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As-Built Report South Cell Final Reclamation

Church Rock Site Gallup, New Mexico

Submitted To:

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AS-BUILT REPORT

SOUTH CELL FINAL RECLAMATION UNITED NUCLEAR CORPORATION CHURCH ROCK FACILITY GALLUP, NEW MEXICO

1.0 INTRODUCTION

This report describes the construction of the final reclamation cover for the South Cell of the uranium tailings disposal area at United Nuclear Corporation's (United Nuclear's) Church Rock facility. The site is located northeast of Gallup, New Mexico, along State Highway 566, as shown on Sheet 1. United Nuclear is continuing reclamation of the site as scheduled, in accordance with the "Tailings Reclamation Plan as Approved by the NRC March 1, 1991, License Number SUA-1475" (Reclamation Plan) [Canonie Environmental Services Corp. (Canonie), 1991].

Final reclamation of the South Cell consisted of completing the radon attenuation soil cover, placing the erosion protection cover and constructing drainage swales over the reclaimed surface. The reclamation was performed from May to September 1995 and encompassed approximately 19.4 acres of the South Cell and surrounding areas. Work also continued on the Runoff Control Ditch located west of the tailings disposal area.

Construction of the final cover for the South Cell represents the third stage of final reclamation for the tailings disposal area. Final reclamation of the North Cell was previously completed in 1993 as documented in the "As-Built Report, North Cell Final Reclamation" (Canonie, 1994), and final reclamation of the Central Cell was previously completed in 1994 as documented in the "As-Built Report, Central Cell Final Reclamation" (Canonie, 1995). Interim stabilization of the entire tailings disposal area was previously completed from 1989 to 1991 and consisted of regrading the tailings and placing the interim soil cover. As-built reports for interim stabilization include the North Cell (Canonie, 1990), Central Cell [Western Technologies, Inc. (WT), 1991], South Cell (Canonie, 1992a) and Central Cell Addendum (Canonie, 1992b).

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Sheet 2 shows the design plan view and Sheet 3 shows the design details for the installation of the final cover over the South Cell. Construction activities for this phase of the reclamation included:

- 1. Grubbing of the South Cell area to remove vegetation from the interim soil cover
- 2. Placing and compacting 9 inches of soil to complete the radon attenuation barrier
- 3. Covering the radon attenuation barrier with a minimum of 3 inches of rock
- 4. Placing and compacting soil over the rock cover
- 5. Constructing drainage swales and channels to control surface water runoff

These construction activities were performed in accordance with the design drawings (Sheets 2 and 3) and the specifications provided in Appendix B of the Reclamation Plan. Sheet 4 shows the as-built plan view of the final cover, surface water controls for the South Cell and the section of the Runoff Control Ditch constructed in 1995. Final reclamation of Borrow Pit No. 2, located east of the Central Cell, including completion of Branch Swales A, B and C, was also completed during the 1995 construction season. Details of the borrow pit reclamation are provided in a separate document titled "As-Built Report, Borrow Pit No. 2 Final Reclamation" [Smith Environmental Technologies Corporation (Smith Environmental), 1996].

Construction services for the reclamation activities were provided to United Nuclear by Nielson's General Contractors (Nielson's). Table 1 lists the equipment used by Nielson's during construction. The crushed rock for the erosion protection cover and the riprap and bedding material for the drainage swales and channels were provided by Hamilton Brothers, Inc. (Hamilton). WT provided geotechnical sampling and testing services. 'Appendix A provides WT's 1995 field reports of daily construction activities.

The following sections of this document describe the construction activities and quality control procedures implemented during construction of the radon attenuation layer, erosion protection cover and surface water controls. Copies of the geotechnical test results are provided in the appendices.

2.0 RADON ATTENUATION LAYER

The radon attenuation layer over the South Cell consists of 18 inches of compacted soil and is designed to reduce the long-term radon flux from the underlying tailings to 20 picoCuries per square meter per second (pCi/m²/sec). The 18-inch layer consists of the soil cover placed during interim stabilization activities in 1991 (Canonie, 1992a) plus the final lift of soil added during this phase of reclamation activities. The soil radon attenuation layer constructed during final reclamation activities was placed, compacted and tested as described below.

2.1 Construction Methods and Materials

Prior to placement of the final lift of the radon attenuation cover, the South Cell interim soil cover was grubbed of vegetation using scrapers and a motor grader. The grubbing removed an average of approximately 3 inches of soil from the top of the existing 12-inch interim cover, leaving an average of 9 inches of compacted soil cover in place. The top of the remaining interim cover was then scarified and moisture conditioned prior to placing the final soil cover to provide for adequate bonding between the interim and final soil covers. The thickness of the final cover averaged 9 inches, thereby bringing the total thickness of the radon attenuation cover to 18 inches.

The soil used to construct the final lift of the radon attenuation cover was obtained from the South Cell borrow area (see Sheet 4), which is located southeast of the South Cell. The soil within the stockpile ranges from a lean clay and sandy/silty clay to a silty sand and meets the soil classification requirements specified on Figure B-1 of the technical specifications presented in the Reclamation Plan. The soil was excavated and transported to the South Cell area using scrapers. Fine grading of the soil cover was performed using a motor grader.

The soil cover was conditioned to meet construction specifications by adding water and compacting. This process consisted of scarifying the soil with a roame plow and/or motor grader and spraying water on top of the soil using a water wagon. A sheepsfoot

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compactor was used to obtain primary compaction. Afterwards the top of the soil layer was compacted using a smooth-drum roller.

The total volume of radon attenuation cover placed over the South Cell, excluding swale areas, was approximately 24,000 cubic yards (cy). This estimate is based on 19.4 acres of South Cell tailings area and an average final soil cover of 9 inches. The radon attenuation cover placed in the swale areas (less than 1 acre) was inspected and tested separately as described in Section 4.0 of this report. The 24,000 cy of soil cover was placed, moisture conditioned and compacted in 11 work days between July 6 and August 2, 1995, at an average rate of about 2,200 cy per work day.

2.2 Specifications and Testing

Construction specifications for placement of the radon attenuation cover, as stipulated in the Reclamation Plan, are listed below. Adherence to these specifications was maintained through strict survey control and geotechnical testing of soil properties and field density.

- 1. A total of 18 inches of soil cover shall be placed over the regraded tailings.
- 2. Soil used for the cover shall be clays, silts and fine-grained sands which fall within the gradation envelope shown on Figure B-1 of Appendix B.
- 3. The soil cover over the tailings is to be compacted to a minimum of 95 percent of the maximum dry density at a moisture content of within 2 percent above the optimum moisture content as determined by the Standard Proctor Compaction Method [American Society for Testing and Materials (ASTM) D 698].
- 4. The areas surrounding the tailings that are incorporated into the reclamation work, such as drainage swales in native soils, will be excavated and regraded in accordance with the construction drawings, and compacted to a minimum of 90 percent of the maximum dry density as determined by the Standard Proctor Compaction Method (ASTM D 698).



Subsequent sections discuss the survey control and geotechnical testing performed to verify that the radon attenuation cover was constructed in accordance with specifications.

2.2.1 Survey Control

During previous reclamation activities in 1991, the top of the South Cell tailings was graded to the design slope and a minimum of 12 inches of interim soil cover (i.e., the initial lift of the radon attenuation cover) were placed and compacted in accordance with the construction drawings and specifications (Canonie, 1992a). To insure that the final lift of soil cover was applied uniformly and that the required total cover thickness of 18 inches was achieved, the South Cell was surveyed on a 100-foot by 100-foot grid system both prior to and after grubbing of vegetation. Subtraction of the second set of surveyed elevations from the initial set of elevations determined the thickness of soil removed by grubbing. The thickness of the soil removed averaged 3 inches. A final lift of soil cover averaging 9 inches was then added to the remaining 9-inch interim cover, thereby bringing the total thickness of the radon attenuation cover to 18 inches.

Elevations for the final lift were established in the field by placing wooden stakes at each grid location with the top-of-grade marked by a blue ribbon. These top-of-grade stakes were checked frequently and reestablished as necessary during placement of the final soil cover.

2.2.2 Soil Properties

The suitability of the borrow soil for use in the radon attenuation cover was verified by performing gradation and Atterberg tests at 3 locations within the South Cell borrow area and at 30 locations distributed uniformly over the radon attenuation cover as the soil was placed. All of the tests indicated that the soil was within the specified gradation limits and met soil classification requirements. The testing frequency of 1 gradation test for every 730 cy of soil (i.e., 24,000 cy/33 gradation tests) exceeded the specified test rate of 1 test for every 1,000 cy placed. The laboratory reports



documenting the results of the gradation and Atterberg tests for the radon attenuation layer are presented in Appendix B.

2.2.3 Field Density

In-place field moisture-density testing of the soil cover was conducted using the sandcone method (ASTM D 1556). A total of 52 locations distributed uniformly over the tailings soil cover were tested, of which 50 met the required density and moisture specifications on the initial test. The remaining 2 locations were recompacted until additional testing confirmed that required minimum moisture-density standards were met. The test frequency of 1 moisture-density test for every 462 cy of soil (i.e., 24,000 cy/ 52 moisture-density tests) exceeds the specified test rate of 1 test for every 500 cy placed. The laboratory reports documenting the results of the moisture-density testing are presented in Appendix C.

The average dry density and moisture content of the 52 passing tests were 109.9 pounds per cubic foot (pcf) and 14.2 percent, respectively. This average dry density and in-situ moisture content are higher than the values used in the Reclamation Plan design of 108.0 pcf and 12.9 percent, respectively. The average values from the testing correspond to an in-situ porosity of 0.32 and a saturation of 78 percent, as compared to the design values of 0.33 and 68 percent for porosity and saturation, respectively. The higher density and degree of saturation of the radon attenuation layer will provide improved radon attenuating properties as compared to the mathematical model for the radon attenuation cover provided in the Reclamation Plan.

2.2.4 Proctor Tests

A total of 10 Standard Proctor tests were conducted during completion of the radon attenuation cover over the South Cell. The results of these tests are presented in Appendix D. The Standard Proctor tests were performed in accordance with ASTM D 698A to determine the relationship between moisture and density in the barrow soils over a range of moisture and density values.



The Reclamation Plan specifies that Standard Proctor tests be conducted for every 15 field density tests, and One-Point Proctor tests be performed for every 5 field density tests. The total of 10 Standard Proctor tests performed on the radon attenuation soil cover resulted in a testing frequency of one Standard Proctor tests performed because the higher field density tests. No One-Point Proctor tests were performed because the higher frequency for the Standard Proctor tests made such testing redundant.

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3.0 EROSION PROTECTION COVER

The erosion protection cover consists of 6 inches or more of a soil/rock matrix placed on top of the radon attenuation soil cover. The soil/rock matrix is designed to promote surface water runoff and protect the underlying radon attenuation soil layer from wind and water erosion. The erosion protection cover was constructed over the entire area of the South Cell except for the drainage swales which were riprapped in accordance with the Reclamation Plan (refer to Section 4.0 for drainage swale construction). Construction methods, materials and testing for the erosion protection cover are described below.

3.1 Construction Methods and Materials

The soil/rock matrix was constructed by placing a minimum of 3 inches of rock mulch over the completed radon attenuation soil cover, then placing a 4- to 6-inch layer of random soil material over the rock mulch. The soil was then forced into the rock mulch voids to form the soil/rock matrix.

The rock mulch consisted of a basalt aggregate with a D_{50} of 1.5 inches. This same rock was also used as riprap in portions of the Runoff Control Ditch and drainage swales described in Section 4.0. Construction of the rock mulch layer consisted of dumping the rock directly from haul trucks and scrapers onto the top of the completed radon attenuation cover in a series of elongated parallel piles. A motor grader was then used to spread the rock to the required thickness of 3 inches or greater.

The 4 to 6 inches of soil placed on top of the rock mulch were obtained from the South Cell borrow area. This soil was excavated, transported and placed using scrapers. Afterwards, a pneumatic compactor was used to force the soil into the underlying rock mulch, thereby creating the required soil/rock matrix. Finish grading of the top of the completed cover was performed using a motor grader.



3.2 Specifications and Testing

Construction specifications for construction of the erosion protection cover as stipulated in the Reclamation Plan include:

- The rock mulch is to be dense limestone or other suitable rock and is to meet the following criteria: specific gravity = 2.6 or greater; absorption = 1.8 percent or less; and sodium sulfate loss = 10 percent or less. Alternatively, the rock source shall have a minimum score of 50 using the scoring criteria shown in Table D1 of the August 1990 Staff Technical Position (STP), "Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites" or equivalent, and shall be oversized, if needed, in accordance with the procedures provided in Appendix D of the August 1990 STP.
- 2. The rock mulch is to be placed a minimum of 3 inches thick and have a nominal D_{50} of 1.5 inches with the following size gradations: 100 percent passing a 3-inch screen; 8 to 37 percent passing a 1-inch screen; and, 0 to 8 percent passing a No. 4 screen.
- 3. The soil for the soil/rock matrix is to be a clayey sand to sandy clay with no more than 25 percent of the soil greater than 1/2-inch in diameter. The soil is to be placed in a 4- to 6-inch lift over the rock mulch and compacted a minimum of 2 inches into the rock mulch. After compaction, the top of the soil layer is to be a minimum of 3 inches and a maximum of 4.5 inches above the rock mulch.

Adherence to the specifications was maintained through geotechnical testing of the rock mulch and by measuring the rock mulch thickness, soil layer thickness, and the depth of soil penetration into the rock mulch as described below.

3.2.1 Rock Mulch Quality

The rock used to construct the rock mulch was a dense basalt rock with durability characteristics superior to the criteria stipulated in the technical specifications. A total



of 3 tests were performed on the "Basalt 1.5-inch Aggregate" to verify the rock's quality. The test results are presented in Appendix E. The average test values for the rock included a specific gravity of 2.75, an absorption of 1.5 percent, a sodium sulfate loss of 2.9 percent, and an L.A. Abrasion percentage of 4.9. The rock quality score for the 3 tests, using the scoring criteria provided in the August 1990 STP, ranged from 85 to 93 with an average score of 90.

The specifications require that rock quality tests be performed initially and for each additional 10,000 cy of rock placed. More frequent testing is also required if the rock characteristics in the rock borrow source vary significantly from the rock that was previously tested. United Nuclear's records show that in 1995 a total of 18,479 cy of D_{50} 1.5-inch rock were placed as rock mulch and riprap during final reclamation of the South Cell, the Runoff Control Ditch, and Borrow Pit No. 2. No change in rock characteristics was noted by the quality control technician. Therefore, the rock quality testing rate of 1 series of tests per 6,160 cy of rock placed (i.e., 18,479 cy/3 tests) exceeded the test rate required by the specifications.

3.2.2 Rock Mulch Thickness and Size Gradation

The basalt rock with a D_{50} of 1.5 inches that was used to construct the rock mulch and to riprap the surface water control structures was subjected to sieve analyses to determine if gradation requirements were being met. A total of 5 samples were tested at the quarry and 3 at the site prior to spreading. One of the samples collected and tested at the quarry did not meet gradation specifications and this material was not used. The remaining tests at the quarry and on the samples collected and tested at the site all met the gradation requirements. The results of the sieve analysis testing are presented in Appendix F.

The thickness of the rock mulch was checked and recorded on 50- to 100-foot centers over the entire extent of the South Cell tailings area. Areas having a measured thickness of less than 3 inches or greater than 5 inches were regraded by Nielson's and then rechecked to verify that a rock mulch thickness between 3 and 5 inches had been achieved. The recorded measurements are presented in Appendix G.

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3.2.3 Soil Thickness and Penetration

The soil used to construct the soil/rock matrix was obtained from the South Cell borrow area. Gradation analyses performed for constructing the radon attenuation barrier (see Appendix B) indicates that this soil ranges from lean clay and sandy/silty clay to silty sand with an average of only 1 to 2 percent of the material greater than 1/2-inch in diameter. This soil is slightly finer than the clayey sand to sandy clay called for in the specifications. Use of the finer soil is an improvement on the design specification because it allows for greater penetration of the soil into the rock mulch and increases the cohesion of the soil/rock matrix.

The thickness of the soil layer and the depth of penetration of the soil into the rock mulch was checked on a uniform basis over the entire extent of the soil/rock matrix cover. The measurements were performed on staggered 100-foot centers. The results of the measurements are presented in Appendix H and show that the soil layer above the rock mulch was a minimum of 3 inches in all areas. In some areas, the soil layer thickness was increased in excess of 4.5 inches to provide adequate surface drainage. The depth of soil penetration into the rock mulch exceeded 2 inches in all areas.

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4.0 SURFACE WATER CONTROL STRUCTURES

Surface water control structures associated with the South Cell include:

- 1. Branch Swales H, I and J
- 2. Runoff Control Ditch

Sheets 2 and 3 show the design details for these structures. Sheet 4 shows the as-built conditions for those portions completed during South Cell reclamation in 1995.

Branch Swales H, I and J are shallow, riprapped ditches located on top of the South Cell designed to convey runoff from the reclaimed tailings area to the South Cell Drainage Channel, which will be constructed in the future. Construction of those portions of Branch Swales H and J that pass through the Evaporation Pond area will also be constructed in the future when the Evaporation Ponds are reclaimed.

In conjunction with South Cell reclamation activities, work also continued on the Runoff Control Ditch between Stations 25+00 to 43+00 (Sheet 4). This ditch, located west of the tailings area, is designed to intercept runoff from the west embankment of the North, Central and South Cells.

4.1 Branch Swales H, I, and J

Branch Swales H, I, and J were constructed on top of the South Cell at the locations shown on Sheet 4. These swales are designed to collect surface water runoff while minimizing erosion on the rock mulch cover. As shown on Sheet 3, the swales consist of shallow, trapezoidal ditches with 3H/1V sideslopes. Both the bottom and sideslopes of the swales are armored with riprap.

Sheet 4 presents the extent of swale completion at the end of 1995 construction activities. Swale I was completed in 1995, while Swales H and J were partially

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completed. Swales H and J are designed to extend further to the north across the present location of the evaporation ponds.

4.1.1 Construction Methods and Materials

The initial step in swale construction was to excavate down to the required subgrade elevation. Swale excavation was performed using scrapers and included removal of material along the length of each swale. The swales were excavated to a designed bottom width of 10 or 20 feet with 3H/1V sideslopes. A motor grader was used for fine grading to achieve the required final subgrade elevations. During excavation of the swales, the following 3 types of subgrade material were found below the interim cover:

- 1. Fill soil which had been placed during interim reclamation activities to achieve the design grade for the base of the interim soil cover.
- 2. Native soils located along the southeastern edge of the South Cell.
- 3. Coarse tailings sands which were used as the initial cover over the fine tailings sands. These coarse tailings, when encountered, were overexcavated and replaced with fill soil from the Borrow Pit No. 2 soil stockpile. The excavated tailings were disposed of in Borrow Pit No. 2 in compacted lifts as specified in the Reclamation Plan.

The soil comprising the subgrade was tested to verify its in-place density. Any areas not meeting density requirements were subjected to additional compaction until the required density was achieved. Exposed soils were also monitored for radon emissions. After completion of the subgrade, a radon attenuation layer was placed over the bottom and sideslopes of the lower section of Swale I. The total thickness of the radon attenuation layer in this area, including the interim cover, measured a minimum of 18 inches. Each lift of the radon attenuation layer was conditioned by adding water and compacted with a sheepsfoot compactor followed by a smooth-drum roller. Placement of a radon attenuation layer was not required in the upper reaches of Swale I and in Swales H and J



because they were constructed southeast of the tailings area in native soils and fill derived from the Borrow Pit No. 2 soil stockpile.

Prior to installation of the riprap, a 3-inch-thick bedding layer having a D_{50} of 0.02 inch was placed in the swales. This bedding layer or filter blanket is designed to prevent undercutting and piping beneath the riprap during surface runoff events. An additional 3-inch bedding layer having a D_{50} of 0.35 inch was placed in Swales H and I in accordance with the design specifications. All bedding layers were placed using a frontend loader and spread to a uniform thickness using hand rakes. A minimum of 3 inches of riprap was then placed on top of the bedding material in Swale J. A minimum of 6 inches of riprap was placed in Swales H and I. The riprap was placed using a front-end loader, hand rakes, and a trackhoe.

4.1.2 Specifications and Testing

Specifications for construction of the branch swales as stipulated in the Reclamation Plan include:

- 1. The swales are to be constructed as shown on Sheets 2 and 3 and in accordance with the design parameters listed in Table 2.
- 2. The subgrade is to be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 698.
- A total of 18 inches of radon attenuation soil cover shall be placed over the subgrade within the tailings area. This soil cover is to have gradation characteristics within the gradation envelope shown on Figure B-1 (see Appendix B) and compacted to a minimum of 95 percent of the maximum dry density at a moisture content of within 2 percent above the optimum moisture content as determined by ASTM D 698.



- 4. A minimum 3-inch-thick bedding layer consisting of well-graded crushed rock with a D_{50} of 0.02 inch is to be placed on the bottom and sideslopes of each swale.
- 5. A second bedding layer consisting of a minimum 3-inch thickness of well-graded crushed rock with a D_{50} of 0.35 inch is to be placed on the bottom and sideslopes of Swales H and I.
- 6. A minimum of 3 inches of riprap consisting of durable rock with a D_{50} of 1.5 inches is to be placed on top of the bedding layer in Swale J.
- A minimum of 6 inches of riprap consisting of durable rock with a D₅₀ of 3 inches is to be placed on top of the bedding layer in Swales H and I.

Adherence to the specifications was maintained through strict survey control, geotechnical testing of soil and rock properties, and measuring of in-place densities and depths of cover.

4.1.2.1 Field Modifications

Prior to the start of final reclamation of the South Cell, United Nuclear conducted a detailed review of the reclamation plan requirements for construction of the branch swales. This review identified several areas where minor modifications of the South Cell Swales were necessary to match the swale design to the as-built topography of the interim cover and surrounding areas. These minor modifications were developed by Canonie using NRC guidelines and were incorporated into the construction design as a field change. The modifications affecting branch swale construction are shown in parentheses in Table 2. Appendix I provides the details of the design modifications for the South Cell swales.



4.1.2.2 Survey Control

Survey control for construction of the branch swales consisted of installing grade stakes through the middle of each swale and at 10-foot offsets on each side of the swale. Grade stakes were installed on 100-foot centers and cuts and fills were determined by subtracting the thickness of the radon attenuation layer (where appropriate), bedding layer and riprap from the final required elevation. Surveying was performed within a precision level of plus or minus 0.05 foot.

After the initial excavation was completed, each swale was resurveyed and blue grade stakes were installed indicating the cuts and fills required to achieve final grade elevations. Installation of these "blue topped" finish grade stakes were necessary because the swales slopes are extremely flat having average grades of less than 1 percent. After the finish-grading was completed, the elevations of the subgrade were checked at each survey station to verify that positive drainage was being maintained.

Swale I was again surveyed after placement of the radon attenuation layer. This survey served two purposes:

- 1. Verify that a minimum of 18 inches of radon attenuation soil cover had been placed.
- 2. Verify that positive drainage was being maintained in each swale.

Surveying of the bedding layer and riprap in each swale was not necessary because the thickness of these components was verified by measurements made on 100-foot centers as described in Sections 4.1.2.5 and 4.1.2.6.

4.1.2.3 Subgrade Density Testing

In-place field density testing of the swale subgrade was conducted using the sand cone method (ASTM D 1556). The subgrade consisted of both fill soils and native soils. A total of 12 locations spaced over the swales were tested, of which 11 met the required



density of 90 percent of the maximum dry density as determined by ASTM D 698 on the initial test. The remaining location was subjected to additional compaction and met density requirements on the retest.

The Reclamation Plan specifies that Standard Proctor tests be conducted for every 15 field density tests, and One-Point Proctor tests be performed for every 5 field density tests. A total of 5 Standard Proctor tests were performed on the subgrade material resulting in a testing frequency of 1 Standard Proctor test performed for every 2.4 field density tests. No One-Point Proctor tests were performed because the higher frequency for the Standard Proctor tests made such testing redundant.

The results of the Standard Proctor and field density tests for the subgrade material are presented in Appendix J.

4.1.2.4 Radon Attenuation Layer Testing

As required in the Reclamation Plan, the radon attenuation layer was placed over the lower portion of Swale I. The upper portion of Swale I and Swales H and J did not require a radon attenuation layer because of their location beyond the limits of tailings. Construction of the radon attenuation layer over Swale I required the placement and compaction of approximately 500 cy of soil from the South Cell borrow area. The volume of soil used in constructing the radon attenuation layer in these swales was estimated by multiplying the area of Swale I covered by the radon attenuation layer (about 0.2 acre) by the depth of the compacted soil cover (18 inches). After soil placement and compaction, the radon attenuation layer was tested to verify that the soil met gradation requirements and that density and moisture specifications were also being met. These test results are summarized below and presented in detail in Appendix J.

One gradation test was performed on the radon attenuation soils placed in Swale I. The results were within the gradation requirements illustrated on Figure B-1 in Appendix B of the Reclamation Plan. The test frequency of 1 test per 500 cy of soil placed exceeded the specified test frequency of 1 test per 1,000 cy of soil placed.



Two in-place field moisture-density tests of the radon attenuation soil cover in Swale I were performed using the sand cone method (ASTM D 1556). These tests were performed at the upper and lower ends of the covered portion of the swale. Both of the tests met the requirement for a minimum of 95 percent of the maximum dry density at a moisture content of within 2 percent above the optimum moisture content. The test frequency of 1 test for every 250 cy of soil (i.e., 500 cy/2 tests) exceeded the specified test frequency of one test for every 500 cy of soil.

4.1.2.5 Bedding Layer Testing

Bedding material was placed at a minimum thickness of 3 inches on the bottom and sides of all the swales. The bedding material consisted of crusher fines from Hamilton's stockpile and had a nominal D_{50} of 0.02 inch. The bedding layer thickness was verified in the field by measuring the depth of the bedding layer on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix J and show that the bedding layer ranged from 3 to 3.5 inches thick in all swales.

In accordance with the Reclamation Plan, a second bedding layer was placed on top of the D_{50} 0.02-inch bedding layer in Swales H and I. The second layer of bedding material consisted of crushed basalt aggregate from Hamilton's pit and had a nominal D_{50} of 0.35 inch. Its thickness was also verified in the field by measuring the total depth of both bedding layers on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix J and show that the depth of the second bedding layer ranged from 3 to 4 inches thick in Swales H and I.

Three sieve analyses were performed to determine the gradation characteristics of the D_{50} 0.02-inch bedding material used in constructing the branch swales and the upper reach of the Runoff Control Ditch. The results of the sieve analyses are presented in Appendix K and confirm that the bedding material met the gradation specifications of 100 percent passing a 3-inch screen, 85 to 100 percent passing a 3/4-inch screen, 65 to 100 percent passing a No. 4 screen, 47 to 94 percent passing a No. 10 screen, 23 to 70 percent passing a No. 40 screen, and 15 to 30 percent passing a No. 200 screen.



Eight sieve analyses were performed to determine the gradation characteristics of the D_{50} 0.35-inch bedding material used in constructing Branch Swale H. The results of the sieve analyses are presented in Appendix K. The first 5 sieve analyses did not meet the gradation requirements, and the tested material was discarded. Results of the last 3 tests confirm that the bedding material met the gradation specifications of 65 to 100 percent passing a 3-inch screen, 43 to 80 percent passing a 3/4-inch screen, 22 to 60 percent passing a No. 4 screen, 15 to 38 percent passing a No. 10 screen, 5 to 12 percent passing a No. 40 screen, and 0 to 10 percent passing a No. 200 screen.

The D_{50} 0.35-inch bedding material exceeded the durability specifications for aggregate with rock quality characteristics similar to the 1.5-inch rock aggregate (see Section 3.2). The average test values for the rock included a specific gravity of 2.74, an absorption of 1.9 percent, a sodium soundness loss of 4.1 percent, and an L.A. Abrasion percentage of 3.6. The rock quality scores for the test, using the scoring criteria provided in the August 1990 STP, ranged from 80 to 90, with an average score of 84.7. The three rock quality tests for the D₅₀ 0.35-inch aggregate are presented in Appendix E.

4.1.2.6 Riprap Testing

Two sizes of riprap were used during construction of the branch swales associated with the South Cell. In accordance with the reclamation plan, riprap with a D_{50} of 1.5 inches was used in Swale J, and riprap with a D_{50} of 3 inches was used in Swales H and I.

1.5-Inch Riprap

Riprap consisting of a basalt rock with a D_{50} of 1.5 inches was placed at a minimum thickness of 3 inches on the bottom and sides of Swale J. Riprap thickness was verified by measuring the depth of the riprap on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix J and show that all measurement were in excess of the 3-inch minimum.

The rock used for the riprap was the same basalt rock used to construct the rock mulch. As discussed in Section 3.2.1, this rock has superior durability characteristics with an



average rock quality score of 90. Sieve analyses of this rock were also performed as discussed in Section 3.2.2, to maintain the size gradation in conformance with the specifications. Rock quality and gradation test results for the riprap are provided in Appendices E and F, respectively.

Three-Inch Riprap

In accordance with the specifications of the reclamation plan, riprap consisting of a basalt rock with a D_{so} of 3 inches was placed at a minimum thickness of 6 inches on the bottom and sides of Swales H and I. Riprap thickness was verified by measuring the depth of the riprap on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix J and show that all measurements met or exceeded the 6-inch minimum.

The rock used as riprap in Swales H and I was a dense basalt rock with durability characteristics superior to the criteria stipulated in the technical specifications. The specifications for rock quality characteristics of the D_{50} 3-inch rock are identical to those for the D_{50} 1.5-inch rock outlined in Section 3.2. Three tests were performed to verify the rock's quality. The test results are presented in Appendix E. The average test values for the rock included a specific gravity of 2.74, an absorption of 1.7 percent, a sodium soundness loss of 2.6 percent, and an L.A. Abrasion percentage of 3.9. Using the scoring criteria provided in the August 1990 STP, the rock quality scores for the test ranged from 83 to 90, with an average score of 87.3.

The specifications require that a series of rock durability tests be performed initially and for each additional 10,000 cy of rock placed. More frequent testing is also required if the rock characteristics in the rock borrow source vary significantly from the rock that was previously tested. United Nuclear's records show that a total of 2,554 cy of D_{50} 3-inch rock was placed as riprap during 1995. No change in rock characteristics was noted by the quality control technician. Three rock quality tests were conducted, or 1 for each 850 cy of rock used. Therefore, the rock quality testing rate exceeds the test rate required by the specifications.

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The basalt rock with a D_{50} of 3 inches that was used to riprap Swales H and I was also subjected to 8 sieve analyses to ensure that gradation requirements were being met. The following size gradations were required for the D_{50} 3-inch rock: 100 percent passing a 6-inch screen; 45-67 percent passing a 4-inch screen; and 0-22 percent passing a 1-inch screen. Four of the samples did not meet these requirements, and the material was rejected. The remaining tests showed that the material was within specifications. The results of the sieve analysis testing are presented in Appendix F.

4.2 Runoff Control Ditch

The Runoff Control Ditch is located immediately west of the tailings disposal area as shown on Sheet 4. During 1995, construction of the Runoff Control Ditch continued in a southerly direction from Stations 25+00 to 43+00. The upper reach of the Runoff Control Ditch was completed to Station 25+00 in 1993 and 1994 as part of the North Cell and Central Cell Final Reclamation. The ditch is designed to collect surface water runoff from the west embankment of the tailings area. As shown on Sheet 3, the Runoff Control Ditch is 2 feet deep with a 10-foot-wide bottom and 3H/1V and 5H/1V sideslopes.

4.2.1 Construction Methods and Materials

The Runoff Control Ditch was excavated down to the required subgrade elevation using scrapers and dozers. A motor grader was used for fine grading to achieve the required final subgrade elevations. The native soils at the bottom and sides of the ditch were then compacted as necessary with a sheepsfoot compactor and a smooth drum roller to achieve the required soil density.

After the subgrade met the in-place density specifications, a minimum of 3 inches of bedding material having a D_{50} of 0.02 inch was placed in the ditch using a front-end loader. The bedding material was spread using hand rakes. A second bedding layer of rock aggregate with a D_{50} of 0.35 inch was then placed to a minimum depth of 3 inches in the lower reach of the Runoff Control Ditch (i.e., from Stations 38 ± 00 to 43 ± 00). Subsequently, the upper reach was covered with a minimum of 3 inches of riprap having



a D_{50} of 1.5 inches and the lower reach was covered with a minimum of 6 inches of riprap having a D_{50} of 3 inches.

4.2.2 Specifications and Testing

The specifications for construction of the Runoff Control Ditch as stipulated in the Reclamation Plan include:

- 1. The ditch is to be constructed as shown on Sheets 2 and 3.
- 2. The subgrade is to be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 698.
- 3. A minimum 3-inch-thick bedding layer consisting of well-graded crushed rock with a D_{50} of 0.02 inch is to be placed on the bottom and sideslopes.
- 4. A second bedding layer consisting of a minimum 3-inch thickness of well-graded crushed rock with a D_{50} of 0.35 inch is to be placed on the bottom and sideslopes of the lower reach.
- 5. A minimum of 3 inches of riprap consisting of durable rock with a D_{50} of 1.5 inches is to be placed on top of the bedding layer in the upper reach.
- 6. A minimum of 6 inches of riprap consisting of durable rock with a D_{50} of 3 inches is to placed on top of the bedding layer in the lower reach.

Adherence to the specifications was maintained through strict survey control, geotechnical testing of soil and rock properties, and measuring of in-place densities and depths of cover.



4.2.2.1 Survey Control

Survey control for construction of the Runoff Control Ditch from Station 25+00 to Station 43+00 consisted of installing grade stakes through the middle of the ditch and at 10-foot offsets on each side of the ditch. The grade stakes were installed on 100-foot centers and cuts and fills for the ditch bottom were determined by subtracting the profile elevations shown on Sheet 3 from the existing elevations. Cuts and fills to achieve the 3H/1V sideslopes of the ditch and 5H/1V slope of the protective bench were also marked at each station. Surveying was performed within a precision level of plus or minus 0.05 foot.

After the excavation was completed to the subgrade, the ditch was surveyed again to verify that the required grades had been achieved. Surveying of the bedding layer and riprap was not necessary because the thickness of these components were verified by measurements made on 100-foot centers as described in Sections 4.2.2.3 and 4.2.2.4.

4.2.2.2 Subgrade Density Testing

In-place field density testing of the ditch subgrade was conducted using the sand cone method (ASTM D 1556). A total of 10 locations spaced uniformly over the ditch bottom and east and west berms were tested, all of which met the required density of 90 percent of the maximum dry density as determined by ASTM D 698.

The Reclamation Plan specifies that Standard Proctor tests be conducted for every 15 field density tests, and One-Point Proctor tests be performed every 5 field density tests. A total of 2 Standard Proctor tests were performed on the subgrade material resulting in a testing frequency of 1 Standard Proctor test performed for every 5 field density tests. No One-Point Proctor tests were performed because the higher frequency for the Standard Proctor tests made such testing redundant.

The results of the Standard Proctor and field density tests for the subgrade material are presented in Appendix L.



4.2.2.3 Bedding Layer Testing

Bedding material was placed at a minimum thickness of 3 inches on the bottom and sides of the ditch prior to installation of riprap. The bedding material consisted of crusher fines from Hamilton's stockpile and had a nominal D_{50} of 0.02 inch. The bedding layer thickness was verified in the field by measuring the depth of the bedding layer on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix L and show that the bedding layer ranged from 3 to 3.5 inches thick over the entire length of the ditch.

In accordance with the Reclamation Plan, a second bedding layer was placed on top of the D_{50} 0.02-inch bedding layer in the lower reach of the Runoff Control Ditch (i.e., from Stations 38 + 00 to 43 + 00). The second layer of bedding material consisted of crushed basalt aggregate from Hamilton's pit and had a nominal D_{50} of 0.35 inch. A minimum of 3 inches of this coarser bedding material in the lower reach was verified in the field by measuring its depth on the ditch bottom and sides every 100 feet. The results of these measurements are presented in Appendix L and show that the depth of the second bedding layer ranged from 3 to 4 inches thick in the lower reach.

Sieve analyses and rock quality testing indicate that the bedding material met gradation and durability specifications. These analyses and tests are discussed in Section 4.1.2.5 with the results presented in Appendices K and E, respectively.

4.2.2.4 Riprap Testing

Riprap consisting of a basalt rock with a D_{50} of 1.5 inches was placed at a minimum thickness of 3 inches on the bottom and sides of the upper reach of the ditch (i.e., Stations 25+00 to 38+00). Riprap consisting of a basalt rock with a D_{50} of 3.0 inches was placed at a minimum thickness of 6 inches on the bottom and sides of the lower reach of the ditch (i.e., Stations 38+00 to 43+00). Riprap thickness was verified by measuring the depth of the riprap every 100 feet. The results of these measurements are presented in Appendix L and show that all measurements were in excess of the minimum thickness requirements.



The rock used for the riprap was the same basalt rock used to construct the rock mulch. As discussed in Sections 3.2.1 and 4.1.2.6, this rock has superior durability characteristics with rock quality scores between 83 and 93. Sieve analyses of this rock were performed as discussed in Section 3.2.2 and Section 4.1.2.6, to maintain the size gradation in conformance with the specifications. Rock quality and gradation test results for the riprap are provided in Appendices E and F, respectively.

5.0 CLOSING REMARKS

The South Cell of the tailings disposal facility has been reclaimed in accordance with the specifications and construction drawings contained in the Reclamation Plan (Canonie, 1991). This reclamation included construction of the radon attenuation layer, erosion protection cover and surface water controls.

Smith Environmental Technologies Corporation appreciates this opportunity to provide engineering services for the reclamation construction and as-built conditions documentation regarding work conducted during 1995 in the South Cell Tailings Disposal Area at the Church Rock Facility. If you have any questions, please contact me at (303) 790-1747.

Respectfully submitted,

Bruce W. Hassinger, P.G. Project Manager

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REFERENCES

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Smith Environmental Technologies Corporation, 1996, "As-Built Report, Borrow Pit No. 2 Final Reclamation", prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

Western Technologies, Inc., 1991, "As-Built Construction Report, Interim Stabilization, Central Cell Tailings Disposal Area", prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

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TABLE 1

EARTHMOVING EQUIPMENT

Equipment Type	Number
Caterpillar 633 Scrapers	2
Caterpillar 825 Sheepsfoot Compactor	1
Caterpillar D-8 Dozer	Ĩ
Caterpillar EL 300 Excavator	1
Caterpillar 14G Graders	1
Caterpillar 950B Front-End Loaders	2
Caterpillar 631 Water Wagon	1
End Dump Trucks	2
Belly Dump Trucks	2
Water Truck	1

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TABLE 2

Parameter	Swale	Н	Swale	: 1	Sw	vale J
Length (ft)	2,550	(2,350)	550	(750)	1,900	(1,700)
Slope (ft/ft)	0.0085	(0.010)	0.0040	(0.0067)	0.0047	
Bottom Width (ft)	20		20		10	
Minimum Depth (ft)	2.5		3.5		2.5	
Bedding Layer D _{so} (in)	0.02, Layer 1 0.35, Layer 2		0.02, Layer 1 0.35, Layer 2		0.02	
Bedding Layer Thickness (in)	3, Layer 1 3, Layer 2	1	3, Layer 1 3, Layer 2		3	
Riprap D ₅₀ (in)	3.0		3.0	· · ·	1.5	
Riprap Thickness (in)	6		6		3	

SWALES H, I, AND J DESIGN PARAMETERS

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Notes: 1.

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The sides of the swales are to be installed at a slope of 3H/1V.

2. Values shown in parentheses are field design modifications. See Appendix I for additional details.

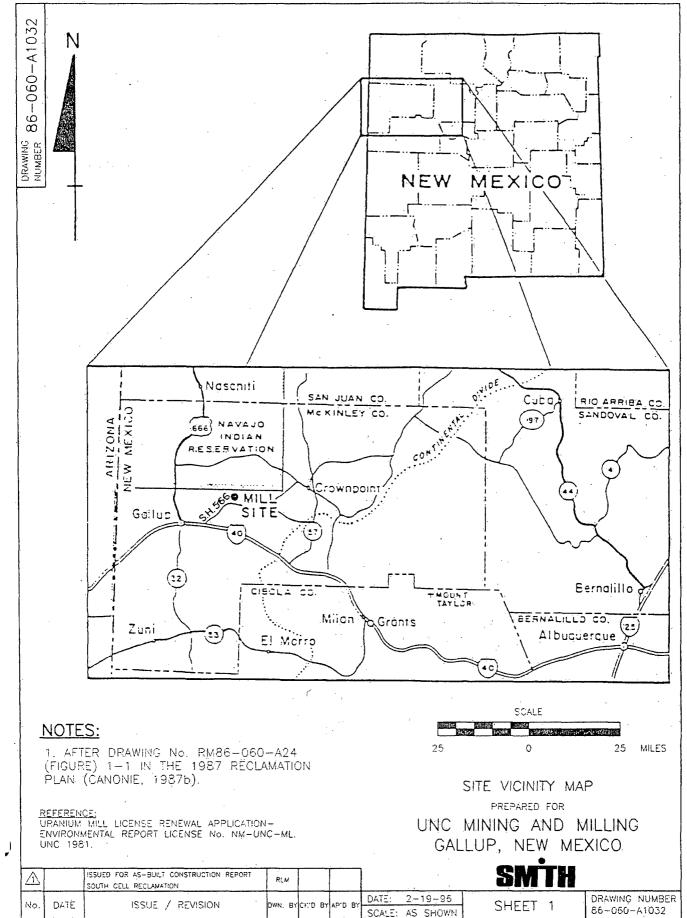
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FIGURES

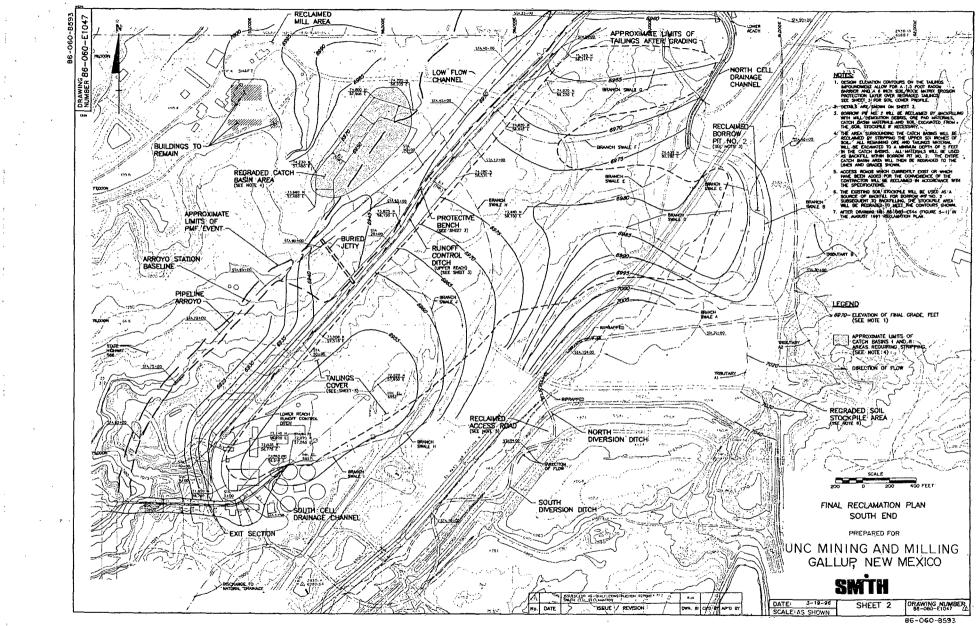


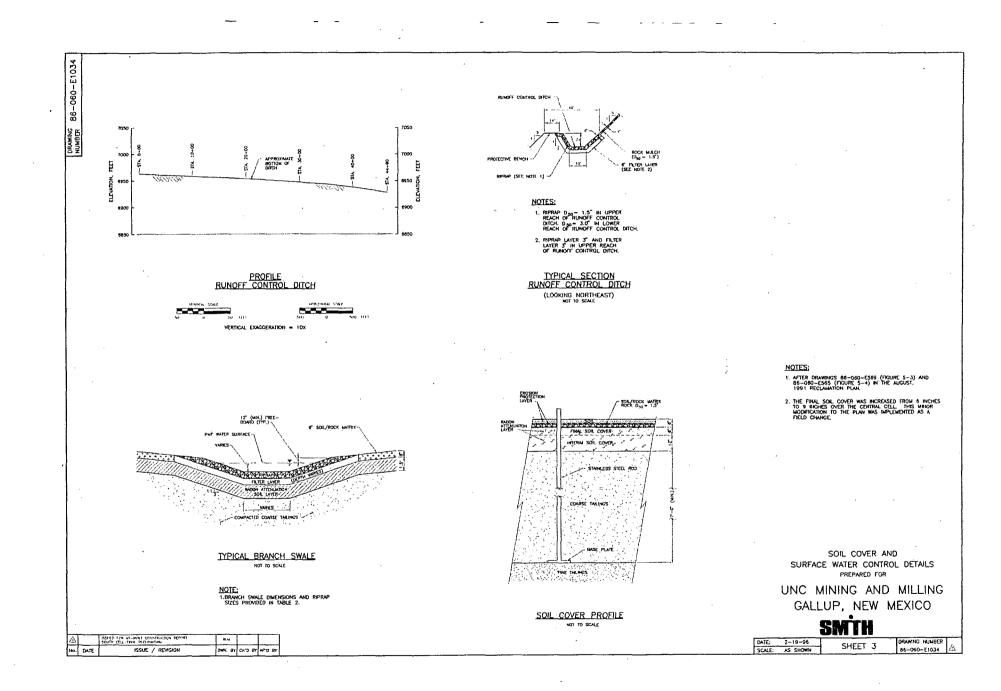
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APPENDIX A

FIELD REPORTS (BORROW PIT NO. 2 AND SOUTH CELL)

Western 400 South Lorena Avenue Technologies Farmington, New Mexico 87401 (505) 327-4966 • fax 327-5293 Inc. The Quality People Since 1955 REPORT ON JOB SITE CONDITIONS JOB NO: CLIENT UNC Mining & Milling 3145JB031 Attn: Mr. Ed Morales 31450122 LAB/INVOICE NO: PO Box 3077 Gallup, NM 97305 DATE OF REPORT: 5/22/95 Project -1995 Reclaimation Location Church Rock New Mexico Contractor **Report By** 5/09/95 Nielson Inc. H. Kuebler Date Subject **Project Specifications** Superintendent James Harris

Observations and Action Taken:Ed Morales and I discussed testing requirements for1995 Reclamation Project. According to UNC, 70 gradation and Atterbergs limits and 67compaction tests will be needed on Radon Attenuation reaction tests and 25 gradation and#2 to meet project specification. South cell needs 50 compaction tests and 25 gradation andAtterbergs limits to meet Radon Attenuation cover project requirements. Testing frequency inborrow pit #2 for exposed natural ground shall be one test every 2000 cubic yards, 10compaction and 2 proctors (ASTM 698). Nielson Inc began to prepare natural ground for RadonAttenuation cover in Borrow Pit #2.

Comments:

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Copies: Client (3), Billing (1), Field File (1). 59/rgo:UNCO31

> The above services and report were performed pursuant to the terms and conditions of the ontract, it any, between WT and cleant, WT warrants that this was performed under the phytophats translated of clare, including the skill and judgement that is reasonably expected from milarly situated professionals. No other warranty, guaranty, or representation, either xpressed or impled is induced or minerad.

Thomas Much

CLIENT UNC Mining & Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 97305

Western

Inc.

Technologies

REPO	
JOB SITE C	CONDITIONS

 JOB NO:
 3145JB031

 LAB/INVOICE NO:
 31450122

 DATE OF REPORT:
 5/31/95

 Project
 1995 Reclamation

 Location
 Church Rock New Mexico

 Contractor
 Nielson Inc.

 Report By
 H. Kuebler

 Date
 5/22/95

 Subject
 Testing/Observations

 Observations and Action Taken:
 Nielson Inc. placed material in swale B & C. Sieve

 analysis on .35 aggregate indicated material doesn't meet specification. Hamilton Brothers will

 recrush aggregate.

Comments:

- 11 S.

Copies: Client (3), Billing (1), Field File (1). 5.22/rgo:UNC031

> The above services and report were performed pursuant to the terms and conditions of the contract, If any, between WT and client. WT warrants that this was performed under the appropriar emodual of case, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either axistensed or immilde is included or horseded.

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Western Technologies

The Quality People Since 1955

Inc.

