CHAPTER VI

DIAMOND DRILLING

WILLIAMS POINT AREA

The Williams Point area is located 2 miles east of the town of Antigonish in Antigonish County (Figure 21). It forms a peninsula which juts out into the southern part of Antigonish Harbour. Geologically, this area comprises part of the central basin of Windsor marine sedimentary rocks in Antigonish County.

There are three definite areas of limestone with a small number of scattered outcrops exposed in this part of Antigonish County (Figure 22). Limestone can be found outcropping on all sides of and in places covering a granodiorite ridge which has a trend almost due north and south in the central part of this peninsula. At one point this ridge stands 250 feet above sea level and is the highest point of land in the area. The main body of limestone is exposed on the west side of the ridge (Figure 24). On the east side of the ridge the granodiorite drops off rather steeply, thus showing only a thin covering of limestone in places. Basal sections of the limestone contain large and small fragments of granodioritic material.

The limestone in this area ranges from light brown to dark grey in color, is hard, dense, massive and belongs to the B Subzone of the Windsor Group. Bedding is very poorly developed with the limestone appearing to dip at a low angle away from the granodiorite ridge on all sides. Various sections of the limestone are fossiliferous, while in other areas there is no evidence of fossil remains. Limestone of the latter type was formed mainly from algal material. Fossils observed include gastropods, pelecypods and brachiopods with some bryozoans. Very little argillaceous material is present in the exposed areas. The silica content is mainly due to fragments of granodiorite which were washed into the limestone during deposition. The greatest amount of granodiorite is found near the contact of the limestone with the granodiorite. Galena occurs in small blebs throughout this limestone.

Numerous gypsum sink holes are found at a lower elevation in the Williams Point area. This gypsum overlies the limestone stratigraphically, but nowhere can the contact between the gypsum and the limestone horizon be observed and measured.

The overburden at the base of the ridge is very thick with the cliff of limestone having a steeply dipping slope, probably due to weathering. The average depth of overburden cut by the holes drilled at the ridge is approximately 50 feet. This overburden consists mainly of reddish brown mud with a few limestone boulders.

Five holes were drilled during this examination in 1967 (Figure 21), all on the southwest side of the central ridge. The limestone in these holes ranges between 25 and 30 feet in thickness. Drilling was also carried out in this area in 1945, these holes shawing an average limestone thickness approximately 40 feet along the western side of the central ridge.

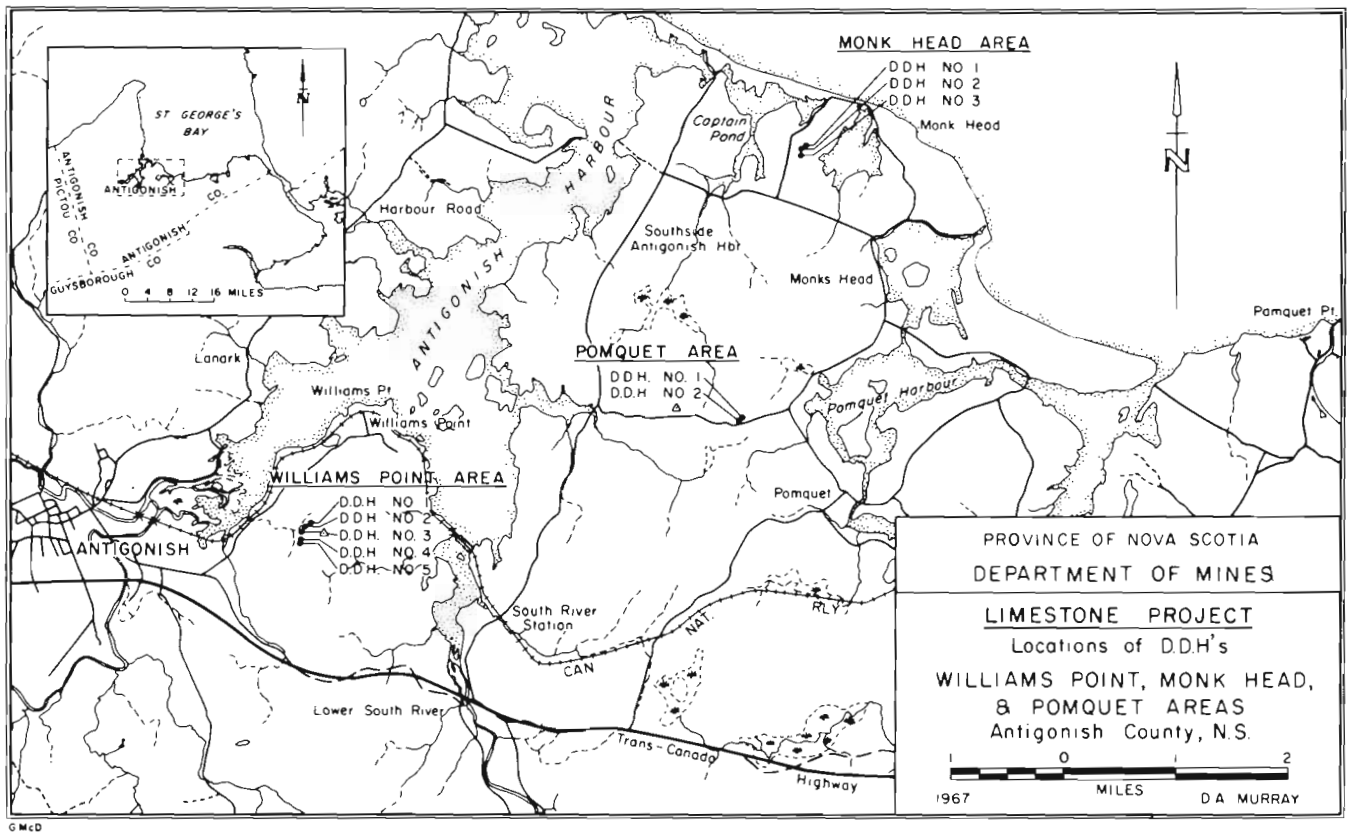
MONK HEAD AREA
D.D.H. NO. 1
D.D.H. NO. 2
D.D.H. NO. 3
Monk Head
Captain Pond
HARBOUR
ANTIGONISH
Harbour Road
Southside Antigonish Hbr
Monks Head
Pomquet Pt.
POMQUET AREA
D.D.H. NO. 1
D.D.H. NO. 2
Pomquet Harbour
Lanark
Williams Pt.
Williams Point
WILLIAMS POINT AREA
D.D.H. NO. 1
D.D.H. NO. 2
D.D.H. NO. 3
D.D.H. NO. 4
D.D.H. NO. 5
Pomquet
ANTIGONISH
South River Station
NAT
RLY
CAN
Lower South River
Trans-Canada Highway
ST GEORGE'S BAY
ANTIGONISH CO.
PICTOU CO.
GUYSBOROUGH CO.
0 4 8 12 16 MILES
N
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES
LIMESTONE PROJECT
Locations of D.D.H's
WILLIAMS POINT, MONK HEAD, & POMQUET AREAS
Antigonish County, N.S.
1 0 1 2
MILES
1967
D.A. MURRAY
GMcD

