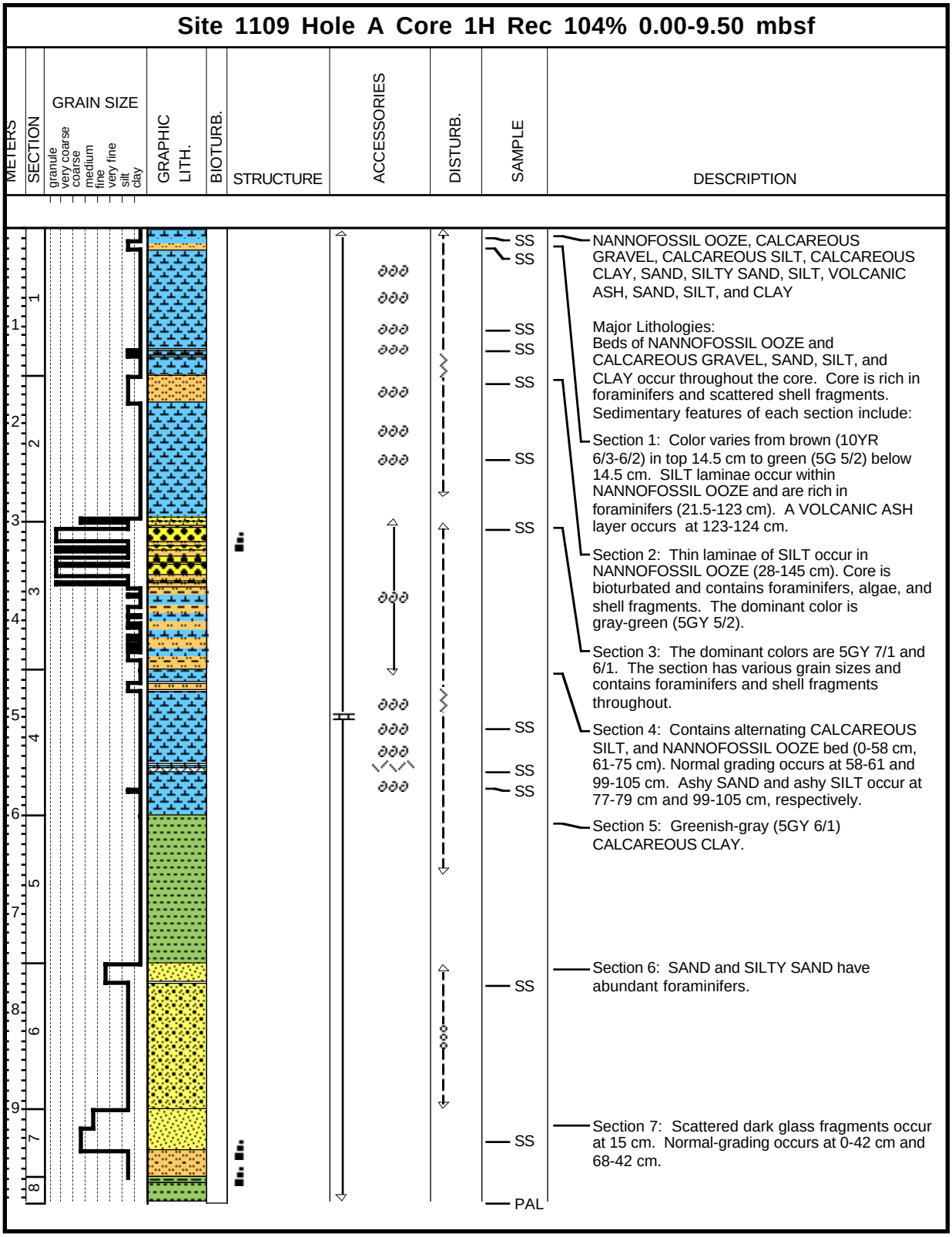
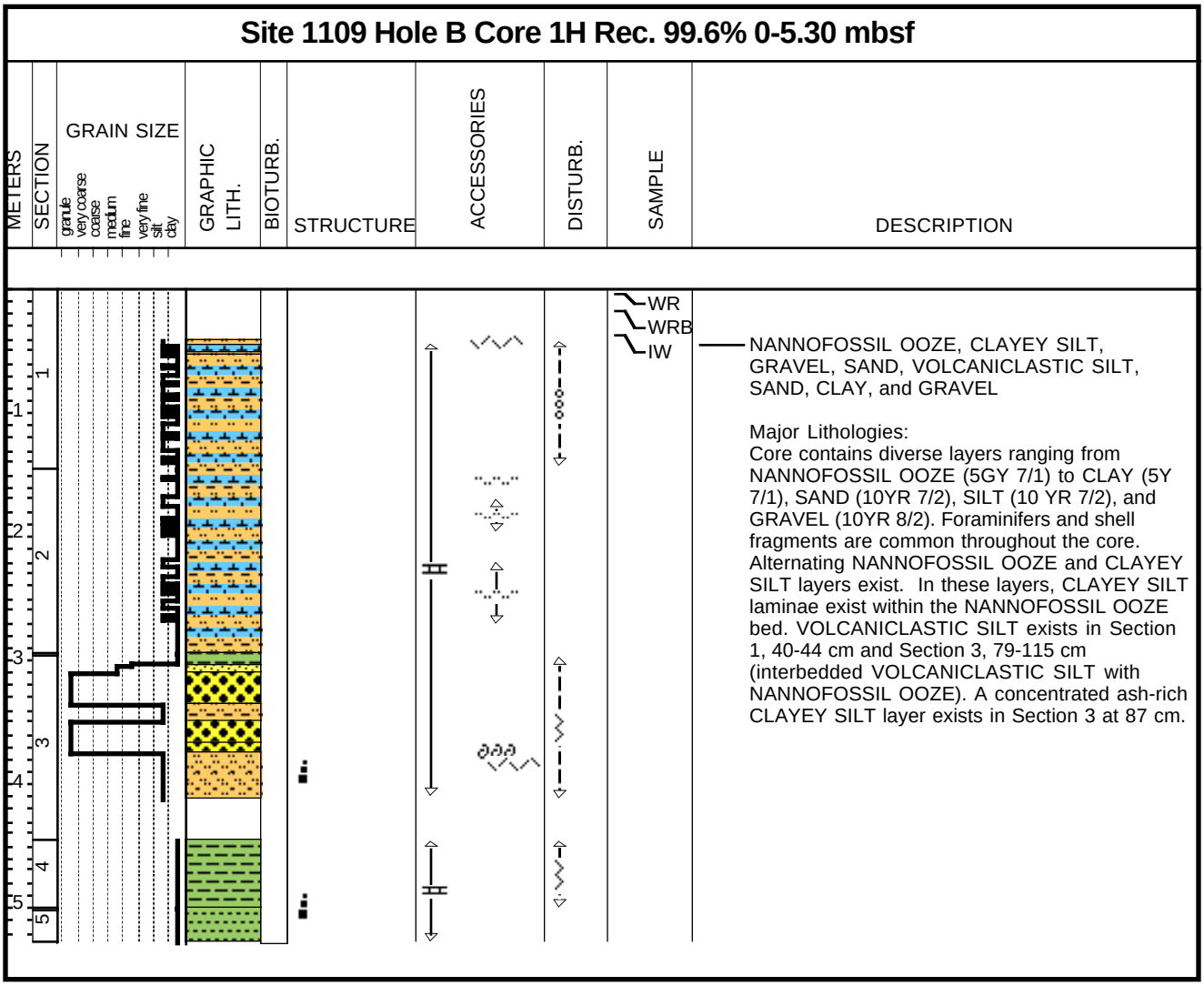
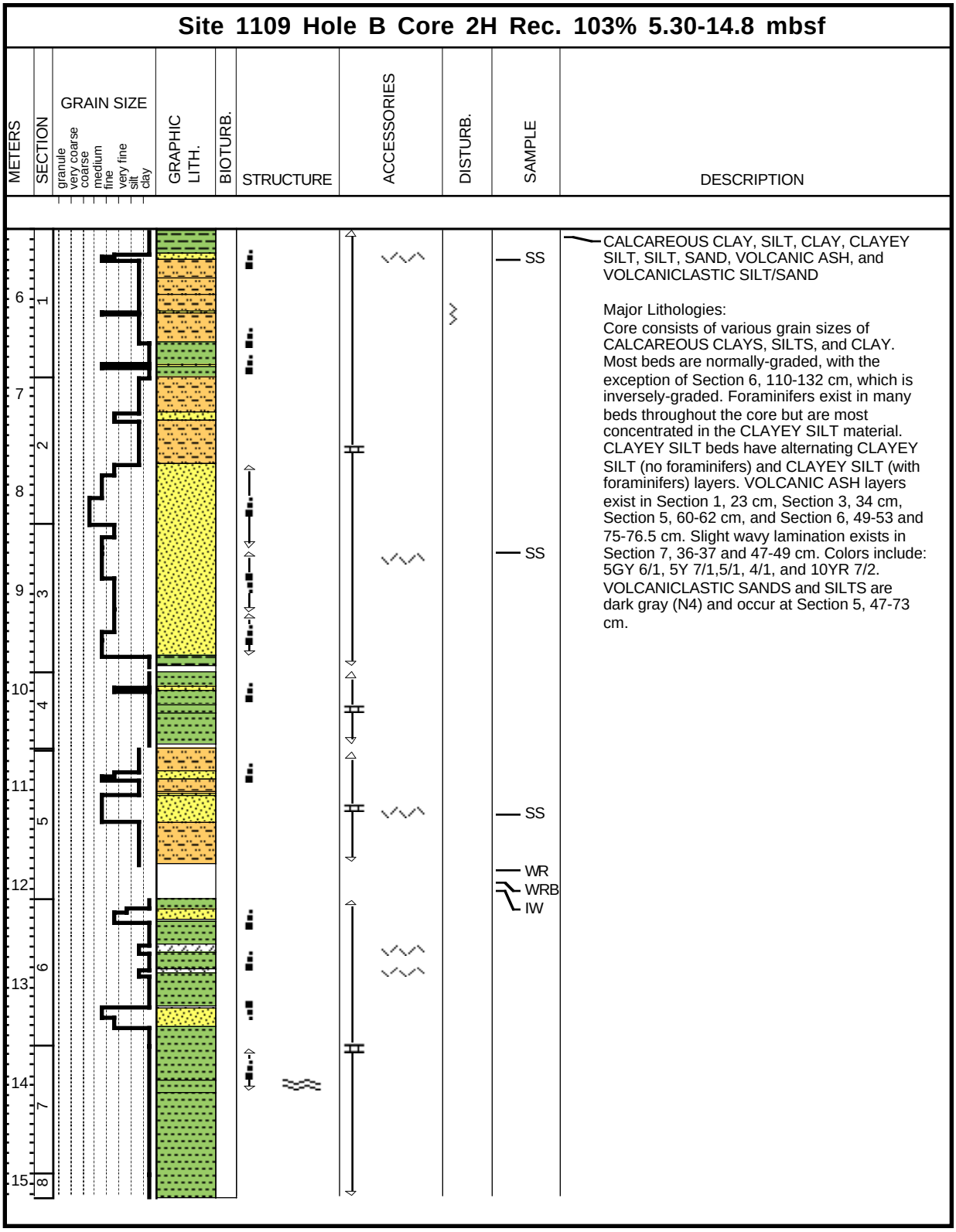
Core Photo


Site 1109 Hole A Core 1H Rec 104% 0.00-9.50 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
SS
PAL
NANNOFOSSIL OOZE, CALCAREOUS GRAVEL, CALCAREOUS SILT, CALCAREOUS CLAY, SAND, SILTY SAND, SILT, VOLCANIC ASH, SAND, SILT, and CLAY
Major Lithologies:
Beds of NANNOFOSSIL OOZE and CALCAREOUS GRAVEL, SAND, SILT, and CLAY occur throughout the core. Core is rich in foraminifers and scattered shell fragments. Sedimentary features of each section include:
Section 1: Color varies from brown (10YR 6/3-6/2) in top 14.5 cm to green (5G 5/2) below 14.5 cm. SILT laminae occur within NANNOFOSSIL OOZE and are rich in foraminifers (21.5-123 cm). A VOLCANIC ASH layer occurs at 123-124 cm.
Section 2: Thin laminae of SILT occur in NANNOFOSSIL OOZE (28-145 cm). Core is bioturbated and contains foraminifers, algae, and shell fragments. The dominant color is gray-green (5GY 5/2).
Section 3: The dominant colors are 5GY 7/1 and 6/1. The section has various grain sizes and contains foraminifers and shell fragments throughout.
Section 4: Contains alternating CALCAREOUS SILT, and NANNOFOSSIL OOZE bed (0-58 cm, 61-75 cm). Normal grading occurs at 58-61 and 99-105 cm. Ashy SAND and ashy SILT occur at 77-79 cm and 99-105 cm, respectively.
Section 5: Greenish-gray (5GY 6/1) CALCAREOUS CLAY.
Section 6: SAND and SILTY SAND have abundant foraminifers.
Section 7: Scattered dark glass fragments occur at 15 cm. Normal-grading occurs at 0-42 cm and 68-42 cm.

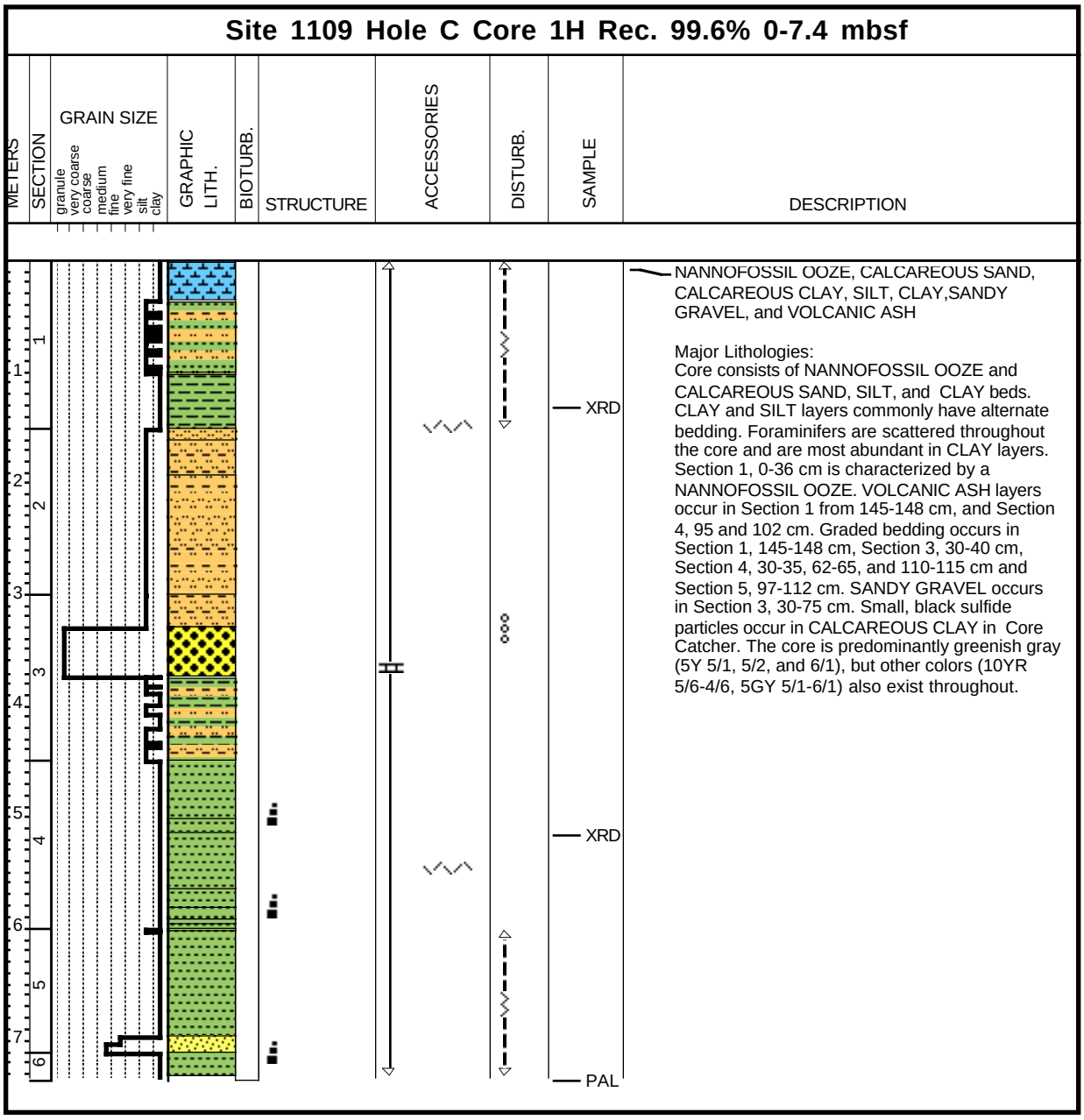
Core Photo


Site 1109 Hole B Core 1H Rec. 99.6% 0-5.30 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
WR
WRB
IW
NANNOFOSSIL OOZE, CLAYEY SILT, GRAVEL, SAND, VOLCANICLASTIC SILT, SAND, CLAY, and GRAVEL
Major Lithologies:
Core contains diverse layers ranging from NANNOFOSSIL OOZE (5GY 7/1) to CLAY (5Y 7/1), SAND (10YR 7/2), SILT (10 YR 7/2), and GRAVEL (10YR 8/2). Foraminifers and shell fragments are common throughout the core. Alternating NANNOFOSSIL OOZE and CLAYEY SILT layers exist. In these layers, CLAYEY SILT laminae exist within the NANNOFOSSIL OOZE bed. VOLCANICLASTIC SILT exists in Section 1, 40-44 cm and Section 3, 79-115 cm (interbedded VOLCANICLASTIC SILT with NANNOFOSSIL OOZE). A concentrated ash-rich CLAYEY SILT layer exists in Section 3 at 87 cm.

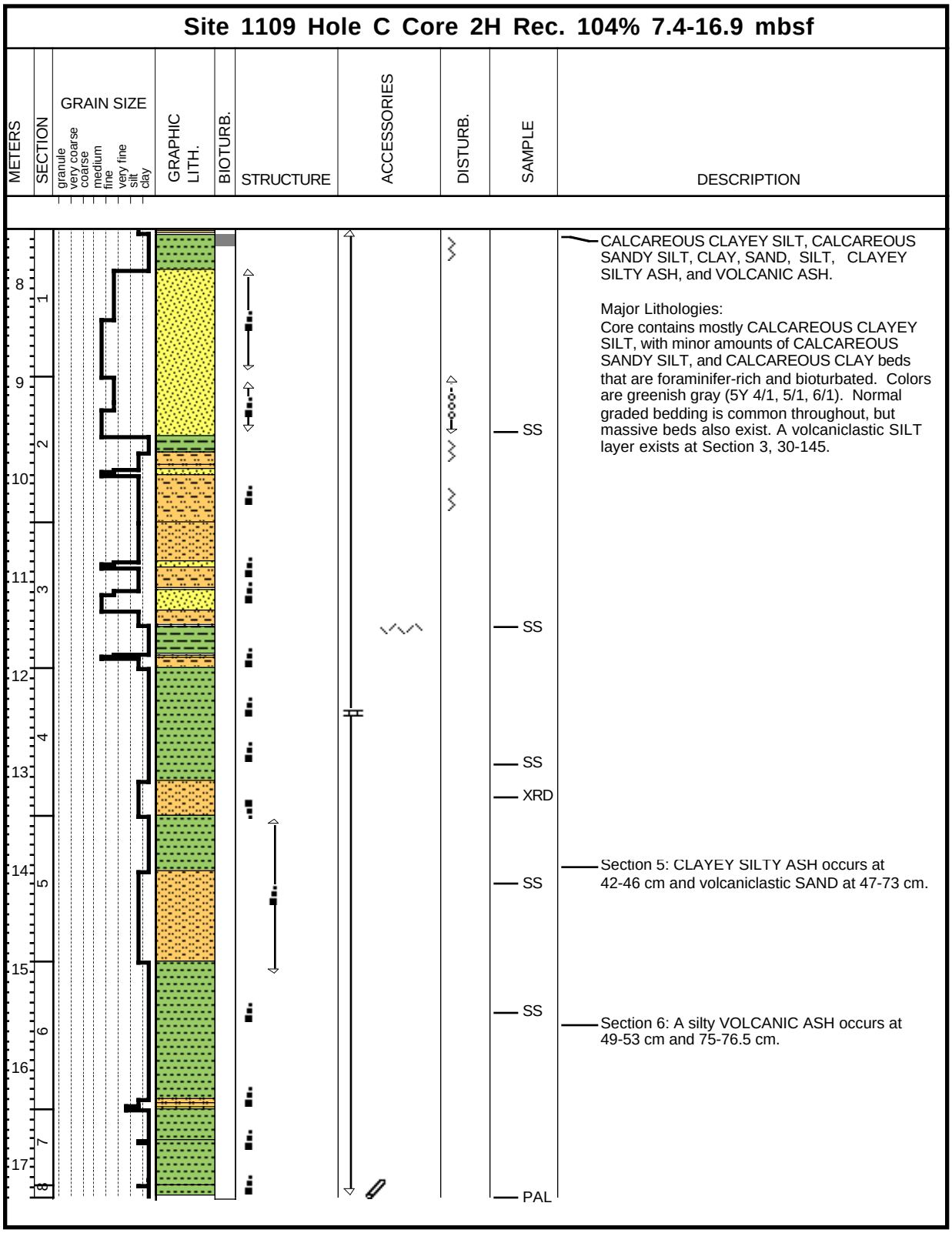
Core Photo


Site 1109 Hole B Core 2H Rec. 103% 5.30-14.8 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
6
7
8
9
10
11
12
13
14
15
1
2
3
4
5
6
7
8
SS
SS
SS
WR
WRB
IW
CALCAREOUS CLAY, SILT, CLAY, CLAYEY SILT, SILT, SAND, VOLCANIC ASH, and VOLCANICLASTIC SILT/SAND
Major Lithologies:
Core consists of various grain sizes of CALCAREOUS CLAYS, SILTS, and CLAY. Most beds are normally-graded, with the exception of Section 6, 110-132 cm, which is inversely-graded. Foraminifers exist in many beds throughout the core but are most concentrated in the CLAYEY SILT material. CLAYEY SILT beds have alternating CLAYEY SILT (no foraminifers) and CLAYEY SILT (with foraminifers) layers. VOLCANIC ASH layers exist in Section 1, 23 cm, Section 3, 34 cm, Section 5, 60-62 cm, and Section 6, 49-53 and 75-76.5 cm. Slight wavy lamination exists in Section 7, 36-37 and 47-49 cm. Colors include: 5GY 6/1, 5Y 7/1,5/1, 4/1, and 10YR 7/2. VOLCANICLASTIC SANDS and SILTS are dark gray (N4) and occur at Section 5, 47-73 cm.

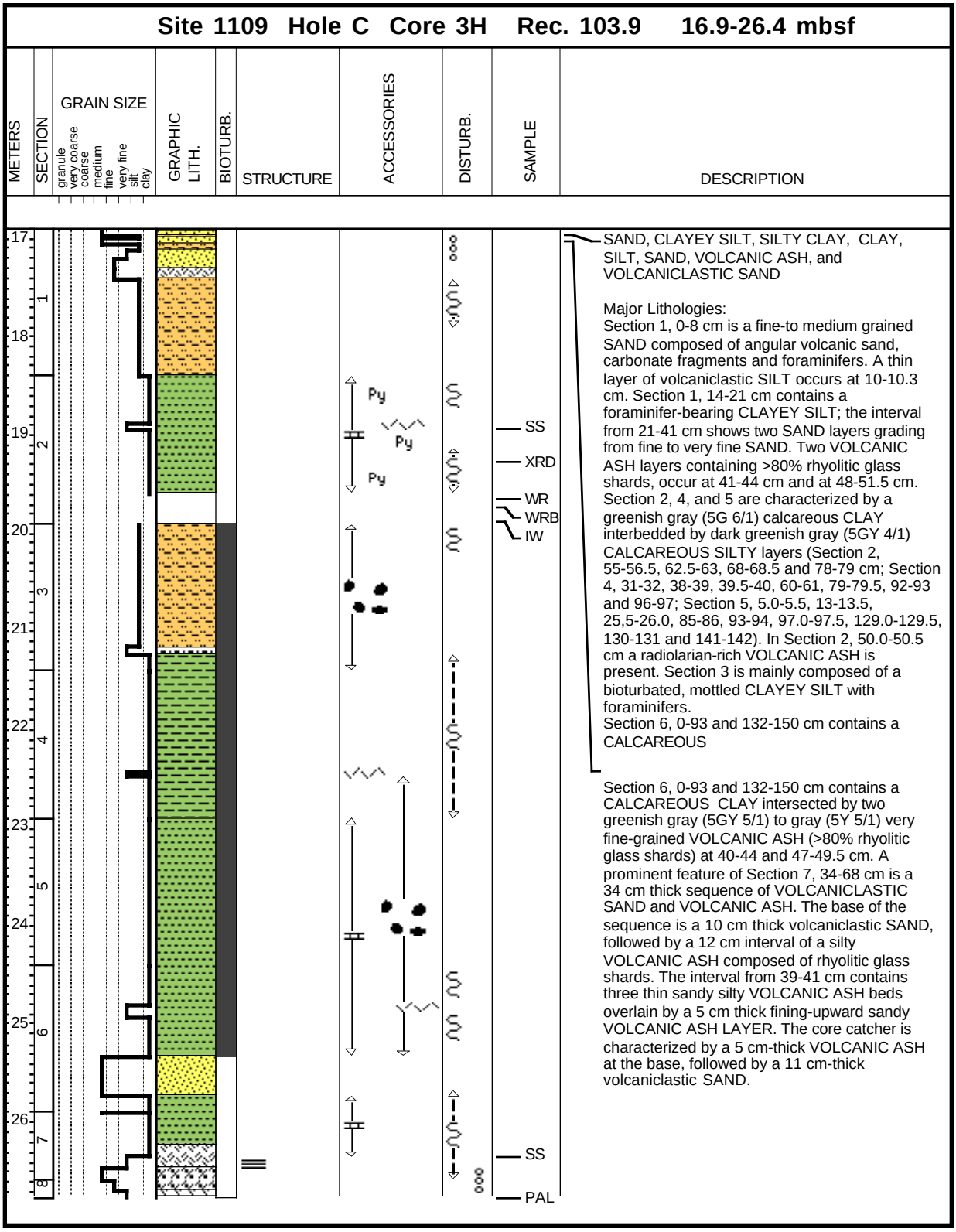
Core Photo


Site 1109 Hole C Core 1H Rec. 99.6% 0-7.4 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
XRD
XRD
PAL
NANNOFOSSIL OOZE, CALCAREOUS SAND, CALCAREOUS CLAY, SILT, CLAY,SANDY GRAVEL, and VOLCANIC ASH
Major Lithologies:
Core consists of NANNOFOSSIL OOZE and CALCAREOUS SAND, SILT, and CLAY beds. CLAY and SILT layers commonly have alternate bedding. Foraminifers are scattered throughout the core and are most abundant in CLAY layers. Section 1, 0-36 cm is characterized by a NANNOFOSSIL OOZE. VOLCANIC ASH layers occur in Section 1 from 145-148 cm, and Section 4, 95 and 102 cm. Graded bedding occurs in Section 1, 145-148 cm, Section 3, 30-40 cm, Section 4, 30-35, 62-65, and 110-115 cm and Section 5, 97-112 cm. SANDY GRAVEL occurs in Section 3, 30-75 cm. Small, black sulfide particles occur in CALCAREOUS CLAY in Core Catcher. The core is predominantly greenish gray (5Y 5/1, 5/2, and 6/1), but other colors (10YR 5/6-4/6, 5GY 5/1-6/1) also exist throughout.

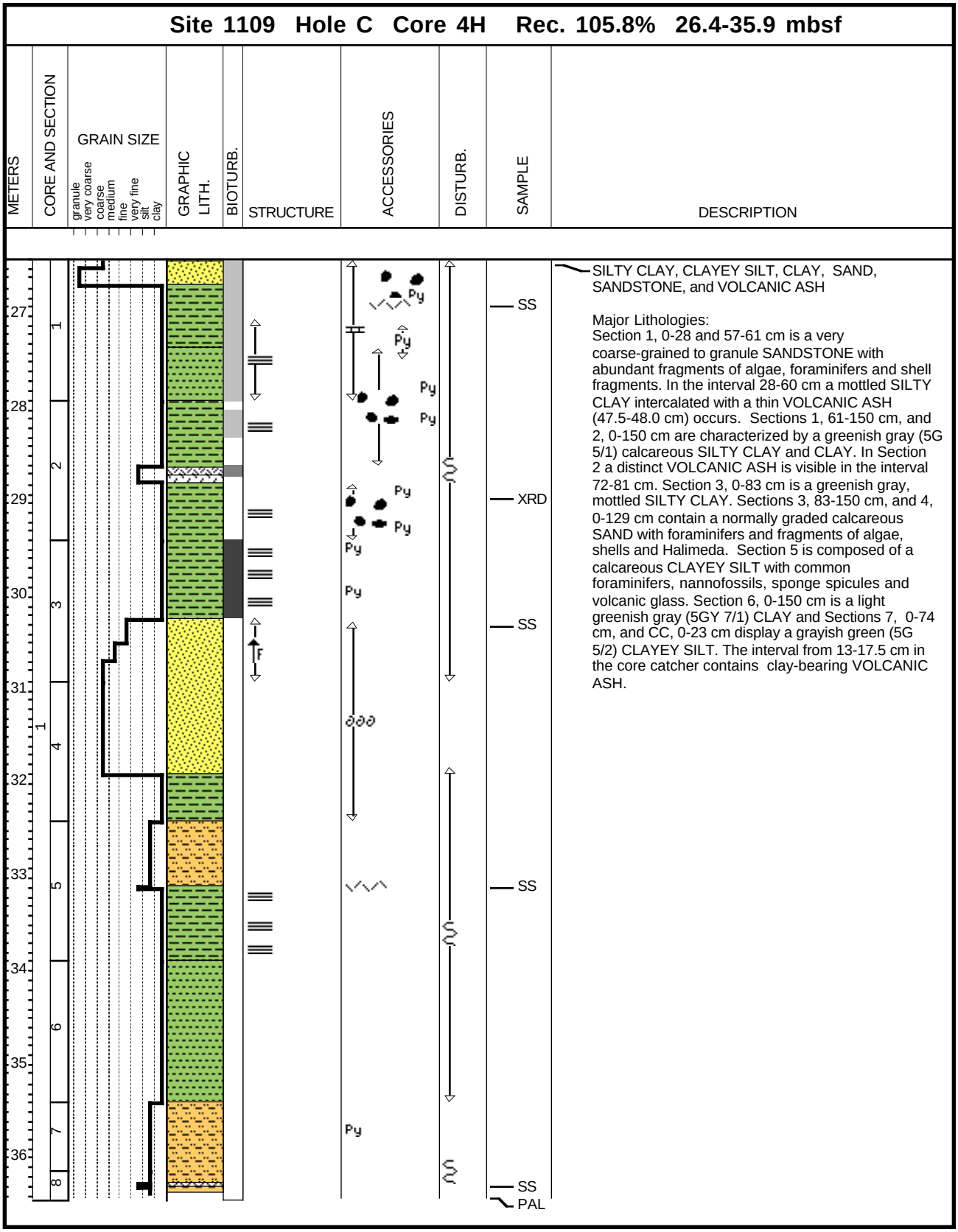
Core Photo


Site 1109 Hole C Core 2H Rec. 104% 7.4-16.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
8
9
10
11
12
13
14
15
16
17
1
2
3
4
5
6
7
CALCAREOUS CLAYEY SILT, CALCAREOUS SANDY SILT, CLAY, SAND, SILT, CLAYEY SILTY ASH, and VOLCANIC ASH.
Major Lithologies:
Core contains mostly CALCAREOUS CLAYEY SILT, with minor amounts of CALCAREOUS SANDY SILT, and CALCAREOUS CLAY beds that are foraminifer-rich and bioturbated. Colors are greenish gray (5Y 4/1, 5/1, 6/1). Normal graded bedding is common throughout, but massive beds also exist. A volcaniclastic SILT layer exists at Section 3, 30-145.
SS
SS
SS
XRD
SS
SS
PAL
Section 5: CLAYEY SILTY ASH occurs at 42-46 cm and volcaniclastic SAND at 47-73 cm.
Section 6: A silty VOLCANIC ASH occurs at 49-53 cm and 75-76.5 cm.

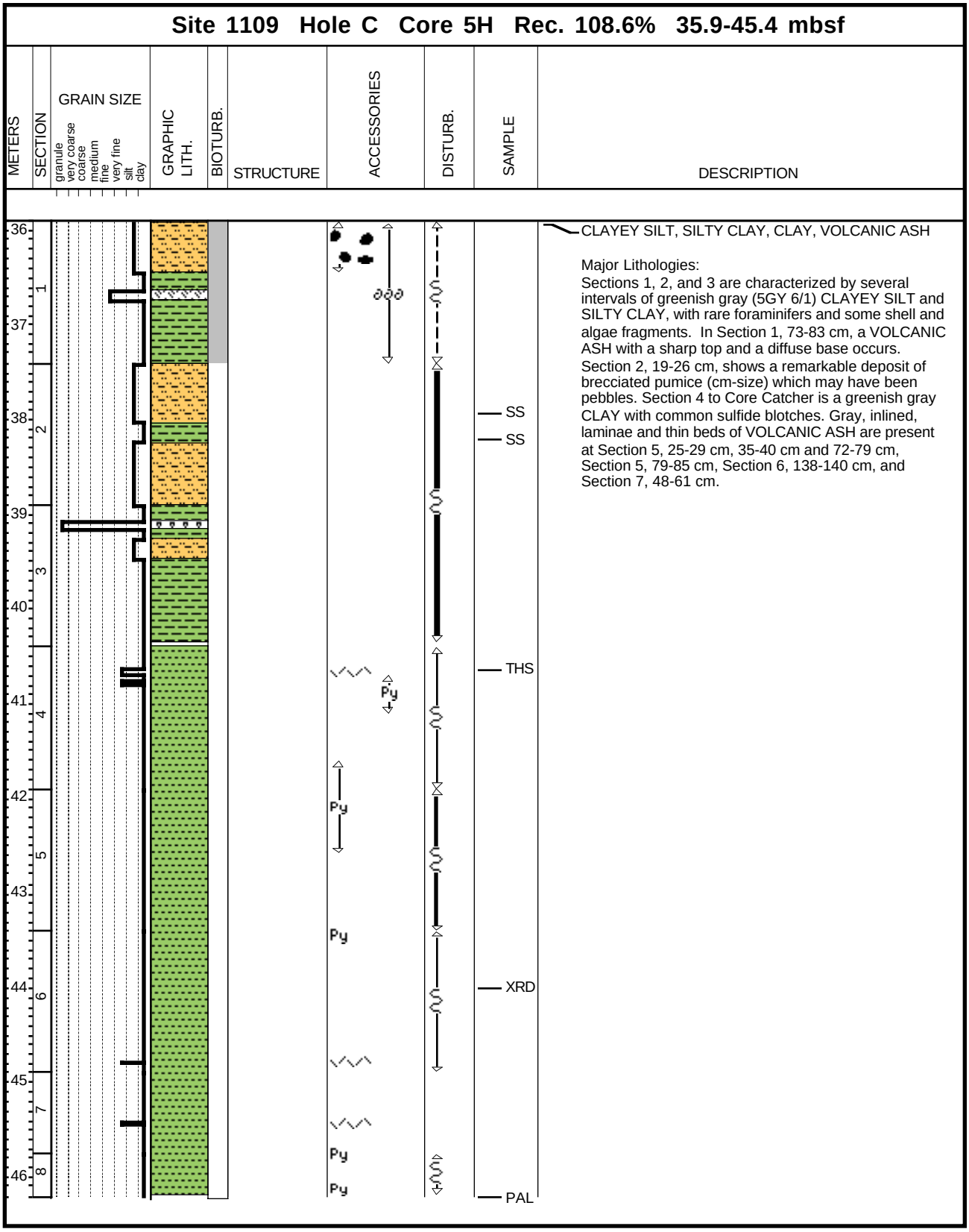
Core Photo


Site 1109 Hole C Core 3H Rec. 103.9 16.9-26.4 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
17
18
19
20
21
22
23
24
25
26
1
2
3
4
5
6
7
8
Py
Py
Py
SS
XRD
WR
WRB
IW
SS
PAL
SAND, CLAYEY SILT, SILTY CLAY, CLAY, SILT, SAND, VOLCANIC ASH, and VOLCANICLASTIC SAND
Major Lithologies:
Section 1, 0-8 cm is a fine-to medium grained SAND composed of angular volcanic sand, carbonate fragments and foraminifers. A thin layer of volcaniclastic SILT occurs at 10-10.3 cm. Section 1, 14-21 cm contains a foraminifer-bearing CLAYEY SILT; the interval from 21-41 cm shows two SAND layers grading from fine to very fine SAND. Two VOLCANIC ASH layers containing >80% rhyolitic glass shards, occur at 41-44 cm and at 48-51.5 cm. Section 2, 4, and 5 are characterized by a greenish gray (5G 6/1) calcareous CLAY interbedded by dark greenish gray (5GY 4/1) CALCAREOUS SILTY layers (Section 2, 55-56.5, 62.5-63, 68-68.5 and 78-79 cm; Section 4, 31-32, 38-39, 39.5-40, 60-61, 79-79.5, 92-93 and 96-97; Section 5, 5.0-5.5, 13-13.5, 25,5-26.0, 85-86, 93-94, 97.0-97.5, 129.0-129.5, 130-131 and 141-142). In Section 2, 50.0-50.5 cm a radiolarian-rich VOLCANIC ASH is present. Section 3 is mainly composed of a bioturbated, mottled CLAYEY SILT with foraminifers.
Section 6, 0-93 and 132-150 cm contains a CALCAREOUS
Section 6, 0-93 and 132-150 cm contains a CALCAREOUS CLAY intersected by two greenish gray (5GY 5/1) to gray (5Y 5/1) very fine-grained VOLCANIC ASH (>80% rhyolitic glass shards) at 40-44 and 47-49.5 cm. A prominent feature of Section 7, 34-68 cm is a 34 cm thick sequence of VOLCANICLASTIC SAND and VOLCANIC ASH. The base of the sequence is a 10 cm thick volcaniclastic SAND, followed by a 12 cm interval of a silty VOLCANIC ASH composed of rhyolitic glass shards. The interval from 39-41 cm contains three thin sandy silty VOLCANIC ASH beds overlain by a 5 cm thick fining-upward sandy VOLCANIC ASH LAYER. The core catcher is characterized by a 5 cm-thick VOLCANIC ASH at the base, followed by a 11 cm-thick volcaniclastic SAND.

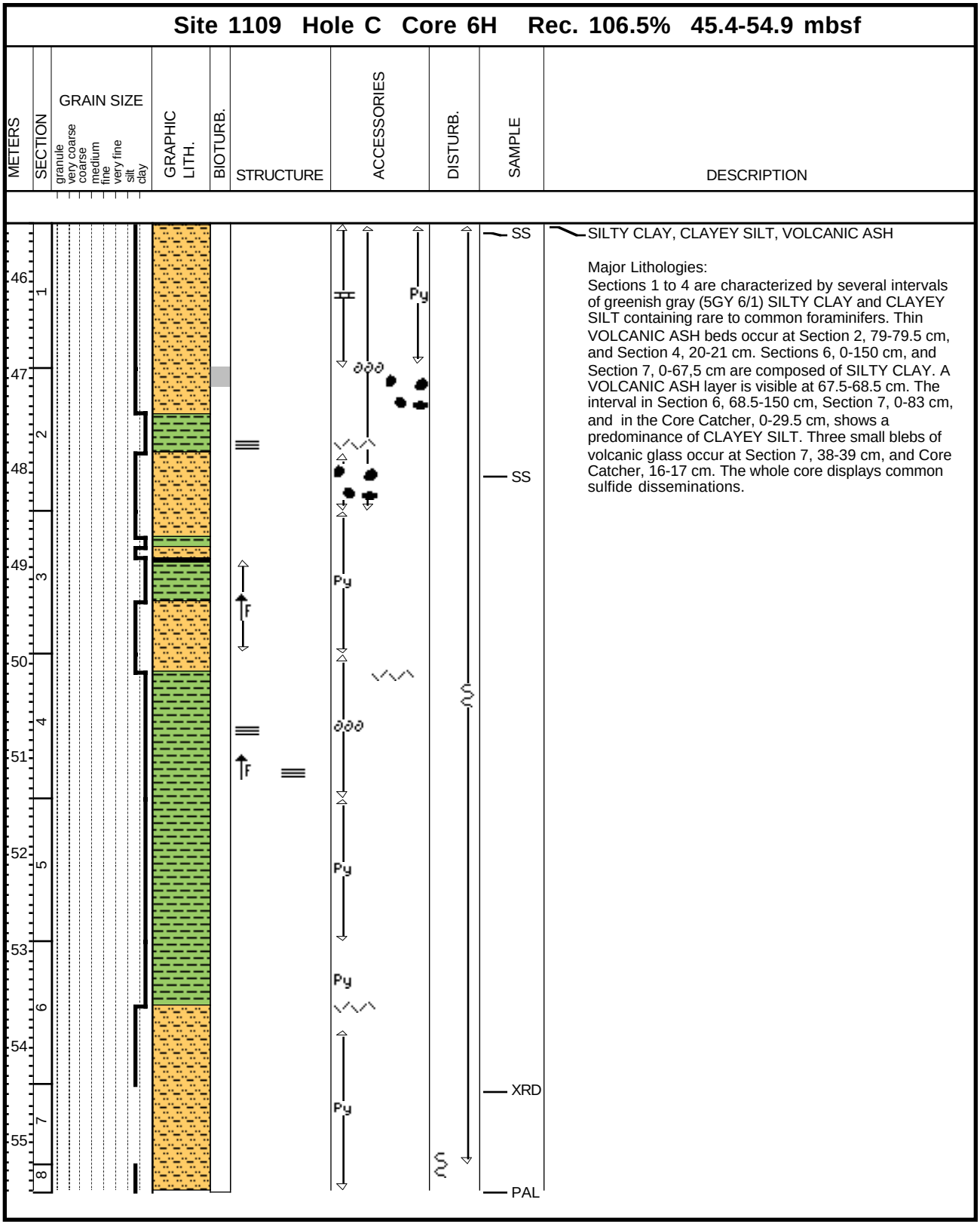
Core Photo


Site 1109 Hole C Core 4H Rec. 105.8% 26.4-35.9 mbsf
METERS
CORE AND SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
27
28
29
30
31
32
33
34
35
36
1
2
3
4
5
6
7
8
Py
F
SS
XRD
SS
SS
SS
PAL
SILTY CLAY, CLAYEY SILT, CLAY, SAND, SANDSTONE, and VOLCANIC ASH
Major Lithologies:
Section 1, 0-28 and 57-61 cm is a very coarse-grained to granule SANDSTONE with abundant fragments of algae, foraminifers and shell fragments. In the interval 28-60 cm a mottled SILTY CLAY intercalated with a thin VOLCANIC ASH (47.5-48.0 cm) occurs. Sections 1, 61-150 cm, and 2, 0-150 cm are characterized by a greenish gray (5G 5/1) calcareous SILTY CLAY and CLAY. In Section 2 a distinct VOLCANIC ASH is visible in the interval 72-81 cm. Section 3, 0-83 cm is a greenish gray, mottled SILTY CLAY. Sections 3, 83-150 cm, and 4, 0-129 cm contain a normally graded calcareous SAND with foraminifers and fragments of algae, shells and Halimeda. Section 5 is composed of a calcareous CLAYEY SILT with common foraminifers, nannofossils, sponge spicules and volcanic glass. Section 6, 0-150 cm is a light greenish gray (5GY 7/1) CLAY and Sections 7, 0-74 cm, and CC, 0-23 cm display a grayish green (5G 5/2) CLAYEY SILT. The interval from 13-17.5 cm in the core catcher contains clay-bearing VOLCANIC ASH.

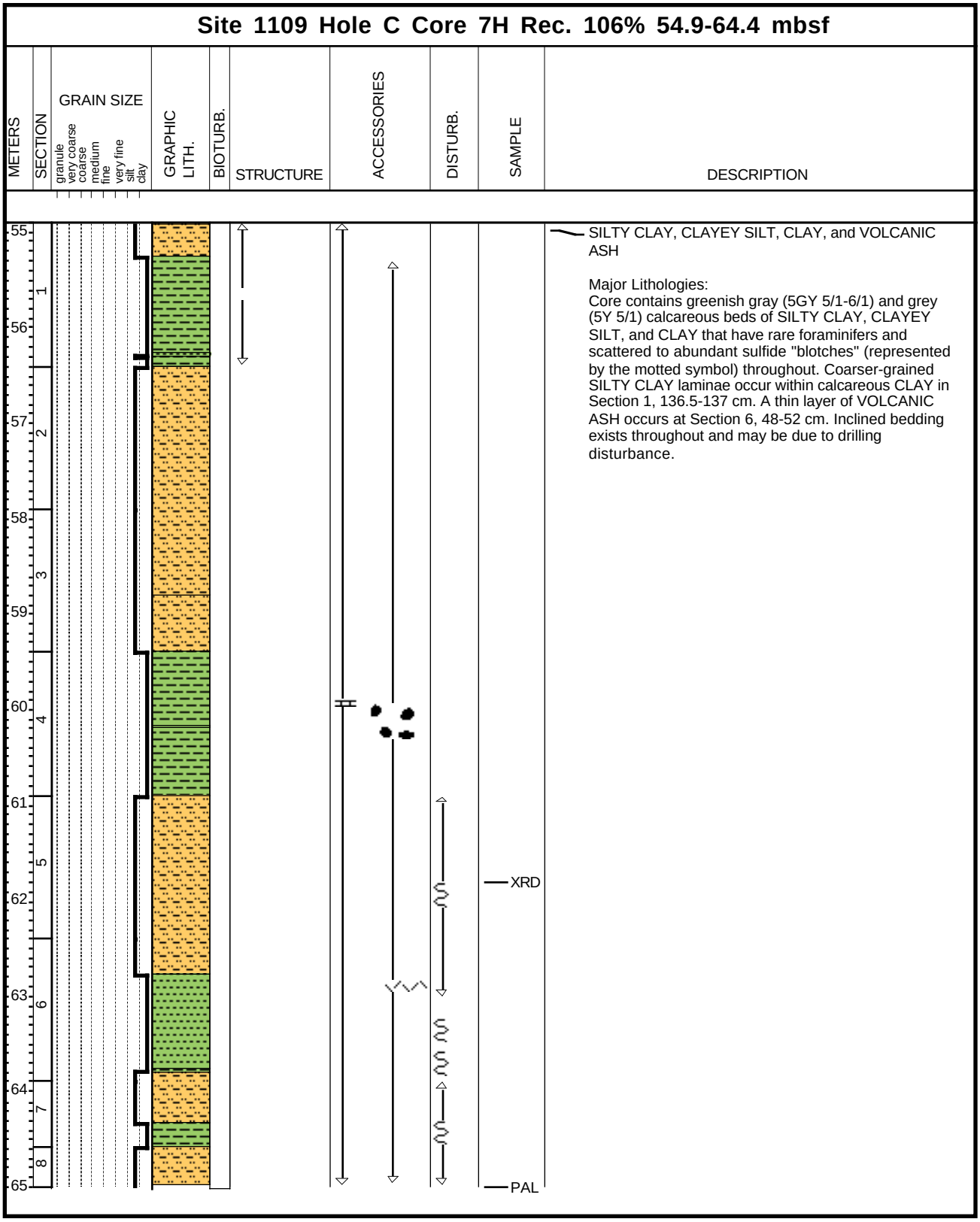
Core Photo


Site 1109 Hole C Core 5H Rec. 108.6% 35.9-45.4 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
36
37
38
39
40
41
42
43
44
45
46
1
2
3
4
5
6
7
8
Py
SS
SS
THS
XRD
PAL
CLAYEY SILT, SILTY CLAY, CLAY, VOLCANIC ASH
Major Lithologies:
Sections 1, 2, and 3 are characterized by several intervals of greenish gray (5GY 6/1) CLAYEY SILT and SILTY CLAY, with rare foraminifers and some shell and algae fragments. In Section 1, 73-83 cm, a VOLCANIC ASH with a sharp top and a diffuse base occurs. Section 2, 19-26 cm, shows a remarkable deposit of brecciated pumice (cm-size) which may have been pebbles. Section 4 to Core Catcher is a greenish gray CLAY with common sulfide blotches. Gray, inlined, laminae and thin beds of VOLCANIC ASH are present at Section 5, 25-29 cm, 35-40 cm and 72-79 cm, Section 5, 79-85 cm, Section 6, 138-140 cm, and Section 7, 48-61 cm.

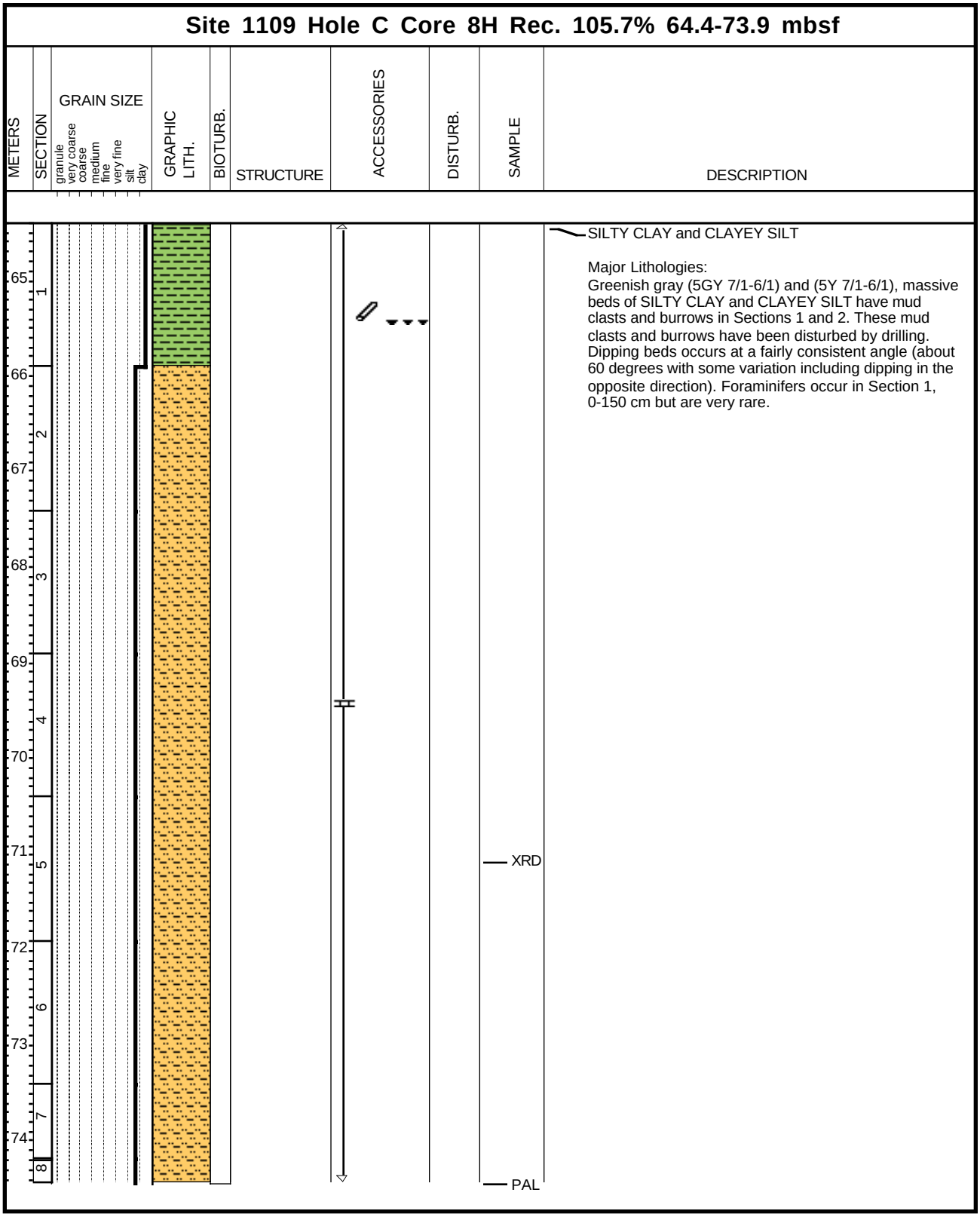
Core Photo


Site 1109 Hole C Core 6H Rec. 106.5% 45.4-54.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
46
47
48
49
50
51
52
53
54
55
1
2
3
4
5
6
7
8
Py
F
SS
SS
XRD
PAL
SILTY CLAY, CLAYEY SILT, VOLCANIC ASH
Major Lithologies:
Sections 1 to 4 are characterized by several intervals of greenish gray (5GY 6/1) SILTY CLAY and CLAYEY SILT containing rare to common foraminifers. Thin VOLCANIC ASH beds occur at Section 2, 79-79.5 cm, and Section 4, 20-21 cm. Sections 6, 0-150 cm, and Section 7, 0-67,5 cm are composed of SILTY CLAY. A VOLCANIC ASH layer is visible at 67.5-68.5 cm. The interval in Section 6, 68.5-150 cm, Section 7, 0-83 cm, and in the Core Catcher, 0-29.5 cm, shows a predominance of CLAYEY SILT. Three small blebs of volcanic glass occur at Section 7, 38-39 cm, and Core Catcher, 16-17 cm. The whole core displays common sulfide disseminations.

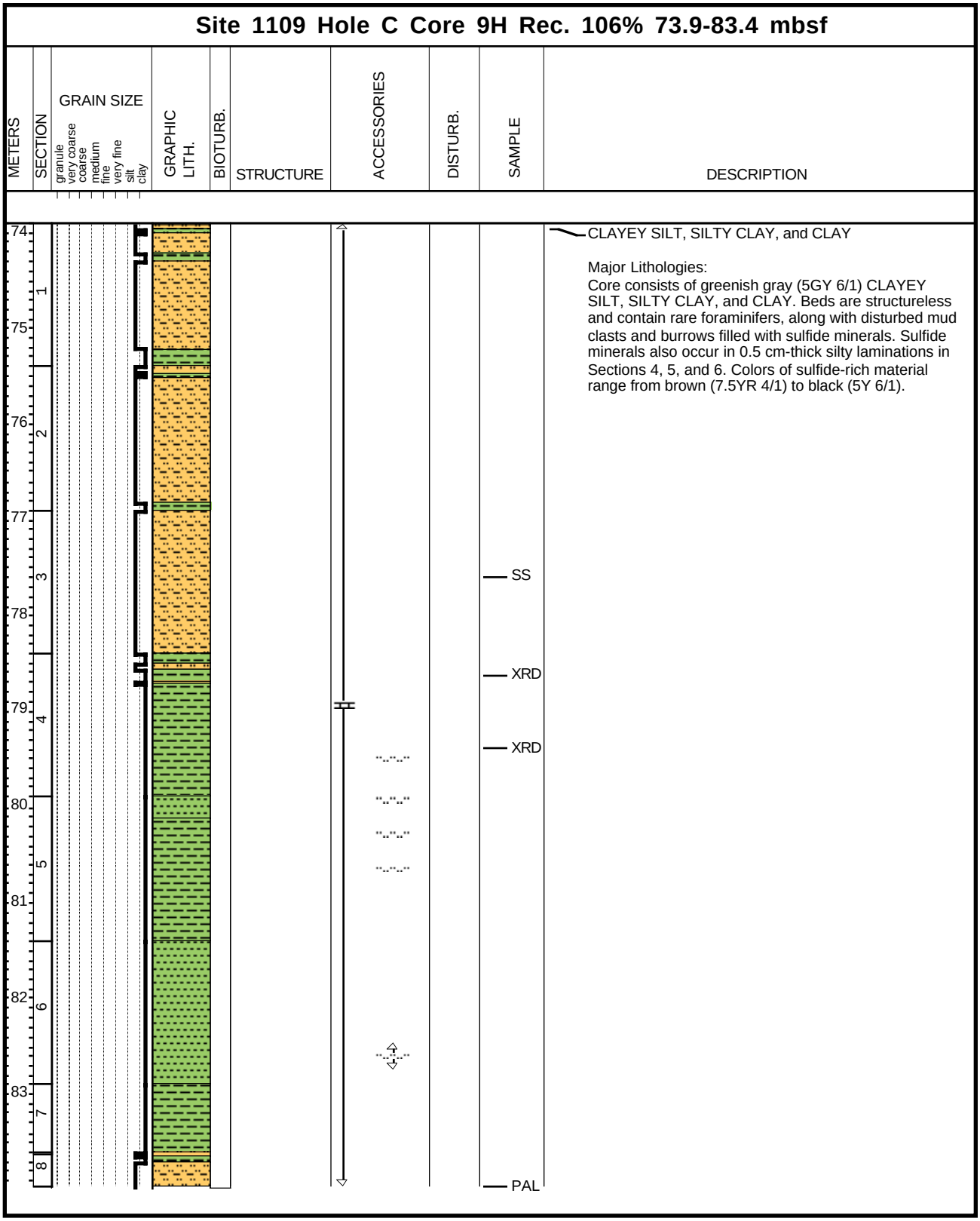
Core Photo


Site 1109 Hole C Core 7H Rec. 106% 54.9-64.4 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
55
56
57
58
59
60
61
62
63
64
65
1
2
3
4
5
6
7
8
XRD
PAL
SILTY CLAY, CLAYEY SILT, CLAY, and VOLCANIC ASH
Major Lithologies:
Core contains greenish gray (5GY 5/1-6/1) and grey (5Y 5/1) calcareous beds of SILTY CLAY, CLAYEY SILT, and CLAY that have rare foraminifers and scattered to abundant sulfide "blotches" (represented by the motted symbol) throughout. Coarser-grained SILTY CLAY laminae occur within calcareous CLAY in Section 1, 136.5-137 cm. A thin layer of VOLCANIC ASH occurs at Section 6, 48-52 cm. Inclined bedding exists throughout and may be due to drilling disturbance.

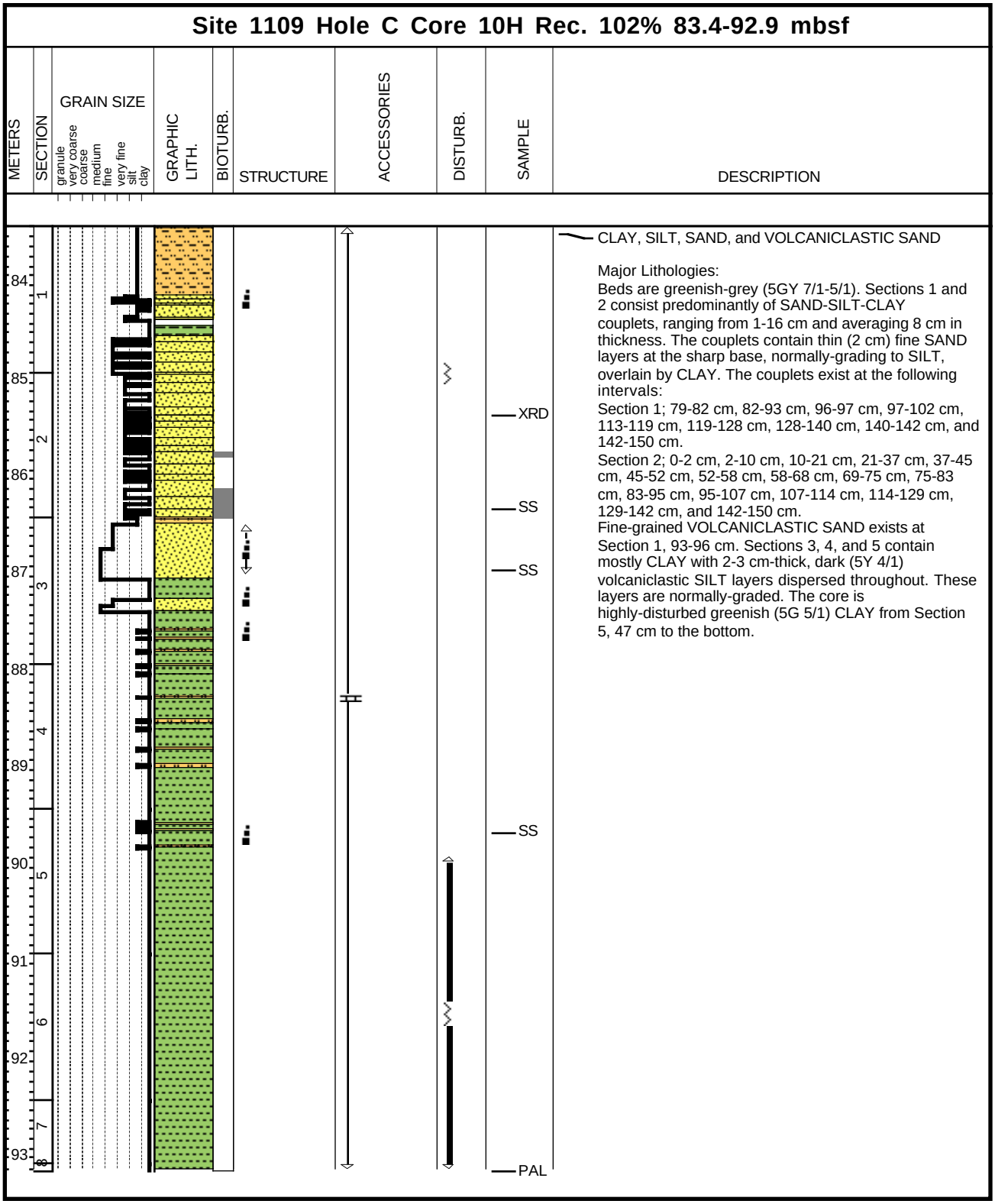
Core Photo


Site 1109 Hole C Core 8H Rec. 105.7% 64.4-73.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
65
66
67
68
69
70
71
72
73
74
1
2
3
4
5
6
7
8
H
XRD
PAL
SILTY CLAY and CLAYEY SILT
Major Lithologies:
Greenish gray (5GY 7/1-6/1) and (5Y 7/1-6/1), massive beds of SILTY CLAY and CLAYEY SILT have mud clasts and burrows in Sections 1 and 2. These mud clasts and burrows have been disturbed by drilling. Dipping beds occurs at a fairly consistent angle (about 60 degrees with some variation including dipping in the opposite direction). Foraminifers occur in Section 1, 0-150 cm but are very rare.

