



FOIA — 97-0068

RESPONSE TYPE

FINAL

X

PARTIAL (5th)

DATE

JUN 10 1997

DOCKET NUMBER(S) (if applicable)

RESPONSE TO FREEDOM OF
INFORMATION ACT (FOIA) REQUEST

REQUESTER

John R. Kyte

PART I.—AGENCY RECORDS RELEASED OR NOT LOCATED (See checked boxes)

☐ No agency records subject to the request have been located.☐ No additional agency records subject to the request have been located.☐ Requested records are available through another public distribution program. See Comments section.☒ Agency records subject to the request that are identified in Appendix(es) I are already available for public inspection and copying at the NRC Public Document Room, 2120 L Street, N.W., Washington, DC.☒ Agency records subject to the request that are identified in Appendix(es) J are being made available for public inspection and copying at the NRC Public Document Room, 2120 L Street, N.W., Washington, DC, in a folder under this FOIA number.☐ The nonproprietary version of the proposal(s) that you agreed to accept in a telephone conversation with a member of my staff is now being made available for public inspection and copying at the NRC Public Document Room, 2120 L Street, N.W., Washington, DC, in a folder under this FOIA number.☐ Agency records subject to the request that are identified in Appendix(es) _____ may be inspected and copied at the NRC Local Public Document Room identified in the Comments section.☐ Enclosed is information on how you may obtain access to and the charges for copying records located at the NRC Public Document Room, 2120 L Street, N.W., Washington, DC.☒ Agency records subject to the request are enclosed. *☐ Records subject to the request have been referred to another Federal agency(ies) for review and direct response to you.

Fees

☐ You will be billed by the NRC for fees totaling \$ _____.☐ You will receive a refund from the NRC in the amount of \$ _____.☐ In view of NRC's response to this request, no further action is being taken on appeal letter dated _____, No. _____.

PART II. A—INFORMATION WITHHELD FROM PUBLIC DISCLOSURE

☐ Certain information in the requested records is being withheld from public disclosure pursuant to the exemptions described in and for the reasons stated in Part II, B, C, and D. Any released portions of the documents for which only part of the record is being withheld are being made available for public inspection and copying in the NRC Public Document Room, 2120 L Street, N.W., Washington, DC in a folder under this FOIA number.

COMMENTS

*The records identified on enclosed Appendices I and J are responsive to your request. Copies of Appendix I records may be obtained directly by contacting NRC's Public Document Room. Copies of Appendix J records are enclosed.

Please note that additional records responsive to your request have been addressed under your earlier request, FOIA-97-0064. Several remaining records are being reviewed for disclosure determinations. You will be notified once this review is complete.

FIA 9/1

SIGNATURE, DIRECTOR, DIVISION OF FREEDOM OF INFORMATION AND PUBLICATIONS SERVICES

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PDR FOIA

KYTE97-68

PDR



APPENDIX I
RECORDS ALREADY AVAILABLE IN THE PDR

<u>NO.</u>	<u>DATE</u>	<u>ACCESSION NUMBER</u>	<u>DESCRIPTION/(PAGE COUNT)</u>
1	01/08/97	9701150293	Letter from Thomas Cochran to James Taylor on Request for action pursuant to 10 CFR 2.206. (7 pages).
2	01/08/97	9701150293	Letter from Thomas Cochran to Hugh Thompson on Request for action pursuant to 10 CFR 2.206. (7 pages).
3	01/21/97	9703060162	Letter from Carol Marcus to Shirley Jackson on Petition to Conduct Expedited Agreement State Program Compatibility Review. (13 pages).
4	01/24/97	9702260089	Letter from John Frisco to Hugh Thompson on issues concerning the Regulatory Licenses for the Envirocare of Utah Facility. (3 pages).
5	02/07/97	9703130098	Letter from Hugh Thompson to Thomas Cochran on Director's Decision on Natural Resources Defense Council's 10 CFR 2.206 Petition. (7 pages).
	02/07/97	9702260021	Director's Decision under 10 CFR 2.206. (11 pages).
	02/07/97	9703190177	U.S. Nuclear Regulatory Commission Natural Resources Defense Council Receipt of Petition and Issuance of a Director's Decision under 10 CFR 2.206. (4 pages).
6	02/11/97	9703060153	Letter from Richard Bangart to Carol Marcus responding to her letter for January 21, 1997, requesting the NRC to review Utah's Agreement State Program. (1 page).

APPENDIX J

RECORDS MAINTAINED IN THE PDR UNDER THE ABOVE REQUEST NUMBER

NUMBER	DATE	DESCRIPTION/PAGES
1.	6/21/96	Items of Interest of the Office of the General Counsel, (1 pg.).
2.	7/15/96	Letter to RIV Administrator from V. Andrews, re: Revision to Annual Radiological Monitoring Program Report; License SMC-1559, (116 pgs.).
3.	10/12/96	Notice of Appearance for Defendants and Acceptance of Service of Process, (10 pgs.).
4.	10/12/96	Copy of Complaint, (8 pgs.).
5.	11/1/96	Answer and Counterclaim, (22 pgs.).
6.	11/21/96	Letter to J. Egan from M. Malsch, re: NRC Licensing Authority, (2 pgs.).
7.	1/3/97	Article from News Flash, entitled, "Former Utah Regulator Sues Envirocare," (2 pgs.).
8.	1/10/97	Meeting Notice, (1 pg.).
9.	1/13/97	Fax Transmittal Sheet with Handwritten Note attaching DRAFT Environmental Chemistry Analysis Report, (14 pgs.).
10	1/14/97	Article from News Flash, entitled, "Suit Against Envirocare Sparks Investigations Formal Petition Filed with NRC," (8 pgs.).

APPENDIX J
RECORDS MAINTAINED IN THE PDR UNDER THE ABOVE REQUEST NUMBER
(Continued)

NUMBER	DATE	DESCRIPTION
11.	1/3/97	Letter to B. Evans from A. Kiggins, re: Safety and Environmental Review Panel Administrative Procedure; License SMC-1559, (5 pgs.).
12.	2/3/97	Letter to J. Goldberg from J. Carter, re: 10 CFR 2.206 Petitions/Envirocare of Utah, Inc., (18 pgs.).
13.	2/18/97	Extracted Page from Federal Register, Vol. 62, No. 32, (1 pg.).

EGAN & ASSOCIATES, P.C.

Counselors at Law

2300 N Street, N.W.
Washington, D.C. 20037
Telephone (202) 663-9200
Fax (202) 663-9066

February 24, 1996

VIA FACSIMILE ((301) 415-7010)

AND VIA FIRST CLASS MAIL

Mr. Russell A. Powell, Chief
FOIA/LPDR Branch
Division of Freedom of Information
and Publications Services
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

FOIA/PA REQUEST

Case No:	<u>97-0068</u>
Date Rec'd:	<u>2-25-97</u>
Action Off:	<u>Pugh</u>
Related Case:	<u></u>

RE: Freedom of Information Act Request

Dear Mr. Powell:

Pursuant to the Freedom of Information Act (5 U.S.C. § 552) and the U.S. Nuclear Regulatory Commission (NRC) regulations (10 C.F.R. Part 9, Subpart A), please provide me with a copy of the following documentation:¹

1. All documentation submitted to any office of NRC from or pertaining to Envirocare of Utah, Inc., since April 1, 1996.
2. All documentation sent by any office of NRC to or pertaining to Envirocare of Utah, Inc., since April 1, 1996.
3. All documentation submitted to any office of NRC from or pertaining to Waste Control Specialists LLC (WCS) of Pasadena, Texas, since April 1, 1996.

¹ "Documents" means any written, recorded or graphic material of any kind, whether prepared by NRC or by any other person, that is in NRC's possession, custody or control. The term includes, but is not limited to: letters; telegrams; cables; interoffice communications; memoranda; reports; analyses; authorizations; notebooks; lists; outlines; schedules; charts; applications; and minutes or notes of meetings or conferences (in each case whether stored in electronic/computer form or hard copy).

Mr. Russell A. Powell

February 24, 1997

Page 2

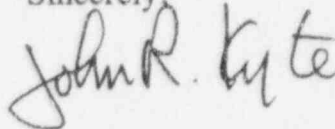
including but not limited to documentation from members of the Texas Legislature and/or representatives of Texas state government or regulatory agencies.

4. All documentation sent by any office of NRC to or pertaining to Waste Control Specialists LLC (WCS) of Pasadena, Texas, since April 1, 1996, including but not limited to documentation to members of the Texas Legislature and/or representatives of Texas state government or regulatory agencies.

If any or all of this request is denied, please cite the specific exemption(s) relied upon by NRC for such denial, and inform me of any appeal procedures available under the law. I would greatly appreciate NRC handling this request as quickly as possible as responsive documents may have relevance to on-going legal proceedings. In any event, I look forward to hearing from you within 10 days as required by law.

If you need any further information to process this request, please do not hesitate to contact me during the day at (202) 663-9051.

Sincerely,

A handwritten signature in dark ink, appearing to read "John R. Kyte". The signature is written in a cursive, slightly stylized font.

John R. Kyte

Office of the General Counsel
Items of Interest
Week Ending June 21, 1996

Waste Control Specialists

Waste Control Specialists (WCS), a private firm, is seeking to contract with DOE to receive DOE low-level waste for disposal at the firm's facility on non-Federal land in Texas. OGC has conducted informal discussions with representatives from WCS, the State of Texas, and DOE in response to inquiries from several of the various parties involved. As this point, the appropriate regulatory authority for oversight of WCS proposed activities has not been identified. The WCS proposal raises some novel legal issues. OGC has informed the appropriate staff offices of these communications and the issues involved. OGC will provide additional information as this issue develops.

WASTE CONTROL SPECIALISTS 03-17-97
NOIS/DOE RECOMMEND RELEASE

REFERRAL TO OGC & IE/CY

FBI 97-68

Waste
Control
Specialists 71553-358
88888-210

JUNE 21, 1996

ENCLOSURE E

J/1

ENVIROCARE OF UTAH, INC.
THE SAFE ALTERNATIVE

July 15, 1996

Administrator
U.S. Nuclear Regulatory Commission
Region IV
Material Radiation Protection Section
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

Re: Revision to Annual Radiological Monitoring Program Report, License Number SMC-1559

Dear Sir:

Enclosed is one copy of the revision to the 1995 Annual Radiological Monitoring Report prepared by Envirocare of Utah, Inc. The following changes have been made in this revision.

Appendix C has been changed to include actual calculated concentrations of airborne particulate radioactivity rather than using "ND" for those cases where the uncertainty is greater than the concentration.

Appendices D and I have been changed to make the reporting units mrem/qr for gamma doses and pCi/l for radon and thoron concentrations. The two appendices have also been changed to include annual averages for each station.

Appendix E has been revised to remove extraneous nuclide data and to include gamma-emitting radionuclides from the uranium and thorium decay chains. Several errors in the original report have also been corrected.

Appendix G has been expanded to include all data on gamma-emitting nuclides and results of analysis for total U, isotopic thorium and lead-210 on certain samples.

Text of the report has been revised slightly to correct several typographical and grammatical errors and to add additional discussion to the sections on airborne radioactivity monitoring and groundwater monitoring.

If you have any questions or comments regarding this report, please contact Vernon Andrews by telephone at (801)532-1330.

Sincerely,

Vernon E. Andrews
Vernon E. Andrews
Corporate RSO

Enclosure: 1995 Annual Radiological Monitoring Report; Revision 1

1995 ANNUAL REPORT
RADIOLOGICAL MONITORING PROGRAM
ENVIROCARE OF UTAH, INC.
LICENSE NUMBER SMC-1559

Revision 1, July 11, 1996

9607240108 15011

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1995 ANNUAL RADIOLOGICAL MONITORING REPORT

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INTRODUCTION

Envirocare of Utah, Inc., (Envirocare) received its radioactive materials license number SMC-1559 from the U.S. Nuclear Regulatory Commission on November 19, 1993. This license allows Envirocare to receive and dispose of 11e.(2) byproduct material. This byproduct material is defined as "the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes." Envirocare received the first 11e.(2) waste for disposal on September 26, 1994.

As an 11e.(2) disposal facility, Envirocare was licensed under the conditions of Appendix A to 10 CFR 40. It is also subject to the radiation safety provisions of 10 CFR 20. This report presents the results of all monitoring and inspections required by the appropriate regulations and by license conditions.

Envirocare's 11e.(2) disposal facility is located on the same Section on and as its low activity radioactive waste (LARW) disposal facility which is licensed by the State of Utah Division of Radiation Control. For purposes of radiation control, and to demonstrate compliance with the individual licenses, any radiological effects measured at the total facility is assumed be solely the result of activities conducted under each license. Under this operating philosophy, for this report all airborne releases and all radiation doses are assumed to derive from activities conducted under this license.

ENVIRONMENTAL MONITORING PROGRAM

Envirocare conducts a comprehensive program of environmental monitoring to measure and evaluate the radiological impact of the disposal facility on its workers and the environment. Although the Clive facility is remote from any inhabited area, every effort is made to maintain radiological releases and doses as low as reasonably achievable. Environmental monitoring shows that measurable quantities of airborne radioactivity are released to the off-site area, but are within the standards set forth in 10 CFR 20.

Because Envirocare had operated its LARW facility for six years prior to accepting the first shipments of 11e.(2) waste, it had an extensive environmental monitoring program in place, with many sampling sites already established at locations selected to monitor the 11e.(2) operation. Therefore, in addition to the monitoring networks specifically established for this license, a number of additional sites are monitored and sampled around the

facility. The results of those efforts are not contained in this report, but do provide an additional source of data to assist in interpreting results. Any impact which the 11e.(2) disposal operations might have on the LARW monitoring locations receives the same review and evaluation as part of that network as if they had been part of the 11e.(2) monitoring network, and vice versa.

Envirocare's environmental monitoring program is summarized in Table 1. Ten environmental stations containing a lo-vol air particulate sampler, electret ion chamber radon/thoron monitors and electret ion chamber gamma dose monitors are located within and around the access restricted area. An additional station, not containing a thoron monitor, is located at the nearest occupied facility, a hazardous waste incinerator site, approximately one-and-a-half miles west. Additional radon/thoron monitors are placed in the Administration building laboratory area and in the security guard residence trailer north of the Administration building.

Air filters are changed twice weekly and are counted for gross alpha and gross beta activity after a seven-day decay period to allow for the decay of thoron daughters. Quarterly composites of filters from each station are analyzed by radiochemistry for uranium, Th-230 and -232, Ra-226 and Pb-210. The radon/thoron monitors are collected and read quarterly. Gamma monitors and the radon monitor at the incinerator site are collected and read quarterly.

Soil samples six inches square by one inch deep are collected quarterly at 30 locations, including the environmental stations. All soil samples are analyzed by gamma spectrometry for Ra-226 and other gamma-emitting nuclides. Samples from nine of the sites are also analyzed by radiochemistry for uranium and for thorium isotopes.

Vegetation samples are collected from available desert shrubs twice each year during the growing season at five locations around the disposal site and at four locations one to one-and-a-half miles to the north, east, south and west.

Twelve ground water monitoring wells are sampled quarterly and analyzed for an extensive list of organic, inorganic and radiological parameters. Results are reported to both the NRC and to the State of Utah.

AIRBORNE RADIOACTIVITY MONITORING

Gross Alpha and Beta Particulate Radioactivity

Gross alpha particulate concentrations are listed and plotted in Appendix A. Because of the relatively high gross beta background due to Pb-210, gross alpha measurements are more sensitive to small changes in airborne particulate concentrations of the type of materials which compose 11e.(2) waste. This is demonstrated by the graphs of gross alpha and gross beta concentrations in Appendix B.

An increase in airborne gross alpha particulate activity can be identified with those periods when higher radioactivity waste was being handled at the rail car rollover. Station A-14 is immediately north-northeast of the rail car rollover. Several other stations also show corresponding changes in airborne radioactivity. The highest individual concentration measured on a filter was $9.3 \text{ E-14 } \mu\text{Ci/ml}$ at Station A-14 during the period of October 9 - 12. A corresponding spike of $2.9 \text{ E-14 } \mu\text{Ci/ml}$ can be seen for the same period at Station A-2, located immediately west of the rail car rollover. Envirocare will continue to keep these airborne activity levels as low as reasonably achievable by working with the waste generators to ensure that shipping practices are used to prevent drying of the waste, and by applying water to waste in rail cars prior to emptying them in the rollover.

As shown in Appendix B, Station A-14 exhibited the highest annual average concentrations of both gross alpha and gross beta activity.

Specific Radionuclide Concentrations

Quarterly isotopic air concentrations for each of the low volume air samplers are contained in Appendix C. The reported results are concentrations determined from the net radioactivity (total activity on the filter composite minus total radioactivity on the filter blank) divided by the total volume sampled. Total uranium is determined by fluorimetry, therefore, there are no error terms listed. In some cases uranium was not detected by the fluorimetric test and results are given as ND.

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Radon/Thoron Concentrations

Quarterly and annual average radon monitoring results are shown in Appendix D. Quarterly concentrations at each station were compared to the mean plus two standard deviations as observed during that quarter at the two background stations, B-1 and B-2. Annual average concentrations were compared to the annual mean plus two standard deviations determined from the background stations. The highest quarterly radon concentration from an environmental station was 1.4 pCi/l at Station A-14 during the fourth quarter. This is a net increase for the quarter of 0.7 pCi/l over the average background concentration of 0.7 pCi/l. Station A-14 was found to exceed the mean plus two standard deviations by 0.3 pCi/l during the third quarter. In addition to A-14, four other stations - A-3, A-5, A-7 and A-12 were found to exceed the mean plus two standard deviations by 0.1 to 0.4 pCi/l during the fourth quarter. Of those stations, only A-5 is a site boundary location. The highest average concentration of radon for the year was 1.1 pCi/l at A-14. This exceeded the annual mean plus 2 standard deviations by 0.3 pCi/l. The concentrations of radon observed were within the range expected for the type of waste managed during the period.

Thoron (Rn-220) monitoring results are summarized in Appendix I. Measured concentrations were compared to the appropriate values for mean background plus two standard, as for radon. Except for an occasional observation, all stations were found to exceed the mean plus two standard deviations by as much as 1.4 pCi/l (Station A-7 during the fourth quarter). The highest quarterly thoron concentration at an environmental station located at the site boundary was 1.9 pCi/l at Station A-5 during the fourth quarter. This is a net concentration of 1.2 pCi/l over the background mean plus two standard deviations. The highest annual average concentration of thoron at a site boundary location was 1.3 pCi/l, with a net of 1 pCi/l at Station A-5. While the observed thoron concentrations were in the range anticipated, efforts were made during the year to control emissions from the disposal cell by covering non-active areas of disposed waste with a layer of clean soil or lower-concentration waste.

Because both Station A-14 and A-5 are located outdoors and the time from generation to monitoring is short it is appropriate to assume that both radon and thoron are present without their daughters. This is supported by past working level measurements made in the disposal cell. The measured annual increases in radon and thoron concentrations at these locations was calculated to be four percent and five percent of the respective ECL's.

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Sum of Fractions Determinations

A sum of fractions calculation was used to determine the annual percent of the ECL at each of the environmental stations during 1995. The calculation included contributions from all the isotopes analyzed during the year. To ensure a conservative estimate the lower limit of detection was used in the calculation for instances where the isotopic concentration was not measurable. Average airborne radioactivity concentrations at Station A-14 were 33 percent of the ECL. This was the highest percentage for any of the environmental monitoring stations located outside the Restricted Area.

EXTERNAL GAMMA RADIATION

The results of environmental gamma monitoring are given in Appendix D. The higher doses measured during the first and fourth quarters at A-3 may be due to direct gamma radiation from the disposal cell. Gamma exposure rates at all other environmental monitoring stations are within the range of observed variations for those stations.

VEGETATION SAMPLING RESULTS

Vegetation samples were collected during the growing season in May and August. The results are presented in Appendix J. Concentrations are reported as $\mu\text{Ci/kg}$ of dry weight in order to reduce variabilities due to moisture content. The total uranium concentrations tend to be lower for more remote samples. No other trends can be determined from the given sample results.

SOIL SAMPLING

The results of gamma spectral analysis of soil samples collected at the environmental stations and at three work areas are presented in Appendix E. Results of radiochemical analysis for total U and isotopic thorium are included for the six environmental stations and three work areas where those analyses are performed. Station 55 is located northeast of the rail car rollover and exhibits higher contamination levels resulting from previous operations. Locations A, B and D generally exhibit higher concentrations of radioactivity as a result of vehicle traffic between the disposal cells and loading areas.

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Radium-226 sample results, including those results from monitoring prior to issuance of the active radioactive materials license, are displayed graphically in Appendix F. As can be seen, the concentrations measured at all locations are typical of historical values for those sites.

Soil samples are collected annually at 300-m intervals along the eight compass radials beginning at the Site boundary and extending out to 1500 m. A summary of radiological analytical results is contained in Appendix G. Radium-226 concentrations from these samples are consistent with expected background.

GROUNDWATER

Groundwater monitoring results, as prepared by Envirocare's consultant, Bingham Environmental, Inc., are reported in Appendix H. During the second quarter, water from four wells exceeded the NRC-approved backgrounds for one nuclide each. Those wells were resampled and met the background limits on that set of samples. Two wells exceeded NRC approved background standards during the fourth quarter. Well GW-58 exceeded the approved background for uranium. On resampling the uranium concentration was below the background limit. The concentration of Th-230 reported for the quarterly sampling of well GW-60 was 0.4 ± 0.6 pCi/l, exceeding the NRC-approved background of 0.0 pCi/l. On resampling, the concentration was reported as 0.1 ± 0.3 pCi/l and was again considered to be an exceedence. These results were, subsequently, the topic of discussion on several occasions between Envirocare and NRC in an attempt to revise the approved backgrounds to values based on observed concentrations during the preoperational sampling period.

RADIATION DOSE TO THE PUBLIC

The maximum radiation dose to a hypothetical receptor during the year outside the Restricted Area was calculated at 19 mrem. Since this is the maximum dose expected at any location along Envirocare's property boundary, the dose to an individual at that spot from inhalation of airborne radioactivity and external gamma radiation is less than 100 mrem for the year. However, there are no receptors within seven miles of the facility in that direction, so the actual dose to any individual in that direction approaches 0.

Envirocare provides a residential mobile home to its security guard. The mobile home is located on Envirocare property outside

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the permitted Section 32, immediately to the north of the Administration building. Envirocare's sub-contractor also operates an equipment maintenance facility shortly north of the security guard mobile home. The mobile home and maintenance facility are a short distance beyond environmental Station A-1. In addition to using that station to monitor airborne particulate radioactivity and measure external gamma doses which might impact those receptors, radon monitors are placed in the mobile home and work shop and a gamma monitor is maintained in the mobile home. Except for naturally occurring isotopes which were found at normal ambient levels, no airborne particulate radioactivity was detected at Station A-1. Gamma doses at the security guard mobile home are the lowest found in the area due to a layer of gravel fill and blacktop paving which are lower in radioactivity than the native soil. No increases in dose rate have been observed. Radon and thoron concentrations are in the range expected for an indoors location.

The monitoring station at the hazardous waste incinerator site had the lowest average gross alpha concentration of any of Envirocare's monitoring locations, indicating that it was measuring background levels. Radon concentrations are representative of background and gross gamma doses are the lowest of any station. The conclusion is that there has been no measurable impact on workers at that location.

The final conclusion is that there has been no measurable radiation dose to any off-site worker or resident.

OCCUPATIONAL RADIATION EXPOSURES

The maximum accumulated gamma dose equivalent for the year to any worker was 263 mrem. This worker was an equipment operator working in the disposal cell and was routinely rotated from the area to maintain his dose below the ALARA plan goal of 125 mrem per quarter. Work area hi-vol air sample filters which exceeded either the gross alpha or gross beta screening levels of 10 percent of the appropriate DACs were submitted for specific isotopic analysis. The results are presented in Appendix M as the fraction of the DAC for each nuclide. The sum of fractions (Σf) was calculated for each filter so analyzed, with results ranging from $1.2 \text{ E-}03$ to $5.4 \text{ E-}1$. All workers in the areas monitored wore respirators with protection factors of at least 10; therefore, the effective sums of fractions were further reduced by a factor of ten. As shown in the final column, the maximum effective sum-of-fractions was $5.4 \text{ E-}02$. Therefore, it was not necessary to calculate internal doses and the total effective dose equivalent was the dose due to external gamma radiation.

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EMPLOYEE TRAINING

All employees received initial training and specific on-the-job training in compliance with Envirocare's operational procedures for training. Each worker was required to be trained in all aspects of their job, with satisfactory completion of training documented and placed in their personnel file.

All employees were required to attend weekly half-hour training sessions in topics covering occupational and radiation safety, new procedures and other topics related to site operations.

An eight-hour annual refresher training course was conducted for all employees during January.

JOINT INSPECTIONS BY CRSO AND ENGINEER

In compliance with License condition 11.3, joint monthly inspections of the facility were conducted by the Corporate RSO and Facility Engineer. These inspections were usually in the company of other site personnel for the purpose of prompt communication of any problems which might be observed. No significant problems were identified during the inspections and any corrective actions found necessary as a result of the inspections were promptly applied. A summary of the inspection reports is in Appendix K.

ANNUAL LAND USE SURVEY

Land use within 5 km of the site remains essentially the same as described in the license application. The only occupied areas within the 5-km area were the previously-identified hazardous waste incinerator facility; the Envirocare security guard trailer north of the Administration building; and the equipment maintenance facility operated by Envirocare's contractor, Broken Arrow, north of Envirocare's property. The facility is now considered to be the nearest off-site occupied area and a full environmental monitoring station will be placed at that location. There are no residents, and no other workers, within the 5-km area.

There are no domestic, industrial or agricultural wells within 5 km.

OPERATIONAL CONTROLS AND LIMITS

License condition 10.2(b) requires specific measurements of porosity, emanation factor, and diffusion coefficients to be made on waste placed in the top 10 feet of the disposal cell. Some waste has now been placed within that elevation range. Samples collected from the waste is in laboratory analysis to determine specific gravity, radon emanation factor and diffusion coefficient. Some delay was caused when the laboratory which normally performs such determinations voluntarily relinquished their 11e.(2) license and Envirocare had to acquire the equipment to perform in-house measurements. Data from the measurements will be provided to the laboratory which will use its proprietary software to generate the necessary results.

License condition 10.2(c) requires the measurement of Th-230 and Ra-223 concentrations in the top ten feet of the disposal cell. The average concentration of Ra-226 placed in the top 10 feet has averaged less than 150 pCi/g and the average concentration of Th-230 disposed of was less than 50 pCi/g. No wastes have been placed in that level of the disposal cell which exceeded 500 pCi/g for Ra-226 or Th-230.

License condition 10.8 sets limits for the disposal operation shown below. Actual 1995 operational figures are compared to those limits.

<u>Limit</u>	<u>Limit Value</u>	<u>1995 Actual</u>
Annual Disposal Mass	5×10^5 tons	1.44×10^5 tons
Annual Disposal Area	38,472 m ²	10,000 m ²
Embankment Capacity	3.3×10^6 yd ³	1.48×10^5 yd ³
Waste In Storage	9.687×10^5 ft ³	1.8×10^4 ft ³
Concentration Limits	Th series, 6,000 pCi/g U series, 2,000 pCi/g	<2,000 pCi/g <1,000 pCi/g

EQUIPMENT CALIBRATION

All laboratory and field equipment was maintained in calibration during the year. Equipment such as radiological survey meters and laboratory counters which had to be sent outside the company for calibration were taken out of service at the end of their useful period and were not returned to service until they had been properly calibrated. No instances occurred in which an

Revision 1, July 11, 1996

instrument was found out of calibration and which would have resulted in unreliable measurements.

AUDITS

As required by license condition 9.17, an independent audit of the operations was performed by an NRC-approved auditor, following an approved audit plan. The first annual audit report is included as Appendix L.

Revision 1, July 11, 1996

TABLE 1

RADIOLOGICAL MONITORING PROGRAM

<u>Type of Sample</u>	<u>Sample Collection</u>			<u>Sample Analysis</u>
	Location	Method	Frequency	
Air Particulates (Weekly)	Stations A-1 to A-3 A-5 to A-7 A-11 to A-14	Continuous Low Volume	Weekly	Gross alpha Gross beta
Air Particulates (Quarterly)	Stations A-1 to A-3 A-5 to A-7 A-11 to A-14	Continuous Low Volume	Quarterly	Total Uranium Ra-226 Th-230 Th-232 Pb-210
Radon Gas	Stations A-1 to A-3 A-5 to A-7 A-11 to A-14 B-1 B-2	Passive	Continuous (Exchanged quarterly)	Rn-222 Rn-220
Direct Gamma	Station A-1 to A-3 A-5 to A-7 A-11 to A-14 B-1 B-2	TLD or Electret	Continuous (Exchanged quarterly)	Gamma Exposure

(TABLE 1, Continued)

<u>Type of Sample</u>	<u>Sample Collection</u>			<u>Sample Analysis</u>
	Location	Method	Frequency	
Soil	Stations A-1 to A-3 A-5 to A-7 B-1 B-2 18 to 21 30 to 34 36 to 44 55 Vehicle Decon Area Truck Staging Area Along Rollover to Cell Road	Grab	Quarterly	Gamma Spect
Soil	Stations 31 32 55 A-11 A-12 A-13 Vehicle Decon Area Truck Staging Area Along Road, Rollover to Cell	Grab	Quarterly	Total U Th-230 Th-232
Soil	Along eight radials from site boundary to 1500 m at 300-m intervals	Grab	Annually	Gamma Spect
Soil	Five samples collected at random from above radial samples	Grab	Annually	Total U Th-232 Th-230 Pb-210

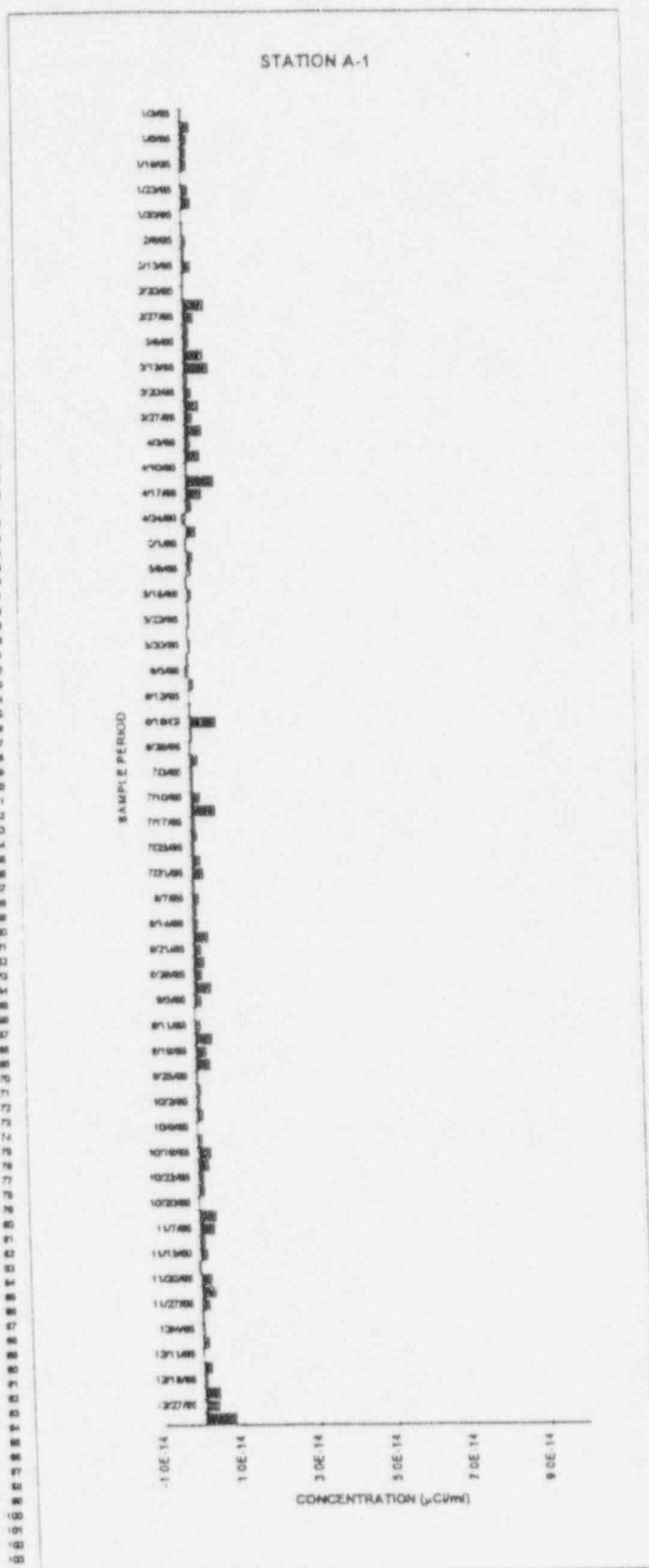
(TABLE 1, Continued)

<u>Type of Sample</u>	<u>Sample Collection</u>			<u>Sample Analysis</u>
	Location	Method	Frequency	
Vegetation	Stations	Grab	Twice	Gamma Spect
	B-1 to B-4		Annually	Th-230, 232
	A-12		during	Po-210
	GW-3		growing	Pb-210
	30		season	Total U
	39			
	55			

APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)

START DATE	END DATE	CONC (pCi/l)	
1/2/90	1/2/90	4.20-10	1
1/3/90	1/3/90	1.80-10	2
1/4/90	1/4/90	1.80-10	3
1/5/90	1/5/90	1.80-10	4
1/13/90	1/13/90	1.80-10	5
1/19/90	1/19/90	0.00-40	6
1/19/90	1/23/90	1.80-10	7
1/23/90	1/23/90	2.00-10	8
1/28/90	1/30/90	0.00-40	9
1/30/90	2/2/90	4.30-10	10
2/3/90	2/6/90	1.20-10	11
2/6/90	2/6/90	4.30-10	12
2/6/90	2/13/90	2.30-10	13
2/13/90	2/16/90	4.30-10	14
2/16/90	2/23/90	3.30-10	15
2/23/90	2/23/90	8.30-10	16
2/23/90	2/27/90	2.80-10	17
2/27/90	2/28/90	1.80-10	18
2/28/90	3/5/90	1.80-10	19
3/5/90	3/5/90	5.10-10	20
3/5/90	3/13/90	1.20-10	21
3/13/90	3/20/90	2.00-10	22
3/20/90	3/23/90	3.80-10	23
3/23/90	3/27/90	2.30-10	24
3/27/90	3/30/90	4.80-10	25
3/30/90	4/3/90	1.80-10	26
4/3/90	4/4/90	3.80-10	27
4/4/90	4/10/90	6.00-10	28
4/10/90	4/13/90	7.00-10	29
4/13/90	4/17/90	4.30-10	30
4/17/90	4/20/90	1.70-10	31
4/20/90	4/24/90	4.80-10	32
4/24/90	4/27/90	2.80-10	33
4/27/90	5/1/90	0.10-10	34
5/1/90	5/4/90	1.70-10	35
5/4/90	5/4/90	1.30-10	36
5/4/90	5/11/90	4.00-10	37
5/11/90	5/15/90	1.20-10	38
5/15/90	5/18/90	4.00-10	39
5/18/90	5/22/90	3.80-10	40
5/22/90	5/25/90	4.00-10	41
5/25/90	5/29/90	7.00-10	42
5/29/90	6/5/90	4.30-10	43
6/5/90	6/5/90	1.30-10	44
6/5/90	6/12/90	4.30-10	45
6/12/90	6/19/90	1.30-10	46
6/19/90	6/19/90	0.00-40	47
6/19/90	6/26/90	4.30-10	48
6/26/90	6/26/90	7.00-10	49
6/26/90	6/26/90	4.30-10	50
6/26/90	6/26/90	3.10-10	51
6/26/90	6/26/90	2.10-10	52
6/26/90	7/3/90	6.30-10	53
7/3/90	7/6/90	7.80-10	54
7/6/90	7/13/90	2.80-10	55
7/13/90	7/13/90	6.80-10	56
7/13/90	7/17/90	1.30-10	57
7/17/90	7/20/90	1.80-10	58
7/20/90	7/23/90	8.80-10	59
7/23/90	7/27/90	2.40-10	60
7/27/90	7/27/90	3.00-10	61
7/27/90	8/3/90	6.10-10	62
8/3/90	8/7/90	1.80-10	63
8/7/90	8/10/90	1.30-10	64
8/10/90	8/14/90	1.30-10	65
8/14/90	8/17/90	4.00-10	66
8/17/90	8/24/90	2.80-10	67
8/24/90	8/24/90	2.30-10	68
8/24/90	8/28/90	2.30-10	69
8/28/90	8/31/90	4.80-10	70
8/31/90	9/4/90	2.00-10	71
9/4/90	9/7/90	0.00-40	72
9/7/90	9/11/90	1.80-10	73
9/11/90	9/14/90	4.40-10	74
9/14/90	9/18/90	2.80-10	75
9/18/90	9/21/90	3.70-10	76
9/21/90	9/25/90	6.30-10	77
9/25/90	9/28/90	1.30-10	78
9/28/90	10/3/90	8.80-10	79
10/3/90	10/6/90	1.80-10	80
10/6/90	10/6/90	0.00-40	81
10/6/90	10/13/90	1.30-10	82
10/13/90	10/16/90	3.40-10	83
10/16/90	10/23/90	2.80-10	84
10/23/90	10/23/90	1.80-10	85
10/23/90	10/28/90	1.80-10	86
10/28/90	10/30/90	0.00-40	87
10/30/90	11/3/90	4.40-10	88
11/3/90	11/7/90	3.80-10	89
11/7/90	11/10/90	1.30-10	90
11/10/90	11/13/90	1.80-10	91
11/13/90	11/16/90	4.30-10	92
11/16/90	11/20/90	2.80-10	93
11/20/90	11/23/90	3.70-10	94
11/23/90	11/27/90	2.00-10	95
11/27/90	11/30/90	4.30-10	96
11/30/90	12/4/90	6.40-10	97
12/4/90	12/7/90	1.80-10	98
12/7/90	12/11/90	0.00-40	99
12/11/90	12/14/90	6.10-10	100
12/14/90	12/21/90	4.00-10	101
12/21/90	12/27/90	3.80-10	102
12/27/90	12/28/90	6.10-10	103
12/28/90	12/28/90	6.10-10	104

Note 1

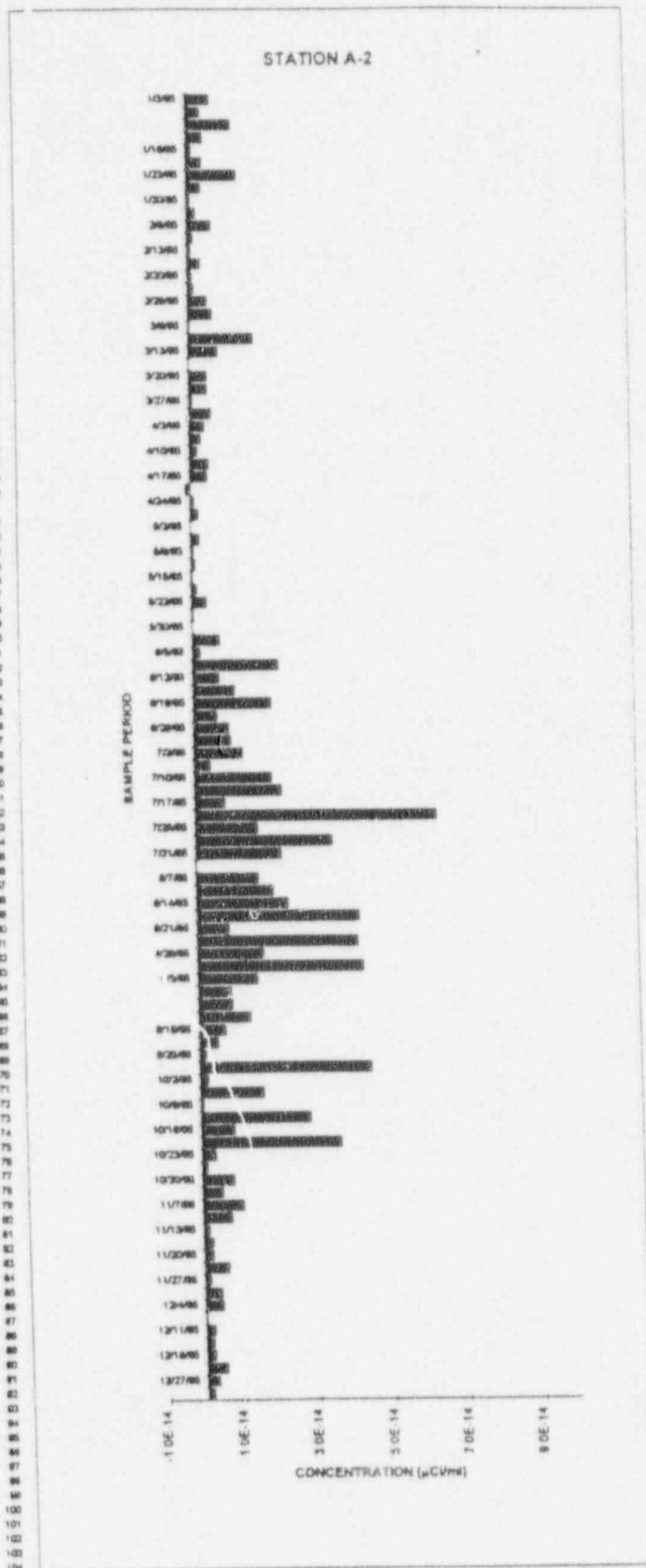


Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)

START DATE	END DATE	CONC	QAC/L	
1/23/94	1/23/94	4.45-15		1
1/23/94	1/23/94	3.85-15		2
1/23/94	1/23/94	1.25-14		3
1/23/94	1/23/94	4.45-15		4
1/23/94	1/23/94	1.85-18		5
1/23/94	1/23/94	4.15-15		6
1/23/94	1/23/94	1.35-14		7
1/23/94	1/23/94	3.75-18		8
1/23/94	1/23/94	6.85-18		9
1/23/94	1/23/94	2.35-15		10
2/23/94	2/23/94	4.25-15		11
2/23/94	2/23/94	1.85-15		12
2/23/94	2/23/94	6.65-18		13
2/23/94	2/23/94	3.45-15		14
2/23/94	2/23/94	1.25-13		15
2/23/94	2/23/94	1.85-15		16
2/23/94	2/23/94	6.05-15		17
2/23/94	2/23/94	6.35-15		18
2/23/94	2/23/94	3.85-18		19
2/23/94	2/23/94	1.75-14		20
2/23/94	2/23/94	7.85-15		21
2/23/94	2/23/94	0.25-10		22
2/23/94	2/23/94	4.85-15		23
2/23/94	2/23/94	4.55-14		24
2/23/94	2/23/94	6.45-14		25
2/23/94	2/23/94	5.85-15		26
2/23/94	2/23/94	4.05-18		27
2/23/94	2/23/94	3.15-15		28
2/23/94	2/23/94	2.15-15		29
2/23/94	2/23/94	6.85-15		30
2/23/94	2/23/94	6.55-15		31
2/23/94	2/23/94	1.35-15		32
2/23/94	2/23/94	6.85-18		33
2/23/94	2/23/94	0.05-10		34
2/23/94	2/23/94	2.35-15		35
2/23/94	2/23/94	6.35-18		36
2/23/94	2/23/94	1.25-15		37
2/23/94	2/23/94	3.15-15		38
2/23/94	2/23/94	1.85-15		39
2/23/94	2/23/94	4.05-15		40
2/23/94	2/23/94	4.05-18		41
2/23/94	2/23/94	0.05-10		42
2/23/94	2/23/94	7.25-15		43
2/23/94	2/23/94	3.25-14		44
2/23/94	2/23/94	2.35-14		45
2/23/94	2/23/94	7.05-15		46
2/23/94	2/23/94	1.15-14		47
2/23/94	2/23/94	2.15-14		48
2/23/94	2/23/94	6.35-15		49
2/23/94	2/23/94	6.35-15		50
2/23/94	2/23/94	6.35-15		51
2/23/94	2/23/94	6.75-15		52
2/23/94	2/23/94	1.35-14		53
2/23/94	2/23/94	4.35-15		54
2/23/94	2/23/94	3.15-14		55
2/23/94	2/23/94	2.35-14		56
2/23/94	2/23/94	7.85-15		57
2/23/94	2/23/94	6.35-14		58
2/23/94	2/23/94	1.85-14		59
2/23/94	2/23/94	3.85-14		60
2/23/94	2/23/94	2.35-14		61
2/23/94	2/23/94	6.05-15		62
2/23/94	2/23/94	1.85-14		63
2/23/94	2/23/94	2.05-14		64
2/23/94	2/23/94	2.45-14		65
2/23/94	2/23/94	4.35-14		66
2/23/94	2/23/94	5.45-15		67
2/23/94	2/23/94	4.35-14		68
2/23/94	2/23/94	1.75-14		69
2/23/94	2/23/94	4.45-14		70
2/23/94	2/23/94	1.05-14		71
2/23/94	2/23/94	6.35-15		72
2/23/94	2/23/94	9.05-15		73
2/23/94	2/23/94	1.45-14		74
2/23/94	2/23/94	7.15-15		75
2/23/94	2/23/94	5.05-15		76
2/23/94	2/23/94	1.85-15		77
2/23/94	2/23/94	4.85-14		78
2/23/94	2/23/94	2.35-15		79
2/23/94	2/23/94	1.75-14		80
2/23/94	2/23/94	6.15-15		81
2/23/94	2/23/94	2.85-14		82
2/23/94	2/23/94	6.05-15		83
2/23/94	2/23/94	3.75-14		84
2/23/94	2/23/94	3.75-15		85
2/23/94	2/23/94	1.85-15		86
2/23/94	2/23/94	6.45-15		87
2/23/94	2/23/94	5.45-15		88
2/23/94	2/23/94	1.15-14		89
2/23/94	2/23/94	7.85-15		90
2/23/94	2/23/94	1.85-15		91
2/23/94	2/23/94	2.85-15		92
2/23/94	2/23/94	2.85-15		93
2/23/94	2/23/94	6.85-15		94
2/23/94	2/23/94	1.75-15		95
2/23/94	2/23/94	4.85-15		96
2/23/94	2/23/94	4.85-15		97
2/23/94	2/23/94	4.05-15		98
2/23/94	2/23/94	2.45-15		99
2/23/94	2/23/94	2.05-15		100
2/23/94	2/23/94	3.45-15		101
2/23/94	2/23/94	6.45-15		102
2/23/94	2/23/94	3.25-15		103
2/23/94	2/23/94	1.85-15		104

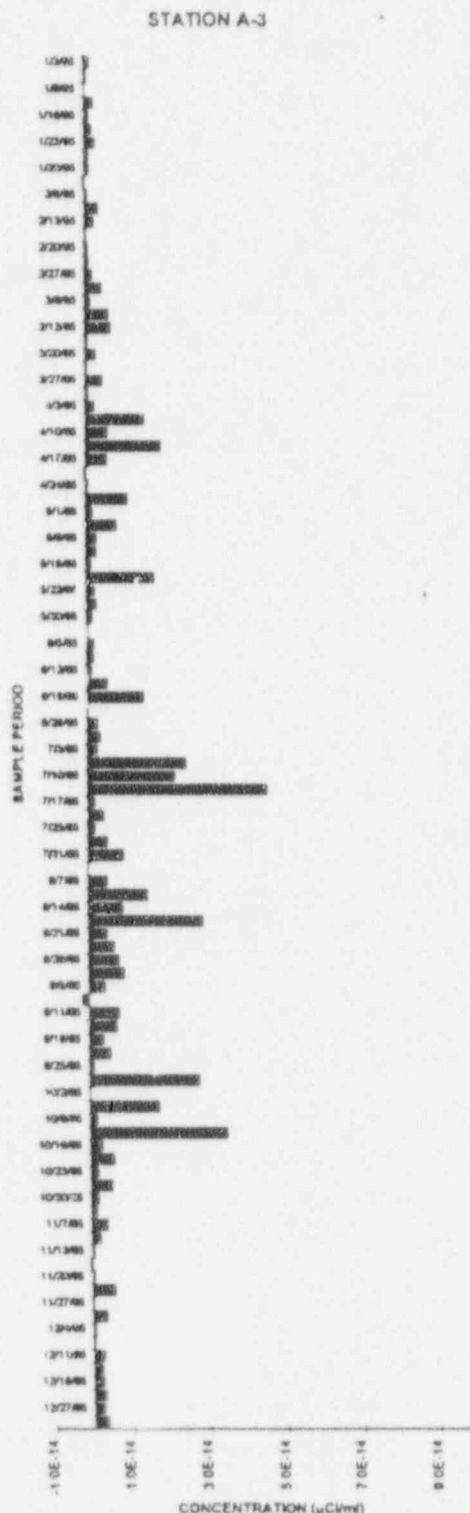


Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)

