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Progress Report

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Radionuclide Concentrations in Vegetation at the Los Alamos National Laboratory in 1998

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G. J. Gonzales
P. R. Fresquez
M. A. Mullen
L. Naranjo, Jr.

Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

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G. J. Gonzales, P. R. Fresquez, M. A. Mullen, and L. Naranjo, Jr.

ABSTRACT

This report summarizes and evaluates the concentrations of ^{3}H, ^{137}Cs, ^{238}Pu, $^{239,240}Pu$, ^{241}Am, ^{90}Sr, and total U in understory and overstory vegetation collected from Los Alamos National Laboratory (LANL), its perimeter, and regional background areas in 1998. Comparisons to conservative toxicity reference value "safe limits" were also made. The arithmetic mean LANL radionuclide concentrations in understory were 501 pCi L^{-1} for ^{3}H, 0.581 pCi ash g^{-1} for ^{137}Cs, 0.001 pCi ash g^{-1} for ^{238}Pu, 0.008 pCi ash g^{-1} for $^{239,240}Pu$, 0.007 pCi ash g^{-1} for ^{241}Am, 1.46 pCi ash g^{-1} for ^{90}Sr, and 0.233 μg ash g^{-1} for total uranium. The mean LANL radionuclide concentrations in overstory were 463 pCi L^{-1} for ^{3}H, 1.51 pCi ash g^{-1} for ^{137}Cs, 0.0004 pCi ash g^{-1} ^{238}Pu, 0.008 pCi ash g^{-1} for $^{239,240}Pu$, 0.014 pCi ash g^{-1} for ^{241}Am, 1.97 pCi ash g^{-1} for ^{90}Sr, and 0.388 μg ash g^{-1} for total uranium. Concentrations of radionuclides and total U in both understory and overstory vegetation at LANL generally were not statistically higher than in perimeter and regional background vegetation ($\alpha = 0.05$). The exceptions were LANL ^{3}H > perimeter ^{3}H (understory) and LANL ^{3}H > background ^{3}H (overstory). All maximum radionuclide concentrations were lower than toxicity reference values. With the exception of total U, the relationship between contaminant concentration in soil vs. vegetation was insignificant ($\alpha = 0.05$). Generally, as the concentration of total U in soil decreased, the concentration in vegetation increased. This held true for both understory and overstory and regardless of whether data were separated by general location (LANL, perimeter, and background) or not. There was no apparent relationship between contaminant concentrations in understory vs. overstory.

I. INTRODUCTION

U.S. Department of Energy (DOE) requirements established the need to monitor biological organisms ("biota") and other environmental media for contaminants related to the operation of DOE sites (USDOE 1991). As part of the Environmental Surveillance Program at the Los Alamos National Laboratory (LANL), samples of air, water, soil, sediments, foodstuffs, and biota are collected on an annual basis and analyzed for radiological constituents in an effort to determine the impact of Laboratory operations on the surrounding environment (LANL 1995). One important component of this program is the assessment of vegetation (USDOE 1991). Vegetation is the foundation of ecosystems because it provides a usable form of energy and nutrients. Because of this, vegetation serves as a means by which contaminants can enter biological pathways. Plants contain radionuclides that settle from "global fallout," i.e., foliar deposition, that settle after resuspension with soil, and, to a lesser extent, that are absorbed by plant roots (Whicker and Shultz 1982). Consequently, monitoring radionuclide concentrations in vegetation over time is important to understanding the nature of radionuclide transport via food chains and to understanding the dynamics of radioactivity in the environment at nuclear facilities. With ecological risk assessment becoming an important issue at LANL and other DOE sites, information such as this will also be helpful to establishing coefficients of contaminant transfer between trophic levels that are specific to each site so that accurate radiation dose estimates can be made (Whicker and Schultz 1982, Calabrese and Baldwin 1993, EPA 1998).

The sources of most radioactive elements detected in the environment are fallout produced by nuclear weapons testing (Klement 1965), the burn up of satellite power sources in the atmosphere (Perkins and Thomas 1980), reactor accidents (Andersson and Roed 1994), and common minerals in the earth's crust (Whicker and Schultz 1982). More localized sources include planned or unplanned releases of radioactive gases, solids, and/or liquid effluents from nuclear weapons research and testing facilities such as LANL (USDOE 1999).

Radionuclide concentrations in vegetation at LANL have been monitored sporadically, usually in relation to a particular LANL facility or operation (Fresquez et al. 1999, Wenzel et al. 1987, Hakonson et al. 1973). This report presents,

summarizes, and evaluates the concentrations and distribution of tritium (^{3}H), cesium-137 (^{137}Cs), americium-241 (^{241}Am), plutonium-238 (^{238}Pu), plutonium-239/240 ($^{239/240}Pu$), strontium-90 (^{90}Sr), and total uranium (U) in understory and overstory vegetation samples collected "onsite" at LANL, along LANL's perimeter, and from regional background locations in 1998. The vegetation sampling locations correspond to soil sampling locations also monitored in the Environmental Surveillance Program (Fresquez et al. 1996). This document reports (1) raw data and arithmetic means for the above-mentioned radionuclides and total U for the three general locations (onsite, perimeter, and regional background) and (2) correlation coefficients for soil vs. vegetation radionuclide concentrations.

II. METHODS

In late July and early August of 1998, a total of 25 samples each of understory vegetation (composited) and overstory vegetation (shoot tips; by species) vegetation were collected. Sample locations are identified in Figure 1 and corresponded to soil surface sample locations where soil was collected at the same time. New Mexico state plane coordinates for each sample location are identified in a document by Fresquez et al. (1996). Specifically, the number of samples collected were 10 onsite, 10 perimeter, and three regional background.

Specific onsite sampling locations avoided Solid Waste Management Units (SWMUs)—any discernible site at which solid and/or liquid wastes have been routinely and systematically released (e.g., waste tanks, septic tanks, sumps, firing sites, burn pits, material disposal areas [like Area G at LANL], and outfalls). Instead, the majority of onsite stations were located close to, and, if possible, downwind from major facilities and/or operations at LANL in an effort to assess vegetation that may have been contaminated as a result of air stack emissions (there were approximately 140 stacks at LANL in 1994 that could emit radionuclides) (McNamara 1995) and fugitive dust (e.g., the resuspension of dust from SWMUs).

The locations of the perimeter stations, located within 4 km (2.5 mi) of the Laboratory, are intended to determine the downwind conditions of the inhabited areas to the north (Los Alamos' North Mesa, Sportsman's Club, and airport area) and east of the Laboratory (White Rock [east of San Ildefonso Pueblo land] and Tsankawi (in

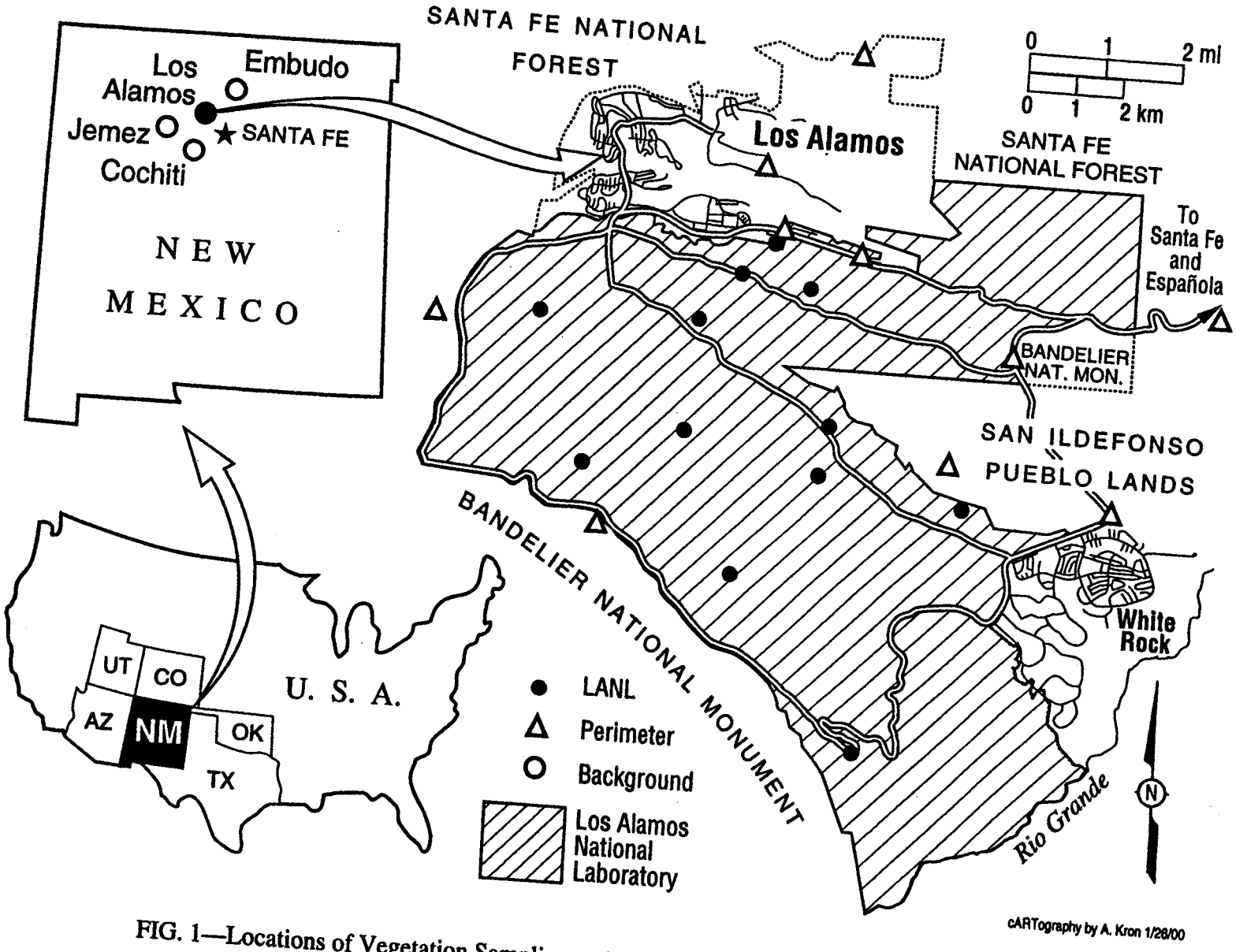

FIG. 1—Locations of Vegetation Sampling on LANL, Perimeter and Background Areas

Bandelier National Monument [BNM]). Additional samples were collected on the west (Forest Service land across from TA-8/GT site) and south (BNM across from TA-49, Frijoles Canyon in BNM, and south State Road 4) sides of LANL to provide comprehensive coverage.

Regional ("background") sampling stations were located in the three major drainages in northern New Mexico surrounding the Laboratory: Rio Chama, Embudo, and Otowi; Cochiti and Bernalillo; and Jemez. All regional stations are over 15 km (9 mi) from the Laboratory and are beyond the likely range of significant impacts from Laboratory operations; thus, these areas were used to establish "background" levels of radionuclides that can be attributed to naturally occurring radioactive materials and/or to worldwide fallout (LANL 1995).

