LAIDLAW ENVIRONMENTAL SERVICES
CHEMICAL QUALITY CONTROL REPORT

CONTRACT DACA85-91-C-0044, PHASE II
ROOSEVELT ROAD TRANSMITTER SITE
PCB REMEDIATION
FT. RICHARDSON, ALASKA
OCTOBER 30, 1992

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1.0 INTRODUCTION

Laidlaw Environmental Services, Inc. (hereby Laidlaw) was retained by the U.S. Army Corps of Engineers (hereby Corps) to excavate surface and subsurface soils which were known to have been contaminated with polychlorinated biphenyls (PCBs), namely Aroclor 1260 (as Askarel). Initially, approximately 600 tons of material were thought to be affected. During the original phase of this project, excavation was completed to the lines, grades, and depths indicated in the plans.

As stated in the Contractor Chemical Quality Control Plan (CCQCP), Contract DACA85-91-C-0044, for the Roosevelt Road Transmitter Site PCB Remediation at Fort Richardson, Alaska, the chemical quality control issues revolve around a sampling program to confirm that contaminated soils have been removed during excavation to clean-up Federal and site criteria of < 10 ppm PCB. Upon completing the excavation of contaminated soils during the initial phase of this project, soils remaining in the excavated areas were sampled in accordance with preconstructed grids (shown previously in figures 1 through 13, Phase I of Contractor Chemical Quality Control Report), which were representative of the material remaining in the excavated areas.

Laboratory Analysis of these samples showed the Power Control Hut and East Bunker Entrance to contain PCB levels > 10 ppm. As stated in the Contractor Workplan for this project, should any sample results indicate the presence of PCBs at levels > 10 ppm, Laidlaw would excavate soils within these areas as directed by the Contracting Officer.

This report details the sequence of excavations that occurred during the second phase of the Roosevelt Road Transmitter Site PCB Remediation project.

2.0 PRE-EXCAVATION PLANNING

A preparatory meeting prior to any further excavation of the Power Control Hut and East Bunker Entrance took place on August 21, 1992. In attendance were Corps personnel Lincoln Belin, Dan Owens, Gary Miller, and Captain Chris Cotrell, Laidlaw personnel Truman Hill, and Sterling & Associates personnel Richard Krentz and Deborah Campbell. The purpose of the preparatory meeting was to establish a plan of action so as not to over-excavate either of the two aforementioned areas.

2.1 *Nature and Extent of Contamination*

2.1.1 Stockpile SPB09 (figure 13, Phase I) would be resampled by Laidlaw and the Corps to confirm the prior analysis result of 11.9 ppm Aroclor 1260. It was decided that the resampling of this 100 yard stockpile was necessary because the Chemical and Geological Laboratory allows +/- 30% deviation on 10 ppm calibration verification standards and thus the stockpile could quite possibly contain less than 10 ppm Aroclor 1260. If resampling of stockpile SPB09

yielded results <10 ppm PCB, there would be a substantial savings in transportation and disposal fees to the Corps, and therefore more funding could be allocated for additional excavation and disposal of contaminated materials from the East Bunker Entrance.

2.1.2 Laboratory analysis of samples D14 and D15 obtained from the Power Control Hut (figure 1, Phase I) yielded 429 ppm and 144 ppm Aroclor 1260, respectively. The Corps instructed Laidlaw to excavate and bag two additional feet and resample according to the grid shown in figure 14. Additionally, if the samples at the 4' depth showed >10 ppm by the L2000™ PCB/Chloride Analyzer, excavation and screening would continue until samples were shown to contain <10 ppm. However, excavated soil from depths greater than 4' would be stockpiled in a 50 yard stockpile, and a composite of the stockpile would be sent directly to the laboratory.

2.1.3 Once the preliminary screening of the Power Control Hut re-excavation showed <10 ppm, backfilling of the Original Transmitter Annex, the North Bunker Entrance, and the Power Control Hut could occur. Backfill material for these areas would be obtained from the clean stockpiles accumulated during the initial phase of this project. Compaction analyses of these three areas was not required by the Corps.

2.1.4 Laboratory analysis of samples B210, B220, and B230 obtained from the East Bunker Entrance, Limit of Excavation 0 to 5' Depth (figure 9, Phase I), yielded 315 ppm, 41.9 ppm, and 997 ppm Aroclor 1260, respectively. The Corps instructed Laidlaw to excavate and bag two additional feet and resample according to the grid shown in figure 17. The portion of the excavation containing <10 ppm at a depth of 5' would be stockpiled for backfill. As previously instructed, samples obtained at the 7' depth would be screened with the L2000™. Any further excavation mandated by the L2000™ results would result in 50 yard stockpiles until a clean depth was obtained. The stockpiles were to be sampled and sent directly to the laboratory.

2.1.5 Laboratory analysis of samples B5002, B10002, and B10005 obtained at 5' and 10' depths on the walls of the East Bunker Entrance (figure 12, Phase I), yielded 15.2 ppm, 42.4 ppm, and 118 ppm Aroclor 1260, respectively. The Corps instructed Laidlaw to excavate and bag an additional two feet into the wall and resample according to figure 20. The walls would then be resampled and screened. Any further excavations of these areas would be stockpiled and sampled as previously instructed.

2.1.6 Laboratory analysis of samples B13002, B13003, B13004, B13005, and B13009 obtained at thirteen feet on the floor of the East Bunker Entrance (figure 12, Phase I), yielded 76.5 ppm, 471 ppm, 1280 ppm, 184 ppm, and 17.1 ppm Aroclor 1260, respectively. Laidlaw was instructed to excavate and bag an

additional two feet and resample according to the grid shown in figure 21. If samples at 15' depth showed >10 ppm according to the L2000™, further excavation of these areas would be stockpiled and sampled as previously instructed.

2.1.7 Laboratory analysis of samples B3301, B3302, B3303, obtained on the floor of the East Bunker Entry at approximately 33' (figure 11, Phase I), yielded 70.5 ppm, 777 ppm, and 42.9 ppm Aroclor 1260, respectively. Laboratory analysis of samples B3305-10, and B3306-10, obtained at approximately 25' depth on the walls of the East Bunker Entry excavation (figure 11, Phase I), yielded 11.3 ppm and 2300 ppm Aroclor 1260, respectively. The re-excavation of the entry would begin by cutting the walls back 2' according to figure 22, and bagging the material. If preliminary screening indicated further excavation was necessary, the walls would again be cut back an additional 2', excavated material stockpiled, and the walls resampled. Once preliminary screening showed the walls to contain <10 ppm, they would be sloped back at a 1:1.5 ratio, which would allow for the backhoe to safely continue excavation at thirty-three feet. The floor would be excavated to 35' and resampled according to figure 25. If further excavation was necessary due to preliminary screening results, excess material would be stockpiled and sampled.

2.2 *Preliminary Screening & Laboratory Confirmation*

2.2.1 Only samples containing <10 ppm Aroclor 1260 according to L2000™ analysis would be sent to the laboratory for confirmation.

2.2.2 Unlike a gas chromatograph, the L2000™ cannot differentiate between organic chloride originating from PCBs or additional chlorinated compounds that may be present in a sample. It does, however, allow the operator to select how the instrument will interpret any organic chloride present in the sample. When set on the Aroclor 1260 setting, the instrument interprets all chloride present in the sample to have originated from Aroclor 1260. When set on the Askarel setting, the instrument interprets only 60% of the chloride present to have originated from Aroclor 1260. In other words, the instrument subtracts out the amount of chloride (40%) that would be present due to trichlorobenzene, a chlorinated solvent additive of commercially manufactured Askarel. The purpose of adding trichlorobenzene to Aroclor 1260 in the manufacture of Askarel was to improve the viscosity of Aroclor 1260, thereby aiding in the subsequent mixture of Askarel and transformer oil.

During this project, each sample was measured as Aroclor 1260 and as Askarel. The Aroclor 1260 results, being the more conservative of the two settings, would govern the decisions of further excavation, although the Askarel results compare more closely to the laboratory results.

3.0 CONTRACTOR QUALITY CONTROL OPERATIONS

Laidlaw was directly responsible for the quality control for all operations at this site. Laidlaw contracted Sterling & Associates, Inc. (hereby S&A) of Milpitas, California, to function in the capacity of Contractor Quality Control (CQC) Officer. The CQC Officer performed the required preliminary screening, sampling, monitoring, and documentation of all on-site activities during both phases of this project. Sampling was conducted to verify whether clean-up criteria had been met, with confirmatory analyses of prescreened samples being conducted by a Corps approved laboratory. The laboratory chosen for the PCB analyses within the scope of this project was the Chemical & Geological Laboratory (hereby Chem-Geo) of Anchorage, Alaska.

4.0 QUALITY ASSURANCE OBJECTIVE

Quality assurance objectives were used in the second phase of this project to ensure that the remedial action for the Roosevelt Road Transmitter Site was performed in a manner that was consistent with the requirements of the initial Specifications (as provided in the Bidding Documents, DACA-91-B-0044, August, 1991), and in accordance with further instruction given to Laidlaw by the Corps regarding additional contaminated material. The quality assurance objective for measurement data in the second phase of this project was to ensure that environmental sampling data of known and acceptable quality was provided. Results from site samples were used to determine whether or not clean-up criteria have or have not been met.

Analytical methodology for testing soil samples was derived from the *Test Methods for Evaluating Solid Wastes (Physical/Chemical Methods), SW-846, Fourth Edition, November 1990.*

5.0 FIELD ACTIVITIES

5.1 *Sampling, Handling, and Shipping*

Series 200, 8-ounce glass sample jars cleaned to EPA specifications were obtained from Chem-Geo. Samples were collected using a hand sampler with a single 2.5 inch diameter stainless steel liner. At each sampling point, the top six inches of soil was removed to permit retrieval of the soil sample below. Each container was labeled at the time of sampling, identifying the sample number, sampler's name, date and time of collection, and location of sampling point. Each container was then enclosed in a resealable storage bag, placed in an insulated cooler with ice packs, and delivered under Chain of Custody (COC) to the laboratory. Split samples were taken and packaged in the same manner, and were delivered by Federal Express to the North Pacific Division Laboratory (hereby NPD) for quality assurance verification. Coolers containing samples destined for either laboratory were sealed with evidence tape. Copies of all Chain of Custody forms for this phase of the project can be found in

Appendix XI; additionally, sample inventory/integrity reports for this phase can be found in Appendix XII of this report.

5.2 *Summary of Additional Power Control Hut Excavation, Screening, and Sampling Activities*

Upon completion of the initial excavation of the Power Control Hut, samples were taken according to the grid shown in figure 1 (Phase I). Sampling was performed in accordance with the procedures described in section 5.1 of this report. Laboratory analysis initially showed samples D14 and D15 to contain >10 ppm Aroclor 1260. The Power Control Hut area represented by samples D14 and D15 was excavated (and bagged) to a depth of four feet, and sampled according to figure 14. Preliminary screening at four feet showed >10 ppm in both areas. Excavation and stockpiling was continued to five feet, according to figure 15, where the area represented by sample D15 showed <10 ppm Aroclor 1260. Excavation and stockpiling was continued to seven feet according to figure 16, where the area represented by sample D14 showed <10 ppm Aroclor 1260.

Samples of D15 at five feet and D14 at seven feet were sent to the laboratory for confirmation. The Corps had given Laidlaw permission to backfill the Power Control Hut based on preliminary screening results generated by the L2000™. Backfilling occurred and the perimeter fencing was then consolidated to allow the Corps better observation of excavation activities at the East Bunker Entrance. Table 14 summarizes the excavation depths, and the respective screening and laboratory results.

POWER CONTROL HUT EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	DEPTH	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
*D14	4'	17.9/10.8	*not sent*
	5'	27.3/16.5	*not sent*
	7'	9.2/5.6	1.14
**D15	4'	14.8/8.6	*not sent*
	5'	3.3/1.9	1.21

TABLE 14

* D14-7' (D14 split) sent to NPD laboratory for QA verification.

** D15-5' (D15 split) sent to NPD laboratory for QA verification.

5.3 *Summary of Additional East Bunker Excavation, Screening, and Sampling Activities; Original Limit of Excavation 0 - 5' Depth*

Excavation activities at the East Bunker entrance during the second phase of the project commenced with the five foot cut west of the underground tank. The "L" shaped area represented by samples B210, B220, and B230 was excavated (and bagged) to seven feet and sampled according to the grid shown in figure 17. Preliminary screening at seven feet showed the samples to contain >10 ppm Aroclor 1260. Excavation and stockpiling was continued to nine feet according to figure 18, where preliminary screening of the areas represented by samples B210 and B230 were shown to contain <10 ppm Aroclor 1260. The samples were sent to Chem-Geo for laboratory confirmation. Excavation and stockpiling was continued to eleven feet according to figure 19, where preliminary screening of the areas represented by samples B220 and B240 were shown to contain <10 ppm Aroclor 1260. These samples were sent to Chem-Geo for laboratory confirmation. Table 15 summarizes the excavation depths, and the respective screening and laboratory results.

EAST BUNKER ENTRANCE, LIMIT OF EXCAVATION 5' TO 11' DEPTH, EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	DEPTH	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
*B210	7'	1615/975	*not sent*
	9'	2.1/1.3	0.782
B220	7'	1399/845	*not sent*
	9'	568/344	*not sent*
	11'	2.2/1.3	0.299
**B230	7'	22.9/13.8	*not sent*
	9'	1.8/1.1	0.509/0.427
B240	9'	20.4/12.3	*not sent*
	11'	3.9/2.3	2.17

TABLE 15

* B214-9' (B210 split) sent to NPD laboratory for QA verification.

** B234 (B230 split) sent to Chem-Geo; result reported above with B230.

5.4 *Summary of Additional East Bunker Excavation, Screening, and Sampling Activities; Original Limit of Excavation 0 - 13' Depth*

Figure 12 (Phase I) shows the sampling pattern of the entire East Bunker excavation upon completion of the original contracted scope of work. Samples were taken at 5' and 10' depths on the shear excavation walls. Initial results of sampling the walls at 5' and 10' depths showed samples B5002, B10002, and B10005 to contain >10 ppm Aroclor 1260. The sections of the wall represented by these samples were excavated and screened in 2' increments according to figure 20 until the L2000™ results showed <10 ppm Aroclor 1260. The first 2' increments were bagged and subsequent increments were stockpiled. Table 16 summarizes the excavation increments, and the respective screening and laboratory results.

Samples were originally taken on the excavated floor of the East Bunker Entrance at approximately 13' depth. Initial results of sampling the floor at 13' showed samples B13002, B13003, B13004, B13005 and B13009 to contain >10 ppm Aroclor 1260. The Entrance floor was excavated and bagged to a depth of 15' according to figure 21. Upon resampling and screening with the L2000™, some of the areas were still >10 ppm. These areas were then excavated, stockpiled, and screened in 2' increments until screening showed <10 ppm. The area represented by sample B13009 was excavated to 15', and was then entirely removed when cutting 2' from the 33' shear walls of the East Bunker Entry, (see figure 22). Similarly, the area represented by sample B13005 was excavated to 17', but was entirely removed when cutting 2' from the 33' shear walls of the East Bunker Entry. Table 17 summarizes the excavation depths, and the respective screening and laboratory results.

EAST BUNKER ENTRANCE, LIMIT OF EXCAVATION 2' TO 8' DEPTH INTO WALL, EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	DEPTH INTO WALL	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
*B5002	2'	332/201	*not sent*
	4'	1379/839	*not sent*
	6'	2.1/1.2	0.165/0.322
B10002	2'	25/15.3	*not sent*
	4'	400/242	*not sent*
	6'	382/231	*not sent*
	8'	6.3/3.8	3.81
B10005	2'	2.3/1.4	ND < 0.020

TABLE 16

* B50024-5'x6' (B5002 split) sent to NPD laboratory for QA verification.

* B50025 (additional B5002 split) sent to Chem-Geo; result reported above with B5002.

EAST BUNKER ENTRANCE FLOOR, LIMIT OF EXCAVATION 15' TO 17' DEPTH, EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	DEPTH	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
B13002	15'	2.4/1.5	0.348
B13003	15'	76.9/46.5	*not sent*
	17'	2.7/1.7	0.114
B13004	15'	2.8/1.7	0.078
B13005	15'	15.7/9.5	*not sent*

TABLE 17

5.5 *Summary of Excavation, Sloping, Screening, and Sampling Activities of Entry Ramp, North West and North East Walls of East Bunker Entrance Excavation*

Prior to the additional removal of materials from the 15' to 33' excavation, the north west and north east shear walls, extending approximately 17' to the floor of the East Bunker Entrance, were sloped back to allow equipment and personnel to safely continue excavation. The entry ramp was also cut down to allow easier access into the excavation to the two front-end loaders. Soils resulting from the sloping and cutting activities were stockpiled. The newly sloped walls and entry ramp were then screened, excavated in some areas, and sampled according to figure 29. Tables 18, 19, and 20 summarize the screening, excavation, and laboratory results of these areas.

NORTH WEST SLOPED WALL OF EAST BUNKER ENTRANCE, EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	DEPTH INTO WALL	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
NWS01	6"	1.7/1.0	0.154
NWS02	6"	2.3/1.4	0.862
NWS03	6"	46.4/28.1	*not sent*
	2'	5.7/3.5	2.72
NWS04	6"	1.2/0.8	0.067

TABLE 18

ENTRY RAMP INTO EAST BUNKER ENTRANCE, EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	DEPTH INTO RAMP	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
ER01	6"	2.4/1.5	1.25
ER02	6"	3.7/2.3	1.21
ER03	6"	6.3/3.8	1.99
ER04	6"	4.1/2.5	1.22

TABLE 19

NORTH EAST SLOPED WALL OF EAST BUNKER ENTRANCE, EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	DEPTH INTO WALL	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
NES01	6"	19.5/11.8	*not sent*
	2'	1.4/0.8	0.021
*NES02	6"	2.2/1.3	ND < 0.020/ ND < 0.020
NES03	6"	103.7/63.3	*not sent*
	2'	248/148.3	*not sent*
	4'	540/326	*not sent*
	7'	106.4/64.2	*not sent*
	10'	1.6/1.0	0.045
**NES04	6"	21.5/13	*not sent*
	2'	565/341	*not sent*
	4'	277/168	*not sent*
	7'	114.1/68.9	*not sent*
	10'	12.1/7.3	*not sent*
	11'	3.6/2.2	0.886/1.45
NES05	6"	*not done*	*not done*
	3'	1.7/1.0	0.141
NES06	6"	*not done*	*not done*
	3'	6.6/4.1	3.38

TABLE 20

* NES025 (NESO2 split) sent to Chem-Geo; result reported above with NES02.

** NES045 (NES04 split) sent to Chem-Geo; result reported above with NES04.

5.6 *Summary of Additional East Bunker Excavation, Screening, and Sampling Activities; Original Limit of Excavation 15 - 33' Depth*

Figure 11 (Phase I) shows the sampling pattern of the approximate locations for samples pulled from the floor at a depth of 33', and on the shear outside walls of the 15' to 33' excavation. Initial results of sampling the shear outside walls of the 15' to 33' entry excavation at a depth of 10' showed samples B3305-10' and B3306-10' to contain >10 ppm. The sections of the wall represented by these samples were

excavated and screened in two-foot increments according to figures 22, 23, and 24, until the L2000™ results were <10 ppm Aroclor 1260. The first 2' increment of excavated material was bagged; additional increments were stockpiled. Table 21 summarizes the 15' to 33' shear wall excavation increments, and the respective screening and laboratory results. Samples listed in table 21 are listed according to depth on outside wall, with results listed according to increments cut into the walls.

Initial results of sampling the 33' floor at the bunker entry showed samples B3301, B3302, and B3303 to contain > 10 ppm. The floor was excavated to 35' and bagged, according to figure 25. Subsequent excavated material was stockpiled, until a final floor depth of 40' was reached, according to figures 26, 27, and 28. Table 22 summarizes the excavation, screening and laboratory results.

OUTSIDE WALLS OF EAST BUNKER ENTRANCE, ORIGINAL LIMIT OF EXCAVATION 15' TO 33', EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE & WALL DEPTH	DEPTH INTO WALL	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
B3305-10'	2'	12.1/7.3	*not sent*
	4'	1.9/1.1	ND<0.020
B3305-21'	4'	8.8/5.3	9.54
B3306-10'	2'	>2000/1515	*not sent*
	4'	2.1/1.3	ND<0.020
B3306-25'	4'	561/339	*not sent*
	6'	8.4/5.1	1.86
*B3304-25'	4'	1.5/0.9	0.032/0.024

TABLE 21

* B33045-25' (B3304 - 25' split) sent to Chem-Geo; result reported above with B3304-25'.

FLOOR OF EAST BUNKER ENTRANCE, ORIGINAL LIMIT OF EXCAVATION 15' TO 33', EXCAVATION, SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	DEPTH	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
B3301	35'	30.0/18/1	*not sent*
	37'	2.8/1.7	0.404
*B3302	35'	667/404	*not sent*
	37'	4.0/2.4	1.73/0.724
**B3303	35'	21.3/12.9	*not sent*
	37'	374/226	*not sent*
	38'	43.2/26.1	*not sent*
	40'	3.4/2.1	0.768

TABLE 22

* B33024-37' (B3302 split) sent to NPD laboratory for QA verification.

* B33025-37' (additional B3302 split) sent to Chem-Geo; result reported above with B3302.

** B33034 (B3303 split) sent to NPD laboratory for QA verification.

5.7 *Summary of Stockpile Sampling Activities*

Figure 30 shows the location of stockpiles accumulated during the second phase of this project. The results of the composite samples taken from each 50 yard stockpile, and the resampling results of stockpile SPB09, are shown Table 23. (Preliminary screening of SPB09 showed 65.8 ppm as 1260, 39.8 ppm as Askarel.) Stockpiles containing <10 ppm Aroclor 1260 were used as backfill material in the East Bunker Entrance excavation. Stockpiles containing >10 ppm Aroclor 1260, including SPB09, were bagged and shipped.

PHASE II STOCKPILE SAMPLING ACTIVITIES SUMMARY

STOCKPILE NUMBER	ORIGIN OF STOCKPILE	ppm Aroclor 1260
SPB09 (Repeat)	10-15', East Bunker, Phase I	46.3
SPD21	Pwr. Control Hut exc. 2'-7' (samples D14 & D15)	135
SPB22	Clean 5'-7' exc. E. Bunker Entr., West of Tank	8.79
*SPB23	5'-7' & 7'-9' exc. E. Bunker Entr., West of Tank	118
**SPB24	North Wall & North East Wall Slope	45.1
SPB25	North Wall & North East Wall Slope	2.65
SPB26	9'-11' exc. E. Bunker Entr., W. Tank, N.E. Slope	647
SPB27	Entry Ramp into E. Bunker & 13' floor cleanup	8.97
+SPB28	Entry Ramp	6.40/2.11
SPB29	11'-13' exc. West of Tank & 33'-35' exc. of Entry	35.6
SPB30	17'-18' exc. of floor & 35'-37' exc. of Entry	32.1
SPB31	37'-40' exc. of Entry	437
SPB32	37'-40' exc. of Entry & No. East Slope (hot)	49.8
++SPB33	No. East Slope (hot)	77.1
SPB34	Material around tank before & after pulling	211
SPB35	No. East Slope (suspected hot)	1.46
SPB36	No. area of tank area & No. East Slope (NES05,06)	4.86
SPB37	No. East Slope (hot)	79.6
SPB38	No. East Slope (hot)	22.8

TABLE 23

* SPB234 (SPB23 split) sent to NPD Laboratory for QA verification.

** SPB244 (SPB24 split) sent to NPD Laboratory for QA verification.

\+ SPB284 (SPB28 split) sent to NPD Laboratory for QA verification.

\+ SPB285 (additional SPB28 split) sent to Chem-Geo; result reported above with SPB28.

++ SPB334 (SPB33 split) sent to NPD Laboratory for QA verification.

5.8 *Summary of Blank Sampling Activities*

Blank samples were obtained from an area outside of the exclusion zone and submitted to the laboratory. Blank soil samples were obtained six inches below the ground surface, in the same manner as samples taken inside the exclusion zone. Results for blanks submitted during the second phase of this project are shown in table 24.

PHASE II BLANK SAMPLING RESULTS

SAMPLE ID NUMBER	ppm Aroclor 1260
P2BLK1	ND <0.020
P2BLK2	Sent to NPD
P2BLK3	ND <0.020
P2BLK4	Sent to NPD

TABLE 24

5.9 *Summary of Tank Pull Activities*

During the first phase of this project a full underground storage tank was discovered while excavating the East Bunker Entrance (figure 9, Phase I). Laboratory analysis by Engler Distillation identified the tank contents as diesel, meeting ASTM D396 #1 fuel specifications. Additionally, the sample had a specific gravity of 35.9 API^{o}, a flash point of 158 (+/-2) ^{o}F, and was shown to contain <1.00 ppm PCB.

Approximately 1000 gallons of diesel fuel was drained from the tank on September 4, 1992, by Alaska Pollution Control, Inc., of Anchorage, Alaska. Prior to removing the tank from the ground, the lower explosive level (LEL) and oxygen (O_2) content were measured inside the tank: 0.0% LEL, 20.9% O_2. The tank was then pulled and transported to the decon pad where it was washed down with a diluted solution of Simple Green™. The tank was then allowed to air dry before wipe sampling according to figure 31. Results of the wipes samples are shown in table 25.

TANK WIPE RESULTS

SAMPLE	micrograms 1260
TW01	ND <1.00
TW02	2.42
TW03	ND <1.00

TABLE 25

The laboratory results confirmed that the tank had been satisfactorily decontaminated, and arrangements were made with Alaska Pollution Control to haul the tank off-site for disposal. Prior to hauling, the LEL/O_2 levels were measured inside the tank and were found to be 0.0% and 20.9%, respectively.

Previous screening of the material surrounding the tank during the original phase of this project showed the area to the north of the tank to contain >100 ppm Aroclor 1260. The north and north east areas surrounding the tank, and the area below the tank were excavated three feet in those directions, and the material was stockpiled. Sampling and screening was performed according to figure 32; screening and laboratory results are shown in table 26.

TANK EXCAVATION , SCREENING, AND SAMPLING ACTIVITIES SUMMARY

SAMPLE	LOCATION	DEPTH	L2000™ (ppm) 1260/ASK	Chem-Geo ppm 1260
TANK01	WALL	7'	7.3/4.4	0.645/0.762
TANK02	WALL	5'	*not screened*	0.026
TANK03	WALL	5'	*not screened*	ND<0.020
TANK04	WALL	10'-12'	*not screened*	0.031
TANK05	FLOOR	10'-12'	0.8/0.5	0.170
TANK06	FLOOR	10'-12'	0.8/0.5	ND<0.020

TABLE 26

6.0 QUALITY ASSURANCE OBJECTIVES FOR CHEMICAL ANALYSIS

6.1 *CCQCP Quality Assurance Specifications*

As stated in the CCQCP, the precision of laboratory results and field sampling efforts was evaluated by examining laboratory and field QC sample results. Analytical precision was evaluated by comparing the QC criteria stipulated in the method standard operating procedure (SOP) to the results from laboratory matrix spike samples, matrix spike duplicate samples, and field duplicate samples. The accuracy of the analytical data was assessed by examining the results obtained from the analysis of sample blanks, duplicate samples, laboratory matrix spike/matrix spike duplicate samples, and laboratory QA/QC samples as required by the analytical method.

