GEOLOGIC AND MONITOR WELL

INFORMATION FOR PETROTOMICS'

TAILINGS RESERVOIR AREA

Prepared for:
Getty Oil-Petrotomics Co.

By:
HYDRO-ENGINEERING
July 1980

Stephen J. Playton
Hydrologist

TABLE OF CONTENTS

INTRODUCTION

Petrotomics Company, a unit of Getty Oil, operates a uranium mine and mill in Shirley Basin, Wyoming. Mill tailings are presently placed in a reservoir shown on Exhibit 1.

Five monitor wells have been used in the past to detect seepage of liquids from the tailings reservoir. Three relatively close-in wells, labeled RTH-1, RTH-2, and RTH-3 on Exhibit 1, have apparently sanded in or become plugged with silt, and may not be viable as monitor wells. Therefore, three new monitor wells (1-D, 2-D, and 3-D on Exhibit 1) have been drilled and cased. The two other monitor wells are located approximately one mile south and southwest of the tailings reservoir. These have been designated RTH-4 and RTH-5, respectively.

The purpose of this report is to document the drilling and completion information and down-hole lithology for the three replacement monitor wells. Also, the regional and local geologic settings are briefly reviewed.

GEOLOGIC SETTING

The Wind River formation, of early Eocene age, and the White River formation, of Oligocene age, are the principle outcropping geologic units in the uranium mining areas of Shirley Basin. The White River formation generally is present only north of T. 27 N. Therefore, most of Petrotomics' mining property and, specifically, the mill tailings reservoir, is in the outcrop area of the Wind River formation.

The Wind River formation is characterized by abrupt changes in lithology and thickness. The thickest section is along a northwesterly trending zone in the central part of Shirley Basin where 450-550 feet of siltstone and sandstone overlies a major valley or the pre-Wind River erosion surface. In the vicinity of Petrotomics' mining and milling operation, the Wind River formation is generally about 400 feet thick and consists of interbedded siltstones, sandstones, and claystones. At least seven discontinuous sandstone layers have been identified in Petrotomics' mining area with overlying and underlying layers of relatively impermeable siltstones and claystones. The general dip of the Wind River formation in this area is to the north at approximately 150 feet per mile.

NEW MONITOR WELLS

In the area down-gradient from Petrotomics' mill tailings disposal reservoir, three new monitoring wells have been drilled and cased. They have been designated wells 1-D, 2-D, and 3-D, and their locations are shown on Exhibit 1. They were all completed in the second sand layer encountered. Drilling was performed with a rotary, air-circulating rig. Lithologic logs for each well (Figure 1) were made based on drill cutting samples at approximately 5-foot intervals.

Well 1-D was drilled July 15, 1980 to a total depth of 101 feet. The six-inch drill hole was cased with three-inch PVC, the bottom 15 feet of which was slotted. Gravel packing was placed outside the perforations. Approximately two feet of sand was placed on top of the gravel packing followed with concrete to the land surface. During drilling, water was encountered in both sand layers penetrated. The clay layer between the two saturated sands was dry, however.

Well 2-D was drilled and cased on July 11, 1980. Total depth is approximately 87 feet below land surface. Three-inch PVC, with the bottom 15 feet slotted, was placed in the six-inch drill hole. Gravel packing was placed outside the slotted casing, and concrete was poured outside the rest of the casing to the land surface. Saturation was observed in both sand layers, but the saturation of the clay layer in between was difficult to ascertain.

Well 3-D, also drilled and cased on July 11, 1980, is approximately 76 feet deep. Again, three-inch PVC, with the bottom 15 feet slotted, was placed in the six-inch drill hole. Gravel packing was placed outside the slotted section of casing, and concrete was poured on top of the gravel to the land surface. The upper sand layer was saturated, but the lower sand, in which well 3-D is completed, is apparently dry.

