



# energy fuels nuclear, inc.

three park central • suite 900  
1515 arapahoe street • denver, colorado 80202

303-623-8317  
twx 910-931-2561  
fax 303-595-0930

September 27, 1996

Mr. Joseph J. Holonich, Branch Chief  
High Level Waste and Uranium Recovery  
Projects Branch  
Division of Waste Management  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
2 White Flint North, Mail Stop T-7J9  
11545 Rockville Pike  
Rockville, MD 20852

40-9024

Re: Possession - Only License SUA-1558

Dear Mr. Holonich:

Enclosed are two copies of the Annual Report for Mining Permit No. 479, for the period from October 16, 1996 to October 15, 1996, submitted by Energy Fuels Nuclear, Inc. ("EFN") to the Wyoming Department of Environmental Quality ("WDEQ"). Following the WDEQ review of the Annual Report and annual project site inspection, the WDEQ will notify EFN of the surety amount required to be maintained for the following year.

The surety estimate included in the annual report has been updated, and includes a breakdown of the costs and the basis for the cost estimates based on current costs, and 16.5 percent contingency. In Attachment 2, under the heading, "1. Removal and Transport of Organic Resin," the surety estimate includes an amount specifically designated for transportation and disposal of ion exchange resin, which is being stored on the project property under NRC Possession-Only License SUA-1558.

As always, I can be reached at (303) 899-5647.

Sincerely,

Michelle R. Rehmann  
Environmental Manager

MRR/pl  
Attachments

cc/enc: Terry V. Wetz  
Mark B. Mathisen  
File

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Department of Environmental Quality  
Land Quality Division - District III  
Annual Report Information

1. Name, Address and Phone Number of Permittee Energy Fuels Nuclear, Inc.  
1515 Arapahoe Street, Suite 900, Three Park Central, Denver, <sup>(303) 623-8317</sup> Colorado 80202
2. Permit Number 479
3. Reporting date: from October 1995  
to October 1996
4. Location of the Operation (Section, Township, Range and County) \_\_\_\_\_  
See Attachments
5. On a separate sheet, please attach a brief description of your operations during the past reporting period including:
  - all activities conducted, including the number of wells installed, quantity of recovery fluid injected, total quantity of recovery fluid recovered (per each well field);
  - all restoration and reclamation work accomplished;
  - the extent to which predictions made in the original license or any previous reports have been fulfilled and any deviation therefrom;
  - a revised schedule of operations and reclamation, an estimate of the number of acres to be affected and the volume of groundwater to be affected during the next (one year) report period;
  - if appropriate and illustrative, a map which identifies the major features of the existing field operation (eg. buildings, well sites, disturbed lands, topsoil stockpiles, access roads, evaporation ponds, etc. A quality, hand-drawn map is acceptable;
  - updated potentiometric surface map(s) for all aquifers that are affected or may be affected by the mining operation.
6. On a separate sheet, please describe all monitoring activities required by the existing License, including:
  - a map and description (location, parameter(s), extent) of all excursions which occurred during the report period;
  - completion details for all monitor wells installed or repaired during the report period;
  - the date, place, time and method of sampling;
  - the personnel responsible for the sampling;
  - the date(s) on which the analysis was performed and the personnel (firm) who performed the analysis;
  - the analytical techniques utilized;
  - analytical results in an organized format.

If a groundwater restoration program is underway, the Annual Report should contain supporting data sufficient to demonstrate restoration in accordance with the standards of the approved license.
7. On a separate sheet, furnish a current Reclamation Performance Bond estimate which itemizes the cost of complete reclamation including removal of all facilities, proper plugging and reclamation of all wells, backfilling, grading, retopsoiling and seeding all disturbed lands, including all access roads.

Send completed report to: Land Quality Division - District III  
1043 Coffeen Ave., Suite D  
Sheridan, WY 82801  
telephone (307) 672-6488

Report Prepared by

Signature

Date

ENERGY FUELS NUCLEAR, INC.  
1995-96 ANNUAL REPORT TO  
WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY  
LAND QUALITY DIVISION  
RENO CREEK PROJECT  
PERMIT NO. 479

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**1. Name, Address, and Phone Number of Permittee:**

Energy Fuels Nuclear, Inc.  
1515 Arapahoe Street, Suite 900  
Denver, Colorado 80202  
(303) 623-8317

Attention: Michelle R. Rehmann, Environmental Manager

**2. Permit Number: 479**

**3. Reporting Date:** From October 16, 1995 to October 15, 1996

**4. Location of the Operation (Section, Township, Range, and County):**

Legal land description of the permit area complete with acreage tabulation.  
Exact metes and bounds should be listed for the permit area only if the area or a  
portion thereof is irregular.