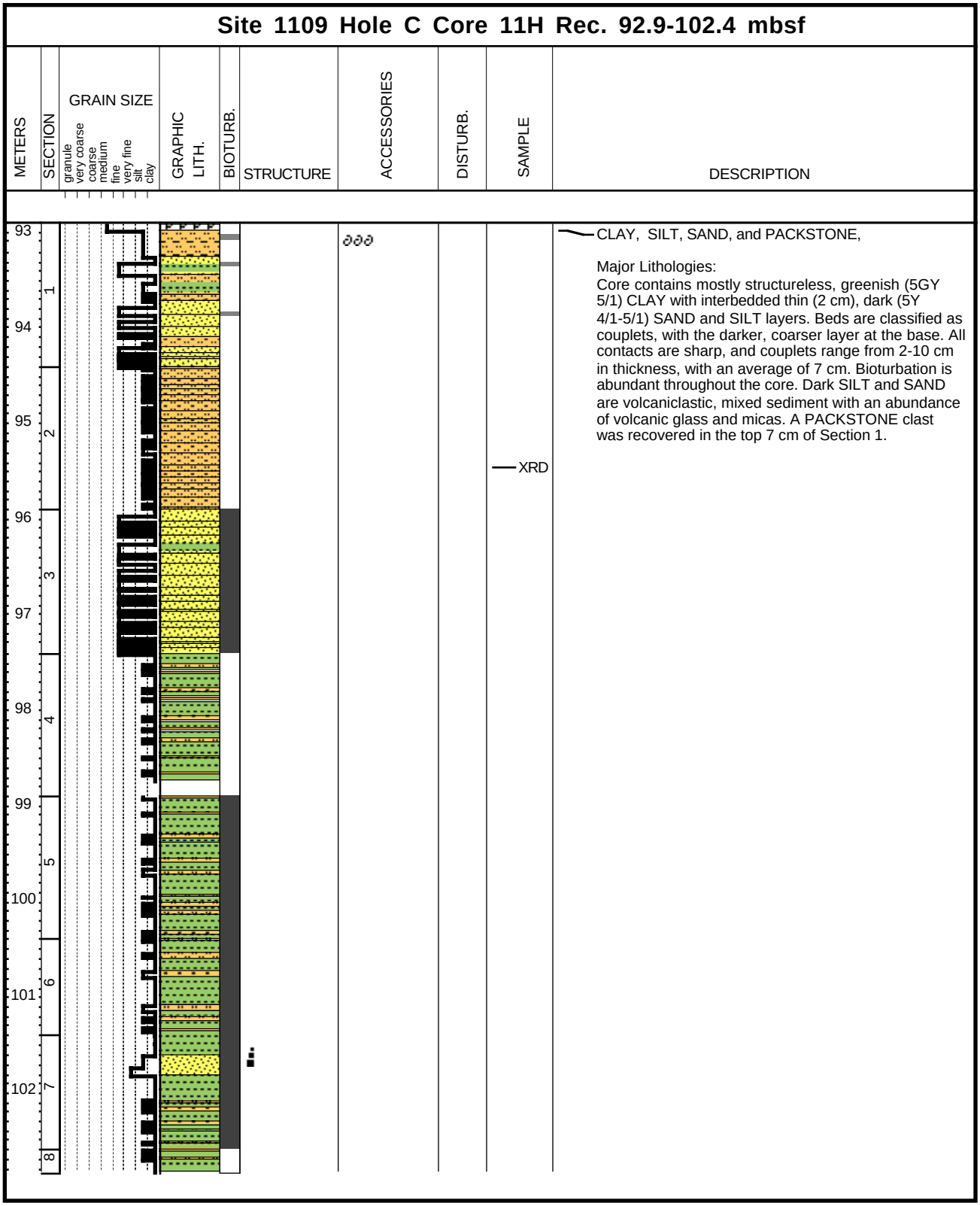
Core Photo


Site 1109 Hole C Core 9H Rec. 106% 73.9-83.4 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
74
75
76
77
78
79
80
81
82
83
1
2
3
4
5
6
7
8
SS
XRD
XRD
PAL
CLAYEY SILT, SILTY CLAY, and CLAY
Major Lithologies:
Core consists of greenish gray (5GY 6/1) CLAYEY SILT, SILTY CLAY, and CLAY. Beds are structureless and contain rare foraminifers, along with disturbed mud clasts and burrows filled with sulfide minerals. Sulfide minerals also occur in 0.5 cm-thick silty laminations in Sections 4, 5, and 6. Colors of sulfide-rich material range from brown (7.5YR 4/1) to black (5Y 6/1).

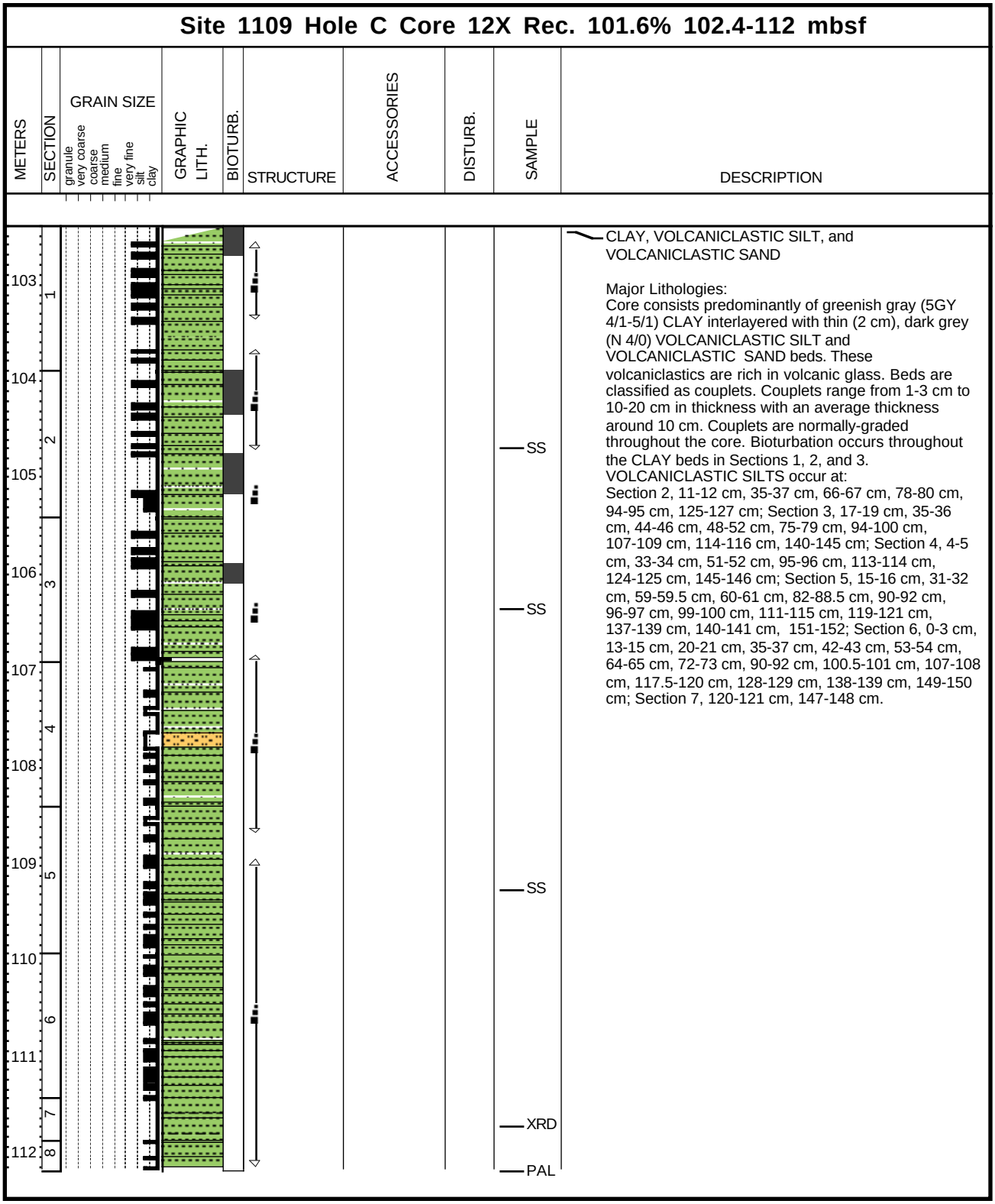
Core Photo


Site 1109 Hole C Core 10H Rec. 102% 83.4-92.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
84
85
86
87
88
89
90
91
92
93
1
2
3
4
5
6
7
XRD
SS
SS
SS
PAL
CLAY, SILT, SAND, and VOLCANICLASTIC SAND
Major Lithologies:
Beds are greenish-grey (5GY 7/1-5/1). Sections 1 and 2 consist predominantly of SAND-SILT-CLAY couplets, ranging from 1-16 cm and averaging 8 cm in thickness. The couplets contain thin (2 cm) fine SAND layers at the sharp base, normally-grading to SILT, overlain by CLAY. The couplets exist at the following intervals:
Section 1; 79-82 cm, 82-93 cm, 96-97 cm, 97-102 cm, 113-119 cm, 119-128 cm, 128-140 cm, 140-142 cm, and 142-150 cm.
Section 2; 0-2 cm, 2-10 cm, 10-21 cm, 21-37 cm, 37-45 cm, 45-52 cm, 52-58 cm, 58-68 cm, 69-75 cm, 75-83 cm, 83-95 cm, 95-107 cm, 107-114 cm, 114-129 cm, 129-142 cm, and 142-150 cm.
Fine-grained VOLCANICLASTIC SAND exists at Section 1, 93-96 cm. Sections 3, 4, and 5 contain mostly CLAY with 2-3 cm-thick, dark (5Y 4/1) volcaniclastic SILT layers dispersed throughout. These layers are normally-graded. The core is highly-disturbed greenish (5G 5/1) CLAY from Section 5, 47 cm to the bottom.

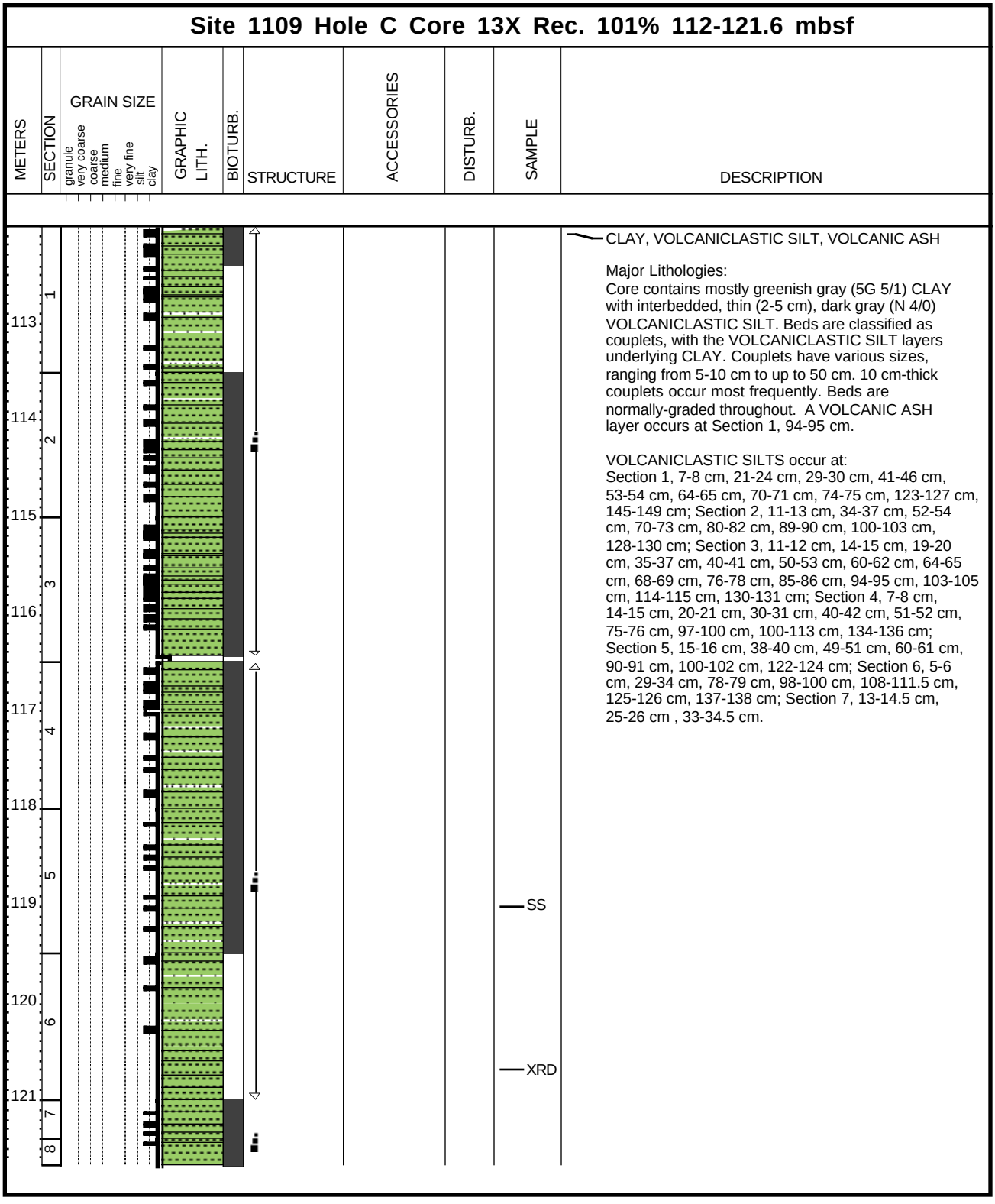
Core Photo


Site 1109 Hole C Core 11H Rec. 92.9-102.4 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
93
94
95
96
97
98
99
100
101
102
1
2
3
4
5
6
7
8
XRD
CLAY, SILT, SAND, and PACKSTONE,
Major Lithologies:
Core contains mostly structureless, greenish (5GY 5/1) CLAY with interbedded thin (2 cm), dark (5Y 4/1-5/1) SAND and SILT layers. Beds are classified as couplets, with the darker, coarser layer at the base. All contacts are sharp, and couplets range from 2-10 cm in thickness, with an average of 7 cm. Bioturbation is abundant throughout the core. Dark SILT and SAND are volcaniclastic, mixed sediment with an abundance of volcanic glass and micas. A PACKSTONE clast was recovered in the top 7 cm of Section 1.

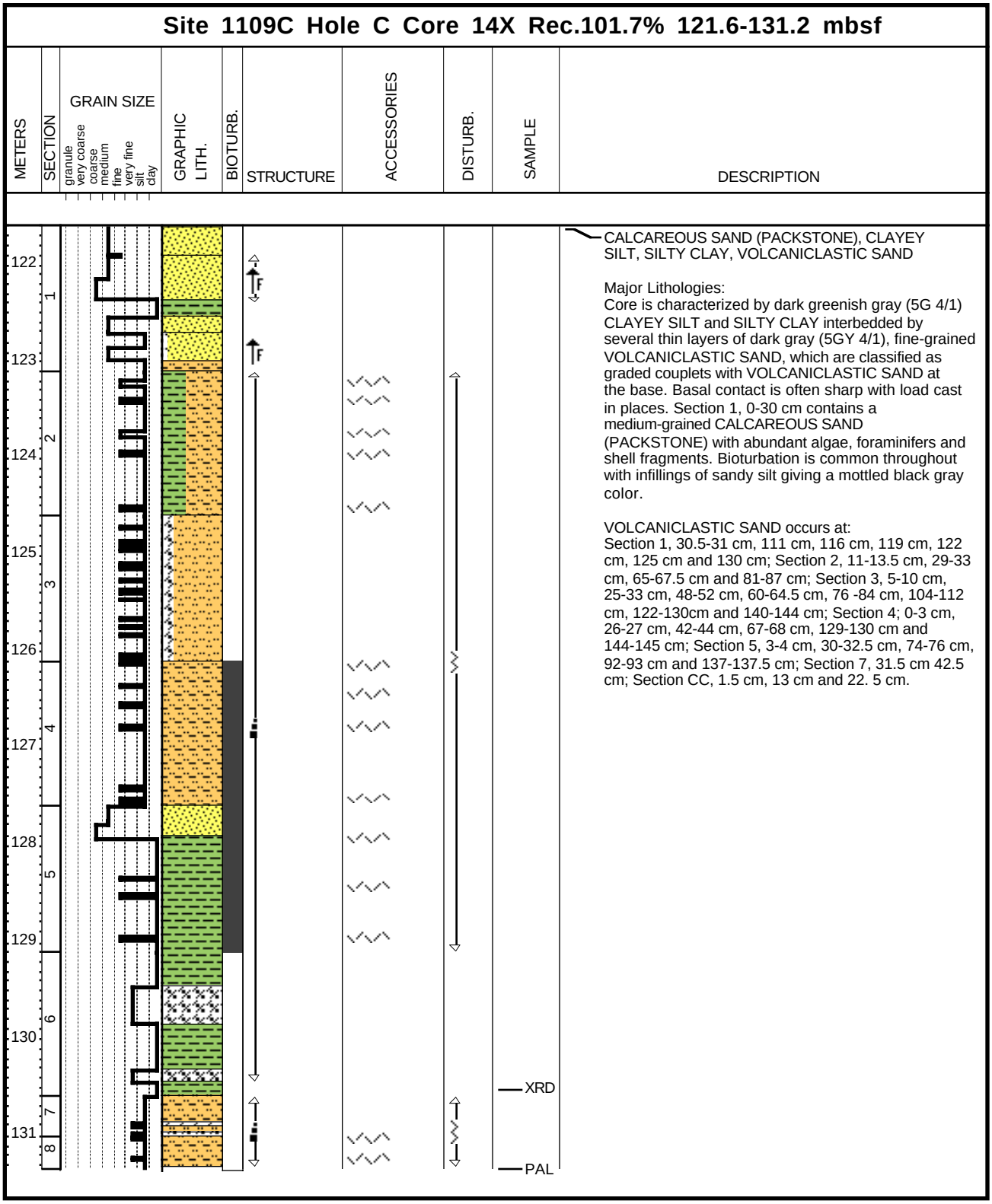
Core Photo


Site 1109 Hole C Core 12X Rec. 101.6% 102.4-112 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
103
104
105
106
107
108
109
110
111
112
1
2
3
4
5
6
7
8
SS
SS
SS
XRD
PAL
CLAY, VOLCANICLASTIC SILT, and VOLCANICLASTIC SAND
Major Lithologies:
Core consists predominantly of greenish gray (5GY 4/1-5/1) CLAY interlayered with thin (2 cm), dark grey (N 4/0) VOLCANICLASTIC SILT and VOLCANICLASTIC SAND beds. These volcaniclastics are rich in volcanic glass. Beds are classified as couplets. Couplets range from 1-3 cm to 10-20 cm in thickness with an average thickness around 10 cm. Couplets are normally-graded throughout the core. Bioturbation occurs throughout the CLAY beds in Sections 1, 2, and 3.
VOLCANICLASTIC SILTS occur at:
Section 2, 11-12 cm, 35-37 cm, 66-67 cm, 78-80 cm, 94-95 cm, 125-127 cm; Section 3, 17-19 cm, 35-36 cm, 44-46 cm, 48-52 cm, 75-79 cm, 94-100 cm, 107-109 cm, 114-116 cm, 140-145 cm; Section 4, 4-5 cm, 33-34 cm, 51-52 cm, 95-96 cm, 113-114 cm, 124-125 cm, 145-146 cm; Section 5, 15-16 cm, 31-32 cm, 59-59.5 cm, 60-61 cm, 82-88.5 cm, 90-92 cm, 96-97 cm, 99-100 cm, 111-115 cm, 119-121 cm, 137-139 cm, 140-141 cm, 151-152; Section 6, 0-3 cm, 13-15 cm, 20-21 cm, 35-37 cm, 42-43 cm, 53-54 cm, 64-65 cm, 72-73 cm, 90-92 cm, 100.5-101 cm, 107-108 cm, 117.5-120 cm, 128-129 cm, 138-139 cm, 149-150 cm; Section 7, 120-121 cm, 147-148 cm.

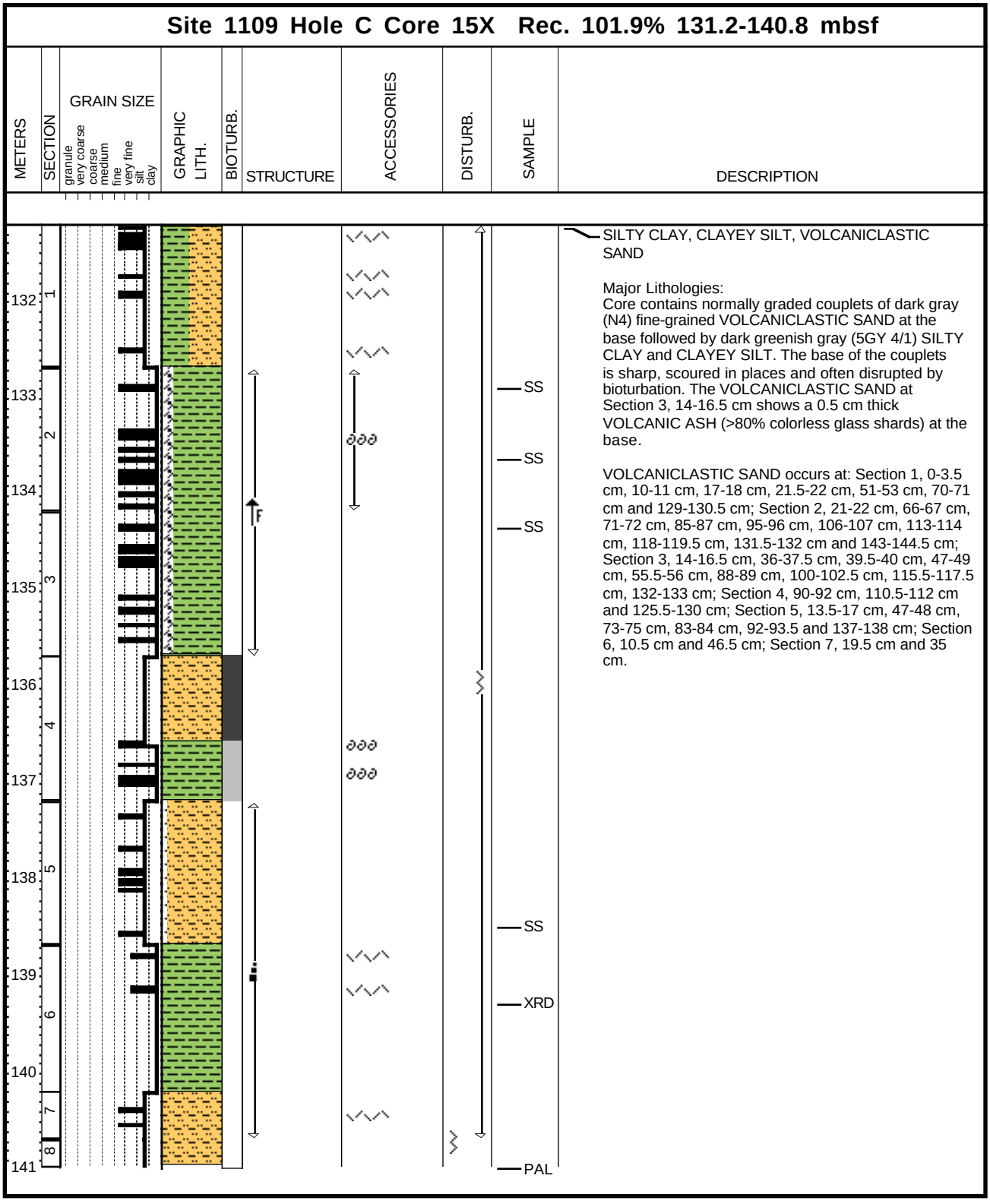
Core Photo


Site 1109 Hole C Core 13X Rec. 101% 112-121.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
113
114
115
116
117
118
119
120
121
1
2
3
4
5
6
7
8
SS
XRD
CLAY, VOLCANICLASTIC SILT, VOLCANIC ASH
Major Lithologies:
Core contains mostly greenish gray (5G 5/1) CLAY with interbedded, thin (2-5 cm), dark gray (N 4/0) VOLCANICLASTIC SILT. Beds are classified as couplets, with the VOLCANICLASTIC SILT layers underlying CLAY. Couplets have various sizes, ranging from 5-10 cm to up to 50 cm. 10 cm-thick couplets occur most frequently. Beds are normally-graded throughout. A VOLCANIC ASH layer occurs at Section 1, 94-95 cm.
VOLCANICLASTIC SILTS occur at:
Section 1, 7-8 cm, 21-24 cm, 29-30 cm, 41-46 cm, 53-54 cm, 64-65 cm, 70-71 cm, 74-75 cm, 123-127 cm, 145-149 cm; Section 2, 11-13 cm, 34-37 cm, 52-54 cm, 70-73 cm, 80-82 cm, 89-90 cm, 100-103 cm, 128-130 cm; Section 3, 11-12 cm, 14-15 cm, 19-20 cm, 35-37 cm, 40-41 cm, 50-53 cm, 60-62 cm, 64-65 cm, 68-69 cm, 76-78 cm, 85-86 cm, 94-95 cm, 103-105 cm, 114-115 cm, 130-131 cm; Section 4, 7-8 cm, 14-15 cm, 20-21 cm, 30-31 cm, 40-42 cm, 51-52 cm, 75-76 cm, 97-100 cm, 100-113 cm, 134-136 cm; Section 5, 15-16 cm, 38-40 cm, 49-51 cm, 60-61 cm, 90-91 cm, 100-102 cm, 122-124 cm; Section 6, 5-6 cm, 29-34 cm, 78-79 cm, 98-100 cm, 108-111.5 cm, 125-126 cm, 137-138 cm; Section 7, 13-14.5 cm, 25-26 cm , 33-34.5 cm.

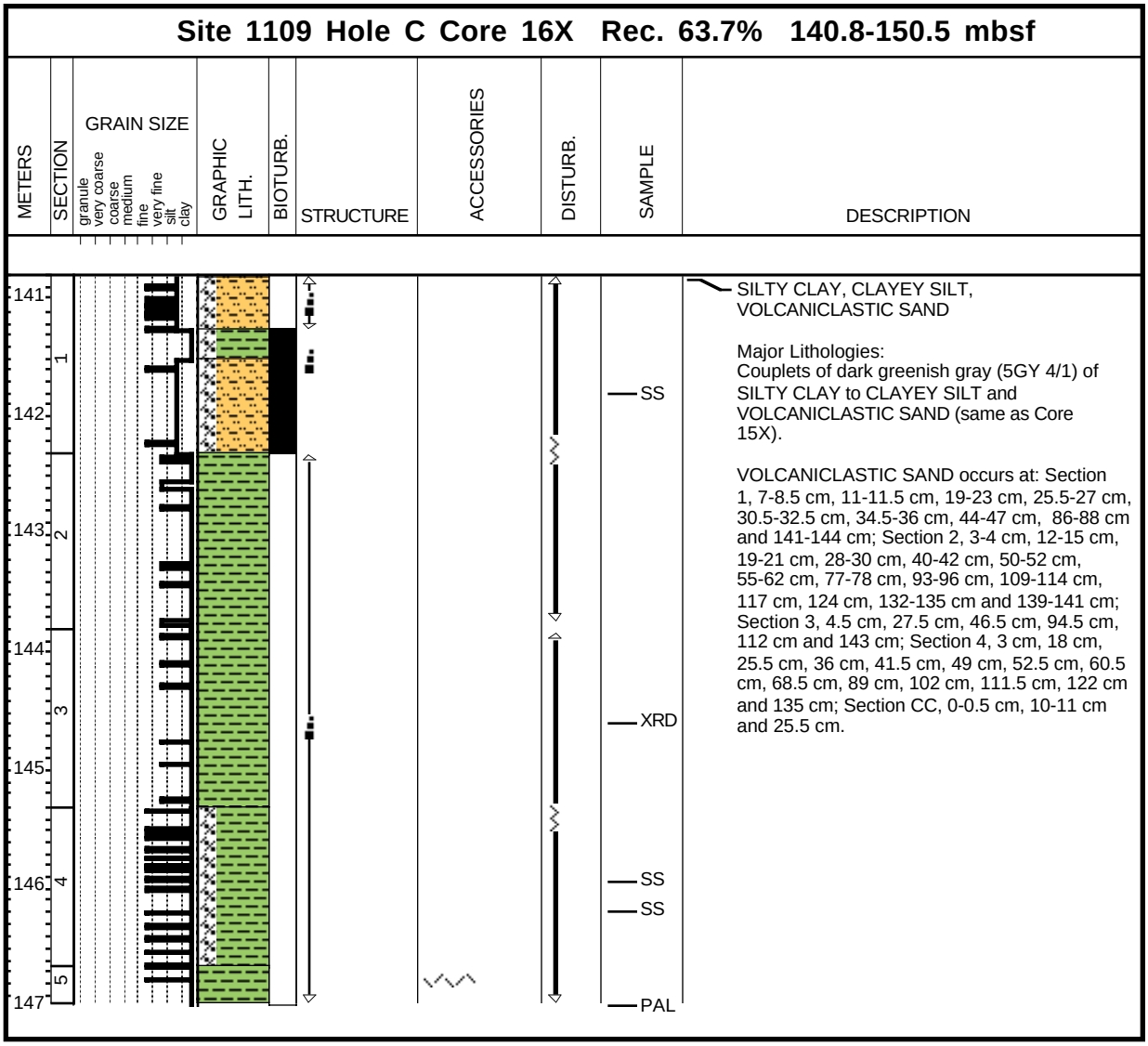
Core Photo


Site 1109C Hole C Core 14X Rec.101.7% 121.6-131.2 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
122
123
124
125
126
127
128
129
130
131
1
2
3
4
5
6
7
8
F
F
XRD
PAL
CALCAREOUS SAND (PACKSTONE), CLAYEY SILT, SILTY CLAY, VOLCANICLASTIC SAND
Major Lithologies:
Core is characterized by dark greenish gray (5G 4/1) CLAYEY SILT and SILTY CLAY interbedded by several thin layers of dark gray (5GY 4/1), fine-grained VOLCANICLASTIC SAND, which are classified as graded couplets with VOLCANICLASTIC SAND at the base. Basal contact is often sharp with load cast in places. Section 1, 0-30 cm contains a medium-grained CALCAREOUS SAND (PACKSTONE) with abundant algae, foraminifers and shell fragments. Bioturbation is common throughout with infillings of sandy silt giving a mottled black gray color.
VOLCANICLASTIC SAND occurs at:
Section 1, 30.5-31 cm, 111 cm, 116 cm, 119 cm, 122 cm, 125 cm and 130 cm; Section 2, 11-13.5 cm, 29-33 cm, 65-67.5 cm and 81-87 cm; Section 3, 5-10 cm, 25-33 cm, 48-52 cm, 60-64.5 cm, 76 -84 cm, 104-112 cm, 122-130cm and 140-144 cm; Section 4; 0-3 cm, 26-27 cm, 42-44 cm, 67-68 cm, 129-130 cm and 144-145 cm; Section 5, 3-4 cm, 30-32.5 cm, 74-76 cm, 92-93 cm and 137-137.5 cm; Section 7, 31.5 cm 42.5 cm; Section CC, 1.5 cm, 13 cm and 22. 5 cm.

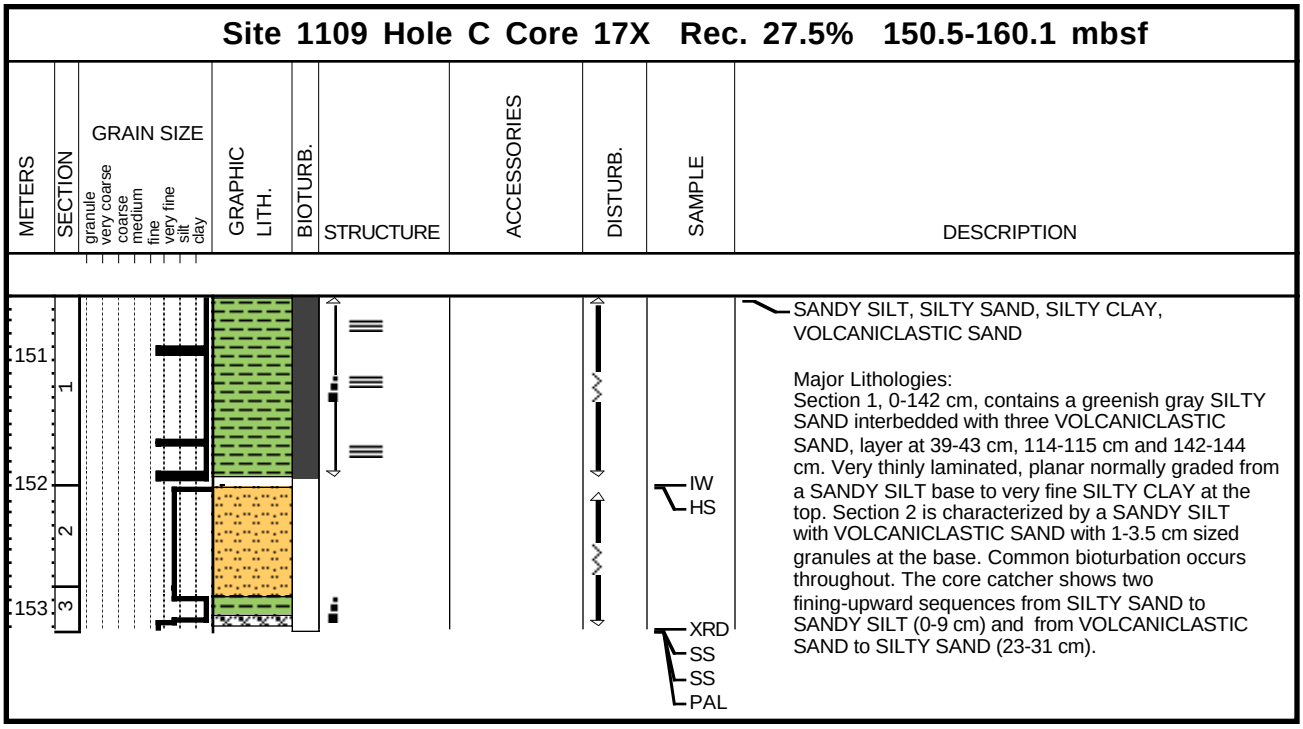
Core Photo


Site 1109 Hole C Core 15X Rec. 101.9% 131.2-140.8 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
132
133
134
135
136
137
138
139
140
141
1
2
3
4
5
6
7
8
F
SS
SS
SS
SS
XRD
PAL
SILTY CLAY, CLAYEY SILT, VOLCANICLASTIC SAND
Major Lithologies:
Core contains normally graded couplets of dark gray (N4) fine-grained VOLCANICLASTIC SAND at the base followed by dark greenish gray (5GY 4/1) SILTY CLAY and CLAYEY SILT. The base of the couplets is sharp, scoured in places and often disrupted by bioturbation. The VOLCANICLASTIC SAND at Section 3, 14-16.5 cm shows a 0.5 cm thick VOLCANIC ASH (>80% colorless glass shards) at the base.
VOLCANICLASTIC SAND occurs at: Section 1, 0-3.5 cm, 10-11 cm, 17-18 cm, 21.5-22 cm, 51-53 cm, 70-71 cm and 129-130.5 cm; Section 2, 21-22 cm, 66-67 cm, 71-72 cm, 85-87 cm, 95-96 cm, 106-107 cm, 113-114 cm, 118-119.5 cm, 131.5-132 cm and 143-144.5 cm; Section 3, 14-16.5 cm, 36-37.5 cm, 39.5-40 cm, 47-49 cm, 55.5-56 cm, 88-89 cm, 100-102.5 cm, 115.5-117.5 cm, 132-133 cm; Section 4, 90-92 cm, 110.5-112 cm and 125.5-130 cm; Section 5, 13.5-17 cm, 47-48 cm, 73-75 cm, 83-84 cm, 92-93.5 and 137-138 cm; Section 6, 10.5 cm and 46.5 cm; Section 7, 19.5 cm and 35 cm.

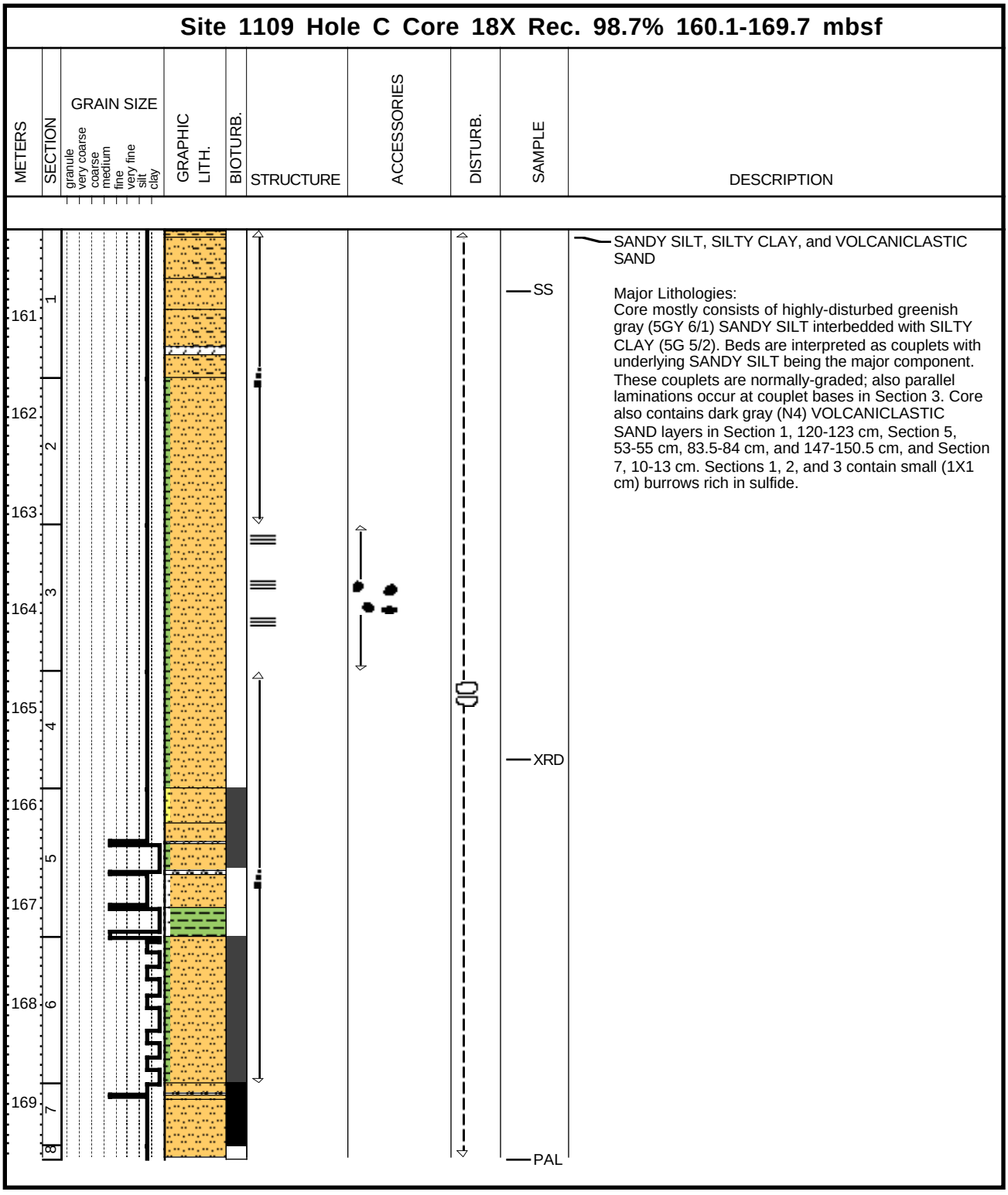
Core Photo


Site 1109 Hole C Core 16X Rec. 63.7% 140.8-150.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
141
142
143
144
145
146
147
1
2
3
4
5
SS
XRD
SS
SS
PAL
SILTY CLAY, CLAYEY SILT, VOLCANICLASTIC SAND
Major Lithologies:
Couplets of dark greenish gray (5GY 4/1) of SILTY CLAY to CLAYEY SILT and VOLCANICLASTIC SAND (same as Core 15X).
VOLCANICLASTIC SAND occurs at: Section 1, 7-8.5 cm, 11-11.5 cm, 19-23 cm, 25.5-27 cm, 30.5-32.5 cm, 34.5-36 cm, 44-47 cm, 86-88 cm and 141-144 cm; Section 2, 3-4 cm, 12-15 cm, 19-21 cm, 28-30 cm, 40-42 cm, 50-52 cm, 55-62 cm, 77-78 cm, 93-96 cm, 109-114 cm, 117 cm, 124 cm, 132-135 cm and 139-141 cm; Section 3, 4.5 cm, 27.5 cm, 46.5 cm, 94.5 cm, 112 cm and 143 cm; Section 4, 3 cm, 18 cm, 25.5 cm, 36 cm, 41.5 cm, 49 cm, 52.5 cm, 60.5 cm, 68.5 cm, 89 cm, 102 cm, 111.5 cm, 122 cm and 135 cm; Section CC, 0-0.5 cm, 10-11 cm and 25.5 cm.

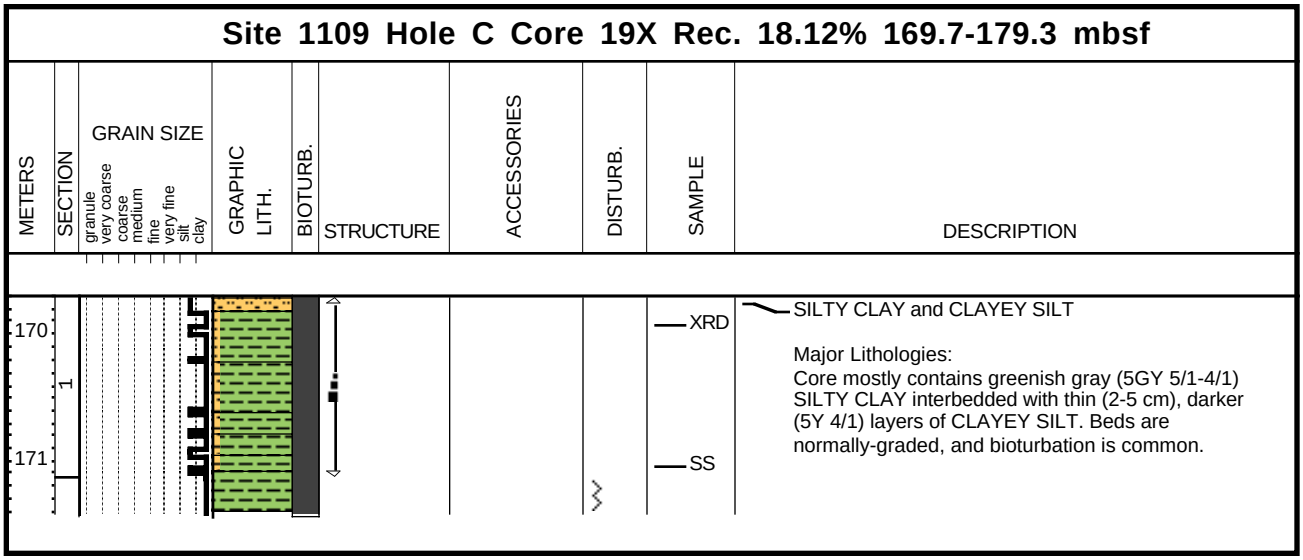
Core Photo


Site 1109 Hole C Core 17X Rec. 27.5% 150.5-160.1 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
151
152
153
1
2
3
IW
HS
XRD
SS
SS
PAL
SANDY SILT, SILTY SAND, SILTY CLAY, VOLCANICLASTIC SAND
Major Lithologies:
Section 1, 0-142 cm, contains a greenish gray SILTY SAND interbedded with three VOLCANICLASTIC SAND, layer at 39-43 cm, 114-115 cm and 142-144 cm. Very thinly laminated, planar normally graded from a SANDY SILT base to very fine SILTY CLAY at the top. Section 2 is characterized by a SANDY SILT with VOLCANICLASTIC SAND with 1-3.5 cm sized granules at the base. Common bioturbation occurs throughout. The core catcher shows two fining-upward sequences from SILTY SAND to SANDY SILT (0-9 cm) and from VOLCANICLASTIC SAND to SILTY SAND (23-31 cm).

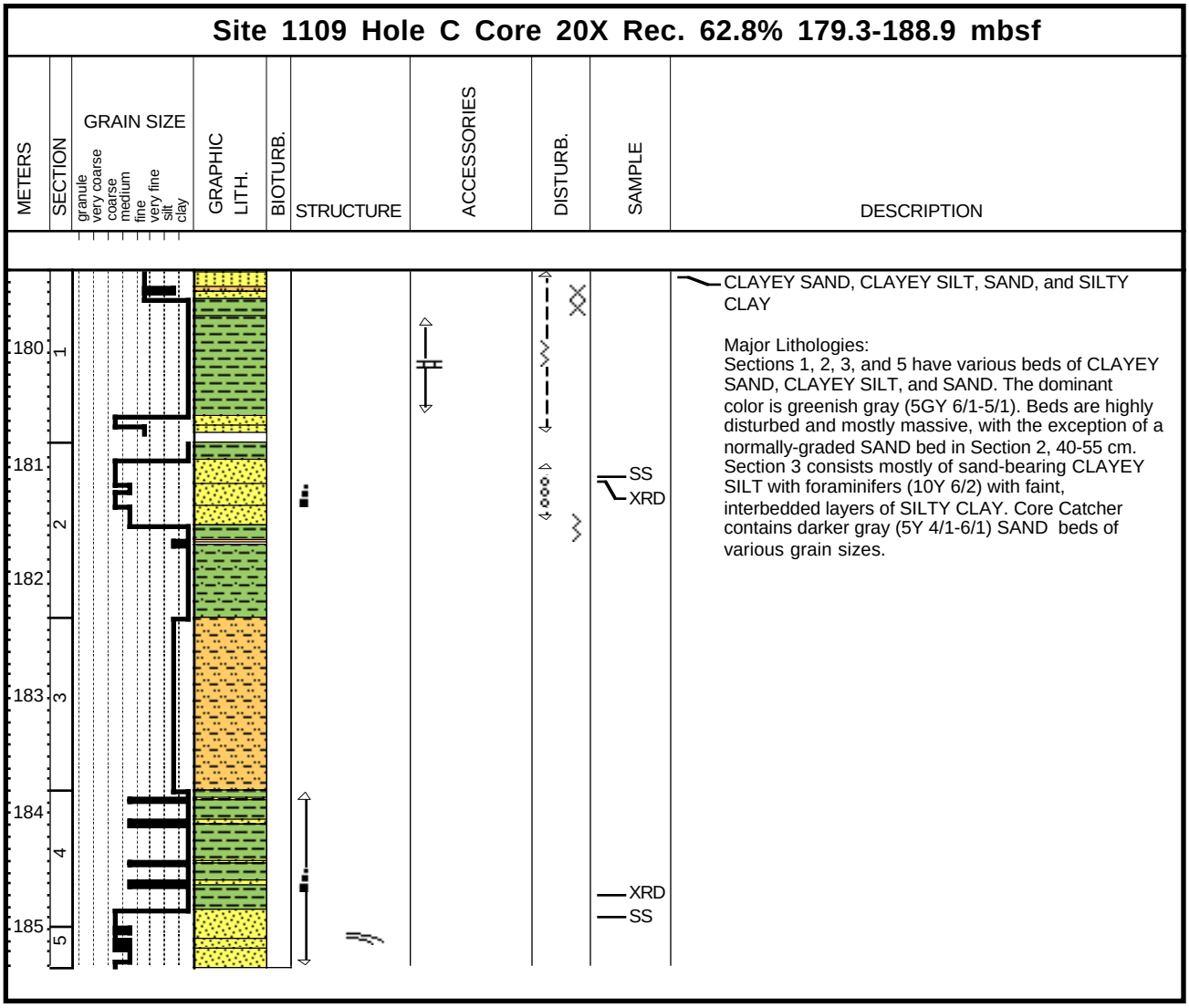
Core Photo


Site 1109 Hole C Core 18X Rec. 98.7% 160.1-169.7 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
161
162
163
164
165
166
167
168
169
1
2
3
4
5
6
7
8
SS
XRD
PAL
SANDY SILT, SILTY CLAY, and VOLCANICLASTIC SAND
Major Lithologies:
Core mostly consists of highly-disturbed greenish gray (5GY 6/1) SANDY SILT interbedded with SILTY CLAY (5G 5/2). Beds are interpreted as couplets with underlying SANDY SILT being the major component. These couplets are normally-graded; also parallel laminations occur at couplet bases in Section 3. Core also contains dark gray (N4) VOLCANICLASTIC SAND layers in Section 1, 120-123 cm, Section 5, 53-55 cm, 83.5-84 cm, and 147-150.5 cm, and Section 7, 10-13 cm. Sections 1, 2, and 3 contain small (1X1 cm) burrows rich in sulfide.

Core Photo

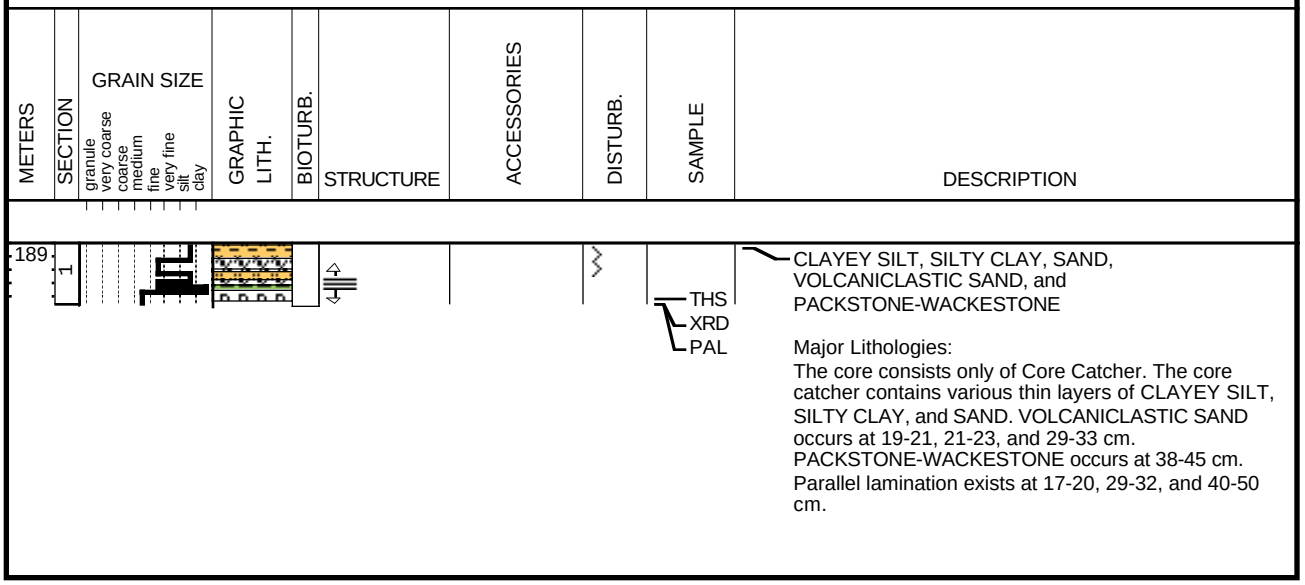

Site 1109 Hole C Core 19X Rec. 18.12% 169.7-179.3 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
170
171
1
XRD
SS
SILTY CLAY and CLAYEY SILT
Major Lithologies:
Core mostly contains greenish gray (5GY 5/1-4/1) SILTY CLAY interbedded with thin (2-5 cm), darker (5Y 4/1) layers of CLAYEY SILT. Beds are normally-graded, and bioturbation is common.

Core Photo


Site 1109 Hole C Core 20X Rec. 62.8% 179.3-188.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
180
181
182
183
184
185
1
2
3
4
5
SS
XRD
XRD
SS
CLAYEY SAND, CLAYEY SILT, SAND, and SILTY CLAY
Major Lithologies:
Sections 1, 2, 3, and 5 have various beds of CLAYEY SAND, CLAYEY SILT, and SAND. The dominant color is greenish gray (5GY 6/1-5/1). Beds are highly disturbed and mostly massive, with the exception of a normally-graded SAND bed in Section 2, 40-55 cm. Section 3 consists mostly of sand-bearing CLAYEY SILT with foraminifers (10Y 6/2) with faint, interbedded layers of SILTY CLAY. Core Catcher contains darker gray (5Y 4/1-6/1) SAND beds of various grain sizes.

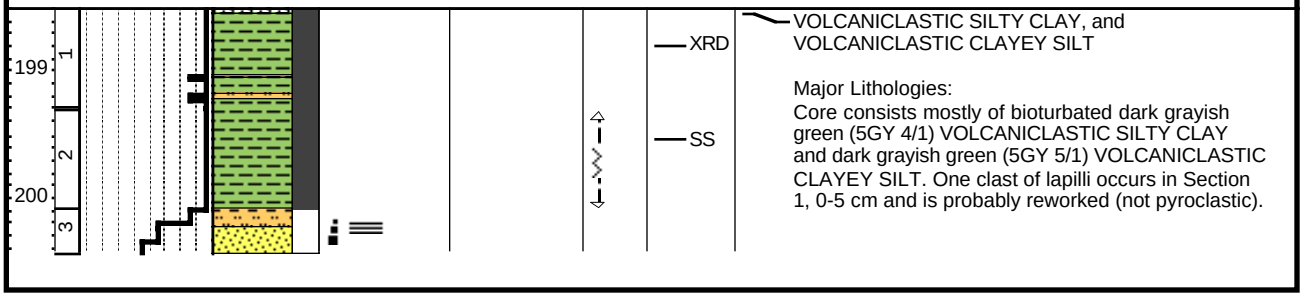
Core Photo

Site 1109 Hole C Core 21X Rec. 5% 188.9-198.38 mbsf



Core Photo

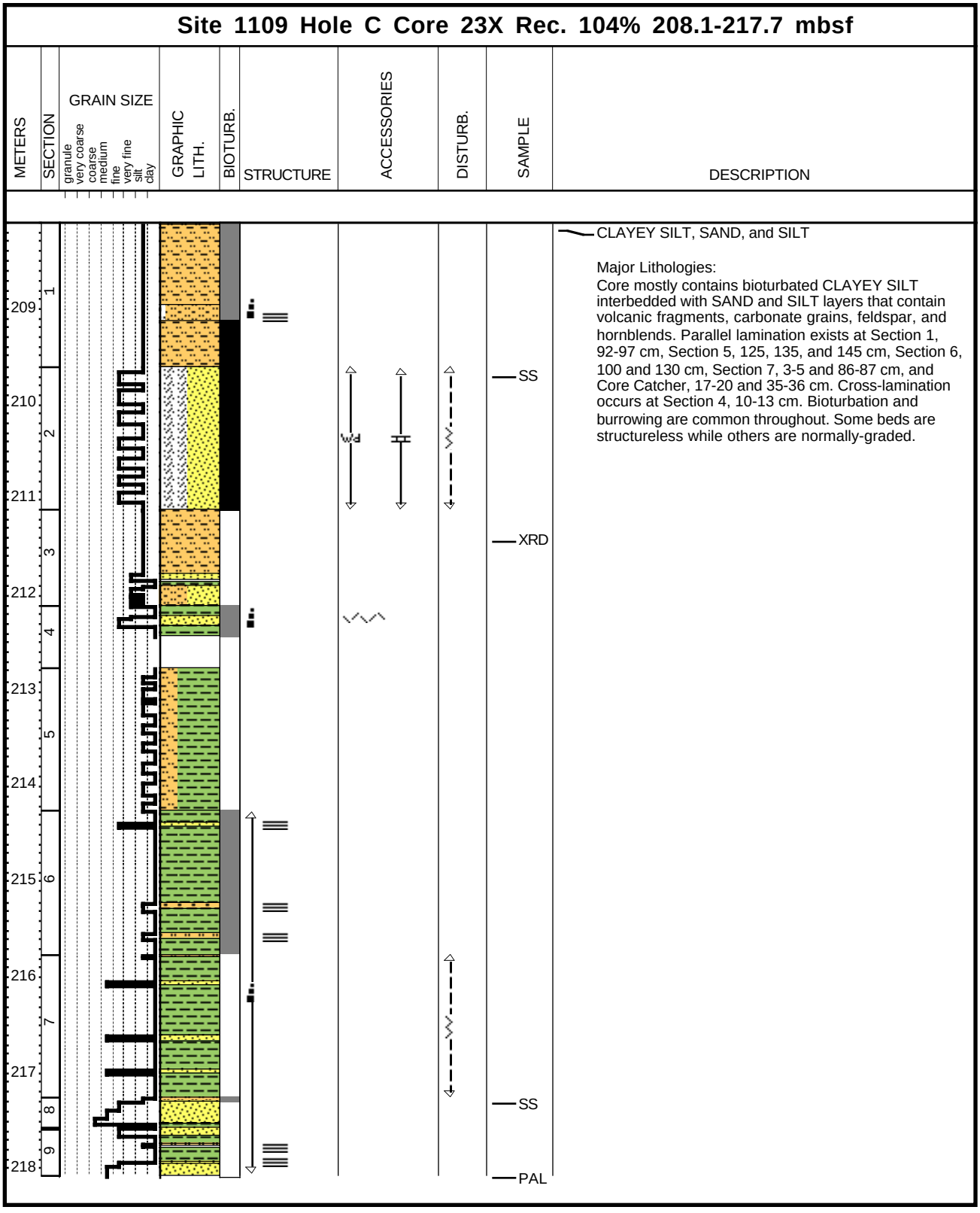
Site 1109 Hole C Core 22X Rec. 20.2% 198.5-208.1 mbsf



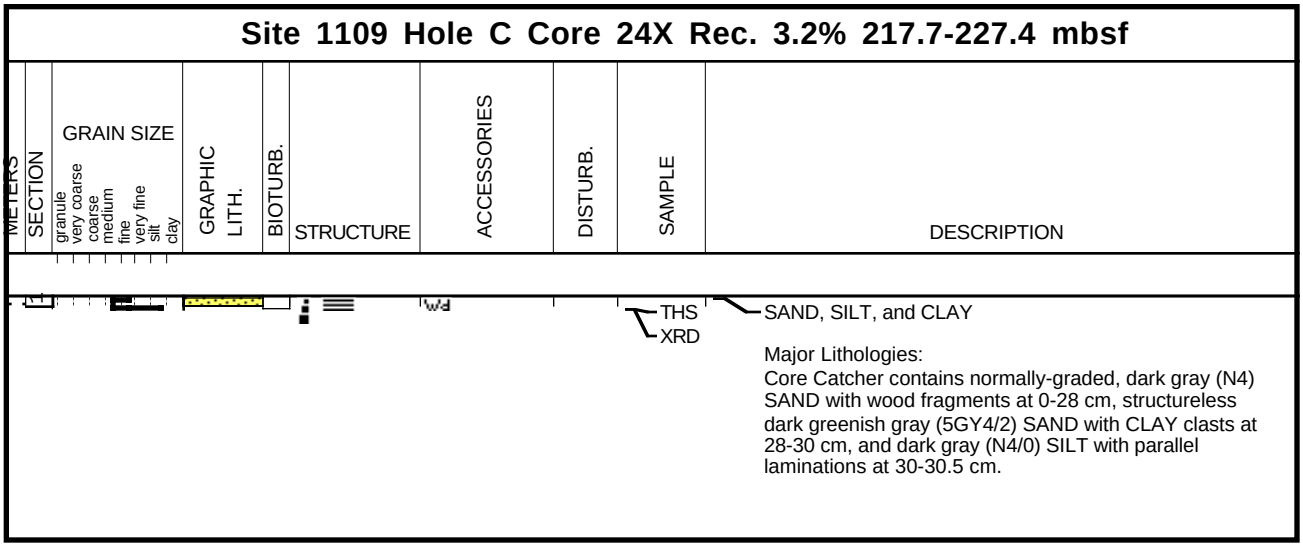
VOLCANICLASTIC SILTY CLAY, and VOLCANICLASTIC CLAYEY SILT

Major Lithologies:
Core consists mostly of bioturbated dark grayish green (5GY 4/1) VOLCANICLASTIC SILTY CLAY and dark grayish green (5GY 5/1) VOLCANICLASTIC CLAYEY SILT. One clast of lapilli occurs in Section 1, 0-5 cm and is probably reworked (not pyroclastic).

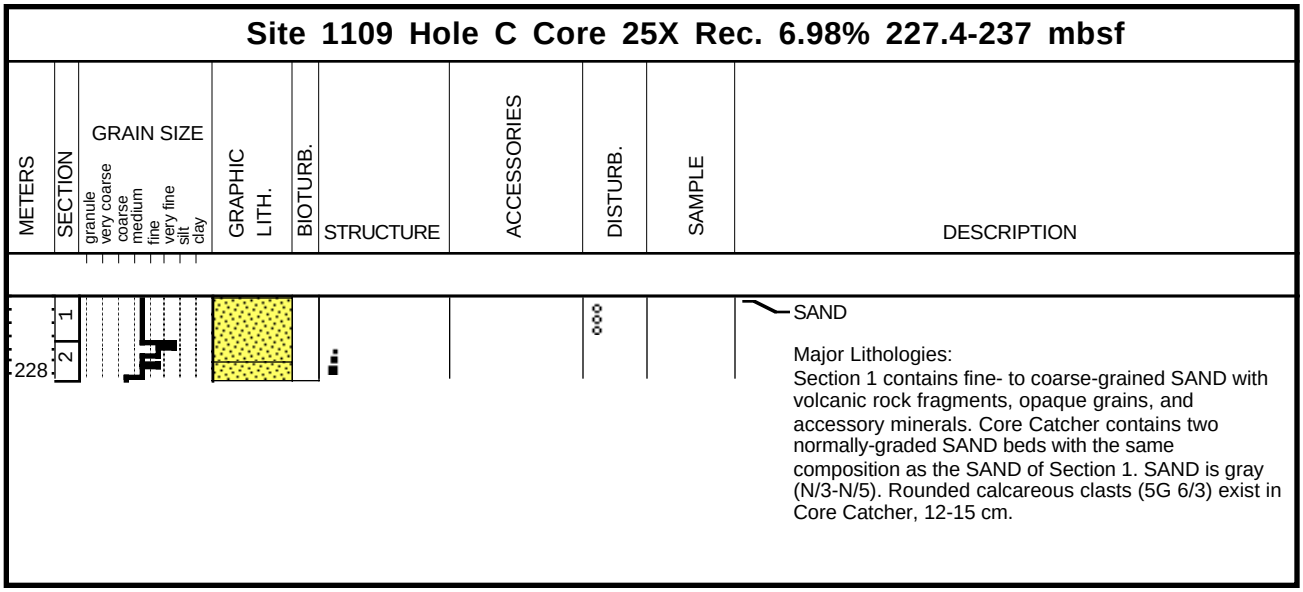
Core Photo


Site 1109 Hole C Core 23X Rec. 104% 208.1-217.7 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
209
210
211
212
213
214
215
216
217
218
1
2
3
4
5
6
7
8
9
SS
XRD
SS
PAL
CLAYEY SILT, SAND, and SILT
Major Lithologies:
Core mostly contains bioturbated CLAYEY SILT interbedded with SAND and SILT layers that contain volcanic fragments, carbonate grains, feldspar, and hornblends. Parallel lamination exists at Section 1, 92-97 cm, Section 5, 125, 135, and 145 cm, Section 6, 100 and 130 cm, Section 7, 3-5 and 86-87 cm, and Core Catcher, 17-20 and 35-36 cm. Cross-lamination occurs at Section 4, 10-13 cm. Bioturbation and burrowing are common throughout. Some beds are structureless while others are normally-graded.

