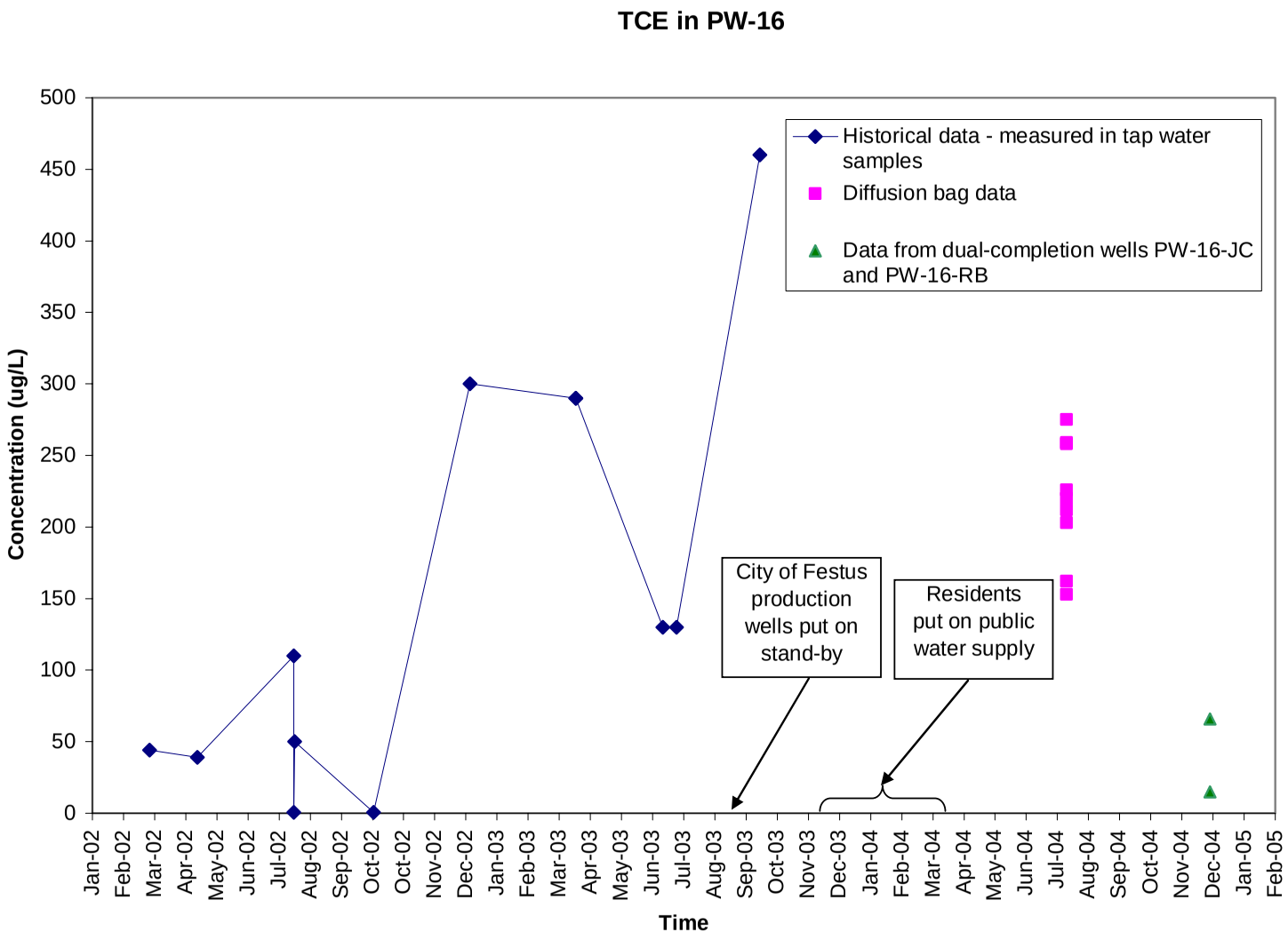


Fig. 5.19a. TCE in PW-16.

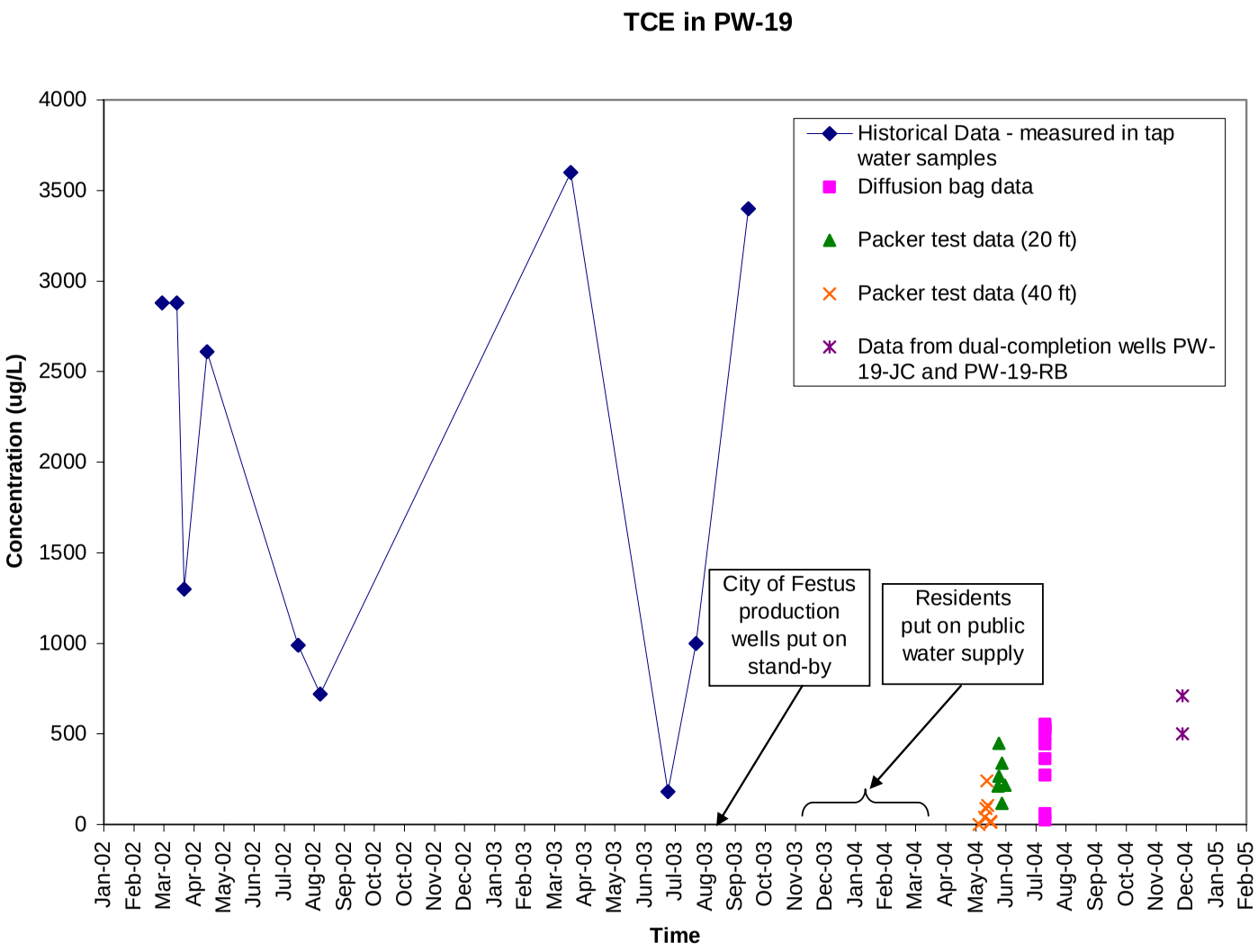


Fig. 5.19b. TCE in PW-19.

