From: Mike Thomas [mthomas@uranerz.com]
Sent: Wednesday, May 20, 2009 10:56 AM
To: Ron Linton
Cc: Irene Yu
Subject: RE: Uranerz ER RAI Responses

That is the one that should contain the ER RAI's. Thanks for the notification.

Mike

Mike Thomas
Environmental, Safety, and Health Manager
Uranerz Energy Corporation
Work: 307-265-8900
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Fax: 307-265-8904
Mthomas@uranerz.com

From: Ron Linton [mailto:Ron.Linton@nrc.gov]
Sent: Wednesday, May 20, 2009 8:52 AM
To: Mike Thomas
Cc: Irene Yu
Subject: RE: Uranerz ER RAI Responses

Mike:
I picked up one large box from secretaries station @ 4:00 just after our telecon yesterday. I didn't have a chance to open it as I was hustling to catch my carpool. I won't have a chance to open it until I get in the office tomorrow, but it appears to have made it to NRC.
Ron

From: Mike Thomas [mailto:mthomas@uranerz.com]
Sent: Tuesday, May 19, 2009 10:06 AM
To: Ron Linton; Irene Yu
Subject: Uranerz ER RAI Responses

Ron and Irene,

Yesterday I mailed out the Uranerz responses to the ER RAI's. You should be receiving one box today or tomorrow that has all the revisions, requested site forms, and a packet on top. The packet contains two copies of the cover letter for the responses, cultural resources affidavit for the included site forms, set of index sheets detailing what revisions were made, and the actual responses to the ER RAI's.

I have also attached the cover letter and the ER RAI responses for your review.

Let me know if you have any questions,

Mike

Mike Thomas
Environmental, Safety, and Health Manager
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Received: from mail2.nrc.gov (148.184.176.43) by OWMS01.nrc.gov
(148.184.100.43) with Microsoft SMTP Server id 8.1.358.0; Wed, 20 May 2009
10:55:06 -0400
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([72.166.85.10]) by mail2.nrc.gov with ESMTP; 20 May 2009 10:55:06 -0400
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with Microsoft SMTPSVC(6.0.3790.3959); Wed, 20 May 2009 08:55:33 -0600
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Subject: RE: Uranerz ER RAI Responses
Date: Wed, 20 May 2009 08:55:32 -0600
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From: Mike Thomas <mthomas@uranerz.com>
To: "Ron Linton" <Ron.Linton@nrc.gov>
CC: "Irene Yu" <Irene.Yu@nrc.gov>
Return-Path: mthomas@uranerz.com
X-OriginalArrivalTime: 20 May 2009 14:55:33.0342 (UTC) FILETIME=[06A3CFE0:01C9D95B]

Uranerz
ENERGY CORPORATION

May 8, 2009

Attn: Document Control Desk
Ron Linton
Project Manager
Uranium Recovery Licensing Branch
Division of Waste Management and
Environmental Protection
Office of Federal and State Materials and
Environmental Management Programs
U.S. Nuclear Regulatory Commission
Two White Flint North, MS T8F5
11545 Rockville Pike
Rockville, MD 20852

RE: Responses to the Environmental Report Request for Additional Information for the Nichols Ranch ISR Project License Application (TAC J00553, Docket No 040-09067)

Dear Mr. Linton,

In a letter dated March 12, 2009 the Nuclear Regulatory Commission (NRC) staff requested additional information (RAI) to complete the review of the Environmental Report (ER) for the source material license application for the Uranerz Energy Corporation Nichols Ranch ISR Project. By this letter, Uranerz is submitting responses to the NRC ER RAI's. The responses include:

- A detail response to each ER RAI including reference to the applicable section of the Environmental Report or applicable portion of the Nichols Ranch ISR Project Source Material License Application for those RAI responses that required revisions to be made to the Environmental Report or to other portions of the Source Material License Application.

- 6 copies of all revised sections of the Environmental Report. The revised sections include new copies of the Table of Contents, Chapters 2, 3, 4, and revisions to Appendix D10 contained in Volume VIII of the Nichols Ranch ISR Project license application. Chapters 5 through 10 of the ER have also been included since page numbering has changed with those chapters, but no revisions were made to the chapters.

- A set of index sheets detailing where the new revisions pages are to replace pages in the ER and original license application.

Additional information that was not part of the NRC ER RAI's but has been provided includes revisions to Section 3.6 of the Environmental Report, revised Addendum 5B, and the addition of Wyoming Cultural Properties Forms 48CA6146, 48CA6147, 48CA6148, 48CA6149, 48CA6748,

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48CA6749, 48CA6750, 48CA6751, 48CA6752, 48CA6753, and 48CA6754 to be included into Addendum 3C of the Environmental Report Confidential Binder of the Environmental Report. The revisions to 3.6, Addendum 5B, and the Wyoming Cultural Properties Forms also include the following information:

- Six copies of the Wyoming Cultural Properties Forms. These copies are contained in red confidential folders that are appropriately labeled as Addendum 3C for the Environmental Report.

- Six copies each of text revisions to Section 3.6 of the Environmental Report. This section was revised to include new meteorological information that was submitted to the NRC in the March 2009 Technical Report RAI response submission. (The revised Section 3.6 is included with the new Chapter 3 provided with the NRC ER RAI responses.)

- Six copies each of revised Addendum 5B – Nichols Ranch ISR Project Surety Estimate

- An affidavit for withholding the cultural resource information from pubic disclosure.

If you have any questions regarding the RAI response submittal, please contact me at 307-265-8900 or by email at: mthomas@uranerz.com.

Sincerely,

Mike Thomas
Environmental, Safety, and Health Manager
Uranerz Energy Corporation

Enclosures: Responses to NRC ER Request for Additional Information
Environmental Report Revision Index Sheets
Environmental Report Revisions – Table of Contents, Chapters 2, 3, and 4 (revisions)
Environmental Report – 5 through 10 (page numbers revised, content not revised)
Affidavit to Withhold Cultural Resource Information from Public Disclosure
Confidential Folders Containing Cultural Resource Information (Red Folders).

cc: Irene Yu, Environmental Project Manager, (via email – cover letter and responses only)
Glenn Mooney, WDEQ Project Manager, (via email – cover letter and responses only)
Jerry Queen, BLM Buffalo Field Office, (via email – cover letter and responses only)

Request for Additional Information
Regarding the Uranerz Energy Corporation's
Nichols Ranch ISR Project License Application
Environmental Report – Uranerz Energy Corporation Responses

Air Quality

AIR-1 ER Section 3.6.2.2. The ER states that "Particulate emissions associated with the Nichols Ranch ISR Project will also be minimal." However, emission calculations are not provided for each phase of the proposed project.

a) Provide emission estimates for vehicle traffic during each phase of the proposed project (construction, operation, decommissioning, aquifer restoration) including assumptions (i.e., number of vehicles, types of vehicles, fuel usage, type of fuel).

URZ Response:

Emission estimates for all aspects of the project (i.e. construction, operation, decommissioning, and aquifer restoration) are based upon the fugitive dust calculations provided in Figure 2-11 of the Technical Report. Estimates for vehicle traffic are indicated in Section 3.6.2.2 of the ER. This includes eight passenger vehicles (standard light duty trucks or ¾ ton trucks, gas or diesel fuel) per day per week along with six tractor trailers (diesel) per week. The amount of tractor trailer traffic may be reduced during aquifer restoration activities since the amount of process chemicals and resin transfers from Hank to Nichols is less than when in production. Because of the reduced tractor trailer traffic, the estimated amount of fugitive dust produced would be approximately 109 tons per year for the decommissioning and aquifer restoration stages. The 135.9 tons of fugitive dust specified in the ER would be applicable to the construction and operation phase since vehicular traffic would be nearly the same for these aspects of the project.

b) Provide information on where the fuel may be stored and what leak protection would be available for the fuel storage.

URZ Response:

Fuel will be stored in above ground tanks that will be located in a containment basin constructed out of concrete and/or steel. The containment basin will be designed to hold the volume of a full fuel tank plus a safety factor (usually between 1.1 to 1.5). The fueling facilities at each plant will be located downwind of the processing facilities. Routine visual inspections of the fueling area will be used to check for potential fuel leaks that may occur.

c) Provide information on the method of dust suppression during construction.

