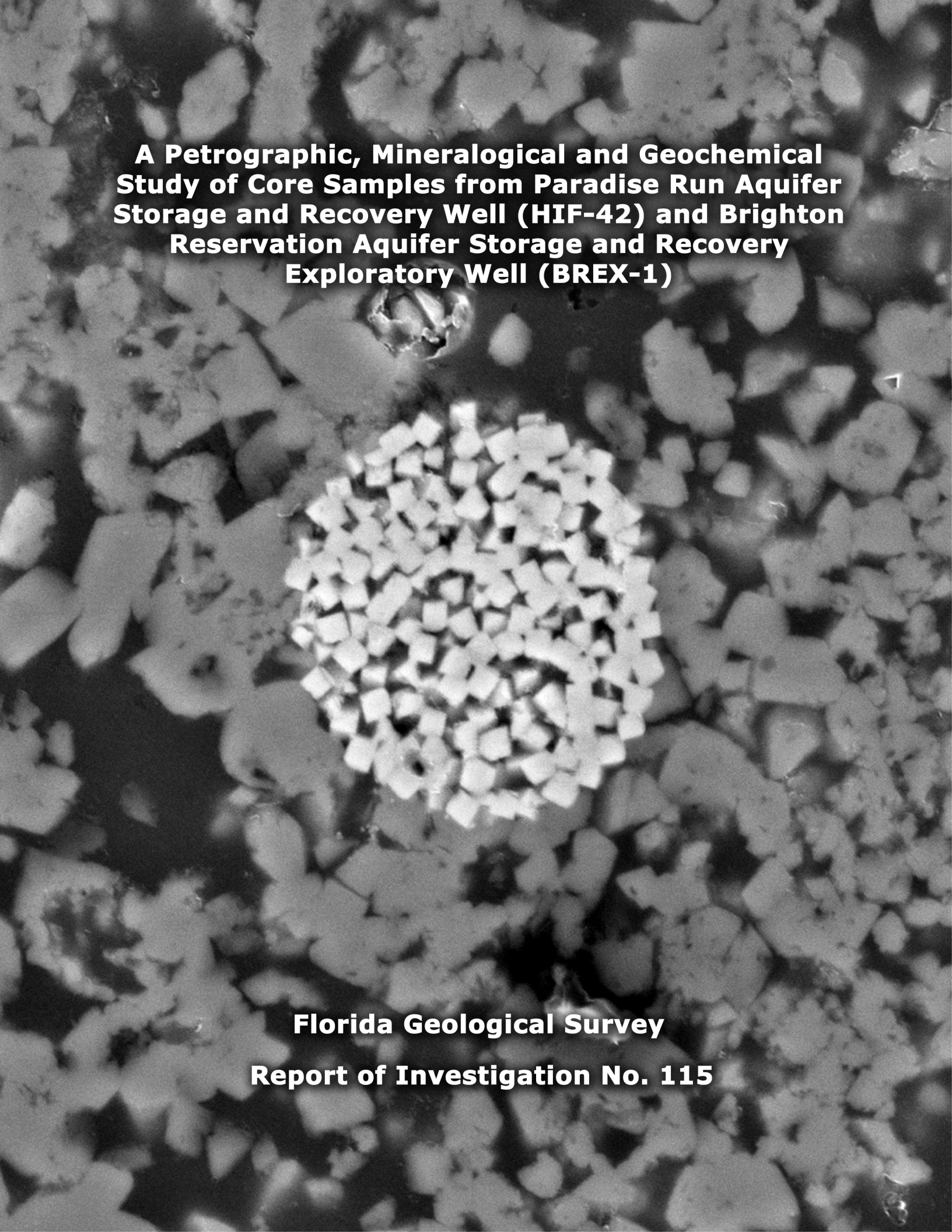
A Petrographic, Mineralogical and Geochemical Study of Core Samples from Paradise Run Aquifer Storage and Recovery Well (HIF-42) and Brighton Reservation Aquifer Storage and Recovery Exploratory Well (BREX-1)



Florida Geological Survey

Report of Investigation No. 115

Cover: Scanning electron photomicrograph of sample from Well 18811 (BREX-1, Brighton Reservation), 1217-1217.5 feet below land surface showing sub-spherical pyrite framboid in center. Framboid is approximately 25 microns in diameter.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Jonathan P. Steverson, *Secretary*

REGULATORY PROGRAMS
Paula Cobb, *Deputy Secretary*

FLORIDA GEOLOGICAL SURVEY
Jonathan D. Arthur, *State Geologist and Director*

A PETROGRAPHIC, MINERALOGICAL AND GEOCHEMICAL STUDY OF CORE SAMPLES FROM PARADISE RUN AQUIFER STORAGE AND RECOVERY WELL (HIF-42) AND BRIGHTON RESERVATION AQUIFER STORAGE AND RECOVERY EXPLORATORY WELL (BREX-1)

REPORT OF INVESTIGATION 115

By

Cindy Fischler

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PREFACE



FLORIDA GEOLOGICAL SURVEY

Tallahassee, Florida
2015

The Florida Geological Survey, Florida Department of Environmental Protection, is publishing its Report of Investigation No. 115, *A Geochemical, Mineralogical and Petrographic Study of Core Samples from the Paradise Run Aquifer Storage and Recovery Well, (HIF-42) and Brighton Reservation Aquifer Storage and Recovery Exploratory Well (BREX-1).* Data on chemical and trace mineral compositions of aquifer system rocks (storage zones and confining units) in this region are limited. Studies such as this are beneficial to identifying processes that may adversely affect native and recovered water quality due to aquifer storage and recovery activities. State, regional, county and local governmental agencies as well as the public will find this information useful in support of natural resource management and conservation decisions.

Jonathan D. Arthur, Ph.D., P.G.
State Geologist and Director
Office of the Florida Geological Survey
Florida Department of Environmental Protection

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The author appreciates our Office of the Florida Geological Survey colleagues Rodney DeHan, Frank Rupert, Richard Green, Tom Greenhalgh, Dan Phelps, Jackie Lloyd, Harley Means and Doug Calman for their peer review of the manuscript.

TABLE OF CONTENTS

Introduction 1
Objective and Scope 3
Methods 5
Sample Collection 5
Sample Preparation 8
Splitting and Powdering 8
Lithogeochemistry 8
Petrographic/Mineralogic Analyses 8
Scanning Electron Microscopy 9
Results 9
Lithogeochemistry 9
Major elements 9
Trace metals 11
Petrographic/Mineralogic Analyses 12
References 135

FIGURES

Figure 1. Project wells……..…2
Figure 2. Gamma ray log W-18812 with locations of samples……...…6
Figure 3. Gamma ray log W-18811 with locations of samples. 7

TABLES

Table 1. Sampled intervals and analyses included for W-18812. 4
Table 2. Sampled intervals and analyses included in this study for W-18811. 5
Table 3. Summary Datasheet W-18812. 13
Table 4. Summary Datasheet W-18811 14

APPENDICES

Appendix 1. Lithogeochemical analyses……...138
Appendix 2. Lithologic description of selected core samples……...148
Appendix 3. Scanning electron microscopy images……..161

ABBREVIATIONS AND ACRONYMS

A	algae
AVPK	Avon Park Formation
ActLabs	Activation Laboratories LTD.
Al_2O_3	aluminum oxide
ASR	Aquifer Storage and Recovery
As	arsenic
B	bryozoa
BDL	below detection limit
BLS	below land surface
C	carbon
Ca	calcite
CH	charophyte
cm	centimeter
CO_2	carbon dioxide
d	dolomite
D	orbitolinid
e	echinoid
E	evaporite
EDS	energy-dispersive X-ray
f	foraminifera
FDEP	Florida Department of Environmental Protection
FE	fenestral pore
Fe	iron
Fe_2O_3	ferric oxide
FIMS	flow injection mercury system
ft	feet
FUS-ICP	fusion - inductively coupled plasma
FUS-MS	fusion - mass spectrometer
GA	green algae
HWTN	Hawthorn Group
Hg	mercury
I	intraclast
ICP-MS	inductively coupled plasma - mass spectrometer
ICP-OES	inductively coupled plasma - optical emission spectrometer
INAA	instrumental neutron activation analysis
IR	infra-red detector
Ix	intercrystalline porosity
K_2O	potassium oxide
L	miliolid
Lep	Lepidocyclina
Mg	magnesium
µg/L	microgram per liter
mg/L	milligram per liter
m	mollusk
M	mold
Mn	manganese
MO	moldic porosity
Mo	molybdenum
Na_2O	sodium oxide
N	nummulites
O	organics
Os	ostracod
P	phosphorus
p	peloid
P_2O_5	diphosphorus pentoxide
ppb	parts per billion or µg/L
ppm	parts per million or mg/L
Py	pyrite
Q	quartz
S	sulfur
sp	spicule
$S(SO_4)$	total sulfur as sulfate
SO_4^{2-}	sulfate
SEM	scanning electron microscope
Sb	antimony
SiO_2	silica dioxide
Sr	strontium
$SrSO_4$	celestite
Tl	thallium
U	uranium
V	vanadium
%	weight percent
XRF	X-ray fluorescence

CONVERSIONS

Multiply	By	To obtain
foot (ft)	0.305	meter (m)
inch (in)	2.54	centimeter (cm)
mg/L	1000	µg/L
millimeter (mm)	1000	micron (µm)
percent (or weight percent)	10000	parts per million
parts per million	1000	parts per billion
mile	1.609	kilometer

A PETROGRAPHIC, MINERALOGICAL AND GEOCHEMICAL STUDY OF CORE SAMPLES FROM PARADISE RUN AQUIFER STORAGE AND RECOVERY WELL (HIF-42) AND BRIGHTON RESERVATION AQUIFER STORAGE AND RECOVERY EXPLORATORY WELL (BREX-1)

By

Cindy Fischler, P.G. 2512

INTRODUCTION

The Paradise Run (HIF-42, W-18812) and Brighton Reservation (BREX-1, W-18811) sites are located within the South Florida Water Management District (Figure 1). Paradise Run is in Highlands County located in the lower Kissimmee River floodplain about seven miles northwest of Lake Okeechobee. Brighton Reservation is located in Glades County on the Seminole Tribe of Florida Brighton Reservation. If suitable storage zones can be located, these two sites will be considered for aquifer storage and recovery (ASR). In South Florida, carbonates of the Upper Floridan aquifer comprise the potential ASR storage zone. Data including the chemical and trace mineral compositions of aquifer system rocks (storage zones and confining units) in this region are limited and are required to identify processes that may adversely affect native and recovered water quality due to ASR activities. Increasing our understanding of the rock chemistry and the chemical processes involved in the mobilization of arsenic and other metals is important to the implementation of ASR and mitigating these potential adverse water-rock interactions.

Studies in the central Florida peninsula have demonstrated that carbonate rocks of the Floridan aquifer system are chemically heterogeneous, and that these rocks interact with the injected water during ASR activities resulting in water quality changes during recovery (Arthur et al., 2002, 2005, 2007, 2008; Jones and Pichler, 2007). The metals (and metalloids) most likely to be mobilized from the aquifer matrix into the injected waters include arsenic (As), iron (Fe), molybdenum (Mo). The source of these metals may include organic materials, fracture or grain coatings, or minerals within the carbonate matrix. Of particular concern is As, a trace metal that is known to be toxic even at low-level exposures. Arsenic is naturally present in soils and rocks, usually in trace concentrations. In Florida, background soil concentrations range from 0.01 to 50.6 ppm, with median values of 0.2 to

~2 ppm, depending upon soil type (Chen et al., 2002). Arsenic mobilization from rocks is most often associated with iron oxides and iron sulfides (e.g., goethite, pyrite, greigite and arsenopyrite). While arsenopyrite, the most common As bearing mineral globally, is not common in Florida (Mason and Berry, 1968) pyrite and other iron sulfides do appear in trace amounts.

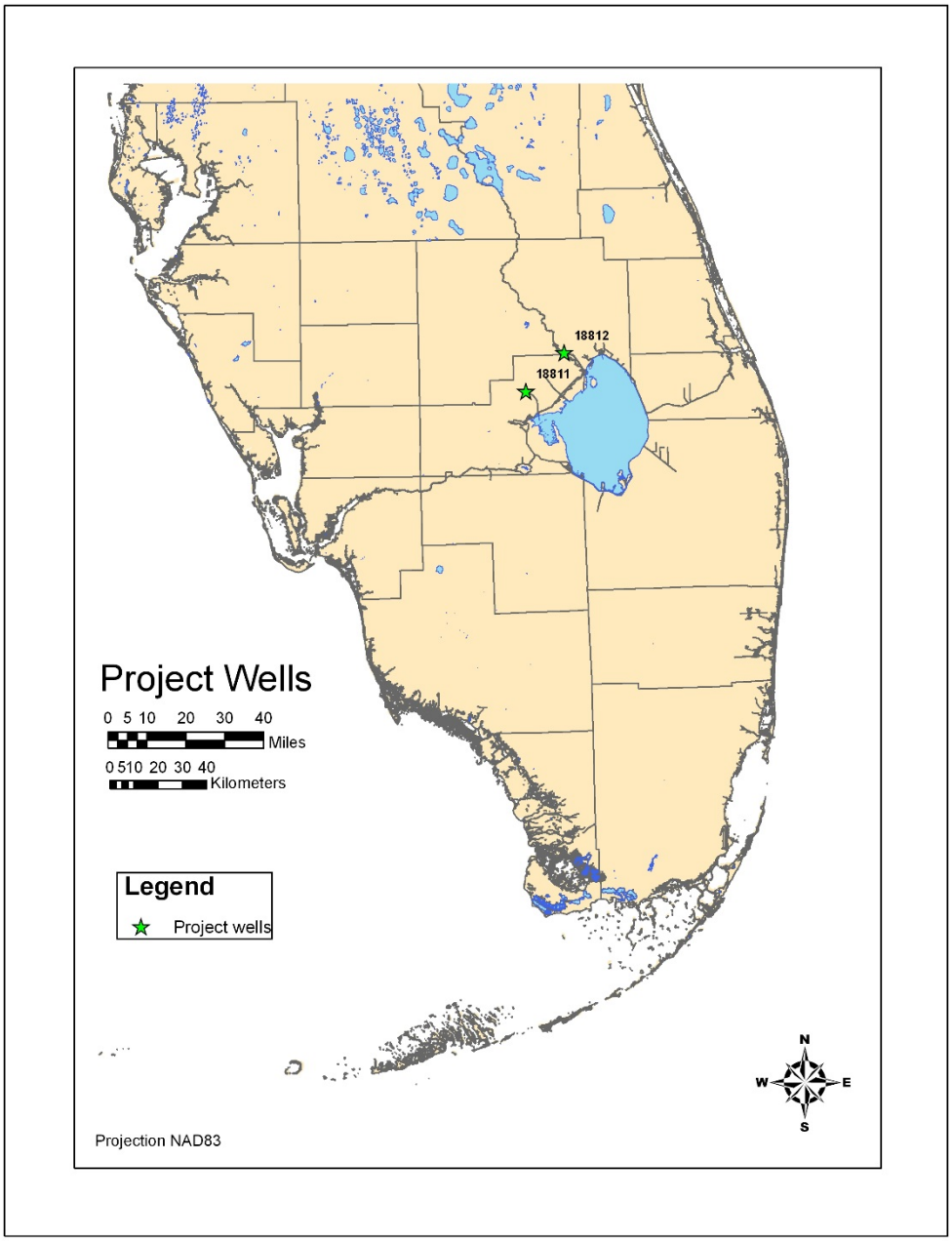


Figure 1. Project wells.

OBJECTIVE AND SCOPE

The primary objective of this project was to characterize the petrography, chemical and mineralogical composition within and adjacent to the proposed ASR storage zones of two sites, Paradise Run (W-18812, HIF-42) and Brighton Reservation (W-18811, BREX-1) in order to facilitate assessment of reactions and constituents that might impact the suitability of the rock as an ASR storage zone. The core samples included three from lower Hawthorn Group sediments, four from the Ocala Limestone and 33 from the Avon Park Formation (Tables 1 and 2).

Paradise Run's ASR test monitor well consisted of a dual zone monitor well with two potential storage zones, one from 560 to 1,049 ft below land surface (BLS) comprised of the Suwannee Limestone, Ocala Limestone and Avon Park Formation and the second one from 1,310 to 1,530 ft BLS in the Avon Park Formation (formation picks were made by CH2MHill, 2008). Six core runs were made but no core was collected between the depths of 560 ft to 798 ft BLS so all potential storage zone analyzed core belonged to the Avon Park Formation.

Brighton Reservation's ASR exploratory well's potential-storage-zone was around 1,200 to 1,400 ft BLS in the Avon Park Formation (formation picks were made by Missimer Groundwater Science, 2007).

Whole-rock geochemical analyses of 40 core samples, 20 from each ASR site, have been completed (Appendix 1). These analyses included carbon, sulfur and multi-element, multi-method analytical techniques that yield detection limits and precision required for future geochemical modeling efforts. Lithologic descriptions (Appendix 2), lithostratigraphic unit determination, petrographic descriptions and archival photography of core samples have also been completed for this project. Sample preparation for various analyses and procedures included bulk rock powders and polished thin sections.

Table 1. Sampled intervals and analyses included for W-18812 (HIF-42, Paradise Run).

Sampled Interval ft. BLS	Lithogeochemical Analyses	Petrographic Analyses	Formation
458-458.5	X	X	Hawthorn Group
463-463.5	X	X	Hawthorn Group
464.5-465	X		Hawthorn Group
799-799.5	X	X	Avon Park Formation
801-801.5	X		Avon Park Formation
803-803.5	X	X	Avon Park Formation
807-807.5	X	X	Avon Park Formation
1101-1101.5	X	X	Avon Park Formation
1102.5-1103	X		Avon Park Formation
1106.5-1107	X	X	Avon Park Formation
1252.5-1253	X		Avon Park Formation
1255-1255.5	X	X	Avon Park Formation
1257.5-1258	X		Avon Park Formation
1260-1260.5	X	X	Avon Park Formation
1510-1512	X	X	Avon Park Formation
1520-1525	X	X	Avon Park Formation
1752.5-1753	X	X	Avon Park Formation
1753.5-1754	X	X	Avon Park Formation
1754.5-1755	X	X	Avon Park Formation
1758.5-1759	X	X	Avon Park Formation

Table 2. Sampled intervals and analyses included for W-18811 (BREX-1, Brighton Reservation).

Sampled Interval ft. BLS	Lithogeochemical Analyses	Petrographic Analyses	Formation
748-748.5	X	X	Ocala Limestone
806.5-807	X	X	Ocala Limestone
883.5-884	X	X	Ocala Limestone
971.5-972	X	X	Ocala Limestone
993-993.5		X	Avon Park Formation
1027-1027.5	X	X	Avon Park Formation
1057.5-1058	X	X	Avon Park Formation
1069.5-1070		X	Avon Park Formation
1157.5-1158	X	X	Avon Park Formation
1197.5-1198		X	Avon Park Formation
1217-1217.5	X	X	Avon Park Formation
1274.5-1275	X	X	Avon Park Formation
1294-1294.5	X	X	Avon Park Formation
1316-1316.5		X	Avon Park Formation
1317-1317.5	X	X	Avon Park Formation
1355-1355.5		X	Avon Park Formation
1358-1358.5	X	X	Avon Park Formation
1394.5-1395	X	X	Avon Park Formation
1402-1402.5	X	X	Avon Park Formation
1408-1408.5	X	X	Avon Park Formation
1413.5-1414	X	X	Avon Park Formation
1422-1422.5	X	X	Avon Park Formation
1428-1428.5	X	X	Avon Park Formation
1430-1430.5	X	X	Avon Park Formation
1433.5-1434	X	X	Avon Park Formation

METHODS

Sample Collection

Core sampling from the wells emphasized representative, homogenous lithologies, while also sampling zones with anomalous textural, lithological or mineralogical characteristics (e.g., chemically reduced or oxidized zones, organic-rich sediments, sulfide/sulfate minerals, interlayered carbonates/siliciclastics). These samples ideally represented homogenous and heterogeneous strata from within or proximal to the ASR storage zone. Gamma-ray logs were used for checking formation boundaries and assisting in the location of anomalous textures. Figures 2 and 3 provide sample locations relative to gamma-ray activity.

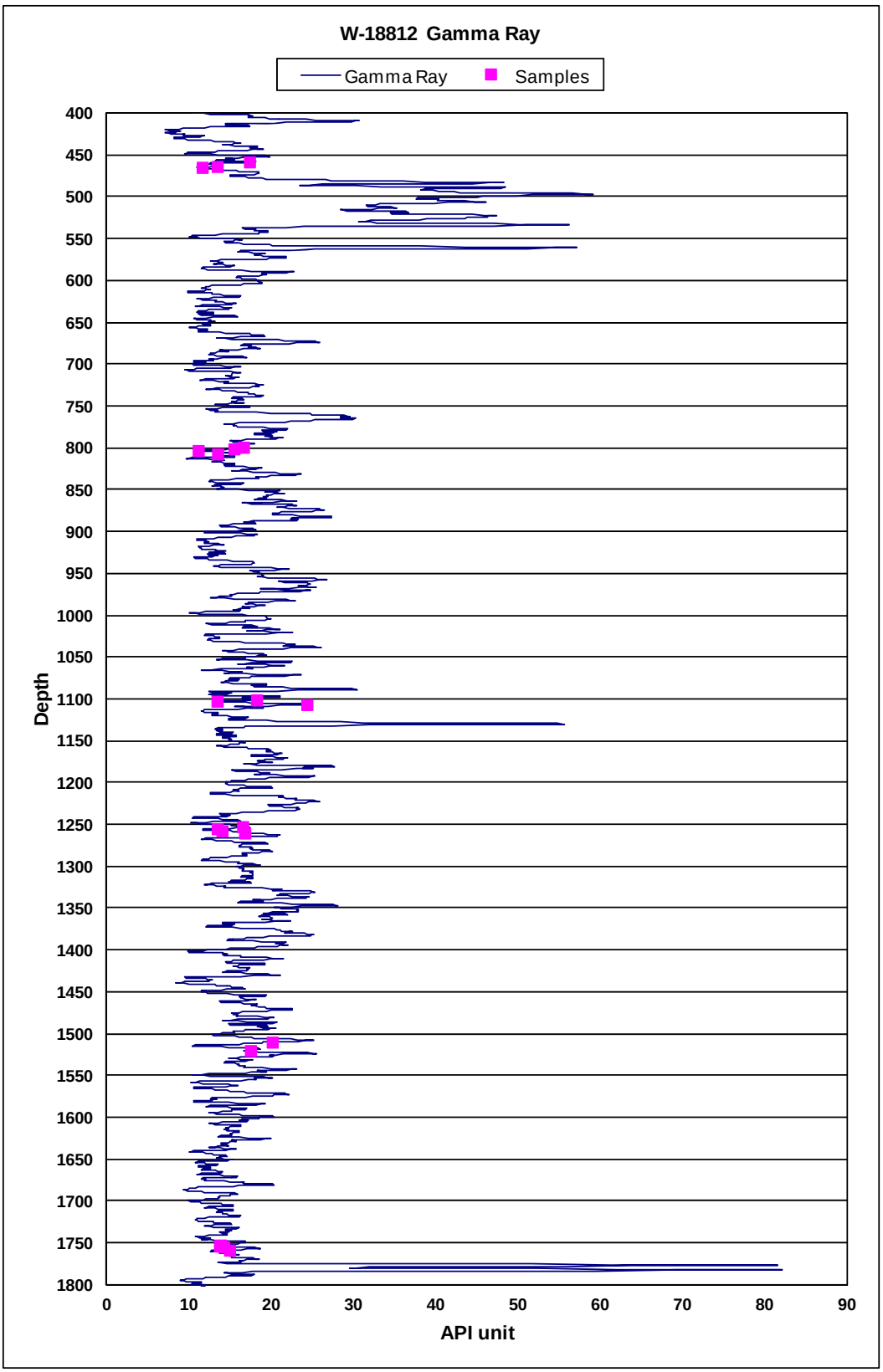


Figure 2. Gamma ray log W-18812 with locations of samples that have undergone lithogeochemical analyses.

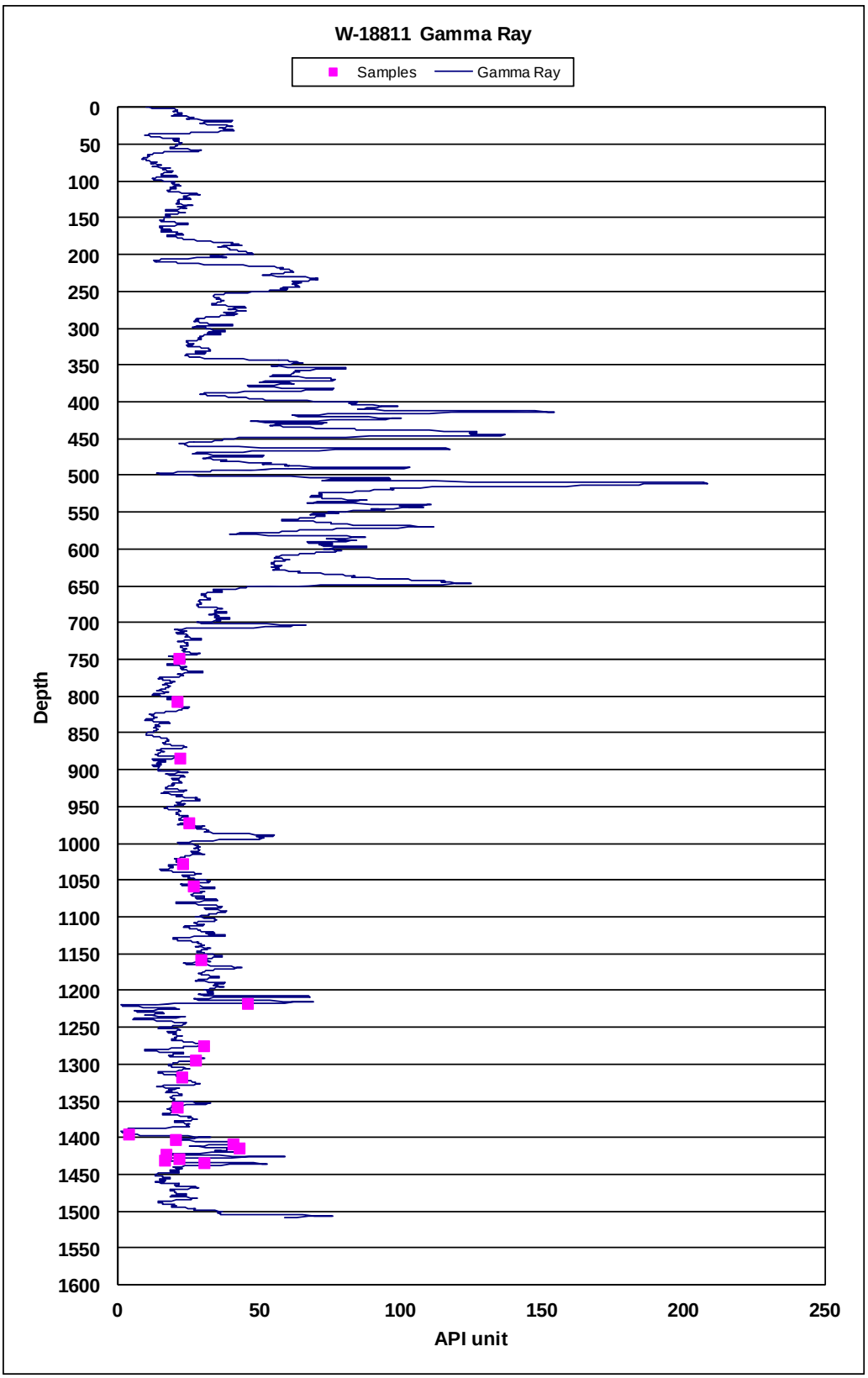


Figure 3. Gamma ray log W-18811 with locations of samples that have undergone lithogeochemical analyses.

Sample Preparation

Each sample consisted of approximately six inches of core. Samples were photographed prior to processing. Core exteriors were removed via a water-cooled trim saw used solely for projects requiring geochemical analysis. Sample trimming was intended to remove drilling mud impregnated along the core exterior, post-drilling oxidized zones and precipitates (e.g., gypsum formed during core storage), as well as any possible anthropogenic contaminants. After trimming, each sample was rinsed with distilled de-ionized water. Samples were then air-dried overnight on a clean countertop in the laboratory to minimize possible contamination.

Splitting and Powdering

Rock powders were required for lithogeochemical analyses. Crushing, pulverization and splitting were completed by a commercial laboratory (Activation Laboratories LTD. [ActLabs] Ancaster, Ontario, Canada, analysis code RX2).

Lithogeochemistry

Major, trace, and rare earth element geochemical analyses were completed at a commercial laboratory (ActLabs). The multi-method analytical package (4E-Research) includes: 1) inductively coupled plasma - optical emission spectrometer (ICP-OES), 2) trace element fusion inductively coupled plasma - mass spectrometer (ICP-MS) analyses, 3) instrumental neutron activation analysis (INAA), and 4) x-ray fluorescence spectrometer (XRF). In addition, carbon (C) and sulfur (S) were analyzed using an automated LECO CS-344 analyzer and a solid-state infra-red detector to yield CO_2, total C, graphitic C, organic C, S and SO_4. Samples were analyzed for mercury (Code 1G) using a Perkin Elmer FIMS 100 cold vapor Hg analyzer. Detection limits, methods used and results are in Appendix 1.

Petrographic/Mineralogic Analyses

Petrographic descriptions of 40 thin sections were completed for this investigation, 15 thin sections were from Paradise Run and 25 from Brighton Reservation. Thin-sections were

cut parallel to the long axis of the core to yield more "stratigraphy" and increased heterogeneity. Polished thin sections were finished to 30 microns thick and were impregnated with blue dye under vacuum. Petrographic analyses were completed using an S8 APO Leica stereozoom microscope and a Nikon petrographic microscope.

Scanning Electron Microscopy

Trace mineralogical analyses were completed using scanning electron microscopy (SEM) and energy-dispersive x-ray (EDS) using a JEOL JXA 840A. Prior to image analyses, all thin sections were sputter-coated with carbon at the Florida Department of Environmental Protection/Office of the Florida Geological Survey (FDEP/FGS) Microanalysis Laboratory. Secondary electron (topographic) imagery was useful for identifying textures. Backscatter electron images enhanced contrast between different minerals or mineral compositions based on the average atomic number; the higher the average atomic number the brighter the mineral. This was important in locating pyrite grains which, because of the higher atomic number, were brighter than the surrounding matrix. Photos and analyses can be found in Appendix 3.

RESULTS

Lithogeochemistry

Major elements

Differences existed in SiO_2, Fe_2O_3 (total Fe as Fe (III) [T]), Na_2O, K_2O and P_2O_5 among the lithostratigraphic units. The Hawthorn Group is a mixed siliciclastic and carbonate unit, while the non-Hawthorn Group units are predominantly carbonates. Higher concentrations of Na_2O, Al_2O_3 and K_2O observed in Hawthorn Group samples were expected given their higher clay content. The siliciclastic nature of the Hawthorn Group was evident in the higher SiO_2 concentrations relative to the other lithostratigraphic units. While the average SiO_2 concentration in the Ocala Limestone was one tenth of the Hawthorn Group average, it was twice the average found in the Avon Park Formation. The maximum value for Hawthorn Group SiO_2 was 19.83 percent.

Higher concentrations of P_2O_5 relative to the other formations are characteristic of the Hawthorn Group due to the presence of carbonate-fluorapatite. Thus the highest concentrations of P_2O_5 were found in the Hawthorn Group which then decreased with increasing age of the lithostratigraphic units. Avon Park Formation values were below detection.

The availability of soluble Fe is important with regard to the behavior of As during ASR operations. Iron rich minerals, iron oxides and iron sulfides, are known to contain arsenic which can be mobilized during ASR. The average value for Fe_2O_3 [T] was highest in the Hawthorn Group (0.46 percent), which then decreased in the Ocala Limestone and Avon Park Formation.

Carbon (C) was analyzed as four forms: total, graphitic (high temperature), inorganic (as CO_2) and organic. The latter two forms were particularly significant. While CO_2 content is primarily a function of the amount of carbonate minerals (e.g., calcite, dolomite, and ankerite) in the rock samples, CO_2 can also be associated with natural organic matter. Inorganic C (as CO_2) was generally lowest in the Hawthorn Group, owing to the relative abundance of non-carbonate minerals. The presence of natural organic matter was suggested by the organic C analyses. The Hawthorn Group and the Avon Park Formation contained the highest organic C values. This was expected given the occurrence within the formations of organic-rich laminae and/or finely disseminated natural organic matter. The Avon Park Formation dataset showed no apparent relationship between organic C and either As or Hg concentrations; however, the sample sets for the Hawthorn Group and the Ocala Limestone were too small to draw conclusions.

Sulfur was analyzed as S (total) and SO_4 weight-percent concentration. Total S reflects the pyrite distribution as well as sulfate minerals (i.e. gypsum, celestite and barite). The maximum total S content (6.34 percent) was observed in the Avon Park Formation, which generally contains the highest amount of sulfate minerals (e.g., gypsum, barite and celestite). The maximum SO_4 concentration, same sample, (16.1 percent) also occurred in the Avon Park Formation samples. The Ocala Limestone had the lowest concentrations of both total S and SO_4. For a detailed look at the lithogeochemistry see Appendix 1.

Trace metals

Based on solubility, water-quality and environmental health concerns, the trace metal discussion in this section was limited to As, Mo, Sb, Hg and U. Maximum observed As concentrations occurred within the Avon Park Formation and the Hawthorn Group (25 ppm and 8 ppm, respectively). Molybdenum, a metal associated with water-quality concerns according to the U.S. Environmental Protection Agency (2009, 2011), was highest in the Avon Park Formation and the Hawthorn Group (140 ppm and 8 ppm, respectively), but measured < 2 ppm for all Ocala Limestone samples. Antimony concentrations varied among the three lithologic units. The Hawthorn Group samples varied from 0.6 to 0.8 ppm, while the Ocala Limestone ranged from 0.2 to 0.6 ppm. The most variable antimony concentrations were found in the Avon Park Formation (BDL to 3.4 ppm) with the highest concentration found in the same sample exhibiting the highest molybdenum concentration. Pyrite is known to contain the trace metals As, Mo and Sb (Arthur et al., 2007; Berner et al., 2013). Pyrite was most abundant in the Hawthorn Group and Avon Park Formation samples and may have been a source of those trace metals.

Mercury was either at or below the detection limit of 5 ppm for all samples in the Ocala Limestone and Avon Park Formation. The highest concentration found in the Hawthorn Group was 22 ppm. Uranium revealed more distinct differences between the lithostratigraphic units, with the Hawthorn Group rocks having the highest concentration (32.6 ppm), as expected due to the relative abundance of carbonate-fluorapatite. The Ocala Limestone concentrations were the lowest and least variable ranging from 2.65 to 2.78 ppm. The Avon Park Formation had on average higher, more variable, concentrations (2.08 to 6.4 ppm) than the Ocala Limestone.

Also associated with the carbonate-fluorapatite are rare earth elements (Long et al., 2010). On average the rare earth element concentrations were highest in the Hawthorn Group and decreased an order of magnitude in the Ocala Limestone and continued to decrease in concentration in the Avon Park Formation.

Petrographic/Mineralogic Analyses

Petrographic descriptions of 40 thin sections (15 from Paradise Run and 25 from Brighton Reservation) were completed for this investigation. Thin-sections were cut parallel to the long axis of the core, impregnated with blue dye and polished to 30 microns. Petrographic descriptions included characterization of sample lithology, mineralogy, rock fabric (Dunham, 1962), depositional environment and pore types. This information was supported by extensive photomicrograph documentation. Tables 3 and 4 provide a summary of the petrographic descriptions.

Detailed petrographic analyses follow Tables 3 and 4. These descriptions are provided in the following format:

- Descriptions are arranged by increasing depth in core
- Each sample description includes
    - Sample name and depth
    - Stratigraphic unit
    - Litho facies
    - Depositional environment
    - Selected lithogeochemical analyses
    - Core photograph (prior to sampling when available)
    - Photograph of sampled interval
    - Thin section petrography
    - Four photomicrographs for each thin section

Table 3. Summary datasheet W-18812. HTWN = Hawthorn Group, AVPK = Avon Park Formation, ND = not determined.

Well	Depth	Unit	General Lithology	Acc. Minerals Abundance	Dominant Grain Types	Diagenesis	Sorting	Sedimentary Structures	Porosity	BP Mud	Texture	Interpreted Depositional Setting	Dominant Pore Network
W-18812	458-458.5	HTWN	Limestone	Phosphate, quartz, ~25% silt-sized dolomite rhombs, organics, & possible pyrite	Foraminifera, peloids, bryozoa, algae	Micritized, minimal cementation	Poor	Laminated and bioturbated	~40%	Moderate	Wackestone	Subtidal marine	Microporosity and moldic
W-18812	463-463.5	HTWN	Limestone	~20% Phosphate, quartz, ~5% silt-sized dolomite rhombs, organics, & possible pyrite	Foraminifera, echinoids, peloids, mollusks, algae, bryozoa	Minimal cement	Poor	Laminated and bioturbated	~40%	Moderate	Packstone	Normal marine to brackish	Interparticle and microporosity
W-18812	799-799.5	AVPK	Limestone	Sparse silt-sized dolomite rhombs, trace of organics and pyrite	Large and small foraminifera, echinoids, and miliolids	Some micritization and minimal cementation	Poor	Mottling and bioturbated	~25%	High	Wackestone	Subtidal shallow marine	Microporosity and moldic and minor interparticle
W-18812	803-803.5	AVPK	Limestone	Sparse silt-sized dolomite rhombs, trace of organics and pyrite	Foraminifera, many miliolids, echinoids, ostracods, algae, peloids	Minimal to moderate cementation and some micritization	Moderate	Laminated, mottled and bioturbated	~30%	Low	Packstone/ wackestone	Subtidal shallow marine	Interparticle, microporosity and minor moldic
W-18812	807-807.5	AVPK	Limestone	Trace of organics and pyrite	Foraminifera, miliolids, algae, and many ostracods	Minimal cementation and some micritization	Moderate	Laminated	~25%	High	Packstone/ wackestone	Shallow water subtidal	Interparticle, moldic and microporosity
W-18812	1101-1101.5	AVPK	Limestone	Evaporites (barite and celestite?) possibly some gypsum and pyrite	Foraminifera, miliolids, algae, intraclasts, mollusk and peloids	Micritized and minimal cementation	Poor	Bioturbated	~40%	High	Packstone/ wackestone	Brackish, supratidal sabkha	Moldic interparticle
W-18812	1106.5-1107	AVPK	Limestone	Evaporites (barite and celestite?) possibly some gypsum and pyrite and organics	Peloids, algae, ostracods, miliolids, and intraclasts	Micritized	Poor	Fracture and laminated	~50%	High	Mudstone	Subtidal sabkha	Fracture and microporosity
W-18812	1255-1255.5	AVPK	Limestone	Organics and possibly pyrite and or iron sulfide	Large and small foraminifera, peloids, algae, bryozoa, and intraclasts	Micritized, moderate cementation, and compaction	Poor	Mottled, fracture and algal lamina	~35%	High	Packstone	Subtidal shallow marine	Moldic, interparticle and intraparticle
W-18812	1260-1260.5	AVPK	Limestone	Trace of organics and iron sulfide	Foraminifera, peloids, ostracods, intraclasts, miliolids, algae	Micritized and minimal cementation	Moderate	Bioturbated, laminated, and mottled	~30%	High	Packstone	Subtidal shallow marine	Fenestral pores, interparticle and microporosity
W-18812	1510-1512	AVPK	Dolomite	Organics and trace of pyrite and or iron sulfide	Ghosts of foraminifera and echinoids	Inclusion rich	Moderate	Laminated	~10%	Low	Dolomicrite	Marine	Moldic
W-18812	1520-1525	AVPK	Dolomite	Organics and micrite	ND	Micritized and Inclusion rich	Poor	Laminated	~25%	High	ND	Undetermined	Microporosity and intercrystalline
W-18812	1752.5-1753	AVPK	Dolomite	Organics and or iron sulfide	Peloids, intraclasts, and algae	Micritized and minimal cementation	Poor	ND	~35%	High	Dolosilt	Subtidal shallow marine	Moldic microporosity
W-18812	1753.5-1754	AVPK	Dolomite	Pyrite and gypsum	Mollusk molds	Mottled and bioturbated	ND	ND	~25%	High	Dolomicrite	Restricted shallow water marine	Microporosity and moldic
W-18812	1754.5-1755	AVPK	Dolomite	Evaporites, organics and micrite	Foraminifera molds	Micritized, bioturbated and mottled	ND	Fracture and wispy organic lamina	~10%	High	Calcareous Dolomicrite	Restricted shallow water marine	Moldic, minor intercrystalline and microporosity
W-18812	1758.5-1759	AVPK	Dolomite	Evaporites	Foraminifera molds	Micritized	ND	Fracture	<10%	High	Dolosilt	Restricted shallow water marine	Moldic

Table 4. Summary datasheet W-18811. Ocala = Ocala Limestone, AVPK = Avon Park Formation.

Well	Depth	Unit	General lithology	Acc. Minerals Abundance	Dominant Grain Types	Diagenesis	Sorting	Sedimentary Structures	Porosity	BP Mud	Texture	Interpreted Depositional Setting	Dominant pore Network
Well	**Depth**	**Unit**	**General lithology**	**Acc. Minerals Abundance**	**Dominant Grain Types**	**Diagenesis**	**Sorting**	**Sedimentary Structures**	**Porosity**	**BP Mud**	**Texture**	**Interpreted Depositional Setting**	**Dominant pore Network**
W-18811	748-748.5	Ocala	Limestone	Organics, pyrite and sparse silt-size rhombs of dolomite	Large and small foraminifera, mollusk, bryozoan, echinoid, green algae	Micritized, minimal cementation, and compaction	Poor	Bioturbated and mottled	~30%	High	Wackestone	Middle to deep ramp	Microporosity and interparticle
W-18811	806.5-807	Ocala	Limestone	Not determined	Echinoids, foraminifera, ostracods and red algae?	micritized and minimal cementation	Poor	Bioturbated	~30	High	Wackestone	Deep ramp (very low energy)	Microporosity
W-18811	883.5-884	Ocala	Limestone	Trace of pyrite, sparse scattered rhombs of dolomite.	Large foraminifera, ostracods, echinoids, bryozoan, and algae	micritized and minimal cementation	Poor	Bioturbated, fracture and laminated	~25%	High	Wackestone	Deep Ramp (as above)	Microporosity, moldic and interparticle
W-18811	971.5-972	Ocala	Limestone	Dolomite ~10-15%, pyrite and glauconite?	Large foraminifera, mollusk, echinoids and algae	Minimal cementation	Poor	Fracture and bioturbated	~25%	High	Wackestone	Deep ramp (low energy)	Microporosity
W-18811	993-993.5	AVPK	Limestone	Trace of pyrite	Many miliolids, ostracods, echinoids, mollusk and red algae	Well cemented	Poor	Micritized and bioturbated	~15%	Low	Grainstone	Shoals, shallow water upper ramp	Moldic
W-18811	1027-1027.5	AVPK	Limestone	Scattered dolomite rhombs	Foraminifera, ostracods, intraclast, peloids and abundant miliolids	Micritized, minimal cementation and some compaction	Poor	Bioturbated and mottled	~35%	Low	Packstone	Shallow marine	Interparticle and Moldic
W-18811	1057.5-1058	AVPK	Limestone	Scattered dolomite and very fine grained micrite matrix	Foraminifera, peloids, many miliolids, sparse ostracods and algae	Micritized, minimal cementation and some compaction	Poor	Bioturbated	~25%	Low	Packstone	Shallow marine	Interparticle and microporosity
W-18811	1069.5-1070	AVPK	Dolomitic Limestone	Dolomite 40%	Sparse miliolids and ostracods, intraclast and algae	Micritized	Poor	Mottled and laminated	~40%	High	Not determined	Lower intertidal or shallow subtidal	Moldic/ Vuggy
W-18811	1157.5-1158	AVPK	Limestone	Dolomite and organics	Ostracods, foraminifera, echinoids, peloids, algae and intraclast	Micritized, some compaction and minimal cementation	Poor	Laminated, mottled and bioturbated	~30%	High	Wackestone	Shallow marine with open circulation	Microporosity
W-18811	1197.5-1198	AVPK	Limestone	Dolomite, trace of pyrite and organics	Intraclast, foraminifera, miliolids, ostracods, echinoids, algae, and peloids	micritized, minimal cementation, some compaction	Poor	Laminated	~25%	High	Packstone	Subtidal to shallow marine	Interparticle and microporosity
W-18811	1217-1217.5	AVPK	Limestone	Pyrite	Peloids, miliolids, algae, ostracods, foraminifera and echinoids	Micritized and minimal cementation	Poor	Laminated slight mottling	~30%	High	Wackestone	Subtidal to shallow marine	Microporosity and moldic
W-18811	1274.5-1275	AVPK	Limestone	Pyrite	Peloids, foraminifera, miliolids, intraclast, and coralline algae	Micritized and minimal cementation	Poor		~55%	Low	Packstone	Shallow subtidal	Interparticle and microporosity
W-18811	1294-1294.5	AVPK	Limestone	Organics and or iron sulfide	Peloids, miliolids, foraminifera, algae, echinoids, intraclast and mollusk	Micritized, some compaction and minimal cementation	Poor	Bioturbated	~45%	Low	Grainstone/ packstone	Shallow marine	Interparticle
W-18811	1316-1316.5	AVPK	Limestone	Not determined	Peloids, miliolids, algae, and foraminifera	Micritized, micritic envelopes and minimal cementation	Poor	Laminated and fractured	~25%		Packstone	Shallow subtidal	Intercrystalline and interparticle
W-18811	1317-1317.5	AVPK	Limestone	Not determined	Miliolids, foraminifera, intraclast, and abundant peloids and algae	Micritized, some compaction and minimal cementation	Poor	Bioturbated	~45%	Low	Grainstone	Shallow subtidal to shallow marine	Interparticle
W-18811	1355-1355.5	AVPK	Limestone	Organics	Foraminifera, miliolids, peloids, intraclast and red algae	Micritized and minimal cementation	Poor		~20%	Moderate	Wackestone	Shallow subtidal to shallow marine	Interparticle and microporosity
W-18811	1358-1358.5	AVPK	Limestone	Microspar	Miliolids, foraminifera, peloids, intraclast, ostracods, echinoids, and red algae.	Micritized and minimal cementation	Poor	Bioturbated	~30%	Low	Packstone	Subtidal to shallow marine	Intercrystalline and moldic
W-18811	1394.5-1395	AVPK	Dolomite	Pyrite	Foraminifera and echinoids	Well indurated		Fracture	~10%	Not determined	Not determined	Not determined	Moldic
W-18811	1402-1402.5	AVPK	Limestone	Organics and or iron sulfide	Foraminifera, ostracods, miliolids, and red algae	Micritized, some compaction and minimal cementation	Poor	Laminated	~25%	High	Packstone	Shallow Marine	Microporosity, interparticle and slightly moldic
W-18811	1408-1408.5	AVPK	Dolomite	Organics and pyrite	Echinoids, foraminifera and algae	Well indurated		Laminated and mottled	~15%	Not determined	Not determined	Subtidal	Intercrystalline and moldic
W-18811	1413.5-1414	AVPK	Dolomite	Organics and or pyrite	Relict molds of foraminifera and echinoids	Well indurated	Well	Not determined	~15%	Not determined	Not determined	Not determined	Intercrystalline and moldic
W-18811	1422-1422.5	AVPK	Limestone	Organics	Small foraminifera, ostracods, algae, miliolids, echinoids, intraclast and bryozoa	Minimal cementation, some compaction	Not determined	Laminated and mottled	~25%	Low	Packstone	Subtidal to shallow marine	Interparticle and microporosity
W-18811	1428-1428.5	AVPK	Dolomite	Pyrite	Echinoid	Well indurated	Well	Laminated and mottled	~10%	Not determined	Not determined	Not determined	Moldic and intercrystalline
W-18811	1430-1430.5	AVPK	Limestone	Organics and possibly pyrite	Foraminifera, bryozoa, miliolids, algae, and intraclast	Micritized and minimal cementation	Poor	Not determined	~45%	Low	Packstone	Lagoonal or brackish water	Interparticle, moldic and microporosity
W-18811	1433.5-1434	AVPK	Limestone	Organics and possibly pyrite	Algae, intraclast, miliolids and foraminifera	Moderately cemented and micritized	Poor	Mottled	~35%	High	Packstone	Subtidal to shallow marine	Interparticle, moldic and microporosity





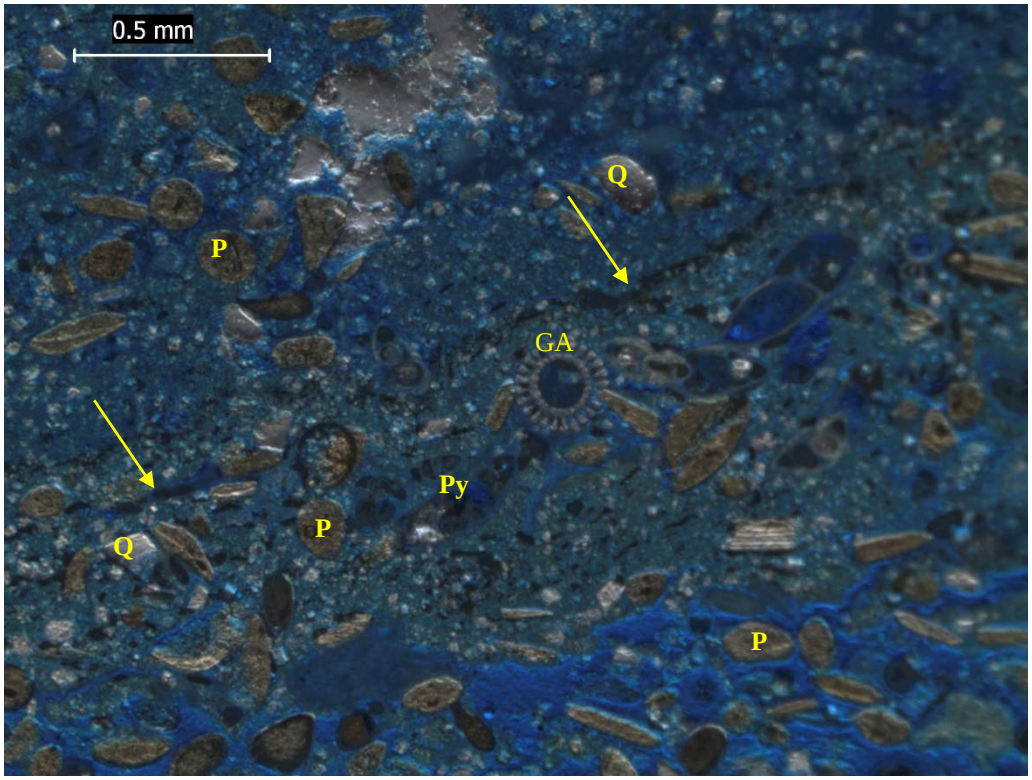
W-18812 (HIF-42)

Depth:	458-458.5 ft BLS
Stratigraphic Unit:	Hawthorn Group
Litho Facies:	Sandy, phosphatic, dolomitic wackestone
Dominant Pore Type:	Microporosity and moldic
Porosity Amount:	~40 percent
Depositional Environment:	Subtidal marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=19.83, MgO=10.95, CaO=27.91, P_2O_5=4.35)
	Trace Constituents (ppm): (As=8, Ba=73, Cd=3.0, Cr=96, Mo=8, Ni=18, Sb=0.7, Sr=1182, U=9.49, V=38, SO_4=0.9)

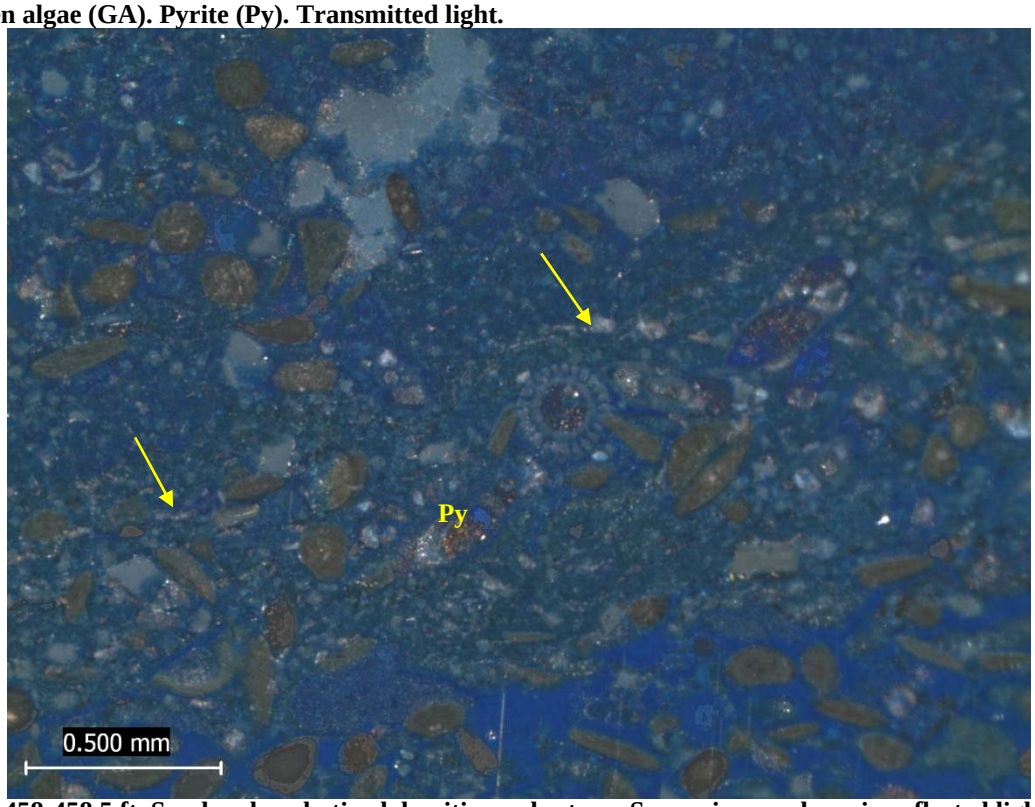
Description:

The section consists of phosphate, quartz, silt-size dolomite rhombs (~25 percent), organics and pyrite. Allochems include peloids, small foraminifera, dasycladacaen green algae and sparse bryozoa. The section is laminated, coarse and fine-grained, sometimes separated by dark organic laminae. The organic laminae appear black in transmitted light but white in reflected light. Sample is also mottled and bioturbated with varying grain densities. There appears to be minimal cementation with silt-sized dolomite rhombs suspended in a micrite matrix. There is no evidence of compaction. Phosphate grains are rounded and indicate a detrital source as do the quartz grains. Phosphatic clasts with quartz and possible pyrite inclusions are present. Also noted are black lenticular flecks of organics.

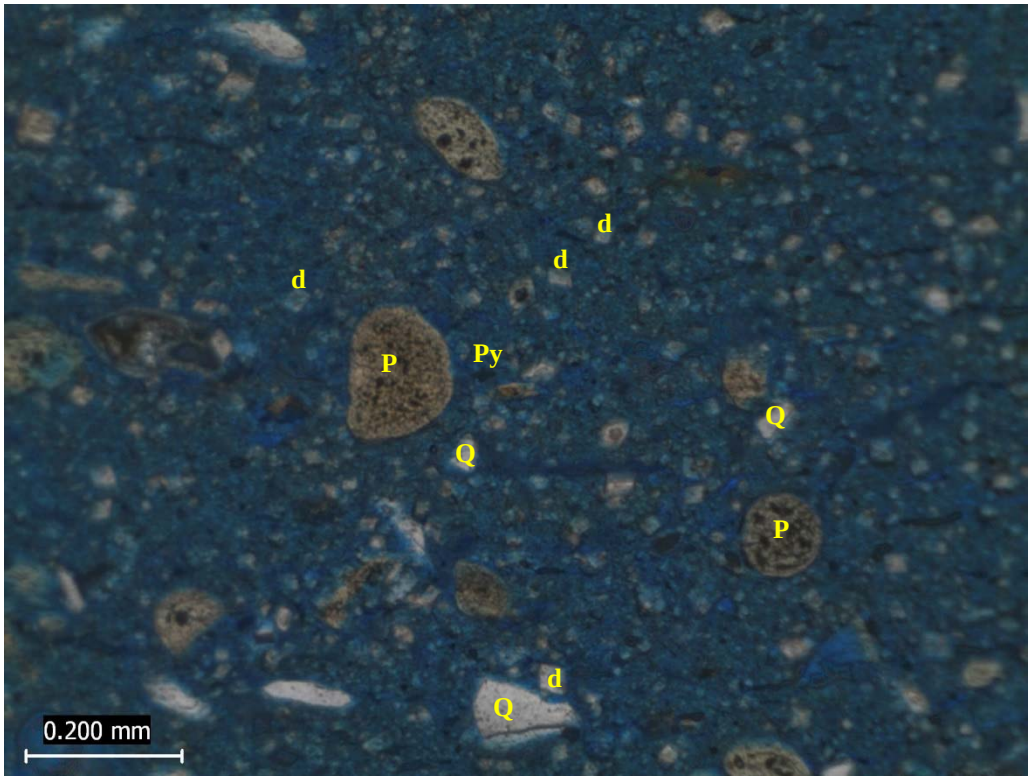
The depositional environment is likely to be subtidal marine, probably stressed, as indicated by the lack of diversity of fossils, dasycladacaen green algae (Scholle and Ulmer-Scholle, 2003).



