UNITED NUCLEAR CORPORATION

CHURCH ROCK

MILL DECOMMISSIONING REPORT

LICENSE NO SUA-1475

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APRIL 1, 1993

VOLUME I

UNITED NUCLEAR CORPORATION

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April 13, 1993

Mr. Ramon E. Hall, Director
U.S. Nuclear Regulatory Commission
Uranium Recovery Field Office
Region IV
P.O. Box 25325

Re: Completion of Mill Decommissioning and
Decommissioning Activities Report

United Nuclear Corporation has completed the mill decommissioning per our approved plan dated December 29, 1988, as revised by submittal dated April 10, 1990 in accordance with Condition 26 of Material License SUA-1475. Submitted here with is the Mill Decommissioning Report also required by Lincense Condition 26. This report discusses the demolition, disposal activities, and the radiation safety program utilized during the mill decommissioning. The report also includes health physics monitoring data, occupational exposures, bioassay results, and employee training and instruction records.

Enclosed are two copies of the above-mentioned report for your review.

If you have any questions, please advise.

Sincerely,

Edward M. Morales
General Manager
Radiation Safety Officer

EMM:M

Enclosures

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1.0 Introduction

The Church Rock mill owned and operated by United Nuclear Corporation is located approximately 17 miles northeast of Gallup, New Mexico, on Section 2, Township 16 North, Range 16 West, McKinley County. The mill was licensed to operate by the State of New Mexico on May, 1977. It operated until May, 1982, when it was placed on standby due to the economic condition of the uranium industry.

The plant was shut down systematically so that all ore and process solutions were completely processed through the plant before shutdown. The circuits were flushed out with water. The wooden tanks were left full of water to keep them from drying and falling apart. The exception was #6 Thickner; it was left with tailings slurry on the bottom and remainder full of water. This shutdown method made the mill decommissioning and equipment decontamination much easer.

United Nuclear determined in late 1984 that the Church Rock facility would be closed permanently. Since that time, the company has actively pursued the salvage and sale of the mill equipment and materials. A list of sold and stored decontaminated equipment was submitted in our 1988 Mill Decommissioning Plan. Information on equipment sold and stored since the 1988 list is included in this report in Appendix I.

2.0 Mill Decommissioning Activity Summary

The mill decommissioning was done in two phases. In 1991 the above-ground mill facilities and associated equipment were demolished and hauled to Borrow Pit #2 and disposed of as per our Reclamation Plan. The solvent extraction circuit was an exception due to the fact the circuit was made out of concrete. All concrete demolition was scheduled to take place in 1992.

In 1992, with the exception of concrete buried in place as explained further in this report, all cement floors, sumps, foundations, solvent extraction circuit and all underground process piping was demolished, hauled to Borrow Pit #2 and disposed of as per our Reclamation Plan. The 1992 Plan also included the excavation of contaminated soils from the mill process area, ore pad and catch basins.

3.0 1991 Mill Decommissioning Activities

3.1 Leach Circuit Demolition

The leach circuit was not a housed circuit. It did contain a closed breezeway over the top of the leach tanks. As mentioned before, tanks and breezeway were washed during our 1982 shutdown. The leach tanks, however, were flat bottom tanks which made it hard to completely clean the floors. These tanks did retain some leached ore residue.

The breezeway was demolished, loaded and hauled to Borrow Pit #2. The leach tanks were kept wet during demolition and loading. They were hauled to the south end of Borrow Pit #2 where they were unloaded in the area with the rest of the wood materials. Photographs showing the demolition, loading and Borrow Pit disposal area can be seen in Appendix A, Leach Circuit Demolition and Borrow Pit disposal.

3.2 CCD Tank and Piping Demolition

As was mentioned in our Decommissioning Plan, all tanks were cleaned during the 1982 shutdown with the exception being #6 Thickner. Most of the wood stave tanks were taken down and stored prior to 1988. Some of these staves have been planed to remove the contamination, and released for unrestricted use. Information on the procedures for planing the staves can be seen in the Radiation Work Permit section.

CCD wooden stave tanks which were demolished in 1991 were #6 Thickner, raffinate tank, overflow tank, preg tank, and back wash tank. The tanks were kept wet during demolition. The staves were loaded on dump trucks and hauled to the south end of Borrow Pit #2 where they were disposed of. The ore tailings material which had been left in #6 Thickner floor was kept wet while loading into the dump truck. The ore tailings material was disposed of in Borrow Pit #2.

The metal floc chemical tanks from the CCD circuit had been taken out and sold prior to 1988. The metal tanks remaining for demolition were seven overflow sump tanks. These tanks were demolished along with the piping from inside the CCD buildings. The tanks and piping were cut up, flattened and disposed of in Borrow Pit #2. Photographs showing some of the demolition can bee seen in Appendix A, CCD Equipment Demolition.

3.3 CCD Building Demolition

As mentioned in our decommissioning plan, the CCD Building walls and floors had all been washed during the 1982 shutdown. This building housed a wet process circuit and no dry materials were produced to cause any contaminated dust problems on the walls and insulation. As a good health protection practice, the building was kept wet during demolition. The sequence used in the demolition of this building was as follows: Remove the piping and other materials which could be reached by the demolition equipment. Cut the structural steel and collapse that portion of the building. The collapsed building portion would then get cut up and loaded into trucks for disposal in Borrow Pit #2.

3.4 Percipitation Equipment Demolition

Prior to shutting down, all yellow cake slurries in the precip circuit were processed through the dryer. The dryer, yellow cake bin, process tanks, and related equipment were then acid washed and rinsed with water and put on standby.

In 1986 in order to remove other equipment from the precipitation circuit the yellow cake dryer had to be move out of the way. The yellow cake dryer was moved outside the precip building and placed in front of the precip's north door. In late 1989, we noticed the dryer was showing signs of yellow cake leakage from insulation between the dryer walls. On March 22, 1990, the yellow cake dryer was wrapped with vent bag material and a building constructed around it to keep any yellow cake leakage contained.

In 1991 the yellow cake dryer was hauled out to its burial place in Borrow Pit #2. Procedure used in handling and disposal was as follows. Vent bag material was set on the floor of a trailer. The building containing the yellow cake dryer was taken apart, the dryer was then loaded on the trailer and wrapped by taking the vent bag material up to the top of the dryer and tying it up. The dryer was taken out to Borrow Pit #2 where it was unloaded. The dryer was unwrapped and wetted down prior to starting and during demolition.

The yellow cake bin had been left in its operating place until the day it was loaded.

The bin had been cleaned as mentioned before during shutdown. The bin contained rusted scale which could possibly contain some residual yellow cake.

No special handling was imposed on the bin during transportation other than it being secured on the truck. The bin was wet down during demolition as a precaution and as a good health physics practice. The yellow cake primary thickner and the preg solution tank were made out of steel. These tanks and process piping were cut up, flattened and disposed of with other materials in Borrow Pit #2.

The precip tanks and the barren strip tanks were made out of wooden staves. The tanks had been cleaned during shutdown; they did show some yellow stains but no actual yellow cake dust. The precip tanks were taken out whole and loaded on a flat bed, secured and taken out to Borrow Pit #2.

The barren strip tanks were demolished on site, loaded on to dump trucks and hauled to the borrow pit. All wood materials were unloaded on the south side of Borrow Pit #2 where they were later burned and buried. Photographs showing the handling and demolition of the precipitation circuit equipment can be seen in Appendix A, Precipitation Equipment Demolition.

3.5 Precipitation Building Demolition

After the removal of process equipment from within the building, demolition was started. The building walls, ceilings and floors had all been cleaned during shut down as was mentioned in our Reclamation Plan. As a good health protection practice, the building was kept wet during demolition. The demolition took place by first peeling off the outer skin of the building, then cutting down the structural steel. The building material was cut up in pieces which would fit into a 30-foot dump truck. The dump trucks hauled the material out to Borrow Pit #2 where it was dumped and later laid out by special equipment to maintain a layer of 1.0 to 2.5 feet. Photographs showing the handling and demolition of this building can be seen in Appendix A, Precipitation Building Demolition.

3.6 Disposal of Wooden Staves in Borrow Pit #2.

The wooden staves form all the wooden process tanks demolished in 1991 were disposed of by incineration in Boorw Pit #2. The ashes were buried in the south area of the borrow pit where incineration took place. Photographs showing the area and incineration can be seen in Appendix A, Wooden Stave Disposal. The burning took place on non-windy days and only few staves at a time were burned. Data Summary on air samples taking during the buring is reported on page 21. Ref: Letter of November 13, 1991, UNC reply to Notice of Violation.

3.7 Borrow Pit #2 Burial Disposal and Cover

Borrow Pit #2 was used for mill tailings solutionstorage during the mill operation. After the shutdown in 1982, neutralization of the tailings solution in the borrow pit was started and was completed July, 1983. The borrow pit was also used for storage of the water fromt he remediation pumpback system until the evaporation ponds were completed early 1989. The borrow pit was dry by end of April, 1989. The borrow pit had to be used for temporary water storage in early 1991. The pond was pumped dry by May 30, 1991. By July 17, 1991, the contractor started putting a base on the bottom of the borrow pit in order to support equipment placing the decommissioning materials in the borrow pit.

The material placed in the borrow pit in 1991 was structural steel, siding from the demolished buildings, process equipment, piping, tanks, and wooden staves. The material was covered with a minimum of 1 foot compacted soil cover. Photographs showing the borrow pit prior to any disposal or base fill through the completion of the 1991 disposal and compacted soil cover can be seen in Appendix A, Borrow Pit Disposal and Cover.

4.0 Mill Decommissioning Activities 1992

4.1 Decontamination of CCD Basement, Tunnels and Thickner Floors

The decontamination procedure used was wet sandblasting. The wet sandblasting method did a good job of decontamination as well as meeting the ALARA concept in that it eliminates any dust problems. The basement walls, tunnel walls, ceilings and thickner floors were completed first, then basement and tunnel floors were washed off removing all the sand material and proceeded to sandblast the floors. Once the stains were removed from the concrete, the contamination was removed. Reg Guide 8.30 Table 1 was the criteria used on the concrete to be buried in place. The sampling Procedures and the Data Summary on all buried concrete is reported in Pages 12 thru 15. Photographs showing the before and after sandblasting can be seen in Appendix B, Pages 3, 4, and 9.

4.2 Bulkheading CCD tunnels and Emergency Drain

The CCD basement tunnel and drain openings were buldkheaded by bolting .38 inch reinforced steel plate over the openings on the basement walls. Photographs showing the bulkheads can be seen in Appendix B, Page 6.

4.3 CCD Basement Roof Demolition

Clean soil was hauled from the borrow area by truck and dumped in the basement. A small dozer/compactor piece of equipment would spread and compact the soil. The sequence continued until the basement lacked about two feet of being full. Photographs showing filling and compacting can be seen In Appendix B, Page 6.

4.4 CCD Basement Roof Demolition

The plan was to fill the basement as full as possible, then demolish the basement roof. This way the concrete material would not go 22 feet to the bottom of the basement. Instead, it fell on top of the compacted fill which made it easier to remove and reclean the surface of the compacted soil. Photographs showing the roof demolition can be seen in Appendix B, Page 7.

4.5 Demolition of Thickner Floor Stem Wall

The stem wall was an actual cement wall which surrounded the thickner floor about 5 feet high, one foot thick, with about three feet being below ground. The wall was excavated and loaded into trucks.

Excavation of soils in the stem wall area was done to assure no soil contamination. Photographs showing the demolition of the stem wall can be seen in Appendix B, Page 9.

4.6 Bulkheading and Filling of the CCD Thickner Floors

The CCD Thickner Floor discharge cone was bulkheaded with .38 inch reinforced steel plate. The thickner floor was then filled with clean soil and compacted. Photographs showing the bulkhead and covering of the thickner floors can be seen in Appendix B, Page 10.

4.7 Demolition and Decontamination of Grizzly and the Grizzly Tunnel

This equipment was made out of concrete and was below ground level. The grizzly tunnel came at incline from the depth of 35 feet. About 20 feet of the tunnel came out of the ground. The above-ground portion was demolished so that the tunnel roof was a minimum of 1 foot below ground level. The grizzly itself had a steel sleeve which was pulled out and demolished. The concrete walls, ceiling and floors were decontaminated by wet sandblasting.

4.8 Filling and Compacting the Grizzly and Grizzly Tunnel

Both areas were filled with clean dirt and compacted. The grizzly was filled up to the tunnel opening, then both were filled and compacted at the same time. The grizzly was filled from the top and the tunnel from the incline. Photographs showing the filling and compacting can be seen in Appendix B, Pages 23 and 24.

4.9 Excavation of Foundation, Floors, and Sumps from the Following Process Areas: Leach, Grinding, Precipitation, Boiler, Clair Floc Tank, and Raffinate Tank.

All floors in these process areas had sumps and drains below ground level except the two tank areas. Excavation in those areas required from four to five feet in depth excavation. All concrete and contaminated soils were excavated and hauled to Borrow Pit #2. The procedure used in the decontamination of soil was to excavate and remove the soil until ur/hr gamma reading was 16 ur/hr or less. As per our correlation graph 16 ur/hr gamma is equivalent to 6 pci/gm Ra 226. The cleanup criteria for site is 5 pci/gm above background being 1.0 pci/gm Ra 226. The Radiological Data Summary for all soil surface is reported on Pages 16 thru 18. Photographs showing the excavation can be seen in Appendix B, Pages 17 and 18.

5.0 Paving and SX Catch Basin Excavation

The excavation of the process area paving and the catch basin was performed by using a dozer and front end loader. The catch basin was excavated until contaminated soils were removed. The excavated materials were loaded on dump trucks and hauled to Borrow Pit #2 where they were disposed of. Photographs showing the before and after excavation can be seen in Appendix B, Pages 15 and 16.

5.1 Excavation of the Only On-site Process Underground Piping

The process piping going from the SX Circuit to the emergency catch basin and to the raffinate tank were excavated with a backhoe. Excavation of soils was done in the buried pipe area to assure no contaminated soils were left in the area. Photograph showing excavation can be seen in Appendix B, Page 15.

5.2 Demolition of Solvent Extraction Circuit (SX)

The solvent extraction and strip circuit compartments were constructed out of concrete with steel plate tops. The solvent extraction scrub compartment was entirely made out of steel plate. The piping for the SX circuit was all internal or overhead with the exception as mentioned in 5.1 of this report.

The scrub compartment was decommissioned by using a cutting torch. The purpose of using the cutting torch on this piece of equipment was that the steel plate was used as bulkhead material for the CCD tunnels and thickner cone openings, but only after it met releaseable standards. The scrub compartment contained a sump which needed special handling. The sump was a small rectangular tank made out of steel which contained some yellow cake residual. The sump was removed and the opening was covered with a tarp. The area was then roped off until the sump was loaded and hauled out to the borrow pit.

Some of the steel top material from the rest of the SX circuit was also used for bulkheads and some was put in storage, again only after it met releasable standards. The rest of the steel material was cut up and hauled to Borrow Pit #2.

The SX circuit was surrounded by an emergency catch impoundment. This impoundment was excavated and hauled out to the borrow pit. The rest of the SX circuit concrete walls and floors were demolished and hauled to the borrow pit. The SX circuit area soils were excavated

for the purpose of removing contaminated soils. Photographs showing the SX circuit demolition can be seen in Appendix B, Pages 11 through 14.

5.3 Ore Pad Excavation

The ore pad was located on the east side of the process area. The ore pad was not used for process functions other than ore storage. The ore pad had been contaminated by the ore which had been stored during the years of operation.

The ore pad was excavated from 2 to 4 feet in order to remove the contamination. The excavated material was hauled to the borrow pit where it was used as cover for the mill decommissioning materials disposed of in the borrow pit. Photographs showing excavation and before and after pictures of the ore pad can be seen in Appendix B, Pages 19 through 21.

5.4 Catch Basin Excavation

The catch basins were situated east of the mill site across State Highway 566 on the tailings side of Section 2. The north basin (#1) which was used to hold runoff from the mill site had to be excavated an average of 3 feet in order to be decontaminated. The south catch basin (#2) which was used as an emergency catch basin for CCD spills had to be excavated an average of 4 feet to remove the contaminated soils. The excavated soils from both basins were used as cover in Borrow Pit #2 for the disposed mill materials. Photographs showing the before and after excavation can be seen in Appendix B, Pages 19 and 20.

5.5 Borrow Pit #2 Disposal, Burial and Cover

The material disposed of in Borrow Pit #2 in 1992 was mostly concrete and a small amount of structural steel, piping and wooden staves. The soil used for cover was mainly excavated soils from the mill site, ore pad and catch basins. The average thickness of concrete placed in the borrow pit was about 3 feet; there was some concrete which measured 5 feet in size. Photographs showing the 1992 before and after, the spreading of the concrete, and the disposed material can be seen in Appendix B, Pages 27 through 30.

5.6 Removal of Sewer Plant and Excavation of Sewer Plant Area

The sewer system at United Nuclear's Church Rock site was as follows: The Chem. and Met. Laboratories drained to the CCD sump which would then put it back into the CCD thickner circuit. The car wash sump also drained to the CCD sump. The soil material from the car wash sump was hauled to the ore pad to be processed with the ore. The showers and laboratories in the process areas all drained to sumps in the circuits. Human waste and the shower discharge from the main change hosue were the only items received by the sewer plant. The sewer plant discharge went to the CCD tailing sump which was then discharging to tailings along with the tailings from the process. The sewer plant was shut down and emptied out in 1985. The sewer system was changed at that time to a septic tank system.

Before removal of the sewer plant it was flushed out and surveyed. The plant was pulled and put in storage. This area was then excavated and graded. The contaminated soils were disposed of in Borrow Pit #2. Photographs showing the sewer plant area excavation can be seen in Appendix B, Pages 25 and 26.

5.7 Removal of East Perimeter Fence and Excavation of the Contaminated Soils from the Area

A temporary fence was installed 30 feet inside the restricted area so that the east perimeter fence could be removed to complete the clean-up of contaminated soils. The perimeter fence was removed, the area was excavated, and the contaminated soils were hauled to Borrow Pit #2. The perimeter fence was re-installed and the temporary fence taken down. Photographs showing the fencing and excavation can be seen in Appendix B, Page 26.

6.0 Disposal Data 1991 and 1992

6.1 1991 Material Disposed in the Borrow Pit #2

1991 material disposed in the borrow pit was structural steel, siding from demolished buildings, process equipment, piping, tanks and wooden staves. Before disposal commenced, a 3-foot lift of soil was placed on the bottom of Borrow Pit #2. The disposed material was placed in 2.5 feet maximum lifts using special equipment to place it. The material was then covered with 2 feet of soil which was worked into the disposed material. More dirt was then placed over the disposal area and compacted.

6.1.1 1991 Summary of Total Feet Placed in Borrow Pit #2 over 4 acres.

- 3 feet of soil for base
- 2.5 feet of disposed material
- 1.5 feet of soil for cover
- 7 total feet placed in Borrow Pit #2

Detailed material disposal survey included in Appendix C, Figure 1 and Table 1.

6.2 1992 Material Disposed in Borrow Pit #2

1992 material disposed in the borrow pit was mostly concrete from process area foundations, sumps, floor and the SX circuit. Other materials which were disposed of were structural steel, piping, and wooden staves. The average thickness of concrete placed was about 3 feet; there was some concrete that measured 5 feet in size. The other material placed averaged about 2 feet in thickness. The material was then spread out with a dozer, then soil was placed over it, and worked into the concrete and other material layers. More dirt was then placed over the disposal area and compacted.

6.2.1 1992 Summary of Total Feet Placed in Borrow Pit #2 over 5 acres

- 3.5 average feet of concrete and other disposed material
- 4.0 feet of soil cover
- 7.5 total feet placed in Borrow Pit #2

Detailed material disposal survey included in Appendix C, Figure 2 and Table 2.

7.0 Concrete Material Buried in Place

As per Section 4.9 of our approved Mill Decommissioning Plan and submittal of June 8, 1992, the listed concrete materials were buried in place.

- CCD basement walls and floor
- CCD thickner floors
- CCD tunnel floors, walls and ceilings
- Grizzly tunnel and basement
- Electrical vault

7.1 Concrete and Soil Radiological Sampling Procedure

- The 125-foot diameter thickner floors were divided into four (4) equal pie shapes. Each pie-shape was cored at about mid-point.
- The basement floor was divided into four (4) quarters. A core was done on each quarter; also, two in the sump area and one in the north section.
- The tunnel floors were cored in two (2) places--one in the cone and underflow pump area and the other at mid-point of tunnel.
- The grizzly tunnel area was cored at mid-point.
- The cement cores were surveyed for radiation and the soil below the cement core was sampled and sent to Energy Labs for Radium 226 and Uranium analysis. When possible, the coring was done on a cement seam or crack. The contractor's coring reports, the core radiation surveys, soil sample analysis, and the concrete surface radiological survey data are enclosed in Appendix D.
- After sandblasting, the remaining concrete surfaces were surveyed on a 10-foot grid pattern for Gamma and Alpha Radiation.

7.2 Summary of Concrete Radiological Data

The summary shows the highest data results recorded which are always less than allowable. Only the side and bottom Alpha survey data on the concrete cores were used in summary. The top surface was still contaminated when the coring was performed.

- 47 core samples surveyed — Alpha 828 dpm/100 cm^2 Gamma 12 ur/l
- 47 soil samples assayed — Ra226 1.3 pci/gm *U nat 29 pci/gm

*There were six soil samples with readings of 17 through 29 pic/gm u nat. the rest were less than 11 pci/gm u nat.

	Survey Points	Fixed Alpha dpm / 100 cm^2	Gamma ur/hr
° CCD Basement	87		
Walls	48	355	16
Floor	35	310	14
Pillar	4	177	12
Openings on drain pipes	12	835	15
° CCD Thickner #1	175		
Tunnel walls	20	753.9	12
Tunnel floor	10	931	12
Tunnel ceiling	10	443	12
Cone tunnel wall	7	443	12
Cone tunnel floor	4	886	12
Cone tunnel ceiling	4	532	12
Thickner floor	120	975	9
Thickner floor rim		221	9
° CCD Thickner #2	179		
Tunnel walls	22	798	12
Tunnel floor	11	886	12
Tunnel ceiling	11	953	12
Cone tunnel wall	7	133	13
Cone tunnel floor	4	155	13
Cone tunnel ceiling	4	103	13
Thickner floor	120	886	9
Thickner floor rim		221	9
° CCD Thickner #3	175		
Tunnel walls	20	938	14
Tunnel floor	10	820	13
Tunnel ceiling	10	997	12
Cone tunnel wall	7	842	12
Cone tunnel floor	4	731	12
Cone tunnel ceiling	4	578	12
Thickner floor	120	909	7
Thickner floor rim		221	7

	Survey Points	Fixed Alpha dpm	Gamma ur/hr
° CCD Thickner #4	175	100 cm²	
Tunnel walls	20	931	12
Tunnel floor	10	990	12
Tunnel ceiling	10	510	12
Cone tunnel walls	7	487	13
Cone tunnel floor	4	960	13
Cone tunnel ceiling	4	488	13
Thickner floor	120	886	7
Thickner floor rim		369	7
° CCD Thickner #5	179		
Tunnel walls	22	975	13
Tunnel floor	11	997	13
Tunnel ceiling	11	990	13
Cone tunnel walls	7	244	13
Cone tunnel floor	4	266	13
Cone tunnel ceiling	4	376	13
Thickner floor	120	990	7
Thickner floor rim		369	7
° CCD Thickner #6			
Tunnel walls	20	931	15
Tunnel floor	10	931	15
Tunnel ceiling	10	577	15
Cone tunnel walls	7	709	18
Cone tunnel floor	4	487	18
Cone tunnel ceiling	4	576	18
Thickner floor	120	960	8
Thickner floor rim		369	8
° Grizzly Basement	36		
Basement walls	30	886	16
Basement floor	6	569	16
Basement pipe inlet	1	221	18
Tunnel walls	26	753	15
Tunnel floor	13	975	15
Tunnel ceiling	13	222	15

	Survey Points	Alpha dpm / 100 cm²	Gamma ur/hr
° Electrical Vault			
Walls	4	133	10
Floor	1	110	10

Detailed Concrete Radiological Data is enclosed in Appendix D.

8.0 Radiological Survey on Process Area Soil Surface After Excavation

A reading of 16 ur/hr shielded gamma is equal to 6.0 pci/gm Ra226.

All gamma surveys were performed on a 10-meter grid system using a Ludlum Model 19 or 12S with a shield. The instrument was function checked prior to daily use.

8.1 Ore Pad. 246 gamma survey points and 43 soil samples.

4 survey points with 15 ur/hr 242 survey points below 15 ur/hr

5 soil samples with gamma spec 7.2 through 21.1 pci/gm Ra226, and 38 survey points at < 5.7 pci/gm.

3 soil samples with Chemical Ra226 at 6.0 to 7.5 pci/gm and 7 soil samples at < 2.4 pci/gm.

8.2 Grizzly. 14 gamma survey points and 1 soil sample.

2 survey points at 13 ur/hr 12 survey points below 13 ur/hr.

1 soil sample with gamma spec 4.1 pci/gm Ra226.

8.3 Precipitation. 28 gamma survey points and 1 soil sample.

1 survey point at 13 ur/hr 27 survey points below 13 ur/hr.

1 soil sample with gamma spec 2.1 pci/gm Ra226.

8.4 Precipitation Area Drainage Pond. 4 gamma survey points.

2 survey points at 14 ur/hr 2 survey points below 14 ur/hr.

8.5 Solvent Extraction (SX) 43 gamma survey points and 3 soil samples.

1 survey point at 11 ur/hr 42 survey points below 11 ur/hr.

1 soil sample with gamma spec 3.7 pci/gm Ra226 and 2 soil samples below 3.7 pci/gm.

8.6 Solvent Extraction Emergency Catch Basins. 13 gamma survey points and 1 soil sample.

2 survey points at 13 ur/hr and 11 survey points below 13 ur/hr.

1 soil sample with gamma spec 5.3 pci/gm Ra226.

8.7 CCD Pump House (CCD Building). 18 gamma survey points and 2 soil samples.

1 survey point at 12 ur/hr and 17 survey points below 12 ur/hr.

1 soil sample with gamma spec 7.1 pci/gm Ra226.

Same soil above with chemical at 5.5 pci/gm Ra226.

8.8 Inactive Basin. 18 gamma survey points.

1 survey point at 13 ur/hr 17 survey ponts below 13 ur/hr

8.9 Sewage Plant. 2 gamma survey points and 1 soil sample.

1 survey point at 15 ur/hr and 1 survey point below 15 ur/hr.

1 soil sample gamma spec 2.7 pci/gm Ra226.

9.0 Leach. 19 gamma survey points and 2 soil samples.

1 survey point at 14 ur/hr and 18 survey points at below 14 ur/hr.

1 soil sample gamma spec 4.2 pci/gm Ra226 and 1 soil sample below 4.2 pci/gm Ra226.

9.1 Clair Floc, Raffinate Tank Areas. 15 gamma survey points and 2 soil samples.

1 survey point at 10 ur/hr and 14 survey points below 10 ur/hr.

1 soil sample gamma spec 1.3 pci/gm Ra226 and one at 1.2 pci/gm Ra226.

9.2 Sodium Chlorate Storage (Chemical Building). 2 gamma survey points.

1 survey point at 13 ur/hr and 1 survey point below 13 ur/hr.

9.3 Thickner Floor Stem Wall Area.

The stem wall surrounding each thickner floor was removed and the area excavated to assure removal of any contaminated soils. Each thickner stem wall area was gamma surveyed at 12 survey points and 1 to 3 soil samples taken. Total survey points 72. Total soil samples 14.

1 survey point at 16 ur/hr and 71 survey points below 16 ur/hr.

1 soil sample gamma spec 4.0 pci/gm Ra226 and 13 soil samples below 4.0 pci/gm Ra226.

1 soil sample chemical Ra226 0.7 pci/gm and others below 0.7 pci/gm Ra226.

9.4 Solvent Extraction (SX) Impoundment. 18 gamma survey points and 4 soil samples.

The SX impoundment was made out of concrete and surrounded the SX circuit.

1 survey point at 15 ur/hr and 17 survey points below 15 ur/hr.

1 soil sample gamma spec 3.0 pci/gm Ra226 and 7 soil samples below 3.0 pci/gm Ra226.

9.5 Borrow Soil Area. 15 gamma survey points and 8 soil samples.

The soil from the borrow areas was used to fill all mill site excavated areas, CCD basement , CCD thickner floors and grizzly tunnel and basement.

1 survey point at 7 ur/hr and 14 survey points below 7ur/hr.

1 soil sample gamma spec 2.1 pci/gm Ra 226 and 7 soil samples below 2.1 pci/gm Ra226

1 soil sample chemical Ra226 0.4 pci/gm and 7 soil samples below 0.4 pci/gm Ra226

9.6 North, South Catch Basins (1 and 2)

These catch basins wre excavated to remove contaminated soils and then regraded.

° (1) North Catch Basin. 152 gamma survey points and 21 soil samples.

8 survey points at 15 ur/hr and 144 survey points below 15 ur/hr.

1 soil sample gamma spec 6.0 pci/gm and 20 soil samples below 5.5 pci/gm Ra226.

1 soil sample chemical 4.7 pci/gm Ra226 and 1 soil sample at 0.9 pci/gm Ra226.

° (2) South Catch Basin. 124 gamma surveypoints and 26 soil samples.

12 survey points at 15 ur/hr and 112 survey points below 15 ur/hr.

3 soil samples gamma spec 6.5, 6.7 and 7.0 pci/gm Ra226 and 23 soil samples at below 5.5 pci/gm Ra226

1 soil sample chemical 9.0 pci/gm Ra226 and 1 soil sample at 1.0 pci/gm Ra226

Radiological data for all soil surface areas is enclosed in Appendix E. All tables should be referenced to Figures A and B for actual survey and sampling points. The data in Figures C, D, and E do not require a reference table.

Radiological data for the correlation of gamma ur/hr vs. pci/gm Ra226 is enclosed as Appendix F. Our control for the site is 6.0 pci/gm Ra226. 16 ur/hr = 6.0 pci/gm Ra226.

10.0 Radiation Protection Program

10.1 Responsibility

The General Manager/Radiation Safety Officer was responsible for all activities on site. The General Manager has a wealth of technical experience as well as the educational background to have been able to take on such a responsibility. The General Manager was the mill superintendent and also supervised some of its construction. He has also been the RSO for United Nuclear since 1983 after he completed the shutdown of the IX plants and the yellowcake circuit. United Nuclear also has one full-time radiation safety technician who has at his disposal two other employees which have been trained in radiation protection, operation of monitoring equipment, soil sampling and recording of monitoring data. Documentation of training is listed in Appendix G.

10.2 Exposure Controls and Monitoring.

10.2.1 The Exposure Controls Used for the Decommissioning Activities for Both 1991 and 1992.

- Sign in and out roster for contractor's employees.
- Kept the area wet when necessary to control dusty conditions.
- Wore a dust mask or half mask respirator as required by the RWP.
- Washed hands and face prior to eating.
- Ate only in designated lunch areas.
- Took showers and changed clothes if required by the daily exit survey results or by the RWP.
- The decommissioning area was roped off and only authorized personnel were allowed in that area.
- Control spillage from trucks hauling contaminated material from mill site across unrestricted areas to disposal site.
- Good housekeeping and cleanup practices.
- Decontamination of equipment or materials leaving the site.
- Issued (RWP) Radiation Work Permits as per task requirements.
- Incinerating of wooden staves controlled by burning a few at a time rather than all at once. Burn dates were August 2, 5, 7, 8, 9, 13, 14, 20, 26, 27, and 29.

10.2.2 Monitoring Performed During Decommissioning Activities for Both 1991 and 1992

- Continuous, grab and breathing zone air samples taken.
- Working level readings of work areas.
- Bioassay sampling.
- TLD badges for exposure monitoring were issued to personnel.
- Daily visual inspections.
- Lunch room and change room surveys.
- Personnel exit surveys and spot checks by Rad Technician.
- Exit surveys of material and equipment.
- Gamma surveys of work areas.
- Gamma surveys of truck haulage road.

10.3 Summary of Health Physics Monitoring Data 1991

The summary shows the highest data recorded which is less than allowable unless otherwise indicated in summary.

Personnel

° Internal exposure	3.73 mpc hours in 424 hours worked
° Personnel (TLD) Whole Body Dose	24 mr/cal. qtr.
° Personnel Bioassay	6.3 mg/l U Exception of Anomolies
° Respirator Survey	= 259 dpm/100cm² (replaced respirator) more tha the 100dpm/100cm² allowable
° Personnel Alpha Surveys Spot Check	= 628 dpm/100cm²
* ° Personnel Alpha Survey	= 1,244 dpm/100cm² (clothing), allowable 1000 dpm/100cm²
° Personnel Alpha Survey (next highest)	= 311 dpm/100cm²
° Lowest Rad Test Score	70% (passing 70%)

(* The clothing was left on site and laundered to decontaminate it.)

Environmental

° Area Gamma Survey	340 to 360 ur/hr
° Area Gamma TLD	11.5 mr/wk
° Air Sample Radon	$1.4E^{-9}$ uci/ml
° Air Sample Uranium	$5.06E^{-14}$ uci/ml
° Alpha Surface Survey	602 dpm/100cm² (change room floor)
° Contractor's Equipment Survey	900 dpm/100cm²
° Truck Haulage Road Survey	40 ur/hr Site Entrance 12 ur/hr State Road 566

° Borrow Pit #2
Stave Burning

Air Samples in uci/ml U Nat

Date	Grab Sample	Breathing Zone	Continu-ous	% mpc
8/8/91	$9.28E^{-13}$			0.92
8/9/91		$6.07E^{-12}$		6.0
8/12 to 8/26			$2.05E^{-14}$	0.02
7/1 to 10.7			$5.70E^{-15}$	0.006

10.4 Summary of Health Physics Monitoring Data 1992

The summary shows the highest data recorded which is less than allowable unless otherwise indicated in summary.

Personnel

° Internal exposure	4.22 total mpc hours in 790 hrs. worked
° Personnel TLD whole body dose	11 mr/cal qtr.
° Personnel Bioassay	13.8 mg/1 U Nat Exception Anomolies
° Respirator Survey	56.2 dpm/100 cm^2
° Personnel Alpha Survey Spot Check	148.1 dpm/100 cm^2
° Personnel Alpha Survey	754.7 dpm/100 cm^2
° Lowest Rad Training Score	72% (passing 70%)
° Working Level (radon)	0.02 wl

Environmental

° Area Gamma Survey	310-320 ur/hr
° Area Gamma TLD	11.8 mr/wk
° Air Sample Radon	$8.0E^{-10}$ uci/ml
° Air Sample U Nat	$3.03E^{-14}$ uci/ml
° Alpha Surface Survey	174.6 dpm/100 cm^2
° Contractor's Equipment	398.3 dpm/100 cm^2
° Truck Haulage Road Surveys Shielded Gamma Survey	Entrance to Mill Site 150 ur/hr
° Truck Haulage State Road 566 Surveys	
Gamma Survey	10 ur/hr
Alpha Survey	264 dpm/100 cm^2
° Personnel Survey	* 1330 dpm/100 cm^2 on clothing * After Washing, 37 dpm/100 cm^2 All other data below 755 dpm/100 cm^2

Appendix G contains other monitoring program information not addressed in this summary.

11.0 Closing Remarks

The Mill Decommissioning was completed as per United Nuclear's Approved Decommissioning Plan.

United Nuclear is in the process of performing a complete clean-up and radiological survey of the Mill Site including buildings and materials left on site. A priliminary clean-up and radiological survey had been performed on buildings designated to be left on site as mentioned in United Nuclear Approved Decommissioning Plan.

United Nuclear will be submitting a final Radiological Survey Report in its request to release the site to unrestricted use.

Borrow #2 is scheduled for reclamation in 1994. The criteria for the Borrow Pit's designed cover is addressed in United Nuclear's Approved Reclamation Plan submittal of March 1, 1991.

