CY97 Reaches, Los Alamos and Pueblo Canyons

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Review of planned reaches: main issues, geographic areas, potential activities

1. LA-4, Lower Los Alamos Canyon, upstream of Bayo Canyon

Main Issues: Define nature and extent of contamination in part of San Ildefonso Pueblo lands likely to contain highest concentrations of contaminants (before input of sediment from Bayo and Guaje Canyons), and where current residential use occurs (Totavi). Evaluate mixing and dilution of Los Alamos and Pueblo Canyon sediments.

Area of Investigation: Upstream from Bayo Canyon; best area for evaluation (avoiding extensive disturbed area) may be ~1 km long reach upstream of Totavi, including long-term surveillance sampling station (LA @ Totavi). Access agreements required with San Ildefonso.

Potential Activities: 1) Geomorphic mapping; 2) Fixed point gamma measurements at surface and in banks (note: mini-reach data from 1996 suggested Cs too low to justify gross gamma walkover survey, and fixed point survey may also not be useful); 3) Limited suite sampling (looking for combined suite previously identified in LA-2 and P-4?).

2. LA-3, Los Alamos Canyon upstream of State Road 4

Main Issues: Define nature and extent of contamination in Los Alamos Canyon before it exits Laboratory land, and the contributions of contaminants to downstream San Ildefonso Pueblo lands. Evaluate dilution of contaminants from LA-2. Evaluate possibility of additional analytes introduced from TA-53.

Area of Investigation: Los Alamos Canyon upstream of State Road 4, including stream gaging station and new monitoring well LAOI-7. 0.4 km long reach surveyed by Chemrad in 1996. (Note: LA-2 survey indicated that relatively short reaches would suffice in this canyon to include main variability in contaminant concentrations).

Potential Activities: 1) Geomorphic mapping (in progress); 2) Fixed point gamma measurements at surface and in banks (note: 1996 Chemrad gross gamma walkover survey may be sufficient for our needs; it indicated relatively small areas of elevated gamma radiation, up to ~6000 cpm, much reduced from LA-2 where >6000 cpm relatively common); 3) Full suite sampling (define what is leaving Lab); 4) Limited suite sampling.

3. P-2, Pueblo Canyon, from near well TW-2 to near drainage from North Mesa

Main Issues: Define nature and extent of contamination in part of Pueblo Canyon where canyon bottom broadens sufficiently to allow variety of canyon-bottom land use scenarios, and evaluate dilution of contaminants from P-1. In this area prior data indicate higher concentrations of Pu than downstream, and stream channel becomes less steep and confined, allowing more sediment deposition.

Area of Investigation: Vicinity of well TW-2 downstream to area of lowest channel gradient in Pueblo Canyon, at old landing strip; ~1.5 km long. Include long-term surveillance sample station (Pueblo 2) and relatively broad, braided part of canyon floor near North Mesa

drainage. Access agreements required with Los Alamos County. Possible endangered species concerns.

Potential Activities: 1) Geomorphic mapping; 2) Fixed point alpha measurements at surface and in banks (searching for possible "hot spots"); 3) Limited suite sampling (looking for suite previously identified in P-1, particularly Pu-239/240).

4. P-3, Pueblo Canyon, from reach P-4 upstream to Bayo Treatment Plant

Main Issues: Define nature and extent of contamination in part of Pueblo Canyon where previous study indicated largest local Pu inventory (Graf, 1995, 1996). Canyon floor is relatiyely broad, with resultant potential for dispersion of floodwaters. (Note: data from P-4 West suggests that sediments could be relatively old and have relatively high Pu values in this area).

Area of Investigation: West end of reach P-4 upstream to vicinity of Bayo Treatment Plant outlet; ~1 km long. Includes long-term surveillance sampling station (Pueblo 3).

Potential Activities: 1) Geomorphic mapping; 2) Fixed point alpha measurements? (searching for possible "hot spots"?); 3) Limited suite sampling (looking for suite previously identified in P-1 and P-4, particularly Pu-239/240). (Note: channel not incised here, and thorough investigation of Pu will require coring; use of truck mounted rig may be best option).