URZ Response:
The method of dust suppression that will be employed during construction will be the spraying of water on areas where any disturbance will or has occurred.

Alternatives

ALT-1 ER Section 2.2.1. Provide background information to justify the selection of the locations of the central processing plant, satellite facility, and roads. If other locations were considered, provide details on those locations and a justification for why those locations were less preferable to the chosen location.

URZ Response:

As stated in ER Section 2.2.1 the plant site locations for the Nichols Ranch CPP and the Hank Satellite facilities where chosen because the locations occur on the most topographically suitable area within the license area and are off of the ore zone. The areas where the plants are located are relatively flat and open areas where minimal dirt work would have to be performed for the construction of the facilities. Also the locations are near existing roads resulting in the minimum amount of road construction and road upgrades that must be done to access the plants. By taking into account these considerations, no other alternative sites where considered. The sites chosen are the areas where the plants can be constructed most economically with the minimal amount of disturbance to the area.

ALT-2 ER Section 2.2.4. Provide additional physical details (i.e., approximate size, location, operations) on the two liquid effluent disposal alternatives to deep well injection (evaporation ponds and overland application) and the potential impacts resulting from thesealternatives.

URZ Response:

Evaporation ponds were not chosen as the proposed action for the liquid effluent disposal because of the size of the ponds, possibilities of leaks with the ponds, and potential issues with wildlife. Given that the average annual evaporation rate for Wyoming and its climate is approximately 2 gallons per minute per acre of pond, one evaporation pond for the Nichols Ranch and/or Hank area would have to be at least 75 acres in size given that deep disposal well capacity is 150 gallons per minute for each site. Two ponds would be needed at each site to deal with issues such as surge capacity and the ability to transfer water from one pond to the other in the event that a leak is detected. The total amount of disturbance for all four ponds equals the estimated amount of disturbance for the entire life of the Nichols Ranch ISR Project. Additionally, the cost for building such large ponds at each site is approximately 2 to 3 times more than installing a deep disposal well. Wildlife issues would also have to be mitigated to prevent the local populations of deer, antelope, sage grouse, etc. from accessing the ponds. Mitigation measures would also have to be undertaken to prevent migratory game birds (i.e. ducks and geese) from using the ponds during periods of their migration. Because of these issues, ponds were not considered to be a feasible method for liquid effluent disposal.

The ponds would have to be located near the proposed plant sites (northwest of the Hank plant site and to the south of the Nichols Ranch site).

Land application methods of liquid effluent disposal were considered, but rejected. This method was once used at a different ISR operation in the Powder River Basin of Wyoming with initial success as a way of disposing of water, but overtime vegetation

studies showed an increasing build up of selenium in the vegetation and soil. Because of this, land application was halted and liquid effluents were disposed of in a combination of ponds and deep disposal wells. Because selenium and other metals in liquid effluents, land application is not a viable method of liquid effluent disposal.

ALT-3 ER Section 2.0. Provide information as to why both units were considered for the Nichols Ranch Project instead of just the Nichols Ranch Unit or the Hank Unit.

URZ Response:

A preliminary feasibility study (Preliminary Assessment) was conducted on the Nichols Ranch Project. From an economic and shareholders perspective, in order to justify the large amount of capital necessary to build a main processing facility, the amount of U_3O_8 pounds processed needed to be increased. By adding the Hank Unit into the Nichols Ranch ISR Project, the number of pounds produced on an annual basis increases to an economically feasible level. Adding the Hank Unit in the Nichols Ranch ISR Project also increase the life, or the number of years the main processing plant can operate, for the Nichols Ranch ISR Project. If only the Nichols Ranch Unit or only the Hank Unit is stand alone projects, there are not enough pounds to justify the capital requirements of a main processing plant.

ALT-4 ER Section 2.0. The ER states that the facilities were "located off of the ore zone on the most topographically suitable land within the project area" and that "the ease of access with the minimum disturbance was considered in selecting the plant locations." Provide additional information on your site-selection process to support these statements.

URZ Response:

See response to ALT-1 ER Section 2.2.1

Cultural Resources

CR-1 ER Section 3.8. The applicant has not provided sufficient information regarding cultural resources to fully understand the potential impacts.

a) Clarify if cultural resources assessment was completed for the proposed access roads and permanent routes used to access the facilities.

URZ Response:

No specific cultural resource assessments were conducted for proposed access roads and permanent routes to be used to access the facilities. However, cultural resource surveys that have been conducted by either Uranerz or coal bed methane companies have covered all the areas where access roads are being proposed. Permanent routes to access the facilities are a result of ranch roads that were present on the ranch property. These permanent access roads have been upgraded from two-track roads into crowned and ditched roads by coal bed methane companies. Since these roads are existing disturbed roads, no cultural resource assessments are required unless Uranerz would conduct any additional road work that would encompass disturbance outside of the existing disturbance.

b) Provide a complete description of any structure present within the boundaries of Site 48J02951 (homestead) and the results of any visual assessment completed for these buildings (if present) relative to the proposed project facilities. If the response contains sensitive information, please mark the sections in your response accordingly.

URZ Response:

A complete copy of the requested site form has been obtained from the Wyoming State Historic Preservation Office/Cultural Records Office and has been attached to these responses to be included in Addendum 3C of the confidential binder of the NRC Environmental Report.

c) Provide the results of any visual assessment completed for Site 48CA6474 (rockshelter) relative to the proposed project facilities. If the response contains sensitive information, please mark the sections in your response accordingly.

URZ Response:

A complete copy of the requested site form has been obtained from the Wyoming State Historic Preservation Office/Cultural Records Office and has been attached to these responses to be included in Addendum 3C of the confidential binder of the NRC Environmental Report.

d) Explain why only 240 acres of the proposed project site were included in the Class III cultural resources survey. If additional surveys have been completed, provide that information.

URZ Response:

A statement has been added to Section 3.8, that Class III cultural resource inventories have been completed for all areas of the Hank and Nichols Ranch Units and that no additional inventories will be required.

Cumulative Impacts

CUM-1 ER Section 2.3. Provide a map showing the current location of all coal-bed methane infrastructures within the Nichols Ranch Project area.

URZ Response:

Exhibits 2-1, Nichols Ranch CBM Infrastructure, and Exhibit 2-2, Hank CBM infrastructure have been develop and added to Chapter 2 of the ER to show current location of all known CBM infrastructure in the Nichols Ranch ISR Project area including CBM wells (drilled, approved, and proposed), water and utility lines, CBM water reservoirs, and roads.

Ecology

ECO-1 Various sections of the ER state that some of the pipelines will be buried. Provide

information on how many feet of pipeline will be placed aboveground, if any, and the potential for aboveground pipeline to impede wildlife migration.

URZ Response:

Almost all of the piping that will be used for the Nichols Ranch ISR Project will be buried in order to protect the piping from freezing during winter months. If any piping is located above ground, the amount will be minimal (less than 20 feet). Additionally, if any piping is located above ground, it will be in such a location that it will be in a fenced off area such as a wellfield or in the plant area. Any piping used will have no effect on wildlife migration since the piping will be already in a fenced off area, the piping size is less than 18 inches, and there are no known major wildlife migration corridors present in the project area.

ECO-2 Other sections of the ER state that livestock grazing and wildlife habitat will be excluded in areas of construction and site preparation activities. Please provide information as to how wildlife and livestock will be excluded (e.g., fencing) from these areas.

URZ Response:

Uranerz will use fencing to prevent wildlife and livestock from entering into the plant site locations. The type of fencing to be used surrounding the plant sites is typical chain link fence with minimum height of six feet to prevent inadvertent animal or human intrusion. Fencing to be used around the wellfield will be a typical 3-strand livestock fence to prevent livestock from entering the wellfield. This type of fencing will not prevent animals that can jump the fence, such as deer and antelope, from entering the wellfield area. The reason livestock is prevented from the wellfield area is that livestock can cause damage to wellheads and header houses by rubbing up against them. This could lead to unnecessary spills caused by a broken wellheads or broken lines that go to the wellheads.