Figure 21

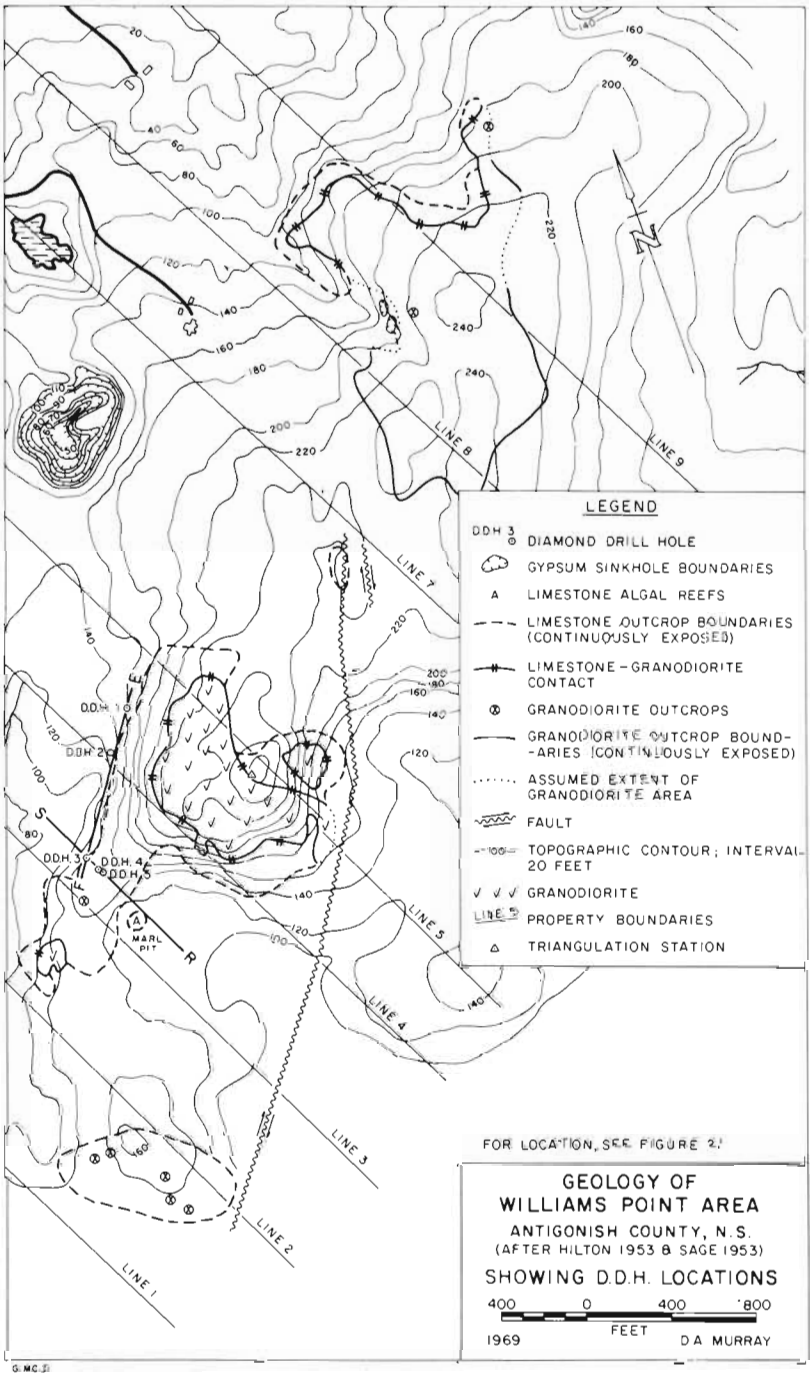
LEGEND
DDH 3 DIAMOND DRILL HOLE
GYPSUM SINKHOLE BOUNDARIES
A LIMESTONE ALGAL REEFS
LIMESTONE OUTCROP BOUNDARIES (CONTINUOUSLY EXPOSED)
LIMESTONE - GRANODIORITE CONTACT
GRANODIORITE OUTCROPS
GRANODIORITE OUTCROP BOUNDARIES (CONTINUOUSLY EXPOSED)
ASSUMED EXTENT OF GRANODIORITE AREA
FAULT
100 TOPOGRAPHIC CONTOUR; INTERVAL 20 FEET
GRANODIORITE
LINE 5 PROPERTY BOUNDARIES
TRIANGULATION STATION
FOR LOCATION, SEE FIGURE 2.
GEOLOGY OF
WILLIAMS POINT AREA
ANTIGONISH COUNTY, N.S.
(AFTER HILTON 1953 & SAGE 1953)
SHOWING D.D.H. LOCATIONS
400 0 400 800
FEET
1969 D A MURRAY
LINE 1
LINE 2
LINE 3
LINE 4
LINE 5
LINE 7
LINE 8
LINE 9
DDH 1
DDH 2
DDH 3
DDH 4
DDH 5
MARL PIT
N