5. LA-1, Los Alamos Canyon, downstream from TA-2 fence

Main Issues: Define nature and extent of contamination in Los Alamos Canyon immediately downstream of TA-2, where contaminant concentrations related to releases from TA-2 expected to be highest. Also help define contributions from upstream TA-1 releases. (Additional issue may be evaluation of potential "hot spot" for Pu downstream, below TA-21, recorded in 1947 report.)

Area of Investigation: Los Alamos Canyon, from TA-2 fence downstream ~0.5-1 km. 0.4 km long reach surveyed by Chemrad in 1996 for gross gamma and gross beta radiation, and may be sufficient. Includes long-term surveillance sampling station (LA @ LAO-1). (Note: area overlaps with earlier mapping and sampling at TA-2). (Also: local area of evaluation below TA-21 may be warranted).

Potential Activities: 1) Geomorphic mapping; 2) Fixed point measurements at surface and in banks (note: 1996 Chemrad gross gamma and gross beta walkover survey did not indicate areas obviously above background, so these measurements may not be helpful); 3) Limited suite sampling (using analytes previously identified downstream in LA-2 plus any additional analytes identified in TA-2, TA-41, and TA-1 sampling upstream).

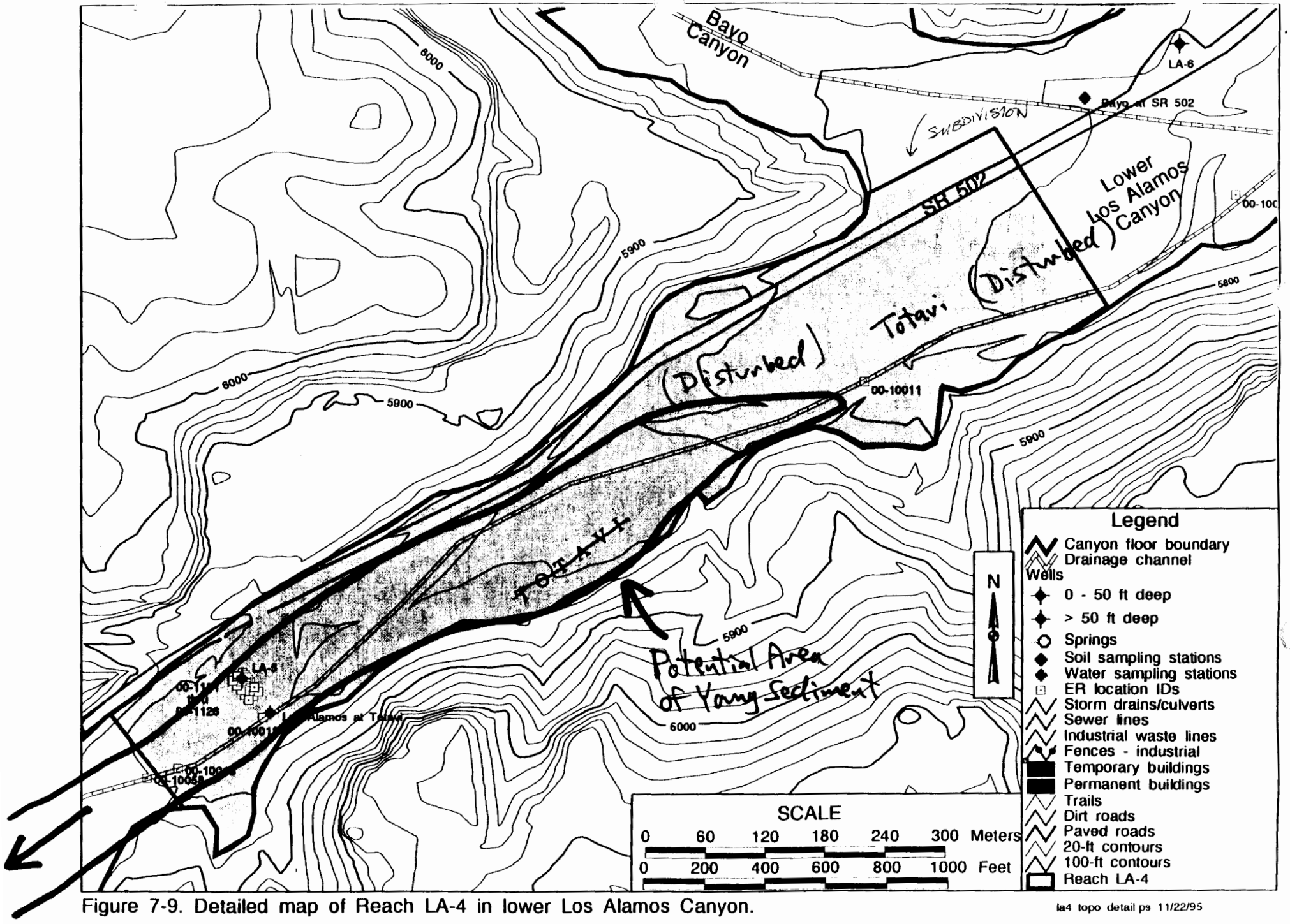

Figure 7-9. Detailed map of Reach LA-4 in lower Los Alamos Canyon.

la4 topo detail ps 11/22/95

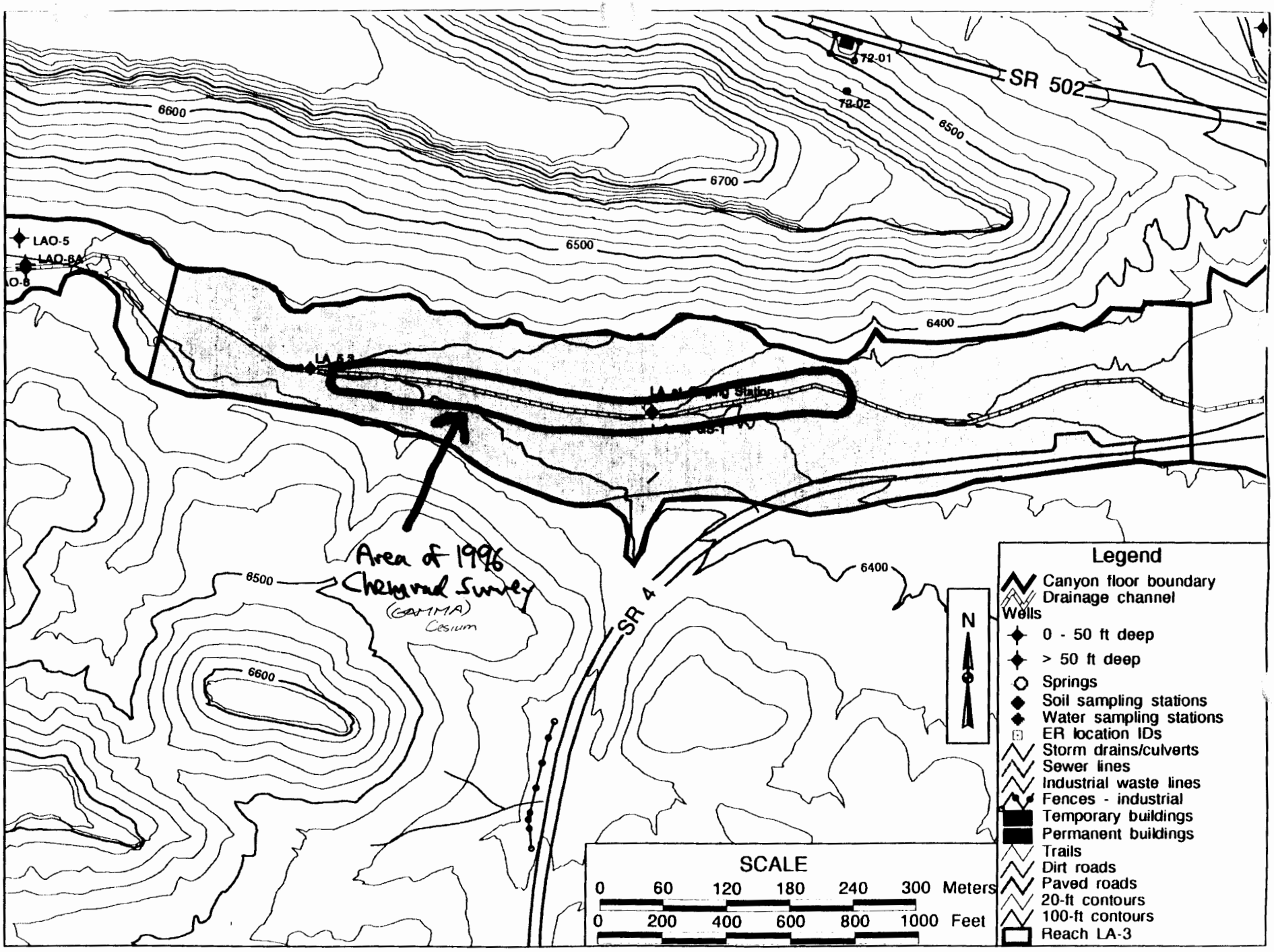

Figure 7-8. Detailed map of Reach LA-3 in lower Los Alamos Canyon.