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	Unit			REPORT JOB SITE COM	
CLIENT		C Mining & Milling		JOB NO:	3145JB031
		n: Mr. Ed Morales Box 3077		LAB/INVOICE NO:	31450122
·		up, NM 97305	• •	DATE OF REPORT:	5/31/95
Project		1995 Reclamation			
Location		Church Rock New Mexico	0	· · · · ·	
Contracto	or	Nielson Inc.	Report By	H. Kuebler Dat	te <u>5/23/95</u>
Subject		Testing/Observations	Superintendent	James Harris	
Observat	ions a	and Action Taken:	Nielson Inc. con	tinued to place fill in	swale B & C
which wi	II late	<u>r be shaped into swale slop</u>	es. Hamilton Bro s	ubmitted another .35	i aggregate
sieve san	nple.	Sieve analysis indicated ma	aterial didn't meet s	specification. Hamilto	on Brothers wi
waste the	e sma	Il stockpile and try again.			
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Comments:

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(303) 327-4900 • lax 327-3293

REPORT ON JOB SITE CONDITIONS

CLIENT		Mining & Milling		JOB NO:		3145JB031
		Mr. Ed Morales ox 3077		LAB/INVOICE	NO:	31450122
	Gallu	p, NM 97305		DATE OF REF	ORT:	5/31/95
Project		1995 Reclamation				
Location		Church Rock New Mexico)			
Contractor	r	Nielson Inc.	Report By	H. Kuebler	_ Date	e <u>5/24/95</u>

Superintendent James Harris

Observations and Action Taken:Nielson Inc. continued to excavate swales. Iperformed sieve analysis on .35 aggregate in Gallup Lab. Test indicated .35 material does notmeet specification. Hamilton Brothers will try to blend coarser material.

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Comments:

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Western

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Inc.

Subject

Technologies

Testing/Observations

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Thomas

Inc.	nologies Farmington,	orena Avenue New Mexico 87401 966 • fax 327-5293		
Sinc	21955		REPORT (JOB SITE CON	
Attr PO	C Mining & Milling n: Mr. Ed Morales Box 3077 up, NM 97305		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB03 31450122 5/31/95
Project	1995 Reclamation		• •	
Location	Church Rock New Me	exico		
Contractor Subject	Nielson Inc. Testing/Observations	Report By	H. Kuebler Date James Harris	e <u>5/25/95</u>
	nd Action Taken: ers required a sieve and v.	alysis performed on .3	ntinued to excavate for 5 aggregate. I worked	
Hamilton Broth	ers required a sieve and	alysis performed on .3		
Hamilton Broth	ers required a sieve and	alysis performed on .3		
Hamilton Broth	ers required a sieve and	alysis performed on .3		
Hamilton Broth	ers required a sieve and	alysis performed on .3		

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Internet pursuant to the terms and congroups of the WT warrants that this was performed under the mill and judgement that is leasonably expected from les waranty, guaranty, or representation, either id, The contract, if any, b T and ci M. appio prode expre ave of care ling the mill No other rintended, stuated p Knahe

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		lity People 1955		REPOR JOB SITE CO	
CLIENT		Mining & Milling		JOB NO:	3145JB031
		i: Mr. Ed Morales Box 3077		LAB/INVOICE NO:	31450145
		up, NM 97305		DATE OF REPORT	: 06/08/95
Project		1995 Reclamation			•
Location		Church Rock New Mexic	0		
Contracto	or	Nielson Inc.	Report By	H. Kuebler D	ate <u>06/05/95</u>
Subject		Observations	Superintendent	James Harris	
		er UNC and Western Tech			
				······································	
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Western

Inc.

Technologies

The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropries transland of case, including the wail and pudgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

REVIEWED BY Thomas Kya ∕

The Qu Si	<u>iality</u> People nce 1955			REPORT JOB SITE CO	
	IC Mining & Mi			JOB NO:	3145JB03
	tn: Mr. Ed Mor Box 3077	ales		LAB/INVOICE NO:	31450145
	llup, NM 9730)5		DATE OF REPORT	06/08/95
Project	1995 Recla	mation			
Location	Church Roc	k New Mexic	0		
Contractor	Nielson Inc.		Report By	H. Kuebler Da	ite <u>06/06/9</u>
Subject	<u>Observation</u>	IS	Superintendent	James Harris	۰
from swales			· · · · · · · · · · · · · · · · · · ·	tinued to remove co tern Technologies of	
from swales	H & I and placi		· · · · · · · · · · · · · · · · · · ·		
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Copies: Client (3), Billing (1), Field File (1). 6-6/rgo:UNCO31

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of case, including the wall and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either appressed or implied is included or intended.

Hughe AEVIEWED BY Thomas -

4	Weste Techr Inc. The Qualit Since	v People	400 South Lorena A Farmington, New M (505) 327-4966 • f	lexico 87401	REPORT O JOB SITE CON	
CLIENT	Attn: PO B	Mining & M Mr. Ed Mo ox 3077 p, NM 973	rales		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB031 31450145 06/09/95
Project		1995 Recla	amation			
Location			ck New Mexico			
Contracto Subject	or	Nielson Inc Observatio		_ Report By _ Superintendent	H. Kuebler Date James Harris	9 06/07/95
		nd Action Ta	iken: ng soils in Borro		ntinued to excavate co	ntaminated
					ntinued to excavate con	ntaminated
					ntinued to excavate con	ntaminated
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Western Technologies

The Quality People

Inc.

Since 1935		REPORT O JOB SITE COND	
CLIENT UNC Mining & Milling		JOB NO:	3145JB031
Attn: Mr. Ed Morales PO Box 3077		LAB/INVOICE NO:	31450145
Gallup, NM 97305		DATE OF REPORT:	06/13/95
Project <u>1995 Reclamation</u>	on		
Location Church Rock Ne	w Mexico		
Contractor Nielson Inc.	Report By	H. Kuebler Date	06/08/95
Subject Observations	Superintendent	James Harris	
Observations and Action Taken:	Nielson Inc. cont	tinued to excavate Sw	ale I for
contaminated materials. Nothing	for W.T. to do. Tech time	3 hours.	
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Comments:	· · · · · · · · · · · · · · · · · · ·		

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrents that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly siturated professionale. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

mos tua REVIEWED BY

Attn: Mr. Ed Morales L PO Box 3077 Gallup, NM 87305 Gallup, NM 87305 D Project 1995 Reclamation Jocation Church Rock New Mexico Contractor Nielson Inc. Subject Observations	LAB/INVOICE NO: 3 DATE OF REPORT: 0 H. Kuebler Date James Harris n to prepare south cell f ves to be done on D50	
Location Church Rock New Mexico Contractor Nielson Inc. Report By H Subject Observations Superintendent	James Harris n to prepare south cell f ves to be done on D50	or final
Location Church Rock New Mexico Contractor Nielson Inc. Report By H Subject Observations Superintendent	James Harris n to prepare south cell f ves to be done on D50	or final
Subject Observations Superintendent Observations and Action Taken: Nielson Inc. began Radon Attenuation Cover. Hamilton Bros. phoned needing server	James Harris n to prepare south cell f ves to be done on D50	or final
Observations and Action Taken: <u>Nielson Inc. began</u> Radon Attenuation Cover. Hamilton Bros. phoned needing serve	n to prepare south cell f ves to be done on D50	
Radon Attenuation Cover. Hamilton Bros. phoned needing serve	ves to be done on D50	
	> aggregate in Gallup lat	D

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that the was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from smilarly mixed professionals. No other warranty, gueranty, or representation, either expressed or implied is included or intended. .

REVIEWED BY Thomas Horalic

	Inc.	nologies ty People 1955	Farmington, Nev (505) 327-4966	w Mexico 87401 • fax 327-5293	REPO JOB SITE	ORT O	
CLIENT		Mining & Mi			JOB NO:		3145JB031
		: Mr. Ed Moi lox 3077	rales		LAB/INVOICE N	10:	31450145
		ip, NM 8730	05		DATE OF REPO	RT:	06/16/95
Project		1995 Recla	mation			-	
Location			k New Mexi	0			
Contracto	or	Nielson Inc.	•	Report By	H. Kuebler	Date	06/13/95
Subject		Observation	ns/Tests	Superintendent	James Harris		
elevation	s of co		sts (from 05-	10-95 till present).	Western Technolo Western Technolo		
elevation	s of co	mpaction te	sts (from 05-	•			
elevation	s of co	mpaction te	sts (from 05-	10-95 till present).			
elevation	s of co	mpaction te	sts (from 05-	10-95 till present).			
elevation	s of co	mpaction te	sts (from 05-	10-95 till present).			
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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other werranty, guaranty, or representation, either expressed or implied is included or intended.

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Si	nce 1955 /		REPORT O JOB SITE CON	
Att PO	IC Mining & Milling n: Mr. Ed Morales Box 3077 Ilup, NM 87305		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB03 31450145 06/16/95
Project	1995 Reclamation			
ocation	Church Rock New Mexic	0	······································	
Contractor	Nielson Inc.	Report By	Ed Morales Date	06/14/95
Observations	Observations and Action Taken: inologies Inc. reviewed pape		James Harris an to excavate for Sw ed proctor testing.	ale J.
Observations	and Action Taken:	Nielson Inc. beg	an to excavate for Sw	ale J.
Observations	and Action Taken:	Nielson Inc. beg	an to excavate for Sw	ale J.
Observations	and Action Taken:	Nielson Inc. beg	an to excavate for Sw	ale J.
Observations	and Action Taken:	Nielson Inc. beg	an to excavate for Sw	ale J.
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Observations	and Action Taken:	Nielson Inc. beg	an to excavate for Sw	ale J.
	and Action Taken:	Nielson Inc. beg	an to excavate for Sw	ale J.

Copies: Client (3), Billing (1), Field File (1). 6-14/rgo:UNCO31

> The above services and report were performed junuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

Krahe Thomas REVIEWED BY.

The Qual	ity People		·····	
			REPORT C JOB SITE CONI	
Attr	C Mining & Milling 1: Mr. Ed Morales 3ox 3077		JOB NO: LAB/INVOICE NO:	3145JB031 31450145
Gall	up, NM 87305		DATE OF REPORT:	06/16/95
Project	1995 Reclamation			<u></u>
Location	Church Rock New Mexico			
Contractor	Nielson Inc.		Ed Morales Date	06/15/95
Subject	Observations	Superintendent	James Harris	
	nd Action Taken: Western Technologies perfo		o place Radon Attenua	
failed.				Jensity lesis
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Comments:		£	·····	

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Copies: Client (3), Billing (1), Field File (1). 6-15/rgo:UNC031

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Western Technologies Inc.

> The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of case, including the akill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guesanty, or representation, either expressed or implied is included or intended.

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Western	400 South Lorena Avenue
Technologies	Farmington, New Mexico 87401
Inc.	(505) 327-4966 • fax 327-5293

Western

The Quality People

Since 1955

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client		Mining & Milling		Job No:		3145JB031
		: Mr. Ed Morales lox 3077		Lab/Invoice No		31450145
	Gallu	ip, NM 87305		Date of Report:	_	06/22/95
Project		1995 Reclamation			_	
Location		Church Rock, New Mexico				
Contracto	r	Nielson Inc.	_ Report By	H. Kuebler	Date	06/20/95
Subject		Testing, Observations	_ Superintendent			

Observations and Action Taken: Nielson Inc. requested compaction testing to begin at 8:00am on 6-20-95 however, the crew had overwatered the area which was to be tested. The new schedule for testing was to be that afternoon. Western Technologies inc. informed Nielson Inc. that the testing area was still too wet. Compaction tests revealed that in Swales H and I RAC material needed to be compacted more. Comments:

Copies: Client (3), Billing (1), Field File (1). 620/dn:unc031

Linte WT d judgement that is re

hua Thomas he REVIEWED BY

3	Inc. The Qua	tern Inologies Ility People 1955	400 South Lorena . Farmington, New I (505) 327-4966 •	Mexico 87401	REP JOB SITE	PORT O	
CLIENT	Attn PO E	Mining & Mi I: Mr. Ed Mor Box 3077 up, NM 8730	ales		JOB NO: LAB/INVOICE I DATE OF REPO		3145JB031 31450185 07/10/95
Project		1995 Recla	mation				
Location		Church Roc	k New Mexico	1			
Contract	or	Nielson Inc.		Report By	H. Kuebler	_ Date	07/06/95
Subject		Observation	IS	Superintendent	James Harris		
1		nd Action Tal cell. Western		Nielson Inc. beg			
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Copies: Client (3), Billing (1), Field File (1). 7-6/rgo:UNCO31

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the shall and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or inpide is included or intended.

4a REVIEWED BY

\mathbf{D}	Western Technologies
	Inc.
	The Quality People
	Since 1055

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

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	Since 1955	· .	REPORT O JOB SITE CONE	
	NC Mining & Milling ttn: Mr. Ed Morales		JOB NO:	3145JB031
	D Box 3077		LAB/INVOICE NO:	31450185
	allup, NM 87305		DATE OF REPORT:	07/11/95
Project	1995 Reclamation			
Location	Church Rock New Mexico			· · · · ·
Contractor	Nielson Inc.	_Report By	H. Kuebler Date	07/07/95
Subject	Testing/Observations	Superintendent		
Observations	and Action Taken:	Nielson Inc. cont	tinued to place Radon A	Attenuation
Cover in sou	th cell. Western Technologies	informed Nielson I	Inc. the west section a	of Borrow Pit
#2 needed to	b be recompacted.			·
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Comments:				
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> The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and cleant. WT warrants that this was performed under the sporporize standard of case, including the skill and judgement that is ensured by expressed for similarly situated professionals. No other warranty, guaranty, or representation, either appressed or implied is included or intereded.

raha nomae REVIEWED BY

Western Technologies

Inc.

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	Unic	e 1955	. *	REP JOB SITE	ORT O	
CLIENT		Mining & Milling		JOB NO:		3145JB031
		: Mr. Ed Morales Box 3077		LAB/INVOICE	NO:	31450185
		ip, NM 87305		DATE OF REPO	DRT:	07/12/95
Project		1995 Reclamation				
ocation		Church Rock New Mexico				
Contracto	or	Nielson Inc.	_ Report By	H. Kuebler	Date	07/10/95
Subject		Testing/Observations	Superintendent			
M		· ····································				
Observat	ions a	nd Action Taken:	Nielson Inc. con	tinued to place F	Radon /	Attenuation
Cover in	south	cell. Compaction testing wa	as to have happen	in west section	of Bor	row Pit #2.
		cell. Compaction testing wave wale l, areas were not ready			of Bor	row Pit #2.
					of Bor	row Pit #2.
					of Bor	row Pit #2.
					of Bor	row Pit #2.
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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of case, including the skill and judgement that is searchably expected from invitanty alturated professionals. No other warranty, guaranty, or representation, sither appressed or invitade in fundad of the skill and dudgement from the standard standard to the standard standard standard and the skill and shadgement that is searchably expected from appressed or invitade in invitade or intended.

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3	Wester Techno Inc. The Quality Since 19	ologies People	400 South Lorena Farmington, New (505) 327-4966 •	Mexico 87401		
	Since 19				REPORT C JOB SITE CON	
CLIENT	Attn: PO Bo Gallup	Aining & Mi Mr. Ed Mor x 3077 , NM 8730	ales 95		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB031 31450185 07/17/95
Project	-	1995 Recla	mation			
Location Contract Subject	tor	Church Roc Nielson Inc. Testing/Obs) Report By Superintendent	H. Kuebler Date James Harris	e <u>07/11/95</u>
		I Action Tal Swales C, F			tinued to place R. A. (taken along east end	
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Western Technologies

Inc.

	The Quali Since				
	Since			REPORT JOB SITE COM	
CLIENT		Mining & Milling		JOB NO:	3145JB031
•		: Mr. Ed Morales lox 3077	·	LAB/INVOICE NO:	31450185
		IP, NM 87305		DATE OF REPORT:	07/17/95
Project		1995 Reclamation			
Location		Church Rock New Mexic			<u></u>
Contracto	or	Nielson Inc.	Report By	<u>H. Kuebler</u> Dat	e <u>07/12/95</u>
Subject		Testing/Observations	Superintendent	James Harris	
				••••••••••••••••••••••••••••••••••••••	
Observati	ions ar	nd Action Taken:	Nielson Inc. con	tinued to place R. A.	C. in south
cell and r	ecomp	bacted Swales H, I, and C	. Western Technolo	gies informed UNC th	e gradation
for D50 -	3.0 fa	ailed specifications, UNC i	nformed Hamilton B	rothers. Moisture sar	nples were
taken on	R.A.C	material from H line to I I	ine in south cell.		·····
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> The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of case, including the skill and judgement that is reasonably arguested from similarly situated professionels. No other warranty, guaranty, or representation, either supressed or included a included or interded.

REVIEWED BY

Inc.	- (50	rmington, New 05) 327-4966 •	fax 327-5293	· · · · · · · · · · · · · · · · · · ·	
The Qu Sin	<u>ality</u> People ace 1955			REPORT JOB SITE COM	
	C Mining & Millin			JOB NO:	3145JB
	n: Mr. Ed Morale Box 3077	es		LAB/INVOICE NO:	314501
	llup, NM 87305			DATE OF REPORT:	07/17/9
Project	1995 Reclama	ation			
Location	Church Rock I	New Mexic	0	·	
Contractor	Nielson Inc.		Report By	H. Kuebler Dat	te <u>07/13</u>
Subject	Testing/Obser	vations	Superintendent	James Harris	· · · · ·
Observations	and Action Taker		Nielsen Ing. com	tinued to place R. A.	C in court
	ests in Swale H, I		gate in Swale B. W	estern Technologies	inc. perion
			gate in Swale B. W		inc. pertori
	ests in Swale H, I		gate in Swale B. W		
	ests in Swale H, I		gate in Swale B. W		
	ests in Swale H, I		gate in Swale B. W		
	ests in Swale H, I		gate in Swale B. W		
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	ests in Swale H, I		gate in Swale B. W		

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The above serv contract, if any appropriate star similarly situate expressed or in me and conditions of the was performed under the reasonably expected from or representation, either lient. WT warrants that this 7 the skill and judgement that is or shat is the

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	lester echno nc. ne Quality	ologies	400 South Lorena Farmington, New (505) 327-4966	Mexico 87401	REPORT	
· ·	Since 195	55			JOB SITE CO	
		Mining & M			JOB NO:	3145JB03
	PO Bo	Mr. Ed Mo x 3077			LAB/INVOICE NO:	31450185
	-	, NM 873			DATE OF REPORT:	07/18/95
Project Location	_	<u>1995 Recla</u>				
Contractor	_	Nielson Inc	k New Mexic	Report By	H. Kuebler Dat	te 07/17/95
Subject		Testing/Ob		Superintendent		
Unservatio	ons and	d Action Ta	ken:	Nielson Inc. cor	ntinued placing KAC ir	i south ceil.
	placer				ntinued placing RAC ir ologies monitored ago	
Aggregate	placer					
Aggregate	placer					
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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WF and client. WT warrants that this was performed under the seproprise standard of care, including the sull and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either screesed or impifed is included or intended.

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from amilarly situated professionals. No other warranty, guaranty, or representation, either annexed no invinise is included on intraded.

REVIEWED BY TROMES Frahe

4				Avenue Mexico 87401 fax 327-5293	REPORT ON JOB SITE CONDITIONS	
CLIENT	Attn: PO Bo	Mining & M Mr. Ed Mo 5x 3077 5, NM 8730	rales		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB031 31450185 07/21/95
Project Location Contracto Subject		1995 Recla	imation :k New Mexico	Report By Superintendent	Dat	
			dicated .35 ag naterial in sout		ess requirements. Nie	elson Inc.
Commen	ts:	······································				
Copies: Cli 7-20/rgo:Ul	ent (3), B VCO31	illing (1), Field	File (1).	cont	above services and isport were performed pur ract, if any, between WT and client. WT war oprists standard of care, including the skill and b any suburds professions. No other werm	iants that this was performed i doemont that is reasonably expe

similarly	intuieted.	professionals.	No oth	er warranty,	guaranty, or	tepresent
expressed	s or impli	ed is included o	n intende	d	1 1	
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400 South Lorena Avenue	
Farmington, New Mexico	
(505) 327-4966 • fax 327	-5293

Western Technologies

The Quality People Since 1955

Inc.

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client		Mining & Milling		Job No:	3145JB031		
		: Mr. Ed Morales 30x 3077		Lab/Invoice No:			
		up, NM 87305		Date of Report:	08/16/95		
Project		1995 Reclamation			· ·		
Location		Church Rock, New Mexico)				
Contracto	or	Nielson's Inc.	Report By	H. Kuebler Date	07/21/95		
Subject		Observations	Superintende	nt James Harris			
Observati	ions a	nd Action Taken:	Nielson's Inc.	Nielson's Inc. did not work today.			
Western [*]	Techn	ologies worked on paperwor	rk and laboratory	work.			
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<u></u>		· · ·		······			
Comment	s:	·					

Copies: Client (3), Billing (1), Field File (1) 721/ha:unc031

The above services and report were performed pursuant to the terms and conditions of the agreement or proposel, if any, between WT and client. WT warrants that this was performed under the appropriate strateded of care, including the will and hidgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation with a sequence or similarly in the professionals.

REVIEWED BY

Inc.	tern Inologies	400 South Lorena A Farmington, New N (505) 327-4966	lexico 87401		
	<u>llity</u> People ce 1955			REPORT (JOB SITE CON	
	C Mining & M			JOB NO:	3145JB03
	n: Mr. Ed Mo Box 3077	orales		LAB/INVOICE NO:	31450185
	up, NM 873	05		DATE OF REPORT:	07/26/95
Project	1995 Recla	amation			
Location	Church Ro	ck New Mexico			
Contractor Subject	<u>Nielson Inc</u> Testing/Ob		_ Report By _ Superintendent	H. Kuebler Date	07/24/9
				· · · · · · · · · · · · · · · · · · ·	
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Copies: Client (3), Billing (1), Field File (1). 7-24/rgo:UNC031

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of case, including the skill and judgement that is reasonably aspected from arriadry situated professionals. No other warranty, gueanty, or representation, either expressed or impired is included or intended.

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Western Technologies

The Quality People Since 1955

Inc.

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LABORATORY REPORT.

REVIEW OF JOBSITE CONDITIONS

Client	UNC Mining & Milling	Job No:	3145JB031
	Attn: Mr. Ed Morales PO Box 3077	Lab/Invoice No:	31450185
	Gallup, NM 87305	Date of Report:	07/27/95
Project	1995 Reclamation	-	
Location	Church Rock, New Mexico		
Contracto	n Nielson, Inc.	Report By <u>H. Kuebler</u> Date	07/25/95
Subject	Observations	Superintendent	
Observati	ons and Action Taken:	Nielson, Inc. continued to place	
aggregate	e bedding in Swale C and also continue	ed to place RAC in the south cell.	
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	·		
Comment	s:		

Copies: Client (3), Billing (1), Field File (1) 725/dn:unc031

> The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client, WT warrants that this was performs under the appropriate strandard of care, including the skill and hidgement that is resemable expected iron winderly situated professionals. No other warranty, puranty, or representation clicks any resented to include the includence or intended.

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Inc. The Quz Since	lity People 2 1955	(505) 327-4966 • f	ax 327-5293	REPORT JOB SITE CON	
	C Mining & M	-		JOB NO:	3145JB03
	i: Mr. Ed Mo Box 3077	rales		LAB/INVOICE NO:	31450185
	up, NM 873	05		DATE OF REPORT:	07/28/95
Project	1995 Recla	amation			
_ocation	Church Roo	ck New Mexico			
Contractor	Nielson Inc	•	_ Report By	H. Kuebler Dat	e <u>07/26/9</u>
Subject	Testing		_ Superintendent	James Harris	••••
n Swale C. M	<u>/estern Tech</u>			ntinued to place aggre b. sieve on D50 - 3.0	
n Swale C. M	<u>/estern Tech</u>				
n Swale C. M	<u>/estern Tech</u>				
n Swale C. M	<u>/estern Tech</u>				
n Swale C. M	<u>/estern Tech</u>			b. sieve on D50 - 3.0	
n Swale C. M	<u>/estern Tech</u>			b. sieve on D50 - 3.0	
n Swale C. M	<u>/estern Tech</u>			b. sieve on D50 - 3.0	
Observations a in Swale C. M Brothers yard.	<u>/estern Tech</u>			b. sieve on D50 - 3.0	

Copies: Client (3), Billing (1), Field File (1). 7-26/rgo:UNC031

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The shove services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client, WT warrants that this was performed under the appropriate and and class, including the skill and pudgement that is reasonably expected from similarly mituated professionals. No other warranty, guaranty, or representation, either appressed or implied is included or interfed.

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			REPORT JOB SITE CON	
NC Mining & M		s	JOB NO:	3145JB03
tn: Mr. Ed Mo D Box 3077	rales		LAB/INVOICE NO:	31450185
	05		DATE OF REPORT:	08/01/95
<u>1995 Recla</u>	mation			
Church Roo	<u>ck New Mexico</u>			
Nielson Inc		_ Report By	H. Kuebler Dat	e <u>07/27/9</u> 5
Testing		Superintendent	James Harris	
egate in Swale	Н.	······		
egate in Swale	Н.	······		
egate in Swale	Н.			
egate in Swale	Н.			
egate in Swale	Н.			
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egate in Swale	Н.			
egate in Swale	Н.			
	<u>1995 Recla</u> <u>Church Roo</u> <u>Nielson Inc</u> <u>Testing</u> and Action Ta	allup, NM 87305 <u>1995 Reclamation</u> <u>Church Rock New Mexico</u> <u>Nielson Inc.</u> <u>Testing</u> and Action Taken:	allup, NM 87305 1995 Reclamation Church Rock New Mexico Nielson Inc. Report By Testing Superintendent and Action Taken: Nielson Inc. recommendent	allup, NM 87305 DATE OF REPORT: 1995 Reclamation

Copies: Client (3), Billing (1), Field File (1). 7-27/rgo:UNC031

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either spreseed or implied is including or intended.

Kuale Thomas REVIEWED BY

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Inc. The Qual	ern nologies ity People	400 South Lorena Av Farmington, New M (505) 327-4966 • fa	exico 87401	REPORT O JOB SITE CON	
Attn: PO B	Mining & Mi : Mr. Ed Mo 3ox 3077 up, NM 8730 1995 Recla	rales 05		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB031 31450185 08/01/95
Location		k New Mexico			<u></u>
Contractor Subject	Nielson Inc Testing		Report By Superintendent	H. Kuebler Date James Harris	07/28/95
			- •	······································	
Nielson Inc. cor tests in south c		ment of RAC sc	buth cell. Western	n Technologies Inc. do	ne density
			· · · · · · · · · · · · · · · · · · ·		
				· · ·	
Comments:	·				

Copies: Client (3), Billing (1), Field File (1). 7-28/rgo:UNC031

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgemont that is reasonably spectred from similarly situated professionals. No other warranty, guaranty, or representation, sither expressed or implied is included or intended.

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	Weste Techr Inc.	ern Iologies	400 South Lorena A Farmington, New M (505) 327-4966 • f	exico 87401		
	The Qualit Since I				REPORT O JOB SITE CON	
CLIENT	Attn: PO B	Mining & M Mr. Ed Mo ox 3077 p, NM 873	rales		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB031 31450185 08/02/95
Project		1995 Recla	amation			
Location		Church Ro	ck New Mexico			
Contracto Subject	or	Nielson Inc Testing		_ Report By _ Superintendent	<u>H. Kuebler</u> Date James Harris	e <u>07/31/95</u>
H & I, pr	ocessin		veen A & C lines	s south cell and pl	tinued to place aggreg aced 1.5 aggregate m hickness in Swale H &	ulch in
H & I, pr	ocessin	g RAC betv	veen A & C lines	s south cell and pl		ulch in
H & I, pr	ocessin	g RAC betv	veen A & C lines	s south cell and pl	aced 1.5 aggregate m	ulch in
H & I, pr	ocessin	g RAC betv	veen A & C lines	s south cell and pl	aced 1.5 aggregate m	ulch in
H & I, pr	ocessin	g RAC betv	veen A & C lines	s south cell and pl	aced 1.5 aggregate m	ulch in
H & I, pr	ocessin	g RAC betv	veen A & C lines	s south cell and pl	aced 1.5 aggregate m	ulch in
H & I, pr	ocessin	g RAC betv	veen A & C lines	s south cell and pl	aced 1.5 aggregate m	ulch in
H & I, pr	ocessin	g RAC betv	veen A & C lines	s south cell and pl	aced 1.5 aggregate m	ulch in

Copies: Client (3), Billing (1), Field File (1). 7-31/rgo:UNC031

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WI and client. WI warrants that this was performed under the appropriate standard of care, including the shall and judgement that is reasonably appreciated from similarly situated purjections. No other waternity, guaranty, or representation, either appreciates are implied is included or intered.

Huske Thomas HEVIEWED BY

Western Technologies

The Quality People

Inc.

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	Since	e 1955		REPORT O JOB SITE CON	
CLIENT	P.O.	Mining & Milling Box 3077 up, NM 87305		JOB NO: LAB/INVOICE NO:	3145JB031 31450243
		i: Ed Morales		DATE OF REPORT:	08/07/95
Project		1995 Reclaimation			
Location		Church Rock, New Mexico			
Contracto	or	Nielson Inc.	_ Report By	H. Kuebler Date	e <u>8/1/95</u>
Subject		Testing and Observations	Superintendent	James Harris	
				······································	<u>,</u>
Observat	ions a	nd Action Taken:	Nielson Inc. plac	ed D ⁵⁰ -1.5 aggregate	in
Borrow F	Pit #2,	reworked grid lined A to C in	South Cell. The	n placed .35 aggregat	e in Swale
H&I. W	/esterr	n Technologies performed me	asurements in Sw	vale H & I. W.T.I. also	o performed
moisture	conte	nts between A & C lines.			
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Copies: Client (3), Billing (1), Field File (1). 81/MK:UNC.031

> The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or models is included or intended.

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he 1 omae ER REVIEWED BY

	The Quali	ty People	(505) 327-4966	v Mexico 87401 • fax 327-5293			
	Since				REPC JOB SITE		
CLIENT		Mining & M	-		JOB NO:		3145JB03*
		Mr. Ed Mo Box 3077	rales		LAB/INVOICE N	10:	31450243
		p, NM 873	05		DATE OF REPO	RT:	08/02/95
Project		1995 Recla	aimation				
Location		Church Roo	ck, NM				
Contracto	or	Nielson Inc	•	Report By	H. Kuebler	Date	08/02/95
Subject			<u></u>	Superintendent	James Harris		i
 Observat	ions ar	d Action Ta	ken:	Nielson Inc. con	tinued to prepare	arid li	ines
				litch for densities te			
•		·					
•		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
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	<u>ality</u> People ¹⁰⁶ 1955			REPORT JOB SITE COM	
	C Mining & M			JOB NO:	3145JB03
	n: Mr. Ed Mo . Box 3077	rales		LAB/INVOICE NO:	31450243
	lup, NM 873	05		DATE OF REPORT:	08/03/95
Project	1995 Recla	aimation			<u></u>
_ocation	CHurch Ro	ck, NM	······		· · · · · · · · · · · · · · · · · · ·
Contractor	Nielson Inc	, 	Report By	H. Kuebler Dat	e <u>08/03/9</u>
Subject	With The State of St		Superintendent	James Harris	
n South cell a hickness of D	nd repair Wes 50-1.5 aggree	st section in bo	prrow pit #2. West	tinued to place D50-1 ern Technologies mea t #2. Thickness appe	asured
n South cell a hickness of D	nd repair Wes 50-1.5 aggree	st section in bo	prrow pit #2. West	ern Technologies mea	asured
n South cell a hickness of D	nd repair Wes 50-1.5 aggree	st section in bo	prrow pit #2. West	ern Technologies mea	asured
n South cell a thickness of D	nd repair Wes 50-1.5 aggree	st section in bo	prrow pit #2. West	ern Technologies mea	asured
n South cell a thickness of D	nd repair Wes 50-1.5 aggree	st section in bo	prrow pit #2. West	ern Technologies mea	asured
	nd repair Wes 50-1.5 aggree	st section in bo	prrow pit #2. West	ern Technologies mea	asured

Copies: Client (3), Billing (1), Field File (1) 8.2\kb:UNC031

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and diant. WT werrants that this was performed under the appropriate standard of care, including the shall and pudgement that is reasonably expected from similarly situated professionals. No other werranty, guesanty, or representation, either appressed or implied is included or intended.

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Inc The Q	chnologies	400 South Lorenz Farmington, New (505) 327-4966	Mexico 87401	F	
				REPORT O JOB SITE CON	
	NC Mining & M			JOB NO:	3145JB03
	tn: Mr. Ed Mo 0. Box 3077	rales		LAB/INVOICE NO:	31450243
	allup, NM 873	05		DATE OF REPORT:	08/04/95
Project	1995 Recla	aimation			<u></u>
Location	CHurch Ro		·····		- 1
Contractor	Nielson Inc		Report By	H. Kuebler Date	08/04/9
Subject			Superintendent	James Harris	· · ·
	and Action Ta	ken:	Nielson Inc. con	tinued to place D50-1	.5 aggregat
Observations in South cell.		ken:	Nielson Inc. con	tinued to place D50-1	.5 aggregat
			Nielson Inc. con	tinued to place D50-1	.5 aggregati
			<u>Nielson Inc. con</u>	tinued to place D50-1	.5 aggregat
			<u>Nielson Inc. con</u>	tinued to place D50-1	.5 aggregati
			<u>Nielson Inc. con</u>	tinued to place D50-1	.5 aggregato
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			<u>Nielson Inc. con</u>	tinued to place D50-1	.5 aggregate
			Nielson Inc. con	tinued to place D50-1	.5 aggregati

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2	Western Technologies
	Inc.
	The Quality People
	Since 1955

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

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		ч. Т	JOB SITE CON	
	C Mining & Milling). Box 3077		JOB NO:	3145JB031
	lup, NM 87305		LAB/INVOICE NO:	31450243
	n: Ed Morales		DATE OF REPORT:	08/10/95
Project	1995 Reclaimation			
Location	Church Rock, New Mexico			-
Contractor	Nielson Inc.	_Report By	H. Kuebler Date	e <u>8/8/95</u>
Subject	Testing and Observations	_Superintendent	James Harris	
				•
Observations	and Action Taken:	Nielson Inc. beg	an to place .02 sand i	n north
runoff ditch.	Existing surface grade is wea	thered sandstone	and shale. No density	/ test
can be perform	ned. Nielson Inc. continued t	o place D ⁵⁰ - 1.5 a	ggregate in the south	cell.
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				······································
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Copies: Client (3), Billing (1), Field File (1). 88/MK:UNC.031

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Western Technologies

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Sinc	re 1955		REPORT C JOB SITE CON	
CLIENT UNC	Mining & Milling		JOB NO:	3145JB031
	Box 3077 up, NM 87305		LAB/INVOICE NO:	31450243
	a: Ed Morales		DATE OF REPORT:	08/16/95
Project	1995 Reclamation			
Location	Church Rock, New Mexico			
Contractor	Nielson's Inc.	_ Report By	H. Kuebler Date	8/9/95
Subject	Testing and Observations	Superintendent	James Harris	
Observations a	nd Action Taken:	Nielson's Inc. co	ontinued to place D ⁵⁰ -1	.5 aggregate
in the south ce	II. Nielson's Inc. crew were			
	······································	······································		
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Comments:				

Copies: Client (3), Billing (1), Field File (1). 89/ha:UNC.031

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	estern echnologies c.	400 South Lorena A Farmington, New N (505) 327-4966 • f	lexico 87401		
	Quality People Since 1955			REPORT JOB SITE CON	
P G A	NC Mining & Mi .O. Box 3077 allup, NM 8730 .ttn: Ed Morales	5	,	JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB03 31450243 08/16/95
Project Location	<u>1995 Recla</u>	k, New Mexico	······································	<u> </u>	
Contractor Subject	Nielson's In	iC.	_Report By _Superintendent	H. Kuebler Dat James Harris	e <u>8/10/95</u>
D ⁵⁰ -1.5 aggr		nimum of 3" no	maximum thickne	Stated soil cover on ess was required. I in	formed
D ⁵⁰ -1.5 aggr James Harri stated no re	regate was a mir s, Larry Bush, th placement techr	nimum of 3" no nat I was not go nician was need	maximum thickne ing to be on the s ed. Nielson's Inc.		formed They 501.5
D ⁵⁰ -1.5 aggr James Harri stated no re	regate was a mir s, Larry Bush, th placement techr	nimum of 3" no nat I was not go nician was need	maximum thickne ing to be on the s ed. Nielson's Inc.	ess was required. I in site Monday 8-14-95. continued to place D	formed They 501.5
D ⁵⁰ -1.5 aggr James Harri stated no re	regate was a mir s, Larry Bush, th placement techr	nimum of 3" no nat I was not go nician was need	maximum thickne ing to be on the s ed. Nielson's Inc.	ess was required. I in site Monday 8-14-95. continued to place D	formed They 501.5

Copies: Client (3), Billing (1), Field File (1). 810/ha:UNC.031

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REVIEWED BY

Western

The Quality People Since 1955

Inc.

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Technologies

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client			•	Job No:		3145JB031
PO Box 3077 Gallup, NM 87305		Lab/Invoice No:			31450243	
	Attn:	Ed Morales	1	Date of Report:		8-18-95
Project		1995 Reclamation				
Location		Church Rock, NM				
Contractor	r	Nielson's Inc.	Report By	H. Kuebler	Date	8-14-95
Subject	t Testing and Observations		Superintendent	James Harris		

Observations and Action Taken:	Western Technologies did not work today.			
Nielson's Inc. was rained out.				
	·			
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Comments:				

Copies: Client (3), Billing (1), Field File (1). 814\ha:UNC031

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Western Technologies Inc. The Quality People Since 1955

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

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client			Job No:		-	3145JB031
PO Box 3077 Gallup, NM 87305		Lab/Invoice No:			31450243	
	Attn: E	Ed Morales	t	Date of Report:	_	8-18-95
Project	-	1995 Reclamation				
Location	_(Church Rock, NM				
Contracto	r. <u>1</u>	Vielson's Inc.	Report By	H. Kuebler	Date	8-15-95
Subject		Testing and Observations	Superintendent	James Harris		

 Observations and Action Taken:
 Western Technologies worked paperwork.

 Nielson's Inc. pumped out water from swales from previous nights rain.

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Comments:

Copies: Client (3), Billing (1), Field File (1). 815/ha:UNC031

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Inc.

Technologies

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client				Job No:		3145JB031
		ox 3077 p, NM 87305		Lab/Invoice No:		31450243
		Ed Morales		Date of Report:	_	8-23-95
Project		1995 Reclamation				
Location		Church Rock, NM				•
Contractor	r	Nielson's Inc.	Report By	H. Kuebler	Date	8-16-95
Subject		Testing and Observations	_ Superintendent	James Harris		<u></u>

Observations and Action Taken:Nielson's Inc. repaired areas of site thatwere eroded from previous rains.Western Technologies and UNC visited Hamilton Brothersto observe D⁵⁰-9 inch crushing operation.

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Comments:					

Copies: Client (3), Billing (1), Field File (1). 816\ha:UNC031

> The above services and report were performed pursuant to the terms and conditions of the agreement or proposel, if any, between WT and clent. WT warrants that this was performed under the appropriate strandard of care, including the shill and judgement that is reasonable expected from employ airuated professionals. No other warranty, guaranty, or representation other explorated or includent? Thandard or "Alton and the warrant of the second be after an another the manual or the second be after an another and the manual of the second be after an another and the manual of the second be after an another and the second be after an another and the second be after an another and the second be after an another and the second be after an another second be after an another and after an another and after an another and after after a second be after a second be after a second be a second after a

REVIEWED B

Western Technologies Inc.

The Quality People Since 1955

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LABORATORY REPORT

		REVIEW OF JC	BSITE CONDITIO	ONS	
Client		ning & Milling		Job No:	3145JB031
	PO Box 3077 Gallup, NM 87305 Attn: Ed Morales			Lab/Invoice No:	31450243
				Date of Report:	
Project	_19	95 Reclamation			
Location	<u></u>	urch Rock, NM			
Contracto	or <u>Ni</u>	elson's Inc.	Report By	H. Kuebler Dat	e <u>8-21-95</u>
Subject	<u></u>	esting and Observations	Superintenden	t <u>James Harris</u>	
Observat	ions and A	Action Taken:	Nielson's Inc.	was rained out. Wes	tern
Technolo	gies devel	loped report.			
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Comment	ts:	· · · · · · · · · · · · · · · · · · ·			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
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Copies: C	lient (3),	Billing (1), Field File (1).			<u></u>

The above services and report were performed pursuant to the terms and conditions of the agreement or proposed, if any, between WT and client, WT warrants that this was performed under the appropriate standard of care, including the shill and judgement that is reasonably expected from similarly situated professionals. No other warranty, pursuanty, or representation,

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	Technolog Inc. The Quality People Since 1955		Farmington, N (505) 327-496	Vew Mexico 87401 56 • fax 327-5293		EPORT C	ON DITIONS
CLIENT	UNC Minin				JOB NO:		3145JB03
	Attn: Mr. Ed Mora PO Box 3077		ales		LAB/INVOIC	E NO:	31450243
	Gallup, NM		5		DATE OF RE	EPORT:	8-29-95
Project	1995	5 Recla	mation				
Location	Chur	ch Roc	k, NM				
Contract	or <u>Niels</u>	on's In	с.	Report By	H. Kuebler	Date	8-22-95
Subject	Proje	ct Spe	cifications	Superintenden	it James Harri	S	
	tions and Act		ken:	Job site shut	down until 8-28	-95 due	to rain
	dy conditions	s. Wes	stern Techn	ologies will be work	king on reports.		
	dy conditions	s. Wes	stern Techn	ologies will be work	ing on reports.	·····	
	dy conditions	s. Wes	stern Techn	ologies will be work	ing on reports.		
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822\ha:UNC031

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Western

The Quality People Since 1955

Inc.

Technologies

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client	UNC Mining & Milling	Job No:		3145JB031
	PO Box 3077 Gallup, NM 87305	L	ab/Invoice No:	31450243
	Attn: Ed Morales	C	ate of Report:	9-6-95
Project	1995 Reclamation		·	·····
Location	Church Rock, NM	······································		
Contracto	Nielson's Inc.	_Report By	H. Kuebler	Date <u>8-28-95</u>
Subject	Testing and Observations	_ Superintendent	James Harris	
r				
Observati	ons and Action Taken:	Previous weeke	nd rain prevente	ed Nielson's
Inc. from	working on site. Western Technolog	gies performed lab	oratory testing.	
Nielson's	Inc. pumped water from south cell.			
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Comments:

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Copies: Client (3), Billing (1), Field File (1). 828/ha:UNC031

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LABORATORY REPORT

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	Western
	Technologies
	Inc,
	The Quality People
*	Since 1055

REVIEW OF JOBSITE CONDITIONS

Client		Mining & Milling		Job No:	_	3145JB031
		lox 3077 lp, NM 87305	L	ab/Invoice No:		31450243
	Attn	Ed Morales	Ē	Date of Report:		9-1-95
Project		1995 Reclamation				· · · · · · · · · · · · · · · · · · ·
Location		Church Rock, NM	· ·			
Contracto	r	Nielson's Inc.	Report By	H. Kuebler	Date	8-29-95
Subject		Testing and Observations	Superintendent	James Harris		

 Observations and Action Taken:
 Site condition still muddy. Nielson's Inc.

 did not work today.
 Western Technologies performed laboratory tests (Sieves & PI).

 I discussed with Ed Morales how many scoring results on aggregate was needed per aggregate class.
 Mr. Morales stated three scores. I had stockpiled samples from earlier Sieve samples and I will submit to Farmington for scoring tests.

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Comments:				,		

Copies: Client (3), Billing (1), Field File (1). 829\ha:UNC031

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Western Technologies

The Quality People Since 1955

Inc.

LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client		Mining & Milling		Job No:	3145JB031
· •		Mr. Ed Morales		Lab/Invoice No:	31450243
		p, NM 87305		Date of Report:	08/30/95
Project		1995 Reclamation			
Location		Church Rock, New Mexico			
Contractor	r '	Nielson Inc.	Report By	H. Kuebler Date	08/30/95
Subject		Observations, testing	Superintenden	t <u>James Harris</u>	
Observatio	ons ar	nd Action Taken:	Western Tech	nologies worked on la	boratory
tests for f	<u>our (4</u>) hours in the Gallup Office.	Nielson Inc. cont	inued to excavate	
diversion of	chann	el in south cell.		· · ·	
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REVIEWED BY

	Inc. The Qual	nologies	400 South Lorena Avent Farmington, New Mexic (505) 327-4966 • fax 3	0 87401		
	Since	1955	• •	·	LABORATORY	REPORT
			REVIEW OF JOE	BSITE CONDITIO	DNS .	
Client		Mining & Mil	ling		Job No:	3145JB031
		ip, NM 87305	5		Lab/Invoice No:	31450243
	Attn:	Ed Morales			Date of Report:	9-6-95
Project		1995 Reclar	mation			
Location		Church Rocl				· · · · · · · · · · · · · · · · · · ·
Contracto	or	Nielson's Inc	· ·	Report By	H. Kuebler Date	8-31-95
Subject		Testing and	Observations	Superintenden	t <u>James Harris</u>	
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Comment	s:					
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Copies: Client (3), Billing (1), Field File (1). 831/ha:UNC031

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<u>~</u>_ Ins REVIEWED BY ٢

Western 400 South Lorena Avenue **Technologies** Farmington, New Mexico 87401 Inc. (505) 327-4966 • fax 327-5293 REPORT ON The Quality People Since 1955 JOB SITE CONDITIONS CLIENT **UNC Mining & Milling** JOB NO: 3145JB031 Attn: Mr. Ed Morales LAB/INVOICE NO: 31450292 PO Box 3077 Gallup, NM 87305 DATE OF REPORT: 9-11-95 Project 1995 Reclamation Location Church Rock, NM Contractor Report By H.K. Date 9-5-95 Nielson's Inc. Subject Testing and Observations Superintendent James Harris **Observations and Action Taken:** Nielson's Inc. repaired areas in swales where previous rains had eroded .02 sand. Nielson's Inc. placed additional soil on D⁵⁰-1.5 aggregate mulch in Borrow Pit #2 where low elevations to prevent "ponding". Comments:

Copies: Client (3), Billing (1), Field File (1). 95\ha:UNC031

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Tec Inc. The Qu	tern hnologies ality People ree 1955	400 South Lorena A Farmington, New N (505) 327-4966 •	Aexico 87401	REPORT JOB SITE CON	
Attr PO Gali	C Mining & Mi n: Mr. Ed Mora Box 3077 up, NM 8730	ales 5		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB031 31450292 9-11-95
Project Location	1995 Recla Church Roc				
Contractor Subject	Nielson's In	iC.	_ Report By _ Superintendent		e <u>9-6-95</u>
· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
Comments:					

Copies: Client (3), Billing (1), Field File (1). 96\ha:UNCO31

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The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the shill and judgement that is reasonably expected from similarly without of professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

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5	Techi Inc. The Quali Since		400 South Lorena A Farmington, New N (505) 327-4966	Aexico 87401	REPORT JOB SITE CON	
CLIENT	UNC	Mining & Mi	ling	· ·	JOB NO:	3145JB03
		Mr. Ed Mora	lles	,	LAB/INVOICE NO:	31450292
	Gallu	p, NM 8730	5		DATE OF REPORT:	9-14-95
Project		1995 Recla	mation			
Location		Church Roc	k, NM			
Contracto	or	Nielson's In	c	_ Report By	Date	ė <u>9-11-95</u>
Subject		Testing and	Observations	_ Superintendent	James Harris	<u></u>
and D ⁵⁰ 1.	.5 aggr		th cell control c	litch. Western Te	ontinued to place D ⁵⁰ chnologies measurem n South cell control di	ent
and D ⁵⁰ 1.	.5 aggr	egate in sou	th cell control c	litch. Western Te	chnologies measurem	ent
and D ⁵⁰ 1.	.5 aggr	egate in sou	th cell control c	litch. Western Te	chnologies measurem	ent
and D ⁵⁰ 1	.5 aggr	egate in sou	th cell control c	litch. Western Te	chnologies measurem	ent
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and D ⁵⁰ 1.	.5 aggr	egate in sou	th cell control c	litch. Western Te	chnologies measurem	ent
and D ⁵⁰ 1.	.5 aggr	egate in sou	th cell control c	litch. Western Te	chnologies measurem	ent
and D ⁵⁰ 1.	.5 aggr	egate in sou	th cell control c	litch. Western Te	chnologies measurem	ent
and D ⁵⁰ 1.	.5 aggr s of D ⁵⁰	egate in sou	th cell control c	litch. Western Te	chnologies measurem	ent

Copies: Client (3), Billing (1), Field File (1). 911\ha:UNCO31

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2		ern nologies	400 South Lorena A Farmington, New M	lexico 87401				
		ity People	(505) 327-4966 • f	ax 327-5293		PORT C	DITIONS	
CLIENT		Mining & Mi Mr. Ed Mora			JOB NO:	:	3145JB0	31
		lox 3077	ales		LAB/INVOICE	NO:	3145029	18
	Gallu	ip, NM 8730	5		DATE OF REF	ORT:	9-14-95	•
Project		<u>1995 Recla</u>	mation					
Location		Church Roc	k, NM					
Contract	or	Nielson's In	с	_Report By	НК	Date	9-12-9	5
Subject		Testing and	Observations	Superintendent	James Harris			
and D ⁵⁰ 1 thicknes		regate in sou	th cell control o	litch. Western T	echnologies mor	nitored		
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C Ç REVIEWED BY -

2	Weste Techi Inc. The Quali Since	v People	400 South Lorena A Farmington, New M (505) 327-4966 • f	lexico 87401	REP JOB SITE	ORT C	
CLIENT		Mining & Mi			JOB NO:		3145JB03
		Mr. Ed Mora	ales		LAB/INVOICE	NO:	31450292
	Gallu	p, NM 8730	5		DATE OF REPO	DRT:	9-18-95
Project		1995 Recla	mation				·
Location		Church Roo	k, NM				
Contract	or	Nielson's In	iC	_Report By	НК	_ Date	9-13-95
Subject		Testing and	Observations	_ Superintendent	James Harris		· · · · · · · · · · · · · · · · · · ·
and D ⁵⁰ 1	.5 aggr			Nielson's Inc. cc hannel. Western 5 aggregate.			
and D ⁵⁰ 1	.5 aggr	egate in sou	th cell control c	hannel. Western			
and D ⁵⁰ 1	.5 aggr	egate in sou	th cell control c	hannel. Western			
and D ⁵⁰ 1	.5 aggr	egate in sou	th cell control c	hannel. Western			

Copies: Client (3), Billing (1), Field File (1). 913\ha:UNC031

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REVIEWED BY

Tech Inc. The Qua	tern inologies Lity People e 1955	400 South Lorena A Farmington, New N (505) 327-4966 • f	exico 87401	REPORT JOB SITE CON	
Attr	Mining & Mi : Mr. Ed Mora 30x 3077			JOB NO: LAB/INVOICE NO:	3145JB03 31450292
	up, NM 8730	5		DATE OF REPORT:	9-18-95
Project Location	<u>1995 Recla</u> Church Roc		·····	······································	·
Contractor Subject	Nielson's In Testing and	c. Observations	_ Report By _ Superintendent	HK Dat James Harris	e <u>9-14-95</u>
				ontinued place aggreg anufacture D ⁵⁰ -9" MPI	RAP. A
			thers began to m	anufacture D ⁵⁰ -9" MPI	RAP. A
			thers began to m	anufacture D ⁵⁰ -9" MPI	RAP. A
			thers began to m	anufacture D ⁵⁰ -9" MPI	RAP. A

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4	Weste Techi Inc. The Quali Since	nologies ty People	400 South Lorena A Farmington, New M (505) 327-4966 • f	lexico 87401	REPORT JOB SITE COM	
CLIENT		Mining & Mi Mr. Ed Mora			JOB NO:	3145JB031
		ox 3077			LAB/INVOICE NO:	31450292
	Gallu	p, NM 8730	5		DATE OF REPORT:	9-25-95
Project		1995 Recla	mation			
Location		Church Roc	k, NM			
Contracto	or	Nielson's In	с.	_ Report By	HK Dat	te <u>9-22-95</u>
Subject		Testing and	Observations	Superintendent	James Harris	
JNC wro	ote a pu	inch list to fi	nish project.	Nielson's Inc. di		
	ote a pu	inch list to fi	nish project.			
	pte a pu	Inch list to fi	nish project.			
	pte a pu	Inch list to fi	nish project.			

