

# State Department of Geology and Mineral Industries

702 Woodlark Building  
Portland 5, Oregon

## BUCK CREEK DIATOMITE DEPOSIT

Jackson County  
Unclassified

Owner: Reported to be on land owned by the Medford Corporation, Medford, Oregon.

Location: SW $\frac{1}{4}$  (?) Sec. 15, T. 33 S., R. 3 E., between 2550 - 2650 (A) feet in elevation on Buck Creek approximately 1/2 to 3/4 miles south-east of its confluence with the South Fork of the Rogue River. The deposit is exposed in Buck Creek at the end of a logging road that extends to the northwest from the Butte Falls to Prospect road, 17.7 miles from Butte Falls or approximately 5.5 miles from Prospect. The logging road was blocked by fallen trees and about 1 mile (nearly all) of this road had to be traversed by foot at the time this deposit was visited.

History: Ray M. Case, 3057 Table Rock road, Medford, Oregon, brought a piece of diatomite from this deposit into the Grants Pass office to be identified in June 1951. July 26, 1953 he guided Lert-Ramp and me to the deposit.

Geology: Alternating layers of diatomite and volcanic tuffs containing only minor amounts of diatoms are exposed along Buck Creek for a distance of approximately 1800 feet. The diatomite is overlain by fresh vesicular lava (probably andesite) and underlain by a weathered vesicular lava flow.

The following section was measured on the southwest side of Buck Creek approximately 500 feet down stream from an outcrop in the creek of the overlying lava flow:

Base of vesicular lava

Talus (rubble and boulders)	-----	27' 6"
Buff to cream diatomite	-----	8' 3"
Gray & tan tuff	-----	8' 3"
White diatomite	-----	7' 1"

Diatomite in bed of creek

The two diatomite beds contain approximately 97 to 98 percent diatoms with very minor amounts of feldspar, clay, and volcanic glass shards. The diatomite consists largely of the barrel-shaped diatom, *Melosira*, with minor amounts of disc-shaped and acicular diatoms.

The vertical distance between the lava flows in which the tuff and diatomite beds occur is approximately 150 feet, but the true thickness may be less. Although many different attitudes and some displacement of these beds were observed, the structures were not studied in detail due to lack of time during this examination.

Remarks: This deposit was visited and the report was written mainly to record the location of diatomite in the Cascades in southwestern Oregon. Had greater thicknesses of pure diatomite been exposed more detailed work would have been done after the initial visit.

Informant: Ray M. Case

Visited by: DJW and LR 7/26/53 (Sunday)

Report by: DJW 12/4/53.

# State Department of Geology and Mineral Industries

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Memo on water well cavings of Southern Oregon Equipment Company, Medford, Oregon

The sample fragments are mostly shale with a few grains of siltstone and claystone. Most of the shale fragments show a high polish typical of slickensiding. From the nature of the sample submitted, the shale is evidently sloughing into the well bore as broken down fragments. Whether the slickensiding occurs while the material is "heaving" into the well or at some earlier time is difficult to say. The fragments are very crumbly and soft in their present state and it appears unlikely that they are hard enough to take a polish if subjected to pressure sufficient to break them up. It would seem more likely (especially in the Medford area) that the shale is located in a fault zone or an area of intense folding.

Corrective measures could follow one of two courses. These measures would only apply if the shale is not the water-bearing aquifer.

(1) Run casing in the hole and perforate opposite the water-bearing zone.

(2) Circulate a high bentonite mud in the hole in the hope of building up a sufficient wall cake to prevent further sloughing. Since this type of sealing would have to be selective so as not to seal off the water-bearing strata the cost of such a program may be more expensive than running casing in the hole.

In the event that the shale is part or all of the water-bearing zone, gravel packing may be the only solution. For further information on procedures in gravel packing, I would recommend that the operators consult the Ground Water branch of the U.S.G.S.

Report by: R.E.C.  
Date: 7-27-53

Diatomite samples  
 Cascade Mts., N.E. of Medford, Oregon within  
 T. 33 S., R. 3 E., U.S. Geological Survey Rustler Peak Quad, 1955.

