# PATHFINDER

January 14, 2005

Mr. Gary Janosko, Branch Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, Maryland 20852

Ref: Revised surety estimate for the Lucky Mc mill tailings site
Docket No. 40-2259, Source Material License No. SUA-672

Dear Mr. Janosko:

The enclosed revision of the Lucky Mc mill tailings site surety estimate is submitted in response to the NRC staff comments we received via e-mail in December, 2004. The estimate has been modified to reflect 1) revised well abandonment procedures, 2) a documented cost for a tractor/backhoe/loader, and 3) additional project management and miscellaneous costs as described in Appendix C of NUREG-1620. Regarding the well abandonment activity, we have endeavored to re-evaluate the entire activity to more accurately describe current material costs, and the remaining wells to be abandoned since some tailings wells have already been abandoned as part of the general tailings reclamation activities. The previous estimate had inadvertently understated the number of five-inch diameter wells to be abandoned.

More importantly, since these adjustments required a re-working of the September 15, 2004 surety estimate submittal, we have taken this opportunity to update other aspects of the estimate. Specifically, since the closure/reclamation of the No. 4 evaporation pond was completed this past December, 2004, we have updated the surety estimate to remove the costs associated with the pond. This submittal more accurately reflects the current status of the site and the remaining work to be done. Enclosed is a panoramic digital image of the No. 4 evaporation pond reclamation project as documentation of the completed work.

Pathfinder hereby requests an amendment to the referenced license to incorporate into the Lucky Mc license a revised surety amount for tailings and mill site reclamation as required by condition 27. A summary of the adjusted surety amount is shown below.

NMSS01

**PATHFINDER Mines Corporation**
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**LUCKY Mc SITE**

| ACTIVITY | CURRENT SURETY | PROPOSED SURETY |
|---|---|---|
| 1. Mill Decommissioning | $0 | $0 |
| 2. Tailings Reclamation | 294,801 | 140,748 |
| 3. Long Term Surveillance | 681,684 | 705,318 |
| **SUBTOTAL** | $ 976,485 | $ 846,066 |
| 4. Contingency (15% of 1 &2) | 44,220 | 21,112 |
| **TOTAL** | **$1,020,705** | **$ 867,178** |
| Increase/(Decrease) | | ($ 153,527) |

The decrease to $867,178 for the proposed surety amount reflects a recalculation of the cost estimate for remaining activities, and the completion of the No. 4 evaporation pond reclamation during December, 2004.

The long term surveillance fee has been increased, consistent with the latest available CPI adjustment (November, 2004). Supporting information for the recalculated surety estimate is enclosed (two copies). Upon your written approval, we will proceed to obtain a rider for the existing Letter-of-Credit to reflect the revised surety amount.

Sincerely,

Tom Hardgrove

T. W. Hardgrove
Manager, Reclamation Operations

Enclosure

Cc: J. Whitten, USNRC Region IV
D. L. Wichers

LUCKY Mc TAILINGS AND MILL SITE RECLAMATION COST ESTIMATE
Revised January 14, 2005

Table 1 presents a cost estimate summary for the reclamation of the Lucky Mc mill site and tailings to 10 CFR 40 Appendix A standards. This cost summary addresses the remaining activities: well abandonment and other residual tasks. The No. 4 evaporation pond reclamation was completed on December 14, 2004.

The material volume estimates and related costs on the Summary Table for the various activities have been adjusted to reflect the remaining work in light of what has been completed to date. Since the submittal of the last cost estimate summary (September, 2004) additional re-grading has been completed. The entire surface of the No. 4 evaporation pond has been covered with fill material and graded to design contours. The adjacent west side diversion channel was also cut to grade. Channel SHC-13 was extended westward from its interim end point into the evaporation pond area. Radon barrier clay was placed to moisture and compaction specifications over the evaporation pond and adjacent areas as required by the plan. Erosion protection in the form of filter bed, rock mulch, and rip rap (in channels) was also placed. Access routes that crossed erosion-protected areas were covered with rock mulch as required. Additional grading work was done immediately to the east of the breach channel SHC-2 through the No. 3 tailings dam to further assure containment of flows through the channel. A final radiological (gamma) survey of the periphery of the solution ponds area was completed, and some minor volumes of identified contaminated material were removed and buried in the evaporation pond as part of the general grading. Topsoil was spread over the west slope of the west clay borrow area. That slope was seeded with the reclamation plan seed mix. Additionally, interseeding was done on the previously seeded topsoiled tailings areas since the vegetative cover on those areas was unsatisfactory. Some minor seeding work remains adjacent to the No. 4 evaporation pond that will be done during 2005. Otherwise, the Lucky Mc tailings reclamation project (exclusive of wells abandonment and some minor seeding) was completed as of December 14, 2004.

