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40-8943

Ferret
Exploration
Company of
Nebraska, Inc.

Suite 400
1800 Glenarm Place
Denver, Colorado 80202

Telephone: (303) 295-0238
Telecopy: (303) 292-5461

MAY 1988
RECEIVED

May 23, 1988

DOCKETED USNRC
MAY 25 1988
FILE SECTION DOCKETING & SERVICE BRANCH

Mr. Gary Konwinski
U.S. Nuclear Regulatory Commission
Uranium Recovery Field Office
Box 25325
Denver, Colorado 80225

Dear Gary:

Enclosed are three (3) copies of the Engineering Design Report dated April 27, 1988 by Western Water Consultants for the solar evaporation ponds at the Crow Butte Project. The design was prepared in accordance with USNRC Regulatory Guides 3.11 and 3.11-1 and Staff Technical Position Paper WM-8101 and is referred to in Section 4.2 of FEN's Commercial Source Material License application dated October 7, 1987.

Also enclosed are revised pages to the license application providing an alternative 7 spot hexagon wellfield pattern.

If you need any additional information regarding the proposed design for the Crow Butte evaporation ponds, please contact me or Ralph Knode at our Crawford Office.

Sincerely,

Stephen P. Collings

Stephen P. Collings
Vice President

cc: Ralph Knode
Bart Conroy

OFFICIAL DOCKET COPY

88-080-4

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ERRATA SHEET

Attached please find corrected replacement pages for the Application and Supporting Environmental Report for the USNRC Commercial Source Material License. Please replace the original pages with the corrected pages.

3.0(8) An alternative 7 spot hexagon pattern is included.
3.0(12) An alternative 7 spot hexagon pattern is included.

w/ltr 5/23/88
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1. The well will be tested after the cement plug at the bottom of the of the casing has been drilled out. The test consists of placement of one or two packers within the casing. The bottom packer will be set just above the well screen and the upper packer if used will be set at the wellhead. Alternatively, a well cap can be used at the wellhead. The bottom packer will be inflated and the casing will be pressurized to a value which simulates the maximum anticipated operating pressure plus an engineering safety factor.

2. The well will then be "closed in" and the pressure observed for a minimum of 20 minutes.

3. If more than 10% of the pressure is lost during this period, the well will be deemed unacceptable for use as an injection well.

An alternate method of integrity testing an operational well may be used. The alternate method would involve installing a well cap and pressurizing the well with air to force the water column down the casing to a level where air pressure will be at a minimum equal to the maximum operating pressure plus an engineering safety factor. After the well is presurized the well will be sealed and the pressure monitored for 10 minutes. If more than 10% of the pressure is lost during this period the well will be deemed unacceptable for use as an injection well.

When possible, the well will be repaired and the integrity tests will be repeated. If the well casing leakage cannot be repaired or corrected, the well will be plugged and reclaimed as described in Section 6.0, Groundwater Quality Restoration, Surface Reclamation and Plant Decommissioning of this application.

