

APPENDIX H

Prospect and Ryer Island Hydrologic Analysis



US Army Corps
of Engineers
Sacramento District

MARCH 1998

PROSPECT ISLAND CALIFORNIA

ENVIRONMENTAL RESTORATION PROJECT

SEEPAGE DATA

C - 0 8 9 0 3 4

C-089034

Subject: PROSPECT AND RYER ISLAND SEEPAGE ANALYSIS

Note: This memo, originally prepared 22 April 1997, has been amended to include additional data that was not available in April of 1997. This data is shown on Charts 10 and 11 and is discussed in paragraph 4.

1. General - Hydraulic Design Section was requested to compare recorded stage data on Miner Slough at 5-Points Marina with groundwater well elevations on Ryer Island and Prospect Island. The purpose of this comparison is to determine if flooding on Prospect Island effects the groundwater elevations on Ryer Island. The flooding question arose based on claims, by residents of Ryer Island, that Ryer Island has a greater tendency for seepage problems when Prospect Island floods. All elevations measurements in this study are referenced to National Geodetic Vertical Datum. Some text from this summary report was excerpted from a DWR Office Memo from Emil Calzascia to Curt Schmutte and dated August 6 1996. This memo described the data collection effort.

2. Data Collection - Piezometers numbered R1 through R6 were installed on Ryer Island. Their locations are shown on Chart 1. R-1 was continuously monitored, using Hermit SE 1000B Environmental Data Logger. Groundwater level measurements were logged beginning at four-hour intervals, then were adjusted to one-hour intervals after the first two weeks to better facilitate a comparison with tidal stage measurements in Miner Slough. Data were downloaded weekly to laptop computer. Data for the week of April 8-15 were lost during downloading. At piezometers R-2 to R-6, groundwater levels were measured manually on a weekly basis.

Stage measurements in Miner Slough were obtained from the tidal recorder at the marina at Five Points on Miner Slough. The location of five Points is shown on Chart 1.

Monitoring wells were also established on Prospect Island. Sites P-1A, P-1B, P2, and P3 are located adjacent to Miner Slough. The locations of these wells are shown on Chart 1.

3. Field Observations - Some ponded surface water was noted in the fields close to the Miner Slough levee in the general vicinity of piezometers R-2 through R-6, during the first three weeks of the observations. After that, only the ground near R-2 remained muddy, as other wet areas dried up.

Heavy rain occurred during the week prior to May 20, 1996. Releases from Folsom were increased. The water level in Miner Slough rose and then began to recede within a week.

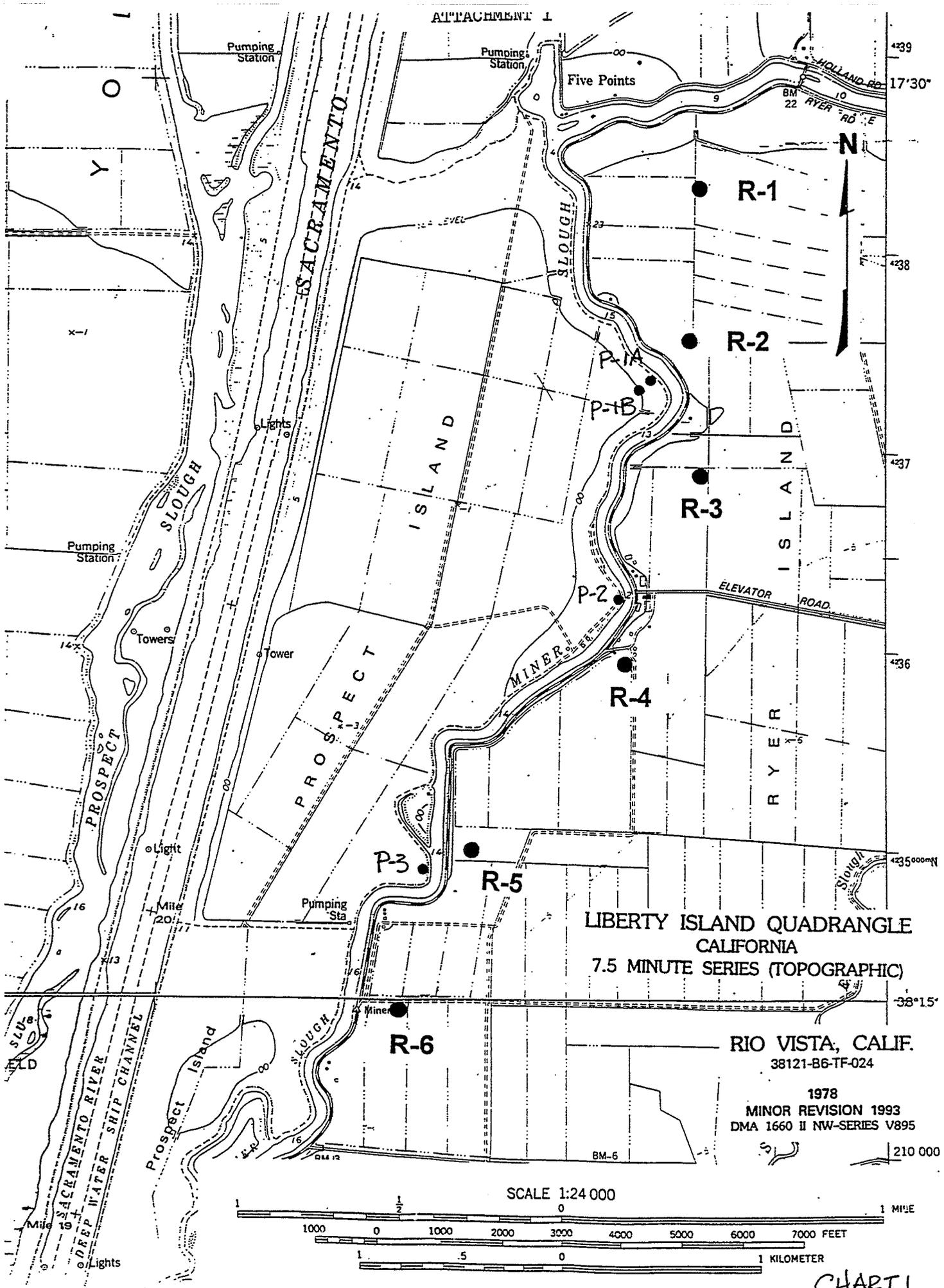
During a May 20th field visit by DWR personnel, it was noted that the Bureau of Reclamation was draining Prospect Island, which had been flooded since early 1995, with a pump located near well R6.

