MAP ACCOMPANIES TEXT

# Surficial Geology Map of the Great Heath

## Washington County, Maine

By

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OPEN-FILE REPORT
83-4


## ABSTRACT

The major portion of the Great Heath, comprising 2,645 acres in the Cherryfield quadrangle, Washington County, Maine, generally averaging 13 feet in thickness, but with as great an average as 15 feet, contain an estimated 6,953,000 short tons air-dried peat. The peat is chiefly sphagnum moss with some reed-sedge of high quality according to ASTM standards for agricultural and horticultural use.

This same volume of peat may be considered for use as fuel because BTO per pound ranges from 8,600 to 10,500 with low sulfur and high hydrogen contents.


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# INTRODUCTION

## Location and geologic setting

The Great Heath lies in the Cherryfield, Maine quadrangle about 6 miles northeast of Cherryfield village in townships Columbia and T 18. An area of about 4 miles by 4.5 miles were selected for mapping surficial geology.

The area of study is a glaciated bedrock terrane drained by the Pleasant River and its tributaries. Slates and quartzites of Cambro-Ordovician age and diorite and gabbro of Devonian age (Gilman, 1967) underlie unconsolidated deposits of Quaternary age. These deposits consisting of sand, silt, and boulders on the uplands south and west of the Pleasant River, were deposited about 12,700 years ago (Stuiver and Borns, 1975). At that time, glacial ice readvanced into the sea in this area. Glacial drift blanketed bedrocks and marine clays, silts, and sands spread on the sea floor in front of the ice. The major portion of the Great Heath and the several smaller, isolated peat areas are raised bogs of moss and other heath plants that developed directly on the marine sediments or on the marsh-plant filled shallow depressions of the sea floor. The mostly treeless surfaces of the heaths are well above the streams but have small scattered shallow ponds on their broad summits. All bogs together with the marsh covered alluvial sands and silts adjacent to the streams are of Holocene age.

they come from the bog contain 85 to 90 percent water by weight. In others, the percentages are lower, but for purposes of a conservative estimate, it may be assumed that the vegetable matter constitutes only 10 to 15 percent by weight of the wet peat. On this basis, a cubic foot of wet peat would contain only 10 to 15 percent of 65 pounds or 6.5 to 9.75 pounds of vegetable matter. The water contained in air-dried machine peat will probably average about 25 percent by weight, but a conservative estimate may assume that it constitutes only 20 percent....Forty pounds may be taken as the average weight of air-dried machine peat per cubic foot. Of this 80 percent, or 32 pounds, would be vegetable matter; as each cubic foot of peat as it comes from the bog contains 6.5 to 9.75 pounds of vegetable matter, it would take 5 to 3.2 cubic feet of wet peat to make 1 cubic foot of air-dried machine peat. If we assume 4 cubic feet of wet peat as an average figure, we have the following relations:

$$\frac{\text{Volume of wet peat in bog, in cubic feet}}{\underset{\text{(number of cubic feet of wet peat equal to 1 cubic foot of machine peat)}}{4}} \times \frac{\underset{\text{(average weight in pounds of 1 cubic foot of machine peat)}}{40}}{\underset{\text{(pounds in short ton)}}{2{,}000}} \times \frac{\text{Volume of wet peat in bog, in cubic feet}}{200} = \text{Number of tons of air-dried machine peat which the bog can produce.}$$

"

## Method of Study

Field studies consisted of pace and compass traverses for determining extent of deposits. Stratigraphy was examined and samples obtained from cores taken with Macaulay peat augers and Davis peat samplers. 181 peat samples were analyzed in the United States Geological Survey laboratories for percent of ash and moisture as received pH and for trace element content. Proximate and ultimate analyses and the heating value of an additional 74 samples were obtained at the Department of Energy laboratories in Pittsburgh, Pennsylvania. Cores are numbered on map and on profiles. Tables 1-8 show analyses.

Estimates of peat resources were based on acre feet of peat where it was 5 or more feet thick and having an ash content not greater than 25 percent, which is in accord with ASTM (1969) standards. The formula for converting acre feet of peat to short tons air-dried peat was developed by E.S. Bastin and C.A. Davis (1900) of the U.S. Geological Survey during their study of peat deposits in Maine to determine extent and value of the State's peat deposits as sources of potential fuel and as raw materials for various other uses. The authors state, "the quantity of peat in a deposit may readily be calculated with enough accuracy for practical purposes, by obtaining its average depth and its area, and assuming that it will yield at least 200 tons of dry machine made fuel per acre for each foot depth." This formula was based on the following figures: "the specific gravity of the dry peat substance was found to be slightly but not much greater than that of water. A cubic foot of water weighs 62.5 pounds. It is probable that a cubic foot of wet peat, as it comes from the bog will weigh somewhat over 65 pounds...many peats as

Acknowledgments

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## RESOURCES

The three areas of the Great Heath for which peat resources have been estimated include areas A, B and C (see figure 1)

Estimated resources shown below this figure total 6,953,000 short tons air-dried peat. Most of the peat is the sphagnum moss type. It contains many stems and fragments of the heath plants associated with the moss rising in domes above the reed-sedge near the base of (see Profiles the stratigraphic sections described for each core in Tables 1-8. Ash content of the moss peat and reed-sedge peat is generally below 5 percent, but that of reed-sedge peat tends to range somewhat higher than moss peat. The pH of most of the peat is between 4 and 5. Samples higher than 5 are mostly reed-sedge. Moisture content as received, that is, as taken from the bog ranges are in the high 80 and low 90 percent bracket.

Proximate and ultimate analyses and heating value were obtained for 74 samples and data plotted in the scatter diagrams of figure 2. BTU per pound ranges from 8,600 to 10,500, but most reed-sedge samples have heating value above 9,500 BTU per pound. Although all samples have an ash content less than 8 percent on moisture free basis, the reed-sedge peat samples tended to have a somewhat higher ash content than the moss peat samples. Volatile matter on moisture free basis is mostly between 60 and 75 percent with most reed-sedge peat samples less than 70 percent. Fixed carbon for all samples on the moisture free basis ranges from 20 percent to slightly more than 30 percent. Sulfur on the moisture free basis ranges from 0.1 to 0.6 percent with most samples having 0.2 percent. Percent Hydrogen for all samples range from 4.8 to 5.9 percent; percent Nitrogen from 0.6 to 2.0; and percent oxygen from 28.9 to 40.9

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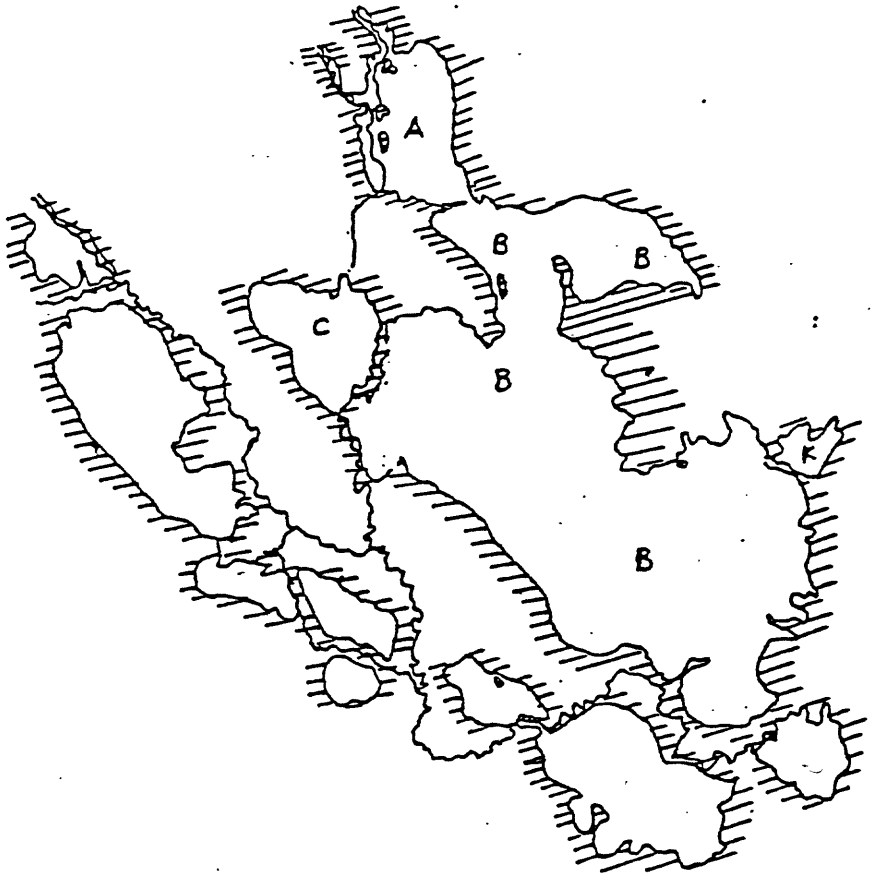



Figure 1. Sketch of peat areas and location of the three for which peat resources have been estimated.

