1. Have there been tritium releases (spills, leaks, etc) other than routine effluent releases, into the public domain (outside the Owner Controlled Area)?

NOTE: It is assumed that "Owner Controlled Area" refers to the property owned by AmerenUE.

There were two breaks in the discharge pipeline (1995 & 1998) where diluted liquid effluent spilled into nearby Logan Creek. There were two earlier breaks (1988 & 1989) which may have spilled into Logan Creek; however, the fate of the spillage is not documented in the available documentation.

Logan Creek drains the northeast, east, and southeast sides of the plant plateau and empties into the Missouri River approximately 100' downstream of the current location of the liquid effluent discharge point. Logan Creek flows mostly on AmerenUE property downstream of the break locations, but some portions are not on AmerenUE property.

Logan Creek was sampled extensively following the 1995 and 1998 breaks, and again in 2006 as one of the earliest actions of the Groundwater Protection Initiative. The 2006 sample results were reported in the 2006 Annual Radiological Environmental Operating Report (Appendix C, Table C-6). There was no tritium detected in the 2006 samples.

There were three additional breaks in the old discharge pipeline (1987, 2005, & 2008). The 1987 break was under Highway 94, but did not involve radioactive materials. The water from the 2005 and 2008 breaks contained radioactive liquid effluent, but in both cases, the spillage was contained on AmerenUE property.

These spills have been documented pursuant to 10 CFR 50.75(g). For additional information, refer to CAR 200602748, Action 18 and CAR 200808920.

2. Has the licensee identified onsite radioactive subsurface water contamination?

Yes

3. If the answer to #2 is yes, what are the source(s) of tritium or other contaminates and what are the highest groundwater contamination levels measured?

(1) Monitoring wells surrounding the power block structures indicate tritium in the shallow groundwater with a concentration of approximately 200-400 pCi/L. The highest concentration of 1479 pCi/L occurred in April 2008. It is believed that this tritium is due to washout of tritium in gaseous effluents. Washout is a known phenomenon (OE25138, OE25092, RIS 2008-03) which occurs when rain or snow removes tritium from gaseous effluents and returns it to the site. Samples were taken of condensate from site air conditioning systems, freezer frost, and ice from the cafeteria ice machine in June 2007. The tritium concentration in the A/C condensate ranged from not detectable to 640 pCi/L. The tritium in the freezer frost ranged from 411-2135 pCi/L. The ice in the ice machine was made from the plant potable water, and there was no detectable tritium in the ice (ref: 2007 AREOR, Part II, Appendix C, Table C-9). Three samples of rain water from puddles were analyzed for tritium in April 2008. The tritium concentration in the water puddles ranged from not detectable to 599 pCi/L (ref: 2008 AREOR, Part II, Appendix C, Table C-1).

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(2) Monitoring wells in the Missouri River alluvial plain in the vicinity of manhole 6B on the retired discharge pipeline show low levels of tritium in the shallow groundwater (see Figure 1). The highest concentration of 615 pCi/L occurred in December 2009. This is residual activity from moisture carryover during normal operation of the air release valve in manhole 6B while the (now retired) pipeline was in service. The tritium concentration in split spoon soil samples taken in the vicinity of manhole 6B in July 2006 ranged from not detectable to 25,863 pCi/L. The tritium concentration in split spoon soil samples taken in the vicinity of manhole 6B in December 2006 ranged from non detectable to 3,116 pCi/L (ref: 2007 AREOR, Part II, Appendix D).

The air release valves on the old pipeline were capped in December 2007. The vacuum breaker was not capped due to concerns about drawing a vacuum and compromising the structural integrity of the pipeline. The new pipeline entered service on October 28, 2008.

4. Provide a general description of liquid radwaste discharges, water/monitoring wells, and any onsite aquifers.

Description of Discharges: All radioactive liquid effluents are discharged through the discharge Monitor Tanks (DMTs) in batch mode and diluted with cooling tower blowdown water to ensure ODCM limits are met. The effluent water is transported by underground stainless steel piping to the discharge line where it is mixed with the dilution flow. The diluted effluent is transported to the discharge point (Missouri River) by a six mile long pipeline.

The original cooling tower blowdown line was replaced under MP 07-0012 and Job 07004468. The new pipeline is constructed of high density polyethylene and was placed in-service on October 28, 2008. Joints were tested by direct air testing to insure leak tightness and visual in-service inspections were performed on any joint that could not be tested due to the required construction methods. The scope of this project includes complete replacement of the old discharge line from mixing manhole 86-2 to the tie-in with the Missouri River discharge point. No air release valves are included in the design/construction of the new pipeline in order to minimize potential leak points and eliminate the vulnerability seen in the old pipeline. The new system includes 1 vacuum breaker and 1 gate valve, both of which are located in new manholes coated with an elastomeric polyerethane bonded geotextile membrane to prevent the release of any potential leakage.

NOTE: The discharge pipeline route is on AmerenUE property.

Water/ Monitoring Wells: There are 31 monitoring wells and 11 ponds in the program. The location of the monitoring wells and ponds, collection frequency, and required analyses are shown on Tables 1 and 2 and Figure 2. In addition to the groundwater monitoring wells, AmerenUE also collects potable well water samples from area residents. The location, collection frequency, and required analyses are shown on Tables 3. (ref: HTP-ZZ-07101-DTI-REMP-SMPL-SCHED, rev. 03).

Aquifers: (Refer to Figure 2.4.12-10.) Across the plateau, the Graydon Chert Formation is considered to be the shallow aquifer. There are localized areas where the overlying material may be included in this aquifer but, on the whole, it was found that saturated groundwater is confined within the chert. The chert (deposits of cherty clay, sandstone, and sandy chert conglomerate) is a moderate water-bearing unit, with the glacial till acting as the confining unit above the chert, and the Burlington Limestone acting as the confining unit and top of the aquitard beneath the chert. The Graydon Chert lies unconformably atop the Burlington Limestone and unconformably below the glacial till so its elevation and thickness vary. Across the plateau, the depth of the Graydon Chert ranges from 15 to 39 feet below ground surface (bgs) and averages approximately 27 feet bgs. Its thickness ranges from 16 to 61 feet and averages approximately 38 feet.

