Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

SEP 16 1994

Benito
Ron K
Barbara
Teri D.
Are we comfortable with this response?
File
Benito
Not really

William K. Honker, Chief
RCRA Permits Branch
U. S. Environmental Protection Agency
Region 6
1445 Ross Ave., Suite 1200
Dallas, Texas 75202-2733

RE: Response to Notice of Deficiency (NOD) for Operable Unit (OU) 1082 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan

Dear Mr. Honker:

Enclosed is the response to comment 18 of the NOD for OU 1082 RFI Work Plan which was received in our office on July 18, 1994. Comment 18 of the NOD requested a revised sampling plan for Section 5.2.

The enclosed response shows the proposed text changes to Section 5.2 of OU 1082 RFI Work Plan. All text changes from the original document have been highlighted with shading. Figures and tables associated with the sampling plan have also been revised.

Should you have any questions or concerns, please call me at (505) 665-7203, or Ken Schenck, Scientech, at (505) 665-7217.

Sincerely,

T. J. Taylor

Theodore J. Taylor
Program Manager
Environmental Restoration Program

LAAMEP:9TT-024

Enclosure

cc:
See page 2

3434

SEP 16 1994
OFFICE OF

cc w/enclosure:
K. Sisneros
NMED
1190 St. Francis Dr.
P. O. Box 26110
Santa Fe, NM 87502
E. Merrill, EM-452, HQ
T. Taylor, AAMEP, LAAO
B. Swanton, NMED-AIP, LANL, MS-J993
RPF, LANL, MS-M707
R. Houck, ERPO, AL
J. Levings, ERPO, AL

cc w/o enclosure:
W. Spurgeon, EM-452, HQ
K. Schenck, Scientech, LAAO
T. Baca, EM, LANL, MS-J591
D. McInroy, EM/ER, LANL, MS-M992
K. Hargis, EM, LANL, MS-J591
B. Martin, CST-6, LANL, MS-E525

CERTIFICATION

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title:

Response to Comment 18 of the NOD for RFI Work Plan for OU 1082

Name: _____ Date: Sept 15, 1994

Dennis Erickson
Division Director
Los Alamos National Laboratory

Name: _____ Date: 9/16/94

Joseph Vozella, Chief
Environment, Safety, and Health Branch
DOE-Los Alamos Area Office

Surface samples for HE and metals will be located using HE field screening techniques described above. A total of 5 laboratory surface samples will be planned in each drainage. The preferred sample size of 5 selected for the surface samples is associated with a probability of 0.9 if 40% is contaminated (see Subsection 4.5.1.1). Contaminant disposal processes in a drainage are likely to produce homogeneous contamination (i.e., 40%).<>

Sampling for volatile organics and other constituents will be conducted in the near surface and subsurface soils of the drainages directly beneath the outfalls, or at the first downstream sediment trap if an outfall daylights in bare tuff where the concentrations would be expected to be highest if organic contaminants were present. A second near surface/subsurface sample in each drainage will be taken at the second downstream sediment trap. Note that at TA-16-340, four subsurface cores will be taken, two at the outfall and two at the outfall of the discharge aerator. For each outfall, sample measurements will be obtained at three different depths to provide information on possible downward transport of contaminants. If contaminant levels are determined to be different from background, then the sample maxima will be compared to the SAL. <>

5.2.4 Sampling and Analysis Plans

All of the sumps discussed in this subsection have relatively similar operational histories and suites of contaminants, with HE being the principal PCOC; thus, a generic sampling plan applicable to all of the sumps and drainages is presented below. Figure 5-13 schematically illustrates this generic sampling plan. SOPs used in this sampling plan are delineated in Table 5-19. Numbers of samples in each SWMU are delineated in Table 5-20. Approximate downstream locations of field-screening points for each outfall are shown in Figs. 5-13 through 5-25. Field screening methods are described in Subsection 4.7; SOPs for these methods are in preparation.

5.2.4.1 Engineering Surveys

Detailed engineering and geomorphologic surveys are needed to accurately map drainages from the HE outfalls in the field, as well as to lay out sampling points for HE spot tests, radiation surveys, and surface and near surface/

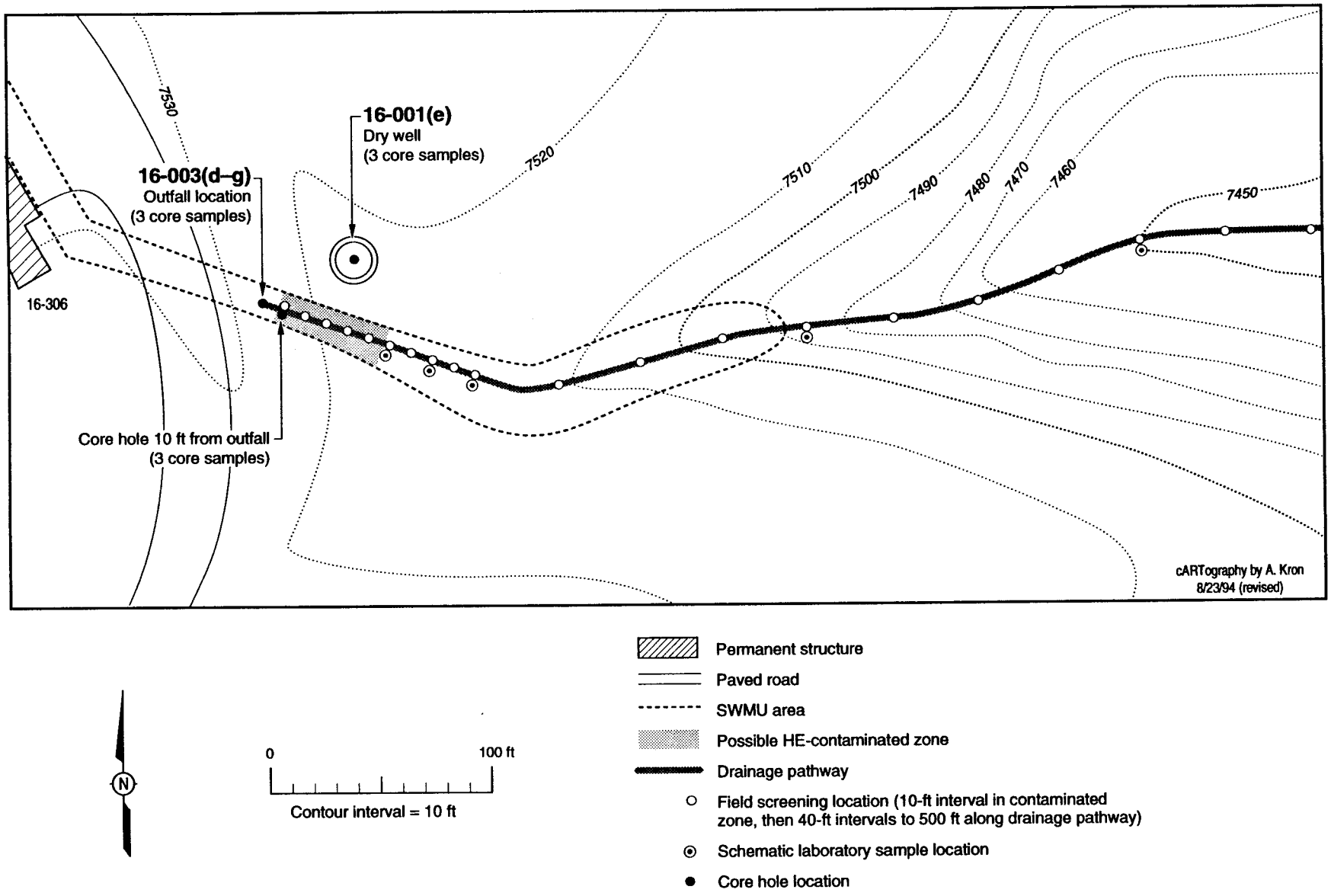

Fig. 5-13. Schematic sample locations for sump outfall (300-Line outfall shown as an example).

TABLE 5-19

STANDARD OPERATING PROCEDURES FOR FIELD ACTIVITIES

LANL-ER-SOP	TITLE	NOTES
01.02, R0	Sample Containers and Preservation	Applied to all laboratory samples
01.04, R1	Sample Control and Field Documentation	Applied to all laboratory samples
04.01, R0	Drilling Methods and Drill Site Management	All angled core hole samples
06.09, R0	Spade and Scoop Method for Collection of Soil Samples	All 0 to 6 in. surface samples
06.10, R0	Hand Auger and Thin-Wall Tube Sampler	VOC-bearing subsurface soil samples
12.01, R0	Field Logging, Handling, and Documentation of Borehole Materials	All cored samples

subsurface sampling. The spacing of surveyed surface points is contingent on the results of the HE spot test. The survey will proceed as follows:

1. Begin by surveying in sample points in the drainages at 10-ft intervals commencing directly at the outfall. During this portion of the survey, an HE spot test will be conducted at each of these sample points.