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Inc The C	chnologies u <u>ality</u> People since 1955	Farmington, New M (505) 327-4966 • f	lexico 87401 ax 327-5293	REPORT O JOB SITE CON	
	NC Mining & M			JOB NO:	3145JB03
	tn: Mr. Ed Mor DBox 3077	ales		LAB/INVOICE NO:	31450292
Ga	illup, NM 8730	05		DATE OF REPORT:	9-28-95
Project	1995 Recla	amation			
Location	Church Ro	ck, NM			
Contractor	Nielson's li	nc.	_Report By	HK Date	9-25-95
Subject	Testing an	d Observations	Superintendent	James Harris	···
Observations	and Action Ta	iken:	Nielson's Inc. re	paired areas on punch	list.
Observations	and Action Ta	ıken:	· · · · · · · · · · · · · · · · · · ·	paired areas on punch	list.
Observations	and Action Ta	iken:	· · · · · · · · · · · · · · · · · · ·	paired areas on punch	list.
Observations	and Action Ta	iken:	· · · · · · · · · · · · · · · · · · ·	paired areas on punch	list.
Observations	and Action Ta	iken:	· · · · · · · · · · · · · · · · · · ·	paired areas on punch	list.
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Observations	and Action Ta	iken:	· · · · · · · · · · · · · · · · · · ·	paired areas on punch	list.

Copies: Client (3), Billing (1), Field File (1). 925\ha:UNCO31

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	Wester Tech Inc. The Quali Since	nologies	400 South Lorena / Farmington, New / (505) 327-4966 •	Mexico 87401	REPORT C JOB SITE CON	
CLIENT		Mining & Mil			JOB NO:	3145JB03
		Mr. Ed Mora	lles		LAB/INVOICE NO:	31450292
		p, NM 8730	5		DATE OF REPORT:	9-28-95
Project		1995 Recla	mation			·
Location		Church Roc	<u>k, NM</u>		·	
Contracto	r	Nielson's In	с	_Report By	HKDate	9-26-95
Subject		Testing and	Observations	Superintendent	James Harris	
<u>checked r</u>	repairs		ken:	Nielson's Inc. di to Hamilton Brothe	dn't work today. WTI ers to do sieve analysis	
<u>checked r</u>	repairs	on punch lis	cen: t and traveled t	Nielson's Inc. di to Hamilton Brothe	dn't work today. WTI	
<u>checked r</u>	repairs	on punch lis	cen: t and traveled t	Nielson's Inc. di to Hamilton Brothe	dn't work today. WTI	
<u>checked r</u>	repairs	on punch lis	cen: t and traveled t	Nielson's Inc. di to Hamilton Brothe	dn't work today. WTI	
<u>checked r</u>	repairs	on punch lis	cen: t and traveled t	Nielson's Inc. di to Hamilton Brothe	dn't work today. WTI	
<u>checked r</u>	repairs	on punch lis	cen: t and traveled t	Nielson's Inc. di to Hamilton Brothe	dn't work today. WTI	
<u>checked r</u>	repairs	on punch lis	cen: t and traveled t	Nielson's Inc. di to Hamilton Brothe	dn't work today. WTI ers to do sieve analysis	

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14. <u>1</u>.

The above services and report wers performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT werrants that this was performed under the appropriate standard of care, including the skill and hydrement that is reasonably expressed from similarly altuated professionals. No other warranty, guaranty, or representation, either atomsmd or immide is indified or bridged

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Inc. The Qu	tern nologies ality People ce 1955	400 South Lorena A Farmington, New M (505) 327-4966 • f	lexico 87401	REPORT ON JOB SITE CONDITIONS			
Attr PO	C Mining & M n: Mr. Ed Mor Box 3077 up, NM 8730	ales		JOB NO: LAB/INVOICE NO: DATE OF REPORT:	3145JB031 31450292 9-28-95		
Project Location	1995 Recla						
Contractor Subject	Nielson's Ir		_ Report By _ Superintendent	HK Dat James Harris	e <u>9-27-95</u>		
Observations a D- ⁵⁰ -9 inch sie		мбп. _:	<u> </u>	Western Technologies			
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·····					······································		
				· · · · · · · · · · · · · · · · · · ·			
				······			
Comments:	<u> </u>				·· <u>···</u> ·······························		

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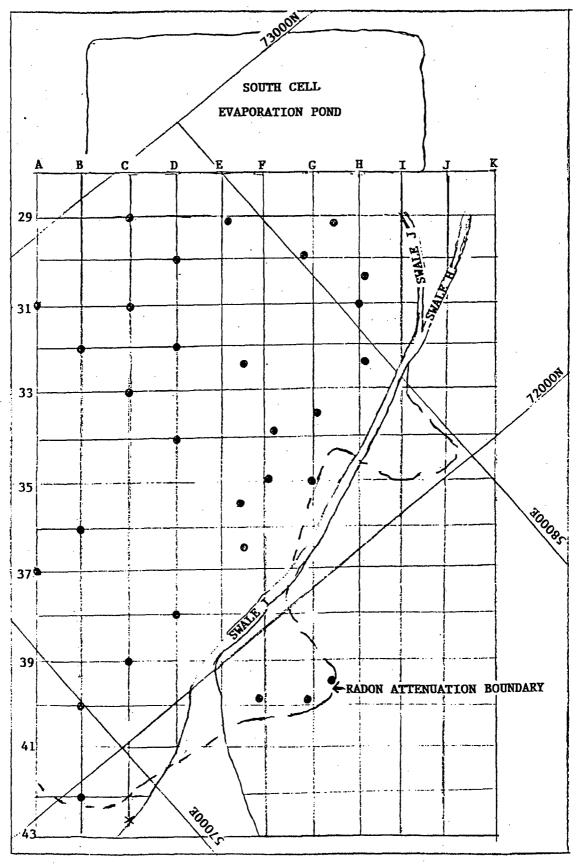
> The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WT and client. WT warrants that this was performed under the appropriate standard of case, including the shall and budgement thus; is resortably reported from similarly situated protessiones. No other warranty, guaranty, or representation, either expressed or implied is loaded or intender.

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APPENDIX B

PHYSICAL PROPERTIES OF SOILS, RADON ATTENUATION COVER



SIEVE LOCATION SOUTH CELL

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR RADON ATTENUATION MATERIAL

DATE OF REPORT 12/07/95

SOUTH CELL

DATE	SAMPLE LOCATION	% PASS 3/4" SPEC. 95-100%	% PASS #4 SPEC. 90-100%	% PASS #10 SPEC. 85-100%	% PASS #40 SPEC. 65-100%	% PASS 100 SPEC. 50-100%	% PASS 200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
03/02/95	S. of S. Cell Borrow Area	100	100	99	95	77	51.0	7	CL	Yes
03/02/95	Center of S. Cell Borrow Area	100	99	97	90	71	41.0	7	CL	Yes
03/02/95	N. of S. Cell Borrow Area	. 100	96	92	86	77	63.0	14	CL	Yes
07/13/95	F.8+39.8	100	94	90	85	52	40.3	11	CL	Yes
07/13/95	H.2+30.4	99	98	97	88	63	51.2	· 29	CL	Yes
07/18/95	C+39	100	95	93	87	60	43.8	3	SM	Yes
07/18/95	G.3+33.4	100	100	95	93	. 78-	58.7	11	CL	Yes
07/18/95	F.9+29.7	100	100	⁻ 96	94	80	57.2	11	CL	Yes
07/18/95	G.5+29.2	100	99	98	96	- 81	57.1	13	CL	Yes
07/18/95	F.1+34.9	100	100	` 98	96	80	56.1	12	CL	Yes
07/18/95	E.3+29.2	100	95	94	91	76	54.0	10 ·	CL	Yes
07/18/95	` E.5+32.5	100	98	96	93	75	52.4	13	CL	Yes

cb/1995.UNC/6

Dist: Client (3) Field File (1) Billing (1)

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. <u>3145JB031</u>

TEST SUMMARY FOR RADON ATTENUATION MATERIAL

DATE OF REPORT <u>12/07/95</u>

SOUTH CELL

DATE	SAMPLE LOCATION	% PASS 3/4" SPEC. 95-100%	% PASS #4 SPEC. 90-100%	% PASS #10 SPEC. 85-100%	% PASS #40 SPEC. 65-100%	% PASS 100 SPEC. 50-100%	% PASS 200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
07/19/95	E.5+36	100	97	95	91	75	47.5	4	CL	Yes
07/19/95	E.8+39.8	100	95	93	83	- 73	48.6	12	CL	Yes
07/19/95	G.5+39.5	100	97	95	92	65	53.1	11	CL	Yes
07/21/95	D+34	100	98	97	85	72	58.6	17	CL	Yes
07/27/95	C+33	100	98	96	93	80	53.4	10	CL	Yes
07/27/95	C + 29	100	95	94 ·	. 92	61	39.8	2	ML	Yes
07/29/95	C+31	99	930	91	88	59	46.0	16	CL	Yes
07/95	H+31	100	100	97	95	74	55.9	14	CL	Yes
07/95	H.2+32.3	100	99	98	96	83	61.8	20	CL	Yes
07/95	A+31	100	98	96	. 93	73	56.8	11	CL	Yes
07/95	G+35	100	99	96	94	79	55.9	7	CL	Yes
07/95	C+43	. 100	92	91	84	48	43.3	NP	SM	Yes

cb/1995.UNC/7

Dist: Client (3) Field File (1) Billing (1)

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR RADON ATTENUATION MATERIAL

SOUTH CELL

DATE	SAMPLE LOCATION	% PASS 3/4" SPEC. 95-100%	% PASS #4 SPEC. 90-100%	% PASS #10 SPEC. 85-100%	% PASS #40 SPEC. 65-100%	% PASS 100 SPEC. 50-100%	% PASS 200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. 7
07/95	A + 37	96	92	90	84	48	41.7	NP	SM	Yes
07/95	D + 38	100	97	94	90	66	53.2	15	CL	Yes
07/95	D + 30	100	100	94	91	69	47.0	NP	SM	Yes
07/95	D + 32	100	98	96	93	76	51.0	10	CL	Yes
07/95	. B+32	100	96	92	86	68 -	47.3	10	CL	Yes
07/95	B+42	100 -	94	89	78	54	40.2	NP	SM	Yes
07/95	B + 38	96	87	85 _	78	53	40.3	NP	SM	Yes
09/01/95	F.2+33.8	100	98	97	95	80	56.0 [`]	7	CL	Yes
09/30/95	8+36	100	95	92	89	63	42.3	4	ML-CL	Yes
-									······································	

cb/1995.UNC/B

Dist: Client (3) Field File (1) Billing (1)

DATE OF REPORT <u>12/07/95</u>

LABORATORY REPORT

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & M			Jo	ob No.	3145JB031
	Attn: Mr. Ed Mo PO Box 3077	orales		L	ab/Inv. No.	31450051
	Gallup, NM 873	05		R	eport Date:	03/07/95
Project:	1995 Reclaimatio	n				
Location:	Church Rock, NN	М	•			
Material:	Sandy/silty Clay		Sampled By:	H. Kuebler	Date	03/02/95
Source:	S of S cell, borro	w area	Submitted By:	H. Kuebler	Date	03/02/95
			Authorized By:	Client	Date	03/02/95
SIEVE AN	ALYSIS, ASTM C	136 & C117		<u></u>		<u></u>
Sieve	% Passing	Specification				,
Size	Accumulative	(As Required)	· ·			
2"	· · ·					
1-1/2"						
1-1/8"						
1"		······································				
3/4"	100	95-100	Plasticity Index, A	ASTM D4318		
1/2"			Liquid Limit			27
3/8"			Plasticity Index			7
1/4"	100					
<u>No. 4</u>	100	90-100				
	99			• :	,	
10	99	85-100				
16	98			÷		·
30	96					
40	95	65-100				
50	93					
100	77	50-100				
200	51	40-85				•

Copies: Client (3), Billing (1), Field File (1) 1:unc.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I Attn: Mr. Ed M				lob No.	3145JB031
	PO Box 3077		. •	I	Lab/Inv. No.	31450051
	Gallup, NM 873			F	Report Date:	03/07/95
Project:	1995 Reclaimatio	on				
Location:	Church Rock, NI	<u>M</u>	·			
Material:	Silty/clay Sand		Sampled By:	H. Kuebler	Date	03/02/95
Source:	Center of S cell,	borrow area	Submitted By:	H. Kuebler	Date	03/02/95
			Authorized By:	Client	Date	03/02/95
SIEVE AN	ALYSIS, ASTM C	136 & C117				
Sieve	% Passing	Specification				
Size	Accumulative	(As Required)				
2"						
1-1/2"						
1-1/8"		······································				
1"						
3/4"	100	95-100	Plasticity Index, A	STM D4318	······································	-
1/2"		·.	Liquid Limit			25
3/8"	100		Plasticity Index			7
1/4"				, , , , , , , , , , , , , , , , , , ,		·
No. 4	99	90-100				
8`	97	`	· · · · · · · · · · · · · · · · · · ·			
10	97	85-100			·.	
16	94			۰.		
30	91	•	· · ·		•	
40	90	65-100				,
50	88				· ·	
100	71	50-100				
100						

n:unc.031

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonally expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implicit is included or intended.

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3	Western Technolog Inc. The Quality Peopl Since 1955	(505) 327-496	ena Avenue ew Mexico 87401 6 • fax 327-5293 ROPERTIES OF AGG	REGATES	LA	BORAT	ORY REPORT
Client:	UNC Mining & 1 Attn: Mr. Ed M PO Box 3077				Job No Lab/Inv		3145JB031 31450051
	Gallup, NM 873	305			Report		12/04/95
Project:	1995 Reclamation	n					
Location:	Church Rock, Ne	ew Mexico					
Material:	Sandy Lean Clay	,	Sampled By:	H. Kuebler	/WT	Date	03/02/95
Source:	N of S Cell, Bor	row Area	Submitted By:	H. Kuebler	· /WT	 Date	03/02/95
		*****	Authorized By:	Client	, ·	 Date	03/02/95
	ALYSIS, ASTM C						
Sieve	% Passing	Specification					
Size	Accumulative	(As Required)	Maistura Dansity	Deletions not	(- D609 M	: (A had a)
15"	100	100	Moisture Density		(ASIM	D098 M	
10"	88	45 - 58	Maximum Dry De				<u>N/A</u>
5"	35	10 - 33	Optimum Moistur	E, 70			<u>N/A</u>
3"	2.4	0 - 23					
3/4"	100	95 - 100	Plasticity Index, A	ASIM D4318	···········		- 24
1/2"	99		Liquid Limit				34
3/8"	98	·····	Plasticity Index				14
1/4"							
No. 4	96	90 - 100					
8	93	·····					
10	92	85 - 100					
	90	······					
16	07						
16 30	87						
	87	65 - 100					
30		65 - 100					
30 40	86	65 - 100 50 - 100					

3.2/dn:unc031

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job N	lo.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/I	nv. No.	31450185
	Gallup, NM 87305		Repor	rt Date:	10/04/95
Project:	1995 Reclamation				
Location:	Church Rock, New Mexico				
Material:	Sandy Lean Clay	Sampled By:	C.P. & H.K.	Date	07/13/95
Source:	F.8 + 39.8 72820N & 57370E	Submitted By:	C. Padilla	Date	07/14/95
	Elevation 6957.0	Authorized By:	Client	Date	07/13/95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2*		
1-1/8*		
1"	100	
3/4"	100	95-100
1/2*	98	
3/8"	97	
1/4"		
No. 4	94	90-100
8	91	
10	90	85-100
16	88	
30	86	
40	85	65-100
50	83	
100	52	50-100
200	40.3	40-85

Plasticity Index, ASTM D4318

Liquid Limit	
Plasticity Index	11

The above services and report were performed pursuant to the terms and conditions of the agreement or proposel, if any, between WT and client, WT werents that this was performed under the appropriate standard of care, including the skill and judgment that is reasonably expected from similarly atjusted professionals. No other yearanty, our representation,

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job 1	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077		Lab/	Inv. No.	31450185
	Gallup, NM 87305		Repo	rt Date:	10/04/95
Project:	1995 Reclamation				
Location:	Church Rock, New Mexico		· · · · · · · · · · · · · · · · · · ·		
Material:	Sandy Silty Clay	Sampled By:	C.P. & H.K.	Date	07/13/95
Source:	(H.2 + 30.4) 72450N & 58070E	Submitted By:	C. Padilla	Date	07/14/95
	Elevation 6953.1	Authorized By:	Client	Date	07/13/95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2*		
1-1/8*		
	100	
3/4"	99	95-100
1/2"	99	
3/8"	99	· · · · · · · · · · · · · · · · · · ·
1/4"		
No. 4	98	90-100
	97	·
10	97	85-100
16	95	
30	92	
40	88	65-100
50	· 83	
100	63	50-100
200	21.5	40-85

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Liquid Limit		34
Plasticity Index	·	29

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, it any, between WT and client. WT versate that this was performed under the appropriate serviced of client, including the skill and Judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representations

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling	•		Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450292
	Gallup, NM			Report Date:	11-14-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Silty Sand	Sampled By:	H.K./WT	Date	7-18-95
Source:	C+39	Submitted By:	H.K./WT	Date	7-18-95
	72150 N and 57130 E Elev. 6952.2	Authorized By:	Client	Date	7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
- 1/2"	99	
3/8"	98	
1/4"		
- No. 4	95	90-100
- 8	93	
- 10	93	85-100
- 16	92	
	90	
40	87	65-100
50	82	
100	60	50-100
200	43.8	40-85

Moisture Density Relations, pcf (ASTM	D698 Method A)
Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

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Liquid Limit		20
Plasticity Index		3

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contract between WT and client. WT warrants that this was performed under the appropriate
standard of care, including the skill and judgement that is reasonably expected from similarly
situated professionals. No other warrenty, guaranty, or representation, either expressed or
implied to included or intended.

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No) . ·	3145JB031
· .	Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	v. No.	31450145
	Gallup, NM 87305		Report	Date:	12/08/95
Project:	1995 Reclamation	· · · · · · · · · · · · · · · · · · ·			
Location:	Church Rock, NM				·····
Material:	Sandy Lean Clay	Sampled By:	H. Kuebler/WT	Date	07/18/95
Source:	G.3+33.4, 72320N & 57830E	Submitted By:	H. Kuebler/WT	Date	07/18/95
	Elev. 6950.9	Authorized By:	Client	Date	07/18/95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
3″		
2"		
1 1/2"		
1 "		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	100	90-100
8	95	÷
10	95	85-100
16	94	· · ·
30	93	
40	93	65-100
50	92	
100	78	50-100
200	58.7	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)		
Maximum Dry Density, pcf	N/A	
Optimum Moisture, %	N/A	

Plasticity Index, ASTM D4318

Liquid Limit		
Plasticity Index	•	11

Copies: Client (3), Billing (1) Field File (1) 10.1/cb:UNC.031

ed pursuant to the terms and condition ons of the vices and report were perf regression of proposal, if any, between WT and client. Or the full and with this was performed inder the appropriate standard of gara, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, ither expressed or implied is included or intended. expe

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450292
	Gallup, NM			Report Date:	11-14-95
Project:	1995 Reclamation		_		
Location:	Church Rock, NM				
Material:	Sandy Lean Clay	Sampled By:	H.K./WT	Date	7-18-95
Source:	F-9+29.7	Submitted By:	H.K./WT	Date	7-18-95
	72630 N and 57950 E Elev. 6951.6	Authorized By:	Client	Date	7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	100	90-100
8	97 [.]	
10	96	85-100
16	96	
30	94	
40	94	65-100
50	[.] 93	•
100	80	50-100
200	57.2	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)		
Maximum Dry Density, pcf	NA	
Optimum Moisture, %	NA	

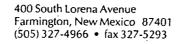
Plasticity Index, ASTM D4318

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Liquid Limit	28
Plasticity Index	11

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> The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of case, including the skill and judgement that is reasonably sepected from similarly situated professionals. No prior warranty, our representation, either expressed or section of the standard statement and section of the section of the section of the terms of the section of the



LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450292
,	Gallup, NM			Report Date:	11-14-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Sandy Lean Clay	Sampled By:	H.K./WT	Date	7-18-95
Source:	G.5+29.2	Submitted By:	H.K./WT	Date	7-18-95
	72580 N and 58100 E Elev. 6952.8	Authorized By:	Client	Date	7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification		
Size	Accumulative	(As Required)		
2"				
1-1/2"		· · · · · · · · · · · · · · · · · · ·		
1-1/8"				
- 1"				
3/4"	100	95-100		
1/2"	100			
3/8"	99			
1/4"				
No. 4	99	90-100		
8	98			
10	98	85-100		
16	. 98			
30	97			
40	96	65-100		
50	95			
100	81	50-100		
200	57.1	40-85		
binies: Cl	ient (3) Billing (1)	Field File (1)		

Moisture Density Relations, pcf (ASTM D698 Method A)				
Maximum Dry Density, pcf	NA			
Optimum Moisture, %	NA			

Plasticity Index, ASTM D4318

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Liquid Limit	28
Plasticity Index	13

wpies: Client (3), Billing (1), Field File (1). ,12\ha:UNC031

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contract between WT and client. WT warrants that this was performed under the appropriate
standard of care, includinguhe skill and judgement that is reasonably expected from similarly
situated professionals. No other marranty, guaranty, or representation, either expressed of
implied is included or instructed.

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling		Job No.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450292
	Gallup, NM			Report Date:	11-14-95
Project:	1995 Reclamation		•		·
Location:	Church Rock, NM				
Material:	Sandy Lean Clay	Sampled By:	H.K./WT	Date	7-18-95
Source:	F-1+34.9	Submitted By:	H.K./WT	Date	7-18-95
	72250 N and 57620 E Elev. 6951.5	Authorized By:	Client	Date	7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification		
Size	Accumulative	(As Required)		
2"				
1-1/2"				
1-1/8"		· .		
1"				
3/4"	100	95-100		
1/2"				
3/8"				
1/4"				
No. 4	100	90-100		
8	98			
10	98	85-100		
16	97			
30	96			
40	[~] 96	65-100		
50	95			
100	80	50-100		
200	56.1	40-85		

 Moisture Density Relations, pcf (ASTM D698 Method A)

 Maximum Dry Density, pcf
 NA

 Optimum Moisture, %
 NA

Plasticity Index, ASTM D4318

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Liquid Limit	 		28
Plasticity Index		·	12

Opies: Client (3), Billing (1), Field File (1). 8.11/ha:UNC031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			3145JB031	
	Attn: Mr. Ed Morales PO Box 3077	· · ·		Lab/Inv. No.	31450185
	Gallup, NM			Report Date:	11-15-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Clay	Sampled By:	H.K./WT	Date	7-18-95
Source:	E 0.3+29.2	Submitted By:	H.K./WT	Date	7-18-95
	72800 N and 57930 E Elev. 6951.5	Authorized By:	Client	Date	7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	98 .	
3/8"	97	
1/4"		
No. 4	95	90-100
8	94	
10	94	85-100
16	93	
	92	-
40	91	65-100
50	90	
100	76	50-100
200	54.0	40-85

Moisture Density Relations, pcf (ASTM)	D698 Method A)
Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit			30
Plasticity Index	·		10

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450185
	Gallup, NM			Report Date:	11-15-95
Project:	1995 Reclamation		,		
Location:	Church Rock, NM	· · · · · · · · · · · · · · · · · · ·			
Material:	Clay	Sampled By:	H.K./WT	Date	7-18-95
Source:	E 0.5+32.5	Submitted By:	H.K./WT	Date	7-18-95
	72530 N and 57740 E Elev. 6950.8	Authorized By:	Client	Date	7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		•
1-1/8"		
1"		
3/4"	100	95-100
1/2"	99	-
3/8"	. 99	•
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	95	2
30	94	
40	93	65-100
50	92	
100	75	50-100
200	52.4	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)		
Maximum Dry Density, pcf	NA	
Optimum Moisture, %	NA	

Plasticity Index, ASTM D4318

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Liquid Limit		32
Plasticity Index		13

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling		Jo	ob No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077	· ```	L	ab/Inv. No.	31450185
	Gallup, NM		R	eport Date:	11-15-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Clay	Sampled By:	H.K./WT	Date	7-19-95
Source:	E 0.5+36	Submitted By:	H.K./WT	• Date	7-19-95
	72230 N and 57480 E Elev. 6951.4	Authorized By:	Client	Date	7-19-95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1 "	·	
3/4"		95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	92	
40	91	65-100
50	90	
100	75	50-100
200	47.5	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)				
Maximum Dry Density, pcf	NA			
Optimum Moisture, %	NA			

Plasticity Index, ASTM D4318

Liquid Limit	26
Plasticity Index	4

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450185
	Gallup, NM			Report Date:	10-9-95
Project:	1995 Reclamation			s	Revised 11-14-95
Location:	Church Rock, NM				
Material:	Sandy Lean Clay	Sampled By:	H.K./WT	Date	7-19-95
Source:	E 0.8+39.8	Submitted By:	H.K./WT	Date	7-19-95
	72900 N and 57300 E Elev. 6952.7	Authorized By:	Client	Date	7-19-95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		·
1"		
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	95	90-100
8	94	
10	93	85-100
16	91	
30	85	
40	83	65-100
50	82	
100	73	50-100
200	48.6	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)		
Maximum Dry Density, pcf	NA	
Optimum Moisture, %	NA	

Plasticity Index, ASTM D4318

Liquid Limit	28
Plasticity Index	12

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contract between WT and client. WT warrants that this was performed under the appropriate.
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situated professionals. No other warranty, or representation, either expressed or
implied is included or integrated.

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077		,	Lab/Inv. No.	31450185
	Gallup, NM			Report Date:	11-15-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Clay	Sampled By:	H.K./WT	Date	7-19-95
Source:	G.5 + 39.5 Elev. 6957.8	Submitted By:	H.K./WT	Date	7-19-95
	71820 N and 57410 E	Authorized By:	Client	Date	7-19-95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"	· · ·	
1-1/2"		
1-1/8"		
.1"		
3/4"	100	95-100
1/2"	99	· · · · ·
3/8"	98	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	65	50-100
200	53.1	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)		
Maximum Dry Density, pcf	NA	
Optimum Moisture, %	NA	

Plasticity Index, ASTM D4318

Liquid Limit		28
Plasticity Index	·	11

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PHYSICAL PROPERTIES OF AGGREGATES

		Job N	10.	3145JB031
Attn: Mr. Ed Morales PO Box 3077		Lab/I	nv. No.	31450185
Gallup, NM 87305		Repor	rt Date:	10/04/95
1995 Reclamation				
Church Rock, New Mexico				
Sandy Silty Clay	Sampled By:	C.P. & H.K.	Date	07/21/95
(D + 34) 72410N & 57320E	Submitted By:	C. Padilla	Date	07/21/95
Elevation 6950.3	Authorized By:	Client	Date	07/21/95
	Gallup, NM 87305 1995 Reclamation Church Rock, New Mexico Sandy Silty Clay (D + 34) 72410N & 57320E	Gallup, NM 873051995 ReclamationChurch Rock, New MexicoSandy Silty ClaySampled By:(D + 34)72410N & 57320ESubmitted By:	Gallup, NM 87305 Report 1995 Reclamation Church Rock, New Mexico Sandy Silty Clay Sampled By: C.P. & H.K. (D + 34) 72410N & 57320E Submitted By: C. Padilla	Gallup, NM 87305 Report Date: 1995 Reclamation Church Rock, New Mexico Sandy Silty Clay Sampled By: C.P. & H.K. Date (D + 34) 72410N & 57320E Submitted By: C. Padilla Date

Plasticity Index, ASTM D4318

Liquid Limit

Plasticity Index

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"	·	
1-1/2"		
1-1/8"		
	100	
3/4"	100	95-100
1/2*	100	
3/8*	99	
1/4"		
No. 4	98	90-100
8	- 98	
10	97	85-100
16	95	
30	93	
40	85	65-100
50	82	
100	72	. 50-100
200	58.6	40-85

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I				Job No.	3145JB031
	Attn: Mr. Ed M PO Box 3077	orales		. *	Lab/Inv. No.	31450185
	Gallup, NM 873	005			Report Date:	10/04/95
Project:	1995 Reclamation	n				
Location:	Church Rock, Ne	ew Mexico				
Material:	Sandy Lean Clay		Sampled By:	C.Padilla	Date	07/27/95
Source:	(C + 33) 724	30N & 57400E	Submitted By:	C. Padilla	Date	07/27/95
	Elevation 6951.2		Authorized By:	Client	Date	07/27/95
	ALYSIS, ASTM C				· · ·	
Sieve	% Passing	Specification			•	
Size	Accumulative	(As Required)				
2*			Plasticity Index, A	ASTM D4318		
1-1/2"			Liquid Limit			25
1-1/8*			Plasticity Index			10
1"	······	····				
3/4*	100	95-100				
1/2"						·
3/8"	100					
1/4"						
No. 4	98	90-100				
8	97	·				
10	96	85-100				
16	95	•				

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94 93

92

80

53.4

65-100

50-100

40-85

۰.

30

40

50

100

200

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job	No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab	/Inv. No.	31450185
	Gallup, NM 87305	Rep	ort Date:	10/04/95	
Project:	1995 Reclamation				
Location:	Church Rock, New Mexico				
Material:	Silt	Sampled By:	C.Padilla	Date	07/27/95
Source:	(C + 29) 72880N & 57780E	Submitted By:	C. Padilla	Date	07/27/95
	Elevation 6955.8	Authorized By:	Client	Date	07/27/95

SIEVE ANALYSIS, ASTM C136 & C117

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% Passing	Specification
Accumulative	(As Required)
100	95-100
98	_
97	
	· .
95	90-100
94	
94	85-100
94	
92	
92	65-100
90	
61	50-100
39.8	40-85
	Accumulative 100 98 97 95 94 94 94 94 92 92 92 90 61

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Plasticity Index, ASTM D4318

Liquid Limit	20	
Plasticity Index	2	

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expected from similarly situated professionals. No other warranty, guaranty, or representation,
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Jot	No.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077		La	b/Inv. No.	31450185	
	Gallup, NM 87305		Re	port Date:	10/04/95	
Project:	1995 Reclamation					
Location:	Church Rock, New Mexico					
Material:	Sandy Lean Clay	Sampled By:	C.Padilla	Date	07/28/95	
Source:	(C + 31) 72730N & 57650E	Submitted By:	C. Padilla	Date	07/29/95	
	Elevation 6952.6	Authorized By:	Client	Date	07/27/95	
						

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	
3/4"	99	95-100
1/2"	95	
3/8"	94	
1/4"		
No. 4	93	90-100
8	91	
10	91	85-100
16	90	
30	89	
40	88	65-100
50	87	
100	. 59	50-100
200	46.0	40-85

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Plasticity Index, ASTM D4318

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Liquid Limit	26
Plasticity Index	16

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		r.	Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450185
	Gallup, NM 87305			Report Date:	11-28-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Sandy Lean Clay	Sampled By:	H.K./WT	Date	7-95
Source:	(H+31) 72420 N & 58040 E	Submitted By:	H.K./WT	Date	7-95
	Elev. 6951,7	Authorized By:	Client	Date	7-95
		······································			<u></u>

'SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4		90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	74	50-100
200	55.9	40-85

Moisture Density Relations, pcf (ASTM D698 Me	thod A)
Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

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Liquid Limit	30
Plasticity Index	14

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situated professionals. No other warranty, guaranty, or representation, either expressed or
implied is included or intend 52

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

UNC Mining & Milling			Job No.	3145JB031
PO Box 3077			Lab/Inv. No.	31450185
Gallup, NM 87305			Report Date:	11-28-95
1995 Reclamation			•	· · · · · · · · · · · · · · · · · · ·
Church Rock, NM				
Sandy Lean Clay	Sampled By:	H.K./WT	Date	7-95
(H.2+32.3) 72230 N & 57980 E	Submitted By:	H.K./WT	Date	7-95
Elev. 6951.7	Authorized By:	Client	Date	7-95
	Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305 1995 Reclamation Church Rock, NM Sandy Lean Clay (H.2+32.3) 72230 N & 57980 E	Attn: Mr. Ed MoralesPO Box 3077Gallup, NM 873051995 ReclamationChurch Rock, NMSandy Lean ClaySampled By:(H.2+32.3)72230 N & 57980 ESubmitted By:	Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 873051995 ReclamationChurch Rock, NMSandy Lean ClaySampled By:(H.2+32.3)72230 N & 57980 ESubmitted By:H.K./WT	Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305Lab/Inv. No. Report Date:1995 ReclamationReport Date:1995 ReclamationSampled By:Church Rock, NMH.K./WTSandy Lean Clay (H.2+32.3) 72230 N & 57980 ESubmitted By:H.K./WTDate

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	· 83	50-100
200	61.8	40-85
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Moisture Density Relations, pcf (ASTM D	Jogo Method A)
Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA
	· /
Plasticity Index, ASTM D4318	
Liquid Limit	31
Plasticity Index	20

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling Attn: Mr. Ed Morales		Job No	•	3145JB031	
	PO Box 3077		Lab/Inv	v. No.	31450185	
	Gallup, NM 87305		Report	Date:	12/04/95	
Project:	1995 Reclamation					
Location:	Church Rock, New Mexico					
Material:	Sandy Lean Clay	Sampled By:	H. Kuebler /WT	Date	July 1995	
Source:	(A + 31), 72900N & 57500E	Submitted By:	H. Kuebler /WT	Date	July 1995	
	Elevation 6956.2	Authorized By:	Client	Date	July 1995	

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95 - 100
1/2"		
3/8"	99	
1/4"		
No. 4	98	90 - 100
8	97	
10	96	85 - 100
16	96	
30	94	÷
40	93	65 - 100
50	92	
100	73	50 - 100
200	56.8	40 - 85

 Maximum Dry Density, pcf
 N/A

 Optimum Moisture, %
 N/A

 Plasticity Index, ASTM D4318
 26

 Plasticity Index
 11

Moisture Density Relations, pcf (ASTM D698 Method A)

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9	Technologies Inc. The Qu <u>alit</u> y People	Farmington, New M (505) 327-4966 • 1	1exico 87401 fax 327-5293		LAB	ORAT	ORY REPORT
•	Since 1955	PHYSICAL PROP	PERTIES OF AGG	REGATES			
· .							
Client:	UNC Mining & Milling Attn: Mr. Ed Morales				Job No.	•	3145JB031
	PO Box 3077 Gallup, NM 87305				Lab/Inv.	No.	31450185
					Report D	ate:	11-28-95
Project:	1995 Reclamation						
Location:	Church Rock, NM						
Material:	Clayey Sand		Sampled By:	H.K./WT		Date	7-95
Source:	(A+35) 72580 N & 57	290 E	Submitted By:	H.K./WT		Date	7-95
	Elev. 6956.2		Authorized By:	Client		Date	7-95
OTEVE AND		-117					
Sieve ANA	LYSIS, ASTM C136 & C	ecification					
Size	•	Required)					
2"		Required	Moisture Density I	Relations, pcf	(ASTM D	698 M	ethod A)
1-1/2"			Maximum Dry Der		. <u> </u>		NA
1-1/8"		······	Optimum Moisture				NA
 1`"						•	
3/4"	100	95-100	Plasticity Index, A	STM D4318			_
1/2"	·		Liquid Limit				19
3/8"	·		Plasticity Index			•	6
1/4"							
No. 4	98	90-100				、	
8	96	·					
10	96	85-100					
16	95		• .				
30	92						
40	82	65-100					
50	67						
100	44	50-100					
200	37.7	40-85					

Copies: Client (3), Billing (1), Field File (1).

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The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended

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Western Technologies

The Quality People Since 1955

Inc.

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & N				Job No.	3145JB031
	Attn: Mr. Ed Mo PO Box 3077	rales			Lab/Inv. No.	31450185
	Gallup, NM 8730	5			Report Date:	11-28-95
Project:	1995 Reclamation					<u> </u>
Location:	Church Rock, NN	1	·····			
Material:	Sandy Silty Clay	<u> </u>	Sampled By:	H.K./WT	Date	7-95
Source:	(G+35) 71800 I	N & 57600 E	Submitted By:	H.K./WT	Date	7-95
	Elev. 6952.3		Authorized By:	Client	Date	7-95
		······································				
	ALYSIS, ASTM CI					
Sieve	% Passing	Specification				
Size	Accumulative	(As Required)				
2"		······	Moisture Density	Relations, pcl	f (ASTM D698 M	lethod A)
1-1/2"	····		Maximum Dry De	nsity, pcf		NA
1-1/8"			Optimum Moisture	e, %		NA
1"						
3/4"	100	95-100	Plasticity Index, A	STM D4318		
1/2"			Liquid Limit			25
3/8"		<u> </u>	Plasticity Index			7
1/4"						·
No. 4	99	90-100	•			
8	97					
10	96	85-100				
16	95					
30	94					
40	94	65-100				
. 50	93			×		
. 100	79	50-100				
200	55.9	40-85				
Copies: Cl 5.12\ha:UN	ent (3), Billing (1), 031	Field File (1).			•••	

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

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 9	Western Technolog Inc. The Quality People Since 1955	(505) 327-4966	na Avenue w Mexico 87401 • • fax 327-5293 ROPERTIES OF ÁGG	REGATES	LA	BORAT	ORY REPO	RT
Client:	UNC Mining & N	•			Job No.	•	3145JB031	
	Attn: Mr. Ed Mo PO Box 3077	orales			Lab/Inv	. No.	31450415	
	Gallup, NM 873	05			Report	Date:	12/04/95	
Project:	1995 Reclamation	ι <u>.</u>						
Location:	Church Rock, Ne	w Mexico						
Material:	Silty Sand		Sampled By:	H. Kuebler	·/WT	Date	July 1995	
Source:	UNC C + 43, 71	840N & 56880E	Submitted By:	H. Kuebler	· /WT	Date	July 1995	
	Elevation 6955.7		Authorized By:	Client		– Date	July 1995	
,	ALYSIS, ASTM CI							
Sieve Size	% Passing	Specification	· · ·					
	Accumulative	(As Required)	Moisture Density	Relations not	(ΔSTM	D698 M	ethod A)	
1-1/2"			Maximum Dry De		(1011)	2000 111	N/A	-
1-1/8"			Optimum Moisture				 N/A	-
1"		*****	•					-
3/4"	100	95 - 100	Plasticity Index, A	STM D4318				
1/2"	98	·····	Liquid Limit				NV	_
3/8"	95		Plasticity Index				NP	_
1/4"								
No. 4	92	90 - 100	- * *					
	91							
10	91	85 - 100	·					
16	89							
30	87							
40	84	65 - 100						
50	• 77							
100	48	50 - 100						

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	Western Technolog Inc. The Q <u>uality</u> People Since 1955	(505) 327-496 :	ena Avenue lew Mexico 87401 56 • fax 327-5293 ROPERTIES OF AGG	<u>REGATES</u>	LA	BORAT	ORÝ REPOR	<u>г</u>
Client:	UNC Mining & M Attn: Mr. Ed Mo				Job No) . .	3145JB031	
	PO Box 3077 Gallup, NM 8730	15			Lab/In	v, No.	31450185	
	Ganap, Init 6750	5			Report	Date:	12/04/95	
Project:	1995 Reclamation		· ·					
Location:	Church Rock, Nev	w Mexico						
Material:	Silty Sand		Sampled By:	H. Kuebl	er /WT	Date	July 1995	
Source:	(A + 37), 724101	N & 57110E	Submitted By:	H. Kuebl	er /WT	Date	July 1995	
	Elevation 6956.4		Authorized By:	Client		Date	July 1995	
Sieve Size	% Passing Accumulative	Specification (As Required)		-	6 () 000 1			
2*			Moisture Density	Relations, po	f (ASTM	D698 M	lethod A)	
1-1/2"			Maximum Dry De	ensity, pcf			N/A	
1-1/8" .			Optimum Moisture	e, %			N/A	
<u> </u>	<u></u>							
3/4"	96	95 - 100	Plasticity Index, A	STM D4318	3			
1/2"	95	· · · · · · · · · · · · · · · · · · ·	Liquid Limit				NV	
3/8"	95		Plasticity Index				NP	
1/4"								
<u>No. 4</u>	92	90 - 100		•				
8 .	91							
10	90	85 - 100				•		
<u> 16 </u>	<u> </u>				£			
40	84	65 - 100						
	<u></u> 77							
100	48	50 - 100						
200	41.7	40 - 85						

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I Attn: Mr. Ed Mc PO Box 3077				Job No. Lab/Inv. No.	3145JB031 31450185
	Gallup, NM 8730)5			Report Date:	11-28-95
Project:	1995 Reclamation	a			-	·····
Location:	Church Rock, NI	M			. <u>.</u>	· ·
Material:	Silty Sand		Sampled By:	H.K./WT	Date	7-95
Source:	(A+41) 72110	N & 56860 E	Submitted By:	H.K./WT	Date	7-95
	Elev. 6956.6	e ⁿ not	Authorized By:	Client	Date	7-95
SIEVE AN	ALYSIS, ASTM C	136 & C117				
Sieve	% Passing	Specification				
Size	Accumulative	(As Required)				
2"			Moisture Density	Relations, pcf	(ASTM D698 M	lethod A)
1-1/2"			Maximum Dry De	ensity, pcf		NA
1-1/8"	······	······	Optimum Moistur			NA
1 "		-				
3/4"	100	95-100	Plasticity Index, A	STM D4318		
1/2"	98	·	Liquid Limit			NV
3/8"	96		Plasticity Index			NP
1/4"	· ·					
No. 4	94	90-100				
8	93					
10	. 92	85-100				
16	91	· · · · · · · · · · · · · · · · · · ·				
30	89					
40	86	65-100			•	
50	78		• .			
100	44	50-100				
		40-85				

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	Western Technologies	400 South Lorena Farmington, New	Avenue	•			
	Inc. The Quality People	(505) 327-4966	• fax 327-5293		LAB	ORAT	ORY REPORT
	Since 1955						
		PHYSICAL PRO	OPERTIES OF AGG	REGATES		7	
Client:	UNC Mining & Millin	g			Job No.		3145JB031
	Attn: Mr. Ed Morales PO Box 3077				Lab/Inv.	No.	31450185
	Gallup, NM 87305				Report I	Date:	11-28-95
Project:	1995 Reclamation						
Location:	Church Rock, NM						·
Material:	Dark Brown Fine Sand		Sampled By:	H.K./WT		Date	7-95
Source:	(C+43) 71840 N & 5	56880 E	Submitted By:	H.K./WT		Date	11-9-95
	Elev. 6955.7		Authorized By:	Client		Date	7-95
		0117		•			
	ALYSIS, ASTM C136 & % Passing S	· · ·			·		
Sieve Size	Ū.	pecification As Required)					
2"		13 Required)	Moisture Density	Relations, pcf	f (ASTM I	D698 M	ethod A)
1-1/2"			Maximum Dry De		····		NA
1-1/8"			Optimum Moisture				NA
1"							
3/4"	100	95-100	Plasticity Index, A	STM D4318		<u> </u>	_
1/2"			Liquid Limit				19
3/8"		- ·	Plasticity Index				NP
1/4"							
No. 4	100	90-100					
8	91	·					
10	91	85-100					
16	90						
30							
40	85	65-100					
50	77.						
100	43	50-100					
200	39.7	40-85					

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situated professionals. No other warranty, guaranty, or representation, either expressed or
implied is included or intepded.
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	Technologies Inc. The Quality People Since 1955	(505) 327-496	ew Mexico 87401 6 • fax 327-5293		LABORAT	ORY REPOR
		PHYSICAL P	ROPERTIES OF AGG	REGATES		
lient:	UNC Mining & Milli				Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077	5			Lab/Inv. No.	31450185
	Gallup, NM 87305				Report Date:	11-28-95
Project:	1995 Reclamation		·			
ocation:	Church Rock, NM				····	
Material:	Sandy Lean Clay	·····	Sampled By:	H.K./WT	Date	7-95
Source:	(D+38) 72150 N &	57280 E	Submitted By:	H.K./WT	Date	7-95
	Elev. 6951.1		Authorized By:	Client	Date	7-95
SIEVE AN Sieve	ALYSIS, ASTM C136 & % Passing	& C117 Specification				
Size		(As Required)				
2"			Moisture Density	Relations not	F (A STNA DEOR NA	
			intoisture Density	Relations, per		iethod A)
1-1/2"					CASTM D098 M	NA
<u>1-1/2"</u> 1-1/8"			Maximum Dry De Optimum Moistur	ensity, pcf	(A31M D098 M	
			Maximum Dry De	ensity, pcf	(A31M D076 M	NA
1-1/8"		95-100	Maximum Dry De	ensity, pcf e, %		NA
<u>1-1/8"</u> 1"	100	95-100	Maximum Dry De Optimum Moistur	ensity, pcf e, %		NA
1-1/8" 1" 3/4"		95-100	Maximum Dry De Optimum Moistur Plasticity Index, A	ensity, pcf e, %		NA NA
1-1/8" 1" 3/4" 1/2"		95-100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>
1-1/8" 1" 3/4" 1/2" 3/8"		95-100 90-100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>
1-1/8" 1" 3/4" 1/2" 3/8" 1/4"	99		Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>
1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4	99 97		Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>
1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8	99 97 94	90-100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>
1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8 10	99 97 94 94	90-100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>
1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8 10 16	99 97 94 94 94 92	90-100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>
1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8 10 16 30	99 97 94 94 94 92 91	90-100 85-100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>
1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8 10 16 30 40	99 97 94 94 94 92 91 90	90-100 85-100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %		<u>NA</u> <u>NA</u>

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

UNC Mining & Milling			Job No.	3145JB031
PO Box 3077			Lab/Inv. No.	31450185
Gallup, NM 87305			Report Date:	11-28-95
1995 Reclamation				······································
Church Rock, NM				
Silty Sand	Sampled By:	H.K./WT	Date	7-95
(D+30) 72750 N & 57800 E	Submitted By:	H.K./WT	Date	7-95
Elev. 6950.5	Authorized By:	Client	Date	7-95
	Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305 1995 Reclamation Church Rock, NM Silty Sand (D+30) 72750 N & 57800 E	Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 873051995 ReclamationChurch Rock, NMSilty SandSampled By:(D+30) 72750 N & 57800 ESubmitted By:	Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 873051995 ReclamationChurch Rock, NMSilty SandSampled By:(D+30) 72750 N & 57800 ESubmitted By:H.K./WT	Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305Lab/Inv. No. Report Date:1995 ReclamationReport Date:Church Rock, NMSampled By:H.K./WTSilty Sand (D+30) 72750 N & 57800 ESubmitted By:H.K./WTDate

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"	<u>.</u>	
1"		
3/4"	100	95-100
1/2"	·	
3/8"		
1/4"		
No. 4	100	90-100
8	94	
10	94	85-100
16	93	•
30	92	
40	91	65-100
50	90	
100	 69	50-100
200	47.0 ient (3), Billing (1)	40-85 , Field File (1).