ECO-3 In ER Section 4.7.1.1.2.7, the ER states that "Forty raptor nests occur within the wildlife study area, of which 14 were determined to be active. Twelve of the 14 active nests were located in the Hank Unit and two of the active nests were located in the Nichols Ranch Unit." However, TR Appendix D9 Section D9.2.8.2 states that "...40 raptor nests were found within the project area...of which 10 were determined to be active. Nine of the 10 active nests are located in the Hank Unit and one of the active nests is located in the Nichols Ranch Unit." Clarify this discrepancy and provide the accurate number of active raptor nests within the Hank Unit and the Nichols Ranch Unit.

URZ Response:

The text in the ER Section 4.7.1.1.2.7 Raptors has been revised to reflect information that is consistent with the information presented in the NRC Technical Report Appendix D9 Section 9.2.8.

Geology and Soils

GEO-1 Provide information on how freezing and thawing issues related to the maintenance of header houses (i.e., a possible break in aboveground piping) will be addressed to minimize impacts to soils.

URZ Response:

Uranerz addressed questions regarding header house spill prevention in the responses to the NRC Technical Review Request for Additional Information (RAIs) Responses dated March 11, 2009. Please refer to responses pertaining to RAIs 3.1a and 3.1d and the revised Chapter 3 text (Sections 3.4.3, 3.5 and 3.6) of the Technical Report.

Land Use

LU-1 ER Section 3.1.2. The ER and TR state that the potential of drawdown extends several miles beyond the permit area near and around the Nichols Ranch Unit. The applicant has not provided sufficient information to fully understand the potential impacts due to this large drawdown area.

URZ Response:

The majority of wells in the Nichols Ranch Unit area that are located in the ore sand have numerous 10's of feet of potential drawdown prior to reaching the top of the aquifer. The larger drawdowns that are caused by the Nichols Ranch Unit bleed rate should not greatly affect the production from pumping wells located in the same sand as the ore sand (A Sand) due to the large amount of potential drawdown. The flowing wells that are inside the 10 foot contour and produce the majority of its water from the A Sand are likely to cease flowing adjacent to the Nichols Ranch Unit. Most of the flowing wells in the area only have a few PSI pressure when they are shut in. For example, Brown 20-9 flowing well is completed in the A Sand and will very likely cease flowing during the ISR operation. Therefore the flowing wells within the 10 foot drawdown contour are the wells that should be noted for potential impact during the Nichols Ranch Unit operation. A pump may have to be installed in a flowing well if the drawdowns cause it to cease flowing.

a) A list and map of all potable and non-potable water resources related to residential, commercial, industrial, and public lands one mile beyond the predicted drawdown area identified in TR Section 7.2.3 for the proposed Nichols Ranch Unit.

URZ Response:

With the response provided above, the only wells that may be affected by the drawdown at the Nichols Ranch Unit would be those wells that are free flowing and are located in the ore zone or A Sand. A search of the Wyoming State Engineer's database showed a total of 10 wells in a five mile radius of the Nichols Ranch Unit that were free flowing wells and located in the ore sand (A Sand). Exhibit 4-3 has been added to Chapter 4 of the ER to show all free flowing A Sand wells within five miles of the Nichols Ranch Unit.3. Section 4.4.1.3 has been revised to include a reference to the new Exhibit 4-3.

b) A list and map of the predominant activities conducted on each individual land parcel (e.g., grazing, oil & gas, coal-bed methane) that may involve potable or non-potable water sources one mile beyond the predicted drawdown area identified in TR Section 7.2.3 for the proposed Nichols Ranch Unit.

URZ Response:

The area within a five mile radius of the Nichols Ranch Unit is predominately private land. The land use is the same as stated in the Environmental Report, livestock grazing and wildlife habitat. In recent years some of the land is now used in oil and gas extraction, coal bed methane extraction, and potential uranium recovery operations. As stated in the previous responses, any potential groundwater impacts associated with the Nichols Ranch Unit drawdowns would only affect those wells that are free flowing and located in the ore zone (A Sand). Any oil and gas and coal bed methane activities occur at depths greater than the A Sand (>700 feet). These types of operations do not use any water from the A Sand for drilling activities. Water used for coal bed methane drilling is provided from other coal bed methane sites where the targeted coal seam is being dewatered. Oil and gas use water from a variety of sources including hauling water from local municipalities, drilling a new water well, or from an arrangement with a landowner if drilling is to be conducted on private land. One point of importance is that the majority of oil and gas drilling is a single occurrence that does not consume water over a long period of time. Most oil and gas wells are completed in a month or less.

c) A list and map of recreational sites and activities that may involve potable and non-potable water sources one mile beyond the predicted drawdown area identified in TR Section 7.2.3 for the proposed Nichols Ranch Unit.

URZ Response:

There are no recreational areas located within 5 miles of the Nichols Ranch Unit project area. The majority of the land surrounding the Nichols Ranch Unit is private therefore there would be no activities that would involve recreational sites that require potable and non-potable water sources.

LU-2 ER Section 3.1.2. Provide the details of any landowner/BLM agreements regarding the termination of grazing leases due to the proposed ISR operations.

URZ Response:

Uranerz does not know the terms of any agreements between the landowners/BLM regarding grazing leases. However, according to the BLM, if a grazing lease is affected by the proposed project (i.e. an area removed by fencing), and then the BLM would reduce the amount of the grazing lease allotment which would decrease the amount that the grazing lessee would pay for the grazing lease. There are no legal requirements that would hold Uranerz responsible to compensate the grazing lessee if the Uranerz proposed project removes any portion of the grazing allotment.

LU-3 Provide a map showing the location of all utility lines onsite and specify whether or not these lines will be buried.

URZ Response:

Proposed utility lines that will supply power to the Nichols Ranch and Hank Units are shown on Exhibits 4-1 and 4-2 in Chapter 4 of the ER. The utility lines may or may not be buried. This will be determined in future meetings with the landowner. If the new utility lines will be located above ground, mitigation steps will be taken so that the new power

poles will not be usable by raptors for perches or nesting sites. Section 4.1.1 has been revised to include reference to the new Exhibits 4-1 and 4-2.

LU-4 ER Section 4.1.1. The applicant states that all topsoil removed during construction will be stockpiled in a designated location. For each phase of the proposed project (construction, operation, decommissioning, and aquifer restoration), provide the estimated volume and onsite storage location for the stockpiles.

URZ Response:

Topsoil removal for the project will begin with the construction of the plant sites at both the Nichols Ranch and Hank Units. Each plant site is expected to be approximately 2 - 4 acres in size. Taking 4 acres of disturbance for the plant site at each location, approximately 3,226.7 yd^3 of topsoil will be removed and stockpiled at each plant site. As stated in 4.1.1 of the Environmental Report, this topsoil will remained stockpiled for the life of the project.

Additional topsoil will be removed for any wellfield and plant access roads and header house location. Any access roads will remain in place for the life of the project. Header houses will also be left in place until the groundwater restoration of the wellfield where the header houses are located is complete and sign off by both the NRC and DEQ. An estimated 92 acres or 74,213 yd^3 (100 total acres for the project) of topsoil will be removed for access road and header house construction. The location of the topsoil stockpiles will be determined during construction activities so that the stockpiles will be located to minimize topsoil soil losses from wind and water erosion. Any topsoil from road construction will be handled in accordance to the practices preferred by the land owner and as outlined in Addendum 5A of the Environmental Report. Topsoil handling practices are also outlined in Section 5.1.2.3 of the Environmental Report.

Most of the topsoil will be salvaged during the construction portion of the project and will not be reapplied until final reclamation/restoration takes place. Topsoil salvaging during operation, decommissioning, and aquifer restoration, will be minimal and is accounted for in the total topsoil removal estimate.

Noise

N01-1 ER Section 3.7. The ER states that noise produced above background levels will be limited. However, no background levels are provided.

a) Please provide field noise measurement data to determine background ambient sound levels.