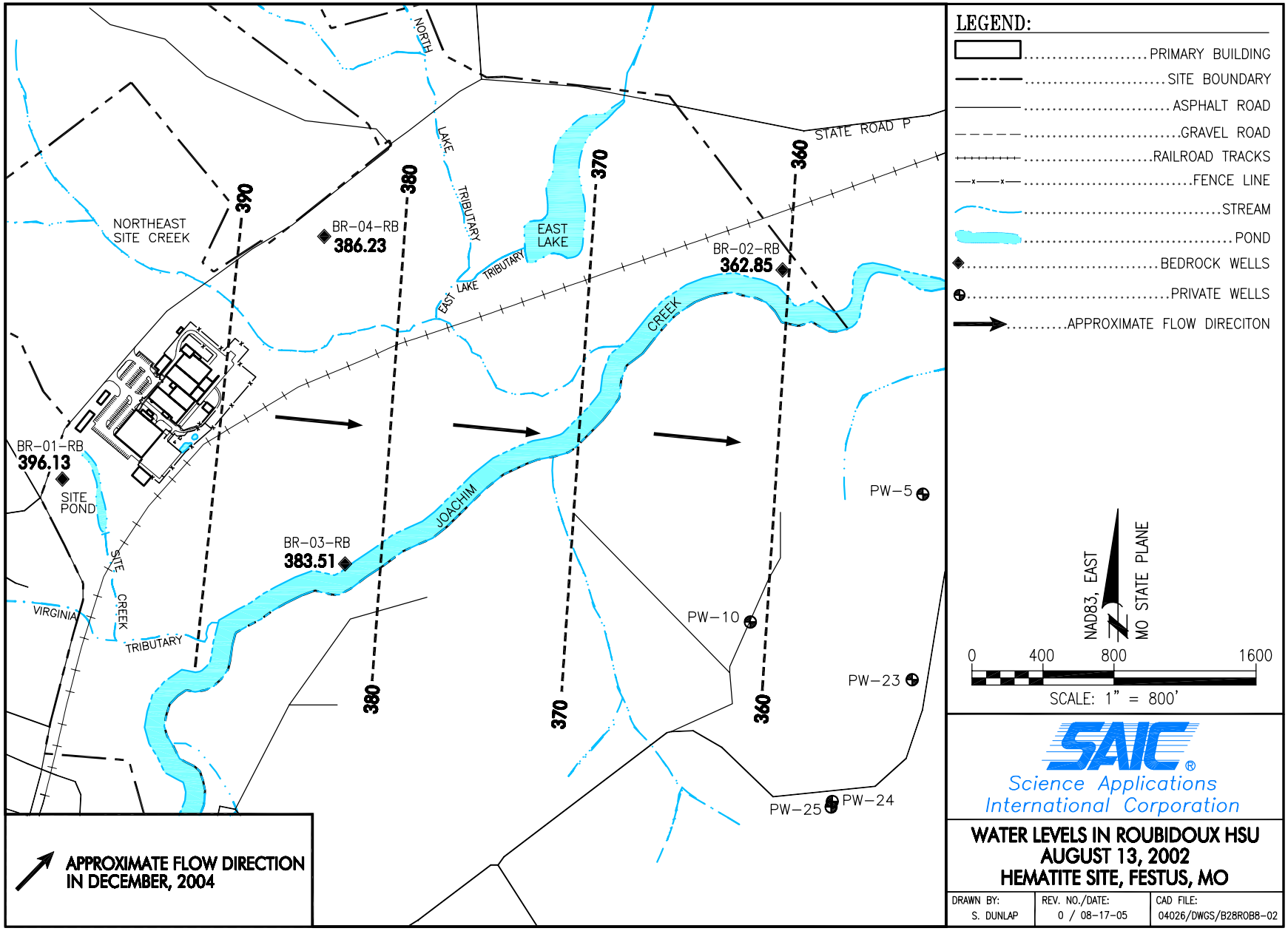


Fig. 5.20. Water levels in Roubidoux HSU: August 13, 2002.

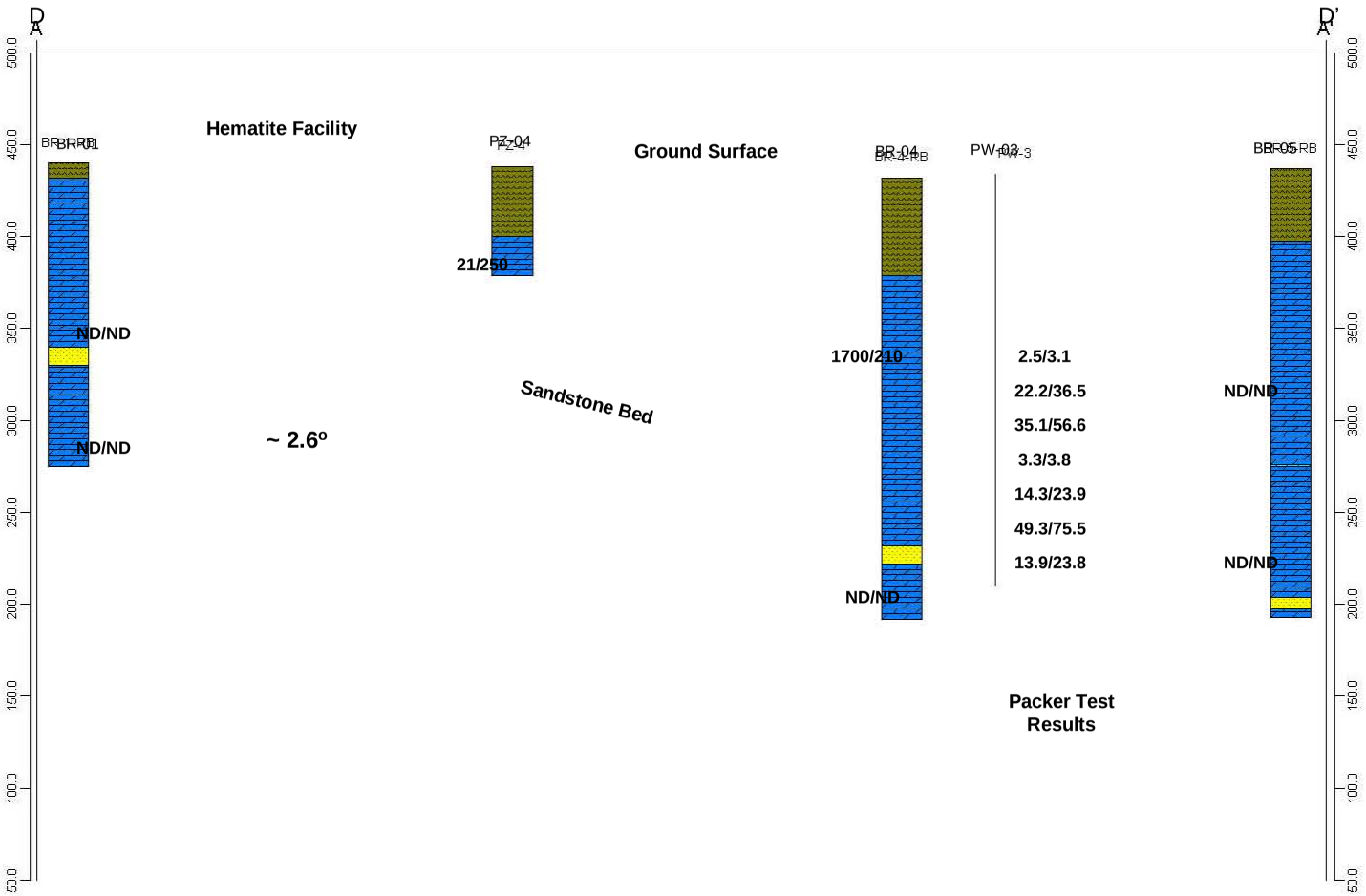


Fig. 5.21. Cross-section D-D'; PCE and TCE concentrations.

