

**Cost Estimates for
Reclamation**

Of

White Mesa Mill

Blanding, Utah

February, 1999

**Source Material License No. SUA-1358
Docket No. 40-8681**

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Cost Estimates for Reclamation of White Mesa Mill

Table of Contents

1. Cost Summary
 2. Mill Decommissioning
 3. Cell 2 Calculations
 4. Cell 3 Calculations
 5. Cell 4A Calculations
 6. Cell 1 Calculations
 7. Miscellaneous Cost Calculations
 8. Rock Production Costs
 9. Equipment Costs
 10. Labor Costs
 11. Long Term Care Calculation
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WHITE MESA MILL RECLAMATION COST ESTIMATE
February, 1999

	<u>1999 Estimate</u>
Mill Decommissioning	\$1,505,166
Cell 2	\$1,082,869
Cell 3	\$1,565,444
Cell 4A	\$120,128
Cell 1	\$933,169
Miscellaneous	\$1,939,480
Subtotal Direct Costs	<hr/> \$7,146,257
Profit Allowance	10.00% \$714,626
Contingency	15.00% \$1,071,939
Licensing & Bonding	2.00% \$142,925
Long Term Care Fund	\$606,721
Total Reclamation	<hr/> \$9,682,467
Revised Bond Amount	<hr/> <u>\$9,682,467</u>

MILL DECOMMISSIONING

Mill Building Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	720	\$12,757
Mechanics	hrs	\$13.80	640	\$8,829
Laborers	hrs	\$10.35	320	\$3,311
Small Tools	hrs	\$1.25	960	\$1,200
Cat 769 Haul Truck	hrs	\$60.52	640	\$38,735
Truck Drivers	hrs	\$12.74	640	\$8,154
Cat 988 Loader	hrs	\$95.68	160	\$15,308
Cat 375 Excavator	hrs	\$123.76	160	\$19,802
PC-400 with Shears	hrs	\$159.84	160	\$25,574
65 Ton Crane	hrs	\$55.91	160	\$8,946
30 Ton Crane	hrs	\$40.80	80	\$3,264
Equipment Maintenance (Butler)	hrs	\$10.01	1,360	\$13,617
Concrete Removal	sf	\$3.30	37,500	\$123,750

Total Mill Building Demolition **\$283,247**

Ore Feed Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	48	\$850
Mechanics	hrs	\$13.80	64	\$883
Laborers	hrs	\$10.35	32	\$331
Small Tools	hrs	\$1.25	96	\$120
Cat 769 Haul Truck	hrs	\$60.52	64	\$3,873
Truck Drivers	hrs	\$12.74	64	\$815
Cat 988 Loader	hrs	\$95.68	16	\$1,531
Cat 375 Excavator	hrs	\$123.76	16	\$1,980
PC-400 with Shears	hrs	\$159.84	16	\$2,557
30 Ton Crane	hrs	\$40.80		\$0
Equipment Maintenance (Butler)	hrs	\$10.01	112	\$1,121

Total Ore Feed Demolition **\$14,063**

SX Building Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	240	\$4,252
Mechanics	hrs	\$13.80	320	\$4,415
Laborers	hrs	\$10.35	160	\$1,655
Small Tools	hrs	\$1.25	480	\$600
Cat 769 Haul Truck	hrs	\$60.52	320	\$19,367
Truck Drivers	hrs	\$12.74	320	\$4,077
Cat 988 Loader	hrs	\$95.68	80	\$7,654
Cat 375 Excavator	hrs	\$123.76	80	\$9,901
PC-400 with Shears	hrs	\$159.84	80	\$12,787
65 Ton Crane	hrs	\$55.91		\$0
30 Ton Crane	hrs	\$40.80		\$0
Equipment Maintenance (Butler)	hrs	\$10.01	560	\$5,607
Concrete Removal	sf	\$3.30	55,970	\$184,701

Total SX Building Demolition **\$255,017**

CCD Circuit Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	195	\$3,455
Mechanics	hrs	\$13.80	120	\$1,655
Laborers	hrs	\$10.35	60	\$621
Small Tools	hrs	\$1.25	180	\$225
Cat 769 Haul Truck	hrs	\$60.52	120	\$7,263
Truck Drivers	hrs	\$12.74	120	\$1,529
Cat 988 Loader	hrs	\$95.68	30	\$2,870
Cat 375 Excavator	hrs	\$123.76	30	\$3,713
PC-400 with Shears	hrs	\$159.84	30	\$4,795
65 Ton Crane	hrs	\$55.91	30	\$1,677
30 Ton Crane	hrs	\$40.80	15	\$612
Equipment Maintenance (Butler)	hrs	\$10.01	315	\$3,154
Concrete Removal	sf	\$3.30	15,000	\$49,500

Total CCD Circuit Removal **\$81,070**

Sample Plant Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	24	\$425
Mechanics	hrs	\$13.80	32	\$441
Laborers	hrs	\$10.35	16	\$166
Small Tools	hrs	\$1.25	48	\$60
Cat 769 Haul Truck	hrs	\$60.52	32	\$1,937
Truck Drivers	hrs	\$12.74	32	\$408
Cat 988 Loader	hrs	\$95.68	8	\$765
Cat 375 Excavator	hrs	\$123.76	8	\$990
PC-400 with Shears	hrs	\$159.84	8	\$1,279
30 Ton Crane	hrs	\$40.80		\$0
Equipment Maintenance (Butler)	hrs	\$10.01	56	\$561
Concrete Removal	sf	\$3.30	4,200	\$13,860

Total Sample Plant Removal**\$20,892****Boiler Demolition**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	120	\$2,126
Mechanics	hrs	\$13.80	160	\$2,207
Laborers	hrs	\$10.35	80	\$828
Small Tools	hrs	\$1.25	240	\$300
Cat 769 Haul Truck	hrs	\$60.52	160	\$9,684
Truck Drivers	hrs	\$12.74	160	\$2,038
Cat 988 Loader	hrs	\$95.68	40	\$3,827
Cat 375 Excavator	hrs	\$123.76	40	\$4,951
PC-400 with Shears	hrs	\$159.84	40	\$6,394
65 Ton Crane	hrs	\$55.91		\$0
30 Ton Crane	hrs	\$40.80		\$0
Equipment Maintenance (Butler)	hrs	\$10.01	280	\$2,804
Concrete Removal	sf	\$3.30	2,900	\$9,570

Total Boiler Demolition**\$44,728****Vanadium Oxidation Circuit Removal**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	48	\$850
Mechanics	hrs	\$13.80	64	\$883
Laborers	hrs	\$10.35	32	\$331
Small Tools	hrs	\$1.25	96	\$120
Cat 769 Haul Truck	hrs	\$60.52	64	\$3,873
Truck Drivers	hrs	\$12.74	64	\$815
Cat 988 Loader	hrs	\$95.68	16	\$1,531
Cat 375 Excavator	hrs	\$123.76	16	\$1,980
PC-400 with Shears	hrs	\$159.84	16	\$2,557
65 Ton Crane	hrs	\$55.91		\$0
30 Ton Crane	hrs	\$40.80		\$0
Equipment Maintenance (Butler)	hrs	\$10.01	112	\$1,121
Concrete Removal	sf	\$3.30	1,200	\$3,960

Total Vanadium Oxidation Circuit Removal**\$18,023****Main Shop/Warehouse Demolition**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	96	\$1,701
Mechanics	hrs	\$13.80	128	\$1,766
Laborers	hrs	\$10.35	64	\$662
Small Tools	hrs	\$1.25	192	\$240
Cat 769 Haul Truck	hrs	\$60.52	128	\$7,747
Truck Drivers	hrs	\$12.74	128	\$1,631
Cat 988 Loader	hrs	\$95.68	32	\$3,062
Cat 375 Excavator	hrs	\$123.76	32	\$3,960
PC-400 with Shears	hrs	\$159.84	32	\$5,115
Equipment Maintenance (Butler)	hrs	\$10.01	224	\$2,243
Concrete Removal	sf	\$3.30	19,300	\$63,690

Total Main Shop/Warehouse Demolition**\$91,616**

Office Building Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	72	\$1,276
Mechanics	hrs	\$13.80	96	\$1,324
Laborers	hrs	\$10.35	48	\$497
Small Tools	hrs	\$1.25	144	\$180
Cat 789 Haul Truck	hrs	\$80.52	96	\$5,810
Truck Drivers	hrs	\$12.74	96	\$1,223
Cat 988 Loader	hrs	\$95.68	24	\$2,298
Cat 375 Excavator	hrs	\$123.76	24	\$2,970
PC-400 with Shears	hrs	\$159.84	24	\$3,836
Equipment Maintenance (Butler)	hrs	\$10.00	168	\$1,680
Concrete Removal	sf	\$3.30	12,100	\$39,930

Total Office Building Demolition**\$61,023****Misc. Tankage & Spare Parts Removal**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	24	\$425
Mechanics	hrs	\$13.80	32	\$441
Laborers	hrs	\$10.35	16	\$166
Small Tools	hrs	\$1.25	48	\$60
Cat 789 Haul Truck	hrs	\$80.52	32	\$1,937
Truck Drivers	hrs	\$12.74	32	\$408
Cat 988 Loader	hrs	\$95.68	8	\$765
Cat 375 Excavator	hrs	\$123.76	8	\$990
PC-400 with Shears	hrs	\$159.84	8	\$1,279
Equipment Maintenance (Butler)	hrs	\$10.00	56	\$560
Concrete Removal	sf	\$3.20		\$0

Total Misc. Tankage & Spare Parts Removal**\$7,031****Mill Yard Decontamination**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	582	\$10,312
Cat 637 Scraper	hrs	\$140.50	257	\$36,110
Cat 988 Loader	hrs	\$95.68	65	\$6,219
Cat D8N Dozer With Ripper	hrs	\$68.67	65	\$4,463
Cat D7 Dozer	hrs	\$57.90	65	\$3,764
Cat 651 Waterwagon	hrs	\$72.12	65	\$4,688
Cat 14G Motorgrader	hrs	\$48.93	65	\$3,180
Equipment Maintenance (Butler)	hrs	\$10.01	582	\$5,827

Total Mill Yard Decontamination**\$74,563****Ore Storage Pad Decontamination**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	429	\$7,601
Cat 637 Scraper	hrs	\$140.50	189	\$26,555
Cat 988 Loader	hrs	\$95.68	48	\$4,593
Cat D8N Dozer With Ripper	hrs	\$68.67	48	\$3,296
Cat D7 Dozer	hrs	\$57.90	48	\$2,779
Cat 651 Waterwagon	hrs	\$72.12	48	\$3,462
Cat 14G Motorgrader	hrs	\$48.93	48	\$2,348
Equipment Maintenance (Butler)	hrs	\$10.01	429	\$4,295

Total Ore Storage Pad Decontamination**\$64,930****Equipment Storage Area Cleanup**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	154	\$2,729
Cat 637 Scraper	hrs	\$140.50	69	\$9,695
Cat 988 Loader	hrs	\$95.68	17	\$1,627
Cat D8N Dozer With Ripper	hrs	\$68.67	17	\$1,167
Cat D7 Dozer	hrs	\$57.90	17	\$984
Cat 651 Waterwagon	hrs	\$72.12	17	\$1,226
Cat 14G Motorgrader	hrs	\$48.93	17	\$832
Equipment Maintenance (Butler)	hrs	\$10.01	154	\$1,542

Total Equipment Storage Area Cleanup**\$19,801**

Revegetate Mill Yard & Ore Pad

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	231	\$4,093
Cat 637 Scraper	hrs	\$140.50	132	\$18,547
Cat 988 Loader	hrs	\$95.68	0	\$0
Cat D8N Dozer With Ripper	hrs	\$68.67	33	\$2,268
Cat D7 Dozer	hrs	\$57.90	33	\$1,911
Cat 651 Waterwagon	hrs	\$72.12		\$0
Cat 14G Motorgrader	hrs	\$48.93	33	\$1,615
Equipment Maintenance (Butler)	hrs	\$10.01	231	\$2,313

Total Revegetate Mill Yard & Ore Pad**\$30,744****Total Demolition and Decontamination****\$1,058,948****CLEANUP OF WINDBLOWN CONTAMINATION****Scoping Survey**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Soil Samples	each	\$50.00	100	\$5,000
Survey Crew	hrs	\$13.19	752	\$9,917
Sample Crew	hrs	\$13.19	1,312	\$17,301

Total Scoping Survey**\$32,218****Characterization Survey**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Soil Samples	each	\$50.00	472	\$23,600
Sample Crew	hrs	\$13.19	1,136	\$14,980

Total Characterization Survey**\$38,580****Final Status Survey**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Soil Samples	each	\$50.00	300	\$15,000
Sample Crew	hrs	\$13.19	3,552	\$46,840

Total Final Status Survey**\$61,840****Windblown Cleanup**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	1,190	\$21,084
Cat 637 Scraper	hrs	\$140.50	680	\$95,543
Cat D8N Dozer With Ripper	hrs	\$68.67	170	\$11,673
Cat D7 Dozer	hrs	\$57.90	170	\$9,844
Cat 14H Motorgrader	hrs	\$48.93	170	\$8,317
Soil Samples	each	\$50.00	500	\$25,000
Survey Crew	hrs	\$13.19	163	\$2,149
Sample Crew	hrs	\$13.19	83	\$1,095
Equipment Maintenance (Butler)	hrs	\$10.01	1,190	\$11,915

Total Windblown Cleanup**\$186,621****Quality Control**

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	\$62.00	2,080	\$128,960

Total Quality Control**\$128,960****Total Cleanup Windblown Contamination****\$448,219****TOTAL MILL DECOMMISSIONING****\$1,508,166**

PROJECT DATE CALC BY SHEET OF

MILL DECOMMISSIONING

1) REMOVAL OF CONTAMINATED MATERIALS FROM MILL YARD

ASSUME:

- 18" (1.5 feet) will have to be removed
- Area (from CAD) = 1,648,483 sq ft
- 37.0 Acres

~~Total~~ Volume Moved = $[1,648,483 \times 1.5] + 27 = 91,302 \text{ yd}^3$

$\frac{91,302 \text{ yd}^3}{287 \text{ yd}^3/\text{hr}} = 257 \text{ hours}$

say $91,302 \text{ yd}^3$
Haul Rate = 2

2) REMOVAL OF CONTAMINATED MATERIALS FROM GDS PND

ASSUME:

- 18" will have to be removed
- Area (from CAD) = 976,780 sq ft
- 22.4 Acres

~~Total~~ Volume Moved = $[976,780 \times 1.5] + 27 = 54,265 \text{ yd}^3$

$\frac{54,265 \text{ yd}^3}{287 \text{ yd}^3/\text{hr}} = 189 \text{ hours}$

say $54,300 \text{ yd}^3$
Haul Rate = 3

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MILL DECOMMISSIONING

3) DEMOLITION EQUIPMENT

- KAMETSU PLACD (OR CAT EQUIVALENT) WITH LA BOUNTY SHEARS (HYDRAULIC)
- CAT 275L BACKHOES W/ GRAPPLES.
- 769C BOULDER TRUCKS (4 ea)
- 988 LOADER (1 ea)

4) DEMOLITION CREW.

- HEAVY EQUIPMENT OPERATORS - PLACD, 285, 988
- DUST CONTROL - 2 - LABORERS
- MELHALLS - CUTTING UP OF DEBRIS TO REMAIN Voids 4
- TRUCK DRIVERS - 4 ea - 769D TRUCKS

5) TOOL & EXPENDABLE ALLOWANCE, COVERING THE FOLLOWING:

- SAFETY GEAR
- HAND TOOLS
- BOTTLED GASOLINE & TRENCHES.
- ALLOW 1.25 / MAN HOUR FOR ALL BUT H.E. OPERATORS + TRUCK DRIVERS

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MILL DECOMMISSIONING

6) DEMOLITION TIME ESTIMATES. (SHEAR & GRABER)

- MILL BUILDING 20 days
- COARSE ORE 2 days
- SK BUILDING 10 days
- CCD, PLT, LARKOV 5 days
- SAMPLE PLANT 1 day
- BOILER 5 days
- Vanadium Oxidation 2 days
- SHOP / WAREHOUSE 4 days
- OFFICE BUILDING 3 days
- MISC TRUCKS & "NORTH FORTY" 4 days

7) FOUNDATION DEMOLITION

- ASSUME THAT MEANS 020-750-0440 OVER ENTIRE AREA OF STRUCTURE WILL SUFFICE @ \$3.33/sq ft
- AREAS ARE AS FOLLOWS. (FROM CAD)

	<u>Area, ft²</u>	<u>Est \$</u>
MILL BUILDING	37,500	120,000
SK BUILDING	55,970	179,100
SHOP / WAREHOUSE	19,200	61,700
OFFICE	12,100	38,700
SAMPLE PLANT	4,200	13,400
DIESEL SHOP	2050	6,600
BOILER	2900	9,300

- LABOR \$ 2.75, EQUIP \$.55

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MILL DECOMMISSIONING

0) REVEGETATION

ASSUME...

- MILL TARD AREA = 1,643,453 ft²
- ORE PAD AREA = 976,780 ft²
- PLACE 6"
- 637 ROUTE #4 APPROXIMATES HAUL

$$\text{hauler} \quad \left[(1,643,453 + 976,780) \text{ ft}^2 \times \frac{1}{2} \text{ ft} \right] \div 27 \frac{\text{ft}^3}{\text{yd}} = 48,522 \text{ yd}^3$$

$$\text{say} \quad \boxed{48,600 \text{ yd}^3}$$

$$\therefore \frac{48,600 \text{ yd}^3}{260 \text{ yd}^3/\text{hr}} = \boxed{132 \text{ "637" hours}}$$

MILL DECOMMISSIONING
WIND BLOWN CONTAMINATION

1) SCOPING SURVEY

- INITIAL SURVEY WILL BE CONDUCTED ON A AREA TO BE DETERMINED BUT FOR THIS ESTIMATE IT IS DEFINED AS AN AREA APPROXIMATED BY A PERIMETER 1000 FEET OUTSIDE OF THE RESTRICTED AREA BOUNDARY. THIS IS CONSERVATIVE SINCE WIND BLOWN CONTAMINATION WOULD MOST LIKELY BE FOUND DOWNWIND OF THE SITE, WHICH IS ON THE EAST SIDE OF THE RESTRICTED AREA
- AREA DETERMINED BY CAP. = 38,728,000 ft²

Area Requiring Wind Blown Survey is

TOTAL AREA -	38,728,000 ft ²
Cell 4A	1,909,000 ft ²
Cell 3	3,234,000 ft ²
Cell 2	2,987,000 ft ²
Cell 1	2,576,000 ft ²
MILL YARD	1,643,000 ft ²
ORE STORAGE PAD	977,000 ft ²
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	25,402,000 ft ²

- ASSUME FLOPMENT OF STANDARD NRC/EPA 10 X 10 meter grid (1076 ft²)
- ASSUME SCOPING SURVEY COMPLETED BY SCANNING WITH NR METER HOLD CLOSE TO GROUND WHILE TRAVELING AT ± 0.5 m/sec. AS PER GUIDANCE IN NUREG 5849.
- SURVEY CREW OF 2 CAPABLE OF SETTING 500 GRID POINTS PER DAY

$$\frac{25,402,000 \text{ ft}^2}{1076 \text{ ft}^2} = 23,600 \text{ GRID POINTS}$$

$$\frac{23,600 \text{ POINTS}}{500 \text{ POINTS/DAY}} \approx 47 \text{ DAYS}$$

$$2 \text{ men} \times 8 \text{ hrs} \times 47 \text{ Days} = \boxed{752 \text{ HOURS}} - \text{SURVEY}$$

- SCANNING CREW CONSISTS OF 2 MEN -

• COVERAGE $0.5 \text{ m/sec} \times 60 \text{ sec/min} \times 8 \text{ hrs/day} = 14,400 \text{ m/day}$
 ASSUME .3 EFF. - ACTUAL
 $14,400 \text{ m/day} \times .3 = 11,520 \text{ m/day}$

No. 5505
Engineer's Computation Pad
ALVIN

Wind blown Contamination - Scoping Survey

- ASSUME 30 meter PATH for each 1 x 10 grid to cover 10% of surface area (see NUREG 5849)

CREW CAN SCAN $\frac{11,520 \text{ m/day}}{30 \text{ m/grid}} = 384 \text{ Grids/day}$

$\therefore \frac{23,600 \text{ Grids}}{384 \text{ Grids/day}} \approx 62 \text{ Days TO Complete INITIAL SCAN}$

$62 \text{ Days} \times 2 \text{ men} \times 8 \text{ hrs/day} = \boxed{992 \text{ man hrs}}$

- ASSUME MAP PRODUCTION + DATA REDUCTION takes SCANNING CREW AN ADDITIONAL 20 DAYS TO COMPLETE

$20 \text{ Days} \times 2 \text{ men} \times 8 \text{ hrs/day} = \boxed{320 \text{ man hrs}}$

TOTAL SCANNING Man hrs = $\boxed{1312}$

- Scoping Survey will require 100 Confirmatory Soil Samples at a cost of \$50.00/each (Unit + R. 226)
- Samples can be taken at same time as Scanning takes place.