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Moisture Density Relations, pcf (ASTM D698 Method A)				
Maximum Dry Density, pcf	NA			
Optimum Moisture, %	NA			
Plasticity Index, ASTM D4318				
Liquid Limit	23			
Plasticity Index	NP			

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I				Job No.		3145JB031
	Attn: Mr. Ed Mo PO Box 3077				Lab/Inv.	No.	31450185
	Gallup, NM 8730	05			Report E	Date:	11-28-95
Project:	1995 Reclamation	a					
Location:	Church Rock, NI	м					
Material:	Sandy Lean Clay	······	Sampled By:	H.K./WT	<u></u>	Date	7-95
Source:	(D+32) 72600	N & 57670 E	Submitted By:	H.K./WT		- Date	7-95
,	Elev. 6951.3		Authorized By:	Client		Date	7-95
SIEVE AN	ALYSIS, ASTM C	136 & C117					
Sieve	% Passing	Specification					
Size	Accumulative	(As Required)					
2"		······································	Moisture Density	Relations, pc	f (ASTM I	0698 M	lethod A)
1-1/2"	·		Maximum Dry De	ensity, pcf			NA
1-1/8"		<u> </u>	Optimum Moistur	e, %			NA
1"							
3/4"	100	95-100	Plasticity Index, A	STM D4318	<u>،</u>		
1/2"	100		Liquid Limit		-		28
3/8"	99		Plasticity Index	C			10
1/4"				ſ			
No. 4	98	90-100					
8	96						
10	96	85-100					
16	95				*		,
30	94						
40	93	65-100					
50	92		•				
100	76	50-100					

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended

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LABORATORY REPORT

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450185
	Gallup, NM 87305			Report Date:	11-28-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Clayey Sand	Sampled By:	H.K./WT	Date	7-95
Source:	(B+32) 72760 N & 57510 E	Submitted By:	H.K./WT	Date	7-95
	Elev. 6955.0	Authorized By:	Client	Date	7-95

SIEVE ANALYSIS, ASTM C136 & C117

Since 1955

Sieve % Passing		Specification			
Size	Accumulative	(As Required)			
2"					
1-1/2"					
1-1/8"					
1"					
3/4"	100	95-100			
1/2"		•			
3/8"	98				
1/4"					
No. 4	96	90-100			
8	93	:			
10	92	85-100			
16	91	ž			
30	89				
40	86	65-100			
50	80				
100	68	50-100			
200	47.3	40-85 , Field File (1).			

Moisture Density Relations, pcf (ASTM	D698 Method A)
Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

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Liquid Limit	24
Plasticity Index	10

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

lient:	UNC Mining & 1 Attn: Mr. Ed Mo PO Box 3077				Job No. Lab/Inv. No.	3145JB031 31450185
	Gallup, NM 8730)5			Report Date:	11-28-95
Project:	1995 Reclamation	1			-	
Location:	Church Rock, NN	M .			····	
Material:	Silty Sand		Sampled By:	H.K./WT	Dat	ie 7-95
Source:	(B+42) 71980	N & 57860 E	Submitted By:	H.K./WT	 Dat	te 7-95
,	Elev. 6956.4	<u></u>	Authorized By:	Client	Dat	te 7-95
SIEVE AN	IALYSIS, ASTM C	136 & C117				·
Sieve	% Passing	Specification				١
Size	Accumulative	(As Required)				
2"			Moisture Density	Relations, pcf	(ASTM D698	Method A)
1-1/2"		<u>, , , , , , , , , , , , , , , , , , , </u>	Maximum Dry D	ensity, pcf		NA
1-1/8"			Optimum Moistur	re, %		NA
1"						
3/4"	100	95-100	Plasticity Index, A	ASTM D4318		
1/2"			Liquid Limit			NV
3/8"			Plasticity Index			NP
1/4"		·	•			
No. 4	94	90-100				
8	89		• .			
10	89	85-100				•
16	87	-	н (р. 1997) 1997 - Полона Солона (р. 1997) 1997 - Полона (р. 1997)			
30	83					
40	78	65-100				
50	65					
		50-100				
100	54	30-100				

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I				Job No.	3145JB031
	Attn: Mr. Ed Mo PO Box 3077				Lab/Inv. No.	31450185
	Gallup, NM 8730	05			Report Date:	11-28-95
Project:	1995 Reclamation	n			·	
Location:	Church Rock, NI	M	A			<u> </u>
Material:	Silty Sand	······································	Sampled By:	H.K./WT	Date	7-95
Source:	(B+38) 72280	N & 57130 E	Submitted By:	H.K./WT	Date	7-95
	Elev. 6954.1		Authorized By:	Client	Date	7-95
SIEVE AN	ALYSIS, ASTM C	136 & C117				
Sieve	% Passing	Specification		2		
Size	Accumulative	(As Required)				
2"	· · · ·	<u>_</u>	Moisture Density	Relations, pcl	f (ASTM D698 M	fethod A)
1-1/2"	······································		Maximum Dry De	ensity, pcf		NA
1-1/8"		<u></u>	Optimum Moistur	e, %		NA
1"	100					
3/4"	96	95-100	Plasticity Index, A	ASTM D4318		
1/2"	92		Liquid Limit		,	NV
3/8"	90		Plasticity Index			NP
1/4"	·.			·		· .
No. 4	87	90-100				
8	86					
10	85	85-100	•			
16	85					м. С
30	82				•••	
40	78	65-100				
50	63	· · · · · · · · · · · · · · · · · · ·				
100	53	50-100				
200	40.3	40-85				

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/Inv. No.	31450292	
	Gallup, NM			Report Date:	9-25-95
Project:	1995 Reclamation				÷
Location:	Church Rock, NM				,
Material:	Silty Clay	Sampled By:	H.K./WT	Date	9-1-95
Source:	F.2+33.8 Elev.6950.9	Submitted By:	H.K./WT	Date	9-1-95
	72400 N & 57620 E	Authorized By:	Client	Date	9-1-95

SIEVE ANALYSIS, ASTM C136 & C117

.

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		·····
1-1/8"		
1"		
3/4"	_	
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	
8	98	
10	97	
16	97	
30	96	
40	95	
50	95	
100	80	
200	56.0	Field File (1)

Maximum Dry Density, pcf	NA NA
Optimum Moisture, %	NA
Plasticity Index, ASTM D4318	
Liquid Limit	25
Plasticity Index	7
Moisture Content	
	39.5

Opies: Client (3), Billing (1), Field File (1). ha:UNC031

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling	Job N	о.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077		Lab/II	1v. No.	31450292
	Gallup, NM		Repor	t Date:	11-14-95
Project:	1995 Reclamation				
Location:	Church Rock, NM	-			
Material:	Sandy Lean Clay	Sampled By:	H.K./WT	Date	9-30-95
Source:	B+36	Submitted By:	H.K./WT	Date	9-30-95
	72400 N and 57250 E Elev. 6953.2	Authorized By:	Client	Date	9-30-95

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	97	
3/8"	97	
1/4"		
No. 4	95	90-100
8	93	
<u></u> 10	92	85-100
16	92	
30	91	· ·
40	89	65-100
50	86	
100	63	50-100
200	42.3	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)						
Maximum Dry Density, pcf	NA					
Optimum Moisture, %	NA					

Plasticity Index, ASTM D4318

Liquid Limit
Plasticity Index

The above services and report were performed pursuant to the terms and conditions of the	
contract between WT and client. WT warrants that this was performed under the appropriate	
standard of care, including the skill and judgement that is reasonably expected from similarly	
situated professionals. No other warranty, guaranty, or representation, either expressed or	
implied is included or insended.	

23 4

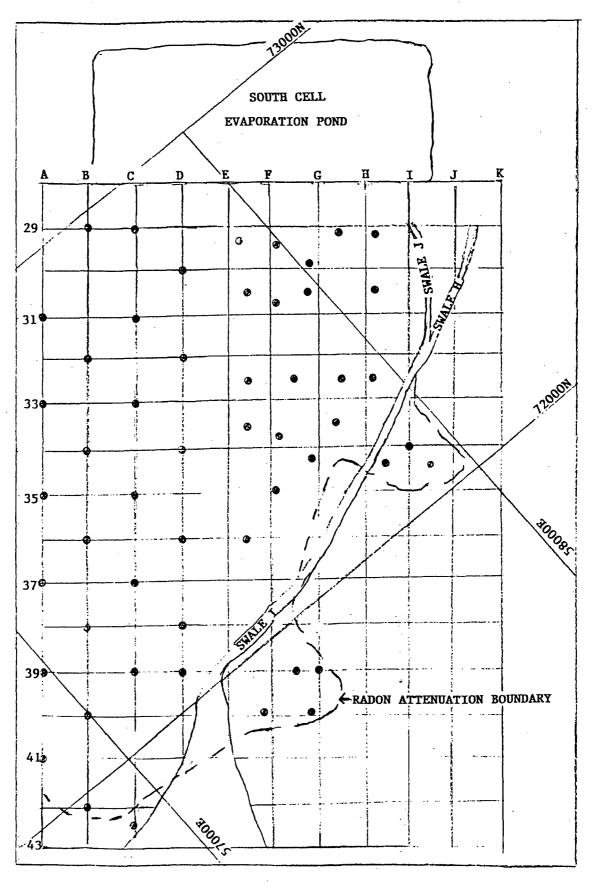
Copies: Client (3), Billing (1), Field File (1). Nha:UNC031

ahe REVIEWED BY

APPENDIX C

APPENDIX C

FIELD DENSITY TESTS, RADON ATTENUATION COVER



RAC DENSITIES SOUTH CELL

·

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE. %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/17/95	Sandcone	1+34	72130.0	57980.0	6960.7	RAC	104.8	15.4	96	CL	Yes
07/17/95	Sandcone	G + 39	71880.0	57450.0	6952.7	RAC	109.9	15.2	98	CL	Yes
07/17/95	Sandcone	E.5+39	71970.0	57340.0	6951.4	RAC	107.6	14.9	96	CL	Yes
07/17/95	Sandcone	1.5+34.5	72050.0	57930.0	6961.8	RAC	107.1	16.2	99	CL	Yes
07/17/95	Sandcone	H.5+34.5	72130.0	57850.0	6952.2	RAC	104.4	17.1	96	CL	Yes
07/18/95	Sandcone	G.5+29.2	72600.0	58120.0	6953.5	RAC	106.3	15.7	98	CL	Yes
07/18/95	Sandcone	H.2+29.3	72560.0	58170.0	6954.6	RAC	108.4	16.1	100	CL	Yes
07/18/95	Sandcone	F.9 + 29.7	72600.0	58040.0	6951.5	RAC	111.5	14.6	.99	CL	Yes
07/18/95	Sandcone	F.2+29.5	72820.0	57980.0	6952.7	RAC	113.5	15.9	100	CL	Yes
07/18/95	Sandcone	E.3+29.2	72740.0	57940.0	6951.6	RAC	108.0	14.3	96	CL	Yes
07/18/95	Sandcone	E.5+30.5	72630.0	57870.0	6951.1	RAC	109.9	15.6	98	CL	Yes
07/18/95	Sandcone	F.2+30.7	72570.0	57900.0	6951.4	RAC	108.1	15.5	96	CL	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/12

WT JOB NO. 3145JB031

NORTHING EASTING DATE TYPE OF TEST GRID ELEV. MATERIAL DENSITY. MOISTURE. RELATIVE USCS WITHIN TYPE PCF % COMPACTION SOIL SPECS. CLASS ? 07/18/95 F.9+30.5 72500.0 57960.0 Sandcone 6951.4 RAC 111.5 14.9 99 CL Yes 07/18/95 H.2 + 30.472450.0 58070.0 6953.1 Sandcone RAC 106.3 15.6 98 CL Yes 07/18/95 H.2 + 32.372320.0 57980.0 6951.7 Sandcone RAC 107.1 16.1 99 CL Yes 07/18/95 G.5+32.5 72350.0 57900.0 6951.8 Sandcone RAC 108.5 15.8 100 CL Yes 07/18/95 72240.0 Sandcone F.5+32.5 57820.0 6950.5 RAC 109.3 14.3 97 CL Yes 07/18/95 E.5+32.5 72480.0 57730.0 6950.9 Sandcone RAC 108.9 14.6 97 CL Yes 07/18/95 G.3+33.4 72320.0 57830.0 Sandcone 6950.9 RAC 106.4 15.7 98 CL Yes 07/18/95 Sandcone F.2+33.8 72340.0 57710.0 6951.1 RAC 107.4 15.1 96 CL Yes 07/18/95 72400.0 Sandcone E.5+33.5 57680.0 6951.1 RAC 106.6 14.2 95 CL Yes 07/18/95 F.9+.34.3 72240.0 57730.0 Sandcone 6951.3 RAC 107.7 15.4 95 CL Yes 07/18/95 Sandcone F.1+34.9 72250.0 57640.0 6951.3 RAC 113.7 16.2 100 CL Yes 07/18/95 Sandcone E.5+36 72200.0 57520.0 6951.3 RAC 110.9 98 Yes 15.8 CL

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

RAC = Radon Attenuation Cover

cb/UNC.031/13

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE. %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/18/95	Sandcone	E.8+39.8	72900.0	57300.0	6952.7	RAC	109.8	15.9	97 .	CL	Yes
07/18/95	Sandcone	F.8+39.8	72820.0	57370.0	6957.0	RAC	113.2	16.1	100	CL	Yes
07/28/95	Sandcone	C+37	72280.0	57260.0	6951.1	RAC	108.0	14.6	96	CL.	Yes
07/28/95	Sandcone	C + 35	72460.0	57410.0	6950.2	RAC	107.6	13.5	95	CL	Yes
07/28/95	Sandcone	C+33	72430.0	57400.0	6951.2	RAC	106.3	15.6	92	CL ·	No
07/28/95	Sandcone	C+31	72730.0	57650.0	6952.7	RAC	104.1	14.8	92	CL	No
07/28/95	Sandcone	C + 29	72880.0	57780.0	6955.8	RAC	108.9	14.6	97	CL	Yes
07/28/95	Sandcone	D+38	72150.0	57280.0	6951.1	RAC	110.6	14.6	- 98	CL	Yes
07/28/95	Sandcone	D + 36	72290.0	57400.0	6951.6	RAC	113.5	14.3	100	CL	Yes
07/28/95	Sandcone	D+34	72410.0	57320.0	6950.3	RAC	108.4	14.9	96	CL	Yes
07/28/95	Sandcone	D+32	72600.0	57670.0	6951.3	RAC	107.0	15.6	95	CL	Yes
07/28/95	Sandcone	D + 30	72750.0	57800.0	6950.5	RAC	106.6	13.0	95	CL	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/14

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

WT JOB NO. 3145JB031

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
08/02/95	Sandcone	C+43	71840.0	56880.0	6955.7	RAC	109.7	14.4	97	CL	Yes
08/02/95	Sandcone	C+39	72150.0	57130.0	6952.2	RAC	108.0	14.8	96	CL	Yes
08/02/95	Sandcone - Retest	C+33	72430.0	57400.0	6951.3	RAC	106.6	13.7	95	, CL	Yes
08/02/95	Sandcone - Retest	C+31	72730.0	57650.0	6952.6	RAC	111.7	13.2	99	CL	Yes
08/02/95	Sandcone	B+36	72440.0	57270.0	6953.1	RAC	111.1	11.6	95	CL	Yes
08/02/95	Sandcone	B+38	72280.0	57130.0	6954.1	RAC	112.3	12.3	96	CL	Yes
08/02/95	Sandcone	B+40	72120.0	57000.0	6954.9	RAC	112.6	12.3	96	CL.	Yes
08/02/95	Sandcone	B+42	71980.0	57860.0	6956.4	RAC	111.8	12.7	95	CL	Yes
08/02/95	Sandcone	8+32	72760.0	57510.0	6955.0	RAC	112.8	12.1	96	CL	Yes
08/02/95	Sandcone	B+34	72610.0	57400.0	6953.0	RAC	111.1	11.4	95	CL	Yes
08/03/95	Sandcone	· A+41	72110.0	56860.0	6956.6	RAC	113.2	11.0	96	CL	Yes
08/03/95	Sandcone	A + 39	72130.0	56970.0	6956.6	RAC	117.0	10.7	100	CL	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/15

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

GRID NORTHING EASTING ELEV. MATERIAL DENSITY, MOISTURE, RELATIVE DATE TYPE OF TEST USCS WITHIN TYPE PCF % COMPACTION SOIL SPECS. CLASS 7 72410.0 57110.0 6956.4 RAC 118,4 10.1 100 08/03/95 A + 37 CL Yes Sandcone 72580.0 57290.0 6956.2 A + 35 RAC 115.8 11.6 99 C٤ 08/03/95 Sandcone Yes 08/03/95 A + 33 72570.0 57240.0 6956.2 RAC 111.3 12.1 95 CL Sandcone Yes 57500.0 72900.0 6956.4 RAC 110.8 12.5 95 CL 08/03/95 A+31 Yes Sandcone 57700.0 08/03/95 B+29 72960.0 6953.8 RAC 114.9 12.3 98 CL Sandcone Yes 08/03/95 D+39 72060.0 57220.0 6951.9 RAC 110.6 14.1 98 CL Yes Sandcone b . .

TEST SUMMARY FOR SOUTH CELL

RAC = Radon Attenuation Cover

cb/UNC.031/16

Dist: Client (3) Field File (1) Billing (1)

٠:



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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 08-28-95 Job No. 3145JB031 Event/Invoice No. 31450185-10 Authorized By E. MORALES Tested By H. KUEBLER/WT

Page 1 of 1 Date 07-17-95 Date 07-17-95

Client UNC MINING AND MILLING POST OFFICE BOX 3077 GALLUP, NM 87305

Client UNC MINING AND MILLING Project 1995 RECLAMATION

Location CHURCH ROCK, NM

Test Locations Designated By CLIENT

Test Procedures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944 Calibrated Volume of Sand Cone Apparatus 0.0387 cu ft Bulk Unit Weight of Sand 94.8 htt/cu ft

Calibia	ited volu	me or San	a Cone App	Daratus	0.038	/ CU. II. BL		veight of San	0 94.8 10	m/cu.	π.	
	IN-	PLACE CHARA	CTERISTICS		LA	B CHARACTERISTIC	s	COMPACTION	CTION REQUIREMENTS			
TEST NO.	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	ID.	Maximum Dry Unit Weight Ibf / cu, ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	•	Compection %	
1	0.0376	15.4	105.1	0.0	46	108.7	15.3	97	15.3 TO	17.3	95	YES
2	0.0291	15.2	110.6	0.0	44	112.3	14.1	98	14.1 TO	16.1	95	YES
3	0.0299	14.9	108.0	0.0	44	112.3	14.1	96	14.1 TO	16.1	95	YES
4	0.0391	16.2	108.2	0.0	46	108.7	15.3	100	15.3 TO	17.3	95	YES
5	0.0395	17.1	105.5	0.0	46	108.7	15.3	97	15.3 TO	17.3	95	YES
						•					· .	
TEST	· · · · · · · · · · · · · · · · · · ·	1					.]	TEST LOCATION	VERTICAL			
NO.			TEST LOCA	TION, HOP			Approximate Fill Elevation *			MATERIAL TESTED		

NO.	TEOT EOCATION, NONEONTAL	Depth, ft.	Elevation *	
1	I+34, 72130 N & 57930 E		6960.7	SUBGRADE
2	G+39, 71880 N & 57450 E		6952.7	SUBGRADE
3	E.5+39, 71970 N & 57340 E		6951.4	SUBGRADE
4	1.5+34.5, 72050 N & 57930 E		6961.8	SUBGRADE
5	H.5+34.5, 72130 N & 57850 E		6952.2	SUBGRADE
İ	•			
				•
· · · · · ·				

	LABORATORY DATA & COMPACTION CHARACTERISTICS										
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, Ibf / cu. ft.	TEST METHOD					
46	31450185	CLAY - H.2+30.4	72450N & 58070E, 6973.1	15.3	108.7	D698-A					
44	31450185	CLAY	F8+39.872820N57370E6957.0	14.1	112.3	D698-A					
) · · · · · · · · · · · · · · · · · · ·									

Comments: CB

* DATUM Test Elevation = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2) TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE VERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FORM SMILLARLY STUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY

A. McHaney

102 693 WTI



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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 11-15-95

of 2 07-18-95 07-18-95

Client UNC MINING AND MILLING POST OFFICE BOX 3077 **GALLUP, NM 87305**

	Job No. 3145JB031	Page	1
	Event/Invoice No. 31450185-13		
	Authorized By E. MORALES	Date	0
	Tested By C. PADILLA/WT	Date	0
•			

UNC MINING AND MILLING Client

Project **1995 RECLAMATION**

Location CHURCH ROCK, NM

Test Locations Designated By C. PADILLA/WT

Test Procedures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944

Calibrated Volume of Sand Cone Apparatus 0.0383 cu. ft. Bulk Unit Weight of Sand 94.8 lbf/cu. ft.

	١N·	PLACE CHARA	CTERISTICS		LAB CHARACTERISTICS			COMPACTION		REQUIREMENTS		
TEST NO.	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %		
1	0.0413	15.7	106.2	0.0	46	108.7	15.3	98	15.3 TO 17.3	95	YES	
2	0.0339	16.1	108.6	0.0	46	108.7	15.3	100	15.3 TO 17.3	95	YES	
3	0.0402	14.6	111.5	0.0	42	112.4	14.0	99	14.0 TO 16.0	95	YES	
4	0.0358	15.9	113.6	0.0	42	112.4	14.0	100 +	14.0 TO 16.0	95	YES	
5	0.0388	14.3	108.0	0.0	42	112.4	14.0	96	14.0 TO 16.0	95	YES	
6	0.0372	15.6	109.9	0.0	42	112.4	14.0	98	14.0 TO 16.0	95	YES	
7	0.0382	15.5	108.1	0.0	42	112.4	14.0	96	14.0 TO 16.0	95	YES	
8	0.0390	14.9	111.5	0.0	42	112.4	14.0	99	14.0 TO 16.0	95	YES	
9	0.0438	15.6	106.3	0.0	46	108.7	15.3	98	15.3 TO 17.3	95	YES	
10	0.0449	16.1	107.2	0.0	46	108.7	15.3	99	15.3 TO 17.3	95	YES	
TEST NO.			TEST LOCA	TION, HOP	IZONTAL			TEST LOCATION Approximate Fill Depth, ft.	VERTICAL Elevation *	MATERIAL T	STED	

1 110.		Depth, ft. Clevation		
1	G.5 + 29.2, 72600 N & 58120 E	6953.	5 SUBGRADE	
2	H.2 + 29.3, 72560 N & 58170 E	6954.	6 SUBGRADE	
3	F.9 + 29.7, 72600 N & 58040 E	6951.	5 SUBGRADE	
4	F.2 + 29.5, 72820 N & 57980 E	6952.	7 SUBGRADE	
5	E.3 + 29.2, 72740 N & 57940 E	6951.	6 SUBGRADE	
6	E.5 + 30.5, 72630 N & 57870 E	6951.	1 SUBGRADE	
7	F.2 + 30.7, 72570 N & 57900 E	6951.	4 SUBGRADE	
8	F.9 + 30.5, 72500 N & 57960 E	6951.	4 SUBGRADE	
9	H.2 + 30.4, 72450 N & 58070 E	6953.	1 SUBGRADE	
10	H.2 + 32.3, 72320 N & 57980 E	6951.	7 SUBGRADE	:
·				

LABORATORY DATA & COMPACTION CHARACTERISTICS

LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	DESCRIPTION OF MATERIAL SOURCE OF MATERIAL		MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD				
46	31450185	CLAY - H.2+30.4	72450N & 58070E, 6973.1	15.3	108.7	D698-A				
42	31850185	CLAY	D+34,72410N&57320E,6950.3	14.0	112.4	D698-A				
44	31450185	CLAY	F8+39.872820N57370E6957.0	14.1	112.3	D698-A				

Comments: CB

* DATUM Elevation of Test = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2) TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FORM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARANTY, GUARANTY, DR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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Client

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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS CONTINUATION SHEET

---of 2 -18-95 -18-95

Client	UNC MINING AND MILLING
	POST OFFICE BOX 3077
	GALLUP, NM 87305

Date of Report 11-15-95		
Job No. 3145JB031	Page	2
Event/invoice No. 31450185-13		
Authorized By E. MORALES	Date	07.
Tested By C. PADILLA/WT	Date	07-

TEST NO. Hole Volume cu.ft. 11 0.040 12 0.046 13 0.037 14 0.038 15 0.047 16 0.036	1 14.3 9 14.6 9 15.7	Dry Unit Weight Ibf / cu. ft. 108.6 109.3 108.9 106.4	Oversize % 0.0 0.0 0.0	^{ID} 46 42 42	Maximum Dry Unit Weight Ibf / cu. ft. 108.7 112.4 112.4	Optimum Moisture % 15.3 14.0	% of Maximum Dry Unit Weight 100 97	Moisture % 15.3 TO 17.3 14.0 TO 16.0	Compaction % 95 95	CONFORMANCE INDICATED YES YES
12 0.046 13 0.037 14 0.038 15 0.047	1 14.3 9 14.6 9 15.7	109.3 108.9	0.0 0.0	42	112.4	14.0		1		1
13 0.037 14 0.038 15 0.047	9 14.6 9 15.7	108.9	0.0			1	97	14.0 TO 16.0	95	YES
14 0.038 15 0.047	9 15.7			42	112.4					
15 0.047		106.4				14.0	97	14.0 TO 16.0	95	YES
	3 15.1		0.0	46	108.7	15.3	98	15.3 TO 17.3	95	YES
16 0.036		107.4	0.0	42	112.4	14.0	96	14.0 TO 16.0	95	YES
	3 14.2	106.6	0.0	42	112.4	14.0	95	14.0 TO 16.0	95	YES
17 0.033	2 15.4	107.7	0.0	42	112.4	14.0	96	14.0 TO 16.0	95	YES
18 0.039	4 16.0	113.9	0.0	42	112.4	14.0	100+	14.0 TO 16.0	95	YES
19 0.037	9 15.8	111.0	0.0	42	112.4	14.0	99	14.0 TO 16.0	95	YES
20 0.030	6 15.9	109.9	0.0	42	112.4	14.0	98	14.0 TO 16.0	95	YES
21 0.031	3 16.1	114.4	0.0	44	112.3	14.1	100+	14.1 TO 16.1	95	YES

TEST			TEST LOCATIO	IN, VERTICAL	
NO.	TEST LOCATION, HORIZONTAL		Approximate Fill Depth, ft.	Elevation *	MATERIAL TESTED
11	G.5 + 32.5, 72350 N & 57900 E			6951.8	SUBGRADE
12	F.5 + 32.5, 72420 N & 57820 E			6950.5	SUBGRADE
13	E.5 + 32.5, 72480 N & 57730 E			6950.9	SUBGRADE
14	G.3 + 33.4, 72320 N & 57830 E	·		6950.9	SUBGRADE
15	F.2 + 33.8, 72340 N & 57710 E			6951.1	SUBGRADE
16	E.5 + 33.5, 72400 N & 57680 E			6951.1	SUBGRADE
17	F.9 + 34.3, 72240 N & 57730 E			6951.3	SUBGRADE
18	F.1 + 34.9, 72250 N & 57640 E	;		6951.3	SUBGRADE
19	E.5 + 36, 72200 N & 57520 E			6951.3	SUBGRADE
20	E.8 + 39.8, 72900 N & 57300 E			6952.7	SUBGRADE
21	F.8 + 39.8, 72820 N & 57370 E			6957.0	SUBGRADE
1	· · ·				

Comments: CB

* DATUM Elevation of Test = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2) TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WI AND CLIENT, WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY STUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 10-17-95 Job No. 3145JB031 Page 1 of 1 Event/Invoice No. 31450185-17 Authorized By E. MORALES Date 07-28-95 Tested By H. KUEBLER/WT Date 07-28-95

Client	UNC MINING AND MILLING		
Project	1995 RECLAMATION	•	

Location CHURCH ROCK, NM

Client UNC MINING AND MILLING

GALLUP, NM 87305

POST OFFICE BOX 3077

Test Locations Designated By H. KUEBLER/WT

Test Procedures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944

Calibrated Volume of Sand Cone Apparatus 0.0383 cu. ft. Bulk Unit Weight of Sand 94.8 lbf/cu. ft.

	IN-PLACE CHARACTERISTICS					B CHARACTERISTIC	s	COMPACTION REQUIREMENTS			
NO.	Hole Volume cu. ft,	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	ID	Meximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	
1	0.0355	14.6	108.0	0.0	45	112.8	13.0	96	13.0 TO 15.0	95	YES
2	0.0370	13.5	107.6	0.0	45	112.8	13.0	95	13.0 TO 15.0	95	YES
3	0.0378	15.6	107.2	0.0	45	112.8	13.0	95	13.0 TO 15.0	95	NO
4	0.0329	14.8	104.0	0.0	45	112.8	13.0	92	13.0 TO 15.0	95	NO
5	0.0373	14.6	108.9	0.0	45	112.8	13.0	97	13.0 TO 15.0	95	YES
								1			

TEST		TEST LOCATION, V	ERTICAL		
NO.	TEST LOCATION, HORIZONTAL	Approximate Fill Depth, ft. El	evation *	MATERIAL TESTED	
1	C + 37, 72280 N & 57260 E	6	951.1	SUBGRADE	
2	C + 35, 72460 N & 57410 E	6	950.2	SUBGRADE	
3	C + 33, 72430 N & 57400 E	6	951.2	SUBGRADE	
4	C + 31, 72730 N & 57650 E	6	952.7	SUBGRADE	
5	C + 29, 72880 N & 57780 E	6	955.8	SUBGRADE	
	· .				
	LABORATORY DATA &	COMPACTION CHARACTERISTICS			
	EVENT/ DESCRIPTION OF MATERIAL		OPTIMUM	MAXIMUM DRY UNIT TEET METHOD	

		DABONATONIO	ATA & COMPACTION CHARACTERISTICS				
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	OPTIMUM MOISTURE, %	TEST METHOD			
45	31450185	1450185 CLAY C+31,72730N&57650E,6952.6		13.0	112.8	D698-A	
	<u>ــــــــــــــــــــــــــــــــــــ</u>			1			

Comments: CB

DATUM Test Elevation = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT ANU CLIENT, WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS, NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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A. McHaney

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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Client UNC MINING AND MILLING POST OFFICE BOX 3077 GALLUP, NM 87305

Date of Report 10-17-95		
Job No. 3145JB031	Page	1 of 1
Event/Invoice No. 31450185-18		
Authorized By E. MORALES	Date	07-28-95
Tested By H. KUEBLER/WT	Date	07-28-95

Client	UNC MINING AND MILLING					
Project	1995 RECLAMATION					
Location	CHURCH ROCK, NM		,			
Test Location	ons Designated By H. KUEBLER	/wr				
Test Proced	ures In-Place Unit Weight : AST	M D1556	Moisture Conter	nt : ASTM D494	44	
Calibrated V	olume of Sand Cone Apparatus	0.0387 cu.	ft. Bulk Unit V	Neight of Sand	94.6	bf/cu. ft.
				- T - · · · · · · · · · · · · · · · · ·		

	IN-	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS CON			COMPACTION REQUIREMENTS		
TEST NO.	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Maisture %	Compection %	
6	0.0317	14.6	110.7	0.0	43	113.2	14.0	98	14.0 TO 16.0	95	YES
7	0.0354	14.3	113.4	0.0	43	113.2	14.0	100	14.0 TO 16.0	95	YES
8	0.0330	14.9	108.4	0.0	42	112.4	14.0	96	14.0 TO 16.0	95	YES
9	0.0294	15.6	107.1	0.0	42	112.4	14.0	95	14.0 TO 16.0	95	YES
10	0.0336	13.0	106.7	0.0	45	112.8	13.0	95	13.0 TO 15.0	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL Approximate Fill Depth, ft. Elevation *	MATERIAL TESTED
6	D + 38, 72150 N & 57280 E	6951.1	SUBGRADE
7	D + 36, 72290 N & 57400 E	6951.6	SUBGRADE
8	D + 34, 72410 N & 57320 E	6950.3	SUBGRADE
9	D + 32, 72600 N & 57670 E	6951.3	SUBGRADE
10	D + 30, 72750 N & 57800 E	6950.5	SUBGRADE
	· .		
	1		

		LABORATORY	DATA & COMPACTION CHARACTERISTICS	4		
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, Ibf / cu. ft.	TEST METHOD
43	31450185	CLAY	D-38,72150N&57280E,6951.1	14.0	113.2	D698-A
42	31850185	CLAY	D+34,72410N&57320E,6950.3	14.0	112.4	D698-A
45	31450185	CLAY	C+31,72730N&57650E,6952.6	13.0	112.8	D698-A

Comments: CB

* DATUM Test Elevation = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING 'ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WIT AND CLENT. WIT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY. EXPECTED FORM SMILLARLY STUATED PROFESSIONALS, NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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A. McHaney

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Client

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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 10-18-95 Job No. 3145JB031 Event/Invoice No. 31450243 Authorized By E. MORALES Tested By H. KUEBLER/WT

6951.3

SUBGRADE

Page 1 of 1 Date 08-02-95 Date 08-02-95

Client	UNC MINING AND MILLING
	POST OFFICE BOX 3077
	GALLUP, NM 87305

UNC MINING AND MILLING

st P	Procedure: ated Volu	s In-Place	d Cone Ap	nt : AST	0.038	56 Moistur 7 cu. ft. Bu	ulk Unit V					
TEST NO.	Hole Volume cu. ft.	Moiature % of Dry Unit Weight	Dry Unit Weight Ibf / cu, ft.	Oversize %		Maximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moistur %		REQUIREMENTS Compection INDICATI	
1	0.0348		109.4	0.0	45	112.8	13.0	97	13.0 TO	15.0	95	YES
2	0.0336		108.2	0.0	45	112.8	13.0	96	13.0 TO		95	YES
3	0.0334		106.7	0.0	45	112.8	13.0	95	13.0 TO		95	YES
4	0.0282	13.2	111.8	0.0	45	112.8	13.0	99	13.0 TO	15.0	95	YES
EST NO.			TEST LOCA	TION, HOR	ZONTAL			TEST LOCATION Approximate Fill Depth, ft.	, VERTICAL Elevation *	MATERIAL TESTED		

4 RETEST OF #4 (07/28/95) 6952.6 SUBGRADE 6952.6 SUBGRADE LAB ID. EVENT/ INVOICE NO. DESCRIPTION OF MATERIAL SOURCE OF MATERIAL OPTIMUM MOISTURE, % MAXIMUM DRY UNIT WEIGHT, Ibf / cu. ft. 45 31450185 CLAY C + 31 72730N&57650F 6952 6 13.0 112.8 D698.	 INVOICE NO.			MOISTURE, %	WEIGHT, 16f / cu. ft.	
		DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL			TEST METHOD
		LABORATOR	Y DATA & COMPACTION CHARACTERISTICS			····
4 RETEST OF #4 (07/28/95) 6952.6 SUBGRADE	 <u></u>		· _			
4 RETEST OF #4 (07/28/95) 6952.6 SUBGRADE						
4 RETEST OF #4 (07/28/95) 6952.6 SUBGRADE		· .				
4 RETEST OF #4 (07/28/95) 6952.6 SUBGRADE		.				
4 RETEST OF #4 (07/28/95) 6952.6 SUBGRADE						
	RETEST OF #4	l (07/28/95)		6952.6	SUBGRADE	

Comments: CB

* DATUM Test Elevation = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2)

3 | RETEST OF #3 (07/28/95)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WIT AND CLIENT. WIT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FORM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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Client UNC MINING AND MILLING

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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 10-18-95 Ε

GALLUP, NM 87305

Job No. 3145JB031	Page	1	of	1	
vent/Invoice No. 31450243-1					
Authorized By E. MORALES	Date	08	3-02	2-95	į
Tested By H. KUEBLER/WT	Date	08	3-02	2-95	j
·					

Client	UNC MINING AND MILLING	
Project	1995 RECLAMATION	
Location	CHURCH ROCK, NM	
Test Locat	ions Designated By H. KUEBLER/WT	

Test Procedures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944

Calibrated Volume of Sand Cone Apparatus 0.0387 cu ft Bulk I Init Weight of Sand 94.8 Jbf/cu ft

Calibra	ted Volu	me of San	d Cone App	aratus	0.038	0.0387 cu. ft. Bulk Unit Weight of Sand 94.8 lbf/cu. ft					<u>. ft.</u>		
	IN-	PLACE CHARA	CTERISTICS		LAB CHARACTERISTICS			COMPACTION			REQUIREMENTS		
TEST NO.	Hole Volume cu. ft.	Moišture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	iD	Maximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moistu %	re	Compaction %		
5	0.0404	11.6	111.1	0.0	40	117.5	11.2	95	11.2 TO	13.2	95	YES	
6	0.0381	12.3	112.4	0.0	40	117.5	11.2	96	11.2 TO	13.2	95	YES	
7	0.0256	12.3	114.9	0.0	40	117.5	11.2	98	11.2 TO	13.2	95	YES	
8	0.0361	12.7	111.8	0.0	· 40	117.5	11.2	95	11.2 TO	13.2		YES	
, 9	0.0229		115.3	0.0	40	117.5	11.2	98	11.2 TO	13.2		YES	
10	0.0340	11.4	111.1	0.0	40	117.5	11.2	95	11.2 TO	13.2	95	YES	
TEST	-							TEST LOCATIO	N, VERTICAL				
NO.					RIZONTAL			Depth, ft.	Elevation *		MATERIAL TESTED		
5			& 57270 E						6953.1		GRADE		
6 7	· · ·		& 57130 E & 57000 E						6954.1 6954.9		IGRADE IGRADE		
8			& 57860 E						6956.4		IGRADE		
9			& 57510 E						6955.0		IGRADE		
10			& 57400 E			•			6953.0		GRADE		
												•	

	LABORATORY DATA & COMPACTION CHARACTERISTICS											
LAB ID.	AB ID. EVENT/ INVOICE NO. DESCRIPTION OF MATERIAL SOURCE OF MATERIAL OPTIMUM MAXIMUM DRY UNIT INVOICE NO. DESCRIPTION OF MATERIAL SOURCE OF MATERIAL OPTIMUM MAXIMUM DRY UNIT WEIGHT, 1bf / cu. ft.											
40	31450185	CLAY	B+32,72760N&57510E,6955.0	11.2	117.5	D698-A						

)

Comments: CB

DATUM Test Elevation = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2)

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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Client UNC MINING AND MILLING **POST OFFICE BOX 3077 GALLUP, NM 87305**

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Date of Report 11-15-95	
Job No. 3145JB031	P
Event/Invoice No. 31450243-2	
Authorized By E. MORALES	D
Tested By H. KUEBLER/WT	D

Page	1	of	1
Date	80	3-03	-95
Date	05	1.03	.95

Client	UNC MINING AND MILLING
Project	1995 RECLAMATION
Location	CHURCH ROCK, NM
—	

Test Locations Designated By CLIENT

Test Procedures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944 Calibrated Volume of Sand Cone Apparatus 0.0387 cu. ft. Bulk Unit Weight of Sand 94.8 lbf/cu. ft

	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS				
NO.	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	iD	Maximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %			
1	0.0309	11.0	113.0	0.0	38	117.5	9.8	96	9.8 TO 11.8	95	YES		
2	0.0254	10.7	116.8	0.0	38	117.5	9.8	99	9.8 TO 11.8	95	YES		
3	0.0270	10.1	118.3	0.0	38	117.5	9.8	100+	9.8 TO 11.8	95	YES		
4	0.0304	11.6	115.8	0.0	38	117.5	9.8	99	9.8 TO 11.8	95	YES		
5	0.0318	12.1	111.4	0.0	39	117.3	12.1	95	12.1 TO 14.1	95	YES		
6	0.0295	12.5	111.0	0.0	39	117.3	12.1	95	12.1 TO 14.1	95	YES		
7	0.0299	12.3	115.0	0.0	39	117.3	12.1	98	12.1 TO 14.1	95	YES		
8	0.0309	14.1	110.5	0.0	45	112.8	13.0	98	13.0 TO 15.0	95	YES		
							·			· · · ·			

TEST		TEST LOCATIO	N, VERTICAL	
NO.	TEST LOCATION, HORIZONTAL	Approximate Fill Depth, ft.	Elevation *	MATERIAL TESTED
1	A + 41, 72110 N & 56860 E		6956.6	SUBGRADE
2	A + 39, 72130 N & 56970 E		6956.6	SUBGRADE
3	A + 37, 72410 N & 57110 E		6956.4	SUBGRADE
4	A + 35, 72580 N & 57290 E		6956.2	SUBGRADE
5	A + 33, 72570 N & 57240 E		6956.2	SUBGRADE
• 6	A + 31, 72900 N & 57500 E		6956.4	SUBGRADE
. 7	B + 29, 72960 N & 57700 E		6953.8	SUBGRADE
8	D + 39, 72060 N & 57220 E		6951.9	SUBGRADE
[LABORATORY DATA & COMPAC	TION CHARACTERISTICS		

		Biberbiretti				
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, Ibf / cu. ft.	TEST METHOD
38	31450243	CLAY	A+41,72110N&56860E,6956.6	9.8	117.5	D698-A
39	31450243	CLAY	A+31,72900N&57500E,6956.4	12.1	117.3	D698-A
45	31450185	CLAY	C+31,72730N&57650E,6952.6	13.0	112.8	D698-A

Comments: CB

* DATUM Test Elevation = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2) TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT ANU CLIENT. WT WARAANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARAANTY, GUARANTY OR REPRESENTATION, EXPRESS OR IMPLED, IS INCLUDED OR INTERDED.

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client:	UNC Mining & Milling	Job N	ò.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077		Lab/In	iv. No.	31450051
	Gallup, NM 87301		Repor	t Date:	04/17/95
Project:	1995 Reclaimation				
Location:	Church Rock, NM				
Material:	Clayey Sand	Sampled By:	H. Kuebler	Date	03/06/95
Source:	Composite of S. Cell, Borrow Area	Submitted By:	H. Kuebler	Date	03/06/95
		Authorized By:	Client	Date	03/06/95

Coefficient of Permeability, Constant Head

5.7 X 10⁻⁷ cm/sec

0.59 ft/yr

Sample was compacted to 95% of ASTM 698

Copies to: Addressee (3), Billing (1), Field File (1) 362/dn:unc031

The above services and report were performed pursuant to the terms and conditions of the
agreement or proposal, if any, between WT and client. WT warrants that this was performed
under the appropriate standard of care, including the skill and judgement that is reasonably
expected from similarly situated professionals. No other warranty, guaranty, or representation,
either expressed or implied is included or intended.
REVIEWED BY Thomas Knake
REVIEWED BY

APPENDIX D

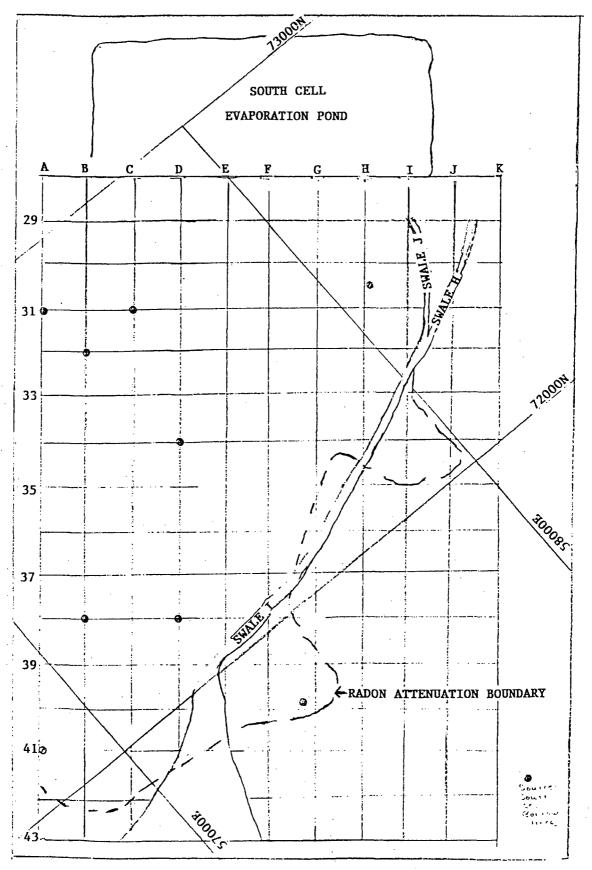
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APPENDIX D

PROCTOR TESTS, RADON ATTENUATION COVER



PROCTOR LOCATION SOUTH CELL

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

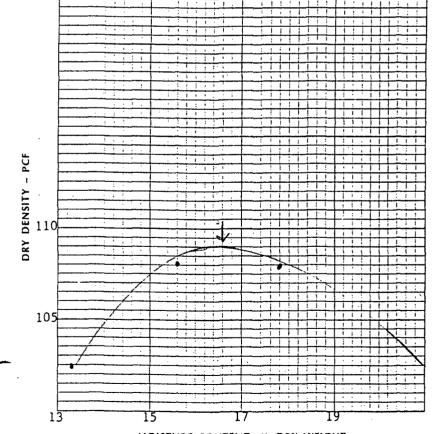
12

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
03/02/95	Proctor	Composite of	South Cell	Borrow Area		RAC	109.0	16.6		SC	Yes
07/13/95	Proctor	H.2 + 30.4	72450.0	58070.0	6953.1	RAC	108.7	15.3		CL	Yes
07/13/95	Proctor	D + 38	72150.0	57280.0	6951.1	RAC	113.2	14.0	·	CL	Yes
07/18/95	Proctor	F.8 + 39.8	. 72820.0	57370.0	6957.0	RAC	112.3	14.1		CL	Yes
07/21/95	Proctor	C+31	72730.0	57650.0	6952.6	RAC	112.8	13.0		CL	Yes
07/21/95	Proctor	.D+34	72410.0	57320.0	6950.3	RAC	112.4	14.0		CL	Yes
07/21/95	Proctor	B + 38	72280.0	57130.0	6954.1	RAC	117.0	12.3		CL	Yes
07/28/95	. Proctor	<u>, B + 32</u>	72760.0	57510.0	6955.0	RAC	117.5	11.2		CL	Yes
08/03/95	Proctor	· A+31	72900.0	57500.0	6956.4	RAC	117.3	12.1		CL	Yes
08/03/95	Proctor	A + 41	72110.0	56860.0	6956.4	RAC	117.5	9.8		ML	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/11

				•		Job No.		314	45JB031
									50051
Type of Material <u>Clayey</u> Sa	and			Sampled By	н.	Kueb1	bler/WT		Date 03/02/
Source of Material <u>Composite</u>	e of South	Cell Borr		Submitted By					Date 03/02/
		Tested / Calc. B					Date 03/02/		
Test ProcedureASTM_D698	8A		Reviewed By		an			Date	
Trial No.	1	2	3	4		5	6		7
Water, Estimated %									
Water, cc	100	50	150	0	•	•			
Sample + Mold Weight, gms	6177.5	6144.9	6115.1	6011.5			T		
Mold Weight, gms	4257.9	4257.9	4257.9	4257.9					
Wet Sample Weight , gms	1919.6	1887	1857.2	1753.6					
Wet Sample Weight, lbs	4.232	4.160	4.094	3.866					
Wet Density, pcf	127.0	124.8	122.8	116.0					
Moisture Sample Wet, gms	210.4	324.3	360.7	270.1					
Moisture Sample Dry, gms	178.6	280.6	299.8	238.3				·	j
Weight of Water, gms	31.8	43.7	60.9	31.8					
Moisture, %	17.8	15.6	20.3	13.3					l ,
Dry Density, pcf	107.8	108.0	102.1	102.4					



Optimum Moisture Conten	n, ‰16.6
Diameter of Mold, in	4"
Height of Mold, in.	4.584
No. of Layers	3
Blows Per Layer	25
Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
<u> </u>	
	······································

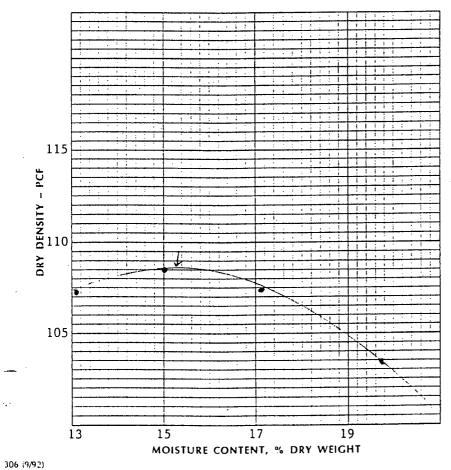
Maximum Dry Density, pcf

109.0

MOISTURE CONTENT, % DRY WEIGHT

306 (9/92)

						Job No.	3	145JB031
						Lab/Inv	oice No3	1450185
Type of Material	Clay				_ Sampled By	C. Padill	a/WT	Date07/13/9
	H.2 + 30	.4 (72450N	& 58070E)		Submitted By	C. Padil	la/WT	Date 07/14/9
	Elev 695	3.1			_ Tested / Calc. I	_{By} C. Padil	la/WT	Date07/14/9
Test Procedure	ASTM D698	3A			_ Reviewed By	By C. Padil	~	Date
Trial No.		1	2	3	4	5	6	7
Water, Estimated	%							· .
Water, cc		150	100	200	50			
Sample + Mold W	/eight, gms	6174.6	6159.5	6145.2	6106.4			
Mold Weight, gm	5	4273.0	4273.0	4273.0	4273.0			
Wet Sample Weig	ght , gms	1901.6	1886.5	1872.2	1833.4			
Wet Sample Weig	zht, Ibs	4.192	4.159	4.127	4.042			
• Wet Density, pcf		125.8	124.8	123.8	121.3			· · ·
Moisture Sample	Wet, gms	367.1	355.1	379.2	368.5	·	<u> </u>	
Moisture Sample	Dry, gms	313.6	308.9	316.7	325.8			
Weight of Water,	gms	53.5	46.2	62.5	42.7			
Moisture, %		17.1	15.0	19.7	13.1			
Dry Density, pcf		107.4	108.5	103.4	107.3			

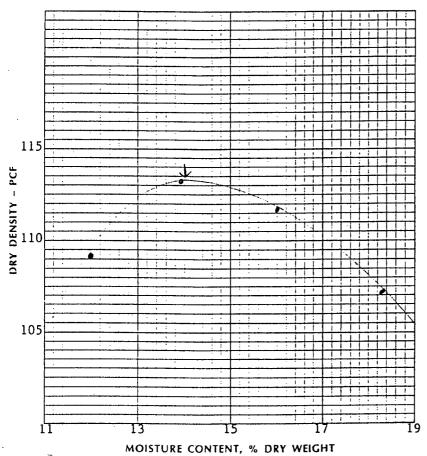


Maximum Dry Density, pcf _____ 108.7

Optimum Moisture Content, % <u>15.3</u>

Diameter of Mold, in	4"
Height of Mold, in.	4.584
No. of Layers	3
Blows Per Layer	25
Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
·	
	···· .