Due to confined groundwater conditions in the Graydon Chert aquifer, groundwater elevations measured in the monitoring wells rise above the top of the chert to within approximately 7 to 15 feet of the ground surface in the central portion of the plateau. Overall, groundwater elevations do not vary much through the year, typically by less than 1 to 2 feet across the central part of the plateau and several feet at the shallow wells around the perimeter of the plateau.

Beneath the shallow aquifer there is a leaky, confining aquitard. The top of the aquitard begins with the top of the Burlington Limestone. The aquitard extends through the Bushberg Sandstone, Snyder Creek Formation (shale), Callaway Limestone, and upper portion of the CJC Dolomitic Limestone. The depth to the top of the aquitard averages 68 feet bgs across the plateau, and its thickness is approximately 290 feet in the central portion of the plateau. Beneath the aquitard is the Cotter-Jefferson City (CJC) aquifer. The depth to the CJC aquifer is approximately 350 feet bg in the central portion of the plateau. The thickness of the CJC aquifer beneath the plateau is approximately 300 feet. Regionally, the CJC aquifer is considered to be a minor aquifer and represents the top of the Cambrian-Ordovician aquifer system, which consists of intervals of minor aquifers and major aquifers with intermittent aquitards to depths up to 2,000 feet bgs. Groundwater levels for the deeper CJC wells beneath the plateau are also confined such that measured groundwater levels rise approximately 50 feet above the top of the CJC aquifer to an approximate elevation of between 550 and 560 feet mean sea level. Although groundwater elevations appear to respond to seasonal changes in precipitation, they vary only by approximately 1 foot.

The estimated well yield for the chert aquifer is less than 1 gallon per minute (gpm) and for the CJC aquifer is approximately 5 to 10 gpm. The relatively low estimates of storativity in the CJC aquifer are consistent with mildly fractured bedrock aquifers where the small size of fractures and low degree of interconnectedness limits the amount of water in storage and the amount of water to potentially yield to a well.

Alluvial deposits along the Missouri River form an important stream-valley aquifer from the Iowa-Missouri state line to the junction of the Missouri and the Mississippi Rivers. The deposits partly fill an entrenched bedrock valley that ranges from about 2 to 10 miles wide. Based on the regional understanding of the Missouri River alluvial aquifer, it is expected that groundwater elevations within the aquifer would mimic surface water elevations along the Missouri River and the lower reach of Auxvasse Creek. (ref: Final Groundwater Model Report, Paul C. Rizzo Associates, Inc., May 2, 2008, Project No. 06-3624.)

5. Provide a description of groundwater flow characteristics and number and location of monitoring wells.

A three- dimensional groundwater flow model was developed for the Callaway site using the Waterloo Hydrogeologic, Inc. Visual MODFLOW Premium 4.2 software package. The groundwater model provides a relatively accurate tool to quickly assess long-term changes to the aquifer system by including temporal variation in recharge (around plateau and flood plain), the drainage (on plateau), the streams (Auxvasse, Mud and Logan), and the Missouri River flow. The results are provided in Figures 26- 33. The model indicates:

- Groundwater particles starting at the top of the Graydon Chert aquifer in the powerblock area will travel horizontally outward and vertically downward according to the estimated groundwater flow velocities and enter the aquitard.
- Once the groundwater particles move into the aquitard, they would experience only downward and vertical flow until the CJC aquifer is reached.
- The groundwater particles remain in the CJC aquifer as they flow toward the potential discharge location along Auxvasse Creek or along Mud Creek.
- The groundwater particles that originate around the periphery of the plateau or along the drainages that run from the periphery of the plateau will still flow with a downward component; some particles discharge to the drainages while some continue to move downward beneath the drainages and will potentially discharge at drainage locations further down the hillside. (ref: Final Groundwater Model Report (rev. 1), Paul C. Rizzo Associates, Inc., October 31, 2008, Project No. 06-3624.)

There are 31 monitoring wells and 11 ponds in the program. The location of the monitoring wells and ponds, collection frequency, and required analyses are shown on Tables 1 and 2 and Figure 2. In addition to the groundwater monitoring wells, AmerenUE also collects drinking water samples from area residents who use well water for drinking. The location, collection frequency, and required analyses are shown on Table 3. (ref: HTP-ZZ-07101-DTI-REMP-SMPL-SCHED, rev. 03).

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6. If tritium has been detected, what is the estimated time for the tritium to reach a public drinking water aquifer? If the tritium is already detected offsite, please explain the location of the activity and the levels detected.

(1) (Refer to Figure 2.4.13-1) Assuming a postulated instantaneous release in the powerblock area, radionuclides would enter the Graydon Chert aquifer, which is assumed to have an approximate thickness of 40 feet. Groundwater in the Graydon Chert aquifer flows radially outward and downward through the Graydon Chert into the underlying aquitard, flows vertically downward through the aquitard and enters the CJC aquifer, and then remains in this aquifer as it flows toward the projected discharge locations west toward Auxvasse Creek and southwest toward Mud Creek. Groundwater has the potential to discharge at these locations and would enter the creeks and flow toward the Missouri River.