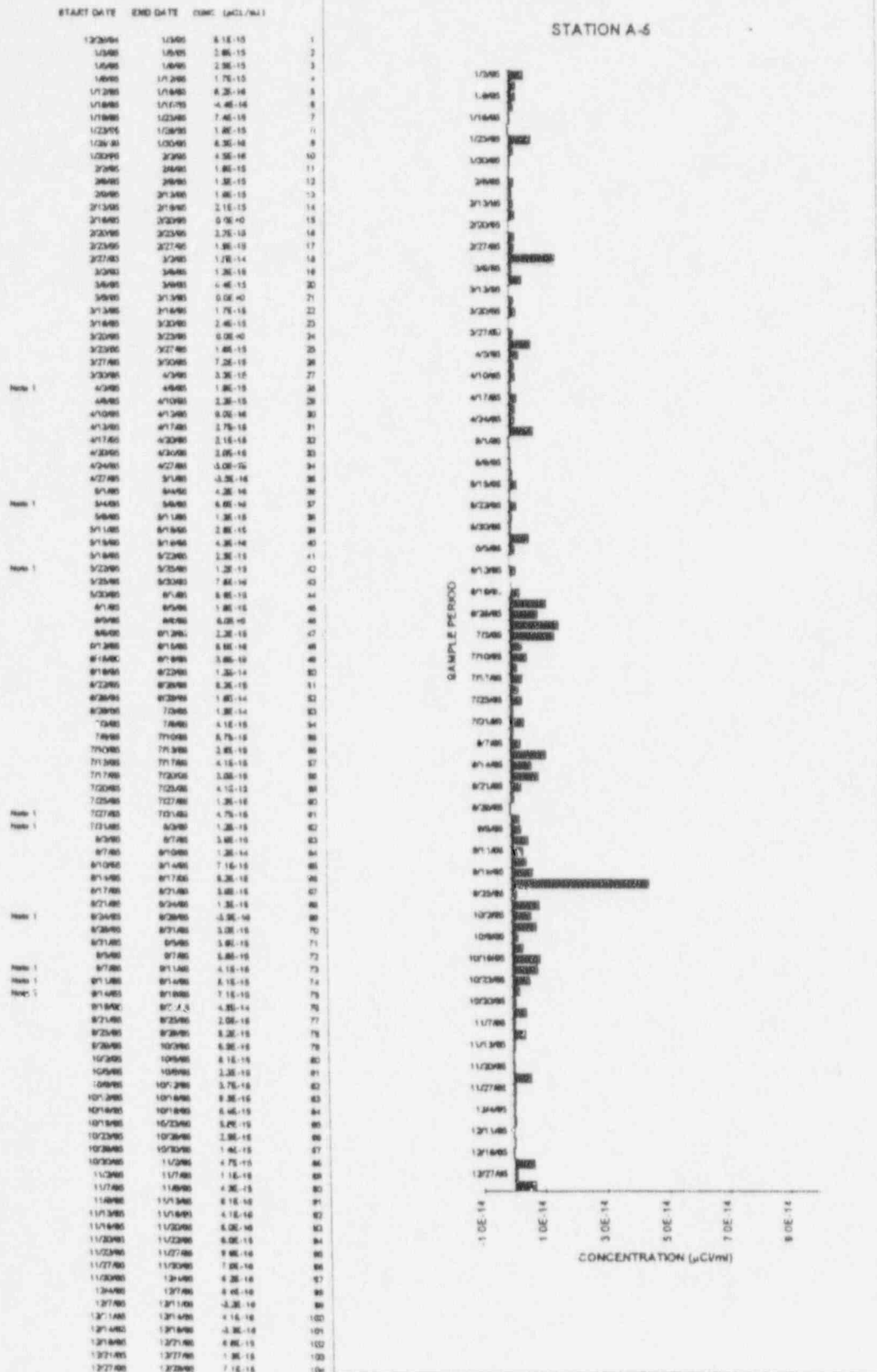
START DATE	END DATE	CONC. (pCi/l)	
1/20/94	1/20/94	1.45E-10	1
1/5/95	1/5/95	6.45E-10	2
1/5/95	1/5/95	5.00E-10	3
1/6/95	1/13/95	2.45E-10	4
1/13/95	1/13/95	1.25E-10	5
1/16/95	1/16/95	2.00E-10	6
1/16/95	1/23/95	2.85E-10	7
1/23/95	1/23/95	1.25E-10	8
1/26/95	1/26/95	1.25E-10	9
1/30/95	2/2/95	4.25E-10	10
2/2/95	2/2/95	8.00E-10	11
2/9/95	2/9/95	3.75E-10	12
2/9/95	2/16/95	2.50E-10	13
2/16/95	2/16/95	4.35E-10	14
2/16/95	2/23/95	8.40E-10	15
2/23/95	2/23/95	1.20E-10	16
2/23/95	2/27/95	2.15E-10	17
2/27/95	2/27/95	4.50E-10	18
3/2/95	3/2/95	1.80E-10	19
3/9/95	3/9/95	6.25E-10	20
3/9/95	3/16/95	6.80E-10	21
3/16/95	3/16/95	8.25E-10	22
3/16/95	3/23/95	3.00E-10	23
3/23/95	3/23/95	5.80E-10	24
3/23/95	3/27/95	4.80E-10	25
3/27/95	3/30/95	6.75E-10	26
3/30/95	4/3/95	2.50E-10	27
4/3/95	4/3/95	1.50E-10	28
4/3/95	4/10/95	5.80E-10	29
4/10/95	4/17/95	2.00E-10	30
4/17/95	4/17/95	6.75E-10	31
4/17/95	4/20/95	4.15E-10	32
4/20/95	4/24/95	8.40E-10	33
4/24/95	4/27/95	1.10E-10	34
4/27/95	5/1/95	1.10E-10	35
5/1/95	5/1/95	8.10E-10	36
5/1/95	5/8/95	2.80E-10	37
5/8/95	5/15/95	2.80E-10	38
5/15/95	5/15/95	1.80E-10	39
5/15/95	5/22/95	1.80E-10	40
5/22/95	5/22/95	2.30E-10	41
5/22/95	5/29/95	2.75E-10	42
5/29/95	5/29/95	1.80E-10	43
5/29/95	6/1/95	6.10E-10	44
6/1/95	6/1/95	2.10E-10	45
6/1/95	6/8/95	3.00E-10	46
6/8/95	6/15/95	1.80E-10	47
6/15/95	6/15/95	6.30E-10	48
6/15/95	6/15/95	1.80E-10	49
6/15/95	6/22/95	4.00E-10	50
6/22/95	6/29/95	3.00E-10	51
6/29/95	6/29/95	3.80E-10	52
6/29/95	7/3/95	2.80E-10	53
7/3/95	7/3/95	2.80E-10	54
7/3/95	7/10/95	2.30E-10	55
7/10/95	7/10/95	4.75E-10	56
7/10/95	7/17/95	2.10E-10	57
7/17/95	7/24/95	4.30E-10	58
7/24/95	7/24/95	2.10E-10	59
7/24/95	7/27/95	6.30E-10	60
7/27/95	7/27/95	6.40E-10	61
7/27/95	7/27/95	6.00E-10	62
8/3/95	8/7/95	5.10E-10	63
8/7/95	8/14/95	1.20E-10	64
8/14/95	8/14/95	8.10E-10	65
8/14/95	8/21/95	3.00E-10	66
8/21/95	8/21/95	4.90E-10	67
8/21/95	8/28/95	6.75E-10	68
8/28/95	8/28/95	7.80E-10	69
8/28/95	8/28/95	6.30E-10	70
8/28/95	8/28/95	4.30E-10	71
8/28/95	8/28/95	1.20E-10	72
8/28/95	8/28/95	7.80E-10	73
8/28/95	8/28/95	7.30E-10	74
8/28/95	8/28/95	3.80E-10	75
8/28/95	8/28/95	6.80E-10	76
8/28/95	8/28/95	1.20E-10	77
8/28/95	8/28/95	2.80E-10	78
8/28/95	10/2/95	0.00E+00	79
10/2/95	10/2/95	1.80E-10	80
10/2/95	10/2/95	2.00E-10	81
10/2/95	10/2/95	3.60E-10	82
10/2/95	10/2/95	3.20E-10	83
10/2/95	10/2/95	6.20E-10	84
10/2/95	10/2/95	3.10E-10	85
10/2/95	10/2/95	6.80E-10	86
10/2/95	10/2/95	2.10E-10	87
10/2/95	11/2/95	1.70E-10	88
11/2/95	11/2/95	4.20E-10	89
11/2/95	11/2/95	3.40E-10	90
11/2/95	11/2/95	6.00E-10	91
11/2/95	11/2/95	4.10E-10	92
11/2/95	11/23/95	6.00E-10	93
11/23/95	11/23/95	6.00E-10	94
11/23/95	11/27/95	2.40E-10	95
11/27/95	11/30/95	3.75E-10	96
11/30/95	12/4/95	6.00E-10	97
12/4/95	12/4/95	4.00E-10	98
12/4/95	12/11/95	3.00E-10	99
12/11/95	12/11/95	2.40E-10	100
12/11/95	12/18/95	2.70E-10	101
12/18/95	12/18/95	3.20E-10	102
12/18/95	12/27/95	2.80E-10	103
12/27/95	12/27/95	3.75E-10	104



Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)

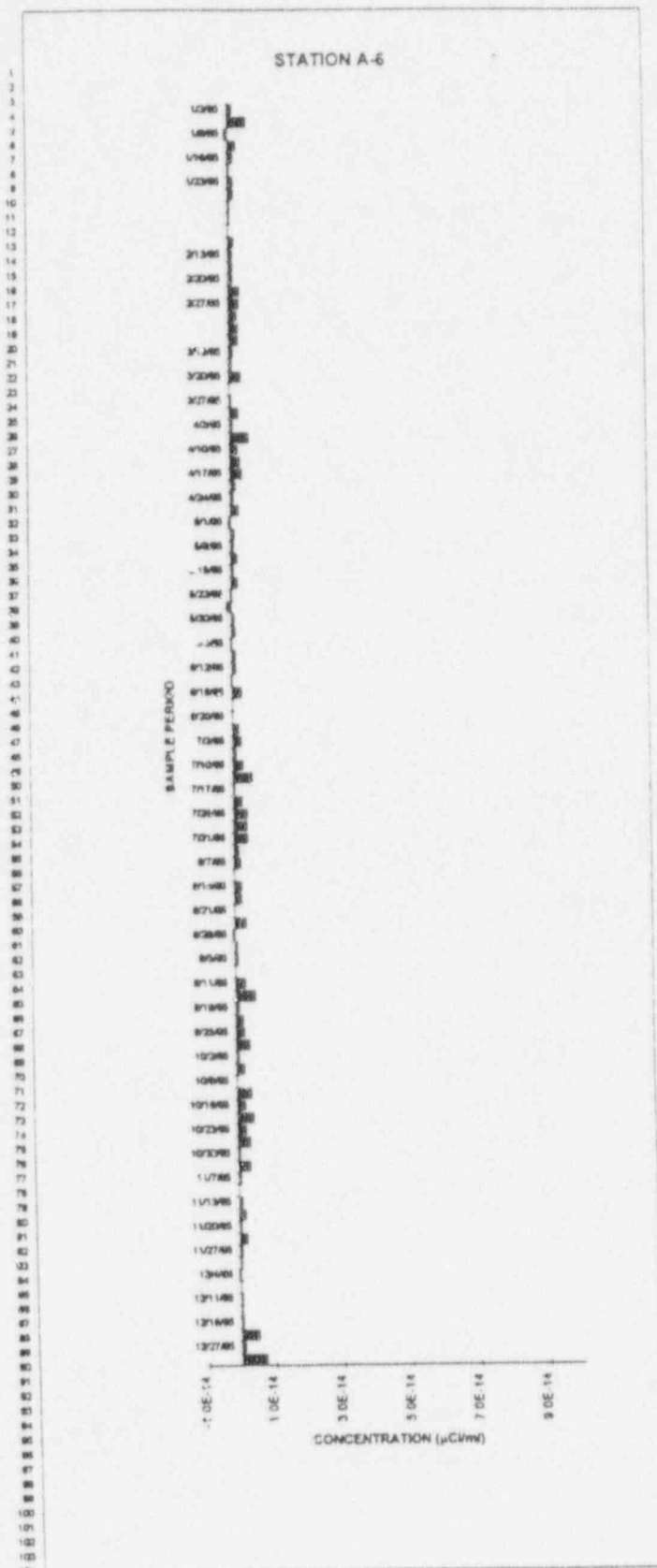


Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)

START DATE	END DATE	CONC (pCi/l)
1/28/94	1/29/94	1.8E-15
1/29/94	1/30/94	8.8E-15
1/30/94	1/31/94	4.8E-15
1/31/94	1/1/95	2.4E-15
1/1/95	1/1/95	1.8E-15
1/1/95	1/1/95	4.1E-15
1/1/95	1/23/95	1.8E-15
1/23/95	1/26/95	1.7E-15
1/26/95	1/26/95	5.0E-15
1/26/95	2/3/95	1.2E-15
2/3/95	2/3/95	1.7E-15
2/3/95	2/13/95	1.2E-15
2/13/95	2/16/95	1.2E-15
2/16/95	2/20/95	1.2E-15
2/20/95	2/27/95	3.3E-15
2/27/95	2/27/95	3.1E-15
2/27/95	3/2/95	3.8E-15
3/2/95	3/6/95	2.7E-15
3/6/95	3/13/95	1.2E-15
3/13/95	3/16/95	8.3E-15
3/16/95	3/20/95	3.5E-15
3/20/95	3/23/95	0.0E+0
3/23/95	3/27/95	8.2E-15
3/27/95	3/30/95	2.8E-15
3/30/95	4/3/95	8.4E-15
4/3/95	4/6/95	4.7E-15
4/6/95	4/10/95	2.3E-15
4/10/95	4/13/95	3.0E-15
4/13/95	4/17/95	3.8E-15
4/17/95	4/20/95	1.8E-15
4/20/95	4/27/95	8.4E-15
4/27/95	5/1/95	3.3E-15
5/1/95	5/4/95	4.2E-15
5/4/95	5/8/95	1.2E-15
5/8/95	5/11/95	8.7E-15
5/11/95	5/15/95	6.5E-15
5/15/95	5/18/95	1.0E-15
5/18/95	5/22/95	4.8E-15
5/22/95	5/25/95	1.8E-15
5/25/95	5/30/95	8.3E-15
5/30/95	6/1/95	1.2E-15
6/1/95	6/5/95	4.0E-15
6/5/95	6/8/95	1.2E-15
6/8/95	6/12/95	1.2E-15
6/12/95	6/15/95	4.0E-15
6/15/95	6/22/95	1.0E+0
6/22/95	6/29/95	0.0E+0
6/29/95	6/30/95	2.0E-15
6/30/95	7/3/95	2.8E-15
7/3/95	7/6/95	1.2E-15
7/6/95	7/10/95	3.1E-15
7/10/95	7/13/95	5.8E-15
7/13/95	7/17/95	9.7E-15
7/17/95	7/20/95	2.7E-15
7/20/95	7/23/95	1.1E-15
7/23/95	7/27/95	4.0E-15
7/27/95	7/31/95	4.3E-15
7/31/95	8/3/95	1.8E-15
8/3/95	8/7/95	2.1E-15
8/7/95	8/10/95	0.0E+0
8/10/95	8/14/95	2.3E-15
8/14/95	8/17/95	2.3E-15
8/17/95	8/21/95	0.0E+0
8/21/95	8/24/95	3.4E-15
8/24/95	8/28/95	4.1E-15
8/28/95	8/31/95	7.7E-15
8/31/95	9/5/95	8.3E-15
9/5/95	9/8/95	0.0E+0
9/8/95	9/11/95	3.1E-15
9/11/95	9/14/95	5.8E-15
9/14/95	9/18/95	1.2E-15
9/18/95	9/21/95	2.3E-15
9/21/95	9/24/95	2.8E-15
9/24/95	9/28/95	4.1E-15
9/28/95	10/2/95	5.8E-15
10/2/95	10/5/95	2.3E-15
10/5/95	10/9/95	0.0E+0
10/9/95	10/13/95	4.2E-15
10/13/95	10/16/95	2.8E-15
10/16/95	10/19/95	4.8E-15
10/19/95	10/23/95	2.8E-15
10/23/95	10/26/95	3.7E-15
10/26/95	10/30/95	5.8E-15
10/30/95	11/2/95	2.7E-15
11/2/95	11/7/95	8.2E-15
11/7/95	11/9/95	0.0E+0
11/9/95	11/13/95	1.2E-15
11/13/95	11/16/95	2.0E-15
11/16/95	11/20/95	5.8E-15
11/20/95	11/23/95	2.4E-15
11/23/95	11/27/95	7.7E-15
11/27/95	11/30/95	4.8E-15
11/30/95	12/4/95	1.8E-15
12/4/95	12/7/95	0.0E+0
12/7/95	12/11/95	5.1E-15
12/11/95	12/14/95	4.0E-15
12/14/95	12/18/95	8.8E-15
12/18/95	12/21/95	5.2E-15
12/21/95	12/27/95	1.2E-15
12/27/95	1/2/96	7.9E-15

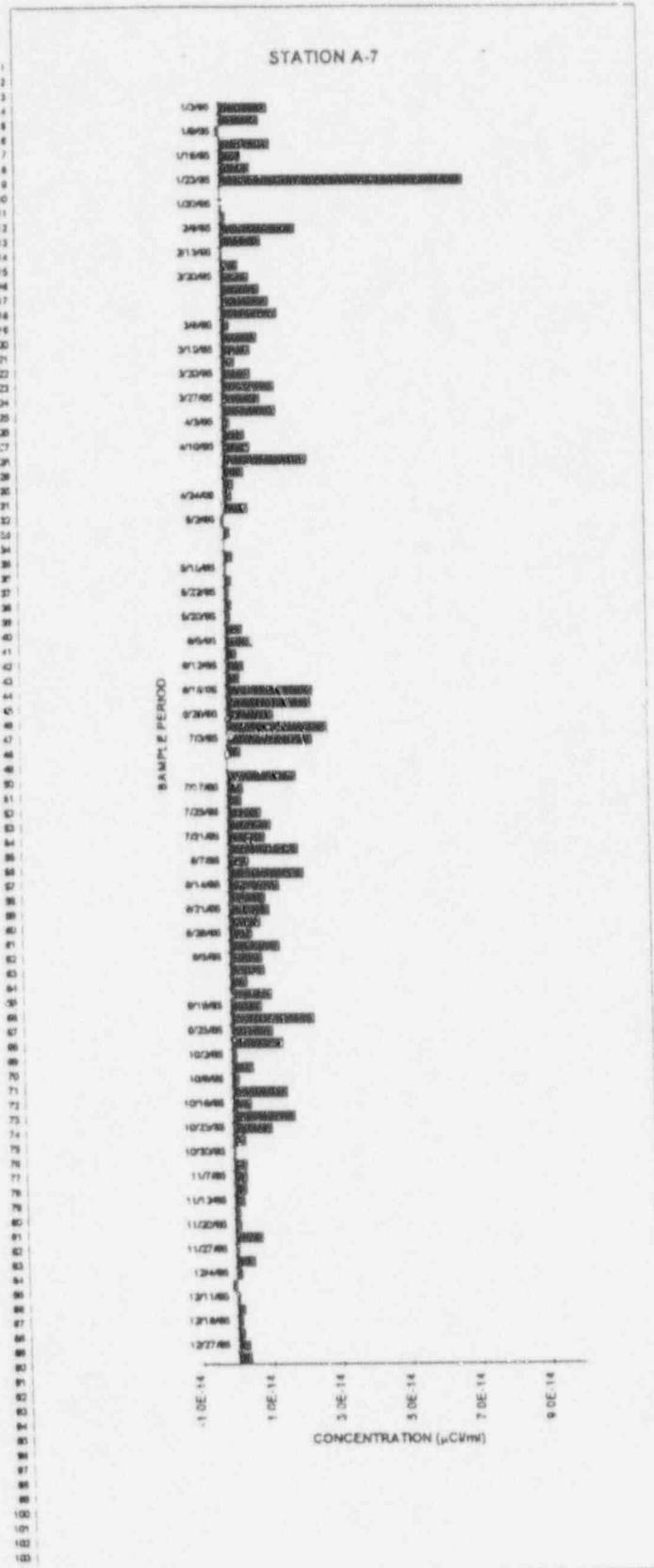


Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)

START DATE	END DATE	CONC. (pCi/l)	
1/23/95	1/23/95	1.45-14	1
1/23/95	1/23/95	1.25-14	2
1/23/95	1/23/95	4.58-16	3
1/23/95	1/23/95	1.45-14	4
1/23/95	1/23/95	6.18-18	5
1/23/95	1/23/95	8.75-15	6
1/23/95	1/23/95	7.08-14	7
1/23/95	1/23/95	None 2	8
1/23/95	1/23/95	8.25-16	9
1/23/95	1/23/95	1.88-15	10
1/23/95	1/23/95	2.25-14	11
1/23/95	1/23/95	1.25-14	12
1/23/95	1/23/95	6.95-16	13
1/23/95	1/23/95	5.08-15	14
1/23/95	1/23/95	6.08-16	15
1/23/95	1/23/95	1.15-14	16
1/23/95	1/23/95	1.88-14	17
1/23/95	1/23/95	1.88-14	18
1/23/95	1/23/95	2.25-15	19
1/23/95	1/23/95	1.08-14	20
1/23/95	1/23/95	4.25-15	21
1/23/95	1/23/95	5.85-15	22
1/23/95	1/23/95	6.15-15	23
1/23/95	1/23/95	1.35-14	24
1/23/95	1/23/95	1.15-14	25
1/23/95	1/23/95	1.55-14	26
1/23/95	1/23/95	2.25-15	27
1/23/95	1/23/95	4.35-15	28
1/23/95	1/23/95	7.75-16	29
1/23/95	1/23/95	2.45-14	30
1/23/95	1/23/95	6.85-15	31
1/23/95	1/23/95	3.05-15	32
1/23/95	1/23/95	2.85-16	33
1/23/95	1/23/95	6.85-15	34
1/23/95	1/23/95	7.85-16	35
1/23/95	1/23/95	1.75-15	36
1/23/95	1/23/95	None 2	37
1/23/95	1/23/95	2.85-15	38
1/23/95	1/23/95	6.25-16	39
1/23/95	1/23/95	2.05-15	40
1/23/95	1/23/95	1.45-15	41
1/23/95	1/23/95	3.05-15	42
1/23/95	1/23/95	1.75-15	43
1/23/95	1/23/95	4.85-16	44
1/23/95	1/23/95	7.85-16	45
1/23/95	1/23/95	3.25-15	46
1/23/95	1/23/95	5.15-15	47
1/23/95	1/23/95	3.85-15	48
1/23/95	1/23/95	2.55-14	49
1/23/95	1/23/95	2.45-14	50
1/23/95	1/23/95	1.25-14	51
1/23/95	1/23/95	5.85-16	52
1/23/95	1/23/95	2.85-14	53
1/23/95	1/23/95	3.85-16	54
1/23/95	1/23/95	0.08-40	55
1/23/95	1/23/95	2.05-14	56
1/23/95	1/23/95	4.85-16	57
1/23/95	1/23/95	4.05-15	58
1/23/95	1/23/95	8.45-16	59
1/23/95	1/23/95	1.25-14	60
1/23/95	1/23/95	1.05-14	61
1/23/95	1/23/95	2.05-14	62
1/23/95	1/23/95	8.75-16	63
1/23/95	1/23/95	2.25-14	64
1/23/95	1/23/95	1.45-14	65
1/23/95	1/23/95	1.05-14	66
1/23/95	1/23/95	1.15-14	67
1/23/95	1/23/95	5.85-15	68
1/23/95	1/23/95	6.25-16	69
1/23/95	1/23/95	1.45-14	70
1/23/95	1/23/95	9.25-16	71
1/23/95	1/23/95	6.85-16	72
1/23/95	1/23/95	4.85-15	73
1/23/95	1/23/95	1.25-14	74
1/23/95	1/23/95	6.85-16	75
1/23/95	1/23/95	2.45-14	76
1/23/95	1/23/95	1.25-14	77
1/23/95	1/23/95	1.85-14	78
1/23/95	1/23/95	1.85-15	79
1/23/95	1/23/95	5.05-16	80
1/23/95	1/23/95	2.15-15	81
1/23/95	1/23/95	1.05-14	82
1/23/95	1/23/95	5.45-15	83
1/23/95	1/23/95	1.85-14	84
1/23/95	1/23/95	1.15-14	85
1/23/95	1/23/95	3.85-16	86
1/23/95	1/23/95	6.15-16	87
1/23/95	1/23/95	3.75-15	88
1/23/95	1/23/95	3.75-15	89
1/23/95	1/23/95	3.85-15	90
1/23/95	1/23/95	2.85-15	91
1/23/95	1/23/95	1.85-15	92
1/23/95	1/23/95	1.85-15	93
1/23/95	1/23/95	7.75-16	94
1/23/95	1/23/95	1.05-15	95
1/23/95	1/23/95	5.45-15	96
1/23/95	1/23/95	1.85-15	97
1/23/95	1/23/95	1.75-15	98
1/23/95	1/23/95	6.85-16	99
1/23/95	1/23/95	2.35-15	100
1/23/95	1/23/95	1.85-15	101
1/23/95	1/23/95	2.05-15	102
1/23/95	1/23/95	3.35-10	103
1/23/95	1/23/95	3.75-15	104



Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)

START DATE	END DATE	DATE (M/D/Y)	
1/22/94	1/24/94	2.8E-15	1
1/24/94	1/26/94	1.8E-15	2
1/26/94	1/28/94	6.0E-16	3
1/28/94	1/30/94	0.0E+0	4
1/30/94	1/31/94	0.0E+0	5
1/31/94	1/31/94	4.2E-16	6
1/31/94	1/22/95	2.1E-15	7
1/22/95	1/24/95	2.1E-15	8
1/24/95	1/26/95	6.1E-16	9
1/26/95	2/2/95	1.7E-15	10
2/2/95	2/4/95	1.8E-15	11
2/4/95	2/6/95	2.8E-15	12
2/6/95	2/13/95	8.6E-16	13
2/13/95	2/16/95	1.2E-15	14
2/16/95	2/23/95	1.8E-15	15
2/23/95	2/25/95	1.3E-15	16
2/25/95	2/27/95	1.8E-15	17
2/27/95	3/2/95	1.7E-15	18
3/2/95	3/4/95	2.8E-15	19
3/4/95	3/6/95	6.0E+0	20
3/6/95	3/13/95	6.2E-15	21
3/13/95	3/16/95	4.1E-16	22
3/16/95	3/23/95	6.4E-16	23
3/23/95	3/25/95	4.2E-16	24
3/25/95	3/27/95	6.0E+0	25
3/27/95	3/30/95	1.3E-15	26
3/30/95	4/3/95	1.2E-16	27
4/3/95	4/6/95	1.8E-15	28
4/6/95	4/13/95	3.8E-16	29
4/13/95	4/16/95	-6.7E-16	30
4/16/95	4/23/95	6.5E-16	31
4/23/95	4/26/95	2.0E-16	32
4/26/95	4/29/95	0.0E+0	33
4/29/95	4/27/95	-4.3E-16	34
4/27/95	5/1/95	1.2E-16	35
5/1/95	5/4/95	2.8E-15	36
5/4/95	5/6/95	2.7E-15	37
5/6/95	5/11/95	1.2E-15	38
5/11/95	5/16/95	6.8E-16	39
5/16/95	5/18/95	4.0E-16	40
5/18/95	5/22/95	2.8E-16	41
5/22/95	5/25/95	2.4E-15	42
5/25/95	5/30/95	4.7E-16	43
5/30/95	6/1/95	6.1E-16	44
6/1/95	6/5/95	8.8E-16	45
6/5/95	6/6/95	3.8E-15	46
6/6/95	6/12/95	0.0E+0	47
6/12/95	6/15/95	6.2E-16	48
6/15/95	6/18/95	6.2E-16	49
6/18/95	6/22/95	-4.1E-16	50
6/22/95	6/25/95	2.1E-15	51
6/25/95	6/28/95	6.0E-16	52
6/28/95	7/2/95	2.0E-15	53
7/2/95	7/6/95	-8.8E-16	54
7/6/95	7/12/95	2.7E-15	55
7/12/95	7/15/95	1.8E-16	56
7/15/95	7/17/95	2.1E-15	57
7/17/95	7/20/95	-7.8E-16	58
7/20/95	7/25/95	1.6E-15	59
7/25/95	7/27/95	1.1E-15	60
7/27/95	7/31/95	6.2E-16	61
7/31/95	8/3/95	6.7E-15	62
8/3/95	8/7/95	4.2E-16	63
8/7/95	8/10/95	3.3E-15	64
8/10/95	8/14/95	1.0E-16	65
8/14/95	8/17/95	3.8E-16	66
8/17/95	8/21/95	8.0E-16	67
8/21/95	8/24/95	-7.8E-16	68
8/24/95	8/28/95	6.4E-15	69
8/28/95	8/31/95	7.8E-16	70
8/31/95	9/5/95	2.7E-15	71
9/5/95	9/7/95	3.0E-15	72
9/7/95	9/14/95	1.2E-15	73
9/14/95	9/16/95	2.8E-15	74
9/16/95	9/18/95	2.3E-16	75
9/18/95	9/21/95	8.3E-15	76
9/21/95	9/25/95	2.7E-12	77
9/25/95	9/28/95	1.3E-15	78
9/28/95	10/2/95	0.0E+0	79
10/2/95	10/5/95	-7.8E-16	80
10/5/95	10/6/95	-1.2E-15	81
10/6/95	10/13/95	3.4E-15	82
10/13/95	10/16/95	1.2E-15	83
10/16/95	10/18/95	4.8E-15	84
10/18/95	10/23/95	6.0E-16	85
10/23/95	10/26/95	3.6E-15	86
10/26/95	10/30/95	0.0E+0	87
10/30/95	11/2/95	1.8E-15	88
11/2/95	11/7/95	1.4E-15	89
11/7/95	11/8/95	6.0E-16	90
11/8/95	11/13/95	1.8E-15	91
11/13/95	11/16/95	3.2E-15	92
11/16/95	11/20/95	-3.0E-15	93
11/20/95	11/23/95	0.0E+0	94
11/23/95	11/27/95	4.8E-15	95
11/27/95	11/30/95	6.0E-16	96
11/30/95	12/4/95	1.2E-15	97
12/4/95	12/7/95	0.0E+0	98
12/7/95	12/11/95	1.2E-15	99
12/11/95	12/14/95	4.1E-16	100
12/14/95	12/16/95	9.9E-16	101
12/16/95	12/21/95	1.2E-15	102
12/21/95	12/27/95	1.8E-15	103
12/27/95	1/2/96	3.7E-15	104



Note 1: Air samples did not run the full sample period.

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APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)

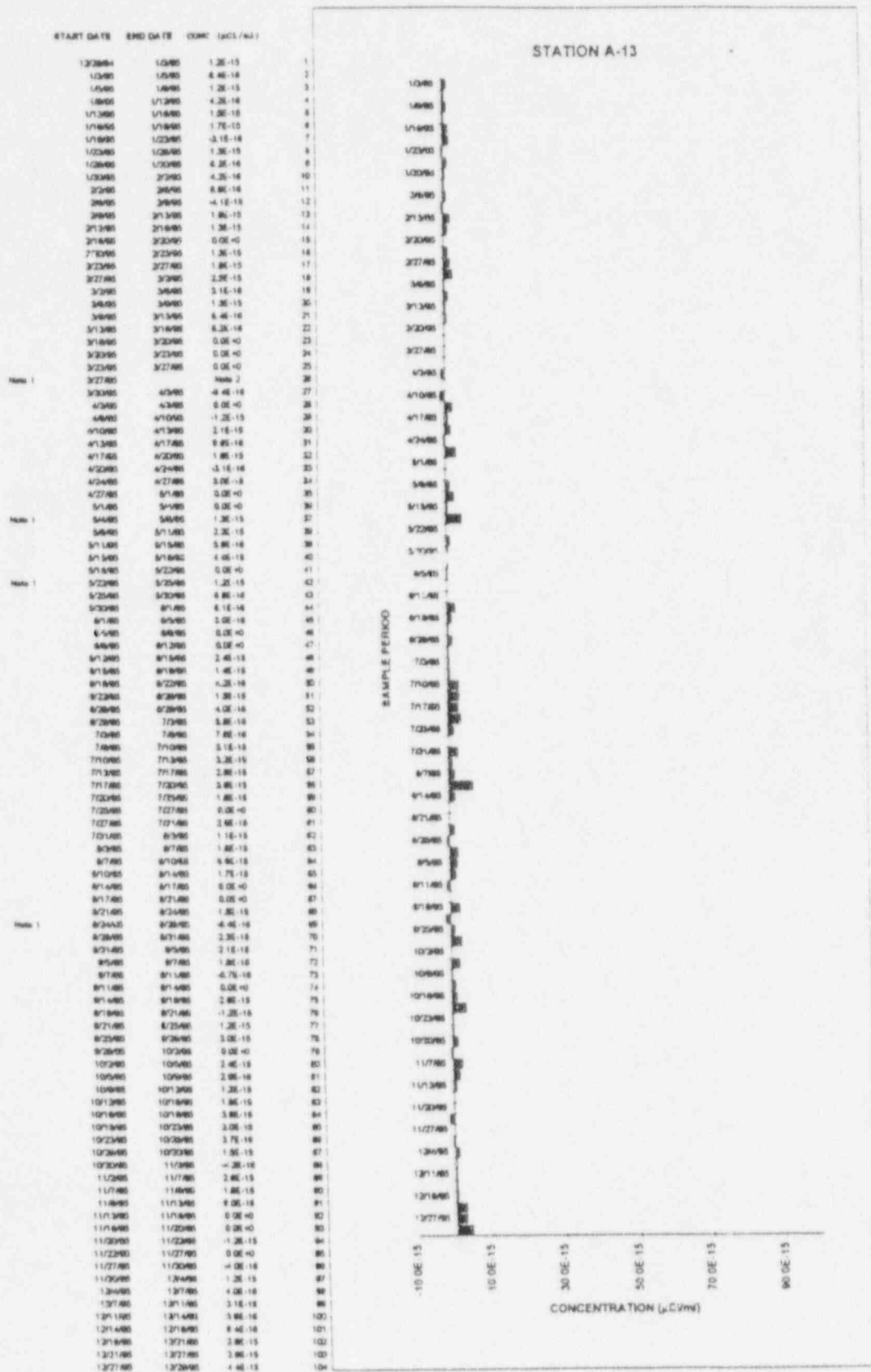
START DATE	END DATE	CONC (pCi/l)	
1/28/94	1/3/95	2.8E-15	1
1/3/95	1/5/95	6.4E-15	2
1/5/95	1/6/95	6.0E-15	3
1/6/95	1/13/95	1.4E-15	4
1/13/95	1/16/95	6.4E-15	5
1/16/95	1/23/95	1.7E-15	6
1/23/95	1/28/95	0.0E+00	7
1/28/95	1/29/95	1.0E-15	8
1/29/95	1/29/95	7.8E-15	9
1/29/95	1/29/95	1.0E-15	10
2/3/95	2/6/95	2.4E-15	11
2/6/95	2/6/95	2.0E-15	12
2/6/95	2/13/95	1.3E-15	13
2/13/95	2/16/95	1.3E-15	14
2/16/95	2/20/95	3.1E-15	15
2/20/95	2/23/95	1.6E-15	16
2/23/95	2/27/95	3.7E-15	17
2/27/95	3/3/95	2.5E-15	18
3/3/95	3/6/95	1.3E-15	19
3/6/95	3/6/95	2.8E-15	20
3/6/95	3/13/95	1.8E-15	21
3/13/95	3/16/95	4.3E-15	22
3/16/95	3/20/95	1.8E-15	23
3/20/95	3/23/95	1.8E-15	24
3/23/95	3/27/95	3.1E-15	25
3/27/95	3/30/95	0.0E+00	26
3/30/95	4/3/95	1.8E-15	27
4/3/95	4/6/95	4.4E-15	28
4/6/95	4/10/95	1.2E-15	29
4/10/95	4/13/95	1.0E-14	30
4/13/95	4/17/95	4.3E-15	31
4/17/95	4/20/95	0.3E+00	32
4/20/95	4/24/95	4.3E-15	33
4/24/95	4/27/95	3.8E-15	34
4/27/95	5/1/95	2.8E-15	35
5/1/95	5/1/95	1.0E-15	36
5/1/95	5/1/95	1.0E-15	37
5/1/95	5/1/95	1.0E-15	38
5/1/95	5/1/95	2.1E-15	39
5/1/95	5/1/95	2.0E-15	40
5/1/95	5/22/95	5.8E-15	41
5/22/95	5/25/95	0.0E+00	42
5/25/95	5/30/95	8.3E-15	43
5/30/95	6/1/95	3.1E-15	44
6/1/95	6/6/95	4.8E-15	45
6/6/95	6/6/95	7.8E-15	46
6/6/95	6/13/95	5.0E-15	47
6/13/95	6/13/95	4.0E-15	48
6/13/95	6/13/95	1.0E-14	49
6/13/95	6/20/95	6.1E-15	50
6/20/95	6/23/95	3.0E-15	51
6/23/95	6/26/95	3.4E-15	52
6/26/95	7/3/95	2.8E-15	53
7/3/95	7/6/95	7.8E-15	54
7/6/95	7/10/95	4.0E-15	55
7/10/95	7/13/95	1.8E-14	56
7/13/95	7/17/95	1.2E-15	57
7/17/95	7/20/95	3.2E-15	58
7/20/95	7/23/95	1.2E-15	59
7/23/95	7/27/95	1.1E-14	60
7/27/95	7/31/95	3.8E-15	61
7/31/95	8/3/95	2.1E-15	62
8/3/95	8/7/95	1.7E-15	63
8/7/95	8/10/95	6.2E-15	64
8/10/95	8/14/95	2.8E-15	65
8/14/95	8/17/95	6.3E-15	66
8/17/95	8/21/95	1.2E-15	67
8/21/95	8/24/95	4.1E-15	68
8/24/95	8/28/95	6.4E-15	69
8/28/95	8/31/95	2.7E-15	70
8/31/95	9/3/95	2.1E-15	71
9/3/95	9/7/95	0.0E+00	72
9/7/95	9/11/95	1.2E-15	73
9/11/95	9/14/95	3.1E-15	74
9/14/95	9/18/95	2.4E-15	75
9/18/95	9/21/95	1.8E-15	76
9/21/95	9/25/95	3.0E-15	77
9/25/95	9/28/95	3.1E-15	78
9/28/95	10/2/95	1.2E-15	79
10/2/95	10/5/95	2.0E-15	80
10/5/95	10/9/95	2.0E-15	81
10/9/95	10/13/95	2.8E-15	82
10/13/95	10/16/95	0.0E+00	83
10/16/95	10/20/95	7.8E-15	84
10/20/95	10/23/95	4.0E-15	85
10/23/95	10/26/95	7.1E-15	86
10/26/95	10/30/95	1.8E-15	87
10/30/95	11/3/95	6.4E-15	88
11/3/95	11/7/95	7.1E-15	89
11/7/95	11/9/95	3.4E-15	90
11/9/95	11/13/95	2.4E-15	91
11/13/95	11/16/95	0.0E+00	92
11/16/95	11/20/95	3.0E-15	93
11/20/95	11/23/95	7.2E-15	94
11/23/95	11/27/95	1.8E-15	95
11/27/95	11/30/95	1.6E-15	96
11/30/95	12/4/95	3.1E-15	97
12/4/95	12/7/95	4.1E-15	98
12/7/95	12/11/95	0.0E+00	99
12/11/95	12/14/95	2.7E-15	100
12/14/95	12/18/95	2.1E-15	101
12/18/95	12/21/95	1.2E-15	102
12/21/95	12/27/95	1.8E-15	103
12/27/95	12/30/95	6.2E-15	104



Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

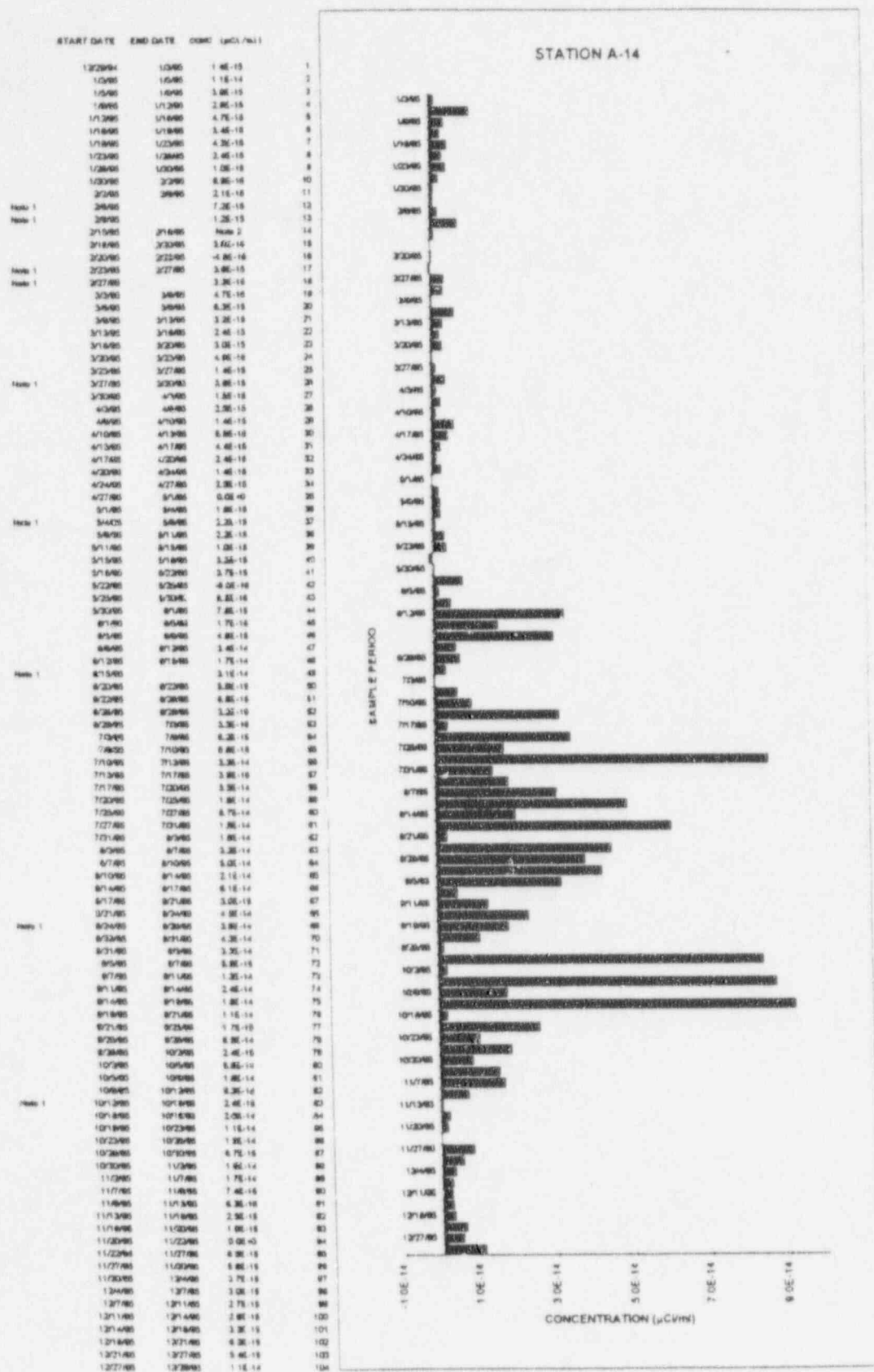
APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)



Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

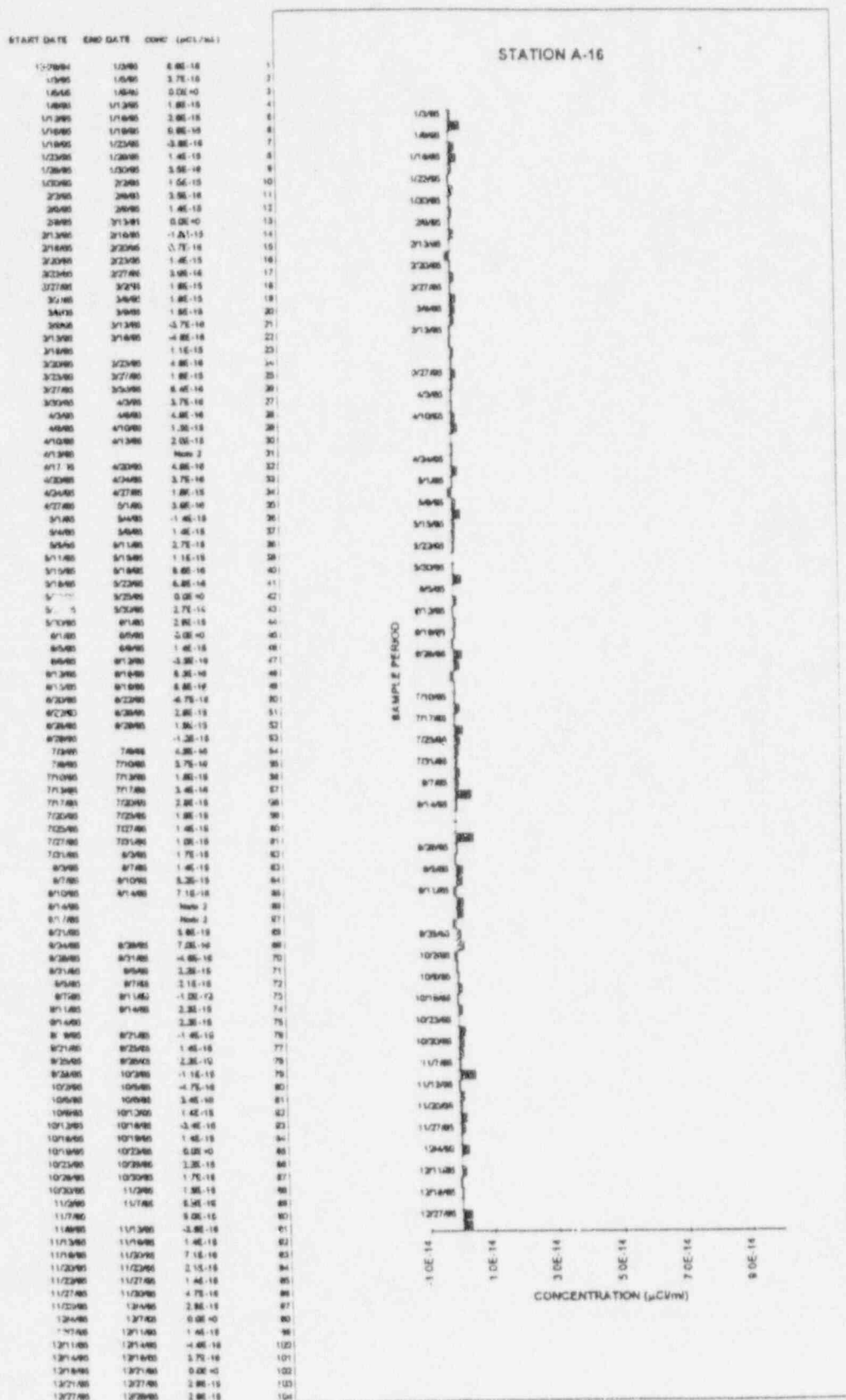
APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)



Note 1: Air samples did not run the full sample period.

Note 2: Analytical results not used due to insufficient sample volume.

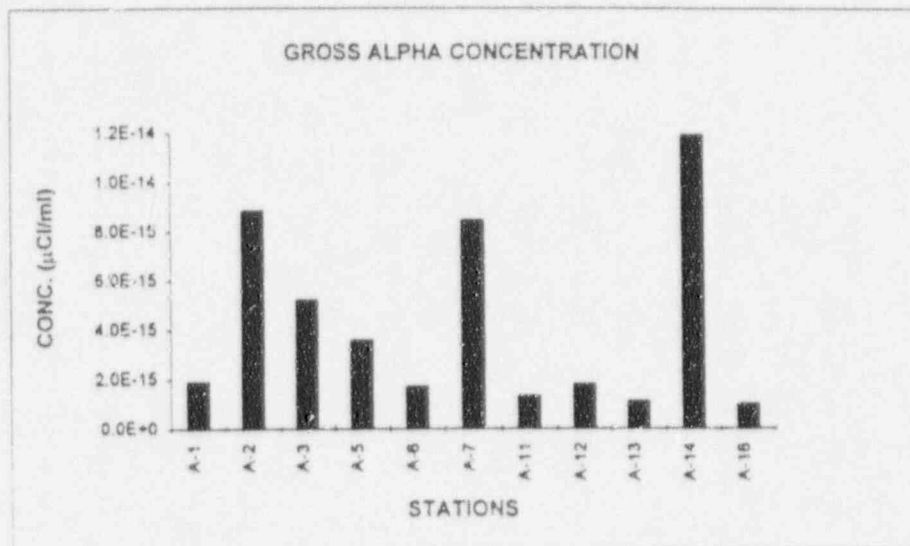
APPENDIX A
LOW VOLUME AIR SAMPLES GROSS ALPHA CONCENTRATIONS
(pCi/l)



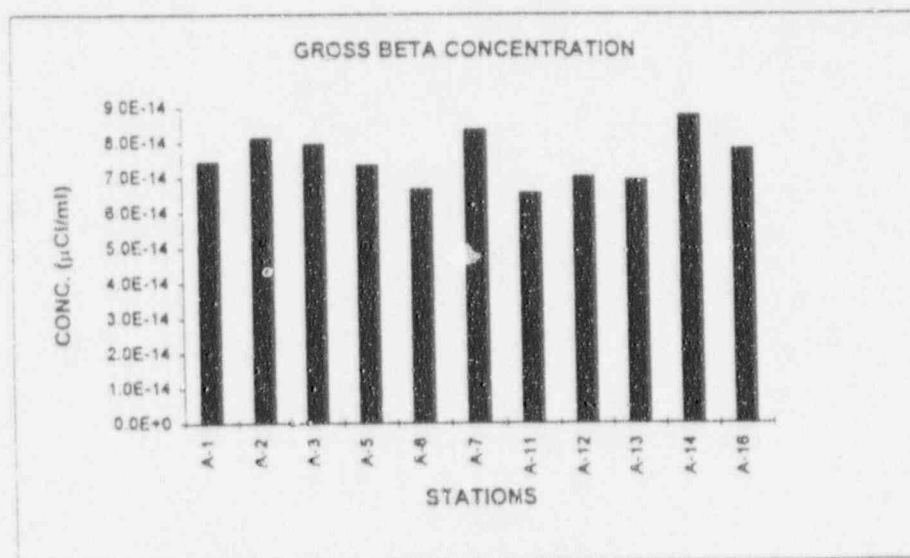
Note 2: Analytical results not used due to insufficient sample volume.