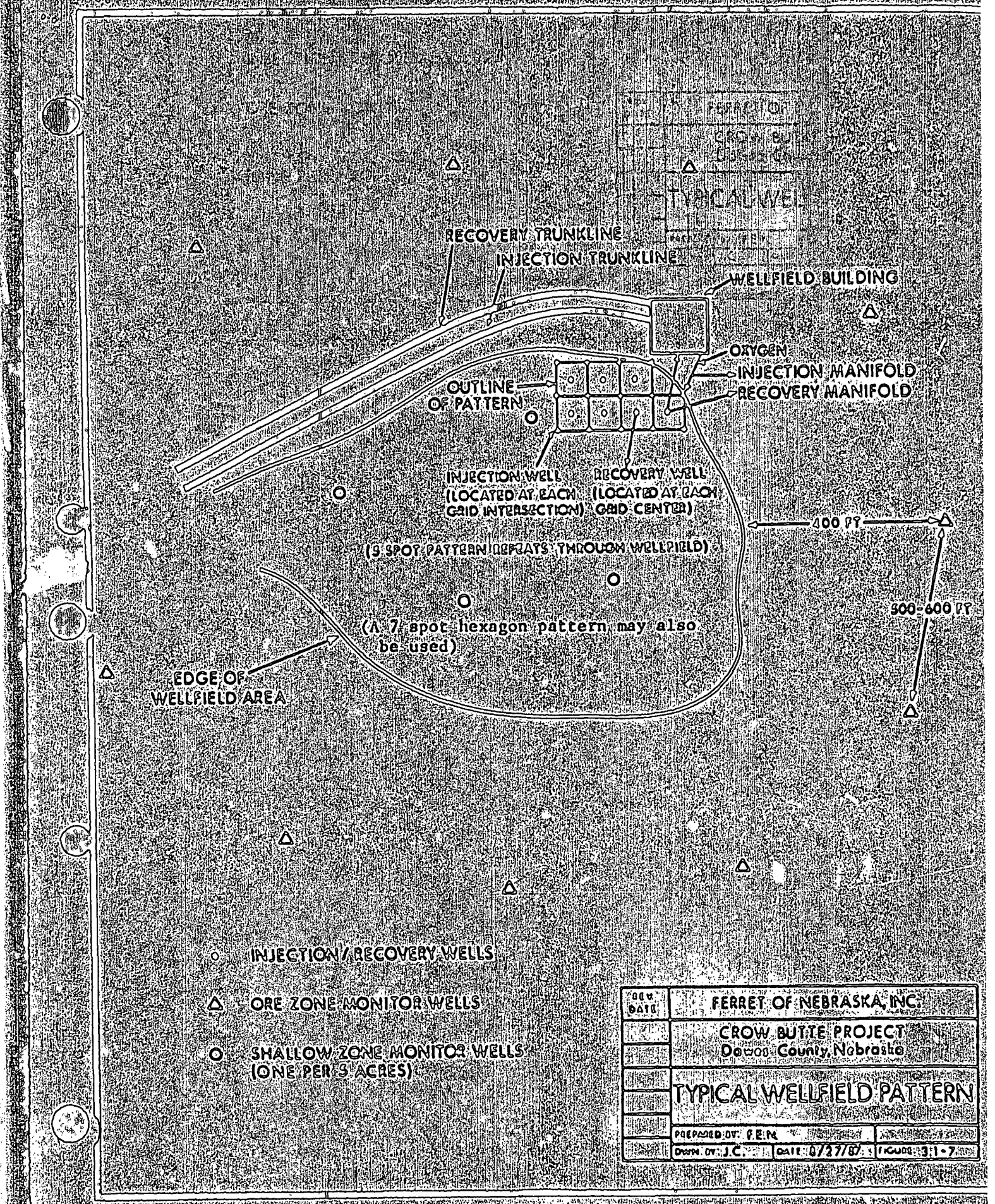
3.1.3 Wellfield Operation

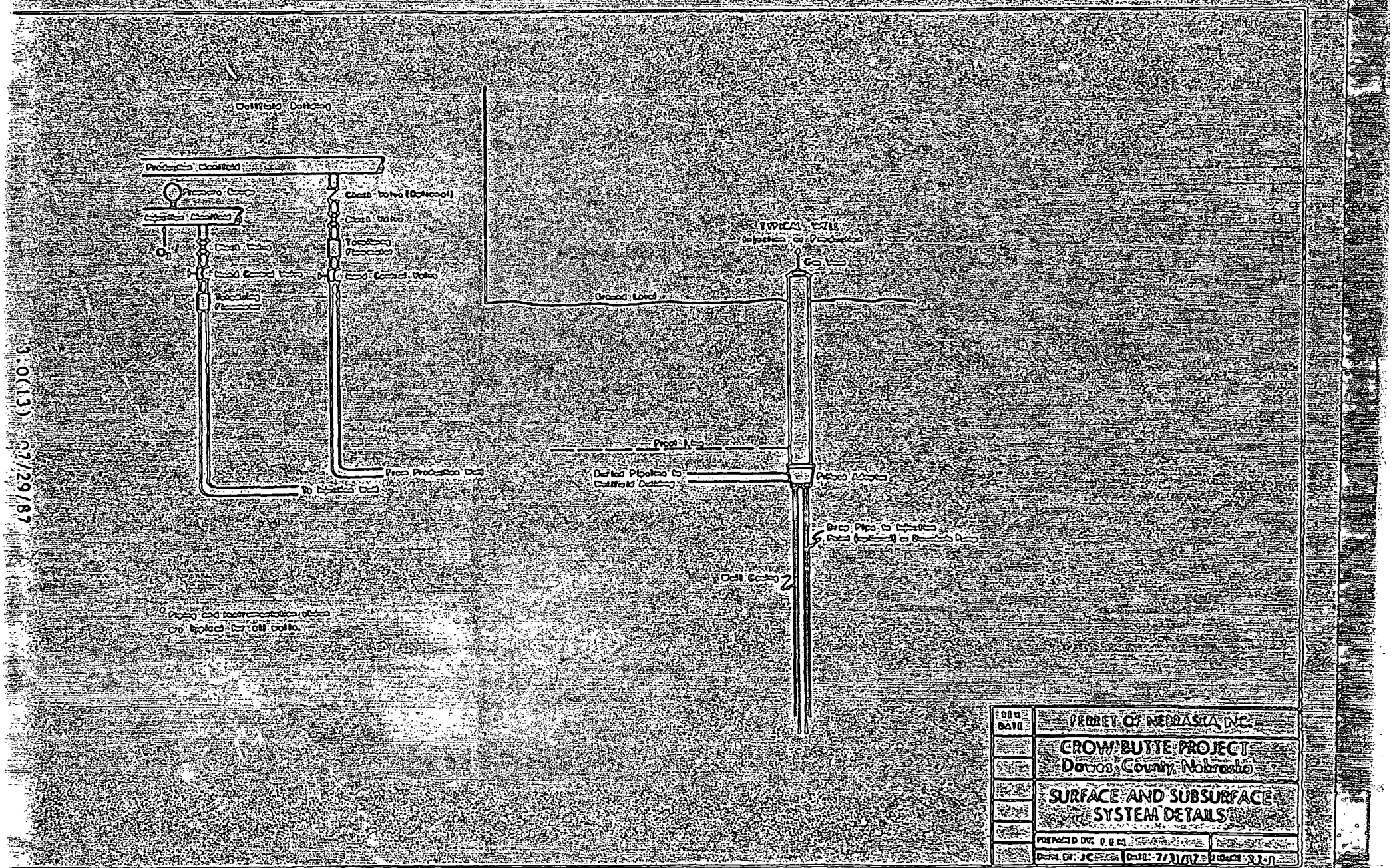
The proposed mine schedule for the Crow Butte Project is shown in Table 3.1-1. This mine schedule covers the first ten years of the project. Mine schedules for later years will be submitted one year prior to the proposed mining. A map showing the proposed mine plan is found as Figure 3.1-6. A typical wellfield layout is shown in Figure 3.1-7. The wellfield is a repeated 5 spot design, or a repeated 7 spot hexagon design or a combination. The spacing between injection wells will range from 40 to 100 ft.

Piping from the plant building to the wellfield building and from the wellfield building to the individual wells will be buried below the frost line. Either high density polyethylene or PVC pipe will be used for the underground service. At the wells, pitless adapters will be used to eliminate any above ground piping. All underground piping will be leak tested prior to use. Figure 3.1-8 shows details of the piping connections between the wells and the main manifolds.

Monitor wells will be placed in the Chadron sand. In addition to the Chadron sand, monitor wells will also be placed in the first significant water bearing Brule sand above the Chadron sand. All monitor wells will be completed and developed prior to leach solution injection.