Travel times were estimated for (1) a groundwater particle starting at the top of the Graydon Chert aquifer traveling horizontally outward and vertically downward and entering the aquitard; (2) a groundwater particle traveling vertically downward through the aquitard in the center of the plateau; and (3) a groundwater particle traveling from the periphery of the plateau to a potential discharge location along Auxvasse Creek or along Mud Creek. Several radial directions of flow were considered both in the Graydon Chert aquifer and in the CJC aquifer. The resulting travel times are:

- The estimated travel time for a groundwater particle at the top of the Graydon Chert to flow outward and downward and to enter the aquitard is 37.4 years.
- The estimated travel time for a groundwater particle to travel downward through the aquitard and enter the CJC aquifer beneath the plateau is 2573 years.
- The estimated travel time for a groundwater particle to flow through the CJC aquifer from the western periphery of the plateau to the closest location along Auxvasse Creek was 579 years. The estimated travel time for a groundwater particle to flow through the CJC aquifer from the southern periphery of the plateau to the closest location along Mud Creek is 408 years. These were the shortest two travel times estimated for potential groundwater discharge to local streams.

The Missouri River alluvial plain is prone to frequent flooding and there are no public drinking water aquifers in the area. Boring logs indicate the soil is a mixture of silt and clay/sandy silt to about 15 feet bgs. From 15 feet bgs to at least 25 feet bgs, the soil is gray, fine grained sand. Groundwater in the alluvial aquifer moves rapidly towards the Missouri River, but with a downstream component as well.

(ref: Final Groundwater Model Report, Paul C. Rizzo Associates, Inc., May 2, 2008, Project No. 06-3624, and Callaway Unit 2 FSAR, Rev. 0A, 02/29/08.)

(2) Tritium has not been detected in any of the offsite groundwater samples, including area drinking water samples.

7. If your site has developed a program, please provide your sites monitoring plan for buried/underground piping.

Callaway's Buried Pipe Program is EDP-ZZ-01011. This procedure is undergoing revision and Rev 1 is expected for release mid May 2010. Revision 1 will incorporate "recommended practices" defined in EPRI Technical Report – 1016456, "Recommendations for an Effective Buried Pipe Program". In 2010, Callaway will work with a vendor to develop a buried pipe database which will house all information relevant to buried pipe systems, including inspection data. By December 2010, Callaway will have a prioritized list or ranking of buried piping systems/segments based on consequence and likelihood of failure. From this prioritized list, an Inspection Plan will be developed for the assessment of structural and leakage integrity of buried piping systems. By December 2013, a formal Asset Management Plan will be developed and will include not only inspection plans, but planned maintenance activities, plans for repair, and plans for replacement.

The STARS plants (Callaway, Palo Verde, Diablo Canyon, SONGS, Wolf Creek, STP, Comanche Peak) have collaborated to create a Buried Pipe Team to ensure all plants within the alliance meet the goals set forth in the Industry Initiative for Buried Piping. Callaway is the lead for this team.

Callaway does not have any formal station commitments for buried pipe testing/ inspection.

Figure 1: Location of Manholes on the (now retired) Discharge Pipeline

Figure 1 was removed to reduce file size for email. Figure 1 will be transmitted separately.

Table 1

Non- Potable Groundwater Wells and Ponds Collection and Analysis Schedule [2]

ID	Description [1]	Location	Aquifer	Freq
936	Plant power block area [3]	Inside OCA	Structual fill	M
937A	Plant power block area [3]	Inside OCA	Glacial till [4]	M
937B	Plant power block area [3]	Inside OCA	Structual fill	M
937C	Plant power block area [3]	Inside OCA	Structual fill	M
937D	Plant power block area [3]	Inside OCA	Structual fill	M
937E	Plant power block area [3]	Inside OCA	Structual fill	M
937F	Plant power block area [3]	Inside OCA	Structual fill	M
GWS	Groundwater sump, plant peninsula area [3]	Inside OCA	Structual fill	M
OW-4	UHS pond berm [3]	Inside OCA	Glacial till [4]	Q
OW-5	UHS pond berm [3]	Inside OCA	Glacial till [4]	Q
U1MW-001	Just outside OCA fence in center portion of plateau, 334 deg, 0.3 mi.	N38.7662° W91.7840°	Graydon Chert	Q
U1MW-002	Just outside OCA fence in center portion of plateau, 206 deg, 0.4 mi.	N38.7571° W91.7842°	Graydon Chert	Q
U1MW-004	Located south of Dillon residence in Missouri River alluvial plain, 165 deg, 3.7 mi.	N38.7101° W91.7635°	Missouri River Alluvial	Q
U1MW-005	Located south of Brownlee/ Hudson residence in Missouri River alluvial plain, 160 deg, 3.8 mi.	N38.7106° W91.7573°	Missouri River Alluvial	Q
U1MW-006	Located south of Ward residence in Missouri River alluvial plain, 171 deg, 3 mi.	N38.7186° W91.7728°	Missouri River Alluvial	Q
U1MW-010	Located in old pipeline bed in Missouri River alluvial plain, 173 deg, 3.1 mi.	N38.7177° W91.7744°	Missouri River Alluvial	Q
U1MW-012	Located south of Ward residence in Missouri River alluvial plain, approx. 100' deep, 172 deg, 3 mi.	N38.7186° W91.7731°	Missouri River Alluvial	Q
U1MW-013	Located in pipeline corridor, south of sludge ponds, on outer perimeter of plateau, 159 deg, 0.8 mi.	N38.7512° W91.7761°	Graydon Chert	Q
U1MW-014	Located in pipeline corridor, near manhole 6B in Missouri River alluvial plain, 171 deg, 3.7 mi.	N38.7086° W91.7709°	Missouri River Alluvial	Q
U1MW-015	Located in pipeline corridor, north side of Hwy 94 in Missouri River alluvial plain, 162 deg, 3.9 mi.	N38.7075° W91.7585°	Missouri River Alluvial	Q
U1MW-016	Located in pipeline corridor, near heavy haul road at Intake Structure, in Missouri River alluvial plain, 151 deg, 4.5 mi.	N38.7409° W91.7056°	Missouri River Alluvial	Q
U1MW-017	Located in pipeline corridor, near manhole 6B in Missouri River alluvial plain, 172 deg, 3.75 mi.	N38.7080° W91.7710°	Missouri River Alluvial	Q
U2 MW-2S	Located on periphery of the plateau, 5 deg, 1.8 mi.	N38.7876° W91.7781°	Graydon Chert	Q
U2 MW-5S	Located on periphery of the plateau, 261 deg, 1.1 mi.	N38.7592° W91.8010°	Graydon Chert	Q
U2 MW-8	Located radially outward from the central part of the plateau, 12 deg, 0.4 mi.	N38.7680° W91.7795°	Graydon Chert	Q