Figure 22

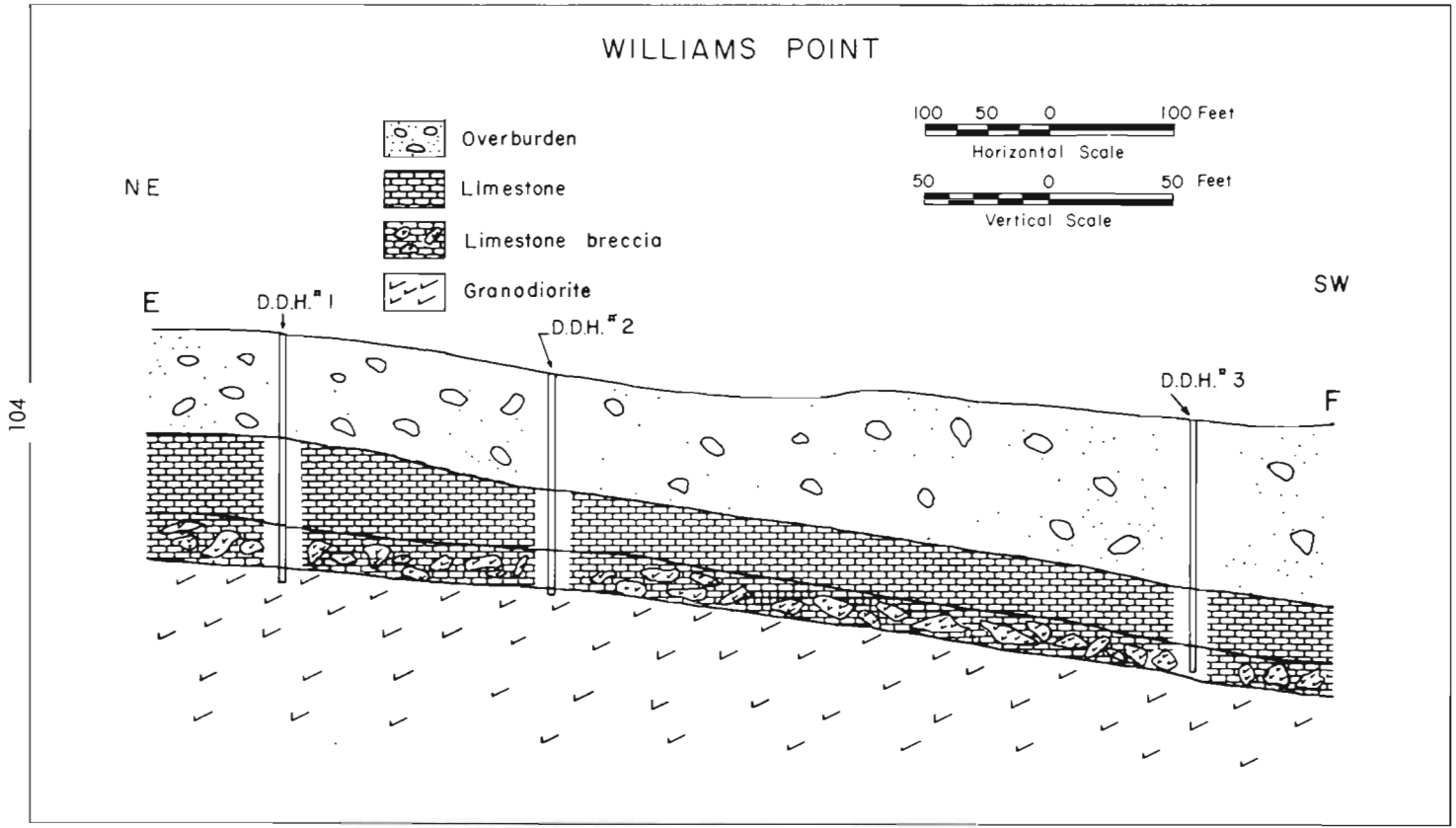
WILLIAMS POINT
Overburden
Limestone
Limestone breccia
Granodiorite
100 50 0 100 Feet
Horizontal Scale
50 0 50 Feet
Vertical Scale
NE
SW
E
F
D.D.H.# 1
D.D.H.# 2
D.D.H.# 3
104

Figure 23

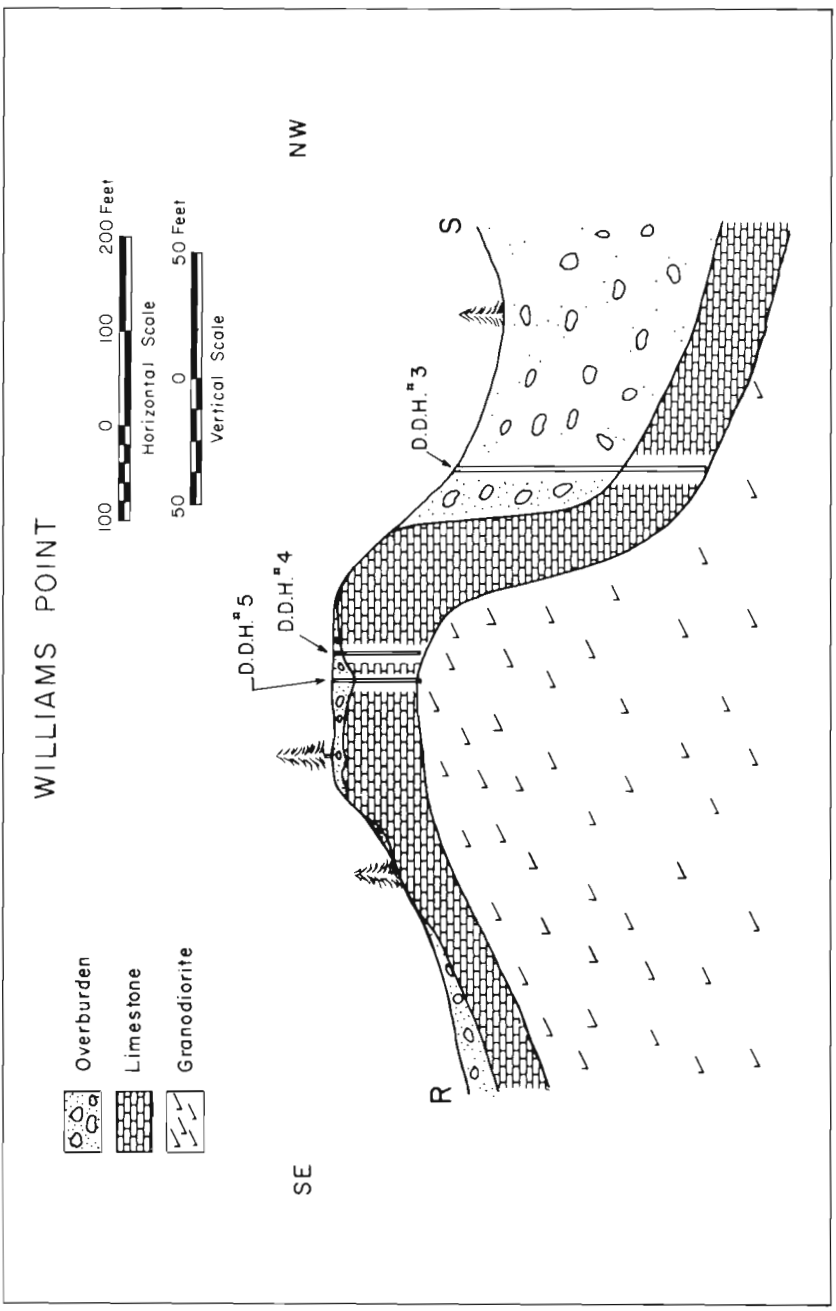
WILLIAMS POINT
Overburden
Limestone
Granodiorite
100 0 100 200 Feet
Horizontal Scale
50 0 50 Feet
Vertical Scale
SE
NW
R
S
D.D.H. #5
D.D.H. #4
D.D.H. #3