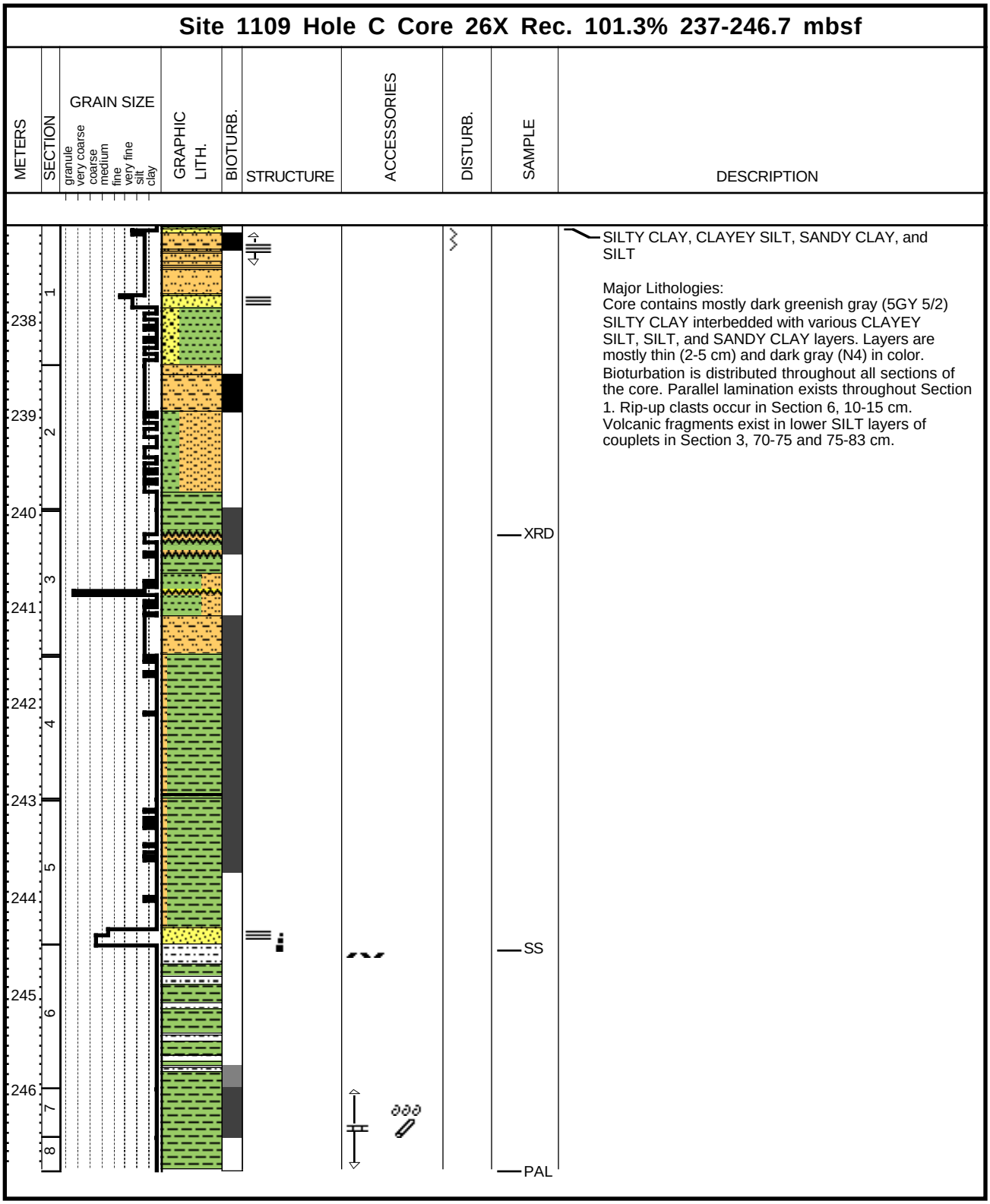
Core Photo


Site 1109 Hole C Core 24X Rec. 3.2% 217.7-227.4 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
THS
XRD
SAND, SILT, and CLAY
Major Lithologies:
Core Catcher contains normally-graded, dark gray (N4) SAND with wood fragments at 0-28 cm, structureless dark greenish gray (5GY4/2) SAND with CLAY clasts at 28-30 cm, and dark gray (N4/0) SILT with parallel laminations at 30-30.5 cm.

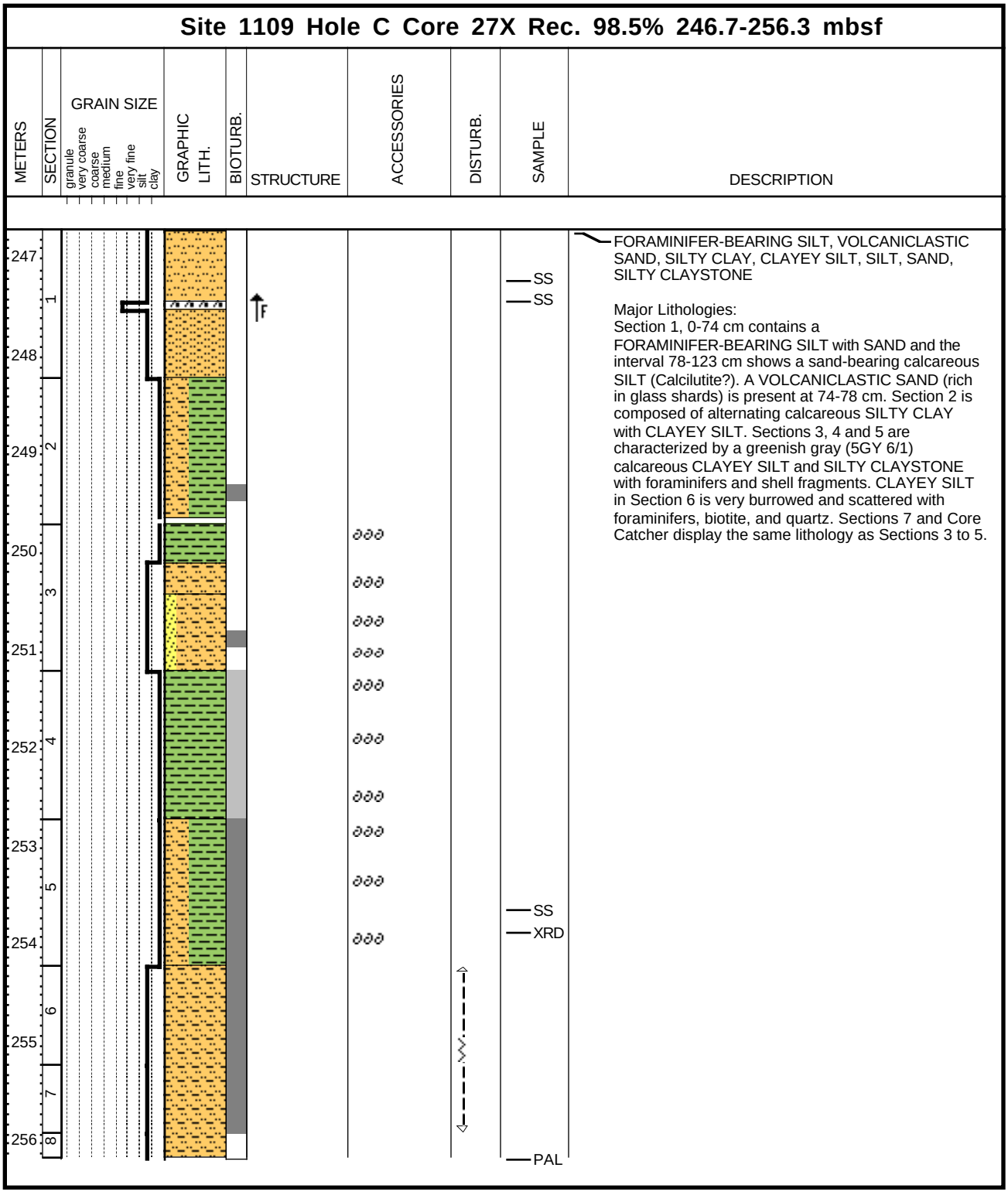
Core Photo


Site 1109 Hole C Core 25X Rec. 6.98% 227.4-237 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
228
1
2
SAND
Major Lithologies:
Section 1 contains fine- to coarse-grained SAND with volcanic rock fragments, opaque grains, and accessory minerals. Core Catcher contains two normally-graded SAND beds with the same composition as the SAND of Section 1. SAND is gray (N/3-N/5). Rounded calcareous clasts (5G 6/3) exist in Core Catcher, 12-15 cm.

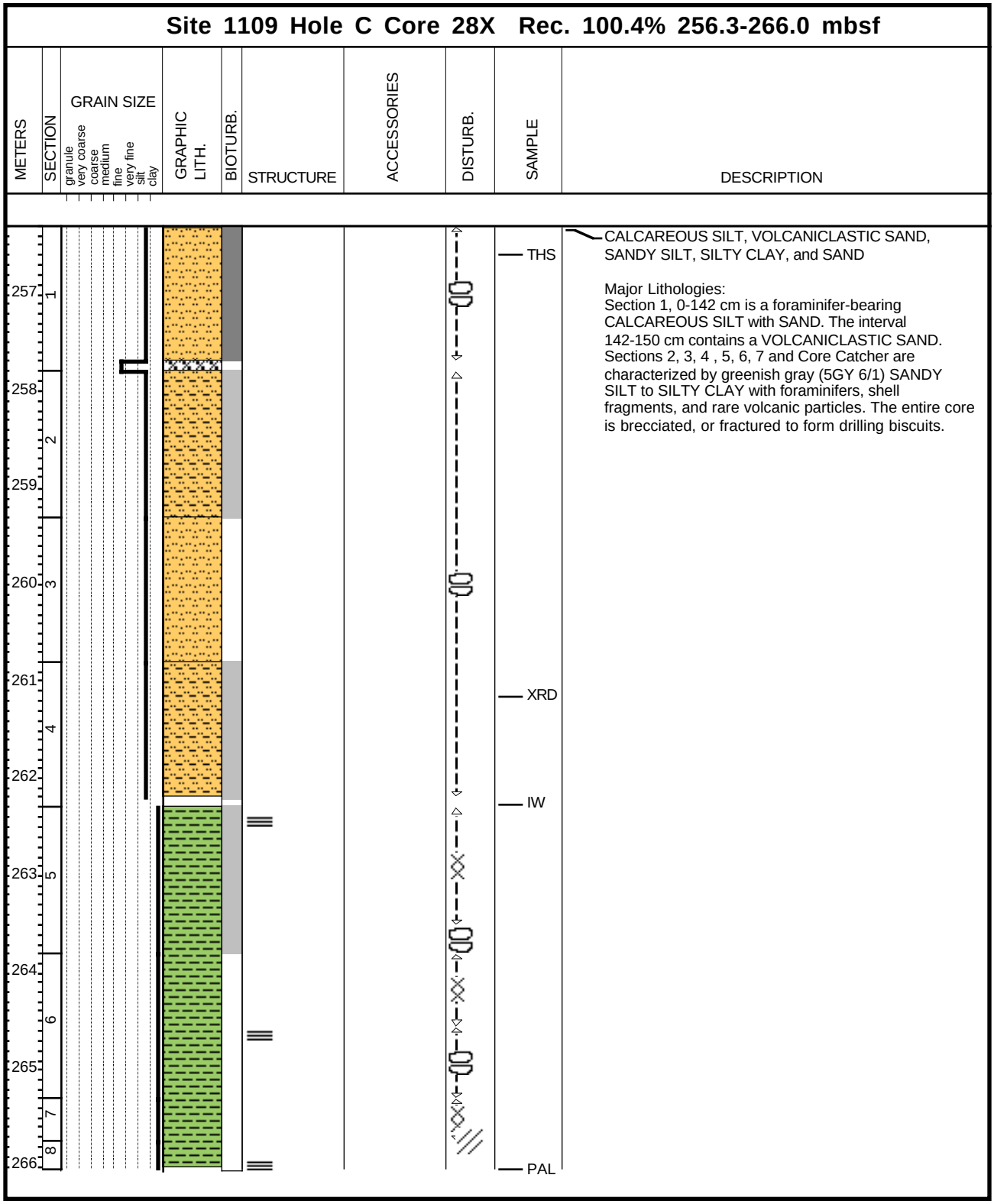
Core Photo


Site 1109 Hole C Core 26X Rec. 101.3% 237-246.7 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
238
239
240
241
242
243
244
245
246
1
2
3
4
5
6
7
8
XRD
SS
PAL
SILTY CLAY, CLAYEY SILT, SANDY CLAY, and SILT
Major Lithologies:
Core contains mostly dark greenish gray (5GY 5/2) SILTY CLAY interbedded with various CLAYEY SILT, SILT, and SANDY CLAY layers. Layers are mostly thin (2-5 cm) and dark gray (N4) in color. Bioturbation is distributed throughout all sections of the core. Parallel lamination exists throughout Section 1. Rip-up clasts occur in Section 6, 10-15 cm. Volcanic fragments exist in lower SILT layers of couplets in Section 3, 70-75 and 75-83 cm.

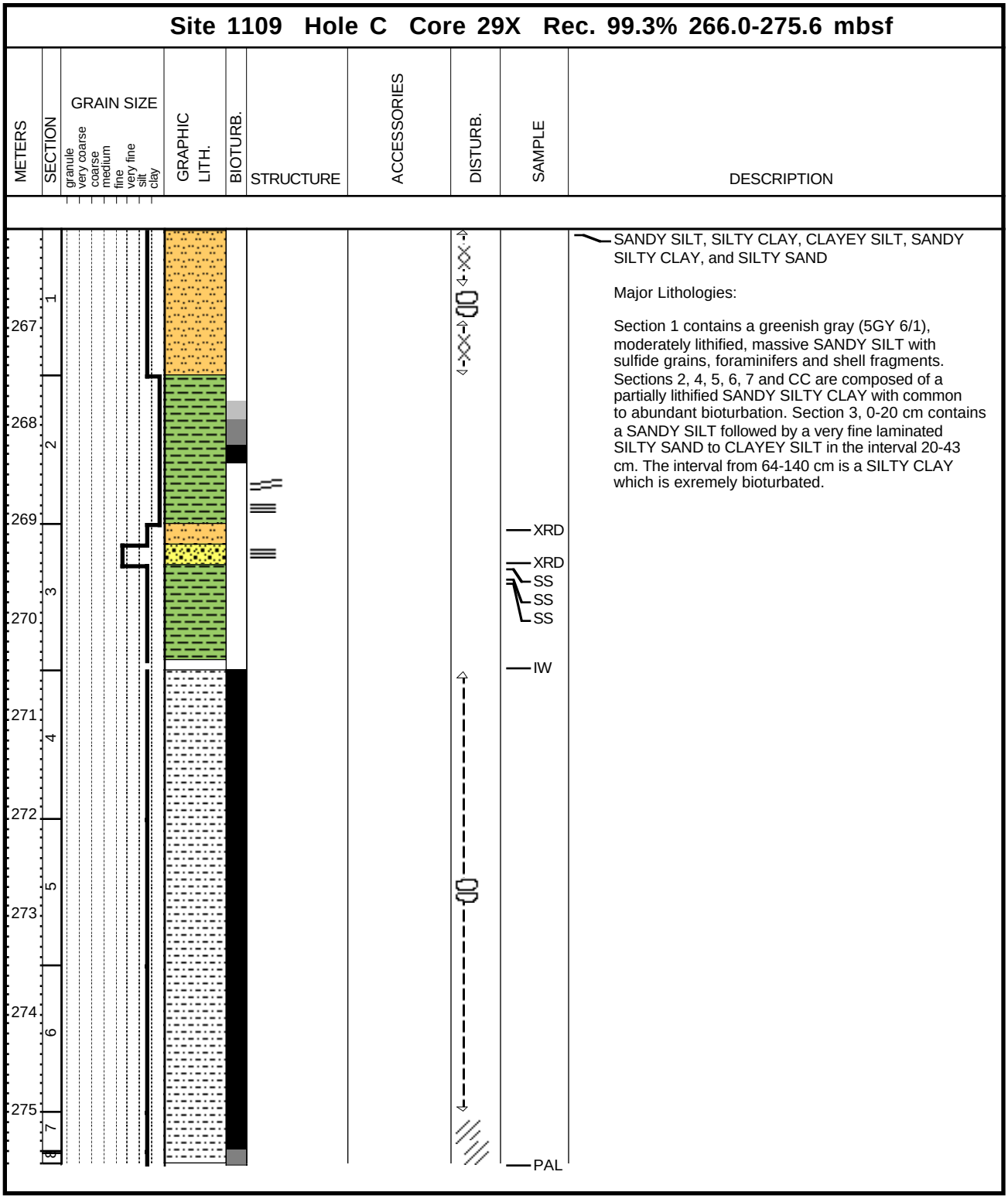
Core Photo


Site 1109 Hole C Core 27X Rec. 98.5% 246.7-256.3 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
247
248
249
250
251
252
253
254
255
256
1
2
3
4
5
6
7
8
F
SS
SS
SS
XRD
PAL
FORAMINIFER-BEARING SILT, VOLCANICLASTIC SAND, SILTY CLAY, CLAYEY SILT, SILT, SAND, SILTY CLAYSTONE
Major Lithologies:
Section 1, 0-74 cm contains a FORAMINIFER-BEARING SILT with SAND and the interval 78-123 cm shows a sand-bearing calcareous SILT (Calcilutite?). A VOLCANICLASTIC SAND (rich in glass shards) is present at 74-78 cm. Section 2 is composed of alternating calcareous SILTY CLAY with CLAYEY SILT. Sections 3, 4 and 5 are characterized by a greenish gray (5GY 6/1) calcareous CLAYEY SILT and SILTY CLAYSTONE with foraminifers and shell fragments. CLAYEY SILT in Section 6 is very burrowed and scattered with foraminifers, biotite, and quartz. Sections 7 and Core Catcher display the same lithology as Sections 3 to 5.

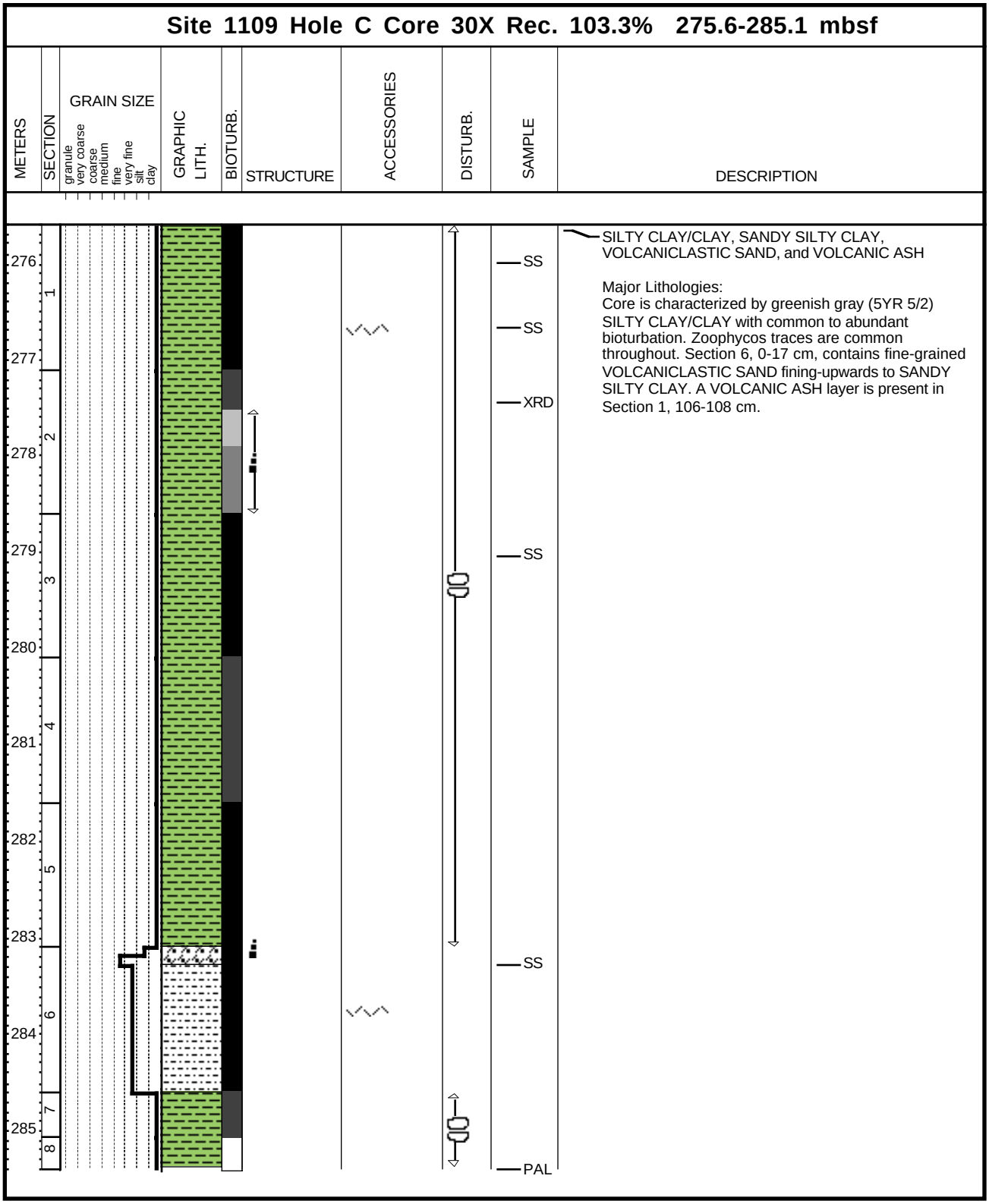
Core Photo


Site 1109 Hole C Core 28X Rec. 100.4% 256.3-266.0 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
257
258
259
260
261
262
263
264
265
266
1
2
3
4
5
6
7
8
THS
XRD
IW
PAL
CALCAREOUS SILT, VOLCANICLASTIC SAND, SANDY SILT, SILTY CLAY, and SAND
Major Lithologies:
Section 1, 0-142 cm is a foraminifer-bearing CALCAREOUS SILT with SAND. The interval 142-150 cm contains a VOLCANICLASTIC SAND. Sections 2, 3, 4 , 5, 6, 7 and Core Catcher are characterized by greenish gray (5GY 6/1) SANDY SILT to SILTY CLAY with foraminifers, shell fragments, and rare volcanic particles. The entire core is brecciated, or fractured to form drilling biscuits.

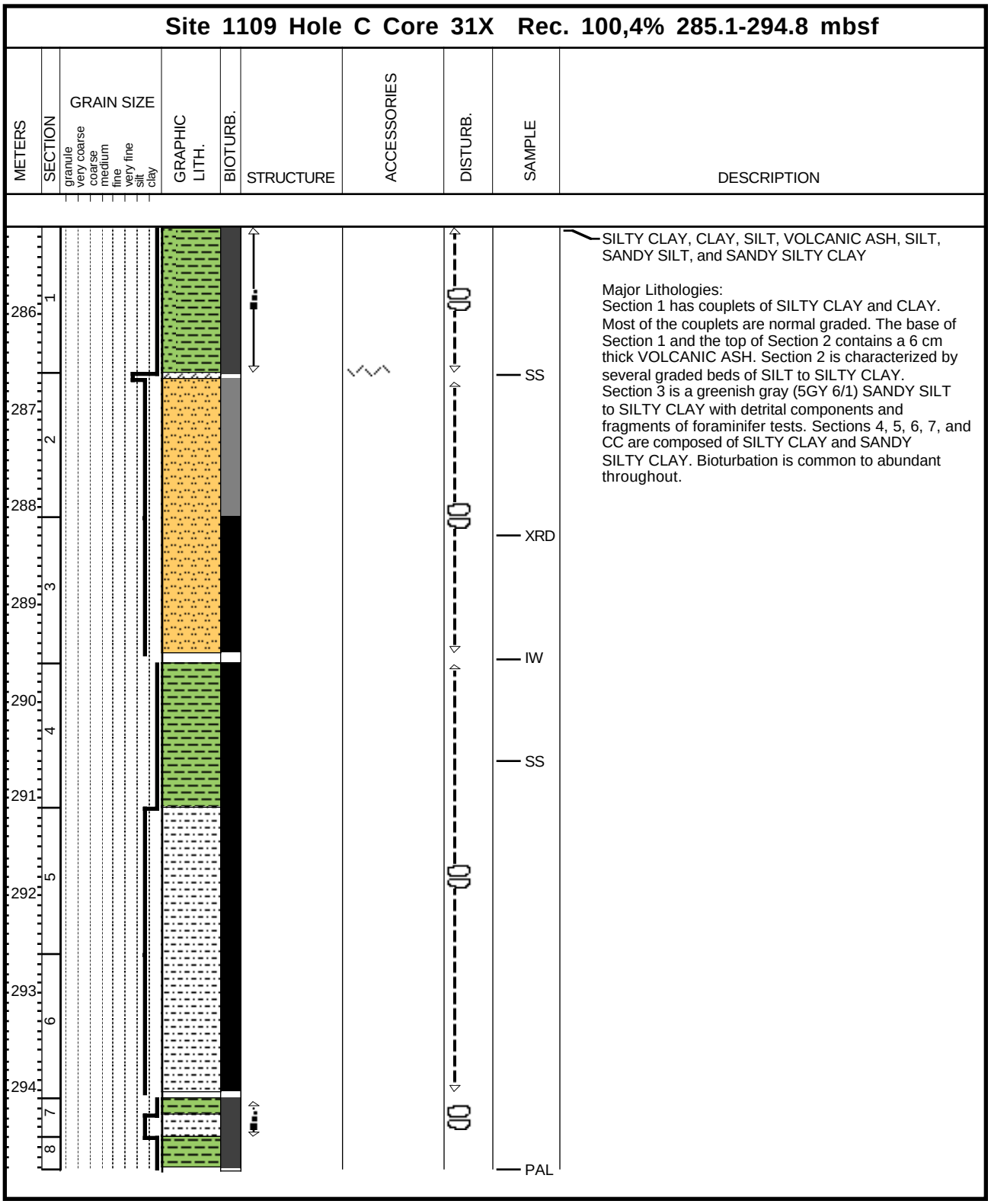
Core Photo


Site 1109 Hole C Core 29X Rec. 99.3% 266.0-275.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
267
268
269
270
271
272
273
274
275
1
2
3
4
5
6
7
CC
XRD
XRD
SS
SS
SS
IW
PAL
SANDY SILT, SILTY CLAY, CLAYEY SILT, SANDY SILTY CLAY, and SILTY SAND
Major Lithologies:
Section 1 contains a greenish gray (5GY 6/1), moderately lithified, massive SANDY SILT with sulfide grains, foraminifers and shell fragments. Sections 2, 4, 5, 6, 7 and CC are composed of a partially lithified SANDY SILTY CLAY with common to abundant bioturbation. Section 3, 0-20 cm contains a SANDY SILT followed by a very fine laminated SILTY SAND to CLAYEY SILT in the interval 20-43 cm. The interval from 64-140 cm is a SILTY CLAY which is exremely bioturbated.

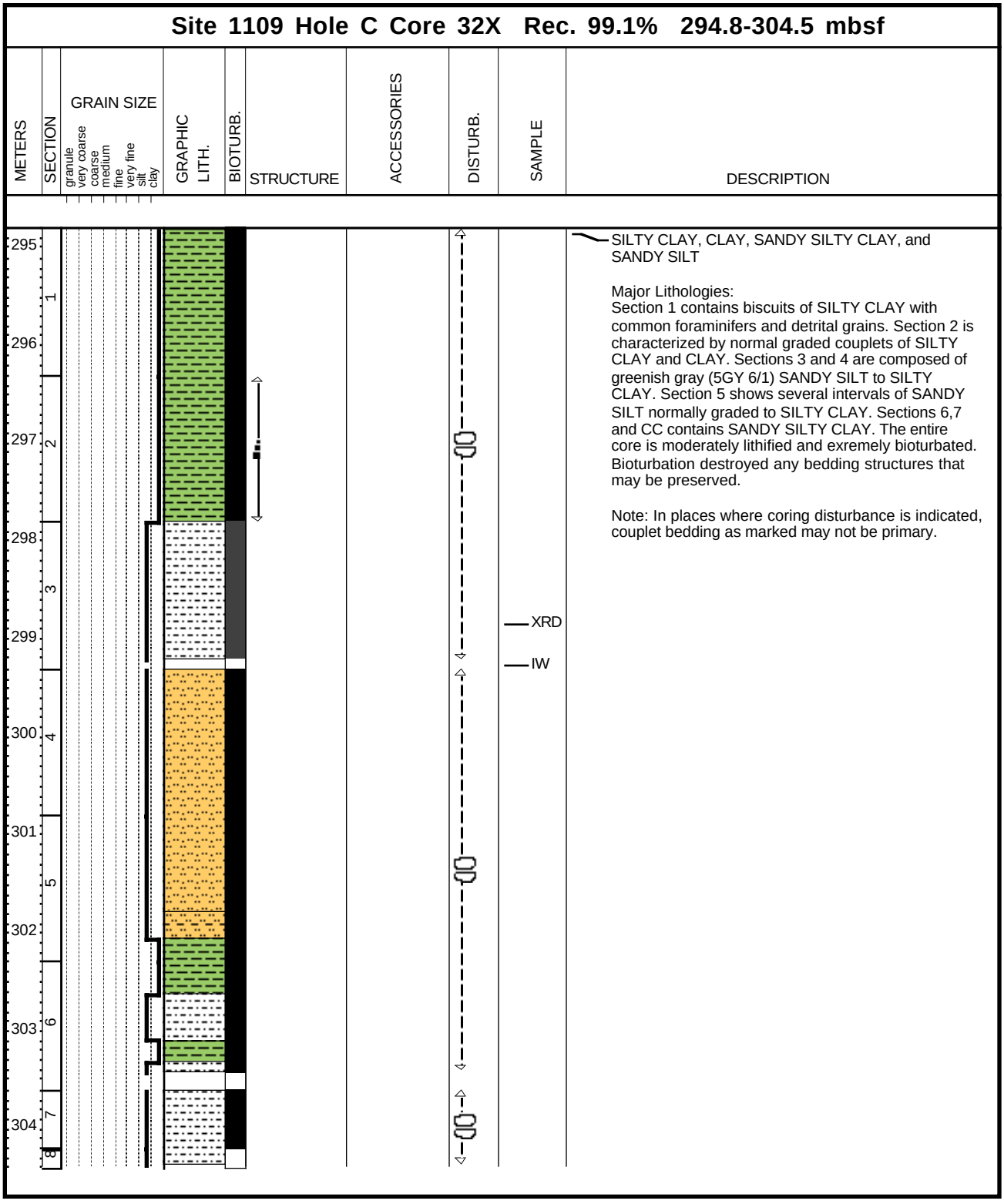
Core Photo


Site 1109 Hole C Core 30X Rec. 103.3% 275.6-285.1 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
276
277
278
279
280
281
282
283
284
285
1
2
3
4
5
6
7
8
SS
SS
XRD
SS
SS
PAL
SILTY CLAY/CLAY, SANDY SILTY CLAY, VOLCANICLASTIC SAND, and VOLCANIC ASH
Major Lithologies:
Core is characterized by greenish gray (5YR 5/2) SILTY CLAY/CLAY with common to abundant bioturbation. Zoophycos traces are common throughout. Section 6, 0-17 cm, contains fine-grained VOLCANICLASTIC SAND fining-upwards to SANDY SILTY CLAY. A VOLCANIC ASH layer is present in Section 1, 106-108 cm.

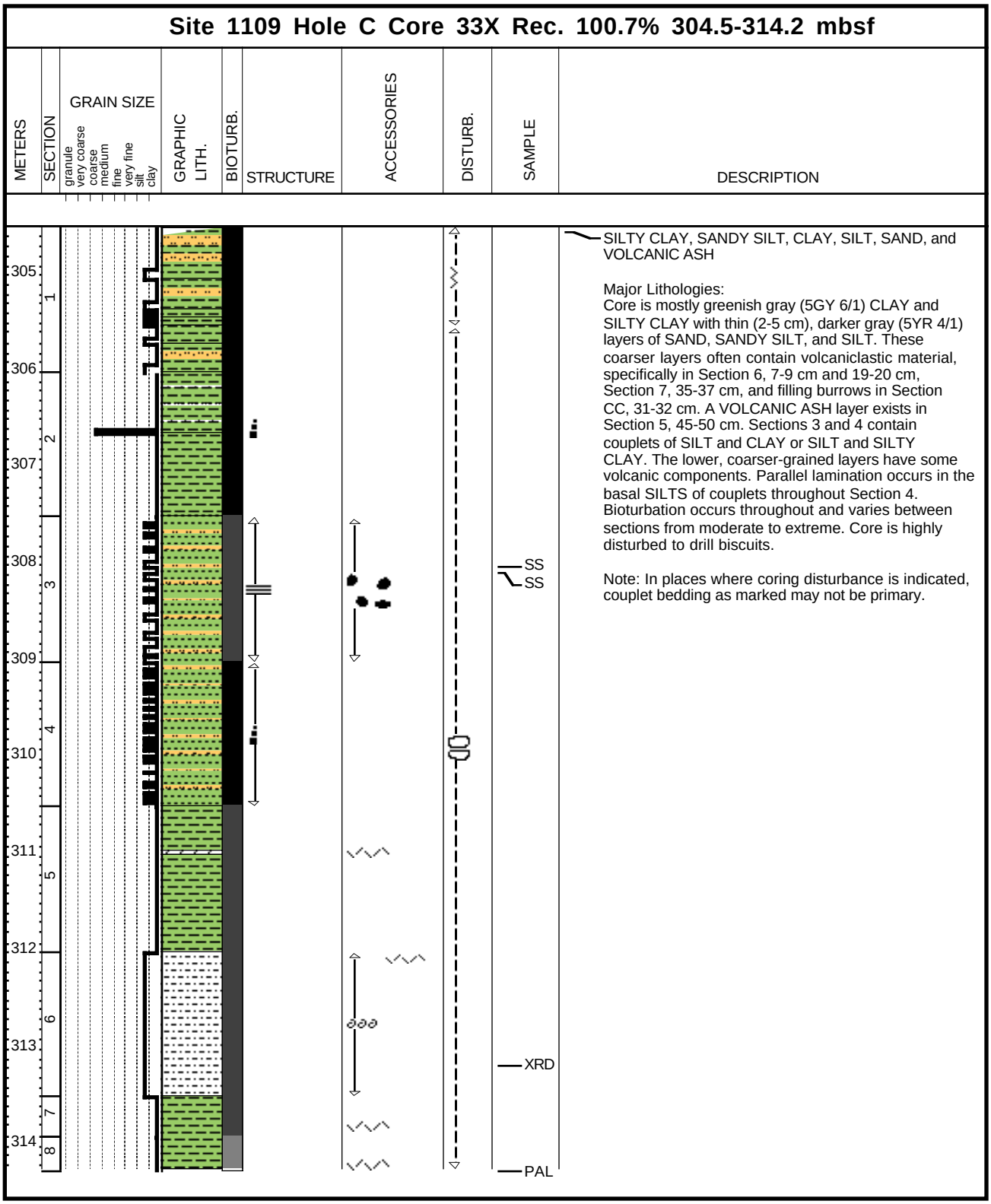
Core Photo


Site 1109 Hole C Core 31X Rec. 100,4% 285.1-294.8 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
286
287
288
289
290
291
292
293
294
1
2
3
4
5
6
7
8
SS
XRD
IW
SS
PAL
SILTY CLAY, CLAY, SILT, VOLCANIC ASH, SILT, SANDY SILT, and SANDY SILTY CLAY
Major Lithologies:
Section 1 has couplets of SILTY CLAY and CLAY. Most of the couplets are normal graded. The base of Section 1 and the top of Section 2 contains a 6 cm thick VOLCANIC ASH. Section 2 is characterized by several graded beds of SILT to SILTY CLAY. Section 3 is a greenish gray (5GY 6/1) SANDY SILT to SILTY CLAY with detrital components and fragments of foraminifer tests. Sections 4, 5, 6, 7, and CC are composed of SILTY CLAY and SANDY SILTY CLAY. Bioturbation is common to abundant throughout.

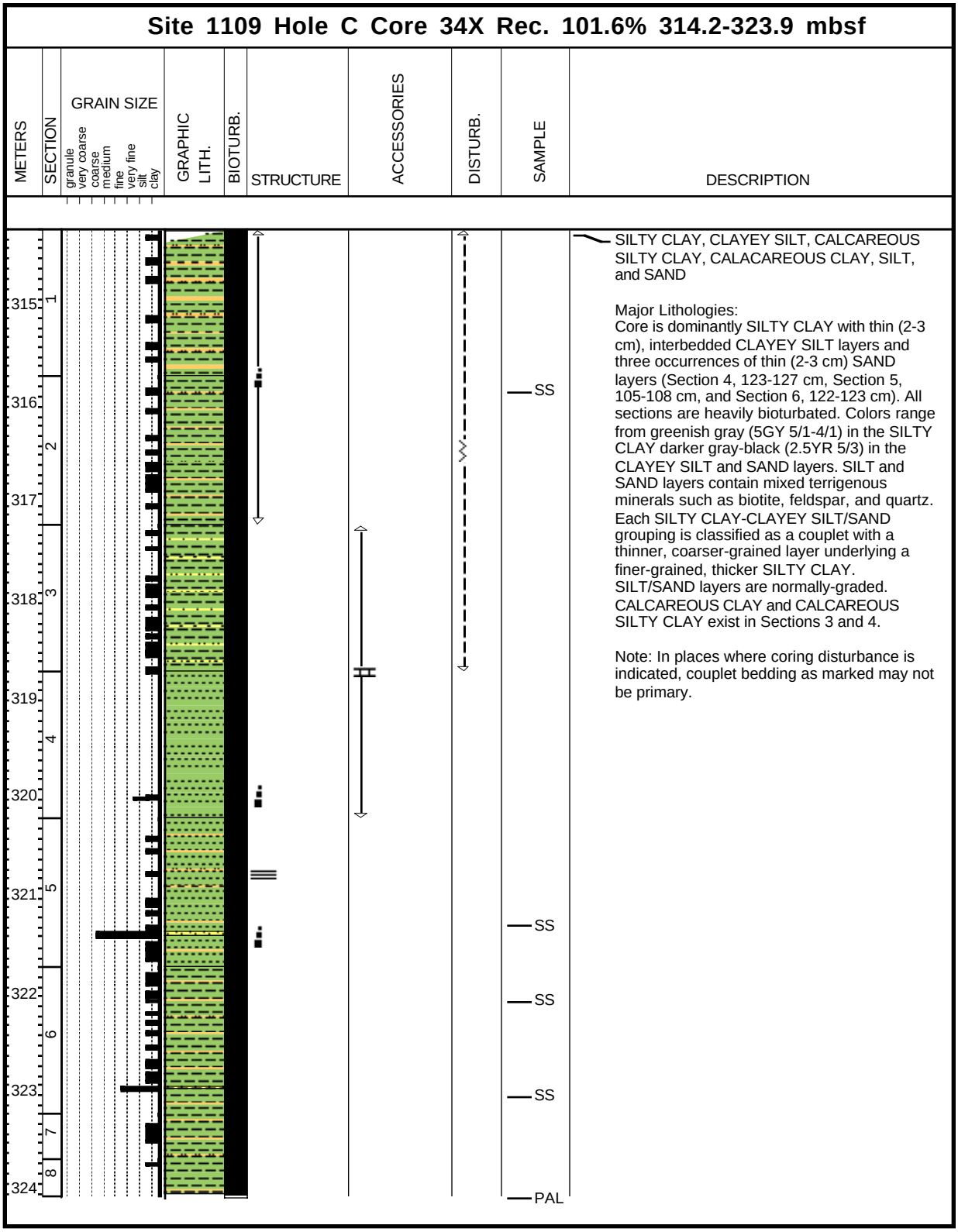
Core Photo


Site 1109 Hole C Core 32X Rec. 99.1% 294.8-304.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
295
296
297
298
299
300
301
302
303
304
1
2
3
4
5
6
7
8
XRD
IW
SILTY CLAY, CLAY, SANDY SILTY CLAY, and SANDY SILT
Major Lithologies:
Section 1 contains biscuits of SILTY CLAY with common foraminifers and detrital grains. Section 2 is characterized by normal graded couplets of SILTY CLAY and CLAY. Sections 3 and 4 are composed of greenish gray (5GY 6/1) SANDY SILT to SILTY CLAY. Section 5 shows several intervals of SANDY SILT normally graded to SILTY CLAY. Sections 6,7 and CC contains SANDY SILTY CLAY. The entire core is moderately lithified and exremely bioturbated. Bioturbation destroyed any bedding structures that may be preserved.
Note: In places where coring disturbance is indicated, couplet bedding as marked may not be primary.

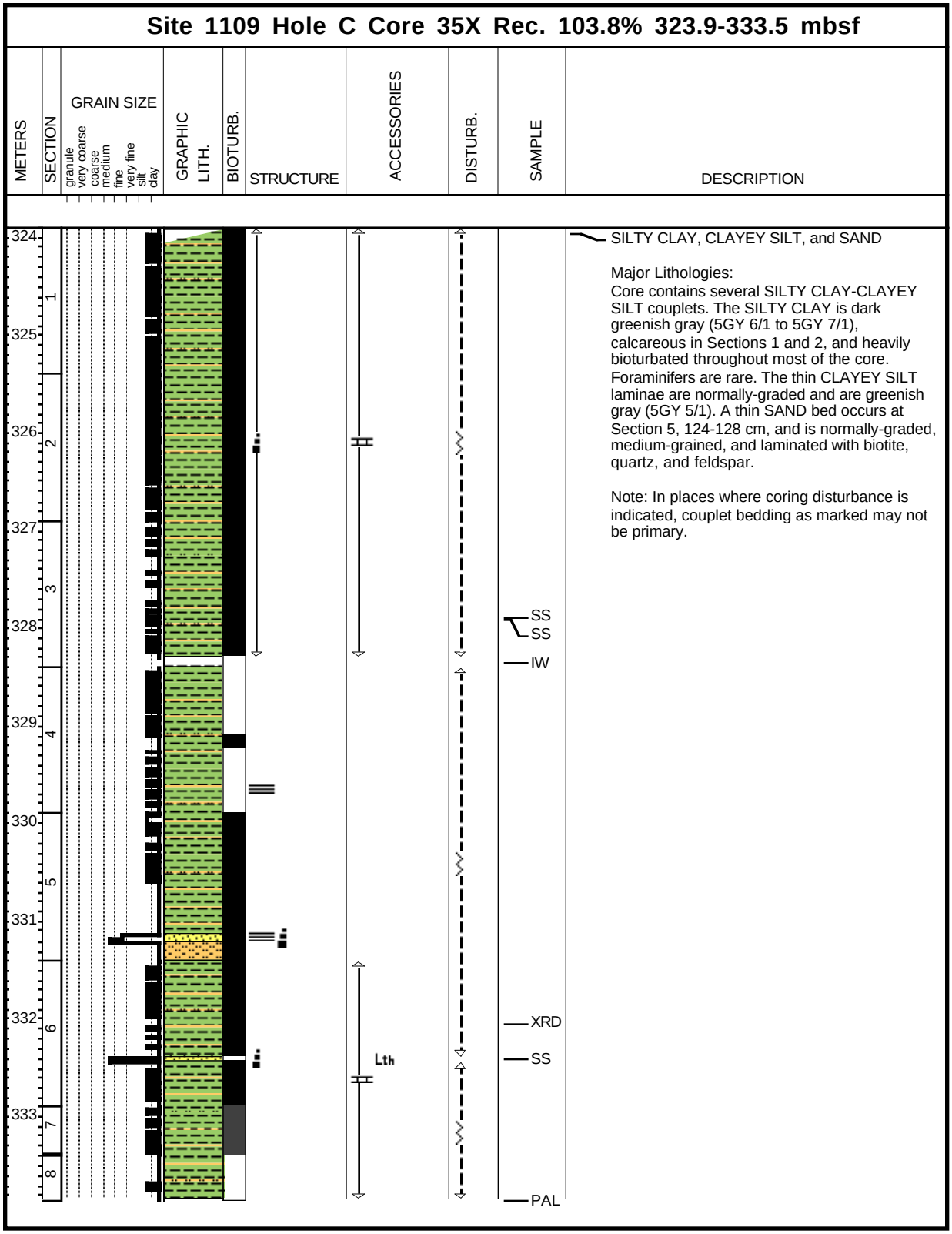
Core Photo


Site 1109 Hole C Core 33X Rec. 100.7% 304.5-314.2 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
305
306
307
308
309
310
311
312
313
314
1
2
3
4
5
6
7
8
SS
SS
XRD
PAL
SILTY CLAY, SANDY SILT, CLAY, SILT, SAND, and VOLCANIC ASH
Major Lithologies:
Core is mostly greenish gray (5GY 6/1) CLAY and SILTY CLAY with thin (2-5 cm), darker gray (5YR 4/1) layers of SAND, SANDY SILT, and SILT. These coarser layers often contain volcaniclastic material, specifically in Section 6, 7-9 cm and 19-20 cm, Section 7, 35-37 cm, and filling burrows in Section CC, 31-32 cm. A VOLCANIC ASH layer exists in Section 5, 45-50 cm. Sections 3 and 4 contain couplets of SILT and CLAY or SILT and SILTY CLAY. The lower, coarser-grained layers have some volcanic components. Parallel lamination occurs in the basal SILTS of couplets throughout Section 4. Bioturbation occurs throughout and varies between sections from moderate to extreme. Core is highly disturbed to drill biscuits.
Note: In places where coring disturbance is indicated, couplet bedding as marked may not be primary.

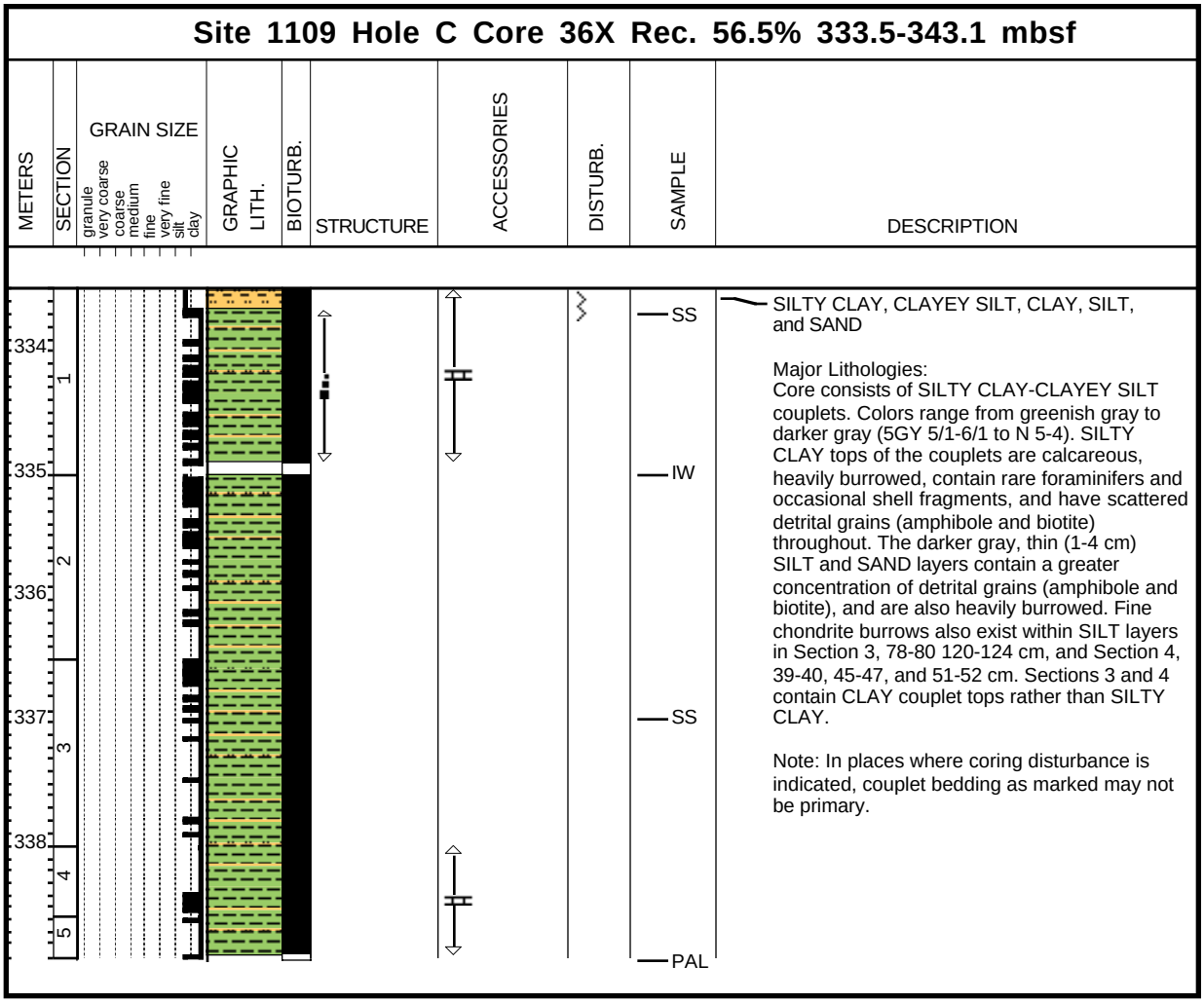
Core Photo


Site 1109 Hole C Core 34X Rec. 101.6% 314.2-323.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
315
316
317
318
319
320
321
322
323
324
1
2
3
4
5
6
7
8
SS
SS
SS
SS
PAL
SILTY CLAY, CLAYEY SILT, CALCAREOUS SILTY CLAY, CALACAREOUS CLAY, SILT, and SAND
Major Lithologies:
Core is dominantly SILTY CLAY with thin (2-3 cm), interbedded CLAYEY SILT layers and three occurrences of thin (2-3 cm) SAND layers (Section 4, 123-127 cm, Section 5, 105-108 cm, and Section 6, 122-123 cm). All sections are heavily bioturbated. Colors range from greenish gray (5GY 5/1-4/1) in the SILTY CLAY darker gray-black (2.5YR 5/3) in the CLAYEY SILT and SAND layers. SILT and SAND layers contain mixed terrigenous minerals such as biotite, feldspar, and quartz. Each SILTY CLAY-CLAYEY SILT/SAND grouping is classified as a couplet with a thinner, coarser-grained layer underlying a finer-grained, thicker SILTY CLAY. SILT/SAND layers are normally-graded. CALCAREOUS CLAY and CALCAREOUS SILTY CLAY exist in Sections 3 and 4.
Note: In places where coring disturbance is indicated, couplet bedding as marked may not be primary.

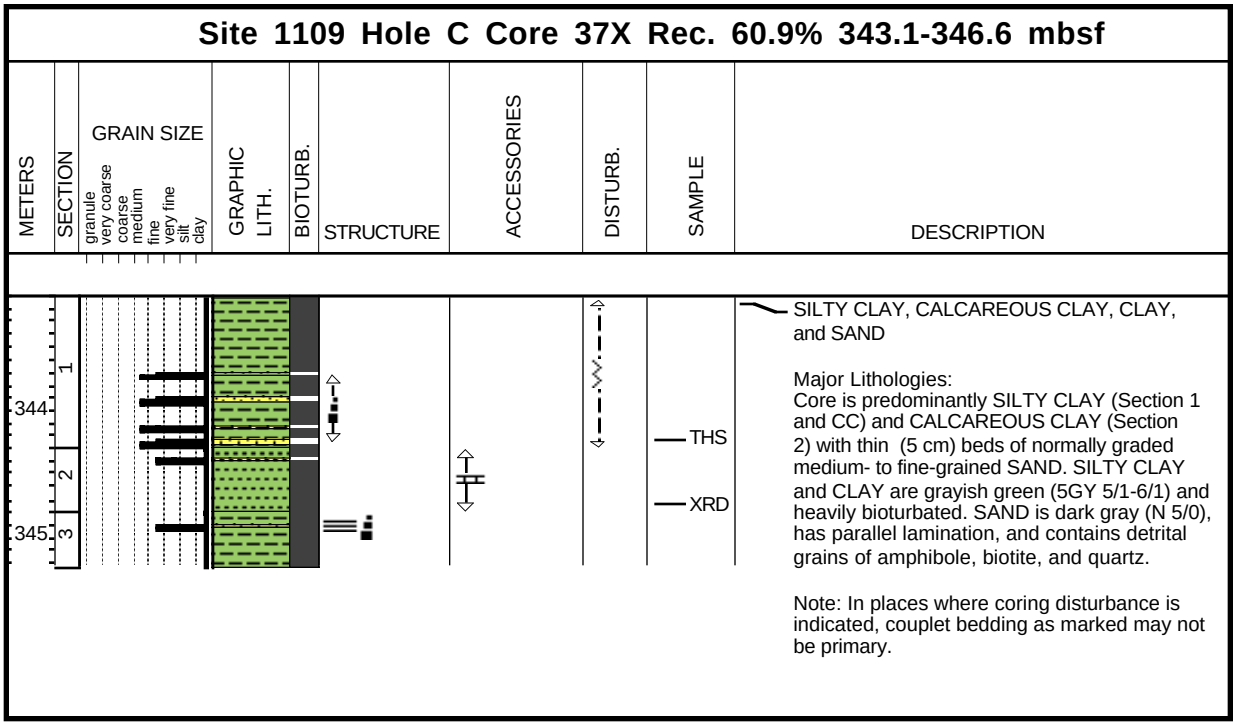
Core Photo


Site 1109 Hole C Core 35X Rec. 103.8% 323.9-333.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
324
325
326
327
328
329
330
331
332
333
1
2
3
4
5
6
7
8
Lth
SS
SS
IW
XRD
SS
PAL
SILTY CLAY, CLAYEY SILT, and SAND
Major Lithologies:
Core contains several SILTY CLAY-CLAYEY SILT couplets. The SILTY CLAY is dark greenish gray (5GY 6/1 to 5GY 7/1), calcareous in Sections 1 and 2, and heavily bioturbated throughout most of the core. Foraminifers are rare. The thin CLAYEY SILT laminae are normally-graded and are greenish gray (5GY 5/1). A thin SAND bed occurs at Section 5, 124-128 cm, and is normally-graded, medium-grained, and laminated with biotite, quartz, and feldspar.
Note: In places where coring disturbance is indicated, couplet bedding as marked may not be primary.

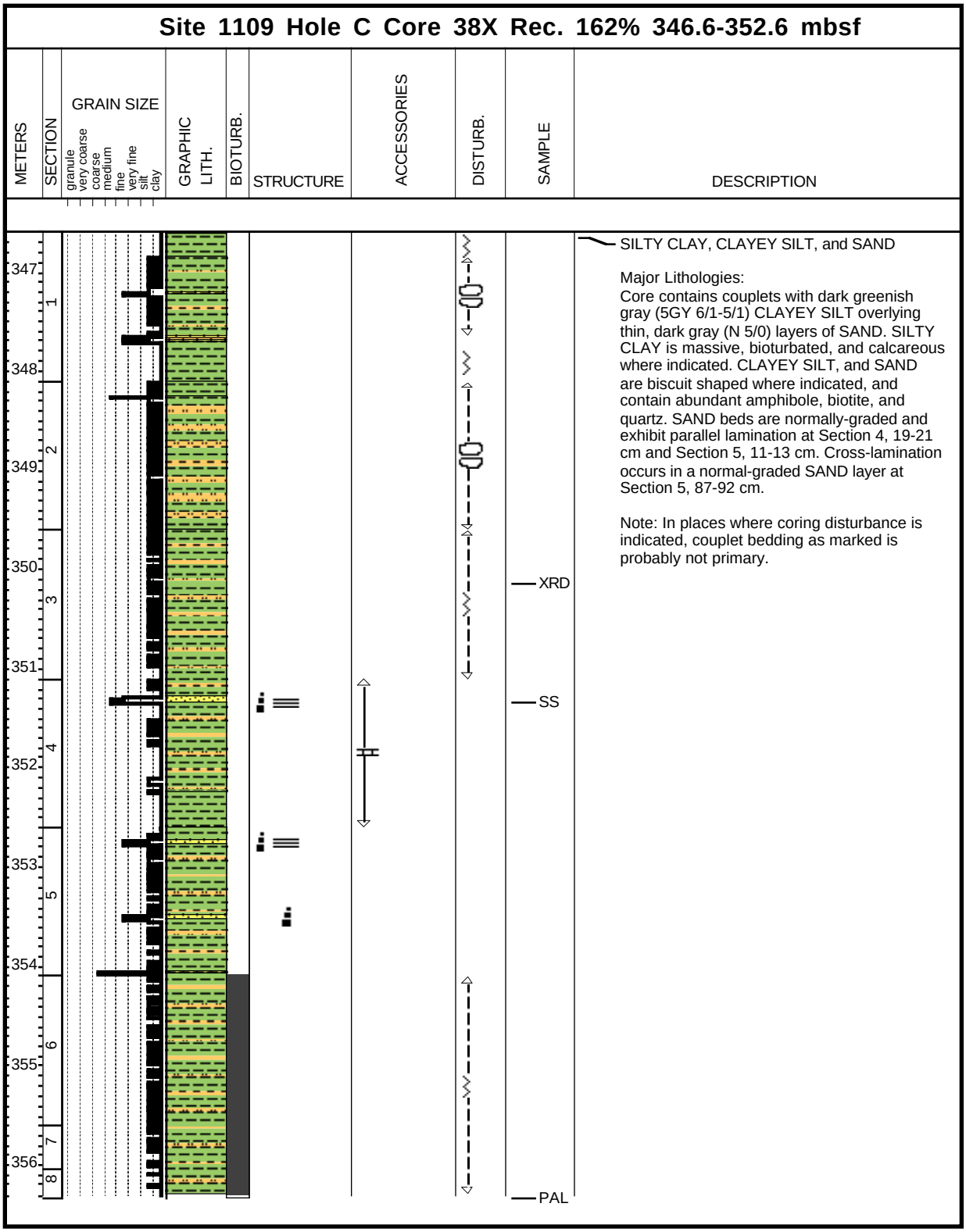
Core Photo


Site 1109 Hole C Core 36X Rec. 56.5% 333.5-343.1 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
334
335
336
337
338
1
2
3
4
5
SS
IW
SS
PAL
SILTY CLAY, CLAYEY SILT, CLAY, SILT, and SAND
Major Lithologies:
Core consists of SILTY CLAY-CLAYEY SILT couplets. Colors range from greenish gray to darker gray (5GY 5/1-6/1 to N 5-4). SILTY CLAY tops of the couplets are calcareous, heavily burrowed, contain rare foraminifers and occasional shell fragments, and have scattered detrital grains (amphibole and biotite) throughout. The darker gray, thin (1-4 cm) SILT and SAND layers contain a greater concentration of detrital grains (amphibole and biotite), and are also heavily burrowed. Fine chondrite burrows also exist within SILT layers in Section 3, 78-80 120-124 cm, and Section 4, 39-40, 45-47, and 51-52 cm. Sections 3 and 4 contain CLAY couplet tops rather than SILTY CLAY.
Note: In places where coring disturbance is indicated, couplet bedding as marked may not be primary.

