



Northern
Engineering
and Testing, Inc.

REMIT TO: **NORTHERN ENGINEERING & TESTING, INC.**
P.O. BOX 7867
BOISE, IDAHO 83707

INVOICE NO. 64740

JOB NO: 88-563 DATE: June 23, 1988
PURCHASE ORDER NO: 40C500180472
PROJECT: Lake 17 Dam Rehabilitation

RECEIVED
OFFICIAL INVOICE RECEIVED
JUN 28 1988
JUN 27 1988
BIA - ENGINEERING BILLINGS, MT

To: U.S. DEPARTMENT OF INTERIOR
BUREAU OF INDIAN AFFAIRS
316 NORTH 26TH STREET
BILLINGS MT 59101

PLEASE RETURN TOP PORTION OF INVOICE WITH REMITTANCE

TERMS: Due on receipt — A Finance Charge of 1½% per month or 18% per annum will be made on all past due balances.

| DESCRIPTION | QUANTITY | UNIT PRICE | TOTAL |
|--|----------|------------|-------------------|
| Geotechnical Engineering Services: | | | |
| Mobilization, lump sum | 1 | \$ 985.00 | \$ 985.00 |
| Field Investigation: | | | |
| Provide drill rig and crew, per hour | 18.5 | 110.00 | 2035.00 |
| Per diem, per manday | 9 | 22.00 | 198.00 |
| Lodging, at cost | | | 184.08 |
| Laboratory Investigation: | | | |
| Moisture Content & Visual Classification, each | 66 | 3.00 | 198.00 |
| Sieve Analysis through No. 200, each | 5 | 25.00 | 125.00 |
| Atterberg Limits, each | 5 | 37.00 | 185.00 |
| Consolidation Test, each | 1 | 65.00 | 65.00 |
| Direct Shear, per point | 3 | 35.00 | 105.00 |
| Resistivity & pH, each | 1 | 25.00 | 25.00 |
| Sulfate Content, each | 1 | 24.00 | 24.00 |
| Moisture-Density Relationship, ASTM D698, each | 2 | 72.00 | 144.00 |
| Provide Geotechnical Engineer for consultation to analyze data and prepare report, per hour: | | | |
| Grade IV | 6.25 | 58.00 | 362.50 |
| Grade V | 0.5 | 67.00 | 33.50 |
| Furnish four copies of report, lump sum | L/S | 225.00 | 225.00 |
| TOTAL AMOUNT DUE | | | <u>\$ 4894.08</u> |

DIRECT INQUIRIES TO: NORTHERN ENGINEERING & TESTING, INC.

- P.O. Box 951, Great Falls, MT 59403, 406-453-1641
- P.O. Box 30615, Billings, MT 59107, 406-248-9161
- P.O. Box 7867, Boise, Idaho 83707, 208-377-2100
- P.O. Box 281, North Salt Lake, Utah 84054, 801-298-9314
- P.O. Box 1512, Casper, Wyoming 82602, 307-266-2931
- P.O. Box 2601, Tri-Cities, Washington 99302, 509-547-1671
- P.O. Box 4699, Helena, Montana 59601, 406-443-5210
- P.O. Box 1903, Evanston, Wyoming 82930, 307-789-7910

ACCOUNTING USE ONLY

Job No. 88-563 Inv. No. 64740

PURCHASE ORDER

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

PURCHASE NEGOTIATED UNDER THE AUTHORITY OF

48 CFR 13

| | | | | |
|--------------|------------------------------------|---------------------------|--------|-------------|
| PAGE OF 1 | PURCHASE ORDER NO. 40C500180472 | TYPE OF ORDER Purchase | 5-3-88 | CHANGE CODE |
|--------------|------------------------------------|---------------------------|--------|-------------|

THE ABOVE PURCHASE ORDER NUMBER MUST APPEAR ON ALL INVOICES, PACKAGES AND PAPERS RELATING TO THIS ORDER. FAILURE TO SHOW OUR PURCHASE ORDER NUMBER ON INVOICE WILL DELAY PAYMENT.