Estimated peat resources in the three areas include:

| | Acres | Thickness | Average thickness | Tons air-dried Peat |
|---|---|---|---|---|
| Area A | 190 | 5-21 ft. | 15 ft. | 570,000 |
| Area B | 210 | 5-27 ft. | 13 ft. | 546,000 |
| Area C | 2,245 | 5-18 ft. | 13 ft. | 5,837,000 |
| | | | TOTAL | 6,953,000 |

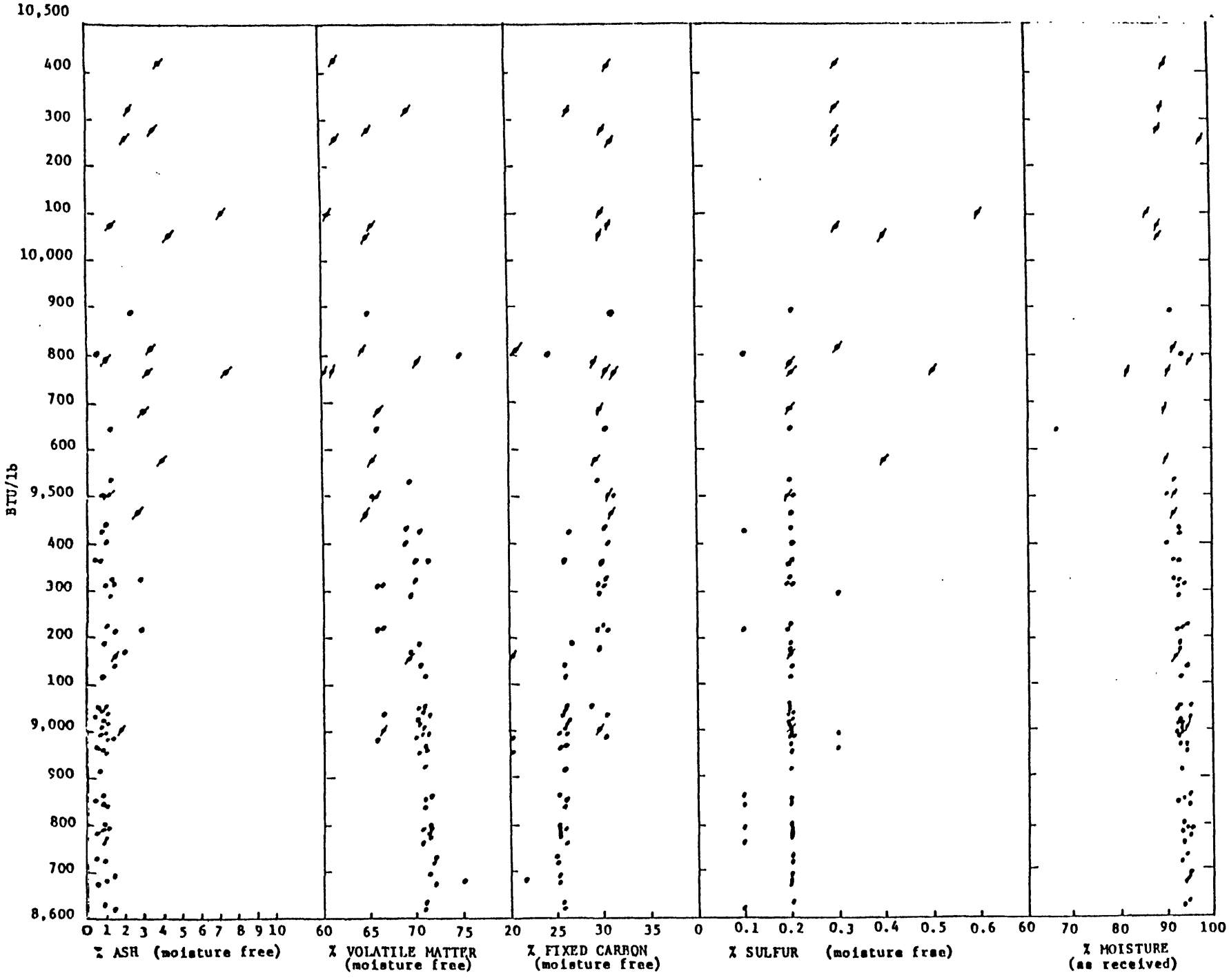
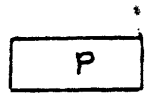



Figure 2.--Scatter diagrams showing BTU relationships in representative samples of sphagnum moss peat (•) and reed-sedge-peat (⌀) to their contents of ash, volatile matter, fixed carbon, and sulfur. The percent moisture as received of each sample is also shown.