				. •	Jot			3145JB031
	·					Lab / Inv	oice No	31450185
Type of Material Clay				_ Sampled By	с.	Padil	la/WT	Date 07/13/9
Source of Material D + 38	(72150N &	57280E) E1	ev 6951.1	Submitted By _	с.	Padil	la/WT	Date 07/14/9
				_ Tested / Calc. B				Date 07/17/9
Test Procedure ASTM D6	98A			_ Reviewed By _		a	2	Date
Trial No.	1	2	3	4		5	6	7
Water, Estimated %								
Water, cc	0	50	100	150				
Sample + Mold Weight, gms	6123.8	6225.7	6230.1	6180.0				
Mold Weight, gms	4272.6	4272.6	4272.6	4272.6				
Wet Sample Weight , gms	1851.2	1953.1	1957.5	1907.4				
Wet Sample Weight, lbs	4.081	4.306	4.315	4.205				
Wet Density, pcf	122.4	129.2	129.5	126.2				
Moisture Sample Wet, gms	402.5	403.4	619.8	466.5				· .
Moisture Sample Dry, gms	359.5	354.2	534.1	394.4				
Weight of Water, gms	43.0	49.2	85.7	72.1				
Moisture, %	12.0	13.9	16.0	18.3				
Dry Density, pcf	109.3	113.4	111.6	106.7				

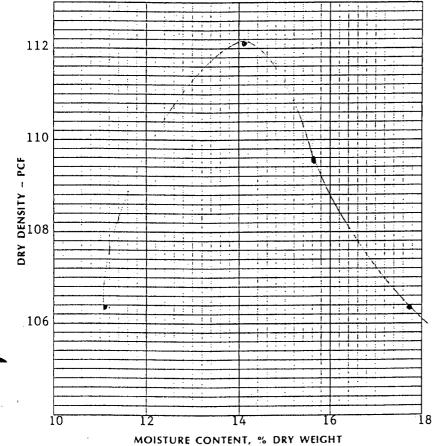


Maximum Dry Density, pcf _____ 113.2

Optimum Moisture Content, % _____14.0

Diameter of Mold, in	4"
Height of Mold, in.	4.584
No. of Layers	3
Blows Per Layer	25
Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
	<u></u>
	- <u></u> ,

						Job No.		3145JB031	
							oice No	31450185	
Type of Material Clay						Kueble		Date ⁰ 7/18	3/93
Source of Material F.8 -	+ 39.8 (7282	ON & 57370	E)	_ Submitted By				Date ^{07/18}	3/9.
	6957.0			_ Tested / Calc. I				Dale ^{07/18}	
Test Procedure ASTM	D698A			_ Reviewed By		a	2	Date	
Trial No.	1	2	3	4		5	6	7	
Water, Estimated %									
Water, cc	100	150	50	200					. <u></u>
Sample + Mold Weight, gms	6116.6	6082.7	5975.8	6080.0				·	
Mold Weight, gms	4179.7	4179.7	4179.7	4179.7					
Wet Sample Weight , gms	1936.9	1903.0	1796.1	1900.3					
Wet Sample Weight, lbs	4.27	4.195	3.96	4.189					
Wet Density, pcf	128.1	125.9	118.8	125.7					
Moisture Sample Wet, gms	424.3	419.6	459.4	429.0					
Moisture Sample Dry, gms	372.0	363.1	413.5	364.4					
Weight of Water, gms	52.3	56.5	45.9	64.6		······································			
Moisture, %	14.1	15.6	11.1	17.7					
Dry Density, pcf	112.3	108.9	106.9	106.8					



Optimum Moisture Content	.%14.1
Diameter of Mold, in	4"
Height of Mold, in	4.584
No. of Layers	3
Blows Per Layer	25
Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
	<u> </u>

Maximum Dry Density, pcf _____

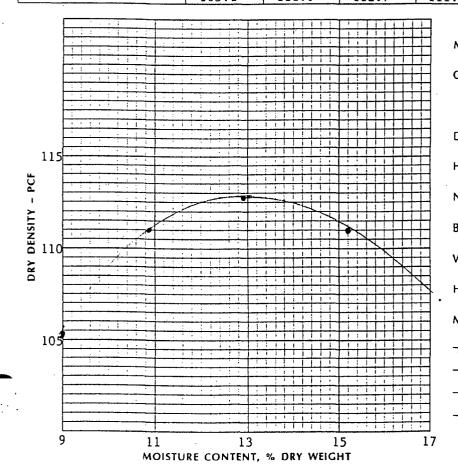
112.3

Western Technologies Inc.

306 (9,92)

· · ·					job No	3	145JB031
					Lab/Inv	pice No. <u>3</u>	1450185
Type of Material Clay	. <u> </u>			_ Sampled By			Date 07/21/
Source of Material $C + 31$	(72730N &	57650E) E1					Date 07/22/
				_ Tested / Calc. B	y N. Smith	/WT	Date 07/25/
est Procedure ASTM D6	98Å		m 	_ Reviewed By _	Ā	2	Date
Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	200	250	300	350	400		
Sample + Mold Weight, gms	5896.3	6025.1	6086.4	6097.2	6074.1	T	
Mold Weight, gms	4163.3	4163.3	4163.3	4163.3	4163.3	· ·	
Wet Sample Weight , gms	1733.0	1861.8	1923.1	1933.9	1910.8		
Wet Sample Weight, Ibs	3.870	4.104	4.240	4.263	4.213		
Wet Density, pcf	114.6	123.1	127.2	127.9	126.4		
Moisture Sample Wet, gms	414.5	468.1	432.7	478.1	428.1		
Moisture Sample Dry, gms	380.2	422.1	383.1	414.9	364.5		
Weight of Water, gms	34.3	46.0	49.6	63.2	63.6		
Moisture, %	9.0	10.9	12.9	15.2	17.4		
Dry Density, pcf	105.1	111.0	112.7	111.0	107.7		

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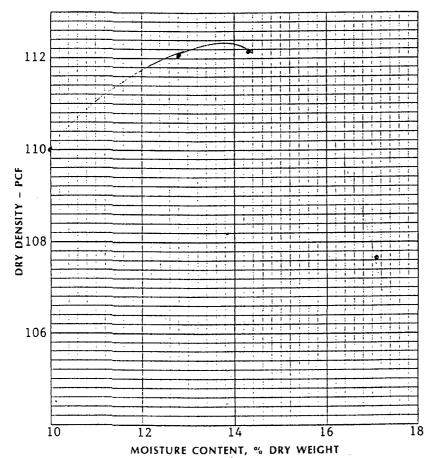


Maximum Dry Density, pcf <u>112.8</u>

Optimum Moisture Content, % _____13.0

Diameter of Mold, in	4"
Height of Mold, in.	4.584
No. of Layers	3
Blows Per Layer	25
veight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
······	
· · · · · · · · · · · · · · · · · · ·	

					Job No.		3145JB031
					Lab / In	voice No	31450185
Type of Material <u>Clay</u>				_ Sampled By	C. Padil	la/WT	Date07/21/9
Source of Material $D + 34$	(72410N & 5	57320E) Ele	v 6950.3	_ Submitted By	C. Padil	la/WT	Date07/22/9
· · · · · · · · · · · · · · · · · · ·				_ Tested / Calc. By	,R. Griff	ith/WT	Date07/24/9
Test Procedure ASTM D69	98A			_ Reviewed By			Date
Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	150	200	250	300			
Sample + Mold Weight, gms	. 5983.1	6074.7	6106.7	6061.5			
Mold Weight, gms	4163.2	4163.2	4163.2	4163.2			
Wet Sample Weight , gms	1829.9	1911.5	1943.5	1898.3			
Wet Sample Weight, Ibs	4.034	4.21	4.30	4.20			
Wet Density, pcf	121.0	126.4	128.5	125.5			
Moisture Sample Wet, gms	490.5	382.9	379.6	430.1			
Moisture Sample Dry, gms	446.1	339.6	332.0	367.0			
Weight of Water, gms	44.4	43.3	47.6	63.1			
Moisture, %	10.0	12.8	14.3	17.2			
Dry Density, pcf	110.0	112.1	112.4	107.1			



Maximum Dry Density, pcf <u>112.4</u>

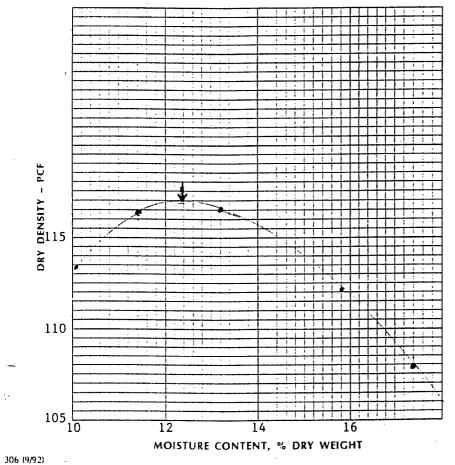
Optimum Moisture Content, % ____14.0

Diameter of Mold, in.	4"
Height of Mold, in.	4.584
No. of Layers	
Blows Per Layer	25
Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
-	4

Western Technologies Inc.

306 (9/92)

					Job No	•	3145JB031
	>				Lab/Invo	oice No	31450185
Type of Material Cla	У		•	_ Sampled By	C. Padill	a/WT	Date 07/21/9
	38 (72280N 8	57130E) I					Date ^{07/22/95}
	,				By N. Smith/		Date ^{07/24/95}
Test Procedure AST	M D698A			_ Reviewed By _			Date
Trial No.	1	2	3	4	5	6	7
Water, Estimated %							-
Water, cc	100	150	200	250	50		
Sample + Mold Weight, gr	ns 6122.8	6157.8	6127.0	6078.1	6049.0		
Mold Weight, gms	4163.2	4163.2	4163.2	4163.2	4163.2		
Wet Sample Weight , gms	1959.6	1994.6	1963.8	1914.9	1885.8		
Wet Sample Weight, lbs	4.320	4.397	4.329	4.221	4.157		
Wet Density, pcf	129.6	131.9	129.9	126.6	124.7		
Moisture Sample Wet, gms	494.0	674.0	432.6	489.8	·447.0		
Moisture Sample Dry, gms	443.3	595.6	373.5	417.1	405.9		
Weight of Water, gms	50.7	78.4	59.1	72.7	41.1		
Moisture, %	11.4	13.2	15.8	17.4	10.1		
Dry Density, pcf	116.3	116.5	112.2	107.8	113.3		



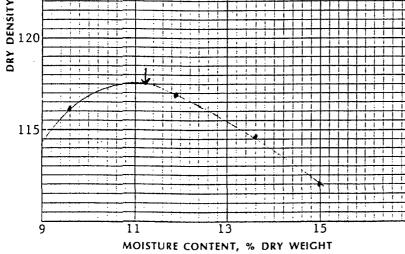
. . .

Maximum Dr	y Density, pcf	117.0
	y Density, per	

12.3 Optimum Moisture Content, %

4"
4.584
3
25
5.5
12"
_#4

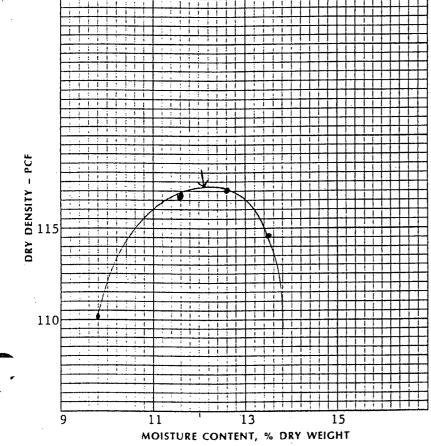
					job No		3145JB031
					Lab / Invoi	ice No	31450185
Type of Material Clay				Sampled By <u>H</u>	. Kuebler/W	/T	Date07/28/
Source of Material $B + 32$ (7	2760N & 57	510E)Elev	6955.0	Submitted By	H. Kuebler/	WT	Date07/28/
	<u> </u>			Tested / Calc. By	H. Kuebl	ler/WT	Date _07/28/
Test ProcedureASTM_D698	A			Reviewed By _	G	R	Date
Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	150	200	250	300			
Sample + Mold Weight, gms	6180.5	6236.0	6224.6	6202.3			
Mold Weight, gms	4256.4	4256.4	4256.4	4256.4			
Wet Sample Weight , gms	1924.1	1979.6	1968.2	1945.9			
Wet Sample Weight, Ibs	4.24	4.36	4.34	4.29			
Wet Density, pcf	127.2	130.8	130.2	128.7			
Moisture Sample Wet, gms	390.4	429.1	430.0	430.6			
Moisture Sample Dry, gms	356.1	383.5	378.5	374.4			
Weight of Water, gms	34.3	45.6	51.5	56.2			
Moisture, %	9.6	11.9	13.6	15.0			
Dry Density, pcf	116.1	116.9	114.6	111.9			
- PCF				Diamete Height o	m Dry Density, p m Moisture Conte er of Mold, in f Mold, in ayers	ent, %4" 4" 4.	11.2
					er Layer	25	



Diameter of Mold, in	4"
Height of Mold, in	4.584
No. of Layers	3
Blows Per Layer	25
Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
·	

306 (9/92)

					Job No.		3145JB031
						roice No.	
Type of Material Clay							
Source of Material $A + 31$ (72900N & 5	7500E) Elev	7 6956.4	_ Submitted By _			Date <u>08/03/95</u>
				_ Tested / Calc. E	gyH. Kueble	r/WT	Date <u>08/03/9</u> 5
Test Procedure ASTM D69	8A	<u> </u>		Reviewed By	a	2	Date <u>08/03/95</u> Date
Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	200	250	150	225			
Sample + Mold Weight, gms	6223.7	6226.1	6085.3	6247.7			
Mold Weight, gms	4256.4	4256.4	4256.4	4256.4			
Wet Sample Weight , gms	1967.3	1969.7	1828.8	1991.3	· .		
Wet Sample Weight, lbs	4.34	4.34	4.03	4.39			
Wet Density, pcf	130.2	130.2	120.9	131.7			
· Moisture Sample Wet, gms	487.5	367.3	317.5	317.9			
Moisture Sample Dry, gms	436.9	323.5	289.1	282.3			
Weight of Water, gms	50.6	43.8	28.4	35.6			
Moisture, %	11.6	13.5	9.8	12.6			
Dry Density, pcf	116.7	114.7	110.1	117.0			



 Optimum Moisture Content, % 12.1

 Diameter of Mold, in.

 Height of Mold, in.

 4.584

 No. of Layers

 3

 Blows Per Layer

 25

 Weight of Hammer, lbs

 5.5

 Height of Drop

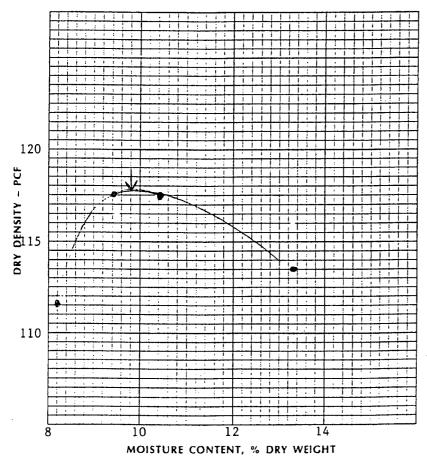
 12"

 Material Used

Maximum Dry Density, pcf 117.3

306 (9/92)

					Job No.		3145JB031
					Lab/Inv	oice No	31450243
Type of Material Silt				Sampled By	H. Kueble	r/WT	Date 08/03/9
Source of Material $A + 41$ (72110N & 5	6860E) Ele	v 6956.6	Submitted By	H. Kueble	r/WT	Date 08/03/9
				_ Tested / Calc. By	H. Kueble	r/WT	Date 08/03/9
Test ProcedureASTM_D69	8A			_ Reviewed By	a	·	Date
Trial No.	1	2	3	4	5	6	7
Water, Estimated %	·						
Water, cc	50	100	0	-50			
Sample + Mold Weight, gms	6217.5	6201.9	6082.0	6199.3			
Mold Weight, gms	4256.4	4256.4	4256.4	4256.4	F. 2010		
Wet Sample Weight , gms	1961.1	1945.5	1825.6	1942.9			
Wet Sample Weight, lbs	4.32	4.289	4.03	4.28	•		
Wet Density, pcf	129.7	128.7	120.9	128.5			
Moisture Sample Wet, gms	353.8	293.8	310.5	311.1			
Moisture Sample Dry, gms	320.5	259.4	287.0	284.4	· · // · · · · · · · · · · · · · · · ·	· ·	
Weight of Water, gms	33.3	34.4	23.5	26.7			
Moisture, %	10.4	13.3	8.2	9.4			
Dry Density, pcf	117.5	113.6	111.7	117.5			



Maximum Dry Density, pcf _____ 117.5

Optimum Moisture Content, % _____9.8

Diameter of Mold, in.	4"
Height of Mold, in	4.584
No. of Layers	3
Blows Per Layer	25
- Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	
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K.			 · · · · · · · · ·	APPENDIX E	······································
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APPENDIX E

ROCK QUALITY DETERMINATIONS, ROCK MULCH AND RIPRAP



Western Technologies Inc. The Quality People Since 1955

400 South Lorena Avenue Farmington, New Mexicò 87401 (505) 327-4966 • fax 327-5293

ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077 Job No. <u>3145JB031</u> Inv. No. <u>31450084</u> Date of Report <u>12/05/95</u> Reviewed By

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.735	9.4	9	84.6
Absorption, %	1.21	9.8	. 2	11.7
L.A. Abrasion, 100 rev, %	6	7.6	1	7.6
Sodium Soundness Loss, %	2.74	9.7	11	106.7

Total = 210.6, Rock Quality Score = 210.6/230 x 100 = 92

Dist: Client (3) Field File (1)

/cb:RQD.UNC12

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job	No.	3145JB031
	Attn: Ed Morales PO Box 3077		Lab	/Inv. No.	31450084
	Gallup, NM 87305		Rep	oort Date:	04/24/95
Project:	1996 Reclamation				
Location:	Church Rock, NM				
Material:	1.5 Aggregate	Sampled By:	H. Kuebler	Date	04/06/95
Source:	Hamilton Brothers	Submitted By:	H. Kuebler	Date	04/06/95
		Authorized By:	Client	Date	04/06/95

Coarse Aggregate, ASTM C127

Weight of Oven-Dry Specimen in Air, gms. - 4369.6

Western

The Quality People Since 1935

Inc.

Technologies

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2.703 Bulk Specific Gravity 2.735 Bulk Specific Gravity (SSD) Apparent Specific Gravity 2.794 Absorption, Percent 1.21

Copies to: Addressee (3), Billing (1) 46.4/dn:unc031

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ر م Western Technologies Inc. The Quality People Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job N	10.	.3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/Ir	nv. No.	31450084
	Gallup, NM 87305		Repor	rt Date:	04/24/95
Project:	1995 Reclaimation				
Location:	Church Rock, NM				
Material:	1.5 Aggregate	Sampled By:	H. Kuebler	Date	04/06/95
Source:	Hamilton Brothers	Submitted By:	H. Kuebler	Date	04/06/95
Supplier:	Hamilton Brothers	Authorized By:	Client	Date	04/06/95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 6

Copies to: Addressee (3), Billing (1) 46.2/unc031

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate stendard of care, including the skill and judgement that is reasonably expected from similarly studated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

REVIEWED BY Thomas Make

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

	Client:	UNC Mining & Attn: Ed Mor PO Box 3077 Gallup, NM &	ales		ş		o. v. No. t Date:	3145JB031 31450084 04/24/95
1	Project:	1995 Reclama	ation					
	Location:	Church Rock,	NM					
ł	Material:	1.5 Aggregate			Sampled By:	H. Kuebler	Date	04/06/95
:	Source:	Hamilton Brot			Submitted By:	H. Kuebler	Date	04/06/95
l	Procedure:	ASTM C88			- Authorized By:	Client	Date	04/06/95
		· · · · · · · · · · · · · · · · · · ·			Solution:	Sodium Sulfate (Us	ed)	
				FIN	E AGGREGATE			<u></u>
	Fin Fraction		Grading of Original Sample Percent		Wt. of Test Fractions Before Test, grams	Percentage Pas Designated Sieve	sing	Weight Percentage Loss, %
	Minus N	o. 100	•					
	No. 50 to	No. 100						
	No. 30 to	No. 50						
	No. 16 to	No. 30						
	No. 8 to	No. 16						
	No. 4 to	No. 8				·		
	3/8 to	No. 4						
	Tota	als		COAF	SE AGGREGATE			
	Coars Fraction		Grading of Original Sample Percent		Wt. of Test Fractions Before Test, grams	Percentage Pas Designated Sieve	sing	Weighted Percentage Loss, %
, -,	2-1/2" to 2" to 1-	2" 1/2"		_				
	1-1/2" to 1" to 3		76			2.48		1.88

3/8" to No. 4 Minus No. 4

3/4" to 1/2" 1/2" to 3/8"

Totals

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

24

Copies to: Addressee (3), Billing (1) 46.3/dn:unc031

> The above services and report were performed pursuest to the terms and conditions of the agreement or proposed, if any, between WT and cleant, WT warrants thet this was performed under the appropriate strandard of case, including the will and Judgement that is reasonably expected from emilely situated professionals. No other warranty, guaranty, or representation, either stransact or involves

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- Ana Th REVIEWED BY

Western Technologies Inc. The Quality People Since 1955

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

ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077 Job No. <u>3145JB031</u> Inv. No. <u>31450145</u> Date of Report <u>11/14/95</u> Reviewed By

 Project:
 1995 Church Rock Uranium Mill Tailings Reclamation Project

 Location:
 Church Rock, New Mexico
 Sampled by:
 H. Kuebler/WT
 Date 06/07/95

 Material Source:
 Hamilton Brothers Construction
 Authorized by:
 E. Morales/Client
 Date 06/07/95

 Material Type:
 D50 1.5"
 Intended Use
 Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.753	10	9	90
Absorption, %	2.66	1.5	2	3
L.A. Abrasion, 100 rev, %	3.0	9.0	1	9
Sodium Soundness Loss, %	3.77	8.5	11	93.5

Total = 195.5, Rock Quality Score = 195.5/230 x 100 = 85

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077		•	Lab/Inv. No.	31450145
	Gallup, NM 87305	Report Date:		11-14-95	
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Crushed Basalt D⁵⁰ 1.5 Aggre.	Sampled By:	H.K./WT	Date	6-7-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	6-7-95
Supplier:		Authorized By:	Client	Date	6-7-95

L.A. Abrasion, ASTM C535, Grading 2

% Loss at 100 Revs. 3.0

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1). Field File (1). 67.2\ha:UN031

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the sporprises standard of care, including the skill and judgement that is reasonably expected from simility situated professionals. No other warranty, guaranty, or representation, other expressed or immEdia is including to intended. .

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0	Western Technologies Inc. The Quality People Since 1955	400 South Lorena A Farmington, New M (505) 327-4966 • f	lexico 87401	REGATES	LABORATO	DRY REPORT
Client:	UNC Mining and Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	9			Job No. Lab/Inv. No. Report Date:	3145JB031 31450145 11-14-95
Project:	1995 Reclamation					••••••••••••••••••••••••••••••••••••••
Location:	Church Rock, NM					
Material:	Crushed Basalt D ⁵⁰ 1.5	Aggre.	_ Sampled By:	H.K./WT	Date	6-7-95
Source:	Hamilton Brothers		_Submitted By:	H.K./WT	Date	6-7-95
	· · · · ·		Authorized By:	Client	Date	6-7-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity Bulk Specific Gravity (SSD) Apparent Specific Gravity Absorption, Percent

2.682	
2.753	
2.888	
2.66	_

Copies to:Client (3), Billing (1), Field File (1). 67.1\ha:UN031

> The above services and report were parlormed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from simulary situated professionals. No oper www.niv, guaranty, or representation, either expressed or implied is included or interpedd.

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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	UNC Mining and Milling		Job No.		3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/Inv.	No.	31450145
	Gallup, NM 87305		Report D	ate:	11-14-95
Project:	1995 Reclamation	······································			
Location:	Church Rock, NM				
Material:	Crushed Basalt D ⁵⁰ 1.5 Aggre.	Sampled By:	н.к./wt	Date	6-7-95
Source:	Hamilton Brothers	Submitted By:	Н.К./WT	Date	6-7-95
Procedure:	ASTM C88	Authorized By:	Client	Date	6-7-95
		Solution:	Sodium Sulfate (Used	5 Cycle	<u>S</u>

COARSE AGGREGATE							
	Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %		
	2-1/2" to 2" 2" to 1-1/2"	38	2015.4	1.1	.41		
	1-1/2" to 1" 1" to 3/4"	46 9	1022.5 508.5	4.6 10.9	2.116 .981		
•	3/4" to 1/2" 1/2" to 3/8"	4 0	671.8 330.6	6.6 8.8	.264 0		
	3/8" to No. 4 Minus No. 4	0	300.6	10.0	0		
•	Totals				3.77		

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1). 67.3\ha:UN031

The above services and report were performed purguent to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skall and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either sporesed or includent TacQatOver intended.

REVIEWED BY



ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077 Job No. <u>3145JB031</u> Inv. No. <u>31450243</u> Date of Report <u>08/29/95</u> Reviewed By <u>6</u>

Project:1995 Church Rock Uranium Mill Tailings Reclamation ProjectLocation:Church Rock, New MexicoSampled by:H. Kuebler/WTDate07/05/95Material Source:Hamilton Brothers Construction Authorized by:E. Morales/ClientDate07/05/95Material Type:Crushed BasaltIntended UseD50 - 1.5"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.747	10	. 9	90
Absorption, %	.61	7.2	2	14.4
L.A. Abrasion, 100 rev, %	5.6	7.63	1	7.63
Sodium Soundness Loss, %	2.30	9.375	11	103.1

Total = 214.5, Rock Quality Score = 214.5/230 x 100 = 93

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling			Job No.	3145JB031
	Attn: Ed Morales PO Box 3077			Lab/Inv. No.	31450185
	Gallup, NM 87305			Report Date:	11-28-95
Project:	1995 Reclamation				
Location:	Church Rock, NM		······		
Material:	D ⁵⁰ 1.5 Aggregate	Sampled By:	H.K./WT	Date	7-5-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	7-5-95
		Authorized By:	Client	Date	7-5-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.730	
Bulk Specific Gravity (SSD)	2.747	_
Apparent Specific Gravity	2.776	
Absorption, Percent	0.61	
*		

Copies to: Client (3), Billing (1), Field File (1). 75\ha:UN031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling			Job No.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450243	
	Gallup, NM 87305			Report Date:	8-28-95	
Project:	1995 Reclamation					
Location:	Church Rock, NM					
Material:	1.5 Aggregate	Sampled By:	нк	Date	7-5-95	
Source:		Submitted By:	нк	Date	7-5-95	
Supplier:	······································	Authorized By:	Client	Date	7-5-95	

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 5.6

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1), Field File (1). 75\ha:UNC031

The above services and report were performed purposed to the terms and conditions of the
agreement or proposal, if any, between WT and client. WT warrants that this was performed
under the appropriate standard of care, including the skill and judgement that is reasonably
expected from similarly situated prefersionals. He other warranty, gysterity, or representation,
ather expressed or ingelied is included or intended,

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	UNC Mining & Milling			Job No.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450243	
	Gallup, NM 87305	· · · · · ·		Report Date:	8-29-95	
Project:	1995 Reclamation					
Location:	Church Rock, NM					
Material:	1.5 Aggregate	Sampled By:	НК	Date	7-5-95	
Source:	Hamilton Brothers	Submitted By:	НК	Date	7-5-95	
Procedure:	ASTM C88	Authorized By:	Client	Date	7-5-95	
		Solution:	Sodium Sulfa	ate (Fresh) 5 cycle	<u>s</u>	

COARSE AGGREGATE							
	Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %		
	2-1/2" to 2" 2" to 1-1/2"	39	2109.7	2.803	1.093		
ಚ್ಚುತ್	1-1/2" to 1" 1" to 3/4"	61	1015.3	1.983	1.210		
	3/4" to 1/2" 1/2" to 3/8"						
-	3/8" to No. 4 Minus No. 4						
	Totals	100			2.30		

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1). 75\ha:unc031

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ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077

Inc.

Since 1955

Job No. 3145JB031 Inv. No. <u>31450122</u> Date of Report 11/14/95 Reviewed By ____

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project Location: Church Rock, New Mexico _Sampled by: <u>H. Kuebler/WT</u> Date 05/23/95 Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 05/23/95 Material Type: <u>D50.35 Aggregate</u> Intended Use <u>Swale Aggregate</u>

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.756	10	9	90
Absorption, %	2.1	3	2	6
L.A. Abrasion, 100 rev, %	2.7	9	1	9
Sodium Soundness Loss, %	4.93	8	11	88

Total = 193.0, Rock Quality Score = 193.0/230 x 100 = 84

Dist: Client (3) Field File (1)

/cb:RQD.UNC2

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The Quality People Since 1955

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling		Job No.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450122
	Gallup, NM 87305		Report Date:	11-14-95	
Project:	1995 Reclamation				
Location:	Church Rock, NM		····	· · · · · · · · · · · · · · · · · · ·	
Material:	Crushed Basalt D ⁵⁰ .35 Aggre.	Sampled By:	H.K./WT	Date	5-23-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	5-23-95
		Authorized By:	Client	Date	5-23-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity Bulk Specific Gravity (SSD) Apparent Specific Gravity Absorption, Percent

2.699	
2.756	
2.863	
2.1	

Copies to:Client (3), Billing (1), Field File (1). 523.1\ha:UN031

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situsted professionals. No other warranty, or representation, either expressed or implied is included or ingreded.



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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling		Job No.		3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450122
	Gallup, NM 87305			Report Date:	11-14-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Crushed Basalt D ⁵⁰ .35 Aggre.	Sampled By:	H.K./WT	Date	5-23-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	5-23-95
Supplier:		Authorized By:	Client	Date	5-23-95

L.A. Abrasion, ASTM C131, Grading

% Loss at 100 Revs. <u>2.7</u>

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1). Field File (1). 523.2\ha:UN031

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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	UNC Mining and Milling Attn: Mr. Ed Morales			Job No.	
	PO Box 3077			Lab/Inv. No.	31450122
	Gallup, NM 87305			Report Date:	11-14-95
Project:	1995 Reclamation		· · · · · · · · · · · · · · · · · · ·		·
Location:	Church Rock, NM		· · · · · · · · · · · · · · · · · · ·		
Material:	Crushed Basalt	Sampled By:	<u>H.K./WT</u>	Date	5-23-95
Source:	Hamilton Brothers	Submitted By:	<u>Н.К./WT</u>	Date	5-23-95
Procedure:	ASTM C88	Authorized By:	Client	Date	5-23-95
		Solution:	Sodium Sulfa	te (Used) 5 Cycles	

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COARSE AGGREGATE							
Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %			
2-1/2" to 2" 2" to 1-1/2"	• •						
1-1/2" to 1" 1" to 3/4"	28 11	1004.3 503.0	4.0 5.1	1.12 .56			
3/4" to 1/2" 1/2" to 3/8"	14 7	670.1 330.6	9.6 12.9	1.34 .90			
3/8" to No. 4 Minus No. 4	11	300.9	9.2	1.01			
Totals				4.93			

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Copies to: Addressee (3), Billing (1), Field File (1). 523\ha:UN031

The shows services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly altuated professionals. No other warranty, guaranty, or representation, after anomaski or implicit illuministic or impanded

REVIEWED BY



ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077 Job No. <u>3145JB031</u> Inv. No. <u>31450145</u> Date of Report <u>11/14/95</u> Reviewed By

 Project:
 1995 Church Rock Uranium Mill Tailings Reclamation Project

 Location:
 Church Rock, New Mexico
 Sampled by:
 H. Kuebler/WT
 Date
 06/12/95

 Material Source:
 Hamilton Brothers Construction
 Authorized by:
 E. Morales/Client
 Date
 06/12/95

 Material Type:
 D50.35 Aggregate
 Intended Use
 Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.75	10	9	90
Absorption, %	1.5	4	2	8
L.A. Abrasion, 100 rev, %	2.6	9.0	1	9
Sodium Soundness Loss, %	6.38	7.0	11	77.0

Total = 184.0, Rock Quality Score = 184.0/230 x 100 = 80

Dist: Client (3) Field File (1)

/cb:RQD.UNC2

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0	Western Technologies Inc. The Quality People Since 1955	400 South Lorena Farmington, New (505) 327-4966	Mexico 87401		LABORATO	DRY REPORT	
		PHYSICAL PR	OPERTIES OF AGGE	EGATES			
Client:	UNC Mining and Millin	9		۰	Job No.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077				Lab/Inv. No.	31450145	
	Gallup, NM 87305				Report Date:	11-14-95	
Project:	1995 Reclamation		······································				
Location:	Church Rock, NM						
Material:	Crushed Basalt D ⁵⁰ .35	Aggre.	Sampled By:	H.K./WT	Date	6-12-95	
Source:	Hamilton Brothers		Submitted By:	H.K./WT	Date	6-12-95	
			Authorized By:	Client	Date	6-12-95	

Coarse Aggregate, ASTM C127

Bulk Specific Gravity Bulk Specific Gravity (SSD) Apparent Specific Gravity Absorption, Percent

2.709	
2.750	
2.824	
1.50	

Copies to:Client (3), Billing (1), Field File (1). 612\ha:UN031

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the sull and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077	·		Lab/Inv. No.	31450145
	Gallup, NM 87305			Report Date:	11-14-95
Project:	1995 Reclamation	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·
Location:	Church Rock, NM				
Material:	Crushed Basalt D ⁵⁰ .35 aggre.	Sampled By:	H.K./WT	Date	6-12-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	6-12-95
Supplier:		Authorized By:	Client	Date	6-12-95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 2.6

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1). Field File (1). 612.3\ha:UN031

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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	UNC Mining & Milling		Job No.		3145JB031
Chent.	Attn: Mr. Ed Morales PO Box 3077		Lab/Inv. N	lo.	31450145
	Gallup, NM 87305		Report Da	ite:	11-15-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Crushed Basalt	Sampled By:	H.K./WT	Date	6-12-95
Source:	D ⁵⁰ .35 Aggre.	Submitted By:	H.K./WT	Date	6-12-95
Procedure:	ASTM C88	Authorized By:	Client	Date	6-12-95
		Solution:	Sodium Sulfate (Used)	Cycles	5

	COA	RSE	AGG	REGA	TE
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Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2" 2" to 1-1/2"				
1-1/2" to 1" 1" to 3/4"	28 11	1007.2 500.8	9.1 6.0	2,55 .66
3/4" to 1/2" 1/2" to 3/8"	14 7	670.2 331.3	6.9 15.9	.97 1.11
3/8" to No. 4 Minus No. 4	11	300.5	9.9	1.09
Totals	·			6.38

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1). 628\h:unc031

agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied as included on untended. nt to the terms nd conditions of the

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ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077 Job No. <u>3145JB031</u> Inv. No. <u>31450185</u> Date of Report <u>12/05/95</u> Reviewed By

 Project:
 1995 Church Rock Uranium Mill Tailings Reclamation Project

 Location:
 Church Rock, New Mexico
 Sampled by:
 H. Kuebler/WT
 Date
 07/10/95

 Material Source:
 Hamilton Brothers Construction
 Authorized by:
 E. Morales/Client
 Date
 07/10/95

 Material Type:
 D50.35 Aggregate
 Intended Use
 Swales

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.718	9.3	9	83.7
Absorption, %	2.07	2.9	2	5.8
L.A. Abrasion, 100 rev, %	5.4	7.6	1	7.6
Sodium Soundness Loss, %	.99	10	11	110

Total = 207.1, Rock Quality Score = 207.1/230 x 100 = 90

Dist: Client (3) Field File (1)

/cb:RQD.UNC2

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client	UNC Mining and Milling Attn: Mr. Ed Morales			Job No.	3145JB031
	PO Box 3077 Gallup, NM 87305		:	Lab/Inv. No.	31450185
		,		Report Date:	11-27-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Crushed Basalt D ⁵⁰ .35 Aggre.	Sampled By:	H.K./WT	Date	7-10-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	7-10-95
		Authorized By:	Client	Date	7-10-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity Bulk Specific Gravity (SSD) Apparent Specific Gravity Absorption, Percent

Copies to:Client (3), Billing (1), Field File (1). 710.1\ha:UN031

nd client. WT warrants that this ling the skill and judgement that i situated professionals implied is included or Noteth

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling		Job	No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/I	nv. No.	31450185
	Gallup, NM 87305		Repo	ort Date:	11-27-95
Project:	1995 Reclamation			······································	······································
Location:	Church Rock, NM	· ·			
Material:	Crushed Basalt D ⁵⁰ .35 Aggre.	Sampled By:	H.K./WT	Date	7-10-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	7-10-95
Supplier:		Authorized By:	Client	Date	7-10-95

L.A. Abrasion, ASTM C131, Grading A

'% Loss at 100 Revs. <u>5.4</u>

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1). Field File (1). 710.2\ha:UN031

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that thus was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situaterequipassionals. No other warranty, guaranty, or representation, either expressed or implied beinchulding unservices or instruct.



LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	UNC Mining and Milling Attn: Mr. Ed Morales	·		Job No.	3145JB031
	PO Box 3077		L	.ab/Inv. No.	31450185
	Gallup, NM 87305		F	Report Date:	11-27-95
Project:	1995 Reclamation			· · · · · · · · · · · · · · · · · · ·	·
Location:	Church Rock, NM		· ····································		
Material:	Basalt D ⁵⁰ .35 Aggre.	Sampled By:	H.K./WT	Date	7-10-95
Source:		Submitted By:	H.K./WT	Date	7-10-95
Procedure:	ASTM C88	Authorized By:	Client	Date	7-10-95
		Solution:	Sodium Sulfat	e (Used) 5 Cycle	s

COARSE AGGREGATE							
Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %			
2-1/2" to 2" 2" to 1-1/2"							
1-1/2" to 1" 1" to 3/4"	17 7	1009.7 500.7	.05 .04	.01 .00			
3/4" to 1/2" 1/2" to 3/8"	14 10	670.3 330.7	.03 .36	.4 .04			
3/8" to No. 4 Minus No. 4	17	300.0	3.2	.54			
Totals				.99			

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1). 710\ha:UN031

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ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077 Job No. 3145JB031 Inv. No. 31450243 Date of Report 08/29/95 Reviewed By _____

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 06/20/95 Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 06/20/95 Intended Use D50 - 3 Material Type: Crushed Basalt

Property	Value [·]	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.728	9.5	9	85.5
Absorption, %	1.45	4	2	8.0
L.A. Abrasion, 100 rev, %	6.1	7.6	1	7.6
Sodium Soundness Loss, %	1.85	9.6	11	105.6

Total = 206.7, Rock Quality Score = $206.7/230 \times 100 = 90$

/cb:RQD.UNC1

-20²⁴⁾

••••

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/inv. No.	31450243
	Gallup, NM 87305		Report Date:	8-29-95	
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Basalt Rock	Sampled By:	нк	Date	6-20-95
Source:	D50-3	Submitted By:	нк	Date	6-20-95
		Authorized By:	Client	Date	6-20-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity Bulk Specific Gravity (SSD) Apparent Specific Gravity Absorption, Percent

2.689	
2.728	
2.798	
1.45	

Copies: Client (3), Billing & Field Flle (2). 620\ha:UNC031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		~	Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450243
	Gallup, NM 87305			Report Date:	8-28-95
Project:	1995 Reclamation		·		
Location:	Church Rock, NM				
Material:	Basalt Rock	Sampled By:	НК	Date	6-20-95
Source:	D50-3	Submitted By:	нк	Date	6-20-95
Supplier:	-	Authorized By:	Client	Date	6-20-95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 6.1

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1), Field File (1). 620\ha:UNC031

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REVIEWED

SOUNDNESS OF AGGREGATES

Client:	UNC Mining & Milling Attn: Mr. Ed Morales	· · ·		Job No.	3145JB031
	PO Box 3077 Gallup, NM 87305			Lab/Inv. No.	31450243
				Report Date:	8-29-95
Project:	1995 Reclamation			· · · · · · · · · · · · · · · · · · ·	
Location:	Church Rock, NM				
Material:	Basalt Rock	Sampled By:	нк	Date	6-20-95
Source:	D50-3	Submitted By:	нк	Date	6-20-95
Procedure:	ASTM C88	Authorized By:	Client	Date	6-20-95
		Solution:	Sodium Su	ulfate	

COARSE AGGREGATE

	Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
	2-1/2" to 2" 2" to 1-1/2"	64	3053.3 2018.4	1.97	1.26
4.5	1-1/2" to 1" 1" to 3/4"	19	1015.0 509.5	03.	.11
	3/4" to 1/2" 1/2" to 3/8"	13	674.9 332.9	2.28	.30
	3/8" to No. 4 Minus No. 4	. 4	302.2	.46	.18
	Totals				1.85
	*The si	re fraction indicated contains	less than 5% of one or m		,

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

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Copies to: Addressee (3), Billing (1), Field File (1). 620\h:unc031

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ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077 Job No. <u>3145JB031</u> Inv. No. <u>31450243</u> Date of Report <u>11/14/95</u> Reviewed By _____

 Project:
 1995 Church Rock Uranium Mill Tailings Reclamation Project

 Location:
 Church Rock, New Mexico
 Sampled by:
 H. Kuebler/WT
 Date
 07/19/95

 Material Source:
 Hamilton Brothers Construction Authorized by:
 E. Morales/Client
 Date
 07/19/95

 Material Type:
 D50 - 3"
 Intended Use
 Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.710	9	9	81
Absorption, %	1.76	3.5	2	7.0
L.A. Abrasion, 100 rev, %	2.6	` 8. 5	1	8.5
Sodium Soundness Loss, %	3.78	8.5	11	93.5

Total = 190.0, Rock Quality Score = 190.0/230 x 100 = 83

Dist: Client (3) Field File (1)

/cb:RQD.UNC2

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450185
	Gallup, NM 87305	Report Date:	11-14-95		
Project:	1995 Reclamation				
Location:	Church Rock, NM	, 		<u></u>	
Material:	Crushed Basalt D ⁵⁰ 3 inch	Sampled By:	<u>Н.К./WT</u>	Date	7-19-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	7-19-95
		Authorized By:	Client	Date	7-19-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity Bulk Specific Gravity (SSD) Apparent Specific Gravity Absorption, Percent

2.663	
2.71	
2.794	
1.76	

Copies to:Client (3), Billing (1), Field File (1). 719\ha:UN031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450185
	Gallup, NM 87305			Report Date:	11-14-95
Project:	1995 Reclamation			······································	
Location:	Church Rock, NM				
Material:	Crushed Basalt D ⁵⁰ 3 inch	Sampled By:	H.K./WT	Date	7-19-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	7-19-95
Supplier:	·	Authorized By:	Client	Date	7-9-95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. <u>2.6</u>

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1). Field File (1). 719.1\ha:UN031

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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	UNC Mining & Milling		Job No.	-	3145JB03
	Attn: Mr. Ed Morales PO Box 3077 Lab/Inv. I				31450185
	Gallup, NM 87305		Report Da	te:	11-15-95
Project:	1995 Reclamation				······
Location:	Church Rock, NM	· · · · · · · · · · · · · · · · · · ·			
Material:	Crushed Basalt D ⁵⁰ 3 inch	Sampled By:	<u>н.к./wt</u>	Date	7-19-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	7-19-95
Procedure:	ASTM C88	Authorized By:	Client	Date	7-19-95
	· .	Solution:	Sodium Sulfate (Used)	Cycles !	5

COARSE AGGREGATE

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2"	20	3007.3	3.56	.71
2" to 1-1/2"	26	2010.2	1.9	
1-1/2" to 1"	20	1003.2	11.9	2.38
1" to 3/4"	2	501.2	10.0	.2
3/4" to 1/2"	0	670.7	6.0	0
1/2" to 3/8"	0	330.8	14.5	
3/8" to No. 4 Minus No. 4	0	300.8	8.9	0
Totals	•	÷		3.78

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1). 719.2\h:unc031

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ROCK QUALITY DETERMINATION

United Nuclear Corporation Attn: Mr. Ed Morales Post Office Box 3077 Gallup, New Mexico 87305-3077

Job No. <u>3145JB031</u> Inv. No. <u>31450243</u> Date of Report <u>11/14/95</u> Reviewed By

 Project:
 1995 Church Rock Uranium Mill Tailings Reclamation Project

 Location:
 Church Rock, New Mexico
 Sampled by:
 H. Kuebler/WT
 Date 07/26/95

 Material Source:
 Hamilton Brothers Construction Authorized by:
 E. Morales/Client
 Date 07/26/95

 Material Type:
 D50 - 3"
 Intended Use Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.781	10	9	90
Absorption, %	1.93	3	2	6
L.A. Abrasion, 100 rev, %	3.1	9	1	9
Sodium Soundness Loss, %	2.20	9	11	99

Total = 204.0, Rock Quality Score = 204.0/230 x 100 = 89

Dist: Client (3) Field File (1)

/cb:RQD.UNC2

0	Western Technologies Inc. The Quality People Since 1955	400 South Lorena Avenue Farmington, New Mexico 87401 (505) 327-4966 • fax 327-5293			LABORATORY REPORT		
	Į	PHYSICAL PROP	ERTIES OF AGGE	EGATES			
Client:	UNC Mining and Milling				Job No.	3145JB031	
	Attn: Mr. Ed Morales PO Box 3077			Lab/Inv. No.	31450185		
	Gallup, NM 87305				Report Date:	11-14-95	
Project:	1995 Reclamation	· .					
Location:	Church Rock, NM			1		,	
Material:	Crushed Basalt D ⁵⁰ 3 inc	h	Sampled By:	H.K./WT	Date	7-26-95	
Source:	Hamilton Brothers		Submitted By:	H.K./WT	Date	7-26-95	
			Authorized By:	Client	Date	7-26-95	

Coarse Aggregate, ASTM C127

Bulk Specific Gravity Bulk Specific Gravity (SSD) Apparent Specific Gravity Absorption, Percent

\$

2.728	
2.781	
2.880	
1.93	

Copies to:Client (3), Billing (1), Field File (1). 726.1\ha:UN031

: <u>2</u>:77

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining and Milling			Job No.	3145JB031
	Attn: Mr. Ed Moralés PO Box 3077	La		_ab/lnv. No.	31450185
	Gallup, NM 87305	•	F	Report Date:	11-14-95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	Crushed Basalt D ⁵⁰ 3 inch	Sampled By:	H.K./WT	Date	7-26-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	7-26-95
Supplier:		Authorized By:	Client	Date	7-26-95

L.A. Abrasion, ASTM C535, Grading 1

% Loss at 100 Revs. <u>3.1</u>

% Loss at 500 Revs.