la3 topo detail ps 11/22/95

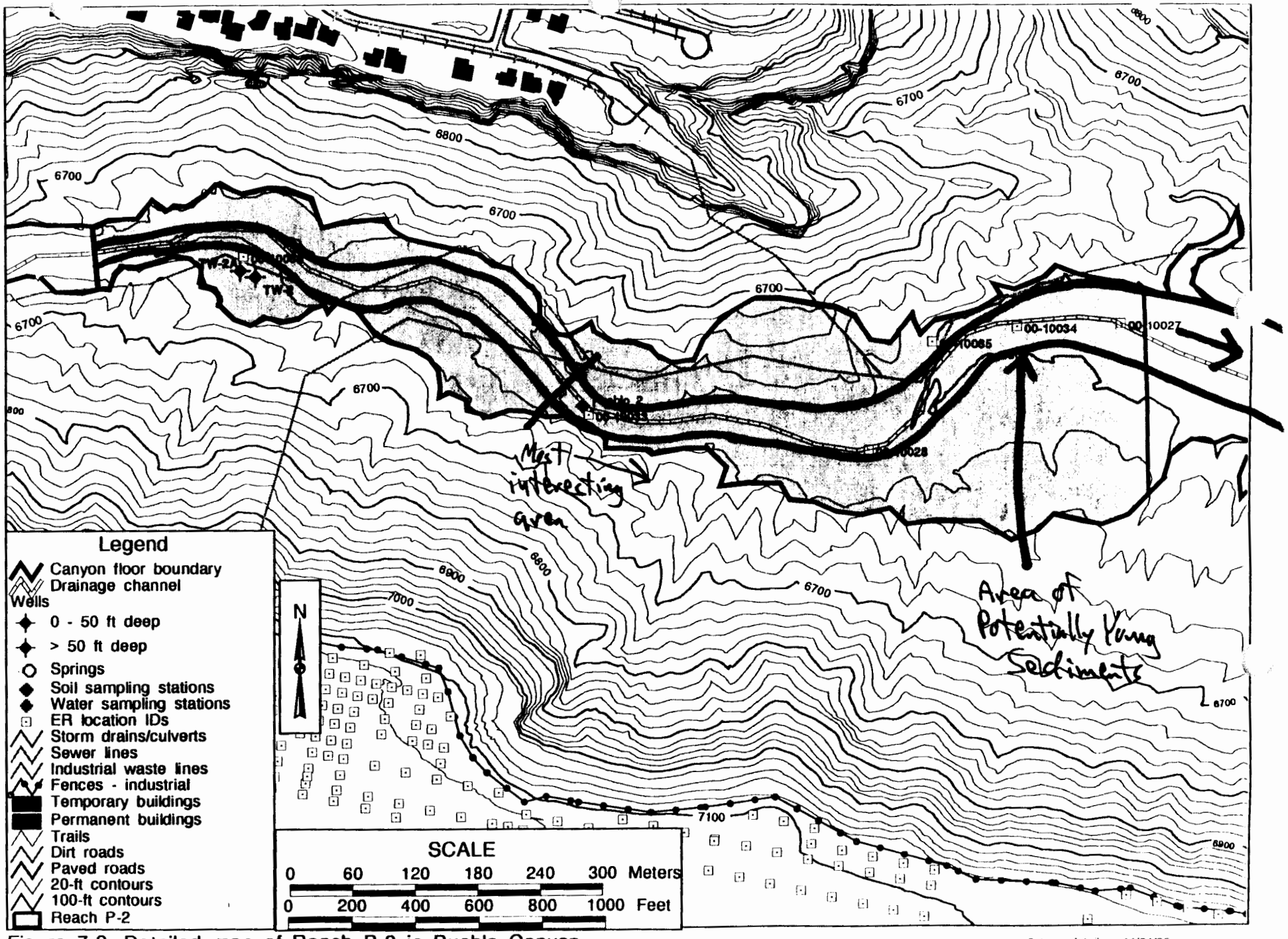

Figure 7-3. Detailed map of Reach P-2 in Pueblo Canyon.