2) CHARACTERIZATION SURVEY -

Survey of areas identified as affected areas by Scoping Survey

- ASSUMES:
 - 20% of Area will require additional Sampling
 - Probing will be used, 4 probe sites/grid (100 m²)
 - Soil Samples will be required on 10% of Grid Samples
 - Samples will be for Unit + R. 226
 - Cost/Sample = \$50 (LAB)

$\frac{25,402,000 \text{ ft}^2}{1076 \text{ ft}^2/\text{grid}} = 23,608 \text{ Grids} \times .2 = 4722 \text{ Grids}$

- Crew can cover 100 Grids/day probing
- Crew can take 25 Soil Samples/day

Probing takes $\frac{4722 \text{ Grids}}{100 \text{ Grids/day}} \approx \boxed{47 \text{ Days}}$

$47 \text{ Days} \times 2 \text{ men} \times 8 \text{ hrs/day} = \boxed{752 \text{ man hrs}}$

No. 3505
Engineer's Computation Pad
ALVIN

WINDBLOWN CONTAMINATION - CHARACTERIZATION SURVEY

Soil Sample are 10% of Probe grids

$$4721 \times .10 = 472 \text{ Soil Samples}$$

$$\frac{472 \text{ Samples}}{25 \text{ Samples / day}} \approx \boxed{19 \text{ days}} \times 8 \text{ hrs} \times 2 = \boxed{304 \text{ hrs}}$$

MAP PREPARATION + DATA REDUCTION take another 5 days:

$$5 \times 2 \times 8 \text{ hr} = \boxed{80 \text{ hrs}}$$

$$\text{TOTAL HRS} = \boxed{1136 \text{ man hrs}}$$

3) RECONSTRUCTION CONTROL SURVEY

- Provided by QA/QC CONTRACTOR

4) FINAL STATUS SURVEY

- IN ORDER TO GAIN FINAL RELEASE, WILL REQUIRE 4 GAMMA ESTIMATES PER EACH 100 M² GRID SQUARE IN THE AFFECTED AREA (20% AREA)
- 200 RANDOM SOIL SAMPLES WILL BE OBTAINED FROM THE UNAFFECTED AREA (80% AREA)
- WILL REQUIRE 100 COMPARATIVE SAMPLES FOR THE AFFECTED AREA

Therefore

$$25,402 \div 1076 \text{ ft}^2/100\text{m}^2 = 23,607 \text{ GRIDS TOTAL}$$

$$23,607 \times 0.20 = 4,721 \text{ GRIDS AFFECTED}$$

$$4,721 \times 4 = 18,886 \text{ GAMMA ESTIMATES}$$

- CREW CAN TAKE 100 PEROXIDE SAMPLES / DAY
 $\therefore 18886 \div 100 = 188.8 \text{ days} \approx 190 \text{ days}$
- CREW CAN TAKE 25 SOIL SAMPLES / DAY
 $\therefore [200 + 100] \div 25 = 12 \text{ days}$
- ASSUME 20 additional DAYS FOR DATA REDUCTION + REPORT GENERATION

PROJECT..... DESG..... CAC BY..... SHEET..... OF.....

MILL DECOMMISSIONING
WIND BLOWN CONTAMINATION (Cont)

3) CLEAN-UP.

- ASSUME 20% OF AREA SURVEYED REQUIRES CORRECTIVE ACTION
- 6" SOIL WILL BE STRIPPED

$$\begin{aligned} \text{Therefore } 25,402 \text{ M}^2 \times 0.20 &= 5,080 \text{ M}^2 = 2,540,000 \text{ FT}^2 \\ &= 94,000 \text{ yd}^2 \\ \text{say } &\underline{94,100 \text{ yd}^2} \end{aligned}$$

- AS IT IS NOT KNOWN WHAT AREAS MAY BE CONTAMINATED, ASSUME THE USE OF 637 HALL ROUTE #6 TO BE CONSERVATIVE.
- BECAUSE OF THE IRREGULAR & DISCONTIGUOUS AREAS, EFFICIENCY WILL BE ONLY 50% OF REGULAR 637 EFFICIENCY.

$$\begin{aligned} \text{Therefore } 277 \text{ yd}^3/\text{hr} \times 0.50 &= 138.5 \text{ yd}^3/\text{hr} \\ \text{say } &\boxed{138 \text{ yd}^3/\text{hr}} \end{aligned}$$

$$\begin{aligned} \text{Therefore } 94,100 \text{ yd}^2 \div 138 \text{ yd}^3/\text{hr} &= 682 \text{ scraper hours} \\ \text{say } &\boxed{680 \text{ hours}} \end{aligned}$$

RECLAMATION OF CELL 2

RECLAMATION OF CELL 2

Obtain Permits for Clay Borrow Site - Section 16

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Permits & Licences	ea	\$10,000.00	5	\$50,000

Total Obtain Permits for Clay Borrow Site - Section 16 **\$50,000**

Place Remainder of Bridging Lift

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	178	\$3,154
Cat 637 Scraper	hrs	\$140.50	78	\$10,959
Cat 825 Compactor	hrs	\$66.15	20	\$1,323
Cat D8N Dozer With Ripper	hrs	\$68.67	20	\$1,373
Cat D7 Dozer	hrs	\$57.90	20	\$1,158
Cat 651 Waterwagon	hrs	\$72.12	20	\$1,442
Cat 14G Motorgrader	hrs	\$48.93	20	\$979
Equipment Maintenance (Butler)	hrs	\$10.01	178	\$1,782

Total Place Remainder of Bridging Lift **\$22,171**

Place Lower Random Fill (12")

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	902	\$15,981
Cat 637 Scraper	hrs	\$140.50	402	\$56,483
Cat 825 Compactor	hrs	\$66.15	100	\$6,615
Cat D8N Dozer With Ripper	hrs	\$68.67	100	\$6,867
Cat D7 Dozer	hrs	\$57.90	100	\$5,790
Cat 651 Waterwagon	hrs	\$72.12	100	\$7,212
Cat 14G Motorgrader	hrs	\$48.93	100	\$4,893
Equipment Maintenance (Butler)	hrs	\$10.01	902	\$9,032

Total Place Lower Random Fill (12") **\$112,872**

Clay Layer

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	1,674	\$29,660
Cat 825 Compactor	hrs	\$66.15	300	\$19,844
Cat D8N Dozer With Ripper	hrs	\$68.67	300	\$20,600
Cat D7 Dozer	hrs	\$57.90	0	\$0
Cat 651 Waterwagon	hrs	\$72.12	300	\$21,635
Cat 14G Motorgrader	hrs	\$48.93	300	\$14,678
Cat 980 Loader	hrs	\$64.99	237	\$15,402
5000 Gallon Water Truck	hrs	\$40.64	237	\$9,631
Highway Trucks	hrs	\$32.00	1,896	\$60,672
Truck Drivers	hrs	\$12.74	1,896	\$24,156
Equipment Maintenance (Butler)	hrs	\$10.01	3,570	\$35,746

Total Place Clay Layer **\$252,023**

RECLAMATION OF CELL 2

Upper Randum Fill

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	1,990	\$35,258
Cat 637 Scraper	hrs	\$140.50	796	\$111,842
Cat 825 Compactor	hrs	\$66.15	199	\$13,163
Cat D8N Dozer With Ripper	hrs	\$68.67	199	\$13,665
Cat D7 Dozer	hrs	\$57.90	199	\$11,523
Cat 651 Waterwagon	hrs	\$72.12	199	\$14,352
Cat 14G Motorgrader	hrs	\$48.93	199	\$9,736
5000 Gallon Water Truck	hrs	\$40.64	199	\$8,087
Equipment Maintenance (Butler)	hrs	\$10.01	1,990	\$19,925

Total Place Upper Randum Fill

\$237,550

Rock Armour

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	789	\$13,979
Cat D7 Dozer	hrs	\$57.90	263	\$15,229
Cat 651 Waterwagon	hrs	\$72.12	263	\$18,967
Cat 14G Motorgrader	hrs	\$48.93	263	\$12,867
Rock Cost Delivered	CY	\$3.34	66,200	\$220,965
Equipment Maintenance (Butler)	hrs	\$10.01	180	\$1,802

Total Place Rock Armour

\$283,810

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	\$62.00	1,050	\$65,100

Total Quality Control

\$65,100

TOTAL RECLAMATION OF CELL 2

\$1,023,526

RECLAMATION OF CELL 3

RECLAMATION OF CELL 3

Dewatering of Cell 3

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Dewatering of Cell 3	hrs	\$0.48	62,400	\$30,000

Total Dewatering of Cell 3

\$30,000

Place Remainder of Bridging Lift

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	1,945	\$34,465
Cat 637 Scraper	hrs	\$140.50	865	\$121,536
Cat 825 Compactor	hrs	\$66.15	216	\$14,304
Cat D8N Dozer With Ripper	hrs	\$68.67	216	\$14,832
Cat D7 Dozer	hrs	\$57.90	216	\$12,507
Cat 651 Waterwagon	hrs	\$72.12	216	\$15,578
Cat 14G Motorgrader	hrs	\$48.93	216	\$10,568
Equipment Maintenance (Butler)	hrs	\$10.01	1,945	\$19,477

Total Place Remainder of Bridging Lift

\$243,268

Place Lower Random Fill (12")

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	1,745	\$30,913
Cat 637 Scraper	hrs	\$140.50	775	\$108,891
Cat 825 Compactor	hrs	\$66.15	194	\$12,816
Cat D8N Dozer With Ripper	hrs	\$68.67	194	\$13,321
Cat D7 Dozer	hrs	\$57.90	194	\$11,233
Cat 651 Waterwagon	hrs	\$72.12	194	\$13,991
Cat 14G Motorgrader	hrs	\$48.93	194	\$9,491
Equipment Maintenance (Butler)	hrs	\$10.01	1,745	\$17,470

Total Place Lower Random Fill (12")

\$218,127

Clay Layer

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	1,975	\$34,993
Cat 637 Scraper	hrs	\$140.50	0	\$0
Cat 825 Compactor	hrs	\$66.15	375	\$24,805
Cat D8N Dozer With Ripper	hrs	\$68.67	350	\$24,034
Cat D7 Dozer	hrs	\$57.90	0	\$0
Cat 651 Waterwagon	hrs	\$72.12	350	\$25,241
Cat 14G Motorgrader	hrs	\$48.93	375	\$18,347
Cat 980 Loader	hrs	\$64.99	350	\$22,746
5000 Gallon Water Truck	hrs	\$40.64	175	\$7,111
Highway Trucks	hrs	\$40.00	2,800	\$112,000
Truck Drivers	hrs	\$12.74	2,800	\$35,674
Equipment Maintenance (Butler)	hrs	\$10.01	4,775	\$47,811

Total Place Clay Layer

\$352,761

RECLAMATION OF CELL 3

Upper Randum Fill

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	2,490	\$44,117
Cat 637 Scraper	hrs	\$140.50	996	\$139,943
Cat 825 Compactor	hrs	\$66.15	249	\$16,470
Cat D8N Dozer With Ripper	hrs	\$68.67	249	\$17,098
Cat D7 Dozer	hrs	\$57.90	249	\$14,418
Cat 651 Waterwagon	hrs	\$72.12	249	\$17,957
Cat 14G Motorgrader	hrs	\$48.93	249	\$12,182
5000 Gallon Water Truck	hrs	\$40.64	249	\$10,118
Equipment Maintenance (Butler)	hrs	\$10.01	2,490	\$24,932

Total Place Upper Randum Fill

\$297,236

Rock Armour

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	948	\$16,796
Cat D7 Dozer	hrs	\$57.90	316	\$18,298
Cat 651 Waterwagon	hrs	\$72.12	316	\$22,789
Cat 14G Motorgrader	hrs	\$48.93	316	\$15,460
Rock Cost Delivered	CY	\$3.34	76,110	\$254,044
Equipment Maintenance (Butler)	hrs	\$10.01	948	\$9,492

Total Place Rock Armour

\$336,880

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	\$62.00	1,406	\$87,172

Total Quality Control

\$87,172

TOTAL RECLAMATION OF CELL 3

\$1,665,444

2/16/99

VOLUME CALCULATIONS CELL 3

1) Area of Top of cell by CAD - 3,234,252 ft²

74.25 ACRES

2) Area of Bridging layer (lower random) PLACED
1,080,000 ft²

25 ACRES

3) ASSUMPTIONS:

- Bridging Layer (random fill) comes from random fill stockpiles west of Cell 3 - using haul route #6.
- Stockpiles designated as "Clay" will be used for top 12" of lower random fill.
- Clay for the radon barrier will be mined, blended, and hauled from Section 16 four miles South of the mill. 8" on slopes, 6" on top + 2'x7' apron at bottom of south slopes.
- 2 foot layer of upper random fill will come from finer material in random fill stockpiles and "Clay" stockpiles.
- Rock armor for top, side slopes, and toe aprons will come from same source as Cell 2 Rock Armor. - Gravel pit North of Blending.
- Clay layer extends over only the top of Cell NOT ON SLOPES.

4) Bridging layer left to place

$$\frac{(3,234,252 \text{ ft}^2 - 1,080,000 \text{ ft}^2) \times 3 \text{ ft}}{27 \text{ ft}^3/\text{CY}} = \text{CY}$$

$$\frac{2154254 \times 3}{27} = 239,361 \text{ CY}$$

239,400 CY

5) Bring lower random fill up to design elevations (assume 50% reduction area for estimate, in reality, parts of end end of pond is up to elevations necessary.)

$$\frac{3,234,252 \text{ ft}^2 \times 0.5}{27 \text{ ft}^3/\text{CY}} = 120,500 \text{ CY} \rightarrow \text{120,500 CY}$$

No. 5505
Engineer's Computation Pad
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Volume Calculations Cell 3

6) Placement of Clay Layer (four inches) over full area Top of Cell

$$\frac{3,234,252 \text{ ft}^2 \times 4 \text{ ft}}{27 \text{ ft}^3/\text{cy}} = 119,773 \text{ cy} \rightarrow \boxed{119,800 \text{ cy}}$$

[.8 loss factor]

7) upper random fill volume over full area of Cell

$$\frac{3,234,252 \text{ ft}^2 \times 2 \text{ ft}}{27 \text{ ft}^3/\text{cy}} = 239,574 \text{ cy} \rightarrow \boxed{239,600 \text{ cy}}$$

8) Armor protection - Top of Cell 6" (.5 ft)

$$\frac{3,234,252 \text{ ft}^2 \times .5 \text{ ft}}{27 \text{ ft}^3/\text{cy}} = 59,894 \text{ cy} \rightarrow \boxed{59,900 \text{ cy}}$$

9) Cell 3 West slope (Slope #6) 2 foot high, 1100 feet long

- No Clay on Slopes
- Toe Apron only at Base of Long Slopes or where drainage off of the Cells is directed
- Random fill wedge \rightarrow NO EXISTING DIKE \rightarrow SO TRANSITION from top CURVE

$$\left(\frac{2 \times 2 \times 5}{2} \times 1100 \text{ ft} \right) / 27 = 407 \text{ cy} \rightarrow \boxed{410 \text{ cy}}$$

$$\bullet \text{ Random Fill } \left(\frac{5 \times 5 \times 5}{2} - \frac{2 \times 2 \times 5}{2} \right) \times 1100 \text{ ft} \rightarrow 57,750 \text{ ft}^3$$

$$\frac{57,750 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 2138 \text{ cy} \rightarrow \boxed{2,200 \text{ cy}}$$

• Rock Armor

$$\left(\frac{5.67 \times 5.67 \times 5}{2} - \frac{5 \times 5 \times 5}{2} \right) \times 1100 \rightarrow 19,659 \text{ ft}^3$$

$$\frac{19,659 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 728 \text{ cy} \rightarrow \boxed{730 \text{ cy}}$$

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VOLUME CALCULATION CELL 3

10) Cell 3 SOUTH DIKE (WEST END) Slope # 7

- 16 ft average height
- 1750 feet long

Random Fill WEDGE → 3:1-5:1 covered →

$$\left[\frac{16 \times 16 \times 5}{2} - \frac{16 \times 16 \times 3}{2} \right] \times 1750 \text{ ft} \rightarrow 448,000 \text{ ft}^3$$

$$\frac{448,000 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 16,592 \text{ cy} \rightarrow \boxed{16,600 \text{ cy}}$$

Random Fill - 1

$$\left[\frac{19 \times 19 \times 5}{2} - \frac{16 \times 16 \times 5}{2} \right] \times 1750 = 459,375 \text{ ft}^3$$

$$\frac{459,375 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 17,013 \text{ cy} \rightarrow \boxed{17,100 \text{ cy}}$$

ROCK ARMOR -
SLOPE = 8" THICK

$$\left[\frac{19.67 \times 19.67 \times 5}{2} - \frac{19 \times 19 \times 5}{2} \right] \times 1750 \rightarrow$$

$$\frac{113,351 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 4198 \text{ cy} \rightarrow \boxed{4200 \text{ cy}}$$

Rock Armor at top of slope

$$\frac{2' \text{ THICK} \times 7' \text{ WIDE} \times 1750' \text{ Long}}{27 \text{ ft}^3/\text{cy}} = 907 \text{ cy} \rightarrow \boxed{1000 \text{ cy}}$$

11) Cell 3 SOUTH DIKE (EAST END Common with Cell 4A, Slope # 5

- 39 ft average height
- 1700 ft Long
- TSE armor full length

Random Fill Volume

$$\left[\frac{39 \times 39 \times 5}{2} - \frac{33 \times 33 \times 5}{2} \right] \times 1700 \text{ ft} \rightarrow 2,585,700 \text{ ft}^3$$

$$\frac{2,585,700 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 95,766 \text{ cy} \rightarrow \boxed{95,800 \text{ cy}}$$

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Volume Calculations Cell 3

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11) CONT

Upper Random Fill

$$\left[\frac{42 \times 42 \times 5}{2} - \frac{39 \times 39 \times 5}{2} \right] \times 1700 \rightarrow 1,032,750 \text{ ft}^3$$

$$\frac{1,032,750 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} \rightarrow 38,250 \text{ cy} \rightarrow \boxed{38,800 \text{ cy}}$$

Rock Armor

$$\left[\frac{42.67 \times 42.67 \times 5}{2} - \frac{42 \times 42 \times 5}{2} \right] \times 1700 \rightarrow 241,098 \text{ ft}^3$$

$$\frac{241,098 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 8930 \text{ cy} \rightarrow \boxed{8950 \text{ cy}}$$

Rock Toe Armor

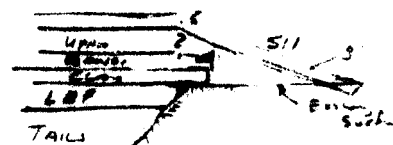
$$\frac{21 \times 7 \times 1700 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 861 \text{ cy} \rightarrow \boxed{900 \text{ cy}}$$

Total Rock

9850 cy

12) Cell 3 East Slope

- Average height 4 feet
- 800 feet Long



Random Fill (No ex. by dike) - $\frac{42 \times 42 \times 5}{2} \times 800 = 32,000 \text{ ft}^3$

$$\frac{32,000 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 1185 \text{ cy} \Rightarrow \boxed{1200 \text{ cy}}$$

Rock Armor - $\left(\frac{4.67 \times 4.67 \times 5}{27} - \frac{4 \times 4 \times 5}{2} \right) \times 800 = 11,618 \text{ ft}^3$

