WESTERN NUCLEAR, INC.

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May 24, 2004

40-1162

Robert A. Nelson
Captain, USNR (Ret)
Chief, Uranium Processing Section
Division of Fuel Cycle Safety and Safeguards
U.S. Nuclear Regulatory Commission
MS T8 A33
Washington, DC 20555

SUBJECT: Source Material License SUA-56; License Conditions 24 and 74.

Dear Mr. Nelson:

On February 16, 2004 Western Nuclear Inc. (WNI) submitted responses to your letter dated November 18, 2003. Your letter requested additional information regarding the proposed groundwater program. One of the issues addressed in our February 16, 2004 letter proposed a new groundwater and surface water monitoring program. A copy of the relevant portion of the February 16, 2004 letter is attached.

This letter is to formally request that the WNI Source Material License be amended to reflect the proposed groundwater and surface water monitoring program. Specifically we would propose that license condition 24 be changed to the following:

The licensee shall sample five surface water locations as shown on Figure 1 of its February 16, 2004 submittal. Samples will be taken annually and analyzed for uranium and sulfate. The results shall be submitted to the NRC as soon as practical after the results are obtained.

License condition 74 A. should be modified to the following:

A. Sample wells WN-41B, WN-39B, WN-42A, SWAB-12, SWAB-2, SWAB-1 and SWAB-29 on an annual frequency for uranium, sulfate and water levels. Sample wells 5 and 21 on an annual basis for aluminum, arsenic, beryllium, cadmium, fluoride, manganese, molybdenum, nickel, ammonia, nitrate, lead, radium-226 and 228, antimony, selenium, thorium-230, thallium and uranium and water levels. The results of the groundwater monitoring program shall be submitted to the NRC as soon as practical after the results are obtained.

The remainder of license condition 74 should remain as is.

NMSS01

We appreciate your attention to this matter and are encouraged by the efforts that you and your staff are making to move the site through closure. Please let me know if there is any additional information you or you staff might need to complete your determinations.

Sincerely,

Louis Miller for

Lawrence J. Corte
President

cc. Mark Thiesse, WDEQ

ATTACHMENT 3

MFG consulting scientists and engineers

MEMORANDUM

MFG PROJECT: 180888

TO: Larry Corte, WNI

FROM: Lou Miller, P.E.

DATE: February 12, 2004

SUBJECT: Response to NRC Letter – Item 4

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4. *In NRC's RAI, dated September 6, 2001, item number 2 requested that WNI address the deficiency of a long-term groundwater and surface water monitoring program. WNI's response of May 28, 2002, on this item is not adequate. William von Till discussed this issue in detail with Lou Miller in a phone conversation on November 4, 2003. This is also covered in the NRC Guidance document NUREG-1620, Section 4.3.3.4.*

A new groundwater and surface water monitoring program is proposed. This system is designed to better monitor evolution of the groundwater plume and to provide more detail for the surface water monitoring program. The location of the existing monitoring locations and the new proposed locations are shown on Figure 1.

The wells that are part of the existing monitoring requirements are generally close to the tailings impoundment and are not useful in defining the continued evolution of the contaminant plume. The new proposed wells will be able to monitor the plume as it matures. Data from the proposed wells could be used to evaluation the plume development with the modeled results.

Point of compliance (POC) wells, proposed in the October 1999 groundwater report (SMI, 1999), are Well 5 and Well WN-21. The proposal for these wells to be the POC wells remains the same.

Two new points have been added to the surface water sampling system. These points are labeled Surface water B and C. They supplement the existing sample location A to better monitor water in the Sweetwater River that might be impacted from the contaminate plume.

The point of compliance wells will be monitored for the complete list of hazardous constituents. The hazardous constituents as determined in the October 1999 Groundwater Report (SMI, 1999) are presented in Table 1. The other wells and the surface water samples will be analyzed for the most mobile constituents, uranium and sulfate. It has been demonstrated that these two constituents are the most conservative indicator parameters for the contaminate plume and they would be the best parameters to use to define the contaminant plume as it evolves.