Samples of overstory and understory vegetation were collected and submitted (unwashed) to an environmental chemistry group at LANL for the analysis of ^{3}H, ^{137}Cs, ^{238}Pu, $^{239,240}Pu$, ^{90}Sr, ^{241}Am, and total uranium. These elements were selected on the basis of their history of use at the Laboratory, activity, and decay mode (half-life) (LANL 1995). Overstory samples consisted of *Pinus edulis, Pinus ponderosa,* or *Juniperus* spp. Site differences did not allow sampling of the same overstory species at each sampling station, however, overstory vegetation data were grouped by species across sites and analyzed to assess the influence of species on radionuclide concentrations and there were none. Overstory vegetation samples consisted of tree-shoot tips approximately 2.5 to 5.0 cm (1 to 2 in.) in length at 1.3 to 1.6 m (4 to 5 ft) above soil level. Understory vegetation samples consisted of composited grass subsamples collected from 10- by 10-m (32- by 32-ft) plots. Radionuclide analysis of unwashed samples generally consisted of alpha spectroscopy (^{238}Pu, $^{239,240}Pu$, ^{241}Am), gamma spectroscopy (^{137}Cs), and liquid scintillation (^{90}Sr and ^{3}H). The specific procedure can be found at http://cst.lanl.gov/docs, or in hardcopy within the LANL document LA-10300-M, Vol. III, Method ANC325 – 331, R.0 (Gautier 1986). Total uranium was analyzed by kinetic phosphorescence analysis.

Examination of box plots and Wilcoxon Rank Sum tests (non-parametric, one-sided) (Gilbert et al. 1995) were used to assess differences in radionuclide concentrations between onsite LANL stations versus perimeter and regional background at the 0.05 probability level

(Gilbert 1987). The significance of relationships between radionuclide concentrations in soil vs. understory vegetation, soil vs. overstory vegetation, and understory vs. overstory vegetation across sites and within LANL were also examined using non-parametric descriptive statistics and tested using the Kendall's Tau test. Finally, maximum understory radionuclide concentrations were compared to conservative toxicity reference values (TRVs) (LANL 1998) that are considered "safe levels" below which impacts to plants will not occur.

III. RESULTS

The measured and arithmetic mean concentrations for onsite, perimeter, and regional background stations are in Tables 1 (understory vegetation) and 2 (overstory vegetation). Raw data in the original analytical reports are appended (Appendix A).

Nonparametric descriptive statistics and results of the Wilcoxon Rank Sum tests generally indicated that there were no differences in radionuclide concentrations between the sites. The exception was statistically higher ($p = 0.02$) concentrations of ^3H in onsite understory vegetation than perimeter understory vegetation and in onsite overstory vegetation compared to background vegetation ($p = 0.01$). The mean ^3H concentration in LANL understory vegetation was 501 pCi L^{-1} compared to 144 pCi L^{-1} in perimeter understory vegetation; however, there was overlap between respective interquartiles. The mean ^3H concentration in LANL overstory vegetation was 463 pCi L^{-1} compared to −63 pCi L^{-1} in background overstory vegetation with no overlap of interquartile ranges.

With site differences generally absent, the need to assess the influence of overstory species on radionuclide concentrations between sites (i.e., determine whether species effects confounded the influence of sample locations) is diminished. Nevertheless this issue is of scientific interest, therefore we combined data by overstory species across two sites (onsite and perimeter) and tested for significant differences. No differences were detected in radionuclide concentrations between *Pinus edulis* and *Pinus ponderosa*.

Significant probability values ($\alpha = 0.05$) indicated a possible negative correlation in total U concentration between soil and overstory vegetation across all sites. Plots also showed a similar, but weaker, relationship in understory vegetation.

Table 1. Concentration of radionuclides in understory plants sampled from within and around LANL.

LOCATION	totU (µg ash g^{-1})	Uncer-tainty	^{90}Sr (pCi ash g^{-1})	Uncer-tainty	^{137}Cs (pCi ash g^{-1})	Uncer-tainty	^{238}Pu (pCi ash g^{-1})	Uncer-tainty	$^{239,240}Pu$ (pCi ash g^{-1})	Uncer-tainty	^{241}Am (pCi ash g^{-1})	Uncer-tainty	^{3}H (pCi L^{-1})	Uncer-tainty
Regional Background Stations:														
Embudo	0.4000	0.04	3.170	0.56	0.500	0.75	0.0033	0.0011	0.0054	0.0018	0.0060	0.0026	-310.0	620
Cochiti	0.1600	0.02	0.970	0.24	0.370	0.56	-0.0006	0.0011	0.0019	0.0015	0.0032	0.0014	60.0	650
Jemez	0.1600	0.02	2.100	0.36	-0.170	0.1	0.0004	0.0011	0.0009	0.0012	0.0032	0.0032	1110.0	720
Mean	0.2400		2.080		0.233		0.0010		0.0027		0.0041		286.7	
(SD)	0.1386		1.100		0.355		0.0020		0.0024		0.0016		736.6	
Perimeter Stations:														
Otowi	0.1500	0.02	2.140	0.58	0.430	0.65	0.0047	0.0025	0.0988	0.0087	0.0042	0.0045	-130.0	630
TA-8 (GT-site)	0.0500	0.01	1.660	0.46	0.450	0.68	-0.0020	0.0009	0.0025	0.0015	-0.0013	0.0028	140.0	650
Near TA-49 (BNM)	0.1000	0.01	3.500	0.66	0.370	0.55	0.0013	0.0016	0.0029	0.0015	0.0002	0.0027	150.0	650
East Airport	0.1700	0.02	3.600	0.88	0.380	0.57	0.0009	0.0014	0.0063	0.0022	0.0022	0.0025	-20.0	640
West Airport	0.1900	0.02	1.190	0.65	-0.300	0.11	0.0012	0.0012	0.0095	0.0025	-0.0036	0.0016	210.0	660
North Mesa	0.0500	0.01	15.390	4.68	0.130	0.2	0.0005	0.001	0.0012	0.0013	-0.0012	0.0026	280.0	660
Sportsman's Club	0.3200	0.03	4.210	0.86	-0.130	0.11	0.0178	0.0094	0.0145	0.0098	0.0257	0.0086	380.0	670
Tsankawi/ PM-1	0.5400	0.05	2.410	0.29	0.220	0.32	0.0024	0.0013	0.0103	0.0023	0.0081	0.0035	180.0	660
White Rock (East)	0.7000	0.07	3.710	0.35	0.390	0.58	0.0017	0.0026	0.0035	0.0022	0.0084	0.0027	-300.0	620
San Ildefonso	0.3600	0.04	2.720	0.28	0.330	0.5	0.0044	0.0019	0.0063	0.0027	0.0069	0.0021	550.0	680
Mean	0.2630		4.053		0.227		0.0033		0.0156		0.0050		144.0	652
(SD)	0.2172		4.099		0.255		0.0054		0.0295		0.0084		245.8	
Onsite Stations:														
TA-16 (S-Site)	0.1000	0.01	1.820	0.34	1.060	1.58	-0.0005	0.0015	-0.0013	0.0017	0.0037	0.0039	10.0	700
TA-21 (DP-Site)	0.7300	0.07	1.120	0.28	0.360	0.54	0.0013	0.0018	0.0267	0.0042	0.0017	0.006	580.0	730
Near TA-33	0.1400	0.01	1.760	0.49	1.110	1.67	-0.0007	0.0017	0.0050	0.0022	0.0084	0.0085	390.0	720
TA-50	0.3800	0.04	0.540	0.29	0.410	0.61	0.0034	0.0018	0.0045	0.0019	0.0050	0.0028	490.0	730
TA-51	0.2800	0.03	2.430	0.36	1.010	1.52	0.0006	0.0009	0.0041	0.0017	0.0086	0.0033	310.0	710
West of TA-53	0.4800	0.05	1.400	0.27	1.310	1.97	0.0000	0.0000	0.0052	0.0021	0.0017	0.0023	270.0	710
East of TA-53	0.1300	0.01	1.620	0.37	0.140	0.2	-0.0005	0.0045	0.0094	0.0056	0.0140	0.0128	130.0	700
East of TA–54	0.1400	0.01	2.360	0.48	0.250	0.37	0.0012	0.0024	0.0180	0.0041	0.0081	0.0068	1310.0	780
Potrillo Drive/ TA-36	0.0900	0.01	0.950	0.34	0.480	0.11	-0.0014	0.0028	0.0074	0.0039	0.0057	0.0083	780.0	740
Near Test Well DT-9	0.0400	0.01	1.150	0.38	0.380	0.56	0.0007	0.0033	0.0032	0.0034	0.0096	0.0116	1300.0	770
R-Site Road East	0.1500	0.02	1.390	0.41	0.180	0.27	0.0032	0.0033	0.0092	0.0036	0.0116	0.0114	210.0	710
Two-Mile Mesa	0.1400	0.01	0.990	0.37	0.280	0.42	0.0002	0.0023	0.0054	0.0033	0.0081	0.0076	230.0	710
Mean	0.2333		1.461		0.581		0.0006		0.0081		0.0072		500.8	
(SD)	0.2024		0.568		0.417		0.0015		0.0075		0.0038		428.1	

Table 2. Concentration of radionuclides in overstory plants sampled from within and around LANL.

