



RE: 0603-N

January 31, 2006

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U.S. Nuclear Regulatory Commission
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RE: Sequoyah Fuels Corporation
2005 Annual Groundwater Report
License No. SUB-1010
Docket No. 40-8027

Dear Mr. Fliegel:

Enclosed is a copy of the 2005 Annual Groundwater Report required by Condition 49 of Amendment 31 to the above referenced license.

Let me know if you have any questions or comments pertaining to the report.

Sincerely,

Scott C. Munson
Project Coordinator

2005 ANNUAL GROUNDWATER REPORT

**Sequoyah Fuels Corporation
Gore, Oklahoma**

**Submitted to:
RCRA Enforcement Branch
U.S. Environmental Protection Agency
Region 6 - Dallas, TX**

and

**Fuel Cycle Facilities Branch
U.S. Nuclear Regulatory Commission
Headquarters Office, Rockville, MD**

January 31, 2006

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2005 ANNUAL GROUNDWATER REPORT

Sequoyah Fuels Corporation

1.0 INTRODUCTION

As a condition of the U.S. Environmental Protection Agency (EPA) Administrative Order on Consent (AOC) No. VI-005-(h)93-H (EPA I.D. No. OKD051961183), Sequoyah Fuels Corporation (SFC) was required to submit a Groundwater Monitoring Interim Measures Workplan (GMIM). The GMIM, submitted November 19, 1993 established a schedule for monitoring and required SFC to submit an annual report with the monitoring data collected for the year by February 1st after the end of a monitoring year. On August 22, 2005, the U.S. Nuclear Regulatory Commission (NRC) amended Source Materials License No. SUB-1010 to authorize implementation of SFC's Groundwater Monitoring Plan (GWMP) dated February 25, 2005. EPA also approved the modification to the schedule contained in the GWMP dated February 25, 2005. Groundwater monitoring data collected during calendar year 2005 is provided herein in fulfillment of the above requirements.

1.1 Background

SFC conducts groundwater monitoring through a monitoring well network described in the GWMP. This network includes corrective action, seep, drainage, surface water and groundwater monitoring. New groundwater monitoring wells required by the GWMP were or will be installed during late 2005 and early 2006. Initial sampling of these wells will be completed during early 2006. Therefore, the analyses of these well samples will be provided in the 2006 Annual Groundwater Report. A map of the site showing corrective action, seep, drainage and groundwater monitoring locations is presented in Figure 1. Surface water sampling locations are shown in Figure 2. Groundwater monitoring wells are completed at various depths to monitor different groundwater units. The groundwater monitoring units at the Sequoyah Facility have

been designated as Terrace/Shale 1, Shale 2, Shale 3, Shale 4 and Shale 5. The GWMP includes a general description of the geologic, hydrogeologic, and geochemical conditions at the Facility.

A detailed discussion of the geology and hydrogeology of the Facility was presented in the Final RFI Report submitted to EPA Region 6 on October 11, 1996. An additional site investigation was conducted during 2001 by Shepherd Miller Inc. (SMI) in support of the development of a site conceptual model for geology and hydrogeology. The conceptual model refined the site geology into individual shale and sandstone units and was submitted to NRC and EPA on October 9, 2001 in a report titled Final Hydrogeological and Geochemical Site Characterization Report.

License Condition 49 of SUB-1010 that required SFC to submit a groundwater monitoring plan to NRC on or before June 15, 2003. SFC evaluated the groundwater monitoring requirements at the Sequoyah Facility during 2003 and submitted the GWMP to NRC and EPA on June 12, 2003. The GWMP provides a comprehensive groundwater monitoring program that meets the objectives of the GMIM and NRC. The GWMP was modified based on comments received from regulatory agencies and resubmitted to NRC and EPA on February 25, 2005. This GWMP was approved by NRC and EPA during August and November of 2005, respectively.

1.2 Scope

Routine groundwater monitoring is conducted for constituents of concern that have previously been identified in the groundwater at the Facility. The primary constituents of concern present in the Facility groundwater are arsenic, fluoride, nitrate and uranium. Barium has also been identified as a constituent of concern but the extent of impact is limited to a small area. Monitoring is conducted in accordance with the requirements of the GWMP and Amendment No. 31 to NRC License SUB-1010.

Routine groundwater sampling will normally be completed in April each year. Quarterly sampling will typically be completed during January, April, July and December of each year.

Quarterly sampling of some locations is required for a year and annually thereafter. Table 1 provides the GWMP sampling and analysis schedule. Samples were collected by SFC employees using procedures and protocols defined in the GWMP. Laboratory analyses were conducted by Outreach Laboratory (EPA Lab Number OK00922 and ODEQ ID Number 9517) located in Broken Arrow, Oklahoma.

1.3 Report Organization

The remaining sections of this report describe the groundwater monitoring program changes (Section 2.0), current conditions (Section 3.0) and summarization of Facility groundwater monitoring results (Section 4.0).

2.0 MONITORING PROGRAM CHANGES

As described in Section 1.1 of this report SFC submitted a new groundwater monitoring plan to NRC and EPA on June 12, 2003. After responding to several requests for additional information from NRC regarding the plan, SFC submitted a revised plan to NRC and EPA on February 25, 2005. This revised plan was approved by NRC and EPA during 2005.

Condition Number 49 to Amendment No. 31 of SFC's NRC License Number SUB-1010 added a requirement to implement a groundwater compliance monitoring program as described in SFC's GWMP submitted to NRC on February 25, 2005. This condition included the following groundwater protection standards, referred to as Maximum Contaminant Levels (MCL's) in this report:

Antimony = 0.006 mg/l, arsenic = 0.01 mg/l, barium = 1.0 mg/l, beryllium = 0.004 mg/l, cadmium = 0.01 mg/l, chromium = 0.05 mg/l, fluoride = 4.0 mg/l, lead = 0.05 mg/l, mercury = 0.002 mg/l, molybdenum = 0.012 mg/l, nickel = 0.023 mg/l, nitrate = 10 mg/l, combined radium-226 and radium-228 = 5.0 pCi/l, selenium = 0.01 mg/l, silver = 0.05 mg/l, thallium = 0.005 mg/l, thorium-230 = 1.2 pCi/l and uranium = 30 µg/l.

Note that, although the Condition 49 lists the molybdenum MCL as 0.0012 mg/l, we believe this was a typographical error and should have been printed as 0.012 mg/l. SFC will request that NRC make a page correction.

The GWMP requires that ten new groundwater monitoring wells be installed. These wells were installed during late 2005 or early 2006. Lithology and well completion information for these new wells will be provided in the 2006 Annual Groundwater Report. These new wells are designated MW121A through MW130A and are included on Figure 1. The wells will be sampled quarterly for one year beginning in January 2006. After the first year these wells will be sampled annually.

In addition to groundwater monitor well compliance locations the GWMP requires SFC to monitor corrective action, seep, drainage and surface water locations. Corrective action monitoring includes collecting samples from groundwater recovery systems and monitoring locations down-gradient of the recovery systems. Seep and drainage samples are collected along the western perimeter of the Facility where groundwater reaches the ground surface from outcrops of groundwater bearing units. Surface water samples are collected at upstream and downstream locations from the rivers located west and southwest of the Facility.

Several new groundwater recovery wells are also being installed at the Facility. SFC plans to install seven new recovery wells during early 2006. These recovery wells will be installed at the following locations:

- Two wells in the northwest portion of the process area to recover uranium impacted groundwater designated MWRW4 and MWRW5.
- Three wells south of the Main Process Building near the main gate to the process area for recovery of uranium impacted groundwater designated MWRW6 through MWRW8.
- One well north of the SX Building to recover nitrate and uranium impacted groundwater designated as MWRW9.
- One well east of Monitor Well Location MW095A to recover arsenic and nitrate impacted groundwater designated as MWRW10.

Recovery well lithology and completion diagrams will be provided in the 2006 Annual Groundwater Report.

3.0 CURRENT CONDITIONS

Groundwater flow at the Facility is described as generally westward with some northwesterly and southwesterly movement. This generalization is true for all the groundwater units currently being monitored. The 2005 groundwater level measurements correlate well with the flow directions found during previous measurement events. Groundwater surface contour maps for each groundwater unit are included as Figures 3 through 7. Ten foot contour intervals are shown along with the groundwater elevations measured at each well used to construct the contours. If more than one water level measurement was obtained during the year an average value was calculated and used. Surfer, a computer program developed by Golden Software, Inc., was used to generate the contours. Each contour is labeled with the groundwater surface elevation in feet above mean sea level. Due to the limited number of data points available these figures provide a general depiction of the groundwater elevations surface for each unit.

The major constituents of concern at the Facility have been established as arsenic, fluoride, nitrate (as N), and uranium. Background quality and compliance groundwater monitoring program data for 2005 are presented in Tables 2 and 3. Groundwater isoconcentration maps for arsenic, fluoride, nitrate and uranium have been prepared for each groundwater unit and are included as Figures 8 through 20. Surfer has also been used to prepare the isoconcentration figures. If more than one analyses was available for a parameter an average value was calculated and used. Due to the limited number of data points these figures provide a general depiction of the concentrations present and location of impacted areas. The extent of the impact may vary from that depicted on the figures. A discussion of the groundwater analyses for arsenic, fluoride, nitrate and uranium is provided below.

3.1 Background Quality Monitoring

The GWMP requires that the designated background groundwater monitoring locations be analyzed on a quarterly basis for one year. Background monitoring wells are analyzed for

antimony, arsenic, barium, beryllium, cadmium, chromium, fluoride, lead, nitrate, molybdenum, nickel, selenium, thallium, radium-226, radium-228, thorium-230 and uranium. The background wells (MW007, MW007A, MW007B, MW070, MW073 and MW110A) were sampled during October 2005 and will be sampled during January, April and July 2006. These four sampling events will be combined and a statistical analysis completed. This analysis will be provided in the 2006 Annual Groundwater Monitoring Report. Analyses for samples collected during 2005 are included in Table 2.

3.2 Compliance Monitoring

3.2.1 Arsenic

Arsenic has been part of the routine monitoring program for select wells since being identified in Facility groundwater during the Facility Environmental Investigation conducted during the early 1990's. Total arsenic continues to be detected above the maximum contaminant level (MCL) of 0.01 mg/l in the Terrace/Shale1, Shale 2, Shale 3 and Shale 4 groundwater systems. Arsenic was not detected above the MCL in the Shale 5 groundwater system.

The arsenic levels found in the Terrace/Shale 1 groundwater varied from <0.005 to 2.01 mg/l. The high of 2.01 mg/l occurred in MW075 located south of the incinerator. Terrace/Shale 1 groundwater monitoring wells with arsenic values in 2005 above the MCL were MW014, MW025, MW031, MW040, MW042, MW049, MW062, MW075, MW077 and MW086. An isoconcentration map of arsenic concentrations in Terrace/Shale 1 groundwater is shown in Figure 8.

The arsenic levels found in the Shale 2 groundwater varied from <0.005 to 0.516 mg/l. The high of 0.516 mg/l occurred in MW042A located south of the South Yellowcake Sump. Shale 2 groundwater monitoring wells with arsenic values in 2005 above the MCL were MW014A, MW042A, MW052A, MW062A, MW065A and MW067A. An isoconcentration map of arsenic concentrations in Shale 2 groundwater is shown in Figure 12.

The arsenic levels found in Shale 3 groundwater varied from <0.005 to 2.54 mg/l. The high of 2.54 mg/l occurred in MW057A located near the southwest corner of Pond 2. Shale 3 groundwater monitoring wells with arsenic values in 2005 above the MCL were 2303A, 2346, MW012A, MW049A, MW050A, MW057A, MW086A and MW089A. An isoconcentration map of arsenic concentrations in Shale 3 groundwater is shown in Figure 15.

The arsenic levels found in the Shale 4 groundwater varied from <0.005 to 1.12 mg/l. The high of 1.12 mg/l occurred in MW059A located southwest of Pond 2. Shale 4 groundwater monitoring wells with arsenic values in 2005 above the MCL were MW059A, MW095A, MW099A and MW107. An isoconcentration map of arsenic concentrations in Shale 4 groundwater is shown in Figure 19.

The arsenic levels found in the Shale 5 groundwater varied from <0.005 to 0.01 mg/l. The high of 0.01 mg/l was less than or equal to the MCL. An isoconcentration map of the arsenic concentrations in Shale 5 groundwater has not been prepared because none of the arsenic analyses were greater than the MCL.

3.2.2 Fluoride

Fluoride has been a common parameter monitored for many years in groundwater at SFC. Fluoride continues to be detected above the MCL of 4 mg/l in Terrace/Shale 1 and Shale 3 groundwater systems. Fluoride was not detected above the MCL in Shale 2, Shale 4 and Shale 5 groundwater systems.

The fluoride levels found in the Terrace/Shale 1 groundwater varied from 0.2 to 6 mg/l. The high of 6 mg/l occurred in MW014 located northwest of the Main Process Building. The only Terrace/Shale 1 groundwater monitoring well with fluoride values in 2005 above the MCL was MW014A. The fluoride analyses for a sample collected from MW045, located north of Pond 2,

was 4 mg/l. An isoconcentration map of fluoride concentration in Terrace/Shale 1 groundwater is shown in Figure 9.

The fluoride levels found in the Shale 2 groundwater varied from 0.3 to 1.2 mg/l. The high of 1.2 mg/l was less than the MCL. An isoconcentration map of the fluoride concentrations in Shale 2 groundwater has not been prepared because none of the fluoride analyses were greater than the MCL.

The fluoride levels found in the Shale 3 groundwater varied from 0.3 to 5.2 mg/l. The high of 5.2 mg/l occurred in MW057A located near the southwest corner of Pond 2. The only Shale 3 groundwater monitoring well with fluoride values above the MCL was MW057A. An isoconcentration map of fluoride concentrations in Shale 3 groundwater is shown in Figure 16. The software utilized to plot the contours had an insufficient number of data points to provide a realistic representation of the fluoride levels in Shale 3. The only contour shown is the 4 mg/l level and shows where the impacted area is located.

The fluoride levels found in Shale 4 groundwater varied from 0.2 to 2.3 mg/l. The high of 2.3 mg/l was less than the MCL. An isoconcentration map of the fluoride concentrations in Shale 4 groundwater has not been prepared because none of the fluoride analyses were greater than the MCL.

The fluoride levels found in the Shale 5 groundwater varied from 0.5 to 2.5 mg/l. The high of 2.5 mg/l was less than the MCL. An isoconcentration map of the fluoride concentrations in Shale 5 groundwater has not been prepared because none of the fluoride analyses were greater than the MCL.

3.2.3 Nitrate

Nitrate has also been a common parameter monitored for many years in groundwater at SFC. Nitrate continues to be detected above the MCL of 10 mg/l in the Terrace/Shale 1, Shale 2, Shale 3 and Shale 4 groundwater systems. Nitrate was not detected above the MCL in the Shale 5 groundwater system.

The nitrate levels found in the Terrace/Shale 1 groundwater varied from <1 to 829 mg/l. The high 829 mg/l occurred in MW025 located north of the SX Building. Terrace/Shale 1 groundwater monitoring wells with nitrate values in 2005 above the MCL were MW008, MW014, MW025, MW035, MW036, MW040, MW045 and MW054. An isoconcentration map of nitrate concentrations in Terrace/Shale 1 groundwater is shown in Figure 10.