APPENDIX A 1991

Photographs

- Mill Site Before and After 1991 Demolition
- Leach Circuit Demolition
- CCD Equipment and Building Demolition
- Precipitation Equipment Demolition
- Precipitation Building Demolition
- Borrow Pit Disposal and Cover
- Wooden Stave Disposal

Mill Site Before and After 1991 Demolition

1 9 9 1

Mill Site
Prior to any 1991 Demolition

Mill Site
Finish of 1991 Demolition

Leach Circuit Demolition

1 9 9 1

Leach Circuit
Demolished leach wooden tanks
Wetting and preparing to load 1991

Leach Circuit
Loading of Wooden Staves 1991

CCD Equipment and Building Demolition

1 9 9 1

CCD Building
Starting Demolition of CCD 1991

CCD Building
Pulling equipment and sumps out before continuing demolition of building. 1991

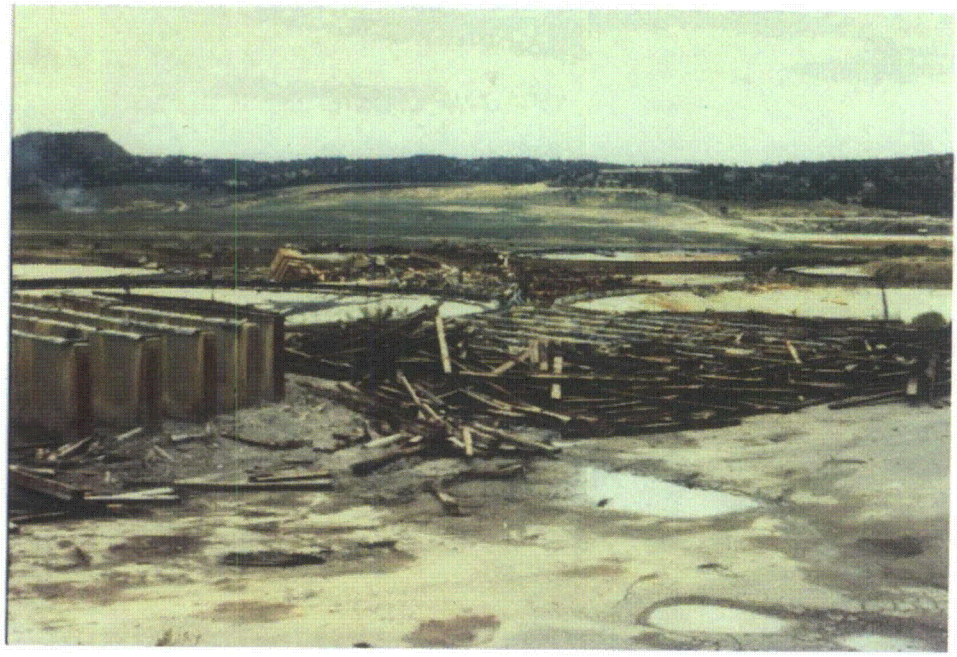
1 9 9 1

CCD Building
Continued Demolition 1991

CCD Building
Continued Demolition 1991

1 9 9 1

CCD Building
Continued Demolition 1991



CCD Circuit
Foreground Demolished Clair Floc Wooden Stave Tank
Background Demolished CCD Building and #6 Thickner 1991

1 9 9 1

Process Piping
Flattened and ready for transport to Borrow Pit #2 1991

CCD /Roped off restricted decommissioning area 1991

Precipitation Equipment Demolition

1 9 9 1

Yellow Cake Dryer
Notice storage of dryer in front of Precip Building Doorway 1991

Yellow Cake Dryer
Dryer being unloaded in
Borrow pit #2 1991

1 9 9 1

Yellow Cake Dryer
Dryer unloaded and unwrapped ready to be demolished
RSO giving instructions to demo crew 1991

Yellow Cake Dryer
Dryer being wet down prior to starting demolition;
precautions taken to control yellow cake dust, if any 1991

1 9 9 1

Yellow Cake Dryer
Still wetting down and demolition started. 1991

Yellow Cake Dryer
Dryer demolished and ready for burial in Borrow Pit #2. 1991

1 9 9 1

Precipitation Tanks
Tanks being unloaded in Borrow Pit #2 1991

Yellow Cake Storage Bin
Bin is getting wet down while being demolished in Borrow Pit #2 1991

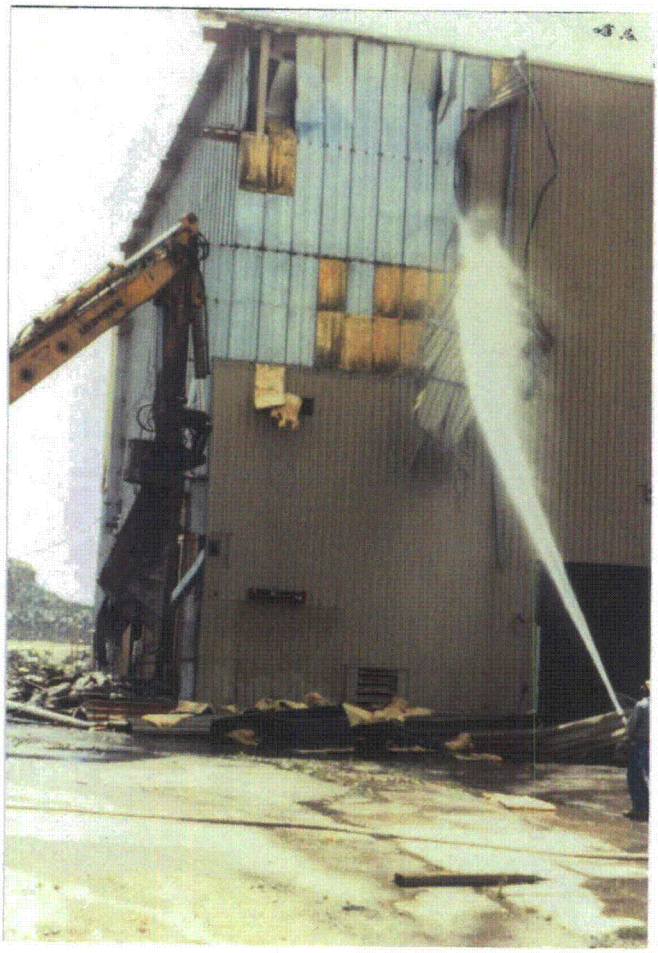
Precipitation Building Demolition

1 9 9 1

← Precipitation (Mill) Building prior to starting demolition. Notice roped off restricted decommissioning area. 1991

Precipitation (Mill) Building starting demolition. Note wetting siding as a precaution to control yellow cake dust, if any. 1991 →

1 9 9 1



Precipitation (Mill)
← Building. Wetting and
Demolition Continued 1991

↓

Borrow Pit Disposal and Cover

1 9 9 1

Borrow Pit #2
Prior to Mill Materials Disposal in Borrow Pit 1991

Borrow Pit #2 Covered
Finish of 1991 Disposal

1 9 9 1

Borrow Pit #2
Placement of Base in Borrow Pit 1991

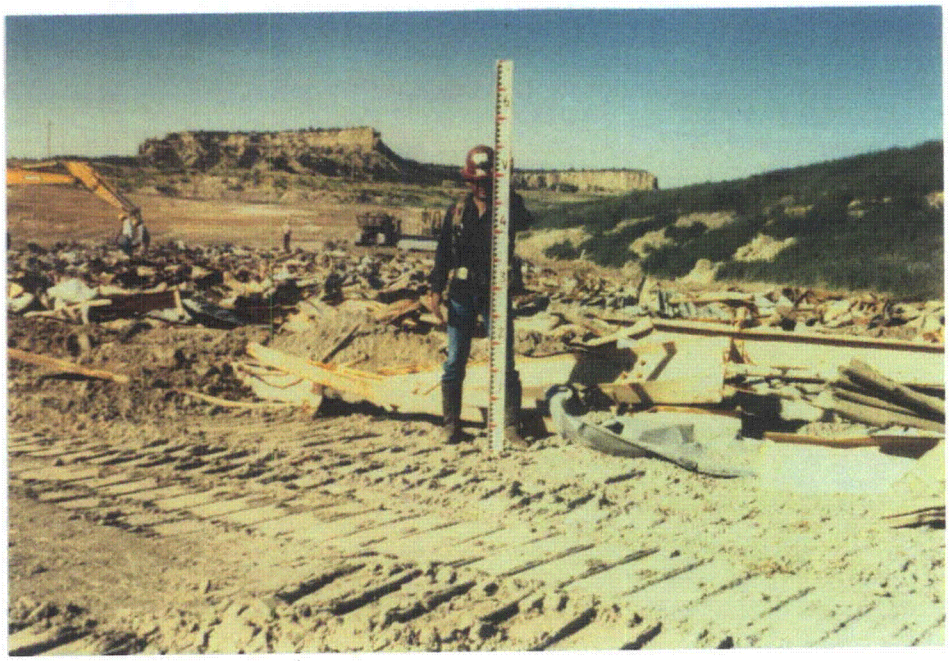
Borrow Pit #2
Placement of Mill Material in Borrow Pit 1991
Showing a maximum lift of 2.5 feet

1991

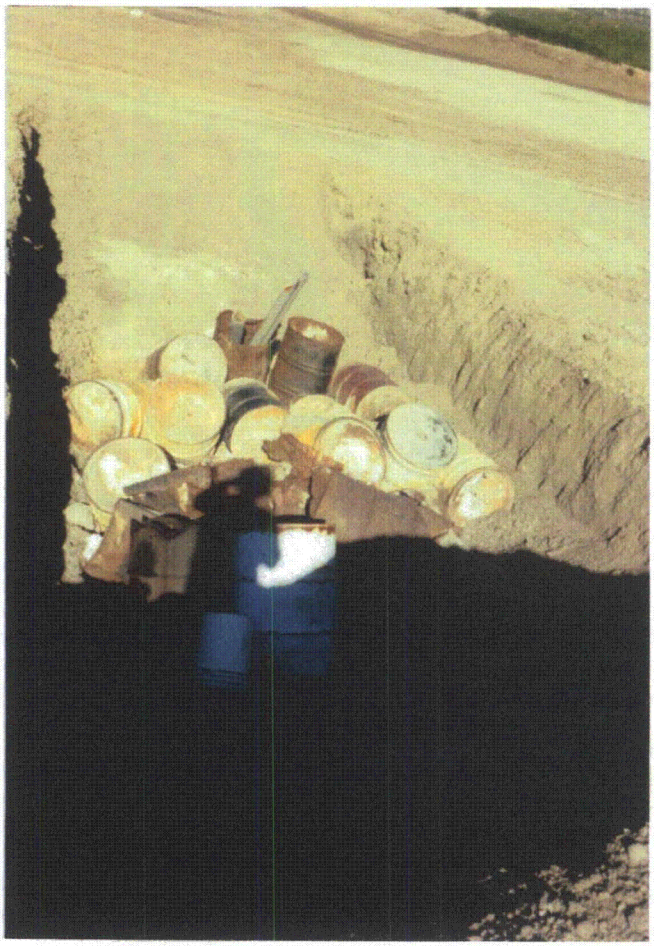
Borrow Pit #2
Area Showing Material Layout 1991

Borrow Pit #2
Closer Picture of Material Layout Showing Type of Material and Flattened Pipe. Pipe looks like Caterpillar tracks 1991

1 9 9 1



Borrow Pit #2
The equipment in the background cutting up the material and laying it. The truck full of dirt for covering material and dozer standing by to push the cover on. Rod man showing again maximum lift of 2.5 feet 1991



Borrow Pit #2
Barrels full of Lab ore samples. 1991

Wooden Stave Disposal

1 9 9 1

Wooden Staves
Staves being unloaded in south end of Borrow Pit #2 1991

Air photo showing the wooden stave burning which took place in Borrow Pit #2
The smoke is in common wind direction. Also direction of special air samples
and Site C air samples. 1991

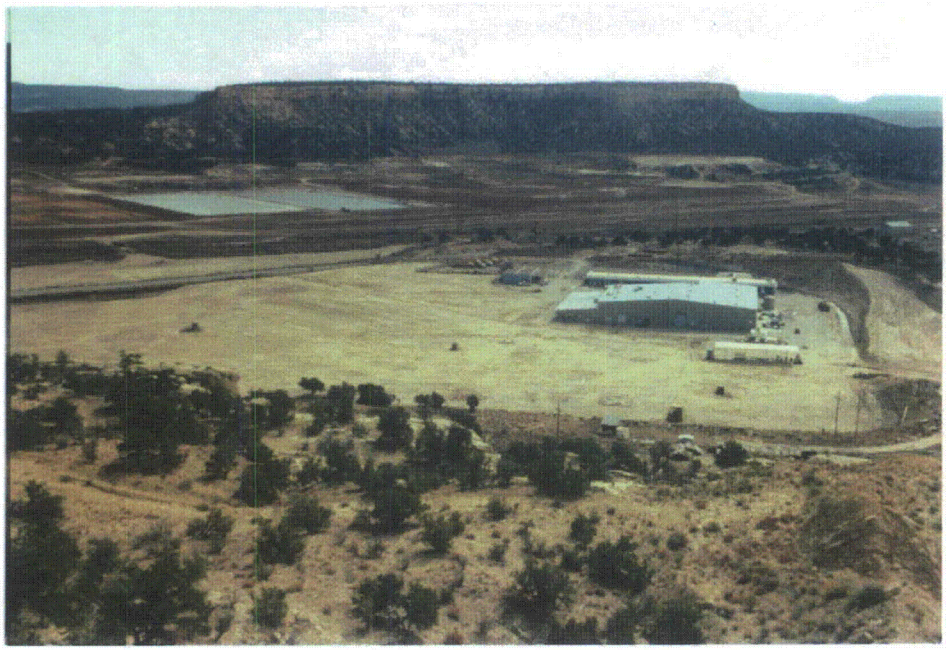
APPENDIX B 1992

Photographs

	Page
° Mill and Catch Basins Area Before and After The 1992 Demolition	1
° Decontamination of CCD Basement, Tunnels and Thickner Floors	3-5
° Filling and Compacting the CCD Basement	6
° CCD Basement Ceiling Demolition	7
° Demolition of Thickner Floor Stem Wall	9
° Filling of the CCD Thickner Floors	10
° SX Circuit Prior to and After Demolition	11
° Demolition of Solvent Extraction Circuit (SX)	12 & 13
° Removal of SX Scrubber Sump and Burrial	14
° Paving, SX Catch Basin and On-site Process Underground Piping Excavation	15 & 16
° Excavation of Foundation, Floors, and Sumps from the following process areas:	17 & 18
° Leach ° Boiler	
° Grinding ° Clair Floc Tank	
° Precipitation ° Raffinate Tank	
° Ore Pad and Catch Basin Excavaiton	19-21
° Removal of Sewer Plant and East Perimeter Fence and Excavating of the Contaminated Soils from the Area	25 & 26
° Borrow Pit #2 Disposal Burial and Cover	27-30

1 9 9 2

Mill and Catch Basin Area. Note catch basins are across State Road 566 on the tailings side. Starting 1992



Mill and Catch Basin Area
Finish 1992

1 9 9 2

CCD Basement Walls and Floor
Prior to Starting of Wet Sand Blasting 1992

#6 Tunnel Area. CCD Basement Wall and Floor
After Sandblasting 1992

1 9 9 2

CCD Basement Walls
Starting of Wet Sandblasting 1992

CCD Basement Floors
Starting of Wet Sandblasting 1992

1 9 9 2

#6 Tunnel
Starting of sandblasting tunnels 1992

#6 Tunnel
Completed wet sandblasting 1992

1 9 9 2

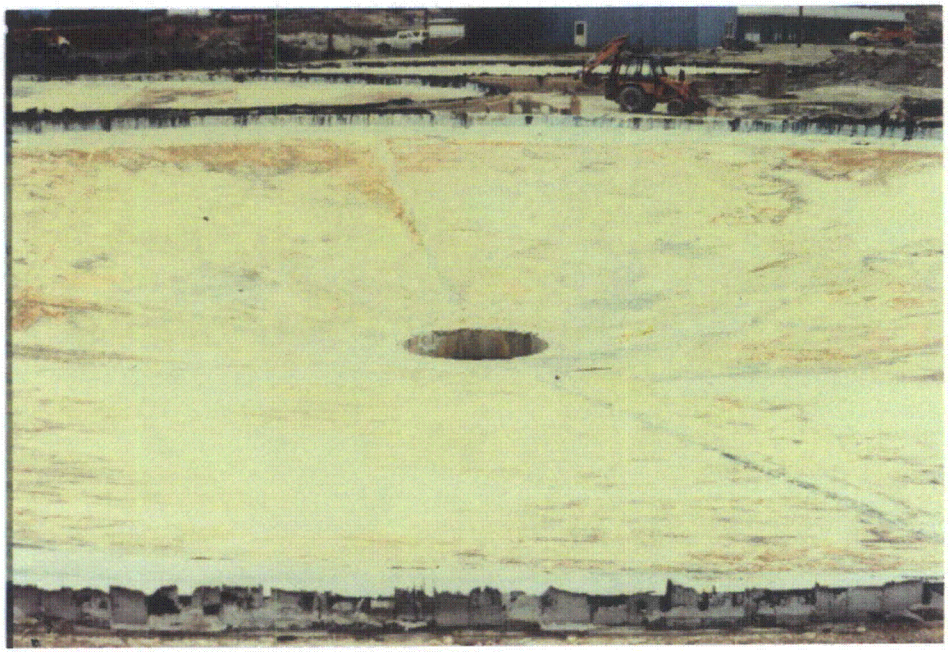
CCD Basement
Notice clean walls and pillars
Filling of CCD basement with clean dirt 1992

CCD Basement
Notice clean walls and bulkheaded tunnel,
compaction of fill in basement 1992

1 9 9 2

CCD Ground Level Floor or Basement Ceiling
being demolished after partial fill and compaction of basement 1992

1 9 9 2



CCD Thickner Floor
after wet sandblasting 1992

CCD Thickner Floor
Foundation stem wall demolishing 1992

1 9 9 2

CCD Thickner Floor ready for covering.
Stem wall has been removed and excavation around the Thickner completed 1992

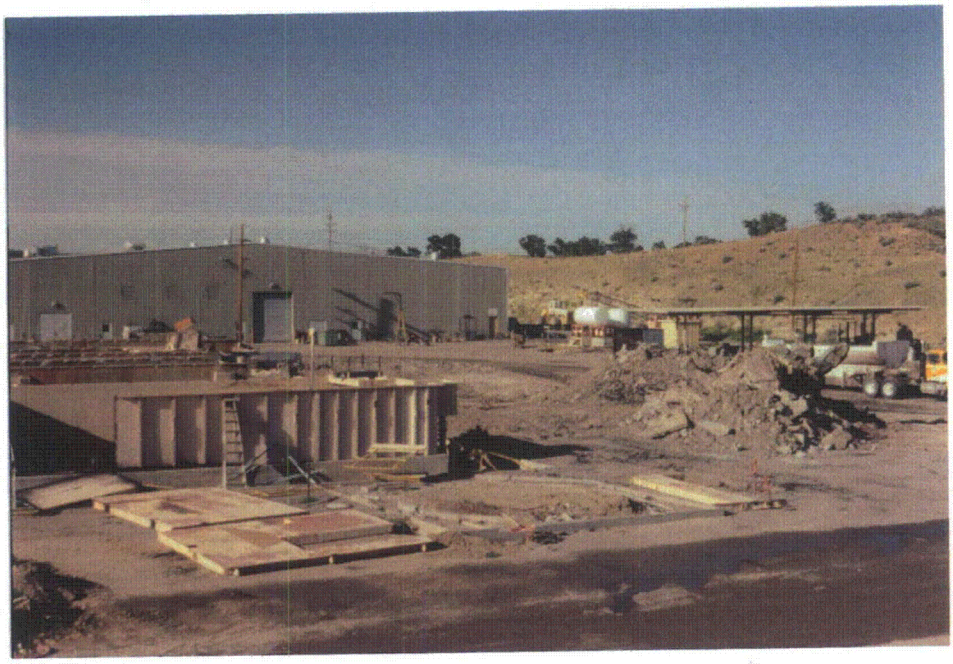
CCD Thickner Floors
The last two thickner floors being covered 1992
Notice bulkhead in center of thickner floor

1 9 9 2

SX Circuit
prior to demolishing 1992

SX Circuit area after completion of demolition 1992

1 9 9 2

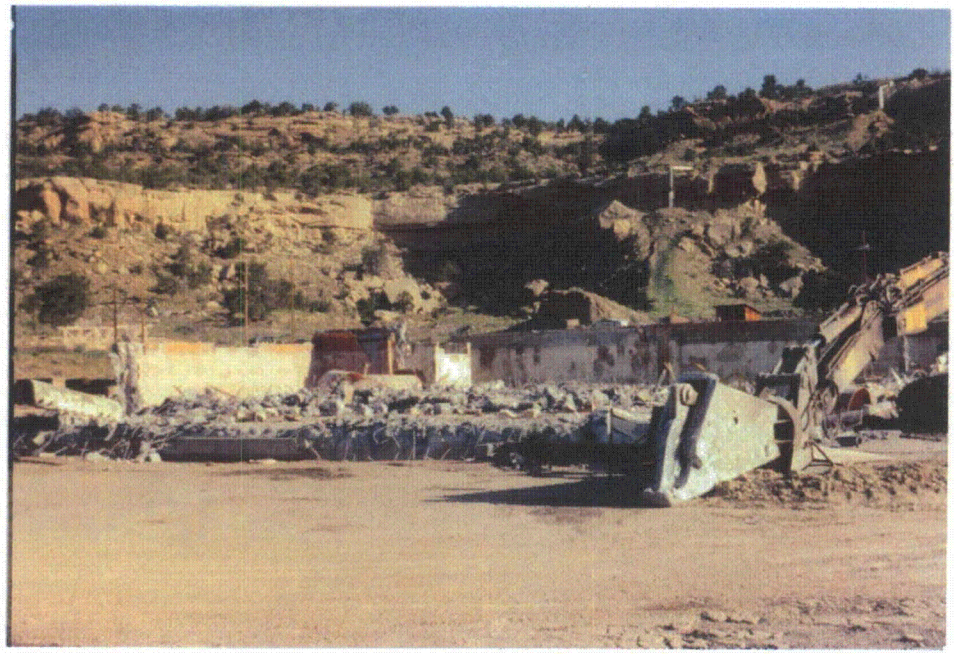


SX Circuit. Part of scrub settler taken apart and excavation of west side to remove piping and emergency concrete impoundment 1992

SX Circuit
Top and piping being demolished 1992

1 9 9 2

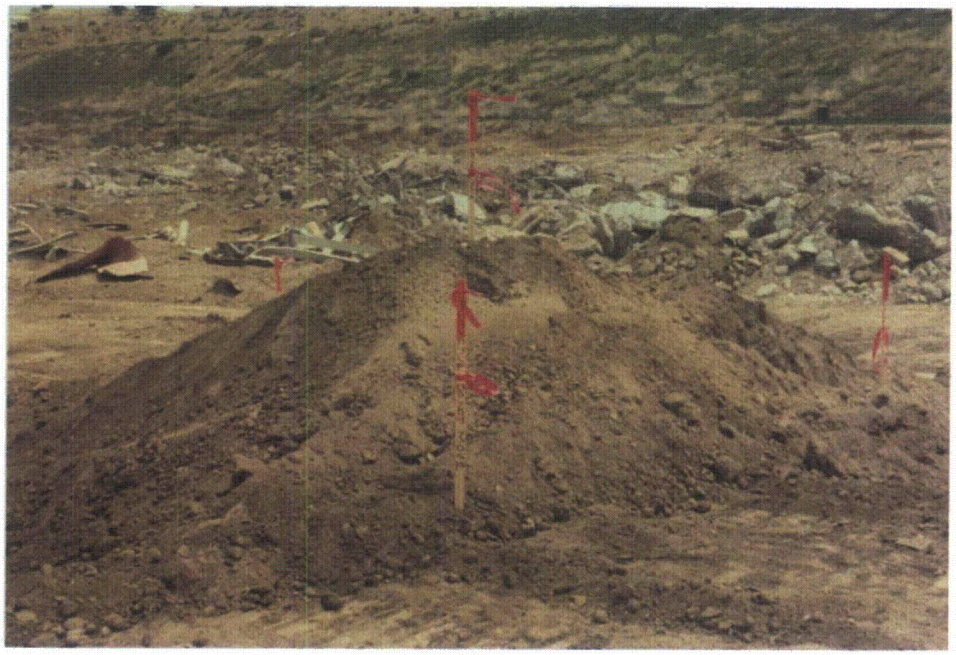
SX Circuit
Concrete emergency impoundment excavation 1992



SX Circuit
Concrete settler wall demolishing 1992

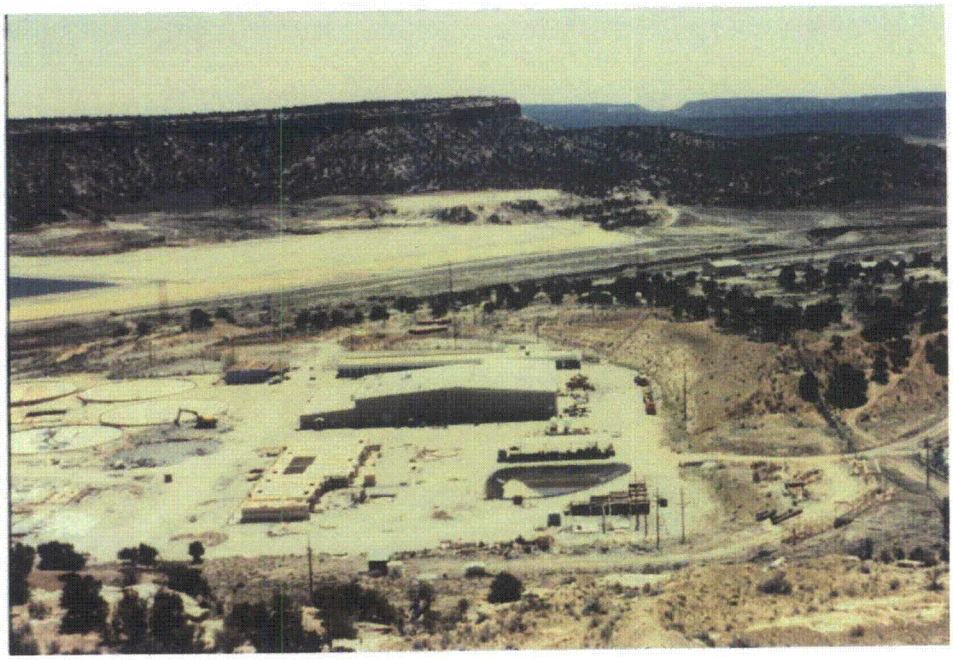
1 9 9 2

SX Scrubber Sump removed from scrubber settler and covered with material to prevent yellow cake loss from sand. Also, roped off area until time to dispose of it in Borrow Pit #2 1992

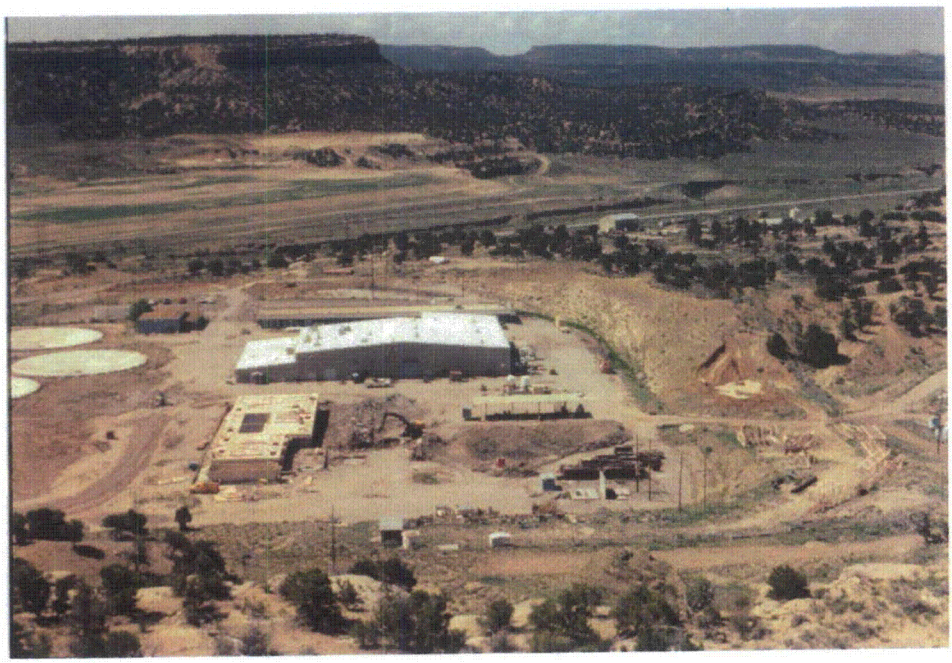


SX Scrubber Sump buried below ground level and dirt piled on top and flagged off to keep equipment from accidentally digging it back up during the continued 1992 burial of other materials.

1 9 9 2



SX Emergency Catch Basin to the right of SX prior to emptying water and excavation 1992



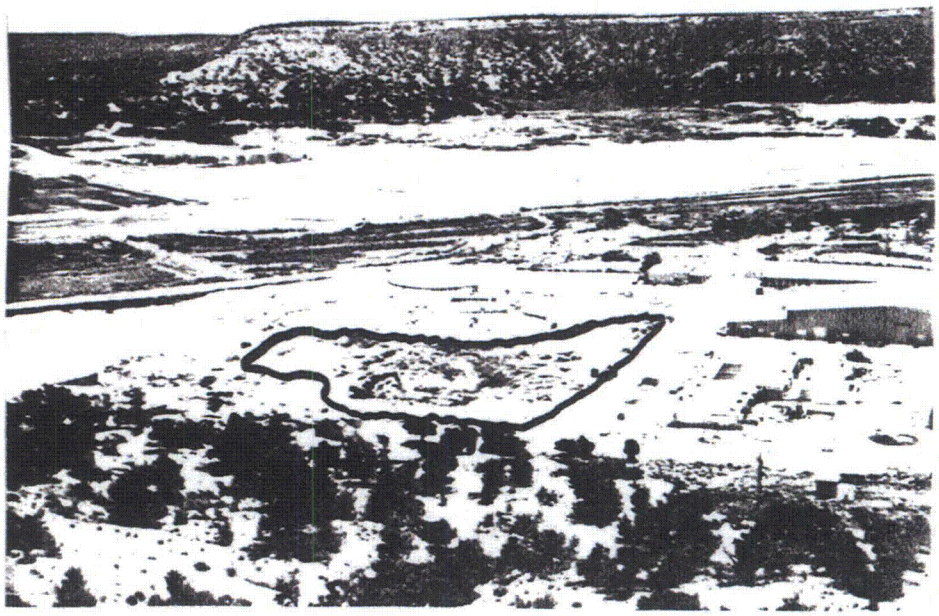
SX Catch Basin excavation 1992
Notice equipment excavating pipe from SX to catch basin

1 9 9 2

SX Emergency Catch Basin Area
filled, compacted and graded 1992
Notice on right-hand side of picture, soil borrow area used
for fill of all mill site where required

1 9 9 2

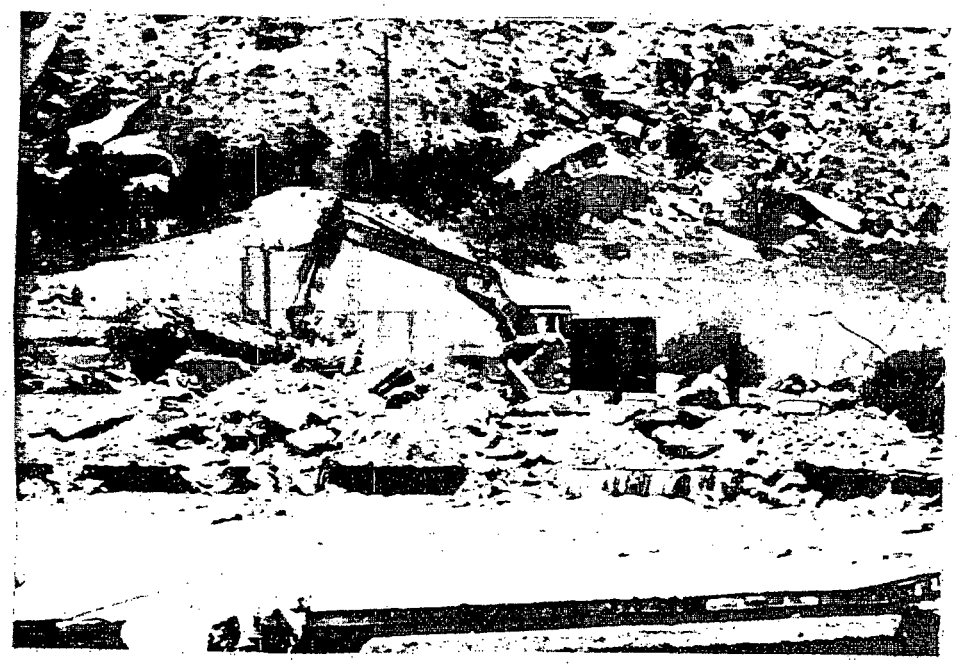
Process area outlined in picture from left to right and then south consists of floors and foundations of grinding and leach, then precipitation and south to boiler, Clair Floc and raffinate tank areas. Prior to excavation 1992



Same as above
Excavation in progress 1992

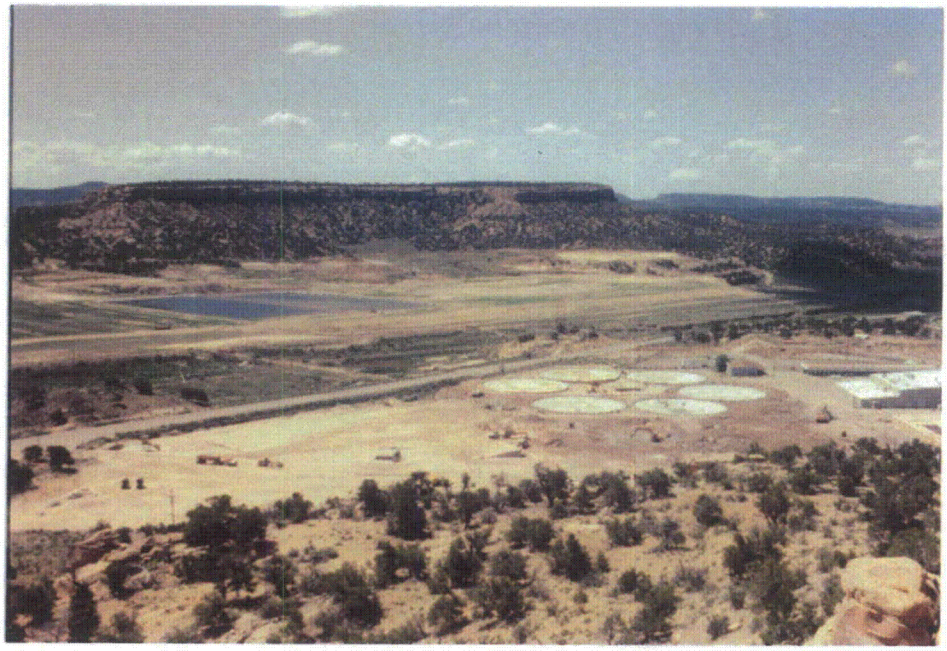
1 9 9 2

Precipitation, boiler, Clair Floc, and raffinate tank area excavation in progress 1992

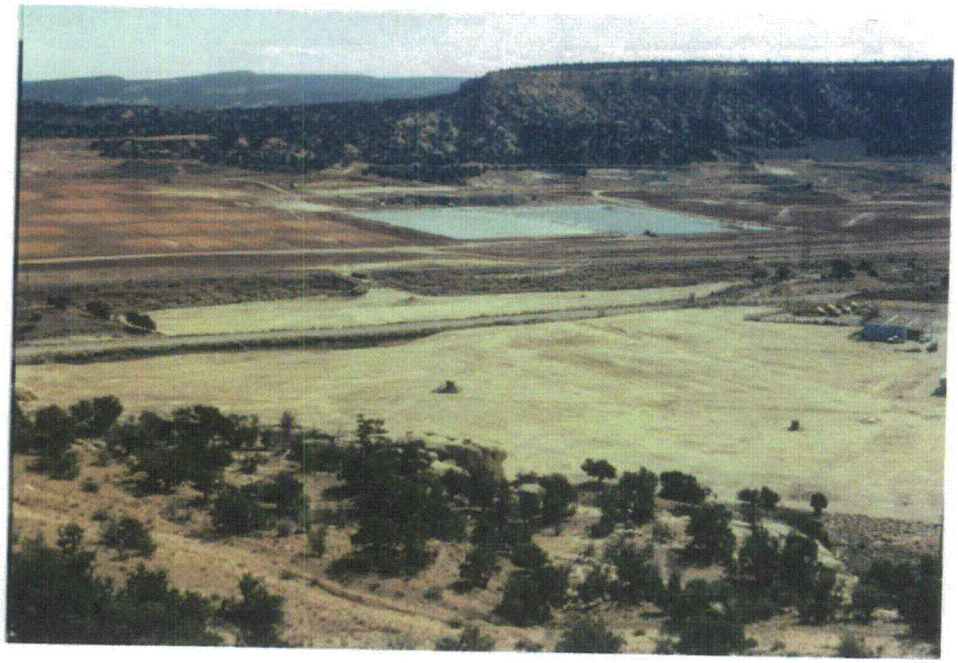


Grinding and leach area excavation in progress 1992

1 9 9 2



Ore pad and catch basins across from mill area on east side of State Road 566., prior to excavation 1992
Notice ongoing excavation on ore pad and mill process area



Ore pad, catch basins and mill process area completed excavation and grading 1992

1 9 9 2

(#2) South catch basin and portion of ore pad
finish excavation and grading 1992

(#1) North catch basin and portion of ore pad
finish excavation and grading 1992

1 9 9 2

Ore Pad 1992

Excavation 1992

1 9 9 2

Grizzly. Filling up 1992

Grizzly. Tunnel filling 1992

1 9 9 2

Grizzly. Compaction of fill. 1992

1 9 9 2

Sewer Plant
Prior to removal and excavation 1992

Mill east perimeter and sewer plant area, excavation and grinding. Notice two fences instead of one shown on prior picture. One is a temporary fence for purpose of removing regular fence in order to complete cleanup of contaminated soils. 1992. Notice also red culvert from prior picture has been removed.

1 9 9 2

Mill east perimeter and sewer plant area
Completion of excavation and grading. Temporary fence is being taken down and permanent fence is back up 1992

1 9 9 2

Borrow Pit #2
Beginning of 1992

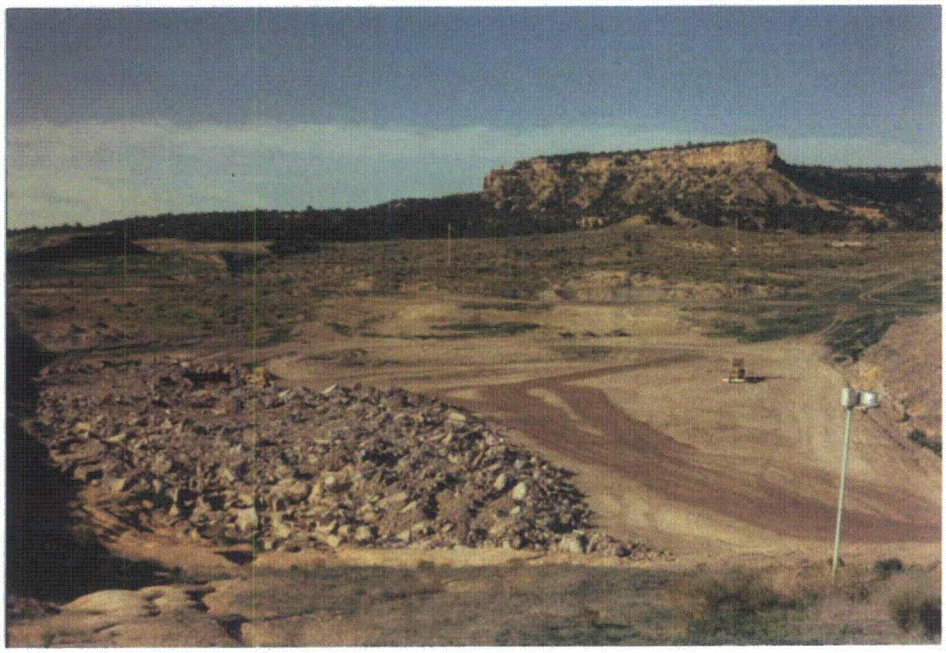
Borrow Pit #2
Completion of 1992

1 9 9 2

Borrow Pit south area, wood staves and concrete to be spread out and buried 1992

Borrow Pit #2, largest piece of concrete disposed of measuring 5 feet which shows we maintained no lifts higher than 5 feet. 1992

1 9 9 2



Borrow Pit #2
Looking south showing equipment spreading concrete materials on east side of Borrow Pit. 1992

Borrow Pit #2
Looking north, again showing materials spread out on east side of Borrow Pit #2. 1992

1 9 9 2

Borrow Pit #2. Looking west, equipment covering materials disposed of from mill. Also shows in the foreground the area where concrete is buried.

APPENDIX C

Survey of Materials Buried in Borrow Pit #2

Table 1 and Figure 1	1991
Table 2 and Figure 2	1992

Reference Survey Number from Table to Number on Figure

TABLE 1 1991

Survey of Materials Buried in Borrow Pit #2

SURVEY #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1.	76764.14	60567.57	6961.84	Edge of road
2.	73769.34	60610.15	6953.98	Start of scrap showing by road
3.	73825.38	60671.69	6954.59	Edge of scrap from CCD building surrounding area
4.	73887.77	60698.85	6953.84	Edge of scrap from CCD building and surrounding area
5.	73947.71	60709.82	6952.28	Edge of scrap from CCD building and surrounding area
6.	74023.68	60718.47	6951.99	Edge of scrap from CCD building and surrounding area
7.	74083.45	60679.83	6954.41	Point of scrap from CCD building and surrounding area
8.	74012.12	60651.38	6951.83	East edge of west road and scrap
9.	73915.29	60612.21	6951.23	East edge of west road and scrap
10.	73880.25	60602.43	6951.42	Edge of cover, scrap and road
11.	73785.36	60556.80	6956.50	Edge of fill and original grade
12.	73569.60	60771.49	6954.80	South side of barrels corner. Pit extends 14' to the north
13.	73574.39	60789.37	6954.80	Southeast corner of barrels
14.	73678.35	60782.50	6953.79	Yellow cake dryer - 14' wide to the north
15.	73675.96	60748.76	6954.91	Yellow cake dryer - 14' wide to the north
16.	73581.16	60854.65	6954.11	Edge of perimeter (silt and cover)
17.	73648.40	60850.28	6950.73	Rebar scrap - mill building
18.	73729.37	60842.87	6955.46	Insulation, metal scrap, something blue, metal and wood staves

Survey #	Northing	Easting	Elevation	Description
19.	73823.93	60830.67	6957.78	6" I beams, sheet metal and steel bands
20.	73874.22	60806.05	6956.22	Flanges, wood staves, conduit, channel, sheet metal and blocks of concrete
21.	73812.14	60854.10	6955.97	Sheet metal, crushed pipe, and wood staves
22.	73966.90	60860.46	6954.73	Dirt from scale gate area with scrap
23.	74016.28	60837.49	6953.92	Dirt from scale gate area with scrap
24.	74078.96	60791.02	6954.66	Dirt from scale gate area with scrap
25.	73908.00	60770.41	6954.31	Area mill building material buried
26.	73800.49	60761.91	6954.41	Area mill building material buried
27.	73631.59	60769.05	6955.55	Surface area between dryer and barrels
28.	73583.85	60648.16	6960.24	Surface start of cover over steel mill building material
29.	73757.64	60645.91	6955.72	Surface over mill building material
30.	73942.13	60668.60	6953.62	Surface over mill building material
31.	74017.08	60681.53	6954.25	Surface over mill building material
32.	74080.96	60669.34	6955.27	West edge of B.P. #2 cover of CCD building material area
33.	73922.88	60610.15	6954.16	West edge of B.P. #2 cover of CCD building material area
34.	73790.92	60564.35	6958.45	West edge of B.P. #2 cover of CCD building material area
35.	73723.61	60538.76	6958.97	West side of B.P. #2 cover of CCD building material area
36.	73510.30	60502.27	6964.50	Burnt wood 30'x30' area
37.	73497.36	60557.37	6963.59	Burnt wood 40'x40' area
38.	73514.56	60605.58	6962.93	Wood burnt in a line 50' east x 10 wide
39.	73482.19	60597.13	6964.12	Burnt wood (refer to sketch on map)
40.	73542.87	60659.44	6960.85	Burnt wood (refer to sketch on map)
41.	73462.07	60650.98	6965.47	Burnt wood (refer to sketch on map)
42.	73407.60	60888.51	6978.94	Resin barrels

Table 2 1992

Survey of Materials Buried in Borrow Pit #2

SURVEY #	NORTHING	EASTING	ELEVATION	DESCRIPTION
TP 84	73863.8851	60529.4280	6973.9720	Survey Station
#1	73475.00	60535.00	6967.7	Concrete, timber, metal debris
#2	73470.00	60565.00	6967.7	Concrete, timber, metal debris
#3	73460.00	60595.00	6967.7	Concrete, timber, metal debris
#4	73475.00	60800.00	6966.5	Brush pile
#5	73480.00	60825.00	6966.0	Staves sawdust pile
#6	73547.2602	60747.6536	6956.7626	SX, organic scrubber sump
Area A (pink area on Figure 2)	73820.00	60820.00	6957.5	Foundation material (concrete/rebar)
Area B (yellow area on Figure 2)	73730.00	60550.00	6968.00	Excavated material from mill east perimeter fence line

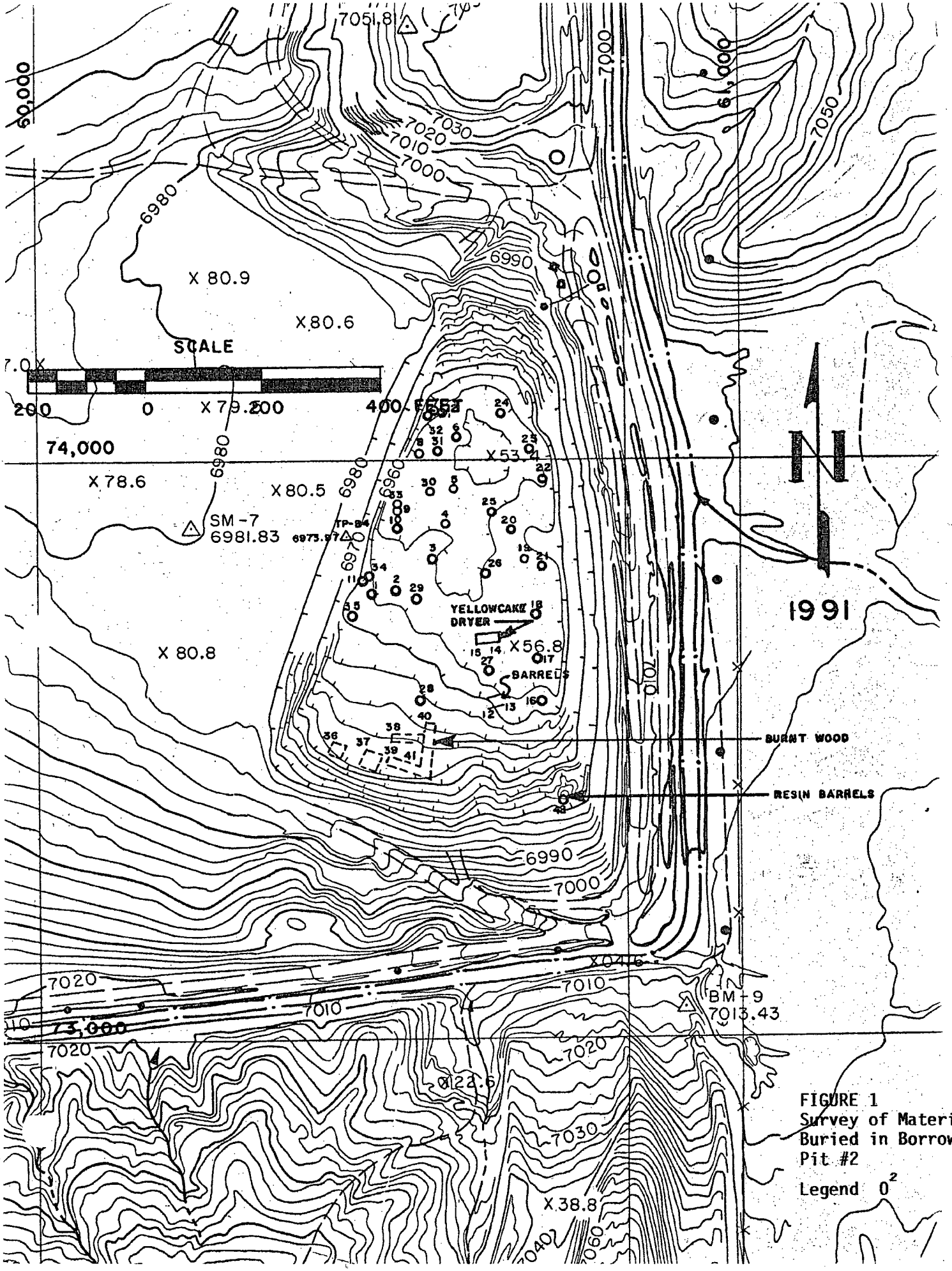


FIGURE 1
Survey of Material Buried in Borrow Pit #2

Legend 0²

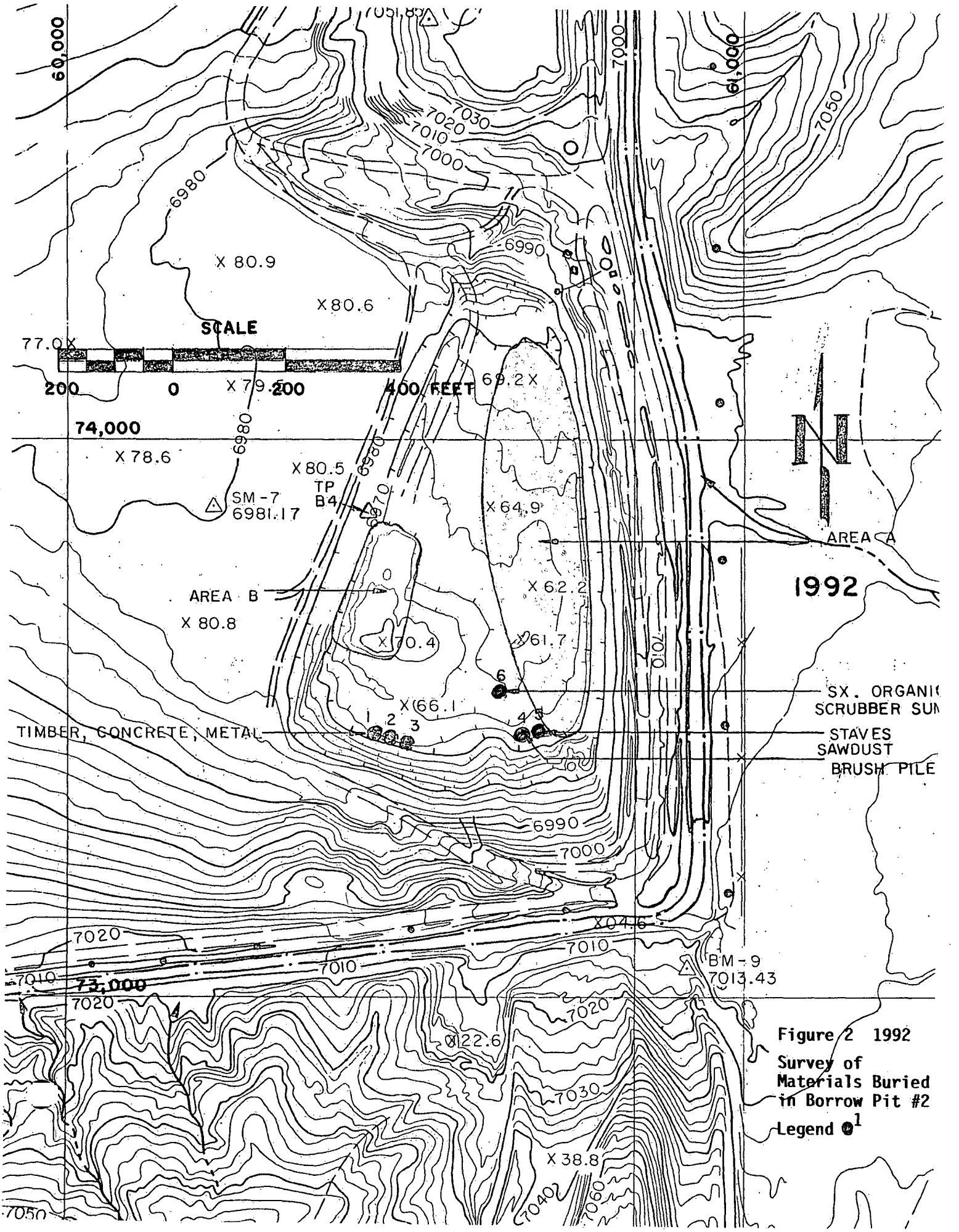


Figure 2 1992 Survey of Materials Buried in Borrow Pit #2

Legend [1]

APPENDIX D

- Contractor's Core Drilling Report
- Core Radiological Data
- Soil Analysis Report
- Concrete Surface Radiological Data

CONTRACTOR'S CORE DRILLING REPORT

WESTERN TECHNOLOGIES INC.
400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No.
Lab/Invoice No. 31420172
Date of Report 05/04/92
Reviewed By L. Waredock

Project: C.C.D. Circuit Foundation Evaluation
Location: Church Rock, New Mexico
Report By: J. Collard/WT & R. Sanchez/WT
Date: 4/27-5/01/92
Prime Contractor: UNC
Superintendent: Ed Morales/Client
Subject: Coring C.C.D. Circuit Foundations

The following locations were cored on the dates indicated below.