2. At the point at which the HE spot test indicates that no HE remains at levels > 100 ppm, survey in a laboratory sample location. Two additional laboratory sample locations will be surveyed 20 ft and 40 ft down the drainage from the initial laboratory sample location.

3. Commencing with the third 20-ft-spaced laboratory sample location, continue to down-drainage survey, surveying screening points in sediment traps at roughly 40-ft intervals for a total distance of roughly 500 ft. These 40-ft-spaced points will also be field screened using the HE spot test.

Core sample locations will also be surveyed in each drainage. All surveyed locations will be registered on a base map, scale 1:7 200. If, during the course of sampling, any sample points must be relocated, the new position will be resurveyed and the revised locations will be indicated on the map. The engineering survey will be performed by a licensed professional under the supervision of the field team leader.

TABLE 5-20

SUMMARY OF SITE SURVEYS, SAMPLING, AND ANALYSIS FOR SUMPS AND OUTFALLS

PRS	PRS TYPE	SAMPLED MEDIA	LABORATORY SAMPLES#						FIELD SCREENING							FIELD LAB.						LABORATORY ANALYSES#										
			STRUCTURE		SURFACE		DEEP SURFACE/ SUBSURFACE†								A					B				C				D	E	F	G	H	
				FIELD DUP		FIELD DUP		FIELD DUP	GROSS ALPHA	GROSS GAMMA/BETA	ORGANIC VAPOR	HE SPOT TEST	GEOPHYSICS SURFACE	BARIUM - LIBS	GEOLOGICAL CHARACTERIZATION	GROSS ALPHA	GROSS GAMMA/BETA	TRITIUM	VOLATILE ORGANICS	XRF	SOIL MOISTURE	ALPHA SPECTROSCOPY	GAMMA SPECTROSCOPY	BETA SPECTROSCOPY	TOTAL URANIUM	ISOTOPIC PLUTONIUM	ISOTOPIC URANIUM	VOA (SW 8240)	SEMIVOLATILES (SW 8270)	METALS (SW 6010)	ASBESTOS	HIGH EXPLOSIVES (SW 8330)	CYANIDE
16-001(e)	Inactive dry well	Soil					3																					3	3	3		3	3
16-003(a)	Inactive HE sumps	Soil			5		6			18#	2#	18#													11			6	11	11		11	
16-003(b)	Inactive HE sumps	Soil			5		6	1		18#	2#	18#													11			6	11	11		11	
16-003(d)	Inactive HE sumps	Soil			5		6				2#	13#																6	11	11		11	11
16-003(e)*	Inactive HE sumps	Soil																															
16-003(f)*	Inactive HE sumps	Soil																															
16-003(g)*	Inactive HE sumps	Soil																															
16-003(h) 16-030(d)	Inactive HE sumps Inactive outfall	Soil			5		6			18#	2#	18#													11			6	11	11		11	
16-003(i)	Inactive HE sumps	Soil			5	1	6	1		15#	2#	15#													11			6	11	11		11	
16-003(j)	Inactive HE sumps	Soil			5		6			18#	2#	18#													11			6	11	11		11	
16-003(l) 16-030(h)	Inactive HE sumps Inactive outfall	Soil			5		18				6#	22#																18	23	23		23	
16-003(m) 16-030(g)	Inactive HE sumps Inactive outfall	Soil			5		6	1			2#	18#																6	11	11		11	
16-026(b) 16-029(a)	Inactive HE sumps Inactive outfall	Soil			5	1	6			15#	2#	15#													11			6	11	11		11	
16-026(c) 16-029(b)	Inactive HE sumps Inactive outfall	Soil			5		6				2#	18#																6	11	11		11	

TABLE 5-20 (continued)

SUMMARY OF SITE SURVEYS, SAMPLING, AND ANALYSIS FOR SUMPS AND OUTFALLS

			LABORATORY SAMPLES#						FIELD SCREENING							FIELD LAB.						LABORATORY ANALYSES#										
			STRUCTURE		SURFACE		DEEP SURFACE/ SUBSURFACE†								A					B				C				D	E	F	G	H	
PRS	PRS TYPE	SAMPLED MEDIA		FIELD DUP		FIELD DUP		FIELD DUP	GROSS ALPHA	GROSS GAMMA/BETA	ORGANIC VAPOR	HE SPOT TEST	GEOPHYSICS SURFACE	BARIUM - LIBS	GEOLOGICAL CHARACTERIZATION	GROSS ALPHA	GROSS GAMMA/BETA	TRITIUM	VOLATILE ORGANICS	XRF	SOIL MOISTURE	ALPHA SPECTROSCOPY	GAMMA SPECTROSCOPY	BETA SPECTROSCOPY	TOTAL URANIUM	ISOTOPIC PLUTONIUM	ISOTOPIC URANIUM	VOA (SW 8240)	SEMIVOLATILES (SW 8270)	METALS (SW 6010)	ASBESTOS	HIGH EXPLOSIVES (SW 8330)	CYANIDE
16-026(d)	Inactive HE sumps																																
16-029(c)	Inactive outfall	Soil			5		6	1			2#	13#															6	11	11		11	
16-026(e)	Inactive HE sumps																																
16-029(d)	Inactive outfall	Soil			5	1	6				2#	13#															6	11	11		11	11
16-026(h2)	Inactive HE sumps																																
16-029(e)	Inactive outfall	Soil			5		6				2#	18#															6	11	11		11	
16-026(j2)	Inactive HE sumps																																
16-029(f)	Inactive outfall	Soil			5	1	6	1			2#	14#															6	11	11		11	
16-003(c)	Active HE sumps																																
16-026(v)	Active outfall	Soil			5		6			18#	2#	18#												11			6	11	11		11	11
16-003(n)	Active HE sumps	Soil			5		6			18#	2#	18#												11			6	11	11		11	
16-003(o)	Active HE sumps	Soil			5		12			32#	12#	32#												17			12	17	17		17	
16-029(g)	Active HE sumps	Soil			5		6			18#	2#	18#												11			6	11	11			

* These sumps have a common outfall with 16-003(d) as part of the 300-Line.

A, B, C, G = not applicable; D, E, H = full suite; D =subsurface samples only; F=1082 suite.

The number of field screening points will be at least this many. The number of laboratory samples may also be greater than the number indicated if numerous positive field screening results are found. The actual number will depend on the HE distribution and core depths.

† Additional subsurface/near surface samples will be taken beneath sumps if COCs are found in drainages.

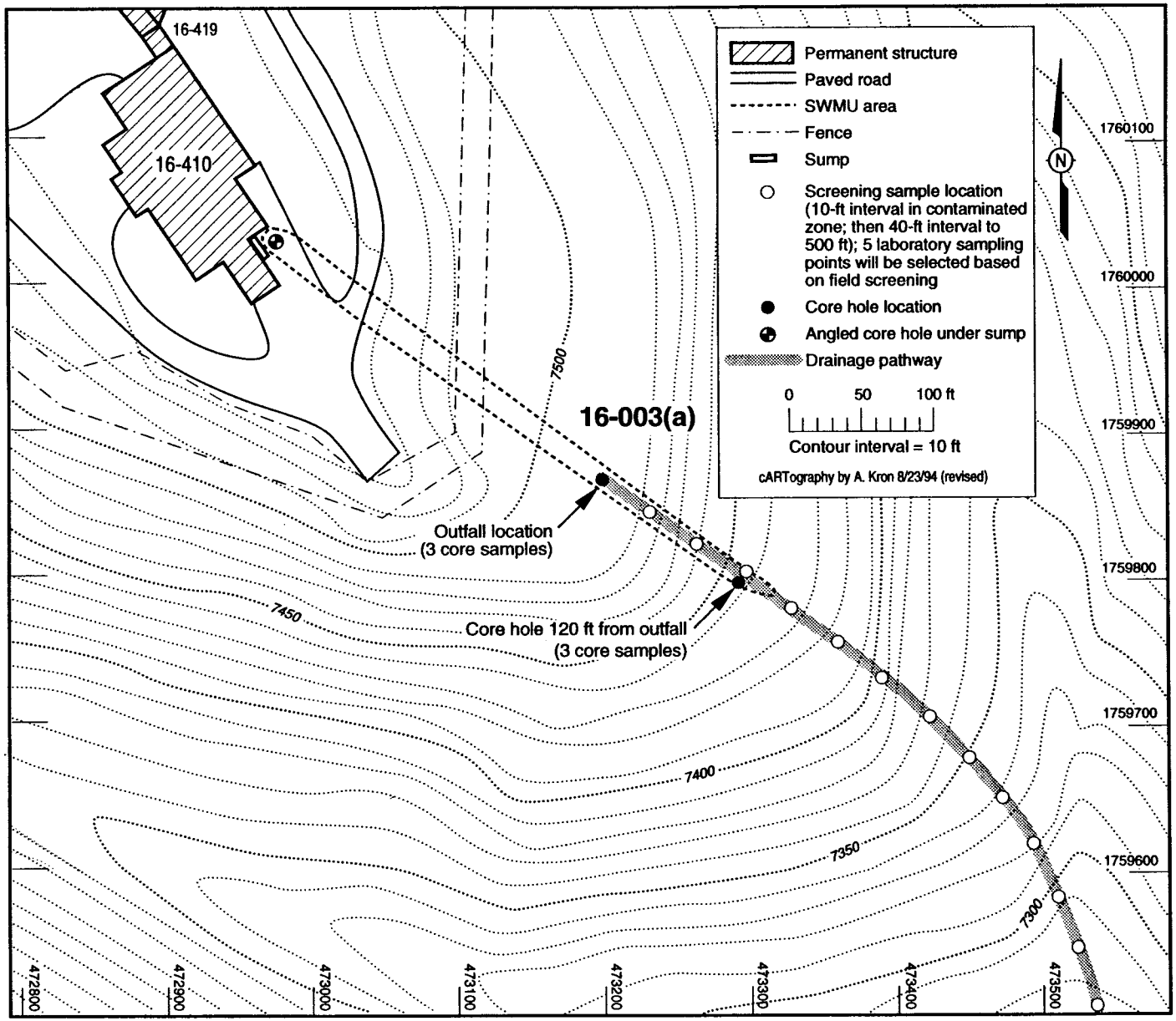

Fig. 5-14. Schematic field screening sampling locations for SWMU 16-003(a).