The nitrate levels found in the Shale 2 groundwater varied from 0.3 to 113 mg/l. The high 113 mg/l occurred in MW014A located northwest of the Main Process Building. Shale 2 groundwater monitoring wells with nitrate values in 2005 above the MCL were MW014A, MW042A, MW047A and MW065A. An isoconcentration map of nitrate concentrations in Shale 2 groundwater is shown in Figure 13.

The nitrate levels found in the Shale 3 groundwater varied from 2 to 6000 mg/l. The high of 6000 mg/l occurred in MW057A located near the southwest corner of Pond 2. Shale 3 groundwater monitoring wells with nitrate values in 2005 above the MCL were 2302A, 2346, MW012A, MW049A, MW050A, MW057A and MW086A. An isoconcentration map of nitrate concentrations in Shale 3 groundwater is shown in Figure 17.

The nitrate levels found in the Shale 4 groundwater varied from <1 to 4390 mg/l. The high of 4390 mg/l occurred in MW059A located southwest of Pond 2. Shale 4 groundwater monitoring wells with nitrate values in 2005 above the MCL were MW059A, MW095A, MW107 and

MW108. An isoconcentration map of nitrate concentrations in Shale 4 groundwater is shown in Figure 20.

The nitrate levels found in the Shale 5 groundwater varied from <1 to 2.9 mg/l. The high of 2.9 mg/l was less than the MCL. An isoconcentration map of the nitrate concentrations in Shale 5 groundwater has not been prepared because none of the nitrate analyses were greater than the MCL.

3.2.4 Uranium

Uranium has been a common parameter monitored in groundwater at SFC for many years. Arsenic continues to be detected above the MCL of 30 $\mu\text{g/l}$ in the Terrace/Shale 1, Shale 2 and Shale 3 groundwater systems. Uranium was not detected above the MCL in Shale 4 and Shale 5 groundwater systems.

The uranium levels found in the Terrace/Shale 1 groundwater varied from <1 to 48400 $\mu\text{g/l}$. The high of 48400 $\mu\text{g/l}$ occurred in MW025 located north of the SX Building. Terrace/Shale 1 groundwater monitoring wells with uranium values in 2005 above the MCL were MW010, MW014, MW025, MW035, MW045 and MW087. An isoconcentration map of uranium concentrations in Terrace/Shale 1 groundwater is shown in Figure 11.

The uranium levels found in the Shale 2 groundwater varied from <1 to 366 $\mu\text{g/l}$. The high of 366 $\mu\text{g/l}$ occurred in MW067A located northwest of Solid Waste Burial Area No. 2. Shale 2 groundwater monitoring wells with uranium values in 2005 above the MCL were MW014A and MW067A. An isoconcentration map of uranium concentrations in Shale 2 groundwater is shown in Figure 14.

The uranium levels found in the Shale 3 groundwater varied from <1 to 3100 $\mu\text{g/l}$. The high of 3100 $\mu\text{g/l}$ occurred in MW012A located northwest of the Main Process Building. Shale 3

groundwater monitoring wells with uranium values in 2005 above the MCL were MW012A, MW050A and MW086A. An isoconcentration map of uranium concentrations in Shale 3 groundwater is shown in Figure 18.

The uranium levels found in the Shale 4 groundwater varied from <1 to 7.8 $\mu\text{g/l}$. The high of 7.8 $\mu\text{g/l}$ was less than the MCL. An isoconcentration map of the uranium concentrations in Shale 4 groundwater has not been prepared because none of the uranium analyses were greater than the MCL.

The uranium levels found in the Shale 5 groundwater varied from <1 to 3.24 $\mu\text{g/l}$. The high of 3.24 $\mu\text{g/l}$ was less than the MCL. An isoconcentration map of the uranium concentrations in Shale 5 groundwater has not been prepared because none of the uranium analyses were greater than the MCL.

3.2.5 Other Parameters

During the RFI, barium was identified in groundwater in a localized area north of the clarifier basins. Additional sampling was performed in 1997. A complete discussion of this data was presented in the 1997 Groundwater Report. MW040 continues to exceed the MCL of 2.0 mg/l. The results of the barium analyses in this well can be found in Table 3.

3.3 Corrective Action Monitoring

Corrective action monitoring includes the collection of samples from groundwater recovery systems and monitoring locations down-gradient of the recovery locations. The corrective action monitoring locations are included on Figure 1. Details regarding the installation and construction of these systems are included in the GWMP or responses to requests for additional information prepared during the GWMP approval process. The analyses of samples collected from corrective action monitoring locations are included in Table 4 and described below.

3.3.1 005 Drainage Collection Trench

The 005 Drainage Collection Trench (Location Number 2224A) recovers arsenic, nitrate and uranium impacted groundwater that flows through the Shale 3 unit. A monitor trench (Location Number 2224B) is sampled to monitor the effectiveness of the 005 Drainage Collection Trench. The monitor trench was dry during most of 2005 so there is a limited amount of analyses for this location. Analysis of samples collected during 2005 from the 005 Drainage Collection Trench averaged 0.024 mg/l, 300 mg/l and 121 $\mu\text{g/l}$ for arsenic, nitrate and uranium, respectively. The only fluoride analysis obtained for the collection trench was 1.1 mg/l. The arsenic, nitrate and uranium analyses exceeded the respective MCL's for each of these parameters. The fluoride analysis was less than the fluoride MCL. Fluoride is not expected to be present at this location. Analysis of arsenic, nitrate and uranium in the monitor trench was 0.004 mg/l, 22 mg/l and 143 $\mu\text{g/l}$ for arsenic, nitrate and uranium, respectively.

Approximately 395,000 gallons of water was recovered from the 005 Collection Trench during 2005. The recovered groundwater was pumped to the Clarifier Basins.

3.3.2 MW095A Collection Trench

The MW095A Collection Trench (Location Number 2247) recovers arsenic and nitrate impacted groundwater that is present in the Shale 4 unit. Monitoring Well MW095A, which is located west of the collection trench, is used to monitor the effectiveness of the trench. Analysis of samples collected during 2005 from the MW095A Collection Trench averaged 0.046 mg/l, 1260 mg/l and 2.1 $\mu\text{g/l}$ for arsenic, nitrate and uranium, respectively. Analysis of samples collected during 2005 from Monitoring Well MW095A averaged 0.024 mg/l, 138 mg/l and 1 $\mu\text{g/l}$ for arsenic, nitrate and uranium, respectively. Arsenic and nitrate analyses exceeded the MCL's for each of these constituents. The uranium analyses were well below the MCL for uranium. Fluoride analysis of a sample collected from the MW095A Collection Trench and a sample

collected from Monitoring Well MW095A were < 0.2 and 0.2 mg/l, respectively. These results are well below the MCL for fluoride.

Approximately 125,000 gallons of water was recovered from the MW095A Collection Trench during 2005. The recovered groundwater was pumped to Pond 3W. Although not included in the GWMP an additional recovery system, the MW095A Collection Pit (Location ID 2247A), is located just east of MW095A and recovered an additional 106,000 gallons of water from the Shale 4 unit in this area. This recovered water was also pumped to Pond 3W.

3.3.3 MW010 Collection Trench

The MW010 Collection Trench (Location Number 2248) recovers uranium impacted groundwater that is present in the Terrace/Shale 1 unit. Monitoring Well MW031, which is located south of the collection trench, is used to monitor the effectiveness of the trench. Analysis of samples collected during 2005 from the MW010 Collection Trench averaged 0.007 mg/l, 2.4 mg/l and 51 µg/l for arsenic, nitrate and uranium, respectively. Analysis of samples collected during 2005 from Monitoring Well MW031 averaged 0.013 mg/l, 1.3 mg/l and 1 µg/l for arsenic, nitrate and uranium, respectively. Uranium analyses of water recovered from the MW010 Collection Trench exceeded the MCL's for uranium. The uranium analyses for samples collected from the Monitor Well MW031 were well below the MCL for uranium. Arsenic and nitrate concentrations were well below respective MCL's at both locations. Fluoride analysis of a sample collected from the MW010 Collection Trench and a sample collected from Monitoring Well MW031 were 0.6 and 1.1 mg/l, respectively. These results are well below the MCL for fluoride.

Approximately 940,000 gallons of water was recovered from the MW010 Collection Trench during 2005. The recovered groundwater was pumped to the Clarifier Basins.

3.4 Seep and Drainage Monitoring

Seep and drainage samples were collected from locations along the western perimeter of the Facility. The monitoring locations are shown on Figure 1. Analyses completed for samples collected during 2005 include antimony, arsenic, fluoride, lead, nitrate, thallium and uranium and are summarized in Table 5. The MCL's for each of these constituents are listed below:

Antimony	0.006 mg/l
Arsenic	0.010 mg/l
Fluoride	4 mg/l
Lead	0.05 mg/l
Nitrate	10 mg/l
Thallium	0.005 mg/l
Uranium	30 µg/l

Location 2241 is located near the property boundary in the 005 Drainage. Uranium analyses at this location ranged from 29.8 to 238 µg/l and, with the exception of one result, were above the MCL for uranium. Antimony, lead, nitrate and thallium analyses were all less than the respective MCL's at this location. The arsenic MCL was slightly exceeded for two of the seven analyses.

Location 2242 is located in the 005 Drainage near Monitoring Well MW100B. Uranium analyses at this location ranged from 34 to 54.7 µg/l and were above the MCL for uranium. Antimony, arsenic, lead, nitrate and thallium analyses were all less than the respective MCL's at this location.

Location 2243 is located in the 007 Drainage north of the Facility. Antimony, arsenic, lead, nitrate, thallium and uranium analyses were all less than the respective MCL's at this location.

Location 2244 is located in the 004 Drainage west of the Facility. Nitrate analyses at this location ranged from 2.3 to 41 mg/l and in general were above the MCL for nitrate. Antimony,

arsenic, lead, thallium and uranium analyses were all less than the respective MCL's at this location.

Location 2245 is a seep located just north of the Port Road Bridge and just east of the 001 Drainage. Nitrate analyses at this location ranged from 10.5 to 31.5 mg/l and were above the MCL for nitrate. Although the nitrate analyses were above the MCL the concentrations have decreased significantly during the past few years. This decrease is attributed to the groundwater recovery accomplished by the MW095A Collection Trench. Antimony, arsenic, fluoride, lead, thallium and uranium analyses were all less than the respective MCL's at this location. A significant decrease in the arsenic concentrations have also been observed at this location during the past few years.

Location 2246 is located in the 001 Drainage north of the Port Road Bridge. Uranium analyses at this location ranged from < 1 to 57 µg/l and were generally above the MCL for uranium. Antimony and thallium slightly exceeded the respective MCL's for one of three sample analyses for each constituent. The other two analyses for each constituent were less than the respective MCL's. Nitrate analyses were generally less than the MCL, although one analysis was equal to the MCL and another had a detection level reported by the laboratory above the MCL. Arsenic analyses were all less than the MCL for arsenic.

3.5 Surface Water Monitoring

Surface water samples are collected annually at the locations shown in Figure 2. The analyses for samples collected on June 29, 2005 are included in Table 6. Radium-226 and uranium were the only two constituents required by the NRC license at that time. The radium-226 and uranium analyses are within the range of results expected for background and well below the MCL's for radium-226 and uranium. The GWMP that became effective during August 2005 requires that surface water samples also be analyzed for arsenic, nitrate and radium-228. These constituents

will be included to the analysis of surface water samples scheduled to be collected during June 2006 and will be reported in the 2006 Annual Groundwater Report.

4.0 SUMMARY

This is the first annual groundwater monitoring report to be prepared after approval of the new GWMP. Some of the monitoring required by the GWMP will not be completed until 2006 because new wells had to be installed, some of the annual sampling had been conducted earlier during 2005 and did not include all of the constituents, and statistical analyses of background monitoring can not be completed until four quarters of data are collected. Therefore, the 2006 Annual Groundwater Report will be the first comprehensive report of all monitoring required by the GWMP.

Monitoring completed during 2005 has been grouped by the type of sampling that was conducted and summarized in a series of tables. The types of sampling includes background quality monitoring; compliance groundwater monitoring; corrective action monitoring; seep and drainage monitoring; and surface water monitoring. These results have been described in Section 3.0, Current Conditions, of this report. A few of the groundwater monitoring wells, drainage and other sample locations were dry when sampling was attempted so samples could not be obtained.

NRC License Amendment 31, Condition 49, requires SFC to prepare groundwater contour maps and groundwater isoconcentration maps for arsenic, fluoride, nitrate and uranium. These maps have been prepared but due to the limited number of data points for each groundwater unit the maps only provide a general representation of site conditions. In some cases only one or a few locations had concentrations that can be used to prepare the contours, therefore some maps do not represent actual conditions. Professional judgement must be used when interpreting these maps.

Tables

Table 1
Groundwater Monitoring Plan
Sampling and Analysis Schedule

Monitor ID	Location	Groundwater Unit Monitored	Parameters Analyzed
Background Quality Monitoring (Annual Sampling Frequency)			
MW007	Northeast of Main Process Building	Terrace / Shale 1	See Note 1
MW070	NE of DUF4 Building Near Property Boundary	Terrace / Shale 1	See Note 1
MW073	East of OG&E Substation Near Property Line	Terrace / Shale 1	See Note 1
MW007A	Northeast of Main Process Building	Shale 3	See Note 1
MW110A	East of Facility	Shale 4	See Note 1
MW007B	Northeast of Main Process Building	Shale 5	See Note 1
Compliance Monitoring (Annual Sampling Frequency)			
MW008 ²	Between MPB and Administration Building	Terrace / Shale 1	U, NO ₃ (N), F, As
MW010 ²	Southwest of Main Process Building	Terrace / Shale 1	U, NO ₃ (N), F, As
MW014 ²	South of Bechtel Building	Terrace / Shale 1	U, NO ₃ (N), F, As
MW019 ²	South of Loading Dock	Terrace / Shale 1	U, NO ₃ (N), F, As
MW025 ²	SX Yard North of SX Building	Terrace / Shale 1	U, NO ₃ (N), F, As
MW035 ²	North of Pond 1 Spoils Pile	Terrace / Shale 1	U, NO ₃ (N), F, As
MW036 ²	West of Sanitary Lagoon on Pond 1 Spoils Pile	Terrace / Shale 1	U, NO ₃ (N), F, As
MW040	North of Basin 1 of Clarifier A	Terrace / Shale 1	U, NO ₃ (N), F, As, Ba
MW042	South of Yellowcake Sump	Terrace / Shale 1	U, NO ₃ (N), F, As
MW045	Northeast Corner of Pond 2	Terrace / Shale 1	U, NO ₃ (N), F, As
MW049	South of Fluoride Sludge Holding Basin 2 (North)	Terrace / Shale 1	U, NO ₃ (N), F, As
MW053 ²	North of Sanitary Lagoon on Emergency Basin Bank	Terrace / Shale 1	U, NO ₃ (N), F, As
MW054 ²	West of Pond 1 Spoils Pile at Base of Slope	Terrace / Shale 1	U, NO ₃ (N), F, As
MW056	Northwest Corner of '86 Incident Sod Storage Area	Terrace / Shale 1	U, NO ₃ (N), F, As
MW062	South of Fluoride Sludge Holding Basin 1 (South)	Terrace / Shale 1	U, NO ₃ (N), F, As
MW075 ²	South of Incinerator	Terrace / Shale 1	U, NO ₃ (N), F, As
MW077 ²	NW of DUF4 Building Near Fence	Terrace / Shale 1	U, NO ₃ (N), F, As
MW079 ²	NE of Bechtel Building on UF6 Cylinder Pad	Terrace / Shale 1	U, NO ₃ (N), F, As
MW080 ²	West of DUF4 Building in Concrete Pad	Terrace / Shale 1	U, NO ₃ (N), F, As
MW086 ²	NE Corner of Cooling Tower	Terrace / Shale 1	U, NO ₃ (N), F, As
MW087	Old Contaminated Solid Waste Burial Area	Terrace / Shale 1	U, NO ₃ (N), F, As
MW014A ²	South of Bechtel Building	Shale 2, 3	U, NO ₃ (N), F, As
MW018A ²	Southwest Corner of MPB	Shale 2	U, NO ₃ (N), F, As
MW042A	South of South Yellowcake Sump in Parking Lot	Shale 2	U, NO ₃ (N), F, As