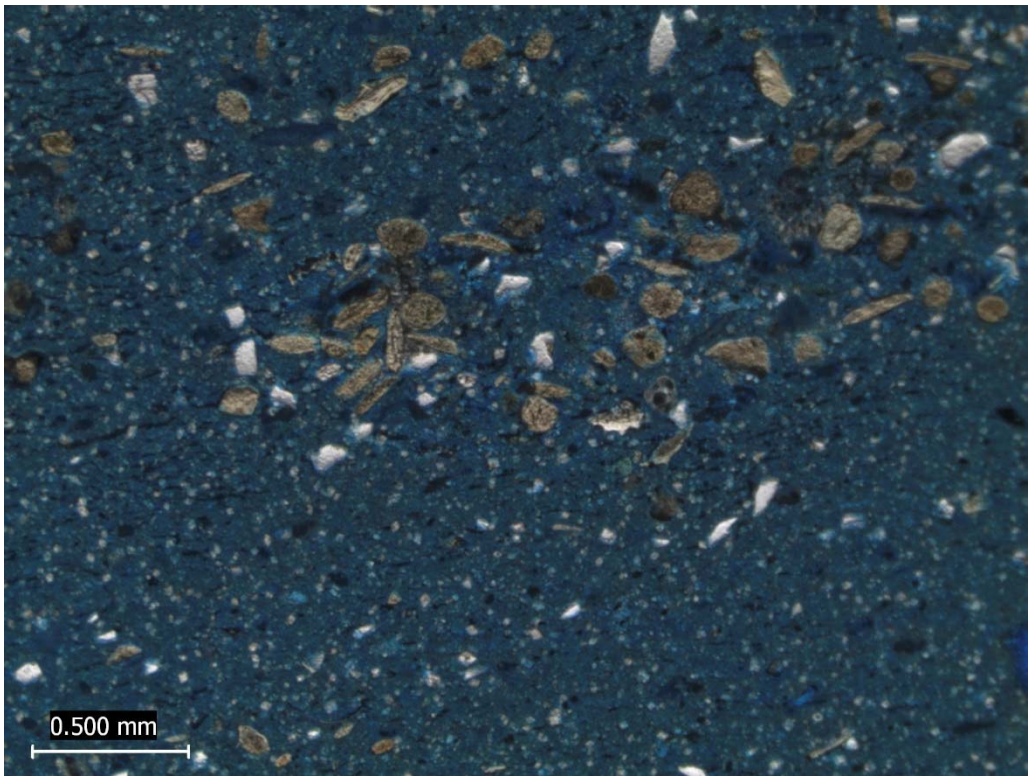
W-18812 458-458.5 ft. Sandy, phosphatic, dolomitic wackestone. Coarse and fine-grained laminae separated by thin organic laminae (arrows). Phosphate (P) and quartz (Q) grains are part of the coarse fraction along with green algae (GA). Pyrite (Py). Transmitted light.



W-18812 458-458.5 ft. Sandy, phosphatic, dolomitic wackestone. Same view as above in reflected light. Note: black laminae from above is now white (arrows).



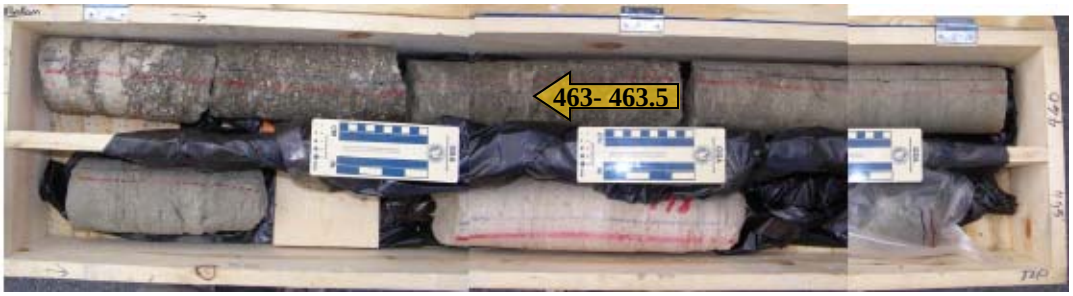
W-18812 458-458.5 ft. Sandy, phosphatic (P), dolomitic wackestone. Silt-sized dolomite rhombs (d), quartz (Q) and pyrite (Py) in a micrite matrix. Transmitted light.



W-18812 458-458.5 ft. Sandy, phosphatic, dolomitic wackestone. Note: coarse grained area in fine grained matrix indicates bioturbation. Transmitted light.

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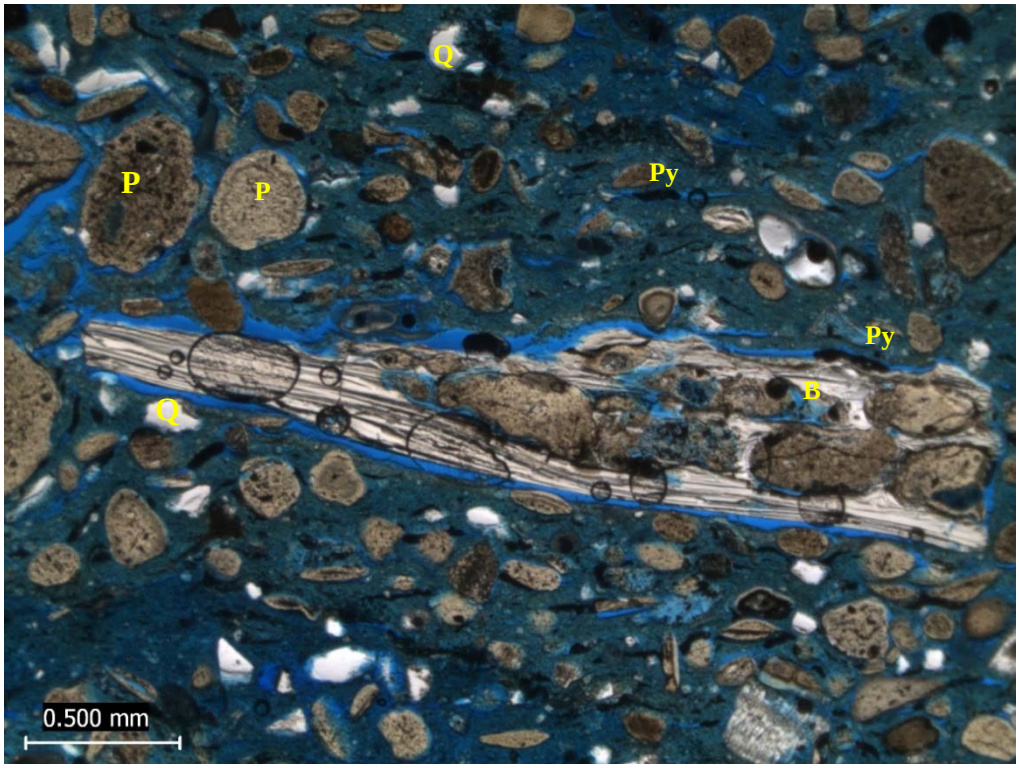
W-18812 (HIF-42)

Depth:	463-463.5 ft BLS
Stratigraphic Unit:	Hawthorn Group
Litho Facies:	Sandy, dolomitic, phosphatic wackestone
Dominant Pore Type:	Interparticle and microporosity
Porosity Amount:	~40 percent
Depositional Environment:	Normal marine to brackish
Whole Rock Analysis:	Major Elements (%): (SiO_2=19.70, MgO=6.11, CaO=34.04, P_2O_5=15.18)
	Trace Constituents (ppm): (As=8, Ba=81, Cd=9.6, Cr=102, Mo=6, Ni=18, Sb=0.8, Sr=2920, U=37.6, V=40, SO_4=1.8)

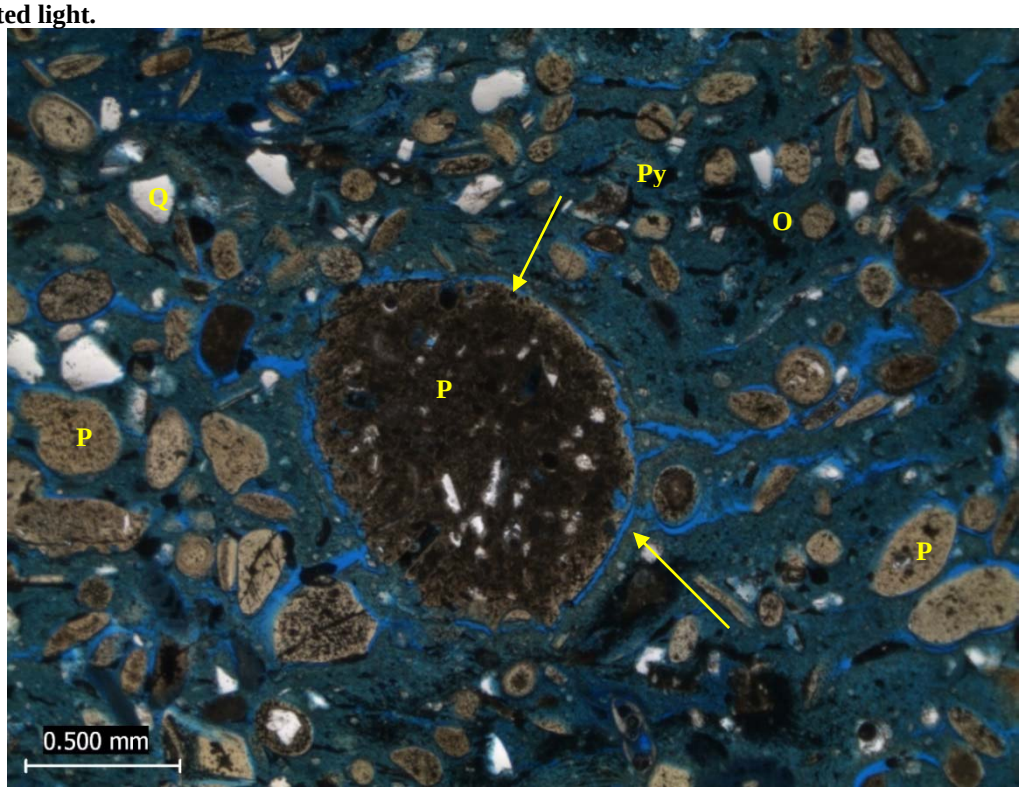
Description:

The section consists of phosphate, phosphatic clasts, quartz, fine-silt-size dolomite rhombs, organics and pyrite. Allochems include peloids, echinoids, foraminifera, bryozoa and mollusks (oysters). There is minimal cementation. Black argillaceous layers appear throughout the section possibly indicating bioturbation or a possible redox front between these layers. Sparse dolomite rhombs are scattered in the muddy micrite matrix. This sample has one of the highest uranium values observed.

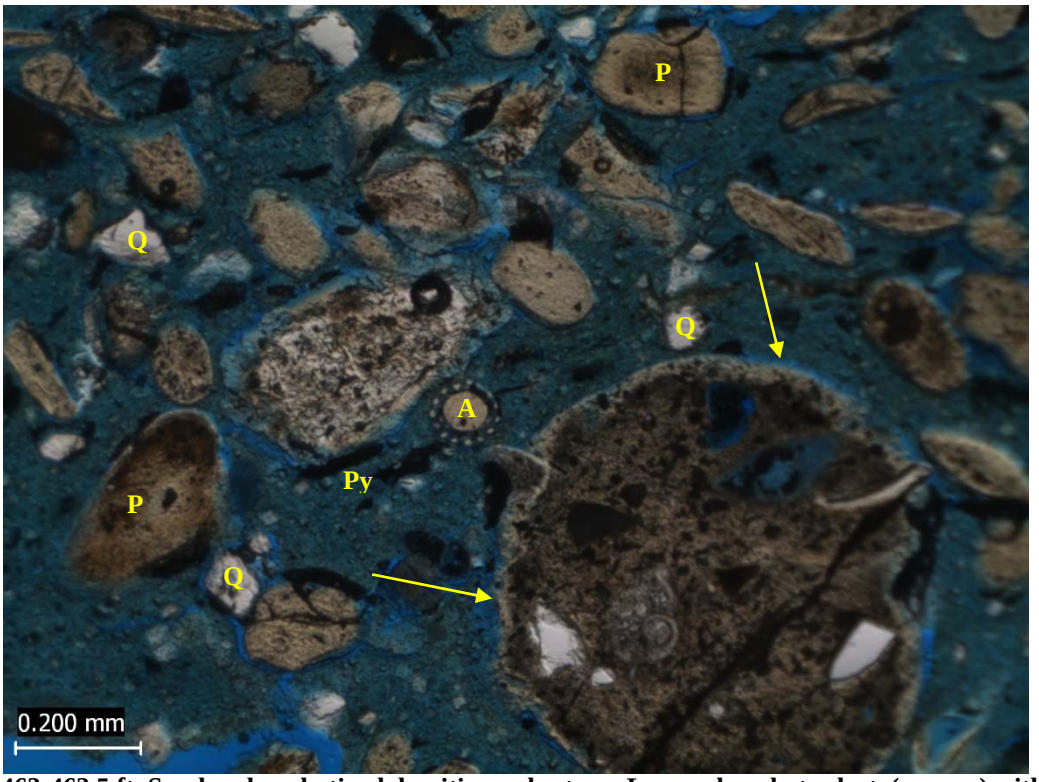
Depositional environment is likely subtidal normal marine possibly slightly brackish as indicated by the bryozoa and oysters, with a detrital sediment source nearby (Scholle and Ulmer-Scholle, 2003; Flügel, 2004). Quartz grains are angular.



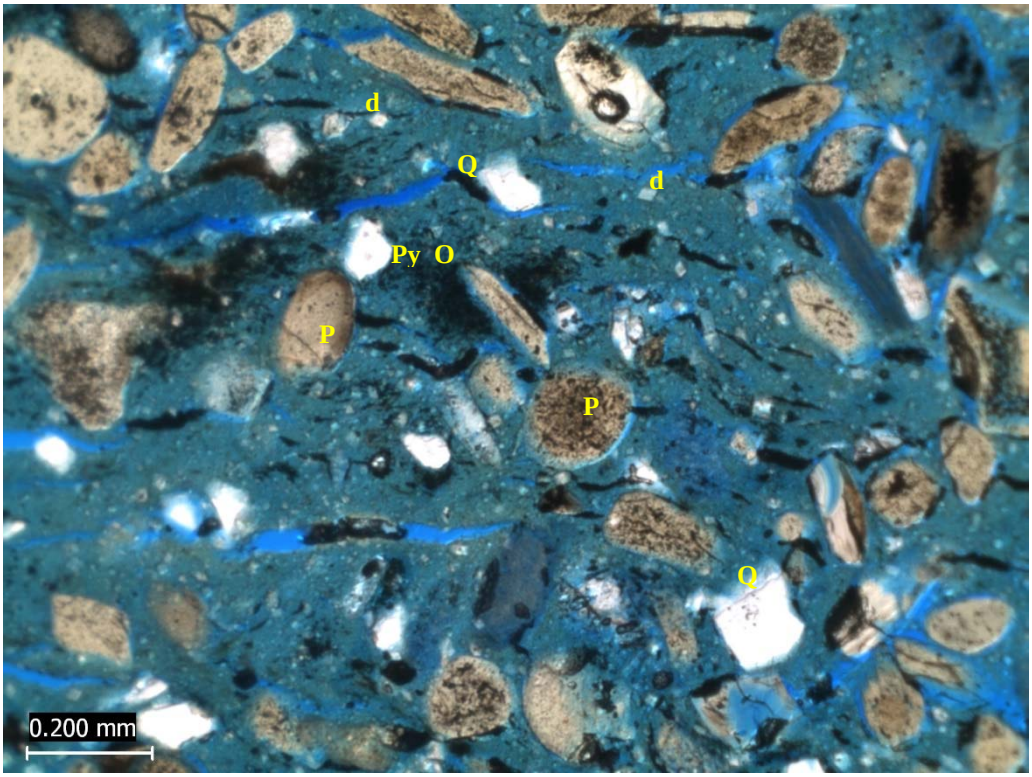
W-18812 463-463.5 ft. Sandy, phosphatic, dolomitic wackestone. Bryozoa (B) with zooecia filled with micrite and phosphate. Phosphate (P), quartz (Q) and pyrite (Py) and silt-sized dolomite in fine-grained matrix. Transmitted light.



W-18812 463-463.5 ft. Sandy, phosphatic, dolomitic wackestone. Phosphate clast (arrows) with quartz surrounded by more quartz (Q) and phosphate (P) grains. Pyrite (Py) and or organics (O) are also present. Transmitted light.



W-18812 463-463.5 ft. Sandy, phosphatic, dolomitic wackestone. Large phosphate clast (arrows) with quartz and foraminifer in a micrite matrix with pyrite (Py), algae (A), quartz (Q), phosphate (P) and silt-sized dolomite grains. Transmitted light.



W-18812 463-463.5 ft. Sandy, phosphatic, dolomitic wackestone. Larger phosphate (P) and quartz (Q) grains in muddy matrix with silt-sized dolomite (d) and pyrite (Py) and or organics (O). Transmitted light.





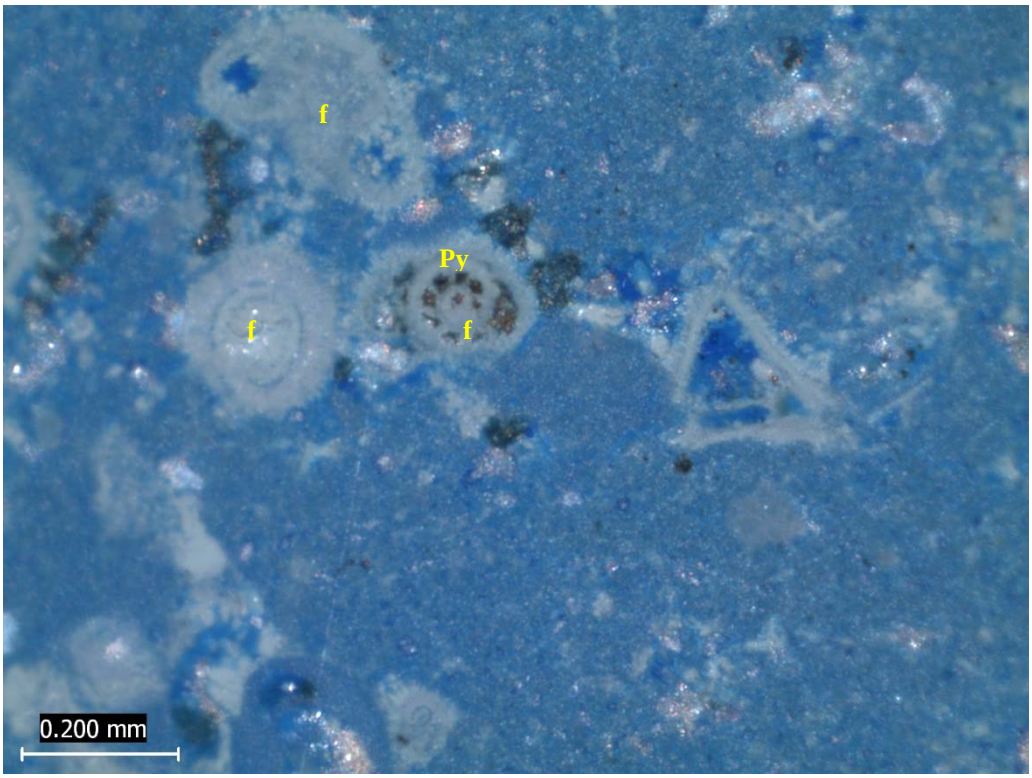
W-18812 (HIF-42)

Depth:	799-799.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Muddy foraminiferal wackestone
Dominant Pore Type:	Microporosity and moldic with minor intraparticle
Porosity Amount:	~25 percent
Depositional Environment:	Subtidal shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.51, MgO=1.06, CaO=54.91) Trace Constituents (ppm): (As=2, Ba=7, Cd=BDL, Cr=5.5, Mo=12, Ni=4, Sb=1.0, Sr=622, U=3.34, V=20, SO_4=0.3)

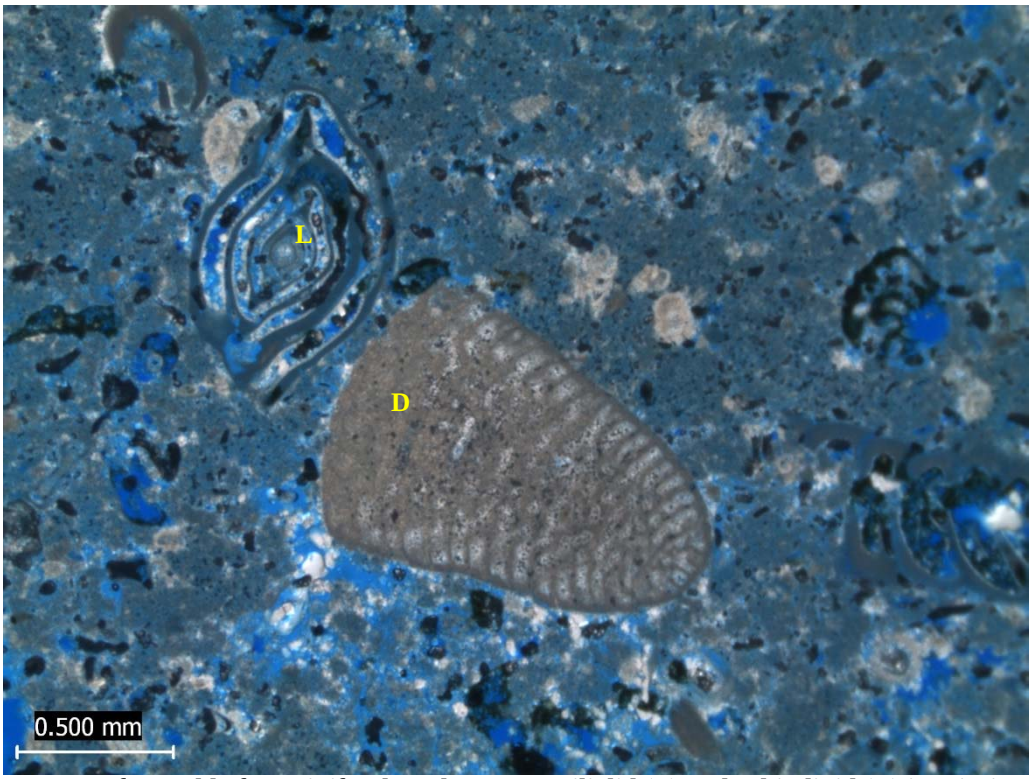
Description:

The section consists of sparse silt-sized dolomite rhombs, traces of pyrite and organics in a micrite matrix. Allochems include small and large foraminifera (orbitolinid), echinoids, and miliolids. There is some cementation surrounding foraminifera and some micritization. The section is mottled and appears bioturbated as evident by areas of varying grain sizes and varying mud content. Pyrite is present in some of the foraminifera. Scanning electron microscope images are in Appendix 3.

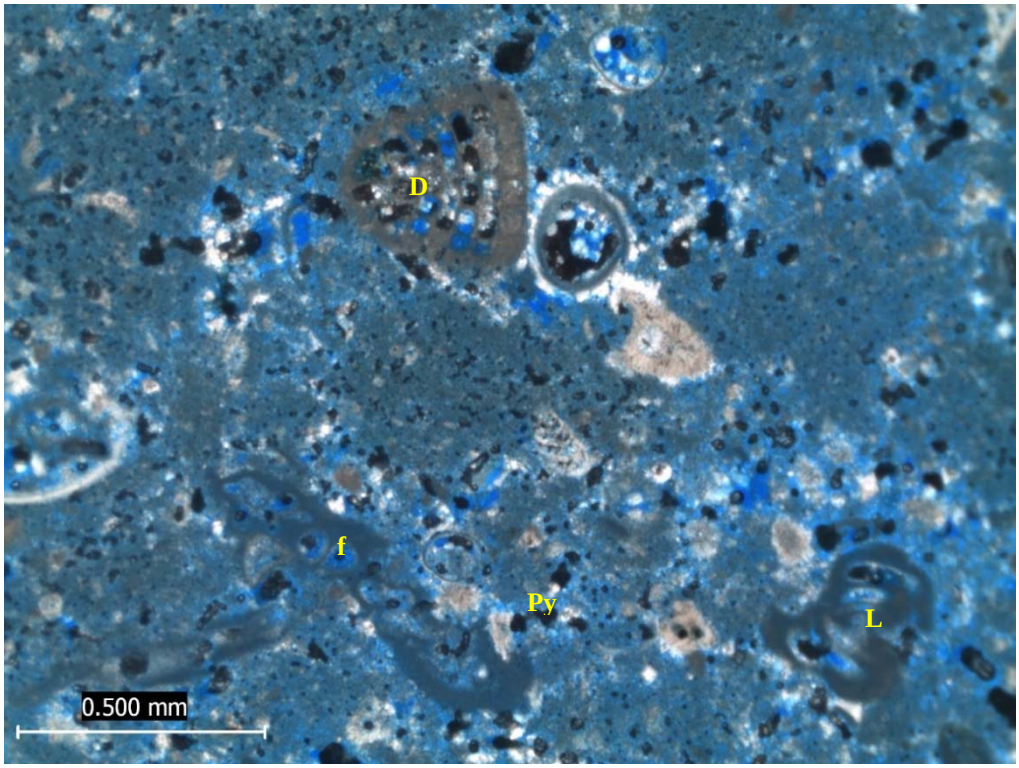
Depositional environment is likely subtidal shallow marine low energy, possibly a reducing environment as indicated by the formation of pyrite (Flügel, 2004).



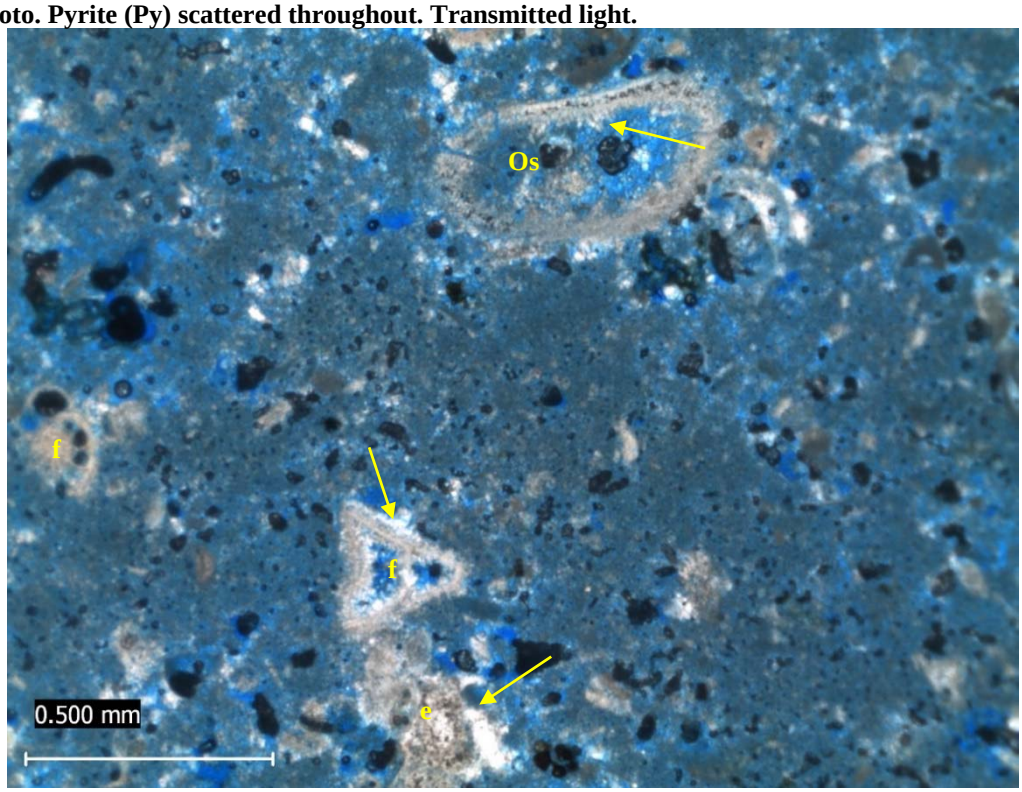
W-18812 799-799.5 ft. Muddy foraminiferal wackestone. Pyrite (Py) present in intraparticle pore space of the foraminifer (f). Reflected light.



W-18812 799-799.5 ft. Muddy foraminiferal wackestone. Miliolid (L) and orbitolinid (D) in micrite matrix with organics scattered throughout. Transmitted light.



W-18812 799-799.5 ft. Muddy foraminiferal wackestone. Matrix is mottled indicating bioturbation. Also present are foraminifera including orbitolinids (D). Micritized foraminifera (f) and miliolids (L) in bottom half of photo. Pyrite (Py) scattered throughout. Transmitted light.



W-18812 799-799.5 ft. Muddy foraminiferal wackestone. Ostracod (Os), foraminifera (f) and echinoid (e) in a muddy matrix. Sparry cement is present on foraminifera. Syntaxial cement is on echinoid fragment (cements indicated by arrows). Transmitted light





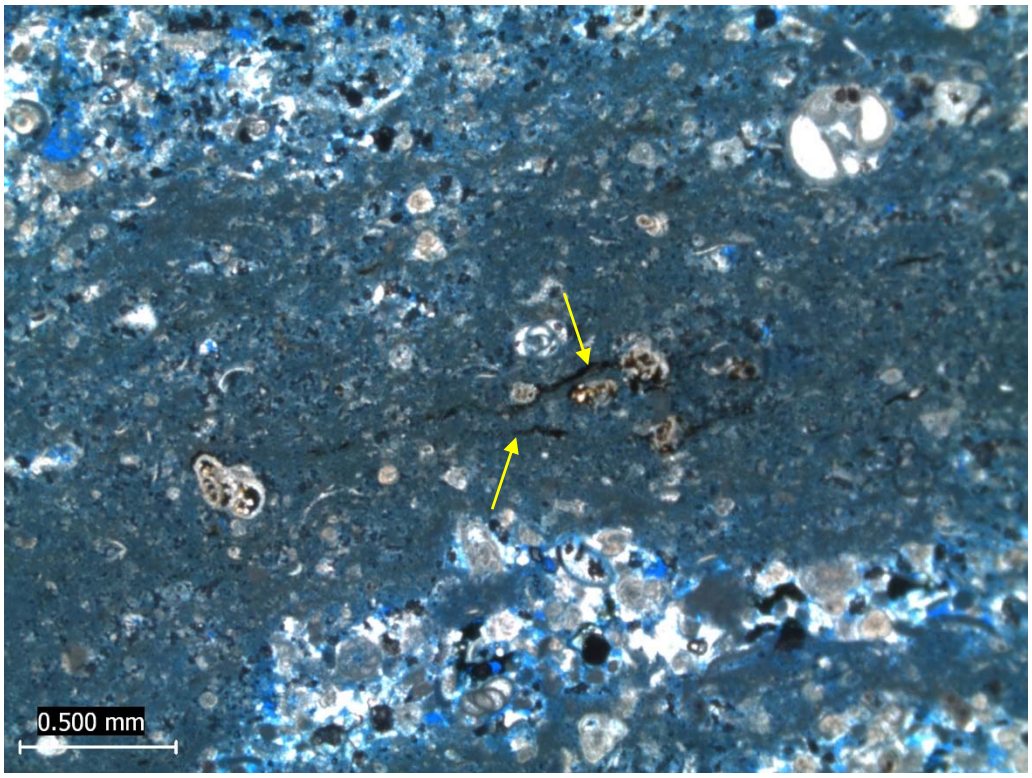
W-18812 (HIF-42)

Depth	803-803.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Foraminiferal packstone/wackestone
Dominant Pore Type	Interparticle, microporosity with minor moldic
Porosity Amount:	~30 percent
Depositional Environment	Subtidal shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.41, MgO=0.89, CaO=55.63) Trace Constituents (ppm): (As=2, Ba=6, Cd=BDL, Cr=5.3, Mo=9, Ni=2, Sb=0.5, Sr=614, U=3.04, V=13, SO_4=BDL)

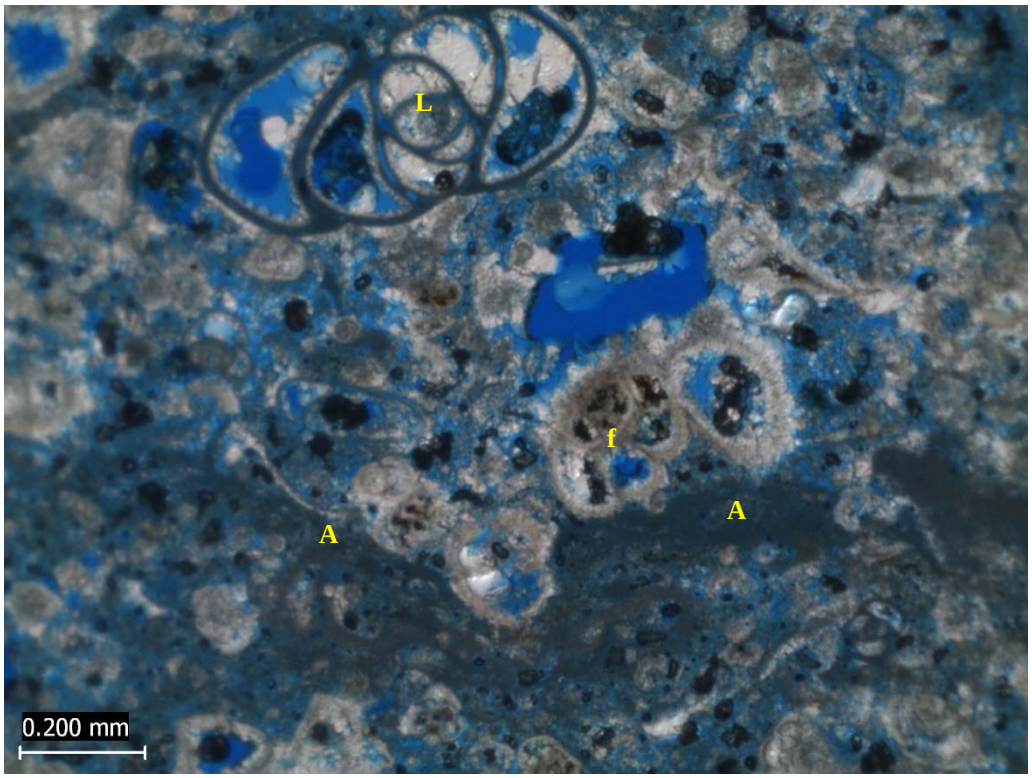
Description:

The section consists of sparse silt-sized dolomite, pyrite and organics in a laminated limestone. Allochems consist of foraminifera, ostracods, peloids, abundant miliolids and algae. Packstone is moderately cemented while the finer-grained muddy laminations show very little cementation. Overall grain size varies with a coarser-grained fraction in the packstone and finer-grained muddy laminations. Section is mottled due to bioturbation. Mud clasts are scattered throughout. Fenestral pores increase the porosity in the packstone areas. Pyrite is found in some intraparticle pore spaces of the foraminifera. Scanning electron microscope images of pyrite are in Appendix 3.

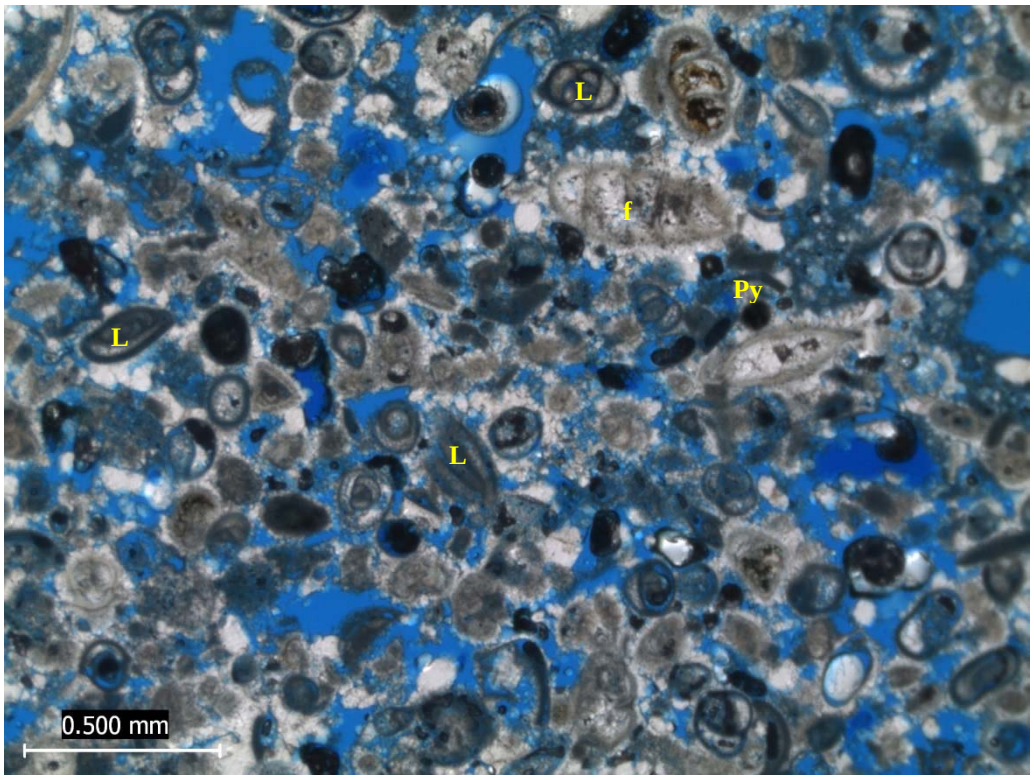
Depositional environment is likely subtidal shallow marine consisting of various foraminifera, algae and peloids. (Flügel, 2004).



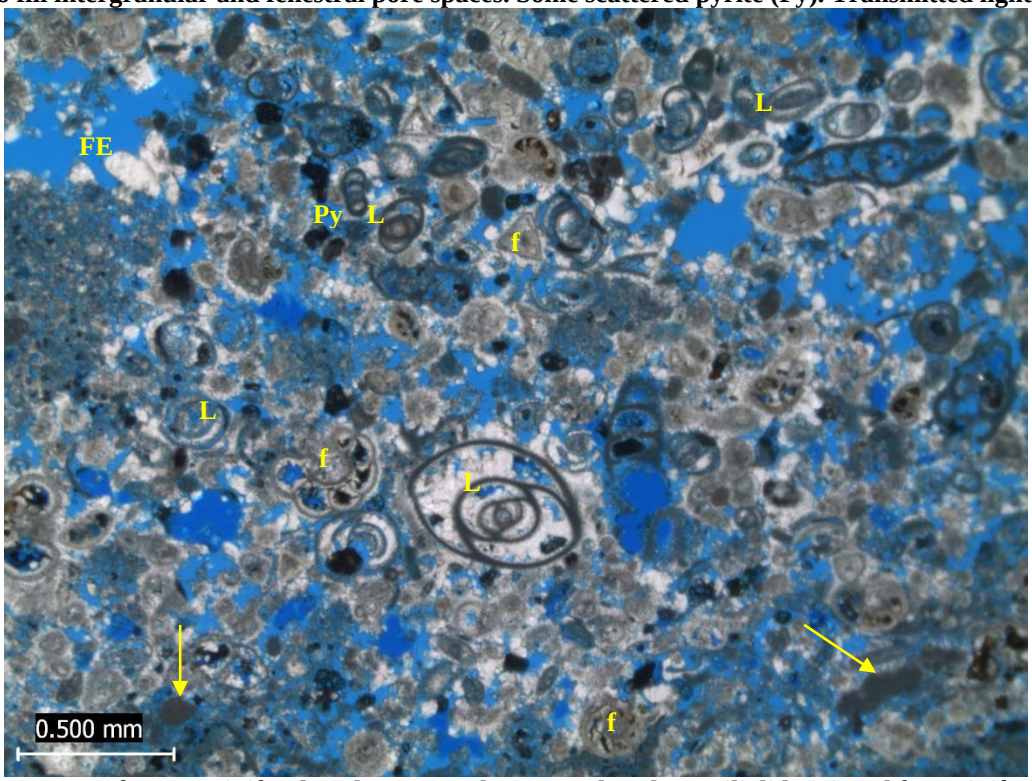
W-18812 803-803.5 ft. Foraminiferal packstone/wackestone. Muddy fine-grained lamina with wispy organics (arrows). Transmitted light.



W-18812 803-803.5 ft. Foraminiferal packstone/wackestone. Foraminifera (f) and miliolids (L) are moderately cemented. Algal layer (A) is finer-grained with minimal cementation. Transmitted light.



W-18812 803-803.5 ft. Foraminiferal packstone/wackestone. Foraminifera (f) and miliolids (L) with cement starting to fill intergranular and fenestral pore spaces. Some scattered pyrite (Py). Transmitted light.



W-18812 803-803.5 ft. Foraminiferal packstone/wackestone. Abundant miliolids (L) and foraminifera (f) showing moderate intraparticle cementation, some mud clasts (arrows) and scattered pyrite (Py). Fenestral pores (FE) visible in top portion of slide. Transmitted light.





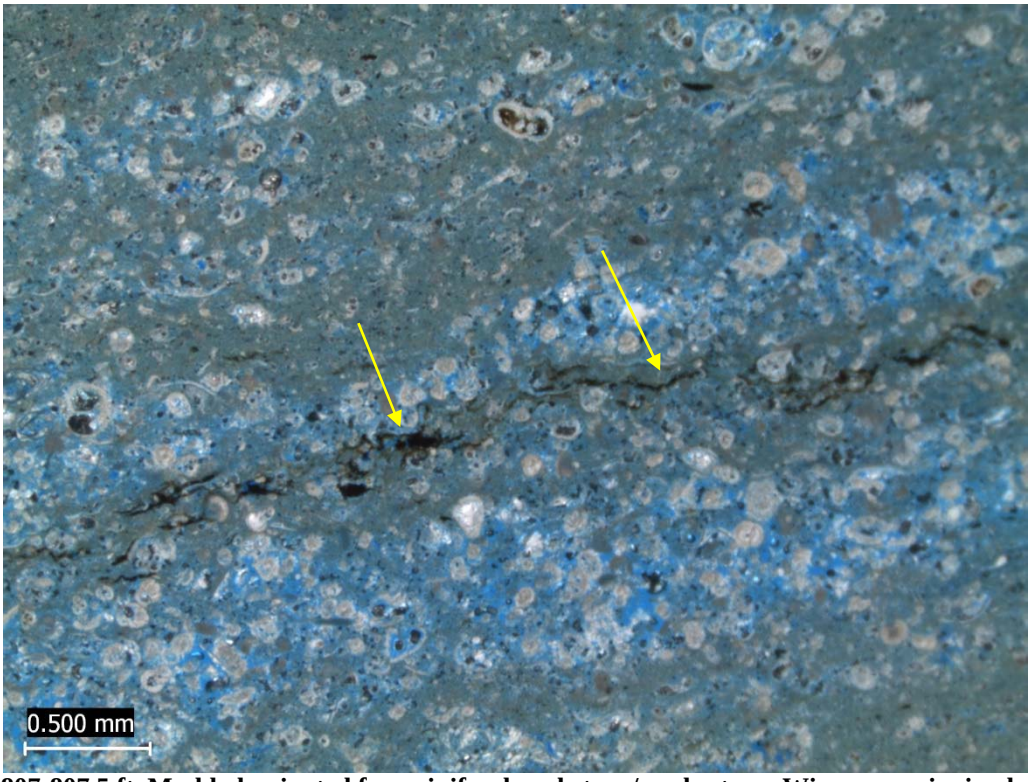
W-18812 (HIF-42)

Depth:	807-807.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Muddy laminated, foraminiferal wackestone/packstone
Dominant Pore Type:	Interparticle with minor moldic and microporosity
Porosity Amount:	~25 percent
Depositional Environment:	Shallow, subtidal, stressed at times
Whole Rock Analysis:	Major Elements (%): (SiO_2=1.88, MgO=1.15, CaO=53.00) Trace Constituents (ppm): (As=6, Ba=11, Cd=BDL, Cr=10.4, Mo=23, Ni=6, Sb=0.8, Sr=971, U=2.89, V=31, SO_4=0.4)

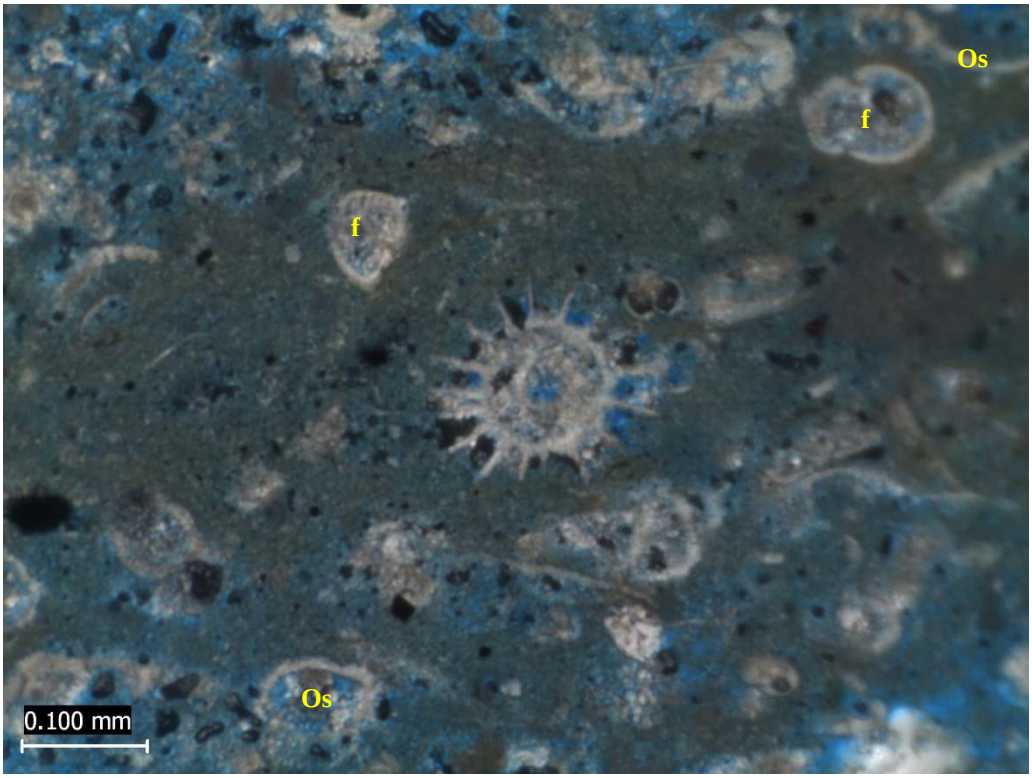
Description:

The section consists of limestone with a trace of pyrite and organics. Allochems include foraminifera, miliolids, micritized peloids, algal layers and abundant ostracods. Section is moderately sorted within laminae. Porosity varies from 40 percent to about 10 percent. Cementation is moderate, with cement more common in coarser-grained, higher porosity laminae. Wispy organics are common in the finer-grained laminae and may also include some pyrite. Algal layers are common in the fine-grained laminae as are ostracods. Scanning electron microscope images are in Appendix 3.

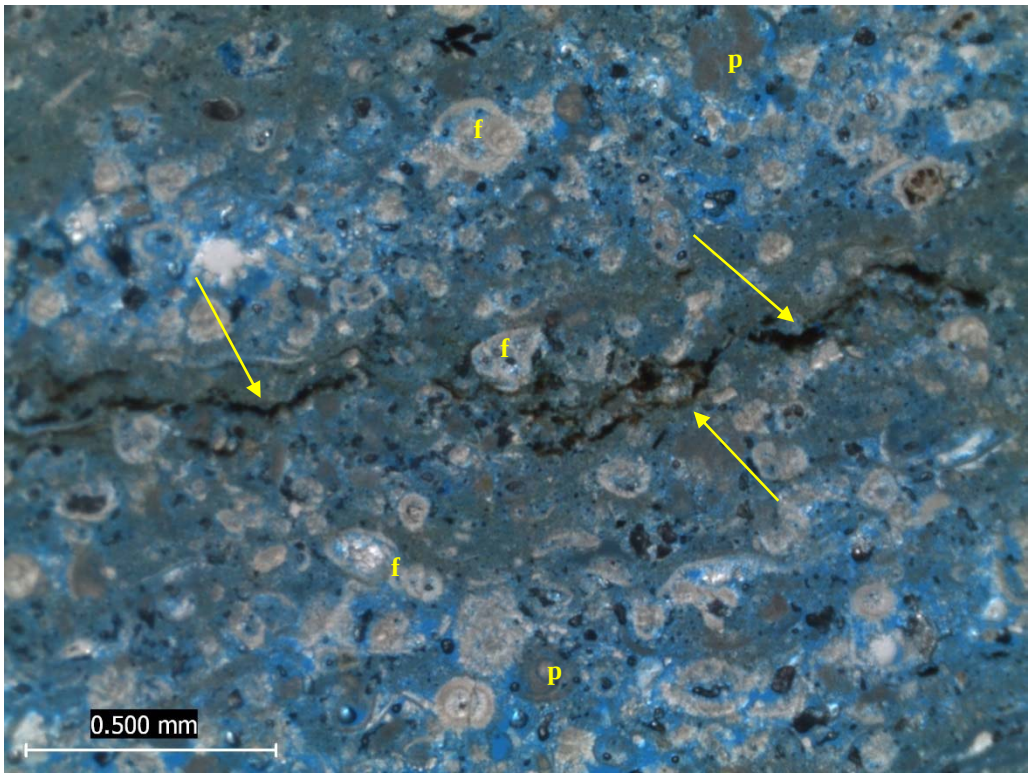
Depositional environment is likely subtidal shallow water possibly brackish and stressed at times as indicated by the abundant ostracods (Scholle and Ulmer-Scholle, 2003).



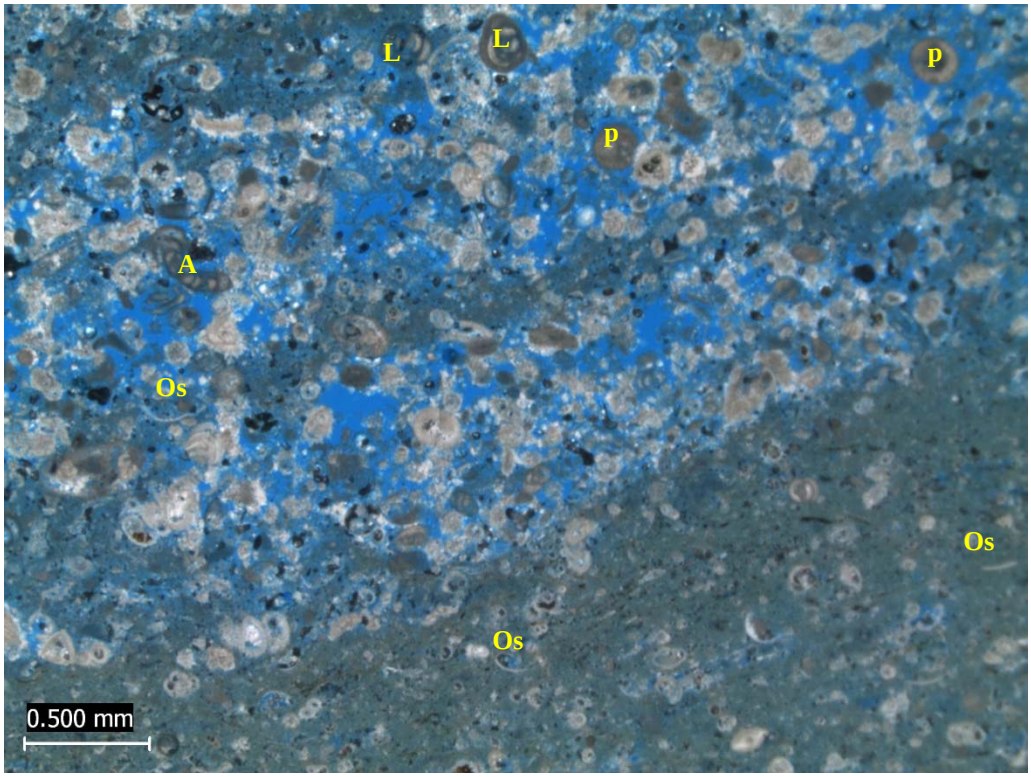
W-18812 807-807.5 ft. Muddy laminated foraminiferal packstone/wackestone. Wispy organics in algal layer (arrow). Transmitted light.



W-18812 807-807.5 ft. Muddy laminated foraminiferal packstone/wackestone. Foraminifera (f), ostracods (Os) in muddy matrix. Transmitted light.

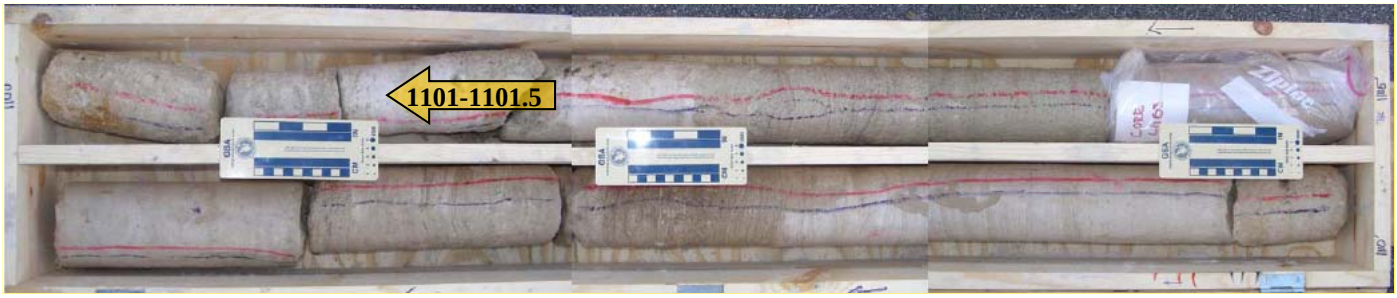


W-18812 807-807.5 ft. Muddy laminated foraminiferal packstone/wackestone. Micritized peloids (p), foraminifera (f), and algal layers with organics (arrows). Transmitted light.



W-18812 807-807.5 ft. Muddy laminated foraminiferal packstone/wackestone. Muddy laminae with coarser, low mud laminae. Note miliolids (L), red algae (A) and peloids (p) in coarser laminae and ostracods (Os) in finer grained laminae. Transmitted light.