EMPLOYER ID NO.
OR SSN

| | | |
|---|---|---------------------|
| TO (CONTRACTOR) Northern Engineering and Testing, Inc. 600 South 25th Street P.O. Box 30615 Billings, Montana 59107 | SHIP TO (CONSIGNEE AND DESTINATION) BIA, BAO Attention: Receiving Agent 316 North 26th Street Billings, Montana 59102 | LOC. CODE C50-01 |
|---|---|---------------------|

| LINE ITEM | ACTION CODE | SUPPLIES OR SERVICES | QUANTITY ORDERED | UNIT ISSUE | UNIT PRICE | AMOUNT |
|-----------|-------------|---|------------------|------------|------------|----------|
| 01 | | Field exploration, laboratory testing, results and reports for foundation and borrow area conditions at Lake 17, Fort Belknap Indian Reservation. | 1 | job | 5,600.00 | 5,600.00 |

V
E
N
D
O
R
-'
S
O
R
I
G
I
N
A
L

| | | | | | | |
|--------------------------|----------------|----------|-------------------|------|---|----------|
| FOB POINT Destination | DISCOUNT TERMS | | | | SUB-TOTAL NO ENTRY IF CONTINUATION PAGES | 5,600.00 |
| DELIVER ON OR BEFORE | PERCENT A | DAYS | PERCENT B | DAYS | | |
| | GBL NO. | SHIP VIA | ESTIMATED FREIGHT | | GRAND TOTAL | 5,600.00 |

BILLING INSTRUCTIONS: FURNISH ORIGINAL INVOICE OR CERTIFIED COPY TO:

DO NOT SHIP ORDER TO THIS ADDRESS (SHIP TO CONSIGNEE ADDRESS ABOVE)

**BUREAU OF INDIAN AFFAIRS
AVEPS
P.O. BOX 1518
ALBUQUERQUE, NM 87103**

OPTIONAL VENDOR INVOICE
THIS ORDER MAY BE USED IN LIEU OF A SEPARATE INVOICE BY COMPLETING THE FOLLOWING:

PAYMENT IS REQUESTED IN THE AMOUNT OF \$ _____
NO OTHER INVOICE WILL BE SUBMITTED.

INVOICE NO. _____

VENDOR'S SIGNATURE _____

VENDOR'S TITLE _____ DATE _____

FREIGHT CHARGE OVER \$100.00 REQUIRES BILL OF LADING OR RECEIPT

| | | |
|---|--|----------------|
| ISSUING OFFICE Bureau of Indian Affairs Billings Area Office 316 North 26th Street, Billings, Montana 59101 | UNITED STATES OF AMERICA BY (SIGNATURE) <i>[Signature]</i> (NAME AND TITLE OF CONTRACTING OFFICER (TYPED)) Henry Graham, Contracting Spec. PHONE (AREA CODE AND NO.) (406) 657-6305 | DATE 5/3/88 |
|---|--|----------------|

3-17-88

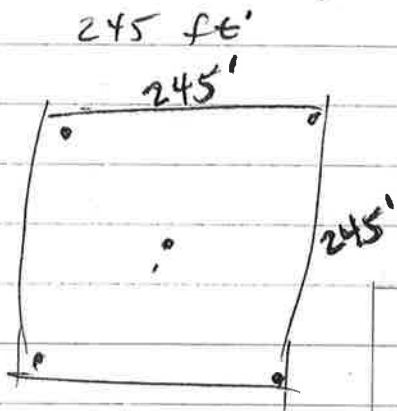
12 holes to barrier. - Key Trench. 20' depth average

Borrow area investigation

$$13,000 \text{ yds}^3, \quad 3' \text{ deep} = 1 \text{ yd.}$$

$$\frac{13,000 \text{ yds}}{1 \text{ yd}} = 13,000 \text{ yds}^2 \frac{9 \text{ ft}^2}{\text{yd}^2} \frac{1 \text{ Ac}}{43,560 \text{ ft}^2} = 2.72 \text{ Ac.}$$

1.36 Ac per side
≈ 60,000 sq. ft



1.5 Ac.

John Pool

| | | | |
|--|----|----|----|
| | 5 | 10 | 5 |
| | 10 | 5 | 10 |

250
3 @ 100'
parallel 150'
3 @ 100'