Explanation of Cores shown on all profiles

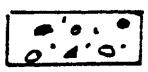



Peat; ash content less than the 25 percent maxium for commercial quality peat

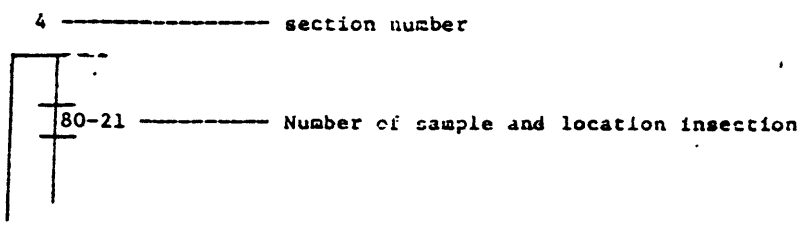
Clayey peat and peaty clay

Clay and silt

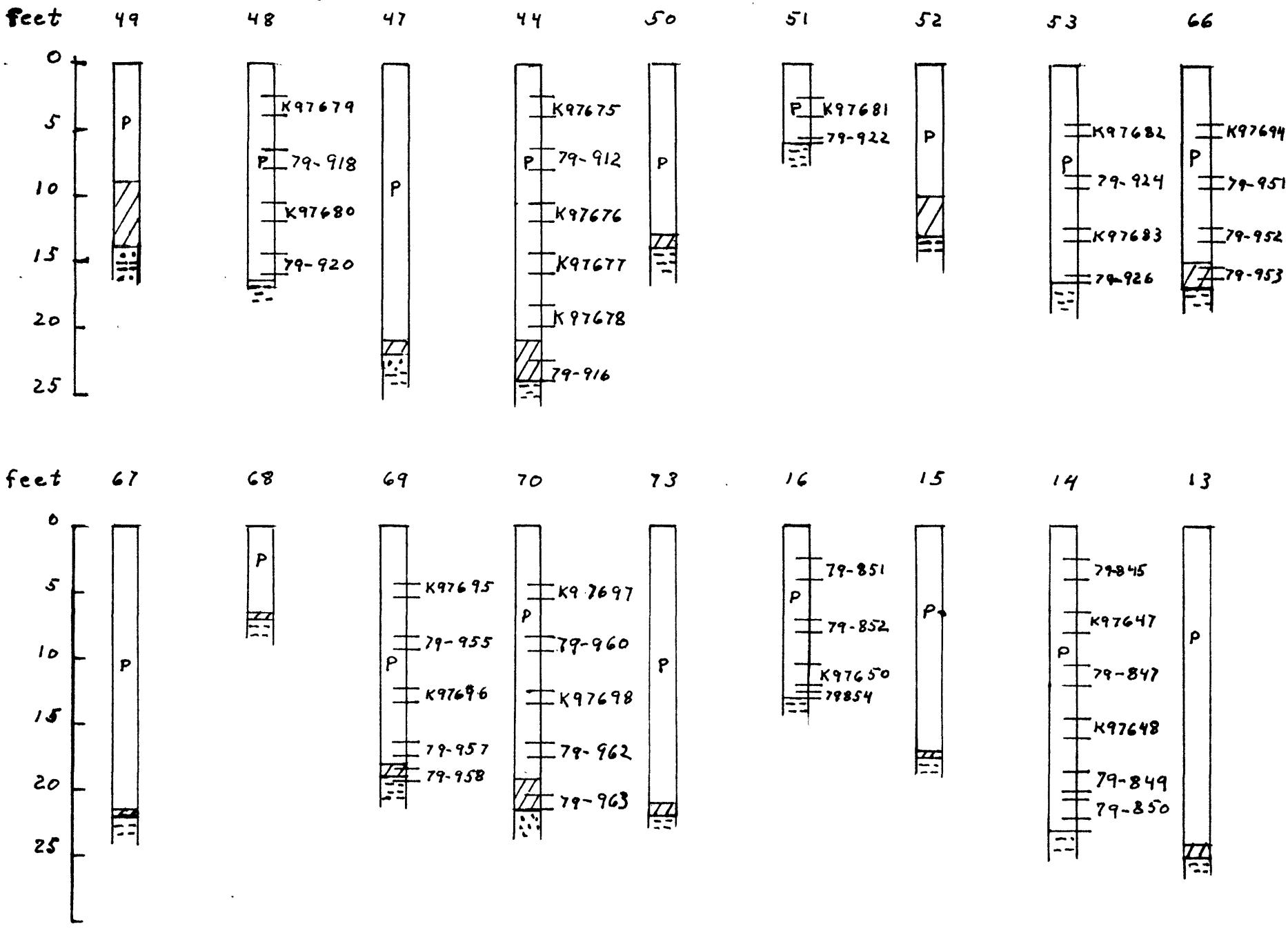
Sand

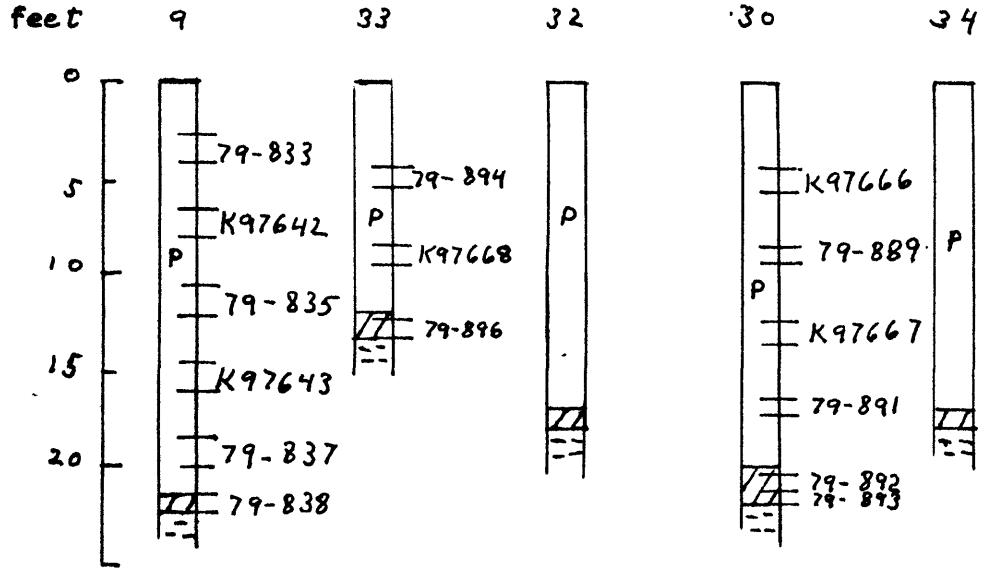


Rock and gravel

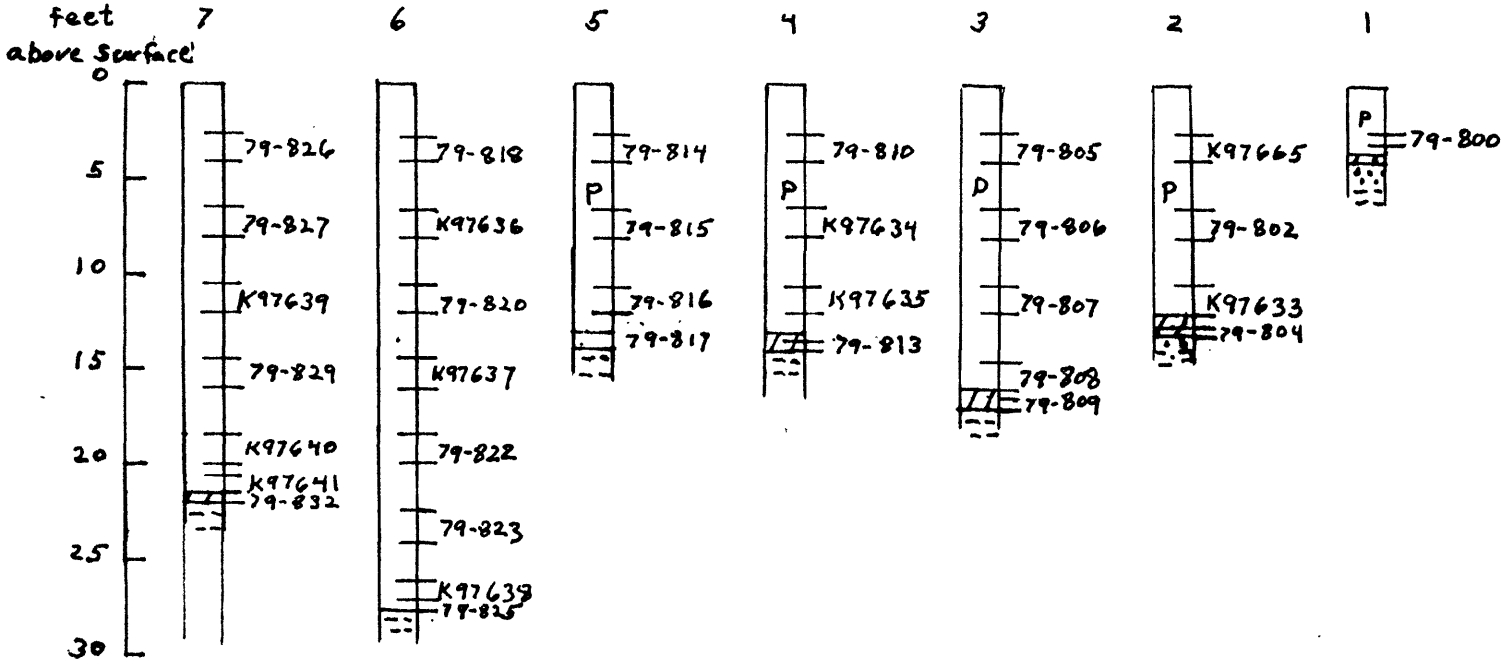