p2 topo detail ps 11/21/95

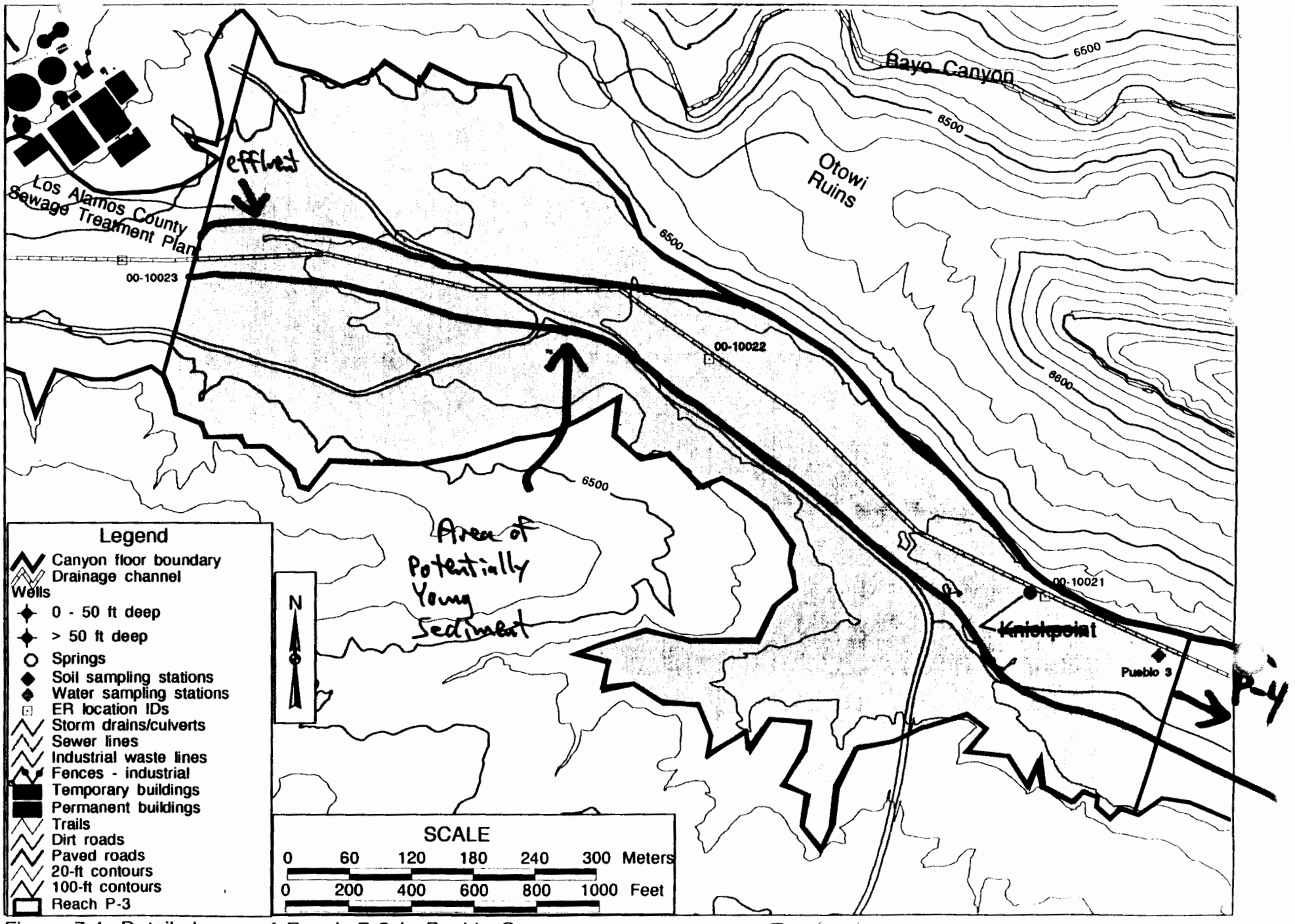

Figure 7-4. Detailed map of Reach P-3 in Pueblo Canyon.