The text following Table 1 provides supporting information for the unit costs or total costs developed for the various activities of the reclamation project as presented in Table 1.

Table 1. Pathfinder Mines Corporation, Lucky Mc Mine
Tailing and Mill Site Reclamation Cost Estimate Summary

| Activity | Quantity | Unit Cost ($) | Cost | Footnote* |
|---|---|---|---|---|
| Regrading: | 0 CY | 0.73 /CY | $0 | |
| Tailings/millsite cover & protection: | | | | |
| Radon barrier placement | 0 CY | 1.30 /CY | $0 | |
| Filter bed stockpiled on site | 0 CY | 2.00 /CY | $0 | |
| Rock mulch stockpiled on site | 0 CY | 2.00 /CY | $0 | |
| Small riprap stockpiled on site | 0 CY | 4.50 /CY | $0 | |
| Large riprap placement | 0 CY | 4.50 /CY | $0 | |
| Topsoil - Borrows | 0 CY | 0.70 /CY | $0 | |
| Revegetation: | | | | |
| Discing & seeding | 5 AC | 99.00 /AC | $495 | B |
| SUBTOTAL | --- | --- | $495 | |
| Contractors' mobilization/demobilization | | | $3,000 | C |
| TOTAL RECLAMATION CONTRACTOR COST | | | $3,495 | |
| Construction management | | | $10,000 | C |
| Other miscellaneous expenses | | | $39,009 | C |
| Completion Report Preparation | | | $6,820 | C |
| Groundwater restoration | | | $34,908 | D |
| Fencing | | | $18,400 | E |
| Radiological surveys | | | $5,000 | F |
| Environmental monitoring | | | $23,116 | F |

| | |
|---|---|
| TOTAL | $140,748 |
| Contingency (15%) | $21,112 |
| Site Surveillance | $705,318 |
| GRAND TOTAL | $867,178 |

* See the corresponding text section for an explanation of the derivation of costs.
All tailings-related regrading and cover/erosion protection placement has been completed.

A. Hourly Costs

The only remaining equipment costs required for project completion are a small backhoe/loader and a pickup truck. The backhoe/loader and pickup truck costs are based on total hourly cost (exclusive of operator cost) from a quote by CRE, a local contractor who is currently doing work for Pathfinder at the Shirley Basin site (see enclosed CRE equipment hourly rate quote).

| Equipment | Total Hrly. Cost |
|---|---|
| Cat 416CIT Tractor/Backhoe | $20.00 |
| Pickup truck | 10.00 |

Hourly Labor Cost:

The operator/laborer pay rate is $34.00 per hour, based on the 2004 contract at Lucky Mc with Rapid Construction, Rapid City, South Dakota (see enclosed Exhibit "D" from the contract).

B. Re-vegetation:

Unit costs for the various operations in the re-vegetation of the few remaining areas still requiring seeding are based upon contractor rates and materials costs quoted for identical work during the fall, 2004.

| Discing and Seeding: | |
|---|---|
| Labor and Equipment - | $60.00/AC |
| Seed - | 39.00/AC |
| Total | **$99.00/AC** |

See mobilization/demobilization under C(2).

C. Construction Management and Miscellaneous Expenses

Because of the limited extent of the remaining construction tasks a lump sum for construction management and incidental overhead of **$10,000** is applied.

Miscellaneous expenses are estimated as follows:

1) Engineering design/plan changes - The planned work has been completed as it relates to the tailings reclamation plan. Therefore, no cost is assigned to this item.
2) Mobilization - The reclamation seeding contractor mobilization/demobilization cost estimate is $1,000. A contractor also will have to mobilize/demobilize to

accomplish the wells abandonment and related activities described below. A cost of $2,000 is assigned to this activity. This is a conservative estimate since the contractor mobilization/demobilization cost for completion of the evaporation pond reclamation during 2004 was $4,000 for a much more extensive complement of equipment. Total mobilization/demobilization is **$3,000.**

3) Legal Expenses - An estimated **$10,000.00** is applied to this activity. This is exclusive of the license termination activities, including site transfer to DOE, discussed below.

4) Power - Power needs related to the site closure are minimal at this point. The 2004 average monthly combined gas and electric power cost for the site was $103.15. Assuming a maximum of three months activity requiring power, a power cost of **$309.00** is derived.