The existing monitoring is performed on a quarterly basis. These results have been submitted on a semi-annual basis. The results of the historic sampling clearly indicate that groundwater quality changes occur very slowly. As an example of this, Figures 2 and 3 show historical water quality data from wells WN-25 and WN-18. These wells are in the contaminate plume and are in the same general areas the propped monitoring wells. Results from these wells clearly show that annual monitoring would be sufficient to adequately monitor the changing conditions within the contaminate plume. Some seasonal variability is evident in the Northwest valley wells completed in the Sweetwater River floodplain. This is due to the effects of irrigation and flooding and not due to changes in groundwater flow.

It has been suggested by NRC that groundwater monitoring north of the Sweetwater River should be considered. Groundwater monitoring north of the river is not proposed. This issue was raised previously and was addressed in correspondence to you (SMI, 2001). A copy of that response is attached.

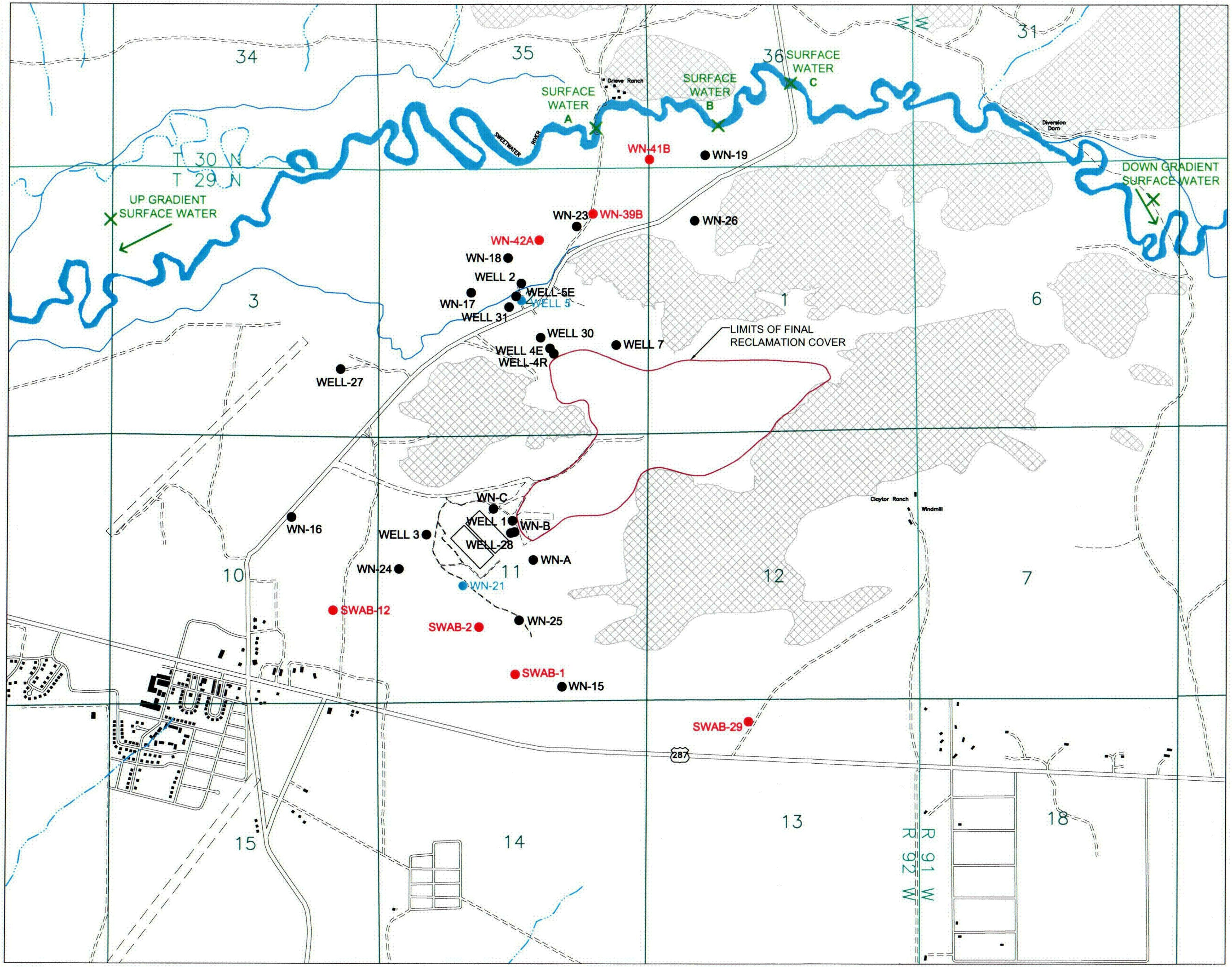
Table 1 Hazardous Constituents Analyzed in POC Wells 5 and WN-21