APPENDIX B
ANNUAL 1995
AVERAGE GROSS ALPHA AND BETA CONCENTRATIONS
(pCi/l)

STATION	AVERAGE CONC.
A-1	1.9E-15
A-2	8.9E-15
A-3	5.2E-15
A-5	3.6E-15
A-6	1.7E-15
A-7	8.5E-15
A-11	1.3E-15
A-12	1.8E-15
A-13	1.1E-15
A-14	1.2E-14
A-16	1.0E-15



STATION	AVERAGE CONC.
A-1	7.4E-14
A-2	8.1E-14
A-3	8.0E-14
A-5	7.4E-14
A-6	6.7E-14
A-7	8.4E-14
A-11	6.6E-14
A-12	7.0E-14
A-13	6.9E-14
A-14	8.8E-14
A-16	7.8E-14



APPENDIX C

AIRBORNE PARTICULATE RADIOACTIVITY 1995

($\mu\text{Ci/ml}$)

STA	QTR	TOTAL U	TH-230	+/- 2 σ	RA-226	+/- 2 σ	PB-210	+/- 2 σ	TH-232	+/- 2 σ
A-1	1	3.4E-7	-3.3E-8	2.6E-7	2.9E-7	1.4E-6	2.0E-5	1.5E-6	6.7E-8	2.0E-7
	2	-2.4E-7	-1.5E-6	7.6E-7	1.5E-6	1.6E-6	9.1E-6	3.4E-6	-5.6E-8	4.9E-7
	3	9.5E-7	-4.6E-8	3.6E-7	-2.6E-6	3.0E-6	1.2E-5	2.1E-6	2.4E-7	5.2E-7
	4	ND	7.1E-7	1.3E-6	-2.1E-7	1.0E-6	1.9E-5	2.8E-6	2.1E-7	1.2E-6
A-2	1	1.0E-7	3.5E-7	3.7E-7	3.5E-7	1.6E-6	1.8E-5	1.7E-6	2.2E-7	2.7E-7
	2	-2.6E-7	-1.5E-6	7.6E-7	3.3E-7	1.4E-6	1.1E-5	3.3E-6	1.6E-7	5.5E-7
	3	1.3E-6	5.5E-7	5.3E-7	-6.1E-7	3.7E-6	1.8E-5	2.6E-6	1.9E-6	9.3E-7
	4	ND	1.2E-6	1.4E-6	1.3E-6	1.7E-6	2.4E-5	3.3E-6	1.0E-6	1.4E-6
A-3	1	6.8E-8	-1.1E-7	2.4E-7	-1.1E-7	1.3E-6	1.9E-5	1.6E-6	8.9E-8	2.1E-7
	2	4.6E-8	-1.4E-6	7.5E-7	3.3E-8	1.3E-6	1.1E-5	3.3E-6	4.4E-8	5.2E-7
	3	1.2E-6	2.8E-7	4.6E-7	-1.1E-6	3.7E-6	1.7E-5	2.4E-6	1.3E-6	7.6E-7
	4	ND	8.7E-7	1.4E-6	3.5E-7	1.3E-6	2.4E-5	3.1E-6	2.9E-7	1.4E-6
A-5	1	2.2E-7	2.5E-7	3.0E-7	-2.3E-7	1.3E-6	1.9E-5	1.7E-6	1.1E-7	1.9E-7
	2	-1.6E-7	-1.3E-6	8.4E-7	2.7E-6	1.8E-6	1.0E-5	3.6E-6	4.2E-7	6.3E-7
	3	1.3E-6	-6.2E-8	3.8E-7	-2.0E-6	3.5E-6	1.3E-5	2.4E-6	3.4E-7	5.9E-7
	4	ND	4.1E-7	1.5E-6	7.2E-7	2.2E-6	2.4E-5	3.1E-6	1.3E-7	1.7E-6
A-6	1	-5.6E-8	-2.4E-8	2.5E-7	1.1E-7	1.5E-6	2.0E-5	1.7E-6	3.4E-7	2.5E-7
	2	-1.5E-7	-1.7E-6	7.1E-7	-6.6E-8	1.2E-6	9.9E-6	3.3E-6	-6.6E-8	4.5E-7
	3	5.9E-7	1.1E-7	4.1E-7	-1.8E-6	3.3E-6	1.6E-5	2.3E-6	2.4E-7	5.3E-7
	4	ND	4.0E-7	1.4E-6	1.2E-6	1.4E-6	2.4E-5	3.0E-6	3.7E-7	1.6E-6
A-7	1	2.7E-7	-5.9E-8	2.4E-7	1.8E-6	1.9E-6	1.9E-5	1.8E-6	5.5E-7	3.0E-7
	2	2.7E-7	-1.4E-6	8.6E-7	2.2E-7	1.5E-6	1.2E-5	4.6E-6	9.9E-7	7.6E-7
	3	1.8E-6	8.7E-7	6.7E-7	-4.7E-7	3.9E-6	1.3E-5	2.7E-6	1.6E-6	8.9E-7
	4	ND	-1.1E-7	1.3E-6	0	1.1E-6	2.3E-5	3.2E-6	4.8E-7	1.7E-6
A-11	1	8.1E-7	3.5E-7	3.1E-7	-1.1E-8	1.3E-6	1.6E-5	1.6E-6	2.3E-7	2.2E-7
	2	1.6E-8	-1.4E-6	7.6E-7	-7.8E-8	1.2E-6	1.1E-5	3.5E-6	-4.5E-8	4.8E-7
	3	ND	2.7E-7	4.3E-7	-2.4E-6	3.1E-6	1.2E-5	2.0E-6	-6.6E-8	4.3E-7
	4	ND	2.7E-7	1.0E-6	-1.8E-7	8.5E-7	2.3E-5	1.7E-6	1.3E-7	1.1E-6
A-12	1	-1.8E-7	-9.7E-8	2.7E-7	1.1E-7	1.5E-6	1.8E-5	1.7E-6	1.1E-7	2.4E-7
	2	-3.9E-7	-1.6E-6	8.4E-7	9.4E-7	1.7E-6	1.1E-5	3.8E-6	-1.2E-8	5.6E-7
	3	ND	4.4E-8	3.8E-7	-2.5E-6	3.0E-6	7.3E-6	1.9E-6	4.4E-8	4.6E-7
	4	ND	1.2E-7	1.0E-6	-6.5E-8	8.7E-7	1.9E-5	1.7E-6	-3.2E-8	1.1E-6
A-13	1	-1.9E-7	-5.7E-8	2.6E-7	0	1.3E-6	2.0E-5	1.7E-6	0.0E+0	1.9E-7
	2	-1.8E-7	-1.6E-6	7.4E-7	-7.8E-8	1.3E-6	9.0E-6	3.3E-6	3.5E-7	5.8E-7
	3	ND	2.0E-7	4.0E-7	-1.4E-6	4.0E-6	8.7E-6	1.9E-6	8.7E-8	4.6E-7
	4	ND	-1.3E-7	1.0E-6	-1.2E-7	8.5E-7	2.2E-5	1.6E-6	-9.8E-8	1.1E-6
A-14	1	4.6E-8	1.5E-7	3.6E-7	1.2E-7	1.7E-6	1.8E-5	2.0E-6	4.1E-8	2.5E-7
	2	ND	-1.6E-6	8.8E-7	2.3E-7	1.6E-6	1.2E-5	3.9E-6	6.4E-7	7.2E-7
	3	6.9E-7	5.8E-7	5.6E-7	-1.4E-6	5.0E-6	6.8E-6	2.1E-6	2.5E-6	9.5E-7
	4	ND	1.1E-7	1.5E-6	6.5E-7	1.4E-6	2.5E-5	3.4E-6	5.4E-7	1.8E-6
A-15	1	-3.5E-7	2.8E-8	3.3E-7	-3.9E-7	1.5E-6	1.9E-5	2.9E-6	-6.9E-8	2.1E-7
	2	2.8E-7	-1.6E-6	8.7E-7	-3.8E-8	1.4E-6	1.0E-5	4.0E-6	3.1E-7	6.5E-7
	3	8.8E-7	3.9E-7	5.3E-7	-2.1E-6	4.0E-6	1.5E-5	2.4E-6	-1.3E-8	5.5E-7
	4	ND	4.7E-7	1.6E-6	-2.1E-7	1.2E-6	2.6E-5	3.4E-6	-1.3E-8	1.5E-6
A-16	1	3.5E-8	-1.3E-8	2.6E-7	-1.3E-7	1.4E-6	1.9E-5	1.8E-6	1.7E-7	2.3E-7
	2	-1.6E-7	-1.6E-6	9.2E-7	2.0E-6	1.9E-6	4.7E-6	4.1E-6	4.0E-8	6.2E-7
	3	1.8E-7	5.8E-8	5.1E-7	-1.5E-7	5.3E-6	1.0E-5	2.5E-6	-1.6E-7	5.2E-7
	4	ND	-5.1E-8	1.4E-6	8.9E-7	1.5E-6	2.2E-5	3.4E-6	3.8E-8	1.6E-6

APPENDIX D

1995 ENVIRONMENTAL GAMMA AND RADON MONITORING RESULTS

Station	Gamma Exposure Rates (mrem/qr)				AVERAGE
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
A1	28.9 +/- 0.8	27.8 +/- 0.9	28.0 +/- 0.9	23.7 +/- 0.9	27.1 +/- 0.9
A2	25.0 +/- 0.8	28.0 +/- 0.9	29.9 +/- 0.9	27.7 +/- 0.9	27.6 +/- 0.9
A3	36.1 +/- 0.9	29.4 +/- 0.9	27.0 +/- 0.9	34.3 +/- 0.8	31.7 +/- 0.9
A5	33.7 +/- 0.8	33.0 +/- 0.9	32.6 +/- 0.9	32.5 +/- 0.9	33.0 +/- 0.9
A6	31.9 +/- 0.8	32.8 +/- 0.9	31.2 +/- 0.9	32.0 +/- 0.9	31.9 +/- 0.9
A7	27.7 +/- 0.8	27.3 +/- 0.9	28.6 +/- 0.9	28.3 +/- 0.9	28.0 +/- 0.9
A11	30.6 +/- 0.8	30.3 +/- 0.9	29.9 +/- 0.9	28.3 +/- 0.9	29.8 +/- 0.9
A12	32.4 +/- 0.9	29.0 +/- 0.9	29.8 +/- 0.9	28.3 +/- 0.9	29.9 +/- 0.9
A13	29.4 +/- 0.9	28.2 +/- 0.9	26.4 +/- 0.9	25.5 +/- 0.8	27.4 +/- 0.9
A14	33.0 +/- 0.9	28.2 +/- 0.9	30.7 +/- 0.9	29.6 +/- 0.8	30.4 +/- 0.9
A16	21.7 +/- 0.8	21.1 +/- 0.9	19.5 +/- 0.9	21.8 +/- 0.9	21.0 +/- 0.9
B1	33.5 +/- 0.8	33.8 +/- 0.8	29.9 +/- 0.9	29.9 +/- 0.8	31.8 +/- 0.8
B2	23.0 +/- 0.9	23.0 +/- 0.9	23.4 +/- 0.9	27.2 +/- 0.9	24.1 +/- 0.9
TRAILER	23.9 +/- 0.9	21.3 +/- 0.9	21.1 +/- 0.9	27.3 +/- 0.9	23.4 +/- 0.9
SAMPLE C	50.2 +/- 0.9	91.1 +/- 0.9	117.3 +/- 0.8	95.7 +/- 0.9	88.0 +/- 0.9
BA SHOP	18.6 +/- 0.9	19.0 +/- 0.9	16.1 +/- 0.9	16.8 +/- 0.9	17.6 +/- 0.9
MW OFFICE		20.8 +/- 0.9	21.7 +/- 0.9	25.4 +/- 0.9	22.6 +/- 0.9
MW TREAT		30.8 +/- 0.9	22.6 +/- 0.9	20.2 +/- 0.9	24.5 +/- 0.9

Station	Radon Concentrations (pCi/l)				AVERAGE
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
A-1	< 2	< 2	0.2 +/- 0.1	0.6 +/- 0.1	0.3 +/- 0.1
A-2	0.3 +/- 0.1	0.2 +/- 0.1	0.4 +/- 0.1	0.7 +/- 0.1	0.4 +/- 0.1
A-3	< 2	0.5 +/- 0.1	0.7 +/- 0.1	1.1 +/- 0.1	0.6 +/- 0.1
A-5	< 2	0.2 +/- 0.1	0.2 +/- 0.1	0.8 +/- 0.1	0.4 +/- 0.1
A-6	< 2	< 2	< 2	0.5 +/- 0.1	0.3 +/- 0.1
A-7	0.6 +/- 0.1	0.4 +/- 0.1	0.6 +/- 0.1	0.9 +/- 0.1	0.6 +/- 0.1
A-11	0.5 +/- 0.1	0.6 +/- 0.1	0.7 +/- 0.1	0.7 +/- 0.1	0.6 +/- 0.1
A-12	0.8 +/- 0.1	0.6 +/- 0.1	0.6 +/- 0.1	1.1 +/- 0.1	0.8 +/- 0.1
A-13	0.3 +/- 0.1	0.3 +/- 0.1	0.3 +/- 0.1	0.7 +/- 0.1	0.4 +/- 0.1
A-14	0.8 +/- 0.1	1.0 +/- 0.1	1.1 +/- 0.1	1.4 +/- 0.1	1.1 +/- 0.1
A-16	0.5 +/- 0.1	0.6 +/- 0.1	0.6 +/- 0.1	0.7 +/- 0.1	0.6 +/- 0.1
B1	< 2 +/-	< 2	0.4 +/- 0.1	0.7 +/- 0.1	0.4 +/- 0.1
B2	0.5 +/- 0.1	0.6 +/- 0.1	0.6 +/- 0.1	0.7 +/- 0.1	0.6 +/- 0.1
TRAILER	0.9 +/- 0.1	0.7 +/- 0.1	0.2 +/- 0.1	0.5 +/- 0.1	0.6 +/- 0.1
SAMPLE C	1.5 +/- 0.2	0.7 +/- 0.3	0.6 +/- 0.3	1.7 +/- 0.3	1.1 +/- 0.3
BA SHOP	0.5 +/- 0.1	0.4 +/- 0.1	0.2 +/- 0.1	0.5 +/- 0.1	0.4 +/- 0.1
MW OFFICE		0.4 +/- 0.1	0.3 +/- 0.1	0.7 +/- 0.1	0.5 +/- 0.1
MW TREAT		0.4 +/- 0.1	0.5 +/- 0.1	0.9 +/- 0.1	0.6 +/- 0.1

1. STATIONS A1, A3, A5, A6, A11, A12, A13, AND A14 SURROUND RESTRICTED AREA.
2. STATIONS A2 AND A7 ARE LOCATED WITHIN OPERATIONAL RESTRICTED AREA.
3. B1 AND B2 ARE LOCATED APPROXIMATELY 1 MILE NORTH AND 1.5 MILES EAST OF PROPERTY BOUNDARY.
4. "TRAILER" IS TAKEN AT THE SECURITY GUARD RESIDENCE TRAILER.
5. "SAMPLE C" IS TAKEN AT THE SAMPLE CONTROL ROOM.
6. "BA SHOP" IS TAKEN AT THE BROKEN ARROW MAINTENANCE AREA.
7. "MW OFFICE" IS TAKEN AT THE MIXED WASTE STORAGE BUILDING OFFICE.
8. "MW TREAT" IS TAKEN AT THE MIXED WASTE TREATMENT BUILDING.

APPENDIX E
1995 SOIL SAMPLE RESULTS
RADIONUCLIDE CONCENTRATION (pCi/g)

STATION	QTR	TOT U	TH-230	+/- 2σ	TH-232	+/- 2σ
31	1	1.4E+0	3.0E-1	9.0E-1	5.0E-1	1.1E+0
31	2	1.9E+0	1.2E+0	8.0E-1	7.0E-1	7.0E-1
31	3	1.6E+0	8.0E-1	7.0E-1	3.0E-1	5.0E-1
31	4	1.7E+0	6.0E-1	7.0E-1	5.0E-1	8.0E-1
32	1	2.3E+0	4.0E-1	7.0E-1	6.0E-1	8.0E-1
32	2	2.6E+0	1.2E+0	8.0E-1	2.0E-1	5.0E-1
32	3	2.1E+0	1.5E+0	8.0E-1	1.0E-1	5.0E-1
32	4	2.1E+0	1.0E+0	8.0E-1	1.2E+0	9.0E-1
55	1	6.5E+0	1.8E+0	1.0E+0	4.0E-1	8.0E-1
55	2	2.5E+0	3.4E+0	1.1E+0	1.5E+0	8.0E-1
55	3	3.1E+0	4.3E+0	1.3E+0	1.6E+0	9.0E-1
55	4	2.9E+0	3.8E+0	1.3E+0	1.5E+0	1.0E+0
A-11	1	1.9E+0	1.9E+0	1.2E+0	8.0E-1	1.1E+0
A-11	2	1.5E+0	1.7E+0	3.0E-1	5.0E-1	5.0E-1
A-11	3	1.4E+0	1.3E+0	3.0E-1	8.0E-1	7.0E-1
A-11	4	1.8E+0	8.0E-1	7.0E-1	8.0E-1	8.0E-1
A-12	1	1.2E+0	1.0E+0	1.0E+0	0.0E+0	1.0E+0
A-12	2	1.6E+0	1.7E+0	8.0E-1	1.4E+0	8.0E-1
A-12	3	1.5E+0	1.2E+0	8.0E-1	5.0E-1	6.0E-1
A-12	4	1.7E+0	8.0E-1	7.0E-1	6.0E-1	8.0E-1
A-13	1	1.4E+0	1.2E+0	1.1E+0	2.0E-1	1.0E+0
A-13	2	1.8E+0	1.0E+0	7.0E-1	6.0E-1	5.0E-1
A-13	3	1.2E+0	1.1E+0	7.0E-1	3.0E-1	5.0E-1
A-13	4	1.5E+0	3.0E+0	1.1E+0	2.0E-1	6.0E-1
A	1	2.5E+0	6.0E-1	9.0E-1	2.0E-1	1.0E+0
A	2	2.0E-1	6.0E-1	5.0E-1	7.0E-1	5.0E-1
A	3	1.5E+0	1.2E+0	5.0E-1	9.0E-1	5.0E-1
A	4	5.0E+0	1.0E+0	6.0E-1	4.4E+0	1.2E+0
B	1	2.1E+0	2.2E+0	1.1E+0	4.0E-1	8.0E-1
B	2	6.0E-1	4.0E-1	4.0E-1	2.0E-1	3.0E-1
B	3	1.7E+0	6.0E-1	2.0E-1	6.0E-1	2.0E-1
B	4	2.2E+0	1.6E+0	8.0E-1	1.7E+0	8.0E-1
D	1	3.4E+0	1.7E+0	8.0E-1	6.6E+0	1.5E+0
D	2	4.9E+0	3.4E+0	1.1E+0	4.1E+0	1.2E+0
D	3	4.4E+0	2.4E+0	1.0E+0	5.9E+0	1.5E+0
D	4	5.3E+0	4.1E+0	1.2E+0	1.9E+1	3.0E+0
A- VEHICLE DECON AREA						
B- TRUCK STAGING AREA						
D- ROAD FROM POLLOVER TO CELL						

APPENDIX E
1995 SOIL SAMPLE RESULTS
RADIONUCLIDE CONCENTRATION (pCi/g)

STATION	QT	RA-226	+/- 2σ	AC-228	+/- 2σ	BI-212	+/- 2σ	BI-214	+/- 2σ	PB-212	+/- 2σ	PB-214	+/- 2σ	TL-208	+/- 2σ	TH-234	+/- 2σ	K-40	+/- 2σ
18	1	1.0E+0	2.0E-1	9.5E-1	5.5E-1	4.1E-1		1.0E+0	2.0E-1	5.2E-1	1.2E-1	9.0E-1	1.9E-1	3.0E-1	1.1E-1	1.7E+0		9.6E+0	1.4E+0
18	2	4.3E+0	2.7E-1	3.3E-1		5.7E-1		4.3E+0	2.7E-1	9.2E-1	1.8E-1	4.4E+0	2.6E-1	4.2E-1	9.0E-2	1.7E+0		1.5E+1	1.5E+0
18	3	3.4E+0	2.3E-1	1.0E+0	3.0E-1	8.6E-1	5.7E-1	3.4E+0	2.3E-1	8.6E-1	1.7E-1	3.5E+0	2.1E-1	3.4E-1	9.0E-2	2.5E+0		1.4E+1	1.4E+0
18	4	2.6E+0	1.9E-1	1.1E+0	2.1E-1	7.4E-1	3.6E-1	2.6E+0	1.9E-1	9.3E-1	1.3E-1	3.0E+0	2.2E-1	3.6E-1	9.0E-2	1.4E+0		1.4E+1	1.3E+0
19	1	1.8E+0	1.8E-1	1.5E+0	3.2E-1	1.8E+0	1.1E+0	1.8E+0	1.8E-1	8.5E-1	1.5E-1	1.7E+0	2.4E-1	4.4E-1	1.0E-1	5.2E+0	3.6E+0	1.6E+1	1.8E+0
19	2	1.4E+0	1.8E-1	1.0E+0	2.5E-1	7.2E-1		1.4E+0	1.8E-1	8.8E-1	1.4E-1	1.3E+0	1.6E-1	1.0E-1		2.3E+0		1.6E+1	1.6E+0
19	3	1.5E+0	1.8E-1	1.1E+0	2.4E-1	8.9E-1	6.2E-1	1.5E+0	1.8E-1	8.6E-1	1.4E-1	1.5E+0	1.8E-1	3.9E-1	8.0E-2	2.1E+0		1.4E+1	1.4E+0
19	4	1.4E+0	1.5E-1	1.0E+0	2.6E-1	5.8E-1	4.0E-1	1.4E+0	1.5E-1	9.9E-1	1.4E-1	1.6E+0	2.0E-1	3.6E-1	8.0E-2	2.9E+0		1.6E+1	1.4E+0
20	1	1.3E+0	1.5E-1	1.0E+0	2.5E-1	1.0E+0	8.6E-1	1.3E+0	1.5E-1	8.7E-1	1.4E-1	1.2E+0	1.5E-1	1.4E-1		2.3E+0	2.1E+0	1.5E+1	1.5E+0
20	2	1.7E+0	2.4E-1	1.3E+0	3.0E-1	8.9E-1		1.7E+0	2.4E-1	8.7E-1	1.5E-1	1.7E+0	2.1E-1	4.1E-1	1.2E-1	2.0E+0		1.7E+1	1.7E+0
20	3	1.7E+0	1.8E-1	1.4E+0	2.8E-1	7.5E-1		1.7E+0	1.8E-1	9.1E-1	1.5E-1	1.9E+0	1.9E-1	4.5E-1	1.0E-1	2.3E+0		1.7E+1	1.7E+0
20	4	1.7E+0	1.9E-1	1.1E+0	2.5E-1	8.1E-1	4.0E-1	1.7E+0	1.9E-1	1.1E+0	1.3E-1	1.7E+0	2.0E-1	4.0E-1	9.0E-2	2.4E+0		1.7E+1	1.8E+0
21	1	1.3E+0	4.0E-2	9.6E-1	8.0E-2	1.0E+0	3.2E-1	1.3E+0	4.0E-2	7.0E-1	3.0E-2	1.3E+0	5.0E-2	3.4E-1	3.0E-2	6.9E-1	5.0E-1	1.3E+1	4.1E+0
21	2	1.5E+0	1.7E-1	1.3E+0	3.0E-1	1.3E+0	7.7E-1	1.5E+0	1.7E-1	9.4E-1	1.4E-1	1.6E+0	1.9E-1	1.0E-1		2.1E+0		1.6E+1	1.6E+0
21	3	1.8E+0	1.9E-1	1.3E+0	2.8E-1	1.4E+0	8.7E-1	1.8E+0	1.9E-1	1.0E+0	1.6E-1	1.8E+0	2.3E-1	4.7E-1	1.3E-1	2.1E+0		1.7E+1	1.6E+0
21	4	1.3E+0	1.6E-1	9.5E-1	2.1E-1	4.4E-1	3.3E-1	1.3E+0	1.6E-1	9.0E-1	1.4E-1	1.6E+0	2.1E-1	3.5E-1	8.0E-2	2.6E+0		1.5E+1	1.4E+0
30	1	1.1E+0	1.4E-1	1.2E+0	3.1E-1	1.5E+0	7.3E-1	1.1E+0	1.4E-1	7.2E-1	1.4E-1	1.2E+0	2.2E-1	4.2E-1	1.2E-1	2.0E+0		1.3E+1	1.5E+0
30	2	9.6E-1	1.5E-1	1.2E+0	2.4E-1	1.8E+0	9.6E-1	9.6E-1	1.5E-1	9.1E-1	1.3E-1	9.7E-1	1.8E-1	3.6E-1	1.0E-1	2.2E+0		1.2E+1	1.5E+0
30	3	1.1E+0	1.5E-1	1.3E+0	3.2E-1	6.2E-1		1.1E+0	1.5E-1	8.7E-1	1.3E-1	1.1E+0	1.5E-1	4.2E-1	9.0E-2	1.8E+0	1.0E+0	1.5E+1	1.6E+0
30	4	1.5E+0	1.9E-1	1.1E+0	2.3E-1	8.7E-1	3.3E-1	1.5E+0	1.9E-1	9.7E-1	1.2E-1	1.4E+0	2.0E-1	3.8E-1	8.0E-2	2.7E+0		1.3E+1	1.4E+0
31	1	8.9E-1	1.4E-1	9.2E-1	2.3E-1	6.2E-1		8.9E-1	1.4E-1	7.1E-1	1.3E-1	1.0E+0	1.4E-1	6.1E-1	1.0E-1	2.0E+0		1.2E+1	1.4E+0
31	2	7.1E-1	1.4E-1	8.2E-1	3.1E-1	6.2E-1		7.1E-1	1.4E-1	8.2E-1	1.3E-1	7.2E-1	1.4E-1	7.9E-2		2.0E+0		1.0E+1	1.4E+0
31	3	1.0E+0	1.5E-1	2.6E-1		7.4E-1		1.0E+0	1.5E-1	8.4E-1	1.2E-1	8.9E-1	1.5E-1	3.4E-1	1.0E-1	1.4E+0		1.1E+1	1.2E+0
31	4	1.2E+0	1.4E-1	1.2E+0	2.3E-1	8.5E-1	3.5E-1	1.2E+0	1.4E-1	1.0E+0	1.4E-1	1.4E+0	1.9E-1	4.0E-1	9.0E-2	3.4E+0		1.5E+1	1.4E+0
32	1	1.1E+0	1.5E-1	8.6E-1	2.3E-1	9.8E-1	8.4E-1	1.1E+0	1.5E-1	7.8E-1	1.4E-1	1.0E+0	1.4E-1	6.4E-1	1.1E-1	2.2E+0		1.4E+1	1.4E+0
32	2	8.4E-1	1.4E-1	1.0E+0	3.1E-1	8.2E-1	8.0E-1	8.4E-1	1.4E-1	7.3E-1	1.3E-1	7.3E-1	1.4E-1	1.3E-1		1.8E+0		1.2E+1	1.4E+0
32	3	7.9E-1	1.4E-1	9.8E-1	3.0E-1	1.2E+0	8.5E-1	7.9E-1	1.4E-1	6.8E-1	1.2E-1	9.7E-1	1.4E-1	3.3E-1	9.0E-2	1.8E+0		1.3E+1	1.4E+0
32	4	2E-1	1.4E-1	9.3E-1	2.7E-1	5.8E-1	4.1E-1	9.2E-1	1.4E-1	8.5E-1	1.4E-1	1.1E+0	1.6E-1	3.1E-1	8.0E-2	2.3E+0	1.0E+0	1.4E+1	1.4E+0
33	1		1.6E-1	1.2E+0	2.3E-1	1.6E+0	8.4E-1	1.4E+0	1.6E-1	8.1E-1	1.3E-1	1.3E+0	1.9E-1	3.8E-1	1.0E-1	2.1E+0		1.4E+1	1.4E+0
33	2		1.8E-1	1.2E+0	2.3E-1	1.9E+0	7.9E-1	1.2E+0	1.8E-1	8.4E-1	1.3E-1	1.3E+0	1.7E-1	3.6E-1	9.0E-2	1.9E+0		1.4E+1	1.5E+0
33	3	1.2E+0	1.5E-1	1.0E+0	2.2E-1	5.9E-1		1.2E+0	1.5E-1	7.7E-1	1.3E-1	1.3E+0	1.9E-1	3.7E-1	1.0E-1	1.9E+0		1.4E+1	1.4E+0
33	4	9.9E-1	1.6E-1	9.6E-1	1.9E-1	6.8E-1	4.6E-1	9.9E-1	1.6E-1	8.9E-1	1.2E-1	1.2E+0	1.7E-1	3.2E-1	7.0E-2	2.7E+0		1.4E+1	1.4E+0
34	1	1.1E+0	4.0E-2	1.1E+0	1.0E-1	1.1E+0	3.3E-1	1.1E+0	4.0E-2	8.0E-1	3.0E-2	1.2E+0	5.0E-2	3.3E-1	3.0E-2	6.3E-1	5.1E-1	1.3E+1	4.1E+0
34	2	1.2E+0	1.6E-1	1.1E+0	2.6E-1	1.5E+0	1.1E+0	1.2E+0	1.6E-1	9.0E-1	1.4E-1	1.3E+0	1.9E-1	3.8E-1	9.0E-2	2.0E+0		1.6E+1	1.5E+0
34	3	1.5E+0	1.7E-1	1.1E+0	2.5E-1	1.4E+0	8.2E-1	1.5E+0	1.7E-1	8.2E-1	1.4E-1	1.5E+0	1.6E-1	4.1E-1	1.1E-1	2.0E+0		1.4E+1	1.3E+0
34	4	1.2E+0	1.7E-1	9.3E-1	2.2E-1	6.3E-1	4.2E-1	1.2E+0	1.7E-1	9.2E-1	1.3E-1	1.2E+0	1.5E-1	3.4E-1	9.0E-2	2.4E+0		1.4E+1	1.4E+0

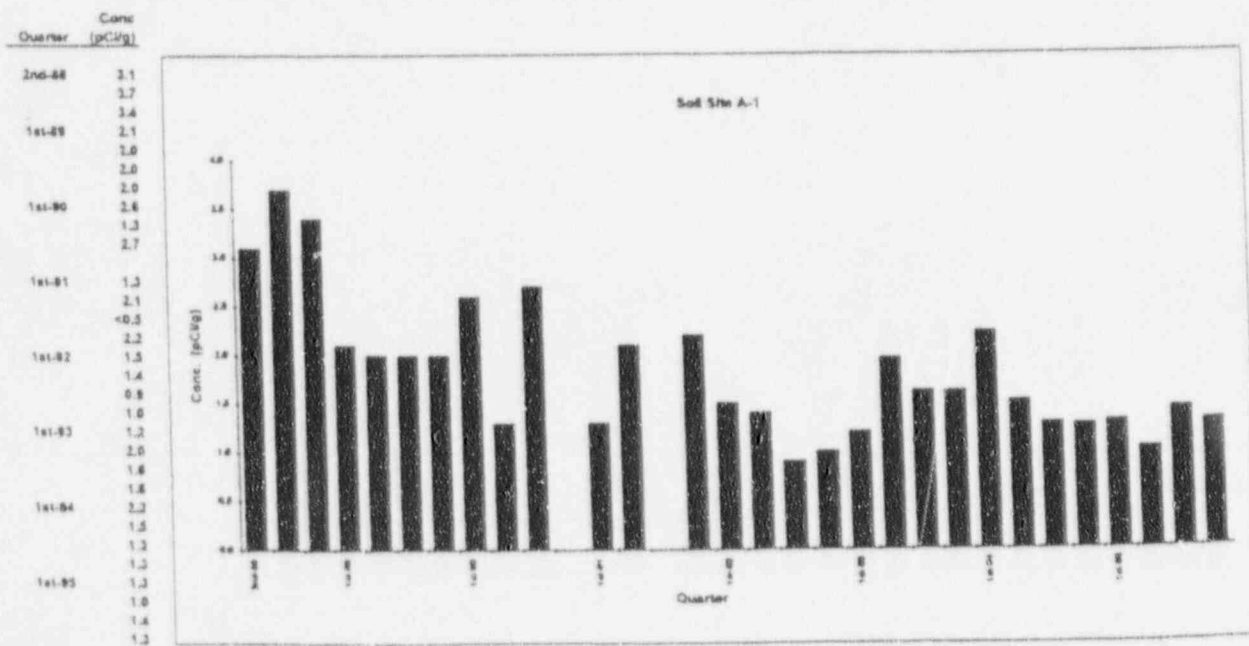
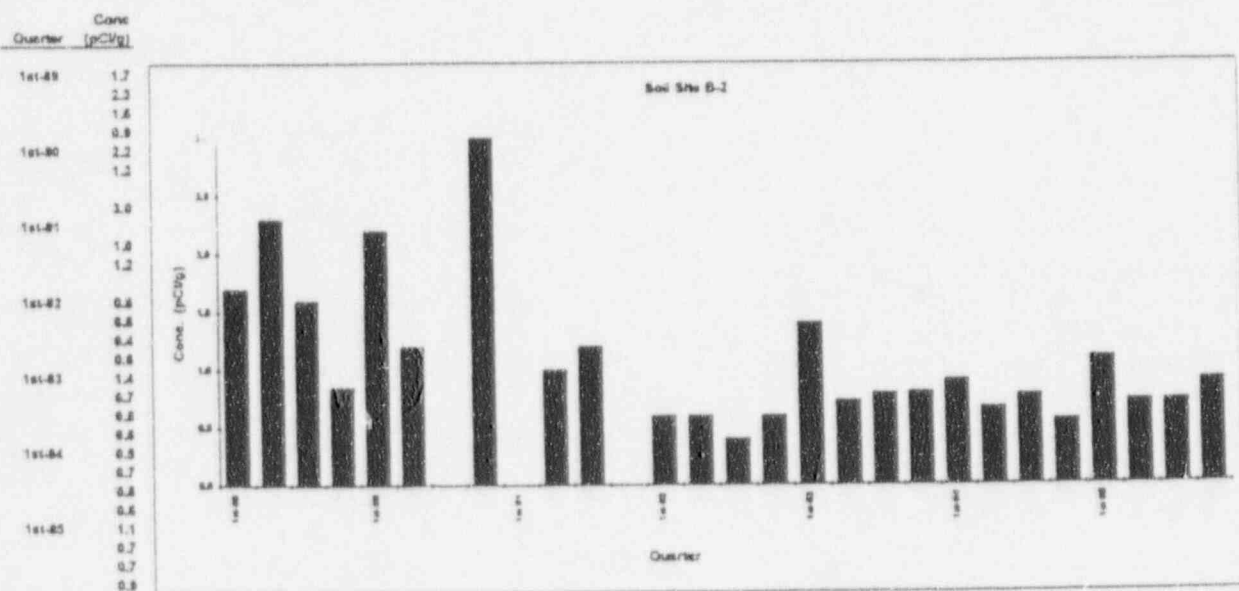
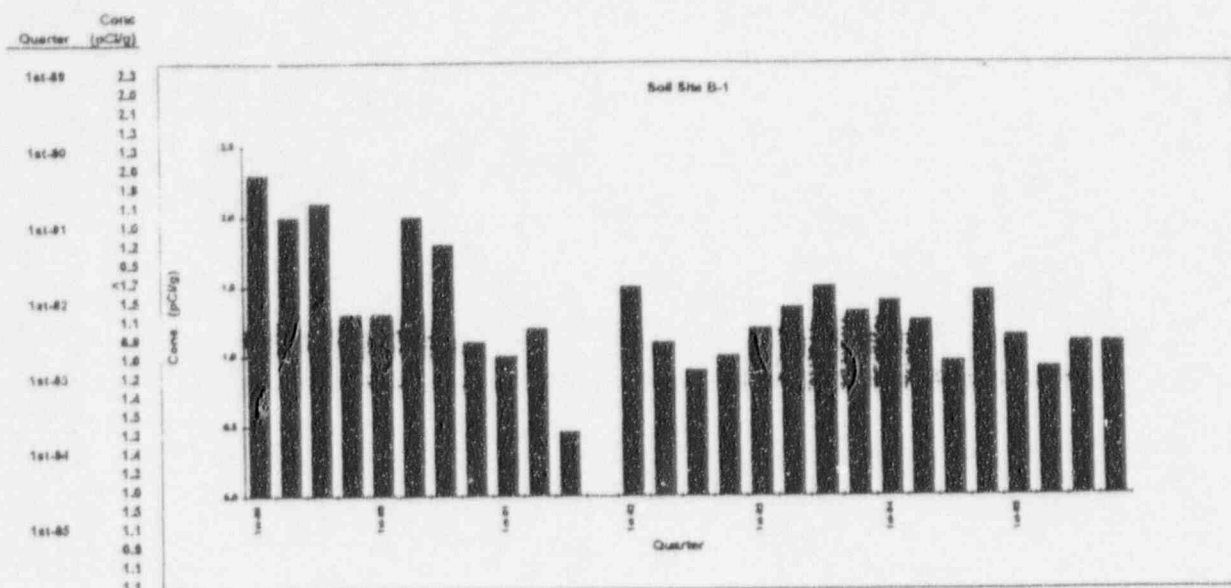
APPENDIX E
1995 SOIL SAMPLE RESULTS
RADIONUCLIDE CONCENTRATION (pCi/g)

STATION	QT	RA-226	+/- 2σ	AC-228	+/- 2σ	Bi-212	+/- 2σ	Bi-214	+/- 2σ	PB-212	+/- 2σ	PB-214	+/- 2σ	TL-208	+/- 2σ	TH-234	+/- 2σ	K-40	+/- 2σ
36	1	11E+0	15E-1	13E+0	29E-1	76E-1		11E+0	15E-1	79E-1	14E-1	12E+0	18E-1	41E-1	10E-1	19E+0		13E+1	15E+0
36	2	10E+0	15E-1	12E+0	30E-1	14E+0	93E-1	10E+0	15E-1	90E-1	14E-1	10E+0	14E-1	14E-1		21E+0		14E+1	15E+0
36	3	12E+0	16E-1	14E+0	29E-1	12E+0	67E-1	12E+0	16E-1	98E-1	13E-1	12E+0	18E-1	35E-1	90E-2	19E+0		15E+1	15E+0
36	4	11E+0	16E-1	11E+0	25E-1	65E-1	48E-1	11E+0	16E-1	80E-1	14E-1	13E+0	18E-1	38E-1	80E-2	14E+0		13E+1	14E+0
37	1	10E+0	15E-1	12E+0	36E-1	14E+0	94E-1	10E+0	15E-1	83E-1	14E-1	11E+0	19E-1	39E-1	10E-1	20E+0		14E+1	15E+0
37	2	10E+0	40E-2	98E-1	80E-2	98E-1	20E-1	10E+0	40E-2	82E-1	30E-2	11E+0	40E-2	20E-2		75E-1	52E-1	15E+1	37E-1
37	3	13E+0	17E-1	14E+0	30E-1	14E+0	55E-1	13E+0	17E-1	91E-1	13E-1	12E+0	17E-1	37E-1	90E-2	18E+0		15E+1	14E+0
37	4	13E+0	17E-1	88E-1	20E-1	83E-1	50E-1	13E+0	17E-1	86E-1	14E-1	13E+0	17E-1	34E-1	70E-2	25E+0		14E+1	14E+0
38	1	11E+0	16E-1	12E+0	28E-1	62E-1		11E+0	16E-1	88E-1	14E-1	12E+0	18E-1	44E-1	11E-1	20E+0		15E+1	16E+0
38	2	98E-1	15E-1	97E-1	32E-1	79E-1		96E-1	15E-1	77E-1	14E-1	95E-1	17E-1	87E-2		17E+0		14E+1	16E+0
38	3	12E+0	17E-1	13E+0	30E-1	10E+0	82E-1	12E+0	17E-1	99E-1	13E-1	13E+0	17E-1	41E-1	80E-2	22E+0		16E+1	14E+0
38	4	10E+0	13E-1	10E+0	29E-1	41E-1		10E+0	13E-1	91E-1	14E-1	13E+0	18E-1	34E-1	11E-1	29E+0		14E+1	13E+0
39	1	11E+0	40E-2	91E-1	90E-2	10E+0	35E-1	11E+0	40E-2	64E-1	30E-2	11E+0	50E-2	33E-1	30E-2	52E-1		13E+1	47E-1
39	2	13E+0	18E-1	11E+0	25E-1	15E+0	79E-1	13E+0	18E-1	94E-1	13E-1	11E+0	17E-1	34E-1	80E-2	27E+0		14E+1	15E+0
39	4	11E+0	14E-1	11E+0	28E-1	71E-1	34E-1	11E+0	14E-1	85E-1	14E-1	13E+0	18E-1	37E-1	90E-2	24E+0		15E+1	14E+0
40	1	12E+0	15E-1	13E+0	34E-1	76E-1		12E+0	15E-1	86E-1	14E-1	13E+0	20E-1	38E-1	12E-1	20E+0		13E+1	14E+0
40	2	11E+0	16E-1	91E-1	24E-1	87E-1	61E-1	11E+0	16E-1	86E-1	14E-1	12E+0	16E-1	58E-1	11E-1	29E+0		14E+1	15E+0
40	3	94E-1	80E-2	11E+0	14E-1	13E+0	57E-1	94E-1	80E-2	84E-1	70E-2	11E+0	80E-2	39E-1	60E-2	12E+0		14E+1	74E-1
40	4	11E+0	15E-1	12E+0	27E-1	50E-1	38E-1	11E+0	15E-1	89E-1	11E-1	13E+0	15E-1	31E-1	90E-2	29E+0	25E+0	15E+1	14E+0
41	1	11E+0	16E-1	16E+0	32E-1	58E-1		11E+0	16E-1	87E-1	14E-1	13E+0	16E-1	46E-1	14E-1	18E+0		15E+1	16E+0
41	2	10E+0	15E-1	12E+0	34E-1	13E+0	77E-1	10E+0	15E-1	89E-1	13E-1	11E+0	17E-1	11E-1		13E+0		13E+1	15E+0
41	3	12E+0	15E-1	12E+0	26E-1	17E+0	83E-1	12E+0	15E-1	91E-1	14E-1	13E+0	17E-1	38E-1	80E-2	20E+0		15E+1	13E+0
41	4	11E+0	15E-1	10E+0	20E-1	51E-1	38E-1	11E+0	15E-1	97E-1	14E-1	14E+0	17E-1	28E-1	90E-2	22E+0		14E+1	14E+0
42	1	13E+0	16E-1	3E+0	30E-1	88E-1		13E+0	16E-1	79E-1	14E-1	13E+0	18E-1	33E-1	12E-1	20E+0		14E+1	14E+0
42	2	11E+0	40E-2	98E-1	80E-2	20E-1		11E+0	40E-2	83E-1	30E-2	10E+0	40E-2	20E-2		45E-1		14E+1	40E-1
42	3	14E+0	16E-1	30E-1		12E+0	53E-1	14E+0	16E-1	97E-1	14E-1	13E+0	19E-1	45E-1	90E-2	20E+0		14E+1	15E+0
42	4	10E+0	14E-1	12E+0	27E-1	85E-1	40E-1	10E+0	14E-1	81E-1	14E-1	13E+0	19E-1	34E-1	80E-2	25E+0		14E+1	13E+0
43	1	11E+0	16E-1	15E+0	30E-1	79E-1		11E+0	16E-1	82E-1	13E-1	12E+0	19E-1	41E-1	11E-1	15E+0		15E+1	15E+0
43	2	12E+0	15E-1	11E+0	33E-1	72E-1		12E+0	15E-1	80E-1	12E-1	92E-1	15E-1	38E-1	11E-1	16E+0		14E+1	14E+0
43	3	13E+0	15E-1	12E+0	23E-1	16E+0	88E-1	13E+0	15E-1	88E-1	11E-1	13E+0	14E-1	41E-1	80E-2	17E+0		14E+1	11E+0
43	4	11E+0	15E-1	12E+0	27E-1	78E-1	48E-1	11E+0	15E-1	91E-1	14E-1	13E+0	19E-1	36E-1	11E-1	33E+0		14E+1	14E+0
44	1	10E+0	16E-1	11E+0	23E-1	12E+0	85E-1	10E+0	16E-1	85E-1	14E-1	14E+0	17E-1	72E-1	11E-1	25E+0		16E+1	15E+0
44	2	11E+0	21E-1	12E+0	21E-1	75E-1	52E-1	11E+0	21E-1	87E-1	13E-1	11E+0	16E-1	32E-1	90E-2	33E+0		13E+1	14E+0
44	3	11E+0	16E-1	15E+0	28E-1	20E+0	85E-1	11E+0	16E-1	87E-1	14E-1	12E+0	17E-1	41E-1	90E-2	25E+0	23E+0	14E+1	13E+0
44	4	13E+0	18E-1	12E+0	22E-1	68E-1	32E-1	13E+0	18E-1	85E-1	12E-1	13E+0	18E-1	33E-1	80E-2	24E+0		15E+1	14E+0
55	1	11E+0	15E-1	63E-1		17E+0		11E+0	15E-1	70E-1	13E-1	12E+0	19E-1	33E-1	11E-1	41E+0		10E+1	14E+0
55	2	57E+0	30E-1	16E+0	42E-1	88E-1		57E+0	30E-1	13E+0	20E-1	57E+0	31E-1	48E-1	13E-1	32E+0		16E+1	18E+0
55	3	49E+0	27E-1	16E+0	40E-1	87E-1		49E+0	27E-1	88E-1	18E-1	45E+0	24E-1	48E-1	12E-1	12E+0		16E+1	16E+0
55	4	45E+0	25E-1	14E+0	31E-1	50E-1		45E+0	25E-1	12E+0	19E-1	50E+0	30E-1	41E-1	11E-1	36E+0		17E+1	15E+0
A-1	1	13E+0	18E-1	12E+0	23E-1	19E+0	87E-1	13E+0	18E-1	88E-1	13E-1	15E+0	18E-1	33E-1	11E-1	97E-1		14E+1	16E+0
A-1	2	10E+0	15E-1	98E-1	28E-1	62E-1	52E-1	10E+0	15E-1	80E-1	13E-1	11E+0	15E-1	46E-2		21E+0		14E+1	14E+0
A-1	3	14E+0	17E-1	13E+0	27E-1	98E-1	74E-1	14E+0	17E-1	87E-1	13E-1	15E+0	18E-1	37E-1	11E-1	23E+0		14E+1	14E+0
A-1	4	13E+0	15E-1	29E-1		70E-1	36E-1	13E+0	15E-1	11E+0	13E-1	16E+0	20E-1	75E-2		25E+0		14E+1	13E+0
A-2	1	99E-1	16E-1	11E+0	30E-1	19E+0	11E+0	99E-1	16E-1	73E-1	14E-1	11E+0	21E-1	31E-1	10E-1	17E+0		14E+1	15E+0
A-2	2	15E+0	18E-1	11E+0	25E-1	75E-1		15E+0	18E-1	73E-1	13E-1	15E+0	19E-1	37E-1	12E-1	18E+0		15E+1	16E+0
A-2	3	84E-1	14E-1	96E-1	23E-1	70E-1		84E-1	14E-1	61E-1	12E-1	87E-1	14E-1	23E-1	90E-2	18E+0		11E+1	13E+0
A-2	4	20E+0	18E-1	12E+0	34E-1	80E-1	44E-1	20E+0	18E-1	12E+0	17E-1	21E+0	19E-1	36E-1	90E-2	28E+0	14E+0	14E+1	15E+0
A-3	1	97E-1	16E-1	96E-1	23E-1	95E-1	59E-1	97E-1	16E-1	93E-1	13E-1	11E+0	16E-1	96E-2		29E+0		14E+1	14E+0
A-3	2	11E+0	18E-1	96E-1	24E-1	51E-1		11E+0	18E-1	77E-1	13E-1	12E+0	17E-1	63E-1	10E-1	22E+0	12E+0	12E+1	14E+0
A-3	3	11E+0	15E-1	11E+0	25E-1	85E-1		11E+0	15E-1	78E-1	13E-1	12E+0	18E-1	29E-1	70E-2	19E+0		15E+1	13E+0
A-3	4	88E-1	12E-1	99E-1	23E-1	57E-1	35E-1	88E-1	12E-1	71E-1	12E-1	11E+0	19E-1	33E-1	80E-2	25E+0		11E+1	11E+0