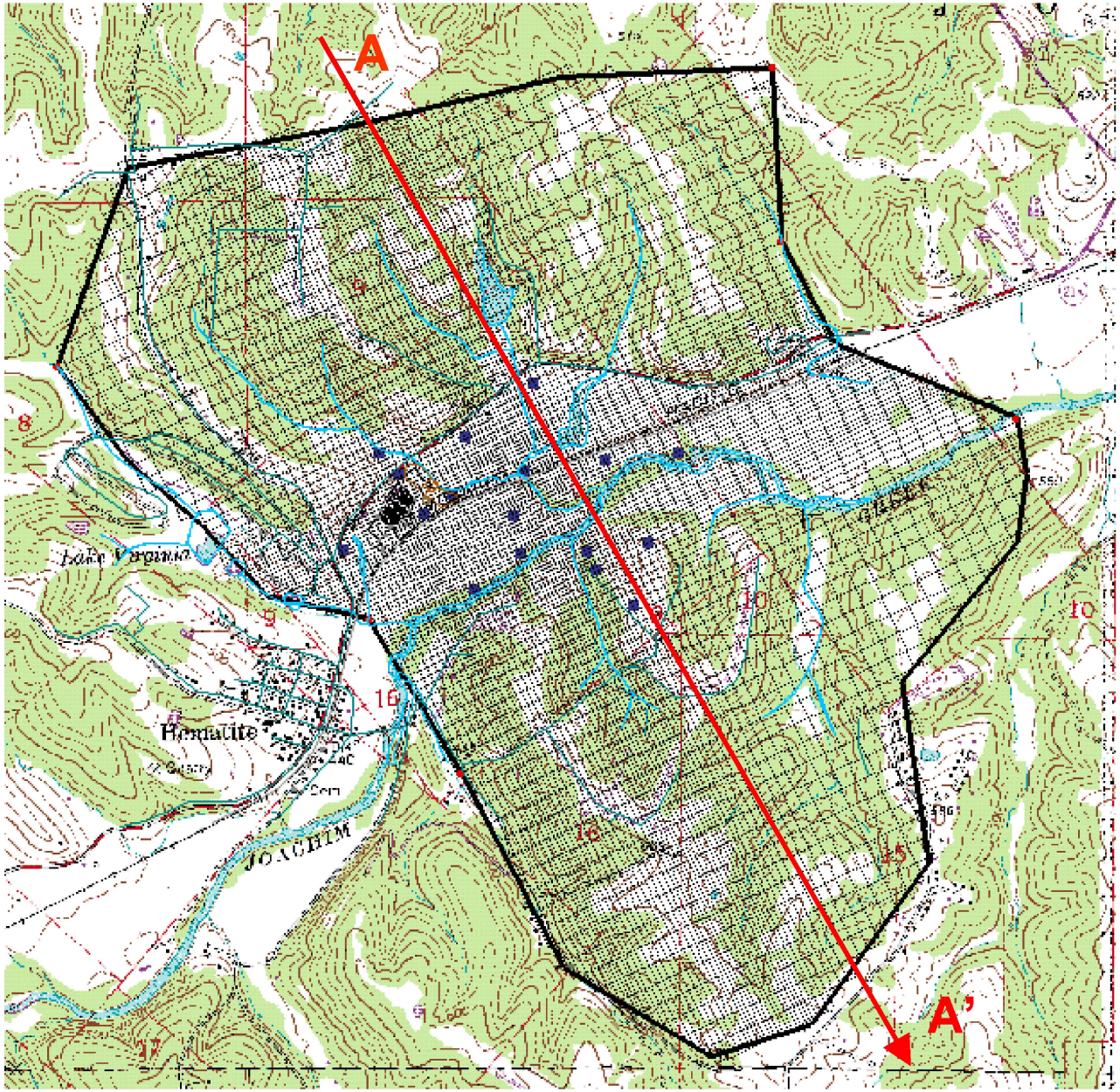


Fig. 5.22. Plan view of MODFLOW/RT3D model domain for the Hematite Site, bounded by solid black line. (Model grid also shown, blue dots correspond to bedrock well locations.)

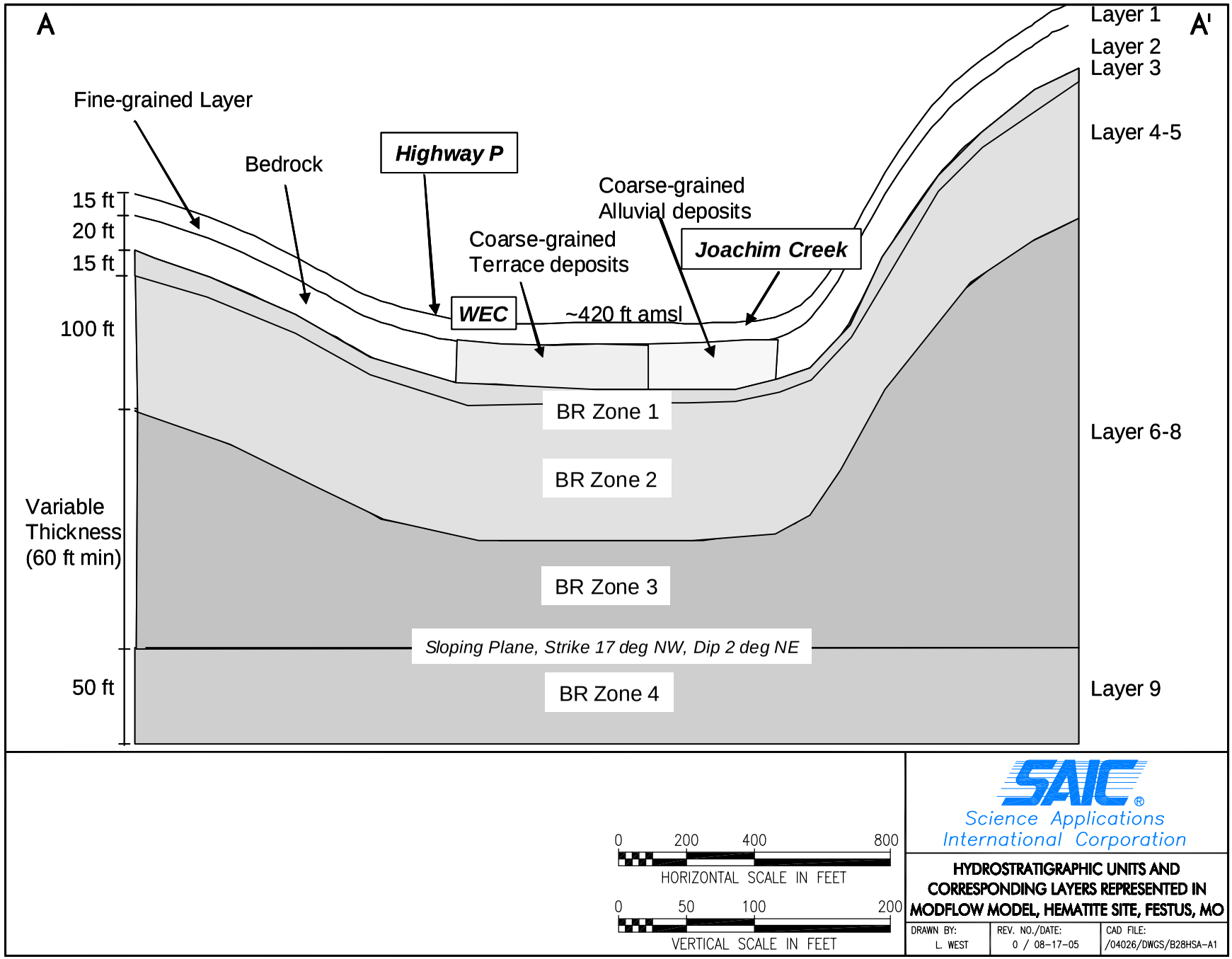


Fig. 5.23. Hydrostratigraphic units and corresponding layers represented in MODFLOW model. (Cross-section A-A' in Fig. 5.21, trending northwest-southeast.)

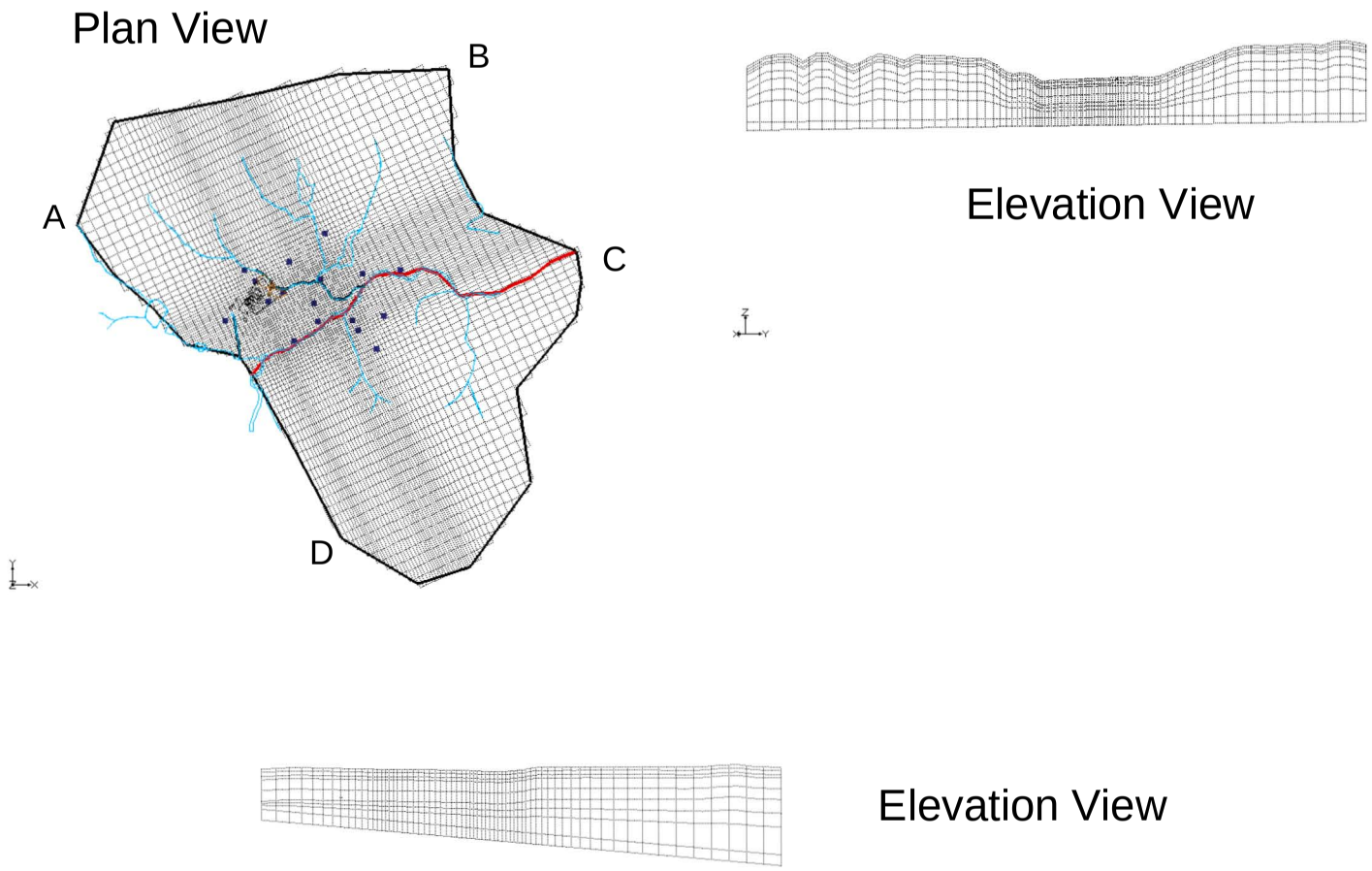


Fig. 5.24. MODFLOW grid in plan and elevation view. [Red line in plan view corresponds to Joachim Creek –cells along this line in the top layer are specified head cells – Arc A-D and Arc B-C are also specified head boundaries in the bottom two layers of the model (refer to Fig. 5.22 for model layers) to produce northeasterly regional groundwater flow.]