U2 MW-9	Located radially outward from the central part of the plateau, 90 deg, 0.3 mi.	N38.7617° W91.7757°	Graydon Chert	Q
U2 MW-10	Located radially outward from the central part of the plateau, 163 deg, 0.4 mi.	N38.7568° W91.7793°	Graydon Chert	Q
U2 MW-12	Located radially outward from the central part of the plateau, 301 deg, 0.5 mi.	N38.7654° W91.7892°	Graydon Chert	Q
U2 MW-16	Located along Mud Creek, screened for the CJC aquifer, 203 deg, 2.9 mi.	N38.7226° W91.8026°	CJC	Q
F05	Located just inside OCA fence in center portion of plateau well,169 deg, 0.9 mi.	N38.7490° W91.7780°	CJC	Q
F15	Located just outside OCA fence in center portion of plateau, screened for the CJC aquifer, 29 deg, 0.4 mi.	N38.7664° W91.7779°	CJC	Q

Notes:

(1) All distances are measured from the midpoint of the two reactors as described in the FSAR-SA Section 2.1.1.1**Error! Reference source not found.** (N 38° 45.705' W 91° 46.873').

(2) Analyze all samples for ^{3}H and Principal Gamma Emitters to the LLD shown in ODCM/ FSAR-SP Table 16.11-9 for surface water. If contaminated with gamma emitting nuclides of plant origin, analyze for Hard- to- Detect (HTD) nuclides. HTD nuclides are defined as ^{89}Sr, ^{90}Sr, ^{55}Fe, ^{63}Ni, ^{237}Np, ^{238}Pu, $^{239/240}Pu$, ^{241}Pu, ^{241}Am, ^{242}Cm and $^{243/244}Cm$.

(3) Refer to drawing 8600-X-88100 for locations of plant power block area groundwater monitoring wells and groundwater sump.

(4) Unconsolidated Glacial Till/ modifier Loess materials

Table 2

Surface Water (Ponds)[(2)]

ID	Description[(1)]	Location	Freq
CTBD	Cooling tower blowdown (water from the cooling tower basin) [(3)]	Inside OCA	Q
UHS	UHS pond [(3)]	Inside OCA	Q
Unit 2	Unit 2 pond [(3)]	Inside OCA	Q
Pond 01	Fishing pond, 264 deg, 0.6 mi.	N38.7607° W91.7950°	SA
Pond 02	Fishing pond, 232 deg, 0.7 mi.	N38.7557° W91.7915°	SA
Outfall 010	Storm water runoff pond, 42 deg, 0.6 mi	N38.7682° W91.7742°	SA
Outfall 011	Storm water runoff pond, 60 deg, 1 mi	N38.7688° W91.7828°	SA
Outfall 012	Storm water runoff pond, 178 deg, 0.5 mi	N38.7547° W91.7811°	SA
Outfall 013	Storm water runoff pond, 189 deg, 0.5 mi	N38.7553° W91.7828°	SA
Outfall 014	Storm water runoff pond, 343 deg, 0.6 mi	N38.7695° W91.7844°	SA
Outfall 015	Storm water runoff pond, 4 deg, 0.7 mi	N38.7721° W91.7805°	SA
Sludge Lagoon #4	On- service sewage sludge lagoon, 153 deg, 0.8 mi.	N38.7521° W91.7753°	SA

Notes:

(1) All distances are measured from the midpoint of the two reactors as described in FSAR-SA Section 2.1.1.1**Error! Reference source not found.** (N 38° 45.705' W 91° 46.873').

(2) Analyze all samples for ^{3}H and Principal Gamma Emitters to the LLD shown in ODCM/ FSAR-SP Table 16.11-9 for surface water. *Except for CTBD, UHS, and Unit 2,* If contaminated with gamma emitting nuclides of plant origin, analyze for Hard- to- Detect (HTD) nuclides. HTD nuclides are defined as ^{89}Sr, ^{90}Sr, ^{55}Fe, ^{63}Ni, ^{237}Np, ^{238}Pu, $^{239/240}Pu$, ^{241}Pu, ^{241}Am, ^{242}Cm and $^{243/244}Cm$.

(3) Refer to drawing 8600-X-88100 for locations of UHS, Unit 2 pond, and the cooling tower.

Figure 2: Surface Ponds

Figure 2 was removed to reduce file size for email. Figure 2 will be transmitted separately.

Table 3

Drinking Well Water Collection and Analysis Schedule [2]

ID	Description[1]	Location	Freq
3	Ward, Rick & Nancy 9204 County Road 448, 168 deg, 2.9 mi.	N 38° 43.252 W 91° 46.225	Q
4	Miller, Albert 9057 County Road 448, 158 deg, 2.6 mi.	N 38° 43.628 W 91° 45.822	Q
5	Hux, Ron 8802 County Road 448, 153 deg, 2.5 mi.	N 38° 43.797 W 91° 45.605	Q
6	Lindeman, Henry 8754 County Road 448, 141 deg, 2.2 mi.	N 38° 44.224 W 91° 45.353	Q
7	Kriete, Stan 8304 County Road 448, 108 deg, 2.1 mi.	N 38° 45.145 W 91° 44.683	Q
8	Brandt, John 9400 County Road 457, 193 deg, 3.4 mi.	N 38° 42.794 W 91° 47.711	Q
9	Clardy, Scott & Tammy 9142 County Road 457, 204 deg, 2.9 mi.	N 38° 43.407 W 91° 48.216	Q
10	Dillon, Susan 9076 County Road 457, 208 deg, 2.7 mi.	N 38° 43.616 W 91° 48.305	Q
12	Dillon, Joe 9549 County Road 464, 165 deg, 3.6 mi.	N 38° 42.71 W 91° 45.83	Q
22	Plummer, Robert 10402 State Road 94, Portland, 140 deg, 4.8 mi.	N 38° 42.541 W 91° 43.408	Q
D01	Portland Bar/Grill 136 deg, 5.0 mi.	N 38° 42.591 W 91° 43.022	Q
PW1	Supplies plant potable water	Callaway Plant Cafeteria	Q