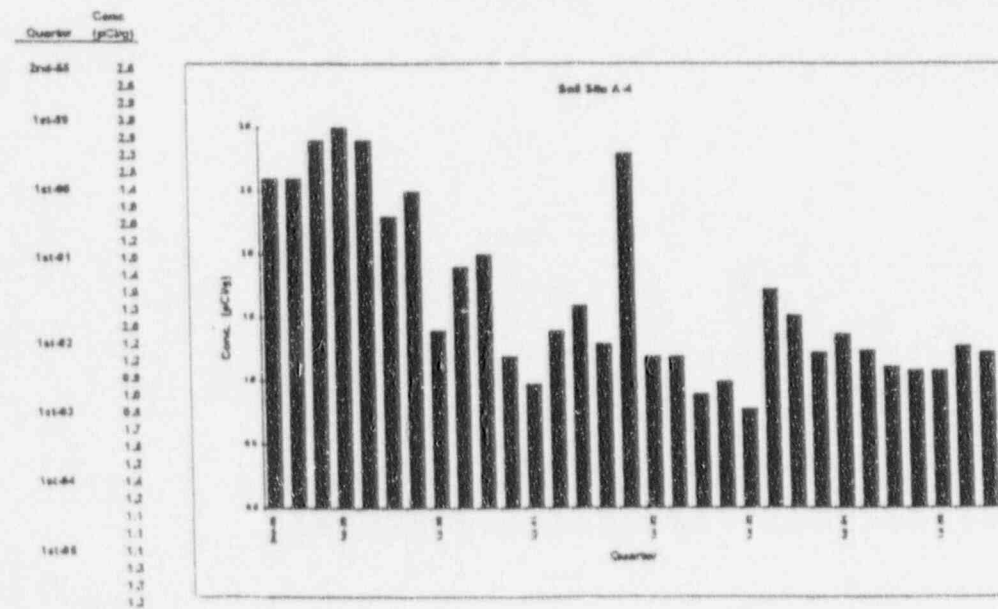
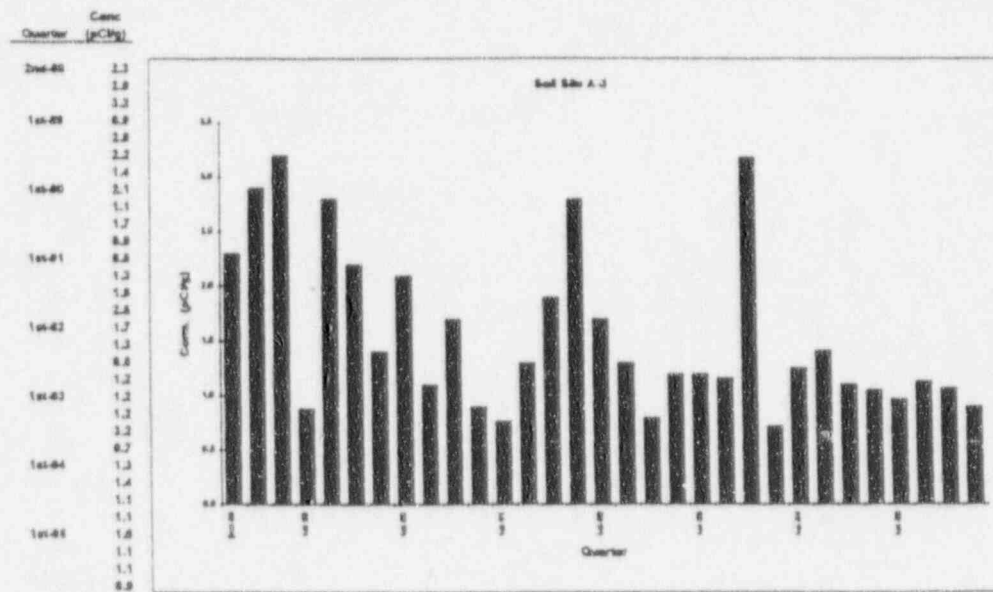
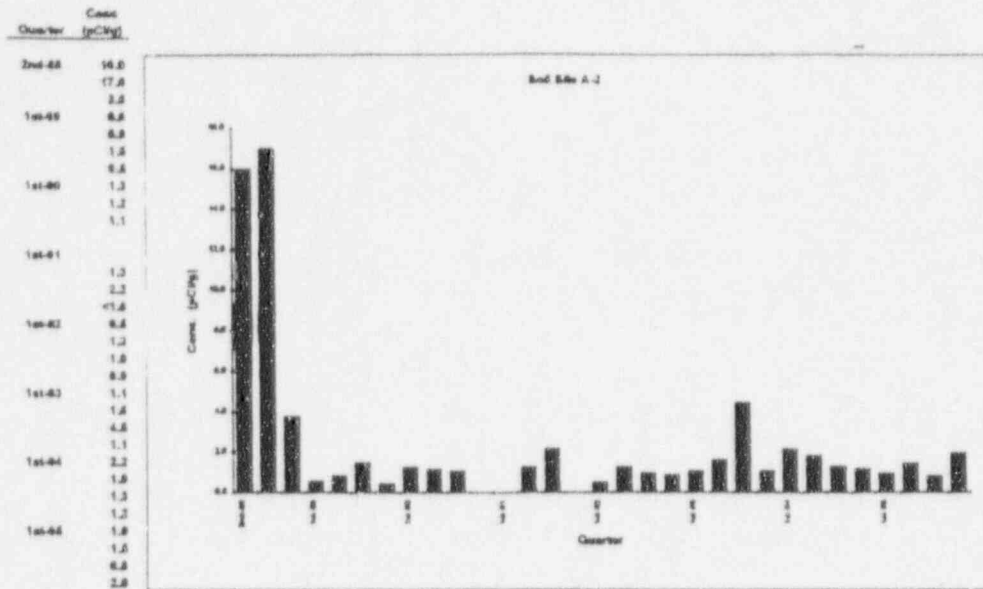
APPENDIX E
1995 SOIL SAMPLE RESULTS
RADIONUCLIDE CONCENTRATION (pCi/g)

STATION	QT	RA 226	+/- 2σ	AC 228	+/- 2σ	BI-212	+/- 2σ	BI-214	+/- 2σ	PB 212	+/- 2σ	PB 214	+/- 2σ	TL-208	+/- 2σ	TH-234	+/- 2σ	K-40	+/- 2σ
A-5	1	13E+0	16E-1	90E-1	28E-1	10E+0	71E-1	13E+0	16E-1	94E-1	14E-1	11E+0	17E-1	11E-1	<	29E+0	<	15E+1	15E+0
A-5	2	12E+0	16E-1	13E+0	29E-1	11E+0	56E-1	12E+0	16E-1	86E-1	13E-1	11E+0	17E-1	31E-1	80E-2	<	20E+0	15E+1	14E+0
A-5	3	12E+0	19E-1	13E+0	24E-1	<	64E-1	12E+0	19E-1	91E-1	13E-1	13E+0	18E-1	39E-1	10E-1	<	28E+0	13E+1	14E+0
A-5	4	87E-1	13E-1	10E+0	28E-1	54E-1	34E-1	87E-1	13E-1	90E-1	13E-1	12E+0	19E-1	37E-1	90E-2	<	25E+0	15E+1	14E+0
A-6	1	14E+0	40E-2	11E+0	80E-2	13E+0	39E-1	14E+0	40E-2	92E-1	30E-2	14E+0	50E-2	37E-1	40E-2	<	83E-1	49E-1	16E+1
A-6	3	13E+0	18E-1	10E+0	26E-1	78E-1	55E-1	13E+0	18E-1	70E-1	13E-1	13E+0	16E-1	41E-1	90E-2	<	21E+0	14E+1	15E+0
A-6	4	12E+0	15E-1	11E+0	33E-1	59E-1	38E-1	12E+0	15E-1	83E-1	14E-1	14E+0	16E-1	19E-1	80E-2	<	32E+0	24E+0	13E+1
A-7	1	11E+0	16E-1	12E+0	29E-1	11E+0	69E-1	11E+0	16E-1	86E-1	14E-1	12E+0	18E-1	42E-1	12E-1	<	14E+0	12E+1	15E+0
A-7	2	12E+0	15E-1	12E+0	27E-1	<	67E-1	12E+0	15E-1	90E-1	14E-1	13E+0	17E-1	32E-1	90E-2	<	23E+0	12E+1	14E+0
A-7	3	11E+0	16E-1	11E+0	28E-1	15E+0	68E-1	11E+0	16E-1	89E-1	13E-1	10E+0	15E-1	37E-1	11E-1	<	22E+0	90E-1	11E+1
A-7	4	13E+0	22E-1	13E+0	31E-1	59E-1	44E-1	13E+0	22E-1	11E+0	17E-1	14E+0	20E-1	41E-1	90E-2	<	29E+0	20E+1	18E+0
A-10	1	13E+0	15E-1	12E+0	26E-1	23E+0	11E+0	13E+0	15E-1	10E+0	13E-1	14E+0	20E-1	47E-1	13E-1	<	20E+0	15E+1	17E+0
A-10	2	55E-1	11E-1	65E-1	28E-1	<	50E-1	55E-1	11E-1	24E-1	12E-1	47E-1	14E-1	33E-1	70E-2	<	23E+0	53E+0	10E+0
A-10	3	13E+0	16E-1	13E+0	27E-1	16E+0	69E-1	13E+0	16E-1	98E-1	14E-1	13E+0	16E-1	43E-1	80E-2	<	20E+0	15E+1	14E+0
A-10	4	99E-1	13E-1	10E+0	27E-1	86E-1	40E-1	99E-1	13E-1	90E-1	13E-1	14E+0	20E-1	31E-1	11E-1	<	24E+0	14E+1	12E+0
A-11	1	11E+0	16E-1	14E+0	29E-1	18E+0	64E-1	11E+0	16E-1	99E-1	15E-1	14E+0	20E-1	41E-1	13E-1	<	22E+0	16E+1	16E+0
A-11	2	10E+0	17E-1	87E-1	25E-1	93E-1	74E-1	10E+0	17E-1	94E-1	14E-1	11E+0	18E-1	64E-1	12E-1	<	23E+0	13E+1	15E+0
A-11	3	12E+0	16E-1	13E+0	29E-1	<	70E-1	12E+0	16E-1	98E-1	13E-1	13E+0	17E-1	41E-1	10E-1	<	19E+0	15E+1	13E+0
A-11	4	10E+0	14E-1	12E+0	27E-1	59E-1	34E-1	10E+0	14E-1	91E-1	13E-1	14E+0	19E-1	34E-1	70E-2	<	25E+0	15E+1	14E+0
A-12	1	12E+0	15E-1	14E+0	32E-1	<	72E-1	12E+0	15E-1	79E-1	13E-1	13E+0	17E-1	47E-1	12E-1	<	19E+0	14E+1	15E+0
A-12	2	89E-1	14E-1	11E+0	25E-1	11E+0	78E-1	89E-1	14E-1	89E-1	13E-1	98E-1	17E-1	52E-1	90E-2	<	32E+0	13E+1	14E+0
A-12	3	14E+0	17E-1	91E-1	25E-1	14E+0	79E-1	14E+0	17E-1	79E-1	13E-1	15E+0	18E-1	<	80E-2	<	20E+0	14E+1	14E+0
A-12	4	13E+0	15E-1	11E+0	28E-1	88E-1	39E-1	13E+0	15E-1	90E-1	15E-1	18E+0	23E-1	37E-1	12E-1	<	28E+0	16E+1	15E+0
A-13	1	13E+0	18E-1	13E+0	29E-1	12E+0	61E-1	13E+0	18E-1	70E-1	12E-1	11E+0	18E-1	36E-1	80E-2	<	86E-1	13E+1	15E+0
A-13	2	12E+0	15E-1	13E+0	28E-1	<	71E-1	12E+0	15E-1	95E-1	14E-1	14E+0	17E-1	40E-1	11E-1	<	18E+0	17E+1	16E+0
A-13	3	10E+0	17E-1	13E+0	26E-1	<	58E-1	10E+0	17E-1	88E-1	14E-1	13E+0	20E-1	33E-1	80E-2	<	29E+0	15E+1	14E+0
A-13	4	90E-1	14E-1	11E+0	26E-1	63E-1	36E-1	90E-1	14E-1	86E-1	13E-1	14E+0	23E-1	42E-1	10E-1	<	26E+0	<	16E+0
A	1	66E-1	13E-1	90E-1	24E-1	12E+0	82E-1	66E-1	13E-1	57E-1	11E-1	86E-1	17E-1	29E-1	90E-2	<	20E+0	66E+0	10E+0
A	2	12E+0	16E-1	18E+0	28E-1	27E+0	99E-1	12E+0	16E-1	15E+0	16E-1	11E+0	15E-1	85E-1	12E-1	<	31E+0	17E+1	16E+0
A	3	12E+0	18E-1	16E+0	31E-1	<	81E-1	12E+0	18E-1	14E+0	15E-1	13E+0	17E-1	51E-1	10E-1	<	16E+0	13E+1	16E+0
A	4	24E+0	20E-1	44E+0	45E-1	28E+0	60E-1	24E+0	20E-1	42E+0	23E-1	30E+0	27E-1	15E+0	18E-1	<	38E+0	13E+1	16E+0
B	1	18E+0	17E-1	11E+0	29E-1	<	50E-1	18E+0	17E-1	64E-1	13E-1	18E+0	21E-1	30E-1	80E-2	<	15E+0	11E+1	14E+0
B	2	93E-1	14E-1	15E+0	30E-1	20E+0	88E-1	93E-1	14E-1	14E+0	16E-1	90E-1	16E-1	85E-1	13E-1	<	31E+0	17E+1	16E+0
B	3	95E-1	16E-1	14E+0	30E-1	<	80E-1	95E-1	16E-1	12E+0	14E-1	11E+0	19E-1	52E-1	10E-1	<	19E+0	15E+1	16E+0
B	4	10E+0	13E-1	14E+0	34E-1	81E-1	38E-1	10E+0	13E-1	13E+0	15E-1	12E+0	18E-1	46E-1	90E-2	<	17E+0	17E+1	14E+0
D	1	70E+0	33E-1	97E+0	62E-1	10E+1	12E+0	70E+0	33E-1	99E+0	34E-1	76E+0	39E-1	38E+0	27E-1	<	44E+0	42E+0	12E+1
D	2	51E+0	28E-1	69E+0	51E-1	73E+0	15E+0	51E+0	28E-1	81E+0	29E-1	52E+0	29E-1	25E+0	14E-1	<	38E+0	11E+1	14E+0
D	3	68E+0	34E-1	89E+0	56E-1	97E+0	13E+0	68E+0	34E-1	85E+0	34E-1	72E+0	34E-1	34E+0	23E-1	<	64E+0	60E+0	12E+1
D	4	11E+1	41E-1	18E+1	94E-1	12E+1	11E+0	11E+1	41E-1	19E+1	48E-1	13E+1	67E-1	64E+0	32E-1	<	77E+0	12E+1	20E+0
B-1	1	11E+0	15E-1	13E+0	29E-1	11E+0	64E-1	11E+0	15E-1	11E+0	64E-1	11E+0	15E-1	36E-1	10E-1	<	25E+0	14E+1	17E+0
B-1	2	91E-1	15E-1	12E+0	27E-1	<	61E-1	91E-1	15E-1	81E-1	15E-1	91E-1	15E-1	36E-1	10E-1	<	18E+0	14E+1	14E+0
B-1	3	11E+0	14E-1	12E+0	27E-1	16E+0	80E-1	11E+0	14E-1	16E+0	80E-1	11E+0	14E-1	34E-1	90E-2	<	20E+0	15E+1	13E+0
B-1	4	11E+0	13E-1	10E+0	24E-1	65E-1	42E-1	11E+0	13E-1	65E-1	42E-1	11E+0	13E-1	34E-1	80E-2	<	22E+0	14E+1	13E+0
B-2	1	11E+0	15E-1	13E+0	40E-1	11E+0	66E-1	32E+0	24E-1	11E+0	66E-1	32E+0	24E-1	42E-1	12E-1	<	25E+0	15E+1	15E+0
B-2	2	72E-1	14E-1	77E-1	28E-1	80E-1	60E-1	72E-1	14E-1	80E-1	60E-1	72E-1	14E-1	28E-1	80E-2	<	20E+0	13E+1	14E+0
B-2	3	72E-1	14E-1	72E-1	22E-1	89E-1	52E-1	72E-1	14E-1	89E-1	52E-1	72E-1	14E-1	26E-1	80E-2	<	17E+0	13E+1	14E+0
B-2	4	88E-1	14E-1	67E-1	29E-1	55E-1	30E-1	88E-1	14E-1	55E-1	30E-1	88E-1	14E-1	25E-1	70E-2	<	14E+0	15E+1	14E+0
		A. VEHICLE DECON AREA				B. TRUCK STAGING AREA				C. ROAD FROM ROLL OVER TO CELL									

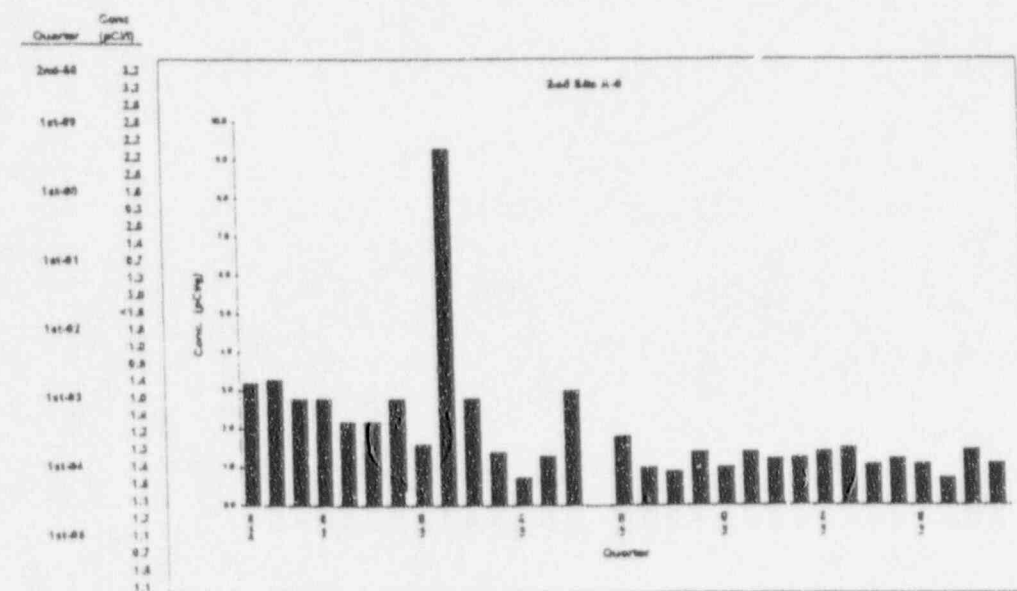
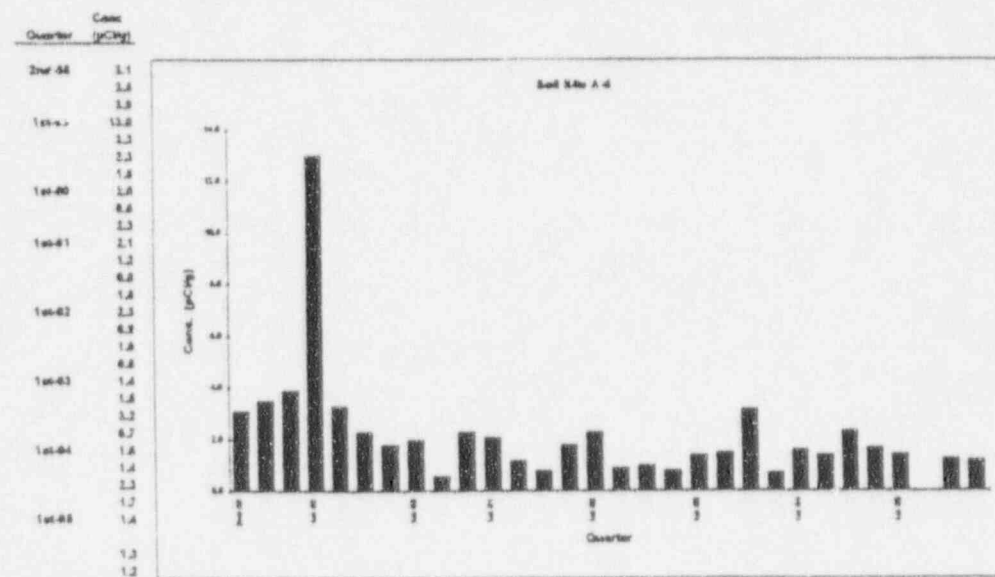
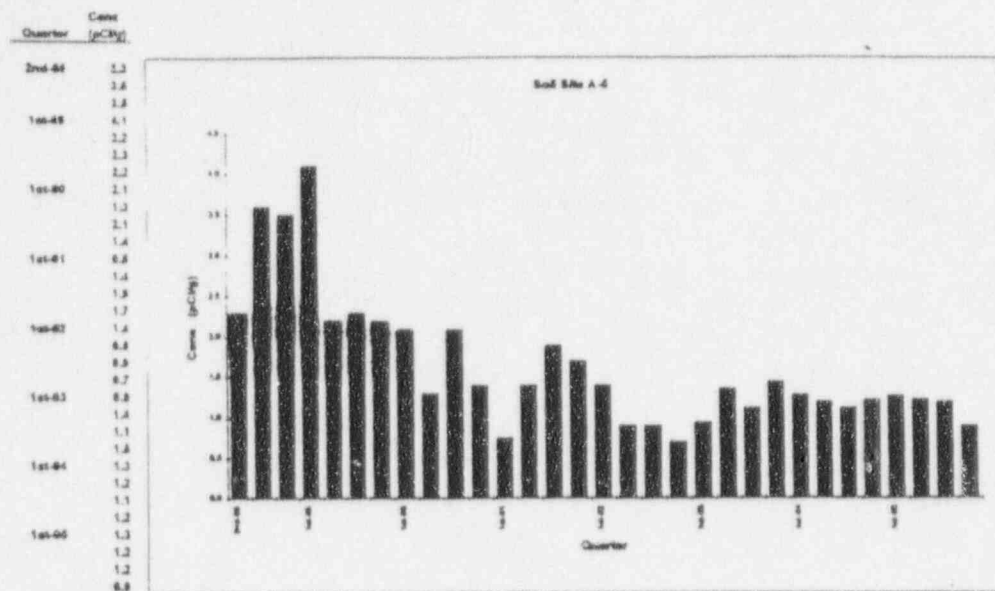
APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL



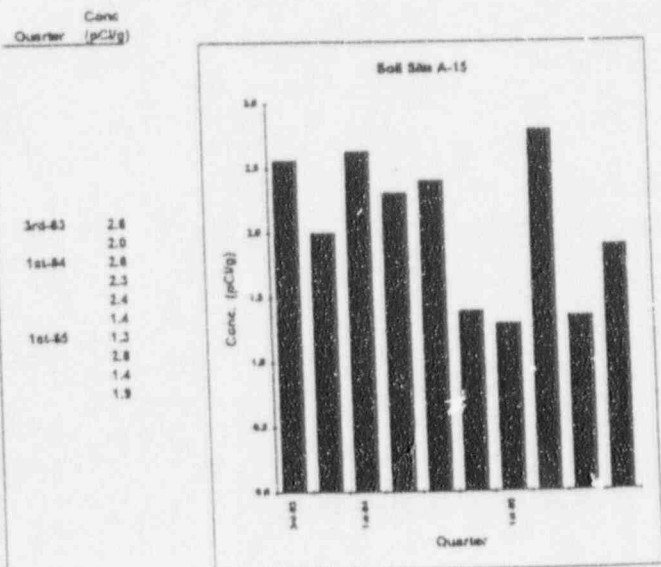
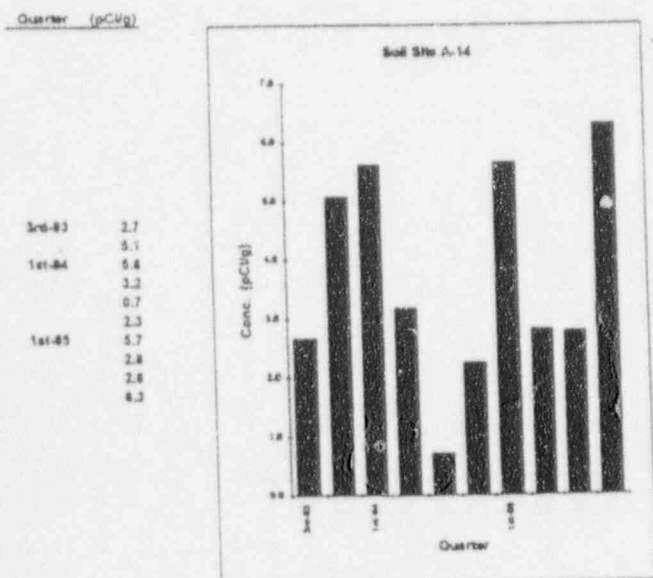
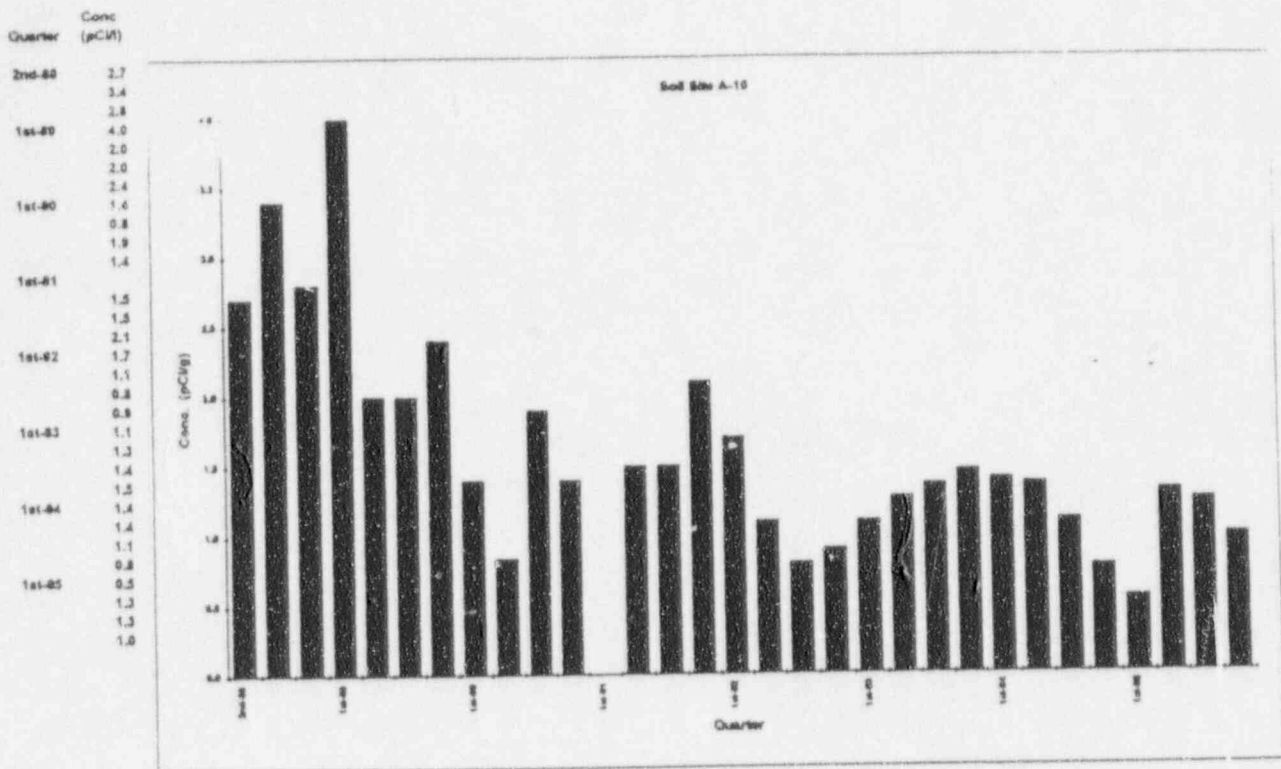
APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL



APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL



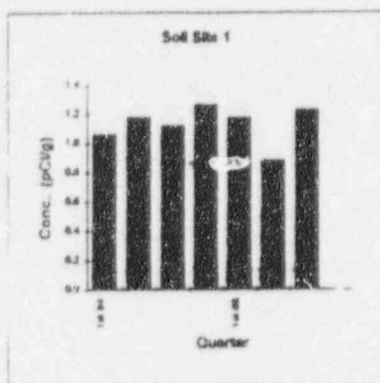
APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL



APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL

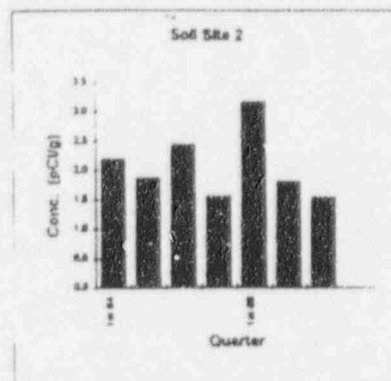
Quarter Conc.
(pCi/g)

1st-84 1.1
1.2
1.1
1.3
1st-85 1.2
0.8
1.2
1.3



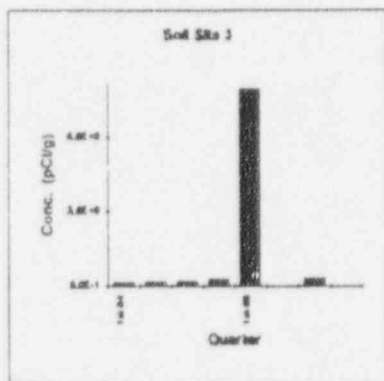
Quarter Conc.
(pCi/g)

1st-84 2.2
1.9
2.4
1.6
1st-85 3.2
1.8
1.6
1.8



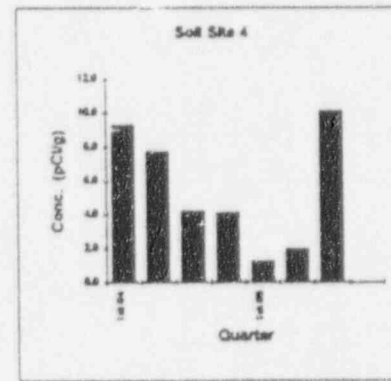
Quarter (pCi/g)

1st-84 1.0
1.0
1.0
1.1
1st-85 8.8
0.8
1.1
1.0



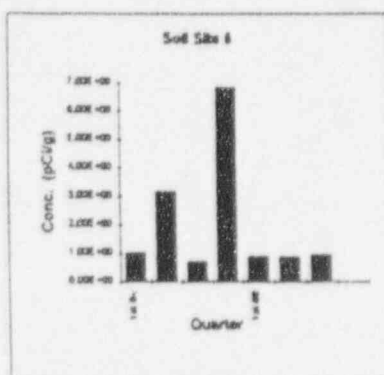
Quarter (pCi/g)

1st-84 9.3
7.8
4.2
4.1
1st-85 1.3
2.0
10.1
3.3

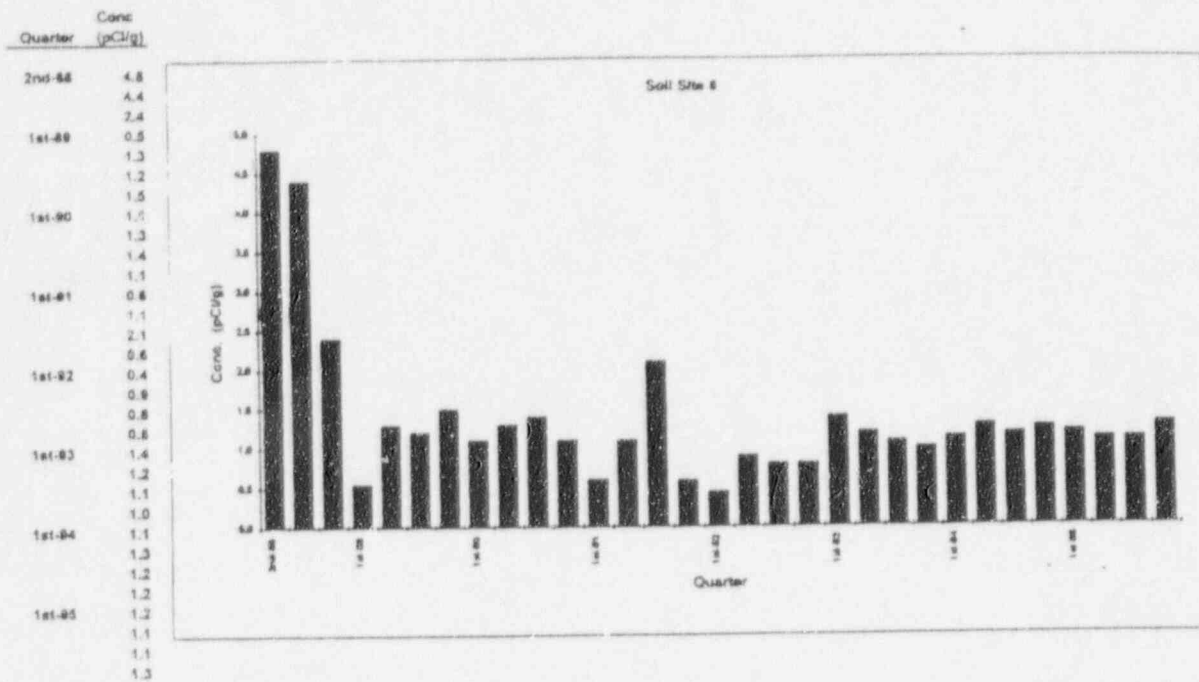


Quarter Conc.
(pCi/g)

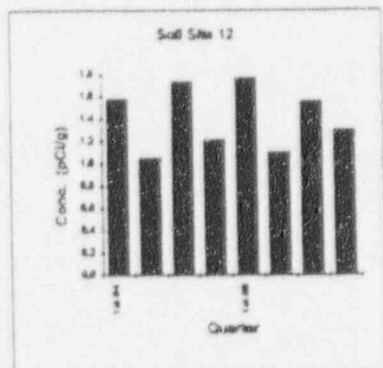
1st-84 1.0
3.2
0.7
6.8
1st-85 0.9
0.9
1.0
0.9



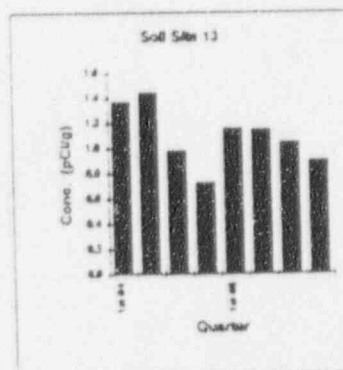
APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL



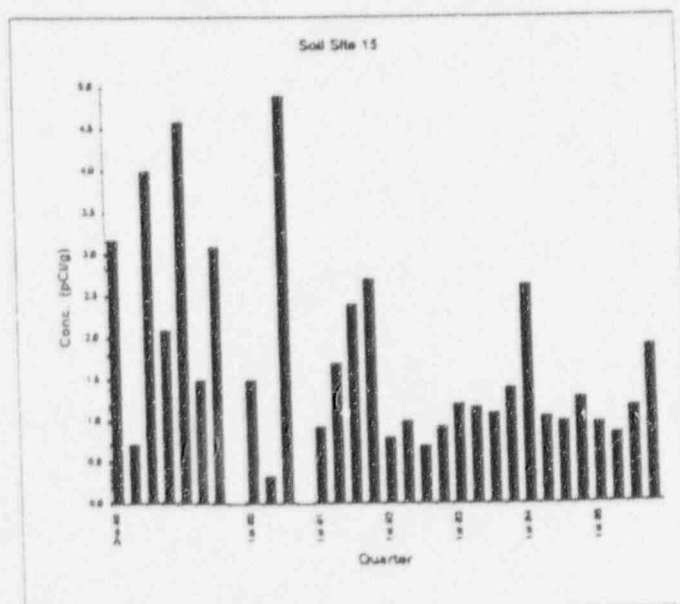
Quarter	Conc. (pCi/g)
1st-84	1.6
	1.1
	1.7
	1.2
1st-85	1.6
	1.1
	1.6
	1.3



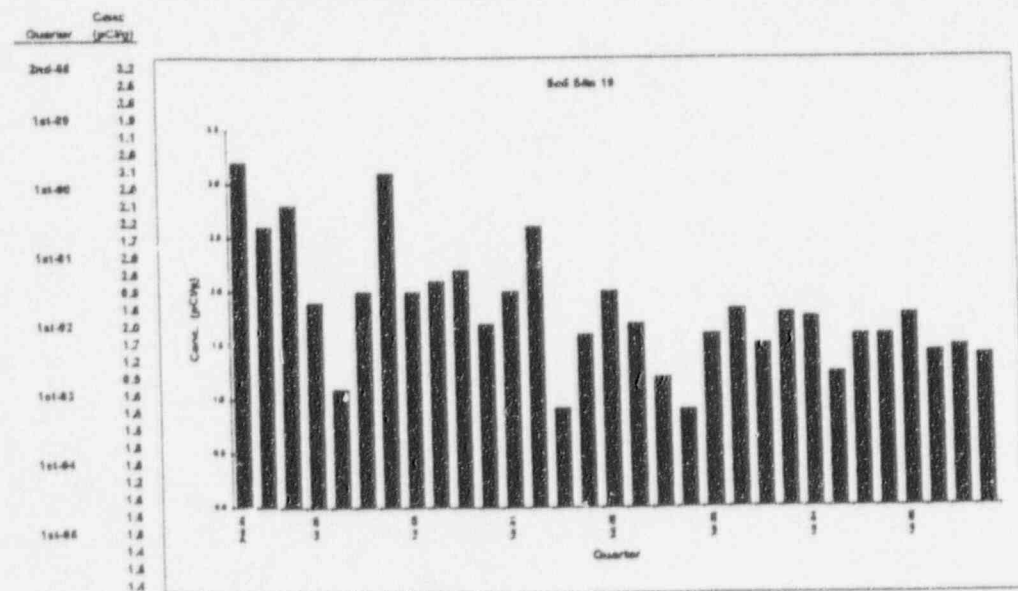
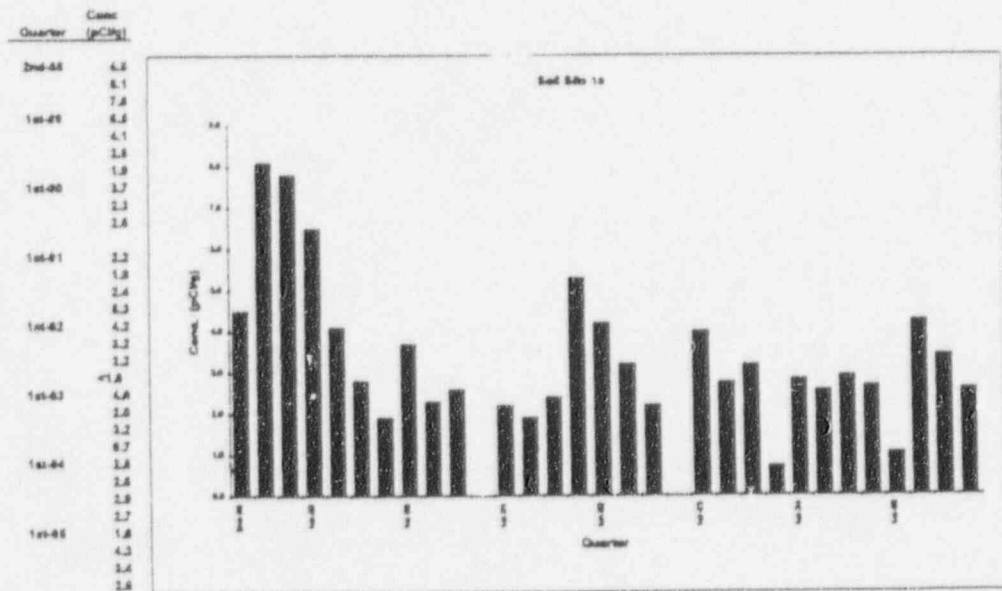
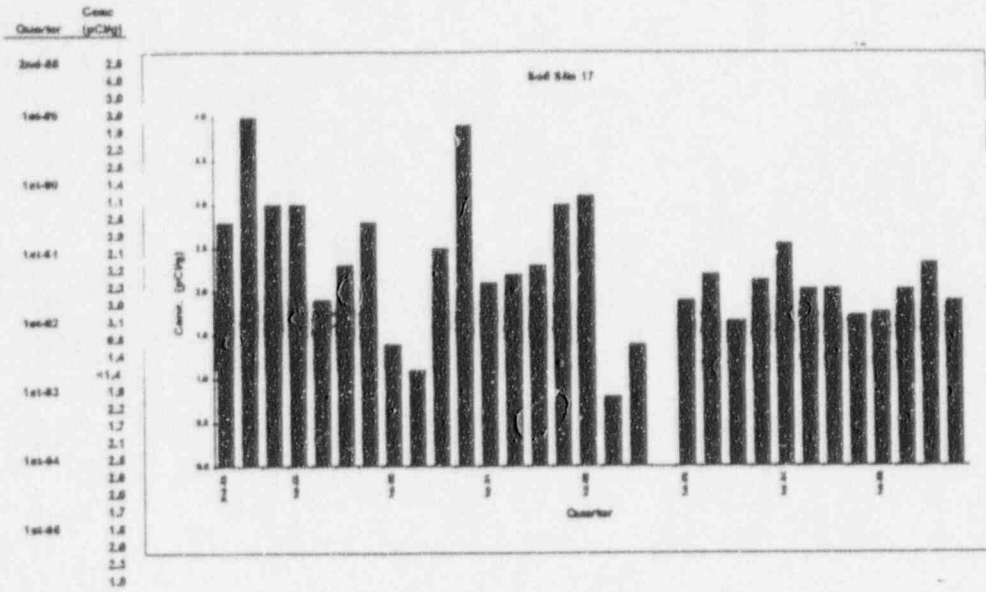
Quarter	Conc. (pCi/g)
1st-84	1.4
	1.4
	1.0
	0.7
1st-85	1.2
	1.1
	1.0
	0.9



Quarter	Conc. (pCi/g)
2nd-88	3.2
	0.7
	4.0
1st-89	2.1
	4.6
	1.5
	3.1
1st-90	1.5
	0.3
	4.9
1st-91	0.9
	1.7
	2.4
	2.7
1st-92	0.6
	1.0
	0.7
	0.9
1st-93	1.2
	1.2
	1.1
	1.4
1st-94	2.6
	1.1
	1.0
	1.1
1st-95	1.0
	0.6
	1.2



APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL

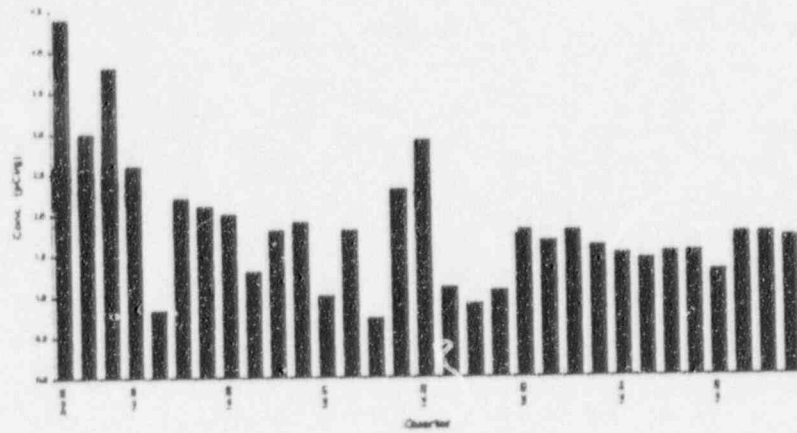


APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL

Conc.
Quarter (pCi/g)

2nd-88 4.4
3.8
3.8
1st-89 3.8
3.2
2.1
1st-90 2.0
1.8
1.8
1st-91 1.8
1.8
6.7
1st-92 2.3
2.8
1.1
1st-93 1.8
1.7
1.8
1st-94 1.8
1.8
1st-95 1.3
1.7
1.7

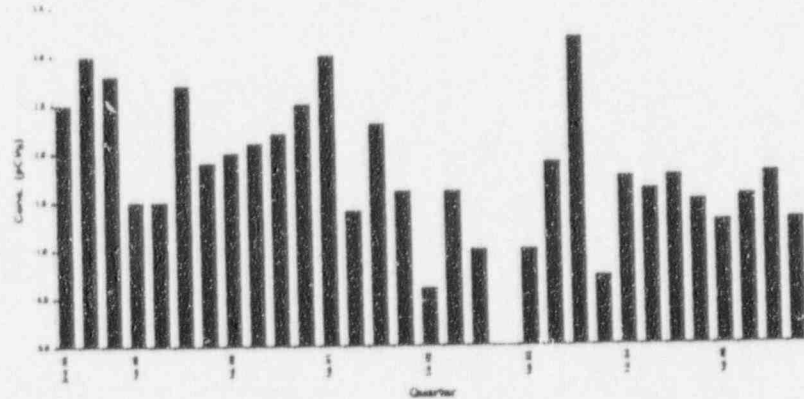
Soil Site 20



Conc.
Quarter (pCi/g)

2nd-88 2.6
2.6
2.6
1st-89 1.8
1.8
2.7
1st-90 2.9
2.1
2.2
1st-91 2.8
1.8
2.5
1st-92 4.8
1.8
40.8
1st-93 1.8
1.8
3.2
1st-94 6.7
1.8
1.8
1st-95 1.3
1.8
1.3

