



Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

JUN 13 1996

96-DOE-05505

Tim Rehder, Manager
Rocky Flats Project
U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500
Denver, Colorado 80202-2466

Dear Mr. Rehder,

This is in response to your letter dated May 3, 1996. In that letter you expressed EPA's concern regarding whether the area of Operable Unit (OU) 1 that is to be excavated as part of the preferred remedial alternative in the Proposed Plan has been adequately characterized to accurately determine the area of excavation. DOE believes that the area has been adequately characterized and does not believe that downgradient subsurface soils contain a contamination source that is contributing to groundwater contamination downgradient of IHSS 119.1.

First, Dense Nonaqueous Phase Liquids (DNAPLs) are the contamination source of concern, and there has been no reported release of DNAPL in the vicinity of the downgradient wells (32591 and 0487) that would lead to a contamination source in that area. In addition, soil samples that were collected at the base of the colluvium from monitoring well 32591 during its installation did not contain DNAPL.

Second, your letter states that EPA is concerned that DOE is basing its estimated area and volume of soil excavation almost entirely on the most recent soil gas survey and is not considering existing soil gas and other data. However, previous soil gas data, soil analytical data and groundwater analytical data were used to prepare the Sampling and Analysis Plan for the most recent soil gas survey. The information obtained from previous studies is not comprehensive enough to delineate the contaminant source areas in IHSS 119.1, therefore, it is not being used to that extent.

Third, in your letter you stated that "...it is quite possible that the solvents have migrated down paleochannels to locations that would be outside the estimated excavation area." The following information supports DOE's belief that free phase DNAPL has not migrated downgradient from IHSS 119.1:

- It has been conservatively calculated that a release of over five hundred gallons of Nonaqueous Phase Liquids within IHSS 119.1 would be required for free phase DNAPL to migrate downgradient and be observed in the vicinity of monitoring wells 32591 and 0487. There is no evidence that such a release ever occurred.

- Previous studies have shown that when DNAPL moves through porous material, residual DNAPL is left behind in the material (Pankow, 1996)¹. The absence of residual DNAPL on the downgradient side of IHSS 119.1 or in the paleochannel approximately twenty-five feet downgradient of the IHSS (at boring 12796) is evidence that free phase DNAPL has not moved downgradient of the contamination source area in the IHSS.
- The most recent soil gas survey performed at IHSS 119.1 was sufficiently precise and accurate to delineate the residual and free phase DNAPLs within the IHSS and to identify areas where DNAPL is dissolved in groundwater. The areas in IHSS 119.1 which contained soil samples exhibiting Organic Vapor Analyzer (OVA) headspace readings from 1.5 ppm to 30 ppm represent soil samples containing groundwater with dissolved DNAPL (Pankow, 1996). The areas in IHSS 119.1 which contained soil samples exhibiting OVA headspace readings from 80 ppm to 1000 ppm or greater represent soil samples containing residual or free phase DNAPL (Pankow, 1996). These data can be extrapolated to conclude that the soil samples exhibiting OVA headspace readings between 30 ppm and 80 ppm may contain groundwater with high concentrations of dissolved DNAPL and/or low concentrations of residual DNAPL. No OVA headspace readings above 30 ppm were detected downgradient of IHSS 119.1 or in the area of the paleochannel.
- Analytical data from IHSS 119.1 supports the above soil gas headspace guidance as stated by Pankow (1996). Soil samples were analyzed during the installation of two monitoring wells within IHSS 119.1: 38191 and 4387. Soil samples collected from monitoring well 38191 contained total volatile solvent concentrations of 204 µg/kg, which indicates that the samples contained groundwater with dissolved DNAPL. This well is located between the 10 ppm and 20 ppm headspace contour lines on Figure 6-1 in the most recent soil gas survey report ("Sampling and Analysis Report - Identification and Delineation of Contaminant Source Area For Excavation Design Purposes"). Soil samples collected from monitoring well 4387 contained total volatile solvent concentrations of 332 µg/kg, which also indicates that the samples contained groundwater with dissolved DNAPL. This well is located near the 30 ppm headspace contour line on Figure 6-1 of the soil gas survey report.

In addition, enclosed in this letter are graphs that represent observed concentrations of contaminants of concern in well 0487 in relationship to the water table elevation and the 1% solubility limit. These data support the conclusion that residual or free phase DNAPL is not in the vicinity of well 0487.

