QUARTERLY RESOURCE CONSERVATION AND RECOVERY ACT GROUNDWATER MONITORING DATA FOR THE PERIOD JANUARY THROUGH MARCH 2002.

Sixteen RCRA sites were sampled during the reporting quarter, as listed in Table 1. Sampled sites include eight monitored under indicator evaluation programs, seven monitored under groundwater quality assessment programs, and one monitored under final-status corrective action.

Comparison to Concentration Limits

Contamination indicator parameter data (pH, specific conductance, total organic halides, and total organic carbon) from downgradient wells were compared to background values at sites monitored under interim-status, indicator evaluation requirements, as described in 40 CFR 265.93. Five of the sites had an exceedance during the quarter (see Table 1), but none of these are considered to indicate dangerous waste contamination from the RCRA units, as explained below. Alternative statistical comparisons were made for 216-B-3 Pond.

1301-N Liquid Waste Disposal Facility: Quadruplicate measurements of pH in downgradient well 199-N-3 averaged 7.25 in March, which is below the lower limit of the critical range for pH (7.34 to 8.44). DOE informed Ecology of the exceedance (Reference 1) and transmitted an assessment report (Reference 2). The report concludes that the relatively low pH is part of the overall distribution of pH in 100 N Area, and does not indicate contamination from the 1301-N facility.

1324-N/NA Facilities. Specific conductance at downgradient wells continued to exceed the critical mean. Groundwater quality assessment monitoring in 1992 indicated that the high conductivity is caused by the nonhazardous constituents sulfate and sodium. Because an assessment has already been completed and the high conductivity is caused by nonhazardous constituents, verification sampling and additional assessment monitoring will not be conducted. Well 199-N-59 contained too little water to be sampled in March. This well was installed when the site was active and the water table was higher than it is now. Ecology is aware that it can only be sampled when river stage is high for an extended period.

1325-N Liquid Waste Disposal Facility. Specific conductance in downgradient well 199-N-41 continued to exceed the critical mean value in March. DOE previously notified Ecology of a September 1999 exceedance in wells 199-N-41 and 199-N-81, and transmitted the results of the groundwater quality assessment in July 2000. The high specific conductance is believed to originate at an upgradient source, and passed the upgradient well several years ago, so the site will remain in a detection monitoring program.

Table 1. Status of RCRA Sites, January-March 2002.

Site	Routine sampling Jan-Mar 2002	Statistical exceedance
Indicator Evaluation Sites [40 CFR 265.93(b)] (sampled semiannually)		
1301-N Facility	Yes	Yes[a]
1325-N Facility	Yes	Yes[a]
1324-N/NA Site	Yes	Yes[a]
B-Pond	Yes	see text
A-29 Ditch	No[a]	Not applicable
B-63 Trench	No	Not applicable
S-10 Pond and Ditch	No	Not applicable
LERF	No	Not applicable
LLBG WMA 1	No	Not applicable
LLBG WMA 2	No	Not applicable
LLBG WMA 3	Yes	No
LLBG WMA 4	Yes	Yes[a]
SST WMA A-AX	No	Not applicable
SST WMA C	Yes	No
NRDWL	Yes	Yes[a]
Groundwater Quality Assessment Sites [40 CFR 265.93(d)] (sampled quarterly)		
Seven sites[b]	Yes	Not required
Final Status Sites (WAC 173-303-645)		
300 Area Process Trenches	Yes	Yes[c]
183-H Basins	No	Not applicable

LERF = Liquid Effluent Retention Facility
LLBG = Low-Level Burial Grounds
NRDWL = Nonradioactive Dangerous Waste Landfill
SST = Single-Shell Tanks
WMA = Waste Management Area

[a] No indication of dangerous waste contamination from facility; see text for explanation.
[b] U-12 Crib, PUREX Cribs, SST WMAs B-BX-BY, S-SX, T, TX-TY, and U.
[c] Site has entered corrective action because of previous exceedances.

Low-Level Waste Management Area 4: The site network now consists of 3 upgradient wells and 2 downgradient wells. Concentrations of total organic halides have shown a downward trend since July 1999, but the average concentration (346.5 μg/L in January 2002) continued to exceed the critical mean value of 168.9 ug/L in downgradient well 299-W15-16. This well used to be an upgradient well and as reported earlier, the exceedance is believed to originate from an

upgradient source. DOE reported an earlier exceedance in this well to Ecology and EPA, and detection monitoring will continue.

Nonradioactive Dangerous Waste Landfill: Specific conductance in three downgradient wells (699-24-34A, 699-25-34D, and 699-26-33) continued to exceed the critical mean value during the quarter[1]. DOE notified Ecology of a previous exceedance in June 2001. The increased specific conductance is caused by increases in concentrations of nonhazardous constituents (bicarbonate, sulfate, calcium, and magnesium), likely from the adjacent Solid Waste Landfill. Therefore, detection monitoring will continue

216-B-3 Pond: The proposal that was submitted to Ecology and agreed upon in November 2001 was implemented during this quarter. Major elements of the approved proposal involve changes in the well network, constituents list, and statistical evaluation method (the combined Shewhart-CUSUM control chart). Statistical comparisons were performed for the three site specific parameters that are subject to statistical evaluation (gross alpha, gross beta, and specific conductance). Because control limits have not yet been finalized, the groundwater project evaluated the data using various control limits that range from mean concentration plus 2 standard deviation to mean concentration plus 4.5 standard deviation (see Tables 2 through 4). All measured values were below the lowest control limits (i.e., mean plus 2 standard deviation) except for a gross beta measurement from well 699-43-45. The observed value (8.61 pCi/L on January 22, 2002) was above the lowest control limit (8.1 pCi/L) but was well below other limits that allow higher shifts above the mean concentration (see Figure 1). Baseline period and control limits have not been established for well 699-43-44 due to insufficient data (i.e., less than the minimum required 8 data points).