Field Notes

Samples  
 No. 1 - 3  
 Sec. 23, T. 33 S., R. 3 E.  
 6/23/75  
 No. 1-Top  
 No. 2-5' below 1  
 No. 3- 14" below 2  
 3= base, elev. 2,990'

Butte Falls - Prospect Hwy. (samples from all existing solid exposures).  
 Cut on W. side of hwy., 0.2 mi S. of Buck Cr. bridge. Exposure 100 ft  $\pm$  along hwy. cut, 6-ft stratigraphic interval. White massive and thinly bedded light weight very fine tuffaceous (?) diatomite. Horizontal beds. Base  $\pm$  10' above meadow land south and easterly, Mill-Mar Ranch area. Coll. 6/23/75 w/R.V. Stryker.

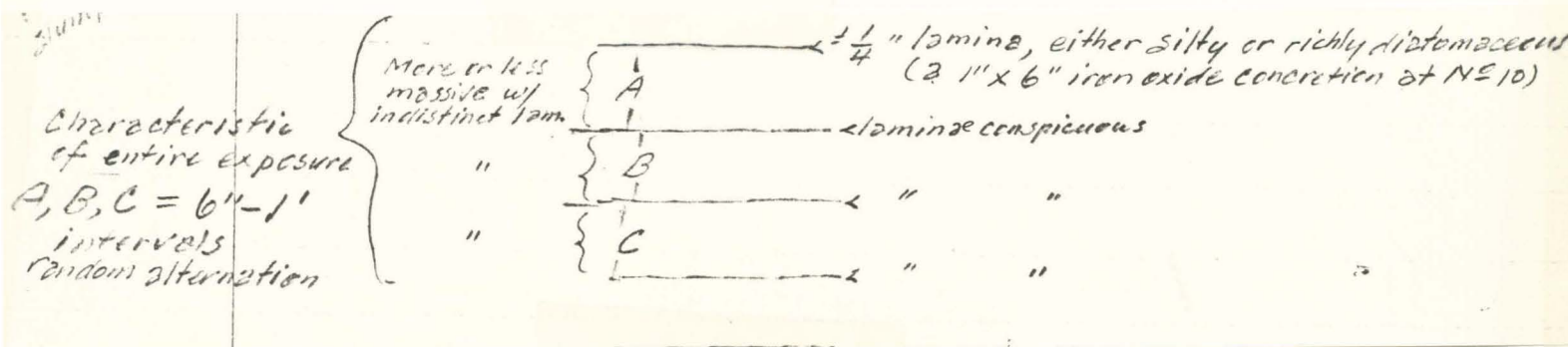
No. 4  
 6/28/75  
 near center sec. 26,  
 T. 33 S., R. 3 E.  
 Elev.  $\pm$  3,020

Hwy cut w. side 0.4 mi S. of No. 1-3 group. Horizontal beds  $\pm$  5' stratig. (?) above No. 1 6/23/75. 5 ft. stratig. interval diatomite cp. No. 1-3, possibly displaced  $\pm$  15' down in slide. Estimated 70' below basalt cap on hill northwesterly Soil w/no bed rock exposed intervenes.

No. 5-10  
 6/28/75  
 15 hwy miles N. of Butte Falls.  
 Sec. 26, T. 33 S., R. 3E.  
 No. 10  $\pm$  20' below base of basalt flows.  
 (Approx. 200' elev. above Buck Creek diatomite approx. located in SW $\frac{1}{4}$  Sec. 15 and NW $\frac{1}{4}$  of Sec. 22, T. 33 S., R. 3 E.

Hwy. cut W. side, 0.2 mi S. of No. 4.  $\pm$  10 ft cut for distance of 350', exposing  $\pm$  21 ft undisturbed stratig. interval, practically horizontal beds (slumped beds at both ends of cut were not sampled). Lithology = white (when dry) well bedded clayey (?) diatomite. Top (elev.  $\pm$  3,060' ends southwesterly immed. below level of meadow land. Basal sample = No. 5 estimated 23' vertical soil covered interval (stratigraphic) above No. 4. No. 6, 4' stratig. above No. 5. No. 7, 4' stratig. above No. 6. No. 8, 4' stratig. above No. 7. No. 9, 5' stratig. above No. 8. No. 10, top sample, elev.  $\pm$  3,060' 4' stratig. above No. 9.