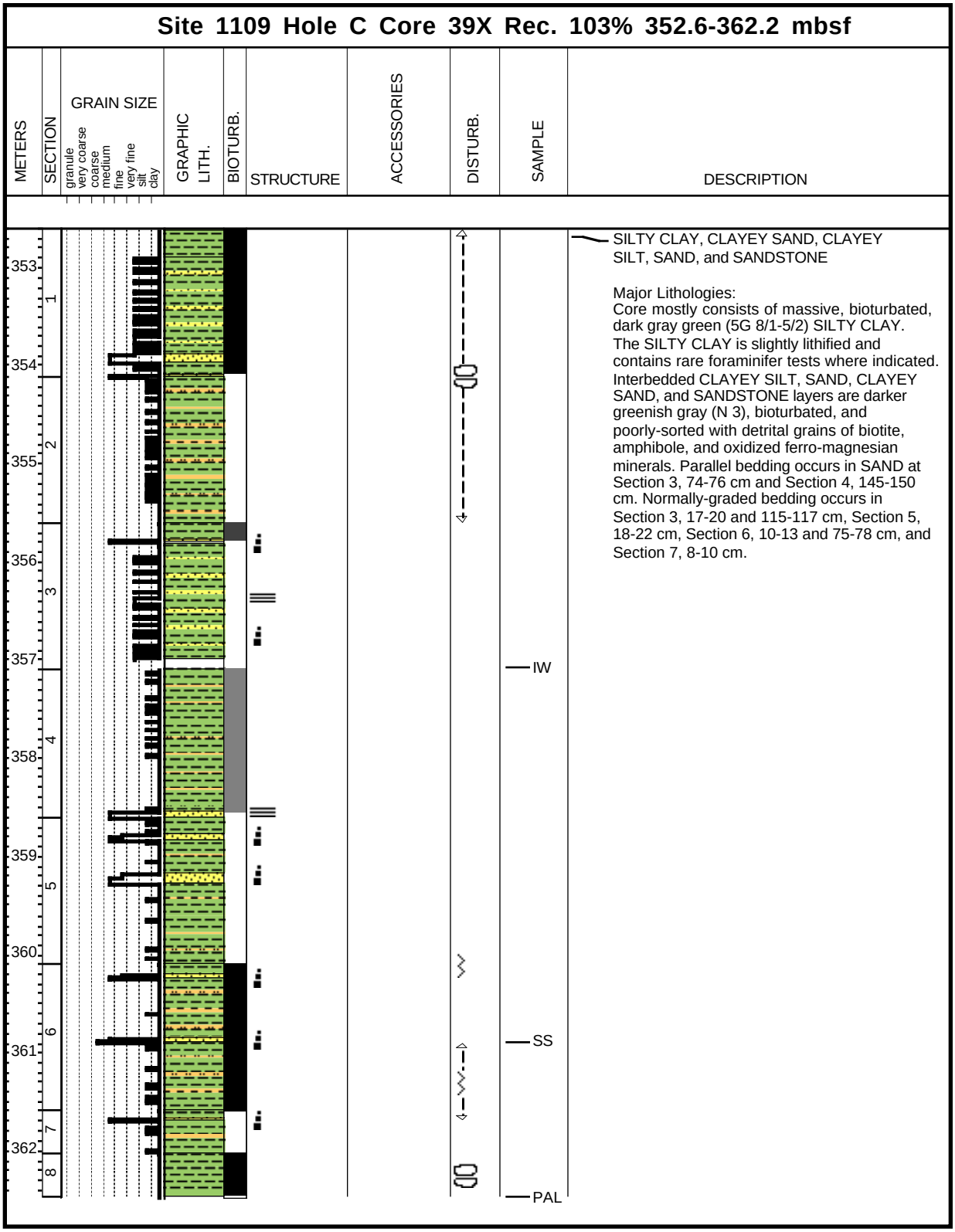
Core Photo


Site 1109 Hole C Core 37X Rec. 60.9% 343.1-346.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
344
345
1
2
3
THS
XRD
SILTY CLAY, CALCAREOUS CLAY, CLAY, and SAND
Major Lithologies:
Core is predominantly SILTY CLAY (Section 1 and CC) and CALCAREOUS CLAY (Section 2) with thin (5 cm) beds of normally graded medium- to fine-grained SAND. SILTY CLAY and CLAY are grayish green (5GY 5/1-6/1) and heavily bioturbated. SAND is dark gray (N 5/0), has parallel lamination, and contains detrital grains of amphibole, biotite, and quartz.
Note: In places where coring disturbance is indicated, couplet bedding as marked may not be primary.

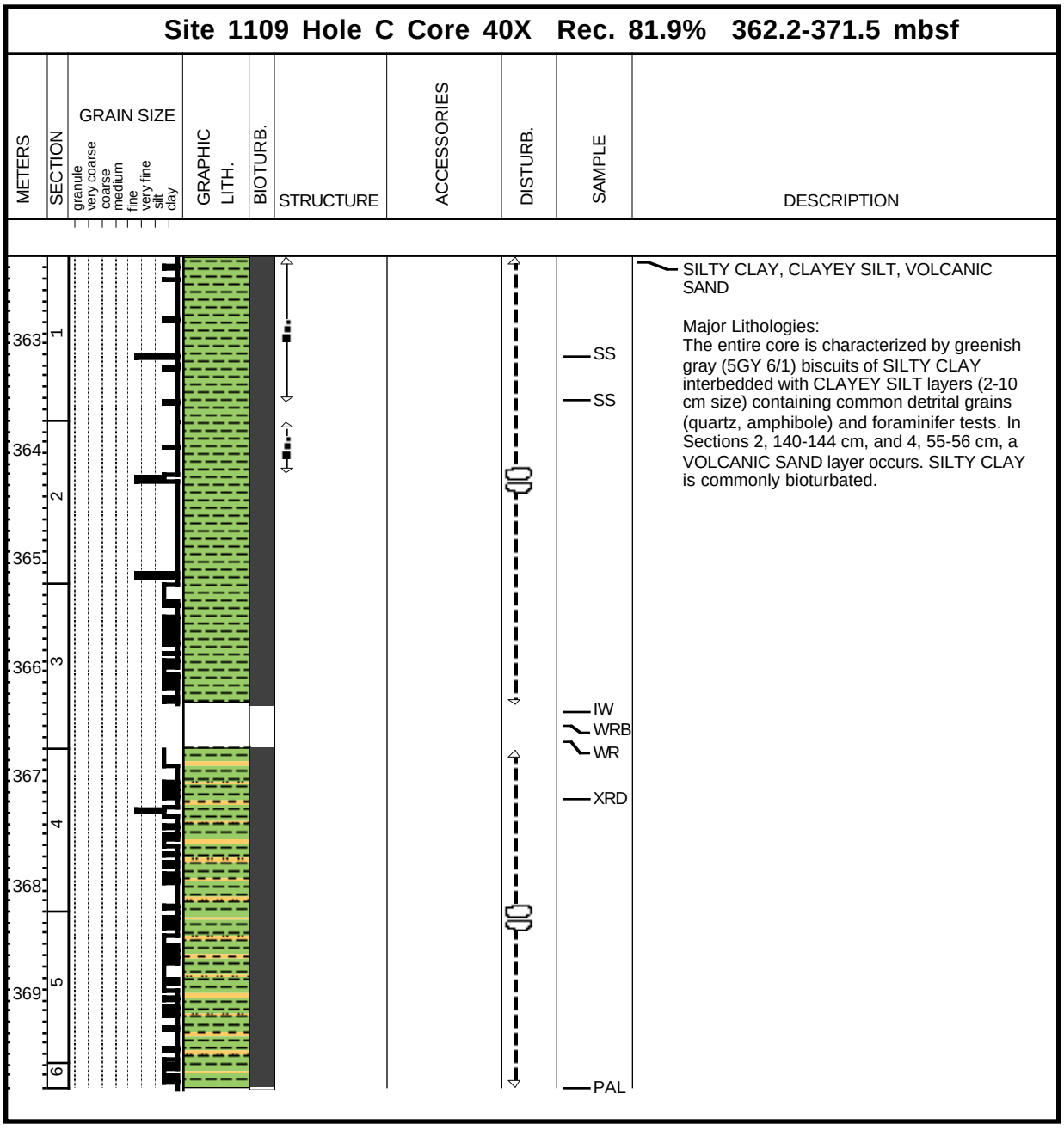
Core Photo


Site 1109 Hole C Core 38X Rec. 162% 346.6-352.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
347
348
349
350
351
352
353
354
355
356
1
2
3
4
5
6
7
8
XRD
SS
PAL
SILTY CLAY, CLAYEY SILT, and SAND
Major Lithologies:
Core contains couplets with dark greenish gray (5GY 6/1-5/1) CLAYEY SILT overlying thin, dark gray (N 5/0) layers of SAND. SILTY CLAY is massive, bioturbated, and calcareous where indicated. CLAYEY SILT, and SAND are biscuit shaped where indicated, and contain abundant amphibole, biotite, and quartz. SAND beds are normally-graded and exhibit parallel lamination at Section 4, 19-21 cm and Section 5, 11-13 cm. Cross-lamination occurs in a normal-graded SAND layer at Section 5, 87-92 cm.
Note: In places where coring disturbance is indicated, couplet bedding as marked is probably not primary.

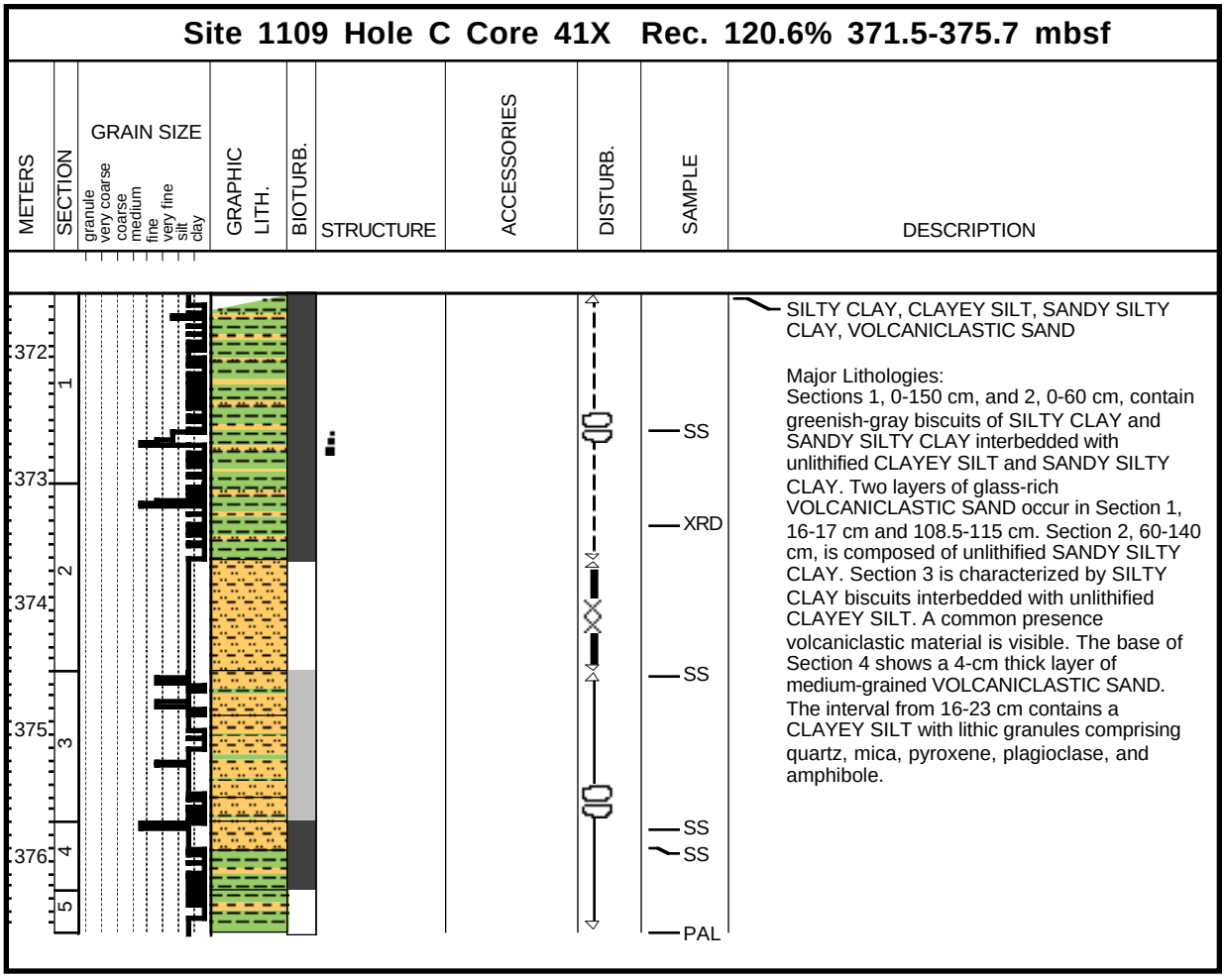
Core Photo


Site 1109 Hole C Core 39X Rec. 103% 352.6-362.2 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
353
354
355
356
357
358
359
360
361
362
1
2
3
4
5
6
7
8
IW
SS
PAL
SILTY CLAY, CLAYEY SAND, CLAYEY SILT, SAND, and SANDSTONE
Major Lithologies:
Core mostly consists of massive, bioturbated, dark gray green (5G 8/1-5/2) SILTY CLAY. The SILTY CLAY is slightly lithified and contains rare foraminifer tests where indicated. Interbedded CLAYEY SILT, SAND, CLAYEY SAND, and SANDSTONE layers are darker greenish gray (N 3), bioturbated, and poorly-sorted with detrital grains of biotite, amphibole, and oxidized ferro-magnesian minerals. Parallel bedding occurs in SAND at Section 3, 74-76 cm and Section 4, 145-150 cm. Normally-graded bedding occurs in Section 3, 17-20 and 115-117 cm, Section 5, 18-22 cm, Section 6, 10-13 and 75-78 cm, and Section 7, 8-10 cm.

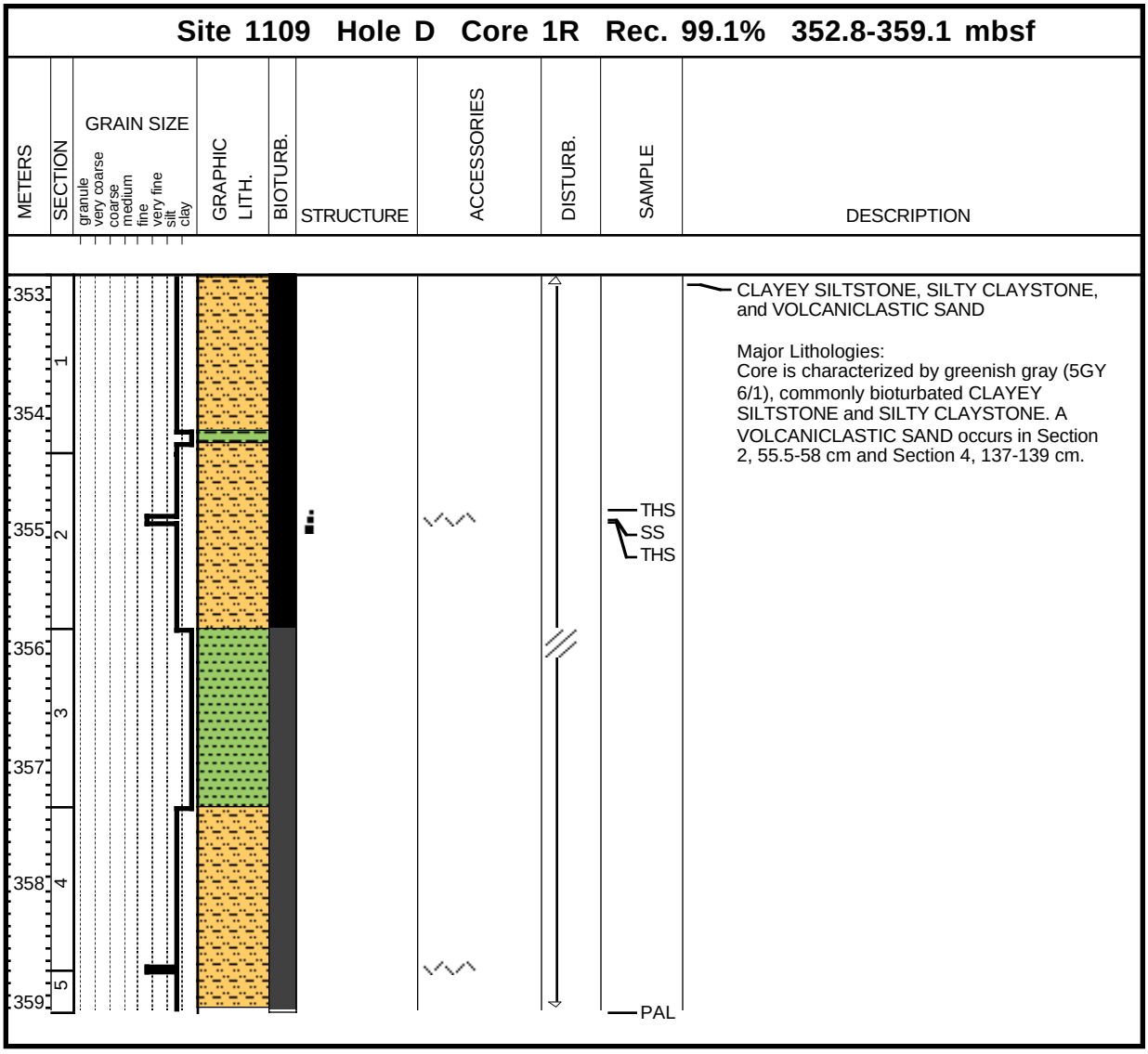
Core Photo


Site 1109 Hole C Core 40X Rec. 81.9% 362.2-371.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
363
364
365
366
367
368
369
1
2
3
4
5
6
SS
SS
IW
WRB
WR
XRD
PAL
SILTY CLAY, CLAYEY SILT, VOLCANIC SAND
Major Lithologies:
The entire core is characterized by greenish gray (5GY 6/1) biscuits of SILTY CLAY interbedded with CLAYEY SILT layers (2-10 cm size) containing common detrital grains (quartz, amphibole) and foraminifer tests. In Sections 2, 140-144 cm, and 4, 55-56 cm, a VOLCANIC SAND layer occurs. SILTY CLAY is commonly bioturbated.

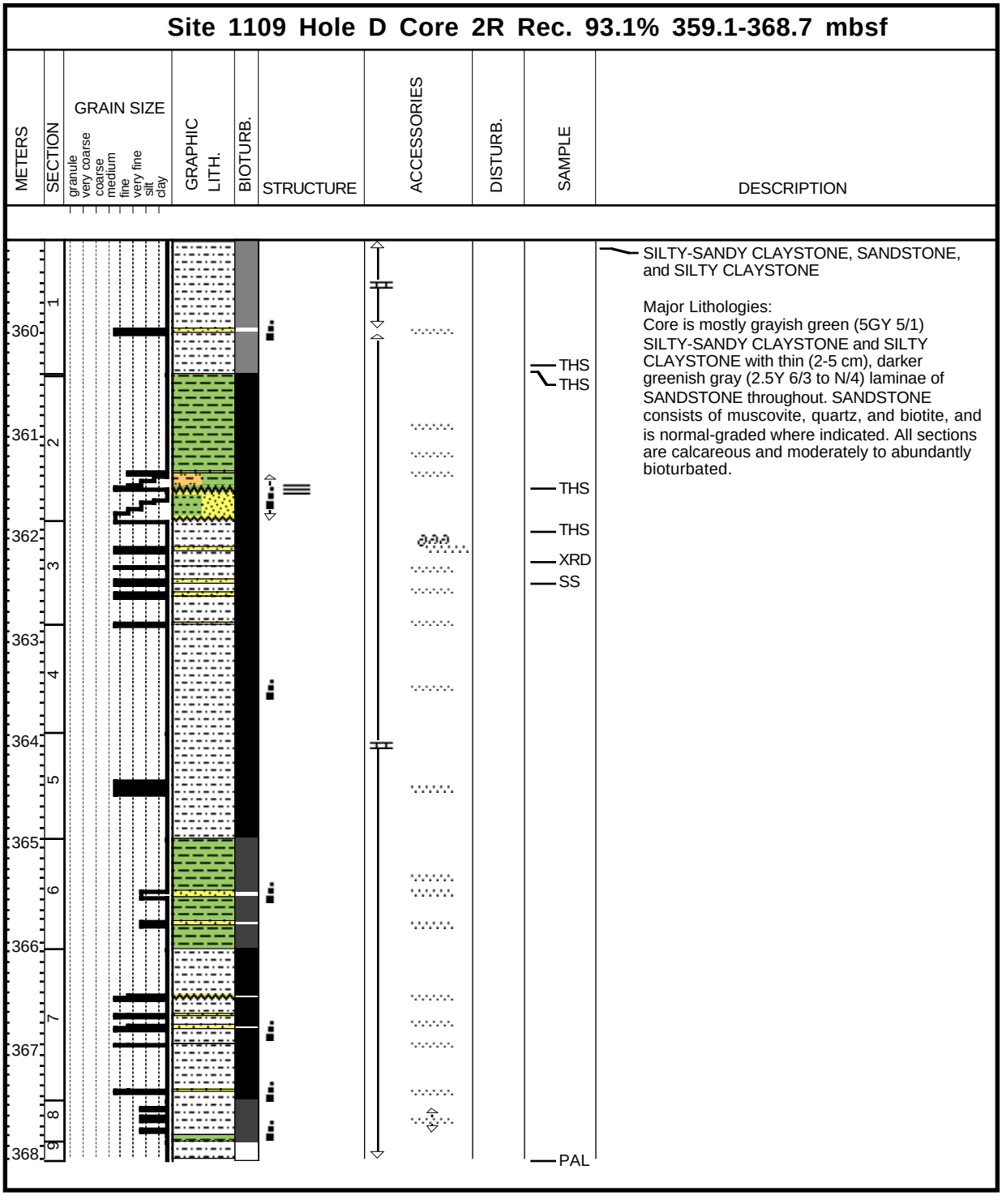
Core Photo


Site 1109 Hole C Core 41X Rec. 120.6% 371.5-375.7 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
372
373
374
375
376
1
2
3
4
5
SS
XRD
SS
SS
SS
PAL
SILTY CLAY, CLAYEY SILT, SANDY SILTY CLAY, VOLCANICLASTIC SAND
Major Lithologies:
Sections 1, 0-150 cm, and 2, 0-60 cm, contain greenish-gray biscuits of SILTY CLAY and SANDY SILTY CLAY interbedded with unlithified CLAYEY SILT and SANDY SILTY CLAY. Two layers of glass-rich VOLCANICLASTIC SAND occur in Section 1, 16-17 cm and 108.5-115 cm. Section 2, 60-140 cm, is composed of unlithified SANDY SILTY CLAY. Section 3 is characterized by SILTY CLAY biscuits interbedded with unlithified CLAYEY SILT. A common presence volcaniclastic material is visible. The base of Section 4 shows a 4-cm thick layer of medium-grained VOLCANICLASTIC SAND. The interval from 16-23 cm contains a CLAYEY SILT with lithic granules comprising quartz, mica, pyroxene, plagioclase, and amphibole.

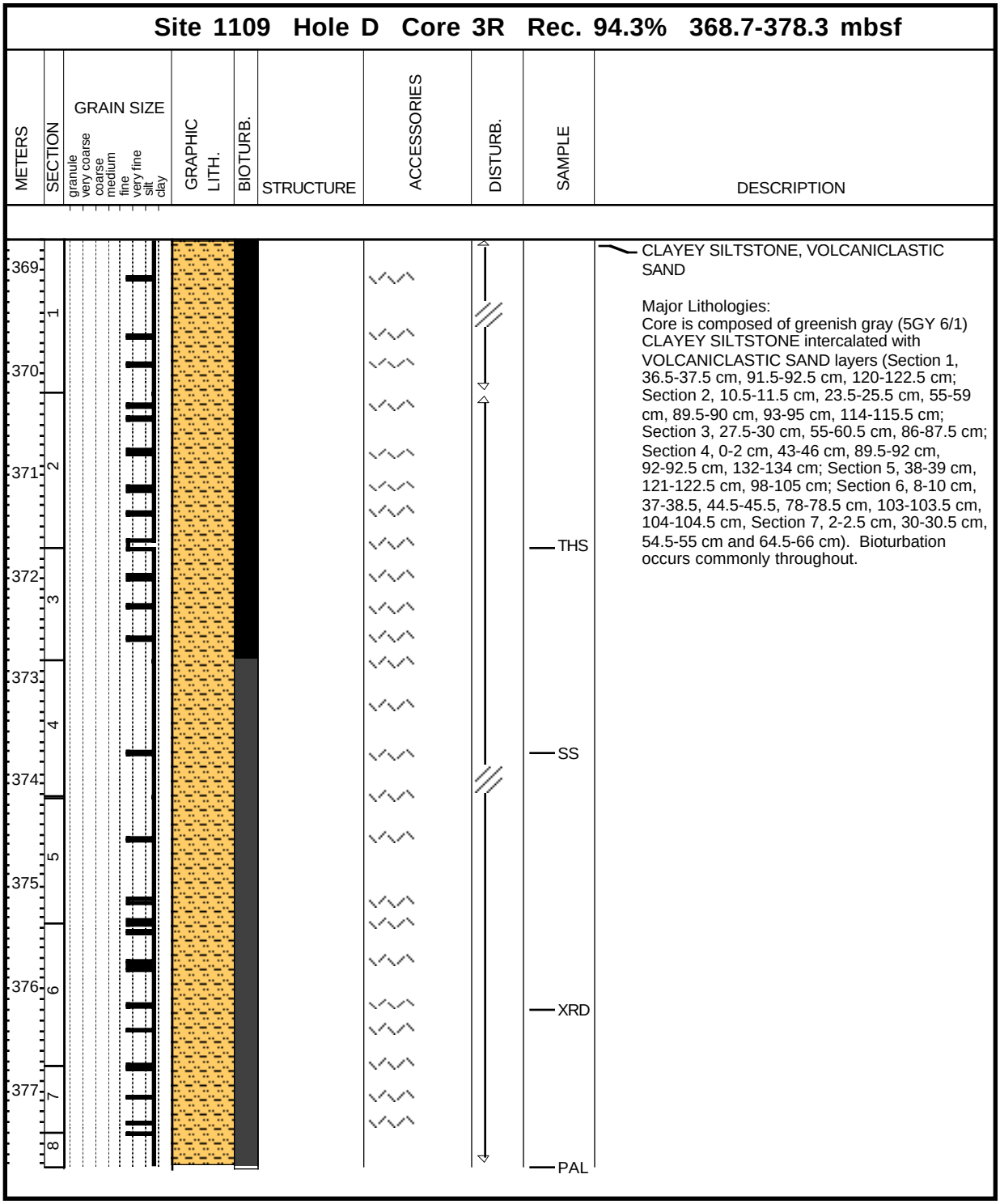
Core Photo


Site 1109 Hole D Core 1R Rec. 99.1% 352.8-359.1 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
353
354
355
356
357
358
359
1
2
3
4
5
THS
SS
THS
PAL
CLAYEY SILTSTONE, SILTY CLAYSTONE, and VOLCANICLASTIC SAND
Major Lithologies:
Core is characterized by greenish gray (5GY 6/1), commonly bioturbated CLAYEY SILTSTONE and SILTY CLAYSTONE. A VOLCANICLASTIC SAND occurs in Section 2, 55.5-58 cm and Section 4, 137-139 cm.

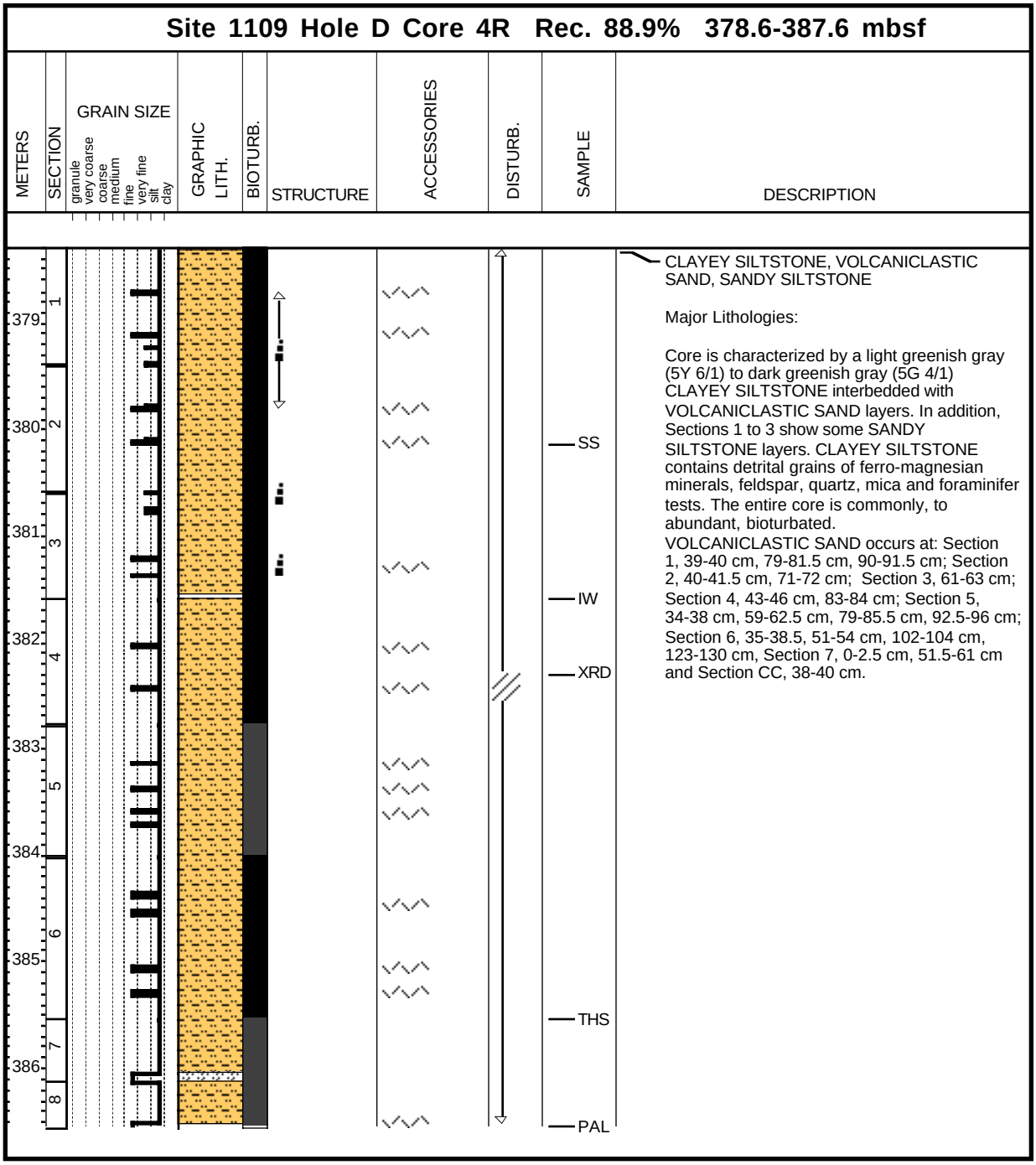
Core Photo


Site 1109 Hole D Core 2R Rec. 93.1% 359.1-368.7 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
360
361
362
363
364
365
366
367
368
1
2
3
4
5
6
7
8
9
THS
THS
THS
THS
XRD
SS
PAL
SILTY-SANDY CLAYSTONE, SANDSTONE, and SILTY CLAYSTONE
Major Lithologies:
Core is mostly grayish green (5GY 5/1) SILTY-SANDY CLAYSTONE and SILTY CLAYSTONE with thin (2-5 cm), darker greenish gray (2.5Y 6/3 to N/4) laminae of SANDSTONE throughout. SANDSTONE consists of muscovite, quartz, and biotite, and is normal-graded where indicated. All sections are calcareous and moderately to abundantly bioturbated.

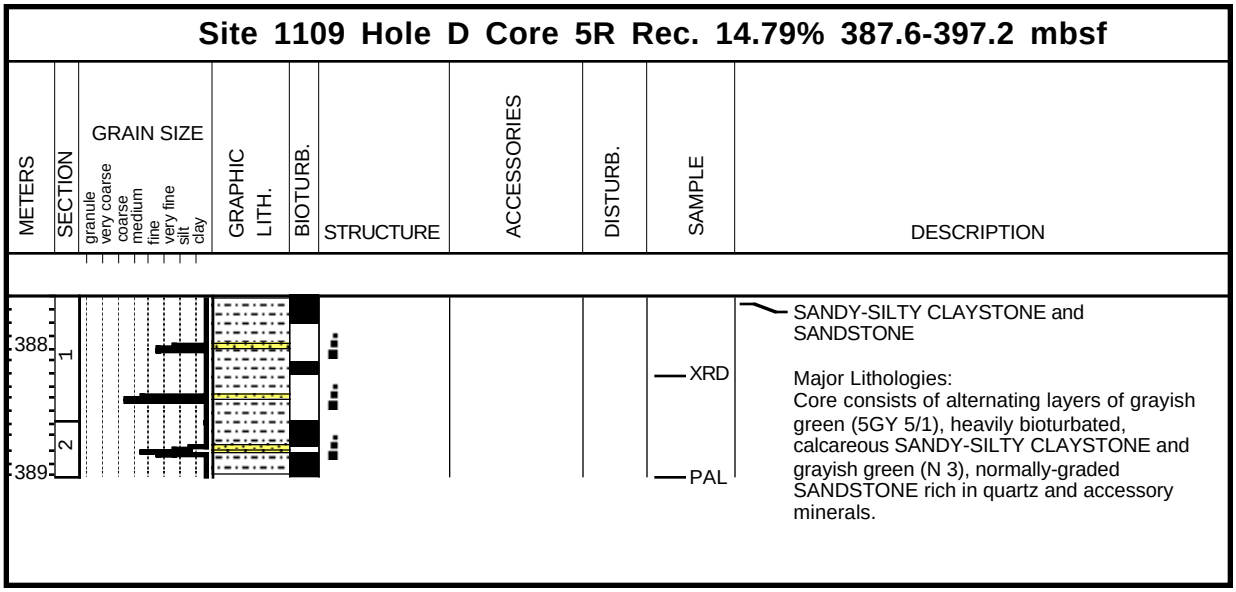
Core Photo


Site 1109 Hole D Core 3R Rec. 94.3% 368.7-378.3 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
369
370
371
372
373
374
375
376
377
1
2
3
4
5
6
7
8
THS
SS
XRD
PAL
CLAYEY SILTSTONE, VOLCANICLASTIC SAND
Major Lithologies:
Core is composed of greenish gray (5GY 6/1) CLAYEY SILTSTONE intercalated with VOLCANICLASTIC SAND layers (Section 1, 36.5-37.5 cm, 91.5-92.5 cm, 120-122.5 cm; Section 2, 10.5-11.5 cm, 23.5-25.5 cm, 55-59 cm, 89.5-90 cm, 93-95 cm, 114-115.5 cm; Section 3, 27.5-30 cm, 55-60.5 cm, 86-87.5 cm; Section 4, 0-2 cm, 43-46 cm, 89.5-92 cm, 92-92.5 cm, 132-134 cm; Section 5, 38-39 cm, 121-122.5 cm, 98-105 cm; Section 6, 8-10 cm, 37-38.5, 44.5-45.5, 78-78.5 cm, 103-103.5 cm, 104-104.5 cm, Section 7, 2-2.5 cm, 30-30.5 cm, 54.5-55 cm and 64.5-66 cm). Bioturbation occurs commonly throughout.

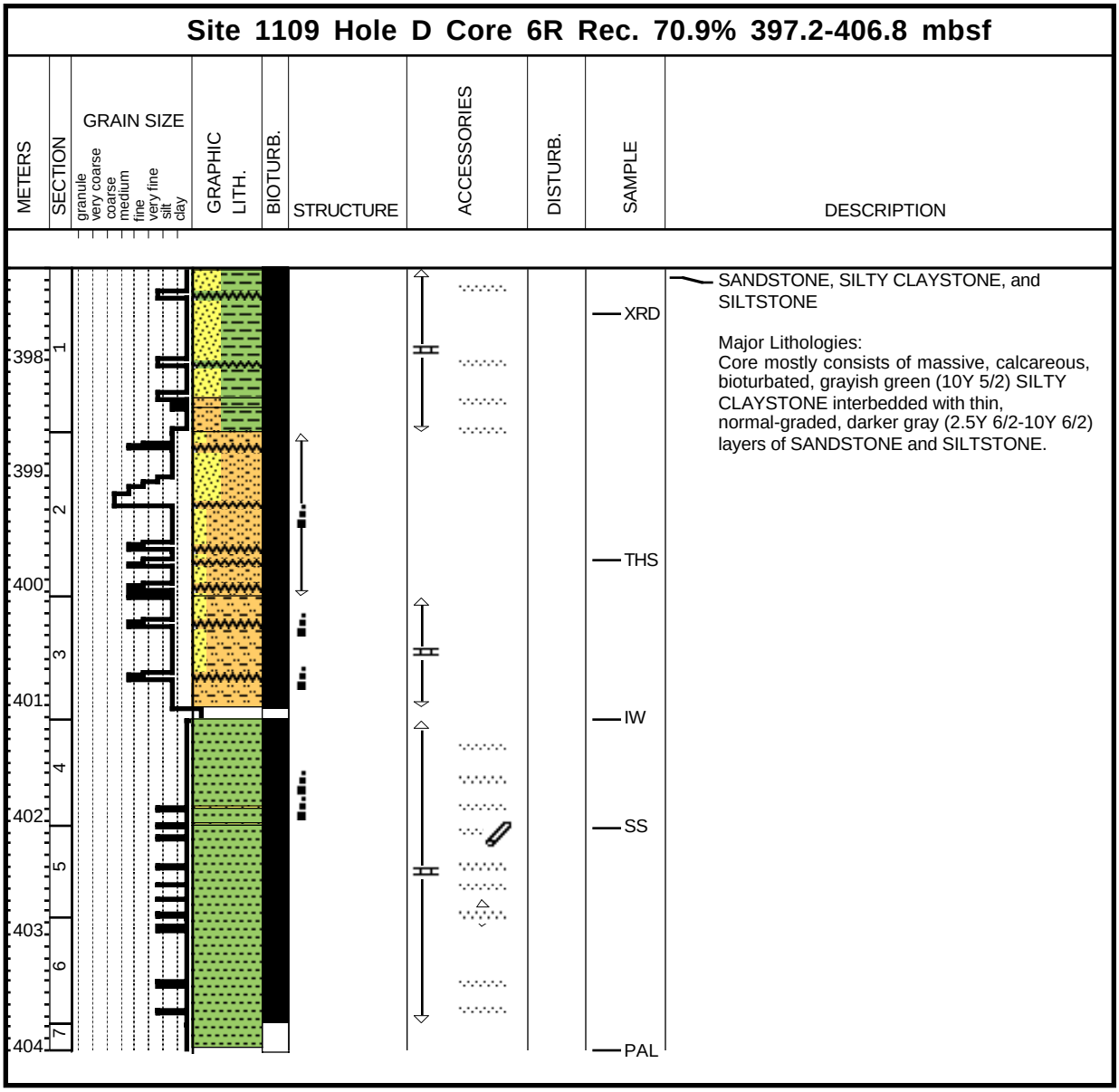
Core Photo


Site 1109 Hole D Core 4R Rec. 88.9% 378.6-387.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
379
380
381
382
383
384
385
386
1
2
3
4
5
6
7
8
SS
IW
XRD
THS
PAL
CLAYEY SILTSTONE, VOLCANICLASTIC SAND, SANDY SILTSTONE
Major Lithologies:
Core is characterized by a light greenish gray (5Y 6/1) to dark greenish gray (5G 4/1) CLAYEY SILTSTONE interbedded with VOLCANICLASTIC SAND layers. In addition, Sections 1 to 3 show some SANDY SILTSTONE layers. CLAYEY SILTSTONE contains detrital grains of ferro-magnesian minerals, feldspar, quartz, mica and foraminifer tests. The entire core is commonly, to abundant, bioturbated.
VOLCANICLASTIC SAND occurs at: Section 1, 39-40 cm, 79-81.5 cm, 90-91.5 cm; Section 2, 40-41.5 cm, 71-72 cm; Section 3, 61-63 cm; Section 4, 43-46 cm, 83-84 cm; Section 5, 34-38 cm, 59-62.5 cm, 79-85.5 cm, 92.5-96 cm; Section 6, 35-38.5, 51-54 cm, 102-104 cm, 123-130 cm, Section 7, 0-2.5 cm, 51.5-61 cm and Section CC, 38-40 cm.

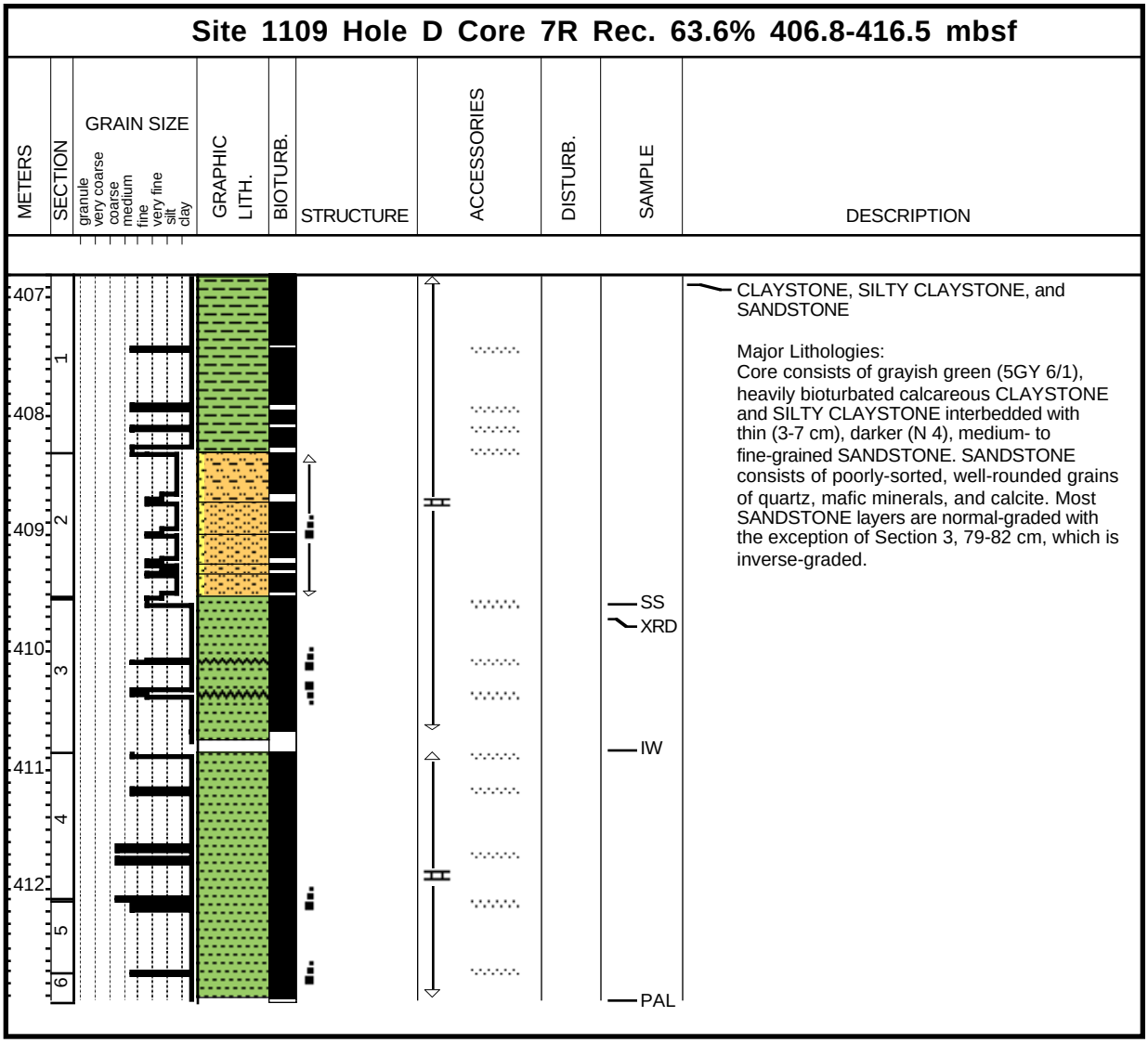
Core Photo


Site 1109 Hole D Core 5R Rec. 14.79% 387.6-397.2 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
388
389
1
2
XRD
PAL
SANDY-SILTY CLAYSTONE and SANDSTONE
Major Lithologies:
Core consists of alternating layers of grayish green (5GY 5/1), heavily bioturbated, calcareous SANDY-SILTY CLAYSTONE and grayish green (N 3), normally-graded SANDSTONE rich in quartz and accessory minerals.

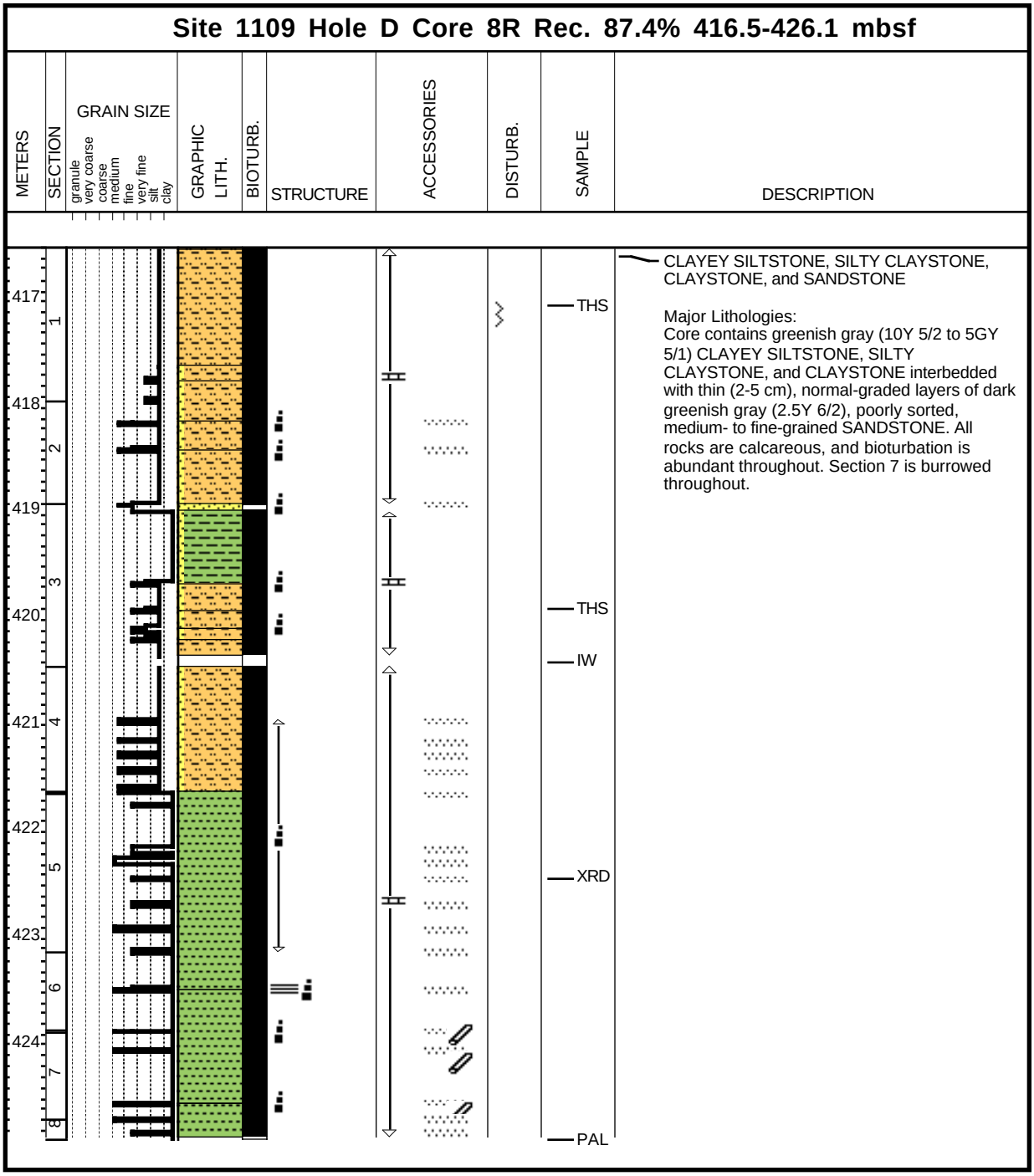
Core Photo


Site 1109 Hole D Core 6R Rec. 70.9% 397.2-406.8 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
398
399
400
401
402
403
404
1
2
3
4
5
6
7
XRD
THS
IW
SS
PAL
SANDSTONE, SILTY CLAYSTONE, and SILTSTONE
Major Lithologies:
Core mostly consists of massive, calcareous, bioturbated, grayish green (10Y 5/2) SILTY CLAYSTONE interbedded with thin, normal-graded, darker gray (2.5Y 6/2-10Y 6/2) layers of SANDSTONE and SILTSTONE.

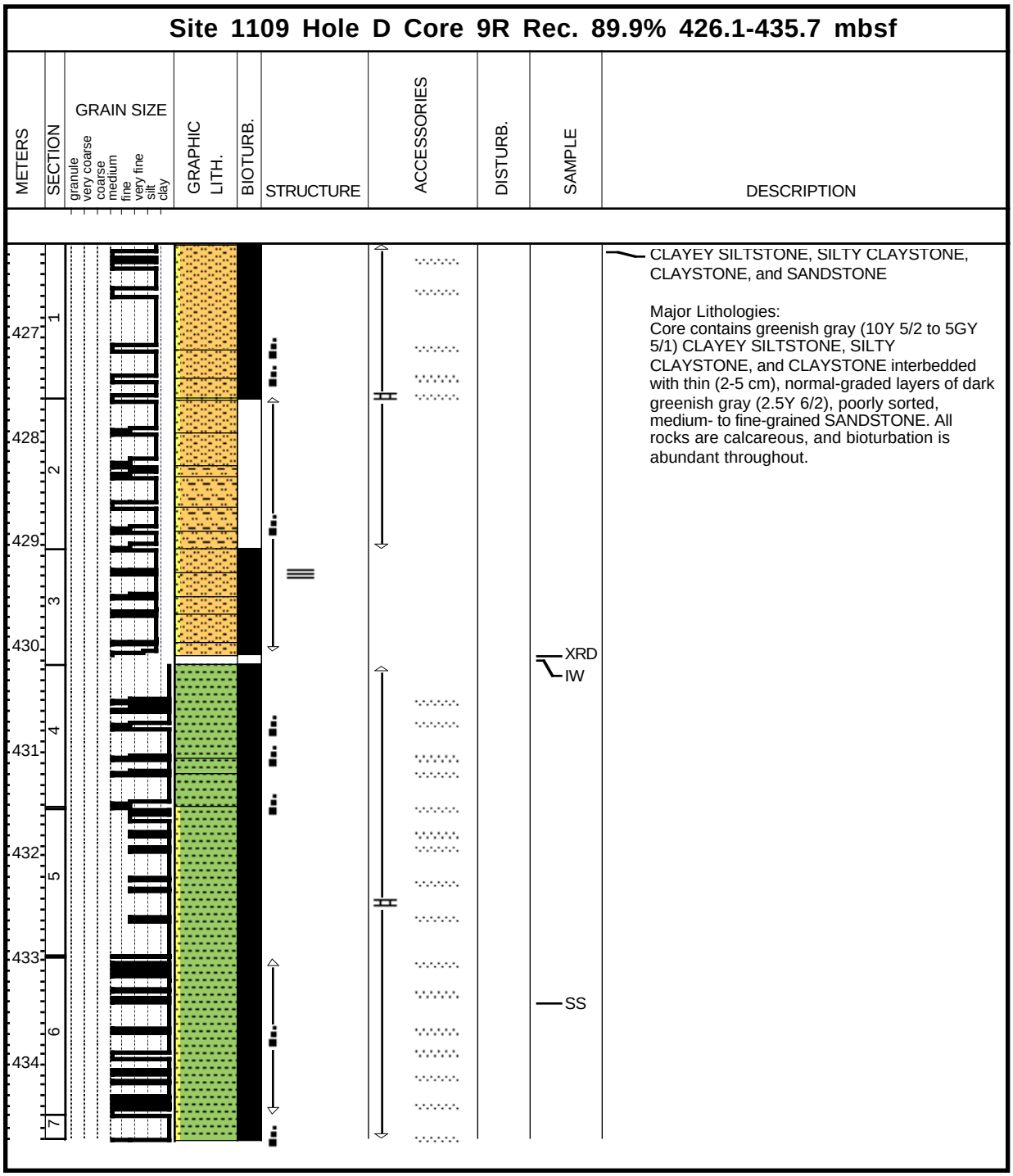
Core Photo


Site 1109 Hole D Core 7R Rec. 63.6% 406.8-416.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
407
408
409
410
411
412
1
2
3
4
5
6
SS
XRD
IW
PAL
CLAYSTONE, SILTY CLAYSTONE, and SANDSTONE
Major Lithologies:
Core consists of grayish green (5GY 6/1), heavily bioturbated calcareous CLAYSTONE and SILTY CLAYSTONE interbedded with thin (3-7 cm), darker (N 4), medium- to fine-grained SANDSTONE. SANDSTONE consists of poorly-sorted, well-rounded grains of quartz, mafic minerals, and calcite. Most SANDSTONE layers are normal-graded with the exception of Section 3, 79-82 cm, which is inverse-graded.

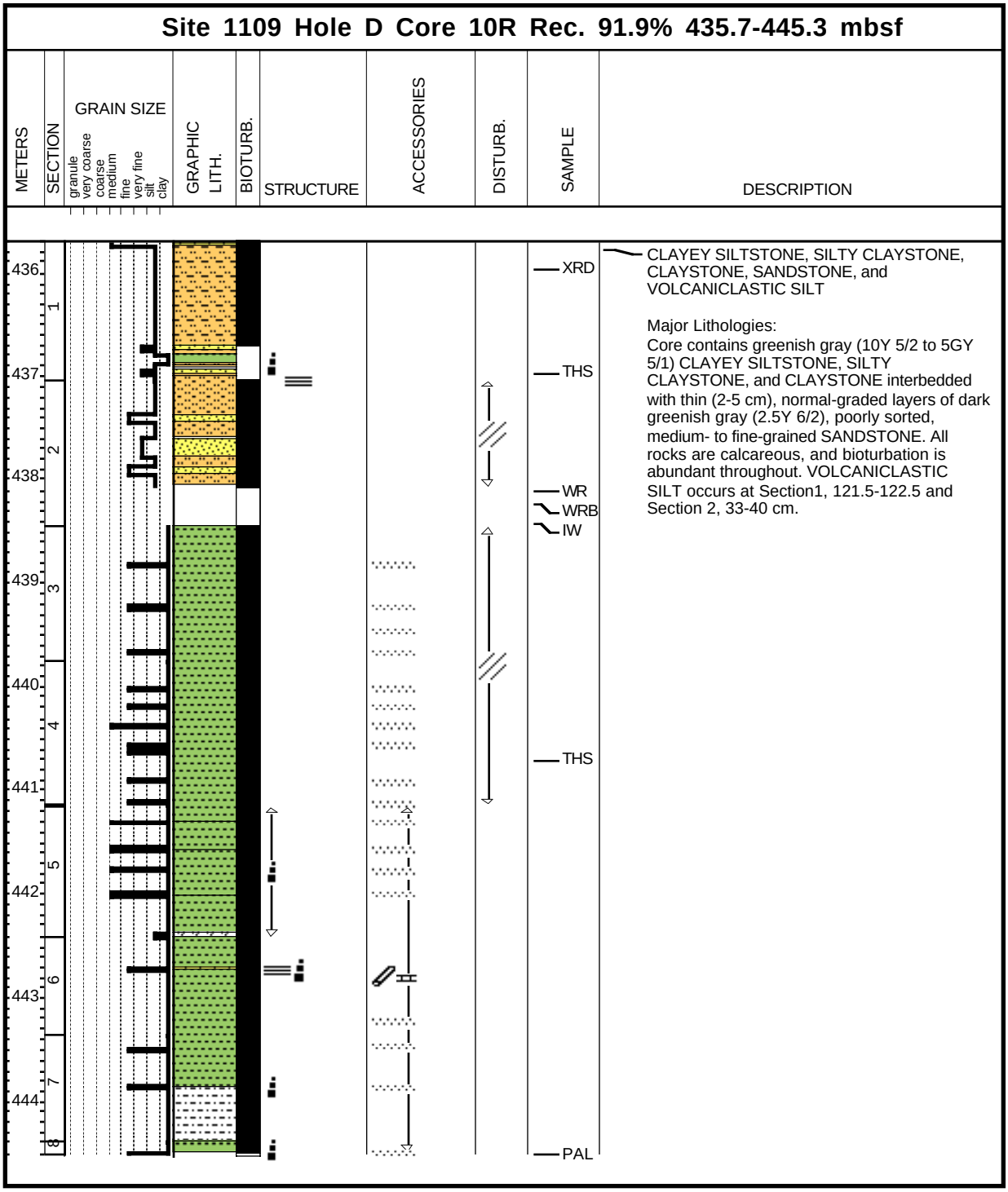
Core Photo


Site 1109 Hole D Core 8R Rec. 87.4% 416.5-426.1 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
417
418
419
420
421
422
423
424
1
2
3
4
5
6
7
8
THS
THS
IW
XRD
PAL
CLAYEY SILTSTONE, SILTY CLAYSTONE, CLAYSTONE, and SANDSTONE
Major Lithologies:
Core contains greenish gray (10Y 5/2 to 5GY 5/1) CLAYEY SILTSTONE, SILTY CLAYSTONE, and CLAYSTONE interbedded with thin (2-5 cm), normal-graded layers of dark greenish gray (2.5Y 6/2), poorly sorted, medium- to fine-grained SANDSTONE. All rocks are calcareous, and bioturbation is abundant throughout. Section 7 is burrowed throughout.

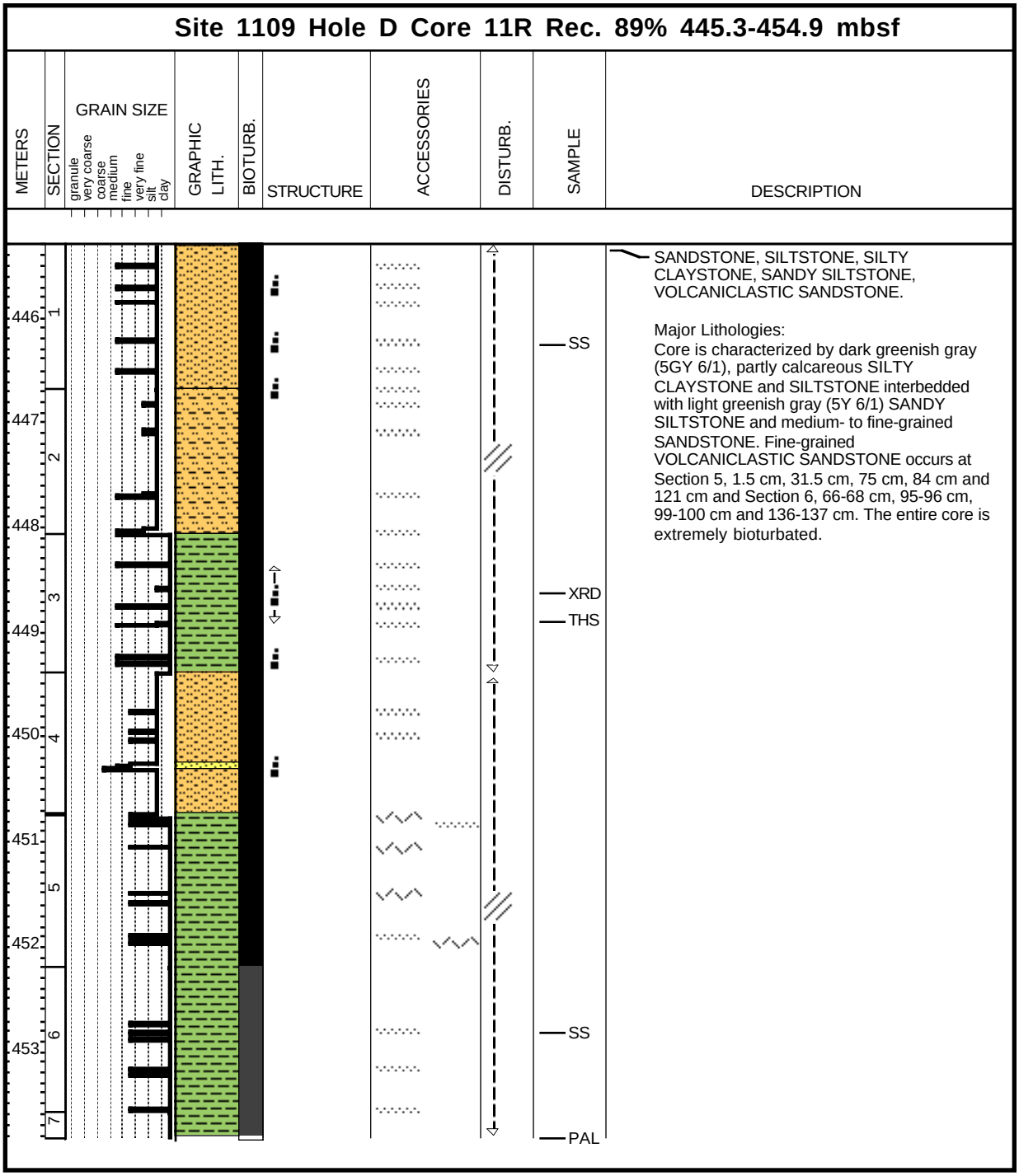
Core Photo


Site 1109 Hole D Core 9R Rec. 89.9% 426.1-435.7 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
427
428
429
430
431
432
433
434
1
2
3
4
5
6
7
XRD
IW
SS
CLAYEY SILTSTONE, SILTY CLAYSTONE, CLAYSTONE, and SANDSTONE
Major Lithologies:
Core contains greenish gray (10Y 5/2 to 5GY 5/1) CLAYEY SILTSTONE, SILTY CLAYSTONE, and CLAYSTONE interbedded with thin (2-5 cm), normal-graded layers of dark greenish gray (2.5Y 6/2), poorly sorted, medium- to fine-grained SANDSTONE. All rocks are calcareous, and bioturbation is abundant throughout.