¹ Pankow, James F. and Cherry, John A., "Dense Chlorinated Solvents and Other DNAPLs in Groundwater," 1996.

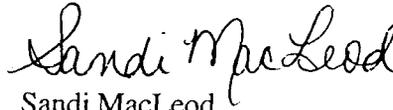
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Therefore, based on the above information, DOE does not believe that additional characterization of the OU 1 hillside is necessary prior to excavation of the contaminated subsurface soil in IHSS 119.1. In addition, DOE will perform confirmatory soil sampling as the excavation progresses to ensure that all contaminated soils are removed, in accordance with the "Action Levels and Standards Framework for Surface Water, Groundwater and Soils" in the Rocky Flats Cleanup Agreement (RFCA).

If you have any questions, please call me at 966-3367.

Sincerely,



Sandi MacLeod
Mission Advocacy

Enclosures

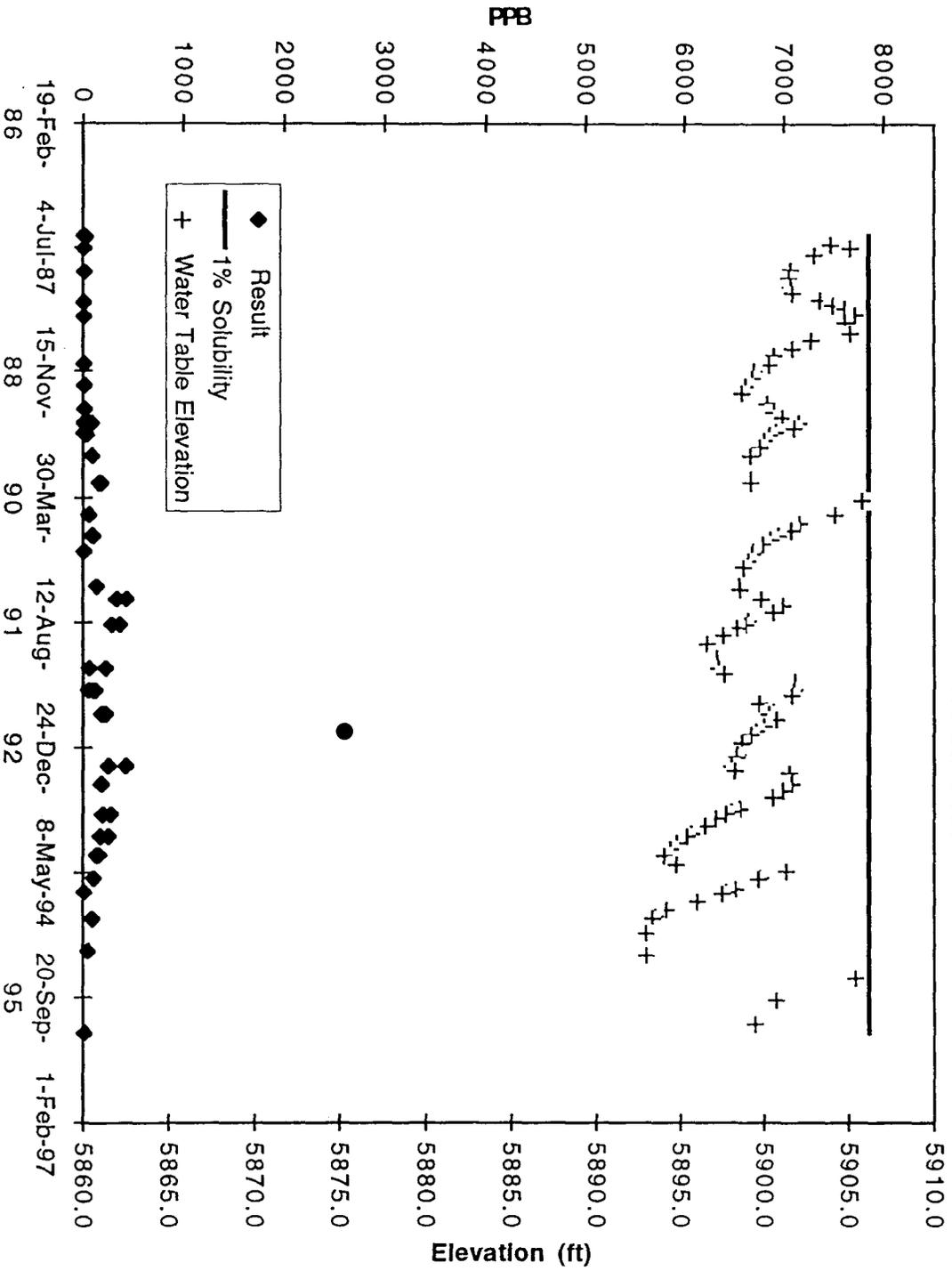
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G. Kleeman, EPA
C. Gilbreath, CDPHE
L. Smith, MA, RFFO
B. April, SIG, RFFO
S. Slaten, SIG, RFFO
Administrative Record