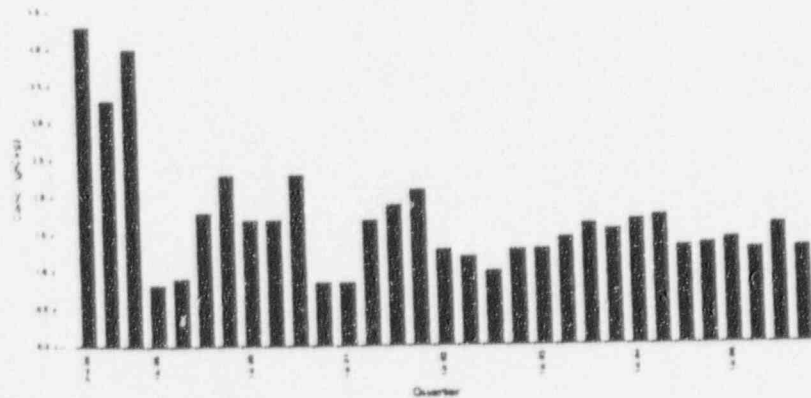
Soil Site 21



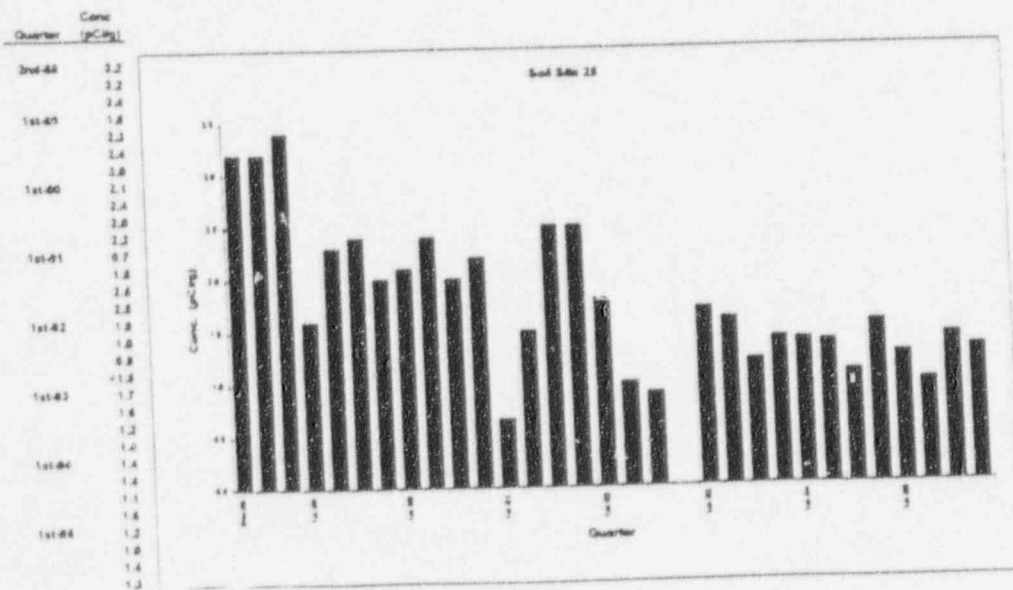
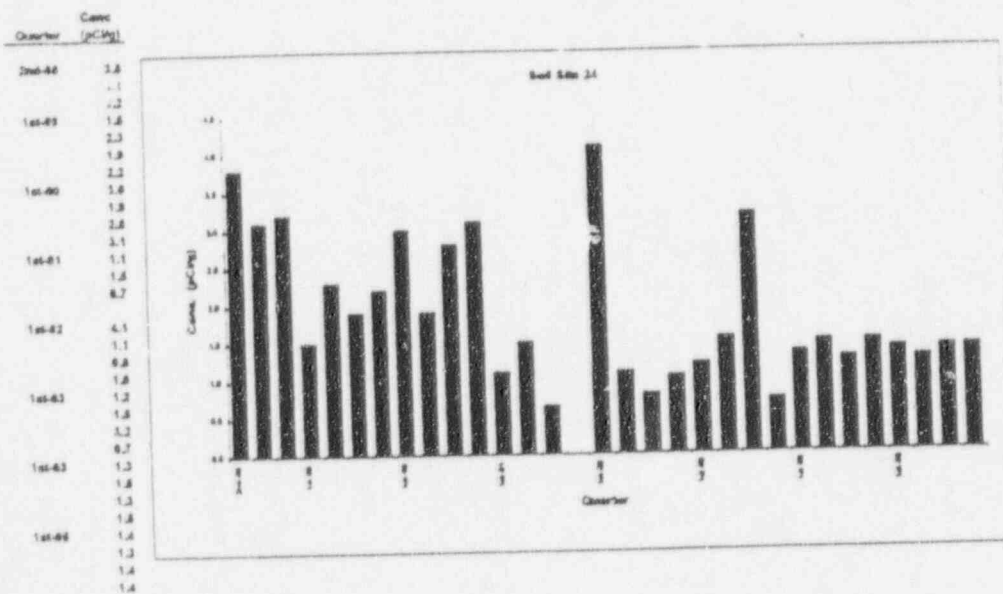
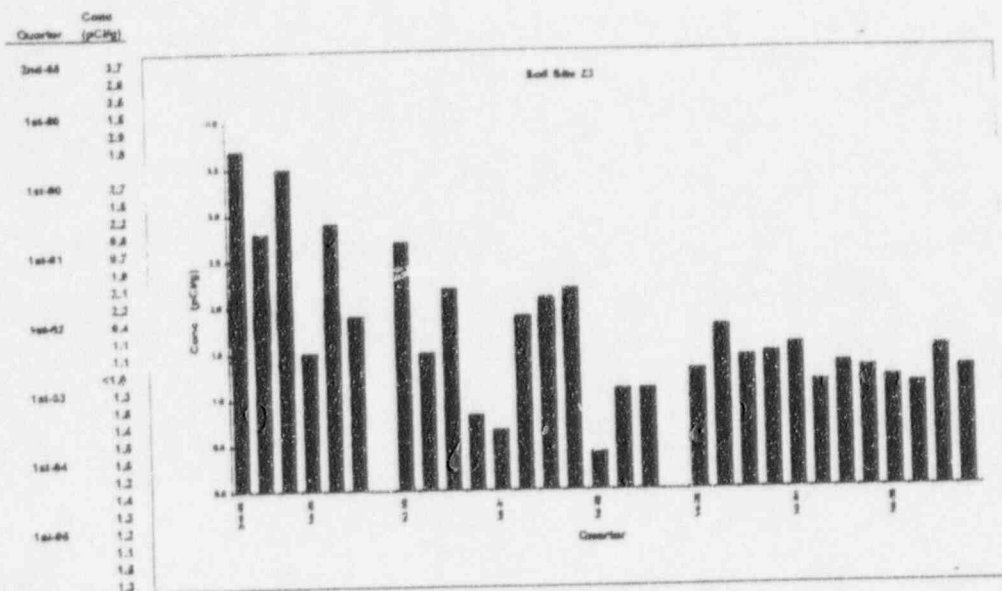
Conc.
Quarter (pCi/g)

2nd-88 4.3
3.2
4.8
1st-89 3.8
3.8
1st-90 1.7
1.7
3.2
1st-91 0.8
1.7
1.8
1st-92 1.2
1.2
1.0
1st-93 1.2
1.8
1.8
1st-94 1.7
1.3
1.8
1st-95 1.4
1.3
1.8

Soil Site 22



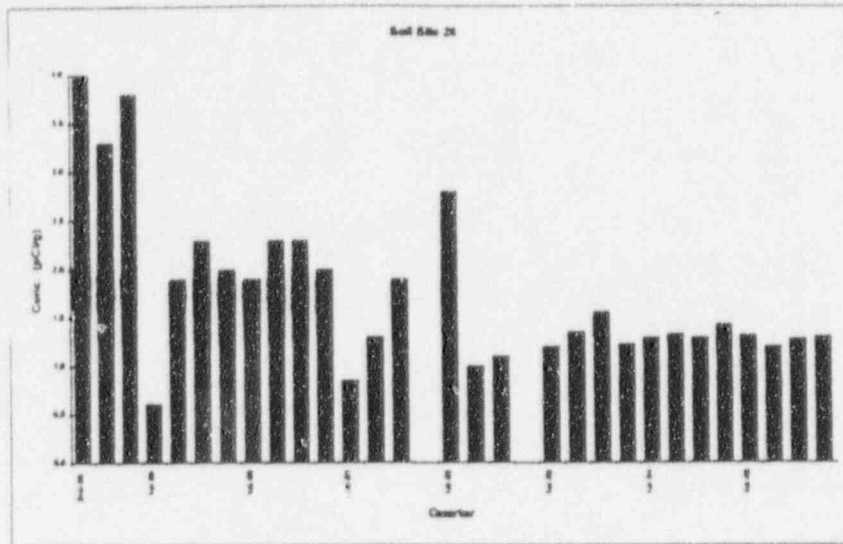
APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL



APPENDIX F
RADON-226 CONCENTRATIONS IN SOIL

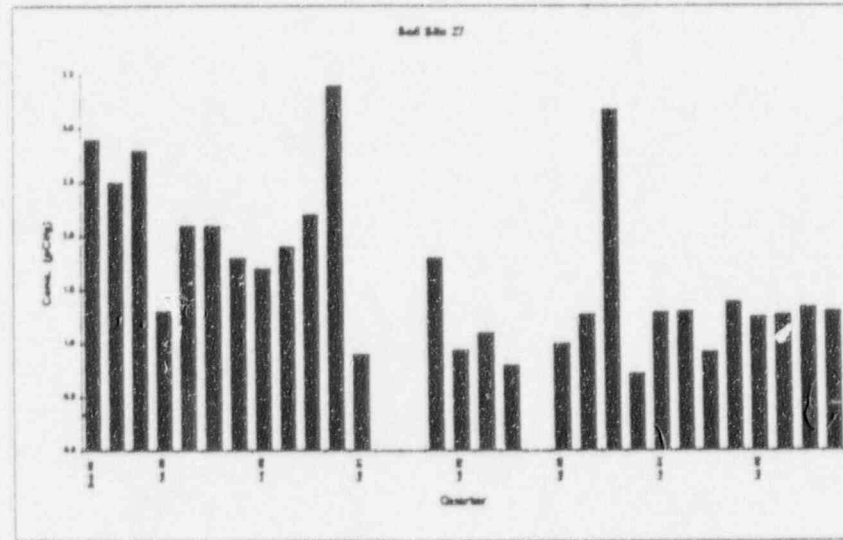
Conc.
Quarter
(pCi/g)

2nd-84 4.8
3.3
3.8
3.4
1st-85 1.8
2.3
2.0
1st-86 1.8
2.3
2.1
1st-87 0.8
1.3
1.8
1st-88 2.5
2.0
1.8
1.1
1st-89 <1.1
1.2
1.4
1st-90 1.2
1.3
1.3
1st-91 1.4
1.3
1.2
1st-92 1.3
1.2
1.3
1st-93 1.3
1.2
1.3
1st-94 1.3
1.2
1.3
1st-95 1.3



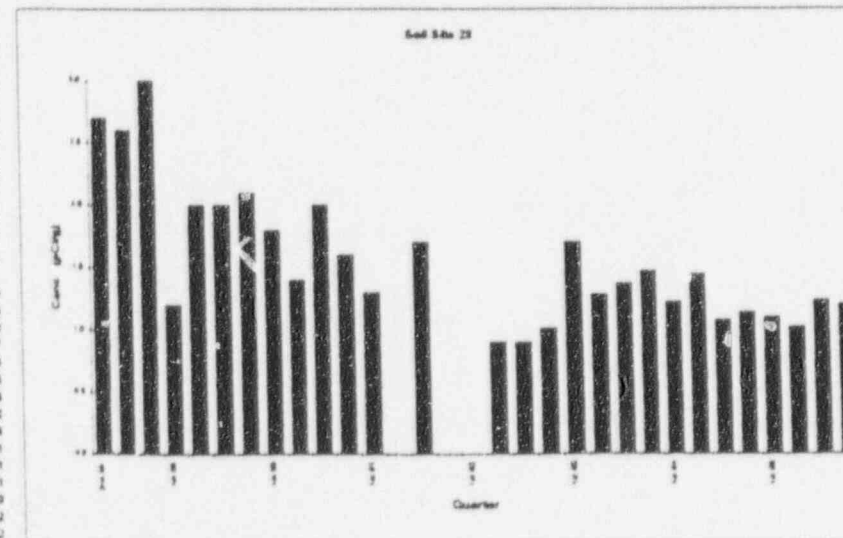
Conc.
Quarter
(pCi/g)

2nd-84 2.9
2.8
2.8
1st-85 1.2
2.1
2.1
1st-86 1.8
2.2
2.2
1st-87 3.4
4.8
4.8
1st-88 1.8
2.5
2.5
1st-89 <1.8
1.4
1.3
1st-90 3.2
4.7
1.3
1st-91 4.8
1.2
1.2
1st-92 1.2
1.2
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1.2
1.2
1st-94 1.2
1.2
1.2
1st-95 1.2

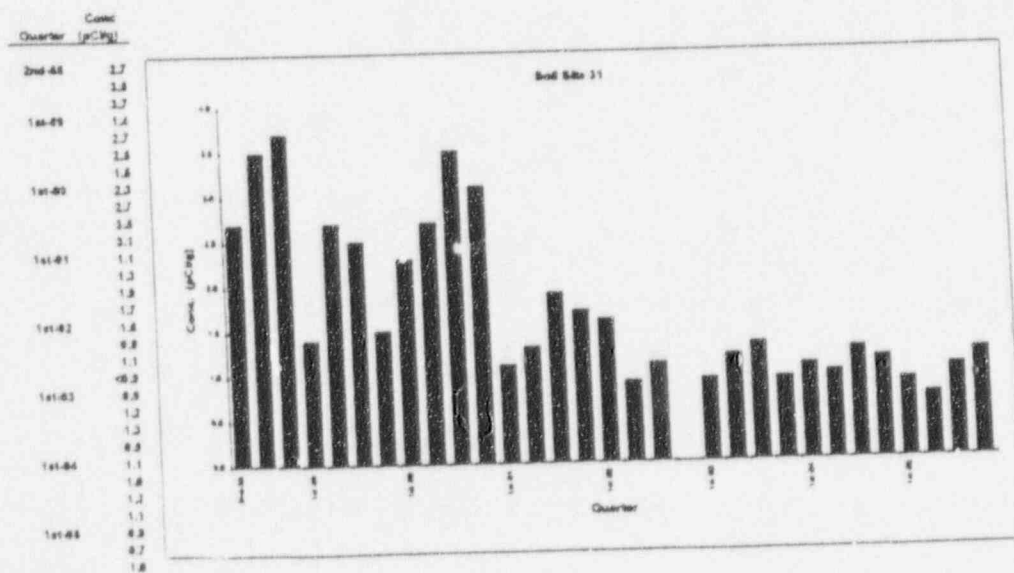
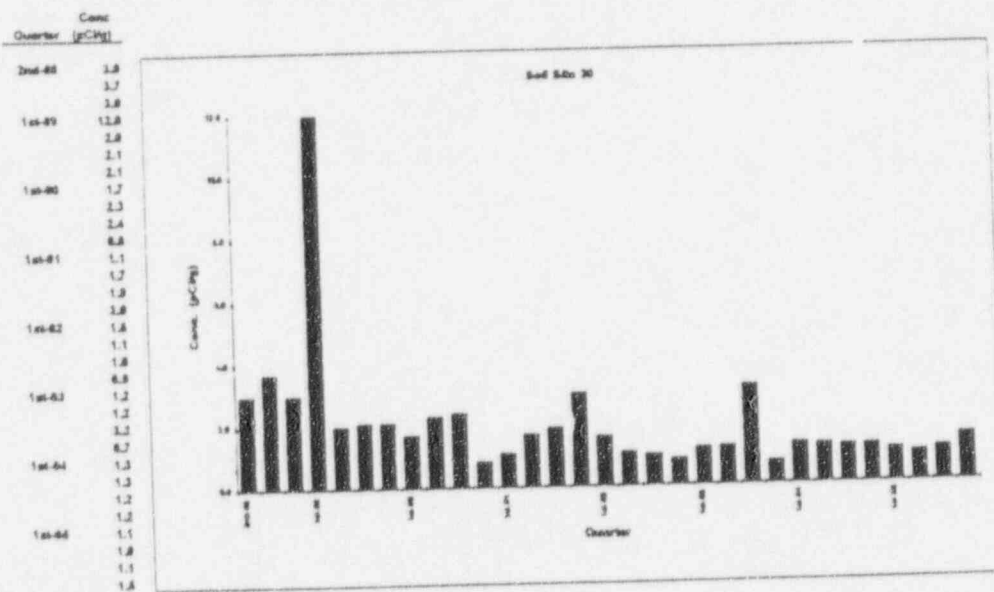
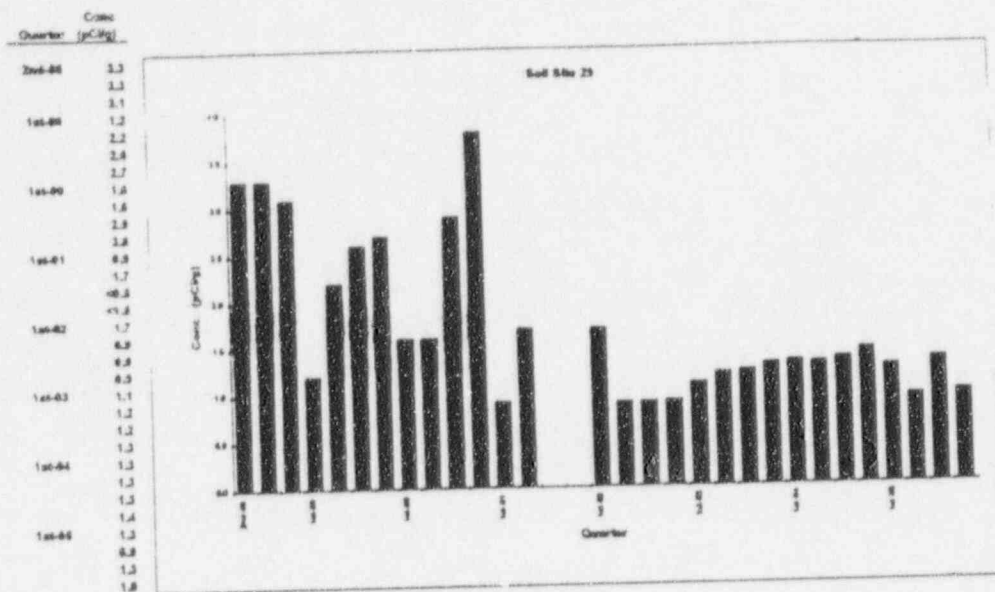


Conc.
Quarter
(pCi/g)

2nd-84 2.7
2.8
2.8
1st-85 1.2
2.0
2.0
1st-86 1.8
1.4
2.0
1st-87 1.8
1.3
1.3
1st-88 <0.1
1.7
1.7
1st-89 <1.8
0.8
0.8
1st-90 1.8
1.7
1.3
1st-91 1.4
1.8
1.2
1st-92 1.1
1.1
1.1
1st-93 1.1
1.0
1.2
1st-94 1.2



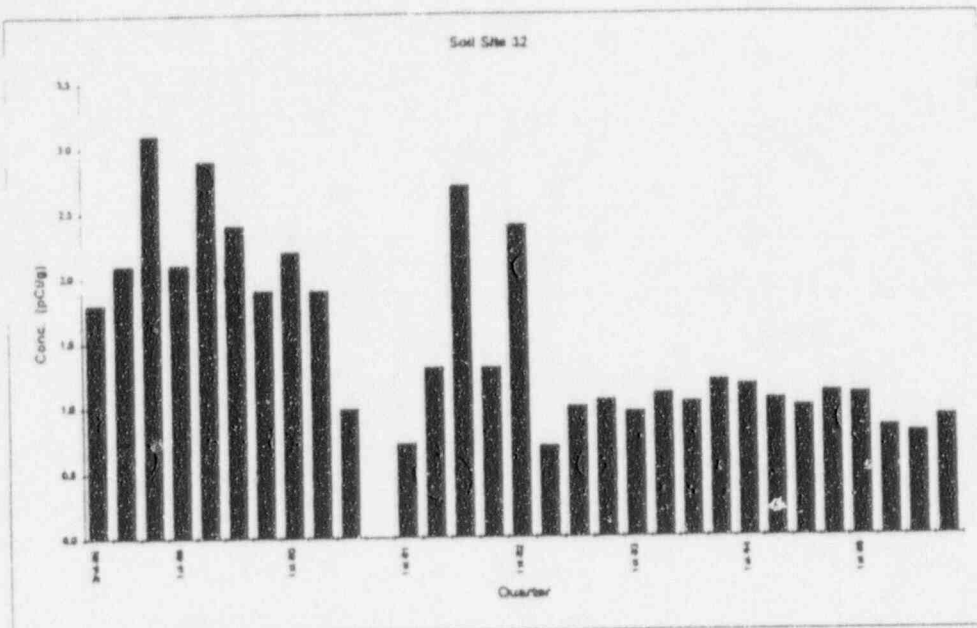
APPENDIX F
RADON-226 CONCENTRATIONS IN SOIL



APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL

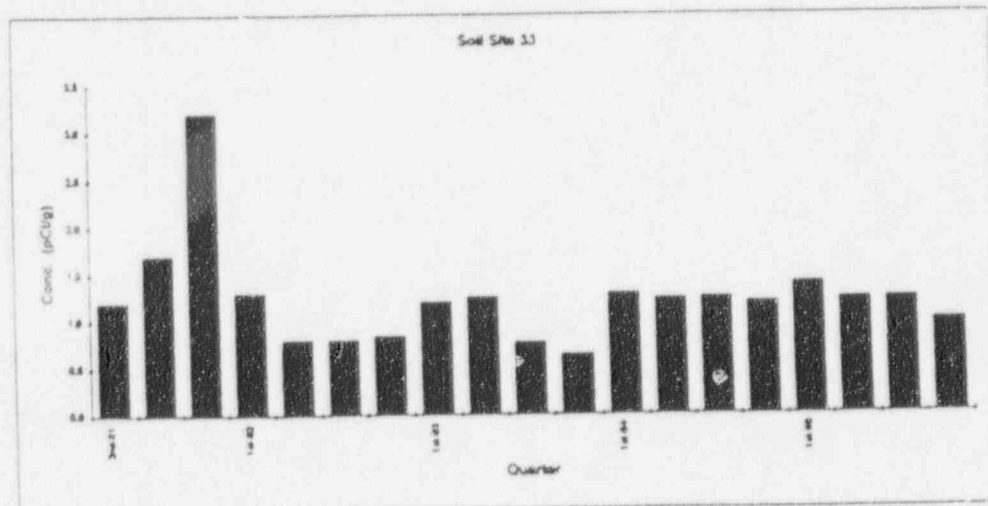
Conc
Quarter (pCi/g)

2nd-88 1.8
2.1
2.1
1st-89 2.1
2.8
2.4
1st-90 1.9
2.2
1.9
1.0
1st-91 0.7
1.3
2.7
1.3
1st-92 2.4
0.7
1.0
1st-93 1.1
1.0
1.1
1.0
1st-94 1.2
1.1
1.0
1.1
1st-95 1.1
0.8
0.9



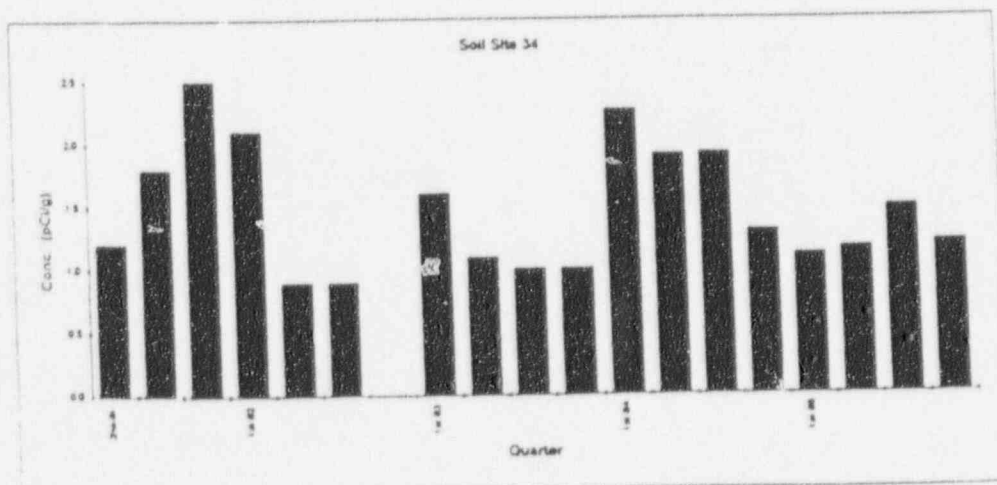
Conc
Quarter (pCi/g)

2nd-91 1.2
1.7
3.2
1st-92 1.3
0.8
0.8
1st-93 1.2
1.3
0.8
0.8
1st-94 1.3
1.2
1.2
1.2
1st-95 1.4
1.2
1.2
1.0



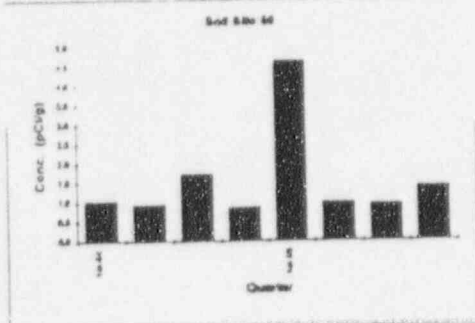
Conc
Quarter (pCi/g)

2nd-91 1.2
1.8
2.5
1st-92 2.1
0.9
0.9
<1.0
1st-93 1.6
1.1
1.0
1.0
1st-94 2.3
1.9
1.9
1.3
1st-95 1.1
1.2
1.5
1.2

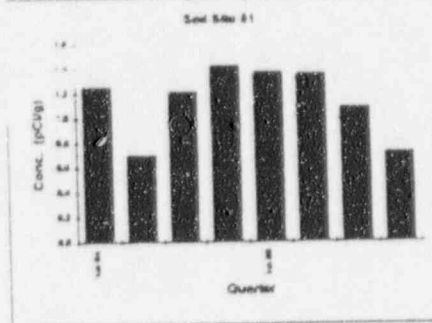


APPENDIX F
RADIUM-226 CONCENTRATIONS IN SOIL

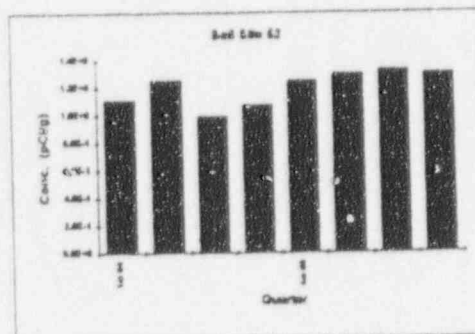
Quarter	Conc. (pCi/g)
1st-84	1.0
	8.8
	1.7
	0.2
1st-85	4.6
	1.0
	0.9
	1.4



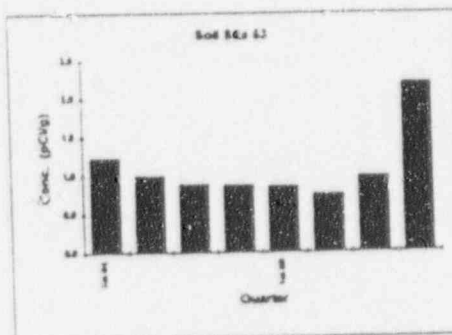
Quarter	Conc. (pCi/g)
1st-84	1.3
	6.7
	1.2
	1.4
1st-85	1.4
	1.4
	1.1
	0.7



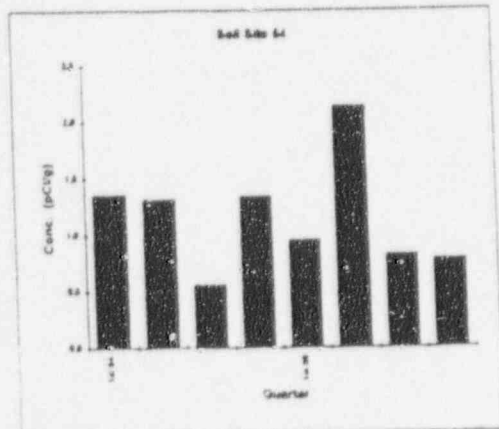
Quarter	Conc. (pCi/g)
1st-84	1.1
	1.3
	1.8
	1.1
1st-85	1.2
	1.2
	1.3
	1.2



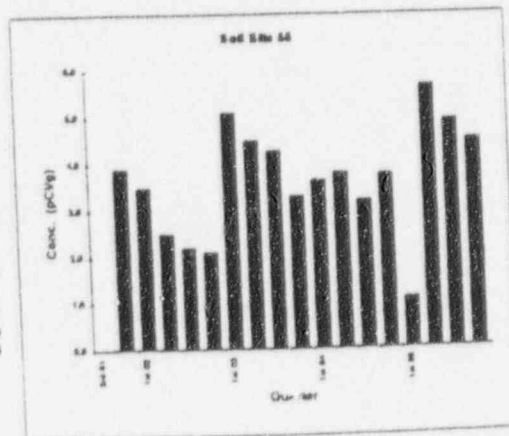
Quarter	Conc. (pCi/g)
1st-84	1.1
	1.8
	0.8
	0.8
1st-85	0.9
	0.7
	1.8
	2.2



Quarter	Conc. (pCi/g)
1st-84	1.4
	1.3
	0.6
	1.3
1st-85	1.0
	2.1
	0.6
	0.6



Quarter	Conc. (pCi/g)
3rd-81	3.9
1st-82	3.8
	2.6
	2.2
1st-83	2.1
	4.8
	4.2
	3.2
1st-84	3.8
	3.2
	3.8
1st-85	1.1
	6.7
	4.8



APPENDIX G
ANNUAL 11e.(2) SAMPLES
(TAKEN AT 300 METER INTERVALS ALONG THE 8 COMPASS DIRECTIONS)
(pCi/g)

DIRECTION	DISTANCE	Total U	Th-230 +/- 2σ	Th-232 +/- 2σ	Pb-210 +/- 2σ	Ac-228 +/- 2σ	Bi-212 +/- 2σ	Ra-226 +/- 2σ	Pb-212 +/- 2σ	Pb-214 +/- 2σ	Tl-208 +/- 2σ
E	0	23	18 09	06 06	26 07	13 03	10 04	14 02	10 01	16 02	04 01
	300					12 03	08 04	11 01	10 01	13 02	04 01
	600	25	1 07	14 08	12 04	12 03	05 03	10 01	09 01	13 02	04 01
	900					12 03	06 04	10 01	10 01	12 02	04 01
	1200					11 03	08 04	11 01	09 01	12 02	03 01
	1500					11 02	06 04	10 01	08 01	12 02	03 01
N	0	18	11 07	05 06	12 04	<03	15 07	13 02	07 02	16 04	05 02
	300					14 03	07 04	11 01	10 01	14 02	04 01
	600					10 02	12 04	11 02	10 02	13 02	04 01
	900					09 03	07 04	13 02	10 01	15 02	04 01
	1200					11 03	07 03	11 01	09 01	13 02	03 01
	1500					12 03	07 04	11 01	10 01	14 02	04 01
NE	0	24	19 09	09 07	29 07	12 03	<05 00	15 02	11 02	18 02	04 01
	300	24	16 08	12 08	24 07	10 03	06 03	09 01	06 01	0 01	03 01
	600					<03	05 04	11 02	10 02	14 02	03 01
	900					11 03	05 04	12 02	09 01	13 02	04 01
	1200					10 03	07 04	10 01	08 01	12 02	03 01
	1500					08 03	06 04	06 01	06 01	07 02	02 01
NW	0					11 03	05 04	11 01	09 01	13 02	03 01
	300					12 03	07 04	10 01	09 01	14 02	< 01
	600					13 04	09 04	11 01	10 01	13 02	04 01
	900					10 03	<04 00	10 01	09 01	13 02	04 01
	1200					10 01	07 01	11 00	09 00	12 01	03 00
	1500					13 03	08 04	11 01	10 01	14 02	04 01
S	0					12 02	08 03	12 02	09 01	15 02	04 01
	300					09 02	06 04	10 01	09 01	13 02	03 01
	600					11 01	06 01	12 00	09 00	13 01	03 00
	900					13 03	06 04	10 01	09 01	13 02	04 01
	1200					12 03	08 04	11 01	10 01	14 02	04 01
	1500					12 03	<05 00	1 01	09 01	13 02	04 01
SE	0					13 03	08 04	12 01	11 01	13 02	04 01
	300					13 03	05 04	12 02	10 01	14 02	04 01
	600					12 02	05 04	10 01	09 01	12 02	04 01
	900					12 02	<05 00	12 01	10 01	14 02	04 01
	1200					14 03	10 05	12 02	09 01	13 02	04 01
	1500					07 02	04 02	07 01	05 01	07 01	< 00
SW	0					11 02	08 04	13 02	10 01	14 02	04 01
	300					<03	06 04	12 01	10 01	13 02	03 01
	600					14 03	12 04	13 02	10 01	13 02	03 01
	900					12 03	08 04	12 02	10 01	14 02	03 01
	1200					12 03	06 04	11 01	11 01	13 02	04 01
	1500					11 03	07 03	11 01	09 01	13 02	03 01
W	0					11 03	07 04	12 02	10 02	14 02	04 01
	300					12 03	08 04	12 02	11 01	14 02	04 01
	600					11 02	09 04	13 01	10 01	13 02	04 01
	900					12 03	06 04	11 02	10 01	13 02	04 01
	1200					12 03	07 03	11 01	10 01	14 02	04 01
	1500					12 03	08 04	12 01	09 01	13 02	04 01

APPENDIX H

GROUND WATER MONITORING RESULTS

ENVIROCARE OF UTAH, INC.

1995

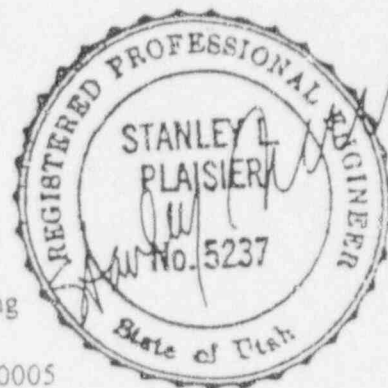
PROJECT MEMORANDUM

TO: George Hellstrom - Envirocare of Utah, Inc.
Loren Morton - Utah Division of Radiation Control

FROM: Stan Plaisier - Bingham Environmental, Inc.
Nathan Rich - Bingham Environmental, Inc.

DATE: January 4, 1996

SUBJECT: Results of 4th Quarter of 1995 Groundwater Sampling
LARW and 11e.(2) Compliance Monitor Wells
Groundwater Quality Discharge Permit No. UGW450005
Envirocare LARW and 11e.(2) Disposal Facility
South Clive, Utah



INTRODUCTION

Provided with this project memorandum are the results of the 4th Quarter of 1995 compliance groundwater and pore water monitoring performed in October 1995 at the Envirocare of Utah, Inc. (Envirocare) LARW and 11e.(2) Disposal Cells located in South Clive, Utah. In addition, we have summarized the groundwater elevations, freshwater equivalent heads, specific gravity data and total anions and cations. We have also provided a review of the sampling activities, a summary of the data validation and compared the results to the revised Ground Water Protection Levels (GWPL).

FIELD ACTIVITIES

Groundwater Sampling

Bingham Environmental, Inc. (Bingham) and Envirocare personnel performed groundwater sampling of the 21 LARW and 11e.(2) monitor wells, identified on Figure 1. Eleven of these wells, identified as I-2-30, GW-16R, GW-20, GW-22, GW-23, GW-24, GW-25, GW-29, GW-56R, GW-63 and GW-64 are designated as compliance monitoring wells for the LARW Disposal Cell. Monitor wells GW-19A, GW-20, GW-24, GW-25, GW-26, GW-27, GW-28, GW-29, GW-36, GW-37, GW-38, GW-57, GW-58, GW-60 and GW-63 are designated as point of compliance wells for the 11e.(2) Disposal Cells. Monitor wells GW-20, GW-24, GW-25, GW-29 and GW-63 serve as compliance wells for both disposal areas. The 4th quarter of 1995 groundwater sampling was performed between October 9 and October 12, 1995. The sampling team consisted of Kent Malmquist from Bingham and Jeff Low from Envirocare.



Based on discussions with the sampling team and review of the field data sheets it appears that the sampling event was performed according to the requirements outlined in the Ground Water Monitoring Quality Assurance (GWMQA) Plan. Sampling activities and measurements were documented on field data sheets and chain of custody forms which are provided in Attachment 1.

Groundwater samples designated for chemical analyses were hand delivered to American West Analytical Laboratories (AWAL) located in Salt Lake City, Utah and groundwater samples collected for radiological analyses were shipped via UPS to Barringer Laboratories, Inc. (Barringer) located in Golden, Colorado.

Water Level Measurements

Groundwater level measurements were obtained during the sampling event prior to sampling each monitor well to determine groundwater flow directions. These measurements have been converted to groundwater elevations and freshwater equivalent heads and are summarized in Table 1. The freshwater equivalent heads have been determined based on the mean specific gravity values provided in Table 2 which are based on specific gravity measurements obtained between December 1991 and May 1993. A freshwater equivalent head potentiometric map has been developed for the shallow, unconfined aquifer and is provided as Figure 1.

The direction of flow and gradient below the LARW Disposal Cell is generally toward the east and northeast. The direction of flow and gradient below the 11e.(2) Disposal Cells is quite variable but appears to radiate from localized mounding in the general area of GW-37 and GW-38. The groundwater elevation in GW-37 decreased 1.36 feet in the three month period between July and October 1995 while overall the water table appeared to drop about 0.5 feet.

Specific Gravity Testing

Specific gravity values were determined from samples obtained during the 4th quarter groundwater sampling event and have been summarized in Table 2. Most of the well samples exhibited very similar specific gravity values when compared to three previous sampling events.

Suction Lysimeter Sampling

Suction lysimeter SL-1 was activated by applying a vacuum of 18 inches of mercury on October 23, 1995. The vacuum was maintained for 26.25 hours at which time approximately 450 ml of water were recovered. Suction lysimeters SL-2 and SL-3 were sampled on October 25, 1995 by applying a vacuum of 17 and 14 inches of mercury respectively. The vacuum was maintained for 22.5 and 3.75 hours on SL-2 and SL-3 respectively. Approximately 350 ml of water were recovered from SL-2 and 300 ml of water were recovered from SL-3.

The water samples were submitted to AWAL for dissolved metal analysis. A summary of the lysimeter and moisture block monitoring activities and laboratory results are provided in Table 6 and the field notes and laboratory data sheets are provided in Attachment 1 and 2, respectively.

Field QA/QC Samples

Trip Blanks - Envirocare used trip blanks throughout the sampling event to monitor the potential for cross contamination during sampling, storage and shipment of the samples. The trip blanks were analyzed for volatile and semi-volatile organic compounds and carbon-14.

Field Duplicates - Envirocare collected one field duplicate sample for the October 1995 sampling event. The field duplicate sample was arbitrarily obtained from MW-63, a monitor well which produces adequate volumes of water. The duplicate sample and identification has been summarized in Table 3.

DATA VALIDATION

The analytical data generated during the 4th quarter of 1995 compliance sampling event has been reviewed and evaluated for quality, accuracy and precision according to EPA data validation general guidelines and requirements set forth in the GWMQA Plan. In general, the data passes the QC review and can be used as reliable data. Some of the data has been flagged with qualifiers which typically designate the value as an estimate or rejects the data. The following qualifiers have been used in this review:

- | | | |
|-----|---|---|
| JFD | - | The reported value is qualified because the associated field duplicate sample analysis control limits were exceeded. |
| UJ | - | The parameter was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise. |
| J | - | The associated value is an estimated quantity. |

The 4th quarter of 1995 laboratory analysis reports are provided in Attachment 2. The inorganic and radiologic results have been summarized on Table 5. Laboratory Quality Assurance/Quality Control documentation is provided in Attachment 3.

Chemical Analyses - Inorganic

Methods and Detection Limits - All chemical results met the detection limit requirements of the GWMQA Plan. All methods used in the chemical analyses of the 4th quarter of 1995 sampling events are EPA approved methods.

Holding Times - All applicable holding times for the chemical analyses were met. Holding time information has been summarized in Table 4.

Initial and Continuing Calibration - Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

All initial and continuing calibration criteria were met for the chemical analyses.

Laboratory Blanks - The assessment of blank analysis results is to determine the existence and magnitude of contamination problems.

No contaminants were detected in the laboratory blanks for chemical analyses.

ICP Interference Check Sample - The ICP Interference Check Sample (ICS) verifies the laboratory's inter-element and background correction factors.

All applicable ICS criteria were met for the chemical analyses.

Field Duplicates - Field duplicate analysis can provide the means to monitor the performance of the laboratory's precision. Precision is a measure of the reproducibility of the data. For inorganic and organic parameters precision is calculated as relative percent difference (RPD) as follows:

$$RPD = \frac{(S-D)}{(S+D)/2} \times 100$$

Where:

S	=	Sample Result
D	=	Duplicate Result

The acceptance criteria is defined as using a control limit of +/- 20% for the RPD for sample values > 5 times the laboratory detection limit (LDL). If the sample values are less than 5 times the LDL a control limit of +/- the LDL shall be used.

If field duplicate analysis results for a particular analyte fall outside the control windows of +/- 20% or +/- LDL, whichever is appropriate, the results for that analyte in all other samples associated with that laboratory set should be flagged as estimated.

It should be noted that field QA/QC samples should not be the basis of accepting or rejecting data, but rather as additional evidence in support of the conclusions arrived at by a review of the total data package. Actions taken as a result of duplicate sample analysis must be weighed carefully since it may be difficult to determine if poor precision is a result of sample non-homogeneity, method defects or laboratory technique. In general, the results of duplicate analysis should be used to support conclusions drawn about the quality of the data rather than as a basis for these conclusions.

All field duplicate results were within acceptable limits with the exception of arsenic in duplicate sample comparison GW-63/GW-70, Laboratory Set # 23999 (AWAL). The associated results have been flagged "JFD" as estimated.

Matrix Spike Sample Analysis - The matrix spiked sample analysis is to provide information about the effect of the sample matrix on the digestion and measurement methodology.

All laboratory matrix spike recovery results were within acceptable limits with the exception of lead in laboratory sets 23989, 23999, 24011, 24019, 24111, and 24124 and selenium in laboratory sets 24111 and 24124. All associated results have been flagged UJ or J accordingly.

ICP Serial Dilution - The serial dilution determines whether significant physical or chemical interferences exist due to sample matrix.

Analyte concentrations were not high enough (> 50 time IDL) to apply ICP serial dilution criteria.

Ion Balance - The ion balance for all inorganic laboratory results were within $\pm 10\%$. A summary of total anions and cations for each sample is provided in Table 7.

Chemical Analysis - Organic

Review of the organic laboratory results indicates that none of the constituents were observed to be above the laboratory detection limits.

Methods and Detection Limits - All organic results met the detection limit requirements of the GWMQA Plan. All methods used in the organic analyses of the 4th quarter of 1995 sampling event are EPA approved methods.

Holding Times - All applicable holding times for the semi-volatile and volatile organic analyses were met.

Laboratory QA/QC - All GC/MS instrument performance check, initial calibration, and continuing calibration QC criteria were met. All System Monitoring Compounds (Surrogate Spikes) recoveries were within acceptable control limits.

Matrix Spike Sample Analysis - Laboratory matrix spike and duplicate matrix spike recovery results were within acceptable limits with the exception of 2,4-Dinitrotoluene in laboratory sets 23989, 23999, 24011, and 24019 which exhibited slightly high recoveries. No qualification of the data is necessary as the target compound was not detected in the samples.

Laboratory Blanks - The assessment of blank analysis results is to determine the existence and magnitude of contamination problems.

Action regarding unsuitable blank results depends on the circumstances and origin of the blank. Positive sample results should be reported unless the concentration of the compound in the sample is less than or equal to 10 times (10x) the amount in any blank for the common volatile laboratory contaminants, or 5 times (5x) the amount for other volatile target compounds. When this criteria is satisfied it is typical to elevate the sample quantitation limit to the concentration found in the sample.

No contaminants were detected in the Method Blanks or Laboratory Blanks.

Trip Blanks - No contaminants were detected in the trip blank.

Field Duplicates - All field duplicate results met the acceptance criteria.

Radiological Analyses

Methods and Detection Limits - All of the detection limits achieved in the analyses were at or below the required detection limit outlined in the current approved GWMQA Plan.

Holding Times - All applicable holding times for the radiological analyses were met. Holding time information has been provided in Table 4.

Trip Blanks - The trip blank results are within acceptable limits.

Field Duplicates - For radiochemistry parameters, precision is measured by the replicate error ratio (RER) which is calculated as follows:

$$RER = \frac{(S-D)}{(2\sigma_S + 2\sigma_D)}$$

Where:

S	=	Sample Value
D	=	Duplicate Value
$2\sigma_S$	=	Sample Error at 95% Confidence Interval
$2\sigma_D$	=	Duplicate Error at 95% Confidence Interval

All RER values ≤ 1.0 which are within acceptable limits. If the RER for a particular nuclide is calculated to be greater than 1.0, the results for that nuclide in all other samples associated with that laboratory set should be flagged as estimated.

All field duplicate results were found to be within the acceptable limits.

GROUNDWATER PROTECTION LEVELS

The Division of Water Quality (DWQ) established groundwater protection levels (GWPL) and non-compliance status criteria for the LARW and 11e.(2) compliance monitor wells in a modified Groundwater Quality Discharge Permit (Permit) which was adopted November 1, 1994. The 4th quarter of 1995 groundwater sampling results have been compared to these GWPL for regulatory

compliance status. In addition, adopted NRC background concentrations for 11e.(2) compliance monitor wells that are regulated by the NRC for radiologic constituents were also compared to the analytical results. Wells which are regulated by the DWQ and the NRC indicate both GWPL and NRC Background levels.

Division of Water Quality GWPL

Molybdenum - Review of the 4th quarter of 1995 groundwater sampling data indicates that molybdenum exceeded the GWPL in sixteen monitor wells. Compliance determinations, however, are to be established for molybdenum by utilizing trend analysis (or other methods) specified in Part I.G.1(c) of the Permit. The basis for this approach, as outlined in Part I.I.11 of the Permit, is to allow Envirocare a one year period, after issuance of the modified Permit, to obtain additional background groundwater quality data for molybdenum, which is free from potential bias due to corrosion and leaching of stainless steel pumps. The stainless steel pumps were replaced with inert PVC pumps in May 1994. All groundwater quality data obtained for molybdenum previous to May 1994 was considered biased by the DRC and therefore was not used to determine background conditions or to establish GWPL. After review of the this new data, submitted in November, 1995, the Executive Secretary may re-open the Permit to modify GWPL for molybdenum.

TDS - The TDS concentration in GW-38 exceeded the GWPL during the 4th quarter of 1995 groundwater sampling event. The TDS concentration in GW-38 has now exceeded the GWPL for four consecutive sampling events. TDS in GW-38 remains in out-of-compliance status as defined under Part I.G.1(b) of the Permit. As stated before there is evidence that the increased levels of TDS in GW-38 may be associated with fluctuations in groundwater levels or mounding in the general area of GW-37 and GW-38 which apparently affects the TDS concentrations. This was illustrated in Figure 2 of the October 31, 1994 submittal of the 3rd quarter of 1994 groundwater sampling event, where TDS concentrations versus groundwater elevations were plotted between June 1992 and July 1994. Envirocare has received approval from the NRC to abandon, and remove as points of compliance, monitoring wells GW-36, GW-37, and GW-38. Envirocare currently has a petition pending with the Division of Radiation Control (DRC) for the abandonment of GW-36, GW-37, and GW-38.

Summarized in the following table are LARW monitor wells which have constituents exceeding the revised GWPL.

EXCEEDANCE OF REVISED GWPL FOR LARW MONITOR WELLS

CONSTITUENTS	WELLS IN EXCEEDANCE OF REVISED GWPL
Molybdenum	GW-19A,20,23,24,25,26,27,28,29,36,37,38,57,58,60,63
TDS	GW-38

NRC Background Concentrations

NRC background concentrations were exceeded in two 11e.(2) monitor wells. The uranium concentration in monitor well GW-58 of 0.0361 milligrams per liter slightly exceeded the NRC background concentration of 0.036 milligrams per liter. The thorium 230 concentration in monitor well GW-60 of 0.4+/-0.6 picocuries per liter may have exceeded the NRC background concentration of 0.0 picocuries per liter. Monitor wells GW-58 and GW-60 were resampled as required by the NRC.

LYSIMETER RESULTS

Review of the laboratory results of the pore water obtained from the three suction lysimeters indicate the detection of arsenic, barium molybdenum, nickel, and zinc. All concentrations of these constituents are similar or below concentrations detected in the groundwater.

CONCLUSIONS AND RECOMMENDATIONS

The field and laboratory data meets the requirements of the GWMQA Plan and all results above laboratory detection limits which have not been rejected are acceptable in determining groundwater quality of the shallow, unconfined aquifer.

The direction of groundwater flow in the area of the LARW Disposal Cell appears to be generally toward the east and northeast. The direction of groundwater flow in the area of the 11e.(2) Disposal Cells appears to radiate from localized mounding in the general area of GW-37.

It is our conclusion that wells with molybdenum concentrations in exceedance of the revised GWPL are due to the fact that molybdenum naturally occurs in the groundwater underneath the Envirocare site above the GWPL established by the DWQ. The GWPL should therefore be modified based on one year of additional background groundwater quality data submitted with the memorandum covering 4th quarter of 1995 LARW/11e.(2) sampling.

The exceedance of the GWPL for TDS in GW-38 is probably due to fluctuations in groundwater levels or mounding in the general area of GW-37 and GW-38. The GWPL was probably based on TDS concentrations which were much lower during the accelerated sampling period than during the present compliance monitoring.

Monitor wells GW-58 and GW-60 were resampled as required by the NRC as both had constituents exceeding background levels.