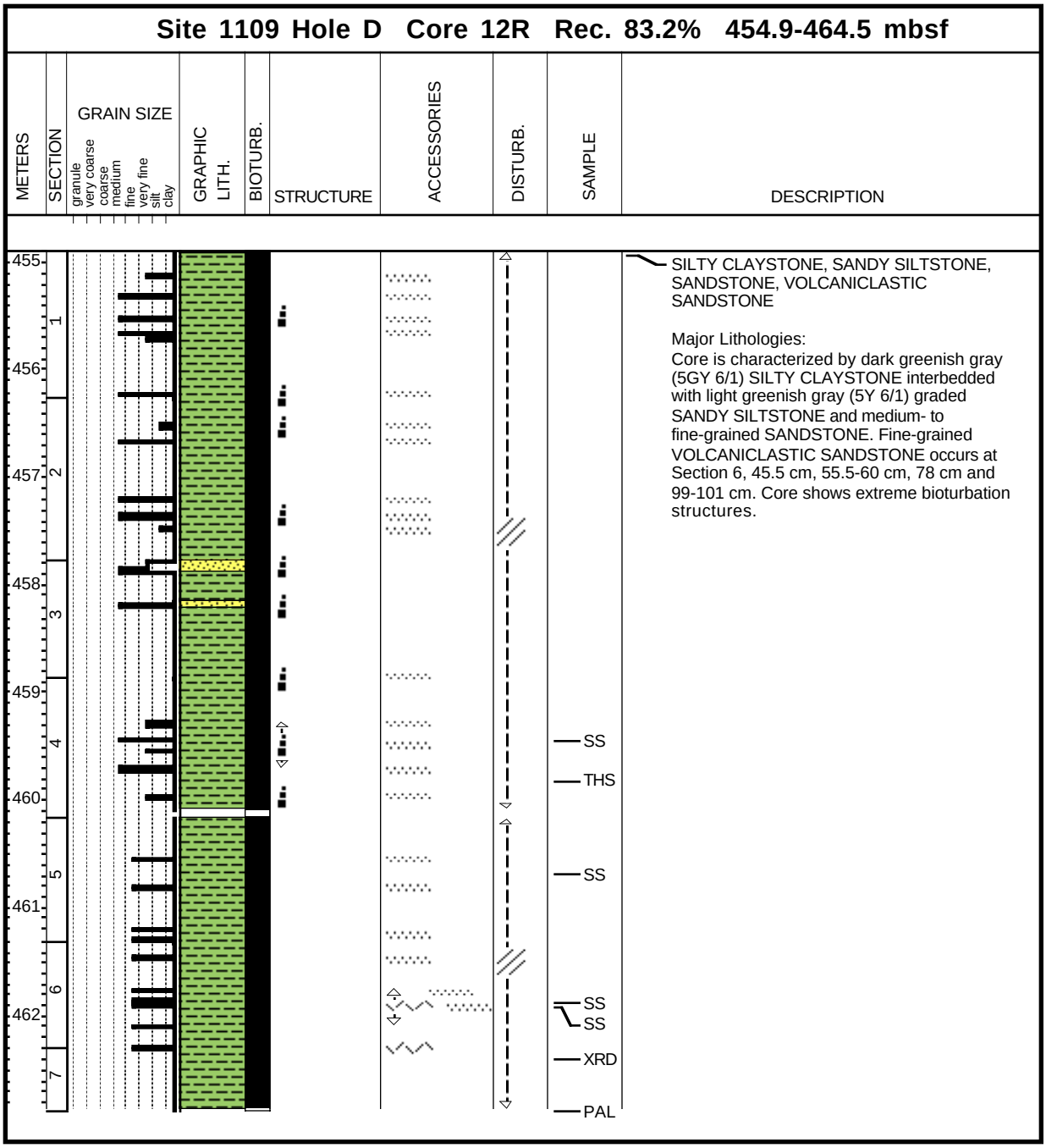
Core Photo


Site 1109 Hole D Core 10R Rec. 91.9% 435.7-445.3 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
436
437
438
439
440
441
442
443
444
1
2
3
4
5
6
7
8
XRD
THS
WR
WRB
IW
THS
PAL
CLAYEY SILTSTONE, SILTY CLAYSTONE, CLAYSTONE, SANDSTONE, and VOLCANICLASTIC SILT
Major Lithologies:
Core contains greenish gray (10Y 5/2 to 5GY 5/1) CLAYEY SILTSTONE, SILTY CLAYSTONE, and CLAYSTONE interbedded with thin (2-5 cm), normal-graded layers of dark greenish gray (2.5Y 6/2), poorly sorted, medium- to fine-grained SANDSTONE. All rocks are calcareous, and bioturbation is abundant throughout. VOLCANICLASTIC SILT occurs at Section1, 121.5-122.5 and Section 2, 33-40 cm.

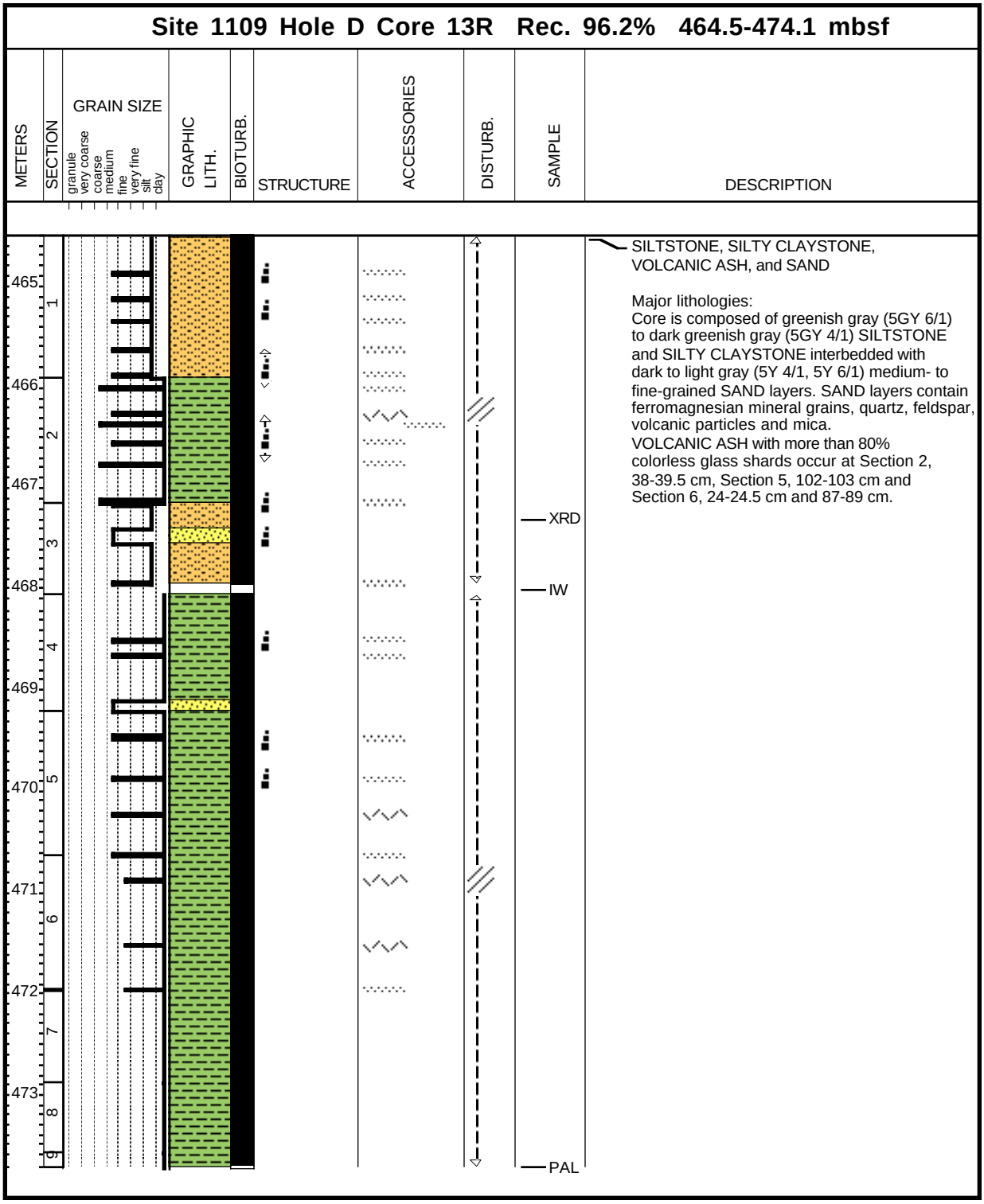
Core Photo


Site 1109 Hole D Core 11R Rec. 89% 445.3-454.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
446
447
448
449
450
451
452
453
1
2
3
4
5
6
7
SS
XRD
THS
SS
PAL
SANDSTONE, SILTSTONE, SILTY CLAYSTONE, SANDY SILTSTONE, VOLCANICLASTIC SANDSTONE.
Major Lithologies:
Core is characterized by dark greenish gray (5GY 6/1), partly calcareous SILTY CLAYSTONE and SILTSTONE interbedded with light greenish gray (5Y 6/1) SANDY SILTSTONE and medium- to fine-grained SANDSTONE. Fine-grained VOLCANICLASTIC SANDSTONE occurs at Section 5, 1.5 cm, 31.5 cm, 75 cm, 84 cm and 121 cm and Section 6, 66-68 cm, 95-96 cm, 99-100 cm and 136-137 cm. The entire core is extremely bioturbated.

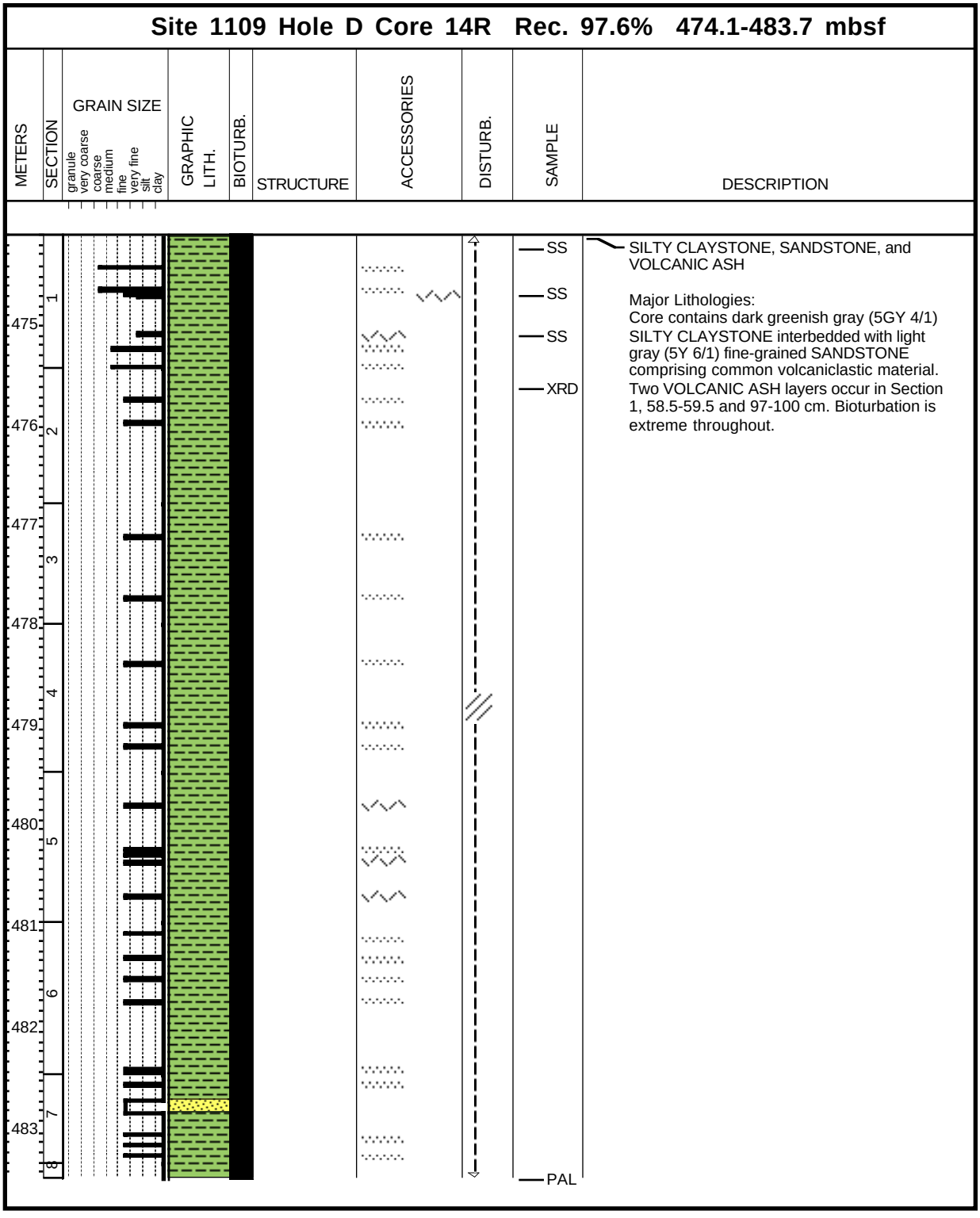
Core Photo


Site 1109 Hole D Core 12R Rec. 83.2% 454.9-464.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
455
456
457
458
459
460
461
462
1
2
3
4
5
6
7
SS
THS
SS
SS
SS
XRD
PAL
SILTY CLAYSTONE, SANDY SILTSTONE, SANDSTONE, VOLCANICLASTIC SANDSTONE
Major Lithologies:
Core is characterized by dark greenish gray (5GY 6/1) SILTY CLAYSTONE interbedded with light greenish gray (5Y 6/1) graded SANDY SILTSTONE and medium- to fine-grained SANDSTONE. Fine-grained VOLCANICLASTIC SANDSTONE occurs at Section 6, 45.5 cm, 55.5-60 cm, 78 cm and 99-101 cm. Core shows extreme bioturbation structures.

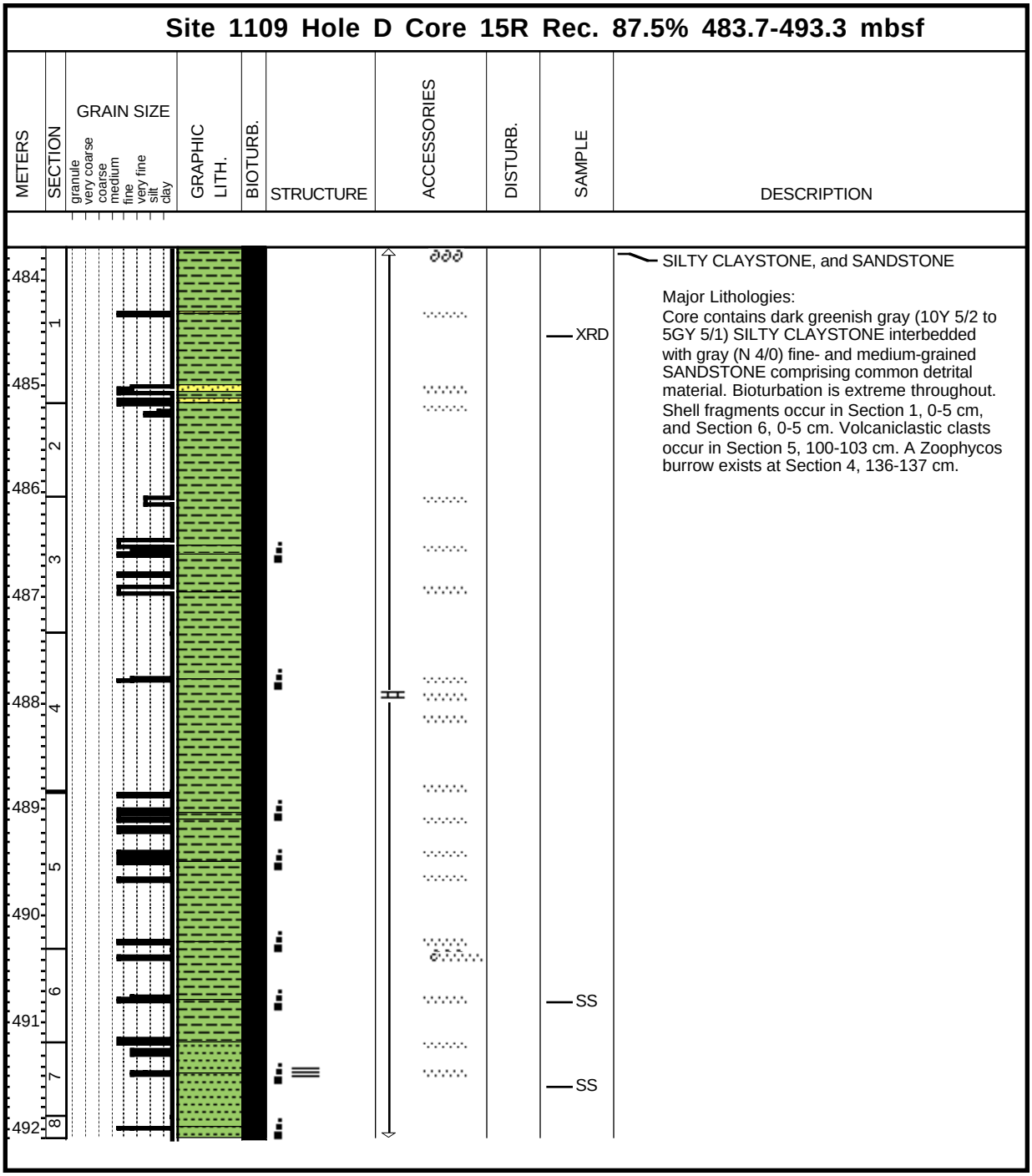
Core Photo


Site 1109 Hole D Core 13R Rec. 96.2% 464.5-474.1 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
465
466
467
468
469
470
471
472
473
1
2
3
4
5
6
7
8
9
XRD
IW
PAL
SILTSTONE, SILTY CLAYSTONE, VOLCANIC ASH, and SAND
Major lithologies:
Core is composed of greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1) SILTSTONE and SILTY CLAYSTONE interbedded with dark to light gray (5Y 4/1, 5Y 6/1) medium- to fine-grained SAND layers. SAND layers contain ferromagnesian mineral grains, quartz, feldspar, volcanic particles and mica.
VOLCANIC ASH with more than 80% colorless glass shards occur at Section 2, 38-39.5 cm, Section 5, 102-103 cm and Section 6, 24-24.5 cm and 87-89 cm.

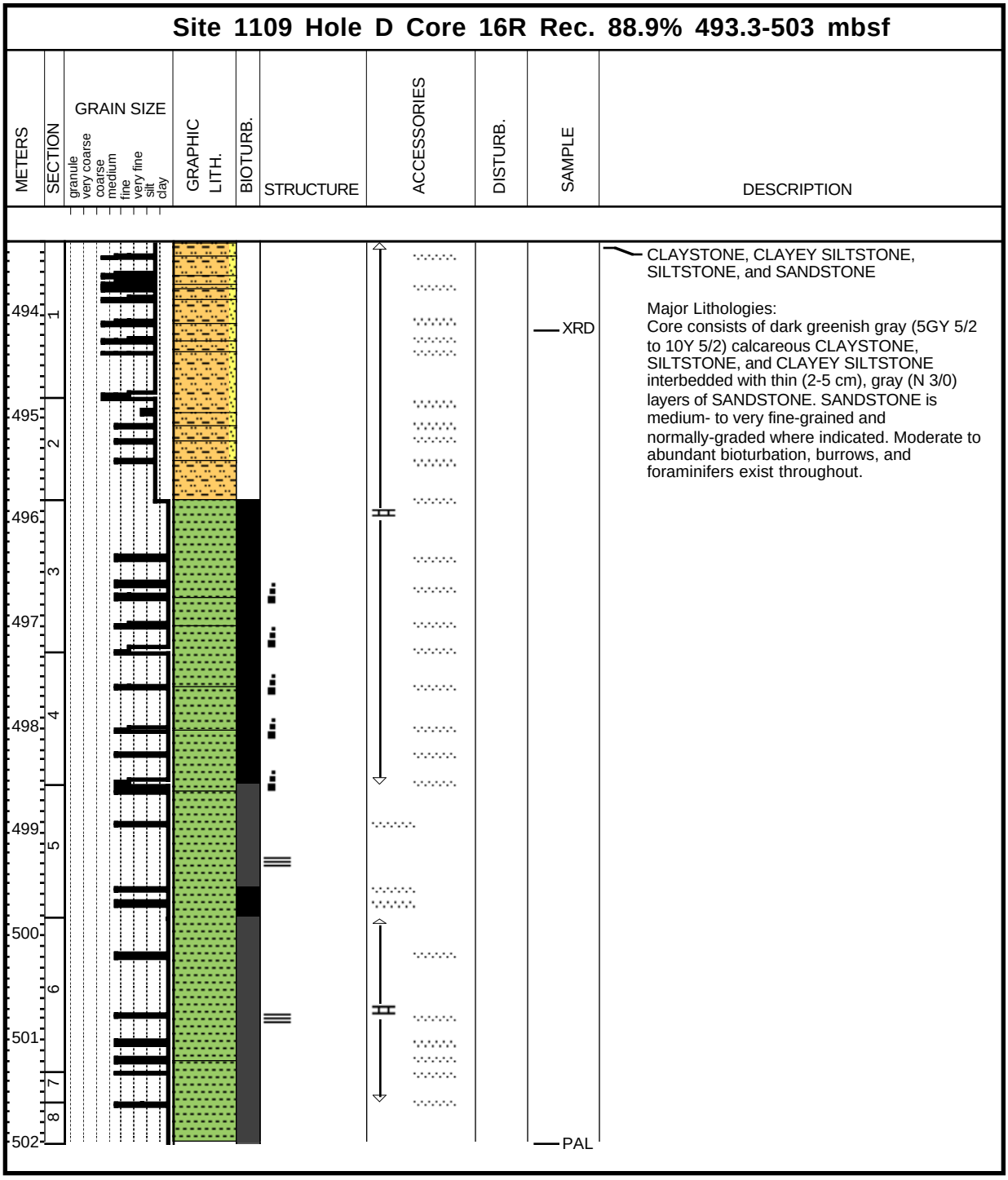
Core Photo


Site 1109 Hole D Core 14R Rec. 97.6% 474.1-483.7 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
475
476
477
478
479
480
481
482
483
1
2
3
4
5
6
7
8
SS
SS
SS
XRD
PAL
SILTY CLAYSTONE, SANDSTONE, and VOLCANIC ASH
Major Lithologies:
Core contains dark greenish gray (5GY 4/1) SILTY CLAYSTONE interbedded with light gray (5Y 6/1) fine-grained SANDSTONE comprising common volcaniclastic material. Two VOLCANIC ASH layers occur in Section 1, 58.5-59.5 and 97-100 cm. Bioturbation is extreme throughout.

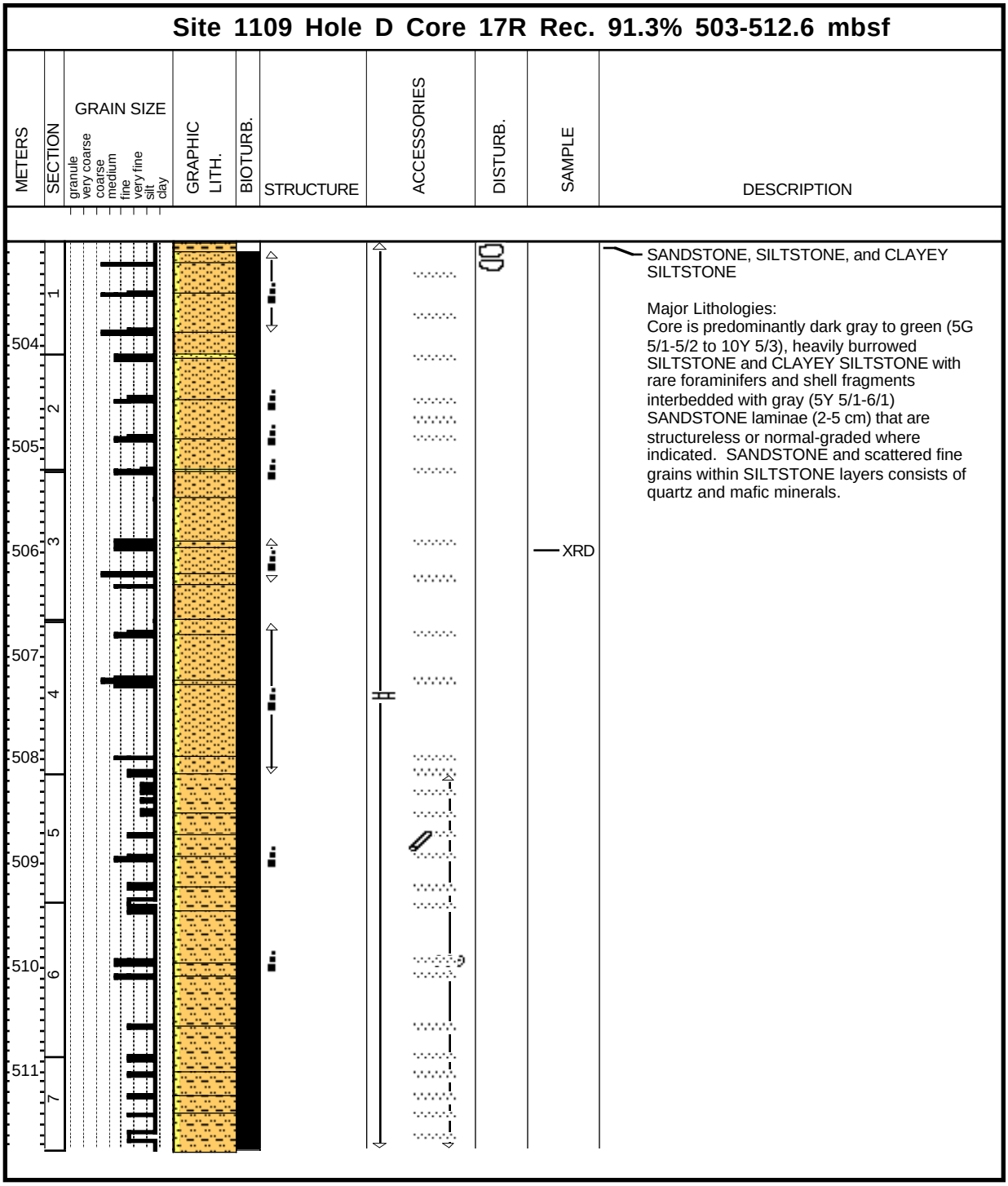
Core Photo


Site 1109 Hole D Core 15R Rec. 87.5% 483.7-493.3 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
484
485
486
487
488
489
490
491
492
1
2
3
4
5
6
7
8
XRD
SS
SS
SILTY CLAYSTONE, and SANDSTONE
Major Lithologies:
Core contains dark greenish gray (10Y 5/2 to 5GY 5/1) SILTY CLAYSTONE interbedded with gray (N 4/0) fine- and medium-grained SANDSTONE comprising common detrital material. Bioturbation is extreme throughout. Shell fragments occur in Section 1, 0-5 cm, and Section 6, 0-5 cm. Volcaniclastic clasts occur in Section 5, 100-103 cm. A Zoophycos burrow exists at Section 4, 136-137 cm.

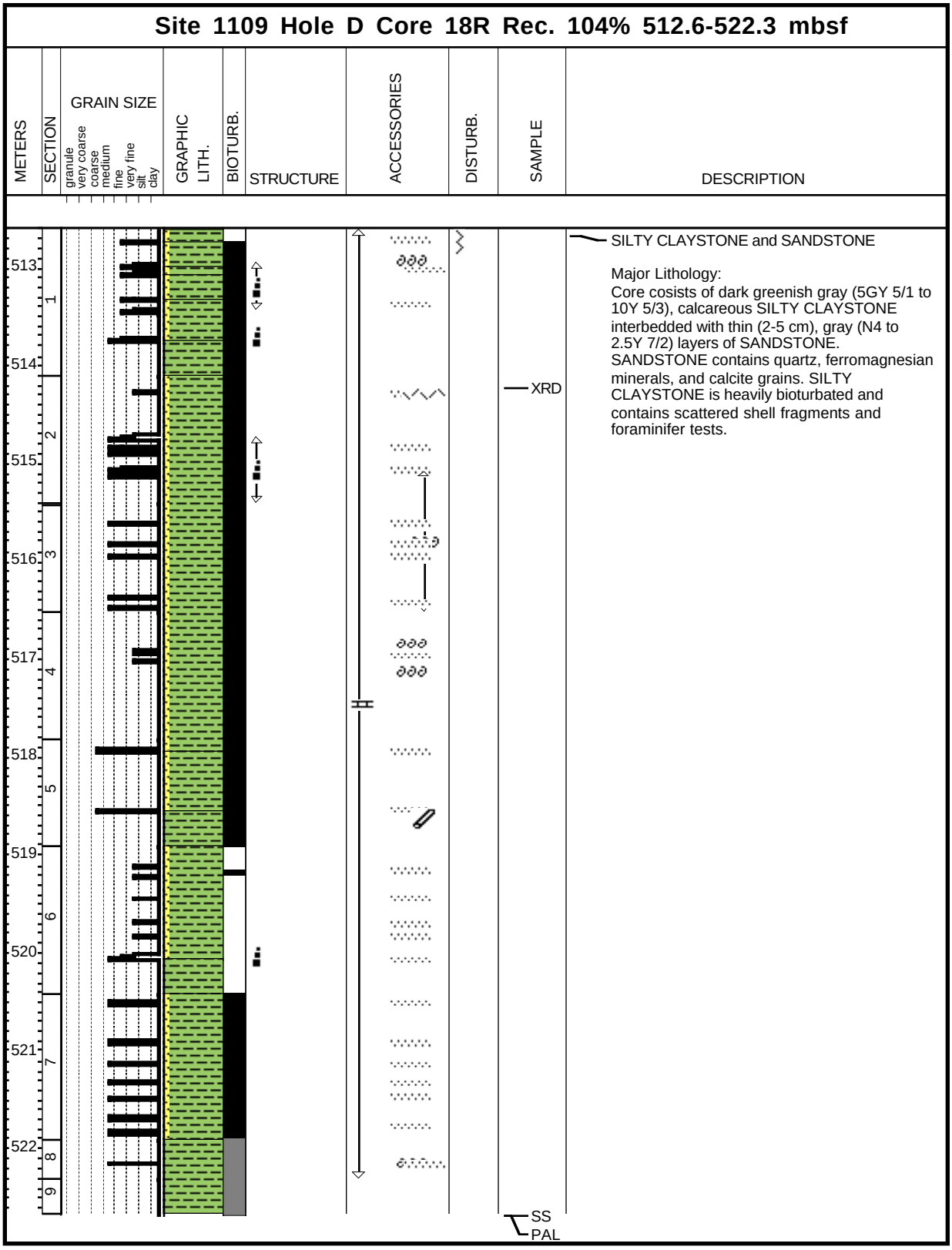
Core Photo


Site 1109 Hole D Core 16R Rec. 88.9% 493.3-503 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
494
495
496
497
498
499
500
501
502
1
2
3
4
5
6
7
8
XRD
PAL
CLAYSTONE, CLAYEY SILTSTONE, SILTSTONE, and SANDSTONE
Major Lithologies:
Core consists of dark greenish gray (5GY 5/2 to 10Y 5/2) calcareous CLAYSTONE, SILTSTONE, and CLAYEY SILTSTONE interbedded with thin (2-5 cm), gray (N 3/0) layers of SANDSTONE. SANDSTONE is medium- to very fine-grained and normally-graded where indicated. Moderate to abundant bioturbation, burrows, and foraminifers exist throughout.

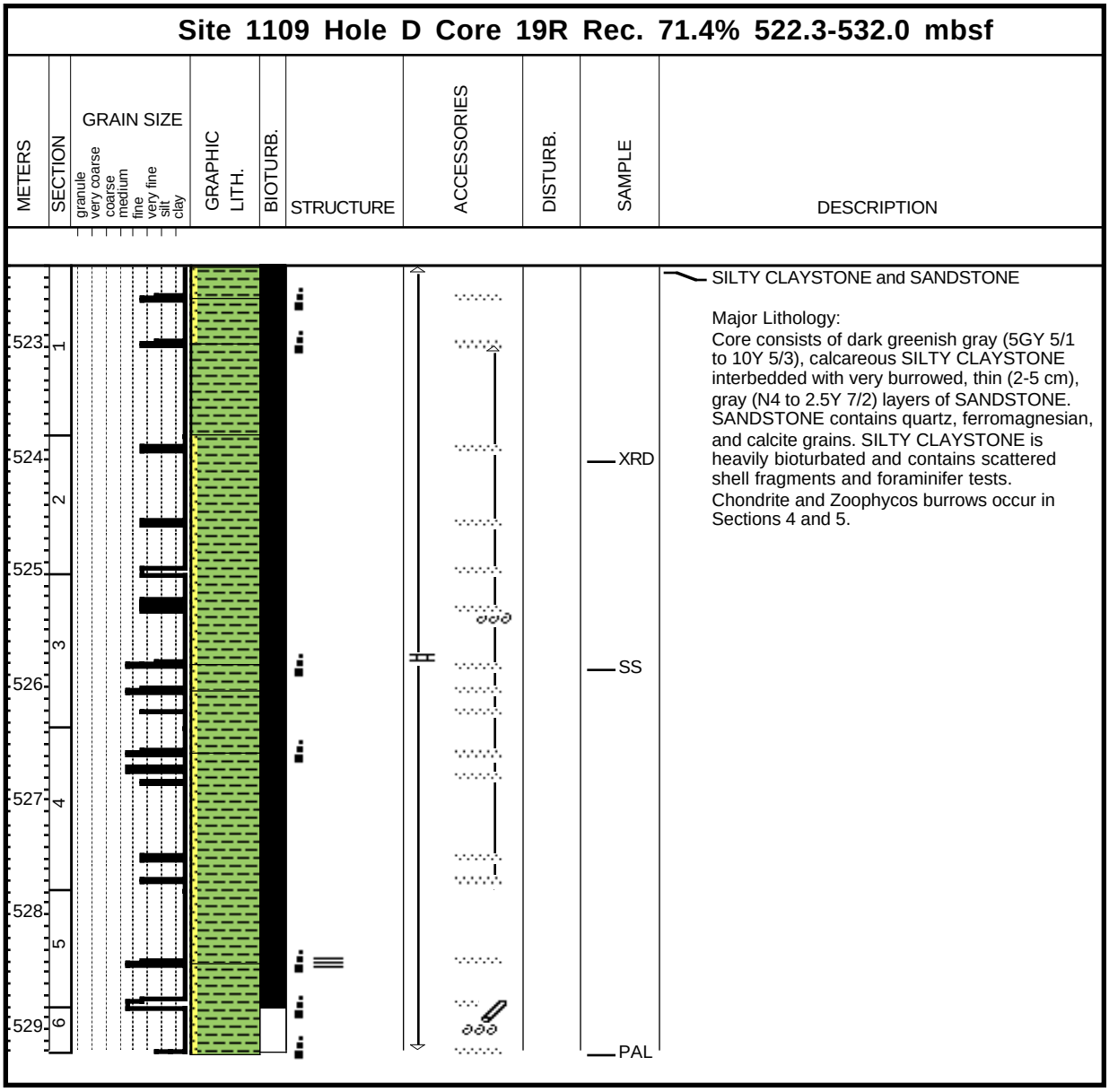
Core Photo


Site 1109 Hole D Core 17R Rec. 91.3% 503-512.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
504
505
506
507
508
509
510
511
1
2
3
4
5
6
7
XRD
SANDSTONE, SILTSTONE, and CLAYEY SILTSTONE
Major Lithologies:
Core is predominantly dark gray to green (5G 5/1-5/2 to 10Y 5/3), heavily burrowed SILTSTONE and CLAYEY SILTSTONE with rare foraminifers and shell fragments interbedded with gray (5Y 5/1-6/1) SANDSTONE laminae (2-5 cm) that are structureless or normal-graded where indicated. SANDSTONE and scattered fine grains within SILTSTONE layers consists of quartz and mafic minerals.

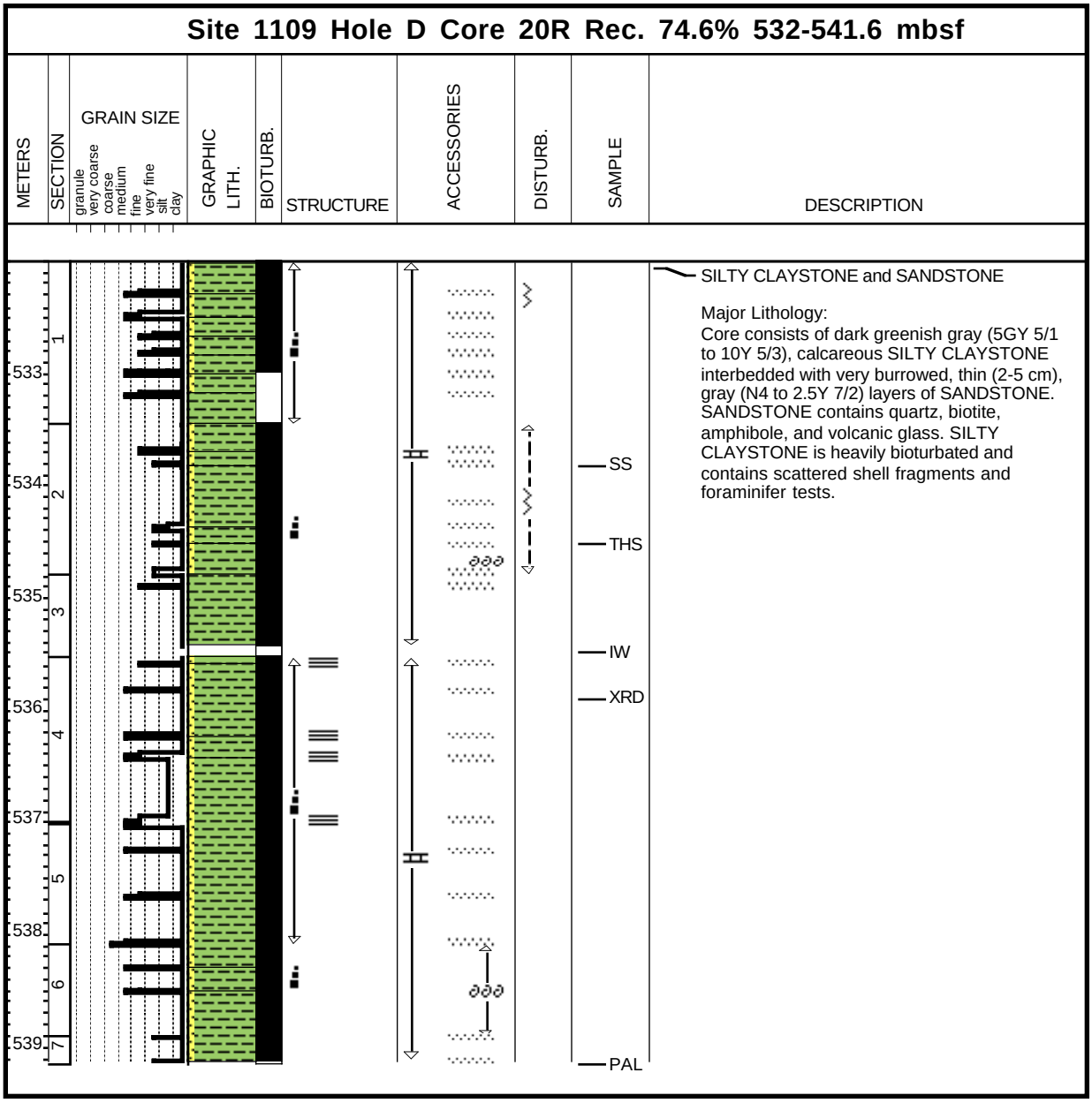
Core Photo


Site 1109 Hole D Core 18R Rec. 104% 512.6-522.3 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
513
514
515
516
517
518
519
520
521
522
1
2
3
4
5
6
7
8
9
XRD
SS
PAL
SILTY CLAYSTONE and SANDSTONE
Major Lithology:
Core cosists of dark greenish gray (5GY 5/1 to 10Y 5/3), calcareous SILTY CLAYSTONE interbedded with thin (2-5 cm), gray (N4 to 2.5Y 7/2) layers of SANDSTONE. SANDSTONE contains quartz, ferromagnesian minerals, and calcite grains. SILTY CLAYSTONE is heavily bioturbated and contains scattered shell fragments and foraminifer tests.

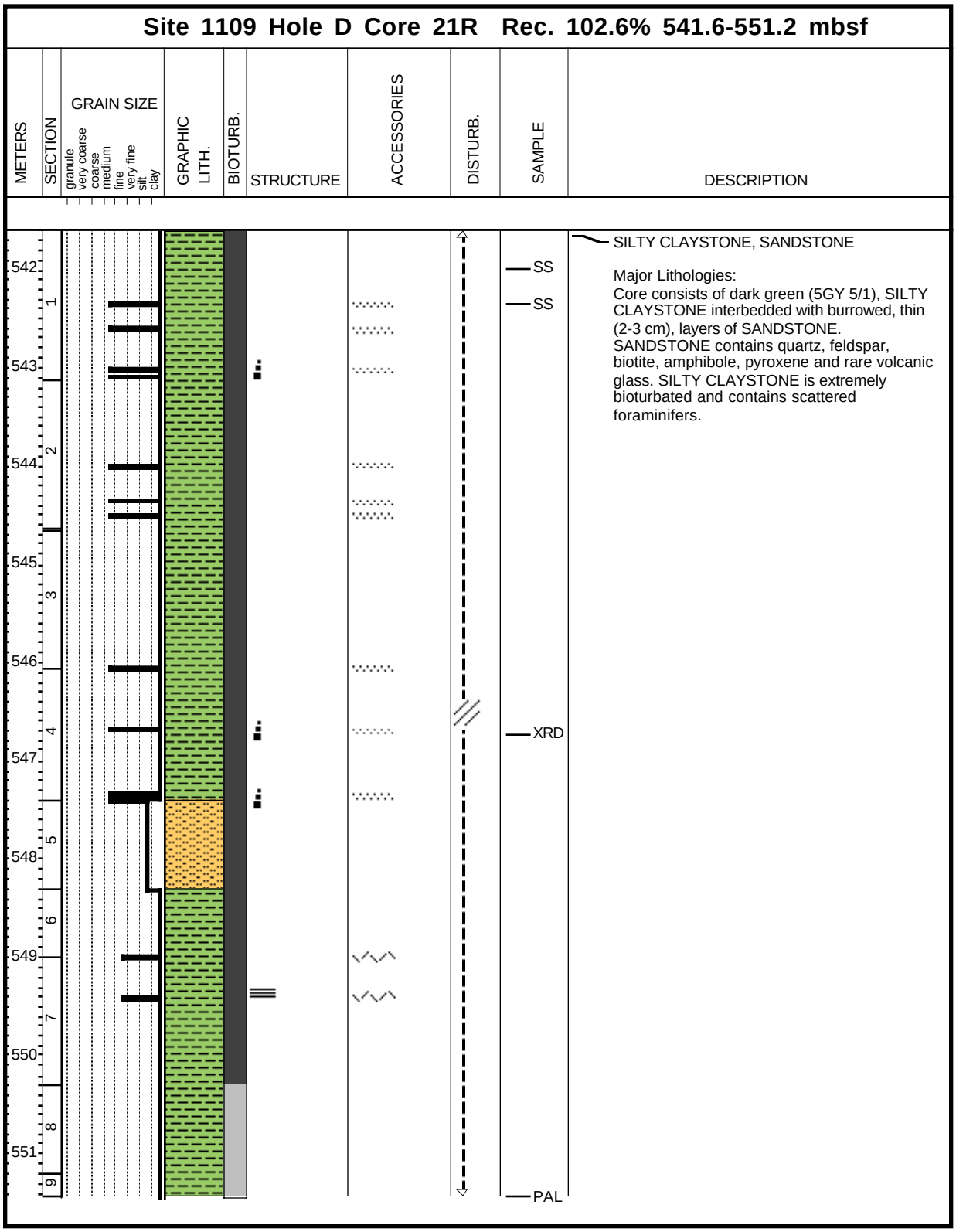
Core Photo


Site 1109 Hole D Core 19R Rec. 71.4% 522.3-532.0 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
523
524
525
526
527
528
529
1
2
3
4
5
6
XRD
SS
PAL
SILTY CLAYSTONE and SANDSTONE
Major Lithology:
Core consists of dark greenish gray (5GY 5/1 to 10Y 5/3), calcareous SILTY CLAYSTONE interbedded with very burrowed, thin (2-5 cm), gray (N4 to 2.5Y 7/2) layers of SANDSTONE. SANDSTONE contains quartz, ferromagnesian, and calcite grains. SILTY CLAYSTONE is heavily bioturbated and contains scattered shell fragments and foraminifer tests. Chondrite and Zoophycos burrows occur in Sections 4 and 5.

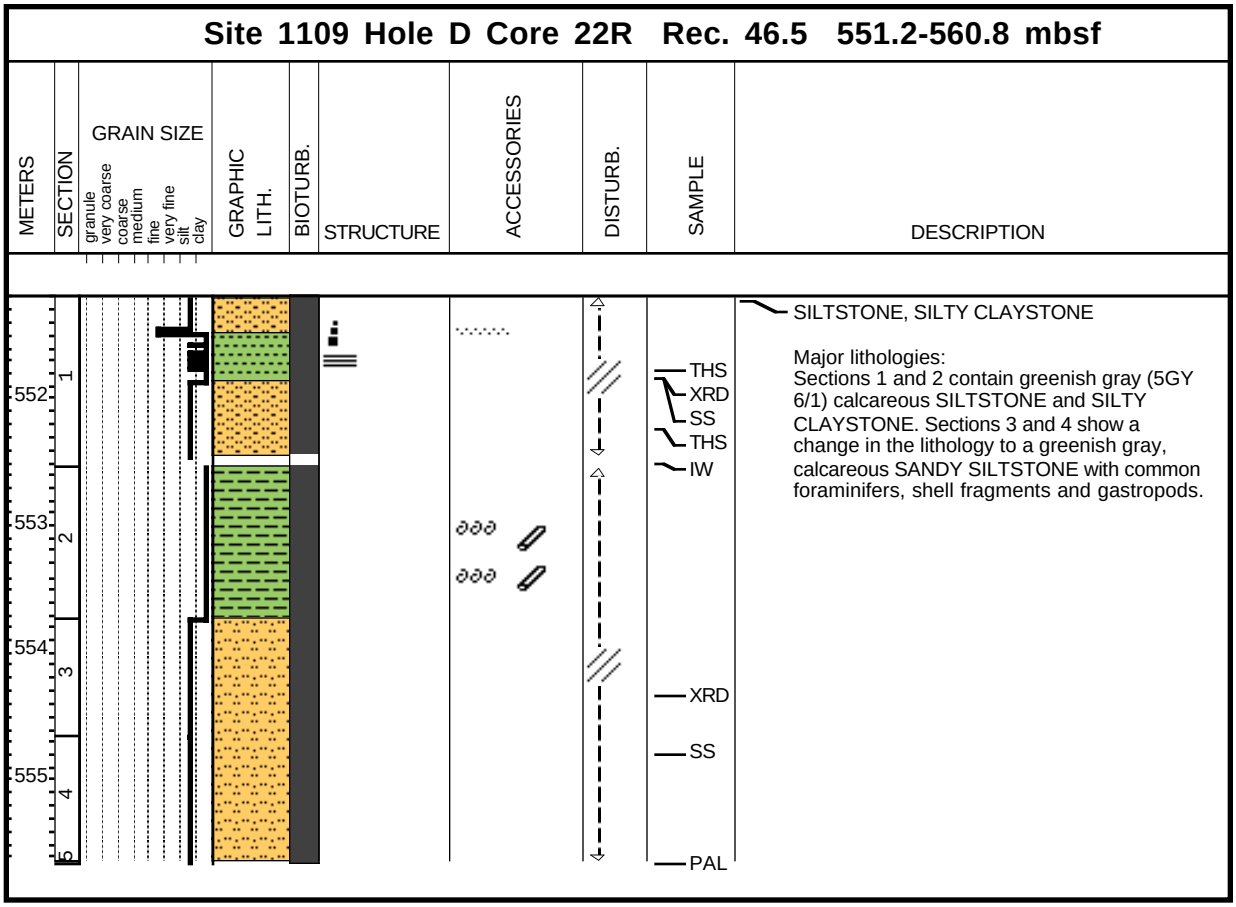
Core Photo


Site 1109 Hole D Core 20R Rec. 74.6% 532-541.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
533
534
535
536
537
538
539
1
2
3
4
5
6
7
SS
THS
IW
XRD
PAL
SILTY CLAYSTONE and SANDSTONE
Major Lithology:
Core consists of dark greenish gray (5GY 5/1 to 10Y 5/3), calcareous SILTY CLAYSTONE interbedded with very burrowed, thin (2-5 cm), gray (N4 to 2.5Y 7/2) layers of SANDSTONE. SANDSTONE contains quartz, biotite, amphibole, and volcanic glass. SILTY CLAYSTONE is heavily bioturbated and contains scattered shell fragments and foraminifer tests.

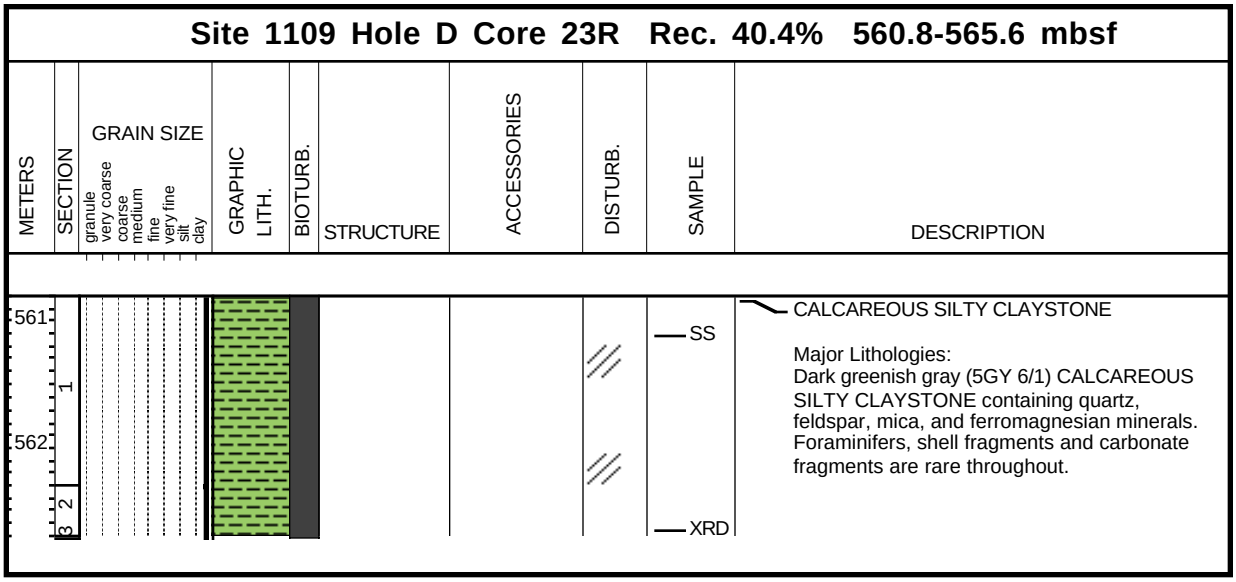
Core Photo


Site 1109 Hole D Core 21R Rec. 102.6% 541.6-551.2 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
542
543
544
545
546
547
548
549
550
551
1
2
3
4
5
6
7
8
9
SS
SS
XRD
PAL
SILTY CLAYSTONE, SANDSTONE
Major Lithologies:
Core consists of dark green (5GY 5/1), SILTY CLAYSTONE interbedded with burrowed, thin (2-3 cm), layers of SANDSTONE. SANDSTONE contains quartz, feldspar, biotite, amphibole, pyroxene and rare volcanic glass. SILTY CLAYSTONE is extremely bioturbated and contains scattered foraminifers.

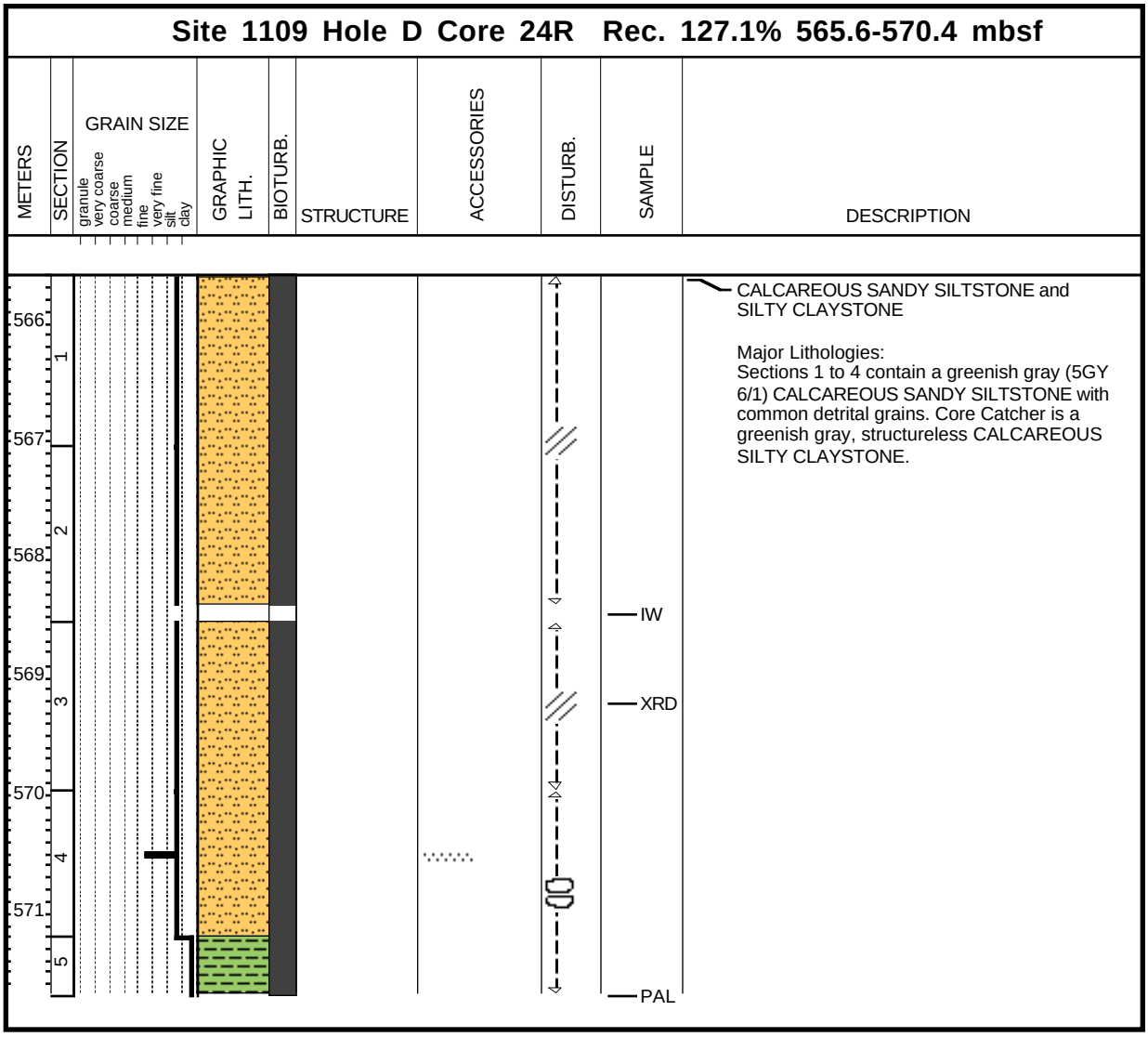
Core Photo


Site 1109 Hole D Core 22R Rec. 46.5 551.2-560.8 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
552
553
554
555
1
2
3
4
5
THS
XRD
SS
THS
IW
XRD
SS
PAL
SILTSTONE, SILTY CLAYSTONE
Major lithologies:
Sections 1 and 2 contain greenish gray (5GY 6/1) calcareous SILTSTONE and SILTY CLAYSTONE. Sections 3 and 4 show a change in the lithology to a greenish gray, calcareous SANDY SILTSTONE with common foraminifers, shell fragments and gastropods.

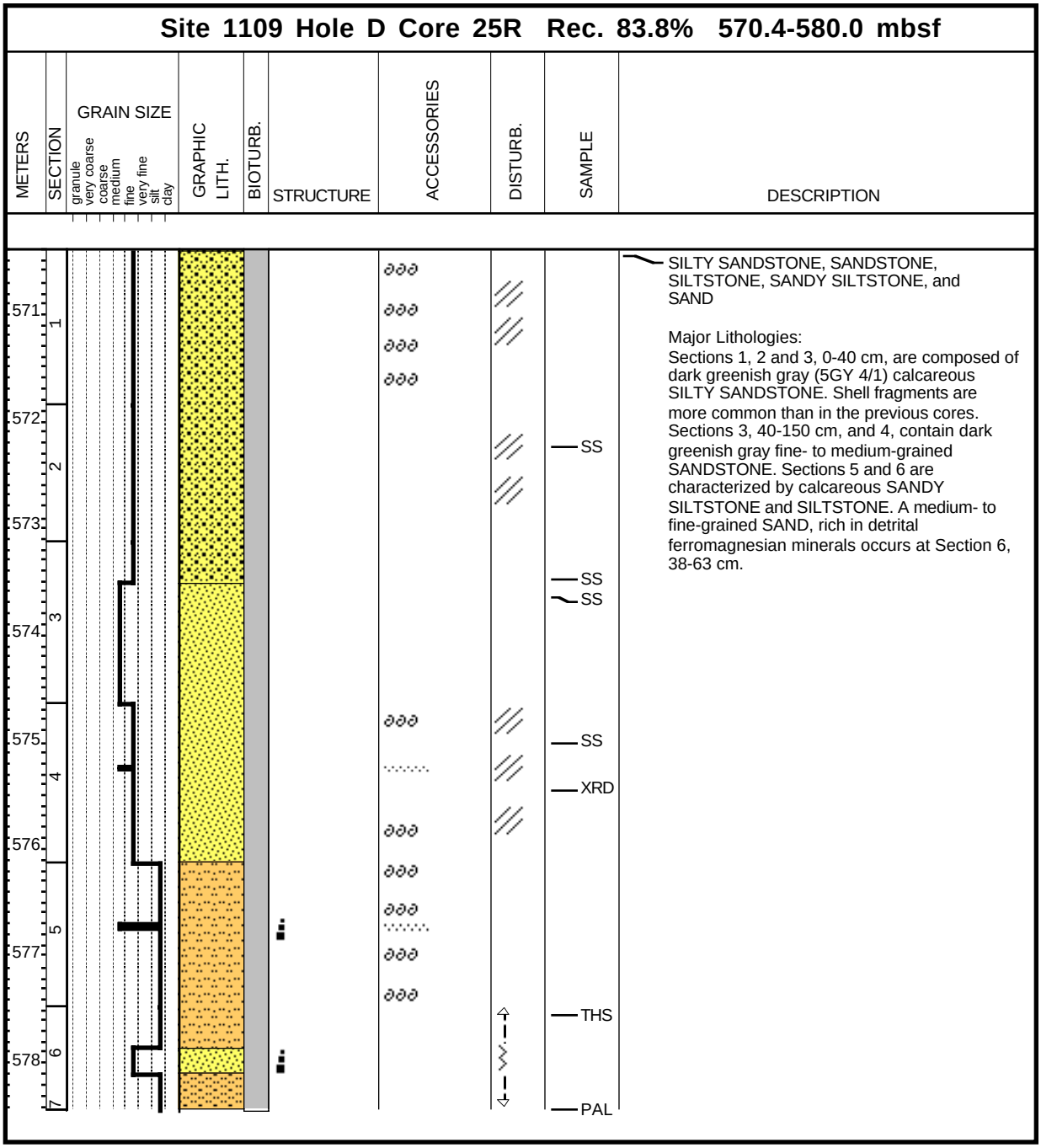
Core Photo


Site 1109 Hole D Core 23R Rec. 40.4% 560.8-565.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
561
562
1
2
3
SS
XRD
CALCAREOUS SILTY CLAYSTONE
Major Lithologies:
Dark greenish gray (5GY 6/1) CALCAREOUS SILTY CLAYSTONE containing quartz, feldspar, mica, and ferromagnesian minerals. Foraminifers, shell fragments and carbonate fragments are rare throughout.

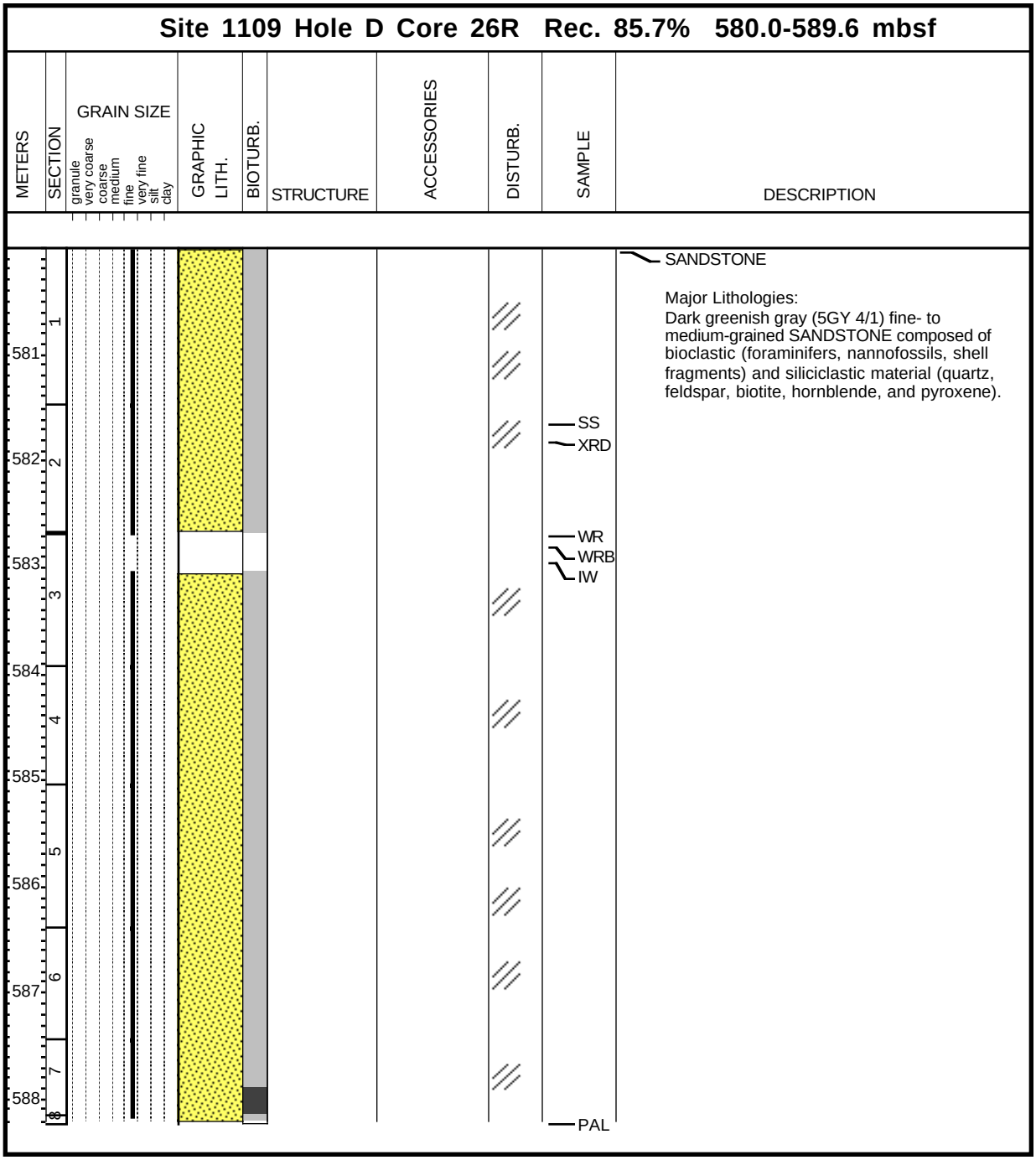
Core Photo


Site 1109 Hole D Core 24R Rec. 127.1% 565.6-570.4 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
566
567
568
569
570
571
1
2
3
4
5
IW
XRD
PAL
CALCAREOUS SANDY SILTSTONE and SILTY CLAYSTONE
Major Lithologies:
Sections 1 to 4 contain a greenish gray (5GY 6/1) CALCAREOUS SANDY SILTSTONE with common detrital grains. Core Catcher is a greenish gray, structureless CALCAREOUS SILTY CLAYSTONE.