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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	UNC Mining & Milling Attn: Mr. Ed Morales	•	Job No.		3145JB03
• .	PO Box 3077 Gallup, NM 87305	Lab/Inv. I	Lab/Inv. No.		
,	Galiup, NW 87305		Report D	ate:	11-15-95
Project:	1995 Reclamation				
Location:	Church Rock, NM	· · · · · · · · · · · · · · · · · · ·			
Material:	Crushed Basalt D ⁵⁰ 3 inch	Sampled By:	H.K./WT	Date	7-26-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT	Date	7-26-95
Procedure:	ASTM C88	Authorized By:	Client	Date	7-26-95
		Solution:	Sodium Sulfate (Used)	Cycles	5

COARSE AGGREGATE						
Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %		
2-1/2" to 2" 2" to 1-1/2"	25 21	3064.4 2025.6	4.10 3.17	1.03 .67		
1-1/2" to 1" 1" to 3/4"	7 0	1022.8 505.3	7.18 8.41	.50 0		
3/4" to 1/2" 1/2" to 3/8"	0 0	· 671.4 330.3	11.3 23.3	0		
3/8" to No. 4 Minus No. 4	0	300.4	18.0	0		
Totals				2.20		

*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

The at to the term and condit of the WT and client. WT warrants that this was pe osal, if any, be skiil and j d of dge ated p

APPENDIX F

ROCK GRADATION TESTS, ROCK MULCH AND RIPRAP

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR D50 1.5 MATERIAL

DATE OF REPORT 12/07/95

DATE	SAMPLE LOCATION	% PASS 3" SPEC. 100%	% PASS 1" SPEC. 8-37%	% PASS #4 SPEC. 0-8%	WITHIN SPECS. 7
03/09/95	Hamilton Brothers	100	14	· 1	Yes
03/14/95	Hamilton Brothers	100	16	1	Yes
03/21/95	Hamilton Brothers	100	27	1	Yes
03/31/95	UNC Stockpile	100	19	.6	
04/06/95	Rock Score				
04/06/95	Hamilton Brothers	100	40	3	No*
05/23/95	UNC Windrow	100	15	.1	Yes
06/07/95	Rock Score				Yes
07/05/95	Rock Score				
07/05/95	UNC	100	22	1	Yes
09/07/95	Hamilton Brothers	100	35	8	Yes

*Material was wasted.

•

cb/1995.UNC/3

Dist: Client (3) Field File (1) Billing (1)



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No	•	3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/Inv	v. No.	31450051
	Gallup, NM 87305		Report	Date:	04/04/95
Project:	1995 Reclamation				
Location:	Chruch Rock, New Mexico				
Material:	1.5 Aggregate	Sampled By:	H. Kuebler /WT	Date	03/09/95
Source:	Hamilton Brothers	Submitted By:	H. Kuebler /WT	Date	03/09/95
		Authorized By:	Client	Date	03/09/95

SIEVE ANALYSIS, ASTM C136 & C117

	Sieve % Passing		Specification
· • • • • • • •	Size	Accumulative	(As Required)
	2"	100	100
_	1"	14	8 - 37
	No. 4	1	0 - 8

pies: Client (3), Billing (1), Field File (1) -9/dn:unc031

. . .

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No.		3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/Inv.	No.	31450051
	Gallup, NM 87305		Report I	Date:	04/04/95
Project:	1995 Reclamation				
Location:	Chruch Rock, New Mexico				
Material:	1.5. A garagete	Commind Days	D. Christenson (N/T	Data	
wraterrar:	1.5 Aggregate	Sampled By:	P. Christensen/WT	Date	03/14/95
Source:	Hamilton Brothers Crusher	Submitted By:	P. Christensen/WT	- Date	03/14/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"	100	100
- 1"	16	8 - 37
No. 4	1	0 - 8

Copies: Client (3), Billing (1), Field File (1) 4.2/dn:unc031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling	-	Job No		3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/Inv. No.		31450051
	Gallup, NM 87305		Report	Date:	04/04/95
Project:	1995 Reclamation				
Location:	Chruch Rock, New Mexico				
					·
Material:	1.5 Aggregate, Sample #83	Sampled By:	H. Kuebler /WT	Date	03/21/95
Material: Source:		Sampled By: Submitted By:	H. Kuebler /WT H. Kuebler /WT	Date Date	03/21/95 03/21/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
 Size	Accumulative	(As Required)
2"	100	100
1"	27	8 - 37
No. 4	1	0 - 8

pies: Client (3), Billing (1), Field File (1) 1.1/dn:unc031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No		3145JB031
	Attn: Mr. Ed Morales PO Box 3077		Lab/Inv. No. Report Date:		31450051
	Gallup, NM 87305				04/04/95
Project:	1995 Reclamation				
Location:	Chruch Rock, New Mexico				
Location: Material:	Chruch Rock, New Mexico 1.5 Aggregate, Sample #83	Sampled By:	H. Kuebler /WT	Date	03/31/95
		Sampled By:	H. Kuebler /WT H. Kuebler /WT	Date Date	03/31/95 03/31/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2*	100	100
1"	19	8 - 37
No. 4	.6	0 - 8

pies: Client (3), Billing (1), Field File (1) J1,1/dn:unc031

. . .

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Technologies Farmingt		400 South Loi ties Farmington, N	rena Avenue New Mexico 87401		LABORAT	ORY REPO
	Inc. The Quality People Since 1955	(505) 327-496	56 • fax 327-5293	·		-
	0.000 1900	PHYSICAL I	PROPERTIES OF AGG	REGATES		
Client:	UNC Mining & M			J	ob No.	3145JB03
	Attn: Mr. Ed Mo Post Office Box 3			L	.ab/Inv. No.	31450084
	Gallup, NM 8730)5		R	Report Date:	11/16/95
Project:	1995 Reclamation	1				
Location:	Church Rock, NN	И	· · · · · · · · · · · · · · · · · · ·			·
Material:	1.5 Aggregate		Sampled By:	H. Kuebler/V	WT Date	04/06/95
Source:	Hamilton Brother	S	Submitted By:	H. Kuebler/V	WT Date	04/06/95
			Authorized By:	Client	Date	04/06/95
SIEVE AN	ALYSIS, ASTM CI	36 & C117			· ·	
Sieve	% Passing	Specification				
a :		(A - Desciond)				
Size	Accumulative	(As Required)				
Size2"	Accumulative 100	(As Required)	Moisture Density	Relations, pcf (A	ASTM D698 M	lethod A)
			Moisture Density Maximum Dry De		ASTM D698 M	lethod A)
2"				ensity, pcf	ASTM D698 M	
2" 1-1/2"			Maximum Dry De	ensity, pcf	ASTM D698 M	N/A
2" 1-1/2" 1-1/8"	100	100	Maximum Dry De	ensity, pcf e, %	ASTM D698 M	N/A
2" 1-1/2" 1-1/8" 1"	100	100	Maximum Dry De Optimum Moistur	ensity, pcf e, %	ASTM D698 M	N/A
2" 1-1/2" 1-1/8" 1" 3/4"	100	100	Maximum Dry De Optimum Moistur Plasticity Index, A	ensity, pcf e, %	ASTM D698 M	N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2"	100	100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2" 3/8"	100	100	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2" 3/8" 1/4"	40	<u>100</u> <u>8-37</u>	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4	40	<u>100</u> <u>8-37</u>	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8	40	<u>100</u> <u>8-37</u>	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8 10	40	<u>100</u> <u>8-37</u>	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8 10 16	40	<u>100</u> <u>8-37</u>	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8 10 16 30	40	<u>100</u> <u>8-37</u>	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A
2" 1-1/2" 1-1/8" 1" 3/4" 1/2" 3/8" 1/4" No. 4 8 10 16 30 40	40	<u>100</u> <u>8-37</u>	Maximum Dry De Optimum Moistur Plasticity Index, A Liquid Limit	ensity, pcf e, %	ASTM D698 M	N/A N/A N/A

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rise above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated applets to the warranty, guaranty, or representation, either expressed or employed is included or referended.

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LABORATORY REPORT

Western Technologies Inc.

The Quality People Since 1955

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No	Job No. 3145	
	Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	v. No.	31450122
	Gallup, NM 87305		Report	Date:	11/16/95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	D ⁵⁰ 1.5 Aggregate	Sampled By:	H. Kuebler/WT	Date	05/23/95
Source:	UNC Wind Row	Submitted By:	H. Kuebler/WT	Date	05/23/95
	·	Authorized By:	Client	Date	05/23/95

SIEVE ANALYSIS, ASTM C136 & C117

	Sieve	% Passing	Specification
	Size	Accumulative	(As Required)
	2"	100	100
_	1-1/2"		
	1-1/8"		
	1"	15	8-37
	.3/4"		
-	1/2"		
-	3/8"		
-	1/4"		- · · · · · · · · · · · · · · · · · · ·
	No. 4	0.1	0-8
_	8		
_	10		
	16		
	30		
-	40		
-	50		
-	100		
-	200		
-			

Moisture Density Relations, pcl (ASIM	D698 Method A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

A CARTAL DCOR MALLAN

Plasticity In	idex, ASTI	M D4318	
Liquid Lim	it		

Liquid Limit	<u>N/A</u>
Plasticity Index	N/A

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	Wester					
4	Western Technolog Inc. The Quality People	(505) 327-4966	Lorena Avenue J, New Mexico 87401 1966 • fax 327-5293			ORY REPORT
	Since 1955	PHYSICAL P	ROPERTIES OF AGG	REGATES		
Client:	UNC Mining & N				Job No.	3145JB031
	Attn: Mr. Ed Mo Post Office Box 3		· · · ·	:	Lab/Inv. No.	31450145
	Gallup, NM 8730)5]	Report Date:	11/16/95
Project:	1995 Reclamation	1				
Location:	Church Rock, NN	М				
Material:	D ⁵⁰ 1.5 Aggregate	е	Sampled By:	H. Kuebler/	WT Date	07/05/95
Source:	Hamilton Brother	S	Submitted By:	H. Kuebler/WT Date		07/05/95
			Authorized By:	Client	Date	07/05/95
SIEVE AN	ALYSIS, ASTM CI	136 & C117				
Sieve	% Passing	Specification	•			
Size	Accumulative	(As Required)				
2"	100	100	Moisture Density	Relations, pcf (ASTM D698 M	lethod A)
1-1/2"			Maximum Dry De	ensity, pcf		N/A
1-1/8"			Optimum Moisture	e, %		N/A
1"	22	8-37	· ·			_
3/4"			Plasticity Index, A	STM D4318		

1-1/0		
1"	22	8-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	1	0-8
8	-	•
10		
16		
30	-	
40		
50		
100		
200		

Liquid Limit	N/A
Plasticity Index	N/A

The ab ove services d pursuant to the terms and conditions all, if any, between WT and client. WT warrans that this was performed al, if any, between WT and client. WT warrans that this was performed a standard of care, including the skill and judgement that is reasonably my subsead professionals. No other warranty, guaranty, or representation, molecular the included or insurant. agreement or pro under the approp expected from si 1818

either expressed or in

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ed or intended.

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Western Technologies Inc. The Quality People Since 1955

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No.		3145JB031	
	Attn: Mr. Ed Morales Post Office Box 3077		Lab/Inv	. No.	31450185	
	Gallup, NM 87305	- ·	Report I	Date:	11/16/95	
Project:	1995 Reclamation	· ·	· · · · · · · · · · · · · · · · · · ·			
Location:	Church Rock, NM					
Material:	D ⁵⁰ 1.5	Sampled By:	Hamilton Brothers	Date	09/07/95	
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT	Date	09/07/95	
		Authorized By:	Client	Date	09/07/95	

SIEVE ANALYSIS, ASTM C136 & C117

	Sieve	% Passing	Specification
_	Size	Accumulative	(As Required)
	4*		
	. 3"		
-	2"	100	100
مين م _{ين} -	1"	35	20-37
-	3/4"		
-	1/2"		
-	3/8"		
_	1/4"	:	
	No. 4	0.8	0-8
_	8		
_	10		
	16	· · · · ·	
	30		
	40		
	50		
-	100		
	200		

Moisture Density Relations, pcf (ASTM)	D698 Method A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A
Plasticity Index, ASTM D4318	
Liquid Limit	N/A
Plasticity Index	N/A

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The above zervices and report were performed pursuant to the terms and conditions of the agreement or proposal. If any, between WT and client. WT warrats that this was performed under the appropriate standard of cars, including the skill and judgement that is reasonably expected from similarly situated patternsionals. No other warranty, guaranty, or representation, either expressed or implied is included on intended.

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. <u>3145JB031</u>

TEST SUMMARY FOR D50 3" MATERIAL

DATE OF REPORT 12/07/95

K

DATE	SAMPLE LOCATION	% PASS 6" SPEC. 100%	% PASS 3" SPEC. 40-50%	% PASS 1" SPEC. 0-22%	WITHIN SPECS. 7
06/14/95	Stockpile	100	45	.1	Yes
06/21/95	Hamilton Brothers	100	18*	0	No
06/20/95	Rock Score				
07/06/95	Hamilton Brothers	100	21*	.1	No
07/07/95	Hamilton Brothers	100	60*	9	No
07/10/95	Hamilton Brothers	100	32•	2.6	No
07/11/95	Hamilton Brothers	100	54	2.0	Yes
07/19/95	Belt Sample	100	46	1.0	Yes
07/19/95	Rock Score				
07/26/95	Belt Sample	100	49	1.1	Yes
07/26/95	Rock Score				· · · · · · · · · · · · · · · · · · ·

*MATERIAL WAS DISCARDED

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cb/1995.UNC/1

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Dist: Client (3) Field File (1) Billing (1)

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2	Western Technolog Inc. The Quality People Since 1955	(505) 327-4966	v Mexico 87401	GREGATES	LABORAT	ORY REPORT
Client:	UNC Mining & Mi			Jol	b No.	3145JB031
	Attn: Mr. Ed Mor P.O. Box 3077	ales		La	b/Inv. No.	31450145
	Gallup, NM 8730	5	·	Re	port Date:	06/16/95
Project:	1995 Reclaimation					
Location:	Church Rock, NM					
Material:	D50 - 3"		Sampled By:	H. Kuebler	Date	06/14/95
Source:	Stock Pile		Submitted By:	H. Kuebler	Date	06/14/95
			Authorized By:	Client	Date	06/14/95
SIEVE AN	ALYSIS, ASTM C13	6 & C117				
Sieve	% Passing	Specification				
Size	Accumulative	(As Required)				
6"	100	100				
4*						
3"	45	40-50				
1"	.1	0-22				
3/4"						
1/2"						
3/8"						
1/4"						
No. 4				÷	•	

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situated professionals. No other warranty, guaranty, or representation, wither expressed or amplied is included or intended.
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400 South Lorena Avenue Farmington, New Mexico 87401 (505) 327-4966 • fax 327-5293

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

	Client:	UNC Mining & I Attn: Mr. Ed M			Job 1	No.	3145JB031
		P.O. Box 3077	orales		Lab/	Inv. No.	31450145
		Gallup, NM 873	05		Repo	ort Date:	8-29-95
	Project:	1995 Reclamation	1	·			·
	Location:	Church Rock, N	M				
	Material:	D50-3" Aggrega	te	Sampled By:	Jim Golding	Date	6-21-95
	Source:	Hamilton Brother	s Crusher	Submitted By:	Jim Golding	Date	6-21-95
				Authorized By:	Client	Date	6-21-95
	SIEVE AN	ALYSIS, ASTM C	136 & C117				· · · · · · · · · · · · · · · · · · ·
	Sieve	% Passing	Specification	•			
	Size	Accumulative	(As Required				
	. 6		100				
	4	100		Moisture Density	Relations, pcf (AST	M D698 M	ethod A)
	3	18	40-50	Maximum Dry De	ensity, pcf		<u>N/A</u>
برد ا	2	18		Optimum Moistur	e, %		A
-	1 1/2	18					
-	1 1/8	18		Plasticity Index, A	STM D4318		_
-	1	0	0-22	Liquid Limit			N/A
-	3/4			Plasticity Index			N/A
_	1/2						
-	3/8			•			
-	1/4,3	•	·				
	#4						
_	8		······································	2			
-	10	······································	· · · · · · · · · · · · · · · · · · ·				
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Western Technologies Inc.

The Quality People Since 1955

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Jo	b No.	3145JB031
	Attn: Mr. Ed Morales P.O. Box 3077		L	ab/Inv. No.	31450185
	Gallup, NM 87305		R	eport Date:	07/06/95
Project:	1995 Reclaimation				
Location:	Church Rock, NM				
Material:	D50 - 3" Aggregate	Sampled By:	J. Golding	Date	07/05/95
Source:	Hamilton Crusher	Submitted By:	J. Golding	Date	07/05/95
		Authorized By:	Client	Date	07/05/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
6*	100	100
4"	100	
3"	21	40-50
2*		
1 1/2"		·
1 1/8."	· ·	
1"	0.1	022
3/4"		
No. 4		· .
8		
10		
16	÷	
30		
40	· · · · · · · · · · · · · · · · · · ·	
50	<u>.</u>	
100		
200	·	
Copies: Cl	ient (3), Billing (1),	Field File (1)

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Western Technologies Inc. The Quality People Since 1955

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & 1				Job No.	3145JB031
	Attn: Mr. Ed M P.O. Box 3077	orales			Lab/Inv. No.	31450185
	Gallup, NM 873	05			Report Date:	8-29-95
Project:	1995 Reclamation	n [`]				
Location:	Church Rock, NI	M				
Material:	D50-3" Aggrega	ite	Sampled By:	HP	Date	7-7-95
Source:	Hamilton Brother	rs Crusher	Submitted By:	HP	Date	7-7-95
			Authorized By:	Client	Date	7-7-95
SIEVE AN	ALYSIS, ASTM C	136 & C117				
Sieve	% Passing	Specification	•			
Size	Accumulative	(As Required				
6	100					
4			Moisture Density	Relations, pc	f (ASTM D698 M	ethod A)
3	60	40-50	Maximum Dry De	nsity, pcf		N/A
2			Optimum Moisture	e, %	2	N/A
1 1/2						
1 1/8			Plasticity Index, A	STM D4318	<u> </u>	-
1	9	0-22	Liquid Limit			<u>N/A</u>
3/4	0		Plasticity Index			N/A
1/2						
3/8						
1/4,3						
#4		·····				
8						
10						
16						

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Western Technologies

The Quality People Since 1955

Inc.

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I			• •	Job No.	3145JB031
	Attn: Mr. Ed M P.O. Box 3077	orales			Lab/Inv. No.	31450185
	Gallup, NM 873	805	• •		Report Date:	8-29-95
Project:	1995 Reclamation	n [.]				
Locatio	n: Church Rock, NI	м				
Materia	l: D50-3" Aggrega	ite	Sampled By:	HD	Date	7-10-95
Source:	Hamilton Brother	rs Crusher	Submitted By:	HD	Date	7-10-95
			Authorized By:	Client	Date	7-10-95
SIEVE	ANALYSIS, ASTM C	136 & C117				
Sieve	% Passing	Specification				
Size	Accumulative	(As Required				
	6 100	100			· .	
	4		Moisture Density	Relations, po	f (ASTM D698 M	ethod A)
	3 32	40-50	Maximum Dry De	ensity, pcf		N/A
، ^{کار} یت ، 	2		Optimum Moistur	e, %	· · · · · · · · · · · · · · · · · · ·	N/A
1 1/2	2					
1 1/	8	······································	Plasticity Index, A	STM D4318		
	1 2.6	0-22	Liquid Limit			<u>N/A</u>
3/-	4		Plasticity Index		· .	N/A
1/2	2		×.			
3/	8				·	
1/4,:	3	· · · · ·				
#	4					
	8	,				
1()					
10	5					

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & M				Job No.	3145JB031	
	Attn: Mr. Ed Mo P.O. Box 3077	orales			Lab/Inv. No.	31450185	
	Gallup, NM 873	05			Report Date:	8-29-95	
Project:	1995 Reclamation	1					
Location:	Church Rock, NM	M				,	
Material:	D50-3"		Sampled By:	WTI Crew	Date	7-11-95	
Source:	Hamilton Brother	s Stockpile	Submitted By:	WTI Crew	Date	7-11-95	
	₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩		Authorized By:	Client	 Date	7-11-95	
SIEVE AN	ALYSIS, ASTM CI	136 & C117			·····		
Sieve	% Passing	Specification					
Size	Accumulative	(As Required					
6	100						
4			Moisture Density	Relations, pcf	(ASTM D698 M	(ethod A)	
. 3	54	40-50	Maximum Dry De	ensity, pcf		N/A	
2		•	Optimum Moistur	e, %		N/A	
1 1/2				·			
1 1/8							
			Plasticity Index, A	ASTM D4318			
1	2	0-22	Liquid Limit	ASTM D4318			
<u> </u>	2	0-22		<u>ISTM D4318</u>			
	2	0-22	Liquid Limit	<u>ISTM D4318</u>			
. 3/4	2	0-22	Liquid Limit	<u>ISTM D4318</u>			
3/4	2	0-22	Liquid Limit	<u>ISTM D4318</u>			
3/4 1/2 3/8	2	0-22	Liquid Limit	<u>ISTM D4318</u>	· · · · · · · · · · · · · · · · · · ·		
3/4 1/2 3/8 1/4,3	2	0-22	Liquid Limit	<u>ISTM D4318</u>	· · · · · · · · · · · · · · · · · · ·		
3/4 1/2 3/8 1/4,3 #4	2	0-22	Liquid Limit	<u>ISTM D4318</u>	······		

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Western Technologies

The Quality People Since 1955

Inc.

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I			Job No.		3145JB031
	Attn: Mr. Ed M P.O. Box 3077			Lab/Inv.	No.	31450185
·	Gallup, NM 873	05		Report I	Date:	8-29-95
Project:	1995 Reclamation	l		· · · · · · · · · · · · · · · · · · ·		<u></u>
Location:	Church Rock, NI	М				
Material:	3" Rock		Sampled By:	Paul/Hamilton Bro.	Date	7-19-95
Source:	Belt - 121:45pm		Submitted By:	СР	- Date	7-19-95
			Authorized By:	Client	- Date	7-19-95
SIEVE AN	ALYSIS, ASTM C	36 & C117		<u> </u>	~	
Sieve	% Passing	Specification				
Size	Accumulative	(As Required				
66	100	100				
4			Moisture Density	Relations, pcf (ASTM	D698 M	lethod A)
3	46	40-50	Maximum Dry De	ensity, pcf		N/A
2			Optimum Moisture	e, %		N/A
1 1/2						
1 1/8			Plasticity Index, A	STM D4318		
1	1	0-22	Liquid Limit			<u>N/A</u>
3/4			Plasticity Index			<u>N/A</u>
1/2						
3/8		· · · · · · · · · · · · · · · · · · ·	·· ·			
1/4,3						
#4			· · ·			
8			. `			
10						
16						

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The above services and seport wave performed pursuent to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is seasonably expected from similarly attuated professionals. No other warranty, gueranty, or representation, either expressed or implied is included or juscaged.

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LABORATORY REPORT

U.

		PHYSICAL P	ROPERTIES OF AGG	REGATES			
Client:	UNC Mining & Attn: Mr. Ed M P.O. Box 3077				o No. b/Inv. No.	3145JB031 31450185	
	Gallup, NM 873	305		Re	port Date:	07/27/95	
Project:	1995 Reclaimatio	n			•		
Location:	Church Rock, N.	м.		<u></u>			
Material:	D50 - 3inch	<u>, , , , , , , , , , , , , , , , , , , </u>	Sampled By:	H. Kuebler	Date	07/26/95	
Source:	Hamilton Belt Sa	mple	Submitted By:	H. Kuebler	Date	07/26/95	
		· · · · · · · · · · · · · · · · · · ·	Authorized By:	Client	Date	07/26/95	
SIEVE AN	ALYSIS, ASTM C	136 & C117		<u></u>	<u></u>		
Sieve	% Passing	Specification					÷
Size	Accumulative	(As Required)					
6"	100	100					
4*							
3"	49	40-50					
1*	1.1	0-22					
3/4*							
1/2*							
3/8"							
1/4"							
No. 4							
8	<u> </u>			ъ.			
10							
16				·			
30		·		• .			
40							
50			•				
100							
200							
Copies: Cli	ent (3), Billing (1),	Field File (1)					

Copies: Client (3), Billing (1), Fi 26/rgo:UNC031

-____

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate strandard of care, including the shift and Judgement that is resenably expected from similarly situated professionals. No other warranty, gueranty, or representation, either storegened or immiddle is included or intended.

Thomas

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APPENDIX G

APPENDIX G

ROCK MULCH THICKNESS

D 50 1.5 AGGREGATE PLACEMENT

After the additional radon cover was placed and accepted by UNC, the D50 1.5 aggregate was placed on the site. The majority of D50 1.5 aggregate was placed in wind rows on site by Hamilton Brothers Inc. Nielson's, Inc. used a motor grader to place the D50 1.5 aggregate. WT measured the thickness of in-place D50 1.5 aggregate. If the required minimum 3" thickness had not been achieved, Nielson's, Inc. would rework the area of the failing tests. D50 1.5 aggregate thickness measurement ranged from 3" to 5". WT measured the thickness to determine if in-place thickness at the specific locations checked, met the project requirements for thickness.

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

Location	Grid Point	Thickness
29+00	A-100'	3"
29 + 50	A-50'	3 1/2"
30+00	A-100'	2 1/2"
30 + 50	Ą-50'	3 1/4"
31+00	A-100'	3 3/4"
31 + 50	A-50'	3 1/2"
32+00	A-100'	3 1/2"
32 + 50	A-50'	2 1/2"
33+00	A-100'	5"
33 + 50	A-50'	5"
34+00	A-100'	4"
34 + 50	A-50'	3"
35 + 00	A-100'	4"
35 + 50	A-50'	3 1/2"

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell Haul Road

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/25

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLED, IS INCLUDED OR INTENDED.

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

Location	Grid Point	Thickness
36+00	A-100′	3 1/2"
36 + 50	A-50'	3 1/2"
37+00	A-100′	4 1/4"
37 + 50	A-50'	3"
38+00	A-100′	3 1/2"
38 + 50	A-50′	4"
39+00	A-100'	3"
39 + 50	A-50'	3 1/4"
40+00	A-100'	2 1/4"
40 + 50	A-50'	3 1/4"
41+00	A-100′	3"
41 + 50	A-50'	3"
42+00	A-100'	3"

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell Haul Road

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/26

> TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

	·.		
Location	Thickness	Location	Thickness
A + 29	3"	A + 30	4 1/2"
A+31	3 1/4"	A + 32	3 1/4"
A+33	3 3/4"	A + 34	3 1/2"
A+35	3"	A+36	3 1/2"
A + 37	4 1/2"	A+38	3 1/4"
A+39	4"	A+40	3 3/4"
A+41	4 1/2"	A+42	3 3/4"
B+29	3"	B+30	3 1/2"
B+31	3"	B+32	3"
B+33	.4"	B+34	4"
B+35	4"	B+36	4"
B+37	4"	B+38	4"
B+39	3 3/4"	B+40	-4 1/4"
B+41	3"	B+42	3"

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/11

> TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

Location	Thickness	Location	Thickness
C+29	3 1/2"	C + 30	3"
C+31	3"	C+32	3 1/2"
C+33	4"	C+34	3"
C+35	3 1/4"	C+36	3 1/2"
C+37	3 3/4"	C+38	4"
C+39	3"	C+40	3"
C+41	3 1/2"	C+42	3 1/2"
D+29	3 1/2"	D+30	4"
D+31	3"	D+32	4"
D+33	4"	D+34	3 1/2"
D+35	3 1/4"	D+36	3 1/4"
D+37	3"	D+38	4"
D+39	3"	D+40	3 1/2"
D+41	3 1/2"	E+29	3 3/4"

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/12

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

Location	Thickness	Location	Thickness
E+30	4 1/4"	E+31	3 1/2"
E+32	3 1/4"	E+33	3 1/4"
E+34	3 1/4"	• E+35	4"
E+36	3 3/4"	E+37	3 1/4"
E+38	3"	F+29	3 1/4"
F + 30	4"	F+31	4"
. F+32	4"	F+33	4"
F + 34	3 1/2"	F+35	3 3/4"
F+36	3 1/2"	F+37	4"
F+38	.3 1/4"	F+39	3 1/2"
F+40	4"	G+29	3 1/4"
G + 30	3"	G+31	4"
• G+32	3 1/2"	G+33	3 1/2"
G+34	4"	G+35	3 3/4"

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/13

> TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TENES AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY STUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

Location	Thickness	. Location	Thickness
H + 29	4"	H + 30	4"
H+31	3"	H + 32	4"
H+33	3 1/2"	H + 34	3 1/2"
l+29	4"	1+30	4"
l+31	3"	1+32	4"
1+33	In Swale	1+34	3 1/2"
I + 35	4"	H.5+32.5	3"
H.5+33.5	3 1/2"	H.5+34.5	3 1/4"
1+33.5	3"	I+34.5	3 1/2"
E+39	4"	E+40	4"

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/14

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 11/21/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

Location	Thickness	Location	Thickness
A.5+29.5	3 1/4"	A.5+30.5	4 1/4"
A.5+31.5	3 1/4"	A.5+32.5	4"
A.5+33.5	3 1/4"	A.5+34.5	4"
A.5+35.5	4"	A.5+36.5	3 1/2"
A.5+37.5	4"	A.5+38.5	3"
A.5+39.5	4"	A.5+40.5	4"
A.5+41.5	3 1/2"	B.5+29.5	3"
B.5+30.5	3 3/4"	B.5+31.5	4"
B.5+32.5	4 1/2"	B.5+33.5	4"
B.5+34.5	4"	B.5+35.5	4"
B.5+36.5	3"	B.5+37.5	3"
B.5+38.5	3"	B.5+39.5	3 3/4"
B.5 + 40.5	4 [´] "	B.5+41.5	3 1/2"
C.5 + 29.5	4".	C.5+30.5	4"

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/8

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Inc.

Since 1955

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 11/21/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

Location	Thickness	Location	Thickness
C.5+31.5	3 1/2"	C.5+32.5	3 1/4"
C.5+33.5	3 1/2"	C.5+34.5	4 1/2"
C.5 + 35.5	3 3/4"	C.5+36.5	3 1/4"
C.5 + 37.5	3"	C.5+38.5	3 3/4"
<u>C.5</u> +39.5	3"	C.5+40.5	3 1/2"
C.5+41.5	4"	D.5+29.5	3 1/2"
D.5 + 30.5	3 1/2"	D.5+31.5	3 1/2"
D.5+32.5	3 1/4"	D.5+33.5	3 3/4"
D.5+34.5	3"	D.5+35.5	3 1/4"
D.5+36.5	3 1/4"	D.5+37.5	3 1/4"
D.5 + 38.5	3 1/4"	D.5+39.5	3 1/4"
D.5+40.5	3"	E.5 + 29.5	3 3/4"
E.5 + 30.5	3 1/4"	E.5+31.5	5".
E.5 + 32.5	3"	E.5+33.5	3 1/4"

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/9

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WT JOB NO. 3145JB031

DATE OF REPORT 11/21/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

Location	Thickness	Location	Thickness
E.5+34.5	3 1/2"	E.5+35.5	3"
E.5+36.5	4 1/2"	E.5+37.5	3 1/4"
E.5+38.5	3"	E.5+39.5	3"
E.5+40,5	3"	F.5+29.5	4"
F.5+30.5	4"	F.5+31.5	4"
F.5+32.5	3"	F.5+33.5	4"
F.5+34.5	4"	F.5+35.5	3"
F.5+36.5	4"	F.5+37.5	4"
G.5 + 29.5	3"	G.5+30.5	3 1/2"
G.5+31.5	3"	G.5+32.5	3 1/2"
G.5+33.5	3 1/4"	G.5+34.5	3 1/2"
H.5 + 29.5	3 1/2"	H.5+30.5	3"
H.5+31.5	4"	÷ .	
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Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/10

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APPENDIX H

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APPENDIX H

SOIL/ROCK MATRIX MEASUREMENTS

SOIL COVER ON D50 1.5 AGGREGATE

After D50 1.5 aggregate thickness was accepted by UNC, Nielson's, Inc. placed soil material on top of D50 1.5 aggregate. Soil material was obtained from the South Cell Borrow Area. The method of placement of the soil material was accomplished with a scraper. Contour of the soil material was completed with a motor grader. A pneumatic compactor was utilized in an attempt to achieve soil cover penetration into the D50 1.5 aggregate material.

Soil cover was required by the project specifications to penetrate the top 2" of D50 1.5 aggregate with an addition 3" to 4" placed on top of the D50 1.5 aggregate. Isolated areas were thickened to provide adequate drainage. WT performed thickness measurements to assist in determining penetration depth and thickness of soil material on top of the D50 1.5 aggregate.



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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

Location	Thickness	Location	Thickness
A + 29	3 3/4"	A + 30	3 1/4"
A+31	. 3"	A + 32	4 1/2"
A + 33	3"	A + 34	4 1/2"
A+35	3 1/2"	A + 36	4 1/2"
A+37	4 1/2"	A + 38	3"
A + 39	3 1/2"	A + 40	5"
A+41	4 1/4"	A+42	6"
B+29	3 1/2"	B+30	5"
B+31	5 3/4"	B+32	4 1/2"
B+33	4 1/2"	B+34	6"
B+35	5"	B+36	5 1/4"
B+37	3"	B+38	5"
B+39	5"	B+40	5"
B+41	3"	B+42	5"

SOIL ON MULCH PLACEMENT THICKNESS South Cell

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/15

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

Location	Thickness .	Location	Thickness
C+29	3"	C + 30	4 3/4"
C+31	3 3/4"	C+32	3"
C+33	4 1/2"	C + 34	8"
C+35	9"	C+36	5"
C+37	5"	C+38	5"
C+39	5 1/2"	C+40	6"
C+41	3 1/2"	C+42	3"
D+29	3 1/4"	D+30	8 3/4"
D+31	3 1/2"	D+32	4 1/2"
D+33	4 1/2"	D+34	4 1/2"
D+35	3 1/2"	D+36	5"
D+37	3 1/4"	D+38	8"
D+39	3 1/4"	D+40	3"
D+41	3 1/2"	E + 29	3"

SOIL ON MULCH PLACEMENT THICKNESS South Cell

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/16

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

Location	Thickness	Location	Thickness
E + 30	3"	E+31	3"
E+32	3"	E+33	3 1/2"
E+34	3"	E+35	3 3/4"
E+36	7"	E+37	3 3/4"
E+38	3 3/4"	F+29	4 1/2"
F+30	4"	F+31	3"
F+32	5 1/2"	F+33	3 1/2"
F + 34	7"	F+35	3"
F+36	3"	F+37	3"
F+38	3"	F+39	
F+40	5"	G + 29	3 1/2"
G + 30	3"	G+31	4 1/2"
G + 32	5"	G+33	4"
G + 34	4"	G + 35	4"

SOIL ON MULCH PLACEMENT THICKNESS South Cell

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/17

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

Location	Thickness	Location	Thickness
G + 36	4"	H + 29	4"
H+30	6"	H+31	8"
H+32	8 1/2"	H+33	4 1/2"
H+34	4 1/2"	1+29	3 1/2"
I + 30	9"	I+31	7"
1+32	6"	I+33	In Swale
1+34	5"	I+35	. 4"
H.5+32.5	10"	H.5+33.5	4"
H.5 + 34.5	4"	I+33.5	3 3/4"
l+34.5	3 1/2"		
			· 2

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/18

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

Location	Thickness	Location	Thickness
A.5 + 29.5	4"	A.5+30.5	5"
A.5+31.5	5 1/4"	A.5+32.5	5 1/2"
A.5+33.5	5 1/4"	A.5+34.5	6"
A.5+35.5	5"	A.5+36.5	4 1/2"
A.5+37.5	3 1/2"	A.5+38.5	6"
A.5+39.5	3 1/2"	A.5+40.5	3"
A.5+41.5	7 1/2"	B.5+29.5	5"
B.5 + 30.5	4"	B.5+31.5	4"
B.5+32.5	. 4"	B.5+33.5	3"
B.5+34.5	3"	B.5+35.5	3 1/2"
B.5+36.5	5 1/2"	B.5+37.5	3"
B.5+38.5	3"	B.5+39.5	3"
B.5 + 40.5	5"	B.5+41.5	4"
C.5+29.5	3 3/4"	C.5+30.5	3"

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/19

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

Location	Thickness	Location	Thickness
C.5+31.5	6"	C.5+32.5	3 1/2"
C.5+33.5	3 3/4"	C.5+34.5	4 1/2"
C.5+35.5	3"	C.5+36.5	3"
C.5+37.5	3 1/4"	C.5+38.5	3"
C.5+39.5	5 1/2"	C.5+40.5	4"
C.5+41.5	3 1/4"	D.5+29.5	6"
D.5+30.5	3"	D.5+31.5	3"
D.5+32.5	4 1/2"	D.5+33.5	3"
D.5+34.5	3 3/4"	D.5+35.5	4 1/4"
D.5+36.5	3 1/4"	D.5+37.5	5"
D.5+38.5	5"	D.5+39.5	4 1/2"
D.5+40.5	- 3"	E.5 + 29.5	4 1/2"
• E.5+30.5	4"	E.5+31.5	3"
E.5+32.5	4 1/2"	E.5+33.5	4 1/2"

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/20

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

·		I	
Location	Thickness	Location	Thickness
E.5 + 34.5	· 4 1/2"	E.5+35.5	3"
E.5+36.5	4 1/2"	E.5+37.5	4 1/4"
E.5 + 38.5	4"	E.5+39.5	3 1/2"
E.5+40.5	5 1/2"	F.5 + 29.5	4 1/2"
F.5 + 30.5	4"	F.5+31.5	3"
F.5+32.5	5 1/2"	F.5+33.5	3 1/2"
F.5+34.5	7"	F.5+35.5	3"
F.5+36.5	3"	F.5+37.5	4"
F.5+38.5	4"	F.5+39.5	6"
G.5+29.5	3 1/2"	G.5+30.5	6 1/4"
G.5+31.5	6"	G.5+32.5	10"
G.5+33.5	3 1/2"	G.5+34.5	4"
H.5+29.5	5"	H.5+30.5	5"
H.5+31.5	8"		

SOIL ON MULCH PLACEMENT THICKNESS South Cell

Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/21

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APPENDIX

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APPENDIX I

FIELD MODIFICATIONS, SOUTH CELL SWALES





Canonie Environmental Services

86-060-20

June 26, 1995

Mr. Edward M. Morales United Nuclear Corporation P.O. Box 3077 Gallup, NM 87305-3077

<u>Transmittal</u> <u>Field Design Modifications</u> <u>Central and South Cell Reclamation</u>

Dear Ed:

This letter summarizes the minor field modifications made in the reclamation design of the Central and South Cells of the tailings disposal area in conjunction with 1995 reclamation activities. These field modifications were designed in accordance with NRC guidelines and serve to fit the approved reclamation design to actual site conditions encountered during reclamation.

Branch Swales B and C

Branch Swale B of the Central Cell was originally designed to pass through the area where the North Cross-Dike Pump-Back Wells are located prior to discharging into the North Cell Drainage Channel. This design was based on the assumption that ground water remediation in Zone 1 would be completed by this time and that the North Cross-Dike Pump-Back Wells would be decommissioned. This was a reasonable design assumption given the limited ground water impacts in Zone 1 and concurrence by the regulatory agencies that extensive remediation in this formation was infeasible. Unfortunately, regulatory delays have caused the remediation of Zone 1 to be extended, and the wells, although currently inactive, have not been approved for decommissioning.

To avoid unnecessary delays in the reclamation of the tailings disposal area, United Nuclear has proposed rerouting the final 367 feet of Swale B around the North Cross-Dike Pump-Back Wells by combining Swale B with Swale C at Survey Station 30+00, as

RM\W:\86-060\FDM.LTR [Jun. 26, 1996]

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Mr. Edward M. Morales

shown on the enclosed sketch. The grade of Swales B and BC are to be 0.0102 from Stations SB 27 to SBC 31 and 0.083 from Stations SB 31 to SB 33+61.7. Canonie/Smith Environmental Technologies Corporation has reviewed this field modification to the reclamation design and has determined that it is consistent with the NRC's reclamation guidelines and the approved reclamation plan, provided that the modified design incorporates the following:

2

- 1. The combined swale is to be 20 feet wide at its base and armored with riprap having a D_{50} of 3.0 inches.
- 2. The combined swale is to be 2.1 feet deep or deeper to allow for adequate freeboard during the design event.

A copy of the supporting calculations for the change in configuration of Swales B and C is enclosed.

Branch Swales H, I and J

The lower portion of Branch Swale H was originally designed to pass through the bedrock outcrop area southeast of the South Cell of the tailings area. However, this design requires substantial excavation in the bedrock to construct the swale to the design grade. United Nuclear has proposed moving Swale H closer to the tailings areas as shown on the enclosed modified Figure 5-1. The invert elevation where Swale I flows into the South Cell Drainage Channel will also require modification from an elevation of 6951 feet to approximately 6947.85 feet (assuming a 3.5-foot deep swale) to match Swale I to the South Cell as-built contours.

These two field modifications result in moving the juncture between Swales J and H approximately 200 feet further to the northeast and increasing the grades of Swale I from 0.0040 to 0.0067 and Swale H from 0.0085 to 0.010. The grade of Swale J will remain the same at 0.0047. These modifications will not require any change in specified swale depths, bedding material or riprap because the calculated safety factors remain above 1.0. A copy of the supporting calculations for the changes in configuration of Swales H, I and J is enclosed.

South Cell Drainage Channel

Lowering the invert elevation where Swale I flows into the South Cell Drainage Channel will also reduce the grade in the South Cell Drainage Channel. The optimum place to make this grade change is the first 450 feet of channel because, after this point, the channel is to be constructed in bedrock. This would result in a grade reduction from

RM\W:\86-060\FDM.LTR (Jun. 26, 1995)



Mr. Edward M. Morales

0.0244 to 0.0174 over the 450-foot section. As shown in the enclosed calculations, the D_{50} of the riprap could also be reduced from 1.25 feet (i.e., 15 inches) to 0.83 foot (i.e., 10 inches). Alternately, the channel could be widened from 10 to 12 feet and the D_{50} reduced to 0.75 foot (i.e., 9 inches) if a smaller sized riprap is desired.

3

Bedding Layer 2

The reclamation plan calls for the placement of Bedding Layer 2 in a number of channels and swales, including Branch Swales H and I, which are to be completed this year. The bedding gradation specification listed in Table 5.7 of the reclamation plan calls for 5 to 12 percent passing the No. 40 screen size. However, the bedding material produced by the quarry is typically running about 14 percent passing the No. 40 screen.

Review of the original gradation calculations presented in United Nuclear's March 1991 response to NRC comments shows that Bedding Layer 2 (also called Filter Layer No. 2) can have up to 20 percent passing the No. 40 screen size in Swales H and I and the Lower Reach of the Runoff Control Ditch. Therefore, use of the finer gradation is acceptable for these areas, but would be unacceptable for the South and North Cell Drainage Channels and the North Diversion Ditch. Figure 1 of the original gradation calculations is enclosed for reference purposes.

If you have any questions or need further information, please call me at (303) 790-1747.

Very truly yours,

Frank J. Filas, P.E. Project Engineer

RM\W:\86-060\FDM.LTR [Jun. 26, 1995]

FJF/wde

Enclosures

cc: Mr. Juan Velasquez, United Nuclear Corporation

SMTH

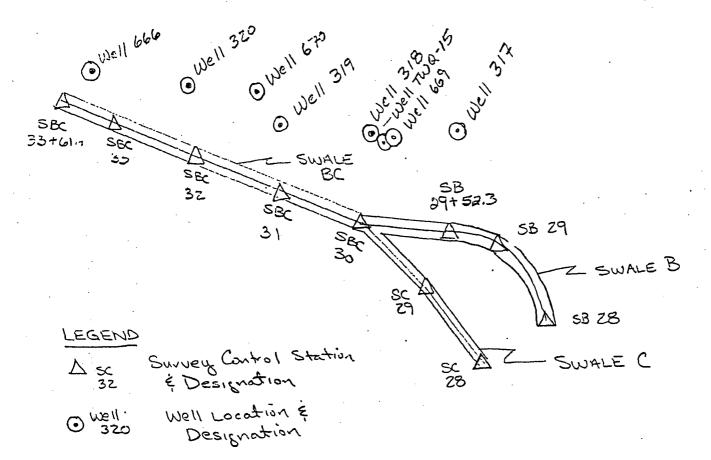
CALCULATIONS

. BRANCH SWALES B AND C

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CHURCH ROCK SITE CENTRAL CELL RECLAMATION



MODIFIED DESIGN OF SWALES BEC Scale : 1" = 100'

RIPRAP DETERMINATION 5. SAFETY FACTOR METHOD REF: "Applied Hydrology and Sedimentology for Disturbed Areas", pages 185-194

LOCATION:	UNC DR	AINAGE SWALE B FIEI	LD MODIFICATION
DISCHARGE = BOTTOM WIDTH =	137 20	· -	swales A+B)
Z (SIDE SLOPE)	3	Alpha =	18.43 Degrees
CHANNEL SLOPE :	= 0.0102	Theta =	0.58 Degrees
RIPRAP S.G. =	2.72	Phi =	37.00 Degrees
COEF FOR t =	0.75	see Fig 3.16, ref.	-

CHANNEL BOTTOM

CHANNEL SIDE SLOPES

D50 (ASSUM)		.25 FT			D50	(ASSUM)	=	0.25	FT
n	= 0.0	031				n		0.031	
đ	= 1	.20 FT	-			d	=	1.20	FT
A	= 28	.32 FT^	2			A	=	28.32	FT^2
R	= 1	.03 FT				R	= .	1.03	FT
Q (CALC)	= 13	8.0 CFS	-		Ç	(CALC)	=	138.0	CFS
. v	= 4	.87 FPS				v	=	4.87	FPS
t	= 0	.76 PSF		,		t	=	0.57	PSF
nb	= 0.	598				nb	==	0.45	
SFb	= .1	.64				Beta	=	27.98	
				·		n'	=	0.33	
						SFs		1.35	

Design values

Channel Depth1.70 FT Depth from top of freeboard to top of riprapDmax0.5 FT = 2* D50Layer Thickness0.5 FT = 2* D50

Design Modification

Specific Gravity increased from 2.5 to 2.72 to match as-built conditions Rip rap D50 increased from 0.125 FT to 0.25 FT Swale A discharge of 40 cfs added to original 97 cfs

REFERENCE: FILE RIPSF105.WR1

RIPRAP DETERMINATION L_ SAFETY FACTOR METHOD REF: "Applied Hydrology and Sedimentology for Disturbed Areas", pages 185-194

UNC -- DRAINAGE SWALE B + C

DISCHARGE =	212	CFS	(Drainage swa	les A+B and Swale C)
BOTTOM WIDTH =	20	FŤ	(assume same	width as Swale B)
Z (SIDE SLOPE)	3	:	Alpha =	18.43 Degrees
CHANNEL SLOPE =	0.0102	1	Theta =	0.58 Degrees
RIPRAP S.G. =	2.72		Phi =	37.00 Degrees
COEF FOR t =	0.75	see Fi	ig 3.16, ref.	