# Cores along Profile A-C'-A'

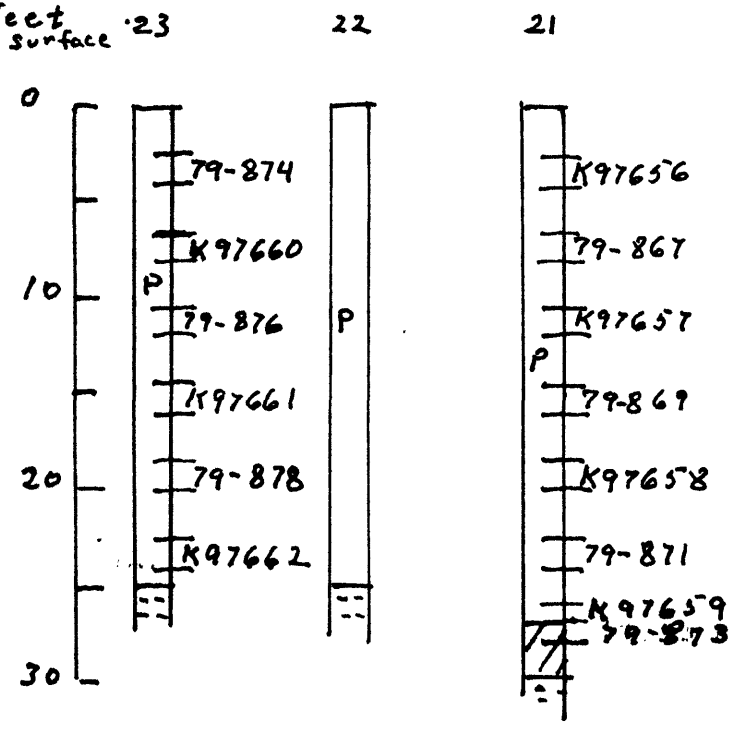




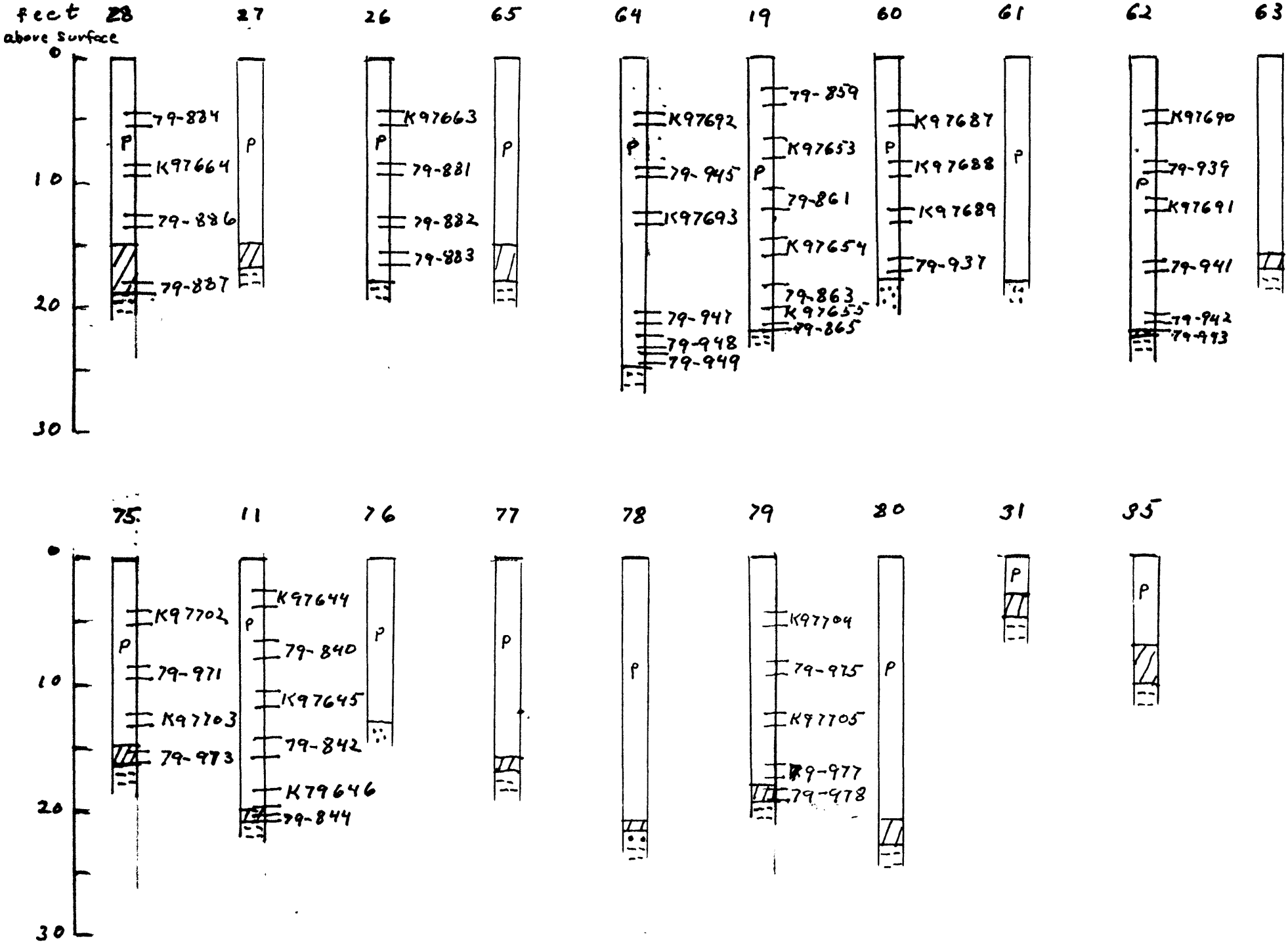

Cores along profile A-C-A' continued



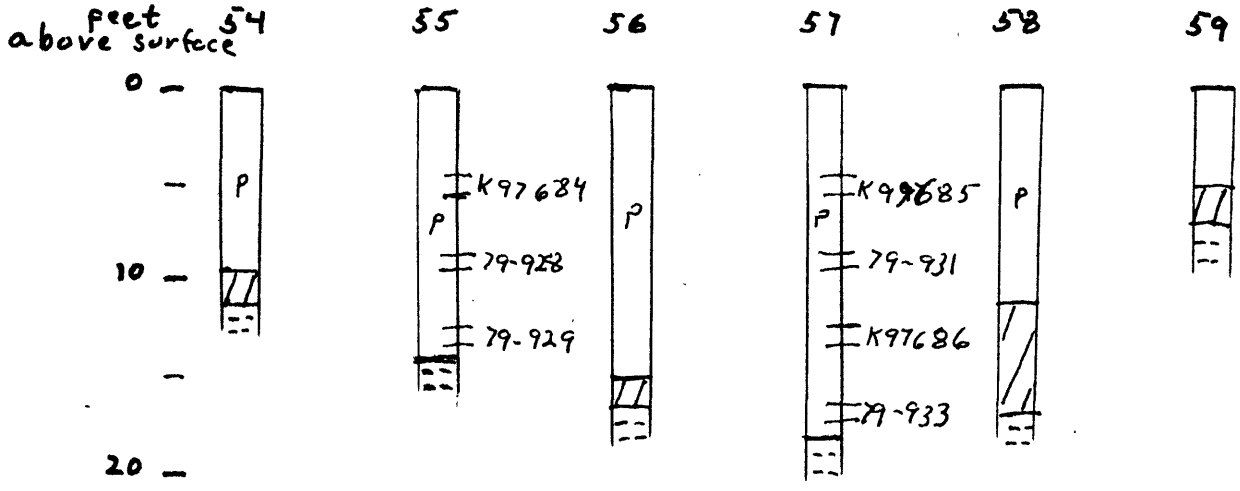

Cores along Profile B-B'



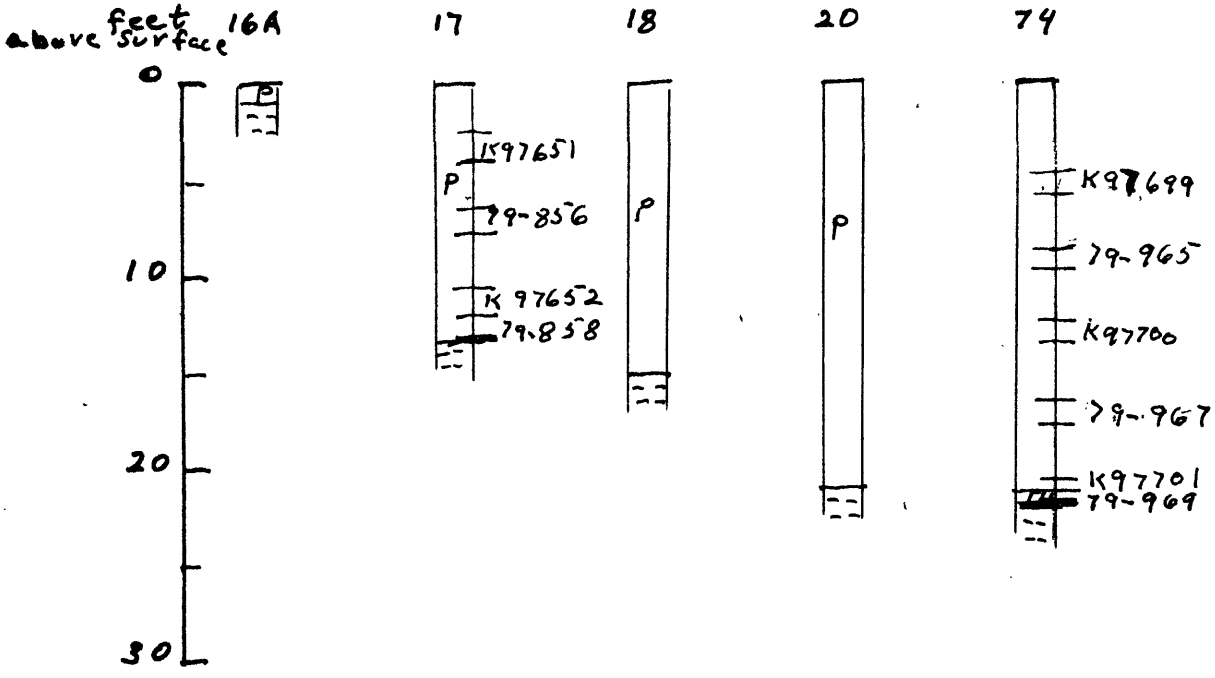

Cores along Profile
C-C'



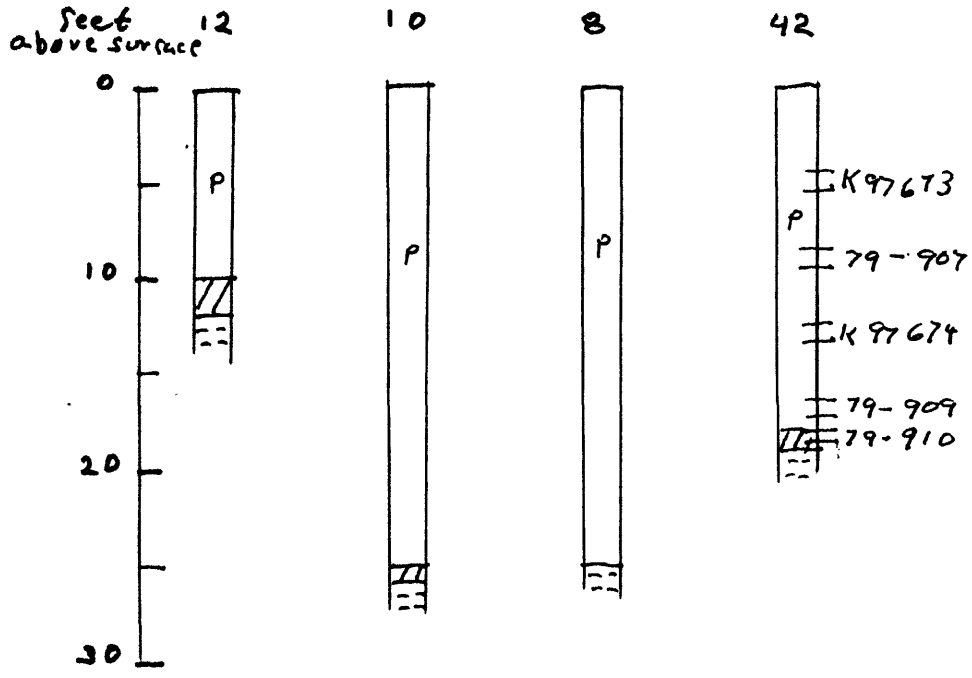

Cores along Profile D-D'