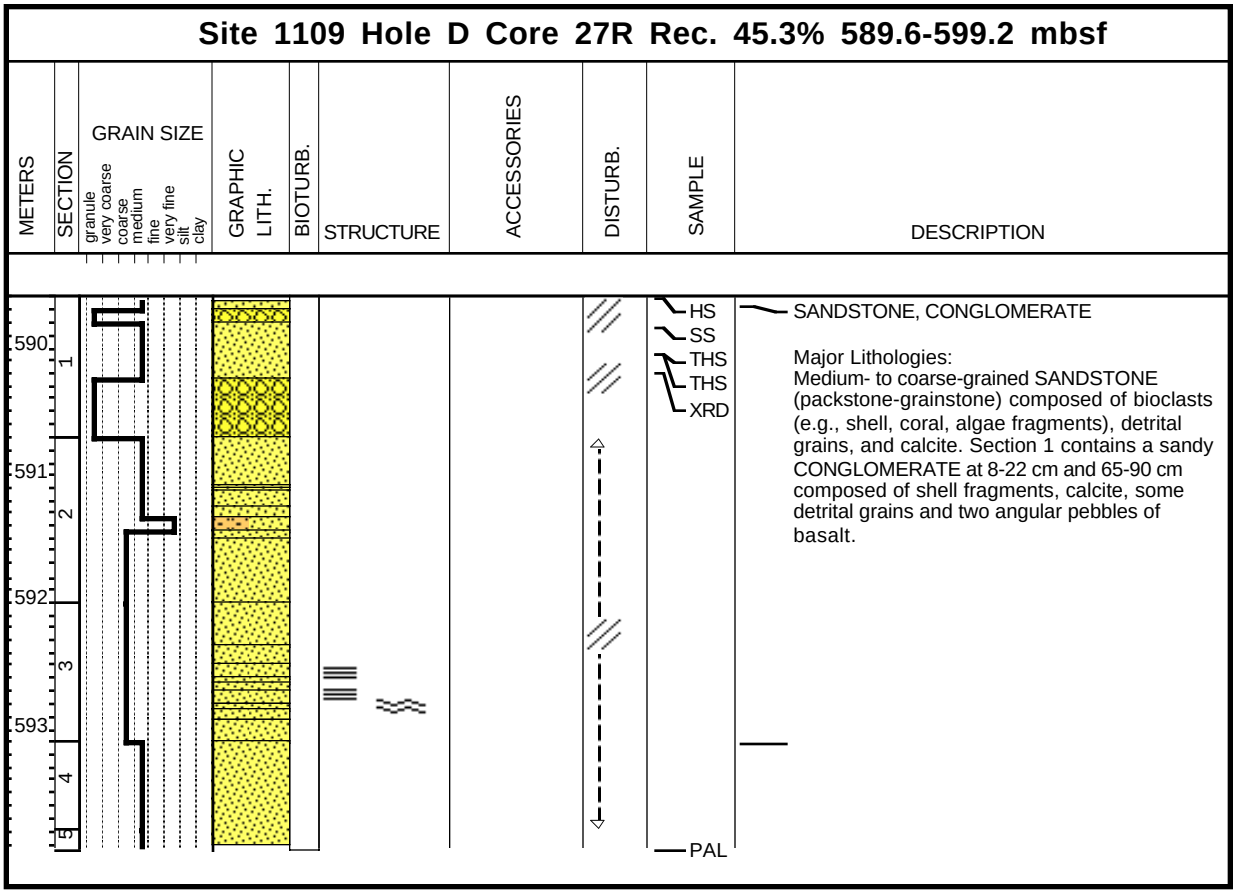
Core Photo


Site 1109 Hole D Core 25R Rec. 83.8% 570.4-580.0 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
571
572
573
574
575
576
577
578
1
2
3
4
5
6
7
SS
SS
SS
XRD
THS
PAL
SILTY SANDSTONE, SANDSTONE, SILTSTONE, SANDY SILTSTONE, and SAND
Major Lithologies:
Sections 1, 2 and 3, 0-40 cm, are composed of dark greenish gray (5GY 4/1) calcareous SILTY SANDSTONE. Shell fragments are more common than in the previous cores. Sections 3, 40-150 cm, and 4, contain dark greenish gray fine- to medium-grained SANDSTONE. Sections 5 and 6 are characterized by calcareous SANDY SILTSTONE and SILTSTONE. A medium- to fine-grained SAND, rich in detrital ferromagnesian minerals occurs at Section 6, 38-63 cm.

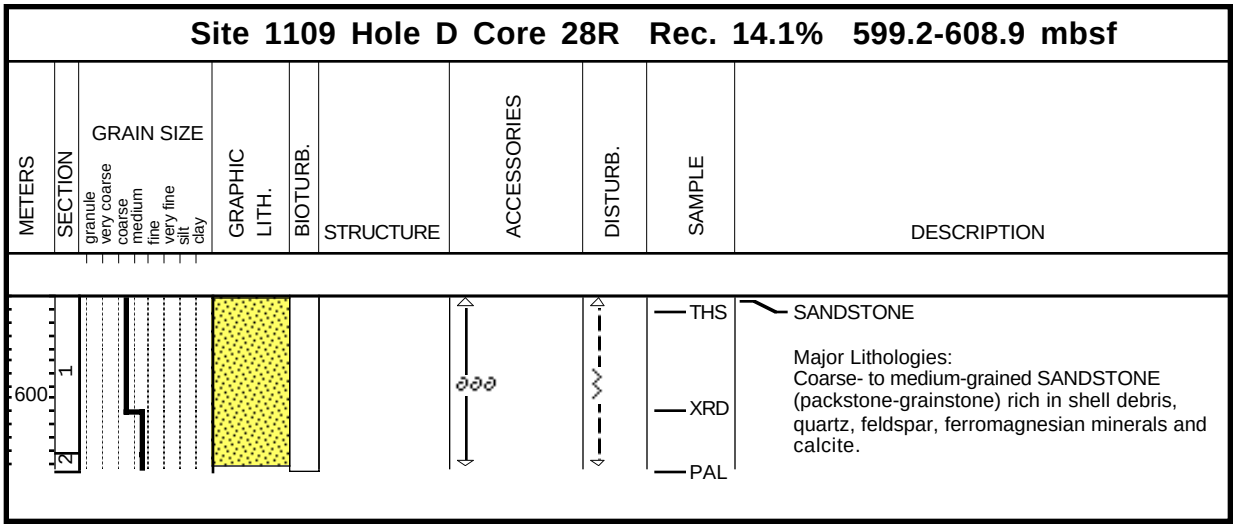
Core Photo


Site 1109 Hole D Core 26R Rec. 85.7% 580.0-589.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
581
582
583
584
585
586
587
588
1
2
3
4
5
6
7
SS
XRD
WR
WRB
IW
PAL
SANDSTONE
Major Lithologies:
Dark greenish gray (5GY 4/1) fine- to medium-grained SANDSTONE composed of bioclastic (foraminifers, nannofossils, shell fragments) and siliciclastic material (quartz, feldspar, biotite, hornblende, and pyroxene).

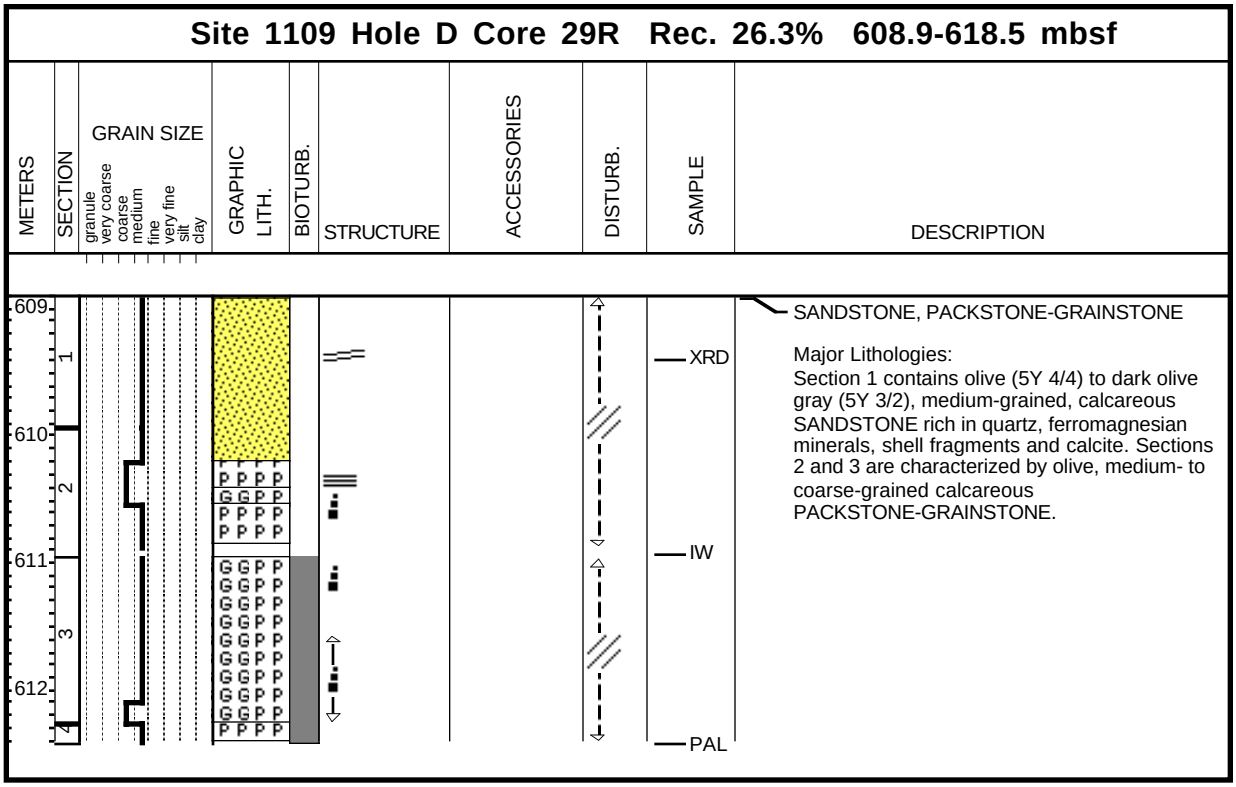
Core Photo


Site 1109 Hole D Core 27R Rec. 45.3% 589.6-599.2 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
590
591
592
593
1
2
3
4
5
HS
SS
THS
THS
XRD
PAL
SANDSTONE, CONGLOMERATE
Major Lithologies:
Medium- to coarse-grained SANDSTONE (packstone-grainstone) composed of bioclasts (e.g., shell, coral, algae fragments), detrital grains, and calcite. Section 1 contains a sandy CONGLOMERATE at 8-22 cm and 65-90 cm composed of shell fragments, calcite, some detrital grains and two angular pebbles of basalt.

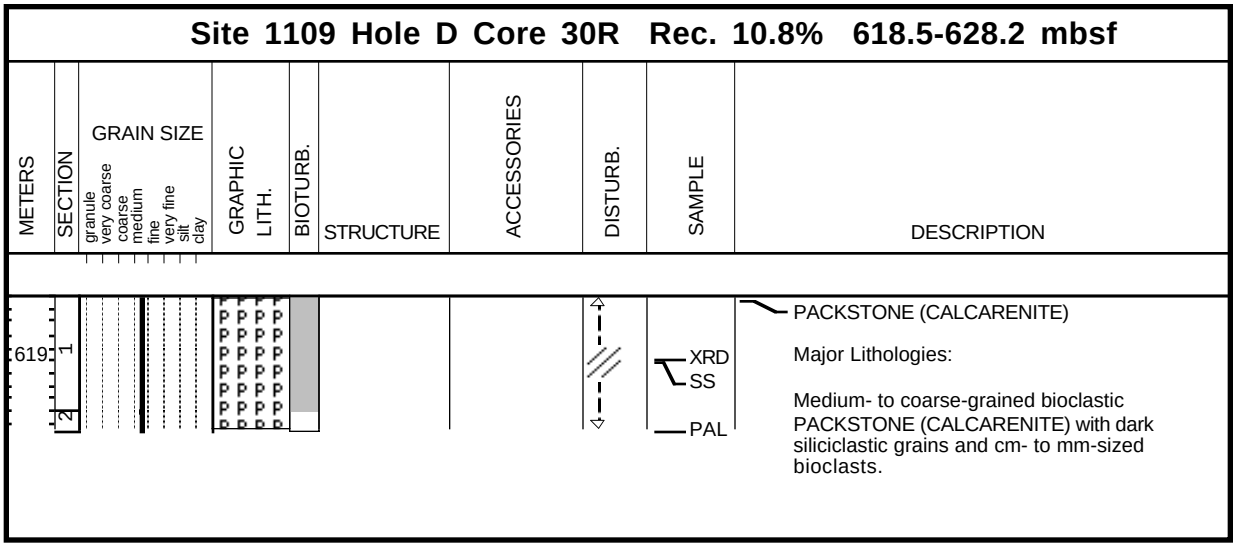
Core Photo


Site 1109 Hole D Core 28R Rec. 14.1% 599.2-608.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
600
1
2
THS
XRD
PAL
SANDSTONE
Major Lithologies:
Coarse- to medium-grained SANDSTONE (packstone-grainstone) rich in shell debris, quartz, feldspar, ferromagnesian minerals and calcite.

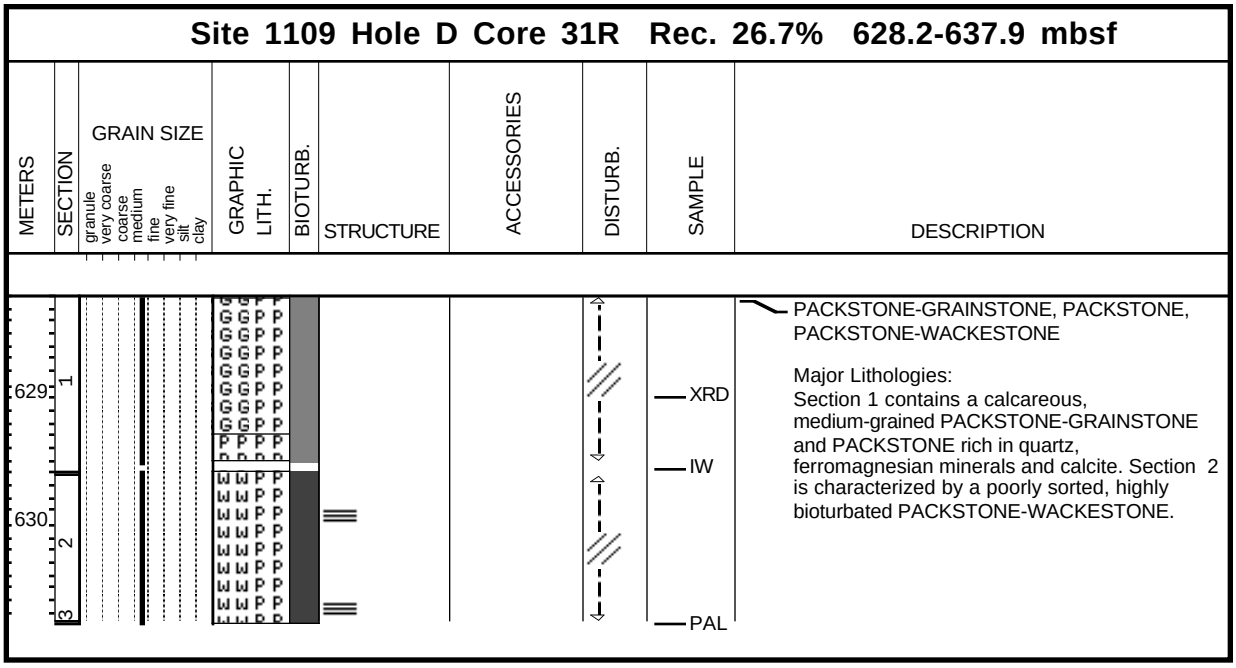
Core Photo


Site 1109 Hole D Core 29R Rec. 26.3% 608.9-618.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
609
610
611
612
1
2
3
4
XRD
IW
PAL
SANDSTONE, PACKSTONE-GRAINSTONE
Major Lithologies:
Section 1 contains olive (5Y 4/4) to dark olive gray (5Y 3/2), medium-grained, calcareous SANDSTONE rich in quartz, ferromagnesian minerals, shell fragments and calcite. Sections 2 and 3 are characterized by olive, medium- to coarse-grained calcareous PACKSTONE-GRAINSTONE.

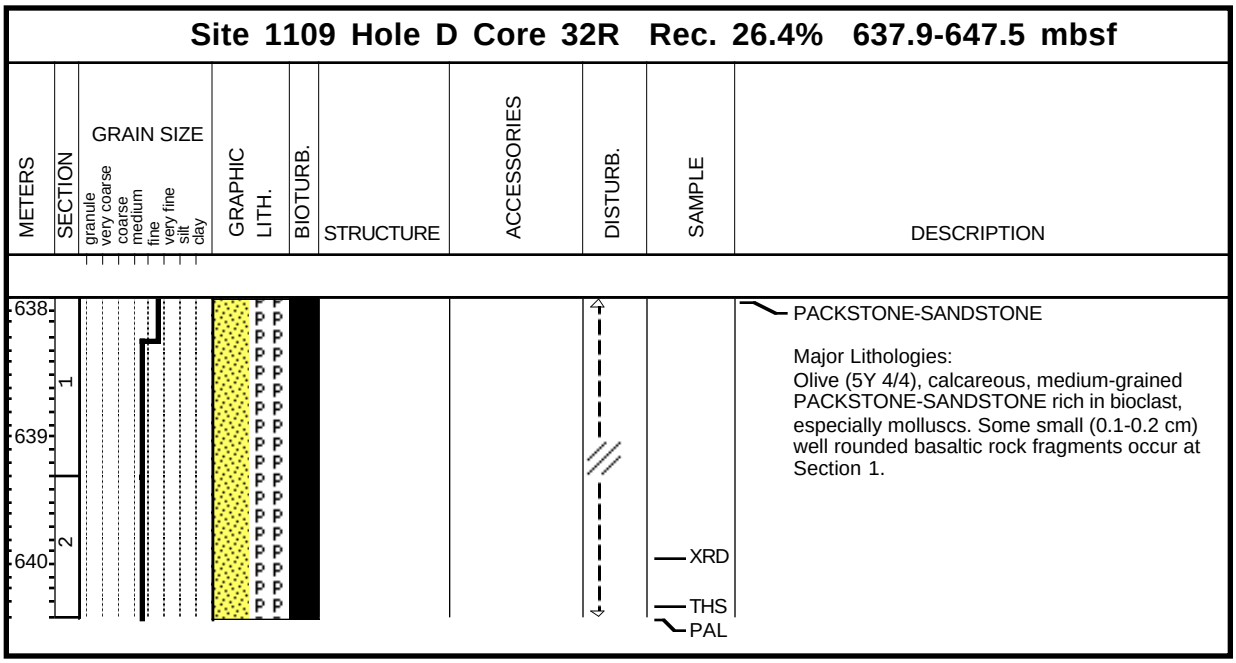
Core Photo


Site 1109 Hole D Core 30R Rec. 10.8% 618.5-628.2 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
619
1
2
XRD
SS
PAL
PACKSTONE (CALCARENITE)
Major Lithologies:
Medium- to coarse-grained bioclastic PACKSTONE (CALCARENITE) with dark siliciclastic grains and cm- to mm-sized bioclasts.

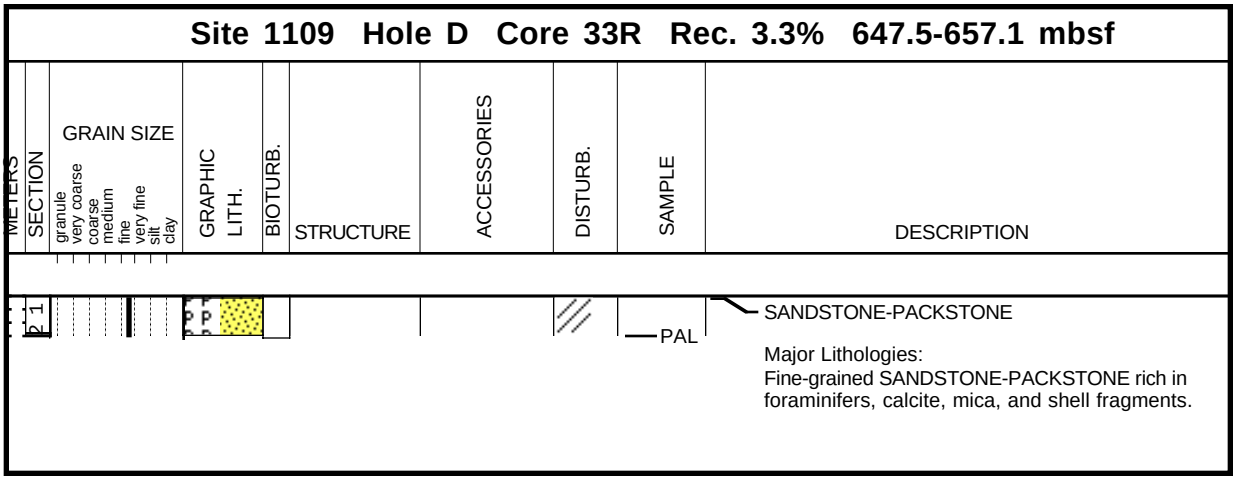
Core Photo


Site 1109 Hole D Core 31R Rec. 26.7% 628.2-637.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
629
630
1
2
3
XRD
IW
PAL
PACKSTONE-GRAINSTONE, PACKSTONE, PACKSTONE-WACKESTONE
Major Lithologies:
Section 1 contains a calcareous, medium-grained PACKSTONE-GRAINSTONE and PACKSTONE rich in quartz, ferromagnesian minerals and calcite. Section 2 is characterized by a poorly sorted, highly bioturbated PACKSTONE-WACKESTONE.

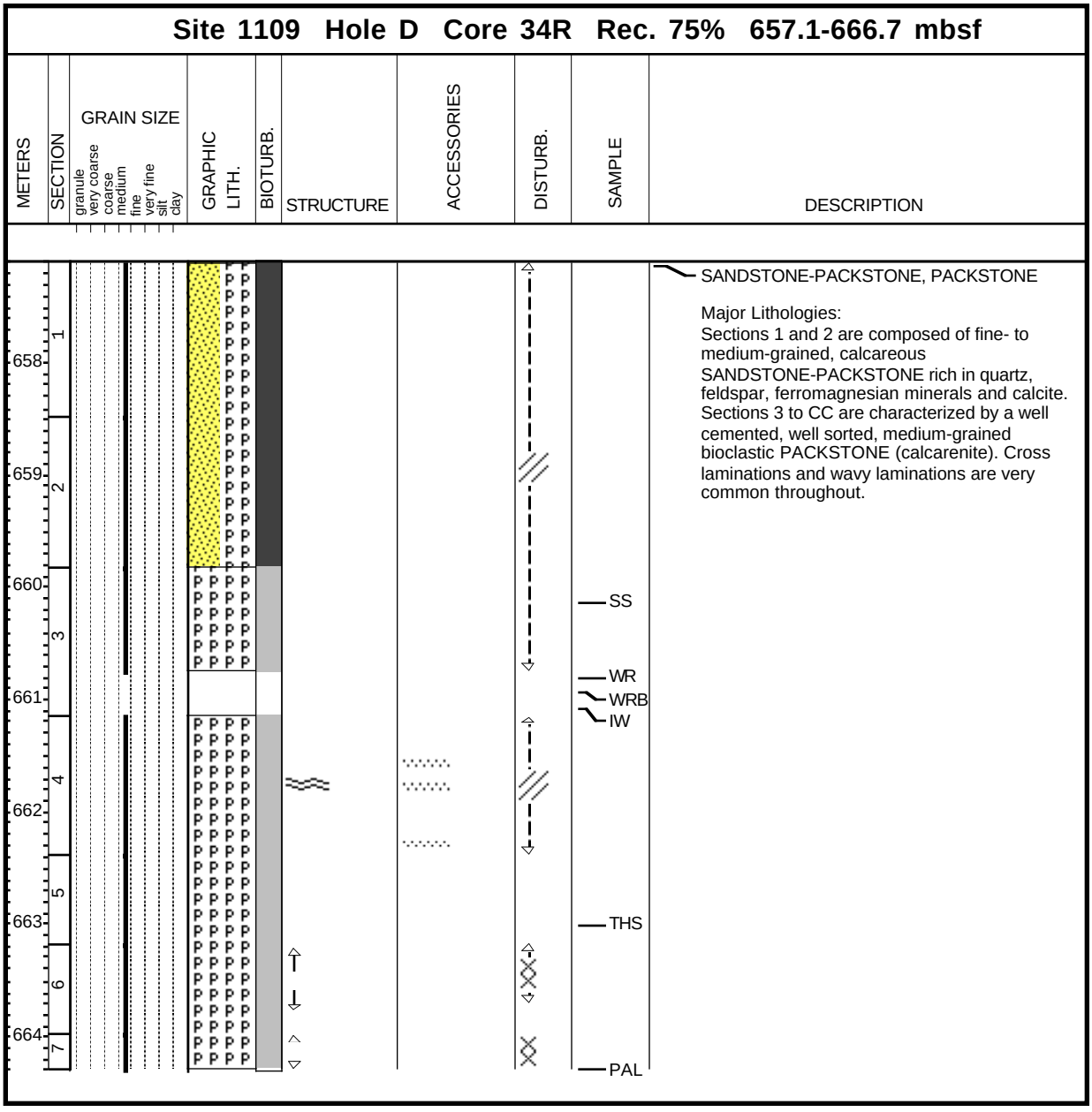
Core Photo


Site 1109 Hole D Core 32R Rec. 26.4% 637.9-647.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
638
639
640
1
2
XRD
THS
PAL
PACKSTONE-SANDSTONE
Major Lithologies:
Olive (5Y 4/4), calcareous, medium-grained PACKSTONE-SANDSTONE rich in bioclast, especially molluscs. Some small (0.1-0.2 cm) well rounded basaltic rock fragments occur at Section 1.

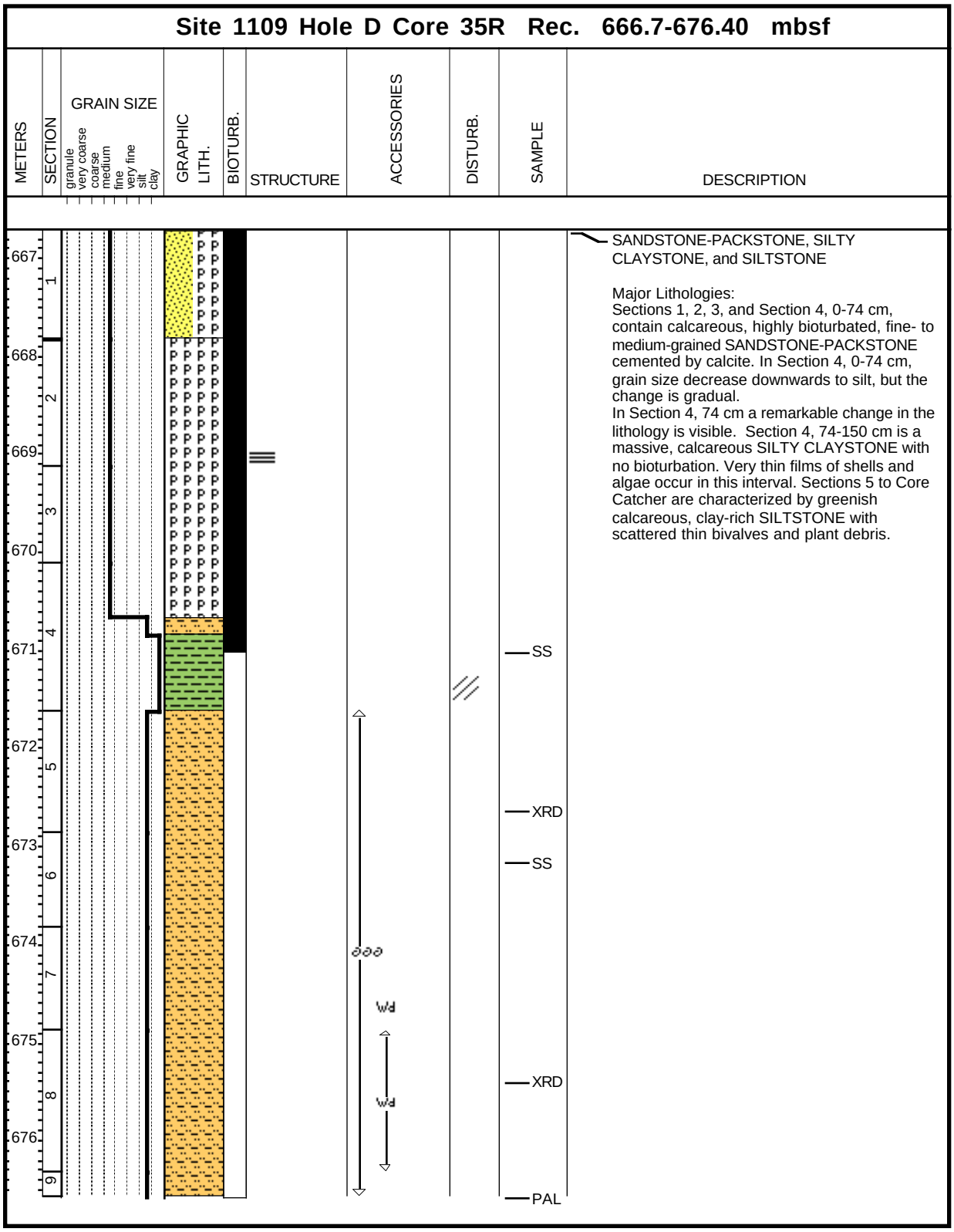
Core Photo


Site 1109 Hole D Core 33R Rec. 3.3% 647.5-657.1 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
1
SANDSTONE-PACKSTONE
PAL
Major Lithologies:
Fine-grained SANDSTONE-PACKSTONE rich in foraminifers, calcite, mica, and shell fragments.

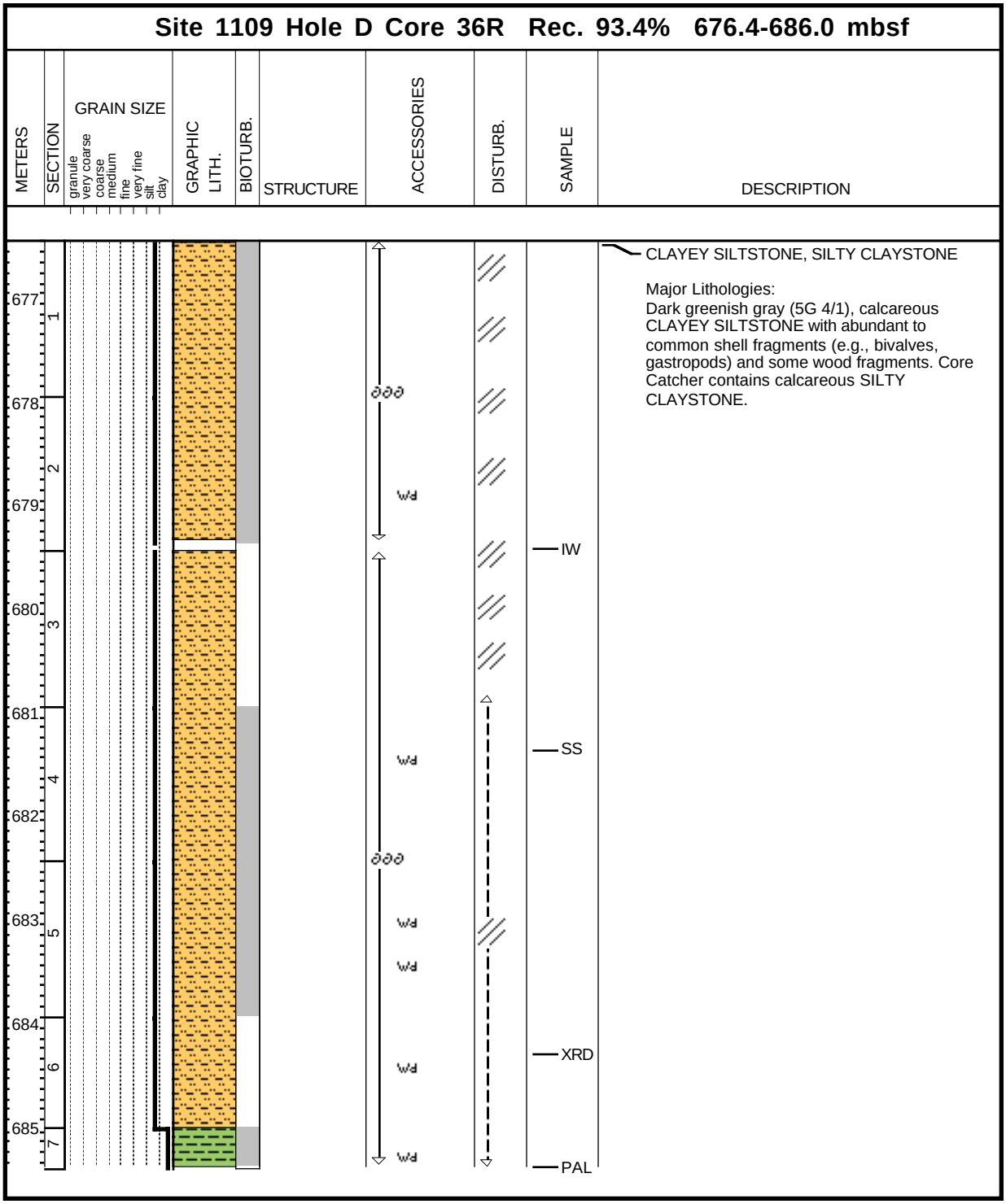
Core Photo


Site 1109 Hole D Core 34R Rec. 75% 657.1-666.7 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
658
659
660
661
662
663
664
1
2
3
4
5
6
7
SS
WR
WRB
IW
THS
PAL
SANDSTONE-PACKSTONE, PACKSTONE
Major Lithologies:
Sections 1 and 2 are composed of fine- to medium-grained, calcareous SANDSTONE-PACKSTONE rich in quartz, feldspar, ferromagnesian minerals and calcite. Sections 3 to CC are characterized by a well cemented, well sorted, medium-grained bioclastic PACKSTONE (calcarenite). Cross laminations and wavy laminations are very common throughout.

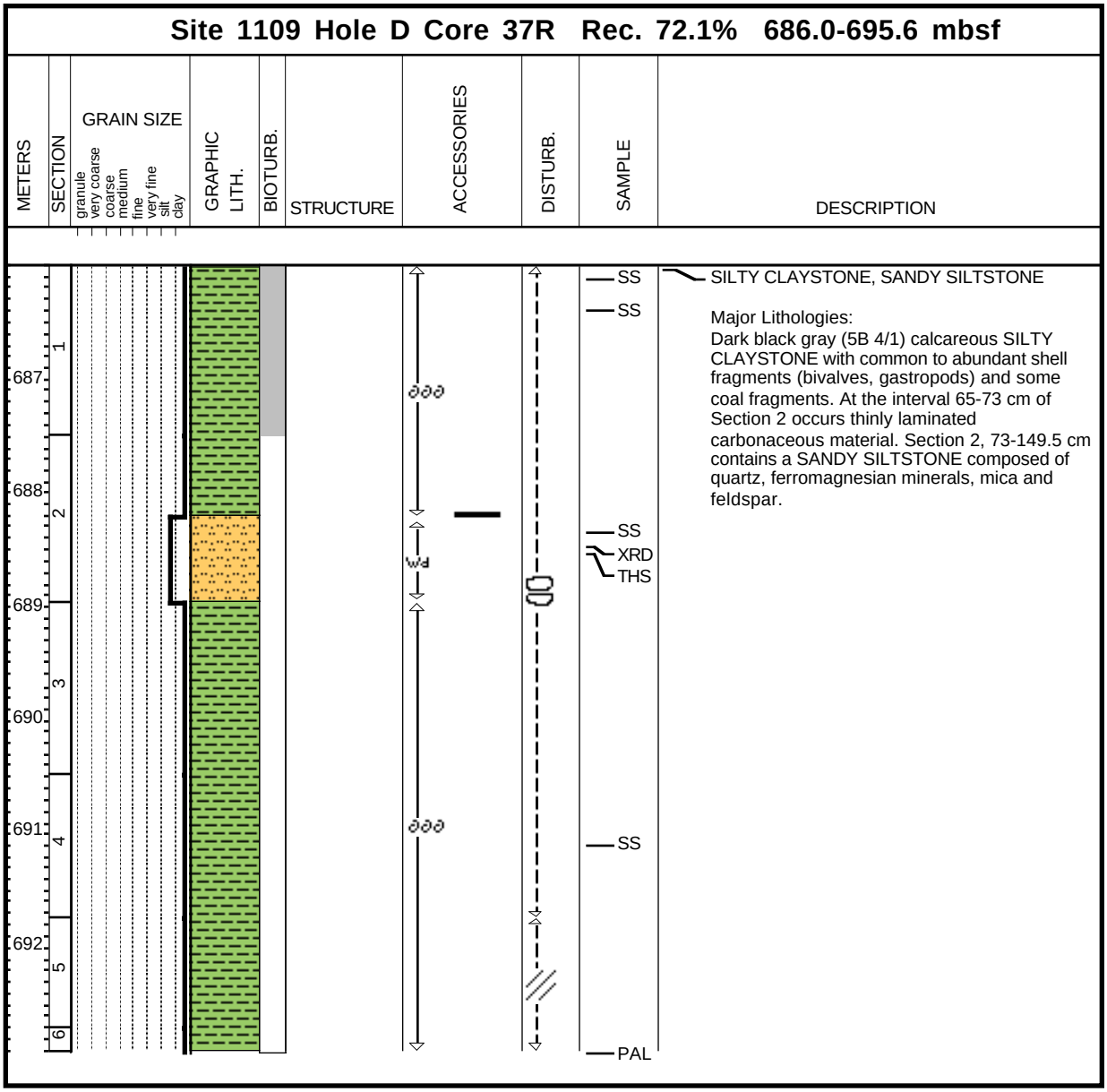
Core Photo


Site 1109 Hole D Core 35R Rec. 666.7-676.40 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
667
668
669
670
671
672
673
674
675
676
1
2
3
4
5
6
7
8
9
SS
XRD
SS
XRD
PAL
Wd
Wd
SANDSTONE-PACKSTONE, SILTY CLAYSTONE, and SILTSTONE
Major Lithologies:
Sections 1, 2, 3, and Section 4, 0-74 cm, contain calcareous, highly bioturbated, fine- to medium-grained SANDSTONE-PACKSTONE cemented by calcite. In Section 4, 0-74 cm, grain size decrease downwards to silt, but the change is gradual.
In Section 4, 74 cm a remarkable change in the lithology is visible. Section 4, 74-150 cm is a massive, calcareous SILTY CLAYSTONE with no bioturbation. Very thin films of shells and algae occur in this interval. Sections 5 to Core Catcher are characterized by greenish calcareous, clay-rich SILTSTONE with scattered thin bivalves and plant debris.

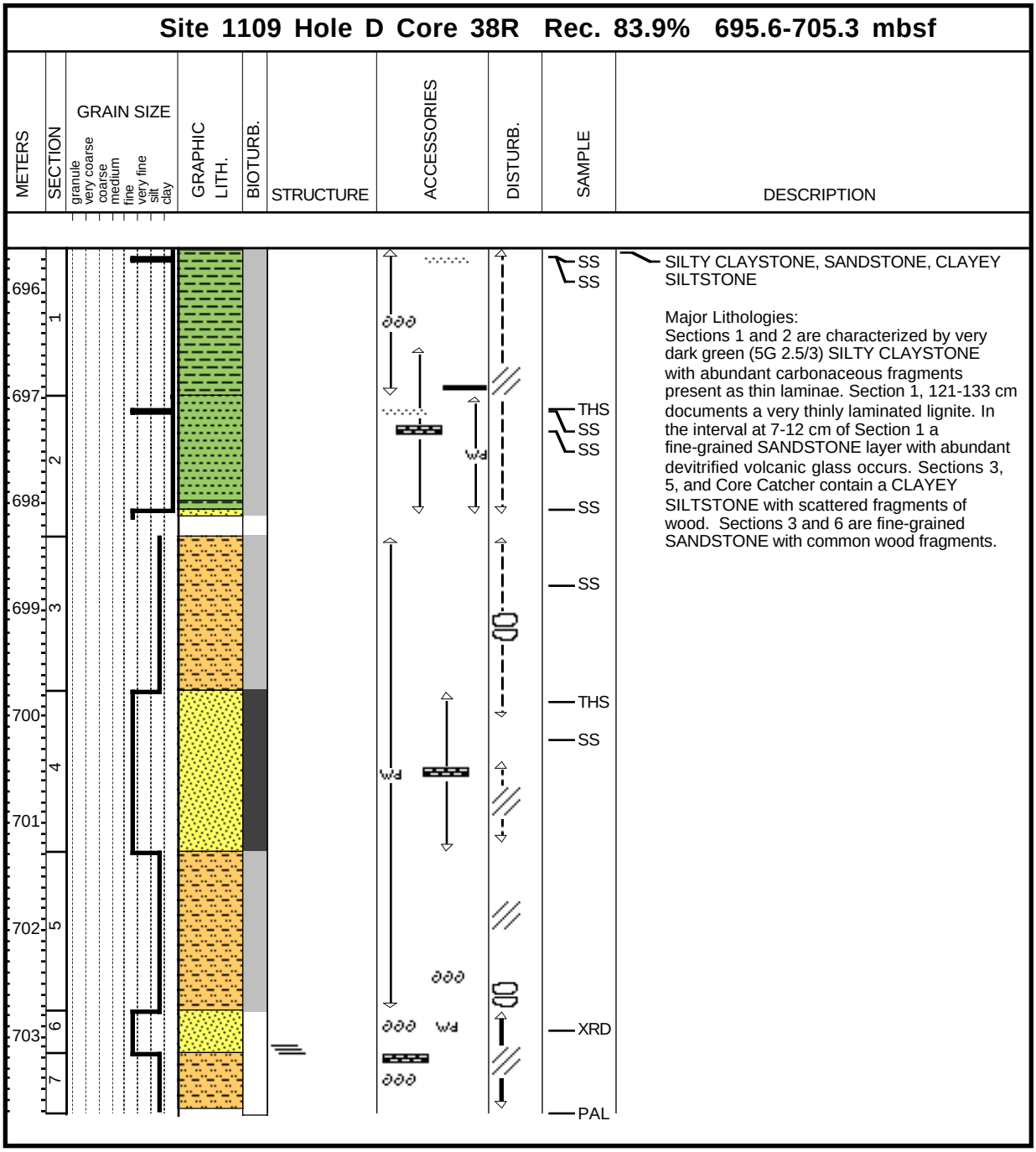
Core Photo


Site 1109 Hole D Core 36R Rec. 93.4% 676.4-686.0 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
677
678
679
680
681
682
683
684
685
1
2
3
4
5
6
7
IW
SS
XRD
PAL
CLAYEY SILTSTONE, SILTY CLAYSTONE
Major Lithologies:
Dark greenish gray (5G 4/1), calcareous CLAYEY SILTSTONE with abundant to common shell fragments (e.g., bivalves, gastropods) and some wood fragments. Core Catcher contains calcareous SILTY CLAYSTONE.

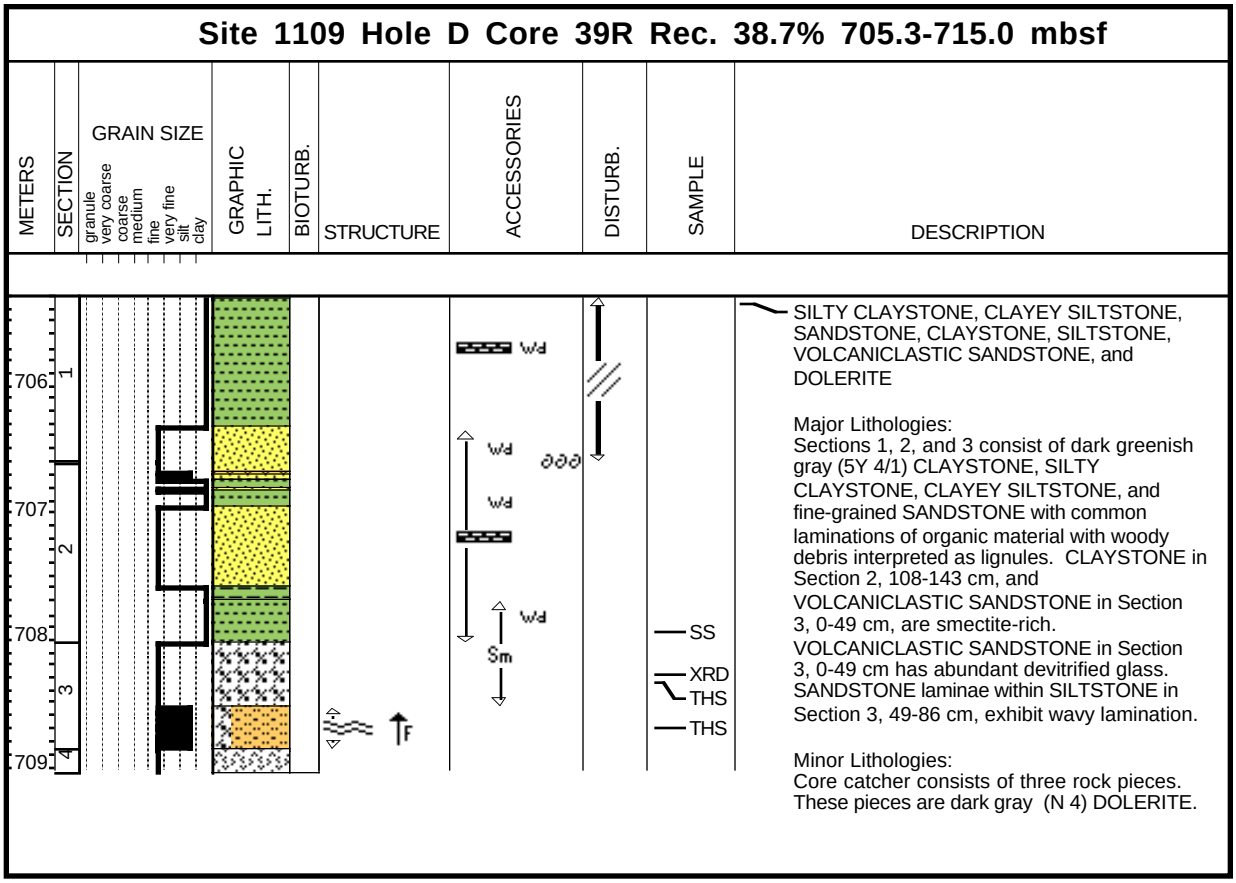
Core Photo


Site 1109 Hole D Core 37R Rec. 72.1% 686.0-695.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
687
688
689
690
691
692
1
2
3
4
5
6
SS
SS
SS
XRD
THS
SS
PAL
SILTY CLAYSTONE, SANDY SILTSTONE
Major Lithologies:
Dark black gray (5B 4/1) calcareous SILTY CLAYSTONE with common to abundant shell fragments (bivalves, gastropods) and some coal fragments. At the interval 65-73 cm of Section 2 occurs thinly laminated carbonaceous material. Section 2, 73-149.5 cm contains a SANDY SILTSTONE composed of quartz, ferromagnesian minerals, mica and feldspar.

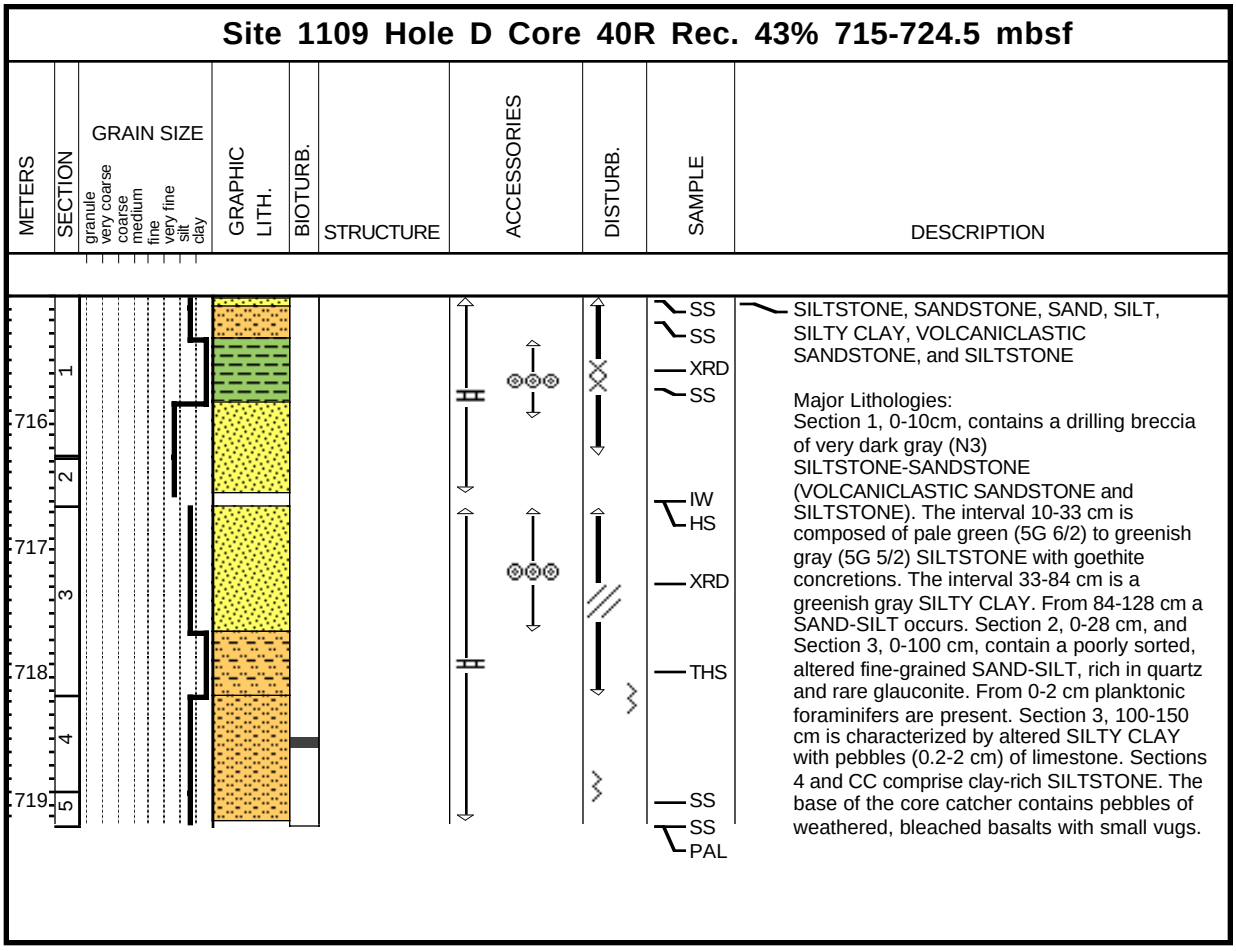
Core Photo


Site 1109 Hole D Core 38R Rec. 83.9% 695.6-705.3 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
696
697
698
699
700
701
702
703
1
2
3
4
5
6
7
SS
SS
THS
SS
SS
SS
SS
THS
SS
XRD
PAL
SILTY CLAYSTONE, SANDSTONE, CLAYEY SILTSTONE
Major Lithologies:
Sections 1 and 2 are characterized by very dark green (5G 2.5/3) SILTY CLAYSTONE with abundant carbonaceous fragments present as thin laminae. Section 1, 121-133 cm documents a very thinly laminated lignite. In the interval at 7-12 cm of Section 1 a fine-grained SANDSTONE layer with abundant devitrified volcanic glass occurs. Sections 3, 5, and Core Catcher contain a CLAYEY SILTSTONE with scattered fragments of wood. Sections 3 and 6 are fine-grained SANDSTONE with common wood fragments.

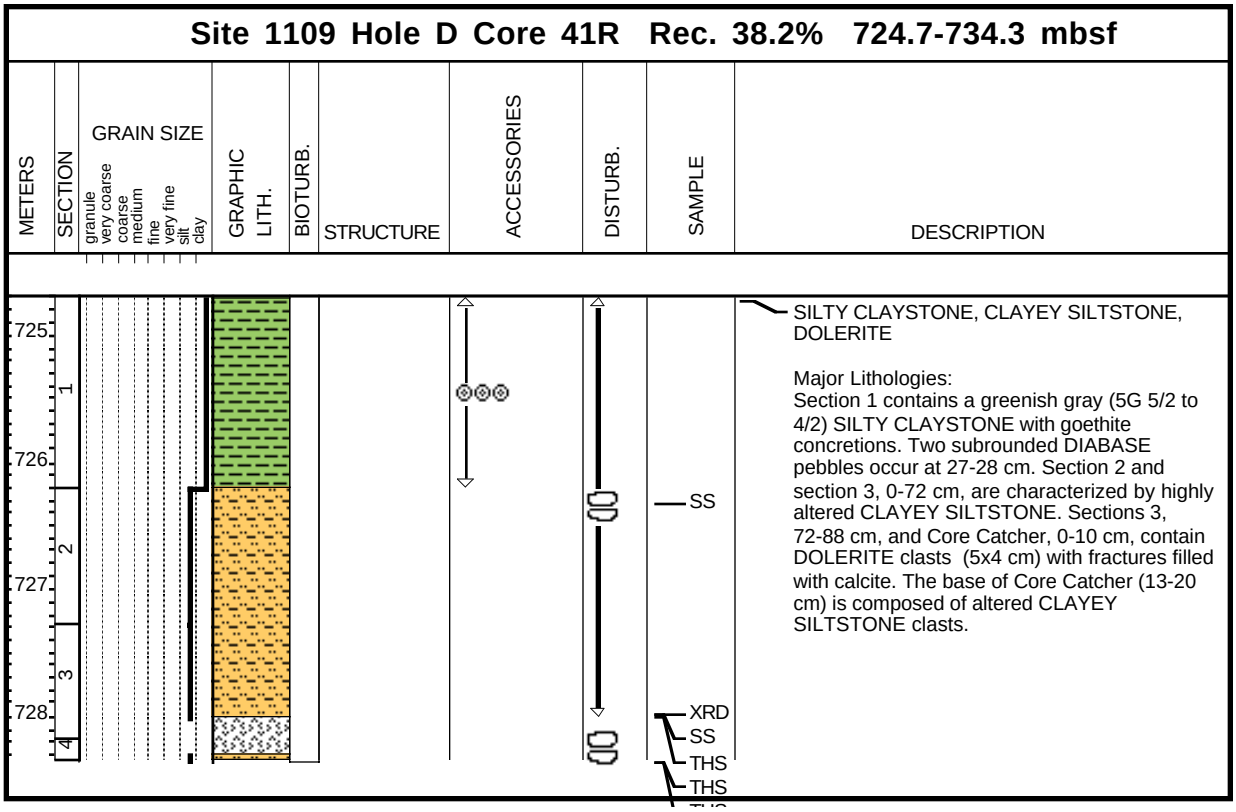
Core Photo


Site 1109 Hole D Core 39R Rec. 38.7% 705.3-715.0 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
706
707
708
709
1
2
3
4
Wd
Sm
F
SS
XRD
THS
THS
SILTY CLAYSTONE, CLAYEY SILTSTONE, SANDSTONE, CLAYSTONE, SILTSTONE, VOLCANICLASTIC SANDSTONE, and DOLERITE
Major Lithologies:
Sections 1, 2, and 3 consist of dark greenish gray (5Y 4/1) CLAYSTONE, SILTY CLAYSTONE, CLAYEY SILTSTONE, and fine-grained SANDSTONE with common laminations of organic material with woody debris interpreted as lignules. CLAYSTONE in Section 2, 108-143 cm, and VOLCANICLASTIC SANDSTONE in Section 3, 0-49 cm, are smectite-rich. VOLCANICLASTIC SANDSTONE in Section 3, 0-49 cm has abundant devitrified glass. SANDSTONE laminae within SILTSTONE in Section 3, 49-86 cm, exhibit wavy lamination.
Minor Lithologies:
Core catcher consists of three rock pieces. These pieces are dark gray (N 4) DOLERITE.

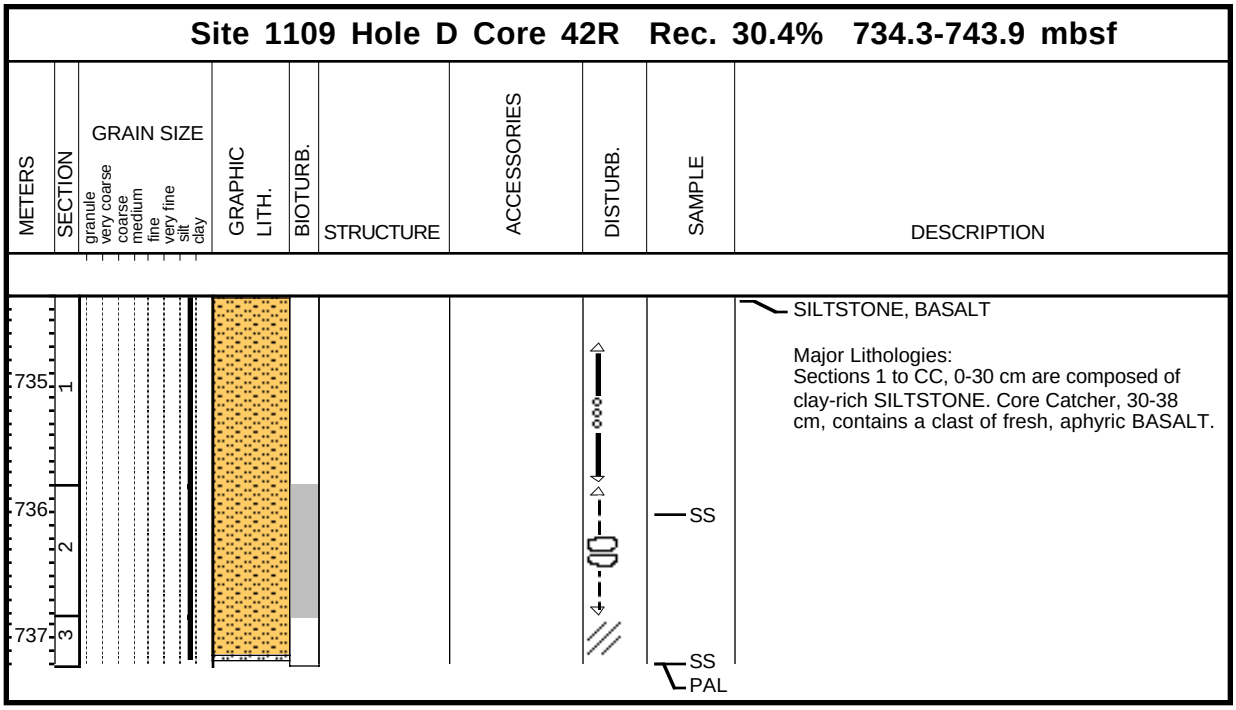
Core Photo


Site 1109 Hole D Core 40R Rec. 43% 715-724.5 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
716
717
718
719
1
2
3
4
5
SS
SS
XRD
SS
IW
HS
XRD
THS
SS
SS
PAL
SILTSTONE, SANDSTONE, SAND, SILT, SILTY CLAY, VOLCANICLASTIC SANDSTONE, and SILTSTONE
Major Lithologies:
Section 1, 0-10cm, contains a drilling breccia of very dark gray (N3) SILTSTONE-SANDSTONE (VOLCANICLASTIC SANDSTONE and SILTSTONE). The interval 10-33 cm is composed of pale green (5G 6/2) to greenish gray (5G 5/2) SILTSTONE with goethite concretions. The interval 33-84 cm is a greenish gray SILTY CLAY. From 84-128 cm a SAND-SILT occurs. Section 2, 0-28 cm, and Section 3, 0-100 cm, contain a poorly sorted, altered fine-grained SAND-SILT, rich in quartz and rare glauconite. From 0-2 cm planktonic foraminifers are present. Section 3, 100-150 cm is characterized by altered SILTY CLAY with pebbles (0.2-2 cm) of limestone. Sections 4 and CC comprise clay-rich SILTSTONE. The base of the core catcher contains pebbles of weathered, bleached basalts with small vugs.

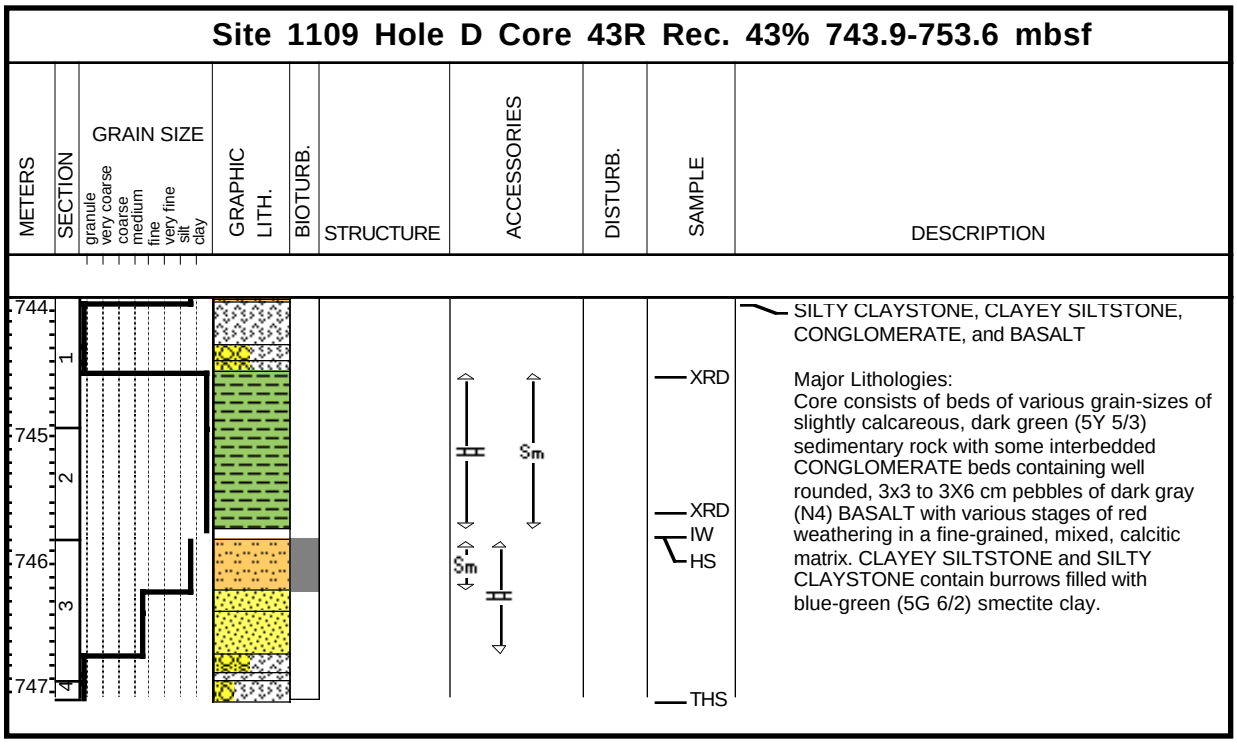
Core Photo


Site 1109 Hole D Core 41R Rec. 38.2% 724.7-734.3 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
725
726
727
728
1
2
3
4
SS
XRD
SS
THS
THS
SILTY CLAYSTONE, CLAYEY SILTSTONE, DOLERITE
Major Lithologies:
Section 1 contains a greenish gray (5G 5/2 to 4/2) SILTY CLAYSTONE with goethite concretions. Two subrounded DIABASE pebbles occur at 27-28 cm. Section 2 and section 3, 0-72 cm, are characterized by highly altered CLAYEY SILTSTONE. Sections 3, 72-88 cm, and Core Catcher, 0-10 cm, contain DOLERITE clasts (5x4 cm) with fractures filled with calcite. The base of Core Catcher (13-20 cm) is composed of altered CLAYEY SILTSTONE clasts.