248-9161 N. Testing

Circle 17 -

Fill requirements (borrow area)

$$V = 12,506 \text{ yds} = A \times d$$

$$d = 6'$$

$$12,506 \text{ yds}^3 = 6 \text{ ft} \times A$$

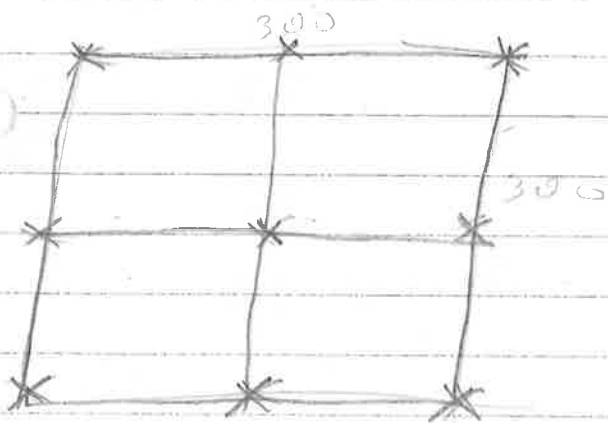
$$\frac{12,506 \text{ yds} \cdot \text{yd} \cdot \text{yd}}{6 \text{ ft}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} = A$$

$$= 56,547 \text{ ft}^2$$

$$= 1.3 \text{ Ac}$$

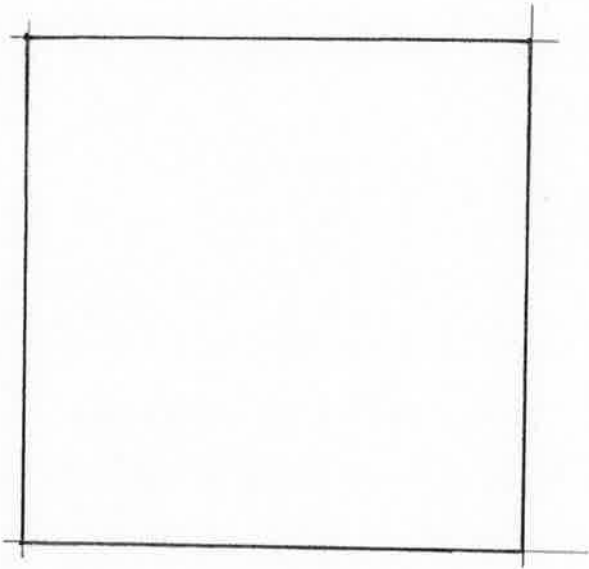
$$238' \times 238' = 1.3 \text{ Ac}$$

$$295 \times 295 = 2 \text{ Ac}$$



18 holes - borrow area

1/15/88



Borrow area
within 1500' radius
of Dam.

15 - Bear Paw - Elloam
4-8%

Clay-loam

CL

A-6, A-7

1/15/88

| AREA | SUM OF AREAS | UNITS OF ACRES |
|-----------------------|----------------------|----------------------------------|
| 56.2692627 | 56.2692627 | <i>soil Unit 15</i> |
| 628.237657 | 684.50692 | <i>Bea Paw - Elbow clay loam</i> |



Northern

Engineering
and Testing, Inc.

600 South 25th Street
P. O. Box 30615
Billings, MT 59107
(406) 248-9161

March 23, 1988

RECEIVED

MAR 24 1988
11-38
BAO Water Resources

Bureau of Indian Affairs
Water Resources Division
316 North 26th Street
Billings, MT 59101

ATTENTION: Mr. ^{Day} ~~Dele~~ Oellerman

John Pool

SUBJECT: Proposal for Geotechnical Services
Lake 17 Dam Rehabilitation
Exhibit "B"

GJP 88-36

Gentlemen:

At your request, we are pleased to submit the following proposal to provide geotechnical engineering services for the proposed rehabilitation of the Lake 17 dam on the Fort Belknap Indian Reservation.

Project Description

We understand the dam is about 50 years old. It has a crest height of about 12 to 15 feet and you intend to raise the crest about three feet using downstream construction techniques. Seepage reduction is a major consideration so a cutoff trench is included in the new construction.

Approximately three acres adjacent to the dam are to be used for the borrow source.

Anticipated Site and Subsurface Conditions

We understand the site is presently available for access by our truck mounted drilling equipment. Based on our knowledge of this general area, we have developed our field investigation program and estimated fee assuming the subsoils will consist of sand and clay soils. We assume the materials can be drilled utilizing our hollowstem auger equipment.

Scope of Services

We understand our services will be limited to performing the field exploration and laboratory testing under your direction. For budgeting purposes, 12 borings are planned along the downstream toe to determine the depth for the cutoff trench. Boring depths are estimated to average 20 feet. Another 12 borings, 6 to about 5 feet and 6 to about 10 feet, are anticipated within the borrow source.