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Figure 1	Freshwater Equivalent Head Potentiometric Map (October 1995)
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LIST OF ATTACHMENTS

Attachment 1	Field Sampling Documentation
Attachment 2	Groundwater Quality Analyses
Attachment 3	Quality Assurance/Quality Control Documentation

TABLE 1

FRESHWATER EQUIVALENT HEADS
SOUTH CLIVE SITE
ENVIROCORE OF UTAH

WELL ID #	Grdwtr Surface Elevation (feet)	Freshwater Equivalent Elevation (feet)	Grdwtr Surface Elevation (feet)	Freshwater Equivalent Elevation (feet)	Grdwtr Surface Elevation (feet)	Freshwater Equivalent Elevation (feet)	Grdwtr Surface Elevation (feet)	Freshwater Equivalent Elevation (feet)
	January (23-27) 1995		April (3-6) 1995		July (17-21) 1995		October (9-12) 1995	
GW-16R	4249.09	4249.18	4249.23	4249.32	4249.30	4249.39	4249.16	4249.25
GW-19A	4249.79	4249.93	4249.62	4249.76	4249.65	4249.79	4249.70	4249.84
GW-20	4250.5	4250.62	4250.83	4250.96	4251.51	4251.66	4251.36	4251.51
GW-22	4249.35	4249.44	4249.64	4249.73	4249.71	4249.81	4249.50	4249.59
GW-23	4249.88	4249.89	4250.23	4250.25	4250.31	4250.33	4250.09	4250.10
GW-24	4250.54	4250.60	4251.13	4251.21	4251.29	4251.37	4250.81	4250.87
GW-25	4250.12	4250.26	4250.20	4250.34	4250.52	4250.67	4250.59	4250.75
GW-26	4249.33	4249.35	4249.34	4249.36	4249.40	4249.42	4249.44	4249.47
GW-27	4248.99	4249.08	4248.91	4249.00	4248.94	4249.03	4249.00	4249.09
GW-28	4249.69	4249.82	4249.56	4249.69	4249.80	4249.94	4249.89	4250.03
GW-29	4250.44	4250.49	4250.55	4250.60	4250.86	4250.92	4251.04	4251.11
GW-36	4251.24	4251.40	4251.41	4251.58	4252.23	4252.42	4252.19	4252.38
GW-37	4252.42	4252.66	4253.27	4253.53	4253.69	4256.03	4254.33	4254.63
GW-38	4251.84	4251.97	4254.52	4254.73	4254.45	4254.66	4253.21	4253.38
GW-56R	4249.18	4249.28	4249.32	4249.42	4249.44	4249.54	4249.31	4249.41
GW-57	4249.47	4249.59	4249.20	4249.31	4249.35	4249.46	4249.48	4249.60
GW-58	4250.01	4250.16	4250.01	4250.16	4250.12	4250.28	4250.27	4250.43
DH-59	NA	NA	NA	NA	NA	NA	NA	NA
GW-60	4250.49	4250.53	4250.58	4250.63	4251.00	4251.06	4251.26	4251.33
DH-62	NA	NA	NA	NA	NA	NA	NA	NA
GW-63	4250.82	4250.95	4250.88	4251.02	4251.22	4251.37	4251.50	4251.65
GW-64	4249.48	4249.51	4249.58	4249.62	4249.73	4249.77	4249.68	4249.72
I-2-30	4249.35	4249.42	4249.47	4249.54	4249.61	4249.68	4249.50	4249.57

12/19/95

TABLE 2

SUMMARY OF SPECIFIC GRAVITY DATA
LARW AND 11e.(2) QUARTERLY GROUNDWATER SAMPLING

Well ID#	Average Specific Gravity (Dec. '91 - May '93)	1st Quarter Sampling Event Jan. (23-27) 1995	2nd Quarter Sampling Event Apr. (3-6) 1995	3rd Quarter Sampling Event July (17-21) 1995	4th Quarter Sampling Event Oct. (9-13) 1995
GW-16R	1.0292	1.0302	1.0300	1.0280	1.0301
GW-19A	1.0353	1.0382	1.0370	1.0360	1.0380
GW-20	1.0337	1.0337	1.0330	1.0330	1.0321
GW-22	1.0306	1.0322	1.0310	1.0300	1.0311
GW-23	1.0304	1.0322	1.0310	1.0310	1.0313
GW-24	1.0338	1.0347	1.0330	1.0310	1.0330
GW-25	1.0338	1.0362	1.0353	1.0360	1.0351
GW-26	1.0341	1.0352	1.0343	1.0340	1.0339
GW-27	1.0302	1.0332	1.0322	1.0310	1.0330
GW-28	1.0314	1.0322	1.0320	1.0310	1.0313
GW-29	1.0346	1.0352	1.0340	1.0340	1.0340
GW-36	1.0299	1.0292	1.0283	1.0280	1.0281
GW-37	1.0330	1.0337	1.0330	1.0310	1.0339
GW-38	1.0273	1.0347	1.0300	1.0300	1.0330
GW-56R	1.0287	1.0312	1.0310	1.0290	1.0307
GW-57	1.0306	1.0312	1.0310	1.0210	1.0300
GW-58	1.0285	1.0292	1.0280	1.0270	1.0280
GW-60	1.0299	1.0297	1.0290	1.0270	1.0280
GW-63	1.0266	1.0282	1.0280	1.0270	1.0268
GW-64	NA	1.0247	1.0240	1.0220	1.0238
1-2-30	1.0236	1.0247	1.0240	1.0220	1.0235

10/20/95

TABLE 4

HOLDING TIMES
LARW AND 11e.(2) QUARTERLY SAMPLING
OCTOBER 1995

LAB SET NUMBER	WELLS INCLUDED	DATE SAMPLED	DATE RECEIVED	TYPE OF ANALYSIS	HOLDING TIME	DATE ANALYZED	NO. OF DAYS ELAPSED
23989	GV-25,26,27 57,58	10/09/95	10/10/95	Metals	6 months	10/19-10/20	10-11
				TOX,TOC	28 days	10/17, 10/20	8, 11
				TDS	7 days	10/13	4
				Others	14 days	10/17-10/23	8-14
				Others	28 days	10/16-10/19	7-10
				VOC	14 days	10/17-10/18	8-9
				Semi-VOC	7,40 days	10/16, 10/23	7, 14
953591			10/17/95	Radiologics	6 months	10/25-11/17	16-39
23999	GW-60,63,70,19 24,38,37	10/10/95	10/11/95	Metals	6 months	10/19-10/20	9-10
				TOX,TOC	28 days	10/17, 10/20	7, 10
				TDS	7 days	10/13	3
				Others	14 days	10/17-10/23	7-13
				Others	28 days	10/16-10/19	6-9
				VOC	14 days	10/17	8
				Semi-VOC	7,40 days	10/12, 10/20	2, 10
953591			10/17/95	Radiologics	6 months	10/25-11/17	15-38
24011	GW-16R,22,56R 64,29,1-2-30	10/11/95	10/12/95	Metals	6 months	10/19-10/20	8-9
				TOX,TOC	28 days	10/17, 10/20	6, 9
				TDS	7 days	10/13	2
				Others	14 days	10/17-10/23	6-12
				Others	28 days	10/16-10/19	5-8
				VOC	14 days	10/17	6
				Semi-VOC	7,40 days	10/16, 10/23	5, 12
953591			10/17/95	Radiologics	6 months	10/25-11/17	14-37
24019	GW-23,20,28,36 Trip Blank	10/12/95	10/12/95	Metals	6 months	10/19-10/20	7-8
				TOX,TOC	28 days	10/17, 10/20	5, 8
				TDS	7 days	10/13	1
				Others	14 days	10/17-10/23	5-11
				Others	28 days	10/16-10/19	4-7
				VOC	14 days	10/17	5
				Semi-VOC	7,40 days	10/16, 10/23	4, 11
953591			10/17/95	Radiologics	6 months	10/25-11/17	13-36
24111	SL-1	10/24/95	10/24/95	Metals	6 months	10/25-11/01	1-8
24124	SL-2,3	10/25/95	10/25/95	Metals	6 months	10/30-11/1	5-7

12/18/95

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Well Identification: GW-19A

Page 1 of 2

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-26-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-10-95)
DISSOLVED METALS					
Arsenic	0.05	0.02	0.022	0.031	[0.022]JFD
Barium	2.0	<0.002	<0.002	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.4	0.4	0.5	0.44
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	[<0.002]JFD	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		160	150	160	160
Carbonate		<10	<10	<10	<10
Chloride		23000	25000	24000	25000
Sulfate		6500	7000	6300	6300
CATIONS					
Calcium		810	780	790	830
Magnesium		1200	1200	1200	1200
Potassium		480	480	470	490
Sodium		16000	16000	16000	17000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	5.8	4.2	4.6	5.1	5.3
Fluorine as Fluoride		1.2	1.1	1.1	1.0
Nitrate		[<0.01]JFD	<0.01	<0.01	0.02
Nitrates (NO ₃ -N + NO ₂ -N)	10	[<0.01]JFD	<0.01	<0.01	0.02
Total Dissolved Solids	55022	52000	51000	52000	52000
Conductivity (umhos/cm)		53000	56000	57000	53000
pH	6.5-8.5	7.5	7.6	7.4	7.6
ORGANICS					
Total Organic Carbon (TOC)	3.5	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH		7.42	7.38	7.35	7.35
Conductivity (umhos/cm)		76000	75600	70200	71800
Temperature (Deg. C)		12.3	13.9	13.6	12.9

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Well Identification: GW-19A

Page 2 of 2

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-26-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-10-95)
DISSOLVED RADIOLOGICS					
Gross Alpha		11+/-3	12+/-3	7.1+/-2.3	8.2+/-3.0
Gross Beta		560+/-352	515+/-270	467+/-230	594+/-456
Total Uranium (mg/l)	0.0051	[0.0021]JFD	0.0014	0.0017	0.0022
Carbon-14		-9+/-14	6+/-26	-4+/-18	11+/-22
Iodine-129		-2.1+/-1.3	-0.3+/-0.6	-14+/-6	-0.5+/-0.7
Neptunium-237		-0.2+/-0.5	-0.2+/-0.4	0.1+/-0.5	-0.2+/-0.5
Potassium-40		392+/-83	472+/-73	431+/-75	392+/-67
Radium-226	(Ra-226+228) 3	0.1+/-0.4	0.1+/-0.5	0.7+/-0.4	0.1+/-0.2
Radium-228		0.9+/-0.4	1.0+/-0.4	1.0+/-0.4	0.8+/-0.4
Strontium-90		[1.3+/-1.5]JFD	0.5+/-1.3	0.9+/-1.9	2.3+/-7.8
Technetium-99		2.5+/-7.3	0.7+/-7.8	13+/-16	-3+/-15
Thorium-230	2.29	-0.4+/-0.5	0.0+/-0.3	-0.3+/-0.9	0.2+/-0.6
Thorium-232	0.00	-0.3+/-0.7	-0.1+/-0.2	-1.0+/-0.9	-0.1+/-0.6

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Well Identification: GW-20

Page 1 of 2

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-24-95)	2nd Quarter (4-6-95)	3rd Quarter (7-18-95)	4th Quarter (10-12-95)
DISSOLVED METALS					
Arsenic	0.05	0.03	0.024	0.034	0.021
Barium	2.0	<0.002	<0.002	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]U	[<0.005]U
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.11	0.10	0.16	0.13
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	<0.005	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	<0.002	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		210	200	220	200
Carbonate		<10	<10	<10	<10
Chloride		23000	25000	23000	23000
Sulfate		4300	4300	4300	3800
CATIONS					
Calcium		410	400	410	430
Magnesium		690	680	670	700
Potassium		500	530	520	540
Sodium		15000	15000	15000	16000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.1	3	3.1	3.7	3.9
Fluorine as Fluoride		0.8	0.7	0.8	0.7
Nitrate		0.17	<0.01	<0.01	0.27
Nitrates (NO ₃ -N + NO ₂ -N)	10	0.17	<0.01	<0.01	0.27
Total Dissolved Solids	55295	47000	47000	46000	45000
Conductivity (umhos/cm)		51000	56000	56000	50000
pH (units)	6.5-8.5	7.5	7.6	7.5	7.6
ORGANICS					
Total Organic Carbon (TOC)	2.3	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.43	7.42	7.42	7.41
Conductivity (umhos/cm)		67200	70600	74600	70000
Temperature (Deg. C)		12.1	13.3	14.0	12.3

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11c.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-20

PARAMETERS	SAMPLING DATE				
	GWPL / NRC	1st Quarter (1-24-95)	2nd Quarter (4-6-95)	3rd Quarter (7-18-95)	4th Quarter (10-12-95)
DISSOLVED RADIOLOGICS					
Gross Alpha	51	13+/-3	17+/-3	23+/-4	23+/-4
Gross Beta	796	347+/-190*	746+/-333	412+/-227	503+/-377
Total Uranium (mg/l)	0.0211 / 0.013	[0.0090]JFD	0.0130	0.0043	0.0091
Carbon-14	2133	0+/-20	10+/-18	9+/-23	17+/-24
Iodine-129	4.4	-3.6+/-1.7	-0.2+/-3.8	-2.8+/-2.4	-0.8+/-0.7
Neptunium-237	8	0.1+/-0.6	0.4+/-0.5	0.0+/-0.5	-0.2+/-0.5
Potassium-40	666	493+/-62	501+/-79	516+/-86	501+/-78
Radium-226	(Ra-226+228) 5	1.0+/-0.6	0.6+/-0.5	1.8+/-0.7	0.6+/-0.5
Radium-228		2.3+/-0.5	1.6+/-0.5	1.7+/-0.6	1.6+/-0.5
Strontium-90	8	[0.9+/-1.3]JFD	-0.3+/-1.1	0.0+/-1.2	3.1+/-3.4
Technetium-99	800	4.7+/-7.6	4.8+/-8.0	11+/-17	24+/-19
Thorium-230	5 / 1.04	-0.1+/-0.8	-0.1+/-0.2	-0.1+/-0.6	0.3+/-0.6
Thorium-232	5 / 0.0	-0.8+/-0.8	-0.1+/-0.2	-0.6+/-0.6	-0.1+/-0.6

* Re-analyzed

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
 (in mg/l unless noted otherwise)

Page 1 of 2

Well Identification: GW-24

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-25-95)	2nd Quarter (4-6-95)	3rd Quarter (7-20-95)	4th Quarter (10-10-95)
DISSOLVED METALS					
Arsenic	0.05	0.021	0.018	0.027	[0.02]JFD
Barium	2.0	<0.002	0.005	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.12	0.11	0.15	0.14
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	0.012	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		220	220	230	220
Carbonate		<10	<10	<10	<10
Chloride		24000	24000	23000	23000
Sulfate		4500	4500	4100	4300
CATIONS					
Calcium		440	420	430	450
Magnesium		690	670	670	710
Potassium		510	520	520	540
Sodium		16000	15000	16000	16000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.0	3.1	3	3.5	3.5
Fluorine as Fluoride		0.8	0.8	0.8	0.7
Nitrate		0.11	[0.14]JFD	0.12	0.19
Nitrates (NO3-N + NO2-N)	10	0.11	[0.14]JFD	0.12	0.19
Total Dissolved Solids	50861	47000	47000	47000	46000
Conductivity (umhos/cm)		53000	56000	55000	51000
pH (units)	6.5-8.5	7.5	7.6	7.5	7.6
ORGANICS					
Total Organic Carbon (TOC)	2.5	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.38	7.36	7.42	7.38
Conductivity (umhos/cm)		70300	69200	67600	68600
Temperature (Deg C)		11.7	13.2	14.1	13.8

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-24

PARAMETERS	SAMPLING DATE				
	GWPL / NRC	1st Quarter (1-25-95)	2nd Quarter (4-6-95)	3rd Quarter (7-20-95)	4th Quarter (10-10-95)
DISSOLVED RADIOLOGICS					
Gross Alpha	46	36+/-5	39+/-5	31+/-4	30+/-5
Gross Beta	980	666+/-354	527+/-328	567+/-294	756+/-421
Total Uranium (mg/l)	0.0207 / 0.02	[0.0154]JFD	0.0208	0.0175	0.0155
Carbon-14	2133	-6+/-20	-8+/-24	-8+/-22	14+/-18
Iodine-129	1	-1.5+/-1.6	-0.7+/-0.7	-1.3+/-0.6	-0.9+/-1.2
Neptunium-237	8	0.1+/-0.5	-0.2+/-0.6	-0.1+/-0.6	-0.2+/-0.5
Potassium-40	625	442+/-60	469+/-85	432+/-81	499+/-77
Radium-226	(Ra-226+228) 5	1.6+/-0.7	1.5+/-0.8	1.3+/-1.0	1.0+/-0.6
Radium-228		2.6+/-0.6	2.0+/-0.5	2.7+/-0.6	2.6+/-0.6
Strontium-90	8	[1.0+/-1.2]JFD	-0.2+/-1.2	0.6+/-1.6	1.2+/-1.5
Technetium-99	800	5.0+/-8.2	3.2+/-9.5	17+/-17	16+/-17
Thorium-230	5 / 1.76	-0.5+/-0.7	-0.1+/-0.2	-0.4+/-0.9	0.1+/-0.4
Thorium-232	5 / 0.0	-0.9+/-0.8	-0.1+/-0.2	-1.2+/-0.9	0.0+/-0.4

Shaded areas indicate values above GWPL or NRC background levels.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Well Identification: GW-25

Page 1 of 2

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-23-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-9-95)
DISSOLVED METALS					
Arsenic	0.106	0.082	0.09	0.088	[0.10]JFD
Barium	2.0	<0.002	0.008	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.13	0.13	0.20	0.17
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	<0.002	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		190	200	200	200
Carbonate		<10	<10	<10	<10
Chloride		24000	24000	24000	24000
Sulfate		5000	5000	5300	5000
CATIONS					
Calcium		520	520	530	540
Magnesium		870	890	870	880
Potassium		550	590	590	610
Sodium		17000	16000	16000	17000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.4	3.5	3.8	4.3	4.3
Fluorine as Fluoride		0.9	0.9	1.0	0.9
Nitrate		0.09	0.09	0.08	0.11
Nitrates (NO ₃ -N + NO ₂ -N)	10	0.09	0.09	0.08	0.11
Total Dissolved Solids	52193	51000	49000	50000	51000
Conductivity (umhos/cm)		54000	58000	61000	56000
pH (units)	6.5-8.5	7.5	7.6	7.4	7.5
ORGANICS					
Total Organic Carbon (TOC)	2.9	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.40	7.34	7.36	7.35
Conductivity (umhos/cm)		73200	72000	72800	46600
Temperature (Deg. C)		11.6	12.3	13.5	13.2

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
 (in mg/l unless noted otherwise)

Well Identification: GW-26

Page 1 of 2

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-23-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-9-95)
DISSOLVED METALS					
Arsenic	0.200	0.17	0.18	0.17	[0.14]JFD
Barium	2.0	<0.002	0.005	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.43	0.39	0.46	0.45
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	0.014	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		110	110	120	110
Carbonate		<10	<10	<10	<10
Chloride		23000	24000	23000	23000
Sulfate		5500	5900	5300	5300
CATIONS					
Calcium		620	590	610	620
Magnesium		930	910	910	920
Potassium		500	510	520	520
Sodium		16000	15000	15000	16000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.8	3.5	3.7	4.3	4.3
Fluorine as Fluoride		1.0	0.9	0.8	0.7
Nitrate		0.86	0.9	0.76	0.84
Nitrates (NO ₃ -N + NO ₂ -N)	10	0.86	0.9	0.76	0.84
Total Dissolved Solids	55680	48000	48000	46000	46000
Conductivity (umhos/cm)		52000	56000	58000	53000
pH (units)	6.5-8.5	7.5	7.6	7.4	7.5
ORGANICS					
Total Organic Carbon (TOC)	2.6	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.59	7.50	7.55	7.54
Conductivity (umhos/cm)		70300	67000	70300	44700
Temperature (Deg. C)		11.4	13.5	15.4	13.5

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-26

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-23-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-9-95)
DISSOLVED RADIOLOGICS					
Gross Alpha		41+/-4	41+/-5	43+/-5	39+/-5
Gross Beta		600+/-359	543+/-494	162+/-223	257+/-341
Total Uranium (mg/l)	0.033	[0.0274]JFD	0.0270	0.0169	0.0228
Carbon-14		-4+/-12	8+/-21	-15+/-16	-12+/-19
Iodine-129		-0.2+/-1.3	0.0+/-0.7	-5.9+/-2.7	-1.1+/-0.6
Neptunium-237		-0.2+/-0.5	0.1+/-0.4	0.1+/-0.5	0.3+/-0.8
Potassium-40		398+/-61	490+/-62	520+/-81	483+/-71
Radium-226	(Ra-226+228) 4	0.8+/-0.7	0.8+/-0.9	0.5+/-0.4	1.0+/-0.4
Radium-228		1.7+/-0.6	1.7+/-0.5	1.6+/-0.6	1.9+/-0.6
Strontium-90		[0.5+/-1.0]JFD	0.4+/-1.1	1.2+/-1.4	3.9+/-4.1
Technetium-99		2.3+/-7.5	-0.3+/-7.8	6+/-13	12+/-16
Thorium-230	1.57	-0.5+/-0.7	-0.1+/-0.2	0.7+/-0.9	0.1+/-0.4
Thorium-232	0.00	-0.6+/-0.9	-0.1+/-0.2	-0.6+/-0.6	0.0+/-0.3

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Well Identification: GW-27

Page 1 of 2

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-23-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-9-95)
DISSOLVED METALS					
Arsenic	0.057	0.051	0.049	0.057	[0.049]JFD
Barium	2.0	<0.002	0.008	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.38	0.4	0.47	0.17
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	0.005	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate			160	170	160
Carbonate		<10	<10	<10	<10
Chloride		22000	22000	22000	23000
Sulfate		4800	5300	5500	5000
CATIONS					
Calcium		540	540	560	580
Magnesium		860	880	880	900
Potassium		490	510	520	530
Sodium		14000	14000	14000	15000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.5	3.3	3.7	4.4	3.6
Fluorine as Fluoride		1.1	1.0	1.0	0.9
Nitrate		0.06	0.06	0.03	0.1
Nitrates (NO3-N + NO2-N)	10	0.06	0.06	0.03	0.1
Total Dissolved Solids	52481	45000	45000	46000	50000
Conductivity (umhos/cm)		50000	54000	56000	52000
pH (units)	6.5-8.5	7.5	7.6	7.5	7.5
ORGANICS					
Total Organic Carbon (TOC)	2.8	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.48	7.35	7.46	7.48
Conductivity (umhos/cm)		67200	69700	69700	68400
Temperature (Deg. C)		11.6	13.4	15.6	13.5

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11c.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Well Identification: GW-27

Page 2 of 2

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-23-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-9-95)
DISSOLVED RADIOLOGICS					
Gross Alpha		16+/-3	24+/-4	20+/-4	18+/-4
Gross Beta		415+/-349	572+/-329	232+/-224	388+/-338
Total Uranium (mg/l)	0.027	[0.0100]JFD	0.0130	0.0121	0.0133
Carbon-14		-4+/-16	-3+/-23	2+/-20	14+/-23
Iodine-129		-2.7+/-1.4	-1.1+/-0.7	-6.2+/-3.2	-0.4+/-0.6
Neptunium-237		1.7+/-0.9	-0.4+/-0.6	1.4+/-0.9	0.1+/-0.6
Potassium-40		544+/-105	588+/-73	514+/-85	522+/-66
Radium-226	(Ra-226+228) 3	0.1+/-0.4	0.3+/-0.7	0.8+/-0.5	0.1+/-0.3
Radium-228		1.1+/-0.5	1.3+/-0.5	1.4+/-0.5	1.4+/-0.5
Strontium-90		[0.0+/-1.4]JFD	-0.6+/-1.1	1.6+/-1.4	1.5+/-2.6
Technetium-99		6.2+/-7.6	-1.0+/-7.6	-2+/-14	15+/-16
Thorium-230	4.62	-0.4+/-0.7	-0.1+/-0.2	-0.5+/-0.5	0.2+/-0.5
Thorium-232	0.001	-0.8+/-0.8	-0.1+/-0.4	-0.3+/-0.7	-0.1+/-0.3

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Well Identification: GW-28

Page 1 of 2

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-23-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-12-95)
DISSOLVED METALS					
Arsenic	0.076	0.064	0.066	0.07	0.048
Barium	2.0	<0.002	0.004	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.13	0.19	0.25	0.22
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	<0.002	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		150	150	160	140
Carbonate		<10	<10	<10	<10
Chloride		21000	22000	22000	23000
Sulfate		4300	4400	4800	3800
CATIONS					
Calcium		420	410	420	440
Magnesium		690	700	680	710
Potassium		470	500	490	520
Sodium		14000	14000	14000	15000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.2	3	3.4	4.0	4
Fluorine as Fluoride		1.1	0.9	1.0	0.9
Nitrate		0.34	0.31	0.30	0.36
Nitrates (NO ₃ -N + NO ₂ -N)	10	0.34	0.31	0.30	0.36
Total Dissolved Solids	48289	44000	43000	45000	44000
Conductivity (umhos/cm)		50000	54000	55000	49000
pH (units)	6.5-8.5	7.5	7.6	7.6	7.6
ORGANICS					
Total Organic Carbon (TOC)	2.3	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.56	7.49	7.59	7.36
Conductivity (umhos/cm)		65300	68800	67900	65700
Temperature (Deg. C)		12.9	13.2	14.7	12.4

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
 (in mg/l unless noted otherwise)

Well Identification: GW-29

Page 1 of 2

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-24-95)	2nd Quarter (4-6-95)	3rd Quarter (7-18-95)	4th Quarter (10-11-95)
DISSOLVED METALS					
Arsenic	0.05	0.016	0.013	0.023	0.014
Barium	2.0	<0.002	<0.002	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.11	0.10	0.17	0.15
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	<0.005	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	<0.002	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		310	300	330	310
Carbonate		<10	<10	<10	<10
Chloride		23000	25000	23000	24000
Sulfate		4300	4800	4400	4100
CATIONS					
Calcium		480	460	460	490
Magnesium		760	760	740	780
Potassium		520	560	540	560
Sodium		16000	15000	16000	17000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.5	3.4	3.4	4.1	4
Fluorine as Fluoride		1.0	0.9	0.9	0.8
Nitrate		0.52	<0.01	<0.01	0.02
Nitrates (NO ₃ -N + NO ₂ -N)	10.0	0.52	<0.01	<0.01	0.02
Total Dissolved Solids	53498	49000	48000	47000	47000
Conductivity (umhos/cm)		53000	57000	58000	51000
pH (units)	6.5-8.5	7.5	7.6	7.4	7.6
ORGANICS					
Total Organic Carbon (TOC)	2.4	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.18	7.16	7.23	7.22
Conductivity (umhos/cm)		68100	73200	76500	68300
Temperature (Deg. C)		12.2	13.6	14.4	13.1

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

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Well Identification: GW-28

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-23-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-12-95)
DISSOLVED RADIOLOGICS					
Gross Alpha		15+/-3	18+/-3	17+/-3	19+/-4
Gross Beta		345+/-337	595+/-325	362+/-224	440+/-383
Total Uranium (mg/l)	0.011	[0.0099]JFD	0.0110	0.0102	0.0098*
Carbon-14		-20+/-23	-7+/-21	-6+/-25	-13+/-19
Iodine-129		-3.8+/-2.0	-0.2+/-0.5	-6.8+/-2.8	-0.2+/-0.5
Neptunium-237		1.3+/-1.1	-0.3+/-0.4	-0.2+/-0.4	0.1+/-0.8
Potassium-40		511+/-75	473+/-74	466+/-74	483+/-75
Radium-226	(Ra226+228) 3	0.4+/-0.5	0.8+/-0.7	0.8+/-0.6	0.5+/-0.4
Radium-228		1.2+/-0.6	1.4+/-0.5	1.4+/-0.5	1.4+/-0.5
Strontium-90		[1.2+/-1.3]JFD	0.0+/-0.9	-0.3+/-1.4	2.5+/-3.8
Technetium-99		8.4+/-7.8	2.9+/-7.8	12+/-17	19+/-18
Thorium-230	1.16	-0.1+/-0.8	-0.1+/-0.2	0.3+/-0.8	0.1+/-0.6
Thorium-232	0.00	-0.2+/-0.8	0.1+/-0.4	-0.4+/-0.6	-0.1+/-0.6

Shaded areas indicate values above NRC background levels.

*Re-analyzed

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Well Identification: GW-29

Page 2 of 2

PARAMETERS	SAMPLING DATE				
	GWPL / NRC	1st Quarter (1-24-95)	2nd Quarter (4-6-95)	3rd Quarter (7-18-95)	4th Quarter (10-11-95)
DISSOLVED RADIOLOGICS					
Gross Alpha	81	42+/-4	37+/-4	41+/-5	36+/-5
Gross Beta	882	517+/-347	392+/-320	558+/-231	469+/-350
Total Uranium (mg/l)	0.0405 / 0.040	[0.0215]JFD	0.0240	0.0145	0.0205
Carbon-14	2133	-14+/-28	38+/-27	-4+/-29	28+/-25
Iodine-129	1	-1.4+/-1.3	-0.7+/-0.5	-5.3+/-3.0	-0.8+/-0.5
Neptunium-237	8	-0.6+/-0.7	0.1+/-0.5	0.2+/-0.5	-0.2+/-0.5
Potassium-40	691	411+/-97	534+/-84	549+/-94	547+/-64
Radium-226	(Ra-226+228) 5	0.8+/-0.5	1.9+/-1.0	1.8+/-1.1	1.1+/-0.6
Radium-228		3.3+/-0.6	2.5+/-0.5	3.1+/-0.7	2.5+/-0.5
Strontium-90	8	[-0.5+/-1.4]JFD	0.4+/-1.2	0.4+/-1.4	4.3+/-5.5
Technetium-99	800	5.8+/-6.9	2.0+/-8.4	11+/-18	2+/-15
Thorium-230	5 / 2.28	-0.6+/-0.7	0.2+/-0.4	0.2+/-0.7	0.3+/-0.7
Thorium-232	5 / 0.0	-0.9+/-0.8	0.0+/-0.3	-0.4+/-0.6	-0.1+/-0.6

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Page 1 of 2

Well Identification: GW-36

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-27-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-12-95)
DISSOLVED METALS					
Arsenic	0.062	0.049	0.048	0.058	0.049
Barium	2.0	0.004	0.01	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.16	0.15	0.19	0.17
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	0.023	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		150	140	160	140
Carbonate		<10	<10	<10	<10
Chloride		20000	20000	20000	23000
Sulfate		3600	3800	3500	3800
CATIONS					
Calcium		440	420	420	430
Magnesium		610	600	590	610
Potassium		450	450	450	470
Sodium		13000	12000	13000	14000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.0	2.6	2.8	3.0	3.4
Fluorine as Fluoride		0.8	0.8	0.8	na
Nitrate		0.57	0.55	0.55	0.66
Nitrates (NO ₃ -N + NO ₂ -N)	10.0	0.57	0.55	0.55	0.66
Total Dissolved Solids	44864	40000	38000	38000	39000
Conductivity (umhos/cm)		46000	50000	50000	45000
pH (units)	6.5-8.5	7.5	7.6	7.5	7.6
ORGANICS					
Total Organic Carbon (TOC)	1.9	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.57	7.58	7.58	7.34
Conductivity (umhos/cm)		62600	62600	65200	59000
Temperature (Deg C)		12.6	13.1	13.9	13.5

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(In pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-36

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-27-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter*
DISSOLVED RADIOLOGICS					
Gross Alpha		57+/-5	76+/-7	55+/-6	
Gross Beta		235+/-228	572+/-322	206+/-221	
Total Uranium (mg/l)	0.055	[0.0452]JFD	0.0370	0.0469	
Carbon-14		15+/-17	-30+/-23	1+/-16	
Iodine-129		-2.7+/-1.5	-1.2+/-0.8	-1.3+/-0.6	
Neptunium-237		0.0+/-0.5	-0.5+/-0.6	0.1+/-0.5	
Potassium-40		361+/-88	371+/-77	407+/-74	
Radium-226	(Ra-226+228) 4	1.3+/-0.8	1.0+/-0.7	1.6+/-0.6	
Radium-228		2.0+/-0.5	1.8+/-0.5	1.3+/-0.5	
Strontium-90		[1.2+/-1.2]JFD	0.8+/-1.1	2.3+/-2.1	
Technetium-99		6.5+/-8.3	0.9+/-9.3	24+/-17	
Thorium-230	0.757	0.4+/-0.8	0.3+/-0.5	-0.4+/-0.9	
Thorium-232	0.00	-0.4+/-0.6	0.1+/-0.4	-0.8+/-1.0	

Shaded areas indicate values above NRC background levels.

*4th quarter samples not submitted for radiologic analysis as well as not currently designated compliance well by NRC.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
 (in mg/l unless noted otherwise)

Page 1 of 2

Well Identification: GW-37

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-27-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-10-95)
DISSOLVED METALS					
Arsenic	0.05	0.038	0.036	0.046	[0.036]JFD
Barium	2.0	0.003	0.007	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.17	0.17	0.22	0.19
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	0.031	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		1000	130	140	130
Carbonate		<10	<10	<10	<10
Chloride		24000	24000	23000	24000
Sulfate		4200	4400	4100	4300
CATIONS					
Calcium		470	440	450	480
Magnesium		740	700	710	750
Potassium		500	500	500	520
Sodium		16000	15000	15000	17000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.0	2.7	2.9	3.3	3.6
Fluorine as Fluoride		0.7	0.5	0.6	na
Nitrate		0.35	0.31	0.41	0.65
Nitrates (NO3-N + NO2-N)	10.0	0.35	0.31	0.41	0.65
Total Dissolved Solids	50942	46000	46000	45000	47000
Conductivity (umhos/cm)		53000	56000	56000	52000
pH (units)	6.5-8.5	7.5	7.6	7.5	7.6
ORGANICS					
Total Organic Carbon (TOC)	2.1	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.57	7.58	7.60	7.67
Conductivity (umhos/cm)		70800	72000	73600	71400
Temperature (Deg. C)		11.8	11.7	12.2	11.9

Shaded areas indicate values above GWPL

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11c.(2) Compliance Monitor Wells
(in pCVI unless noted otherwise)

Page 2 of 2

Well Identification: GW-37

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-27-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter*
DISSOLVED RADIOLOGICS					
Gross Alpha		22+/-3	36+/-5	29+/-4	
Gross Beta		292+/-236	337+/-316	297+/-227	
Total Uranium (mg/l)	0.017	[0.0138]JFD	0.0120	0.0153	
Carbon-14		13+/-18	-15+/-21	-6+/-16	
Iodine-129		-3.0+/-1.4	-0.6+/-0.5	-0.7+/-0.6	
Neptunium-237		0.5+/-0.7	-0.1+/-0.5	0.5+/-0.6	
Potassium-40		424+/-85	472+/-70	529+/-90	
Radium-226	(Ra-226+228) 5	1.1+/-0.9	1.3+/-0.8	0.5+/-0.5	
Radium-228		2.5+/-0.5	2.1+/-0.5	2.5+/-0.6	
Sroutium-90		[2.0+/-1.3]JFD	-0.5+/-1.3	1.8+/-2.0	
Technetium-99		6.6+/-9.3	5.0+/-9.0	30+/-20	
Thorium-230	1.57	0.0+/-0.6	0.0+/-0.3	-0.8+/-0.7	
Thorium-232	0.29	-0.3+/-0.7	-0.1+/-0.2	-1.0+/-0.9	

*4th quarter samples not submitted for radiologic analysis as well is not currently designated compliance well by NRC.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e (2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Page 1 of 2

Well Identification: GW-38

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-27-95)	2nd Quarter (4-4-95)	3rd Quarter (7-20-95)	4th Quarter (10-10-95)
DISSOLVED METALS					
Arsenic	0.05	0.035	0.037	0.044	[0.032]JFD
Barium	2.0	<0.002	0.003	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.005	<0.005	<0.005
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Lead	0.015	<0.005	<0.005	<0.0002	<0.0002
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.11	0.11	0.18	0.13
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.019]J	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	0.014	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		140	150	160	140
Carbonate		<10	<10	<10	<10
Chloride		24000	23000	22000	23000
Sulfate		4700	3900	4200	4000
CATIONS					
Calcium		560	450	470	540
Magnesium		810	680	710	790
Potassium		520	490	500	540
Sodium		16000	14000	14000	16000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.0	3	2.8	3.4	3.6
Fluoride as Fluoride		0.6	0.6	0.7	na
Nitrate		1.5	1.6	2.1	1.9
Nitrates (NO ₃ -N + NO ₂ -N)	10.0	1.5	1.6	2.1	1.9
Total Dissolved Solids	41206	47000.00	42000.00	43000.00	46000
Conductivity (umhos/cm)		53000	52000	53000	51000
pH (units)	6.5-8.5	7.5	7.6	7.5	7.6
ORGANICS					
Total Organic Carbon (TOC)	2.2	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.43	7.50	7.36	7.47
Conductivity (umhos/cm)		73300	67700	64800	62600
Temperature (Deg. C)		11.4	12.4	12.7	12.3

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-38

PARAMETERS	SAMPLING DATE			
	NRC	1st Quarter (1-27-95)	2nd Quarter (4-4-95)	3rd Quarter (7-20-95)
DISSOLVED RADIOLOGICS				4th Quarter*
Gross Alpha		48+/-5	61+/-6	47+/-5
Gross Beta		355+/-238	810+/-330	190+/-222
Total Uranium (mg/l)	0.035	[0.0278]JFD	0.0260	0.0301
Carbon-14		6+/-14	1+/-27	-6+/-16
Iodine-129		-4.3+/-1.6	-0.7+/-0.5	-0.7+/-0.6
Neptunium-237		-0.4+/-0.5	-0.2+/-0.5	-0.3+/-0.4
Potassium-40		405+/-85	496+/-87	493+/-82
Radium-226	(Ra-226+228) 5	1.5+/-0.9	0.6+/-0.7	1.5+/-0.6
Radium-228		2.5+/-0.5	2.1+/-0.5	2.3+/-0.6
Strontium-90		[1.3+/-1.1]JFD	-0.3+/-1.2	0.9+/-1.6
Technetium-99		6.1+/-9.5	-2.1+/-8.9	13+/-18
Thorium-230	0.44	0.1+/-0.7	0.0+/-0.3	-0.3+/-0.9
Thorium-232	0.00	-0.6+/-0.6	-0.1+/-0.2	-1.0+/-0.9

*4th quarter samples not submitted for radiologic analysis as well is not currently designated compliance well by NRC

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Page 1 of 2

Well Identification: GW-57

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-26-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-9-95)
DISSOLVED METALS					
Arsenic	0.05	0.031	0.026	0.029	[0.025]JFD
Barium	2.0	<0.002	0.006	<0.002	<0.002
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.005
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Lead	0.015	<0.002	<0.0002	<0.0002	<0.0002
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.26	0.25	0.32	0.3
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	[0.00]JFD	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		130	120	130	120
Carbonate		<10	<10	<10	<10
Chloride		21000	22000	20000	21000
Sulfate		5400	5200	4500	5000
CATIONS					
Calcium		640	640	650	670
Magnesium		770	790	770	800
Potassium		490	490	490	510
Sodium		14000	13000	13000	1000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.0	3.3	3.5	4	3.4
Fluorine as Fluoride		0.9	0.9	0.9	0.8
Nitrate		[0.55]JFD	0.43	0.38	0.47
Nitrates (NO3-N + NO2-N)	10.0	[0.55]JFD	0.43	0.38	0.47
Total Dissolved Solids	45954	43000	42000	43000	42000
Conductivity (umhos/cm)		48000	51000	53000	48000
pH (units)	6.5-8.5	7.5	7.6	7.6	7.6
ORGANICS					
Total Organic Carbon (TOC)	2.7	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.48	7.52	7.56	7.61
Conductivity (umhos/cm)		68100	66000	65300	62700
Temperature (Deg. C)		11.0	13.6	15.1	13.6

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11c.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-57

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-26-95)	2nd Quarter (4-3-95)	3rd Quarter (7-17-95)	4th Quarter (10-9-95)
DISSOLVED RADIOLOGICS		14+/-3	10+/-3	13+/-3	48+/-6
Gross Alpha		511+/-243	375+/-320	214+/-270	518+/-295
Gross Beta	0.0075	[0.0043]JFD	0.0046	0.0057	0.0043
Total Uranium (mg/l)		-10+/-13	-5+/-22	-9+/-15	-8+/-19
Carbon-14		-3.3+/-1.4	0.2+/-0.7	-6.9+/-3.3	0.8+/-0.6
Iodine-129		-0.2+/-0.5	0.1+/-0.5	-0.2+/-0.5	0.2+/-0.7
Neptunium-237		385+/-95	411+/-80	465+/-74	453+/-61
Potassium-40		0.2+/-0.6	0.2+/-0.6	0.6+/-0.4	1.1+/-0.5
Radium-226	(Ra-226+228) 3	1.3+/-0.5	1.1+/-0.5	1.3+/-0.5	1.9+/-0.6
Radium-228		[3.1+/-1.9]JFD	6.8+/-1.2	-0.3+/-1.4	0.6+/-1.1
Strontium-90		3.6+/-9.3	3.8+/-7.6	-2+/-14	12+/-14
Technetium-99		-0.5+/-0.5	0.2+/-0.4	0.0+/-0.7	0.1+/-0.4
Thorium-230	3.89	-0.4+/-0.6	-0.1+/-0.2	-0.6+/-0.6	0.1+/-0.4
Thorium-232	0.18				

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Page 1 of 2

Well Identification: GW-58

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-23-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-9-95)
DISSOLVED METALS					
Arsenic	0.119	0.091	0.087	0.11	[0.082]JFD
Barium	2.0	0.004	0.013	0.003	0.017
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.13	0.14	0.19	0.17
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	0.028	0.023	0.023	0.023
ANIONS					
Bicarbonate		140	130	150	140
Carbonate		<10	<10	<10	<10
Chloride		19000	20000	20000	21000
Sulfate		3500	3500	3400	3300
CATIONS					
Calcium		390	390	410	420
Magnesium		620	630	640	640
Potassium		430	460	470	470
Sodium		13000	13000	13000	14000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.0	2.8	2.9	3.2	3.5
Fluorine as Fluoride		1.1	1.0	1.0	0.9
Nitrate		0.75	0.65	0.62	0.68
Nitrates (NO ₃ -N + NO ₂ -N)	10.0	0.75	0.65	0.62	0.68
Total Dissolved Solids	44763	40000	40000	39000	39000
Conductivity (umhos/cm)		46000	50000	50000	48000
pH (units)	6.5-8.5	7.5	7.6	7.5	7.5
ORGANICS					
Total Organic Carbon (TOC)	1.8	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.67	7.61	7.62	7.60
Conductivity (umhos/cm)		60900	64300	65700	63200
Temperature (Deg. C)		12.7	12.5	13.8	13.0

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-58

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-23-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-9-95)
DISSOLVED RADIOLOGICS					
Gross Alpha		40+/-4	56+/-6	53+/-6	48+/-6
Gross Beta		409+/-337	530+/-320	236+/-220	518+/-295
Total Uranium (mg/l)	0.036	[0.0321]JFD	0.0220	0.0311	0.0361*
Carbon-14		-9+/-14	10+/-21	0+/-18	-8+/-19
Iodine-129		-1.8+/-1.3	-0.6+/-0.6	-0.9+/-0.6	0.8+/-0.6
Neptunium-237		-0.3+/-0.5	0.1+/-0.4	-0.3+/-0.3	0.2+/-0.7
Potassium-40		381+/-54	426+/-73	474+/-74	453+/-61
Radium-226	(Ra-226+228) 5	0.9+/-0.6	1.2+/-0.7	1.5+/-0.7	1.1+/-0.5
Radium-228		1.9+/-0.6	2.4+/-0.5	1.9+/-0.5	1.9+/-0.6
Strontium-90		[0.2+/-1.1]JFD	0.1+/-1.0	-1.0+/-1.4	0.6+/-1.1
Technetium-99		4.4+/-7.9	3.0+/-8.0	6+/-16	12+/-14
Thorium-230	0.84	-0.8+/-0.6	0.5+/-0.5	0.1+/-1.0	0.1+/-0.4
Thorium-232	0.00	-1.0+/-0.7	-0.1+/-0.2	-0.7+/-1.0	0.1+/-0.4

Shaded areas indicate values above NRC background levels

* Re-analyzed

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
 (in mg/l unless noted otherwise)

Page 1 of 2

Well Identification: GW-60

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-26-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-10-95)
DISSOLVED METALS				0.03	[0.023]JFD
Arsenic	0.05	0.024	0.023	<0.002	<0.002
Barium	2.0	<0.002	0.003	<0.004	<0.004
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.005	<0.005
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Lead	0.015	<0.005	<0.002	<0.0002	<0.0002
Mercury	0.002	<0.0002	<0.0002	0.18	0.16
Molybdenum	0.04	0.14	0.14	<0.01	<0.01
Nickel	0.15	<0.01	<0.01	[<0.008]J	<0.005
Selenium	0.05	<0.005	<0.005	<0.005	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.002
Zinc	5.0	[0.01]JFD	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		90	190	200	190
Carbonate		<10	<10	<10	<10
Chloride		20000	20000	20000	20000
Sulfate		3700	3700	3800	3300
CATIONS					
Calcium		400	400	390	410
Magnesium		590	610	580	610
Potassium		460	450	450	470
Sodium		13000	13000	13000	14000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.0	2.7	2.4	3.2	3.4
Fluorine as Fluoride		0.8	0.7	0.7	0.7
Nitrate		[0.37]JFD	0.41	0.5	0.58
Nitrates (NO3-N + NO2-N)	10.0	[0.37]JFD	0.41	0.5	0.58
Total Dissolved Solids	43000	40000	39000	39000	39000
Conductivity (umhos/cm)		47000	48000	50000	46000
pH (units)	6.5-8.5	7.5	7.6	7.5	7.6
ORGANICS					
Total Organic Carbon (TOC)	1.0	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.46	7.46	7.50	7.52
Conductivity (umhos/cm)		64700	63900	59600	61000
Temperature (Deg. C)		12.0	13.8	13.9	12.4

Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-60

PARAMETERS	SAMPLING DATE				
	NRC	1st Quarter (1-26-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-10-95)
DISSOLVED RADIOLOGICS		31+/-4	31+/-4	31+/-4	28+/-5
Gross Alpha		403+/-223	603+/-327	311+/-224	227+/-302
Gross Beta	0.02	[0.0133]JFD	0.0150	0.0152	0.0174
Total Uranium (mg/l)		4+/-27	4+/-27	-14+/-15	-3+/-19
Carbon-14		-10+/-15	-0.2+/-0.6	-1.0+/-0.6	-0.4+/-0.6
Iodine-129		-0.9+/-1.4	0.2+/-0.4	-0.2+/-0.5	0.2+/-0.7
Neptunium-237		0.0+/-0.8	0.2+/-0.4	506+/-82	424+/-69
Potassium-40		424+/-88	376+/-78	1.0+/-0.5	1.3+/-0.6
Radium-226	(Ra-226+228) 4	1.4+/-0.8	0.8+/-0.7	2.5+/-0.6	1.9+/-0.6
Radium-228		2.2+/-0.5	2.4+/-0.5	2.4+/-1.9	-0.1+/-1.6
Strontium-90		[3.0+/-2.5]JFD	0.0+/-1.1	13+/-15	19+/-17
Technetium-99		0.0+/-7.6	1.7+/-7.7	-0.5+/-0.8	0.4+/-0.6
Thorium-230	0.0	-0.3+/-0.5	0.2+/-0.4	-1.2+/-0.9	0.0+/-0.4
Thorium-232	0.0	-0.6+/-0.6	-0.1+/-0.2		

Shaded areas indicate values above NRC background levels

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in mg/l unless noted otherwise)

Page 1 of 2

Well Identification: GW-63

PARAMETERS	SAMPLING DATE				
	GWPL	1st Quarter (1-26-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-10-95)
DISSOLVED METALS					
Arsenic	0.05	0.025	0.023	0.033	[0.033]JFD
Barium	2.0	0.007	0.019	0.008	0.02
Beryllium	0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.005	<0.005	<0.005	<0.005
Copper	1.3	<0.005	<0.005	<0.005	<0.005
Lead	0.015	<0.005	<0.005	[<0.005]UJ	[<0.005]UJ
Mercury	0.002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.04	0.15	0.14	0.19	0.16
Nickel	0.15	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.005	[<0.005]UJ	<0.005
Silver	0.1	<0.005	<0.005	<0.005	<0.005
Zinc	5.0	[<0.002]JFD	<0.002	<0.002	<0.002
ANIONS					
Bicarbonate		140	140	150	140
Carbonate		<10	<10	<10	<10
Chloride		20000	20000	19000	19000
Sulfate		3600	3600	4000	3300
CATIONS					
Calcium		390	380	380	380
Magnesium		620	620	600	610
Potassium		440	440	430	440
Sodium		13000	12000	13000	13000
OTHER CHEMISTRIES					
Cyanide	0.02	<0.005	<0.005	<0.005	<0.005
Fluoride	4.0	2.8	2.8	3.1	3.4
Fluorine as Fluoride		0.9	0.7	0.8	0.7
Nitrate		[0.51]JFD	0.47	0.43	0.45
Nitrates (NO ₃ -N + NO ₂ -N)	10.0	[0.51]JFD	0.47	0.43	0.45
Total Dissolved Solids	51118	39000	38000	38000	37000
Conductivity (umhos/cm)		46000	47000	49000	44000
pH (units)	6.5-8.5	7.6	7.6	7.6	7.6
ORGANICS					
Total Organic Carbon (TOC)	1.0	<1.0	<1.0	<1.0	<1.0
Total Organic Halogens (TOX)	0.005	<0.005	<0.005	<0.005	<0.005
FIELD MEASUREMENTS					
pH (units)		7.61	7.59	7.60	7.63
Conductivity (umhos/cm)		63200	61500	57500	57400
Temperature (Deg. C)		12.1	13.9	14.2	13.1

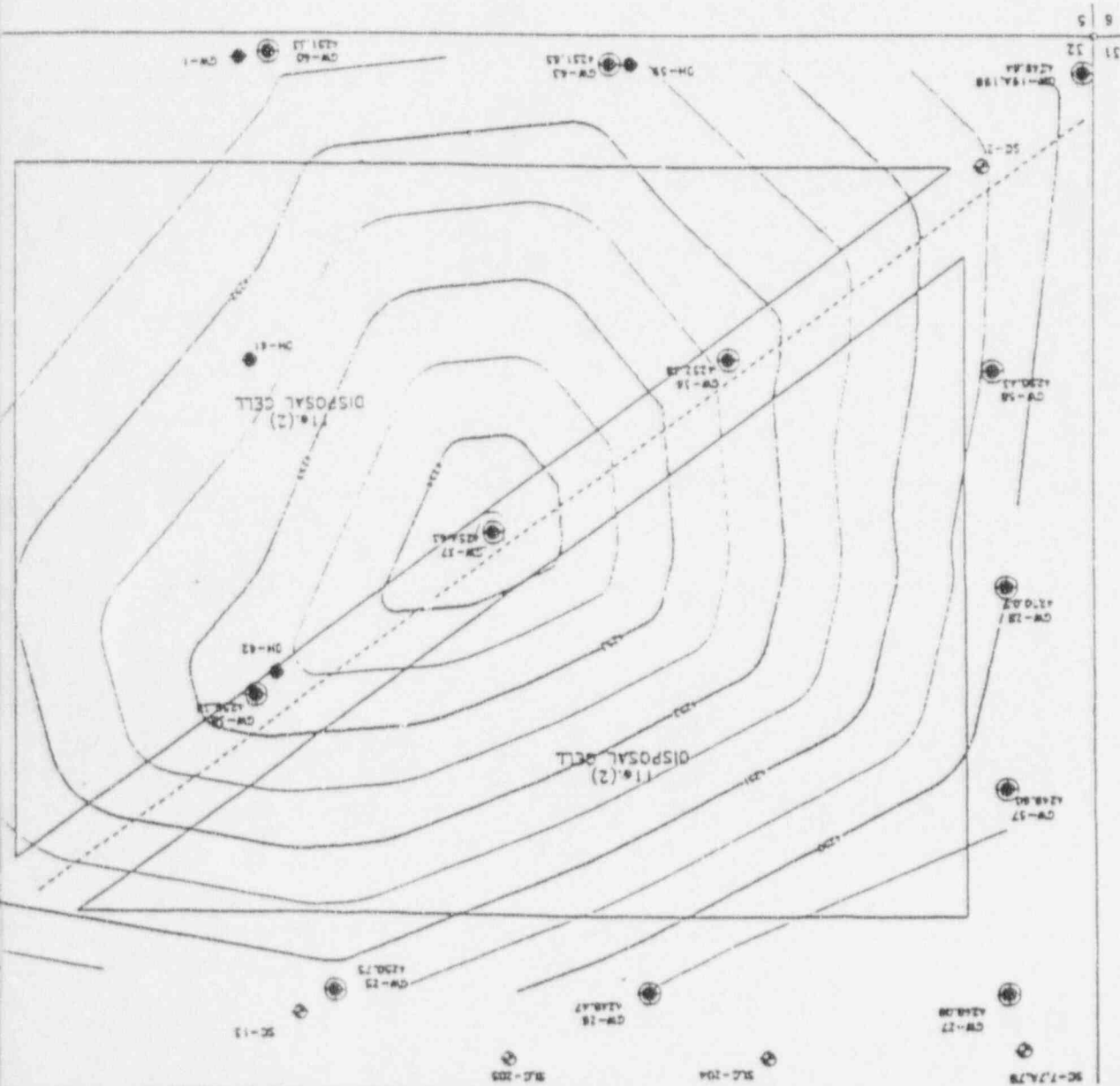
Shaded areas indicate values above GWPL.