Date	Location	Length Cored
04/27/92	Thicker Pad #1-Northwest Section	8-1/4"
	Thicker Pad #2-Northeast Section	11-1/2"
	Thicker Pad #2-North Section	9"
04/28/92	Thicker Pad #2-West Section	6-3/4"
	Thicker Pad #3-North Section	9-1/2"
	Thicker Pad #3-South Section	6-1/2"
	Thicker Pad #4-West Section	10-1/2"
	Thicker Pad #4-East Section	5-1/2"
	Thicker Pad #5-East Section	7"
	Thicker Pad #5-South Section	8-3/4"
	Thicker Pad #6-East Section	8"
	Thicker Pad #6-Northeast Section	12"
	Thicker Pad #6-15'S. of Cone Section	7-1/4"
04/29/92	#6 Tunnel	17-1/2"
	#6 Tunnel Base	18-1/2"
	#5 Tunnel	20"
	#5 Tunnel Base	17"
	C.C.D. Sump-South Section	17"

Copies to: Client (3)
/sr

WESTERN TECHNOLOGIES INC.
400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No.
Lab/Invoice No. 31420172
Date of Report 05/04/92
Reviewed By L. Wiedeck

Project: C.C.D. Circuit Foundation Evaluation
Location: Church Rock, New Mexico
Report By: J. Collard/WT & R. Sanchez/WT
Date: 04/27-05/01
Prime Contractor: UNC
Superintendent: Ed Morales/Client
Subject: Coring C.C.D. Circuit Foundations (con't)

Date	Location	Length Cored
04/30/92	#4 Tunnel	19"
	#3 Tunnel	18"
	#2 Tunnel	15-1/4"
	#1 Tunnel	17"
	NE corner C.C.D. Basement	14-1/2"
	NW corner C.C.D. Basement	7-1/4"
05/01/92	Grizzly Basement-3'S. of N. wall	32"
	Grizzly Conveyor-Tunnel Midsection	11-1/2"

Copies to: Client (3)
/sr

WESTERN TECHNOLOGIES INC.
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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No.
Lab/Invoice No. 31420134
Date of Report 04/14/92
Reviewed By L. Wansbrock

Project: C.C.D. Circuit Foundation Evaluation
Location: Church Rock, NM
Report By: H. Kuebler/WT
Date: 04/06-04/08/9
Prime Contractor: U.N.C.
Superintendent: Ed Morales/Client
Subject: Coring C.C.D. Circuit Foundations

The following locations were cored on the dates indicated below.

Date	Locations	Concrete Thickness
04/06/92	#1 Thicker Pad S.E. Section	11-3/4"
	#1 Thicker Pad S.W. Section	9-1/2"
	#1 Thicker Pad Cone Floor	17"
	#2 Thicker Pad S.E. Section	7"
	#2 Thicker Pad N.E. Section	9-1/2"
	#2 Thicker Pad Cone Floor	19"
	#3 Thicker Pad S.E. Section	10"
04/07/92	#3 Thicker Pad S.W. Section	11"
	#3 Thicker Pad Cone Floor	17-1/2"
	#4 Thicker Pad Cone Floor	17-1/2"
	#4 Thicker Pad S.W. Section	12"
	#4 Thicker Pad N.E. Section	5-1/4"
	#5 Thicker Pad N.W. Section	9"
	#5 Thicker Pad S.W. Section	8"
	#5 Thicker Pad Cone Floor	18-1/4"
04/08/92	#6 Thicker Pad N.E. Section	5-1/2"
	#6 Thicker Pad S.W. Section	7-1/4"
	#6 Thicker Pad Cone Floor	19-1/2"
	C.C.D. Basement Floor S.E. Section	21"
	C.C.D. Basement Floor N. Section	6-1/2"
	C.C.D. Basement Floor Sump Area	6"
	C.C.D. Basement Floor S.W. Section	9"

Copies to: Client (3)
/mja

CORE RADIOLOGICAL DATA

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LUD/2/7370 W/44-6/8820
(OPEN WINDOW)

COMPUTATIONS

SUBJECT RAD SURVEY ON SURFACE CONCRETE CORE, Sheet No. 1 of 4
SILL HOLE AND SOIL SAMPLE ANALYZES FOR THE CCD Made By MC Date 5-26-92
CIRCUIT FOUNDATIONS. Chkd. By _____ Date _____

DATE	DRILL HOLE / CONCRETE CORE ID	CONCRETE THICKNESS	LOCATION OF READING-CORE	ALPHA (CPM) & (DPM)-CORE CPM	DPM	GAMMA (MR/HR)-CORE	BETA (MR/HR)-CORE	GAMMA-BETA (MR/HR)-DRILL-HOLE @ DEPTH	URANIUM (pCi/GM) SOIL ANALYSIS	RA-226 (pCi/GM) SOIL ANALYSIS	COMMENTS - FOR CORE: F, FRACTURE, SF-SLIGHT FRACTURE, HF HORIZONTAL FRACTURE, VF-VERTICAL FRACTURE
4-8-92	CCD - BASEMENT FLOOR - N	6 1/2"	A - TOP			10-12		.03 @ 6"	22.9	1.2	FOR BOREHOLE - H_2O IN HOLE & DRILLED ON FLOOR UPHEAVAL
			B - SIDE	33	244						
			C - BOTTOM	25	185						
4-8-92	CCD - BASEMENT FLOOR SW CORNER	9.0"	A - AS			10-12		IN H_2O	26.6	0.6	HF
			B - ABOVE	17	126						
			C -	17-27	163						
4-8-92	CCD - BASEMENT FLOOR - SE CORNER	21.0"	A			10-12		IN H_2O	3.5	1.2	
			B	25	185						
			C	20	148						
4-30-92	CCD - BASEMENT FLOOR - NE CORNER	14 1/2"	A	245	1,811	10-12	.03	IN H_2O	8.4	0.8	3 PIECES (8", 5", 1/2") - HF
			B	18	133						
			C	13	96						
4-30-92	CCD - BASEMENT FLOOR - NW CORNER	7 1/4"	A	1642	12,136	9-11	.13	.03 @ 6"	6.4	1.3	SHF FOR BOREHOLE - SOME H_2O IN HOLE
			B	17	126						
			C	112	828		.09				
4-8-92	CCD - BASEMENT FLOOR - SUMP	6.0"	A	67	495	10-11			10.2	1.1	
			B	12	89						
			C	11	81						
4-30-92	CCD - SUMP - S. SIDE	16 1/2"	A	488	3,607	10-11	.05		1.9	1.1	2 PIECES (7", 9 1/2") - HF
			B	18	133						
			C	8-16	163						
4-6-92	#1 - THICKNER PAD - SW	9 1/2"	A			10-12		.03 @ 13" CONTACT	8.5	0.6	FOR BOREHOLE - DRILLED 4" FROM CONST. JOINT
			B	22	163						
			C	28	207						
4-6-92	#1 - THICKNER PAD - CONE F.	17.0"	A			10-12		.04 @ 24"	0.9	0.6	
			B	24	177						
			C	23	170						
4-6-92	#1 - THICKNER PAD - SE	11 3/4"	A			10-12		.03 @ 16" CONTACT	5.6	0.5	FOR BOREHOLE - DRILLED ON CONSTRUCTION JOINT
			B	24	177						
			C	24-36	222		.03				
4-22-92	#1 - THICKNER PAD - NE	11 1/2"	A	26	192	10-12		.04 @ 15" CONTACT	9.6	0.5	FOR BOREHOLE - DRILLED 7" FROM CONST. JOINT
			B	09	67						
			C	09	67		.03				
4-27-92	#1 - THICKNER PAD - NW	8 1/4"	A	25	185	9-11		.04 @ 10" CONTACT	7.6	0.8	FOR BOREHOLE - DRILLED 2" FROM CONST. JOINT
			B	16	118						
			C	11	81		.03				
4-30-92	#1 - THICKNER TUNNLE - MIDDLE	18"	A	302	2,232	9-11	.05	.03 @ 6"	3.2	1.0	2 PIECES (3", 5") HF FOR BOREHOLE - H_2O IN HOLE - DRILLED ON CONC. FRACTURE
			B	07	52						
			C	8	59						

NOTE: FOR YOUR INFORMATION THE LOCATION A-TOP ALPHA (CPM) & (DPM)-CORE READING IS BEFORE DECONTAMINATION.

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COMPUTATIONS

SUBJECT: RAD SURVEY ON SURFACE CONCRETE CORE, DRILL HOLE AND SOIL SAMPLE ANALYZES FOR THE CCD CIRCUIT FOUNDATIONS.

Sheet No. 2 of 4
Made By [illegible] Date 5-26-92
Chkd. By _____ Date _____

DATE	DRILL HOLE / CONCRETE CORE ID	CONCRETE THICKNESS	LOCATION OF READING - CORE	ALPHA (CPM) & (DPM) - CORE CPM	DPM	GAMMA (MR/HR) CORE	BETA (MR/HR) - CORE	GAMMA - BETA (MR/HR) - DRILL - HOLE @ DEPTH	URANIUM (PCI/GM) SOIL ANALYSIS	RA-226 (PCI/GM) SOIL ANALYSIS	COMMENTS - FOR CORE: F - FRACTURE, SF - SLIGHT FRACTURE, HF - HORIZONTAL FRACTURE, VF - VERTICAL FRACTURE
4-6-92	#2 - THICKNER PAD - NE	9 1/2"	A - TOP			10-12		.03 @ 3" CONTACT	8.3	1.1	FOR BOREHOLE - DRILLED ON CONSTRUCTION JOINT
			B - SIDE	27	200						
			C - BOTTOM	29	214						
4-6-92	#2 THICKNER PAD - SE	7.0"	A - AS			10-12		.03 @ 2" CONTACT	1.0	0.5	FOR BOREHOLE - DRILLED 12" FROM CONST. JOINT
			B - ABOVE	23	170						
			C	12-23	129						
4-6-92	#2 THICKNER PAD - CONE F.	19.0"	A			10-12		.03 @ 9"	0.8	0.6	FOR BORE HOLE - H2O IN HOLE
			B	30	222						
			C	28	207						
4-29-92	#2 THICKNER PAD - N	9.0"	A	42	310	9-11	.05	.03 @ 2" CONTACT	10.2	0.6	2 PIECES FOR BOREHOLE - DRILLED 6" FROM CONST. JOINT
			B	19	140						
			C	08	59						
4-28-92	#2 THICKNER PAD - W	6 3/4"	A	21	155	9-11		.03 @ 10" CONTACT	1.0	0.5	FOR BOREHOLE - DRILLED 16" FROM CONST. JOINT
			B	16	118						
			C	10	74		.03				
4-30-92	#2 THICKER TUNNEL - MIDDLE	15.0"	A	30	222	10-12	.03	.03 @ 9"	8.6	1.0	2 PIECES (13", 2") - SVF, HF FOR BOREHOLE - DRILLED ON SLIGHT CONC. FRACTURE
			B	15-27	155						
			C	11	81						
4-6-92	#3 THICKNER PAD - SW	11.0"	A			10-12		.03 @ 4" CONTACT	16.9	0.9	FOR BOREHOLE - DRILLED 16" FROM CONST. JOINT
			B	19	140						
			C	21	155						
4-6-92	#3 THICKNER PAD - SE	10.0"	A			10-12		.03 @ 14" CONTACT	0.7	0.8	FOR BOREHOLE - DRILLED 17" FROM CONST. JOINT
			B	21	155						
			C	16	118						
4-28-92	#3 THICKNER PAD - S.	6 1/2"	A	49	362	10-12	.03	.03 @ 10" CONTACT	4.2	0.7	FOR BOREHOLE - DRILLED 23" FROM CONST. JOINT
			B	11	81						
			C	15	111						
4-30-92	#3 THICKNER TUNNEL - MIDDLE	18.0"	A	263	1,944	9-11	.05	.03 @ 22"	1.7	0.7	2 PIECES (10", 8") HF
			B	07	52						
			C	15	111						
4-28-92	#3 THICKNER PAD - N	9.0"	A	35	259	9-11	.03	.03 @ 3" CONTACT	17.2	5.8	FOR BOREHOLE - DRILLED 19" FROM CONST. JOINT
			B	47	347						
			C	30	222						
4-6-92	#3 THICKNER PAD - CONE F.	17 1/2"	A			10-12		.03 @ 12"	0.6	0.4	FOR BORE HOLE - H2O IN HOLE
			B	27	200						
			C	19	140						
4-6-92	#4 THICKNER PAD - CONE F.	17 1/2"	A			10-12		.03 @ 14"	1.1	0.6	FOR BOREHOLE - H2O IN HOLE
			B	22	163						
			C	28	207						

NOTE: THE LOCATION A - TOP ALPHA (CPM) & (DPM) - CORE READING IS BEFORE DECONTAMINATION

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COMPUTATIONS

SUBJECT: RAD SURVEY ON SURFACE CONCRETE CORE, MILL HOLE AND SOIL SAMPLE ANALYZES FOR THE MILL CD CIRCUIT FOUNDATIONS.

Sheet No. 3 of 4
Made By: RC Date: 5-26-92
Chkd. By: Date:

DATE	DRILL HOLE / CONCRETE CORE ID	CONCRETE THICKNESS	LOCATION OF READING - CORE	ALPHA (CPM) & (DPM) - CORE CPM	DPM	GAMMA (MR/HR) CORE	BETA (MR/HR) CORE	GAMMA-BETA (MR/HR) - DRILL-HOLE @ DEPTH	URANIUM (PCi/GM) SOIL ANALYSIS	RA-226 (PCi/GM) SOIL ANALYSIS	COMMENTS - FOR CORE: F = FRACTURE, SF = SLIGHT FRACTURE, HF = HORIZONTAL FRACTURE, VF = VERTICAL FRACTURE
4-7-92	#4 THICKNER PAD - SW	12.0"	A - TOP			10-12		.03 @ 14½" CONTACT	29.9	0.7	FOR BOREHOLE - DRILLED 14" FROM CONST. JOINT
			B - SIDE	22-59	299						
			C - BOTTOM	25	185						
4-28-92	#4 THICKNER PAD - E	5½"	A - AS	44	325	9-11		.03 @ 19½" CONTACT	4.7	0.6	FOR BOREHOLE - DRILLED 22" FROM CONST. JOINT
			B - ABOVE	10	74						
			C	12	89		.03				
4-30-92	#4 THICKNER TUNNEL - MIDDLE	19.0"	A	486	3592	9-11	.05	.03 @ 23" CONTACT	1.0	0.7	3 pieces (5", 1", 3") - HF
			B	25	185						
			C	09	67						
4-28-92	#4 THICKNER PAD W.	10½"	A	08	59	10-11		.04 @ 14" CONTACT	6.3	0.6	FOR BOREHOLE - DRILLED ON CONST. JOINT
			B	10	74						
			C	15	111		.05				
4-7-92	#4 THICKNER PAD - N.E.	5¼"	A			10-12		.03 @ 10" CONTACT	1.1	0.5	HV - SPLIT CORE FOR BOREHOLE - DRILLED ON CONCRETE FRACTURE
			B	20-26	170						
			C	20	148						
4-7-92	#5 THICKNER PAD - N.W.	9.0"	A			10-12		.03 @ 10"	1.8	0.8	FOR BOREHOLE - H_2O IN HOLE AND DRILLED 10" FROM CONSTRUCTION JOINT
			B	15	111						
			C	24	177						
4-7-92	#5 THICKNER PAD - S.W.	8.0"	A			10-12		.03 @ 12½" CONTACT	2.1	0.6	FOR BOREHOLE - DRILLED 8" FROM CONST. JOINT
			B	22	163						
			C	25	185						
4-28-92	#5 THICKNER PAD - E.	6½"	A	52	384	9-11		.04 @ 9½"	1.2	1.3	2 pieces (4", 2½") - HF FOR BOREHOLE - H_2O IN HOLE, DRILLED 18" FROM CONST. JOINT
			B	07	52						
			C	18	137		.03				
4-30-92	#5 THICKNER TUNNEL - MIDDLE	19½"	A	507	3762	10-12		.05 @ 24" CONTACT	2.7	1.3	2 pieces (13½", 6") VF IN MIDDLE & HF FOR BOREHOLE - DRILLED ON CONC. FRACTURE
			B	07-87	347		.06				
			C	41	303		.06				
4-30-92	#5 THICKNER TUNNEL BASE	19.0"	A	1291	9542	10-12	.09	.03 @ 22" CONTACT	1.5	2.7	2 pieces - VF IN MIDDLE & HF FOR BOREHOLE - DRILLED ON CONC. FRACTURE
			B	17	126						
			C	15	111						
4-7-92	#5 THICKNER PAD - CONC F.	18¼"	A			10-12		.03 @ 7"	0.5	1.0	FOR BOREHOLE - H_2O IN HOLE
			B	26	192						
			C	21	155						
4-28-92	#5 THICKNER PAD - S.	8½"	A	64	473	10-11	.05	.03 @ 10"	3.6	0.9	FOR BOREHOLE - H_2O IN HOLE & DRILLED 10" FROM CONST. JOINT
			B	17	126						
			C	10	74						
4-7-92	#4 THICKNER PAD - N.E.	5½"	A			10-12		.03 @ 9" CONTACT	3.3	0.5	VF FOR BOREHOLE - DRILLED ON CONCRETE FRACTURE.
			B	15	111						
			C	25	185						

NOTE: THE LOCATION A-TOP ALPHA (CPM) & (DPM) - CORE READING IS BEFORE DECONTAMINATION.

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COMPUTATIONS

SUBJECT RAD SURVEY ON SURFACE CONCRETE CORE, DRILL HOLE AND SOIL SAMPLE ANALYZES FOR THE MILL CCD CIRCUIT FOUNDATIONS.

Sheet No. 4 of 4
Made By [illegible] Date 5-26-92
Chkd. By _____ Date _____

DATE	DRILL HOLE / CONCRETE CORE ID	CONCRETE THICKNESS	LOCATION OF READING - CORE	ALPHA (CPM) & (DPM) - CORE CPM	DPM	GAMMA (MR/HR) CORE	BETA (MR/HR) - CORE	GAMMA - BETA (MR/HR) - DRILL HOLE @ DEPTH	URANIUM (PCI/GM) SOIL ANALYSIS	RA-226 (PCI/GM) SOIL ANALYSIS	COMMENTS - FOR CORE: F - FRACTURE, SF - SLIGHT FRACTURE, HF - HORIZONTAL FRACTURE, VF - VERTICAL FRACTURE
4-7-92	#6 THICKNER PAD - CONE F.	19 1/2"	A - TOP			10-12		.03 @ 6"	0.4	0.6	FOR BOREHOLE - H2O IN HOLE
			B - SIDE	24	177						
			C - BOTTOM	25	185						
4-7-92	#6 THICKNER PAD - S.W.	7 1/4"	A - AS			10-12		.04 @ 9 1/2"	2.9	0.7	VF - SPLIT CORE FOR BOREHOLE - H2O IN HOLE, DRILLED ON CONCRETE FRACTURE
			B - ABOVE	20-201	817						
			C -	26	192						
4-28-92	#6 THICKNER PAD - N.E.	12.0"	A	77	569	10-12	.03	.05 @ 18" CONTACT	3.1	0.8	FOR BOREHOLE - DRILLED 6" FROM CONC. FRACTURE
			B	09	67						
			C	17	126						
4-28-92	#6 THICKNER PAD - E.	8.0"	A	55	407	9-11	.05	.03 @ 10"	2.1	0.6	FOR BOREHOLE - H2O IN HOLE - DRILLED 6" FROM CONC. FRACTURE
			B	17	126						
			C	11	81						
4-30-92	#6 THICKNER TUNNEL - MIDDLE	17 1/2"	A	985	7280	10-12	.05	.03 @ 21"	17.2	0.7	2 PIECES (13 1/2", 4") - SVF & HF
			B	13	96						
			C	07	52						
4-30-92	#6 THICKNER TUNNEL - BASE	18 1/2"	A	146	1079	10-12	.09	.03 @ 3"	9.6	0.7	2 PIECES (14", 4 1/2") + SVF & HF FOR BOREHOLE - H2O IN HOLE, DRILLED ON CONC. FRACTURE
			B	25	185		.08				
			C	06	44						
4-28-92	#6 THICKNER 15'S. OF CONE	7"	A	119	880	10-11	.03	.03 @ 5"	3.4	1.0	SVF FOR BOREHOLE + H2O IN HOLE, DRILLED ON CONC. FRACTURE
			B	14	103						
			C	08	59						
5-1-92	GRIZZLY TUNNEL - MIDDLE	12 1/2"	A	153	1131	9-11	.09	.03 @ 9"	1.1	0.8	2 PIECES (10 1/2", 2") - SVF & HF FOR BOREHOLE - H2O IN HOLE
			B	03	22						
			C	04	30						
											IMPORTANT NOTE: FOR YOUR INFORMATION
											THE LOCATION A-TOP ALPHA (CPM) & (DPM) - CORE READING IS BEFORE DECONTAMINATION.

SOIL ANALYSIS REPORT

ENERGY LABORATORIES

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254 NORTH CENTER, SUITE 100 • CASPER, WY 82601 • FAX (307) 234-1639

SOIL ANALYSIS REPORT - UNC MINING & MILLING, INC.

Project:	Churchrock	Churchrock
UNC Submittal #:	EW-1-4-92	EW-1-4-92
Sample I.D.:	#2 Cone	#1 SE
Sample Date:	04-06-92	04-06-92
Report Date:	04-22-92	04-22-92
Sample Number:	92-8133	92-8134
RADIOMETRIC pCi/gm:		
U	0.8	5.6
Ra226	0.6	0.5
Ra Prec. +/-	0.1	0.1

Q.A. MANAGER: R.A. Searing
Energy Laboratories, Inc.
Casper, Wyoming 82602

UNC MINING AND MILLING

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INSTRUMENTATION

EBERLINE PS-2/285W/AC-3/714209. (Th230/11093) =23.0% EFF.
LUD/19/9180 (Cs137/1524)=230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD#1 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS

Sheet No. 1 of 8
Made By MC, Date 7-10-92
Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR $\bar{C}$	α (CPM) LO-HI	CPM $\bar{C}$	DPM 100CM²	AREA ID	γ (MR/HR) LO-HI	MR/HR $\bar{C}$	α (CPM) LO-HI	CPM $\bar{C}$	DPM 100CM²	COMMENTS
(#1 TUNNEL FLOOR - TF)						TRW-9	9-11	10	36-48	42	310.4	
TF-1	9-11	10.0	18-18	18	133.0	10	9-11	10	33-50	42	310.4	NOTE:
2	8-12	10.0	12-66	39	288.3	(#1 CONE FLOOR - CF)						THE DIRECTION OF
3	8-10	9.0	3-6	5	37.0	CF-1	8-10	9	6-24	15	110.9	INCREMENTAL READING
4	7-11	9.0	98-126	112	827.8	2	8-10	9	18-120	69	510.0	IS FROM SOUTH EXIT-
5	8-10	9.0	42-48	45	332.6	3	10-12	11	18-48	33	243.9	CCD BSMT TO NORTH
6	8-11	10.0	60-123	92	680.0	4	10-12	11	18-78	48	354.8	ENTRY - CONE AND
7	8-11	10.0	36-66	51	377.0	(#1 CONE CEILING - CC)						ALL SURVEYS IS DONE
8	9-11	10.0	30-120	75	554.3	CC-1	8-10	9	30-48	39	288.3	ON APPROXIMATED 10'
9	9-11	10.0	18-30	24	177.4	2	8-10	9	36-54	45	332.6	X 10' GRID AREAS
10	9-11	10.0	16-25	21	155.2	3	10-12	11	18-54	36	266.1	AFTER ALL DECON-
(#1 TUNNEL CEILING - TC)						4	10-12	11	12-72	42	310.4	TAMINATION BY
TC-1	9-11	10	3-24	14	103.5	(#1 CONE LEFT WALL - CLW)						PRESSURIZE SAND-
2	8-12	10	3-3	3	22.2	CLW-1	8-10	9	6-48	27	199.6	BLASTING W/WATER
3	8-10	9	3-12	8	59.1	2	8-10	9	12-48	30	221.7	IS DONE.
4	7-11	9	6-18	12	88.7	(#1 CONE RIGHT WALL - CRW)						(FOR ALL SURVEYS
5	8-10	9	6-12	9	66.5	CRW-3	10-12	11	24-24	24	177.4	SEE SHEET 7 OF 8
6	8-11	10	30-36	33	243.9	4	10-12	11	12-42	32	236.5	AND 8 OF 8 DIAGRAMS
7	8-11	10	6-54	30	221.7	(#1 CONE END WALL - CEW)						FOR AREA ID LOCATIONS)
8	9-11	10	30-54	42	310.4	CEW-2	8-10	9	6-6	6	44.3	
9	9-11	10	24-60	42	310.4	3	10-12	11	12-24	18	133.0	
10	9-11	10	20-55	35	258.7	(#1 CONE TUNNEL WALL - CTW)						
(#1 TUNNEL LEFT WALL - TLW)						CTW-1	8-10	9	36-60	48	354.8	
TLW-1	9-11	10	12-54	33	243.9							
2	8-12	10	12-60	36	266.1							
3	8-10	9	3-66	35	258.7							
4	7-11	9	72-72	72	532.2							
5	8-10	9	30-42	36	266.1							
6	8-11	10	6-78	42	310.4							
7	8-11	10	96-102	99	731.7							
8	9-11	10	30-90	60	443.5							
9	9-11	10	9-12	11	81.3				N/A			
10	9-11	10	8-10	9	66.5							
(#1 TUNNEL RIGHT WALL - TRW)												
TRW-1	9-11	10	24-30	27	199.6							
2	8-12	10	12-72	42	310.4							
3	8-10	9	30-86	48	354.8							
4	7-11	9	42-78	60	443.5							
5	8-10	9	54-66	60	443.5							
6	8-11	10	72-84	78	576.5							
7	8-11	10	90-96	93	687.4							
8	9-11	10	84-102	93	687.4							

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INSTRUMENTATION

EBERLINE PS-2/285 w/AC-3/714209. (Th230/11093) =22.0% EFF.
LUD/19/9180. (Cs137/1524) = 230-240 uR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD#2 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS.

Sheet No. 2 of 8
Made By [illegible] Date 6-30, 7-1-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100cm²	AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100cm²	COMMENTS
(#2	TUNNEL		FLOOR	—	TF)	TRW-6	9-11	10	6-30	18	133.0	
TF-1	10-12	11	9-120	65	480.4	7	8-10	9	12-30	21	155.2	NOTE:
2	8-10	9	6-9	8	59.1	8	9-11	10	16-21	19	140.4	THE DIRECTION OF
3	8-10	9	9-18	14	103.5	9	9-12	11	24-102	63	465.7	INCREMENTAL READING
4	8-10	9	18-21	20	147.8	10	8-12	10	15-27	21	155.2	IS FROM SOUTH EXIT-
5	8-10	9	9-15	12	88.7	11	9-12	11	4-21	13	96.1	CCD BSMT. TO NORTH
6	9-11	10	78-99	89	657.8	(#2	CONE		FLOOR	—	CF)	ENTRY-CONE AND ALL
7	8-10	9	27-36	32	332.6	CF-1	9-12	11	12-18	15	110.9	SURVEYS ARE DONE
8	9-11	10	27-93	60	443.5	2	12-13	13	3-12	8	59.1	ON APPROXIMATED 10'
9	9-12	11	117-117	117	864.8	3	8-12	10	6-21	14	103.5	X 10' GRID AREAS
10	8-12	10	30-78	54	687.4	4	11-13	12	3-6	5	37.0	AFTER ALL DECON-
11	9-12	11	24-33	29	214.3	(#2	CONE		CEILING	—	CC)	TAMINATION BY
(#2	TUNNEL		CEILING	—	TC)	CC-1	9-12	11	4-18	11	81.3	PRESSURIZED SAND-
TC-1	10-12	11	3-114	59	436.1	2	12-13	13	6-14	10	73.9	BLASTING W/WATER
2	8-10	9	3-6	5	37.0	3	8-12	10	6-8	7	51.7	IS DONE.
3	8-10	9	3-4	4	30.0	4	11-13	12	10-12	11	81.3	
4	8-10	9	3-12	8	59.1	(#2	CONE		LEFT WALL	—	CLW)	
5	8-10	9	24-27	26	192.2	CLW-1	9-12	11	2-11	7	51.7	
6	9-11	10	9-15	12	88.7	2	12-13	13	6-12	9	66.5	
7	8-10	9	3-18	11	81.3	(#2	CONE		RIGHT WALL	—	CRW)	
8	9-11	10	21-102	62	458.3	CRW-3	8-12	10	4-5	5	37.0	
9	9-12	11	0-69	35	258.7	4	11-13	12	5-18	12	88.7	
10	8-12	10	24-24	24	177.4	(#2	CONE		END WALL	—	CEW)	
11	9-12	11	12-27	20	147.8	CEW-2	12-13	13	6-9	8	59.1	
(#2	TUNNEL		LEFT WALL	—	TLW)	3	8-12	10	2-8	5	37.0	
TLW-1	10-12	11	9-33	21	155.2	(#2	CONE		TUNNEL WALL	—	CTW)	
2	8-10	9	15-75	45	332.6	CTW-1	9-12	11	7-12	9	66.5	
3	8-10	9	21-30	26	192.2							
4	8-10	9	105-108	107	790.9							
5	8-10	9	33-81	57	421.3							
6	9-11	10	69-87	78	576.5							
7	8-10	9	36-66	51	377.0							
8	9-11	10	62-108	85	628.3							
9	9-12	11	42-54	48	354.8							
10	8-12	10	3-24	14	103.5							
11	9-12	11	12-30	21	155.2							
(#2	TUNNEL		RIGHT WALL	—	TRW)							
TRW-1	10-12	11	12-18	15	110.9							
2	8-10	9	48-71	60	443.5							
3	8-10	9	12-21	17	125.7							
4	8-10	9	21-42	32	236.5							
5	8-10	9	12-24	18	133.0							

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INSTRUMENTATION

EBER LINE #3-2/285 w/AC-3/714209. (Th230/11093) = 23.0% EFF.
A.00/19/9180 (Cs 137/1524) = 230-240 μR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #3 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS

Sheet No. 3 of 8
Made By [illegible] Date 6-25-92, 6-30-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(#3	TUNNE	EL	FLOO	R -	TF)	TRW-9	8-11	10	18-39	29	214.3	
TF-1	9-13	11	21-42	27	199.6	↓10	8-11	10	30-119	75	554.3	NOTE:
2	9-11	10	39-45	42	310.4	(#3	CONE	FLO	OR -	C	F)	THE DIRECTION OF
3	9-11	10	30-99	65	480.4	CF-1	10-12	11	5-13	9	66.5	INCREMENTAL READING
4	9-11	10	15-45	30	221.7	2	10-12	11	4-15	10	73.9	IS FROM EAST EXIT-
5	9-12	11	39-63	51	377.0	3	8-11	10	36-99	68	502.6	CCD BSMT, TO WEST
6	9-12	11	42-111	77	569.1	↓4	10-12	11	21-66	44	325.2	ENTRY-CONE AND ALL
7	9-13	11	42-75	59	436.1	(#3	CONE	C	EILIN	G -	CC)	SURVEYS ARE DONE ON
8	10-12	11	42-90	66	487.8	CC-1	9-12	11	12-18	15	110.9	APPROXIMATED 10'x10'
9	10-13	12	39-90	65	480.4	2	9-10	10	36-78	57	421.3	GRID AREAS AFTER ALL
↓10	10-13	12	36-96	66	487.8	3	9-11	10	42-54	48	354.8	DECONTAMINATION BY
(#3	TUNNE	EL	CEIL	ING	- TC)	↓4	9-11	10	45-60	53	391.7	PRESSURIZED SAND-
TC-1	10-11	11	4-4	4	29.6	(#3	CONE	LEFT	WALL	-	CLW)	BLASTING w/ WATER
2	9-11	10	15-82	49	362.2	CLW-1	9-11	10	49-58	54	399.1	IS DONE.
3	7-11	9	0-135	68	502.6	↓2	10-12	11	6-63	35	258.7	
4	9-11	10	27-45	36	266.1	(#3	CONE	RIGH	T WA	LL -	CRW)	CF-1, CF-2 &
5	10-12	11	60-95	78	576.5	CRW-3	9-11	10	33-114	74	547.0	CLW-1: AREAS RE-
6	10-11	11	18-48	33	243.9	↓4	9-12	11	30-102	66	487.8	SANDBLASTED ON
7	9-10	10	0-54	27	199.6	(#3	CONE	END	WA	L -	CEW)	6-30-92. PRIOR
8	9-11	10	0-30	15	110.9	CEW-2	8-11	10	30-57	44	325.2	READINGS C̄ = 383cpm
9	9-11	10	45-78	62	458.3	↓3	9-11	10	24-27	26	192.2	= 2,831 DPM.
↓10	9-11	10	47-70	59	436.1	(#3	CONE	TUNN	EL W	ALL -	CTW)	
(#3	TUNNE	EL	LEFT	WALL	- TLW)	CTW-1	9-11	10	27-30	29	214.3	
TLW-1	9-13	11	18-27	23	170.0							
2	8-10	9	3-18	11	81.3							
3	8-12	10	9-33	21	155.2							
4	8-10	9	36-54	45	332.6							
5	8-12	10	24-33	29	214.3							
6	8-12	10	36-120	78	576.5							
7	8-11	10	18-30	24	177.4							
8	8-11	10	48-105	77	569.1							
9	8-11	10	24-127	76	561.7				N/A			
↓10	8-11	10	30-119	75	554.3							
(#3	TUNNE	EL	RIGHT	WALL	- TRW)							
TRW-1	8-14	11	0-9	5	37.0							
2	9-12	11	18-42	30	221.7							
3	9-12	11	39-57	48	354.8							
4	8-14	11	0-21	11	81.3							
5	8-9	9	30-48	39	288.3							
6	8-11	10	9-24	17	125.7							
7	8-11	10	3-42	23	170.0							
↓8	8-11	10	42-57	50	369.6							

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INSTRUMENTATION

EBERLINE PS-2/285 W/AC-3/714209. (Th 230/11093) =28.0% EFF.
LUD/19/9180 (Cs137/1524) = 230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #4 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS

Sheet No. 4 of 8
Made By AC, Date 6-26, 6-30-92
Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(#4	TUNN	EL	FLOOR	- T	F)	TRW-9	8-12	10	57-69	63	465.7	
TF-1	9-10	10	6-9	8	59.1	↓ 10	8-12	10	61-75	68	502.6	NOTE:
2	8-10	9	120-131	126	931.3	(#4	CONE	FLO	OR -	C	F)	THE DIRECTION OF
3	8-10	9	57-69	63	465.7	CF-1	9-11	10	54-120	87	643.0	INCREMENTAL READING
4	7-11	9	15-21	18	133.0	2	9-11	10	51-130	91	672.6	IS FROM NORTH EXIT-
5	10-11	11	9-51	30	221.7	3	9-11	10	6-18	12	88.7	CCD BSMT. TO SOUTH
6	8-11	10	12-42	27	199.6	↓ 4	9-13	11	9-63	36	266.1	ENTRY-CONE AND ALL
7	8-10	9	42-66	54	399.1	(#4	CONE	C	EILI	NG-	CC)	SURVEYS ARE DONE ON
8	7-11	9	60-105	83	613.5	CC-1	9-11	10	3-60	32	236.5	APPROXYMATED 10'x10'
9	8-12	10	54-132	93	687.4	2	9-11	10	24-48	36	266.1	GRID AREAS AFTER ALL
↓ 10	8-12	10	52-134	93	687.4	3	9-11	10	18-66	39	288.3	DECONTAMINATION BY
(#4	TUNN	EL	CEIL	ING	- TC)	↓ 4	9-13	11	15-45	30	221.7	PRESSURIZED SAND -
TC-1	9-10	10	0-3	2	14.8	(#4	CONE	LE	FT W	ALL	- CLW)	BLASTING W/WATER
2	8-10	9	3-3	3	22.2	CLW-1	9-11	10	6-12	9	66.5	IS DONE.
3	8-10	9	3-69	36	266.1	↓ 2	9-11	10	6-6	6	44.3	
4	7-11	9	18-51	35	258.7	(#4	CONE R	IGH	T WAL	L -	CRW)	TF-1: AREA RE-
5	10-11	11	0-21	11	81.3	CRW-3	9-11	10	3-6	5	37.0	SAND BLASTED ON
6	8-11	10	6-9	8	59.1	↓ 4	9-13	11	12-66	39	288.3	6-30-92. PRIOR
7	8-10	9	0-0	0	< BKGD	(#4	CONE	END	WALL	-	CEW)	READING = 1400CPM =
8	7-11	9	9-30	20	147.8	CEW-2	9-11	10	6-12	9	66.5	10,348 DPM
9	8-12	10	14-60	37	273.5	↓ 3	9-11	10	1-15	8	59.1	
↓ 10	8-12	10	14-65	40	295.7	(#4	CONE	TUNN	EL WA	LL -	CTW)	
(#4	TUNNE	L L	EFT W	ALL	- TLW)	CTW-1	9-11	10	6-18	12	88.7	
TLW-1	9-10	10	24-39	32	236.5							
2	8-10	9	18-21	20	147.8							
3	8-10	9	18-30	24	177.4							
4	7-11	9	27-33	30	221.7							
5	10-11	11	66-66	66	487.8							
6	8-11	10	63-126	95	702.2							
7	8-10	9	18-90	54	399.1							
8	7-11	9	27-51	39	288.3							
9	8-12	10	27-30	29	214.3				N/A			
↓ 10	8-12	10	30-33	32	236.5							
(#4	TUNNE	L R	IGHT	WALL	- TRW)							
TRW-1	9-10	10	24-42	33	243.9							
2	8-10	9	33-39	36	266.1							
3	8-10	9	30-60	45	332.6							
4	7-11	9	18-108	58	428.7							
5	10-11	11	18-66	47	347.4							
6	8-11	10	24-72	48	354.8							
7	8-10	9	12-87	50	369.6							
↓ 8	7-11	11	0-6	3	22.2							

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EDGRLINE PS-2/285 W/AC-3/714.209. (Th230/1109.2) = 23.0% EFF.
LUD/19/9180. (Cs137/1524) = 230-240 MA/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #5 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS.