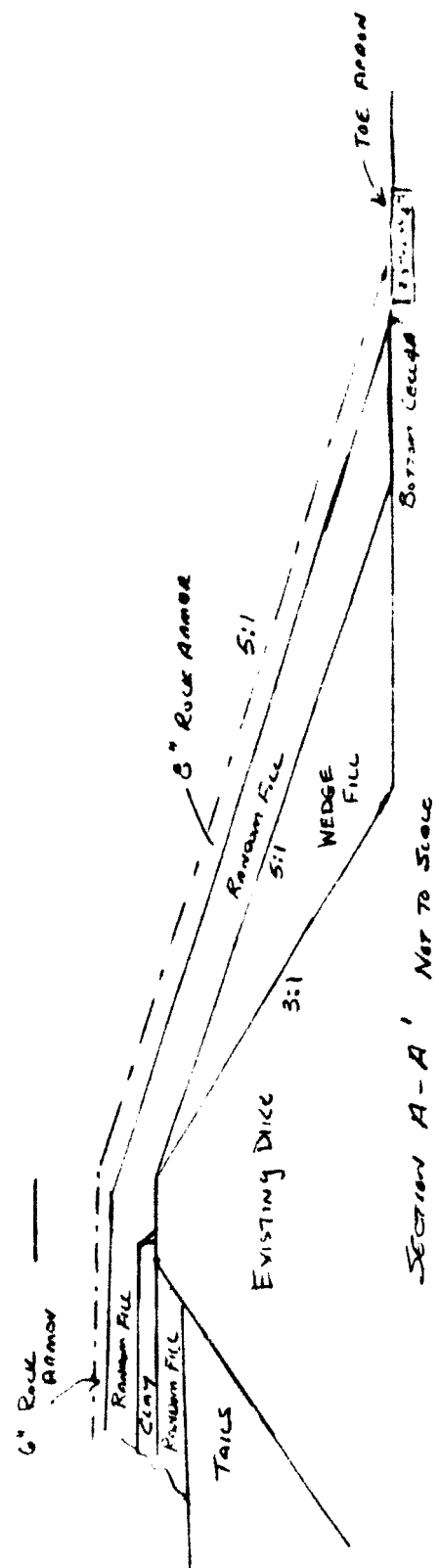
$$\frac{11,618 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} \Rightarrow \boxed{430 \text{ cy}} \rightarrow$$

NO TOE ARMOR

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CELL 3
Volume Calc's Fig. A,
Scale 1" = 500'



SECTION A-A' Not To Scale

Volume Calculation Cell 3

Volume Summary

	Bridge Layer	Lower Ramp	CL1	UPPER Ramp	Armor
TOP OF CELL	239,400	119,800	119,800	239,400	59,900
WEST SLOPE (#6)	—	410	—	2,200	730
SOUTH DIKE (#7)	—	16,600	—	17,100	5,200
SOUTH DIKE (#8)	—	95,800	—	38,300	9850
EAST SLOPE (#9)	—	—	—	1,200	480
TOTALS (c)	239,400	232,610	119,800	298,200	76,110

No. 5005
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CELL 3 PRODUCTION
(USE SAME ASSUMPTION AS CELL 2)
CLAY

Clay Volume = $\frac{119,800 \text{ BCY}}{.8 \text{ Swell factor}} = 149,750 \text{ LCY}$

TRUCKING 475 LCY/hr - 8 TRUCKS + 1 LOADER

$\frac{149,750 \text{ LCY}}{475 \text{ LCY/hr}} \approx 316 \text{ hr} + 10\% \Rightarrow \text{USE } 350 \text{ hrs}$

$350 \times 8 \text{ Trucks} = 2800 \text{ hrs}$

980 Loader - 350 hrs

D8N DOZER W/RIPPER - 350 hrs

CAT 651 WN 350 hrs

CAT 825 Compactor 375 hrs

CAT 14G Grader 395 hrs

5000 Grouser Water Tm 175 hrs

ROCK ARMOR

Rock Armor Volume = 76,110 cy - 38 cy/Truck x 8 Trucks

304 cy/hr - D8N DOZER

5% 25% EXTRA TIME TO

FINISH SPREADING - 1

$241 \text{ cy/hr} \rightarrow 316 \text{ hrs}$

CELL 3 RECLAMATION

CAT 637 RESOURCE REQUIREMENTS

	Volume	Route	Yds/Hr	%	Equip hrs
Cell 3 Bridging Lift					
Tailings Surface	239,400	6	277	100%	864.3
				TOTAL	864.3
Cell 3 Lower Random Fill					
Tailings surface	119,800	6	296	100%	404.7
Slope 6	410	6	296	100%	1.4
Slope 7	16,600	6	368	100%	45.1
Slope 8	95,800	6	296	100%	323.6
Slope 9	0	6	368	100%	0.0
				TOTAL	774.9
Cell 3 Upper Random fill					
Tailings surface	239,400	6	296	100%	808.8
Slope 6	2,200	6	296	100%	7.4
Slope 7	17,100	6	368	100%	46.5
Slope 8	38,300	6	296	100%	129.4
Slope 9	1,200	6	368	100%	3.3
				TOTAL	995.3
Cell 3 Rock Armour use Highway Trucks					

CELL 4A CLEANUP

CELL 4A CLEANUP

Dewatering of Cell 4A

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Dewatering of Cell 4A	hrs	\$0.48	11,500	\$5,529

Total Dewatering of Cell 4A

\$5,529

Remove Fencing

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 988 Loader	hrs	\$95.68	40	\$3,827
Equipment Operators	hrs	\$17.72	40	\$709
Equipment Maintenance (Butler)	hrs	\$10.01	40	\$401
Laborers	hrs	\$10.35	160	\$1,655

Total Remove Fencing

\$6,592

Remove Liner & Contaminated Material to Cell 3

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	303	\$5,368
Cat 789 Truck	hrs	\$60.52	606	\$36,677
Truck Driver	hrs	\$12.74	606	\$7,721
Cat 988 Loader	hrs	\$95.68	303	\$28,990
Equipment Maintenance (Butler)	hrs	\$10.01	909	\$9,102

Total Remove Liner & Contaminated Material to Cell 3

\$87,858

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	\$62.00	325	\$20,150

Total Quality Control

\$20,150

TOTAL CELL 4A CLEANUP

\$120,128

INTERNATIONAL URANIUM (USA) CORP.
COST ESTIMATE

PROJECT DATE CALC BY SHEET OF

CELL 4B WORK

1) ASSUMPTIONS

- ANY XTALS ARE PICKED UP WITH LINDER
- AVERAGE OF 1 FOOT UNDER LINDER WILL GO TO CELL 3
- ALL DIRT MATERIAL IS UNCONTAMINATED & CAN BE UTILIZED FOR CELL 3 COVER; THEREFORE, NO COST IS PLACED AGAINST ITS REMOVAL
- AREA OF CELL FOR VOLUME ESTIMATES IS 1,909 M²
- CRUSTALS ESTIMATED TO BE 6" THICK OVER ENTIRE AREA

Therefore

QUANTITY OF CONTAMINATED MATERIAL:

$$[1,909,000 \times [4\frac{1}{2} + 12\frac{1}{2}]] \div 27 \text{ ft}^3/\text{yd}^3 = 106,055$$

say 106,100 yd³

and

BASED ON HALL ROUTE B PROFILE, EFFICIENCY = 175 yd³/truck hour.

$$\begin{aligned} 106100 \text{ yd}^3 \div 175 \text{ yd}^3 &= 606 \text{ TRUCK HOURS} \\ &= 303 \text{ FLEET HOURS (2 TRUCKS)} \end{aligned}$$

Volume Calculations
CELL 2

2/10/99

1) AREA OF CELL 2 - $2986.660 \text{ ft}^2 = \boxed{68.56 \text{ ACRES}}$

2) AREA OF CELL 2 STILL OPEN 2/10/99 (SEE FIGURE A)

$1000 \times 200 \text{ APPROXIMATE AREA} \approx 200,000 \text{ ft}^2 (4.6 \text{ ACRES})$

3) ASSUMPTIONS:

- Bridging layer is placed using random fill from piles west of Cell 2
- Cell will be graded to design elevation utilizing finer materials in random fill stockpiles and from "clay" stockpiles.
- Clay will be mined, blended & hauled from borrow site located in Section 16 - 4 miles south of the mill - using belly dump trucks - clay layer on top of cell only, except on south slope common to Cell 3
- The upper 2 feet of random fill will be placed utilizing the fine random fill and clay stockpiles
- Rock for side armor, top armor and toe aprons will come from an off-site gravel source 1 mile north of Blowing Rock will be produced through screening, stockpiled and trucked to the site at the time of use. Belly dump trucks will dump gravel in windrows on the top and sides of the cell.

4) Bridging Layer (Random Fill) LEFT TO PLACE

$\frac{200,000 \text{ ft}^2 \times 3 \text{ ft}}{27 \text{ ft}^3/\text{cy}} = 22,222 \text{ cy} \rightarrow \boxed{23,000 \text{ cy}}$

5) Bring lower random fill up to design elevation

Assume Full Area of Cell x 1 foot thick

$\frac{2,986,660 \text{ ft}^2 \times 1 \text{ ft}}{27 \text{ ft}^3/\text{cy}} = 110,617 \text{ cy} \rightarrow \boxed{110,700 \text{ cy}}$



Volume Calculation Cell 2
(CONT)

- 6) PLACEMENT OF CLAY LAYER (1 foot thick on top of cell
- ONLY
-)

Full AREA OF CELL x 1ft thick

$$\frac{2986,660 \text{ ft}^2 \times 1 \text{ ft}}{27 \text{ ft}^3/\text{cy}} = 110,617 \text{ cy} \rightarrow \boxed{110,700 \text{ cy}}$$

- 7) UPPER RANDOM FILL VOLUME - TOP OF PILE

Full AREA OF CELL x 2 ft Thick

$$\frac{2986,660 \text{ ft}^2 \times 2 \text{ ft}}{27 \text{ ft}^3/\text{cy}} = 221,234 \text{ cy} \rightarrow \boxed{221,300 \text{ cy}}$$

- 8) ARMOR PROTECTION - TOP OF CELL

Full AREA OF CELL x .5 ft

$$\frac{2986,660 \text{ ft}^2 \times .5 \text{ ft}}{27 \text{ ft}^3/\text{cy}} = 55,309 \text{ cy} - \boxed{55,400 \text{ cy}}$$

- 9) Cell 2 North Slope (Slope = 1) Common WITH CELL 1

- Average height = 12 feet
- Length = 2600 ft

- a) Random Fill TO Restore Slope From 3:1 TO 5:1

$$\text{First Wedge} \quad \left[\frac{12 \times 12 \times 5}{2} - \frac{12 \times 12 \times 3}{2} \right] \times 2600$$

$$= \frac{374,400 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 13,867 \text{ cy}$$

$$= \boxed{13,900 \text{ cy}}$$

Remaining Random Fill

$$\left[\frac{15 \times 15 \times 5}{2} - \frac{12 \times 12 \times 5}{2} \right] \times 2600$$

$$\frac{526,500 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = \boxed{19,500 \text{ cy}}$$

Volume Calculations Cell 2
(CONT)

Total Random Fill N slope = $\boxed{33,400 \text{ cy}}$

b) Rock Armour 8" THICK - (67 ft)

$$\left[\frac{15.67 \times 15.67 \times 5}{2} - \frac{15 \times 15 \times 5}{2} \right] \times 2600 \text{ ft}$$

$$\frac{132,957 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 4925 \text{ cy} \rightarrow \boxed{5000 \text{ cy}}$$

c) TOE APRON $\frac{2 \times 7 \times 2600}{27} = 1348 \text{ cy} \rightarrow \boxed{1400 \text{ cy}} - \boxed{6400 \text{ cy}}$

10) North slope common with mill yard

- Average height 1 ft
- Average length 900 ft

a) Random Fill - Wedge - $\left[\frac{1 \times 1 \times 5}{2} - \frac{1 \times 1 \times 3}{2} \right] \times 900 \text{ ft}$

$$\frac{900 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 33 \text{ cy} \rightarrow \boxed{100 \text{ cy}}$$

Remaining Fill \rightarrow Random $\left[\frac{4 \times 4 \times 5}{2} - \frac{1 \times 1 \times 5}{2} \right] \times 900 \text{ ft}$

$$\frac{33,750 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 1250 \text{ cy} \rightarrow \boxed{1300 \text{ cy}}$$

Total Random Fill $\boxed{1,400 \text{ cy}}$

b) Rock Armour. 8" THICK

$$\left[\frac{4.67 \times 4.67 \times 5}{2} - \frac{4 \times 4 \times 5}{2} \right] \times 900$$

$$\frac{13,070 \text{ ft}^3}{27 \text{ ft}^3} = 484 \text{ cy} \rightarrow \boxed{500 \text{ cy}}$$

No TOE APRON NO FILL

Volume Calculations Cell 2
(CONT)

11) Cell 2 West Dike Super # 3

- Average Height 2 ft
- Length 500 ft.

a) Random Fill

Wedge $\left[\frac{2 \times 2 \times 5}{2} - \frac{2 \times 2 \times 3}{2} \right] \times 500 = 2000 \text{ ft}^3$
 $= 74 \text{ cy} \rightarrow \boxed{100 \text{ cy}}$

Remaining Random fill $\left[\frac{5 \times 5 \times 5}{2} - \frac{2 \times 2 \times 5}{2} \right] \times 500$
 $= \frac{26,250 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} = 972 \text{ cy} \Rightarrow \boxed{1000 \text{ cy}}$

b) Rock Armor

Total $\boxed{1100 \text{ cy}}$
 $\left[\frac{5.67 \times 5.67 \times 5}{2} - \frac{5 \times 5 \times 5}{2} \right] \times 500$
 $= \frac{8936 \text{ ft}^3}{27 \text{ ft}^3} \approx 331 \text{ cy} \rightarrow \boxed{400 \text{ cy}}$

TOE Apron (?) \rightarrow not required for slope 10' Long - Drainage from Cell goes south to Cell 3 and then off of South slope of Cell 3

12) Cell 2 East Dike (Super # 4)

- Average height 1 ft
- Length - 1250 ft

a) Random Fill

Wedge Form # 10 $1 \text{ ft}^3/\text{LF}$

$1 \text{ ft}^3/\text{LF} \times 1250' = 1250 \text{ ft}^3$
 $= 46 \text{ cy} \rightarrow \boxed{100 \text{ cy}}$

Remaining Random Fill - Form # 10 $37.5 \text{ ft}^3/\text{LF}$

$\frac{37.5 \text{ ft}^3/\text{LF} \times 1250 \text{ LF}}{27 \text{ ft}^3/\text{cy}} = 1736 \text{ cy} \rightarrow \boxed{1800 \text{ cy}}$

Total - Random fill

$\boxed{1900 \text{ cy}}$

VOLUME CALCULATION CELL 2
(CONT)

12 (CONT) ROCK ARMOR 8" (.67') THICK

USING #10 14.52 ft³/LF DICE

$$14.52 \frac{\text{ft}^3}{\text{LF}} \times 1250 \text{ LF} = 18,153 \text{ ft}^3$$

$$\frac{18,153 \text{ ft}^3}{27 \text{ ft}^3/\text{cy}} \Rightarrow 672 \text{ cy} \rightarrow \boxed{700 \text{ cy}}$$

NO TOE APRON →

13) SOUTH SLOPE CELL 2 Common with Cell 3

- Average Height 3 ft
- Length 3500 ft

a) Random Fill - Wedge → $\left[\frac{3 \times 3 \times 5}{2} - \frac{3 \times 3 \times 3}{2} \right] \times 3500$
 $= \frac{31500 \text{ ft}^3}{27} = 1167 \text{ cy} \rightarrow \boxed{1200 \text{ cy}}$

b) Clay Layer $\left[\frac{4 \times 4 \times 5}{2} - \frac{3 \times 3 \times 5}{2} \right] \times 3500$
 $\frac{61250 \text{ ft}^3}{27} = 2268 \text{ cy} \rightarrow \boxed{2300 \text{ cy}}$

c) Random Fill (upper) $\left(\frac{6 \times 6 \times 5}{2} - \frac{4 \times 4 \times 5}{2} \right) \times 3500$
 $\frac{175,000 \text{ ft}^3}{27} = 6481 \text{ cy} \rightarrow \boxed{6500 \text{ cy}}$

D) ROCK ARMOR -

$$\left(\frac{6.67 \times 6.67 \times 5}{2} - \frac{6 \times 6 \times 5}{2} \right) \times 3500$$

$$\frac{74,273 \text{ ft}^3}{27} = 2751 \text{ cy} \rightarrow \boxed{2800 \text{ cy}}$$

NO TOE APRON -

Volume Calculations
 COLL 2

Volume Summary.

	Br. G. Layer	Lower Bedrock	Clay	Upper Bedrock	Gravel
TOP OF COLL	29,000	110,700	110,200	221,300	58,400
NORTH (Slope 1)		13,900	—	19,500	6,400
NORTH (Slope 2)		100	—	1,200	500
WEST (Slope 3)		100	—	1,000	400
EAST (Slope 4)		100	—	1,300	700
SOUTH (Slope 5)		1200	2,300	6,500	2800
TOTALS	29,000	126,100	113,000	251,400	66,200

PROJECT QUANTITIES

Call Shape No	Shape	Height feet	Length feet	EXISTING DIME "A"		WEDGE "B"		RANDOMS FILL "C"		RANDOMS FILL "D"		RANDOMS FILL "E"	
				AREA	VOL (CY)	AREA	VOL (CY)	AREA	VOL (CY)	AREA	VOL (CY)	AREA	VOL (CY)
1	Call 2 Round Dike	12	2,000	216.0	28,080	144.0	13,857	62.5	6,019	140.0	13,401	51.7	4,976
2	Call 2 Round Dike	1	500	1.5	50	1.0	33	7.5	250	30.0	1,000	15.0	500
3	Call 2 Round Dike	2	500	6.0	111	4.0	74	12.5	231	40.0	741	18.3	340
4	Call 2 Round Dike	1	1,250	1.5	60	1.0	46	7.5	347	30.0	1,300	15.0	604
5	Call 2 Round Dike	3	3,500	0.0	0	9.0	1,167	17.5	2,269	50.0	6,461	30.7	3,976
Call 2 Shape Totals			6,150		21,031		15,187		9,116		23,063		10,465
6	Call 3 Round Dike	2	1,100	6.0	244	4.0	163	12.5	509	40.0	1,600	18.3	747
7	Call 3 Round Dike	16	1,750	304.0	24,880	256.0	16,593	82.5	5,347	180.0	11,067	65.0	4,213
8	Call 3 Round Dike	39	1,700	2,281.5	143,850	1,521.0	95,767	197.5	12,435	410.0	25,815	141.7	8,920
9	Call 3 Round Dike	6	800	54.0	1,050	36.0	1,067	32.5	963	80.0	2,370	31.7	938
Call 3 Shape Totals			5,350		170,383		113,589		19,255		41,481		14,819
Total Material Requirements (CY)					191,414		128,776		28,370		64,574		25,304

NOTE:

Values shown in the "Area" column are the CROSS SECTIONAL AREA for the component in SQUARE FEET.
 Values shown in the "Volume" column are the component's area x length converted to CUBIC YARDS.

CELL 2 RECLAMATION

CAT 637 RESOURCE REQUIREMENTS

	Volume	Route	Yds/Hr	%	Equip hrs
Cell 2 Bridging Lift					
Tailings Surface	23,000	5	296	100%	77.7
				TOTAL	77.7
Cell 2 Lower Random fill					
Tailings surface	110,700	5	296	67%	250.6
Tailings Surface	110,700	4	368	33%	99.3
Slope 1	13,900	5	296	100%	47.0
Slope 2	100	4	368	100%	0.3
Slope 3	100	5	296	100%	0.3
Slope 4	100	4	368	100%	0.3
Slope 5	1,200	5	296	100%	4.1
				TOTAL	401.7
Cell 2 Upper Random Fill					
Tailings surface	221,300	5	296	67%	500.9
Tailings Surface	221,300	4	368	33%	198.4
Slope 1	19,520	5	296	100%	65.9
Slope 2	1,300	4	368	100%	3.5
Slope 3	100	5	296	100%	0.3
Slope 4	1,800	4	368	100%	4.9
Slope 5	6,500	5	296	100%	22.0
				TOTAL	796.0
Cell 2 Rock Armour use Highway Trucks					

Clay Production

Haulage From Section 16

Haul Profile From Section 16 - London

#	Segment Length	Grade		Loaded	Empty
1	2000'	4%	600 m.	1 min	.65
2	1800'	11%	540 m	1.8 min	1 min
3	4200'	1.5%	1260 m	1.4 min	1.2 min
4	5600'	0.5%	1600 m	1.6 min	1.5 min
5	5700'	1.4%	1710 m	1.75 min	1.65 min
6	5200'	0.8%	1560 m	1.5 min	1.45 min
	<u>24,500'</u>				

9.05 min 7.43 min
16.48 min

4.6 MILE TRIP London
9.2 mile Round Trip

Clay = 2800 ^{cu}cy haul

1.5 minutes to load x 8 trucks = 12 minutes
Cycle is 18 minutes → 6 minutes to spread

FIXED TIMES - LOADING -

900 7 cy Bucket 3 passes to load
.5 min/cycle = 1.5 minutes load
Dump → using belly Dumps → Contoured.