Sampled 5-10 21-ft interval excluding slumped beds.



### BUCK CREEK DIATOMITE

Samples and notes 8/29/75 W.H.H.

Deposit 4.5 mi airline S.E. of Prospect, Ore.  
SW $\frac{1}{4}$  sec. 15, T. 33 S., R. 3 E., U.S. Geological Survey Rustler Peak Quad. 15 min. series, 1955.

See accompanying copy of map and pages 3 and 4 "Road and trail log 7/11/75" amending access given in attached copy "Buck Creek Diatomite Deposit" 12/4/53, by D.J.W., Oregon State Department of Geology and Mineral Industries\*. This report is an invaluable description of the geology and stratigraphy of the diatomite. It will be used as a guide in future sampling by W.H.H., thus to extend the reconnaissance sampling as of 8/29/75. Notes regarding the samples obtained are given below:

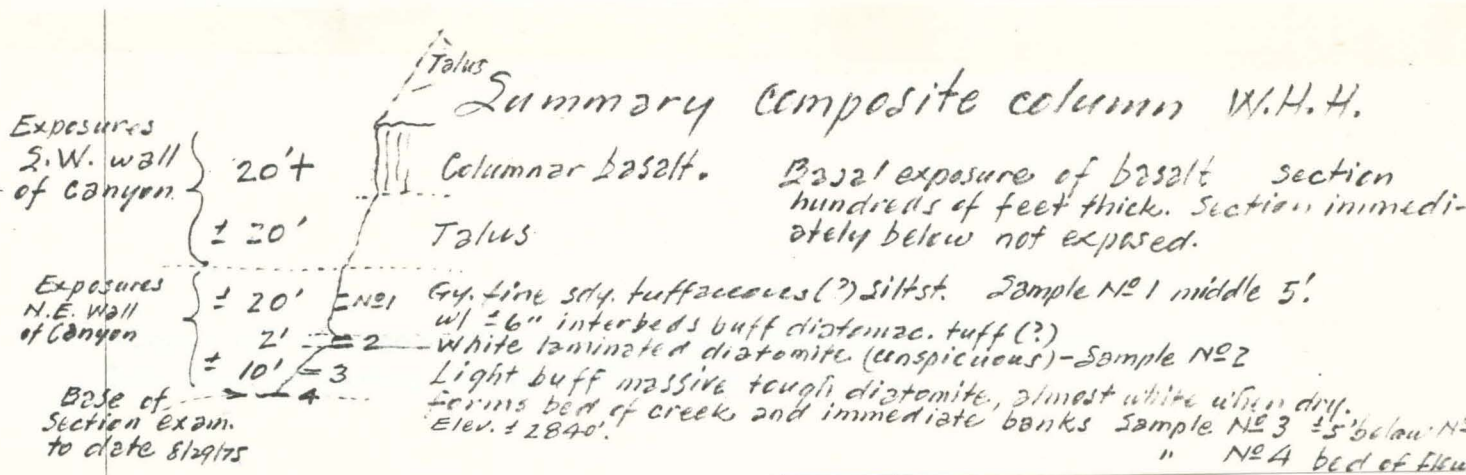
SAMPLE No. 1 Composite  $\pm 5'$  stratig. interval within middle part of  $\pm 20'$  stratig. interval gray siltstone w/  $\pm 4''$  distinct beds light buff, firm diatomaceous fine grained tuff (?).

The  $\pm 20'$  interval is poorly exposed in cut slope of abandoned logging road "B". The  $\pm 20'$  siltstone interval is present on south side of the creek, the top being  $\pm 20'$  vertically below the base of a prominent exposure of columnar basalt. The interval below basalt and top of siltstone is talus covered.

SAMPLE No. 2 From  $\pm 2'$  stratig. interval white, thinly bedded diatomite inter-bed in gray fine-grained siltstone in prominent brush-free, clear area between remnants of logging roads on north side of creek upstream,  $\pm 400'$  E. from Sample No. 1 locality. Diatomite is evidently correlative within  $\pm 3$  ft. white diatomite, on s. side of creek in prominent exposure, which lies at base of  $\pm 15$ -ft exposure of siltstone, the upper part of which evidently correlated with the siltstone at Sample loc. No. 1. Large Melosira in the silty portion.