Bureau of Indian Affairs
Billings, MT

March 23, 1988
Page 2

Standard penetration resistance tests will be made and undisturbed samples obtained as the drilling progresses. Groundwater, if encountered at the time of our investigation, will be observed and reported, and water level observation wells will be installed if requested.

The field investigation will be under the supervision of a field engineer or geologist who will log the test borings and select sample locations. We understand you will be present for field consultation to review the conditions encountered and make any desired modifications to the exploration program.

Upon completion of the field drilling, the samples will be transported to our laboratory where they will be visually identified in accordance with ASTM D2488 and moisture contents determined. The laboratory testing program will be selected by you; we anticipate the following types of tests will be required:

| | |
|-------------------------------|---|
| Grain Size Distribution | ASTM D422 |
| Liquid Limit | ASTM D423 |
| Plastic Limit | ASTM D424 |
| Moisture-Density Relationship | ASTM D698 |
| Permeability | Corps of Engineers - Permeability in Pressure Cell |

The data will be presented in a report with logs of the borings and the laboratory test results. Engineering analysis and design criteria will be developed by your personnel. The services will be performed in accordance with generally accepted standards of the geotechnical engineering profession.

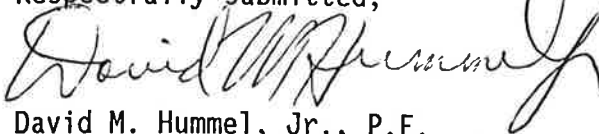
Cost Estimate

Our fee for the investigations and report as outlined above will be in accordance with the attached unit price schedule. We estimate the cost of the field exploration phase will in the range of \$4000. Fees for laboratory testing will depend upon the program you select. After authorization to proceed, we can provide an estimated time schedule, if requested.

Enclosed please find a copy of our Standard Agreement for Geotechnical Engineering Services. Should you find this proposal acceptable, please sign and return one copy as our authorization to proceed with the project.

Thank you for the opportunity to submit this proposal and we look forward to working with you on this project.

Respectfully submitted,



David M. Hummel, Jr., P.E.

DMH(JMP)rnr

Enclosures

NORTHERN ENGINEERING AND TESTING, INC.
CONSULTING GEOTECHNICAL ENGINEERS

UNIT PRICE SCHEDULE
FOR
GEOTECHNICAL ENGINEERING SERVICES
Lake 17 Dam Rehabilitation

| | |
|--|----------|
| 1. Mobilization of drill rig, crew and engineer or geologist to jobsite, lump sum | \$985.00 |
| 2. Provide drill rig and two-man crew, includes one-way travel to and from site, per hour | 75.00 |
| Per diem, per man day, actual lodging cost plus | 22.00 |
| Provide bits, drilling media, special sampling equipment, air compressor, water truck, equipment for site access or other auxiliary equipment to be invoiced at cost plus 15 percent for handling. | |
| 3. Provide Grade I or II Field Engineer or Geologist to log test borings and supervise field drilling program, per hour | 35.00 |
| 4. LABORATORY INVESTIGATIONS: | |
| a. Moisture Content & Visual Classification, each | 3.00 |
| b. Sieve Analysis through 0.005 mm, each | 40.00 |
| Through No. 200 Sieve, each | 25.00 |
| c. Atterberg Limits, each | 37.00 |
| d. Moisture-Density Determination, each | 72.00 |
| e. Consolidation-Settlement, each (4 ksf) | 65.00 |
| f. Direct Shear, per point | 35.00 |
| g. Unit Weight and Moisture, each | 19.00 |
| h. Resistivity and pH of Soil, each | 25.00 |
| i. Sulfate Content of Soil, each | 24.00 |
| j. CBR Test, each | 190.00 |
| k. Special sample handling and preparation time by a Technician, Level III, per hour | 31.00 |
| 5. Provide Geotechnical Engineer or Geologist for consultation to analyze data and prepare report, per hour: | |
| a. Grade I-II | 35.00 |
| b. Grade III | 46.50 |
| c. Grade IV | 58.00 |
| d. Grade V | 67.00 |
| e. Grade VI-VII | 80.00 |
| 6. Provide four (4) copies of the report, including drafting, reproduction, and stenographic services, lump sum | 225.00 |



Northern

Engineering
and Testing, Inc.