Figure 24

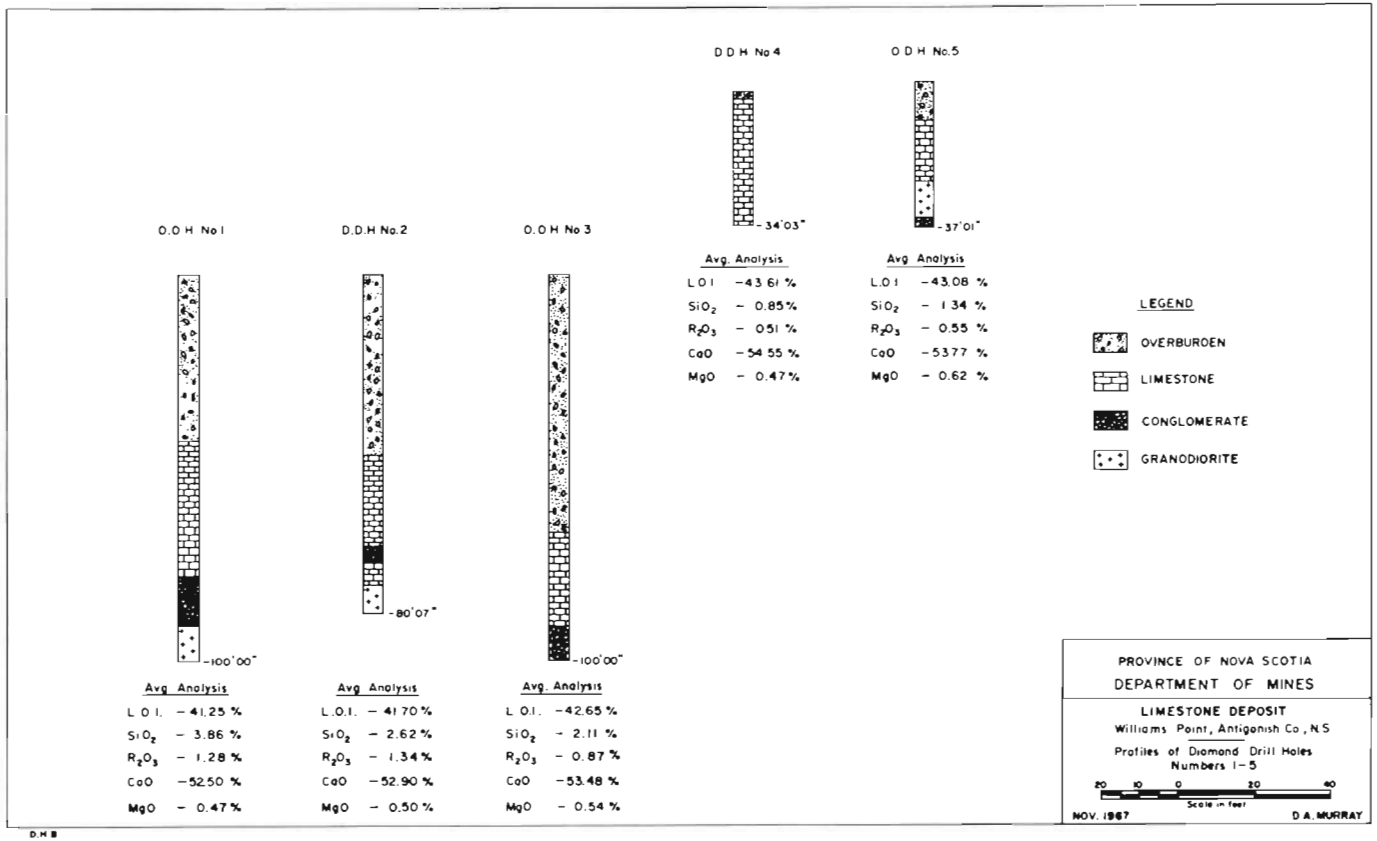
D.D.H No 1
-100'00"
Avg Analysis
L.O.I. - 41.25 %
SiO2 - 3.86 %
R2O3 - 1.28 %
CaO -52.50 %
MgO - 0.47 %
D.D.H No.2
-80'07"
Avg Analysis
L.O.I. - 41.70 %
SiO2 - 2.62 %
R2O3 - 1.34 %
CaO -52.90 %
MgO - 0.50 %
D.D.H No 3
-100'00"
Avg. Analysis
L.O.I. -42.65 %
SiO2 - 2.11 %
R2O3 - 0.87 %
CaO -53.48 %
MgO - 0.54 %
D.D.H No 4
-34'03"
Avg. Analysis
L.O.I -43.61 %
SiO2 - 0.85 %
R2O3 - 0.51 %
CaO -54.55 %
MgO - 0.47 %
D.D.H No.5
-37'01"
Avg Analysis
L.O.I -43.08 %
SiO2 - 1.34 %
R2O3 - 0.55 %
CaO -53.77 %
MgO - 0.62 %
LEGEND
OVERBURDEN
LIMESTONE
CONGLOMERATE
GRANODIORITE
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES
LIMESTONE DEPOSIT
Williams Point, Antigonish Co., N.S.
Profiles of Diamond Drill Holes Numbers 1-5
20 10 0 20 40
Scale in feet
NOV. 1967
D.A. MURRAY
D.H.B

Figure 25

There are two other sections of limestone, one of which is found in the northern part of the area where it forms a very thin layer of material in place around the granodiorite mass (Figure 22). There is a small quarry in this locality showing a 15 foot section of limestone which could be considered as the maximum thickness at this quarry site.

In the southern part of the area there is an isolated patch or outlier of limestone separated from the two large deposits at Williams Point (Figure 22). Here also, the limestone forms only a thin layer over a zone of numerous granodiorite outcrops. The limestone appears to have a greater thickness along the slope of the hill, but this probably would not exceed 20 feet.

The limestone here at Williams Point could easily be quarried along the sides of the ridges with some 25,000 tons available. An additional 25,000 tons could probably be quarried at the base of the ridge, but a large amount of overburden would have to be removed.

The limestone is of good quality but the apparent tonnage is insufficient for any large scale operation.

MONKS HEAD AREA

This area is located 0.3 miles west of Monk Pond which is approximately 3 miles northwest of the village of Pomquet in Antigonish County. The area is two miles east of the mouth of Antigonish Harbour and 0.5 miles inland from the shore of St. Georges Bay (Figure 21).

The outcrop occurs as a mound of dolomitic limestone which stretches for 900 feet in a northeast-southwest direction. The mound reaches a maximum height of 25 feet above the surrounding area with a maximum width across the top of 40 feet (Figure 26).

Three holes were drilled in this deposit; hole #1 on the north end of the mound; hole #2 to the west of the mound and in the central part; and hole #3 on the southern part of the mound.