Pertinent drilling and completion information for each new monitor well is given on Table 1. A generalized geologic cross-section through the three monitor wells is shown on Figure 2. In order to reflect the discontinuous nature of the sand layers in the Wind River formation, the connecting lines in the geologic section are shown as dashed.

TABLE 1. MONITOR WELL DRILLING AND COMPLETION INFORMATION

WELL	DATE DRILLED	LAND SURFACE ELEVATION (ft)	TOTAL DEPTH (ft)	CASING TYPE	PERFOR-ATION INTERVAL (ft)	GRAVEL PACKING	WATER LEVEL		MEASURING POINT (ft above L S)
							DATE	ft below MP	
1-D	7/15/80	7065	101.1	3" PVC	87-102	yes	7/16/80	80.45	2.1
2-D	7/11/80	7052	86.7	3" PVC	75-87	yes	7/16/80	54.82	2.0
3-D	7/11/80	7061	75.8	3" PVC	61-76	yes	7/15/80	dry	2.6

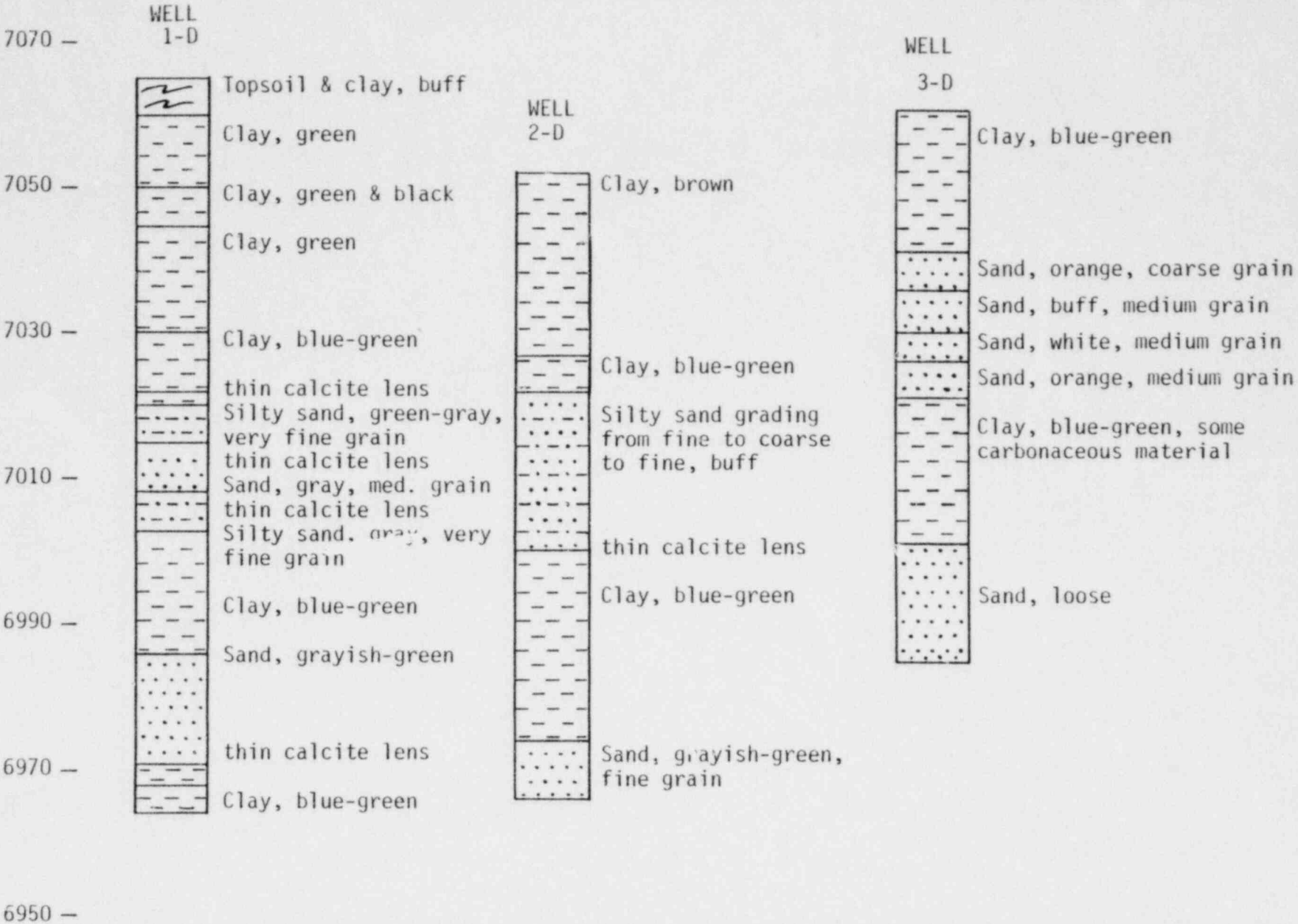
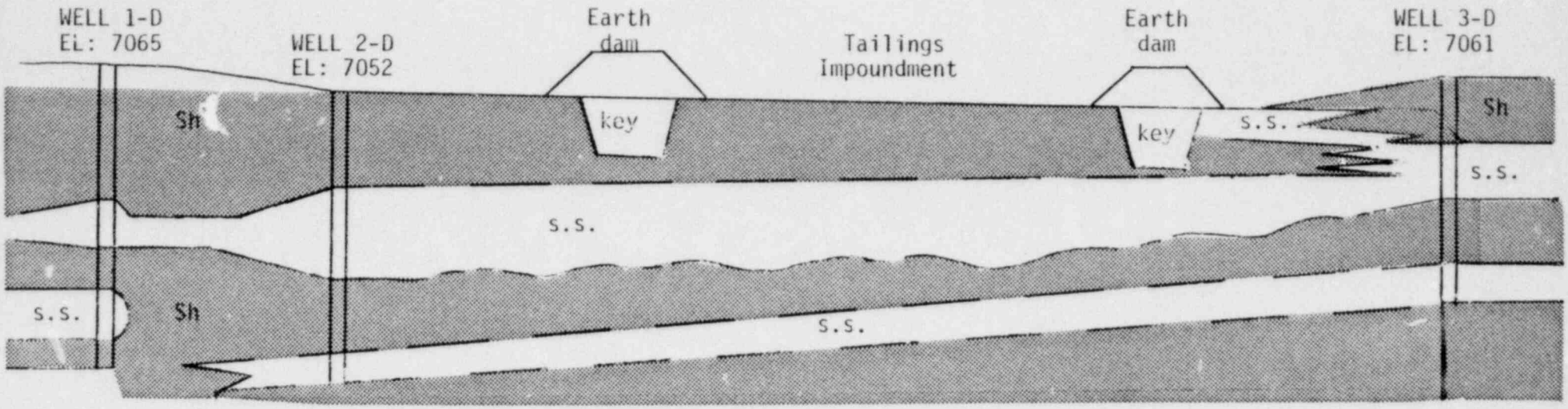


FIGURE 1. LITHOLOGIC LOGS FOR THREE NEW MONITORING WELLS.



SCALE

Vertical 1" = 50'

Horizontal 1" = 400'

s.s. = sandstone

= shale

FIGURE 2. GENERALIZED GEOLOGIC CROSS-SECTION THROUGH THREE NEW MONITORING WELLS.

DOCUMENT/ PAGE PULLED

ANO. 8008080193

NO. OF PAGES 1 map

REASON:

☐ PAGE ILLEGIBLE:

☐ HARD COPY FILED AT: PDR CF

OTHER _____

☐ BETTER COPY REQUESTED ON ___/___/___

☑ PAGE TOO LARGE TO FILM.

☐ HARD COPY FILED AT: (PDR) CF

OTHER _____

☑ FILMED ON APERTURE CARD NO. 8008080193