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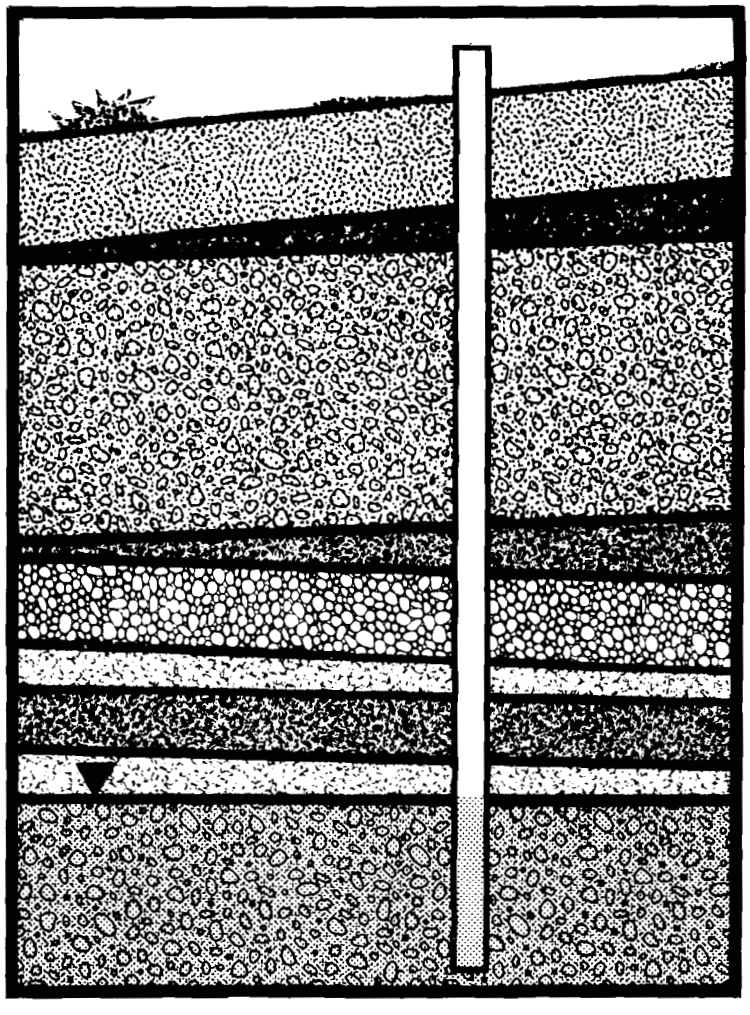
Radiological Status of The Ground Water Beneath The Hanford Project

January - December 1979



Prepared for the U.S. Department of Energy
under Contract DE-AC06-76 RLO 1830

Pacific Northwest Laboratory
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RADIOLOGICAL STATUS OF THE GROUND WATER BENEATH THE HANFORD PROJECT JANUARY-DECEMBER 1979

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April 1980

Prepared for
U.S. Department of Energy
Under contract DE-AC06-76RLO 1830

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Richland, Washington 99352

SUMMARY

Operations on the Hanford Site since 1944 have resulted in discharge of large volumes of process cooling water and low-level liquid radioactive waste to the ground. Radioactivity and chemical substances have been carried with these discharges and have reached the Hanford ground water. For many years wells have been used as groundwater sampling structures to gather data on the distribution and movement of these discharges as they interact with the unconfined ground water beneath the site. During 1979, 317 wells were sampled on various frequencies from weekly to annually. This report is one of a series prepared annually to document the evaluation of the status of ground water on the Hanford Site.

Data collected during 1979 describe the movement of radionuclide (Tritium and Beta) and nitrate plumes that respond to the influences of groundwater flow, ionic dispersion and radioactive decay. The gross beta plume continues to recede, with the exception of a beta source that is beginning to show up in the 300 Area.

The tritium plume continues to expand. It is mapped as having reached the Columbia River, although its contribution to the river cannot be distinguished from that attributable to atmospheric fallout. This plume now shows much the same configuration as in 1977 and 1978 and shows general size stability. Nitrate concentrations in the vicinity of the 100-H Area continue to be high as a result of leaks from the evaporation facility.

The results of a study to determine the ^{129}I distribution in the Hanford groundwater system indicate that the majority of contaminants are in the upper portions of the unconfined aquifer and are nearing the Columbia River. The study is to be completed in the fall of 1980.

Impact of these groundwater discharges on the public is evaluated annually and is currently reported in "Environmental Surveillance at Hanford." The consumption of groundwater for drinking water purposes at the FFTF results in a maximum dose of 0.4 mrem annually.

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INTRODUCTION

Surveillance of ground water on the Hanford Site is one facet of the Comprehensive Environmental Monitoring Program designed to evaluate existing and potential pathways of exposure to contamination from site operations. The objectives of the groundwater monitoring program, conducted by Pacific Northwest Laboratory (PNL) for the U.S. Department of Energy (DOE), are to measure and report the concentration and distribution of radioactive and other chemical constituents in the ground water, to determine movement and transport of contaminations with time, and the impact of contamination on man's environs.

All routine groundwater samples for 1979 referred to in this report were taken by PNL's Environmental Evaluations Section of the Occupational and Environmental Protection Department and were analyzed by PNL's Technical Analysis Section. The U.S. Geological Survey collected and comprehensively analyzed samples from specific wells. Program overview and coordination was provided by the Environmental Evaluations Section.

This document is an attempt to present comprehensive information about the sampling and analysis of ground water at the Hanford Site. Data from other contractors, (Rockwell Hanford Operations, United Nuclear Corporation, and Hanford Engineering Development Laboratory) was used for construction of the various maps but are not included in the tabulation of data in the Appendix.

BACKGROUND

Operations on the Hanford Site since 1944 have resulted in the disposal of large volumes of low-level liquid radioactive wastes and contaminated cooling water to the ground. Figure 1 shows the location and layout of the Hanford Site. Most of the liquid wastes have been disposed of to the ground at or near the chemical separation areas (200 Areas) located on a plateau near the center of the site. Smaller amounts of wastes have been released at the reactor sites (100 Areas), located adjacent to the Columbia River, and at the laboratory and fuel fabrication area (300 Area). Only one reactor and its disposal facility (the 100-N Area) are currently in operation.

The disposal of liquid effluents to the ground at Hanford Site has been greatly reduced in the past several years because of the deactivation of all reactors except for N Reactor, the cessation of reactor fuel processing, and the improved treatment of several waste streams.

DISPOSITION OF EFFLUENTS

Liquid effluents disposed of to the ground percolate laterally and downward through 150 to 300 feet (50 to 100 m) of unconsolidated glaciofluvial and lacustrine sands, silts, and gravel that overlay the unconfined aquifer. As the wastes move through these sedimentary materials, adsorption and ion exchange reactions take place between the minerals in the sediments and the materials in the liquid waste. Some of the longer-lived radionuclides such as strontium-90 (^{90}Sr), cesium-137 (^{137}Cs), and plutonium-239 (^{239}Pu) have favorable ion exchange characteristics and are effectively removed as the liquid percolates downward through the unsaturated soil column. Other radionuclides, including ruthenium-106 (^{106}Ru), cobalt-60 (^{60}Co), technetium-99 (^{99}Tc), tritium (^{3}H), and nonradioactive nitrate (NO_3^-) have poor ion exchange characteristics and move through the unsaturated column at varying rates until they eventually enter the ground water. Once in the unconfined aquifer, the contaminants move in a general down-gradient direction at a rate of movement nearly equal to or equal to the velocity of the ground water. As the contaminants

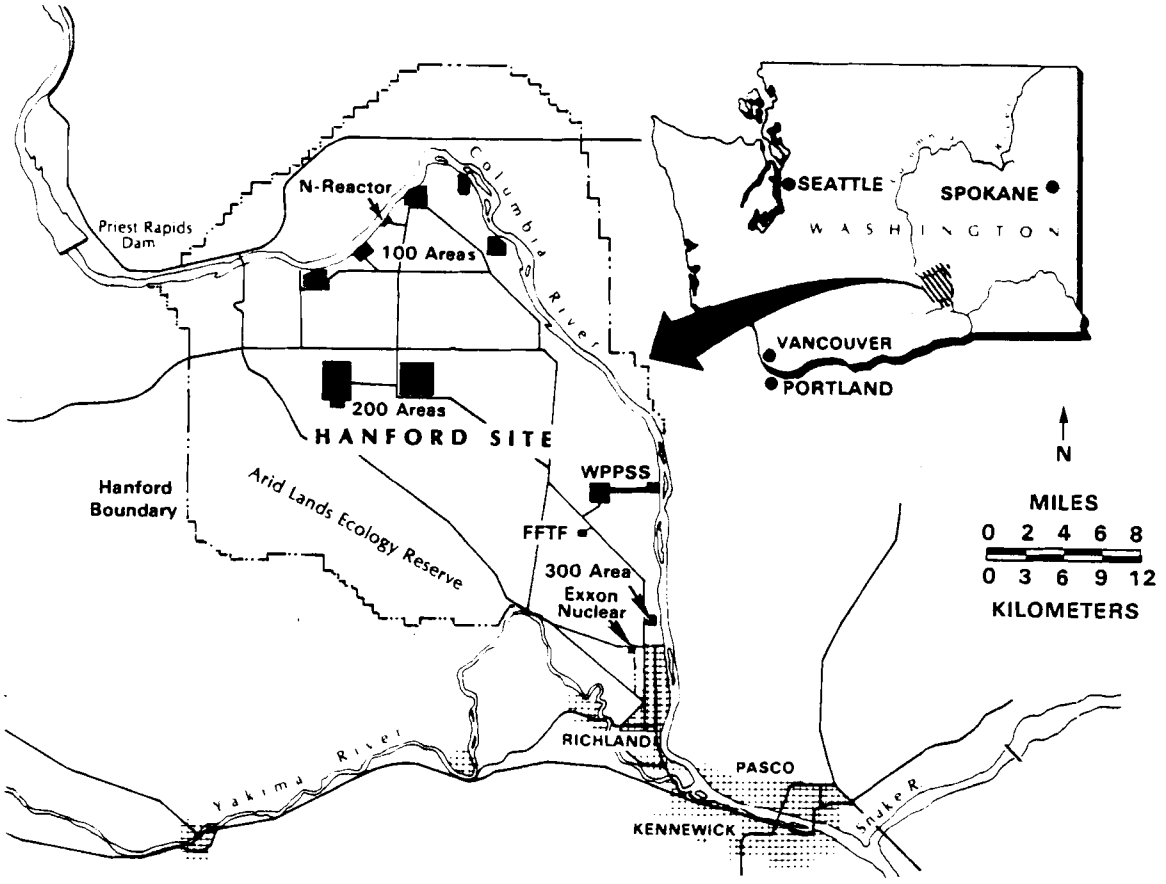


FIGURE 1. The Hanford Site

move with the ground water, their concentrations are further reduced by radioactive decay, ion exchange, diffusion, and hydrodynamic dispersion.

During the past thirty-six years, the disposal of nearly 165 billion gallons (>6 x 10^{11} liters) of process cooling water and over 8 billion gallons (>3 x 10^{10} liters) of other liquid has changed the water table configuration. Groundwater mounds, created by the discharge of water, now exist near each of the chemical processing areas and in the 100N reactor area. Groundwater levels have changed continuously over the years, depending upon variations in

the volume and location of waste water discharged to the ground. The movement of the ground water and its associated contaminants has also changed with time, reflecting the discharges of effluents.

MONITORING AND WELLS

Nearly 800 cased groundwater monitoring wells (McGhan and Damschen 1979) have been drilled since the beginning of the disposal operations at the Hanford Site (Figure 2). These structures provide a means for obtaining water samples and for conducting in-situ investigations.

There are basically three aquifers monitored at the Hanford Site. The first or lowest is an aquifer in the consolidated basalt. When a well is drilled into this aquifer an artesian flow (water under greater than atmospheric pressure) is generally encountered, which causes the water level in the well to rise. The second aquifer is encountered when wells are drilled into a semi-consolidated sedimentary material overlying the basalts. This second aquifer is artesian in places and unconfined in other locations. The third aquifer and probably the most important as far as monitoring of radiocontaminants at the Hanford Site is concerned is the unconfined aquifer. This unconfined aquifer is under atmospheric pressure, overlies the artesian aquifers, and is associated with the unconsolidated material near land surface. This aquifer appears to contain most of the contaminates and as such is monitored far more heavily than the deeper aquifers. Wells are generally drilled a few tens of feet below the top of this aquifer and samples taken from that interval.

Most of the wells drilled at Hanford are multipurpose structures. That is, they are used to obtain geologic and hydrologic information before they become sampling structures. For a structure to be useful in monitoring, a well's casing should be perforated below the water table along its entire depth to allow water in the aquifer to flow in a direction normal to the well at all depths. However, since the heterogeneity of the sediments beneath the Hanford Site prevents this, each well structure on the site must be evaluated individually as a potential monitoring facility.

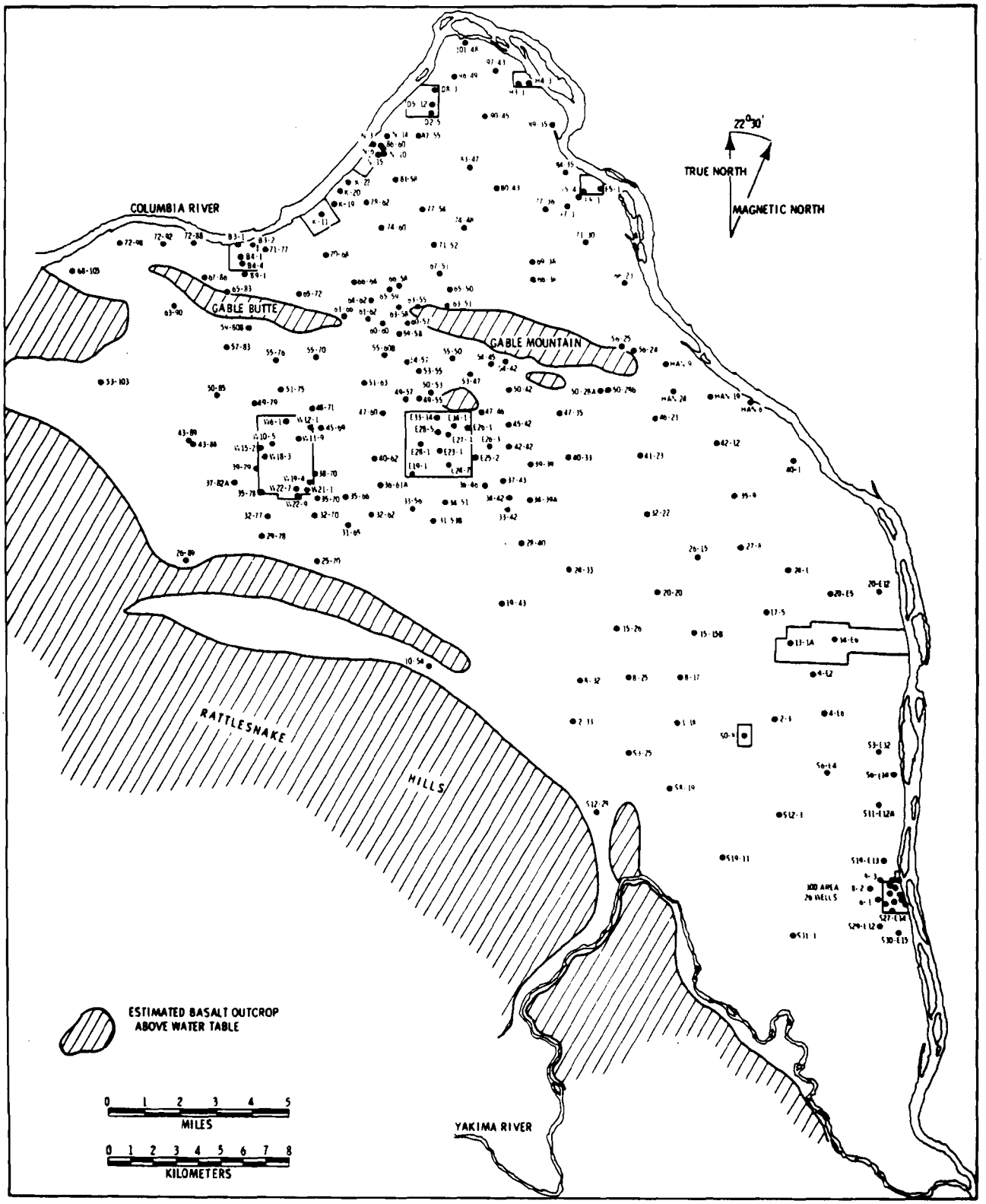


FIGURE 2. Locations of Wells Sampled

SAMPLING AND ANALYSIS

Well-water samples are obtained routinely throughout the Hanford Site. For the 1979 routine groundwater monitoring program, 317 wells were used. From these, 1578 well-water samples were taken to provide 6920 analytical results for evaluating the effects of site operations on the ground water. (These figures do not include other contractor monitoring efforts at the Hanford Site.) The frequency of sampling may be monthly, quarterly, semi-annually, or annually depending on well locations and constituents to be analyzed. Some groundwater samples are collected just under the water surface of the unconfined aquifer by lowering a plastic bottle enclosed in a steel bailer. When contamination appears in a project well, the highest concentration is usually observed at the surface of the water table (Eddy et al. 1978). Submersible sampling pumps have been installed in most key wells to obtain a more representative sample of the water in the aquifer adjacent to the well than is provided by a small-volume bailer sample. Since the submersible pumps are left in the wells this method prevents the possibility of cross contamination that may result from using a single bailer to sample several wells. At a few locations, where appropriate well structures are available, samples are obtained from the confined aquifers. Some small diameter wells and piezometer tubes are sampled by the airlift method (Trescott and Pinder 1970).

Three substances are readily transported in ground water with little decrease in concentration from adsorption or ion exchange. These are radionuclides represented by gross beta measurement calculated as ruthenium (^{106}Ru), tritium (^{3}H), and the nonradioactive nitrate ion (NO_3^-). Therefore, these substances are used as primary tracers to monitor the movement of contaminated ground water. In addition, samples from selected wells are routinely analyzed at less frequent intervals for the radionuclides ^{90}Sr, ^{137}Cs, and ^{60}Co. Total alpha (as ^{239}Pu) emission is also determined. Selected samples are analyzed by gamma spectrometry to identify the mixture of radionuclides present. Standard radiometric and chemical methods are used to analyze the routine groundwater samples.

Other radionuclides, such as ^{129}I and ^{99}Tc, have been detected in the ground water beneath the Hanford Site. These radionuclides also make excellent tracers of groundwater contamination and are used for this purpose although they generally occur in very low concentrations. A special study is presently underway and will be discussed later in the text. Ground water from several wells is analyzed for chemical parameters in order to monitor broader changes in water quality. Analyses for uranium (^{238}U), fluoride (F^-) and total chromium (Cr^{+6}) are made on selected groundwater samples in and adjacent to the 300 Area.

EVALUATION OF GROUNDWATER SURVEILLANCE DATA

Radionuclide concentrations in the ground water beneath Hanford are evaluated in terms of their respective Concentration Guides (CGs; U.S. Department of Energy, 1977); radioactive materials are also compared with Drinking Water Regulations (DWR) promulgated by the Environmental Protection Agency (EPA 40 CFR 141) as adopted by the State of Washington. The comparison between the actual concentration and the guidelines provides a conservative method for evaluating the potential significance of most waterborne materials. The CGs used in this report are those that apply to uncontrolled areas. Table 1 shows the detection limit and applicable CGs or DWR for various constituents analyzed for the routine groundwater monitoring program.

TABLE 1. Lower Analytical Detection Limit and Lowest Applicable Concentration Guides or Drinking Water Regulations

Analysis	Detection Limit[a]	CGs[a]
Gross Beta (as ^{106}Ru)	0.08	NA[b]
Total Alpha (as ^{239}Pu)	0.017	NA
^{3}H	1.0	3,000
^{60}Co	0.02	30
^{90}Sr	0.03	0.3
^{106}Ru	0.06	10
^{125}Sb	0.06	100
^{129}I	1×10^{-8}	0.06
^{131}I	0.01	0.3
^{137}Cs	0.02	20
U (Natural)	3.4	20
		DWR
NO_3^-	0.5 mg/ℓ	10 mg/ℓ
F^-	0.08 mg/ℓ	1.8 mg/ℓ
Cr^{+6}	0.01 mg/ℓ	0.05 mg/ℓ

(a) pCi/ml except where otherwise noted
(b) NA--Not Applicable. Significance of contaminations determined by specific radionuclide analysis.

At the beginning of each report section dealing with a major contaminant, a map shows the distribution of that contaminant. The isopleths on the maps show concentration zones rather than discrete contours because the data do not justify the additional detail. Some data from the 200 Areas were used to provide continuity in the maps although no data from waste disposal operations and resultant groundwater contamination in the 200 Areas are included in this report.

Appendix A contains tabular analytical data for 1979 on the average, maximum and minimum concentrations of the primary tracers (gross beta activity, tritium and nitrate ion). The data on the average concentrations of the primary tracers were used to generate the isopleth maps.

Table 2 shows the number of wells sampled, the number of samples taken, and the number of analyses made as part of the 1979 groundwater monitoring program for each area of the Hanford Site. The data shown in Appendices A (the primary tracers) and B (other materials) were derived from analysis of these samples. The table does not account for any special samples.

TABLE 2. Numerical Data on the Routine Groundwater Monitoring Program, 1979

Area	Number of Wells Sampled	Number of Samples Taken	Number of Analyses Made
100	35	116	465
200	21	84	336
300	25	228	1157
600	236	1034	2799
	317	1462	4757

GROSS BETA (β_t) CONCENTRATION IN THE UNCONFINED GROUND WATER

Figure 3 shows the concentration and distribution of β_t contamination in Hanford's unconfined ground water. Appendix A contains data on this primary tracer for groundwater samples collected during 1979. The configuration of the β_t plume is static with the plume's general size continuing to recede

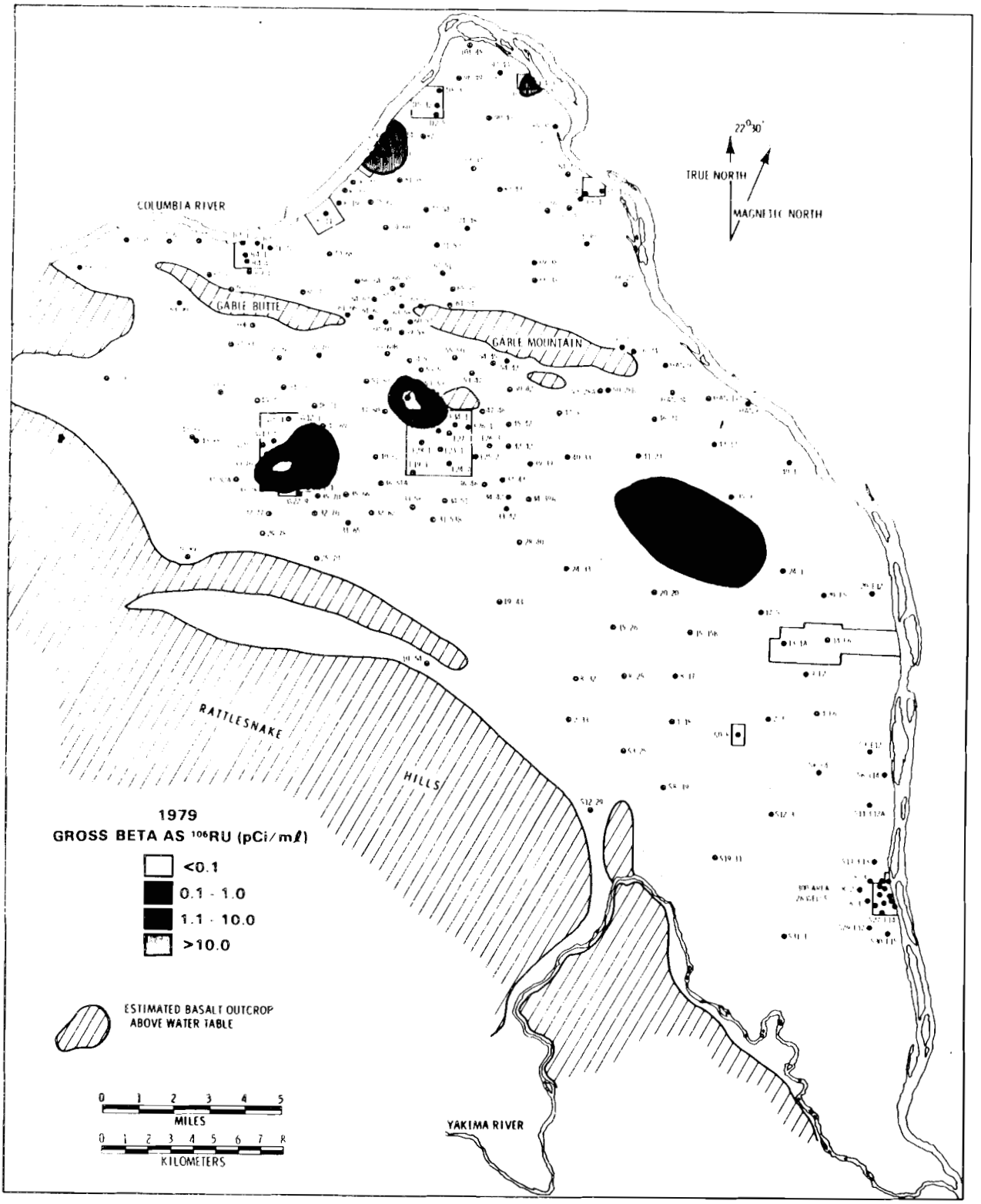


FIGURE 3. Gross Beta Distribution in Unconfined Ground Water

slightly since the last reporting period. The plumes continue to extend southeasterly from the 200-E Area for about 12.5 km (7.8 miles). The apparent increase in concentration at Well 699-49-55 (Appendix A) is the result of a slightly higher laboratory result which falls within possible laboratory error and does not represent an actual physical increase of contamination. However, continuing monitoring will take place to verify this conclusion.

Gross beta concentrations in the most southeasterly plume continued to be less than 1.0 pCi/mℓ. Concentrations higher than 1.0 pCi/mℓ were noted in two small plumes adjacent to the southeast corner of the 200-W Area. Figure 4 shows that gross beta concentrations at Well 6-34-42 have an apparent half life of about 1.3 years. Concentrations are currently near the detection limit of 0.08 pCi/mℓ. The nature of the concentration history indicates that this well is located in an area where groundwater flow is minimal, or the concentration is decreasing as a result of dilution. Figure 5, a concentration history of Well 6-38-70, shows that β_t concentrations at this well have an apparent half life of 3.6 years. The continuing supply of β_t-containing ground water past this site is reflected in Figure 5. Beta activity shown in this figure results from the cyclical nature of Hanford's plant operations. The peak in β_t concentrations occurred in early 1971 at a level of about 1.5 pCi/mℓ, following the last operations in the 200-W Area. The level of contamination continues to decrease, with β_t contamination in Well 6-26-15 (Figure 6) showing an apparent half life midway between those of Wells 6-34-42 and 6-38-70. Well 6-26-15 is located near the extreme eastern edge of the gross beta plume. Gross beta concentrations at this site are expected to drop to less than detectable levels in the near future. Peaks in concentration histories can be used to determine travel times in the groundwater flow system. However, correlation of peaks and discharges is sometimes difficult because dispersion within the flow system tends to coalesce minor plumes from different release points and mask the true time of release.

In addition to the 200 Area plumes, contributors to the β_t contamination of ground water are evident in the 100-B, 100-D and 100-H Areas from past operations; they are evident in the 100-N Area from liquid waste disposal to the 1301-N trench; and in the 300 Area, from waste disposal facilities.