Hole #1 cut 112'10" of limestone which ranges from high calcium to dolomitic in composition. At an average dip of 36° this 112 foot section represents a true thickness of about 90 feet. It is brownish grey, hard, dense and in some parts oolitic. Galena is found disseminated in minor amounts throughout. Red shale underlies this limestone.

Hole #2 was drilled to a depth of 35 feet and remained in overburden.

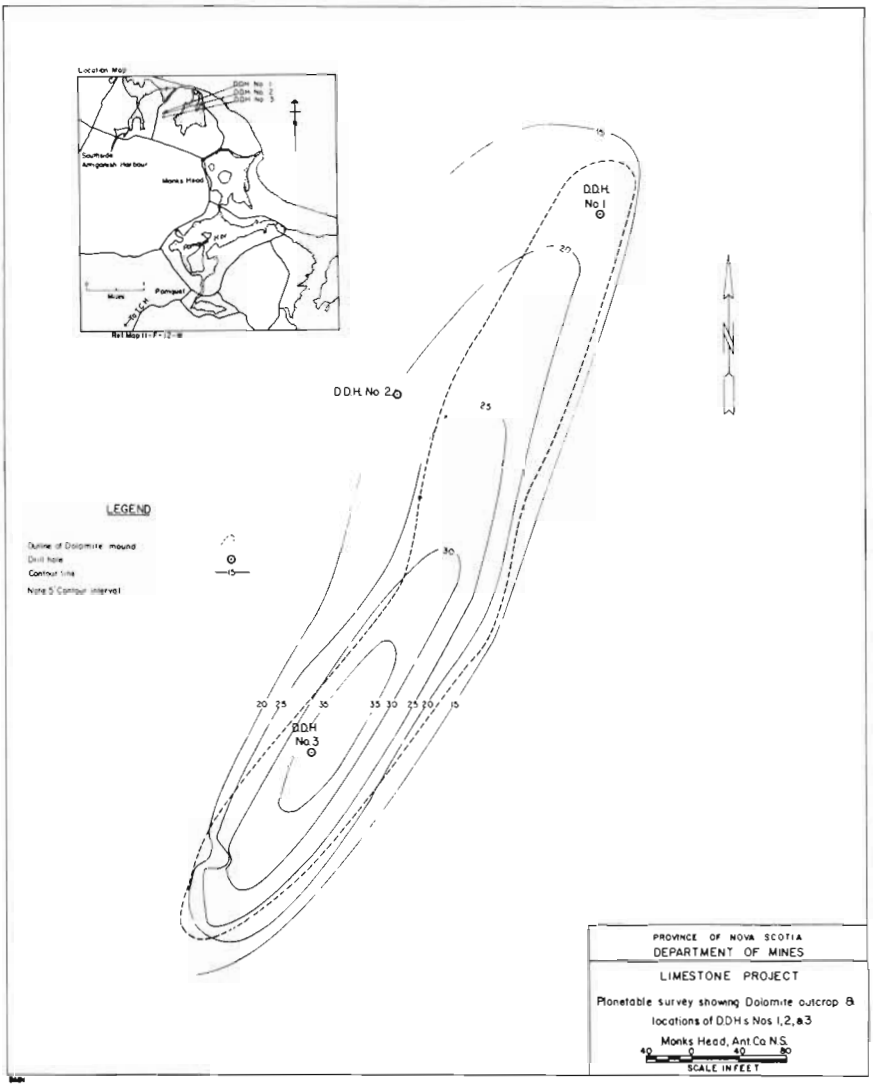
Location Map
D.D.H. No. 1
D.D.H. No. 2
D.D.H. No. 3
Southside
Annapolis Harbour
Monks Head
Pompeys
D.D.H. No 1
D.D.H. No 2
D.D.H. No 3
LEGEND
Outline of Dolomite mound
Drill hole
Contour line
Note 5' Contour interval
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES
LIMESTONE PROJECT
Planetable survey showing Dolomite outcrop & locations of D.D.H.s Nos 1,2, & 3
Monks Head, Ant Co. N.S.
SCALE IN FEET

Figure 26

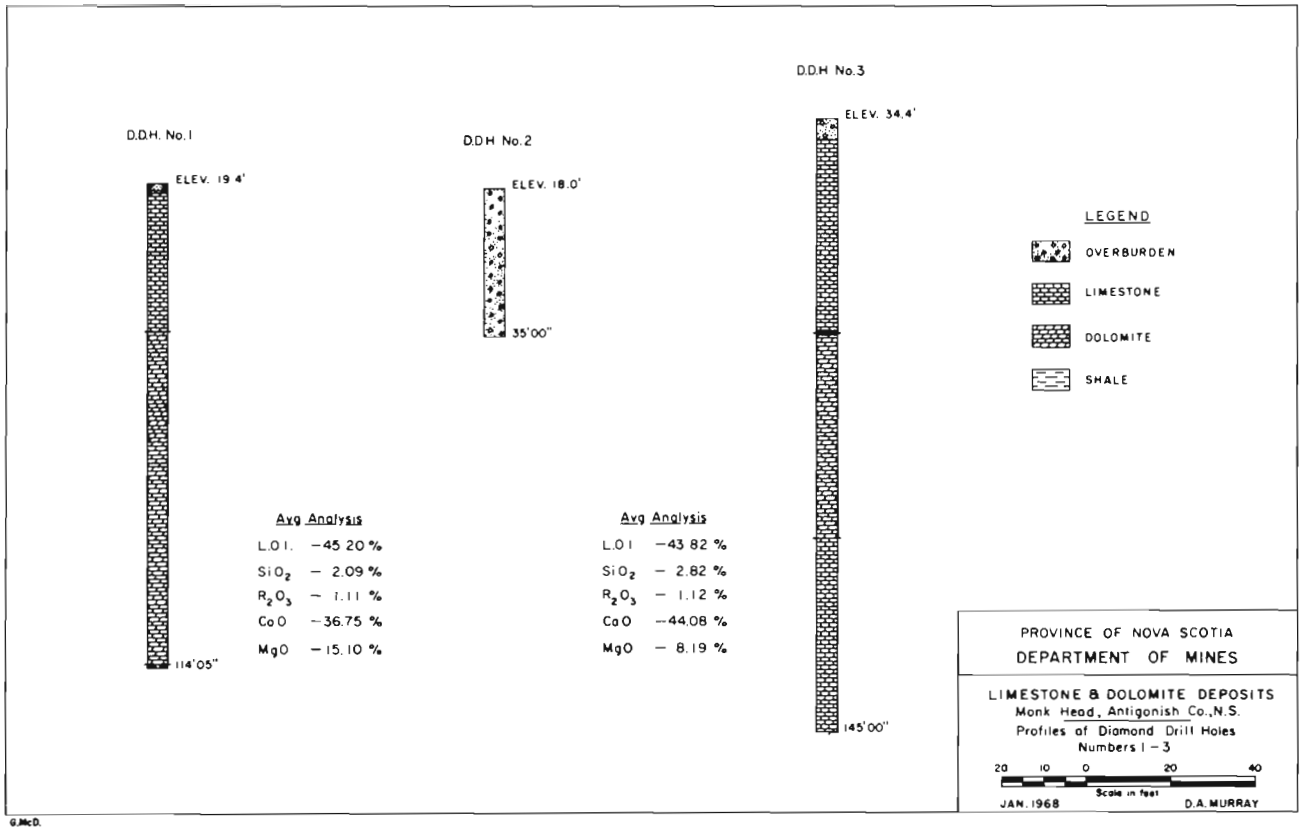
D.D.H No.1
ELEV. 19.4'
114'05"
D.D.H No.2
ELEV. 18.0'
35'00"
D.D.H No.3
ELEV. 34.4'
145'00"
Avg Analysis
L.O.I. −45.20 %
SiO2 − 2.09 %
R2O3 − 1.11 %
CaO −36.75 %
MgO − 15.10 %
Avg Analysis
L.O.I −43.82 %
SiO2 − 2.82 %
R2O3 − 1.12 %
CaO −44.08 %
MgO − 8.19 %
LEGEND
OVERBURDEN
LIMESTONE
DOLOMITE
SHALE
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES
LIMESTONE & DOLOMITE DEPOSITS
Monk Head, Antigonish Co., N.S.
Profiles of Diamond Drill Holes
Numbers 1 – 3
20 10 0 20 40
Scale in feet
JAN. 1968
D.A. MURRAY
G.McD.