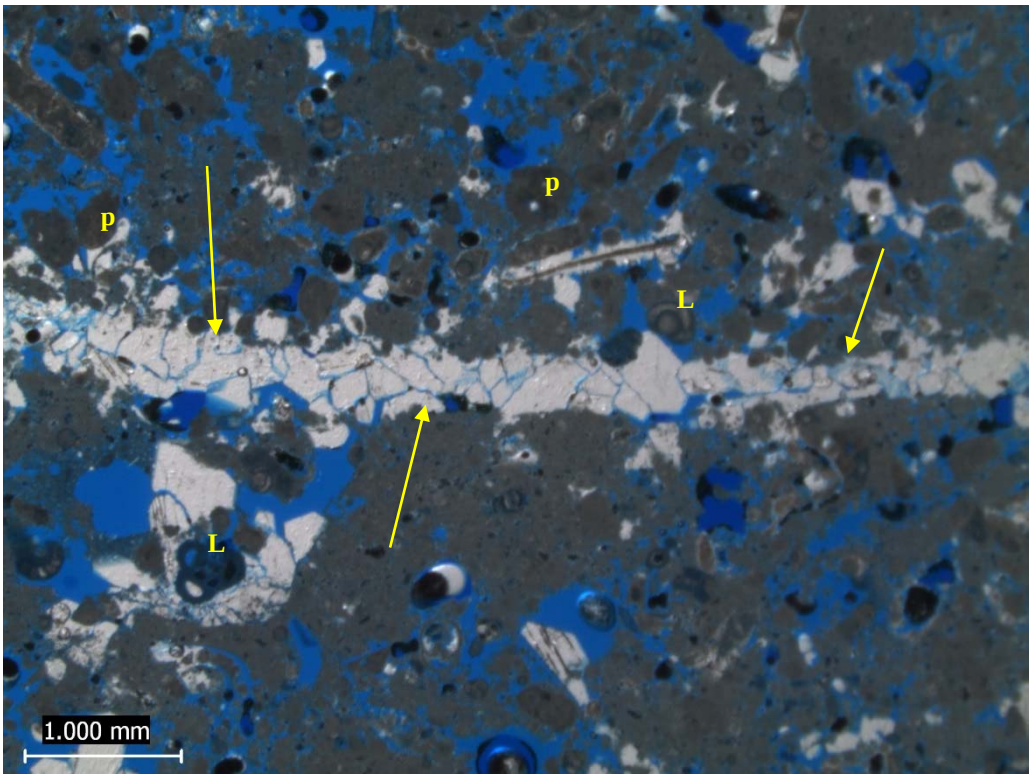
W-18812 (HIF-42)

Depth:	1101-1101.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Muddy foraminiferal packstone/wackestone
Dominant Pore Type:	Moldic and interparticle
Porosity Amount:	~40 percent
Depositional Environment:	Subtidal to marine sabkha
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.14, MgO=0.53, CaO=49.04) Trace Constituents (ppm): (As=BDL, Ba=432, Cd= BDL, Cr=3, Mo=3, Ni=BDL, Sb=0.4, Sr=58440, U=3.57, V=17, SO_4=5.4)

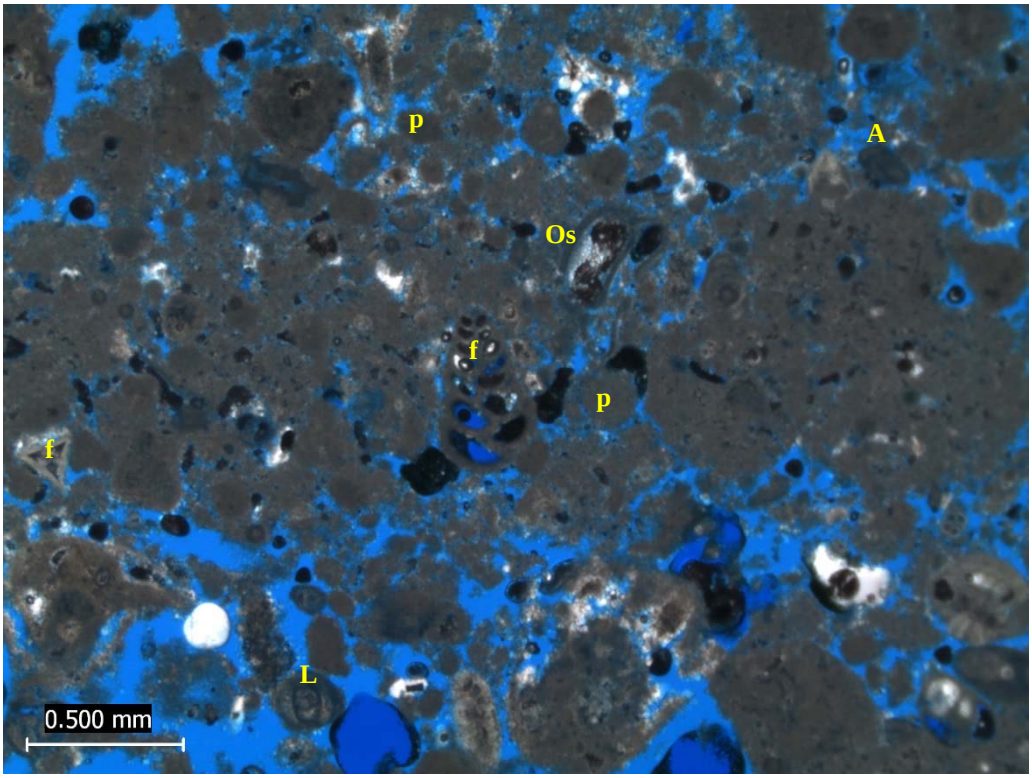
Description:

The section consists of evaporites and traces of pyrite and organics in a micrite matrix. Allochems consist of foraminifera (including orbitolinids and miliolids), mollusk molds, peloids, intraclast, and charophyte (green algae). Charophytes are found in fresh to brackish waters and are most common in lacustrine settings but are readily transported into marine waters by rivers and streams (Scholle and Ulmer-Scholle, 2003). Section is heavily micritized with minimal cementation which is more common around foraminifera. Section is poorly sorted and bioturbated. There are micrite inclusions within the evaporites. Evaporites appear as interparticle cement and filling mollusk molds. Due to the high barium (432 ppm) and strontium (58,440 ppm) in the lithogeochemical analysis, evaporites are believed to be primarily barite and celestite and possibly some gypsum. Birefringence is too low for anhydrite. Scanning electron microscope images are in Appendix 3. Trace mineralogical analyses from the SEM confirms the presence of barite and celestite as well as pyrite.

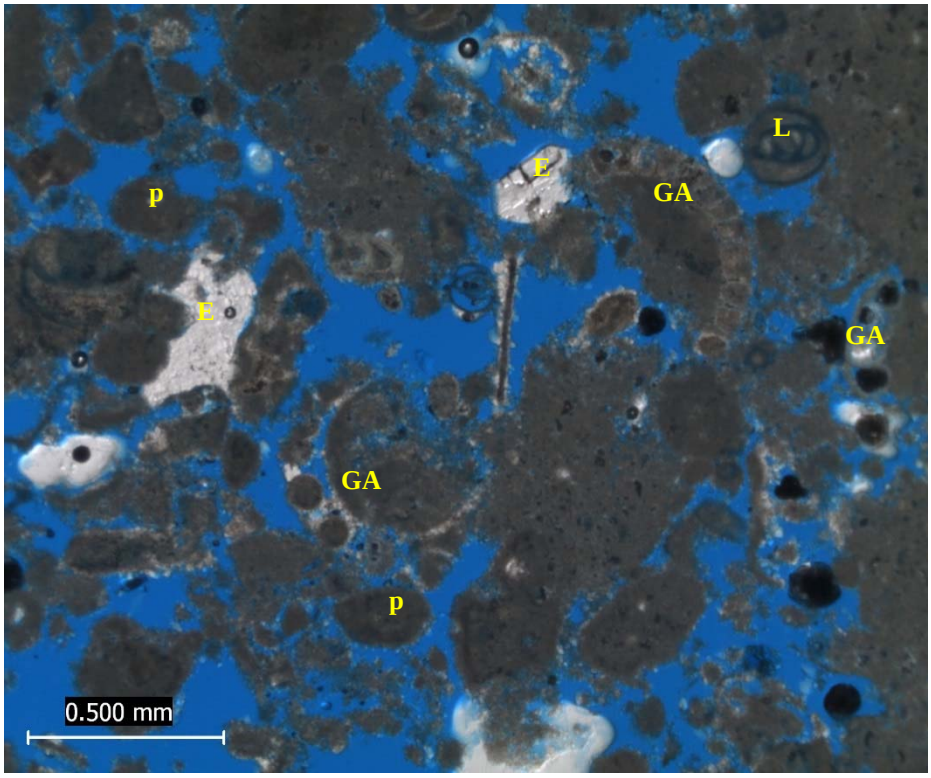
Depositional environment is likely subtidal to marine sabkha (Thayer and Miller, 1984).



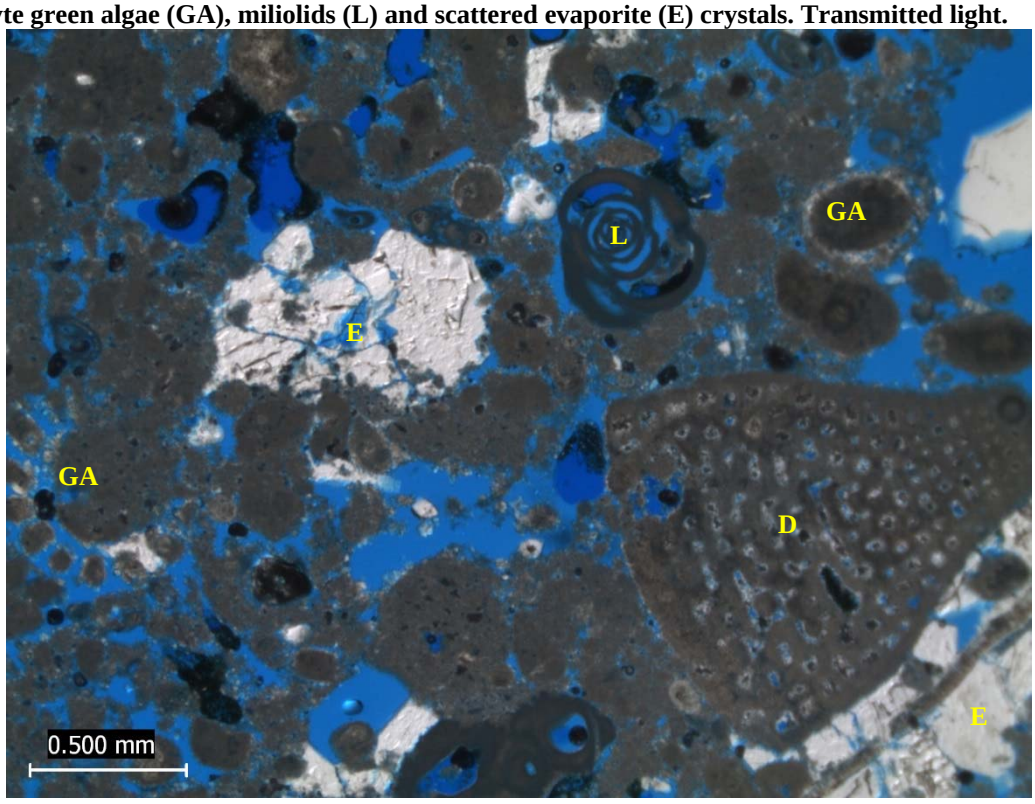
W-18812 1101-1101.5 ft. Muddy, micritized, foraminiferal packstone/wackestone. Evaporites filling mollusk mold (arrows). Peloids (p) and miliolids (L). Transmitted light.



W-18812 1101-1101.5 ft. Muddy, micritized, foraminiferal packstone/wackestone. Foraminifera (f), ostracods (Os), miliolids (L), peloids (p) and red algae (A). Transmitted light.

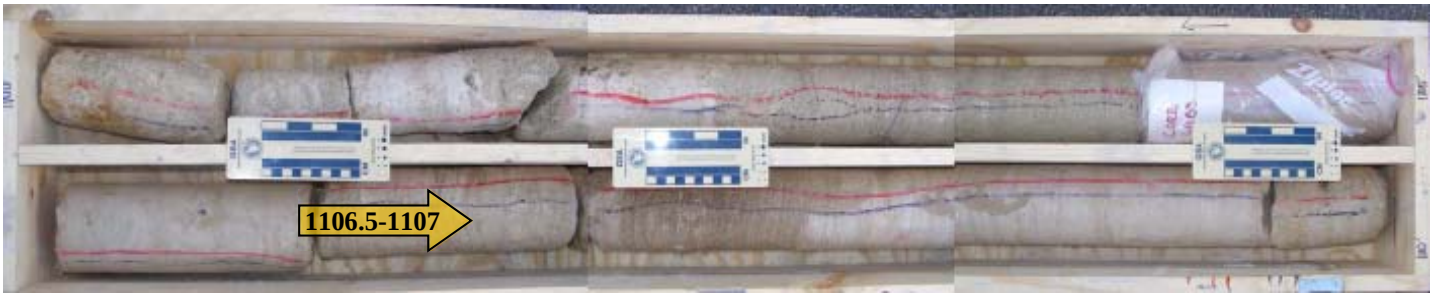


W-18812 1101-1101.5 ft. Muddy, micritized, foraminiferal packstone/wackestone. Micritized peloids (p), charophyte green algae (GA), miliolids (L) and scattered evaporite (E) crystals. Transmitted light.



W-18812 1101-1101.5 ft. Muddy, micritized, foraminiferal packstone/wackestone. Evaporites with inclusions (E), orbitolinid (D), miliolids (L) and charophyte green algae (GA). Transmitted light





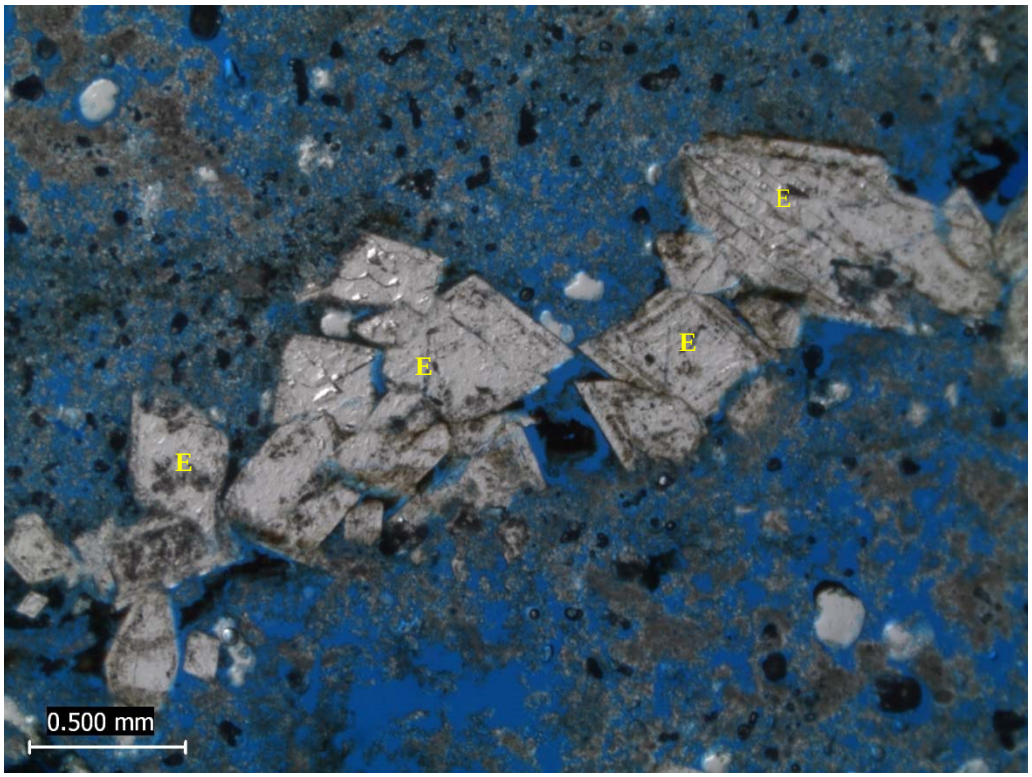
W-18812 (HIF-42)

Depth:	1106.5-1107 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Mudstone with evaporites
Dominant Pore Type:	Fracture and microporosity
Porosity Amount:	~50 percent
Depositional Environment:	Subtidal sabkha
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.22, MgO=0.92, CaO=49.21) Trace Constituents (ppm): (As=BDL, Ba=221, Cd=BDL, Cr=3.1, Mo=15, Ni=5, Sb=1.1, Sr=50630, U=4.34, V=32, SO_4=5.1)

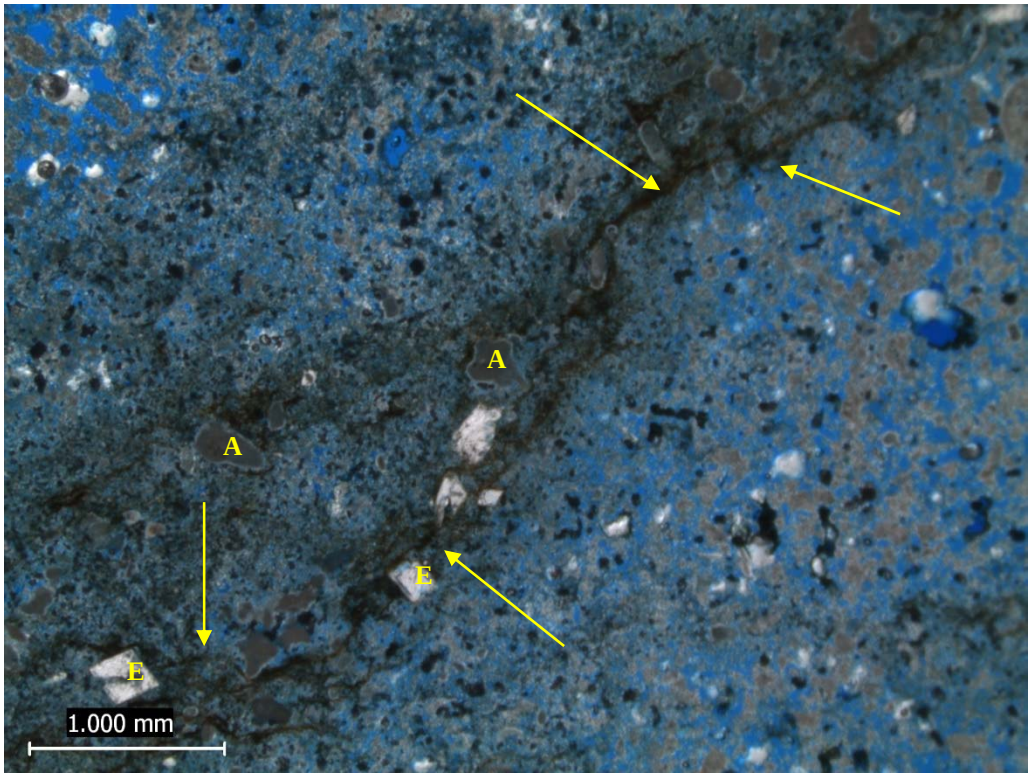
Description:

The section consists of evaporites, traces of pyrite and organics in micrite. Allochems include peloids, ostracods, miliolids, algae and intraclasts. Section is fractured with zoned tabular and rhomb-shaped evaporite minerals filling the fractures. Further investigation using the SEM for trace mineralogical analyses confirms the presence of barite and celestite as well as pyrite. Scanning electron microscope images are in Appendix 3. Wispy organics and algal laminae are associated with the fracture zone. Matrix appears to be very fine silt-sized euhedral crystals. Some compaction is evident as shown by foraminifera fragments and crystal fragments (Budd, 2002).

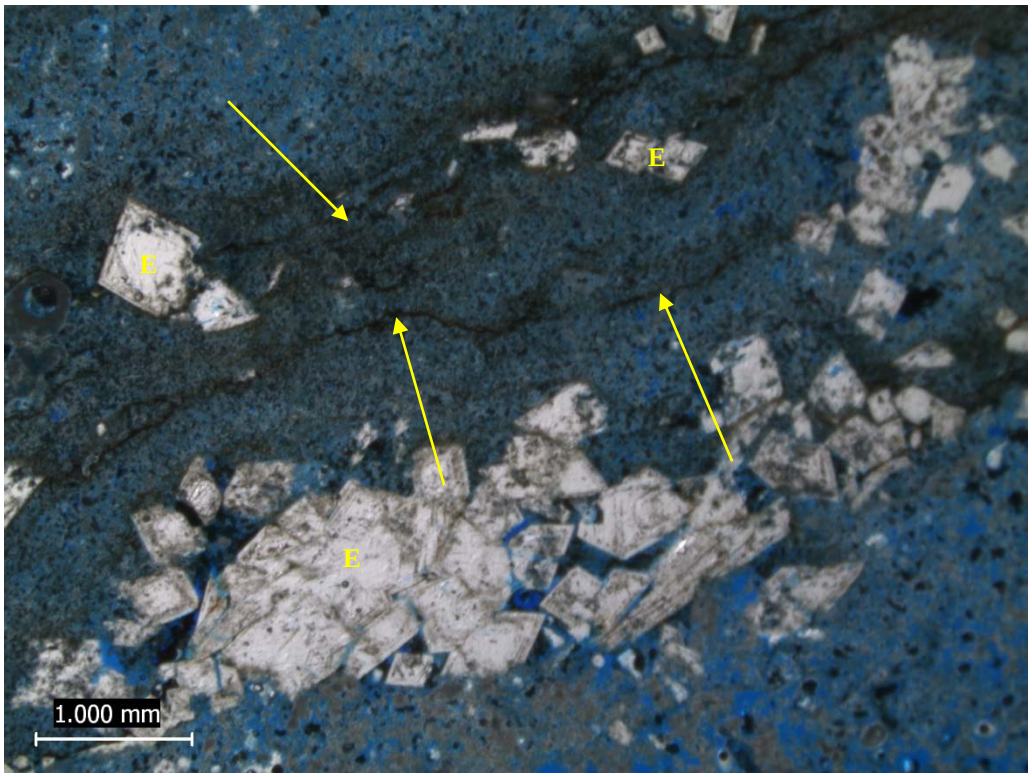
Depositional environment is likely a sabkha setting which allowed the formation of the evaporites while also experiencing intermittent flooding allowing the accumulation of mud at times (Thayer and Miller, 1984).



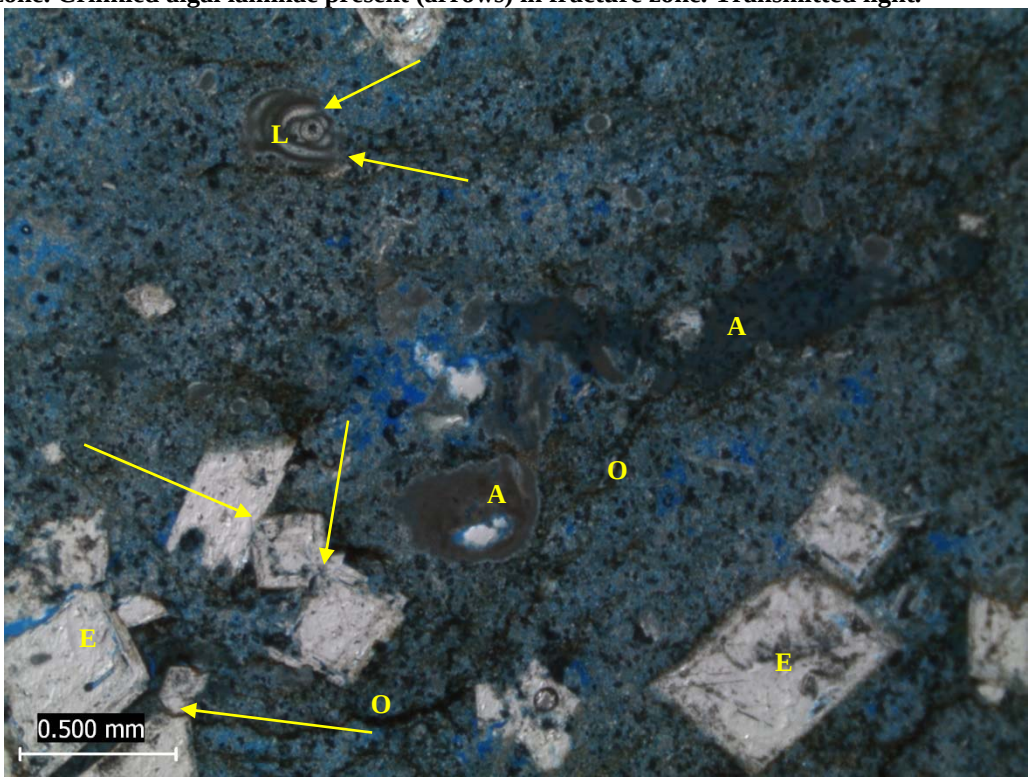
W-18812 1106.5-1107 ft. Mudstone with evaporites. Euhedral zoned crystals of evaporites with inclusions (E) in a very fine silt–sized matrix. Transmitted light.



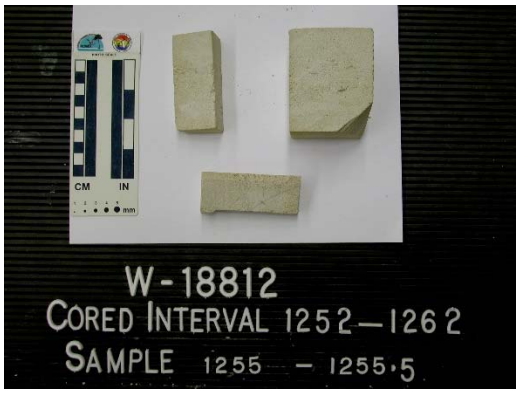
W-18812 1106.5-1107 ft. Mudstone with evaporites. Crinkled algal laminae (arrows) with sparse evaporite crystals (E) and intraclasts of algal material (A). Transmitted light.



W-18812 1106.5-1107 ft. Mudstone with evaporites. Zoned euhedral evaporites with inclusions (E) filling fracture zone. Crinkled algal laminae present (arrows) in fracture zone. Transmitted light.



W-18812 1106.5-1107 ft. Mudstone with evaporites. More zoned evaporite crystals (E) with algal material (A) and organics (O). Some compaction evident from miliolid fragment (L) and evaporite crystal fragments (arrows). Transmitted light.





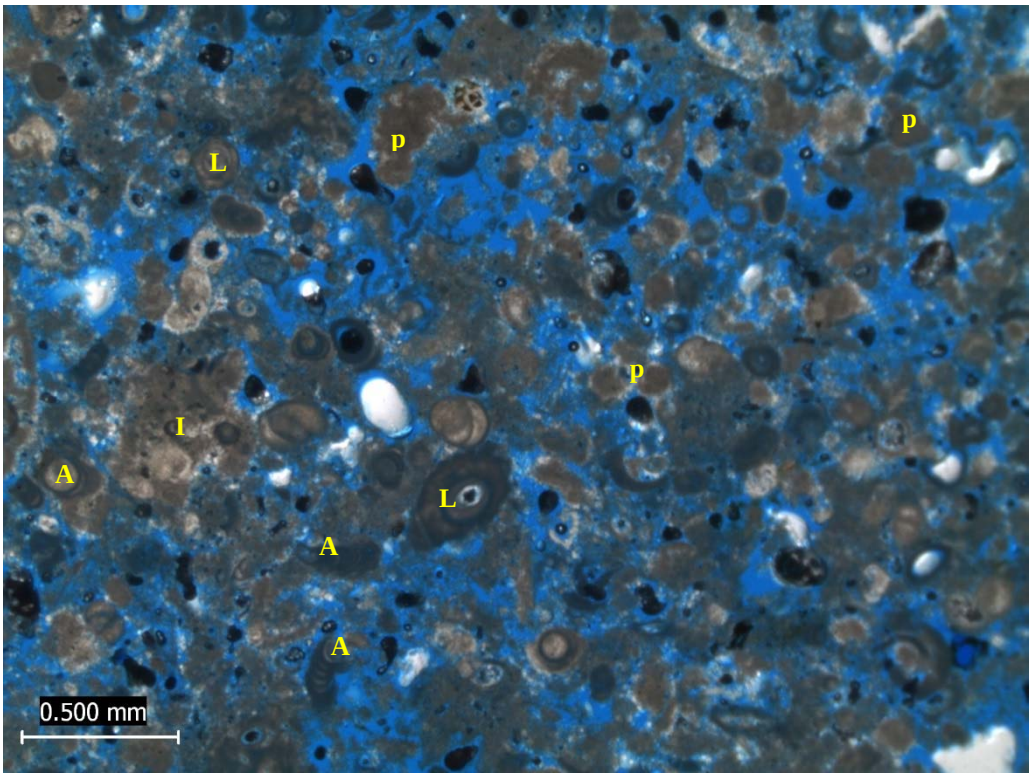
W-18812 (HIF-42)

Depth:	1255-1255.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Muddy peloidal packstone
Dominant Pore Type:	Moldic, interparticle and intraparticle
Porosity Amount:	~35 percent
Depositional Environment:	Subtidal, shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.09, MgO=0.69, CaO=56.04) Trace Constituents (ppm): (As=2, Ba=6, Cd=BDL, Cr=2.3, Mo=18, Ni=3, Sb=1.1, Sr=617, U=3.89, V=16, SO_4=0.3)

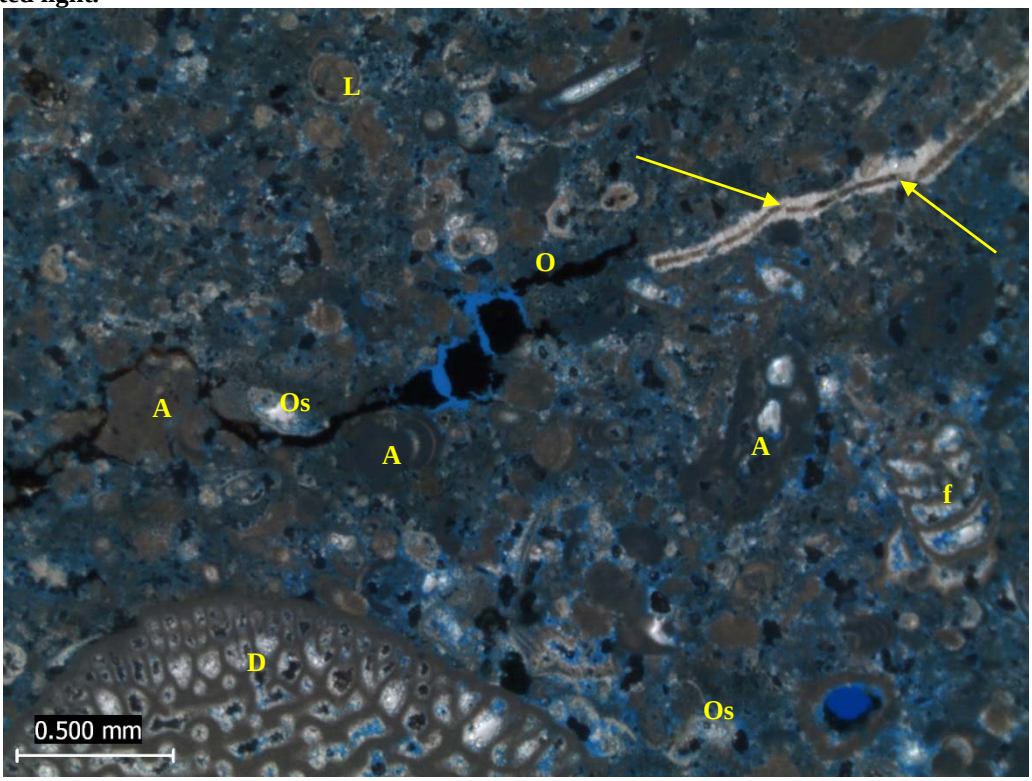
Description:

The section consists of scattered organics and possibly pyrite and or iron sulfide in limestone. Allochems include large and small foraminifera including orbitolinid, peloids, algae, miliolids, bryozoa and intraclasts. Section is highly micritized and poorly sorted with moderate cementation filling many of the intraparticle pore spaces. Compaction is evident from dented and broken foraminifera and skeletal debris. Section is mottled with varying grain densities indicating bioturbation. Algal laminae are present throughout this high-mud packstone with pyrite possibly in the organic laminae. Fractures are present and some are partially filled with micrite cement. Abundant red algae are present.

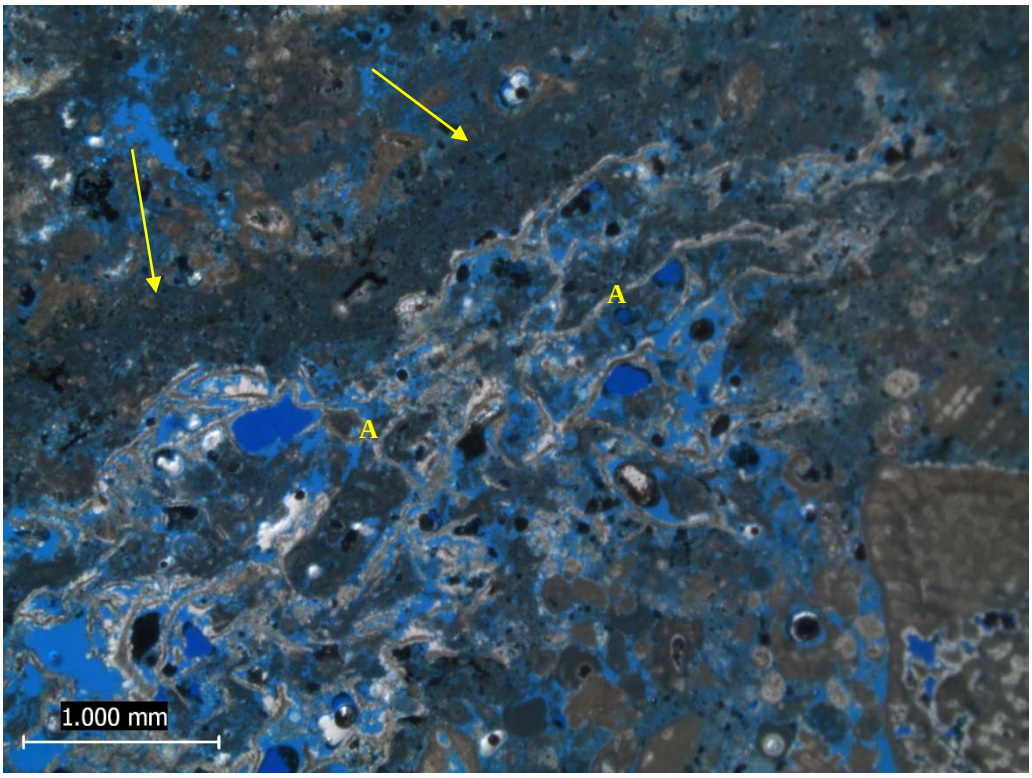
Depositional environment is likely subtidal, shallow marine possibly a shallow reef as indicated by the coralline red algae (Scholle and Ulmer-Scholle, 2003; Flügel, 2004).



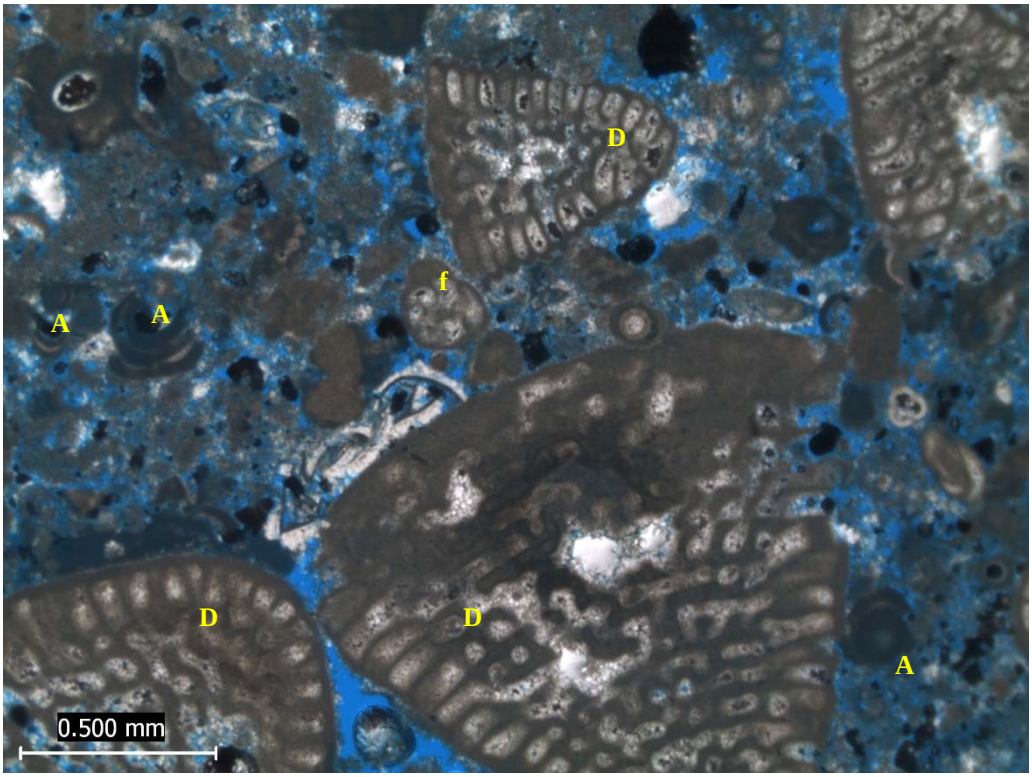
W-18812 1255-1255.5 ft. Muddy peloidal packstone. Peloids (p), intraclast (I), miliolids (L) and red algae (A). Transmitted light.



W-18812 1255-1255.5 ft. Muddy peloidal packstone. Fracture partially filled with organics (possibly sea grass?) with some cementation (arrows). Organic lamina (O) and red algae (A), miliolids (L), ostracods (Os), foraminifera (f) including orbitolinid (D). Transmitted light.



W-18812 1255-1255.5 ft. Muddy peloidal packstone. Phylloid algae? (A) common in shallow shelf settings. Darker area is also algal material (arrows). Transmitted light.



W-18812 1255-1255.5 ft. Muddy peloidal packstone. Foraminifera (f) including orbitolinids (D) with cement partially filling intraparticle pore space. Red algae (A) are also present. Transmitted light.





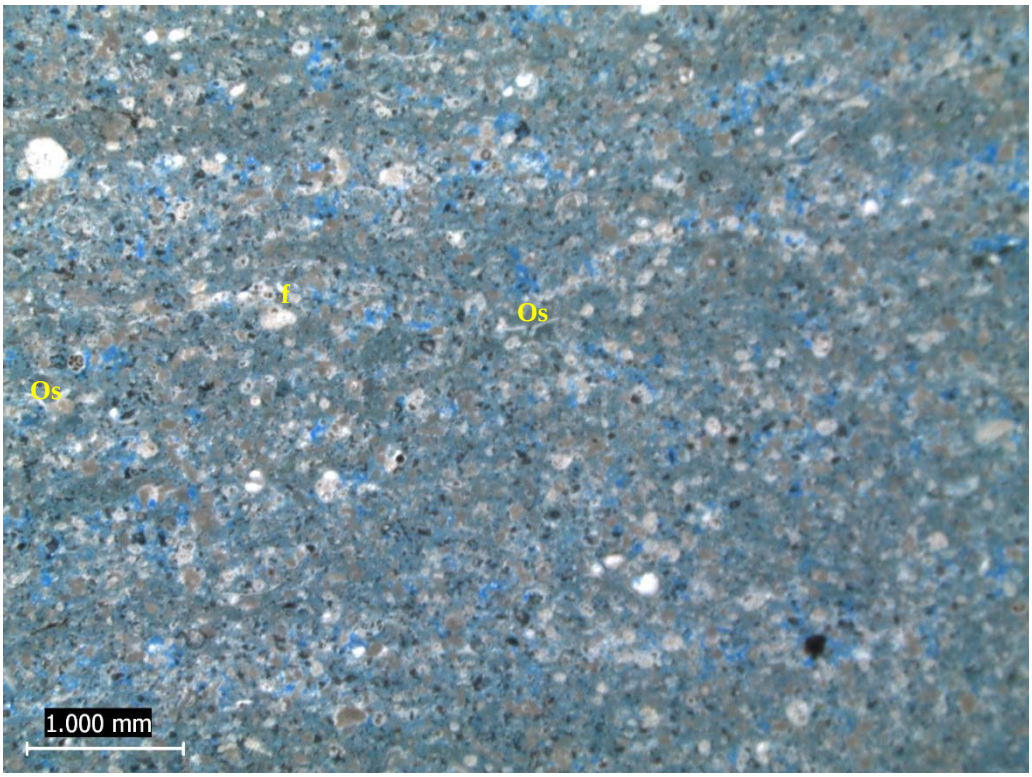
W-18812 (HIF-42)

Depth:	1260-1260.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Muddy packstone
Dominant Pore Type:	Fenestral pores, interparticle and microporosity
Porosity Amount:	~30 percent
Depositional Environment:	Subtidal marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.38, MgO=0.74, CaO=54.84) Trace Constituents (ppm): (As=2, Ba=15, Cd=BDL, Cr=4.6, Mo=16, Ni=4, Sb=0.7, Sr=628, U=3.6, V=24, SO_4=0.4)

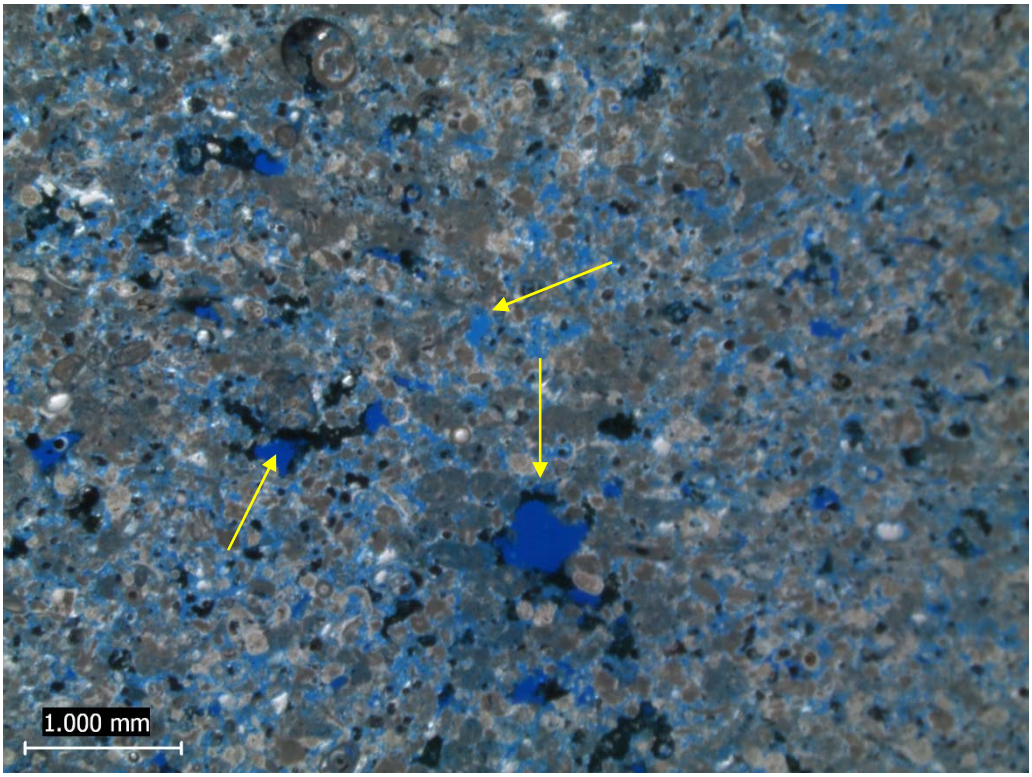
Description:

The section consists of organics and possibly pyrite and or iron sulfide. Allochems include foraminifera, peloids, ostracods and miliolids, intraclasts and red algae. Section is micritized and has minimal cement which is found in the intraparticle pore space of the foraminifera. Mottling and bioturbation is evident as well as some layering of grains. Section is moderately sorted and there is a noticeable muddier finer-grained portion of the slide. The muddier section contains many ostracod fragments.

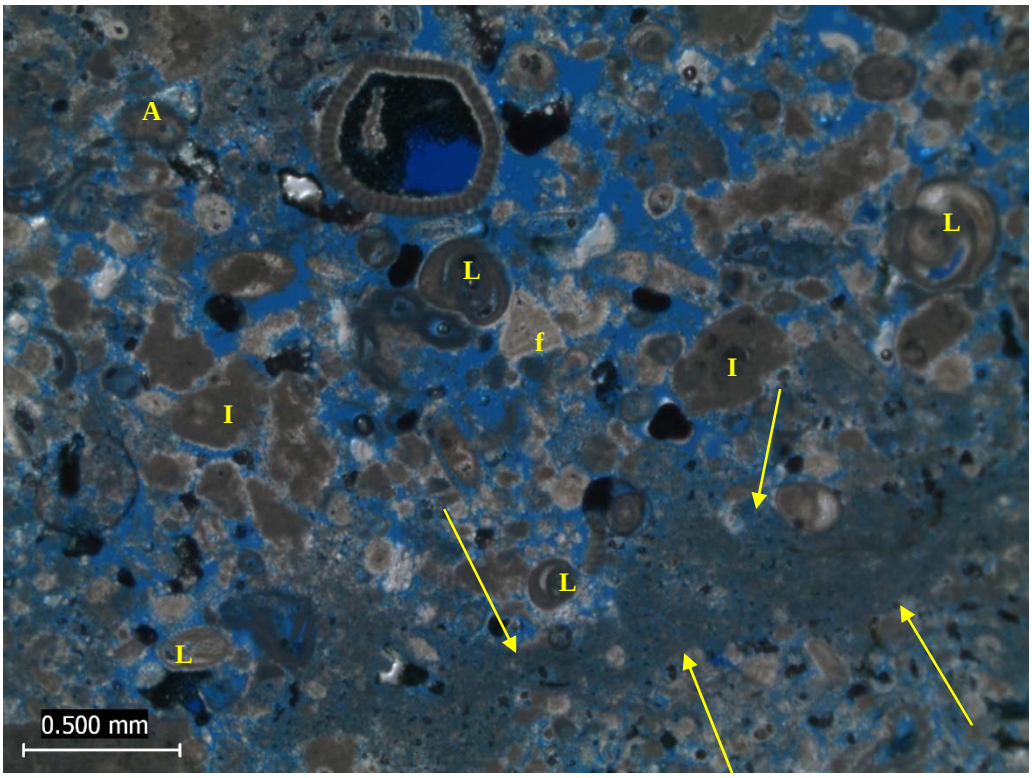
Depositional environment is likely subtidal marine, possibly a shallow reef, as indicated by the coralline red algae (Scholle and Ulmer-Scholle, 2003; Flügel, 2004).



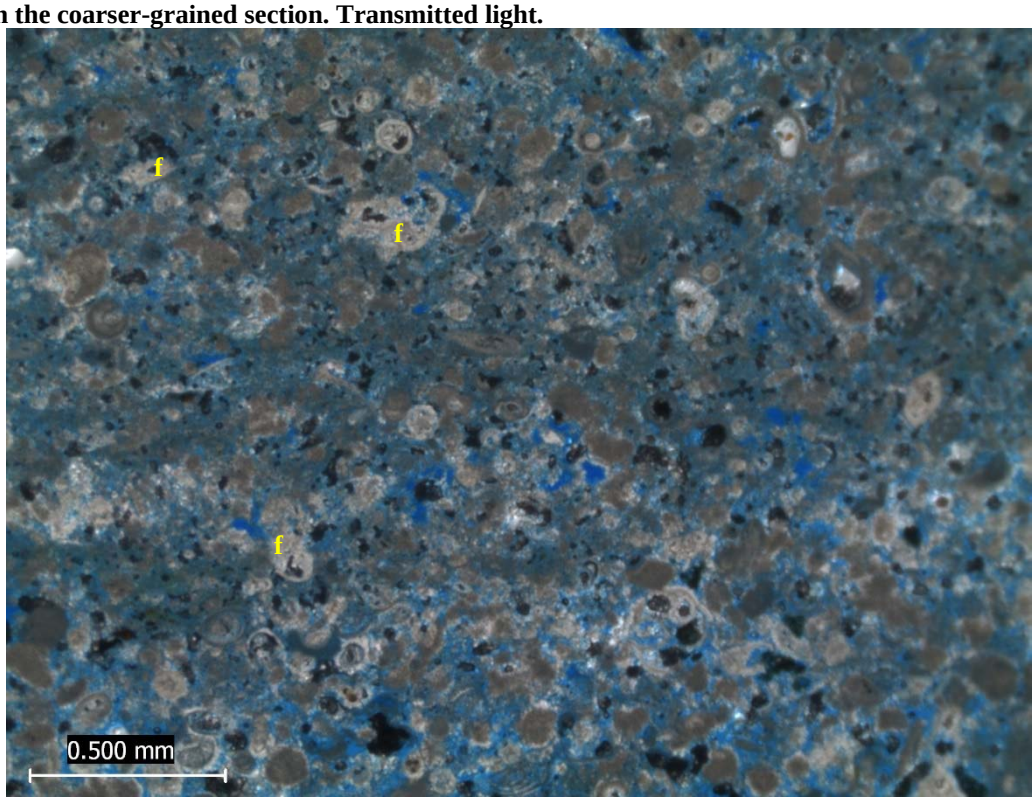
W-18812 1260-1260.5 ft. Muddy packstone. Finer grained portion of section with foraminifera (f) and ostracod fragments (Os). Transmitted light.



W-18812 1260-1260.5 ft. Muddy packstone. Fenestral pores (arrows) in finer grained matrix. Transmitted light.



W-18812 1260-1260.5 ft. Muddy packstone. Coarser grained section with an algal layer (arrows) separating it from the finer-grained portion. Miliolids (L), intraclast (I), foraminifera (f) and algal fragments (A) are present in the coarser-grained section. Transmitted light.



W-18812 1260-1260.5 ft. Muddy packstone. Foraminifera (f) with some cementation. Mottling of this section indicates bioturbation. Transmitted light.





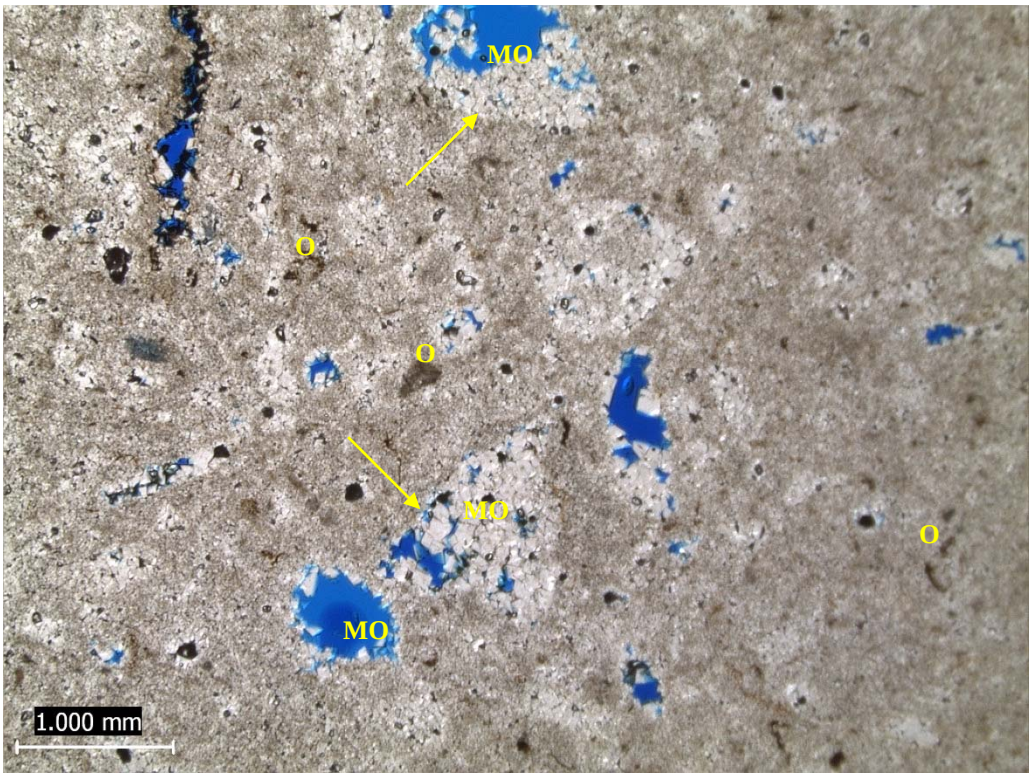
W-18812 (HIF-42)

Depth:	1510-1512 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Dolomicrite
Dominant Pore Type:	Moldic
Porosity Amount:	~10 percent
Depositional Environment:	Marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.28, MgO=19.25, CaO=33.05) Trace Constituents (ppm): (As=2, Ba=5, Cd=BDL, Cr=4.6, Mo=10, Ni=2, Sb=0.1, Sr=247, U=3.21, V=44, SO_4=0.3)

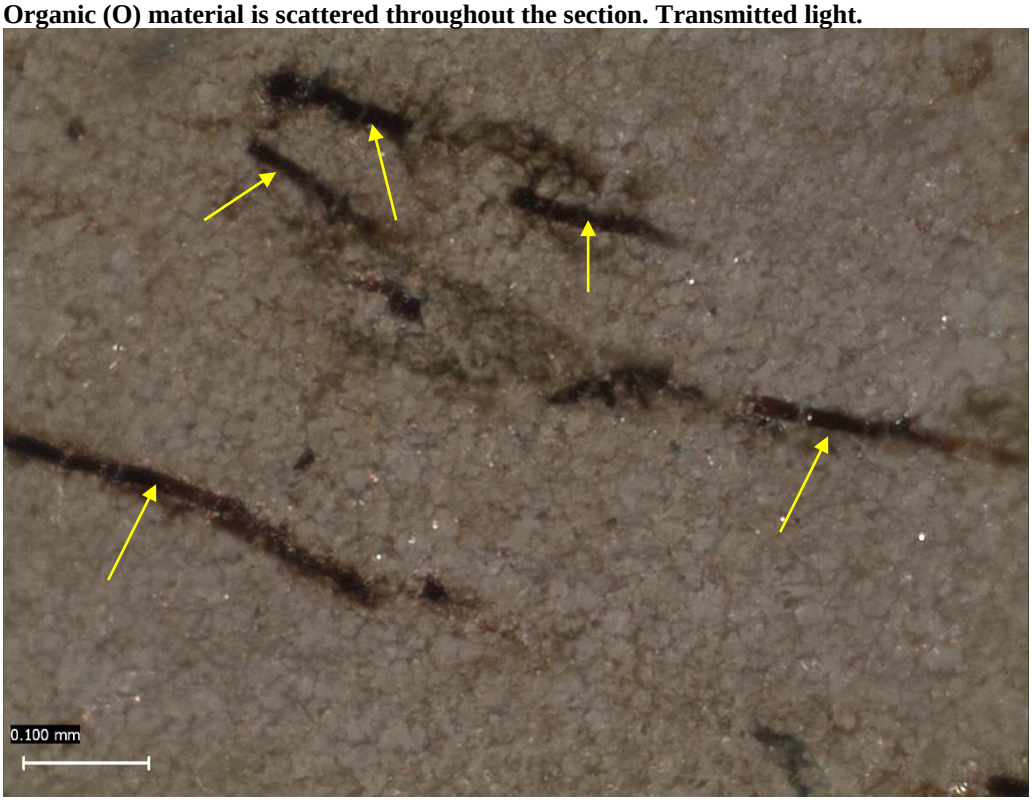
Description:

The section consists of light brown inclusion-rich dolomicrite and microspar with organics and some iron sulfide. The dolomite, dense with interlocking euhedral to subhedral crystals, is responsible for the low porosity. Most of the allochems have been replaced by dolomite but foraminiferal ghosts as well as molds of foraminifera and echinoids are present. Some of the foraminiferal molds and microspar filling the molds are clearly orbitolinids while others are not identifiable. Microspar filling the molds is lighter in color and coarser than the remainder of the section. Organics are scattered throughout the section and also occur as thin wispy laminae. Scanning electron microscope images revealing pyrite clusters and framboids are in Appendix 3.

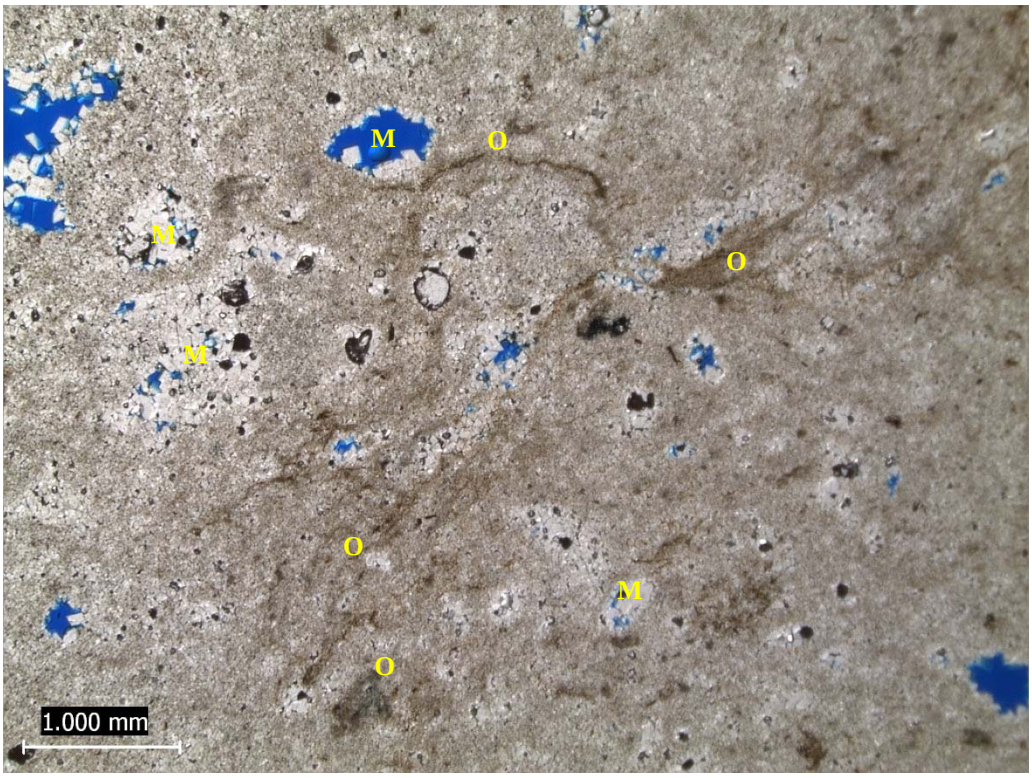
Depositional environment is likely a normal marine setting, although, dolomitization obscures much of the original depositional fabric (Thayer and Miller, 1984).