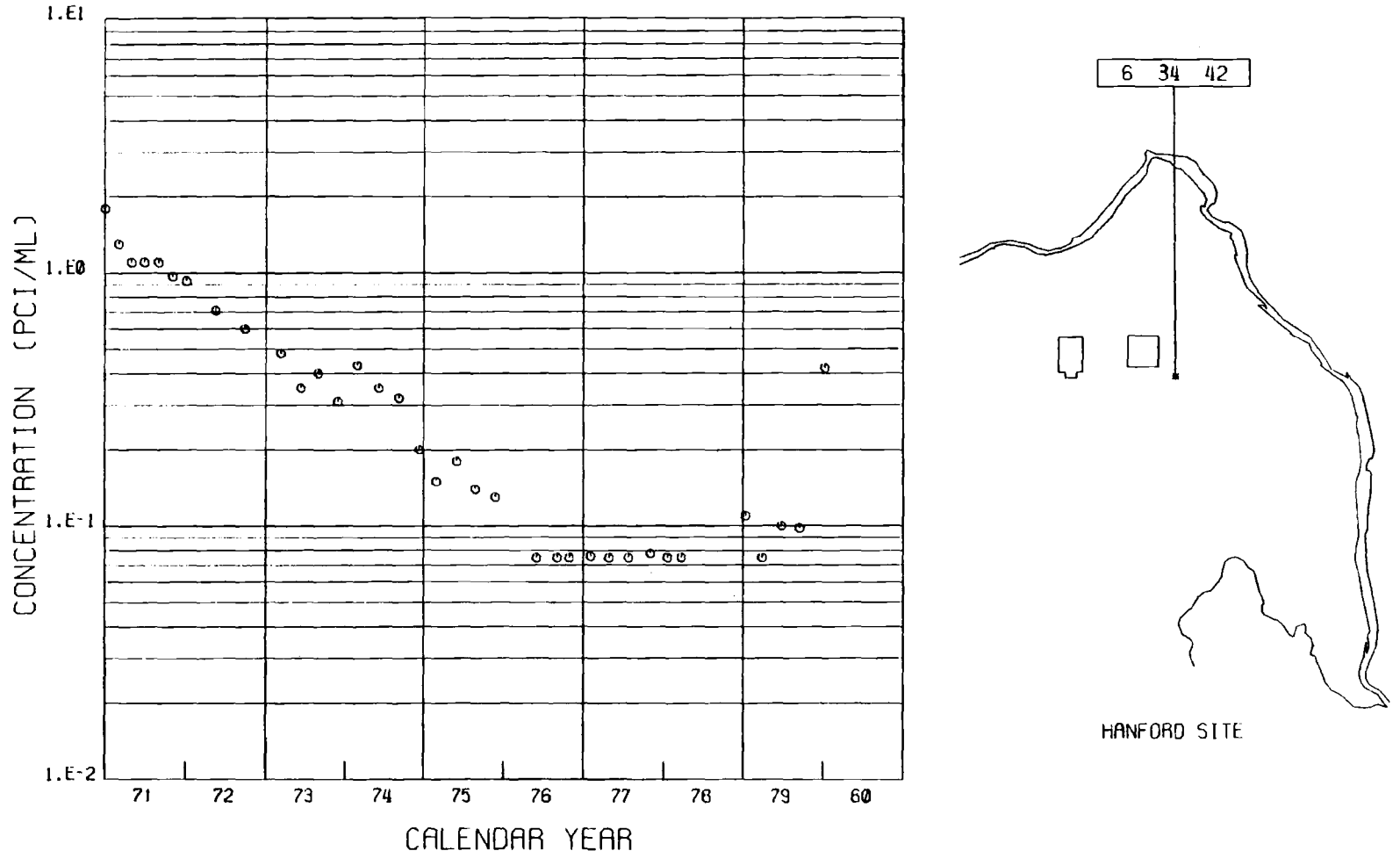
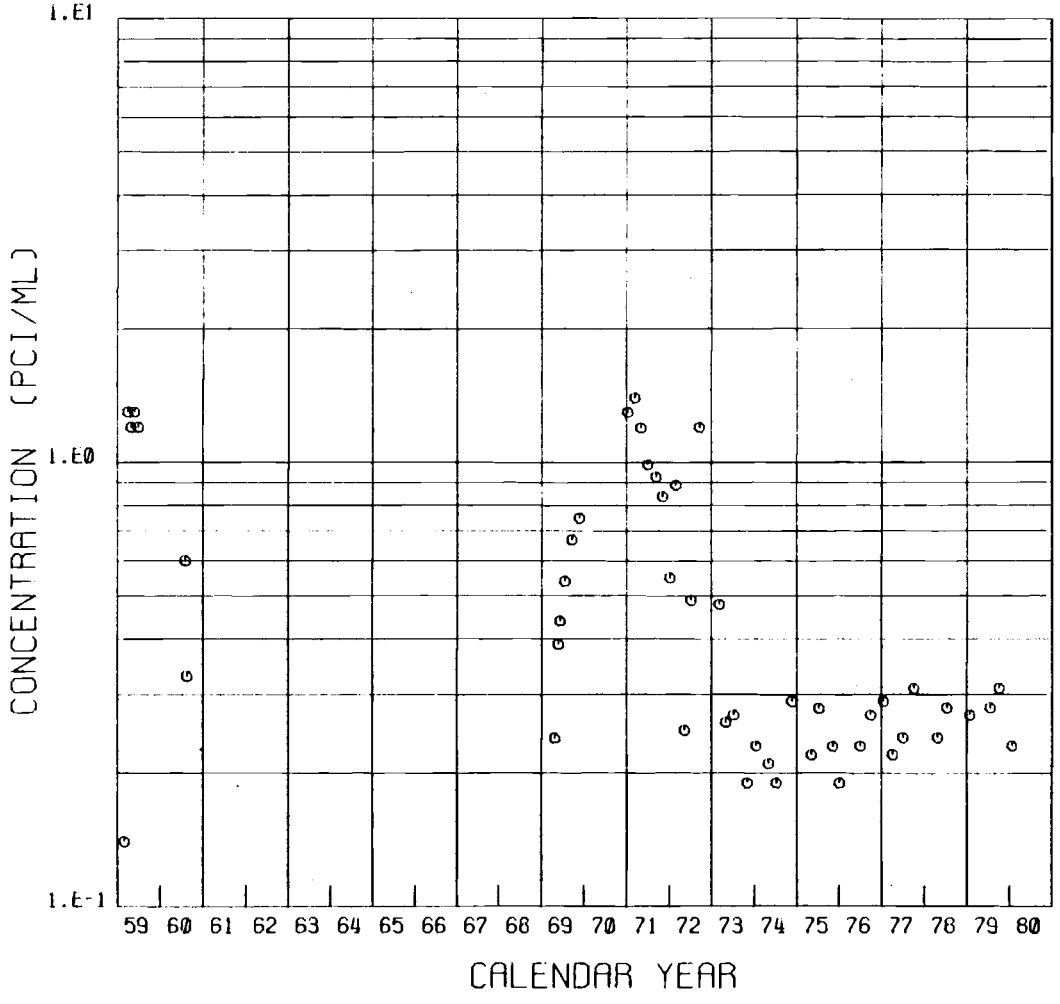


FIGURE 4. Concentration History for Gross Beta Activity in Well 6-34-42



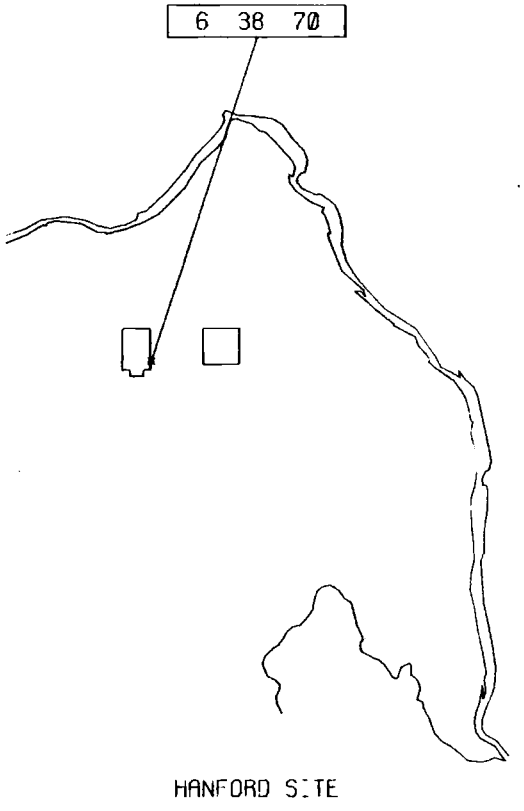


FIGURE 5. Concentration History for Gross Beta Activity in Well 6-38-70

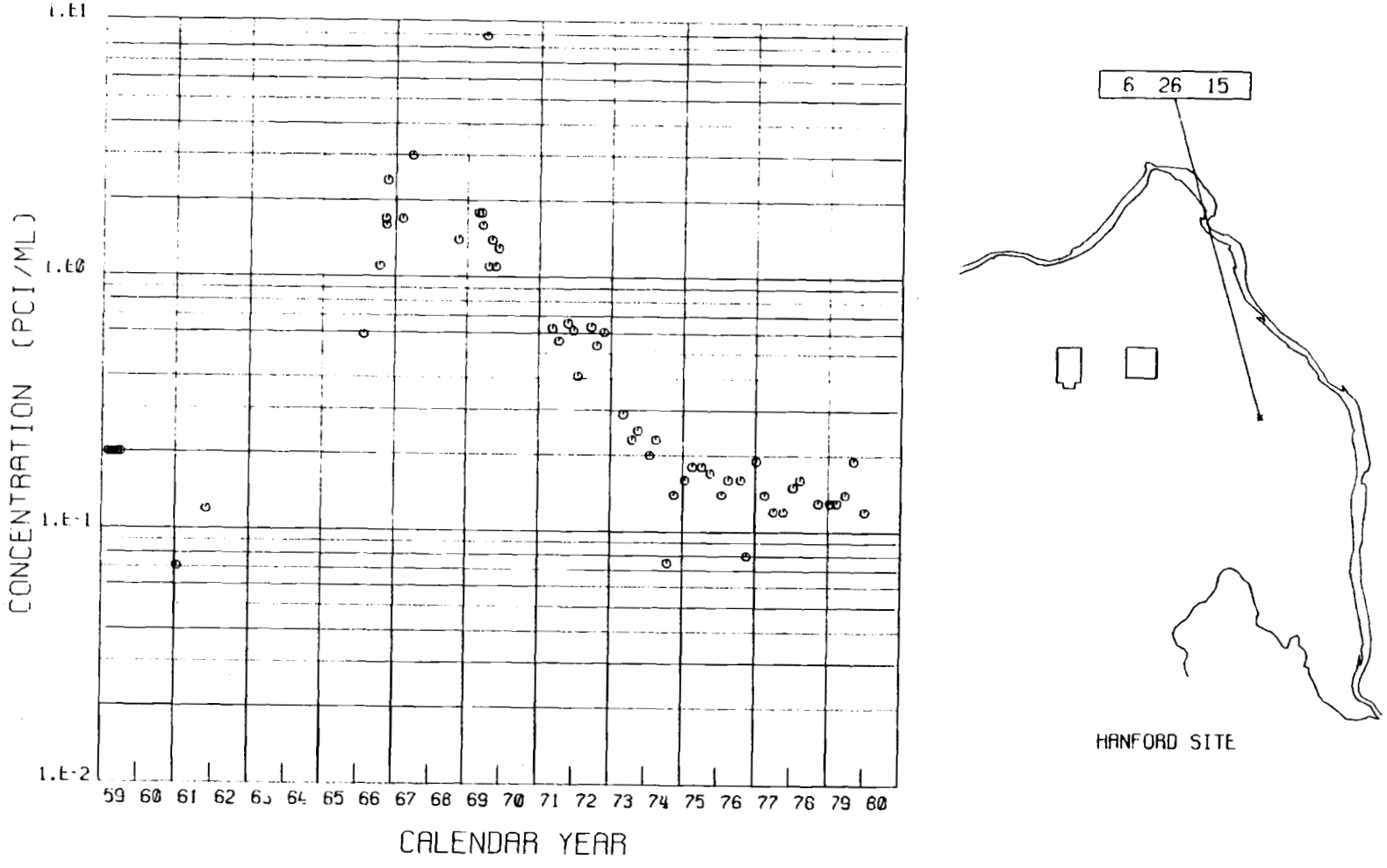


FIGURE 6. Concentration History for Gross Beta Activity in Well 6-26-15

DEFINITION OF GROSS BETA CONTRIBUTORS

In 1976, a program to define the actual contributors to the gross beta plume was initiated. Well 6-34-42 (Figure 4) was selected for analysis because of its proximity to the 200-East Area plume. Initial analyses indicated the possible existence of minute concentrations of highly mobile radionuclides. In an effort to determine whether gross beta contributors could be detected away from the major plume, four wells were selected for comprehensive radiochemical analysis. Data from these four wells, (699-32-21, 699-35-9, 699-41-23 and 699-42-12) are shown in Table 3. Figures 4-6 show the β_t change with time.

Additional data concerning ^{60}Co and ^{106}Ru were obtained during analysis for ^{129}I; these data are presented in a later section of this report. The low levels shown for these radionuclides were attainable only through special analytical techniques, and corroborate the data obtained to define the gross beta contributors.

TRITIUM (^{3}H) CONCENTRATION IN THE UNCONFINED GROUND WATER

Because tritium enters the groundwater system as a part of the water molecule, it is carried along with the groundwater flow and remains almost unaffected by the geologic conditions that affect other radionuclides. Tritium, therefore, provides the most accurate and extensive overview of groundwater movement at the Hanford Site. Figure 7 shows the distribution of ^{3}H in the unconfined aquifer. Appendix A contains data concerning maximum, average, and minimum concentrations for samples collected in 1979.

The configuration of the ^{3}H plume has changed somewhat in the past year. Concentrations of ^{3}H in Well 6-40-1 have increased which indicates that the plume has reached the Columbia River.

Tritium concentrations in wells within the plume show different responses dependent upon the geohydrology of the locale being monitored. Figure 8 shows a concentration history for Well-6-15-26. The apparent half life for ^{3}H in this well is about 10 years, slightly less than the actual half life. This rate of decay indicates that uncontaminated or at least less contaminated water is reaching this well. Figure 9, a concentration history for Well 6-32-22

TABLE 3. Comprehensive Radiochemical (pCi/ℓ) Analysis of Four Wells

Well No.	^{22}Na	^{54}Mn	^{60}Co	^{65}Zn	^{95}Zr	^{95}Nb	^{106}Ru	^{108m}Ag	^{110m}Ag	^{125}Sb
699-32-22										
Filters	<0.00093	0.00077	0.0307	0.0047	0.0021	<0.00057	<0.0053	<0.00053	<0.00102	<0.0015
1st Anion Bed	0.0179	<0.0157	38.87	0.2228	<0.0159	<0.0127	0.7409	<0.00749	0.0288	<0.0215
2nd Anion Bed	<0.0043	<0.0046	1.414	<0.0133	<0.0057	<0.0054	0.0191	<0.00268	<0.00749	<0.00778
1st Cation Bed	<0.00258	<0.0020	0.789	<0.0055	<0.0023	<0.0018	<0.0152	<0.00152	0.00497	<0.00445
2nd Cation Bed	<0.00153	0.0014	0.0396	<0.0034	<0.0018	<0.0015	<0.0089	<0.00082	<0.00172	<0.00247
1st Al_2O_3	<0.00095	<0.00068	0.0045	<0.0018	<0.00075	<0.00059	<0.0053	0.00074	<0.00103	<0.00155
2nd Al_2O_3	<0.00103	<0.00073	0.0037	<0.0023	<0.00096	<0.00073	0.0167	<0.00061	<0.00111	<0.00178
3rd Al_2O_3	<0.00112	0.0014	0.0113	<0.0022	<0.0011	<0.0008	<0.0062	<0.00062	<0.00122	<0.00184
699-35-9										
Filters	<0.00122	0.0012	0.0115	<0.0025	<0.00095	<0.00077	<0.0068	<0.00069	<0.00127	<0.00198
1st Anion Bed	<0.00599	<0.0073	5.248	0.0468	0.012	<0.00615	0.0631	<0.00377	<0.0117	<0.01097
2nd Anion Bed	<0.00418	<0.0034	<0.0045	<0.0093	<0.00532	<0.00405	<0.0255	<0.00237	0.00777	<0.00724
1st Cation Bed	0.00666	0.0030	0.0089	<0.0081	<0.00372	<0.00288	<0.0232	<0.00228	0.00662	<0.00661
2nd Cation Bed	<0.00431	<0.0029	0.0051	<0.0090	<0.00498	<0.00401	<0.0225	<0.00207	<0.00453	<0.00626
1st Al_2O_3	<0.00107	0.00082	<0.0011	0.0030	0.00133	<0.00067	<0.0061	<0.00062	<0.00113	0.00217
2nd Al_2O_3	<0.0012	<0.00091	<0.0012	<0.0024	<0.00130	<0.00103	0.0177	<0.00070	<0.00139	<0.00202
3rd Al_2O_3	<0.00139	<0.00103	<0.0013	<0.0028	<0.00138	<0.00117	<0.0077	<0.00077	<0.00142	<0.00217
699-41-23										
Filters	<0.00142	<0.00094	0.0141	<0.0027	<0.00110	<0.00084	<0.0072	<0.00072	<0.00139	<0.00213
1st Anion Bed	<0.00937	0.01354	15.05	0.3561	<0.01389	<0.01082	0.4154	<0.00619	<0.02580	<0.01808
2nd Anion Bed	<0.00505	<0.00438	0.4801	0.0310	<0.00736	<0.00562	<0.0333	<0.00293	0.00817	<0.00870
1st Cation Bed	<0.00467	<0.00346	0.0308	0.0109	<0.00467	0.00581	<0.0275	<0.00267	<0.00512	<0.00793
2nd Cation Bed	<0.00467	<0.00324	0.0127	<0.0099	0.00896	<0.00406	<0.0245	<0.00228	<0.00465	0.01328
1st Al_2O_3	<0.00172	<0.00233	0.0054	<0.0076	<0.06505	<0.05015	0.0376	<0.00079	0.01285	<0.00293
2nd Al_2O_3	<0.00112	<0.00088	<0.0012	<0.0023	<0.00155	<0.00092	0.0094	<0.00066	<0.00128	<0.00193
3rd Al_2O_3	<0.00125	0.00212	0.0023	<0.0024	<0.00123	<0.00098	0.0101	<0.00071	<0.00138	<0.00205
699-42-12										
Filters	<0.00089	<0.00069	0.0353	0.0029	0.00101	<0.00059	<0.0050	<0.00050	<0.00100	<0.00144
1st Anion Bed	<0.00831	<0.01153	15.18	0.0394	<0.01286	<0.01010	<0.0692	<0.00550	<0.01879	<0.01608
2nd Anion Bed	<0.00367	<0.00304	0.1613	<0.0086	<0.00483	<0.00388	0.0734	<0.00218	<0.00462	<0.00634
1st Cation Bed	<0.00284	0.00352	0.0186	<0.0061	0.00445	<0.00227	<0.0171	<0.00168	<0.00313	<0.00500
2nd Cation Bed	<0.00231	<0.00174	0.0128	<0.0047	0.00323	<0.00224	<0.0131	<0.00127	<0.00256	<0.00374
1st Al_2O_3	<0.00059	<0.00046	<0.00068	<0.0012	<0.00052	<0.00042	<0.0035	<0.00037	<0.00072	<0.00103
2nd Al_2O_3	<0.00096	<0.00070	<0.00099	<0.0019	0.00115	<0.00071	<0.0057	<0.00054	0.00116	0.00312
3rd Al_2O_3	<0.00096	<0.00073	<0.00104	<0.0020	<0.00099	<0.00077	<0.0056	0.00083	<0.00106	<0.00167

Table 3 (continued)

^{126}Sn	^{134}Cs	^{137}Cs	^{144}Ce	^{152}Eu	^{154}Eu	^{155}Eu	^{228}Th	^{226}Ra
<0.00059	0.00077	<0.00066	<0.0011	<0.0014	<0.0030	0.0012	0.0097	0.0082
<0.01118	<0.0147	0.0136	<0.01115	<0.0179	<0.0729	<0.0063	0.0148	0.0540
<0.00329	<0.0042	<0.00364	<0.00547	0.01093	<0.0202	<0.00294	0.0242	0.0437
0.00278	0.0044	0.00297	0.00494	<0.00397	<0.00775	0.00225	0.0121	0.0133
0.00126	<0.0011	<0.00101	0.00202	<0.00219	<0.00447	0.0016	0.0149	0.0221
<0.00060	0.00075	<0.00652	<0.00124	<0.00145	<0.00289	0.00083	0.0045	0.0083
<0.00069	<0.00076	<0.00076	0.00192	<0.00161	0.00385	0.00081	0.0049	0.0095
<0.00073	<0.00078	0.00113	<0.00145	<0.00166	<0.0031	<0.00080	0.0045	0.0051
<0.00075	<0.00091	0.00261	<0.00147	<0.00178	0.00428	<0.00084	0.0090	0.0102
<0.0053	<0.00683	<0.0056	<0.00667	<0.00938	<0.03259	<0.0037	0.0174	0.0345
<0.00266	<0.00309	<0.0029	<0.00599	<0.00643	<0.01223	<0.00307	0.0194	0.0353
<0.00256	<0.0027	<0.00279	<0.00527	<0.00608	<0.01198	<0.00294	0.0219	0.0364
<0.00236	0.00368	0.00313	<0.00507	<0.00542	<0.01153	<0.00268	0.0209	0.0263
<0.00066	<0.00077	<0.00077	<0.00138	<0.00166	<0.0030	0.00090	0.0040	0.0083
<0.00071	<0.00081	<0.00080	<0.00165	<0.00186	0.00549	<0.00088	0.0083	0.0104
<0.00084	<0.00095	<0.00090	<0.00181	<0.00207	<0.00387	0.00143	0.0068	0.0064
<0.00085	0.00134	0.00200	<0.00159	<0.00193	<0.00409	<0.00091	0.0088	0.0138
0.01188	<0.01167	<0.00974	<0.01056	0.3262	<0.05523	<0.00609	<0.0081	0.0404
<0.00343	0.00498	0.00368	<0.00681	<0.00763	<0.01716	<0.00357	0.0223	0.0294
0.00622	0.00342	<0.00311	0.00663	<0.00702	<0.01408	<0.00336	0.0255	0.0363
<0.00255	<0.00304	<0.00282	<0.00558	<0.00597	<0.01223	<0.00289	0.0214	0.0218
<0.00088	0.00144	0.00165	0.00559	0.00273	<0.00432	0.00125	0.0111	0.0115
<0.00073	0.00119	<0.00079	<0.00157	<0.00178	0.00521	<0.00086	0.0060	0.0091
<0.00077	<0.00089	0.00127	<0.00166	<0.00184	<0.00350	0.00195	0.0069	0.0077
<0.00058	<0.00067	0.00616	<0.00109	<0.00133	0.00316	<0.00061	0.0083	0.0086
<0.00808	0.01252	0.01474	<0.00876	<0.01323	<0.05225	<0.00484	0.0271	0.0431
<0.00250	<0.00281	<0.00265	<0.00507	<0.00567	<0.01163	<0.00264	0.0147	0.0199
<0.00189	<0.00217	<0.00202	0.00443	<0.00438	<0.00896	<0.00214	0.0136	0.0276
0.00142	0.00170	0.00168	0.00330	<0.00336	<0.00635	<0.00162	0.0104	0.0219
<0.00041	0.00095	<0.00043	<0.00082	<0.00095	<0.00180	<0.00047	0.0040	0.0066
<0.00088	<0.00067	0.00089	<0.00126	0.00150	<0.00280	0.00092	0.0069	0.0079
<0.00058	0.00095	<0.00068	<0.00133	<0.00149	<0.00272	<0.00073	0.0050	0.0047

shows essentially the same thing; however, ground water containing slightly more elevated concentrations of ^{3}H is indicated by the apparent half life, which is greater than 12.3 years. The concentration history of ^{3}H in Well 6-26-15 (Figure 10) shows that, after peaking in 1969, concentrations of ^{3}H declined and reached an apparent equilibrium in about 1975. Groundwater flow in the vicinity of this well is such that concentrations are maintained near 1000 pCi/mℓ.