URZ Response:

No field level noise measurements were taken to determine background ambient sound levels. However since the Nichols Ranch ISR Project is located in a remote area, ambient noise levels are likely to range from 29 to 39 dBA, depending on time of day, as reported for "farm in valley" sites by Wyle Laboratories (1971). Section 3.7 text has been revised to reflect this information and is attached to these responses.

b) If no field measurements were taken, provide the methodology of how the ambient

background sound levels were determined to assess noise impacts.

URZ Response:

See previous response for NOI-1 ER Section 3.7. The discussion as to how the ambient sound levels were determined is included in the revised Section 3.7 text that is attached to these responses

NOI-2 ER Section 4.9.1. The ER states that "noise is created by the construction/drilling activities in the wellfield, from truck traffic for the operation, and from the operation of the processing plants..." However, no projections of noise levels were provided for the proposed project.

a) Provide projections of typical equipment and their reference sound levels that would be associated with activities during each phase of the proposed project.

URZ Response:

Typical equipment that will be used for the Nichols Ranch ISR Project and their noise levels are below. Section 4.9.1 has been revised to include this information.

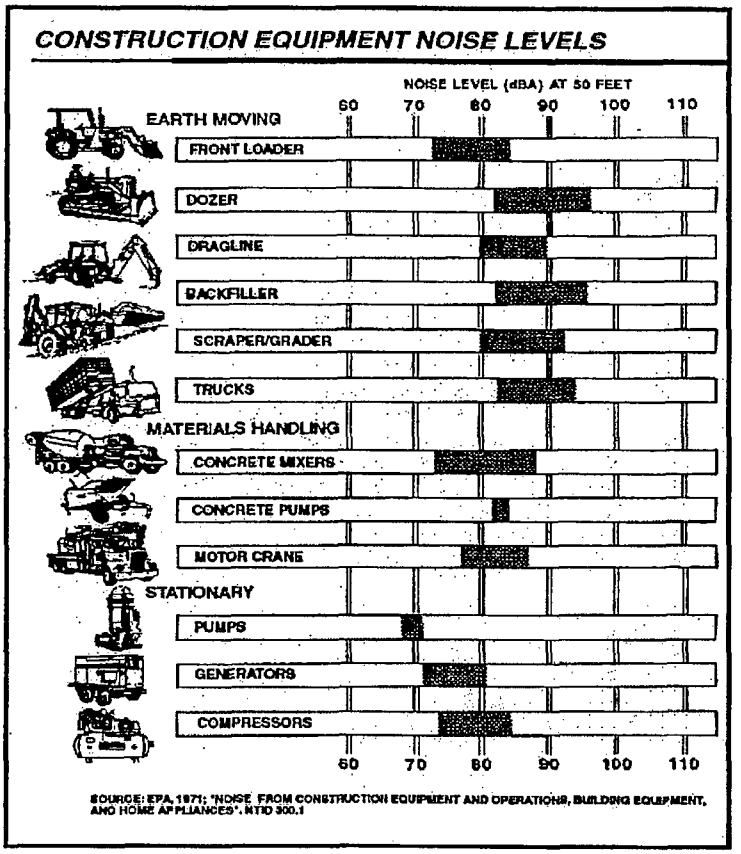


FIGURE 3-23
CONSTRUCTION EQUIPMENT NOISE LEVELS

b) Provide estimated daily or peak hour traffic volumes and number of trucks on local roadways that will be utilized daily during each phase of the proposed project.

URZ Response:

Traffic would be approximately eight pickup trucks per day per week and six tractor trailers per week during the day. This volume of traffic would be for the construction and operation of the project. The decommissioning and aquifer restoration portion of the project would see a decrease in the traffic volume since the amount of chemicals and supplies needed to run the operation would decrease in these phases. Traffic volumes would be the highest Monday through Friday during the beginning and ending of regular working hours (around 8:00 AM and 4:00 PM).

Public and Occupational Health

POH-1 ER Section 3.11.1. The ER provides a general description of natural background radiation; however, it does not address the specifics for Wyoming and the surrounding environmental for the proposed facilities. Provide additional information indicating whether or not the background radiation or radioactive levels for the site are different than that assumed otherwise for Wyoming and or the normal background exposure.

URZ Response:

As required by the Nuclear Regulatory Commission (NRC), an extensive baseline radiological survey was conducted for the Nichols Ranch and Hank Units. The surveys included numerous gamma measurements; collection and analysis of surface and subsurface soils; collection and analysis of sediment samples from ephemeral streams passing through the proposed license areas; collection and analysis of vegetation; surface water analysis; as well as quarterly monitoring of Rn-222 and gamma at a number of locations within and adjacent to the proposed license areas. As noted in Section 2.9 of the Technical Report (TR), Ra-226 values from the baseline survey were compared to the 1 pCi/g value typically found in normal soils, and a reference was given to NCRP Report No. 78. As used in this publication, normal soils would include areas of Wyoming that are not influenced by rocks or soils that are known to have naturally elevated levels of uranium or Ra-226. In other words, soils in Wyoming, as with many other areas of the U.S. and the world, typically have Ra-226 concentrations of approximately 1 pCi/g. A review of Tables 2-22 and 2-24 in the TR shows that the average Ra-226 values at the Nichols Ranch and Hank sites are 0.9 pCi/g and 1.1 pCi/g, respectively, and these measured levels are consistent with the 1 pCi/g value reported for normal soils. As noted on page TR-116, one site (LAS-5) had a Ra-226 value of 26 pCi/g. Given the relatively large sample population which shows most of the values to be at or near the 1 pCi/g norm, LAS-5 is clearly an outlier. Because LAS-5 is a single point-source anomaly, likely a remnant of earlier drilling activity, it is not a weighty factor in the overall radiological background evaluation.

With respect to the other radiological parameters (U, Th-230 and Pb-210) that were included in the baseline surveys, they too are within normal background ranges. Again, referring back to the summary tables in the TR it can be seen that the majority of the sample sites had non-detectable levels of Pb-210 and the measurable levels averaged less than a pCi/g. Background Th-230 exhibited the same pattern of non-detectable to less than a pCi/g. Lastly, average U values of less than 2 mg/kg are not unusual. In summary, the survey results show that the Nichols Ranch and Hank Units have radiological characteristics that are within the normal ranges reported in the literature and at other sites where similar surveys had been performed.

The extensive Rn-222 and gamma surveys also show values that would be expected for Wyoming. The one-year values measured at the Nichols Ranch and Hanks Units were compared to the U.S. average and to measurements taken between 1988 and 1989 at the nearby North Butte Project. The annualized average at North Butte was 0.8 pCi/l as compared to 1.2 pCi/l and 1.0 pCi/l at Nichols Ranch and Hank, respectively. Given that Rn-222 concentrations are known to vary significantly depending on a host of factors such as moisture, atmospheric pressure changes, land use activities, etc., the tight range in values between North Butte and the Nichols Ranch ISR Project validates the accuracy of the baseline monitoring program. It was noted in the TR that the values measured at

the sites are above the U.S. outdoor average of 0.4 pCi/l, as reported by the U.S. EPA. It was also noted, however, that this comes as no surprise since only two counties in Wyoming (Weston and Platte) have indoor Rn-222 levels that are lower than the 4 pCi/l EPA Action Level of 4 pCi/l. The indoor average Ra-222 level for Wyoming is approximately 3 times higher than the U.S. average of 1.3 pCi/l.

In rounding out the discussion on radiological background conditions at the Nichols Ranch/Hanks Units in comparison with Wyoming and the U.S., baseline gamma measurements at the Nichols Ranch/Hank sites are not atypical. Again, a comparison over time and distance was made using 1988-1989 data from North Butte and 2007 data from the Nichols Ranch/Hank Units. A review of pages TR-131 and TR-132 in the TR summarize the similarities. The average range at North Butte was from 32 mrem to 40 mrem while the average range at Nichols Ranch was from 35 mrem to 48 mrem. The Hank Unit range was from 35 mrem to 58 mrem. To put these values into perspective, exposure rates from other U.S. locations were provided in the TR. For example, terrestrial background in the Rocky Mountains is approximately 40 mrem; the Colorado Plateau ranges from 75 mrem to 140 mrem; and the average dose to the U.S. population from natural sources is 300 mrem. As can be readily seen from these comparisons, background gamma exposure rates at the Nichols Ranch and Hank Units are in line with natural background reported at other U.S. locations.