**NORTHERN ENGINEERING & TESTING, INC.
AGREEMENT FOR SERVICES**

THIS AGREEMENT is by and between BUREAU OF INDIAN AFFAIRS
WATER RESOURCES DIVISION
316 NORTH 26TH ST. - BILLINGS MT 59101

hereinafter called Owner and Northern Engineering and Testing, Inc. _____
600 South 25th Street, P O Box 30615, Billings, MT 59107

hereinafter called NORTHERN, who agree as follows:

1. **DECLARATIONS.** CLIENT DESIRES TO ENGAGE NORTHERN to provide services in connection with Owner's project ("The Project") described as follows: _____
Lake 17 Dam Rehabilitation - Fort Belknap Indian Reservation

NORTHERN has submitted a fee schedule to Owner, a copy of which is attached hereto and made part hereof as Exhibit "A", for such services, which fee schedule is acceptable to Owner.

2. **SCOPE OF WORK.** NORTHERN shall provide services for The Project in accordance with the accompanying proposed "scope of services" made a part hereof as Exhibit "B", and "terms and conditions" as set forth on the reverse side of this agreement.
3. **OWNER DISCLOSURE OF HAZARDOUS & TOXIC MATERIALS AND CONDITIONS AT THE PROJECT.**

_____ Owner warrants to NORTHERN that to the best of its knowledge no hazardous wastes or conditions exist at The Project site.

_____ Owner warrants to NORTHERN that to the best of its knowledge the only hazardous or toxic materials which exist at The Project site are as follows:

Owner acknowledges and confirms that NORTHERN is relying upon the above warranties in undertaking to perform the services described in this Agreement.

EXECUTED THIS _____ day of _____, 19 ____.

By _____
Owner Title

By David M. Hummer _____
Northern Engineering & Testing, Inc. Title MGR



Northern

Engineering
and Testing, Inc.

**NORTHERN ENGINEERING & TESTING, INC.
AGREEMENT FOR SERVICES**

THIS AGREEMENT is by and between BUREAU OF INDIAN AFFAIRS
WATER RESOURCES DIVISION
316 NORTH 26TH ST. - BILLINGS MT 59101

hereinafter called Owner and Northern Engineering and Testing, Inc. 600 South 25th Street, P O Box 30615, Billings, MT 59107

hereinafter called NORTHERN, who agree as follows:

1. **DECLARATIONS. CLIENT DESIRES TO ENGAGE NORTHERN** to provide services in connection with Owner's project ("The Project") described as follows: Lake 17 Dam Rehabilitation - Fort Belknap Indian Reservation

NORTHERN has submitted a fee schedule to Owner, a copy of which is attached hereto and made part hereof as Exhibit "A", for such services, which fee schedule is acceptable to Owner.

2. **SCOPE OF WORK. NORTHERN** shall provide services for The Project in accordance with the accompanying proposed "scope of services" made a part hereof as Exhibit "B", and "terms and conditions" as set forth on the reverse side of this agreement.
3. **OWNER DISCLOSURE OF HAZARDOUS & TOXIC MATERIALS AND CONDITIONS AT THE PROJECT.**

_____ Owner warrants to NORTHERN that to the best of its knowledge no hazardous wastes or conditions exist at The Project site.

_____ Owner warrants to NORTHERN that to the best of its knowledge the only hazardous or toxic materials which exist at The Project site are as follows:

Owner acknowledges and confirms that NORTHERN is relying upon the above warranties in undertaking to perform the services described in this Agreement.

EXECUTED THIS _____ day of _____, 19 ____.

By _____
Owner Title

By David M. Hummer
Northern Engineering & Testing, Inc. Title MGR.

April 20, 1988
GO8/WPWATRES822

RECEIVED

APR 21 1988

BAO Water Resources



**HKM Associates
Engineers/Planners**

Airport Industrial Park
P.O. Box 31318
Billings, Montana 59107
Phone (406) 245-6354/259-1993

Mr. Doug Oellermann
Bureau of Indian Affairs
Federal Building
Billings, MT 59103

RE: Proposal to Perform Subsurface Exploration
for Lake Seventeen Dam

Branch Offices:
Bozeman, Montana
Sheridan, Wyoming

Dear Mr. Oellermann:

HKM proposes to perform the geotechnical exploration program for the proposed rehabilitation of Lake Seventeen Dam located in Section 23, Range 22E, Township 27N on the Fort Belknap Indian Reservation. This proposed geotechnical exploration program consists of a subsurface drilling program, borrow investigation, laboratory testing, and a final report.