Table 2 Specific Conductance Baseline Periods, Summary Statistics, and Various Control Limits for the B Pond System Wells

	699-42-42B (µS/cm)	699-43-45 (µS/cm)	699-44-39B (µS/cm)
Baseline Period	7/27/97 – /12/01	11/10/99 – 6/13/01	1/9/98 – 6/12/01
Number of Samples	8	8	8
Mean ($\bar{x}$)	255.50	226.03	262.22
Standard Deviation (s)	11.23	6.23	22.55
CV[a] (%)	4.4	2.8	8.6
Fitted Distribution[b]	Normal	Normal	Normal
Control Limit ($\bar{x}$ + 2s)	278	238	307
Control Limit ($\bar{x}$ + 3s)	289	245	330
Control Limit ($\bar{x}$ + 3.5s)	295	248	341
Control Limit ($\bar{x}$ + 4s)	300	251	352
Control Limit ($\bar{x}$ + 4.5s)	306	254	364

[a]Coefficient of variation = ($s/\bar{x}$) * 100
[b]Based on goodness-of-fit test results

[1] Wells 699-24-34A and 699-25-34D were sampled in February 2002. Sampling of well 699-26-33 was delayed until April to repair the sampling pump.

Table 3 Gross Alpha Baseline Periods, Summary Statistics, and Various Control Limits for the B Pond System Wells

	699-42-42B (pCi/L)	699-43-45 (pCi/L)	699-44-39B (pCi/L)
Baseline Period	7/22/97 –6/12/01	1/13/97 – 1/18/01	4/10/97 – 6/12/01
Number of Samples	8	8	8
Mean ($\bar{x}$)	1.76	1.03	1.65
Standard Deviation (s)	0.64	0.52	0.52
CV[a] (%)	36.5	50.6	31.3
Fitted Distribution[b]	Normal	Normal	Normal
Control Limit ($\bar{x}$ + 2s)	3.04	2.07	2.68
Control Limit ($\bar{x}$ + 3s)	3.68	2.59	3.20
Control Limit ($\bar{x}$ + 3.5s)	4.00	2.85	3.46
Control Limit ($\bar{x}$ + 4s)	4.32	3.11	3.72
Control Limit ($\bar{x}$ + 4.5s)	4.65	3.37	3.97

[a]Coefficient of variation = (s/$\bar{x}$) * 100
[b]Based on goodness-of-fit test results.

Table 4. Gross Beta Baseline Periods, Summary Statistics, and Various Control Limits for the B Pond System Wells

	699-42-42B (pCi/L)	699-43-45 (pCi/L)	699-44-39B (pCi/L)
Baseline Period	7/22/97 – 6/12/01	1/13/97 – 1/18/01	4/10/97 – 6/12/01
Number of Samples	8	8	8
Mean ($\bar{x}$)	6.51	5.91	5.88
Standard Deviation (s)	1.23	1.09	2.35
CV[a] (%)	18.9	18.4	40.0
Fitted Distribution[b]	Log-Normal	Normal	Normal
Control Limit ($\bar{x}$ + 2s)	9.0	8.1	10.6
Control Limit ($\bar{x}$ + 3s)	10.7	9.2	12.9
Control Limit ($\bar{x}$ + 3.5s)	11.6	9.7	14.1
Control Limit ($\bar{x}$ + 4s)	12.6	10.3	15.3
Control Limit ($\bar{x}$ + 4.5s)	13.7	10.8	16.4

[a]Coefficient of variation = (s/$\bar{x}$) * 100
[b]Based on goodness-of-fit test results .