OFF ROAD application 22 cy/6000

Cycle time = 18 minutes/truck
50 minutes hr = 2.7 cycles/hr

22 cy/cycle x 2.7 cycles/hr x 8 trucks
= 475 cy/hr.

Cell 2 = $\frac{118,000 \text{ cu cy Clay}}{.8} =$

= 147,500 cu cy = 297 hrs (8 trucks)
13,300 hrs

hrs Loader + haulage + Dozer
(Dozer Rate 300 cy/hr / 50% =)

Spreading + Compacting take place
as material hauled

Trucks	257 x 8 =	1896 hrs	} - 2376 hrs (Exc. ha to strip OR + Trip)
Dozer	300 x 1 =	300 hrs	
Loader	237 x 1 =	237 hrs	297 - 300
GROUT	237 x 1 =	237 hrs	297 300 + 20
NW	200 x 1 =	237 hrs	297 300
Compactor			300 - 20

22-141 20 SHEETS
22-142 100 SHEETS
22-143 200 SHEETS



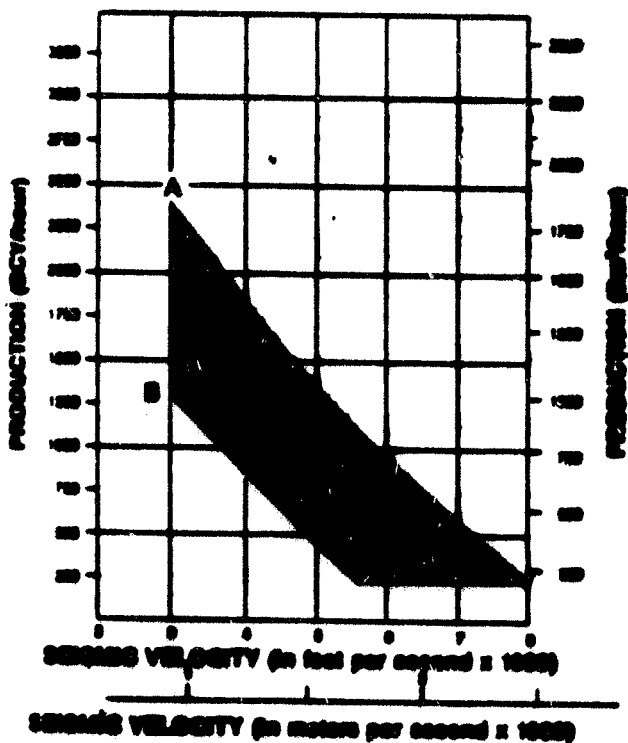
PROJECT WHITE MESA RILL DELS CALC BY SHEET OF

CLAY PRODUCTION COSTS
- SECTION 16 SOURCES -

1). CLAY PRODUCTION

- CLAYS WILL BE RIPPED FROM SOURCE @ SECTION 16
 - APPROX 400 VERTICAL FEET OF BOUGHT BASIN EXPOSURE
 - FROM CAT HAND ROOM ...
- MAX SEISMIC VELOCITY OF CLAY @ 6000 FT/SEC

DBL WITH SINGLE SHANK



KEY
A - DBL
B - ADVISE

- BASED ON THE ABOVE, DB CAT SHOULD BE ABLE TO PRODUCE AT LEAST 250 BCF/HOUR WITH AN AVERAGE OF -

500 BCF/HR

- WE WILL ASSUME THAT THE CAT IS UTILIZED EVERY DAY OF CLAY PRODUCTION FOR RIPPING AND OR DRIVING/BLENDING/PREPARATION.

RECLAMATION OF CELL 1

RECLAMATION OF CELL 1

Dewatering of Cell 1

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Dewatering of Cell 1	hrs	\$0.48	62,400	\$30,000

Total Dewatering of Cell 1

\$30,000

Crystal Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	2,695	\$47,749
Cat 769 Truck	hrs	\$60.52	2,157	\$130,548
Truck Drivers	hrs	\$12.74	2,157	\$27,481
Cat 988 Loader	hrs	\$95.68	539	\$51,570
Cat D8N Dozer With Ripper	hrs	\$68.67	539	\$37,012
Cat 375 Excavator	hrs	\$123.76	539	\$66,709
Cat 651 Waterwagon	hrs	\$72.12	539	\$38,872
Cat 14G Motorgrader	hrs	\$48.93	539	\$26,371
Equipment Maintenance (Butler)	hrs	\$10.01	4,852	\$48,582

Total Crystal Removal

\$474,893

Contaminated Materials Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	616	\$10,914
Cat 637 Scraper	hrs	\$140.50	308	\$43,275
Cat D8N Dozer With Ripper	hrs	\$68.67	77	\$5,287
Cat 825C Compactor	hrs	\$66.15	77	\$5,093
Cat 651 Waterwagon	hrs	\$72.12	77	\$5,553
Cat 14G Motorgrader	hrs	\$48.93	77	\$3,767
Equipment Maintenance (Butler)	hrs	\$10.01	616	\$6,168

Total Contaminated Materials Removal

\$80,058

Topsoil Application

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	280	\$4,961
Cat 637 Scraper	hrs	\$140.50	160	\$22,481
Cat D8N Dozer With Ripper	hrs	\$68.67	40	\$2,747
Cat 651 Waterwagon	hrs	\$72.12	40	\$2,885
Cat 14G Motorgrader	hrs	\$48.93	40	\$1,957
Equipment Maintenance (Butler)	hrs	\$10.01	280	\$2,804

Total Topsoil Application

\$37,834

RECLAMATION OF CELL 1

Construct Channel

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	889	\$15,751
Cat 637 Scraper	hrs	\$140.50	200	\$28,101
Cat 769 Truck	hrs	\$60.52	325	\$19,670
Truck Drivers	hrs	\$12.74	325	\$4,141
Cat 988 Loader	hrs	\$95.68	163	\$15,595
Drilling & Blasting Contractor	BCY	\$1.50	64,800	\$97,200
Cat 14G Motorgrader	hrs	\$48.93	263	\$12,867
Cat D8N Dozer With Ripper	hrs	\$68.67	263	\$18,060
Equipment Maintenance (Butler)	hrs	\$10.01	1,214	\$12,155

Total Construct Channel

\$223,540

Rock Protection

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	45	\$797
Cat D7 Dozer	hrs	\$57.90	15	\$869
Cat 651 Waterwagon	hrs	\$72.12	15	\$1,082
Cat 14G Motorgrader	hrs	\$48.93	15	\$734
Rock Cost Delivered	CY	\$3.34	2,810	\$9,379
Equipment Maintenance (Butler)	hrs	\$10.01	45	\$451

Total Place Rock Armour

\$13,311

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	\$62.00	1,186	\$73,532

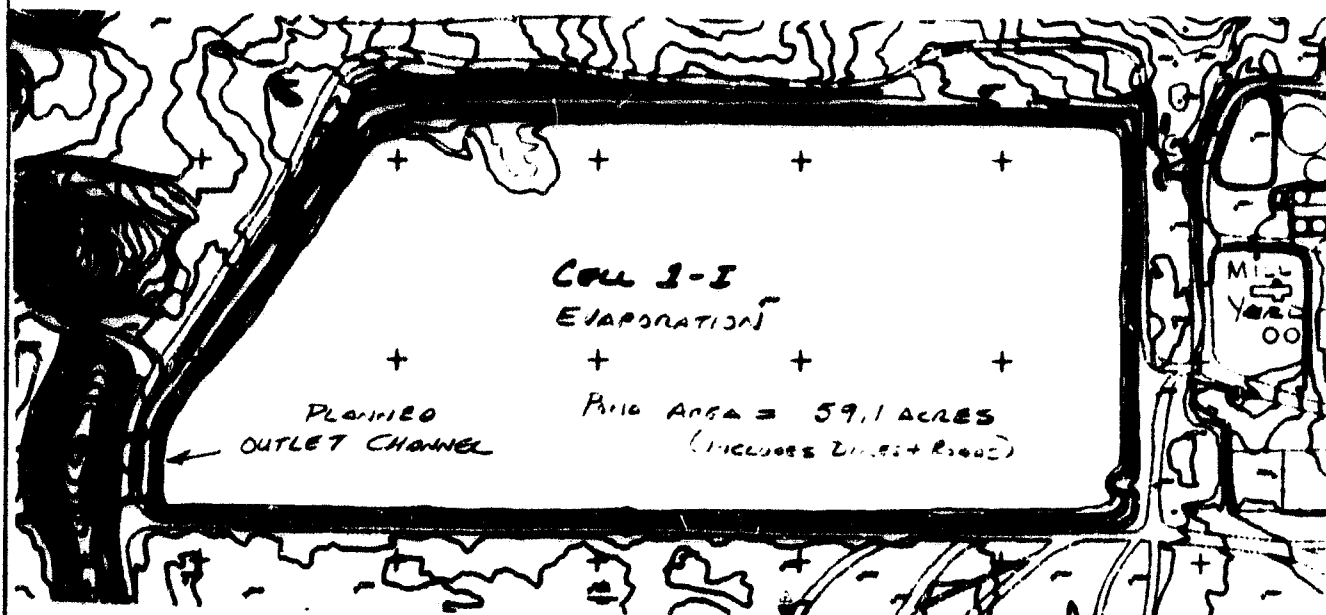
Total Quality Control

\$73,532

TOTAL RECLAMATION OF CELL 1

\$933,169

CELL 1 VOLUME CALCULATION



CELL 1 - Scale 1" = 500'

22-141 50 SHEETS
 22-142 100 SHEETS
 22-144 200 SHEETS



1) Crystal Volume + Liner Cover

- Crystal thickness based on historical elevation of top of crystal layer and aerial mapping → Assume 3 ft thick
- Soil cover over PVC Liner 1 1/2' by design and as built
- Liner crystals over soil cover all picked up at same time.

$$\text{Area of Pond} \quad \frac{2,575,703 \text{ ft}^2 \times (3 \text{ ft} + 1.5 \text{ ft})}{27 \text{ ft}^2/\text{cy}} = 429,253 \text{ cy}$$

→ 429,300 cy

2) Volume of Contaminated material under Liner

- Assume for purposes of this estimate that 1 ft of contaminated material must be removed from under liner for whole cell

$$\frac{2,575,703 \text{ ft}^2 \times 1 \text{ ft}}{27 \text{ ft}^2/\text{cy}} = 95,396 \text{ cy} \rightarrow \text{95,500 cy}$$

3) Time Required to haul Xyls + Liner Cover Assuming the use of 4-769 Trucks, a 275L Tractor, 988 Loader. Assume haul route # 1 for production (199 cy/hr/truck/hr)

$$\frac{429,300 \text{ cy}}{199 \text{ cy/hr}} = 2157 \text{ truck hrs} \quad - \quad 539 \text{ hrs/truck}$$

CELL Volume Calculations

4)

Time Required to haul material from waste land to fill in Cell #3 - use Haul Route #2 - 4 scrapers

$$\frac{95,500 \text{ cy}}{310 \text{ cy/hr/scraper}} = 308 \text{ scraper hours} \quad 4 \text{ scrapers} = 77 \text{ hrs./day.}$$

5) TOP SOIL VOLUMES → place 6" of top soil over areas of

Cell 1 - $\frac{2,575,703 \text{ ft}^2 \times .5 \text{ ft}}{27 \text{ ft}^3/\text{cy}} \approx 47,633 \text{ cy}$

→ 48,000 cy

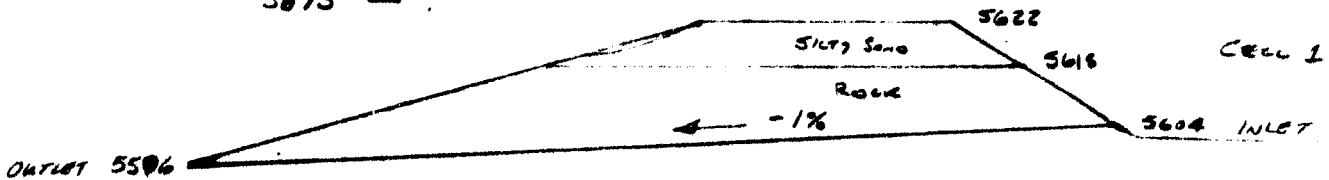
USE scraper fleet assume Route 1 → 310 cy/hr/scraper

$$\frac{48,000 \text{ cy}}{310 \text{ cy/hr/scraper}} \approx 155 \text{ hrs using one scraper}$$

if use 4 scrapers ≈ 40 hrs/unit.

6) DISCHARGE CHANNEL VOLUME →

- CHANNEL WILL HAVE base width of 150 ft - side slope 3:1
- CHANNEL FLOW LINE will drop at .01 ft/ft (1%)
- ROCK ELEVATION BASED on Drill holes + Construction Report is at 5615 -



- Random Fill and Top Soil STOCKPILES will be used in the RECLAMATION OF Cells 2 + 3 and the mill yard before discharge channel is built.

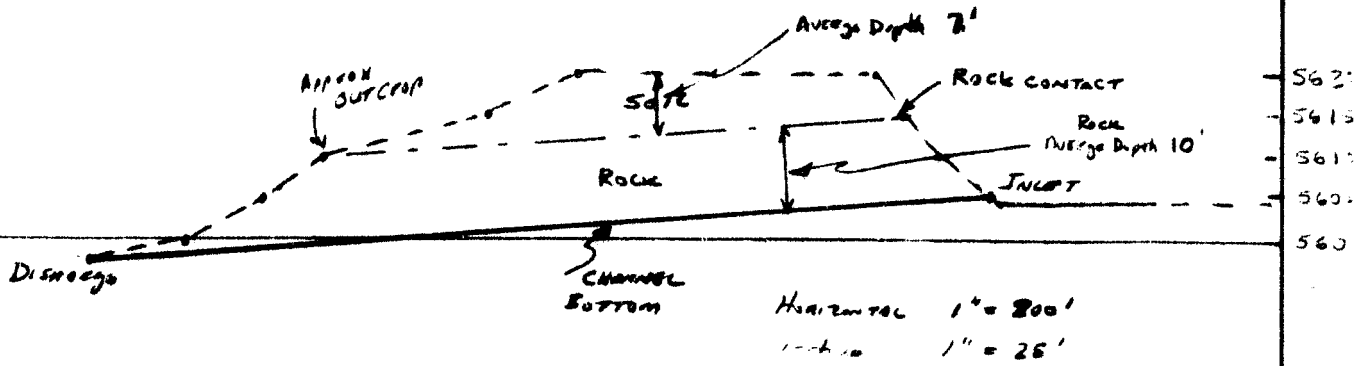
50 SHEETS
100 SHEETS
200 SHEETS
22-141
22-142
22-144



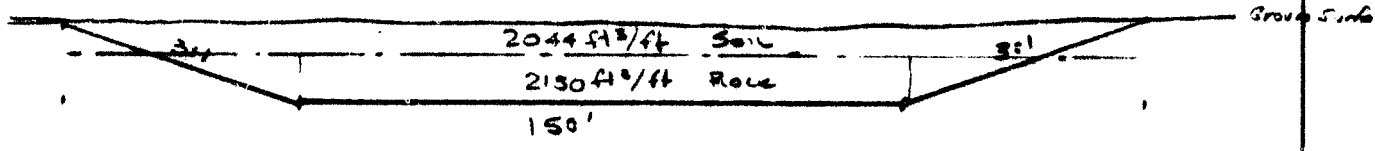
Case 1 - 1/2 mile - 1/2 mile

OUTLET CHANNEL SECTIONS

SECTION A-A'



1852.9



B-B' 1" = 40'

• ASSUME

ROCK = 81 cy/ft channel length
 SOIL = 76 cy/ft channel length.

800 ft channel = 64,800 cy Rock
 60,800 cy Soil

- USE SCRAPERS ON SOIL REMOVAL
- DRILL AND BLOST ROCK USE TRUCKS TO HAUL AWAY
 BASED ON EPA'S EXPERIENCE DURING CONSTRUCTION - ROCK DOES NOT RIP
 Blasting is required.
- ASSUME ROUTE 1 ER TRUCKS + SCRAPERS

TRUCKS - 199 cy/truck/hr
 SCRAPERS - 310 cy/hr

22-141 50 SHEETS
 22-142 100 SHEETS
 22-144 200 SHEETS



CHANNEL FILLING (Continued)

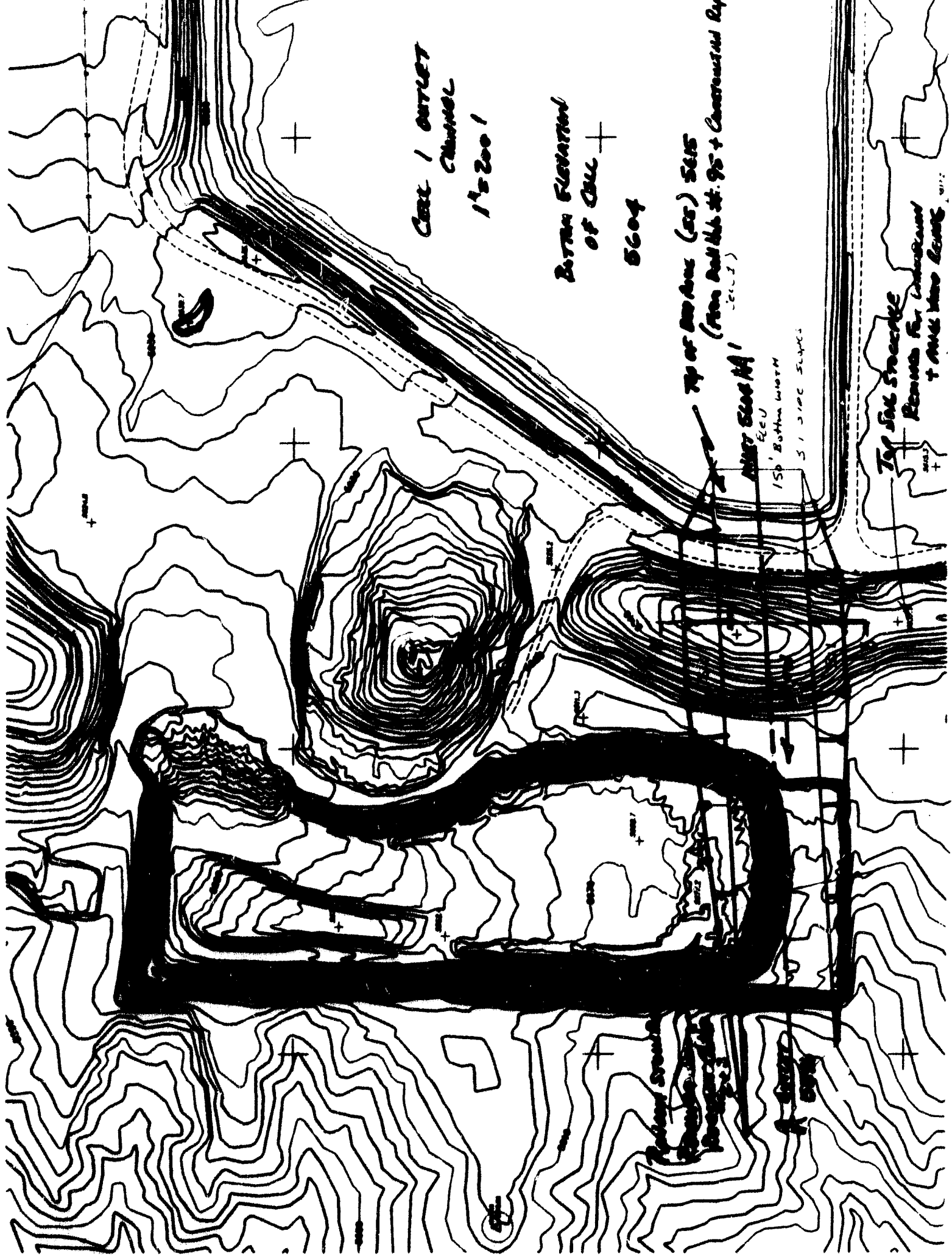
Soil → $\frac{69,900 \text{ cy}}{310 \text{ cy/hr}} = 196 \text{ scraper hrs} \Rightarrow 50 \text{ hr, mobilization, } 4 \text{ scrapers}$

Rock → $\frac{64,800 \text{ cy}}{199 \text{ cy/hr}} = 325 \text{ truck hrs} \Rightarrow 2 \text{ trucks} = 163 \text{ hr. loc.}$

Drilling + Blasting Rock → 10 ft average Depth → \$1.50/cy
 Based on Recent Contractor Quote

22-141 50 SHEETS
 22-142 100 SHEETS
 22-144 200 SHEETS





Outlet Channel
1'5'200'

Bottom Elevation
of Chl +
5604

Top of Dam Area (see) 5615
(from Bull Mt. St. 95 + Contour Interval 100)

Outlet Elevation
Elev
150' Bottom in 100'
5' 1000'

Top Soil Structure
Remains for Underpinning
+ More Work Done



AMERICAN MINE SERVICES

*BOB
HAMBREE
(303) 389-4125*

August 13, 1998

Via Fax:

Attn: Mark Kerr, KLG Associates, Inc.