Notes:

(1) All distances are measured from the midpoint of the two reactors as described in FSAR-SA Section 2.1.1.1**Error! Reference source not found.** (N 38° 45.705' W 91° 46.873').

(2) Analyze all samples for ^{3}H and Principal Gamma Emitters to the LLD shown in ODCM/ FSAR-SP Table 16.11-9 for drinking water. If contaminated with gamma emitting nuclides of plant origin, analyze for Hard- to- Detect (HTD) nuclides. HTD nuclides are defined as ^{89}Sr, ^{90}Sr, ^{55}Fe, ^{63}Ni, ^{237}Np, ^{238}Pu, $^{239/240}Pu$, ^{241}Pu, ^{241}Am, ^{242}Cm and $^{243/244}Cm$.

(3) Station PW-1 is supplied by Unit 1 construction well #3 (DGLS # 028347) which is open from 400'- 1400' bgs across multiple aquifers from the Cotter- Jefferson City through the Derby- Doe Run formation. Located inside the Owner Controlled Area.

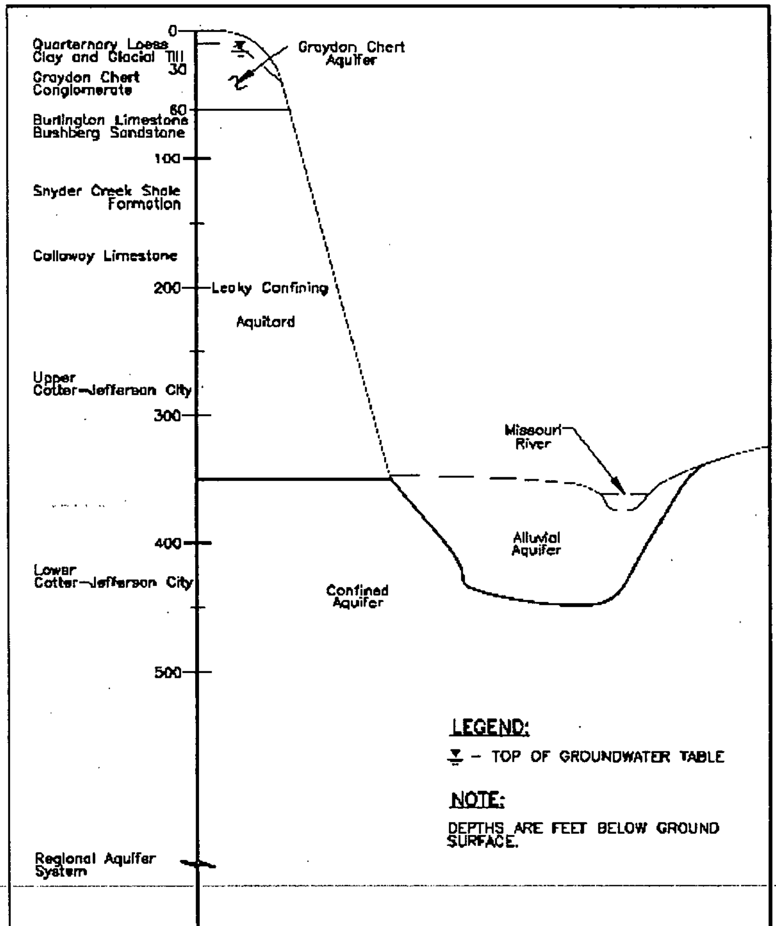
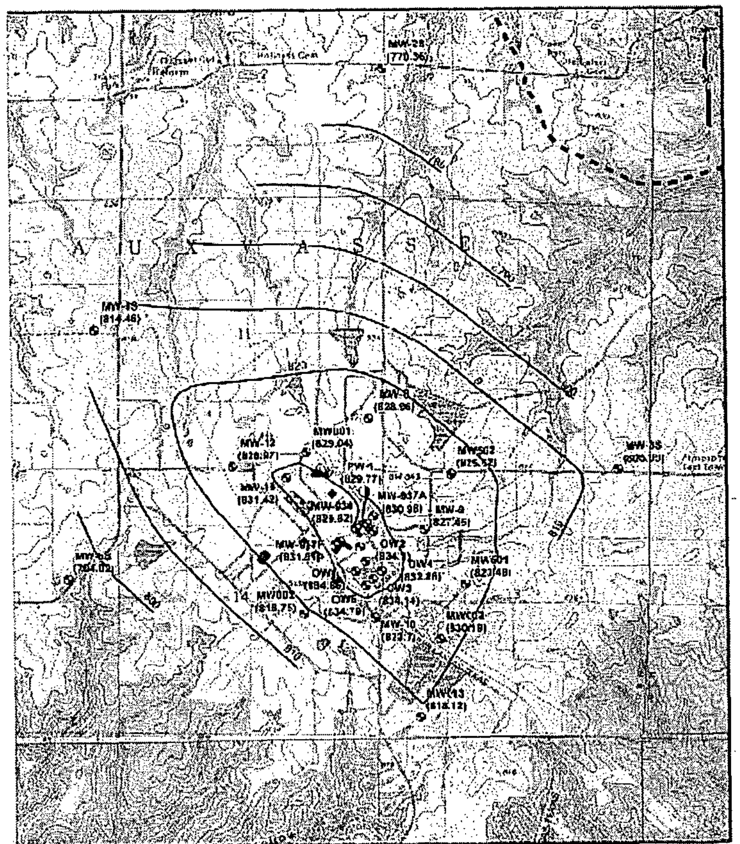