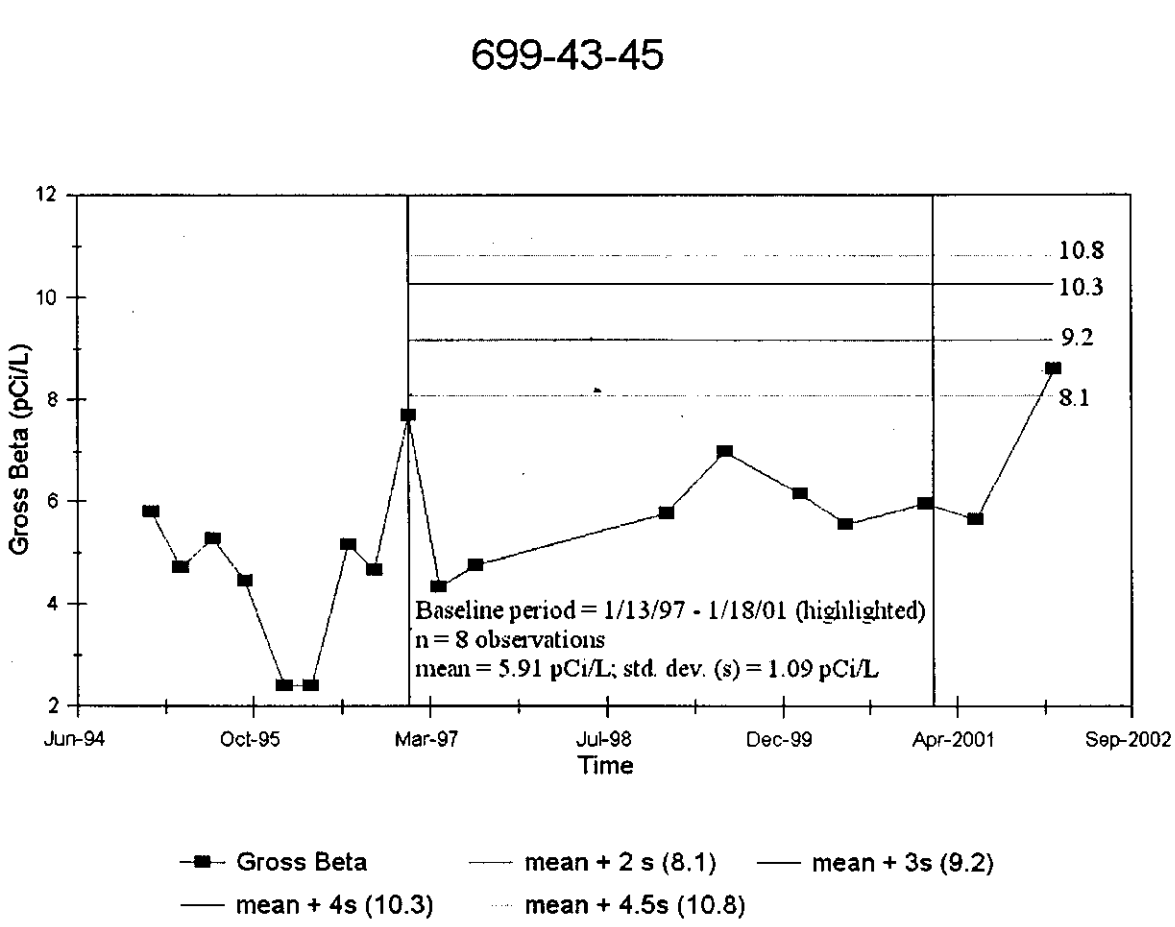


Figure 1. Various Gross Beta Control Limits Calculated for Well 699-43-45

Additional Information on Detection Sites

Single-Shell Tanks Waste Management Area C: Although no indicator parameters exceeded critical mean values during January-March 2002, specific conductance continued to rise across the site due to increasing non-dangerous waste constituents sulfate, calcium, nitrate, chloride and to a lesser extent, sodium. The highest values were in cross-gradient well 299-E27-14 (581 μS/cm) and upgradient well 299-E27-7 (502 μS/cm). Specific conductance began rising in both wells in the mid 1990s. The critical mean of 1212.4 μS/cm was calculated when well 299-E27-14 was defined as an upgradient well. With the recognition of a southwest groundwater flow direction for this site, described in a recent interim change notice for WMA C, this well is defined as a cross gradient well. Well 299-E27-7 is the only upgradient well, and currently specific conductance is rising sharply at this well. A critical mean for specific conductance cannot be calculated using data from this well because four quarters of stable data are needed for a critical mean calculation. Consequently, no upgradient/downgradient comparisons will be made until specific conductance stabilizes in well 299-E27-7 or a new upgradient well is installed.

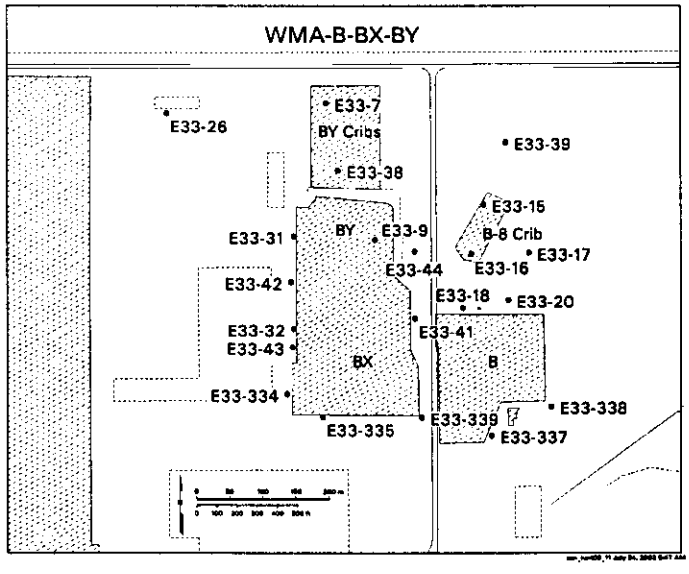
The following discussion on non-RCRA constituents is provided because it allows further insight

regarding the source and migration of dangerous waste constituents in groundwater. Technetium-99 concentrations are increasing in most wells at Waste Management Area C. The highest technetium-99 value was in well 299-E27-7 with a maximum value of 2,760 pCi/L in January 2002. The concentration in this well dropped to 1,700 pCi/L in March 2002. The technetium-99 began rising in 1998. Low levels of cyanide have also been found in the well over the past several years with a maximum of 17.1 μg/L in June 2000. Technetium-99 in well 299-E27-14, however, shows a general rise with only a slight decline from December 2001 (1,740 pCi/L) to March 2002 (1,720 pCi/L). Technetium-99 concentrations began increasing in this well around 1995 to 1996. In downgradient well 299-E33-13, the technetium-99 concentration began rising sharply in late 1999 to early 2000 and was 492 pCi/L in March 2002.