Table 1
Groundwater Monitoring Plan
Sampling and Analysis Schedule

Monitor ID	Location	Groundwater Unit Monitored	Parameters Analyzed
MW047A	Northwest Corner of Pond 2	Shale 2	U, NO ₃ (N), F, As
MW048	West of Pond 2	Shale 2	U, NO ₃ (N), F, As
MW050A ²	North of Fluoride Basin No. 2	Shale 2, 3	U, NO ₃ (N), F, As
MW052A	West of Fluoride Sludge Holding Basin 2 (North)	Shale 2	U, NO ₃ (N), F, As
MW065A ²	South of Fluoride Clarifier	Shale 2	U, NO ₃ (N), F, As
MW067A ²	North Solid Waste Burial Area No. 2	Shale 2	U, NO ₃ (N), F, As
MW081A	N of DUF4 Building Near Perimeter Fence	Shale 2	U, NO ₃ (N), F, As
MW121A ³	Southwest of Pond 2	Shale 2	U, NO ₃ (N), F, As
2303A	North of Clarifier Basins	Shale 3	U, NO ₃ (N), F, As
2346	Southwest of Pond 6	Shale 3	U, NO ₃ (N), F, As
MW012A ²	Northwest of Main Process Building	Shale 3	U, NO ₃ (N), F, As
MW049A ²	South of Fluoride Holding Basin No. 2	Shale 3	U, NO ₃ (N), F, As
MW057A ²	Southwest of Pond 2	Shale 3	U, NO ₃ (N), F, As
MW084A ²	SW of Misc Digestion on YC Pad	Shale 3	U, NO ₃ (N), F, As
MW086A ²	NE Corner of Cooling Tower	Shale 3	U, NO ₃ (N), F, As
MW089A	Northwest of Fluoride Holding Basin No. 2	Shale 3	U, NO ₃ (N), F, As
MW115A	South of Pond 2	Shale 3	U, NO ₃ (N), F, As
MW122A ³	Northwest of Pond 2	Shale 3	U, NO ₃ (N), F, As
MW123A ³	Southwest of Pond 2	Shale 3	U, NO ₃ (N), F, As
MW124A ³	South of Pond 5	Shale 3	U, NO ₃ (N), F, As
MW127A ³	Southwest of Fluoride Holding Basin No. 2	Shale 3	U, NO ₃ (N), F, As
MW130A ³	West of Pond 5	Shale 3	U, NO ₃ (N), F, As
MW059A	Southwest of Pond 2	Shale 4	U, NO ₃ (N), F, As
MW062A	South of Fluoride Holding Basin No. 1	Shale 4, 2	U, NO ₃ (N), F, As
MW097A	West of Pond 2 at Property Boundary	Shale 4	U, NO ₃ (N), F, As
MW099A	Northwest Corner of Industrial Area in Woods	Shale 4	U, NO ₃ (N), F, As
MW107	800 Feet West of Pond 5	Shale 4	U, NO ₃ (N), F, As
MW108	800 Feet Southwest of Pond 5	Shale 4	U, NO ₃ (N), F, As
MW111A	Northeast Portion of Agland	Shale 4	U, NO ₃ (N), F, As
MW112A	Southwest Portion of Facility on Agland Field	Shale 4	U, NO ₃ (N), F, As
MW125A ³	South of Pond 3 East	Shale 4	U, NO ₃ (N), F, As

Table 1
Groundwater Monitoring Plan
Sampling and Analysis Schedule

Monitor ID	Location	Groundwater Unit Monitored	Parameters Analyzed
MW126A ³	Southwest of Pond 5	Shale 4	U, NO ₃ (N), F, As
MW129A ³	Southwest of Pond 2 Near Facility West Boundary	Shale 4	U, NO ₃ (N), F, As
MW059B	Southwest of Pond 2	Shale 5	U, NO ₃ (N), F, As
MW090B	Northwest of Pond 5 Near Reservoir Weir	Shale 5	U, NO ₃ (N), F, As
STA04	Southwest of Pond 2 Near Port Road Bridge	Shale 5	U, NO ₃ (N), F, As
MW098B	West of Pond 2 at Property Boundary (old 004 Path)	Shale 5	U, NO ₃ (N), F, As
MW100B	West of Fluoride Sludge Holding Basin 2 in 005 Drainage	Shale 5	U, NO ₃ (N), F, As
MW105B	West of Pond 5	Shale 5	U, NO ₃ (N), F, As
MW128B ³	SW portion of the Agland	Shale 5	U, NO ₃ (N), F, As
Corrective Action Monitoring (Quarterly Sampling Frequency)			
2224A	005 Collection Trench	Shale 3	U, NO ₃ (N), F, As
2224B	005 Monitor Trench	Shale 3	U, NO ₃ (N), F, As
2247	95A Collection Trench	Shale 4	U, NO ₃ (N), F, As
MW095A	Southwest of Pond 2 Near Facility West Boundary	Shale 4	U, NO ₃ (N), F, As
2248	10 Collection Trench	Terrace/Shale 1	U, NO ₃ (N), F, As
MW031	South of Main Process Building	Terrace/Shale 1	U, NO ₃ (N), F, As
Seep and Drainage Monitoring (Quarterly Sampling Frequency)			
2241	005 Drainage - 25 feet East of COE Property Boundary Fence	Shale 5	See Note 4
2242	005 Drainage - Pool Near MW100B	Shale 4	See Note 4
2243	007 Drainage at Drainage from North Holding Basin	Shale 4	See Note 4
2244	004 Drainage - 20 feet East of COE Property Boundary Fence	Shale 4	See Note 4
2245	Seep North of Port Road Bridge and East of 001 Drainage	Shale 4	See Note 4, F
2246	001 Drainage N of Port Road Bridge	Shale 4	See Note 4
Surface Water Monitoring (Annual Sampling Frequency)			
2201	Illinois River - 1600 feet Upstream of 001 Confluence		U, NO ₃ (N), As, Ra-226
2202	Illinois River - 600 feet Downstream of 001 Confluence		U, NO ₃ (N), As, Ra-226
2203	Arkansas River - Upstream Towards Highway 64 Bridge		U, NO ₃ (N), As, Ra-226
2204	Arkansas River - Downstream Near I-40 Bridge		U, NO ₃ (N), As, Ra-226

Note 1: Analyze for antimony, arsenic, barium, beryllium, cadmium, chromium, fluoride, lead, molybdenum, nickel, nitrate(as N), radium-226, selenium, thallium, thorium-230 and uranium

Note 2: Well will be abandoned and plugged as necessary to allow reclamation activities

Note 3: Well installed upon approval of GWMP

Note 4: Analyze for antimony, arsenic, nitrate (as N), lead, thallium and uranium.

Table 2
Background Quality Monitoring Analyses

Well ID	GW Unit Monitored	Date Sampled	Uranium $\mu\text{g/l}$	Thorium-230 pCi/l	Radium-226 pCi/l	Radium-228 pCi/l	Nitrate(as N) mg/l	Fluoride mg/l	Antimony mg/l	Arsenic mg/l
MW007	Terrace / Shale 1	04/22/05	< 1				1.6	0.6		< 0.005
MW007	Terrace / Shale 1	10/20/05	< 1	1.05 ± 0.188	0.176 ± 0.075	1.09 ± 0.123	2	0.8	0.015	0.006
MW070	Terrace / Shale 1	10/20/05	1.67	0.531 ± 0.164	0.756 ± 0.230	3.51 ± 0.294	1.7	1.1	< 0.005	0.009
MW073	Terrace / Shale 1	10/20/05	1.08	0.262 ± 0.103	0.161 ± 0.168	1.63 ± 0.287	5.3	0.5	< 0.005	< 0.005
MW007A	Shale 3	04/22/05	< 1				5.5	0.6		< 0.005
MW007A	Shale 3	10/20/05	1.92	0.441 ± 0.149	0.054 ± 0.073	1.17 ± 0.118	6.5	0.8	< 0.005	< 0.005
MW110A	Shale 4	04/19/05	< 1	0 ± 0.121	0 ± 0.372		1.2	0.6	0.006	< 0.005
MW110A	Shale 4	10/13/05	2.4	0.826 ± 0.308	1.18 ± 0.283	1.81 ± 0.142	1.1	0.6	< 0.007	0.009
MW007B	Shale 5	04/07/05	< 1				< 1	2.6		0.005
MW007B	Shale 5	10/13/05	5.47	0.389 ± 0.121	0.393 ± 0.18	2.87 ± 0.162	1.0	1.9	0.013	0.014

Well ID	Date Sampled	Barium mg/l	Beryllium mg/l	Cadmium mg/l	Chromium mg/l	Lead mg/l	Molybdenum mg/l	Nickel mg/l	Selenium mg/l	Thallium mg/l
MW007	04/22/05									
MW007	10/20/05	0.042	< 0.006	< 0.006	0.008	0.01	0.011	< 0.006	0.01	< 0.009
MW070	10/20/05	0.3	< 0.006	< 0.006	0.015	0.018	< 0.007	0.023	< 0.007	< 0.009
MW073	10/20/05	0.038	< 0.006	< 0.006	< 0.007	0.007	< 0.007	< 0.006	< 0.007	< 0.009
MW007A	04/22/05									
MW007A	10/20/05	0.018	< 0.006	< 0.006	< 0.007	< 0.005	0.008	< 0.006	0.009	< 0.009
MW110A	04/19/05	0.018	< 0.006	< 0.006	0.007	0.005	< 0.007	< 0.006	< 0.007	< 0.002
MW110A	10/13/05	0.010	< 0.006	< 0.006	< 0.007	< 0.006	< 0.007	0.008	< 0.007	< 0.004
MW007B	04/07/05									
MW007B	10/13/05	< 0.287	< 0.006	< 0.006	0.012	< 0.006	< 0.007	0.008	< 0.007	< 0.004

Table 3
Compliance Groundwater Monitoring Analysis

Location ID	GW Unit Monitored	Date Sampled	Uranium µg/l	Nitrate (as N) mg/l	Fluoride mg/l	Arsenic mg/l	Barium mg/l
MW008	Terrace / Shale 1	04/28/05		66.1			
MW008	Terrace / Shale 1	10/20/05		65.6	0.5	0.006	
MW008	Terrace / Shale 1	01/23/06	< 1				
MW010	Terrace / Shale 1	04/28/05	1360	1.8	0.7	< 0.005	
MW014	Terrace / Shale 1	05/05/05	15800	20	6		
MW014	Terrace / Shale 1	10/21/05	30400			0.019	
MW019	Terrace / Shale 1	04/29/05	< 1	1		< 0.005	
MW019	Terrace / Shale 1	10/21/05	< 1		0.2		
MW025	Terrace / Shale 1	05/04/05	48400	829	0.5	0.014	
MW035	Terrace / Shale 1	04/22/05	33.1	13.3	0.3	< 0.005	
MW036	Terrace / Shale 1	04/26/05	1.49	21	0.2	< 0.005	
MW040	Terrace / Shale 1	04/26/05	< 1	491	3.3	0.045	10
MW042	Terrace / Shale 1	04/27/05	1.22	< 1	1.1	0.344	
MW045	Terrace / Shale 1	04/26/05	99.5	66.3	4		
MW049	Terrace / Shale 1	04/21/05	< 1	< 1		< 0.005	
MW049	Terrace / Shale 1	10/18/05	1.46	1.2	0.5	0.021	
MW053	Terrace / Shale 1	05/04/05	8.6	1.4			
MW053	Terrace / Shale 1	10/20/05			1.5	< 0.005	
MW054	Terrace / Shale 1	04/22/05	< 1	304	0.7	0.07	
MW056	Terrace / Shale 1	Dry					
MW062	Terrace / Shale 1	04/14/05	< 1	1.7	0.6	0.055	
MW075	Terrace / Shale 1	05/04/05	< 1	< 1		2.01	
MW075	Terrace / Shale 1	10/21/05			2.2		
MW077	Terrace / Shale 1	05/03/05	< 1				
MW077	Terrace / Shale 1	10/20/05		1.2	0.7	0.064	
MW079	Terrace / Shale 1	05/03/05	4.96	1	1.3		
MW079	Terrace / Shale 1	10/21/05				0.007	
MW080	Terrace / Shale 1	10/21/05	1.27	1.1	0.5	< 0.005	
MW086	Terrace / Shale 1	10/21/05	< 1	4.3	0.4	0.022	
MW087	Terrace / Shale 1	05/03/05	982	< 1		< 0.005	
MW087	Terrace / Shale 1	10/20/05			3.1		
MW014A	Shale 2,3	05/05/05	49.8	113	0.5		
MW014A	Shale 2,3	10/21/05	38.8			0.02	
MW018A	Shale 2	05/03/05	< 1	8		< 0.005	
MW018A	Shale 2	10/21/05			0.5		
MW042A	Shale 2	04/27/05	< 1	24.1	1.2	0.516	
MW047A	Shale 2	10/20/05	2.43	48.5	< 0.6	0.01	
MW048	Shale 2	04/21/05	< 1	2.7	< 0.4		
MW048	Shale 2	10/20/05	10.3			0.006	
MW050A	Shale 2, 3	04/20/05	402	23.4	0.3	0.029	
MW052A	Shale 2	04/20/05	< 1	< 1			
MW052A	Shale 2	10/18/05			0.4	0.012	
MW065A	Shale 2	04/27/05	2.35	35.2	0.9	0.44	
MW067A	Shale 2	04/29/05	366	1.6	0.3	0.011	
MW081A	Shale 2	05/03/05	29.1				
MW081A	Shale 2	10/20/05		< 1	0.8	0.006	
MW121A	Shale 2	Not Completed					