Figure 27

Hole #3 was drilled to a depth of 145 feet, 140 feet of which was in limestone. This limestone is hard, granular, medium-grained and grades from dolomitic limestone into a soft, porous dolomite. At 99 feet the dolomite grades into a coarse-grained, dolomitic, slightly fassiliferous, Windsor limestone. The hole continued in limestone to 145 feet but due to poor core recovery the hole was stopped. See Table I for results of drilling during 1967.

Further assessment programs would be required to substantiate the commercial significance of this area.

POMQUET AREA

This area is located approximately one mile northwest of Pomquet in Antigonish County. The deposit which was drilled is found just north of the road running between Pomquet and Southside Antigonish Harbour. The holes were drilled in the vicinity of an old saw mill (Figure 28).

This occurrence of dolomite can be traced for 1,200 feet, paralleling the road. The beds dip very steeply (63° SW) ond form a mound which stands 20 to 30 feet above the surrounding area.

Two holes were drilled in this deposit approximately 200 feet apart. The first hole did not intersect the dolomite horizon. Hole #2 was drilled at an angle of -45° on a bearing of N 33° E to a depth of 94 feet with 68 feet of limestone and dolomite being encountered (Figure 29). The true thickness is 64 feet. If the deposit could be quarried to a depth of 50 feet, a maximum tonnage of 320,000 tons could be obtained.

Although the drilling results to date suggest that the value of the dolomite in the Pomquet area is questionable, it is possible that further exploration may outline limited areas with quality adequate to sustain productian.

LIMEROCK AREA

This area is located just south of the school at Limerock, near West River, Pictou County.

The Windsor here shows up as a small fault block adjoining the Boss Point Formation (Riversdale Group) on the north and the Canso Group on the south (Gillis, 1964).

Four holes were drilled in this area with the idea of autlining the limestone. Of the four holes drilled, only two penetrated limestone (Figure 31).

The informatian obtained from the drill holes and the two outcrops in the area seem to show the limestone as a southeasterly plunging anticline with the limestone thickening to the north.

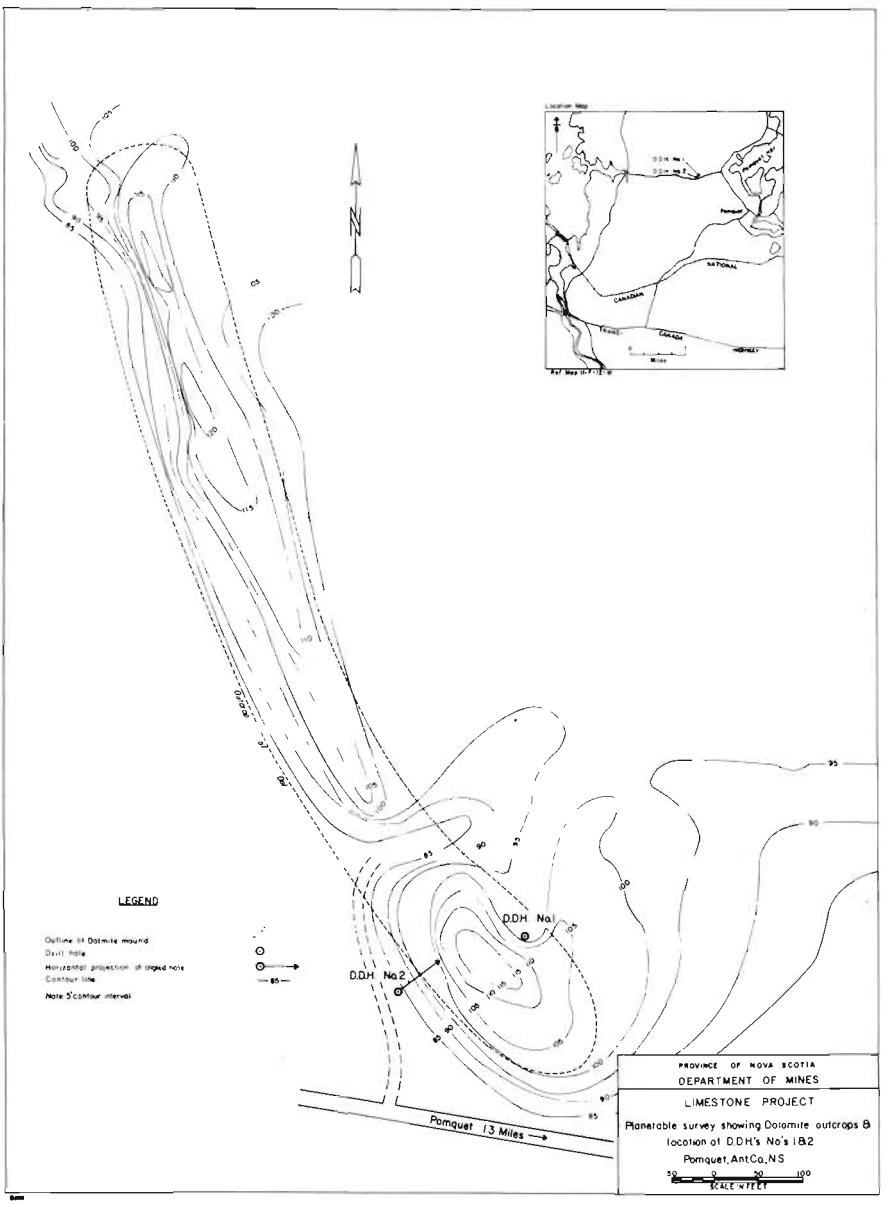
LEGEND
D.D.H No.1
D.D.H No.2
Pomquet 13 Miles
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES
LIMESTONE PROJECT
Planetable survey showing Dolomite outcrops &
location of D.D.H's No's 1&2
Pomquet, Ant.Co., N.S.
SCALE IN FEET