The technetium-99 increases in well 299-E27-14 may represent a contaminant plume moving into the area from the upgradient 216-B-3-1 Ditch in recent years (1995 to the present). This ditch was decommissioned in 1964 after an accidental release of mixed fission products from the PUREX Plant was discharged directly to the ditch. It should be noted, however, that the technetium-99 level in well 299-E27-7 has risen sharply since 1998, indicating a short travel time and thus a short travel distance in the groundwater from the point of entry into the groundwater to the well. This fact, along with the presence of cyanide in the groundwater, suggests the source may be remobilization of waste related to WMA C.

Status of Assessment Programs

Single-Shell Tanks Waste Management Area B-BX-BY: There was no apparent change in the direction or rate of groundwater flow this quarter. Flow is to the southwest in the north half of the waste management area and is very slow. Groundwater flows toward the south-southeast to southeast in the southern waste management area, where the flow rate is faster.



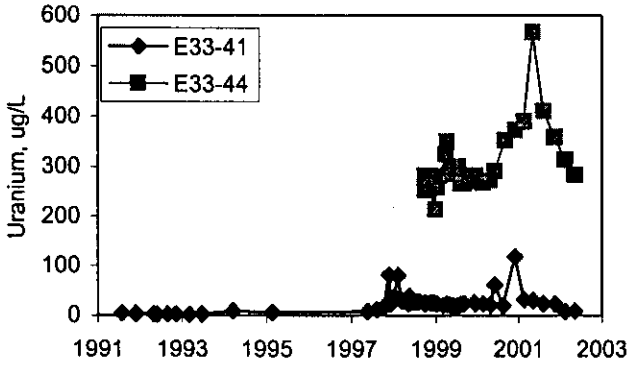
Nitrate concentrations are still elevated across most of the waste management area, with the highest values in the north and under the B-8 Crib, to the lowest in the southeast corner of the 241 B Tank Farm. It appears the source of this nitrate contamination in the north is the original BY Cribs plume migrating into the area from the north. This plume, characterized in the early 1990s north of the BY Cribs, contains high levels of the dangerous waste constituent cyanide, as well as nitrate. High levels of cyanide are also found with the elevated nitrate in the northern part of the waste management area and to

the north under the BY cribs indicating a BY crib source. Although contaminant levels for these constituents have generally decreased in the area from the BY Cribs to the central part of WMA B-BX-BY, nitrate concentrations appear to be stabilizing in some wells. For example, nitrate concentrations have remained between 385 to 393 mg/L for the last 9 months in well 299-E33-38 under the BY Cribs.

Recently, nitrate has been rising sharply in the southwest corner of the site in wells 299-E33-43, 299-E33-21, 299-E33-334, and 299-E33-335, but values are still below 30 mg/L. These recent nitrate trends track with the increases in concentrations of the non-RCRA contaminant tritium. The tritium plume is centered on well 299-E33-334, reported at 17,800 pCi/L in February 2002. A comparison with tritium data from well 299-E33-43 from 1990 to 2002 illustrates the sharp rise in contamination, indicating the tritium and associated chemistry is entering the groundwater very close to these wells. Thus, the tritium is probably migrating into the groundwater from a zone of perched water, which was observed in borehole 299-E33-45 at 5 to 6 meters above the water table. Tritium concentrations are around 75,000 pCi/L in the perched water. The source of this tritium may be associated with remobilized waste from past leaks from waste transfer lines and diversion boxes in the southern part of the 241-BX connecting the 242 B-evaporator to the BY Cribs and the B-57 Crib.

Nitrite is still detected in well 299-E33-44 in the central part of the waste management area (690 μg/L, February 2002). Nitrite is not usually found in the groundwater, probably because it is oxidizes to nitrate before it can be detected. The presence of nitrite might suggest a recent release from the waste management area.