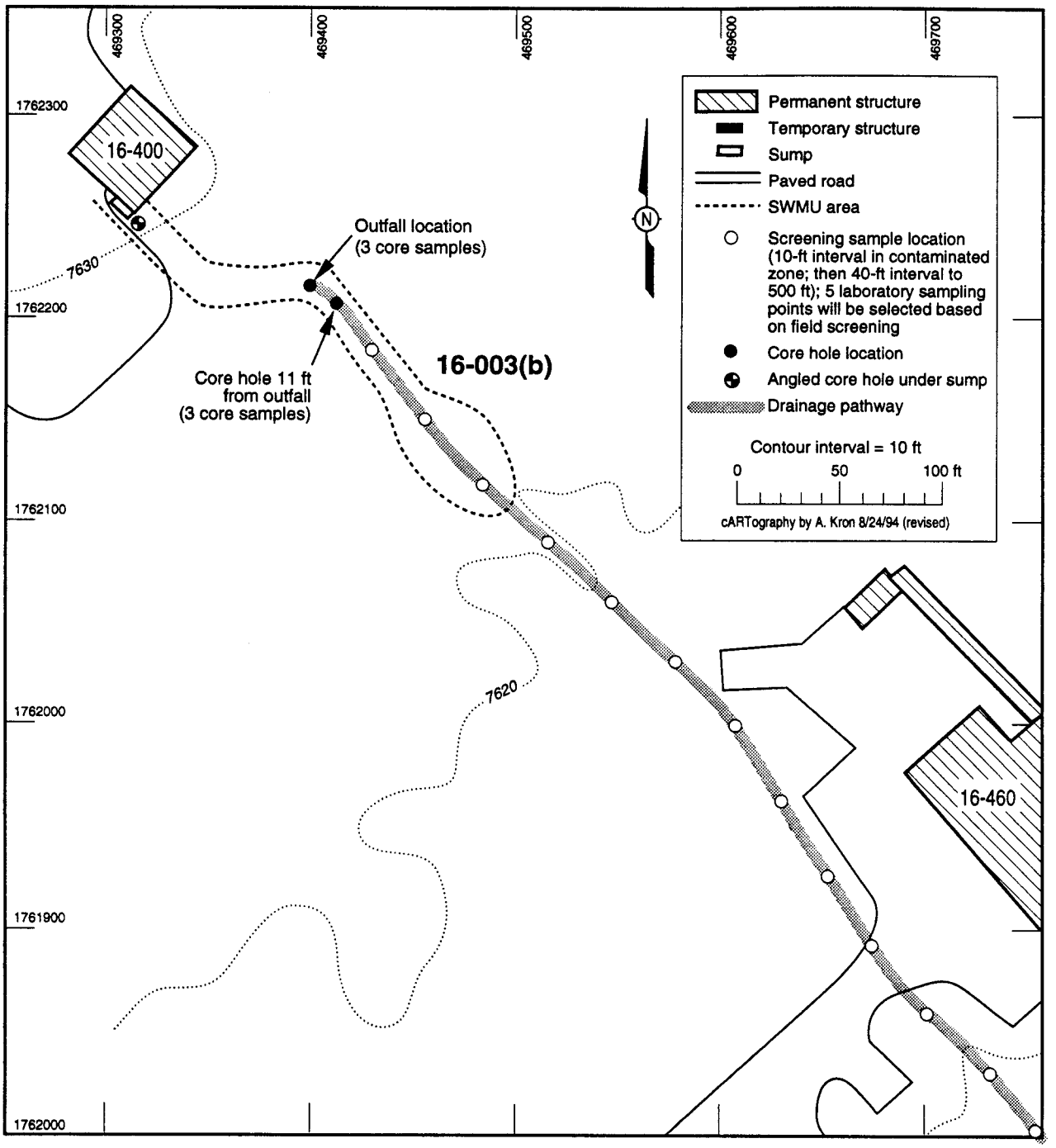

Fig. 5-15. Schematic field screening sampling locations for SWMU 16-003(b).

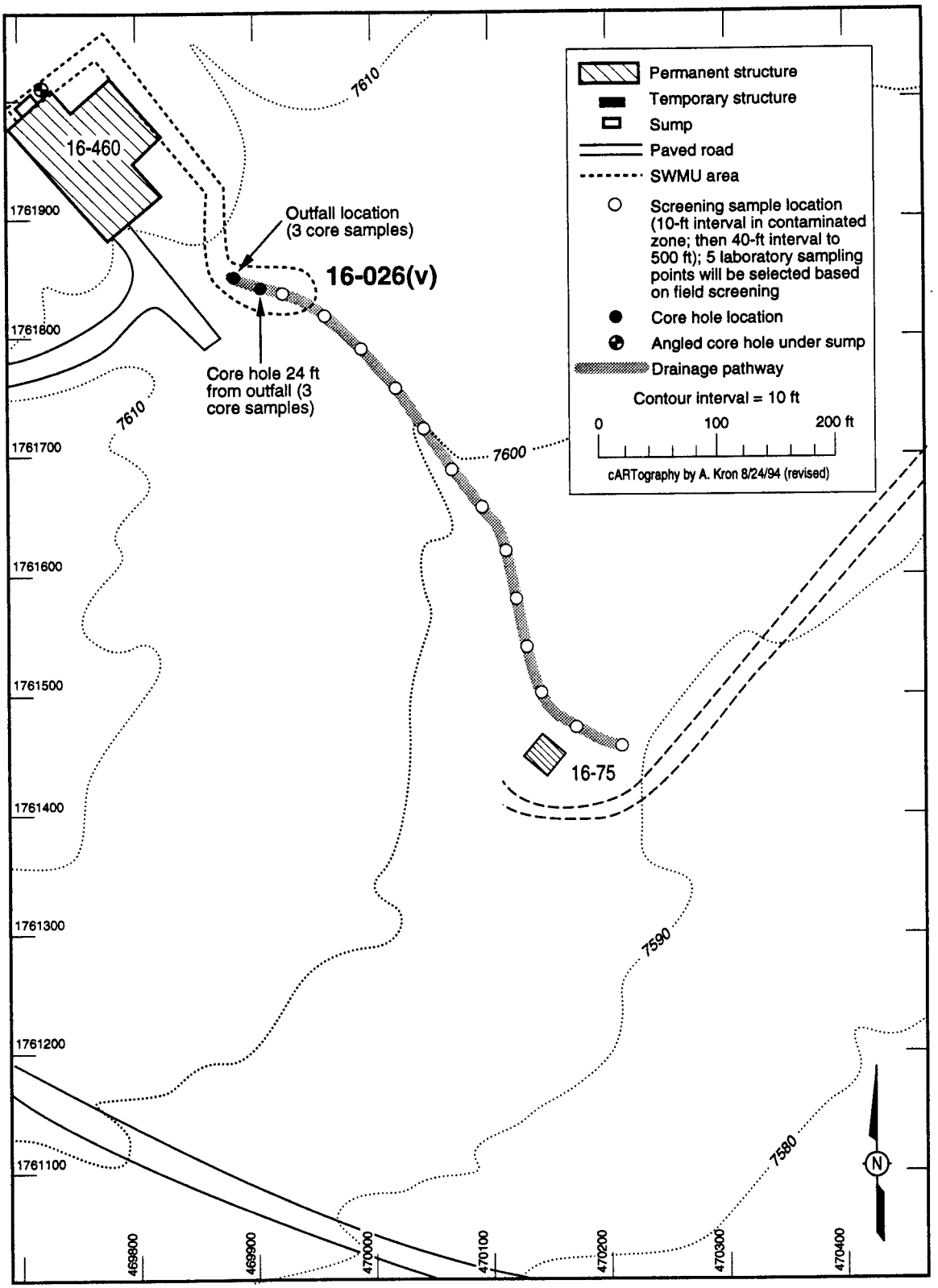

Fig. 5-16. Schematic field screening sampling locations for SWMU 16-026(v).