Re: Drilling and Blasting Limestone, Mill Creek, Oklahoma

We are please to submit the following proposal to provide all equipment, labor and materials for the above referenced project as follows:

Description	Unit Price	Est. Quantity
Mobilization	\$8,000.00	1
Drill and Blast Cuts >20' Deep	\$ 1.35/CY	30,000 CY
Seismic Monitoring	\$300.00/EA	2

General Clarifications:

- > Layout and grade control by others
- > Excavation by others
- > Explosives storage on site
- > Pricing assumes two 10 hour drilling shifts per day for 6 days per week
- > If boning is required add 1%
- > Night working lights by others
- > Pricing assumes dry hole conditions, add \$.15 per CY if wet hole conditions are encountered
- > Pricing is based on a minimum of 30,000 CY shot during a 10 day period

If you have any questions or need additional information, please feel free to contact me at 303.499.4770.

Sincerely,

C. B. Stalder, Project Manager

*Recent
QUOTE FOR
Drill + Blast
use \$1.50 / CY*

MISCELLANEOUS ITEMS

Equipment Mobilization

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Butler Machinery Mobilization	LS	\$148,200.00	1	\$148,200
Other Equipment Mobilization	LS	\$2,500.00	1	\$2,500

Total Equipment Mobilization

\$150,700

Office Facilities

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Run New Powerline	LS	\$15,000.00	1	\$15,000
Utilities for Offices	months	\$1,000.00	36	\$36,000

Total Temporary Office Facilities

\$51,000

Wheel Wash Facility

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Laborers	hrs	\$10.35	8,320	\$86,084
Construct Wheel Wash Facility	LS	\$50,000.00	1	\$50,000

Total Wheel Wash Facility

\$136,084

MANAGEMENT/SUPPORT

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Manager/Engineer	hrs	\$48.69	6,240	\$303,826
Radiation Safety Officer	hrs	\$37.87	6,240	\$236,309
Secretary	hrs	\$15.01	6,240	\$93,680
Clerk	hrs	\$12.51	4,866	\$60,877
Environmental Technician	hrs	\$20.02	4,866	\$97,403
Maintenance Foreman	hrs	\$27.51	6,240	\$171,661
Chemist	hrs	\$22.52	2,080	\$46,840
Security	hrs	\$7.78	18,720	\$145,583
Safety Engineer	hrs	\$20.02	4,160	\$83,271
Misc. Materials & Supplies	hrs	\$36.45	6,240	\$227,448
Health Physics Costs	hrs	\$64.81	2,080	\$134,800

Total Management/Support

\$1,601,696

TOTAL MISCELLANEOUS ITEMS

\$1,939,480

Assumptions:

Rock is obtained from gravel source north of Blanding, UT that is a BLM Public pit
Rock is processed by screening only, no crushing is required 1.25 CY of feed for 1 CY of product
Rock is produced and stockpiled at the site
Site is 7 road miles from the mill, 6 miles of which is paved public highway
Rock will be hauled in 22 CY bellydump trucks, contract haulers (\$45.00/hr)
Rock will be dumped in windrows on Cells by trucks, spread by grader, and compacted by D7 Dozer
Trucks can average 30 MPH (1.75 rounds/hr)

	Product		Material Feed	Plant	Plant
	Required (CY)	Reject Factor	to Plant (CY)	Throughput	Operating
Material fed to plant	146,000	25.0%	182,500	(CY/hr)	Hours
				122	1,500

PRODUCTION OF RIPRAP

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	\$17.72	2,340	\$41,460
Laborer	hrs	\$10.35	1,500	\$15,520
Cat D8N Dozer With Ripper	hrs	\$68.67	365	\$25,064
Cat 980 Loader	hrs	\$64.99	1,975	\$128,353
Screening Plant w/conveyors	hrs	\$55.00	1,500	\$82,500
Contract Highway Trucks - Bellydumps	hrs	\$45.00	3,800	\$171,000
Equipment Maintenance (Butler)	hrs	\$10.01	2,340	\$23,430

Total Production of RipRap

\$487,326

RIPRAP COST PER CUBIC YARD DELIVERED

\$3.34

EQUIPMENT COSTS

**WHITE MESA MILL RECLAMATION COST
HOURLY EQUIPMENT COSTS 1989 DOLLARS**

Actual equipment rates quoted from Butler machinery 6 month rental period
November 3, 1988

Units	RATE		MITCE EXPENDABLES	FUEL USAGE	FUEL @ 90.75	TOTAL COST	Mob/Demob per machine	Mob/Demob Totals	Operating Hrs per Month
	MONTHLY	HOURLY							
4	21,200	120.45	2.05	24.0	18.00	\$140.50	\$10,800.00	\$43,200.00	704
1	10,800	61.36	0.93	8.5	6.38	\$68.67	\$7,400.00	\$7,400.00	176
1	9,100	51.70	0.95	7.0	5.25	\$57.90	\$6,400.00	\$6,400.00	176
1	9,600	54.55	1.10	14.0	10.50	\$66.15	\$7,300.00	\$7,300.00	176
1	10,000	56.82	1.42	9.0	6.75	\$64.99	\$7,300.00	\$7,300.00	176
1	15,000	85.23	1.45	12.0	9.00	\$95.68	\$8,600.00	\$8,600.00	176
4	9,200	52.27	1.50	9.0	6.75	\$60.52	\$7,400.00	\$29,600.00	704
1	19,600	111.36	1.90	14.0	10.50	\$123.76	\$15,000.00	\$15,000.00	176
1	10,000	56.82	1.80	18.0	13.50	\$72.12	\$8,000.00	\$8,000.00	176
1	5,700	32.39	0.75	10.0	7.50	\$40.64	\$3,000.00	\$3,000.00	176
1	7,700	43.75	1.05	5.5	4.13	\$48.93	\$5,600.00	\$5,600.00	176
1	11,000	62.50	1.20	8.5	6.38	\$70.08	\$6,800.00	\$6,800.00	176

\$148,200.00 3,168

22,950.00 130.40 18.94 14.0 10.50 \$159.84

Small tools allocation - Demolition -
\$1.25/mechanic labor hour for
operational/expense, expendables

\$1.25

Total Equipment Mobilization

\$150,700.00

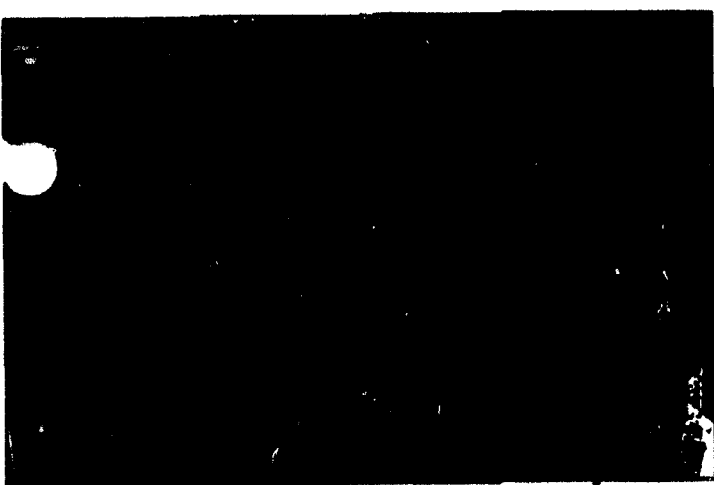
Monthly Maintenance Flat Rate	Planned Operating Hours/month	Availability Factor	Maintenance Cost per Operating Hour	Maintenance Cost	
				FUEL USAGE	FUEL @ 90.75
\$29,500.00	3,168	0.93	\$10.01	15.0	11.25

Butler Equipment Maintenance Cost

MONTHLY	RATE	HOURLY	MITCE EXPENDABLES	FUEL USAGE	FUEL @ 90.75	TOTAL COST
5,500	31.25	2.05	10.0	7.50	\$40.80	

Crane Rental Rates

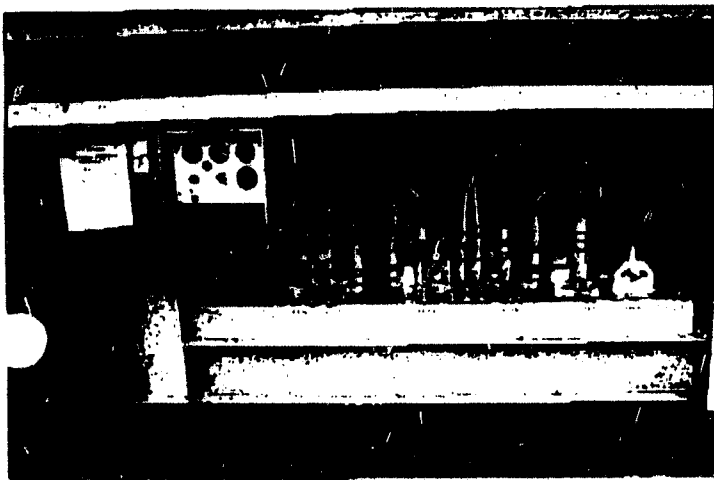
30 ton Hydraulic Crane
65 ton Hydraulic Crane



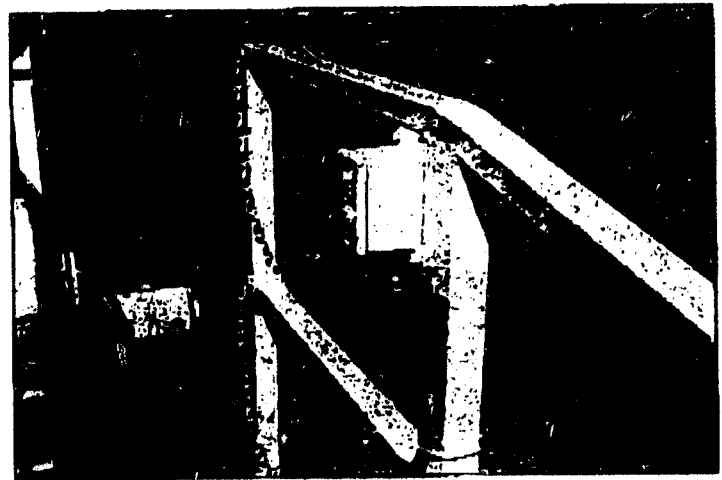
The charging hopper folds out to the width of 14' while in its working position.



A 48" wide variable feed conveyor with 20" rubber lagged head pulley feeds a 5 x 12 2 Deck screen.



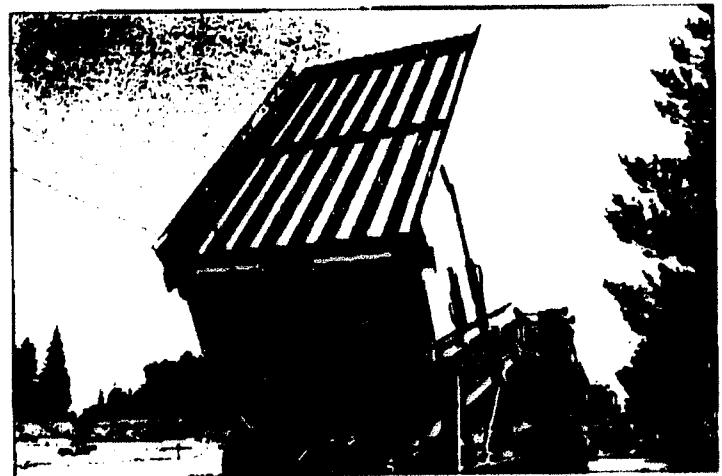
Control panel and hydraulic controls are all located in turnkey area. Powered by a Deutz 4 cylinder, 70 HP diesel engine.



Actuator switch to control speed of feed conveyor is located on the catwalk platform along with kill switch. Actuator switch also located at control panel.



The SCREEN IT has an optional 14 foot long by 8 foot wide hydraulic dumping grizzly. An operator controlled remote dumping system is also available.



The optional grizzly dumps to the rear of the plant.



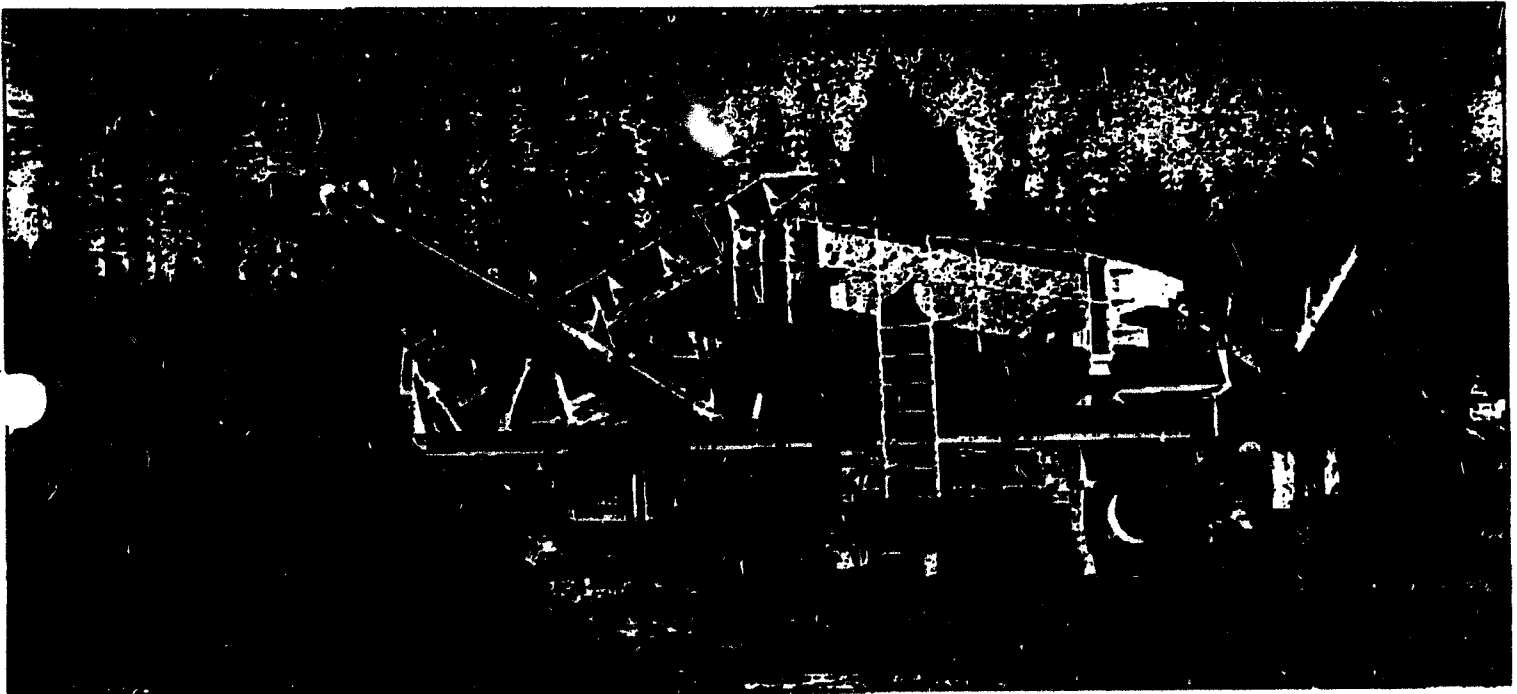
Construction Equipment Co.

SCREEN IT - Series II

Highly Portable - All Hydraulic Setup

Produces Three Different Products

4 of 7



**SCREENS COMPOST 120-140 YARDS PER HOUR
SCREENS GRAVEL UP TO 600 TONS PER HOUR**

**SCREENS: LOG YARD WASTE, COMPOST, BARK, TOP SOIL,
SAND & GRAVEL, TRASH, C & D, STUMPS, CONCRETE,
ROCK AND MANY RECYCLE MATERIALS**

Patent #5234564

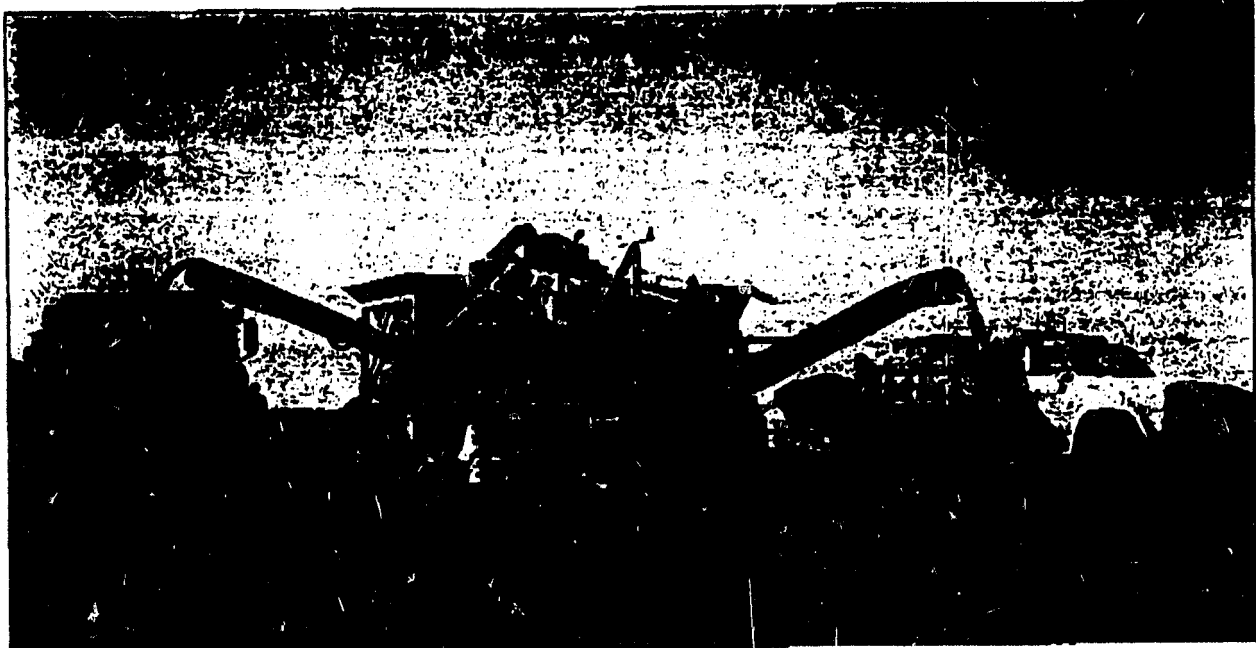


Construction Equipment Co.
P.O. Box 1271
Lake Grove, Oregon 97035
503-635-4427
Fax 503-635-7819

Area Dealer

Portable and Easy to Set Up

3 of 7



**High Production
Screens Sand and Gravel**



Conveyors Can Load Directly Into Truck



Construction Equipment Co.

18650 S.W. Pacific Hwy
Tualatin, OR 97062
503-692-9000
Fax 503-692-6220

Area Dealer

**POWER MOTIVE
5000 VASQUEZ BLVD.
DENVER, CO 80216
PHONE: (303) 355-5900
FAX: (303) 388-9325**

POWER MOTIVE CORP

FAX Transmission

To: *Bob Emery*
Company: *I.U.C.*
From: TERRY BERG

Date: *2/25/99*
C.C.
FAX #: *303.389.4163*

*FOLLOWING PAGES SHOW CONFIGURATION
OF THE DEC SCREEN-ITS*

THE 4x10 SIZE RENTS @ 8,800.-/MO.

THE 5x12 SIZE RENTS @ 10,600.-/MO.