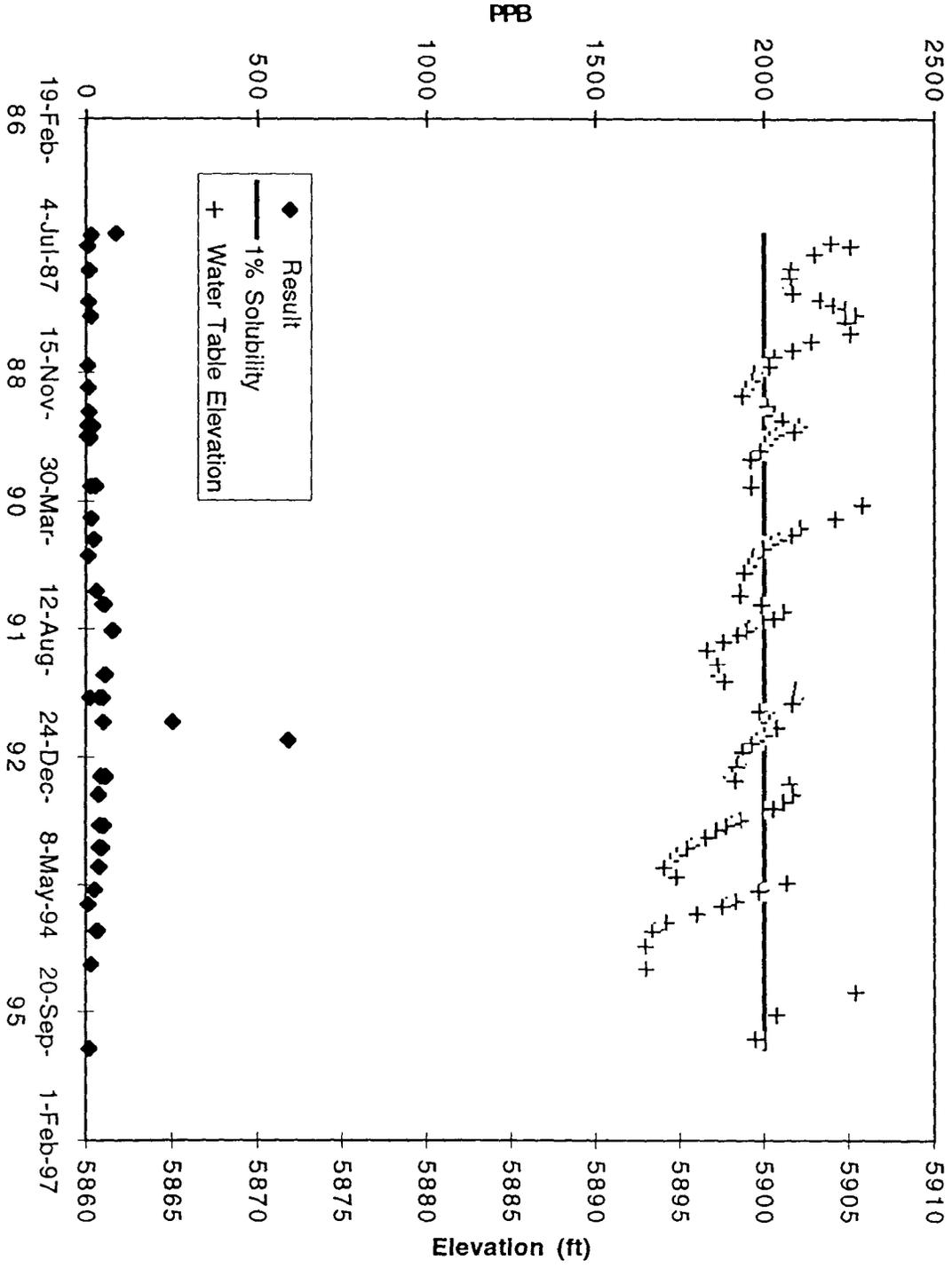
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