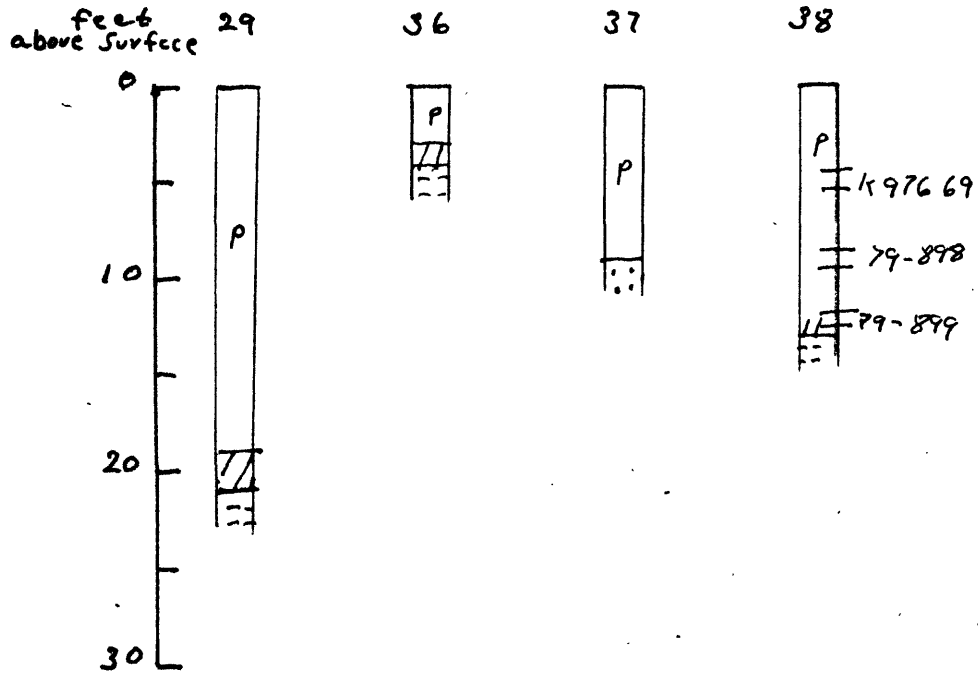

Cores along Profile E-E'



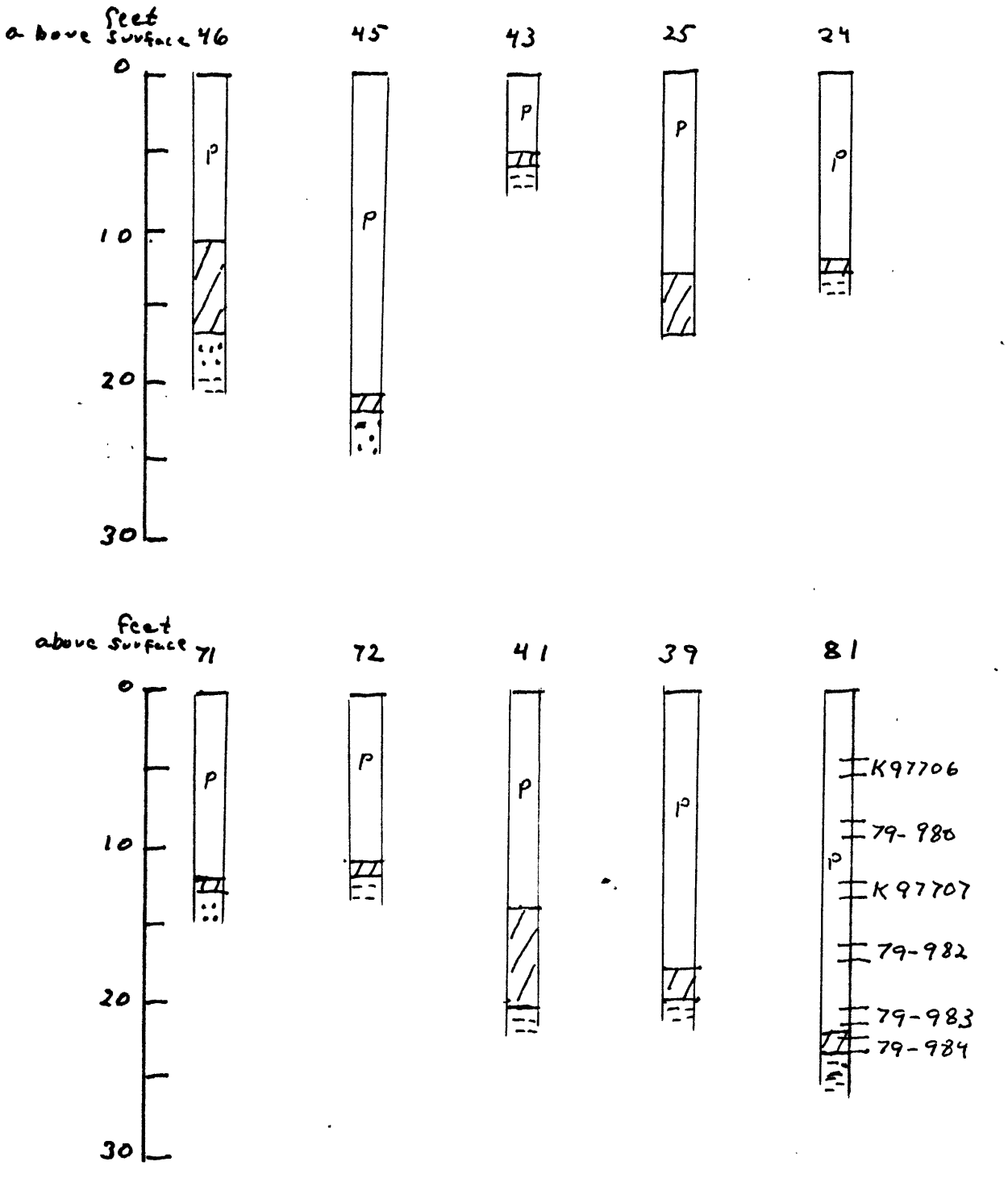

Cores along Profile F-F'




Cores along Profile
G-G'




Cores along Profile
H-H'




Cores not along Profiles

Table 1.--Analyses of samples in Cores along Profile A-C-A'