Table 3
Compliance Groundwater Monitoring Analyses

Location ID	GW Unit Monitored	Date Sampled	Uranium µg/l	Nitrate (as N) mg/l	Fluoride mg/l	Arsenic mg/l	Barium mg/l
2303A	Shale 3	04/26/05	10.7	497	0.4	0.053	
2346	Shale 3	04/12/05	< 1	1080	0.3	0.032	
MW012A	Shale 3	05/05/05	3100	184		0.018	
MW012A	Shale 3	10/21/05			0.4		
MW049A	Shale 3	04/21/05	< 1	56			
MW049A	Shale 3	10/18/05	2.52	62.6	0.3	0.015	
MW057A	Shale 3	04/26/05	5.21	6000	5.2	2.54	
MW084A	Shale 3	04/29/05	< 1	15		0.007	
MW084A	Shale 3	10/21/05			0.4		
MW086A	Shale 3	10/21/05	443	99.8	0.4	0.016	
MW089A	Shale 3	04/19/05	< 1	2			
MW089A	Shale 3	10/18/05			0.3	0.014	
MW115A	Shale 3	Dry					
MW122A	Shale 3	Not Completed					
MW123A	Shale 3	Not Completed					
MW124A	Shale 3	Not Completed					
MW127A	Shale 3	Not Completed					
MW130A	Shale 3	Not Completed					
MW059A	Shale 4	04/26/05	7.8	4390	2.3	1.12	
MW062A	Shale 4, 2	04/14/05	< 1	0.3	0.6	0.148	
MW097A	Shale 4	04/19/05	< 1	1.2		< 0.005	
MW097A	Shale 4	10/14/05			0.3		
MW099A	Shale 4	04/20/05	5.78	< 1			
MW099A	Shale 4	10/14/05			0.2	0.016	
MW107	Shale 4	04/15/05		100		< 0.005	
MW107	Shale 4	10/14/05	< 1		0.3	0.017	
MW108	Shale 4	04/15/05		42.9		< 0.005	
MW108	Shale 4	10/14/05	1.37		< 1		
MW111A	Shale 4	04/15/05	< 1	< 1		< 0.005	
MW111A	Shale 4	10/14/05			0.6		
MW112A	Shale 4	04/15/05	< 1	2.3		< 0.005	
MW112A	Shale 4	10/14/05			0.3		
MW125A	Shale 4	Not Completed					
MW126A	Shale 4	Not Completed					
MW129A	Shale 4	Not Completed					
MW059B	Shale 5	04/07/05	< 1	2.9		0.004	
MW059B	Shale 5	10/18/05			1.8		
MW090B	Shale 5	04/08/05	< 1	< 1			
MW090B	Shale 5	10/14/05			2.2	0.009	
STA04	Shale 5	10/18/05	< 1	< 1	1.7	< 0.005	
MW098B	Shale 5	04/19/05	< 1	1.3		< 0.005	
MW098B	Shale 5	10/14/05			0.5		
MW100B	Shale 5	04/08/05	< 1	1.1		0.005	
MW100B	Shale 5	10/14/05			0.6		
MW105B	Shale 5	04/08/05	< 1	1.1		< 0.004	
MW105B	Shale 5	10/14/05			2.5		
MW128B	Shale 5	Not Completed					

Table 4
Corrective Action Monitoring Analyses

Location ID	GW Unit Monitored	Date Sampled	Uranium $\mu\text{g/l}$	Nitrate (as N) mg/l	Fluoride mg/l	Arsenic mg/l
2224A	Shale 3	01/10/05	127	52.6		< 0.004
2224A	Shale 3	02/11/05	147	164		< 0.004
2224A	Shale 3	03/09/05	136	216		0.013
2224A	Shale 3	04/27/05	96.7	296		0.021
2224A	Shale 3	05/10/05	126	300		0.011
2224A	Shale 3	06/09/05	82.2	292		0.016
2224A	Shale 3	07/13/05	105	335		0.031
2224A	Shale 3	08/08/05	108	372		0.038
2224A	Shale 3	09/12/05	149	397		0.04
2224A	Shale 3	10/05/05	164	431		0.035
2224A	Shale 3	11/07/05	144	364		0.031
2224A	Shale 3	12/05/05	65.8	383	1.1	0.04
2224B	Shale 3	01/10/05	143	22		< 0.004
2247	Shale 4	01/10/05	< 1	1520		0.031
2247	Shale 4	02/11/05	< 1	832		< 0.004
2247	Shale 4	03/09/05	2.26	1250		0.022
2247	Shale 4	04/27/05	< 1	1180		0.055
2247	Shale 4	05/10/05	1.84	1200		0.026
2247	Shale 4	06/09/05	1.78	1100		0.056
2247	Shale 4	07/13/05	2.34	1180		0.051
2247	Shale 4	08/08/05	3.66	1340		0.072
2247	Shale 4	09/14/05	3.26	1570		0.041
2247	Shale 4	10/05/05	1.45	1390		0.072
2247	Shale 4	11/07/05	3.62	1310		0.072
2247	Shale 4	12/05/05	3.68	1300	< 0.2	0.06
MW095A	Shale 4	04/21/05	< 1	35.8		< 0.005
MW095A	Shale 4	10/18/05	< 1	241	0.2	0.042
2248	Terrace / Shale 1	01/10/05	17.7	6.4		< 0.004
2248	Terrace / Shale 1	02/11/05	43.1	2.5		< 0.004
2248	Terrace / Shale 1	03/09/05	60.5	1.4		0.004
2248	Terrace / Shale 1	04/27/05	41.9	2.7		0.006
2248	Terrace / Shale 1	05/10/05	46	2.5		< 0.005
2248	Terrace / Shale 1	06/09/05	32.8	1.8		< 0.005
2248	Terrace / Shale 1	07/13/05	71.1	< 1		< 0.005
2248	Terrace / Shale 1	08/08/05	58	1.8		0.015
2248	Terrace / Shale 1	09/12/05	39.1	1.4		0.006
2248	Terrace / Shale 1	10/05/05	30.4	2.3		0.013
2248	Terrace / Shale 1	11/07/05	73.6	2.1		< 0.005
2248	Terrace / Shale 1	12/05/05	95	1.4	0.6	0.01
MW031	Terrace / Shale 1	04/27/05	< 1	1.3		
MW031	Terrace / Shale 1	10/18/05	< 1	1.2	1.1	0.013

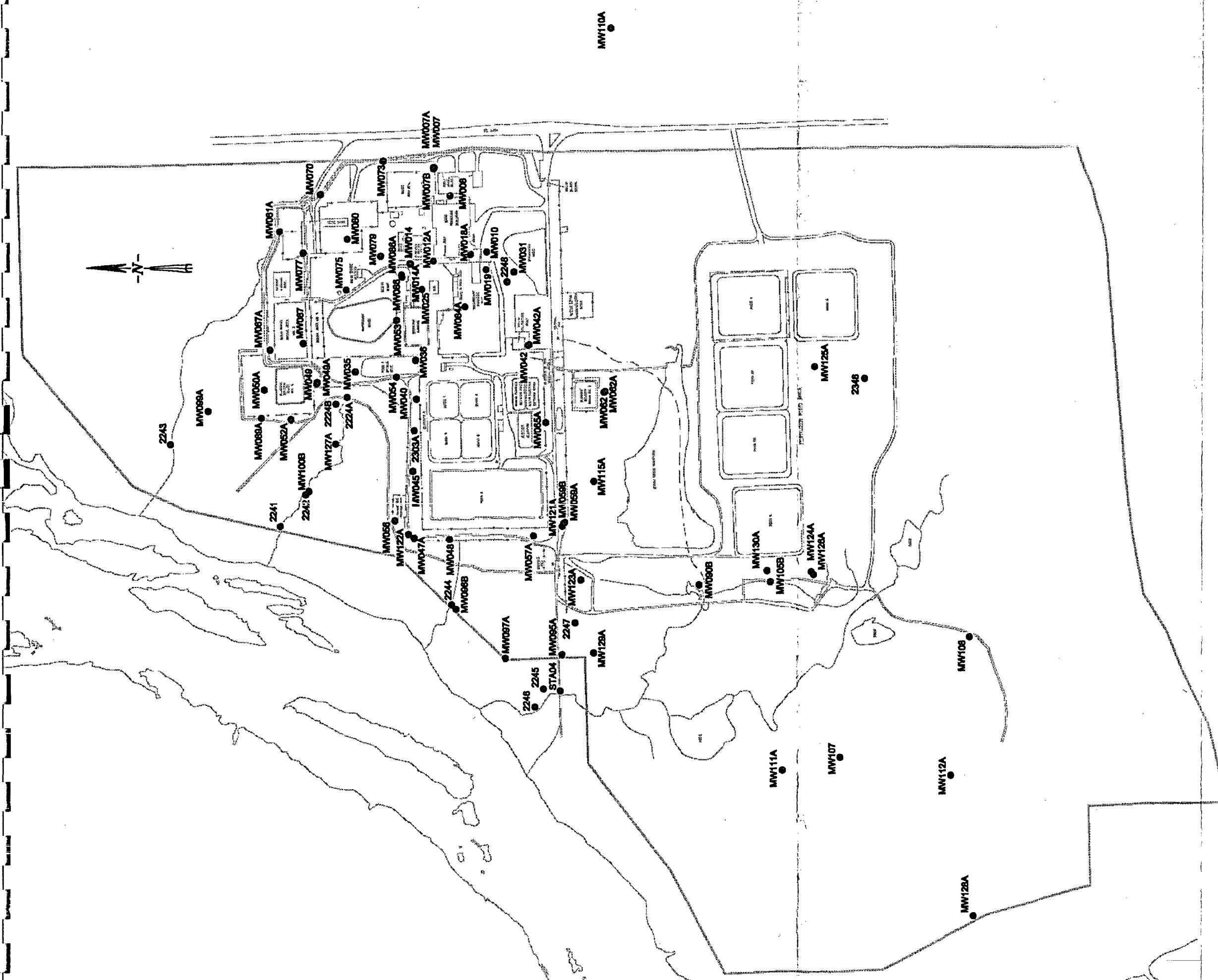
Table 5
Seep and Drainage Monitoring Analyses

Location ID	GW Unit Monitored	Date Sampled	Uranium µg/l	Nitrate (N) mg/l	Fluoride mg/l	Antimony mg/l	Arsenic mg/l	Lead mg/l	Thallium mg/l
2241	Shale 5	01/10/05	29.8	6.4			< 0.004		
2241	Shale 5	02/11/05	36.6	4.1			< 0.004		
2241	Shale 5	03/09/05	49.4	5.3			0.014		
2241	Shale 5	04/27/05	71.9	< 1			< 0.005		
2241	Shale 5	05/10/05	76.2	1.2			< 0.005		
2241	Shale 5	06/09/05	80.4	< 1		< 0.005	< 0.005	< 0.005	< 0.005
2241	Shale 5	09/13/05	238	1.4		0.009	0.013	< 0.005	< 0.004
2242	Shale 4	01/10/05	36	5.3			< 0.004		
2242	Shale 4	02/11/05	34	5.4			< 0.004		
2242	Shale 4	03/09/05	54.7	9			< 0.004		
2242	Shale 4	04/27/05	38.1	1.6			< 0.005		
2242	Shale 4	05/10/05	51.4	2.1			< 0.005		
2242	Shale 4	06/09/05	49	< 1		< 0.005	< 0.005	< 0.005	< 0.002
2242	Shale 4	09/13/05	Dry	Dry		Dry	Dry	Dry	Dry
2243	Shale 4	01/10/05	5.26	2			< 0.004		
2243	Shale 4	02/11/05	15.1	1.2			< 0.004		
2243	Shale 4	03/09/05	8.8	< 1			< 0.004		
2243	Shale 4	04/27/05	4.05	< 1			< 0.005		
2243	Shale 4	05/10/05	9.96	< 1			< 0.005		
2243	Shale 4	06/09/05	3.38	< 1		< 0.005	< 0.005	< 0.005	< 0.002
2243	Shale 4	09/13/05	Dry	Dry		Dry	Dry	Dry	Dry
2244	Shale 4	01/10/05	1.35	41			0.004		
2244	Shale 4	02/11/05	9.87	29.1			< 0.004		
2244	Shale 4	03/09/05	7.31	37			0.004		
2244	Shale 4	04/27/05	3.29	10.3			< 0.005		
2244	Shale 4	05/10/05	6.6	5.2			< 0.005		
2244	Shale 4	06/09/05	5.45	2.3		< 0.005	< 0.005	0.012	< 0.002
2244	Shale 4	09/13/05	Dry	Dry		Dry	Dry	Dry	Dry
2245	Shale 4	01/10/05	< 1	23.9			< 0.004		
2245	Shale 4	02/11/05	< 1	24.3			< 0.004		
2245	Shale 4	03/09/05	< 1	25.4			< 0.004		
2245	Shale 4	04/27/05	< 1	31.5			< 0.005		
2245	Shale 4	05/10/05	< 1	26.8			< 0.005		
2245	Shale 4	06/09/05	< 1	10.5	< 0.6	< 0.005	< 0.005	0.005	< 0.002
2245	Shale 4	09/13/05	Dry	Dry	Dry	Dry	Dry	Dry	Dry
2246	Shale 4	01/10/05	< 1	18.9			< 0.004		
2246	Shale 4	02/11/05	3.75	7.3			< 0.004		
2246	Shale 4	03/09/05	23.6	10			< 0.004		
2246	Shale 4	04/27/05	27.2	6			< 0.005		
2246	Shale 4	05/10/05	32.1	4.2			< 0.005		
2246	Shale 4	06/09/05	37.7	2.1		< 0.005	< 0.005	< 0.005	< 0.002
2246	Shale 4	09/13/05	57	< 1		0.007	0.006	0.006	< 0.004
2246	Shale 4	12/05/05	41.2	< 15		0.005	< 0.005	0.017	0.013

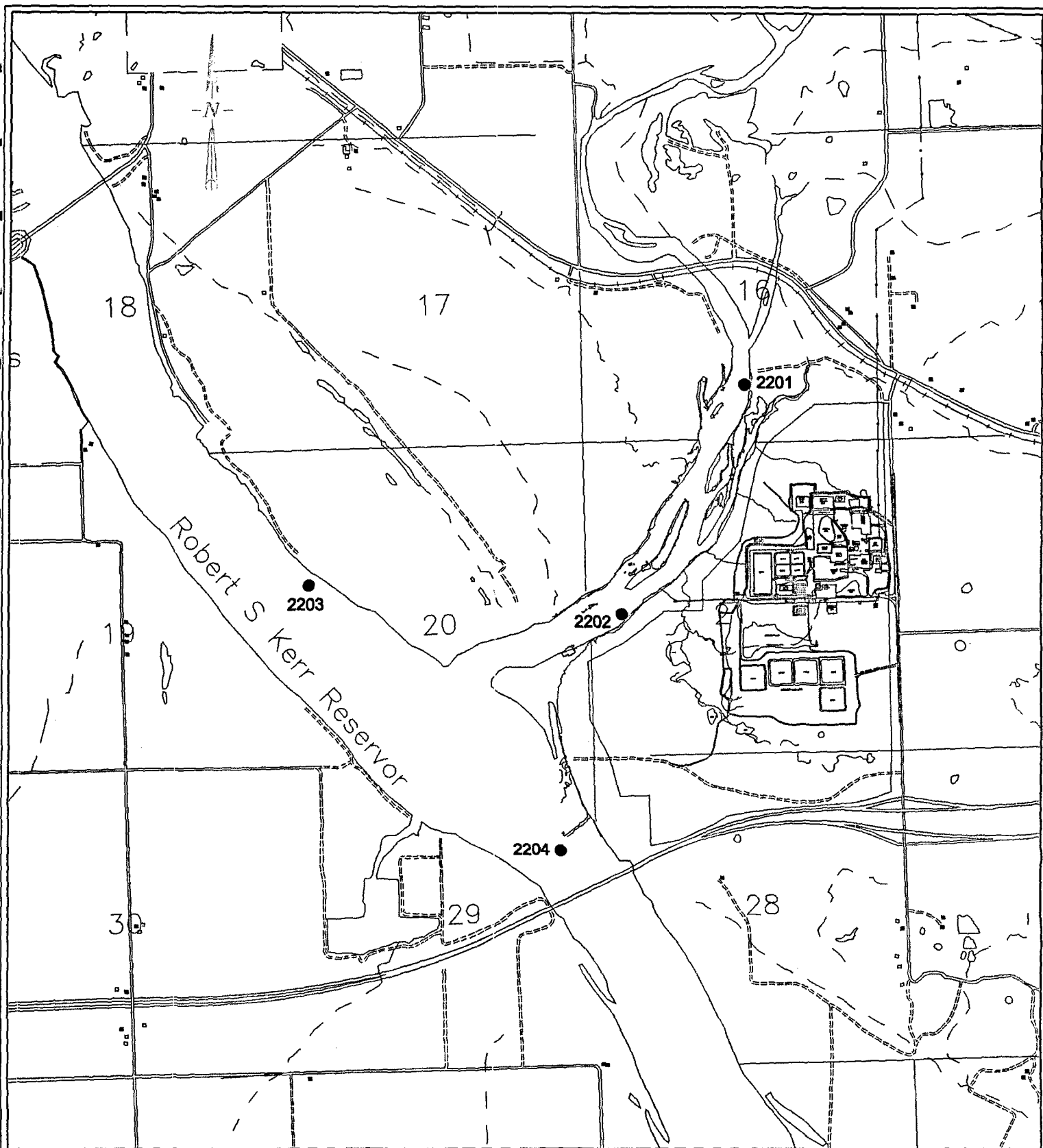
Table 6
Surface Water Monitoring Analyses