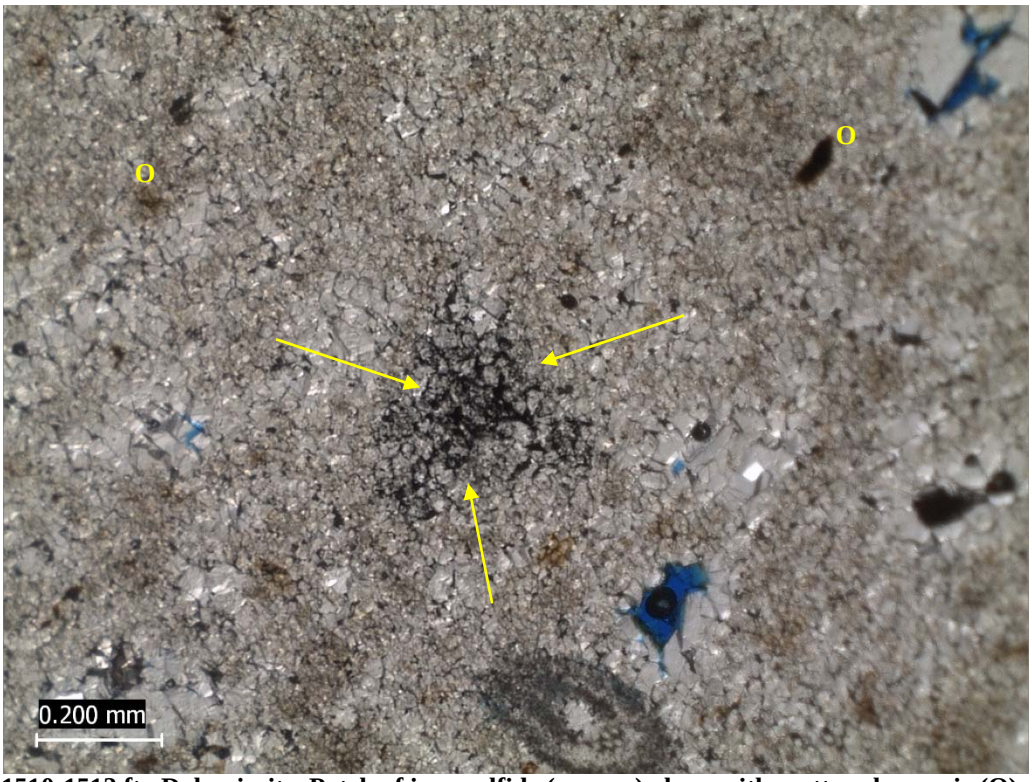
W-18812 1510-1512 ft. Dolomicrite. Moldic porosity (MO) with many molds filled or partially filled with dolomite rhombs slightly coarser and lighter in color than surrounding matrix. Note orbitolinid molds (arrows). Organic (O) material is scattered throughout the section. Transmitted light.



W-18812 1510-1512 ft. Dolomicrite. Organic material (sea grass?) (arrows) in dense interlocking dolomite crystals. Transmitted light.



W-18812 1510-1512 ft. Dolomicrite. Wispy and scattered organics (O) throughout section as well as molds (M) that are partially filled with a lighter colored dolomite. Transmitted light.



W-18812 1510-1512 ft. Dolomicrite. Patch of iron sulfide (arrows) along with scattered organic (O) material. Transmitted light.





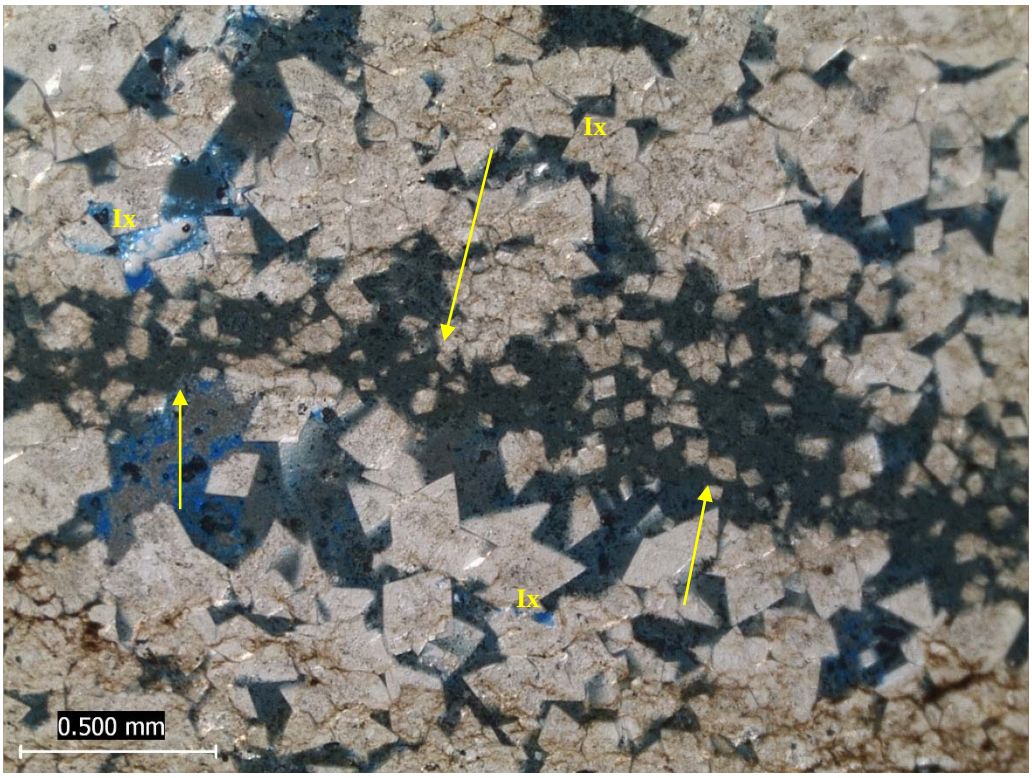
W-18812 (HIF-42)

Depth:	1520-1525 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Dolomite
Dominant Pore Type:	Microporosity and intercrystalline
Porosity Amount:	~25 percent
Depositional Environment:	Undetermined
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.2, MgO=12.12, CaO=38.52) Trace Constituents (ppm): (As=8, Ba=23, Cd=BDL, Cr=4.2, Mo=41, Ni=4, Sb=1.4, Sr=2880, U=3.96, V=36, SO_4=0.5)

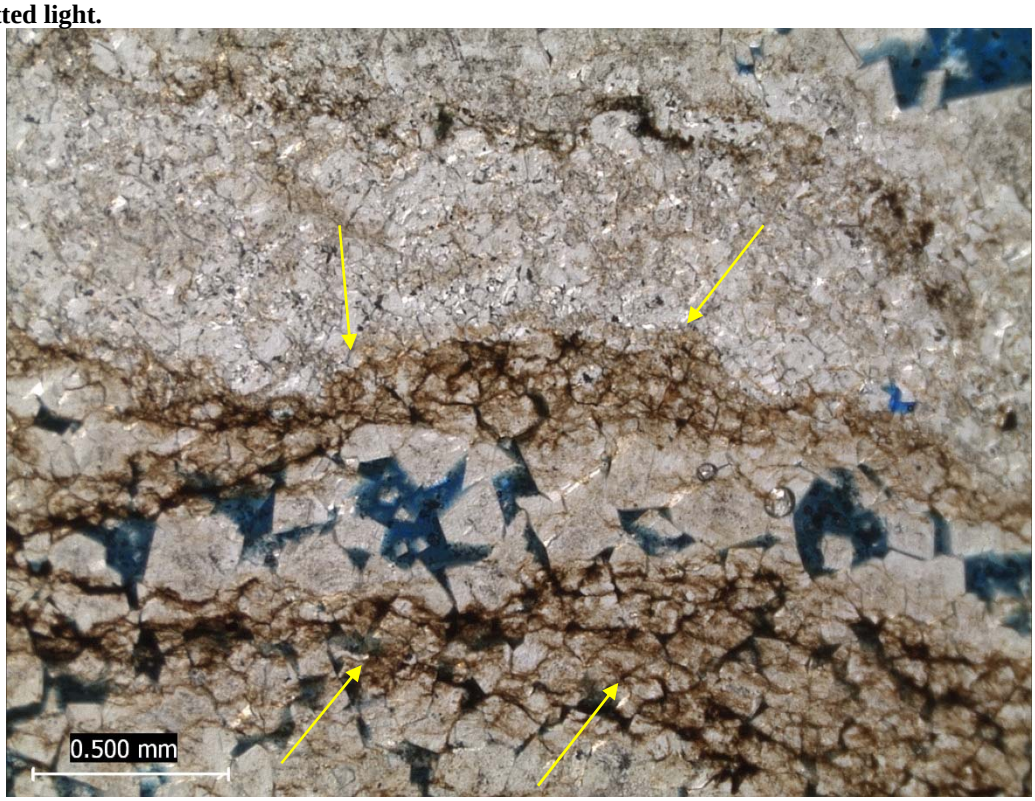
Description:

The section consists of a dark brown inclusion-rich dolomite layered with a chalky micrite, sparse evaporites and organics scattered throughout. Dolomite is coarser-grained than previous sample. Porosity varies from 20-45 percent within the section depending on the laminae. Microporosity is dominant where chalky micrite is highest. The dolomite exhibits intercrystalline porosity which varies significantly within the section; from densely packed low porosity to a more loosely packed higher porosity. Chalky micrite is micritized and grain types are not identifiable and may be algal. Also appears that some of the dolomite is replacing and filling molds. Scanning electron microscope images revealing pyrite and celestite are in Appendix 3.

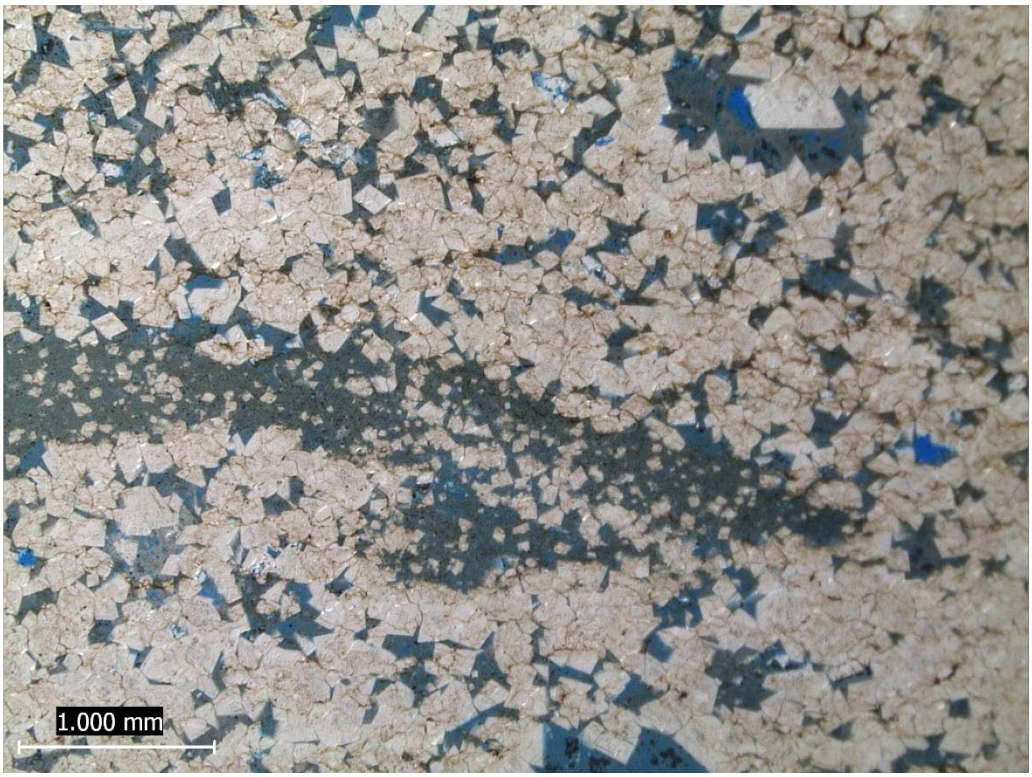
Depositional environment is obscured by dolomitization.



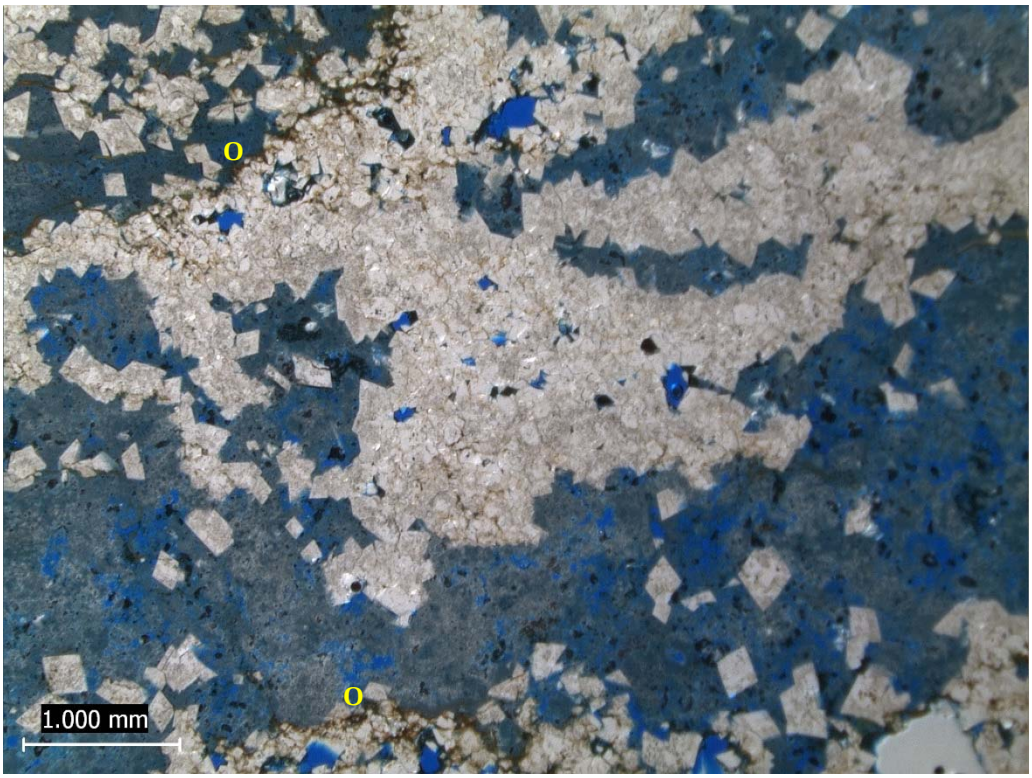
W-18812 1520-1525 ft. Dolomite. Coarser-grained dolomite exhibiting intercrystalline porosity (Ix) and an algal layer? (arrows) with much finer-grained dolomite rhombs. Possible pyrite in the algal layer. Transmitted light.



W-18812 1520-1525 ft. Dolomite. Dolomite showing densely packed low porosity section (top) with organic laminae (arrows) and more loosely packed zone (lower half). Transmitted light.



W-18812 1520-1525 ft. Dolomite. Note finer-grained dolomite within the chalky micrite (algal layer?) and overall less dense packing and higher porosity than previous photo. Transmitted light.



W-18812 1520-1525 ft. Dolomite. Microporosity in chalky micrite with organic (O) material as laminae and organics scattered throughout. Transmitted light.





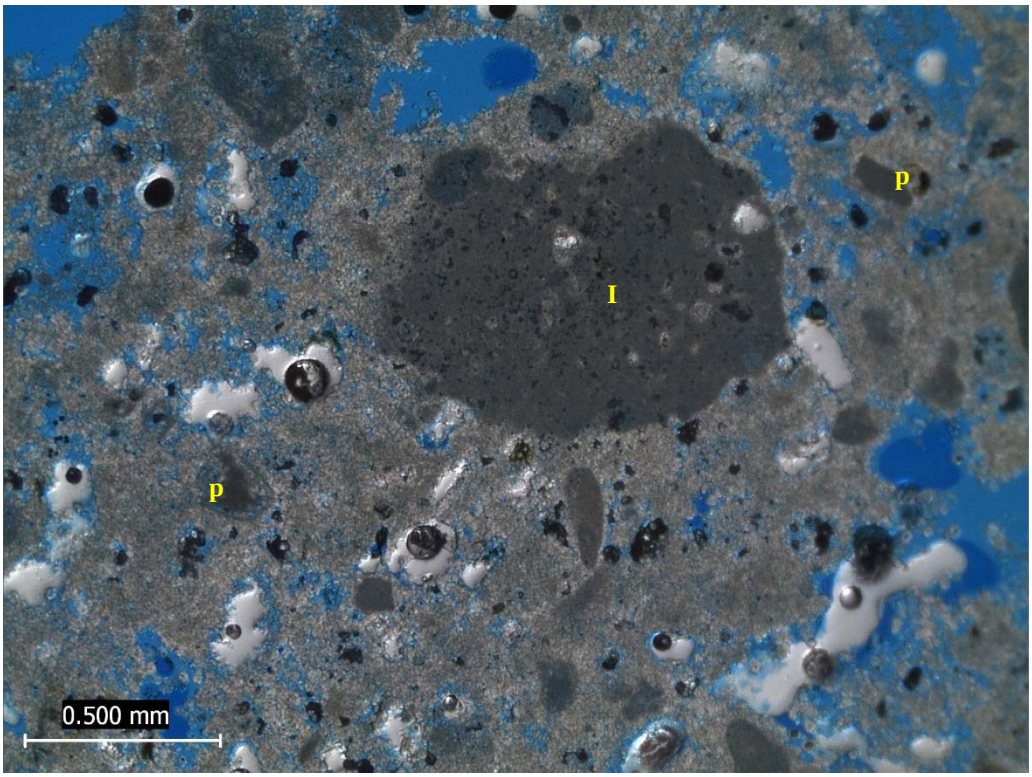
W-18812 (HIF-42)

Depth:	1752.5-1753 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Dolosilt
Dominant Pore Type:	Microporosity and moldic
Porosity Amount:	~35 percent
Depositional Environment:	Subtidal shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.18, MgO=21.62, CaO=30.78) Trace Constituents (ppm): (As=2, Ba=4, Cd=BDL, Cr=3, Mo=11, Ni=3, Sb=0.2, Sr=118, U=2.12, V=25, SO_4=BDL)

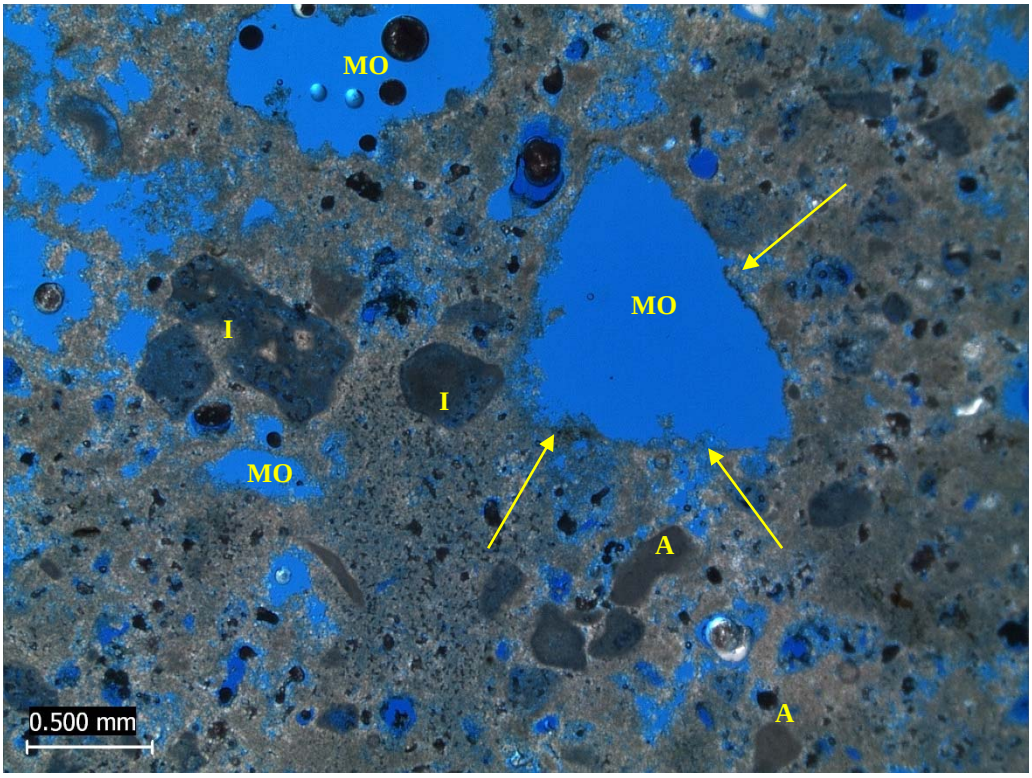
Description:

The section consists of very fine dolosilt with organics and or iron sulfide scattered throughout. Allochems include red algae, peloids and intraclasts with many grains too micritized to identify. Section is poorly sorted and shows minimal cementation. Foraminiferal molds are common. Some micritized peloids may contain pyrite. Hand sample shows bioturbation and mottling.

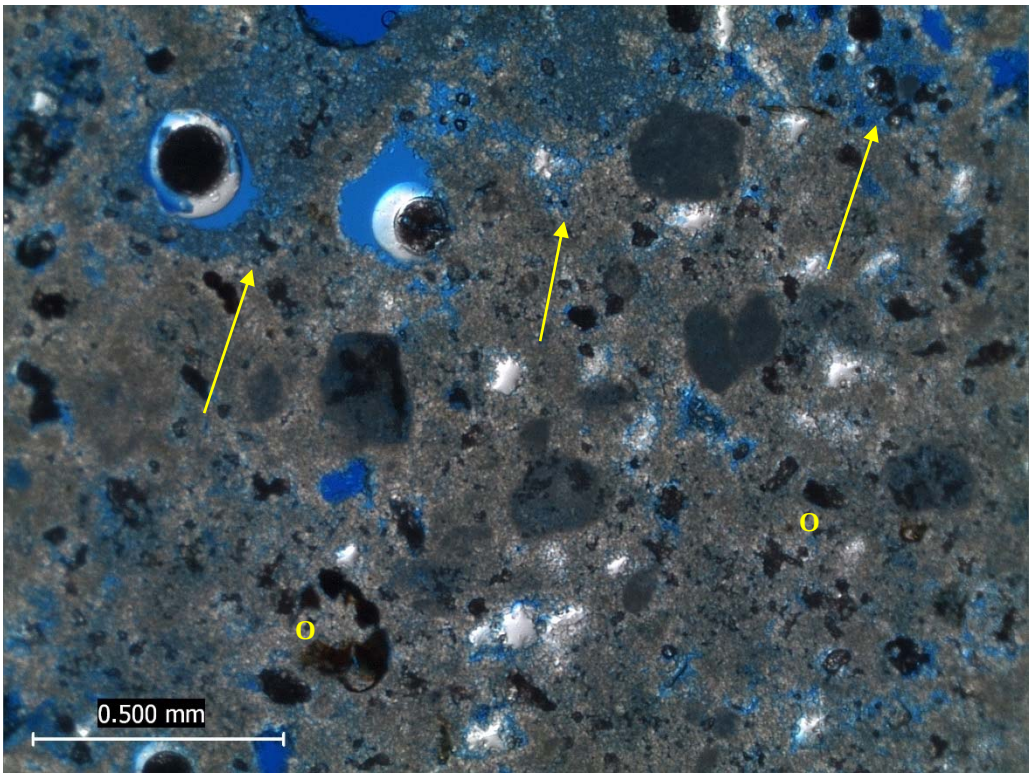
Depositional environment is likely a subtidal shallow marine setting influenced by wave action allowing intraclast formation (Scholle and Ulmer-Scholle, 2003).



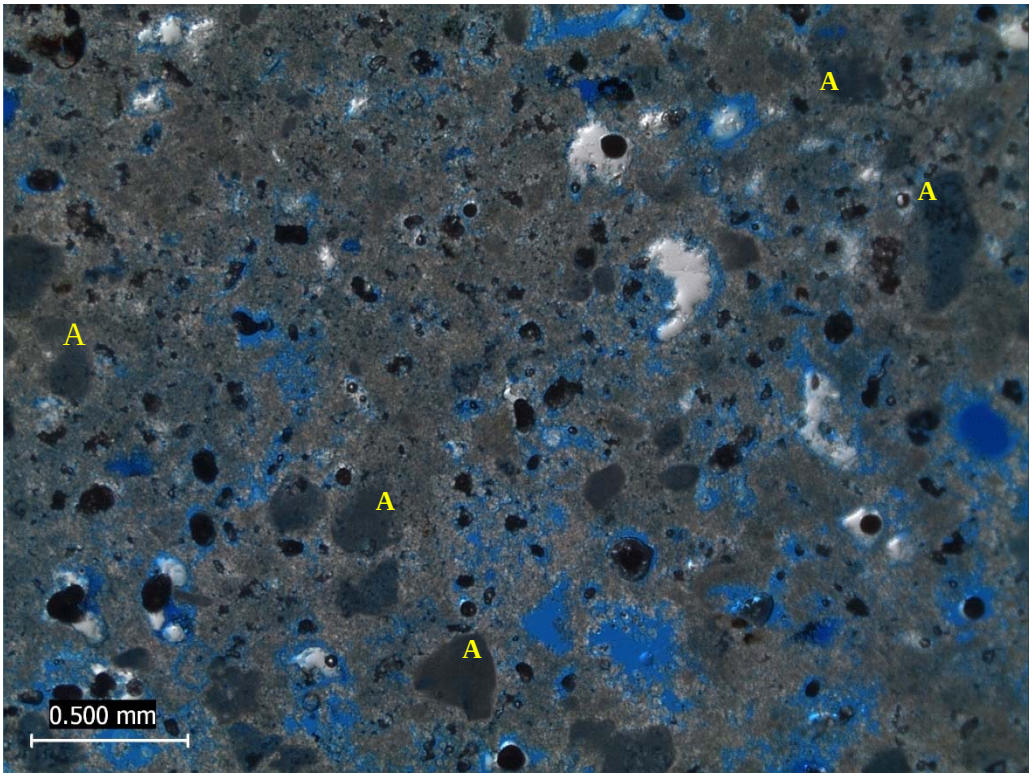
W-18812 1752.5-1753 ft. Dolosilt. Intraclast (I) and peloids (p) in dolosilt. Transmitted light.



W-18812 1752.5-1753 ft. Dolosilt. Moldic porosity (MO) with orbitolinid mold near center of photo (arrows). intraclast (I) and red algae fragments (A) are also present. Transmitted light.



W-18812 1752.5-1753 ft. Dolosilt. Dolosilt is slightly less dense in upper quarter of photo (arrows) could indicate bioturbation. Organics (O) scattered in lower half of section. Transmitted light.



W-18812 1752.5-1753 ft. Dolosilt. Some of the intraclasts are of algal origin (A). Transmitted light.





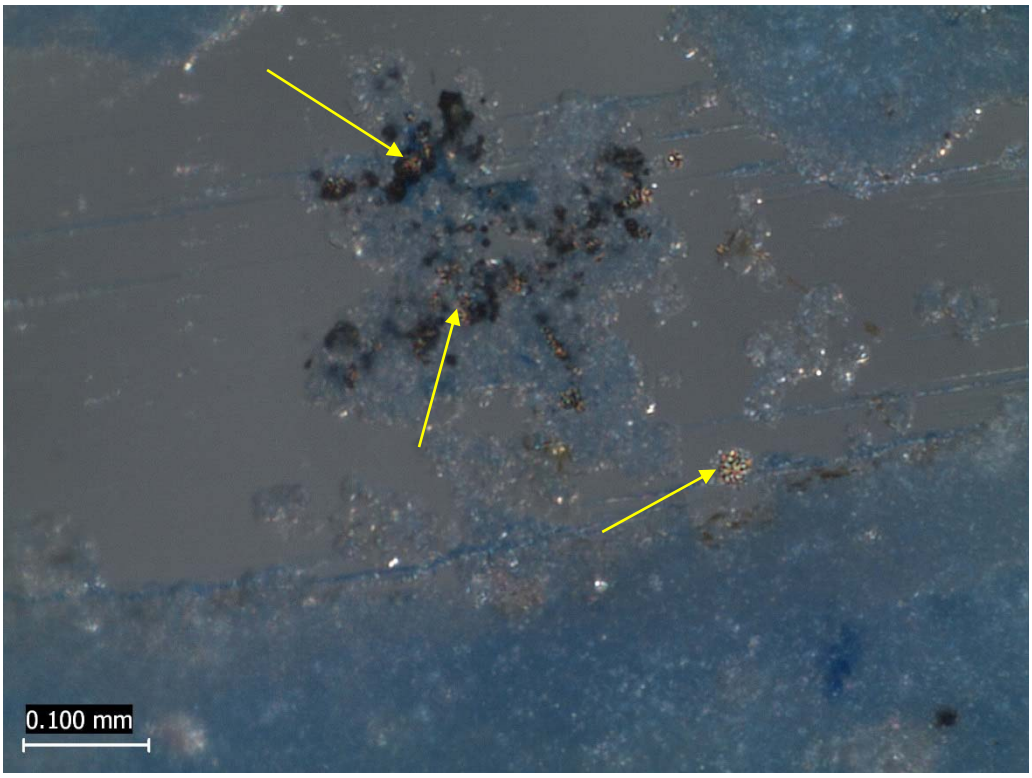
W-18812 (HIF-42)

Depth:	1753.5-1754 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Gypsiferous dolomicrite
Dominant Pore Type:	Microporosity and moldic
Porosity Amount:	~25 percent
Depositional Environment:	Restricted shallow water marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.29, MgO=19.45, CaO=31.55) Trace Constituents (ppm): (As=2, Ba=4, Cd=BDL, Cr=BDL, Mo=7, Ni=1, Sb=0.2, Sr=151, U=2.08, V=20, SO_4=4.4)

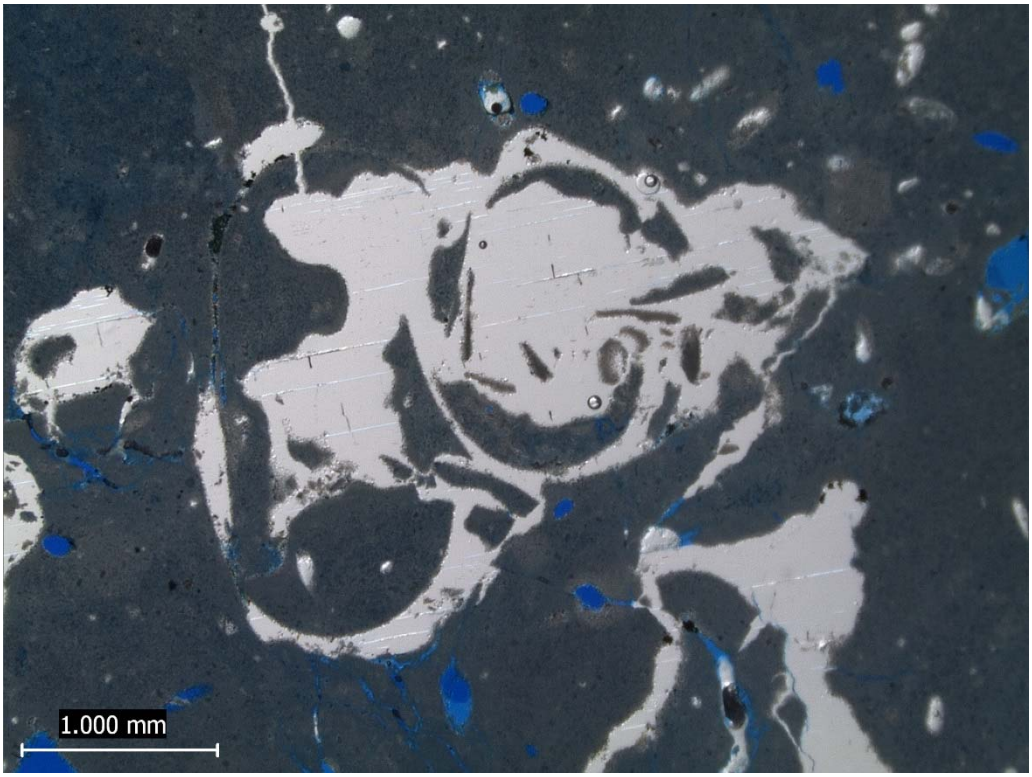
Description:

The section consists of dolomicrite, pyrite and gypsum. Allochems include mollusk molds, peloids and foraminiferal ghosts. Dolomicrite is mottled and bioturbated. Mollusk molds are filled with evaporites, probably gypsum as birefringence is not high enough for anhydrite. Pyrite is found within some of the gypsum. There are some fractures within the section which are partially filled with gypsum. Scanning electron microscope images of gypsum are in Appendix 3.

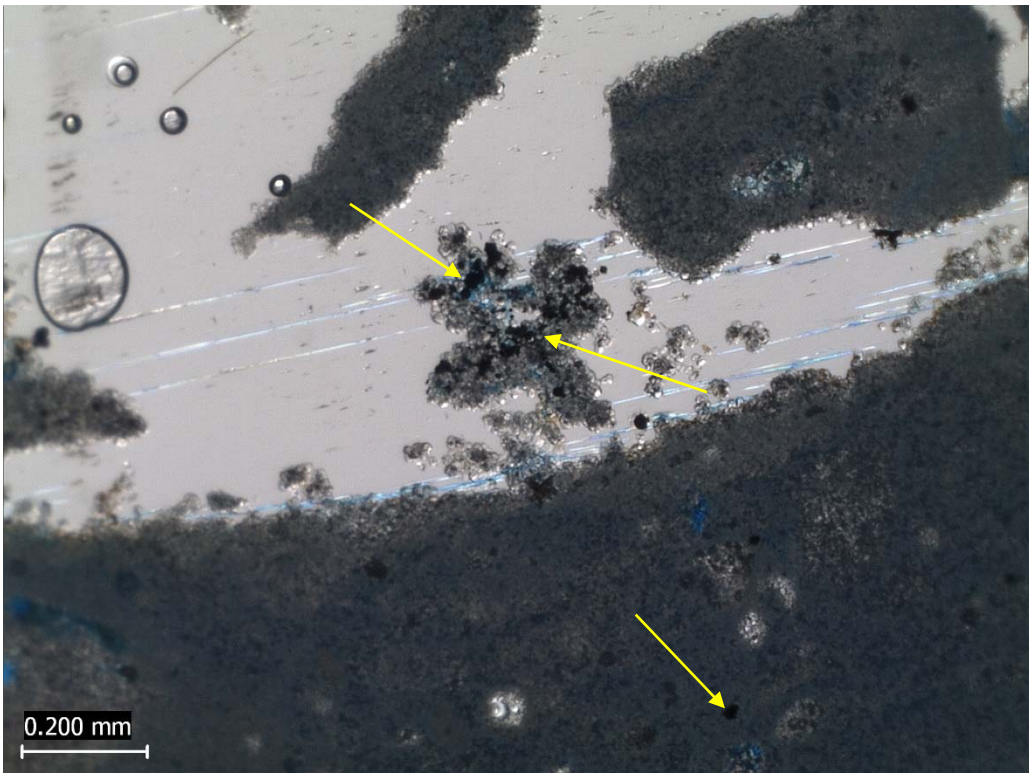
Depositional environment is likely restricted shallow water marine in which the dolomites and evaporites were formed by early replacement of limestone from dense Mg-rich brine. These brines could have originated in an overlying sabkha and moved downward and seaward (Thayer and Miller, 1984).



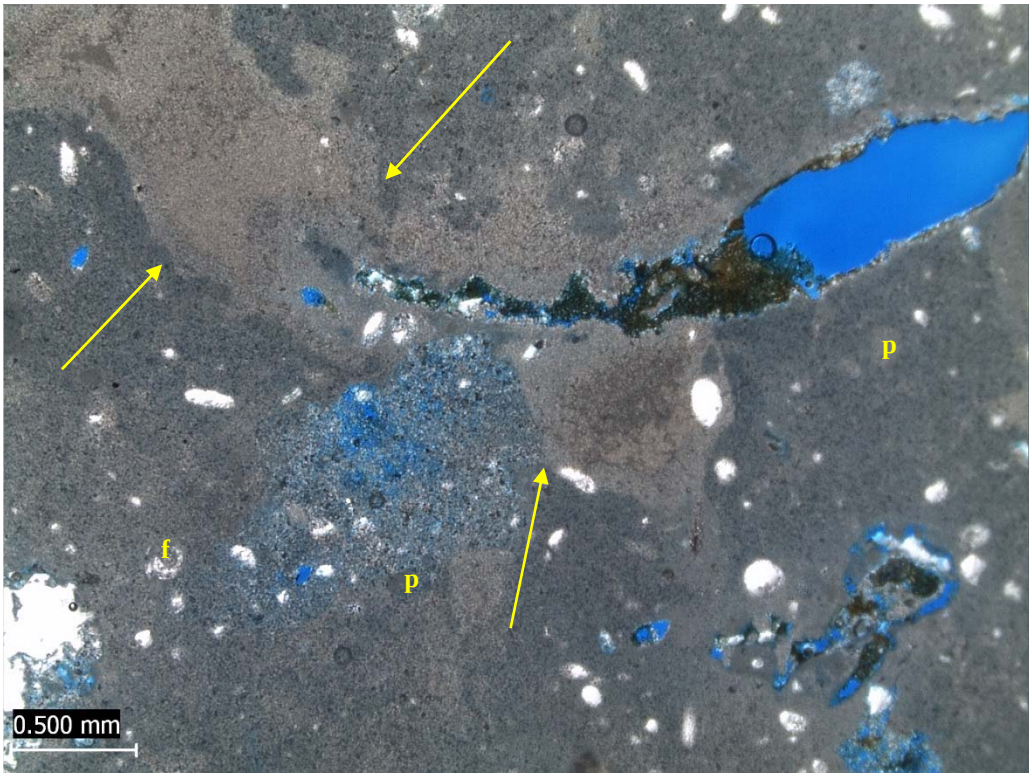
W-18812 1753.5-1754 ft. Dolomicrite. Pyrite (arrows) within mollusk mold filled with gypsum. Reflected light.



W-18812 1753.5-1754 ft. Dolomicrite. Gastropod mold filled with gypsum. Transmitted light.



W-18812 1753.5-1754 ft. Dolomicrite. Gypsum filled mold with pyrite and or iron sulfide. Transmitted light.



W-18812 1753.5-1754 ft. Dolomicrite. Mottling and bioturbation (arrows) peloids (p) and foraminifera ghost (f). Transmitted light.





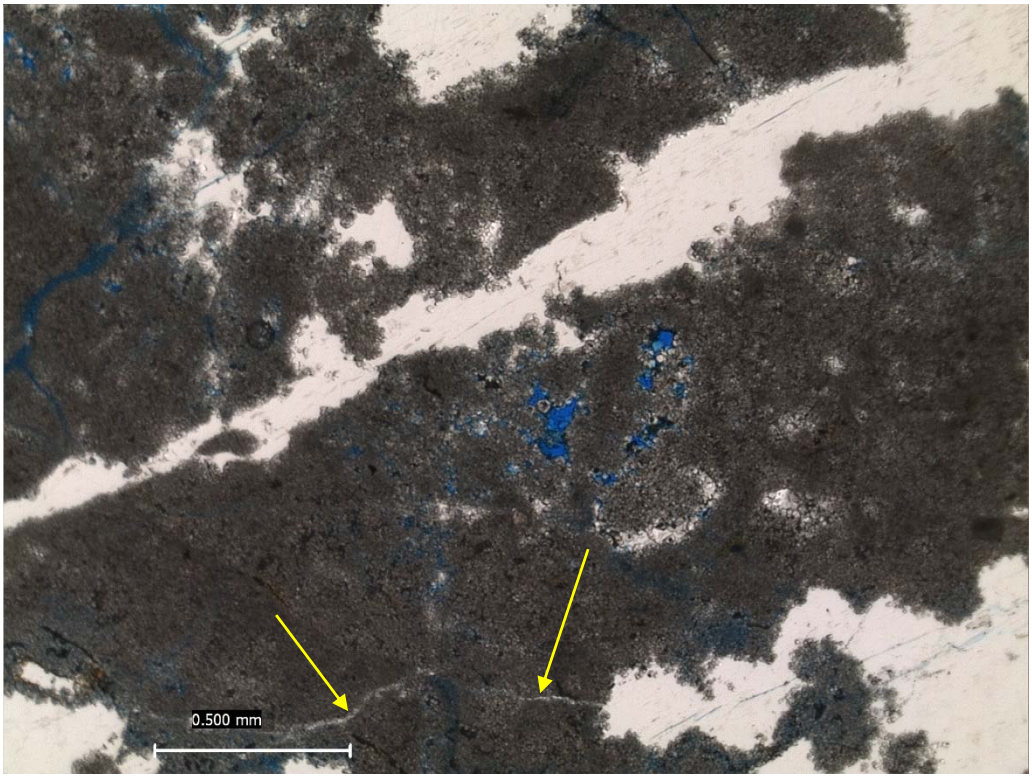
W-18812 (HIF-42)

Depth:	1754.5-1755 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Gypsiferous calcareous dolomicrite
Dominant Pore Type:	Moldic, minor intercrystalline and microporosity
Porosity Amount:	~10 percent
Depositional Environment:	Marine sabkha
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.81, MgO=14.68, CaO=31.24) Trace Constituents (ppm): (As=2, Ba=21, Cd=BDL, Cr=5.6, Mo=8, Ni=BDL, Sb=0.2, Sr=2746, U=2.74, V=12, SO_4=16.1)

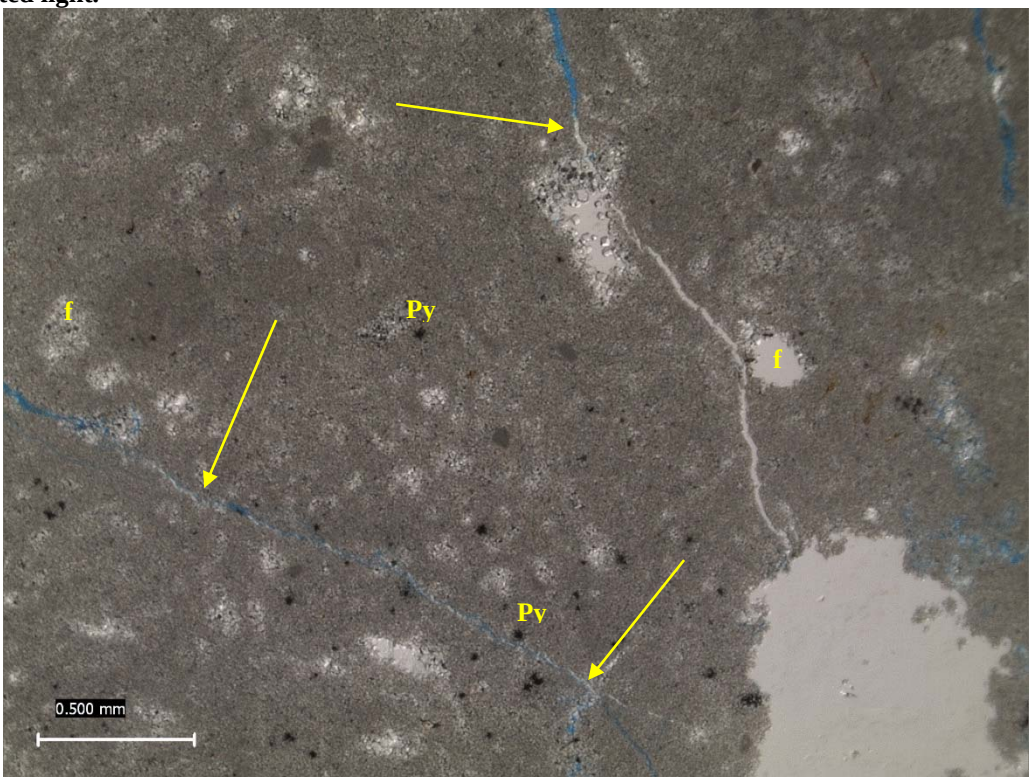
Description:

The section consists of evaporites, organics and dolomicrite. Allochems include mollusk molds, peloids and foraminiferal ghosts. Most of the original fabric of the section is replaced making identification difficult. Section appears mottled and bioturbated with fractures, some of which are filled with evaporites. Evaporites also fill voids and molds. Organics are scattered throughout and also as a few wispy laminae. Pyrite and or iron sulfide are also scattered throughout. Scanning electron microscope images revealing pyrite, gypsum and celestite are in Appendix 3.

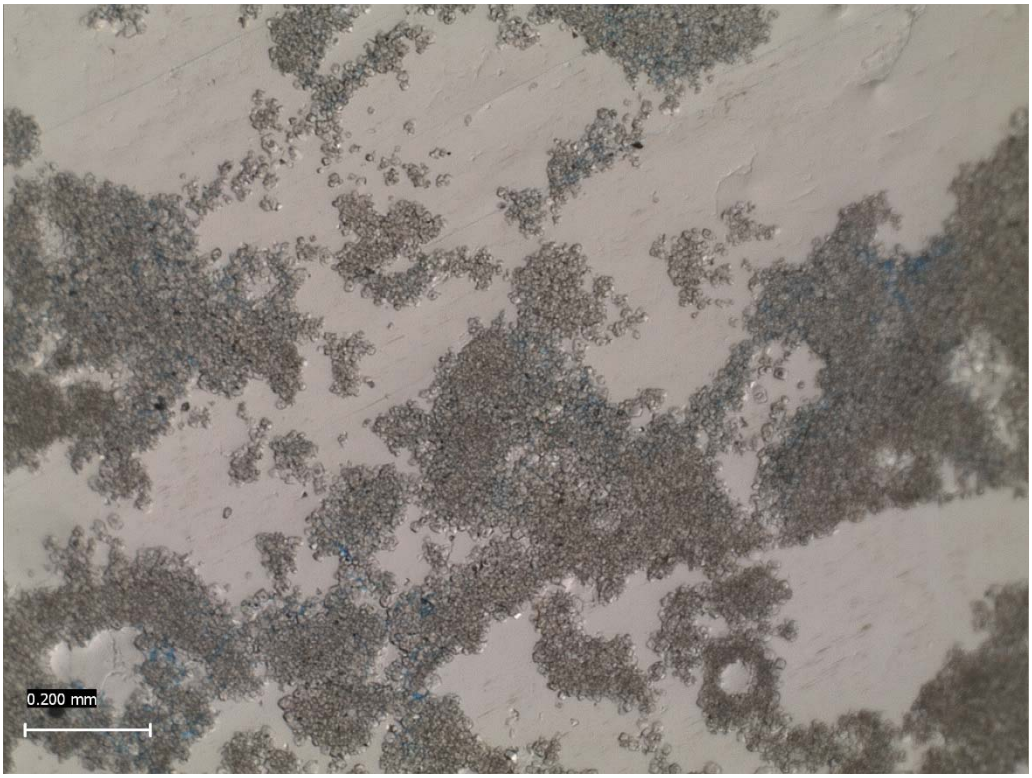
Depositional environment is likely to have been marine sabkha in which the dolomites and evaporites were formed by early replacement of limestone from dense Mg-rich brine. These brines could have originated in an overlying sabkha and moved downward and seaward (Thayer and Miller, 1984).



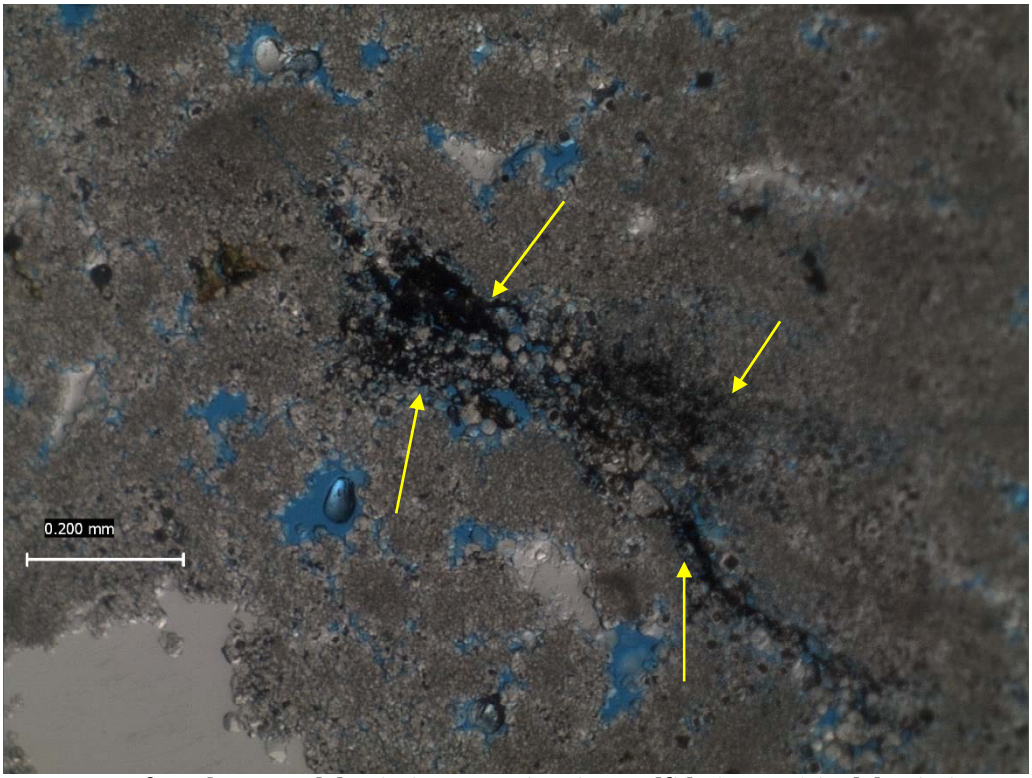
W-18812 1754.5-1755 ft. Calcareous dolomicrite. Evaporites filling molds and small fracture (arrows). Transmitted light.



W-18812 1754.5-1755 ft. Calcareous dolomicrite. Evaporites filling molds some appear to be foraminiferal molds (f). Some of the fractures are partially filled with evaporites (arrows). Pyrite / iron sulfide throughout (Py). Transmitted light.



W-18812 1754.5-1755 ft. Calcareous dolomicrite. Evaporites almost completely filling in voids around dolomicrite, some slight intercrystalline porosity (blue coloring in dolomicrite). Transmitted light.



W-18812 1754.5-1755 ft. Calcareous dolomicrite. Organics / iron sulfide (arrows) in dolomicrite. Transmitted light.





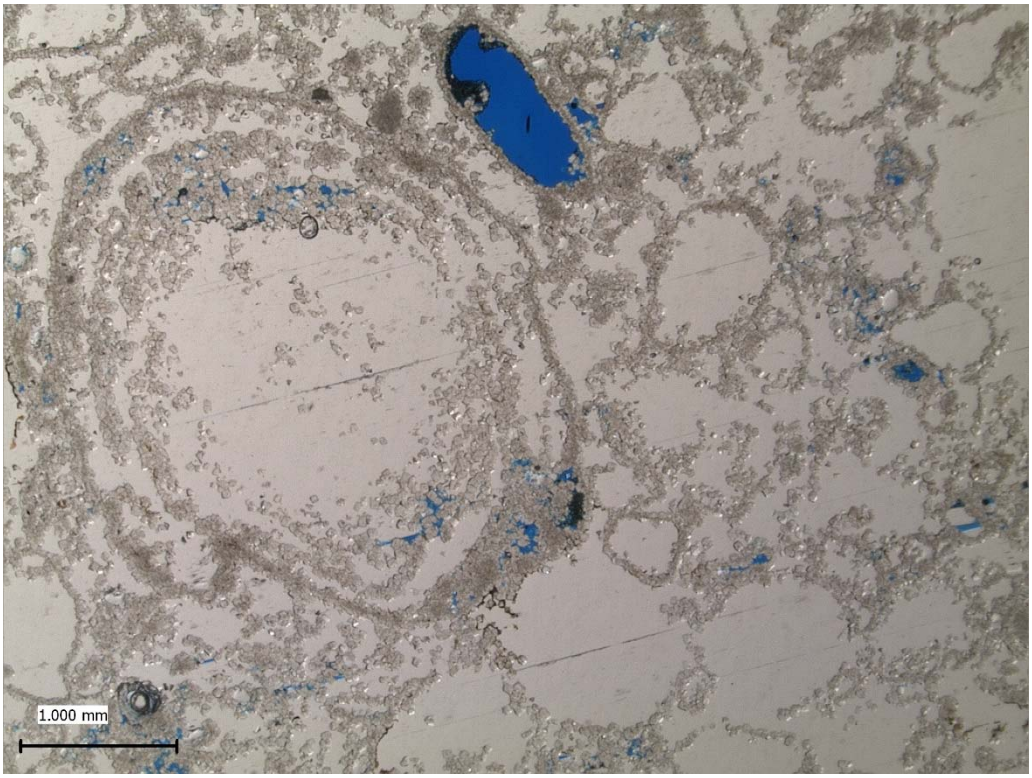
W-18812 (HIF-42)

Depth:	1758.5-1759 ft BLS
Stratigraphic Unit:	Avon Park Formation
Litho Facies:	Gypsiferous dolosilt
Dominant Pore Type:	Moldic and slight fracture
Porosity Amount:	<10 percent
Depositional Environment:	Restricted shallow water marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.64, MgO=22.07, CaO=31.93) Trace Constituents (ppm): (As=BDL, Ba=1, Cd=BDL, Cr=11.3, Mo=7, Ni=3, Sb=0.8, Sr=113, U=4.34, V=15, SO_4=1.2)

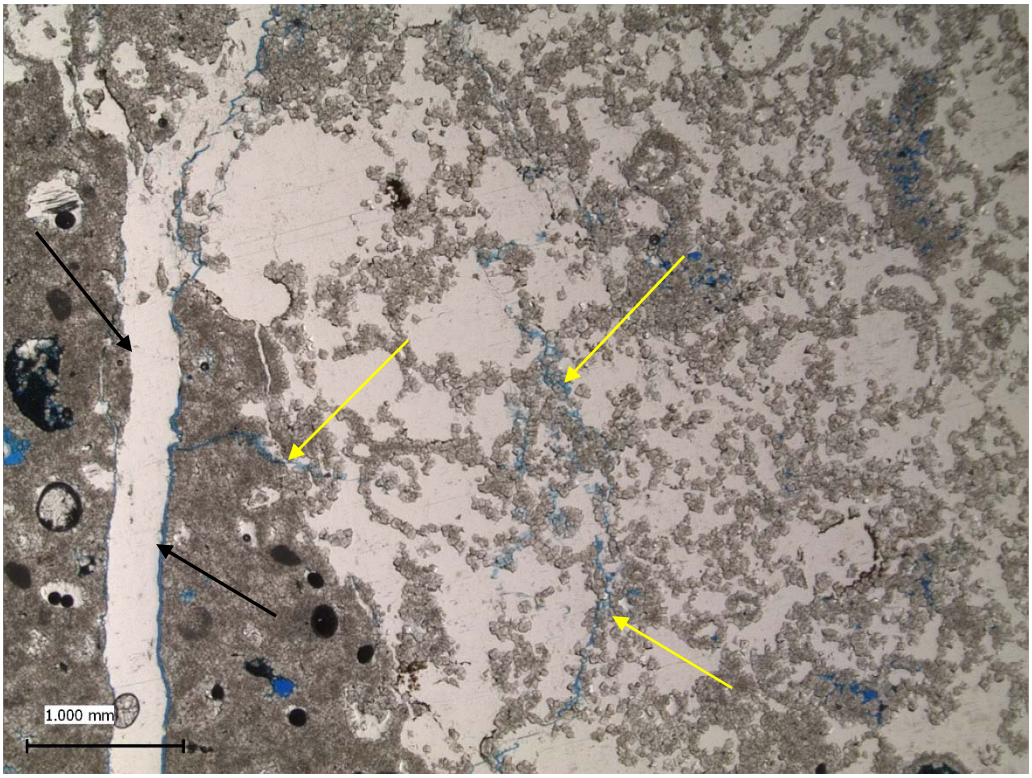
Description:

The section consists of evaporites and inclusion-rich dolosilt. Section is highly recrystallized. Dissolution has caused only micrite envelopes of molds, peloids, ooids and foraminifera to remain in some areas. Most of the micrite envelopes are filled with gypsum accounting for the low porosity. Other areas of the section are a finer-grained dolosilt and show fractures which are partially filled with evaporites. Slight fracturing is also noted in the evaporites. Scanning electron microscope images revealing pyrite and gypsum are in Appendix 3.