A portion of Sections 21, 22, 27, 28, T43N, R73W as described by the following  
legal subdivisions:

SW corner Section 22 Township 43N Range 73W is P.O.B.  
thence Due North 554' to PT1  
thence Due East 443' to PT2  
thence S 36° 5' E 218' to PT3  
thence Due South 450' to PT4  
thence Due East 397' to PT5  
thence Due South 652' to PT6  
thence Due West 280' to PT7  
thence Due South 403' to PT8  
thence Due West 198' to PT9  
thence Due North 403' to PT10  
thence Due West 505' to PT11  
thence Due South 90' to PT12

thence Due West 483' to PT13  
thence Due North 342' to PT14  
thence N 32° 15' E 560' to PT15  
thence Due East 205' to P.O.B.

Section	#22	6.773
	#27	16.909
	#28	<u>8.068</u>
Total		<u>31.750 Acres</u>

Contingency Reservoir and Road

PT8 from above is P.O.B.

thence Due South 274.45' to PT1  
thence Due East 478.05' to PT2  
thence Due South 650.00' to PT3  
thence Due West 530.00' to PT4  
thence Due North 650.00' to PT5  
thence Due East 31.95' to PT6  
thence Due North 274.45' to PT7  
thence Due East 20.00' to P.O.B.

Section	#27	<u>7.57 Acres</u>
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5. **On a separate sheet, please attach a brief description of your operation during the past reporting period including:**

- **all activities conducted, including the number of wells installed, quantity of recovery fluid injected, total quantity of recovery fluid recovered (per each wellfield);**

No operational wells for injection, recovery, or monitoring were installed during the past reporting period.

- **all restoration and reclamation work accomplished;**

All mud pits used in the drilling and installation of the Mine Unit I monitoring wells (1994-1995) were regraded and temporarily seeded. Permanent reseeding of the mud pits will be performed upon final abandonment of the well(s).

- **the extent to which predictions made in the original license or any previous reports have been fulfilled and any deviation therefrom;**

The schedule of reclamation of surface facilities has not changed during the past reporting period. The existing building located in Section 28, T43N, R73W continues to be maintained as a warehouse for an indefinite period of time.

An NRC possession-only license was issued in August 1993, allowing EFN to store five semi-trailers containing 55-gallon drums of uranium-and radium-contaminated resin for use at the Reno Creek project. The purpose of the license is to allow EFN to store organic resin on site prior to approval of the full commercial mining permit and source material license. On August 16, 1995, the U.S. Nuclear Regulatory Commission ("NRC") issued a renewal of Possession-Only License No. SUA-1558. On July 15, 1996, the NRC conducted a routine, announced inspection of the licensee's activities including management and organization controls and radiation protection. Findings were as follows:

- The organizational structure and staffing levels were determined to be acceptable for the work in progress at the site. Qualified individuals had maintained oversight of licensed activities. The licensee's organization and management controls met the requirements of the license.
- The licensee had implemented a radiation protection program that met requirements established in 10 CFR Part 20 and the license. The licensee had an effective radiation survey and inspection program that was in compliance with the license.
- No items of noncompliance or significant issues were identified.
- **a revised schedule of operations and reclamation, an estimate of the number of acres to be affected and the volume of groundwater to be affected during the next (one year) report period;**

The Permit to Mine Amendment Application is currently in preparation and review. As permitting allows, EFN may commence construction under the amended permit in 1997. Estimates of the acreage to be disturbed and the affected groundwater volume will be provided in the Amendment Application and the Wellfield Data Package.

- **if appropriate and illustrative, a map which identifies the major features of the existing field operation (e.g. buildings, well sites,**

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**disturbed lands, topsoil stockpiles, access roads, evaporation ponds, etc.) A quality, hand-drawn map is acceptable;**

The only field investigations conducted in the past year were geotechnical test work at the site of the proposed reservoir near Mine Unit I; therefore the map submitted with last year's Annual Report is resubmitted without changes. Attachment 1 is a map entitled "Permit #479 1995-1996 Annual Report," which shows the permit boundary, the plant building, the access road and the Mine Unit I monitor well network. This map also shows an area to the south of the current permit area, which has not been disturbed or occupied in the past.

All disturbances associated with the original Rocky Mountain Energy Corporation (RMEC) operations have been adequately reclaimed with the following exceptions:

- Regional Monitor Wells
- Demolition of RMEC process building (warehouse).
- Reclamation of the building site itself. The building site, the surrounding graveled area for vehicle access, and the access road to the building total approximately 1.5 acres as detailed in Attachment 2, Reno Creek Bond Estimate -- 1995-1996 Annual Report.
- Reclamation of the access road within the permit area. The road outside the permit area is maintained as an access to a producing oil well operated by Butte Resources.
- Removal of barbed wire fence surrounding the permit area.
- **updated potentiometric surface map(s) for all aquifers that are affected or may be affected by the mining operation.**

Initial water level data and baseline water quality samples have been collected for Mine Unit I, and potentiometric surface maps of aquifers that may be affected by the mining operations will be prepared for and included in the Wellfield Data Package. After the Mine Unit I data package is submitted, annual reports will include a potentiometric surface map.