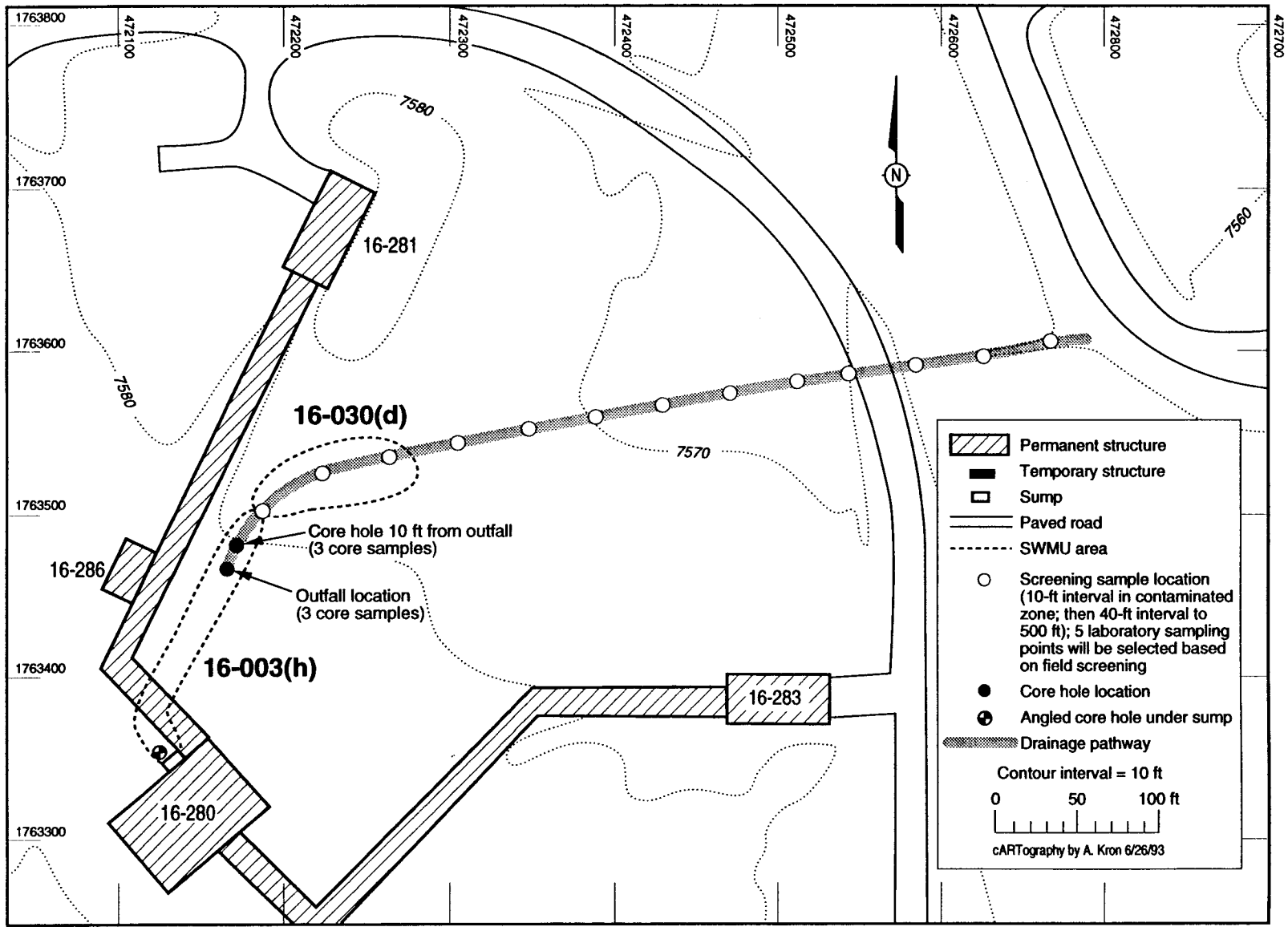

Fig. 5-17. Schematic field screening sampling locations for SWMUs 16-003(h) and 16-030(d).

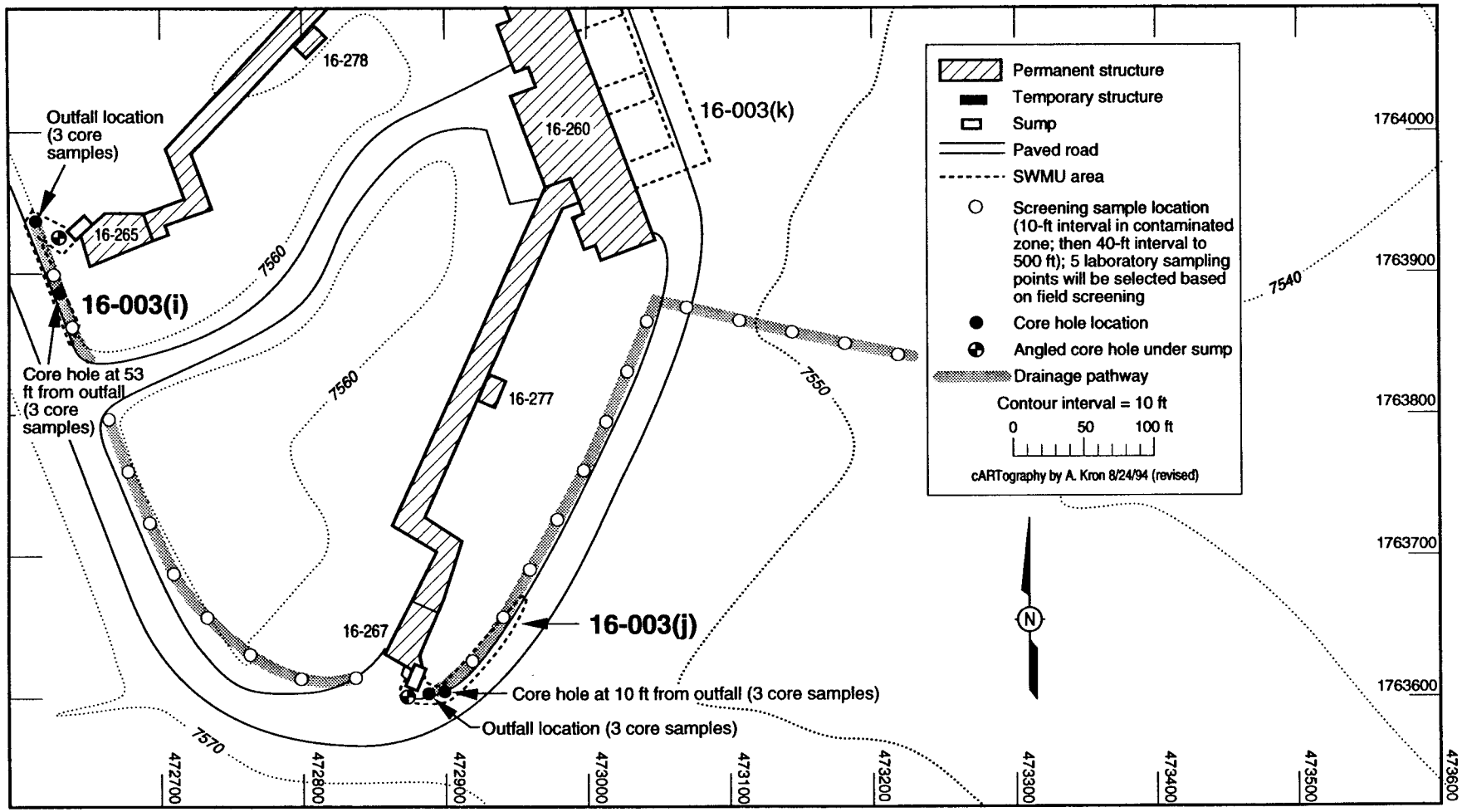

Fig. 5-18. Schematic field screening sampling locations for SWMUs 16-003(i,j).