SAMPLE No. 3 from small cropping N. side of creek. Buff, firm, massive diatomite estimated  $\pm 5'$  below No. 2.

SAMPLE No. 4 from light gray, massive firm diatomite forming bottom of creek S. of No. 3, estimated  $\pm 5'$  below No. 3 elev.  $\pm 2,840'$  taken from U.S.G.S. Rustler Peak Quad. This diatomite member forms creek bed for a distance of at least 450'. Small Melosira by hand lens exam.



## Butte Falls - Prospect Hwy.

## Medco Pond vicinity

- No. 11  
1 mi S. of No.  
5-10 group
- Hwy. cut S.W. of mid-point of Medco Pond  
Sec. 35, T. 33 S., R. 3 E. Elev. 3,070'  
 $\pm$  6-ft stratig. interval exposed,  $\pm$  30'  
above pond surface horizontal beds, white  
diatomaceous, light weight sediment as in  
exposures sampled No. 1 - 10.
- No. 11 A
- Road cut, small exposure  $\pm$  300' E. of Pond  
and S. 65° E.  $\pm$  5/8 mi. from sample No. 11,  
approx. 35' above Pond surface. Soft, weathered  
white diatomaceous clayey sediment.
- No. 11 B
- Cut on logging road  $\pm$  20' higher than No. 11 A  
locality.  $\pm$  150 N. of No. 11 A.  $\pm$  40' X 10'  
stratigraphic interval exposure, practically hori-  
zontal beds, lith. similar to No. 11 A.  
(Additional cropping unsampled deeply weathered  
soft slumped white punky sediment similar to No. 11 A  
is  $\pm$  15' above 11-A
- No. 11 C      See page 3.  
No. 11 D
- No. 12  
 $\frac{1}{4}$  mi S. of No. 11
- Butte Falls - Prospect Hwy. cut.  $\pm$  8' stratig.  
interval exposed, lith. similar to No. 11.  
Sample  $\pm$  8' above hwy. grade and immed.  
below  $\pm$  3' interval talus lying below base of  
extensive basalt. Elev.  $\pm$  3,080' and  $\pm$  30' above  
Medco Pond level.
- No. 13  
0.9 mi. S.W. of No. 12  
 $\pm$  130' N.W. of hwy.  
Section 34, T. 33 S., R. 3E.  
 $\pm$  15' stratig. below base of approx.  
horizontal basalt flows which  
outcrop  $\pm$  100' E. of Buck Cr.  
culvert on highway  
(No. 13-A see page 5)
- (Bottom of Beaver Dam Creek for a distance of at  
least 2,200' beginning  $\pm$  200' W. of Butte Falls -  
Prospect Hwy. is light gray diatomaceous rock generally  
similar to that sampled (No. 1-12) plus hard tuffaceous  
beds. Beds practically horizontal; overlain by  
Holocene or Pleistocene basalt cobble conglomerate  
 $\pm$  3-ft thick, beneath  $\pm$  3' meadow alluvium and  
soil) Sample No. 13 = 4" buff hard tuffaceous (?)  
beds with sparse to abundantly diatomaceous intervals  
at locality No. 13. Highest exposure of pre-basalt  
sediments in this vicinity.
- No. 14  
 $\pm$  8' strat. below No. 13.
- Light gray to white sectile diatomaceous claystone  
in creek bottom downstream  $\pm$  400' N.W. of No. 13.  
Elev.  $\pm$  2,985'.

## BUCK CREEK DIATOMITE

Road and trail log 7/11/75

Road is referred to as road "A" for identify in WHH locality notes and on accompanying Rustler Peak Quad. Road parallels creek.