6. **On a separate sheet, please describe all monitoring activities required by**



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**the existing License, including:**

- **a map and description (location, parameter(s), extent) of all excursions which occurred during the report period;**

Not applicable

- **completion details for all monitor wells installed or repaired during the report period;**

No monitoring wells were installed within the current boundaries of Permit No. 479, and no monitoring activities are required under existing Permit No. 479. Completion details for the Mine Unit I monitor wells were provided in the 1995 Annual Report.

The monitoring well network installed in Mine Unit I during early 1995 is not within the boundaries of Permit No. 479; however, EFN has included the cost of reclaiming these wells in the current bond estimate until such time as a new bond is established for commercial operation at Reno Creek. EFN has completed the initial baseline groundwater sampling of these wells as part of the planned Wellfield Data Package for Mine Unit I.

- **the date, place, time and method of sampling;**

The initial four rounds of baseline sampling for Mine Unit I were completed in December, 1995. EFN prepared and implemented a Field Sampling Plan (FSP) in accordance with the guidelines recommended by the Wyoming Department of Environmental Quality-Land Quality Division for collecting groundwater samples to characterize baseline water quality (Guideline 8, WDEQ 12/90). All groundwater samples were collected from pumped wells. Samples were preserved and filtered, as appropriate, for the analyses being performed.

- **the personnel responsible for the sampling;**

The water quality baseline sampling program is under the direction of Michelle R. Rehmann, Energy Fuels Nuclear, Inc. Environmental Manager. Field activities are under the direct supervision of Mark B. Mathisen, Energy Fuels Nuclear, Inc. Project Geologist.

- **the date(s) on which the analysis was performed and the personnel (firm) who performed the analysis;**

Analyses were performed by Energy Laboratories in Casper, Wyoming within the holding times for the parameters listed in WDEQ-LQD Guideline 8. Laboratory analyses were directed by Roger Garling, Branch Manager at Energy Laboratories in Wyoming. Analytical reports for all four rounds of baseline sampling have been received from the Energy Laboratories and will be incorporated in the planned Wellfield Data Package.

- **the analytical techniques utilized;**

Analytical techniques used by Energy Laboratories conform with those specified in Guideline 8 and will be reported in the analytical data package.

- **analytical results in an organized format.**

The analytical results from the baseline water quality sampling program will be incorporated in the Wellfield Data Package for Mine Unit I.

**If groundwater restoration program is underway, the Annual Report should contain supporting data sufficient to demonstrate restoration in accordance with the standards of the approved license.**

As no mining has taken place, no groundwater restoration activities are required or have been undertaken on the Reno Creek permit area.

7. **On a separate sheet, furnish a current Reclamation Performance Bond estimate which itemizes the cost of complete reclamation including removal of all facilities, proper plugging and reclamation of all wells, backfilling, grading, retopsoiling and seeding all disturbed lands, including all access roads.**

EFN has filed an Amendment Application for a Permit to Mine with the WDEQ and a Source Material License application with the NRC. Both portions of the application are currently under review and/or revision. The total bond related to the construction and operation of the commercial project will be evaluated in conjunction with the Application reviews. Subject to completion of reviews of permit and license application, EFN may commence project construction in 1997.