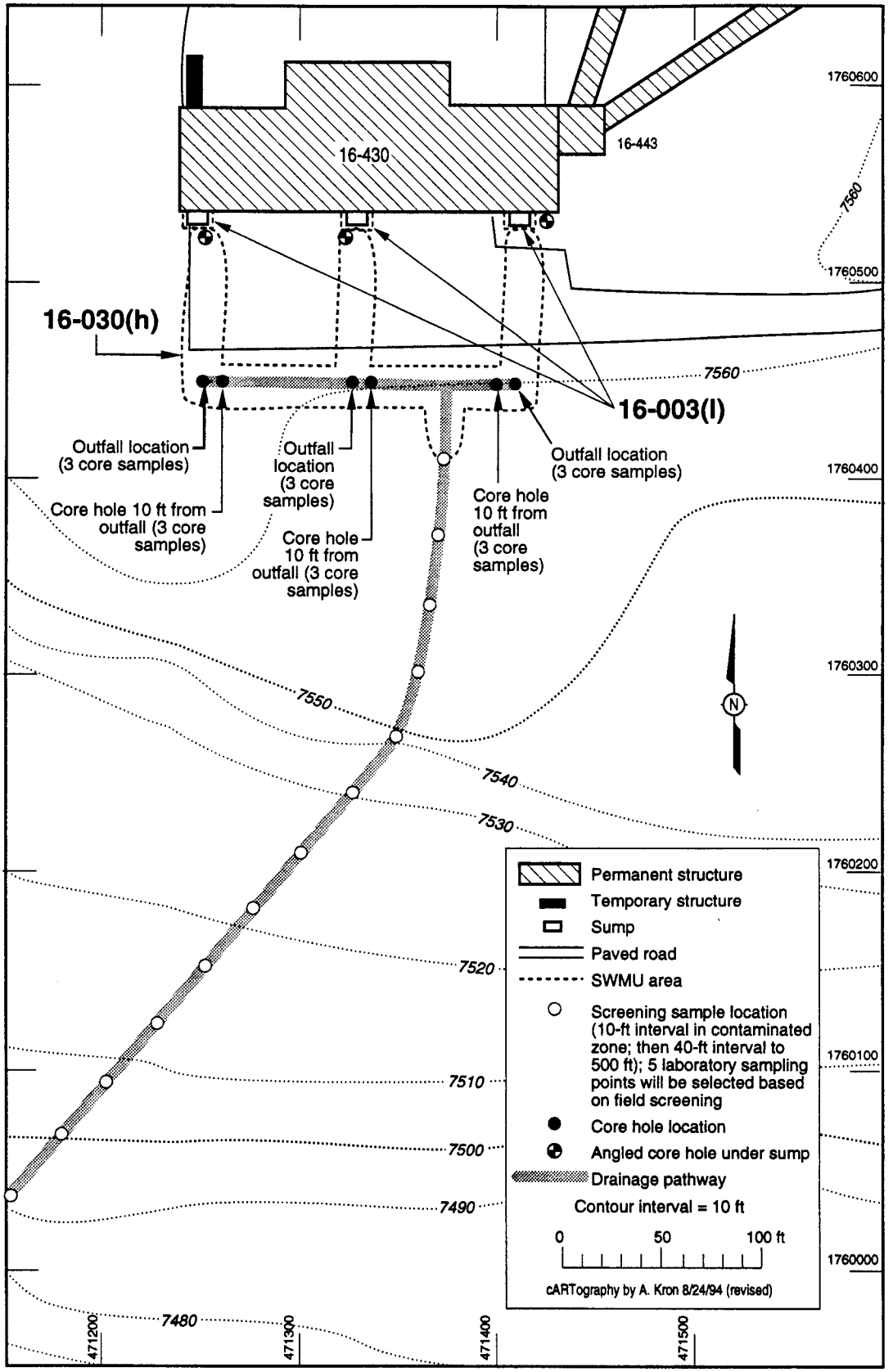

Fig. 5-19. Schematic Field screening sampling locations for SWMUs 16-003(I) and 16-030(h).

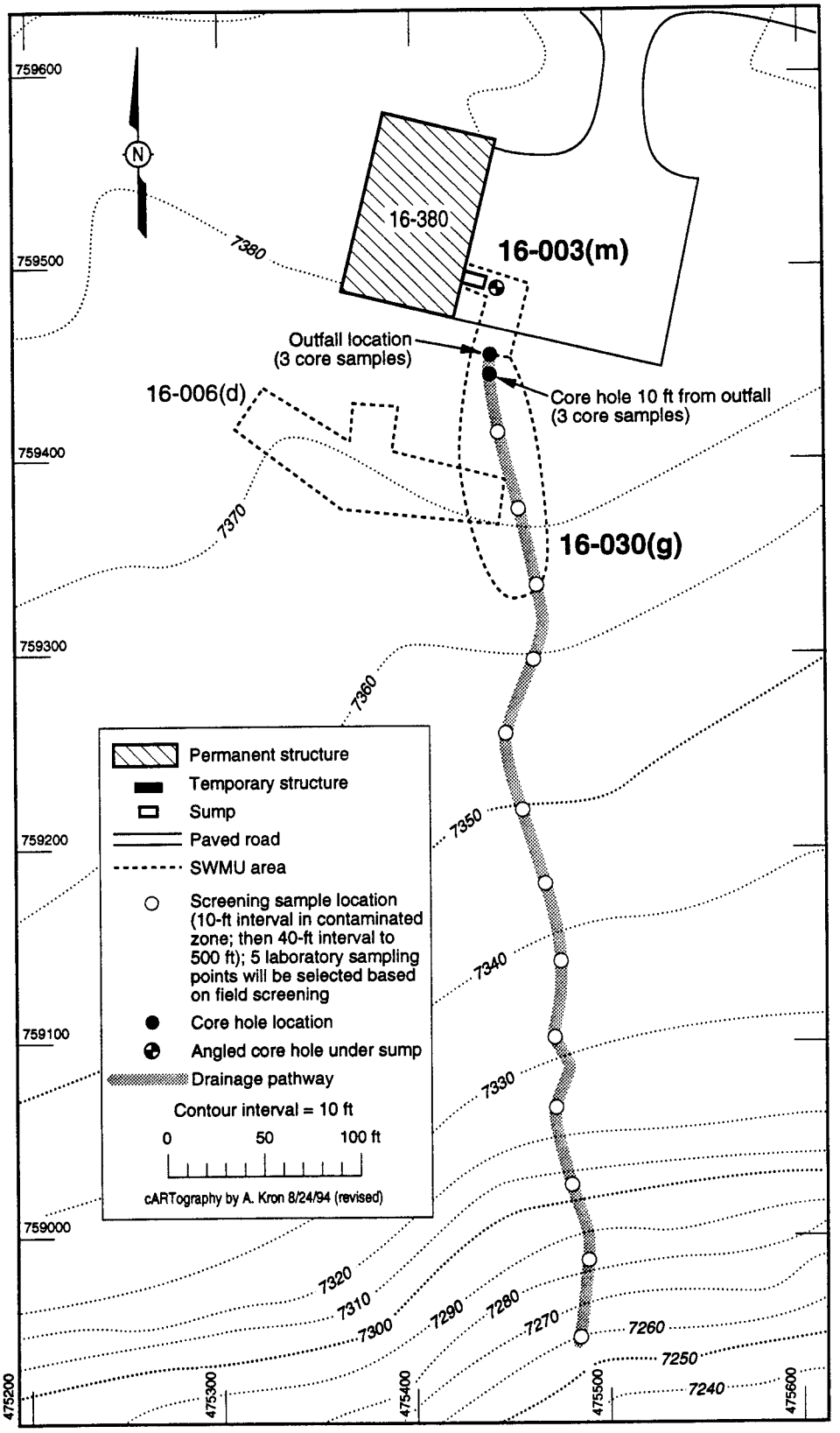

Fig. 5-20. Schematic field screening sampling locations for SWMUs 16-003(m) and 16-030(g).