Figure 28

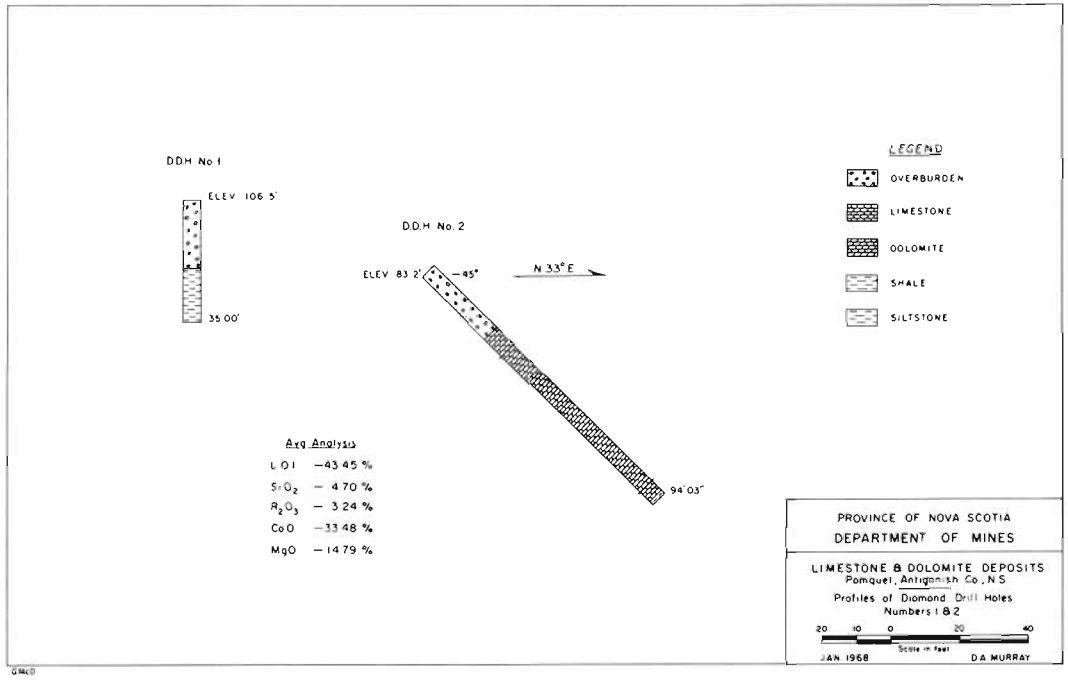
D.D.H No 1
ELEV 106 5'
35.00'
D.D.H No. 2
ELEV 83 2'
-45°
N 33° E
94'03"
LEGEND
OVERBURDEN
LIMESTONE
DOLOMITE
SHALE
SILTSTONE
Avg Analysis
L.O.I -43.45 %
SiO2 - 4.70 %
R2O3 - 3.24 %
CaO -33.48 %
MgO -14.79 %
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES
LIMESTONE & DOLOMITE DEPOSITS
Pomquet, Antigonish Co., N.S.
Profiles of Diamond Drill Holes
Numbers 1 & 2
20 10 0 20 40
Scale in Feet
JAN. 1968
D.A. MURRAY

Figure 29

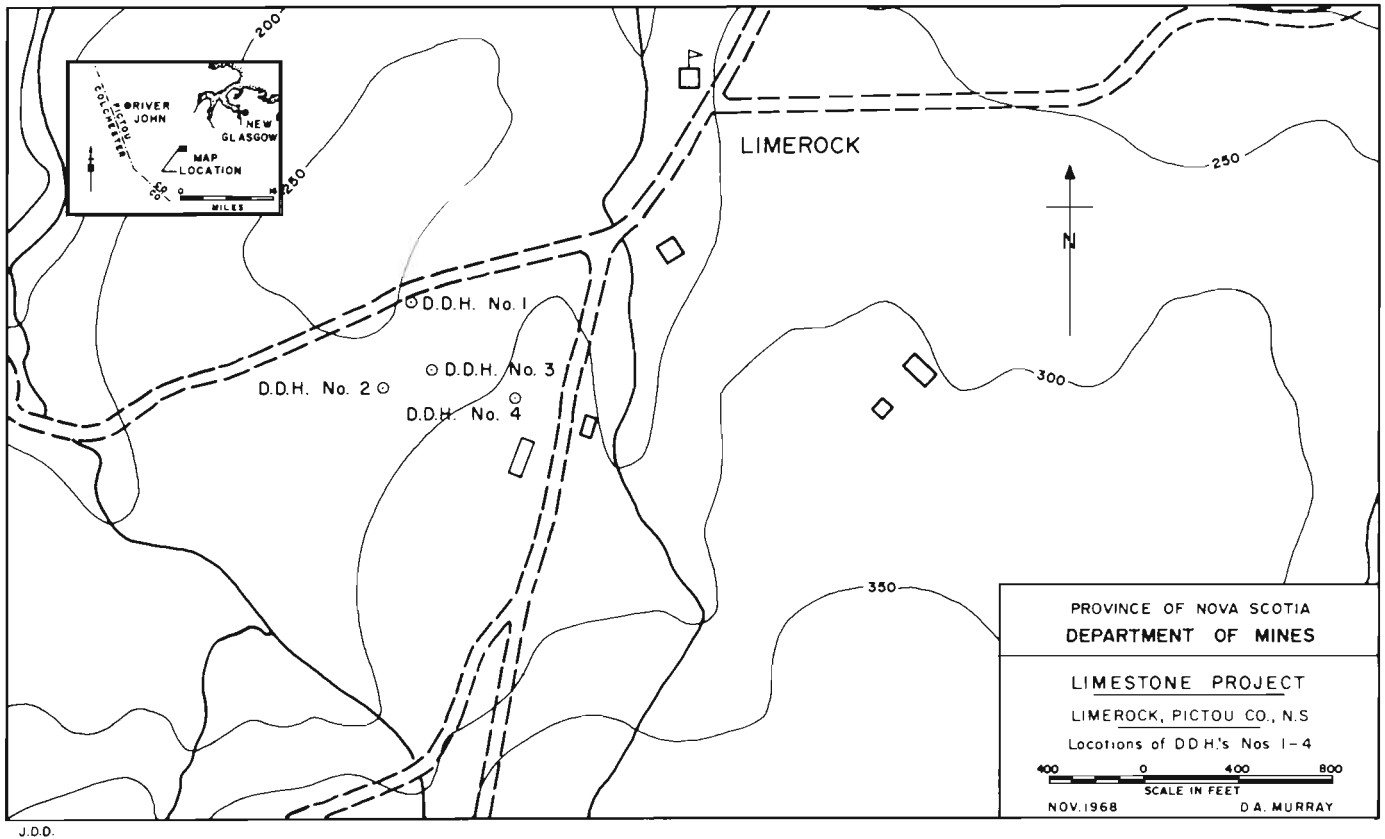
LIMEROCK
D.D.H. No. 1
D.D.H. No. 2
D.D.H. No. 3
D.D.H. No. 4
200
250
300
350
N
RIVER JOHN
NEW GLASGOW
MAP LOCATION
TRURO
TATAMAGOUCHE
MILES
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES
LIMESTONE PROJECT
LIMEROCK, PICTOU CO., N.S
Locations of DD.H.'s Nos 1-4
400 0 400 800
SCALE IN FEET
NOV. 1968
D.A. MURRAY
J.D.D.