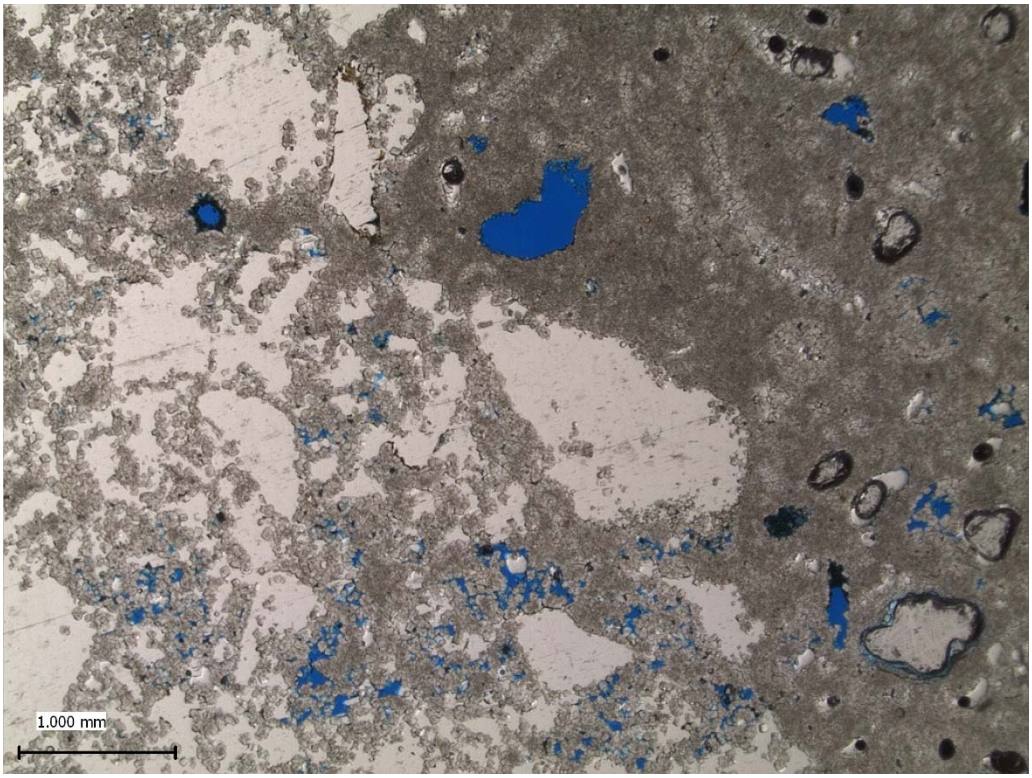
Depositional environment is likely restricted shallow water marine in which micrite envelopes formed by dissolution and replacement of allochems during dolomitization. Molds and pores formed during the early replacement of limestone from dense Mg-rich brine could account for the evaporites. These brines could have originated in an overlying sabkha and moved downward and seaward (Thayer and Miller, 1984).



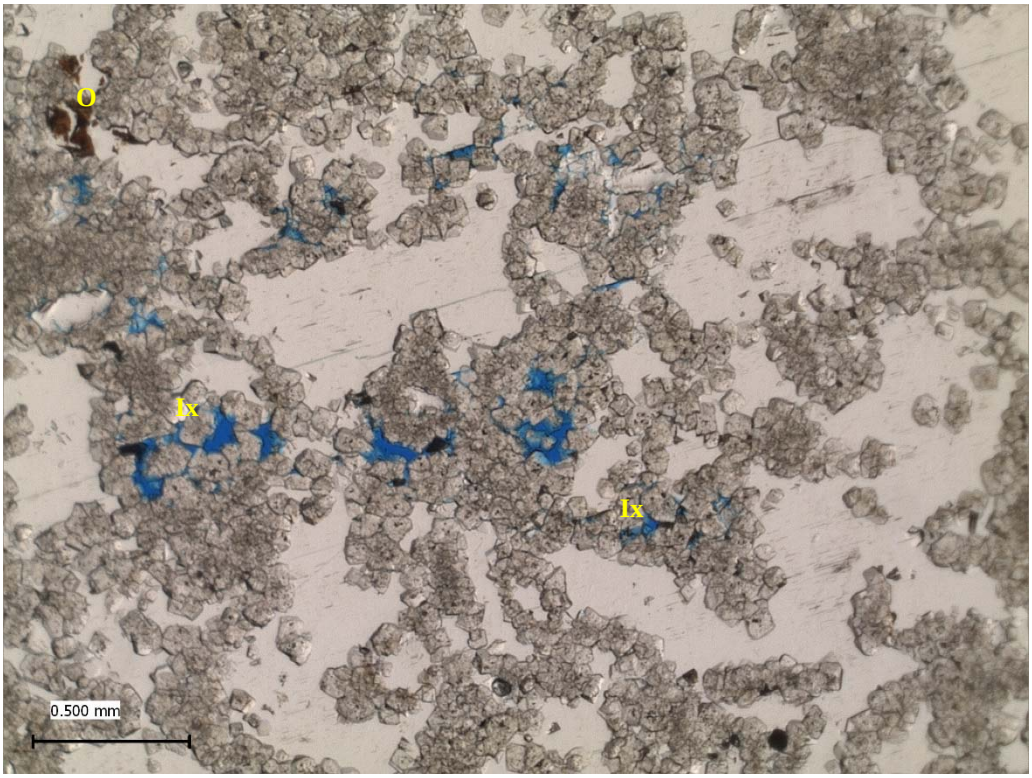
W-18812 1758.5-1759 ft. Gypsiferous dolosilt. Micrite envelopes are all that remain of the leached grains. Transmitted light.



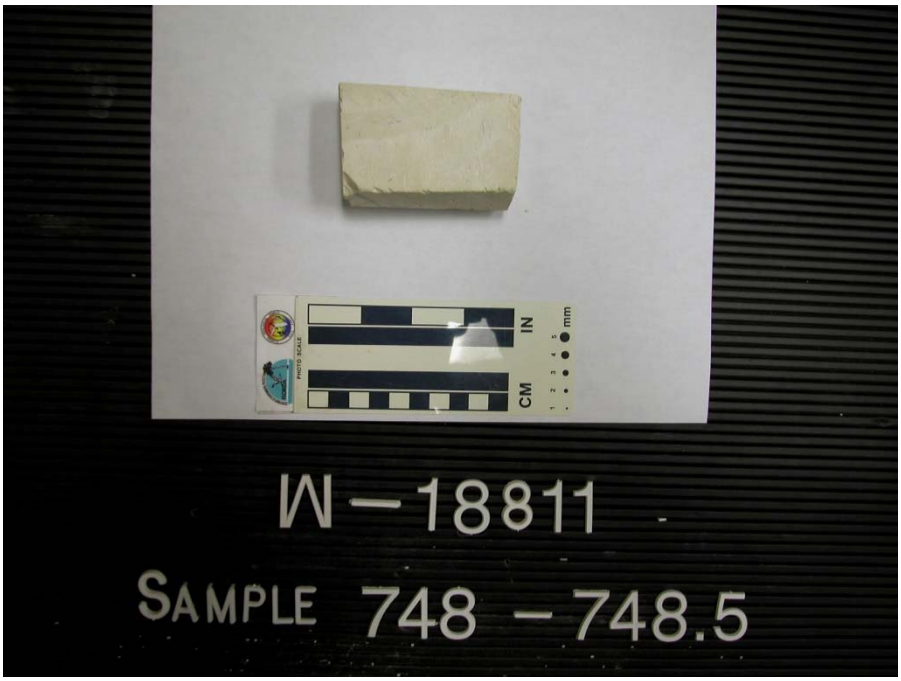
W-18812 1758.5-1759 ft. Gypsiferous dolosilt. Dissolution surface in denser finer-grained portion of section (black arrows). Note fractures in section with gypsum showing porosity (yellow arrows). Transmitted light.



W-18812 1758.5-1759 ft. Gypsiferous dolosilt. Dolomicrite ghosts of fossils are visible in finer-grained section while gypsum filled fossils are seen in the more heavily leached section. Transmitted light.



W-18812 1758.5-1759 ft. Gypsiferous dolosilt. Closer view of the heavily micritized section showing some intercrystalline porosity (Ix) and trace of organics (O). Transmitted light.



W-18811 (Brighton Reservation)

Depth:	748-748.5 ft BLS
Stratigraphic Unit:	Ocala Limestone
Lithofacies:	Foraminiferal wackestone
Dominant Pore Type:	Microporosity and interparticle
Porosity Amount:	~30 percent
Depositional Environment:	Middle to deep ramp
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.85, MgO=1.17, CaO=54.07, P_2O_5=0.04)
	Trace Constituents (ppm): (As=BDL, Ba=7, Cd=BDL, Cr=14.2, Mo=BDL, Ni=3, Sb=0.2, Sr=567, U=2.7, V=13, SO_4=BDL)

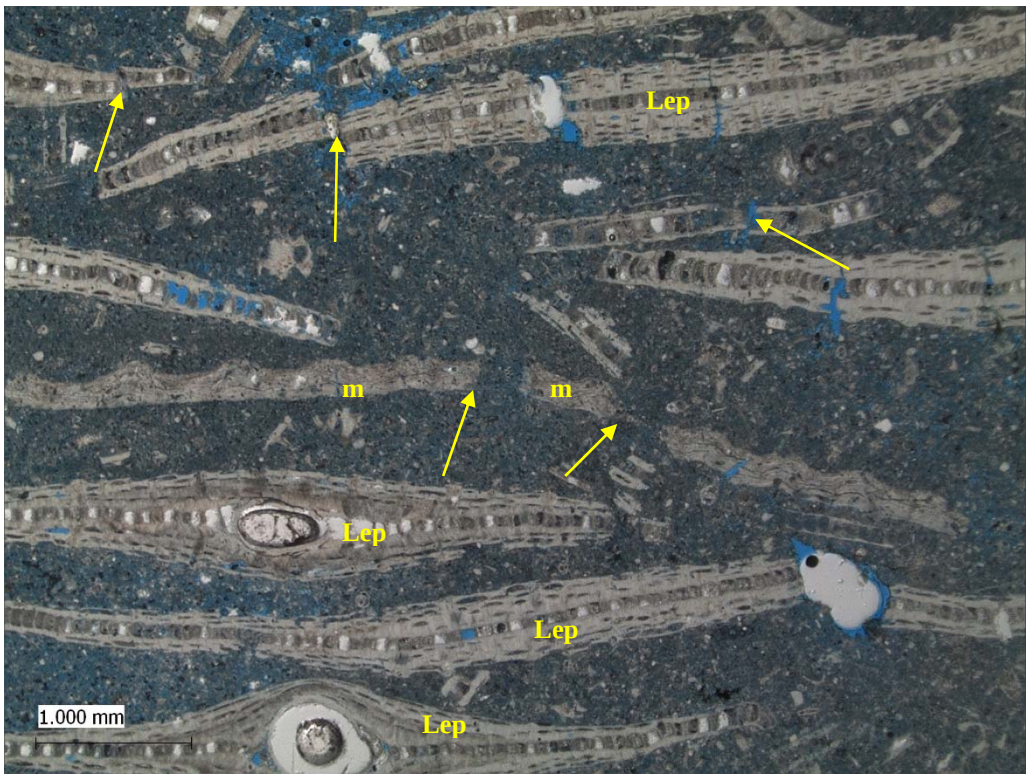
Description:

The section consists of limestone with sparse silt-size dolomite rhombs, organics and pyrite. Allochems include large and small foraminifera, algae, bryozoans, echinoids and mollusks. Section is mottled and bioturbated with a fine-grained micrite matrix. Abundant *Lepidocyclina* spp. appear stacked in some areas and scattered in different orientations in other areas, evidence of bioturbation. Pyrite is present in foraminifera and scattered throughout. Some compaction noted with broken *Lepidocyclina* spp.

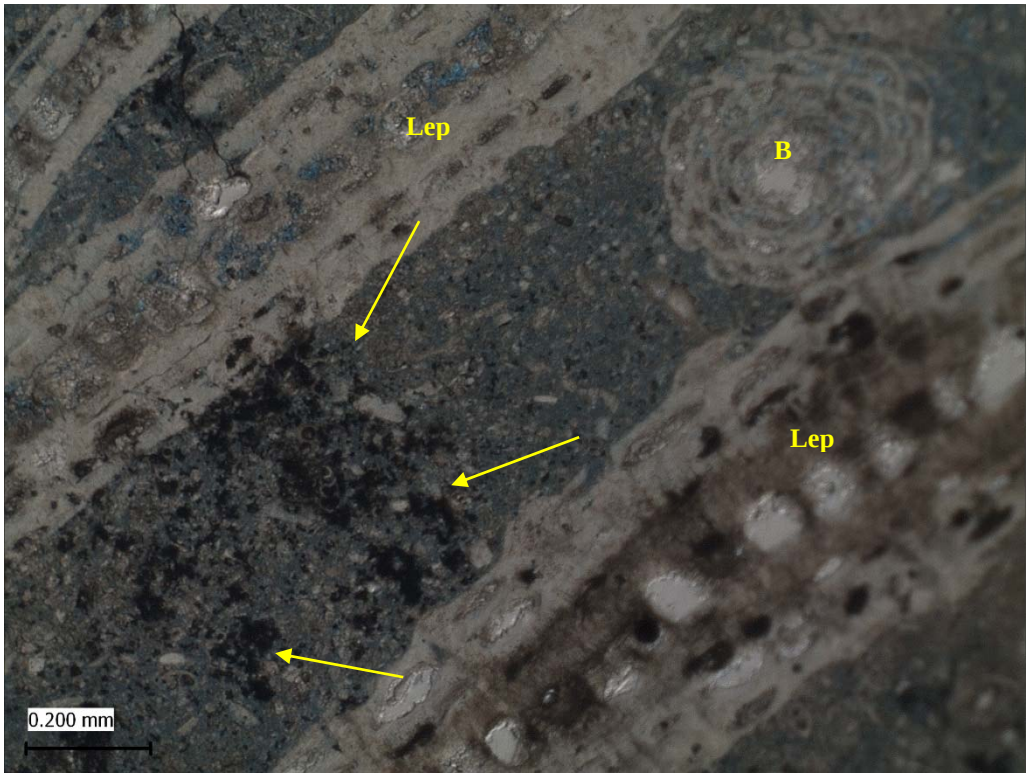
Depositional environment is likely low energy environment middle to deep ramp as indicated by abundant mostly intact *Lepidocyclina* spp. (Loizeaux, 1995).



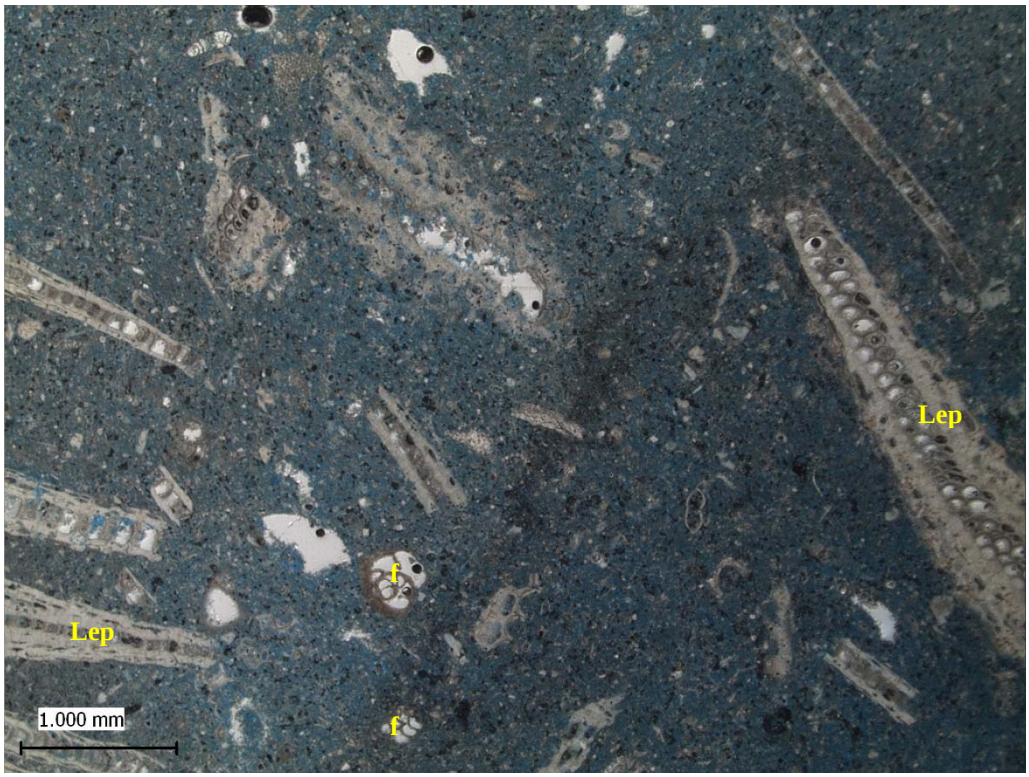
W-18811 748-748.5 ft. Foraminiferal wackestone. Pyrite (arrow) in *Lepidocyclina* sp. Reflected light.



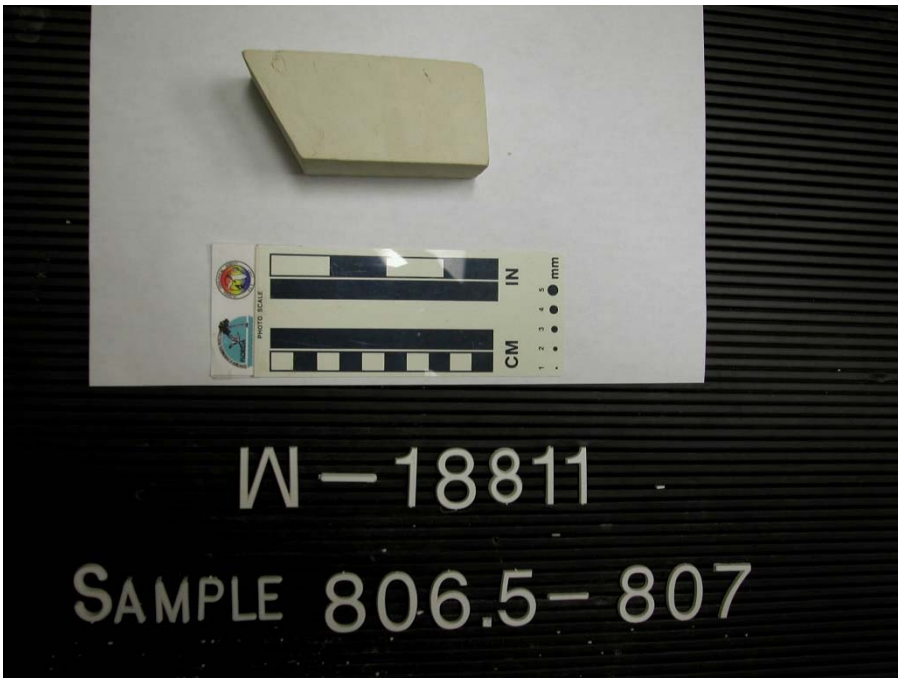
W-18811 748-748.5 ft. Foraminiferal wackestone. *Lepidocyclina* spp. (Lep) and mollusk (m) stacked with evidence of compaction, broken grains (arrows) in fine-grained matrix of shell hash. Transmitted light.



W-18811 748-748.5 ft. Foraminiferal wackestone. *Lepidocyclina* spp. (Lep) and bryozoan (B) in a fine-grained matrix of shell hash. Pyrite (arrows). Transmitted light.



W-18811 748-748.5 ft. Foraminiferal wackestone. *Lepidocyclina* spp. (Lep) and small foraminifera (f) broken and scattered in mottled and bioturbated fine-grained matrix. Transmitted light.



W-18811 (Brighton Reservation)

Depth:	806.5-807 ft BLS
Stratigraphic Unit:	Ocala Limestone
Lithofacies:	Wackestone
Dominant Pore Type:	Microporosity and interparticle
Porosity Amount:	~30 percent
Depositional Environment:	Deep ramp
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.8, MgO=0.9, CaO=54.3, P_2O_5=0.03) Trace Constituents (ppm): (As=2, Ba=6, Cd=0.5, Cr=22, Mo=BDL, Ni=6, Sb=0.2, Sr=596, U=2.73, V=14, SO_4=BDL)

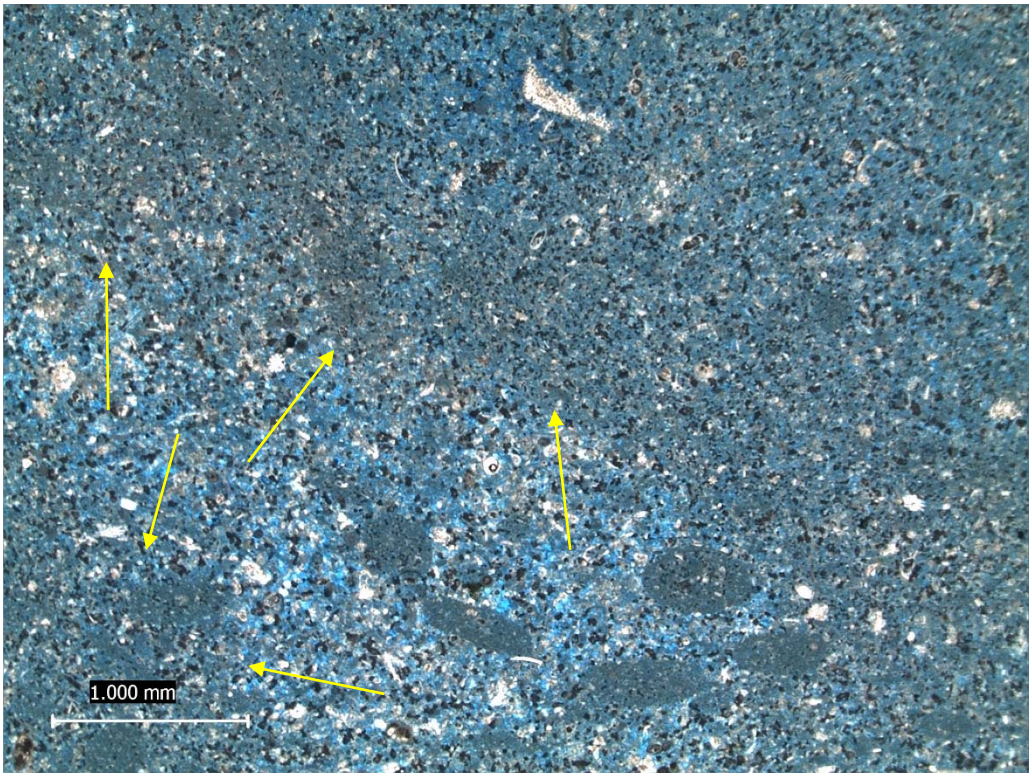
Description:

The section consists of limestone. Allochems include sparse broken fragments of large and small foraminifera, algae, ostracods and echinoids. Sample is also mottled and bioturbated with varying grain densities. Matrix is very fine grained. There is minimal cementation occurring around echinoid fragments. There is no evidence of compaction.

Depositional environment is likely very low energy, deep ramp as evidenced by sparse, small fragments of larger foraminifera and echinoids, extensive bioturbation and a very fine grained matrix. Also evidence of small foraminiferal tests interpreted as pelagic. (Loizeaux, 1995).



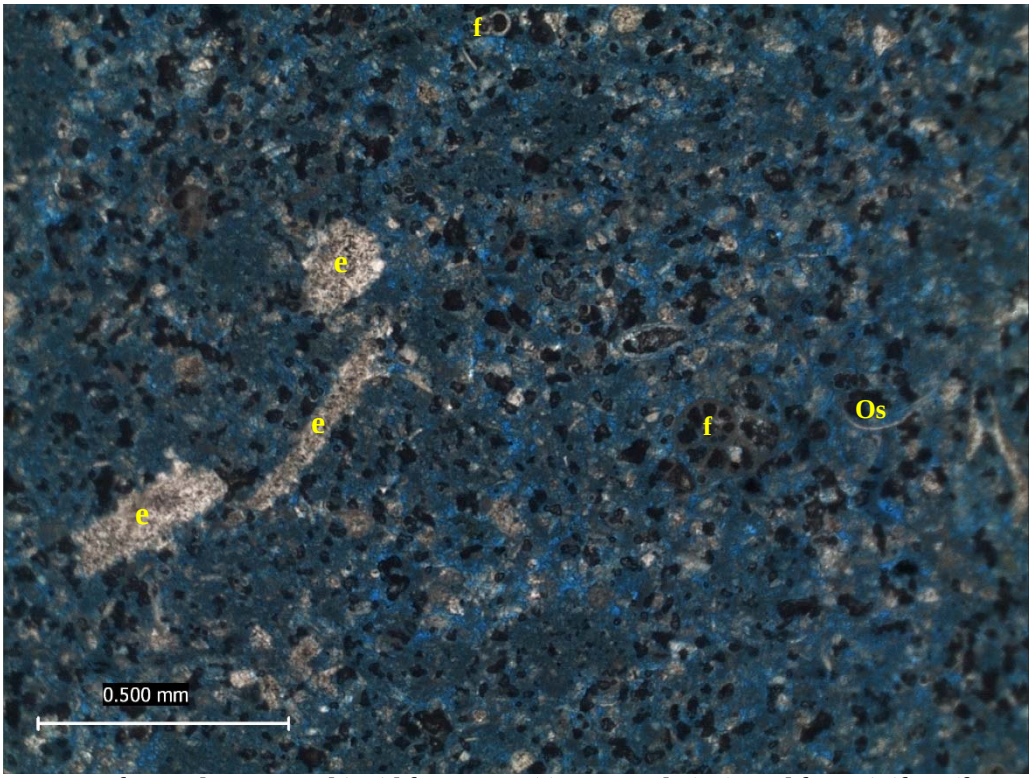
W-18811 806.5-807 ft. Wackestone. Very fine grained matrix with ostracod (Os). Transmitted light.



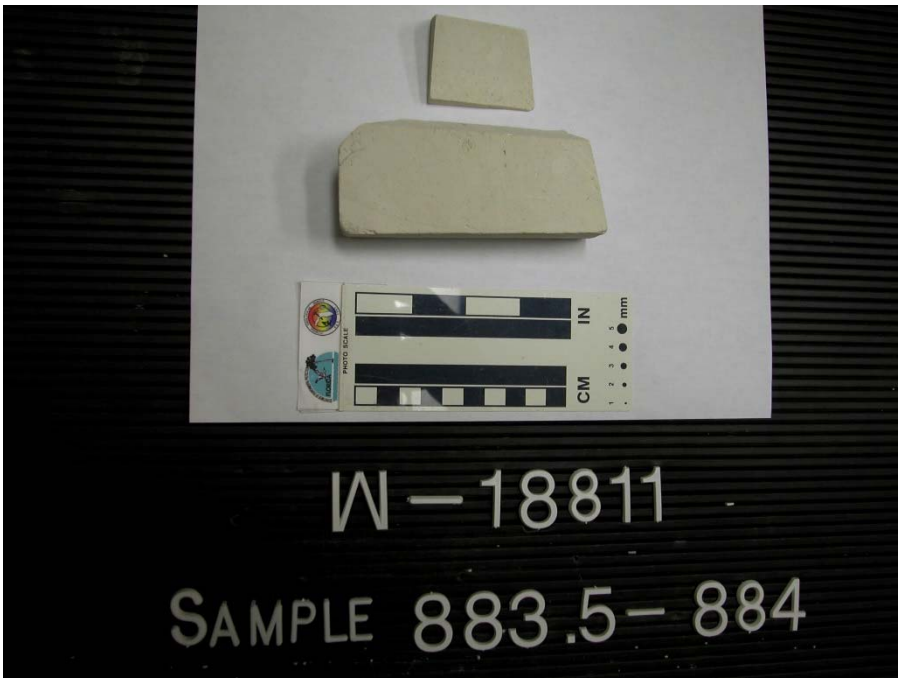
W-18811 806.5-807 ft. Wackestone. Varying grain densities (arrows) indicative of bioturbation. Transmitted light.



W-18811 806.5-807 ft. Wackestone. Very fine grained matrix with scattered echinoid (e) fragments and mottling from bioturbation. Transmitted light.



W-18811 806.5-807 ft. Wackestone. Echinoid fragments (e), ostracods (Os), and foraminifera (f). Transmitted light.



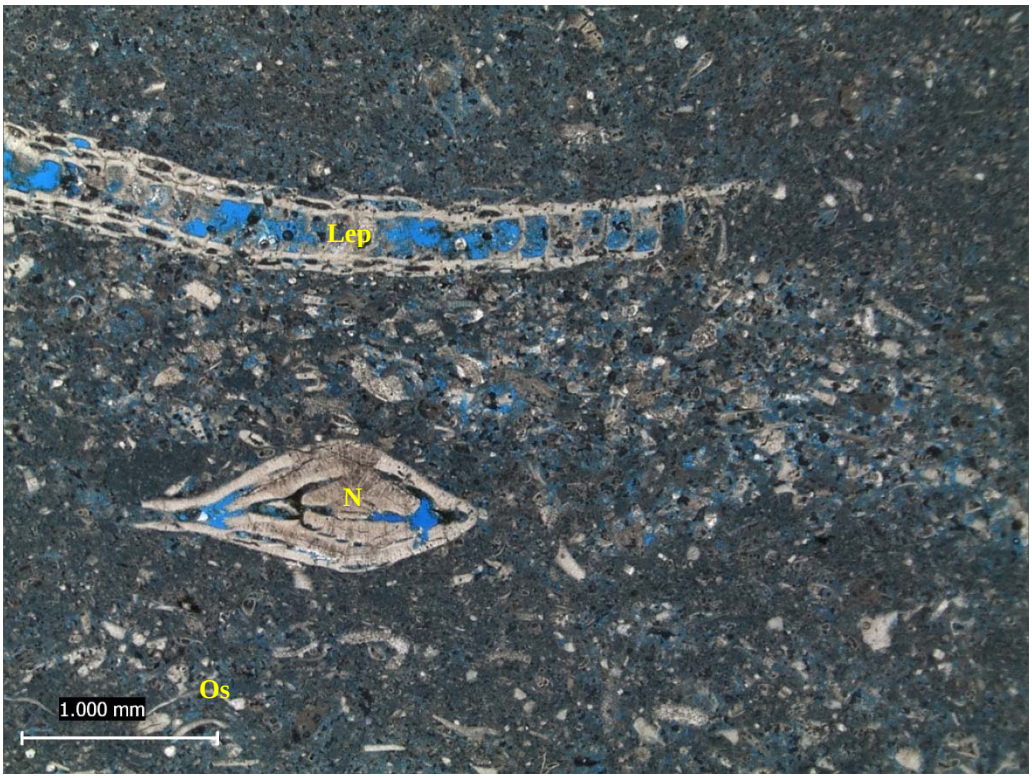
W-18811 (Brighton Reservation)

Depth:	883.5-884 ft BLS
Stratigraphic Unit:	Ocala Limestone
Lithofacies:	Mixed skeletal, foraminiferal wackestone
Dominant Pore Type:	Microporosity, moldic and interparticle
Porosity Amount:	~25 percent
Depositional Environment:	Middle ramp
Whole Rock Analysis:	Major Elements (%): (SiO_2=1.16, MgO=1.2, CaO=54.17, P_2O_5=0.05)
	Trace Constituents (ppm): (As=2, Ba=7, Cd=BDL, Cr=18.2, Mo=BDL, Ni=5, Sb=0.3, Sr=675, U=2.65, V=13, SO_4=BDL)

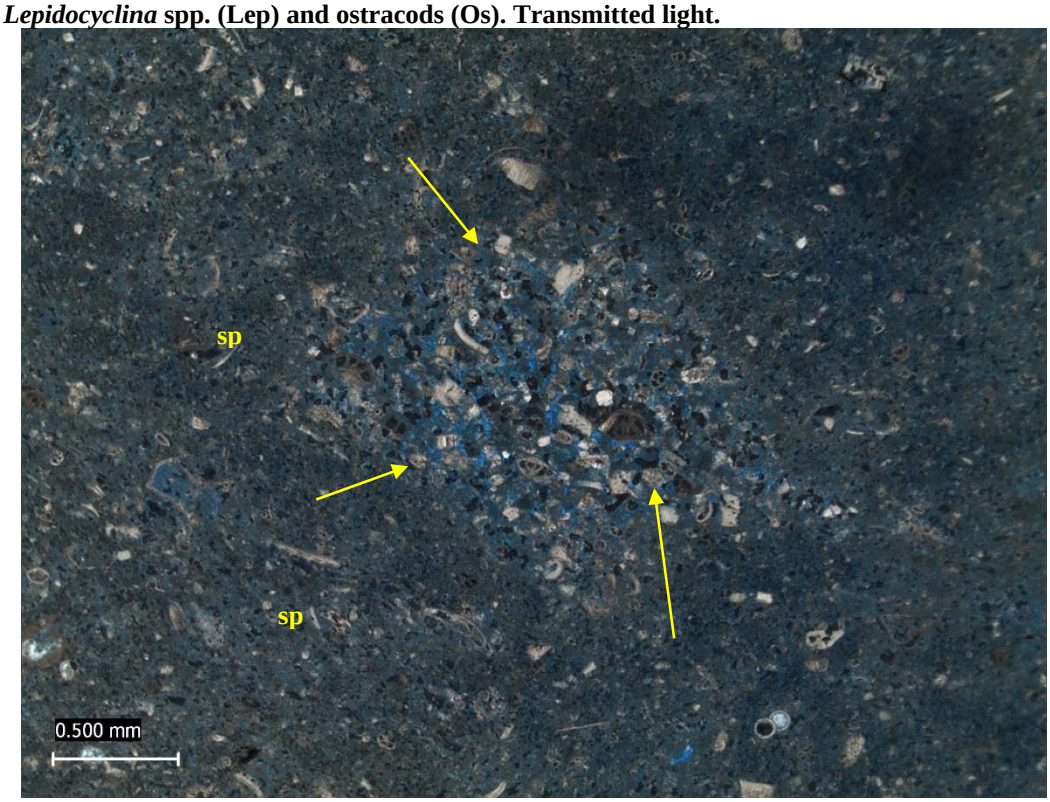
Description:

The section consists of limestone with sparse scattered rhombs of dolomite and trace of pyrite. Allochems include large and small foraminifera, ostracods, echinoids, algae, sparse bryozoan and possible sponge spicules. Section is laminated, bioturbated and fractured. There is minimal cementation. Silt-sized dolomite rhombs float in the micrite matrix. Bioturbation is indicated by differences in mud and grain densities. There are a few thin laminae possibly of algal origin. *Nummulites* spp. and *Lepidocyclina* spp. are not as fragmented and are more common than in the previous section.

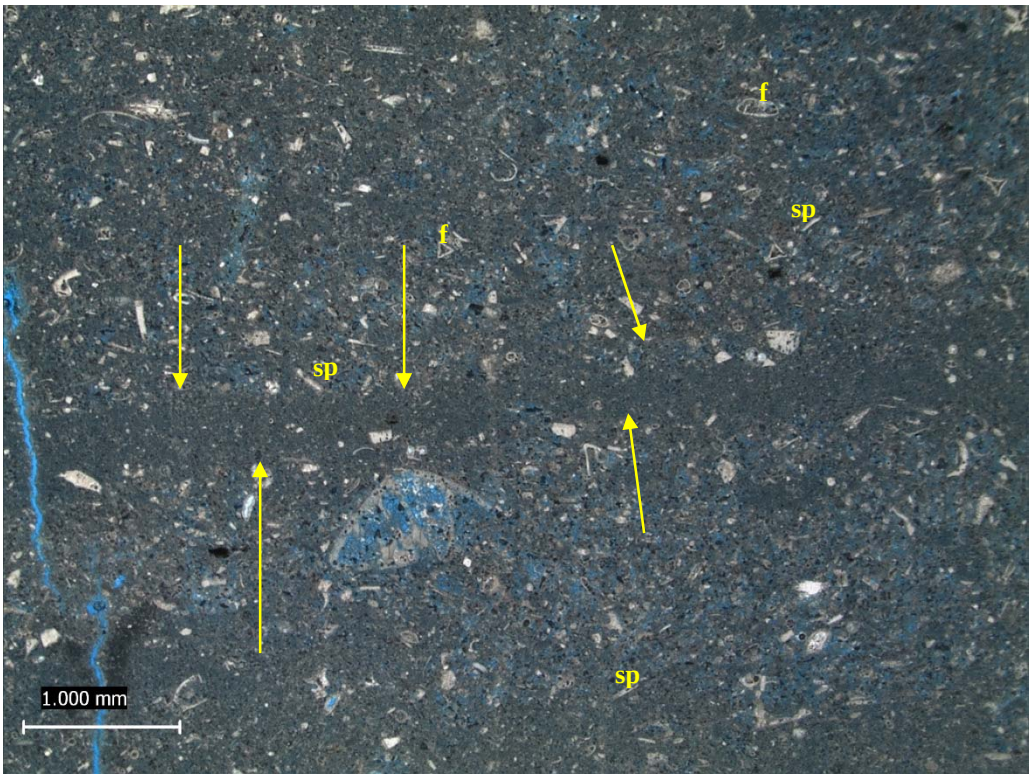
Depositional environment is likely very low energy environment, middle ramp as indicated by the bioturbated wackestone texture with relatively intact large foraminifera (Loizeaux, 1995).



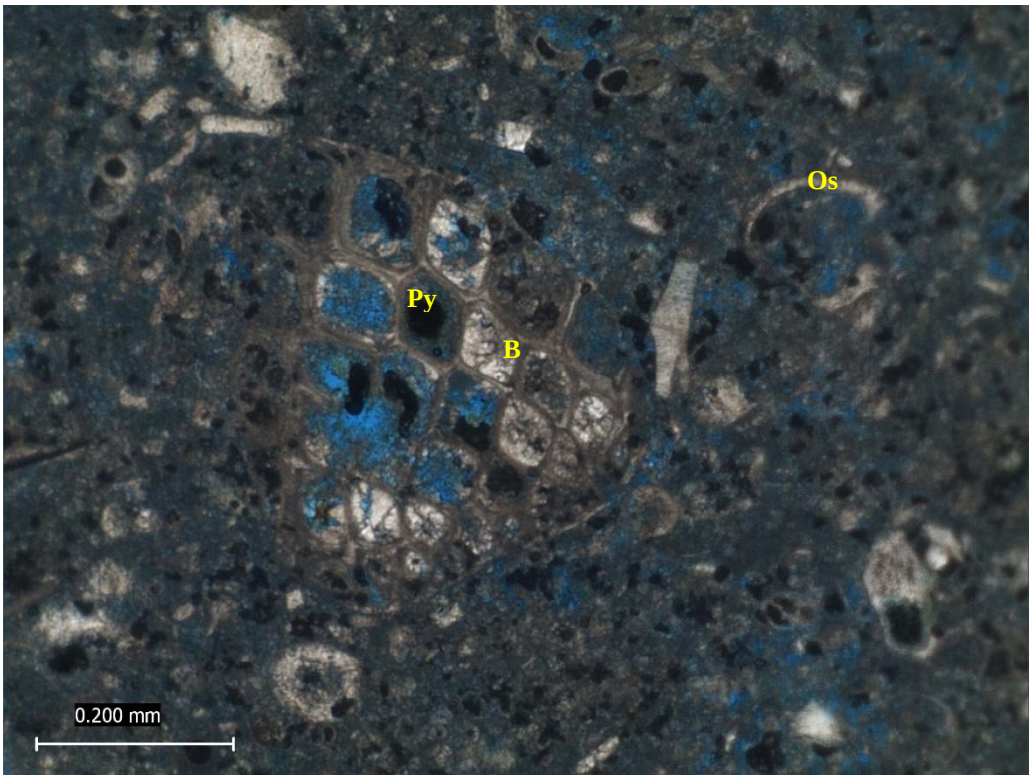
W-18811 883.5-884 ft. Mixed skeletal foraminiferal wackestone. Fine-grained matrix with *Nummulites* spp. (N) and *Lepidocyclina* spp. (Lep) and ostracods (Os). Transmitted light.



W-18811 883.5-884 ft. Mixed skeletal foraminiferal wackestone. Area of varying mud densities (arrows) indicating bioturbation. Possible sponge spicules (sp). Transmitted light.



W-18811 883.5-884 ft. Mixed skeletal foraminiferal wackestone. Thin lamina possibly of algal origin (arrows). Foraminifera (f). Possible sponge spicules (sp). Transmitted light.



W-18811 883.5-884 ft. Mixed skeletal foraminiferal wackestone. Ostracod (Os) and bryozoan (B) with pyrite (Py). Transmitted light.



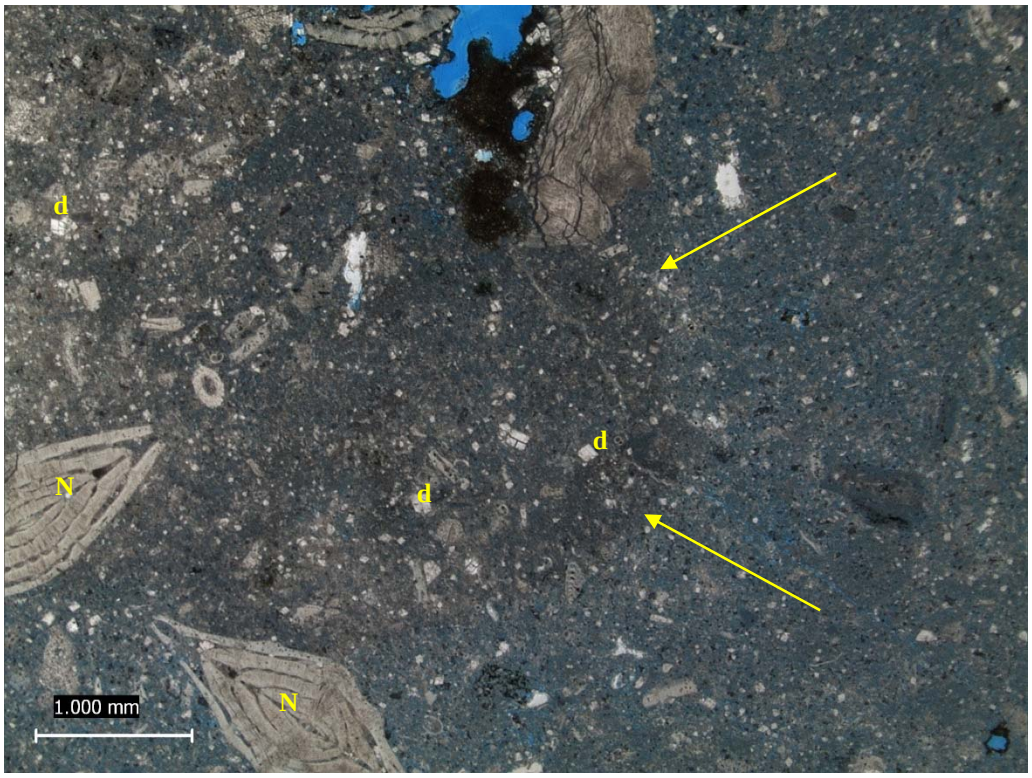
W-18811 (Brighton Reservation)

Depth:	971.5-972 ft BLS
Stratigraphic Unit:	Ocala Limestone
Lithofacies:	Foraminiferal wackestone
Dominant Pore Type:	Microporosity
Porosity Amount:	~25 percent
Depositional Environment:	Middle ramp
Whole Rock Analysis:	Major Elements (%): (SiO_2=1.7, MgO=2.06, CaO=52.98, P_2O_5=0.07)
	Trace Constituents (ppm): (As=4, Ba=4, Cd=BDL, Cr=16.7, Mo=BDL, Ni=5, Sb=0.6, Sr=554, U=2.78, V=24, SO_4=0.4)

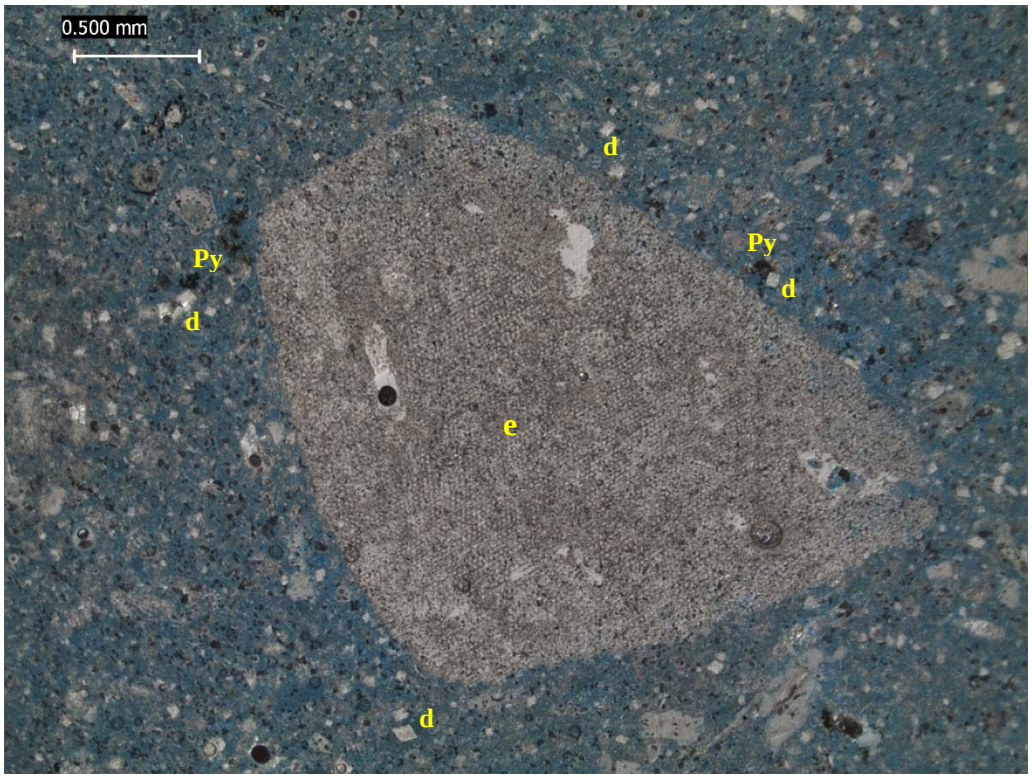
Description:

The section consists of limestone with scattered rhombs of dolomite (~10-15 percent), scattered pyrite and what appears to be glauconite; not able to confirm with SEM. Allochems include many *Nummulites* spp., a few *Lepidocyclina* sp., mollusk, echinoids and algae. Section is fractured and bioturbated. There is minimal cementation. Some areas appear more dolomitized than others.

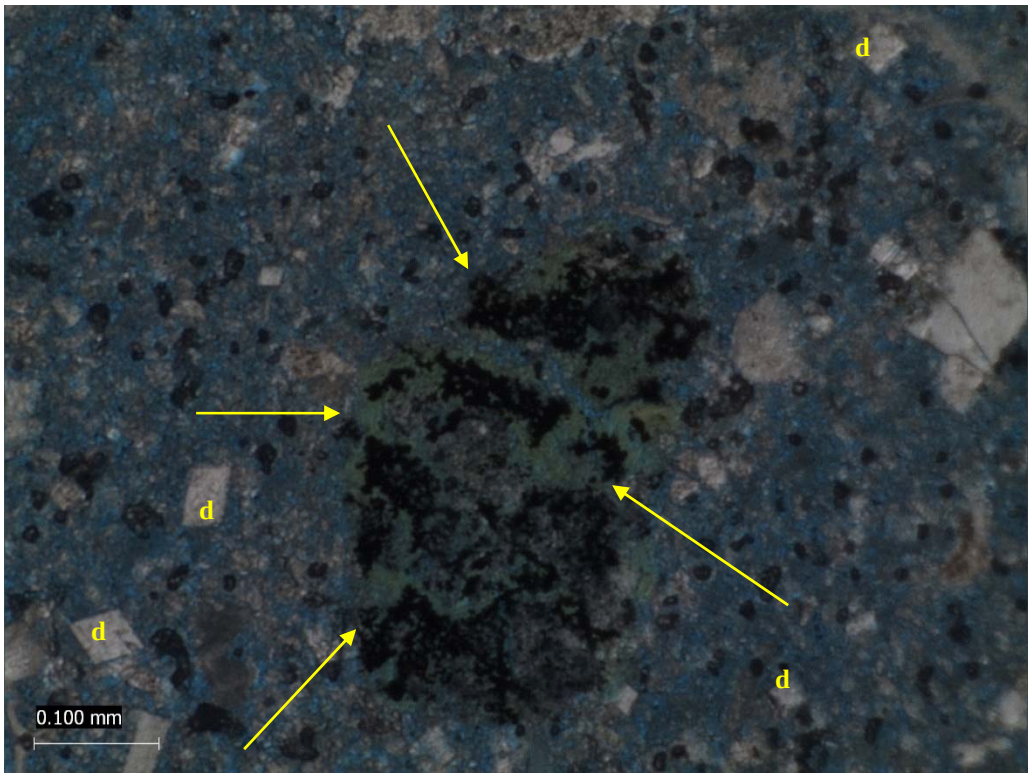
Depositional environment is likely a low energy environment, middle ramp as indicated by large foraminifera, echinoids, algal material and bioturbation, Loizeaux, 1995 (not quite as deep as previous section).



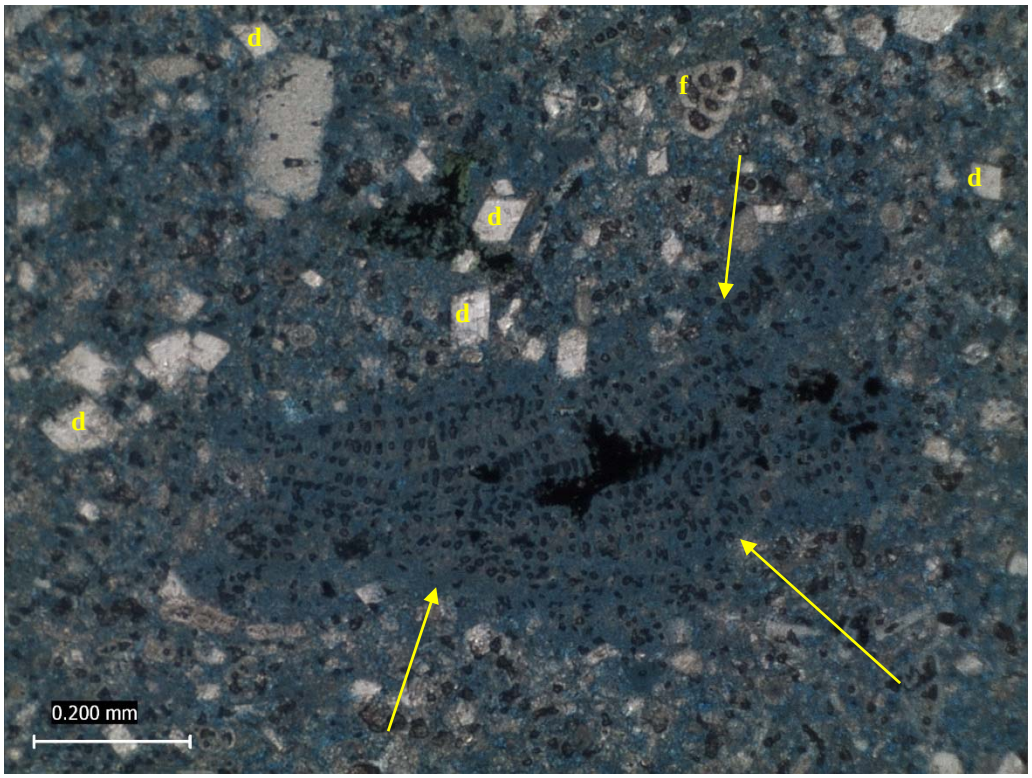
W-18811 971.5-972 ft. Foraminiferal wackestone. Note mottling (arrows) and grain size variations indicating bioturbation. *Nummulites* spp. (N) and dolomite rhombs (d). Transmitted light.



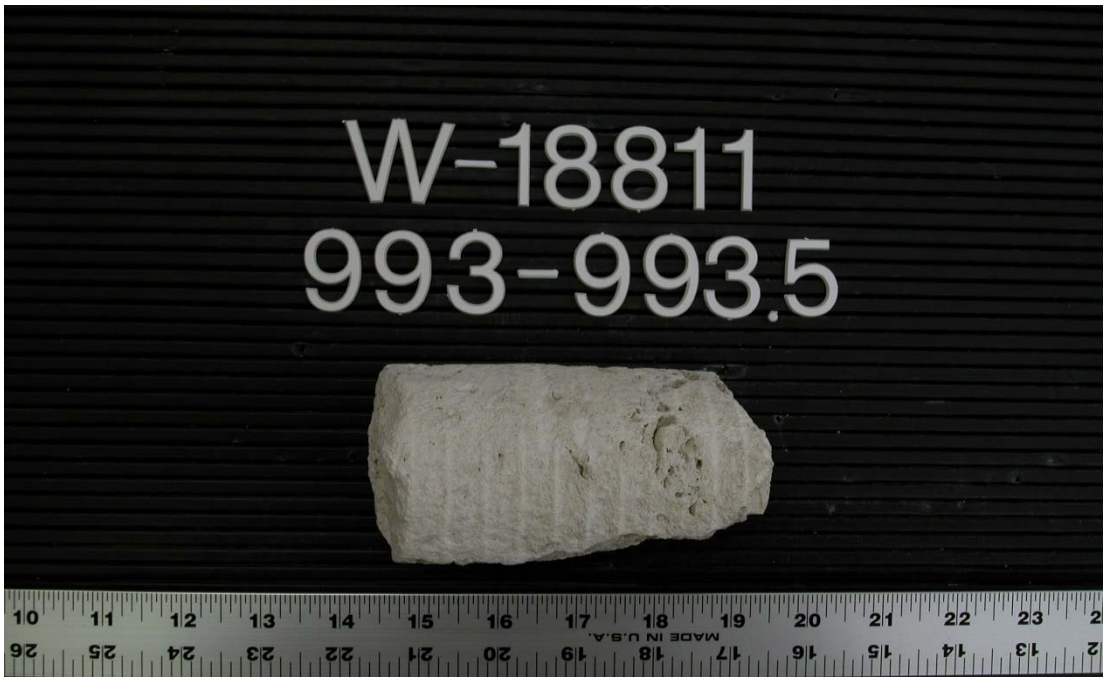
W-18811 971.5-972 ft. Foraminiferal wackestone. Echinoid fragment (e) in fine grained matrix with scattered dolomite rhombs (d) and Pyrite (Py). Transmitted light.



W-18811 971.5-972 ft. Foraminiferal wackestone. Area with iron sulfide/ pyrite and possible glauconite (arrows). Dolomite rhombs (d) of varying sizes in the matrix. Transmitted light.



W-18811 971.5-972 ft. Foraminiferal wackestone. Possible algae (*Halimeda*) or bryozoan (arrows), dolomite rhombs (d) and foraminifera (F). Transmitted light.