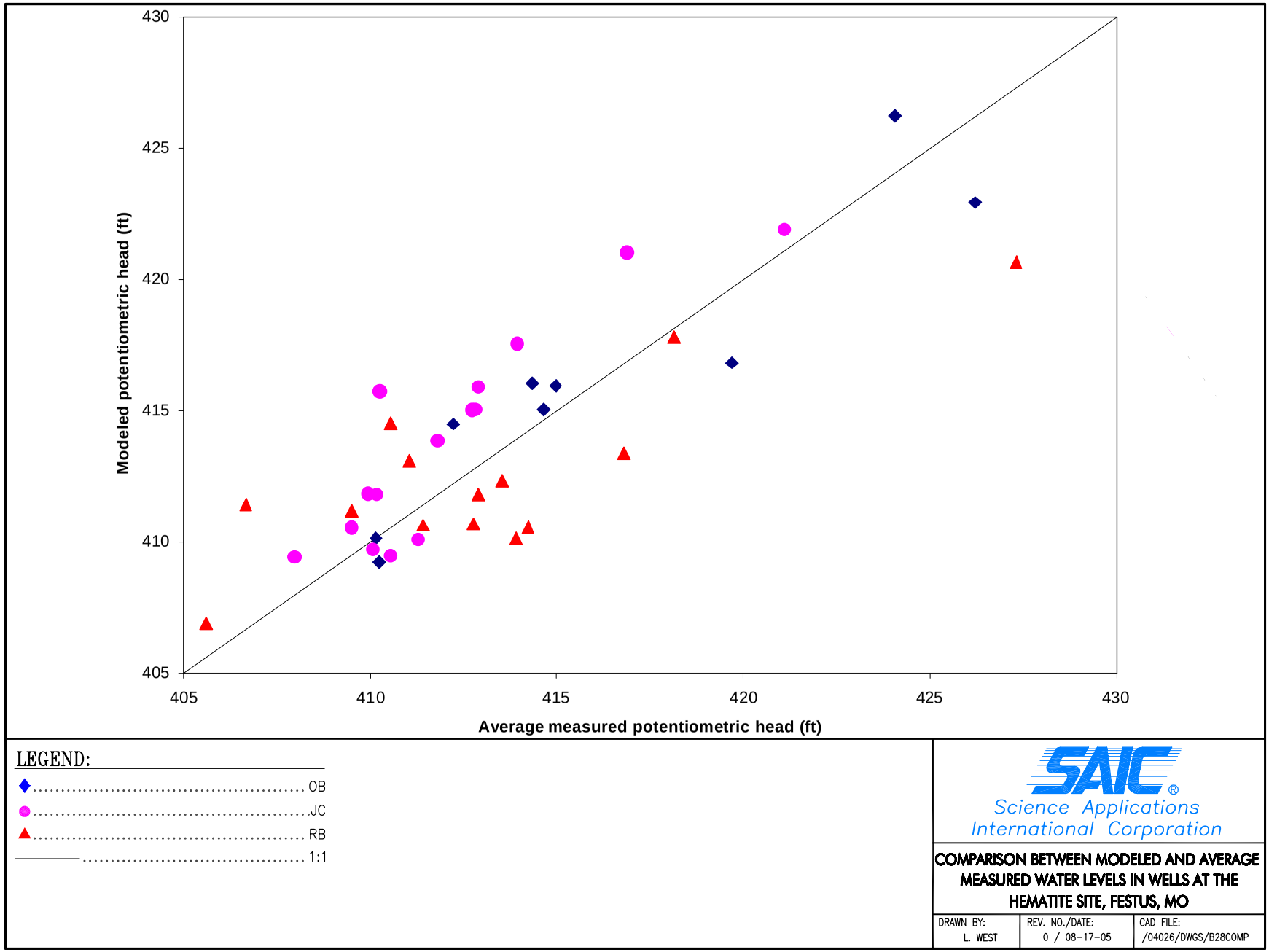


Fig. 5.25. Comparison between modeled and average measured water levels in wells at the Hematite Site. [(Deep) overburden, Jefferson City-Cotter, and Roubidoux wells.]

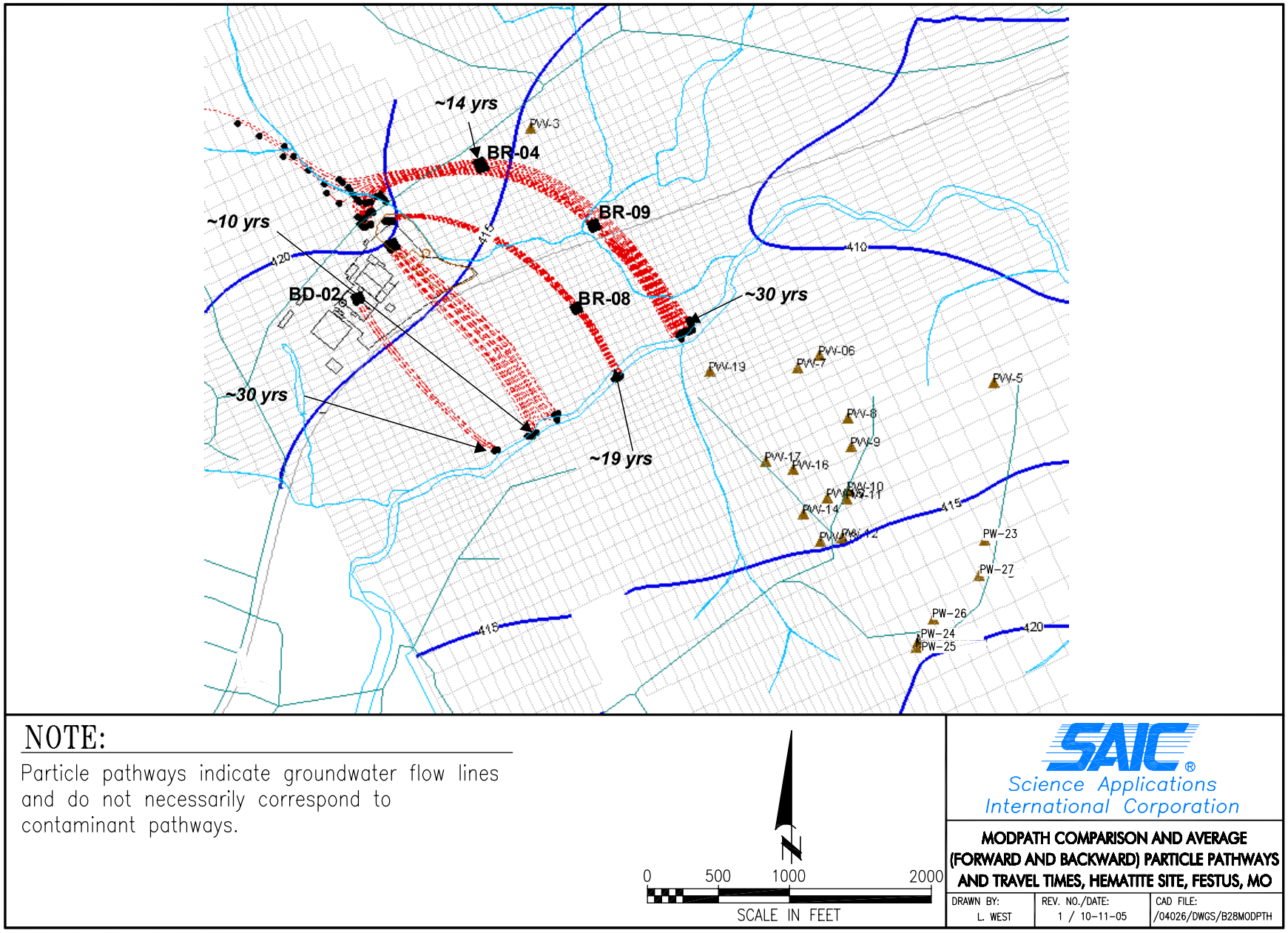
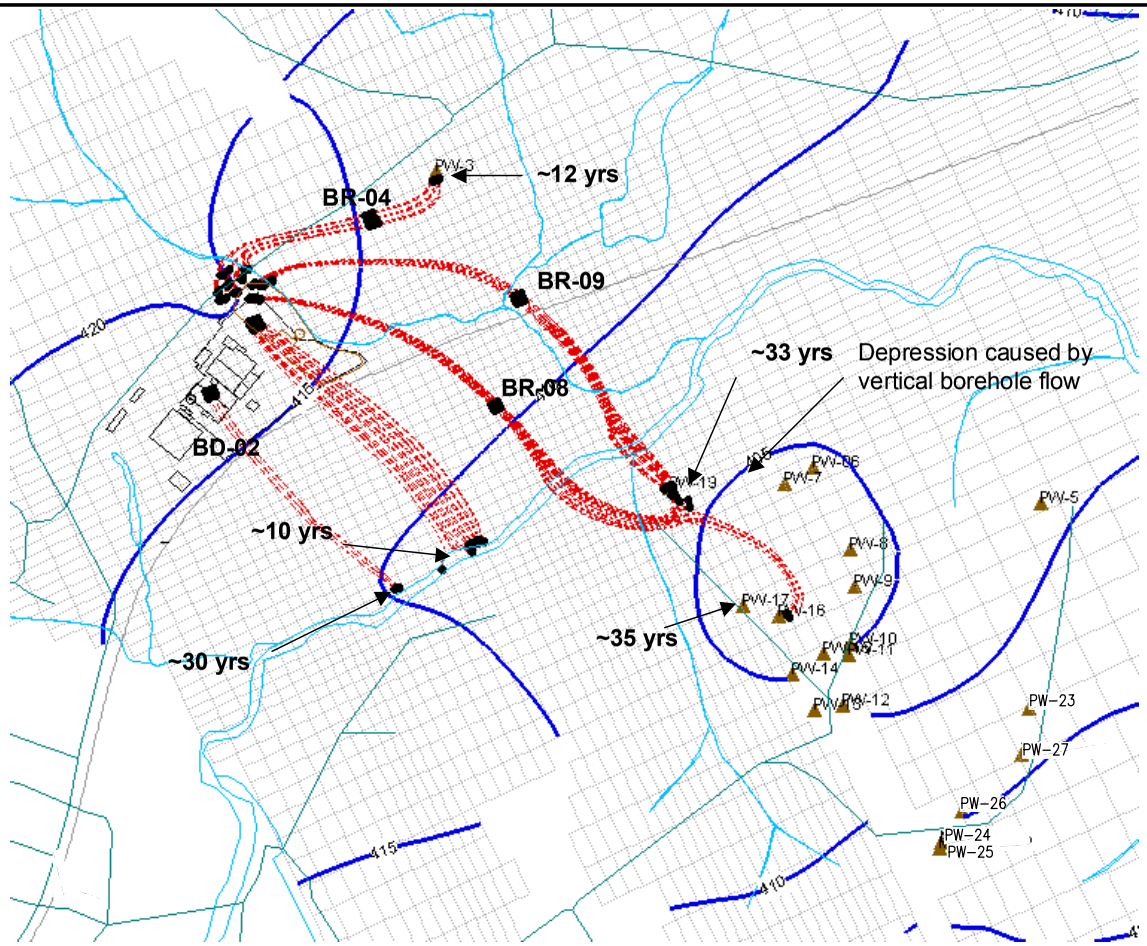