| Station number | DOE sample number | Sample number USGS 79- | Proximate analysis: Moisture as received (%) | Proximate analysis: Moisture free: Volatile matter (%) | Proximate analysis: Moisture free: Fixed carbon (%) | Proximate analysis: Moisture free: Ash (%) | Ultimate analysis: Moisture free: Hydrogen (%) | Ultimate analysis: Moisture free: Carbon (%) | Ultimate analysis: Moisture free: Nitrogen (%) | Ultimate analysis: Moisture free: Sulfur (%) | Ultimate analysis: Moisture free: Oxygen (%) | Heating value BTU/lb | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48 | K97679 | | 92.8 | 73.6 | 26.4 | 0.6 | 5.5 | 52.5 | 0.7 | 0.2 | 40.4 | 8794 | 4.58 |
| | | 79-918 | 93.11 | -- | -- | 1.1 | -- | -- | -- | -- | -- | -- | 3.80 |
| | K97680 | | 93.4 | 72.0 | 27.2 | 0.8 | 5.5 | 53.2 | 0.6 | 0.2 | 39.7 | 9115 | 4.69 |
| | | 79-920 | 92.58 | -- | -- | 3.6 | -- | -- | -- | -- | -- | -- | 4.88 |
| 44 | K97675 | | 92.8 | 73.6 | 25.7 | 0.7 | 5.3 | 52.1 | 0.7 | 0.2 | 40.9 | 8723 | 4.40 |
| | | 79-912 | 93.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.40 |
| | K97676 | | 93.0 | 72.4 | 26.9 | 0.7 | 5.3 | 54.1 | 0.8 | 0.2 | 38.9 | 9008 | 4.78 |
| | K97677 | | 92.0 | 66.9 | 31.7 | 1.4 | 5.4 | 56.8 | 0.9 | 0.2 | 35.3 | 9505 | 4.80 |
| | K97678 | | 92.2 | 65.0 | 32.1 | 2.9 | 5.4 | 57.2 | 1.2 | 0.2 | 33.1 | 9465 | 4.85 |
| | | 79-916 | 46.75 | -- | 94.0 | -- | -- | -- | -- | -- | -- | -- | 5.32 |
| 51 | K97681 | | 94.5 | 75.4 | 23.6 | 1.0 | 5.5 | 52.2 | 1.4 | 0.2 | 39.8 | 8680 | 4.60 |
| | | 79-922 | 92.11 | -- | -- | 3.0 | -- | -- | -- | -- | -- | -- | 4.80 |
| 53 | K97682 | | 93.9 | 72.1 | 27.2 | 0.7 | 5.5 | 52.8 | 0.8 | 0.2 | 40.0 | 8914 | 4.68 |
| | | 79-924 | 94.0 | -- | -- | 1.2 | -- | -- | -- | -- | -- | -- | 4.83 |
| | K97683 | | 93.6 | 67.2 | 31.2 | 1.6 | -- | -- | 0.9 | 0.1 | -- | 9212 | 5.35 |
| | | 79-926 | 36.5 | -- | -- | 72.8 | -- | -- | -- | -- | -- | -- | 5.60 |
| 66 | K97694 | | 92.9 | 71.4 | 27.8 | 0.8 | 5.8 | 54.9 | 1.1 | 0.1 | 37.2 | 9426 | 4.85 |
| | | 79-951 | 93.31 | -- | -- | 0.8 | -- | -- | -- | -- | -- | -- | 4.72 |
| | | | 94.13 | -- | -- | 1.5 | -- | -- | -- | -- | -- | -- | 4.30 |
| | | | 80.35 | -- | -- | 38.9 | -- | -- | -- | -- | -- | -- | 4.80 |
| 69 | K97695 | | 94.6 | 73.7 | 25.4 | 0.9 | 5.3 | 53.3 | 0.7 | 0.1 | 39.7 | 8862 | 4.40 |
| | | 79-955 | 93.7 | -- | -- | 1.4 | -- | -- | -- | -- | -- | -- | 4.64 |
| | K97696 | | 90.6 | 63.7 | 32.3 | 4.0 | 5.2 | 60.5 | 1.3 | 0.2 | 28.8 | 10417 | 5.10 |
| | | 79-957 | 88.8 | -- | -- | 1.2 | -- | -- | -- | -- | -- | -- | 5.60 |
| | | 79-958 | 58.9 | | | 86.0 | -- | -- | -- | -- | -- | -- | 5.45 |
| 70 | K97697 | | 94.2 | 72.1 | 26.5 | 1.4 | 5.5 | 51.8 | 0.6 | 0.1 | 40.5 | 8620 | 4.40 |
| | | 79-960 | 93.85 | -- | -- | 0.8 | -- | -- | -- | -- | -- | -- | 4.41 |
| | K97698 | | 94.6 | 71.6 | 27.3 | 1.1 | 5.3 | 53.5 | 0.6 | 0.1 | 39.3 | 8838 | 4.35 |
| | | 79-962 | 91.82 | -- | -- | 2.1 | -- | -- | -- | -- | -- | -- | 4.50 |
| | | 79-963 | 82.68 | -- | -- | 46.5 | -- | -- | -- | -- | -- | -- | 4.65 |
| 16 | | 79-851 | 93.45 | -- | -- | 1.0 | -- | -- | -- | -- | -- | -- | 4.18 |
| | | 79-852 | 91.24 | -- | -- | 1.6 | -- | -- | -- | -- | -- | -- | 3.98 |
| | K97650 | | 91.2 | 65.1 | 32.4 | 2.5 | 5.4 | 58.8 | 1.0 | 0.2 | 32.1 | 9887 | 4.10 |
| | | 79-963 | 80.70 | -- | -- | 45.1 | -- | -- | -- | -- | -- | -- | 5.08 |
| 14 | | 79-845 | 92.09 | -- | -- | 1.1 | -- | -- | -- | -- | -- | -- | 4.70 |
| | K97647 | | 93.3 | 69.0 | 30.2 | 0.8 | 5.2 | 56.6 | 0.8 | 0.2 | 36.5 | 9364 | 3.90 |
| | | 79-847 | 93.31 | -- | -- | 1.0 | -- | -- | -- | -- | -- | -- | 4.02 |
| | K97648 | | 90.2 | 67.9 | 30.9 | 1.2 | 5.6 | 57.8 | 1.1 | 0.2 | 34.1 | 9399 | 4.10 |
| | | 79-849 | 90.25 | -- | -- | 3.6 | -- | -- | -- | -- | -- | -- | 4.40 |
| | | 79-850 | 91.82 | -- | -- | 2.7 | -- | -- | -- | -- | -- | -- | 4.64 |
| 9 | | 79-833 | 91.45 | -- | -- | 1.6 | -- | -- | -- | -- | -- | -- | 4.20 |
| | K97642 | | 92.8 | 68.9 | 29.7 | 1.4 | 5.5 | 56.1 | 1.1 | 0.3 | 35.6 | 9292 | 5.13 |
| | | 79-835 | 94.42 | -- | -- | 4.6 | -- | -- | -- | -- | -- | -- | 4.90 |
| | K97643 | | 88.9 | 67.2 | 31.3 | 1.5 | 5.5 | 57.7 | 1.1 | 0.2 | 34.0 | 9646 | 4.95 |
| | | 79-837 | 90.32 | -- | -- | 3.3 | -- | -- | -- | -- | -- | -- | 5.18 |
| | | 79-838 | 79.44 | -- | -- | 54.6 | -- | -- | -- | -- | -- | -- | 5.59 |
| 33 | | 79-894 | 91.05 | -- | -- | 1.1 | -- | -- | -- | -- | -- | -- | 4.23 |
| | K97668 | | 82.0 | 63.3 | 33.0 | 3.7 | 5.2 | 57.6 | 1.1 | 0.2 | 32.2 | 9761 | 5.38 |
| | | 79-896 | 80.19 | -- | -- | 30.0 | -- | -- | -- | -- | -- | -- | 5.75 |
| 30 | K97666 | | 91.9 | 72.6 | 26.8 | 0.6 | 5.7 | 55.2 | 1.0 | 0.2 | 37.3 | 9363 | 4.32 |
| | | 79-889 | 94.05 | -- | -- | 0.7 | -- | -- | -- | -- | -- | -- | 4.35 |
| | K97667 | | 93.9 | 70.7 | 28.1 | 1.2 | 5.4 | 54.3 | 0.6 | 0.2 | 38.4 | 8951 | 4.35 |
| | | 79-891 | 91.34 | -- | -- | 2.0 | -- | -- | -- | -- | -- | -- | 4.62 |
| | | 79-892 | 71.77 | -- | -- | 21.6 | -- | -- | -- | -- | -- | -- | 4.40 |
| | | 79-893 | 35.88 | -- | -- | 92.1 | -- | -- | -- | -- | -- | -- | 4.10 |

Table 2.--Analyses of samples in coves along Profile B-B'

| Station number | DOE sample number | Sample number USGS 79- | Proximate analysis: Moisture as received (%) | Proximate analysis: Moisture free: Volatile matter (%) | Proximate analysis: Moisture free: Fixed carbon (%) | Proximate analysis: Moisture free: Ash (%) | Ultimate analysis: Moisture free: Hydrogen (%) | Ultimate analysis: Moisture free: Carbon (%) | Ultimate analysis: Moisture free: Nitrogen (%) | Ultimate analysis: Moisture free: Sulfur (%) | Ultimate analysis: Moisture free: Oxygen (%) | Heating value BTU/lb | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | | 79-826 | 93.23 | -- | -- | 0.7 | -- | -- | -- | -- | -- | -- | 4.35 |
| | | 79-827 | 92.73 | -- | -- | 0.8 | -- | -- | -- | -- | -- | -- | 4.30 |
| | K97639 | | 94.4 | 74.9 | 24.3 | 0.8 | 5.6 | 52.9 | 0.6 | 0.1 | 40.0 | 9803 | 3.80 |
| | | 79-829 | 91.71 | -- | -- | 1.3 | -- | -- | -- | -- | -- | -- | 4.44 |
| | K97640 | | 92.3 | 65.9 | 31.2 | 2.9 | 5.4 | 56.5 | 0.9 | 0.2 | 34.1 | 9325 | 4.25 |
| | K97641 | | 90.3 | 67.1 | 29.7 | 3.2 | 5.6 | 58.0 | 1.4 | 0.2 | 31.6 | 9682 | -- |
| | | 79-832 | 60.81 | -- | -- | 80.5 | -- | -- | -- | -- | -- | -- | 4.49 |
| 6 | | 79-818 | 91.78 | -- | -- | 0.7 | -- | -- | -- | -- | -- | -- | 4.30 |
| | K97636 | | 93.3 | 72.7 | 26.3 | 1.0 | 5.3 | 53.8 | 0.7 | 0.3 | 38.9 | 8992 | 4.35 |
| | | 79-820 | 93.61 | -- | -- | 0.5 | -- | -- | -- | -- | -- | -- | 4.55 |
| | K97637 | | 92.2 | 71.0 | 27.7 | 1.3 | 5.5 | 54.6 | 0.7 | 0.2 | 37.8 | 9015 | 4.75 |
| | | 79-822 | 92.00 | -- | -- | 1.3 | -- | -- | -- | -- | -- | -- | 4.35 |
| | | 79-823 | 92.87 | -- | -- | 1.6 | -- | -- | -- | -- | -- | -- | 4.37 |
| | K97638 | | 90.6 | 66.3 | 29.0 | 4.7 | 5.6 | 56.1 | 1.5 | 0.4 | 31.8 | 9575 | -- |
| | | 79-825 | 86.02 | -- | -- | 9.6 | -- | -- | -- | -- | -- | -- | 4.85 |
| 5 | | 79-814 | 91.12 | -- | -- | 0.8 | -- | -- | -- | -- | -- | -- | 4.30 |
| | | 79-815 | 92.55 | -- | -- | 0.9 | -- | -- | -- | -- | -- | -- | 4.40 |
| | | 79-816 | 89.39 | -- | -- | 1.4 | -- | -- | -- | -- | -- | -- | 4.29 |
| | | 79-817 | 91.36 | -- | -- | 1.4 | -- | -- | -- | -- | -- | -- | 4.27 |
| 4 | | 79-810 | 89.73 | -- | -- | 1.2 | -- | -- | -- | -- | -- | -- | 4.34 |
| | K97634 | | 92.4 | 69.3 | 29.3 | 1.4 | 5.6 | 56.2 | 0.9 | 0.2 | 35.7 | 9532 | 4.65 |
| | K97635 | | 87.0 | 61.6 | 30.6 | 7.8 | 5.5 | 57.7 | 2.0 | 0.6 | 26.5 | 10111 | 5.15 |
| | | 79-813 | 76.41 | -- | -- | 55.2 | -- | -- | -- | -- | -- | -- | 3.85 |
| 3 | | 79-805 | 90.62 | -- | -- | 0.2 | -- | -- | -- | -- | -- | -- | 4.57 |
| | | 79-806 | 91.89 | -- | -- | 0.4 | -- | -- | -- | -- | -- | -- | 4.80 |
| | | 79-807 | 92.60 | -- | -- | 1.3 | -- | -- | -- | -- | -- | -- | 4.65 |
| | | 79-808 | 86.43 | -- | -- | 17.5 | -- | -- | -- | -- | -- | -- | 5.12 |
| | | 79-809 | 53.23 | -- | -- | 83.8 | -- | -- | -- | -- | -- | -- | 5.9 |
| 2 | K97665 | | 92.7 | -- | -- | 0.8 | 5.3 | 53.4 | 0.8 | 0.2 | 39.5 | 8848 | 4.20 |
| | | 79-802 | 93.42 | -- | -- | 1.0 | -- | -- | -- | -- | -- | -- | 4.75 |
| | K97633 | | 89.7 | 63.2 | 32.3 | 4.5 | 5.4 | 59.2 | 1.5 | 0.3 | 29.0 | 10255 | 5.48 |
| | | 79-804 | 56.92 | -- | -- | 75.0 | -- | -- | -- | -- | -- | -- | 5.59 |
| 1 | | 79-800 | 92.46 | -- | -- | 11.0 | -- | -- | -- | -- | -- | -- | 4.04 |