POH-2 ER Section 3.11.2. A statement is made in the ER that "Emission rates for these chemicals are well below the threshold that would trigger a permit." Provide a comparison of the annual use, projected air emissions and concentrations, and applicable permit levels to substantiate the above statement.

URZ Response:

The emissions inventory provided in Table 3-3 of the ER represents the five emissions that will be evolved from the Nichols Ranch ISR Project at a two million pound per year of yellowcake production rate. The only two emissions of the five that are currently regulated by State and Federal regulations are fugitive dust and hydrochloric acid. The amount of fugitive dust that is estimated (calculated) to be produced is 135.9 tons per year. This estimate does not take into consideration any means of dust suppression such as wetting dirt roads to further reduce emissions. Additionally, the target value that would require Uranerz to submit an operating permit application to the State of Wyoming is 250 tons per year of fugitive dust emissions. As for the hydrochloric acid fumes, they are considered a hazardous air pollutant under the EPA and the State of Wyoming, but the action limit is 10 tons/yr of emissions. The amount of hydrochloric acid fume emissions that would be emitted from the Nichols Ranch ISR Project is 0.017 tons per year which is substantially below the 10 tons per year action level. The State of Wyoming does require that BACT be used to further reduce hydrochloric acid fume emissions which Uranerz will comply with. By using a small scrubbing system, the amount of hydrochloric acid fume emissions produced during acid off-loading and normal expansion will be reduced 96% or greater. This would reduce acid emissions to 0.0007 tons per year.

POH-3 ER Section 3.11.3. Table 3.10 presents the results of calculated annual doses at the facility site boundary and members of the public for demonstrating compliance with the public dose limit. This assessment appears to be based on information presented in

TR Appendix D11 with Section D11.5 providing limited information on assumptions used for the modeling. Additional information/bases is needed to describe/document the modeling used for estimating source term and basis for the various pathway modeling parameters used in the MILDOS-Area modeling.

a) Provide details of the modeling and basis for selection of assumptions used for calculating the source term in TR Appendix D11 Section D11.5.7, the transport and exposure assumptions in TR Appendix D11 Section D11.5.5, and the meteorological parameters in TR Appendix D11 Section D11.5.6.
b) Provide the bases for selection of the modeling parameters as summarized in TR Appendix D11 Tables D11.17 and D11.18.

URZ Response to a) and b):

Pressurized downflow systems such as the one being proposed by Uranerz are designed to minimize radon emissions through a system of closed-loop piping and pressurized/sealed process vessels. Although radon is for the most part captured by this system, it was assumed for radiological modeling purposes, that the operations at Hank and Nichols Ranch would generate radon emissions. As required by the U.S. Nuclear Regulatory Commission (NRC), a radiological assessment must be completed by an applicant. Uranerz completed a detailed radiological assessment for its Nichols Ranch and Hank project operations using the NRC-approved radiological model known as MILDOS-Area (MILDOS).

MILDOS was used to calculate both release rates and dose commitments associated with Rn-222 daughters. The Total Effective Dose Equivalent (TEDE) mrem/year was determined for a number of near-by residences, project site boundaries, and populations within and beyond an 80 km radius of the operations. The radiological assessment, as required by NRC, spans the entire life of the project from development through restoration.

As noted above, Rn-222 emissions were calculated for the various process/restoration stages. The calculations were based on a host of factors, which included engineering specifications (tank volumes, resin porosity, resin volume, fluid volume within and passing through the wellfields and process equipment, production/restoration rates, IX column resin exchange rates, etc.). In addition, characteristics of the ore (e.g., thickness, density, porosity, radium-226 concentrations, emanation fraction, etc.) were combined with the engineering design and operational elements to determine estimated Rn-222 emissions. This combined information along with other required MILDOS model input parameters, were employed to derive Rn-222 emissions and their resultant estimated dose to members of the public. Emission estimates are provided in Tables 7-6 and 7-7 from Chapter 7.3 of the TR. The tables provide a detailed summary of the factors employed to estimate Rn-222 emissions.

The tables below show that the Nichols Ranch and Hank Units will generate the following estimated Curies per year from production and restoration activities.

	Total Rn-222 Released (Production)	**Total Rn-222 Released (Restoration)**
Nichols Unit:	170 Ci/yr	180 Ci/yr
Hank Unit:	260 Ci/yr	230 Ci/yr

To express the above Rn-222 estimates in terms of federal regulatory requirements that govern exposure from radiation the following summary is provided. According to 10 CFR 20, the dose limit for a member of the public is 100 mrem/yr. MILDOS modeling shows that Rn-222 emissions will have a TEDE of at least 100 times less than the 100 mrem/yr dose limit for near-by receptors. Table 7-8 of the TR shows the extremely low dose estimates that would be received by individual receptors near the project sites. Table 7-9 of the TR also shows that the TEDE for the project site boundaries is many times lower than the 100 mrem/yr federal standard.

Lastly, Table 7-10 of the TR shows that the TEDE for the population within an 80 km radius of the uranium recovery facility is vastly lower than the 100 mrem/yr federal standard provided in 10 CFR 20. In brief, it has been clearly demonstrated that projected Rn-222 emissions will not present a significant impact to members of the public.

POH-4 ER Sections 3.12 and 4.15. The ER identifies types of radioactive solid and liquid wastes anticipated to be generated during plant operation; however, limited information is provided on anticipated generation rates (annual volumes). Provide additional information on anticipated generation of liquid and solid radioactive wastes, chemical wastes, and mixed wastes, including wastes from potential site-contaminating events.

URZ Response:

Chapter 4 of the Technical Report includes sections on liquid and effluent wastes and their estimated volumes. For non-contaminated solid wastes (trash, piping, valves, instrumentation, equipment, and any other items that are not contaminated), an estimated 700 to 1,000 yd^3 of solid waste per year may be generated. For contaminated waste (waste with radioactive material that cannot be contaminated), an estimated 60 to 90 yd^3 of waste will be generated per year. These estimates are based on the waste generation rates of similar ISR uranium facilities.

For the liquid wastes generated at the proposed project including wellfield bleed, plant wash down, and plant waste streams, these waste streams will be sent to the deep disposal wells. Each plant site will have at least one deep disposal well capable of disposing of 150 gpm of liquid waste. If the wells operate 24 hours a day, 365 days a year at the full 150 gpm, then approximately 79 million gallons of liquid waste will be disposed of during the year. This number takes into account any liquid wastes from potential site-contaminating events.

POH-5 TR Section 7.5. The TR states that since the NRC has performed a complete analysis of accidents in NUREG/CR-6733 and NUREG-0706, a facility-specific analysis of potential accidents was not performed. Provide additional information that

demonstrates that the proposed facility design and operating conditions are reasonably bounded by the two NRC NUREG documents or provide a site-specific evaluation.

URZ Response:

ISR operations in the United States operate virtually the same no matter of the location (i.e. Wyoming, Texas, Nebraska, New Mexico, and South Dakota). The Nichols Ranch ISR Project does not deviate from the basic design of any ISR uranium facility that is operating. The equipment and operation of the Nichols Ranch and Hank Units are consistent with those throughout the United States. The standardization of all ISR uranium facilities is also evident by the development of the GEIS for the In Situ Recovery. The GEIS evaluates transportation issues and further states that transportation issues throughout Wyoming, in both specified regions, are the same. Because of these reasons, the Nichols Ranch ISR Project is reasonably bounded by the two NRC NUREG documents and does not warrant a site specific evaluation.

POH-6 ER Section 4.2. The ER provides an evaluation of a hypothetical transportation accident using NUREG-0706 as the basis. One of the mitigation measures proposed for a transportation accident is the use of a referenced "Uranerz Energy Corporation Incident Response Guide"; however, no specifics are provided as to the content of this guidance document.

a) Provide sufficient detail for this guide indicating its effectiveness as a mitigation measure.