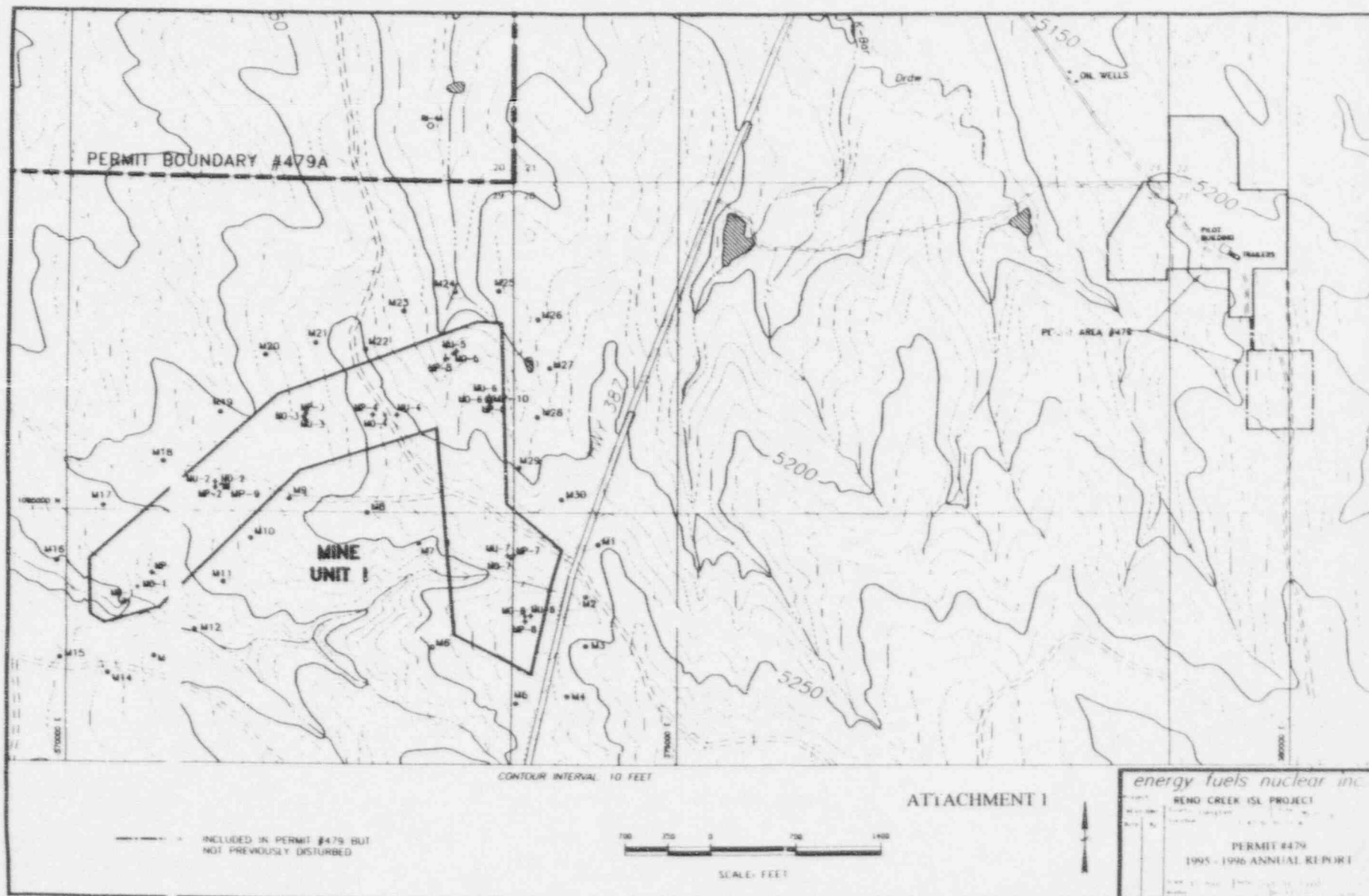
EFN has prepared an updated estimate of the bond for this Annual Report. The bond as of September 1996 for the Reno Creek project was \$142,890 for transport and disposal of the organic resin stored on site, demolition of the



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existing building, and site reclamation. As in previous bond estimates for the Reno Creek project, EFN has also included the cost of plugging all regional monitor wells and Mine Unit I monitor wells. This detailed estimate is provided in Attachments 2, 3, and 4.

The reclamation bond proposed by EFN is \$137,612.27. The reduction in the proposed bond amount is due to revision of the method to be used to plug and abandon all existing wells. The proposed abandonment method, stacked completion using bentonite chips for sealing, is the method proposed in EFN's Amendment Application and follows the standards set forth in the Wyoming Department of Environmental Quality Rules and Regulations, Chapter XI, Part G, Well Construction.



**ATTACHMENT 2  
1995-1996 ANNUAL REPORT  
RENO CREEK BOND ESTIMATE  
Permit No. 479**

**WAREHOUSE AND PILOT SITE RECLAMATION**

**I. Removal and Transport of Organic Resin**

A. Transportation Costs		Total Miles	Number of Trailers	\$/mile	\$ Cost	Ref
- Cost		750	5.0	1.75	6562.50	1
B. Disposal Costs			Total Vol. (ft3)	\$/ft3	\$ Cost	Ref
- Cost			3318.0	15.00	49770.00	2
<b>Removal and Transport of Organic Resin Total</b>					<b>56332.50</b>	

**II. Building Demolition**

A. Demolition		No. Bldgs.	Total Vol. (ft3)	\$/ft3	\$ Cost	Ref
1. Plant (Warehouse) Building		1	51200	0.18	9216.00	3
2. Shop Building		1	6000	0.18	1080.00	
					10296.00	
B. Transportation Costs		No. Bldgs	Total Mat. Vol. (yd3)	\$/yd3	\$ Cost	Ref
1. Plant (Warehouse) Building		1	107.6	9.00	968.00	4 & 5
2. Shop Building		1	20.5	9.00	184.25	
					1152.25	
C. Disposal Costs			Total Vol. (yd3)	\$/yd3	\$ Cost	Ref
			128.0	25.00	3200.69	4
<b>Building Demolition Total</b>					<b>14648.94</b>	

**III. Foundation Demolition**

A. Demolition			Total Vol. (yd3)	\$/yd3	\$ Cost	Ref
1. Plant (Warehouse) Building			59.3	73.00	4325.93	3 & 6
2. Shop Building			9.3	73.00	675.93	
					5001.85	
<b>Foundation Demolition Total</b>					<b>5001.85</b>	