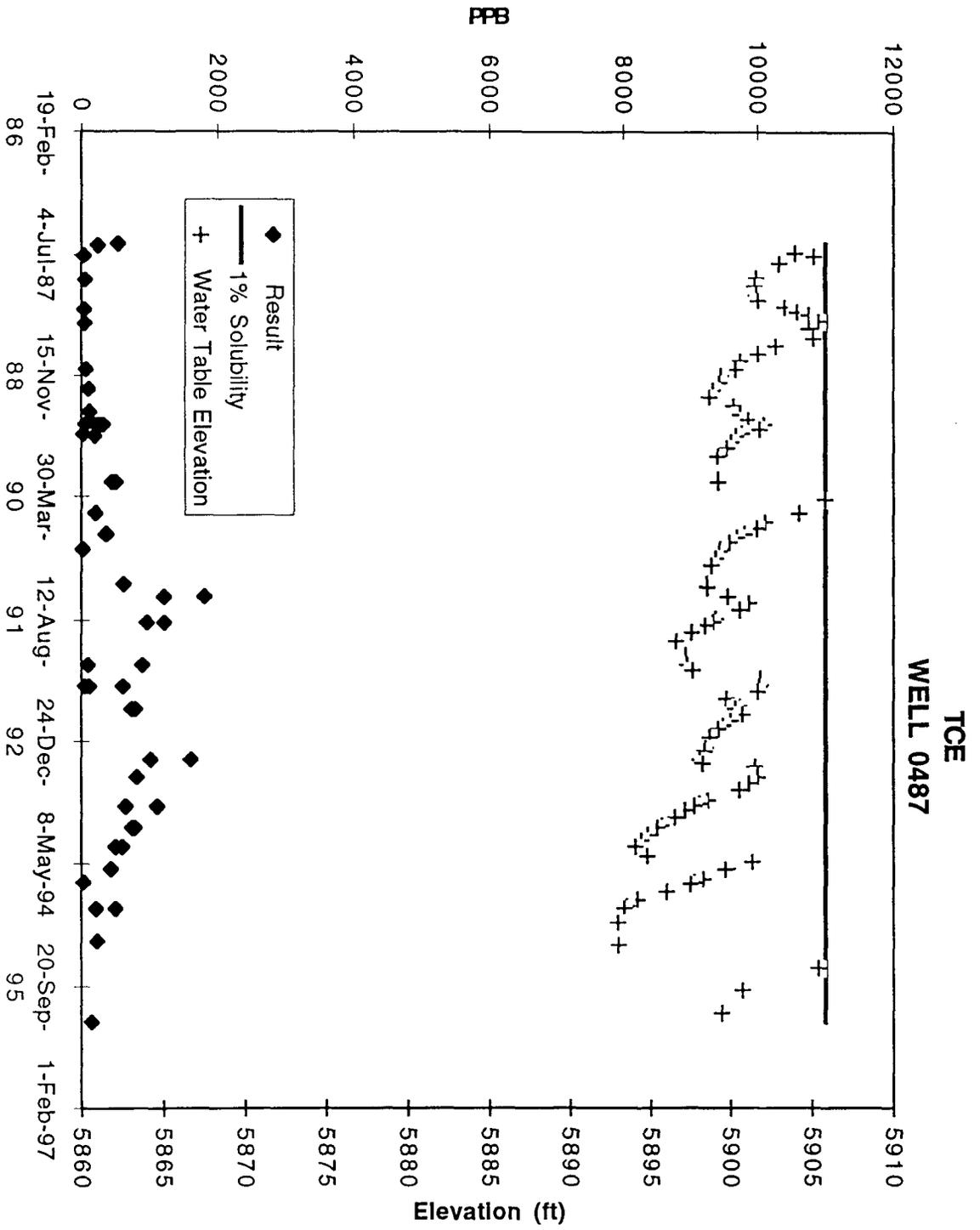
S. MacLeod, MA, RFFO
D. George, ESHPA, RFFO
T. Reeves, SAIC
W. Katz, RMRS
A. Sieben, K-H