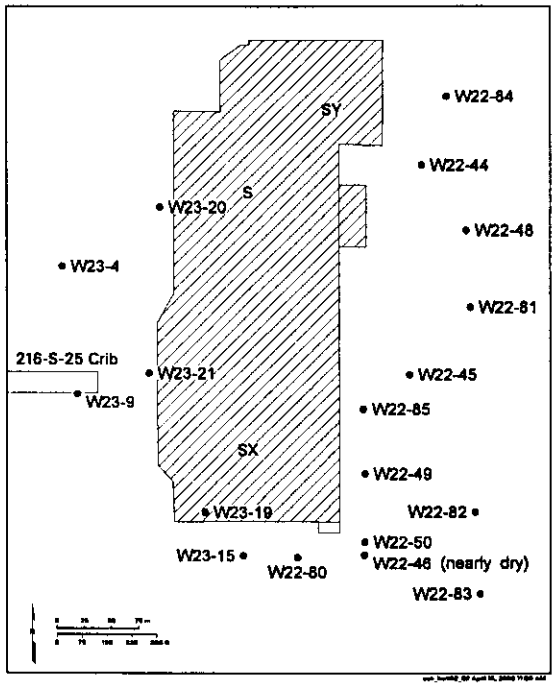
Technetium-99 and cobalt-60 are two non-RCRA contaminants associated with BY Cribs that have exhibited high levels in some wells in the north part of WMA B-BX-BY. Tracking these non-RCRA contaminants helps to discriminate between crib and tank-associated sources and in estimating local plume boundaries. However, the BY Cribs are part of the 200-BP-5 Groundwater Operable Unit and are monitored under separate CERCLA requirements. In general the technetium-99 values have been following the decreasing trends seen in the nitrate concentrations across WMA B-BX-BY.



Uranium levels rose sharply in the central part of the waste management area (wells 299-E33-9, 299-E33-44) in 2000 and declined in 2001. During the reporting quarter, the concentrations were 391 μg/L in well 299-E33-9 and 314 μg/L in 299-E33-44. These decreases in uranium are similar to decreasing trends seen in nitrate and technetium-99 in these wells. Upgradient, under the BY Cribs, uranium was found at 217 μg/L while downgradient, in wells 299-E33-41 and 299-E33-18, values ranged from 8.6 μg/L to 96.5 μg/L. To the west and southwest of the BY Tank Farm, uranium decreased slightly in well 299-E33-31 to 65 μg/L and

to 20.8 μg/L in well 299-E33-42. Because uranium levels upgradient and downgradient of the BY Tank Farm are either significantly lower or at background levels, the source of the uranium is probably associated with the waste management area. The uranium trend seen in well 299-E33-44 also indicates the uranium source is close to the BY Tank Farm. The shape of the trend plot for well 299-E33-44 indicates that a relatively steady source was operative in the groundwater at this site until concentrations rose sharply after April 2000. The abrupt breakthrough curve indicates that the uranium had not traveled far in the groundwater before impacting the well, implying the uranium is entering the groundwater close to wells 299-E33-9 and 299-E33-44.

Single-Shell Tanks Waste Management Area S-SX: Groundwater beneath this waste management area is contaminated with , nitrate, and hexavalent chromium, attributed to sources primarily within the waste management area. High concentrations of carbon tetrachloride are also present from upgradient sources. The water table elevation has continued to decline but the gradient is relatively stable and the interpreted flow direction is eastward.



The following discussion on the non-RCRA constituent technetium-99 is provided because it allows further insight regarding the source and migration of dangerous waste constituents in groundwater. The technetium-99 concentration may have peaked in downgradient well 299-W22-48, located east of the southern end of S tank farm. The technetium-99 concentration in the March sample decreased slightly for the first time since the well was installed in 1999. The same trend appeared in chromium, but nitrate continued a slight increase. The lateral extent of the contaminant plume responsible for these observations is limited to an area between well 299-W22-44 on the north and 299-W22-81 on the south.

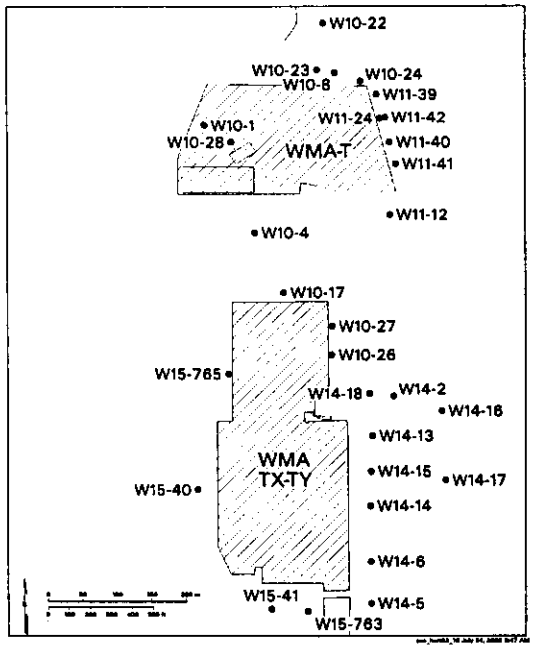
The technetium-99 plume located across the southern portion of the waste management area continues to slowly spread downgradient. Well 299-W22-83 has been used to delineate the downgradient margin of the technetium-99, but the technetium-99 concentration in this well increased to 968 pCi/L in March 2002, above the 900 pCi/L drinking water standard for the first time. The northern margin of the plume continues to be bounded by well 299-W22-49 where the technetium-99 concentration has remained at about 130 pCi/L.

Technetium-99 concentrations in well 299-W23-19, located near tank SX-115 in the southwestern corner of SX tank farm, experienced another 60% drop in March, to 29,500 pCi/L. A similar drop was experienced in August 2001 before the technetium-99 peak in September and December. The cause of these fluctuations is not presently understood. Nitrate and chromium --

concentrations also dropped significantly.

Two new wells, 299-W22-84 and 299-W22-85, were sampled for the second time in March 2002. All reported results were within expected ranges and consistent with neighboring wells and the location of known contaminant plumes.