URZ Response:

The Uranerz Energy Corporation Incident Response Guide is a document that is currently under construction. The portion of the guide referencing transportation accidents will contain the following:

Transportation Accidents

Radioactive material (yellowcake and byproduct) will be transported from the Nichols Ranch CPP. The transportation will occur by use of contract carrier. The carrier will be required to maintain emergency response capabilities. Instructions will be provided to the carrier as how to respond to a transportation accident involving the type of radioactive material being transported. The instructions will also recommend the type of equipment and items that should be on the transport vehicle for use in case of an accident. Following are the instructions for the carrier to carry on board.

I.1.A <u>Instructions</u>

Instructions to the carrier regarding first response actions for a transportation accident include:

(1) Notifications
   a. Carrier
   b. Driver
   c. Local law enforcement
   d. State agency
   e. Shipper

(2) Access restriction
   a. Small spill
      i. Isolate area to at least 25 meters.
      ii. Stay upwind
      iii. Keep unauthorized personnel away
   b. Large spill
      i. Consider initial downwind evacuation for at least 100 meters.
      ii. Stay upwind
      iii. Keep unauthorized personnel away
   c. Fire involving large spill
      i. Consider initial evacuation of 300 meters in all directions.
      ii. Stay upwind
      iii. Keep unauthorized personnel away

(3) First response assessment
   a. Priorities for rescue, life-saving, first aid, fire control, and other hazards supersede priority for contamination control and measuring radiation levels
   b. Fire
      i. Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques
      ii. Move undamaged containers from fire area if can be done without risk.
   c. First Aid
      i. Medical problems take priority over radiological concerns
      ii. Use first aid according to nature of injury
      iii. Do not delay care and transport of injured person
      iv. Artificial respiration if not breathing or oxygen of difficulty breathing
      v. In case of contact with material, wipe from skin or flush eyes with water
      vi. Injured persons contaminated by contact with material are not a serious hazard to personnel, equipment or facilities.
   d. Isolate uninjured persons or equipment suspected to be contaminated
   e. Delay decontamination and cleanup until instructions are received from Radiation Authority

(4) Spill containment
   a. Do not touch damaged containers or spilled material
   b. Cover spill (e.g. earth, plastic tarp. etc.) to minimize spreading
   c. Dike to collect or prevent runoff.

I.1.B <u>Equipment</u>

The types of equipment recommended to the carrier to be available for use in case of an accident include the following:

(1) Current U.S. DOT Emergency Response Guidebook
(2) Plastic sheeting
(3) Several stakes
(4) Hammer
(5) Shovels
(6) Coveralls
(7) Rubber boots or boot covers
(8) Non-cloth gloves
(9) Several rolls duct tape

(10) Several knives
(11) Several permanent marking pens
(12) Warning signs and barrier rope
(13) Large plastic bags
(14) Bottled water
(15) Eye protectors
(16) Dust mask

I.2 Personnel injury

Instructions to employees on how to respond to an injury to an individual and involves radioactive material include:

I.2.A Notifications

(1) Verbal notification of the injury will be made to the ESH Department and the RSO. The timing of the notification will be commensurate with the severity of the injury.

(2) The ESH Department will initiate notification to Agencies and Authorities.
   a. This notification will establish communication which will continue through culmination of initial medical treatment.

(3) Notification will be made as soon as reasonable to line management.

I.2.B Radiological assistance to first responders

(1) Priorities for rescue; life-saving and first aid supersede priority for contamination control and measuring radiation levels

(2) The following will be communicated to first responders
   a. Medical problems take priority over radiological concerns
   b. Use first aid according to nature of injury
   c. Do not delay care and transport of injured person
   d. Artificial respiration if not breathing or oxygen of difficulty breathing
   e. In case of contact with material, wipe from skin or flush eyes with water
   f. Injured persons contaminated by contact with material are not a serious hazard to personnel, equipment or facilities.

(3) An individual competent in use of radiation detection instrumentation will be available to first responders and to accompany injured person to treatment.

The RSO will oversee radiation and radioactivity surveys of treatment equipment and facilities as appropriate or necessary.

b) The ER states that "The carrier will also be required to maintain accident response capability to specifically include spill response." Provide details for assessing the effectiveness of such identified measures.

URZ Response:

As stated in the previous response, each carrier will be trained in how to be a first responder in the event of a transportation accident. If the driver and/or any other person are not injured, the main responsibility of the carrier will be to isolate the accident scene, then if contaminated material is on the ground, either cover the spill or construct a dike to collect or prevent runoff until a clean-up crew can be on scene to clean up any spill and contamination.

POH-7 TR Section 4.2.1. The TR discusses the use of deep well injection for disposal of byproduct liquid waste. Per 10 CFR 20.2002, provide a technical justification or an evaluation of potential radiological impact for such disposal addressing proposed total

radioactivity and potential radiological doses to members of the public for any feasible exposure pathways.

URZ Response:

The use of Class I Non-hazardous Waste Injection Wells (11e.(2) by-product) is authorized under 40 CFR 144 Underground Injection Control Act. Class I Wells have been used for this purpose throughout the ISR history. Because of the large volume of water associated with both recovery and restoration, it is not feasible to dispose of this material by shipping it to a site licensed to dispose of 11e.2 fluid. Shipping this volume of material to a remote site would not be in line with the ALARA principle. The potential for accidents and accidental spills and potential exposure to the public simply does not warrant this approach to disposal, especially in light of the fact that disposal can be safely accomplished at the mine sites.

The track record of Class I wells are exemplary: there has not been a single incident of a well failure to date nor has there ever been an incident of fluid escaping the injection zone. Because the wells are isolated from members of the public, there is no measurable exposure pathway and therefore potential doses to members are non-existent. With respect to potential environmental impacts associated with an accidental on-site spill from a leaking pipeline or leak at the wellhead, the risk is remote. Class I wells are required to have a number of automated monitoring devises that alert the operator to any failure in the system. In addition, routine visual inspections are required along with annual mechanical integrity testing (MIT). In the unlikely event of a pipeline leak or break, the automated monitoring system would shut down flow to the well and minimize the spill. Corrective action protocol calls for surveying the spill area and removing contaminated soil. Because of all the safeguards just outlined, a significant environmental impact or impact to a member of the public is not likely.

POH-8 ER Section 6.1. The ER includes an in-depth evaluation of data from the baseline radiological environmental monitoring program. However, it is unclear if this program is to be continued during operations. Provide details on the proposed operational program, including sampling media, sampling locations (with an accompanying map), and frequency of sampling, types of analyses, detection levels, and quality control measures.

URZ Response:

Chapter 5 of the Technical Report gives complete details of all the radiological sampling that will occur during the operation of the Nichols Ranch ISR Project. Details regarding human exposure, surface, subsurface, groundwater, surface water, and vegetation sampling are included in the chapter.

POH-9 ER Section 6.1.1. The ER presents results from the baseline radiological monitoring program. Several locations within the Nichols Ranch Unit and Hank Unit were identified with elevated levels of radioactive materials, predominantly Ra-226, which was attributed to previous exploration activities. Provide an evaluation of impacts from these elevated levels/areas to public and worker dose.

URZ Response:

As described in the response to POH-1 ER Section 3.11.1 above, there are a few

sample sites with slightly elevated Ra-226 and only a single site with a Ra-226 value of 26 pCi/g. On average, Ra-226 as well as the other measured radiological parameters is within normal ranges. It was also noted in the earlier response that the 26 pCi/g level at LAS-5 is a small point-source that can possibly be attributed to drilling that was done years earlier. As a single point source of only 26 pCi/g, this site does not constitute a significant impact. Although it was speculated that the source may have been from earlier drilling, it is also possible that it could be a result of a laboratory error or even naturally occurring radioactive material.

Socioeconomics

SOC-1 ER Section 4.12.1. The ER states that Uranerz "anticipates employing approximately 45-55 people" when the project is up and running. Provide an estimated breakdown in the number of employees needed for each phase of the proposed project (construction, operation, decommissioning, and aquifer restoration).