Al	Mo	Sb
As	Ni	Se
Be	NH_3	Th-230
Cd	NO_3	Tl
F	Pb	U
Mn	Ra-226 and Ra-228	

References:

Shepherd Miller, 2001. "WNI Response to NRC Request of 9/6/01 for Additional Information on Site Closure Plan for the Split Rock, Wyoming Site." November.

Shepherd Miller, Inc. (SMI), 1999. "Site Closure Plan." Consultant's Report. October



LEGEND

- ● EXISTING MONITORING WELLS
- ● PROPOSED MONITORING WELLS
- ● PROPOSED POC WELLS

NORTH

SCALE IN FEET

0 2000

FIGURE 1
EXISTING AND PROPOSED MONITORING WELLS

consulting scientists and engineers

Date:	FEBRUARY 2004
Project:	003347\2003
File:	WELLS-PREX-3.DWG

Filename: E:\03-347\2003\WELLS-PREX-3.dwg
Date: 02/12/2004
Time: 14:49:42.32

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are appropriate (Anderson and Woessner, 1991). WNI maintains that this relationship is met in the model. Evidence of this relationship was observed during a site inspection of the granite outcrops near Claytor ranch. If significant granite conductivity existed, seeps would be present in that location. Although dry streambeds in this location indicate surface water is present during high precipitation events, no moisture was indicated at base flow conditions. To further characterize the presence or absence of contaminated groundwater flow through bedrock in this vicinity, a soil boring installation is planned as described in the attached approach for supplemental data collection.

Question 3: *To support the assumption that all discharge in the Sweetwater River floodplain is in the river, WNI needs to provide information to show that the USGS findings for the regional ground water applies specifically to ground water in the vicinity of the WNI mill site.*

Large bodies of water, such as the Sweetwater River, are typically assumed to be groundwater divides. The river performs either as a sink (i.e. collects groundwater) or as a source (i.e. discharges to the aquifer). Certainly, in the area of the Narrows, groundwater flow is constricted. Sedimentary bedrock groundwater flow is forced to surficial deposits as the granite bedrock rises to the surface. This hypothesis is supported by dense riparian vegetation in this area. The presence of "salt lakes" is also an indication of groundwater discharge. North of the Sweetwater River, salt lakes form on the north side of granite outcrops. These outcrops act as local dams and force groundwater to the surface on the upgradient side.

River sampling data (Appendix F, Section 8.0 of SMI, 1999) indicates that mass loading to the river is occurring from groundwater discharge from the south side of the river. As illustrated in Figures F-8-3 through F-8-13, concentrations of site-derived constituents show a consistent increase from the sampling location upstream (S-7) and across from the site (S-6) to the down stream sampling location (S-5). The loading indicated by these data demonstrate that the river acts as a sink for the flow from the south side of the river. In addition, data from the ENSR Baseline Risk Assessment (Appendix I of SMI, 1999) indicate similar data trends. Though none of the measured concentrations exceed values protective of public health safety and the environment, these data clearly indicate the river is acting as a sink for groundwater from the south side of the river over the reach adjacent to the site.