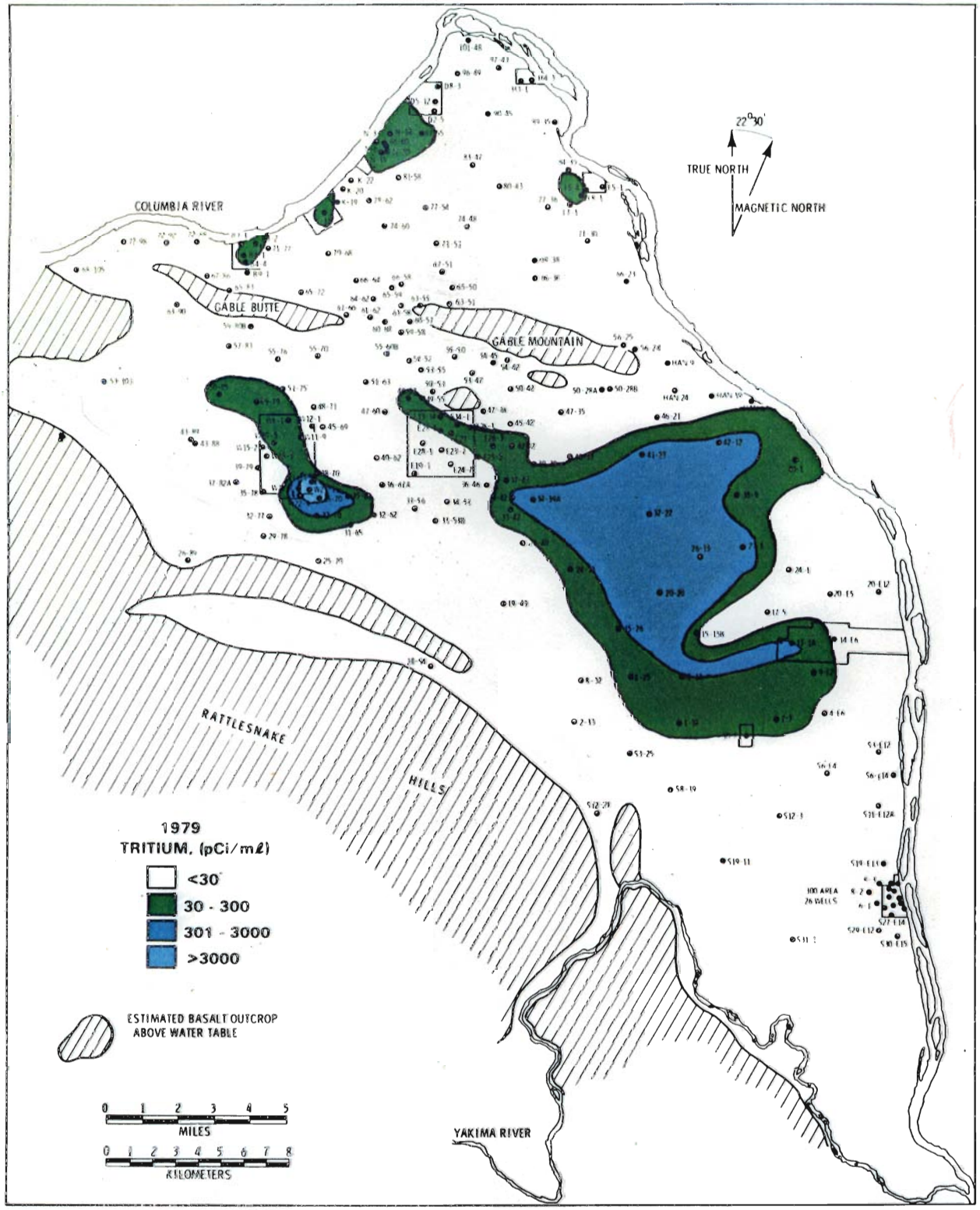


FIGURE 7. Tritium Distribution in Unconfined Ground Water

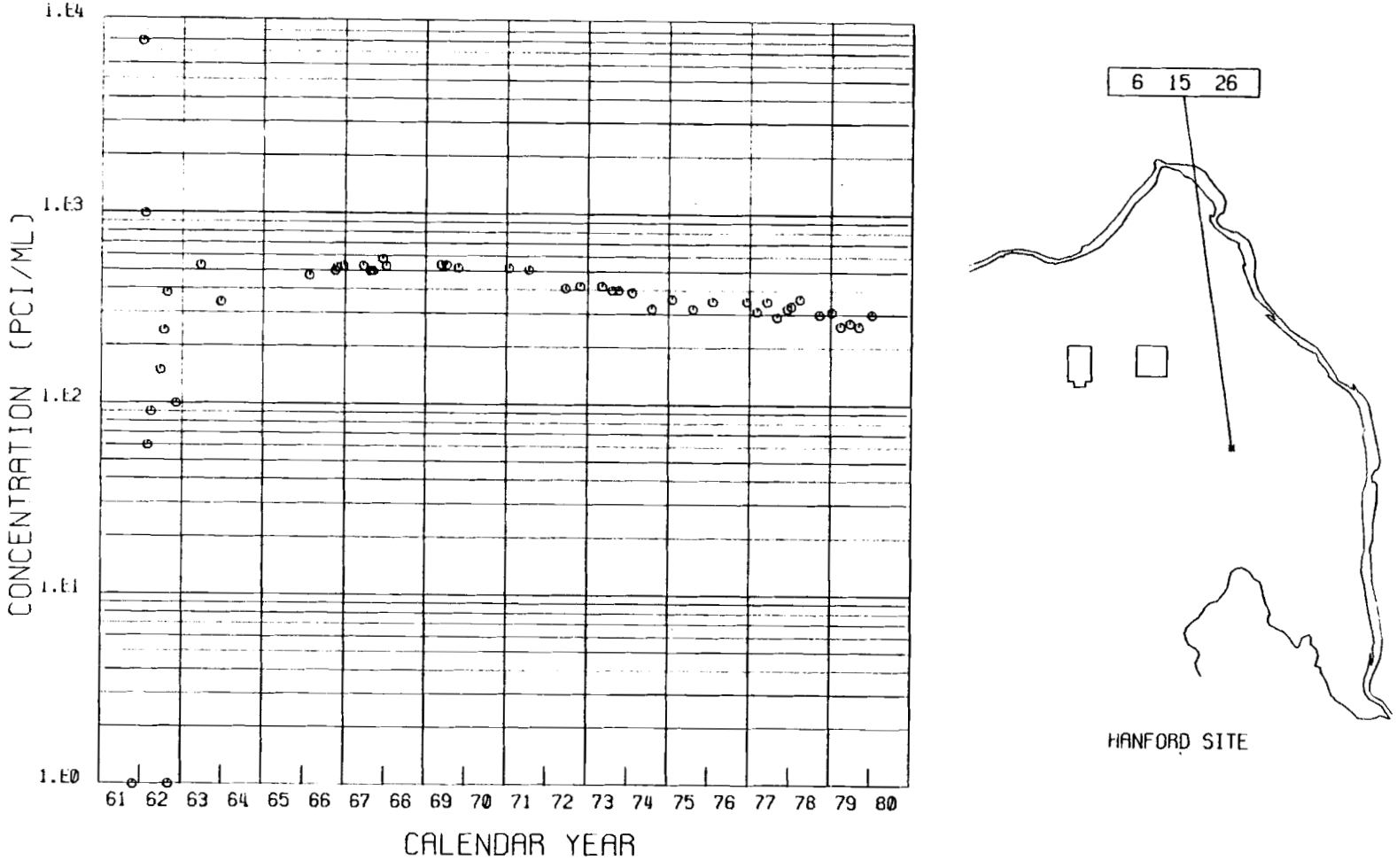


FIGURE 8. Concentration History for Tritium in Well 6-15-26

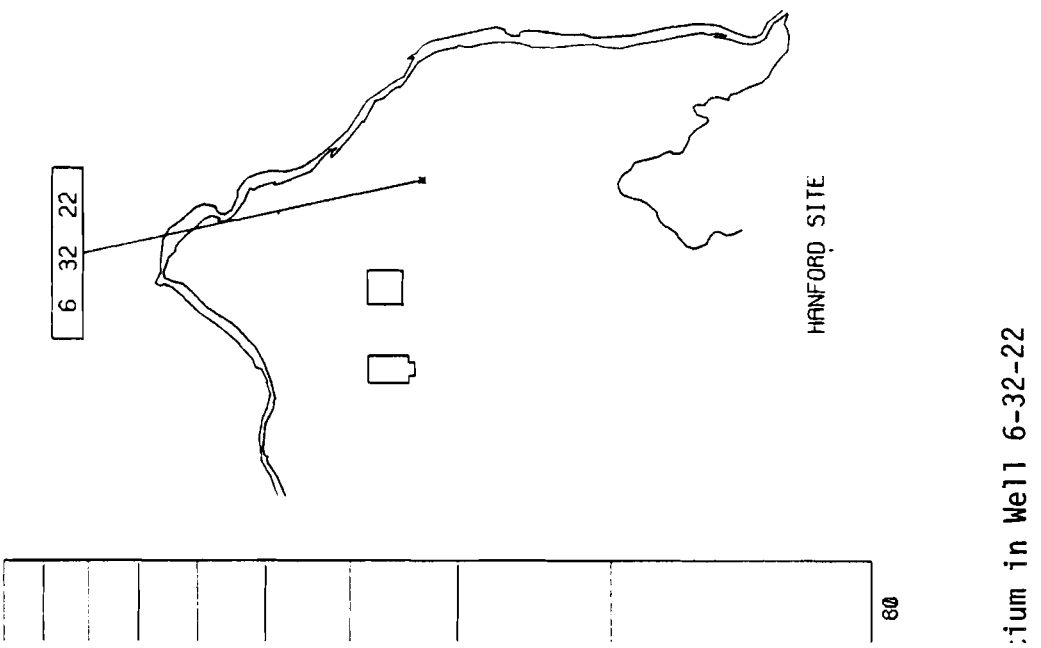


Figure 11 shows that the tritium concentration in Well 6-9-E2 dropped through mid-1972 and has been showing a gradual increase since then. Well 6-2-3 (Figure 12), has been showing a rising ^{3}H concentration since 1968, and illustrates the arrival of the plume at the well's location. Although Well 6-9-E2 and 6-2-3 show different concentrations, both are used to monitor the southern portion of the ^{3}H plume. Well 6-9-E2 represents an area of low permeability, which retards the rapid movement of ground water, and Well 6-2-3 represents an area through which ground water moves at a more rapid rate.

The combination of operational effects and hydrological events can be seen in Figure 13, which shows a concentration history for Well 6-87-55. This well is located about 1 mile (1.8 km) from N Reactor. The graph with its sinusoidal pattern illustrates a dynamic system which combines river flow, precipitation, reactor operations and geohydrology.

NITRATE (NO_3^-) CONCENTRATION IN THE UNCONFINED GROUND WATER

Figure 14 shows the concentration and distribution of NO_3^- in the ground water at Hanford. Appendix A contains data on the maximum, minimum and average concentrations. Data collected in 1979 indicate little areal change in the nitrate plume. Zones of elevated nitrate concentration persist in the vicinity of the 200-E, 200-W, 100-D, 100-F, 100-H, 100-K, and 100-N Areas, and in the central portion of the main groundwater plume.

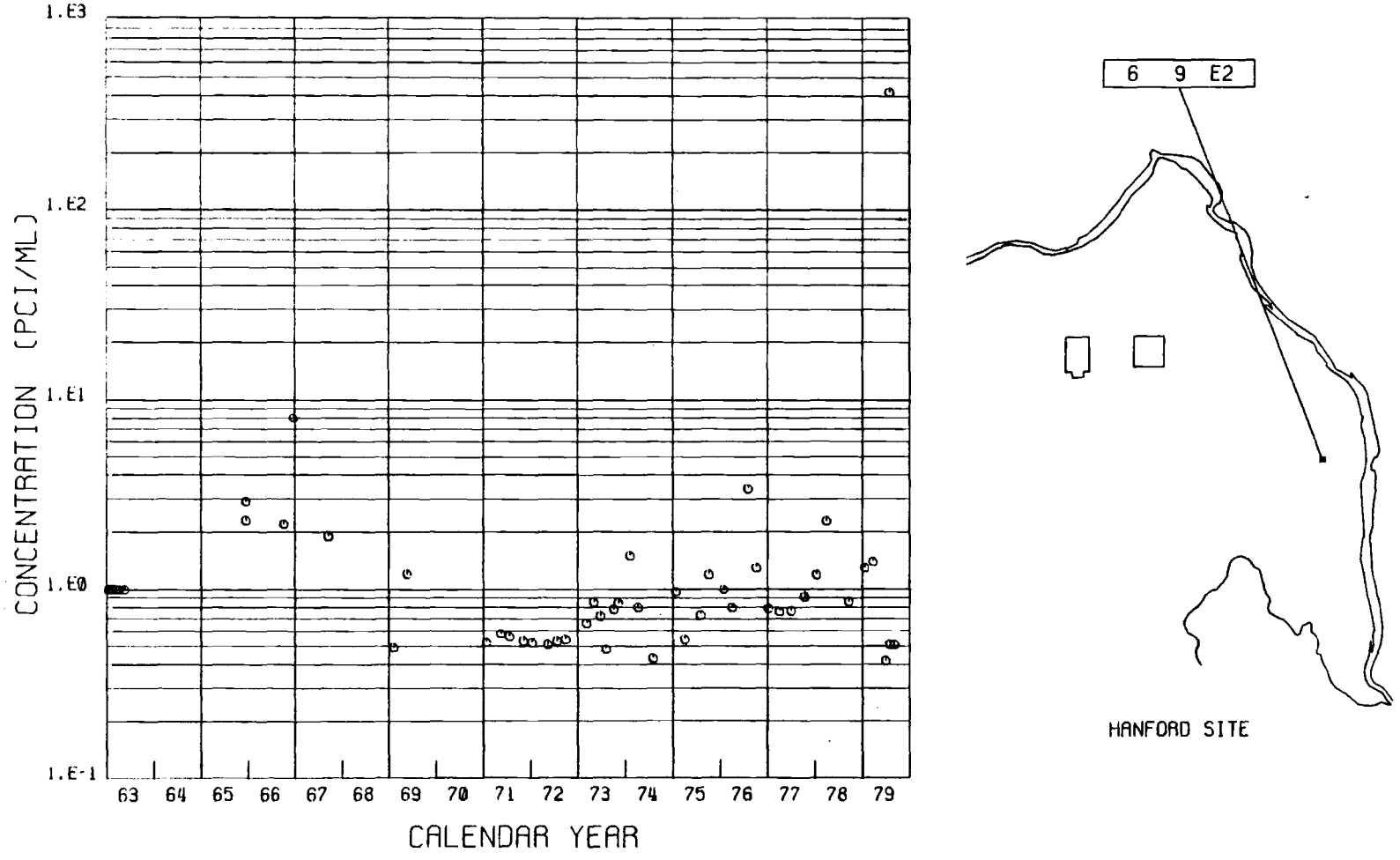


FIGURE 11. Concentration History for Tritium in Well 6-9-E2

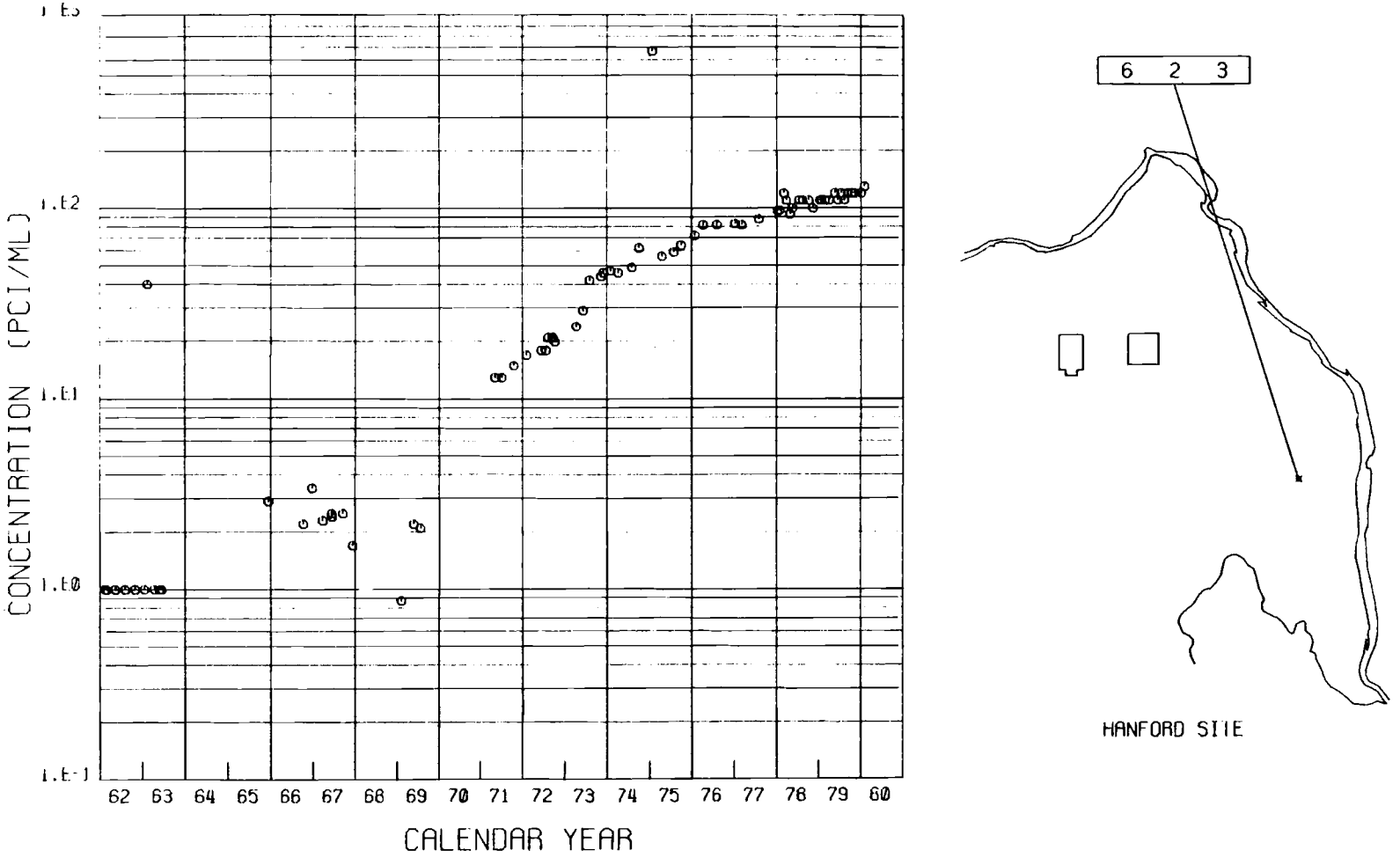


FIGURE 12. Concentration History for Tritium in Well 6-2-3

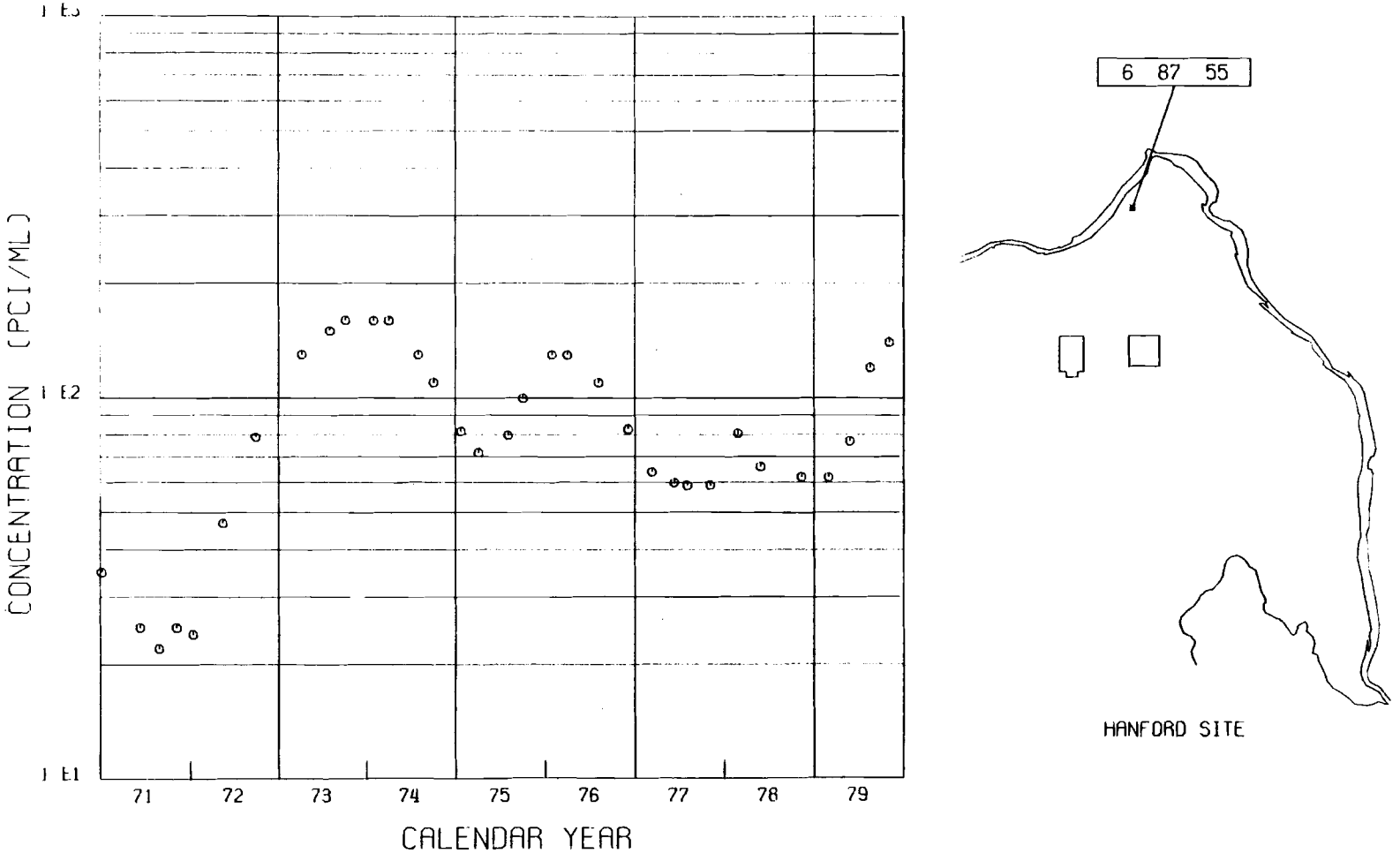


FIGURE 13. Concentration History for Tritium in Well 6-87-55

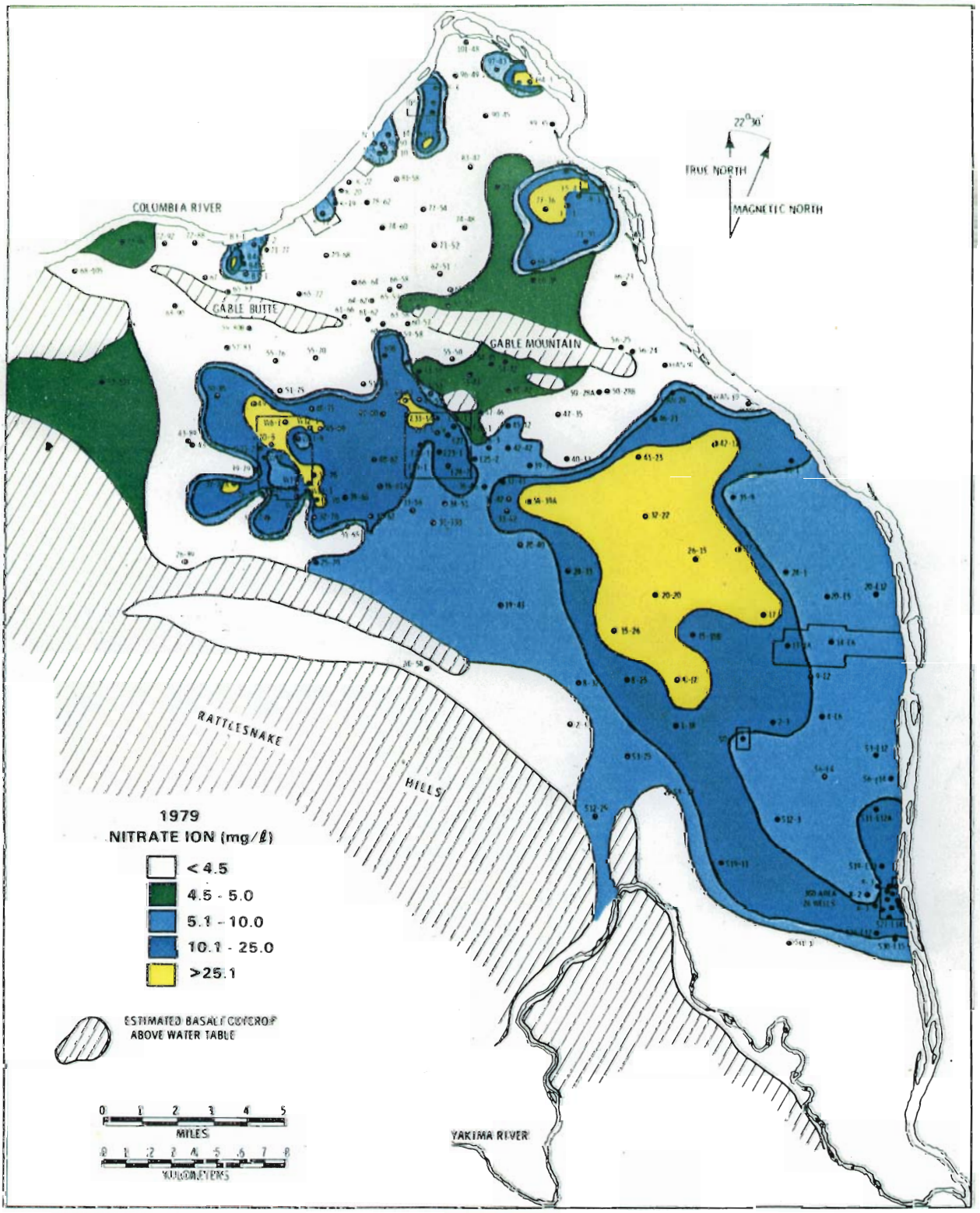
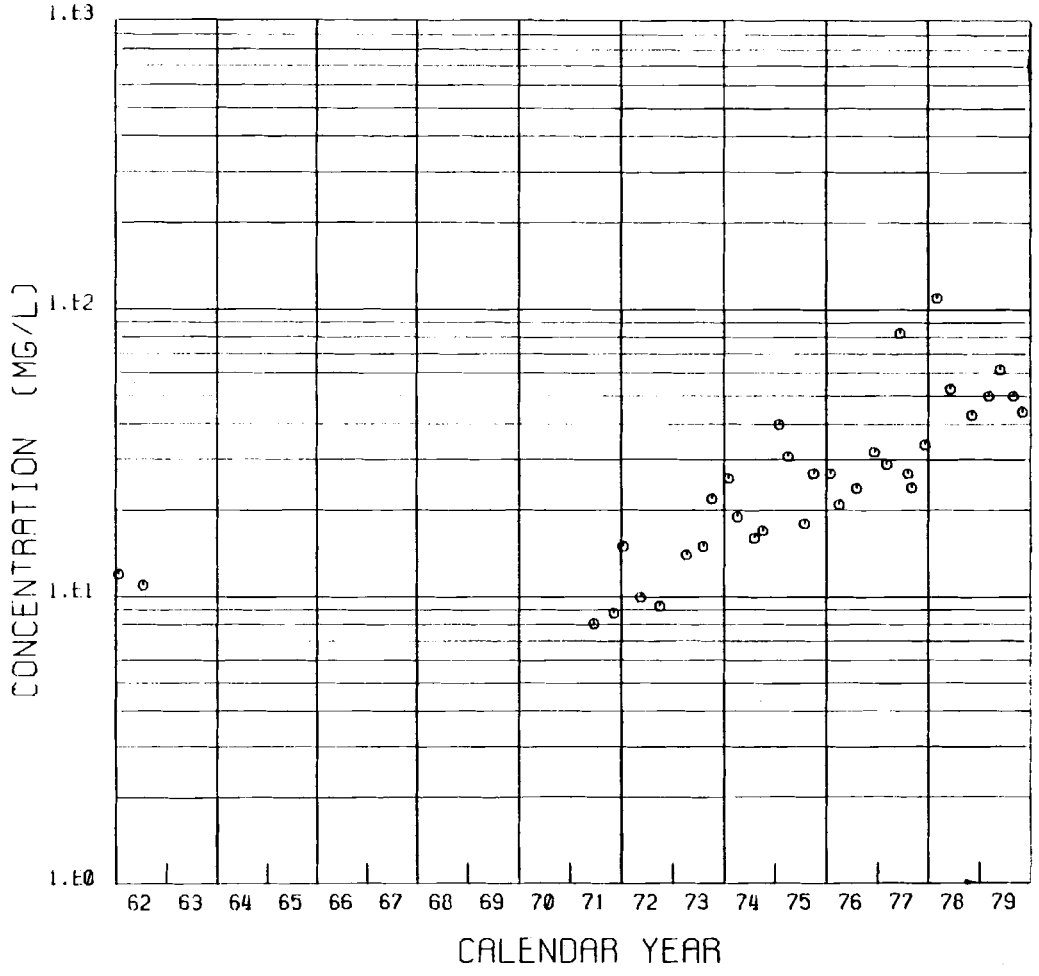


FIGURE 14. Nitrate Ion Distribution in Unconfined Ground Water



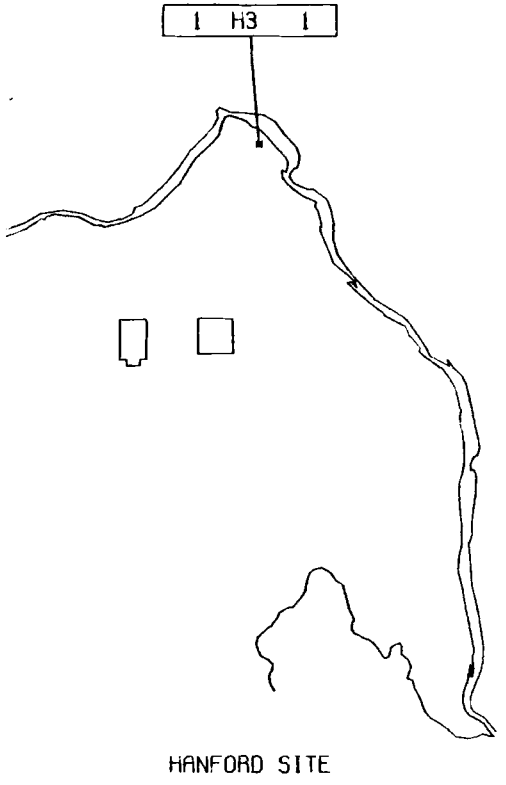
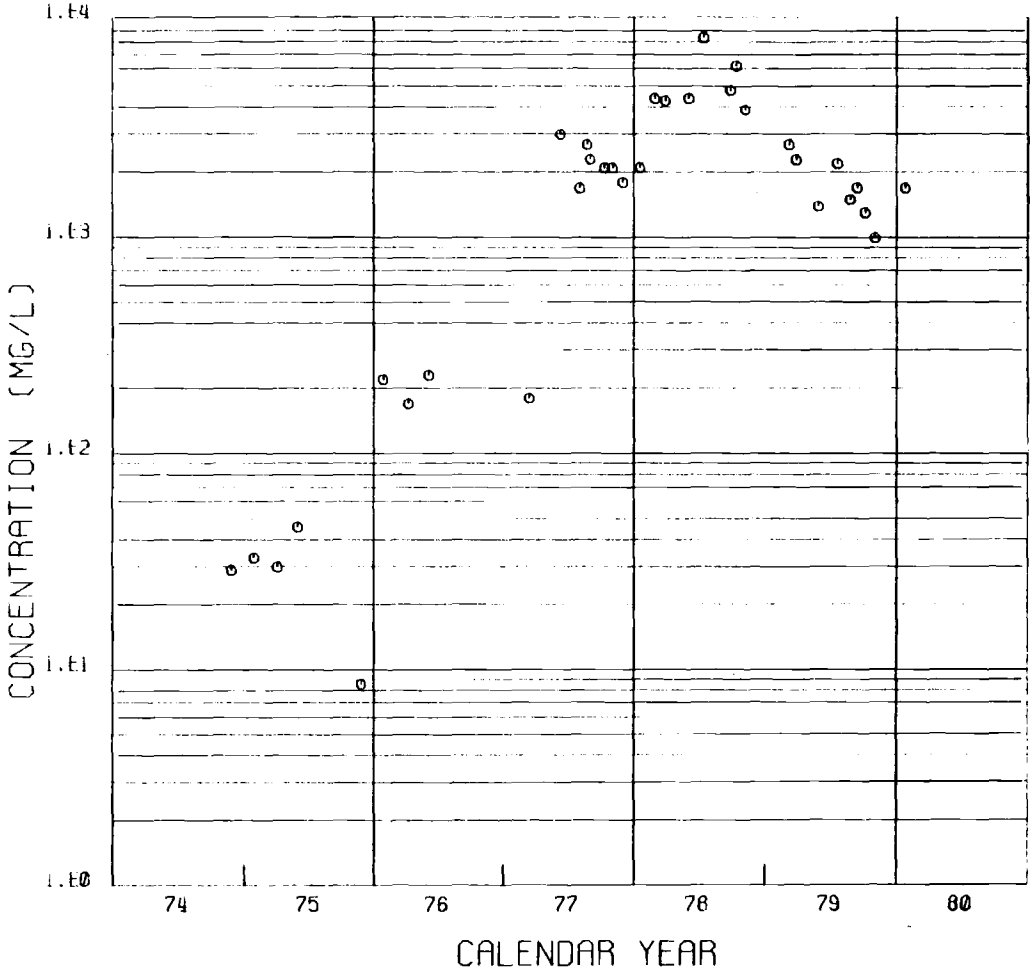


FIGURE 15. Concentration History for Nitrate in Well 1-H3-1



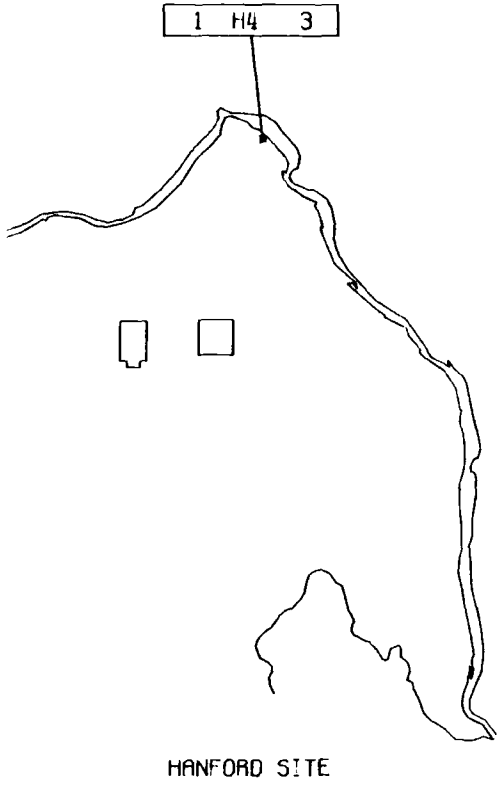


FIGURE 16. Concentration History for Nitrate in Well 1-H4-3

and form a recoverable crystalline coating on the bottom of the solar evaporation basin. An unknown quantity of this brine leaked from the pond through joints or other fractures in the concrete basin and eventually reached the ground water.