**CARBON TET
WELL 0487**

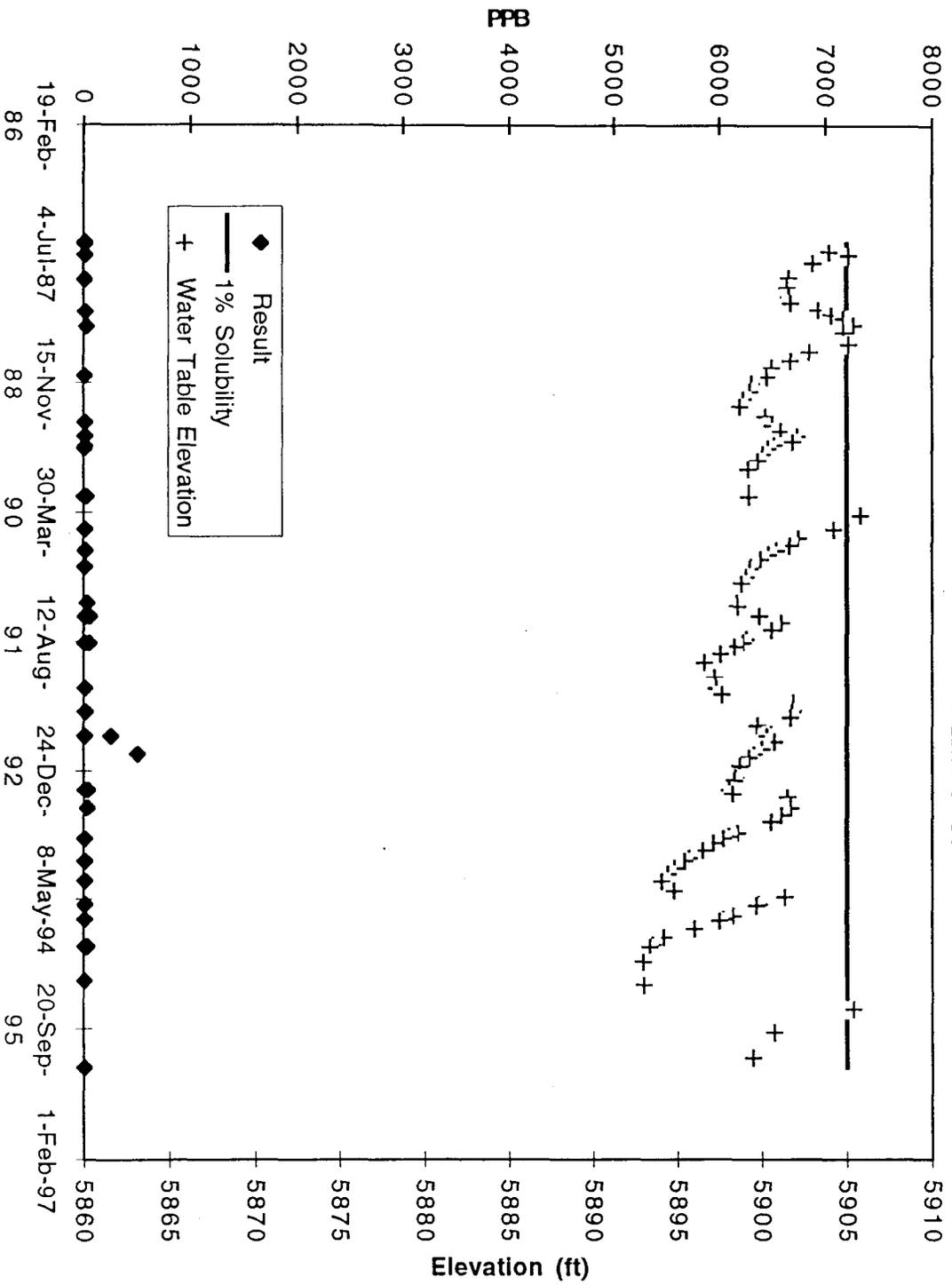


PCE
WELL 0487





1,1,1-TCA
WELL 0487



**1,1-DCE
WELL 0487**