Road mileage

- 0.0 Barometric elevation 2,960 ft (close to elevation on Rustler Peak topo sheet.) Intersection of the logging road on the east side of Buck Creek and the Butte Falls - Prospect road mentioned in the paragraph on Location in the State Department of Geology and Mineral Industries report on the Buck Creek Diatomite Deposit by DJW 12/4/53.
- 1.6 Road blocked by 2 fallen fir trees  $\pm$  24" dia.
- 2.0 End of the road which is practically clear to this point except for fallen tree at 1.6 mi. Road pitches down steeply and overgrown w/brush, etc. ahead. Impassable.  
Elev. 2,950 $\pm$  roughly estimated 120' above Buck Creek, which is accessible by dim trails in scattered lilac brush terrange southwesterly. "Diatomite" in creek bed and on westerly bank first observable from about 1/3 way down slope to creek, S. 7° easterly to S. 40° westerly, through a distance of approx. 450' in stream bed and southerly bank. A remnant of narrow logging road, "B" along N. bank  $\pm$  10' above creek bed is mostly overgrown w/brush, willow thickets, small conifers, etc., but affords access and some cut slope exposures of sediments, including diatomite, and an upstream entry to diatomite in creek bed. Sampled composite stratigraphic section available here, Aug. 29, 1975, by W.H.H. (Lower part of section appears accessible downstream in bed of creek but not sampled due to lack of time).  
For notes regarding sampled section see page 4.

Medco Pond area additional samples 9/21/71  
Ridge on east side of Medco Pond.

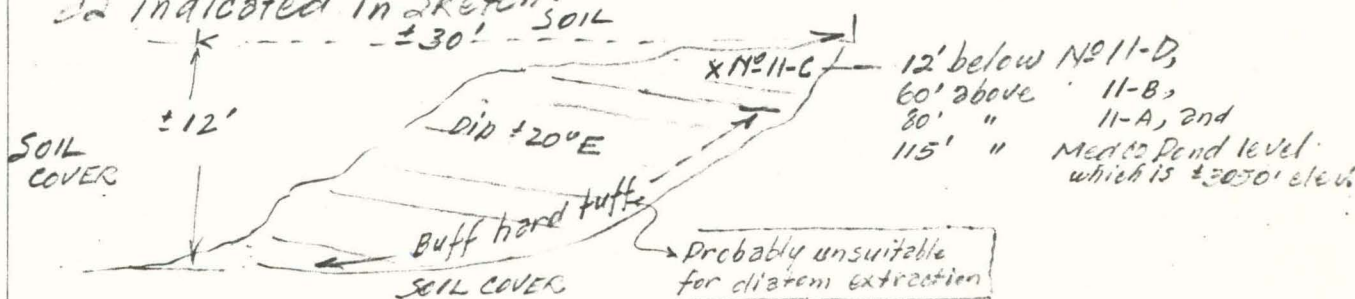
Certainly higher stratigraphically than samples  
No 11-A and 11-B and ~~probably~~ higher than samples  
No 11, 12 and 11-F on west side, assuming no  
structural movement and a period of irregular pre-basalt  
erosion of a normal horizontal-lying diatomaceous  
sedimentary sequence.

Top showings of apparent diatomite = meager  
exposure mixed with red soil approximately  
30' in elevation lower than base of extensive  
blocks of basalt in soil regolith. No sample  
Contact between solid basalt and underlying sedimentary rocks not observed  
Sample No 11-E = meager soil-free exposure buff  
crumbly diatomaceous sediment 25' lower than  
top showings (indicated above).

Sample No 11-D = diatomaceous sediment similar  
to above, from  $\pm 1' \times 10'$  exposure through soil  
mantle 15' lower than 11-E.

Sample No 11-C = white, firm diatomaceous, very  
fine grained zeolitized tuff at top of <sup>road cut in slide</sup> exposure,

as indicated in sketch:





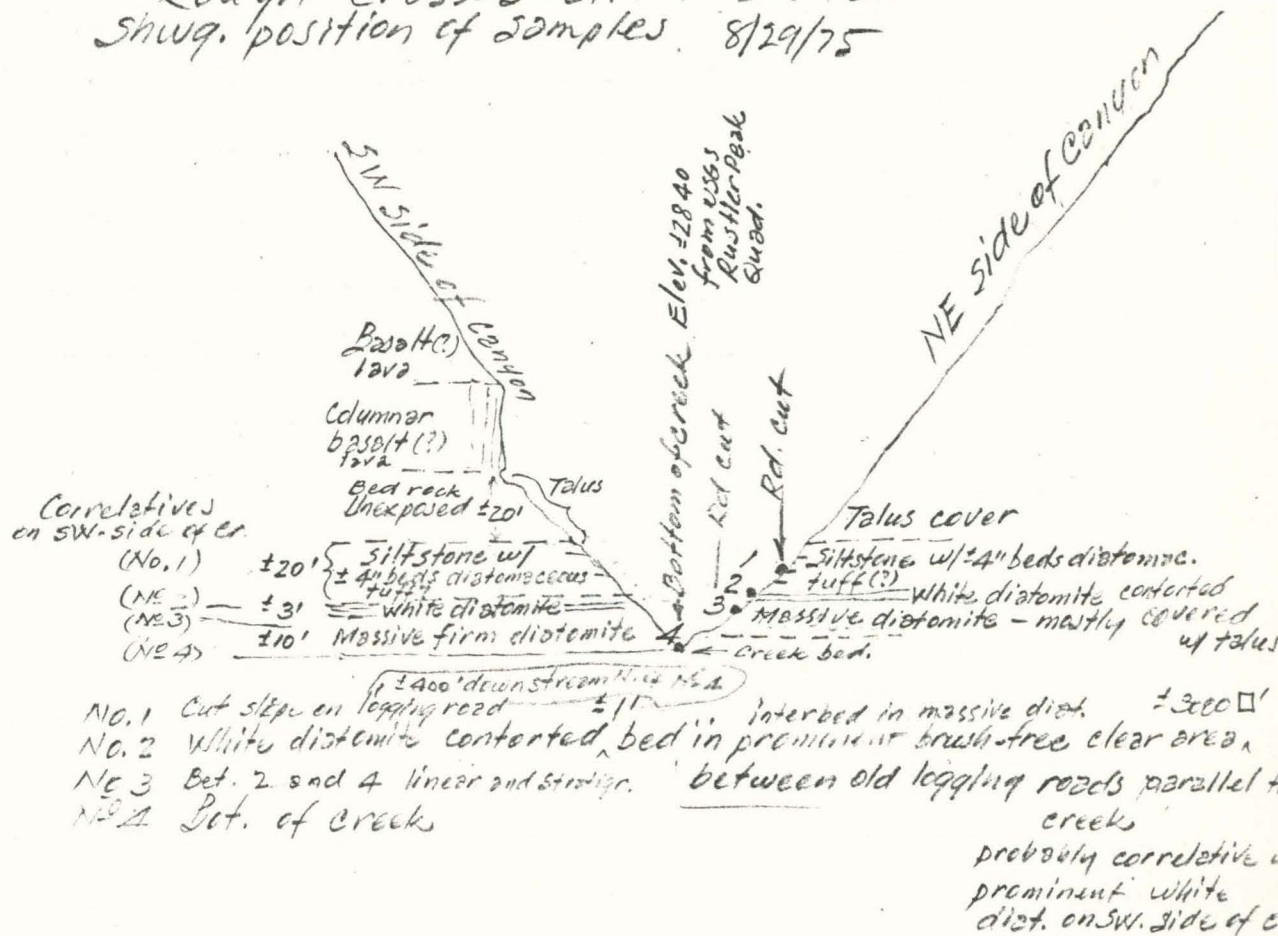
No. 11 F  
8/28/76

Sample from middle of  $\pm$  5-ft. stratigraphic interval white massive diatomite exposed in Crane Creek stream channel at bridge crossing  $\pm$  100' S. of S. end of Medco Pond. Elev. 2' below  $\pm$  3,050 level of Medco Pond and the base of solid cropping of basalt at the pond level. Probably 30' stratigraphically below No. 12.

No. 13 A  
8/28/76

Sample white diatomite cropping in bed of tributary of Beaver Dam Cr., at point approx. 400' N. 80° W. of sample No. 13 (Beaver Dam Cr.) Elev.  $\pm$  2,980',  $\pm$  4' below Meadowland and probably 4' stratigraphically below No. 13. and Possibly  $\pm$  60' stratig. below No. 11-F.