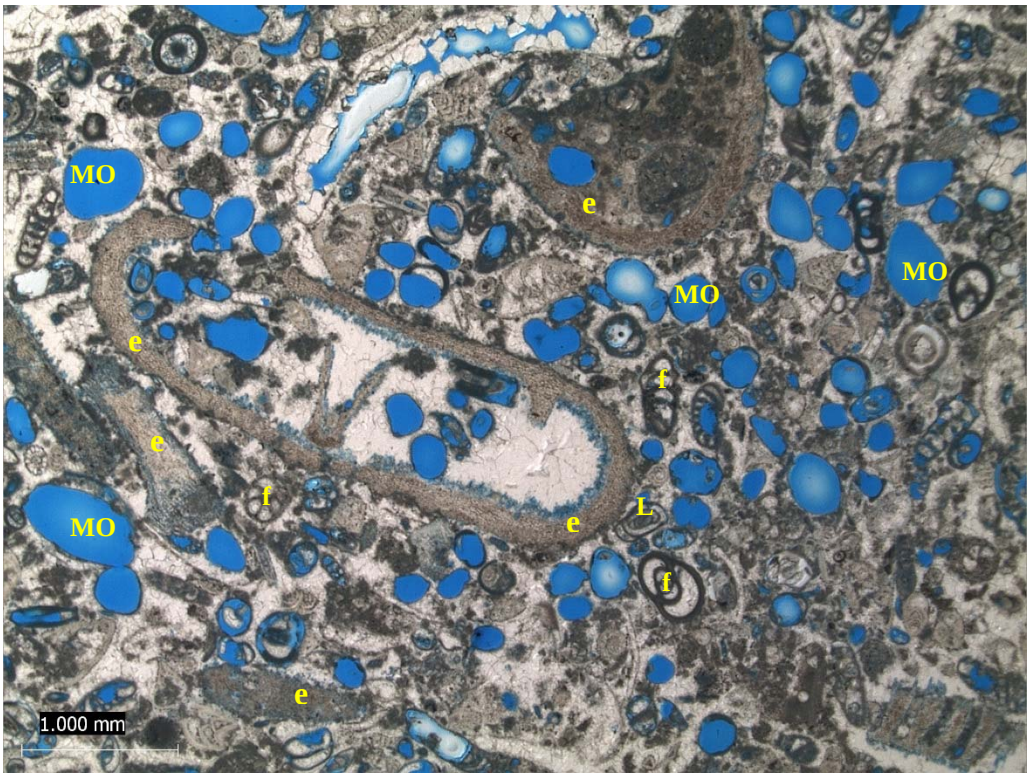
W-18811 (Brighton Reservation)

Depth:	993-993.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Mixed foraminiferal grainstone
Dominant Pore Type:	Moldic
Porosity Amount:	~15 percent
Depositional Environment:	Shallow water upper ramp
Whole Rock Analysis:	Not analyzed for this sample

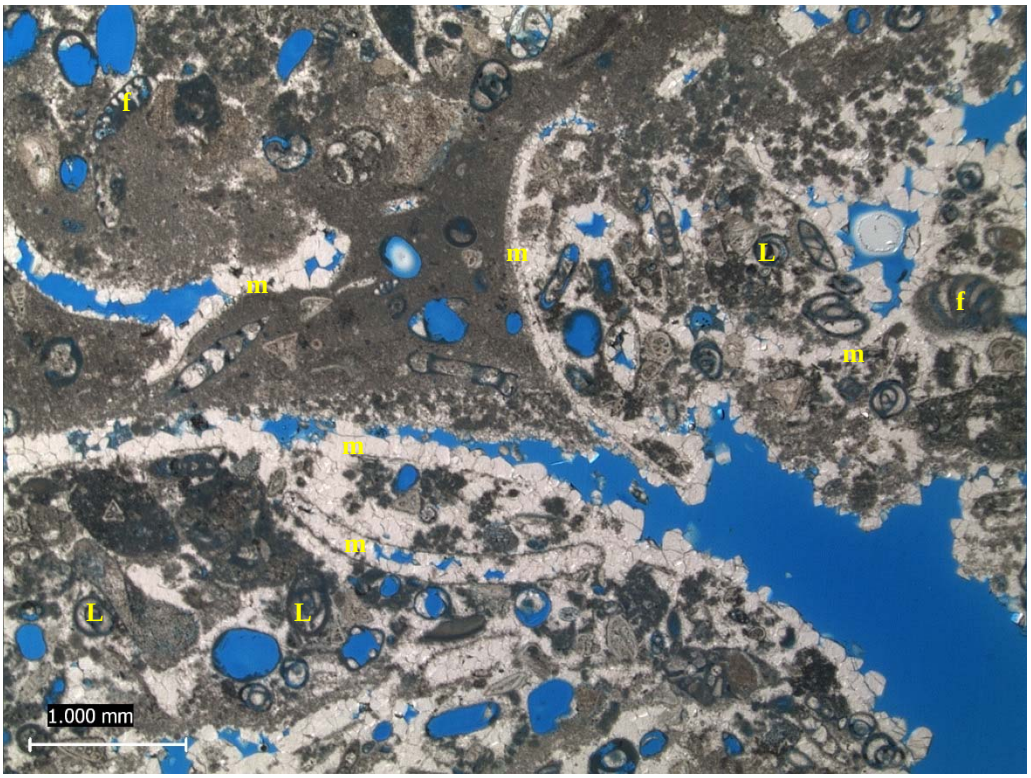
Description:

The section consists of limestone with a trace of pyrite. Section is believed to be Avon Park Formation, but complete core was not described. Allochems include many miliolids, some ostracods, red algae, mollusk molds and large echinoids. Sample is mottled and bioturbated. Section is moderate to well-cemented with fine to medium crystalline cement filling many molds and interparticle pore spaces. Muddy areas are not as well cemented. Syntaxial cement is common around echinoid fragments.

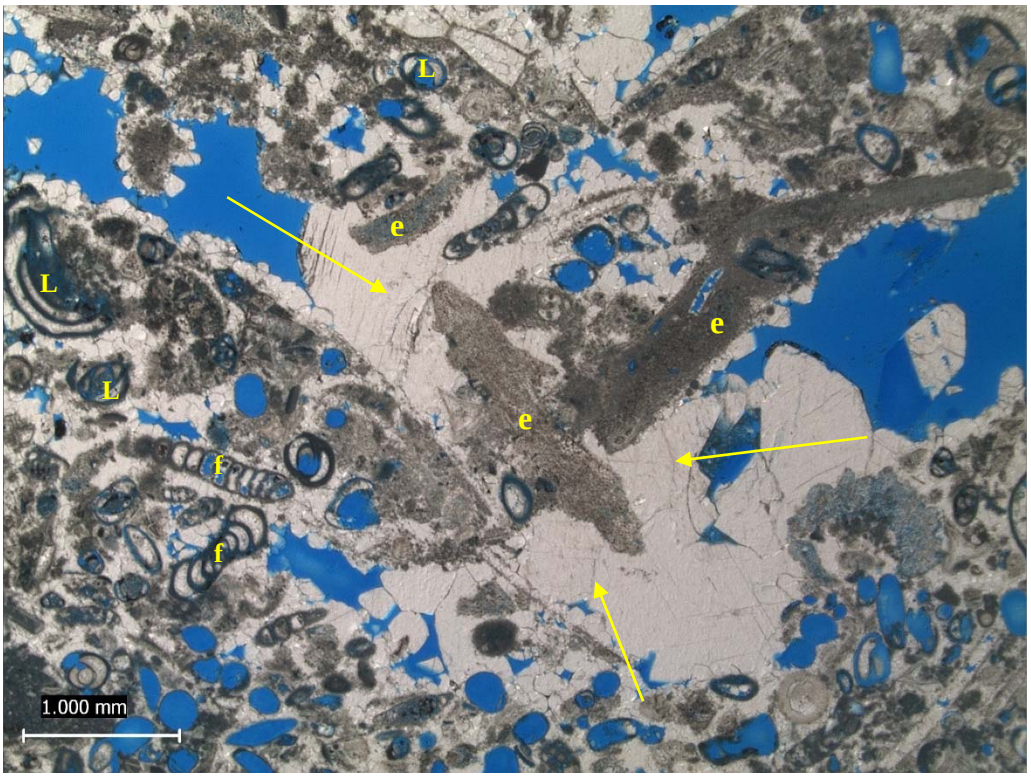
Depositional environment is likely a shallow water upper ramp environment, possibly shoals (Flügel, 2004; Scholle and Ulmer-Scholle, 2003).



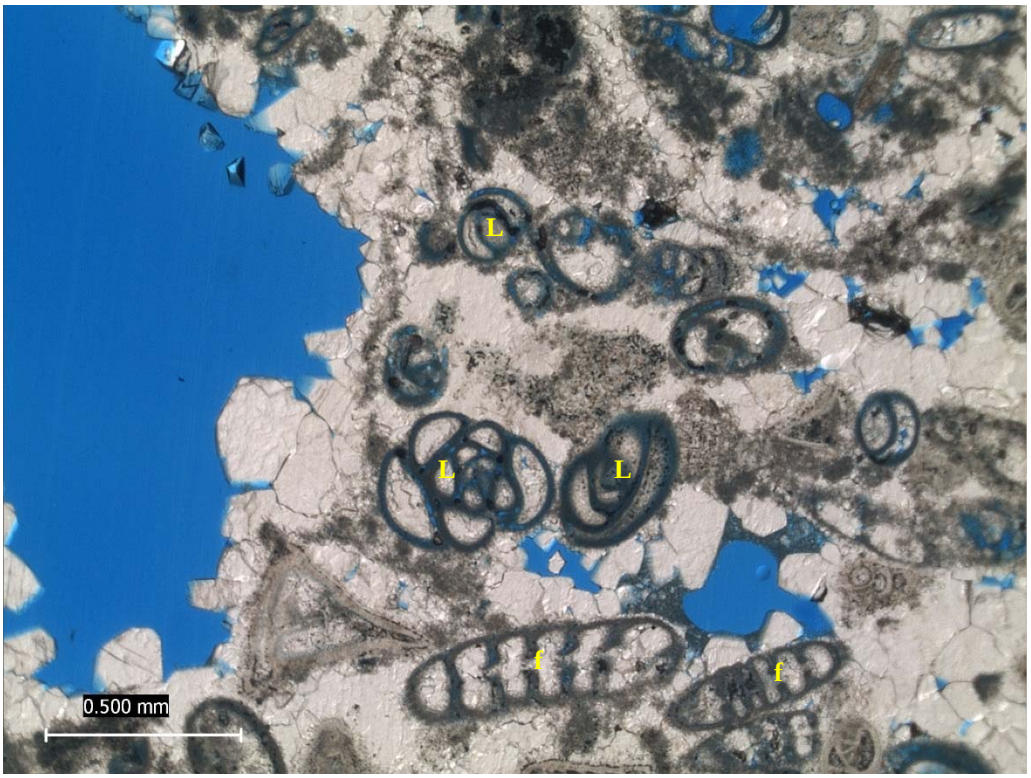
W-18811 993-993.5 ft. Mixed foraminiferal grainstone. Moldic porosity (MO) with interparticle cementation. Foraminifera (f), miliolids (L), large echinoid and echinoid fragments (e). Transmitted light.



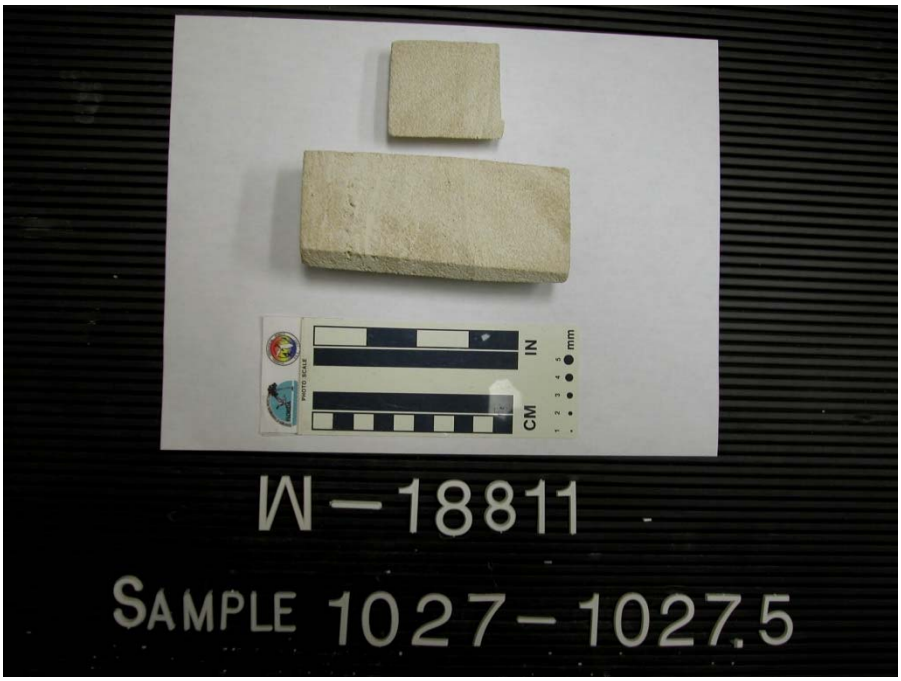
W-18811 993-993.5 ft. Mixed foraminiferal grainstone. Mollusk (m) mold partially filled with fine to medium crystalline cement. Upper left quadrant of photo is muddier with less cementation. Foraminifera (f) and miliolids (L). Transmitted light.



W-18811 993-993.5 ft. Mixed foraminiferal grainstone. Echinoid fragments (e) with syntaxial cement overgrowths (arrows). Foraminifera (f) and miliolids (L). Transmitted light.



W-18811 993-993.5 ft. Mixed foraminiferal grainstone. Foraminifera (f) and miliolids (L) with fine to medium crystalline cement (inter and intraparticle). Transmitted light.



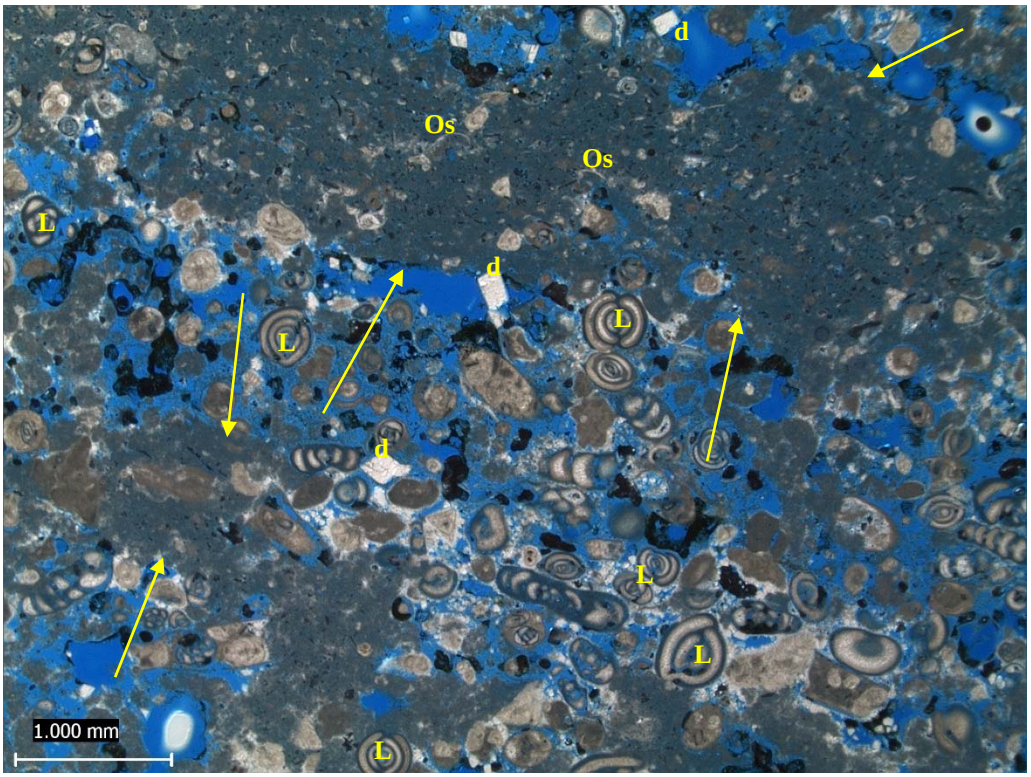
W-18811 (Brighton Reservation)

Depth:	1027-1027.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Mixed foraminiferal packstone
Dominant Pore Type:	Interparticle and moldic
Porosity Amount:	~35 percent
Depositional Environment:	Shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=.18, MgO=1.28, CaO=55.74) Trace Constituents (ppm): (As=2, Ba=4, Cd=BDL, Cr=5.3, Mo=6, Ni=BDL, Sb=0.2, Sr=614, U=2.91, V=10, SO_4=BDL)

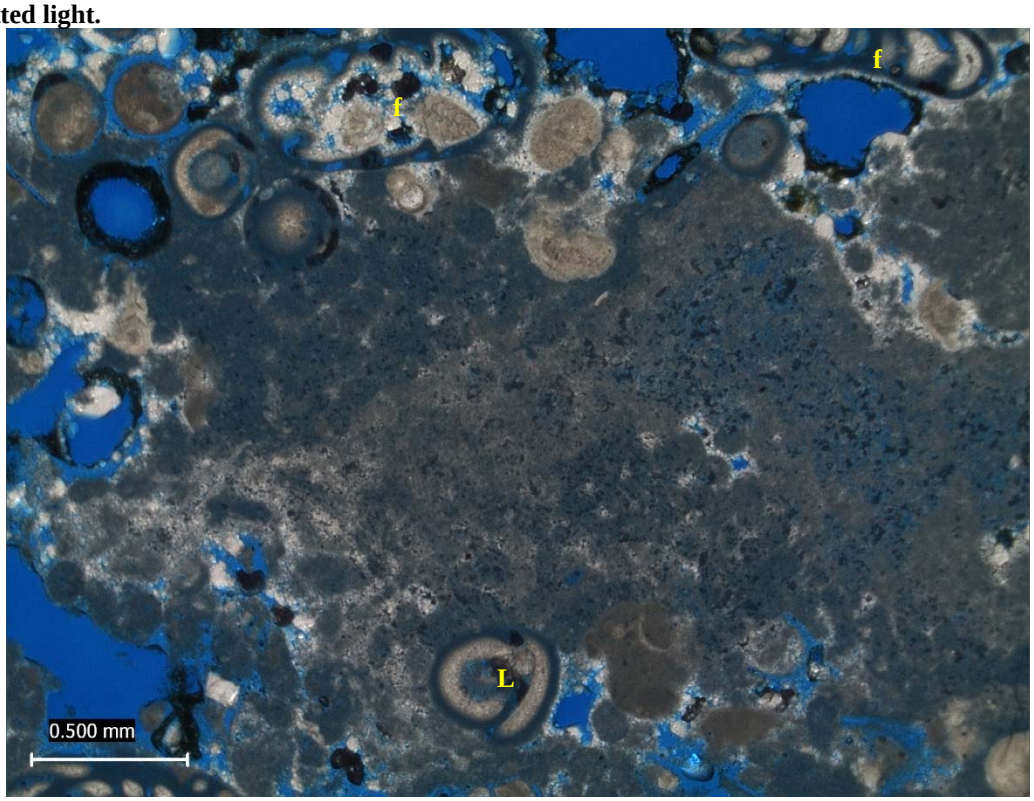
Description:

The section consists of limestone with scattered dolomite rhombs. Allochems include foraminifera, ostracods, peloids, intraclasts and abundant miliolids. Section is mottled and bioturbated. Minimal cementation throughout but occurs most often around foraminifera. Ostracods are more common in the muddy laminae. Muddy laminae may have a possible algal origin. Dolomite rhombs are usually scattered but occur more concentrated in a few areas probably related to bioturbation. Section is micritized and shows some evidence of compaction with linear grain contacts and interpenetration with dissolution of one grain and inclusion of preexisting cements from the other grain.

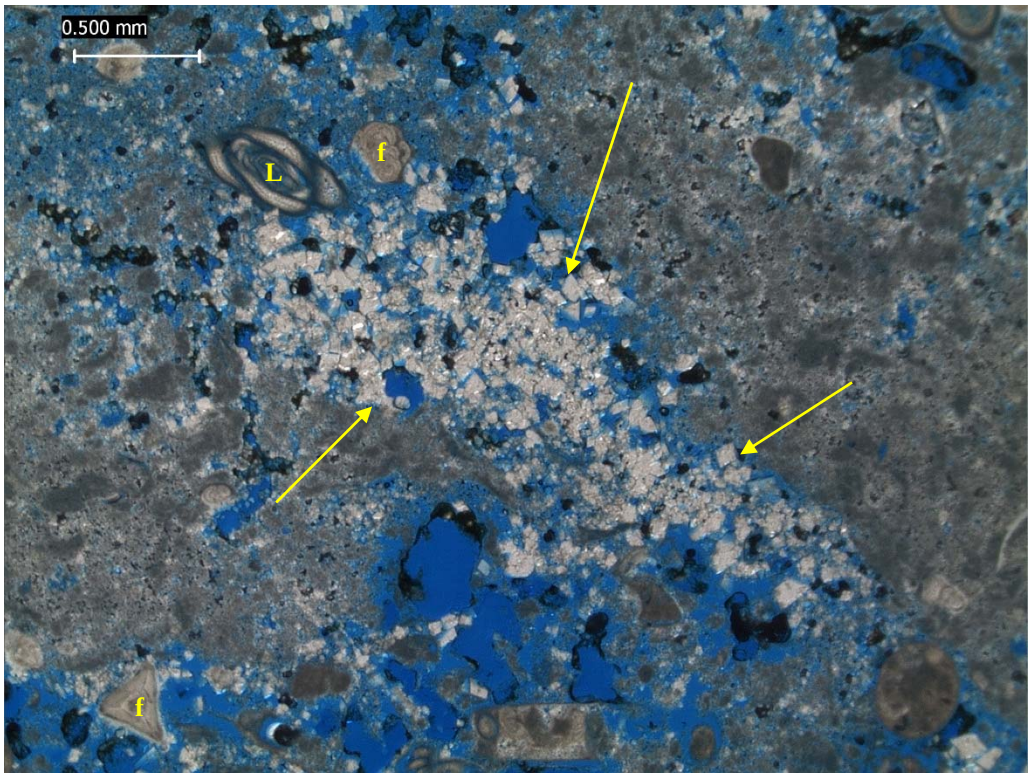
Depositional environment is likely a shallow marine environment, possibly a shallow reef (Flügel, 2004; Scholle and Ulmer-Scholle, 2003).



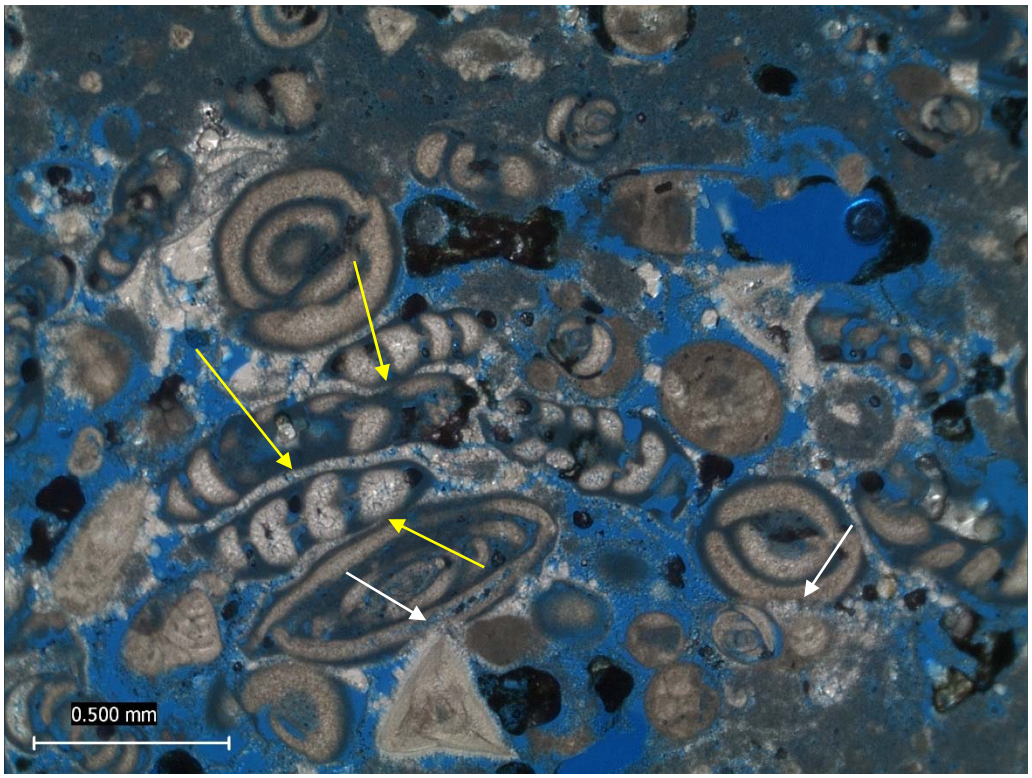
W-18811 1027-1027.5 ft. Mixed foraminiferal packstone. Abundant miliolids (L) with some cementation. Muddy areas (arrows) may be algal and contain ostracods (Os). Dolomite rhombs (d) scattered throughout. Transmitted light.



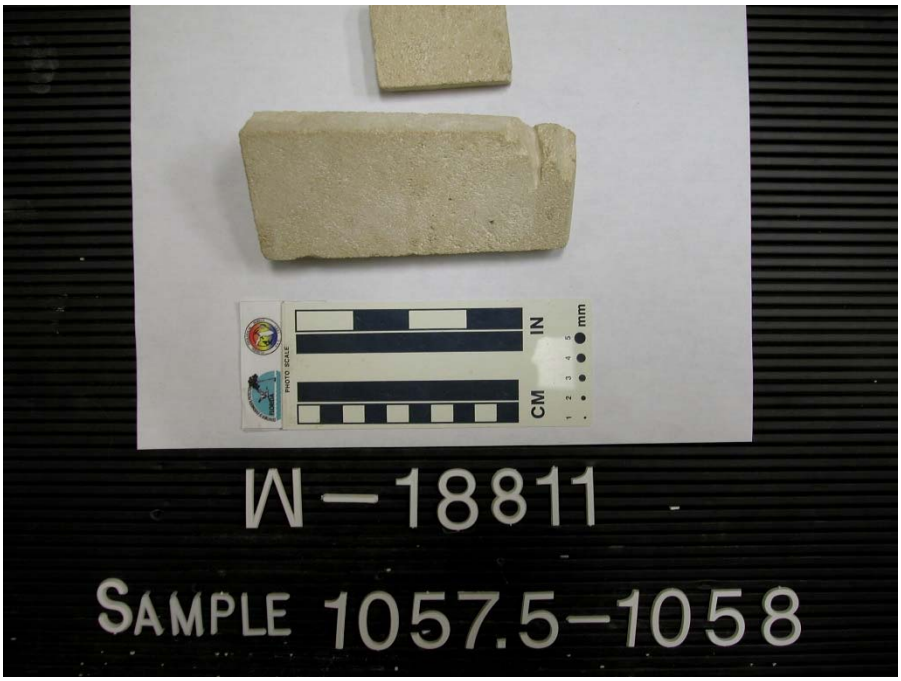
W-18811 1027-1027.5 ft. Mixed foraminiferal packstone. Algal layer with peloidal texture. Foraminifera (f) and miliolids (L) with some cementation. Transmitted light.



W-18811 1027-1027.5 ft. Mixed foraminiferal packstone. Area with abundant dolomite rhombs (arrows). Foraminifera (f) and miliolids (L). Transmitted light.



W-18811 1027-1027.5 ft. Mixed foraminiferal packstone. Some evidence of mechanical compaction – linear grain contacts (yellow arrows) and interpenetration (white arrows). Transmitted light.



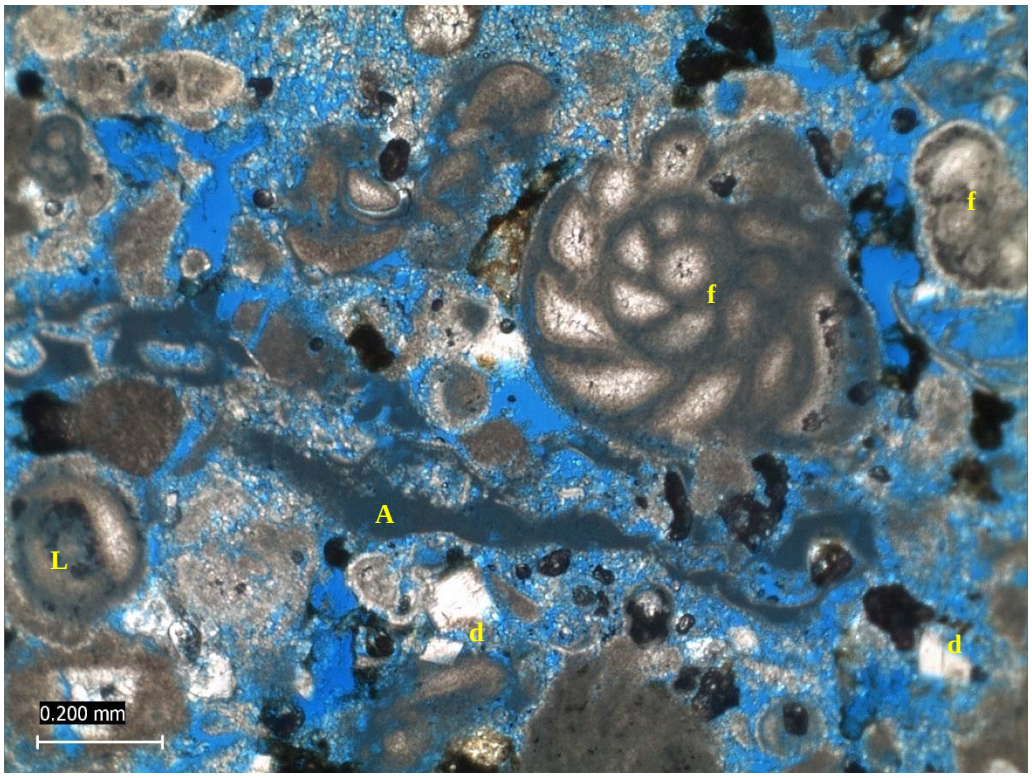
W-18811 (Brighton Reservation)

Depth:	1057.5-1058 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Mixed foraminiferal packstone
Dominant Pore Type:	Interparticle and microporosity
Porosity Amount:	~25 percent
Depositional Environment:	Shallow inner platform
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.14, MgO=1, CaO=55.83) Trace Constituents (ppm): (As=3, Ba=1, Cd=BDL, Cr=3, Mo=13, Ni=1, Sb=0.4, Sr=517, U=3.7, V=17, SO_4=0.4)

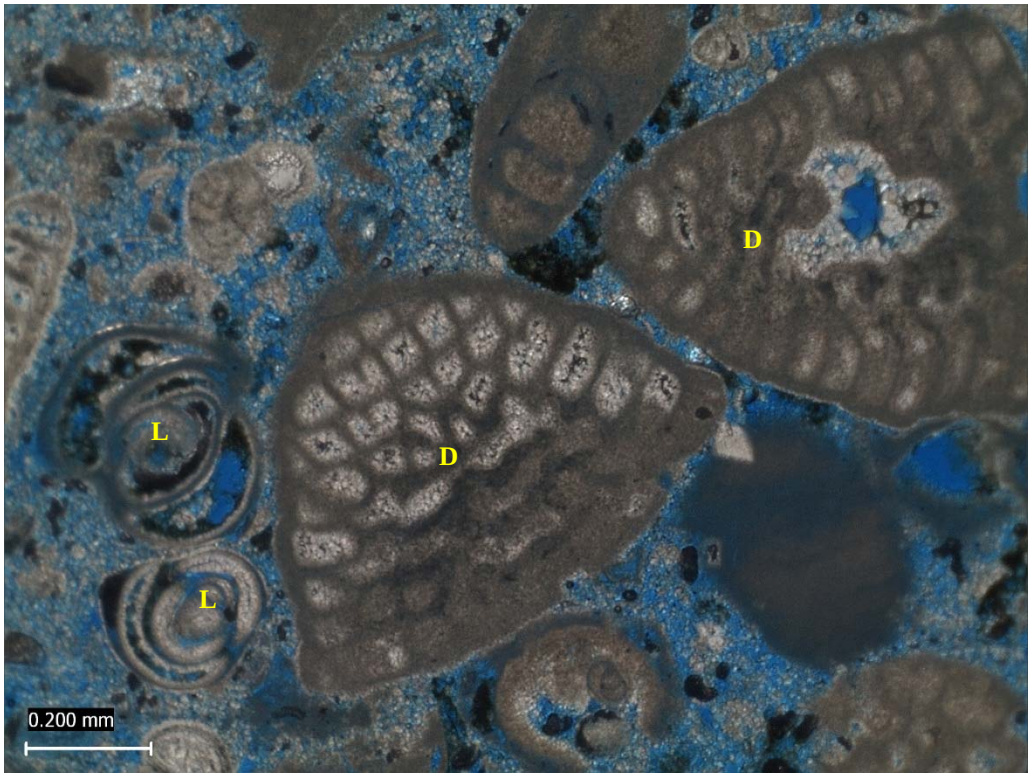
Description:

The section consists of limestone with scattered dolomite rhombs and a micrite matrix. Allochems include foraminifera, peloids, algae, few ostracods and many miliolids. Section is micritized with minimal cementation. The cement that does occur is intraparticle. There is some evidence of compaction with linear grain contacts and interpenetration with dissolution of one grain and inclusion of preexisting cements from the other grain. Dolomite is more common in the bioturbated areas. Parts of the matrix appear recrystallized.

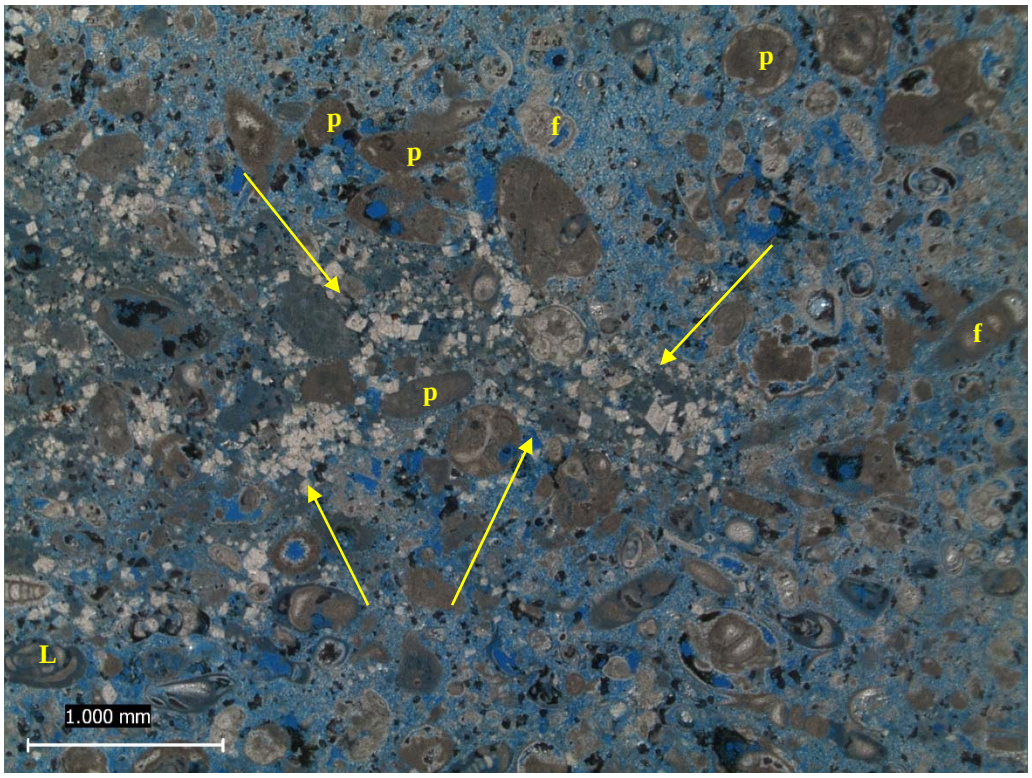
Depositional environment is likely a shallow inner platform indicated by abundant miliolids and orbitolinids (Flügel, 2004).



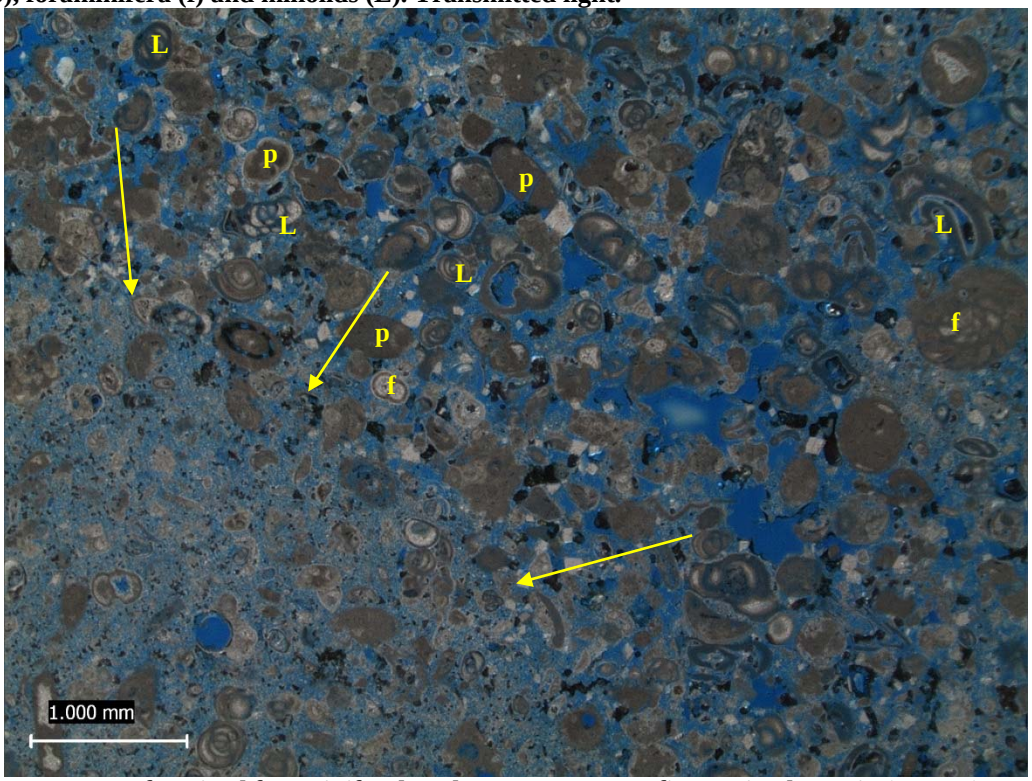
W-18811 1057.5-1058 ft. Mixed foraminiferal packstone. Foraminifera (f) and dolomite rhombs (d), miliolids (L) and wispy algal (A) lamina. Transmitted light.



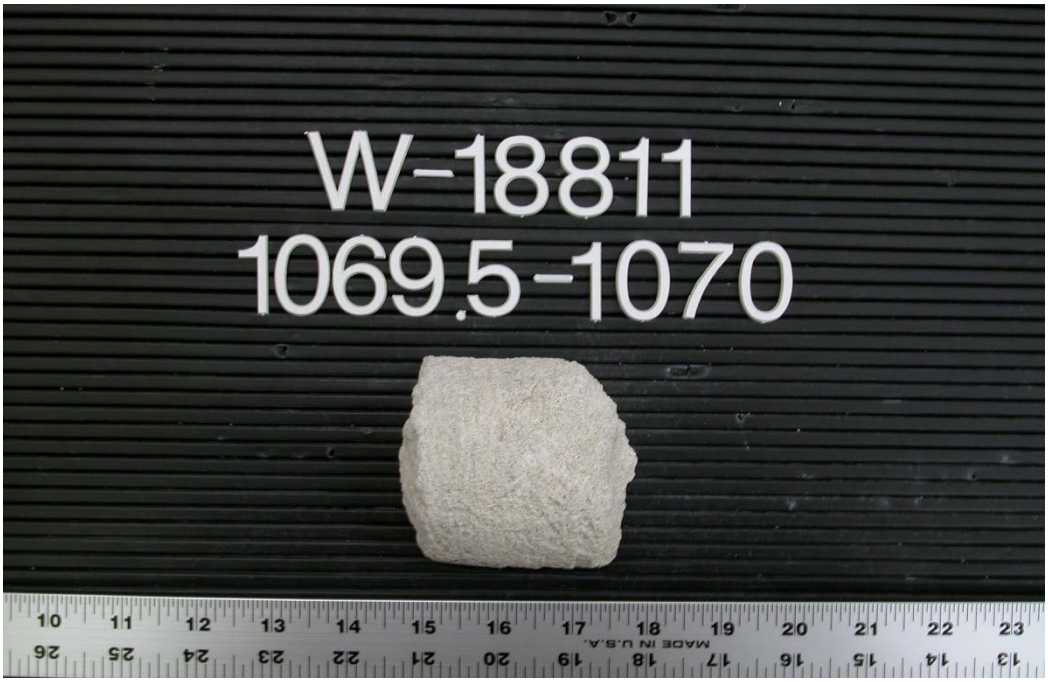
W-18811 1057.5-1058 ft. Mixed foraminiferal packstone. Miliolids (L) and foraminifera (orbitolinids [D]) with some intraparticle cementation. Note matrix appears recrystallized. Transmitted light.



W-18811 1057.5-1058 ft. Mixed foraminiferal packstone. Area of bioturbation is more dolomitized (arrows). Peloids (p), foraminifera (f) and miliolids (L). Transmitted light.



W-18811 1057.5-1058 ft. Mixed foraminiferal packstone. Note very fine grained matrix (arrows) appears recrystallized with area of coarser grained material above probably due to bioturbation. Miliolids (L), foraminifera (f) and peloids (p) more abundant in coarser fraction. Transmitted light.



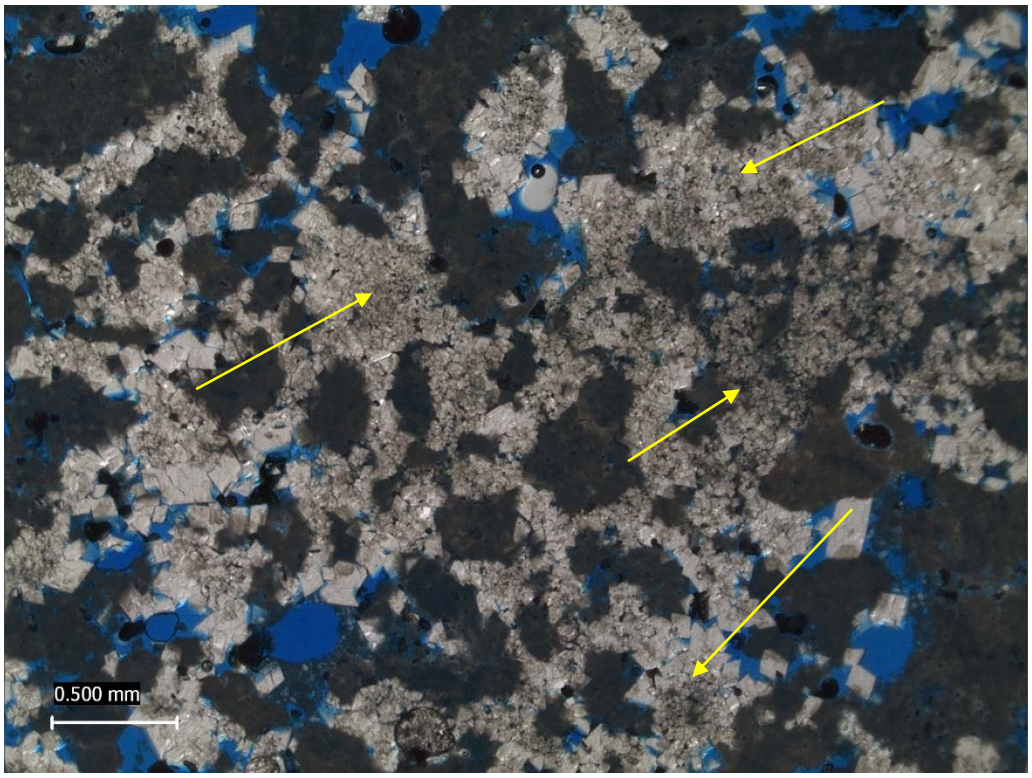
W-18811 (Brighton Reservation)

Depth:	1069.5-1070 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Dolomitic limestone
Dominant Pore Type:	Moldic and vuggy
Porosity Amount:	~40 percent
Depositional Environment:	Lower intertidal or shallow subtidal
Whole Rock Analysis:	Not analyzed for this sample

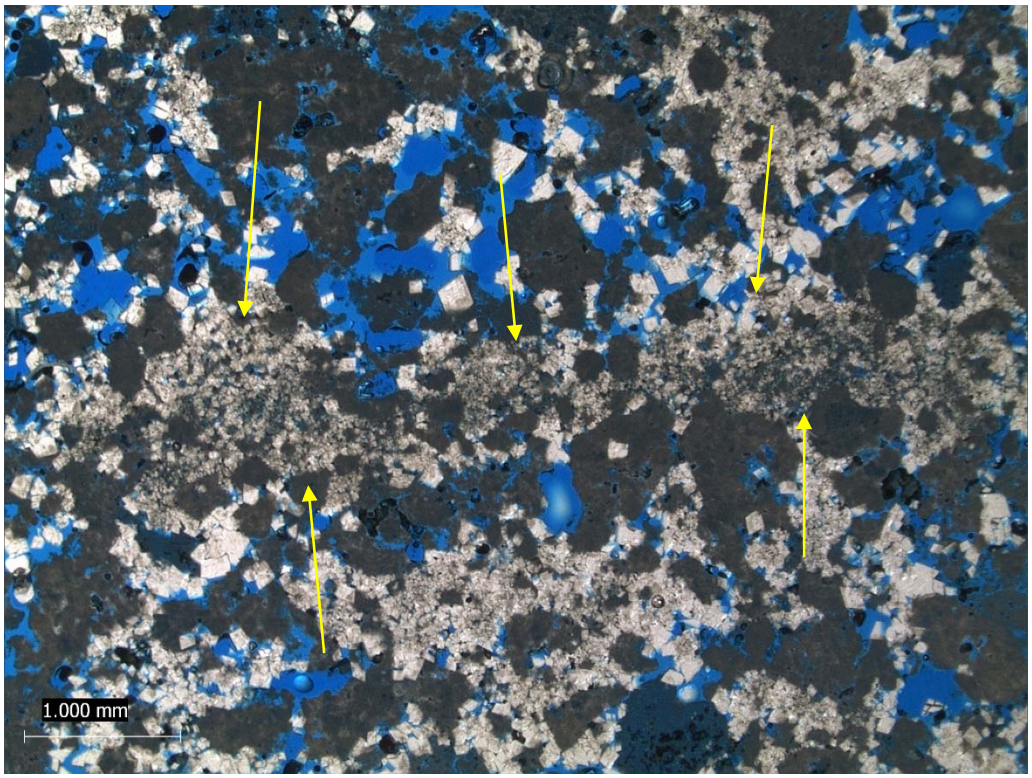
Description:

The section consists of dolomitic limestone about (40 percent dolomite). Allochems include sparse miliolids and ostracods, intraclasts and algal fragments. Most of the allochems are micritized making identification difficult. Much of the muddy micritized areas may be ghosts of foraminifera and algal pieces. The section is mottled and laminated. Dolomite rhombs are inclusion rich, appear roughly laminated at times and also fill interparticle pore spaces.

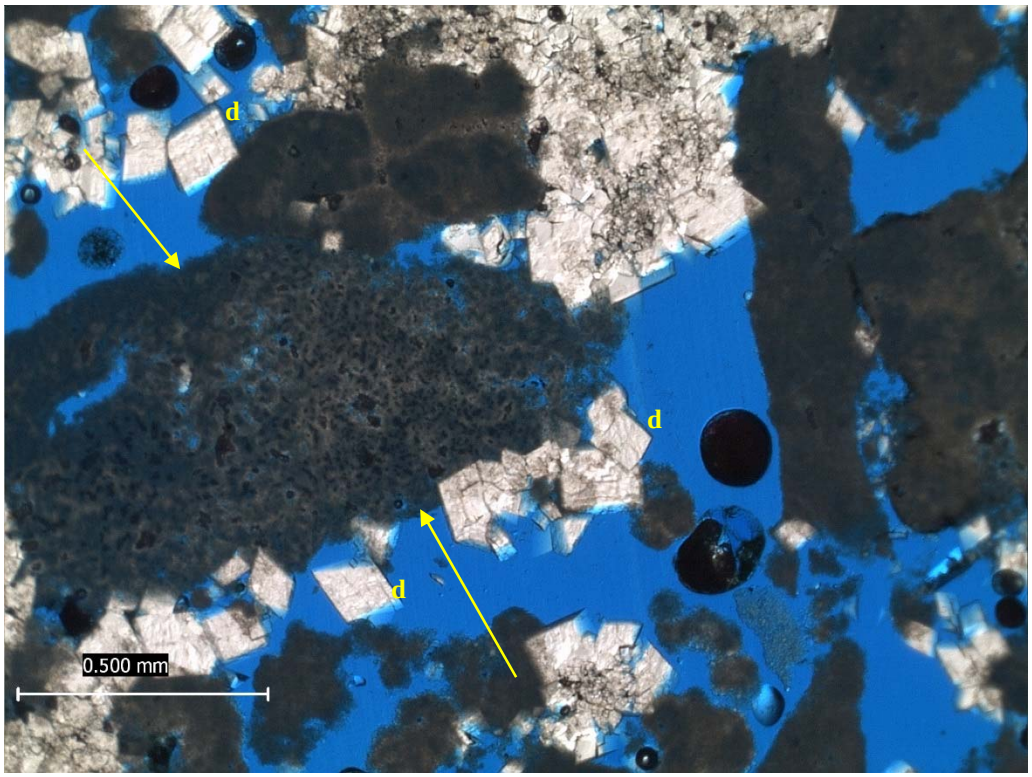
Depositional environment is likely lower intertidal or shallow subtidal (Thayer and Miller, 1984).



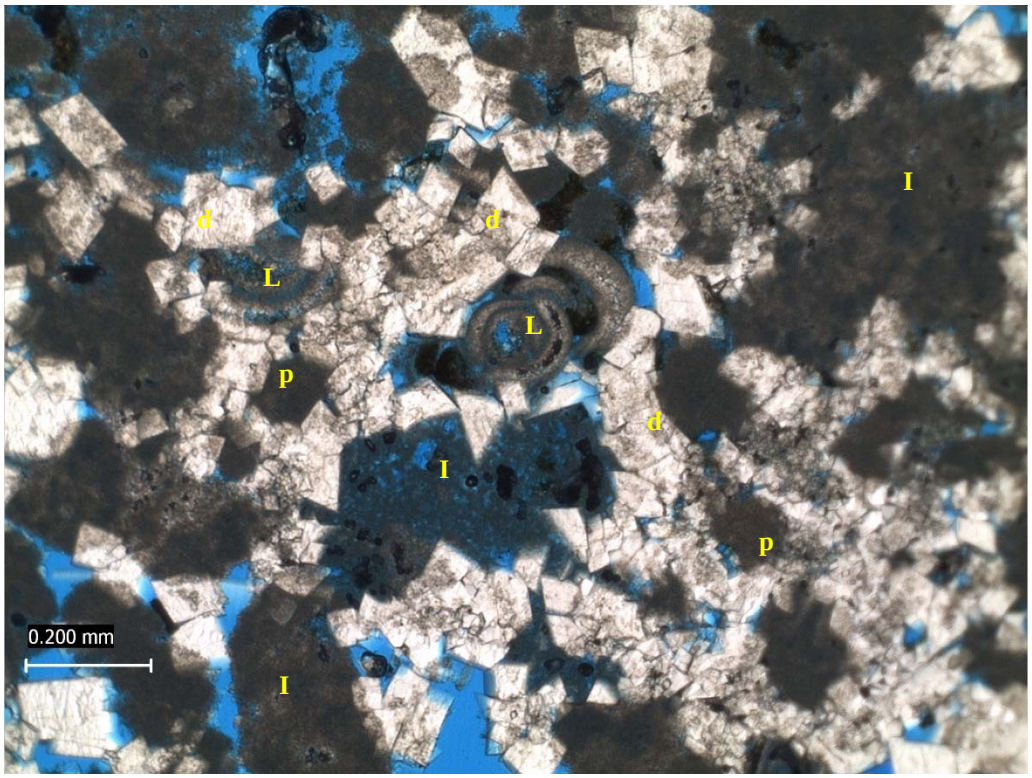
W-18811 1069.5-1070 ft. Dolomitic limestone. Inclusion rich dolomite rhombs (arrows) filling interparticle pore spaces surrounding micritized allochems. Transmitted light.



W-18811 1069.5-1070 ft. Dolomitic limestone. Inclusion rich dolomite roughly laminated (arrows). Transmitted light.



W-18811 1069.5-1070 ft. Dolomitic limestone. Micritized algal material (arrows) with dolomite rhombs (d) in interparticle pore spaces. Transmitted light.



W-18811 1069.5-1070 ft. Dolomitic limestone. Dolomite (d) surrounding micritized peloids (p) and miliolids (L) and intraclasts (I) of possible algal origin. Transmitted light.



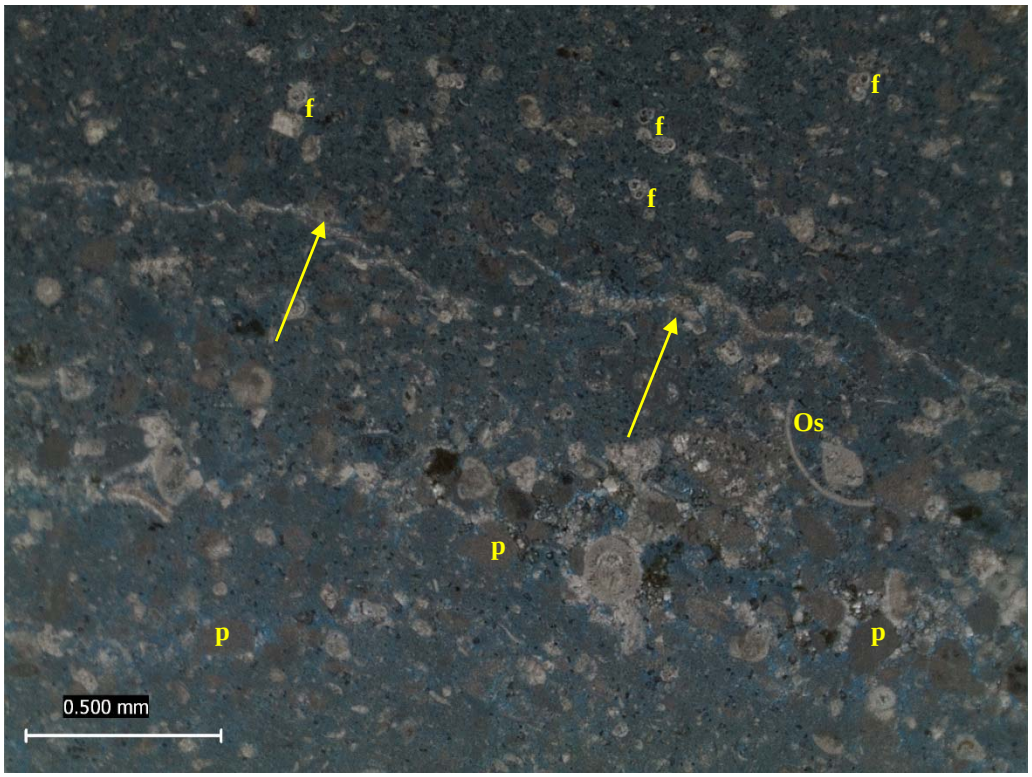
W-18811 (Brighton Reservation)

Depth:	1157.5-1158 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Mixed skeletal wackestone
Dominant Pore Type:	Microporosity
Porosity Amount:	~30 percent
Depositional Environment:	Shallow marine with open circulation
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.55, MgO=1.21, CaO=53.39,) Trace Constituents (ppm): (As=2, Ba=5, Cd=BDL, Cr=5.5, Mo=9, Ni=3, Sb=0.2, Sr=683, U=4.64, V=24, SO_4=0.4)

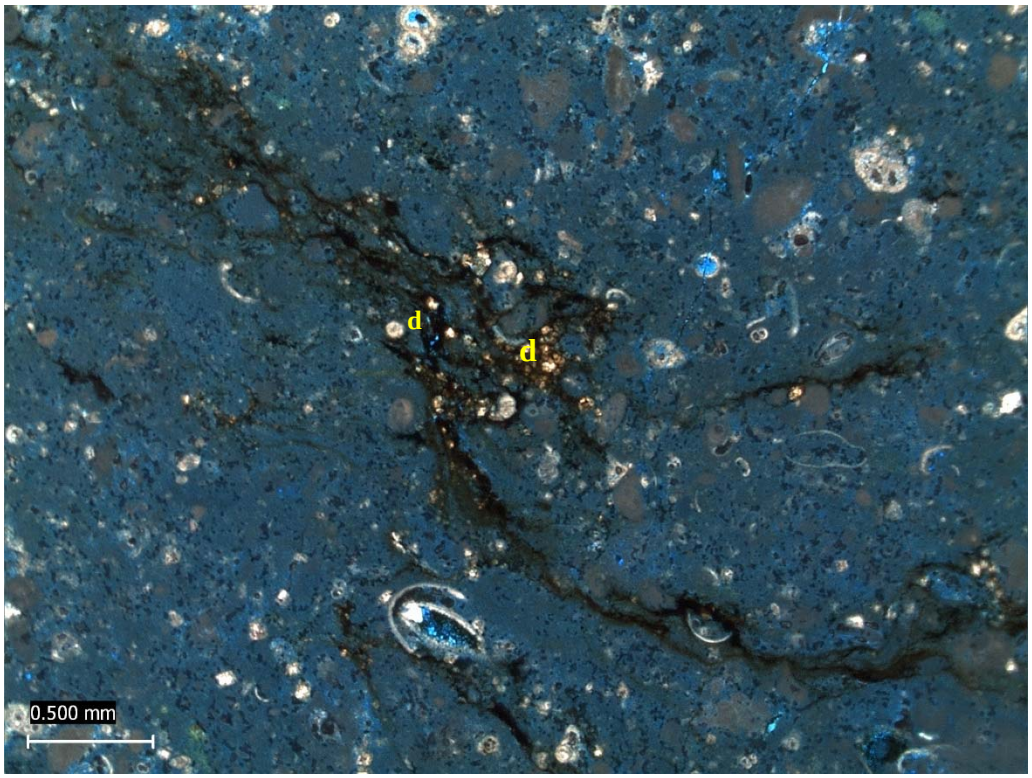
Description:

The section consists of limestone with scattered dolomite and organics. Allochems include foraminifera, peloids, ostracods, echinoids, algae and intraclasts. There is some micritization and minimal cement. Cement is most common around foraminifera. Section is mottled and contains wispy organic laminae throughout. Dolomite rhombs are scattered throughout and fill some voids as well as occurring in clusters along the organic laminae. There is some compaction. Microporosity varies as grain densities vary, indicating bioturbation.