Figure 2.4.12-10 Rev. 0

Hydrogeological Units

CALLAWAY Unit 2 FSAR



LEGEND

PW-1 (829.77) — Pumping Well Location (Groundwater Elevation 1,1%)

MW-28 (770.36) — Monitoring Well Location (Groundwater Elevation 1,1%)

Hydrogeologic Study Area

Contour Interval - 10 ft

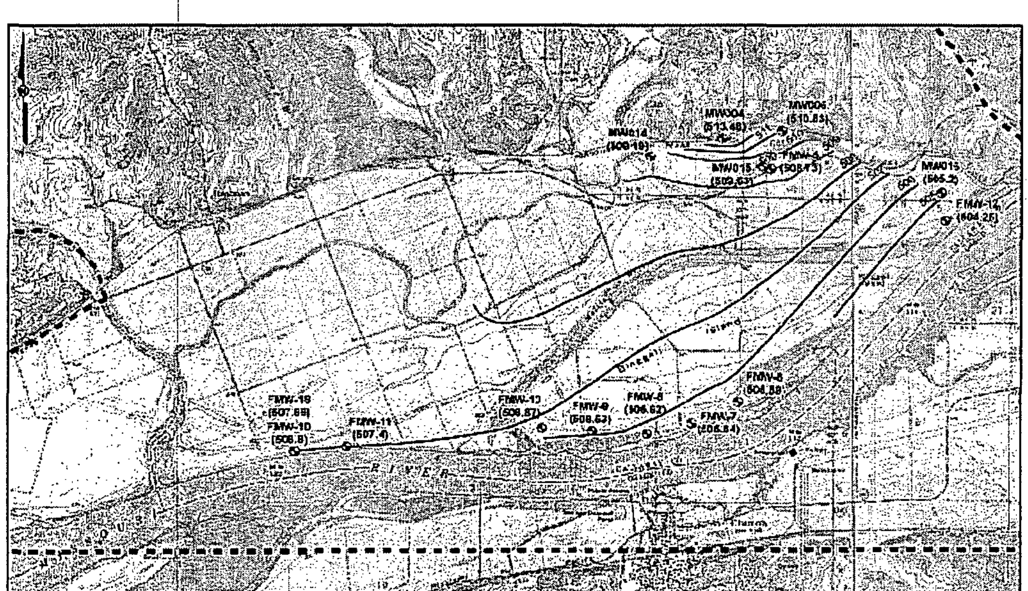
0 — 1,000 — 2,000 — 3,000 — 4,000 Feet

REFERENCE
USGS 1:100K Topographic Maps

Figure 26 - Potentiometric Surface Map Greydon-Chert Aquifer

Groundwater Model Report

August 2008



LEGEND

FMW-5 (508.73) Monitoring Well Location (Groundwater Elevation Data)

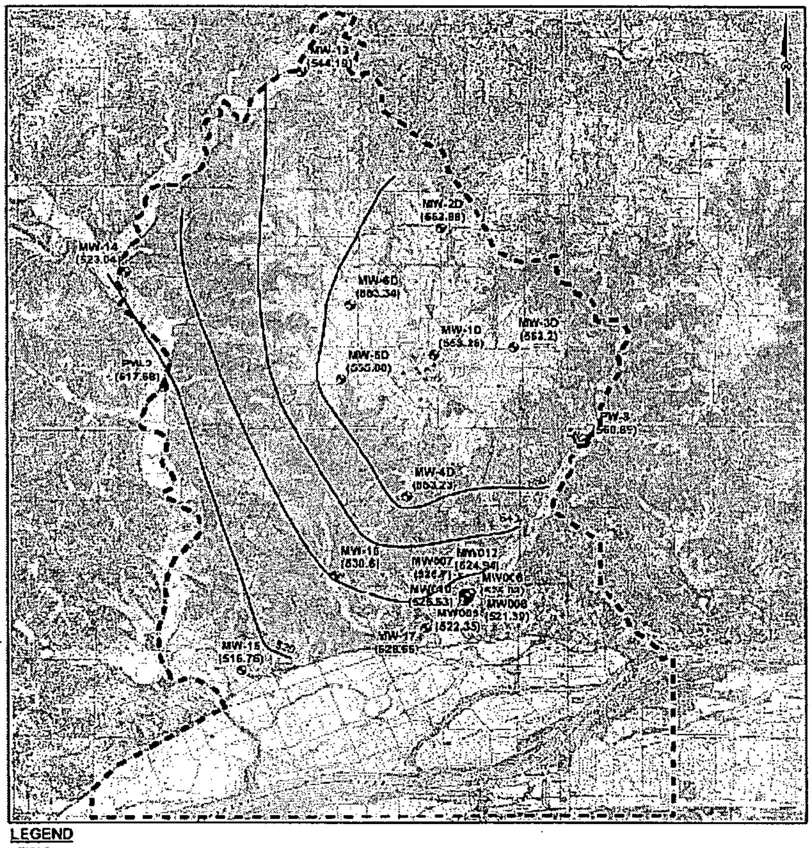
Hydrogeologic Study Area

Contour Interval - 1 ft

0 1,500 3,000 4,500 6,000 Feet

REFERENCE:
USGS 1:100K Topographic Maps
Nebraska East and Mortison Maps edited 1985

Figure 27 - Potentiometric Surface Map
Missouri River Alluvial Aquifer
Groundwater Model Report
August 2008