Sheet No. 5 of 8
Made By MC, Date 6-26, 6-30-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²
(#5 TUNNEL FLOOR — TF)					
TF-1	10-13	12	9-12	11	81.3
2	8-10	9	24-30	27	199.6
3	8-10	9	6-24	15	110.9
4	8-11	10	30-30	30	221.7
5	8-10	9	63-135	99	731.7
6	8-10	9	42-96	69	510.0
7	8-10	10	48-108	78	576.5
8	8-10	10	54-57	56	413.9
9	8-12	10	6-30	18	133.0
10	8-10	9	6-18	12	88.7
11	9-10	10	6-30	18	133.0
(#5 TUNNEL CEILING - TC)					
TC-1	10-13	12	48-99	74	547.0
2	8-10	9	9-12	11	81.3
3	8-10	9	12-12	12	88.7
4	8-11	10	42-57	50	369.6
5	8-10	9	9-24	17	125.7
6	8-10	9	18-134	76	561.7
7	8-10	9	0-3	2	14.8
8	8-10	9	3-3	3	22.2
9	8-12	10	0-36	18	133.0
10	8-10	9	0-36	18	133.0
11	9-10	10	60-69	65	480.4
(#5 TUNNEL LEFT WALL - TLW)					
TLW-1	10-13	12	0-18	9	66.5
2	8-10	9	18-54	36	266.1
3	8-10	9	24-132	78	576.5
4	8-11	10	24-72	48	354.8
5	8-10	9	12-18	15	110.9
6	8-10	9	18-78	48	354.8
7	8-10	9	3-18	11	81.3
8	8-10	9	6-6	6	44.3
9	8-12	10	3-36	20	147.8
10	8-10	9	0-3	2	14.8
11	9-10	10	0-6	3	22.2
(#5 TUNNEL RIGHT WALL - TRW)					
TRW-1	10-13	12	3-6	5	37.0
2	8-10	9	18-36	27	199.6
3	8-10	9	0-6	3	22.2
4	8-11	10	12-22	17	125.7
5	8-10	9	12-66	39	288.3
TRW-6	8-10	9	12-96	54	399.1
7	8-10	9	24-42	33	243.9
8	8-10	9	12-54	33	243.9
9	8-12	10	20-72	46	340.0
10	8-10	9	0-66	33	243.9
11	9-10	10	6-18	12	88.7
(#5 CONE FLOOR — CF)					
CF-1	9-11	10	18-21	20	147.8
2	9-10	10	12-12	12	88.7
3	9-11	10	36-36	36	266.1
4	9-13	11	18-24	21	155.2
(#5 CONE CEILING — CC)					
CC-1	9-11	10	0-3	2	14.8
2	9-10	10	27-51	39	288.3
3	9-11	10	12-30	21	155.2
4	9-13	11	0-12	6	44.3
(#5 CONE LEFT WALL - CLW)					
CLW-1	9-11	10	9-12	11	81.3
2	9-10	10	9-33	21	155.2
(#5 CONE RIGHT WALL - CRW)					
CRW-3	9-11	10	0-3	2	14.8
4	9-13	11	6-6	6	44.3
(#5 CONE END WALL — CEW)					
CEW-2	9-10	10	12-21	17	125.7
3	9-11	10	3-12	8	59.1
(#5 CONE TUNNEL WALL - CTW)					
CTW-1	9-11	10	0-18	9	66.5

N/A

COMMENTS

NOTE: THE DIRECTION OF INCREMENTAL READING IS FROM NORTH EXIT-CCD BSMT. TO SOUTH ENTRY-CONE AND ALL SURVEYS ARE DONE ON APPROXIMATED 10' X 10' GRID AREAS AFTER ALL DECONTAMINATION BY PRESSURIZED SAND BLASTING W/WATER IS DONE.

TF-1: AREA RE-SAND BLASTED ON 6-30-92. PRIOR READING = 1830 CPM = 13,952 DPM.

UNC MINING AND MILLING

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INSTRUMENTATION

EBERLINE PS-2/2B5 w/AC-2/714209. (Th230/1109S) = 23.0% EFF.
LUD/19/9180. (Cs137/1524) = 230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #6 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS.

Sheet No. 6 of 8
Made By MC Date 7-8-92
Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²
(#6 TUNNEL FLOOR - TF)					
TF-1	8-10	9	3-6	5	37.0
2	10-12	11	18-24	21	155.2
3	8-12	10	6-78	42	310.4
4	10-12	11	18-30	24	177.4
5	10-12	11	108-126	117	864.8
6	9-11	10	72-102	87	643.0
7	12-15	14	60-78	69	510.0
8	8-11	10	36-78	57	421.3
9	8-12	10	60-102	81	598.7
10	8-12	10	65-110	88	650.4
(#6 TUNNEL CEILING - TC)					
TC-1	8-10	9	3-60	32	236.5
2	10-12	11	3-3	3	22.2
3	8-12	10	3-9	6	44.3
4	10-12	11	60-78	69	510.0
5	10-12	11	6-60	33	243.9
6	9-11	10	6-12	9	66.5
7	12-15	14	12-36	24	177.4
8	8-11	10	12-48	30	221.7
9	8-12	10	48-66	57	421.3
10	8-12	10	53-68	61	450.9
(#6 TUNNEL LEFT WALL - TLW)					
TLW-1	8-10	9	3-24	14	103.5
2	10-12	11	6-9	8	59.1
3	8-12	10	6-54	30	221.7
4	10-12	11	42-126	84	620.9
5	10-12	11	24-84	54	399.1
6	9-11	10	24-24	24	177.4
7	12-15	14	18-18	18	133.0
8	8-11	10	18-36	27	199.6
9	8-12	10	6-24	15	110.9
10	8-12	10	7-28	18	133.0
(#6 TUNNEL RIGHT WALL - TRW)					
TRW-1	8-10	9	90-102	96	709.6
2	10-12	11	60-66	63	465.7
3	8-12	10	6-54	30	221.7
4	10-12	11	30-90	60	443.5
5	10-12	11	102-109	106	783.5
6	9-11	10	66-102	84	620.9
7	12-15	14	12-60	36	266.1
8	8-11	10	3-66	35	258.7
TRW-9	8-12	10	24-102	72	532.2
10	8-12	10	17-111	64	473.0
(#6 CONE FLOOR - CF)					
CF-1	8-10	9	12-60	36	266.1
2	12-18	15	6-30	18	133.0
3	9-11	10	18-60	39	288.3
4	10-12	11	36-66	51	377.0
(#6 CONE CEILING - CC)					
CC-1	8-10	9	18-78	48	354.8
2	12-18	15	18-36	27	199.6
3	9-11	10	24-84	54	399.1
4	10-12	11	30-36	33	243.9
(#6 CONE LEFT WALL - CLW)					
CLW-1	8-10	9	36-96	66	487.8
2	12-18	15	18-78	48	354.8
(#6 CONE RIGHT WALL - CRW)					
CRW-3	9-11	10	36-36	36	266.1
4	10-12	11	12-36	24	177.4
(#6 CONE END WALL - CEW)					
CEW-2	12-18	15	18-30	24	177.4
3	9-11	10	42-66	54	399.1
(#6 CONE TUNNEL WALL - CTW)					
CTW-1	8-10	9	3-42	23	170.0
			N/A		

COMMENTS

NOTE: THE DIRECTION OF INCREMENTAL READING IS FROM WEST EXIT - CCD BEMT. TO SOUTH ENTRY - CONE AND ALL SURVEYS ARE DONE ON APPROXIMATED 10'X10' GRID AREAS AFTER ALL DECONTAMINATION BY PRESSURIZED SAND-BLASTING W/WATER IS DONE.

TF 5-7: DECON AFTER FURTHER SANDBLASTING INCLUDING ACID WASH ON 7-13-92, PRIOR READING-C̄ = 859 CPM = 6,345 DPM.

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COMPUTATIONS

SUBJECT DIAGRAM OF AREA ID GRID ON THE CCD-THICKNER TUNNEL CEMENT SURFACE AREAS FOR RADIOLOGICAL VERIFICATION FIELD SURVEY.

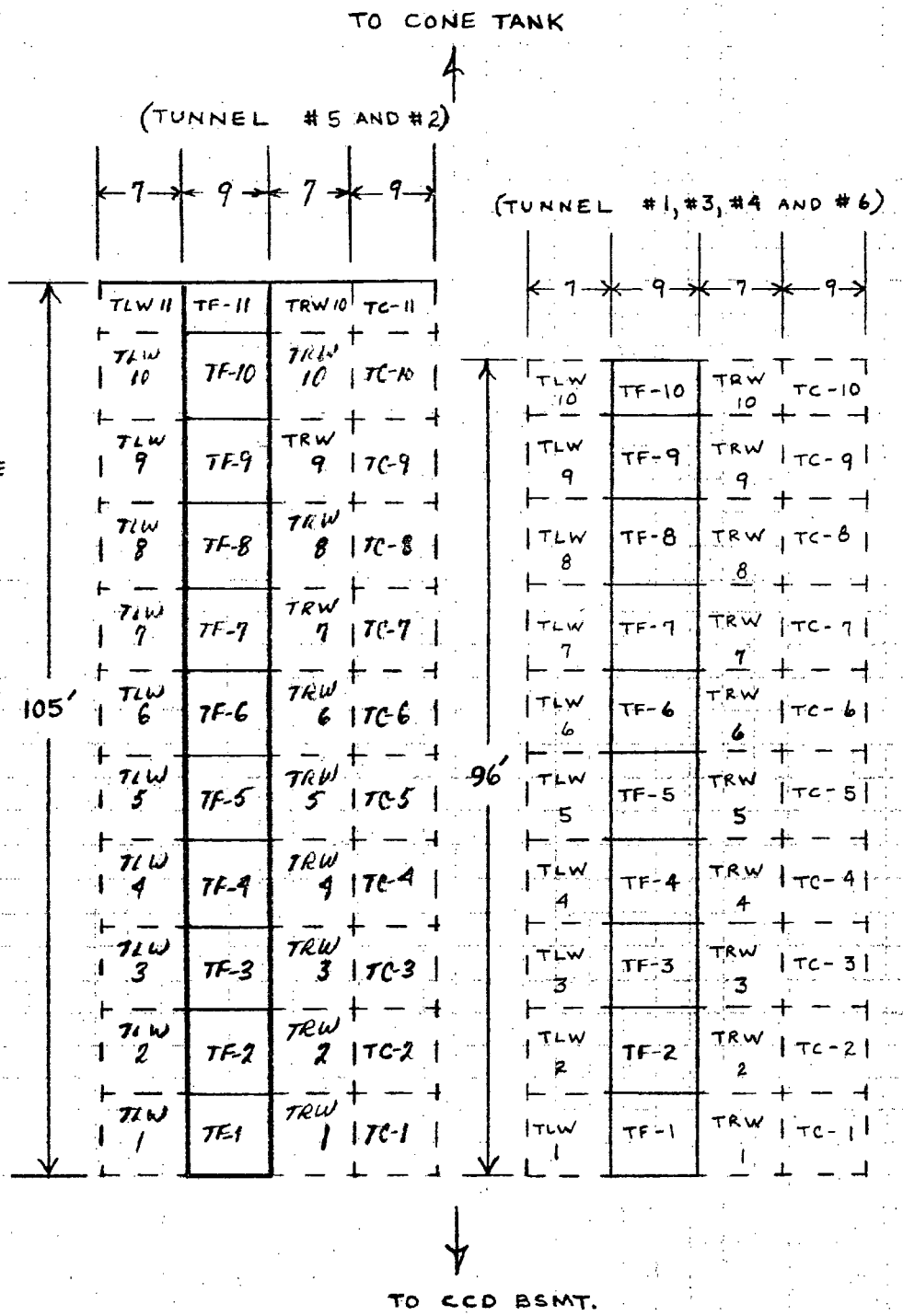
Sheet No. 7 of 8
Made By MC, Date 7-6-92
Chkd. By _____ Date _____

L - LEFT
R - RIGHT
W - WALL
F - FLOOR
C - CEILING
T - TUNNEL

NOT TO SCALE

GRID AT 10' CENTERS

DOTTED LINES INDICATE WALL AND CEILING



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COMPUTATIONS

SUBJECT DIAGRAM OF AREA ID GRID ON THE CCD-THICKNER CONE TANK COMPARTMENT CEMENT SURFACE AREAS FOR RADIOLOGICAL VERIFICATION FIELD SURVEY.

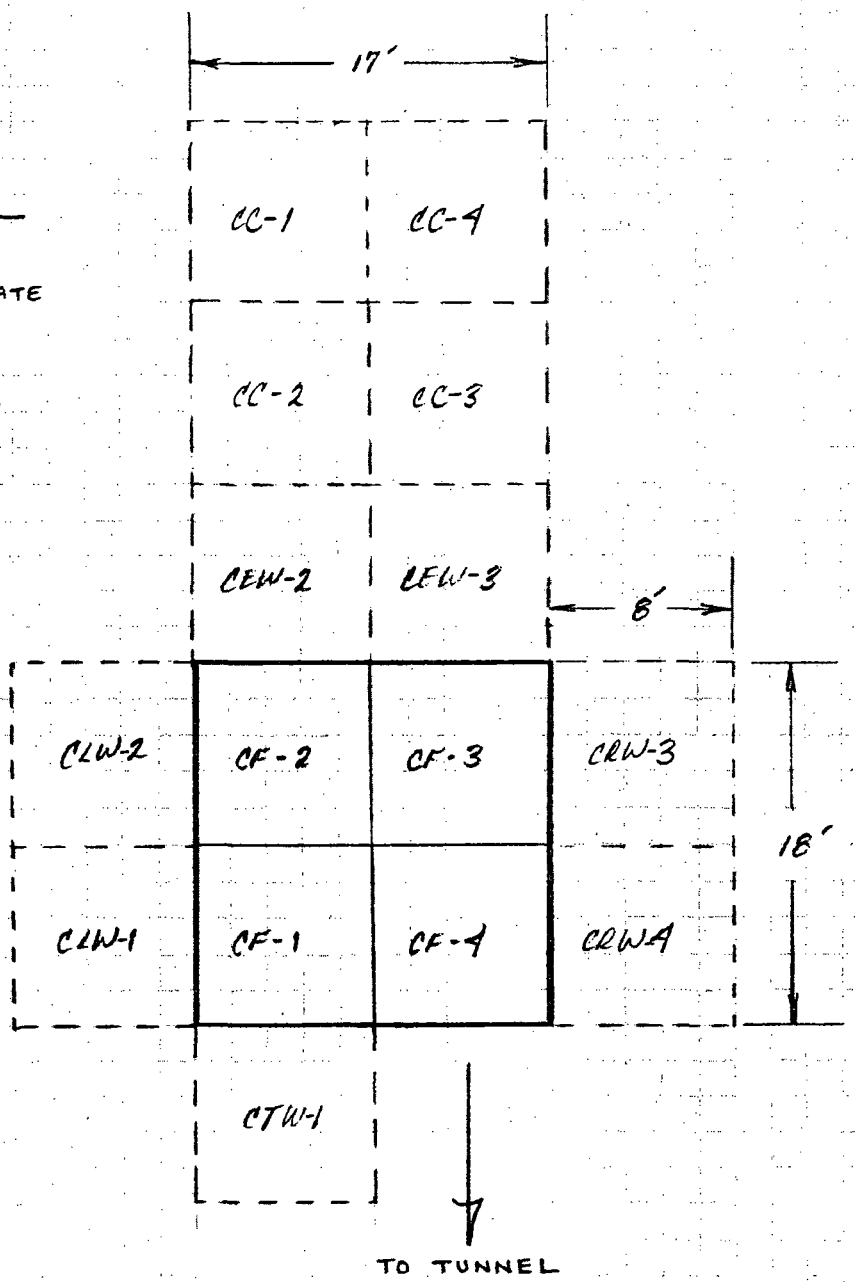
Sheet No. 8 of 8
Made By MC, Date 7-6-92
Chkd. By _____ Date _____

CC - CONE / CEILING
E - END
T - TUNNEL
L - LEFT
R - RIGHT
W - WALL
F - FLOOR
C - CONE

— NOT TO SCALE —

BLACK LINES INDICATE WALL AND CEILING

GRID ≅ 10' CENTERS



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SOIL ANALYSIS REPORT - UNC MINING & MILLING, INC.

Project:	Churchrock	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-1-4-92	EW-1-4-92	EW-1-4-92	EW-1-4-92	EW-1-4-92
Sample I.D.:	Basement N	Basement SW Corner	#2 NE	#4 NE	#3 SW
Sample Date:	04-08-92	04-08-92	04-06-92	04-07-92	04-06-92
Report Date:	04-22-92	04-22-92	04-22-92	04-22-92	04-22-92
Sample Number:	92-8113	92-8114	92-8115	92-8116	92-8117
RADIOMETRIC pCi/gm:					
U	22.9	26.6	8.3	1.1	16.9
Ra226	1.2	0.6	1.1	0.5	0.9
Ra Prec. +/-	0.1	0.1	0.1	0.1	0.1

Project:	Churchrock	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-1-4-92	EW-1-4-92	EW-1-4-92	EW-1-4-92	EW-1-4-92
Sample I.D.:	#5 Cone	#6 Cone	#3 SE	#3 Cone	#4 Cone
Sample Date:	04-07-92	04-07-92	04-06-92	04-06-92	04-06-92
Report Date:	04-22-92	04-22-92	04-22-92	04-22-92	04-22-92
Sample Number:	92-8118	92-8119	92-8120	92-8121	92-8122
RADIOMETRIC pCi/gm:					
U	0.5	0.4	0.7	0.6	1.1
Ra226	1.0	0.6	0.8	0.4	0.6
Ra Prec. +/-	0.1	0.1	0.1	0.1	0.1

Q.A. MANAGER: R.A. Leading
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SOIL ANALYSIS REPORT - UNC MINING & MILLING, INC.

Project:	Churchrock	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-1-4-92	EW-1-4-92	EW-1-4-92	EW-1-4-92	EW-1-4-92
Sample I.D.:	#5 NW	#2 SE	#5 SW	#6 NE	#1 SW
Sample Date:	04-07-92	04-06-92	04-07-92	04-07-92	04-06-92
Report Date:	04-22-92	04-22-92	04-22-92	04-22-92	04-22-92
Sample Number:	92-8123	92-8124	92-8125	92-8126	92-8127
RADIOMETRIC pCi/gm:					
U	1.8	1.0	2.1	3.3	8.5
Ra226	0.8	0.5	0.6	0.5	0.6
Ra Prec. +/-	0.1	0.1	0.1	0.1	0.1

Project:	Churchrock	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-1-4-92	EW-1-4-92	EW-1-4-92	EW-1-4-92	EW-1-4-92
Sample I.D.:	Basement SE Corner	#1 Cone	Basement Sump	#6 SW	#4 SW
Sample Date:	04-08-92	04-06-92	04-08-92	04-07-92	04-07-92
Report Date:	04-22-92	04-22-92	04-22-92	04-22-92	04-22-92
Sample Number:	92-8128	92-8129	92-8130	92-8131	92-8132
RADIOMETRIC pCi/gm:					
U	3.5	0.9	10.2	2.9	29.7
Ra226	1.2	0.6	1.1	0.7	0.6
Ra Prec. +/-	0.1	0.1	0.1	0.1	0.1

Q.A. MANAGER: R.A. Gearing
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SOIL ANALYSIS REPORT - UNC MINING & MILLING, INC.

Project:	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-9-5-92	EW-9-5-92	EW-9-5-92	EW-9-5-92
Sample I.D.:	#5 East	#5 South	#5 Tunnel Middle	#3 South
Sample Date:	04-28-92	04-28-92	04-30-92	04-28-92
Report Date:	06-01-92	06-01-92	06-01-92	06-01-92
Sample Number:	92-13898	92-13899	92-13900	92-13901
RADIOMETRIC pCi/gm:				
U	1.2	3.6	2.7	4.2
Ra226	1.3	0.9	1.3	0.7
Ra Prec. +/-	0.4	0.1	0.1	0.1

Project:	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-9-5-92	EW-9-5-92	EW-9-5-92	EW-9-5-92
Sample I.D.:	#6 Northeast	#4 East	#3 Tunnel Middle	#4 Tunnel Middle
Sample Date:	04-28-92	04-28-92	04-30-92	04-30-92
Report Date:	06-01-92	06-01-92	06-01-92	06-01-92
Sample Number:	92-13902	92-13903	92-13904	92-13905
RADIOMETRIC pCi/gm:				
U	3.1	4.7	1.7	1.0
Ra226	0.8	0.8	0.7	0.7
Ra Prec. +/-	0.1	0.1	0.1	0.1

Q.A. MANAGER: R.A. Gearing
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SOIL ANALYSIS REPORT - UNC MINING & MILLING, INC.

Project:	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-9-5-92	EW-9-5-92	EW-9-5-92	EW-9-5-92
Sample I.D.:	#1 Northeast	#3 North	#6 East	#2 North
Sample Date:	04-22-92	04-28-92	04-28-92	04-27-92
Report Date:	06-01-92	06-01-92	06-01-92	06-01-92
Sample Number:	92-13906	92-13907	92-13908	92-13909
RADIOMETRIC pCi/gm:				
U	9.6	17.2	2.1	10.3
Ra226	0.5	5.8	0.6	0.6
Ra Prec. +/-	0.1	0.2	0.1	0.1

Project:	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-9-5-92	EW-9-5-92	EW-9-5-92	EW-9-5-92
Sample I.D.:	#1 Northwest	South Side CCD Pump	#2 West	#4 West
Sample Date:	04-27-92	04-30-92	04-28-92	04-28-92
Report Date:	06-01-92	06-01-92	06-01-92	06-01-92
Sample Number:	92-13910	92-13911	92-13912	92-13913
RADIOMETRIC pCi/gm:				
U	7.6	1.9	1.0	6.3
Ra226	0.8	1.1	0.5	0.6
Ra Prec. +/-	0.1	0.1	0.1	0.1

Q.A. MANAGER: R.A. Leading
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SOIL ANALYSIS REPORT - UNC MINING & MILLING, INC.

Project:	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-9-5-92	EW-9-5-92	EW-9-5-92	EW-9-5-92
Sample I.D.:	#5 Tunnel Base	#6 Tunnel Base	#1 Tunnel Middle	#2 Tunnel Middle
Sample Date:	04-30-92	04-30-92	04-30-92	04-30-92
Report Date:	06-01-92	06-01-92	06-01-92	06-01-92
Sample Number:	92-13914	92-13915	92-13916	92-13917
RADIOMETRIC pCi/gm:				
U	1.5	3.6	3.2	8.6
Ra226	0.7	0.7	1.0	1.0
Ra Prec. +/-	0.1	0.1	0.1	0.1

Project:	Churchrock	Churchrock	Churchrock	Churchrock
UNC Submittal #:	EW-9-5-92	EW-9-5-92	EW-9-5-92	EW-9-5-92
Sample I.D.:	CCD Basement NE Corner	#6 Tunnel Middle	#6 - 15' South Side of Cone	Grizzly Tunn Middle
Sample Date:	04-30-92	04-30-92	04-28-92	05-01-92
Report Date:	06-01-92	06-01-92	06-01-92	06-01-92
Sample Number:	92-13918	92-13919	92-13920	92-13921
RADIOMETRIC pCi/gm:				
U	8.4	17.2	3.4	1.1
Ra226	0.8	0.7	1.0	0.8
Ra Prec. +/-	0.1	0.1	0.1	0.1

Q.A. MANAGER: R.A. Leasing
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SOIL ANALYSIS REPORT - UNC MINING & MILLING, INC.

Project:	Churchrock
UNC Submittal #:	EW-9-5-92
Sample I.D.:	CCD Basement NW Corner
Sample Date:	04-30-92
Report Date:	06-01-92
Sample Number:	92-13922

RADIOMETRIC pCi/gm:	
U	6.4
Ra226	1.3
Ra Prec. +/-	0.1

Q.A. MANAGER: R.O. Lanting
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Casper, Wyoming 82602

CONCRETE SURFACE RADIOLOGICAL DATA

- CCD Basement Surface
  CCD Basement Potable Water, Drain and Conduit Pipe Outlets
  Electrical (Vault) Manhole Surface
- CCD Thickner Floor
- Grizzly Tunnel and Basement Surfaces
- CCD Thickner Tunnel and Tunnel Cone Area Surface

Radiological Data

for

CCD Basement Surface

CCD Basement Potable Water, Drain and Conduit Pipe Outlets

Electrical (Vault) Manhole Surface

Refer Area ID in Field Data Sheet to Diagram to Locate Data Points

UNC MINING AND MILLING

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INSTRUMENTATION

UNC EBERLINE PS-2/285 W/AC-3/714209. (Th230/4093) = 23.0 % EFF.
LUD/19/9180 (Cs137/1524) = 230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD CEMENT BASEMENT AND OTHER MATERIAL SURFACE AREAS. Sheet No. 1 of 3 Made By [illegible] Date 7-9-92 Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(F	LOOR				F)	SW-26	10-14	12	24-30	27	199.6	
F-1	11-14	12	1-2	2	14.8	↓35	10-14	12	24-30	27	199.6	NOTE:
2	10-13	12	4-14	9	66.5	(SOUTH	TOP	WALL			STW)	ALL SURVEYS ARE
3	10-12	11	1-42	22	162.6	STW-5	10-14	12	18-30	24	177.4	DONE ON APPROXIMAT-
4	9-14	12	8-14	11	81.3	6	10-14	12	18-24	21	155.2	ED 10'X10' GRID
5	10-14	12	4-6	5	37.0	15	10-14	12	12-36	24	177.4	AREAS AFTER ALL
6	10-14	12	40-42	41	303.0	16	10-14	12	18-30	24	177.4	DECONTAMINATION BY
7	9-14	12	4-6	5	37.0	25	10-14	12	3-12	8	59.1	PRESSURIZED SAND-
8	10-12	11	1-4	3	22.2	26	10-14	12	3-12	8	59.1	BLASTING W/WATER
9	10-13	12	2-4	3	22.2	↓35	10-14	12	12-48	30	221.7	IS DONE.
10	11-14	12	0-4	2	14.8	(NORTH	WALL				NW)	(SEE SHEET 3 OF 3
11	11-14	12	1-30	16	118.3	NW-1	10-11	11	6-12	9	66.5	DIAGRAM FOR AREA
12	10-13	12	8-20	14	103.5	10	10-12	11	3-42	23	170.3	ID LOCATION)
13	10-12	11	12-36	24	177.4	11	10-12	11	3-12	8	59.1	
14	9-14	12	3-12	8	59.1	20	11-14	13	6-24	15	110.9	
15	10-14	12	2-8	5	37.0	21	14-16	15	15-39	27	199.6	
16	10-14	12	8-8	8	59.1	30	10-13	12	11-15	13	96.1	
17	9-14	12	3-8	6	44.3	↓31	10-13	12	0-27	14	103.5	
18	10-12	11	1-30	16	118.3	(NORTH	TOP	WALL			NTW)	
19	10-13	12	1-38	20	147.8	NTW-1	10-11	11	6-12	9	66.5	
20	11-14	12	10-15	13	96.1	10	10-12	11	3-12	8	59.1	
21	11-14	12	12-20	16	118.3	11	10-12	N	6-6	6	44.3	
22	10-13	12	2-28	15	110.9	20	11-14	13	14-21	18	133.0	
23	10-12	11	2-6	4	29.6	21	14-16	15	15-30	23	170.0	
24	9-14	12	1-2	2	14.8	30	10-13	12	3-15	9	66.5	
25	10-14	12	2-20	11	81.3	↓31	10-13	12	6-18	12	88.7	
26	10-14	12	4-20	12	88.7	(EAST	WALL				EW)	
27	9-14	12	1-6	4	29.6	EW-1	10-11	11	3-18	11	81.3	
28	10-12	11	12-26	19	140.4	2	10-11	11	12-24	18	133.0	
29	10-13	12	4-30	17	125.7	3	10-11	11	12-24	18	133.0	
30	11-14	12	0-6	3	22.2	4	10-11	11	6-42	24	177.4	
31	11-14	12	18-23	21	155.2	↓5	10-11	11	6-12	9	66.5	
32	10-13	12	6-10	8	59.1	(EAST	TOP	WALL			-ETW)	
33	10-12	11	6-18	12	88.7	ETW-1	10-11	11	3-18	11	81.3	
34	9-14	12	6-6	6	44.3	2	10-11	11	12-18	15	110.9	
↓35	10-14	12	1-2	2	14.8	3	10-11	11	12-18	15	110.9	
(SOUTH	WALL				SW)	4	10-11	11	12-12	12	88.7	
SW-5	10-14	12	36-42	39	288.3	↓5	10-11	11	12-12	12	88.7	
6	10-14	12	18-30	24	177.4							
15	10-14	12	3-12	8	59.1			N				
16	10-14	12	3-12	8	59.1				A			
↓25	10-14	12	36-36	36	266.1							

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INSTRUMENTATION

EBERLINE PS-2/285 w/AC-3/914209. (Th230/11093) = 23.0% EFF.
LUD/19/9180 (C5137/1524) = 230-240 μR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD CEMENT BASEMENT AND OTHER MATERIAL SURFACE AREAS

Sheet No. 2 of 3
Made By mc Date 7-9-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(WEST WALL — WW)						(PRECIP MANHOLE FLOOR — PMF)						PRECIP MANHOLE IS LOCATED NORTH OF MILL BLDG. AREA.
WW-31	10-14	12	6-6	6	44.3	PMF	8-10	9	5-15	10	73.9	
32	8-12	10	9-18	14	103.5	(PRECIP MANHOLE SOUTH WALL-PMSW)						
33	11-14	13	6-15	11	81.3	PMSW	8-10	9	6-6	6	44.3	
34	10-13	12	12-48	30	221.7	(PRECIP MANHOLE NORTH WALL-PMNW)						
35	10-12	11	6-36	21	155.2	PMNW	8-10	9	4-6	5	37.0	
(WEST WALL TOP — WWT)						(PRECIP MANHOLE EAST WALL-PMEW)						
WWT-31	10-14	12	15-18	17	125.7	PMEW	8-10	9	2-8	5	37.0	
32	8-12	10	3-12	8	59.1	(PRECIP MANHOLE WEST WALL-PMWW)						
33	11-14	13	0-9	5	37.0	PMWW	8-10	9	10-18	14	103.5	
34	10-13	12	12-24	18	133.0							
35	10-12	11	12-13	13	96.1							SURVEY DONE ON ALL SIDES OF PILLAR
(WEST PILLAR BOTTOM — WPB)												
WPB	10-12	11	3-6	5	37.0							
(WEST PILLAR TOP — WPT)												
WPT	10-12	11	3-12	8	59.1							CONTAMINATED STAIRWAY IS TAKEN OUT & BURIED IN BP#2
(EAST PILLAR BOTTOM — EPB)												
EPB	8-12	10	3-24	14	103.5							READING C̄ = 152 CPM = 1,123.5 DPM
(EAST PILLAR TOP — EPT)												
EPT	8-12	10	3-6	5	37.0							
(4-6" x 6" DRAIN PIPES — DP-1)												SURVEY DONE ON THE INTERIOR AREAS OF DRAIN PIPES WHICH ARE LOCATED ON WALL AREAS.
DP-1	8-10	9	10-20	15	110.9							
(2-8" x 8" DRAIN PIPES — DP-2)												
DP-2	8-10	9	5-20	13	96.1							
(1-3' x 3' DRAIN PIPE — DP-3)									N/A			DP-3: ALL SOIL SETTLEMENT @ BOTTOM OF PIPE IS REMOVED BY WATER PRESSURE PRIOR TO CAPPING.
DP-3	14-15	15	47-113	80	591.3							
(5-3" x 3" COND UITS — C)												
C	8-10	9	5-50	28	207.0							
			N/A									NOTE: SEE SHEET 3 OF 3 DIAGRAM FOR AREA ID LOCATION.

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COMPUTATIONS

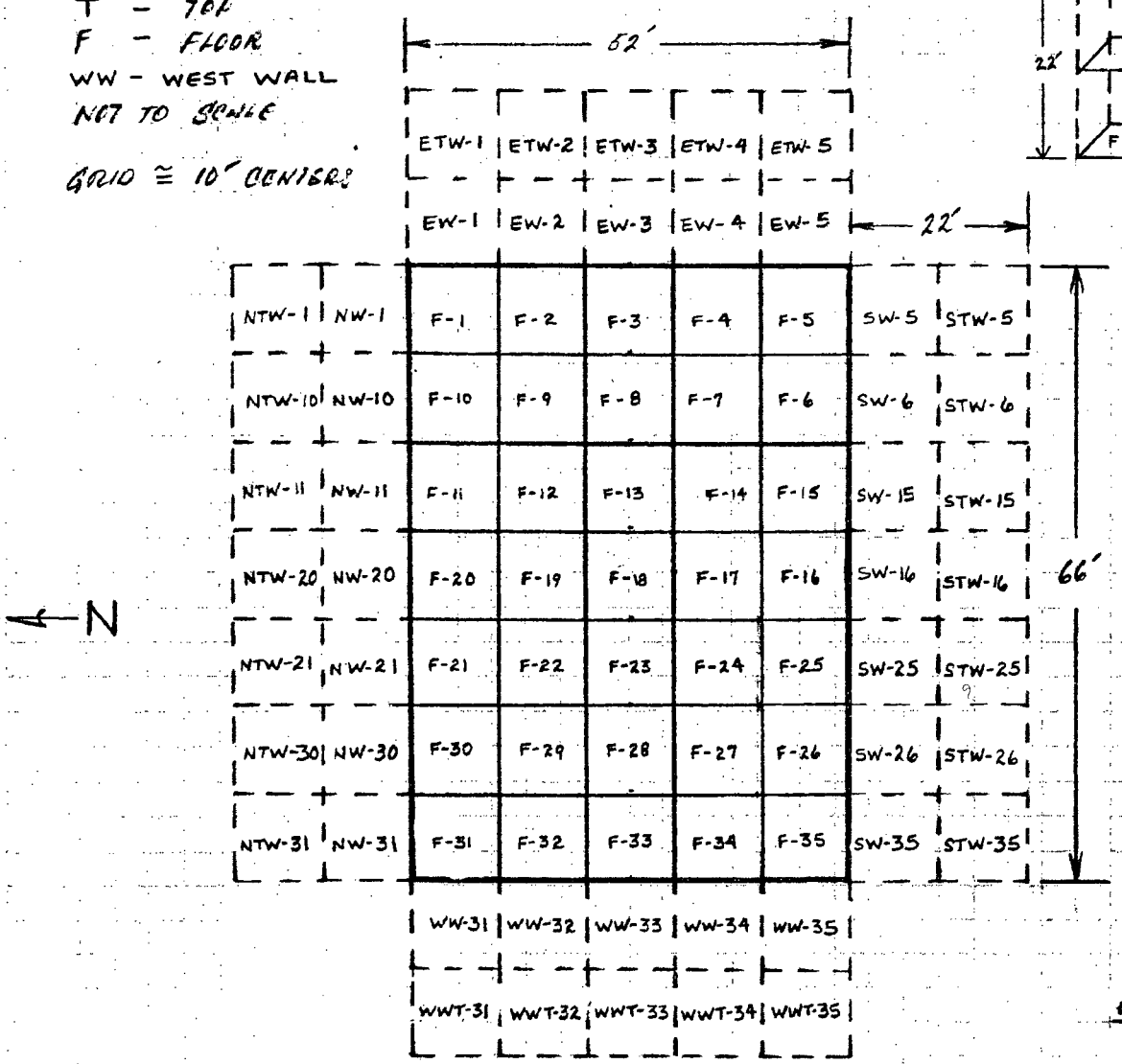
SUBJECT DIAGRAM OF AREA 10 GRID ON THE CCD - BASEMENT CEMENT SURFACE AREAS FOR RADIOLOGICAL VERIFICATION FIELD SURVEY. Sheet No. 3 of 3 Made By mc Date 7-9-92 Chkd. By _____ Date _____

N - NORTH
S - SOUTH
E - EAST
W - WALL
T - TOP
F - FLOOR
WW - WEST WALL
NOT TO SCALE

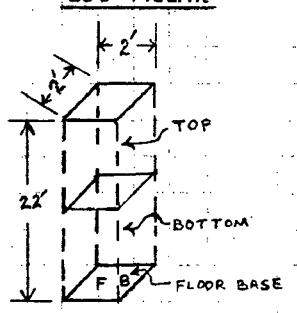
GRID ≅ 10' CENTERS

BROKEN LINES INDICATE WALLS

CCD BASEMENT

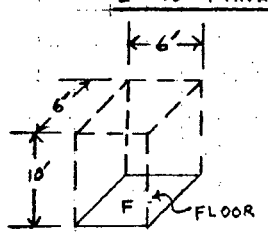


CCD PILLAR



NOTE: PILLARS ARE LOCATED ON F-9 AND F-29 AREA.

Elect. MANHOLE



Radiological Data

for

CCD Thickner Floor Surface

Refer Area ID in Field Data Sheet to Diagram to Locate Data Points

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INSTRUMENTATION

EBERLINE PS-2/285 W/AC-3/714 209. (Th230/U083) = 28.0% EF.
LVP/19/9180 (Cs 137/524) = 230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #1 THICKNER SURFACE AREA, AFTER CLEAN UP

Sheet No. 1 of 10
Made By MC, Date 6-28-92
Chkd. By _____ Date _____

AREA # ID	γ (MR/HR) LO - HI	MR/HR $\bar{C}$	α (CPM) LO - HI	CPM $\bar{C}$	DPM 100CM²	AREA ID	γ (MR/HR) LO - HI	MR/HR $\bar{C}$	α (CPM) LO - HI	CPM $\bar{C}$	DPM 100CM²	COMMENTS
ITS-1	5-9	7.0	15-63	39	288.3	ITS-43	6-9	7.5	33-57	45	332.6	ITS-#1 THICKNER SURFACE
2	5-9	7.0	9-69	39	288.3	44	6-9	7.5	24-126	75	554.3	
3	5-9	7.0	15-18	17	125.7	45	6-9	7.5	30-60	45	332.6	NOTE: FOR ITS -
4	6-9	7.5	15-69	42	310.4	46	6-9	7.5	36-42	39	288.3	ALL SURVEYS ARE
5	6-9	7.5	21-63	42	310.4	47	6-9	7.5	12-30	21	155.2	DONE ON APPROXIM-
6	6-9	7.5	9-69	39	288.3	48	6-9	7.5	9-51	30	221.7	ATED 10'X10' GRID
7	6-9	7.5	30-60	45	332.6	49	6-9	7.5	87-120	104	768.7	AREAS EAFTER 2
8	6-9	7.5	15-15	15	110.9	50	6-9	7.5	45-114	80	591.3	HOT SPOTS (1'X1')
9	6-9	7.5	9-18	14	103.5	51	6-9	7.5	21-30	26	192.2	ARE DECONTAMINATED
10	6-9	7.5	9-9	9	66.5	52	6-9	7.5	9-9	9	66.5	BY PRESSURIZED SAND
11	5-9	7.5	18-27	23	170.0	53	6-9	7.5	36-39	38	280.9	BLASTING W/WATER.
12	5-9	7.5	4-21	13	96.1	54	6-9	7.5	9-24	17	125.7	(SEE DIAGRAM ON SHEET
13	5-9	7.5	12-15	14	103.5	55	5-9	7.0	9-12	11	81.3	#10 OF 10 FOR LOCATION
14	5-9	7.5	60-108	84	620.9	56	5-9	7.0	27-96	62	458.3	OF AREA ID GRID).
15	5-9	7.5	15-21	18	133.0	57	5-9	7.0	39-54	47	347.4	ITS-56: CEMENT TO CONC BSMT. AREA
16	5-9	7.5	15-75	45	332.6	58	5-9	7.0	6-12	9	66.5	
17	5-9	7.5	24-57	41	303.0	59	5-9	7.0	6-15	11	81.3	* SEE DIAGRAM ON
18	5-9	7.5	24-42	33	243.9	60	5-9	7.0	9-27	18	133.0	SHEET #10 OF 10 FOR
19	5-9	7.5	21-27	24	177.4	61	5-9	7.0	1-18	10	73.9	LOCATION OF AREA ID.
20	5-9	7.5	9-15	12	88.7	62	5-9	7.0	36-114	75	554.3	ITS-STAINED OUTER RIM
21	6-9	7.5	6-15	11	81.3	63	5-9	7.0	30-120	75	554.3	EDGES = 55 CPM - 220 CPM
22	6-9	7.5	9-24	17	125.7	64	5-9	7.0	15-33	24	177.4	ON 7-21-92 EAFTER
23	6-9	7.5	6-18	12	88.7	65	5-9	7.0	12-27	20	147.8	FURTHER HAMMERING
24	6-9	7.5	51-114	83	613.5	66	5-9	7.0	21-117	69	510.0	05-30 CPM = 37-222 DPM
25	6-9	7.5	42-60	51	377.0	67	6-9	7.5	30-108	69	510.0	ITS-66: SLIGHT STAIN
26	6-9	7.5	9-27	18	133.0	68	6-9	7.5	48-129	89	657.8	ITS-68: COVER MATERIAL NEAR CONC BSMT.
27	6-9	7.5	33-39	36	266.1	69	6-9	7.5	60-123	92	680.0	ITS-27: TOP COVER MATERIAL
28	6-9	7.5	15-33	24	177.4	70	6-9	7.5	15-54	35	258.7	
29	6-9	7.5	9-39	24	177.4	71	6-9	7.5	30-36	33	243.9	
30	6-9	7.5	6-72	39	288.3	72	6-9	7.5	9-12	11	81.3	ITS-30: ON CEMENT
31	5-9	7.0	30-90	60	443.5	73	6-9	7.5	9-18	14	103.5	
32	5-9	7.0	15-42	29	214.3	74	6-9	7.5	39-66	53	391.7	
33	5-9	7.0	42-96	69	510.0	75	6-9	7.5	6-24	15	110.9	
34	5-9	7.0	24-51	38	280.9	76	6-9	7.5	3-18	11	81.3	
35	5-9	7.0	45-90	68	502.6	77	6-9	7.5	12-36	24	177.4	
36	5-9	7.0	27-96	62	458.3	78	6-9	7.5	36-129	83	613.5	ITS-78: SLIGHT DISCOLORATION
37	5-9	7.0	52-111	82	606.1	79	5-9	7.0	18-48	33	243.9	
38	5-9	7.0	27-75	51	377.0	80	5-9	7.0	12-81	47	347.4	
39	5-9	7.0	21-69	45	332.6	81	5-9	7.0	24-132	78	576.5	
40	5-9	7.0	9-75	42	310.4	82	5-9	7.0	60-66	63	465.6	
41	5-9	7.0	51-87	69	510.0	83	5-9	7.0	24-36	30	221.7	
42	5-9	7.0	42-129	86	635.7	84	5-9	7.0	57-126	92	680.0	

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INSTRUMENTATION

EBERLINE PS-2/285 w/AC-3/714209. (Th230/1093) =22.0% EFF.
LUD/19/9180. (CS137/1524) = 230-240 μR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD - #1 AND #2 THICKNER CEMENT FLOOR SURFACE AREAS.