*3" ON TOP DECK & 1/2" ON BOTTOM
DECK IS A COMFORTABLE SET-UP
FOR LETTER PLANT.*

THANKS

T. Berg

VOICE: 303-355-5900 FAX: 303-388-9328

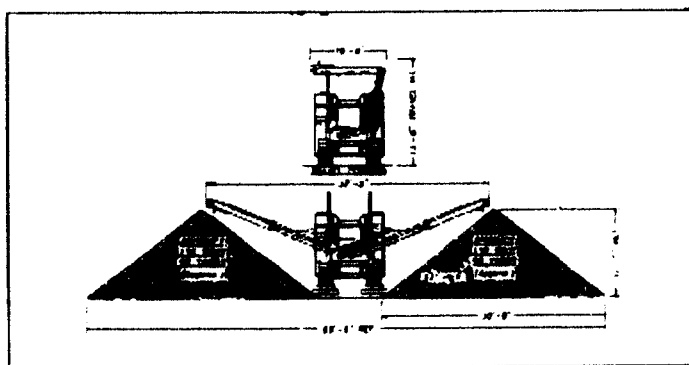
1 of 7

CEC

Construction Equipment Co.

SCREEN-IT 4 X 10

2 of 7



TRANSPORT

Height: 13'6" Fifth Wheel Pull
Width: 10'0" Spring Suspension, air brakes
Length: 39' Lights, oil filled hubs

ENGINE

4 cylinder Deutz; 46 HP - Air Cooled
65 gallon fuel tank

OPTIONS

4 individual jacking legs
Shredder
Grizzly dump
Stacking Conveyors
Ball decks

HOPPER

5.5 cu. yard charging hopper
Height to load 12'3"
Side Loading width 12'0"

SCREEN

4 x 10; 2 Deck Screen
Hydraulic drive 5/8" Throw
Rubber Spring Suspension

CONVEYORS

36" wide feed conveyor
36" wide under screen conveyor
24" side discharge conveyor
24" rear discharge conveyor

100 Ton Hydraulic
\$4800 Mob. & Demob. w/operator Blanding, UT
200/hr. on site
\$100/Per Diem Not available 10/9/98

75 Ton Conventional w/operator
\$3900 Mob. & Demob.
\$180/hr. on site 200 hr/mo.
\$100 Per Diem Not available 10/9/98

40 Ton Rough Terrain (Our Operator) ~~2~~
\$6000/month
\$2200/week
\$1632 mob & Demob Not available 10/9/98

Hewlett Packard
deVryle & Son

Crane Service TO, 122.00
~~65~~ 65 Ton
\$7,500.00/month
\$3600.00 mob. & Demob.
50 Ton \$7,000.00/month
\$3,600.00 mob & Demob.

INTERNATIONAL URANIUM

BLANDING UTAH

ATTN: WALLY BRICE

CONFIDENTIAL PRICE INFORMATION FAX # 1 435 678 2224

TERMS: NET 15 DAYS ON TRANSPORT LOADS

Red dyed diesel for off road use delivered in transport quantities to various sites

	Blanding	Sunday Mines	La Sal Mine	Dove Creek
Rack del #2	\$0.4250	\$0.3825	\$0.3825	\$0.4485
Freight	\$0.0450	\$0.0500	\$0.0550	\$0.0400
Taxes	\$0.0000	\$0.0083	\$0.0000	\$0.0083
Margin	\$0.0200	\$0.0200	\$0.0200	\$0.0200
Sales Tax	\$0.0000	\$0.0000	\$0.0000	\$0.0000
Total Price	\$0.4900	\$0.4608	\$0.4575	\$0.5168

Utah charges sales tax on dyed diesel fuel .06%

Red dyed diesel for off road use delivered in bobtail load (500-2000) to various sites

	Blanding	Sunday Mines	La Sal Mine	Dove Creek
Rack del # 2	\$0.4275	\$0.3825	\$0.3825	\$0.4485
Frt & Margin	\$0.1500	\$0.1500	\$0.1500	\$0.1500
Taxes	\$0.0000	\$0.0083	\$0.0000	\$0.0083
Sales Tax	\$0.0000	\$0.0000	\$0.0000	\$0.0000
Total Price	\$0.5775	\$0.5328	\$0.5325	\$0.6068

Utah Charges sales tax on dyed diesel 6%

No Lead Gasoline 86 octane gasoline delivered in transport loads to various sites

	Blanding	Sunday Mines	La Sal Mine	Dove Creek
Rack	\$0.4300	\$0.3900	\$0.3900	\$0.4450
Freight	\$0.0450	\$0.0500	\$0.0550	\$0.0400
Taxes	\$0.4290	\$0.4103	\$0.4290	\$0.4103
Margin	\$0.0200	\$0.0200	\$0.0200	\$0.0200
Total Price	\$0.9240	\$0.8703	\$0.8940	\$0.9153

No Lead Gasoline 86 octane delivered in bobtail deliveries (500-2000) to various sites

	Blanding	Sunday Mines	La Sal Mine	Dove Creek
Rack	\$0.4300	\$0.3900	\$0.3900	\$0.4450
Frt & Margin	\$0.1500	\$0.1500	\$0.1500	\$0.1500
Taxes	\$0.4290	\$0.4103	\$0.4290	\$0.4103
Total Price	\$1.0090	\$0.9503	\$0.9690	\$1.0053

Propane Delivered Transport Loads Blanding Utah

	Blanding
Rack	\$0.2700
Freight	\$0.0450
Margin	\$0.0100
Taxes	\$0.0000
Total Price	\$0.3250

+.06 % Utah Sales Tax exempt

Propane bobtail loads delivered to various sites

	Blanding	Sunday Mine	La Sal Mine	Dove Creek
Rack	\$0.2700	\$0.2700	\$0.2700	\$0.2700
Frt & Margin	\$0.1500	\$0.1500	\$0.1500	\$0.1500
Taxes	\$0.0000	\$0.0000	\$0.0000	\$0.0000
Total Price	\$0.4200	\$0.4200	\$0.4200	\$0.4200

Utah charges .06% sales tax on propane

Colorado charges .03% sales tax

FROM: FRALEY & CO. INC CORTEZ COLORADO NEIL JONES 1 800 382 6838

(801) 201-7418

ATL. JMENTA
INTERNATIONAL URANIUM CORPORATION
EQUIPMENT NEEDED FOR JOB IN BLANDING, UTAH
NOVEMBER 3, 1998

MODEL	QTY	MONTHLY RENTAL RATE	HOURS ALLOWED PER MONTH	EXCESS HOUR CHARGE	MINIMUM GUARANTEED NUMBER OF MONTHS BASED UPON	TOTAL** FREIGHT CHARGES TO & FROM	MAINTENANCE RATE PER HOUR
D9N/RIPPER	1	13,300	176	42	6	8,600	1.40
D6N/RIPPER	1	10,800	176	34	6	7,400	1.15
D7H/RIPPER	1	9,100	176	28	6	6,400	.95
825C	1	9,600	176	30	6	7,300	1.10
980F	1	10,000	176	32	6	7,300	1.15
*988F	1	15,000	176	48	6	8,600	1.45
*769C	4	9,200 EA.	176 EA.	28 EA.	6 EA.	7,400 EA.	1.50 EA.
375L	1	19,600	176	56	6	15,000	1.90
10,000 GALLON WATER WAGON	1	10,000	176	30	6	8,000	1.80
5,000 GALLON WATER WAGON	1	5,700	176	18	6	3,000	.75
14G/RIPPER	1	7,700	176	24	6	5,600	1.05
16G/RIPPER	1	11,000	176	34	6	6,800	1.20

* PLUS TIRE WEAR

** INCLUDES ASSEMBLY AND DISASSEMBLY

NOVEMBER 3, 1998

PAGE 2

OUR MONTHLY MAINTENANCE CHARGE WOULD BE \$29,500.00, WHICH INCLUDES OUR LAI 3, SPECIALIZED LUBE TRUCKS, SUPPORT VEHICLES AND EQUIPMENT, SPECIALIZED TOOLING, SCHEDULED OIL SAMPLING, PARTS TRAILERS AND INVENTORIES, MILEAGE AND TRAVEL EXPENSE. BUTLER WILL PROVIDE TWO (2) FULL-TIME MAINTENANCE TECHNICIANS ON SITE FIFTY (50) HOURS PER WEEK ON A SCHEDULE TO BE DETERMINED, MONDAY THROUGH FRIDAY. IRC WOULD HAVE TO SCHEDULE THE MACHINES AVAILABLE FOR A TIME FRAME YET TO BE DETERMINED ADEQUATE FOR BUTLER MAINTENANCE PERSONNEL TO PERFORM THE REQUIRED MAINTENANCE. BUTLER WOULD INVOICE IRC FOR THE MONTHLY MAINTENANCE CHARGE AT THE BEGINNING OF EACH MONTH.

REPAIRS:

BUTLER WOULD BE RESPONSIBLE FOR ALL REPAIRS INCLUDING PARTS AND LABOR ON OUR MACHINES OTHER THAN FAILURES CAUSED BY DAMAGES OR MIS-USE. REPAIRS INCLUDE ITEMS AS MINOR AS STARTERS, ALTERNATORS, WATER PUMPS, HYDRAULIC HOSES, ETC. TO THE MAJOR ITEMS SUCH AS ENGINES, TRANSMISSIONS, DIFFERENTIALS, BRAKES, HYDRAULIC PUMPS AND CYLINDERS, ETC. IF TIME PERMITS AND IRC REQUESTS BUTLER'S TECHNICIAN TO PERFORM REPAIRS OR MAINTENANCE ON THEIR MACHINES, OUR HOURLY CHARGE WOULD BE \$47.00 PER HOUR PLUS MATERIALS.

FREIGHT:

FREIGHT CHARGES INCLUDE BOTH DELIVERY AND RETURN, ASSEMBLY, AND DISASSEMBLY OF EQUIPMENT.

IRC'S RESPONSIBILITIES INCLUDE:

OPERATORS. PROVIDE THE OPERATORS AS NEEDED TO OPERATE MACHINES AS STATED IN CATERPILLAR'S OPERATING GUIDE. BUTLER WILL PROVIDE, AT NO EXPENSE TO IRC, QUALIFIED TRAINING INSTRUCTORS FOR THE PURPOSES OF TRAINING OPERATORS. THIS TRAINING WOULD TAKE PLACE ON THE JOBSITE AT THE INITIAL START UP OF THE JOB AND WOULD INCLUDE CLASSROOM, WALK AROUND, AND IN IRON DEMONSTRATIONS.

FUEL. SUPPLY AND FILL ALL FUEL FOR EQUIPMENT INCLUDING BUTLER'S SERVICE VEHICLES.

DAMAGES. THIS INCLUDES GLASS BREAKAGE, BENT HANDRAILS, STEP LADDERS, FENDERS, ETC. BUTLER'S NORMAL POLICY FOR REPAIRING DAMAGES TO RENTAL MACHINES IS TO REPAIR THEM WHEN THE RENTAL PERIOD IS COMPLETED, HOWEVER, IF THE DAMAGED ITEM IS OF A SAFETY CONCERN, WE WOULD REPAIR THE DAMAGES AS SOON AS POSSIBLE AFTER THEY OCCURRED. AN ITEMIZED LIST OF THE PARTS AND LABOR REQUIRED WOULD BE PROVIDED TO IRC PRIOR TO STARTING THE REPAIR, AND INVOICED AT CURRENT LIST PRICES PLUS FREIGHT UPON COMPLETION.

UNDERCARRIAGE AND TIRES: IRC WOULD BE RESPONSIBLE FOR ALL TIRE WEAR INCLUDING TIRE DAMAGES ON THE MACHINES WITH AN ASTERISK LISTED ON ATTACHMENT A. EQUIPMENT WOULD HAVE TO BE RETURNED WITH SAME BRAND AND MODEL TIRES AS WHEN DELIVERED, OR PRORATED ACCORDINGLY BY PERCENTAGE OF TIRE WEAR AND CONDITION AT TERMINATION OF RENTAL PERIOD.

UPON DELIVERY OF MACHINES, A REPRESENTATIVE OF BUTLER, A REPRESENTATIVE OF IRC AND A REPRESENTATIVE FROM AN INDEPENDENT TIRE DEALER OR MANUFACTURER WOULD JOINTLY VERIFY IN WRITING THE CONDITION, PERCENTAGE OF WEAR, AND TIRE VALUE. UPON TERMINATION OF RENTAL, WE WOULD AGAIN HAVE THE REPRESENTATIVES MENTIONED ABOVE DETERMINE THE CONDITION, PERCENTAGE OF WEAR, AND TIRE VALUES. ANY DIFFERENCES NOTED, WOULD THEN BE CHARGED OR CREDITED TO IRC INCLUDING BOTH MATERIALS AND LABOR.

UNDERCARRIAGE WEAR ON ALL TRACK TYPE MACHINES WOULD BE BUTLER'S EXPENSE.

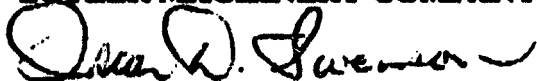
GROUND ENGAGING TOOLS:

IRC WOULD BE RESPONSIBLE FOR ALL PARTS RELATING TO GROUND ENGAGING TOOLS (G.E.T.), I.E. CUTTING EDGES, RIPPER TIPS AND PROTECTORS, BUCKET TIPS AND ADAPTERS, EDGES BETWEEN ADAPTERS, WEAR PLATES ON BOTTOM OF BUCKETS AND ALL MOUNTING HARDWARE. BUTLER WOULD INSTALL THESE ITEMS ON AN AS NEEDED BASIS AT THE CURRENT CATERPILLAR LIST PRICE PLUS FREIGHT AT NO ADDITIONAL LABOR COSTS. ALL MACHINES WOULD BE DELIVERED WITH NEW G.E.T. ITEMS AND ARE TO BE RETURNED WITH NEW.

WE WISH TO THANK IRC AND YOU FOR GIVING US THE OPPORTUNITY TO PRESENT OUR PROPOSAL AND FOR ALL THE CONSIDERATION WE RECEIVE.

SINCERELY YOURS,

BUTLER MACHINERY COMPANY



**OSCAR D. SWENSON
RENTAL FLEET MARKETING MANAGER**

ODS/ddl

cc: JOEL NIKLE, RENTAL FLEET MANAGER

Butler



Butler Machinery Company • (701) 232-0033 • FAX (701) 298-1717 • 1351 Page Dr. • Box 9559 • Fargo, ND 58106

NOVEMBER 3, 1998

INTERNATIONAL URANIUM CORPORATION
ATTN: BOB HEMBREE
1050 SEVENTEENTH ST. SUITE 950
DENVER CO 80265

DEAR BOB:

THANK YOU FOR THE INVITATION TO QUOTE INTERNATIONAL URANIUM CORPORATION (IRC) THE EQUIPMENT NEEDED FOR THEIR MINING PROJECT IN BLANDING, UTAH. BUTLER MACHINERY COMPANY (BUTLER) RESPECTFULLY SUBMITS OUR PROPOSAL FOR A MAINTAINED FLEET OF CATERPILLAR MACHINES.

LISTED ON ATTACHMENT A, YOU WILL FIND THE MODELS, QUANTITIES, MONTHLY RENTAL RATES, HOURS ALLOWED PER MONTH, EXCESS HOUR CHARGE, GUARANTEED NUMBER OF MONTHS RATES ARE BASED UPON, TOTAL FREIGHT CHARGES AND THE MAINTENANCE RATE PER HOUR FOR MATERIALS ONLY.

ALL RATES SHOWN ON ATTACHMENT A DO NOT INCLUDE ANY STATE, LOCAL, PROPERTY OR ANY OTHER TAXES THAT MAY BE APPLICABLE.

RATES ARE BASED UPON ELECTRIC HOUR METER READINGS WHICH ARE ATTACHED TO THE DASH OF EACH MACHINE. RATES ARE BASED ON 176 HOURS OF USE EACH MONTH. EXCESS HOUR CHARGES, IF ANY, WILL BE CALCULATED AND INVOICED AT THE END OF THE PROJECT. THERE WOULD BE NO CREDIT ISSUED FOR ANY HOURS UNDER THE ALLOWED DURING THE TERM OF THIS PROPOSAL. IF IRC ELECTS TO DOUBLE SHIFT MACHINES, THEN BUTLER WOULD INVOICE THOSE HOURS AT THE END OF EACH MONTH. (TO FIGURE THE DOUBLE SHIFT RATES, TAKE THE EXCESS HOUR RATE SHOWN ON ATTACHMENT A TIMES THE NUMBER OF HOURS).

RATES ARE BASED UPON A MINIMUM GUARANTEE OF 6 MONTHS AND A PACKAGE DEAL.

MAINTENANCE:

THE MAINTENANCE RATES PER HOUR LISTED ON ATTACHMENT A INCLUDES THE MATERIAL PART ITEMS ONLY, SUCH AS AIR, OIL, AND FUEL FILTERS, LUBRICANT OILS, GREASE, ANTI-FREEZE, BATTERIES, FAN BELTS, LIGHTS AND MAKE-UP OILS. BUTLER WOULD INVOICE IRC ACTUAL HOURS USED ON MACHINES AT THE END OF EACH MONTH.

Fargo, 58108
3482 38th Ave. S.
P.O. Box 9559

Bismarck, 58502
3830 Miriam Ave.
P.O. Box 757

Minot, 58702
1606 Hwy. 2, Bypass E
P.O. Box 1069

Grand Forks, 58208
1201 S. 4th St.
P.O. Box 12208

Rapid City, 57708
3801 Goodwood Ave. N.
P.O. Box 2670

Spear Falls, 57701
3201 N. Louise Ave.
P.O. Box 1307

Aberdeen, 57402
4958 E. Highway 12
P.O. Box 38

CAT 769 TRUCKS

TRAVEL TIMES FOR CAT 769C TRUCKS BASED ON PROJECTED HAUL ROUTES

Haul Segment	Distance Feet	Distance Meters	Hauling Distance	Grade %	Ave Speed MPH	Time Min
1a	200	67	7.5	0.0	7.6	0.30
1b	500	167	5.0	0.0	12.6	0.45
1c	200	67	3.0	2.5	9.1	0.25
1d	1400	467	3.0	0.0	18.7	0.85
1e	250	83	3.0	0.0	9.5	0.30
1f	250	83	3.0	0.0	11.4	0.25
1g	1400	467	3.0	0.0	22.7	0.70
1h	200	67	3.0	(2.5)	11.4	0.20
1i	400	133	5.0	0.0	13.0	0.35
1j	200	67	7.5	0.0	9.1	0.25
						3.90
2a	200	67	7.5	0.0	7.6	0.30
2b	2150	717	3.0	(0.5)	24.4	1.00
2c	250	83	5.0	0.0	9.5	0.30
2d	250	83	5.0	0.0	11.4	0.25
2e	2250	750	3.0	+0.5	25.9	0.95
2f	200	67	7.5	0.0	9.1	0.25
						3.05
3a	250	83	7.5	0.0	8.1	0.35
3b	3300	1100	3.0	-0.5	25.0	1.50
3c	250	83	5.0	0.0	9.5	0.30
3d	250	83	5.0	0.0	11.4	0.25
3e	3300	1100	3.0	+0.5	28.8	1.30
3f	250	83	7.5	0.0	9.5	0.30
						4.00
4a	350	117	7.5	-3.5	11.4	0.35
4b	1450	483	3.0	0.0	19.4	0.85
4c	250	83	5.0	0.0	9.5	0.30
4d	250	83	5.0	0.0	11.4	0.25
4e	1700	567	3.0	0.0	22.7	0.85
4f	500	167	7.5	+3.5	11.4	0.50
						3.10

769C TRUCK EFFICIENCY

NOMINAL CAPACITY

25

HAUL ROUTE	TRAVEL TIME	FIXED TIME	EFFICIENCY	MINUTES PER TRIP	TRIPS/HOUR	YARDS/HOUR
1	3.90	2.50	85%	7.5	8.0	199
2	3.05	2.50	85%	6.5	9.2	230
3	4.00	2.50	85%	7.6	7.8	196

CAT 637 SCRAPER

Haul Segment	Distance Feet	Distance Meters	Rolling Resistance	Grade %	Ave Speed MPH	Time Min
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5a	1400	467	7.5	-2.75	15.9	1.00
5b	1350	450	3.0	0.0	19.2	0.80
5c	250	83	5.0	0.0	9.5	0.30
5d	250	83	5.0	0.0	11.4	0.25
5e	2250	750	3.0	0.0	23.2	1.10
5f	700	233	7.5	+5.5	11.4	0.70
						4.15