6.2 *Receipt and Format of Analytical Results*

Analytical results for the second phase of this project have been submitted by the Chem-Geo in the form of six (6) separate data packages. Each of these packages are

identified by Chem-Geo's internal "Chemlab Reference Number," and each sample incorporated in the data packages are referred to by an internal "Chemlab Sample Number." Each of the Chem-Geo data packages contained the following information:

- *Data Package Summary*
  - Case Narrative
  - Chain of Custody
  - Laboratory Chronicles
  - Glossary of Result Qualifiers

- *Sample Data Results Summaries*

- *PCB Analyses*
  - Quality Control Summaries
  - Raw Analytical Data

Due to the lengthiness of the data, the pertinent components from each package have been separated out and placed in the Appendices section of this report. Additionally, Laidlaw Sample ID numbers and the reported results have been added to the tabulated Chem-Geo Method Blank Summary sheets (see Appendix XV) for easier correlation. (S&A did comment to Chem-Geo on the difficulty and significant effort required to read and interpret Chem-Geo's data packages, due to the absence of cross-referencing Laidlaw's Sample ID numbers throughout the reports.)

6.3 *Calibration Verification Summary*

The Quality Control Summary sheets shown in Appendix XVI list the Chem-Geo acceptance criteria for calibration verification standards (CVS) as 70 - 130% of the actual value. Tables 27, 28, and 29 summarize the percent recoveries for 10 ppm 1242, 1254, and 1260, respectively, according to date and instrument ID number. For each standard, the average CVS percent recovery, median, and mode are shown following each summary table. The original Calibration Verification Summary sheets can be found in Appendix XVII. The average CVS percent recovery for samples submitted during the second phase of this project for Aroclor 1242 and Aroclor 1254 are biased high, but are within the acceptance criteria specified by Chem-Geo for this method.

The Quality Control Summary Sheet submitted 9/16/92 reported the calibration verification standard Aroclor 1242 as "out of QC limits", but because no Aroclor 1242 values were reported, the Aroclor 1242 calibration curve was not recalibrated.

As in the QC data received for the first phase of this project, the CQC Officer noted that on almost every CVS Summary sheet, the recovered concentration was rounded off to a whole number, but the percent recovery reflected the unrounded recovered concentration. The three summary tables reflect percent recoveries based on rounded

off recovered concentrations, not those reported by Chem-Geo. These tables should have been reported by Chem-Geo with more consistency between recovered concentrations and percent recoveries.

CALIBRATION VERIFICATION SUMMARY FOR AROCLOR 1242

DATE	INSTR. ID NUMBER	ACTUAL CONC. (ppm)	RECOVERED CONC. (ppm)	% RECOVERY
8/25/92	ECD#3	10	9	90
8/26/92	ECD#3	10	10	100
9/3/92	ECD#3	10	9	90
9/6//92	ECD#3	10	9	90
9/11/92	ECD#3	10	10	100
9/5/92	ECD#2	10	9	90
9/5/92	ECD#3	10	9	90
9/5/92	ECD#3	10	10	100
9/9/92	ECD#3	10	9	90
9/14/92	ECD#3	10	9	90
9/12/92	ECD#3	10	9.7	97
9/12/92	ECD#3	10	8.8	88
9/9/92	ECD#3	10	10	100
9/16/92	ECD#2	10	12.6	126

TABLE 27

Note: Average CVS Recovery = 95.79 +/- 9.92 %
Median = 107%
Mode = 90%

CALIBRATION VERIFICATION SUMMARY FOR AROCLOR 1254

DATE	INSTR. ID NUMBER	ACTUAL CONC. (ppm)	RECOVERED CONC. (ppm)	% RECOVERY
8/25/92	ECD#3	10	10	100
8/26/92	ECD#3	10	11	110
9/3/92	ECD#3	10	11	110
9/6/92	ECD#3	10	10	100
9/11/92	ECD#3	10	10	100
9/4/92	ECD#2	10	10	100
9/5/92	ECD#2	10	11	110
9/5/92	ECD#3	10	11	110
9/5/92	ECD#3	10	11	110
9/9/92	ECD#3	10	10.5	105
9/14/92	ECD#3	10	7.8	78
9/12/92	ECD#3	10	10.2	102
9/12/92	ECD#3	10	10.2	102
9/9/92	ECD#3	10	10.5	105
9/16/92	ECD#2	10	10.1	101

TABLE 28

Note: Average CVS Recovery = 102.87 +/- 8.12 %
Median = 94%
Mode = 110%

CALIBRATION VERIFICATION SUMMARY FOR AROCLOR 1260

DATE	INSTR. ID NUMBER	ACTUAL CONC. (ppm)	RECOVERED CONC. (ppm)	% RECOVERY
8/25/92	ECD#3	10	11	110
8/26/92	ECD#3	10	11	110
9/3/92	ECD#3	10	11	110
9/6/92	ECD#3	10	11	110
9/11/92	ECD#3	10	10	100
9/4/92	ECD#2	10	11	110
9/5/92	ECD#2	10	12	120
9/5/92	ECD#3	10	12	120
9/5/92	ECD#3	10	11	110
9/9/92	ECD#3	10	10.9	109
9/14/92	ECD#3	10	10.2	102
9/12/92	ECD#3	10	9.6	96
9/12/92	ECD#3	10	10.6	106
9/9/92	ECD#3	10	10.1	101
9/16/92	ECD#2	10	9.9	99

TABLE 29

Note: Average CVS Recovery = 107.53 +/- 7.01 %
Median = 108%
Mode = 110%

7.0 BACKFILLING AND COMPACTION ACTIVITIES

Stockpiles containing < 10 ppm PCB were used as backfill prior to the use of material obtained from a Fort Richardson gravel pit located at Lake Otter. A total of 199 twelve-yard loads of gravel were obtained for filling the remainder of the East Bunker Excavation. Compaction analysis was performed at various depths below the finish grade by Alaska Testlab of Anchorage. The results are shown in Appendix XX. A total of 150 tons of topsoil obtained from G&S Trucking of Eagle River, which was spread over each backfilled area at the Transmitter Site. Reseeding of the site has been scheduled for the spring of 1993.

8.0 DISPOSAL OF DECON PAD AND HOLDING TANK CONTENTS

Laboratory analysis showed a composite sample of the decon pad to contain 0.077 ppm Aroclor 1260, and a composite sample of the water in the holding tank to contain 0.075 ppm Aroclor 1260. The Alaska Wastewater POTW granted Laidlaw permission to discharge the water to the sewer system via Rent-A-Can of Anchorage.

9.0 TRANSPORTATION AND DISPOSAL OF CONTAMINATED SOIL

Contaminated material was shipped to Envirosafe Services of Idaho, Inc., of Grandview, Idaho, during both phases of this project. Shipping activities began on July 27, 1992, and were concluded on October 15, 1992. A total of 157 trailers (1524 bags) were shipped. Appendix XXI contains the manifest number, number of bags, ship date, and shipping weight for each trailer. The weight for each trailer is recorded, however, the disposal cost for each container will be based on the weights obtained from the scales at Envirosafe.

The Roosevelt Road Transmitter Site Quality Assurance Representative (QAR), L. Gary Miller, (or Corps Project Engineer Dan Owens) signed for the generator on each manifest. The generator listed on each manifest was the U.S. Army, Department of Public Works.

The profile number assigned by Envirosafe for this particular material is 13959001. A letter of acceptance by Envirosafe of this material was submitted to the Resident Engineer, Tom Johnson, prior to any shipping activities. Material with this profile number will be accepted by Envirosafe until July, 1993.

Generator copies of all signed manifests were given to Gary Miller, to be filed with the Fort Richardson Department of Public Works. The original top-copy of each manifest will be sent to the generator's address recorded on each manifest (APVR-PW-ENV) upon receipt at Envirosafe. Manifests must remain on file for a minimum of three years.

10.0 SCREENING OF ROAD AND STOCKPILE STORAGE AREA

Upon completion of bagging and backfilling activities, the Corps requested Laidlaw to screen the dirt road traveling through the Transmitter Site, and the area where contaminated stockpiles were stored (see figure 33). The purpose of the screening was to demonstrate that contamination of these areas had not occurred during excavation and bagging activities. The screening results are shown in table 30. Laboratory confirmation of these results was not requested by the Corps.

ROAD AND STOCKPILE STORAGE AREA SCREENING SUMMARY

SAMPLE	L2000™ (ppm) 1260/ASK
PS01	2.1/1.3
PS02	2.0/1.2
PS03	6.0/3.6
PS04	4.4/2.7
PS05	6.6/4.1
PS06	2.3/1.4
PS07	3.3/2.1
PS08	2.5/1.5

TABLE 30

11.0 CONCLUDING REMARKS AND FUTURE RECOMMENDATIONS

The analytical data submitted to Laidlaw from Chem-Geo during the second phase of this project was of better quality than those packages submitted previously, with no serious QC violations noted by the CQC Officer. S&A feels confident that the second stage of Chem-Geo's data did closely follow those results obtained using field screening. If a major discrepancy was observed, retesting was performed. Upon retesting, the results were in closer agreement.

Remedial investigations and feasibility studies conducted prior to the excavation of the Roosevelt Road Transmitter Site concluded that approximately 600 tons of material was originally thought to have been contaminated. Once the excavation limits specified in the Bidding Documents had been reached, preliminary field screening and laboratory analysis of samples obtained from the Power Control Hut and East Bunker Entrance showed that the clean-up criteria of < 10 ppm PCB had *not* been met.

At 2' increments, each area containing > 10 ppm Aroclor 1260 were excavated, screened, and bagged (or stockpiled) until the Federal and site clean-up criteria of < 10 ppm PCB had been attained. Field screening with the L2000™ PCB/Chloride

Analyzer was used to determine at what point the excavation of a contaminated area had achieved the target level. Samples were then sent to the laboratory to verify that clean-up criteria had been met. In areas requiring more than one excavation increment, substantial savings in time and laboratory fees were realized through the use of the L2000™, which allowed Laidlaw to make on-the-spot decisions directing further excavation and sampling. Because of the success with employing a screening technology on this project, the Corps has requested that S&A provide a recommendation for incorporating field screening into future site assessments for this site and others like it.

A site assessment was conducted on the Roosevelt Road Transmitter Site in 1990 by Ecology & Environment, Inc. (hereby E&E). E&E based its limits of contamination upon laboratory results obtained from surface grab samples and borehole samples. It seems logical that the location of the boreholes should have been determined based on the laboratory results of grab samples showing >10 ppm PCB. This strategy would have allowed for a more thorough determination of the depth and extent of the plume. However, in an apparent effort to conserve time and resources, soil borings at various depths were taken concurrently with the grab samples. The results of E&E's assessment were used to delineate the limits of excavation used during the 1992 excavation conducted by Laidlaw. Unfortunately, the limits of contamination had been underestimated by E&E, thereby necessitating much more excavation than was originally anticipated.

In order to prevent projects such as this from ultimately becoming a "plume chase," S&A proposes three alternatives to the assessment format which E&E followed.

1. The first alternative would be to wait for the laboratory results of the grab samples, and base additional borehole sampling on known "hot" samples. This would allow a more complete and accurate estimate of contamination levels.

2. The second alternative would be to obtain and screen grab samples, possibly employing a hand auger for deeper samples. The screening results would then quickly identify the location(s) to conduct borehole sampling at deeper depths. Screening could also be used to help determine the depth to which borehole sampling should continue, as the E&E borehole assessments did not completely define the depth of contamination, and disclosed only an estimate of the depth of contamination.

3. The third alternative would be to design a mathematical grid and conduct borehole sampling and screening of the entire site. An example of such a scenario would be to core 5' depth sections at each sampling point, (i.e., 5', 10', 15', etc.), until screening indicated <10 ppm PCB. Sampling should be consistent, e.g., at 2 1/2' in each successive sample removed from the split spoon sampler, unless staining is apparent elsewhere in the core

sample. The advantage to utilizing screening is that results would be available immediately, and depths of contamination could be accurately determined while equipment was still on-site. This eliminates costly down time and the additional charges incurred with moving equipment repeatedly on and off the site. Upon completion of the field sampling activities, a three-dimensional mapping program could then be employed to generate a plume map based on both screening and laboratory results.

S&A recommends that preliminary design criteria for PCB-related projects should involve proper and thorough site assessment procedures, such as those described above. During excavation stages of the project, the field screening system used in conjunction with an approved laboratory will provide an effective and more cost-effective project, allowing timely, informed decisions to be made.

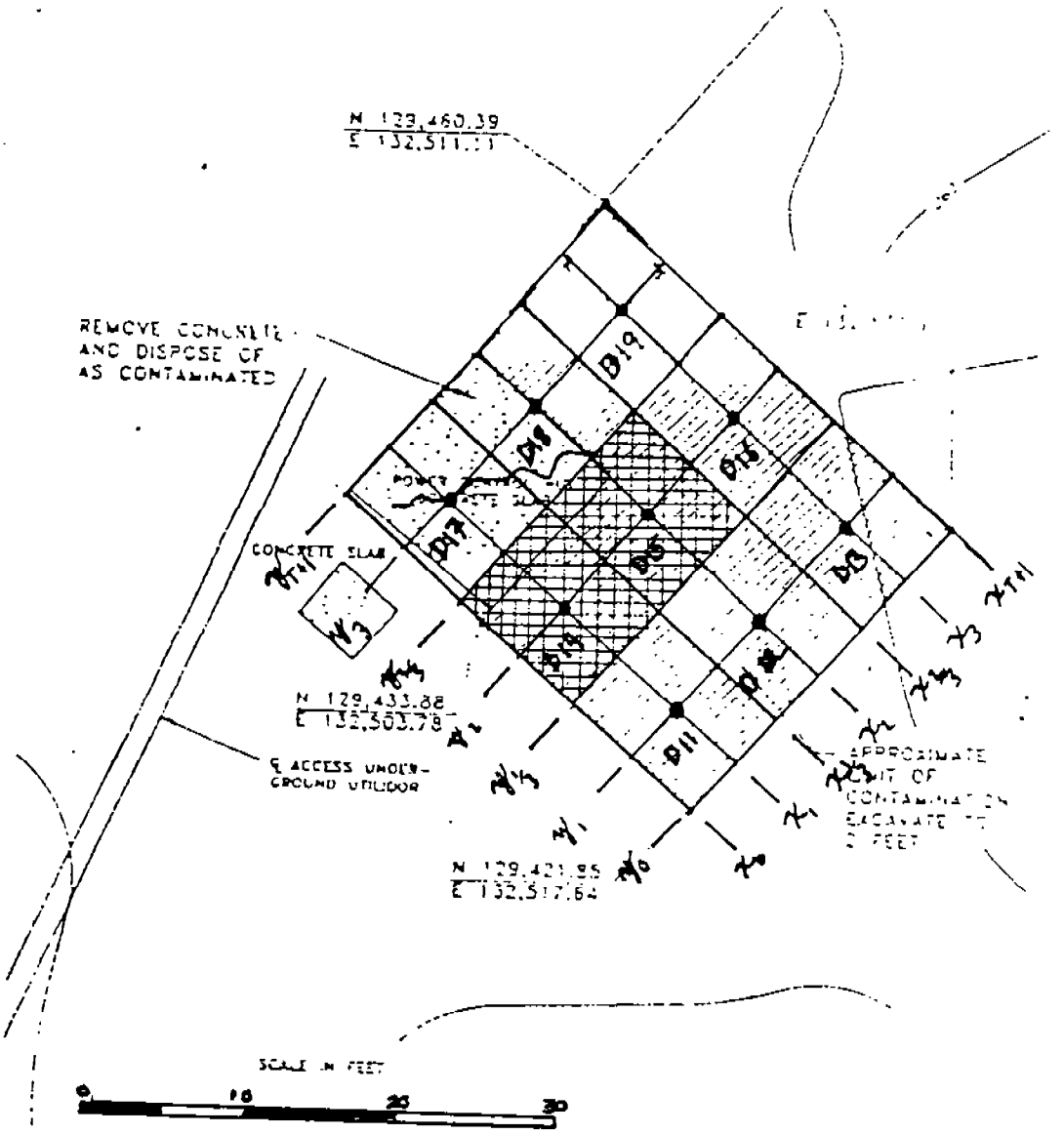
12.0 LIMITATIONS

The data, information, interpretations, and recommendations contained in this quality assurance technical report are presented solely as preliminary bases and guides to the existing environmental conditions of the site. The conclusions and professional opinions presented herein were developed by S&A in accordance with generally accepted engineering principals and practices. As with all environmental reports, the opinions expressed here are subject to revisions in light of new information which may be developed in the future, and no warranties are expressed or implied.

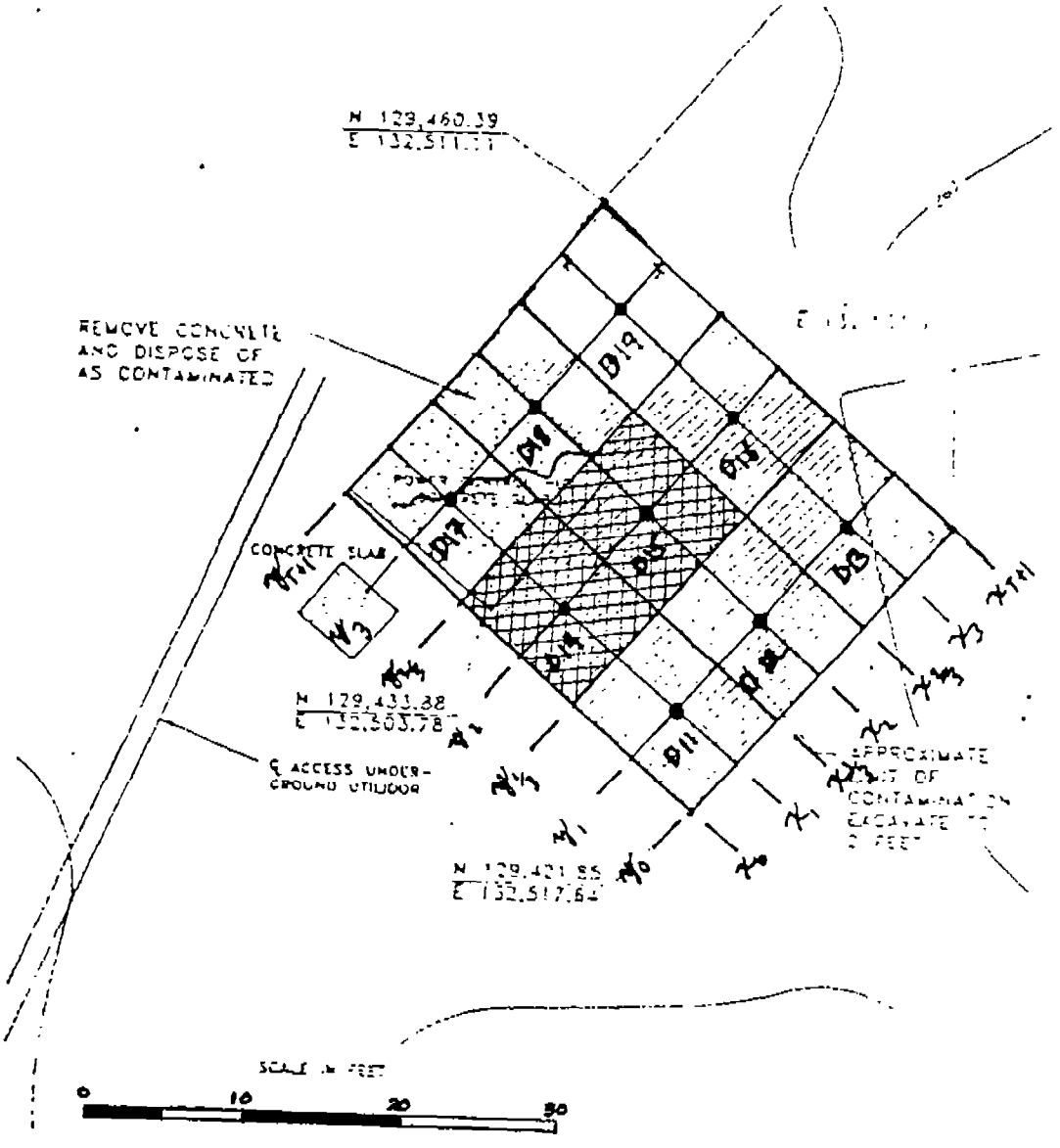
This report has not been prepared for use by parties other than the U.S. Army Corps of Engineers or Laidlaw Environmental Services, Inc. It may not contain sufficient information for the purposes of other parties or other uses. If any changes are made at the Roosevelt Road Transmitter Site during future PCB remediation activities, the remediation as described in this report, the conclusions and recommendations contained herein should not be considered valid, unless changes are reviewed by S&A, and the conclusions and recommendations are modified or approved in writing.

Soil deposits may vary in type, strength, and many other important properties between points of observation and exploration. Additionally, changes can occur in groundwater and soil moisture conditions due to seasonal variations, or for other reasons. Furthermore, the distribution of PCB concentrations in the soil and groundwater can vary spatially and over time. The PCB analysis results, valid as of the date of this report only, are based on data collected at the specified sampling locations only.

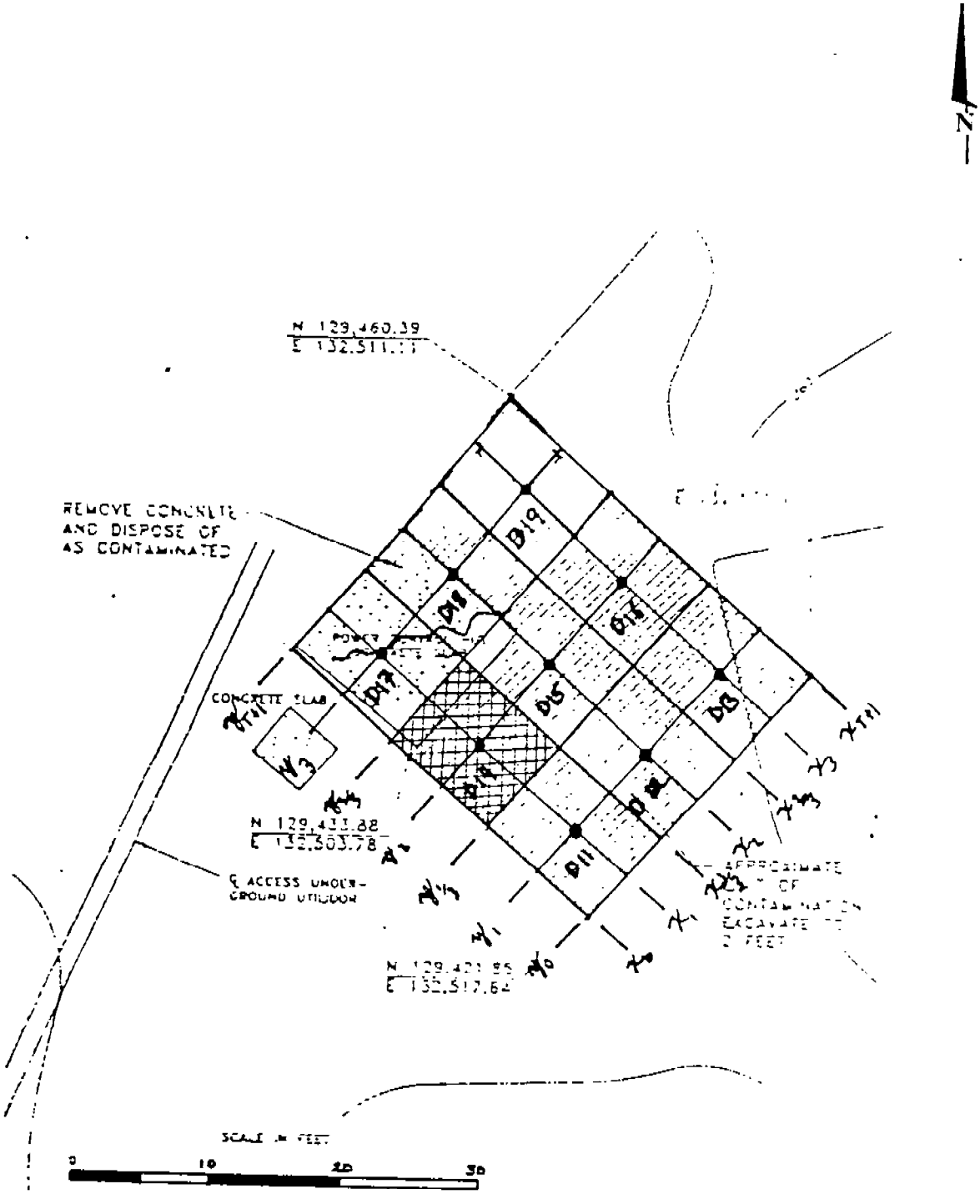
PHASE II SAMPLING GRIDS



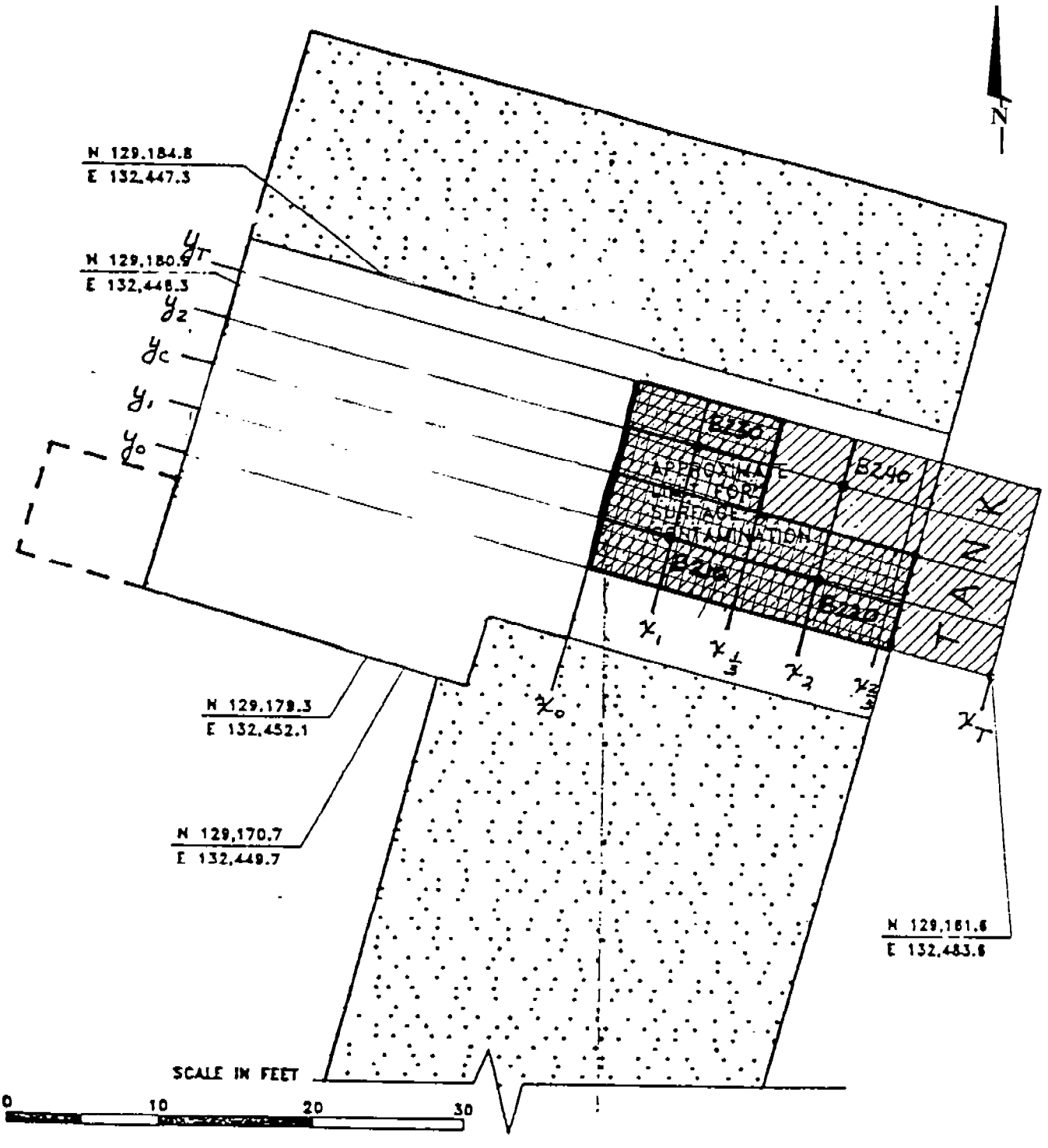
STERLING & ASSOCIATES INC.	Power Control Hut, 2' - 4'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	14