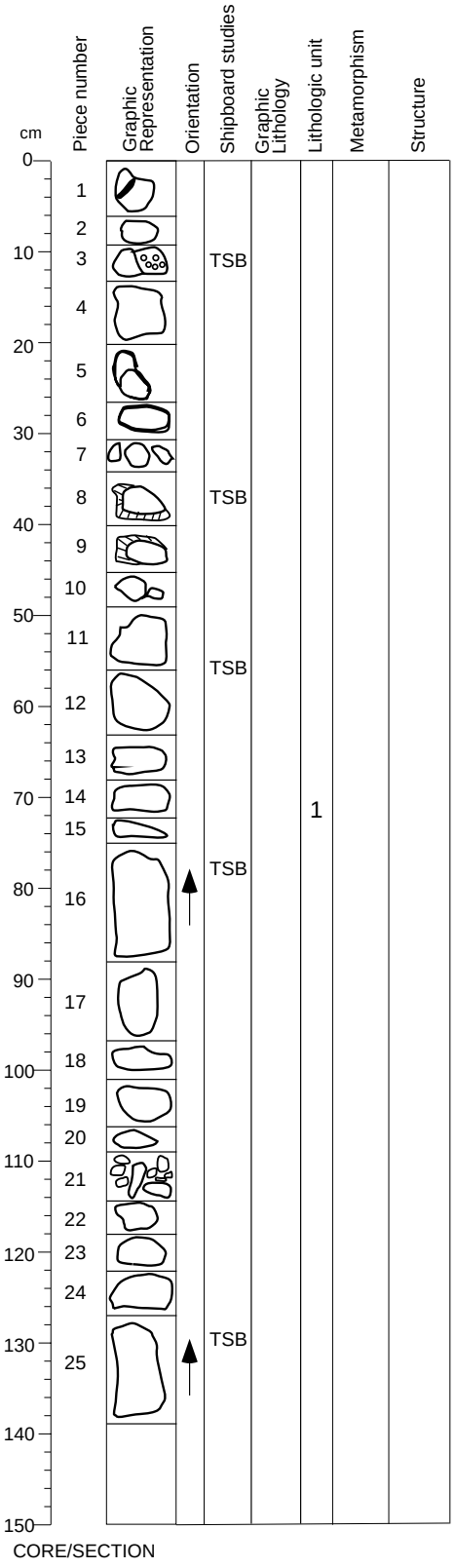
Core Photo


Site 1109 Hole D Core 42R Rec. 30.4% 734.3-743.9 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
735
736
737
1
2
3
SS
SS
PAL
SILTSTONE, BASALT
Major Lithologies:
Sections 1 to CC, 0-30 cm are composed of clay-rich SILTSTONE. Core Catcher, 30-38 cm, contains a clast of fresh, aphyric BASALT.

Core Photo


Site 1109 Hole D Core 43R Rec. 43% 743.9-753.6 mbsf
METERS
SECTION
GRAIN SIZE
granule
very coarse
coarse
medium
fine
very fine
silt
clay
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
744
745
746
747
1
2
3
4
XRD
XRD
IW
HS
THS
SILTY CLAYSTONE, CLAYEY SILTSTONE, CONGLOMERATE, and BASALT
Major Lithologies:
Core consists of beds of various grain-sizes of slightly calcareous, dark green (5Y 5/3) sedimentary rock with some interbedded CONGLOMERATE beds containing well rounded, 3x3 to 3X6 cm pebbles of dark gray (N4) BASALT with various stages of red weathering in a fine-grained, mixed, calcitic matrix. CLAYEY SILTSTONE and SILTY CLAYSTONE contain burrows filled with blue-green (5G 6/2) smectite clay.

Core Photo



180-1109D-44R-1 (753.6-755.0 mbsf)

UNIT: 1 **CONGLOMERATE** and clasts therefrom

Pieces: 1-25

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	44R	1	1	753.60
Lower contact:	44R	1	25	755.00

Thickness (m): 1.40
Contact Type: None

GENERAL: Unit is predominantly a conglomerate containing fine- to medium-grained dolerite clasts within a clay matrix.

GRAIN SIZE: Fine- to medium-grained

TEXTURE: Ophitic

STRUCTURE: None discernable

ALTERATION: Slight, some rusty zones as noted.

COMMENTS: These pieces are thought to be clasts from a conglomerate, liberated by the drilling process.

Piece 1: Conglomerate with 2 basic clasts in a fine-grained matrix. Piece one is 4x2 cm, gray in color (5Y 6/1) in which small ferromagnesian minerals can be seen - probably a dolerite. The other is a 1x1 cm, rounded and apparently unaltered dolerite clast. It is gray (6Y 6/1) and too fine-grained to identify minerals.

Piece 2 is a volcaniclastic sandstone, 6x9 cm, with clastic grains of quartz and ferromagnesian minerals, Fe oxidation is pervasive. Color 5Y 4/4.

Piece 3 is a conglomerate similar to Piece 1. Clasts are well rounded, 5x5 cm to 2x2 cm, and weathered on the outside to rusty material.

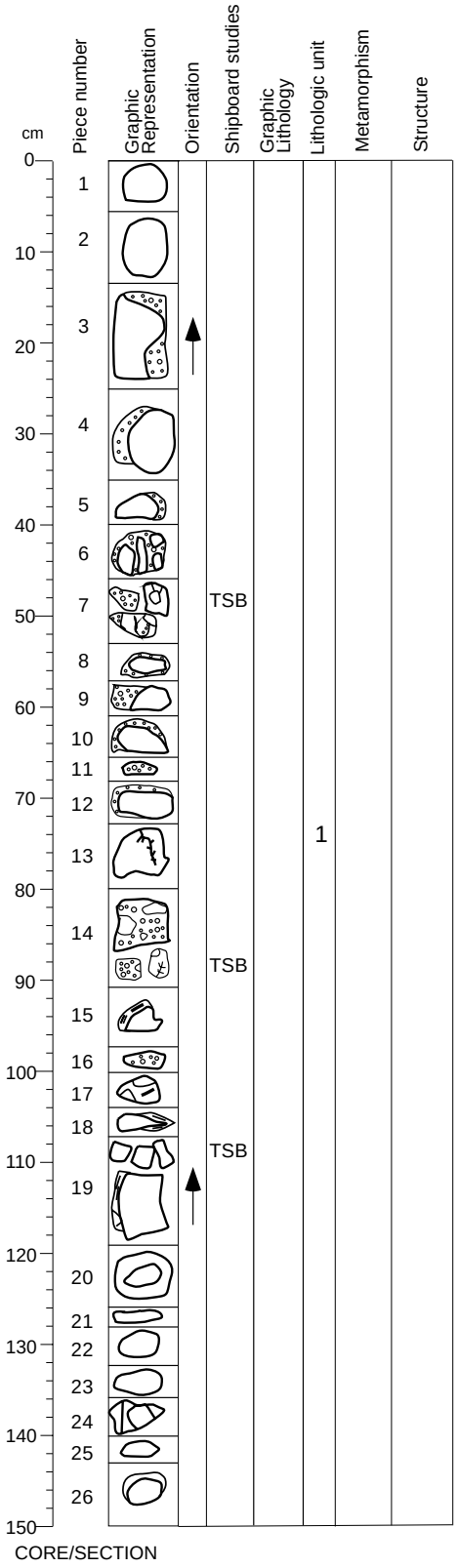
Piece 4 is a dolerite similar to Piece1. Color gray (N7/0).

Pieces 5 and 6 are similar to Piece 4 but Piece 5 is slightly more mafic.

Piece 7 contains three small pebbles: a weathered sandstone similar to Piece 2 (1x1.5 cm); a very rounded and weathered dolerite with adhering matrix similar to that in conglomerate Piece 1, and a fresh dolerite similar to Piece 4.

Piece 8 is a chilled basaltic glass - identified from thin section.
Pieces 9 - 25: dolerite similar to 4 but variable weathering (particularly 9 and 11, which have iron oxide staining). All rounded, suggesting conglomeratic clasts. These rocks are all fine-grained dolerite, in which only poikilitic ferromagnesian minerals (probably clinopyroxene) in patches up to 1 mm can be distinguished under the hand lens, especially in Pieces 10, 13, 17, 19, 23, and 24). Other pieces appear to be more equigranular.

Core Photo



180-1109D-45R-1 (763.2-764.7 mbsf)

UNIT: 1 **CONGLOMERATE**

Pieces: 1-26

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	45R	1	1	763.20
Lower contact:	45R	1	26	764.70

Thickness (m): 1.50
Contact Type: None

GENERAL: These are fine- to medium-grained rocks, whose modal mineralogy cannot be distinguished in hand specimen.

GRAIN SIZE: Fine- to medium-grained

TEXTURE: Generally ophitic

STRUCTURE: None of note

ALTERATION: Slight, except as noted

COMMENTS: These pieces are either fragments of a conglomerate or clasts derived therefrom.

Pieces 1-5: Dolerite clasts composed of approximately equal amounts of plagioclase and ferromagnesian minerals. They are highly rounded and fresh, apart from Piece 4, which has a rusty weathering band (5Y 4/4). Pieces 2, 3, and 4 have adhering conglomeratic matrix (greenish gray, 5GY 6/1), which contains clay, calcite, and detrital grains.

Pieces 6-11: Conglomerates with rounded clasts (1x1 cm to 3x5 cm) of dolerite and a matrix similar to that already described (in 1-5 above). Thin section of Piece 7 shows highly chilled and finely crystalline basalt clasts in a sparry calcite matrix.

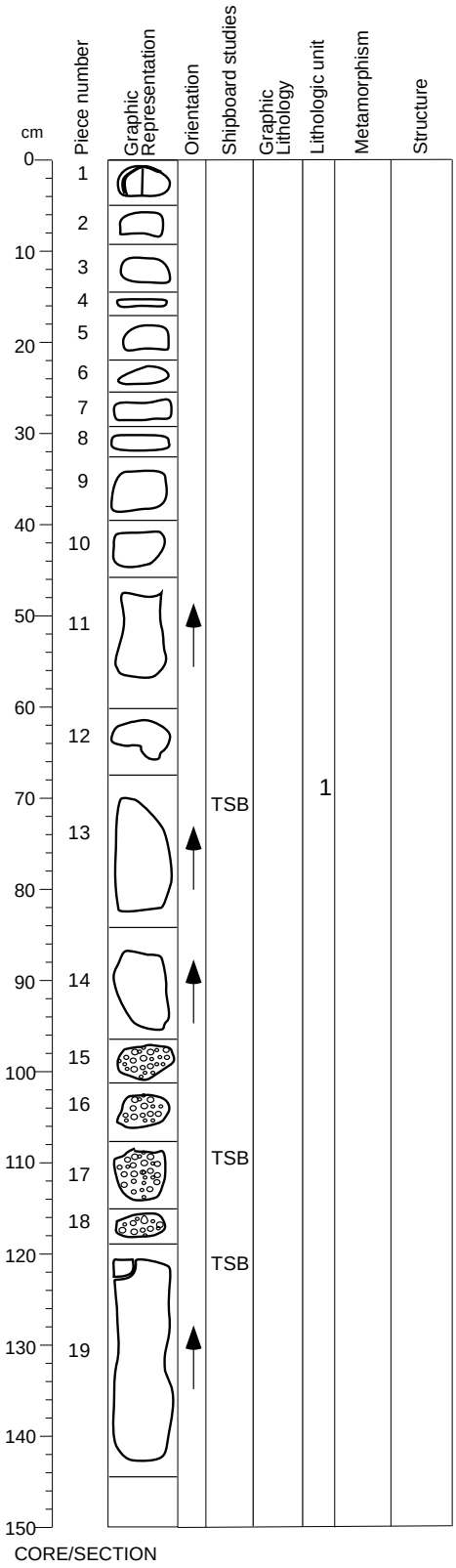
Pieces 12 and 13: Dolerite clasts, similar to Pieces 1-5, probably derived from the conglomerate. Slight reddish alteration.

Pieces 14-18: Conglomerates, similar to Pieces 6-11. Thin section o f Piece 14 shows casts of fine-grained basalts, tachylites and variolitic basalts, probably of submarine origin, in a matrix with abundant augite fragments.

Piece 19: Three small pieces of conglomerate and one larger (6x4 cm) pebble with adhering conglomeratic matrix.

Pieces 20-26: Dolerite pebbles, similar to Pieces 1-5. Pieces 20 and 24 have white veins.

Core Photo



180-1109D-45R-2 (764.7-766.15 mbsf)

UNIT: 1 **CONGLOMERATE**

Pieces: 1-19

Interval Location:	Core	Depth Section	Piece	(mbsf)
Upper contact:	45R	2	1	764.70
Lower contact:	45R	2	19	766.15

Thickness (m): 1.45
Contact Type: None

GENERAL: These are fine- to medium-grained rocks, whose modal mineralogy cannot be distinguished in hand specimen.

GRAIN SIZE: Fine- to medium grained

TEXTURE: Generally ophitic

STRUCTURE: None of note

ALTERATION: Slight, except as noted

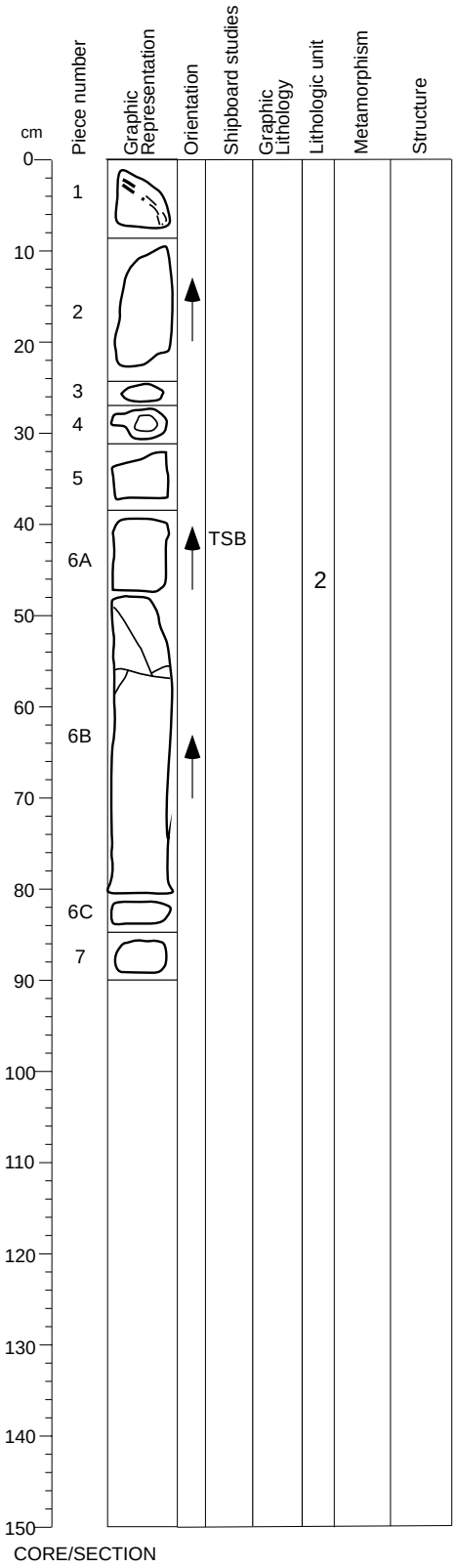
COMMENTS: These pieces are either fragments of a conglomerate or clasts derived therefrom.

Pieces 1-14: Mostly rounded pebbles, some with attached conglomeratic matrix. They consist of fine-grained dolerite with around 50% plagioclase and 50% ferromagnesian minerals, clinopyroxene(?). Only ophitic pyroxene, up to 1 mm in size can be distinguished in hand specimen. Most pieces are fresh and homogeneous. They have probably been liberated from the conglomerate during the drilling process. Pieces 1 and 4 are slightly weathered in part to a reddish color (5Y 4/4)

Pieces 15-18: Conglomerates with rounded to sub-rounded clasts (comprising about 80% of the rock) of weathered and unweathered dolerite. Weathering is red-brown and appears to be the same as that described above. The matrix, which comprises about 20% of the rock, is greenish gray (5GY 6/1) and contains calcite and detrital grains. It is not possible from the size of these samples to determine if the deposit is matrix- or clast-supported, but the latter is supported. Thin section shows that these include highly chilled (probably submarine) basalts.

Piece 19: Dolerite, but slightly more coarse-grained than previously described. Color is dark gray (N 5/0-N 4/0)
.

Core Photo



180-1109D-45R-3 (766.15-767.04 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1-19

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	45R	3	1	766.15
Lower contact:	45R	3	7	767.04

Thickness (m): 0.89
Contact Type: None

GENERAL: These are fine- to medium-grained rocks containing equal amounts of plagioclase and clinopyroxene

GRAIN SIZE: Up to 0.5 mm (fine to medium)

TEXTURE: Ophitic

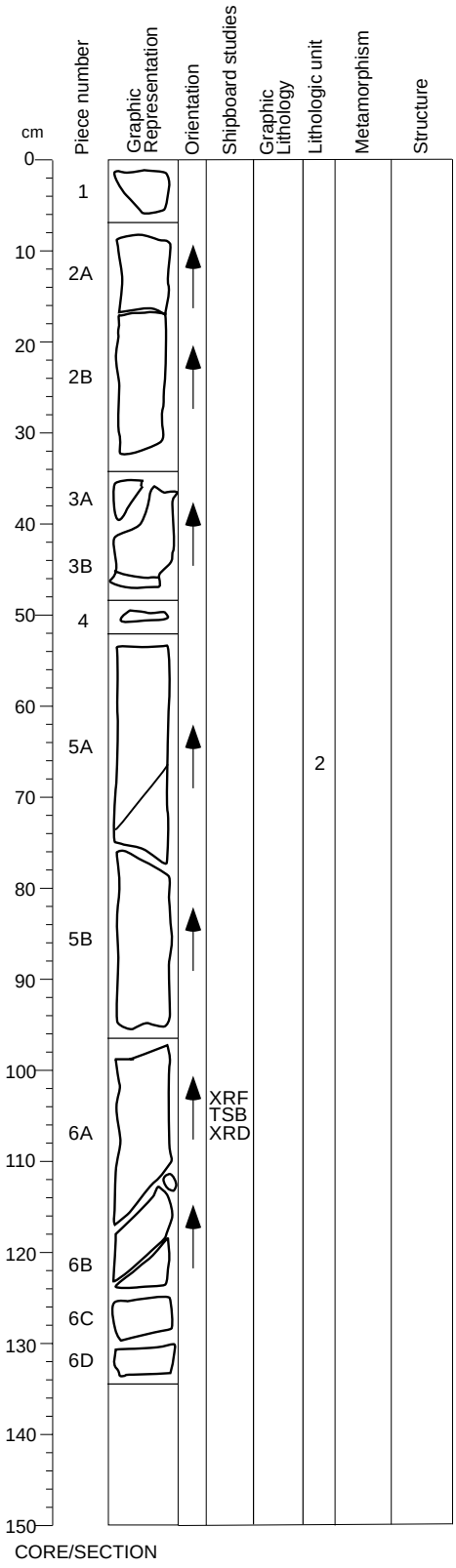
STRUCTURE: None of note

ALTERATION: Slight, except as noted

COMMENTS: All are pieces of dolerite, with approximately 50% plagioclase and 50% clinopyroxene. They are fresh, with a dark gray color (N 5/0- N 4/0).

Individual variations:
Piece 1 has a greenish gray (5G 6/1) crust on one side, possibly due to weathering.
Pieces 3 and 4 have some alteration.
Piece 6 has a vein structure (as indicated) filled with a black amorphous material.

Core Photo



180-1109D-46R-1 (772.90-774.23 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1-19

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	46R	1	1	772.90
Lower contact:	46R	1	6	774.23

Thickness (m): 1.33
Contact Type: None

GENERAL: These are fine- to medium-grained rocks containing equal amounts of plagioclase and clinopyroxene. They are similar to the conglomerate clasts described in immediately preceding cores.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

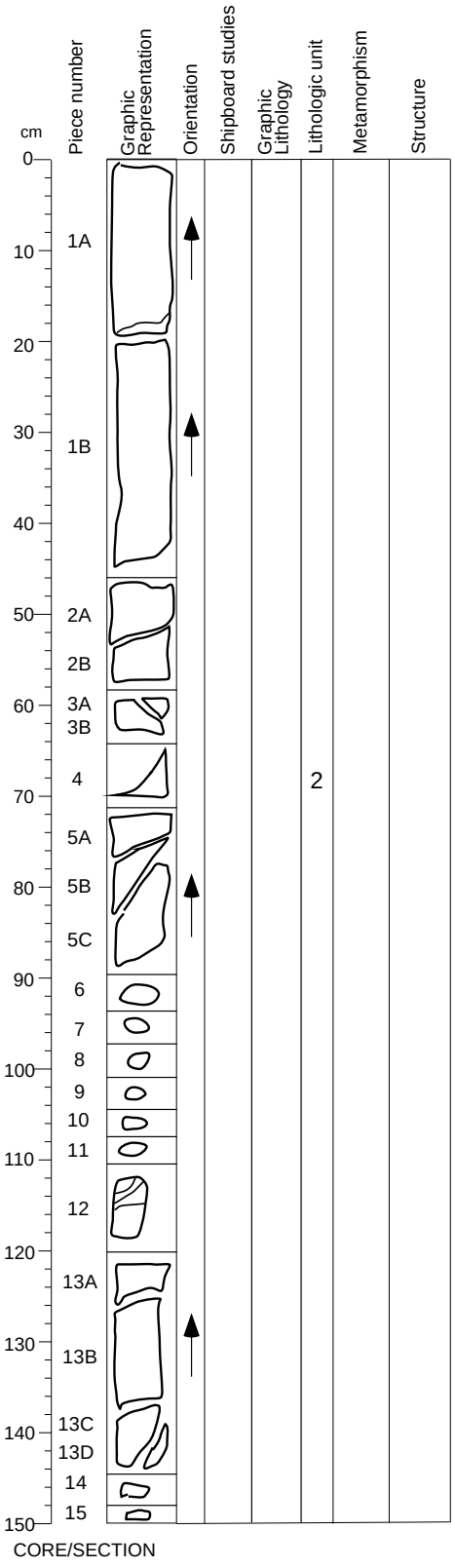
TEXTURE: Ophitic

STRUCTURE: None of note

ALTERATION: Slight, except as noted

COMMENTS: All pieces are apparently from a continuous section of dolerite. They have approximately 50% plagioclase and 50% clinopyroxene and are fresh with a dark gray color (N 5/0- N 4/0).
Flecks of pyrite, up to 5 mm across, occur on non-slickensided fractures (especially between Pieces 2A and 2B, 5A and 5B, and 6A, 6B, and 6C).

Core Photo



180-1109D-46R-2 (774.23-775.73 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1-6

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	46R	2	1	774.23
Lower contact:	46R	2	15	775.73

Thickness (m): 1.50
Contact Type: None

GENERAL: Pieces 1 to 15 are all of uniform dolerite as described in previous core and belong to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

TEXTURE: Ophitic

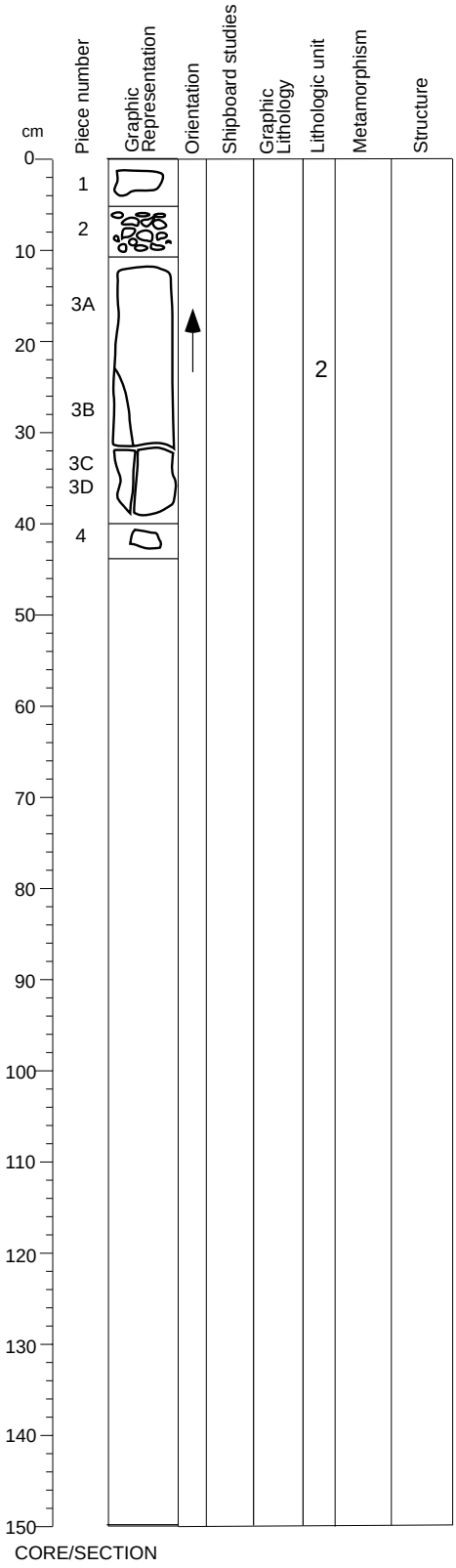
STRUCTURE: None of note

ALTERATION: Slight, except as noted

COMMENTS: These pieces apparently are from a continuous section of dolerite. They have approximately 50% plagioclase and 50% clinopyroxene and are fresh with a dark gray color (N 5/0- N 4/0). There are no significant variations in hand specimen.

Piece 2 has flecks of pyrite on a non-slickensided fracture.
Pieces 5A and 5B are separated by a slickensided fracture.

Core Photo



180-1109D-46R-3 (775.73-776.18 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1-4

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	46R	3	1	775.73
Lower contact:	46R	3	4	776.18

Thickness (m): 0.45
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

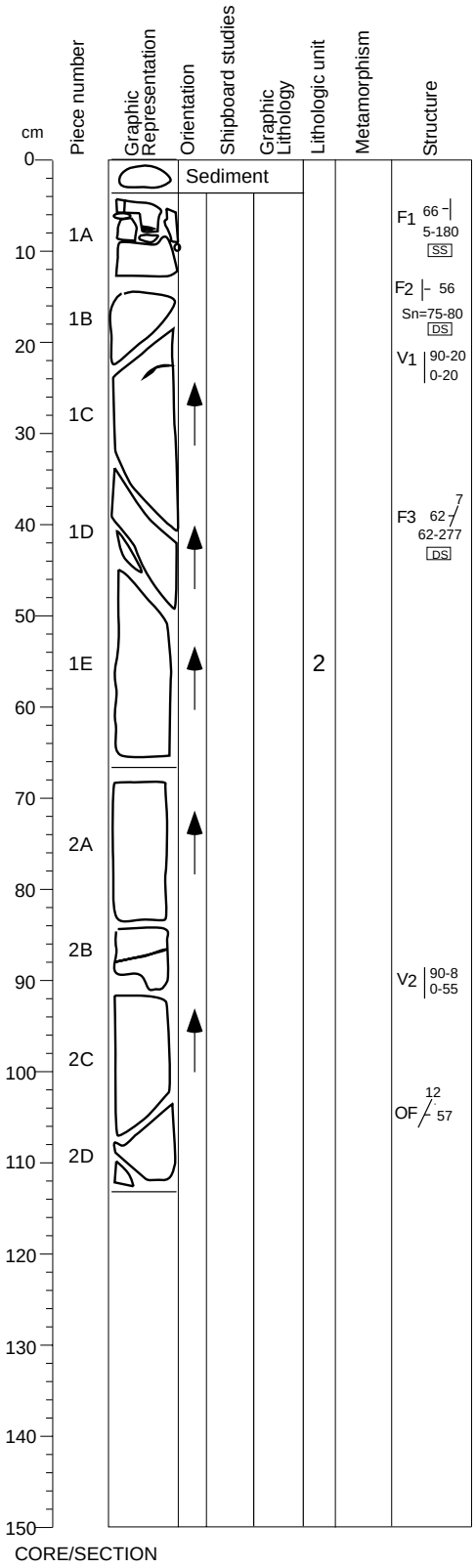
TEXTURE: Ophitic

STRUCTURE: None of note

ALTERATION: Slight, except as noted

COMMENTS: No deposits on slickensides or fractures of Piece 3.

Core Photo



180-1109D-47R-1 (777.60-778.72 mbsf)

UNIT: 2 **DOLERITE**, except as noted below

Pieces: 1 and 2

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	47R	1	1A-1E	777.60
Lower contact:	47R	1	2A-2D	778.72

Thickness (m): 1.12
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

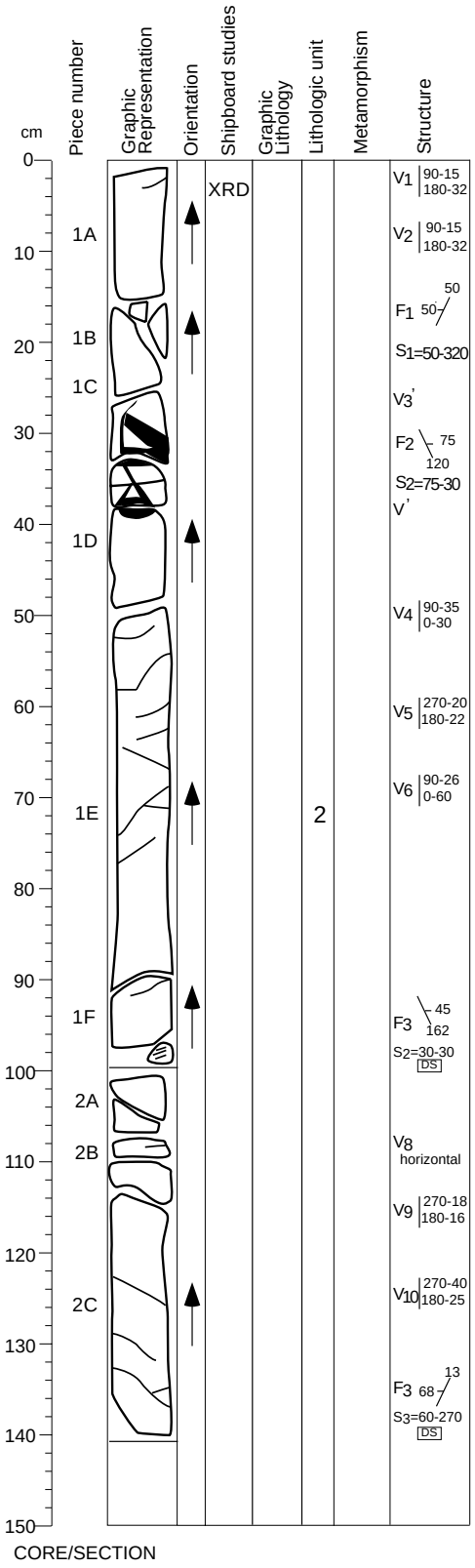
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight, except as noted

COMMENTS: The topmost piece is a siltstone with 95% quartz and <5% lithics (detrital). It has likely fallen in from up-hole.
Rest is dolerite, as described for Core 46R.
Faults filled with black material in Pieces 1A, 2B, and 2C.

Core Photo



180-1109D-47R-2 (778.72-780.13 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1-4

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	47R	2	1	778.72
Lower contact:	47R	2	2	780.13

Thickness (m): 1.41
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

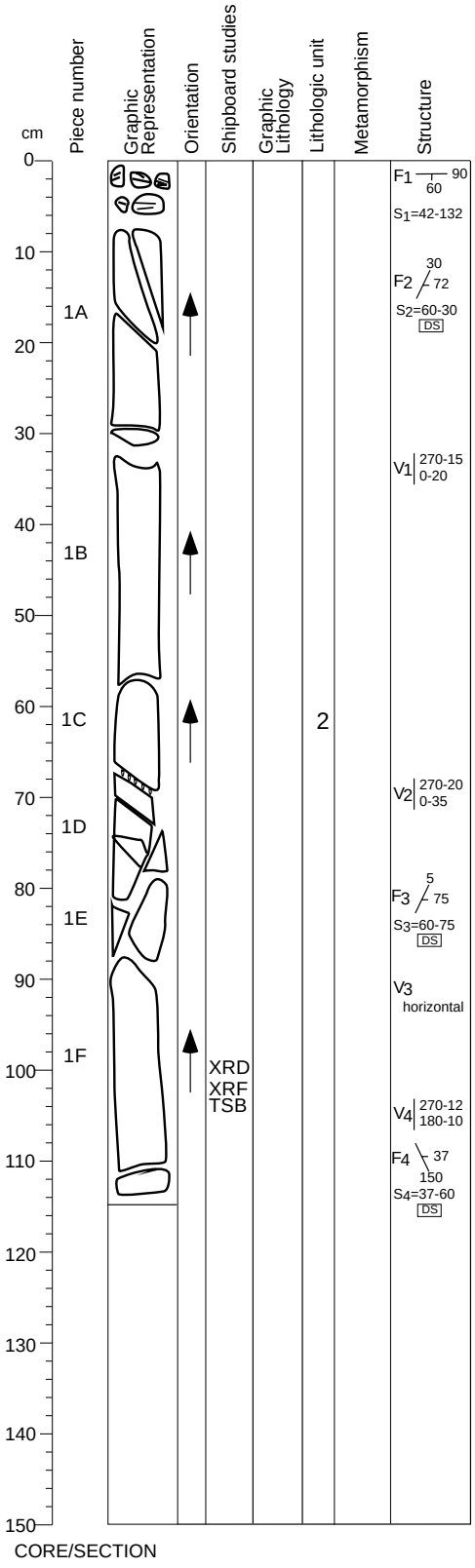
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight, except as noted

COMMENTS: Pieces are separated by faults. Fractures as marked have black material, especially on Pieces 1A, 1C, 1D, 1E, 1F, 2A, and 2C.

Core Photo



180-1109D-47R-3 (780.13-781.27 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1F

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	47R	3	1A	780.13
Lower contact:	47R	3	1F	781.27

Thickness (m): 1.14
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

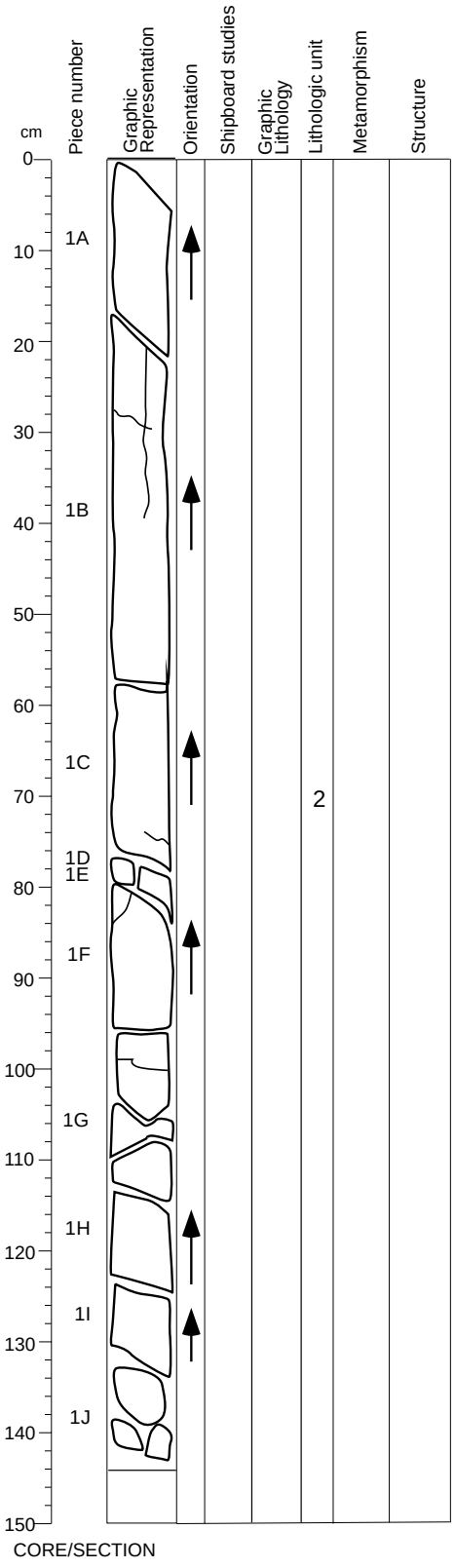
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight, except as noted

COMMENTS: Pieces are separated by faults with slickensides. Veins are filled with black, fine-grained material as in Core 46R.

Core Photo



180-1109D-47R-4 (781.27-782.71 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1J

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	47R	4	1A	781.27
Lower contact:	47R	4	1J	782.71

Thickness (m): 1.44
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

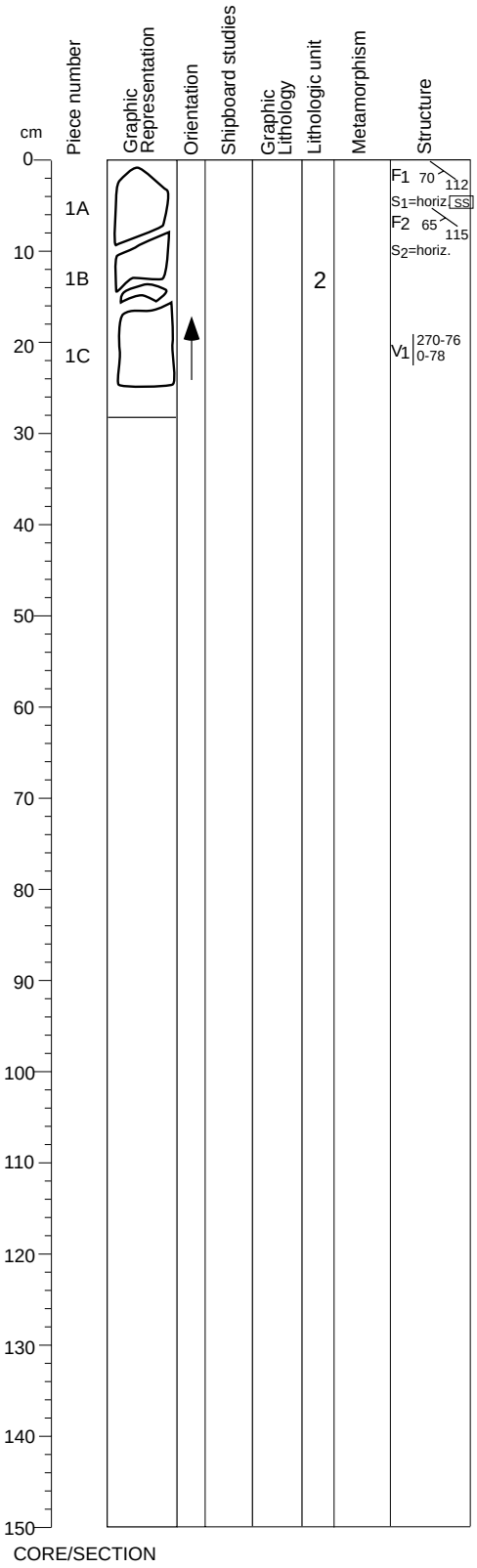
TEXTURE: Ophitic

STRUCTURE: None of note

ALTERATION: Slight, except as noted

COMMENTS: Very similar to previous sections - pieces separated by broken surfaces occur at veins filled with black material and faults with slickensided surfaces.

Core Photo



180-1109D-47R-5 (782.71-782.99 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1C

Interval Location:	**Core**	**Section**	**Piece**	**Depth (mbsf)**
Upper contact:	47R	5	1A	782.71
Lower contact:	47R	5	1C	782.99

Thickness (m): 0.28
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

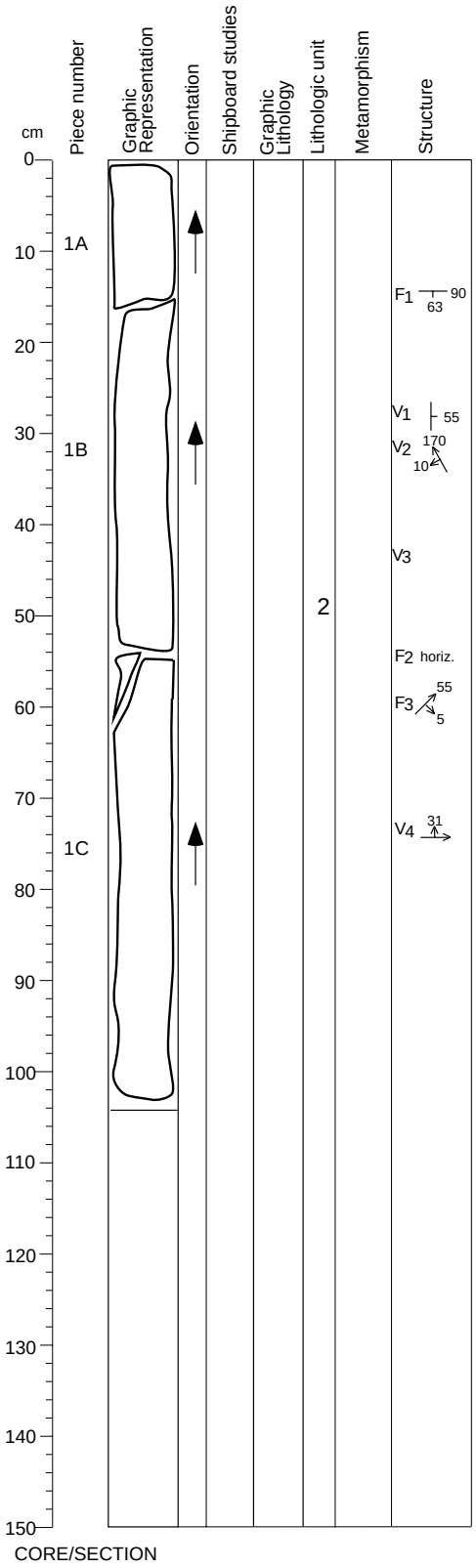
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: None

Core Photo



180-1109D-48R-1 (782.50-783.53 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1C

Interval Location:	**Core**	**Section**	**Piece**	**Depth (mbsf)**
Upper contact:	48R	1	1A	782.50
Lower contact:	48R	1	1C	783.53

Thickness (m): 1.03
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

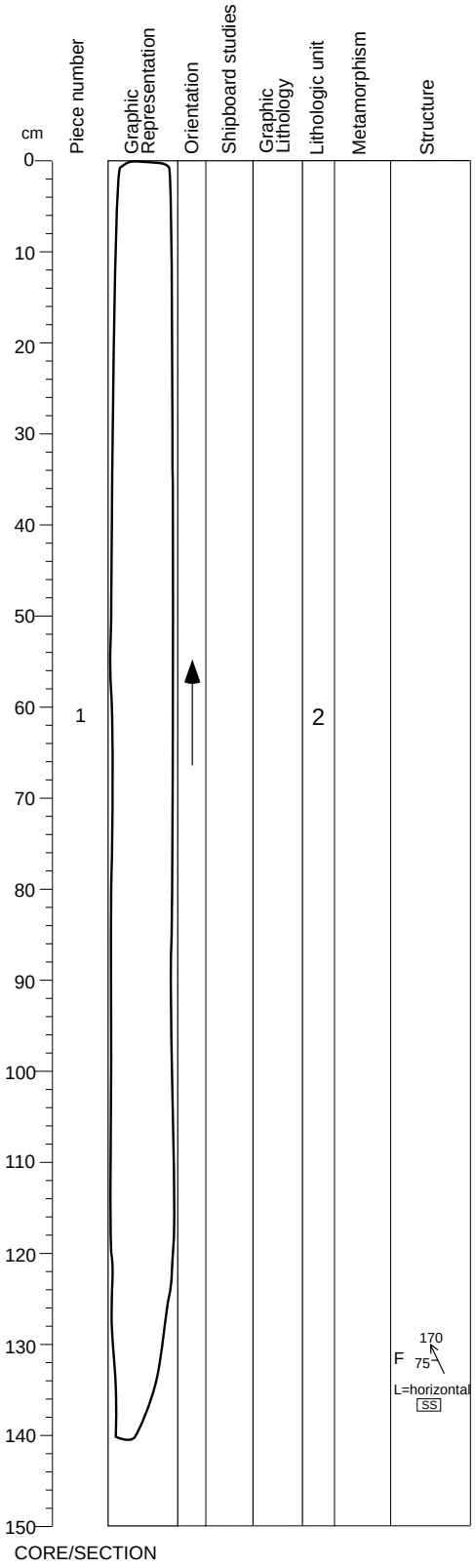
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: None.

Core Photo



180-1109D-48R-2 (783.53-789.97 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	48R	2	1	783.53
Lower contact:	48R	2	1	784.97

Thickness (m): 1.44
Contact Type: None

ENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

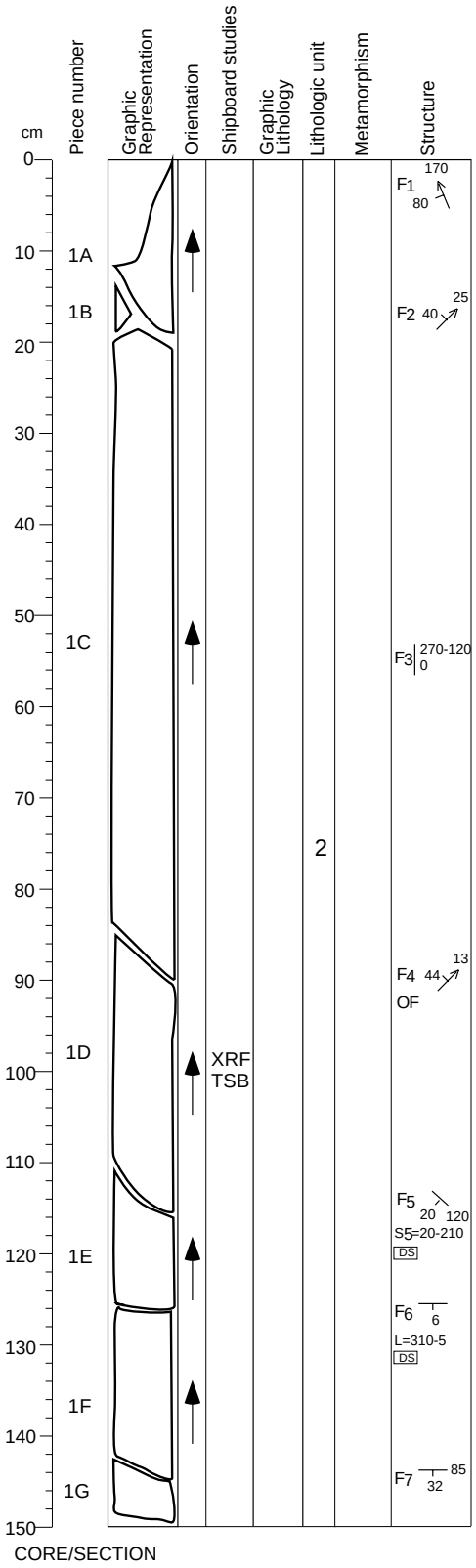
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: None

Core Photo



180-1109D-48R-3 (784.97-786.47 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1G

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	48R	3	1A	784.97
Lower contact:	48R	3	1G	786.47

Thickness (m): 1.50
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

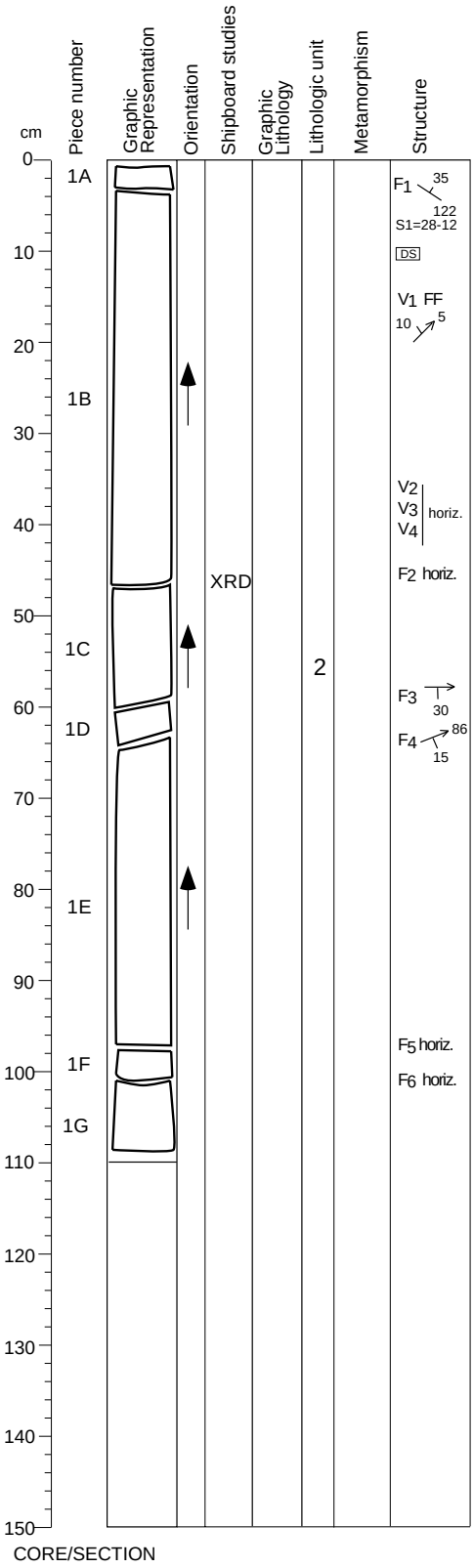
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Chlorite, ~0.5 cm thick, fills slickensided fault between Pieces 1E and 1F.

Core Photo



180-1109D-48R-4 (786.47-787.57 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1G

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	48R	4	1A	786.47
Lower contact:	48R	4	1G	787.57

Thickness (m): 1.08
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

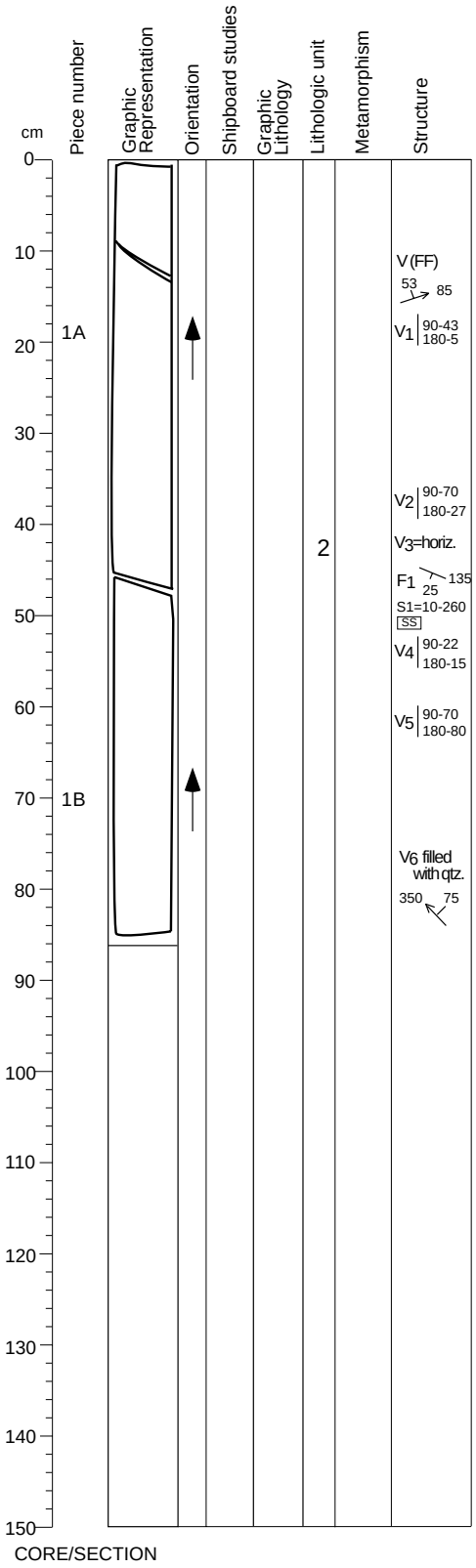
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: XRD analysis identifies the black material filling a vein at the bottom of Piece 1B as greigite.

Core Photo



180-1109D-48R-5 (787.57-788.46 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1B

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	48R	5	1A	787.57
Lower contact:	48R	5	1B	788.46

Thickness (m): 0.89
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

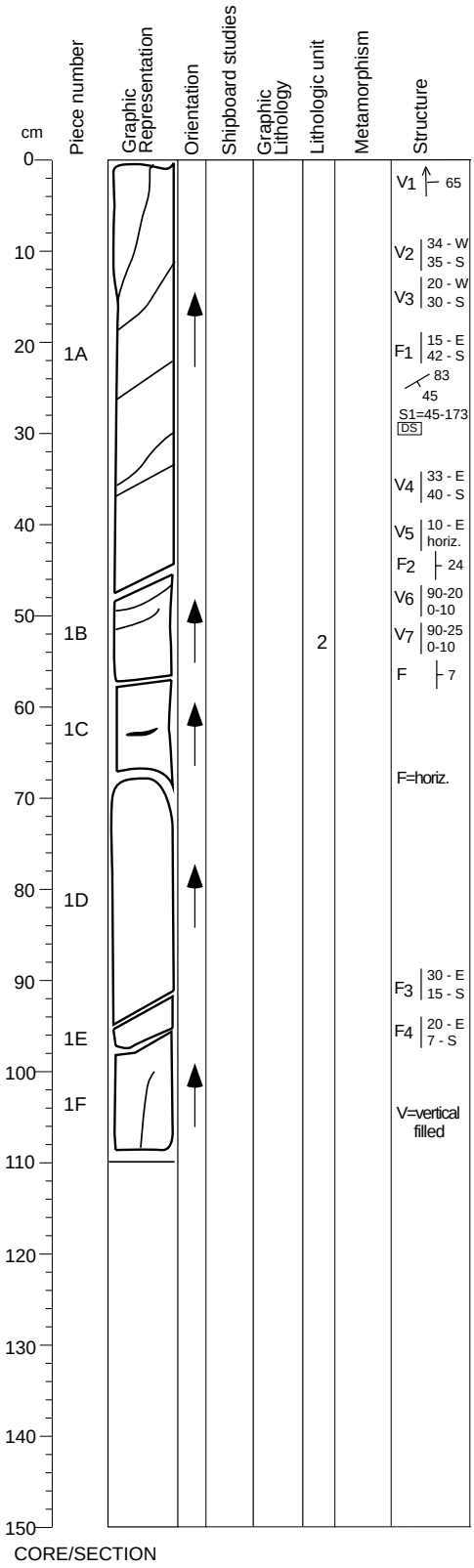
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Piece 1A has a prominent green color (5GY 7/2) vein.

Core Photo



180-1109D-49R-1 (787.20-788.30 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1F

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	49R	1	1A	787.20
Lower contact:	49R	1	1F	788.30

Thickness (m): 1.10
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

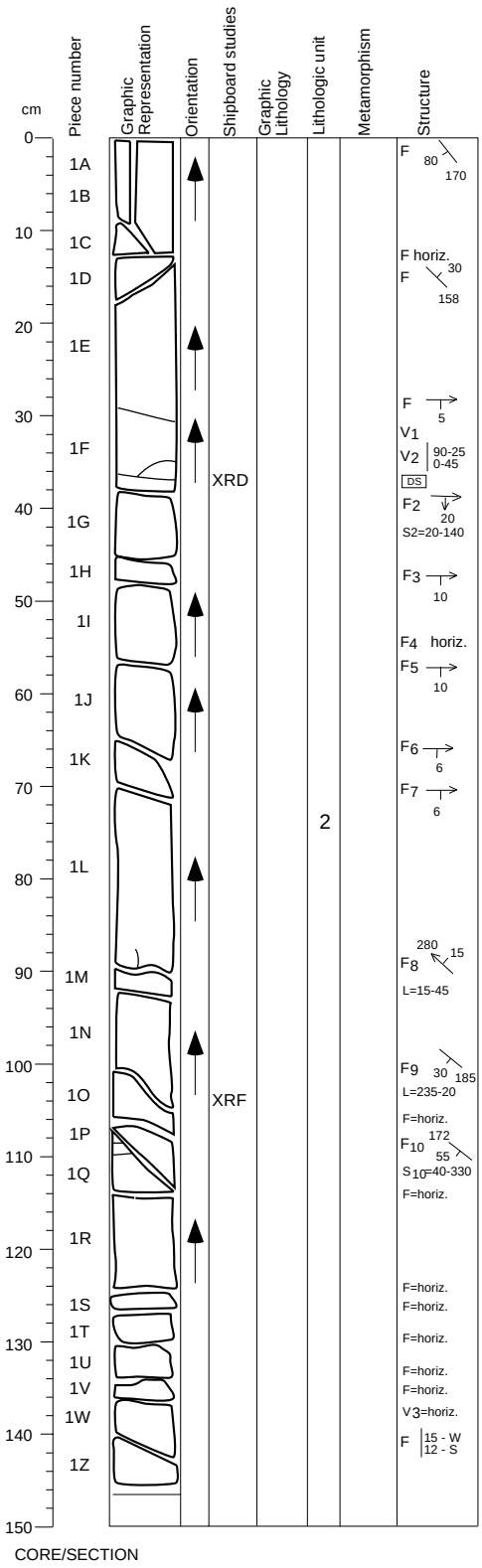
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Veins filled with white and black material occur on Piece 1F as marked. Black veins also occur on Pieces 1B and 1C.

Core Photo



180-1109D-49R-2 (788.30-789.75 mbsf)

UNIT: DOLERITE

Pieces: 1A-1Z

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	49R	2	1A	788.30
Lower contact:	49R	2	1Z	789.75

Thickness (m): 1.45
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

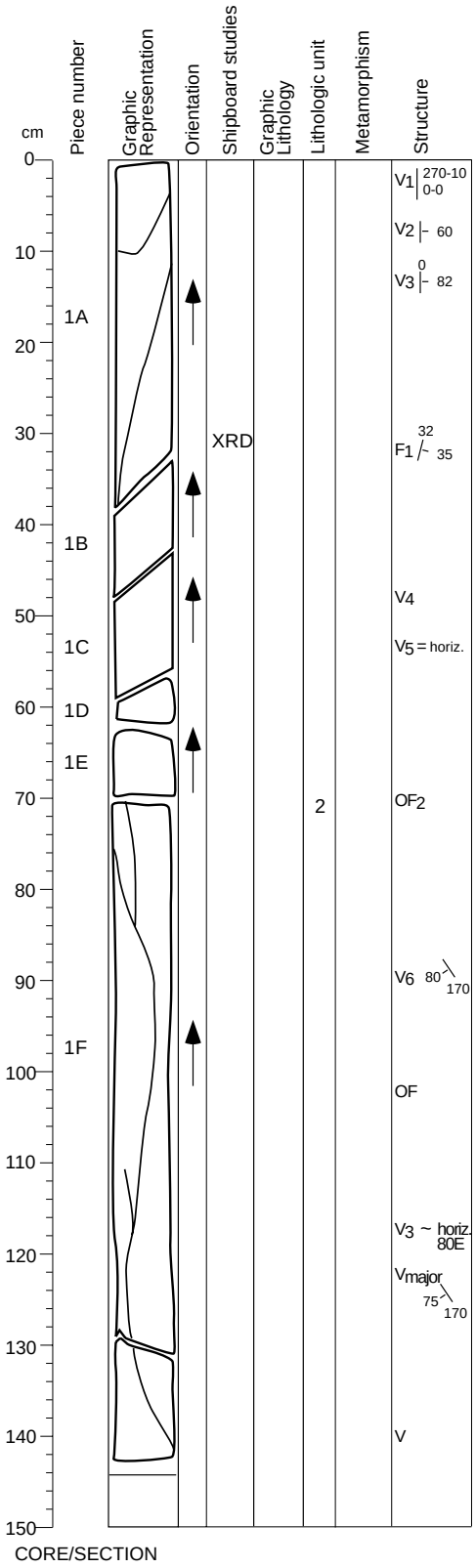
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS : A dark green vein occurs on Piece 1F as marked. XRD analysis indicates the presence of natrolite within this vein. Black veins also occur on Pieces 1M and 1Q.