LOCATION		TotU (µg ash g^{-1})	Uncer-tainty	^{90}Sr (pCi ash g^{-1})	Uncer-tainty	^{137}Cs (pCi ash g^{-1})	Uncer-tainty	^{238}Pu (pCi ash g^{-1})	Uncer-tainty	$^{239,240}Pu$ (pCi ash g^{-1})	Uncer-tainty	^{241}Am (pCi ash g^{-1})	Uncer-tainty	^{3}H (pCi L^{-1})	Uncer-tainty
Regional Background Stations:															
Embudo		0.52	0.05	2.1200	0.32	0.480	0.72	0.0009	0.0012	0.0023	0.0014	0.0023	0.0022	80	650
Cochiti		0.35	0.04	1.8300	0.3	0.520	0.78	-0.0003	0.001	0.0024	0.0013	0.0069	0.0019	-70	640
Jemez		0.25	0.03	2.3000	0.34	0.170	0.26	0.0019	0.0015	0.0026	0.0016	0.0048	0.002	-200	630
	Mean	0.373	0.04	2.0833	0.32	0.390	0.5867	0.0008	0.0012	0.0024	0.0014	0.0047	0.002	-63.3	640
	(SD)	0.137		0.2371		0.192		0.0011		0.0002		0.0023		140.1	
Perimeter Stations:															
Otowi		0.23	0.02	4.5900	0.58	0.290	0.44	0.0000	0	0.0076	0.0032	0.0054	0.0042	190	660
TA-8 (GT-site)		0.14	0.01	0.2700	0.35	0.540	0.81	-0.0008	0.0016	0.0045	0.0026	-0.0031	0.003	200	660
Near TA-49 (BNM)		0.25	0.03	0.9200	0.36	0.510	0.77	0.0020	0.002	0.0078	0.0036	0.0107	0.0066	960	710
East Airport		0.36	0.04	3.1700	0.44	0.610	0.92	-0.0010	0.001	0.0053	0.002	0.0101	0.0044	240	660
West Airport		0.22	0.02	2.4700	0.45	0.440	0.66	0.0180	0.0039	0.0213	0.004	0.0005	0.004	300	660
North Mesa		0.16	0.02	2.5500	0.48	0.200	0.3	-0.0006	0.0012	0.0046	0.0025	0.0011	0.0032	130	650
Sportsman's Club		0.23	0.02	5.7500	1.05	1.240	1.86	0.0009	0.0013	0.0000	0	0.0138	0.0056	190	660
Tsankawi/ PM-1		0.42	0.04	2.2800	0.25	0.690	1.04	0.0010	0.0012	0.0040	0.0016	0.0035	0.0034	190	660
White Rock (East)		0.5	0.05	2.0000	0.28	1.140	1.71	-0.0001	0.0017	0.0045	0.003	0.007	0.0031	410	670
San Ildefonso		0.56	0.06	2.4100	0.36	-0.360	0.1	-0.0004	0.0014	0.0224	0.003	0.0175	0.0046	-10	640
	Mean	0.307		2.6410		0.530		0.0019		0.0082		0.0067		280	
	(SD)	0.145		1.5972		0.456		0.0057		0.0075		0.0064		262	
Onsite Stations:															
TA-16 (S-Site)		0.14	0.01	1.1600	0.47	2.370	3.56	0.0009	0.0034	0.0013	0.004	0.0212	0.0084	90	700
TA-21 (DP-Site)		0.45	0.05	0.2700	0.32	1.800	2.71	0.0031	0.0022	0.0175	0.0039	0.0057	0.0041	60	700
Near TA-33		0.39	0.04	4.3800	0.47	0.930	1.39	-0.0004	0.0006	0.0056	0.0021	-0.0008	0.003	280	710
TA-50		0.68	0.07	0.7500	0.27	1.060	1.6	0.0000	0	0.0095	0.0031	0.0067	0.0066	370	720
TA-51		0.83	0.08	2.2300	0.34	0.470	0.71	0.0030	0.0021	0.0100	0.0027	0.0101	0.0061	80	700
West of TA-53		0.33	0.03	0.4400	0.47	1.410	2.12	0.0013	0.0024	0.0089	0.0039	0.0178	0.0081	950	750
East of TA-53		0.58	0.06	3.4700	0.34	8.320	12.48	0.0012	0.0011	0.0039	0.0017	0.0194	0.0051	170	710
East of TA-54		0.38	0.04	4.5000	0.54	0.300	0.46	0.0000	0	0.0257	0.0068	0.0378	0.0158	1530	790
Potrillo Drive/ TA-36		0.49	0.05	2.6000	0.4	0.080	0.12	-0.0015	0.0032	0.0047	0.0034	-0.0019	0.0165	290	710
Near Test Well DT-9		0.2	0.02	2.6700	0.5	0.390	0.58	-0.0023	0.0046	0.0100	0.0063	0.0342	0.0157	250	710
R-Site Road East		0.11	0.01	0.5900	0.71	0.570	0.86	0.0024	0.0051	-0.0010	0.0063	0.0066	0.0133	1180	770
Two-Mile Mesa		0.07	0.01	0.5600	0.59	0.370	0.55	-0.0028	0.0027	0.0035	0.0035	0.0145	0.0132	310	710
	Mean	0.388		1.9683		1.506		0.0004		0.0083		0.0143		463	
	(SD)	0.236		1.5574		2.252		0.0020		0.0073		0.0126		483	

Maximum understory vegetation radionuclide concentrations were converted to units dry wt for comparison to TRVs in LANL (1998) which were derived as shown in LANL (1999). Moisture conversion ratios of 0.1 and 0.08 (ash/dry) (Fresquez and Ferenbaugh 1999) were used for understory and overstory vegetation, respectively. Maximum concentrations were total U–0.0730 $\mu g\ g^{-1}$- dry; ^{90}Sr–0.243, ^{137}Cs–0.131, ^{238}Pu–0.197, $^{239,240}Pu$–0.00045, and ^{241}Am–0.00056 pCi g^{-1}-dry; and ^{3}H–1,300 pCi L^{-1}. All of these levels were below the TRVs, most being several orders of magnitude below the TRVs.

IV. DISCUSSION

Fewer differences were detected in vegetation than have been typically found in soil (Fresquez et al. 1996). Two statistically higher concentrations of ^{3}H in onsite vegetation were observed. This result has been previously attributed to Laboratory operations and agrees with soil data (Fresquez et al. 1996). Elevated levels of ^{3}H have been historically reported in soils within Laboratory lands—mostly from SWMU areas (Purtymun 1973, Purtymun et al. 1980, Fresquez et al. 1999). The sampling location "East of TA-54," which is next to Material Disposal Area G, had the highest ^{3}H concentration for both understory and overstory vegetation. This agrees with previous studies on vegetation (Fresquez et al. 1999).

V. ACKNOWLEDGEMENTS

Rick Velasquez of ESH-20 compiled the summary data and reviewed it for errors and Hector Hinojosa of CIC-1 did the technical editing.

VI. LITERATURE CITED

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Appendix A

CST Analytical Reports of Radionuclide Concentrations In Vegetation Samples From 25 Environmental Surveillance Sampling Locations in and Around the Los Alamos National Laboratory

Regional Background Stations, Perimeter Stations, LANL Onsite Stations

Table A-1. Legend to "Customer ID" Codes on Analytical Results Reports

Code

US – understory vegetation
OS – overstory vegetation

E – Embudo Regional Background (control) site
C – Cochiti Regional Background (control) site
J – Jemez Regional Background (control) site

Perimeter Stations
1 – Otowi
2 – TA-8 (GT-site)
3 – Near TA-49 (BNM)
4 – East Airport
5 – West Airport
6 – North Mesa
7 – Sportsman's Club
8 – Tsankawi/ PM-1
9 – White Rock (East)
10 – San Ildefonso

Onsite Stations
11 – TA-16 (S-Site)
12 – TA-21 (DP-Site)
13 – Near TA-33
14 – TA-50
15 – TA-51
16 – West of TA-53
17 – East of TA-53
18 – East of TA-54
19 – Potrillo Drive/ TA-36
20 – Near Test Well DT-9
21 – R-Site Road East
22 – Two-Mile Mesa

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

TAL30

Method: GENERIC KPA **Method Area:** EH-ALPHA **Submission Id :** 100034306

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082900	300191742	1-0S	U	0.23	0.02	ug/g	
200082902	300191747	1-US	U	0.15	0.02	ug/g	
200082903	300191752	2-0S	U	0.14	0.01	ug/g	
200082904	300191757	2-US	U	0.05	0.01	ug/g	
200082905	300191762	3-0S	U	0.25	0.03	ug/g	
200082906	300191767	3-US	U	0.10	0.01	ug/g	
200082907	300191772	4-0S	U	0.36	0.04	ug/g	
200082908	300191777	4-US	U	0.17	0.02	ug/g	
200082909	300191782	5-0S	U	0.22	0.02	ug/g	
200082910	300191787	5-US	U	0.19	0.02	ug/g	
200082911	300191793	6-0S	U	0.16	0.02	ug/g	
200082912	300191797	6-US	U	0.05	0.01	ug/g	
200082913	300191802	7-0S	U	0.23	0.02	ug/g	

**** FINAL REPORT ****

Method: GENERIC KPA Method Area: EH-ALPHA Submission Id : 100034306

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082914	300191805	U	0.29	0.03	ug/g	0.30	0.030	ug/g	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.38058	300200510	U	10.37	1.04	ug/L	10.1	1.0	ug/L	IN CONTROL

**** FINAL REPORT ****

Method: GENERIC KPA Method Area: EH-ALPHA Submission Id : 100034306

Analyst	Review	Team Leader	QA Officer
2/24/99	2/25/99	2/25/99	2/25/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: GENERIC KPA **Method Area:** EH-ALPHA **Submission Id :** 100034307

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C200WE6G300000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	APODACA
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082901	300191903	7-US	U	0.32	0.03	ug/g	
200082925	300191908	8-OS	U	0.42	0.04	ug/g	
200082926	300191913	8-US	U	0.54	0.05	ug/g	
200082927	300191920	9-OS	U	0.50	0.05	ug/g	
200082928	300191923	9-US	U	0.70	0.07	ug/g	
200082929	300191928	10-OS	U	0.56	0.06	ug/g	
200082930	300191934	10-US	U	0.36	0.04	ug/g	
200082931	300191938	E-OS	U	0.52	0.05	ug/g	
200082932	300191943	E-US	U	0.40	0.04	ug/g	
200082933	300191948	C-OS	U	0.35	0.04	ug/g	
200082934	300191953	C-US	U	0.16	0.02	ug/g	
200082935	300191959	J-OS	U	0.25	0.03	ug/g	
200082936	300191963	J-US	U	0.16	0.02	ug/g	

**** FINAL REPORT ****

Method: GENERIC KPA Method Area: EH-ALPHA Submission Id : 100034307

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082961	300191971	U	0.28	0.03	ug/g	0.26	0.026	ug/g	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.38058	300203092	U	10.31	1.03	ug/L	10.1	1.0	ug/L	IN CONTROL

**** FINAL REPORT ****

Method: GENERIC KPA Method Area: EH-ALPHA Submission Id : 100034307

ml			NK for PCL
Analyst	Review	Team Leader	QA Officer
3/3/99	3/4/99	3/4/99	3/4/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: SR-90 LS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034306

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082900	300191744	1-0S	Sr-90	4.59	0.58	pCi/g	
			Sr-90 MDA	1.29		pCi/g	
200082902	300191749	1-US	Sr-90	2.14	0.58	pCi/g	
			Sr-90 MDA	1.81		pCi/g	
200082903	300191754	2-0S	Sr-90	0.27	0.35	pCi/g	
			Sr-90 MDA	1.23		pCi/g	
200082904	300191759	2-US	Sr-90	1.66	0.46	pCi/g	
			Sr-90 MDA	1.44		pCi/g	
200082905	300191764	3-0S	Sr-90	0.92	0.36	pCi/g	
			Sr-90 MDA	0.80		pCi/g	
200082906	300191769	3-US	Sr-90	3.50	0.66	pCi/g	
			Sr-90 MDA	1.82		pCi/g	
200082907	300191774	4-0S	Sr-90	3.17	0.44	pCi/g	
			Sr-90 MDA	0.83		pCi/g	
200082908	300191779	4-US	Sr-90	3.60	0.88	pCi/g	
			Sr-90 MDA	2.56		pCi/g	
200082909	300191784	5-0S	Sr-90	2.47	0.45	pCi/g	
			Sr-90 MDA	1.11		pCi/g	

**** FINAL REPORT ****

8

Method: SR-90 LS ENV Method Area: EH-ALPHA Submission Id : 100034306

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082910	300191789	5-US	Sr-90	1.19	0.65	pCi/g	
			Sr-90 MDA	2.10		pCi/g	
200082911	300191790	6-0S	Sr-90	2.55	0.48	pCi/g	
			Sr-90 MDA	1.28		pCi/g	
200082912	300191799	6-US	Sr-90	15.39	4.68	pCi/g	
			Sr-90 MDA	17.26		pCi/g	
200082913	300191804	7-0S	Sr-90	5.75	1.05	pCi/g	
			Sr-90 MDA	3.09		pCi/g	

**** FINAL REPORT ****

Method: SR-90 LS ENV Method Area: EH-ALPHA Submission Id : 100034306

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082916	300191808	Sr-90	-1.02	1.34	pCi/g	3.65	0.12	pCi/g	OUT OF CONTROL