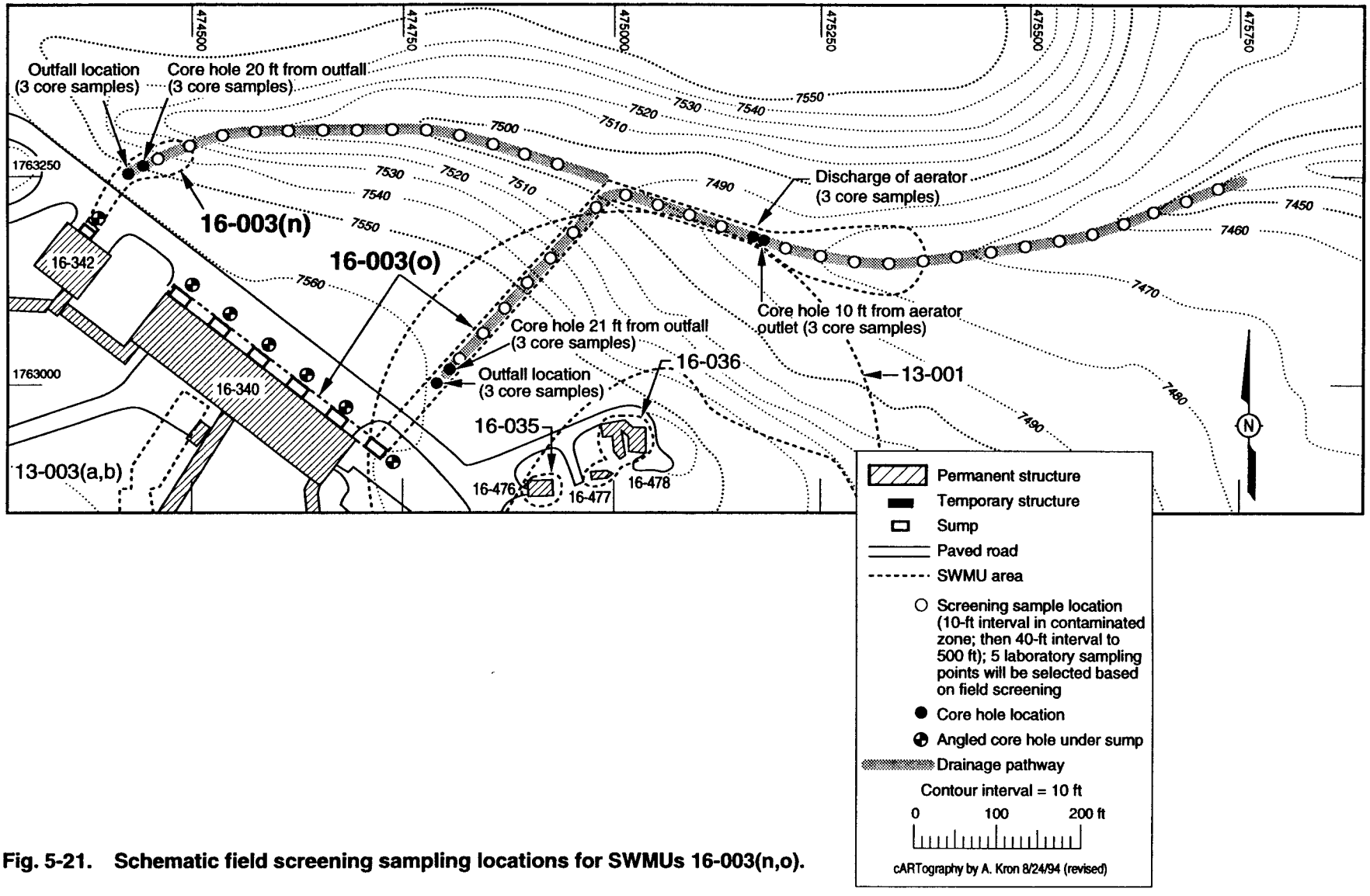

Fig. 5-21. Schematic field screening sampling locations for SWMUs 16-003(n,o).

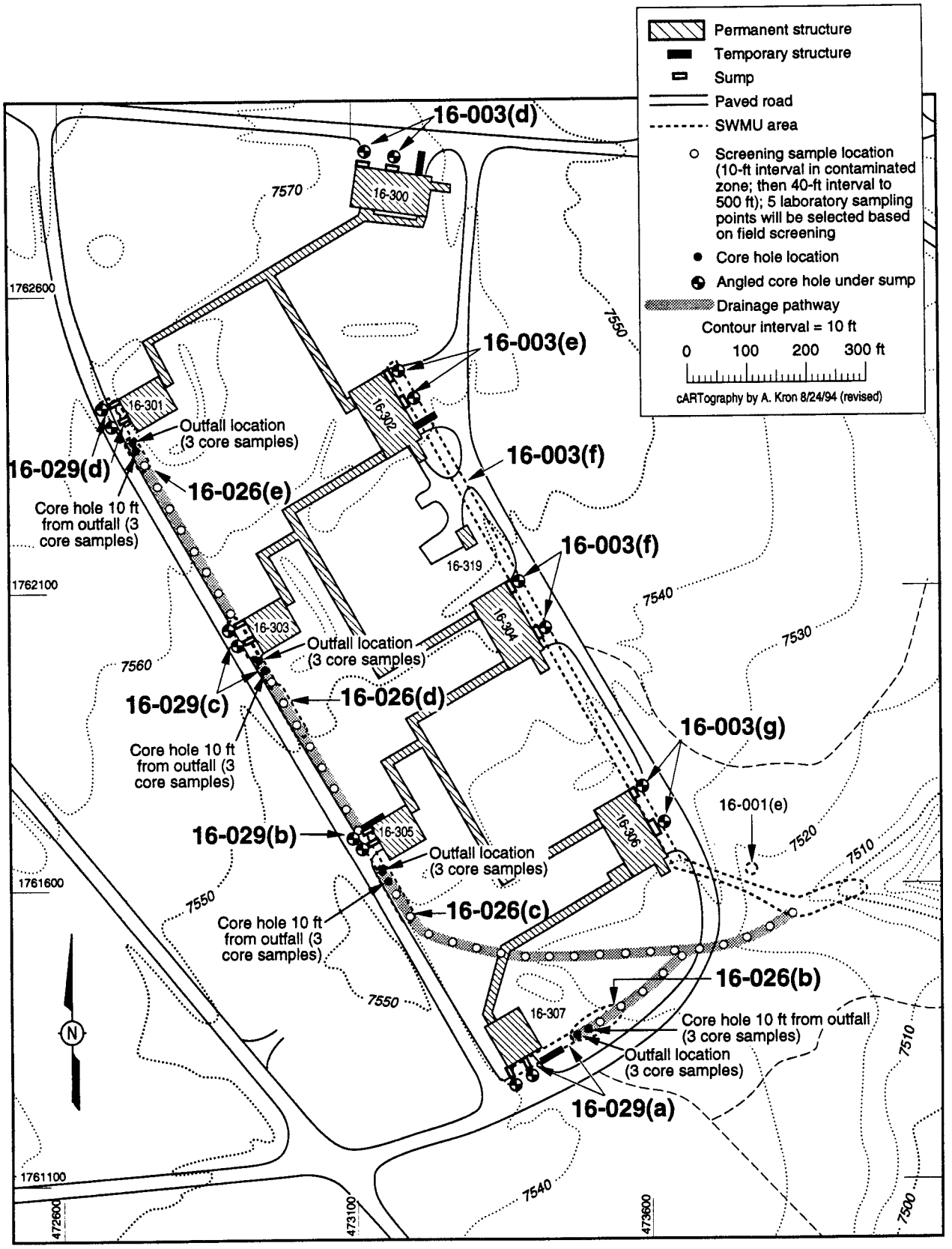

Fig. 5-22. Schematic field screening sampling locations for SWMUs 16-026(b-e) and 16-029(a-d).

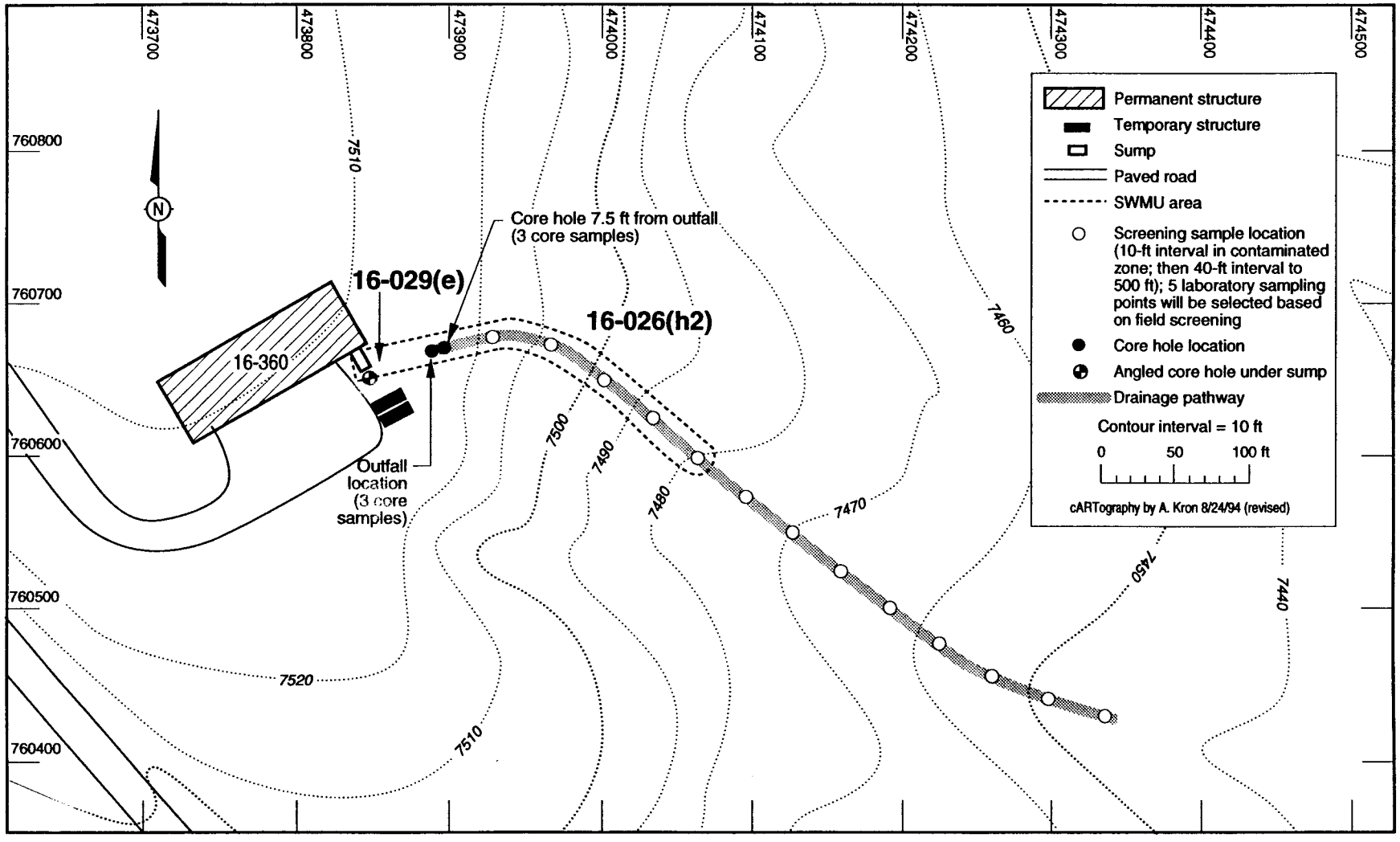

Fig. 5-23. Schematic field screening sampling locations for SWMUs 16-026(h2) and 16-029(e).