Sheet No. 2 of 10
Made By MC Date 6-8, 6-28-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	COMMENTS
1TS-85	5-9	7	18-51	35	258.7	2TS-6	5-9	7	6-84	45	332.6	
86	5-9	7	9-27	18	133.0	7	5-9	7	30-120	75	554.3	NOTE: FOR 2TS -
87	5-9	7	21-39	30	221.7	8	5-9	7	15-36	26	192.2	ALL SURVEYS ARE
88	5-9	7	27-72	50	369.6	9	5-9	7	18-45	32	236.5	DONE ON APPROXIMATED
89	5-9	7	30-48	39	288.3	10	5-9	7	20-99	60	443.5	10'X10' GRID AREAS &
90	5-9	7	6-36	21	155.2	11	5-7	6	15-90	53	391.7	AFTER 1 HOT SPOT
91	6-9	7.5	12-33	23	170.0	12	5-7	6	18-66	42	310.4	(1'X6') IS DECONTAMIN-
92	6-9	7.5	30-33	32	236.5	13	5-7	6	15-36	26	192.2	ATED BY PRESSURIZED
93	6-9	7.5	18-66	42	310.4	14	5-7	6	15-63	39	288.3	SANDBLAST W/WATER
94	6-9	7.5	36-96	66	487.8	15	5-7	6	27-45	36	266.1	
95	6-9	7.5	24-114	69	510.0	16	5-7	6	24-36	30	221.7	
96	6-9	7.5	21-48	35	258.7	17	5-7	6	9-42	26	192.2	
97	6-9	7.5	9-12	11	81.3	18	5-7	6	24-27	26	192.2	
98	6-9	7.5	18-39	29	214.3	19	5-7	6	18-36	27	199.6	
99	6-9	7.5	6-42	24	177.4	20	5-7	6	12-66	39	288.3	2TS-20: EXPOSED CEMENT
100	6-9	7.5	33-39	36	266.1	21	5-9	7	18-60	39	288.3	UNDERNEATH COVER
101	6-9	7.5	6-48	27	199.6	22	5-9	7	9-39	24	177.4	2TS-22: TOP COVER
102	5-9	7	9-99	54	399.1	23	5-9	7	36-42	39	288.3	
103	5-9	7	9-114	62	458.3	24	5-9	7	30-42	36	226.1	
104	5-9	7	3-27	15	110.9	25	5-9	7	36-39	38	280.9	
105	5-9	7	12-36	24	177.4	26	5-9	7	30-42	36	226.1	
106	5-9	7	6-24	15	110.9	27	5-9	7	24-42	33	243.9	
107	5-9	7	36-96	66	487.8	28	5-9	7	21-30	26	192.2	
108	5-9	7	15-45	30	221.7	29	5-9	7	18-24	21	155.2	2TS-29: PK. ORANGE
109	5-9	7	9-36	23	170.0	30	5-9	7	18-36	27	199.6	STAIN
110	5-9	7	30-36	33	243.9	31	5-7	6	12-36	24	177.4	2TS-31: BLK. ASPHALT
111	6-9	7.5	36-96	66	487.8	32	5-7	6	36-39	38	280.9	
112	6-9	7.5	18-114	66	487.8	33	5-7	6	33-42	38	280.9	2TS - STAINED OUTER
113	6-9	7.5	18-36	27	199.6	34	5-7	6	18-30	24	177.4	RIM EDGES = 55-
114	6-9	7.5	9-42	26	192.2	35	5-7	6	36-36	36	226.1	220 CPM ON 7-21-92
115	6-9	7.5	18-78	48	354.8	36	5-7	6	24-30	27	199.6	& AFTER FURTHER
116	6-9	7.5	12-66	39	288.3	37	5-7	6	9-15	12	88.7	HAMMERING TO
117	6-9	7.5	9-33	21	155.2	38	5-7	6	18-21	20	147.8	REMOVE = 05-30 CPM
118	6-9	7.5	6-39	23	170.0	39	5-7	6	36-36	36	226.1	= 37-222 DPM
119	6-9	7.5	48-57	53	391.7	40	5-7	6	30-39	38	280.9	
120	6-9	7.5	33-69	51	377.0	41	5-7	6	24-39	32	236.5	
(#2	THICKN	ER	SURF	ACE	- 2TS)	42	5-7	6	39-45	42	310.4	
2TS-1	5-7	6	6-12	9	66.5	43	5-9	7	24-30	27	199.6	
2	5-7	6	6-75	41	303.0	44	5-9	7	30-36	33	243.9	
3	5-7	6	9-60	35	258.7	45	5-9	7	18-27	23	170.0	
4	5-9	7	12-36	24	177.4	46	5-9	7	24-30	30	221.7	
5	5-9	7	12-39	26	192.2	47	5-9	7	21-27	24	177.4	

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INSTRUMENTATION

EBERLINE PS-2/285 w/AC-3/714209. (Th230/1109B) = 23.0% EFF.
LVO/19/9180. (Cs137/1524) = 230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD- #2 AND #3 THICKNER CEMENT FLOOR SURFACE AREAS.

Sheet No. 3 of 10
Made By MC Date 6/8, 28/92
Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR $\bar{C}$	α (CPM) LO-HI	CPM $\bar{C}$	DPM 100CM²	AREA ID	γ (MR/HR) LO-HI	MR/HR $\bar{C}$	α (CPM) LO-HI	CPM $\bar{C}$	DPM 100CM²	COMMENTS
2 TS-48	5-9	7	9-12	11	81.3	2 TS-90	5-7	6	36-42	39	288.3	2TS- #2 THICKNER
49	5-9	7	36-48	42	310.4	91	5-7	6	33-48	41	303.0	SURFACE
50	5-9	7	30-33	32	236.5	92	5-7	6	30-60	45	332.6	
51	5-9	7	24-36	30	221.7	93	5-7	6	6-24	15	110.9	
52	5-9	7	30-36	33	243.9	94	5-7	6	24-60	42	310.4	
53	5-9	7	24-30	27	199.6	95	5-7	6	33-120	77	569.1	2TS-95: ORANGE
54	5-9	7	39-39	39	288.3	96	5-7	6	18-42	30	221.7	STAIN
55	5-7	6	21-39	30	221.7	97	5-7	6	6-30	18	133.0	
56	5-7	6	30-36	33	243.9	98	5-7	6	24-30	27	199.6	
57	5-7	6	6-24	15	110.9	99	5-7	6	33-36	35	258.7	
58	5-7	6	18-21	20	147.8	100	5-7	6	6-42	24	177.4	
59	5-7	6	36-87	62	458.3	101	5-7	6	27-42	35	258.7	
60	5-7	6	24-60	42	310.4	102	5-7	6	9-24	17	125.7	
61	5-7	6	33-39	36	266.1	103	5-7	6	30-36	33	243.9	
62	5-7	6	21-42	32	236.5	104	5-7	6	9-21	15	110.9	
63	5-7	6	18-21	20	147.8	105	5-7	6	06-60	33	243.9	
64	5-7	6	21-39	30	221.7	106	5-7	6	24-45	35	258.7	
65	5-7	6	12-39	26	192.2	107	5-7	6	18-33	26	192.2	
66	5-7	6	39-39	39	288.3	108	5-7	6	18-39	29	214.3	
67	5-7	6	15-45	30	221.7	109	5-7	6	15-39	27	199.6	
68	5-7	6	33-36	35	258.7	110	5-7	6	9-45	27	199.6	
69	5-7	6	30-36	33	243.9	111	5-7	6	36-57	47	347.4	
70	5-7	6	18-27	23	170.0	112	5-7	6	9-24	17	125.7	
71	5-7	6	12-60	36	266.1	113	5-7	6	18-27	23	170.0	
72	5-7	6	30-48	39	288.3	114	5-7	6	42-108	75	554.3	
73	5-7	6	18-54	36	266.1	115	5-7	6	18-36	27	199.6	NOTE: FOR 3TS- ALL
74	5-7	6	36-39	38	280.9	116	5-7	6	15-42	29	214.3	SURVEYS ARE DONE
75	5-7	6	39-39	39	288.3	117	5-7	6	36-39	38	280.9	ON APPROXIMATED
76	5-7	6	9-24	17	125.7	118	5-7	6	15-45	30	221.7	10'x10' GRID AREAS &
77	5-7	6	6-27	17	125.7	119	5-7	6	30-48	39	288.3	AFTER 2 HOT SPOTS
78	5-7	6	12-18	15	110.9	120	5-7	6	9-30	20	147.8	(16'x3', 3'x2') ARE
79	5-7	6	12-27	20	147.8	(#3 THICKNER SURFACE-3TS)						DECONTAMINATED BY
80	5-7	6	21-21	21	155.2	3TS-1	4-7	5.5	6-9	8	59.1	PRESSURIZED SAND-
81	5-7	6	9-36	23	170.0	2	4-7	5.5	0-9	5	37.0	BLAST w/WATER.
82	5-7	6	12-18	15	110.9	3	4-7	5.5	3-6	5	37.0	
83	5-7	6	9-21	15	110.9	4	4-7	5.5	2-9	6	44.3	
84	5-7	6	9-24	17	125.7	5	4-7	5.5	6-6	6	44.3	
85	5-7	6	18-24	21	155.2	6	4-7	5.5	3-15	9	66.5	
86	5-7	6	18-33	26	192.2	7	4-7	5.5	3-6	5	37.0	
87	5-7	6	12-39	26	192.2	8	4-7	5.5	3-9	6	44.3	
88	5-7	6	6-36	21	155.2	9	4-7	5.5	25-75	50	369.6	
89	5-7	6	6-36	21	155.2	10	4-7	5.5	6-12	8	59.1	

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INSTRUMENTATION

UNC EBERLINE PS-2/285 W/AC-3/714209. (Th230/11093) =23.0% EFF.
LUD/19/9180. (Cs137/1524) =230-240 uR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD - #3 THICKNER CEMENT FLOOR SURFACE AREAS. Sheet No. 4 of 10 Made By MC Date 6-28-92 Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	COMMENTS
3TS-11	4-7	5.5	9-27	18	133.0	3TS-53	4-7	5.5	9-60	35	258.7	3TS-#3 THICKNER SURFACE
12	4-7	5.5	3-15	9	66.5	54	4-7	5.5	15-33	24	177.4	
13	4-7	5.5	6-9	7	51.7	55	4-7	5.5	6-42	24	177.4	
14	4-7	5.5	12-15	14	103.5	56	4-7	5.5	9-33	21	155.2	
15	4-7	5.5	3-9	6	44.3	57	4-7	5.5	12-18	15	110.9	
16	4-7	5.5	9-9	9	66.5	58	4-7	5.5	6-24	15	110.9	3TS- STAINED OUTER
17	4-7	5.5	9-12	11	81.3	59	4-7	5.5	15-15	15	110.9	RIM EDGES =55-220CPM
18	4-7	5.5	12-15	14	103.5	60	4-7	5.5	4-15	10	73.9	ON 7-21-92 & AFTER
19	4-7	5.5	9-15	12	88.7	61	4-7	5.5	15-66	41	303.0	FURTHER HAMMERING
20	4-7	5.5	0-9	5	37.0	62	4-7	5.5	18-24	21	155.2	TO REMOVED = 05-
21	4-7	5.5	6-9	7	51.7	63	4-7	5.5	3-12	8	59.1	20 CPM = 37-148 DPM
22	4-7	5.5	9-15	12	88.7	64	4-7	5.5	9-33	21	155.2	
23	4-7	5.5	6-36	21	155.2	65	4-7	5.5	9-27	18	133.0	
24	4-7	5.5	3-9	6	44.3	66	4-7	5.5	6-15	11	81.3	
25	4-7	5.5	2-15	9	66.5	67	4-7	5.5	3-93	48	354.8	
26	4-7	5.5	12-15	14	103.5	68	4-7	5.5	6-33	20	147.8	
27	4-7	5.5	12-12	12	88.7	69	4-7	5.5	9-24	17	125.7	
28	4-7	5.5	6-15	11	81.3	70	4-7	5.5	3-18	11	81.3	
29	4-7	5.5	3-12	7	51.7	71	4-7	5.5	9-12	11	81.3	
30	4-7	5.5	9-15	12	88.7	72	4-7	5.5	12-54	33	243.9	
31	4-7	5.5	0-18	9	66.5	73	4-7	5.5	6-30	18	133.0	
32	4-7	5.5	1-15	8	59.1	74	4-7	5.5	9-24	17	125.7	
33	4-7	5.5	3-12	7	51.7	75	4-7	5.5	6-15	11	81.3	
34	4-7	5.5	6-15	11	81.3	76	4-7	5.5	9-84	47	347.4	
35	4-7	5.5	3-15	9	66.5	77	4-7	5.5	6-27	17	125.7	
36	4-7	5.5	9-18	14	103.5	78	4-7	5.5	21-24	23	170.0	
37	4-7	5.5	0-3	2	14.8	79	4-7	5.5	15-120	68	502.6	3TS-79: AFTER
38	4-7	5.5	3-9	6	44.3	80	4-7	5.5	12-30	21	155.2	FURTHER DECON
39	4-7	5.5	0-15	8	59.1	81	4-7	5.5	27-90	59	436.1	
40	4-7	5.5	12-15	14	103.5	82	4-7	5.5	12-33	23	170.0	
41	4-7	5.5	0-6	3	22.2	83	4-7	5.5	9-48	29	214.3	
42	4-7	5.5	15-60	38	280.9	84	4-7	5.5	30-123	77	569.1	
43	4-7	5.5	12-30	21	155.2	85	4-7	5.5	12-33	23	170.0	
44	4-7	5.5	15-27	21	155.2	86	4-7	5.5	9-30	20	147.8	
45	4-7	5.5	15-54	35	258.7	87	4-7	5.5	27-81	54	399.1	
46	4-7	5.5	21-117	69	510.0	88	4-7	5.5	15-120	68	502.6	
47	4-7	5.5	24-99	62	458.3	89	4-7	5.5	15-30	23	170.0	
48	4-7	5.5	30-93	62	458.3	90	4-7	5.5	9-57	33	243.9	
49	4-7	5.5	21-27	24	177.4	91	4-6	5.0	12-48	30	221.7	
50	4-7	5.5	33-78	56	413.9	92	4-6	5.0	12-33	23	170.0	
51	4-7	5.5	18-30	24	177.4	93	4-6	5.0	0-15	8	59.1	
52	4-7	5.5	15-90	53	391.7	94	4-6	5.0	6-27	17	125.7	

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INSTRUMENTATION

EBERLINE PS-2/285 w/AC-3/714209. (Th230/1043) =230% EFF.
LUD/19/9180. (Cs137/1584)=230-240 uR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD-#3 AND #4 THICKNER CEMENT FLOOR SURFACE AREAS.

Sheet No. 5 of 10
Made By MC Date 6/27-28/92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100cm²	AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100cm²	COMMENTS
3TS-95	4-6	5.0	12-18	15	110.9	4TS-16	4-6	5.0	3-3	3	22.2	3TS-#3 THICKNER SURFACE
96	4-6	5.0	12-15	14	103.5	17	4-6	5.0	3-12	8	59.1	
97	4-6	5.0	21-27	24	177.4	18	4-6	5.0	6-12	9	66.5	
98	4-6	5.0	9-15	12	88.7	19	4-6	5.0	6-6	6	44.3	
99	4-6	5.0	3-18	11	81.3	20	4-6	5.0	3-9	6	44.3	
100	4-6	5.0	30-75	53	391.7	21	5-7	6.0	0-9	5	37.0	
101	4-6	5.0	18-27	23	170.0	22	5-7	6.0	3-12	8	59.1	
102	4-6	5.0	9-15	12	88.7	23	5-7	6.0	0-3	2	14.8	
103	4-6	5.0	15-63	39	288.3	24	5-7	6.0	6-27	17	125.7	
104	4-6	5.0	69-111	90	665.2	25	5-7	6.0	6-30	5	37.0	
105	4-6	5.0	18-33	26	192.2	26	5-7	6.0	3-27	15	110.9	
106	4-6	5.0	24-69	47	347.4	27	5-7	6.0	9-33	21	155.2	
107	4-6	5.0	30-84	57	421.3	28	5-7	6.0	15-30	23	170.0	
108	4-6	5.0	27-33	30	221.7	29	5-7	6.0	6-9	8	59.1	
109	4-6	5.0	69-126	95	702.2	30	5-7	6.0	3-12	08	59.1	
110	4-6	5.0	12-30	21	155.2	31	4-6	5.0	3-15	9	66.5	
111	4-6	5.0	12-15	14	103.5	32	4-6	5.0	3-6	5	37.0	
112	4-6	5.0	12-12	12	88.7	33	4-6	5.0	0-9	5	37.0	
113	4-6	5.0	3-9	6	44.3	34	4-6	5.0	3-9	6	44.3	
114	4-6	5.0	3-9	6	44.3	35	4-6	5.0	3-6	5	37.0	
115	4-6	5.0	6-15	11	81.3	36	4-6	5.0	3-12	8	59.1	
116	4-6	5.0	12-15	14	103.5	37	4-6	5.0	9-9	9	66.5	
117	4-6	5.0	0-6	3	22.2	38	4-6	5.0	6-9	8	59.1	
118	4-6	5.0	9-18	14	103.5	39	4-6	5.0	9-9	9	66.5	
119	4-6	5.0	3-12	8	59.1	40	4-6	5.0	3-6	5	37.0	
120	4-6	5.0	9-12	11	81.3	41	4-6	5.0	3-12	8	59.1	
(#4 THICKNER SURFACE — 4TS)						42	4-6	5.0	0-15	8	59.1	NOTE: FOR 4TS-ALL SURVEYS ARE DONE ON APPROXIMATED 10'x 10' GRID AREAS & NO HOT SPOT FOUND DURING PRELIMINARY SURVEY.
4TS-1	4-6	5.0	3-16	10	73.9	43	5-7	6.0	12-51	32	236.5	
2	4-6	5.0	6-12	9	66.5	44	5-7	6.0	3-21	12	88.7	
3	4-6	5.0	6-12	9	66.5	45	5-7	6.0	6-6	6	44.3	
4	5-7	6.0	0-6	3	22.2	46	5-7	6.0	3-12	8	59.1	
5	5-7	6.0	6-6	6	44.3	47	5-7	6.0	9-12	11	81.3	
6	5-7	6.0	0-3	2	14.8	48	5-7	6.0	0-9	5	37.0	
7	5-7	6.0	12-15	14	103.5	49	5-7	6.0	6-9	8	59.1	
8	5-7	6.0	9-15	12	88.7	50	5-7	6.0	6-18	12	88.7	
9	5-7	6.0	27-45	36	266.1	51	5-7	6.0	3-12	8	59.1	
10	5-7	6.0	3-6	5	37.0	52	5-7	6.0	0-9	5	37.0	
11	4-6	5.0	3-3	3	22.2	53	5-7	6.0	0-6	3	22.2	
12	4-6	5.0	3-6	5	37.0	54	5-7	6.0	3-6	5	37.0	
13	4-6	5.0	3-12	8	59.1	55	4-6	5.0	0-3	2	14.8	
14	4-6	5.0	3-6	5	37.0	56	4-6	5.0	3-9	6	44.3	
15	4-6	5.0	0-3	2	14.8	57	4-6	5.0	9-9	9	66.5	

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INSTRUMENTATION

EBER LINE PS-2/285 W/AC-3/714209. (Th230/11093) =23.0% EFF.
LVO/19/9180. (Cs137/1524) = 230-240 μR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD - #4 AND #5 THICKNER CEMENT FLOOR SURFACE AREAS.

Sheet No. 6 of 10
Made By AC Date 6-27-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	COMMENTS
4TS-58	4-6	5.0	0-3	2	14.8	4TS-100	4-6	5.0	9-27	18	133.0	4TS-#4 THICKNER SURFACE
59	4-6	5.0	0-9	5	37.0	101	4-6	5.0	3-18	11	81.3	
60	4-6	5.0	3-3	3	22.2	102	4-7	5.5	9-18	14	103.5	
61	4-7	5.5	3-6	5	37.0	103	4-7	5.5	3-15	9	66.5	
62	4-7	5.5	0-12	6	44.3	104	4-7	5.5	0-12	6	44.3	
63	4-7	5.5	0-3	2	14.8	105	4-7	5.5	0-15	8	59.1	
64	4-7	5.5	3-9	6	44.3	106	4-7	5.5	3-3	3	22.2	
65	4-7	5.5	12-120	66	487.8	107	4-7	5.5	3-33	18	133.0	
66	4-7	5.5	9-33	21	155.2	108	4-7	5.5	9-27	18	133.0	
67	4-6	5.0	3-21	12	88.7	109	4-7	5.5	15-27	21	155.2	
68	4-6	5.0	3-42	23	170.0	110	4-7	5.5	6-24	15	110.9	
69	4-6	5.0	6-57	32	236.5	111	4-6	5.0	9-15	12	88.7	
70	4-6	5.0	12-36	24	177.4	112	4-6	5.0	6-36	21	155.2	
71	4-6	5.0	6-48	27	199.6	113	4-6	5.0	6-6	6	44.3	
72	4-6	5.0	6-6	6	44.3	114	4-6	5.0	0-9	5	37.0	
73	4-6	5.0	3-51	27	199.6	115	4-6	5.0	0-6	3	22.2	
74	4-6	5.0	9-57	33	243.9	116	4-6	5.0	6-9	8	59.1	
75	4-6	5.0	6-15	11	81.3	117	4-6	5.0	12-18	15	110.9	
76	4-6	5.0	3-9	12	88.7	118	4-7	5.5	12-30	16	118.3	
77	4-6	5.0	15-18	16	118.3	119	4-7	5.5	15-30	23	170.0	
78	4-6	5.0	3-12	8	59.1	120	4-7	5.5	6-33	20	147.8	
79	4-7	5.5	6-27	17	125.7	(#5 THICKNER SURFACE - 5TS)						NOTE: FOR 5TS-ALL SURVEYS ARE DONE ON APPROXIMATED 10'x10' GRID AREAS & AFTER 85-90% OF FLOOR AREAS ARE DECONTAMINATED BY PRESSURIZED SAND-BLAST W/WATER.
80	4-7	5.5	12-15	14	103.5	5TS-1	5-7	6.0	6-9	8	59.1	
81	4-7	5.5	0-12	6	44.3	2	5-7	6.0	21-24	23	170.0	
82	4-7	5.5	0-3	2	14.8	3	5-7	6.0	6-57	32	236.5	
83	4-7	5.5	0-9	5	37.0	4	5-7	6.0	6-9	8	59.1	
84	4-7	5.5	9-18	14	103.5	5	5-7	6.0	33-78	56	413.9	
85	4-7	5.5	6-24	15	110.9	6	5-7	6.0	6-13	10	73.9	
86	4-7	5.5	0-15	8	59.1	7	5-7	6.0	30-99	65	480.4	
87	4-7	5.5	3-18	11	81.3	8	5-7	6.0	27-54	41	303.0	
88	4-7	5.5	0-12	6	44.3	9	5-7	6.0	33-42	19	140.4	
89	4-7	5.5	9-9	9	66.5	10	5-7	6.0	15-18	17	125.7	
90	4-7	5.5	9-87	48	354.8	11	5-7	6.0	30-39	35	258.7	
91	4-6	5.0	6-12	9	66.5	12	5-7	6.0	21-36	29	214.3	
92	4-6	5.0	15-36	26	192.2	13	5-7	6.0	24-27	26	192.2	
93	4-6	5.0	3-30	17	125.7	14	5-7	6.0	6-33	20	147.8	
94	4-6	5.0	12-15	14	103.5	15	5-7	6.0	39-42	41	303.0	
95	4-6	5.0	6-54	30	221.7	16	5-7	6.0	9-93	51	377.0	
96	4-6	5.0	15-21	18	133.0	17	5-7	6.0	24-42	33	243.9	
97	4-6	5.0	12-18	15	110.9	18	5-7	6.0	18-21	20	147.8	
98	4-6	5.0	15-30	23	170.0	19	5-7	6.0	12-54	33	243.9	
99	4-6	5.0	15-18	17	125.7	20	5-7	6.0	63-99	81	598.7	

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INSTRUMENTATION

UNC

EBERLINE PS-2/285 w/AC-3/714209. (Th230/11093) = 22.0% EFF.
LUO/19/4180. (Cs137/1524) = 230-240 mR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCO-#5 THICKNER CEMENT FLOOR SURFACE AREAS. Sheet No. 7 of 10 Made By mc Date 6-27-92 Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	COMMENTS
STS-21	5-7	6.0	66-114	90	665.2	STS-63	4-7	5.5	54-60	57	421.3	STS-#5 THICKNER
22	5-7	6.0	27-84	56	413.9	64	4-7	5.5	21-30	26	192.2	SURFACE
23	5-7	6.0	48-69	59	436.1	65	4-7	5.5	21-27	24	177.4	
24	5-7	6.0	9-57	33	243.9	66	4-7	5.5	78-93	86	635.7	
25	5-7	6.0	21-39	30	221.7	67	4-7	5.5	9-120	65	480.4	
26	5-7	6.0	42-45	44	325.2	68	4-7	5.5	6-15	11	81.3	
27	5-7	6.0	57-75	66	487.8	69	4-7	5.5	6-45	26	192.2	
28	5-7	6.0	15-21	18	133.0	70	4-7	5.5	6-12	9	66.5	
29	5-7	6.0	33-42	38	280.9	71	4-7	5.5	6-15	11	81.3	
30	5-7	6.0	27-36	32	236.5	72	4-7	5.5	6-9	8	59.1	
31	5-7	6.0	24-39	32	236.5	73	4-7	5.5	3-36	20	147.8	
32	5-7	6.0	15-24	20	147.8	74	4-7	5.5	6-36	21	155.2	
33	5-7	6.0	9-18	14	103.5	75	4-7	5.5	15-18	17	125.7	
34	5-7	6.0	12-24	18	133.0	76	4-7	5.5	21-84	53	391.7	
35	5-7	6.0	30-36	33	243.9	77	4-7	5.5	3-15	9	66.5	
36	5-7	6.0	27-30	29	214.3	78	4-7	5.5	12-30	21	155.2	
37	5-7	6.0	15-60	38	280.9	79	4-7	5.5	27-33	30	221.7	
38	5-7	6.0	36-45	41	303.0	80	4-7	5.5	39-93	66	487.8	
39	5-7	6.0	9-12	11	81.3	81	4-7	5.5	33-63	48	354.8	
40	5-7	6.0	6-9	8	59.1	82	4-7	5.5	9-42	26	192.2	
41	5-7	6.0	36-45	41	303.0	83	4-7	5.5	12-15	14	103.5	
42	5-7	6.0	48-134	91	672.6	84	4-7	5.5	24-87	56	413.9	
43	5-7	6.0	24-33	29	214.3	85	4-7	5.5	27-81	54	399.1	
44	5-7	6.0	9-27	18	133.0	86	4-7	5.5	15-72	44	325.2	
45	5-7	6.0	6-33	20	147.8	87	4-7	5.5	24-30	27	199.6	
46	5-7	6.0	9-42	26	192.2	88	4-7	5.5	15-45	30	221.7	
47	5-7	6.0	6-48	26	192.2	89	4-7	5.5	9-12	11	81.3	
48	5-7	6.0	9-18	14	103.5	90	4-7	5.5	6-9	8	59.1	
49	5-7	6.0	9-12	14	103.5	91	4-7	5.5	63-120	92	680.0	
50	5-7	6.0	39-45	42	310.4	92	4-7	5.5	6-42	24	177.4	
51	5-7	6.0	9-15	12	88.7	93	4-7	5.5	6-57	32	236.5	
52	5-7	6.0	21-57	39	288.3	94	4-7	5.5	6-8	7	51.7	
53	5-7	6.0	12-39	26	192.2	95	4-7	5.5	9-18	14	103.5	
54	5-7	6.0	12-111	62	458.3	96	4-7	5.5	9-102	56	413.9	
55	5-7	6.0	42-120	81	598.7	97	4-7	5.5	15-63	39	288.3	
56	5-7	6.0	24-33	29	214.3	98	4-7	5.5	24-123	74	547.0	
57	5-7	6.0	21-87	54	399.1	99	4-7	5.5	12-87	50	369.6	
58	5-7	6.0	27-102	65	480.4	100	4-7	5.5	30-78	54	399.1	
59	5-7	6.0	48-57	53	391.7	101	4-7	5.5	3-45	24	177.4	
60	5-7	6.0	6-63	35	258.7	102	4-7	5.5	6-87	47	347.4	
61	4-7	5.5	9-81	45	332.6	103	4-7	5.5	9-18	14	103.5	
62	4-7	5.5	114-123	119	879.6	104	4-7	5.5	33-69	51	377.0	

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INSTRUMENTATION

EBERLINE PS-2/2RS W/AC-3/714209. (Th230/11093) = 23.0% EFF.
LUD/19/9180. (CS137/1524) = 230-240 μR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD - #5 AND #6 THICKNER CEMENT FLOOR SURFACE AREAS

Sheet No. 8 of 10
Made By rc, Date 6-27/7-1-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{C}$	α (CPM) LO-HI	CPM $\bar{C}$	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{C}$	α (CPM) LO-HI	CPM $\bar{C}$	DPM 100CM²	COMMENTS
5TS-105	4-7	5.5	18-57	38	280.9	6TS-26	6-8	7.0	12-22	17	125.7	5TS-#5 THICKNER
106	4-7	5.5	6-9	8	59.1	27	6-8	7.0	15-112	64	473.0	SURFACE
107	4-7	5.5	12-36	24	177.4	28	6-8	7.0	9-28	19	140.4	
108	4-7	5.5	6-12	9	66.5	29	6-8	7.0	6-37	22	162.6	
109	4-7	5.5	3-72	38	280.9	30	6-8	7.0	30-85	58	428.7	
110	4-7	5.5	9-36	23	170.0	31	5-7	6.0	42-82	62	458.3	
111	4-7	5.5	6-81	44	325.2	32	5-7	6.0	24-70	47	347.4	
112	4-7	5.5	27-39	33	243.9	33	5-7	6.0	12-13	13	96.1	
113	4-7	5.5	18-90	54	399.1	34	5-7	6.0	52-70	61	450.9	
114	4-7	5.5	6-72	39	288.3	35	5-7	6.0	27-31	29	214.3	6TS-36 & 37
115	4-7	5.5	15-78	47	347.4	36	5-7	6.0	21-49	35	258.7	ON LINER
116	4-7	5.5	39-69	54	399.1	37	5-7	6.0	9-85	47	347.4	
117	4-7	5.5	33-72	53	391.7	38	5-7	6.0	9-10	10	73.9	
118	4-7	5.5	15-78	47	347.4	39	5-7	6.0	1-6	4	29.6	
119	4-7	5.5	21-114	68	502.6	40	5-7	6.0	12-58	35	258.7	
120	4-7	5.5	15-18	17	125.7	41	5-7	6.0	24-40	32	236.5	
(#6	THICKN	ER	SURFA	CE —	6TS)	42	5-7	6.0	24-103	64	473.0	
6TS-1	5-7	6.0	9-85	47	347.4	43	6-8	7.0	12-58	35	258.7	6TS - #6 THICKNER
2	5-7	6.0	18-34	26	192.2	44	6-8	7.0	9-16	8	59.1	SURFACE
3	5-7	6.0	3-22	13	96.1	45	6-8	7.0	3-25	14	103.5	ALL READINGS ARE
4	6-8	7.0	15-28	22	162.6	46	6-8	7.0	6-12	9	66.5	ON EXPOSED CEMENT
5	6-8	7.0	15-37	26	192.2	47	6-8	7.0	24-40	32	236.5	EXCEPT WHERE
6	6-8	7.0	9-13	11	81.3	48	6-8	7.0	30-64	47	347.4	INDICATED
7	6-8	7.0	6-58	32	236.5	49	6-8	7.0	18-22	20	147.8	
8	6-8	7.0	6-7	7	51.7	50	6-8	7.0	33-40	37	273.5	NOTE: FOR 6TS-ALL
9	6-8	7.0	12-16	14	103.5	51	6-8	7.0	42-94	68	502.6	SURVEYS ARE DONE
10	6-8	7.0	18-64	41	303.0	52	6-8	7.0	12-28	20	147.8	ON APPROXIMATED
11	5-7	6.0	9-46	28	207.0	53	6-8	7.0	9-46	28	207.0	10'x10' GRID AREAS
12	5-7	6.0	18-61	40	295.7	54	6-8	7.0	21-40	31	229.1	& AFTER 85-90%
13	5-7	6.0	12-118	65	480.4	55	5-7	6.0	9-46	28	207.0	OF FLOOR AREAS ARE
14	5-7	6.0	60-125	93	687.4	56	5-7	6.0	36-52	44	325.2	DECONTAMINATED BY
15	5-7	6.0	12-13	13	96.1	57	5-7	6.0	9-16	13	96.1	PRESSURIZED SAND-
16	5-7	6.0	15-19	17	125.7	58	5-7	6.0	3-4	4	29.6	BLAST W/WATER.
17	5-7	6.0	24-61	43	317.8	59	5-7	6.0	0-1	1	7.4	
18	5-7	6.0	21-118	70	517.4	60	5-7	6.0	0-1	1	7.4	
19	5-7	6.0	9-67	38	280.9	61	5-8	6.5	38-70	54	399.1	
20	5-7	6.0	6-34	20	147.8	62	5-8	6.5	3-4	4	29.6	
21	6-8	7.0	9-25	17	125.7	63	5-8	6.5	6-46	26	192.2	
22	6-8	7.0	6-37	22	162.6	64	5-8	6.5	4-34	19	140.4	
23	6-8	7.0	51-85	68	502.6	65	5-8	6.5	0-28	14	103.5	
24	6-8	7.0	42-94	68	502.6	66	5-8	6.5	3-4	4	29.6	
25	6-8	7.0	9-25	17	125.7	67	5-8	6.5	15-28	22	162.6	

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INSTRUMENTATION

UNC EBERLINE PS-2/285 W/AC-3/714209. (Th230/NDG3 = 23.6% eff.
LUD/19/9180. (Cs137/1524) = 230-240 mR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD-#6 THICKNER CEMENT FLOOR SURFACE AREAS

Sheet No. 9 of 10
Made By MC, Date 7-1-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100cm²	AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100cm²	COMMENTS
6TS-68	5-8	6.5	0-1	1	7.4	6TS-110	5-8	6.5	3-16	9	66.5	6TS-#6 THICKNER SURFACE
69	5-8	6.5	0-4	2	14.8	111	5-8	6.5	24-58	42	310.4	
70	5-8	6.5	21-22	22	162.6	112	5-8	6.5	33-130	82	606.1	
71	5-8	6.5	15-34	25	184.8	113	5-8	6.5	3-4	4	29.6	CLOSING NOTE; THICKNER
72	5-8	6.5	30-58	44	325.2	114	5-8	6.5	36-118	77	569.1	#1 THRU #6 HAD MIN-
73	5-8	6.5	9-46	28	207.0	115	5-8	6.5	24-82	53	391.7	IUMAL SPOTS OF SUS-
74	5-8	6.5	6-76	41	303.0	116	5-8	6.5	18-88	53	391.7	PECTED CONTAMINATION
75	5-8	6.5	3-70	37	273.5	117	5-8	6.5	9-10	10	73.9	(e.g. ORANGE/YELLOWISH
76	5-8	6.5	39-94	67	495.2	118	5-8	6.5	9-22	16	118.3	STAIN DISCOLORATION)
77	5-8	6.5	3-10	7	51.7	119	5-8	6.5	18-46	32	236.5	ON THE OUTSIDE CEM-
78	5-8	6.5	48-64	56	413.9	120	5-8	6.5	33-58	46	340.0	ENT RIM EDGES/SIDES.
79	5-8	6.5	12-16	14	103.5							THESE AREAS ARE
80	5-8	6.5	3-10	7	51.7							MARKED AND REMOVED
81	5-8	6.5	3-4	4	29.6							BY EQUIPMENT HAMM-
82	5-8	6.5	12-16	14	103.5							ERING AND THE RESULT-
83	5-8	6.5	3-4	7	51.7							ANT DEBRIS WERE
84	5-8	6.5	6-88	47	347.4							PICKED UP & HAULED
85	5-8	6.5	75-130	103	761.3							OFF TO B.P. #2.
86	5-8	6.5	9-10	10	73.9							
87	5-8	6.5	3-4	7	51.7							
88	5-8	6.5	0-1	1	7.4							
89	5-8	6.5	3-16	10	73.9							
90	5-8	6.5	3-4	4	29.6							
91	5-8	6.5	30-52	41	303.0							
92	5-8	6.5	24-58	41	303.0							
93	5-8	6.5	18-58	38	280.9							
94	5-8	6.5	45-124	85	628.3							
95	5-8	6.5	21-34	28	207.0							
96	5-8	6.5	9-58	34	251.3							
97	5-8	6.5	6-28	17	125.7							
98	5-8	6.5	6-28	17	125.7							
99	5-8	6.5	12-34	23	170.0							
100	5-8	6.5	3-4	4	29.6							
101	5-8	6.5	0-4	2	14.8							
102	5-8	6.5	30-58	44	325.2							
103	5-8	6.5	28-34	31	229.1							
104	5-8	6.5	12-22	17	125.7							
105	5-8	6.5	9-16	13	96.1							
106	5-8	6.5	1-1	1	7.4							
107	5-8	6.5	3-16	10	73.9							
108	5-8	6.5	9-16	13	96.1							
109	5-8	6.5	3-10	7	51.7							

N/A

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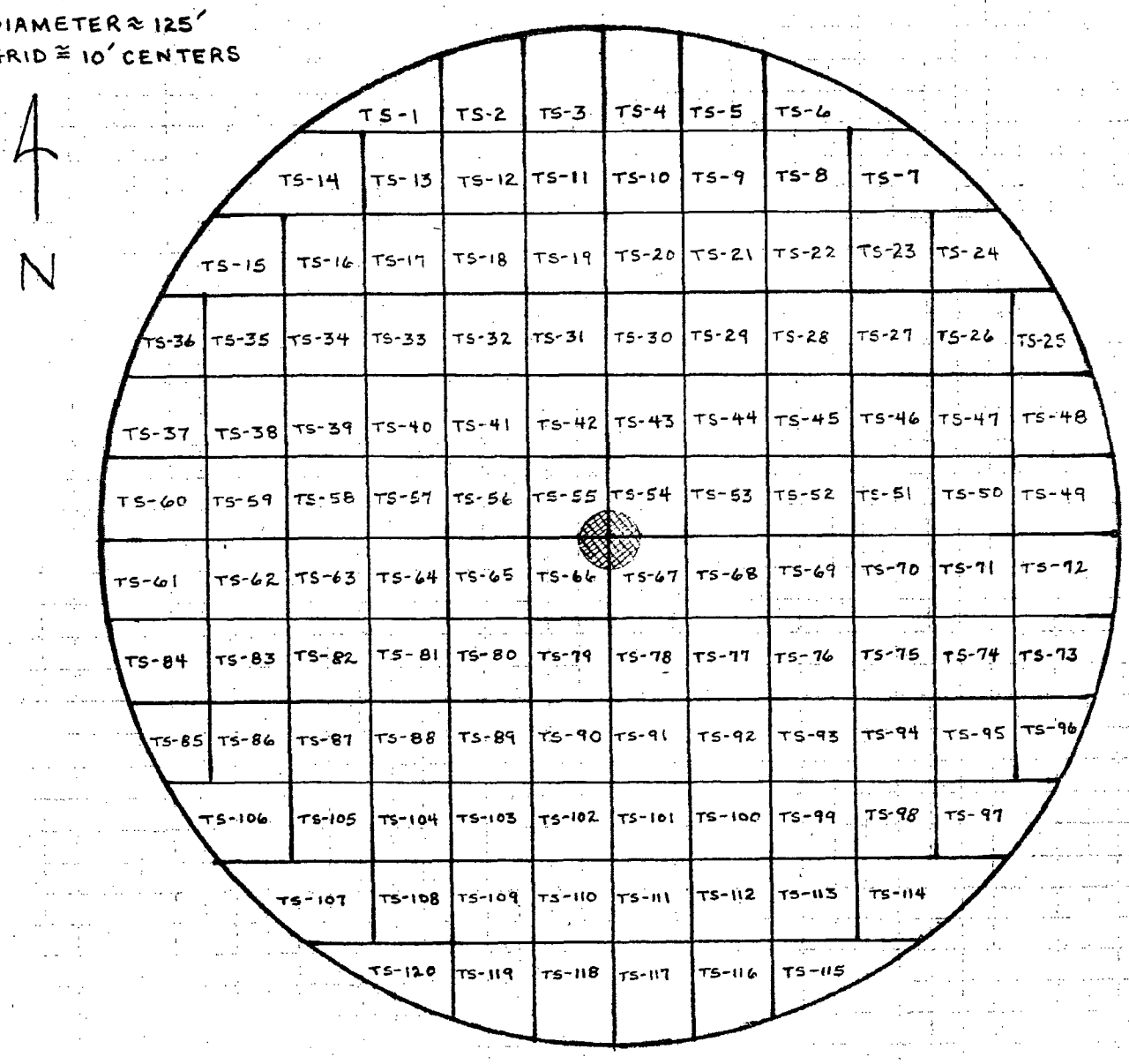
COMPUTATIONS

SUBJECT DIAGRAM OF AREA ID GRID ON THE CCD - THICKNER CEMENT FLOOR SURFACE AREAS FOR RADIOLOGICAL VERIFICATION FIELD SURVEY.