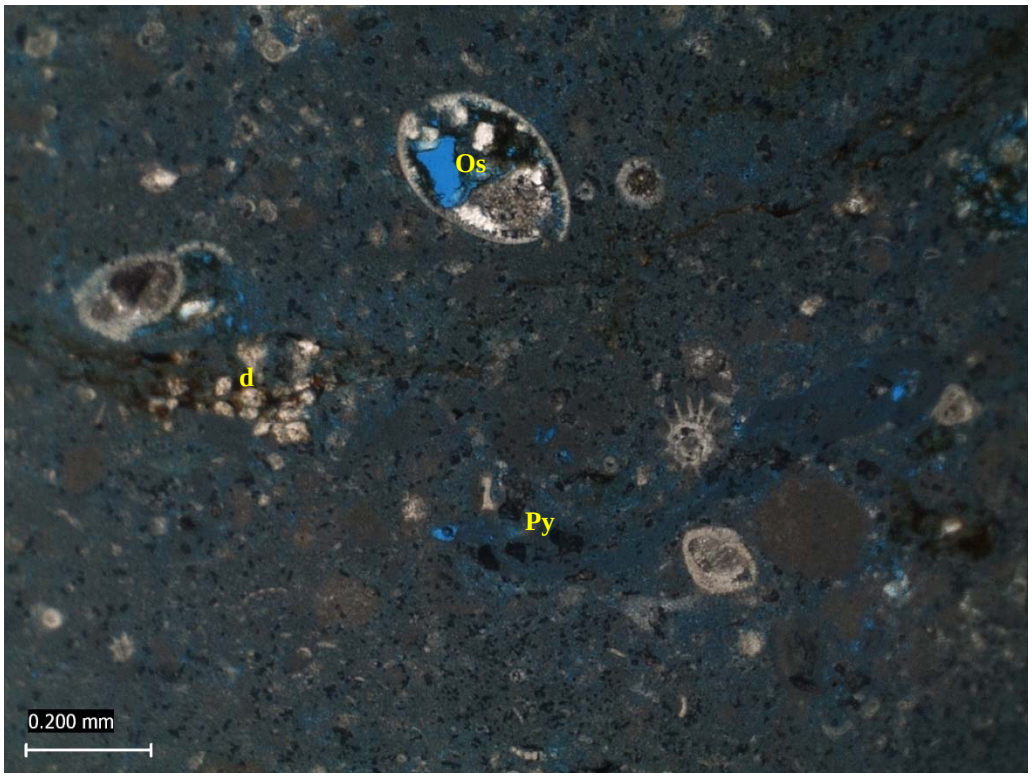
Depositional environment is likely shallow marine with open circulation (Thayer and Miller, 1984).



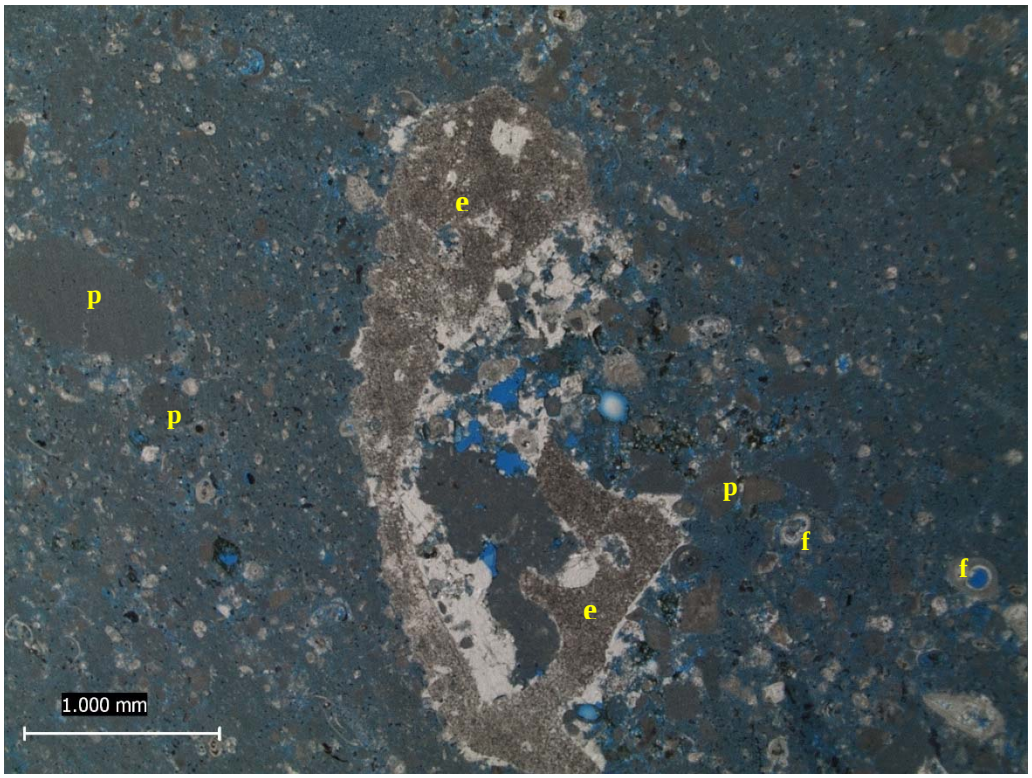
W-18811 1157.5-1158 ft. Mixed skeletal wackestone. Upper section is muddy with small foraminifera (f) separated by cement-filled contact (arrows) from lower section with peloids (p) and sparse ostracods (Os). Transmitted light.



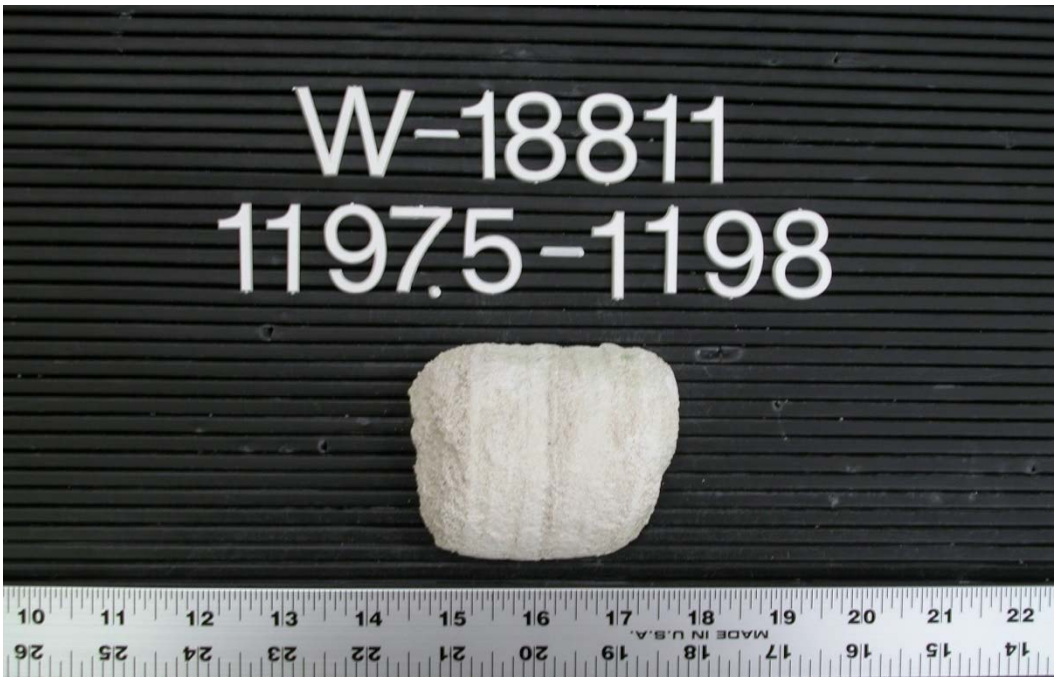
W-18811 1157.5-1158 ft. Mixed skeletal wackestone. Wispy organic laminae with sparse fine grained dolomite rhombs (d). Transmitted light.



W-18811 1157.5-1158 ft. Mixed skeletal wackestone. Wispy organic laminae and dolomite rhombs (d), ostracods (Os), and possible pyrite (Py). Transmitted light.



W-18811 1157.5-1158 ft. Mixed skeletal wackestone. Echinoid fragments (e) with syntaxial cement, peloids (p), and foraminifera (f). Transmitted light.



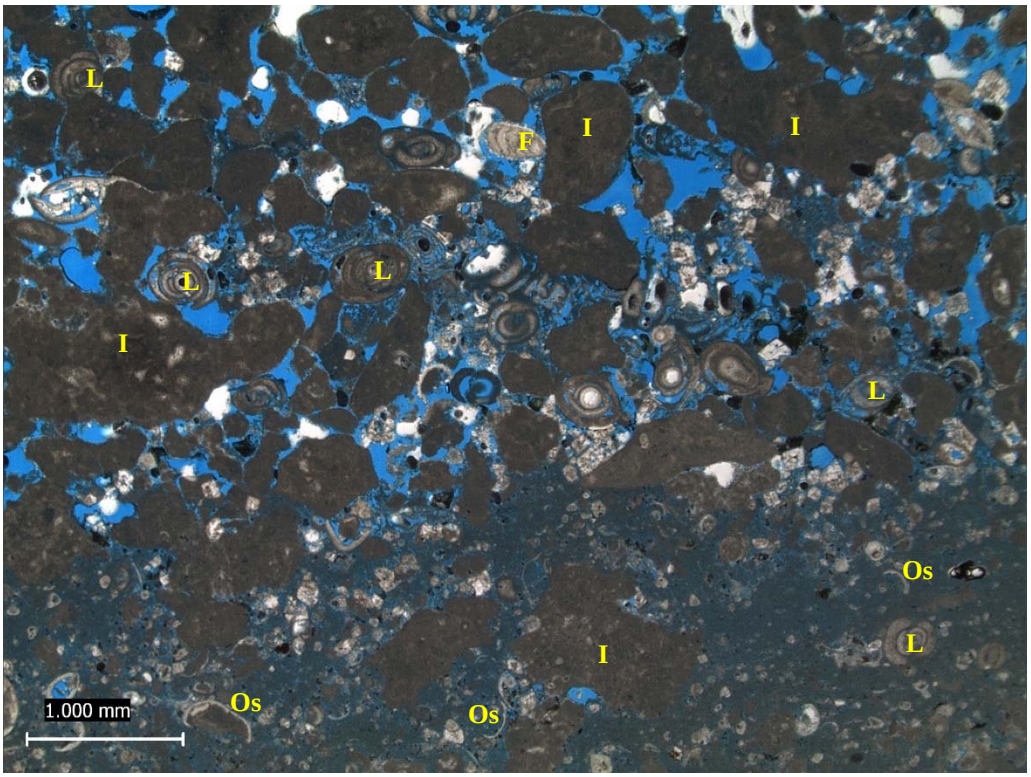
W-18811 (Brighton Reservation)

Depth:	1197.5-1198 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Foraminiferal and intraclast packstone
Dominant Pore Type:	Interparticle and microporosity
Porosity Amount:	~25 percent
Depositional Environment:	Subtidal to shallow marine
Whole Rock Analysis:	Not analyzed for this sample

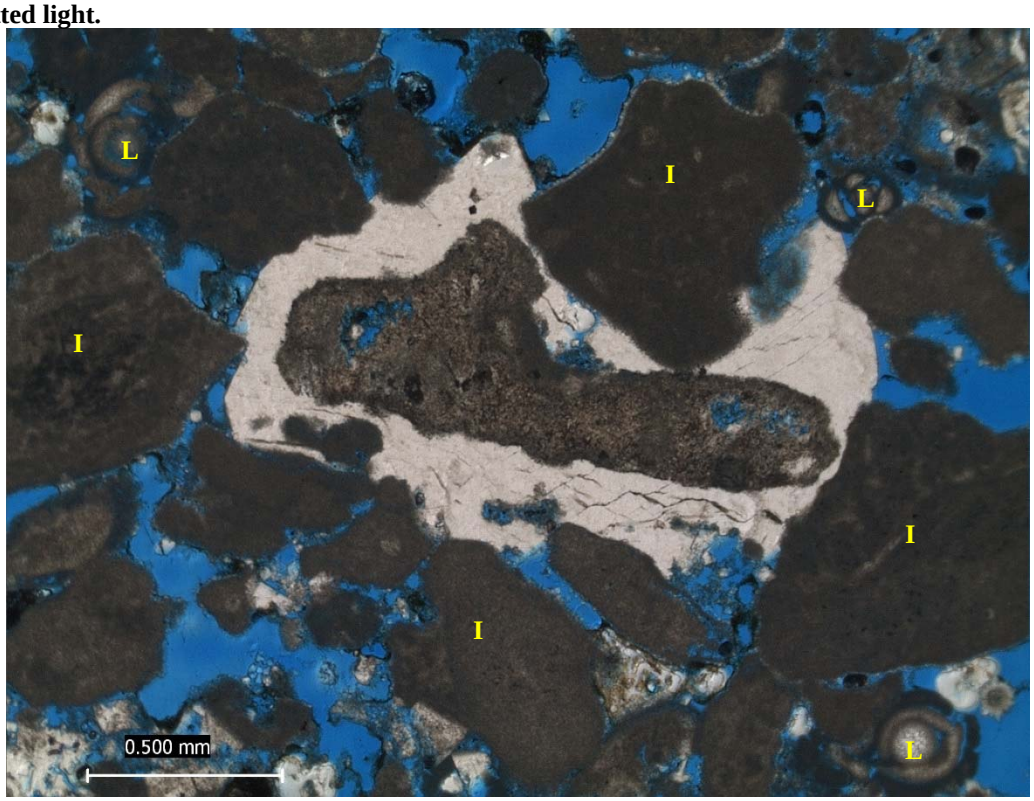
Description:

The section consists of limestone with sparse scattered dolomite and trace amounts of pyrite and organics. Allochems include abundant intraclasts, peloids, algae, foraminifera, miliolids, ostracods and echinoids. Section is highly micritized making identification difficult, especially the intraclasts which may be algal in origin. Cementation is minimal but more extensive than the previous sample with syntaxial cement occurring around echinoids. Foraminifera also exhibit cementation. Section is laminated with notably higher porosity in some of the micro laminae. Some of the lower porosity laminae appear to be algal. There is some compaction. Scanning electron microscope images are in Appendix 3.

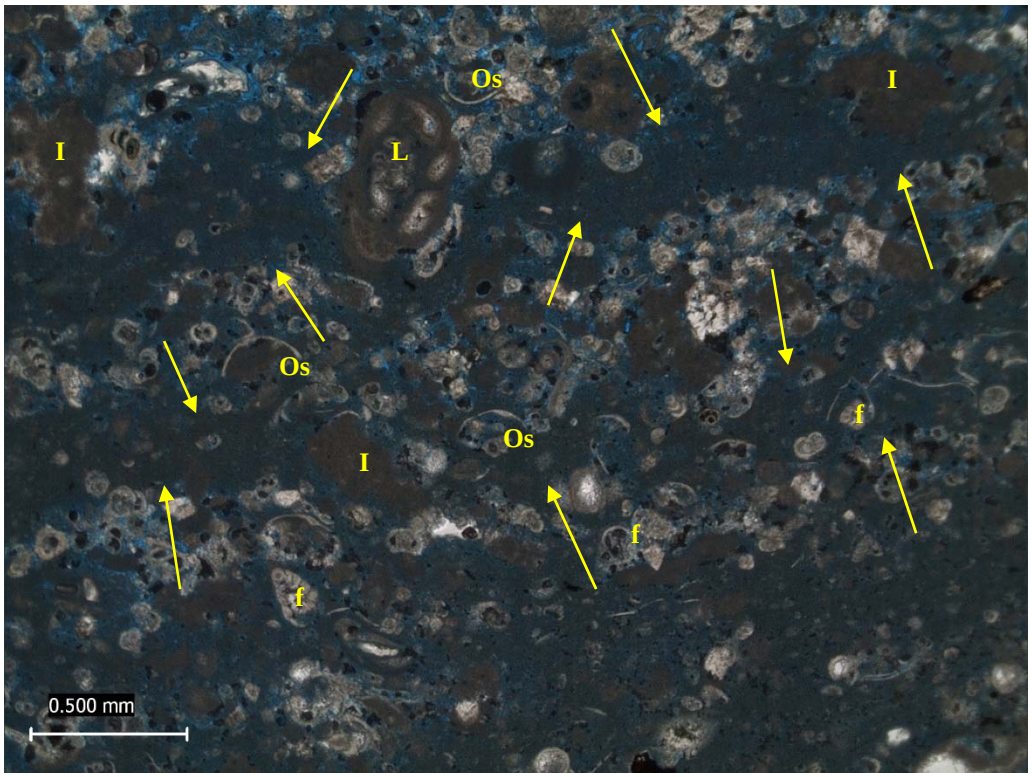
Depositional environment is likely subtidal to shallow marine (Thayer and Miller, 1984).



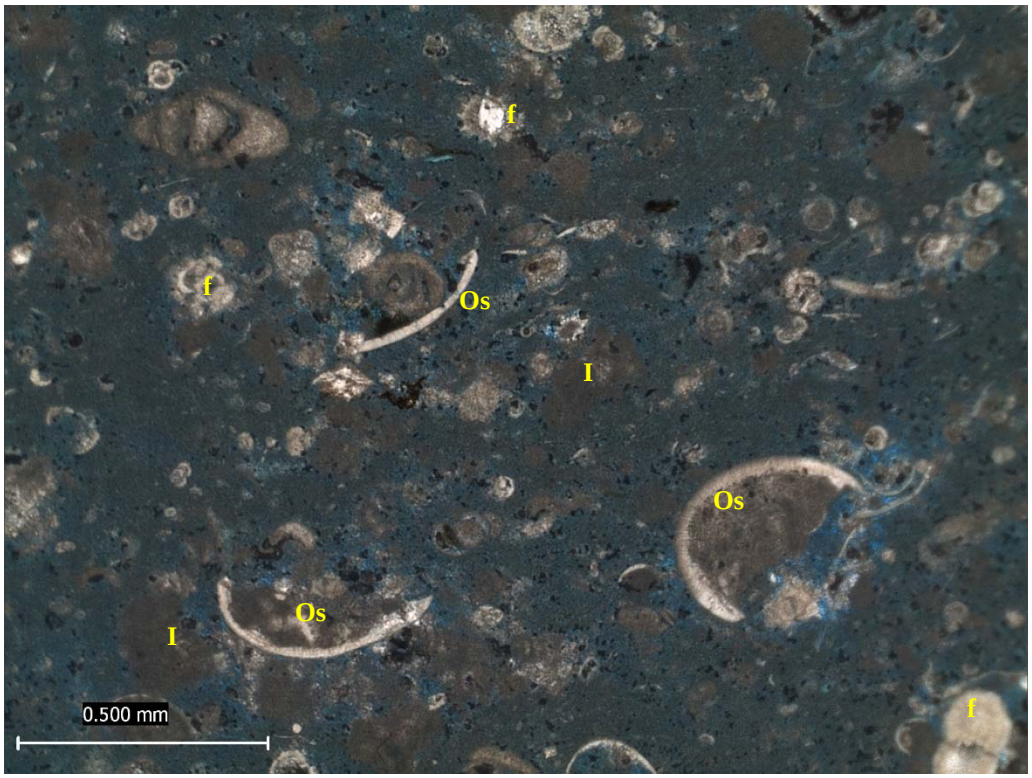
W-18811 1197.5-1198 ft. Foraminiferal and intraclast packstone. Abundant intraclasts (I) of possible algal origin, miliolids (L), foraminifera (f) and, in lower part of photo, mud rich lamina with ostracods (Os). Transmitted light.



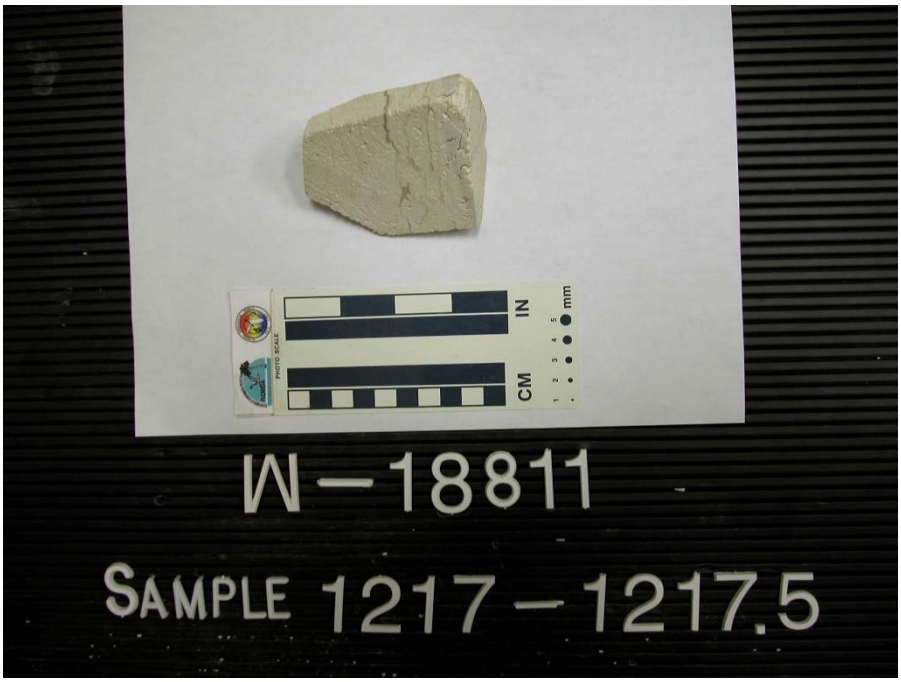
W-18811 1197.5-1198 ft. Foraminiferal and intraclast packstone. Micritized echinoid fragment (e) with syntaxial cement. Miliolids (L) and intraclasts (I). Transmitted light.



W-18811 1197.5-1198 ft. Foraminiferal and intraclast packstone. Algal layers (arrows), foraminifera (f), ostracods (Os), miliolids (L) and intraclasts (I). Transmitted light.



W-18811 1197.5-1198 ft. Foraminiferal and intraclast packstone. Ostracods (Os), foraminifera (f) some planktonic and intraclasts (I). Transmitted light.



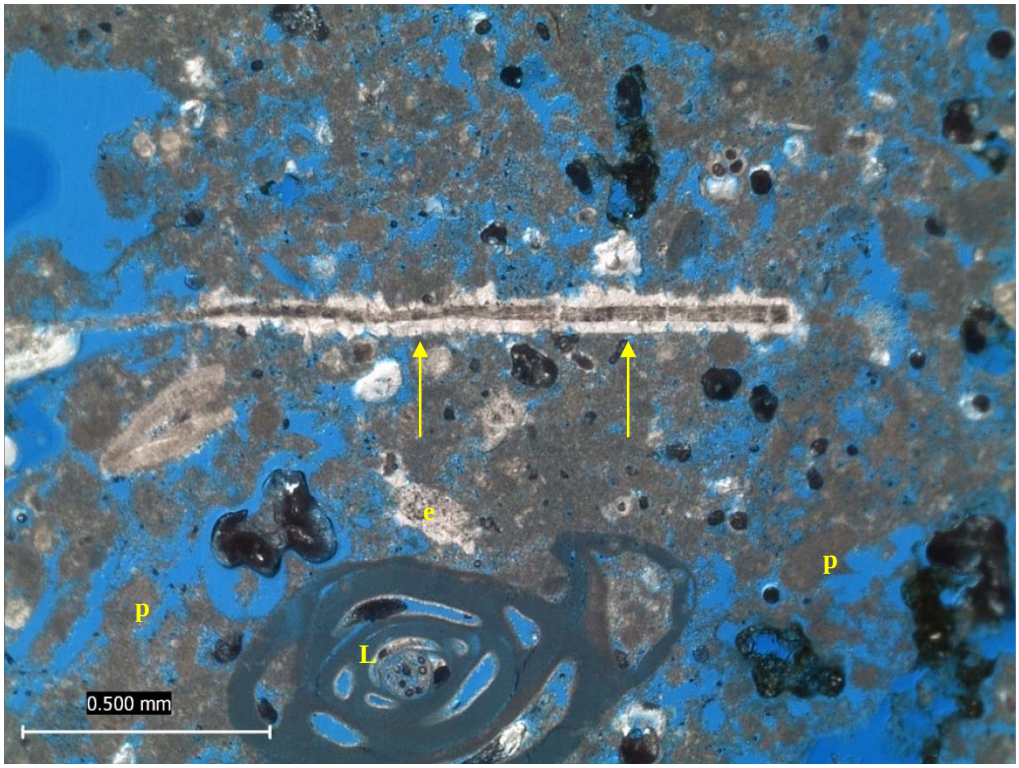
W-18811 (Brighton Reservation)

Depth:	1217-1217.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Peloidal wackestone
Dominant Pore Type:	Microporosity and moldic
Porosity Amount:	~30 percent
Depositional Environment:	Subtidal to shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.38, MgO=0.07, CaO=54.56) Trace Constituents (ppm): (As=25, Ba=3, Cd=BDL, Cr=5.4, Mo=140, Ni=7, Sb=3.4, Sr=516, U=5.87, V=40, SO_4=0.5)

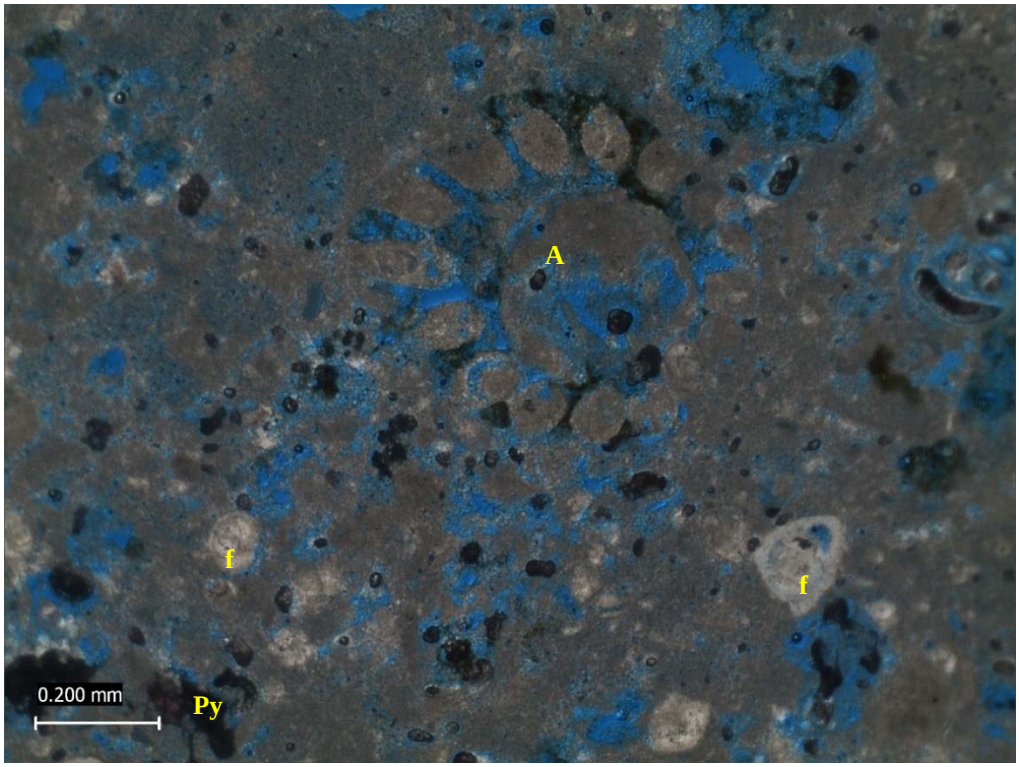
Description:

The section consists of limestone with organics and scattered pyrite. Allochems include peloids, miliolids, ostracods, foraminifera, various algae and echinoids. Section appears laminated and slightly mottled with wispy organic laminae occurring within possible algal layers. Ostracods are common within the algal layers. Section is micritized making it difficult to identify many of the allochems. Grain density variation is indicative of burrowing. There is minimal cementation which occurs as syntaxial cement around echinoid fragments. This rock sample has one of the highest values observed for arsenic and molybdenum. Scanning electron microscope images are in Appendix 3.

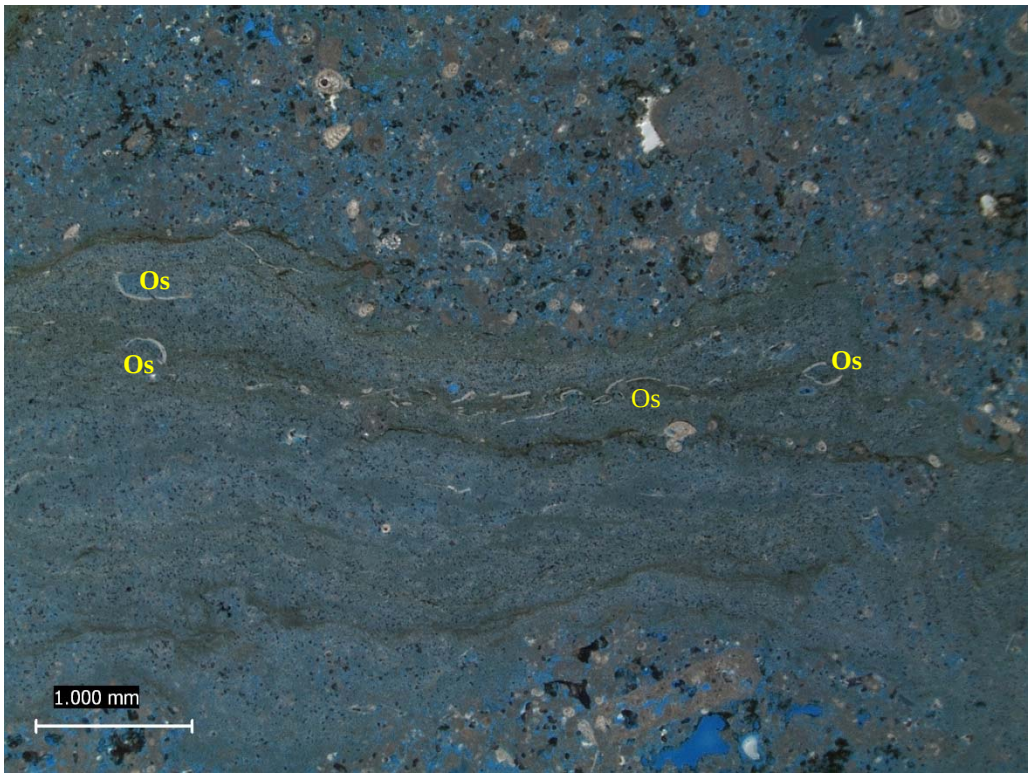
Depositional environment is likely subtidal to shallow marine, possibly a lagoon consisting of normal marine fossils and green algae (Scholle and Ulmer-Scholle, 2003).



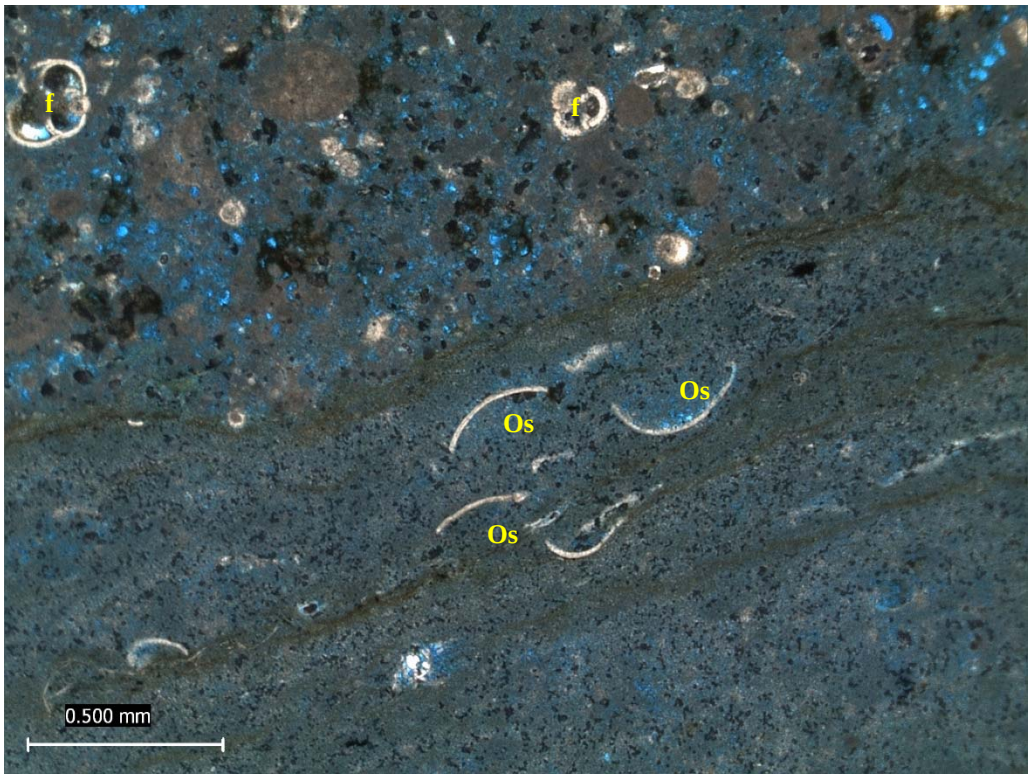
W-18811 1217-1217.5 ft. Peloidal wackestone. Large miliolids (L), peloids (p), echinoid fragments (e) and possible filamentous algal fragments with fine crystalline cement (arrows). Transmitted light.



W-18811 1217-1217.5 ft. Peloidal wackestone. Green algae (A) (dasyclad or charophyte), foraminifera (f), and pyrite (Py). Transmitted light.



W-18811 1217-1217.5 ft. Peloidal wackestone. Possible algal laminae with wispy organics and ostracods (Os). Transmitted light.



W-18811 1217-1217.5 ft. Peloidal wackestone. Possible algal laminae with wispy organics, ostracods (Os) and foraminifera (f). Transmitted light.



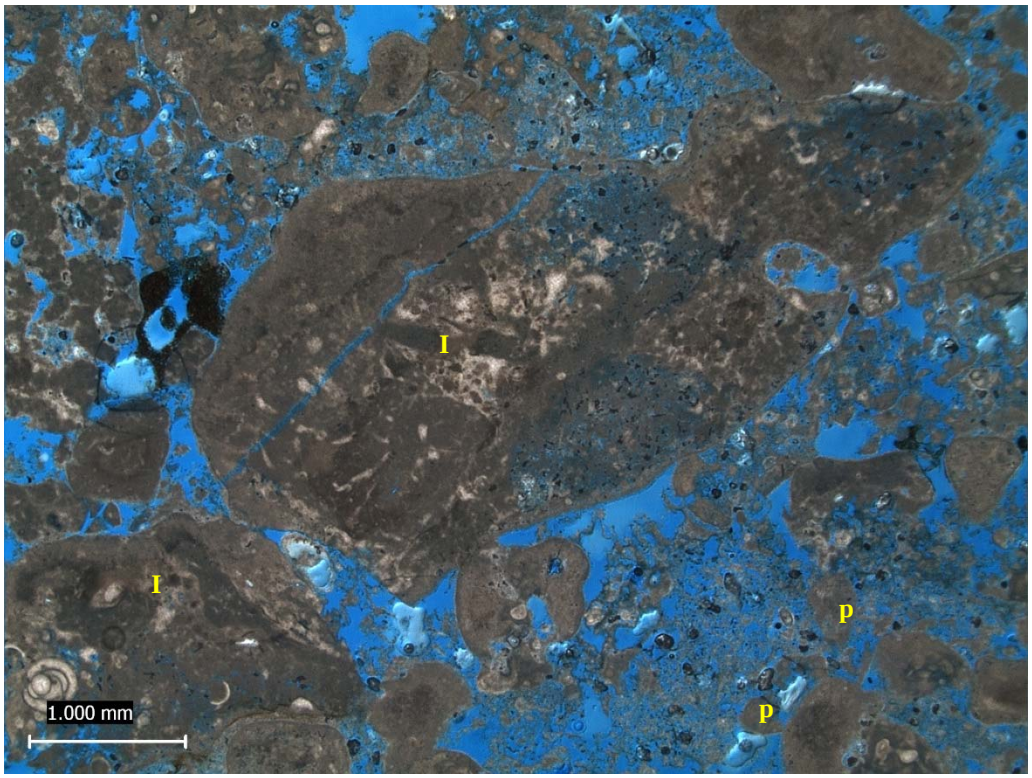
W-18811 (Brighton Reservation)

Depth:	1274.5-1275 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Packstone
Dominant Pore Type:	Interparticle and microporosity
Porosity Amount:	~55 percent
Depositional Environment:	Shallow subtidal
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.15, MgO=0.72, CaO=56.11) Trace Constituents (ppm): (As=BDL, Ba=3, Cd=BDL, Cr=3.4, Mo=6, Ni=2, Sb=0.2, Sr=481, U=6.19, V=11, SO_4=BDL)

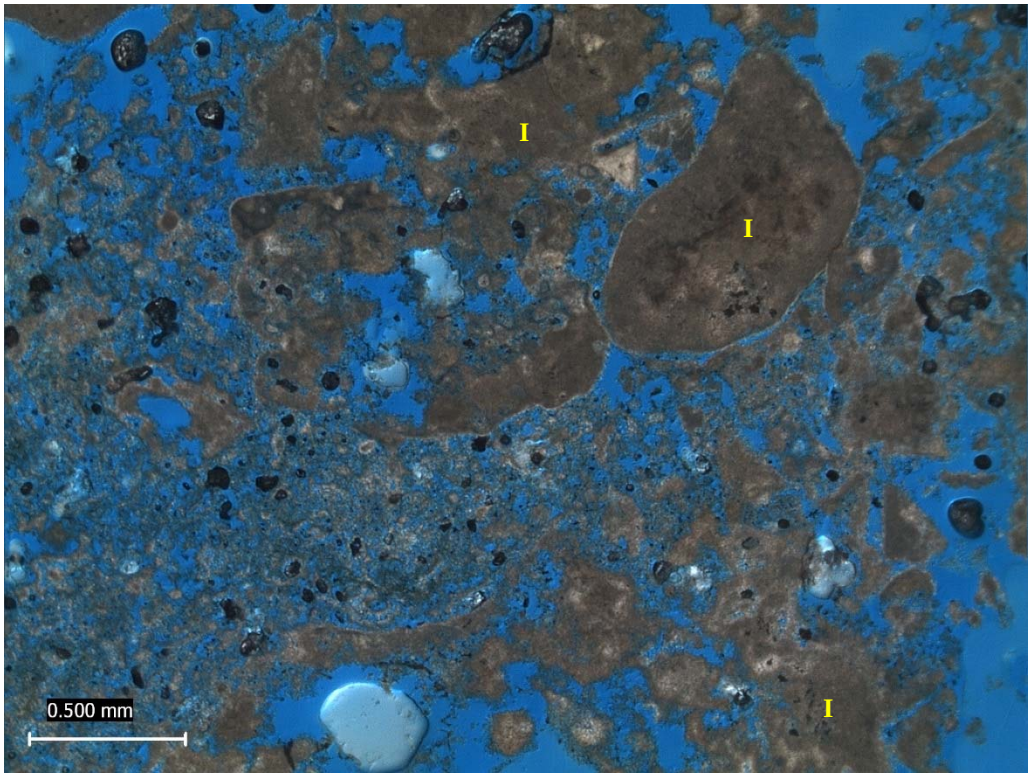
Description:

The section consists of limestone with abundant microspar and sparse pyrite. Allochems include peloids, foraminifera (including orbitolinids), miliolids, intraclasts, and calcareous coralline algae. Section is micritized and identification of allochems is not always possible. Syntaxial cement around what appears to be an echinoid was observed, otherwise there is minimal cementation. Some area between peloids consists of microspar. Some foraminifera are micritized and abraded. Hand sample consisted of a large amount of coralline algae. Scanning electron microscope images are in Appendix 3.

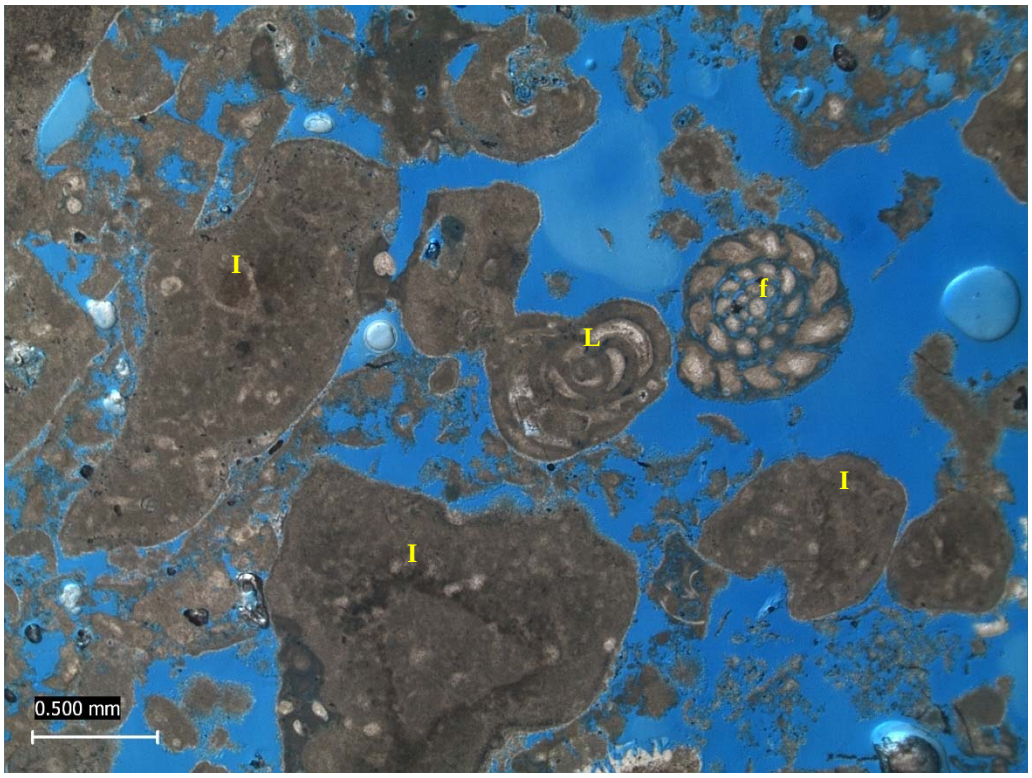
Depositional environment is likely shallow subtidal as indicated by the coralline algae (Thayer and Miller, 1984).



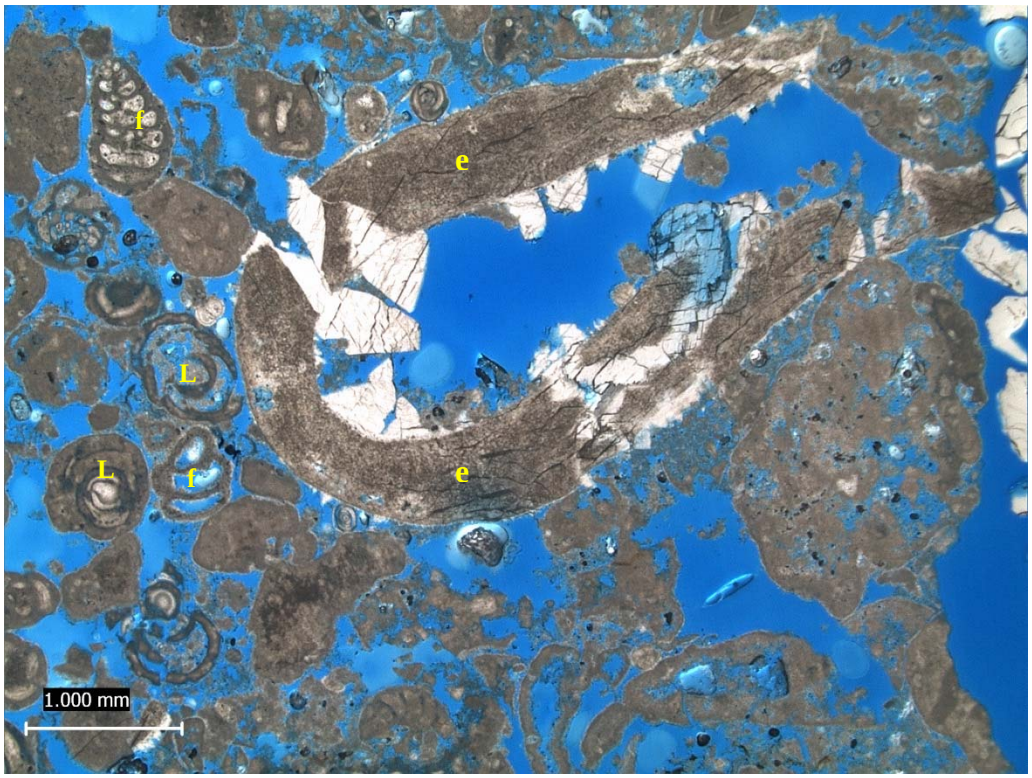
W-18811 1274.5-1275 ft. Packstone. Intraclast (I) and peloids (p). Transmitted light.



W-18811 1274.5-1275 ft. Packstone. Intraclast (I) with microspar or coralline algae in the matrix. Transmitted light.



W-18811 1274.5-1275 ft. Packstone. Foraminifera (f), miliolids (L) and intraclasts (I). Transmitted light.



W-18811 1274.5-1275 ft. Packstone. Echinoid fragment? (e) with syntaxial cement, foraminifera (f) and miliolids (L). Transmitted light.



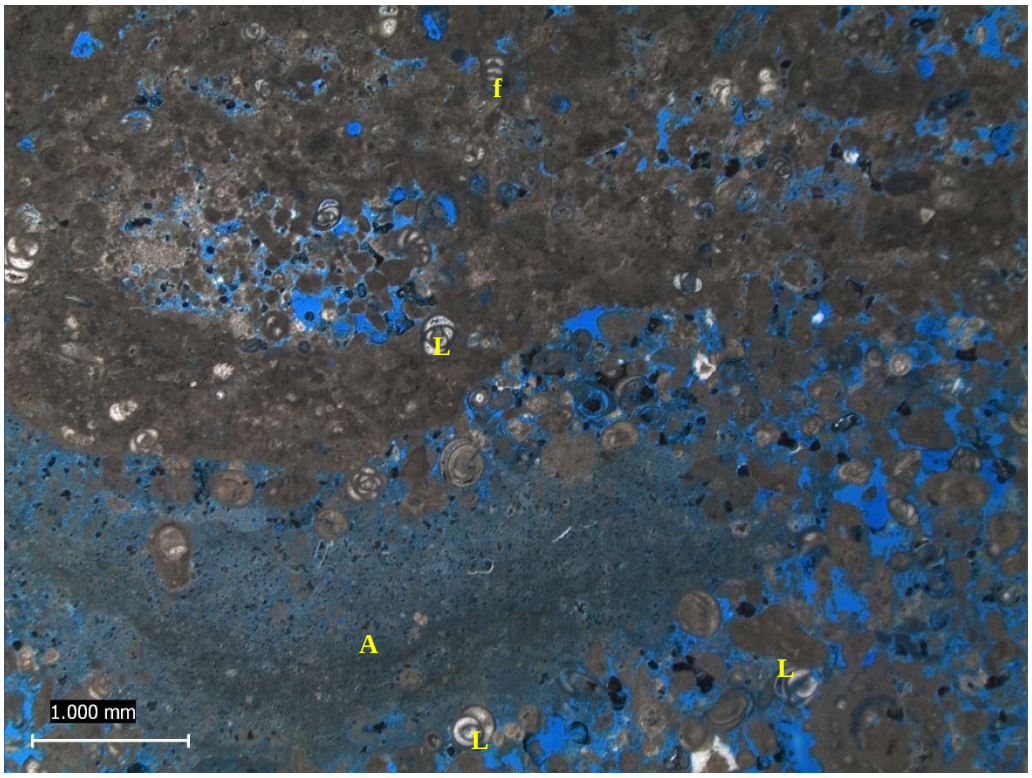
W-18811 (Brighton Reservation)

Depth:	1294-1294.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Peloidal foraminiferal packstone
Dominant Pore Type:	Interparticle
Porosity Amount:	~45 percent
Depositional Environment:	Shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.26, MgO=0.61, CaO=55.81) Trace Constituents (ppm): (As=2, Ba=92, Cd=BDL, Cr=4.0, Mo=6, Ni=2, Sb=0.3, Sr=608, U=4.17, V=30, SO_4=0.4)

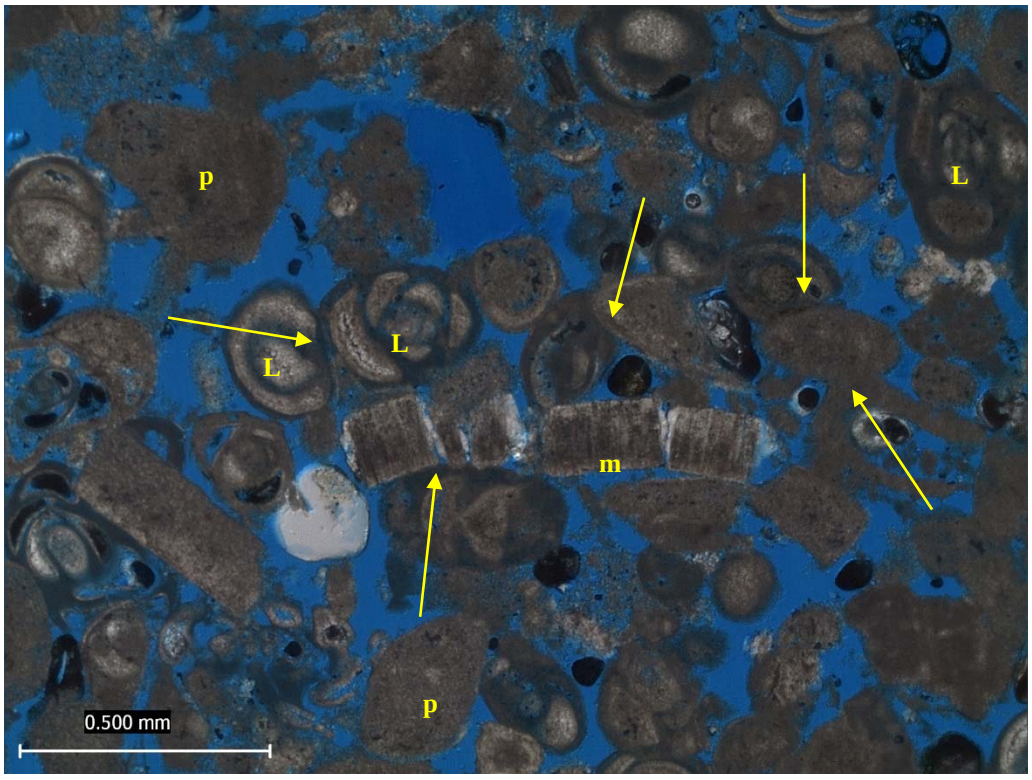
Description:

The section consists of limestone with organics and/or iron sulfide. Allochems include peloids, foraminifera, miliolids, algae, echinoids, intraclasts and mollusks. Texture varies from packstone to grainstone. Varying grain density indicates bioturbation. Section is micritized and exhibits minimal cementation usually as syntaxial cement around echinoids. Miliolids are abundant. Coralline algae are noted in the hand sample. There is evidence of some compaction. Scanning electron microscope image of barite is in Appendix 3.

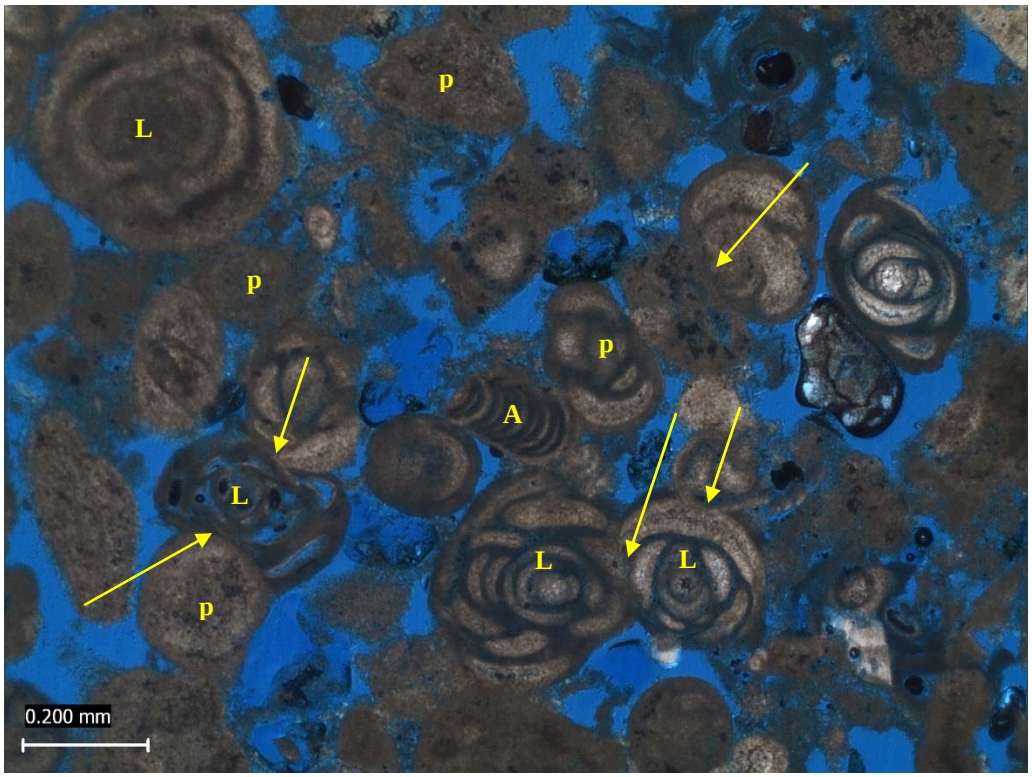
Depositional environment is likely shallow marine as indicated by red algae (Flügel, 2004; Scholle and Ulmer-Scholle, 2003).