4. Additional Data - Subsequent to the April memo, additional groundwater data was supplied by the Bureau of Reclamation and the Department of Water Resources. This data has been plotted on Charts 10 and 11. The data is not continuous. Due to recorder problems, some data is unavailable. Ryer well data was available through December 1997. However, Prospect Island data ended in December 1996 and the 5-points Marina data is missing from January 1997 through mid July 1997.

5. Discussion - Charts 2 through 9 show plots of various combinations of observed stage readings for Miner Slough and well observations on Ryer and Prospect Islands for April through June 1996. Generally, it appears the groundwater elevations on Ryer Island **MAY** be governed by the water-surface elevations in Miner Slough.

Prior to the beginning of Prospect Island data on May 2, 1996, Charts 3 through 6 show the ground water elevations at the Ryer Island Wells R2-R5 following the general trend of the Miner Slough stages. During the period of May 2nd to May 10th, the Prospect Island elevations are rising while the Ryer elevations show a general downward trend. During the period of increased stage in Miner Slough in the May 20th time period, groundwater observations, for both Prospect and Ryer Islands, show an upward trend. As the stage in Miner Slough decreases, the groundwater elevations in both Ryer and Prospect Islands decrease.

6. Conclusion - The available data represent a very small snapshot in time. Based on the available data, there is no evidence that there is a link between Prospect Island flooding and Ryer Island seepage.



LIBERTY ISLAND QUADRANGLE
 CALIFORNIA
 7.5 MINUTE SERIES (TOPOGRAPHIC)

RIO VISTA, CALIF.
 38121-B6-TF-024

1978
 MINOR REVISION 1993
 DMA 1660 II NW-SERIES V895

SCALE 1:24 000

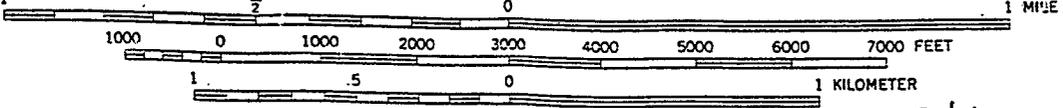


CHART 1

Note:
Ryer Island Well R-1 data for period 4/8/96 to
4/15/96 is missing to gage problems.