Rough cross-section sketch  
 shwg. position of samples 8/29/75



Rustler Peak Quad. Edition 1955.  
Lutte Falls - Prospect hwy. diatomite  
and diatomaceous rock samples.

Beaver Dam Creek bed exposure.  
Sec. 34, T33-S, R3-E. W.H.H. 6/30/1976.

N<sup>o</sup> 15  
6/30/76

White, light weight, firm, obscurely laminated  
diatomite. Stratigraphically ± 6' below N<sup>o</sup> 14.

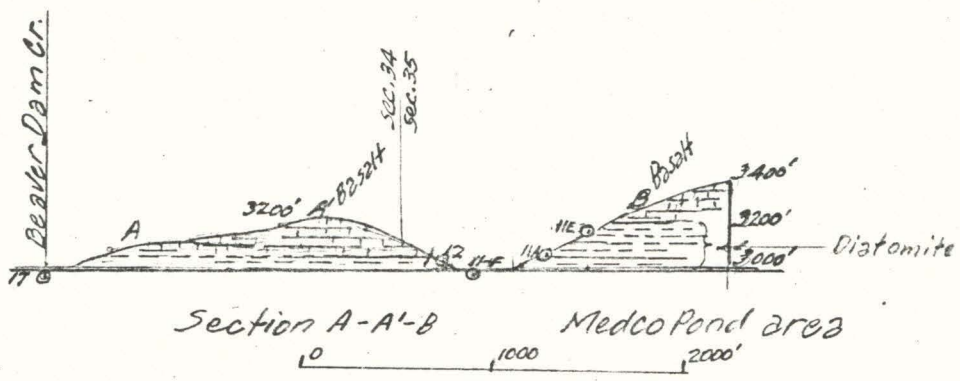
N<sup>o</sup> 16

Gray firm tuffaceous(?) diatomite, w/ <sup>or tuffaceous(?) mudstone</sup>  $\frac{1}{4}$ " irregular  
laminae stacked w/ large Melosira. Stratigraphically  
± 8' below N<sup>o</sup> 15.