Fig. 5.26. MODPATH-simulated (forward and backward) particle pathways and travel times. [Blue lines are potentiometric contour lines for layers corresponding to transmissive Jefferson City-Cotter HSU; pumping in private wells at household rates (35 ft3/day)]



NOTE:

Particle pathways indicate groundwater flow lines and do not necessarily correspond to contaminant pathways.

N

0 500 1000 2000

SCALE IN FEET

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Science Applications International Corporation

MODPATH-SIMULATED (FORWARD AND BACKWARD) PARTICLE PATHWAYS AND TRAVEL TIMES
HEMATITE SITE, FESTUS, MO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
L. WEST	1 / 10-11-05	/04026/DWGS/B28MODPT2

Fig. 5.27. MODPATH-simulated (forward and backward) particle pathways and travel times.
[Blue lines are potentiometric contour lines for layers corresponding to transmissive Jefferson City-Cotter HSU; specified extraction flow rate in private wells at 2000 ft3/day (~10.4 gpm) drawn from Jefferson City-Cotter HSU layer to simulate vertical borehole flow.]

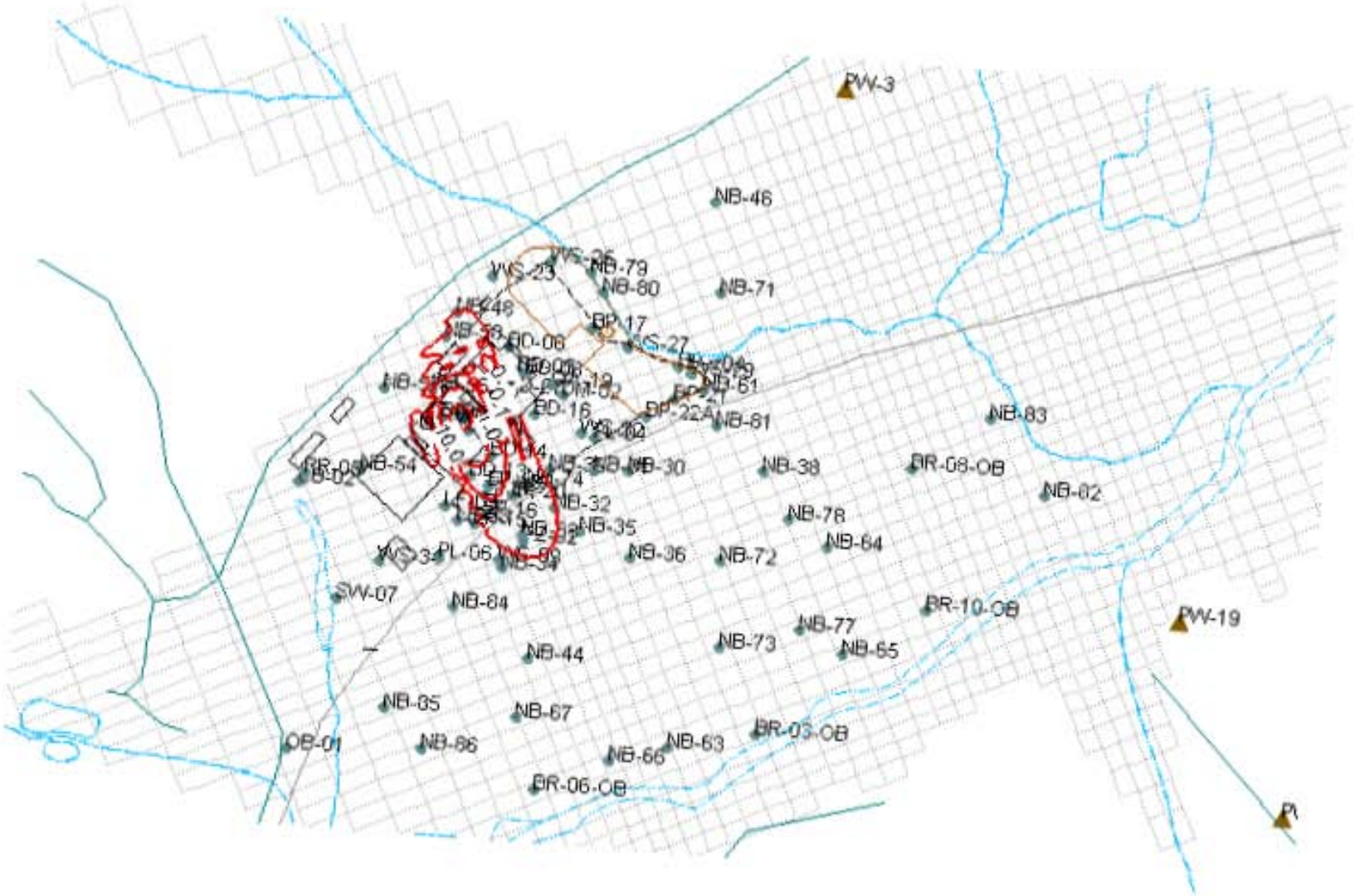

Fig. 5.28. PCE concentration contours (mg/L) in layer corresponding to terrace/alluvial deposits at t = 3000 days (~8 years). (Constant concentration source of 200 mg/L PCE placed in cell corresponding to BD-02; simulated using MODFLOW model with vertical borehole flow and RT3D Sequential Decay chemical reaction package.)