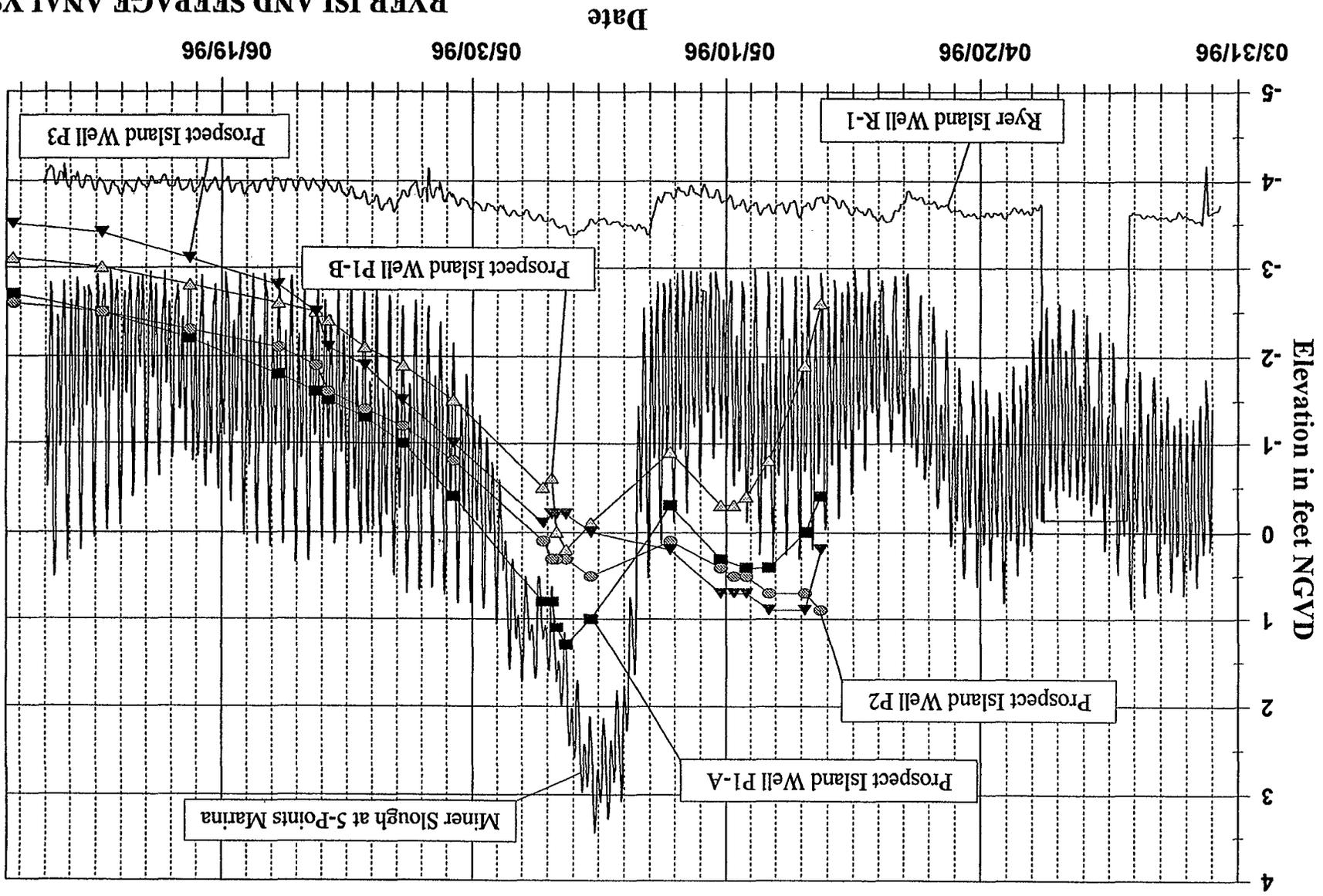
RYER ISLAND SEEPAGE ANALYSIS

Miner Slough and Prospect Island

vs
Ryer Island Well R-1

JH 4/21/97 RYERIS.WB2:R1 vs Miner

Chart 2



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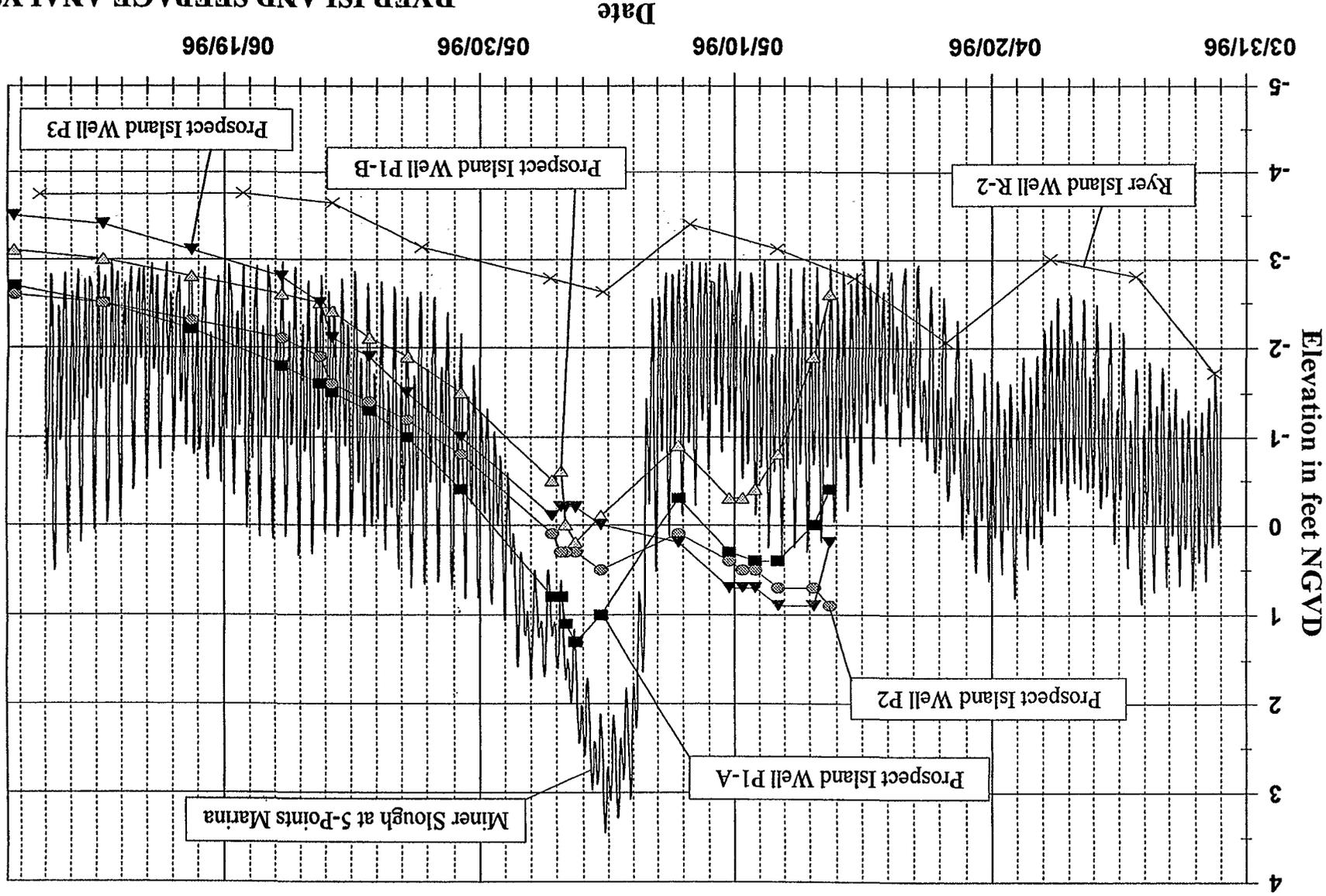
RYER ISLAND SEEPAGE ANALYSIS