**IV. Site Reclamation**

A. Gravel Removal		Area (ft2)	Total Vol. (yd3)	\$/yd3	\$ Cost	Ref	
1. Plant Area		28300	524.1	0.60	314.44	4 & 7	
2. Access Road		18600	344.4	0.60	206.67		
			868.5		521.11		
B. Disposal Costs							
1. Dozer Costs		Vol. (yd3)	Rate (yd3/hr)	Total Hrs.	\$/Hr.	\$ Cost	Ref.
Excavate Trench (20' x 150' x 15')		1666.7	102.5	16.26	95.00	1544.72	8, 9, & 10
Disposal of Rubble (Foundations+Gravel)		954.2	183.3	5.20	95.00	494.43	
Backfill Trench (20' x 150' x 15')		1666.7	183.3	9.09	95.00	863.64	
						2902.78	

**ATTACHMENT 2  
1995-1996 ANNUAL REPORT  
RENO CREEK BOND ESTIMATE  
Permit No. 479**

<b>C. Ripping and Grading</b>			<b>Acres</b>	<b>\$/Acre</b>	<b>\$ Cost</b>	<b>Ref</b>
1. Ripping Costs			2.00	70.23	140.46	4 & 11
2. Grading Costs			2.00	100.00	200.00	
					340.46	
<b>D. Revegetation</b>			<b>Acre</b>	<b>\$/Acre</b>	<b>\$ Cost</b>	<b>Ref</b>
1. Seed Cost			2.00	50.00	100.00	4
2. Seeding Costs			2.00	40.00	80.00	
					180.00	
<b>E. Fence Removal</b>			<b>Length</b>	<b>\$/ft.</b>	<b>\$ Cost</b>	<b>Ref</b>
1. Removal Cost			5417	1.13	6121.21	12
<b>F. Miscellaneous</b>					<b>\$ Cost</b>	<b>Ref</b>
1. Remove Cattle Guard					100.00	4

**Site Reclamation Total 10165.56**

**GRAND TOTAL PLANT FACILITIES RECLAMATION 86148.86**

**WELL ABANDONMENT AND RECLAMATION**

**V. Well Plugging**

		<b>No.</b>	<b>No. Wells</b>	<b>Hrs/Well</b>	<b>Total Hrs.</b>	<b>\$/Hr.</b>	<b>\$ Cost</b>	<b>Ref.</b>
<b>A. Labor</b>	1. Foreman	1	95	1.00	95.00	20.00	1900.00	13
	2. Laborer	2	95	1.00	190.00	15.00	2850.00	
							4750.00	
		<b>No.</b>	<b>No. Wells</b>	<b>Hrs/Well</b>	<b>Total Hrs.</b>	<b>\$/Hr.</b>	<b>\$ Cost</b>	<b>Ref.</b>
<b>B. Equipment</b>	1. Backhoe	1	95	0.25	23.75	25.00	593.75	14
<b>C. Materials</b>				<b>Well Type</b>	<b>No. Wells</b>	<b>\$ Material/Well</b>	<b>\$ Cost</b>	<b>Ref.</b>
				M-Well	30	377.96	11338.80	15
				MO-Well	8	264.23	2113.84	
				MP-Well	10	267.60	2676.00	
				MU-Well	8	248.15	1985.20	
				RI-Well (Ore SS)	32	188.89	6044.48	
				RI-Well (Up Aquifer)	7	124.22	869.54	
							25027.86	

**Well Plugging Total 30371.61**

**VI. Well Site Revegetation**

1. Ground Preparation Cost		No. Wells	\$/well site	\$ Cost	Ref.	
		95	15.00	1425.00	16	
		Total Ft. (ft2)	Acre	\$/Acre	\$ Cost	Ref.
2. Seed Cost		85500	1.96	50.00	98.14	4
3. Seeding Costs		85500	1.96	40.00	78.51	
					176.65	

**Well Site Revegetation Total 1601.65**

ATTACHMENT 2  
1995-1996 ANNUAL REPORT  
RENO CREEK BOND ESTIMATE  
Permit No. 479

GRAND TOTAL WELL RECLAMATION

31973.26

SUMMARY

I. Removal and Transport of Organic Resin	56332.50
II. Building Demolition	14648.94
III. Foundation Demolition	5001.85
IV. Site Reclamation	10165.56
V. Well Plugging	30371.61
VI. Wellfield Revegetation	1601.65

SUBTOTAL

118122.12

Contingencies:

Project Design & Document Preparation	2.00%	2362.44
Contractor Profit, Overhead, Mobilization	10.00%	11812.21
Liability Insurance	1.00%	1181.22
Post-Reclamation Monitoring Costs	0.50%	590.61
Administration, Accounting, Costs	1.00%	1181.22
Unknowns	2.00%	2362.44