URZ Response:

The anticipated number of employees for each phase of the Nichols Ranch ISR Project is as follows:

Construction: 45-55 people
Operation: 45-55 people
Decommissioning: ~20 people
Aquifer Restoration: ~20 people

Surface Water and Wetlands

SW-1 TR Section 2.7.1. The applicant has not provided sufficient information on surface water features for staff to fully understand potential impacts from the ISR operation.

a) Provide a map showing the locations of all natural and artificial surface water channels and ponds, specifically indicating if it is a natural or artificial feature.

URZ Response:

Exhibit 4-4 Surface Water Reservoirs, Drainages, and Wetlands has been created and added to the ER. Section 4.4.1.1 has been revised to include reference to the new exhibit.

b) The terms "intermittent" and "ephemeral" appear to be used interchangeably in the TR and ER. Please confirm and identify on the map any channels with intermittent flow.

URZ Response:

All channels and streams are ephemeral with those channels experiencing flow during periods of run-off or during high precipitation storm events. Figure 2-15 of the Technical Report and Figure D6-1 of Volume VI, Appendix D6 identify ephemeral channels.

SW-2 TR Section 2.7.1.3. The applicant relies upon previous reporting from data collected

decades ago.

a) Provide justification for reliance on old data.

URZ Response:

Surface water samples for the Nichols Ranch and Hank Units were not available prior to submission of the Nichols Ranch ISR Project because of the lack of surface water, precipitation, and run off events. However, surface water samples were obtained in June 2008 for all three surface water samplers that are being monitored for the Nichols Ranch and Hank license areas. The results obtained from the surface water samples were incorporated into Table D6A.1-1 in Volume VI, Appendix D6. A revised Table D6A.1-1 was sent to the NRC in August 2008. Section 2.7.1.3 of the Technical Report was also updated to reflect the new surface water samples and was incorporated in the March 2009 RAI submittal.

b) If available, provide more recent monitoring data.

URZ Response:

See the above response for SW-2 TR Section 2.7.1.3 a.

c) Provide a map showing the locations of the 1970s water quality samples and if available, the locations of recent sampling.

URZ Response:

Sampling locations are shown on the updated Figure 2-15 of the Technical Report. This updated figure was part of the March 2009 RAI submittal.

d) Provide the methodology used for the recent water sampling.

URZ Response:

Surface water samples were collected using surface water self samplers. These samplers were located in areas where they could collect any water that was created as a result of a run-off or significant precipitation event within the license area. The samplers function by allowing the surface water to be collected into a sampling container through tubes that are set at pre-determined depth. If there is enough water present, the water will flow through the tubes. These samplers have been used by the U.S.G.S. to collect surface water in the past. A diagram of the samplers is attached to these responses. Additionally, Uranerz submitted a copy of its groundwater sampling procedure that was included as Addendum 5A in the March 2009 Technical Report RAI submittal.

SW-3 TR Appendix D10. "Waters of the U.S." are surface water features that fall under the jurisdiction of the Army Corps of Engineers (Corps) through the Clean Water Act.

a) Provide a map showing all "Waters of the U.S." and wetlands as defined by the Corps. Provide labels on the map to distinguish between ephemeral channels and man-made or natural ponds onsite.

URZ Response:

"Waters of the U.S." and wetlands are shown on Figures D10-3 and D10-4 in Volume VIII, Appendix D10 of the NRC Technical Report. These figures have been updated to denote which of the wetlands are man-made wetlands.

b) Several National Wetlands Inventory wetlands classified as Palustrine Emergent wetlands are not included in the delineation inventory in Appendix D10. Provide descriptions with supporting data to justify their exclusion as surface waters/wetlands.

URZ Response:

The text on pages D10-3, D10-7, and D10-8 of the NRC Technical Report, Volume VIII, Appendix D10 has been revised to explain that all potential wetland sited identified on the NWI maps were visited to determine if wetlands or Waters of the U.S. were present.

SW-4 TR Section 7.2.1. This section provides generalities regarding location of proposed work in relation to surface water features and wetlands. Specific locations or blocks of areas will be needed to determine impacts to wetlands.

a) Provide a detailed map showing proposed well locations, new road work, underground piping, utilities, and processing plants in relation to all channels, wetlands and ponds. If details are unknown, please show on the detailed map the areas where they might occur.

URZ Response:

New Exhibits 4-1 and 4-2 of the ER depict preliminary well locations, piping, and utility line locations in relation to all channels, wetlands, and ponds. New roads are not shown on the map. Uranerz will utilize as many existing roads as possible in each license area before constructing any new roads. Generally speaking, any new roads would be constructed along the paths of the truck lines that run to and from the plant.

As seen in the exhibits, there may be some wells that may have to be placed into channels. As a general rule, installation of injection, production, and monitoring wells in drainages will be avoided. If an injection, production, and/or monitoring well have to be constructed in a drainage, appropriate erosion protection controls will be used to minimize the impact to the drainage. Protection controls that could be used, but not limited to, are: grading and contouring, placement of hay bales, culvert installation, rocked low water crossings, placement of water contour bars, and designated traffic routes. The drainage bottoms will be restricted to the work activities that are needed to construct and maintain the wells. If the wells are placed in a location in the drainage where runoff and/or flooding has the potential to impact the well, measures will be taken to protect the well and wellhead. Barriers surrounding the well such as cement blocks, protective steel casing around the wellheads, or other measures to protect the wells from damage will be utilized. Additionally, if a new road or any access roads have to cross an ephemeral drainage, efforts will be made to cross the drainage at right angles to minimize erosion with the appropriate sized culverts installed. Rocked low water crossings or culverts in combination with a low water crossing will be designed to pass a 25-year peak runoff event. The minimum culvert size of 18" will be used in diverting drainage from

roads or for crossing small drainages. In the event that drainage has to be crossed, but cannot be crossed at a right angle or along elevation contours, appropriate measures for erosion control will be examined and implemented. All measures will use the best management practices (rock, riprap, etc.) in accordance to WDEQ-LQD Rules and Regulations, Chapter 3 or those stated in 10 CFR Part 40.

b) Estimate the number of injection and processing wells that may be placed in surface water features and the approximate distance between wells.

URZ Response:

The potential number of injection and recovery wells that may be located in an ephemeral drainage and/or channel for each unit is as follows:

Nichols Ranch - 5 recovery wells and 10 injector wells.

Hank – 11 recovery wells and 11 injector wells.

c) Quantify the number of new road crossings, pipe crossings, utility crossings, and buildings that may be placed in surface water features.

URZ Response:

The potential number of crossings that may have to go across an ephemeral channel is as follows:

Nichols Ranch – 2

Hank – 3

The numbers above are determined by the where the main truck lines running to and from the plant will have to cross an ephemeral channel. As stated above, any roads that would have to be constructed would follow the path of the trunk lines.

d) Provide justification for the encroachments and steps taken to avoid, minimize, and mitigate such impacts.

URZ Response:

See the above response for part a)

Transportation

TRA-1 ER Section 3.2. The ER describes current road conditions and maintenance schedules; however additional information is necessary to accurately characterize transportation impacts. Specifically, please provide the following information:

a) Specify the potential destinations of the dried yellowcake, the radioactive waste, and the non-radioactive waste.

URZ Response:

Yellowcake produced at the Nichols Ranch ISR Project will be shipped to Metropolis, Illinois. Radioactive wastes (i.e. 11(e).2 by-product) will be shipped to a licensed disposal site that is yet to be determined but will be determine before lixiviant injection begins. Possible sites include sites in Wyoming and Utah. Non-radioactive wastes will be sent to the landfill located in Gillette, Wyoming.

b) Specify the approximate transportation routes for shipment of the dried yellowcake, radioactive waste, and non-radioactive waste to be used during construction, operation, aquifer restoration, and decommissioning.

URZ Response:

Yellowcake Transfer: Yellowcake that is produced at the Nichols Ranch CPP will be shipped to Metropolis, Illinois. The route that will be used is as follows:

1. From the Nichols Ranch CPP exit to WY-387. Go east towards Wright, Wyoming.
2. At Wright, turn south on WY-59 heading towards Douglas, Wyoming.
3. At Douglas, take I-25 South to Cheyenne, Wyoming.
4. At Cheyenne, take I-80 East. Continue on I-80 East to I-29.
5. Take I-29 South to Kansas City; proceed on I-70 East to I-64 South.
6. From I-64 exit onto I-57 South.
7. Continue on I-57 South then merge onto I-24 East to Metropolis.