Mobilization of the brine was enhanced by water from a leaking valve in a fresh-water line servicing the facility. Upon realization of the problem, corrective action was initiated in 1979 which included sealing the leak in the basin and repairing the leaking valve. Since these repairs, the well has become a poor producer because of the lack of water from the leaks. As of this writing, no decrease in the concentrations have been noted. But, since the lack of water has appeared, it is assumed that the contaminate is trapped in the ground material and will not move or will move only at a very slow rate from the naturally occurring ground water.

A decrease of nitrate concentration continues in Well 6-34-42 (Figure 17), where a cyclical pattern has developed. This pattern reflects the operational history of the 200-E Area. The very definite trend of increasing nitrate concentration observed in Well 6-17-5 (Figure 18), located north of the Washington Public Power Supply System projects, has reversed and decreasing concentrations of nitrate are now being observed. Maintenance work on this well and the installation of a sampling pump have eliminated much of the data scatter. The graph indicates that the previous rapid increase in nitrate concentration at this site is due to the movement or expansion of the plumes' zone of high concentration within the central portion, and that the later decline in nitrate concentration is due to the passage of the main plume from the site.

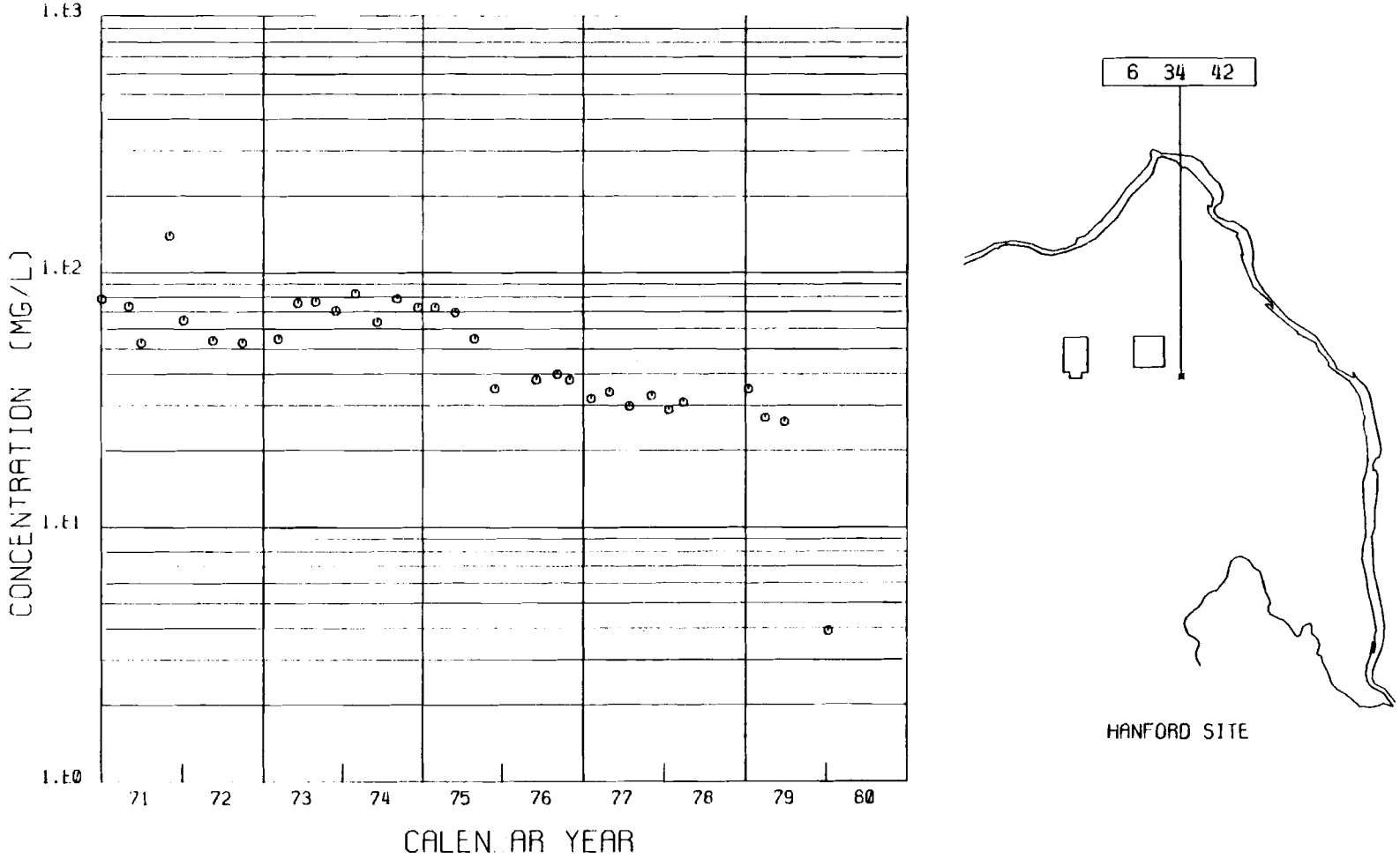


FIGURE 17. Concentration History for Nitrate in Well 6-34-42

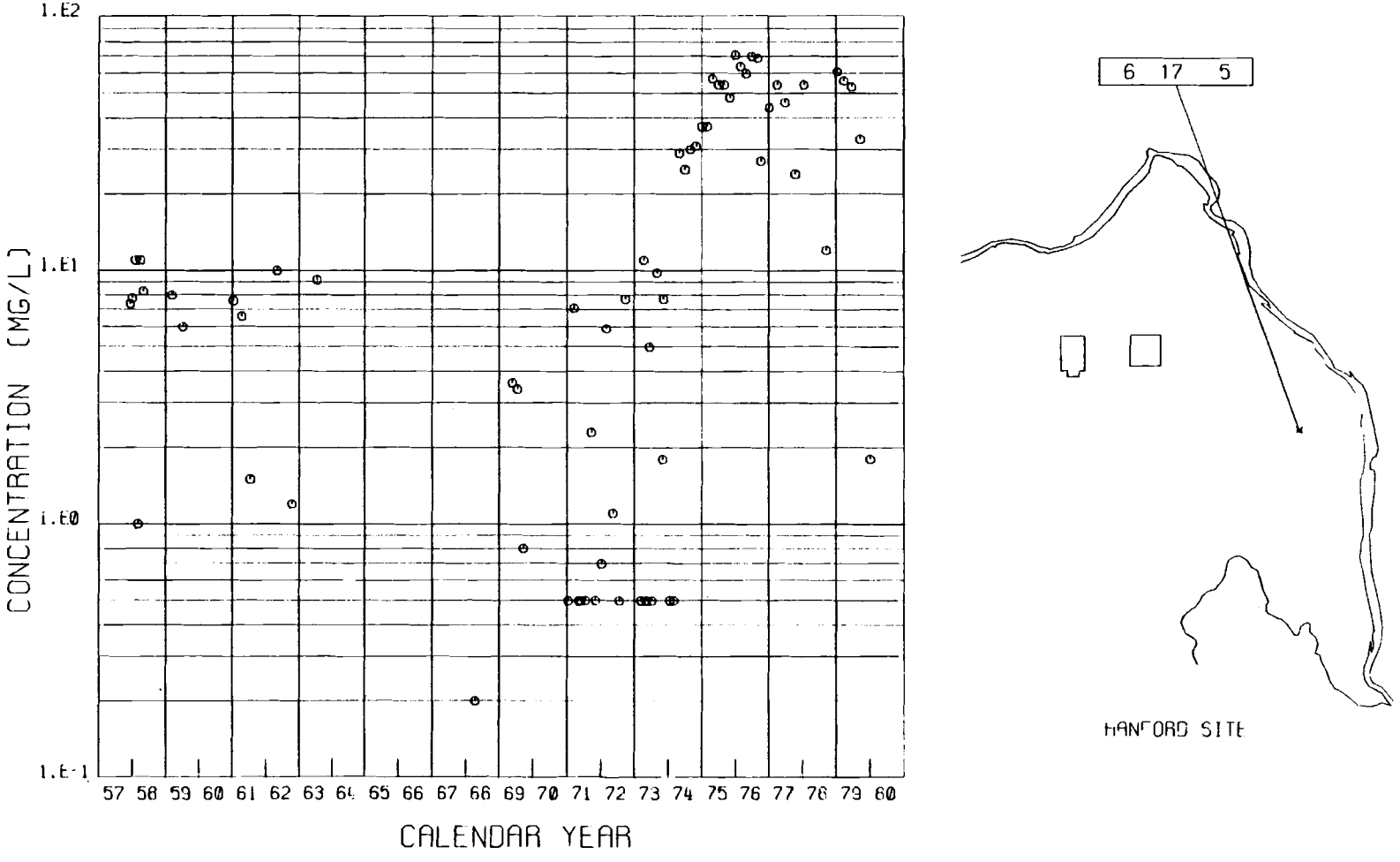


FIGURE 18. Concentration History for Nitrate in Well 6-17-5

ADDITIONAL CONTAMINANTS IN THE GROUND WATER

Appendix B contains data from the routine analysis of materials other than the primary tracers. These materials include uranium, gross alpha emitters, and fluoride ion, all found primarily in the fuel fabrication area (300 Area). A special analysis was performed for iodine-129 (see next section). In addition, water samples from the unconfined aquifer were analyzed and the temperature distribution defined.

SPECIAL ANALYSES FOR IODINE-129

During 1979, samples were collected from ten wells for iodine-129 (^{129}I) analysis. Selection of these wells was based on location, with preference given to those away from a source of contamination so that the degree and direction of movement of this radionuclide could be ascertained. Existing data were complemented by the additional information.

Analyses were performed using neutron activation techniques (ASTM 1979). This analytical technique allows a detection level of approximately 1×10^{-5} pico curies per liter (1.7×10^{-5}% of the Concentration Guides). Table 4 shows the results of the analyses from 1976 through 1979. Figure 19 shows the locations of the sampling points.

Iodine-129 is of interest because of its long half life (10 years) and its mobility in the groundwater environment. Analyses made during 1975-1979 verify that ^{129}I follows the flow paths of the other major contaminants and that its levels of concentration are reduced by diffusion and dispersion within the groundwater flow system. Past studies have shown that the majority of the ^{129}I is contained in the upper portions of the aquifer (Eddy et al. 1978). During 1979, no increase in ^{129}I concentrations attributable to groundwater transport was observed in Columbia River water (Houston and Blumer 1979).

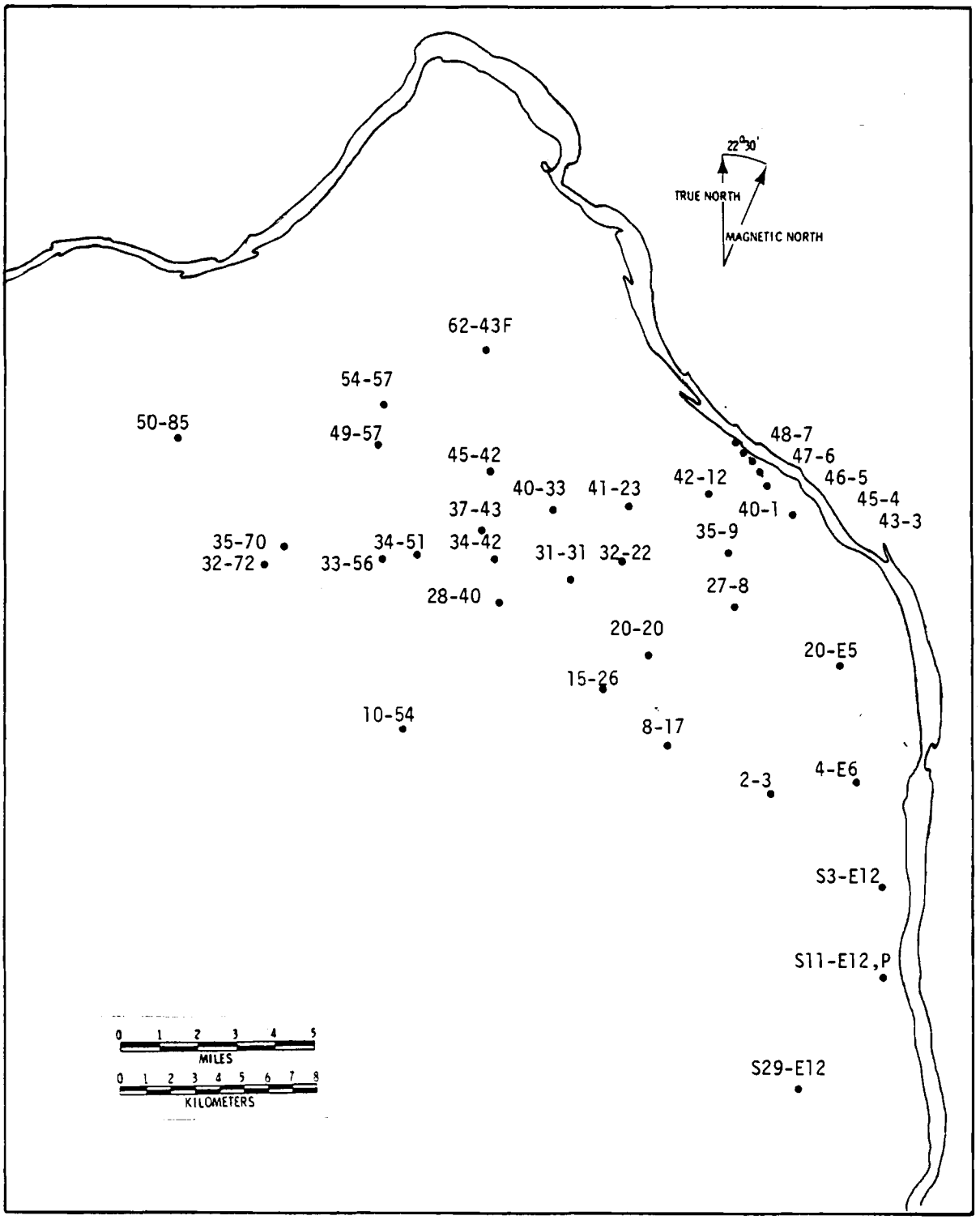


FIGURE 19. Location of Sample Points for ^{129}I Analysis

TABLE 4. ^{129}I, ^{60}Co, and ^{106}Ru Concentrations

Well No.	Concentration, pCi/ℓ ^{129}I	^{60}Co	^{106}Ru
699-2-3	0.049	4.3	0.086
699-4-E6	1.0×10^{-5}	--	--
699-8-17	0.12	12.0	0.4
699-10-54	6.0×10^{-5}	1.5×10^{-3}	--
699-15-26	0.52	11.0	0.37
699-20-E5	1.7×10^{-3}	6.0×10^{-2}	--
699-20-20	1.4	27.0	0.52
699-27-8	0.99	56.0	2.16
699-28-40	1.01×10^{-3}	4.5×10^{-3}	--
699-31-31	5.78	38.4	14.8
699-32-22	2.1	81	4.2
699-32-72	1.6×10^{-3}	4.6×10^{-3}	--
699-33-56	2.4×10^{-4}	0.01	--
699-34-42	5.1	22.3	16.5
699-34-51	1.8×10^{-5}	--	--
699-35-9	0.12	4.8	0.16
699-35-70	37.0	4.15	75.5
699-37-43	27.4×10^{-3}	5.2×10^{-3}	6.7×10^{-3}
699-40-1	0.18	9.85	0.28
699-40-33	2.2×10^{-5}	--	--
699-41-23	3.0	14.0	0.86
699-42-12	0.62	12.1	0.24
699-43-3	0.16	6.9	7.6×10^{-2}
699-45-4	7.8×10^{-2}	4.0	4.4×10^{-2}
699-45-42	15.0	--	--
699-46-5	6.7×10^{-2}	4.6	2.9×10^{-2}
699-47-6	0.2	5.0	2.9×10^{-2}
699-48-7	3.9×10^{-5}	0.2	--
699-49-57	0.17	900.0	6.2
699-50-85	2.2×10^{-5}	--	--
699-54-57	1.6×10^{-3}	--	--
699-62-43F	6.6×10^{-3}	--	--
699-S3-E12	7.9×10^{-4}	--	--
699-S11-E12	2.2×10^{-3}	2.0×10^{-2}	--
699-S11-E12P	1.7×10^{-4}	--	--
699-S29-E12	4.6×10^{-5}	--	--
Conc. Guides	0.06	30	10

RADIOLOGICAL IMPACT

Groundwater transport of contaminants on the Hanford Site represents a potential pathway for exposure to radiation via water obtained from either 1) wells that tap the unconfined aquifer, or 2) the Columbia River, into which the unconfined aquifer discharges. The following discussion examines these potential pathways.

GROUND WATER

During 1979, drinking water for DOE facilities on the Hanford Site was obtained from the unconfined aquifer at the Fast Flux Test Facility (FFTF). The drinking water at FFTF contains elevated concentrations of ^{3}H from past effluent disposal in the 200-East Area (refer to Figure 7).

The impact on the total-body dose attributable to the ^{3}H in drinking water at FFTF (average 27,000 pCi/ℓ) is calculated to be 0.4 mrem, based on an ingestion rate of 220 liters/year at 40 hrs/week. The 50-year dose commitment from ^{3}H is the same as the annual dose because of the relatively short biological half life of this radionuclide. This total-body dose is less than the amount of 0.6 mrem reported last year. The decrease is the result of modified groundwater withdrawal practices at the FFTF.

The concentrations of ^{3}H in FFTF drinking water are low compared to the guidelines in MC-0524, and the calculated dose is 10% of the State of Washington drinking water standards.

COLUMBIA RIVER

Ground water entering the Columbia River from the Hanford Site is diluted by a factor of about 1000 because of the difference between the river and groundwater flow rates. During 1979, the average Columbia River flow rate reported by the U.S. Geological Survey (Houston and Blumer, 1979) was 99,703 cfs (2824 m^3/sec). The flow rate from the unconfined aquifer (Myers, 1978) was calculated to be about 100 cfs (2.8 m^3/sec).

Tritium (^{3}H) observed at the farthest extreme boundaries of the contamination plume shown in Figure 7 indicate that the radionuclide would reach the river at this concentration (30-300 pCi/mℓ). Figure 20 provides a comparison of identical analyses performed on samples taken upstream and downstream from the Hanford Site. The figure shows that there is no apparent, statistically significant difference between upstream and downstream concentrations of ^{3}H. The Columbia River transports approximately 26,000 Ci/yr of ^{3}H attributable to worldwide fallout (annual flow of 8.9^{13} ℓ/yr x ∿290 pCi/ℓ). Tritium discharges from N Reactor during 1979 contributed an additional ∿0.01% (200 Ci/yr), (Greager, 1980) but this contribution is not distinguishable from the variability resulting in fallout levels.

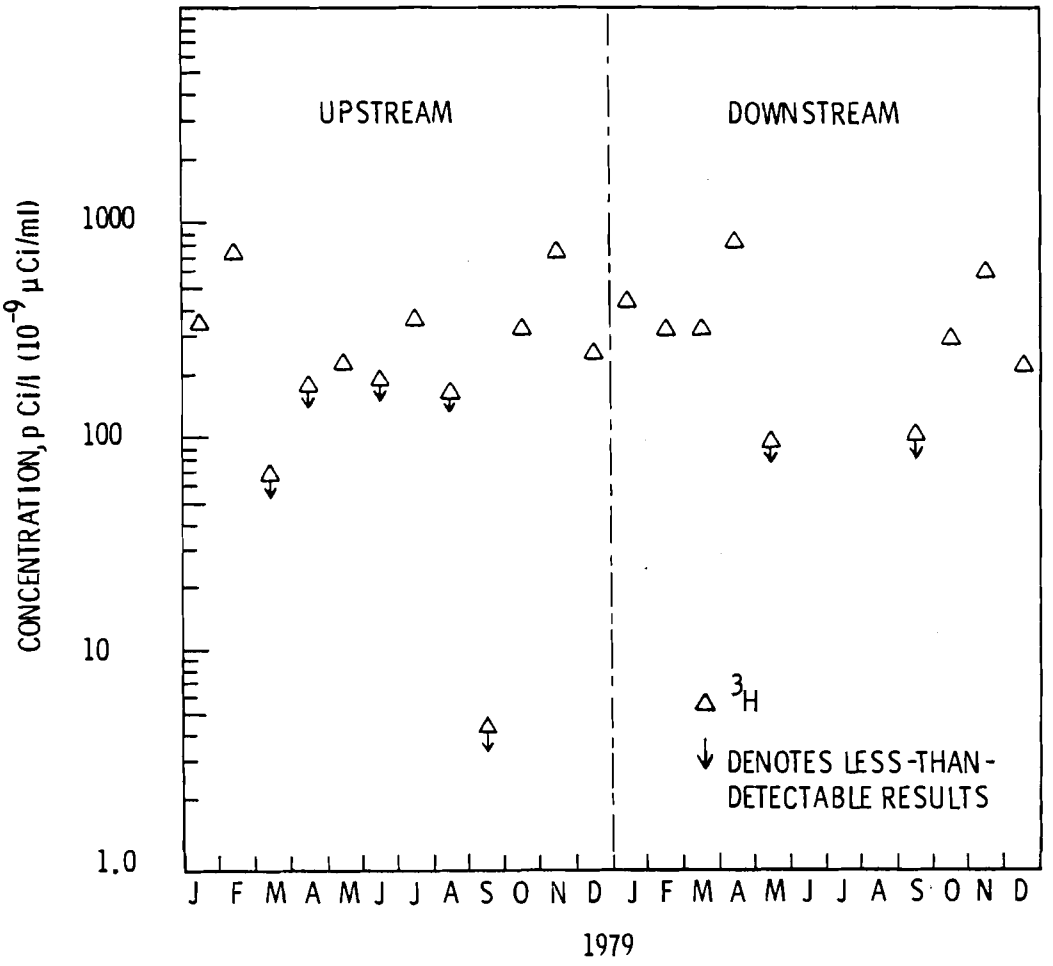


FIGURE 20. Upstream and Downstream Concentration of ^{3}H in Columbia River Water

QUALITY CONTROL

The PNL program for quality control measures was initiated in 1974 and reaches all phases of the groundwater monitoring program. The extensive effort to insure that samples are representative of the aquifer system beneath the site includes: 1) well maintenance; 2) visual and geophysical inspection, and; 3) installation of sampling pumps. In addition, blind and duplicate samples are analyzed by the PNL Technical Analysis Laboratory. Analysis of groundwater samples by the U.S. Geological Survey has been continued. These programs have shown that data received as part of the routine monitoring program are within the analytical limits of accuracy. The historical analytical record for each well further confirms the representativeness of the data collected each year.

In addition to providing quality assurance, the program with the U.S. Geological Survey provides data on the chemistry of Hanford groundwater. These data, including wet, chemical, and spectrographic analysis, represent background information that is useful in assessing trends on the effects of plant operations. The results of the analyses made in 1979 are shown in Appendix C. These data analyses indicate that the quality of the groundwater beneath the Hanford Site is comparable to that of other groundwaters found in eastern Washington. No changes in basic chemistry are evident that indicate chemical contamination from Hanford sources other than the results of the leak at the 183H Solar Evaporator Facility and changes caused by process waste disposal in the 300 Area.

At the laboratory level the documentation of laboratory insturment calibrations and all laboratory procedures is required. Documentation of field instrument calibration also is being implemented.