Computations have indicated the minimum pressure that could initiate hydraulic fraction will be 0.63 psi/ft of well depth. The injection pressure will be limited to less than 0.63 psi/ft of well depth to prevent fracturing the formation. The 0.63 psi/ft. of well depth limit provides a factor of safety to avoid fracturing the formation at the depths and peizometric surfaces encountered in the vicinity of the wellfield. Injection pressures will not exceed the pressure at which the well was integrity tested, less safety factor.


RECOVERY TRUNKLINE
INJECTION TRUNKLINE
WELLFIELD BUILDING
OXYGEN
INJECTION MANIFOLD
RECOVERY MANIFOLD
OUTLINE OF PATTERN
INJECTION WELL (LOCATED AT EACH GRID INTERSECTION)
RECOVERY WELL (LOCATED AT EACH GRID CENTER)
400 FT
(5 SPOT PATTERN REPEATS THROUGH WELLFIELD)
(A 7 spot hexagon pattern may also be used)
500-600 FT
EDGE OF WELLFIELD AREA
INJECTION / RECOVERY WELLS
ORE ZONE MONITOR WELLS
SHALLOW ZONE MONITOR WELLS (ONE PER 5 ACRES)
FERRET OF NEBRASKA, INC.
CROW BUTTE PROJECT
Dawes County, Nebraska
TYPICAL WELLFIELD PATTERN
PREPARED BY: P.E.N.
DRAWN BY: J.C.
DATE: 8/27/87
FIGURE: 3.1-7