This proposal is divided into two parts. The first part is a summary of the scope of work anticipated during this geotechnical exploration program. The second part is a Cost Estimate which details costs for the individual work tasks in the Scope of Work.

The final product will be a letter report documenting the methodology, field test results, laboratory test results, and the subsurface characteristics in charactering exploration. It is anticipated that logs of each drill hole will be provided along with the letter report.

The total cost to do this investigation is estimated to be \$12,541. Drilling costs are estimated assuming the drilling will be done by Rollins, Brown, and Gunnell, Inc. and they are contingent on the "approval to begin work" coming before May 14, 1988. Mobilization for the drill rig is from Havre, Montana which is where the rig will be during the first two weeks in May. After May 14th, the drill rig will be going to Utah, unless requested to work on this project. If this work is delayed beyond May 14th, additional costs for mobilization or to retain a different drilling firm may be as much as \$2,000.00. If there is a savings in the final drilling costs, the saving will be passed on to the BIA.

Sincerely,

HKM ASSOCIATES

A. T. Kersich, P.E.
President

ATK/jah

Enclosure

SCOPE OF WORK

The proposed scope of work is described on a task by task basis in the following subsections. For convenience and consistency, each task in this scope of work carries the same number and title in the business proposal which details the costs.

Task 1. Drilling Program

The drilling program was developed after reviewing all available information with Mr. Doug Oellermann. A summary of the proposed exploration holes is presented in Table 1. The depths of the holes were estimated based on a work session with Mr. Oellermann. Access to the drill hole sites is not expected to be a problem. BIA is responsible for access and damages. HKM Associates will backfill the drill holes.

TABLE 1
SUMMARY OF EXPLORATION HOLES

| <u>DRILL HOLE NO.</u> | <u>LOCATION</u> | <u>ESTIMATED DEPTH</u> | | | <u>TOTAL</u> |
|-------------------------------|---------------------------------|------------------------|---------------|---------------|--------------|
| | | <u>AUGER</u> | <u>ROTARY</u> | <u>CORING</u> | |
| 1 | Left abutment | | 20 | 10 | 30 |
| 2 | Left abutment area | 20 | | | 20 |
| 3 | Near outlet conduit | | 20 | 10 | 30 |
| 4 | Toe of embankment | 20 | | | 20 |
| 5 | Toe of embankment | 20 | | | 20 |
| 6 | Right abutment | | 20 | 10 | 30 |
| 7-10 | Borrow area northwest of dam | 60 | | | 60 |
| 11-14 | Borrow area northeast of dam | 60 | | | 60 |

Field permeability tests will be performed in three of the drill holes. The tests will be performed in accordance with the U.S. Bureau of Reclamation Standard Designation E-18 and will include permeability tests in the bedrock.

Field labor during the drilling program will consist of supervising the drilling. Continuous logs of the exploration holes will be prepared by a professional HKM engineer or engineering geologist as the drilling progresses. Samples will be obtained for laboratory testing.

Task 2. Laboratory Testing

Laboratory testing will be performed to determine the physical and engineering properties of the foundation, abutments, and borrow materials. A list of the laboratory tests anticipated for the dam site investigation is presented in the Cost Estimate.

The laboratory tests will be performed in the HKM office in Billings, MT. All tests will be performed in accordance with applicable ASTM standards.

Results of the tests will be presented on the exploration hole logs. Graphical presentation of the results will also be included with the final report.

Task 3. Report

HKM will prepare a final report which summarizes the findings associated with the drilling program, the borrow exploration, and the laboratory testing. The report will be limited to describing physical characteristics of the soils encountered during the exploration program. Engineering analysis of the soils are not anticipated. It is HKM's understanding that the rehabilitation design will be performed by the Bureau of Indian Affairs.

The report will include one 24 X 36 inch sheet which will summarize the subsurface information. The logs as well as the tests results will be shown on this sheet. A subsurface profile along the downstream toe of the embankment will be prepared and shown on this sheet. HKM will use the BIA title block when preparing this sheet, if desired.

COST ESTIMATE

A cost estimate has been prepared detailing costs to prepare the geotechnical investigation for Lake Seventeen Dam. A summary of costs is presented in Table 2.