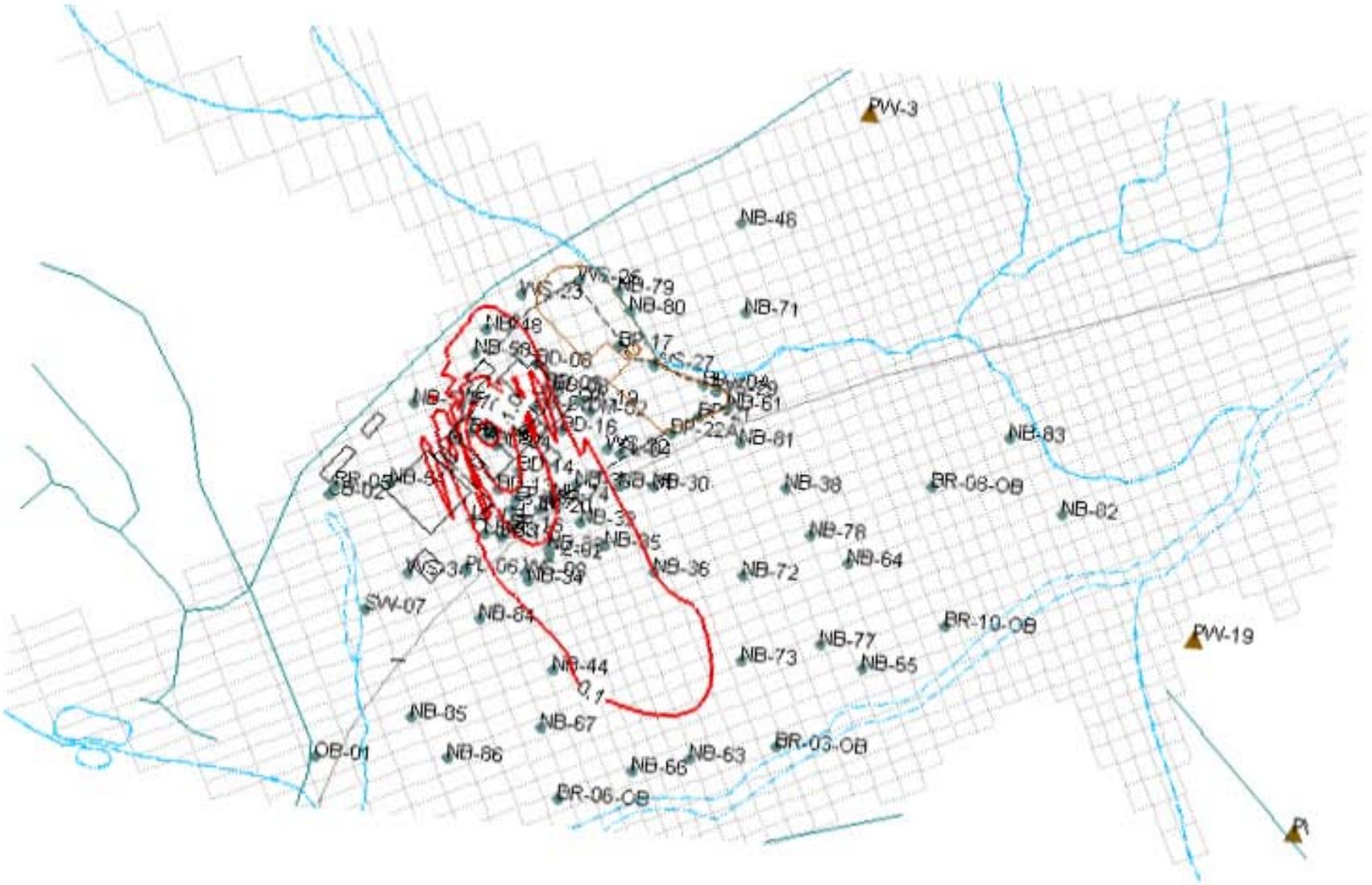

Fig. 5.29. PCE concentration contours (mg/L) in layer corresponding to terrace/alluvial deposits at t = 9000 days (~25 years). (Constant concentration source of 200 mg/L PCE placed in cell corresponding to BD-02; simulated using MODFLOW model with vertical borehole flow and RT3D Sequential Decay chemical reaction package.)

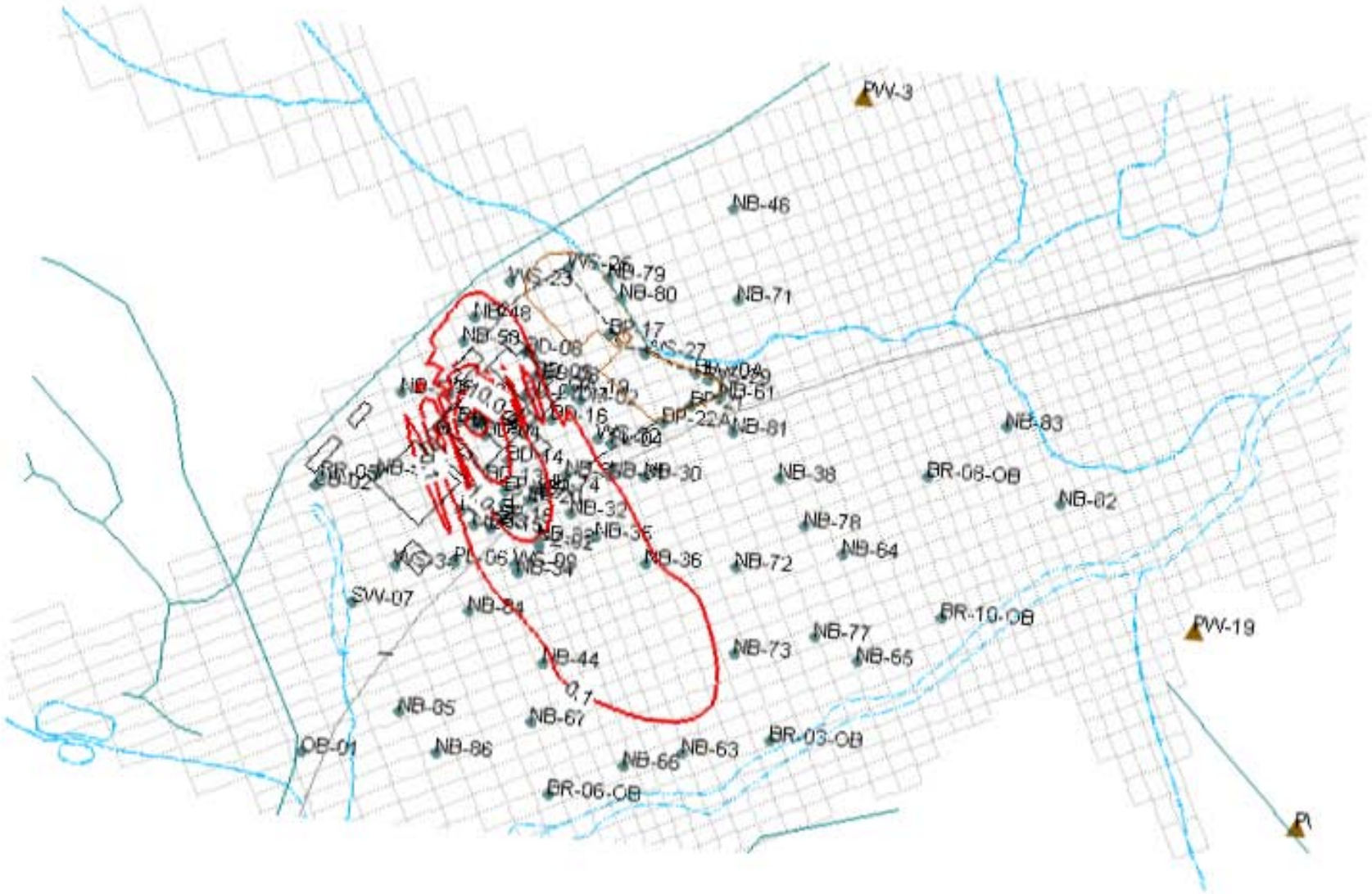

Fig. 5.30. PCE concentration contours (mg/L) in layer corresponding to terrace/alluvial deposits at t = 15,000 days (~41 years). (Constant concentration source of 200 mg/L PCE placed in cell corresponding to BD-02; simulated using MODFLOW model with vertical borehole flow and RT3D Sequential Decay chemical reaction package.)