Location ID	Date Sampled	Uranium µg/l	Radium-226 pCi/l	Radium-228 pCi/l	Nitrate (N) mg/l	Arsenic mg/l
2201	06/29/05	< 1	0.150 ± 0.155			
2202	06/29/05	< 1	0.014 ± 0.073			
2203	06/29/05	< 1	0.199 ± 0.127			
2204	06/29/05	< 1	0.285 ± 0.161			

Figures



SEQUOYAH FUELS CORPORATION Annual Groundwater Report			
TITLE: Corrective Action, Seep, Drainage and Groundwater Monitor Well Locations			
PREPARED BY:	SCM	FILENAME:	MonitoringLocs.dwg
REVIEWED BY:	CLH	FIGURE NO. 1	
DATE:	27 Jan. 2006		



SEQUOYAH FUELS CORPORATION
Annual Groundwater Report

TITLE:

Surface Water Sample Locations

PREPARED BY:

SCM

FILENAME:

SurfaceWaterLocs.dwg

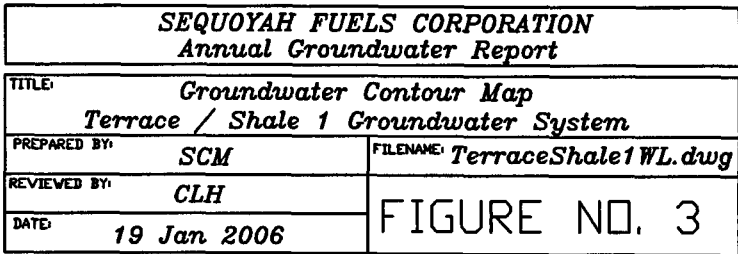
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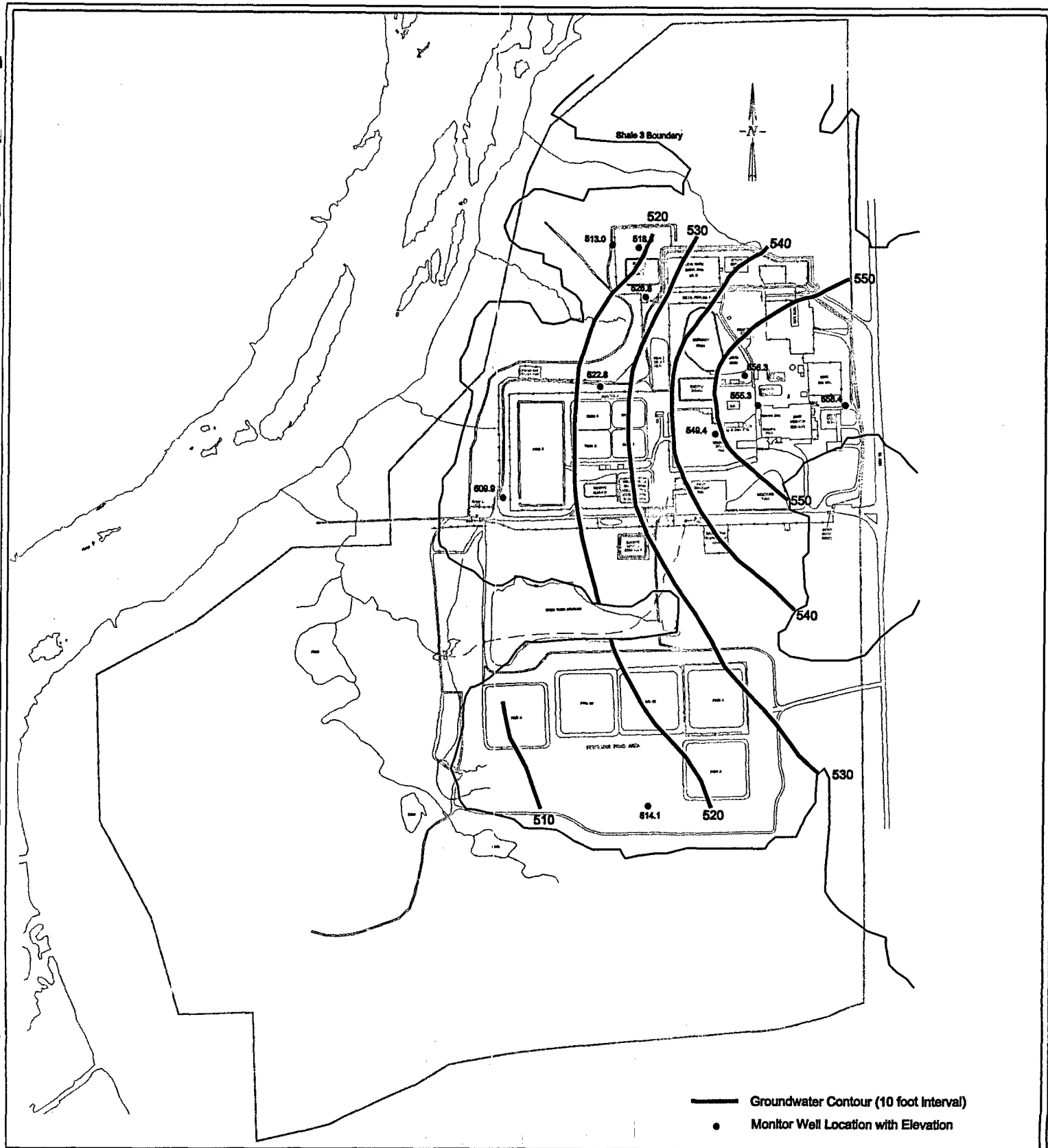
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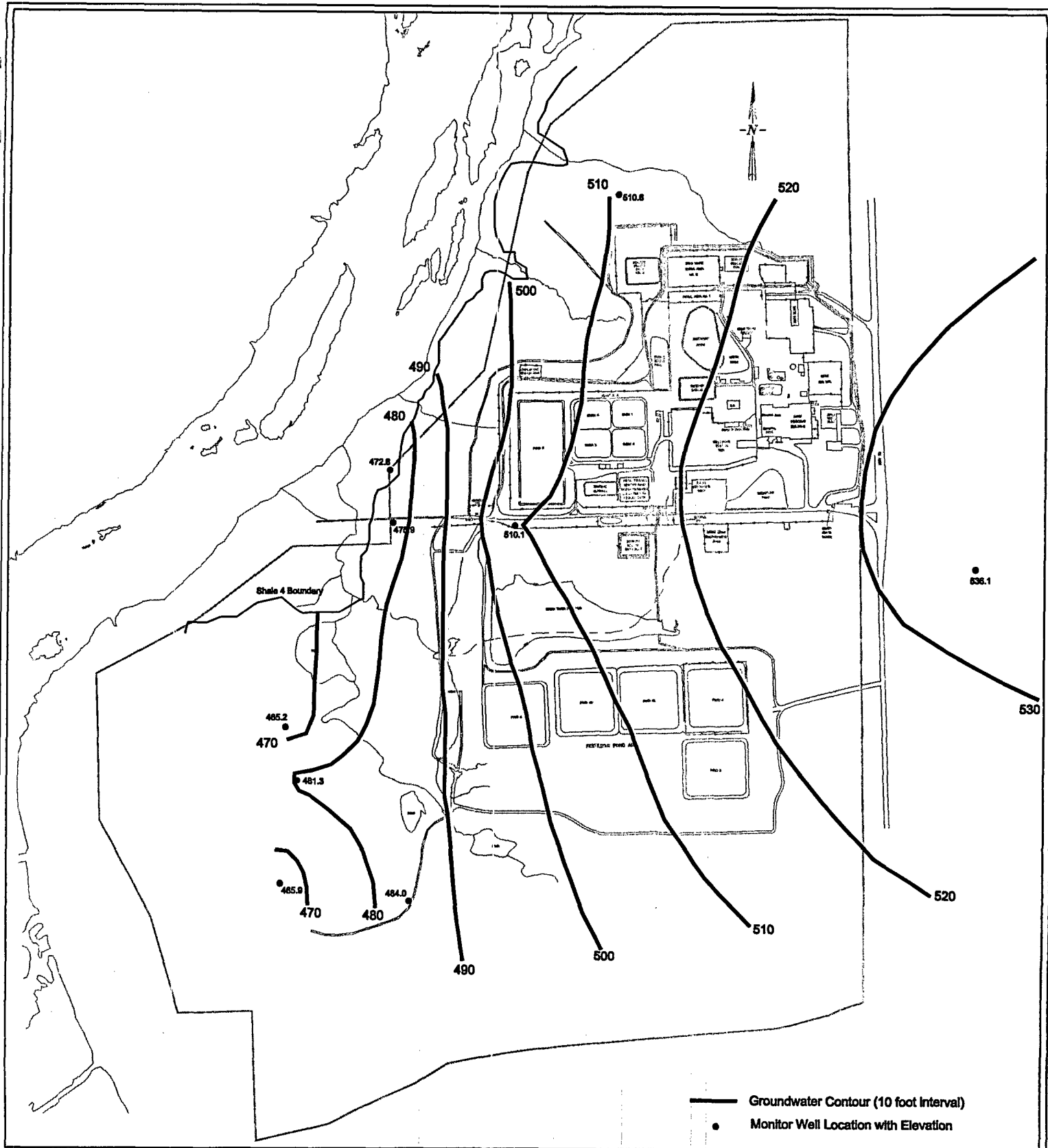
27 Jan 2006

FIGURE NO. 2

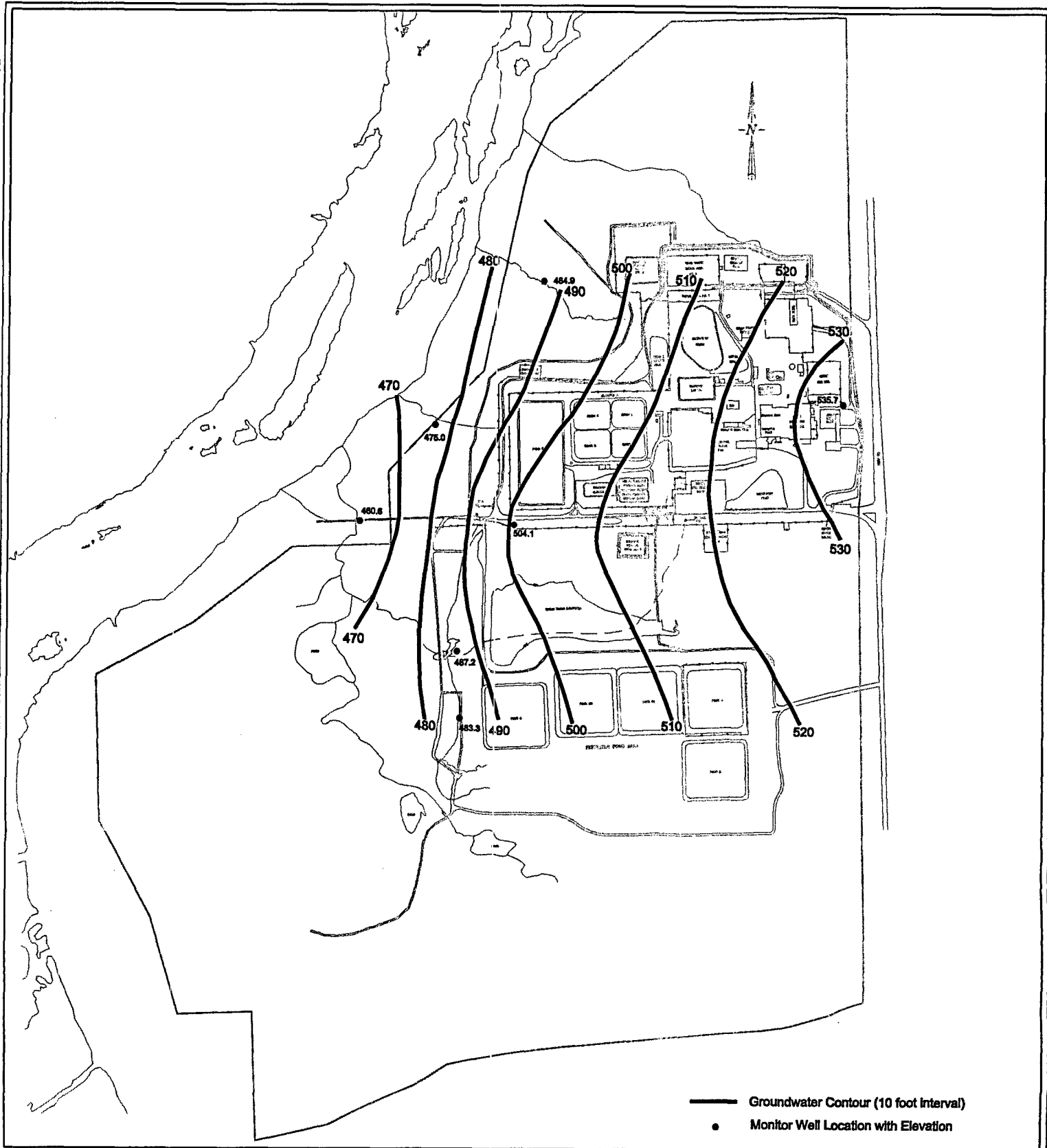




SEQUOYAH FUELS CORPORATION Annual Groundwater Report		
TITLE: Groundwater Contour Map Shale 3 Groundwater System		
PREPARED BY:	SCM	FILENAME: Shale3WL.dwg
REVIEWED BY:	CLH	FIGURE NO. 5
DATE:	19 Jan 2006	



SEQUOYAH FUELS CORPORATION Annual Groundwater Report		
TITLE: Groundwater Contour Map Shale 4 Groundwater System		
PREPARED BY:	SCM	FILENAME: Shale4WL.dwg
REVIEWED BY:	CLH	
DATE:	19 Jan 2006	FIGURE NO. 6



SEQUOYAH FUELS CORPORATION
Annual Groundwater Report

TITLE: Groundwater Contour Map Shale 5 Groundwater System	
PREPARED BY: SCM	FILENAME: Shale5WL.dwg
REVIEWED BY: CLH	FIGURE NO. 7
DATE: 19 Jan 2006	