**** FINAL REPORT ****

Method: SR-90 LS ENV **Method Area: EH-ALPHA** **Submission Id : 100034306**

Analyst	Review	Team Leader	QA Officer
4/23/99	7/29/99	7/29/99	7/29/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: SR-90 LS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034307

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C200WE6G300000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	APODACA
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082901	300191906	7-US	Sr-90	4.21	0.86	pCi/g	
			Sr-90 MDA	2.03		pCi/g	
200082925	300191911	8-OS	Sr-90	2.28	0.25	pCi/g	
			Sr-90 MDA	0.4		pCi/g	
200082926	300191916	8-US	Sr-90	2.41	0.29	pCi/g	
			Sr-90 MDA	0.52		pCi/g	
200082927	300191918	9-OS	Sr-90	2.00	0.28	pCi/g	
			Sr-90 MDA	0.55		pCi/g	
200082928	300191926	9-US	Sr-90	3.71	0.35	pCi/g	
			Sr-90 MDA	0.47		pCi/g	
200082929	300191931	10-OS	Sr-90	2.41	0.36	pCi/g	
			Sr-90 MDA	.75		pCi/g	
200082930	300191932	10-US	Sr-90	2.72	0.28	pCi/g	
			Sr-90 MDA	0.41		pCi/g	
200082931	300191941	E-OS	Sr-90	2.12	0.32	pCi/g	
			Sr-90 MDA	0.65		pCi/g	
200082932	300191946	E-US	Sr-90	3.17	0.56	pCi/g	
			Sr-90 MDA	1.24		pCi/g	

**** FINAL REPORT ****

Method: SR-90 LS ENV Method Area: EH-ALPHA Submission Id : 100034307

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082933	300191951	C-OS	Sr-90	1.83	0.3	pCi/g	
			Sr-90 MDA	0.65		pCi/g	
200082934	300191956	C-US	Sr-90	0.97	0.24	pCi/g	
			Sr-90 MDA	0.6		pCi/g	
200082935	300191957	J-OS	Sr-90	2.30	0.34	pCi/g	
			Sr-90 MDA	0.69		pCi/g	
200082936	300191966	J-US	Sr-90	2.1	0.36	pCi/g	
			Sr-90 MDA	0.79		pCi/g	

**** FINAL REPORT ****

Method: SR-90 LS ENV Method Area: EH-ALPHA Submission Id : 100034307

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082956	300191969	Sr-90	3.9	0.86	pCi/g	2.33	0.075	pCi/g	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.36592	300213347	Sr-90	496.3	40.8	pCi/L	499.5	15.98	pCi/L	IN CONTROL

**** FINAL REPORT ****

Method: SR-90 LS ENV **Method Area: EH-ALPHA** **Submission Id : 100034307**

Analyst	Review	Team Leader	QA Officer
5-3-99	5/5/99	5/10/99	5/10/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

****** FINAL REPORT ******

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: GENERIC GAMMA **Method Area:** EH-GAMMA **Submission Id :** 100034306

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082900	300191817	1-0S	CS-137	0.29	0.44	pCi/g	
200082902	300191818	1-US	CS-137	0.43	0.65	pCi/g	
200082903	300191816	2-0S	CS-137	0.54	0.81	pCi/g	
200082904	300191819	2-US	CS-137	0.45	0.68	pCi/g	
200082905	300191820	3-0S	CS-137	0.51	0.77	pCi/g	
200082906	300191821	3-US	CS-137	0.37	0.55	pCi/g	
200082907	300191822	4-0S	CS-137	0.61	0.92	pCi/g	
200082908	300191823	4-US	CS-137	0.38	0.57	pCi/g	
200082909	300191827	5-0S	CS-137	0.44	0.66	pCi/g	
200082910	300191828	5-US	CS-137	-0.30	0.11	pCi/g	
200082911	300191829	6-0S	CS-137	0.20	0.30	pCi/g	
200082912	300191830	6-US	CS-137	0.13	0.20	pCi/g	
200082913	300191831	7-0S	CS-137	1.24	1.86	pCi/g	

**** FINAL REPORT ****

Method: GENERIC GAMMA Method Area: EH-GAMMA Submission Id : 100034306

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082917	300191809	CS-137	35.6	2.7	pCi/g	43.2	1.4	pCi/g	WARNING 2-3SIG

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.33114	300197253	CS-137	43.7	3.3	pCi/g	42	1.4	pCi/g	IN CONTROL
00.33381	300197254	CS-137	5.18	0.56	pCi/g	4.8500	0.1600	pCi/g	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22785	300197252	CS-137	-0.01	0.11	pCi/g	0.0	0.0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: GENERIC GAMMA Method Area: EH-GAMMA Submission Id : 100034306

Analyst	Review	Team Leader	QA Officer
2/1/99	2/2/99	2/2/99	2/2/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: GENERIC GAMMA **Method Area:** EH-GAMMA **Submission Id :** 100034307

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C200WE6G300000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	APODACA
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082901	300191902	7-US	CS-137	-0.13	0.11	pCi/g	
200082925	300191907	8-OS	CS-137	0.69	1.04	pCi/g	
200082926	300191912	8-US	CS-137	0.22	0.32	pCi/g	
200082927	300191919	9-OS	CS-137	1.14	1.71	pCi/g	
200082928	300191922	9-US	CS-137	0.39	0.58	pCi/g	
200082929	300191927	10-OS	CS-137	-0.36	0.10	pCi/g	
200082930	300191933	10-US	CS-137	0.33	0.50	pCi/g	
200082931	300191937	E-OS	CS-137	0.48	0.72	pCi/g	
200082932	300191942	E-US	CS-137	0.50	0.75	pCi/g	
200082933	300191947	C-OS	CS-137	0.52	0.78	pCi/g	
200082934	300191952	C-US	CS-137	0.37	0.56	pCi/g	
200082935	300191958	J-OS	CS-137	0.17	0.26	pCi/g	
200082936	300191962	J-US	CS-137	-0.17	0.10	pCi/g	

**** FINAL REPORT ****

Method: GENERIC GAMMA Method Area: EH-GAMMA Submission Id : 100034307

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082960	300191970	CS-137	34.9	2.7	pCi/g	28.8	0.95	pCi/g	WARNING 2-3SIG

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.33742	300199907	CS-137	31.8	2.5	pCi/g	30	1	pCi/g	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22785	300199906	CS-137	0.06	0.09	pCi/g	0.0	0.0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: GENERIC GAMMA Method Area: EH-GAMMA Submission Id : 100034307

Analyst	Review	Team Leader	QA Officer
2/8/99	2/9/99	2/9/99	2/11/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: PU RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034306

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082900	300191741	1-0S	Pu-238	0.0000	0.0000	pCi/g	
			Pu-239	0.0076	0.0032	pCi/g	
			Pu-242T Recovery	76.78		%	
200082902	300191746	1-US	Pu-238	0.0047	0.0025	pCi/g	
			Pu-239	0.0988	0.0087	pCi/g	
			Pu-242T Recovery	76.17		%	
200082903	300191751	2-0S	Pu-238	-.0008	.0016	pCi/g	
			Pu-239	.0045	.0026	pCi/g	
			Pu-242T Recovery	82.49		%	
200082904	300191756	2-US	Pu-238	-.0020	.0009	pCi/g	
			Pu-239	.0025	.0015	pCi/g	
			Pu-242T Recovery	82.90		%	
200082905	300191761	3-0S	Pu-238	.0020	.0020	pCi/g	
			Pu-239	.0078	.0036	pCi/g	
			Pu-242T Recovery	84.45		%	
200082906	300191766	3-US	Pu-238	.0013	.0016	pCi/g	
			Pu-239	.0029	.0015	pCi/g	
			Pu-242T Recovery	91.64		%	

**** FINAL REPORT ****

Method: PU RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034306**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082907	300191771	4-0S	Pu-238	-.0010	.0010	pCi/g	
			Pu-239	.0053	.0020	pCi/g	
			Pu-242T Recovery	93.65		%	
200082908	300191776	4-US	Pu-238	.0009	.0014	pCi/g	
			Pu-239	.0063	.0022	pCi/g	
			Pu-242T Recovery	84.29		%	
200082909	300191781	5-0S	Pu-238	.0180	.0039	pCi/g	
			Pu-239	.0213	.0040	pCi/g	
			Pu-242T Recovery	84.55		%	
200082910	300191786	5-US	Pu-238	.0012	.0012	pCi/g	
			Pu-239	.0095	.0025	pCi/g	
			Pu-242T Recovery	82.06		%	
200082911	300191792	6-0S	Pu-238	-.0006	.0012	pCi/g	
			Pu-239	.0046	.0025	pCi/g	
			Pu-242T Recovery	74.31		%	
200082912	300191796	6-US	Pu-238	.0005	.0010	pCi/g	
			Pu-239	.0012	.0013	pCi/g	
			Pu-242T Recovery	89.68		%	
200082913	300191801	7-0S	Pu-238	.0009	.0013	pCi/g	
			Pu-239	.0000	.0000	pCi/g	
			Pu-242T Recovery	88.81		%	

**** FINAL REPORT ****

Method: PU RAS ENV Method Area: EH-ALPHA Submission Id : 100034306

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082915	300191806	Pu-238	5.0667	.1938	pCi/g	5.13	0.18	pCi/g	IN CONTROL
		Pu-239	2.4216	.1047	pCi/g	2.51	0.080	pCi/g	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22784	300209903	Pu-238	.0016	.0015	pCi/g	0	0	pCi/g	IN CONTROL
		Pu-239	.0026	.0022	pCi/g	0	0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: PU RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034306**

RJP			NK for PCL
Analyst	Review	Team Leader	QA Officer
15 Apr 99	4/16/99	4/16/99	4/16/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: PU RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034307

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C200WE6G300000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	APODACA
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082901	300191905	7-US	Pu-238	0.0178	0.0094	pCi/g	
			Pu-238 DL	0.0324		pCi/g	
			Pu-239	0.0145	0.0098	pCi/g	
			Pu-239 DL	0.0324		pCi/g	
			Pu-242T Recovery	60.47		%	
			Analysis Date	13-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	36.49		%	
200082925	300191910	8-OS	Pu-238	0.0010	0.0012	pCi/g	
			Pu-238 DL	0.0046		pCi/g	
			Pu-239	0.0040	0.0016	pCi/g	
			Pu-239 DL	0.0046		pCi/g	
			Pu-242T Recovery	96.86		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	36.49		%	

**** FINAL REPORT ****

Method: PU RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034307**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082926	300191915	8-US	Pu-238	0.0024	0.0013	pCi/g	
			Pu-238 DL	0.0046		pCi/g	
			Pu-239	0.0103	0.0023	pCi/g	
			Pu-239 DL	0.0067		pCi/g	
			Pu-242T Recovery	88.30		%	
			Analysis Date	13-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	37.28		%	
200082927	300191917	9-OS	Pu-238	-0.0001	0.0017	pCi/g	
			Pu-238 DL	0.0074		pCi/g	
			Pu-239	0.0045	0.0030	pCi/g	
			Pu-239 DL	0.0094		pCi/g	
			Pu-242T Recovery	45.80		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	41.29		%	
200082928	300191925	9-US	Pu-238	0.0017	0.0026	pCi/g	
			Pu-238 DL	0.0109		pCi/g	
			Pu-239	0.0035	0.0022	pCi/g	
			Pu-239 DL	0.0059		pCi/g	
			Pu-242T Recovery	44.64		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	40.19		%	
200082929	300191930	10-OS	Pu-238	-0.0004	0.0014	pCi/g	
			Pu-238 DL	0.0052		pCi/g	
			Pu-239	0.0224	0.0030	pCi/g	
			Pu-239 DL	0.0031		pCi/g	