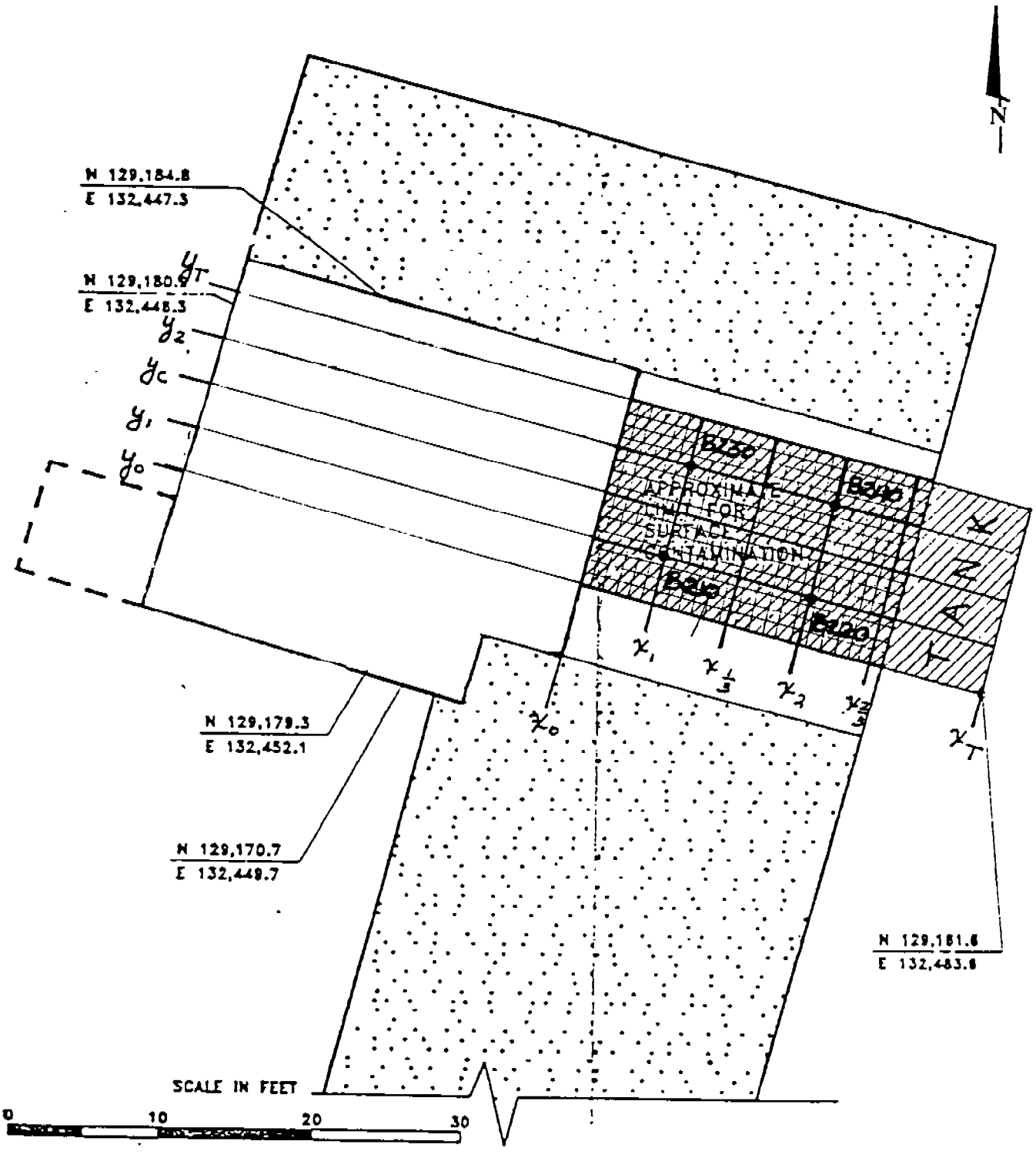
STERLING & ASSOCIATES INC.	Power Control Hut, 4' - 5'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	15



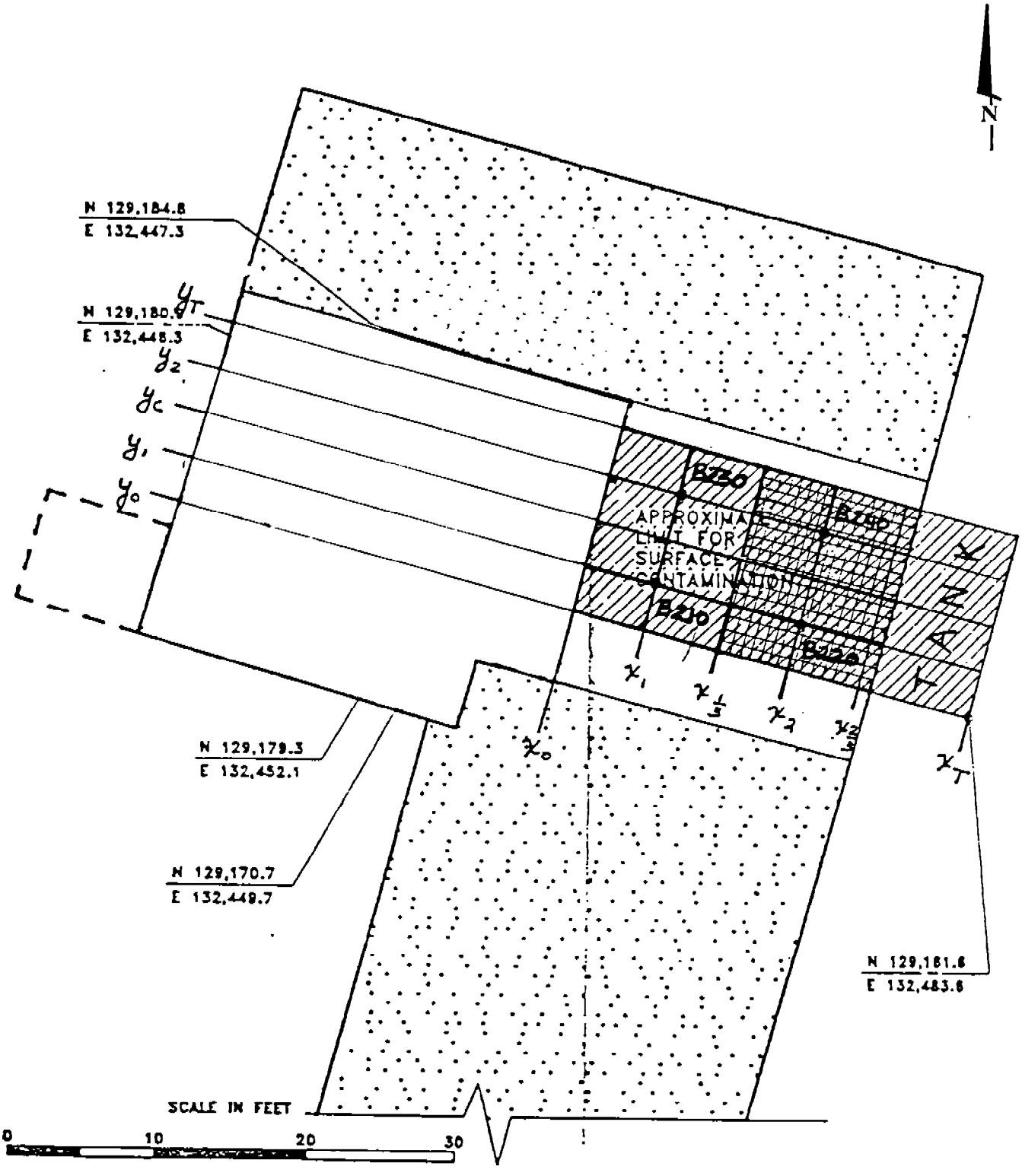
STERLING & ASSOCIATES INC.	Power Control Hut, 5' - 7'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	16



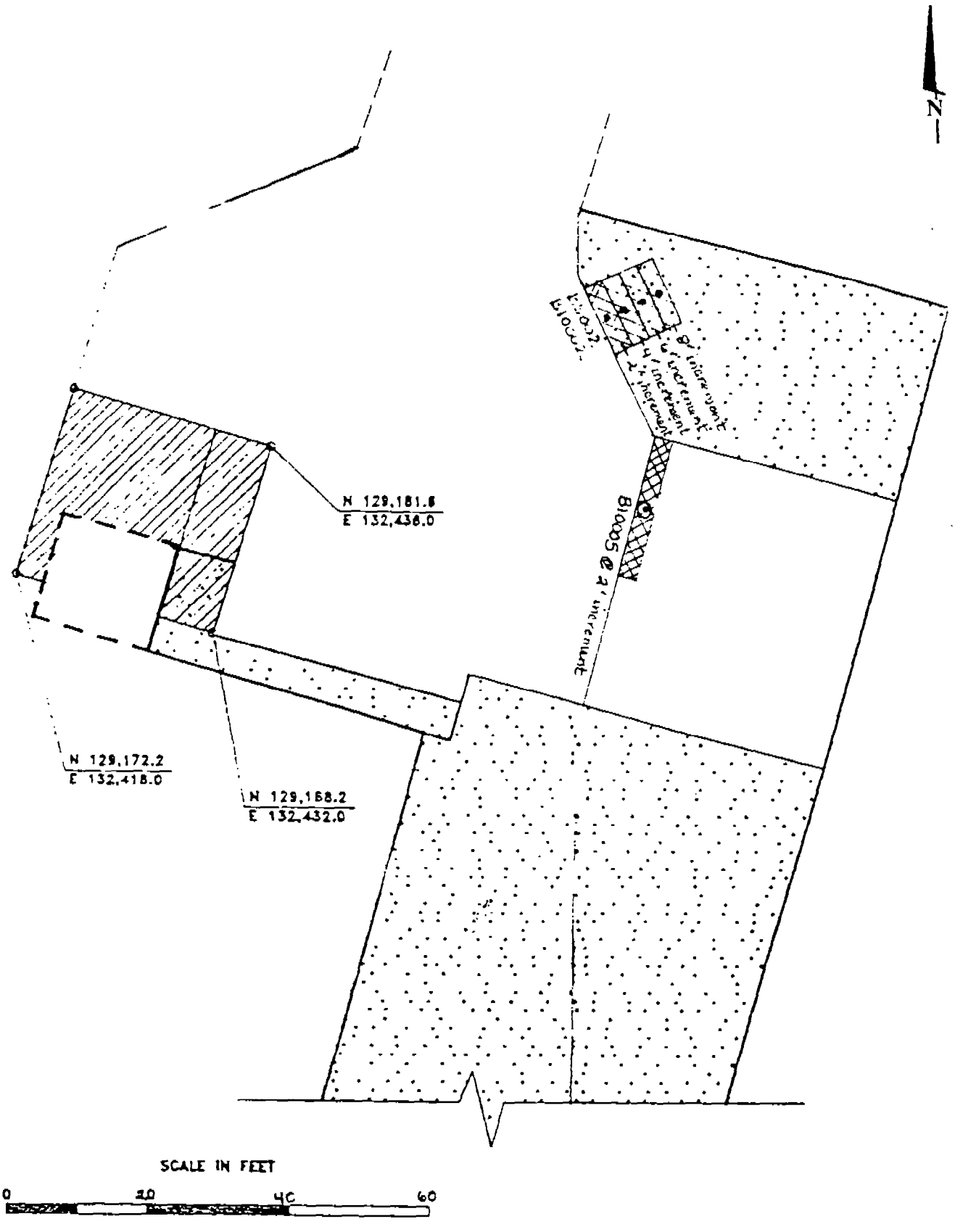
STERLING & ASSOCIATES INC.	East Bunker, West of Tank, 5' - 7'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	17



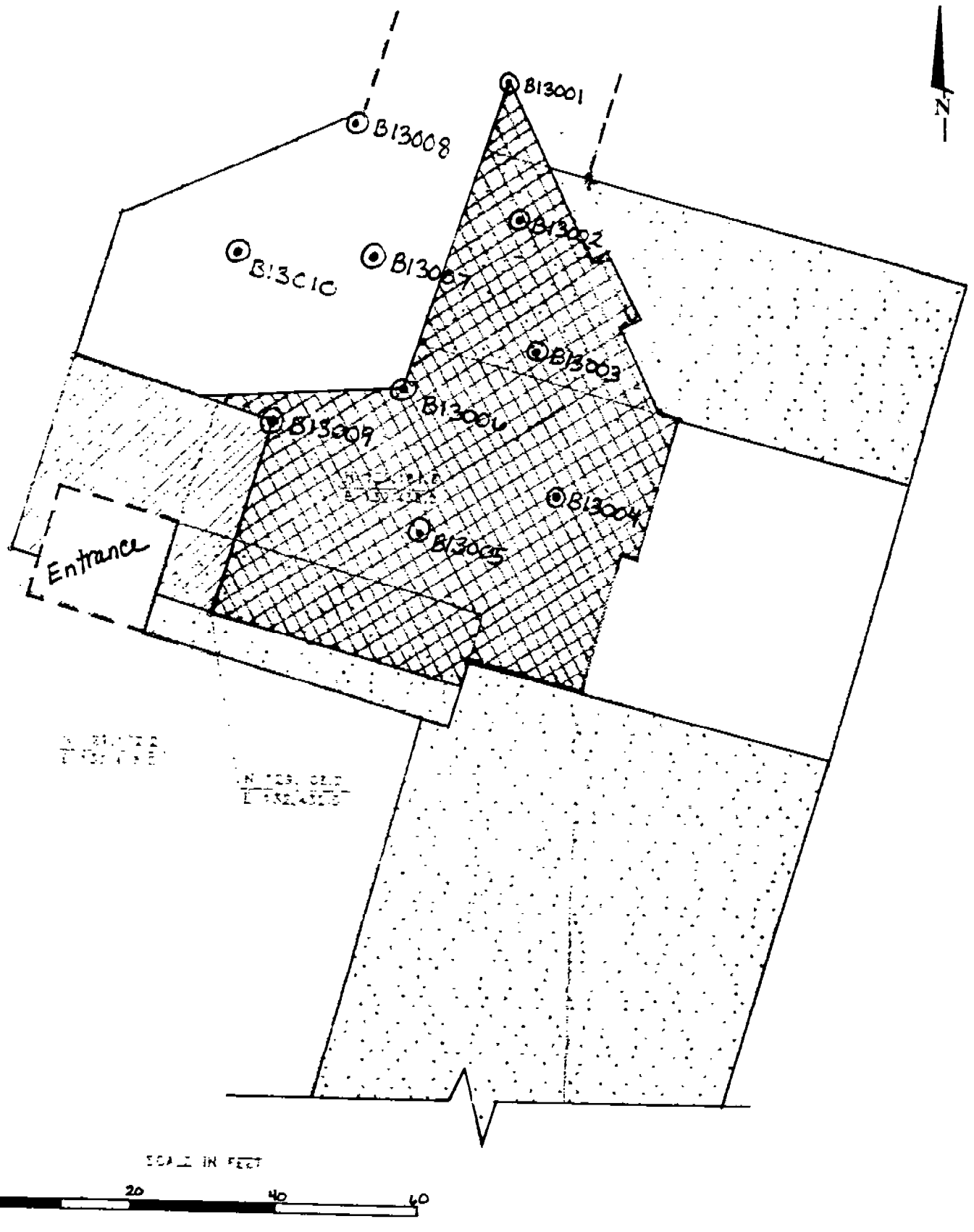
STERLING & ASSOCIATES INC.	East Bunker, West of Tank, 7' - 9'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	18



STERLING & ASSOCIATES INC.	East Bunker, West of Tank, 9' - 11'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	19



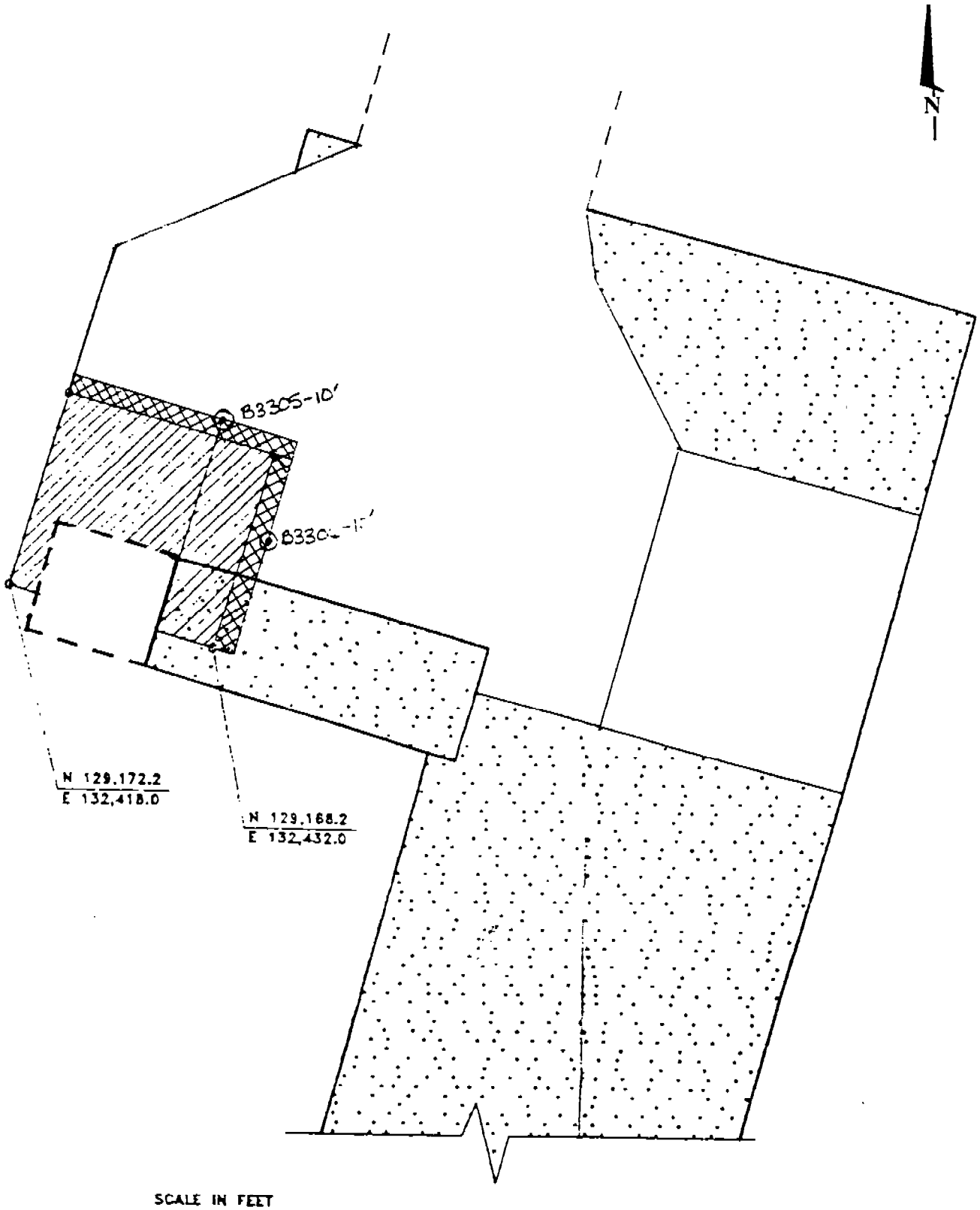
STERLING & ASSOCIATES INC.	East Bunker Walls, 0 - 13' x 2', 4', 6', 8'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	20



East Bunker Floor, 13' - 15'

STERLING & ASSOCIATES INC.

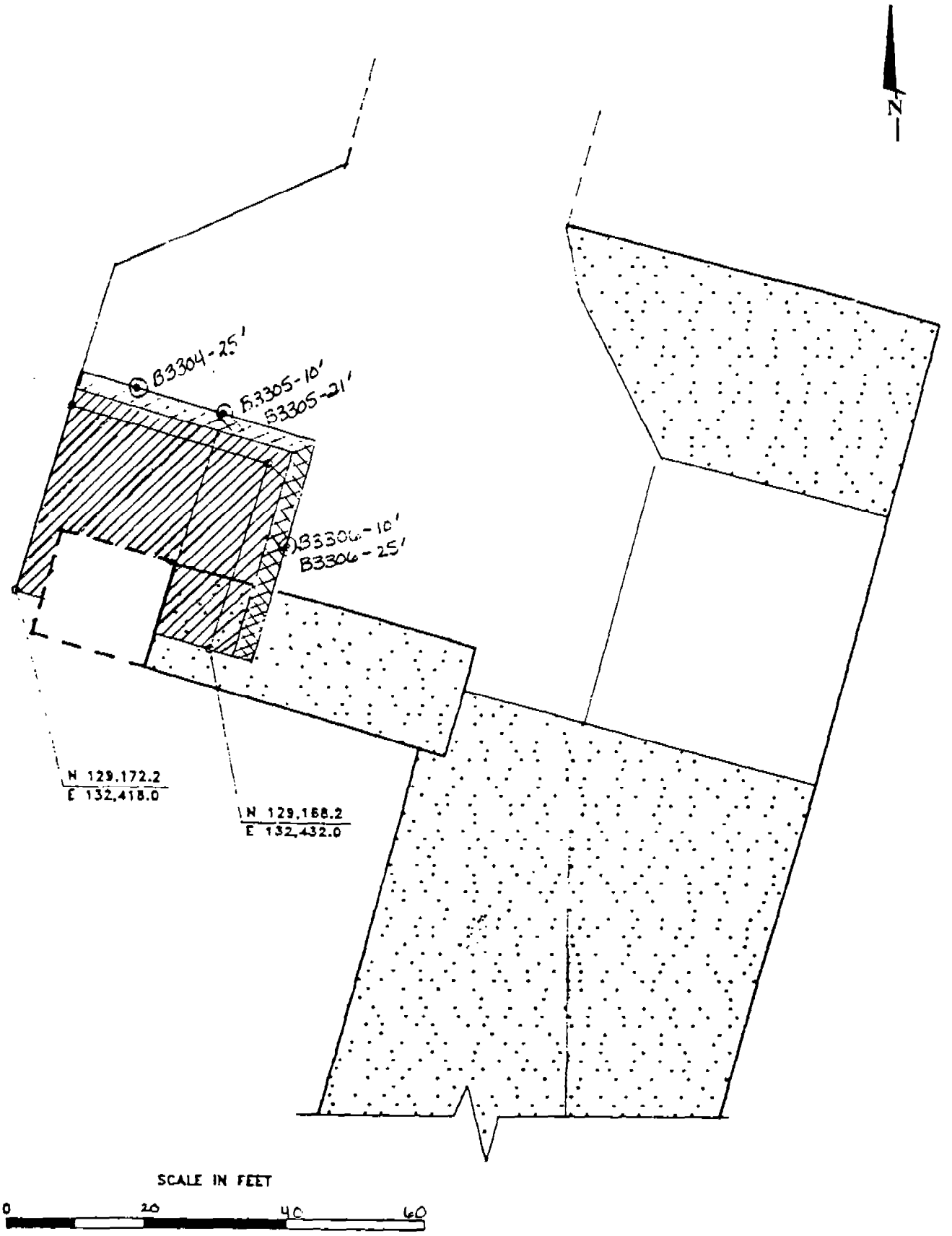
PROJECT NO.	DATE	FIGURE NO.
920415.2	October 30, 1992	21



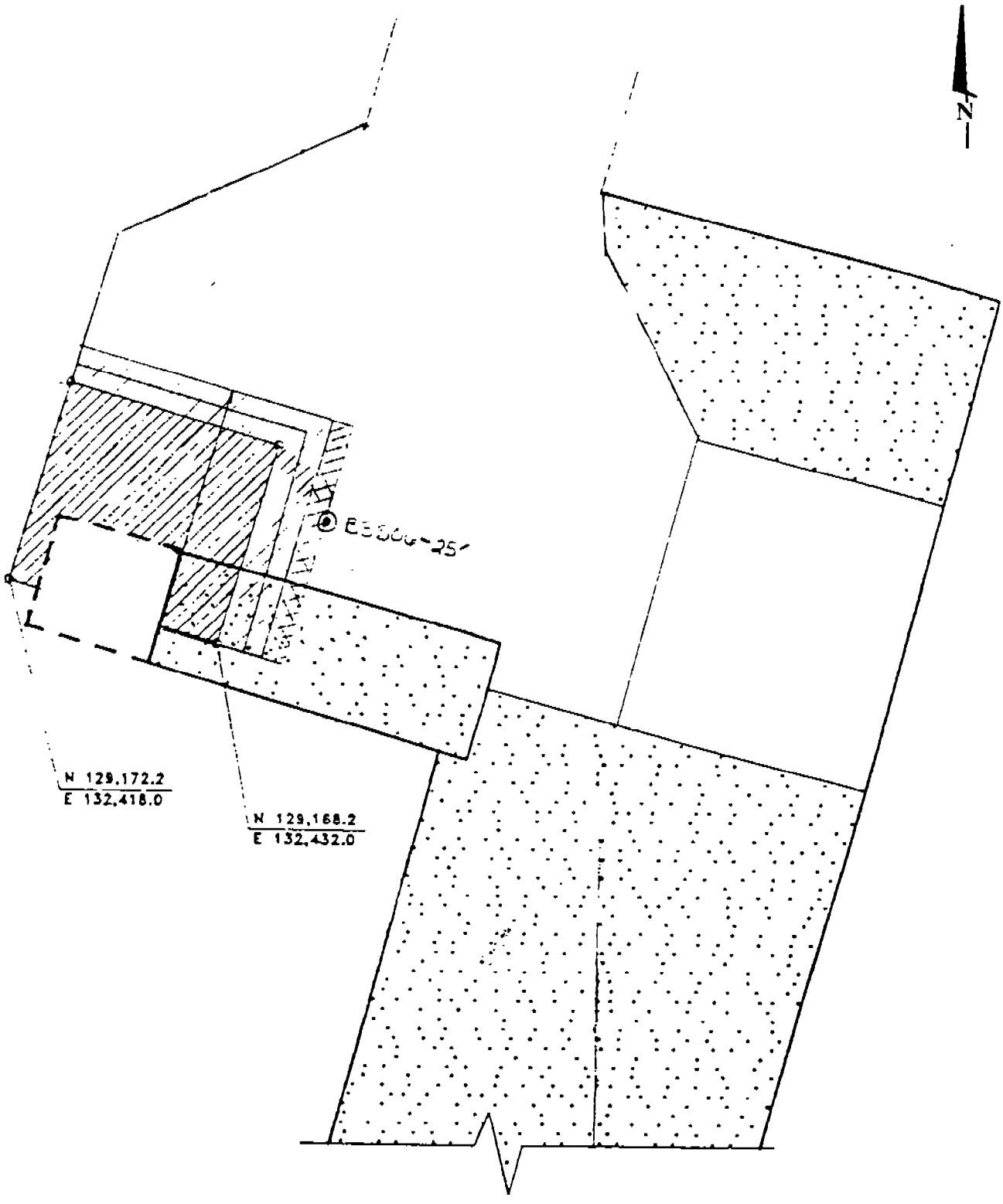
STERLING & ASSOCIATES INC.