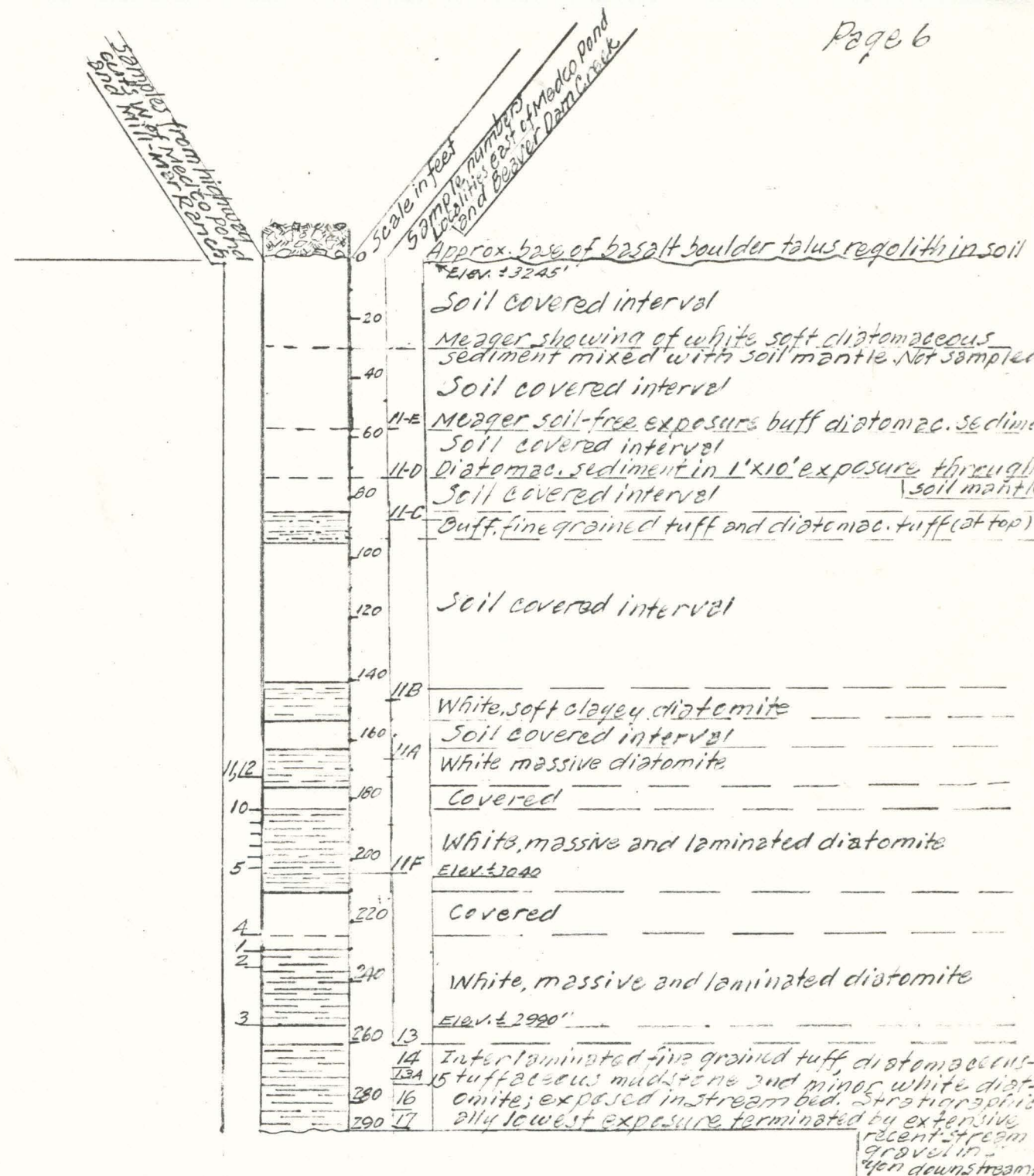
N<sup>o</sup> 17

Final expo-  
sure of the  
diatomaceous  
rocks in the  
section. The  
latter probably  
continues down-  
stream but is  
covered by gravel.

Lithology + Melosira, similar to N<sup>o</sup> 16 w/ ±  
1" interbed of white fine ash.  
± 5' stratig. below N<sup>o</sup> 16.



See remarks, page 3, and those refer-  
ring to the composite stratigraphic column, page 6.



Composite stratigraphic column showing order of diatomaceous rock samples from exposures, as follows: Butte Falls - Prospect highway cuts, Medco Pond vicinity minor road cuts, and Beaver Dam creek bed. Includes all exposures below 140-ft. horizon (There may be additional exposures above it east of the pond and Mill-Mar Ranch areas).

Based on relative elevations of the samples, assuming no structural disturbance of this horizontal-lying beds throughout the area. Samples 11, 12 and 11-F lie immediately below basalt A (labeled on map), below which samples 1-10 and 13-17 also lie. Samples 11-A to 11-E lie below base of basalt B which lies approx. 170' higher than basalt A, but the latter is not necessarily older than basalt B.

### Stratigraphic relationships and geologic age

Buck Creek and Butte Falls - Prospect Highway diatomite samples: Both groups probably represent deposition in a pond or small lake which occupied a depression in a lava flow or imbricated lavas, eventually to be covered by succeeding lava flows. The lavas are mapped within unit Qtb = Pliocene and Pleistocene of "Geologic Map of Oregon West of the 121st Meridian" published in 1961 by the State of Oregon Department of Geology and Mineral Industries. The scale of the map is 1:500,000 (approx. 1"=8 Mi.) thus the small outcrop areas of the Buck Creek diatomite and the highway diatomite and their associated sediments are not shown. The stratigraphic relationship of Buck Creek unit (approximately 25' thick) and the highway unit (composite thickness somewhat more than 90') is not evident by reconnaissance field work.

Assuming that the essentially horizontal bedding prevails without interruption by faulting between the units, the Buck Creek exposure, being about 160' lower in elevation, is then about 160' stratigraphically lower than the lowest of the highway exposures, represented by Samples No. 1 - 3, immediately west of Buck Creek.