**** FINAL REPORT ****

Method: PU RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034307

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082929	300191930	10-OS	Pu-242T Recovery	94.54		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	34.43		%	
200082930	300191936	10-US	Pu-238	0.0044	0.0019	pCi/g	
			Pu-238 DL	0.0058		pCi/g	
			Pu-239	0.0063	0.0027	pCi/g	
			Pu-239 DL	0.0074		pCi/g	
			Pu-242T Recovery	40.73		%	
			Analysis Date	13-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	41.29		%	
200082931	300191940	E-OS	Pu-238	0.0009	0.0012	pCi/g	
			Pu-238 DL	0.0049		pCi/g	
			Pu-239	0.0023	0.0014	pCi/g	
			Pu-239 DL	0.0047		pCi/g	
			Pu-242T Recovery	99.52		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	34.17		%	
200082932	300191945	E-US	Pu-238	0.0033	0.0011	pCi/g	
			Pu-238 DL	0.0023		pCi/g	
			Pu-239	0.0054	0.0018	pCi/g	
			Pu-239 DL	0.0055		pCi/g	
			Pu-242T Recovery	100.24		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	

**** FINAL REPORT ****

Method: PU RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034307**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082932	300191945	E-US	Efficiency	34.99		%	
200082933	300191950	C-OS	Pu-238	-0.0003	0.0010	pCi/g	
			Pu-238 DL	0.0035		pCi/g	
			Pu-239	0.0024	0.0013	pCi/g	
			Pu-239 DL	0.0028		pCi/g	
			Pu-242T Recovery	96.41		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
200082934	300191955	C-US	Efficiency	35.61		%	
			Pu-238	-0.0006	0.0011	pCi/g	
			Pu-238 DL	0.0043		pCi/g	
			Pu-239	0.0019	0.0015	pCi/g	
			Pu-239 DL	0.0049		pCi/g	
			Pu-242T Recovery	95.17		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
200082935	300191961	J-OS	Efficiency	36.24		%	
			Pu-238	0.0019	0.0015	pCi/g	
			Pu-238 DL	0.0055		pCi/g	
			Pu-239	0.0026	0.0016	pCi/g	
			Pu-239 DL	0.0049		pCi/g	
			Pu-242T Recovery	91.04		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
200082936	300191965	J-US	Efficiency	36.70		%	
			Pu-238	0.0004	0.0011	pCi/g	
			Pu-238 DL	0.0040		pCi/g	
			Pu-239	0.0009	0.0012	pCi/g	

**** FINAL REPORT ****

Method: PU RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034307**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082936	300191965	J-US	Pu-239 DL	0.0035		pCi/g	
			Pu-242T Recovery	98.59		%	
			Analysis Date	03-MAY-1999		DD-MON-YYYY	
			Instrument	96 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	35.39		%	

****** FINAL REPORT ******

Method: PU RAS ENV Method Area: EH-ALPHA Submission Id : 100034307

********** CST QUALITY ASSURANCE REPORT *********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200091992	300207157	Pu-238	6.1128	0.1902	pCi/g	5.8	0.20	pCi/g	IN CONTROL
		Pu-239	1.9403	0.0731	pCi/g	1.80	0.058	pCi/g	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.39798	300215257	Pu-238	4033	152	pCi/L	4180	418	pCi/L	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22784	300215258	Pu-238	-0.0019	0.0041	pCi/g	0	0	pCi/g	IN CONTROL
		Pu-239	0.0034	0.0046	pCi/g	0	0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: PU RAS ENV Method Area: EH-ALPHA Submission Id : 100034307

Analyst	Review	Team Leader	QA Officer
5/26/99	5/26/99	5/26/99	5/26/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: AM RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034306

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082900	300191740	1-0S	Am-241	0.0054	0.0042	pCi/g	
			Am-243T Recovery	38.46		%	
200082902	300191745	1-US	Am-241	0.0042	0.0045	pCi/g	
			Am-243T Recovery	32.17		%	
200082903	300191750	2-0S	Am-241	-0.0031	0.0030	pCi/g	
			Am-243T Recovery	42.37		%	
200082904	300191755	2-US	Am-241	-0.0013	0.0028	pCi/g	
			Am-243T Recovery	45.91		%	
200082905	300191760	3-0S	Am-241	0.0107	0.0066	pCi/g	
			Am-243T Recovery	42.44		%	
200082906	300191765	3-US	Am-241	0.0002	0.0027	pCi/g	
			Am-243T Recovery	39.19		%	
200082907	300191770	4-0S	Am-241	0.0101	0.0044	pCi/g	
			Am-243T Recovery	42.79		%	
200082908	300191775	4-US	Am-241	0.0022	0.0025	pCi/g	
			Am-243T Recovery	42.13		%	
200082909	300191780	5-0S	Am-241	0.0005	0.0040	pCi/g	
			Am-243T Recovery	40.67		%	

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034306

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082910	300191785	5-US	Am-241	-0.0036	0.0016	pCi/g	
			Am-243T Recovery	32.77		%	
200082911	300191791	6-0S	Am-241	0.0011	0.0032	pCi/g	
			Am-243T Recovery	41.78		%	
200082912	300191795	6-US	Am-241	-0.0012	0.0026	pCi/g	
			Am-243T Recovery	29.85		%	
200082913	300191800	7-0S	Am-241	0.0138	0.0056	pCi/g	
			Am-243T Recovery	35.56		%	

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034306

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082915	300191807	Am-241	5.0025	0.2081	pCi/g	5.58	0.25	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034306

Analyst	Review	Team Leader	QA Officer
5/6/99	5/12/99	5/16/99	5/16/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: AM RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034307

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C200WE6G300000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	APODACA
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082901	300191904	7-US	Am-241	0.0257	0.0086	pCi/g	
			Am-241 DL	0.0241		pCi/g	
			Am-243T Recovery	89.97		%	
			Analysis Date	05-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	30.27		%	
200082925	300191909	8-OS	Am-241	0.0035	0.0034	pCi/g	
			Am-241 DL	0.0128		pCi/g	
			Am-243T Recovery	56.75		%	
			Analysis Date	05-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	28.39		%	
200082926	300191914	8-US	Am-241	0.0081	0.0035	pCi/g	
			Am-241 DL	0.0114		pCi/g	
			Am-243T Recovery	50.46		%	
			Analysis Date	05-MAY-1999		DD-MON-YYYY	

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034307

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082926	300191914	8-US	Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	29.63		%	
200082927	300191921	9-OS	Am-241	0.0070	0.0031	pCi/g	
			Am-241 DL	0.0083		pCi/g	
			Am-243T Recovery	53.01		%	
			Analysis Date	05-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	30.82		%	
200082928	300191924	9-US	Am-241	0.0084	0.0027	pCi/g	
			Am-241 DL	0.0058		pCi/g	
			Am-243T Recovery	59.62		%	
			Analysis Date	17-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	30.49		%	
200082929	300191929	10-OS	Am-241	0.0175	0.0046	pCi/g	
			Am-241 DL	0.0110		pCi/g	
			Am-243T Recovery	38.62		%	
			Analysis Date	05-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	30.27		%	
200082930	300191935	10-US	Am-241	0.0069	0.0021	pCi/g	
			Am-241 DL	0.0035		pCi/g	
			Am-243T Recovery	65.07		%	
			Analysis Date	05-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	30.67		%	

****** FINAL REPORT ******

Method: AM RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034307**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082931	300191939	E-OS	Am-241	0.0023	0.0022	pCi/g	
			Am-241 DL	0.0072		pCi/g	
			Am-243T Recovery	48.56		%	
			Analysis Date	17-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	28.32		%	
200082932	300191944	E-US	Am-241	0.0060	0.0026	pCi/g	
			Am-241 DL	0.0063		pCi/g	
			Am-243T Recovery	55.37		%	
			Analysis Date	05-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	30.27		%	
200082933	300191949	C-OS	Am-241	0.0069	0.0019	pCi/g	
			Am-241 DL	0.0034		pCi/g	
			Am-243T Recovery	74.31		%	
			Analysis Date	05-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	29.76		%	
200082934	300191954	C-US	Am-241	0.0032	0.0014	pCi/g	
			Am-241 DL	0.0043		pCi/g	
			Am-243T Recovery	85.06		%	
			Analysis Date	17-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	32.83		%	
200082935	300191960	J-OS	Am-241	0.0048	0.0020	pCi/g	
			Am-241 DL	0.0064		pCi/g	
			Am-243T Recovery	57.16		%	

**** FINAL REPORT ****

Method: AM RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034307**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082935	300191960	J-OS	Analysis Date	05-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	32.68		%	
200082936	300191964	J-US	Am-241	0.0032	0.0032	pCi/g	
			Am-241 DL	0.0119		pCi/g	
			Am-243T Recovery	31.84		%	
			Analysis Date	17-MAY-1999		DD-MON-YYYY	
			Instrument	32 ALPHA		NONE	
			Count Time	3000.00		min	
			Efficiency	30.93		%	

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034307

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082953	300191968	Am-241	3.4933	0.0898	pCi/g	3.36	0.15	pCi/g	IN CONTROL
200091992	300207158	Am-241	7.2083	0.2197	pCi/g	6.9	0.31	pCi/g	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22784	300216176	Am-241	0.0035	0.0082	pCi/g	0	0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034307

Analyst	Review	Team Leader	QA Officer
5/26/99	5/27/99	5/27/99	5/27/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: H-3 LS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034283

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	07-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	APODACA
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082655	300191435	E-OS	H-3	80	650	pCi/L	
			H-3 MDA	470		pCi/L	
200082656	300191436	E-US	H-3	-310	620	pCi/L	
			H-3 MDA	480		pCi/L	
200082657	300191437	C-OS	H-3	-70	640	pCi/L	
			H-3 MDA	480		pCi/L	
200082658	300191438	C-US	H-3	60	650	pCi/L	
			H-3 MDA	500		pCi/L	
200082659	300191439	J-OS	H-3	-200	630	pCi/L	
			H-3 MDA	470		pCi/L	
200082660	300191440	J-US	H-3	1110	720	pCi/L	
			H-3 MDA	520		pCi/L	

**** FINAL REPORT ****

Method: H-3 LS ENV Method Area: EH-ALPHA Submission Id : 100034283

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082668	300191441	H-3	10600	1200	pCi/L	11900	440	pCi/L	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.38286	300192776	H-3	-0.00049	0.00061	uCi/L	0	0	uCi/L	IN CONTROL
00.39930	300192777	H-3	0.0121	0.0013	uCi/L	0.01427	0.00143	uCi/L	IN CONTROL