Miner Slough and Prospect Island

Ryer Island Well R-2

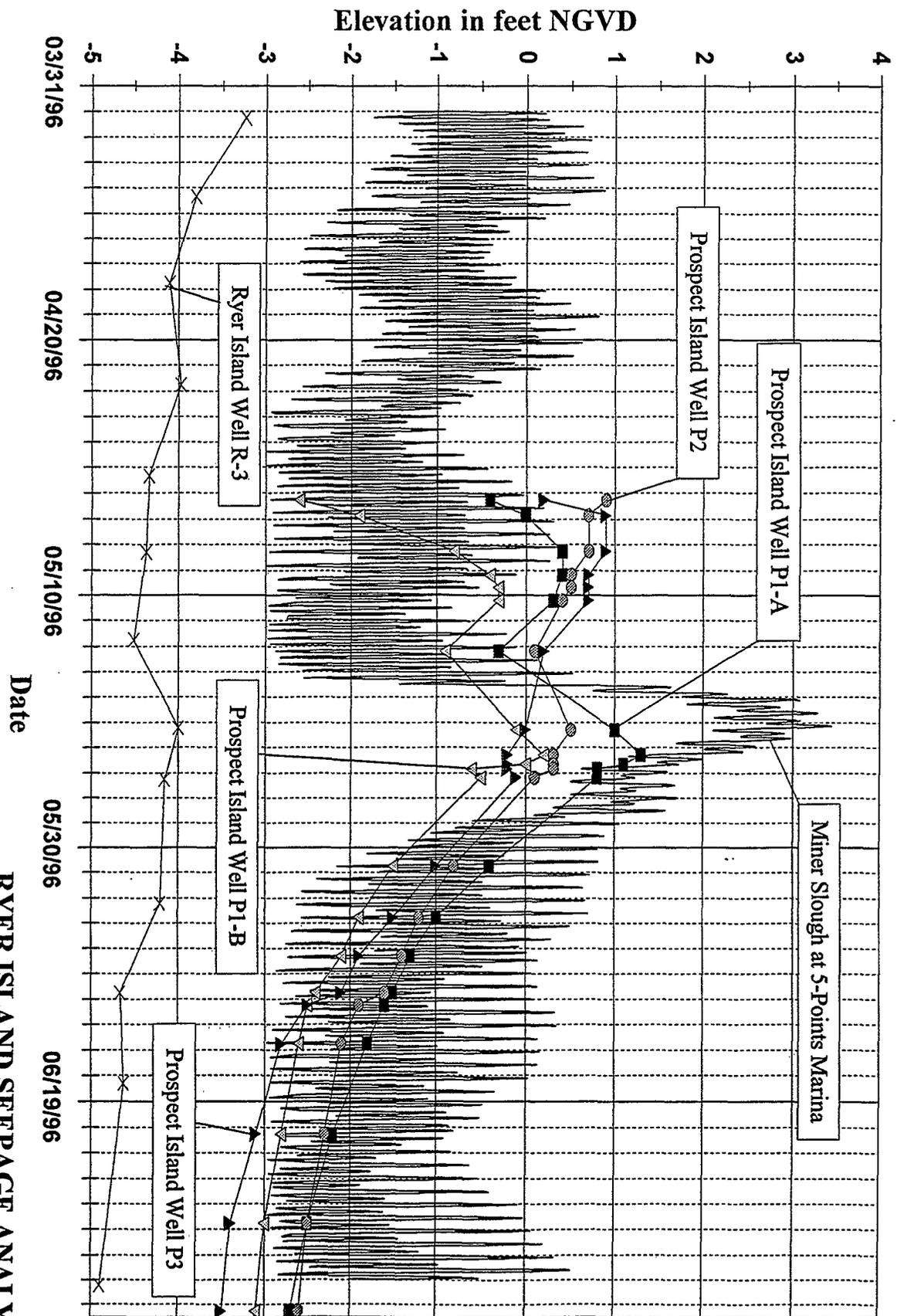
vs
J.H. 4/21/97 RYERIS.WB2.R2 vs Miner

Chart 3



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RYER ISLAND SEEPAGE ANALYSIS