Water level data from wells and minipiezometers on the north side of the river, when compared to projected stream stage elevations support the modeled configuration of the river as a regional sink. As shown on Tables 1 through 3 and in Figure 1, potentiometric potentials decrease toward the river from both sides of the river.

The movement of contaminants in groundwater north of the Site will be limited if the potentiometric surface of groundwater north of the Sweetwater River is at a higher elevation than the surface elevation of the river. The estimated river stage was compared to the water levels in nearby, alluvial minipiezometers to determine the difference between the potentiometric surface and the water level of the river. Minipiezometers and a river location from two areas were used in the comparison. Location A is near the Grieve Ranch directly to the north from the Site and includes MP-57 (north of river), along with MP-2 (south of the river). Location B is located near the haul road bridge over the river and includes MP-58 (north of the river) and MP-3 (south of the river). The locations of the minipiezometers are given in Figure 1.

Surface water levels were estimated for the River A and River B locations. River stage data (Table D-5-2, Appendix D of SMI, 1999) from surface water sampling locations (Figure 1) upstream and downstream of each location was used to estimate the water surface gradient at both locations A and B (Table 1). The gradient was then used with the stage data from the adjacent upstream sampling location to interpolate a river stage at both the River A and River B locations. The estimated river stage was then compared to potentiometric surface data from the nearby minipiezometers both north and south of the river. Groundwater levels for each minipiezometer can be found in Table A-15-2, Appendix A of the Site Closure Plan (SMI, 1999).

The difference between the surface elevation of the river and the associated minipiezometers is given in Table 3. In both areas, the groundwater level north of river is at a higher elevation than the elevation of the surface of the river (0.35 feet higher at MP-57 and 1.03 feet higher at MP-58). This information suggests that between the SG-6 and SG-8 locations (Figure 1) the Sweetwater River effectively acts as a hydrologic boundary to the northward migration of groundwater.

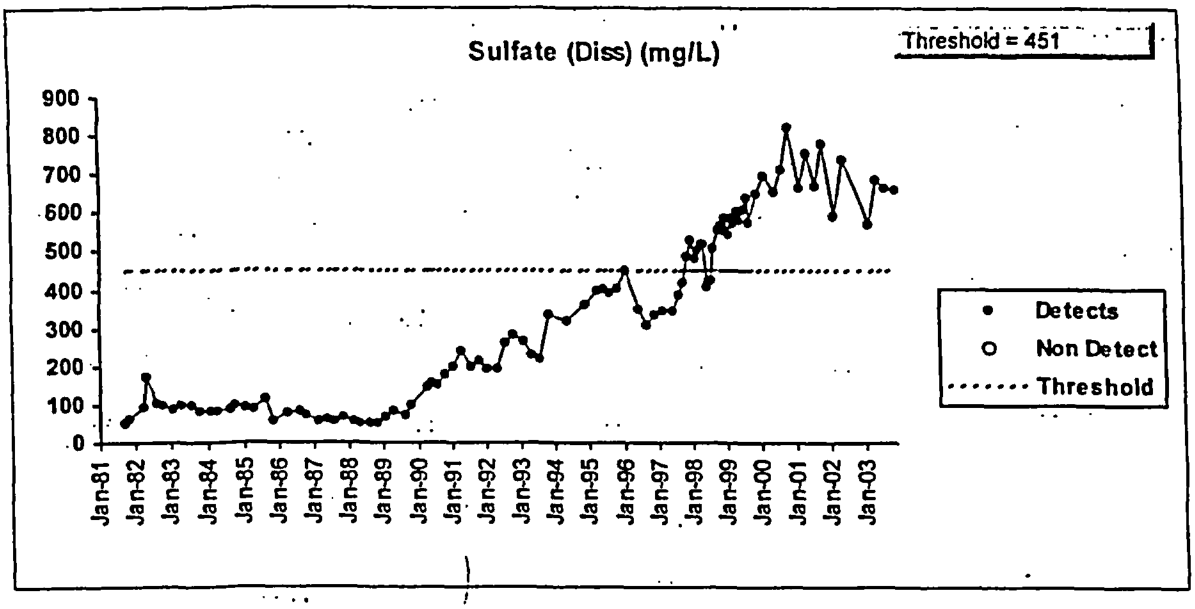
In addition, vertical gradients between the Lower Split Rock Formation, the Upper Split Rock Formation and the Floodplain Alluvium (see Table 4) support the position that the Sweetwater River is a local and regional sink. The river acts as a boundary for flow and transport for the lower formations or hydrostratigraphic units along the northern boundary of the site.