Total Contingencies 16.50%

SUBTOTAL

19490.15

TOTAL BOND

137612.27



**ATTACHMENT 3**  
**1995-96 ANNUAL REPORT - REFERENCES**  
**RENO CREEK BOND ESTIMATE**  
**Permit No. 479**

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1. EFN actual experience at \$1.75/loaded mile for 25 ton carrier on long highway hauls. 750 mile haul to White Mesa =  $750 \times \$1.75/\text{mile} = \$1312$ .
2. Cost for disposal of contaminated waste at licensed facility is \$15 per cubic foot based on 1994-95 Annual Report bond estimate.
3. Means 1996 (020-600-604-0500)
  - Small Building Demolition =  $\$0.18/\text{ft}^3$
  - Site Demolition -  $\$73.00/\text{yd}^3$
4. Reno Creek Project Bond Estimate - November 1995, Permit No. 479, Glenn Mooney.
  - Assume  $1 \text{ yd}^3 = 1 \text{ ton}$ , and use 20  $\text{yd}^3$  haulers.
  - Distance to Campbell County Landfill is about 60 miles at  $\$3.00/\text{mile} = 60 \times \$3.00/\text{mile} = \$180$ . With 20 ton payload, cost per hauled ton:  $\$180/20 = \$9.00/\text{ton}$  with a disposal cost of  $\$25/\text{yd}^3$ .
  - Gravel Removal  $\$0.60/\text{yd}^3$ .
  - Seed Cost  $\$50/\text{Acre}$  is per Stacy Page, LQD District 3 (08/10/93).
  - Seeding Cost  $\$40/\text{Acre}$  per LQD Guideline No. 12 (06/92).
  - Ripping Cost  $\$70.23/\text{Acre}$  is per Stacy Page, LQD District 3 (08/10/93).
  - Grading Cost  $\$100.00/\text{Acre}$  is per Stacy Page, LQD District 3 (08/10/93).
  - Assume  $\$100.00$  to remove cattle guard; no culvert exists at entrance.
5. Volume of pilot plant buildings with 4" thick walls as follows:
  - Pilot Plant - (2 each @  $80' \times 16' \times .33'$ ) + (2 each @  $40' \times 16' \times .33'$ ) + ( $80' \times 40' \times .33'$ ) =  $2323 \text{ ft}^3$ ; with 25% swell, total volume =  $2903.75 \text{ ft}^3/\text{bldg.} = 107.55 \text{ yd}^3$ .
  - Shop - (2 each @  $25' \times 12' \times .33'$ ) + (1 each @  $20' \times 12' \times .33'$ ) + ( $25' \times 20' \times .33'$ ) =  $442 \text{ ft}^3$ , with 25% swell, total volume =  $552.50 \text{ ft}^3/\text{bldg.} = 20.46 \text{ yd}^3$ .
6. Pilot plant foundation volumes as follows:
  - Pilot Plant - ( $80' \times 40' \times .5'$ ) =  $2144 \text{ ft}^3 = 59.3 \text{ yd}^3$ , with 25% swell during disposal, total disposal volume =  $74.07 \text{ yd}^3$ .
  - Shop - ( $25' \times 20' \times .5'$ ) =  $250 \text{ ft}^3 = 9.3 \text{ yd}^3$ , with 25% swell during disposal, total disposal volume =  $11.57 \text{ yd}^3$ .
7. Volume of gravel on access road to pilot building =  $1550' \times 12' \times 0.5' \text{ thick} = 9300 \text{ ft}^3 = 344.4 \text{ yd}^3$ . Volume of gravel on plant site =  $32,000 \text{ ft}^2 - 3200 \text{ ft}^2$  (Warehouse Building Area) -  $500 \text{ ft}^2$  (Shop Building Area) =  $28,300 \text{ ft}^2 \times 0.5' \text{ thick} = 14150 \text{ ft}^3 = 524.0 \text{ yd}^3$ .

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8. Melgaard Construction - Gillette, Wyoming, September 1996 estimate
    - D7 (200 H.P.) Dozer with crew - \$95.00/hour
  9. Means 1996 (022-200-208-4020)  
Backfilling:
    - 200 HP Dozer = 2200 C.Y./day,  $2200/12 = 183.33$  C.Y./hr.
  10. Means 1996 (022-200-242-4020)  
Excavating:
    - 200 HP Dozer = 1230 C.Y./day,  $1230/12 = 102.50$  C.Y./hr.
  11. Area of disturbance at pilot site = (road @ 1550' x 20') + (plant site @ 32000 ft<sup>2</sup>) = 63000 ft<sup>2</sup> = 1.45 acres. Assume 2.0 acres for ripping, grading, and revegetation to cover peripheral areas disturbed during reclamation work.
  12. Means 1996 (020-550-554-0650)
    - Fence Demolition (5 strand) - \$1.13/L.F.
  13. General foreman, electrician, RST, welders, laborer rates (including fringes and benefits), and material costs for Wyoming and local region have been drawn from the Pathfinder North Butte ISL Project Annual Report to the DEQ (02/10/92).
  14. Means 1996 (016-400-408-0470)
    - 112 H.P., 1-3/4 C.Y. loader, 1/2 C.Y. backhoe - \$1000/week,  $\$1000/40 = \$25.00$ /hour.
  15. The total well inventory in the next year is expected to be:
    - 0 injection and production wells in Mine Unit I
    - 56 monitor wells in Mine Unit I (30 M-wells, 8 MO-wells, 10 MP-wells, and 8 MU-wells).
    - 39 existing regional monitor wells (32 RI-wells (Ore SS) and 7 RI-wells (Upper Aquifer).