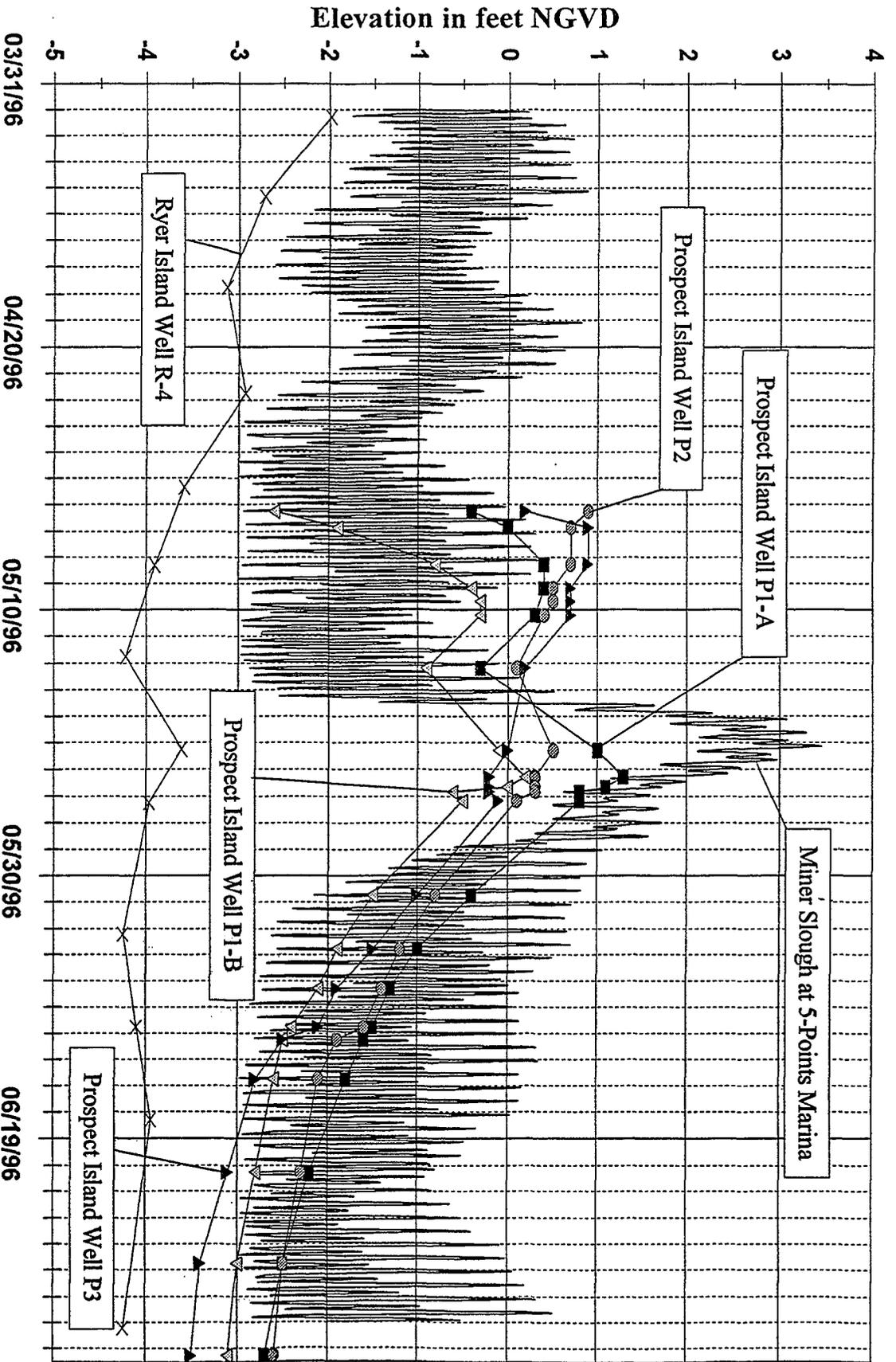
Miner Slough and Prospect Island

VS

Ryer Island Well R-3

J.H. 4/21/97 RYERIS.WB2:R3 vs Miner

Chart 4



RYER ISLAND SEEPAGE ANALYSIS

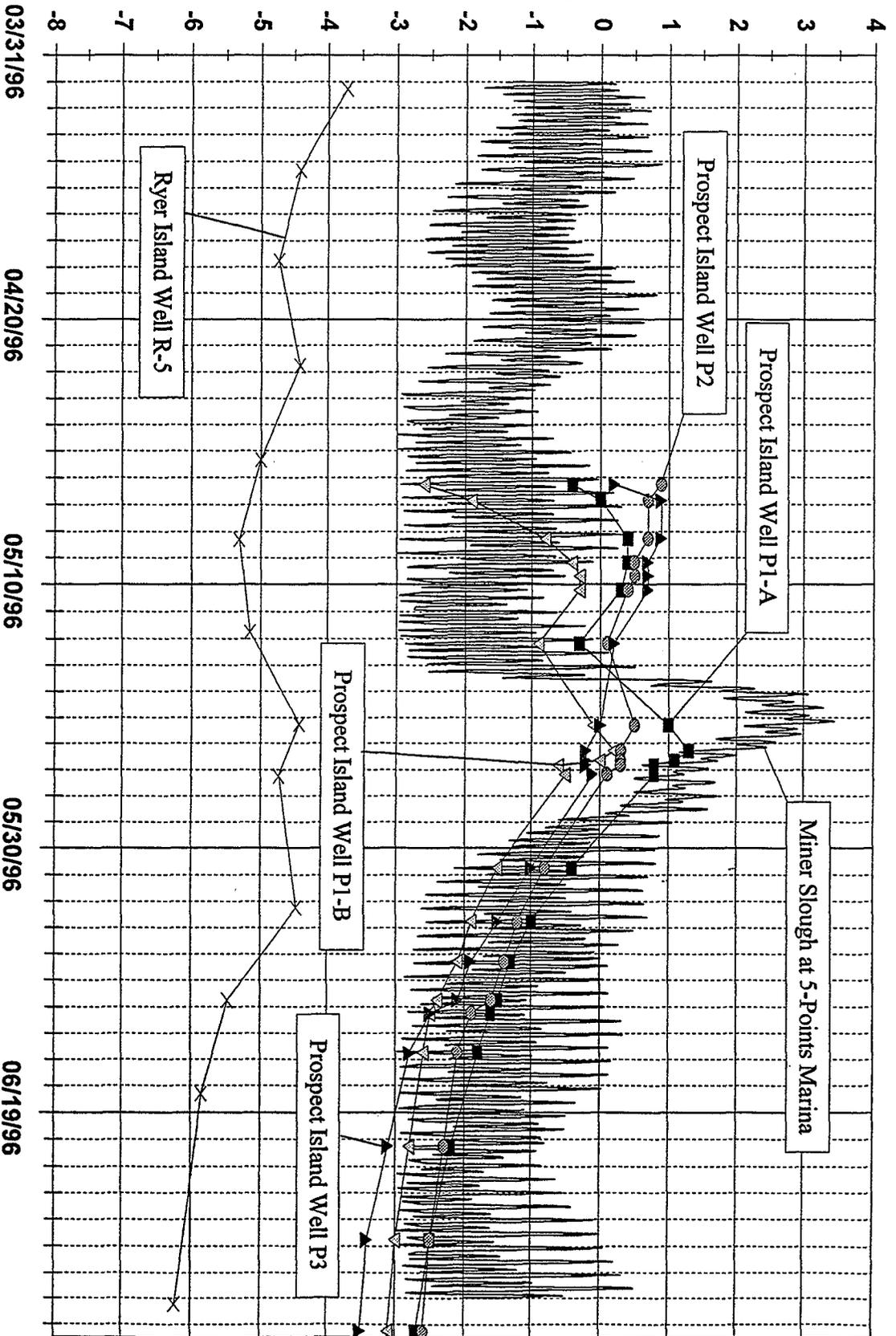
Miner Slough and Prospect Island
vs

Ryer Island Well R-4

J.H. 4/21/97 RYERIS.WB2:R4 vs Miner

Chart 5

Elevation in feet NGVD



Date

RYER ISLAND SEEPAGE ANALYSIS

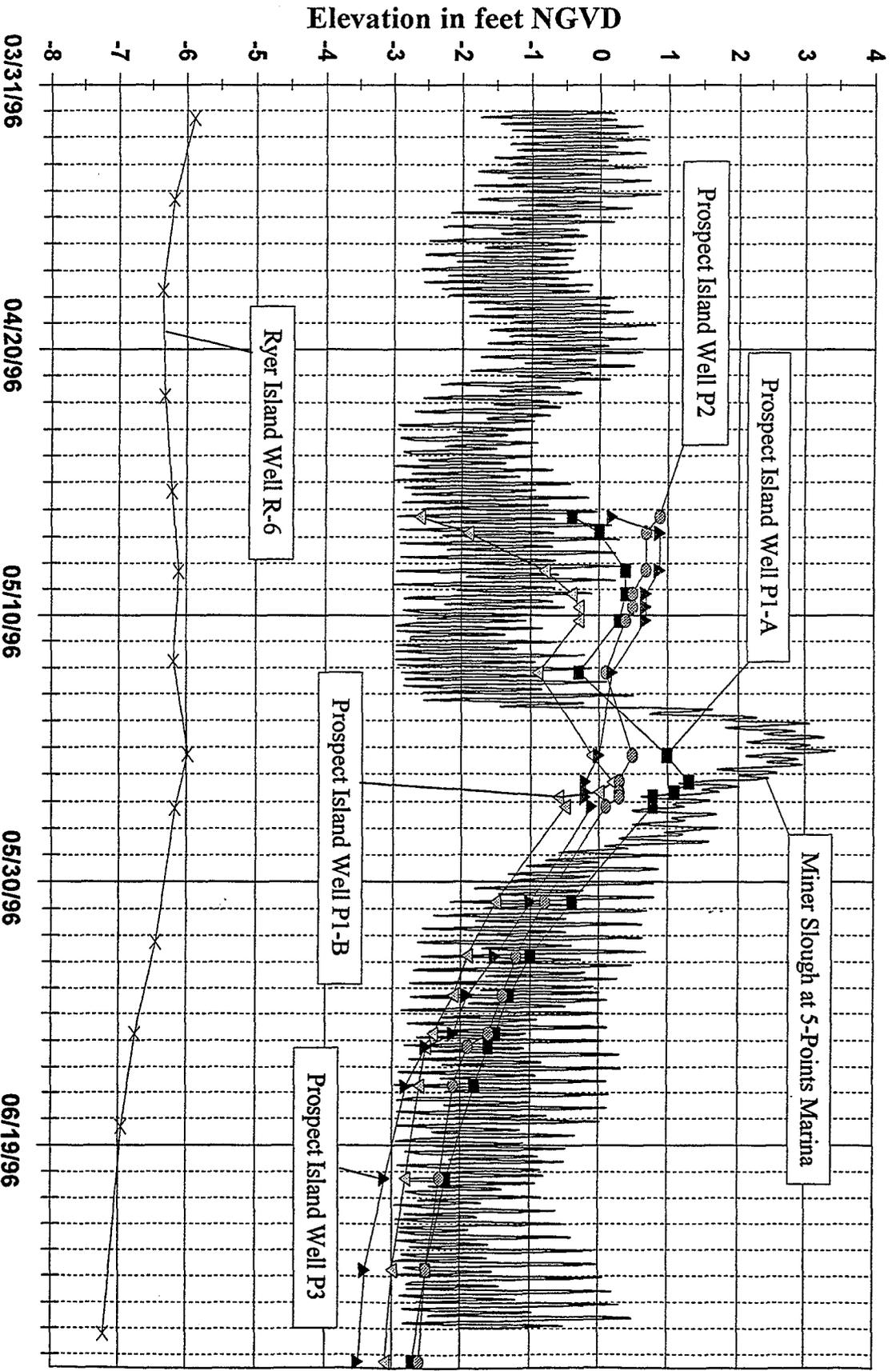
Miner Slough and Prospect Island

vs

Ryer Island Well R-5