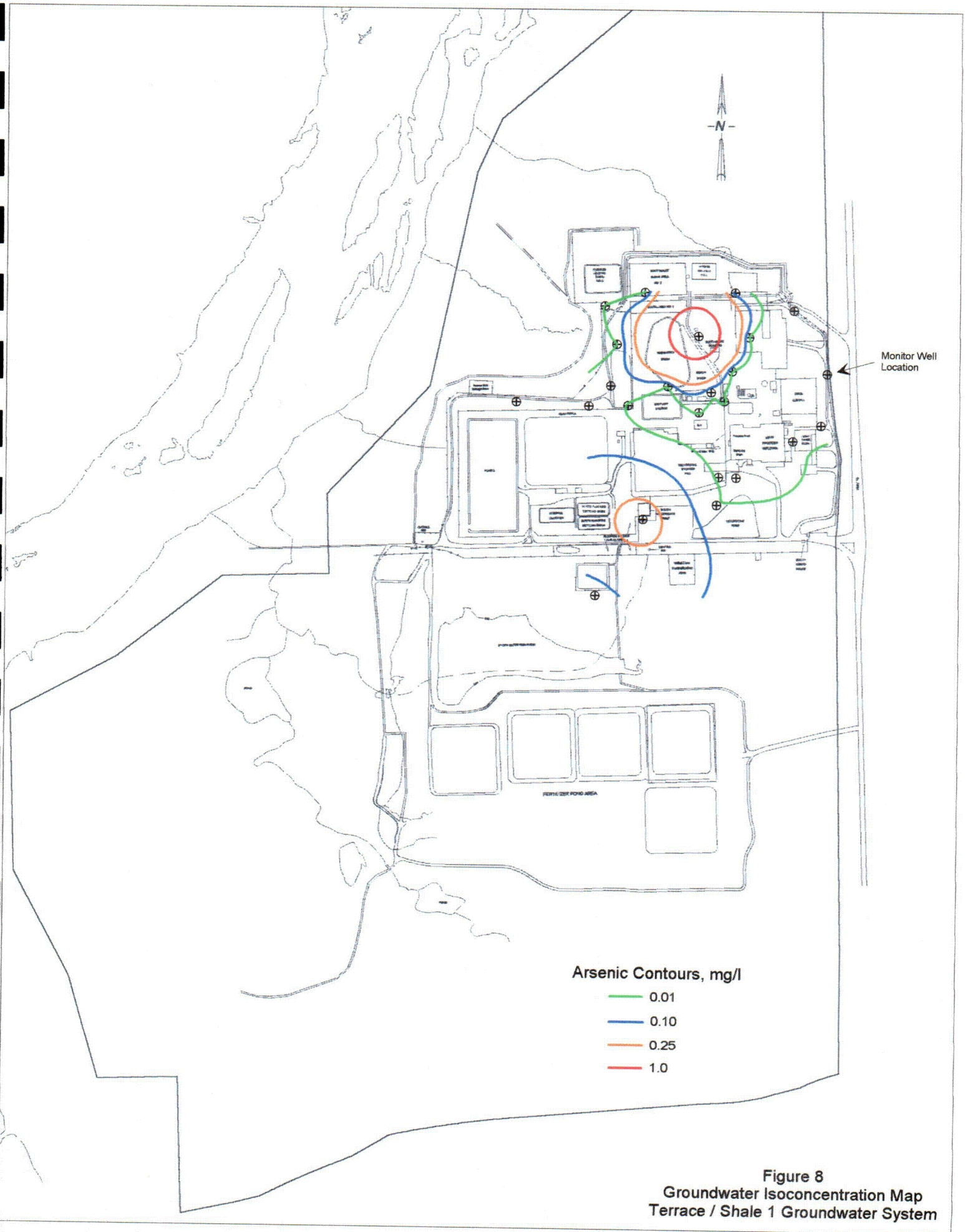


Figure 8
Groundwater Isoconcentration Map
Terrace / Shale 1 Groundwater System

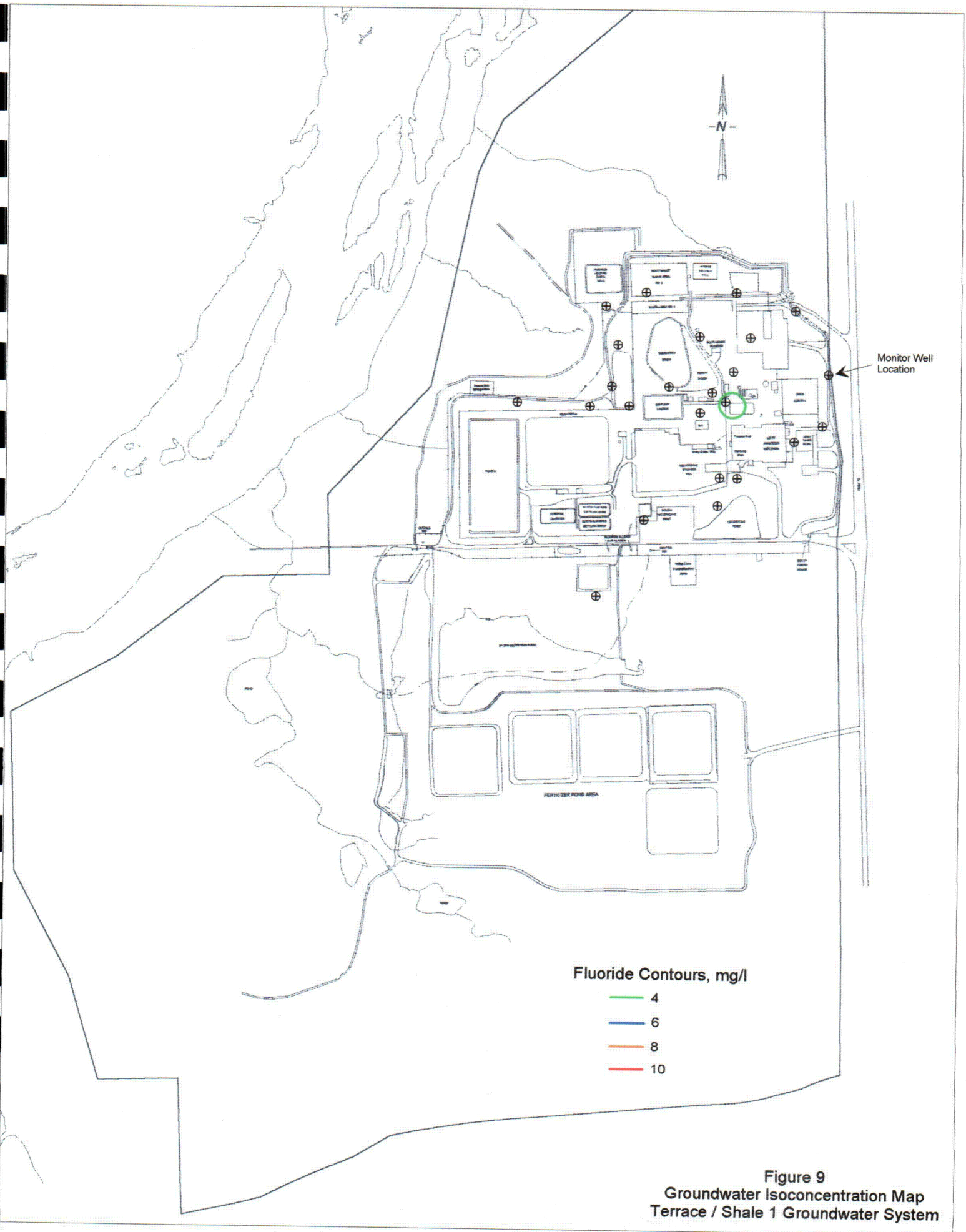


Figure 9
Groundwater Isoconcentration Map
Terrace / Shale 1 Groundwater System

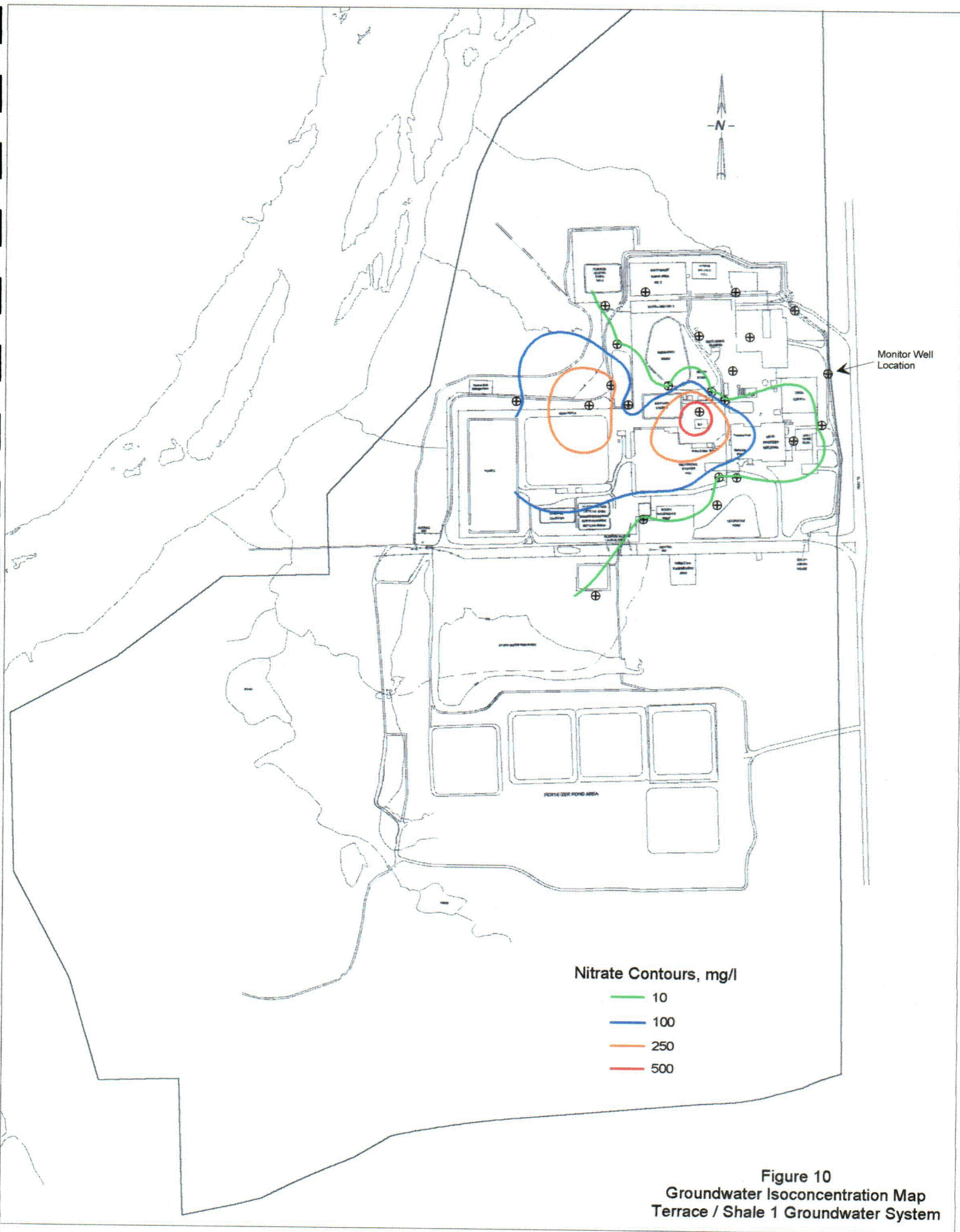


Figure 10
Groundwater Isoconcentration Map
Terrace / Shale 1 Groundwater System

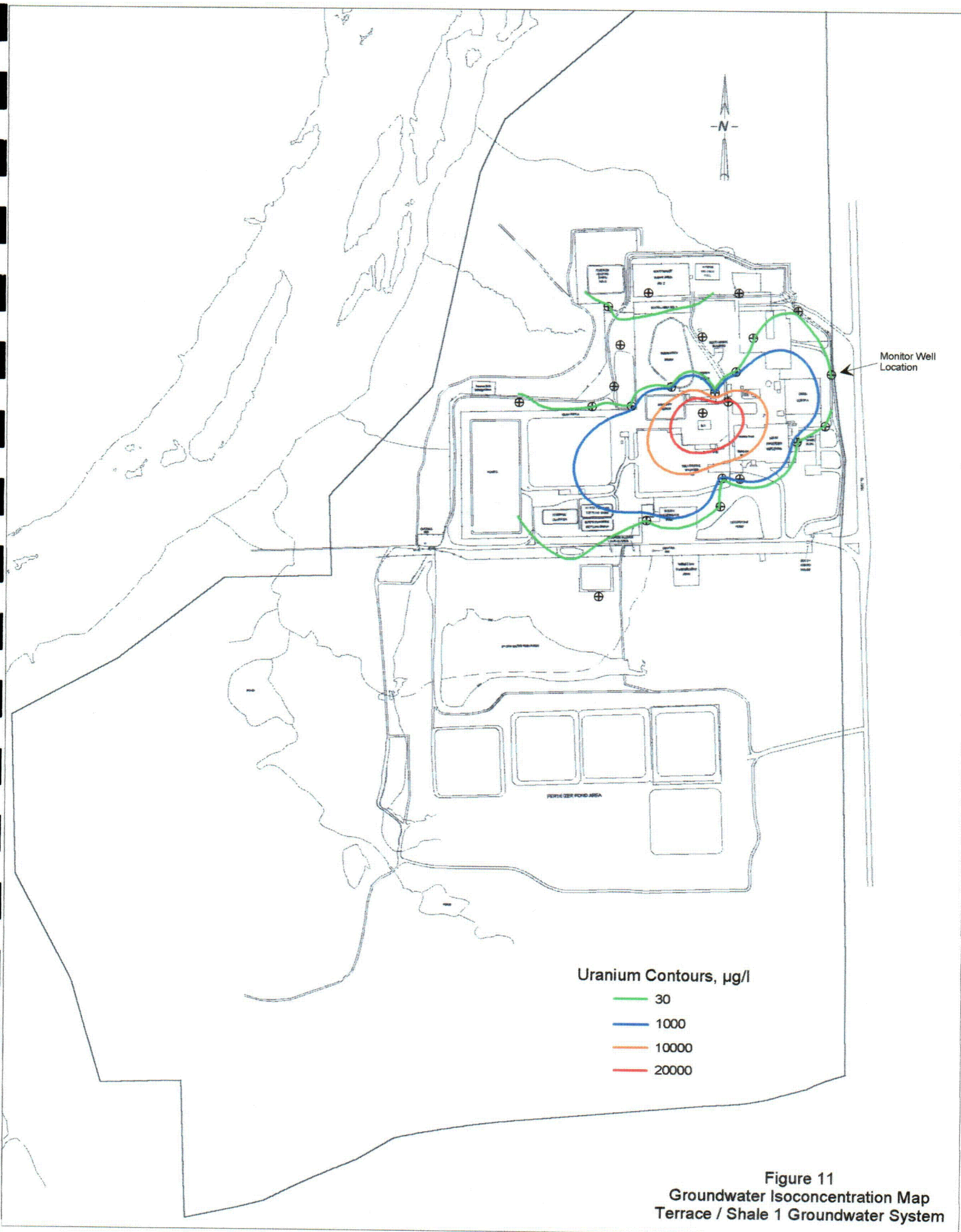


Figure 11
Groundwater Isoconcentration Map