NOTE: EFN drill hole records show one additional well (RI-26) existing compared to the 1994-1995 Annual Report. Abandonment records show this well not to exist; however this has not been verified with a field inspection. Therefore, for bonding estimates EFN has added this well to the "need to abandon list" until field confirmation verifies the non-existence of the well.

The weighted average depth of the wells is as follows:

- M-Wells = 410 feet
- MO-wells = 314 feet

- 
- MP-wells = 405 feet
  - MU-wells = 219 feet
  - RI-wells (Ore SS) = 314 feet
  - RI-wells (Upper Aquifer) = 148 feet.

Well plugging will employ bentonite chips placed across and 50 feet above the screened zone, unscreened sand within 30 feet of the surface, bentonite chips in the top 30 feet, and a concrete plug w/ metal tag at the surface.

The material costs, based on September 1996 quote(s) from Casper Well Products, and local quarries are shown in Attachment 3.

16. EFN actual experience May 1996 for soil preparation - \$15.00/well. The area to be reclaimed for each well is estimated to be  $30' \times 30' = 900 \text{ ft}^2 \times 95 \text{ wells} = 85,500 \text{ ft}^2 = 1.96 \text{ acres}$ .

ATTACHMENT 4  
1995-96 ANNUAL REPORT - WELL ABANDONMENT COST(S)  
RENO CREEK BOND ESTIMATE  
Permit No. 479

Well Type	M-Well	MO-Well	MP-Well	MU-Well	RI-Well (Ore SS)	RI-Well (Up Aquifer)
<b>Borehole - Well Parameters</b>						
Depth Parameter(s):						
Average Total Depth to Bottom Well (feet)	410	314	405	219	314	148
Average Depth to Bottom of Casing (feet)	341	272	365	179	274	128
Average Depth to Top of Screen/J-collar (feet)	331	262	355	168	264	118
Borehole/Well Diameter(s):						
Borehole diameter (inches)	7.875	7.875	7.875	7.875	7.875	7.875
Underreamed borehole diameter (inches)	10.5	10.5	10.5	10.5	7.875	7.875
Casing Diameter(s):						
O.D. of well casing (inches)	5.563	5.563	5.563	5.563	5.563	5.563
I.D. of well casing (inches)	5.00	5.00	5.00	5.00	5.00	5.00
O.D. of screen (inches)	3.500	3.500	3.500	3.500	5.563	5.563
I.D. of screen (inches)	2.89	2.89	2.89	2.89	5.00	5.00
Borehole/Casing Volume(s):						
Volume of well casing (ft3/ft)	0.136	0.136	0.136	0.136	0.136	0.136
Volume of screen (ft3/ft)	0.046	0.046	0.046	0.046	0.136	0.136
Volume of underream borehole (ft3/ft)	0.602	0.602	0.602	0.602	0.338	0.338
<b>Stacked Completion Technique Parameters</b>						
Completion Zone Plug:						
Seal Material	Bentonite Chips	Bentonite Chips	Bentonite Chips	Bentonite Chips	Bentonite Chips	Bentonite Chips
Underreamed Zone Plug Thickness (ft/well)	69	42	40	41	40	20
Volume of Completion Zone Plug (ft3/well)	41.54	25.28	24.08	24.68	13.52	6.76
Bottom Plug Thickness (ft/well)	50	50	50	50	50	50
Volume of Bottom Plug (ft3/well)	6.80	6.80	6.80	6.80	6.80	6.80
Formation Loss Seal Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Shrinkage Loss Seal Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Total Volume Completion Zone Plug (ft3/well)	48.34	32.08	30.88	31.48	20.32	13.56
Well Casing Seal:						
Fill Material	Unscreened Wash Sand	Unscreened Wash Sand	Unscreened Wash Sand	Unscreened Wash Sand	Unscreened Wash Sand	Unscreened Wash Sand
Fill Material Thickness (ft/well)	261	192	285	98	194	48
Volume of Fill Material (ft3/well)	35.50	26.11	38.76	13.33	26.38	6.53
Formation Loss Seal Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Shrinkage Loss Seal Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Total Volume Fill Material (ft3/well)	35.50	26.11	38.76	13.33	26.38	6.53
Surface Zone Plug:						
Seal Material	Bentonite Chips	Bentonite Chips	Bentonite Chips	Bentonite Chips	Bentonite Chips	Bentonite Chips
Surface Plug Thickness (ft/well)	30	30	30	30	30	30
Volume of Surface Zone Plug (ft3/well)	4.08	4.08	4.08	4.08	4.08	4.08
Formation Loss Seal Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Shrinkage Loss Seal Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Total Volume Surface Zone Plug (ft3/well)	4.08	4.08	4.08	4.08	4.08	4.08

