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United States Department of the Interior

GEOLOGICAL SURVEY

Water Resources Division
Room 227, Federal Building
Carson City, Nevada 89701

March 15, 1982

MEMORANDUM

To: The Record

From: James R. Harrill

Subject: Results of field visit to Diamond Valley

On March 10, 1982, James Harrill accompanied Jerry Brownfield, Ralph Gamboa, and two BLM employees on a field visit to the Thompson Ranch in Diamond Valley. Discharge of the Thompson Ranch springs has decreased markedly and the purpose of this trip was to observe conditions that might be related to this change. The day was spent as follows:

1. Arrived at Thompson Ranch at about 9:30 a.m.
2. Milt Thompson showed us some shot holes and springs located 1 to 4 miles west of the Thompson Ranch.
3. Drove north of the ranch and viewed (from the road) an area where a large amount of water was flowing from unplugged shot holes. The condition of pasture and phreatophyte areas west of the road was observed at this time.
4. Inspected the Thompson Ranch Spring and made an estimate of discharge.
5. Visited several wells south of the ranch and measured water levels where possible.
6. Drove to west side of the valley and visited Sulphur Spring and Tule Dam Spring and observed general conditions along west side of the valley south of Romano Ranch.



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The following observations were made:

SHUT HOLES

- a. Hole closest to Thompson Ranch--This hole had a 3" pipe inserted in it and had flowed for a number of years. Stain on casing indicated former flow from a hole in the casing 2.2 feet above land surface. Currently, water stood at level of 0.05 feet above land surface. Pipe was silted into land surface and was unable to measure depth. Some seepage around pipe was indicated by a muddy area around the casing. No flow was observed.
- b. Hole .2 miles west of first hole--Hole had a 3" pipe inserted in it and was flowing at several gallons per minute (<5) through a hole in the casing .2 to .3 feet above land surface. Casing was sounded to a depth of 29.6 feet below land surface. Milt Thompson reported that this hole had formerly flowed enough to create a pond in the winter. Now all water remains in a small area surrounding the casing.
- c. Hole about .2 miles west of second hole--Hole has a 3" pipe in it and was flowing at about 5 gallons per minute through a hole in the casing about 1.1 feet above land surface. Casing was sounded to a depth of 44 feet below land surface. Stains on casing indicate that water had formerly flowed over the top of the casing at a height of about 3 feet above land surface. In past years water had reportedly ponded over a significant area. Water is now contained in a small area around the casing.
- d. Visited a shot hole about 2.1 miles west of the third hole visited that had been plugged with concrete. Several other holes in the vicinity were scheduled to be plugged as soon as the area was dry enough to allow access with heavy equipment.
- e. Visited several springs in the same general area and that had recently gone dry.
- f. Visited a spring in Sec. 12 (T. 23 N., R. 53 E) that was still flowing. Discharge was estimated to be between 20 to 30 gpm.

- g. Visited hole 23 N/55 E-18 sbe that had formerly flowed to provide stock water and now has dried up. Casing was sounded to a depth of about 15 feet below land surface. Was probably sanded in and hole may be between 40 to 80 feet deep. Water level was at 1.7 feet below land surface.
- h. Observed, from road, areas in Sections 20 and 17 of T. 25 N., R. 54 E. where currently there was sufficient flow from unplugged shot holes to water to pond water over a large area. Milt Thompson reported that after these holes were dug, some older flowing holes to the north ceased to flow. This area is about 9 miles north of the Thompson Ranch Springs. Several other smaller areas of ponded flow about 4-5 miles north of the Thompson Ranch Spring were also pointed out to us.

SPRING MEASUREMENTS

- a. Thompson Ranch Springs--Flow as estimated to be 130 gpm. Available flow data on this spring are summarized below (rounded):

9-21-65	1050 gpm
4-01-66	950 gpm
10-19-66	920 gpm
10-03-81	30 gpm
3-10-82	130 gpm

The increase from 30 gpm to 130 gpm can be correlated with seasonal variation in pumping. In Bulletin 35, the same type of fluctuation was noted in the hydrograph of well 21/53-22cd (figure 13). Also Manse Spring in Pahrump Valley had similar seasonal fluctuations that correlated with pumping.

- b. Diamond Springs--Located about 1 mile north of Thompson Ranch Springs. This spring was dry during this visit and Jerry Brownfield reported that it was dry last fall when he visited the area. Tules and willows formerly present (1965-66) in the vicinity of the spring were gone.
- c. Sulphur Spring--On the west side of the valley at 23/52-36 b. This is the spring closest to pumping on the west side of the valley. The following flow data are available:

11-16-65	40 gpm
10-03-81	dry
3-10-82	dry

On 3-10-82, a pipe had been driven into the bottom of the pond and the water level was about 3.8 feet below the pond bottom. This is about 6 feet below the estimated level of the pond in 1965. Tules present in 1965 were gone.

- d. Tule Dam Spring--On west side of valley about 1 mile north of Sulphur Spring at 23/52 25b. The following flow data are available:

11-16-65	54 gpm
3-10-82	dry

A 12" pipe west of the spring (located several feet west of fence) was sounded to a depth of 70 feet below land surface. Water level was 10.52 feet below land surface. This well had formerly flowed.

- e. Observations from the road suggested that wells in the SW $\frac{1}{4}$ of Sec. 24, T. 23 N., R. 52 E. had also ceased to flow.

- f. Shipley Hot Spring--Was not visited on 3-10-82, however, the following flow data are available:

9-22-65	3,230 gpm
4-01-66	3,150 gpm
10-19-66	2,780 gpm
4-22-77	2,530 gpm
10-03-81	2,570 gpm

It is significant to note that between 1977 and 1981 there appeared to be no significant decrease in flow at this site.

WATER-LEVEL MEASUREMENTS

Water-level measurements were made in two USGS observation wells and the irrigation well located closest to Thompson Ranch. They are as follows (below LSD):

23/53-27 BB1	04-08-66	12.97
(23 ft deep)	03-10-82	13.37
	(net change =	-0.4)

23/54 = 18 db1 04-08-66 16.69
(32 ft deep) 03-10-82 18.71
(net change = - 2.02)

23/54 - 20 dd 04-07-66 0.40
(243 ft deep) 03-10-82 12.39
(net change = -11.99)