Terrace / Shale 1 Groundwater System

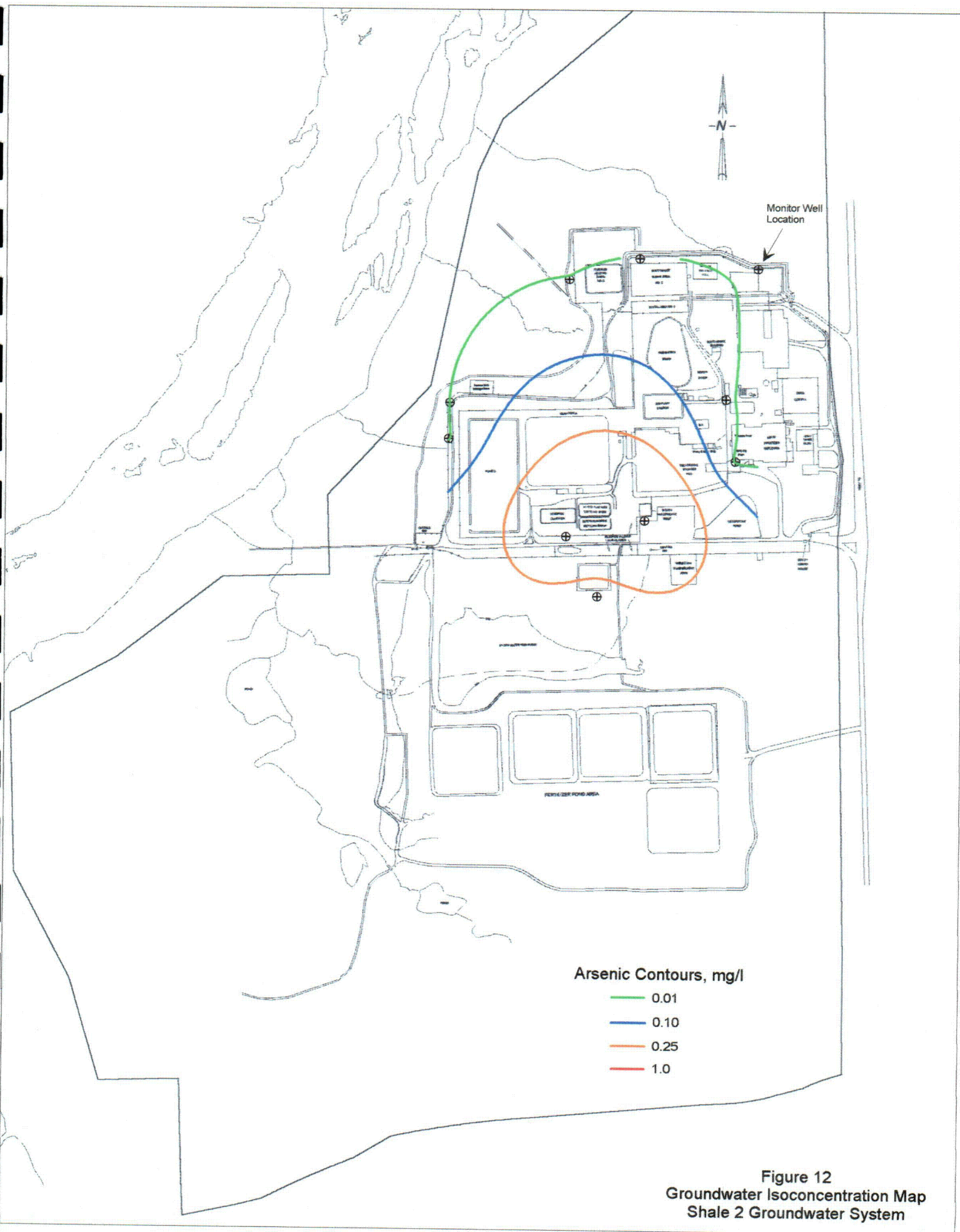


Figure 12
Groundwater Isoconcentration Map
Shale 2 Groundwater System

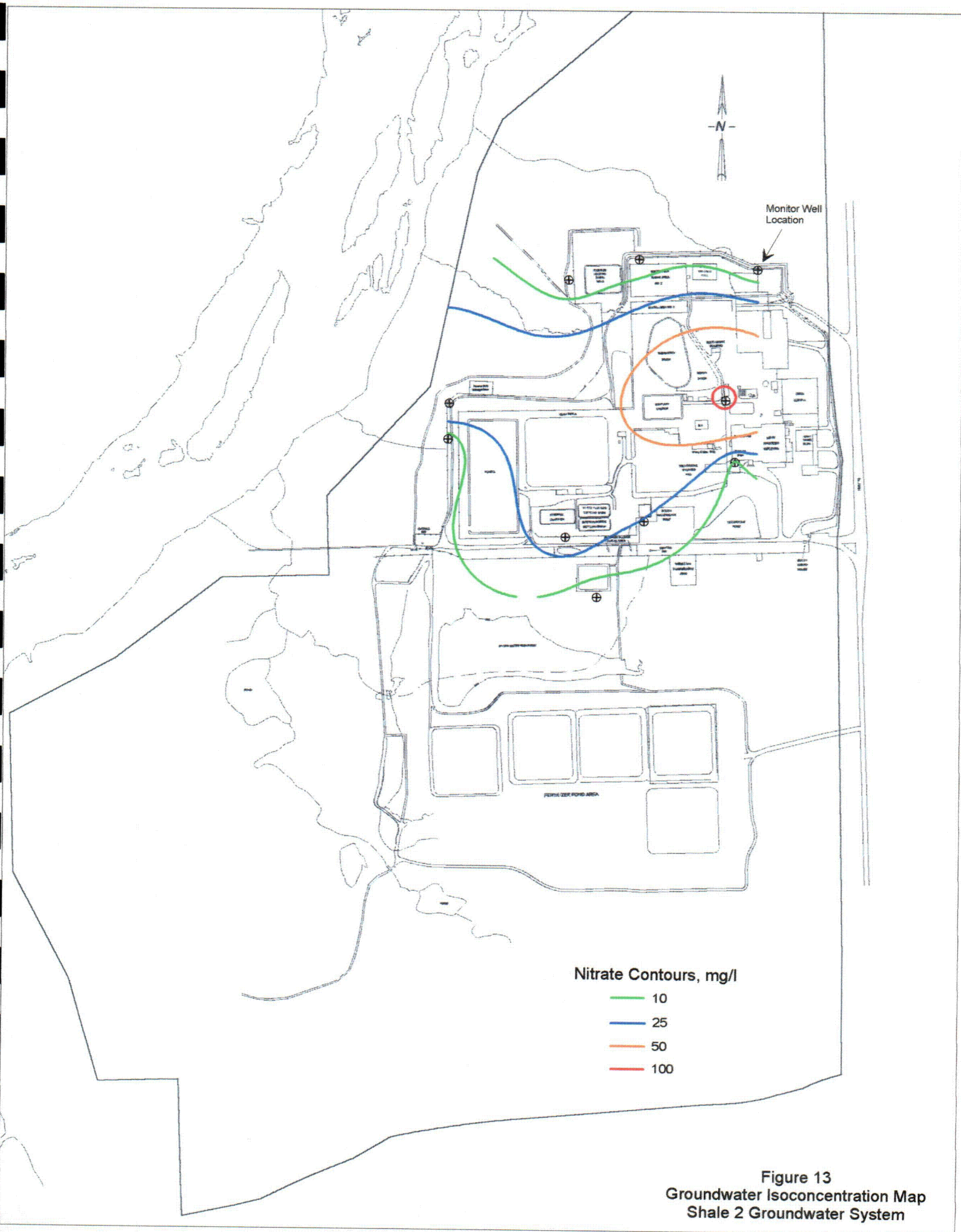


Figure 13
Groundwater Isoconcentration Map
Shale 2 Groundwater System

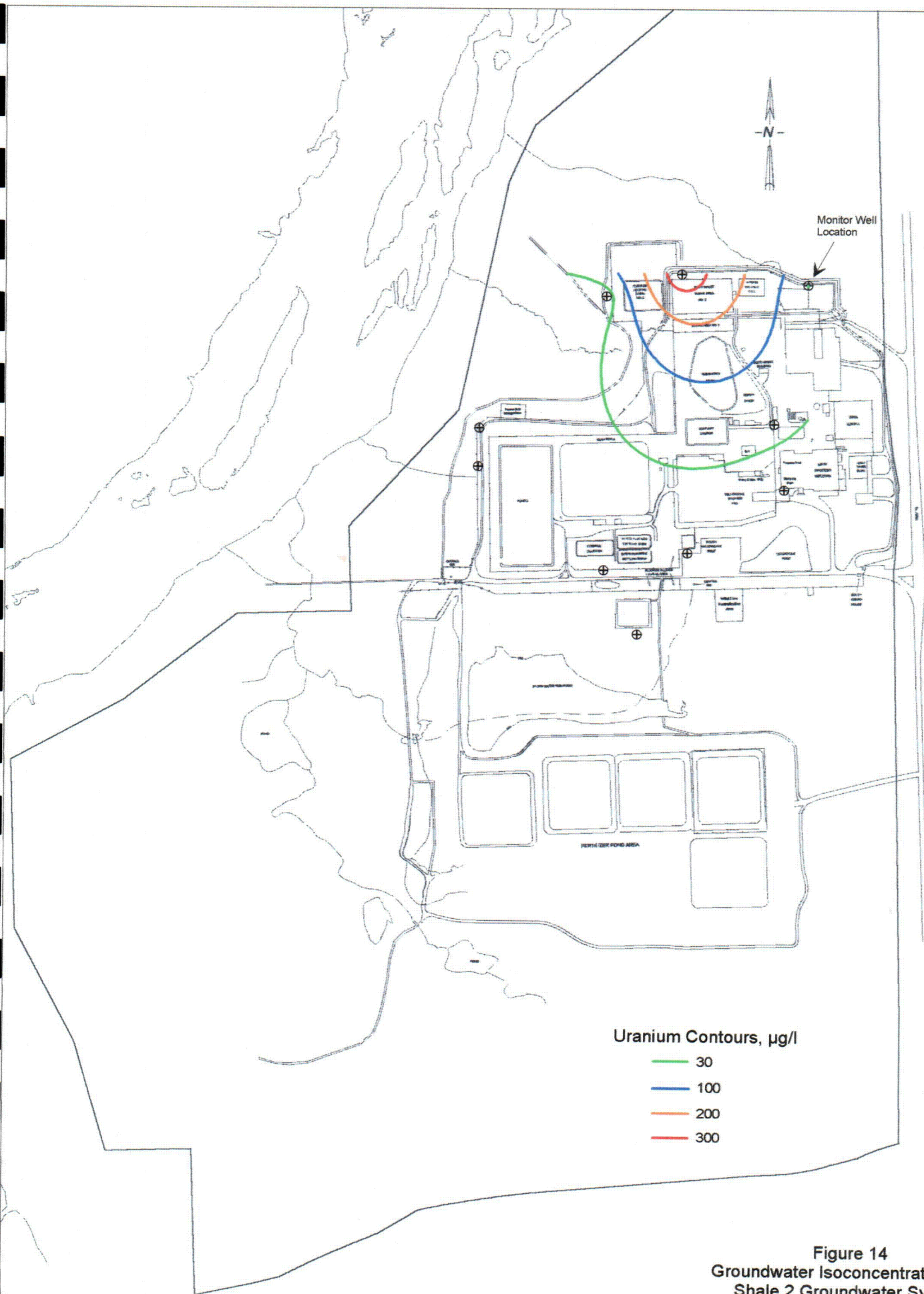


Figure 14
Groundwater Isoconcentration Map
Shale 2 Groundwater System

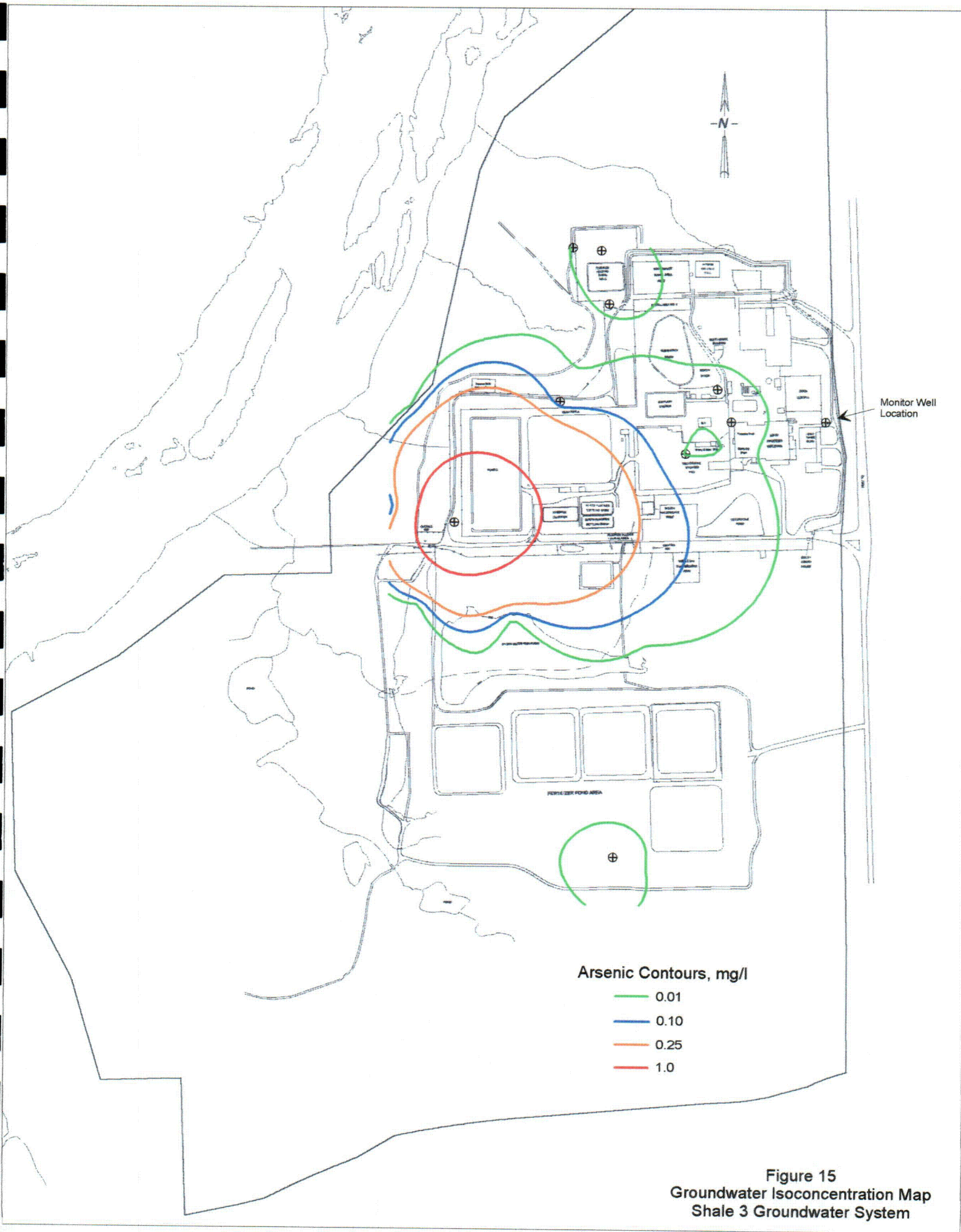


Figure 15