East Bunker Entry Walls, 0' - 33' x 2'

PROJECT NO.	DATE	FIGURE NO.
920415.2	October 30, 1992	22

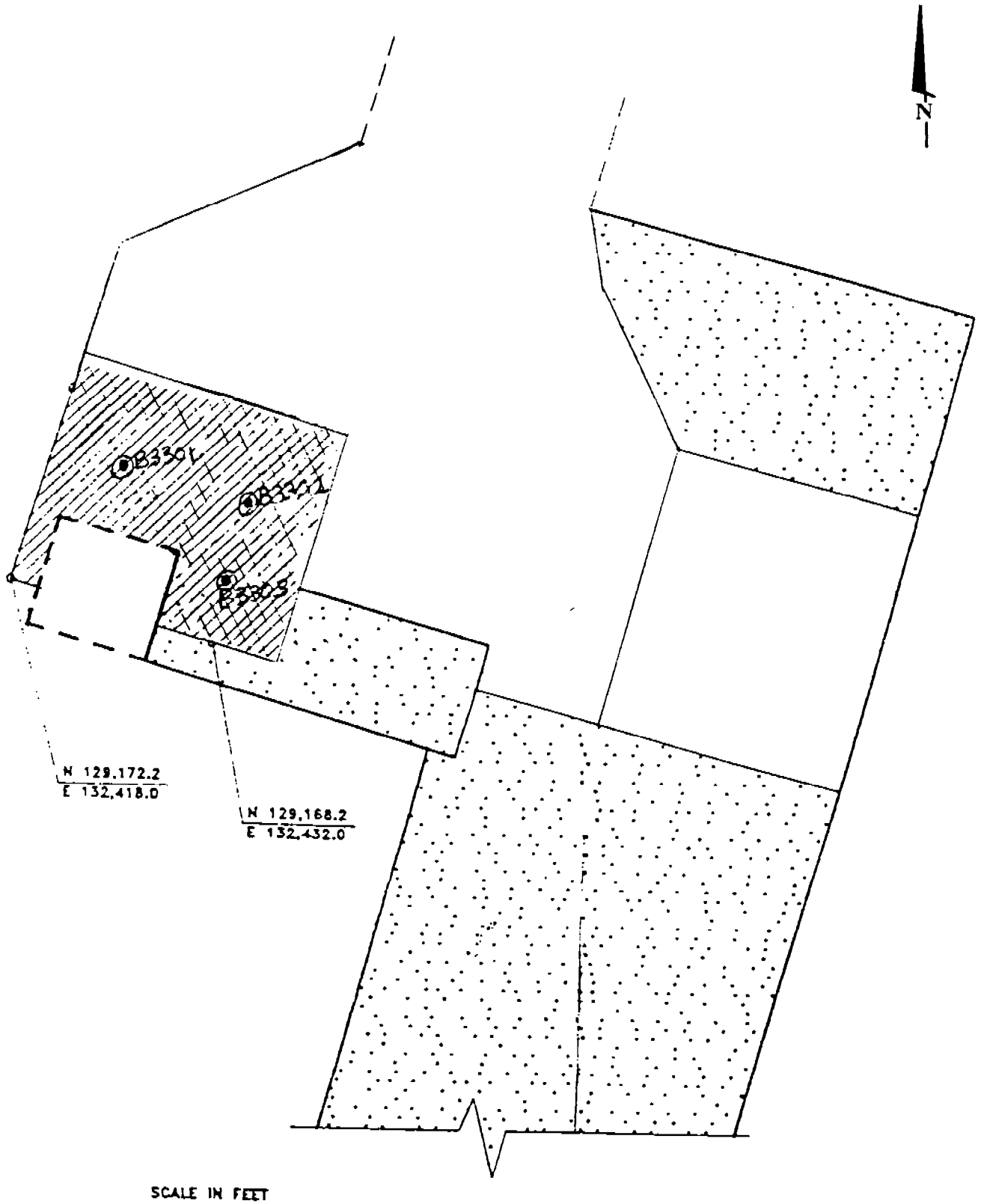


STERLING & ASSOCIATES INC.	East Bunker Entry Walls, 0' - 33' x 4'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	23



East Bunker Entry walls, 0' - 33' x 6'

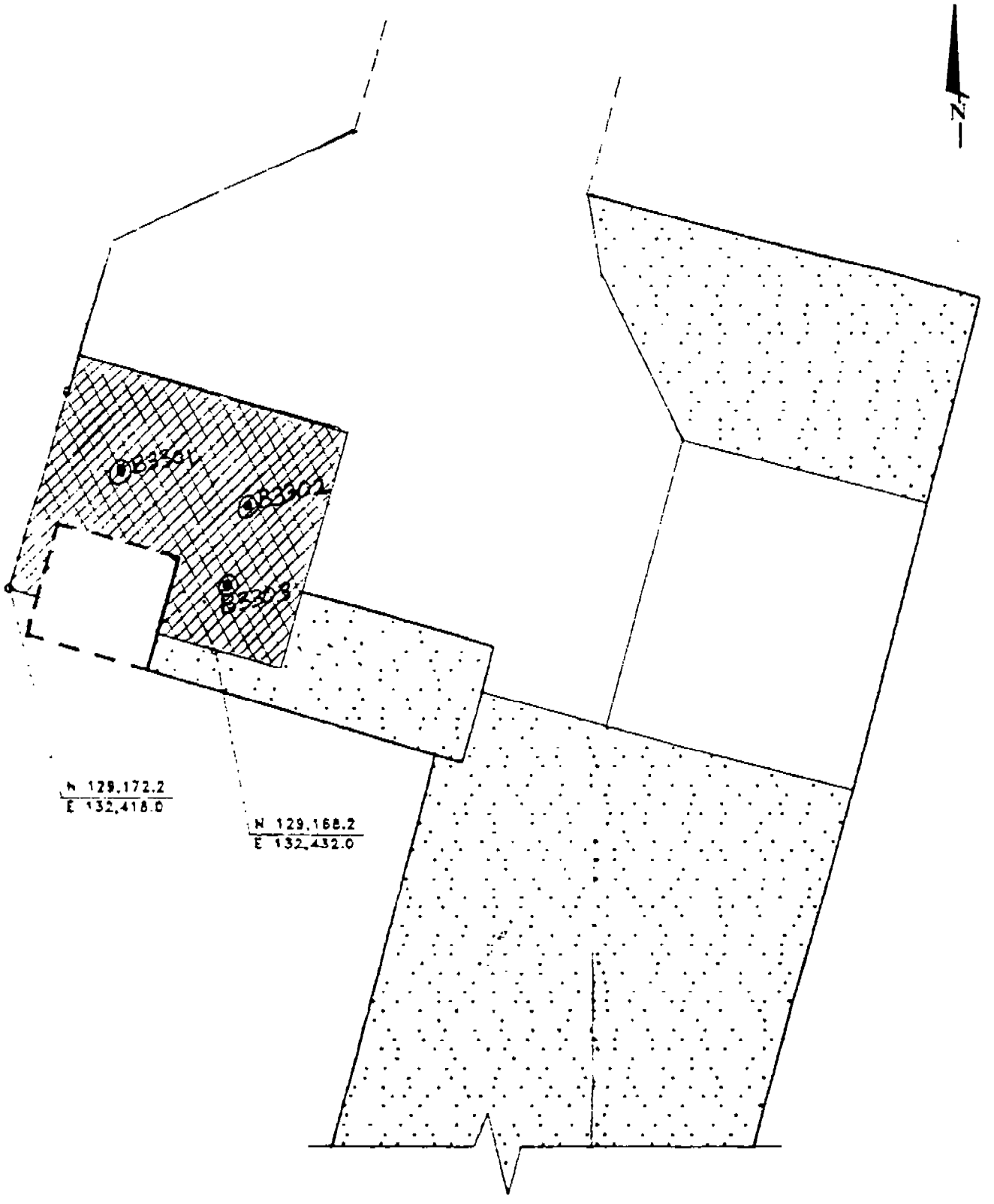
STERLING & ASSOCIATES INC.	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	24



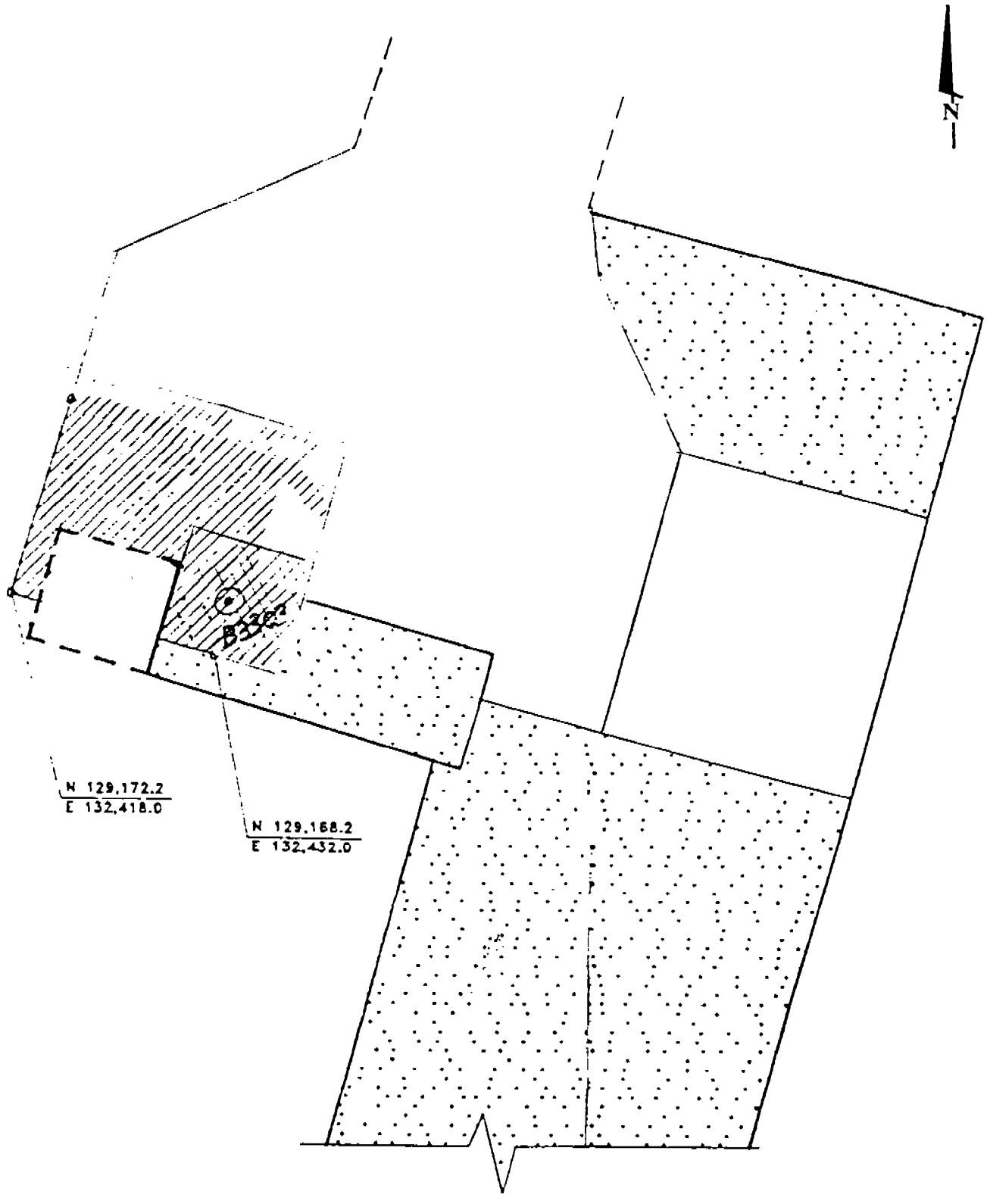
STERLING & ASSOCIATES INC.

East Bunker Enrty Floor, 33' - 35'

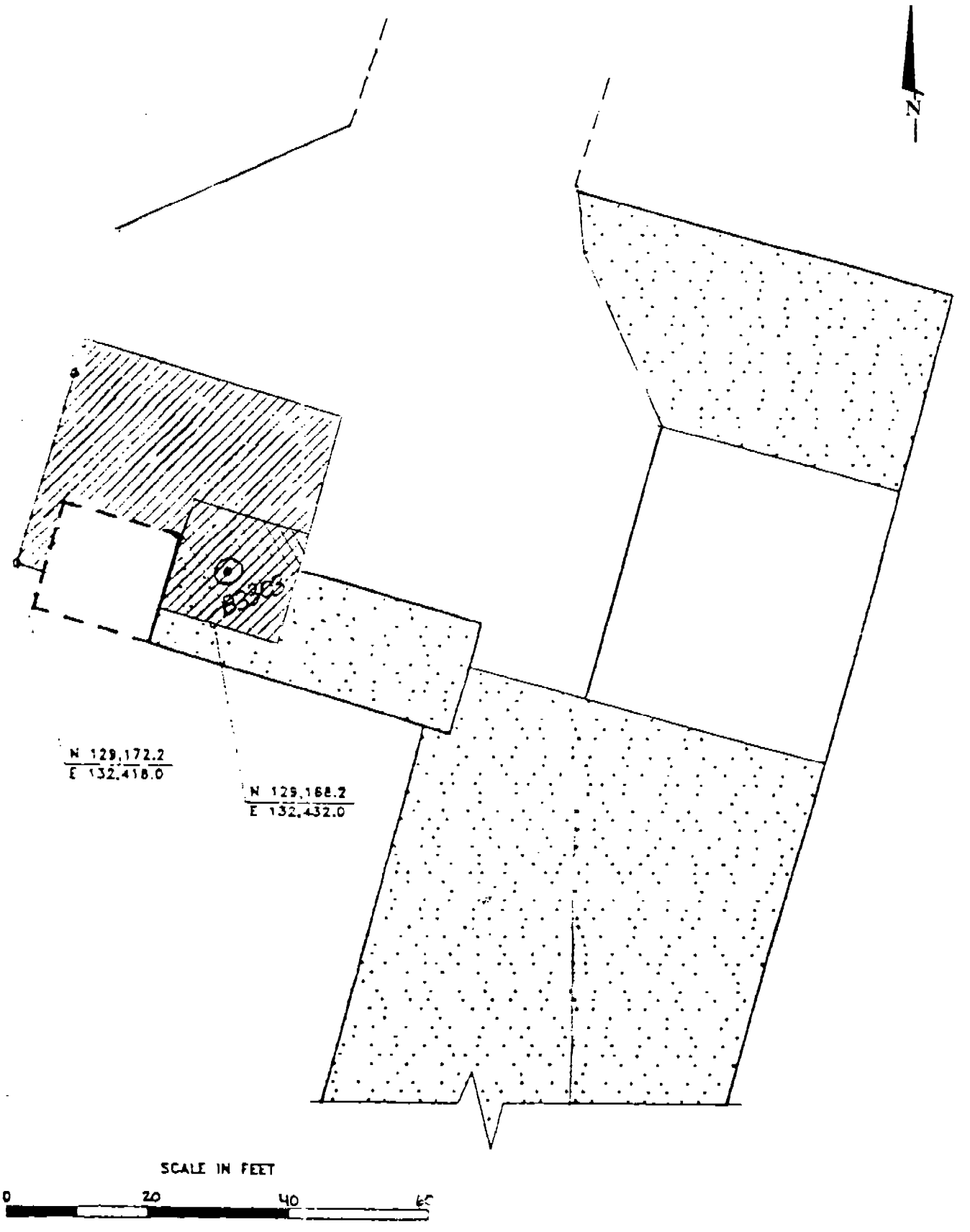
PROJECT NO.	DATE	FIGURE NO.
920415.2	October 30, 1992	25



STERLING & ASSOCIATES INC.	East Bunker Entry Floor, 35' - 37'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	26



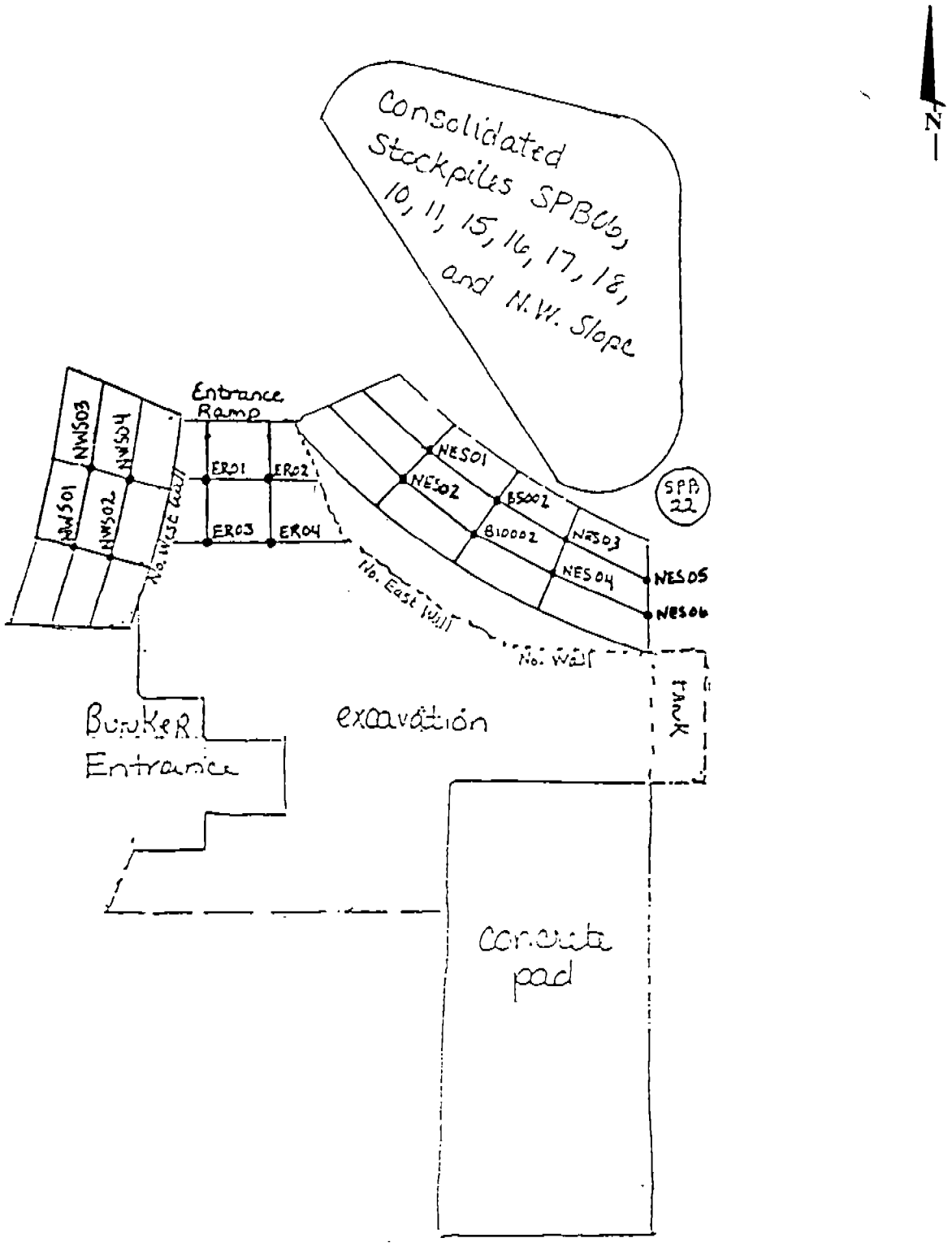
STERLING & ASSOCIATES INC.	East Bunker Entry Floor, 37' - 38'		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	27



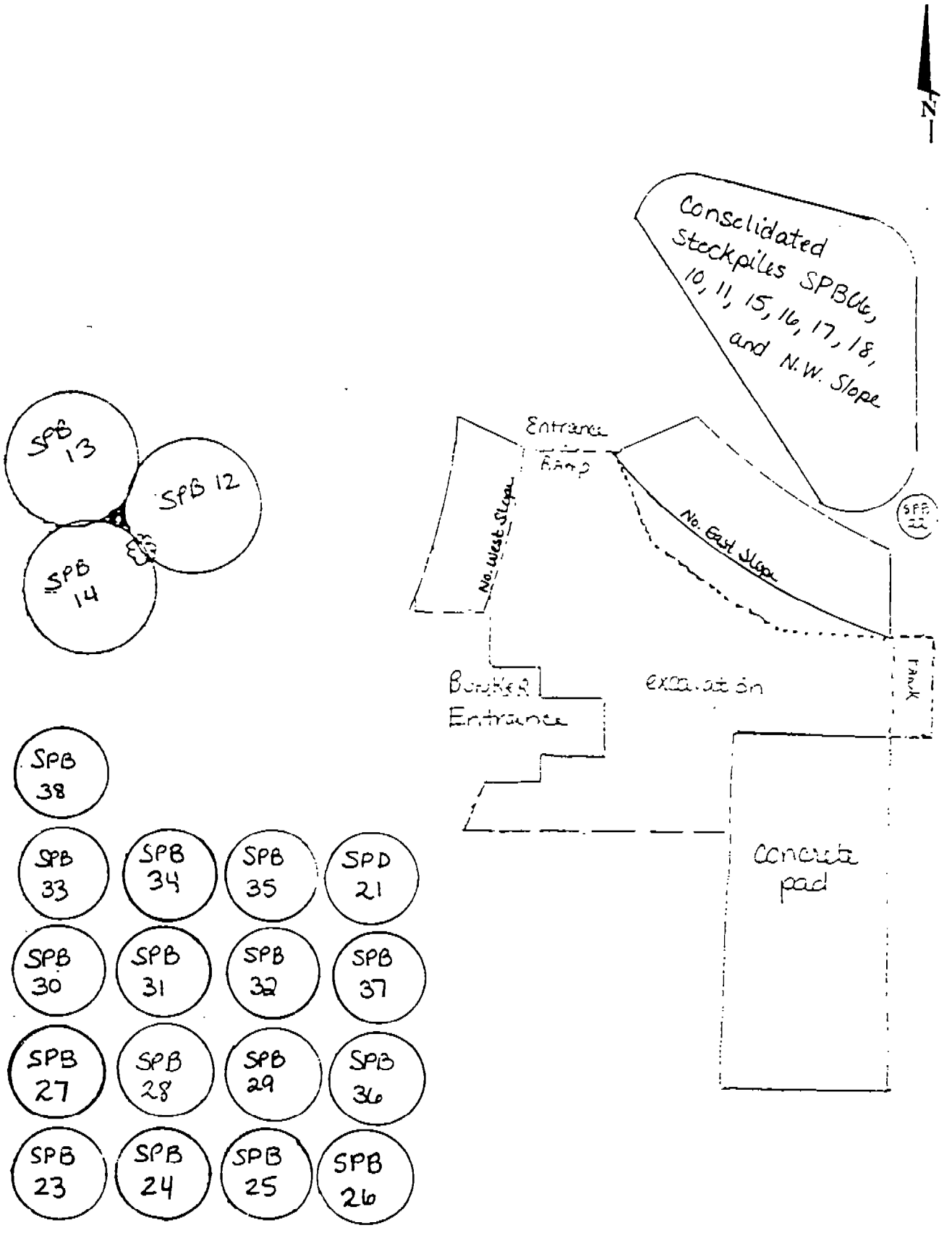
STERLING & ASSOCIATES INC.