Sheet No. 10 of 10
Made By MC, Date 7-2-92
Chkd. By _____ Date _____

TS - THICKNER SURFACE
CONE CENTERHOLE DIAMETER ≈ 8'
DIAMETER ≈ 125'
GRID ≅ 10' CENTERS



Radiological Data

for

Grizzly Tunnel and Basement Surfaces

Refer Area ID in Field Data Sheet to Diagram to Locate Data Points

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INSTRUMENTATION

EBERLINE PS-2/285 W/AC-3/714209. (Th230/11093) = 28.0% EFF.
LVO/19/9180 (Cs137/1524) = 230-240 uR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF GRIZZLY TUNNEL CEMENT SURFACE AREAS. Sheet No. 1 of 4 Made By [illegible] Date 7-2-92 Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR $\bar{c}$	α (CPM) LO-HI	CPM $\bar{c}$	DPM 100CM²	COMMENTS
(FLOOR					F)	(NORTH WALL - NW)						
F-1	14-15	15	18-24	21	155.2	NW-1	14-15	15	12-30	21	155.2	NOTE:
2	13-15	14	30-36	33	243.9	2	13-15	14	12-18	15	110.9	ALL SURVEYS ARE
3	11-13	12	6-18	12	88.7	3	11-13	12	18-18	18	133.0	DONE ON APPROXIM-
4	9-13	11	30-42	36	266.1	4	9-13	11	6-16	11	81.3	ATED 10'X 10' GRID
5	12-14	13	12-42	27	199.6	5	12-14	13	36-48	42	310.4	AREAS AFTER ALL
6	11-14	13	36-48	42	310.4	6	11-14	13	18-66	42	310.4	DECONTAMINATION BY
7	12-14	13	48-78	60	443.5	7	12-14	13	30-90	60	443.5	PRESSURIZED SAND-
8	11-14	13	48-54	51	377.0	8	11-14	13	12-20	16	118.3	BLASTING W/WATER
9	10-14	12	12-45	30	221.7	9	10-14	12	0-12	6	44.3	IS DONE.
10	12-14	13	0-72	36	266.1	10	12-14	13	30-66	48	354.8	(SEE SHEET 3 OF 4
11	13-15	14	78-90	84	620.9	11	13-15	14	36-90	63	465.7	DIAGRAM FOR AREA ID
12	14-15	15	6-132	69	510.0	12	14-15	15	30-36	33	243.9	LOCATIONS).
13	13-15	14	60-120	90	665.2	13	13-15	14	60-102	81	598.7	
(CEILING					C)							
C-1	14-15	15	6-30	18	133.0							
2	13-15	14	0-12	6	44.3							
3	11-13	12	0-6	3	22.2							
4	9-13	11	0-3	2	14.8							
5	12-14	13	0-3	2	14.8							
6	11-14	13	0-3	2	14.8							
7	12-14	13	0-6	3	22.2							
8	11-14	13	0-3	2	14.8							
9	10-14	12	0-6	3	22.2							
10	12-14	13	0-3	2	14.8							
11	13-15	14	0-6	3	22.2							
12	14-15	15	0-6	3	22.2				N/A			
13	13-15	14	30-90	60	443.5							
(SOUTH WALL - SW)												
SW-1	14-15	15	9-12	11	81.3							
2	13-15	14	12-30	21	155.2							
3	11-13	12	0-36	18	133.0							
4	9-13	11	22-24	23	170.0							
5	12-14	13	18-72	45	332.6							
6	11-14	13	30-30	30	221.7							
7	12-14	13	0-24	12	88.7							
8	11-14	13	30-36	33	243.9							
9	10-14	12	24-30	27	199.6							
10	12-14	13	12-38	25	184.8							
11	13-15	14	18-54	36	266.1							
12	14-15	15	24-42	33	243.9							
13	13-15	14	0-12	6	44.3							

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INSTRUMENTATION

EBERLINE PS-2/285 W/AC-3/714209. (Th230/11093) = 23.0% EFF.
LUD/19/9180 (Cs137/1524) = 230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF GRIZZLY CEMENT BASEMENT AND OTHER MATERIAL SURFACE AREAS

Sheet No. 2 of 4
Made By AC, Date 7-19-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(F	L O O	R	—	—	F)	WW-2	10-16	13	54-96	75	554.3	
F-1	4-16	10	66-72	69	510.0	(WEST	WALL	MIDDL	E -	WWM)		NOTE:
2	4-16	10	60-72	66	487.8	WWM-1	10-16	13	0-48	24	177.4	ALL SURVEYS ARE
3	4-16	10	18-77	48	354.8	↓ 2	10-16	13	6-102	54	399.1	DONE ON APPROXIM-
4	4-16	10	52-66	59	436.1	(WEST	WALL	TOP	—	WWT)		ATED 10'x16' GRID
5	4-16	10	24-66	45	332.6	WWT-1	10-16	13	12-12	12	88.7	AREAS AFTER ALL
↓ 6	4-16	10	36-52	44	325.2	↓ 2	10-16	13	54-99	77	569.1	DECONTAMINATION BY
(S	O U T	H	WAL	L -	SW)	(DR	AIN	PIP	E —		DP)	PRESSURIZED SAND-
SW-1	10-16	13	18-54	36	266.1	DP	14-18	16	05-30	18	133.0	BLASTING W/WATER
4	10-16	13	6-12	9	66.5							IS DONE.
↓ 5	10-16	13	6-120	63	465.7							
(SO	UTH M	IDDLE	WA	LL -	SMW)							DP SURVEYED INSIDE
SMW-1	10-16	13	0-54	27	199.6							6"x6" LOCATED @
4	10-16	13	18-42	30	221.7							SW-4 EMBEDDED
↓ 5	10-16	13	6-24	15	110.9							IN CEMENT,
(SO	UTH T	OP	WALL	—	STW)							CONTAMINATED STAIR-
STW-1	10-16	13	18-24	21	155.2							WAY IS TAKEN OUT
4	10-16	13	6-18	12	88.7							AND BURIED IN EP
↓ 5	10-16	13	6-42	24	177.4							#2. READING C̄ = 140 CPM
(N	O R T	H	WAL	L -	NW)							= 1,035 DPM
NW-2	10-16	13	42-90	66	487.8							
3	10-16	13	18-108	63	465.7							(SEE SHEET 4 OF 4
↓ 6	10-16	13	18-48	33	243.9							DIAGRAM FOR AREA ID
(NO	RTH M	IDDLE	WA	LL -	NMW)							LOCATIONS)
NMW-2	10-16	13	60-72	66	487.8							
3	10-16	13	24-78	51	377.0			N	A			
↓ 6	10-16	13	18-60	39	288.3							
(NOR	TH T	OP	WALL	—	NTW)							
NTW-2	10-16	13	30-48	39	288.3							
3	10-16	13	12-96	54	399.1							
↓ 6	10-16	13	15-55	35	258.7							
(E	A S T	W	A L L	—	EW)							
EW-5	10-16	13	36-90	63	465.7							
↓ 6	10-16	13	42-78	60	443.5							
(EAS	T M	IDDL	E WA	LL -	EMW)							
EMW-5	10-16	13	24-60	32	236.5							
↓ 6	10-16	13	3-42	23	170.0							
(EAS	T T	OP	WAL	L -	ETW)							
ETW-5	10-16	13	18-24	21	155.2							
↓ 6	10-16	13	24-60	52	384.3							
(WE	ST	WA	L L	—	WW)							
WW-1	10-16	13	60-90	75	554.3							

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COMPUTATIONS

SUBJECT DIAGRAM OF AREA 1D GRID ON THE GRIZZLY TUNNEL CEMENT SURFACE AREAS FOR RADIOLOGICAL VERIFICATION FIELD SURVEY.

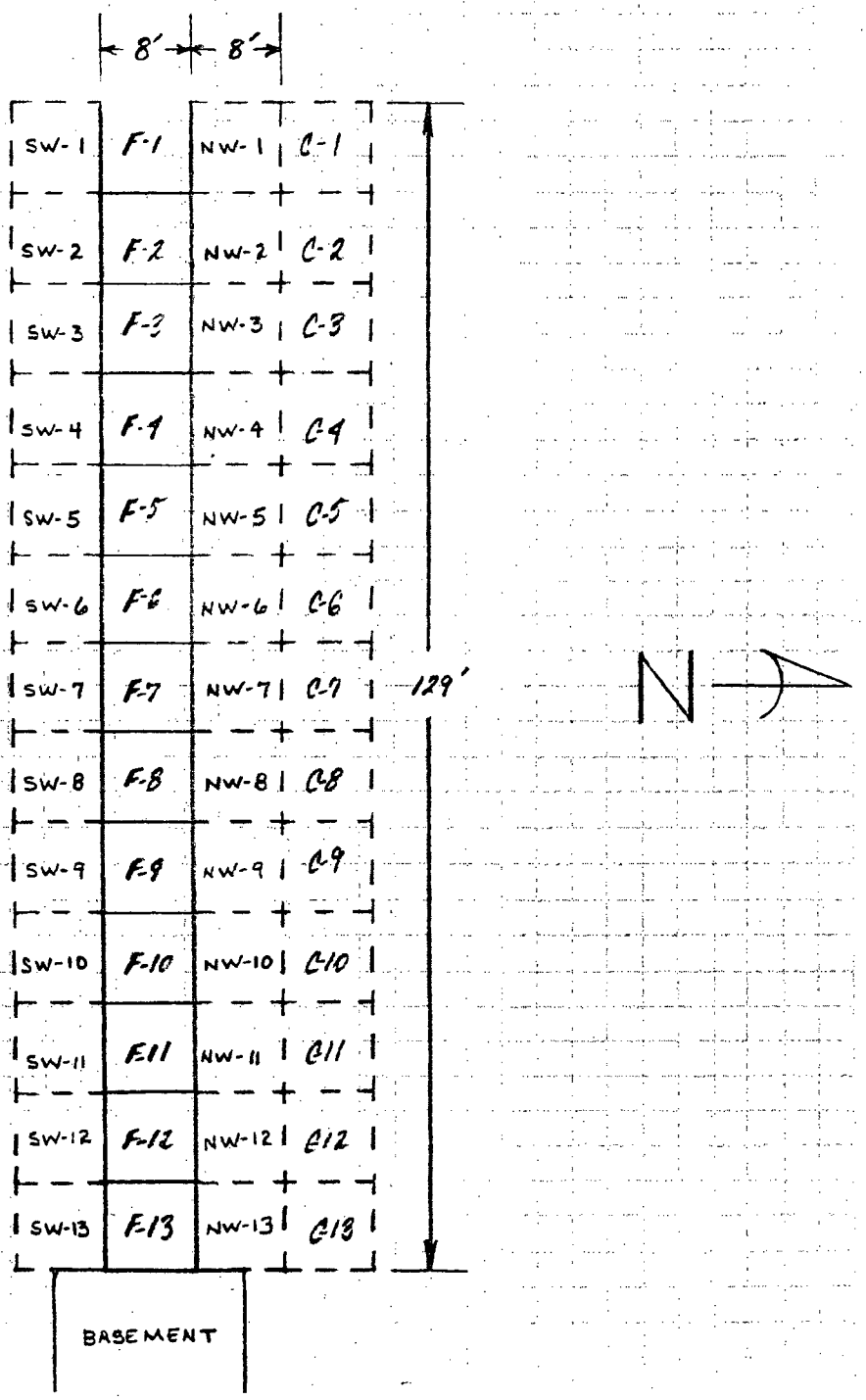
Sheet No. 3 of 4
Made By [illegible] Date 7-2-92
Chkd. By [illegible] Date 3-20-93

F - FLOOR
N - NORTH
S - SOUTH
C - CEILING
W - WALL

NOT TO SCALE

GRID ≅ 10' CENTERS

Broken LINES INDICATE WALLS AND CEILING



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COMPUTATIONS

SUBJECT DIAGRAM OF AREA ID GRID ON THE GRIZZLY BASEMENT CEMENT SURFACE AREAS FOR RADIOLOGICAL VERIFICATION FIELD SURVEY.

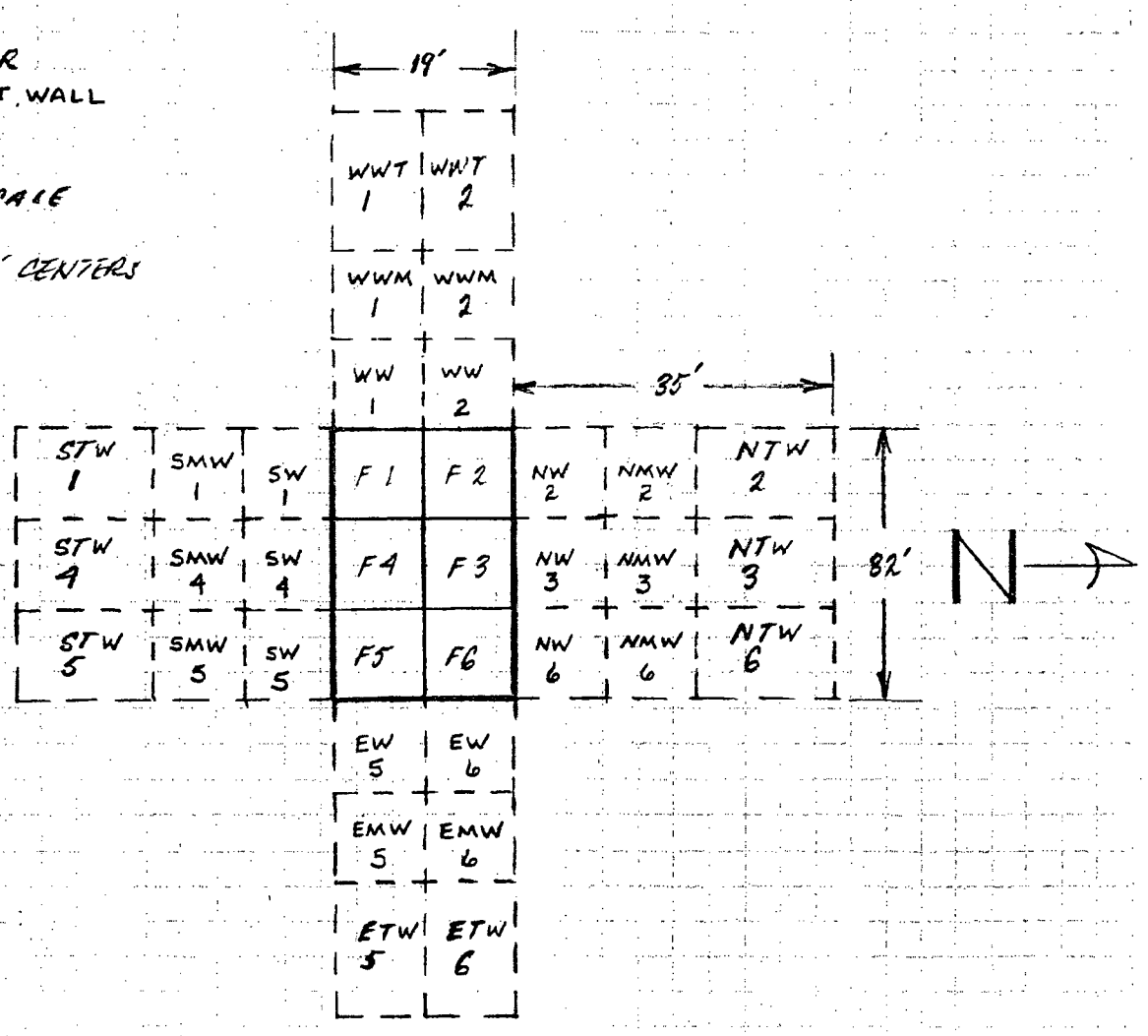
Sheet No. 4 of 4
Made By MC, Date 7-19-92
Chkd. By [illegible] Date 3-20-93

N - NORTH
S - SOUTH
E - EAST
W - WALL
M - MIDDLE
T - TOP
F - FLOOR
WW - WEST WALL

NOT TO SCALE

GRID ≅ 10' CENTERS

Broken LINES INDICATE WALLS



Radiological Data

for

CCD Thickner Tunnel and Tunnel Cone Area Surfaces

Reference Area ID in Field Data Sheet to Diagram to Locate Data Points

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INSTRUMENTATION

EBERLINE PS-2/285 w/AC-3/714209. (7h280/11093) =23.0% EFF.
LUD/19/9180 (CS137/1524)=230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD#1 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS

Sheet No. 1 of 8
Made By MC, Date 7-10-92
Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²
(#1 TUNNEL FLOOR - TF)					
TF-1	9-11	10.0	18-18	18	133.0
2	8-12	10.0	12-66	39	288.3
3	8-10	9.0	3-6	5	37.0
4	7-11	9.0	98-126	112	827.8
5	8-10	9.0	42-48	45	332.6
6	8-11	10.0	60-123	92	680.0
7	8-11	10.0	36-66	51	377.0
8	9-11	10.0	30-120	75	554.3
9	9-11	10.0	18-30	24	177.4
10	9-11	10.0	16-25	21	155.2
(#1 TUNNEL CEILING - TC)					
TC-1	9-11	10	3-24	14	103.5
2	8-12	10	3-3	3	22.2
3	8-10	9	3-12	8	59.1
4	7-11	9	6-18	12	88.7
5	8-10	9	6-12	9	66.5
6	8-11	10	30-36	33	243.9
7	8-11	10	6-54	30	221.7
8	9-11	10	30-54	42	310.4
9	9-11	10	24-60	42	310.4
10	9-11	10	20-55	35	258.7
(#1 TUNNEL LEFT WALL - TLW)					
TLW-1	9-11	10	12-54	33	243.9
2	8-12	10	12-60	36	266.1
3	8-10	9	3-66	35	258.7
4	7-11	9	72-72	72	532.2
5	8-10	9	30-42	36	266.1
6	8-11	10	6-78	42	310.4
7	8-11	10	96-102	99	731.7
8	9-11	10	30-90	60	443.5
9	9-11	10	9-12	11	81.3
10	9-11	10	8-10	9	66.5
(#1 TUNNEL RIGHT WALL - TRW)					
TRW-1	9-11	10	24-30	27	199.6
2	8-12	10	12-72	42	310.4
3	8-10	9	30-86	48	354.8
4	7-11	9	42-78	60	443.5
5	8-10	9	54-66	60	443.5
6	8-11	10	72-84	78	576.5
7	8-11	10	90-96	93	687.4
8	9-11	10	84-102	93	687.4

AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²
TRW-9	9-11	10	36-48	42	310.4
10	9-11	10	33-50	42	310.4
(#1 CONE FLOOR - CF)					
CF-1	8-10	9	6-24	15	110.9
2	8-10	9	18-120	69	510.0
3	10-12	11	18-48	33	243.9
4	10-12	11	18-78	48	354.8
(#1 CONE CEILING - CC)					
CC-1	8-10	9	30-48	39	288.3
2	8-10	9	36-54	45	332.6
3	10-12	11	18-54	36	266.1
4	10-12	11	12-72	42	310.4
(#1 CONE LEFT WALL - CLW)					
CLW-1	8-10	9	6-48	27	199.6
2	8-10	9	12-48	30	221.7
(#1 CONE RIGHT WALL - CRW)					
CRW-3	10-12	11	24-24	24	177.4
4	10-12	11	12-42	32	236.5
(#1 CONE END WALL - CEW)					
CEW-2	8-10	9	6-6	6	44.3
3	10-12	11	12-24	18	133.0
(#1 CONE TUNNEL WALL - CTW)					
CTW-1	8-10	9	36-60	48	354.8

N/A

COMMENTS

NOTE: THE DIRECTION OF INCREMENTAL READING IS FROM SOUTH EXIT-CCD BSMT. TO NORTH ENTRY-CONE AND ALL SURVEYS IS DONE ON APPROXIMATED 10' X 10' GRID AREAS AFTER ALL DECONTAMINATION BY PRESSURIZE SANDBLASTING W/WATER IS DONE. (FOR ALL SURVEYS SEE SHEET 7 OF 8 AND 8 OF 8 DIAGRAMS FOR AREA ID LOCATIONS)

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INSTRUMENTATION

EBERLINE PS-2/285 w/AC-3/714209. (Th230/11093) =23.0% EFF.
LUD/19/9180. (Cs137/1524) = 230-241 uR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #2 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS. Sheet No. 2 of 8 Made By [illegible] Date 6-30, 7-1-92 Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(#2 TUNNEL FLOOR - TF)						TRW-6	9-11	10	6-30	18	133.0	
TF-1	10-12	11	9-120	65	480.4	7	8-10	9	12-30	21	155.2	NOTE;
2	8-10	9	6-9	8	59.1	8	9-11	10	16-21	19	140.4	THE DIRECTION OF
3	8-10	9	9-18	14	103.5	9	9-12	11	24-102	63	465.7	INCREMENTAL READING
4	8-10	9	18-21	20	147.8	10	8-12	10	15-27	21	155.2	IS FROM SOUTH EXIT-
5	8-10	9	9-15	12	88.7	11	9-12	11	4-21	13	96.1	CCD BSMT. TO NORTH
6	9-11	10	78-99	89	657.8	(#2 CONE FLOOR - CF)						ENTRY-CONE AND ALL
7	8-10	9	27-36	32	332.6	CF-1	9-12	11	12-18	15	110.9	SURVEYS ARE DONE
8	9-11	10	27-93	60	443.5	2	12-13	13	3-12	8	59.1	ON APPROXIMATED 10'
9	9-12	11	117-117	117	864.8	3	8-12	10	6-21	14	103.5	X 10' GRID AREAS
10	8-12	10	30-78	54	687.4	4	11-13	12	3-6	5	37.0	AFTER ALL DECON-
11	9-12	11	24-33	29	214.3	(#2 CONE CEILING - CC)						TAMINATION BY
(#2 TUNNEL CEILING - TC)						CC-1	9-12	11	4-18	11	81.3	PRESSURIZED SAND-
TC-1	10-12	11	3-114	59	436.1	2	12-13	13	6-14	10	73.9	BLASTING w/WATER
2	8-10	9	3-6	5	37.0	3	8-12	10	6-8	7	51.7	IS DONE.
3	8-10	9	3-4	4	30.0	4	11-13	12	10-12	11	81.3	
4	8-10	9	3-12	8	59.1	(#2 CONE LEFT WALL - CLW)						
5	8-10	9	24-27	26	192.2	CLW-1	9-12	11	2-11	7	51.7	
6	9-11	10	9-15	12	88.7	2	12-13	13	6-12	9	66.5	
7	8-10	9	3-18	11	81.3	(#2 CONE RIGHT WALL - CRW)						
8	9-11	10	21-102	62	458.3	CRW-3	8-12	10	4-5	5	37.0	
9	9-12	11	0-69	35	258.7	4	11-13	12	5-18	12	88.7	
10	8-12	10	24-24	24	177.4	(#2 CONE END WALL - CEW)						
11	9-12	11	12-27	20	147.8	CEW-2	12-13	13	6-9	8	59.1	
(#2 TUNNEL LEFT WALL - TLW)						3	8-12	10	2-8	5	37.0	
TLW-1	10-12	11	9-33	21	155.2	(#2 CONE TUNNEL WALL - CTW)						
2	8-10	9	15-75	45	332.6	CTW-1	9-12	11	7-12	9	66.5	
3	8-10	9	21-30	26	192.2							
4	8-10	9	105-108	107	790.9							
5	8-10	9	33-81	57	421.3							
6	9-11	10	69-87	78	576.5							
7	8-10	9	36-66	51	377.0							
8	9-11	10	62-108	85	628.3							
9	9-12	11	42-54	48	354.8				N			
10	8-12	10	3-24	14	103.5				A			
11	9-12	11	12-30	21	155.2							
(#2 TUNNEL RIGHT WALL - TRW)												
TRW-1	10-12	11	12-18	15	110.9							
2	8-10	9	48-71	60	443.5							
3	8-10	9	12-21	17	125.7							
4	8-10	9	21-42	32	236.5							
5	8-10	9	12-24	18	133.0							

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INSTRUMENTATION

EBER LINE PS-2/285 w/AC-3/714209 (78230/11093) = 23.0% EFF.
L.00/19/9180 (CS 137/1524) = 230-240 μR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #3 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS

Sheet No. 3 of 8
Made By [illegible] Date 6-25-92, 6-30-92
Chkd. By _____ Date _____

AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100cm²	AREA ID	γ (μR/HR) LO-HI	μR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100cm²	COMMENTS
(#3 TUNNEL FLOOR - TF)						TRW-9	8-11	10	18-39	29	214.3	
TF-1	9-13	11	21-42	27	199.6	10	8-11	10	30-119	75	554.3	NOTE:
2	9-11	10	39-45	42	310.4	(#3 CONE FLOOR - CF)						THE DIRECTION OF
3	9-11	10	30-99	65	480.4	CF-1	10-12	11	5-13	9	66.5	INCREMENTAL READING
4	9-11	10	15-45	30	221.7	2	10-12	11	4-15	10	73.9	IS FROM EAST EXIT-
5	9-12	11	39-63	51	377.0	3	8-11	10	36-99	68	502.6	CCD BSMT, TO WEST
6	9-12	11	42-111	77	569.1	4	10-12	11	21-66	44	325.2	ENTRY-CONE AND ALL
7	9-13	11	42-75	59	436.1	(#3 CONE CEILING - CC)						SURVEYS ARE DONE ON
8	10-12	11	42-90	66	487.8	CC-1	9-12	11	12-18	15	110.9	APPROXIMATED 10'x10'
9	10-13	12	39-90	65	480.4	2	9-10	10	36-78	57	421.3	GRID AREAS AFTER ALL
10	10-13	12	36-96	66	487.8	3	9-11	10	42-54	48	354.8	DECONTAMINATION BY
(#3 TUNNEL CEILING - TC)						4	9-11	10	45-60	53	391.7	PRESSURIZED SAND-
TC-1	10-11	11	4-4	4	29.6	(#3 CONE LEFT WALL - CLW)						BLASTING w/ WATER
2	9-11	10	15-82	49	362.2	CLW-1	9-11	10	49-58	54	399.1	IS DONE.
3	7-11	9	0-135	68	502.6	2	10-12	11	6-63	35	258.7	
4	9-11	10	27-45	36	266.1	(#3 CONE RIGHT WALL - CRW)						CF-1, CF-2 &
5	10-12	11	60-95	78	576.5	CRW-3	9-11	10	33-114	74	547.0	CLW-1: AREAS RE-
6	10-11	11	18-48	33	243.9	4	9-12	11	30-102	66	487.8	SANDBLASTED ON
7	9-10	10	0-54	27	199.6	(#3 CONE END WALL - CEW)						6-30-92. PRIOR
8	9-11	10	0-30	15	110.9	CEW-2	8-11	10	30-57	44	325.2	READINGS C̄ = 383 cpm
9	9-11	10	45-78	62	458.3	3	9-11	10	24-27	26	192.2	= 2,831 DPM.
10	9-11	10	47-70	59	436.1	(#3 CONE TUNNEL WALL - CTW)						
(#3 TUNNEL LEFT WALL - TLW)						CTW-1	9-11	10	27-30	29	214.3	
TLW-1	9-13	11	18-27	23	170.0							
2	8-10	9	3-18	11	81.3							
3	8-12	10	9-33	21	155.2							
4	8-10	9	36-54	45	332.6							
5	8-12	10	24-33	29	214.3							
6	8-12	10	36-120	78	576.5							
7	8-11	10	18-30	24	177.4							
8	8-11	10	48-105	77	569.1							
9	8-11	10	24-127	76	561.7				N/A			
10	8-11	10	30-119	75	554.3							
(#3 TUNNEL RIGHT WALL - TRW)												
TRW-1	8-14	11	0-9	5	37.0							
2	9-12	11	18-42	30	221.7							
3	9-12	11	39-57	48	354.8							
4	8-14	11	0-21	11	81.3							
5	8-9	9	30-48	39	288.3							
6	8-11	10	9-24	17	125.7							
7	8-11	10	3-42	23	170.0							
8	8-11	10	42-57	50	369.6							

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INSTRUMENTATION

GBERLINE PS-2/285 W/AC-3/714209. (Th 230/11093) =23.0% EFF.
LUD/19/9180 (Cs137/1524) = 230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #4 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS

Sheet No. 4 of 8
Made By AC, Date 6-26, 6-30-92
Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(#4	TUNN	EL	FLOOR	- T	F)	TRW-9	8-12	10	57-69	63	465.7	
TF-1	9-10	10	6-9	8	59.1	↓ 10	8-12	10	61-75	68	502.6	NOTE:
2	8-10	9	120-131	126	931.3	(#4	CONE	FLO	OR -	C	F)	THE DIRECTION OF
3	8-10	9	57-69	63	465.7	CF-1	9-11	10	54-120	87	643.0	INCREMENTAL READING
4	7-11	9	15-21	18	133.0	2	9-11	10	51-130	91	672.6	IS FROM NORTH EXIT-
5	10-11	11	9-51	30	221.7	3	9-11	10	6-18	12	88.7	CCD BSMT. TO SOUTH
6	8-11	10	12-42	27	199.6	↓ 4	9-13	11	9-63	36	266.1	ENTRY-CONE AND ALL
7	8-10	9	42-66	54	399.1	(#4	CONE	C	EILI	NG-	CC)	SURVEYS ARE DONE ON
8	7-11	9	60-105	83	613.5	CC-1	9-11	10	3-60	32	236.5	APPROXIMATED 10'x10'
9	8-12	10	54-132	93	687.4	2	9-11	10	24-48	36	266.1	GRID AREAS AFTER ALL
↓ 10	8-12	10	52-134	93	687.4	3	9-11	10	18-66	39	288.3	DECONTAMINATION BY
(#4	TUNN	EL	CEIL	ING	- TC)	↓ 4	9-13	11	15-45	30	221.7	PRESSURIZED SAND-
TC-1	9-10	10	0-3	2	14.8	(#4	CONE	LE	FT W	ALL	-CLW)	BLASTING W/WATER
2	8-10	9	3-3	3	22.2	CLW-1	9-11	10	6-12	9	66.5	IS DONE.
3	8-10	9	3-69	36	266.1	↓ 2	9-11	10	6-6	6	44.3	
4	7-11	9	18-51	35	258.7	(#4	CONE R	IGH	T WA	LL -	CRW)	TF-1: AREA RE-
5	10-11	11	0-21	11	81.3	CRW-3	9-11	10	3-6	5	37.0	SAND BLASTED ON
6	8-11	10	6-9	8	59.1	↓ 4	9-13	11	12-66	39	288.3	6-30-92. PRIOR
7	8-10	9	0-0	0	< BKGD	(#4	CONE	END	WALL	—	CEW)	READING = 1400CAMS
8	7-11	9	9-30	20	147.8	CEW-2	9-11	10	6-12	9	66.5	10,348 DPM.
9	8-12	10	14-60	37	273.5	↓ 3	9-11	10	1-15	8	59.1	
↓ 10	8-12	10	14-65	40	295.7	(#4	CONE	TUNN	EL WA	LL	-CTW)	
(#4	TUNNE	L L	EFT W	ALL	-TLW)	CTW-1	9-11	10	6-18	12	88.7	
TLW-1	9-10	10	24-39	32	236.5							
2	8-10	9	18-21	20	147.8							
3	8-10	9	18-30	24	177.4							
4	7-11	9	27-33	30	221.7							
5	10-11	11	66-66	66	487.8							
6	8-11	10	63-126	95	702.2							
7	8-10	9	18-90	54	399.1							
8	7-11	9	27-51	39	288.3							
9	8-12	10	27-30	29	214.3				N/A			
↓ 10	8-12	10	30-33	32	236.5							
(#4	TUNNE	L R	IGHT	WALL	-TRW)							
TRW-1	9-10	10	24-42	33	243.9							
2	8-10	9	33-39	36	266.1							
3	8-10	9	30-60	45	332.6							
4	7-11	9	18-108	58	428.7							
5	10-11	11	18-66	47	347.4							
6	8-11	10	24-72	48	354.8							
7	8-10	9	12-87	50	369.6							
↓ 8	7-11	11	0-6	3	22.2							

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INSTRUMENTATION

EBERLINE PS-2/285 W/AC-3/714209, (Th230/11093) = 23.0% EFF.
LUW/19/9180, (Cs137/1524) = 230-240 MA/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #5 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS.

Sheet No. 5 of 6
Made By mc, Date 6-26, 6-30-92
Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(#5	TUNNE	L	FLOOR	—	TF)	TRW-6	8-10	9	12-96	54	399.1	
TF-1	10-13	12	9-12	11	81.3	7	8-10	9	24-42	33	243.9	NOTE:
2	8-10	9	24-36	27	199.6	8	8-10	9	12-54	33	243.9	THE DIRECTION OF
3	8-10	9	6-24	15	110.9	9	8-12	10	20-72	46	340.0	INCREMENTAL READING
4	8-11	10	30-30	30	221.7	10	8-10	9	0-66	33	243.9	IS FROM NORTH EXIT-
5	8-10	9	63-135	99	731.7	11	9-10	10	6-18	12	88.7	CCD BSMT. TO SOUTH
6	8-10	9	42-96	69	510.0	(#5	CONE	FLO	OR —		CF)	ENTRY-CONE AND ALL
7	8-10	10	48-108	78	576.5	CF-1	9-11	10	18-21	20	147.8	SURVEYS ARE DONE
8	8-10	10	54-57	56	413.9	2	9-10	10	12-12	12	88.7	ON APPROXIMATED 10'
9	8-12	10	6-30	18	133.0	3	9-11	10	36-36	36	266.1	X 10' GRID AREAS
10	8-10	9	6-18	12	88.7	4	9-13	11	18-24	21	155.2	AFTER ALL DECONTAMIN-
11	9-10	10	6-30	18	133.0	(#5	CONE	CEI	LING	—	CC)	ATION BY PRESSURIZED
(#5	TUNN	EL	CEILING	—	TC)	CC-1	9-11	10	0-3	2	14.8	SAND BLASTING W/WATER
TC-1	10-13	12	48-99	74	547.0	2	9-10	10	27-51	39	288.3	IS DONE.
2	8-10	9	9-12	11	81.3	3	9-11	10	12-30	21	155.2	
3	8-10	9	12-12	12	88.7	4	9-13	11	0-12	6	44.3	TF-1: AREA RE-
4	8-11	10	42-57	50	369.6	(#5	CONE	LEF	T WAL	L -	CLW)	SAND BLASTED ON
5	8-10	9	9-24	17	125.7	CLW-1	9-11	10	9-12	11	81.3	6-30-92. PRIOR
6	8-10	9	18-134	76	561.7	2	9-10	10	9-33	21	155.2	READING = 1820 CPM =
7	8-10	9	0-3	2	14.8	(#5	CONE	RIGH	T WA	LL -	CRW)	13,452 DPM.
8	8-10	9	3-3	3	22.2	CRW-3	9-11	10	0-3	2	14.8	
9	8-12	10	0-36	18	133.0	4	9-13	11	6-6	6	44.3	
10	8-10	9	0-36	18	133.0	(#5	CONE	END	WALL	—	CEW)	
11	9-10	10	60-69	65	480.4	CEW-2	9-10	10	12-21	17	125.7	
(#5	TUNNE	L	LEFT WA	LL -	TLW)	3	9-11	10	3-12	8	59.1	
TLW-1	10-13	12	0-18	9	66.5	(#5	CONE	TUNN	EL WA	LL -	CTW)	
2	8-10	9	18-54	36	266.1	CTW-1	9-11	10	0-18	9	66.5	
3	8-10	9	24-132	78	576.5							
4	8-11	10	24-72	48	354.8							
5	8-10	9	12-18	15	110.9							
6	8-10	9	18-78	48	354.8							
7	8-10	9	3-18	11	81.3							
8	8-10	9	6-6	6	44.3							
9	8-12	10	3-36	20	147.8				N/A			
10	8-10	9	0-3	2	14.8							
11	9-10	10	0-6	3	22.2							
(#5	TUNNE	L	RIGHT	WALL	- TRW)							
TRW-1	10-13	12	3-6	5	37.0							
2	8-10	9	18-36	27	199.6							
3	8-10	9	0-6	3	22.2							
4	8-11	10	12-22	17	125.7							
5	8-10	9	12-66	39	288.3							

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INSTRUMENTATION

EBERLINE PS-2/285 w/AC-2/714209. (Th230/11093) = 23.0% EFF.
LUO/19/9180. (Cs137/1524) = 230-240 MR/HR.

COMPUTATIONS

SUBJECT MILL DECOMMISSIONING - ALPHA AND GAMMA VERIFICATION SURVEY FIELD DATA SHEET OF CCD #6 THICKNER TUNNEL AND TANK CONE CEMENT SURFACE AREAS.

Sheet No. 6 of 8
Made By AC, Date 7-8-92
Chkd. By _____ Date _____

AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	AREA ID	γ (MR/HR) LO-HI	MR/HR C̄	α (CPM) LO-HI	CPM C̄	DPM 100CM²	COMMENTS
(#6 TUNNEL FLOOR — TF)						TRW-9	8-12	10	24-102	72	532.2	
TF-1	8-10	9	3-6	5	37.0	10	8-12	10	17-111	64	473.0	NOTE:
2	10-12	11	18-24	21	155.2	(#6 CONE FLOOR — CF)						THE DIRECTION OF
3	8-12	10	6-78	42	310.4	CF-1	8-10	9	12-60	36	266.1	INCREMENTAL READING
4	10-12	11	18-30	24	177.4	2	12-18	15	6-30	18	133.0	IS FROM WEST EXIT-
5	10-12	11	108-126	117	864.8	3	9-11	10	18-60	39	288.3	CCD BEMT. TO SOUTH
6	9-11	10	72-102	87	643.0	4	10-12	11	36-66	51	377.0	ENTRY-CONE AND ALL
7	12-15	14	60-78	69	510.0	(#6 CONE CEILING — CC)						SURVEYS ARE DONE ON
8	8-11	10	36-78	57	421.3	CC-1	8-10	9	18-78	48	354.8	APPROXIMATED 10'x10'
9	8-12	10	60-102	81	598.7	2	12-18	15	18-36	27	199.6	GRID AREAS AFTER ALL
10	8-12	10	65-110	88	650.4	3	9-11	10	24-84	54	399.1	DECONTAMINATION BY
(#6 TUNNEL CEILING - TC)						4	10-12	11	30-36	33	243.9	PRESSURIZED SAND-
TC-1	8-10	9	3-60	32	236.5	(#6 CONE LEFT WALL — CLW)						BLASTING W/WATER
2	10-12	11	3-3	3	22.2	CLW-1	8-10	9	36-96	66	487.8	IS DONE.
3	8-12	10	3-9	6	44.3	2	12-18	15	18-78	48	354.8	
4	10-12	11	60-78	69	510.0	(#6 CONE RIGHT WALL — CRW)						TF 5-7: DECON AFTER
5	10-12	11	6-60	33	243.9	CRW-3	9-11	10	36-36	36	266.1	FURTHER SANDBLAST-
6	9-11	10	6-12	9	66.5	4	10-12	11	12-36	24	177.4	ING INCLUDING ACID
7	12-15	14	12-36	24	177.4	(#6 CONE END WALL — CEW)						WASH ON 7-13-92,
8	8-11	10	12-48	30	221.7	CEW-2	12-18	15	18-30	24	177.4	PRIOR READING-C̄ =
9	8-12	10	48-66	57	421.3	3	9-11	10	42-66	54	399.1	859 CPM = 6,345 DPM.
10	8-12	10	53-68	61	450.9	(#6 CONE TUNNEL WALL - CTW)						
(#6 TUNNEL LEFT WALL - TLW)						CTW-1	8-10	9	3-42	23	170.0	
TLW-1	8-10	9	3-24	14	103.5							
2	10-12	11	6-9	8	59.1							
3	8-12	10	6-54	30	221.7							
4	10-12	11	42-126	84	620.9							
5	10-12	11	24-84	54	399.1							
6	9-11	10	24-24	24	177.4							
7	12-15	14	18-18	18	133.0							
8	8-11	10	18-36	27	199.6							
9	8-12	10	6-24	15	110.9				N/A			
10	8-12	10	7-28	18	133.0							
(#6 TUNNEL RIGHT WALL - TRW)												
TRW-1	8-10	9	90-102	96	709.6							
2	10-12	11	60-66	63	465.7							
3	8-12	10	6-54	30	221.7							
4	10-12	11	30-90	60	443.5							
5	10-12	11	102-109	106	783.5							
6	9-11	10	66-102	84	620.9							
7	12-15	14	12-60	36	266.1							
8	8-11	10	3-66	35	258.7							

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COMPUTATIONS

SUBJECT DIAGRAM OF AREA ID GRID ON THE CCD-THICKNER TUNNEL CEMENT SURFACE AREAS FOR RADIOLOGICAL VERIFICATION FIELD SURVEY.