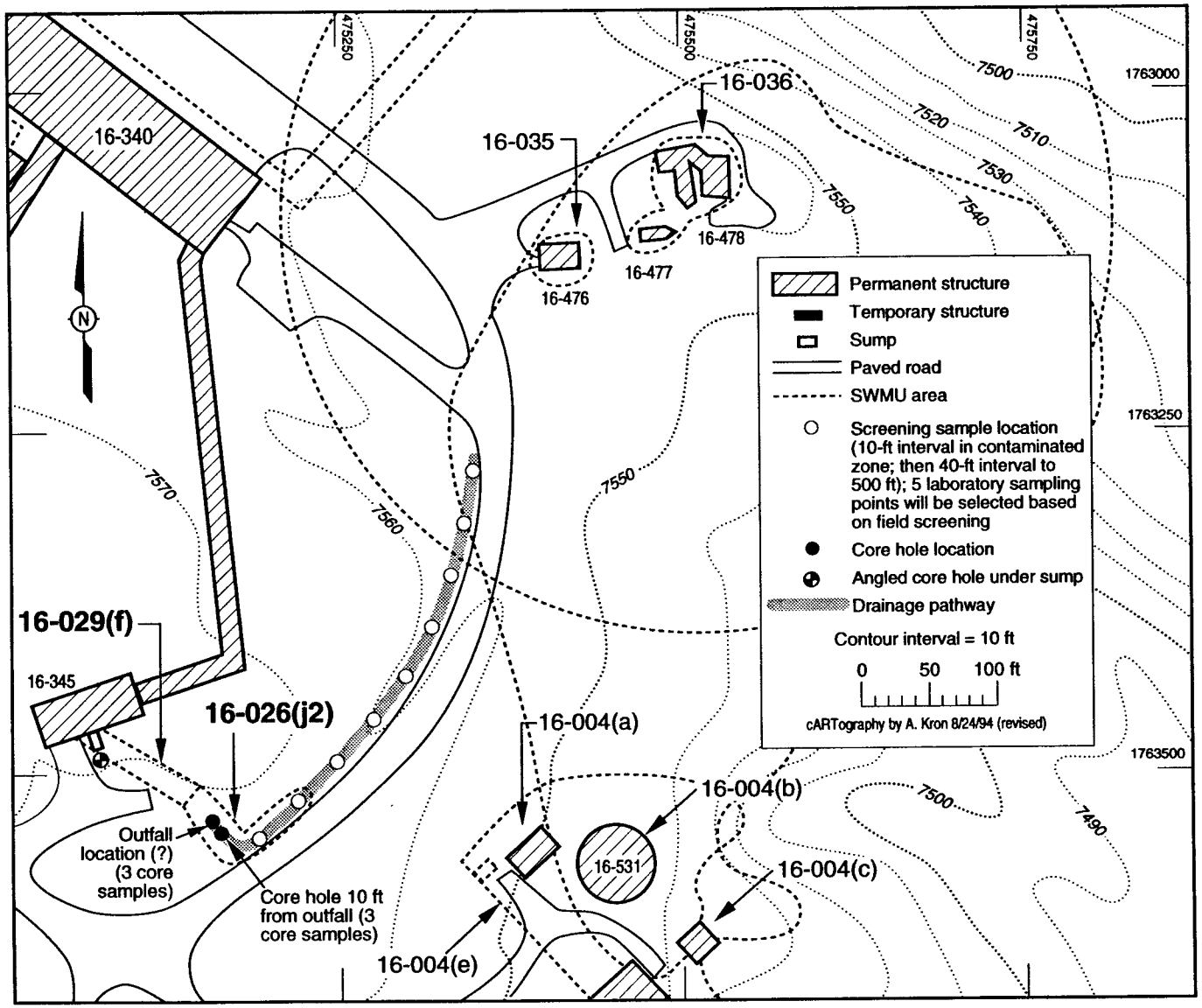

Fig. 5-24. Schematic field screening sampling locations for SWMUs 16-026(j2) and 16-029(f).

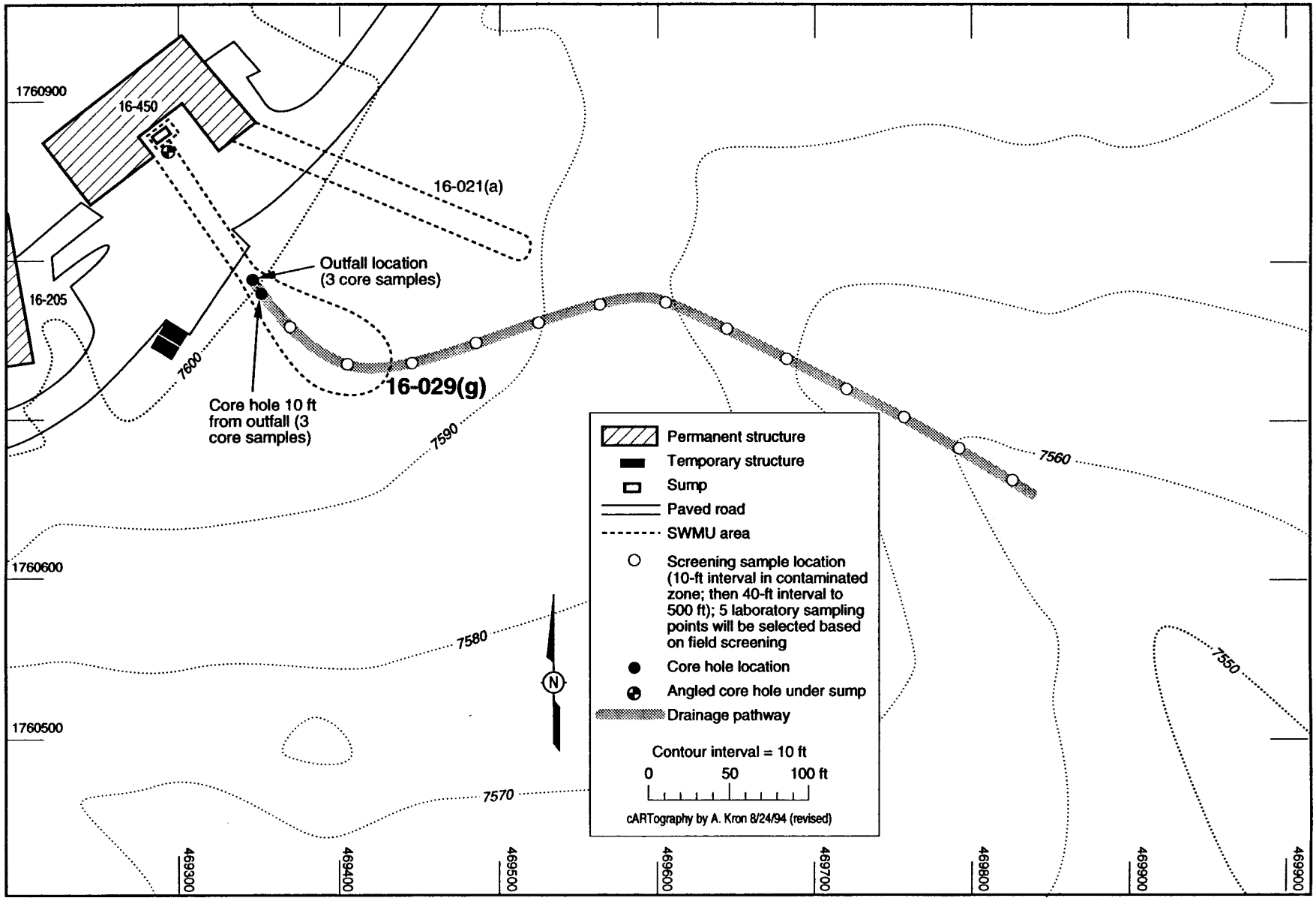

Fig. 5-25. Schematic field screening sampling locations for SWMU 16-029(g).