JH 4/21/97 RYERIS.WB2:R5 vs Miner

Chart 6

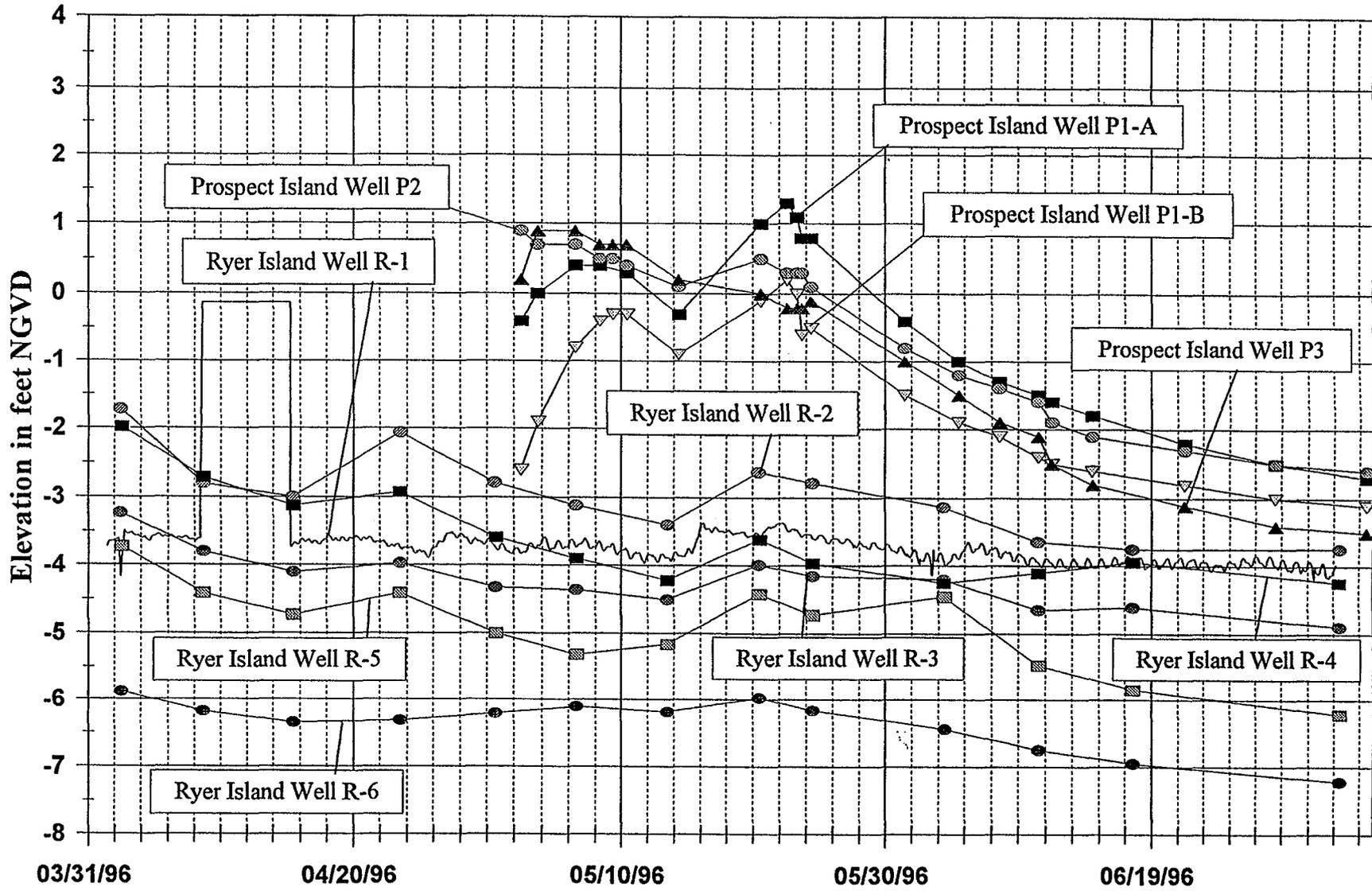


RYER ISLAND SEEPAGE ANALYSIS
 Miner Slough and Prospect Island

vs
 Ryer Island Well R-6

J.H. 4/21/97 RYERIS.WB2:R6 vs Miner

Chart 7



Note:
Ryer Island Well R-1 data for period 4/8/96 to
4/15/96 is missing to to gage problems.

RYER ISLAND SEEPAGE ANALYSIS

Prospect Island

vs

Ryer Island

J.H 4/21/97 RYERIS.WB2:Ryer vs Prospec Chart 8

Note:
Ryer Island Well R-1 data for period 4/8/96 to
4/15/96 is missing to gage problems.