CHANNEL BOTTOM

LOCATION:

CHANNEL SIDE SLOPES

D50 (ASSUM) n	=	0.25	FT		D50	(ASSUM) n	=	0.25	FT
d	=	1.54		-	· ·	đ	=	1.58	
A R		37.91				A R		39.09	
Q (CALC)	= '.	213.4	CFS	-	Q	(CALC)	=	223.3	CFS
v t	=	5.63 0.98				v t	=	5.71 0.75	
nb	<u>111</u>	0.767				nb		0.59	
SFb	=	1.28			Ţ	Beta	=	34.93	
						n'	=	0.47	
· ·						SFs	=	1.17	

Design values

Channel Depth2.04 FT Depth from top of freeboard to top of riprapDmax0.5 FT = 2* D50Layer Thickness0.5 FT = 2* D50

REFERENCE: FILE RIPS103.WR1

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RIPRAP DETERMINATION B. SAFETY FACTOR METHOD REF: "Applied Hydrology and Sedimentology for Disturbed Areas", pages 185-194

LOCATION:	UNC DH	RAINAGE	SWALE B +	С				
DISCHARGE = BOTTOM WIDTH = Z (SIDE SLOPE) CHANNEL SLOPE = RIPRAP S.G. = COEF FOR t =	• 0.0083 2.72	FT	(assume Alpha = Theta = Phi =	same wi		wale B 3 Degr 8 Degr) ees ees	
CHANNEL BOTTOM				CHANN	EL SIDE	SLOPES		
D50 (ASSUM) = $n =$	0.25 0.031			D50	(ASSUM)		0.25	FT
	1.63		-				1.58	FT
	40.57						9.09	
R =	1.34						1.30	
	212.8			Ç	(CALC)		01.4	
	5.24				-		5.15	
	0.84	PSI					0.61	PSF
nb =	0.661				nb		0.48	

Design values

Channel Depth2.13 FT Depth from top of freeboard to top of riprapDmax0.5 FT = 2* D50Layer Thickness0.5 FT = 2* D50

Beta =

n' =

SFs =

29.67

0.36

1.31

REFERENCE: FILE RIPS113.WR1

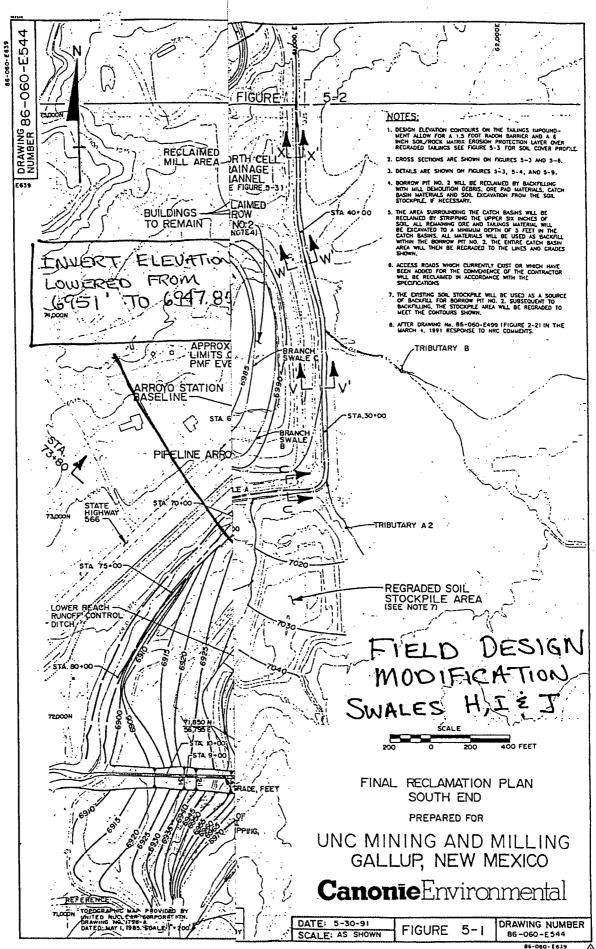
SFb =

1.49



CALCULATIONS

BRANCH SWALES H, I AND J



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RIPSF106.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD REF: "Applied Hydrology and Sedimentology for Disturbed Areas", pages 185-194

LOCATION:	UNC	DRAINAGE	SWALE	Ι	FIELD	MODIFICATION
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DISCHARGE =	385	CFS	·
BOTTOM WIDTH =	20	FT	
Z (SIDE SLOPE)	3	Alpha =	18.43 Degrees
CHANNEL SLOPE =	0.0067	Theta =	0.38 Degrees
RIPRAP S.G. =	2.72	Phi =	37.00 Degrees
COEF FOR $t =$	0.75	see Fig 3.16, ref.	

CHANNEL BOTTOM

CHANNEL SIDE SLOPES

D50 (ASSUM) =	0.25 FT			D50 (ASSUM)	=	0.25 FT	
n =	0.031			n	=	0.031	
d =	2.42 FT	-		đ	=	1.90 FT	
A =	65.97 FT^2			А	=	48.83 FT^2	
R =	1.87 FT			R	=	1.53 FT	
Q (CALC) =	388.3 CFS	-	1	Q (CALC)	=	251.0 CFS	-
v =	5.89 FPS		· .	v		5.14 FPS	
t =	1.01 PSF			t	=	0.60 PSF	
nb =	0.792			nb	=	0.47	
SFb =	1.25			Beta	=	28.96	
				n′	=	0.35	
	ų.			SFs	=	1.33	ē

Design values

Channel Depth2.92 FT Depth from top of freeboard to top of riprapDmax0.50 FT = 2* D50Layer Thickness0.50 FT = 2* D50

DESIGN MODIFICATION

SPECIFIC GRAVITY INCREASED FROM 2.5 TO 2.72 TO MATCH AS-BUILT CONDITIONS CHANNEL SLOPE INCREASED TO 0.067 (ASSUMES 3.5 FT DEPTH AT END OF SWALE I)

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD REF: "Applied Hydrology and Sedimentology for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE H FIELD MODIFICATION

DISCHARGE =	284	CFS	
BOTTOM WIDTH =	20	FT	
Z (SIDE SLOPE)	3	Alpha =	18.43 Degrees
CHANNEL SLOPE =	0.01	Theta =	0.57 Degrees
RIPRAP S.G. =	2.72	Phi =	37.00 Degrees
COEF FOR t =	0.75	see Fig 3.16, ref.	

CHANNEL BOTTOM

CHANNEL SIDE SLOPES

D50 (ASSUM) =	0.25	FT		D50 (ASSUM)	= 0.25	FΤ
n =	0.031			n	= 0.031	
d =	1.82	\mathbf{FT}	-	đ	= 1.90	\mathbf{FT}
A =	46.34	FT^2		A	= 48.83	FT^2
R =	1.47	FT		R	= 1.53	FT
Q (CALC) =	284.0	CFS	-	Q (CALC)	= 306.7	CFS
v =	6.13	FPS		v	= 6.28	FPS
t =	1.14	PSF		t t	= 0.89	PSF
nb =	Q.889	ť		nb	= 0.70	
SFb =	1.11	i) Beta	= 39.43	
				n′	= 0.57	
				SFS	= 1.06	

Design values

Channel Depth2.32 FT Depth from top of freeboard to top of riprapDmax0.50 FT = 2* D50Layer Thickness0.50 FT = 2* D50

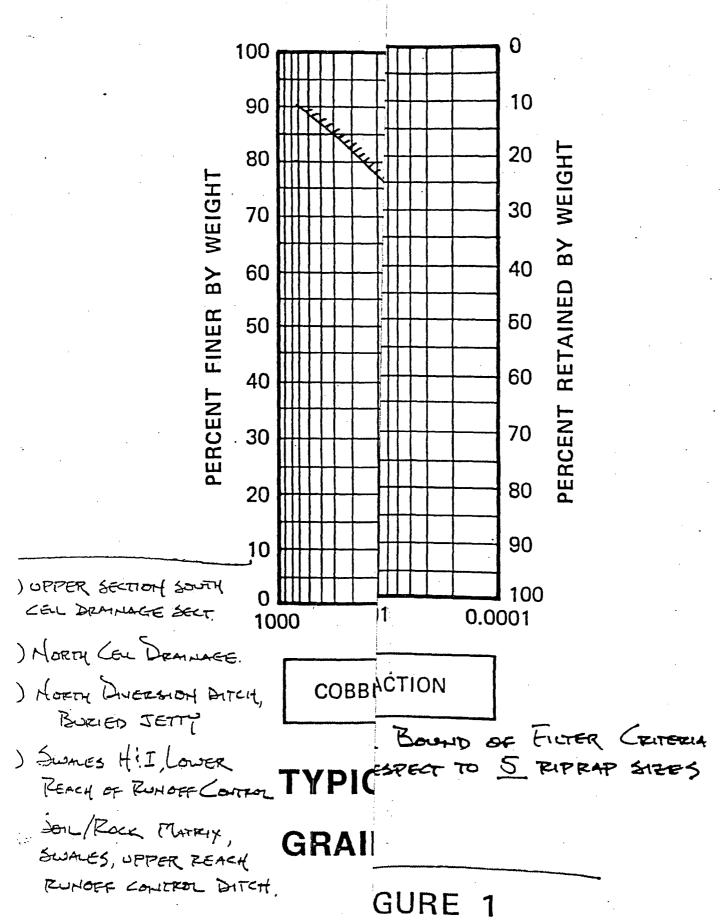
DESIGN MODIFICATION

SPECIFIC GRAVITY INCREASED FROM 2.5 TO 2.72 TO MATCH AS-BUILT CONDITIONS SLOPE INCREASED FROM 0.0085 TO 0.010



FIGURE 1

BEDDING LAYER GRADATIONS





CALCULATIONS

SOUTH CELL DRAINAGE CHANNEL

RIPSF109.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD REF: "Applied Hydrology and Sedimentology for Disturbed Areas", pages 185-194

LOCATION: South Cell Drainage Channel

694	CFS	
10	FT	
3	Alpha =	18.43 Degrees
0.0174	Theta =	1.00 Degrees
2.7	Phi =	37.00 Degrees
0.75	see Fig 3.16, ref.	·
	10 3 0.0174 2.7	0.0174 Theta =

CHANNEL BOTTOM

CHANNEL SIDE SLOPES

D50 (ASSUM) =	0.83	FT	D50	(ASSUM) =	0.83 FT	
n, =	0.038			n =	0.038	
d =	3.70	FT –		d =	3.70 FT	
A =	78.07	FT^2		A =	78.07 FT^2	
R =	2.3.4	FT		R =	2.34 FT	
Q (CALC) =	703.9	CFS -	Ç	Q (CALC) =	703.9 CFS	
v =	9.02	FPS		v =	9.02 FPS	
t =	4.02	PSF		• t =	3.01 PSF	
nb =	0.958			nb =	0.72	
SFb =	1.02			Beta =	40.15	
		۰.		n' =	0.60	
				SFs =	1.04	
		· .		•		

Design values

2.2

Channel Depth 4.2 ft. Depth from top of freeboard to top of riprap Dmax 1.66 ft = 2* D50 Layer Thickness1.66 FT. = 2* D50

RIPSF110.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD REF: "Applied Hydrology and Sedimentology for Disturbed Areas", pages 185-194

LOCATION:	South Ce	ll Drainag	e Channel		
DISCHARGE = BOTTOM WIDTH = Z (SIDE SLOPE) CHANNEL SLOPE = RIPRAP S.G. = COEF FOR t =	2.72	FT	Alpha = Theta = Phi = .16, ref.	1.00	Degrees Degrees Degrees

CHANNEL BOTTOM			CHANNEL SIDE SLOPES
D50 (ASSUM) =	0.75 FT		D50 (ASSUM) = 0.75 FT
n =	0.038		n = 0.038
d =	3.45 FT	-	d = 3.45 FT
A =	77.11 FT^2		$A =7.11 FT^2$
R =	2.28 FT		R = 2.28 FT
Q (CALC) =	695.4 CFS	-	Q (CALC) = 695.4 CFS
v =	9.02 FPS		v = 9.02 FPS
t =	3.75 PSF		t = 2.81 PSF
nb =	0.977		nb = 0.73
SFb =	1.00		Beta = 40.70
			n' = 0.61
			SFs = 1.02

Design values

Channel Depth 4.0 ft. Depth from top of freeboard to top of riprap Dmax 1.5 ft. = $2 \times D50$ Layer Thickness1.5 FT. = 2* D50

APPENDIX J

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TEST RESULTS, SWALES H, I, AND J

SWALES

Swales designed H, I and J were constructed to Station 11 + 25 in 1995 Reclamation project. Nielson's, Inc. contoured the existing native materials to excavated grade. Field density tests taken in conjunction with maximum unit weight values were performed to assist in determining if native soils were compacted to a minimum of 90% of ASTM D698. Upon completion, UNC personnel monitored swales for radon emissions and areas were determined where radon attenuation cover would be placed. Areas where RAC were omitted are sections of Swale I from Station 2 + 00 to Station 7 + 00, Swale H from Station 7 + 00 to Station 11 + 25 and Swale J from Station 8 + 00 to Station 11 + 25. Nielson's, Inc. placed radon attenuation cover to the specified elevations provided by UNC. RAC cover was processed and compacted to a minimum of 95% of ASTM D698 as noted at the specific test locations with moisture specification of optimum to plus 2%. Field densities, proctor values, and soil classifications were completed to assist in determining if RAC layer met project specifications.

Specified aggregate sizes used as erosion control were placed to minimum thickness determined by project requirements.

Bedding material (D50 .02) ranging from 3" to 3 1/2" thick were placed upon RAC material. Nielson's, Inc. placed bedding material by manual means. WT measured the in-place bedding material for thickness at various locations to indicate if thickness met project specifications at the specific test locations.

D50 .35 aggregate ranging from 3" to 4 1/2" was placed upon D50 .02 aggregate material. Nielson's, Inc. placed D50 .35 aggregate by manual means. WT measured in the in-placed D50 .35 aggregate for thickness at various locations to indicate conformance to project requirements.

D50 1.5 aggregate was placed on in-placed bedding material. D50 1.5 aggregate ranged from 3" to 4 1/2" thick. Nielson's, Inc. used manual means in an effort to meet project requirement thickness. WT measured in-place D50 1.5 aggregate for thickness to determine whether the material met the project requirements for thickness at the specific test locations.

D50 3" aggregates ranging from 6" to 7 1/2" were placed when specified by Reclamation plan. Nielson's, Inc. used a track hoe as a method of placement. WT measured in-place D50 3" for thickness at various locations to indicate if thickness met project requirements.

Areas where material thickness were not in compliance were reworked by Nielson's, Inc.

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SWALE J

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
06/19/95	Proctor	Swale J	Sta. 10+00		6955.6	Subgrade	112.0	14.0		CL	Yes
06/19/95	Soil Classification	Swale J	Sta. 10+00		6955.6	Subgrade				CL	Yes
07/12/95	Sandcone	Swale J	Sta. 11+00	W. Slope	6956.3	Subgrade	106.8	14.2		CL	Yes
07/12/95	Sandcone	Swale J	Sta. 9+00	Bottom	6953.5	Subgrade	98.8	17.2		CL	Yes
									•		
											*
							· .				

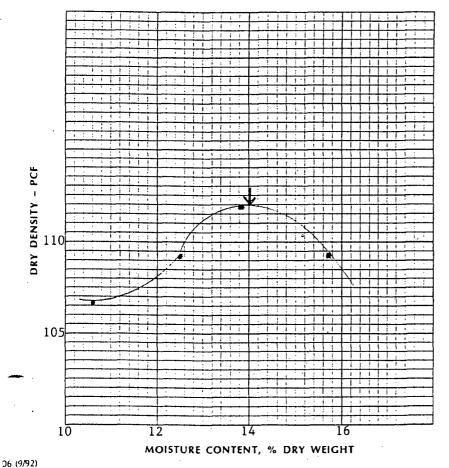
cb/UNC.031/30

Dist: Client (3) Field File (1) Billing (1)

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SOIL / AGGREGATE - MOISTURE DENSITY RELATIONS

					Job No	3145JB031	
						oice No. 31	
Type of Material Sandy Lean	Clay			Sampled By _ []]	H. Kuebler,		Date6-19-95
Fource of Material Swale J		HOO Subgr	ade		H. Kuebler		Date6-19-95
Elev. 6955.6				Tested / Calc.			Date6-19-95
Test Procedure <u>ASTM 698 A</u>				Reviewed By	a.	2	Date
Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	100	150	50	0		<u> </u>	
Sample + Mold Weight, gms	6188	6179	612.5	6047			
Mold Weight, gms	4264.0	4264.0	4264.0	4264.0			
Wet Sample Weight , gms	1924	1915	1861	1783			
Wet Sample Weight, Ibs	4.24	4.22	4.10	3.93		-	
Wet Density, pcf	127.2	126.6	123.0	117.9			
Moisture Sample Wet, gms	426.0	428	474.5	410.6			
Moisture Sample Dry, gms	374.5	370	421.8	371.2			
Weight of Water, gms	51.5	58	52.7	39.4			
Moisture, %	13.8	15.7	12.5	10.6			
Dry Density, pcf	111.8	109.3	109.3	106.6			



Maximum Dry Density, pcf 112.0

Optimum Moisture Content, % 14.0

Diameter of Mold, in. <u>4</u> inch
Height of Mold, in. <u>4.584</u>
No. of Layers3
Blows Per Layer 25
Weight of Hammer, lbs 5.5
Height of Drop <u>12</u> inch
Material Used 4 material

Western Technologies Inc.

	Western Technologies	400 South Lorena Ave Farmington, New Me		LABORATORY REPORT		
	Inc. The Quality People Since 1955	(505) 327-4966 • fa: PHYSICAL PROPE	ATES			
Client:	UNC Mining & M	-		Job 1	No.	3145JB0
	Attn: Mr. Ed Mc P.O. Box 3077	orales		Lab/	Inv. No.	3145014
Gallup, NM 87305	05		Repo	Report Date: 06		
Project:	1995 Reclaimation	1				
ocation:	Church Rock, NM	1				•
Material:	Silty Sand		Sampled By:	H. Kuebler	Date	06/19/95
Source:	Swale J		Submitted By:	H. Kuebler	Date	06/19/95
			Authorized By:	Client	Date	06/19/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1 1/2"	· .	
1*		
3/4"		
1/2"	100	
3/8"	.99.6	
. 1/4"		
No. 4	98	
	96	
10	96	
16	94	
30	92	
40	91	
50	89	
. 100	70	
200	47.6	

200 47.6 Copies: Client (3), Billing (1), Field File (1) 6-19/rgo:UNC031

> The above services and report were performed pursuent to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from including situated professionals. No other warranty, guaranty, or representation, either expressed or including included in including the skill and professionals.

Hughe Thomas REVIEWED BY



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

SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 08-23-95 Job No. 3145JB031 Event/Invoice No. 31450185-6 Authorized By E. MORALES Tested By H. KUEBLER/WT

Page	1	of	1	
Date Date				

CONFORMANCE

INDICATED

YES

YES

Client UNC MINING AND MILLING POST OFFICE BOX 3077 **GALLUP, NM 87305**

					•					
Client	U		AND MILL	.ING						
Projec	t 15	95 RECLA	MATION							
Locati	on Cl	URCH RO	CK, NM							
Test L	ocations	Designated	By H.K	UEBLER	/wr					
Test P	rocedure	s In-Place	Unit Weigh	nt : AST	M D15	56 Moistu	e Conten	t : ASTM D4	1944	
Calibra	ated Volu	ime of San	d Cone Ap	paratus	0.038	7 cu. ft. Bu	ulk Unit M	leight of Sar	nd 94.6 lbf/cu.	ft.
	İN	PLACE CHARA	CTERISTICS		·	B CHARACTERISTI	cs	COMPACTION		REQUIREMENTS
TEST NO.	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compection %
1	0.0369	14.2	106.8	0.0	22	112.0	14.0	95	14.0 TO 16.0	95
2	0.0373	17.2	98.8	0.0	33	103.8	17.1	95	17.1 TO 19.1	95

]		 				
TEST NO.			TEST LOCA	TION, HOP	RIZONTAL			TEST LOCATIO Approximate Fill Depth, ft.	Elevation *	MATERIA	AL TESTED	
1	SWALE J,	STA. 11	I + 00, W. S	LOPE					9656.3	SUBGRADE		
2	SWALE J, STA. 9+00, BOTTOM								6953.5	SUBGRADE		
l	·											
	EVENT/			U	ABURATO	HY DATA &		 ATERIA	OPTIMUM	MAXIMUM DRY		

LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, 1bf / cu. ft.	TEST METHOD	
22	31450145	SANDY LEAN CLAY	SWALE J,STA. 10+00,6955.6	14.0	112.0	D698-A	
33	31450185	SILT, SUBGRADE	SWALE I,STA. 5+00, 6951.2	17.1	103.8	D698-A	
	t F		· · ·				

Comments: CB

* DATUM Elevation of Test = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE AROVE STAVICES AND REPORT WERE VEREDARD PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WI AND CULINI. WI WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGKINT THAT IS REASONABLY EXPECTED FORM SIMILARLY STUATED PROFTSSIONALS NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

T. Krake ISIGNED COPT ON INFI

-02 (\$93 WTI

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SWALES H and I

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE. %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
06/06/95	Proctor - Swale I	Sta. 2+00	Bottom			Subgrade	116.0	12.4		CL	Yes
06/06/95	Soil Classification Swale I	Sta. 2+00	. Bottom			Subgrade				CL	Yes
06/14/95	Proctor - Swale H	Sta. 11 + 50			6956.7	Subgrade	116.5	12.4		CL	Yes
06/14/95	Proctor - Swale I	Sta. 7+00			6952.5	Subgrade	110.3	16.5		CL	·Yes ·
06/20/95	Soil Classification Swale I	Sta. 7+00			6952.5	Subgrade				SM	Yes
06/20/95	Soil Classification Swale H	Sta. 11+50			6956.0	Subgrade				CL	Yes
07/06/95	Sandcone - Swale I	Sta. 0 + 00			6945.3	Subgrade	110.1	9.1	95	CL	Yes
07/06/95	Sandcone - Swale I	Sta. 2+00	W. Slope	-	6950.1	Subgrade	98.6	4.6	85	CL	No*
07/06/95	Sandcone - Swale I	Sta. 1+00			6947.5	Subgrade	106.9	7.6	92	CL	Yes
07/06/95	Sandcone - Retest Swale I*	Sta. 2+00	W. Slope		6950.1	Subgrade	105.7	7.3	91	CL ·	Yes
07/12/95	Sandcone	Sta. 7+00	E. Slope		6955.0	Subgrade	93.6	14.1	90	CL	Yes
07/12/95	Sandcone	Sta. 5+00	Bottom		6951.2	Subgrade	99.4	18.7	96	CL	Yes

cb/UNC.031/33 *Revised 02/14/96

Dist: Client (3) Field File (1) Billing (1)

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SWALES H and I

DATE OF REPORT <u>12/06/95</u>

DATE	TYPE OF TËST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/12/95	Sandcone - Swale I	Sta. 3+00	Bottom		6949.9	Subgrade	101.7	18.0	· 98	ML	Yes
07/12/95	Sandcone - Swale I	Sta. 2+00	W. Slope		6952.4	RAC	104.6	17.4	[.] 100	ML	Yes
07/13/95	Proctor - Swale 1	Sta. 5+00			6951.2	Subgrade	103.8	17.1		ML	Yes
07/13/95	Soil Classification Swale I	Sta. 5+00			6951.2	Subgrade				ML	Yes
07/13/95	Sandcone - Swale H	Sta. 11+00	Bottom		6956.5	Subgrade	110.5	12.6	95	CL-ML	Yes
07/13/95	Sandcone - Swale H	Sta. 9+00	Bottom		6954.5	Subgrade	98.8	17.2	95	ĊL	Yes
07/17/95	Sandcone - DC-SC	Sta. 0+00	W. Slope		6951.3	RAC	102.9	17.2	99	CL	Yes
07/17/95	Soil Classification DC-SC	Sta. 0+00	W. Slope		6951.3	RAC				CL	Yes
07/20/95 to _09/27/95	Aggregate Placement				·						
		ŧ				•					

AC = Radon Attenuation Cover

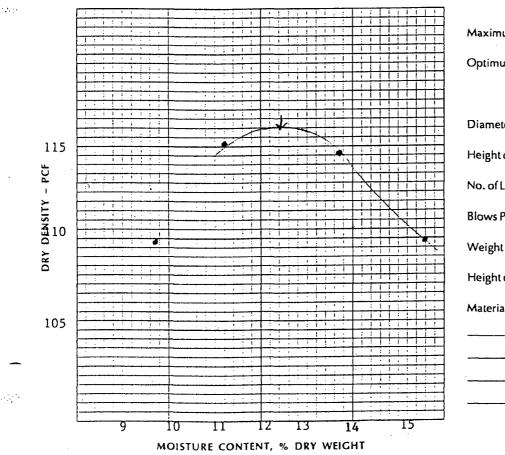
b/UNC.031/34

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SOIL / AGGREGATE - MOISTURE DENSITY RELATIONS

						Job No.		3145	5JB0	31
						Lab/Inv	oice No	3145	5014	5
Type of Material Clayey St	llt			_ Sampled By	Η.	Kueble	er/WT	(Date ⁰	6/06/9
Source of Material <u>Native</u> Su		le I 2+00		_ Submitted By _	н.	Kueble	er/WT	T Date06/06/9		
Test Procedure ASTM D698		Tested / Calc. B Reviewed By _	ву <u>Н.</u>	Dicks	on/WT	Date06/07/9				
Trial No.	1	2	3	4		5	6			7
Water, Estimated %										
Water, cc	0	50	100	150						
Sample + Mold Weight, gms	6419.4	6535.0	6571.4	6520.8						
Mold Weight, gms	4600.0	4600.4	4600.4	4600.0		-11-11-1-1				
Wet Sample Weight , gms	1819.4	1935.0	1971.4	1920.8						
Wet Sample Weight, lbs	4.01	4.27	4.35	4.23						
Wet Density, pcf	120.3	128.0	130.4	127.0						
Moisture Sample Wet, gms	401.3	406.5	403.1	407.9						
Moisture Sample Dry, gms	365.8	365.4	354.4	353.0						
Weight of Water, gms	35.5	41.1	48.7	54.9			,			·
Moisture, %	9.7	11.2	13.7	15.6						· · · · · · · · · · · · · · · · · · ·
Dry Density, pcf	109.7	115.1	114.7	109.9						

.....



Maximum Dry Density, pcf _____116.0 Optimum Moisture Content, % _____12.4

Diameter of Mold, in.	<u>4 inch</u>
-----------------------	---------------

Height of Mold, in. _____4.584

No. of Layers ______3

Blows Per Layer _____ 25

Weight of Hammer, lbs 5.5

Height of Drop <u>12 inch</u>

Material Used <u>-4 material</u>

Western Technologies Inc.

Client:	Inc. The Quality People Since 1955 UNC Mining & Milling Attn: Mr. Ed Morales	(505) 327-4966 • fax 327 PHYSICAL PROPERTI					LABORATORY REPOR				
Client:				REGATES							
•	Atur. 1911, EU 19101aics	x			Job No.		3145JB031				
	PO Box 3077 Gallup, NM 87305				Lab/Inv. No Report Date		31450415				
Project:	1995 Reclamation	``````````````````````````````````````									
ocation:	Church Rock, New Mexi	20					•				
Aaterial:	Sandy Lean Clay	Sam	pled By:	H. Kuebler	WT D	ate	June 1995				
Source:	Swale I, 2 + 00	Subr	mitted By:	H. Kuebler	WT D	ate	June 1995				
· .	Native Subgrade	Auth	norized By:	Client	D	ate	June 1995				
SIEVE ANA Sieve	LYSIS, ASTM C136 & C % Passing Spe	117 cification					,				
Size	Accumulative (As	Required)									
2"		Mois	sture Density	Relations, pcf (ASTM D69	98 M	ethod A)				
1-1/2"		Max	imum Dry De	nsity, pcf			N/A				
1-1/8"	· ·	Optin	mum Moistur	e, %		-	N/A				
1"											
3/4"		Plast	icity Index, A	STM D4318			_				
1/2"		Liqu	id Limit				32				
. 3/8"		Plast	icity Index				13				
1/4"	••••••••••••••••••••••••••••••••••••••		۰.								
No. 4	100										
. 8	. 99										
10	98		ч.								
16	97										
30	[°] 96										
40	96										
50	95										
100 200	75 60.9										

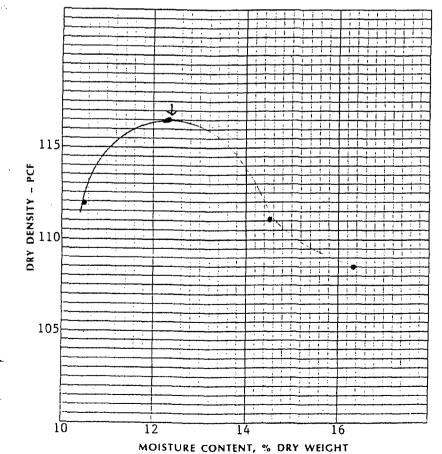
Copies: Client (3), Billing (1), Field File (1) 1/dn:unc031

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REVIEWED BY

SOIL / AGGREGATE - MOISTURE DENSITY RELATIONS

						Job No		<u>3145JB031</u>
						Lab/Invoi	ce No	31450145
Type of Material Sandy L	ean Clay			Sampled By	н.	Kuebler	r/WT	Date06/14/9
Source of MaterialSwale_H	Sta. 11+5	50 subgrade	2	_ Submitted By _	Н.	Kuebler	c/WT	Date06/14/
Elev 69	56.7			Tested / Calc. B	<u>н.</u>	Kueblei	c/WT	Date06/14/9
Test Procedure <u>ASTM D6</u>		_ Reviewed By _		<u> </u>	2	Date		
Trial No.	1	2	3	4		5	6	7
Water, Estimated %								
Water, cc	100	150	50	0			· · · · · · · · · · · · · · · · · · ·	
Sample + Mold Weight, gms	6240.0	6186.0	6135.0	6173.7			<u> </u>	
Mold Weight, gms	4264.0	4264.0	4264.0	4264.0				
Wet Sample Weight , gms	1976.0	1922.0	1871.0	1909.7				
Wet Sample Weight, Ibs	4.36	4.24	4.12	4.21				
Wet Density, pcf	130.8	127.2	123.6	126.2				
Moisture Sample Wet, gms	400.8	400.1	399.9	410.1				
Moisture Sample Dry, gms	357.0	349.6	361.9	352.6			******	
Weight of Water, gms	43.8	50.5	38.0	57.5				
Moisture, %	12.3	14.5	10.5	16.3		·		
Dry Density, pcf	116.5	111.1	111.9	108.5				



Maximum Dry Density, pcf _____116.5

Optimum Moisture Content, % _____12.4

Diameter of Mold, in.	4''
Height of Mold, in.	4.584
No. of Layers	3
Blows Per Layer	25
Weight of Hammer, lbs	
Height of Drop	12"
Material Used	-#4
	nya (* e e e e e e e e e e e e e e e e e e
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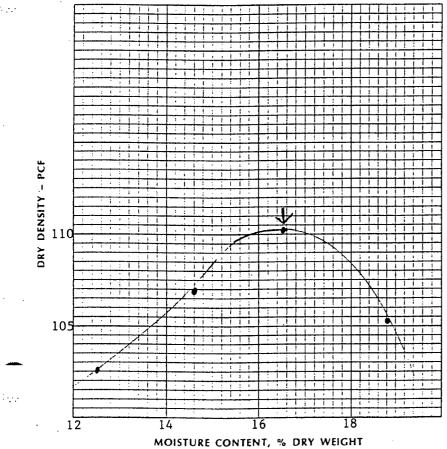
306 (9/92)

Western Technologies Inc.

SOIL / AGGREGATE - MOISTURE DENSITY RELATIONS

				•	,	Job No		<u>3145JB</u>)31
ype of Material Sandy Le	an Clay		. <i>.</i>	_ Sampled By	н.			3145014 Date	45 06/14
Source of Material Swale I	Sta. 7+00							Date	06/14
·				_ Tested / Calc. By				Date	06/14
est Procedure ASTM D69	8A ,	<u></u>		_ Reviewed By		-	1		
Trial No.	1	2	3	4		5	6		7
Water, Estimated %									
Water, cc	50	100	0	-50	•	•			
Sample + Mold Weight, gms	6205	6156	6114	6007.5					
Mold Weight, gms	4264.0	4264.0	4264.0	4264.0					
Wet Sample Weight , gms	1941	1892	1850	1743.5					
Wet Sample Weight, lbs	4.279	4.17	4.08	3.84					
Wet Density, pcf	128.4	125.1	122.4	115.3					
Moisture Sample Wet, gms	337.4	353.4	394.8	400.0					
Moisture Sample Dry, gms	289.6	297.5	344.6	355.6					
Weight of Water, gms	47.8	55.9	50.2	44.4					
Moisture, %	16.5	18.8	14.6	12.5					
Dry Density, pcf	110.2	105.3	106.8	102.5					

306 (9/92)



Maximum Dry Density, pcf	110.3
4	

16.5 Optimum Moisture Content, %

Diameter of Mold, in.	4"
Height of Mold, in.	4.584
No. of Layers	3
Blows Per Layer	25
Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
· · · · · · · · · · · · · · · · · · ·	

Western Technologies Inc.

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

Westem Technologies Inc. The Quality People Since 1955

LABORATORY REPORT

ns of the

Client:	UNC Mining &				Job No.	3145JB031
	Attn: Mr. Ed Mo PO Box 3077	orales		•	Lab/Inv. No.	31450243
•	Gallup, NM 8730	05			Report Date:	8-23-95
Project:	1995 Reclamation	n				
Location:	Church Rock, NI	M			· · · · · · · · · · · · · · · · · · ·	
Material:	Silty Sand		Sampled By:	H.K.	Date	6-20-95
Source:	Swale I 7+00/Su	ubgrade	Submitted By:	Н.К.	Date	6-20-95
			Authorized By:	Client	Date	6-20-95
SIEVE AN	ALYSIS, ASTM C	136 & C117				
Sieve	% Passing	Specification				
Size	Accumulative	(As Required)				
2"			Moisture Density	Relations, p	cf (ASTM D698 M	ethod A)
1-1/2"			Maximum Dry De	ensity, pcf		NA
1-1/8"			Optimum Moistur	re, %		NA
1"						
3/4"	100	100	Plasticity Index, A	ASTM D431	8	
1/2"	97		Liquid Limit			NV
3/8"	97		Plasticity Index			NP
1/4"						
No. 4	94	90-100				
8	91					•
10	90	85-100				•
16	88				· ·	
30	87					ية. ا
40	86	65-100				
50	84	- <u> </u>				
100	·73	50-100				
200	51.3	40-85				
Copies: Client	(3), Field File (1), Billin	ng <u>(</u> 1).				•

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Services

wither expressed or in

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save services and report was performing between WT and clean to the variant and bottom of the server or proposed, if any, between WT and cleant, WT warrants that this was performed r the appropriate standard of care, including the skill and judgement that is reasonably cted from smalarly struated professionals. No other warranty, gualanty, or representation,

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cludes or intended.

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Δ	Western Technolog Inc.		ena Avenue ew Mexico 87401 6 • fax 327-5293		LABORA	FORY REPORT
	The Quality People Since 1955		0 10x 527-5255			
	4. *	PHYSICAL P	ROPERTIES OF AGG	REGATES		
Client:	UNC Mining & N			Jo	b No.	3145JB031
	Attn: Mr. Ed Mo Post Office Box 3			L	ab/Inv. No.	31450122
<u>.</u>	Gallup, NM 8730)5		R	eport Date:	11/21/95
Project:	1995 Reclamation	1				
Location:	Church Rock, NN	M		· . ·		
Material:	Sandy Lean Clay		Sampled By:	H. Kuebler/W	T Date	06/20/95
Source:	Swale H 11+50/3	Subgrade	Submitted By:	H. Kuebler/W	T Date	06/20/95
	Elev. 6956.0		Authorized By:	Client	Date	06/20/95
3"			Moisture Density	Relations, pcf (A	STM D698 1	Method A)
2"			Maximum Dry De			N/A
1 1/2"			Optimum Moistur	e, %	• .	 N/A
1"						•
3/4"	100	100	Plasticity Index, A	ASTM D4318		
1/2"	98		Liquid Limit			25
3/8"	97	<u> </u>	Plasticity Index			7
1/4"						
No. 4	94	90-100				
8	. 91		· ·			
10	90	85-100				
16	89		÷			
30		65-100				
40	86	001-00				

-Copies: Client (3), Billing (1) Field File (1) 0.1/cb:UNC.031

85

72 50.6 50-100

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100

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and report ware performed pursuant to the terms and conditions of the tail, if any, between WT and client. WT warrants that this was performed a standard of care, including the skill and judgement that is rasionably rhy situated professionals. No other warranty, guaranty, or representation, The above agı under the ap ate ata cted fro Ş

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REVIEWED BY



SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Client UNC MINING AND MILLING POST OFFICE BOX 3077 GALLUP, NM 87305

Date of Report 08-22-95
Job No. 3145JB031
Event/Invoice No. 31450185-1
Authorized By E. MORALES
Tested By H. KUEBLER/WT

Page	1	of	1
Date	07	7-06	-95

Date 07-06-95

Client UNC MINING AND MILLING Project 1995 RECLAMATION

Location CHURCH ROCK, NM

Test Locations Designated By UNC Test Procedures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944

Calibrated Volume of Sand Cone Apparatus 0.0387 cu. ft. Bulk Unit Weight of Sand 94.6 lbf/cu. ft.

	in-i	PLACE CHARA	CTERISTICS		LAB CHARACTERISTICS			COMPACTION		REQUIREMENTS	
TEST NO.	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	ID	Meximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	
1	0.0332	9.1	110.1	0.0	3	116.0	12.4	95		90	YES
2	0.0408	4.6	98.6	0.0	3	116.0	12.4	85		90	NO
3	0.0405	7.6	106. 9	0.0	3	116.0	12.4	92		90	YES
4	0.0341	7.3	105.7	0.0	3	116.0	12.4	91		90	YES
							1	-			

TEST			TEST LOCATIO	N, VERTICAL	
NO.	TEST LOCATION, HORIZONTAL		Approximate Fill Depth, ft.	Elevation *	MATERIAL TESTED
1	SWALE I, STA. 0+00			6945.3	SUBGRADE
2	SWALE I, STA. 2+00, W. SLOPE			6950.1	SUBGRADE
3	SWALE I, STA. 1+00		6947.5	SUBGRADE	
4	RETEST OF #2 (07/06/95)			6950.1	SUBGRADE
		1	Í		
					•
	LABORATORY DA	ATA & COMPACTION CHAI	RACTERISTICS		
AB ID.	EVENT/ INVOICE NO. DESCRIPTION OF MATERIAL	SOURCE OF M	ATERIAL	OPTIMUM MOISTURE 9	MAXIMUM DRY UNIT TEST METH

	LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE,%	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
ļ	3	31450145	CLAYEY SILT	STATION 2 + 00, SWALE I	12.4	116.0	698-A
		- - - - -					

Comments: CB

* DATUM Elevation of Test = Top of Subgrade Prior to RAC Placement

Distribution : CLIENT - (3) FIELD FILE & BILLING (2) IFSTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE AROVE SERVICES AND REPORT WERE PRESIDAND PUNSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WI AND CLIENT. WI WARRANTS THAT THIS WAS PERFORMED UNDER THE AFPHOPHIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THE AFPHOPHIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONARY CREEDER TORM SIMULARLY STUATED PROFESSIONALS. NO OTHER WARRANTY, GUAHANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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T. Krake SIGNED COPT ON F. FI



Client UNC MINING AND MILLING POST OFFICE BOX 3077

GALLUP, NM 87305

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

SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 08-28-95 Job No. 3145JB031 Event/Invoice No. 31450185-7 Authorized By E. MORALES Tested By H.K./C.P./WT

Page 1 of 1

Date 07-12-95 Date 07-12-95

Test P	t 19 on CH ocations Procedure	95 RECLA IURCH RO Designated s In-Place	CK, NM 3 By H. KI Unit Weigh	JEBLER	M D15			nt : ASTM D4 Veight of San		bf/cu.	ft.	
	IN-	PLACE CHARA	CTERISTICS		L	B CHARACTERISTIC	s	COMPACTION			REQUIREMENTS	
TEST NO.	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	מו	Meximum Dry Unit Weight Ibf / cu, ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moistu: %	7 0	Compection %	
1	0.0400	14.1	93.6	0.0	33	103.8	17.1	90			90	YES
2	0.0576	18.7	99.4	0.0	33	103.8	17.1	96			90	YES
3	0.0376	18.0	101.7	0.0	33	103.8	17.1	98			90	YES
4	0.0343	17.4	104.6	0.0	33	103.8	17.1	100+	17.1 TO	19.1	95	YES
		·				•						
TEST NO.			TEST LOCA	TION. HO				TEST LOCATION	· · · · · · · · · · · · · · · · · · ·	ł	MATERIAL TE	STED
	-							Depth, ft.	Elevation *	CUI		
1			00, E. SLC						6955.0		GRADE	
2		•	00, BOTTO						6951.2	1	GRADE	
3		• -	00, BOTTO						6949.9		BGRADE	
4	SWALE	I, STA. 2+	00, W. SL	OPE		r			6952.4	SUE	IGRADE	

 LABORATORY DATA & COMPACTION CHARACTERISTICS

 LAB ID.
 EVENT/ INVOICE NO.
 DESCRIPTION OF MATERIAL
 SOURCE OF MATERIAL
 OPTIMUM MOISTURE,%
 MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.
 TEST METHOD

 33
 31450185
 SILT, SUBGRADE
 SWALE I,STA. 5+00, 6951.2
 17.1
 103.8
 D698-A

Comments: CB

* DATUM Elevation of Test = Top of Subgrade prior to Bedding Placmt.

Distribution : CLIENT - (3) FIELD FILE & BILLING (2)

TEETS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE VERIFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FORM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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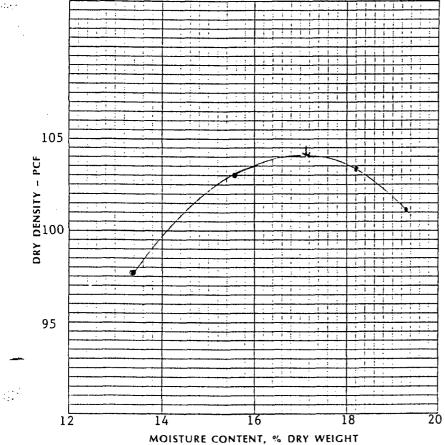
A. McHaney

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SOIL / AGGREGATE - MOISTURE DENSITY RELATIONS

	,				Job No.	3145JB	031
					Lab/Inv	oice No31	450185
Type of Material				_ Sampled By(Date 07/13/9
•	Sta. 5+00	Elev. 695	1.2	_ Submitted By _			
							07/13/9
Test Procedure ASTM D6	98A		<u>,</u>	_ Reviewed By _			Date
Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Waler, cc	50	100	150		• •		
Sample + Mold Weight, gms	5980.3	6025.5	6003.4	5853.0			
Mold Weight, gms	4179.7	4179.7	4179.7	4179.7			
Wet Sample Weight , gms	1800.6	1845.8	1823.7	1673.3		1	
Wet Sample Weight, Ibs	3.970	4.069	4.021	3.689			
Wet Density, pcf	119.1	122.1	120.6	110.7			
Moisture Sample Wet, gms	317.1	328.4	318.1	392.7			
Moisture Sample Dry, gms	274.2	277.9	266.7	346.3			
Weight of Water, gms	42.9	50.5	51.4	46.4			
Moisture, %	15.6	18.2	19.3	13.4			
Dry Density, pcf	103.0	103.3	101.1	97.6			1



103.8 Maximum Dry Density, pcf ____

Optimum Moisture Content, % 17.1

Diameter of Mold, in	4''
Height of Mold, in	4.584
No. of Layers	3
Blows Per Layer	05
Weight of Hammer, lbs	5.5
Height of Drop	
Material Used	-#4

Western Technologies Inc.

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6	Technologie Inc. The Quality People	400 South Lore S Farmington, No. (505) 327-4960	ew Mexico 87401 6 • fax 327-5293		LABORAT	ORY REPOR
	Since 1955	PHYSICAL P	ROPERTIES OF AGO	REGATES		
Client:	UNC Mining & Mill				Job No.	3145JB031
	Attn: Mr. Ed Morale PO Box 3077	es			Lab/Inv. No.	31450185
	Gallup, NM 87305				Report Date:	8-28-95
Project:	1995 Reclamation				r	
Location:	Church Rock, NM					<u></u>
Material:	Silt	· · · · · · · · · · · · · · · · · · ·	Sampled By:	CP & HK	Date	7-13-95
Source:	Swale I Station 5+0	n	Submitted By:	CP	Date	7-14-95
			Authorized By:	Client	Date	7-13-95
	<u></u>			Chent	Date	
<u>1-1/2"</u> <u>1-1/8"</u>	·······		Maximum Dry De Optimum Moistur			<u>NA</u>
1"	· · · · · · · · · · · · · · · · · · ·		optimum moistur		· .	
3/4"			Plasticity Index, A	STM D4318		
1/2"			Liquid Limit			NV
3/8"			Plasticity Index			NP
1/4"						
No. 4						
8	100					•
10	99					
16	98					
30	97					÷
40	93				,	
50	89			· .		
100	64					

200 34

Copies: Client (3), Billing (1), Field File (1). 713\ha:UNC031

> The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT wertants that this was performed under the appropriate standard of care, including the skill and updoment that is reasonably expected (from invitially structed professionals. No other warranty, guaranty, or ispresentation, either expressed or imbled is included or intermed.

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Western Technologies Inc.
The Quality People
Since 1955

Client UNC MINING AND MILLING

GALLUP, NM 87305

Client

· . .