LEGEND

PW-2 (517.68) Pumping Well Location (Groundwater Elevation ft msl)

MW-1D (553.26) Monitoring Well Location (Groundwater Elevation ft msl)

Hydrogeologic Study Area

Contour Interval - 10 ft

0 3,500 7,000 10,500 14,000 Feet

REFERENCE:
USGS 7.5-minute Quadrangles:
Missouri Spatial Data Information Service Website

Figure 28 - Potentiometric Surface Map
Cotter-Jefferson City Aquifer
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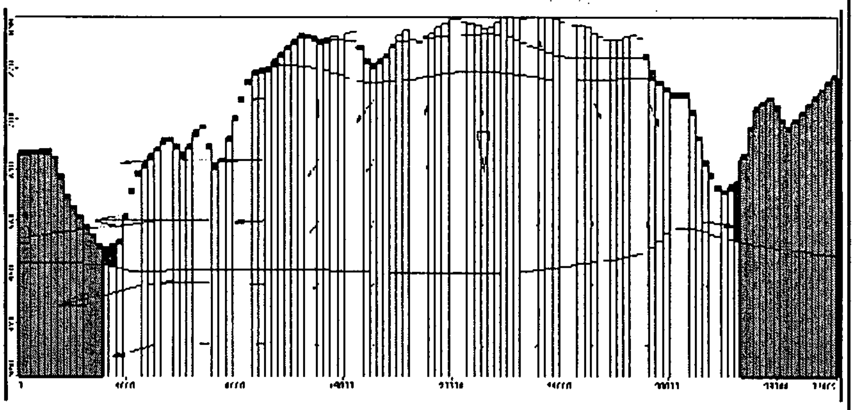

Figure 29 – Cross-Section of Groundwater flow field

Groundwater Model Report

August 2008

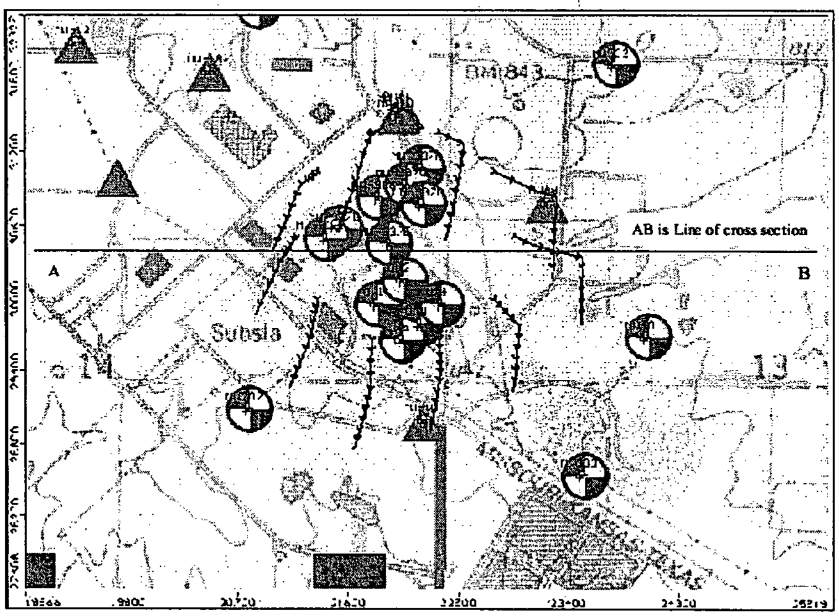

Figure 30 – Unit 1 Particle Release

Groundwater Model Report

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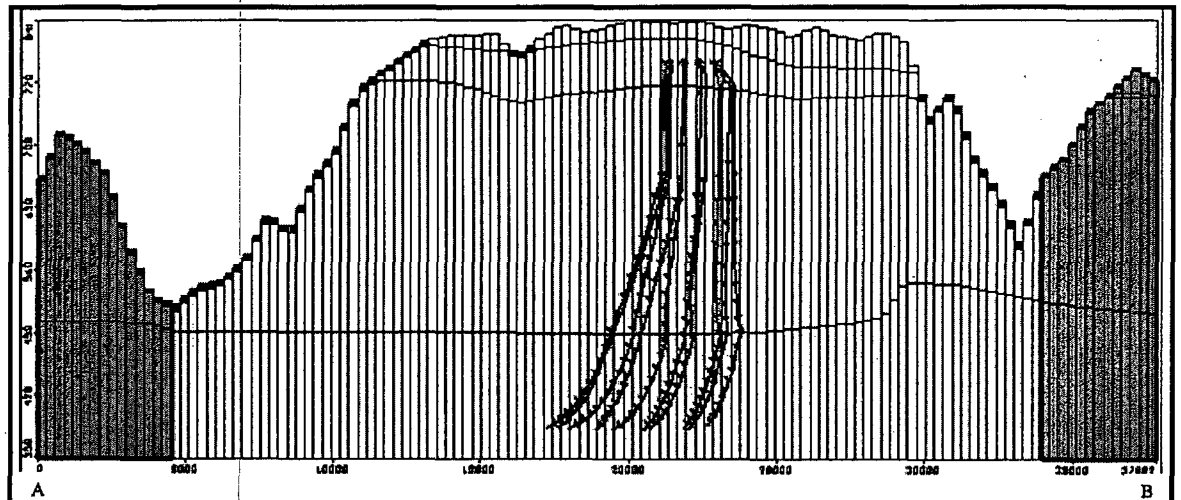