Groundwater Isoconcentration Map
Shale 3 Groundwater System

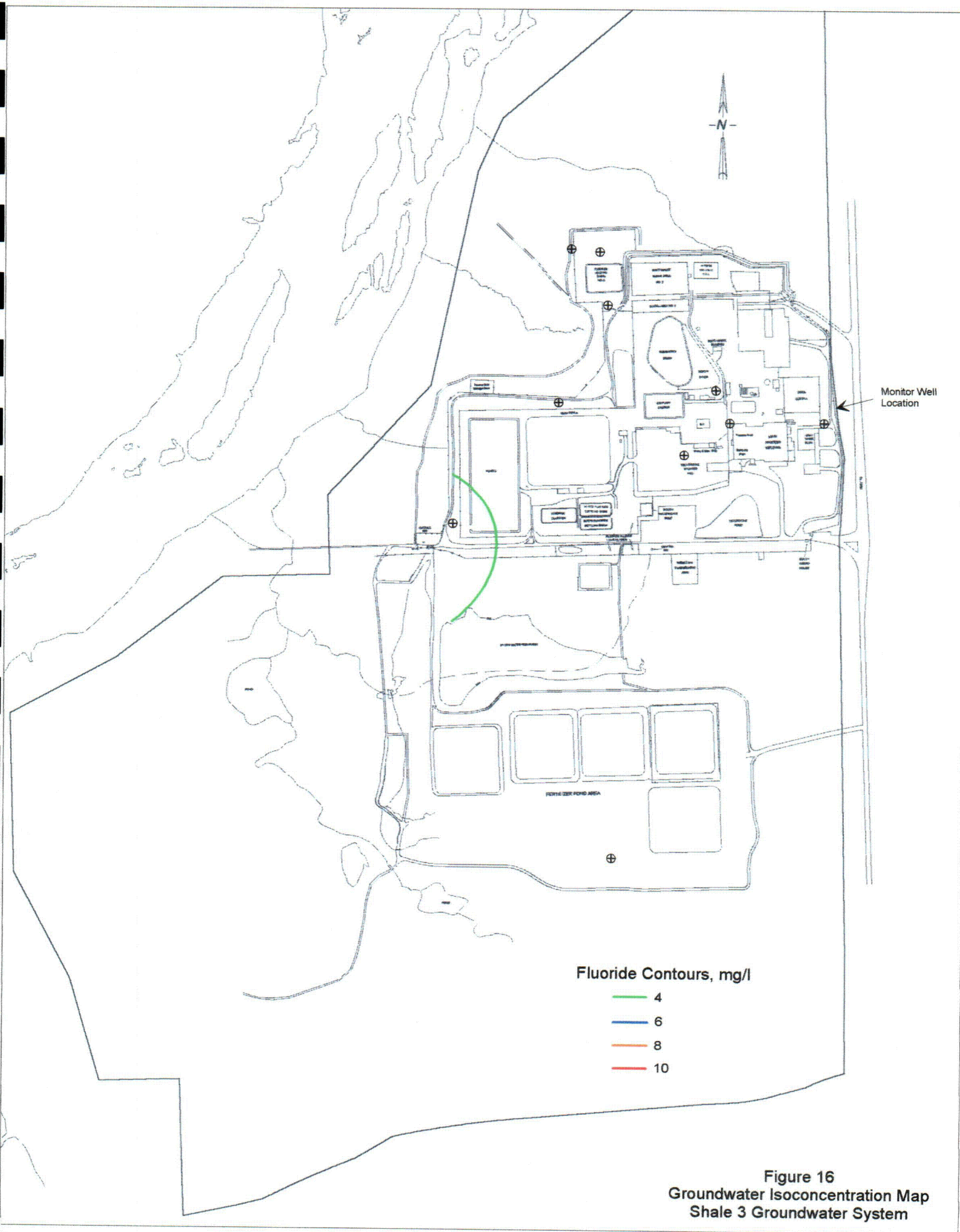
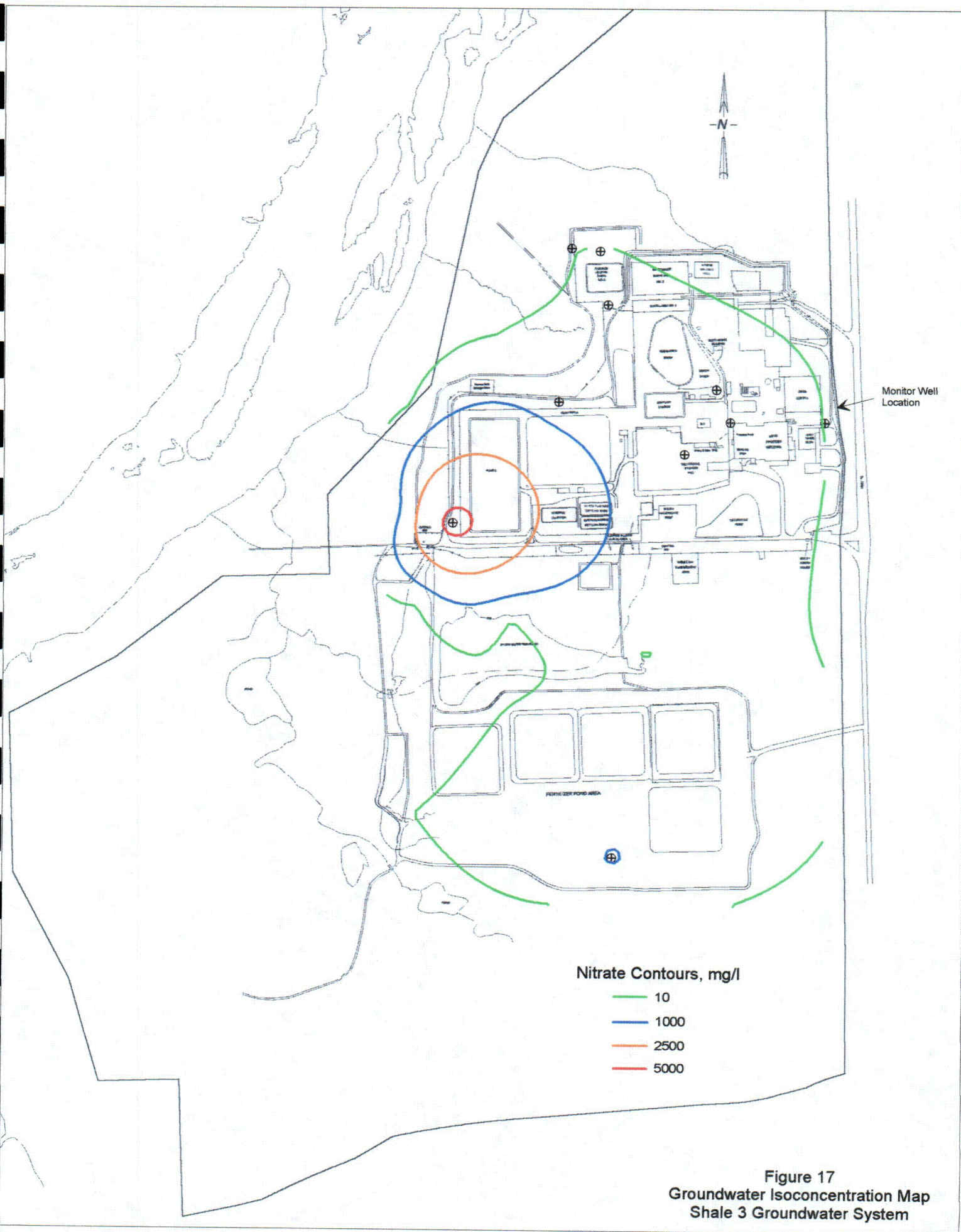


Figure 16
Groundwater Isoconcentration Map
Shale 3 Groundwater System



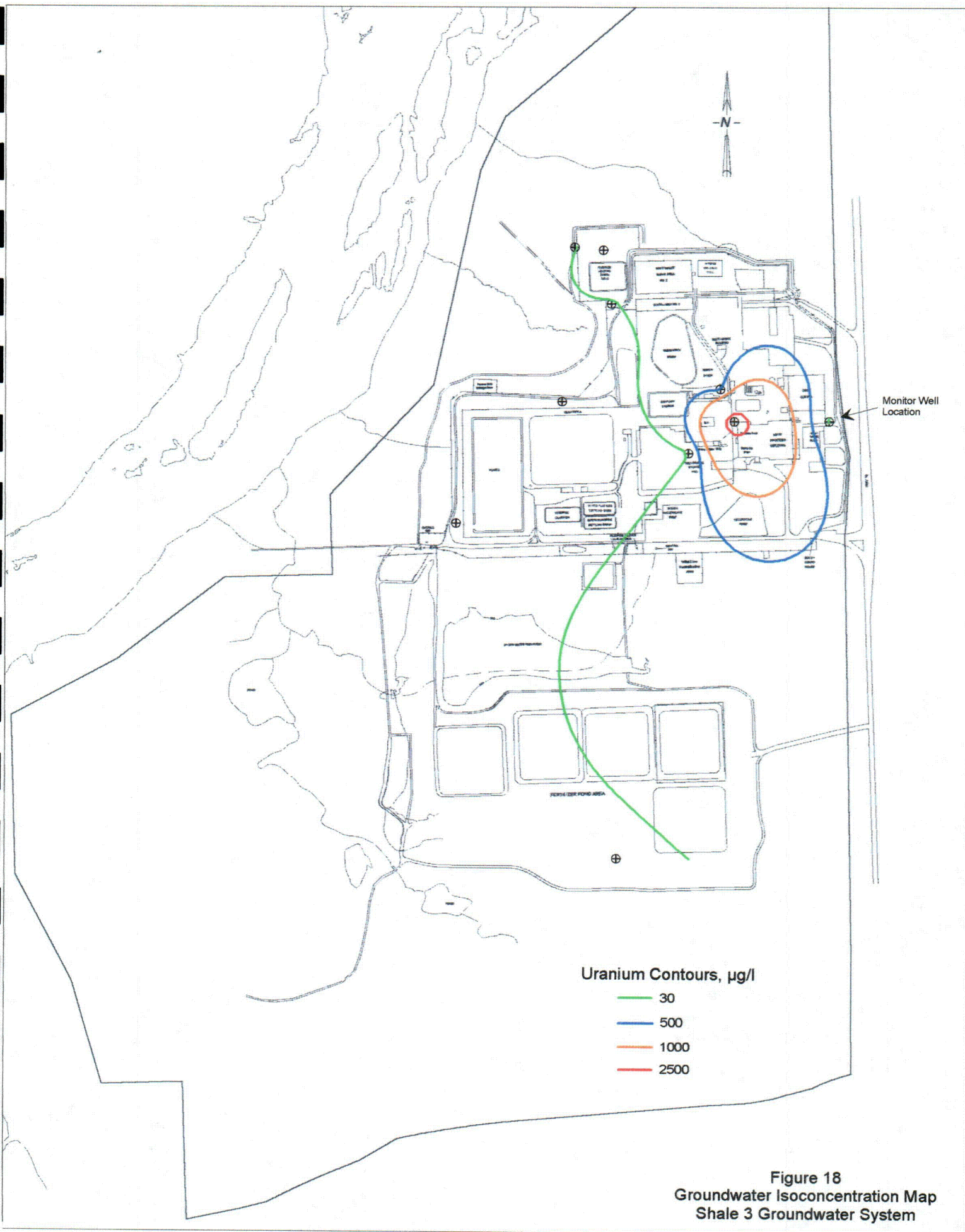




Figure 19
Groundwater Isoconcentration Map
Shale 4 Groundwater System

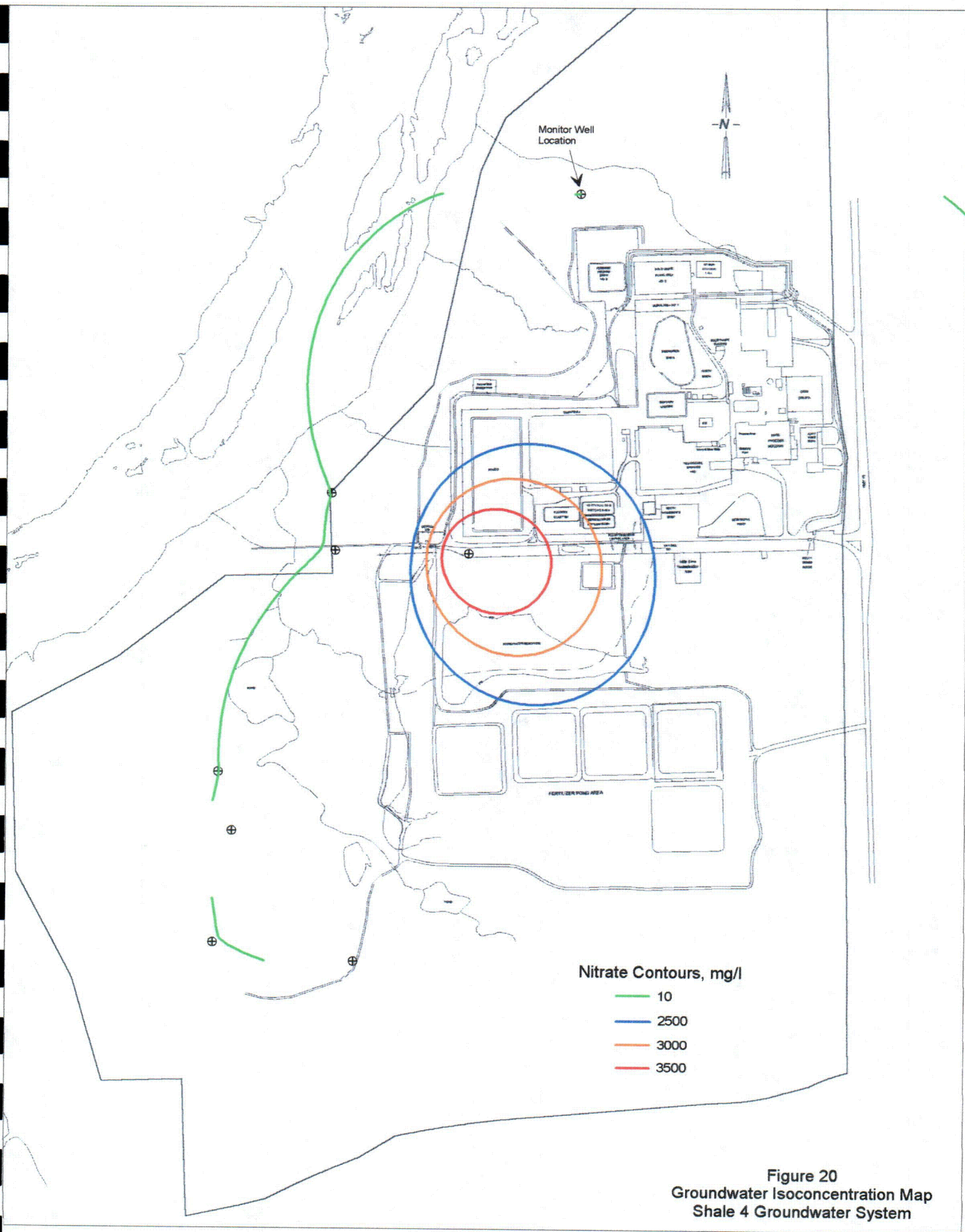


Figure 20
Groundwater Isoconcentration Map
Shale 4 Groundwater System