East Bunker Entry Floor, 38' - 40'

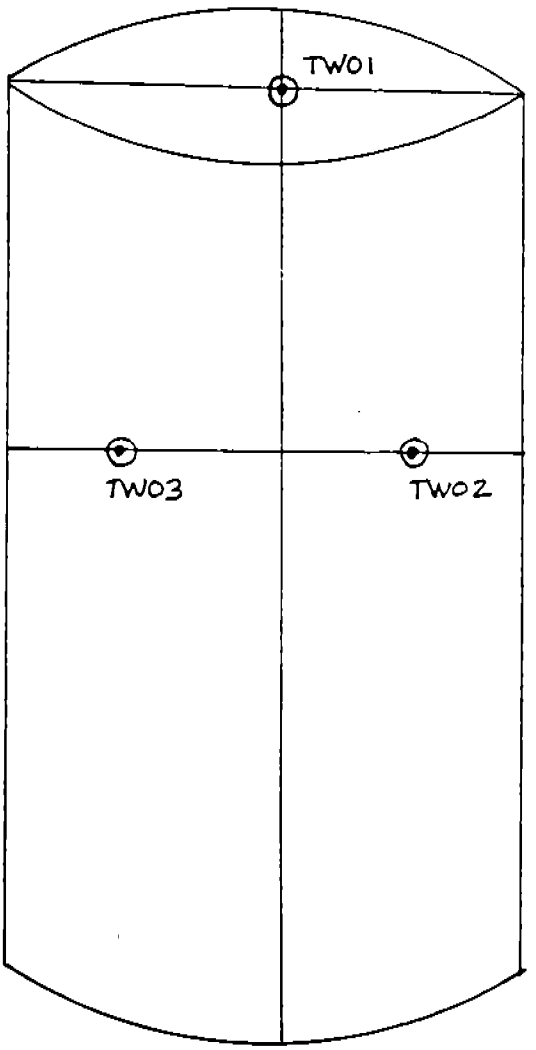
PROJECT NO.	DATE	FIGURE NO.
920415.2	October 30, 1992	28



STERLING & ASSOCIATES INC.	East Bunker N.W. & N.E. Walls, Entry Ramp		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	29



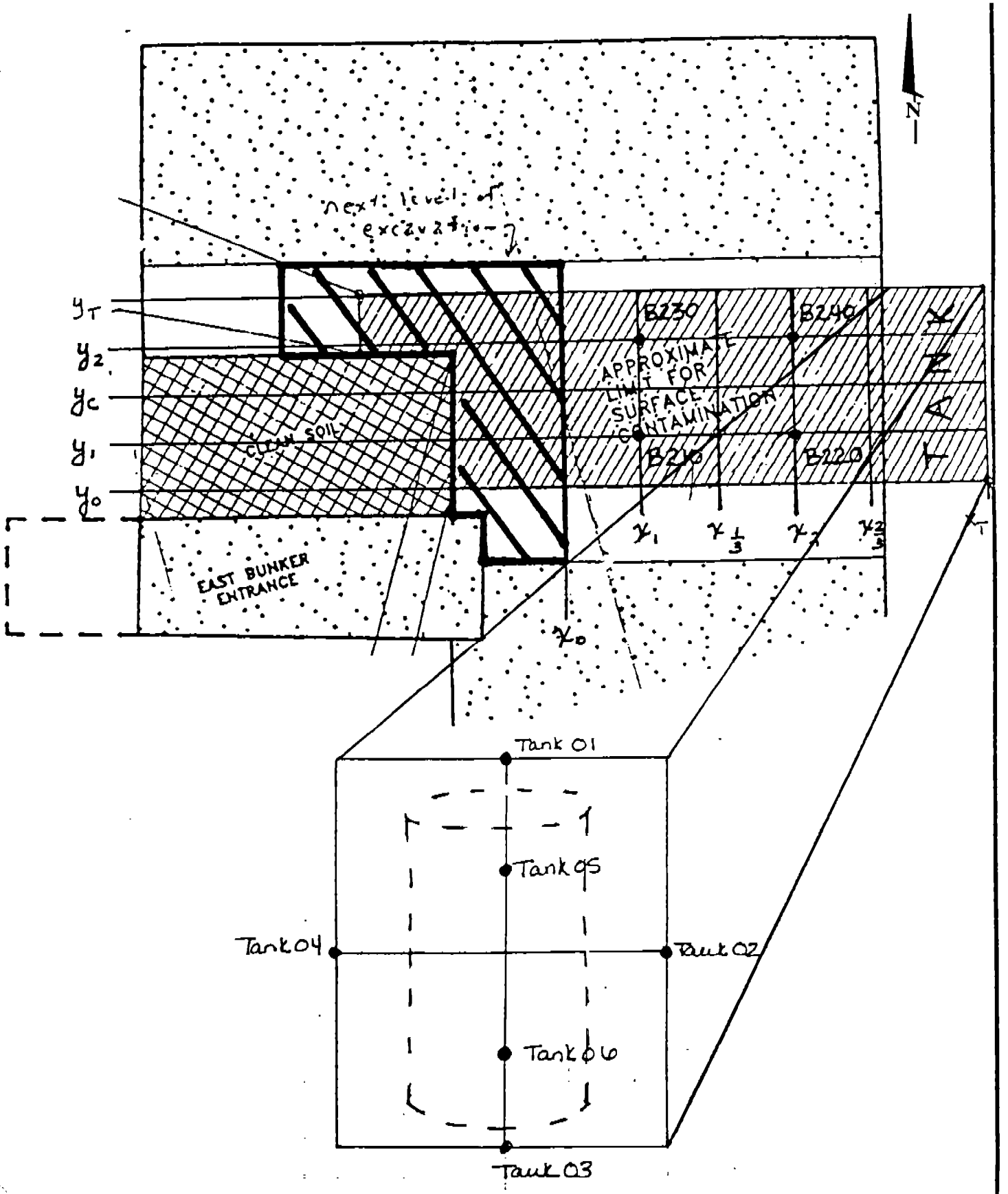
STERLING & ASSOCIATES INC.	Stockpiles		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	30



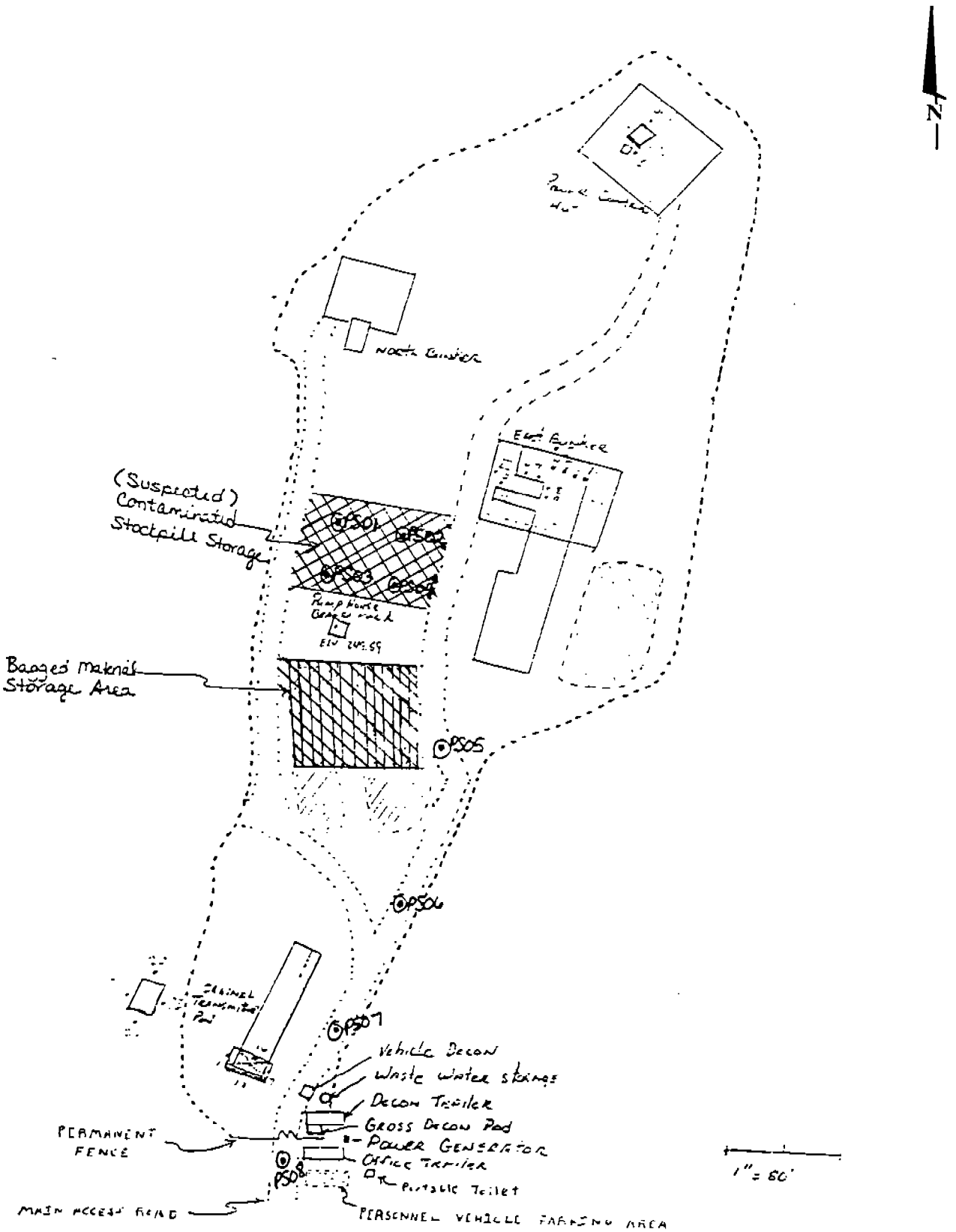
STERLING & ASSOCIATES INC.

Tank Wipe Sampling Locations

PROJECT NO.	DATE	FIGURE NO.
920415.2	October 30, 1992	31



STERLING & ASSOCIATES INC.	East Bunker, Area Surrounding Tank		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	32



STERLING & ASSOCIATES INC.	Site Road & Stockpile Storage Area Screening		
	PROJECT NO.	DATE	FIGURE NO.
	920415.2	October 30, 1992	33

APPENDIX XI

5-day turn-around !

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Fax Results (907) 562-1912 * Attn: Debbie Campbell

CHAIN OF CUSTODY RECORD

Send Bound QA/QC data to Sterling & Associates, Inc 631 S6. Main St. Milpitas, CA 95035

PROJECT: Roosevelt Rd. Transmitter Site

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Env. Services, Inc.
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah Campbell

WITNESS: (Printed) Richard Kuntz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
15-5'	Power Hut ✓	8/20/92	10:43	soil	1	EPA 8080 PCBs only	yes
-7'	Power Hut ✓	8/20/92	11:50	soil	1	↓	↓
009 RPT	Stockpile 11.9 ✓	8/24/92	11:50	soil	1	↓	↓

Relinquished by: (Printed) Deborah Campbell
(Signature) Deborah Campbell
Received by: (Printed)
(Signature)
Date / Time 8/24/92 | 2:10

Relinquished by: (Printed)
(Signature)
Received by: (Printed)
(Signature)
Date / Time

Dispatched by: (Printed)
(Signature)
Date / Time
Received at Laboratory by: Marla Curtis
Date / Time 8/24/92 | 1640

Method of Shipment: Personal Vehicle
Condition of Containers:
Seals (yes) / no Seals Intact?

Comments:
Sampling Complete; follow Army Corps of Engrs. Specs.
Truman Hill is on-site superintendent.

~~Rush~~ Turn Around page 1 of 2

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Fax Results: (907) 562-1912 * Attn: Debbie Campl

CHAIN OF CUSTODY RECORD

Send QC data package to D. Campbell at Sterling & Associate

PROJECT: Roosevelt Road Transmitter Site

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Environmental Services
5500 Ming Ave
Bakersfield, CA 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

WITNESS: (Printed) Richard Krentz
(Signature)

	ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
1	3002-15'	13' floor cut to 15'	8/29	1000	soil/grid	1	EPA 8080 PCBs ONLY	yes
2	3004-15'	↓	8/29	1010	↓	1	↓	↓
3	5-10'	5'-10' wall cutback 2'	8/29	1030	↓	1	↓	↓
4	D21	Stockpile/Pwr. Hut Etc.	8/30	1300	soil/comp.	1	↓	↓
5	B22	Stockpile/5' cut B240 Sect.	8/30	1315	↓	1	↓	↓
6	B23	7'-9' cut + No. Wall Slope	8/30	1330	↓	1	↓	↓
7	B24	No. wall + N.E. Wall Slope	8/30	1345	↓	1	↓	↓
8	325	N.E. wall slope	8/30	1350	↓	1	↓	↓
9	10-9'	west of tank	8/30	1410	soil/grid	1	↓	↓

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) (Signature)	Date / Time
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Rhonda Auld 8/31/92 1450
Method of Shipment: Personal Vehicle	Condition of Containers: good	Seals yes / no Intact (RD)

Comments:
Please follow U.S. Army Corps of Engrs. Specifications. On-Site Superintendent is Thurman Hill.

page 2 of

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEEHING CO.

92.4582

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Fax Results; (907) 562-1912 * Attn: Debbie Camp

CHAIN OF CUSTODY RECORD

Send QC data package to D. Campbell at Sterling & Associates

PROJECT: Roosevelt Road Transmitter Site

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Environmental Services
5500 Ming Avenue
Bakersfield, CA 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

WITNESS: (Printed) Richard Krentz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
(10) 230-9'	West of tank	8/30	1430	Soil/grab	1	EPA 8080 PCBs only	yes
(11) 234-9'	West of tank	8/30	1445	↓	1	↓	↓
(12) K1	Lot	8/30	1100	Soil/grab	1	↓	↓

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) (Signature)	Date / Time
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Rhonda Ward 8/31/92 1450
Method of Shipment: Personal Vehicle	Condition of Containers: good	Seals yes / no (A) Intact

Comments:
Please follow U.S. Army Corps of Engrs. Specifications. On-Site Superintendent is Truman Hill.

40-hour turnaround on circled numbers

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO. 92.4701

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Please fax Results: 562-1912* Attn: Debbi Campbell

CHAIN OF CUSTODY RECORD

Send QC data package to D. Campbell at Sterling & Associates

PROJECT: Roosevelt Road Transmitter Site, St. Richardson, Alaska

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Env. Services, Inc.
5500 Ming Avenue
Bakersfield, CA 93309

SAMPLERS: (Printed) Richard Krentz
(Signature)

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED	
326	9-11' W. tank, Hot sect. Slope-floor	9/1/92	1500	soil/comp	1	EPA 8080 PCBs Only	yes	(1)
327	Entrance Ramp Cut 2', floor	↓	1515		1			(2)
328	Entrance Ramp ~~+ B220/240 floor~~	↓	1530		1			(3)
329	B220/240 11' to 13' W. tank	9/2/92	1145		1			(4)
330	Bunker top 1' + floor >35'	↓	1200		1			(5)
331	floor > 35'-37'	↓	1500		1			(6)
2-11'	9'-11' cut West of tank	9/1/92	1545		1			(7)
10-11'	9'-11' cut West of tank	↓	1600		1			(8)
328-17'	15'-17' cut on Floor	↓	1615	↓	1	↓	↓	(9)

~~Relinquished by:~~ (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) Amy Hill (Signature) Amelia Hill	Date / Time 9/3/92 1600
Relinquished by: (Printed) A Hill (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Mary Ellen Jones Date / Time 9/3/92 1735
ethod of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) no

Comments:
Sampling Complete; Follows U.S. Army Corps of Engrs Specs.
On-site Superintendent is Truman Hall

48- Hour turnaround on Circled Numbers Page 2 of 4

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO. 92.4701

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Please fax results: 562-1912 * Attn: Debbie Campbell

CHAIN OF CUSTODY RECORD

Send QC data package to D. Campbell at Sterling & Assoc.

PROJECT: Roosevelt Rd. Transmitter Site, Ft. Richardson, Alaska

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Environmental Services, Inc
5500 Ming Ave.
Bakersfield, CA 93309

SAMPLERS: (Printed) Richard Krentz
(Signature) Richard S Krentz

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED	
-37'	E. Bunker Entry, 37'	9/2/92	1515	soil/grid	1	EPA 8080 PCBs Only	Yes	(10)
7'	↓		1530		1			(11)
5-10'x4'	E. Bunker Walls, cutback 4'		1545		1			(12)
D -10'x4'	↓	↓	1600		1			(13)
4) E-5'x6'	No. East Slope	9/2/92	1605	↓	1			(14)
332	Stockpile	9/3/92	1130	soil/grab	1			(15)
S01	No. West Slope		0900	soil/grid	1			(16)
S02	No. West Slope		0910		1			(17)
S04	No. West Slope	↓	0920	↓	1	↓	↓	(18)

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) Amy Hill (Signature) Amelia Hill	Date / Time 9/3/92 | 1600
Relinquished by: (Printed) A. Hill (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Nancy Eford Date / Time: 9/3/92 | 1735
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) / no

Comments: See Page 1

∴ 48-hour turnaround on Circled Numbers

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO. 92.4701

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

CHAIN OF CUSTODY RECORD

92.4701

PROJECT: Roosevelt Rd Transmitter site St Richardson, AK

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Env. Services Inc
5500 Hwy
Bakersfield Ca 93309

SAMPLERS: (Printed) Richard Kuntz
(Signature) Rick E Kuntz

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED	
25-5'46	No. East Slope	9/2/92	1615	Soil/grid	1	EPA 8080 PCBs Only	Yes	(19)
S4	Entrance Ramp	9/2/92	1530		1			(20)
[redacted]-37'	Entry Floor, 37'	9/2/92	1530		1			(21)
45-25	x4' E. Bunker Entry Wall, 25'	9/3/92	1030		1			(22)
S25	No. East Slope		1100		1			(23)
R1	Entry Ramp		0930		1			(24)
R2	Entry Ramp		0940		1			(25)
R3	Entry Ramp		0950		1			(26)
R4	Entry Ramp		1000		1			(27)

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah Campbell	Received by: (Printed) Amy Hill (Signature) Amelia Hill	Date / Time 9/3/92 1600
Relinquished by: (Printed) (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: (p) Mary Elora Date / Time 9/3/92 1735
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) no

Comments:
See Page 1

5 Hour Turnaround on Circled Numbers page 2 of 4

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO. C92.4701

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Please Fax Results: 562-1912* Attn: Debbie Campbell

CHAIN OF CUSTODY RECORD

Send QC data package to D. Campbell at Sterling & Assoc.

PROJECT: Roosevelt Road Transmitter Site, Ft. Richardson Alaska

AUTHORIZATION NUMBER:

CLIENT: Landlaw Env. Services, Inc. 5500 ~~S~~ming Ave Bakersfield, CA 99505-5000

SAMPLERS: (Printed) Richard Krentz (Signature) Richard Krentz

WITNESS: (Printed) Deborah Campbell (Signature) Deborah Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED	
-10'x8'	No. East Slope	9/3/92	1010	Soil/grid	1	EPA 8080 PCBs only	Yes	(28)
5x4'	E. Bunker Entry Wall, 25'		1030		1			(29)
5-21'x4'	E. Bunker Entry Wall, 21'		1045		1			(30)
52	No. East Slope		1100		1			(31)
33 ✓	Stockpile		1500	Soil/grab	1			(32)

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah Campbell	Received by: (Printed) Amy Hill (Signature) Amelia Hill	Date / Time 9/3/92 1600
Relinquished by: (Printed) (Signature) Amelia Hill	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Nancy Elona — Date / Time 9/3/92 1735
thod of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) no

Comments: See page 1

8-hr turnaround on Circled Numbers. pg 1 of

2.4762

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

please fax results: 562-1912 ≠ Attn: Deborah Campbell

CHAIN OF CUSTODY RECORD

Please send QC data package to D. Campbell at Sterling & Assoc

PROJECT: Roosevelt Road Transmitter Site, Ft. Richardson, Alaska

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Env. Services, Inc.
5500 Ming Avenue
Bakersfield, CA 93309

SAMPLERS: (Printed) Richard Krentz
(Signature)

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED	
VS03-2'	No. West Slope	9/3/92	1600	Soil/grid	1	EPA 8080 PCBs Only	yes	(1)
VS01-2'	No. East Slope		1615		1			(2)
VS02B/38-40'	E. bunker entry floor		1630		1			(3)
VB06/25-30'x6'	E. bunker entry wall		1645		1			(4)
VBLK3	Lot	9/4/92	1100	Soil/grab	1			(5)
VB34	Stockpile		1115	Soil/comp.	1			(6)
VB35	Stockpile		1150	Soil/comp.	1			(7)
V1	No. Side of Tank		1500	Wipe	1			(8)
V2	East Side of Tank		1510		1			(9)

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) (Signature)	Date / Time 9/5/92 | 1350
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time Received at Laboratory by:	Date / Time 9/5/92 | 1250
Method of Shipment: Personal Vehicle	Condition of Containers:	Seals (yes) / no

Comments:
Please follow U.S. Army Corps of Engrs Specifications; On-site Superintendent is Truman Hill

48-hour turnaround on Circled Numbers

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

please Pay Results: 562-1912 * Attn: Debbie Campbell

CHAIN OF CUSTODY RECORD

Please send QC data package to D. Campbell at Sterling & Assoc

PROJECT: Roosevelt Road Transmitter Site, Fort Richardson, Alaska

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Env. Services, Inc.
5500 Ming Avenue
Bakersfield, CA 93309

SAMPLERS: (Printed) Richard Kuntz
(Signature) [signature]

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
S03-10'	No. East Slope	9/5/92	1100	soil/grid	1	EPA 8080 PCBs only	yes (PA)
S04S-11'	No. East Slope	9/5/92	1130	↓	1	↓	↓ (PB)

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) (Signature)	Date / Time 9/5/92 1350
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature) — Date / Time	Received at Laboratory by: [signature]	Date / Time 9/5/92 1250
Method of Shipment: personal vehicle	Condition of Containers:	Seals yes / no

Comments:
see page 1

48- near Turnarama on Circled Numbers

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

please fax results : 562-1912 * Attn: Debbie Campbell

CHAIN OF CUSTODY RECORD

please send QC Data package to D. Campbell at Sterling & Associates

PROJECT: Roosevelt Road Transmitter Site, Ft. Richardson, Alaska

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Env. Services, Inc.
5500 Ming Avenue
Bakersfield, CA 93309

SAMPLERS: (Printed) Richard Krentz
(Signature)

WITNESS: (Printed) Deborah Campbell
(Signature) Deborah Campbell

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED	
W3	West Side of tank	9/4/92	1520	wipe	1	EPA 8080 PCBs only	yes	(7)
B36	Stockpile		1600	soil/comp.	1			(11)
A37	Stockpile		1615	↓	1			(12)
-3'	No. East Slope		1600	soil/grid	1			(13)
SA-3'	No. East Slope		1610		1			(14)
K01	No. End Tank, Wall		1620		1			(15)
K015	No. End Tank, Wall		1630		1			(16)
K02	Wall, East tank		1640		1			(17)
K03	Wall, So. End tank		1650		1			(18)
K04	Wall, West tank		1700		1			(19)
K05	No. Floor, 7'		1710		1			(20)
K06	No. Floor, 7'	↓	1720		1			(21)
S04-11'	No. East Slope	9/5/92	1130	↓	1	↓	↓	(22)

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah Campbell	Received by: (Printed) (Signature)	Date / Time 9/5/92 1350
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Nancy Elos Date / Time 9/5/92 1250
Relinquished by: (Printed) (Signature)	Received by: (Printed)	Date / Time
Method of Shipment: Personal Vehicle	Condition of Containers: good Fair Poor	Seals (yes) no

Comments: See page 1

←

4829

CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

Please fax results: 562-1912 ✱ Attn: Debbie Campbell

CHAIN OF CUSTODY RECORD

Please send QC data package to D. Campbell at Sterling & Assoc.

PROJECT: Roosevelt Road Transmitter Site, Ft. Richardson, Alaska

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Env. Services, Inc.
5500 Ming Avenue
Bakersfield, CA 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah A Campbell

WITNESS: (Printed) Richard Krentz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
SPB38	Stockpile ✓	9/8/92	1100	soil / comp	1	EPA 8080 Ars only	yes

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah A Campbell	Received by: (Printed) Amelia Hill (Signature) Amelia Hill	Date / Time 9/9/92 | 1130
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time
Dispatched by: (Printed) (Signature)	Date / Time Received at Laboratory by: Rhonda Ward	Date / Time 9/9/92 | 1430
Relinquished by: (Printed) (Signature)	Received by: (Printed)	Date / Time
Method of Shipment: Personal Vehicle	Condition of Containers: (good) Fair Poor	Seals (yes) / no yes, Antac (KS)

Comments: Follow U.S. Army Corps of Engrs Specifications. On-Site Superintendent is Jymal Hill.

92.5020

8- Hour Turnaround

CHEMICAL & GEOLOGICAL LABORATORY
A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.
5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

please fax results: 562-1912 * Attn: Debbie Campbell

CHAIN OF CUSTODY RECORD

Please send QC data package to D. Campbell at Sterling & Associ

PROJECT: Roosevelt Road Transmitter Site, Ft. Richardson, Alaska

AUTHORIZATION NUMBER:

CLIENT: Laidlaw Env. Services, Inc.
5500 Ming Avenue
Bakersfield, CA 93309

SAMPLERS: (Printed) Deborah Campbell
(Signature) Deborah Campbell

WITNESS: (Printed) Richard S. Kratz
(Signature)

ID #	DESCRIPTION / LOCATION	DATE	TIME	SAMPLE TYPE	# OF CONT.	ANALYSIS REQUIRED	QA/QC REQUIRED
1) C01	Decon Tank Comp.	9/16/92	1000	H_2O	2	EPA 8080 PCBs only	yes
C02	Decon Pad Comp	9/16/92	1000	~~grab~~	1	↓	↓
2)				Composite			

Relinquished by: (Printed) Deborah Campbell (Signature) Deborah Campbell	Received by: (Printed) (Signature)	Date / Time 9/16/92 | 1510	
Relinquished by: (Printed) (Signature)	Received by: (Printed) (Signature)	Date / Time	
Dispatched by: (Printed) (Signature)	Date / Time	Received at Laboratory by: Allyn Ellis	Date / Time 9/16/92 | 1510
Relinquished by: (Printed) (Signature)	Received by: (Printed)	Date / Time	
Method of Shipment: Personal Vehicle	Condition of Containers: good Fair Poor	Seals (yes) no	

Comments: Follow U.S. Army Corps of Engrs. Specifications. On-Site Superintendent is Truman Hill.

APPENDIX XII

FAX RESULTS BY 8/31

Computer W/O*: 57461 / 57462QC Lab Due Date: 8/31

(new) Account*: Laidlaw
Client Name: Laidlaw
Ordered By: Deborah Campbell
Via: HC
Purchase Order*:
Requisition*:
Chem Lab Ref.*

92.4408

Extraction Date: 8/09 - 8/31
Holding Time: 7D
Date Due: 08/31
Sample Received: 8/24 Time: 1645
Date Collected: Time:
Address:

Phone*: Fax*:
Send Addt'l Reports To:

Phone*: Fax*:

Paid (Ck*)___ (Cash)___
Amount $___

Special Instructions:

See COC

Sample*	Description	Mtx	Test	Parameter	A
	See COC 1-3	4	40035 40000	PCB	73.(
				"	
				"	
4	QA/QC Data Package	5	5001D	LEVEL III	N/c

Sample Remarks EP Tox (GC) (GC PREP) H2O IC Metals Micro O/G Oils

(JW) (SCE)

Chain Of Custody: Y Tags: N Y
Custody Seals: (broken) N (intact) N
Rec'd By: RD
Logged By: RD
Entered By:

Temp. of Samples: 3.8°C
Sample Condition: (Good) Fair Po
Sample Containers:
(3) 250cc I Chem

MUST HAVE RESULTS BY

Computer W/O*: 57124 / 5725 QC

Lab Due Date: 9/7

(new) Account*: Laidlaw

Client Name: Laidlaw Enviro

Ordered By: Debbie Campbell

Via: IIC

Purchase Order*:

Requisition*:

Chem Lab Ref.*

92.4582

Extraction Date: 9/5 - 8/6

Holding Time:

Date Due: 9/8

Sample Received: 8/31 Time: 1445

Date Collected: Time:

Address:

Phone*: Fax*:

Send Addt'l Reports To: Sterling & Assoc.