6a	600	200	7.5	0.0	11.4	0.60
6b	900	300	3.0	-3.3	20.5	0.50
6c	1450	483	3.0	0.0	19.4	0.85
6d	400	133	5.0	0.0	11.4	0.40
6e	400	133	5.0	0.0	11.4	0.40
6f	1450	483	3.0	0.0	22.0	0.75
6g	900	300	3.0	+3.3	17.0	0.60
6h	450	150	7.5	0.0	12.8	0.40
						4.50

7a	750	250	7.5	-1.5	12.2	0.70
7b	1600	533	3.0	0.0	20.2	0.90
7c	350	117	5.0	0.0	11.4	0.35
7d	350	117	5.0	0.0	11.4	0.35
7e	1600	533	3.0	0.0	22.7	0.80
7f	750	250	7.5	+1.5	13.1	0.65
						3.75

CAT 637 SCRAPER

TRAVEL TIMES FOR CAT 637 SCRAPERS BASED ON PROJECTED HAUL ROUTES

Haul Segment	Distance Feet	Distance Meters	Rolling Resistance	Grade %	Ave Speed MPH	Time Min
1a	200	67	7.5	0.0	9.1	0.25
1b	500	167	5.0	0.0	12.6	0.45
1c	200	67	3.0	2.5	9.1	0.25
1d	1400	467	3.0	0.0	18.7	0.85
1e	250	83	3.0	0.0	9.5	0.30
1f	250	83	3.0	0.0	11.4	0.25
1g	1400	467	3.0	0.0	21.2	0.75
1h	200	67	3.0	(2.5)	11.4	0.20
1i	400	133	5.0	0.0	13.0	0.35
1j	200	67	7.5	0.0	9.1	0.25
						3.90

2a	200	67	7.5	0.0	9.1	0.25
2b	2150	717	3.0	(0.5)	22.2	1.10
2c	250	83	5.0	0.0	9.5	0.30
2d	250	83	5.0	0.0	11.4	0.25
2e	2250	750	3.0	+0.5	23.2	1.10
2f	200	67	7.5	0.0	9.1	0.25
						3.25

3a	250	83	7.5	0.0	8.1	0.35
3b	3300	1100	3.0	-0.5	23.4	1.60
3c	250	83	5.0	0.0	9.5	0.30
3d	250	83	5.0	0.0	11.4	0.25
3e	3300	1100	3.0	+0.5	25.0	1.50
3f	250	83	7.5	0.0	9.5	0.30
						4.30

4a	350	117	7.5	-3.5	11.4	0.35
4b	1450	483	3.0	0.0	19.4	0.85
4c	250	83	5.0	0.0	9.5	0.30
4d	250	83	5.0	0.0	11.4	0.25
4e	1700	567	3.0	0.0	22.7	0.85
4f	500	167	7.5	+3.5	11.4	0.50
						3.10

637 SCRAPER EFFICIENCY

NOMINAL CAPACITY

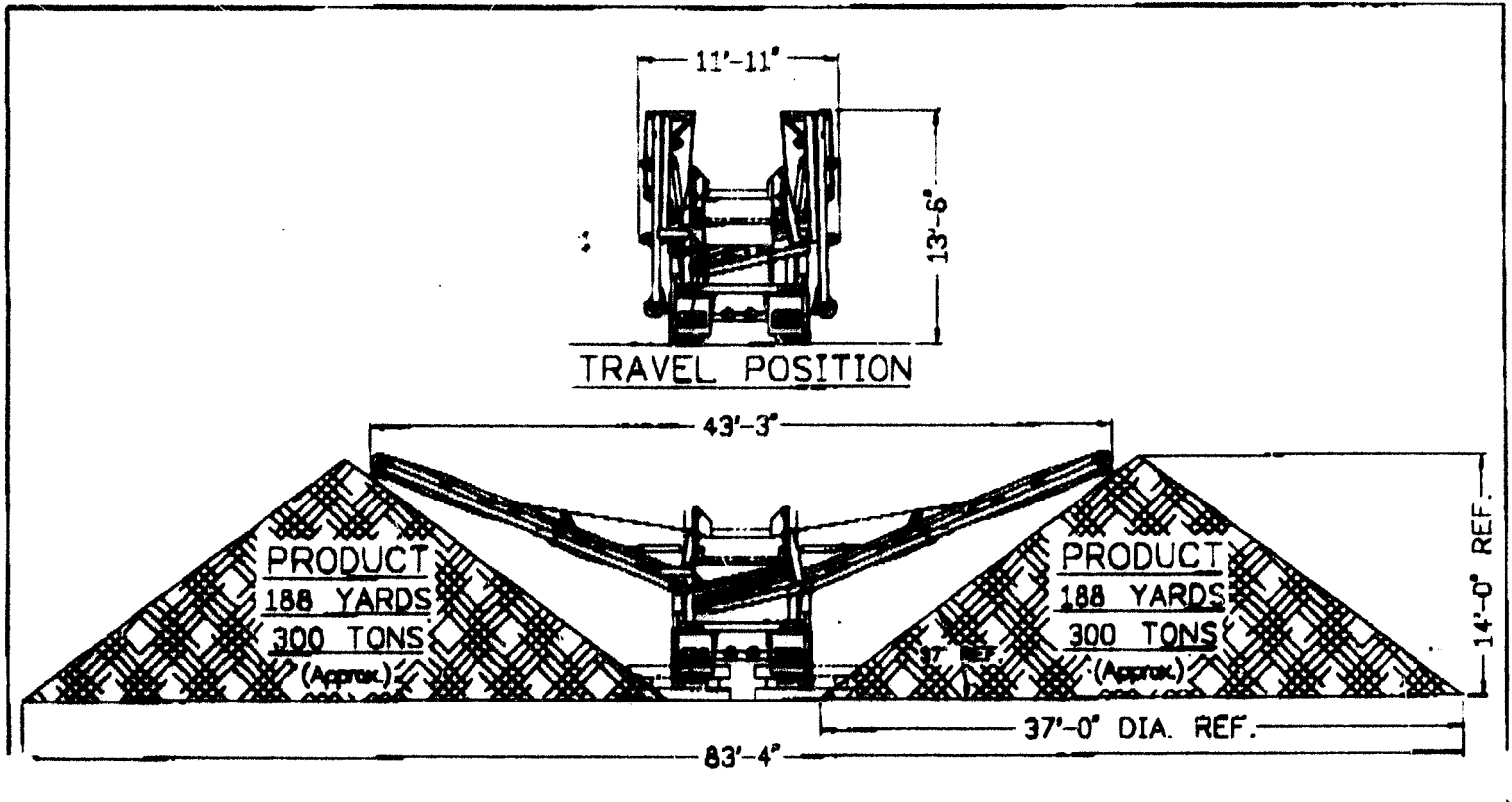
31

HAUL ROUTE	TRAVEL TIME	FIXED TIME	EFFICIENCY	MINUTES PER TRIP	TRIPS/HOUR	YARDS/HOUR
1	3.90	1.20	85%	6.0	10.0	310
2	3.25	1.20	85%	5.2	11.5	355
3	4.30	1.20	85%	6.5	9.3	287
4	3.10	1.20	85%	5.1	11.9	368
5	4.15	1.20	85%	6.3	9.5	296
6	4.50	1.20	85%	6.7	8.9	277
7	3.75	1.20	85%	5.8	10.3	319

SCREENING,

Topsoil To 250 yds./hr.
Sand & Gravel To 600 Tons/hr.

7 of 7



HYDRAULIC DRIVE

TRANSPORT

Height: 13' 6" Fifth wheel pull
Width: 11' 11" Spring suspension, air brakes
Length: 43' 0" Lights, oil filled hubs
Weight: 38,800 Transport speed 65 mph

HOPPER

14.5 cu. yard charging hopper
Height to load 13' 6"
Width at rear 14' - Working position
Width at rear 8' - Travel position

ENGINE

4 cylinder Deutz
70 HP • Air Cooled
65 gallon fuel tank
110 gallon hydraulic tank

SCREEN

5 x 12, 2 Deck with step deck
Hydraulic drive with 3/8" to 5/8" throw
Rubber spring suspension

OPTIONS

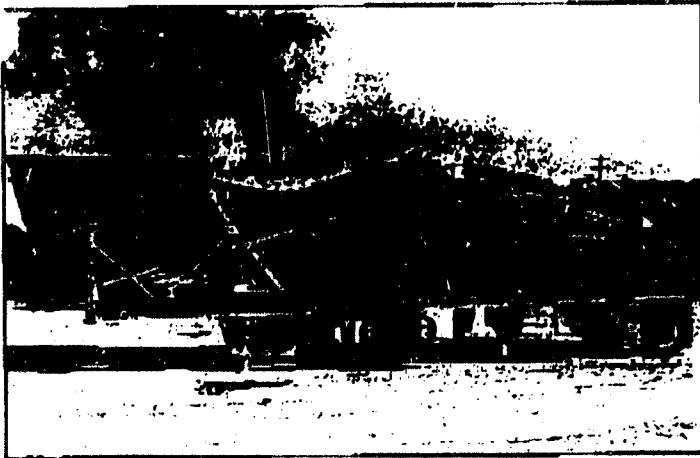
4 individual jacking legs
Shredder
Grizzly Dump
Stacking conveyors
79 HP Turbo Diesel (Water Cooled)
98 HP Turbo Diesel (Air Cooled)

CONVEYORS

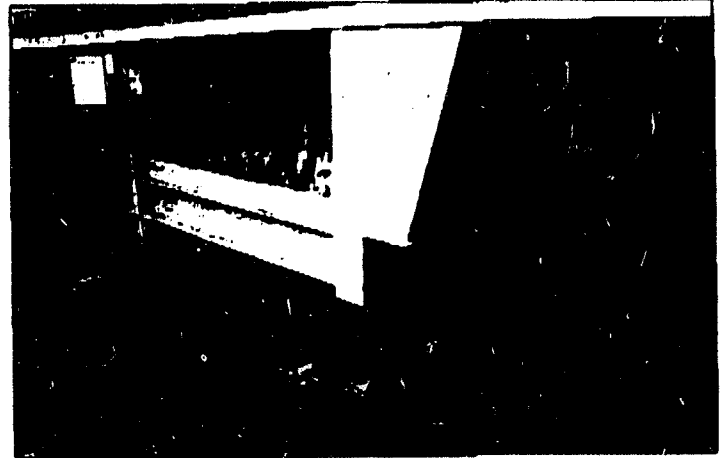
48" wide feed conveyor 23' 10" long
42" wide under screen conveyor
30" side discharge conveyor 18' 4" long
30" rear discharge conveyor 18' 4" long

ALL HYDRAULIC FOLD AND SETUP

5 of 7



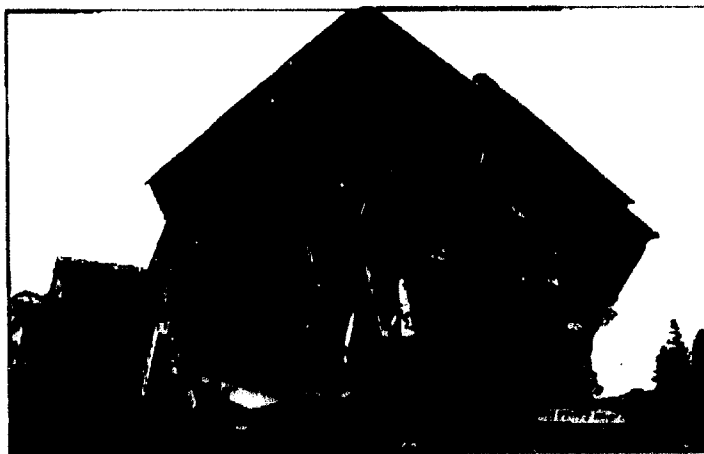
Travel position of the SCREEN IT in which feed conveyor and hopper hydraulically slide back and lower down to transportation height, while hopper wings fold in.



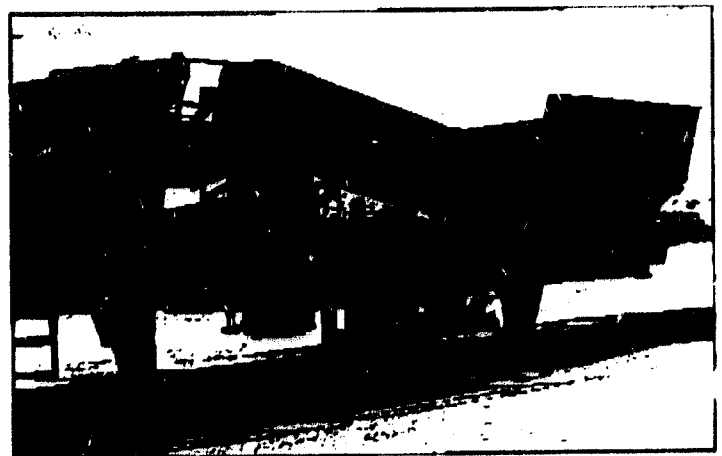
Hydraulic jacking legs are standard for cantilever style blocking, but four (4) individual jacking legs can be an option.



Side and rear discharge conveyors hydraulically fold out to the height of 14'.



Feed conveyor moves up and forward hydraulically, while the hopper wing walls extend for operation.



Feed conveyor hydraulically moves back and down for transport.

CAT 769 TRUCKS

Haul Segment	Distance Feet	Distance Meters	Rolling Resistance	Grade %	Ave Speed MPH	Time Min
5a	1400	467	7.5	-2.75	15.9	1.00
5b	1350	450	3.0	0.0	19.2	0.80
5c	250	83	5.0	0.0	9.5	0.30
5d	250	83	5.0	0.0	11.4	0.25
5e	2250	750	3.0	0.0	23.2	1.10
5f	700	233	7.5	+5.5	11.4	0.70
						4.15

6a	600	200	7.5	0.0	11.4	0.60
6b	900	300	3.0	-3.3	20.5	0.50
6c	1450	483	3.0	0.0	19.4	0.85
6d	400	133	5.0	0.0	11.4	0.40
6e	400	133	5.0	0.0	11.4	0.40
6f	1450	483	3.0	0.0	22.0	0.75
6g	900	300	3.0	+3.3	17.0	0.60
6h	450	150	7.5	0.0	12.8	0.40
						4.50

7a	750	250	7.5	-1.5	12.2	0.70
7b	1600	533	3.0	0.0	20.2	0.90
7c	350	117	5.0	0.0	11.4	0.35
7d	350	117	5.0	0.0	11.4	0.35
7e	1600	533	3.0	0.0	22.7	0.80
7f	750	250	7.5	+1.5	13.1	0.65
						3.75

LABOR COSTS

Specified Wages

Heavy Construction

1998 Estimate Labor Rates**

0.1397

0.2128

Labor Classification	Base Rate	Mandated Fringe	Labor Burden		Fringe Costs	Labor Cost/HR
			(FICA, SUI, FUI, etc.)	Company Benefits (medical, life insure, etc)		
Boiler Makers	\$19.60	\$8.78	\$2.74	no added cost	\$11.50	\$31.10
Milwrights	\$19.83	\$3.25	\$2.77	\$0.97	\$6.99	\$26.82
Ironworkers	\$19.92	\$6.66	\$2.78	no added cost	\$9.44	\$29.36
Carpenters	\$10.81		\$1.51	\$2.30	\$3.81	\$14.62
Cement Masons	\$11.52		\$1.61	\$2.45	\$4.06	\$15.58
Electricians	\$14.52	\$2.71	\$2.03	\$0.38	\$5.12	\$19.64
Ironworkers - Reinforcing	\$11.00		\$1.54	\$2.34	\$3.88	\$14.88
Laborers (including pipelayers)	\$7.65	\$1.60	\$1.07	\$0.03	\$2.70	\$10.35
Pipefitters	\$12.60		\$1.76	\$2.68	\$4.44	\$17.04
POWER EQUIPMENT OPERATORS						
Backhoes	\$10.00		\$1.40	\$2.13	\$3.53	\$13.53
Cranes	\$10.43		\$1.46	\$2.22	\$3.68	\$14.11
Dozers++	\$13.10		\$1.83	\$2.79	\$4.62	\$17.72
Graders	\$12.67		\$1.77	\$2.70	\$4.47	\$17.14
Loaders	\$11.26		\$1.57	\$2.40	\$3.97	\$15.23
Scrapers+	\$10.00		\$1.40	\$2.13	\$3.53	\$13.53
Trackhoes	\$10.00		\$1.40	\$2.13	\$3.53	\$13.53
Tractors	\$9.42		\$1.32	\$2.00	\$3.32	\$12.74
TRUCK DRIVERS	\$9.42		\$1.32	\$2.00	\$3.32	\$12.74

Note: base rates do not include FICA, worker comp, unemployment, or company benefits which increase the cost per hour

** General Decision UT980009 - Modification 0 - 2/13/98

++ Operator Rate used in 1999 estimate

LABOR COSTS

Nonspecified Wages	Base Rate	Mandated Fringe	Labor Burden	Company	Fringe Costs	Labor Cost/HR
			(FICA, SUI, FUI, etc.)	Benefits (medical, life insure. etc.)		
Survey Crew Member	\$9.75	\$0.00	\$1.36	\$2.07	\$3.44	\$13.19
Sample Crew Member	\$9.75	\$0.00	\$1.36	\$2.07	\$3.44	\$13.19
Mechanic (Demolition)	\$10.20	\$0.00	\$1.42	\$2.17	\$3.60	\$13.80
Manager/Engineer	\$36.00	\$0.00	\$5.03	\$7.66	\$12.69	\$48.69
Radiation Safety Officer	\$28.00	\$0.00	\$3.91	\$5.96	\$9.87	\$37.87
Secretary	\$11.10	\$0.00	\$1.55	\$2.36	\$3.91	\$15.01
Clerk	\$9.25	\$0.00	\$1.29	\$1.97	\$3.26	\$12.51
Engineer	\$28.00	\$0.00	\$3.91	\$5.96	\$9.87	\$37.87
Environmental Technician	\$14.80	\$0.00	\$2.07	\$3.15	\$5.22	\$20.02
Safety Engineer	\$14.80	\$0.00	\$2.07	\$3.15	\$5.22	\$20.02
Maintenance Foreman	\$20.34	\$0.00	\$2.84	\$4.33	\$7.17	\$27.51
Security Personnel	\$5.75	\$0.00	\$0.80	\$1.22	\$2.03	\$7.78
Chemist	\$16.65	\$0.00	\$2.33	\$3.54	\$5.87	\$22.52



INTERNATIONAL
URANIUM (USA)
CORPORATION

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Shauna Vigil - Heavy Construction Davis-Bacon wages

From: Shauna Vigil
To: w.deal@cisna.com
Date: Fri, Nov 13, 1998 11:21 AM
Subject: Heavy Construction Davis-Bacon wages

Heavy Construction Projects
Modification Number **Publication Date**
 0 02/13/1998

County (ies)		
Beaver	Iron	Sevier
Carbon	Juab	Uintah
Daggett	Kane	Washington
Emery	Plute	Wayne
Garfield	San Juan	
Grand	San Pete	

	Rates	Fringes
Boilermakers	19.60	8.76
Milwrights	19.83	3.25
Ironworkers:Structural	18.92	6.66
	Rates	Fringes
Carpenters	10.81	
Cement Masons	11.52	2.71
Electricians	14.52	
Ironworkers:Reinforcing	11.00	
Laborers (including pipelayers)	7.65	1.60
Pipefitters	12.60	
Power Equipment Operators:		
Backhoes	10.00	
Cranes	10.43	
Dozers	13.10	
Graders	12.67	
Loaders	11.26	
Scrapers	10.00	
Trackhoes	10.00	
Tractors	9.42	
Truck Drivers	9.42	

Let me know if this works out o.k.
 Shauna :)

Consumer Price Indexes



Table 1. Consumer Price Index for All Urban Consumers (CPI-U): U. S. City Average, by expenditure category and commodity and service group

Table 1. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category and commodity and service group

(1982-84=100, unless otherwise noted)