The total distance covered is approximately 1,200 miles.

Radioactive (Contaminated Waste)

The site for the contaminated waste disposal for the Nichols Ranch ISR Project has not yet been selected. However, a potential site does exist in Wyoming. To get to the site, the following route would be used:

1. From the Nichols Ranch ISR Project, take WY-387 West to Midwest, Wyoming.
2. From Midwest, turn South onto WY-259.
3. From WY-259, merge onto I-25 South to Casper, WY.
4. At Casper, take WY-220 south towards Alcova, WY.
5. Merge off of WY-220 onto WY-487.
6. Follow WY-487 to the disposal site.

The total one way distance traveled is approximately 130 miles.

Non-Contaminated Waste:

1. From the Nichols Ranch ISR Project, travel on the Van Buggenum Road to WY-50.
2. Turn North on WY-50 to Gillette, WY.
3. Proceed to the county landfill located on Westover Rd.

The total one way distance traveled is approximately 50 miles.

TRA-2 ER Section 4.3.2. The ER states that "on-site and local roads would be plowed,

maintained, and improved as necessary." Additional information is necessary to adequately assess the proposed mitigation strategies. Discuss how the onsite and local roads will be maintained throughout the life of the project.

URZ Response:

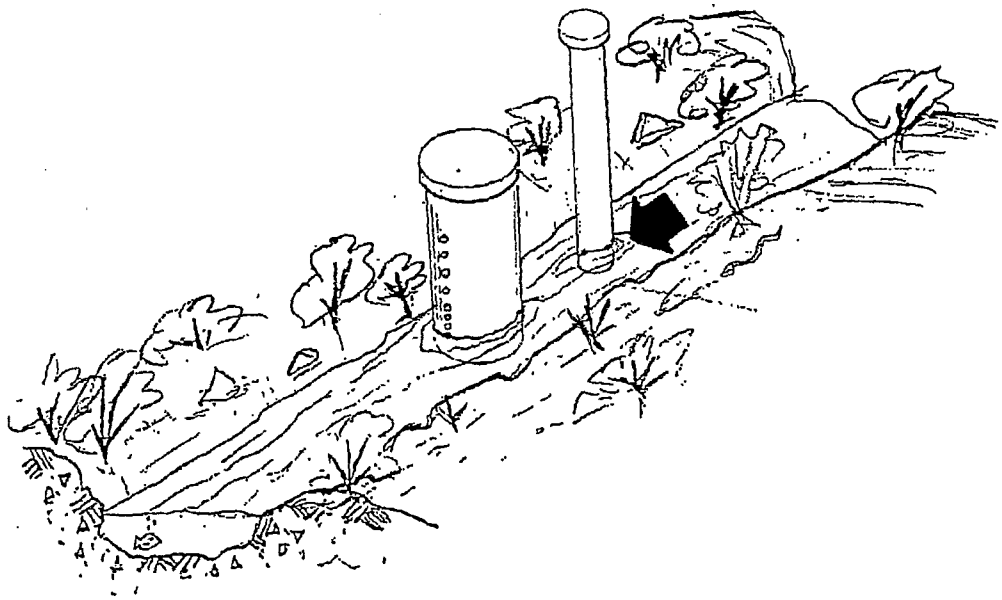
On-site (in the license area) roads and local (ranch) roads will be maintained to ensure the safe travel of users. This includes the removal of snow by motor grader, plow, or front end loader when snow is present, repairing any road when ruts greater than 3 inches are present, and keeping the road in overall good condition. Since these roads are improved dirt crowned and ditch roads, they will frequently be sprayed with water for dust suppression. The maintenance of roads in the license area will be handled by Uranerz. Ranch or local roads will be maintained by Uranerz. Any maintenance conducted on local roads will be conducted in consultation with the landowner to ensure that the landowners desired road construction methods are adhered to. These methods will be employed for the entire life of the project.

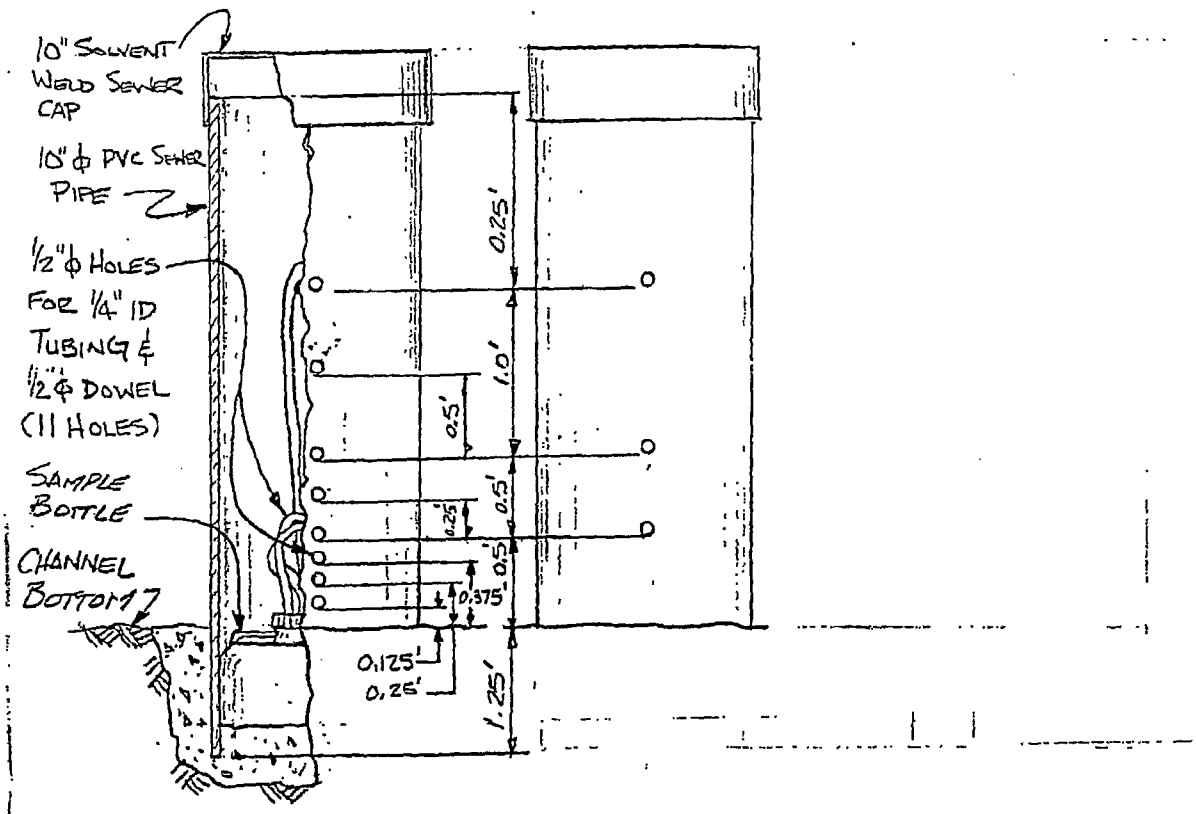
Waste Management

WM-1 ER Section 3.1.2. The ER mentions the use of approved septic systems for sanitary wastes from restrooms and lunchrooms. Provide the approximate location and size of the septic system leach field.

URZ Response:

One septic system will be constructed at each of the Nichols Ranch and Hank Units. The location and size of the septic systems at Nichols Ranch and Hank are currently being designed. Preliminary location of the septic systems would be to the south of the Nichols Ranch CPP and to the north of the Hank satellite plant. The septic systems will be designed in order to accommodate the total number of predicated employees for the Nichols Ranch ISR Project, or each septic system would be able to handle the estimated 55 employees at each site.





URANERZ SURFACE WATER SAMPLER DIAGRAM

PER ER RAI SW-2 d)