631 S. main St.

Phone*: Fax*:

Milpitas, Ca 95035

Paid (Ck*)___ (Cash)___

Amount $

Special Instructions:

See COC

Sample*	Description	Mtx	Test	Parameter	Amt
	See COC Bottle 1-12	4	~~4003S~~ 4000D	8080 PCB	
13	Other lab Charges	5	5000	Level III	

Sample Remarks: See COC

EP Tox GC GC PREP H20 IC Metals Micro O/G Oils

SCE JW

Chain Of Custody: Y Tags: N

Custody Seals: (broken) N (intact) Y

Rec'd By:

Logged By:

Entered By:

Proofed By:

Temp. of Samples: 4.3°C

Sample Condition: Good Fair Poor

Sample Containers:

(12) 250cc

Figure 7-2
Sample Check-in List

Project Name or ID # : Roosevelt Road Transmitter Site

Date Received 8/31/92 1450

1. Condition of shipping containers: good

2. Open shipping container Rhonda David

3. Number of sample containers in shipping container: 12

4. Samples have labels including: sample# yes location yes
date sampled yes time sampled yes sampler yes

5. Sample lids closed tightly? yes

6. Verify each sample ID with the Chain of Custody. yes

7. Verify the following paperwork:

Chain-of-Custody #: _____

Sample Log-in complete (Y/N) yes

8. Initiate Non-conformance memo of required.

9. Cooler Temperature 4.3°C

10. Preservation used

RUSH

MUST Have Final By 5861 Rush 9/9 all other

Computer W/O#: 5861 / 5874 QC

Lab Due Date: 9/10 @ 15, 20, 32

Std 5 days turnaround

(new) Account#: Laidlaw
Client Name: Laidlaw
Ordered By:
Via: HC
Purchase Order#:
Requisition#:
Chem Lab Ref.#

Extraction Date:
Holding Time: 7D
Date Due: 9/9 9/11
Sample Received: 9/3 Time:
Date Collected: 9/1, 9/2 Time:
Address:

92.4701

Phone#: Fax#:
Send Addt'l Reports To:

Phone#: Fax#:

Paid (Ck#)___ (Cash)___
Amount $

RUSH

Special Instructions:
Fax Results to Debbie Campbell @ 562-1912

Sample#	Description	Mtx	Test	Parameter	Ar
	See COC Samples #1-32	4	40035 / 40000	PCB's in Soil	73.
	Other Lab Charges	5	50010	Level III	
	other Lab charges	5	50005	Rush x2	1168
	7-14, 16-19, 21-31 Rush		23 X	2 samples	

Sample Remarks EP Tox GC GC-PREP H20 IC Metals Micro O/G Oils

D.W., SCE

Quote

Chain Of Custody: yes Tags: n
Custody Seals: (broken) ___ (intact) Yes
Rec'd By: NJ
Logged By: NJ
Entered By: GD

Temp. of Samples: 9.8C
Sample Condition: Good Fair Pc
Sample Containers:
(32) 250ml Glass

Figure 7-2
Sample Check-in List

Project Name or ID # : _____

Date Received 9/3/92

1. Condition of shipping containers: good

2. Open shipping container Nancy

3. Number of sample containers in shipping container: 32

4. Samples have labels including: sample# yes location yes
date sampled yes time sampled yes sampler yes

5. Sample lids closed tightly? yes

6. Verify each sample ID with the Chain of Custody. yes

7. Verify the following paperwork:

Chain-of-Custody #: _____

Sample Log-in complete (Y)/N) _____

8. Initiate Non-conformance memo of required. n.a.

9. Cooler Temperature 9.8°C

10. Preservation used

Samples# 1,2,3,4, 13-24 <9/10

RUSH

Computer W/O*: 57912 / 57913 QC

Lab Due Date: 9/11

(new) Account*: Laidlaw

Client Name: Laidlaw

Ordered By: D. Campbell

Via: HC

Purchase Order*:

Requisition*:

Chem Lab Ref.*

92.4762

Extraction Date:

Holding Time:

Date Due: 9/10 9/14

Sample Received: 9/5 Time:

Date Collected: Time:

Address:

Phone*: Fax*:

Send Addt'l Reports To:

Phone*: Fax*:

Paid (Ck*)___ (Cash)___

Amount $

Special Instructions:

RUSH Fax Results 562-1912 Attn: Debbie Campbell

Sample*	Description	Mtx	Test	Parameter
	See COC samples #1-23	4	4003S / 4000	PCB in Soil
		5	4006S / 4000	PCB in Wipe
	#8,9 10,			
24	other lab charges	5	50010	Level III

Sample Remarks EP Tox GC GC PREP H20 IC Metals Micro O/G Oils

Matrix = Wipe

Chain Of Custody: Y Tags: N

Custody Seals: (broken) N (intact) N

Rec'd By: DJ

Logged By: KS

Entered By: BR

Proofed By:

Temp. of Samples: 9.4 °C

Sample Condition: Good Fair Po

Sample Containers:

(24) 250 mL widemouth

MUST HAVE RESULTS BY 9/16 —

Computer W/O#: 58146 / 58147 QC Lab Due Date: 9/15

(new) Account#: Laidlaw Extraction Date: 9/15
Client Name: Laidlaw Holding Time: 7D
Ordered By: Debbie Campbell Date Due: 9/16
Via: HC Sample Received: 9/9 Time: 1430
Purchase Order#: Date Collected: Time:
Requisition#: Address:
Chem Lab Ref.#

92.4828

Phone#: Fax#:
Send Addt'l Reports To: Sterling + Assoc
631 S. main St
Phone#: Fax#:
milpitas Ca 95035

Paid (Ck#)___ (Cash)___
Amount $___
Special Instructions:
See COC

Sample#	Description	Mtx	Test	Parameter	Amt
	See COC	4	40035 / 70000	PCB	73.
2	QA/QC Data Package	5	50010	LEVEL III	

Sample Remarks EP Tox (GC) GC/PREP H20 IC Metals Micro O/G Oils
(SCE HOW)

Chain Of Custody: Y Tags: N Temp. of Samples: 2.1°C
Custody Seals: (broken) N (intact) X Sample Condition: Good Fair Poo
Rec'd By: RD Sample Containers:
Logged By: KP (1) 250cc TChan
Entered By: CDL
Proofed By:

RUSH

J.W. 9/18

Computer W/O#: 58446 / 58447

Lab Due Date: 9/17

(new) Account#: LAIDLAW

Client Name: Laidlaw

Ordered By: Debbie Campbell

Via: HC

Purchase Order#:

Requisition#:

Chem Lab Ref.#

92.5020

Extraction Date: 9/23 9/30

Holding Time: 7D 14D

Date Due: 9/16 1700

Sample Received: 9/16 1700 Time: 1510

Date Collected: 9/16 Time:

Address:

Phone#: Fax#:

Send Addt'l Reports To:

Phone#: Fax#:

Paid (Ck#)___ (Cash)___

Amount $:

Special Instructions:

Fax Results to Debbie, 562-1912

Sample#	Description	Mtx	Test	Parameter	
	See COC Samples #1-2	1	40035 / 40000	PCB 8080	105
	#1	4	40035 / 40000	PCB 8080	
	#2				
3	other lab charges	5	50010	Level III	
4	other lab charges	5	50005	Rush x2	

Sample Remarks EP Tox GC GC PREP H20 IC Metals Micro O/G Oils

J.W

Chain Of Custody: Y Tags: N

Custody Seals: (broken) X (intact) Yes

Rec'd By:

Logged By:

Entered By:

Temp. of Samples: 3.1c

Sample Condition: Good Fair Poo

Sample Containers:

(2) 950 mL

(1) 250

Figure 7-2
Sample Check-in List

Project Name or ID # : Roosevelt Road Transmitter Site Ft. Richardson, AK
Date Received 9/16/92 1570

1. Condition of shipping containers: good

2. Open shipping container Nancy & Jones

3. Number of sample containers in shipping container: 3

4. Samples have labels including: sample# yes location yes
date sampled yes time sampled yes sampler yes

5. Sample lids closed tightly? yes

6. Verify each sample ID with the Chain of Custody.

7. Verify the following paperwork:

Chain-of-Custody #: _____

Sample Log-in complete (Y/N) yes

8. Initiate Non-conformance memo of required.

9. Cooler Temperature 3.6°C

10. Preservation used

APPENDIX XIII

CASE NARRATIVE

Company Name: LAIDLAW ENVIRONMENTAL SERVICES, INC.
Project Name: ROOSEVELT ROAD TRANSMITTER SITE
Chemlab Reference Number: 92.4408

Chemlab Sample #	Client Sample #	Analyses Requested
1	D15-5'	EPA SW846 METHOD 8080
2	D14-7'	EPA SW846 METHOD 8080
3	SPB09 RPT	EPA SW846 METHOD 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ede 9-1-92

PREPARED BY
PRINTED NAME AND DATE

Laura L. Hopkins
LAURA L. HOPKINS 9-1-92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc.
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.4582

Chemlab Sample #	Client Sample #	Analyses Requested
1	B13002-15'	EPA SW846 METHOD 8080
2	B13004-15'	EPA SW846 METHOD 8080
3	B10005-10'	EPA SW846 METHOD 8080
4	SPD21	EPA SW846 METHOD 8080
5	SPB22	EPA SW846 METHOD 8080
6	SPB23	EPA SW846 METHOD 8080
7	SPB24	EPA SW846 METHOD 8080
8	SPB25	EPA SW846 METHOD 8080
9	B210-9'	EPA SW846 METHOD 8080
10	B230-9'	EPA SW846 METHOD 8080
11	B234-9'	EPA SW846 METHOD 8080
12	P2BLK1	EPA SW846 METHOD 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ede
STEPHEN C. EDE 9-10-92

PREPARED BY
PRINTED NAME AND DATE

Laura L. Hopkins
LAURA L. HOPKINS 9-11-92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc.
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.4701

Chemlab Sample #	Client Sample #	Analyses Requested
1	SPB26	EPA SW846 Method 8080
2	SPB27	EPA SW846 Method 8080
3	SPB28	EPA SW846 Method 8080
4	SPB29	EPA SW846 Method 8080
5	SPB30	EPA SW846 Method 8080
6	SPB31	EPA SW846 Method 8080
7	B220-11'	EPA SW846 Method 8080
8	B240-11'	EPA SW846 Method 8080
9	B13003-17'	EPA SW846 Method 8080
10	B3301-37'	EPA SW846 Method 8080
11	B3302-37'	EPA SW846 Method 8080
12	B3305-10'x4	EPA SW846 Method 8080
13	B3306-10'x4'	EPA SW846 Method 8080
14	B5002-5'x6'	EPA SW846 Method 8080
15	SPB32	EPA SW846 Method 8080
16	NWS01	EPA SW846 Method 8080
17	NWS02	EPA SW846 Method 8080
18	NWS04	EPA SW846 Method 8080
19	B50025-5'x6'	EPA SW846 Method 8080
20	SPB285	EPA SW846 Method 8080
21	B33025-37'	EPA SW846 Method 8080
22	B33045-25'x4'	EPA SW846 Method 8080
23	NES25	EPA SW846 Method 8080
24	ER1	EPA SW846 Method 8080
25	ER2	EPA SW846 Method 8080
26	ER3	EPA SW846 Method 8080
27	ER4	EPA SW846 Method 8080
28	B10002-10'x8'	EPA SW846 Method 8080
29	B3304-25x4'	EPA SW846 Method 8080
30	B3305-21'x4'	EPA SW846 Method 8080
31	NES2	EPA SW846 Method 8080
32	SPB33	EPA SW846 Method 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ede 9-16-92

PREPARED BY
PRINTED NAME AND DATE

Laura L. Hoskins
LAURA L. HOSKINS 9-15-92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc.
Project Name: Roosevelt Road Transmitter site
Chemlab Reference Number: 92.4762

Chemlab Sample #	Client Sample #	Analyses Requested
1	NWS03-2'	EPA SW846 Method 8080
2	NES01-2'	EPA SW846 Method 8080
3	B3303/38-40'	EPA SW846 Method 8080
4	B3306/25'-30'x6'	EPA SW846 Method 8080
5	P2BLK3	EPA SW846 Method 8080
6	SPB34	EPA SW846 Method 8080
7	SPB35	EPA SW846 Method 8080
8	TW1	EPA SW846 Method 8080
9	TW2	EPA SW846 Method 8080
10	TW3	EPA SW846 Method 8080
11	SPB36	EPA SW846 Method 8080
12	SPB37	EPA SW846 Method 8080
13	NES05-3'	EPA SW846 Method 8080
14	NES06-3'	EPA SW846 Method 8080
15	TANK 01	EPA SW846 Method 8080
16	TANK 015	EPA SW846 Method 8080
17	TANK 02	EPA SW846 Method 8080
18	TANK 03	EPA SW846 Method 8080
19	TANK 04	EPA SW846 Method 8080
20	TANK 05	EPA SW846 Method 8080
21	TANK 06	EPA SW846 Method 8080
22	NES04-11'	EPA SW846 Method 8080
23	NES03-10'	EPA SW846 Method 8080
24	NES45-11'	EPA SW846 Method 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Edw 9-24-92

PREPARED BY
PRINTED NAME AND DATE

Laura L Hopkins
LAURA L HOPKINS 9-22-92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc.
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.4828

Chemlab Sample #	Client Sample #	Analyses Requested
1	SPB38	EPA Method 8080

Comments: See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ede 9-24-92

PREPARED BY
PRINTED NAME AND DATE

Cindy Mueller
Judy Mueller 9/22/92

CASE NARRATIVE

Company Name: Laidlaw Environmental Services, Inc
Project Name: Roosevelt Road Transmitter Site
Chemlab Reference Number: 92.5020

Chemlab Sample #	Client Sample #	Analyses Requested
1	DC01	EPA SW846 Method MOD 8080
2	DC02	EPA SW846 Method MOD 8080

Comments. See attached chain of custody forms.

LABORATORY SUPERVISOR SIGNATURE
PRINTED NAME AND DATE

Stephen C. Ell
Stephen C. Ell 9-25-92

PREPARED BY
PRINTED NAME AND DATE

Laura L Hopkins
LAURA L HOPKINS 9-25-92

APPENDIX XIV

LABORATORY CHRONICLE

	I Date	II Date
Receipt/Refrigeration		
	____ 8/24/92	____
PCB Extraction Date		
EPA Method 3550 (Soil)		
92.4408-1	_____ 8/24/92	_____
92.4408 (2-3)	_____ 8/26/92	_____
PCB Analysis Date		
EPA SW846 Method 8080		
92.4408-1	_____ 8/25/92	_____
92.4408 (2-3)	_____ 8/27/92	_____

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

* See original Laboratory Chronicle.

Section Supervisor Review & Approval	(Signature)	Jané M. Fuller
	(Print Name)	Jané M. Fuller
	(Date)	9/1/92
Q.C. Officer Review & Approval	(Signature)	Stephen C. Eglu
	(Print Name)	Stephen C. Eglu
	(Date)	9-1-92

LABORATORY CHRONICLE

	I Date	II Date
Receipt/Refrigeration	8/31/92	
PCB Extraction Date		
EPA Method 3550 (Soil) 92.4582	9/1/92	
PCB Analysis Date		
EPA SW846 Method 8080 92.4582 (1, 2, 3, 5, 8, 10)	9/3/92	
92.4582 (11, 12)	9/4/92	
92.4582 (4, 6, 7, 9)	9/6/92	

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

* See original Laboratory Chronicle.

Section Supervisor Review & Approval	(Signature)	
	(Print Name)	Peter J. Robinson
	(Date)	9-10-92
Q.C. Officer Review & Approval	(Signature)	
	(Print Name)	Stephen C. Eder
	(Date)	9-10-92

LABORATORY CHRONICLE

Chem Lab Reference No. 92.4701

	I Date	II Date
Receipt/Refrigeration	9/3/92	
PCB Extraction Date		
EPA Method 3550 (Soil)		
92.4701-		
1	9/8/92	
2	9/8/92	
3	9/8/92	
4	9/8/92	
5	9/8/92	
6	9/8/92	
7	9/3/92	
8	9/3/92	
9	9/3/92	
10	9/3/92	
11	9/3/92	
12	9/3/92	
13	9/3/92	
14	9/3/92	
15	9/8/92	
16	9/4/92	
17	9/4/92	
18	9/4/92	
19	9/4/92	
20	9/8/92	
21	9/4/92	
22	9/4/92	
23	9/4/92	
24	9/4/92	
25	9/4/92	
26	9/4/92	
27	9/4/92	
28	9/4/92	
29	9/4/92	
30	9/4/92	
31	9/4/92	
32	9/8/92	

LABORATORY CHRONICLE (CONTINUED)

PCB Analysis Date

EPA SW846 Method 8080 92.4701-	I Date	II Date
1	9/11/92	
2	9/11/92	
3	9/11/92	
4	9/11/92	
5	9/11/92	
6	9/11/92	
7	9/4/92	
8	9/5/92	
9	9/5/92	
10	9/5/92	
11	9/6/92	
12	9/6/92	
13	9/6/92	
14	9/6/92	
15	9/11/92	
16	9/6/92	
17	9/6/92	
18	9/6/92	
19	9/6/92	
20	9/11/92	
21	9/6/92	
* 22	9/6/92	
23	9/6/92	
24	9/6/92	
25	9/6/92	
26	9/6/92	
27	9/6/92	
28	9/6/92	
29	9/6/92	
30	9/6/92	
31	9/6/92	
32	9/11/92	

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

* See original Laboratory Chronicle.

Section Supervisor Review & Approval
(Signature) Scott C. Montieth
(Print Name) Scott C. Montieth
(Date) 9/15/92

Q.C. Officer Review & Approval
(Signature) Steven C. Ede
(Print Name) Steven C. Ede
(Date) 9-14-92

LABORATORY CHRONICLE

Chem Lab Reference No. 92-4762

	I	Date	II	Date
Receipt/Refrigeration	____	9/5/92	____	
PCB Extraction Date				
EPA Method 3550 (Soil)				
92-4762-				
1	_____	9/7/92	_____	
2	_____	9/7/92	_____	
3	_____	9/7/92	_____	
4	_____	9/7/92	_____	
5	_____	9/9/92	_____	
6	_____	9/9/92	_____	
7	_____	9/9/92	_____	
8	_____	9/8/92	_____	
9	_____	9/8/92	_____	
10	_____	9/8/92	_____	
11	_____	9/8/92	_____	
12	_____	9/9/92	_____	
13	_____	9/7/92	_____	
14	_____	9/7/92	_____	
15	_____	9/7/92	_____	
16	_____	9/7/92	_____	
17	_____	9/7/92	_____	
18	_____	9/7/92	_____	
19	_____	9/7/92	_____	
20	_____	9/7/92	_____	
21	_____	9/7/92	_____	
22	_____	9/7/92	_____	
23	_____	9/7/92	_____	
24	_____	9/7/92	_____	

LABORATORY CHRONICLE (CONTINUED)

PCB Analysis Date

EPA SW846 Method 8080 92.4762-		I Date		II Date
1	_____	9/9/92	_____	
2	_____	9/9/92	_____	
3	_____	9/9/92	_____	
4	_____	9/9/92	_____	
5	_____	9/9/92	_____	
6	_____	9/13/92	_____	
7	_____	9/13/92	_____	
8	_____	9/10/92	_____	
9	_____	9/12/92	_____	
10	_____	9/10/92	_____	
11	_____	9/13/92	_____	
12	_____	9/13/92	_____	
13	_____	9/9/92	_____	
14	_____	9/9/92	_____	
15	_____	9/9/92	_____	
16	_____	9/9/92	_____	
17	_____	9/10/92	_____	
18	_____	9/10/92	_____	
19	_____	9/10/92	_____	
20	_____	9/10/92	_____	
21	_____	9/10/92	_____	
22	_____	9/10/92	_____	
23	_____	9/10/92	_____	
24	_____	9/10/92	_____	

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

* See original Laboratory Chronicle.

Section Supervisor Review & Approval
(Signature) [signature]
(Print Name) Kevin Maher
(Date) 9-24-92

Q.C. Officer Review & Approval
(Signature) [signature]
(Print Name) Stephen C. Edl
(Date) 9-24-92

LABORATORY CHRONICLE

	I Date	II Date
Receipt/Refrigeration	9/9/92	
PCB Extraction Date		
EPA Method 3550 (Soil) 92.4828-1	9/15/92	
PCB Analysis Date		
EPA SW846 Method 8080 92.4828-1	9/17/92	

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

* See original Laboratory Chronicle.

Section Supervisor Review & Approval	(Signature)	
	(Print Name)	Kevin Maher
	(Date)	9-24-92
Q.C. Officer Review & Approval	(Signature)	
	(Print Name)	Stephen C. Edl
	(Date)	9-24-92

LABORATORY CHRONICLE

	I Date	II Date
Receipt/Refrigeration		
	_____ 9/16/92	_____
PCB Extraction Date		
EPA Method 3510 (Water) 92.5020 - 1	_____ 9/17/92	_____
EPA Method 3550 (Soil) 92.5020 - 2	_____ 9/16/92	_____
PCB Analysis Date		
EPA SW846 Method 8080 92.5020 (1-2)	_____ 9/18/92	_____

NOTE: If fractions are re-extracted and re-analyzed because the initial endeavors failed to meet the required quality control criteria, the date of re-extraction and/or reanalysis will be entered in column 2 additionally.

* See original Laboratory Chronicle.

Section Supervisor Review & Approval	(Signature)	[signature]
	(Print Name)	Scott G. Madiol
	(Date)	9/28/92
Q.C. Officer Review & Approval	(Signature)	[signature]
	(Print Name)	Stephen C. Edl
	(Date)	9-28-92

APPENDIX XV

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4408-1

Lab Name: Chemical & Geological Laboratory

Lab File ID: 007F0101.D

Date Analyzed: 8/25/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Raidlaw ID	ppm 1260
01	BLK 8/24	007F0101.D	8/25/92	2:08 PM		
02	SPK 8/24	008F0101.D	8/25/92	3:07 PM		
03	DUP 8/24	009F0101.D	8/25/92	4:05 PM		
04	Aroclor 1242	003F0101.D	8/25/92	10:15 AM		
05	Aroclor 1254	004F0101.D	8/25/92	11:14 AM		
06	Aroclor 1260	007F0101.D	8/26/92	5:15 PM		
07	92.4408-1	013F0101.D	8/25/92	7:58 PM	DIS	1.21

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4408 (2-3)

Lab Name: Chemical & Geological Laboratory

Lab File ID: 015F0101.D

Date Analyzed: 8/27/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Spidlaw ID	PPm 1260
01	BLK 8/26	015F0101.D	8/27/92	1:01 AM		
02	SPK 8/26	016F0101.D	8/27/92	1:59 AM		
03	DUP 8/26	017F0101.D	8/27/92	2:58 AM		
04	Aroclor 1242	009F0101.D	8/26/92	7:11 PM		
05	Aroclor 1254	010F0101.D	8/26/92	8:10 PM		
06	Aroclor 1260	007F0101.D	8/26/92	5:15 PM		
07	92.4408-2	018F0101.D	8/27/92	3:56 AM	D14	1.14
08	92.4408-3	020F0101.D	8/27/92	5:52 AM	SPB09 RPT	46.3

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4582 (1-12)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 008F0101.D

Date Analyzed: 9/2/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	ppm 1260
01	BLK 9/1	008F0101.D	9/2/92	3:52 PM		
02	SPK 9/1	009F0101.D	9/2/92	4:51 PM		
03	DUP 9/1	010F0101.D	9/2/92	5:49 PM		
04	Aroclor 1242	003F0101.D	9/3/92	1:22 PM		
05	Aroclor 1254	004F0101.D	9/3/92	2:28 PM		
06	Aroclor 1260	002F0101.D	9/3/92	12:23 PM		
07	92.4582-1	021F0201.D	9/3/92	4:29 AM	B13002	0.348
08	92.4582-2	022F0201.D	9/3/92	5:28 AM	B13004	0.078
09	92.4582-3	023F0201.D	9/3/92	6:26 AM	B1000S	ND<0.020
10	92.4582-4x100	006F0101.D	9/6/92	8:43 PM	SPD21	135
11	92.4582-5	009F0101.D	9/3/92	7:24 PM	SPB22	8.79
12	92.4582-6x100	007F0101.D	9/6/92	9:41 PM	SPB23	118
13	92.4582-7x100	008F0101.D	9/6/92	10:39 PM	SPB24	45.1
14	92.4582-8	012F0101.D	9/3/92	10:19 PM	SPB25	2.65
15	92.4582-9	009F0101.D	9/6/92	11:37 PM	B210	0.782
16	92.4582-10	013F0101.D	9/3/92	11:17 PM	B230	0.509
17	92.4582-11	014F0101.D	9/4/92	12:16 AM	B234	0.427
18	92.4582-12	015F0101.D	9/4/92	1:14 AM	PZBLK1	ND<0.020

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4701 (1-6, 15, 20, 32)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 007F0101.D

Date Analyzed: 9/11/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	ppm 1260
BLK 9/8	007F0101.D	9/11/92	1:29 AM		
SPK 9/8	008F0101.D	9/11/92	2:28 AM		
DUP 9/8	009F0101.D	9/11/92	3:26 AM		
Aroclor 1242	003F0101.D	9/11/92	6:32 PM		
Aroclor 1254	004F0101.D	9/11/92	7:30 PM		
Aroclor 1260	002F0101.D	9/11/92	5:34 PM		
92.4701-1x100	006F0101.D	9/11/92	9:27 PM	SPB26	647
92.4701-2	014F0101.D	9/11/92	8:16 AM	SPB 27	8.97
92.4701-3	015F0101.D	9/11/92	9:13 AM	SPB28	6.40
92.4701-4x100	007F0101.D	9/11/92	10:25 PM	SPB29	35.6
92.4701-5x100	008F0101.D	9/11/92	11:23 PM	SPB30	32.1
92.4701-6x100	009F0101.D	9/12/92	12:22 AM	SPB31	437
92.4701-15x100	010F0101.D	9/12/92	1:20 AM	SPB32	49.8
92.4701-20	020F0101.D	9/11/92	2:05 PM	SPB285	2.11
92.4701-32x100	011F0101.D	9/12/92	2:18 AM	SPB33	77.1

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4701 (7-14)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 054R0401.D

Date Analyzed: 9/4/92

Instrument ID: ECD #2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	PPM 1260
BLK 9/3	054R0401.D	9/4/92	1:38 PM		
SPK 9/3	055R0401.D	9/4/92	2:27 PM		
DUP 9/3	056R0401.D	9/4/92	3:17 PM		
Aroclor 1242	003F0401.D	9/5/92	4:25 PM		
Aroclor 1254	004F0401.D	9/5/92	5:23 PM		
Aroclor 1260	002F0401.D	9/5/92	3:27 PM		
92.4701-7	063R0501.D	9/4/92	8:17 PM	B220	0.229
92.4701-8	008F0401.D	9/5/92	9:16 PM	B240	2.17
92.4701-9	009F0401.D	9/5/92	10:14 PM	B13003	0.114
92.4701-10	010F0401.D	9/5/92	11:13 PM	B3301	0.404
92.4701-11	011F0401.D	9/5/92	12:11 AM	B3302	1.73
92.4701-12	012F0401.D	9/6/92	1:09 AM	B3305	ND<0.020
92.4701-13	013F0401.D	9/6/92	2:07 AM	B3306	ND<0.020
92.4701-14	014F0401.D	9/6/92	3:05 AM	BS002	0.165

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4701 (16-19, 21-31)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 055R0301.D

Date Analyzed: 9/5/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	ppm 1260
BLK 9/4	055R0301.D	9/5/92	9:16 PM		
SPK 9/4	056R0301.D	9/5/92	10:14 PM		
DUP 9/4	057R0301.D	9/5/92	11:13 PM		
Aroclor 1242	003F0401.D	9/5/92	4:25 PM		
Aroclor 1254	004F0401.D	9/5/92	5:23 PM		
Aroclor 1260	002F0401.D	9/5/92	3:27 PM		
92.4701 - 16	058F0501.D	9/6/92	5:02 AM	NWS01	0154
92.4701 - 17	059F0501.D	9/6/92	6:00 AM	NWS02	0.862
92.4701 - 18	060F0501.D	9/6/92	6:58 AM	NWS04	0.067
92.4701 - 19	061F0501.D	9/6/92	7:56 AM	BS0025	0.322
92.4701 - 21	062F0501.D	9/6/92	8:55 AM	B33025	0.724
92.4701 - 22	063F0501.D	9/6/92	9:53 AM	B33045	0.032
92.4701 - 23	064F0501.D	9/6/92	10:52 AM	NES025	ND<0.020
92.4701 - 24	065F0501.D	9/6/92	11:51 AM	ER1	1.25
92.4701 - 25	066F0501.D	9/6/92	12:51 PM	ER2	1.21
92.4701 - 26	067F0501.D	9/6/92	1:50 PM	ER3	1.99
92.4701 - 27	068F0501.D	9/6/92	2:48 PM	ER4	1.22
92.4701 - 28	069R0301.D	9/6/92	10:52 AM	B1002	3.81
92.4701 - 29	070R0301.D	9/6/92	11:51 AM	B3504	0.024
92.4701 - 30	071R0301.D	9/6/92	12:51 PM	B3305	9.54
92.4701 - 31	072R0301.D	9/6/92	1:50 PM	NES02	ND<0.02