**** FINAL REPORT ****

Method: H-3 LS ENV **Method Area: EH-ALPHA** **Submission Id : 100034283**

Analyst	Review	Team Leader	QA Officer
12/16/98	12/17/98	12/17/98	12/17/98
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

****** FINAL REPORT ******

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LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: H-3 LS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034297

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	APODACA
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082816	300191605	1-OS	H-3	190	660	pCi/L	
			H-3 MDA	480		pCi/L	
200082817	300191606	1-US	H-3	-130	630	pCi/L	
			H-3 MDA	490		pCi/L	
200082818	300191607	2-OS	H-3	200	660	pCi/L	
			H-3 MDA	470		pCi/L	
200082819	300191608	2-US	H-3	140	650	pCi/L	
			H-3 MDA	470		pCi/L	
200082820	300191609	3-OS	H-3	960	710	pCi/L	
			H-3 MDA	570		pCi/L	
200082821	300191610	3-US	H-3	150	650	pCi/L	
			H-3 MDA	490		pCi/L	
200082822	300191611	4-OS	H-3	240	660	pCi/L	
			H-3 MDA	500		pCi/L	
200082823	300191612	4-US	H-3	-20	640	pCi/L	
			H-3 MDA	490		pCi/L	
200082824	300191613	5-OS	H-3	300	660	pCi/L	
			H-3 MDA	490		pCi/L	

**** FINAL REPORT ****

Method: H-3 LS ENV Method Area: EH-ALPHA Submission Id : 100034297

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082825	300191614	5-US	H-3	210	660	pCi/L	
			H-3 MDA	510		pCi/L	
200082826	300191615	6-OS	H-3	130	650	pCi/L	
			H-3 MDA	490		pCi/L	
200082827	300191616	6-US	H-3	280	660	pCi/L	
			H-3 MDA	520		pCi/L	
200082828	300191617	7-OS	H-3	190	660	pCi/L	
			H-3 MDA	490		pCi/L	
200082829	300191618	7-US	H-3	380	670	pCi/L	
			H-3 MDA	510		pCi/L	
200082830	300191619	8-OS	H-3	190	660	pCi/L	
			H-3 MDA	470		pCi/L	
200082831	300191620	8-US	H-3	180	660	pCi/L	
			H-3 MDA	510		pCi/L	
200082832	300191621	9-OS	H-3	410	670	pCi/L	
			H-3 MDA	490		pCi/L	
200082833	300191622	9-US	H-3	-300	620	pCi/L	
			H-3 MDA	490		pCi/L	
200082834	300191623	10-OS	H-3	-10	640	pCi/L	
			H-3 MDA	470		pCi/L	
200082835	300191624	10-US	H-3	550	680	pCi/L	
			H-3 MDA	480		pCi/L	

DUPLICATE TASKS

Sample Id	Task Id	Original Task	Component	Result Value	Uncertainty	Units	Qualifier
200082824	300191613		H-3	300	660	pCi/L	
			H-3 MDA	490		pCi/L	
200083517	300192778	300191613	H-3	60	650	pCi/L	

**** FINAL REPORT ****

006

Method: H-3 LS ENV Method Area: EH-ALPHA Submission Id : 100034297

Sample Id	Task Id	Original Task	Component	Result Value	Uncertainty	Units	Qualifier
200083517	300192778	300191613	H-3 MDA	500		pCi/L	

007

**** FINAL REPORT ****

Method: H-3 LS ENV Method Area: EH-ALPHA Submission Id : 100034297

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082836	300191626	H-3	17100	1500	pCi/L	19600	730	pCi/L	IN CONTROL
200082837	300191625	H-3	14900	1400	pCi/L	16200	600	pCi/L	IN CONTROL

008

**** FINAL REPORT ****

Method: H-3 LS ENV Method Area: EH-ALPHA Submission Id : 100034297

Analyst	Review	Team Leader	QA Officer
12/16/98	12/17/98	12/17/98	12/17/98
Date	Date	Date	Date

009

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LANL Onsite Stations

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: GENERIC KPA **Method Area:** EH-ALPHA **Submission Id :** 100034309

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082937	300191833	11-OS	U	0.14	0.01	ug/g	
200082938	300191838	11-US	U	0.10	0.01	ug/g	
200082939	300191843	12-OS	U	0.45	0.05	ug/g	
200082940	300191848	12-US	U	0.73	0.07	ug/g	
200082941	300191855	13-OS	U	0.39	0.04	ug/g	
200082942	300191858	13-US	U	0.14	0.01	ug/g	
200082943	300191863	14-OS	U	0.68	0.07	ug/g	
200082944	300191868	14-US	U	0.38	0.04	ug/g	
200082945	300191873	15-OS	U	0.83	0.08	ug/g	
200082946	300191878	15-US	U	0.28	0.03	ug/g	
200082947	300191883	16-OS	U	0.33	0.03	ug/g	
200082948	300191888	16-US	U	0.48	0.05	ug/g	
200082949	300191896	17-OS	U	0.58	0.06	ug/g	

**** FINAL REPORT ****

Method: GENERIC KPA Method Area: EH-ALPHA Submission Id : 100034309

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082958	300191900	U	0.51	0.05	ug/g	0.49	0.049	ug/g	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.38058	300203235	U	10.57	1.06	ug/L	10.1	1.0	ug/L	IN CONTROL

**** FINAL REPORT ****

Method: GENERIC KPA **Method Area: EH-ALPHA** **Submission Id : 100034309**

ml			NK for PCL
Analyst	Review	Team Leader	QA Officer
3/3/99	3/4/99	3/4/99	3/4/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: GENERIC RPA **Method Area:** EH-ALPHA **Submission Id :** 100034304

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082884	300191682	17-US	U	0.13	0.01	ug/g	
200082886	300191687	18-OS	U	0.38	0.04	ug/g	
200082887	300191692	18-US	U	0.14	0.01	ug/g	
200082888	300191697	19-OS	U	0.49	0.05	ug/g	
200082889	300191702	19-US	U	0.09	0.01	ug/g	
200082890	300191707	20-OS	U	0.20	0.02	ug/g	
200082891	300191712	20-US	U	0.04	0.01	ug/g	
200082892	300191717	21-OS	U	0.11	0.01	ug/g	
200082893	300191722	21-US	U	0.15	0.02	ug/g	
200082894	300191727	22-OS	U	0.07	0.01	ug/g	
200082895	300191732	22-US	U	0.14	0.01	ug/g	

**** FINAL REPORT ****

Method: GENERIC KPA Method Area: EH-ALPHA Submission Id : 100034304

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082899	300191739	U	0.29	0.03	ug/g	0.29	0.029	ug/g	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.38058	300200506	U	10.25	1.03	ug/L	10.1	1.0	ug/L	IN CONTROL

**** FINAL REPORT ****

Method: GENERIC KPA **Method Area: EH-ALPHA** **Submission Id : 100034304**

Analyst	Review	Team Leader	QA Officer
2/24/99	2/25/99	2/25/99	2/25/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

****** FINAL REPORT ******

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: SR-90 LS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034309

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815				
Requester Fax #:	667-0731	**Analytical Service Agreement #:**		**Logged by:**	LBRANCH

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082937	300191836	11-OS	Sr-90	1.16	0.47	pCi/g	
			Sr-90 MDA	1.34		pCi/g	
200082938	300191841	11-US	Sr-90	1.82	0.34	pCi/g	
			Sr-90 MDA	0.81		pCi/g	
200082939	300191846	12-OS	Sr-90	0.27	0.32	pCi/g	
			Sr-90 MDA	1.01		pCi/g	
200082940	300191851	12-US	Sr-90	1.12	0.28	pCi/g	
			Sr-90 MDA	0.72		pCi/g	
200082941	300191853	13-OS	Sr-90	4.38	0.47	pCi/g	
			Sr-90 MDA	0.74		pCi/g	
200082942	300191861	13-US	Sr-90	1.76	0.49	pCi/g	
			Sr-90 MDA	1.31		pCi/g	
200082943	300191866	14-OS	Sr-90	0.75	0.27	pCi/g	
			Sr-90 MDA	0.77		pCi/g	
200082944	300191871	14-US	Sr-90	0.54	0.29	pCi/g	
			Sr-90 MDA	0.88		pCi/g	
200082945	300191876	15-OS	Sr-90	2.23	0.34	pCi/g	
			Sr-90 MDA	0.72		pCi/g	

**** FINAL REPORT ****

Method: SR-90 LS ENV **Method Area: EH-ALPHA** **Submission Id : 100034309**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082946	300191881	15-US	Sr-90	2.43	0.36	pCi/g	
			Sr-90 MDA	0.76		pCi/g	
200082947	300191886	16-OS	Sr-90	0.44	0.47	pCi/g	
			Sr-90 MDA	1.5		pCi/g	
200082948	300191891	16-US	Sr-90	1.4	0.27	pCi/g	
			Sr-90 MDA	0.63		pCi/g	
200082949	300191894	17-OS	Sr-90	3.47	0.34	pCi/g	
			Sr-90 MDA	0.5		pCi/g	

**** FINAL REPORT ****

Method: SR-90 LS ENV Method Area: EH-ALPHA Submission Id : 100034309

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082955	300191897	Sr-90	0.21	0.86	pCi/g	2.98	0.095	pCi/g	OUT OF CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.36592	300212914	Sr-90	490.5	39.8	pCi/L	499.5	15.98	pCi/L	IN CONTROL

**** FINAL REPORT ****

Method: SR-90 LS ENV **Method Area: EH-ALPHA** **Submission Id : 100034309**

Analyst	Review	Team Leader	QA Officer
5-3-99	5/5/99	5/10/99	5/10/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: SR-90 LS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034304

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082884	300191680	17-US	Sr-90	1.62	0.37	pCi/g	
			Sr-90 MDA	0.92		pCi/g	
200082886	300191685	18-OS	Sr-90	4.5	0.54	pCi/g	
			Sr-90 MDA	0.94		pCi/g	
200082887	300191690	18-US	Sr-90	2.36	0.48	pCi/g	
			Sr-90 MDA	1.25		pCi/g	
200082888	300191695	19-OS	Sr-90	2.60	0.40	pCi/g	
			Sr-90 MDA	0.81		pCi/g	
200082889	300191700	19-US	Sr-90	0.95	0.34	pCi/g	
			Sr-90 MDA	0.98		pCi/g	
200082890	300191705	20-OS	Sr-90	2.67	0.50	pCi/g	
			Sr-90 MDA	1.11		pCi/g	
200082891	300191710	20-US	Sr-90	1.15	0.38	pCi/g	
			Sr-90 MDA	1.06		pCi/g	
200082892	300191715	21-OS	Sr-90	0.59	0.71	pCi/g	
			Sr-90 MDA	2.36		pCi/g	
200082893	300191720	21-US	Sr-90	1.39	0.41	pCi/g	
			Sr-90 MDA	1.12		pCi/g	

**** FINAL REPORT ****

Method: SR-90 LS ENV **Method Area: EH-ALPHA** **Submission Id : 100034304**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082894	300191725	22-OS	Sr-90	0.56	0.59	pCi/g	
			Sr-90 MDA	1.84		pCi/g	
200082895	300191730	22-US	Sr-90	0.99	0.37	pCi/g	
			Sr-90 MDA	1.08		pCi/g	