**ATTACHMENT 4**  
**1995-96 ANNUAL REPORT - WELL ABANDONMENT COST(S)**  
**RENO CREEK BOND ESTIMATE**  
**Permit No. 479**

Well Type	M-Well	MO-Well	MP-Well	MU-Well	RI-Well (Ore SS)	RI-Well (Up Aquifer)
<b>Seal Material Cost (\$/well)</b>						
Quantity (pounds/bag)	50	50	50	50	50	50
Water (gallons/bag)	0.0	0.0	0.0	0.0	0.0	0.0
Density	67.3 lbs/ft <sup>3</sup>	67.3 lbs/ft <sup>3</sup>	67.3 lbs/ft <sup>3</sup>	67.3 lbs/ft <sup>3</sup>	67.3 lbs/ft <sup>3</sup>	67.3 lbs/ft <sup>3</sup>
Material Yield (ft <sup>3</sup> )	0.65	0.65	0.65	0.65	0.65	0.65
Cost of Seal Material (\$/bag)	4.20	4.20	4.20	4.20	4.20	4.20
Cost of Seal Material (\$/ft <sup>3</sup> )	6.46	6.46	6.46	6.46	6.46	6.46
Total Volume of Seal Material (ft <sup>3</sup> /well)	52.42	36.16	34.96	35.56	24.40	17.64
Bags Seal Needed	81.0	52.0	54.0	55.0	38.0	27.0
Total Cost Seal Material	340.20	235.20	226.80	231.00	159.60	113.40
<b>Fill Material Cost (\$/well)</b>						
Bulk Fill Material Cost:						
Material Yield (tons/27ft <sup>3</sup> )	1.50	1.50	1.50	1.50	1.50	1.50
Cost of Filler Material (\$/ton)	11.00	11.00	11.00	11.00	11.00	11.00
Cost Filler Material (\$/ft <sup>3</sup> )	0.61	0.61	0.61	0.61	0.61	0.61
Delivery Charge of Fill Material:						
Hour Rate (\$/hour)	55.0	55.0	55.0	55.0	55.0	55.0
Haul Capacity (ft <sup>3</sup> )	432.0	432.0	432.0	432.0	432.0	432.0
Distance to Project Sight (miles)	50.0	50.0	50.0	50.0	50.0	50.0
Delivery Time (hours)	2.5	2.5	2.5	2.5	2.5	2.5
Total Delivery Charge (\$/ft <sup>3</sup> )	0.32	0.32	0.32	0.32	0.32	0.32
Total Cost Fill Material (\$/ft <sup>3</sup> )	0.93	0.93	0.93	0.93	0.93	0.93
Total Volume of Fill Material (ft <sup>3</sup> /well)	35.50	26.11	38.76	13.33	26.38	6.53
Total Cost Fill Material (\$/well)	33.01	24.28	36.05	12.40	24.54	6.07
<b>Capping Material Cost (\$/Well)</b>						
Cement Plug w/ wire ring (\$/well)	3.75	3.75	3.75	3.75	3.75	3.75
Aluminum tag/plate (\$/well)	1.00	1.00	1.00	1.00	1.00	1.00
Total Materials (\$/well)	4.75	4.75	4.75	4.75	4.75	4.75
<b>Backhoe Cost (\$/Well)</b>						
Backhoe Time (hours/well)	0.25	0.25	0.25	0.25	0.25	0.25
Backhoe (\$/hour)	25.00	25.00	25.00	25.00	25.00	25.00
Total Cost of Backhoe (\$/well)	6.25	6.25	6.25	6.25	6.25	6.25
<b>Labor Cost (\$/Well)</b>						
Man Hours (hours/well)	1.00	1.00	1.00	1.00	1.00	1.00
Foreman (man/well)	1	1	1	1	1	1
Foreman (\$/hour)	20.00	20.00	20.00	20.00	20.00	20.00
Laborer (man/well)	2	2	2	2	2	2
Laborer (\$/hour)	15.00	15.00	15.00	15.00	15.00	15.00
Total Labor (\$/well)	50.00	50.00	50.00	50.00	50.00	50.00
<b>Subtotal Stacked Completion Technique (\$/Well)</b>	<b>\$434.21</b>	<b>\$320.48</b>	<b>\$323.85</b>	<b>\$304.40</b>	<b>\$245.14</b>	<b>\$180.47</b>
Number of Wells	30	8	10	8	32	7
<b>GRAND TOTAL</b>	<b>\$13,026.34</b>	<b>\$2,563.87</b>	<b>\$3,238.47</b>	<b>\$2,435.16</b>	<b>\$7,844.39</b>	<b>\$1,263.30</b>