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4762 (1 - 4, 13 - 24)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 014F0101.D

Date Analyzed: 9/8/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	ppm 1260
01	BLK 9/7	014F0101.D	9/8/92	3:40 AM		
02	SPK 9/7	015F0101.D	9/8/92	4:38 AM		
03	DUP 9/7	016F0101.D	9/8/92	5:36 AM		
04	Aroclor 1242	003F0101.D	9/9/92	6:59 PM		
05	Aroclor 1254	004F0101.D	9/9/92	7:57 PM		
06	Aroclor 1260	002F0101.D	9/9/92	6:00 PM		
07	92.4762 - 1	017F0101.D	9/9/92	6:35 AM	NWS03 - 2'	2.72
08	92.4762 - 2	018F0101.D	9/9/92	7:33 AM	NES01 - 2'	0.021
09	92.4762 - 3	019F0101.D	9/9/92	8:31 AM	B3303/38-40'	0.768
10	92.4762 - 4	0201F0301.D	9/9/92	10:28 AM	B3306/25'-30'x6'	1.86
11	92.4762 - 13	021F0301.D	9/9/92	11:26 AM	NES05 - 3'	0.141
12	92.4762 - 14	006F0101.D	9/9/92	9:53 PM	NES06 - 3'	3.38
13	92.4762 - 15	007F0101.D	9/9/92	10:52 PM	TANK 01	0.645
14	92.4762 - 16	008F0101.D	9/9/92	11:50 PM	TANK 015	0.762
15	92.4762 - 17	009F0101.D	9/10/92	12:48 AM	TANK 02	0.026
16	92.4762 - 18	010F0101.D	9/10/92	1:47 AM	TANK 03	ND < 0.020
17	92.4762 - 19	011F0101.D	9/10/92	2:45 AM	TANK 04	0.031
18	92.4762 - 20	012F0101.D	9/10/92	3:43 AM	TANK 05	0.170
19	92.4762 - 21	013F0101.D	9/10/92	4:42 AM	TANK 06	ND < 0.020
20	92.4762 - 22	014F0101.D	9/10/92	5:40 AM	NES04 - 11'	0.886
21	92.4762 - 23	015F0101.D	9/10/92	6:38 AM	NES03 - 10'	0.045
22	92.4762 - 24	016F0101.D	9/10/92	7:36 AM	NES045 - 11'	1.45

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4762 (5 - 7, 11 12)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 059R0301.D

Date Analyzed: 9/11/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	Ppm 1260
01	BLK 9/9	059R0301.D	9/11/92	11:02 AM		
02	SPK 9/9	060R0301.D	9/11/92	12:01 PM		
03	DUP 9/9	061R0301.D	9/11/92	12:58 PM		
04	Aroclor 1242	003R0301.D	9/12/92	6:03 PM		
05	Aroclor 1254	004R0201.D	9/12/92	7:01 PM		
06	Aroclor 1260	002R0201.D	9/12/92	5:04 PM		
07	92.4762 - 5	053F0401.D	9/13/92	1:28 PM	P2 BLK 3	ND < 0.020
08	92.4762 - 6x100	007F0301.D	9/14/92	3:32 PM	SPB34	211
09	92.4762 - 7	055F0401.D	9/13/92	3:25 PM	SPB35	1.46
10	92.4762 - 11	056F0401.D	9/13/92	4:23 PM	SPB36	4.86
11	92.4762 - 12x100	008F0301.D	9/14/92	4:31 PM	SPB37	79.6

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4762 (8, 9, 10)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 053R0401.D

Date Analyzed: 9/10/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	ug 1260
01	BLK 9/8	053R0401.D	9/10/92	4:42 AM		
02	SPK 9/8	054R0401.D	9/10/92	5:40 AM		
03	DUP 9/8	055R0401.D	9/10/92	6:38 AM		
04	Aroclor 1242	003R0201.D	9/9/92	7:57 PM		
05	Aroclor 1254	004R0201.D	9/9/92	8:55 PM		
06	Aroclor 1260	002R0201.D	9/9/92	6:59 PM		
07	92.4762 - 8	056R0401.D	9/10/92	7:36 AM	TW1	ND<1.00
08	92.4762 - 9	057R0401.D	9/10/92	8:34 AM	TW2	2.42
09	92.4762 - 10	058R0401.D	9/10/92	9:33 AM	TW3	ND<1.00

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.4828-1

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 007F0201.D

Date Analyzed: 9/16/92

Instrument ID: ECD #2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	ppm 1260
BLK 9/15	007F0201.D	9/16/92	8:57 PM		
SPK 9/15	008F0201.D	9/16/92	9:47 PM		
DUP 9/15	009F0201.D	9/16/92	10:37 PM		
Aroclor 1242	003F0101.D	9/16/92	5:37 PM		
Aroclor 1254	004F0101.D	9/16/92	6:27 PM		
Aroclor 1260	002F0101.D	9/16/92	4:47 PM		
92.4828-1	035F0301.D	9/16/92	11:06 AM	SPB 38	22.8

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.5020 - 1

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 013F0401.D

Date Analyzed: 9/18/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	Laidlaw ID	PPm 1260
01	BLK H2O 9/17	013F0401.D	9/18/92	3:06 PM		
02	SPK H2O 9/17	014F0601.D	9/18/92	5:06 PM		
03	DUP H2O 9/17	015F0601.D	9/18/92	6:05 PM		
04	Aroclor 1242	003F0101.D	9/18/92	9:15 AM		
05	Aroclor 1254	004F0101.D	9/18/92	10:14 AM		
06	Aroclor 1260	002F0101.D	9/17/92	6:09 PM		
07	92.5020 - 1	016F0201.D	9/18/92	12:10 PM	DC01	0.075

POLYCHLORINATED BIPHENYLS
METHOD BLANK SUMMARY
92.5020 - 2

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Lab File ID: 061R0801 D

Date Analyzed: 9/18/92

Instrument ID: ECD #3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

	LAB SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	field ID	ppm 1260
01	BLK SOIL 9/16	061R0801.D	9/18/92	6:05 PM		
02	SPK SOIL 9/16	062R0801.D	9/18/92	7:03 PM		
03	DUP SOIL 9/16	063R0801.D	9/18/92	8:02 PM		
04	Aroclor 1242	033R0201.D	9/18/92	10:14 AM		
05	Aroclor 1254	004R0201.D	9/18/92	11:12 AM		
06	Aroclor 1260	002R0201.D	9/18/92	9:15 AM		
07	92.5020 - 2	064F0301.D	9/19/92	1:09 PM	DC02	0.077

APPENDIX XVI

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4408-1

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 8/24	110%	104%
SPK 8/24	110%	99%
DUP 8/24	115%	101%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 8/24	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Jerré M. Fuller

Printed Name and Date: 9/1/92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4408 (2-3)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 8/26	104%	98%
SPK 8/26	101%	102%
DUP 8/26	103%	103%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 8/26	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: José M. Tello

Printed Name and Date: 9/1/92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4582 (1-12)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 9/1	88%	97%
SPK 9/1	117%	96%
DUP 9/1	87%	92%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 9/1	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Supervisor's Signature: Peter Robinson

Printed Name and Date: Peter Robinson 9-10-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4701 (1-6, 15, 20, 32)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 9/8	111%	96%
SPK 9/8	87%	93%
DUP 9/8	94%	93%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 9/8	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analist's Signature: Scott G. Madirola

Printed Name and Date: Scott G. Madirola 9/15/92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4701 (7-14)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 9/3	90%	126%
SPK 9/3	60%	100%
DUP 9/3	66%	111%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 9/3	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analist's Signature: Scott G. Mandiola

Printed Name and Date: Scott G. Mandiola 9/13/92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4701 (16-19, 21-31)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 9/4	146%	87%
SPK 9/4	182%	89%
DUP 9/4	91%	87%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 9/4	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.
G. Other	Surrogate Recovery Tetra blank and Tetra spike are outside of required quality control limits.	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analist's Signature: [signature]

Printed Name and Date: Scott G. Mankiewicz 9/15/92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4762 (1 - 4, 13 - 24)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 9/7	83%	101%
SPK 9/7	109%	101%
DUP 9/7	104%	99%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 9/7	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% rec. for 1 of 2 surrogates. Waters: 70-130% rec. for 1 of 2 surrogates.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analyst's Signature: Nikki R. Countryman

Printed Name and Date: NIKKI R. COUNTRYMAN 9-24-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4752 (5 - 7, 11, 12)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 9/9	82%	82%
SPK 9/9	80%	79%
DUP 9/9	86%	88%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 9/9	0.020	0.020	0.020	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	90-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% rec. for 1 of 2 surrogates. Waters: 70-130% rec. for 1 of 2 surrogates.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analyst's Signature: Niki R. Countryman

Printed Name and Date: NIKI R. COUNTRYMAN 9-14-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.4762 (8. 9. 10)

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK 9/8	99%	87%
SPK 9/8	98%	96%
DUP 9/8	108%	96%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK 9/8	1.00	1.00	1.00	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% rec. for 1 of 2 surrogates. Waters: 70-130% rec. for 1 of 2 surrogates.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analyst's Signature: Nicki R. Countryman

Printed Name and Date: NICKI R. COUNTRYMAN 9-9-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92428

Below is a summary of the quality assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK SOIL 9-15	74%	86%
SPK SOIL 9-15	98%	95%
DUP SOIL 9-15	100%	98%

II. BLANK ANALYSIS

AROCLOR 1242	AROCLOR 1254	AROCLOR 1260
ND (0.020)	ND (0.020)	ND (0.020)

III. ANALYSIS

	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calib. Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% Rec. Waters: 70-130% Rec.

G. Other Aroclor 1242 is out of QC limits.
No Aroclor 1242 was reported.

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analyst Signature: Niki R. Countryman

Date: NIKI R. COUNTRYMAN 9-16-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.5020 - 1

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK H2O 9/17	122%	33%
SPK H2O 9/17	123%	29%
DUP H2O 9/17	118%	55%

II. BLANK ANALYSIS	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK H2O 9/17	0.001	0.001	0.001	U

III. ANALYSIS	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% rec. for 1 of 2 surrogates. Waters: 70-130% rec. for 1 of 2 surrogates.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analyst's Signature: Niki R. Countryman

Printed Name and Date: NIKI R. COUNTRYMAN 9-18-92

POLYCHLORINATED BIPHENYLS
QUALITY CONTROL SUMMARY

Chemical and Geological Laboratory Reference # 92.5020 - 2

Below is a summary of the Quality Assurance measures performed in conjunction with the analysis of your samples.

I. Surrogate Recoveries

Sample I.D.	% RECOVERY TETRA	% RECOVERY DECA
BLK SOIL 9/16	103%	96%
SPK SOIL 9/16	121%	94%
DUP SOIL 9/16	107%	94%

II. BLANK ANALYSIS

	Aroclor 1242	Aroclor 1254	Aroclor 1260	
BLK SOIL 9/16	0.020	0.020	0.020	U

III. ANALYSIS

	Assurance Notes	Acceptance Criteria
A. Holding Time	All criteria met.	Extraction - 14 days Analysis - 40 days
B. Calibration	All criteria met.	Linearity over calibration range.
C. Matrix Blank	All criteria met.	Below practical quantitation limit.
D. Matrix Spike/ Matrix Spike Dup	All criteria met.	Soils: 70-130% Rec., ±30% RPD Waters: 70-130% Rec., ±25% RPD
E. Calibration Verif. Std.	All criteria met.	80-120% of True Value.
F. Surrogates	All criteria met.	Soils: 70-130% rec. for 1 of 2 surrogates. Waters: 70-130% rec. for 1 of 2 surrogates.
G. Other	NONE	

I certify that this analysis is in compliance with the terms and conditions agreed to by the client and Chemical and Geological Laboratory, both technically and for completeness for other than the conditions detailed above.

Analyst's Signature: Nikki R. Countryman

Printed Name and Date: NIKKI R. COUNTRYMAN 9-18-92

APPENDIX XVII

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4408-1

Lab Name: Chemical and Geological Laboratory

CCVS Date: 8/25/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 7/15/92 AROCLOR 1260 007F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %	
Aroclor 1242	10	9	93%	90%
Aroclor 1254	10	10	104%	100%
Aroclor 1260	10	11	113%	110%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4408 (2-3)

Lab Name: Chemical and Geological Laboratory

CCVS Date: 8/26/92 FILE NO: AROCLOR 1242 009F0101.D
AROCLOR 1254 010F0101.D
Init Cal Date: 7/15/92 AROCLOR 1260 007F0101.D

Instrument I.D. ECD #3

COMPOUND	Actual CVS Conc. (ppm)	Recov. CVS Conc. (ppm)	Recovery %	
Aroclor 1242	10	10	97%	100%
Aroclor 1254	10	11	110%	
Aroclor 1260	10	11	113%	110%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4582 (1-3, 5, 8, 10-12)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/3/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 8/27/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %	
Aroclor 1242	10	9	92%	90%
Aroclor 1254	10	11	106%	110%
Aroclor 1260	10	11	107%	110%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4582 (4, 6, 7, 9)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/6/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 8/27/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %	
Aroclor 1242	10	9	88%	90%
Aroclor 1254	10	10	104%	100%
Aroclor 1260	10	11	107%	110%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4701 (1-6, 15, 20, 32)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/11/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 8/27/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %	
Aroclor 1242	10	10	95%	100%
Aroclor 1254	10	10	103%	100%
Aroclor 1260	10	10	103%	100%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4701 (8-14)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/5/92 FILE NO: AROCLOR 1242 003F0401.D
AROCLOR 1254 004F0401.D

Init Cal Date: 8/27/92 AROCLOR 1260 002F0401.D

Instrument I.D. ECD #2

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %	
Aroclor 1242	10	9	94%	90%
Aroclor 1254	10	11	111%	110%
Aroclor 1260	10	12	116%	120%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4701 - 7

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/4/92 FILE NO: AROCLOR 1242 NA
AROCLOR 1254 052R0301.D
Init Cal Date: 8/28/92 AROCLOR 1260 061R0501.D

Instrument I.D. ECD #2

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %	
Aroclor 1242	NA	NA	NA	
Aroclor 1254	10	10	98%	100%
Aroclor 1260	10	11	114%	110%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4701 (16-19 , 21-27)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/5/92 FILE NO: AROCLOR 1242 003F0401.D
AROCLOR 1254 004F0401.D

Init Cal Date: 8/27/92 AROCLOR 1260 002F0401.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %	
Aroclor 1242	10	9	94%	90%
Aroclor 1254	10	11	111%	110%
Aroclor 1260	10	12	116%	120%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4701 (28-31)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/5/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 8/27/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %	
Aroclor 1242	10	10	102%	100%
Aroclor 1254	10	11	110%	110%
Aroclor 1260	10	11	106%	110%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4762 (1 - 4, 13 - 24)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/9/92 FILE NO. AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 8/27/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %
Aroclor 1242	10	9.000	90%
Aroclor 1254	10	10.493 10.5	105%
Aroclor 1260	10	10.886 10.9	109%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4762 (6. 12)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/14/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 8/27/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %
Aroclor 1242	10	8.977 9.0	90%
Aroclor 1254	10	7.750 7.8	78%
Aroclor 1260	10	10.238 10.2	102%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
MATRIX (BLK. SPK. DUP)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/12/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 8/27/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %
Aroclor 1242	10	9.682 9.7	97%
Aroclor 1254	10	10.158 10.2	102%
Aroclor 1260	10	9.565 9.6	96%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
MATRIX (BLK. SPK. DUP)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/12/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D
Init Cal Date: 8/27/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %
Aroclor 1242	10	8.823 -8.8	88%
Aroclor 1254	10	10.246 10.2	102%
Aroclor 1260	10	10.595 10.6	106%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4762 (8, 9, 10)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/9/92 FILE NO: AROCLOR 1242 003R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 8/27/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %
Aroclor 1242	10	9.992 10	100%
Aroclor 1254	10	10.466 10.5	105%
Aroclor 1260	10	10.087 10.1	101%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.4828

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/16/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101 D
Init Cal Date: 9/4/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #2

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %
Aroclor 1242	10	12.595 12.6	* 126%
Aroclor 1254	10	10.136 10.1	101%
Aroclor 1260	10	9.934 9.9	99%

* Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.5020 - 1

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/18/92 FILE NO: AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101.D

Init Cal Date: 8/27/92 AROCLOR 1260 002F0101.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (mg/L)	RECOV. CVS CONC. (mg/L)	RECOVERY %
Aroclor 1242	10	9.55 9.5	95%
Aroclor 1254	10	9.38 9.4	94%
Aroclor 1260	10	11.2	112%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
92.5020 - 2

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/18/92 FILE NO. AROCLOR 1242 003F0101.D
AROCLOR 1254 004F0101 D
Init Cal Date: 8/27/92 AROCLOR 1260 002F0101 D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %
Aroclor 1242	10	9.55 9.5	95%
Aroclor 1254	10	9.38 9.4	94%
Aroclor 1260	10	11.2	112%

POLYCHLORINATED BIPHENYLS
CALIBRATION VERIFICATION SUMMARY
MATRIX (BLK. SPK. DUP)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

CCVS Date: 9/18/92 FILE NO. AROCLOR 1242 033R0201.D
AROCLOR 1254 004R0201.D
Init Cal Date: 8/27/92 AROCLOR 1260 002R0201.D

Instrument I.D. ECD #3

COMPOUND	ACTUAL CVS CONC. (ppm)	RECOV. CVS CONC. (ppm)	RECOVERY %
Aroclor 1242	10	10.2	102%
Aroclor 1254	10	9.82 9.9	98%
Aroclor 1260	10	10.4	104%

APPENDIX XVIII

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.4408-1

Lab Name: Chemcial and Geological Laboratory

Matrix Spike File No.: 008F0101.D

Matrix Spike Dup. File No.: 009F0101.D

Instrument ID: ECD #3

Date Analyzed: 8/25/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	0.90	0.00	0.83	92%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	0.90	0.00	0.79	88%	4%

✓

Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.4408 (2-3)

Lab Name: Chemcial and Geological Laboratory

Matrix Spike File No.: 016F0101.D

Matrix Spike Dup. File No.: 017F0101.D

Instrument ID: ECD #3

Date Analyzed: 8/27/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	0.90	0.00	0.89	99%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	0.90	0.00	0.90	100%	1%

Column to be used to flag recovery and RPD

*Values outside of QC limits

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.4582 (1-12)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File No.: 009F0101.D

Matrix Spike Dup. File No.: 010F0101.D

Instrument ID: ECD #3

Date Analyzed: 9/2/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	0.90	0.00	0.76	84%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	0.90	0.00	0.90	99%	16%

* - Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.4701 (1-6, 15, 20, 32)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File No.: 008F0101.D

Matrix Spike Dup. File No.: 009F0101.D

Instrument ID: ECD #3

Date Analyzed: 9/11/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	0.94	94%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.95	95%	1%

* - Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.4701 (7-14)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File No.: 055R0401.D

Matrix Spike Dup. File No.: 056R0401.D

Instrument ID: ECD #2

Date Analyzed: 9/4/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	1.13	113%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	1.25	125%	10%

* - Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.4701 (16-19, 21-31)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File No.: 056R0301.D

Matrix Spike Dup. File No.: 057R0301.D

Instrument ID: ECD #3

Date Analyzed: 9/5/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	1.03	103%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	1.07	107%	4%

* - Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.4762 (1 - 4, 13 - 24)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File No.: 015F0101.D

Matrix Spike Dup. File No.: 016F0101.D

Instrument ID: ECD #3

Date Analyzed: 9/8/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	0.89	89%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.89	89%	0%

* - Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.4762 (5 - 7, 11, 12)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File No.: 060R0301.D

Matrix Spike Dup. File No.: 061R0301.D

Instrument ID: ECD #3

Date Analyzed: 9/11/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	5.00	0.00	4.21	84%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	5.00	0.00	4.65	93%	10%

* - Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92 4762 (8, 9, 10)

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File No.: 054R0401.D

Matrix Spike Dup. File No.: 055R0401.D

Instrument ID: ECD #3

Date Analyzed: 9/10/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	0.91	91%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.78	78%	15% ✓

* - Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File ID: 008F0201.D Instrument ID: ECD #2

Matrix Spike Dup. File ID: 009F0201.D Date Analyzed: 9/16/92

MATRIX SPIKE COMPOUND	SPK ADDED (PPM)	SAMPLE MULTIPLIER	MS CONC (PPM)	MS REC %
Aroclor 1262	1.00	0.1961	0.237	121%

MATRIX SPK DUP COMPOUND	SPK ADDED (PPM)	SAMPLE MULTIPLIER	MSD CONC (PPM)	MSD REC %	RPD %
Aroclor 1262	1.00	0.1977	0.250	126%	5%

* Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.5020 - 1

Lab Name:	Chemical and Geological Laboratories of Alaska, Inc.
Matrix Spike File No.:	014F0S01.D
Matrix Spike Dup. File No.:	015F0S01.D
Instrument ID:	ECD #3
Date Analyzed:	9/18/92

Matrix Spike

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONC. (mg/L)	MS CONC. (mg/L)	MS REC. %
Aroclor 1262	1.00	0.00	0.63	63%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONC. (mg/L)	MSD CONC. (mg/L)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.93	93%	11%

* - Values outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
MATRIX SPIKE/ DUPLICATE SUMMARY SHEET
92.5020 - 2

Lab Name: Chemical and Geological Laboratories of Alaska, Inc.

Matrix Spike File No.: 062F0801.D

Matrix Spike Dup. File No.: 062R0801.D

Instrument ID: ECD #3

Date Analyzed: 9/18/92

Matrix Spike

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MS CONC. (ppm)	MS REC. %
Aroclor 1262	1.00	0.00	1.09	109%

Matrix Spike Duplicate

COMPOUND	SPIKE ADDED (ppm)	SAMPLE CONC. (ppm)	MSD CONC. (ppm)	MSD REC. %	RPD %
Aroclor 1262	1.00	0.00	0.86	86%	23%

* - Values outside of required quality control limits.

APPENDIX XIX

Glossary of Result Qualifiers

1. Q Qualifiers:

U - Reported value is the practical quantification limit.

C - This Flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

X - Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such descriptions attached to the Sample Data Summary Package and the Case Narrative.

M - Duplicate injection precision not met.

N - Spiked sample recovery is outside quality assurance goals.

S - The reported value was determined by the Method of Standard Additions(MSA).

W - Post-digestion spike for Furnace AA analysis is outside quality assurance goals, while sample absorbance is less than 50% of spike absorbance.

+ - Correlation Coefficient for MSA is less than 0.995.

2. M (Method) Flags:

P - for ICP
A - for Flame AA
F - for Furnace AA
CV - for Manual Cold Vapor AA
AV - for Automated Cold Vapor AA
AS - for Semi-Automated Spectrophotometer
C - for Manual Spectrophotometer
T - for Titrimetric Analysis

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4408-1

Lab Name: Chemical & Geological Laboratory

Sequence Name: 82592 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK 8/24	110%	104%	8/25/92	
02	SPK 8/24	110%	99%	8/25/92	
03	DUP 8/24	115%	101%	8/25/92	
04	Aroclor 1242	NA	NA	8/25/92	
05	Aroclor 1254	NA	NA	8/25/92	
06	Aroclor 1260	NA	NA	8/26/92	
07	92.4408-1	89%	108%	8/25/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4408 (2-3)

Lab Name: Chemical & Geological Laboratory

Sequence Name: 82692 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK 8/26	104%	98%	8/27/92	
02	SPK 8/26	101%	102%	8/27/92	
03	DUP 8/26	103%	103%	8/27/92	
04	Aroclor 1242	NA	NA	8/26/92	
05	Aroclor 1254	NA	NA	8/26/92	
06	Aroclor 1260	NA	NA	8/26/92	
07	92.4408-2	98%	105%	8/27/92	
08	92.4408-3	110%	109%	8/27/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4582 (1-12)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 90291 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK 9/1	88%	97%	9/2/92	
02	SPK 9/1	117%	96%	9/2/92	
03	DUP 9/1	87%	92%	9/2/92	
04	Aroclor 1242	NA	NA	9/3/92	
05	Aroclor 1254	NA	NA	9/3/92	
06	Aroclor 1260	NA	NA	9/3/92	
07	92.4582-1	75%	84%	9/3/92	
08	92.4582-2	76%	80%	9/3/92	
09	92.4582-3	89%	95%	9/3/92	
10	92.4582-4x100	------	------	9/6/92	D
11	92.4582-5	91%	91%	9/3/92	
12	92.4582-6x100	------	------	9/6/92	D
13	92.4582-7x100	------	------	9/6/92	D
14	92.4582-8	87%	93%	9/3/92	
15	92.4582-9	------	92%	9/6/92	D
16	92.4582-10	103%	70%	9/3/92	
17	92.4582-11	95%	88%	9/4/92	
18	92.4582-12	82%	110%	9/4/92	

S1- Decachlorobiphenyl

S2- Tetrachlorometaxylene

* - Surrogate recovery outside of required quality control limits.

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4701 (1-6, 15, 20, 32)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 91092 Instrument ID: ECD #3

SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
BLK 9/8	111%	96%	9/11/92	
SPK 9/8	87%	93%	9/11/92	
DUP 9/8	94%	93%	9/11/92	
Aroclor 1242	NA	NA	9/11/92	
Aroclor 1254	NA	NA	9/11/92	
Aroclor 1260	NA	NA	9/11/92	
92.4701-1x100	------	------	9/11/92	D
92.4701-2	99%	85%	9/11/92	
92.4701-3	91%	86%	9/11/92	
92.4701-4x100	------	------	9/11/92	D
92.4701-5x100	------	------	9/11/92	D
92.4701-6x100	------	------	9/12/92	D
92.4701-15x100	------	------	9/12/92	D
92.4701-20	78%	79%	9/11/92	
92.4701-32x100	------	------	9/12/92	D

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene
* - Surrogate recovery outside of required quality control limits.
D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4701 (7-14)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 90492 Instrument ID: ECD #2

SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
BLK 9/3	90%	126%	9/4/92	
SPK 9/3	60%	100%	9/4/92	
DUP 9/3	66%	111%	9/4/92	
Aroclor 1242	NA	NA	9/5/92	
Aroclor 1254	NA	NA	9/5/92	
Aroclor 1260	NA	NA	9/5/92	
92.4701-7	97%	120%	9/4/92	D
92.4701-8	-------	95%	9/5/92	
92.4701-9	80%	87%	9/5/92	
92.4701-10	94%	92%	9/5/92	D
92.4701-11	139%	96%	9/5/92	D
92.4701-12	84%	93%	9/6/92	D
92.4701-13	80%	88%	9/6/92	D
92.4701-14	72%	81%	9/6/92	

S1- Decachlorobiphenyl

S2- Tetrachlorometaxylene

* - Surrogate recovery outside of required quality control limits.