**** FINAL REPORT ****

Method: SR-90 LS ENV Method Area: EH-ALPHA Submission Id : 100034304

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082896	300191735	Sr-90	8.77	2.14	pCi/g	8.99	0.29	pCi/g	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.36592	300209798	Sr-90	539.77	50.00	pCi/L	499.5	15.98	pCi/L	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22784	300209796	Sr-90	-1.97	1.20	pCi/g	0	0	pCi/g	IN CONTROL
00.22784	300209797	Sr-90	-1.58	0.68	pCi/g	0	0	pCi/g	WARNING 2-3SIG

**** FINAL REPORT ****

Method: SR-90 LS ENV **Method Area: EH-ALPHA** **Submission Id : 100034304**

Analyst	Review	Team Leader	QA Officer
4/19/99	4/20/99	4/22/99	4/22/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: GENERIC GAMMA **Method Area:** EH-GAMMA **Submission Id :** 100034309

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082937	300191832	11-OS	CS-137	2.37	3.56	pCi/g	
200082938	300191837	11-US	CS-137	1.06	1.58	pCi/g	
200082939	300191842	12-OS	CS-137	1.80	2.71	pCi/g	
200082940	300191847	12-US	CS-137	0.36	0.54	pCi/g	
200082941	300191854	13-OS	CS-137	0.93	1.39	pCi/g	
200082942	300191857	13-US	CS-137	1.11	1.67	pCi/g	
200082943	300191862	14-OS	CS-137	1.06	1.60	pCi/g	
200082944	300191867	14-US	CS-137	0.41	0.61	pCi/g	
200082945	300191872	15-OS	CS-137	0.47	0.71	pCi/g	
200082946	300191877	15-US	CS-137	1.01	1.52	pCi/g	
200082947	300191882	16-OS	CS-137	1.41	2.12	pCi/g	
200082948	300191887	16-US	CS-137	1.31	1.97	pCi/g	
200082949	300191895	17-OS	CS-137	8.32	12.48	pCi/g	

**** FINAL REPORT ****

Method: GENERIC GAMMA Method Area: EH-GAMMA Submission Id : 100034309

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082959	300191901	CS-137	36.2	2.7	pCi/g	28.8	0.95	pCi/g	WARNING 2-3SIG

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.33382	300200053	CS-137	5.64	0.62	pCi/g	4.8500	0.1600	pCi/g	IN CONTROL
00.33376	300200054	CS-137	4.94	0.42	pCi/g	5.0400	0.1700	pCi/g	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22785	300200052	CS-137	0.14	0.21	pCi/g	0.0	0.0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: GENERIC GAMMA Method Area: EH-GAMMA Submission Id : 100034309

Analyst	Review	Team Leader	QA Officer
2/9/99	2/10/99	2/10/99	2/11/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: GENERIC GAMMA **Method Area:** EH-GAMMA **Submission Id :** 100034304

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082884	300191681	17-US	CS-137	0.14	0.20	pCi/g	
200082886	300191686	18-OS	CS-137	0.30	0.46	pCi/g	
200082887	300191691	18-US	CS-137	0.25	0.37	pCi/g	
200082888	300191696	19-OS	CS-137	0.08	0.12	pCi/g	
200082889	300191701	19-US	CS-137	0.48	0.11	pCi/g	
200082890	300191706	20-OS	CS-137	0.39	0.58	pCi/g	
200082891	300191711	20-US	CS-137	0.38	0.56	pCi/g	
200082892	300191716	21-OS	CS-137	0.57	0.86	pCi/g	
200082893	300191721	21-US	CS-137	0.18	0.27	pCi/g	
200082894	300191726	22-OS	CS-137	0.37	0.55	pCi/g	
200082895	300191731	22-US	CS-137	0.28	0.42	pCi/g	

**** FINAL REPORT ****

Method: GENERIC GAMMA Method Area: EH-GAMMA Submission Id : 100034304

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082898	300191738	CS-137	43.4	3.0	pCi/g	46.1	1.5	pCi/g	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.33742	300197235	CS-137	29.9	2.1	pCi/g	30	1	pCi/g	IN CONTROL
00.33380	300197236	CS-137	5.94	0.51	pCi/g	5.1000	0.1700	pCi/g	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22785	300197234	CS-137	0.03	0.05	pCi/g	0.0	0.0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: GENERIC GAMMA Method Area: EH-GAMMA Submission Id : 100034304

Analyst	Review	Team Leader	QA Officer
1/21/99	1/22/99	1/25/99	1/26/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: PU RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034309

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082937	300191835	11-OS	Pu-238	0.0009	0.0034	pCi/g	
			Pu-239	0.0013	0.0040	pCi/g	
			Pu-242T Recovery	83.87		%	
200082938	300191840	11-US	Pu-238	-0.0005	0.0015	pCi/g	
			Pu-239	-0.0013	0.0017	pCi/g	
			Pu-242T Recovery	87.73		%	
200082939	300191845	12-OS	Pu-238	0.0031	0.0022	pCi/g	
			Pu-239	0.0175	0.0039	pCi/g	
			Pu-242T Recovery	74.92		%	
200082940	300191850	12-US	Pu-238	0.0013	0.0018	pCi/g	
			Pu-239	0.0267	0.0042	pCi/g	
			Pu-242T Recovery	73.12		%	
200082941	300191852	13-OS	Pu-238	-0.0004	0.0006	pCi/g	
			Pu-239	0.0056	0.0021	pCi/g	
			Pu-242T Recovery	86.66		%	
200082942	300191860	13-US	Pu-238	-0.0007	0.0017	pCi/g	
			Pu-239	0.0050	0.0022	pCi/g	
			Pu-242T Recovery	96.06		%	

**** FINAL REPORT ****

Method: PU RAS ENV Method Area: EH-ALPHA Submission Id : 100034309

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082943	300191865	14-OS	Pu-238	0.0000	0.0000	pCi/g	
			Pu-239	0.0095	0.0031	pCi/g	
			Pu-242T Recovery	88.33		%	
200082944	300191870	14-US	Pu-238	0.0034	0.0018	pCi/g	
			Pu-239	0.0045	0.0019	pCi/g	
			Pu-242T Recovery	86.67		%	
200082945	300191875	15-OS	Pu-238	0.0030	0.0021	pCi/g	
			Pu-239	0.0100	0.0027	pCi/g	
			Pu-242T Recovery	87.44		%	
200082946	300191880	15-US	Pu-238	0.0006	0.0009	pCi/g	
			Pu-239	0.0041	0.0017	pCi/g	
			Pu-242T Recovery	88.47		%	
200082947	300191885	16-OS	Pu-238	0.0013	0.0024	pCi/g	
			Pu-239	0.0089	0.0039	pCi/g	
			Pu-242T Recovery	85.11		%	
200082948	300191890	16-US	Pu-238	0.0000	0.0000	pCi/g	
			Pu-239	0.0052	0.0021	pCi/g	
			Pu-242T Recovery	82.26		%	
200082949	300191893	17-OS	Pu-238	0.0012	0.0011	pCi/g	
			Pu-239	0.0039	0.0017	pCi/g	
			Pu-242T Recovery	87.12		%	

**** FINAL REPORT ****

Method: PU RAS ENV Method Area: EH-ALPHA Submission Id : 100034309

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082957	300191898	Pu-238	3.4759	0.1400	pCi/g	3.75	0.13	pCi/g	IN CONTROL
		Pu-239	1.7537	0.0812	pCi/g	1.79	0.057	pCi/g	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22784	300211018	Pu-238	0.0012	0.0020	pCi/g	0	0	pCi/g	IN CONTROL
		Pu-239	0.0014	0.0018	pCi/g	0	0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: PU RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034309

Analyst	Review	Team Leader	QA Officer
5/27/99	5/27/99	5/28/99	6/2/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: PU RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034304

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082884	300191683	17-US	Pu-238	-0.0005	0.0045	pCi/g	
			Pu-239	0.0094	0.0056	pCi/g	
			Pu-242T Recovery	70.35		%	
200082886	300191688	18-OS	Pu-238	0.0000	0.0000	pCi/g	
			Pu-239	0.0257	0.0068	pCi/g	
			Pu-242T Recovery	89.10		%	
200082887	300191693	18-US	Pu-238	0.0012	0.0024	pCi/g	
			Pu-239	0.0180	0.0041	pCi/g	
			Pu-242T Recovery	92.08		%	
200082888	300191698	19-OS	Pu-238	-0.0015	0.0032	pCi/g	
			Pu-239	0.0047	0.0034	pCi/g	
			Pu-242T Recovery	85.40		%	
200082889	300191703	19-US	Pu-238	-0.0014	0.0028	pCi/g	
			Pu-239	0.0074	0.0039	pCi/g	
			Pu-242T Recovery	76.89		%	
200082890	300191708	20-OS	Pu-238	-0.0023	0.0046	pCi/g	
			Pu-239	0.0100	0.0063	pCi/g	
			Pu-242T Recovery	69.10		%	

**** FINAL REPORT ****

Method: PU RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034304**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082891	300191713	20-US	Pu-238	0.0007	0.0033	pCi/g	
			Pu-239	0.0032	0.0034	pCi/g	
			Pu-242T Recovery	83.53		%	
200082892	300191718	21-OS	Pu-238	0.0024	0.0051	pCi/g	
			Pu-239	-0.0005	0.0063	pCi/g	
			Pu-242T Recovery	84.72		%	
200082893	300191723	21-US	Pu-238	0.0032	0.0033	pCi/g	
			Pu-239	0.0092	0.0036	pCi/g	
			Pu-242T Recovery	89.52		%	
200082894	300191728	22-OS	Pu-238	-0.0028	0.0027	pCi/g	
			Pu-239	0.0035	0.0035	pCi/g	
			Pu-242T Recovery	90.74		%	
200082895	300191733	22-US	Pu-238	0.0002	0.0023	pCi/g	
			Pu-239	0.0054	0.0033	pCi/g	
			Pu-242T Recovery	83.08		%	

**** FINAL REPORT ****

Method: PU RAS ENV Method Area: EH-ALPHA Submission Id : 100034304

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082897	300191736	Pu-238	4.4458	0.1915	pCi/g	4.46	0.16	pCi/g	IN CONTROL
		Pu-239	5.4118	0.2251	pCi/g	5.40	0.17	pCi/g	IN CONTROL

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22784	300211827	Pu-238	-0.0024	0.0047	pCi/g	0	0	pCi/g	IN CONTROL
		Pu-239	-0.0029	0.0030	pCi/g	0	0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: PU RAS ENV Method Area: EH-ALPHA Submission Id : 100034304

Analyst	Review	Team Leader	QA Officer
5/27/99	5/27/99	5/28/99	6/2/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: AM RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034309

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082937	300191834	11-OS	Am-241	0.0212	0.0084	pCi/g	
			Am-241 DL	0.0293		pCi/g	
			Am-243T Recovery	66.97		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.58		%	
200082938	300191839	11-US	Am-241	0.0037	0.0039	pCi/g	
			Am-241 DL	0.0159		pCi/g	
			Am-243T Recovery	68.43		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.21		%	
200082939	300191844	12-OS	Am-241	0.0057	0.0041	pCi/g	
			Am-241 DL	0.0136		pCi/g	
			Am-243T Recovery	62.59		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	

**** FINAL REPORT ****

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Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034309