p3 topo detail ps 11/21/95

~3M OF SEDIMENT (MAYBE OVERESTIMATE)

LARGEST Pu INVENTORY
FAIRLY STABLE
VALLEY BOTTOM SATURATED W/ ORG. RICH WTR

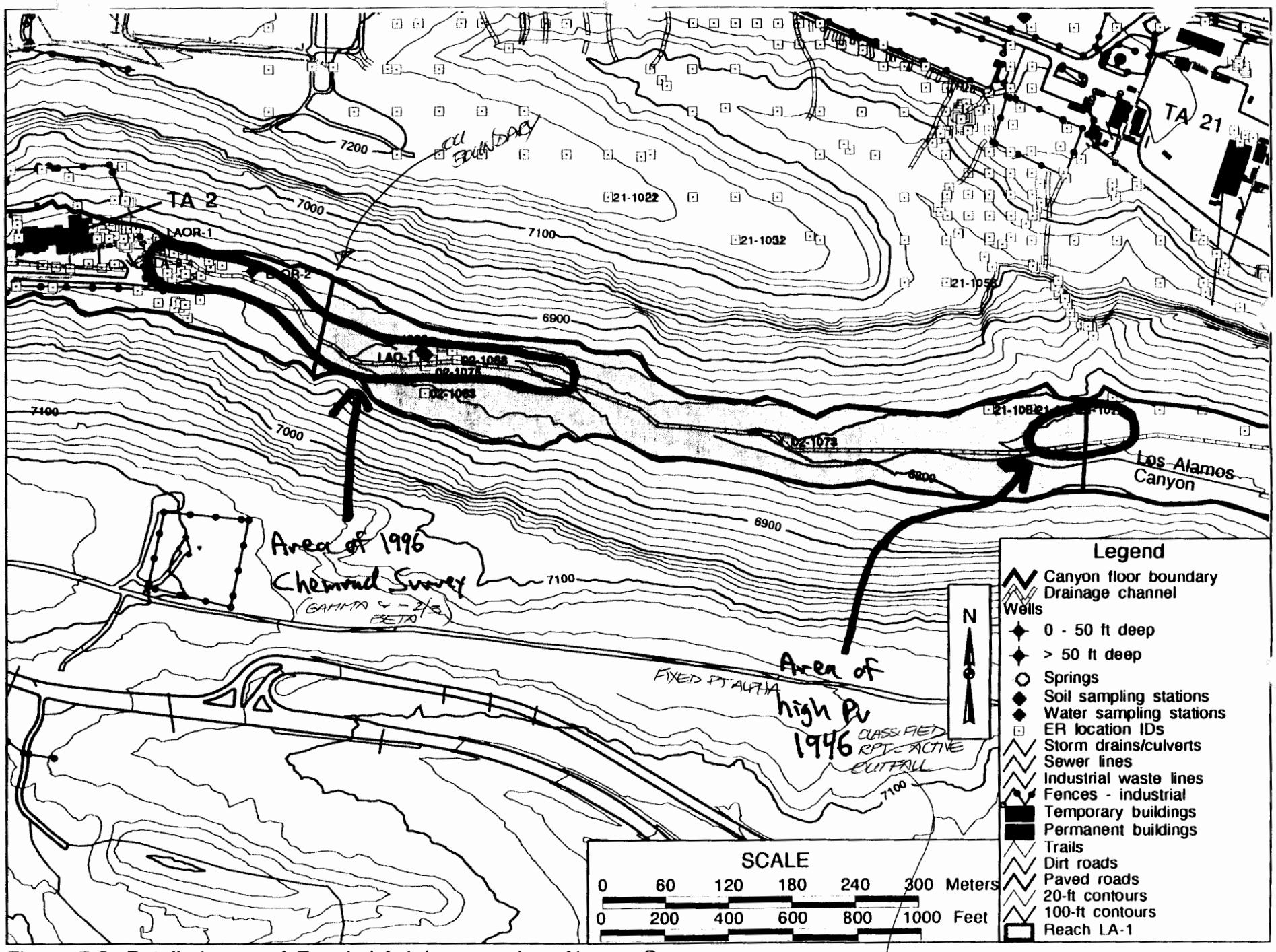

Figure 7-6. Detailed map of Reach LA-1 in upper Los Alamos Canyon.

la1 topo detail ps 11/21/95