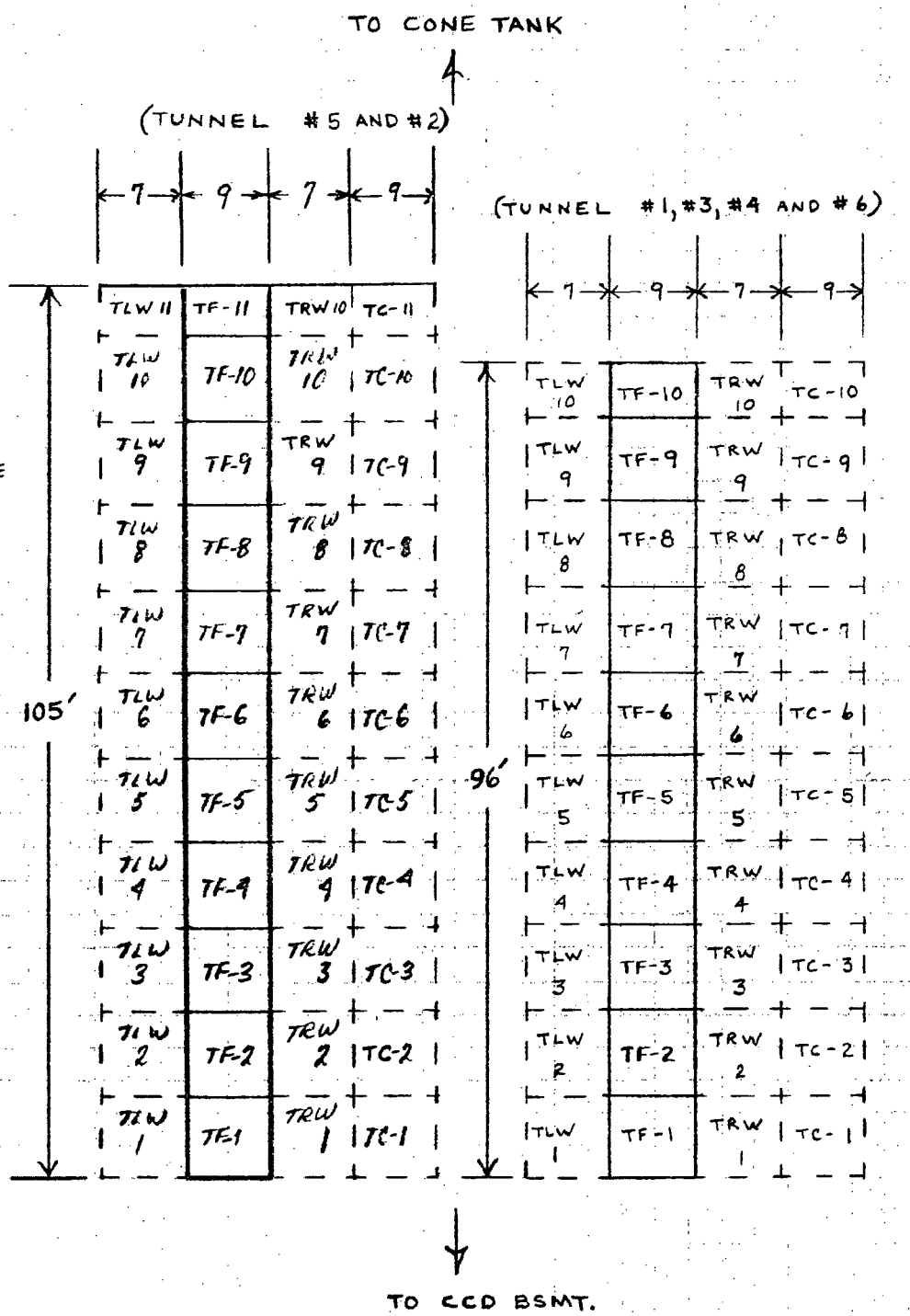
Sheet No. 7 of 8
Made By MC, Date 7-6-92
Chkd. By _____ Date _____

L - LEFT
R - RIGHT
W - WALL
F - FLOOR
C - CEILING
T - TUNNEL

NOT TO SCALE

GRID AT 10' CENTERS

DOTTED LINES INDICATE WALL AND CEILING



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COMPUTATIONS

SUBJECT DIAGRAM OF AREA ID GRID ON THE CCD-THICKNER CONE TANK COMPARTMENT CEMENT SURFACE AREAS FOR RADIOLOGICAL VERIFICATION FIELD SURVEY,

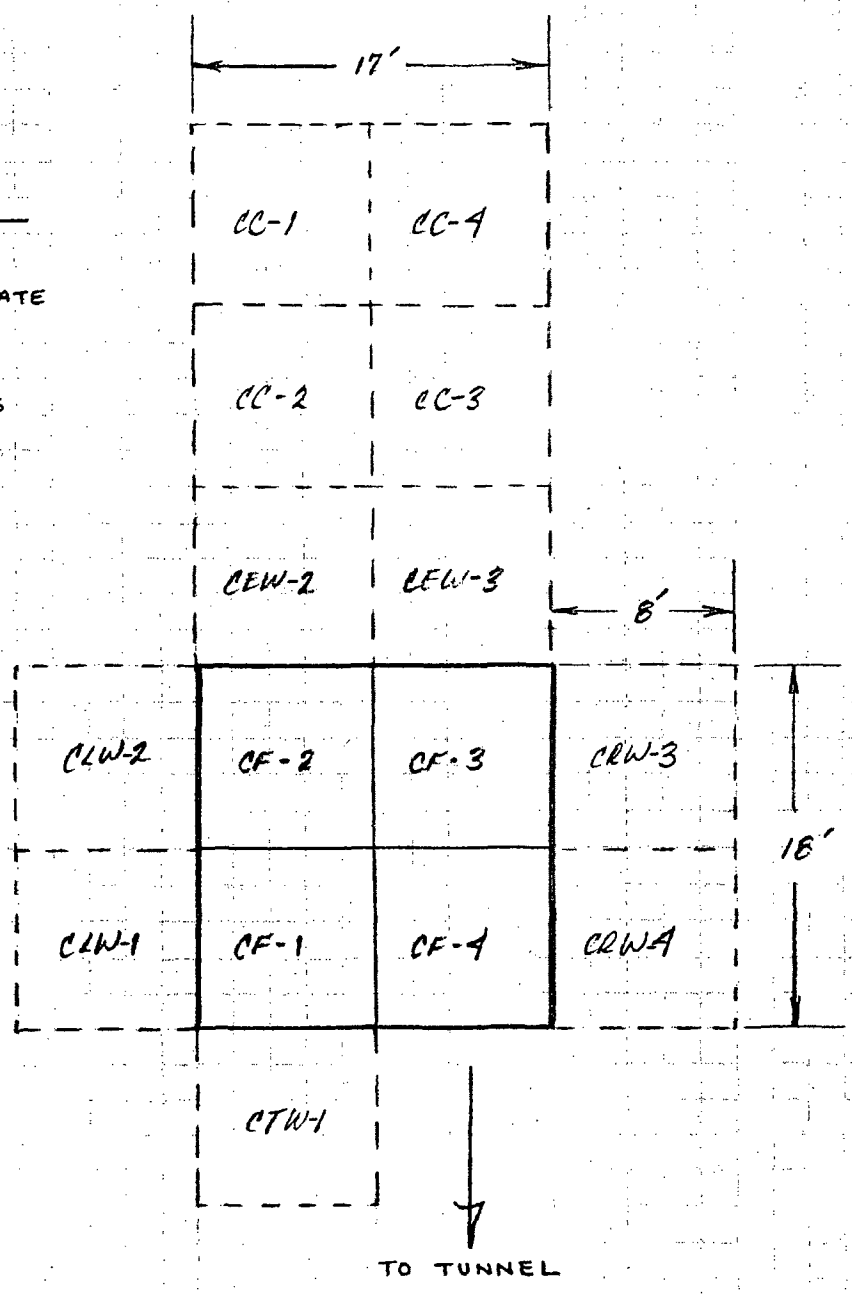
Sheet No. 8 of 8
Made By MC, Date 7-6-92
Chkd. By _____ Date _____

CC - CONE / CEILING
E - END
T - TUNNEL
L - LEFT
R - RIGHT
W - WALL
F - FLOOR
C - CONE

— NOT TO SCALE —

DASHED LINES INDICATE WALL AND CEILING

GRID ≅ 10' CENTERS



APPENDIX E

Radiological Data
for

° Ore Pad	Table 1
° Grizzly	Table 2
° Precipitation	Table 3
° Precipitation Area Drainage Pond	Table 3
° Solvent Extraction (SX)	Table 4
° Solvent Extraction Emergency Catch Basin	Table 5
° CCD Pump House (CCD Building)	Table 6
° Inactive Basin	Table 7
° Sewage Plant	Table 7
° Leach	Table 8
° Clair Floc, Raffinate Tank Areas	Table 9
° Sodium Chlorate Storage (Chemical Building)	Table 9
° Borrow Soil Area	Table 10
° North (1), and South (2) Catch Basins	Fig. C
° Thickner Floor Stem Wall Area	Fig. D
° Underground Piping Area	Fig. E

All Tables should be reference to Fig. A and B for actual Survey and Sampling Points.

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INSTRUMENTATION:
LUD/19/9180, Cs137/1524 220-230 MV
LUD/125/9073

TABLE 1

COMPUTATIONS

SUBJECT TABLE FOR THE ORE PAD OUTDOOR RADIOLOGICAL DATA, (H-1)

Sheet No. 1 of

Made By [illegible] Date 3-15-93

Chkd. By CMM Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL.	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL.
BLE+00, 00R	8	9			BLB+66, 00R	14	13		
BLE+00, 33L	13	14			BLB+66, 33L	11	12		
BLD+00, 33R	8	9	2.8		BLA+66, 33R	9	10	2.6	
BLD+00, 00R	10	11			BLA+66, 00R	12	11		
BLD+00, 33L	8	9			BLA+66, 33L	9	8		
BLC+00, 33R	10	11			BLA+66, 66L	13	15		
BLC+00, 00R	11	12			E1+00, 00R	8	9	1.6	
BLC+00, 33L	14	19			E1+00, 33L	12	13		
BLB+00, 33R	14	15			D1+00, 33R	10	13		
BLB+00, 00R	15	16			D1+00, 00R	8	9		
BLB+00, 33L	13	16			D1+00, 33L	9	11		
BLA+00, 33R	12	11			C1+00, 33R	9	11	3.7	
BLA+00, 00R	9	11			C1+00, 00R	11	12		
BLA+00, 33L	11	10			C1+00, 33L	12	14		
BLA+00, 66L	9	10			B1+00, 33R	9	10	2.7	
BLE+33, 00R	11	12			B1+00, 00R		9		
BLE+33, 33L	9	10			B1+00, 33L	10	9		
BLD+33, 33R	8	9			A1+00, 33R	12	13		
BLD+33, 00R	12	13			A1+00, 00R	12	13		
BLD+33, 33L	8	10			A1+00, 33L	10	11	2.7	
BLC+33, 33R	10	11			A1+00, 66L	14	15		
BLC+33, 00R	13	14	3.7		E1+33, 00R	13	17		
BLC+33, 33L	13	14			E1+33, 33L	12	14		
BLB+33, 33R	12	13			D1+33, 33R	7	9	1.9	
BLB+33, 00R	13	14	4.9		D1+33, 00R	10	11		
BLB+33, 33L	10	13			D1+33, 33L	11	12		
BLA+33, 33R	11	12			C1+33, 33R	10	12		
BLA+33, 00R	12	13			C1+33, 00R	11	12		
BLA+33, 33L	12	13	2.3		C1+33, 33L	11	13		
BLA+33, 66L	11	13			B1+33, 33R	12	12		
BLE+66, 00R	9	11			B1+33, 00R	11	12		
BLE+66, 33L	10	11			B1+33, 33L	10	11	2.3	
BLD+66, 33R	13	12			A1+33, 33R	9	10	3.5	
BLD+66, 00R	9	10	2.6		A1+33, 00R	12	13		
BLD+66, 33L	11	12			A1+33, 33L	9	10		
BLC+66, 33R	10	12			A1+33, 66L	13	14		
BLC+66, 00R	8	10			E1+66, 33R	12	16		
BLC+66, 33L	11	12			E1+66, 00R	13	16		
BLB+66, 33R	12	13			E1+66, 33L	13	12		

REMARKS:

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TABLE 1 PAGE 2

COMPUTATIONS

SUBJECT TABLE FOR THE ORE PAD OUTDOOR RADIOLOGICAL DATA

Sheet No. 2 of

Made By MC Date 3-15-93

Chkd. By Cmm Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL.
D1+66, 33R	15	14			B2+33, 33L	12	11		
D1+00, 00R	13	18			A2+33, 33R	12	13		
D1+00, 33L	11	15			A2+33, 00R	14	15		
C1+66, 33R	12	11	4.8		A2+33, 33L	11	12		
C1+66, 00R	11	14			E2+66, 33R	13	10		
C1+66, 33L	11	12	4.5		E2+66, 00R	10	11		
B1+66, 33R	12	15			E2+66, 33L	9	10		
B1+66, 00R	11	12			D2+66, 33R	13	14		
B1+66, 33L	13	14			D2+66, 00R	11	10		
A1+66, 33R	10	11			D2+66, 33L	9	8		
A1+66, 00R	11	12			C2+66, 33R	10	11		
A1+66, 33L	10	12			C2+66, 00R	11	10	4.0	
A1+66, 66L	13	14			C2+66, 33L	7	8		
E2+00, 33R	9	10			B2+66, 33R	8	9		
E2+00, 00R	10	11	2.4		B2+66, 00R	9	10		
E2+00, 33L	11	10			B2+66, 33L	9	10		
D2+00, 33R	9	10			A2+66, 33R	13	14		
D2+00, 00R	15	19	7.2		A2+66, 00R	13	15	4.6	
D2+00, 33L	8	12			E3+00, 33R	9	8		
C2+00, 33R	10	11			E3+00, 00R	9	8	2.6	
C2+00, 00R	8	10			E3+00, 33L	10	12		
C2+00, 33L	11	13			D3+00, 33R	12	13		
B2+00, 33R	14	15			D3+00, 00R	10	11		
B2+00, 00R	8	9	2.0		D3+00, 33L	11	12		
B2+00, 33L	13	14			C3+00, 33R	10	9	3.2	
A2+00, 33R	10	11			C3+00, 00R	13	12		
A2+00, 00R	9	10	2.6	1.6	C3+00, 33L	8	9		
A2+00, 33L	12	13			B3+00, 33R	9	8		
E2+33, 33R	9	10			B3+00, 00R	9	10	1.4	
E2+33, 00R	9	10			B3+00, 33L	9	10		
E2+33, 33L	11	14			A3+00, 33R	10	9		
D2+33, 33R	11	10			A3+00, 00R	12	13		
D2+33, 00R	9	10			E3+33, 66R	7	8	1.3	0.6
D2+33, 33L	8	12			E3+33, 33R	10	12		
C2+33, 33R	8	9			E3+33, 00R	10	10		
C2+33, 00R	10	11			E3+33, 33L	10	12		
C2+33, 33L	8	9			D3+33, 33R	13	14		
B2+33, 33R	11	12	5.0		D3+33, 00R	11	12	4.1	
B2+33, 00R	10	11			D3+33, 33L	15	16		

REMARKS:

UNC MINING AND MILLING

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TABLE 1 PAGE 3

COMPUTATIONS

SUBJECT TABLE FOR THE ONE PAD OUTDOOR RADIOLOGICAL DATA. Sheet No. 3 of

Made By [illegible] Date 3-15-93

Chkd. By [illegible] Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL
C3+33, 33R	15	16			A4+00, 33R	12	13	5.7	
C3+33, 00R	12	11	21.1		A4+00, 00R	11	12		
C3+33, 33L	12	11			A4+00, 33L	13	15		
B3+33, 33R	12	13			F4+33, 00R	8	11		
B3+33, 00R	13	14			F4+33, 33L	9	11		
B3+33, 33L	13	14			E4+33, 33R	9	11		
A3+33, 33R	12	11			E4+33, 00R	9	11		
A3+33, 00R	12	13			E4+33, 33L	11	12		
A3+33, 33L	15	16	11.4		D4+33, 33R	11	12		
E3+66, 66R	12	11			D4+33, 00R	9	11		
E3+66, 33R	13	14			D4+33, 33L	8	9		
E3+66, 00R	10	11			C4+33, 33R	9	8		
E3+66, 33L	11	12			C4+33, 00R	9	8		
D3+66, 33R	11	14			C4+33, 33L	9	10		
D3+66, 00R	10	11			B4+33, 33R	13	14		
D3+66, 33L	8	10			B4+33, 00R	15	16		
C3+66, 33R	8	9			B4+33, 33L	9	10		
C3+66, 00R	11	10			A4+33, 33R	11	12		
C3+66, 33L	10	11			A4+33, 00R	12	14		
B3+66, 33R	11	10			A4+33, 33L	14	18		
B3+66, 00R	13	14	10.0		F4+66, 00R	8	13		
B3+66, 33L	11	12			F4+66, 33L	11	12		
A3+66, 33R	10	11			E4+66, 33R	12	10	3.5	
A3+66, 00R	6	8			E4+66, 00R	12	14		
A3+66, 33L	13	15			E4+66, 33L	15	14		
E4+00, 00R	12	13			D4+66, 33R	12	13		
E4+00, 66R	12	13			D4+66, 00R	11	12		
E4+00, 33R	11	12	3.9	2.3	D4+66, 33L	8	9		
E4+00, 00R	12	13			C4+66, 33R	8	10	3.5	
E4+00, 33L	10	12			C4+66, 00R	9	10		
D4+00, 33R	10	11	3.4		C4+66, 33L	10	13	3.2	
D4+00, 00R	12	13			B4+66, 33R	11	12		
D4+00, 33L	8	9			B4+66, 00R	15	17	4.1	6.0
C4+00, 33R	7	10	2.3		B4+66, 33L	15	16		
C4+00, 00R	11	10			B4+66, 66L	15	16	5.6	
B4+00, 66R	9	8	2.8		E5+00, 00R	12	15	7.5	7.5
B4+00, 33R	13	16			E5+00, 33L	11	13		
B4+00, 00R	15	14							
B4+00, 33L	13	14							

REMARKS:

UNC MINING AND MILLING

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TABLE 1 PAGE 4

COMPUTATIONS

SUBJECT TABLE FOR THE ORE PAD OUTDOOR RADIOLOGICAL DATA

Sheet No. 4 of

Made By [illegible] Date 3-15-93

Chkd. By [illegible] Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gM by γ SPEC.	Ra-226 IN pCi/gM by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gM by γ SPEC.	Ra-226 IN pCi/gM by CHEM. ANAL
D5+00, 33R	9	10							
D5+00, 00R	11	12							
D5+00, 33L	7	9							
C5+00, 33R	7	8							
C5+00, 00R	13	14							
C5+00, 33L	11	13							
B5+00, 33R	13	14							
B5+00, 00R	11	15							
B5+00, 33L	6	12							
C5+33, 33R	12	14							
C5+33, 00R	11	10	1.6						
C5+33, 33L	13	14							
B5+33, 33R	9	10	2.4						
B5+33, 00R	15	19							

REMARKS:

INSTRUMENTATION
Lu/125/9073. Cs137/1521
Lu0/19/9180 220-230 μR/HR

UNC MINING AND MILLING

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TABLE 2

COMPUTATIONS

SUBJECT TABLE FOR THE GRIZZLY TUNNEL AND BASEMENT SURFACE AREAS OUTDOOR RADIOLOGICAL DATA (A-2)

Sheet No. _____ of _____
Made By MC Date 3-15-93
Chkd. By CMH Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL
D2+33, 00R	9	10							
D2+33, 33R	11	10							
D2+33, 33L	8	12							
D2+33, 66L	8	9							
D2+66, 00R	11	10							
D2+66, 33L	9	8							
D2+66, 66L	10	11							
D2+66, 33R	13	14							
D3+00, 00R	10	11							
D3+00, 33L	11	12							
D3+00, 66L	10	9							
C2+33, 00R	10	11							
C2+66, 00R	11	10	4.0						
C3+00, 00R	13	12							

REMARKS:

UNC MINING AND MILLING

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LUD/19/9180 , CS137/1524
LUD/125/9073 220-230 m/hr.

TABLE 3

COMPUTATIONS

SUBJECT TABLE FOR THE PRECIP AND PRECIP DRAINAGE POND OUT DOOR RADIOLOGICAL DATA (A-3 & A-4)

Sheet No. _____ of _____
Made By MC Date 3-15-93
Chkd. By EMM Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gM by γ SPEC.	Ra-226 IN pCi/gM by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gM by γ SPEC.	Ra-226 IN pCi/gM by CHEM. ANAL.
H1+33,00R	7	8							
H1+66,00R	9	10							
H2+00,00R	8	7							
H2+33,00R	8	7							
H2+66,00R	8	9							
H2+66,33L	7	8	2.1						
H2+33,33L	8	7							
H2+33,66L	10	12							
H2+00,33L	8	9							
H2+00,66L	9	10							
H1+66,33L	9	10							
H1+66,66L	11	12							
H1+33,33L	10	15							
H1+33,33R	10	11							
H1+66,33R	7	8							
H1+66,66R	11	12							
H2+00,33R	7	8							
H2+00,66R	12	13							
I2+00,00R	12	11							
I2+33,00R	10	11							
I2+33,33L	13	14							
I2+33,66L	8	9							
I2+66,00R	12	11							
I2+66,33L	12	13							
I2+66,66L	8	9							
I3+00,00R	11	10							
I3+00,33L	8	9							
I3+00,66L	12	14							
DRAINAGE	POND								
BLG+00,00R	14	15							
BLG+00,33R	7	8							
BLG+66,00R	14	16							
BLG+33,33R	9	10							

REMARKS:

UNC MINING AND MILLING

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UNC

LUD/A/9180, C-137/1524
LUD/125/9073, 220-230 μR/HR.

TABLE 4

COMPUTATIONS

SUBJECT TABLE FOR THE SOLVENT EXTRACTION OUTDOOR RADIOLOGICAL DATA (A-5)

Sheet No. _____ of _____
Made By RC Date 3-15-93
Chkd. By EMM Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL
BLJ+66, 00R	9	8			K3+33, 66L	6	7		
BLJ+66, 33L	8	9			J3+33, 00R	6	8		
BLJ+66, 66L	6	7			J3+33, 33L	7	8		
J1+00, 00R	9	10			J3+66, 00R	7	9		
J1+00, 33L	8	9							
J1+00, 66L	7	8							
J1+33, 00R	9	7							
J1+33, 33R	7	9							
J1+33, 66R	7	8							
J1+33, 33L	8	9	2.1						
J1+33, 66L	7	8							
J1+66, 00R	9	8							
J1+66, 33R	9	8							
J1+66, 66R	7	8							
J1+66, 33L	7	8							
J1+66, 66L	6	8							
J2+00, 00R	8	9							
J2+00, 33R	8	9							
J2+00, 66R	8	7							
J2+00, 33L	6	8							
J2+00, 66L	7	8							
J2+33, 00R	9	6	3.7						
J2+33, 33R	9	8							
J2+33, 66R	6	7							
J2+33, 33L	6	5							
J2+33, 66L	10	9							
J2+66, 00R	5	7							
J2+66, 33R	11	10							
J2+66, 66R	8	6							
K2+66, 00R	6	8							
K2+66, 33R	7	7							
J2+66, 33L	9	8							
J3+00, 00R	6	9	1.7						
J3+00, 33L	6	8							
J3+00, 33R	8	9							
J3+00, 66R	6	7							
K3+00, 00R	7	6							
K3+33, 00R	6	7							
K3+33, 33L	5	6							

REMARKS: _____

UNC MINING AND MILLING

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UNC

LW/19/9160. Cs137/1524
LU0/125/9073. 220-230 μR/HR

TABLE 5

COMPUTATIONS

SUBJECT TABLE FOR THE SOLVENT EXTRACTION CATCH BASIN AND KEROSENE TANK AREA OUTDOOR RADIOLOGICAL DATA. (A-6)

Sheet No. _____ of _____
Made By MC Date 3-15-93
Chkd. By EMM Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL
SECB									
K1+00, 33R	13	14							
K1+33, 33L	10	12							
K1+33, 66L	9	10							
L1+33, 00R	8	7							
L1+66, 00R	10	11							
L1+66, 33L	8	10	5.3						
L1+66, 66L	13	14							
L2+00, 33L	7	7							
L2+00, 66L	5	6							
KEROSENE TK									
BLK+66, 00R	9	10							
BLK+66, 33L	8	9							
K1+00, 00R	7	8							
K1+00, 33L	6	9							

REMARKS: ESDP L1+66, 33L IS ALSO K1+66, 66R

UNC MINING AND MILLING

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LW0/125/9073, Cs137/1524
LW0/19/9180 220-230 μR/HR

TABLE 6

COMPUTATIONS

SUBJECT TABLE FOR THE CCD PUMP HOUSE OUTDOOR RADIOLOGICAL DATA (A-9)

Sheet No. _____ of _____

Made By MC Date 3-15-93

Chkd. By EMM Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL.
G5+66, 00R	11	12							
G5+66, 33R	7	8							
G5+66, 66R	8	9							
H5+66, 00R	8	9							
H6+00, 00R	8	9							
H6+00, 33L	8	10							
H6+00, 66L	10	11							
G6+00, 00R	8	9							
G6+00, 33L	9	8							
G6+33, 00R	9	12	7.1	5.5					
G6+33, 33L	9	10							
G6+33, 33R	9	10	4.5						
G6+33, 66L	8	9							
H6+33, 00R	8	9							
H6+66, 00R	7	8							
H6+66, 33L	12	14							
H6+66, 00R	9	10							
H6+66, 33R	8	10							

REMARKS:

UNC MINING AND MILLING

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INSTRUMENTATION:
LUK/19/4180 CS137/1524
LUK/125/9073 220-230 μR/HR.

TABLE 7

COMPUTATIONS

SUBJECT TABLE FOR THE INACTIVATED BASIN AND SEWAGE TREATMENT PLANT OUTDOOR RADIOLOGICAL DATA (A-10 & A-11)

Sheet No. ____ of ____
Made By mc Date 3-15-93
Chkd. By [illegible] Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL
H10+00,00R	8	9							
H10+00,33R	9	10							
H10+00,66R	7	8							
I10+00,00R	7	8							
I10+33,00R	7	8							
I10+33,33L	7	8							
I10+33,66L	9	10							
H10+33,00R	7	8							
H10+33,33L	8	9							
H10+66,00R	7	8							
H10+66,33R	7	8							
I11+00,00R	6	7							
I11+00,33L	13	12							
I11+00,66L	9	10							
I11+33,33L	5	6							
I11+33,66L	6	7							
H11+00,00R	8	9							
H11+33,33R	9	8							
SEWAGE TREATMENT PLANT									
D6+33,00R	15	16							
D6+66,00R	15	18	2.7						

REMARKS:

UNC MINING AND MILLING

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LNU/12/9073. Cs137/1569
LNU/19/9180 220-230 MR/HR

TABLE 8

COMPUTATIONS

SUBJECT TABLE FOR THE LEACH OUTDOOR RADIOLOGICAL DATA, (A-12)

Sheet No. _____ of _____

Made By MC Date 3-15-93

Chkd. By CMM Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL.
F2+33,00R	9	10							
F2+33,33R	7	8							
F2+33,66R	9	10							
F2+66,00R	9	10							
F2+66,33R	10	11							
F2+66,66R	10	11							
F3+00,00R	9	10							
F3+00,33R	10	11							
F3+00,66R	11	12	2.7						
G3+00,00R	8	9							
G3+33,00R	8	7							
G3+66,00R	10	12							
G4+00,00R	7	8							
G4+33,33L	8	9							
G4+00,33L	8	9							
F3+66,33R	14	15							
G3+66,33L	10	12							
F3+33,33R	13	14	4.2						
G3+33,33L	9	8							

REMARKS:

UNC MINING AND MILLING

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LUD/19/9180. Cs137/1521
LUD/125/9073 220-230 μR/HR

TABLE 9

COMPUTATIONS

SUBJECT TABLE FOR THE CLARIFLOC, RAFFINATE AND SODIUM CHLORATE STORAGE OUTDOOR RADIOLOGICAL DATA. (A-7, A-8 & A-13)

Sheet No. _____ of _____
Made By HC Date 3-15-92
Chkd. By EMM Date 3/22/93

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL
CLARIFLOC									
I3+33, 00R	10	11							
I3+33, 33L	9	10							
I3+66, 00R	8	9							
I3+66, 33L	7	8	1.2						
I3+66, 66L	7	8							
I4+00, 00R	7	8							
I4+00, 33L	9	10							
I4+00, 66L	9	10							
RAFFINATE									
I4+33, 00R	9	10							
I4+33, 33L	9	10							
I4+66, 00R	8	7	1.3						
I4+66, 33R	7	8							
I4+66, 33L	6	8							
I5+00, 00R	7	8							
I5+00, 33L	7	8							
SODIUM CHLORATE STORAGE BLDG.									
H3+66, 00R	13	11							
H3+66, 33L	12	11							

REMARKS:

UNC MINING AND MILLING

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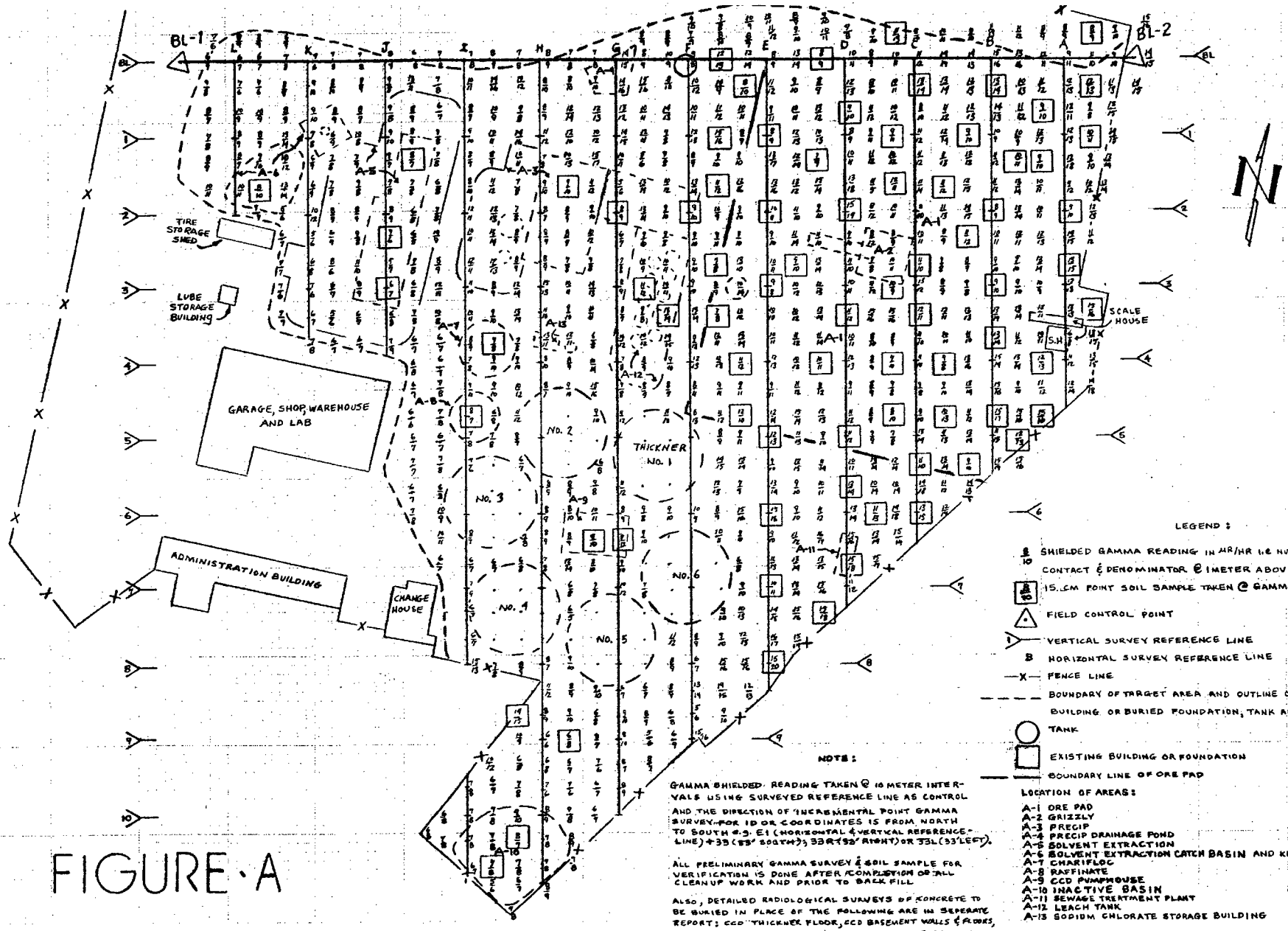
TABLE 10

COMPUTATIONS

SUBJECT TABLE FOR BORROW MATERIAL — Sheet No. ____ of ____
RADIOLOGICAL DATA — Made By AC — Date 3-15-93
Chkd. By ____ Date ____

POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL	POINT ID OR COORDINATES	CONTACT γ μR/HR READING	1 METER γ μR/HR READING	Ra-226 IN pCi/gm by γ SPEC.	Ra-226 IN pCi/gm by CHEM. ANAL
BL3+200, -140	7	8	1.8						
BL3+200, -250	7	8	2.1						
BL3+350, -150	7	8	0.5						
BL3+350, -250	7	8	1.0						
BL250, -190	7	8	0.7						
BL250, -100	7	8	1.2						
BL3+300, -150	7	8	0.4						
BL3+300, -250	7	8	1.9	0.6					
BL250, -300	7	8							
BL3+50, -150	5	7							
BL3+100, -163	7	8							
BL3+150, -175	5	6							
BL3+200, -180	7	8							
BL3+400, -163	7	8							
BL3+450, -178	7	8							

REMARKS:



LEGEND:

- 8/10 SHIELDED GAMMA READING IN MR/HR i.e. NUMERATOR @ GROUND CONTACT & DENOMINATOR @ 1 METER ABOVE GROUND LEVEL.
- 15 CM POINT SOIL SAMPLE TAKEN @ GAMMA READING.
- FIELD CONTROL POINT
- VERTICAL SURVEY REFERENCE LINE
- HORIZONTAL SURVEY REFERENCE LINE
- —X— FENCE LINE
- BOUNDARY OF TARGET AREA AND OUTLINE OF DEMOLISHED BUILDING OR BURIED FOUNDATION, TANK AND POND
- TANK
- EXISTING BUILDING OR FOUNDATION
- BOUNDARY LINE OF ORE PAD

NOTE:

GAMMA SHIELDED READING TAKEN @ 10 METER INTERVALS USING SURVEYED REFERENCE LINE AS CONTROL AND THE DIRECTION OF INCREMENTAL POINT GAMMA SURVEY FOR ID OR COORDINATES IS FROM NORTH TO SOUTH e.g. E1 (HORIZONTAL & VERTICAL REFERENCE LINE) +35 (85' SOUTH), 33R (92' RIGHT) OR 33L (33' LEFT).

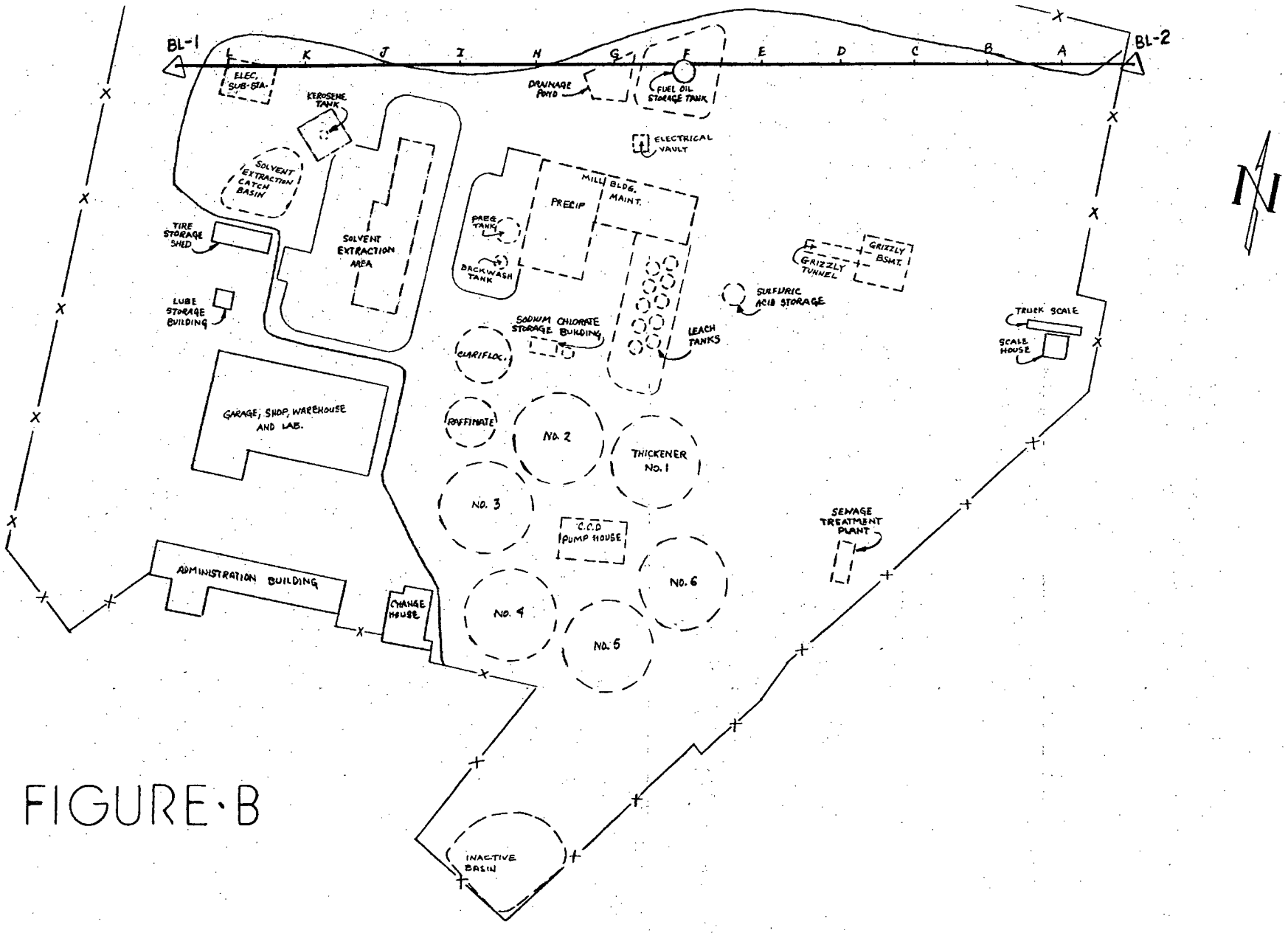
ALL PRELIMINARY GAMMA SURVEY & SOIL SAMPLE FOR VERIFICATION IS DONE AFTER COMPLETION OF ALL CLEANUP WORK AND PRIOR TO BACK FILL

ALSO, DETAILED RADIOLOGICAL SURVEYS OF CONCRETE TO BE BURIED IN PLACE OF THE FOLLOWING ARE IN SEPERATE REPORT: CCD THICKNER FLOOR, CCD BASEMENT WALLS & FLOORS, CCD TUNNEL FLOORS, WALLS & CEILINGS AND THE GRIZZLY

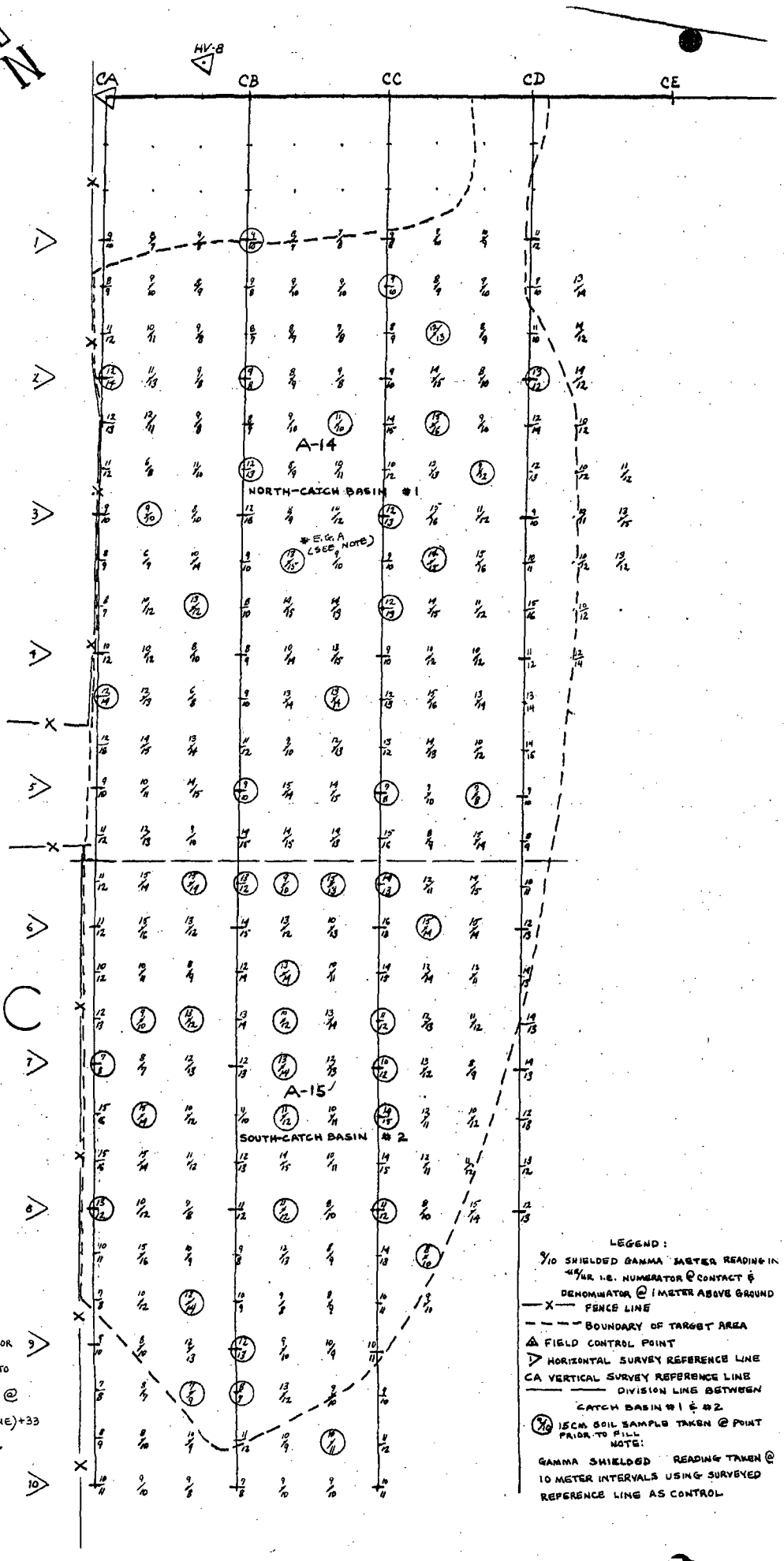
LOCATION OF AREAS:

A-1 ORE PAD
A-2 GRIZZLY
A-3 PRECIP
A-4 PRECIP DRAINAGE POND
A-5 SOLVENT EXTRACTION
A-6 SOLVENT EXTRACTION CATCH BASIN AND KEROSENE TANK
A-7 CHARIFLOC
A-8 RAFFINATE
A-9 CCD PUMPHOUSE
A-10 INACTIVE BASIN
A-11 SEWAGE TREATMENT PLANT
A-12 LEACH TANK
A-13 SODIUM CHLORATE STORAGE BUILDING

FIGURE·A


BL-1
BL-2
L
K
J
I
H
G
F
E
D
C
B
A
ELEC. SUB-STA.
KEROSENE TANK
DRAINAGE POND
FUEL OIL STORAGE TANK
ELECTRICAL VAULT
SOLVENT EXTRACTION CATCH BASIN
MILL BLDG. MAINT.
PRECIP
PREG. TANK
BACKWASH TANK
TIRE STORAGE SHED
SOLVENT EXTRACTION AREA
GRIZZLY BSMT.
GRIZZLY TUNNEL
SULFURIC ACID STORAGE
LUBE STORAGE BUILDING
SODIUM CHLORATE STORAGE BUILDING
LEACH TANKS
TRUCK SCALE
SCALE HOUSE
CLARIFLOC.
GARAGE, SHOP, WAREHOUSE AND LAB.
RAFFINATE
NO. 2
THICKENER NO. 1
NO. 3
C.C.D PUMP HOUSE
SEWAGE TREATMENT PLANT
ADMINISTRATION BUILDING
CHANGE HOUSE
NO. 4
NO. 5
NO. 6
INACTIVE BASIN
N

FIGURE·B



FIGURE·C

NOTE ALSO:

THE DIRECTION OF INCREMENTAL POINT GAMMA SURVEY FOR ID OR COORDINATES IS FROM WEST TO EAST *E.G. A IS 13/15 LOCATION @ CB (HORIZONTAL & VERTICAL LINE)+33 (33' EAST), 33 R (33' RIGHT).