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APPENDIX A

GROSS BETA, TRITIUM AND NITRATE CONCENTRATIONS IN THE GROUND WATER (UNCONFINED AQUIFER)

APPENDIX A

Total Beta, Tritium and Nitrate Concentrations in the Ground Water (Unconfined Aquifer)

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
1	B3	1	MAX			
			AVE		9,70E-01*	
			MIN			
1	B3	2P	MAX			
			AVE		8,40E-01*	<5,00E-01*
			MIN			
1	B3	2Q	MAX			
			AVE		9,85E-01*	<5,00E-01*
			MIN			
1	B4	1	MAX		4,40E+01	4,40E+00
			AVE		3,60E+01	4,23E+00
			MIN		2,80E+01	4,00E+00
1	B4	2	MAX		2,70E+01	3,50E+01
			AVE		1,32E+01	1,06E+01
			MIN		5,60E+00	<5,00E-01
1	B4	3	MAX		6,80E+01	
			AVE		5,38E+01	4,23E+00*
			MIN		4,00E+01	
1	B4	4	MAX			
			AVE	7,95E-02*	2,40E+00*	2,45E+00*
			MIN			
1	B5	1	MAX			
			AVE		1,03E+00*	3,50E+00*
			MIN			
1	B9	1	MAX			
			AVE		9,65E-01*	6,15E+00*
			MIN			
1	D2	5	MAX		2,00E+01	1,00E+02
			AVE		1,65E+01	9,18E+01
			MIN		1,40E+01	8,60E+01
1	D5	12	MAX	<7,50E-02	2,30E+00	1,40E+01
			AVE	<7,50E-02	1,65E+00	1,25E+01
			MIN	<7,50E-02	1,30E+00	1,00E+01

WELL NO.			TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
		MAX		8.90E+00	2.10E+01
1	D8	3	AVE	8.10E+00	1.62E+01
			MIN	6.70E+00	7.70E+00
		MAX		<5.90E-01	2.50E+00
1	F5	1	AVE	<5.17E-01	1.83E+00
			MIN	<4.40E-01	1.10E+00
		MAX		<1.20E+00	8.20E+00
1	F5	3	AVE	<6.78E-01	3.70E+00
			MIN	<4.20E-01	<5.00E-01
		MAX		7.50E+01	2.90E+01
1	F5	4	AVE	5.93E+01	1.02E+01
			MIN	5.10E+01	7.00E-01
		MAX		<8.50E-01	2.00E+01
1	F5	6	AVE	<6.90E-01	5.38E+00
			MIN	5.00E-01	<5.00E-01
		MAX		2.10E+00	5.70E+01
1	F7	1	AVE	1.43E+00	5.40E+01
			MIN	9.10E-01	5.10E+01
		MAX		2.10E+01	7.80E+01
1	F8	1	AVE	1.83E+01	7.05E+01
			MIN	1.40E+01	6.10E+01
		MAX			
1	F8	2	AVE	1.30E+01*	5.27E+01*
			MIN		
		MAX		1.10E+01	6.20E+01
1	H3	1	AVE	1.01E+01	5.15E+01
			MIN	9.60E+00	4.40E+01
		MAX			
1	H4	2	AVE	<7.50E-02*	4.00E+00*
			MIN		
		MAX	1.40E+00	8.40E+00	2.70E+03
1	H4	3	AVE	9.81E-01	5.66E+00	1.76E+03
			MIN	5.00E-01	4.30E+00	1.00E+03

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
	MAX		4.30E+01	1.00E+01
1 K 11	AVE		3.12E+01	8.70E+00
	MIN		2.50E+01	5.20E+00
	MAX		3.20E+00	3.90E+00
1 K 19	AVE		2.90E+00	3.28E+00
	MIN		2.00E+00	2.60E+00
	MAX		2.30E+00	2.90E+00
1 K 20	AVE		1.80E+00	1.87E+00
	MIN		1.40E+00	1.20E+00
	MAX		2.20E+00	3.30E+00
1 K 22	AVE		1.68E+00	1.47E+00
	MIN		1.10E+00	<5.00E-01
	MAX		7.40E+01	1.90E+01
1 N 1	AVE		4.68E+01	9.70E+00
	MIN		1.80E+01	<5.00E-01
	MAX		6.00E+01	1.10E+01
1 N 2	AVE		4.10E+01	8.90E+00
	MIN		2.60E+01	4.60E+00
	MAX	8.00E-01	9.00E+01	
1 N 3	AVE	7.50E-01	4.90E+01	8.20E+00*
	MIN	6.40E-01	2.50E+01	
	MAX	2.60E-01	5.10E+01	8.20E+00
1 N 4	AVE	1.68E-01	4.58E+01	6.60E+00
	MIN	1.20E-01	4.10E+01	5.00E+00
	MAX		7.40E+01	7.40E+00
1 N 5	AVE		4.60E+01	5.98E+00
	MIN		3.10E+01	4.20E+00
	MAX	4.10E-01	5.10E+01	
1 N 6	AVE	2.95E-01	3.53E+01	
	MIN	2.30E-01	2.20E+01	
	MAX		5.90E+01	<5.00E-01
1 N 7	AVE		4.55E+01	<5.00E-01
	MIN		3.70E+01	<5.00E-01

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX	7.40E-01	6.10E+01	8.90E+00
1	N	14	AVE	5.20E-01	3.98E+01	6.27E+00
			MIN	3.60E-01	2.30E+01	3.30E+00
			MAX	2.50E-01	5.60E+01	1.10E+01
1	N	15	AVE	2.13E-01	4.30E+01	7.72E+00
			MIN	1.80E-01	3.60E+01	6.40E+00
			MAX	<7.50E-02	<9.40E-01	
2E	13	5	AVE	<7.50E-02	<6.08E-01	
			MIN	<7.50E-02	<3.90E-01	
			MAX	<7.50E-02		
2E	13	8	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX	9.10E-02		
2E	13	14	AVE	7.90E-02		
			MIN	<7.50E-02		
			MAX	<7.50E-02		
2E	13	19	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX			
2E	13	20	AVE	<7.50E-02*		
			MIN			
			MAX			
2E	16	1	AVE	<7.50E-02*		
			MIN			
			MAX	<7.50E-02		
2E	16	2	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX	<7.50E-02		
2E	17	1	AVE	<7.50E-02		8.30E+00*
			MIN	<7.50E-02		
			MAX	1.10E-01		
2E	17	2	AVE	8.52E-02		
			MIN	<7.50E-02		

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX	1.60E-01		3.80E+01
2E	17	5	AVE	9.63E-02		3.28E+01
			MIN	<7.50E-02		3.00E+01
			MAX			
2E	17	6	AVE	<7.50E-02*		
			MIN			
			MAX			
2E	17	8	AVE	1.00E-01*		
			MIN			
			MAX	<7.50E-02		2.60E+02
2E	17	9	AVE	<7.50E-02		2.00E+02
			MIN	<7.50E-02		1.50E+02
			MAX	1.70E-01		
2E	19	1	AVE	9.88E-02	<6.27E-01*	8.30E+00*
			MIN	<7.50E-02		
			MAX	<7.50E-02	1.90E+01	2.30E+01
2E	23	1	AVE	<7.50E-02	1.25E+01	1.73E+01
			MIN	<7.50E-02	8.10E+00	1.10E+01
			MAX			
2E	23	2	AVE	<7.50E-02*	1.03E+01*	5.55E-01*
			MIN			
			MAX			
2E	24	1	AVE	<7.50E-02*	3.25E+02*	
			MIN			
			MAX	<7.50E-02	5.10E+02	
2E	24	2	AVE	<7.50E-02	2.96E+02	
			MIN	<7.50E-02	2.50E+01	
			MAX	<7.50E-02		
2E	24	4	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX	<7.50E-02	7.30E+00	2.10E+01
2E	24	7	AVE	<7.50E-02	5.23E+00	1.68E+01
			MIN	<7.50E-02	1.60E+00	1.40E+01

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
2E	24	8	MAX AVE MIN	<7.50E-02*	2.65E+01*	5.95E+00*
2E	24	12	MAX AVE MIN	1.60E-01 1.07E-01 <7.50E-02		
2E	24	13	MAX AVE MIN	<7.50E-02 <7.50E-02 <7.50E-02		
2E	25	2	MAX AVE MIN	<7.50E-02 <7.50E-02 <7.50E-02	1.50E+02 1.24E+02 1.10E+02	8.20E+00 5.85E+00 2.40E+00
2E	25	3	MAX AVE MIN	<7.50E-02 <7.50E-02 <7.50E-02		
2E	25	6	MAX AVE MIN	<7.50E-02 <7.50E-02 <7.50E-02	7.50E+02 6.17E+02 5.30E+02	
2E	25	9	MAX AVE MIN	<7.50E-02 <7.50E-02 <7.50E-02		
2E	25	10	MAX AVE MIN	<7.50E-02 <7.50E-02 <7.50E-02		
2E	25	11	MAX AVE MIN	<7.50E-02 <7.50E-02 <7.50E-02		
2E	25	13	MAX AVE MIN	<7.50E-02*		
2E	26	1	MAX AVE MIN	<7.50E-02 <7.50E-02 <7.50E-02	1.90E+00 1.30E+00 5.20E-01	<5.00E-01 <5.00E-01 <5.00E-01

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX	<7.50E-02		
2E	26	2	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX	<7.50E-02	6.90E+01	6.00E+00
2E	26	3	AVE	<7.50E-02	4.88E+01	5.68E+00
			MIN	<7.50E-02	3.20E+01	5.40E+00
			MAX	<7.50E-02	2.10E+02	
2E	26	4	AVE	<7.50E-02	1.21E+02	
			MIN	<7.50E-02	7.50E+01	
			MAX	<7.50E-02	2.10E+01	1.10E+01
2E	27	1	AVE	<7.50E-02	1.48E+01	7.58E+00
			MIN	<7.50E-02	1.20E+01	5.20E+00
			MAX	<7.50E-02		
2E	27	5	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX			
2E	28	1	AVE	8.33E-02*	1.00E+01*	9.37E+00*
			MIN			
			MAX			
2E	28	5	AVE	<7.50E-02*	<8.20E-01*	2.10E+01*
			MIN			
			MAX	<7.50E-02	1.50E+02	
2E	28	12	AVE	<7.50E-02	1.09E+02	
			MIN	<7.50E-02	2.60E+01	
			MAX	<7.50E-02		
2E	28	16	AVE	<7.50E-02		5.20E+00*
			MIN	<7.50E-02		
			MAX	1.10E-01		
2E	28	18	AVE	8.55E-02		
			MIN	<7.50E-02		
			MAX	<7.50E-02		
2E	28	21	AVE	<7.50E-02		
			MIN	<7.50E-02		

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX			
2E	32	1	AVE	8.20E-02*	3.65E+01*	6.70E+01*
			MIN			
			MAX	3.60E+00		
2E	33	1	AVE	1.64E+00		
			MIN	1.50E-01		
			MAX	2.80E+00	8.00E+01	
2E	33	3	AVE	2.67E+00	6.10E+01	
			MIN	2.40E+00	4.60E+01	
			MAX	2.70E+00		
2E	33	5	AVE	1.60E+00		
			MIN	1.00E+00		
			MAX	4.70E+00		
2E	33	7	AVE	3.70E+00		
			MIN	2.90E+00		
			MAX	1.10E-01		
2E	33	8	AVE	8.36E-02		
			MIN	7.50E-02		
			MAX	6.50E-01		6.60E+02
2E	33	9	AVE	2.91E-01		5.06E+02
			MIN	1.80E-01		2.50E+02
			MAX	1.60E-01	1.70E+01	5.20E+01
2E	33	10	AVE	1.16E-01	8.42E+00	4.26E+01
			MIN	<7.50E-02	1.70E+00	3.60E+01
			MAX	1.10E-01	2.50E+00	2.90E+01
2E	33	14	AVE	8.38E-02	1.23E+00	2.45E+01
			MIN	<7.50E-02	5.50E-01	1.90E+01
			MAX	1.90E-01		
2E	33	18	AVE	1.23E-01		
			MIN	<7.50E-02		
			MAX	<7.50E-02		
2E	33	21	AVE	<7.50E-02		
			MIN	<7.50E-02		

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX	4.40E+00		
2E	33	24	AVE	2.92E+00		
			MIN	1.50E+00		
			MAX	2.40E+00		
2E	33	26	AVE	2.03E+00		
			MIN	1.30E+00		
			MAX	8.10E+00		
2E	33	27	AVE	3.87E+00	3.33E+01*	
			MIN	2.70E+00		
			MAX	<7.50E-02	<1.30E+00	7.00E-01
2E	34	1	AVE	<7.50E-02	<9.80E-01	5.55E-01
			MIN	<7.50E-02	6.10E-01	<5.00E-01
			MAX	<7.50E-02	4.70E+01	2.10E+02
2W	6	1	AVE	<7.50E-02	4.23E+01	1.70E+02
			MIN	<7.50E-02	3.90E+01	1.20E+02
			MAX			
2W	10	1	AVE	9.75E-02*		
			MIN			
			MAX			
2W	10	4	AVE	1.47E-01*		
			MIN			
			MAX	<7.50E-02	3.80E+01	1.50E+02
2W	10	5	AVE	<7.50E-02	3.15E+01	1.33E+02
			MIN	<7.50E-02	2.80E+01	1.20E+02
			MAX	1.30E-01		
2W	10	8	AVE	1.01E-01		
			MIN	<7.50E-02		
			MAX			
2W	10	9	AVE	7.93E-02*		
			MIN			
			MAX	3.40E-01	3.10E+00	1.60E+00
2W	11	9	AVE	1.41E-01	2.83E+00	7.75E-01
			MIN	<7.50E-02	2.50E+00	<5.00E-01

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX	1,20E-01		
2W	11	11	AVE	1,12E-01		
			MIN	9,70E-02		
			MAX			
2W	11	13	AVE	1,05E-01*	9,30E+01*	2,65E+02*
			MIN			
			MAX	<7,50E-02		
2W	11	15	AVE	<7,50E-02		
			MIN	<7,50E-02		
			MAX	9,60E-02		
2W	11	18	AVE	8,70E-02		
			MIN	<7,50E-02		
			MAX	<7,50E-02		
2W	11	23	AVE	<7,50E-02		
			MIN	<7,50E-02		
			MAX			
2W	11	24	AVE	1,18E-01*		
			MIN			
			MAX	<7,50E-02	<8,20E-01	2,10E+02
2W	12	1	AVE	<7,50E-02	<6,45E-01	1,93E+02
			MIN	<7,50E-02	<5,70E-01	1,70E+02
			MAX	1,00E-01		2,30E+02
2W	14	2	AVE	9,75E-02		2,18E+02
			MIN	9,30E-02		2,10E+02
			MAX	<7,50E-02	4,10E+01	
2W	14	5	AVE	<7,50E-02	2,83E+01	
			MIN	<7,50E-02	2,00E+01	
			MAX	<7,50E-02		
2W	14	6	AVE	<7,50E-02		
			MIN	<7,50E-02		
			MAX	<7,50E-02	<9,70E-01	2,00E+01
2W	15	2	AVE	<7,50E-02	<8,13E-01	1,75E+01
			MIN	<7,50E-02	<6,90E-01	1,50E+01

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
2W	15	3	MAX			
			AVE	8.67E-02*		
			MIN			
2W	15	4	MAX	<7.50E-02	2.40E+03	8.00E+02
			AVE	<7.50E-02	2.13E+03	6.58E+02
			MIN	<7.50E-02	1.90E+03	5.30E+02
2W	15	5	MAX			
			AVE	<7.50E-02*	2.25E+00*	1.21E+01*
			MIN			
2W	15	6	MAX			
			AVE	<7.50E-02*		7.33E+00*
			MIN			
2W	15	7	MAX	2.00E-01		
			AVE	1.17E-01		
			MIN	8.50E-02		
2W	15	10	MAX	9.70E-01		
			AVE	1.50E-01		
			MIN	<7.50E-02		
2W	15	11	MAX	2.10E-01		
			AVE	8.62E-02		
			MIN	<7.50E-02		
2W	18	3	MAX	<7.50E-02	9.40E+00	2.40E+00
			AVE	<7.50E-02	4.50E+00	2.08E+00
			MIN	<7.50E-02	<7.00E-01	1.90E+00
2W	18	5	MAX			
			AVE	<7.50E-02*		
			MIN			
2W	18	7	MAX			
			AVE	<7.50E-02*		
			MIN			
2W	18	12	MAX	1.20E-01		
			AVE	8.40E-02		
			MIN	<7.50E-02		

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
	MAX	8.30E-02	1.30E+02	2.80E+02
2W 19 2	AVE	7.66E-02	8.28E+01	1.22E+02
	MIN	<7.50E-02	4.00E+01	5.20E+01
	MAX	3.70E-01	1.30E+01	1.00E+01
2W 19 3	AVE	1.03E-01	2.37E+00	5.33E+00
	MIN	<7.50E-02	<4.60E-01	1.70E+00
	MAX	<7.50E-02	1.70E+00	1.20E+01
2W 19 4	AVE	<7.50E-02	1.13E+00	1.09E+01
	MIN	<7.50E-02	<8.20E-01	9.40E+00
	MAX	<7.50E-02	6.10E+00	2.80E+00
2W 19 5	AVE	<7.50E-02	2.07E+00	2.24E+00
	MIN	<7.50E-02	5.40E-01	1.70E+00
	MAX	3.50E-01	5.40E+03	1.00E+02
2W 21 1	AVE	2.75E-01	4.90E+03	9.08E+01
	MIN	2.10E-01	4.40E+03	8.00E+01
	MAX	2.40E+01	6.70E+03	
2W 22 1	AVE	1.71E+01	2.21E+03	
	MIN	6.30E+00	4.30E+02	
	MAX	<7.50E-02	2.70E+03	<5.00E-01
2W 22 7	AVE	<7.50E-02	2.58E+03	<5.00E-01
	MIN	<7.50E-02	2.40E+03	<5.00E-01
	MAX	<7.50E-02	1.21E+04	7.00E-01
2W 22 9	AVE	<7.50E-02	1.14E+04	5.50E-01
	MIN	<7.50E-02	1.06E+04	<5.00E-01
	MAX	<7.50E-02	2.90E+03	8.90E+00
2W 22 12	AVE	<7.50E-02	1.92E+03	7.00E+00
	MIN	<7.50E-02	9.70E+02	6.10E+00
	MAX	1.90E-01		
2W 22 20	AVE	1.27E-01		
	MIN	8.80E-02		
	MAX	2.20E-01		7.50E+00
2W 22 21	AVE	1.17E-01		2.97E+00
	MIN	<7.50E-02		7.50E-01

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX	<7.50E-02		
2W	22	22	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX	8.90E-02		
2W	22	26	AVE	7.85E-02	6.57E+02*	
			MIN	<7.50E-02		
			MAX			
2W	22	27	AVE	<7.50E-02*	5.10E+00*	2.90E+00*
			MIN			
			MAX	<7.50E-02		
2W	23	1	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX	<7.50E-02		
2W	23	2	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX	<7.50E-02		
2W	23	3	AVE	<7.50E-02		
			MIN	<7.50E-02		
			MAX		1.40E+01	<5.00E-01
2W	23	4	AVE	<7.50E-02*	7.28E+00	<5.00E-01
			MIN		3.10E+00	<5.00E-01
			MAX	1.10E-01	2.20E+03	
2W	23	9	AVE	7.79E-02	6.16E+02	
			MIN	<7.50E-02	8.80E+01	
			MAX	3.20E-01	2.40E+03	
2W	23	10	AVE	9.54E-02	1.02E+03	
			MIN	<7.50E-02	6.30E+00	
			MAX	<7.50E-02	1.30E+00	8.80E-01
2W	26	3	AVE	<7.50E-02	8.17E-01	6.68E-01
			MIN	<7.50E-02	5.70E-01	<5.00E-01
			MAX	<7.50E-02		1.50E+01
3	1	1	AVE	<7.50E-02		1.18E+01
			MIN	<7.50E-02		1.00E+01

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX	<7.50E-02		1.50E+01
3	1	2	AVE	<7.50E-02		1.08E+01
			MIN	<7.50E-02		8.30E+00
			MAX	<7.50E-02		1.60E+01
3	1	3	AVE	<7.50E-02		1.28E+01
			MIN	<7.50E-02		9.00E+00
			MAX	<7.50E-02		1.80E+01
3	1	4	AVE	<7.50E-02		1.03E+01
			MIN	<7.50E-02		6.40E+00
			MAX	<7.50E-02	1.30E+00	
3	1	5	AVE	<7.50E-02	6.65E-01	1.50E+01*
			MIN	<7.50E-02	<4.10E-01	
			MAX	<7.50E-02		1.90E+01
3	1	6	AVE	<7.50E-02		1.32E+01
			MIN	<7.50E-02		6.60E+00
			MAX	<7.50E-02		2.60E+01
3	2	1	AVE	<7.50E-02		8.36E+00
			MIN	<7.50E-02		2.70E+00
			MAX	<7.50E-02		1.90E+01
3	2	2	AVE	<7.50E-02		1.27E+01
			MIN	<7.50E-02		1.80E+00
			MAX	<7.50E-02		2.40E+01
3	2	3	AVE	<7.50E-02		1.18E+01
			MIN	<7.50E-02		2.80E+00
			MAX	<7.50E-02		1.20E+01
3	3	1	AVE	<7.50E-02		7.89E+00
			MIN	<7.50E-02		3.80E+00
			MAX	<7.50E-02		6.60E+00
3	3	2	AVE	<7.50E-02		3.78E+00
			MIN	<7.50E-02		<5.00E-01
			MAX	<7.50E-02		1.10E+01
3	3	3	AVE	<7.50E-02		4.97E+00
			MIN	<7.50E-02		2.70E+00

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
			MAX	2.80E-01		1.30E+01
3	3	8	AVE	1.75E-01		1.12E+01
			MIN	9.00E-02		1.00E+01
			MAX	<7.50E-02		6.00E+01
3	3	9	AVE	<7.50E-02		2.05E+01
			MIN	<7.50E-02		8.90E+00
			MAX	<7.50E-02		1.40E+01
3	3	10	AVE	<7.50E-02		9.88E+00
			MIN	<7.50E-02		4.70E+00
			MAX	<7.50E-02		1.40E+01
3	3	11	AVE	<7.50E-02		1.11E+01
			MIN	<7.50E-02		8.40E+00
			MAX	<7.50E-02		8.40E+00
3	4	1	AVE	<7.50E-02		6.55E+00
			MIN	<7.50E-02		5.30E+00
			MAX	<7.50E-02		1.40E+01
3	4	7	AVE	<7.50E-02		1.07E+01
			MIN	<7.50E-02		7.50E+00
			MAX	<7.50E-02		1.80E+01
3	4	9	AVE	<7.50E-02		1.43E+01
			MIN	<7.50E-02		1.10E+01
			MAX	<7.50E-02		1.60E+01
3	4	10	AVE	<7.50E-02		1.30E+01
			MIN	<7.50E-02		9.80E+00
			MAX	1.20E-01		1.20E+02
3	5	1	AVE	8.63E-02		4.08E+01
			MIN	<7.50E-02		1.30E+01
			MAX	<7.50E-02		1.40E+01
3	6	1	AVE	<7.50E-02		1.25E+01
			MIN	<7.50E-02		1.10E+01
			MAX	<7.50E-02		5.20E+00
3	8	1	AVE	<7.50E-02		3.90E+00
			MIN	<7.50E-02		1.80E+00

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
	MAX	<7.50E-02		9.00E+00
3 8 2	AVE	<7.50E-02		8.25E+00
	MIN	<7.50E-02		7.70E+00
	MAX	<7.50E-02		4.80E+00
3 8 3	AVE	<7.50E-02		4.08E+00
	MIN	<7.50E-02		3.20E+00
	MAX			
6 S31 1P	AVE		<7.00E-01*	<5.00E-01*
	MIN			
	MAX			1.10E+01
6 S30E15A	AVE		<3.80E-01*	9.00E+00
	MIN			8.00E+00
	MAX			1.40E+01
6 S29 E12	AVE			1.15E+01
	MIN			9.10E+00
	MAX			1.30E+01
6 S27 E14	AVE			1.20E+01
	MIN			8.30E+00
	MAX			
6 S24 19	AVE			<5.00E-01*
	MIN			
	MAX			2.50E+01
6 S19 E13	AVE			1.37E+01
	MIN			9.10E+00
	MAX			
6 S19 11	AVE			1.40E+01*
	MIN			
	MAX			<5.00E-01
6 S14 20	AVE			<5.00E-01
	MIN			<5.00E-01
	MAX		<1.00E+00	5.80E+00
6 S12 3	AVE		<6.45E-01	5.30E+00
	MIN		<3.80E-01	4.40E+00

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
	MAX			9,80E+00
6 S12 29	AVE			5,68E+00
	MIN			<5,00E-01
	MAX			
6 S11E12A	AVE		<1,25E+00*	<5,00E-01*
	MIN			
	MAX		<1,30E+00	1,60E+01
6 S11E12AP	AVE		<8,30E-01	9,88E+00
	MIN		<4,20E-01	<5,00E-01
	MAX		<1,30E+00	2,60E+00
6 S8 19	AVE		<7,92E-01	1,72E+00
	MIN		<4,80E-01	<5,00E-01
	MAX		<9,50E-01	<5,00E-01
6 S7 34	AVE		<6,68E-01	<5,00E-01
	MIN		<4,50E-01	<5,00E-01
	MAX		<1,50E+00	1,20E+01
6 S6E14A	AVE		<9,65E-01	7,10E+00
	MIN		<3,90E-01	1,90E+00
	MAX		1,70E+01	9,40E+00
6 S6 E4B	AVE		1,50E+01	8,20E+00
	MIN		1,30E+01	6,80E+00
	MAX		2,40E+01	1,50E+01
6 S6 E4D	AVE		2,28E+01	1,18E+01
	MIN		2,20E+01	1,00E+01
	MAX		<1,30E+00	7,00E+00
6 S3 E12	AVE		<9,10E-01	4,13E+00
	MIN		<5,50E-01	1,30E+00
	MAX			
6 S3 25	AVE		8,33E-01*	7,33E+00*
	MIN			
	MAX			
6 S1 78	AVE	<7,50E-02*	2,80E+01*	9,50E-01*
	MIN			

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
	MAX	<7.50E+02	2.50E+01	2.60E+00
6 S0 8	AVE	<7.50E+02	1.90E+01	1.60E+00
	MIN	<7.50E+02	1.40E+01	8.00E-01
	MAX			
6 S0 7	AVE	<7.50E+02*	5.40E+01*	7.27E+00*
	MIN			
	MAX		1.40E+02	2.10E+01
6 1 18	AVE		1.38E+02	1.95E+01
	MIN		1.30E+02	1.90E+01
	MAX	<7.50E+02	1.20E+02	2.90E+01
6 2 3	AVE	<7.50E+02	1.15E+02	2.33E+01
	MIN	<7.50E+02	1.10E+02	2.00E+01
	MAX		<7.80E-01	1.70E+00
6 2 33A	AVE		<5.85E-01	8.63E-01
	MIN		<4.20E-01	<5.00E-01
	MAX			8.00E+00
6 3 45	AVE		<6.10E-01*	7.05E+00
	MIN			6.30E+00
	MAX		<1.10E+00	6.00E+00
6 4 E6	AVE		<7.85E-01	4.35E+00
	MIN		<5.00E-01	1.60E+00
	MAX	<7.50E+02	2.00E+02	2.80E+01
6 8 17	AVE	<7.50E+02	1.98E+02	2.63E+01
	MIN	<7.50E+02	1.90E+02	2.50E+01
	MAX	<7.50E+02	1.20E+02	2.10E+01
6 8 25	AVE	<7.50E+02	1.10E+02	1.87E+01
	MIN	<7.50E+02	1.00E+02	1.80E+01
	MAX		1.10E+00	7.60E+00
6 8 32	AVE		7.55E-01	7.10E+00
	MIN		<5.00E-01	6.80E+00
	MAX		4.21E+02	5.60E-01
6 9 E2	AVE		7.09E+01	5.15E-01
	MIN		<4.20E-01	<5.00E-01

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
	MAX		2.20E+00	1.50E+01
6 10 E12	AVE		1.58E+00	1.19E+01
	MIN		<9.00E-01	9.80E+00
	MAX			
6 13 1A	AVE		9.05E+02*	1.60E+01*
	MIN			
	MAX			
6 13 1B	AVE		3.97E+02*	1.15E+01*
	MIN			
	MAX			
6 13 64	AVE		<6.17E-01*	5.80E-01*
	MIN			
	MAX			
6 14 E6P	AVE		6.00E-01*	6.50E-01*
	MIN			
	MAX			
6 14 E6Q	AVE		<5.80E-01*	<5.00E-01*
	MIN			
	MAX			
6 14 E6R	AVE		<5.80E-01*	9.40E-01*
	MIN			
	MAX			
6 14 E6S	AVE		<5.60E-01*	<5.00E-01*
	MIN			
	MAX			
6 14 E6T	AVE		1.50E+01*	8.40E-01*
	MIN			
	MAX		<1.50E+00	<5.00E-01
6 14 38	AVE		<8.00E-01	<5.00E-01
	MIN		<5.30E-01	<5.00E-01
	MAX		<1.50E+00	5.20E-01
6 14 47	AVE		<7.67E-01	5.05E-01
	MIN		<4.10E-01	<5.00E-01

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6 15 158	MAX	<7.50E-02	1.50E+00	1.50E+01
	AVE	<7.50E-02	9.88E-01	1.17E+01
	MIN	<7.50E-02	<4.90E-01	6.60E+00
6 15 26	MAX	1.20E-01	3.10E+02	2.80E+01
	AVE	8.65E-02	2.75E+02	2.68E+01
	MIN	<7.50E-02	2.60E+02	2.50E+01
6 17 5	MAX	<7.50E-02	1.20E+00	6.10E+01
	AVE	<7.50E-02	9.18E-01	5.08E+01
	MIN	<7.50E-02	<5.50E-01	3.30E+01
6 17 70	MAX		<9.10E-01	2.60E+01
	AVE		<6.80E-01	2.10E+01
	MIN		<4.90E-01	1.20E+01
6 19 43	MAX		<7.60E-01	9.40E+00
	AVE		<5.97E-01	8.63E+00
	MIN		<4.30E-01	6.80E+00
6 19 47A	MAX		<1.10E+00	<5.00E-01
	AVE		<6.63E-01	<5.00E-01
	MIN		<5.00E-01	<5.00E-01
6 19 58	MAX			<5.00E-01
	AVE			<5.00E-01
	MIN			<5.00E-01
6 19 88	MAX			7.50E-01
	AVE			6.58E-01
	MIN			<5.00E-01
6 20 E5A	MAX			
	AVE		9.65E+00*	6.75E+00*
	MIN			
6 20 E5P	MAX			
	AVE		<4.55E-01*	6.70E-01*
	MIN			
6 20 E5Q	MAX			
	AVE		<6.25E-01*	<5.00E-01*
	MIN			