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082939	300191844	12-OS	Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	26.15		%	
200082940	300191849	12-US	Am-241	0.0017	0.0060	pCi/g	
			Am-241 DL	0.0260		pCi/g	
			Am-243T Recovery	43.73		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.59		%	
200082941	300191856	13-OS	Am-241	-0.0008	0.0030	pCi/g	
			Am-241 DL	0.0148		pCi/g	
			Am-243T Recovery	50.05		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.52		%	
200082942	300191859	13-US	Am-241	0.0084	0.0085	pCi/g	
			Am-241 DL	0.0345		pCi/g	
			Am-243T Recovery	43.66		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.24		%	
200082943	300191864	14-OS	Am-241	0.0067	0.0066	pCi/g	
			Am-241 DL	0.0258		pCi/g	
			Am-243T Recovery	41.60		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.56		%	

**** FINAL REPORT ****

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Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034309

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082944	300191869	14-US	Am-241	0.0050	0.0028	pCi/g	
			Am-241 DL	0.0092		pCi/g	
			Am-243T Recovery	60.26		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.73		%	
200082945	300191874	15-OS	Am-241	0.0101	0.0061	pCi/g	
			Am-241 DL	0.0201		pCi/g	
			Am-243T Recovery	46.66		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.70		%	
200082946	300191879	15-US	Am-241	0.0086	0.0033	pCi/g	
			Am-241 DL	0.0049		pCi/g	
			Am-243T Recovery	50.05		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.88		%	
200082947	300191884	16-OS	Am-241	0.0178	0.0081	pCi/g	
			Am-241 DL	0.0191		pCi/g	
			Am-243T Recovery	45.74		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	21.59		%	
200082948	300191889	16-US	Am-241	0.0017	0.0023	pCi/g	
			Am-241 DL	0.0090		pCi/g	
			Am-243T Recovery	63.21		%	

**** FINAL REPORT ****

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Method: AM RAS ENV **Method Area: EH-ALPHA** **Submission Id : 100034309**

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082948	300191889	16-US	Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.53		%	
200082949	300191892	17-OS	Am-241	0.0194	0.0051	pCi/g	
			Am-241 DL	0.0107		pCi/g	
			Am-243T Recovery	52.86		%	
			Analysis Date	21-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.37		%	

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034309

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082957	300191899	Am-241	5.6564	0.2164	pCi/g	6.49	0.29	pCi/g	WARNING 2-3SIG

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22784	300216208	Am-241	0.0011	0.0067	pCi/g	0	0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034309

Analyst	Review	Team Leader	QA Officer
June 2, 99	6/7/99	6/8/99	6/11/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

**** FINAL REPORT ****

3

LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: AM RAS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034304

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	LBRANCH
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082884	300191684	17-US	Am-241	0.0140	0.0128	pCi/g	
			Am-241 DL	0.0487		pCi/g	
			Am-243T Recovery	38.30		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.34		%	
200082886	300191689	18-OS	Am-241	0.0378	0.0158	pCi/g	
			Am-241 DL	0.0398		pCi/g	
			Am-243T Recovery	34.00		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.25		%	
200082887	300191694	18-US	Am-241	0.0081	0.0068	pCi/g	
			Am-241 DL	0.0162		pCi/g	
			Am-243T Recovery	40.86		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	

**** FINAL REPORT ****

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Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034304

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082887	300191694	18-US	Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	26.19		%	
200082888	300191699	19-OS	Am-241	-0.0019	0.0165	pCi/g	
			Am-241 DL	0.0705		pCi/g	
			Am-243T Recovery	19.59		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.68		%	
200082889	300191704	19-US	Am-241	0.0057	0.0083	pCi/g	
			Am-241 DL	0.0327		pCi/g	
			Am-243T Recovery	35.21		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.51		%	
200082890	300191709	20-OS	Am-241	0.0342	0.0157	pCi/g	
			Am-241 DL	0.0482		pCi/g	
			Am-243T Recovery	49.52		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.09		%	
200082891	300191714	20-US	Am-241	0.0096	0.0116	pCi/g	
			Am-241 DL	0.0488		pCi/g	
			Am-243T Recovery	35.88		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.52		%	

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034304

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082892	300191719	21-OS	Am-241	0.0066	0.0133	pCi/g	
			Am-241 DL	0.0583		pCi/g	
			Am-243T Recovery	49.40		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.61		%	
200082893	300191724	21-US	Am-241	0.0116	0.0114	pCi/g	
			Am-241 DL	0.0401		pCi/g	
			Am-243T Recovery	32.71		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	20.79		%	
200082894	300191729	22-OS	Am-241	0.0145	0.0132	pCi/g	
			Am-241 DL	0.0411		pCi/g	
			Am-243T Recovery	32.87		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	19.86		%	
200082895	300191734	22-US	Am-241	0.0081	0.0076	pCi/g	
			Am-241 DL	0.0249		pCi/g	
			Am-243T Recovery	27.75		%	
			Analysis Date	12-MAY-1999		DD-MON-YYYY	
			Instrument	80 ALPHA		NONE	
			Count Time	1333.33		min	
			Efficiency	21.62		%	

****** FINAL REPORT ******

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034304

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082897	300191737	Am-241	2.2286	0.1444	pCi/g	2.62	0.12	pCi/g	WARNING 2-3SIG

METHOD BLANK

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.22784	300215832	Am-241	0.0174	0.0348	pCi/g	0	0	pCi/g	IN CONTROL
00.22784	300215833	Am-241	0.0075	0.0058	pCi/g	0	0	pCi/g	IN CONTROL

**** FINAL REPORT ****

Method: AM RAS ENV Method Area: EH-ALPHA Submission Id : 100034304

Analyst	Review	Team Leader	QA Officer
5/18/99	5/19/99	5/20/99	5/20/99
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

"The reported uncertainties are at the 1 sigma confidence level unless otherwise stated."

****** FINAL REPORT ******

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LOS ALAMOS NATIONAL LABORATORY
CST Analytical Chemistry
Analytical Results Report

Method: H-3 LS ENV **Method Area:** EH-ALPHA **Submission Id :** 100034298

Requester Name:	PHIL FRESQUEZ	**Customer Cost Code:**	7C2000WE6G30000000	**Due Date:**	17-FEB-99
Requester Group:	ESH-20	**Logged Date:**	08-DEC-1998	**Screening Data:**	NO SCREENING DATA REQUIRED
Mail Stop:	M887	**Study:**	ESH20 BIOLOGICALS		
Requester Phone:	667-0815			**Logged by:**	APODACA
Requester Fax #:	667-0731	**Analytical Service Agreement #:**			

CUSTOMER SAMPLES

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082839	300191637	11-OS	H-3	90	700	pCi/L	
			H-3 MDA	480		pCi/L	
200082840	300191638	11-US	H-3	10	700	pCi/L	
			H-3 MDA	470		pCi/L	
200082841	300191639	12-OS	H-3	60	700	pCi/L	
			H-3 MDA	470		pCi/L	
200082842	300191640	12-US	H-3	580	730	pCi/L	
			H-3 MDA	490		pCi/L	
200082843	300191641	13-OS	H-3	280	710	pCi/L	
			H-3 MDA	490		pCi/L	
200082844	300191642	13-US	H-3	390	720	pCi/L	
			H-3 MDA	480		pCi/L	
200082845	300191643	14-OS	H-3	370	720	pCi/L	
			H-3 MDA	490		pCi/L	
200082846	300191644	14-US	H-3	490	730	pCi/L	
			H-3 MDA	470		pCi/L	
200082847	300191645	15-OS	H-3	80	700	pCi/L	
			H-3 MDA	460		pCi/L	

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**** FINAL REPORT ****

Method: H-3 LS ENV Method Area: EH-ALPHA Submission Id : 100034298

Sample Id	Task Id	Customer Id	Component	Result Value	Uncertainty	Units	Qualifier
200082848	300191646	15-US	H-3	310	710	pCi/L	
			H-3 MDA	480		pCi/L	
200082849	300191647	16-OS	H-3	950	750	pCi/L	
			H-3 MDA	530		pCi/L	
200082850	300191648	16-US	H-3	270	710	pCi/L	
			H-3 MDA	470		pCi/L	
200082851	300191649	17-OS	H-3	170	710	pCi/L	
			H-3 MDA	470		pCi/L	
200082852	300191650	17-US	H-3	130	700	pCi/L	
			H-3 MDA	460		pCi/L	
200082853	300191651	18-OS	H-3	1530	790	pCi/L	
			H-3 MDA	470		pCi/L	
200082854	300191652	18-US	H-3	1310	780	pCi/L	
			H-3 MDA	500		pCi/L	
200082855	300191653	19-OS	H-3	290	710	pCi/L	
			H-3 MDA	460		pCi/L	
200082856	300191654	19-US	H-3	780	740	pCi/L	
			H-3 MDA	510		pCi/L	
200082857	300191655	20-OS	H-3	250	710	pCi/L	
			H-3 MDA	470		pCi/L	
200082858	300191656	20-US	H-3	1300	770	pCi/L	
			H-3 MDA	580		pCi/L	
200082859	300191657	21-OS	H-3	1180	770	pCi/L	
			H-3 MDA	460		pCi/L	
200082860	300191658	21-US	H-3	210	710	pCi/L	
			H-3 MDA	470		pCi/L	
200082861	300191659	22-OS	H-3	310	710	pCi/L	
			H-3 MDA	470		pCi/L	
200082862	300191660	22-US	H-3	230	710	pCi/L	
			H-3 MDA	460		pCi/L	

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**** FINAL REPORT ****

Method: H-3 LS ENV Method Area: EH-ALPHA Submission Id : 100034298

DUPLICATE TASKS

Sample Id	Task Id	Original Task	Component	Result Value	Uncertainty	Units	Qualifier
200082850	300191648		H-3	270	710	pCi/L	
			H-3 MDA	470		pCi/L	
200084117	300193704	300191648	H-3	420	720	pCi/L	
			H-3 MDA	470		pCi/L	

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**** FINAL REPORT ****

Method: H-3 LS ENV Method Area: EH-ALPHA Submission Id : 100034298

********** CST QUALITY ASSURANCE REPORT **********

BLIND QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
200082866	300191661	H-3	14200	1400	pCi/L	14500	540	pCi/L	IN CONTROL
200082867	300191662	H-3	16600	1500	pCi/L	17900	660	pCi/L	IN CONTROL

OPEN QC

Customer Id	Task Id	Component	Result Value	Uncertainty	Units	QC Value	QC Uncertainty	QC units	QC Evaluation
00.38286	300193702	H-3	-0.00018	0.00068	uCi/L	0	0	uCi/L	IN CONTROL
00.39930	300193703	H-3	0.0121	0.0013	uCi/L	0.01427	0.00143	uCi/L	IN CONTROL

**** FINAL REPORT ****

Method: H-3 LS ENV **Method Area: EH-ALPHA** **Submission Id : 100034298**

Analyst	Review	Team Leader	QA Officer
12/22/98	12/24/98	12/24/98	12/24/98
Date	Date	Date	Date

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in Quality Assurance for Health and Environmental Chemistry: 1992, LA-12790-MS, Vol I, pp. 19-29.

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NATIONAL LABORATORY
Los Alamos, New Mexico 87545