TABLE 5
SUMMARY OF WATER QUALITY DATA
LARW/11e.(2) Compliance Monitor Wells
(in pCi/l unless noted otherwise)

Page 2 of 2

Well Identification: GW-63

PARAMETERS	SAMPLING DATE				
	GWPL / NRC	1st Quarter (1-26-95)	2nd Quarter (4-4-95)	3rd Quarter (7-19-95)	4th Quarter (10-10-95)
DISSOLVED RADIOLOGICS					
Gross Alpha	27	17+/-3	20+/-3	18+/-3	16+/-4
Gross Beta	723	594+/-342	387+/-310	274+/-219	298+/-346
Total Uranium (mg/l)	0.02 / 0.011	[0.0081]JFD	0.0130	0.0093	0.0087
Carbon-14	2133	-5+/-13	-4+/-25	-1+/-21	-11+/-18
Iodine-129	1	-2.6+/-1.4	-1.0+/-0.7	-0.6+/-0.5	-0.6+/-0.5
Neptunium-237	8	-0.2+/-0.4	0.0+/-0.5	0.3+/-0.6	-0.2+/-0.5
Potassium-40	649	454+/-100	395+/-77	416+/-79	417+/-60
Radium-226	(Ra-226+228) 5	0.5+/-0.5	0.5+/-0.6	0.4+/-0.6	0.5+/-0.4
Radium-228		1.9+/-0.5	1.8+/-0.5	1.6+/-0.5	2.1+/-0.6
Strontium-90	8	[0.3+/-1.1]JFD	0.1+/-1.0	2.0+/-1.5	1.2+/-1.4
Technetium-99	800	0.2+/-7.5	3.8+/-7.9	5+/-16	18+/-20
Thorium-230	5 / 2.62	0.1+/-0.7	0.1+/-0.4	-0.8+/-0.7	0.3+/-0.5
Thorium-232	5 / 0.0	-0.2+/-0.7	-0.1+/-0.2	-1.2+/-0.9	0.3+/-0.5



LEGEND

Freshwater Equivalent Head (OCTOBER 9-12, 1995)
Freshwater Equivalent Head Elevation adjacent to Well 1.0.

Monitor Wells-Bingham Environmental (1991-1994)
Exploratory Holes / Piezometers-Bingham Environmental (1991-1995)
Datto Geotechnical Consultants (1982, 1990)
Jacobs Engineering Group, Inc. (1984)
Dames & Moore (1981-1982)

Monitor Wells Included in Network
Suction Lytiometers in Network

SOIL SAMPLING CODE

Continuous Soil Sampling Hole
Discontinuous Soil Sampling Hole

NOTES

SL-1
SL-2
SL-3

SUCTION LYTIOMETERS

1-2-30 CW-25
CW-168 CW-24
CW-20 CW-25
CW-22 CW-29

EXISTING LABW CELL
COMPLIANCE MONITOR

1. CW-17A TO MON
DISPOSAL CELL
BE A COMPLIANC
2. OH-DESIGNATES
NOT COMPLETED
OH-33 AND OH-

PERFORMANCE OF VITRO
NOT PROPOSED TO
OR WELL
CATORY DRILL HOLES WHICH WERE
VITRO WELLS. OH-31, OH-32,
E COMPLETED AS PIEZOMETERS.

- OH-19A OH-27 OH-28
- OH-19 OH-27 OH-28
- OH-20 OH-28 OH-27
- OH-24 OH-29 OH-28
- OH-25 OH-36 OH-50
- OH-26 OH-37 OH-53

COMPLIANCE MONITOR WELLS
11# (2) DISPOSAL CELLS

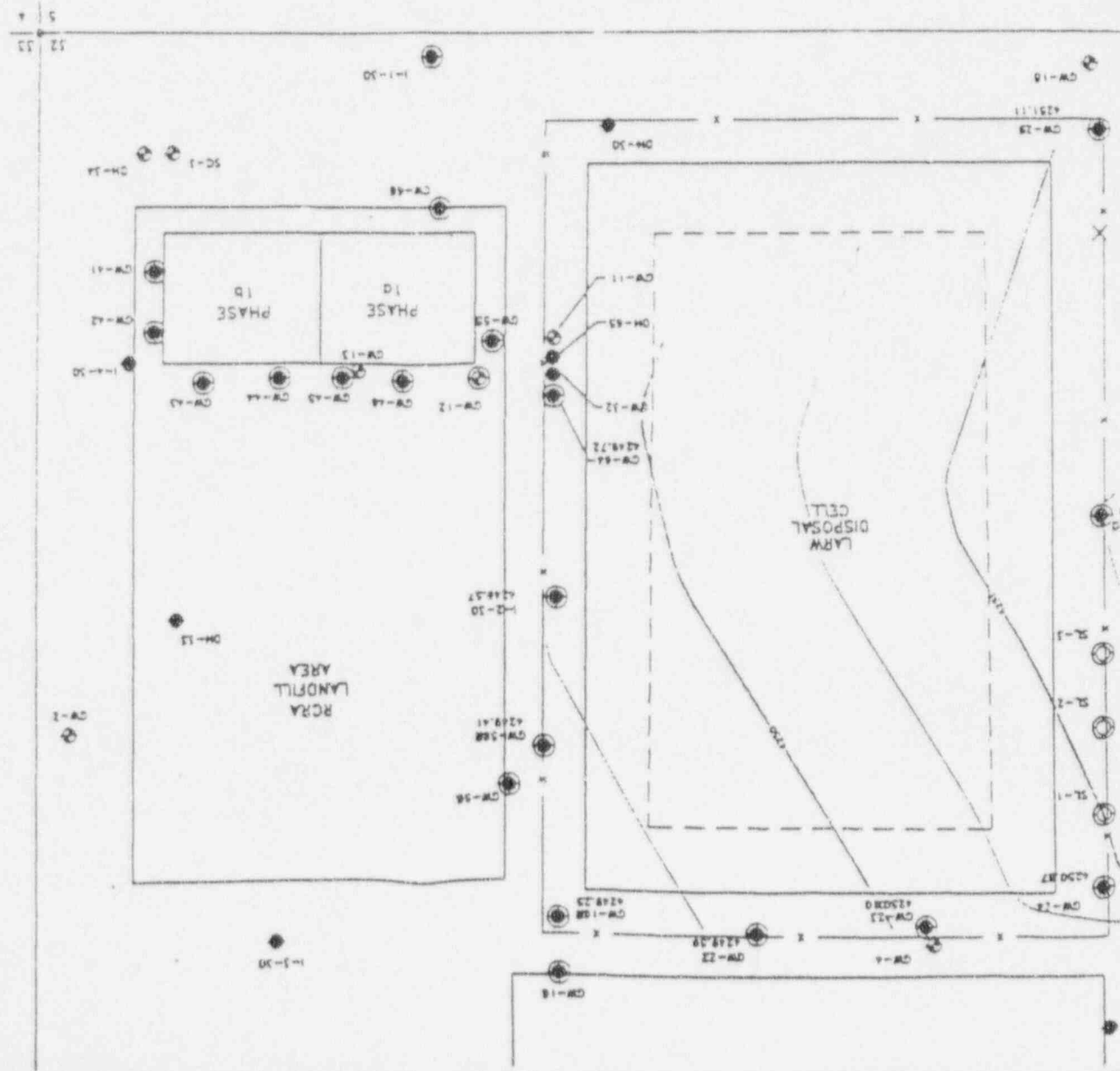
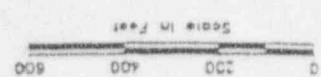
WELLS/PIEZOMETERS

BIRMINGHAM
SALT LAKE CITY - (001) 532-2230

FIGURE 1

FRESHWATER EQUIVALENT HEAD
POTENTIOMETRIC MAP
SHALLOW UNCONFINED AQUIFER
(OCTOBER 1995)

ENVIRONMENTAL



APPENDIX I

1995 ENVIRONMENTAL THORON MONITORING RESULTS

Station	Thoron Concentrations (pCi/l)				AVERAGE
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
A-1	0.42	0.45	0.15	0.24	0.3
A-2	0.05	1.01	1.79	1.68	1.1
A-3	1.18	2.22	1.67	5.30	2.6
A-5	0.68	1.65	1.07	1.88	1.3
A-6	0.91	0.79	0.13	1.20	0.8
A-7	1.54	1.40	1.75	2.13	1.7
A-11	0.69	0.88	0.95	1.05	0.9
A-12	0.26	1.45	0.86	1.22	0.9
A-13	0.29	0.31	0.61	-0.07	0.3
A-14	0.73	1.06	0.98	1.58	1.1
B1	0.02	0.02	0.34	-0.05	0.1
B2	0.06	0.02	0.05	0.34	0.1
TRAILER	0.37	0.36	0.48	0.43	0.4
SAMPLE C	0.05	Note 1	1.13	1.61	0.9
BA SHOP	0.53	0.37	0.29	0.26	0.4

Note 1: SAMPLER WAS EXTENDED BELOW ALLOWABLE RANGE.

1. STATIONS A1, A3, A5, A6, A11, A12, A13, AND A14 SURROUND RESTRICTED AREA.
2. STATIONS A2 AND A7 ARE LOCATED WITHIN OPERATIONAL RESTRICTED AREA.
3. B1 AND B2 ARE LOCATED APPROXIMATELY 1 MILE NORTH AND 1.5 MILES EAST OF PROPERTY BOUNDARY.
4. "TRAILER" IS TAKEN AT THE SECURITY GUARD RESIDENCE TRAILER.
5. "SAMPLE C" IS TAKEN AT THE SAMPLE CONTROL ROOM.
6. "BA SHOP" IS TAKEN AT THE BROKEN ARROW MAINTENANCE AREA.

APPENDIX J
VEGETATION SAMPLES 1995
($\mu\text{Ci/kg}$, Dry Weight)

STATION	DATE	Ra-226	+/- 2 σ	Th-230	Th-232	Total U	Po-210	+/- 2 σ	Pb-210	+/- 2 σ
		ND		ND	ND	1.0E-4	2.7E-4	7.7E-5	4.6E-4	1.5E-4
30	5/8/95	ND		ND	ND	1.1E-4	3.5E-4	6.0E-5	1.6E-4	1.1E-4
30	8/2/95	3.6E-4	2.0E-5	ND	ND	7.6E-5	1.7E-4	6.9E-5	3.4E-4	1.4E-4
39	5/8/95	ND		ND	ND	1.8E-5	1.3E-4	9.0E-6	7.2E-4	6.8E-5
39	8/2/95	ND		ND	ND	1.1E-4	3.8E-4	8.3E-5	5.0E-4	1.7E-4
55	5/8/95	ND		ND	ND	1.3E-4	4.0E-4	1.3E-5	9.0E-4	5.3E-5
55	8/2/95	1.9E-5	5.3E-6	ND	ND	1.0E-4	3.6E-4	9.1E-5	6.4E-4	1.8E-4
A-12	5/8/95	ND		ND	ND	1.8E-4	2.4E-4	4.3E-5	4.7E-4	1.3E-4
A-12	8/2/95	6.0E-5	2.8E-5	ND	ND	9.6E-5	3.2E-4	7.1E-5	5.4E-4	1.4E-4
B-1	5/8/95	ND		ND	ND	3.4E-5	3.6E-5	6.3E-6	2.9E-4	4.2E-5
B-1	8/2/95	1.5E-5	4.2E-6	ND	ND	1.2E-4	3.5E-4	7.7E-5	8.1E-4	1.5E-4
B-2	5/8/95	ND		ND	ND	2.4E-5	2.9E-4	4.3E-5	1.0E-3	9.1E-5
B-2	8/2/95	1.5E-5	6.1E-6	ND	ND	6.6E-5	1.9E-4	6.3E-5	4.7E-4	1.3E-4
B-3	5/8/95	ND		ND	ND	3.7E-5	3.4E-5	8.6E-6	1.0E-4	2.2E-5
B-3	8/2/95	2.2E-5	4.3E-6	ND	ND	6.3E-5	2.1E-4	8.3E-5	3.3E-4	1.7E-4
B-4	5/8/95	ND		ND	ND	3.9E-5	7.0E-5	1.1E-5	2.7E-4	4.6E-5
B-4	8/2/95	1.4E-5	7.0E-6	ND	ND	7.0E-5	1.7E-4	6.7E-5	2.7E-4	1.3E-4
GW-3	5/8/95	ND		ND	ND	3.2E-5	7.9E-5	6.4E-6	3.2E-4	4.2E-5
GW-3	8/2/95	ND		ND	ND					

APPENDIX K

JOINT MONTHLY INSPECTIONS OF 11e.(2) OPERATIONS

by the

CORPORATE RSO AND FACILITY ENGINEER

JANUARY

The 11e.(2) facility was jointly inspected on Friday, January 6, by Steve Peterson and Vernon Andrews. Disposal operations and engineering records were inspected. Due to favorable weather, all of the Maywood waste received to date has been placed and covered with clean cover. About 10,000 square yards of waste is in an open, active disposal mode. The amount of 11e.(2) waste in storage has been reduced to well below 25,000 cubic yards. Seavans of 11e.(2) waste containing asbestos waste have been received and plans for handling those were made with the Site Manager and Broken Arrow. Engineering records of waste placement were reviewed and found to be complete and accurate.

FEBRUARY

The monthly inspection of the 11e.(2) facility was conducted in the company of the Site RSO and facility engineer. Waste which had been stored on the disposal cell during the initial stages of receipt from West Chicago has now been removed from the northwest corner of the disposal cell. The initial two lifts had been placed and were awaiting engineering approval. Final cell elevation after the stored waste has been placed will be below the height at which Envirocare will begin measuring waste diffusion parameters.

MARCH

Operations involving handling and disposal of 11e.(2) waste materials were inspected by the Corporate RSO and Facility Engineer on Friday, March 24, 1995. The rail car rollover had been cleaned of 11e.(2) waste and was being used for LARW waste. Waste which had been in storage on the disposal cell was being moved to other parts of the cell and put into final placement. About two weeks of effort remains, assuming no adverse weather, to complete placement. No waste is currently being received at the site. Cell expansion is progress in with excavation nearly finished along the north, east and south sides of the currently active cell. New liner construction should be complete in about three weeks. Cell berms and fences were found to be in good condition and no problems were found in any phase of the operation.

APRIL

Disposal operations were inspected by the Facility Engineer and Corporate RSO on Friday, April 21. The rail car rollover was not currently in use. Water which had accumulated in the rollover pit as a result of the heavy rainfall of the previous two days had been removed.

Portions of the ramp into the disposal cell had been removed two weeks earlier, along with clay and sand being removed to expand the disposal cell, and placed in a temporary storage area in the portion of the Envirocare facility operated under a license from the State of Utah. The Site RSO had discovered the contaminated material while excavation was still on-going and required the sub-contractor to move the material to the 11e.(2) disposal cell for storage pending use in appropriate areas. The Corporate RSO, Site RSO, Facility Engineer and Site Manager met with the sub-contractor following the inspection and established procedures to prevent future improper management of contaminated soil during construction activities and to reduce contamination of haul roads. The contaminated soil will be used to provide an essentially clean cover over the inactive portions of the disposed waste to reduce thoron emissions.

Measurable contamination of the haul road near the cell area had been reported by the Site RSO. The sub-contractor will remove and dispose of the contaminated surface as waste.

Placement of previously stored waste was continuing. Approximately 90 percent of all waste received had been placed in final disposal at the time of inspection.

Because of the recurrent rains during the month the waste surface has remained quite moist and no evidence of airborne particulates was seen during the inspection.

MAY

The 11e. (2) disposal cell and rail car rollover were inspected by the Facility Engineer and Corporate RSO on Friday, May 19. All of the previously stored waste had been put into final placement and the first shipments of new waste were being placed in the cell. Clean clay had been placed over the west and north side slopes of the emplaced waste to reduce airborne particulate radioactivity and thoron emissions. Runoff and run-on control berms were inspected and found to be in good repair. All waste handling operations were found to be in compliance.

New cell liner construction had been temporarily halted to allow clay to dry following recent rains. A portion of the restricted area fence adjacent to the cell access road was found to have been damaged by clay which had been recently placed during reconstruction of the access road. Broken Arrow was contacted and made immediate repairs. No other instances of non-compliance were observed.

JUNE

The monthly joint inspection by the Facility Engineer and Corporate RSO was conducted Friday, June 23. Waste is currently being received from three generators. Waste from West Chicago is being placed in sections 3 and 4 to bring them to the level of waste in sections 1, 2, 5 and 6, at which point all six sections will be at approximately 10 feet below the top of the final waste layer.

The new cell area south of the initial disposal area is now receiving waste from St. Louis. The initial two feet of waste was being placed during the inspection and the contractor was removing debris from the waste to comply with restrictions on placement of debris in the bottom layers of waste.

Cell berms were inspected and found to be in good condition.

Haul roads to and within the disposal cell were, generally, well-watered and no evidence of dust generation was noted. One area was showing signs of dryness and a discussion was held with the sub-contractor on ways of assuring adequate watering of all haul road sections. Polymer spray had been applied to all non-active portions of the waste and was found to have formed a good seal, preventing generation of wind-blown dust.

Rail car rollover operations were inspected. No rail cars were being unloaded at the time, but waste from the previous day's unloading was still being loaded into trucks for transport to the disposal cell. Moisture content of the waste was ideal for compaction and presented no potential for airborne radioactive particulates during rail car unloading or moving.

No instances of non-compliance were observed during the inspection.

JULY

The monthly joint inspection by the Corporate RSO and Facility Engineer was performed on July 7, 1995. At the time of the inspection the newly completed cell addition to the south of the initial cell area was completed and was receiving waste from two generators. Debris had been sorted from the bottom two lifts of the new cell area, as required. It was requested that the lower level waste currently being received from West Chicago be placed over all the in-place higher-level waste received earlier to limit thoron and particulate emissions. Because of the placement of clean clay over the liner in the new addition, it was not clear that the runoff control berm was of adequate height. A check of engineering records showed that it had been placed to the proper height.

Construction of the sub-grade for the cell addition to the east of the initial cell had been completed and liner construction had commenced.

Rail car rollover and wash shed were inspected and found to be in compliance.

AUGUST

The Facility Engineer and Corporate RSO performed the monthly joint inspection of 11e.(2) operations on Friday, August 18. No waste was being received or placed at the time of the inspection. All waste in the disposal cell had been placed and compacted. Clean clay has been placed on the side slopes of the original disposal cell to eliminate airborne particulate radioactivity and thoron emissions. The exposed top of the original cell, which is within approximately 10 feet of the final cell height, has been covered with lower-concentration waste from West Chicago. West Chicago waste is now being placed in the new cell area east of the original cell area and reaches to the final toe of the slope on the east edge. The restricted area fence has been relocated along the south and west sides. On the south, the fence has been moved south to the edge of the planned active waste disposal for 11e.(2) waste and the fence along the west side has been extended south to meet the new south restricted area fence. A new run-on control berm is being constructed to control the entire area within the expanded restricted area. Upon completion, the inner run-on control berms will be removed. The Site RSO had pointed out that a layer of old haul road to the 11e.(2) disposal cell was still to be found in the run-on control berm along the east side. This will be removed and replaced with clean clay.

The rail car rollover was inspected, although there were no operations being conducted at the time. The HDPE liner material which had been placed over the side slopes above the concrete pit walls is in very poor condition as a result of wind damage. Although not required by permit, it is recommended that this material be repaired or replaced by a more permanent cover such as shotcrete.

No findings of non-compliance were observed during the inspection.

SEPTEMBER

The monthly joint inspection of 11e.(2) operations was performed on Friday, September 15, by the Corporate RSO and Facility Engineer. Waste elevations on units 1 - 6 of the 11e.(2) disposal cell are approximately 8 feet from final grade. Runoff control berms were inspected and found to be in good repair. Existing run-on control berms were inspected and were, also, in good condition. New run-on control berms are being constructed along the boundaries of the newly expanded restricted area. Prior to constructing the new run-on control berm across the haul road, the haul road will be removed and placed into the disposal cell so that contaminated material will not be covered by the berm.

Expansion of the disposal cell south of the existing run-on control berm has begun. This area will accommodate waste from the Wayne Interim Storage Site. After the cell liner has been completed in this area the remainder of the haul road inside the new run-on control berm will be removed and placed in the new cell as part of the needed "clean" lift. The haul road will be rebuilt with uncontaminated material. A portion of the old haul road was covered during reconstruction of the run-on control berm east of the disposal cell. This material will be removed and placed in the expanded cell area and the berm will be restored to design height.

Cell construction was inspected and found to be in compliance. No items of non-compliance were observed during the inspection.

OCTOBER

The 11e.(2) operations were inspected on Friday, October 27, by the

Corporate RSO and Facility Engineer. Winter blanket has been placed over the lots 1 to 6 and adjacent lifts are being used for waste placement.

The expanded run-on control berm has been completed. The portion of the haul road covered by the berm was cleaned of radioactive contamination prior to constructing the berm over the road. Removal of clay from the cell expansion to the south is in progress and is expected to be completed in about one week. Final preparation of the cell liner in that area will be about two weeks afterward.

Waste was being hauled and placed in the cell during the inspection. No evidence of dust was seen, showing good moisture control to prevent resuspension.

NOVEMBER

The 11e.(2) disposal operations were inspected by the Corporate RSO and Facility Engineer on Friday, November 17. Winter blanket has been placed on the initial six lots of waste from West Chicago. Waste is still being placed on the lots to the east of the initial six lots. The first lift of clay liner had been placed and was being worked in the cell extension to the south. The top layer of the haul road inside the run-on control berm had been scraped to remove contamination. Material removed from the road has been temporarily placed in the disposal cell. After the clay liner has been completed in the extension, that road surface material, along with additional material to be removed will be placed as part of the initial lift of debris-free material.

All berms were inspected and found to be in good repair. A section of the run-on control berm east of the disposal cell will be removed to excavate a portion of the old haul road which was covered by repairs to the berm. The material removed will be placed in the disposal cell extension.

No items of non-compliance were found during the inspection.

DECEMBER

The 11e.(2) operations were inspected December 15 by the Corporate RSO and Facility Engineer in the company of the Site RSO. The only activity at the rail car rollover during the inspection was four gondolas from the Wayne, NJ WISS FUSRAP site. Waste receipts from the other three sites have stopped for the winter. The cells for those projects were inspected and found to be in proper condition. Site Engineers were inspecting the final lift of the cell extension being constructed for the Wayne material. The lift was found to be a fraction of an inch too thick and is to be reworked to the proper elevation by December 18. Run-on and run-off control berms were inspected and found to meet established standards and to be in good repair. Additional road surface needs to be removed to bring contamination within the 11e.(2) area to acceptable levels.

24 August 1995

Mr. Khosrow Semnani, President
Envirocare of Utah, Inc.
46 West Broadway, Suite 240
Salt Lake City, Utah 84101

Dear Mr. Semnani:

On 14 and 15 August 1995 I visited the Envirocare of Utah, Inc. Radioactive Waste Site at Clive, Utah assisted by Kenneth Kessler, Site RSO (referred to as the FRSO in SMC-1559 License) and other administrative and operational personnel for the following Purposes and Applications prescribed for the Independent Auditor. On 16 August 1995 I reviewed and audited documents supporting operating licenses for the Clive Site.

PURPOSE OF INDEPENDENT AUDIT

As required by Section 9.17 of NRC License SMC-1559, Amendment No. 5, Docket No. 40-8989 for NRC 11e.(2) Byproduct Material License issued to Envirocare of Utah, Inc. the following independent internal audit of facility operations and documentation has been performed by an NRC approved independent consultant (Gary M. Sandquist) as required by the License.

APPLICATION OF INDEPENDENT AUDIT

The NRC approved independent consultant for the Audit performed the following activities associated with the Audit:

- Inspected and toured the site and its facilities
- Interviewing operational and administrative personnel
- Reviewed health physics operations, audited radiation records, procedures, and safety practices at the site.
- Audited compliance of activities and activities with the NRC License SMC-1559, Amendment No. 5, Docket No., 40-8989 for 11e.(2) Byproduct Material License issued to Envirocare of Utah, Inc.

The site serves as a disposal facility for radioactive waste and is Licensed by the State of Utah (License Number UT 2300249, Amendment 19, dated 9 November 1994 for the permanent disposal of radioactive waste and by the US NRC for the disposal of Byproduct Materials as packaged or bulk radioactive waste under License NRC: SMC-1559.

To facilitate the Audit and insure comprehensive coverage audit a checklist for radiological activities and documentation associated with the NRC License SMC-1559, 11e.(2) Byproduct Material License issued to Envirocare of Utah, Inc. and a general audit checklist were prepared and employed by the auditor for the audit.

SPECIFIC INSPECTION ITEMS

Quality Assurance Program Audit Items for the period January 1994 to 15 August 1995

CHECKLIST OF SMC-1559 AUDIT ITEMS

Standard Operating Procedures (Operational SOPs): (Ref.: SMC-1559, Amend 5, Sect 9.6a) SOPs exist for all operational activities (viz., handling, storing, disposal, etc.) of radioactive materials.

Observation: Standard Operating Procedures for Operations at Envirocare are contained in the Operational Procedures Manual dated 11 Nov 1994 and are found in the administrative offices at the Clive Site.

Standard Operating Procedures (Non-operational SOPs): (Ref.: SMC-1559, Amend 5, Sect 9.6a) SOPs exist for all non operational activities (viz., environmental monitoring, bioassay, instrument calibration, etc.)

Observation: Non-operational Standard Operating Procedures at Envirocare are contained in the Operational Procedures Manual dated 11 Nov 1994 and are found in the administrative offices at the Clive Site.

Envirocare QA/QC Plans: (Ref.: SMC-1559, Amend 5, Sect 9.6e) Quality controls exist for waste sampling and characterization, protective equipment and respirator protection equipment.

Observation: Item is adequate and meets requirements. QA/QC documents include: Quality Assessment Manual dated 14 June 1994, Operational Procedures Manual dated 11 Nov 1994, and Quality Assurance Manual dated 28 Mar 1994. Note that the QA Manual does not delineate the responsibilities and qualifications of the CRSO.

Air Sampling Program: (Ref.: SMC-1559, Amend 5, Sect 9.6f) Current design and implementation of air sampling program based on NRC REG GUIDE 8.25, Rev 1.

Observation: Item is adequate and meets all requirements. No corrective actions required.

CRSO Approval of Radiological SOPs: (Ref.: SMC-1559, Amend 5, Sect 9.8) All SOPs reviewed and approved by CRSO.

Observation: Item is adequate and meets all requirements. No corrective actions required. Revision 3 of the Operating Procedures Manual dated 9 May 1994 is signed by CRSO on 14 Jul 1994.

Envirocare Radiological Organization: (Ref.: SMC-1559, Amend 5, Sect 9.9) Existing Radiological Administrative Structure reviewed and reported to NRC.

Observation: Item is adequate and meets all requirements. No corrective actions required.

CRSO Reporting, Qualification and Training: (Ref.: SMC-1559, Amend 5, Sect 9.10) CRSO reports to Envirocare Executive VP on radiological safety, is qualified as per REG GUIDE 8.31 and received 40 hour biennial training.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Field Radiation Safety Officer (FRSO), Radiation Technicians (RTs), Radiation Monitors (RMs): (Ref.: SMC-1559, Amend 5, Sect 9.10) FRSO, RTs and RMs report to appropriate officers, are qualified as per REG GUIDE 8.31, work is reviewed by CRSO and have received required training.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Annual Training for Facility Inspectors: (Ref.: SMC-1559, Amend 5, Sect 9.11b) All facility and site inspectors of 11e(2) byproduct materials and disposal areas receive annual training as required.

Observation: Item is adequate and meets requirements. Envirocare should designate those personnel in writing who are 11e(2) qualified facility inspectors. Annual training activities should also be documented.

Radiation Work Permits (RWPs): (Ref.: SMC-1559, Amend 5, Sect 9.13) RWPs are used for all radiological activities where no SOP exists and describe scope of work, ALARA precautions, additional radiological monitoring and sampling, protective equipment used.

Observation: Item is adequate and meets requirements. Continuation sheets of RWPs are not evident. See for example RWP dated 18 May 1995. Paging of RWPs should be designated as page --- of ---- total pages to ensure that users have all RWP instructions.

CRSO Approval of RWPs: (Ref.: SMC-1559, Amend 5, Sect 9.13) All RWPs are reviewed and approved by the CRSO prior to initiation of work.

Observation: Item is adequate and meets requirements. RWPs are reviewed and approved by FRSO. Documentation designating FRSO to approve RWPs for CRSO is required.

SOPs for Worker Contamination Control: (Ref.: SMC-1559, Amend 5, Sect 9.14) SOPs shall provide for control of dust inhalation, and use of dust suppressants on all operational roads.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Qualified Respirator Fit Tests: (Ref.: SMC-1559, Amend 5, Sect 9.15) CRSO or designee must be qualified by training and perform annual respirator fits tests as provided in REG GUIDE 8.15 for all employees using respirators. SOPs must exist and be current for fit testing.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Annual Certification of Facility Drawings (as built) : (Ref.: SMC-1559, Amend 5, Sect 9.16) A Registered Professional Engineer must annually certify as built drawings of the Envirocare facility on an annual basis.

Observation: Item is adequate and meets all requirements. No corrective actions required.

foot) which cannot be disposed of within 24 hours has been posted as a "Radiation Area" according to 10CFR20.1902(a).

Observation: Item is adequate and meets all requirements. No corrective actions required.

Facility Compliance with Specifications: (Ref.: SMC-1559, Amend 5, Sect 10.8)
Facility complies with following annual specifications:

disposal mass $\leq 453,600$ metric tonnes or 500,000 tons
disposal surface area $\leq 38,472$ sq. m or 414,100 sq. ft
embankment capacity 3.3 million cu yd
undisposed waste 27,430 cu m or 968,700 cu ft
all truck load or railcar shipment ≤ 2000 pCi/g of U series
or ≤ 6000 pCi/g of Th series
effluent concentration limits comply with Table 2,
Appendix B of 10CFR20.1001-20.2401
and population dose limits of 10CFR20.1301

1 Jan 95-14 Aug 95
6.8E4 14% max
5E4 2% max
0 0
<2000 pCi/g
<6000 pCi/g

Observation: Item is adequate and meets all requirements. No corrective actions required.

Monitoring in POC Wells: (Ref.: SMC-1559, Amend 5, Sect 11.1) Detection, compliance and corrective action monitoring performed at POC wells as required for constituents in SMC, Section 11.1 and all new constituents as per Section 10.2(a). Detection monitoring performed quarterly if POC wells contaminant-free. Otherwise see SMC, Section 11.1 for procedures.

Observation: Item may exceed NRC background concentration on Th-230 in GW-60, Th-232 in GW-28 and GW-36, natural U in GW-24 as reported in the 2nd quarter 1995 Bingham Environmental Report to Envirocare dated 28 Jun 1995. Corrective action required.

Monitoring Certification: (Ref.: SMC-1559, Amend 5, Sect 11.2) Monitoring samples shall be analyzed by a certified laboratory within two weeks after monitoring compliance period. Occupational exposure results shall be performed within 1 week after receipt of analysis. Non routine sample analysis by certified laboratory or Envirocare shall begin within two working days after sample collection. CRSO shall review results within 2 working days after receipt of results.

Observation: Item is adequate and meets all requirements. No corrective actions required.

CRSO and Site Engineer Inspections: (Ref.: SMC-1559, Amend 5, Sect 11.3) CRSO and Site Engineer shall perform and document joint inspections of all work areas monthly. Deficiencies shall be corrected within 7 working days after disclosure. Any corrective actions shall be reported in annual report.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Personnel Radiological Monitoring: (Ref.: SMC-1559, Amend 5, Sect 11.4a) Monitoring shall demonstrate compliance with Subpart C of Part 20 as follows:

personnel monitoring required by 10CFR20.1502
continuous monitoring of airborne concentrations of Rn-222 and Rn-220 (SMC, Sec 9.3)
waste unloading area
waste storage area
covered waste area

security guard trailer
airborne particulate monitoring (SMC, Sec 9.3)
gamma radiation exposure measurements of work areas (SMC, Sec 9.3)
demonstrate that monitoring locations are representative of occupational exposures

Observation: Item is adequate and meets requirements. Documentation demonstrating that monitoring locations are representative of occupational exposures is required.

Site Radiological Monitoring: (Ref.: SMC-1559, Amend 5, Sect 11.4b) Monitoring shall demonstrate compliance with Subpart D of Part 20 as follows:

continuous monitoring of airborne concentrations at site perimeter of Rn-222 and Rn-220 (SMC, Sec 9.3)

airborne particulate monitoring at air sampling stations in Table 7.2 of License (SMC, Sec 9.3)

gamma radiation exposure measurements of unrestricted areas (SMC, Sec 9.3)
demonstrate that monitoring locations are representative of occupational exposures
calculate total effective dose equivalent for occupational workers and demonstrate compliance (≤ 5000 mrem/yr.)

calculate total effective dose equivalent for public and demonstrate compliance (≤ 500 mrem/yr.)

Observation: Item is adequate and meets all requirements. No corrective actions required.

Annual ALARA Audit: (Ref.: SMC-1559, Amend 5, Sect 12.3) Perform an annual ALARA audit of Envirocare Radiation Safety Program led by CRSO and include representative of Corporate Management as per REG GUIDE 8.31. Audit shall address the following records and activities:

bioassay results and actions taken for levels in excess of Table 1 of REG GUIDE 8.22

records of external and internal exposures

safety meeting minutes, attendance records, training program records

daily inspection logs and summary reports of monthly reviews

radiological surveys and monitoring data, environmental radiological effluent and monitoring data

surveys required by RWPs

reports of overexposures to NRC and State of Utah

reviews of operating and monitoring procedures completed during the year.

review and analysis of trends in personnel exposures, radiological effluent data, performance of exposure and effluent control equipment.

recommendations to reduce personnel exposures or environmental releases.

Observation: Item is adequate and meets requirements. Personnel ALARA interviews are performed quarterly with a formal annual individual employee and FRSO interview. However, minutes of meeting do not reflect specific audits of each of the above items. Corrective actions required.

Land Use Survey around Site: (Ref.: SMC-1559, Amend 5, Sect 12.4) Conduct an annual land use survey for 5 km radius around site. Assess population and industrial changes. Inventory domestic and agricultural wells in survey area. Document survey in annual report.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Notification of Violation of Regulations or License Conditions: (Ref.: SMC-1559, Amend 5, Sect 12.5, 12.7) Inform NRC as required in SMC, Section 12.5 of any waste shipment which violates regulations or license conditions, failure of 11e.(d) byproduct material disposal cells that release waste into unrestricted areas, any condition that might lead to system failure or release of waste into unrestricted areas.

Observation: Item is adequate and meets all requirements. No corrective actions required. No violations were reported to NRC as per License Conditions 12.5 or 12.7.

Annual Report to NRC: (Ref.: SMC-1559, Amend 5, Sect 12.6) Submission of annual report to NRC documenting the following by 1 March first year and 31 March thereafter :

- all annual reporting requirements as specified in the license or applicable regulations
- results of calibration of equipment
- audits and inspections completed during the year
- results of meeting and training courses required by license
- other significant information, reviews, investigations, corrective actions

Observation: Item is adequate and meets all requirements. No corrective actions required.

CHECKLIST OF GENERAL AUDIT ITEMS

The following activities, documents and programs which support license activities at Envirocare of Utah, Inc. were also inspected and audited for compliance with existing state and federal license requirements, regulations regarding radiological activities at the Clive Site.

Instrument Constancy: All portable and laboratory radiation detection and measurement instrumentation must be checked on a daily basis when in use.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Instrument Calibration: All portable survey instruments must be calibrated by outside calibration facilities following repair and at six (6) month intervals.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Gamma Spectrometer System Certification:

Observation: Item is adequate and meets all requirements. No corrective actions required. Some drift problems still exist with MCA but these are corrected as needed.

Air Sampler Maintenance and Calibration: All air samplers are to be calibrated for air flow every six (6) months with calibration data available to users..

Observation: Item is adequate and meets all requirements. No corrective actions required.

Electronic Balance Calibration: The laboratory electronic balance is to be calibrated monthly..

Observation: Item is adequate and meets all requirements. No corrective actions required.

Postings: Notice to employees, notice of location of documents required by 10CFR19,20,40 and 51, and copy of Section 206 of the Energy Reorganization Act of 1974 must be posted.

Observation: Item is adequate and meets all requirements. No corrective actions required. However, suggested that essential postings required above be separated from non-mandatory postings for ease of use.

Site Regulations: Site regulations are current and signed by all employees or other entrants in the restricted areas.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Waste Manifest (RSR) and Continuation Sheets: Waste manifest and continuation sheets are current, complete and accurate.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Incoming Shipment Data Analysis: Laboratory analysis of incoming waste samples are reviewed and compared to waste manifest sheets for accuracy.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Weekly Audits by RSO: Weekly inspections are performed and documented by the CRSO or designee.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Monthly Joint Inspection by CRSO and Facility Engineer (Records Only): Monthly inspections are performed and documented jointly by the CRSO or designee and the Facility Engineer.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Unlimited Release of Vehicles and Equipment:

Observation: Item is adequate and meets all requirements. No corrective actions required. However, EC-3 forms should be updated to reflect units used in readings (i.e., indicate Bq/ sq cm).

Unlimited Release of Packages:

Observation: Item is adequate and meets all requirements. No corrective actions required. However, EC-3 forms should be updated to reflect units used in readings (i.e., indicate Bq/ sq cm).

Emergency Response (Kits and Drills):

Observation: Item is adequate and meets all requirements. No corrective actions required. Suggest future drills exercise medical injury to test capabilities to provide first aid treatment, patient transport and admission at hospital.

Personnel Airborne Exposure Monitoring for Employees: Work areas and breathing zone samples are collected and analyzed for potential internal exposures.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Personnel Monitoring for Visitors:

Observation: Item is adequate and meets all requirements. No corrective actions required.

Access Control for Employees:

Observation: Item is adequate and meets all requirements. No corrective actions required.

Exiting Controlled Areas:

Observation: Item is adequate and meets all requirements. No corrective actions required.

Area Surveys of Restricted Areas Operations: Surveys performed as scheduled and reviewed by Site RSO (FRSO) and actions performed are noted.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Training of New Employees and Examinations:

Observation: Item is adequate and meets all requirements. No corrective actions required.

Pre-refresher Training of All Employees:

Observation: Item is adequate and meets all requirements. No corrective actions required.

Respiratory Protection:

Observation: Item is adequate and meets all requirements. No corrective actions required. Michelle Little has a bioassay due of 15 Jul 1995, however, she is on maternity leave. She should have a bioassay upon her return to work at Envirocare.

Ground Water Sampling:

Observation: Item may exceed NRC background concentration on Th-230 in GW-60, Th-232 in GW-28 and GW-36, natural U in GW-24 as reported in the 2nd quarter 1995 Bingham Environmental Report to Envirocare dated 28 Jun 1995. Corrective action required.

Soil Sampling Program:

Observation: Item is adequate and meets all requirements. No corrective actions required.

Environmental Air Sampling Program: Samples collected as specified, airborne radioactivity concentrations are within regulatory limits.

Observation: Item is adequate and meets all requirements. No corrective actions required.

Vegetation Sampling Program:

Observation: Item is adequate and meets all requirements. No corrective actions required.

Environmental Gamma Monitoring:

Observation: Item is adequate and meets all requirements. No corrective actions required.

Radon-220, 222, Monitoring Program

Observation: Item is adequate and meets all requirements. No corrective actions required.

Chain of Custody Forms:

Observation: Item is adequate and meets requirements. However, some second quarter and third quarter 1995 chain of custody forms (EC-0101) are incomplete in that they lack receipt signatures as follows: 5591, 5600, 5609, 5615, 5619, 5626, 564, 5667, 5580, 5519, 5483, 54177, 5426, 4419, 4415, 4416, 4417. Corrective actions required.

CONCLUSIONS AND RECOMMENDATIONS

1. Record keeping, collation and filing and general administrative upkeep at the site is very good. Because of expanding volume of documents, it is suggested that all essential past radiological records should be inventoried, checked for completeness, and then bound and archived for permanent storage as allowed by regulations.
2. Envirocare QA Manual does not delineate the responsibilities and qualifications of the CRSO. This should be done because of the significant regulatory role performed by the CRSO for the NRC license.
3. The Site Contingency Plan (Emergency Plan) should be expanded to include all credible threats (physical, personnel, bomb, etc.) to the Site from any source such as severe weather, demonstrations, major accidents, etc.
4. It is suggested that duplicate samples continue to be submitted to outside agencies for confirmation of the Envirocare's Environmental Monitoring Program to demonstrate performance capability in meeting regulatory requirements.
5. Envirocare should designate personnel who are 11e(2) qualified facility inspectors. Also annual training activities should be documented and filed.
6. Continuation paging of RWPs is not done. This should be done to ensure that these important instructions are complete for radiation workers.
7. It was not apparent that emergency procedures exist for response to a demonstration, threat, terrorism, earthquake, violent storm, etc. or other physical threat to Site property or personnel. If this has not been done, a written policy and set of procedures should be developed so that Site personnel respond in a planned and appropriate manner to such a situation.
8. RWPs are reviewed and approved by FRSO rather than CRSO specified in NRC license. This is satisfactory if documentation designating FRSO to perform this function is prepared.
9. Radon attenuation testing and distribution of Ra-226 and Th-230 in the cover must be initiated soon to ensure compliance with the NRC license.
10. Documentation demonstrating that current monitoring locations are representative (and probably yield conservative measurements) of occupation exposures.

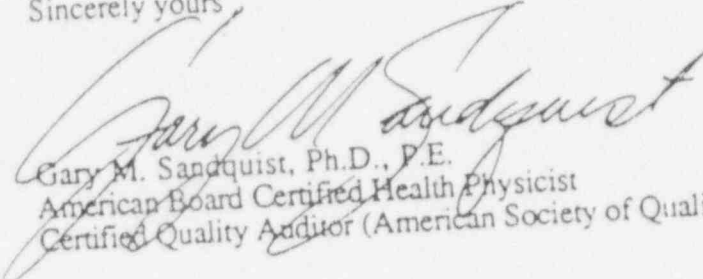
11. Minutes of ALARA Review Committee (Radiation Safety Committee) do not presently reflect that each item in Section 15.3 of the NRC license is addressed. Suggest that a form with each of these items denoted be prepared and utilized when the committee meets.

12. Chain of Custody forms are not always complete in that receipt signatures are missing. Suggest that training of personnel completing these forms be conducted to resolve this continuing issue.

13. Requirement: Monitoring in POC Wells: (Ref.: SMC-1559, Amend 5, Sect 11.1) Detection, compliance and corrective action monitoring performed at POC wells as required for constituents in SMC, Section 11.1 and all new constituents as per Section 10.2(a). Detection monitoring performed quarterly if POC wells contaminant-free. Otherwise see SMC, Section 11.1 for procedures.

Observation: Item may exceed NRC background concentration on Th-230 in GW-60, Th-232 in GW-28 and GW-36, natural U in GW-24 as reported in the 2nd quarter 1995 Bingham Environmental Report to Envirocare dated 28 Jun 1995. Corrective action is required to resolve this observation. It may be that natural variation in background is responsible for this exceedence, but it should be resolved soon. See Amendment 5, Section 11.1 of the NRC License SMC-1559.