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6 20 E5R	MAX			
	AVE		<4.50E-01*	<5.00E-01*
	MIN			
6 20 E12	MAX			
	AVE		<6.20E-01*	<5.00E-01*
	MIN			
6 20 E12P	MAX			
	AVE		<4.70E-01*	<5.00E-01*
	MIN			
6 20 20	MAX	1.00E-01	6.70E+02	4.80E+01
	AVE	8.93E-02	5.18E+02	4.35E+01
	MIN	<7.50E-02	1.40E+02	4.00E+01
6 20 39	MAX		6.70E+00	<5.00E-01
	AVE		2.51E+00	<5.00E-01
	MIN		<5.20E-01	<5.00E-01
6 20 82	MAX		3.80E+00	1.70E+01
	AVE		1.50E+00	1.60E+01
	MIN		<6.40E-01	1.50E+01
6 22 70	MAX		<7.00E-01	1.00E+01
	AVE		<5.80E-01	8.53E+00
	MIN		<4.80E-01	5.10E+00
6 24 1P	MAX			
	AVE		<7.00E-01*	<5.00E-01*
	MIN			
6 24 1Q	MAX			
	AVE		7.60E-01*	<5.00E-01*
	MIN			
6 24 1R	MAX			
	AVE		<6.75E-01*	<5.00E-01*
	MIN			
6 24 1S	MAX			
	AVE		<5.05E-01*	<5.00E-01*
	MIN			

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6	24	1T	MAX			
			AVE		1.90E+00*	9.00E-01*
			MIN			
6	24	33	MAX	<7.50E-02	1.70E+02	1.90E+01
			AVE	<7.50E-02	1.55E+02	1.60E+01
			MIN	<7.50E-02	1.50E+02	1.40E+01
6	24	46	MAX			
			AVE		<6.63E-01*	<5.00E-01*
			MIN			
6	25	55	MAX			
			AVE		<5.20E-01*	9.67E+00*
			MIN			
6	25	70	MAX			
			AVE		8.30E-01*	6.75E+00*
			MIN			
6	26	15	MAX	1.90E-01	9.30E+02	6.60E+01
			AVE	1.48E-01	8.83E+02	5.20E+01
			MIN	1.30E-01	8.30E+02	4.50E+01
6	27	8	MAX	2.20E-01	9.30E+02	5.50E+01
			AVE	1.60E-01	8.88E+02	4.90E+01
			MIN	1.10E-01	8.30E+02	3.30E+01
6	28	40	MAX			
			AVE		1.75E+01*	6.70E+00*
			MIN			
6	28	40P	MAX			
			AVE		1.13E+01*	4.45E+00*
			MIN			
6	28	52	MAX			
			AVE		<7.25E-01*	<5.00E-01*
			MIN			
6	29	78	MAX		1.90E+00	3.00E+00
			AVE		9.90E-01	2.65E+00
			MIN		<5.90E-01	2.30E+00

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6	31	31	MAX			
			AVE		7.10E+02*	3.60E+01*
			MIN			
6	31	31P	MAX			
			AVE		7.15E+02*	2.13E+01*
			MIN			
6	31	538	MAX			
			AVE		<8.40E-01*	7.60E+00*
			MIN			
6	31	65	MAX			
			AVE		2.76E+00*	6.27E-01*
			MIN			
6	32	22	MAX	1.60E-01	1.30E+03	6.90E+01
			AVE	1.50E-01	1.20E+03	6.45E+01
			MIN	1.30E-01	1.10E+03	5.80E+01
6	32	42	MAX		3.40E+02	7.00E+00
			AVE		3.15E+02	4.98E+00
			MIN		3.00E+02	2.60E+00
6	32	43	MAX		7.80E+01	1.90E+01
			AVE		6.58E+01	1.60E+01
			MIN		5.40E+01	1.30E+01
6	32	62	MAX			
			AVE		1.23E+00*	2.70E+01*
			MIN			
6	32	70	MAX	<7.50E-02	2.20E+02	1.60E+01
			AVE	<7.50E-02	2.13E+02	1.35E+01
			MIN	<7.50E-02	2.00E+02	1.20E+01
6	32	72	MAX		7.40E+02	9.00E+00
			AVE		2.85E+02	2.63E+00
			MIN		1.30E+02	<5.00E-01
6	32	77	MAX	<7.50E-02	2.00E+00	2.60E+01
			AVE	<7.50E-02	1.00E+00	1.76E+01
			MIN	<7.50E-02	<5.40E-01	8.40E+00

WELL NO.			TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
		MAX	9.20E-02	2.10E+02	2.10E+01
6 33 42		AVE	7.93E-02	2.03E+02	1.93E+01
		MIN	<7.50E-02	1.90E+02	1.80E+01
		MAX			
6 33 56		AVE	<7.50E-02*	<4.90E-01*	6.80E+00*
		MIN			
		MAX	9.60E-02	4.80E+02	3.20E+01
6 34 39A		AVE	8.28E-02	4.53E+02	2.83E+01
		MIN	<7.50E-02	4.20E+02	2.40E+01
		MAX			
6 34 41		AVE		4.25E+02*	3.80E+01*
		MIN			
		MAX	1.10E-01	3.60E+02	
6 34 42		AVE	9.57E-02	3.35E+02	2.93E+01*
		MIN	<7.50E-02	3.10E+02	
		MAX	<7.50E-02	5.80E+00	7.80E+00
6 34 51		AVE	<7.50E-02	2.16E+00	7.23E+00
		MIN	<7.50E-02	<5.50E-01	6.30E+00
		MAX		1.30E+00	1.50E+01
6 34 88		AVE		8.68E-01	1.08E+01
		MIN		<5.70E-01	4.20E+00
		MAX	<7.50E-02	1.20E+02	2.10E+01
6 35 9		AVE	<7.50E-02	1.16E+02	1.92E+01
		MIN	<7.50E-02	1.10E+02	1.70E+01
		MAX	<7.50E-02	8.40E+02	2.30E+01
6 35 66		AVE	<7.50E-02	8.03E+02	2.05E+01
		MIN	<7.50E-02	7.40E+02	1.80E+01
		MAX			
6 35 70		AVE	8.33E-02*	6.47E+03*	2.00E+01*
		MIN			
		MAX	<7.50E-02	2.50E+00	8.00E-01
6 35 78		AVE	<7.50E-02	1.45E+00	5.80E-01
		MIN	<7.50E-02	<7.20E-01	<5.00E-01

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6 36 46P	MAX			
	AVE		<6.40E-01*	<5.00E-01*
	MIN			
6 36 46Q	MAX			
	AVE		<6.40E-01*	<5.00E-01*
	MIN			
6 36 61A	MAX			
	AVE			1.40E+01*
	MIN			
6 36 61B	MAX		1.40E+00	<5.00E-01
	AVE	<7.50E-02*	8.22E-01	<5.00E-01
	MIN		<4.80E-01	<5.00E-01
6 36 93	MAX			
	AVE		7.50E-01*	8.75E+00*
	MIN			
6 37 43	MAX			
	AVE	<7.50E-02*	6.85E+01*	8.75E+00*
	MIN			
6 37 82A	MAX			
	AVE		1.02E+00*	4.20E+01*
	MIN			
6 38 65	MAX			
	AVE		8.80E+01*	8.17E+01*
	MIN			
6 38 70	MAX			
	AVE	2.87E-01*	1.36E+01*	2.83E+02*
	MIN			
6 39 39	MAX			
	AVE	<7.50E-02*	<6.40E-01*	<5.00E-01*
	MIN			
6 39 79	MAX	<7.50E-02	1.90E+00	8.40E-01
	AVE	<7.50E-02	9.10E-01	6.88E-01
	MIN	<7.50E-02	<4.40E-01	<5.00E-01

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
	MAX		2.10E+02	2.60E+02
6 40 1	AVE		1.88E+02	7.44E+01
	MIN		1.70E+02	2.60E+01
	MAX		2.70E+01	6.10E-01
6 40 33A	AVE		7.47E+00	5.28E-01
	MIN		<4.90E-01	<5.00E-01
	MAX			
6 40 62	AVE		6.67E+00*	1.93E+01*
	MIN			
	MAX	<7.50E-02	8.60E+02	4.60E+01
6 41 23	AVE	<7.50E-02	7.78E+02	4.40E+01
	MIN	<7.50E-02	6.70E+02	4.20E+01
	MAX	8.50E-02	3.50E+02	3.40E+01
6 42 12A	AVE	7.75E-02	3.26E+02	3.16E+01
	MIN	<7.50E-02	3.10E+02	3.00E+01
	MAX			
6 43 88	AVE		<8.13E-01*	4.30E+00*
	MIN			
	MAX			
6 44 64	AVE		<7.50E-01*	1.57E+01*
	MIN			
	MAX	<7.50E-02	2.50E+02	6.80E+00
6 45 42	AVE	<7.50E-02	2.35E+02	5.43E+00
	MIN	<7.50E-02	2.20E+02	4.60E+00
	MAX			
6 45 69	AVE	<7.50E-02*	1.14E+00*	2.80E+01*
	MIN			
	MAX		3.00E+01	1.30E+01
6 46 21	AVE		2.70E+01	1.20E+01
	MIN		2.50E+01	1.10E+01
	MAX		1.60E+00	1.20E+00
6 47 35A	AVE		8.38E-01	7.15E-01
	MIN		<4.80E-01	<5.00E-01

WELL NO.			TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
		MAX			
6	47	46 AVE		1.61E+00*	1.16E+01*
		MIN			
		MAX	<7.50E-02	2.90E+00	1.70E+01
6	47	60 AVE	<7.50E-02	1.37E+00	1.55E+01
		MIN	<7.50E-02	<6.00E-01	1.40E+01
		MAX		2.90E+00	4.00E+00
6	48	7 AVE		1.82E+00	2.82E+00
		MIN		<5.70E-01	1.40E+00
		MAX			
6	48	71 AVE		5.67E+00*	1.90E+01*
		MIN			
		MAX		4.70E+00	3.90E+00
6	49	13 AVE		1.76E+00	3.40E+00
		MIN		<4.40E-01	3.00E+00
		MAX		1.50E+00	<5.00E-01
6	49	28 AVE		8.32E-01	<5.00E-01
		MIN		<4.30E-01	<5.00E-01
		MAX		8.30E+00	1.90E+01
6	49	55 AVE	1.00E-01*	2.82E+00	7.57E+00
		MIN		<5.90E-01	<5.00E-01
		MAX	1.50E+00	1.50E+02	2.00E+02
6	49	57 AVE	1.33E+00	1.38E+02	1.90E+02
		MIN	1.20E+00	1.20E+02	1.80E+02
		MAX			
6	49	79 AVE		9.67E-01*	4.53E+01*
		MIN			
		MAX		2.00E+00	7.20E+00
6	50	18 AVE		1.07E+00	6.10E+00
		MIN		<4.90E-01	5.00E+00
		MAX			
6	50	28B AVE		<6.07E-01*	1.37E+00*
		MIN			

WELL NO.			TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
		MAX		2.00E+00	5.80E+00
6	50	30 AVE		9.73E-01	5.55E+00
		MIN		<4.30E-01	5.30E+00
		MAX		1.90E+00	<5.00E-01
6	50	42 AVE		1.53E+00	<5.00E-01
		MIN		1.30E+00	<5.00E-01
		MAX	1.10E-01	1.80E+00	2.10E+01
6	50	53 AVE	8.78E-02	1.03E+00	1.73E+01
		MIN	<7.50E-02	<5.50E-01	1.50E+01
		MAX			
6	50	85 AVE		8.23E-01*	1.15E+01*
		MIN			
		MAX		<1.30E+00	4.40E+00
6	51	63 AVE		<9.00E-01	3.40E+00
		MIN		<4.70E-01	2.30E+00
		MAX		1.20E+00	9.60E-01
6	51	75 AVE		7.65E-01	6.15E-01
		MIN		<5.80E-01	<5.00E-01
		MAX		1.70E+00	<5.00E-01
6	53	35 AVE		8.85E-01	<5.00E-01
		MIN		<5.60E-01	<5.00E-01
		MAX		1.20E+00	<5.00E-01
6	53	47 AVE		8.80E-01	<5.00E-01
		MIN		<4.10E-01	<5.00E-01
		MAX		1.80E+00	<5.00E-01
6	53	55A AVE		1.03E+00	<5.00E-01
		MIN		<4.70E-01	<5.00E-01
		MAX		<1.30E+00	<5.00E-01
6	53	103 AVE		<7.15E-01	<5.00E-01
		MIN		<4.20E-01	<5.00E-01
		MAX			
6	54	18 AVE			2.15E+00*
		MIN			

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
	MAX		1,70E+00	3,20E+00
6 54 34	AVE		8,98E-01	1,18E+00
	MIN		<4,80E-01	<5,00E-01
	MAX			<5,00E-01
6 54 37A	AVE		<5,53E-01*	<5,00E-01
	MIN			<5,00E-01
	MAX			<5,00E-01
6 54 42	AVE		<6,85E-01*	<5,00E-01
	MIN			<5,00E-01
	MAX		1,50E+00	1,20E+01
6 54 45	AVE		7,38E-01	3,44E+00
	MIN		<4,40E-01	<5,00E-01
	MAX			
6 54 57	AVE		1,30E+00*	9,33E-01*
	MIN			
	MAX		1,60E+00	<5,00E-01
6 55 40	AVE		8,80E-01	<5,00E-01
	MIN		<5,00E-01	<5,00E-01
	MAX		1,60E+00	<5,00E-01
6 55 44	AVE		1,05E+00	<5,00E-01
	MIN		<8,00E-01	<5,00E-01
	MAX		3,40E+00	8,00E-01
6 55 50A	AVE		1,68E+00	5,75E-01
	MIN		6,40E-01	<5,00E-01
	MAX		2,80E+00	7,20E-01
6 55 50C	AVE		1,25E+00	5,60E-01
	MIN		<6,80E-01	<5,00E-01
	MAX			
6 55 50D	AVE		1,03E+00*	7,37E-01*
	MIN			
	MAX			
6 55 70	AVE		8,70E-01*	<5,00E-01*
	MIN			

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6 55 76	MAX			<5.00E-01
	AVE			<5.00E-01
	MIN			<5.00E-01
6 55 89	MAX			2.50E+00
	AVE			1.66E+00
	MIN			7.20E-01
6 56 43	MAX		1.40E+00	<5.00E-01
	AVE		9.13E-01	<5.00E-01
	MIN		<4.80E-01	<5.00E-01
6 57 25A	MAX		<8.60E-01	2.10E+02
	AVE		<6.93E-01	5.40E+01
	MIN		<5.20E-01	1.80E+00
6 57 29	MAX		<9.70E-01	1.50E+00
	AVE		<6.55E-01	1.33E+00
	MIN		<4.10E-01	1.20E+00
6 57 83	MAX			1.60E+00
	AVE			1.27E+00
	MIN			1.00E+00
6 59 32	MAX		1.30E+00	1.80E+00
	AVE		1.20E+00	1.45E+00
	MIN		1.10E+00	9.10E-01
6 59 58	MAX		3.20E+00	7.00E-01
	AVE		2.80E+00	5.55E-01
	MIN		2.50E+00	<5.00E-01
6 59 808	MAX			<5.00E-01
	AVE			<5.00E-01
	MIN			<5.00E-01
6 60 32	MAX		1.20E+00	3.10E+00
	AVE		9.53E-01	3.00E+00
	MIN		6.80E-01	2.80E+00
6 60 57	MAX		2.20E+00	<5.00E-01
	AVE		1.78E+00	<5.00E-01
	MIN		9.00E-01	<5.00E-01

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6 60 60	MAX		1.70E+00	1.20E+01
	AVE		1.17E+00	9.75E+00
	MIN		7.80E-01	6.00E+00
6 61 37	MAX			1.90E+00
	AVE			1.55E+00
	MIN			1.20E+00
6 61 41	MAX		<7.00E-01	1.00E+00
	AVE		<5.55E-01	8.65E-01
	MIN		<4.50E-01	7.60E-01
6 61 62	MAX		8.00E+00	4.80E+00
	AVE		6.90E+00	4.33E+00
	MIN		5.90E+00	3.90E+00
6 62 31	MAX			4.50E+00
	AVE			3.60E+00
	MIN			2.90E+00
6 62 43F	MAX		1.70E+00	1.20E+00
	AVE		1.65E+00	1.03E+00
	MIN		1.50E+00	9.10E-01
6 63 25A	MAX		<6.70E-01	1.70E+01
	AVE		<5.88E-01	1.45E+01
	MIN		<4.80E-01	1.10E+01
6 63 51	MAX			
	AVE		6.20E-01*	<5.00E-01*
	MIN			
6 63 55	MAX		2.00E+00	<5.00E-01
	AVE		1.75E+00	<5.00E-01
	MIN		1.50E+00	<5.00E-01
6 63 58	MAX		1.80E+00	6.10E+00
	AVE		1.63E+00	1.93E+00
	MIN		1.50E+00	<5.00E-01
6 63 90	MAX		<1.10E+00	3.60E+00
	AVE		<7.48E-01	3.20E+00
	MIN		<4.30E-01	2.80E+00

WELL NO.				TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6	64	27	MAX			
			AVE		<5.80E-01*	1.08E+01*
			MIN			
6	64	62	MAX		2.40E+00	1.20E+00
			AVE		2.17E+00	1.01E+00
			MIN		1.80E+00	8.60E-01
6	65	38	MAX			
			AVE		<6.30E-01*	<5.00E-01*
			MIN			
6	65	50	MAX		2.10E+00	8.20E-01
			AVE		2.03E+00	6.68E-01
			MIN		1.90E+00	<5.00E-01
6	65	59	MAX		1.90E+00	5.00E-01
			AVE		1.57E+00	5.00E-01
			MIN		9.60E-01	5.00E-01
6	65	72	MAX		2.20E+00	5.20E+00
			AVE		1.61E+00	4.63E+00
			MIN		8.20E-01	4.10E+00
6	65	83	MAX		1.70E+00	2.20E+00
			AVE		1.60E+00	2.03E+00
			MIN		1.50E+00	1.70E+00
6	66	38	MAX			
			AVE			<5.00E-01*
			MIN			
6	66	39	MAX			<5.00E-01
			AVE			<5.00E-01
			MIN			<5.00E-01
6	66	58	MAX		2.30E+00	9.80E-01
			AVE		2.00E+00	6.95E-01
			MIN		1.50E+00	<5.00E-01
6	66	64	MAX			
			AVE		1.73E+00*	6.67E-01*
			MIN			

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6 66 103	MAX			
	AVE		7.55E-01*	5.00E-01*
	MIN			
6 67 51	MAX		1.80E+00	9.40E-01
	AVE		1.68E+00	7.40E-01
	MIN		1.50E+00	<5.00E-01
6 67 86	MAX		1.50E+00	1.30E+00
	AVE		1.27E+00	1.08E+00
	MIN		1.00E+00	9.40E-01
6 67 98	MAX		<8.60E-01	3.10E+00
	AVE		<7.30E-01	2.65E+00
	MIN		<6.10E-01	2.10E+00
6 68 105	MAX			
	AVE		<6.35E-01*	1.03E+00*
	MIN			
6 69 38	MAX		<7.20E-01	4.20E+01
	AVE		<5.17E-01	2.10E+01
	MIN		<4.10E-01	<5.00E-01
6 70 68	MAX			
	AVE		1.40E+00*	7.60E-01*
	MIN			
6 71 30	MAX			
	AVE		<5.00E-01*	1.30E+01*
	MIN			
6 71 52	MAX			
	AVE		2.17E+00*	4.27E+00*
	MIN			
6 71 77	MAX			
	AVE		<9.65E-01*	8.75E-01*
	MIN			
6 72 73	MAX			
	AVE		1.01E+00*	9.00E-01*
	MIN			

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6 72 88	MAX		8.20E+00	1.90E+00
	AVE		7.78E+00	1.50E+00
	MIN		7.40E+00	1.20E+00
6 72 92	MAX			
	AVE		8.65E+00*	2.90E+00*
	MIN			
6 72 98	MAX			
	AVE		2.40E+00*	<5.00E-01*
	MIN			
6 73 61	MAX		<8.80E-01	7.20E+00
	AVE		<6.35E-01	6.68E+00
	MIN		<4.40E-01	6.30E+00
6 74 44	MAX		<7.00E-01	2.60E+00
	AVE		<6.28E-01	1.20E+00
	MIN		<5.10E-01	<5.00E-01
6 77 36	MAX		<7.20E-01	1.90E+02
	AVE		<6.63E-01	1.58E+02
	MIN		<5.60E-01	1.40E+02
6 77 54	MAX			5.30E+00
	AVE			4.80E+00
	MIN			4.30E+00
6 78 62	MAX			
	AVE			2.70E+00*
	MIN			
6 80 43P	MAX			
	AVE			<5.00E-01*
	MIN			
6 80 43Q	MAX			
	AVE			<5.00E-01*
	MIN			
6 80 43R	MAX			
	AVE			<5.00E-01*
	MIN			

WELL NO.		TOTAL BETA (PCI/ML)	TRITIUM (PCI/ML)	NITRATE (MG/L)
6 80 43S	MAX			
	AVE			<5.00E-01*
	MIN			
6 81 58	MAX		7.70E-01	6.10E-01
	AVE		6.18E-01	5.43E-01
	MIN		<4.10E-01	<5.00E-01
6 83 47	MAX			
	AVE		<6.90E-01*	
	MIN			
6 84 35AD	MAX			
	AVE		<6.15E-01*	2.30E+00*
	MIN			
6 87 55	MAX		1.40E+02	1.50E+01
	AVE		9.98E+01	1.15E+01
	MIN		6.20E+01	1.00E+01
6 89 35	MAX			6.60E+00
	AVE			4.75E+00
	MIN			1.70E+00
6 90 45	MAX			
	AVE		2.00E+01*	1.15E+00*
	MIN			
6 96 49	MAX		3.10E+01	5.00E+00
	AVE		2.68E+01	3.78E+00
	MIN		2.40E+01	1.80E+00
6 97 43	MAX		9.60E+00	1.10E+01
	AVE		9.18E+00	7.68E+00
	MIN		8.70E+00	4.30E+00
6 97 51A	MAX		2.00E+01	7.20E+00
	AVE		1.85E+01	5.62E+00
	MIN		1.60E+01	3.60E+00
6 101 48B	MAX			
	AVE		<7.00E-01*	6.00E-01*
	MIN			

APPENDIX B

TOTAL ALPHA, STRONTIUM, CESIUM, COBALT, URANIUM, RUTHENIUM, CHROMIUM, AND FLUORIDE CONCENTRATIONS IN THE GROUND WATER (UNCONFINED AQUIFER)

Total Alpha, Strontium, Cesium, Cobalt, Uranium, Ruthenium, Chromium and Fluoride Concentrations in the Ground Water (Unconfined Aquifer)

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
1 B4 4								
05-MAR-79				1.70E-02				
24-AUG-79				1.90E-02				
1 D5 12								
05-MAR-79				1.70E-02				
25-MAY-79				1.20E-02				
23-AUG-79				2.50E-02				
02-NOV-79				3.80E-02				
1 H4 2								
16-MAY-79	<1.20E-02							
1 H4 3								
12-FEB-79							1.90E+00	
05-MAR-79			1.10E-01	1.60E-02	2.26E-01		3.60E+00	1.40E-01
12-MAR-79							4.00E+00	
26-MAR-79					2.05E-01		2.60E+00	<1.00E-01
17-APR-79							1.10E+00	
23-MAY-79							1.50E+00	
25-MAY-79					9.60E-02		2.70E+00	1.00E-01
19-JUL-79					1.70E-01		2.10E+00	1.00E-01
06-AUG-79							1.75E+00	
23-AUG-79				3.50E-02	1.03E-01	1.60E-01	3.80E+00	2.00E-01
12-SEP-79					8.90E-02		3.70E+00	<1.00E-01
05-OCT-79					1.03E-01		3.50E+00	2.00E-01
01-NOV-79					2.10E-02		8.60E-01	2.00E-01
1 K 11								
02-NOV-79				2.90E-02				
1 N 1								
05-MAR-79			9.00E-02	6.00E-02				
30-MAY-79		2.90E-01		1.00E-01		3.00E-01		
28-AUG-79				1.30E-01		3.50E-01		

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
1 N 1								
05-NOV-79		5.00E-01		6.60E-02				
1 N 2								
30-MAY-79		1.43E+00		3.00E-01				
28-AUG-79				2.00E-01				
05-NOV-79		1.70E+00		2.00E-01				
1 N 3								
30-MAY-79		5.05E-01		1.40E-01		3.00E-01		
28-AUG-79				1.00E-01				
05-NOV-79		2.60E-01		1.80E-01				
1 N 4								
05-MAR-79				9.80E-02				
30-MAY-79		<2.40E-03		8.40E-02		1.50E-01		
28-AUG-79				1.00E-01		2.90E-01		
05-NOV-79		9.50E-03		1.10E-01				
1 N 5								
30-MAY-79		7.40E-03		7.50E-02		2.70E-01		
28-AUG-79				7.70E-02		2.50E-01		
05-NOV-79		2.00E-02	1.70E-02	9.50E-02		3.10E-01		
1 N 6								
30-MAY-79		8.80E-03		9.00E-02		3.00E-01		
28-AUG-79				1.10E-01		3.10E-01		
05-NOV-79		1.60E-02		1.40E-01				
1 N 7								
05-MAR-79			1.30E-01	2.60E-02				
30-MAY-79		1.00E-02		1.90E-02		1.00E-01		
28-AUG-79				6.00E-02				
05-NOV-79		1.10E-02		1.90E-02				
1 N 14								
30-MAY-79		4.91E-02		7.00E-01		3.00E-01		

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
1 N 14								
28-AUG-79				3.00E-01				
05-NOV-79		1.06E-01		3.10E-01				
1 N 15								
30-MAY-79		8.70E-03		6.90E-02		1.70E-01		
28-AUG-79				8.80E-02		1.40E-01		
05-NOV-79		1.20E-02		9.00E-02				
2E 13 8								
29-AUG-79						1.40E-01		
15-NOV-79				1.60E-02				
2E 17 1								
08-MAR-79		4.10E-03						
05-JUN-79		<3.00E-03						
29-AUG-79		<1.40E-03						
15-NOV-79		5.00E-03						
11-DEC-79		4.30E-03						
2E 17 2								
03-JAN-79	6.00E-02				3.10E-02			
05-FEB-79	5.00E-02				2.50E-02			
08-MAR-79	4.90E-02				2.70E-02			
28-MAR-79	5.50E-02				3.10E-02			
07-MAY-79	5.70E-02				3.40E-02			
05-JUN-79	5.20E-02				2.90E-02			
02-JUL-79					3.10E-02			
27-JUL-79					3.10E-02			
29-AUG-79	4.10E-02				2.10E-02			
20-SEP-79	4.30E-02							
23-OCT-79	3.80E-02				2.30E-02			
11-DEC-79	3.40E-02							
2E 17 5								
03-JAN-79	<1.70E-02	5.30E-03		1.70E-02		1.60E-01		
28-MAR-79	<1.70E-02	4.30E-03		2.40E-02		1.90E-01		
02-JUL-79	<1.70E-02	4.50E-03		6.90E-02				
20-SEP-79	<1.70E-02	<3.40E-03		1.60E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2E 17 9								
03-JAN-79	<1.70E-02	1.30E-02		1.70E-02				
28-MAR-79	<1.70E-02	2.50E-02						
02-JUL-79	<1.70E-02	7.50E-03		1.80E-02				
20-SEP-79	<1.70E-02	<3.30E-03		1.20E-02				
2E 19 1								
07-MAY-79			3.00E-01			9.00E-02		
27-JUL-79			7.00E-02	2.20E-02				
2E 23 1								
07-MAY-79				2.10E-02				
2E 24 1								
08-MAR-79		<2.10E-03						
05-JUN-79		<2.00E-03						
2E 24 2								
08-MAR-79	<1.70E-02	2.80E-03						
05-JUN-79	<1.70E-02	<2.00E-03						
29-AUG-79	<1.70E-02	4.30E-03				1.30E-01		
15-NOV-79	<1.70E-02	<2.90E-03		2.60E-02				
11-DEC-79	<1.70E-02	2.70E-03		2.90E-02				
2E 24 7								
07-MAY-79			<1.20E-02	<1.20E-02				
2E 24 12								
03-JAN-79	6.00E-02				3.30E-02			
28-MAR-79	5.00E-02				2.70E-02			
02-JUL-79	4.00E-02				2.20E-02			
20-SEP-79	6.30E-02							
2E 25 2								
27-JUL-79				2.00E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2E 25 6								
03-JAN-79				4.70E-02				
11-DEC-79				1.80E-02				
2E 25 10								
08-MAR-79	<1.70E-02				<6.90E-03			
05-JUN-79	<1.70E-02				<6.90E-03			
29-AUG-79	<1.70E-02				<6.90E-03			
15-NOV-79	<1.70E-02				<6.90E-03			
11-DEC-79	<1.70E-02			1.20E-02				
2E 26 3								
27-JUL-79				1.60E-02				
2E 27 1								
05-FEB-79				2.40E-02				
27-JUL-79				2.00E-02				
15-OCT-79				2.20E-02				
2E 27 5								
29-AUG-79				3.00E-02				
11-DEC-79				2.10E-02				
2E 28 1								
27-JUL-79				2.00E-02				
15-OCT-79				2.00E-02				
2E 28 5								
05-FEB-79				2.00E-02				
2E 28 17								
05-FEB-79	<1.70E-02				<6.90E-03			
07-MAY-79	<1.70E-02				<6.90E-03			
27-JUL-79	7.40E-02							
24-OCT-79	2.70E-02				1.50E-02			
15-NOV-79	7.10E-02				3.90E-02			