Single-Shell Tanks Waste Management Areas T and TX-TY: Interim change notices to the assessment monitoring plans for Waste Management Areas T and TX-TY were issued in February 2002. They updated the constituents list for the waste management areas, deleted wells that have gone dry, and added wells that were drilled subsequent to the date of the original assessment plans.



Water levels near these waste management areas continued to decline during the reporting quarter. Well 299-W11-24 at WMA T could not be sampled because the drop in water level. Also, a water level could not be obtained from well 299-W10-28, the new upgradient well, because of an obstruction in the well.

While the water table has continued to drop, the gradient has changed little; therefore the rate and direction of groundwater flow has not changed appreciably during the quarter. As previously reported, groundwater flow directions have been affected by the 200-ZP-1 groundwater remediation in the southern part of WMA TX-TY. Groundwater flow is to the east or slightly north of east beneath T tank farm, to the east or southeast beneath TY tank farm, and toward the south or southwest beneath the TX tank farm.

WMA T

Nitrate concentrations remained above the maximum contaminant level in all wells in the WMA T network. The highest nitrate concentrations are in two upgradient wells. The nitrate concentration in upgradient well 299-W10-28 was 1,320 mg/L and in upgradient well 299-W10-4 was 1,560 mg/L in February 2002. The nitrate concentration in well 299-W10-4 continued an increasing trend that began in 1997.

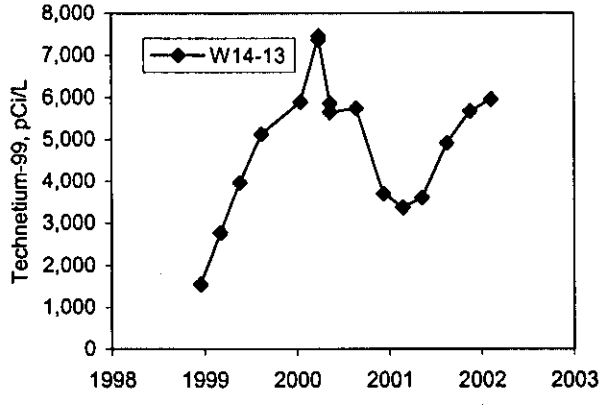
Nitrate concentrations in all monitoring wells except well 299-W11-40 on the downgradient (east) side of WMA T are between 283 mg/L (well 299-W10-24) and 593 mg/L (well 299-W11-39). The nitrate concentration in well 299-W11-39 is an order of magnitude greater than previous values and is probably erroneous, as indicated by a poor charge balance for the sample. Nitrate concentration in well 299-W11-40 was 157 mg/L in February 2002. The trends in nitrate concentrations in wells on the downgradient side of WMA T are fairly level. The nitrate

concentration in upgradient well 288-W10-28 was 135 mg/L in February 2002 and the nitrate concentration in well 299-W10-4, south and lateral to groundwater flow at WMA T, was 156 mg/L. This information indicates that most nitrate in groundwater at WMA T is part of a regional plume and not from the WMA.

Chromium is a dangerous-waste constituent; however, the distribution of chromium suggests that it is from an upgradient source. Chromium concentrations continued to be above the maximum contaminant level in three wells at WMA T. The highest chromium concentration was in well 299-W10-4, south of WMA T, where chromium continued to increase to 252 μg/L in February 2002, up from 225 μg/L in November 2001. Chromium exceeded the maximum contaminant level in two downgradient wells during the reporting period where concentrations were 134 μg/L in well 299-W11-41 and 130 μg/L in well 299-W11-42. The chromium concentration in either of the two latter wells did not significantly change from the previous quarter.

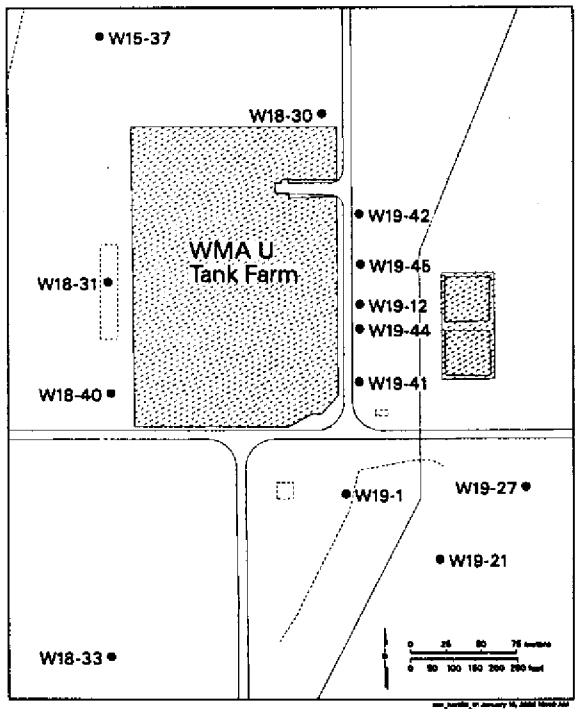
Fluoride concentrations were above the maximum contaminant level in three downgradient wells at WMA T. Fluoride concentrations were 4,100 μg/L in wells 299-W10-24 and 299-W11-39 and 4,000 μg/L in well 299-W11-42 (a quality control sample associated with this sample was out of limits). The February 2002 fluoride concentrations in wells 299-W10-24 and 299-W11-42 are consistent with previous quarter's values but the concentration in well 299-W11-39 is an increase from the November 2001 concentration of 1,600 μg/L. The fluoride value from well 299-W11-39 is undergoing further review.