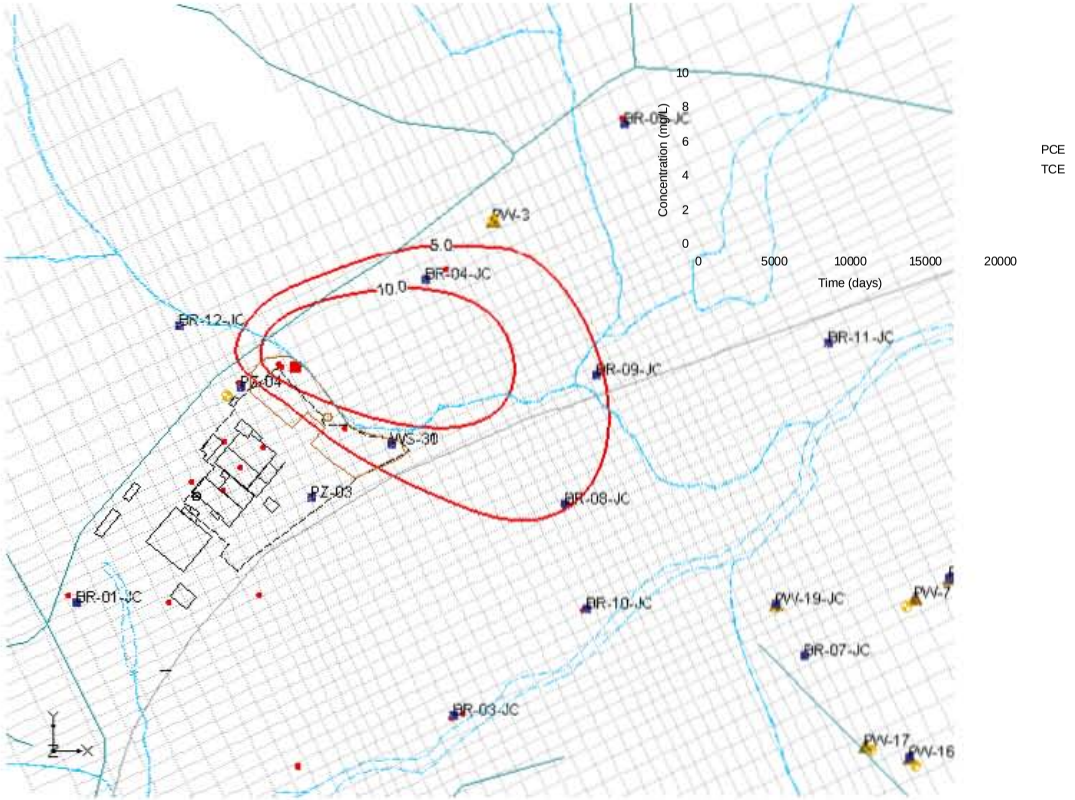

Fig. 5.31. Simulated PCE concentration contours (mg/L) in layer corresponding to transmissive Jefferson City-Cotter Formation at t = 15,000 days (~41 years). [Constant concentration source of 100 mg/L PCE placed in vicinity of Burial Pits (red square); simulated using

Fig. 5.31. Simulated PCE concentration contours (mg/L) in layer corresponding to transmissive Jefferson City-Cotter Formation at t = 15,000 days (~41 years). [Constant concentration source of 100 mg/L PCE placed in vicinity of Burial Pits (red square); simulated using MODFLOW model with vertical borehole flow and RT3D sequential decay chemical reaction package (PCE > TCE > cis-1,2-DCE > vinyl chloride > ethene).]

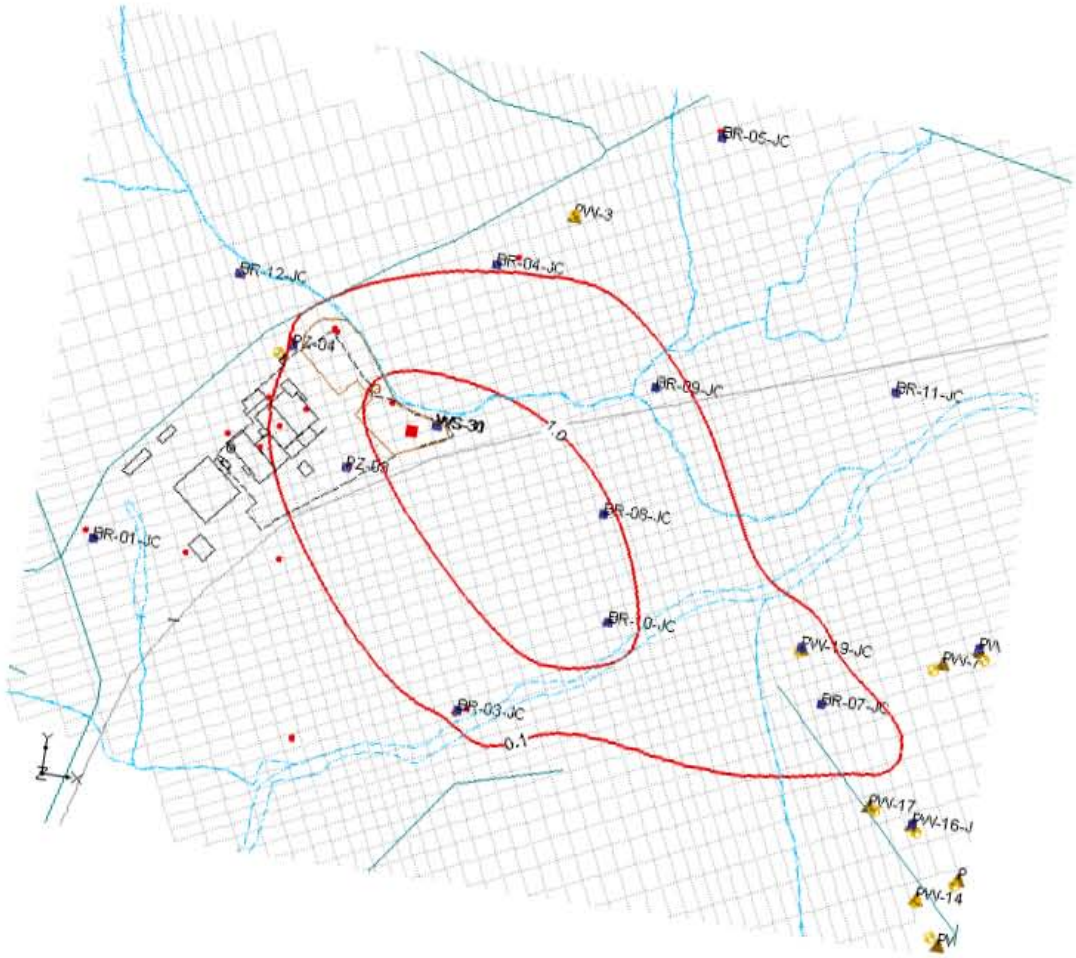

Fig. 5.32. Simulated TCE concentration contours (mg/L) in layer corresponding to transmissive Jefferson City-Cotter Formation at t = 15,000 days (~41 years). [Constant concentration source of 100 mg/L PCE placed in vicinity of Burial Pits (red square); simulated using MODFLOW model with vertical borehole flow and RT3D sequential decay chemical reaction package (PCE > TCE > cis-1,2-DCE > vinyl chloride > ethene); note that TCE shown in figure is from degradation of PCE in source.]

Fig. 5.33. Simulated uranium concentration contours (mg/L) in layer corresponding to deep overburden at t = 74,000 days (~200 years). [Constant concentration source of 0.2 mg/L uranium placed in Burial Pits and Deul's Mountain (red squares); simulated using MODFLOW model with vertical borehole flow and RT3D Tracer Transport package (includes sorption coefficient measured in site-specific study (SAIC 2003c).]

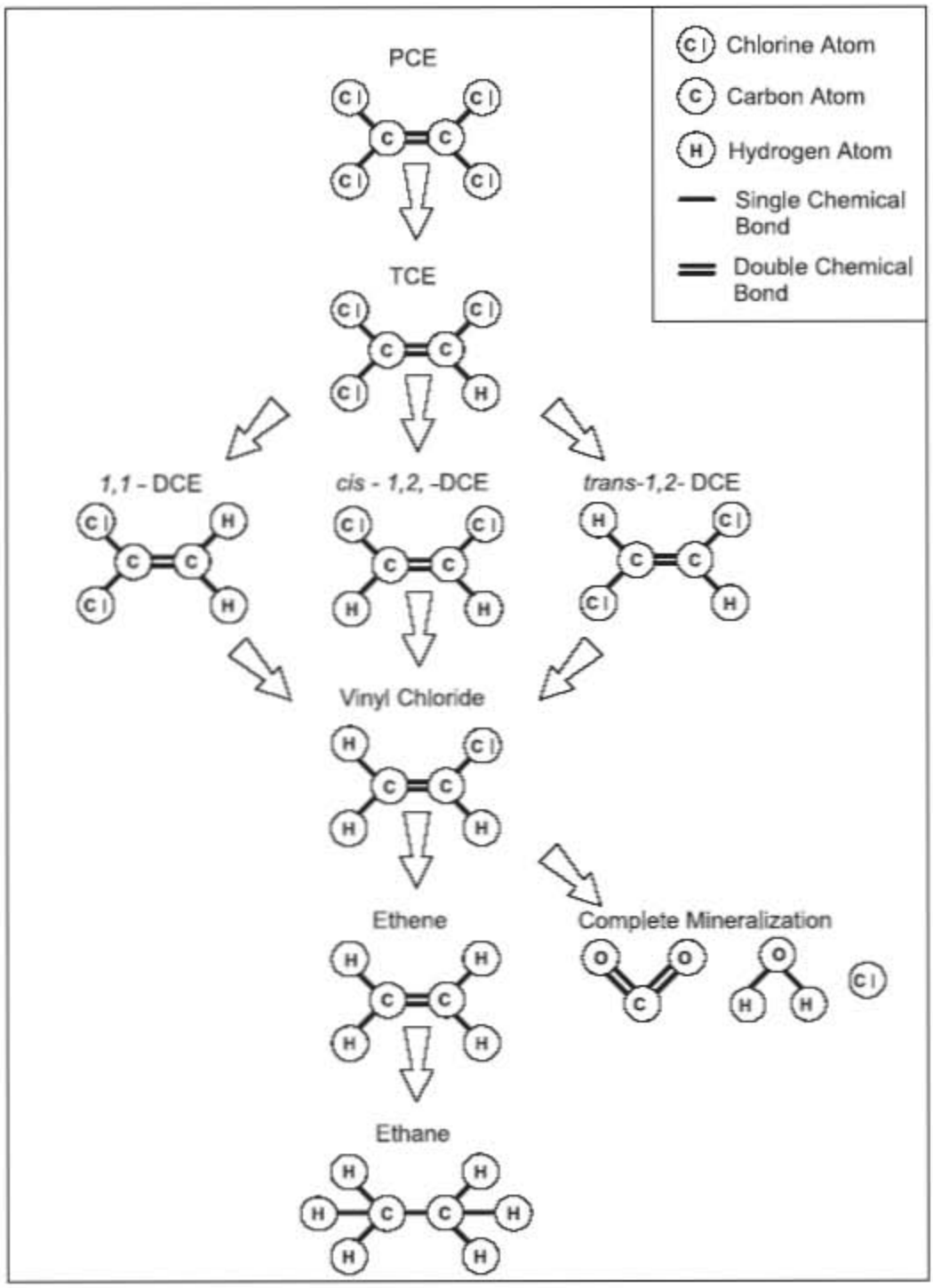

Fig. 5.34. Degradation pathway for PCE/TCE under anaerobic conditions.