WELL NO. / DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2E 28 18								
03-JAN-79		<3.30E-03				1.70E-01		
28-MAR-79		<2.00E-03						
02-JUL-79		<2.00E-03		1.70E-02				
20-SEP-79		<2.60E-03						
2E 28 21								
03-JAN-79		<2.30E-03						
28-MAR-79		<3.10E-03						
02-JUL-79		<2.90E-03						
20-SEP-79		<3.40E-03						
2E 33 1								
03-JAN-79		2.90E-03		2.50E+00				
05-FEB-79		<3.80E-03		9.80E-01				
08-MAR-79		9.30E-03		8.50E-01				
28-MAR-79		3.80E-03		1.70E+00				
07-MAY-79		2.20E-03		1.10E+00				
05-JUN-79		<2.30E-03		1.20E+00				
31-JUL-79		<3.00E-03		7.60E-01				
29-AUG-79		3.10E-03		1.80E-01				
20-SEP-79		<3.80E-03		3.00E-02				
23-OCT-79		8.80E-03						
15-NOV-79		8.20E-03		9.00E-02				
11-DEC-79		5.00E-03		1.20E-02				
2E 33 3								
05-FEB-79		2.10E-03	1.20E-01	2.90E+00				
07-MAY-79		1.30E-02		2.10E+00				
31-JUL-79		4.90E-03		2.60E+00				
23-OCT-79		6.60E-03						
2E 33 5								
05-FEB-79				5.10E-01				
07-MAY-79				8.60E-01				
31-JUL-79				1.60E+00				
15-NOV-79				4.60E-01				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2E 33 7								
05-FEB-79				3.80E+00				
07-MAY-79				3.50E+00		2.20E-01		
31-JUL-79				2.80E+00				
15-NOV-79				1.80E+00				
2E 33 8								
07-MAY-79				1.50E-02				
2E 33 9								
03-JAN-79		1.90E-03	3.50E-02	1.40E-01		1.40E-01		
08-MAR-79		2.90E-03	3.00E-02	9.10E-02				
07-MAY-79		<2.00E-03		8.90E-02				
05-JUN-79		6.90E-03	8.90E-02	8.80E-02		1.00E-01		
02-JUL-79		2.20E-03	2.20E-01	5.70E-02		8.70E-02		
31-JUL-79		<3.10E-03	2.00E-02	6.20E-02				
29-AUG-79		<3.30E-03	1.90E-02	2.80E-02		8.00E-02		
20-SEP-79		5.30E-03						
23-OCT-79		3.00E-03						
15-NOV-79		<2.80E-03	4.20E-02	4.60E-02				
2E 33 14								
05-FEB-79				2.70E-02				
31-JUL-79			2.50E-02					
2E 33 18								
05-JUN-79		<2.00E-03		1.60E-02				
31-JUL-79		<2.50E-03		1.90E-02				
23-OCT-79		2.60E-03						
15-NOV-79		5.60E-03				4.70E-02		
2E 33 20								
15-NOV-79	<1.70E-02							
2E 33 21								
15-NOV-79				2.50E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2E 33 24								
04-JAN-79				2.30E+00				
05-FEB-79				2.00E+00				
08-MAR-79				2.70E+00		1.80E-01		
28-MAR-79				2.80E+00				
07-MAY-79				2.30E+00				
05-JUN-79				2.80E+00				
02-JUL-79				2.60E+00				
31-JUL-79				2.60E+00				
29-AUG-79				5.70E-01				
20-SEP-79				6.20E-01				
15-NOV-79				1.70E+00				
11-DEC-79				2.10E-01				
2E 33 26								
08-MAR-79				1.60E+00				
05-JUN-79				1.90E+00				
29-AUG-79				1.30E+00				
15-NOV-79				5.70E-01				
11-DEC-79				3.50E-01				
2E 33 27								
08-MAR-79	<1.70E-02		3.50E+00					
05-JUN-79	<1.70E-02		9.80E+00					
15-NOV-79	<1.70E-02		3.00E+00					
2E 34 1								
07-MAY-79				2.10E-02				
15-OCT-79				1.30E-02				
2W 6 1								
13-FEB-79				1.20E-02				
2W 10 4								
04-JAN-79				5.60E-02				
03-JUL-79				6.20E-02		7.90E-02		
24-SEP-79				1.70E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2W 10 5								
13-FEB-79				6.40E-02				
09-MAY-79				3.30E-02				
09-OCT-79				3.90E-02				
2W 10 8								
07-MAR-79	<1.70E-02			5.70E-02		1.50E-01		
04-JUN-79	<1.70E-02			5.60E-02				
30-AUG-79	<1.70E-02			4.20E-02		1.20E-01		
16-NOV-79	<1.70E-02			2.60E-02				
12-DEC-79	<1.70E-02			4.60E-02				
2W 10 9								
04-JAN-79	<1.70E-02			3.60E-02				
29-MAR-79	<1.70E-02			3.70E-02				
24-SEP-79	<1.70E-02			3.10E-02				
2W 11 9								
13-FEB-79				2.70E-02				
2W 11 11								
04-JAN-79				2.60E-02		1.20E-01		
24-SEP-79				3.30E-02				
2W 11 23								
07-MAR-79	<1.70E-02							
04-JUN-79	<1.70E-02			3.00E-02				
30-AUG-79	<1.70E-02			4.30E-02		1.50E-01		
16-NOV-79	<1.70E-02			4.00E-02				
12-DEC-79	<1.70E-02			5.40E-02		1.30E-01		
2W 11 24								
04-JAN-79	<1.70E-02			7.00E-02		1.00E-01		
29-MAR-79	<1.70E-02			5.40E-02				
24-SEP-79	<1.70E-02			5.00E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2W 12 1								
13-FEB-79				2.30E-02				
09-OCT-79				1.50E-02				
2W 14 2								
04-JAN-79	<1.70E-02			1.70E-02				
29-MAR-79	<1.70E-02							
03-JUL-79	<1.70E-02			2.30E-02		1.00E-01		
24-SEP-79	<1.70E-02			1.70E-02				
2W 15 3								
04-JAN-79				7.90E-02		1.30E-01		
03-JUL-79				5.10E-02				
2W 15 5								
29-MAR-79	<1.70E-02							
24-SEP-79	<1.70E-02							
2W 15 6								
04-JAN-79	<1.70E-02							
29-MAR-79	<1.70E-02							
24-SEP-79	<1.70E-02							
2W 15 7								
13-FEB-79				2.50E-01				
26-JUL-79				1.40E-02				
16-NOV-79				1.10E-01				
2W 15 10								
04-JAN-79	<1.70E-02							
13-FEB-79	<1.70E-02							
07-MAR-79	<1.70E-02							
29-MAR-79	<1.70E-02							
09-MAY-79	<1.70E-02							
04-JUN-79	<1.70E-02							
03-JUL-79	<1.70E-02							
26-JUL-79	<1.70E-02							
30-AUG-79	<1.70E-02							

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2W 15 10								
24-SEP-79	<1.70E-02							
22-OCT-79	<1.70E-02							
16-NOV-79	<1.70E-02							
12-DEC-79	<1.70E-02							
2W 15 11								
04-JAN-79	<1.70E-02							
13-FEB-79	<1.70E-02							
07-MAR-79	<1.70E-02							
29-MAR-79	<1.70E-02							
09-MAY-79	<1.70E-02							
04-JUN-79	<1.70E-02							
03-JUL-79	<1.70E-02							
26-JUL-79	<1.70E-02							
30-AUG-79	<1.70E-02							
24-SEP-79	<1.70E-02							
22-OCT-79	<1.70E-02							
16-NOV-79	<1.70E-02							
12-DEC-79	<1.70E-02							
2W 18 5								
22-OCT-79	<1.70E-02							
16-NOV-79	<1.70E-02							
2W 18 7								
13-FEB-79	<1.70E-02							
16-NOV-79	<1.70E-02							
2W 18 12								
13-FEB-79	<1.70E-02							
09-MAY-79	<1.70E-02							
26-JUL-79	<1.70E-02							
22-OCT-79	<1.70E-02							
16-NOV-79	<1.70E-02							
2W 19 2								
13-FEB-79	<1.70E-02				<6.90E-03			
09-MAY-79	<1.70E-02				<6.90E-03			

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2W 19 2								
26-JUL-79	<1.70E-02							
22-OCT-79	<1.70E-02				<6.90E-03			
16-NOV-79					<6.90E-03			
2W 19 3								
04-JAN-79	3.90E-02	5.00E-03			2.10E-02			
13-FEB-79	<1.70E-02	2.30E-01			<6.90E-03			
07-MAR-79	3.40E-02	5.30E-02			1.90E-02			
29-MAR-79	4.70E-02	4.00E-02			2.40E-02			
09-MAY-79	3.90E-02	1.50E-02			2.10E-02			
04-JUN-79	4.40E-02	3.90E-03			2.70E-02			
03-JUL-79		<3.10E-03			1.60E-02			
26-JUL-79		5.90E-03			1.70E-02			
30-AUG-79	2.20E-02	2.40E-03						
24-SEP-79	2.10E-02	<2.30E-03			1.00E-02			
22-OCT-79	1.80E-02	1.40E-02			1.00E-02			
16-NOV-79	2.10E-02	<1.90E-03			1.00E-02			
12-DEC-79	<1.70E-02							
2W 21 1								
13-FEB-79				1.00E-01				
09-MAY-79				6.90E-02				
09-JUL-79				5.40E-02		2.70E-01		
09-OCT-79				4.60E-02				
2W 22 1								
13-FEB-79	7.50E-02	1.80E+01						
09-MAY-79	<1.70E-02	3.12E+00						
26-JUL-79	<1.70E-02	1.72E+01						
22-OCT-79	<1.70E-02	1.46E+01						
16-NOV-79	<1.70E-02							
2W 22 5								
12-DEC-79	<1.70E-02	1.10E-02						
2W 22 7								
13-FEB-79				1.30E-02				
09-OCT-79				2.00E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2W 22 9								
13-FEB-79				2.40E-02				
2W 22 10								
12-DEC-79	<1.70E-02	8.60E-03						
2W 22 12								
07-MAR-79		1.50E-02						
04-JUN-79		<3.10E-03						
30-AUG-79		2.80E-03						
16-NOV-79		2.20E-03						
12-DEC-79		2.60E-03						
2W 22 17								
12-DEC-79	<1.70E-02	3.00E-03						
2W 22 20								
13-FEB-79		4.80E-03						
09-MAY-79		3.50E-03						
26-JUL-79		<3.50E-03						
22-OCT-79		8.60E-02						
16-NOV-79		<3.90E-03						
2W 22 21								
13-FEB-79	3.00E-01	2.80E-03		2.10E-02	1.58E-01			
09-MAY-79	2.20E-01	4.00E-03			1.16E-01			
26-JUL-79	6.50E-02	<3.50E-03		1.40E-02				
22-OCT-79	2.80E-01	9.60E-03			1.51E-01			
16-NOV-79	5.30E-02	2.50E-03			2.90E-02			
2W 22 26								
09-MAY-79		1.40E-02		1.90E-02				
26-JUL-79		4.60E-03		1.20E-02				
22-OCT-79		1.60E-02						
16-NOV-79		9.00E-03						

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
2W 23 4								
07-MAR-79	5.00E-02				2.60E-02			
04-JUN-79	4.70E-02				2.50E-02			
30-AUG-79	3.90E-02							
16-NOV-79	4.40E-02				2.29E-02			
12-DEC-79	4.10E-02							
2W 23 9								
04-JAN-79	2.70E-02							
29-MAR-79	2.80E-02							
03-JUL-79	1.90E-02							
24-SEP-79	2.00E-02							
2W 23 10								
04-JAN-79		3.40E-03		1.40E-02				
29-MAR-79		<2.00E-03						
03-JUL-79		3.20E-03						
24-SEP-79		<1.60E-03						
2W 26 3								
07-MAR-79	<1.70E-02							
04-JUN-79	<1.70E-02							
30-AUG-79	<1.70E-02							
16-NOV-79	<1.70E-02							
12-DEC-79	<1.70E-02							
3 1 1								
08-JAN-79					1.20E-02		1.40E-02	6.00E-01
19-MAR-79					1.80E-02		5.30E-03	6.00E-01
15-JUN-79				1.50E-02	1.70E-02		<3.00E-03	5.00E-01
05-SEP-79					1.90E-02		5.30E-03	6.00E-01
3 1 2								
08-JAN-79					<6.90E-03		9.60E-03	2.00E-01
19-MAR-79					<6.90E-03		7.30E-03	4.00E-01
15-JUN-79					1.00E-02		<3.00E-03	3.00E-01
05-SEP-79					<6.90E-03		5.40E-03	4.00E-01

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
3 1 3								
08-JAN-79					1.40E-02		1.10E-02	6.00E-01
19-MAR-79					2.20E-02		2.50E-02	4.00E-01
15-JUN-79				1.40E-02	2.10E-02		<3.00E-03	3.00E-01
05-SEP-79					1.00E-02		7.40E-03	5.00E-01
3 1 4								
08-JAN-79					1.40E-02		8.70E-03	<1.00E-01
19-MAR-79					1.00E-02		6.60E-03	3.00E-01
15-JUN-79					<6.90E-03		<3.00E-03	3.00E-01
05-SEP-79					<6.90E-03		8.80E-03	3.00E-01
3 1 5								
08-JAN-79					1.00E-02		<3.00E-03	3.00E-01
28-JAN-79					1.10E-02		4.50E-03	4.00E-01
22-FEB-79					<6.90E-03		<3.00E-03	3.00E-01
19-MAR-79					1.30E-02		3.70E-03	2.00E-01
08-APR-79					1.10E-02		6.60E-03	4.00E-01
16-MAY-79					1.00E-02		6.90E-03	5.00E-01
15-JUN-79				1.30E-02	<6.90E-03		<3.00E-03	3.00E-01
10-JUL-79					<6.90E-03		6.00E-03	4.00E-01
07-AUG-79					<6.90E-03		6.30E-03	3.00E-01
05-SEP-79				1.30E-02	<6.90E-03		5.50E-03	4.00E-01
11-OCT-79							1.20E-02	2.00E-01
07-NOV-79					1.10E-02		1.30E-02	4.00E-01
03-DEC-79					2.40E-02		1.30E-02	3.00E-01
3 1 6								
08-JAN-79					1.10E-02		3.80E-03	3.00E-01
24-JAN-79					1.00E-02		6.30E-03	2.00E-01
22-FEB-79					1.40E-02		4.20E-03	3.00E-01
19-MAR-79					1.10E-02		6.40E-03	3.00E-01
18-APR-79				2.10E-02	<6.90E-03	1.10E-01	5.40E-03	4.00E-01
16-MAY-79					9.60E-03		9.20E-03	3.00E-01
15-JUN-79				2.40E-02	<6.90E-03		<3.00E-03	2.00E-01
10-JUL-79				1.40E-02	<6.90E-03		7.50E-03	3.00E-01
07-AUG-79					<6.90E-03		6.10E-03	3.00E-01
05-SEP-79					<6.90E-03		5.60E-03	3.00E-01
11-OCT-79					1.60E-02		1.40E-02	3.00E-01
07-NOV-79				1.80E-02	<6.90E-03		1.30E-02	4.00E-01
03-DEC-79					<6.90E-03		7.60E-03	4.00E-01

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
3 2 1								
08-JAN-79					1.80E-02		1.10E-02	5.00E-01
24-JAN-79				2.90E-02	9.60E-03		<3.00E-03	6.00E-01
22-FEB-79					1.40E-02		<3.00E-03	4.00E-01
19-MAR-79					1.90E-02		3.20E-03	5.00E-01
18-APR-79					2.70E-02		<3.00E-03	6.00E-01
16-MAY-79					1.00E-02		<3.00E-03	7.00E-01
13-JUN-79					2.30E-02		<3.00E-03	7.00E-01
10-JUL-79					<6.90E-03		6.00E-03	3.00E-01
07-AUG-79				1.80E-02	<6.90E-03		4.30E-03	3.00E-01
05-SEP-79					<6.90E-03		<3.00E-03	5.00E-01
10-OCT-79					6.90E-03		<3.00E-03	5.00E-01
07-NOV-79				2.00E-02	<6.90E-03		1.20E-02	5.00E-01
03-DEC-79					<6.90E-03		4.40E-03	5.00E-01
3 2 2								
08-JAN-79					1.50E-02		5.20E-03	1.20E+00
24-JAN-79					1.30E-02		6.00E-03	8.00E-01
22-FEB-79					1.80E-02		6.00E-03	7.00E-01
19-MAR-79					1.90E-02		5.50E-03	2.20E+00
18-APR-79					2.30E-02		5.80E-03	5.00E-01
17-MAY-79					1.70E-02		<3.00E-03	6.00E-01
13-JUN-79				1.20E-02	3.30E-02		<3.00E-03	1.00E-01
10-JUL-79				2.30E-02	1.50E-02		5.40E-03	4.00E-01
07-AUG-79					1.60E-02		5.60E-03	5.00E-01
05-SEP-79					2.10E-02		5.40E-03	6.00E-01
10-OCT-79					1.40E-02		1.10E-02	8.00E-01
07-NOV-79				2.90E-02	<6.90E-03		1.30E-02	7.00E-01
03-DEC-79					<6.90E-03		<3.00E-03	2.00E-01
3 2 3								
08-JAN-79					<6.90E-03		3.50E-03	5.00E-01
24-JAN-79					<6.90E-03		6.00E-03	3.00E-01
22-FEB-79					<6.90E-03		8.10E-03	5.00E-01
19-MAR-79					<6.90E-03		4.30E-03	4.00E-01
18-APR-79					<6.90E-03		<3.00E-03	5.00E-01
16-MAY-79				1.70E-02	<6.90E-03		<3.00E-03	3.00E-01
10-JUL-79				1.40E-02	<6.90E-03		<3.00E-03	3.00E-01
07-AUG-79					1.00E-02		<3.00E-03	2.00E-01
06-SEP-79					<6.90E-03		<3.00E-03	4.00E-01
10-OCT-79					<6.90E-03	1.30E-01	<3.00E-03	4.00E-01
07-NOV-79					9.60E-03		1.10E-02	4.00E-01

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
3 2 3								
03-DEC-79					<6.90E-03		6.30E-03	4.00E-01
3 3 1								
08-JAN-79				2.30E-02	1.20E-02		4.20E-03	5.00E-01
24-JAN-79				1.90E-02	1.40E-02		<3.00E-03	4.00E-01
22-FEB-79					1.40E-02		<3.00E-03	4.00E-01
19-MAR-79					1.40E-02		<3.00E-03	4.00E-01
18-APR-79					2.30E-02		<3.00E-03	5.00E-01
16-MAY-79					1.10E-02		<3.00E-03	5.00E-01
15-JUN-79				1.50E-02	2.70E-02		<3.00E-03	4.00E-01
10-JUL-79					2.20E-02		<3.00E-03	3.00E-01
07-AUG-79					1.00E-02		<3.00E-03	3.00E-01
05-SEP-79					1.40E-02		<3.00E-03	3.00E-01
11-OCT-79					<6.90E-03		7.50E-03	5.00E-01
07-NOV-79					<6.90E-03		1.10E-02	4.00E-01
03-DEC-79					<6.90E-03		<3.00E-03	5.00E-01
3 3 2								
08-JAN-79				2.00E-02	<6.90E-03		7.90E-03	3.00E-01
24-JAN-79					<6.90E-03		4.50E-03	3.00E-01
22-FEB-79				1.90E-02	1.00E-02		<3.00E-03	3.00E-01
19-MAR-79					1.00E-02		<3.00E-03	4.00E-01
17-APR-79					<6.90E-03		<3.00E-03	3.00E-01
16-MAY-79					1.00E-02		<3.00E-03	3.00E-01
19-JUN-79					<6.90E-03		9.50E-03	2.00E-01
10-JUL-79					1.40E-02		6.30E-03	3.00E-01
07-AUG-79					1.00E-02		6.70E-03	2.00E-01
04-SEP-79					<6.90E-03		<3.00E-03	3.00E-01
11-OCT-79					6.90E-03		1.80E-02	3.00E-01
07-NOV-79					9.60E-03		1.30E-02	2.00E-01
03-DEC-79					<6.90E-03		1.10E-02	3.00E-01
3 3 3								
08-JAN-79					<6.90E-03		1.10E-02	2.00E-01
24-JAN-79					9.60E-03		4.90E-03	2.00E-01
22-FEB-79				2.30E-02	9.60E-03		7.40E-03	2.00E-01
19-MAR-79					<6.90E-03		5.40E-03	3.00E-01
10-APR-79				1.60E-02				
17-APR-79	<1.70E-02						3.50E-03	3.00E-01
16-MAY-79							9.60E-02	3.00E-01

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
3 3 3								
21-JUN-79					<6,90E-03		8,50E-03	2,00E-01
09-JUL-79				1,60E-02				
10-JUL-79					1,00E-02		7,30E-03	3,00E-01
13-JUL-79				1,40E-02				
09-AUG-79					<6,90E-03		5,30E-03	2,00E-01
04-SEP-79					<6,90E-03		6,90E-03	3,00E-01
11-OCT-79					<6,90E-03		9,30E-03	3,00E-01
07-NOV-79					<6,90E-03		8,80E-03	2,00E-01
3 3 6								
13-JUN-79		<2,00E-03						
3 3 8								
08-JAN-79	4,80E-02				2,60E-02		<3,00E-03	4,00E-01
24-JAN-79	4,70E-02				2,50E-02		3,50E-03	5,00E-01
22-FEB-79	<1,70E-02				<6,90E-03		4,00E-03	4,00E-01
20-MAR-79	3,20E-02	8,90E-02			1,90E-02		<3,00E-03	5,00E-01
3 3 9								
08-JAN-79		4,70E-03			1,60E-02		<3,00E-03	4,00E-01
24-JAN-79		8,10E-03			1,60E-02		<3,00E-03	5,00E-01
22-FEB-79		9,20E-03			1,50E-02		<3,00E-03	6,00E-01
19-MAR-79		<2,30E-03			1,90E-02		<3,00E-03	7,00E-01
17-APR-79		3,00E-03			2,20E-02		<3,00E-03	7,00E-01
16-MAY-79		<2,00E-03			3,20E-02		<3,00E-03	6,00E-01
13-JUN-79		<4,00E-03			1,90E-02		<3,00E-03	6,00E-01
10-JUL-79		<2,40E-03			3,40E-02		<3,00E-03	4,00E-01
07-AUG-79		<3,40E-03			3,80E-02		<3,00E-03	3,00E-01
04-SEP-79		<2,60E-03			2,50E-02		3,50E-03	5,00E-01
11-OCT-79		4,20E-03			1,60E-02		1,00E-02	5,00E-01
07-NOV-79		8,00E-03			1,80E-02		1,10E-02	5,00E-01
03-DEC-79		1,50E-02			1,70E-02		<3,00E-03	6,00E-01
3 3 10								
08-JAN-79		<3,20E-03			3,80E-02		<3,00E-03	6,00E-01
24-JAN-79		7,20E-03			1,60E-02		<3,00E-03	8,00E-01
22-FEB-79		1,30E-02			2,00E-02		<3,00E-03	1,00E+00
19-MAR-79		<2,90E-03			1,70E-02		3,30E-03	7,00E-01
17-APR-79		<3,90E-03			2,10E-02		<3,00E-03	7,00E-01

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
3 3 10								
16-MAY-79		<3.00E-03			3.80E-02		<3.00E-03	7.00E-01
13-JUN-79		<3.00E-03			2.50E-02		<3.00E-03	5.00E-01
10-JUL-79		3.70E-03			2.80E-02		<3.00E-03	4.00E-01
07-AUG-79		<4.10E-03			4.70E-02		3.50E-03	4.00E-01
04-SEP-79		<4.20E-03			4.00E-02		<3.00E-03	5.00E-01
11-OCT-79		<2.60E-03			4.10E-02		9.00E-03	5.00E-01
07-NOV-79		6.60E-03			2.90E-02		8.70E-03	4.00E-01
03-DEC-79		1.30E-02			3.10E-02		<3.00E-03	5.00E-01
3 3 11								
19-JUN-79		9.10E-03						
11-JUL-79		7.70E-03			1.40E-02		7.00E-03	4.00E-01
07-AUG-79		7.50E-03			2.20E-02		8.90E-03	4.00E-01
04-SEP-79		5.80E-03			1.60E-02		3.00E-03	5.00E-01
11-OCT-79		9.60E-03			1.70E-02		1.20E-02	5.00E-01
07-NOV-79		7.00E-03			1.90E-02		1.30E-02	4.00E-01
03-DEC-79		1.80E-02			2.10E-02		4.10E-03	5.00E-01
3 4 1								
08-JAN-79					1.30E-02		3.10E-02	3.00E-01
24-JAN-79				1.60E-02	1.50E-02		2.60E-02	3.00E-01
22-FEB-79					1.20E-02		2.10E-02	3.00E-01
19-MAR-79					1.40E-02		1.80E-02	4.00E-01
17-APR-79					1.20E-02		4.30E-03	6.00E-01
16-MAY-79					1.40E-02		9.70E-03	3.00E-01
13-JUN-79					1.20E-02		7.00E-03	3.00E-01
10-JUL-79				1.60E-02	1.40E-02		1.20E-02	3.00E-01
07-AUG-79					1.60E-02		8.70E-03	2.00E-01
04-SEP-79				1.50E-02	1.20E-02		1.80E-02	3.00E-01
11-OCT-79					1.10E-02		1.20E-02	3.00E-01
07-NOV-79					1.20E-02		1.70E-02	3.00E-01
03-DEC-79					9.60E-03		5.80E-03	3.00E-01
3 4 7								
08-JAN-79				1.60E-02	3.60E-02		5.90E-03	5.00E-01
24-JAN-79					3.60E-02		6.00E-03	6.00E-01
22-FEB-79					3.10E-02		1.10E-02	5.00E-01
19-MAR-79					3.60E-02		5.50E-03	5.00E-01
17-APR-79				1.60E-02	3.20E-02		4.30E-03	6.00E-01
16-MAY-79					2.60E-02		3.70E-03	6.00E-01