Table 3.--Analyses of samples in cores along Profile C-C'

| Station number | DOE sample number | Sample number USGS 79- | Proximate analysis: Moisture as received (%) | Proximate analysis: Moisture free: Volatile matter (%) | Proximate analysis: Moisture free: Fixed carbon (%) | Proximate analysis: Moisture free: Ash (%) | Ultimate analysis: Moisture free: Hydrogen (%) | Ultimate analysis: Moisture free: Carbon (%) | Ultimate analysis: Moisture free: Nitrogen (%) | Ultimate analysis: Moisture free: Sulfur (%) | Ultimate analysis: Moisture free: Oxygen (%) | Heating value BTU/lb | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | | 874 | 93.07 | -- | -- | 1.1 | -- | -- | -- | -- | -- | -- | 4.28 |
| | K97660 | | 92.9 | 70.9 | 28.4 | 0.7 | 5.2 | 54.6 | 0.8 | 0.2 | 38.5 | 9053 | 4.29 |
| | | 876 | 92.12 | -- | -- | 1.0 | -- | -- | -- | -- | -- | -- | 4.28 |
| | K97661 | | 92.8 | 68.3 | 30.6 | 1.1 | 5.3 | 56.4 | 0.9 | 0.2 | 36.2 | 9434 | 4.40 |
| | | 878 | 91.82 | -- | -- | 2.2 | -- | -- | -- | -- | -- | -- | 4.39 |
| | K97662 | | 93.2 | 69.4 | 28.9 | 1.7 | -- | -- | 0.8 | 0.2 | -- | 9160 | 4.10 |
| 21 | K97656 | | 93.4 | 73.3 | 25.8 | 0.9 | 5.5 | 53.5 | 1.0 | 0.2 | 38.9 | 8798 | 4.10 |
| | | 867 | 92.09 | -- | -- | 1.0 | -- | -- | -- | -- | -- | -- | 4.07 |
| | K97657 | | 93.8 | 72.3 | 27.1 | 0.6 | 5.4 | 53.8 | 0.6 | 0.2 | 39.4 | 8850 | 4.15 |
| | | 869 | 93.12 | -- | -- | 1.0 | -- | -- | -- | -- | -- | -- | 4.24 |
| | K97658 | | 92.9 | -- | -- | 1.4 | -- | -- | -- | 0.2 | -- | 9323 | 4.20 |
| | | 871 | 91.87 | -- | -- | 2.0 | -- | -- | -- | -- | -- | -- | 4.25 |
| | K97659 | | 89.5 | 65.6 | 29.9 | 4.5 | 5.7 | 57.9 | 1.6 | 0.4 | 29.9 | 10046 | -- |
| | | 873 | 87.87 | -- | -- | 26.9 | -- | -- | -- | -- | -- | -- | 4.15 |

Table 4.--Analyses of samples in coves along Profile D-D'

| Auger hole | DOE sample number | Sample number USGS 79- | Proximate analysis: Moisture as received (%) | Proximate analysis: Moisture free: Volatile matter (%) | Proximate analysis: Moisture free: Fixed carbon (%) | Proximate analysis: Moisture free: Ash (%) | Ultimate analysis: Moisture free: Hydrogen (%) | Ultimate analysis: Moisture free: Carbon (%) | Ultimate analysis: Moisture free: Nitrogen (%) | Ultimate analysis: Moisture free: Sulfur (%) | Ultimate analysis: Moisture free: Oxygen (%) | Heating value BTU/lb | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | | 884 | 85.86 | -- | -- | 1.3 | -- | -- | -- | -- | -- | -- | 5.40 |
| | K97664 | | 95.2 | 72.7 | 26.3 | 1.0 | 5.4 | 52.7 | 0.6 | 0.2 | 40.1 | 8774 | 4.50 |
| | | 886 | 93.41 | -- | -- | 1.8 | -- | -- | -- | -- | -- | -- | 4.84 |
| | | 887 | 76.05 | -- | -- | 48.4 | -- | -- | -- | -- | -- | -- | 4.40 |
| 26 | K97663 | | 94.8 | 73.0 | 26.2 | 0.8 | 5.3 | 52.8 | 0.9 | 0.1 | 40.0 | 8795 | 4.46 |
| | | 881 | 92.36 | -- | -- | 1.2 | -- | -- | -- | -- | -- | -- | 4.70 |
| | | 882 | 92.98 | -- | -- | 5.6 | -- | -- | -- | -- | -- | -- | 4.72 |
| | | 883 | 98.78 | -- | -- | 0.7 | -- | -- | -- | -- | -- | -- | 5.01 |
| 64 | K97692 | | 93.4 | 70.7 | 28.4 | 0.9 | 5.7 | 53.8 | 0.8 | 0.2 | 38.5 | 9018 | 4.31 |
| | | 945 | 91.30 | -- | -- | 0.9 | -- | -- | -- | -- | -- | -- | 4.20 |
| | K97693 | | 94.5 | 68.3 | 29.8 | 1.9 | 5.4 | 54.3 | 0.7 | 0.2 | 37.6 | 9000 | 4.30 |
| | | 947 | 92.04 | -- | -- | 1.8 | -- | -- | -- | -- | -- | -- | 4.37 |
| | | 948 | 92.25 | -- | -- | 2.2 | -- | -- | -- | -- | -- | -- | 4.43 |
| | | 949 | -- | -- | -- | 4.5 | -- | -- | -- | -- | -- | -- | 5.17 |
| 19 | | 859 | 92.10 | -- | -- | 0.8 | -- | -- | -- | -- | -- | -- | 3.92 |
| | K97653 | | 93.0 | 73.0 | 26.5 | 0.5 | 5.5 | 54.4 | 0.6 | 0.2 | 38.7 | 9029 | 3.88 |
| | | 861 | 94.11 | -- | -- | 0.5 | -- | -- | -- | -- | -- | -- | 4.00 |
| | K97654 | | 93.0 | 68.1 | 30.4 | 1.5 | 5.3 | 56.7 | 0.7 | 0.2 | 35.7 | 9309 | 3.88 |
| | | 863 | 90.90 | -- | -- | 1.8 | -- | -- | -- | -- | -- | -- | 4.03 |
| | K97655 | | 90.1 | 69.1 | 28.4 | 2.5 | 5.9 | 59.0 | 1.4 | 0.2 | 30.9 | 10319 | -- |
| | | 865 | 88.66 | -- | -- | 5.5 | -- | -- | -- | -- | -- | -- | 4.28 |
| 60 | K97687 | | 94.7 | 71.2 | 27.7 | 1.1 | 5.3 | 54.1 | 1.1 | 0.2 | 38.0 | 9051 | 4.35 |
| | K97688 | | 89.6 | 66.2 | 32.2 | 1.6 | 5.0 | 59.3 | 1.1 | 0.2 | 32.7 | 10072 | 4.20 |
| | K97689 | | 95.0 | 70.6 | 28.2 | 1.2 | -- | -- | 0.5 | 0.2 | -- | 8787 | 4.20 |
| | | 933 | 93.97 | -- | -- | 1.5 | -- | -- | -- | -- | -- | -- | 4.38 |
| 62 | K97690 | | 93.8 | 73.8 | 25.6 | 0.6 | 5.3 | 52.5 | 0.5 | 0.2 | 40.7 | 8676 | 4.28 |
| | | 939 | 93.29 | -- | -- | 1.4 | -- | -- | -- | -- | -- | -- | 4.30 |
| | K97691 | | 95.1 | 67.8 | 31.0 | 1.2 | 5.3 | 54.6 | 0.6 | 0.2 | 38.1 | 9035 | 4.45 |
| | | 941 | 93.00 | -- | -- | 2.4 | -- | -- | -- | -- | -- | -- | 4.48 |
| | | 942 | 92.02 | -- | -- | 3.2 | -- | -- | -- | -- | -- | -- | 4.54 |
| | | 943 | 67.68 | -- | -- | 68.0 | -- | -- | -- | -- | -- | -- | 4.92 |
| 75 | K97702 | | 92.3 | 67.5 | 31.1 | 1.4 | 5.3 | 5.1 | 0.7 | 0.2 | 37.3 | 9686 | 4.40 |
| | | 971 | 92.96 | -- | -- | 3.2 | -- | -- | -- | -- | -- | -- | 5.15 |
| | K97703 | | 90.8 | 61.3 | 31.2 | 7.5 | 5.3 | 56.6 | 1.8 | 0.5 | 28.3 | 9765 | 5.18 |
| | | 973 | 36.36 | -- | -- | 89.8 | -- | -- | -- | -- | -- | -- | 4.02 |
| 11 | K97644 | | 92.8 | 72.0 | 27.1 | 0.9 | 5.5 | 54.5 | 0.7 | 0.2 | 38.2 | 8967 | 4.30 |
| | | 840 | 93.21 | -- | -- | 1.1 | -- | -- | -- | -- | -- | -- | 4.60 |
| | K97645 | | 93.3 | 70.3 | 28.4 | 1.3 | 5.3 | 54.7 | 0.6 | 0.2 | 38.1 | 8985 | 4.52 |
| | | 842 | 91.58 | -- | -- | 2.5 | -- | -- | -- | -- | -- | -- | 4.70 |
| | K97646 | | 91.8 | 64.2 | 32.3 | 3.5 | 5.5 | 57.5 | 1.4 | 0.3 | 31.8 | 9811 | 4.90 |
| | | 844 | 76.05 | -- | -- | 43.5 | -- | -- | -- | -- | -- | -- | 4.20 |
| 79 | K97704 | | 94.5 | 72.6 | 26.5 | 0.9 | 5.3 | 52.8 | 0.6 | 0.2 | 40.2 | 8634 | 4.30 |
| | | 975 | 93.52 | -- | -- | 1.1 | -- | -- | -- | -- | -- | -- | 4.32 |
| | K97705 | | 93.6 | 71.4 | 27.0 | 1.6 | -- | -- | 0.7 | 0.2 | -- | 9140 | 4.20 |
| | | 977 | 90.45 | -- | -- | 2.2 | -- | -- | -- | -- | -- | -- | 4.20 |
| | | 978 | 77.03 | -- | -- | 53.2 | -- | -- | -- | -- | -- | -- | 3.80 |