LEGEND:

9/10 SHIELDED GAMMA METER READING IN μR/HR I.E. NUMERATOR @ CONTACT & DENOMINATOR @ 1 METER ABOVE GROUND

—X— FENCE LINE

— — — BOUNDARY OF TARGET AREA

△ FIELD CONTROL POINT

▷ HORIZONTAL SURVEY REFERENCE LINE

CA VERTICAL SURVEY REFERENCE LINE

——— DIVISION LINE BETWEEN CATCH BASIN #1 & #2

9/10 15CM SOIL SAMPLE TAKEN @ POINT PRIOR TO FILL

NOTE:

GAMMA SHIELDED READING TAKEN @ 10 METER INTERVALS USING SURVEYED REFERENCE LINE AS CONTROL

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(505) 265-4421

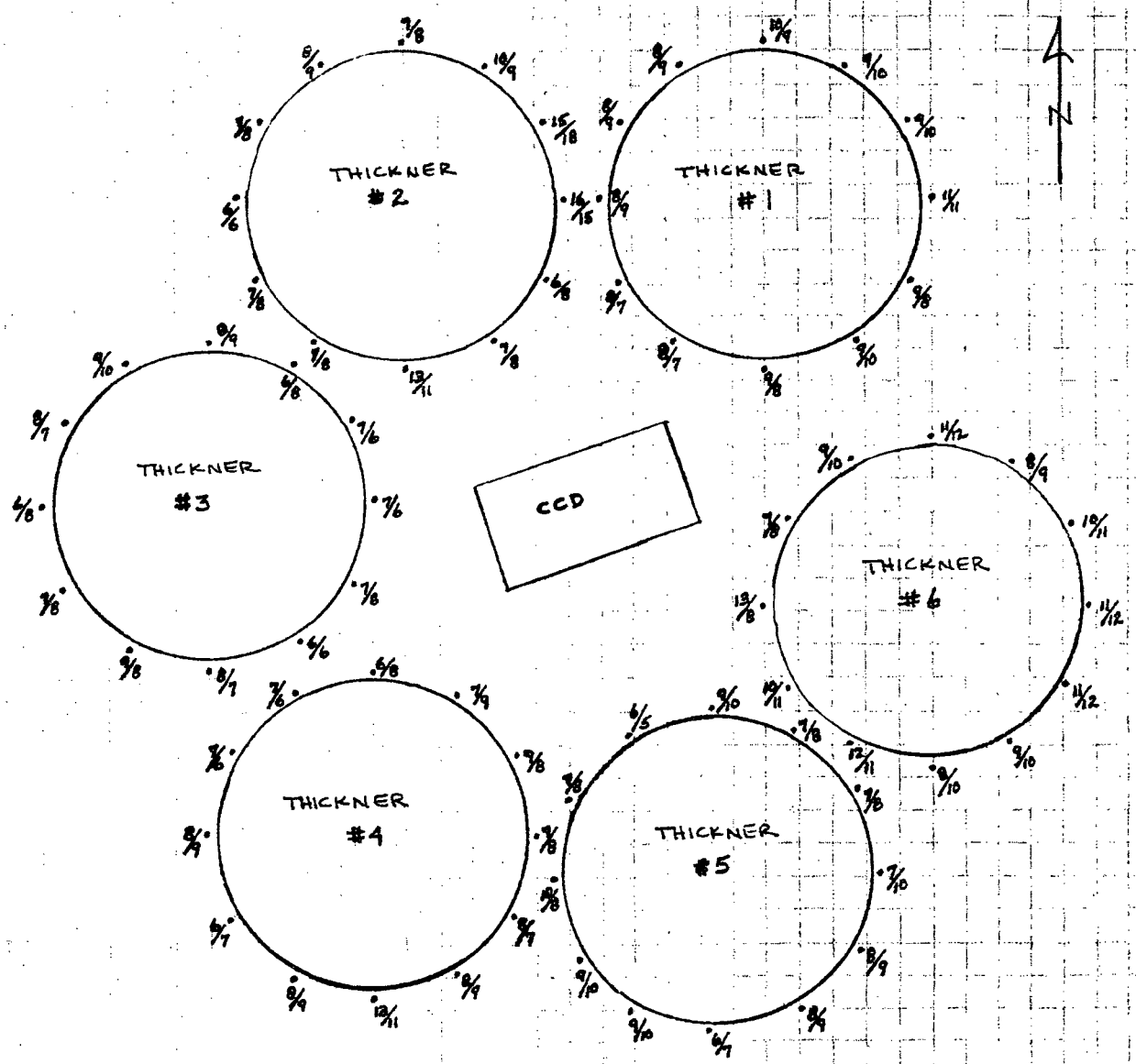
INSTRUMENTATION:
EBERLINE PS-2/285 w/AC-3/714209. Th230/ =23% EFF. #093
LUD/19/9180. C5137/1524 220-230 μR/HR.
LUD/125/9073

FIG. D

COMPUTATIONS

SUBJECT GAMMA SURVEY FOR VERIFICATION AFTER CLEANUP @ BOTTOM OF TRENCH AREAS BEFORE FILL ALONGSIDE EDGE OF THICKNERS. READINGS TAKEN EVERY 33' AROUND THE THICKNERS.

Sheet No. 1 of 1
Made By [illegible] Date 8-2, 8-5-92
Chkd. By [illegible] Date 3/20/93



NOTE:

NOT TO SCALE
FINAL ALPHA READINGS ON OUTER RIM CEMENT AREAS = 37.0 - 370 DPM FOR ALL THICKNERS

LEGEND:

9/10 SHIELDED GAMMA EXPOSURE READING IN μR/HR i.e. NUMERATOR @ CONTACT & DENOMINATOR @ 1 METER ABOVE GROUND.

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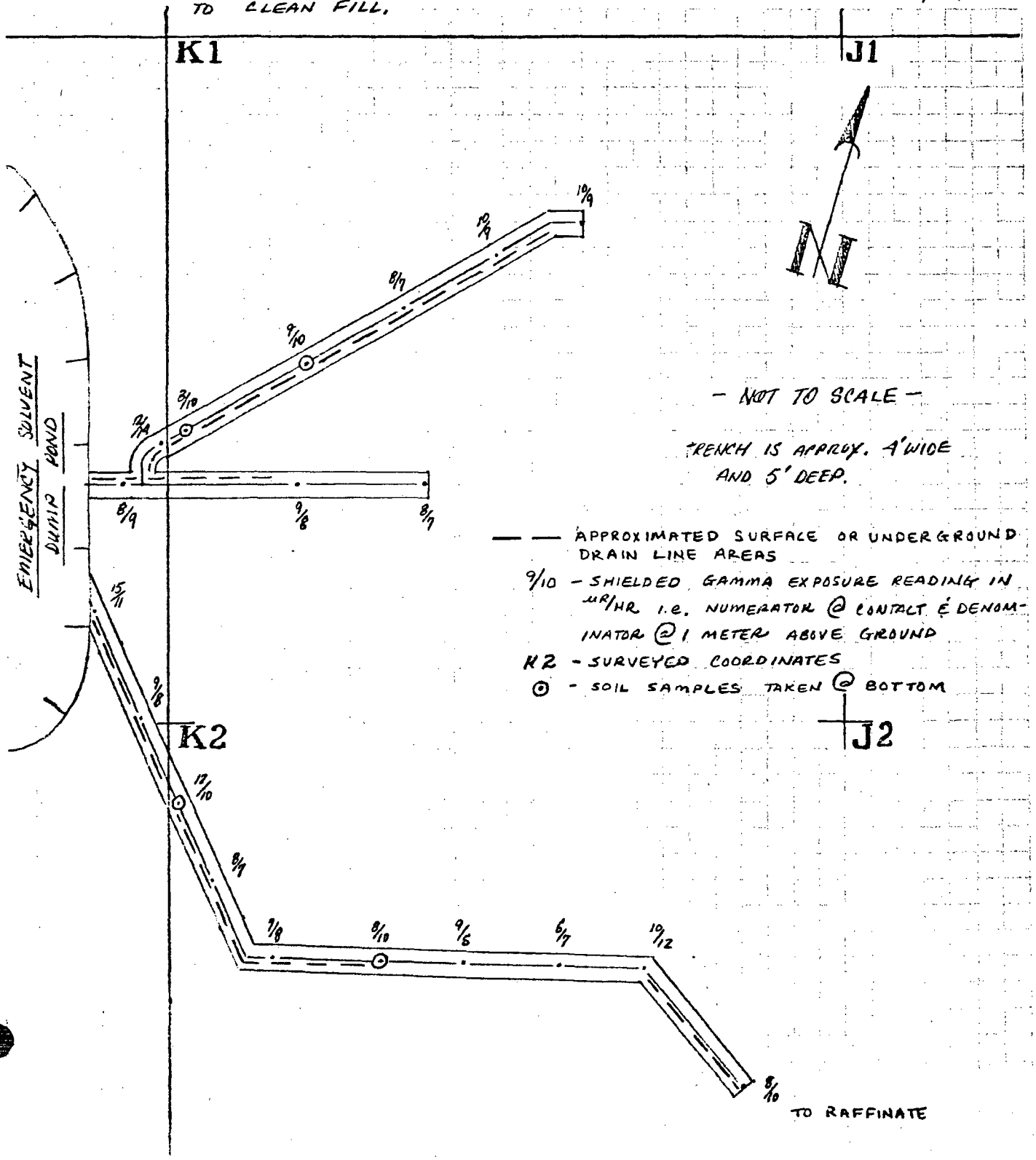
LUD/125/9073. CS137/1524
LUD/19/9180. 220-230 μR/HR.

FIG. E

COMPUTATIONS

SUBJECT BOTTOM OF TRENCH AFTER EXCAVATION OF DRAIN PIPE FROM S-X CIRCUIT TO EMERGENCY SOLVENT DUMP POND PRIOR TO CLEAN FILL.

Sheet No. 1 of 1
Made By MC Date 7-28-92
Chkd. By EMM Date 3/20/93



APPENDIX F

- Graph Showing Correlation of ur/hr gamma vs. pci/gm Ra226
- Laboratory Report of Soil Sample Analysis Used in Correlation
- Tables with Compiled Radiological Data to Produce Correlation Graph

GAMMA SPECTROSCOPY ANALYSES FOR Ra-226 SOIL CONTENT ACTIVITY IN PCI/GM

5. OUTDOOR FIELD SURVEY FOR GAMMA RAY EXPOSURE RATE IN MR/HR

NOTE: • GROUND CONTACT SHIELDED METER GAMMA READING

⊙ 1 METER ABOVE GROUND SHIELDED METER GAMMA READING

——— LINEAR RELATIONSHIP LINE FOR THE ABOVE •

FINDINGS FOR RELATIONSHIP CORRELATION:

• 6-15 MR/HR RANGE

CORRELATION COEFFICIENT (r) = 0.4295

SLOPE = 0.4716, Y-INTERCEPT = −1.65, 6 pci/gm = 16.22 MR/HR

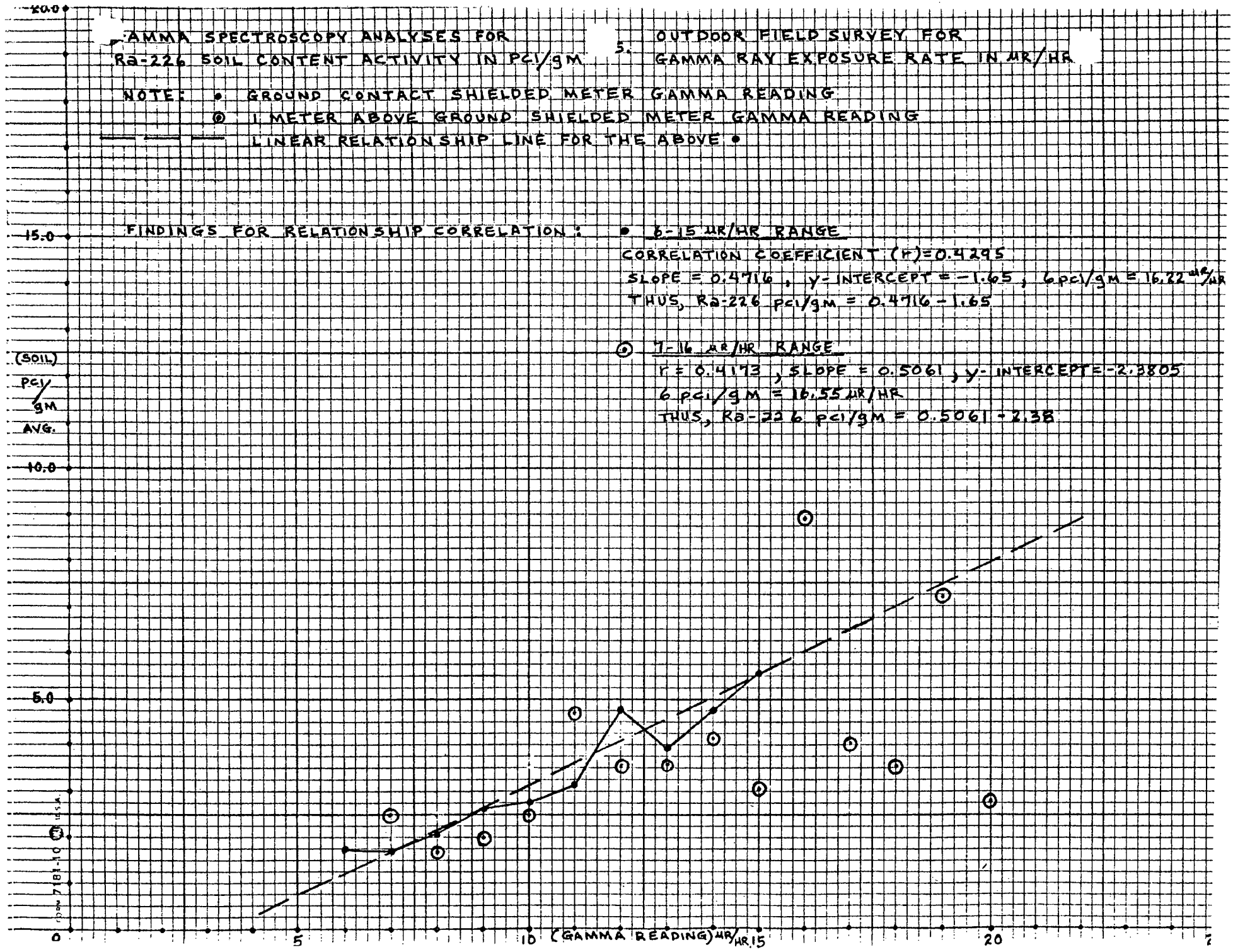
THUS, Ra-226 pci/gm = 0.4716 − 1.65

⊙ 7-16 MR/HR RANGE

r = 0.4173, SLOPE = 0.5061, Y-INTERCEPT = −2.3805

6 pci/gm = 16.55 MR/HR

THUS, Ra-226 pci/gm = 0.5061 − 2.38



ENERGY LABORATORIES, INC.
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254 NORTH CENTER, SUITE 100 • CASPER, WY 82601 • FAX (307) 234-1639

UNITED NUCLEAR CORPORATION
SOIL ANALYSIS REPORT

P.O. # EW-42-9-92

Report Date: 10-27-92

ELI #	Sample ID		Sample Date	Gamma Ra226	Ra226 Prec. +/-
92- 35603	E4+00, 33R		08-25-92	3.9	0.6
92- 35604	BLE+33, 33R		08-25-92	1.6	0.3
92- 35605	BLD+00, 33R		08-25-92	2.8	0.4
92- 35606	BLE+00, 66R		08-25-92	4.8	0.6
92- 35607	E2+00, 00R		08-25-92	2.4	0.4
92- 35608	E1+00, 66R		08-25-92	4.3	0.6
92- 35609	D3+33, 00R		08-25-92	4.1	0.6
92- 35610	BLD+66, 00R		08-25-92	2.6	0.4
92- 35611	C4+00, 33R		08-25-92	2.3	0.4
92- 35612	D1+33, 33R		08-25-92	1.9	0.3
92- 35613	E5+00, 00R		08-25-92	7.5	0.9
92- 35614	E4+66, 33R		08-25-92	3.5	0.5
92- 35615	D2+00, 00R		08-25-92	7.2	0.9
92- 35616	D5+00, 00R		08-25-92	4.8	0.6
92- 35617	E3+00, 00R	ORE PAD AREAS	08-25-92	2.6	0.4
92- 35618	D4+00, 33R		08-25-92	3.4	0.5
92- 35619	E1+00, 00R		08-25-92	1.6	0.3
92- 35620	E2+66, 33L		08-25-92	2.3	0.4
92- 35621	A1+33, 33R		08-26-92	3.5	0.5
92- 35622	B1+33, 33L		08-26-92	2.3	0.4
92- 35623	A2+00, 00R		08-26-92	2.6	0.4
92- 35624	CI+66, 33L		08-26-92	4.5	0.6
92- 35625	A1+00, 33L		08-26-92	2.7	0.4
92- 35626	BLB+33, 00R		08-26-92	4.9	0.7
92- 35627	B2+00, 00R		08-26-92	2.0	0.3
92- 35628	C4+66, 33R		08-26-92	3.5	0.5
92- 35629	BLA+33, 33L		08-26-92	2.3	0.4
92- 35630	BLA-33, 33L		08-26-92	5.2	0.7
92- 35631	B1+00, 33R		08-26-92	2.7	0.4
92- 35632	BLC-33, 33R		08-26-92	3.8	0.5
92- 35633	E3+33, 66R		08-26-92	1.3	0.2
92- 35634	C1+00, 33R		08-26-92	3.7	0.5
92- 35635	BLC+33, 00R		08-26-92	3.7	0.5
92- 35636	C3+33, 00R		08-26-92	21.1	1.6
92- 35637	D5+66, 00R		08-26-92	4.0	0.6
92- 35638	C5+33, 00R		08-26-92	1.6	0.3
92- 35639	E1+66, 66R		08-26-92	2.9	0.4
92- 35640	C3+00, 00R		08-26-92	3.2	0.5
92- 35641	C1+66, 33R		08-26-92	4.8	0.6
92- 35642	E2+66, 66R		08-26-92	1.5	0.2
92- 35643	A3+33, 33L		08-27-92	11.4	1.1

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ELI #	Sample ID		Sample Date	Gamma Ra226	Ra226 Prec. +/-
92- 35644	C2+66, 00R	ORE PAD AREAS	08-27-92	4.0	0.5
92- 35645	B3+00, 00R		08-27-92	1.4	0.2
92- 35646	A2+66, 00R		08-27-92	4.6	0.6
92- 35647	A4+00, 33R		08-27-92	5.7	0.7
92- 35648	BLA+66, 33R		08-27-92	2.6	0.4
92- 35649	B3+66, 00R		08-27-92	10.0	1.0
92- 35650	B2+33, 33R		08-27-92	5.0	0.7
92- 35651	B4+00, 66R		08-27-92	2.8	0.4
92- 35652	C6+00, 33R		09-01-92	2.4	0.4
92- 35653	E8+00, 00R		09-01-92	2.8	0.4
92- 35654	E7+00, 00R		09-01-92	1.3	0.2
92- 35655	C6+00, 00R		09-01-92	1.5	0.2
92- 35656	B5+33, 33R		09-01-92	2.4	0.4
92- 35657	E6+00, 00R		09-01-92	18.9	1.5
92- 35658	D6+66, 00R		09-01-92	2.7	0.4
92- 35659	E7+33, 66L		09-01-92	2.4	0.4
92- 35660	C4+66, 33L		09-01-92	3.2	0.5
92- 35661	B4+66, 66L		09-01-92	5.6	0.7
92- 35662	B5+00, 33L		09-01-92	1.1	0.2
92- 35663	B4+66, 00R		09-01-92	4.1	0.6
92- 35664	H9+00, 33L		09-03-92	1.7	0.3
92- 35665	HB+66, 33R		09-03-92	7.6	0.8
92- 35666	BL3+200,-100	BORROW/BACKGROUND MATERIAL AREAS	08-14-92	1.8	0.3
92- 35667	BL3+200,-250		08-14-92	2.1	0.3
92- 35668	BL3+350,-150		08-14-92	0.5	0.1
92- 35669	BL3+350,-250		08-14-92	1.0	0.2
92- 35670	BL250,-190		08-20-92	0.7	0.1
92- 35671	BL250,-100		08-20-92	1.2	0.2
92- 35672	BL3+300,-150		08-10-92	0.4	0.1
92- 35673	BL3+300,-250		08-10-92	1.9	0.3
92- 35674	SX SW TRENCH BOTTOM	SOLVENT EXTRACTION AREAS	07-27-92	3.0	0.4
92- 35675	SX MID TRENCH BOTTOM		07-27-92	0.9	0.2
92- 35676	SX N. TRENCH BOTTOM		07-27-92	1.8	0.3
92- 35677	SX S. TRENCH BOTTOM		07-27-92	1.6	0.3
92- 35678	SX J3+00, 00R		07-28-92	1.7	0.3
92- 35679	SX J2+33, 00R		07-28-92	3.7	0.5
92- 35680	SX J1+33, 33L		07-28-92	2.1	0.3
92- 35681	ESDP K1+66, 66R	SOLVENT EXTRACTION CATCH BASIN	07-28-92	5.3	0.7
92- 35682	PRECHP H2+33, 33R	PRECIP MILL BUILDING AREAS	08-03-92	2.1	0.3
92- 35683	PRECHP G2+00, 00R		08-03-92	0.0	0.0
92- 35684	PRECHP F2+00, 00R		08-03-92	1.9	0.3
92- 35685	LEACH F3+33, 33R	LEACH TANK AREAS	08-03-92	4.2	0.6
92- 35686	LEACH F3+00, 66R		08-03-92	2.7	0.4
92- 35687	CLARIFLOC I3+66, 33L	CLARIFLOC TANK AREAS	08-03-92	1.2	0.2

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ELI #	Sample ID	Sample Date	Gamma Ra226	Ra226 Prec. +/-
92- 35688	RAFFINATE I4+66, 00R (RAFFINATE TK. AREA)	08-03-92	1.3	0.2
92- 35689	THICKNER #2 S. TRENCH BOTTOM	08-04-92	2.2	0.3
92- 35690	THICKNER #3 S. TRENCH BOTTOM	08-10-92	0.9	0.2
92- 35691	THICKNER #5 S. TRENCH BOTTOM	08-04-92	0.6	0.1
92- 35692	THICKNER #5 E. TRENCH BOTTOM	08-10-92	1.0	0.2
92- 35693	THICKNER #5 N. TRENCH BOTTOM	08-10-92	1.1	0.2
92- 35694	THICKNER #6 S. TRENCH BOTTOM	08-10-92	2.1	0.3
92- 35695	THICKNER #6 W. TRENCH BOTTOM	08-10-92 AROUND THICKNERS	1.3	0.2
92- 35696	THICKNER #6 N. TRENCH BOTTOM	08-10-92	2.4	0.4
92- 35697	THICKNER #4 E. TRENCH BOTTOM	08-10-92	1.3	0.2
92- 35698	THICKNER #4 S. TRENCH BOTTOM	08-10-92	1.9	0.3
92- 35699	THICKNER #4 N. TRENCH BOTTOM	08-10-92	1.6	0.3
92- 35700	THICKNER #1 S. TRENCH BOTTOM	08-10-92	1.8	0.3
92- 35701	THICKNER #1 N. TRENCH BOTTOM	08-10-92	1.8	0.3
92- 35702	THICKNER #1 E. TRENCH BOTTOM	08-04-92	2.1	0.3
92- 35703	CCD G6+33, 00R (CCD PUMP HOUSE AREA)	08-10-92	7.1	0.8
92- 35704	CCD G6+33, 33R	08-10-92	4.5	0.6
92- 35705	S. CATCH BASIN CA8+66, 66R	08-20-92	4.8	0.6
92- 35706	S. CATCH BASIN CB9+00, 00R	08-20-92	6.5	0.8
92- 35707	S. CATCH BASIN CB7+33, 33L	08-20-92	2.4	0.4
92- 35708	S. CATCH BASIN CB9+00, 33R	08-20-92	4.3	0.6
92- 35709	S. CATCH BASIN CB9+66, 66R	08-20-92	3.4	0.5
92- 35710	S. CATCH BASIN CB7+33, 00R	08-20-92	4.5	0.6
92- 35711	S. CATCH BASIN CC8+33, 33R	08-20-92	2.0	0.3
92- 35712	S. CATCH BASIN CA9+66, 33R	08-20-92	2.1	0.3
92- 35713	S. CATCH BASIN CB6+33, 33L	08-20-92	1.7	0.3
92- 35714	S. CATCH BASIN CB6+00, 33L	08-20-92	2.8	0.4
92- 35715	S. CATCH BASIN CA6+66, 33L	08-20-92	2.8	0.4
92- 35716	S. CATCH BASIN CC8+00, 00R	08-20-92	1.6	0.3
92- 35717	S. CATCH BASIN CC7+00, 33L	08-20-92	2.7	0.4
92- 35718	S. CATCH BASIN CC7+00, 00R	08-20-92	3.2	0.5
92- 35719	S. CATCH BASIN CC5+66, 00R	08-20-92	1.5	0.2
92- 35720	S. CATCH BASIN CA8+00, 00R	08-20-92	3.4	0.5
92- 35721	S. CATCH BASIN CB7+33, 33R	08-20-92	2.0	0.3
92- 35722	S. CATCH BASIN CC6+00, 33L	08-20-92	3.4	0.5
92- 35723	S. CATCH BASIN CA7+33, 33R	08-20-92	7.0	0.8
92- 35724	S. CATCH BASIN CC6+33, 00R	08-20-92	1.7	0.3
92- 35725	S. CATCH BASIN CB8+33, 00R	08-20-92	2.8	0.4
92- 35726	S. CATCH BASIN CA7+00, 00R	08-20-92	1.9	0.3

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ELI #	Sample ID	Sample Date	Gamma Ra226	Ra226 Prec. +/-
92- 35727	S. CATCH BASIN CB7+33, 66L	08-20-92	2.4	0.4
92- 35728	S. CATCH BASIN CB5+66, 66R	08-20-92	1.8	0.3
92- 35729	S. CATCH BASIN CA7+66, 33L	08-20-92	6.7	0.8
92- 35730	S. CATCH BASIN CA7+33, 33L	08-20-92	2.0	0.3
92- 35731	S. CATCH BASIN CC7+00, 33R	08-20-92	4.1	0.6
92- 35732	N. CATCH BASIN CC3+66, 33L	08-27-92	2.0	0.3
92- 35733	N. CATCH BASIN CB5+66, 66L	08-27-92	1.7	0.3
92- 35734	N. CATCH BASIN CA4+66, 33L	08-27-92	2.4	0.4
92- 35735	N. CATCH BASIN CA2+00, 00R	08-27-92	4.7	0.6
92- 35736	N. CATCH BASIN CC2+33, 33R	08-27-92	6.0	0.8
92- 35737	N. CATCH BASIN CB1+00, 00R	08-27-92	2.0	0.3
92- 35738	N. CATCH BASIN CB2+66, 33R	08-27-92	2.7	0.4
92- 35739	N. CATCH BASIN CD2+00, 00R	08-27-92	5.2	0.7
92- 35740	N. CATCH BASIN CC1+00, 33R	08-27-92	1.4	0.2
92- 35741	N. CATCH BASIN CC3+33, 33R	08-27-92	3.4	0.5
92- 35742	N. CATCH BASIN CB3+00, 33L	08-27-92	2.1	0.3
92- 35743	N. CATCH BASIN CC5+00, 00R	08-27-92	1.7	0.3
92- 35744	N. CATCH BASIN CC4+00, 33L	08-27-92	3.1	0.5
92- 35745	N. CATCH BASIN CC2+33, 33L	08-27-92	1.6	0.3
92- 35746	N. CATCH BASIN CB2+00, 00R	08-27-92	2.3	0.4
92- 35747	N. CATCH BASIN CB5+00, 00R	08-27-92	2.3	0.4
92- 35748	N. CATCH BASIN CA4+00, 33R	08-27-92	1.8	0.3
92- 35749	N. CATCH BASIN CB3+33, 33R	08-27-92	1.4	0.2
92- 35750	N. CATCH BASIN CA3+33, 00R	08-27-92	5.5	0.7
92- 35751	N. CATCH BASIN CC3+00, 00R	08-27-92	4.4	0.6

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ELI #	Sample ID	Sample Date	"Chemical" Ra226	Ra226 Prec. +/-
92- 35603	E4+00, 33R	08-25-92	2.3	0.1
92- 35613	E5+00, 00R	08-25-92	7.5	0.2
92- 35623	A2+00, 00R	08-26-92	1.6	0.1
92- 35633	E3+33, 66R	08-26-92	0.6	0.1
92- 35643	A3+33, 33L	08-27-92	10.9	0.2
92- 35653	E8+00, 00R	09-01-92	1.9	0.1
92- 35663	B4+66, 00R	09-01-92	6.0	0.2
92- 35673	BL3+300,-250	08-10-92	0.6	0.1
92- 35683	PRECHP G2+00, 00R	08-03-92	0.6	0.1
92- 35693	THICKNER #5 N. TRENCH BOTTOM	08-10-92	0.7	0.1
92- 35703	CCD G6+33, 00R	08-10-92	5.5	0.2
92- 35713	S. CATCH BASIN CB6+33, 33L	08-20-92	1.0	0.1
92- 35723	S. CATCH BASIN CA7+33, 33R	08-20-92	9.0	0.2
92- 35733	N. CATCH BASIN CB5+66, 66L	08-27-92	4.7	0.2
92- 35743	N. CATCH BASIN CC5+00, 00R	08-27-92	0.9	0.1
92- 35628	C4+66, 33R	08-26-92	1.2	0.1
92- 35648	BLA+66, 33R	08-27-92	1.7	0.1
92- 35668	BL3+350,-150	08-14-92	0.4	0.1
92- 35688	RAFFINATE I4+66, 00R	08-03-92	0.9	0.1
92- 35708	S. CATCH BASIN CB9+00, 33R	08-20-92	3.8	0.1

ELI

"Quality Assurance Report"

ELI #	Sample ID	Sample Date	Gamma Ra226 Duplicates	% Recovery
92- 35610	BLD+66, 00R	08-25-92	2.8	91
92- 35620	E2+66, 33L	08-25-92	2.8	82
92- 35630	BLA-33, 33L	08-26-92	5.5	94
92- 35640	C3+00, 00R	08-26-92	4.3	76
92- 35650	B2+33, 33R	08-27-92	5.8	86
92- 35660	C4+66, 33L	09-01-92	4.1	77
92- 35670	BL250,-190	08-20-92	1.7	45
92- 35680	SX J1+33, 33L	07-28-92	2.4	88
92- 35690	THICKNER #3 S. TRENCH BOTTOM	08-10-92	1.1	85
92- 35700	THICKNER #1 S. TRENCH BOTTOM	08-10-92	2.0	90
92- 35710	S. CATCH BASIN CB7+33, 00R	08-20-92	3.6	125
92- 35720	S. CATCH BASIN CA8+00, 00R	08-20-92	2.7	129
92- 35730	S. CATCH BASIN CA7+33, 33L	08-20-92	3.2	63
92- 35740	N. CATCH BASIN CC1+00, 33R	08-27-92	1.1	134

Report Approved By: R.O. Gearing

kmp

UNC MINING AND MILLING

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COMPUTATIONS

SUBJECT TABLE FOR Ra-226 CORRELATION GRAPH (i.e. SOIL ACTIVITY ANALYSIS (PCI/gm) VS. CONTACT AND 1 METER SHIELDED GAMMA RAY EXPOSURE READING (μR/HR) ON THE 1992 MILL DECOMMISSIONING

Sheet No. 1 of 4
Made By MC Date 3-4-93
Chkd. By _____ Date _____

GAMMA RAY EXPOSURE READING (μR/HR)	• - CONTACT	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0			
	⊙ - @ 1 METER	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
(COORDINATES) →	E4+00, 33R						3.9	3.9							
	BLE+33, 33R				1.6										
	BLD+00, 33R			2.8	2.8										
	BLE+00, 66R							4.8	4.8						
	E2+00, 00R					2.4	2.4								
	E1+00, 66R										4.3	4.3			
	D3+33, 00R						4.1	4.1							
	BLD+66, 00R				2.6	2.6									
	C4+00, 33R			2.3	2.3										
	D1+33, 33R			1.9											
	E5+00, 00R							7.5	7.5						
	E4+66, 33R				3.5				3.5						
	D2+00, 00R											7.2		7.2	
	D5+00, 00R						4.8	4.8							
Ra-226 SOIL	E3+00, 00R		2.6			2.6									
CONTENT (PCI/gm)	D4+00, 33R					3.4	3.4								
@ COORDINATES	E1+00, 00R			1.6	1.6										
	E2+66, 33L				2.3	2.3									
	A1+33, 33R				3.5	3.5									
	B1+33, 33L					2.3	2.3								
	A2+00, 00R				2.6	2.6									
	C1+66, 33L						4.5	4.5							
	A1+00, 33L					2.7	2.7								
	BLB+33, 00R								4.9	4.9					
	B2+00, 00R			2.0	2.0										
	C4+66, 33R				3.5										
	BLA+33, 33L							2.3	2.3						
	BLA-33, 33L			5.2	5.2										
	B1+00, 33R				2.7	2.7									
	BLC-33, 33R							3.8							
	E3+33, 66R		1.3	1.3											
	C1+00, 33R					3.7									
	BLC+33, 00R								3.7	3.7					
	C3+33, 00R					21.1			21.1						
	D5+66, 00R								4.0	4.0					
	C5+33, 00R				1.6			1.6							
	E1+66, 66R						2.9	2.9							
	C3+00, 33R			3.2			3.2								
	C1+66, 33R					4.8			4.8						
	E2+66, 66R		1.5	1.5											
	A3+33, 33L										11.4	11.4			
	C2+66, 00R				4.0			4.0							

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SUBJECT TABLE FOR Ra-226 CORRELATION GRAPH (i.e. SOIL ACTIVITY ANALYSIS (PCi/gm) VS. CONTACT AND 1 METER SHIELDED GAMMA RAY EXPOSURE READING (μR/HR) ON THE 1992 MILL DECOMMISSIONING

Sheet No. 2 of 4
Made By AC Date 3-4-93
Chkd. By _____ Date _____

GAMMA RAY EXPOSURE READING (μR/HR)	• - CONTACT	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0			
	⊙ - @ 1 METER	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
(COORDINATES) →	B3+00, 00R				1.4	1.4									
	A2+66, 00R									4.6					
	A4+00, 33R							5.7	5.7						
	B1A+66, 33R				2.6	2.6									
	B3+66, 00R								10.0	10.0					
	B2+33, 33R						5.0	5.0							
	B4+00, 66R				2.8	2.8									
	D6+00, 33R							2.4							
	E8+00, 00R											2.8			2.8
	E7+00, 00R					1.3	1.3								
	C6+00, 00R									1.5					
	B5+33, 33R				2.4	2.4									
	E6+00, 00R										18.9	18.9			
	D6+66, 00R											2.7	2.7		
Ra-226 SOIL	E7+33, 66L											2.4	2.4		
CONTENT (PCi/gm)	C4+66, 33L						3.2	3.2							
@ COORDINATES	B4+66, 66L											5.6	5.6		
	B5+00, 33L							1.1	1.1						
	B4+66, 00R											4.1			
	H9+00, 33L		1.7												
	H8+66, 33R (ESDP)										7.6				
	K1+66, 66R (PRECIP)										5.3				
	H2-33, 33L (PRECIP)				2.1	2.1									
	G2+00, 00R (PRECIP)			00	00										
	F2+00, 00R (LEACH)				1.9	1.9									
	F3+33, 33R (LEACH)								4.2	4.2					
	F3+00, 66R (CLARIFIER)						2.7	2.7							
	13+66, 33L (RAFFINATE)		1.2	1.2											
	14+66, 00R	1.3			1.3										
	THICKNER #2 STB					2.2			2.2						
	THICKNER #3 STB		0.9	0.9											
	THICKNER #5 STB			0.6	0.6										
	THICKNER #5 ETB				1.0	1.0									
	THICKNER #5 NTB				1.1	1.1									
	THICKNER #6 STB						2.1	2.1							
	THICKNER #6 WTB			1.3	1.3										
	THICKNER #6 NTB				2.4	2.4									
	THICKNER #4 ETB			1.3	1.3										
	THICKNER #4 STB			1.9	1.9										
	THICKNER #4 NTB		1.6	1.6											
	THICKNER #1 STB	1.8	1.8												
	THICKNER #1 NTB		1.8	1.8											

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UBJECT TABLE FOR Ra-226 CORRELATION GRAPH (i.e. SOIL ACTIVITY ANALYSIS (pCi/gm) vs. CONTACT AND 1 METER SHIELDED GAMMA RAY EXPOSURE READING (μR/HR) ON THE 1992 MILL DECOMMISSIONING

Sheet No. 4 of 4
Made By MC Date 3-4-93
Chkd. By _____ Date _____

GAMMA RAY EXPOSURE READING (μR/HR)															
	• - CONTACT	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0			
	⊙ - @ 1 METER	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
(COORDINATES) →	(NCB) CC4+00, 33L							3.1	3.1						
	" CC2+33, 33L							1.6	1.6						
	" CB2+00, 00R		2.3			2.3									
	" CB5+00, 00R				2.5	2.5									
	" CA4+00, 33R								1.8						
	" CB3+33, 33R									1.4					
	" CA3+33, 00R				5.5	5.5									
	" CC3+00, 00R							4.4	4.4						
AVERAGE pCi/gm by GAMMA SPEC.															
• - CONTACT			1.75	1.68	2.10	2.64	2.75	3.15	4.82	3.96	4.76	5.62			
⊙ - @ 1 METER		2.47	1.70	1.99	2.49	4.73	3.54	3.58	4.16	3.00	8.92	4.10	3.57	7.20	2.80
Ra-226 SOIL CONTENT (pCi/gm) @ COORDINATES															