CPI-U	Relative importance, December 1998	Unadjusted indexes per cent		
		Dec. 1998	Jan. 1999	Jan. 1999
Expenditure category				
All items	100.000	163.9	164.3	0
All items (1967=100)	-	491.0	492.3	1
Food and beverages	16.408	162.7	163.9	2
Food	15.422	162.3	163.6	2
Food at home	9.691	162.6	164.3	2
Cereals and bakery products	1.544	182.3	184.2	2
Meats, poultry, fish, and eggs	2.569	147.3	146.4	-1
Dairy and related products (1)	1.088	157.6	161.2	3
Fruits and vegetables	1.440	200.7	208.6	3
Nonalcoholic beverages and beverage materials	1.049	131.7	133.5	-0
Other food at home	2.002	152.4	153.0	2
Sugar and sweets .....	.377	150.1	151.7	0
Fats and oils .....	.309	151.9	150.5	7
Other foods	1.316	166.9	167.7	2
Other miscellaneous foods (1) (2) .....	.320	104.9	104.1	3
Food away from home (1)	5.730	163.0	163.5	2
Other food away from home (1) (2) .....	.175	103.3	103.5	3
Alcoholic beverages .....	.986	167.2	167.6	1
Housing	39.828	161.3	161.8	2
Shelter	30.283	184.0	184.7	3
Rent of primary residence (3)	7.007	174.9	175.3	3
Lodging away from home (2) (3)	2.376	103.9	107.1	1
Owners' equivalent rent of primary residence (3) (4)	20.529	190.7	191.0	3
Tenants' and household insurance (1) (2) .....	.371	99.9	99.7	-0
Fuels and utilities	4.735	126.6	126.2	-2
Fuels	3.801	111.4	110.9	-2
Fuel oil and other fuels .....	.227	86.1	86.6	-10
Gas (piped) and electricity (3)	3.574	118.9	118.3	-2
Household furnishings and operations	4.810	126.6	126.8	1

INTERNATIONAL URANIUM (USA) CORP
 SALARY ALLOCATION - JOURNAL ENTRY SUPPORT
 JAN 31, 1999
 (FINAL)

	SALARY	PENSN	BONUS	TAXES	INSUR	VACAT	HOLIDY	SICK	OTHER	DENOMD	TOTAL	PRPTY	VACAT	HOLIDY	SICK	OTHER
249	3M [REDACTED] 1,280.00	12.50		168.38	234.00	32.57	65.23	13.01		1,805.69	1,727.45		78.24			
294	3M [REDACTED] 1,296.00			212.26	234.00	33.57	67.03	13.47		1,856.33	1,775.93		80.40			
307	3M [REDACTED] 1,576.00			238.17	234.00	39.36	78.84			2,166.37	2,071.81		94.56			
214	3M [REDACTED] 1,612.00			243.51	234.00	40.13	80.37	16.03		2,226.04	2,129.64		96.40			
306	3M [REDACTED] 1,649.09			247.45	234.00	40.93	81.97	18.44		2,271.88	2,173.56		98.32			
<hr/>																
OPERATIONS - HOURLY	201,681.02	602.15	0.00	28,185.40	5,682.11	1,900.32	0.00	0.00	272,780.64	242,341.32	12,032.88	324.00	616.32			
				24,948.00	9,781.64					10,466.12						

1.353
 .1397
 .21258
 032202
 Bureau
 H 28185.40
 H 21914.22
 Taxes
 Bureau

LONG TERM CARE CALCULATION

Long Term Care Calculation

Base Amount (Starting in Dec. 1978)	\$250,000
CPI-U December, 1978	67.7
CPI-U January, 1999	164.3

Adjusted Long Term Care = $\$250,000 \times (\text{CPI-U most recent} / \text{CPI-U Dec., 1978})$

Adjusted Long Term Care	\$606,721
-------------------------	-----------

Apparel	4.831	130.7	127.9	-1
Men's and boys' apparel	1.358	130.3	124.1	-1
Women's and girls' apparel	1.939	122.4	117.7	-1
Infants' and toddlers' apparel (1).....	.272	129.6	130.0	4
Footwear .....	.876	127.5	125.6	-1
Transportation	16.999	140.7	140.4	-1
Private transportation	15.653	137.2	136.7	-1
New and used motor vehicles (2).....	7.843	100.9	100.6	0
New vehicles	4.983	144.1	144.4	0
Used cars and trucks (1).....	1.914	153.1	150.6	1
Motor fuel	2.493	86.2	85.0	-13
Gasoline (all types)	2.476	85.7	84.5	-13
Motor vehicle parts and equipment .....	.549	101.2	101.2	-0
Motor vehicle maintenance and repair	1.624	169.6	169.8	2
Public transportation (1).....	1.346	188.4	190.4	1
Medical care	5.713	245.2	246.6	3
Medical care commodities	1.252	225.6	225.9	3
Medical care services	4.461	249.6	251.3	3
Professional services (3).....	2.854	224.6	225.8	3
Hospital and related services (3).....	1.354	291.4	294.4	3
Recreation (2).....	6.120	101.2	101.7	1
Video and audio (1) (2).....	1.748	100.7	101.4	0
Education and communication (2).....	5.478	100.7	100.9	1
Education (2).....	2.694	104.7	105.0	4
Educational books and supplies .....	.203	257.3	258.4	5
Tuition, other school fees, and childcare	2.492	301.7	302.4	4
Communication (1) (2).....	2.783	97.1	97.3	-2
Information and information processing (1)				
(2).....	2.580	96.9	96.9	-2
Telephone services (1) (2).....	2.327	100.3	100.7	3
Information and information processing				
other than telephone services (1) (5)	.253	34.8	33.8	-26
Personal computers and peripheral				
equipment (1) (2).....	.148	64.2	61.4	-36
Other goods and services	4.624	250.3	255.4	10
Tobacco and smoking products	1.159	331.2	354.2	39
Personal care (1).....	3.465	158.3	158.9	2
Personal care products (1).....	.742	148.7	149.9	2
Personal care services (1).....	.973	168.3	168.8	2
Miscellaneous personal services	1.491	237.8	238.9	3
Commodity and service group				
Commodities	42.109	142.2	142.5	0
Food and beverages	16.408	162.7	163.9	2
Commodities less food and beverages	25.702	130.2	129.9	-0
Nondurables less food and beverages	14.345	132.1	131.8	-0
Apparel	4.831	130.7	127.9	-1
Nondurables less food, beverages, and				
apparel	9.514	137.8	138.8	0
Durables	11.356	127.4	127.1	-0
Services	57.891	185.7	186.3	2
Rent of shelter (4).....	29.912	191.5	192.3	3
Transportation services	6.963	188.4	188.8	0
Other services	10.768	219.5	220.5	3
Special indexes				
All items less food	84.578	164.2	164.5	1
All items less shelter	69.717	157.8	158.1	1

All items less medical care	94.247	143.4	143.4	
Commodities less food	127.888	131.7	131.4	
Nondurables less food	18.331	134.2	133.4	
Nondurables less food and apparel	10.300	139.7	141.1	
Nondurables	30.753	147.5	147.9	1
Services less rent of shelter (4).....	27.979	192.8	193.3	1
Services less medical care services	53.429	179.8	180.3	2
Energy	6.294	98.9	98.1	-7
All items less energy	93.706	172.3	172.9	2
All items less food and energy	78.284	174.8	175.3	2
Commodities less food and energy commodities	23.967	143.9	143.7	1
Energy commodities	2.720	86.3	85.2	-12
Services less energy services	54.316	192.5	193.2	2
Purchasing power of the consumer dollar	-	\$.610	\$.608	
Purchasing power of the consumer dollar - old base	-	\$.204	\$.203	

1 Not seasonally adjusted.

2 Indexes on a December 1997=100 base.

3 This index series was calculated using a Laspeyres estimator. All other items geometric means estimator in January, 1999.

4 Indexes on a December 1982=100 base.

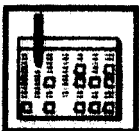
5 Indexes on a December 1988=100 base.

- Data not available.

NOTE: Index applies to a month as a whole, not to any specific date.



[Table of Contents](#)



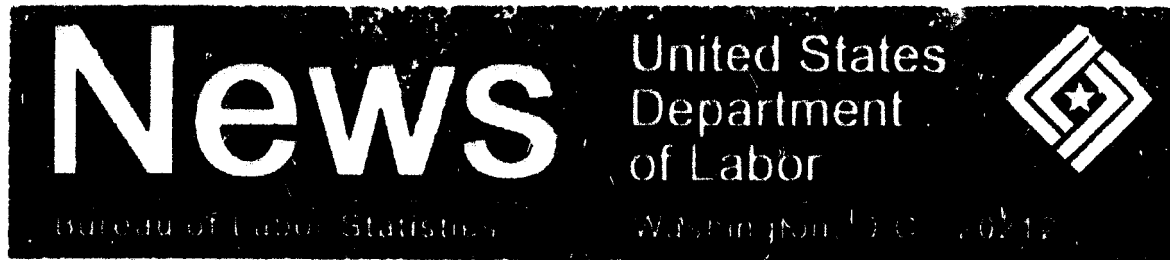
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Bureau of Labor Statistics

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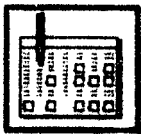
URL: [/news.release/cpi.t01.htm](http://news.release/cpi.t01.htm)



Consumer Price Index

Table of Contents

- [Consumer Price Index Summary](#)
- [Table 1. Consumer Price Index for All Urban Consumers \(CPI-U\): U. S. City Average, by expenditure category and commodity and service group](#)
- [Table 2. Consumer Price Index for All Urban Consumers \(CPI-U\): Seasonally adjusted U. S. City Average, by expenditure category and commodity and service group](#)
- [Table 3. Consumer Price Index for All Urban Consumers \(CPI-U\): Selected areas, all items index](#)
- [Table 4. Consumer Price Index for Urban Wage Earners and Clerical Workers \(CPI-W\): U. S. City Average, by expenditure category and commodity and service group](#)
- [Table 5. Consumer Price Index for Urban Wage Earners and Clerical Workers \(CPI-W\): Seasonally adjusted U. S. City Average, by expenditure category and commodity and service group](#)
- [Table 6. Consumer Price Index for Urban Wage Earners and Clerical Workers \(CPI-W\): Selected areas, all items index](#)
- [Table 1\(LAS\). Consumer Price Index for All Urban Consumers \(CPI-U-XL\): U.S. city average, by expenditure category and commodity and service group using a Laspeyres Estimator](#)
- [Table 2\(LAS\). Consumer Price Index for Urban Wage Earners and Clerical Workers \(CPI-W-XL\): U.S. city average, by expenditure category and commodity and service group using a Laspeyres Estimator](#)
- [Table 3\(LAS\). Consumer Price Index for All Urban Consumers \(CPI-U-XL\): Selected areas, all items index using a Laspeyres Estimator](#)
- [Table 4\(LAS\). Consumer Price Index for Urban Wage Earners and Clerical Workers \(CPI-W-XL\): Selected areas, all items index using a Laspeyres Estimator](#)
- [Text version of entire news release](#)



[Consumer Price Indexes](#)



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Bureau of Labor Statistics

gibson_s@bls.gov

Last modified: Friday, February 19 1999

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2-19-1999

U.S. Department Of Labor
Bureau of Labor Statistics
Washington, D.C. 20212

Consumer Price Index

All Urban Consumers - (CPI-U)

U.S. city average

All items

1982-84=100

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.
1913	9.8	9.8	9.8	9.8	9.7	9.8	9.9	9.9	10.0	10.0	10.1
1914	10.0	9.9	9.9	9.8	9.9	9.9	10.0	10.2	10.2	10.1	10.2
1915	10.1	10.0	9.9	10.0	10.1	10.1	10.1	10.1	10.1	10.2	10.3
1916	10.4	10.4	10.5	10.6	10.7	10.8	10.8	10.9	11.1	11.3	11.5
1917	11.7	12.0	12.0	12.6	12.8	13.0	12.8	13.0	13.3	13.5	13.5
1918	14.0	14.1	14.0	14.2	14.5	14.7	15.1	15.4	15.7	16.0	16.3
1919	16.5	16.2	16.4	16.7	16.9	16.9	17.4	17.7	17.8	18.1	18.5
1920	19.3	19.5	19.7	20.3	20.6	20.9	20.8	20.3	20.0	19.9	19.8
1921	19.0	18.4	18.3	18.1	17.7	17.6	17.7	17.7	17.5	17.5	17.4
1922	16.9	16.9	16.7	16.7	16.7	16.7	16.8	16.6	16.6	16.7	16.9
1923	16.8	16.8	16.8	16.9	16.9	17.0	17.2	17.1	17.2	17.3	17.3
1924	17.3	17.2	17.1	17.0	17.0	17.0	17.1	17.0	17.1	17.1	17.2
1925	17.3	17.2	17.3	17.2	17.3	17.5	17.7	17.7	17.7	17.7	18.0
1926	17.9	17.9	17.8	17.9	17.8	17.7	17.5	17.4	17.5	17.6	17.7
1927	17.5	17.4	17.3	17.3	17.4	17.6	17.3	17.2	17.3	17.4	17.3
1928	17.3	17.1	17.1	17.1	17.2	17.1	17.1	17.1	17.3	17.2	17.2
1929	17.1	17.1	17.0	16.9	17.0	17.1	17.3	17.3	17.3	17.3	17.3
1930	17.1	17.0	16.9	17.0	16.9	16.8	16.6	16.5	16.6	16.5	16.4
1931	15.9	15.7	15.6	15.5	15.3	15.1	15.1	15.1	15.0	14.9	14.7
1932	14.3	14.1	14.0	13.9	13.7	13.6	13.6	13.5	13.4	13.3	13.2
1933	12.9	12.7	12.7	12.6	12.6	12.7	13.1	13.2	13.2	13.2	13.2
1934	13.2	13.3	13.3	13.3	13.3	13.4	13.4	13.4	13.6	13.5	13.5
1935	13.6	13.7	13.7	13.8	13.8	13.7	13.7	13.7	13.7	13.7	13.8
1936	13.8	13.8	13.7	13.7	13.7	13.8	13.9	14.0	14.0	14.0	14.0
1937	14.1	14.1	14.2	14.3	14.4	14.4	14.5	14.5	14.6	14.6	14.5
1938	14.2	14.1	14.1	14.2	14.1	14.1	14.1	14.1	14.1	14.0	14.0
1939	14.0	13.9	13.9	13.8	13.8	13.8	13.8	13.8	14.1	14.0	14.0
1940	13.9	14.0	14.0	14.0	14.0	14.1	14.0	14.0	14.0	14.0	14.0
1941	14.1	14.1	14.2	14.3	14.4	14.7	14.7	14.9	15.1	15.3	15.4
1942	15.7	15.8	16.0	16.1	16.3	16.3	16.4	16.5	16.5	16.7	16.8
1943	16.9	16.9	17.2	17.4	17.5	17.5	17.4	17.3	17.4	17.4	17.4
1944	17.4	17.4	17.4	17.5	17.5	17.6	17.7	17.7	17.7	17.7	17.7
1945	17.8	17.8	17.8	17.8	17.9	18.1	18.1	18.1	18.1	18.1	18.1
1946	18.2	18.1	18.3	18.4	18.5	18.7	19.8	20.2	20.4	20.8	21.2

1947	21.5	21.5	21.9	21.9	21.9	22.1	22.2	22.5	22.7	22.7	22.7
1948	23.7	23.5	23.4	23.3	23.9	24.1	24.4	24.5	24.5	24.4	24.4
1949	24.0	23.8	23.8	23.9	23.8	23.9	23.7	23.5	23.9	23.7	23.7
1950	23.5	23.5	23.6	23.6	23.7	23.5	24.1	24.3	24.4	24.6	24.7
1951	25.4	25.7	25.8	25.8	25.9	25.9	25.9	25.9	26.1	26.2	26.4
1952	26.5	26.3	26.3	26.4	26.4	26.5	26.7	26.7	26.7	26.7	26.7
1953	26.6	26.5	26.6	26.6	26.7	26.8	26.8	26.9	26.9	27.0	26.9
1954	26.9	26.9	26.9	26.8	26.9	26.9	26.9	26.9	26.8	26.8	26.8
1955	26.7	26.7	26.7	26.7	26.7	26.7	26.8	26.8	26.9	26.9	26.9
1956	26.8	26.8	26.8	26.9	27.0	27.2	27.4	27.3	27.4	27.5	27.5
1957	27.6	27.7	27.8	27.9	28.0	28.1	28.3	28.3	28.3	28.3	28.4
1958	28.6	28.6	28.8	28.9	28.9	28.9	29.0	28.9	28.9	28.9	29.0
1959	29.0	28.9	28.9	29.0	29.0	29.1	29.2	29.2	29.3	29.4	29.4
1960	29.3	29.4	29.4	29.5	29.5	29.6	29.6	29.6	29.6	29.8	29.8
1961	29.8	29.8	29.8	29.8	29.8	29.8	30.0	29.9	30.0	30.0	30.0
1962	30.0	30.1	30.1	30.2	30.2	30.2	30.3	30.3	30.4	30.4	30.4
1963	30.4	30.4	30.5	30.5	30.5	30.6	30.7	30.7	30.7	30.8	30.8
1964	30.9	30.9	30.9	30.9	30.9	31.0	31.1	31.0	31.1	31.1	31.2
1965	31.2	31.2	31.3	31.4	31.4	31.6	31.6	31.6	31.6	31.7	31.7
1966	31.8	32.0	32.1	32.3	32.3	32.4	32.5	32.7	32.7	32.9	32.9
1967	32.9	32.9	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8
1968	34.1	34.2	34.3	34.4	34.5	34.7	34.9	35.0	35.1	35.3	35.4
1969	35.6	35.8	36.1	36.3	36.4	36.6	36.8	37.0	37.1	37.3	37.5
1970	37.8	38.0	38.2	38.5	38.6	38.8	39.0	39.0	39.2	39.4	39.6
1971	39.8	39.9	40.0	40.1	40.3	40.6	40.7	40.8	40.8	40.9	40.9
1972	41.1	41.3	41.4	41.5	41.6	41.7	41.9	42.0	42.1	42.3	42.4
1973	42.6	42.9	43.3	43.6	43.9	44.2	44.3	45.1	45.2	45.6	45.9
1974	46.6	47.2	47.8	48.0	48.6	49.0	49.4	50.0	50.6	51.1	51.5
1975	52.1	52.5	52.7	52.9	53.2	53.6	54.2	54.3	54.6	54.9	55.3
1976	55.6	55.8	55.9	56.1	56.5	56.8	57.1	57.4	57.6	57.9	58.0
1977	58.5	59.1	59.5	60.0	60.3	60.7	61.0	61.2	61.4	61.6	61.9
1978	62.5	62.9	63.4	63.9	64.5	65.2	65.7	66.0	66.5	67.1	67.4
1979	68.3	69.1	69.8	70.6	71.5	72.3	73.1	73.8	74.6	75.2	75.9
1980	77.8	78.9	80.1	81.0	81.8	82.7	82.7	83.3	84.0	84.8	85.5
1981	87.0	87.9	88.5	89.1	89.8	90.6	91.6	92.3	93.2	93.4	93.7
1982	94.3	94.6	94.5	94.9	95.8	97.0	97.5	97.7	97.9	98.2	98.0
1983	97.8	97.9	97.9	98.6	99.2	99.5	99.9	100.2	100.7	101.0	101.2
1984	101.9	102.4	102.6	103.1	103.4	103.7	104.1	104.5	105.0	105.3	105.3
1985	105.5	106.0	106.4	106.9	107.3	107.6	107.8	108.0	108.3	108.7	109.0
1986	109.6	109.3	108.8	108.6	108.9	109.5	109.5	109.7	110.2	110.3	110.4
1987	111.2	111.6	112.1	112.7	113.1	113.5	113.8	114.4	115.0	115.3	115.4
1988	115.7	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3
1989	121.1	121.6	122.3	123.1	123.8	124.1	124.4	124.6	125.0	125.6	125.9
1990	127.4	128.0	128.7	128.9	129.2	129.9	130.4	131.6	132.7	133.5	133.8
1991	134.6	134.8	135.0	135.2	135.6	136.0	136.2	136.6	137.2	137.4	137.8
1992	138.1	138.6	139.3	139.5	139.7	140.2	140.5	140.9	141.3	141.8	142.0
1993	142.6	143.1	143.6	144.0	144.2	144.4	144.4	144.8	145.1	145.7	145.8
1994	146.2	146.7	147.2	147.4	147.5	148.0	148.4	149.0	149.4	149.5	149.7
1995	150.3	150.9	151.4	151.9	152.2	152.5	152.5	152.9	153.2	153.7	153.6
1996	154.4	154.9	155.7	156.3	156.6	156.7	157.0	157.3	157.8	158.3	158.6
1997	159.1	159.6	160.0	160.2	160.1	160.3	160.5	160.8	161.2	161.6	161.5
1998	161.6	161.9	162.2	162.5	162.8	163.0	163.2	163.4	163.6	164.0	164.0
1999	164.3										