

Ruth ISL R&D

Docket Number #40-8783

License # SUA-1401

License Amendment

Restoration Plan

Stipulation #14

page 1 of 6

### INTRODUCTION

The affected water will be returned to a state consistent with the water quality and original potential use that existed before mining took place. To that end, Uranerz will accomplish the restoration task by employing a series of phases designed in sequence with each phase being critical to the step that follows. These various phases are described in summary fashion throughout this introduction. The restoration sequential plan with anticipated tentative dates is also provided.

The first two phases of restoration are a function of the process. They will occur during the final stages of production. The initial phase is done by terminating the addition of oxygen into the system. This first phase will also prepare the aquifer for further restoration sequences. During this initial phase, the plant will operate normally as a production facility; therefore, this is not a restoration phase as such, but rather a post-production/pre-restoration step to condition the wellfield for further phases. This initial phase is expected to continue for at least one month.

Ruth ISL R&D

Docket Number #40-8783

License # SUA-1401

License Amendment

Restoration Plan

Stipulation #14

page 2 of 6

After the uranium head grades in the recovery solution reach a lower level, phase two will begin. Again this is still a function of the production process and not a restoration phase. This step begins with the termination of the sodium carbonate and carbon dioxide leachate fortification process. One pore volume of recovery solution will be pumped from the wellfield and sent to the evaporation ponds. This practice simulates commercial techniques of transferring chemicals from a depleted wellfield section to a new area, thus conserving as much of the circulating chemical base as possible, saving time and money in starting a new wellfield.

After the one pore volume has been transferred to the solar evaporation pond, the processing plant will continue to process the lixiviant to further reduce the residual uranium values. The reverse osmosis system will then be incorporated into the processing scheme to begin the clean-up of the recovery stream. At this point, with the process plant still operating; together, at full capacity the final aquifer restoration will commence.

Ruth ISL R&D  
Docket Number #40-8783  
License # SUA-1401

License Amendment  
Restoration Plan  
Stipulation #14

page 3 of 6

### Restoration Plan

#### Objective

The restoration target is to return the groundwater to a condition that is baseline in quality or Class I standards, whichever is higher, as contained in Appendix A of the October 29, 1982 submittal. This is planned to be accomplished through groundwater circulation through the wellfield area and purification using reverse osmosis (RO) technology to minimize the consumptive use of the circulated groundwater.

#### Methodology

The restoration period will begin with water circulation through the RO unit and is anticipated to continue until all target parameters have been returned to the levels indicated. The various process stream flows will be monitored as to chemical composition and concentration and graphed individually until the parameters have dropped to a level consistent with stated objectives. This monitoring program will be conducted according to the plan previously described in the original

Ruth ISL R&D  
Docket Number #40-8783  
License # SUA-1401

License Amendment  
Restoration Plan  
Stipulation #14

page 4 of 6

licensing document and the proposed changes within this plan/  
amendment. When the restoration objectives have been met, the  
stabilization period will commence. The USNRC and the WDEQ-LQD will  
be notified that the restoration phase has been terminated and  
that the wellfield is now in the stablization phase.

#### Stream Flow Analysis

As required by Stipulation No. 14, Amendment No.4, dated March  
25, 1983, the composite restoration stream and representative  
injection and recovery well water samples will be analyzed for the  
following parameters, as outlined in Stipulation #16, Amendment No.4:

Total Dissolved Solids  
Chloride  
Sulfate  
Total Alkalinity  
Sodium  
Uranium

These parameters will be sampled on a twice per month schedule as  
outlined in the last paragraph in Stipulation No.14, Amendment No.4.

Ruth ISL R&D  
Docket Number #40-8783  
License # SUA-1401

License Amendment  
Restoration Plan  
Stipulation #14

page 5 of 6

#### Wellfield Sampling - Proposed Change in Numbers

(1) Number of Wells - License Stipulation #15 states that "the monitoring plan shall consist of water sampling and analysis of all leaching well, including any monitoring wells affected by mining operations." This requirement totals at least thirty-two (32) wells in less than one sixth (0.6) of an acre, which is excessive in terms of data collected and cost to obtain that data. Therefore, Uranerz is submitting the following changes and amendment to this stipulation.

Uranerz is proposing to reduce the thirty-two wells down to approximately one-third or eleven (11) wells that will be sampled on the stipulated schedule of once every month during the stablization period and analyzing them for the full suite of baseline parameters.

The wells being proposed as sample wells are as follows:

- 7 Recovery Wells (Center of Each Pattern)
- 4 Designated Wellfield Parameter Wells

These wells are labeled on the enclosed map. (Figure 1)

Because of the close proximity of the individual wells in the wellfield it is the opinion of Uranerz that the wellfield can be moritored satisfactorily with this number and arrangement of wells.