5.2.4.2 Sampling

High explosives screening will begin directly at each outfall and continue down the drainage at the surveyed locations described above for 500 ft. This screening will be concurrent with the channel surveying described above.

Several of the HE sumps described in this section serve process buildings in which radioactive materials are processed or assembled into HE devices. These sumps will have radiation surveys as well as HE field screening at the surveyed points. The sumps and outfalls that require radiation screening are: SWMU 16-003(a), associated with TA-16-410; SWMU 16-003(b), associated with TA-16-400; SWMU 16-003(c), associated with TA-16-460; SWMU 16-003(h), associated with TA-16-280; SWMU 16-003(i), associated with TA-16-265; SWMU 16-003(j), associated with TA-16-267; SWMU 16-003(n), associated with TA-16-342; SWMU 16-003(o), associated with TA-16-340; SWMU 16-029(a), associated with TA-16-307; and SWMU 16-029(g), associated with TA-16-450.

Three laboratory sediment (or soil) samples will be taken in each drainage commencing at the first negative HE screening sample defined through the HE screening, and continuing down the drainage at approximately 20-ft surveyed intervals. A minimum of two laboratory sediment samples will be taken at additional downstream surveyed natural sediment traps. The criteria for selecting downstream sediment trap samples are:

1st) Samples with positive HE spot test indications;

2nd) Samples with above-background (twice background) radionuclide screening;

3rd) Samples with visual evidence of staining; and,

4th) Samples containing large amounts of clay-rich sediments, which tend to sorb many PCOCs.

All surface samples that satisfy either of the first two criteria will be submitted for laboratory analysis.

In cases where a surface sample satisfies either of the first two criteria, collect augered samples at depths of 6-in. increments until the samples do

not satisfy either of the first two criteria. Then, in each core, select the deepest sample that tests positive with the HE spot test or has an above-background radionuclide content for laboratory analysis. The purpose of continuing to sample in the sediment traps is to bound contamination during Phase I.

At each sump outfall or at the first downstream sediment trap where the outfall daylights on bare tuff, one augered core sample will be taken to a depth of at least 2.5 ft into bedrock. At the TA-16-340 outfall channel, one sample will also be taken at the discharge of the aerator. An additional augered core sample will be taken in each drainage at the second downstream sediment trap. Locations of these traps are shown on Figs. 5-13 to 5-25. A single augered core sample will be taken in dry well SWMU 16-001(e); it too will extend 2.5 ft below the depth of bedrock. Samples will be taken at depths of 0 to 6 in., 6 to 12 in., and 12 to 18 in. or 6 in. bracketing the soil/bedrock interface and analyzed for HE, volatile and semivolatile organics, metals, and radionuclides. The bottom interval of each core will be field screened for HE, radionuclides, and volatiles. If above-background values are found, then continue coring (to a maximum depth of 10 ft) and field screening until a clean zone is delineated. The deepest core sample with an above-background reading will be submitted for laboratory analysis, in addition to the 0 to 6 in., 6 to 12 in., and 12 to 18 in./soil-tuff interface ranges.

If contamination above SALs and background is found in a sump drainage, then additional Phase I sampling will be initiated beneath the sumps. For each sump this sampling will consist of:

Is EPA using SALs or Detection Levels to determine if Phase II is needed?

1) Draining each sump and carefully inspecting the interior for signs of cracking or leakage. If leak points are observed, site the angled core hole to pass beneath the leak points.

2) Accurate surveying of the location of the well-head of an angled core hole. The preliminary locations of the core holes are shown on Figs. 5-13 to 5-25. Siting of core holes was designed to pass adjacent to the sump/drain line joint (a high probability location of leakage for many sumps), and pass near the center of each sump at a depth of roughly 4 ft. Typically a 25° angled hole will be drilled at a distance of 8

to 12 ft from a sump for those holes parallel to the long axis of a sump and a 45° angled hole will be drilled at a distance of 5 ft from a sump for those holes perpendicular to the long axis of a sump (Fig. 5-26).

3) Drilling a 25-45° angled hole passing beneath each sump with a contaminated drainage;

4) Field screening each core at 6-in. intervals for HE, radionuclides, and volatiles by PID;

5) Submitting all above-background samples for laboratory analysis; and,

Is this a good approach? Shouldn't the shallowest point be sampled to determine release?

6) In the absence of positive indicators, submitting the deepest sample (from beneath the center of the sump) for laboratory analysis.

5.2.4.3 Laboratory Analysis

Full laboratory analyses of samples will be at Level III by the following methods: radionuclides (LANL or DOE method), VOCs (SW-846 Method 8240), SVOCs (SW-846 Method 8270), metals (SW-846 Method 6010), and HE and its by-products (e.g., DNT, DNB, TNB) (SW-846 Method 8330). Principal COCs are HE (TATB, TNT, HMX, RDX), barium, any other metals, VOCs, and in some cases uranium.

5.2.4.4 QA/QC Sampling

Field duplicates will be selected according the guidance provided in the latest version of the IWP (LANL 1992, 0768). Sampling parameters are summarized in Table 5-20, including a listing of appropriate QA/QC field duplicates.

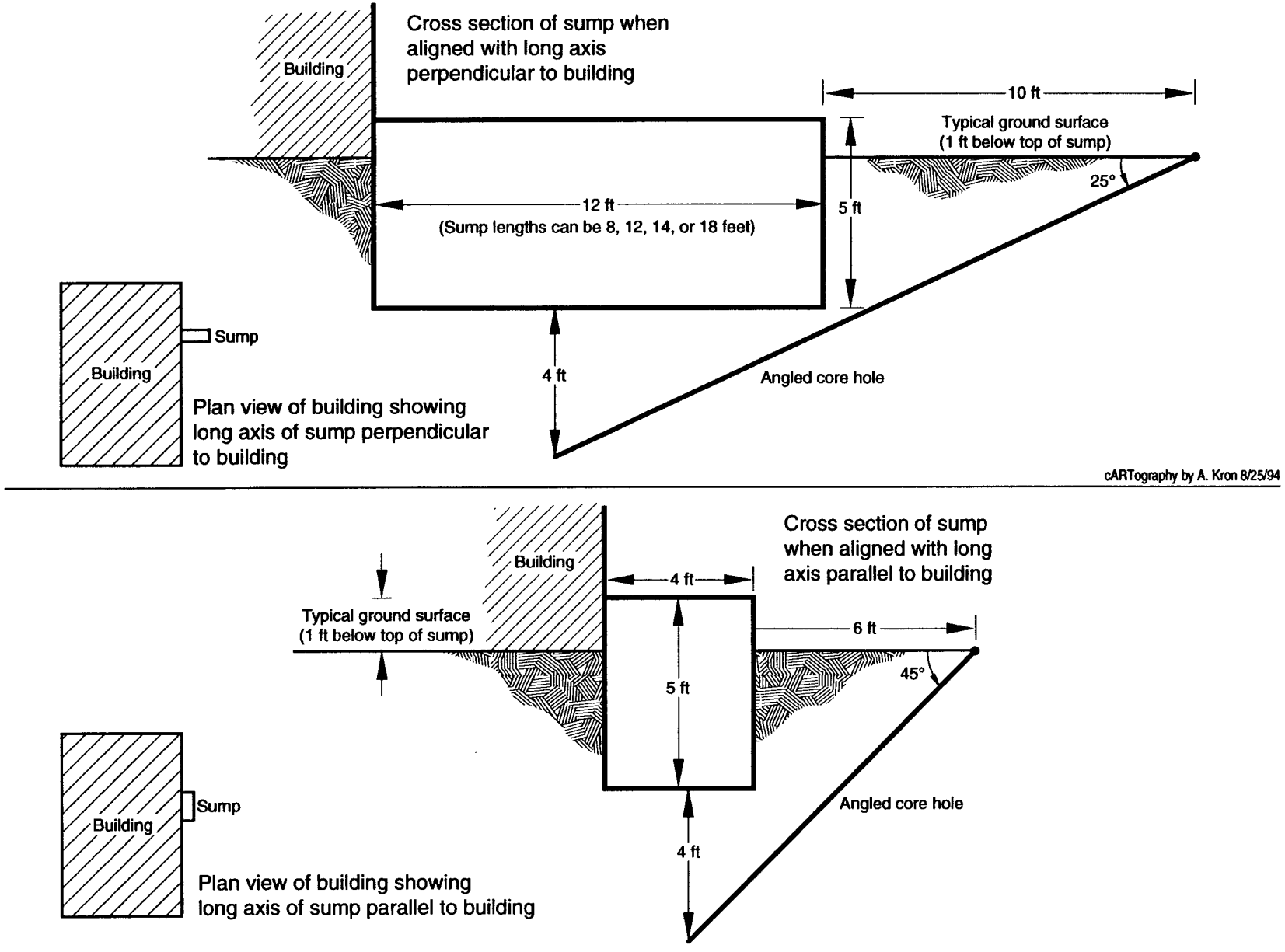

Fig. 5-26. Cross sections and plan views showing typical orientations of sump to building and method for drilling angled core holes.