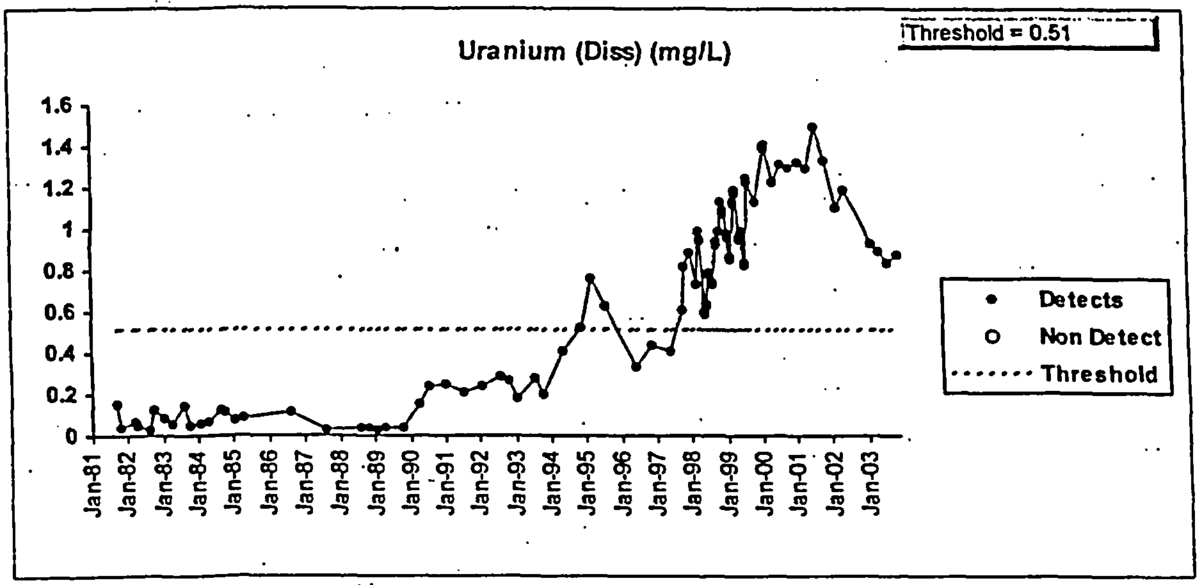
Further, inspection of the topographic contours and aerial photographs of the area support the interpretation that the area to the north of the river behave hydraulically the same as the area south of the river, that is the river is a sink for the reach adjacent to the site. The slope of the topography from the Beaver Rim, north of the site, toward the Sweetwater River and the flow of surface drainages in this same direction and the occurrence of soda lakes north of the river, where groundwater flow is impeded by small local granite outcrops, also supports the interpretation that the river is a sink for the reach adjacent to the site.

Question 4: *It is not clear whether the 1986 and 1996 calibrations were done subsequently or concurrently. If it was done subsequently, it would be useful to know what adjustments were made to the parameters from one calibration to the next and when the comparison with the observed data was done?*

The flow model calibration was an iterative process. Parameters for the 1986 model were adjusted to reasonably match the targets for that time period. After calibration of the 1986 model was achieved, the 1996 stresses, developed from review of operational data, were applied and the predicted heads and fluxes compared to the target values for the 1996 period. Again, adjustments in model parameters were made to better fit the 1996 model and the new parameters were then re-applied to the 1986 model. These iterative adjustments were continued until no adjustments were required to attain reasonable calibration in either the 1986 or the 1996 models. The model was then verified by

Jeffrey City WN-18





Jeffrey City WN-25