POST OFFICE BOX 3077

UNC MINING AND MILLING

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

SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 08-28-95 Job No. 3145JB031 Event/Invoice No. 31450185-8 Authorized By E. MORALES Tested By C. PADILLA/WT

Page 1 of 1 Date 07-13-95 Date 07-13-95

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Project **1995 RECLAMATION** Location CHURCH ROCK, NM Test Locations Designated By C. PADILLA/WT Test Procedures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944 Calibrated Volume of Sand Cone Apparatus 0.0383 cu. ft. Bulk Unit Weight of Sand 94.8 lbf/cu. ft. COMPACTION IN-PLACE CHARACTERISTICS LAB CHARACTERISTICS REQUIREMENTS TEST Optimum Moisture % Hole % of Moisture Dry Unit Maximum Dry CONFORMANCE NO. % of Dry Unit Weight Weight lbf / cu. ft. Oversize % ID Unit Weight Ibf / cu. ft. Maximum Dry Unit Weight Moisture Compaction % Volume INDICATED cu. ft. % 1 0.0384 116.0 12.4 95 90 YES 12.6 110.5 0.0 3 0.0414 90 YES 2 103.8 17.1 95 17.2 98.8 0.0 33 TEST LOCATION, VERTICAL TEST NO. MATERIAL TESTED TEST LOCATION, HORIZONTAL Approximate Fill Depth, ft, Elevation * SUBGRADE 1 SWALE H, STA. 11+00, BOTTOM 6956.5 SUBGRADE 2 SWAHE H, STA. 9+00, BOTTOM 6954.5

LABORATORY DATA & COMPACTION CHARACTERISTICS							
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHO	
3	31450145	CLAYEY SILT	STATION 2 + 00, SWALE I	12.4	116.0	698-A	
33	31450185	SILT, SUBGRADE	SWALE I,STA. 5+00, 6951.2	17.1	103.8	D698-A	

Comments: CB

* DATUM Elevation of Test = Top of Subgrade prior to Bedding Placmt

Distribution : CLIENT - (3) FIELD FILE & BILLING (2)

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an A. McHaney SIGNED COPY ON FILES

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	Western Technologies	400 South Lorena Avenue Farmington, New Mexico 87401	LABORAT	ORY REPORT
J	Inc.	(505) 327-4966 • fax 327-5293		
	The Quality People Since 1955	PHYSICAL PROPERTIES OF AGGREGATES		
	UNC Mining & Milling	· · ·	Job No.	3145JB031
	Attn: Mr. Ed Morales		Tab (Taba NTa	21450415
	PO Box 3077 Gallup, NM 87305		Lab/Inv. No.	31450415

			Report	Date:	12/04/95
Project:	1995 Reclamation				
Location:	Church Rock, New Mexico				
Material:	Sandy Silty Clay	Sampled By:	H. Kuebler /WT	Date	August 1995
Source:	DC - SC Swale	Submitted By:	H. Kuebler /WT	Date	August 1995
	Native Subgrade	Authorized By:	Client	Date	August 1995

SIEVE ANALYSIS, ASTM C136 & C117

Client:

	Sieve	% Passing	Specification
	Size	Accumulative	(As Required)
	2"		
	1-1/2"		
	1-1/8"		
	1"		
_	3/4"	98	
	1/2"		· .
	3/8"	98	
	1/4"		
	No. 4	97	
_	8	. 96	<u>,</u>
	10	95	
	16	94	
	30	⁻ 93	
	40	92	
	50	91	
	100	73	
	200	53.6	

Moisture Density Relations, pcf (ASTM D698 Method A)					
N/A					
N/A					

Plasticity Index, ASTM D4318	
Liquid Limit	27
Plasticity Index	6

Copies: Client (3), Billing (1), Field File (1) 1/dn:unc031 1/dn:unc031

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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 08-28-95 Job No. 3145JB031 Page Event/Invoice No. 31450185-11 Authorized By E. MORALES Date (Tested By H. KUEBLER/WT Date (

Page 1 of 1

Date 07-17-95 Date 07-17-95

Client UNC MINING AND MILLING POST OFFICE BOX 3077 GALLUP, NM 87305

Client	UNC MINING AND MILLING	
Project	1995 RECLAMATION	
Location	CHURCH ROCK, NM	
Test Locatio	ons Designated By CLIENT	
Test Proced	ures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944	
Calibrated V	olume of Sand Cone Apparatus 0.0387 cu. ft. Bulk Unit Weight of Sand 94.6 lbf/	cu. ft.

IN-PLACE CHARACTERISTICS COMPACTION LAB CHARACTERISTICS REQUIREMENTS TEST Hole Dry Unit Weight Ibf / cu. ft. Optimum Moisture % % of Maximum Dry Unit Weight Moisture Maximum Dry Unit Weight NO. CONFORMANCE % of Dry Unit Weight Volum Oversize % Ð Moisture Compection % INDICATED cu. ft. lbf / cu. ft. ٩Ж 0.0361 1 17.2 102.9 0.0 33 103.8 17.1 99 17.1 TO 19.1 95 YES

TEST NO.		TEST LOCATION, HORIZONTAL		TEST LOCATIO Approximate Fill Depth, ft.	Elevation *	MATERIAL TES	STED
1	DC-SC, SWAL	E, STA. 0+00			6951.3	SUBGRADE	
		· .					
ſ					ĺ	· ·	
		LABORATORY	DATA & COMPACTION CH	ARACTERISTICS			
.AB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF M	MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu, ft.	TEST METHOD
33	31450185	SILT, SUBGRADE	SWALE I,STA. 5+	00, 6951.2	17.1	103.8	D698-A

Comments: CB

* DATUM Test Elevation = Top of RAC

Distribution : CLIENT - (3) FIELD FILE & BILLING (2)

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A. McHaney Am

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SWALE J - D50 .02 SAND AGGREGATE THICKNESS

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 8+00	3 1/2	3 1/2	3 1/2
Station 9+00	3	3 1/2	3 1/2
Station 10+00	3 1/2	3 1/2	3
Station 11+00	3 1/4	3 1/2	3 1/4

Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/19

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 08/17/95

SWALE H & I - .02 SAND THICKNESS

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 11+50	3	3 1/4	3 1/2
Station 11+00	3 1/4	3 1/2	3
Station 10+00	3 1/2	3 1/2	3 1/4
Station 9+00	3	3	3 1/2
Station 8+00	3	3 1/2	3 1/2
Station 7+00	3 1/4	3 1/4	3 .
Station 6+00	3 1/2	3 1/4	3 1/2
Station 5+00	3 1/2	3 1/4	3 1/4
Station 4+00	3 1/4	3	3 1/4
Station 3+00	3 1/2	3 1/2	3 1/2
Station 2+00	3 1/2	3 1/2	3 1/2
Station 1+00	3 1/2	3 1/2	3 1/2

Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/8

> TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED DURSUANT TO THE TENDES AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT, WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INFLUDED OR INTENDED.

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

e a construction

DATE OF REPORT 08/17/95

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 11+50	4	4	3 1/4
Station 11+00	3 1/2	4	3 3/4
Station 10+00	4	3 1/2	4
Station 9+00	3	4	4
Station 8+00	3	3 1/4	3 1/2
Station 7+00	3 3/4	3	4
Station 6+00	3 3/4	4	3
Station 5+00	4	3 1/2	3 1/2
Station 4+00	3	3	4
Station 3+00	4	4	4
Station 2+00	4	4	3
Station 1+00	4	3 3/4	3

SWALE H & I - .35 AGGREGATE THICKNESS

Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/7

> TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARHIANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY STUATED PROFESSIONALS. NO OTHER WARANTY, GUAHANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SWALE J - D50 1.5 AGGREGATE THICKNESS

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 8+00	3 1/2	3	4
Station 9+00	3 1/4	4	3 1/2
Station 10+00	3 1/2	3 1/4	3
Station 11+00	4	4	3 1/2
· · ·			

Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/20

> TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SWALES H AND I - D50 3 INCH AGGREGATE THICKNESS

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 11 + 50	6	6	6
Station 10+50	6 3/4	6 1/4	6
Station 9+50	6 3/4	6 3/4	6 1/2 _.
Station 8+50	6	6 1/2	6 1/2
Station 7+50	6 1/4	6 1/4	6 1/2
Station 6+50	6 3/4	6	6 3/4
Station 5+50	7	6 1/2	6
Station 4+50	6 1/4	6	6 3/4
Station 3+50	6 1/2	6	6 1/2
Station 2+50	6	6	. 6
Station 1+50	6	6	6 1/4

Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/18

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED ON INTENDED.

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APPENDIX K

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APPENDIX K

BEDDING MATERIAL GRADATION TESTS

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR BEDDING MATERIAL

DATE OF REPORT 12/07/95

DATE	SAMPLE LOCATION	% PASS 3" SPEC. 100%	% PASS 3/4" SPEC. 85-100%	% PASS #4 SPEC. 65-100%	% PASS #10 SPEC. 47-94%	% PASS #40 SPEC. 23-70%	% PASS 200 SPEC. 15-30%	WITHIN SPECS. ?
03/13/95	Hamilton Brothers	100	100	96	73	47	26.0	Yes
05/23/95	UNC Stockpile	100	100	100	73	39	18.0	Yes
06/20/95	UNC Stockpile	100	100	96	76	48	21.5	Yes
				······				
							· ·	

cb/1995.UNC/5

Dist: Client (3) Field File (1) Billing (1)

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling	Job No.	Job No.		
	Attn: Mr. Ed Morales Post Office Box 3077		Lab/Inv.	No.	31450051
	Gallup, NM 87305	,	Report I	Date:	11/16/95
Project:	1995 Reclamation	•			
Location:	Church Rock, NM				
Material:	.02 Aggregate	Sampled By:	P. Christensen/WT	Date	03/13/95
Source:	Hamilton Brothers Crusher	Submitted By:	P. Christensen/WT	Date	03/13/95
		Authorized By:	Client	Date	03/13/95

SIEVE ANALYSIS, ASTM C136 & C117

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Technologies

	Sieve	% Passing	Specification
-	Size	Accumulative	(As Required)
_	2*		
_	1-1/2"	•	
	1-1/8"		
	- 1"		
_	3/4"	100	85-100
	1/2"		
_	3/8"		
_	1/4"		
_	No. 4	96	65-100
	8		
_	10	73	47-94
_	16		
_	30		
	40	47	23-70
_	50		
	100		
	200	26.0	15-30
_			

Moisture Density Relations, pcf (ASTM D698 Method A)				
Maximum Dry Density, pcf	N/A			
Optimum Moisture, %	N/A			

Plasticity Index, ASTM D4318

REVIEWED BY

Liquid Limit	<u>N/A</u>
Plasticity Index	N/A

-Copies: Client (3), Billing (1) Field File (1) 13/cb:UNC.031

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	resment or proposal, if any, between WT and client. WT warrants that this was performed
	der the appropriate standard of care, including the skill and judgement that is reasonably
8X	pected from similarly situated professionals. No other warranty, guaranty, or representation,
	har avanuared or implicit is included or intended

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Inc.

Technologies

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I Attn: Mr. Ed Mo Post Office Box 3 Gallup, NM 8730	orales 3077		Job No Lab/In Report	v. No.	3145JB031 31450122 11/16/95
Project:	1995 Reclamation	1		•		<u></u>
Location:	Church Rock, NM	A		· · · · · · · · · · · · · · · · · · ·		
Material:	.02 Aggregate		Sampled By:	H. Kuebler/WT	Date	05/23/95
Source:	UNC Stockpile		Submitted By:	H. Kuebler/WT	 Date	05/23/95
			Authorized By:	Client	Date	05/23/95
Sieve Size 3"	% Passing Accumulative 100	Specification (As Required) 100	Moisture Density	Relations, pcf (ASTM	1 D698 M	lethod A)
1-1/2"			Maximum Dry De	······		N/A
1-1/8"	· · · · · · · · · · · · · · · · · · ·		Optimum Moistur			N/A
1"	· · · · · · · · · · · · · · · · · · ·					·
3/4"	100	85-100	Plasticity Index, A	ASTM D4318		
1/2"			Liquid Limit			<u>N/A</u>
3/8"		-	Plasticity Index		-	N/A
1/4"		·				
No. 4	100	65-100				

Topies: Client (3), Billing (1) Field File (1) 23.1/cb:UNC.031

73

39

18.0

47-94

23-70

15-30

8 10

16 30 40

50 100 200

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agreement or proposal, if any, between WT and client. WT warrants that this was performed
under the appropriate standard of care, including the skill and judgement that is reasonably
expected from similarly situated professionals. No other warranty, guaranty, or representation,
either expressed or implied included or mitended.

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No). .	3145JB031
	Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	v. No.	31450145
	Gallup, NM 87305		Report	Date:	11/16/95
Project:	1995 Reclamation				
Location:	Church Rock, NM				·
Material:	.02 Aggregate	Sampled By:	H. Kuebler/WT	Date	06/20/95
Source:	UNC	Submitted By:	H. Kuebler/WT	Date	06/20/95
		Authorized By:	Client	Date	06/20/95

SIEVE ANALYSIS, ASTM C136 & C117

	Sieve	% Passing	Specification
	Size	Accumulative	(As Required)
	3"	100	100
	1-1/2"	·	
<i>.</i>	1-1/8"	-	
in the second second	1"		
	3/4"	100	85-100
	1/2"		
	3/8"		
	1/4"		
	No. 4	96	65-100
	8	-	
	10	76	47-94
	16		
	30		· ·
	40	48	23-70
	50		
	100		
•	200	21.5	15-30

Moisture Density Relations, pcf (ASTM)	D698 Method A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit	<u>N/A</u>
Plasticity Index	N/A

opies: Client (3), Billing (1) Field File (1) 20/cb:UNC.031

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR D50 .35 MATERIAL

DATE OF REPORT 12/07/95

DATE	SAMPLE LOCATION	% PASS 3" SPEC. 65-100%	% PASS 3/4" SPEC. 43-80%	% PASS #4 SPEC. 22-60%	% PASS #10 SPEC. 15-38%	% PASS #40 SPEC. 5-12%	% PASS 200 SPEC. 0-10%	WITHIN SPECS. ?
03/09/95	Hamilton Brothers	100	98	49	32	19	10.7	No
03/13/95	Hamilton Brothers	100	94	41	26	14	7.6	No
05/19/95	Hamilton Brothers	100	90	41	29	19	8.8	No
05/23/95	• Rock Score							
05/25/95	Hamilton Brothers	100	80	31	22	14	6.9	No
05/25/95	Hamilton Brothers	100	75	34	24	. 14	8.1	No
06/12/95	Rock Score							
06/12/95	Hamilton Brothers	100	68	27	18	10	6.7	Yes
06/22/95	Hamilton Brothers	100	73	39	. 17	10	7.4	Yes
07/10/95	Rock Score							
07/10/95	Hamilton Brothers	100	67	33	15	10	6.1	Yes
· · · · · · · · · · · · · · · · · · ·								

NOTE: Material that did not meet specifications was discarded.

cb/1995.UNC/4

Dist: Client (3) Field File (1) Billing (1)

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No	•	3145JB031
	Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	v. No.	31450051
	Gallup, NM 87305		Report	Date:	11/16/95
Project:	1995 Reclamation				
Location:	Church Rock, NM		\		
Material:	.35 Aggregate	Sampled By:	H. Kuebler/WT	Date	03/09/95
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT	Date	03/09/95
		Authorized By:	Client	Date	03/09/95
Material:	.35 Aggregate	Submitted By:	H. Kuebler/WT	Date	03/09/95

SIEVE ANALYSIS, ASTM C136 & C117

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	Sieve	% Passing	Specification
	Size	Accumulative	(As Required)
	3"	100	65-100
	1-1/2"		
	1-1/8"		
	- 1"		
-	3/4"	98	43-80
-	1/2"		
	3/8"		
	1/4"	· .	
-	No. 4	49	22-60
	8		
_	10	32	15-38
	16		
-	30		
-	40	19	5-12
	50		
	100		
•	200	10.7	0-10

Moisture Density Relations, pcf (ASTM D	698 Method A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318	
Liquid Limit	N/A
Plasticity Index	N/A

Oppies: Client (3), Billing (1) Field File (1) 9/cb:UNC.031

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	Since 1955	PHYSICAL PROPERTIES OF AGG	<u>REGATES</u>			
Client:	UNC Mining & Milling Attn: Mr. Ed Morales Post Office Box 3077			Job No. Lab/Inv.	No.	3145JB031 31450051
Project:	Gallup, NM 87305			Report D	Date:	11/16/95
Location:	Church Rock, NM		<u></u>			
Material:	.35 Material	Sampled By:	P. Christen	sen/WT	Date	03/13/95
Source:	Hamilton Brothers Crush	sr Submitted By:	P. Christen	sen/WT	Date	03/13/95
		Authorized By:	Client		Date	03/13/95
SIEVE ANA	ALYSIS, ASTM C136 & C	117				

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
<u>3</u> "	100	65-100
1-1/2"		
1-1/8"		
1 "		· · · · ·
3/4"	94	43-80
1/2"	_	
3/8"		
1/4"		
No. 4	41	22-60
8		
10	26	15-38
16		
30		
40	14	5-12
50		
100		
200	7.5	0-10

Moisture Density Relations, pcf (ASTM	D698 Method A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit	N/A
Plasticity Index	<u>N/A</u>

^opies: Client (3), Billing (1) Field File (1)
13.1/cb:UNC.031

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PHYSICAL PROPERTIES OF AGGREGATES

lient:	UNC Mining & I Attn: Mr. Ed Mo			Job No	•	3145JB031
	Post Office Box 2	3077		Lab/In	v. No.	31450122
	Gallup, NM 8730			Report	Date:	11/16/95
roject:	1995 Reclamation	<u>1</u>	····			· ····.
Location:	Church Rock, N	M		····		
Material:	.35 Aggregate		Sampled By:	H. Kuebler/WT	Date	05/19/95
Source:	Hamilton Brother	5	Submitted By:	H. Kuebler/WT	Date	05/19/95
			Authorized By:	Client	Date	05/19/95
SIEVE AN	ALYSIS, ASTM C	136 & C117		· · · ·		
Sieve	% Passing	Specification				
Size	Accumulative	(As Required)				
3".	100	65-100	Moisture Density	Relations, pcf (ASTM	1 D698 M	ethod A)
1-1/2"	······································	·.	Maximum Dry De	ensity, pcf		N/A
1-1/8"			Optimum Moistur	e, %		N/A
1*						
3/4"	90	43-80	Plasticity Index, A	STM D4318		_
1/2"			Liquid Limit			N/A
3/8"	· ·	· ·	Plasticity Index			N/A
1/4"						
No. 4	41	22-60				
8		• v	а -			:
10	29	15-38				
16			. •			÷ '
30						
40	19	5-12				
50						. •
100						

The med pursuant to the terms and co rices and report vere perfi Note services and report were performed purchase to the remains of them ent or proposal, if any, between WT and (sent, WT warrants that this was performed the appropriate standard of care, including the skill and judgement that is reasonably ad from similarly situated scottestionals. No other warranty, guaranty, or representation, agreement or under the app expected from si either expressed of

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

UNC Mining & Milling		Job No) .	3145JB031
Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	v. No.	31450122
Gallup, NM 87305		Report	Date:	11/16/95
1995 Reclamation				
Church Rock, NM				
D ⁵⁰ .35 Aggregate	Sampled By:	H. Kuebler/WT	Date	05/23/95
Hamilton Yard	Submitted By:	H. Kuebler/WT	Date	05/23/95
	Authorized By:	Client	Date	05/23/95
	Attn: Mr. Ed Morales Post Office Box 3077 Gallup, NM 87305 1995 Reclamation Church Rock, NM D ⁵⁰ .35 Aggregate	Attn: Mr. Ed Morales Post Office Box 3077 Gallup, NM 87305 1995 Reclamation Church Rock, NM D ⁵⁰ .35 Aggregate Sampled By: Hamilton Yard Submitted By:	Attn: Mr. Ed Morales Lab/In Post Office Box 3077 Lab/In Gallup, NM 87305 Report 1995 Reclamation Church Rock, NM D ⁵⁰ .35 Aggregate Sampled By: H. Kuebler/WT Hamilton Yard Submitted By: H. Kuebler/WT	Attn: Mr. Ed Morales Post Office Box 3077 Gallup, NM 87305Lab/Inv. No. Report Date:1995 ReclamationReport Date:Church Rock, NMImage: Church Rock, NMD ⁵⁰ .35 AggregateSampled By:Hamilton YardSubmitted By:H. Kuebler/WTDate

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
3"	100	65-100
1-1/2"		
1-1/8"	······································	
1"		
3/4"	70	43-80
1/2"		
3/8"		
1/4"		
No. 4	26	22-60
8	· .	
10	20	15-38
16		
30		
40	14	5-12
50		
100		
200	7.7	0-10

Moisture Density Relations, pcf (ASTM D69	98 Method A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit	N/A
Plasticity Index	N/A

vpies: Client (3), Billing (1) Field File (1) .3.3/cb:UNC.031

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & M			. J	lob No.	3145JB031
	Attn: Mr. Ed Mon Post Office Box 3			.]	Lab/Inv. No.	31450122
	Gallup, NM 8730	5		I	Report Date:	11/16/95
Project:	1995 Reclamation					
Location:	Church Rock, NM	[
Material:	.35 Aggregate		Sampled By:	H. Kuebler/	WT Date	05/25/95
Source:	Hamilton Brothers		Submitted By:	H. Kuebler/	WT Date	05/25/95
			Authorized By:	Client	Date	05/25/95
SIEVE AN	ALYSIS, ASTM CI	36 & C117		• <u>••••</u> •••••••••••••••••••••••••••••••		
Sieve	% Passing	Specification			•	·
Size	Accumulative	(As Required)				
3"	100	65-100	Moisture Density	Relations, pcf (ASTM D698 M	lethod A)
1-1/2"	·		Maximum Dry De	ensity, pcf		N/A
1-1/8"			Optimum Moistur	e, %		<u>N/A</u>
1 "						,
3/4"	80	43-80	Plasticity Index, A	STM D4318		
1/2"			Liquid Limit			<u>N/A</u>
3/8"	· .		Plasticity Index			<u>N/A</u>
1/4"						
No. 4	· 31	22-60			•	
10	22	15-38				
16						
30						
40	14	5-12				
50			•			
100		<u></u>				
200	6.9	0-10				

pies: Client (3), Billing (1) Field File (1) 5/cb:UNC.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No).	3145JB031
	Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	v. No.	31450122
	Gallup, NM 87305		Report	Date:	11/16/95
Project:	1995 Reclamation	• •			
Location:	Church Rock, NM	•			
Material:	.35 Aggregate	Sampled By:	H. Kuebler/WT	Date	05/25/95
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT	Date	05/25/95
		Authorized By:	Client	Date	05/25/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve	% Passing	Specification
Size	Accumulative	(As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	75	43-80
1/2"		
3/8"		
1/4"	:	
No. 4	34	22-60
8		
10	24	15-38
16		
30		
40	14	5-12
50		
100		
200	8.1	0-10

Moisture Density Relations, pcf (ASTM D698 Me	thod A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit		N/A
Plasticity Index	·	N/A

opies: Client (3), Billing (1) Field File (1) 25.1/cb:UNC.031

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No). .	3145JB031	
	Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	v. No.	31450145	
	Gallup, NM 87305		Report	Date:	11/16/95	
Project:	1995 Reclamation					
Location:	Church Rock, NM					
Material:	.35 Aggregate	Sampled By:	H. Kuebler/WT	Date	06/12/95	
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT	Date	06/12/95	
		Authorized By:	Client	Date	06/12/95	
				·		

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
3"	100	65-100
1-1/2"		-
1-1/8"		
1"		
3/4"	68	43-80
1/2"		
3/8"		
1/4"		
No. 4	27	22-60
8	<u>.</u>	
10	18	15-38
16		
30		· ·
40	10	5-12
50		
100		
200	6.7	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)			
Maximum Dry Density, pcf	N/A		
Optimum Moisture, %	N/A		

Plasticity Index, ASTM D4318

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Liquid Limit	N/A
Plasticity Index	N/A

Propies:Client (3), Billing (1) Field File (1)12/cb:UNC.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

UNC Mining & Milling		Job No) .	3145JB031
Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	v. No.	31450145
Gallup, NM 87305		Report	Date:	11/16/95
1995 Reclamation				
Church Rock, NM				
.35 Aggregate	Sampled By:	J. Golding/WT	Date	06/22/95
Hamilton Brothers Crusher	Submitted By:	J. Golding/WT	Date	06/22/95
· · ·	Authorized By:	Client	Date	06/22/95
	Attn: Mr. Ed Morales Post Office Box 3077 Gallup, NM 87305 1995 Reclamation Church Rock, NM .35 Aggregate	Attn: Mr. Ed Morales Post Office Box 3077 Gallup, NM 87305 1995 Reclamation Church Rock, NM .35 Aggregate Sampled By: Hamilton Brothers Crusher Submitted By:	Attn: Mr. Ed Morales Lab/In Post Office Box 3077 Lab/In Gallup, NM 87305 Report 1995 Reclamation Image: Church Rock, NM .35 Aggregate Sampled By: J. Golding/WT Hamilton Brothers Crusher Submitted By: J. Golding/WT	Attn: Mr. Ed Morales Lab/Inv. No. Post Office Box 3077 Report Date: Gallup, NM 87305 Report Date: 1995 Reclamation Church Rock, NM .35 Aggregate Sampled By: J. Golding/WT Date Hamilton Brothers Crusher Submitted By: J. Golding/WT Date

SIEVE ANALYSIS, ASTM C136 & C117

	Sieve	% Passing	Specification
-	Size	Accumulative	(As Required)
•	3"	100	65-100
	1-1/2"		
	1-1/8"		
·	1"		
_	3/4"	73	43-80
_	1/2"		
	3/8"		
•	1/4"		
•	No. 4	39	22-60
_	8		
	10	17	15-38
	16		
_	30		
	40	17	5-12
	50		
	100		
	200	7.4	0-10

M	oisture	Density	/ Relatio	ons, pct	(ASTM	D988	Method A	1)
		·····						· · · · ·

, <u>N/A</u>
N/A

Plasticity Index, ASTM D4318

Liquid Limit	<u>N/A</u>
Plasticity Index	N/A

opies: Client (3), Billing (1) Field File (1) o22.1/cb:UNC.031

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PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling		Job No	D. .	3145JB031
	Attn: Mr. Ed Morales Post Office Box 3077		Lab/In	iv. No.	31450145
	Gallup, NM 87305		Report	Date:	11/16/95
Project:	1995 Reclamation				
Location:	Church Rock, NM				
Material:	.35 Aggregate	Sampled By:	J. Golding/WT	Date	06/22/95
Source:	Hamilton Brothers Crusher	Submitted By:	J. Golding/WT	Date	06/22/95
		Authorized By:	Client	Date	06/22/95

SIEVE ANALYSIS, ASTM C136 & C117

	Sieve	% Passing	Specification
	Size	Accumulative	(As Required)
•	3"	100	65-100
-	1-1/2"		
	1-1/8"		
	1"		
•	3/4"	70	43-80
•	1/2"		
•	3/8"		
	1/4"		
	No. 4	37	22-60
	8	. **	
•		15	15-38
•	16		
	30		
	. 40	15	5-12
	50		
	100		
	200	6.8	0-10
		, <u>, , , , , , , , , , , , , , , , , , </u>	******

Moisture Density Relations, pcf (ASTM	D698 Method A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit		N/A
Plasticity Index	· ,	<u>N/A</u>

pies: Client (3), Billing (1) Field File (1) _22/cb:UNC.031

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Farmington, New Mexico	
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PHYSICA	L PROPERTIES	OF A	AGGRE	GATES

Client:	UNC Mining & Milling Attn: Mr. Ed Morales		Job No	Job No.	
	Post Office Box 3077		Lab/In	v. No.	31450145
	Gallup, NM 87305	· · · · ·	Report	Date:	11/16/95
Project:	1995 Reclamation		······		
Location:	Church Rock, NM				
Material:	.35 Aggregate	Sampled By:	J. Golding/WT	Date	07/10/95
Source:	Hamilton Brothers Crusher	Submitted By:	J. Golding/WT	Date	07/10/95
		Authorized By:	Client	Date	07/10/95

SIEVE ANALYSIS, ASTM C136 & C117

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	Sieve	% Passing	Specification
	Size	Accumulative	(As Required)
	3"	100	65-100
	1-1/2"		
••••	1-1/8"		
	1"		
	3/4*	67	43-80
	1/2"		
	3/8*		· · · · · · · · · · · · · · · · · · ·
	1/4*	· · · · · · · · · · · · · · · · · · ·	
	No. 4	. 33	22-60
	8	· · · · · · · · · · · · · · · · · · ·	<u></u>
	10	- 15	15-38
	16	÷	
	30		
	40	10	- 5-12
	50	,	
	100		
	200	6.1	0-10

Moisture Density Relations, pcf (ASTM	D698 Method A)
Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

REVIEWED BY

Liquid Limit	N/A
Plasticity Index	<u>N/A</u>

ppies: Client (3), Billing (1) Field File (1) .0/cb:UNC.031

> The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate strandard of day, including the skill and judgement that is reasonably expected from similarly situated portsalibrate. No other warranty, guaranty, or representation.

APPENDIX L

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APPENDIX L

TEST RESULTS, RUNOFF CONTROL DITCH

SOUTH CELL WEST CONTROL RUNOFF DITCH

West control ditch was to be contoured to 1995 Reclamation plan specifications. Nielson's, Inc. worked on the west control ditch periodically, with final completion of the control ditch on September 27, 1995. The west berm of the west control berm was built-up to a higher elevation then its previous existing elevation and the control ditch bottom was contoured to a width and elevation as prescribed in the 1995 Reclamation plans. Field density tests were performed to determine if the fill placement was according to project specifications for compaction and moisture content requirements at the specific test locations.

Bedding material was placed in a lift ranging 3" to 3 1/2" thick. Nielson's, Inc. graded material by manual means (rake and shovel). Thickness measurements were performed to determine if material met project specifications for thickness at the specific test locations.

D50 1.5 aggregate was placed on the bedding material to act as an erosion protection layer. Nielson's, Inc. placed D50 1.5 aggregate by manual means. Project specifications stated D50 1.5 aggregate was to be placed in a lift between 3" to 4 1/2" thick. Thickness measurements were performed to determine if the material met project specifications for thickness at the specific locations.

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR WEST CONTROL DITCH

DATE OF REPORT 12/06/95

• •											нς
DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
03/02/95	Soil Classification	South End								CL	Yes
03/02/95	Soil Classification	North End						· · · · · · · · · · · · · · · · · · ·		CL	Yes
03/02/95	Soil Classification	South End	of Drainage	Channel						sc	Yes
03/02/95	Proctor	Composite	of West	Control	Ditch		109.8	15.8		CL	Yes
07/24/95	Proctor	South End	of Control	Ditch		Native	112.5	11.2		SM	Yes
09/12/95	Sandcone	Sta. 25+00	West Berm		6952.3	Native	103.7	12.6	94	CL	Yes
09/12/95	Sandcone	Sta. 26+50	East Berm		6952.1	Native	104.0	12.1	95	CL	Yes
09/12/95	Sandcone	Sta. 28+50	Bottom		6949.4	Native	105.9	13.9	96	CL	Yes
09/12/95	Sandcone	Sta. 30+50	West Berm		6949.6	Nativa	99.9	11.4	91	CL	Yes
09/12/95	Sandcona	Sta. 32+50	Bottom		6947.6	Native	112.3	10.7	100	CL	Yes
09/12/95	Sandcone	Sta. 34+50	West Berm		6945.0	Native	103.2	4.1	94	CL	Yes
09/12/95	Sandcone	Sta. 36+50	East Berm		6943.2	Native	104.8	6.7	93	SM	Yes

RAC = Radon Attenuation Cover

1

cb/UNC.031/4

Dist: Client (3) Field File (1) Billing (1)

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR WEST CONTROL DITCH

DATE OF REPORT 12/06/95

<u>`</u>			· · ·								нς
DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
09/12/95	Sandcone	Sta. 39+00	East Berm		6942.0	Native	106.8	7.2	95	SM	Yes
09/12/95	Sandcone	Sta. 41+00	Bottom		6937.8	Native	104.7	6.4	93	SM	Yes
09/12/95	Sandcone	Sta. 42+50	West Berm		6935.0	Native	101.8	8.6	90	SM	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/5

Dist: Client (3) Field File (1) Billing (1)

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & I				Job No.	3145JB031
	Attn: Mr. Ed M PO Box 3077	orales			Lab/Inv. No.	31450051
· . ·	Gallup, NM 873	05			Report Date:	03/07/95
Project:	1995 Reclaimatio	n	•			
Location:	Church Rock, NI	М				
Material:	Samdy/lean Clay		Sampled By:	H. Kuebler	Date	03/02/95
Source:	S of run off cont	rol ditch	Submitted By:	H. Kuebler	Date	03/02/95
			Authorized By:	Client	Date	03/02/95
SIEVE AN	ALYSIS, ASTM C	136 & C117				
Sieve	% Passing	Specification				
Size	Accumulative	(As Required)				
2"						
1-1/2"	•					
1-1/8"			· · ·			
1"						
3/4"	100	95-100	Plasticity Index, A	STM D4318		
1/2"	100	······································	Liquid Limit			31
3/8"	99		Plasticity Index			13
1/4"	· · · · · · · · · · · · · · · · · · ·					
No. 4	98	90-100				
8	97				÷	
10	97	85-100				
16	96	······································				
30	95				-	
40	94	65-100				
50	93	· .				
100	84	50-100				
200	62.0	40-85	· .			

Copies: Client (3), Billing (1), Field File (1) ln:unc.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & 1 Attn: Mr. Ed M PO Box 3077 Gallup, NM 873	orales			Job No. Lab/Inv. No. Report Date:	3145JB031 31450051 03/07/95
Project:	1995 Reclaimatio	on '				
Location:	Church Rock, NI	M				
Material:	Sandy/lean Clay	· · ·	Sampled By:	H. Kueble	r Date	03/02/95
Source:	N of run off con	trol ditch	Submitted By:	H. Kueble	r Date	03/02/95
			Authorized By:	Client	Date	03/02/95
SIEVE AN	ALYSIS, ASTM C	136 & C117	· ·			
Sieve	% Passing	Specification				
Size	Accumulative	(As Required)				
2"					,	
1-1/2"						
1-1/8"						
1"						
3/4"	100	95-100	Plasticity Index, A	ASTM D4318		
1/2"			Liquid Limit			32
3/8"		· · · · · · · · · · · · · · · · · · ·	Plasticity Index			13
1/4"						
No. 4	100	90-100				
8	96					
10	95	85-100				
16	94			×		
30	93	ت				
40	92	65-100				
50	91	······				
100	79	50-100				
200	64.0	40-85				

Copies: Client (3), Billing (1), Field File (1) 'n:unc.031

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Farmington, New Mexico	87401
(505) 327-4966 • fax 327	-5293

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

NC Mining & Milling		J	ob No.	3145JB031
ttn: Mr. Ed Morales O Box 3077		I	.ab/Inv. No.	31450051
allup, NM 87305		F	Report Date:	03/07/95
995 Reclamation				
hurch Rock, New Mexico				
ilty/Clay Sand	Sampled By:	H. Kuebler	Date	03/02/95
orth of Drainage Channel, East of	Submitted By:	H. Kuebler	Date	03/02/95
ravel Road	Authorized By:	Client	Date	03/02/95
	ullup, NM 87305 95 Reclamation nurch Rock, New Mexico hty/Clay Sand orth of Drainage Channel, East of	D Box 3077 Ulup, NM 87305 95 Reclamation nurch Rock, New Mexico htty/Clay Sand Sampled By: orth of Drainage Channel, East of Submitted By:	D Box 3077 I Ulup, NM 87305 F 95 Reclamation Hurch Rock, New Mexico Ity/Clay Sand Sampled By: H. Kuebler Orth of Drainage Channel, East of Submitted By: H. Kuebler	D Box 3077 Lab/Inv. No. Ulup, NM 87305 Report Date: 95 Reclamation

SIEVE ANALYSIS, ASTM C136 & C117

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Sieve	% Passing	Specification
Size	Accumulative	(As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2".	99	
3/8"	96	
1/4"	 ·	
No. 4	92	90-100
· 8	89	
10	89	85-100
16	88	
30 ້	84	
40	81	65-100
50	73	
100	56	50-100
200	38.0	40-85

Plasticity Index, ASTM D4318

Liquid Limit	23	
Plasticity Index	7	

Note: This material not for R.A.C.

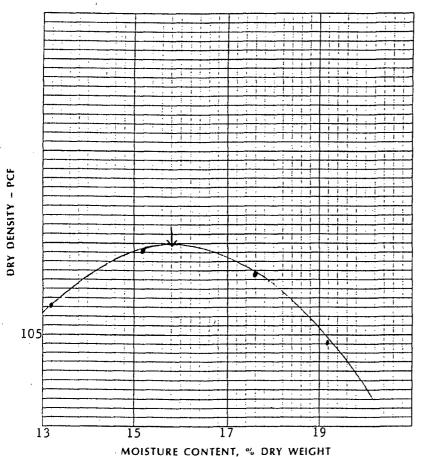
REVIEWED B

Copies: Client (3), Billing (1), Field File (1) 2.1/dn:unc031

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SOIL / AGGREGATE - MOISTURE DENSITY RELATIONS

					Joh No		3145JB031
						voice No.	
Type of Material Sandy Le.	an Clay	、 		Sampled By			Date 03/02/9
Source of Material <u>Composit</u>	e of West			Submitted By			Date03/02/9
Control	Ditch			_ Tested / Calc.	By <u>H.</u> Kuebl	er/WT	Date03/02/9
Test Procedure <u>ASTM D69</u>	8A			Reviewed By	-		Date
Trial No.	1	2	3	4	. 5	6	7
Water, Estimated %							
Water, cc	50	100	0	150	· .		
Sample + Mold Weight, gms	6169.0	6183.0	6081.2	6144.6	1		
Mold Weight, gms	4257.9	4257.9	4257.9	4257.9			
Wet Sample Weight , gms	1911.1	1925.1	1823.3	1886.7	·		
Wet Sample Weight, lbs	4.213	4.244	4.02	4.159			
Wet Density, pcf	126.4	127.3	120.6	124.8			
Moisture Sample Wet, gms	302.3	326.7	345.4	315.2			
Moisture Sample Dry, gms	262.5	277.9	305.2	264.5			
Weight of Water, gms	39.8	48.8	40.2	50.7			
Moisture, %	15.2	17.6	13.2	19.2			
Dry Density, pcf	109.7	108.3	106.5	104.7			



Maximum Dry Density, pcf	109.8

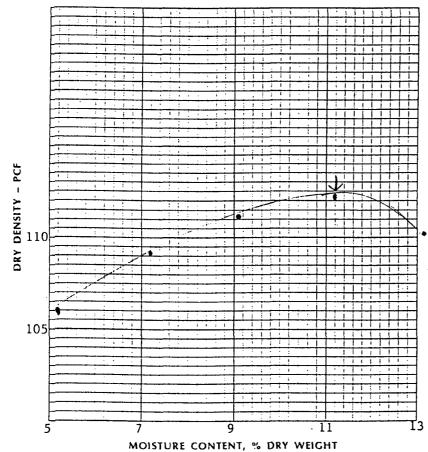
Optimum Moisture Content, % 15.8

Diameter of Mold, in.	4"
Height of Mold, in.	4.584
No. of Layers	3
Blows Per Layer	25
Weight of Hammer, lbs	5.5
Height of Drop	12"
Material Used	-#4
·	
· · · · · · · · · · · · · · · · · · ·	

Western Technologies Inc.

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

					Job No		3145JB031	
· · ·					Lab/Inv	oice No	31450185	
ype of Material Silty Sand (buff color)			Sampled By	H. Kuebl	er/WT	Date 07/24/9		
Source of Material South Cel	ll Control	Ditch	· · · · · ·	Submitted By _	H. Kuebl	er/WT	Date 07/24/9	
·				_ Tested / Calc. E	By H. Kuebl	er/WT_	Date 07/24/95	
Test Procedure ASTM_D698	est Procedure ASTM D698A				à		Date	
Trial No.	1	2	3	4	5	6	7	
Water, Estimated %								
Water, cc	0	50	100	150	200			
Sample + Mold Weight, gms	5941	6025	6089	6142	6139			
Mold Weight, gms	4257	4257	4257	4257	4257			
Wet Sample Weight , gms	1684	1768	1832	1885	1882			
Wet Sample Weight, lbs	3.71	3.90	4.04	4.16	4.15			
Wet Density, pcf	111.3	117.0	121.2	124.8	124.5		· · · · · · · · · · · · · · · · · · ·	
Moisture Sample Wet, gms	315.2	316.1	316.3	316.4	316.7	· · · · ·		
Moisture Sample Dry, gms	299.5	295.0	289.8	284.5	280.0			
Weight of Water, gms	15.7	21.1	26.5	31.9	36.7			
Moisture, %	5.2	7.2	9.1	11.2	13.1	[
Dry Density, pcf	105.8	109.1	111.1	112.2	110.1			



Maximum Dry Density, pcf _____ 112.5

Optimum Moisture Content, % _____11.2

4"				
84				

Western Technologies Inc.



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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Client UNC MINING AND MILLING POST OFFICE BOX 3077 GALLUP, NM 87305

Date of Report 11-16-95
Job No. 3145JB031
Event/Invoice No. 31450292
Authorized By E. MORALES
Tested By H. KUEBLER/WT

Page 1 of 1 Date 09-12-95 Date 09-12-95

ClientUNC MINING AND MILLINGProject1995 RECLAMATIONLocationCHURCH ROCK, NM

Test Locations Designated By CLIENT

Test Procedures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944 Calibrated Volume of Sand Cone Apparatus 0.0387 cu. ft. Bulk Unit Weight of Sand 94.8 lbf/cu. ft.

	IN-PLACE CHARACTERISTICS		ACE CHARACTERISTICS LAB CHARACTERISTICS C		COMPACTION	ACTION REQUIREMENTS						
TEST NO.	Hole Volume cu. ft.	Maisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	ID .	Maximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moistur %	re	Compaction %	CONFORMANCE INDICATED
1	0.0363	12.6	103.7	0.0	2	109.8	15.8	94			90	YES
2	0.0330	12.1	104.0	0.0	2	109.8	15.8	95			90	YES
3	0.0336	13.9	105.9	0.0	2	109.8	15.8	96			90	YES
4	0.0350	11.4	99.9	0.0	2	109.8	15.8	91			90	YES
5	0.0334	10.7	112.3	0.0	2	109.8	15.8	100+			90	YES
6	0.0364	4.1	103.2	0.0	2	109.8	15.8	94			90	YES
7	0.0363	6.7	104.8	0.0	15	112.5	11.2	93			90	YES
TEST NO.	TEST LOCATION, HORIZONTAL					.,	TEST LOCATION Approximate Fill Depth, ft.	I, VERTICAL Elevation *		MATERIAL TE	STED	
1	S. CELL	CONTROL	DITCH, ST	A. 25+0	00, WE	ST BERM			6952.3	SUB	GRADE	
2	S. CELL	CONTROL	DITCH, ST	A. 26+	50, EAS	T BERM			6952.1	SUB	GRADE	
3	S. CELL	CONTROL	DITCH, ST	A. 28+	50, BOT	том			6949.4	SUB	GRADE	
4	S. CELL	CONTROL	DITCH, ST	A. 30+!	50, WE	ST BERM			6949.6	SUB	GRADE	
5	S. CELL	CONTROL	DITCH, ST	A. 32+!	50, BOI	том			6947.6		GRADE	
6	S. CELL	S. CELL' CONTROL DITCH, STA. 34+50, WEST BERM						6945.0	1	GRADE		
7	S. CELL	CONTROL	DITCH, ST	A. 36+	50, EAS	ST BERM			6943.2	SUB	GRADE	
L										<u>i</u>	·	

	LABORATORY DATA & COMPACTION CHARACTERISTICS							
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE,%	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD		
1 -	31450051 31450185	SANDY LEAN CLAY SILTY SAND (BUFF COLOR)	COMP. OF W. RUN OFF CONTD W. CONTROL DITCH	15.8 11.2	109.8 112.5	D698-A D698-A		
į	1							

Comments: CB

* DATUM Elevation of Test = Top of Subgrade

Distribution : CLIENT - (3) FIELD FILE & BILLING (2) TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WIT AND CLIENT. WIT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FORM SIMILARLY STUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTERDED.

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A. Neely 4



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SOIL / AGGREGATE FIELD UNIT WEIGHT TESTS (FIELD DENSITY)

Date of Report 12-05-95 Job No. 3145JB031 Page 1 of 1 Event/Invoice No. 31450292-1 Authorized By E. MORALES Date 09-12-95 Tested By H. KUEBLER/WT Date 09-12-95

Client UNC MINING AND MILLING POST OFFICE BOX 3077 GALLUP, NM 87305

.....

Client	UNC MINING AND MILLING
Project	1995 RECLAMATION
Location	CHURCH ROCK, NM
Test Locati	ons Designated By CLIENT
Test Proced	dures In-Place Unit Weight : ASTM D1556 Moisture Content : ASTM D4944
Calibrated V	Volume of Sand Cone Apparatus 0.0387 cu. ft. Bulk Unit Weight of Sand 94.8 lbf/cu. ft.

	IN-PLACE CHARACTERISTICS			LAB CHARACTERISTICS		COMPACTION REQUIREMENTS		1			
TEST NO.	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight Ibf / cu. ft.	Oversize %	iD	Maximum Dry Unit Weight Ibf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	
8	0.0379	7.2	106.8	0.0	15	112.5	11.2	95		90	YES
9	0.0367	6.4	104.7	0.0	15	112.5	11.2	93		90	YES
10	0.0398	8.6	101.8	0.0	15	112.5	11.2	90		90	YES
		а. С. С. С. С. С. С. С. С. С. С. С. С. С. С									
		-									
					:						
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1							
TEST	<u> </u>			TEST LOCATIO	N, VERTICAL		
NO.		TEST LOCATION, HORIZONTAL		Approximate Fill Depth, ft.	Elevation *	MATERIAL TES	
8	S. CELL CONT	ROL DITCH, STA. 39+00, EAST	SLOPE		6942.0	SUBGRADE	
9	S. CELL CONT	ROL DITCH, STA. 41+00, BOTTO	M		6937.8	SUBGRADE	
10	S. CELL CONT	ROL DITCH, STA. 42+50, WEST	BERM		6935.0	SUBGRADE	
						×	
			•.				
	· · · · · · · · · · · · · · · · · · ·			<u></u>		· · · · · · · · · · · · · · · · · · ·	
		LABORATORY	DATA & COMPACTION	CHARACTERISTICS			
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE	OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
15	31450185	SILTY SAND (BUFF COLOR)	W. CONTROL	ОІТСН	11.2	112.5	D698-A
		nin					

Comments: * DATUM Elevation of Test = Top of Subgrade

Distribution : CLIENT - (3) FIELD FILE & BILLING (2) TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WY WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FORM SMILLARY STUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY

A. Neely

402 @93 WTI



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF DITCH - D50 .02 SAND THICKNESS

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 25+00	3	3 1/2	3
Station 26+00	3 1/4	3	3 1/2
Station 27+00	3	3	3
Station 28+00	3 1/4	3	3
Station 29+00	3	3	3 1/4
Station 30+00	3 1/2	3 1/4	3
Station 31+00	3	3 1/4	3 1/2
Station 32+00	3 1/4	3 1/2	3 1/4
Station 33+00	3 1/2	3 1/2	3 1/2
Station 34+00	3 1/4	3 1/4	3
Station 35+00	3 1/2	3 1/2	3
Station 36+00	3 1/2	3	3

Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/21

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF DITCH - D50 .02 SAND THICKNESS

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 37+00	3	3 1/4	3 1/4
Station 38+00	3 1/2	3	3 1/4
Station 39+00	3	3	3
Station 40+00	3 1/2	3 1/2	. З
Station 41+00	3 1/2	3	3 1/4
Station 42+00	3 1/2	3	3 1/2
Station 43+00	3 1/2	3 1/2	3 1/4
i			•
· · ·			

Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/22

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Po REVIEWED BY



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

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF CONTROL DITCH - D50 .35 AGGREGATE THICKNESS

LOCATION	ŖIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 38+50	3	3 1/2	3 1/2
Station 39+50	3 1/2	3	4
Station 40+50	4	3	4
Station 41+50	4	4	3 3/4
Station 42+50	3 1/2	4	4
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Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/25

> TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF CONTROL DITCH - D50 1.5 AGGREGATE THICKNESS

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 25+00	3 3/4	3 3/4	3 1/4
Station 26+00	- 4	3	3
Station 27+00	3	3 1/2	3 1/2
Station 28+00	3 3/4	4	3
Station 29+00	· 4	4	4
Station 30+00	3 1/4	3	4
Station 31+00	3 1/2	3 1/4	3 1/2
Station 32+00	3 1/2	3	3 1/2
Station 33+00	3 1/2	3 1/4	3 1/4
Station 34+00	3 1/2	3 3/4	3 1/2
Station 35+00	3 3/4	3 1/2	3 1′/4
Station 36+00	4	3 1/2	3 1/2
Station 37+00	. 3 3/4	3 1/2	3 1/2

Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/23

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REVIEWED BY



UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 11/21/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell Control Ditch - East Slope

Location	Thickness	Location	Thickness
Sta. 42+00	4"	Sta. 41+00	4"
Sta. 40 + 00	3 1/2"	Sta. 39+00	4"
Sta. 38 + 00	3 1/2"	Sta. 37+00	5 1/2"
Sta. 36+00	4"	Sta. 35 + 00	3 3/4"
Sta. 34+00	4 3/4"	Sta. 33+00	4"
Sta. 32+00	6 1/2"	Sta. 32+00	5 1/4"
Sta. 31+00	3 1/4"	Sta. 30+00	3 1/4"
Sta. 29+00	3 1/2"	Sta. 28+00	3"
Sta. 27+00	3"		
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Dist: Client (3) Field File (1) Billing (1) /cb:031.UNC/7

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF CONTROL DITCH - D50 3 INCH AGGREGATE THICKNESS

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 38+00	6 3/4	6 3/4	6 1/4
Station 39+00	7	7	7
Station 40+00	6 1/2	6 1/2	7
Station 41+00	7	6 1/2	7
Station 42+00	7	7	6 3/4
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Dist: Client (3) Field File (1) Billing (1) /cb:031.SWE/24

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