Core Photo



180-1109D-49R-3 (789.57-791.19 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1F

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	49R	3	1A	789.75
Lower contact:	49R	3	1F	791.19

Thickness (m): 1.44
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

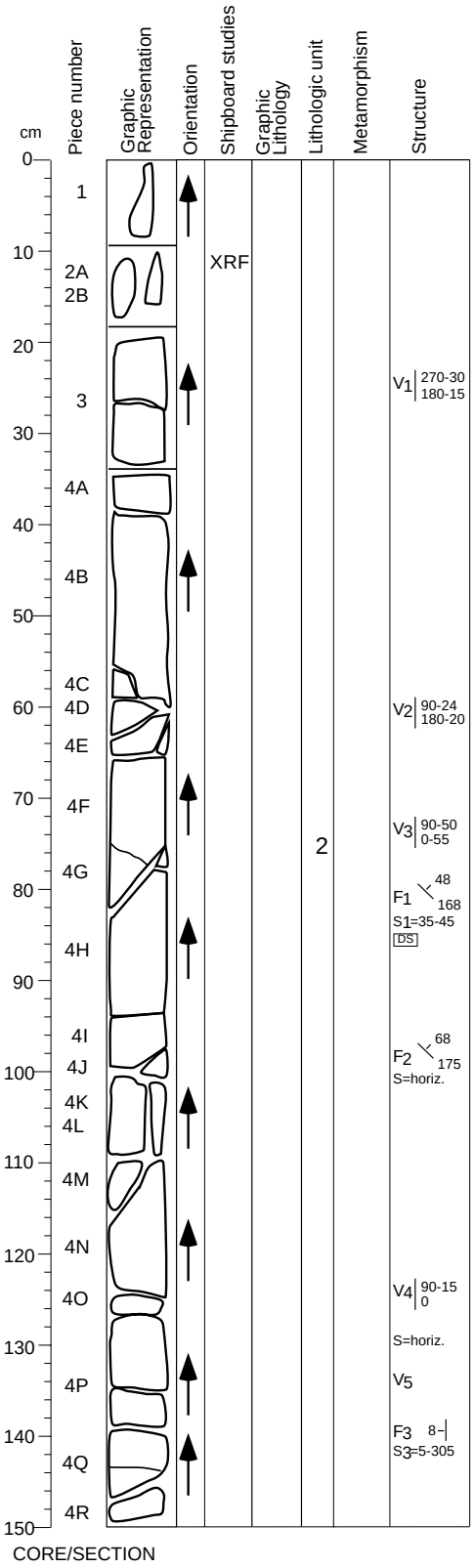
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Green (5GY 7/2) and white veins occur in Pieces 1A and 1F as marked. XRD analysis identifies the presence of cristobalite (white) and smectite and chlorite (green).

Core Photo



180-1109D-50R-1 (792.20-793.70 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-4R

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	50R	1	1A	792.20
Lower contact:	50R	1	4R	793.70

Thickness (m): 1.50
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

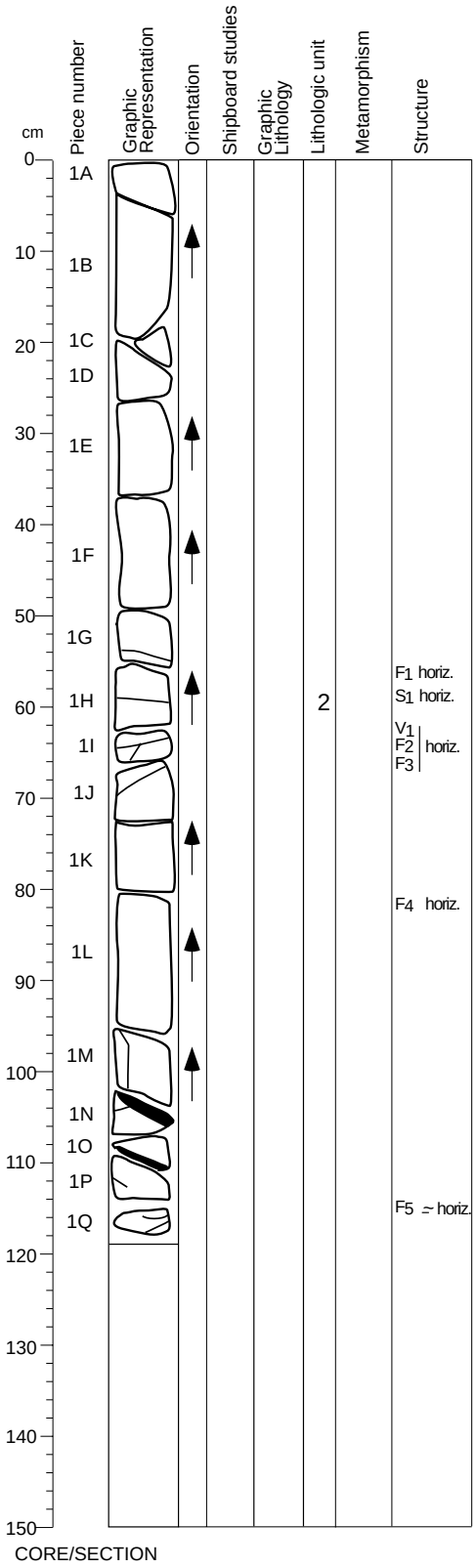
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Piece 3 contains a 0.5 mm vein filled with white material. A vein filled with black material occurs in Piece 4Q.

Core Photo



180-1109D-50R-2 (793.70-794.90 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1Q

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	50R	2	1A	793.70
Lower contact:	50R	2	1Q	794.90

Thickness (m): 1.20
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

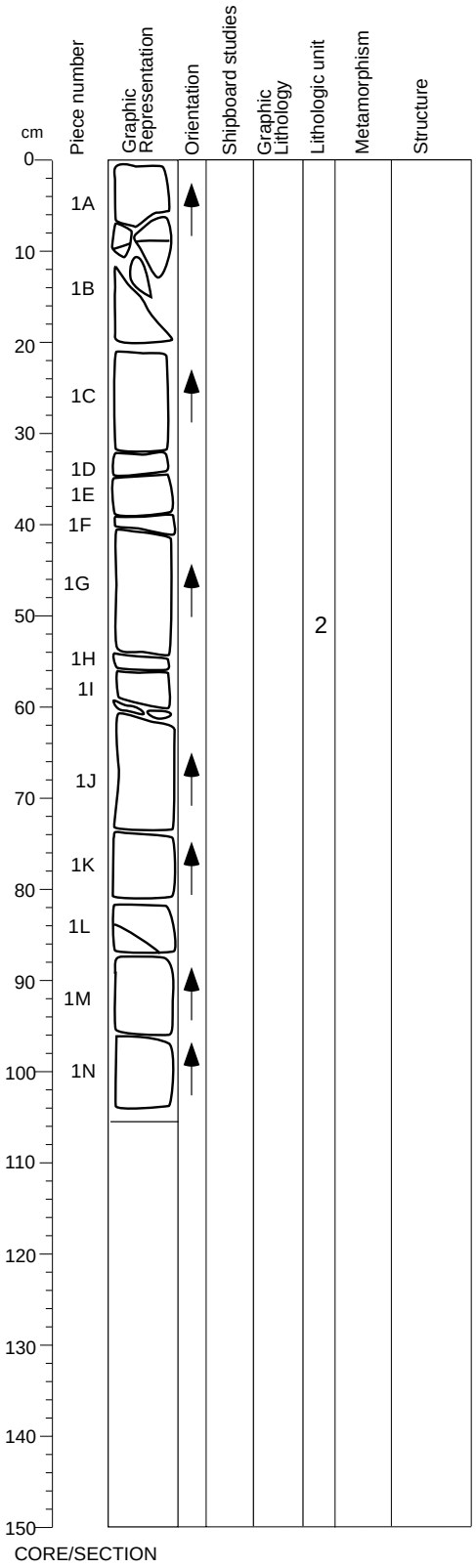
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Black material is filling veins in Pieces 1H, 1I, 1J, 1M, 1N, 1O, and 1Q.

Core Photo



180-1109D-50R-3 (794.90-795.95 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-1N

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	50R	3	1A	794.90
Lower contact:	50R	3	1N	795.95

Thickness (m): 1.05
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

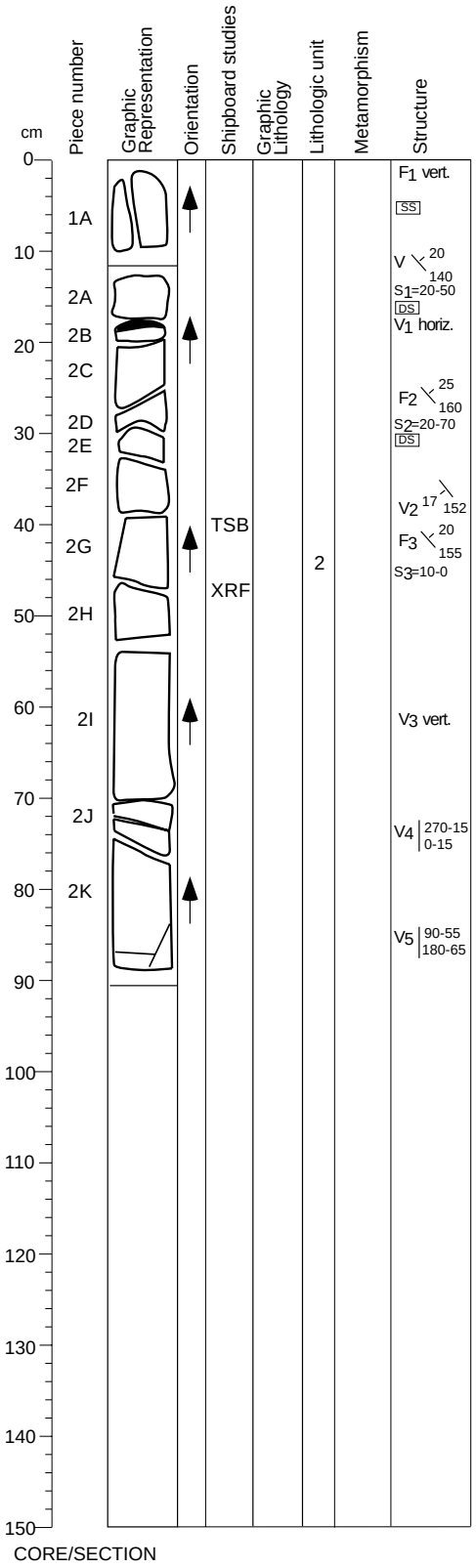
TEXTURE: Ophitic

STRUCTURE: None visible

ALTERATION: Slight

COMMENTS: A fault is filled with green (5GY 7/2) and white material in Piece 1I. Black veins occur in Pieces 1A and 1L.

Core Photo



180-1109D-51R-1 (796.90-797.81 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-2K

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	51R	1	1A	796.90
Lower contact:	51R	1	2K	797.81

Thickness (m): 0.91
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

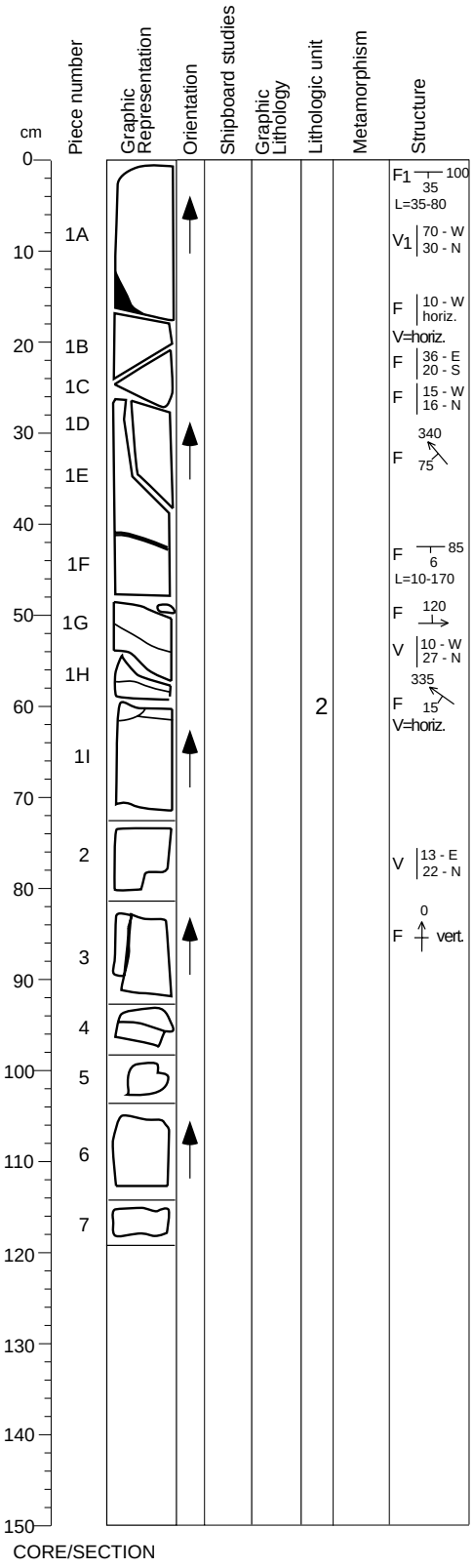
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Most broken surfaces between rocks are former veins filled with black material. Pyrite grains are visible within these black veins. Piece 2F contains a vein filled with green and black material.

Core Photo



180-1109D-51R-2 (797.81-799.00 mbsf)

UNIT: 2 **DOLERITE**

Pieces: 1A-7

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	51R	2	1A	797.81
Lower contact:	51R	2	7	799.00

Thickness (m): 1.19
Contact Type: None

GENERAL: Uniform dolerite as described in previous core, belongs to the same unit.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

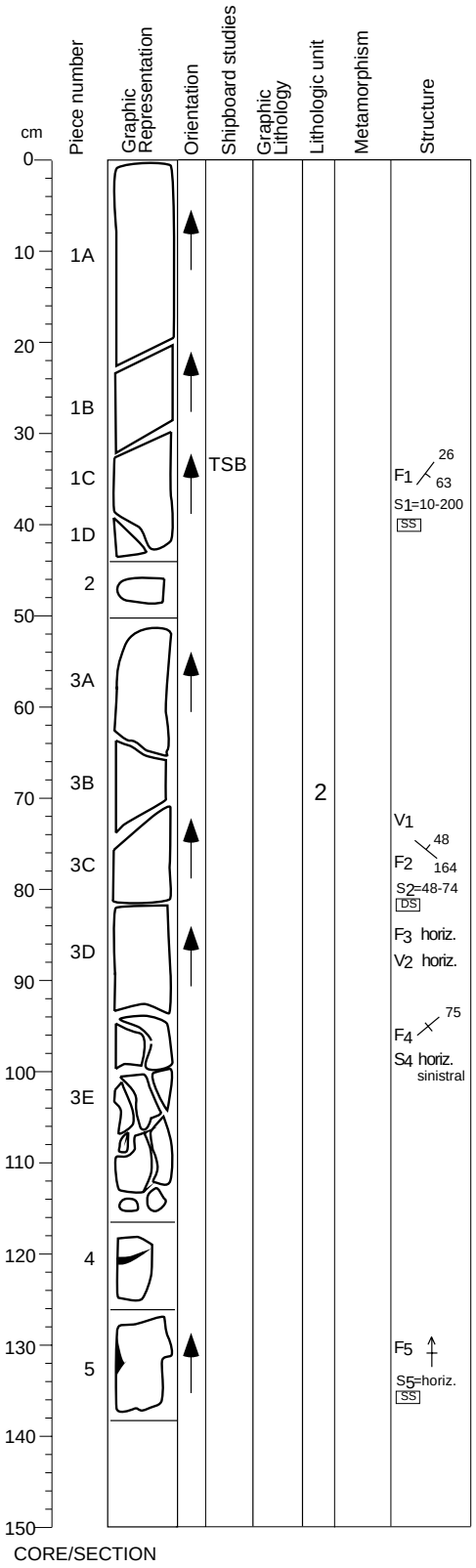
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Black vein material is exposed on the lower surface of Piece 1A. This material contains <0.5 mm pyrite crystals. Black veins occur in all pieces, and a 2 mm-thick, greenish gray (5GY 7/2) and white vein occurs in Piece 1I.

Core Photo



180-1109D-51R-3 (799.00-800.39 mbsf)

UNIT 2: DOLERITE

Pieces: 1A-5

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	51R	3	1A	799.00
Lower contact:	51R	3	5	800.39

Thickness (m): 1.39
Contact Type: None

GENERAL: Dolerite shows a transition to a finer grain size near the bottom of the core. May represent a coring to near the bottom edge of the igneous unit where cooling has occurred more quickly due to cool surroundings.

GRAIN SIZE: Up to 0.5 mm (fine- to medium-grained)

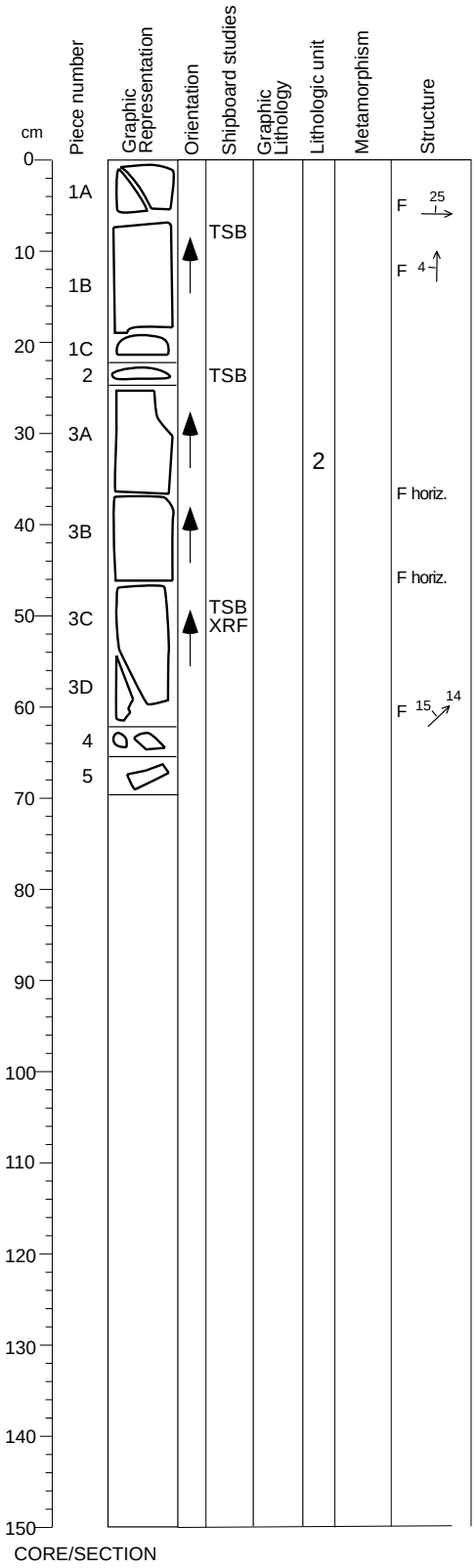
TEXTURE: Ophitic

STRUCTURE: As noted

ALTERATION: Slight

COMMENTS: Pieces 1A to 3D represent the same medium-grained dolerite as in the last 6 cores. Black veins exist throughout these pieces as marked. Grain size begins to fine near 90 cm in Piece 3D. Piece 3E is faulted along previous fractures filled with white and green material. Pieces 4 and 5 are likely similar in composition to the above pieces, but the grain size is decreased.

Core Photo



180-1109D-51R-4 (800.39-801.08 mbsf)

UNIT: DOLERITE

Pieces: 1A-5

Interval Location:	Core	Section	Piece	Depth (mbsf)
Upper contact:	51R	4	1A	800.39
Lower contact:	51R	4	5	801.08

Thickness (m): 0.69
Contact Type: Chilled margin between two intrusive components.

GENERAL: Dolerite decreases in grain size downwards through Piece 1; there are apparent thin glassy veins towards the base. Piece 2 has a contact with a glassy margin below, changing to crystalline material downwards. Throughout Piece 3, the grain size increases again, leaving a maximum at the lowest point.

GRAIN SIZE: Medium, decreasing to fine at base of Piece 1. Glassy with contact in Piece 2. Increasing from fine to medium in Piece 3.

TEXTURE: Granular

STRUCTURE: As noted

ALTERATION: Minor

COMMENTS: This section contains a contact between two components of the intrusive body. The upper component predates the lower, although small pillows of chilled material along the contact (seen in thin section only) show that the upper component was still plastic at the time of the new intrusion and that the time lapse was insignificant.

Pieces 4 and 5 are pebbles with shiny slickensided sides (with pyrite crystals) and crystalline interiors. Their relevance to the other pieces in this section is obscure and they may be extraneous.

Veins filled with black and white material are found in Piece 1. Similar black material (identified by XRD) is greigite, while cristobalite (XRD) and calcite (thin section) comprise the white material elsewhere in the dolerite.

Core, section, interval (cm)	Depth (mbsf)	Described by	Lithology (dominant/minor)	Size			Siliciclastic and volcaniclastic composition																									Clay	Biogenic composition									Sediment or rock name	Remarks
				Sand	Silt	Clay	Quartz	Feldspar	Plagioclase	Muscovite	Biotite	Glauconite	Amphibole	Pyroxene	Rock fragments (sedimentary)	Rock fragments (metamorphic)	Rock fragments (basaltic)	Volcanic glass	Volcanic glass (brown)	Volcanic glass (colorless)	Accessory minerals	Carbonate	Calcite	Dolomite	Opaque (oxide)	Opaque (sulfide)	Fe oxides	Clinoptilolite	Phillipsite	Other		Nannofossils	Foraminifers	Diatoms	Radiolarians	Sponge spicules	Shell debris	Organic material	Fish debris	Unidentified/Other		
180-1109A-																																										
1H-1, 8	0.08	AR	M	r	c	a	r	r			r							r				r								r	a	a	r	r		r					Clay	Nannofossil clay
1H-1, 18	0.18	AR	D	r	a	c	r		r		r							r				r								r	a	a	r	r	r	r					Silt	Calcareous silt
1H-1, 103	1.03	AR	M	r	c	c	r		r		r							r				r								r	a	a	r	r	r	r						Glass-rich nannofossil clay
1H-1, 123	1.23	AR	M	r	c	c	r		r									c				r								r	a	a	r	r	r	r					Clay	Glass-rich nannofossil clay
1H-2, 7	1.57	AR	M	c	c	a	r		r									c				r								r	a	a	c	r	c	r					Clay	Calcareous clay with foraminifers
1H-2, 84.5	2.34	AR	M	r	c	a	r		r									r				r								r	a	a	r		r	r					Clay	Calcareous clay
1H-3, 5	3.05	AR	M	r	c	a	r		r									c				r								r	a	a		r	r	r					Clay	Silty calcareous clay
1H-4, 60	5.10	AR	M	a	c	r	r											c				c								r	c	c	a			r					Sand	Foraminifer sand with silt
1H-4, 103	5.53	AR	M	r	a	c	r		r									a				r								r	c	c	r		r						Silt	Ash-rich silt
1H-6, 24.5	7.74	AR	M	r	a	c	r		r									a				r								r	r	c	r		r						Silt	Ash-rich silt
1H-7, 31	9.31	AR	D	c	c	c	c		r						r		c	c				r								r	c	r	r								Volcaniclastic silt	Calcareous volcaniclastic silt
180-1109B-																																										
2H-1, 28	5.58	AR	M	r	a	r	r		r		r							a												r	r	r	r								Volcanic ash	Silty volcanic ash
2H-3, 28	8.58	AR	M	r	a	r	r	r			r							a														c	r								Volcanic ash	
2H-5, 63	11.23	AR	M	r	a	r	r	r	r		r			r				a													r	r	r								Volcanic ash	
180-1109C-																																										
2H-2, 55	9.45	AR	D	c	a	r	r		r		r							a				r								r	r	c	r								Silt	Ash-rich silt
2H-3, 106	11.46	AR	M	r	a	c	r		r		r							a				r								r	a	c	r								Clay	Silty clay with ash
2H-4, 93	12.83	AR	M	r	a	c	r		r		r							a				r								r	a	r	r	r	c	r					Silt	Calcareous silt with ash
2H-5, 69	14.09	AR	M	a	c	r	r		r		r							r				r								r	c	c	a								Sand	Foraminifer sand
2H-6, 48.5	15.38	AR	M	a	c	c	r		r		r							r				r								r	a	c	a								Sand	Silty sand
3H-2, 50	18.9	AR	D	r	a	c	r	r			r							c													a	c	r	r	c	r					Silt	Clay-rich silt with ash and radiolarians
3H-7, 43.5	26.33	AR	D	r	a	c	r	r	r		r							c													a	c	r	r	c	r					Silt	Clay-rich silt with ash and radiolarians
4H-1, 48	26.88	PK	M	r	c	a	c	c										a			r						r				a	c		r	r						Silt	Clayey silt with ash
4H-3, 90	30.30	PK	D	a	c	r	r																								a	a	c			r	r	r			Silt	Clayey silt
4H-5, 70	33.10	TS	D	r	a	c	r	r													r		r									a	c								Nannofossil-rich siltstone	
4H-CC, 16	36.30	PK	M	r	c	a	c	r				r					c	a			r						r				a	c		r	r	r					Silt	Clayey silt with ash
5H-2, 51	37.91	AR	D	r	c	a	r														r										a	a	r	r		r					Clay	Silty clay
5H-2, 80	38.20	AR	D		c	a	r	r																	r						a	a	r	r	r						Clay	Silty clay
6H-1, 9	45.49	AR	M	r	a	c	r	r			r							c													a	a	r								Siltstone	Clayey siltstone
6H-2, 113	48.03	AR	M	c	a	r	r	r			r							c			a										r	r	r								Volcanic ash	Silty volcanic ash
9H-3, 67	77.57	AR	M		c	a	r	r																									r								Clay	Silty clay
10H-2, 139	86.29	AR	M	a	r	r	r	r		r							a	c			c											r	r								Sand	Volcaniclastic fine basalt largely
10H-3, 53	86.93	AR	M	a	r	r	r	r			r						a	c													r										Sand	Volcaniclastic-epiclastic
10H-5, 22.5	89.62	AR	M	a	r	r	r	r									a	c													r	r	r		r						Sand	volcaniclastic-epiclastic
12X-2, 78	104.68	AR	M	r	a	r	c		c		r						a	a			r										r	r									Silt	Ash and lithic rich
12X-3, 99	106.39	AR	M	r	a	r	r		r		r						c	a			r		a								r	r	r								Silt	Ash and lithic rich
12X-5, 82	109.22	AR	M	a	r		r												c	a													a								Sand	Carbonate sand

Core, section, interval (cm)	Depth (mbsf)	Described by	Lithology (dominant/minor)	Size			Siliciclastic and volcaniclastic composition																								Clay	Biogenic composition									Sediment or rock name	Remarks
				Sand	Silt	Clay	Quartz	Feldspar	Plagioclase	Muscovite	Biotite	Glauconite	Amphibole	Pyroxene	Rock fragments (sedimentary)	Rock fragments (metamorphic)	Rock fragments (basaltic)	Volcanic glass	Volcanic glass (brown)	Volcanic glass (colorless)	Accessory minerals	Carbonate	Calcite	Dolomite	Opaque (oxide)	Opaque (sulfide)	Fe oxides	Clinoptilolite	Phillipsite	Other	Clay	Nannofossils	Foraminifers	Diatoms	Radiolarians	Sponge spicules	Shell debris	Organic material	Fish debris	Unidentified/Other		
13X-5, 99	118.99	AR	M	r	a	r	c	r	r		r						c	a	c	a	r												r			r					Volcanic ash	Ash with lithics
15X-2, 21	132.88	TS	M	r	c	a	r	r		r	r										r		c								c	c	r			r					Clay	Calcareous silty clay
15X-2, 95	133.62	TS	M	a	c		c	c		r	r							c			r		r									r	r								Sand	Fine-grained volcaniclastic sand
15X-3, 16.5	134.33	TS	M	a	c		r	r		c								a			t		c				tr						t								Volcanic ash	Sandy silt (ash)
15X-5, 129	138.46	TS	D	r	a	c	c	c		r								c			t						tr				c	c									Volcaniclastic silt	Volcaniclastic clayey silt
16X-1, 99	141.79	TS	D	r	c	a	c	c										c					c								c	c	r								Volcaniclastic clay	Volcaniclastic silty clay
16X-4, 62	145.92	TS	M		a		r		r		r							a			r		r									r	r								Volcanigenic siltstone	
16X-4, 87	146.17	TS	M	c	a	r	r		r		r						r	a			r											r									Volcanic ash	
17X-CC, 14	152.94	TS	M		a	c	r	r										a					c				r				c	r	r								Volcaniclastic silt	Volcaniclastic clayey silt
17X-CC, 28.5	153.08	TS	M	a	r		r	r										a																							Volcaniclastic sand	Fine-grained volcaniclastic sand
18X-1, 60	160.70	AR	M	c	a																r		c																		Silt	Carbonate silt
19X-1, 132	171.02	AR	M	a	c	c	a		c	r	r						a	c			r				r							c					r				Volcaniclastic sand	
20X-2, 26	181.06	AR	D		c	a	r	r										r					c									a	r	r		r					Clay	Silty clay
20X-4, 22	184.02	AR	M	a	c		a	c		r	r						a	a				c			r	r						c	c								Sand	Mixed volcaniclastic, clastic terrigineous and bioclastic
22X-2, 23	199.53	AR	D		c	a	r	r										r	c												a	a	r	r							Clay	Silty clay
23X-2, 13	209.73	AR	D		r	a	r	r										r														a	r			r					Clay	
23X-8, 7.5	217.32	AR	M	c	a	r	r		r	r	r						r	r			r		c								c	r	c			r	r	c			Silt	Common woody fragments
26X-6, 5	244.50	AR	M	r	c	a	r	r			r												c							c	a	a	c								Clay	Calcareous clay with pyrite framboids
27X-1, 50	247.20	AR	D		r	a	r				r							r														a	c								Clay	Silty clay
27X-1, 72.5	247.42	AR	M	c	a	r	c				r						c	a			r											c	r			c					Siltstone	
27X-5, 92	253.62	AR	D				r	r		r								r				a	a									a	a								Clay	Calcareous silty clay
29X-3, 44	269.44	TS	D	r	a	r	r	r		r	r		r					r					c									r	c								Silt	Clayey silt
29X-3, 56	269.56	TS	D		c		r	r		r	r							c					r									r	c								Silt	Sandy silt
29X-3, 60	269.60	TS	D		c	a	r	c		r	r							r				r	r									r	r								Volcanic ash	Silty volcanic ash
30X-1, 38	275.98	TS	M	c	a		r	c	r	r				r			c	c			r											r	r								Volcaniclastic silt	Volcaniclastic sandy silt
30X-1, 107	276.67	TS	M	r	a		r	r									r	a					r				r					r	r								Volcanic ash	
30X-3, 45	279.05	TS	D	r	c	a	r		r		r						c	c			r		r								c	c	r			r					Silty clay	
30X-6, 15	283.25	TS	M	a	c		r	c			r						c	c			r		r				r					r	r								Volcaniclastic silty sandstone	
31X-2, 2	286.62	AR	M	r	a	r	c		r		r						r	a			r		r		r						r	r									Volcanic ash	Silty volcanic ash
31X-4, 100	290.60	AR	M	r	a	r	r		r		r		r	r			r	a			r												r								Volcanic ash	
33X-3, 49	307.99	AR	M	r	a	c	c		r		r							r			r		r			r						a	r								Silt	Clayey silt
33X-3, 57	308.07	AR	D	r	c	a	r	r			r							r							r	r						a	c								Clay	Silty clay
34X-2, 16	315.86	AR	M		r	a	r	r			r							r					r			r						a	c			r					Clay	Silty clay
34X-6, 134	323.04	AR	M	r	a	r	c	r			r							a			r				r							a	r								Volcanic ash	Clayey volcanic ash
35X-3, 97	327.87	AR	M	r	c	a	c	r													r		c								a		r								Silty clay	
35X-3, 100	327.90	AR	M		a	c	r	r			r		r										r								c	a	r								Silty clay	
35X-6, 100	332.40	AR	M	a	c	r	a	c			c						r	c			r				r	c					r	r									Sand	
36X-1, 19.5	333.69	AR	M	a	r	r	c		c		a									c	r									r	a	a	r								Sand	Biotite-rich sand
36X-3, 46	336.96	AR	M	c	a	r	c		c		c									r	r									r	a	c	c								Volcaniclastic silt	Volcaniclastic silt

Core, section, interval (cm)	Depth (mbsf)	Described by	Lithology (dominant/minor)	Size: Sand	Silt	Clay	Siliciclastic and volcaniclastic composition: Quartz	Feldspar	Plagioclase	Muscovite	Biotite	Glauconite	Amphibole	Pyroxene	Rock fragments (sedimentary)	Rock fragments (metamorphic)	Rock fragments (basaltic)	Volcanic glass	Volcanic glass (brown)	Volcanic glass (colorless)	Accessory minerals	Carbonate	Calcite	Dolomite	Opaque (oxide)	Opaque (sulfide)	Fe oxides	Clinoptilolite	Phillipsite	Other	Clay	Biogenic composition: Nannofossils	Foraminifers	Diatoms	Radiolarians	Sponge spicules	Shell debris	Organic material	Fish debris	Unidentified/Other	Sediment or rock name	Remarks
38X-4, 23	351.33	TS	M	a	c	c	r		c		c							r			c										c	r	r			r					Volcaniclastic sandstone	Volcaniclastic fine-grained sandstone
39X-6, 76	360.86	TS	D	a	c	r	r	c			r							c			r											r	r			r					Volcaniclastic siltstone	Volcaniclastic sandy siltstone
40X-1, 89	363.09	TS	D	c	a		r	c			r							r			r	r	r									r	r			r					Volcaniclastic siltstone	Volcaniclastic sandy siltstone
40X-1, 131	363.51	TS	D	r	a	c	r		r		r										r										c	r	r								Volcaniclastic silt	Volcaniclastic clayey silt
41X-1, 110	372.60	TS	D		a	c	c	c		r	r							a			r						r				c	r	r								Silt	Clayey silt
41X-3, 3	374.53	TS	D	c	a	c	c	c		c	c							c			r												r								Volcaniclastic silt	Volcaniclastic sandy silt
41X-4, 4	375.74	TS	M	a	c		r	r	r		r							r			c											r	r								Volcaniclastic sandstone	Volcaniclastic medium-grained sandstone
41X-4, 18	375.88	TS	D	r	a	c	r		c									c													c		r								Siltstone	Clayey siltstone
180-1109D-																																										
1R-2, 56	354.86	TS	M	a	c		c	c	c		r							c			r											r	r									
1R-2, 57	354.87	TS	M	a	r		r	r			r							r			c												r									
2R-3, 61	362.42	AR	M	r	a	c	c		r		r							r			r				r							a	r								Clayey silt	
3R-4, 91	373.70	TS	D	r	c	a	r			r	r							c			r											r									Volcaniclastic clay	Volcaniclastic silty clay
4R-2, 71	380.11	TS	D	r	a		c		c		r						c	r			r												r								Volcaniclastic siltstone	
6R-4, 92	402.05	TS	D	r	a	c	r		r		r							c			r		r								c		r								Clayey silt	
7R-3, 80	410.34	TS	M	a	c	r	r		r		r						c		r		r											r	r								Volcaniclastic sandstone	
9R-6, 43	433.40	TS	M	c	a	r	r		c		r					r	c										r					r	r								Volcaniclastic siltstone	Volcaniclastic sandy siltstone
11R-1, 92	446.22	TS	M	a	r	r	c		c		r						c				r		r																		Volcaniclastic sandstone	Volcaniclastic fine-grained sandstone
11R-6, 61	452.81	TS	D	r	a	c	c		r		r						r	c			r										r										Sandy siltstone	
12R-4, 57	459.43	TS	M	a	c	r	r	c			r							r			r		r									r	r								Volcaniclastic sandstone	Volcaniclastic medium-grained sandstone
12R-5, 51	460.67	TS	D	r	r	a	r	c			r																				c	r	r			r					Silty clay	Calcareous silty clay
12R-6, 58	461.88	TS	M	a	c	r	r		c		r						r				r						r														Volcaniclastic sandstone	Volcaniclastic fine-grained sandstone
12R-6, 61	461.91	TS	D	r	c	a	c		c		r						r				r		c										r								Silty claystone	
14R-1, 14	474.24	TS	D	r	c	a	r	r			r						c	r			r		r								a	r	r			r					Volcanic ash	Silty volcanic ash
14R-1, 58.5	474.685	TS	D	r	a	r	r	r			r							a			r											r									Volcanic ash	Silty volcanic ash
14R-1, 98	475.08	TS	M	a	c	r	r		r		r						r	a			r											r									Volcanic ash	
15R-6, 47	490.79	AR	M	r	a	c	c	c			r												r								a	a	c								Silt	Clay-rich silt; calcite rhombs
15R-7, 40	491.58	AR	D	r	a	c	r		r		r		r								r		r		r					r		c	c								Silty clay	
18R-CC, 11	522.41	AR	M	r	c	c	c	r			r		r								r										a	a	c								Silty clay	
19R-3, 83	525.82	AR	M	c	a	c	c		r	r	r		r							r	r		r		r					r	c	r									Clay-rich siltstone	Clay-rich siltstone, tiny muscovites
20R-2, 36	533.80	AR	M	c	a	r	c		r		r		r					r		r	r				r							c									Volcaniclastic silt	Volcaniclastic silt with glass
21R-1, 37	541.97	AR	D	r	a	c	r	r			r						r				r									r	a	c	c								Clay-rich calcareous silt	Carlsbad twinned feldspar
21R-1, 75	542.35	TS	D	c	c	r	c		r		r						c	r			r											r									Silty sandstone	
22R-1, 62	551.82	TS	M		a		r	a			r										r		r																		Volcaniclastic silt	Very well sorted angular grains (see XRD [Orthoclase?])
22R-4, 14	554.79	TS	D	r	a	r	r		r		r						r	c			r											c	c								Sandy siltstone	Devitrified glass, amphiboles
23R-1, 30	561.10	TS	D	r	c	a	r		r		r							c			r		c									.	c								Claystone	Amphiboles
25R-2, 40	572.24	TS	D	a	c	r	r		r		r							c			r		c									c	c								Silty sandstone	Fine-grained silty sandstone
25R-3, 34	573.47	TS	D	a	c	r	r		r		r							c			r		c									c	c								Sandstone	Fine-grained sandstone
25R-3, 50	573.63	TS	D	a	c	r	r				r						c	c			r		c									r	r								Sandstone	Mixed medium-grained sandstone
25R-4, 35	574.98	AR	D	c	a	r	c				r						r				r	c	c			r					r	c	c				c	r			Calcareous siltsone	Mixed siliciclastic/carbonate silt

Core, section, interval (cm)	Depth (mbsf)	Described by	Lithology (dominant/minor)	Size			Siliciclastic and volcaniclastic composition																								Clay	Biogenic composition									Sediment or rock name	Remarks
				Sand	Silt	Clay	Quartz	Feldspar	Plagioclase	Muscovite	Biotite	Glauconite	Amphibole	Pyroxene	Rock fragments (sedimentary)	Rock fragments (metamorphic)	Rock fragments (basaltic)	Volcanic glass	Volcanic glass (brown)	Volcanic glass (colorless)	Accessory minerals	Carbonate	Calcite	Dolomite	Opaque (oxide)	Opaque (sulfide)	Fe oxides	Clinoptilolite	Phillipsite	Other		Nannofossils	Foraminifers	Diatoms	Radiolarians	Sponge spicules	Shell debris	Organic material	Fish debris	Unidentified/Other		
26R-2, 18	581.64	TS	D	r	c	a	r		r		r										r		c								c		c								Calcareous silty sandstone	
27R-1, 23	589.83	AR	M	r	c	a	r		r		r						r				r		r							r	a	a	c					r			Silty clay	Rare pyrite cubes
27R-3, 45	592.45	AR	D	r	a	c	r		r		r						c				r	r	c			r				r	c	c	r								Calcareous silt	Calcareous and lithoclastic
30R-1, 50	619.00	AR	D	c	a	r	r	r	r		r						r				r	c	c							r	r	r	c				r				Calcareous silt	Foraminifer rich
34R-3, 30	660.11	AR	D	c	a	c	r		r												r	c			r					r	c		r				r	r			Calcareous silt	
35R-4, 90	671.00	AR	D	r	c	a	r		r		r	r					r					c	c		r					r	c		c								Silty calcareous claystone	
35R-6, 30	673.15	AR	D	r	a	c	r		r												r					r	c				a	c	c								Clay-rich siltstone	
36R-4, 40	681.30	TS	D	r	a	c	r		r		r						r	r			r		r							r	c		r								Clayey siltstone	
37R-1, 10	686.10	TS	M	r	a		r		r		r										r			c																	Dolomite-rich claystone	
37R-1, 40	686.40	TS	D	r	a	c	r		r		r						c	c			r		r									r	r					r			Clayey siltstone	
37R-2, 86	688.34	TS	D	r	a	r	c		c		r							a			r																				Sandy siltstone	
37R-4, 62	691.08	TS	D		c	a	c		r		r						c	a			r												r								Silty clay	
38R-1, 6	695.66	TS	M	r	r	a	r				r												r							r			r								Dolomite-rich claystone	
38R-2, 14	697.12	TS	D	a	r		r		r		r						r	c			c		r															c			Fine-grained sandstone	
38R-2, 33	697.31	TS	M	r	r	c	r		r		r																			r	c							c			Silty claystone	
38R-2, 105	698.03	TS	D	r	c	a	r		r		r							c			r						c											r			Silty claystone	
38R-3, 45	698.75	TS	D	r	a	r	c		c		r					c	c																					c			Sandy siltstone	
38R-4, 44	700.20	TS	D	c	c	r	c		r		r						c	a			r									r											Volcanic fine-grained sandstone	
39R-2, 132	707.93	TS	D	r	a	c	c	r			r							a			r		r																		Volcanic siltstone	
40R-1, 2	715.02	AR	M		c	a	c		c												r						a			c	c										Fe-rich Silt	
40R-1, 20	715.20	AR	D	r	a	c	r		c	r							r						r				c				c										Clay-rich silt	Ferruginous
40R-1, 70	715.70	AR	D	r	a	c	c		c	r							r						r																		Fe-rich silt	
40R-CC, 4	718.94	AR	M				r		r		r										r		r				a				c										Ferruginous concretion	Pisolith
41R-2, 20	726.40	AR	M	r	a	c	r		c	c							a			a	r						c				c										Volcaniclastic silt	Volcaniclastic siltstone
41R-3, 70	727.98	AR	D	r	a	c	r		r	c							c				r		r				c				a										Volcaniclastic silt	Volcaniclastic siltstone
42R-CC, 29	737.11	AR	M	r	a	c	c		r								c				r						c				c										Clay-rich silt	

Notes: a = abundant; c = common; r = rare; tr = trace.

Thin-section number	Core, section, interval (cm)	Depth (mbsf)	Described by	Lithology (dominant/minor)	Conglomerate	Size			Minerals																			Rock fragments													Cement				Bioclasts									Sediment or rock name	Comments
						Sand	Silt	Clay	**Minerals (%)**	Quartz	Strained	Unstrained	Feldspar	Multiple twins	Single/untwinned	Mica	Biotite	Muscovite	Carbonate	Chlorite	Glauconite	Accessory minerals	Clinopyroxene	Amphibole	Olivine	Epidote	Opaques	**Rock fragments (%)**	Plutonic	Volcanic	Rhyolitic/dacitic	Vitric	Andesitic/basaltic	Dolerite	Sedimentary	Siltstone	Metamorphic	Schist	Serpentinite	**Matrix (%)**	**Cement (%)**	Sparry Calcite	Micrite	Siliceous	**Bioclasts (%)**	Foraminifers	Benthic	Planktonic	Shell debris	Algae	Echinoderms	Bryozoa/corals	Carbonaceous detritus		
	180-1109C-																																																						
41	21X-CC, 40-42	189.28	TRS, AR	M		A	R	R	1	R	a		R	a		R	a		A	R		R	a	r			C	1	R	A	c		c				R	a		60					38	A	a	c	R	R	R	R		Wackestone	Phosphatic grains
42	26X-CC, 18-20	217.88	TRS, AR	M		A	R	R	44	R	c	c	C	c	c	R	a	r		R		C	a	c			R	50	R	A	c		a				R	r	a	5					1	A	r	r	C	C		R		Medium-grained sandstone	Calcareous matrix
43	28X-1, 4-8	256.34	TRS, AR	D		R	R	A	1	C	a		A	a	c					R		R				a	R	1		A	a									88					10	A		a						Silty clay	Calcareous matrix semilithified
44	37X-1, 112-114	344.21	TRS, AR	D		A	C	C	50				C	a	r	C	a			R		C	r	a		r	R	5		A			a		R	a				44					1	A								Coarse-grained sandstone	Zoned plagioclase, pyrite- filled foraminifers
	180-1109D-																																																						
45	1R-2, 48-49	354.78	TRS, AR	M		C	C	A	20	R		a	A	a	c	R	a			R		C	r	a			R	1		A	c	c	c							74					5	A		a				R		Sandy siltstone	Micrite matrix, rare microcline
46	1R-2, 56-58	354.86	TRS, AR	M		C	C	C	40	R	a		A	a	c	R	a			R		C		a			R	1		A	a	c								59														Fine-grained sandstone	Micrite matrix, fresh glass
51	2R-2, 110-113	361.51	TRS, AR	M		A	C	R	30	R	a	c	C	a	r	C	a		R	R		C		a			R	2		A		a								68														Fine- to medium-grained sandstone	Graded, well-sorted, siltstone matrix, fresh glass
47	3R-2, 148-149	371.68	TRS, AR	M		C	C	C	50	C	a		A	c	a	C	a		R			C		a			R	5		A	r	a	r							45														Fine-grained sandstone	Well-sorted angular grains, fresh bubble wall glass
48	4R-1, 0-2	385.53	TRS, AR	D		R	C	C	40	R	a		A	c	a	C	a					C	r	a				5		A	a	c	c							55														Clayey siltstone	Very fresh detrital minerals, micritic matrix, fresh rounded glass
53	6R-2, 112-114	399.73	TRS, AR	M		C	C	A	25	R	a		C	a	c	A	a		R			C		a				1		A	c	c	c							72					2	A		a						Silty claystone	Fresh glass, burrows lined with foraminifers, pyrite inside
54	8R-1, 54-58	417.04	TRS, AR	D		R	A	C	25	R	a		A	a	c	R	a		R									1		A	c	c	c							73					1	A	r	a						Clayey siltstone	Calcareous matrix
55	8R-3, 96-100	419.88	TRS, AR	D		C	C	C	30	R	a		A	c	c	A			R			R		a				1		A		a	a							68					1	A		a						Sandstone-siltstone couplet	Detrital sand-size grains define laminae, sharp bases, black glass, redeposited ash
56	10R-1, 132-134	436.95	TRS, AR	M		C	C	C	49	R	a		A	a	c	A	a		R			R		a				1		A		a								50														Very fine sandstone	Possible current dominated laminae, biotite aligned parallel to lamination
57	10R-4, 95-98	440.70	TRS, AR	D		C	C	C	40	R	a		A	a	c	A	a		R			C		a			R	19		A	c	r	c							40					1	A		a						Fine-grained sandstone	Parallel lamination, reverse grading, pyrite filled foraminifers, very angular grains

Thin-section number	Core, section, interval (cm)	Depth (mbsf)	Described by	Lithology (dominant/minor)	Conglomerate	Size			Minerals																			Rock fragments													Cement				Bioclasts									Sediment or rock name	Comments
						Sand	Silt	Clay	**Minerals (%)**	Quartz	Strained	Unstrained	Feldspar	Multiple twins	Single/untwinned	Mica	Biotite	Muscovite	Carbonate	Chlorite	Glauconite	Accessory minerals	Clinopyroxene	Amphibole	Olivine	Epidote	Opaques	**Rock fragments (%)**	Plutonic	Volcanic	Rhyolitic/dacitic	Vitric	Andesitic/basaltic	Dolerite	Sedimentary	Siltstone	Metamorphic	Schist	Serpentinite	**Matrix (%)**	**Cement (%)**	Sparry Calcite	Micrite	Siliceous	**Bioclasts (%)**	Foraminifers	Benthic	Planktonic	Shell debris	Algae	Echinoderms	Bryozoa/corals	Carbonaceous detritus		
58	11R-3, 83-85	448.88	TRS, AR	M		C	C	C	40	R	a		A	a	c	C	a		R			C	r	a				15		A	r	a								44					1	A		a						Medium- to fine-grained sandstone	Biotite concentrated in coarse fraction parallel to lamination
59	12R-4, 95-97	459.82	TRS, AR	D		C	C	C	69	R	a		A	a	c	C	a		R			C	r	a				10		A	a	c								20					1	A		a						Fine-grained sandstone	Well-sorted, claystone-filled burrows
60	20R-2, 104-108	534.51	TRS, AR	M		A	R	R	60	R	a		C	a	c	C	a		R		R	C	r	a				20		A	c	a								19					1	A		a						Fine-grained sandstone	Normally grading into siltstone, burrowed
61	22R-1, 57-60	551.77	TRS, AR	M		R	C	A	40	R	a		R	c	c	A	a		R																					59					1	A								Silty claystone	Thin siltstone laminae, abundant biotite aligned parallel to lamination, infilled burrows, small ripples (?)
62	22R-1, 102-107	552.22	TRS, AR	D		R	A	C	30	R	a	r	A	c	c	A	a		R			R		a			R			A			a							69					1	A	r	a	R					Siltstone	Highly micaceous, calcareous, pyrite-filled foraminifers, small shells or carapaces
63	25R-6, 7.5-9.5	577.54	TRS, AR	D		C	R	C	10	R	a		A	c	c	C	a					R		a			R	1		A	a	r								40					49	A		a	c			R		Packstone	Pyrite-filled foraminifers and framboids, well-sorted, shells parallel to bedding framboids
75	27R-1, 45-48	590.05	TRS, AR	D		A	C	C	8	R	a		C		a	C	a		R	R		R		a				2		A	a	r								30					60	A		a	R		R			Packstone	Well-sorted, brown glass, micritic matrix
76	28R-1, 8-11	599.28	TRS, AR	D		A	R	C	50	R	a		A	c	c	R	a		R	R		R	r	a			R	10		A	a	r	r							30					10	A	a	r	R		R	R		Packstone	Shallow derived bioclasts, micritic matrix
77	32R-2, 101-103	640.32	TRS, AR	D		C	R	A	2				A	c	c				C	R		R	r	c				2		A		a								40					56	A	c	c	C	C	C	C		Packstone	Calcareous matrix, fresh to highly altered volcanic fragments
78	34R-5, 62-65	663.00	TRS, AR	D		A	R	C	5	R	a		A	c	c	R	a			R		R		a				1		A	a				R	a				50					44	A	a	r	A	R		C		Packstone	Well-sorted, cross-laminated (?), current reworked
79	37R-2, 104-108	688.52	TRS, AR	D		C	A	R	90	C	a		A	a	c	C	a					R	r	a			R													10														Sandy siltstone	Well sorted
80	38R-2, 12-18	697.10	TRS, AR	D		A	R	R	60	R	a		A	a	c	C	a					C	r	c				20		A	r	c	r												20								a	Fine-grained sandstone	Carbonaceous laminae, glass contains phenocryts also seen in matrix, ferruginous alteration
81	38R-4, 10-14	699.86	TRS, AR	D		C	C	C	15	R	a		A	a	c	A	a			R		R	c	c			C	10		A	c	c	r							55					20								a	Fine-grained sandstone	Carbonaceous and fine-grained well-sorted angular sandstone laminae, burrowed, fresh glass

						Size			Minerals																			Rock fragments													Cement				Bioclasts										
Thin-section number	Core, section, interval (cm)	Depth (mbsf)	Described by	Lithology (dominant/minor)	Conglomerate	Sand	Silt	Clay	**Minerals (%)**	Quartz	Strained	Unstrained	Feldspar	Multiple twins	Single/untwinned	Mica	Biotite	Muscovite	Carbonate	Chlorite	Glauconite	Accessory minerals	Clinopyroxene	Amphibole	Olivine	Epidote	Opaques	**Rock fragments (%)**	Plutonic	Volcanic	Rhyolitic/dacitic	Vitric	Andesitic/basaltic	Dolerite	Sedimentary	Siltstone	Metamorphic	Schist	Serpentinite	**Matrix (%)**	**Cement (%)**	Sparry Calcite	Micrite	Siliceous	**Bioclasts (%)**	Foraminifers	Benthic	Planktonic	Shell debris	Algae	Echinoderms	Bryozoa/corals	Carbonaceous detritus	Sediment or rock name	Comments
82	39R-3, 28-31	708.32	TRS, AR	M		C	C	C	20	R	a		A	a	c				R			R	r	a			R	5		A	a	r			R	a				60	5			A	10								a	Fine-grained sandstone	Altered and unaltered glass, microline, well to moderately sorted, angular, highly altered
83	39R-3, 64-67	708.68	TRS, AR	D		C	A	C	40	R	a		A	a	r					C		R	c		r		C	5		A	c	c								42					13								a	Sandy siltstone	Carbonaceous and fine-grained sandstone laminae, framboidal pyrite, abundant chloritized clasts, rare phosphate
70	44R-1, 6-8 (#2)	753.66	TRS, AR	M		A	R	R	20				C	a	c							C	a					79		A	c	a	c												1								a	Medium-grained sandstone	Highly altered, devitrified glass and felsic volcanics, rare zeolites
72	45R-1, 75-78(#16)	754.35	TRS, AR	M	A	C			30	R	a		C	a						C		A	a					60		A	r		c	c						10														Ortho-conglomerate	Pebble-, granule-, and sand-size clasts, highly altered matrix
71	45R-1, 46-50 (#7)	763.66	TRS, AR	M	A																							90		A			a	a						10														Ortho-conglomerate	Pebble-size clasts, highly altered matrix, variolitic and pyroxene-rich basalt, oxidation rim on the clasts
73	45R-1, 107-108 (#19)	764.27	TRS, AR	M		A	R	R	30	C	a		C	c	a					C		C	a					10		A	r	c	c	r						40	20	A												Coarse-grained sandstone	Highly altered claystone matrix, carbonate veining.
74	45R-2, 109-114 (#17)	765.79	TRS, AR	M	A				5													A	a					80		A			c	c							15													Ortho-conglomerate	

Note: A = abundant (51%–100%); C = common (11%–50%); R = rare (1%–10%); lower case letters indicate subcategories of the major constituents.

180-1109D-44R-1 (Piece 25, 127-129 cm)
Thin section: # 64
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Granular

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	45	50	0.1		Tabular-subhedral	
Clinopyroxene	35	40	0.1	Augite	Anhedral, short prismatic, colorless	
Opaque minerals	10	10	0.1		Large, anhedral grains	
Olivine	0	5	0.1		Originally euhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green, layer silicates	10	Olivine and glass.	Some alteration patches have olivine morphology.

COMMENTS: This is a typical olivine dolerite in which the olivine has been replaced by layer silicates, whose precise nature is usually difficult to identify.

180-1109D-44R-1 (Piece 8, 34-45 cm)
Thin section: # 65
ROCK NAME: Chilled basalt
GRAIN SIZE: Glassy
TEXTURE: Microporphyritic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~10	~10	<1		Euhedral	Both microphenocrysts and quench crystals are present.
Groundmass	90	-	-		Variolitic	Original basaltic glass has devitrified.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Not significant.			

COMMENTS: This is a basaltic glass produced by sub-aqueous quenching of basaltic magma. Beautiful quench crystals (swallow-tails, hoppers) of plagioclase are present. Original glassy groundmass has crystallized to a variolitic material.

180-1109D-44R-1 (Piece 16, 75-80 cm)
Thin section: # 66
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Granular

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~38	~38	<1		Subhedral, tabular	
Clinopyroxene	~30	~30	<1	Augite	Anhedral	
Opaque Minerals	~5	~5	0.1		Euhedral	
Hornblende	~2	0	0.1		Subhedral	May be secondary.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Greenish alteration products	25	Glassy material(?)	

COMMENTS:
This is a partly-altered dolerite.

180-1109D-45R-2 (Piece 13, 68-71 cm)
Thin section: # 67
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Granular

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~40	~50	<1		Anhedral to subhedral, tabular	
Clinopyroxene	~35	~45	<1	Augite	Anhedral, prismatic	
Opaque Minerals	~5	~5	0.1		Euhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer Silicates, maybe sericite & serpentine	~20	Plagioclase and mesostasis.	

COMMENTS: No clear olivine pseudomorphs seen. This is a moderately-altered dolerite.

180-1109D-45R-2 (Piece 19, 119-122 cm)
Thin section: # 68
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1.5		Euhedral, prismatic	
Clinopyroxene	~35	~45	1-3	Augite	Anhedral to subhedral	
Opaque Minerals	~2	~2	0.1		Anhedral to subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer silicates	~13	Interstitial glass, possibly olivine.	

COMMENTS: This rock has a very strong ophitic texture. May have had original olivine.

180-1109D-45R-3 (Piece 6, 40-43 cm)
Thin section: # 69
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1.5		Euhedral, prismatic	
Clinopyroxene	~35	~45	1-3	Augite	Anhedral to subhedral	
Opaque Minerals	~2	~2	0.1		Anhedral to subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer silicates	~13	Interstitial glass, possibly olivine.	

COMMENTS: This rock has a very strong ophitic texture; may have had original olivine.

180-1109D-46R-1 (Piece 6A, 107-109 cm)
Thin section: # 84
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1.5		Euhedral, prismatic	
Clinopyroxene	~35	~45	1-3	Augite	Anhedral to subhedral	
Opaque Minerals	~2	~2	0.1		Anhedral to subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer silicates	~13	Interstitial glass, possibly olivine.	

COMMENTS: This rock has a very strong ophitic texture. May have had original olivine.

180-1109D-41R-CC (1-4 cm)
Thin section: # 85
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Granular

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1		Euhedral, prismatic	
Clinopyroxene	~45	~45	0.5-3	Augite	Anhedral	
Opaque Minerals	~1	~1	0.1		Subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green alteration products	~4	Interstitial glass possibly olivine.	

COMMENTS: This rock does not have the ophitic texture of the previous (e.g., Thin sections 68, 89 and 84), but is granular. Pseudomorphs of greenish layer silicates may be in part after original olivine.

180-1109D-41R-CC (5-8 cm)
Thin section: # 86
ROCK NAME: Dolerite
GRAIN SIZE: Fine to Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1		Euhedral, prismatic	
Clinopyroxene	~45	~45	0.5-3	Augite	Subhedral	
Opaque Minerals	~1	~1	0.1		Subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green alteration products	2	Olivine(?) mesostasis	

COMMENTS: This rock has a granular texture and is cross cut by calcite-filled veins.

180-1109D-41R-3 (72-74 cm)
Thin section: # 87
ROCK NAME: Basalt
GRAIN SIZE: Glassy
TEXTURE: Microporphyritic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~5	~5	up to 1		Laths	
Clinopyroxene	~2	~2	up to 1	Augite	Prisms	Slightly grey
Olivine	~2	~4	0.5		Euhedral	Clear
Glass>90	>90		Basaltic		Variolitic	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green layer silicates	~1	Olivine(?)	
Sericite	<1	Plagioclase	

COMMENTS: A submarine olivine basalt.

180-1109D-43R-CC (6-9 cm)
Thin section: # 88
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1.5		Euhedral, prismatic	
Clinopyroxene	~35	~45	1-3	Augite	Anhedral to subhedral	
Opaque Minerals	~2	~2	0.1		Anhedral to subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer silicates	~13	Interstitial glass, possibly olivine.	

COMMENTS: This rock has a very strong ophitic texture and is similar to several previous samples (e.g., Thin Section #68).

180-1109D-51R-1 (34-36 cm)
Thin section: # 89
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1.5		Euhedral, prismatic	
Clinopyroxene	~35	~45	1-3	Augite	Anhedral to subhedral	
Opaque Minerals	~2	~2	0.1		Anhedral to subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer silicates	~13	Interstitial glass possibly olivine	

COMMENTS: Identical to several previous, e.g., Thin Section #68.

180-1109D-48R-3 (98-100 cm)
Thin section: # 90
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1.5		Euhedral, prismatic	
Clinopyroxene	~35	~45	1-3	Augite	Anhedral to subhedral	
Opaque Minerals	~2	~2	0.1		Anhedral to subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer silicates	~13	Interstitial glass possibly olivine	

COMMENTS: This rock is identical to those previously described.

180-1109D-51R-1 (129-131 cm)
Thin section: # 92
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1.5		Euhedral, prismatic	
Clinopyroxene	~35	~45	1-3	Augite	Anhedral to subhedral	
Opaque Mineral	~2	~2	0.1		Anhedral to subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer silicates	~13	Interstitial glass, possibly olivine.	

COMMENTS: Identical in thin section to previous ophitic dolerite.

180-1109D-51R-3 (34-36 cm)
Thin section: # 93
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1.5		Euhedral, prismatic	
Clinopyroxene	~35	~45	1-3	Augite	Anhedral to subhedral	
Opaque Minerals	~2	~2	0.1		Anhedral to subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Layer silicates	~13	Interstitial glass, possibly olivine.	

COMMENTS: Again indistinguishable from others with ophitic texture, e.g., Thin Section #68.

180-1109D-51R-4 (6-9 cm)
Thin section: # 94
ROCK NAME: Dolerite
GRAIN SIZE: Fine
TEXTURE: Granular

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1		Euhedral, prismatic	
Clinopyroxene	~45	~45	0.5-3	Augite	Anhedral	
Opaque Minerals	~1	~1	0.1		Subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green alteration products	~4	Interstitial glass, possibly olivine.	

COMMENTS: This rock is much finer-grained than the foregoing, but essentially the same mineralogy. It does not have the ophitic texture of most of the others.

180-1109D-51R-4 (22-24 cm)
Thin section: # 95
ROCK NAME: Dolerite/Glassy basalt
GRAIN SIZE: Medium/Glassy
TEXTURE: Granular/Glassy

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
1. Diabase						
Plagioclase	50	50	0.5-1		Euhedral, prismatic	
Clinopyroxene	45	45	0.5-3	Augite	Anhedral	
Opaque Minerals	1	1	0.1	Subhedral		
2. Chilled Basalt - glass with minor altered plagioclase and olivine						

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green alteration products	4	Interstitial glass, plagioclase and olivine.	

COMMENTS: The contact is curious as there are blebs of chilled basalt in the diabase. This is interpreted as intrusion of the second component of the intrusion before the first was completely solid.

180-1109D-51R-4 (49-50 cm)
Thin section: # 96
ROCK NAME: Dolerite
GRAIN SIZE: Medium
TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO-SITION	MORPHOLOGY	COMMENTS
Plagioclase	~50	~50	0.5-1		Euhedral, prismatic	
Clinopyroxene	~45	~45	0.5-3	Augite	Anhedral	
Opaque Minerals	~1	~1	0.1		Subhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Green alteration products	~4	Interstitial glass, possibly olivine.	

COMMENTS: This rock is much finer grained than the foregoing, but essentially the same mineralogy. It does not have the ophitic texture of most of the others.