Figure 31 - Unit 1 Particle Cross-Section
Groundwater Model Report
August 2008

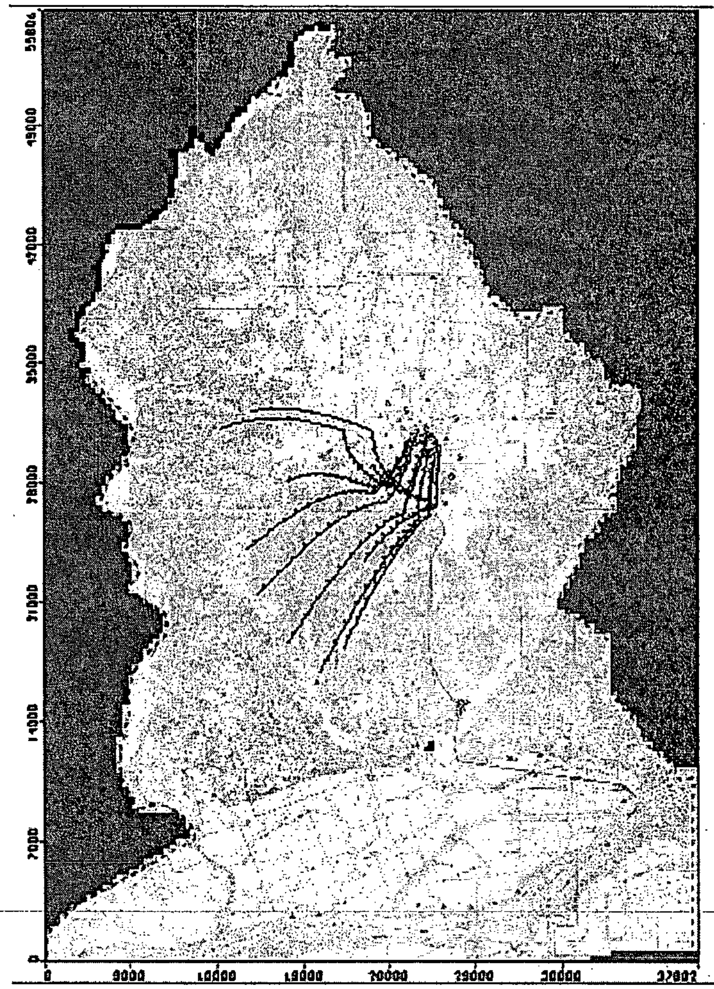

Figure 32 – Unit 1 Particles to Layer 4

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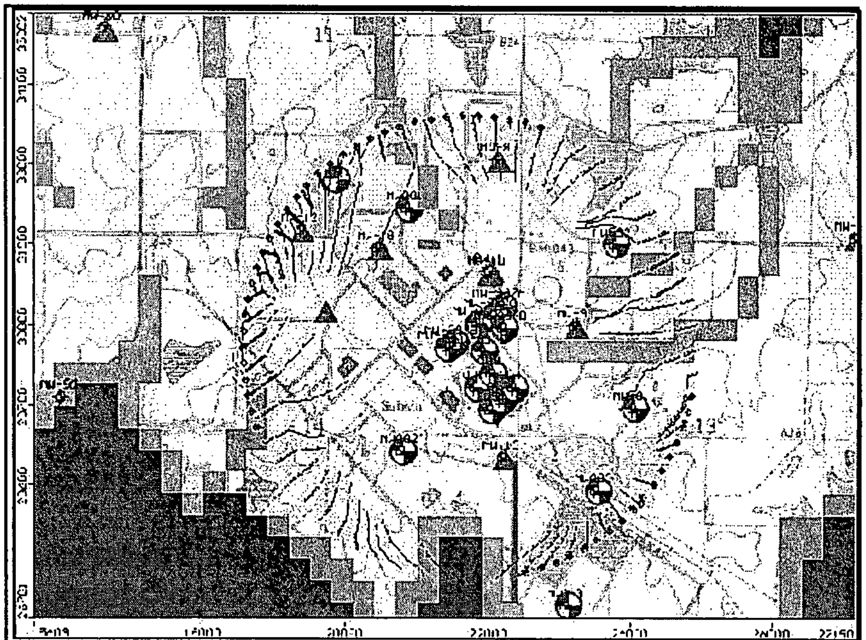

Figure 33 – Periphery Particle Release
Groundwater Model Report
August 2008

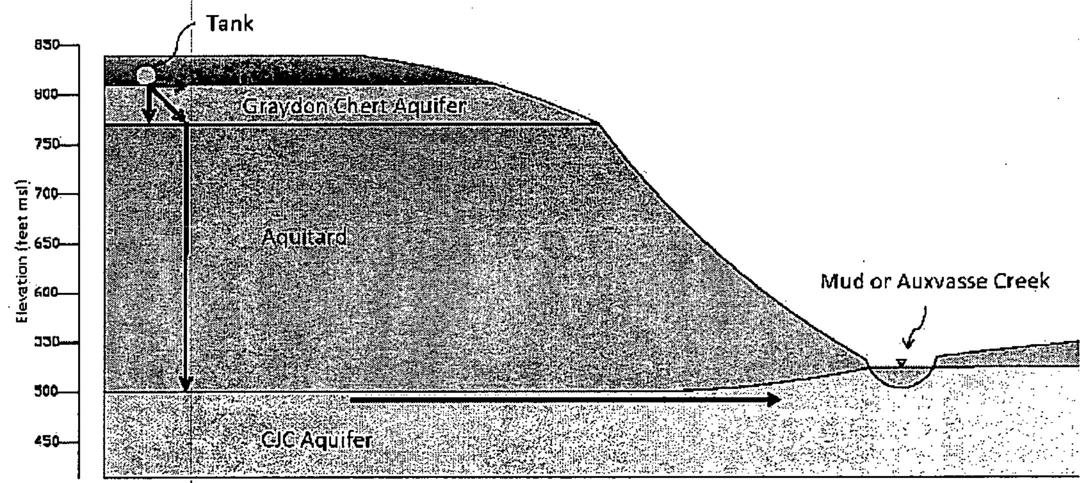

Figure 2.4.13-1 Rev. 0

Conceptual Groundwater Flow and Transport Pathways

CALLAWAY Unit 2 FSAR