Table 5.--Analyses of samples in cores along Profile E-E'

| Auger hole | DOE sample number | Sample number USGS 79- | Proximate analysis: Moisture as received (%) | Proximate analysis: Moisture free: Volatile matter (%) | Proximate analysis: Moisture free: Fixed carbon (%) | Proximate analysis: Moisture free: Ash (%) | Ultimate analysis: Moisture free: Hydrogen (%) | Carbon (%) | Nitrogen (%) | Sulfur (%) | Oxygen (%) | Heating value BTU/lb | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | K97684 | | 93.3 | 70.5 | 28.6 | 0.9 | 5.6 | 54.5 | 1.0 | 0.2 | 37.7 | 9185 | 4.64 |
| | | 928 | 94.15 | -- | -- | 0.8 | -- | -- | -- | -- | -- | -- | 4.50 |
| | | 929 | 85.77 | -- | -- | 16.1 | -- | -- | -- | -- | -- | -- | 4.62 |
| 57 | K97685 | | 93.9 | 72.6 | 26.7 | 0.7 | 5.4 | 53.1 | 0.8 | 0.3 | 39.8 | 8964 | 4.30 |
| | | 931 | 93.52 | -- | -- | 25.7 | -- | -- | -- | -- | -- | -- | 4.45 |
| | K97686 | | 95.0 | 69.5 | 29.1 | 1.4 | 5.3 | 54.2 | 0.7 | 0.2 | 38.3 | 9053 | 4.80 |
| | | 933 | 91.44 | -- | -- | 16.1 | -- | -- | -- | -- | -- | -- | 5.25 |

Table 6.--Analyses of samples in cores along Profile F-F'

| Auger hole | DOE sample number | Sample number USGS 79- | Proximate analysis: Moisture as received (%) | Proximate analysis: Moisture free: Volatile matter (%) | Proximate analysis: Moisture free: Fixed carbon (%) | Proximate analysis: Moisture free: Ash (%) | Ultimate analysis: Moisture free: Hydrogen (%) | Carbon (%) | Nitrogen (%) | Sulfur (%) | Oxygen (%) | Heating value BTU/lb | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | K97651 | | 90.4 | 67.7 | 31.5 | 0.8 | 5.6 | 56.7 | 0.8 | 0.2 | 35.9 | 9502 | 3.82 |
| | | 856 | 92.21 | -- | -- | 2.1 | -- | -- | -- | -- | -- | -- | 3.99 |
| | K97652 | | 89.5 | 65.5 | 30.8 | 3.7 | 4.8 | 60.4 | 1.1 | 0.2 | 29.8 | 10275 | 4.45 |
| | | 858 | 86.01 | -- | -- | 4.3 | -- | -- | -- | -- | -- | -- | 4.70 |
| 79 | K97699 | | 93.7 | 71.6 | 27.4 | 1.0 | 5.6 | 52.6 | 0.8 | 0.2 | 39.8 | 8760 | 4.48 |
| | | 965 | 93.92 | -- | -- | 0.9 | -- | -- | -- | -- | -- | -- | 4.52 |
| | K97700 | | 93.9 | 68.3 | 30.4 | 1.3 | -- | -- | 0.8 | 0.2 | -- | 9221 | 4.75 |
| | | 967 | 91.25 | -- | -- | 2.0 | -- | -- | -- | -- | -- | -- | 5.10 |
| | K97701 | | 92.4 | 61.8 | 31.5 | 6.7 | 5.5 | 56.3 | 2.2 | 0.4 | 28.9 | 9796 | 5.40 |
| | | 969 | 70.39 | -- | -- | 65.2 | -- | -- | -- | -- | -- | -- | 5.60 |

Table 7.--Analyses of samples in cores along Profile G-G'

| Station number | DOE sample number | Sample number USGS 79- | Proximate analysis: Moisture as received (%) | Proximate analysis: Moisture free: Volatile matter (%) | Proximate analysis: Moisture free: Fixed carbon (%) | Proximate analysis: Moisture free: Ash (%) | Ultimate analysis: Moisture free: Hydrogen (%) | Carbon (%) | Nitrogen (%) | Sulfur (%) | Oxygen (%) | Heating value BTU/lb | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | K97673 | | 94.4 | 71.8 | 27.3 | 0.9 | 5.3 | 53.6 | 0.7 | 0.2 | 39.2 | 8790 | 4.55 |
| | | 907 | 94.85 | -- | -- | 0.8 | -- | -- | -- | -- | -- | -- | 4.75 |
| | K97674 | | 94.9 | 72.6 | 26.0 | 1.4 | 5.1 | 53.4 | 0.6 | 0.2 | 39.1 | 8695 | 4.77 |
| | | 909 | 92.48 | -- | -- | 2.5 | -- | -- | -- | -- | -- | -- | 5.22 |
| | | 910 | 91.00 | -- | -- | 44.9 | -- | -- | -- | -- | -- | -- | 5.40 |

Table 8.--Analyses of samples in cores along Profile H-H', and of samples not along Profiles

| Auger hole | DOE sample number | Sample number USGS 79- | Proximate analysis: Moisture as received (%) | Proximate analysis: Moisture free: Volatile matter (%) | Proximate analysis: Moisture free: Fixed carbon (%) | Proximate analysis: Moisture free: Ash (%) | Ultimate analysis: Moisture free: Hydrogen (%) | Carbon (%) | Nitrogen (%) | Sulfur (%) | Oxygen (%) | Heating value BTU/lb | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38 | K97669 | | 92.4 | 71.9 | 27.2 | 0.9 | 5.5 | 54.5 | 0.9 | 0.2 | 38.1 | 9037 | 4.45 |
| | | 898 | 93.61 | -- | -- | 1.8 | -- | -- | -- | -- | -- | -- | 5.30 |
| | | 899 | 65.49 | -- | -- | 75.0 | -- | -- | -- | -- | -- | -- | 5.75 |
| | Analyses of samples not along Profiles | | | | | | | | | | | | |
| 81 | K97706 | | 93.4 | 71.7 | 27.4 | 0.9 | 5.4 | 54.1 | 0.7 | 0.2 | 38.8 | 8991 | 4.25 |
| | | 980 | 93.23 | -- | -- | 0.3 | -- | -- | -- | -- | -- | -- | 4.00 |
| | K97707 | | 93.5 | 68.8 | 29.0 | 2.2 | 5.6 | 54.6 | 0.8 | 0.2 | 36.7 | 9167 | 4.32 |
| | | 982 | 93.08 | -- | -- | 2.4 | -- | -- | -- | -- | -- | -- | 4.40 |
| | | 983 | 93.63 | -- | -- | 2.1 | -- | -- | -- | -- | -- | -- | 4.50 |
| | | 984 | 77.78 | -- | -- | 55.3 | -- | -- | -- | -- | -- | -- | 4.72 |