A detailed breakout of drilling costs are presented in Table 3. The anticipated laboratory testing is summarized in Table 4. Table 5 describes the direct costs anticipated for each of the tasks in the Scope of Work. The costs detailed in Table 5 are included in the cost summary shown in Table 2.

TABLE 2
LAKE SEVENTEEN DAM
COST SUMMARY

| <u>Task</u> | <u>Principal</u> | <u>Field Engineer</u> | <u>Senior Engineer</u> | <u>Technician</u> | <u>Clerical</u> | <u>Direct Expenses</u> |
|---------------------|------------------|-----------------------|------------------------|-------------------|-----------------|------------------------|
| 1. Drilling Program | | 72 | | | | \$6,066 |
| 2. Lab Testing | | 2 | 2 | 2 | | \$ 834 |
| 3. Letter Report | 2 | 2 | 16 | 33 | 4 | \$ 95 |
| TOTAL HOURS | <u>2</u> | <u>76</u> | <u>18</u> | <u>35</u> | <u>4</u> | _____ |
| RATE | \$75 | \$45 | \$47 | \$30 | \$20 | |
| TOTAL COST | \$150 | \$3,420 | \$846 | \$1,050 | \$80 | \$6,995 |
| | | | | | | GRAND TOTAL |
| | | | | | | \$12,541 |

TABLE 3

LAKE SEVENTEEN DAM
DRILLING COSTS

| | | |
|-------------------------------------|---|------------------|
| <u>Assumptions:</u> Number of holes | = | 14 (See Table 1) |
| Total footage | = | 270 ft |
| Auger | = | 180 ft |
| Rockbit | = | 60 ft |
| Core | = | 30 ft |

Drilling Services Unit Costs Using Rollins, Brown, and Gunnell, Inc.

Mobilization (includes CME-55 drill rig, pickup
and 2-man crew) \$80.00/hour

Drill Time (includes CME-55 drill rig with driller
and helper) \$80.00/hour

Per Diem, per man \$40.00/day

| | | |
|-------------------|----------------------|-------------------|
| 1. Mobilization | 8 hrs. @ \$80.00 | \$ 640.00 |
| 2. Rig Time | 52 hrs. @ \$80.00 | 4,160.00 |
| 3. Per diem | 6 days @ \$80.00/day | 480.00 |
| 4. Sampling tubes | 2 @ \$10.00 ea. | 20.00 |
| 5. Bits | | <u>200.00</u> |
| TOTAL | | <u>\$5,500.00</u> |

TABLE 4

LAKE SEVENTEEN DAM
LABORATORY TESTING

| <u>Test</u> | <u>Number</u> | <u>Rate</u> | <u>Cost</u> |
|-------------------------------------|---------------|-----------------------|--------------|
| 1. Visual Classification & Moisture | 5 | \$ 5.00 ³ | \$ 25.00 |
| 2. Atterberg Limits | 5 | 38.00 ³⁷ | 190.00 |
| 3. Washed Gradation | 5 | 35.00 ²⁵ | 175.00 |
| 4. Direct Shear | 1 | 105.00 ¹⁰⁵ | 105.00 |
| 5. Consolidation | 1 | 125.00 ⁶⁵ | 125.00 |
| 6. Moisture Density Curves | 2 | 68.00 ⁷² | 136.00 |
| 7. Corrosivity | 1 | 78.00 | <u>78.00</u> |
| TOTAL LABORATORY TEST COST | | | \$834.00 |

TABLE 5

LAKE SEVENTEEN DAM
DIRECT EXPENSES

Task 1. Drilling Program

| | | |
|-----------|------------------------------|--------------|
| Travel: | 460 miles roundtrip @ \$0.35 | \$161.00 |
| | 500 miles local @ \$0.35 | 175.00 |
| Per Diem: | 5½ days @ \$40/day | 220.00 |
| Misc: | sample sack, etc. | <u>10.00</u> |
| | | \$566.00 |

Task 2. Lab Testing

| | | |
|-------------|--|----------|
| See Table 4 | | \$834.00 |
|-------------|--|----------|

Task 3. Letter Report

| | | |
|-----------------|----------------------|--------------|
| Word Processing | 4 hrs. @ \$15.00/hr. | \$60.00 |
| Mylar | 2 @ \$7.50 | 15.00 |
| Copies, Postage | Lump sum | <u>20.00</u> |
| | | \$95.00 |