Sincerely yours,



Gary M. Sandquist, Ph.D., P.E.
American Board Certified Health Physicist
Certified Quality Auditor (American Society of Quality Control)

APPENDIX M														
WORK AREA PARTICULATE RADIOACTIVITY SAMPLING RESULTS														
LOCATION	DATE	Ra-226	Ra-228	Th-230	Th-232	FRACTION OF DAC		U-234	U-NAT	Pb-210	Po-210	SIGMA F	EFFECTIVE	EFFECTIVE
						U-238	U-2354						RPF*	SIGMA F
RAILCAR WASH SD	1/9/95	0.0E+00	0.0E+00	1.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-03	1.9E-04	4.5E-05	3.1E-03	10	3.1E-04
RAILCAR WASH SD	1/17/95	6.7E-04	1.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-03	1.0E-03	1.5E-04	5.0E-03	10	5.0E-04
11E(2) CELL	2/6/95	0.0E+00	0.0E+00	4.8E-04	2.9E-03	0.0E+00	0.0E+00	0.0E+00	4.0E-03	1.7E-03	1.3E-04	9.2E-03	10	9.2E-04
11E(2) CELL	2/28/95	0.0E+00	0.0E+00	2.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-03	7.1E-04	1.7E-04	7.1E-03	10	1.4E-03
11E(2) CELL	3/27/95	0.0E+00	5.4E-06	2.7E-03	5.4E-03	0.0E+00	0.0E+00	0.0E+00	5.2E-03	7.0E-04	1.7E-04	1.4E-02	10	1.6E-03
11E(2) CELL	3/28/95	0.0E+00	7.6E-05	4.7E-03	5.1E-03	0.0E+00	0.0E+00	0.0E+00	4.9E-03	1.6E-03	1.3E-04	1.6E-02	10	1.6E-02
11E(2) CELL	4/4/95	4.2E-04	2.9E-04	8.8E-03	1.4E-01	0.0E+00	0.0E+00	0.0E+00	5.2E-03	2.5E-03	5.7E-04	2.9E-02	10	2.9E-03
11E(2) CELL	4/5/95	4.5E-05	3.1E-05	0.0E+00	2.3E-02	0.0E+00	0.0E+00	0.0E+00	3.8E-03	1.7E-03	2.5E-04	2.9E-02	10	3.5E-03
11E(2) CELL	4/6/95	6.1E-05	8.7E-05	6.5E-03	2.3E-02	0.0E+00	0.0E+00	0.0E+00	4.9E-03	7.3E-04	3.7E-04	3.5E-02	10	1.4E-03
11E(2) CELL	4/7/95	1.7E-04	4.5E-05	3.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-03	1.8E-03	2.6E-04	1.4E-02	10	7.8E-04
11E(2) CELL	4/10/95	0.0E+00	0.0E+00	1.7E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-03	8.3E-04	1.7E-05	7.8E-03	10	1.4E-02
11E(2) CELL	4/11/95	0.0E+00	1.6E-04	2.1E-02	1.1E-01	0.0E+00	0.0E+00	0.0E+00	9.0E-03	1.1E-03	3.1E-04	1.4E-01	10	2.1E-02
11E(2) CELL	4/12/95	0.0E+00	5.0E-04	1.5E-02	1.9E-01	0.0E+00	0.0E+00	0.0E+00	7.3E-03	3.8E-03	5.8E-04	2.1E-01	10	2.1E-02
11E(2) CELL	4/13/95	5.9E-05	5.4E-04	1.3E-02	1.9E-01	0.0E+00	0.0E+00	0.0E+00	5.3E-03	2.0E-03	5.6E-04	2.1E-01	10	1.2E-03
11E(2) CELL	4/18/95	0.0E+00	1.5E-06	3.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-03	1.6E-03	4.1E-04	1.2E-02	10	5.6E-04
11E(2) CELL	4/26/95	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-03	1.6E-03	2.0E-04	5.6E-03	10	7.1E-04
11E(2) CELL	4/27/95	0.0E+00	0.0E+00	9.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-03	1.2E-03	1.1E-04	7.1E-03	10	1.0E-03
11E(2) CELL	4/28/95	7.2E-05	5.6E-05	3.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03	1.8E-03	1.9E-04	1.0E-02	10	2.8E-03
11E(2) CELL	5/1/95	0.0E+00	1.6E-04	0.0E+00	2.0E-02	0.0E+00	0.0E+00	0.0E+00	1.5E-03	1.5E-03	3.6E-04	2.8E-02	10	1.1E-03
11E(2) CELL	5/3/95	1.2E-04	2.4E-05	5.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-03	6.9E-04	8.0E-05	1.1E-02	10	1.2E-03
11E(2) CELL	5/4/95	0.0E+00	1.2E-04	2.7E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-03	2.1E-03	2.6E-04	1.2E-02	10	7.9E-04
11E(2) CELL	5/5/95	8.4E-05	0.0E+00	7.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-04	5.2E-05	7.9E-03	10	8.6E-03
11E(2) CELL	5/8/95	0.0E+00	6.7E-05	0.0E+00	7.9E-02	0.0E+00	0.0E+00	0.0E+00	6.1E-03	1.1E-03	3.2E-04	8.6E-02	10	1.9E-03
11E(2) CELL	5/10/95	0.0E+00	0.0E+00	0.0E+00	1.3E-02	0.0E+00	0.0E+00	0.0E+00	5.2E-03	7.6E-04	0.0E+00	1.9E-02	10	9.6E-03
11E(2) CELL	5/16/95	0.0E+00	5.1E-05	5.7E-02	3.2E-02	0.0E+00	0.0E+00	0.0E+00	5.9E-03	0.0E+00	2.7E-04	9.6E-02	10	1.5E-02
11E(2) CELL	5/22/95	4.3E-04	4.4E-04	0.0E+00	1.5E-01	0.0E+00	0.0E+00	0.0E+00	2.3E-03	8.6E-04	0.0E+00	1.5E-01	10	6.2E-04
ROLLOVER	6/14/95	0.0E+00	2.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-03	1.6E-03	4.5E-05	6.2E-03	10	2.3E-04
11E(2) CELL	6/22/95	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	1.9E-03	1.9E-04	2.3E-03	10	7.7E-03
11E(2) CELL	6/23/95	2.7E-04	4.6E-05	1.9E-03	6.9E-02	0.0E+00	0.0E+00	0.0E+00	3.7E-03	1.6E-03	2.5E-04	7.7E-02	10	1.8E-04
ROLLOVER	6/23/95	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-03	0.0E+00	2.1E-04	1.8E-03	10	9.5E-03
RAILCAR WASH SD	6/23/95	6.9E-05	1.6E-04	2.0E-03	8.8E-02	0.0E+00	0.0E+00	0.0E+00	3.6E-03	8.8E-04	2.8E-04	9.5E-02	10	1.4E-03
11E(2) CELL	6/26/95	0.0E+00	9.0E-05	0.0E+00	1.1E-02	0.0E+00	0.0E+00	0.0E+00	1.2E-03	8.5E-04	2.5E-04	1.4E-02	10	3.0E-03
11E(2) CELL	6/27/95	1.2E-04	1.8E-04	3.8E-03	2.3E-02	0.0E+00	0.0E+00	0.0E+00	1.9E-03	1.2E-03	3.0E-04	3.0E-02	10	1.2E-05
ROLLOVER	7/13/95	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04	1.2E-04	10	4.5E-05
RAILCAR WASH SD	7/13/95	1.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-04	4.3E-05	4.5E-04	10	1.5E-04
ROLLOVER	7/18/95	9.0E-05	6.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-04	4.4E-04	1.5E-03	10	2.6E-03
ROLLOVER	7/19/95	2.0E-04	3.8E-05	0.0E+00	2.2E-02	0.0E+00	0.0E+00	0.0E+00	9.6E-04	2.5E-03	4.7E-04	2.6E-02	10	4.2E-05
RAILCAR WASH SD	7/26/95	5.2E-05	5.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-04	4.4E-05	4.2E-04	10	3.1E-04
RAILCAR WASH SD	7/28/95	6.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.4E-03	1.6E-04	3.1E-03	10	

Gary A. Weston, USB #3435
NIELSEN & SENIOR
Attorneys for Defendants
1100 Eagle Gate Tower
60 East South Temple
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Telephone (801) 532-1900

FILED
DISTRICT COURT
95 OCT 24 PM 4:20
THIRD JUDICIAL DISTRICT
SALT LAKE COUNTY
BY *[Signature]*
DEPUTY CLERK

IN THE THIRD JUDICIAL DISTRICT COURT OF SALT LAKE COUNTY
STATE OF UTAH

LARRY F. ANDERSON, an individual,
and LAVICKA INC., a Utah corporation,

Plaintiffs,

v.

KHOSROW B. SEMNANI, an individual,
and ENVIROCARE OF UTAH, INC., a
Utah corporation,

Defendants.

)
)
) NOTICE OF APPEARANCE
) FOR DEFENDANTS AND
) ACCEPTANCE OF SERVICE
) OF PROCESS
)

) Civil No. 960907271

) Judge Frank G. Noel
)
)

Gary A. Weston of the firm of Nielsen & Senior does hereby enter his appearance as attorney for the Defendants in the herein action and, being duly authorized by them to accept service of process on their behalf, hereby accepts service of the Summons and Complaint in the above-captioned action, and agrees that said service shall have the same force and effect as if said Defendants had been served with process in accordance with the Utah Rules of Civil Procedure. Defendants agree to answer, plead, or otherwise respond, as provided in said Rules.

12040
7/2020/137

James C. Haskins (1406)
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Murray, Utah 84107-4840
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FILED

5:07 PM 7/20/20
B. Haskins

IN THE THIRD JUDICIAL DISTRICT COURT OF SALT LAKE COUNTY

STATE OF UTAH

LARRY F. ANDERSON, an individual, and
LAVICKA INC., a Utah corporation,

Plaintiffs

v.

KHOSROW B. SEMNANI, an individual,
and ENVIROCARE OF UTAH, INC., a Utah
corporation,

Defendants

COMPLAINT

Civil Number 16-0907271 CN

JUDGE FRANK G. NOEL

COME NOW, the Plaintiffs, by and through their counsel, James C. Haskins, and allege
the following claims as against the Defendants as follows:

JURISDICTION

1. The individual Plaintiff, Larry F. Anderson (hereinafter "Anderson"), although
presently residing outside of the State of Utah, did reside in Utah County during the course of the
activities herein alleged, and by filing this action in the above-entitled court does hereby submit to
the jurisdiction of this court.

2. Plaintiff Lavicka, Inc., is a Utah corporation doing business in the state of Utah with its principal place of business in Utah County.

3. Defendant Khosrow B. Semnani (hereinafter "Semnani") resides in Salt Lake County, State of Utah.

4. Envirocare of Utah Inc., the corporate defendant, has its principal place of business in Salt Lake County, State of Utah.

5. The agreement set forth herein was created in Salt Lake County, with its provisions to be fulfilled in Salt Lake County.

6. The matter in controversy exceeds \$20,000.

7. This matter is properly before the jurisdiction of this Court.

RECITAL OF FACTS

8. The Plaintiffs reallege the allegation set forth in Paragraphs 1 through 7 as though set forth herein in their entirety.

9. On or about 1987, Anderson who was working at the time with the Utah State Division of Environmental Quality, recognized the need for a low level radioactive waste site in the state of Utah.

10. Upon informal advice from members of the Utah State Attorney General's office, Anderson incorporated Lavicka, Inc., the corporate plaintiff on or about February 2, 1987 for the express purpose of developing a plan for siting such facility in the State of Utah.

11. During the course of the next few months, Anderson approached the Defendant Semnani to inquiry of his interest to undertake the siting procedures.

12. Anderson approached Semnani because the two of them had become familiar through Semnani's involvement previously in seeking a site to process industrial waste.

13. Shortly after the initial conversation, the parties agreed to enter into a business relationship wherein Anderson would provide Semnani site application and consulting services through the corporate plaintiff Lavicka, Inc.

14. Under the terms of the agreement, Semnani agreed to pay a consulting fee of \$100,000, in advance, and an ongoing remuneration of five percent (5%) of all direct and indirect revenues that Semnani would realize from such a facility, if siting was successful.

15. Anderson agreed to provide Semnani with such expertise as was necessary for the application process, together with Anderson's business plan as to the operations of such a facility.

16. Over the next several months, Plaintiff provided such expertise and information as was necessary for Semnani to create a formal application for such a site and facility.

16. On or before December 1987, Semnani caused the corporate Defendant to be organized for the express purpose of filing a formal application for a license to operate a facility designed to receive and process naturally occurring radioactive materials ("NORM license").

17. The corporate defendant submitted the formal application, which for the greater part had been completed through the information and services of the Plaintiffs, as had been agreed by the parties.

18. In February 1988, Envirocare was granted a NORM license to operate the waste facility and immediately commenced operations by receiving a contract to process waste materials from the Environmental Protection Agency, Denver, Colorado.

19. Again, the agreed consulting services allowed Envirocare to know about, and appropriately solicit the contract from Denver.

20. During the course of the application process and up to the grant of the license, Defendants paid only a portion of the originally agreed initial advance compensation.

21. During the course of the next eight years, Defendants have paid only portions of the agreed fees during the operations of the facility.

22. Such payments have been in the form of cash, real property, gold coins and other accounts.

23. In the same period of time, Defendants have received over \$125 million in revenues from the operations of the facility.

FIRST CAUSE OF ACTION BREACH OF CONTRACT

24. Plaintiffs reallege the allegation set forth in Paragraphs 1 through 23 as though set forth herein in their entirety.

25. The parties entered into a binding agreement for the services of the Plaintiff Anderson.

26. Although Anderson made several attempts to embody this agreement in writing, Defendant Semnani refused to execute such written agreement, not because there was no agreement between the parties, but for the express reason that he did not desire to have any paperwork which could later be held against him or his operation.

27. The agreement between the parties called for the specialized knowledge and information held by the Plaintiff, which the plaintiff did in fact impart to the defendants in reliance upon the Defendants' promise to pay the agreed compensation.

28. Defendants used such information, skill and knowledge of the Plaintiff to receive the site license and continue to this day to operate such site commercially.

29. Without the express involvement of the Plaintiff, Defendants would not have been able to create such business operation.

30. The parties' agreement included mutual promises, one for the rendering of knowledge and skill for the completion of a specific task, the other for payment for such knowledge and skill.

31. Defendants have not denied the existence of such contract, rather they have been delinquent in the payment of agreed sums.

32. Plaintiffs have done nothing to cause such delays in payment.

33. The non-payment of agreed sums by the Defendants have breached the terms of the agreement between the parties.

34. The Plaintiffs have been damaged because of such breach.

SECOND CAUSE OF ACTION
QUANTUM MERUIT - "QUASI -CONTRACT/ UNJUST ENRICHMENT"

24. Plaintiffs reallege the allegation set forth in Paragraphs 1 through 34 as though set forth herein in their entirety.

25. Plaintiffs have provided information and specialized knowledge to the Defendants for the specific purpose of receiving a license for a site to process waste materials as hereinbefore set forth.

26. Defendants have received the benefit of such knowledge and information to receive the NORM licensing as contemplated by the parties.

27. Defendants have received revenues in excess of \$125 million from the operation of such sited facility.

28. Under the circumstances it would be unjust for the Defendants to have such benefit of information and knowledge without adequate compensation to the Plaintiffs.

29. Plaintiffs' knowledge is unique in nature, and therefore has value to the extent utilized by the Defendants to receive revenues in excess of \$125 million.

30. Such value should not be less than five percent (5%) of such revenues.

THIRD CAUSE OF ACTION QUANTUM MERUIT - "CONTRACT IMPLIED IN FACT"

31. Plaintiffs reallege the allegation set forth in Paragraphs 1 through 30 as though set forth herein in their entirety.

30. The Plaintiffs have acted in good faith towards the Defendants throughout the period of time from the first date of discussion through the date of this Complaint.

31. Plaintiffs have performed the work which was requested of them by the Defendants; to-wit: provided such information and knowledge as was necessary for the grant of the NORM license.

32. In accordance with the conversations and terms of the understanding between the parties, the Plaintiffs expected compensation in the amount of \$100,000 in advance and five percent (5%) of the on-going revenues of the Defendants for the facility.

33. The Defendants knew that Plaintiffs expected the compensation, and acknowledged that fact by paying a portion thereof during the course of the last eight years.

34. Under the circumstances the Plaintiffs should receive the expected and agreed amounts.

FOURTH CAUSE OF ACTION FRAUD

35. Plaintiffs reallege the allegation set forth in Paragraphs 1 through 34 as though set forth herein in their entirety.

36. Defendant Semnani, on more than one occasion prior to the work done by Anderson, made representations to Plaintiffs that he would pay the sum of \$100,000 plus five percent (5%) of the revenues of the facility developed through the efforts of Plaintiffs.

37. On information and belief at this time, and further evidenced by Defendants lack of payments to date, Plaintiffs allege that such representations, at the time they were made were false, that Defendant Semnani had no intention to fulfill the promised representations, but made such representations for the sole purpose to induce Anderson to provide the skill and knowledge.

38. Defendant Semnani knew such representation was false, or in the least made the representation with recklessness as to his true commitment to pay.

39. Plaintiff Anderson reasonably and innocently relied on the representations made by Semnani, provided the requisite information, knowledge and skill, and in so doing foreclosed for him any other possible avenues to develop a site, inasmuch as a license for a facility of this type would be granted to another only after the showing there was still an unfilled need.

40. The knowledge and skill which was provided by Anderson, after he relied on Semnani's representations, did in fact result in the grant of the NORM license to Envirocare.

41. Because of the actions of the Defendants, Anderson has not received the promised benefit of the represented amounts.

WHEREFORE, the Plaintiffs pray the Court for judgement as against the Defendants, jointly and severally as follows:

1. For an amount equal to not less than \$5,000,000, representing the unpaid compensation agreed by the parties, such actual and final amount to be determined at time of trial, Together with an order directing the Defendants to continue with such compensation for the Plaintiffs as the Defendants realize revenues; or,

2. For an amount equal to not less than \$5,000,000, representing the value of the services which Plaintiffs rendered to Defendants, who will remain unjustly enriched, unless this Court equitably intervenes; Together with an order directing the Defendants to continue with such compensation for the Plaintiffs as the Defendants realize revenues. Such actual and final value shall be established at time of trial; or,

3. For an amount equal to not less than \$5,000,00 representing the amount agreed for the services of the Plaintiffs as implied through the actions of the parties; Together with an order directing the Defendants to continue with such compensation for the Plaintiffs as the Defendants realize revenues. Such actual and final amount to be established at time of trial; or,

4. For an amount equal to not less than \$5,000,000 representing the damages incurred by the Plaintiffs by the fraudulent behavior of the Defendants;


5. Together with an amount equal to \$2,500,000 representing exemplary and punitive damages for the egregious actions of the Defendants;

6. Together with interest on such amounts, both before and after judgment, as the Court deems just;

7. Together with the costs and expenses incurred herewith; and,

8. Such other relief as the Court may deem just and proper in the circumstances.

Dated this 12 day of October, 1996


James C. Haskins,
Attorney for Plaintiffs

12000
11/20/2013
James C. Haskins (1406)
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FILED
11/20/2013
B. Haskins

IN THE THIRD JUDICIAL DISTRICT COURT OF SALT LAKE COUNTY
STATE OF UTAH

LARRY F. ANDERSON, an individual, and
LAVICKA INC., a Utah corporation,

Plaintiffs

COMPLAINT

KHOSROW B. SEMNANI, an individual,
and ENVIROCARE OF UTAH, INC., a Utah
corporation,

Defendants

Civil Number 960907271 CN

JUDGE FRANK G. NOEL

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the following claims as against the Defendants as follows:

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28. Defendants used such information, skill and knowledge of the Plaintiff to receive the site license and continue to this day to operate such site commercially.

29. Without the express involvement of the Plaintiff, Defendants would not have been able to create such business operation.

30. The parties' agreement included mutual promises, one for the rendering of knowledge and skill for the completion of a specific task, the other for payment for such knowledge and skill.

31. Defendants have not denied the existence of such contract, rather they have been delinquent in the payment of agreed sums.

32. Plaintiffs have done nothing to cause such delays in payment.

33. The non-payment of agreed sums by the Defendants have breached the terms of the agreement between the parties.

34. The Plaintiffs have been damaged because of such breach.

SECOND CAUSE OF ACTION
QUANTUM MERUIT - "QUASI-CONTRACT/ UNJUST ENRICHMENT"

24. Plaintiffs reallege the allegation set forth in Paragraphs 1 through 34 as though set forth herein in their entirety.

25. Plaintiffs have provided information and specialized knowledge to the Defendants for the specific purpose of receiving a license for a site to process waste materials as hereinbefore set forth.

26. Defendants have received the benefit of such knowledge and information to receive the NORM licensing as contemplated by the parties.

27. Defendants have received revenues in excess of \$125 million from the operation of such sited facility.

28. Under the circumstances it would be unjust for the Defendants to have such benefit of information and knowledge without adequate compensation to the Plaintiffs.

29. Plaintiffs' knowledge is unique in nature, and therefore has value to the extent utilized by the Defendants to receive revenues in excess of \$125 million.

30. Such value should not be less than five percent (5%) of such revenues.

THIRD CAUSE OF ACTION QUANTUM MERUIT - "CONTRACT IMPLIED IN FACT"

31. Plaintiffs reallege the allegation set forth in Paragraphs 1 through 30 as though set forth herein in their entirety.

30. The Plaintiffs have acted in good faith towards the Defendants throughout the period of time from the first date of discussion through the date of this Complaint.

31. Plaintiffs have performed the work which was requested of them by the Defendants, to-wit: provided such information and knowledge as was necessary for the grant of the NORM license.

32. In accordance with the conversations and terms of the understanding between the parties, the Plaintiffs expected compensation in the amount of \$100,000 in advance and five percent (5%) of the on-going revenues of the Defendants for the facility.

33. The Defendants knew that Plaintiffs expected the compensation, and acknowledged that fact by paying a portion thereof during the course of the last eight years.

34. Under the circumstances the Plaintiffs should receive the expected and agreed amounts.

FOURTH CAUSE OF ACTION FRAUD

35. Plaintiffs reallege the allegation set forth in Paragraphs 1 through 34 as though set forth herein in their entirety.

36. Defendant Semnani, on more than one occasion prior to the work done by Anderson, made representations to Plaintiffs that he would pay the sum of \$100,000 plus five percent (5%) of the revenues of the facility developed through the efforts of Plaintiffs.

37. On information and belief at this time, and further evidenced by Defendants lack of payments to date, Plaintiffs allege that such representations, at the time they were made were false, that Defendant Semnani had no intention to fulfill the promised representations, but made such representations for the sole purpose to induce Anderson to provide the skill and knowledge.

38. Defendant Semnani knew such representation was false, or in the least made the representation with recklessness as to his true commitment to pay.

39. Plaintiff Anderson reasonably and innocently relied on the representations made by Seramani, provided the requisite information, knowledge and skill, and in so doing foreclosed for him any other possible avenues to develop a site, inasmuch as a license for a facility of this type would be granted to another only after the showing there was still an unfilled need.

40. The knowledge and skill which was provided by Anderson, after he relied on Seramani's representations, did in fact result in the grant of the NORM license to Envirocare.

41. Because of the actions of the Defendants, Anderson has not received the promised benefit of the represented amounts.

WHEREFORE, the Plaintiffs pray the Court for judgement as against the Defendants, jointly and severally as follows:

1. For an amount equal to not less than \$5,000,000, representing the unpaid compensation agreed by the parties, such actual and final amount to be determined at time of trial; Together with an order directing the Defendants to continue with such compensation for the Plaintiffs as the Defendants realize revenues, or,

2. For an amount equal to not less than \$5,000,000, representing the value of the services which Plaintiffs rendered to Defendants, who will remain unjustly enriched, unless this Court equitably intervenes. Together with an order directing the Defendants to continue with such compensation for the Plaintiffs as the Defendants realize revenues. Such actual and final value shall be established at time of trial, or,

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DISTRICT
COURT
SALT LAKE COUNTY
BY *[Signature]*

IN THE THIRD JUDICIAL DISTRICT COURT OF SALT LAKE COUNTY
STATE OF UTAH

LARRY F. ANDERSON, an individual,
and LAVICKA INC., a Utah corporation,

Plaintiffs,

v.

KHOSROW B. SEMNANI, an individual,
and ENVIROCARE OF UTAH, INC., a
Utah corporation,

Defendants.

ANSWER AND COUNTERCLAIM

Civil No. 960907271

Judge Frank G. Noel

Defendants, Khosrow B. Semnani and Envirocare of Utah, Inc., answer the Complaint of the Plaintiffs as follows:

FIRST DEFENSE

The Complaint fails to state a cause of action against Defendants upon which relief may be granted.

SECOND DEFENSE

1. Admit the allegations of paragraph 1.
2. Admit the allegations of paragraph 2.

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3. Admit the allegations of paragraph 3.

4. Admit the allegations of paragraph 4.

5. Deny the allegations of paragraph 5 and affirmatively allege that neither of the Plaintiffs has had any agreement with either of the Defendants enforceable under principles of either law or equity.

6. Admit the allegations of paragraph 6.

7. Admit the allegations of paragraph 7.

8. Answering paragraph 8, Defendants incorporate herein their answers to paragraphs 1 through 7 of the Complaint.

9. Answering paragraph 9, Defendants admit that, in 1987, Larry Anderson was working as an employee of the Utah State Bureau of Radiation Control, but deny the balance of the allegations of said paragraph and do affirmatively allege that, at all times subject of the Complaint, Anderson was a director of said division and responsible by law for the fair and unbiased performance of his duties as director and as an officer and employee of the State of Utah.

10. Answering paragraph 10, Defendants admit that Larry Anderson incorporated Lavicka, Inc. on February 2, 1987 as a Utah corporation, but deny the balance of the allegations of said paragraph.

11. Answering paragraph 11, Defendants admit that Anderson did approach Khosrow Semnani, but deny the balance of the allegations of said paragraph, and do affirmatively allege that Anderson made no inquiry of Mr. Semnani, but rather requested Mr. Semnani to pay monies to Anderson.

12. Answering paragraph 12, Defendants admit that Khosrow Semnani became acquainted with Larry Anderson incident to Mr. Semnani's application to the State of Utah and the State of Utah's subsequent licensing and permitting of an industrial waste disposal facility at Grassy Mtn., Tooele County, Utah, but do deny the balance of the allegations of said paragraph.

13. Deny the allegations of paragraph 13 and do affirmatively allege that at no time did Larry Anderson advise Khosrow Semnani that either Anderson or Lavicka, Inc. would provide any services or assistance to Mr. Semnani or to Envirocare of Utah, Inc.

14. Deny the allegations of paragraph 14 and affirmatively allege that Larry Anderson requested Mr. Semnani to make payment to him, in advance, of an amount of \$100,000.00 and to thereafter make payment to him of an amount equal to five percent of any revenues that Mr. Semnani would receive incident to the operation of a proposed radioactive waste disposal facility at Clive, Tooele County, Utah, for which Mr. Semnani was then seeking licensing and permitting from the Utah State Bureau of Radiation Control. Defendants further affirmatively allege that Mr. Semnani advised Anderson that Mr. Semnani would pay the amounts requested by Anderson.

15. Deny the allegations of paragraph 15 and affirmatively allege that Anderson did not offer to provide, nor did Mr. Semnani agree to receive, any services or assistance from Anderson or Lavicka, Inc.

16. Deny the allegations of paragraph 16.

16. [sic] Answering the second numbered paragraph 16 [sic], admit that Khosrow Semnani caused Envirocare of Utah, Inc. to be incorporated under the laws of the State of

Utah, but deny the balance of the allegations of said paragraph, and do affirmatively allege that Envirocare of Utah was incorporated on December 4, 1987.

17. Deny the allegations of paragraph 17.

18. Admit the allegations of paragraph 18, except insofar as it is therein alleged or implied that the first waste materials delivered to the waste disposal facility were from the Environmental Protection Agency, Denver, Colorado, which allegation or implication these Defendants do deny.

19. Deny the allegations of paragraph 19.

20. Answering paragraph 20, Defendants deny that there was any agreement to pay any of the amounts as alleged by Plaintiffs, and do deny that Envirocare of Utah has at any time made any payment of any amount to either of the Plaintiffs, but do affirmatively allege that Khosrow Semnani made payment to Larry Anderson of only a portion of the amount requested by Anderson, and do deny the balance of the allegations of said paragraph.

21. Answering paragraph 21, Defendants deny that there was any agreement to pay any of the amounts as alleged by Plaintiffs, and do deny that Envirocare of Utah has at any time made any payment of any amount to either of the Plaintiffs, but do affirmatively allege that Khosrow Semnani made payment to Larry Anderson of only a portion of the amount requested by Anderson, and do deny the balance of the allegations of said paragraph.

22. Answering paragraph 22, Defendants admit that the payments made by Khosrow Semnani have been in cash and on one occasion, real property and on one or more other occasions, gold coins, but do deny the balance of the allegations of said paragraph, and

do affirmatively allege that Envirocare of Utah has not made any payments of any amounts to either of the Plaintiffs.

23. Deny the allegations of paragraph 23.

24. Answering paragraph 24, the Defendants incorporate herein their answers to paragraphs 1 through 23 of the Complaint.

25. Deny the allegations of paragraph 25.

26. Deny the allegations of paragraph 26.

27. Deny the allegations of paragraph 27 and affirmatively allege that neither of the Plaintiffs had any agreement with either of the Defendants and that the responsibilities of Larry Anderson with regard to the Defendants was that same responsibility which Anderson owed to the general public pursuant to his official duties as an officer and employee of the State of Utah.

28. Deny the allegations of paragraph 28.

29. Deny the allegations of paragraph 29.

30. Deny the allegations of paragraph 30.

31. Deny the allegations of paragraph 31. Khosrow Semnani affirmatively alleges that he has not made payment of all of the amounts as requested and demanded by Larry Anderson.

32. Answering paragraph 32, Defendants admit that Larry Anderson has requested and demanded payment of the amounts which he has received from Khosrow Semnani and has demanded other and additional amounts which have not been paid by Mr. Semnani and that neither of the Plaintiffs have advised or directed Mr. Semnani not to make payments to

Anderson of the amounts demanded by Anderson, but do deny the balance of the allegations of said paragraph.

33. Deny the allegations of paragraph 33 and do affirmatively allege that there is not now nor has there ever been a valid agreement which either of the Plaintiffs had with either of the Defendants.

34. Deny the allegations of paragraph 34.

THIRD DEFENSE

24. [sic] Answering paragraph 24 [sic] of the Second Cause of Action of the Complaint, Defendants incorporate herein their answers to paragraphs 1 through 34 of the Complaint.

25. [sic] Deny the allegations of paragraph 25 [sic].

26. [sic] Deny the allegations of paragraph 26 [sic].

27. [sic] Deny the allegations of paragraph 27 [sic].

28. [sic] Deny the allegations of paragraph 28 [sic] and affirmatively allege that neither of the Plaintiffs have provided services or assistance to either of the Defendants.

29. [sic] Deny the allegations of paragraph 29 [sic].

30. [sic] Deny the allegations of paragraph 30 [sic] and affirmatively allege that Lavicka, Inc. has not provided anything of value to either of the Defendants and that the only value, if any, that may have been provided by Larry Anderson was limited to such information as he was required by law to provide to the general public relative to his duties as an officer and employee of the State of Utah.

FOURTH DEFENSE

31. [sic] Answering paragraph 31 [sic] of the Third Cause of Action of the Complaint, Defendants incorporate herein their answers to paragraph 1 through 30 [sic] of the Complaint.

30. [sic] Defendants deny the allegations of paragraph 30 [sic] of the Third Cause of Action. Khosrow Semnani does affirmatively allege that Larry Anderson has engaged in an ongoing felonious practice of extortion of monies from Mr. Semnani.

31. [sic] Deny the allegations of paragraph 31 [sic] and more particularly deny that either of the Defendants has requested any service or assistance from either of the Plaintiffs and that either of the Plaintiffs have provided any assistance or service to Defendants, excepting the providing of information by Larry Anderson as he was required to provide to the general public relative to his duties as an officer and employee of the State of Utah.

32. [sic] Answering paragraph 32 [sic], Defendants deny that either Plaintiff could reasonably have had any understanding that Plaintiffs were legally entitled to payment of any amounts from either of the Defendants. Khosrow Semnani does admit that Larry Anderson believed and expected that he would receive payment of the amounts which he illegally demanded and was extorting from Khosrow Semnani. Defendants deny the balance of the allegations of said paragraph.

33. [sic] Answering paragraph 33 [sic], Khosrow Semnani admits that Larry Anderson expected payment of the amounts which he was illegally demanding and extorting from Mr. Semnani and that Mr. Semnani paid a portion of the amounts demanded by Anderson over a

period of approximately eight years. Defendants deny the balance of the allegations of said paragraph.

34. [sic] Deny the allegations of paragraph 34 [sic].

FIFTH DEFENSE

35. Answering paragraph 35, Defendants incorporate herein their answers to paragraph 1 through paragraph 34 [sic] of the Third Cause of Action of the Complaint.

36. Envirocare of Utah, Inc. is without information sufficient to form a belief as to the truthfulness of the allegations of paragraph 36 and, therefore, does deny the same. Khosrow Semnani, in answer to the allegations of 36, admits that on more than one occasion he told Larry Anderson that he would make payment to Larry Anderson of the \$100,000.00 demanded of him by Anderson and of the five percent of revenues as demanded of him by Anderson, but does deny the balance of the allegations of said paragraph and does affirmatively allege that the demands made by Anderson constituted a felonious extortion of monies from Mr. Semnani.

37. Envirocare of Utah, Inc. is without information sufficient to form a belief as to the truthfulness of the allegations of paragraph 37 of the Complaint and, therefore, does deny the same. Khosrow Semnani denies the allegations of paragraph 37 and does affirmatively allege that he did tell Larry Anderson that he would make payment of amounts demanded by Larry Anderson, but that the demands made by Anderson were illegal and unlawful and he was not entitled to rely on statements made to him by Mr. Semnani in response to said illegal and unlawful demands.

38. Envirocare of Utah, Inc. is without information sufficient to form a belief as to the truthfulness of the allegations of paragraph 38 and, therefore, does deny the same. Khosrow Semnani, in answer to the allegations of paragraph 38, admits that he intended to not make payment to Larry Anderson of all of the amounts which Anderson had illegally and unlawfully demanded, that it was his hope and purpose that Anderson would not continue to demand payment of said amounts and would cease and desist in his illegal and unlawful practices. Mr. Semnani denies the balance of the allegations of said paragraph.

39. Deny the allegations of paragraph 39.

40. Deny the allegations of paragraph 40.

41. Deny the allegations of paragraph 41.

SIXTH DEFENSE

(Illegality and Violation of Public Policy)

42. At the time that the subject requests and demands were made by Larry Anderson for payment from Khosrow Semnani, Anderson was an officer and employee of the State of Utah and a director of the Utah State Bureau of Radiation Control, which Bureau was further responsible for the processing, review and determination of Mr. Semnani's application for a license and permit for the operation of a waste disposal facility. Said Bureau was responsible for all supervision and oversight of said facility by the State of Utah in the event of and upon the granting of a license and permit. Anderson was duty bound as said officer and employee to provide accurate, fair and unbiased information and services to members of the general public whose business interests fell within the review, determination and supervision of the Utah State Bureau of Radiation Control. Anderson was precluded by law

from requesting, demanding or accepting payment for his services as a State officer and employee other than his salary as paid by the State of Utah. Anderson's requests and demands from Khosrow Semnani of the amounts subject of Plaintiffs' Complaint were illegal and against public policy and, consequently, his supposed and alleged contract with Mr. Semnani was illegal and void as against public policy, which illegality bars the claim of right and entitlement which he makes for payment from Mr. Semnani or Envirocare of Utah, Inc. In particular:

(a) Section 67-16-5, Utah Code Ann., prohibited Anderson from soliciting, receiving and accepting any compensation if he recently had been, then was, or in the future may be involved in any governmental function with respect to Mr. Semnani's application, or if said amount would tend to influence Anderson in the discharge of his official duties. Section 67-16-12, Utah Code Ann., provides that such solicitation and/or acceptance constitutes a felonious act.

(b) Section 67-16-6, Utah Code Ann., prohibited Anderson from receiving or agreeing to receive compensation for assisting any person or business entity in any transaction involving the Utah State Bureau of Radiation Control unless Anderson first files a sworn written statement with the head of the Bureau and with the Utah Attorney General identifying the specifics and purpose of such agreement or understanding. No such written statement was filed.

(c) Pursuant to § 76-6-406(2)(g), Utah Code Ann., Larry Anderson is guilty of theft by extortion by implicitly threatening, as a public official, to take an action or withhold an official action or cause such action or withholding of such action

regarding Mr. Semnani's application and regarding the supervision and oversight of the subject waste disposal facility absent Mr. Semnani making payment of the amounts demanded by Anderson. Pursuant to § 76-6-406(2)(e), he is so guilty for thereafter threatening to reveal that payments were made by Mr. Semnani.

SEVENTH DEFENSE

(Duress)

43. All statements which Khosrow Semnani made to Larry Anderson that Mr. Semnani would pay to Anderson the amounts demanded by Anderson and all amounts so paid by Mr. Semnani were statements made and amounts paid by Mr. Semnani upon his reasonable understanding and belief that if he did not so declare to Anderson that said amounts would be paid and that if he did not in fact pay said amounts, that Anderson would use his official position and capacity as an officer and employee of the State of Utah, and the resources available to him incident to his employment, to deny Mr. Semnani a fair consideration, review, hearing and determination on Mr. Semnani's application and thereby assure the absence of a fair consideration, review, hearing and determination which would predictably cause the application to not be granted and the subject waste disposal facility not licensed or, if licensed, an unfair and biased oversight and supervision of the operation of the facility under said license. The claims of Plaintiffs are barred by the doctrine of duress in the inducement of the subject statements and payments.

EIGHTH DEFENSE

(Waiver)

44. By way of a separate affirmative defense to the claims enumerated in the Complaint, the Defendants do reallege the allegations of their Sixth Defense. The said conduct of Larry Anderson was illegal and contrary to law and known by him to have been illegal and contrary to law, and the claims of the Plaintiffs therefore are barred by the doctrine of waiver.

NINTH DEFENSE

(Statute of Frauds)

45. The supposed verbal agreement, as alleged by the Plaintiffs, was for the payment of monies for a term in excess of one year and constitutes an agreement that by its terms was not to be performed within one year from the making of the agreement and, therefore, is barred by the provisions of Section 25-5-4(1), Utah Code Annotated.

TENTH DEFENSE

(Absence of Consideration)

46. No service, assistance or information was provided by Lavicka, Inc. either pursuant or in response to the supposed agreement as alleged by the Plaintiffs, and any information and service as may have been provided by Larry Anderson was limited to that which Anderson was required by law to provide to the general public within the scope of his official duties as an officer and employee of the State of Utah and was not provided pursuant to any alleged contract with either of the Defendants. There is an absence of consideration for the supposed contract as alleged by Plaintiffs.

ELEVENTH DEFENSE

(Directed at Second and Third Causes of Action --
No Implied Contract)

47. By way of an affirmative defense to the allegations of the Second and Third Causes of Action of the Complaint, Defendants allege that no services were provided to or received by them from either of the Plaintiffs and that there was no contract, implied either in law or in fact, that will support either a claim for *quantum meruit* or unjust enrichment.

WHEREFORE, Defendants pray that the Complaint of Plaintiffs be dismissed, with prejudice, and that Defendants be awarded relief pursuant to the prayer of their Counterclaim herein.

COUNTERCLAIM

By way of counterclaim, the Defendants, Khosrow B. Semnani ("Mr. Semnani") and Envirocare of Utah ("Envirocare"), complain of the Plaintiffs, Larry F. Anderson ("Anderson") and Lavicka, Inc. ("Lavicka"), and allege:

1. Mr. Semnani is, and at all times herein mentioned was, a resident of Salt Lake County, Utah.
2. Anderson is currently a resident of the State of Nevada, but resided in Utah County, State of Utah, between 1986 and 1996.
3. Lavicka is a Utah corporation with its principal place of business in Utah County, Utah.

4. During the period between 1986 and 1994, Anderson was an officer and employee of the State of Utah and served as a director of the Utah State Bureau of Radiation Control.

5. In 1987, Mr. Semnani submitted an application to the Utah State Bureau of Radiation Control to obtain licensing and permitting for the establishment and operation of a radioactive waste disposal facility at Clive, Tooele County, Utah.

6. On a date between mid-1987 and early 1988 and while Mr. Semnani's application was before the Utah State Bureau of Radiation Control, Anderson came to Mr. Semnani's office, both unexpected and unannounced. There and on that occasion, Anderson requested that Mr. Semnani make payment to him of an amount of \$100,000.00 and, in addition, an amount of \$5.00 per ton for all waste material received at the disposal facility if and when licensing of the facility was obtained. Previous to this occasion, Anderson had requested that Mr. Semnani loan to Anderson amounts of money which Anderson represented were to be used for the medical expenses of Anderson's mother, then living in the State of Idaho. Semnani had loaned the amounts to Anderson, pursuant to a verbal agreement, as Anderson had requested.

7. At the time that Anderson made the loan requests of Mr. Semnani and at the time of Anderson's request for the \$100,000.00 and the payment of \$5.00 per ton for waste material, Mr. Semnani's requests and submissions were pending before the Utah State Bureau of Radiation Control. Mr. Semnani understood that the requests made of him were wrongful. Notwithstanding, he recognized that Anderson's official position with the State of Utah and the nature of his duties and responsibilities regarding the Bureau's review and determination

of Mr. Semnani's requests and submissions, and the subsequent supervision and oversight by the Bureau of any disposal facility as licensed and permitted by the Bureau, made predictable that Anderson would unduly encumber, if not prejudice, the review and determination of the pending application, perhaps preclude a fair and unbiased review and determination and further prejudice Mr. Semnani's dealings with the Bureau with regard to the Bureau's supervision and oversight of the facility, if licensed and approved.

8. At the time of Anderson's demand for monies from Mr. Semnani, Mr. Semnani further believed that, if he reported the demand to Anderson's superiors or to any other authority, Anderson would deny that the demand had been made and would encumber and prejudice Mr. Semnani's application and efforts with the Utah State Bureau of Radiation Control. Mr. Semnani believed that Anderson intended that Mr. Semnani should understand that such application and efforts would be encumbered and prejudiced if the requested amounts were not paid. In reliance upon that understanding and in response to the duress imposed by Anderson's official position, Mr. Semnani told Anderson that he would pay the \$100,000.00 and would make a payment on a percentage basis on waste delivered to the facility.

9. Mr. Semnani made payment to Anderson of the \$100,000.00 requested by Anderson and, on a number of occasions over subsequent years, made payments to Anderson in varying amounts. Mr. Semnani believes that the last payment of monies to Anderson was made in January of 1995.

10. In 1989, Anderson advised Mr. Semnani that he was interested in acquiring a residential condominium unit and requested Mr. Semnani to purchase the condominium for

Anderson. Mr. Semnani was reluctant to deliver to Anderson the sizable amount which the value of the condominium unit would have represented. Consequently, he persuaded Anderson to permit the condominium unit to be purchased by Mr. Semnani and retained in his name, but with Anderson to have virtually an unrestricted use of the condominium unit.

11. Anderson advised Mr. Semnani that the condominium unit could be purchased and retained in Mr. Semnani's name, conditional upon Anderson being given a deed to the condominium unit which Anderson would hold and not record until such date as was mutually agreeable. Mr. Semnani requested, and Anderson agreed, to provide Mr. Semnani with an unsecured promissory note representing that Anderson would repay to Mr. Semnani the amount which Mr. Semnani paid for the purchase of the condominium unit.

12. On October 27, 1989, Mr. Semnani executed and delivered to Anderson a quitclaim deed therein describing the condominium unit, commonly known as 2468 Fairway Village, Park City, Utah, Summit County, Utah ("the Condominium Property") and more particularly described as follows:

LOT 14, THE FAIRWAY VILLAGE NO. 2 SUBDIVISION, A PLANNED UNIT DEVELOPMENT, AS THE SAME IS IDENTIFIED IN THE RECORD OF SURVEY MAP RECORDED IN SUMMIT COUNTY, UTAH, AS ENTRY NO. 180617, AND IN THE DECLARATION OF COVENANTS, CONDITIONS, RESTRICTIONS AND BY-LAWS OF THE FAIRWAY VILLAGE NO. 2 SUBDIVISION, A PLANNED UNIT DEVELOPMENT AS ENTRY NO. 180616, IN BOOK M190, AT PAGE 52, OF THE OFFICIAL RECORDS. TOGETHER WITH ANY EXCLUSIVE RIGHT AND EASEMENT OF USE IN ANY LIMITED COMMON PARKING STRUCTURE IDENTIFIED WITH THE LOT ABOVE REFERRED AND TOGETHER WITH A RIGHT AND EASEMENT USE AND ENJOYMENT IN AND TO THE COMMON AREAS DESCRIBED ON THE PLAT, AND AS PROVIDED FOR, IN SAID DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS.

Anderson, without the knowledge of Mr. Semnani, recorded the deed on December 1, 1994, but represented to the office of the Summit County, Utah, Recorder that the deed was being

recorded at the request of Mr. Semnani's company, S.K. Hart Engineering. Said representation was false.

13. On the same said date of October 27, 1989, Anderson executed and delivered to Mr. Semnani a promissory note in the face amount of \$295,090.79, declaring that Anderson would make payment to Mr. Semnani of said amount, together with interest accruing at the rate of 11 percent per annum from November 1, 1989 until paid, and with the entire balance of principal and interest to be paid on November 1, 1990.

14. On December 14, 1989, Anderson executed and delivered to Mr. Semnani a second promissory note, declaring that he would pay to Mr. Semnani on or before July 30, 1990, the sum of \$12,900.00, together with interest thereon at the rate of 10½ per annum.

15. The two promissory notes were requested by Mr. Semnani to evidence amounts paid and/or which he had told Anderson he would pay. Mr. Semnani understood that, although Anderson had executed and delivered said promissory notes, Anderson had no intention of making payment of the same or returning to Mr. Semnani the amounts previously received from him.

16. Anderson's employment by the State of Utah terminated in 1993. Following said termination, Anderson continued to come to Mr. Semnani, demanding that Mr. Semnani make payments to him. In response to those demands, and with the desire that Anderson not reveal to others that Anderson had been demanding and receiving payment from Mr. Semnani, Mr. Semnani continued to pay to Anderson various amounts from time to time. Mr. Semnani hoped that Anderson would eventually abandon his felonious practice of extorting monies from Mr. Semnani.

17. In January of 1995, Mr. Semnani advised Anderson that he would no longer pay any amounts to Anderson. Anderson responded that he had an attorney who would file suit against Mr. Semnani and that such suit would constitute a substantial embarrassment to Mr. Semnani which Mr. Semnani should want to avoid. Anderson told Mr. Semnani that he would make no further demands upon Mr. Semnani if he would pay him an amount of five million dollars. Mr. Semnani continued his refusal to pay further amounts, and no additional amounts have been paid since January 1995.

18. The total amounts paid by Mr. Semnani to Anderson, including the value of the condominium unit now held by Anderson and which Anderson received as a consequence of his ongoing felonious practice of extortion, totals not less than \$600,000.00.

19. On May 16, 1996, Anderson was represented by Mr. James C. Haskins, attorney at law. Anderson and Lavicka caused said attorney on said date to prepare a letter addressed to Mr. Semnani's attorney of record and to place said letter in the United States mails addressed to said attorney. A copy of said letter is attached as Exhibit "A" to this Counterclaim and by this reference incorporated herein. The concluding paragraph of said letter reads:

I would request that you inform your client of his options, so that he might govern himself and the course of action on these issues. I would hope that you would explain the impact of the formal suit, regardless of any judicial outcome.

Accompanying said letter was a copy of the Complaint which the Plaintiffs have now filed in this action.

20. Said Complaint and letter of May 16, 1996 constituted an additional act of extortion and was part and parcel of Anderson's ongoing felonious practice of extortion of monies from Mr. Semnani.

FIRST CLAIM FOR RELIEF

(By Mr. Semnani Against Anderson for Wrongful Conversion)

21. Defendant, Mr. Semnani, realleges and incorporates by reference the allegations of paragraphs 1 through 20 of his Counterclaim.

22. Anderson has received the monies and property demanded of and paid by Mr. Semnani and has continued to retain the same. Anderson was not entitled to said money and property, all of which belonged to and constituted the property of Mr. Semnani. Anderson has refused to return to Mr. Semnani the money and property received from him, and has declared and continues to declare that he is entitled to retain the same and, pursuant to his Complaint in this action, demands additional amounts to be paid by Mr. Semnani. Anderson intentionally received and continues to retain said monies and property, without lawful justification and with the intention to exercise dominion and control thereof, and to continue to deprive Mr. Semnani of its use, possession and value. Mr. Semnani demands that said monies and property be forthwith returned to him.

23. As a consequence of the wrongful conduct of Anderson, Mr. Semnani has sustained damages in an amount not less than \$600,000.00, together with interest thereon accruing at the rate of 10 percent per annum from date received by Anderson.

24. The demand by Anderson for the payment of said monies and delivery of said property and his refusal to pay over and return the same to Mr. Semnani was and is done

willfully and maliciously, with a reckless disregard for the rights, entitlement and interest of Mr. Semnani in and to said monies and property and was intended to damage Mr. Semnani, for which reason Mr. Semnani is entitled to an award of punitive damages against Anderson in the amount of \$1.8 million, in addition to the actual damages sustained as a result of said wrongful conversion.

SECOND CLAIM FOR RELIEF

(By Both Defendants Against Both Plaintiffs For Attorney Fees)

25. Defendants reallege and incorporate the allegations of paragraphs 1 through 20 of their Counterclaim.

26. Defendants allege, against each Plaintiff, that the Complaint filed by said Plaintiffs in this action constitutes an action within the contemplation of and precluded by Section 76-6-406(2)(e), Utah Code Ann., and is a felonious attempt to extort monies from said Defendants and that the said Complaint and the claims therein made against these Defendants is without merit and was neither brought nor asserted against these Defendants in good faith, and that Defendants should be awarded, pursuant to Section 78-27-56, Utah Code Ann. and against said Plaintiffs, reasonable attorney fees incurred by Defendants in defending against the Complaint.

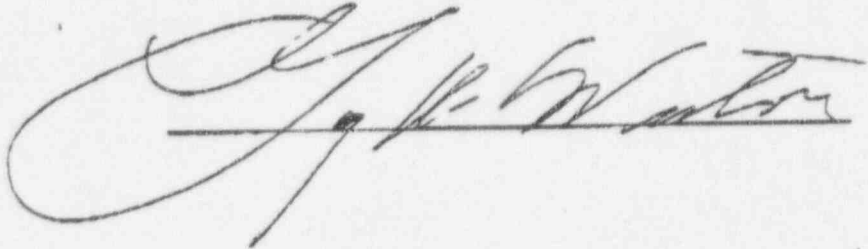
WHEREFORE, Defendants pray for judgment against the Plaintiffs as follows:

1. On his First Claim for Relief, Khosrow B. Semnani prays for judgment against Larry F. Anderson for the total amount of monies paid by Mr. Semnani to Anderson, said amount to be determined by the Court, but which amount is not less than \$250,000.00, and for an order of the Court requiring Anderson to disgorge, reconvey and redeliver to Mr.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 1st day of November, 1996, I did cause a true and correct copy of the foregoing ANSWER AND COUNTERCLAIM to be mailed, United States mails, postage prepaid, addressed to the following:

James C. Haskins, Esq.
Haskins & Associates
5085 South State Street
Murray, Utah 84107-4840

A handwritten signature in cursive script, appearing to read "J. H. Watson", is written over a horizontal line.