RYER ISLAND SEEPAGE ANALYSIS

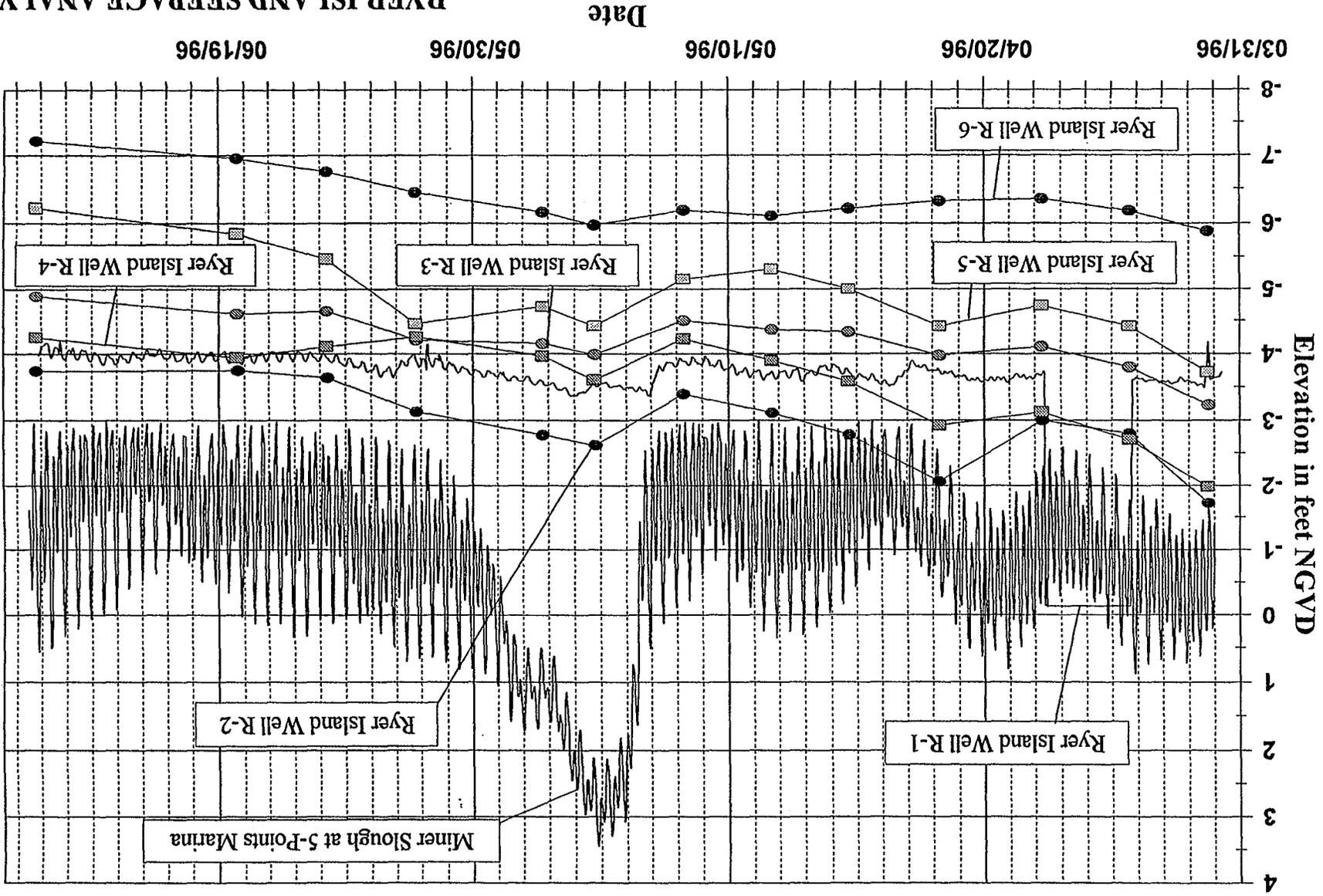
Miner Slough at 5-Points Marina

VS

Ryer Island

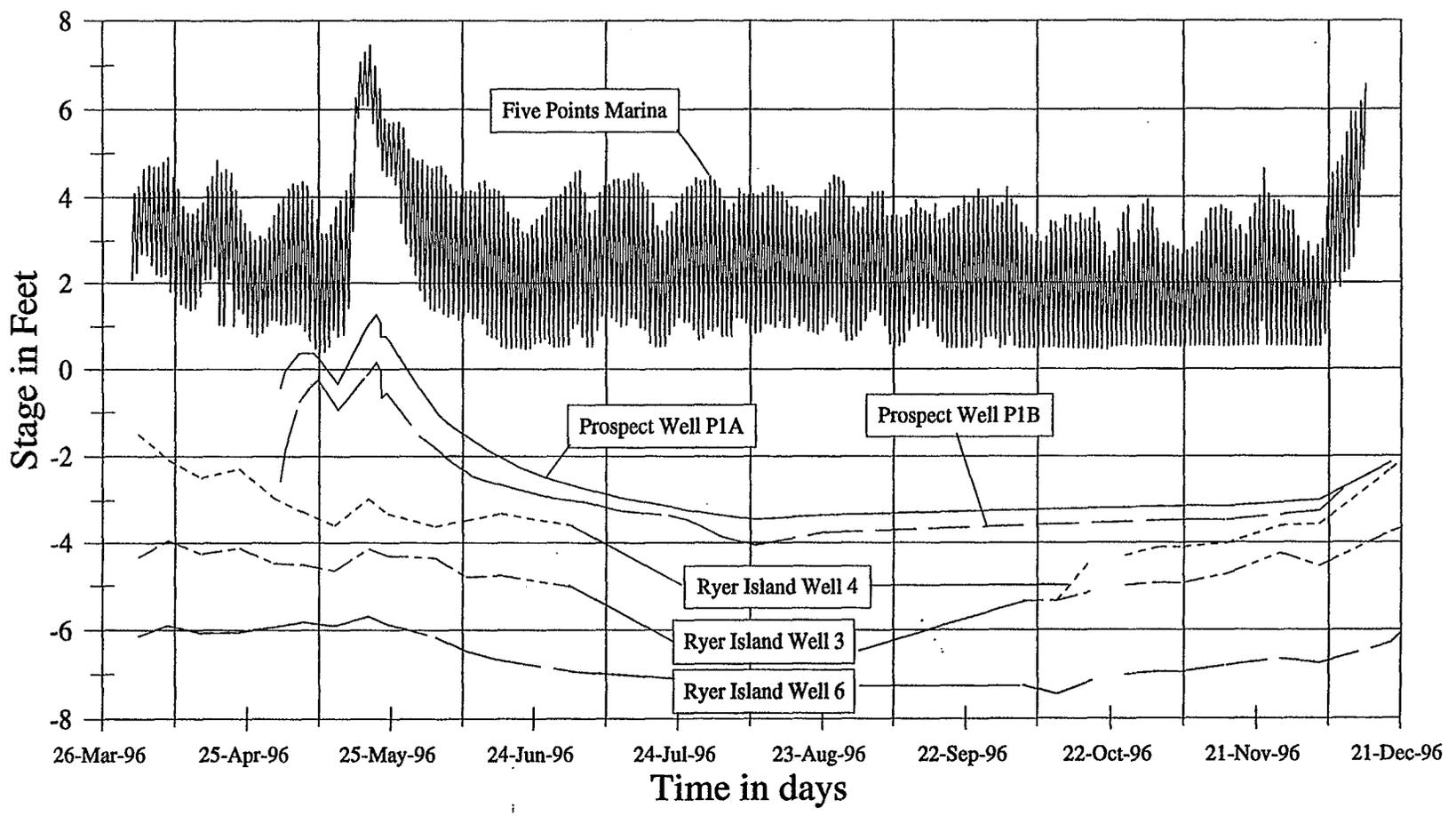
JH 4/21/97 RYERIS.WB2:Ryer vs Miner

Chart 9



C-089045

C-089045



PROSPECT ISLAND SEEPAGE ANALYSIS

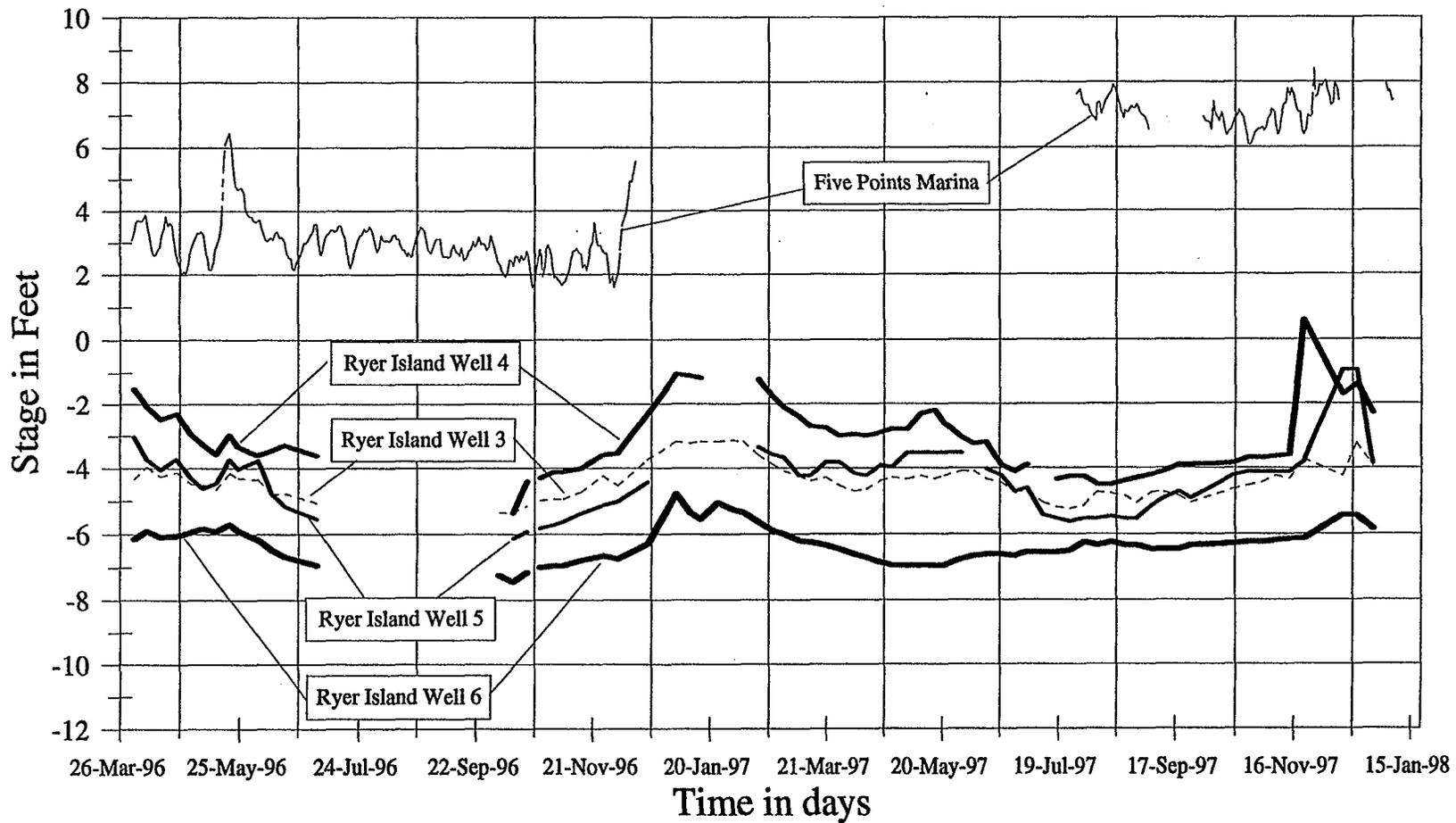
WATER LEVEL COMPARISONS

February 1998

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

C:\DATA\QPRO\PROSPECT\RYER.WB3

CHART 10



Note:

Ryer Well #1 not plotted. It generally follows wells 3 and 5
 Only daily maximum stages plotted for Five Points.
 Any Data not shown is missing.

C:\DATA\QPRO\PROSPECT\RYER.WB3:Ryer_Minor

PROSPECT ISLAND SEEPAGE ANALYSIS
WATER LEVEL COMPARISONS Ryer Island vs. Miner Slough February 1998
U.S. ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT

CHART 11