D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4701 (16-19, 21-31)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 90592 Instrument ID: ECD #3

SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
BLK 9/4	146%	87%	9/5/92	
SPK 9/4	182%	89%	9/5/92	
DUP 9/4	91%	87%	9/5/92	
Aroclor 1242	NA	NA		
Aroclor 1254	NA	NA		
Aroclor 1260	NA	NA		
92.4701 - 16	89%	96%	9/6/92	
92.4701 - 17	105%	91%	9/6/92	
92.4701 - 18	85%	92%	9/6/92	
92.4701 - 19	66%	87%	9/6/92	*
92.4701 - 21	25%	85%	9/6/92	*
92.4701 - 22	29%	92%	9/6/92	*
92.4701 - 23	33%	92%	9/6/92	*
92.4701 - 24	99%	90%	9/6/92	
92.4701 - 25	94%	88%	9/6/92	
92.4701 - 26	144%	92%	9/6/92	*
92.4701 - 27	129%	96%	9/6/92	
92.4701 - 28	85%	89%	9/6/92	
92.4701 - 29	63%	84%	9/6/92	*
92.4701 - 30	78%	84%	9/6/92	
92.4701 - 31	81%	87%	9/6/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene
* - Surrogate recovery Tetra is outside of required quality control limits.
D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4762 (1 - 4, 13 - 24)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 90892 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK 9/7	83%	101%	9/8/92	
02	SPK 9/7	109%	101%	9/8/92	
03	DUP 9/7	104%	99%	9/8/92	
04	Aroclor 1242	NA	NA	9/9/92	
05	Aroclor 1254	NA	NA	9/9/92	
06	Aroclor 1260	NA	NA	9/9/92	
07	92.4762 - 1	66%	92%	9/9/92	
08	92.4762 - 2	------	93%	9/9/92	
09	92.4762 - 3	98%	96%	9/9/92	
10	92.4762 - 4	79%	93%	9/9/92	
11	92.4762 - 13	90%	99%	9/9/92	
12	92.4762 - 14	86%	93%	9/9/92	
13	92.4762 - 15	89%	97%	9/9/92	
14	92.4762 - 16	77%	87%	9/9/92	
15	92.4762 - 17	85%	96%	9/10/92	
16	92.4762 - 18	84%	89%	9/10/92	
17	92.4762 - 19	84%	89%	9/10/92	
18	92.4762 - 20	84%	89%	9/10/92	
19	92.4762 - 21	90%	90%	9/10/92	
20	92.4762 - 22	92%	91%	9/10/92	
21	92.4762 - 23	85%	90%	9/10/92	
22	92.4762 - 24	90%	95%	9/10/92	

S1 - Decachlorobiphenyl

S2- Tetrachlorometaxylene

D - Surrogate recovery cannot be determined due to dilution of sample.

* - Surrogate recovery outside of required quality control limits.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4762 (5 - 7, 11, 12)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 91192 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK 9/9	82%	82%	9/11/92	
02	SPK 9/9	80%	79%	9/11/92	
03	DUP 9/9	86%	88%	9/11/92	
04	Aroclor 1242	NA	NA	9/12/92	
05	Aroclor 1254	NA	NA	9/12/92	
06	Aroclor 1260	NA	NA	9/12/92	
07	92.4762 - 5	66%	80%	9/13/92	
08	92.4762 - 6x100	-------	-------	9/14/92	D
09	92.4762 - 7	74%	85%	9/13/92	
10	92.4762 - 11	72%	81%	9/13/92	
11	92.4762 - 12x100	-------	-------	9/14/92	D

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene
* - Surrogate recovery outside of required quality control limits.
D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4762 (8, 9, 10)

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 90992 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK 9/8	99%	87%	9/10/92	
02	SPK 9/8	98%	96%	9/10/92	
03	DUP 9/8	108%	96%	9/10/92	
04	Aroclor 1242	NA	NA	9/9/92	
05	Aroclor 1254	NA	NA	9/9/92	
06	Aroclor 1260	NA	NA	9/9/92	
07	92.4762 - 8	87%	69%	9/10/92	
08	92.4762 - 9	95%	76%	9/10/92	
09	92.4762 - 10	82%	86%	9/10/92	

S1 - Decachlorobiphenyl
S2 - Tetrachlorometaxylene
* - Surrogate recovery outside of required quality control limits.
D - Surrogate recovery cannot be determined due to dilution of sample

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.4828-1

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 91692 Instrument ID: ECD #2

SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
BLK 9/15	74%	86%	9/16/92	
SPK 9/15	98%	95%	9/16/92	
DUP 9/15	100%	98%	9/16/92	
Aroclor 1242	NA	NA	9/16/92	
Aroclor 1254	NA	NA	9/16/92	
Aroclor 1260	NA	NA	9/16/92	
92.4828-1	-	-	9/16/92	D

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene
* - Surrogate recovery outside of required quality control limits.
D - Surrogate recovery cannot be determined due to dilution of sample

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.5020 - 1

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 91792 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK H2O 9/17	122%	33%	9/18/92	
02	SPK H2O 9/17	123%	29%	9/18/92	
03	DUP H2O 9/17	118%	55%	9/18/92	
04	Aroclor 1242	NA	NA	9/18/92	
05	Aroclor 1254	NA	NA	9/18/92	
06	Aroclor 1260	NA	NA	9/17/92	
07	92.5020 - 1	91%	72%	9/18/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene
* - Surrogate recovery outside of required quality control limits.
D - Surrogate recovery cannot be determined due to dilution of sample.

POLYCHLORINATED BIPHENYLS
SURROGATE RECOVERY
92.5020 - 2

Lab Name: Chemical & Geological Laboratories of Alaska, Inc.

Sequence Name: 91792 Instrument ID: ECD #3

	SAMPLE NO.	S1 TETRA % REC.	S2 DECA % REC	DATE ANALYZED	Q
01	BLK SOIL 9/16	103%	96%	9/18/92	
02	SPK SOIL 9/16	121%	94%	9/18/92	
03	DUP SOIL 9/16	107%	94%	9/18/92	
04	Aroclor 1242	NA	NA	9/18/92	
05	Aroclor 1254	NA	NA	9/18/92	
06	Aroclor 1260	NA	NA	9/18/92	
07	92.5020 - 2	-------	93%	9/18/92	

S1- Decachlorobiphenyl
S2- Tetrachlorometaxylene
* - Surrogate recovery outside of required quality control limits.
D - Surrogate recovery cannot be determined due to dilution of sample

ALASKA TESTLAB
A Division of DOWL, Incorporated

15 SEP 1992
W.O.NO: A25250

LAIDLAW ENVIRONMENTAL SERVICES
5500 MING AVENUE, SUITE 130
BAKERSFIELD CA 93309
ATTN: MR. BRIONNE BISCHKE

SUBJECT: FIELD DENSITIES
PROJECT: PT RICH ROOSEVELT ROAD TRANSMITTER SITE
CLIENT: LAIDLAW ENVIRONMENTAL SERVICES

GENTLEMEN:

ON 12 SEP 1992 FIELD DENSITIES WERE TAKEN AT THE SITE OF THE SUBJECT PROJECT WITH RESULTS AS FOLLOWS:

TEST NO.	LOCATION	FIELD DRY DENSITY LB/CU.FT.	MAXIMUM DENSITY LB/CU.FT.	PERCENT COMPACTION
1	10'N, 10'E OF BUNKER DOOR 2' BELOW FINISH GRADE.	138	145.0	95
2	8'N, 4'E OF BUNKER DOOR. 1' BELOW FINISH GRADE.	127	145.0	88
3	8'N, 14'E OF BUNKER DOOR 1' BELOW FINISH GRADE.	130	145.0	90

FIELD DRY DENSITY HAS BEEN PERFORMED ESSENTIALLY IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

AASHTO T238, "DENSITY OF SOIL AND SOIL AGGREGATE IN-PLACE BY NUCLEAR METHODS (SHALLOW DEPTH)" AND ASTM D3017 (AASHTO T239), "MOISTURE CONTENT OF SOIL AND SOIL AGGREGATE IN-PLACE BY NUCLEAR METHODS (SHALLOW DEPTH)".

THE MAXIMUM DRY DENSITY HAS BEEN DETERMINED ACCORDING TO THE FOLLOWING STANDARD:

ASTM D1557, AASHTO T180, MIL-STD-621A METHOD 100, "MOISTURE-DENSITY RELATIONS OF SOILS USING A 10 LB. RAMMER AND 18 INCH DROP", OR ASTM D4253, "MAXIMUM INDEX DENSITY OF SOILS USING A

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TESTLAB
A Division of DOWL, Incorporated

THE MOST CURRENT VERSION OF THE STANDARDS LISTED WERE UTILIZED IN THIS TESTING.

PLEASE CONTACT US IMMEDIATELY IF THERE IS ANY QUESTION ON THE LISTED RESULTS OR THE TEST METHODS USED.

SINCERELY,

ALASKA TESTLAB

Howard K. Weston

HOWARD K. WESTON, P.E.
TECHNICAL DIRECTOR

ALASKA TESTLAB
A Division of DOWL, Incorporated

15 SEP 1992
W.O.NO: A25250

LAIDLAW ENVIRONMENTAL SERVICES
5500 MING AVENUE, SUITE 130
BAKERSFIELD CA 93309
ATTN: MR. BRIONNE BISCHKE

SUBJECT: FIELD DENSITIES
PROJECT: FT RICH ROOSEVELT ROAD TRANSMITTER SITE
CLIENT: LAIDLAW ENVIRONMENTAL SERVICES

GENTLEMEN:

ON 14 SEP 1992 FIELD DENSITIES WERE TAKEN AT THE SITE OF THE SUBJECT PROJECT WITH RESULTS AS FOLLOWS:

TEST NO.	LOCATION	FIELD DRY DENSITY LB/CU.FT.	MAXIMUM DENSITY LB/CU.FT.	PERCENT COMPACTION
1	8'N, 3'W OF BUNKER DOOR. TOP OF FINISH GRADE.	141	145.0	97

FIELD DRY DENSITY HAS BEEN PERFORMED ESSENTIALLY IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

AASHTO T238, "DENSITY OF SOIL AND SOIL AGGREGATE IN-PLACE BY NUCLEAR METHODS (SHALLOW DEPTH)" AND ASTM D3017 (AASHTO T239), "MOISTURE CONTENT OF SOIL AND SOIL AGGREGATE IN-PLACE BY NUCLEAR METHODS (SHALLOW DEPTH)".

THE MAXIMUM DRY DENSITY HAS BEEN DETERMINED ACCORDING TO THE FOLLOWING STANDARD:

ASTM D1557, AASHTO T180, MIL-STD-621A METHOD 100, "MOISTURE-DENSITY RELATIONS OF SOILS USING A 10 LB. RAMMER AND 18 INCH DROP", OR ASTM D4253, "MAXIMUM INDEX DENSITY OF SOILS USING A VIBRATORY TABLE".

THE MOST CURRENT VERSION OF THE STANDARDS LISTED WERE UTILIZED IN THIS TESTING.

ALASKA
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A Division of DOWL, Incorporated

PLEASE CONTACT US IMMEDIATELY IF THERE IS ANY QUESTION ON THE LISTED RESULTS OR THE TEST METHODS USED.

SINCERELY,

ALASKA TESTLAB

Howard K. Weston

HOWARD K. WESTON, P.E.
TECHNICAL DIRECTOR

ALASKA TESTLAB
A Division of DOWL, Incorporated

15 SEP 1992
W.O.NO: A25250

LAIDLAW ENVIRONMENTAL SERVICES
5500 MING AVENUE, SUITE 130
BAKERSFIELD CA 93309
ATTN: MR. BRIONNE EISCHKE

SUBJECT: FIELD DENSITIES
PROJECT: FT RICH ROOSEVELT ROAD TRANSMITTER SITE
CLIENT: LAIDLAW ENVIRONMENTAL SERVICES

GENTLEMEN:

ON 11 SEP 1992 FIELD DENSITIES WERE TAKEN AT THE SITE OF THE SUBJECT PROJECT WITH RESULTS AS FOLLOWS:

TEST NO.	LOCATION	FIELD DRY DENSITY LB/CU.FT.	MAXIMUM DENSITY LB/CU.FT.	PERCENT COMPACTION
1	5'N AND 20'E OF BUNKER DOOR 5' BELOW FINISH GRADE.	129	145.0	89
2	20'N, 5'W OF BUNKER DOOR. 5' BELOW FINISH GRADE.	123	145.0	85
3	35'N, 5'E OF BUNKER DOOR. 6'BELOW FINISH GRADE.	123	145.0	85
4	10'N, 5'W OF BUNKER DOOR. 5' BELOW FINISH GRADE.	120	145.0	83
5	7'N, 20'E OF BUNKER DOOR. 5' BELOW FINISH GRADE.	129	145.0	89
6	3'N, 20'E OF BUNKER DOOR. 5' BELOW FINISH GRADE.	126	145.0	87
7	20'N, 20'E OF BUNKER DOOR 5' BELOW FINISH GRADE.	118	145.0	82

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15 SEP 1992

8	3'N, 12'E OF BUNKER DOOR. 5' BELOW FINISH GRADE.	130	145.0	90
9	33'N OF BUNKER DOOR. 6' BELOW FINISH GRADE.	125	145.0	86
10	7'N, 15'E OF BUNKER DOOR. 4' BELOW FINISH GRADE.	132	145.0	91
11	34'N, 6'E OF BUNKER DOOR. 6' BELOW FINISH GRADE.	134	145.0	92
12	33'N, 5'E OF BUNKER DOOR. 3' BELOW FINISH GRADE.	126	145.0	87
13	7'N, 2'W OF BUNKER DOOR. 3' BELOW FINISH GRADE.	128	145.0	88
14	10'N, 17'E OF BUNKER DOOR 3' BELOW FINISH GRADE.	130	145.0	90

FIELD DRY DENSITY HAS BEEN PERFORMED ESSENTIALLY IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

AASHTO T238, "DENSITY OF SOIL AND SOIL AGGREGATE IN-PLACE BY NUCLEAR METHODS (SHALLOW DEPTH)" AND ASTM D3017 (AASHTO T239), "MOISTURE CONTENT OF SOIL AND SOIL AGGREGATE IN-PLACE BY NUCLEAR METHODS (SHALLOW DEPTH)".

THE MAXIMUM DRY DENSITY HAS BEEN DETERMINED ACCORDING TO THE FOLLOWING STANDARD:

ASTM D1557, AASHTO T180, MIL-STD-621A METHOD 100, "MOISTURE-DENSITY RELATIONS OF SOILS USING A 10 LB. RAMMER AND 18 INCH DROP", OR ASTM D4253, "MAXIMUM INDEX DENSITY OF SOILS USING A VIBRATORY TABLE".

THE MOST CURRENT VERSION OF THE STANDARDS LISTED WERE UTILIZED IN THIS TESTING.

PLEASE CONTACT US IMMEDIATELY IF THERE IS ANY QUESTION ON THE LISTED RESULTS OR THE TEST METHODS USED.

ALASKA
TESTLAB
A Division of DOWL, Incorporated

SINCERELY,

ALASKA TESTLAB

Howard K. Weston

HOWARD K. WESTON, P.E.
TECHNICAL DIRECTOR

4040 B STREET • ANCHORAGE • ALASKA • 99503-5999 • 907 / 562-2000

APPENDIX XXI

NUMBER	NUMBER	COLOR	OF BAGS	DATE	TARE WT.	GROSS WT.	NET WT.
RRI	1571175	RED	10	7/27/92	33000	74580	41580
RR2	2688266	PUKE GRN.	9	7/27/92	33000	69580	36580
RR3	002294	BLUE	9	7/28/92	34580	67940	33360
RR4	7199946	LT. BLUE	9	7/28/92	34580	59460	24880
RR5	2031108	TAN	9	7/28/92	27360	50360	23000
RR6	1002101	BLUE	9	7/28/92	34580	67360	32780
RR7	2060831	BLUE	9	7/28/92	34580	71100	36520
RR8	7770120	RED	9	7/28/92	34580	71000	36420
RR9	7770244	RED	9	7/28/92	34580	69900	35320
RR10	2732789	BLUE	9	7/29/92	33800	69740	35940
RR11	2520636	GREY	9	7/29/92	27100	62660	35560
RR12	1330100	RED	9	7/29/92	33800	71180	37380
RR13	6005682	GREY	9	7/29/92	27100	63620	36520
RR14	2189674	BLUE	9	7/29/92	33800	68700	34900
RR15	4995210	RED	9	7/29/92	27100	63460	36360
RR16	4993747	RED	9	7/29/92	33800	70440	36640
RR17	4993198	RED	9	7/29/92	27100	63520	36420
RR18	4994002	RED	9	7/29/92	33800	70660	36860
RR19	4994661	RED	9	7/29/92	27100	62060	34960
RR20	9300890	RED	9	7/29/92	33800	69460	35660
RR21	7770183	RED	9	7/29/92	27100	60940	33840
RR22	2020037	RED	9	7/30/92	27100	60460	33360
RR23	100263	BLUE	9	7/30/92	30960	65600	34640
RR24	4994234	RED	9	7/30/92	27100	61600	34500
RR25	1003453	BLUE	9	7/30/92	30960	65540	34580
RR26	2660232	GREEN	9	7/30/92	27100	63120	36020
RR27	7770917	RED	9	7/30/92	30960	65640	34680
RR28	2625798	GREEN	9	7/30/92	27100	62160	35060
RR29	4991195	RED	9	7/30/92	30960	65080	34120
RR30	1003535	BLUE	9	7/30/92	27100	60540	33440

RR31	002262	BLUE	9	7/30/92	30960	63620	32660
RR32	7770265	RED	9	7/30/92	27100	58420	31320
RR33	2010432	BLUE	9	7/30/92	30960	63320	32360
RR34	2832981	RED	10	7/30/92	27100	64300	37200
RR35	4995307	RED	10	7/30/92	30960	67480	36520
RR36	9045488	BLUE	10	8/18/92	34220	71600	37380
RR37	1991464	BROWN	10	8/18/92	30000	66020	36020
RR38	002270	BLUE	10	8/18/92	34220	65900	31680
RR39	2684126	GREEN	10	8/18/92	35940	69420	33480
RR40	2646213	GREEN	10	8/18/92	34220	64140	29920
RR41	2031160	YELLOW	10	8/18/92	34220	68220	34000
RR42	4995354	RUST	10	8/18/92	30000	60480	30480
RR43	2769370	ORANGE	10	8/18/92	34220	60840	26620
RR44	1003290	BLUE	10	8/18/92	35940	71720	35780
RR45	002026	BLUE	10	8/18/92	34220	72220	38000
RR46	7871970	RED	10	8/19/92	27360	55280	27920
RR47	2991355	RUST	10	8/19/92	30140	60820	30680
RR48	2739479	ORANGE	10	8/19/92	27360	68720	41360
RR49	2665276	PUKE GRN.	10	8/19/92	30140	70120	39980
RR50	2354860	ORANGE	10	8/19/92	27360	68780	41420
RR51	7016031	BLUE	9	8/19/92	30140	68300	38160
RR52	1003941	BLUE	9	8/19/92	27360	64620	37260
RR53	8369369	RED	9	8/19/92	30140	66420	36280
RR54	2841426	RED	9	8/19/92	27360	61140	33780
RR55	7770270	RED	9	8/19/92	27360	60760	33400
RR56	2740763	BLUE	9	8/19/92	30140	67700	37560
RR57	7770136	RED	10	8/19/92	27360	67240	39880
RR58	2532431	RED	10	8/19/92	30140	69200	39060
RR59	2033760	YELLOW	10	8/20/92	30140	71140	41000
RR60	001757	BLUE	10	8/20/92	26640	66160	39520

RR61	2003025	LT. BLUE	9	8/21/92	30140	66040	35900
RR62	708030	BLUE	9	8/21/92	30140	65640	35500
RR63	777049	RED	10	8/26/92	30460	70300	39840
RR64	1003520	BLUE	10	8/26/92	27740	67240	39500
RR65	001854	BLUE	10	8/26/92	30460	70640	40180
RR66	1002668	BLUE	10	8/26/92	27740	67180	39440
RR67	7770178	RED	9	8/26/92	27740	60520	32780
RR68	777022	RED	9	8/26/92	30460	66200	35740
RR69	270297	BLUE	9	8/27/92	30140	63540	33400
RR70	1003561	BLUE	9	8/27/92	27020	60160	33140
RR71	2031073	YELLOW	9	8/27/92	30140	63480	33340
RR72	1142387	GREEN	9	8/27/92	27020	61540	34520
RR73	0015084	BLUE	10	9/1/92	30840	72500	41660
RR74	002031	BLUE	10	9/1/92	30140	75760	45620
RR75	1234560	ORANGE	10	9/1/92	30840	69860	39020
RR76	001950	BLUE	10	9/1/92	30140	72000	41860
RR77	1002605	BLUE	10	9/1/92	30840	69760	38920
RR78	001907	BLUE	10	9/1/92	30140	69400	39260
RR79	1001635	BLUE	10	9/1/92	30840	68180	37340
RR80	3678010	RED	10	9/1/92	30140	69286	39146
RR81	0014196	BLUE	10	9/1/92	30840	68740	37900
RR82	001879	BLUE	10	9/1/92	30140	69780	39640
RR83	1991546		10	10/13/92	30880	69640	38760
RR84	1991572		10	10/13/92	34420	72120	37700
RR85	1990468		10	10/13/92	27500	68140	40640
RR86	1990548		10	10/13/92	27500	67940	40440
RR87	1990880		10	10/13/92	30880	71740	40860
RR88	1990616		10	10/13/92	27500	64340	36840
RR89	1990600		10	10/13/92	34420	71600	37180
RR90	1990658		10	10/13/92	30880	69960	39080
RR91	1990302		10	10/13/92	27500	66140	38640
RR92	1990067		10	10/13/92	34420	75040	40620
RR93	1990323		10	10/13/92	27500	70220	42720
RR94	1990637		10	10/13/92	27500	68320	40820
RR95	1991401		10	10/13/92	34420	75980	41560

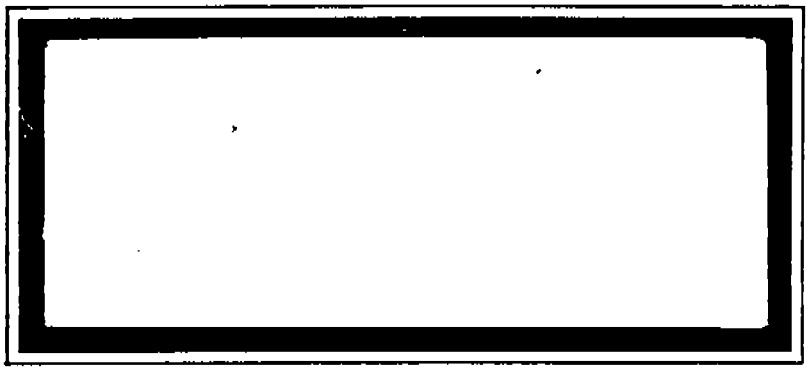
RR96	1990684		10	10/13/92	30880	69620	38740
RR97	1991232		10	10/14/92	34420	74880	40460
RR98	1990909		10	10/14/92	30880	71240	40360
RR99	1990344		10	10/14/92	34420	74080	39660
RR100	1990766		10	10/14/92	30880	71900	41020
RR101	0014787		10	10/12/92	34960	74200	39240
RR102	VOID	VOID	VOID	VOID	VOID	VOID	0
RR103	00151103		10	10/12/92	31440	68580	37140
RR104	002270		10	10/12/92	28180	64880	36700
RR105	2020356		10	10/12/92	30880	69300	38420
RR106	1003181		10	10/12/92	34420	71320	36900
RR107	1991119		10	10/12/92	27500	67620	40120
RR108	1990621		10	10/12/92	34420	71760	37340
RR109	1990679		10	10/12/92	27500	67600	40100
RR110	1990998		10	10/12/92	27500	65320	37820
RR111	1991320		10	10/12/92	34420	73720	39300
RR112	1990869		10	10/12/92	30880	68940	38060
RR113	1990874		10	10/12/92	30880	66980	36100
RR114	1991361		10	10/12/92	27500	65760	38260
RR115	1991016		10	10/12/92	34420	71100	36680
RR116	1990848		10	10/13/92	34420	72140	37720
RR117	1990508		10	10/13/92	30880	68460	37580
RR118	7770100		10	10/14/92	27320	69400	42080
RR119	1990283		10	10/14/92	30200	71220	41020
RR120	000126		10	10/14/92	30880	72680	41800
RR121	7770692		10	10/14/92	34420	76480	42060
RR122	2732601		10	10/14/92	27320	71340	44020
RR123	2731904		10	10/14/92	30200	73300	43100
RR124	2003663		10	10/14/92	30880	73440	42560
RR125	2929385		10	10/14/92	27320	69040	41720
RR126	3677987		10	10/14/92	34420	78460	44040
RR127	7770250		10	10/14/92	29700	72560	42860
RR128	7770901		10	10/14/92	30880	73380	42500
RR129	1990025		10	10/14/92	34420	74720	40300
RR130	1990107		10	10/14/92	27320	68140	40820

RR131	1991398		10	10/14/92	30880	71240	40360
RR132	1990724		10	10/14/92	34420	72940	38520
RR133	1990895		10	10/14/92	29700	70880	41180
RR134	1991274		10	10/14/92	27320	69820	42500
RR135	1990112		10	10/14/92	27360	72340	44980
RR136	1991145		10	10/14/92	27360	72340	44980
RR137	1990046		10	10/14/92	34420	73180	38760
RR138	1990920		10	10/14/92	27320	66620	39300
RR139	1990494		10	10/15/92	34420	75320	40900
RR140	1990350		10	10/15/92	27320	69740	42420
RR141	1990410		10	10/15/92	27320	69160	41840
RR142	1990771		10	10/15/92	27360	69940	42580
RR143	1990318		10	10/15/92	30880	73520	42640
RR144	1990745		10	10/15/92	27360	71500	44140
RR145	1990200		10	10/15/92	34420	76160	41740
RR146	1991438		10	10/15/92	34420	75340	40920
RR147	1990426		10	10/15/92	30880	68980	38100
RR148	1990030		10	10/15/92	27320	70220	42900
RR149	1991037		10	10/15/92	27360	65500	38140
RR150	1991340		10	10/15/92	27320	70620	43300
RR151	1991079		10	10/15/92	30880	68860	37980
RR152	1991192		10	10/15/92	38420	72840	34420
RR153	1990142		10	10/15/92	27360	63620	36260
RR154	1990597		10	10/15/92	30880	70780	39900
RR155	1990663		10	10/15/92	27320	69840	42520
RR156	1990370		10	10/15/92	27320	65300	37980
RR157	199551		10	10/16/92	27320	66640	39320
RR158	1991171		10	10/15/92	27320	71780	44460

TOTAL BAGS 1524 TOTAL WT. 5951706 pounds

AVERAGE WT. PER BAG 3905.32 2975.853 tons

2705320.909 kilos



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