Wellfield Building
Production Manifold
Pressure Gauge
Injection Manifold
Check Valve
Hand Control Valve
Totalizing Flowmeter
Check Valve (Optional)
Check Valve
Totalizing Flowmeter
Hand Control Valve
From Production Well
To Injection Well
Ground Level
Proof Ring
Buried Pipeline to Wellfield Building
Pitless Adapter
Drop Pipe to Injection Point (optional) or Downhole Pump
Well Casing
Piping and instrumentation shown are typical for all wells.
FERRET OF NEBRASKA, INC.
CROW BUTTE PROJECT
Dawes County, Nebraska
SURFACE AND SUBSURFACE SYSTEM DETAILS
PREPARED BY: P.E.M.
DWN. BY: JC
DATE: 7/31/87

3.0(13) 07/29/87

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Nebraska Field Office
203 West Second Street
Grand Island, Nebraska 68801

January 5, 1998

Mr. Joseph J. Holonich
Chief, Uranium Recovery Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Holonich:

This responds to your December 8, 1997, letter requesting comments from the U.S. Fish and Wildlife Service (Service) regarding a license renewal application from Crow Butte Resources, Inc. for its Crow Butte in-situ leach uranium solution mine in Dawes County, Nebraska. We concur with the conclusion that the project as currently operated does not adversely affect federally listed threatened and endangered species or their critical habitat. Therefore, no further section 7 consultation under the Endangered Species Act of 1973 is required with the Service.

Long-term impacts of radiation exposure to birds utilizing the evaporation ponds may potentially be a cause for concern (namely radium, because of its propensity to bioaccumulate). Further, selenium levels in the evaporation ponds may result in selenium toxicosis in birds using the ponds. Because of the potential chronic effects of radiation and selenium exposure, bird usage of the evaporation ponds should continually be monitored.

If you have any further questions, please contact Mr. Wally Jobman within our office at (308)382-6468, extension 16.

Sincerely,

Acting Nebraska Field Supervisor

cc: NGPC; Lincoln, NE (Attn: Martha Tacha)

NL05 1/1

(6)NRC.ltr

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C PDR

January 9, 1998

NOTE TO: Susan Fridley, IRMB/RM

FROM: Jim Park, URB/DWMWNMSS

SUBJECT: REQUEST TO DOCKET JANUARY 5, 1998, LETTER FROM THE NEBRASKA FIELD OFFICE OF THE U.S. FISH AND WILDLIFE SERVICE (DOCKET NO. 40-8943)

Please docket the enclosed letter, dated January 5, 1998, from Mr. Stephen Anschutz, the Acting Field Supervisor for the Nebraska Field Office of the U.S. Fish and Wildlife Service (USFWS). By this letter, the USFWS provides its concurrence on the NRC staff's conclusion that operations at the Crow Butte In-situ leach uranium mine in Dawes County, Nebraska do not adversely affect federally listed threatened or endangered species or their critical habitat.

Thank you for your assistance. I can be reached at 415-6699 if you have any questions.

Enclosure: As stated

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NEBRASKA STATE HISTORICAL SOCIETY
1500 R STREET, P.O.BOX 82554, LINCOLN, NE 68501-2554
(402) 471-3270 Fax: (402) 471-3100 Museum Fax: (402) 471-3314 NSHS@inetnebr.com
Internet address: hpnshs@nebraskahistory.org

May 4, 1998

Mr. Joseph J. Holonich, Chief
Uranium Recovery Branch
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Attn: James Park

Re: Crow Butte Resources, Inc.
License #SUA-1534
HP #9702-003-01

Dear Mr. Holonich:

Under cover letter dated April 3, 1998 from Resource Technologies Group, Inc., we received a report entitled "Survey of Traditional Cultural Properties, Crow Butte Project, Dawes County, Nebraska" (Bartley W. Conroy, April 2, 1998). The report indicates a good faith effort at identifying potential tribal groups and initiating contact with those groups regarding potential traditional cultural properties. No traditional cultural properties were identified in this process.

Combining this information with the results of consultation summarized in your letter of December 31, 1997 and the conditions specified by NRC, we consider this undertaking to be a conditional no adverse effect. As such, NRC has/will include in its renewal license to Crow Butte Resources (CBR) a condition requiring CBR to conduct a cultural resource inventory prior to engaging in any development activity not previously assessed by NRC.

We have appreciated the opportunity to consult with you on this undertaking.

Sincerely,

L. ROBERT PUSCHENDORF
Deputy State Historic
Preservation Officer

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LRP/pft
cc: Terry Steinacher, SHPO office
Bart Conroy, Resource Technologies Group

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