5) Completion report preparation - It is estimated that approximately 100 hours of consultant time would be required to complete the remaining work on the completion report. At typical local engineering consultant rates, the following cost is derived:

| | |
|---|---|
| 60 hrs. engineering work at $76/hr - | $4,560 |
| 40 hrs. clerical/drafting work at $44/hr - | 1,760 |
| Materials - | 500 |
| Total | **$6,820** |

6) License termination activities - The cost to terminate the NRC license and transfer the site to DOE is estimated as follows:

| | |
|---|---|
| Site final survey, survey caps, sign & monument - | $ 6,500 |
| Legal expenses - | 5,000 |
| Labor - 200 hrs. at $76/hr - | 15,200 |
| Miscellaneous - | 2,000 |
| Total | **$28,700** |

D. Groundwater Restoration:

Alternate concentration limits (ACLs) have been approved for the site. The corrective action program has been terminated for the site.

Well Plugging:

There are some 131 wells associated with the tailings/millsite or the groundwater restoration effort that will be abandoned.

An average depth for the 2-5" diameter wells is about 70 feet. Plugging will involve the filling of each well to five feet below the land surface with bentonite pellets. A two feet deep poured concrete plug will be installed on top of the bentonite, and the casing will be cut off three feet below the land surface. The hole will then be backfilled with soil to the land surface. A cost summary for this activity follows:

Equipment:

A Cat 416CIT tractor/backhoe/loader will be utilized to dig out the top three feet of casing below the land surface and to backfill the hole after well plugging as described above. A pickup truck will also be required to haul materials. The cost for this equipment is $30.00/hr.

Materials:

Five inch diameter wells with an average 65 feet to fill will require 9 CF of bentonite pellets. Two inch diameter wells with an average 65 feet to fill will require 1.4 CF of bentonite pellets. Five - sixteen inch diameter wells with an average of 40 feet depth will require 49 CF each of bentonite pellets. Two thirty - six inch diameter sumps that are 20 feet deep will each require 106 CF of bentonite pellets. A 50 lb. bag of pellets costs $3.25/bag FOB the tailings site (based on bagged bentonite chips purchased in late 2004). One CF of pellets equals 70 lbs.

70 lbs/CF/50 lbs/bag x $3.25/bag = $4.55/CF bentonite.
$4.55/CF x 9 CF = $40.95 bentonite for 5" well.
$4.55/CF x 1.4 CF = $6.37 bentonite for 2" well.
$4.55/CF x 49 CF = $222.95 bentonite for 16"well.
$4.55/CF x 106 CF = $482.30 bentonite for 36"well.

1/3 bag of sacked concrete will be required for each 5" diameter well; 1/10 bag of concrete will be required for each 2" diameter well; 4 bags will be needed for each 16" dia. well; and the 36" dia. sumps will need 19 bags each. Sacked concrete costs $4.00/bag FOB the site.

| | 5" Well | 2" Well | 16"Well | 36"Well |
|---|---|---|---|---|
| Bentonite Pellets | $40.95 | $ 6.37 | $222.95 | $482.30 |
| Sacked Concrete | 1.33 | 0.40 | 16.00 | 76.00 |
| Total Materials | $42.28 | $6.77 | $238.95 | $558.30 |

Labor:

2 personnel will be required, one to operate the backhoe, the

other as a manual laborer.

$34.00/hr. + $34.00/hr = $68.00/hr.

It is assumed that wells require an average two hours each to plug. Therefore, labor = 2 hr./well x $68.00/hr = $136.00/well.

Total Costs for Each Size Well:

| | 5" Well | 2" Well | 16"Well | 36"Well |
|---|---|---|---|---|
| Equipment | $60.00 | $ 60.00 | $ 60.00 | $ 60.00 |
| Materials | 42.28 | 6.77 | $238.95 | 558.30 |
| Labor | 136.00 | 136.00 | 136.00 | 136.00 |
| Total | $238.28 | $202.77 | $434.95 | $754.30 |

| | | | |
|---|---|---|---|
| 105 - | 5" wells x | $238.28/well = | $25,019 |
| 19 - | 2" wells x | $202.77/well = | $ 3,853 |
| 5 - | 16"wells x | $434.95/well = | $ 2,175 |
| 2 - | 36"wells x | $754.30/well = | $ 1,509 |
| | | Total | $32,556 |

In addition as estimated three days will be spent removing surface buildings and other equipment. That work will also involve the 416 backhoe/loader, a pickup truck and two personnel. The cost is summarized as follows:

Hourly Cost:

| | |
|---|---|
| 416 backhoe/loader - | $20.00 |
| Pickup truck | 10.00 |
| Labor | 68.00 |
| Total | $98.00 |

3days x 8 hrs./day x $98.00/hr. = $2,352

Mobilization/demobilization for these activities is discussed in section C.