Figure 30

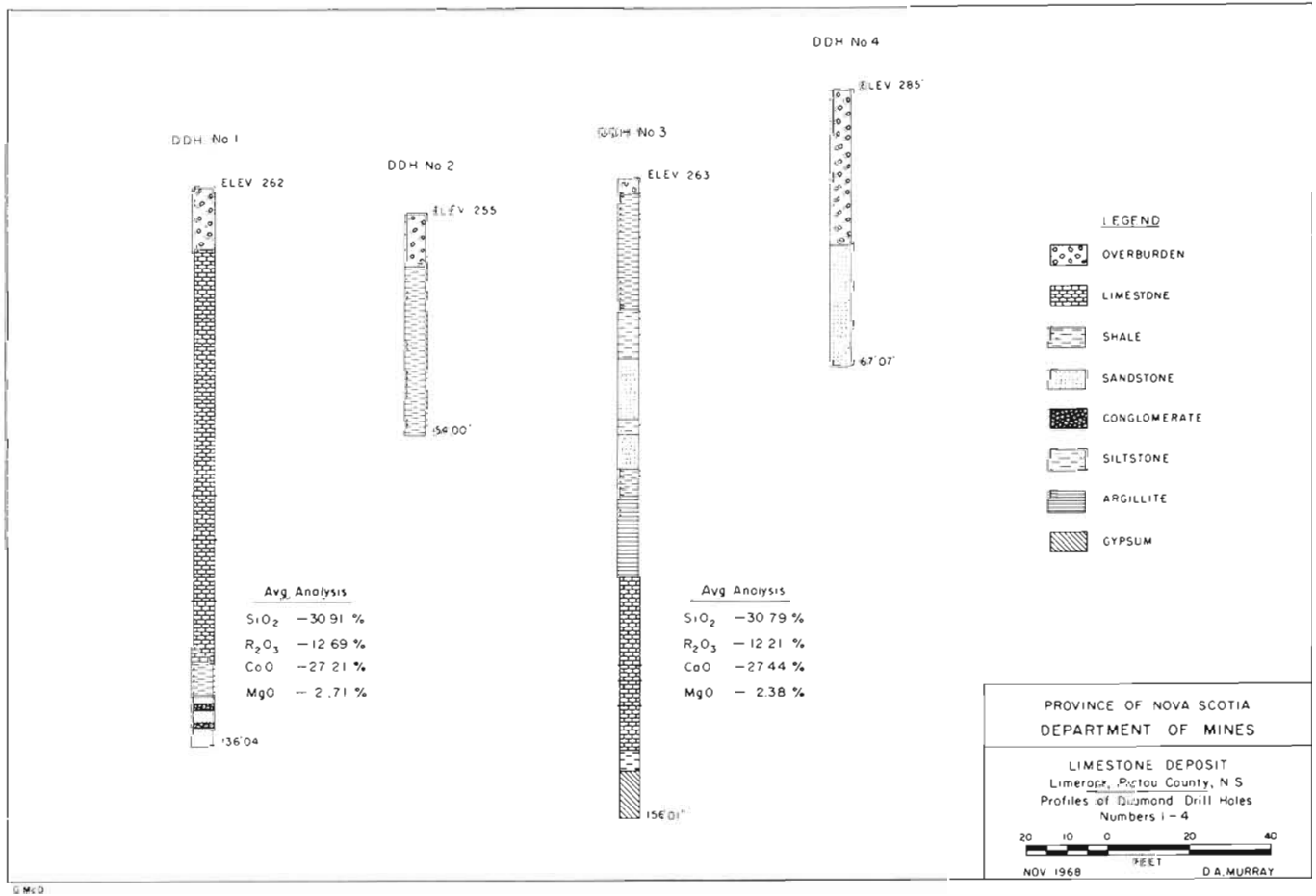
DDH No 1
ELEV 262
136'04
DDH No 2
ELEV 255
154'00"
DDH No 3
ELEV 263
156'01"
DDH No 4
ELEV 285'
67'07"
Avg. Analysis
SiO2 — 30 91 %
R2O3 — 12 69 %
CaO — 27 21 %
MgO — 2 71 %
Avg. Analysis
SiO2 — 30 79 %
R2O3 — 12 21 %
CaO — 27 44 %
MgO — 2 38 %
LEGEND
OVERBURDEN
LIMESTONE
SHALE
SANDSTONE
CONGLOMERATE
SILTSTONE
ARGILLITE
GYPSUM
PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES
LIMESTONE DEPOSIT
Limerock, Pictou County, N S
Profiles of Diamond Drill Holes
Numbers 1 – 4
20 10 0 20 40
FEET
NOV 1968
D.A. MURRAY

Figure 31

The limestone is dark grey, hard, highly siliceous and belongs to the B Subzone of the Windsor Group. The limestone penetrated in Holes 1 and 3 could be subdivided into 4 definite zones by using:

(1) fossil content
(2) presence of oncolites
(3) alternoting thin bands of limestone and dark argillaceous material, and
(4) the abundonce of pink and white calcite.

Although 100 feet of limestone was penetroted in Hole 1, the limestone would appear to be of no economic volue because of the very high silica content which reaches 50% in some samples.