WMA TX-TY



Chromium is the only dangerous-waste constituent that has been detected in groundwater beneath WMA TX-TY, and may be from a source within the WMA. Chromium exceeded the maximum contaminant level of 100 μg/L in well 299-W14-13 during the reporting period. The February 2002 chromium concentration in the well was up slightly from 287 μg/L in November 2001 to 326 μg/L in February 2002. The chromium concentration has been above the maximum contaminant level since the well was first sampled in December 1998 and the concentration has been increasing since May 2001. Chromium concentrations in the wells just north and south of well 299-W14-13 contain less than about 10 μg/L chromium.

Single-Shell Tanks Waste Management Area U. This waste management area, which has been in assessment monitoring since 1999, has affected groundwater quality with elevated concentrations of the non-dangerous waste tank constituents nitrate. These contaminants are accompanied by elevated concentrations of calcium, magnesium, chloride, and sulfate. Nitrate concentrations have increased over the past several years, though concentrations are below their respective drinking water standards. Chromium concentrations in downgradient well 299-W19-41 have exceeded background levels, but concentrations have been decreasing since 2000. The water table elevation has continued to decline but the gradient is relatively stable and the interpreted flow direction is eastward. Chromium is the only dangerous-waste constituent detected in groundwater beneath WMA U.

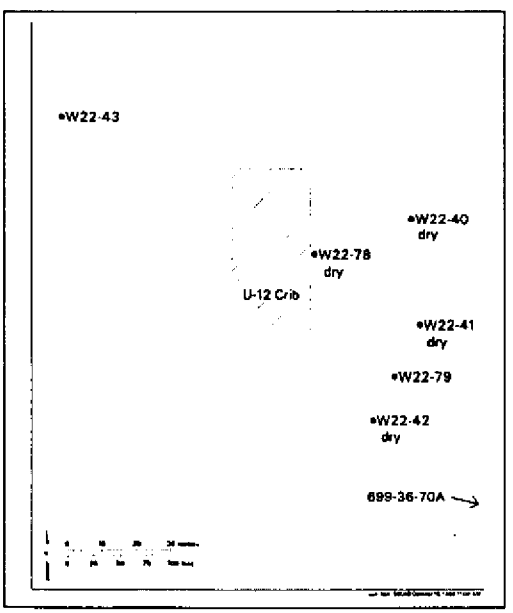


All analytical results from groundwater samples collected in February 2002 were on trend. Carbon tetrachloride increased about four-fold in well 299-W18-31. Another explanation for the trend is that as the water table falls, samples collected from the well consist of water from near the water table. Well 299-W18-31 has approximately 2 meters of water left in the well; therefore, the samples represent water near the water table where contaminant concentrations may be higher. This phenomenon has been noted in wells in WMAs T and TX-TY and in well 299-W18-25, which went dry several years ago.

The three new groundwater-monitoring wells that were completed in September 2001, downgradient wells 299-W19-44 and 299-W19-45 and upgradient well 299-W18-40, were sampled for the second time in February. Results for the new wells are consistent with trends in neighboring wells.

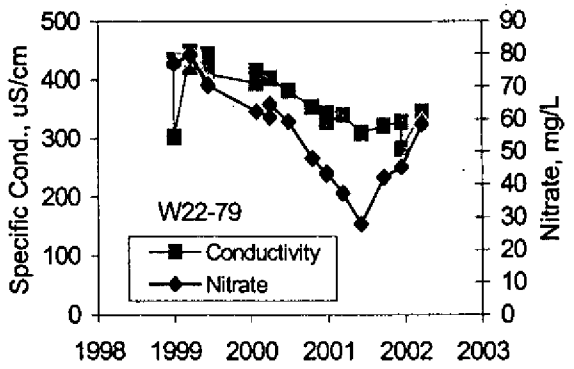
216-U-12 Crib: The current groundwater assessment monitoring network for the 216-U-12 Crib consists of only two downgradient wells (299-W22-79 and 699-36-70A). Both wells were sampled in March 2002. Concentrations for the site-specific contaminants were varied: most declined and some increased slightly during the past quarter. Concentrations are expected to continue to decline overall.

The groundwater flow direction beneath the crib is relatively unchanged, toward the east-southeast, and the two wells still effectively monitor releases from the 216-U-12 Crib. The water levels in the two network wells declined



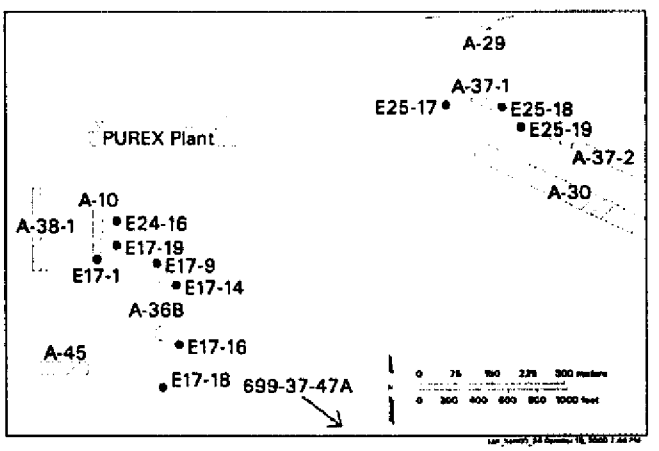
approximately 0.3 meter (~1 foot) since the last quarterly sampling event.