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
3 4 7								
13-JUN-79				1.80E-02	3.20E-02		<3.00E-03	6.00E-01
10-JUL-79				2.60E-02	2.40E-02		6.30E-03	5.00E-01
07-AUG-79					3.10E-02		6.70E-03	4.00E-01
04-SEP-79					2.30E-02		4.80E-03	6.00E-01
11-OCT-79					3.40E-02		1.20E-02	5.00E-01
07-NOV-79					2.80E-02		1.50E-02	5.00E-01
03-DEC-79					2.70E-02		5.60E-03	5.00E-01
3 4 9								
08-JAN-79		<3.10E-03			2.10E-02		<3.00E-03	5.00E-01
24-JAN-79		3.80E-03			1.60E-02		<3.00E-03	4.00E-01
22-FEB-79		4.40E-03			1.60E-02		5.70E-03	5.00E-01
19-MAR-79		<2.00E-03			2.10E-02		7.90E-03	6.00E-01
17-APR-79		3.60E-03			2.40E-02		3.70E-03	5.00E-01
16-MAY-79		<2.00E-03			2.50E-02		3.20E-03	5.00E-01
13-JUN-79		<2.00E-03			2.40E-02		<3.00E-03	4.00E-01
10-JUL-79		2.80E-03			2.20E-02		7.70E-03	4.00E-01
07-AUG-79		<1.70E-03			2.40E-02		7.70E-03	3.00E-01
04-SEP-79		<4.90E-03			2.10E-02		3.70E-03	4.00E-01
11-OCT-79		<2.50E-03			1.90E-02		1.50E-02	3.00E-01
07-NOV-79		4.20E-03			1.60E-02		1.20E-02	4.00E-01
03-DEC-79		8.20E-03			1.40E-02		4.80E-03	5.00E-01
3 4 10								
08-JAN-79		<2.10E-03			2.30E-02		3.50E-03	4.00E-01
24-JAN-79		<2.20E-03			2.20E-02		6.80E-03	3.00E-01
22-FEB-79		2.00E-03			1.90E-02		1.00E-02	5.00E-01
19-MAR-79		<2.00E-03			2.70E-02		6.60E-03	6.00E-01
17-APR-79		<2.00E-03			2.60E-02		4.30E-03	6.00E-01
16-MAY-79		<2.00E-03			2.40E-02		<3.00E-03	6.00E-01
13-JUN-79		<4.00E-03			2.40E-02		<3.00E-03	5.00E-01
10-JUL-79		2.50E-03			2.40E-02		3.90E-03	5.00E-01
07-AUG-79		<2.30E-03			2.20E-02		7.40E-03	4.00E-01
04-SEP-79		5.90E-03			2.30E-02		5.40E-03	6.00E-01
11-OCT-79		3.20E-03			2.90E-02		1.40E-02	6.00E-01
07-NOV-79		6.80E-03			2.40E-02		1.60E-02	6.00E-01
3 5 1								
08-JAN-79					<6.90E-03		7.60E-03	2.00E-01
19-MAR-79					1.10E-02		5.50E-02	3.00E-01

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
3 5 1								
13-JUN-79					<6,90E-03		<3,00E-03	2,00E-01
04-SEP-79				1,60E-02	<6,90E-03		9,10E-03	3,00E-01
3 6 1								
08-JAN-79					<6,90E-03		5,50E-03	2,00E-01
19-MAR-79					<6,90E-03		<3,00E-03	3,00E-01
15-JUN-79				1,20E-02	<6,90E-03		<3,00E-03	2,00E-01
04-SEP-79				3,90E-02	<6,90E-03		1,10E-02	2,00E-01
3 8 1								
08-JAN-79					<6,90E-03		6,20E-03	2,00E-01
20-MAR-79					<6,90E-03		7,60E-03	3,00E-01
13-JUN-79					<6,90E-03		3,20E-03	2,00E-01
04-SEP-79				1,30E-02	<6,90E-03	1,10E-01	4,20E-03	3,00E-01
3 8 2								
08-JAN-79					<6,90E-03		1,10E-02	3,00E-01
19-MAR-79					<6,90E-03		3,30E-03	4,00E-01
13-JUN-79					<6,90E-03		7,50E-03	3,00E-01
04-SEP-79				3,00E-02	<6,90E-03		9,10E-03	3,00E-01
3 8 3								
08-JAN-79					<6,90E-03		6,20E-03	3,00E-01
19-MAR-79					<6,90E-03		4,20E-03	4,00E-01
13-JUN-79				1,40E-02	<6,90E-03		3,20E-03	2,00E-01
04-SEP-79					<6,90E-03		5,80E-03	3,00E-01
6 S30E15A								
09-JAN-79					<6,90E-03		<3,00E-03	1,00E-01
28-MAR-79					<6,90E-03		<3,00E-03	2,00E-01
11-JUN-79					<6,90E-03		3,50E-03	1,00E-01
05-SEP-79					<6,90E-03		<3,00E-03	2,00E-01
6 S29 E12								
09-JAN-79					<6,90E-03			2,00E-01
21-MAR-79					<6,90E-03			3,00E-01
11-JUN-79					<6,90E-03			2,00E-01

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
6 S29 E12								
05-SEP-79					<6,90E-03		5,30E-03	2,00E-01
6 S27 E14								
09-JAN-79					<6,90E-03		<3,00E-03	2,00E-01
22-JAN-79					<6,90E-03		<3,00E-03	1,00E-01
23-FEB-79					<6,90E-03		<3,00E-03	1,00E-01
28-MAR-79					<6,90E-03		<3,00E-03	3,00E-01
18-APR-79							<3,00E-03	
23-APR-79					<6,90E-03			
15-MAY-79					<6,90E-03		3,50E-03	3,00E-01
11-JUN-79					<6,90E-03		3,30E-03	2,00E-01
11-JUL-79					<6,90E-03		5,00E-03	2,00E-01
06-AUG-79					<6,90E-03		<3,00E-03	2,00E-01
04-SEP-79					<6,90E-03		4,80E-03	2,00E-01
11-OCT-79					<6,90E-03		6,00E-03	3,00E-01
07-NOV-79					<6,90E-03		1,20E-02	2,00E-01
6 S19 E13								
15-JAN-79					<6,90E-03			2,00E-01
20-MAR-79					<6,90E-03			3,00E-01
11-JUN-79					<6,90E-03			2,00E-01
06-SEP-79					<6,90E-03			2,00E-01
6 S6 E4B								
15-JAN-79					<6,90E-03			
28-MAR-79					<6,90E-03			
15-JUN-79					<6,90E-03			
06-SEP-79					<6,90E-03			
6 S6 E4D								
15-JAN-79					<6,90E-03			
28-MAR-79					<6,90E-03			
12-JUN-79					<6,90E-03			
06-SEP-79					<6,90E-03			
6 S1 7B								
10-SEP-79				1,80E-02		1,80E-01		

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
6 S0 8								
16-JAN-79				3.00E-02				
6 2 3								
08-JAN-79				1.70E-02				
27-MAR-79						1.00E-01		
11-JUN-79	<1.70E-02							
05-SEP-79				1.70E-02				
6 8 17								
09-JAN-79				6.00E-02				
20-JUN-79				2.10E-02				
10-SEP-79				2.90E-02				
6 8 25								
09-JAN-79				7.00E-02				
10-SEP-79				1.80E-02				
6 15 158								
10-SEP-79				1.50E-02				
6 15 26								
09-JAN-79				4.80E-02				
27-MAR-79				1.40E-02				
20-JUN-79				1.80E-02				
10-SEP-79				2.90E-02				
6 17 5								
14-JUN-79				2.30E-02				
6 19 68								
14-MAY-79								4.00E-01
6 20 ESA								
14-JUN-79				1.30E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
6 20 20								
09-JAN-79				3.10E-02				
21-MAR-79				2.30E-02				
20-JUN-79				6.00E-02				
12-SEP-79				2.70E-02				
6 24 33								
26-MAR-79						1.70E-01		
6 26 15								
22-MAR-79				3.60E-02				
18-JUN-79				5.50E-02				
12-SEP-79				4.30E-02				
6 27 8								
16-JAN-79				7.40E-02		1.50E-01		
22-MAR-79				4.30E-02				
14-JUN-79				4.50E-02				
12-SEP-79				4.70E-02				
6 28 52								
12-JAN-79				1.30E-02				
6 31 31								
27-MAR-79				1.80E-02				
19-JUN-79				3.20E-02				
19-SEP-79				1.10E-02				
6 31 31P								
19-JUN-79				3.10E-02				
6 31 538								
12-JAN-79	<1.70E-02							
6 32 22								
11-JAN-79				6.00E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
6 32 22								
27-MAR-79				5.50E-02				
20-JUN-79				6.60E-02				
14-SEP-79				5.00E-02				
6 32 43								
12-JAN-79				3.00E-02				
6 32 62								
18-JUL-79	<1.70E-02							
02-OCT-79	<1.70E-02							
6 32 70								
02-OCT-79				4.00E-02				
6 32 72								
02-OCT-79				1.30E-02				
6 32 77								
20-JUL-79				1.50E-02				
01-OCT-79				1.40E-02				
6 33 42								
12-JAN-79				3.00E-02				
27-MAR-79				3.50E-02				
25-JUN-79				2.20E-02				
17-SEP-79				2.20E-02				
6 33 56								
21-JUN-79	<1.70E-02							
6 34 39A								
12-JAN-79				3.00E-02				
25-JUN-79				1.20E-02				
17-SEP-79				1.70E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
6 34 41								
12-JAN-79				2.10E-02		1.00E-01		
27-MAR-79				2.70E-02				
6 34 42								
12-JAN-79				1.50E-02				
27-MAR-79				2.00E-02				
25-JUN-79				2.60E-02				
17-SEP-79				1.70E-02				
6 35 9								
16-JAN-79				2.00E-02				
6 35 66								
18-JUL-79				1.30E-02				
02-OCT-79				2.00E-02				
6 35 70								
02-OCT-79				1.40E-02				
6 35 78								
01-OCT-79				1.90E-02				
6 36 460								
19-JUN-79				2.20E-02				
6 37 43								
17-SEP-79				1.20E-02				
6 39 39								
16-JUL-79				1.40E-02				
6 39 79								
01-OCT-79				1.40E-02				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
6 40 1								
16-JAN-79				2.70E-02				
6 40 33A								
11-JAN-79				1.80E-02				
6 41 23								
11-JAN-79				2.00E-02				
22-MAR-79				1.90E-02				
19-JUN-79				2.10E-02				
14-SEP-79				1.70E-02				
6 42 12A								
16-JAN-79				2.70E-02				
18-JUN-79				3.10E-02				
12-SEP-79				1.90E-02				
6 44 64								
03-OCT-79				2.30E-02		1.00E-01		
6 45 42								
22-JAN-79				2.60E-02				
6 47 60								
22-JAN-79				2.50E-02				
6 49 55								
22-JAN-79				3.80E-02				
03-OCT-79				4.30E-02		1.00E-01		
6 49 57								
22-JAN-79				3.30E-02				
24-APR-79				3.40E-02				
16-JUL-79				4.10E-01				
03-OCT-79				4.30E-01				

WELL NO. DATE	TOTAL ALPHA (PCI/ML)	STRONTIUM (PCI/ML)	CESIUM (PCI/ML)	COBALT (PCI/ML)	URANIUM (MG/L)	RUTHENIUM (PCI/ML)	CHROMIUM (MG/L)	FLUORIDE (MG/L)
6 50 53								
22-JAN-79				3.90E-02				
16-JUL-79				2.50E-02				
04-OCT-79				1.70E-02				
6 53 35								
23-JAN-79				1.80E-02				

APPENDIX C

CHEMICAL AND SPECTROGRAPHIC ANALYSES FROM VARIOUS WELLS SAMPLED

TABLE C.1. Chemical and Spectrographic Analyses from Various Wells Sampled

Constituents	Units	199-D5-12	199-H4-3	199-F5-1	199-K-19	699-58-19	699-2-33	699-14-38
Aluminum	µg/ℓ	<50	<50	<50	<50	<50	<50	<50
Antimony	µg/ℓ	<30	<30	<30	<30	30	<30	30
Arsenic	µg/ℓ	5	10	3	3	13	7	4
Barium	µg/ℓ	70	70	70	30	50	50	70
Beryllium	µg/ℓ	<1	<1	<1	<1	<1	<1	<1
Bicarbonate	mg/ℓ	110	240	120	87	210	170	180
Bismuth	µg/ℓ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Boron	µg/ℓ	30	50	30	10	100	10	30
Bromide	mg/ℓ	0.1	0.3	0.0	0.0	0.1	0.1	0.0
Cadmium	µg/ℓ	1	1	3	1	3	1	3
Calcium	mg/ℓ	39	50	34	34	36	38	30
Carbon Dioxide	mg/ℓ	3.5	4.8	3.0	1.1	3.4	4.3	3.6
Carbonate	mg/ℓ	0	0	0	0	0	0	0
Chloride	mg/ℓ	16	8.8	2.6	2.6	22	5.6	4.0
Chromium	µg/ℓ	100	1,000	<50	100	<50	<50	<50
Chromium Hexavalent	µg/ℓ	100	1,500	0	60	0	0	0
Cobalt	µg/ℓ	<5	<5	<5	<5	<5	<5	<5
Color		3	15	0	0	40	2	0
Copper	µg/ℓ	<10	100	<10	<10	<10	<10	<10
Cyanide	mg/ℓ	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Fluoride	mg/ℓ	0.2	0.3	0.1	0.2	1.3	0.4	0.4
Gallium	µg/ℓ	<30	<30	<30	<30	<30	<30	<30
Germanium	µg/ℓ	70	70	50	<30	70	70	100
Hardness Noncarb	mg/ℓ	42	0	5	31	0	1	0
Hardness Total	mg/ℓ	130	160	100	100	130	140	110
Iodide	mg/ℓ	0.00	0.01	0.00	0.00	0.02	0.01	0.01
Iron	µg/ℓ	<5	5	10	<5	<5	30	10
Iron Ferrous	µg/ℓ	0	0	0	0	0	0	0
Lead	µg/ℓ	1,000	1,000	700	500	1,000	1,000	1,000
Lithium	µg/ℓ	10	10	<10	<10	10	10	10
Magnesium	mg/ℓ	8.4	7.5	4.5	4.3	8.9	11	9.4
Manganese	µg/ℓ	1	3	7	<1	30	50	50
Molybdenum	µg/ℓ	10	10	10	<10	10	<10	10
Nickel	µg/ℓ	<50	<50	<50	<50	<50	<50	<50
Nitr NO_2 as in N Total	mg/ℓ	0.00	0.04	0.00	0.00	0.02	0.04	0.02
Nitr NO_3 as in N Total	mg/ℓ	3.7	380	0.91	1.2	0.89	0.31	0.13
Nitr NH_4 as in N Total	mg/ℓ	0.00	0.03	0.06	0.00	0.01	0.00	0.01
NO_2 + NO_3 as N Total	mg/ℓ	3.7	380	0.91	1.2	0.91	0.35	0.15
pH Field		7.7	7.9	7.8	8.1	8.0	7.8	7.9
pH Lab		8.0	8.0	7.9	8.0	8.1	7.8	7.9
Pho Ortho Tot as PO_4	mg/ℓ	0.09	0.25	0.06	0.03	0.12	0.21	0.09
Phosphorus Tot as P	mg/ℓ	0.03	0.08	0.02	0.01	0.04	0.07	0.03
Phosphorus Tot PO_4	mg/ℓ	0.09	0.25	0.06	0.03	0.12	0.21	0.09
Potassium		4.1	10	2.7	1.9	7.8	4.4	5.7
Residue Calc Sum	mg/ℓ	<220	<1,080	<147	145	<268	<226	<224
Residue Ton/Aft		0.29	3.67	0.20	0.19	0.35	<0.29	0.29
Residue 180C	mg/ℓ	216	2,700	145	138	257	215	210
SAR		0.5	24	0.2	0.1	1.4	0.5	0.7
Selenium	µg/ℓ	0	1	0	0	0	3	0
Silica	mg/ℓ	40	29	26	14	39	36	48
Silver	µg/ℓ	<10	<10	<10	<10	<10	<10	<10
Sodium + Potassium	mg/ℓ	16	710	7.1	5.3	44	17	23
Sodium	mg/ℓ	12	700	4.4	3.4	36	13	17
Sodium Percent		16	90	8	7	36	16	23
Sp Conductance Fld		335	3,500	228	235	412	325	310
Sp Conductance Lab		338	3,500	232	240	423	352	322
Strontium	µg/ℓ	300	300	100	100	100	100	100
Sulfate	mg/ℓ	46	160	14	42	13	34	21
Tin	µg/ℓ	100	1,000	<50	<50	<50	50	10
Titanium	µg/ℓ	<5	<5	<5	<5	<5	<5	<5
Turbidity	NTU	4.2	3.9	0.80	0.70	0.60	44	3.6
Vanadium	µg/ℓ	30	10	<10	<10	10	<10	<10
Water Temp	C°	24.2	22.4	20.6	22.2	18.2	19.2	19.1
Zinc	µg/ℓ	<5	<5	<5	10	<5	<5	<5
Zirconium	µg/ℓ	<5	<5	<5	5	<5	<5	<5
Cesium-137	pCi/ℓ	<1	<1	<1	<1	<1	<1	<1
Cobalt-60	pCi/ℓ	<1	<1	<1	2	<1	6	<1
Gross-B,D,Cs-137	pCi/ℓ	54	670	8.6	17	9.0	5.1	4.9
Gross-B,D,Sr-90	pCi/ℓ	49	630	7.8	15	8.2	4.7	4.3
Gross Alpha U-Na	µg/ℓ	<4.3	360	<3.1	<2.4	<5.7	7.5	<4.5
Potassium-40	pCi/ℓ	3.1	7.5	2.0	1.4	5.8	3.3	4.3
Strontium-90	pCi/ℓ	18.9	1.1	2.3	5.2	<0.4	<0.4	<0.4
Tritium	pCi/ℓ	1,700	6,100		3,000	<200	<200	<200

Table C.1 (continued)

Constituents	Units	699-27-8	699-31-53B	699-32-22	699-32-70	699-33-42	699-33-56
Aluminum	µg/ℓ	<50	70	<50	<50	<50	70
Antimony	µg/ℓ	<30	50	<30	50	<30	<30
Arsenic	µg/ℓ	8	6	7	5	5	6
Barium	µg/ℓ	100	50	70	50	50	70
Beryllium	µg/ℓ	<1	<1	<1	<1	<1	<1
Bicarbonate	mg/ℓ	150	200	140	150	140	220
Bismuth	µg/ℓ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Boron	µg/ℓ	50	30	30	30	30	30
Bromide	mg/ℓ	0.1	0.1	0.0	0.0	0.1	0.1
Cadmium	µg/ℓ	1	3	<1	1	<1	3
Calcium	mg/ℓ	48	38	46	32	35	41
Carbon Dioxide	mg/ℓ	3.0	3.2	2.2	3.8	2.8	5.6
Carbonate	mg/ℓ	0	0	0	0	0	0
Chloride	mg/ℓ	13	6.3	15	12	16	7.6
Chromium	µg/ℓ	<50	<50	<50	50	<50	<50
Chromium Hexavalent	µg/ℓ	0	0	0	31	0	0
Cobalt	µg/ℓ	<5	<5	<5	<5	<5	<5
Color		0	0	0	2	0	0
Copper	µg/ℓ	<10	<10	<10	<10	<10	<10
Cyanide	mg/ℓ	0.02	0.00	0.02	0.00	0.01	0.00
Fluoride	mg/ℓ	0.3	0.4	0.4	0.5	0.6	0.5
Gallium	µg/ℓ	<30	<30	<30	<30	<30	<30
Germanium	µg/ℓ	100	100	100	100	70	100
Hardness Noncarb	mg/ℓ	46	0	54	0	22	0
Hardness Total	mg/ℓ	170	140	170	120	140	150
Iodide	mg/ℓ	0.01	0.01	0.01	0.01	0.01	0.01
Iron	µg/ℓ	10	<5	10	<5	10	<5
Iron Ferrous	µg/ℓ	0	0	0	0	0	0
Lead	µg/ℓ	1,000	1,000	1,000	1,000	1,000	1,000
Lithium	µg/ℓ	10	10	10	<10	10	10
Magnesium	mg/ℓ	12	12	13	9.8	12	12
Manganese	µg/ℓ	1	1	1	1	10	1
Molybdenum	µg/ℓ	<10	30	10	10	<10	30
Nickel	µg/ℓ	<50	<50	<50	<50	<50	<50
Nitr NO_2 as in N Total	mg/ℓ	0.00	0.00	0.00	0.00	0.02	0.00
Nitr NO_3 as in N Total	mg/ℓ	13	1.8	17	4.0	5.5	2.2
Nitr NH_4 as in N Total	mg/ℓ	0.00	0.00	0.01	0.00	0.01	0.00
NO_2 + NO_3 as N Total	mg/ℓ	13	1.8	17	4.0	5.5	2.2
pH Field		7.9	8.0	8.0	7.8	7.9	7.8
pH Lab		7.9	7.8	7.9	7.8	7.9	7.5
Pho Ortho Tot as PO_4	mg/ℓ	0.06	0.09	0.06	1.2	0.06	0.09
Phosphorus Tot as P	mg/ℓ	0.02	0.03	0.02	0.38	0.02	0.03
Phosphorus Tot PO_4	mg/ℓ	0.06	0.09	0.06	1.2	0.06	0.09
Potassium		6.4	4.9	6.6	4.3	6.2	5.7
Residue Calc Sum	mg/ℓ	<268	<259	278	<221	<272	<278
Residue Ton/Aft		0.42	0.35	0.46	0.31	0.36	0.34
Residue 180C	mg/ℓ	306	255	335	227	268	252
SAR		0.7	0.8	1.0	0.8	1.2	0.9
Selenium	µg/ℓ	2	2	2	1	2	2
Silica	mg/ℓ	37	45	33	45	43	46
Silver	µg/ℓ	<10	<10	<10	<10	<10	<10
Sodium + Potassium	mg/ℓ	27	26	36	23	37	31
Sodium	mg/ℓ	21	21	29	19	31	25
Sodium Percent		20	23	26	25	32	26
Sp Conductance Fld		462	382	506	340	410	420
Sp Conductance Lab		488	394	528	353	436	436
Strontium	µg/ℓ	300	100	300	100	100	300
Sulfate	mg/ℓ	56	33	66	24	59	32
Tin	µg/ℓ	100	100	100	70	50	100
Titanium	µg/ℓ	<5	<5	<5	<5	<5	<5
Turbidity	NTU	0.40	1.6	0.40	140	0.80	1.6
Vanadium	µg/ℓ	10	30	10	30	10	30
Water Temp	C°	16.6	21.1	18.7	20.8	20.0	21.5
Zinc	µg/ℓ	30	100	<5	<5	<5	100
Zirconium	µg/ℓ	<5	<5	5	<5	<5	<5
Cesium-137	pCi/ℓ	<1	<1	<1	<1	<1	<1
Cobalt-60	pCi/ℓ	60	<1	60	<1	20	<1
Gross-B,D,Cs-137	pCi/ℓ	80	5.6	81	5.9	30	7.3
Gross-B,D,Sr-90	pCi/ℓ	73	4.9	75	5.3	28	6.2
Gross Alpha U-Na	µg/ℓ	8.4	<6.2	<6.3	<3.7	7.7	<7.4
Potassium-40	pCi/ℓ	4.8	3.7	4.9	3.2	4.6	4.3
Strontium-90	pCi/ℓ	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Tritium	pCi/ℓ	880,000	<200		200,000	200,000	<200

Table C.1 (continued)

Constituents	Units	699-34-39A	699-35-66	699-36-61A	699-45-69	699-49-55	699-72-88	699-87-55
Aluminum	µg/ℓ	<50	<50	50	50	<50	<50	<50
Antimony	µg/ℓ	<30	<30	<30	50	<30	<30	<30
Arsenic	µg/ℓ	6	4	6	4	13	5	11
Barium	µg/ℓ	30	50	70	30	30	50	30
Beryllium	µg/ℓ	<1	<1	<1	<1	<1	<1	<1
Bicarbonate	mg/ℓ	140	180	180	120	67	120	120
Bismuth	µg/ℓ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Boron	µg/ℓ	30	30	30	30	30	30	30
Bromide	mg/ℓ	0.0	0.1	0.1	0.2	0.2	0.0	0.0
Cadmium	µg/ℓ	1	3	3	1	<1	<1	1
Calcium	mg/ℓ	32	40	40	41	58	33	26
Carbon Dioxide	mg/ℓ	2.8	3.6	4.6	1.9	0.1	6.1	1.9
Carbonate	mg/ℓ	0	0	0	0	10	0	0
Chloride	mg/ℓ	11	14	7.7	20	28	3.9	3.8
Chromium	µg/ℓ	<50	<50	<50	<50	<50	<50	100
Chromium Hexavalent	µg/ℓ	0	21	0	0	0	9	120
Cobalt	µg/ℓ	<5	<5	<5	<5	<5	<5	<5
Color		0	0	0	1	0	0	0
Copper	µg/ℓ	<10	<10	<10	<10	<10	<10	<10
Cyanide	mg/ℓ	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Fluoride	mg/ℓ	0.6	0.4	0.4	0.4	0.4	0.2	0.4
Gallium	µg/ℓ	<30	<30	<30	<30	<30	<30	<30
Germanium	µg/ℓ	100	100	100	100	70	50	70
Hardness Noncarb	mg/ℓ	10	0	6	74	110	15	6
Hardness Total	mg/ℓ	130	150	150	170	180	110	100
Iodide	mg/ℓ	0.00	0.01	0.01	0.01	0.00	0.00	0.00
Iron	µg/ℓ	30	<5	<5	<5	<5	30	<5
Iron Ferrous	µg/ℓ	0	0	0	0	0	0	0
Lead	µg/ℓ	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Lithium	µg/ℓ	10	10	10	<10	10	<10	10
Magnesium	mg/ℓ	11	11	13	17	7.7	7.5	9.6
Manganese	µg/ℓ	7	1	3	3	3	5	<1
Molybdenum	µg/ℓ	10	30	10	<10	30	<10	30
Nickel	µg/ℓ	<50	<50	<50	<50	<50	<50	<50
Nitr NO_2 as in N Total	mg/ℓ	0.02	0.00	0.00	0.00	0.04	0.00	0.02
Nitr NO_3 as in N Total	mg/ℓ	7.5	5.7	3.8	7.7	3.6	0.77	2.9
Nitr NH_4 as in N Total	mg/ℓ	0.09	0.01	0.01	0.01	0.21	0.01	0.01
NO_2 + NO_3 as N Total	mg/ℓ	7.5	5.7	3.8	7.7	3.6	0.77	2.9
pH Field		7.9	7.9	7.8	8.0	9.2	7.5	8.0
pH Lab		7.9	8.0	8.0	8.0	8.4	7.8	8.2
Pho Ortho Tot as PO_4	mg/ℓ	0.09	0.12	0.09	0.03	0.03	0.15	
Phosphorus Tot as P	mg/ℓ	0.03	0.04	0.03	0.01	0.01	0.05	0.02
Phosphorus Tot PO_4	mg/ℓ	0.09	0.12	0.09	0.03	0.03	0.15	0.06
Potassium		6.8	5.6	5.6	3.8	13	4.5	3.5
Residue Calc Sum	mg/ℓ	256	<254	<256	<261	<398	<197	<186
Residue Ton/Aft		0.37	0.36	0.35	0.38	0.55	<0.25	0.24
Residue 180C	mg/ℓ	272	265	259	277	405	186	180
SAR		1.2	0.8	0.7	0.5	1.5	0.4	0.7
Selenium	µg/ℓ	1	4	3	0	14	1	0
Silica	mg/ℓ	45	43	47	43	33	37	39
Silver	µg/ℓ	<10	<10	<10	<10	<10	<10	<10
Sodium + Potassium	mg/ℓ	38	29	27	18	58	14	20
Sodium	mg/ℓ	31	23	21	14	45	9.3	16
Sodium Percent		34	25	22	15	34	15	24
Sp Conductance Fld		405	404	395	420	600	280	265
Sp Conductance Lab		424	412	400	430	604	294	272
Strontium	µg/ℓ	100	300	100	300	300	100	300
Sulfate	mg/ℓ	50	28	32	62	170	42	25
Tin	µg/ℓ	70	100	<50	100	<50	<50	100
Titanium	µg/ℓ	<5	<5	<5	<5	<5	<5	<5
Turbidity	NTU	1.3	0.90	0.90	3.4	0.90	0.40	0.30
Vanadium	µg/ℓ	30	30	30	30	10	<10	30
Water Temp	C°	21.5	21.2	22.2	20.0	18.2	21.2	16.9
Zinc	µg/ℓ	<5	<5	<5	<5	<5	<5	<5
Zirconium	µg/ℓ	7	<5	<5	<5	<5	<5	<5
Cesium-137	pCi/ℓ	<1	<1	<1	<1	<1	<1	<1
Cobalt-60	pCi/ℓ	20	<1	<1	<1	<1	<1	2
Gross-B,D,Cs-137	pCi/ℓ	41	7.5	6.3	2.9	12	3.7	4.3
Gross-B,D,Sr-90	pCi/ℓ	38	6.4	5.7	2.6	11	3.4	<4.5
Gross Alpha U-Na	µg/ℓ	<5.1	<5.8	<5.4	<6.1	<8.3	<3.7	<4.5
Potassium-40	pCi/ℓ	5.1	4.2	4.2	2.8	9.7	3.4	2.6
Strontium-90	pCi/ℓ	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Tritium	pCi/ℓ	460,000	770,000	3,600	<200	<200	8,000	68,000