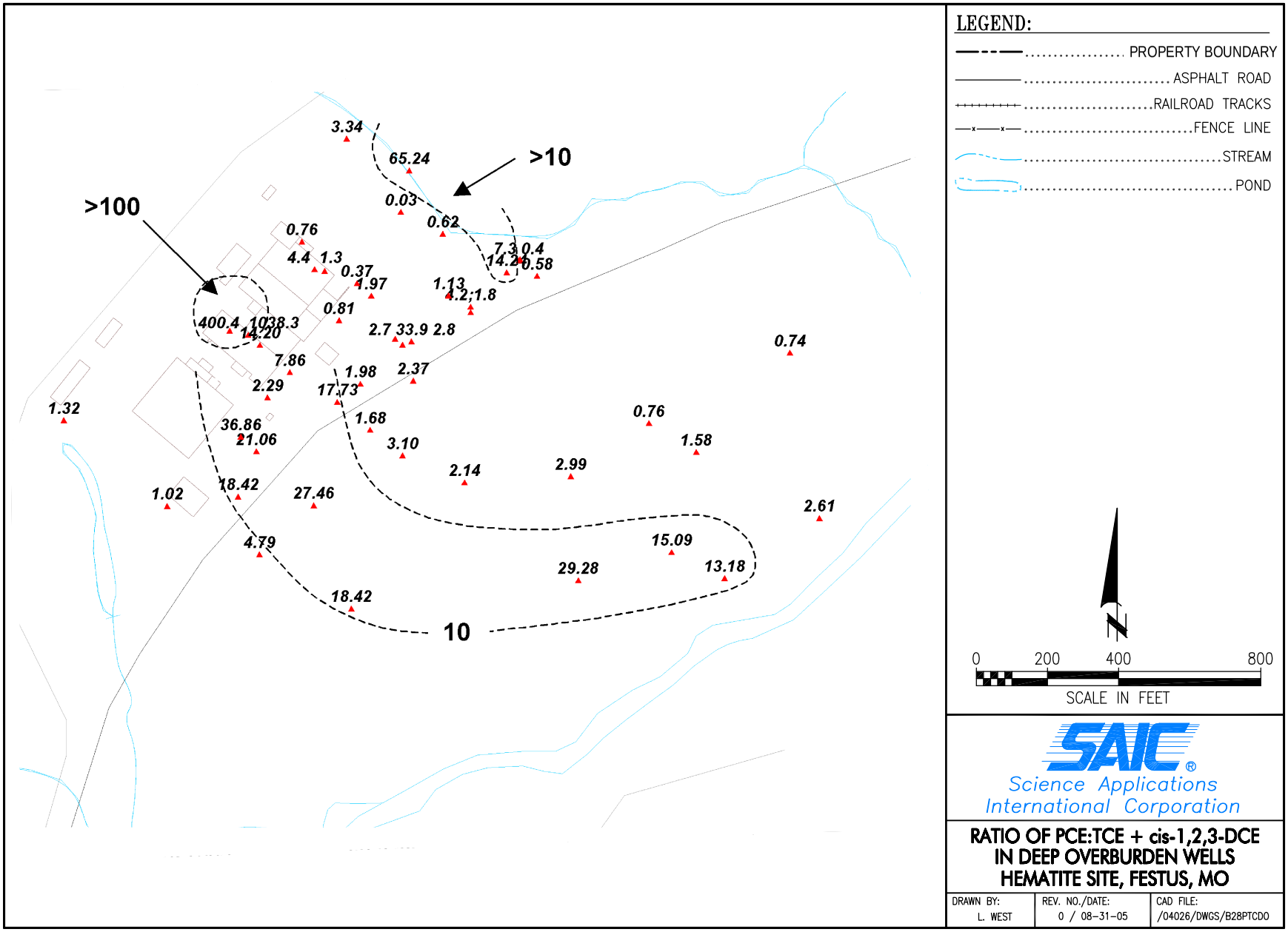

Fig. 5.35. Ratio of PCE:TCE + cis-1,2-DCE in deep overburden wells.

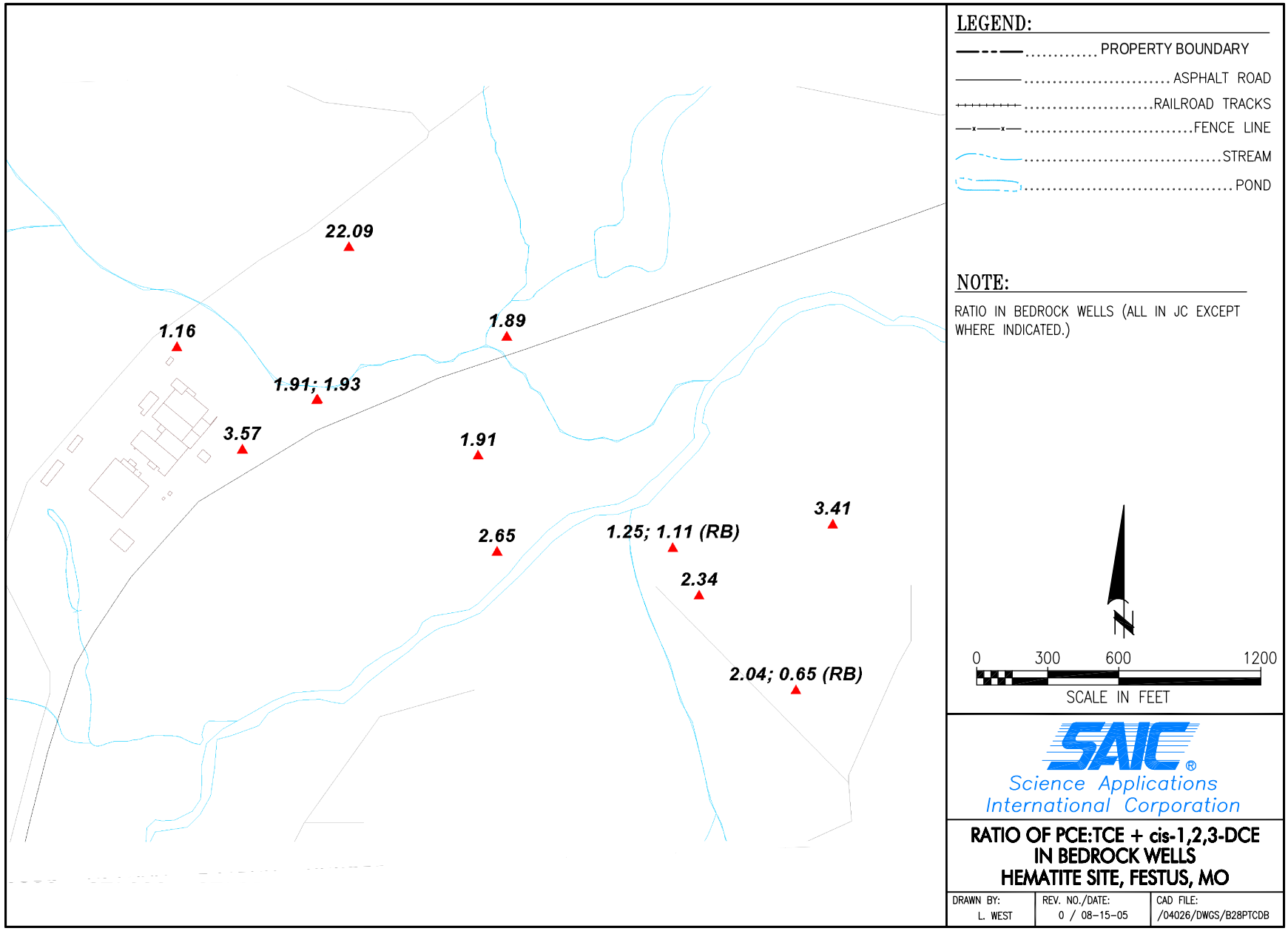

Fig. 5.36. Ratio of PCE:TCE + cis-1,2-DCE in bedrock wells.

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