Specific conductance in downgradient well 299-W22-79 increased again slightly during the March sampling event. The new value was 346 µS/cm. The nitrate concentration (sourced at the U-12 Crib) in well 299-W22-79 increased to 58.4 mg/L, a rise of 13.2 mg/L from last quarter and remains above the 45 mg/L maximum contaminant level. This is the third consecutive quarter increase in specific conductance and nitrate and signifies a potential increase in vadose flux drainage beneath the 216-U-12 Crib.



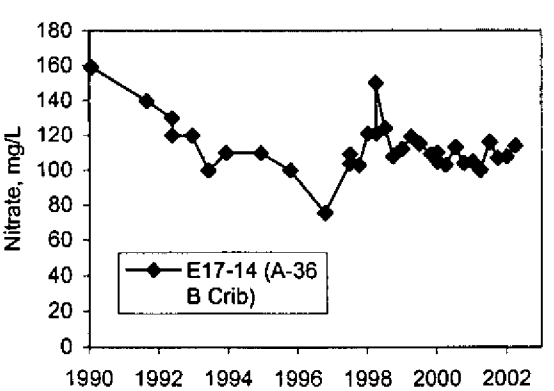
Specific conductance in downgradient well 699-36-70A continued to decline and was 522 µS/cm during March. The nitrate concentration in that well also continued to decline but remained above the maximum contaminant level.

PUREX Cribs (216-A-10, 216-A-36B, and 216-A-37-1: Three of the 11 near-field wells in the network (one near each of the three cribs) were sampled January 2, 2002. Water levels were measured at all 11 of the network wells between March 14 and March 19.



Beneath the PUREX Cribs, the differences in water table elevations from well to well are very small. Typically, the elevation difference between the lowest and highest water levels is about 0.2 meter. During the reporting period the greatest water level difference (0.23 meter) was between two adjacent wells (299-E17-19 and 299-E24-16) at the 216-A-36B crib. Therefore, the water table gradient is too low to determine groundwater flow rate or flow direction reliability. However, the movement of groundwater contamination plumes indicates that regional groundwater flow is toward the southeast.

Nitrate concentration in well 299-E17-14 exceeded the drinking water standard (45 mg/L) in January at 108 mg/L. Nitrate levels at this well are holding steady.



Quality Control

Highlights of the Groundwater Monitoring Project's quality control program for the January-March 2002 quarter are listed in Table 5. Details and data that are not available in HEIS are available upon request. The quality control program indicated that the data were acceptable for use in the statistical comparisons discussed above.

Table 5: Quality Control Highlights, January-March 2002.

- Fifty-four results were flagged with an H due to missed holding times. Anions account for most of the flagged results, and the data impacts should be minor.

- Most of the field duplicate results demonstrated good precision, although the relative percent differences for twenty pairs of results failed to meet the acceptance criteria. Chloride, chromium, fluoride, iron, nitrate, potassium, sulfate, uranium, and zinc were the constituents with out-of-limit results.

- Most total organic carbon and total organic halide quadruplicates exhibited acceptable precision. Although eight total organic halide quadruplicates exhibited a high degree of variability, other QC indicators (i.e., matrix duplicates and blind standards) demonstrated satisfactory precision for this method.

- Approximately 5% of the field-blank results exceeded the QC limits. Most of the out-of-limit results were for acetone, beryllium, methylene chloride, sodium, total organic carbon, uranium, and zinc. In general, the field blank results should have little impact on the interpretation of 1st quarter groundwater data.

- Overall, Severn Trent, Lionville Laboratory, and Eberline Services performed well on the analysis of blind standards. Severn Trent St. Louis had out-of-limit results for total organic carbon (1), total organic halides (3), and fluoride (3). Incorrectly spiked standards probably account for the unacceptable fluoride results.

- Performance-evaluation study results were available from one InterLaB RadCheM study, seven Water Supply/Water Pollution studies, one Mixed Analyte Performance Evaluation Program study, and one Department of Energy Quality Assessment Program this quarter. The majority of the labs' results were within the acceptance limits, indicating good performance overall.

- Most of the laboratory QC results for this quarter were within acceptance limits, suggesting that the analyses were in control and reliable data were generated. Parameters with more than one result that was significantly out of limits include method blanks for aluminum, beryllium, and nickel; matrix spikes for cadmium, lead, and vinyl chloride; and one surrogate. The percentage of out-of-limit results decreased for all QC parameters this quarter.

References

Reference 1: John G. Morse, RL, to Jane Hedges, Ecology, "Notification of Exceedance of Critical Range for pH in 1301-N Facility." July 8, 2002.

Reference 2: John G. Morse, RL, to Jane Hedges, Ecology, "Assessment Report for the 1301-N Facility." July 17, 2002.