Total Expense for Groundwater Restoration =
$32,556 + $2,352 = **$34,908.**

E. Fencing:

It is assumed that the existing restricted area fence will be modified/expanded prior to site transfer to the DOE, requiring 16,000 feet of new fencing. Based upon recent contracted fencing work, a unit cost of $1.15/linear ft. of fence is

appropriate, including materials and labor.

16,000 ft x $1.15/ft = **$18,400.**

F. Radiological Survey and Environmental Monitoring:

Post Reclamation Ra226 Survey:

The post reclamation gamma/Ra226 survey field work has been completed. Report preparation is estimated at **$5,000.**

Environmental Monitoring:

An environmental monitoring program will consist solely of the quarterly sampling of seven monitor wells. Monitoring will continue until the anticipated site transfer to DOE by late 2005. Labor costs, semi-annual report preparation, and other miscellaneous expenses are based on the use of a consultant at current rates that Pathfinder has paid.

Labor and Program Administration -

1 technician for 24 hrs/qtr for four quarters:
24 hrs/qtr x 4 qtrs x $44.00/hr = $4,224.

Administration and general overhead, and general engineering/consultant oversight (including report preparation) -

Administration/overhead = $500/mo x 12 mo/yr
x 1 yr = $6,000.

Engineering/consultants = $400/mo x 12 mo/yr
x 1 yr = $4,800.

Analytical Work -
Based upon current costs for the outside analytical work done at Lucky Mc to maintain the environmental monitoring program as required by the license (post-ACLs approval), the following would apply:

| | Quarterly Cost |
|---|---|
| Water sample analyses | $ 2,023 |

Total Analytical Costs for 4 quarters:

$2,023/yr x 4 qtrs = $8,092.

Total Costs for Environmental Monitoring:

$4,224 + $6,000 + $4,800 + $8,092 = **$23,116.**

G. Inflation Adjustment of the Long Term Surveillance Fee

Consumer Price Index, all urban consumers:
November, 2004 = 191.0
December, 1978 = 67.7

191.0/67.7 x $250,000 = **$705,318.**

CONSTRUCTION
REMEDIATION
ENGINEERING

13 JAN 05
BY JERRY MOORE
PATHFINDER JOB FOREMAN

# EQUIPMENT AND LABOR HOURLY RATE TABLE

| Hourly Rates<br>Equipment and Labor<br>Shirley Basin Tailings Reclamation Project<br>Shirley Basin, Wyoming | | |
|---|---|---|
| **Item** | **Model – Make** | **Hourly Rate** |
| Labor | | |
| Operator | | $35.00 |
| Driver | | $30.00 |
| Equipment | | |
| Articulated trucks | A35C/D – Volvo | $70.00 |
| Loader | L220E – Volvo | $70.00 |
| Loader | 950 - Caterpillar | $35.00 |
| Bulldozer | D65EX – Komatsu | $55.00 |
| Motor Grader | 140G - Caterpillar | $40.00 |
| Scraper | 623B – Caterpillar | $90.00 |
| Belly dump | 23 CY – NA | $40.00 |
| Water truck | 3500 gallon – Freightliner | $30.00 |
| Excavator | 325 – Caterpillar | $30.00 |
| Field truck | ¾ ton | $10.00 |
| Backhoe | 416CIT Cat | $20.00 |

# EXHIBIT "D"

## EQUIPMENT AND LABOR HOURLY RATE TABLE

| Bid Hourly Rates | | | |
|---|---|---|---|
| Equipment | Type | | |
| 637D | Scraper | $ | 135.00 |
| D9H | Dozer | $ | 135.00 |
| D9N | Dozer | $ | 135.00 |
| D9L | Dozer | $ | 145.00 |
| 14G | Grader | $ | 90.00 |
| 16G | Grader | $ | 96.00 |
| 825B | Compactor | $ | 95.00 |
| 4WD Tractor / Disc | | $ | 80.00 |
| 225 | Excavator | $ | 110.00 |
| 235 | Excavator | $ | 140.00 |
| 320 | Excavator | $ | 130.00 |
| 262B Skid Steer | Loader | $ | 54.00 |
| 980B | Loader | $ | 75.00 |
| Truck | Side Dump | $ | 65.00 |
| International | Water Truck | $ | 65.00 |
| | | | |
| Laborer | | $ | 34.00 |
| Foreman | | $ | 54.00 |

Pathfinder - Lucky Mc Tailings Site - Completion of No. 4 Evaporation Pond Reclamation - Dec. 8, 2004


C01