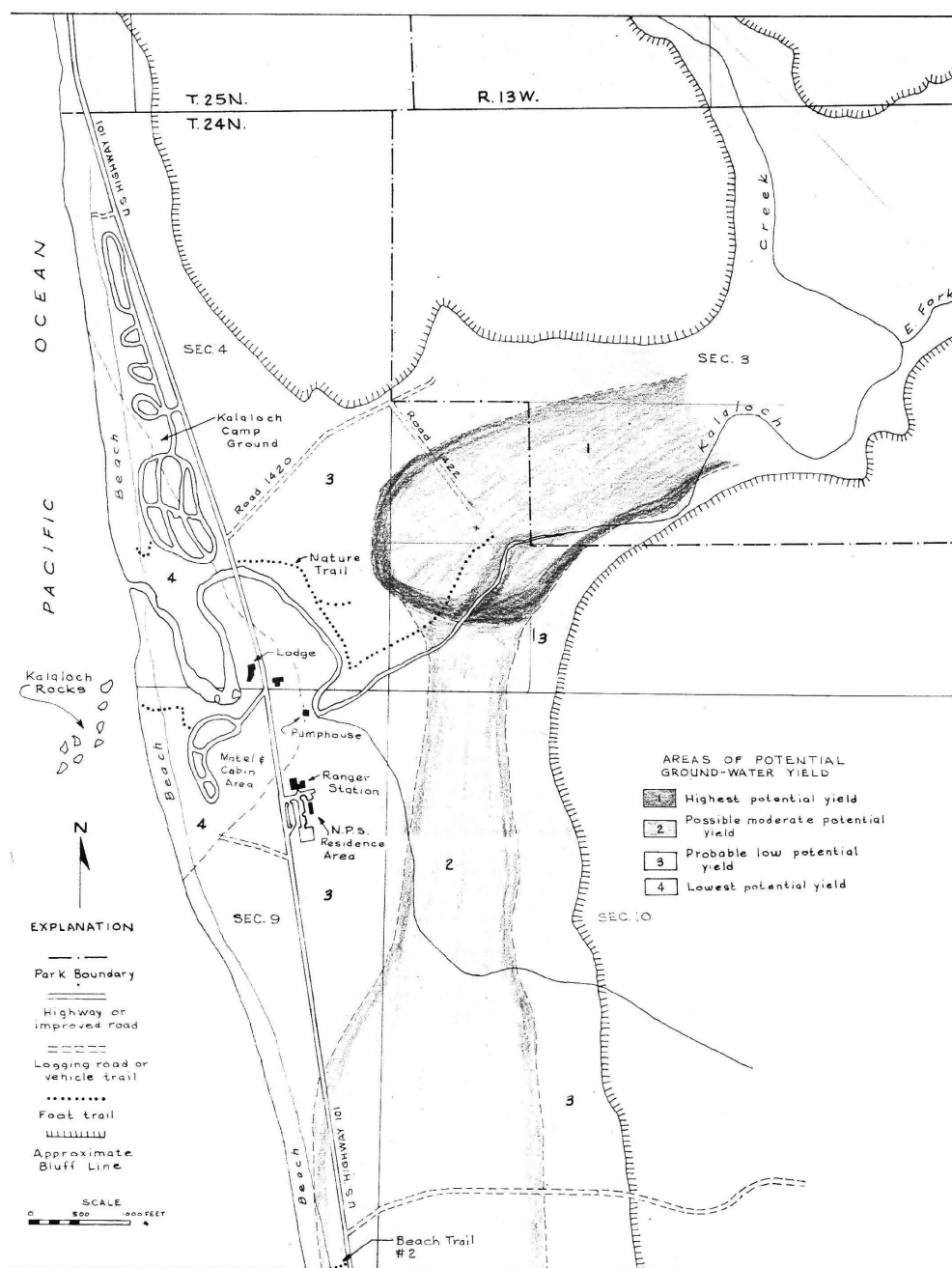
MADE BY: *ADW*

CHECKED BY: *1/16*
(INITIAL AND DATE)

GPO: 1965-O-761-379

Subject: LOCATION OF WELL #1 - KALALACH
OLYMPIC NATL PARK





Docket Information

Number of Documents in Docket 7

Documents Dated from 9/14/1966 to 10/5/1967

Docket Compiled: 6/3/2011