Ruth ISL R&D

Docket Number #40-8783

License # SUA-1401

License Amendment

Restoration Plan

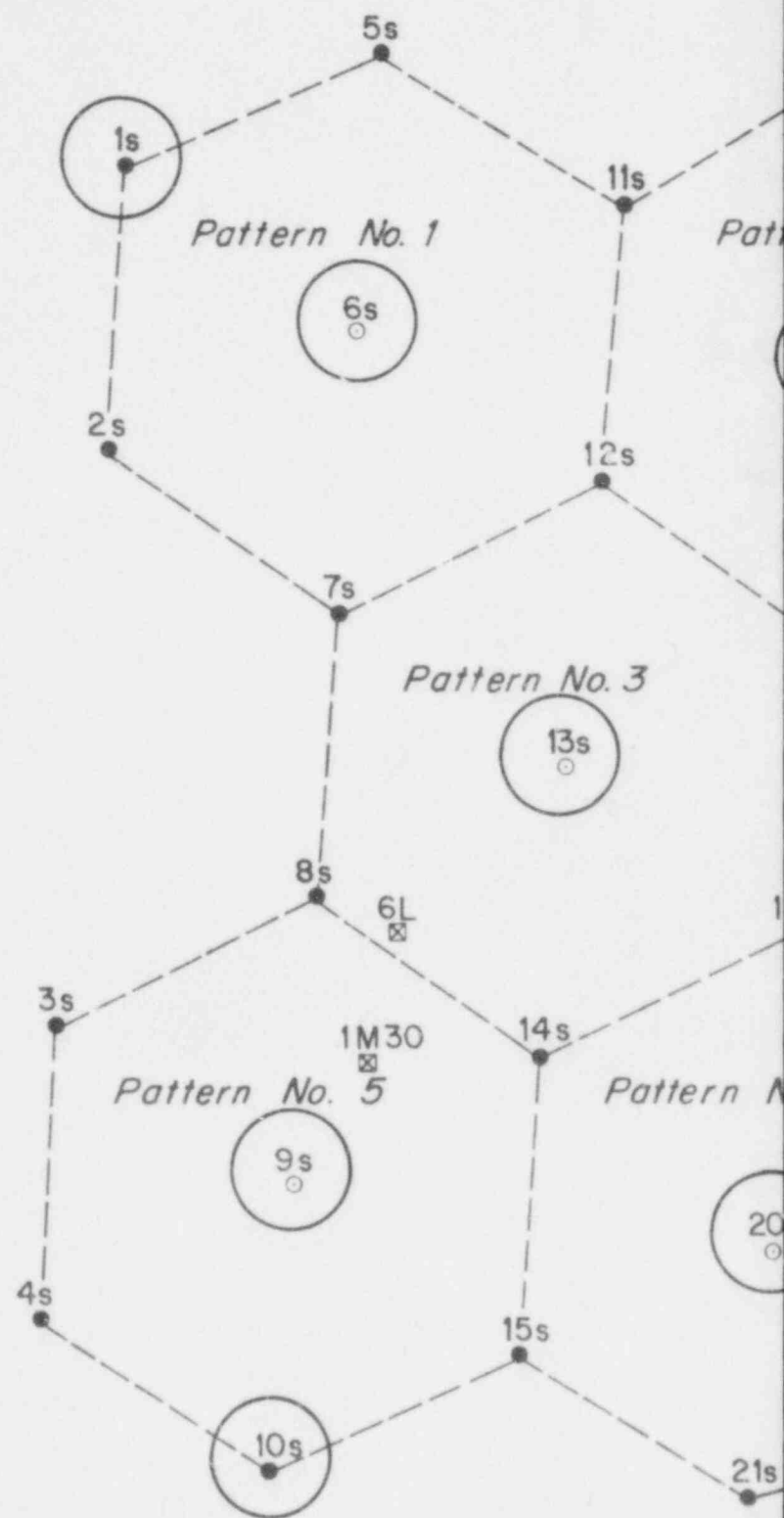
Stipulation #14

page 6 of 6

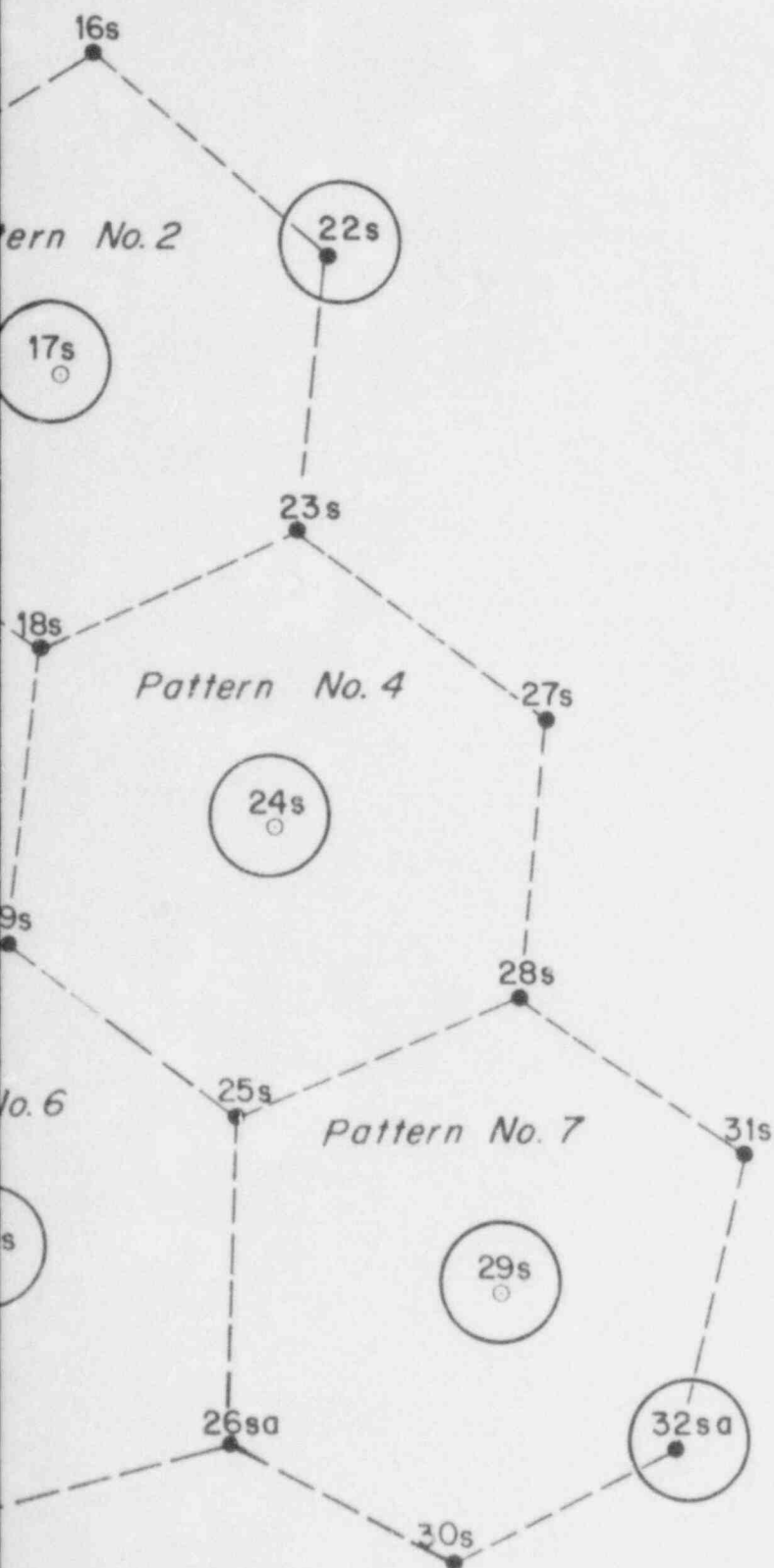
This change of number in the stabilization monitoring wells was discussed with Mr. John Linehan prior to this request. This request to reduce the the number of wells is based on the following justification:

- (1) Adequate data as to stabilization can be obtained from the wellfield due to the relatively small size (0.6 acres) since Uranerz does have a more than adequate baseline to refer to, and
- (2) The overall cost, with respect to the benefit of just collecting data for the sake of more data, cannot be justified in today's economy. Uranerz is of the opinion that adequate data exists for comparison and that the eleven wells in the geometry proposed will provide the necessary stabilization data for sign off.

All of the technologies being used in the restoration phase of this project have been proven in the past and nothing is being proposed that is new to the solution mining industry. Uranerz will complete the restoration as stated in the original permit document and proposed in this amendment.







### LEGEND

- INJECTION WELL
- PRODUCTION WELL
- CIRCLED WELLS ARE PROPOSED MONITOR WELLS

Also Available On  
Aperture Card

PRC  
APERTURE  
CARD



URANERZ U.S.A., INC.		
RUTH ISL PILOT PROJECT		
PROPOSED STABILIZATION MONITORING WELLS		
GEOLOGICAL	SCALE: 1" = 20'	FIGURE:
DRAWN BY: P.S.	DATE: 8-15-83	

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