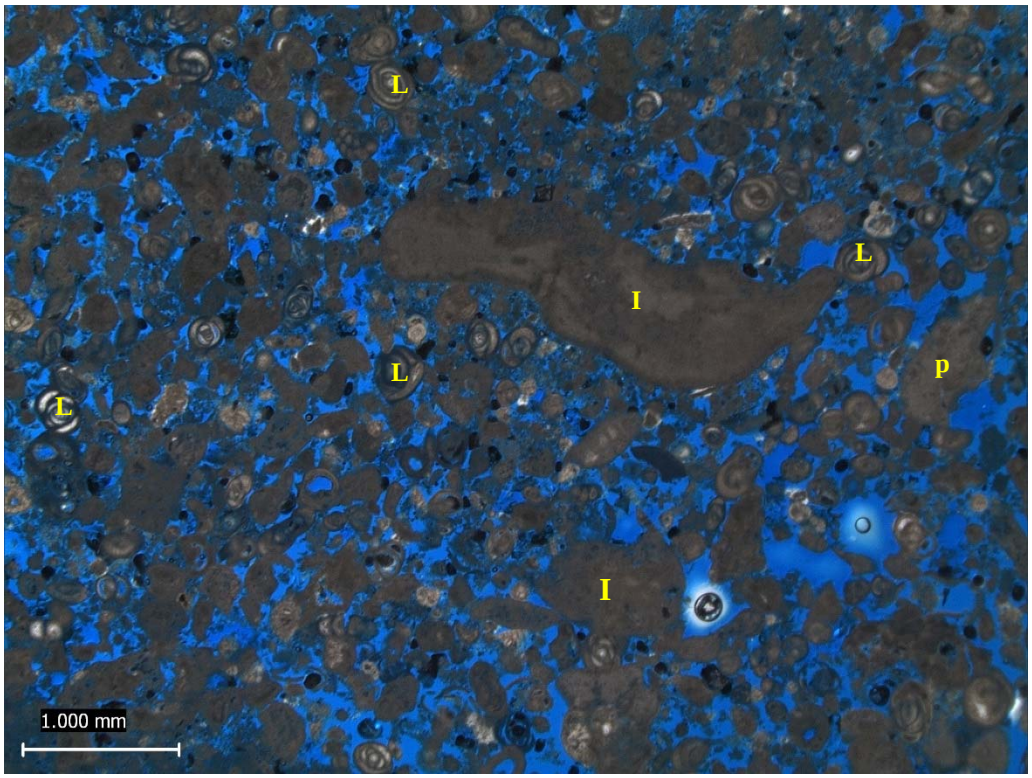
W-18811 1294-1294.5 ft. Peloidal foraminiferal packstone. Possible algal layer (A) and lower half showing lower grain density. Foraminifera (f) and miliolids (L). Transmitted light.



W-18811 1294-1294.5 ft. Peloidal foraminiferal packstone. Compaction (arrows) evident from linear grain contacts, broken grains and interpenetration of grains. Mollusk (m), peloids (p) and miliolids (L). Transmitted light.



W-18811 1294-1294.5 ft. Peloidal foraminiferal packstone. Compaction (arrows) with abundant miliolids (L), peloids (p), red algae (A). Transmitted light.



W-18811 1294-1294.5 ft. Peloidal foraminiferal packstone. Less densely packed area with intraclasts (I) and miliolids (L). Transmitted light.



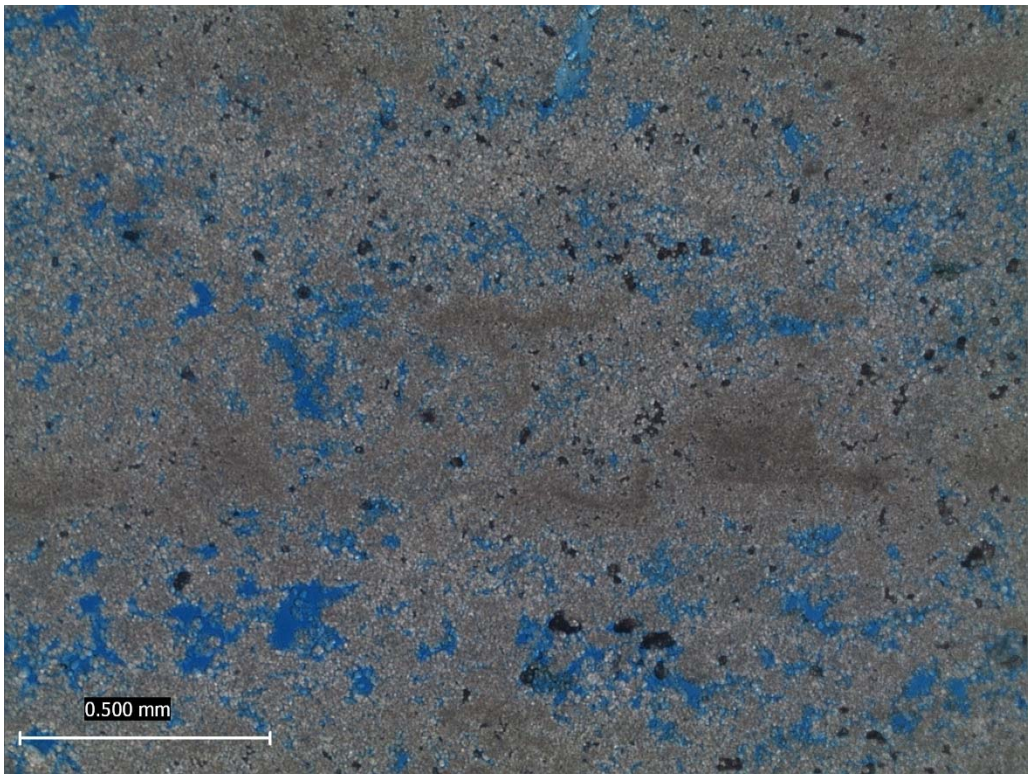
W-18811 (Brighton Reservation)

Depth:	1316-1316.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Peloidal packstone
Dominant Pore Type:	Intercrystalline and interparticle
Porosity Amount:	~25 percent
Depositional Environment:	Shallow subtidal
Whole Rock Analysis:	Not analyzed for this sample

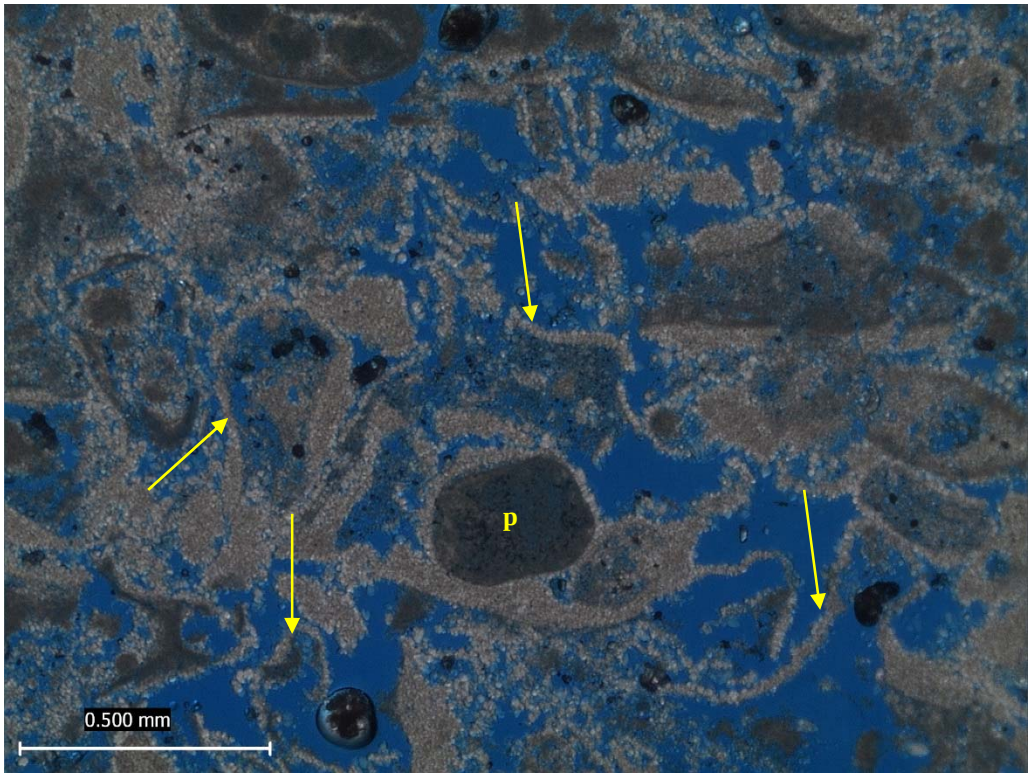
Description:

The section consists of limestone. Allochems include peloids, miliolids, foraminifera and algae. Section is micritized with micrite envelopes throughout. There is minimal cementation but abundant microspar, sometimes replacing allochems, appears highly recrystallized. Section is layered with what appears to be recrystallized algal layers and coarse- and fine-grained layers. Some layers consist of many allochems while other layers have few. Scanning electron microscope images are in Appendix 3.

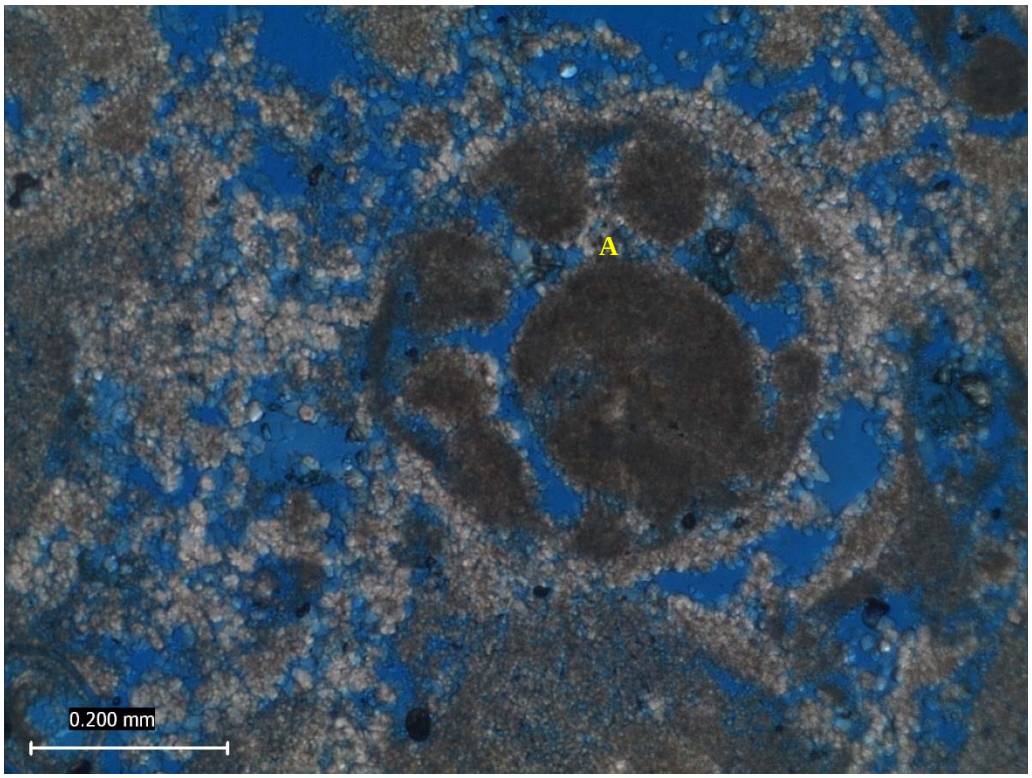
Depositional environment is likely shallow subtidal, possibly a lagoon as indicated by the presence of green algae, charophytes (Flügel, 2004; Scholle and Ulmer-Scholle, 2003).



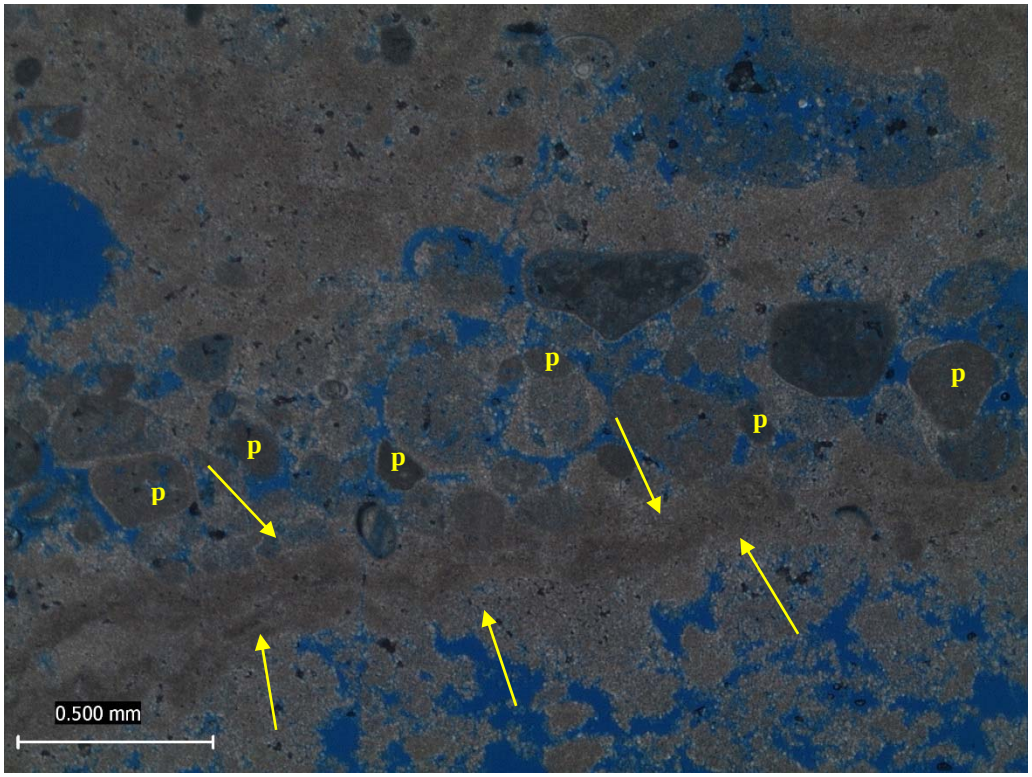
W-18811 1316-1316.5 ft. Peloidal packstone. Possible recrystallized algal layer. Transmitted light.



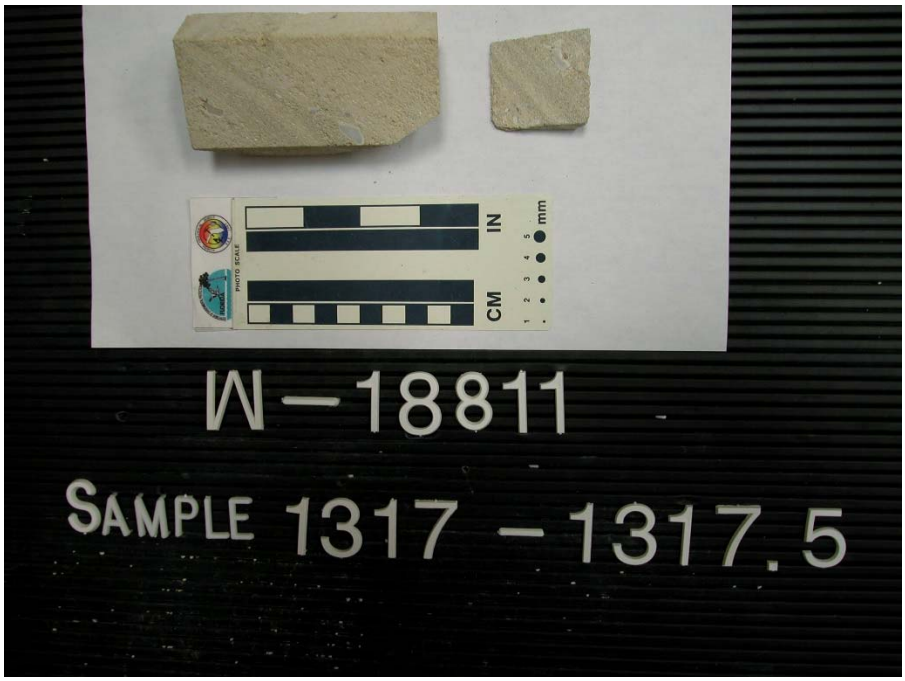
W-18811 1316-1316.5 ft. Peloidal packstone. Peloids (p) and micrite envelopes (arrows) of foraminifera. Transmitted light.



W-18811 1316-1316.5 ft. Peloidal packstone. Green Algae (A) (charophyte?) in a recrystallized matrix. Transmitted light.



W-18811 1316-1316.5 ft. Peloidal packstone. Possible recrystallized algal layer (arrows) with micritized peloidal (p) layer above. Transmitted light.



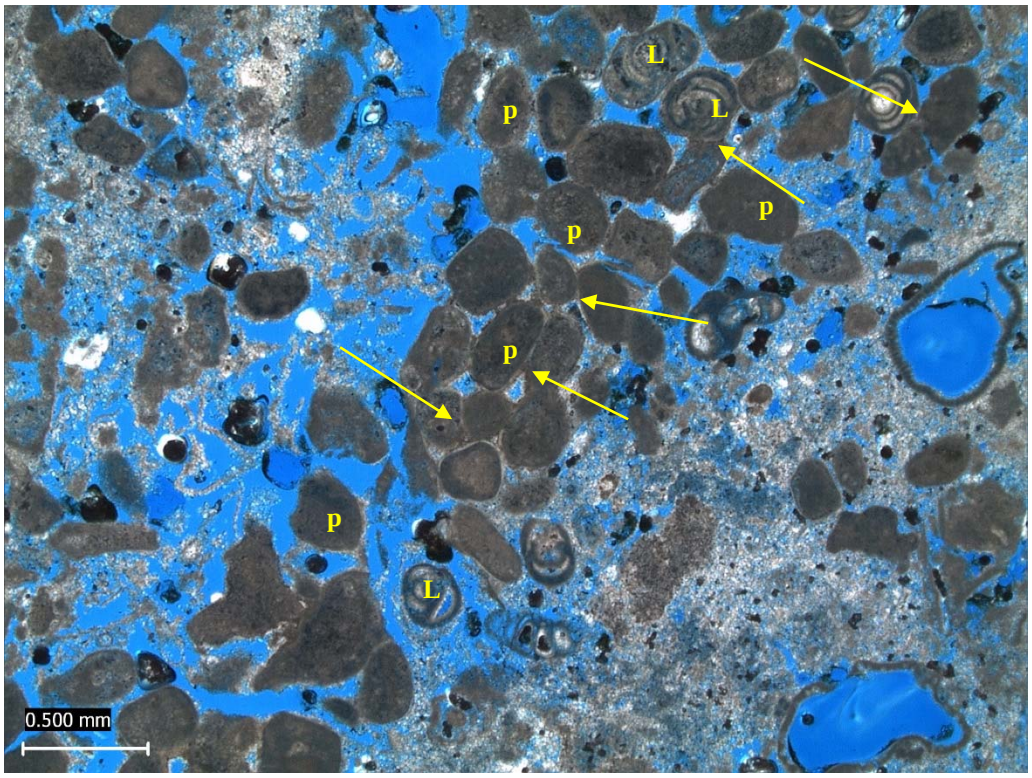
W-18811 (Brighton Reservation)

Depth:	1317-1317.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Peloidal grainstone/packstone
Dominant Pore Type:	Interparticle
Porosity Amount:	~45 percent
Depositional Environment:	Shallow subtidal to shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.19, MgO=0.33, CaO=55.97) Trace Constituents (ppm): (As=6, Ba=2, Cd=BDL, Cr=3.0, Mo=8, Ni=4, Sb=0.9, Sr=510, U=3.32, V=12, SO_4=0.4)

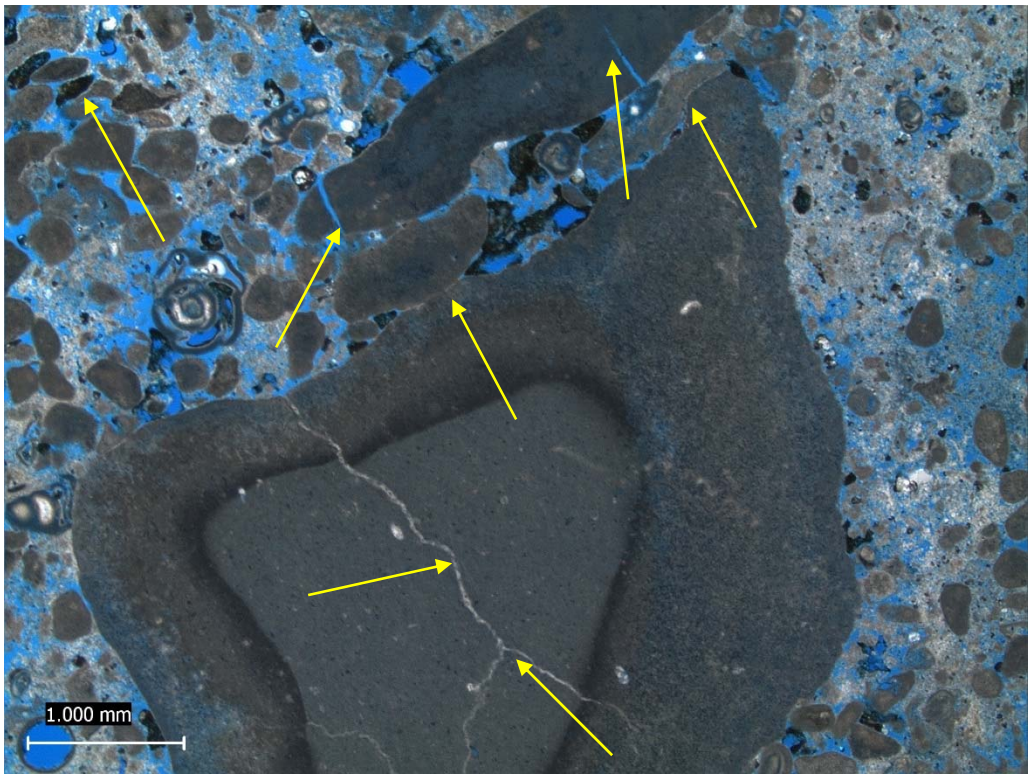
Description:

The section consists of limestone. Allochems include peloids, miliolids, foraminifera, intraclasts, and abundant algal material. Section consists of highly micritized peloids of unknown origin. Section contains various forms of algal material including coralline, red, green, and filamentous. Some of the intraclasts are possibly of algal origin and are highly micritized. Orientation of the allochems in the section suggests tilted beds, or the section may have been cut non-parallel to the core. In the hand sample there are alternating layers of clean grainstone with layers of coralline algae containing pellets and foraminifera. Parts of the section include much microspar which may represent recrystallized coralline algae. There is minimal cementation that occurs on what appears to be filamentous algae. There is some evidence of compaction with spar filled fractures of larger grains and linear contacts with smaller grains. Scanning electron microscope images are in Appendix 3.

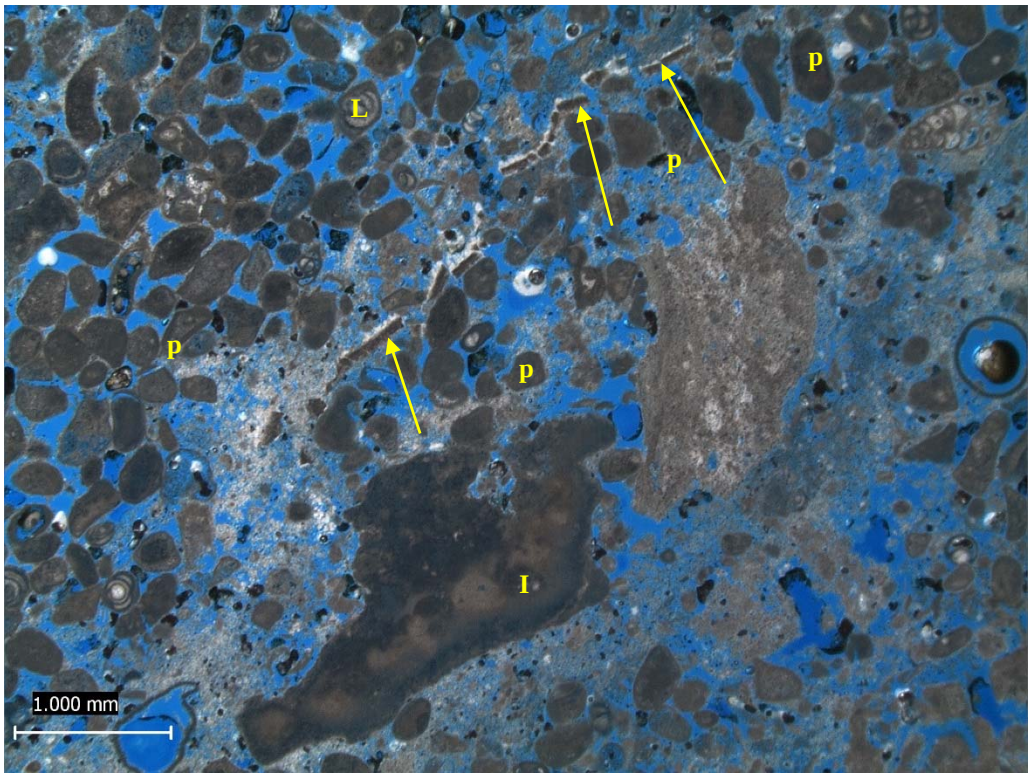
Depositional environment is likely shallow subtidal to shallow marine. Miliolids and green algae indicate shallow warm water of normal salinity (Flügel, 2004).



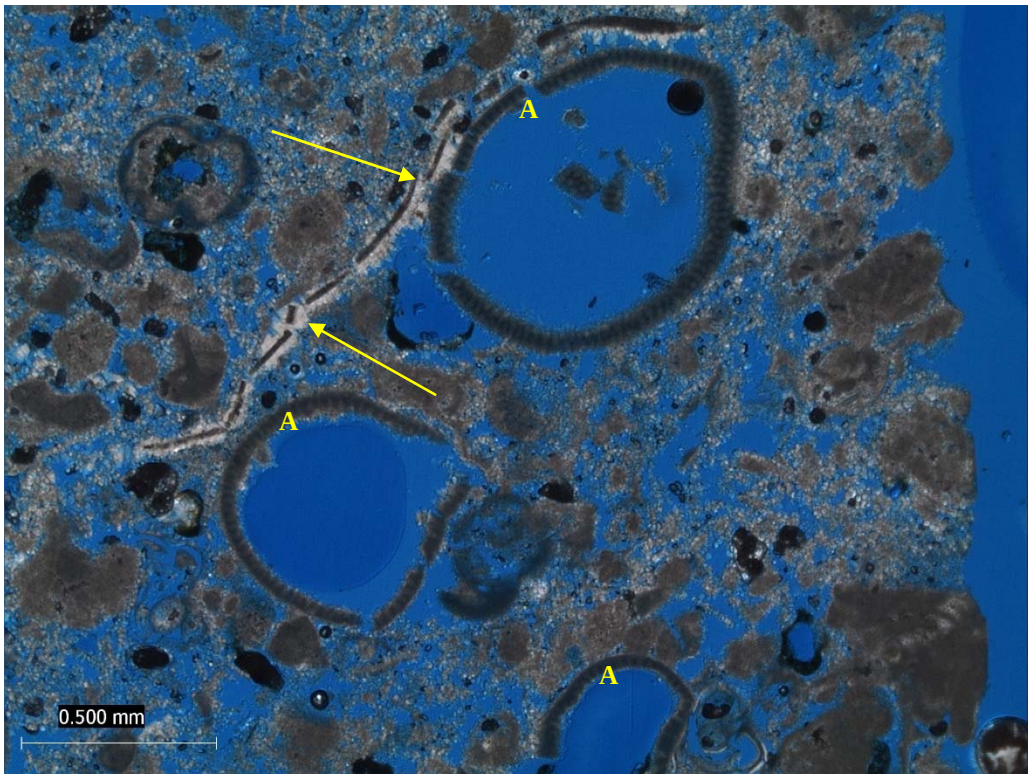
W-18811 1317-1317.5 ft. Peloidal grainstone/packstone. Micritized peloids (p) and miliolids (L) with some compaction (arrows). Transmitted light.



W-18811 1317-1317.5 ft. Peloidal grainstone/packstone. Some evidence of compaction (arrows) with fractured intraclasts and grain contacts. Transmitted light.



W-18811 1317-1317.5 ft. Peloidal grainstone/packstone. Filamentous algae (arrows), peloids (p), intraclasts (I), and coralline algae or microspar matrix. Transmitted light.



W-18811 1317-1317.5 ft. Peloidal grainstone/packstone. Filamentous algae with syntaxial cement (arrows) and green algae (A) possibly dasyclad algae. Transmitted light



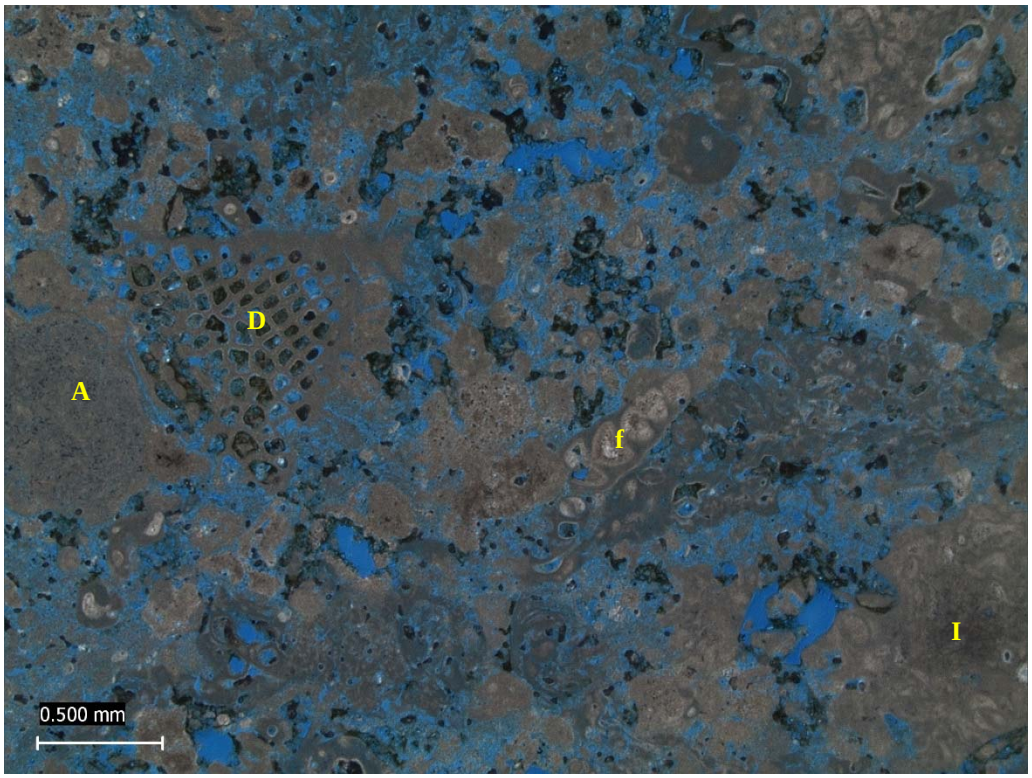
W-18811 (Brighton Reservation)

Depth:	1355-1355.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Foraminiferal wackestone
Dominant Pore Type:	Interparticle and microporosity
Porosity Amount:	~20 percent
Depositional Environment:	Shallow subtidal to shallow marine
Whole Rock Analysis:	Not analyzed for this sample

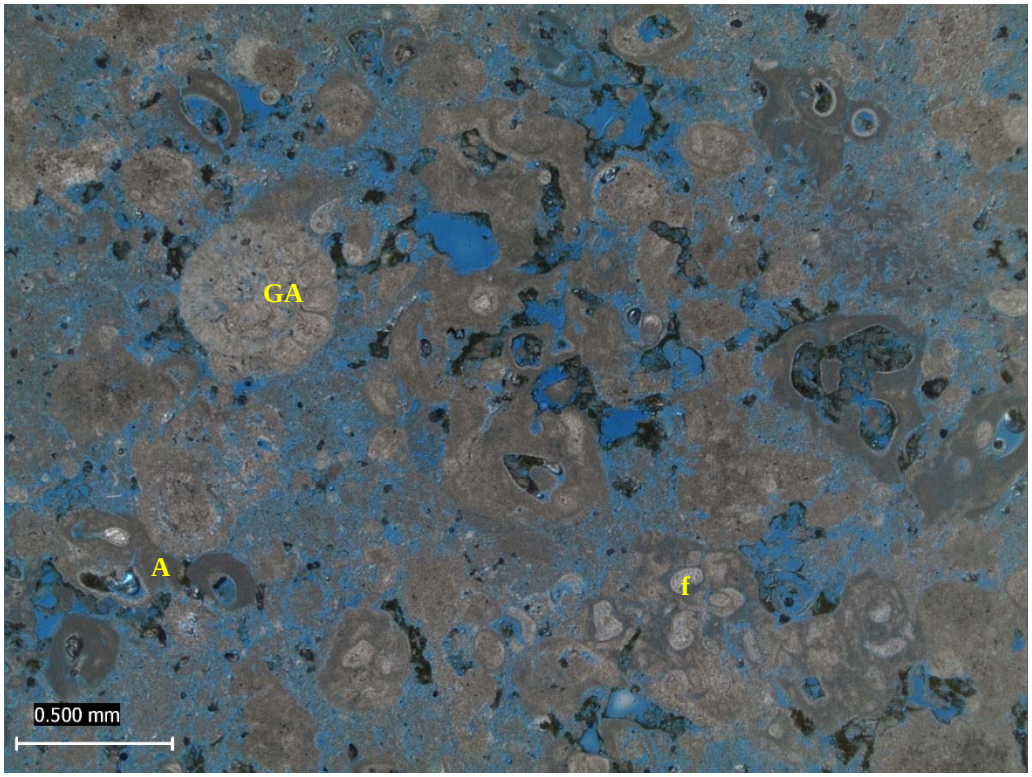
Description:

The section consists of limestone with some organics. Allochems include foraminifera, miliolids, peloids, intraclasts, green and red algae. Section is micritized so identification of allochems is difficult. Various types of algae are present. There is minimal cementation that occurs in foraminifera. Orbitolinids appear ragged and weathered. Scanning electron microscope images are in Appendix 3.

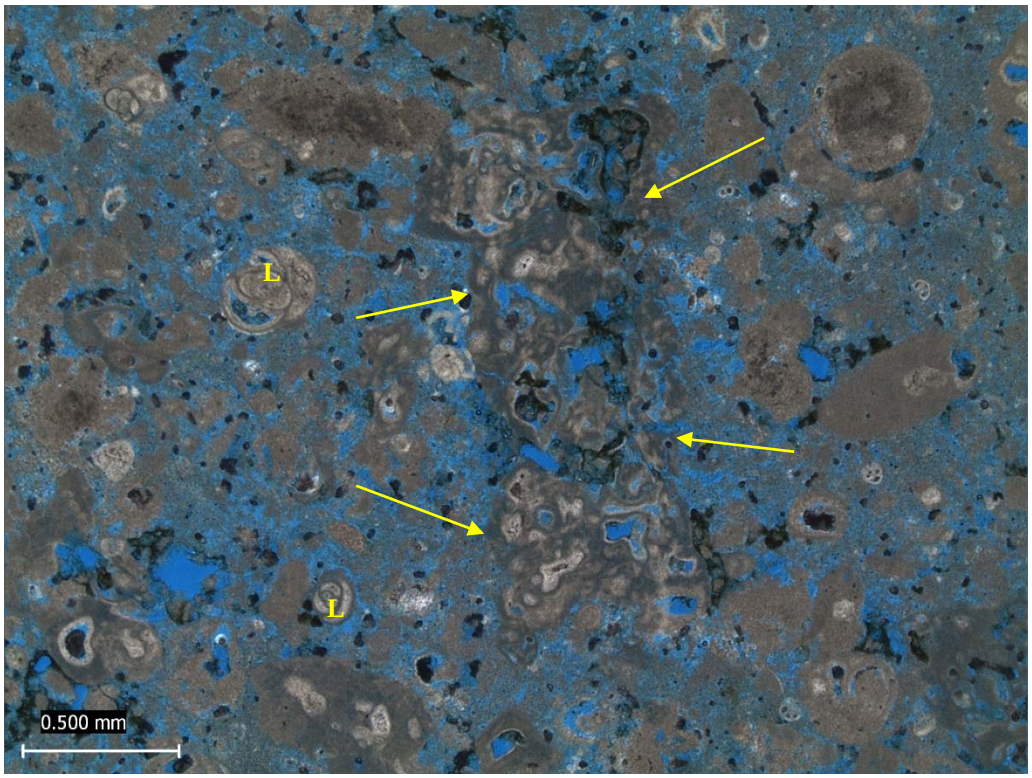
Depositional environment is likely shallow subtidal to shallow marine. Miliolids and green algae indicate shallow warm water of normal salinity (Flügel, 2004, Thayer and Miller, 1984).



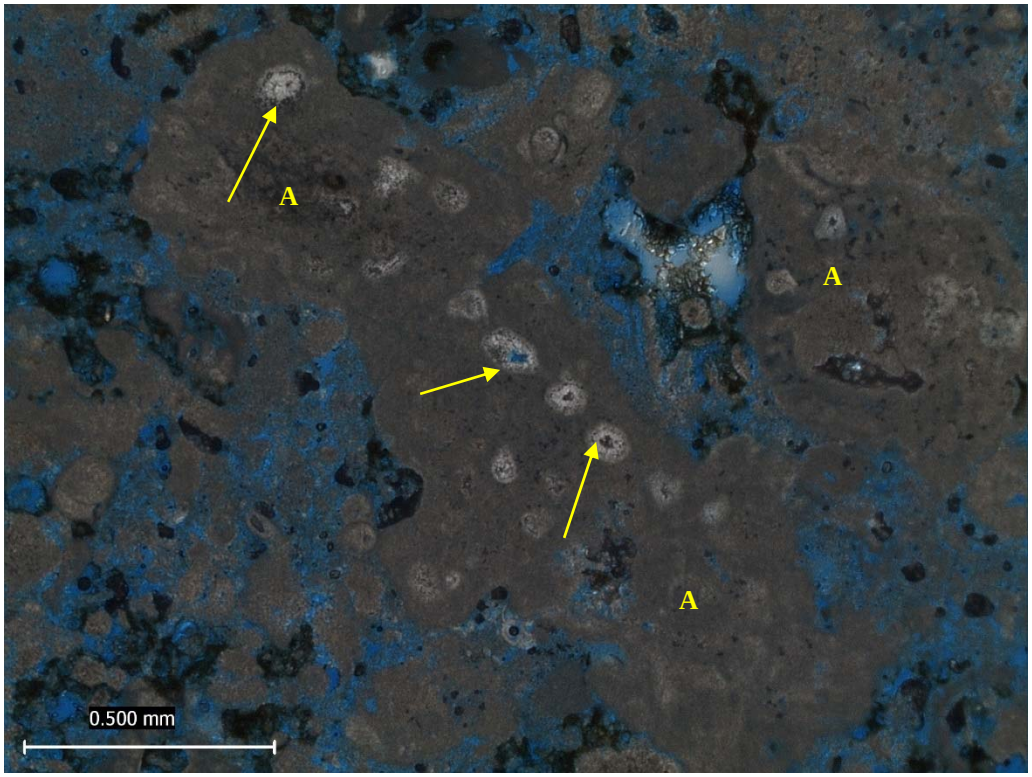
W-18811 1355-1355.5 ft. Foraminiferal wackestone. Highly micritized sample with foraminifera (f) (orbitolinid [D]), intraclasts (I) and algae (A). Transmitted light.



W-18811 1355-1355.5 ft. Foraminiferal wackestone. Highly micritized sample makes identification difficult. Foraminifera (f) and red algae (A) and green algae (GA). Transmitted light.



W-18811 1355-1355.5 ft. Foraminiferal wackestone. Miliolids (L) and possible algal material (arrows), section is highly micritized so identification is difficult. Transmitted light.



W-18811 1355-1355.5 ft. Foraminiferal wackestone. Red algae (A) with spar-filled conceptacles (arrows). Transmitted light.



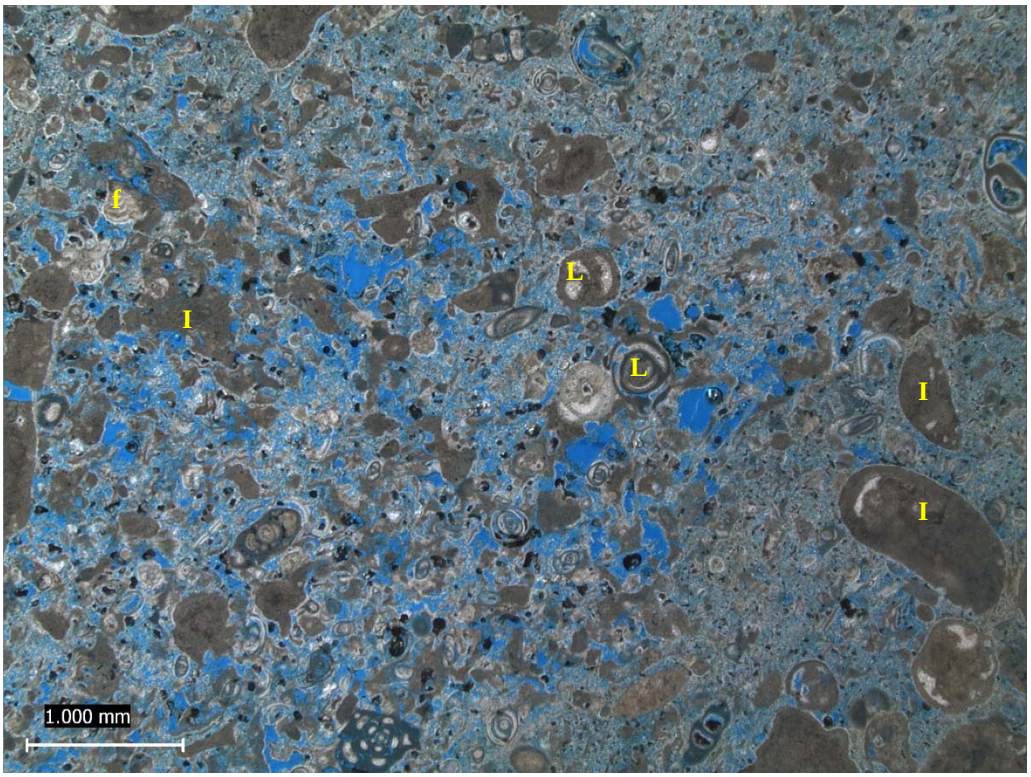
W-18811 (Brighton Reservation)

Depth:	1358-1358.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Mixed skeletal packstone
Dominant Pore Type:	Intercrystalline and moldic
Porosity Amount:	~30 percent
Depositional Environment:	Subtidal to shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.17, MgO=0.5, CaO=54.5) Trace Constituents (ppm): (As=2, Ba=2, Cd=0.9, Cr=BDL, Mo=12, Ni=11, Sb=0.3, Sr=494, U=3.83, V=22, SO_4=0.5)

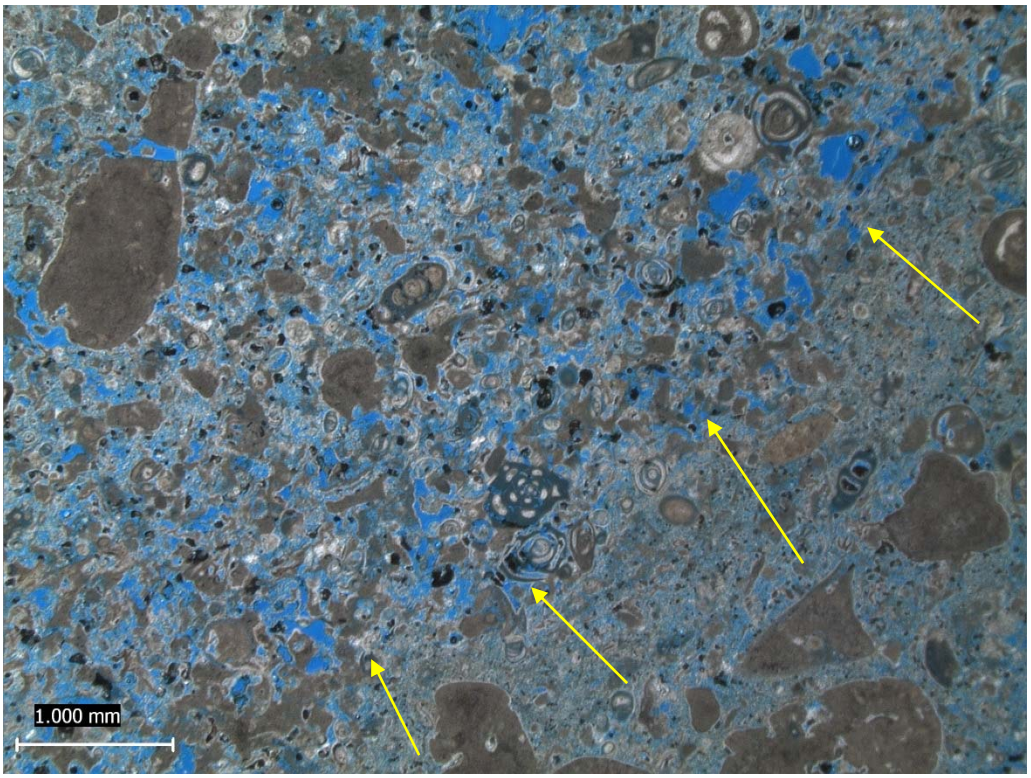
Description:

The section consists of limestone. Allochems include abundant miliolids, foraminifera, red algae, peloids, intraclasts, echinoids and ostracods. Section appears bioturbated with varying grain size and densities. Section is micritized making some identification difficult. Orientation of allochems in the section suggests tilted beds, or the section may have been cut non-parallel to the core. There is minimal cementation occurring around some allochems and within some foraminifera. There is abundant microspar in the interparticle pore spaces. Various algal types are present and intraclasts appear to be of algal origin. Micrite envelopes are common. Scanning electron microscope images are in Appendix 3.

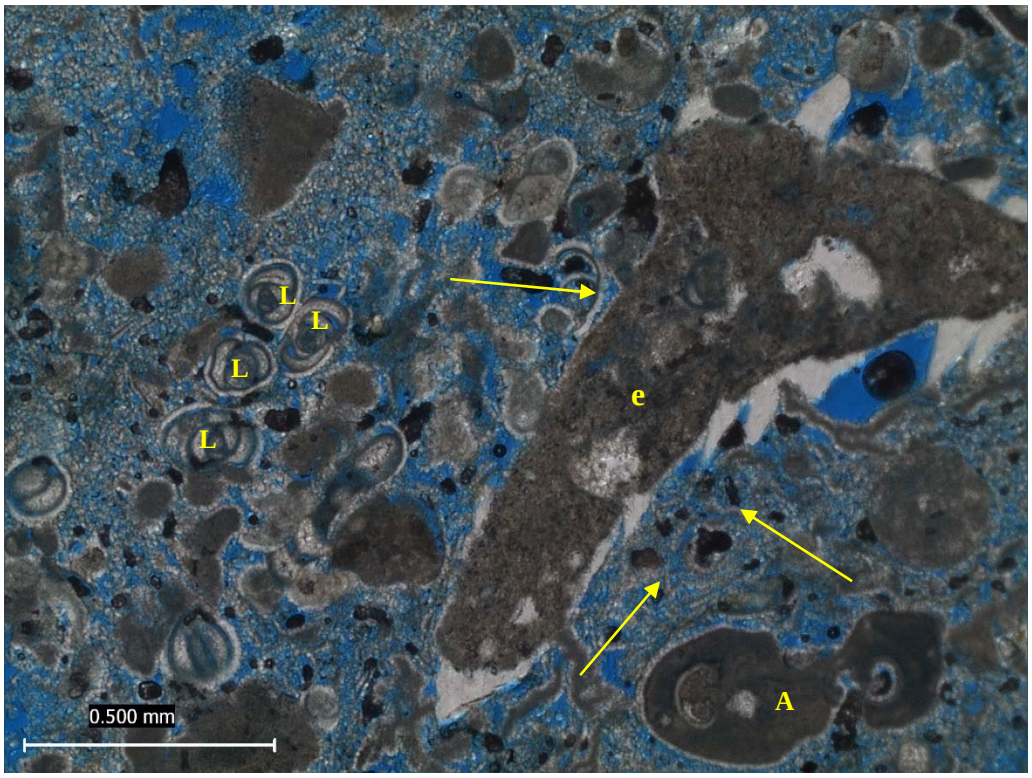
Depositional environment is likely subtidal to shallow marine (Flügel, 2004).



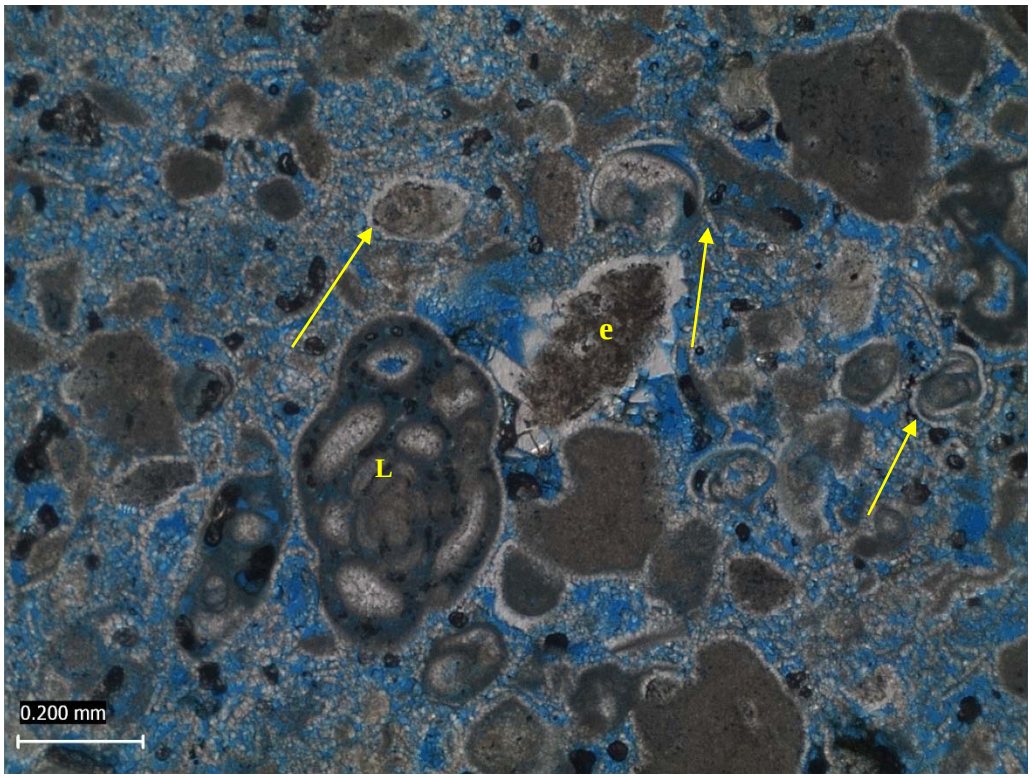
W-18811 1358-1358.5 ft. Mixed skeletal packstone. Miliolids (L), foraminifera (f) and intraclasts (I) in microspar matrix. Transmitted light.



W-18811 1358-1358.5 ft. Mixed skeletal packstone. Varying grain size and density indicating bioturbation (arrows). Transmitted light.



W-18811 1358-1358.5 ft. Mixed skeletal packstone. Echinoid fragment (e) with syntaxial cement, miliolids (L), red algae (A) and micrite envelopes (arrows). Transmitted light.



W-18811 1358-1358.5 ft. Mixed skeletal packstone. Micrite envelopes (arrows), miliolids (L) and echinoid fragment (e). Transmitted light.



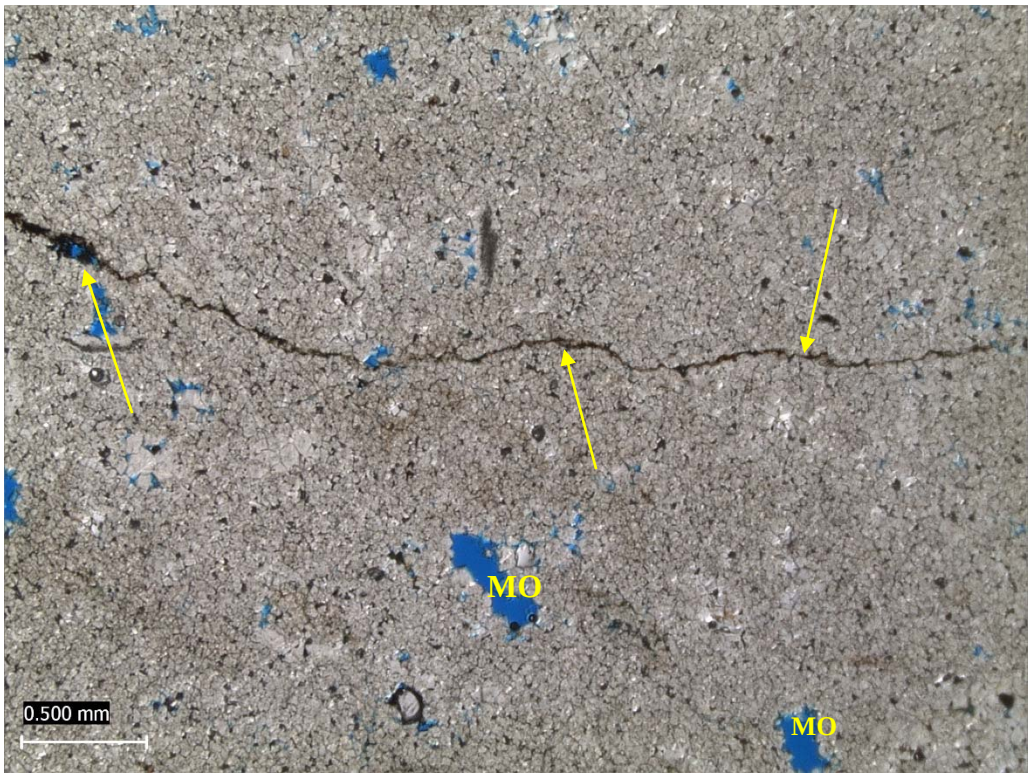
W-18811 (Brighton Reservation)

Depth:	1394.5-1395 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Dolomite
Dominant Pore Type:	Moldic
Porosity Amount:	~10 percent
Depositional Environment:	Undetermined
Whole Rock Analysis:	Major Elements (%): (SiO_2=1.52, MgO=18.85, CaO=32.65) Trace Constituents (ppm): (As=2, Ba=9, Cd=BDL, Cr=14.0, Mo=10, Ni=4, Sb=BDL, Sr=306, U=6.38, V=27, SO_4=0.4)

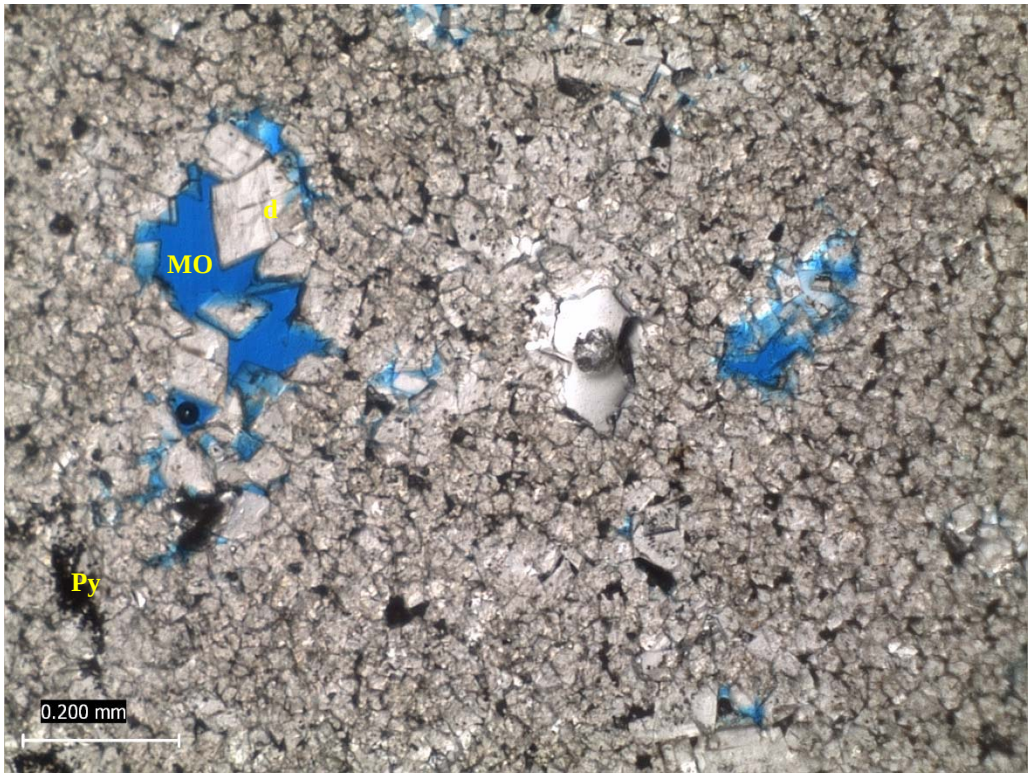
Description:

The section consists of dolomite with pyrite and organics present in some of the small molds and vugs. Dolomite is inclusion rich. Allochems include relict fossil molds of foraminifera and echinoids. Fossils have been leached out and only molds remain making identification difficult. However, there are relict molds of orbitolinid and echinoids with coarser grained dolospar filling or partially filling the molds. Fracture is present and appears to contain organics and or pyrite. Scanning electron microscope images are in Appendix 3.

Depositional environment is obscured due to dolomitization.



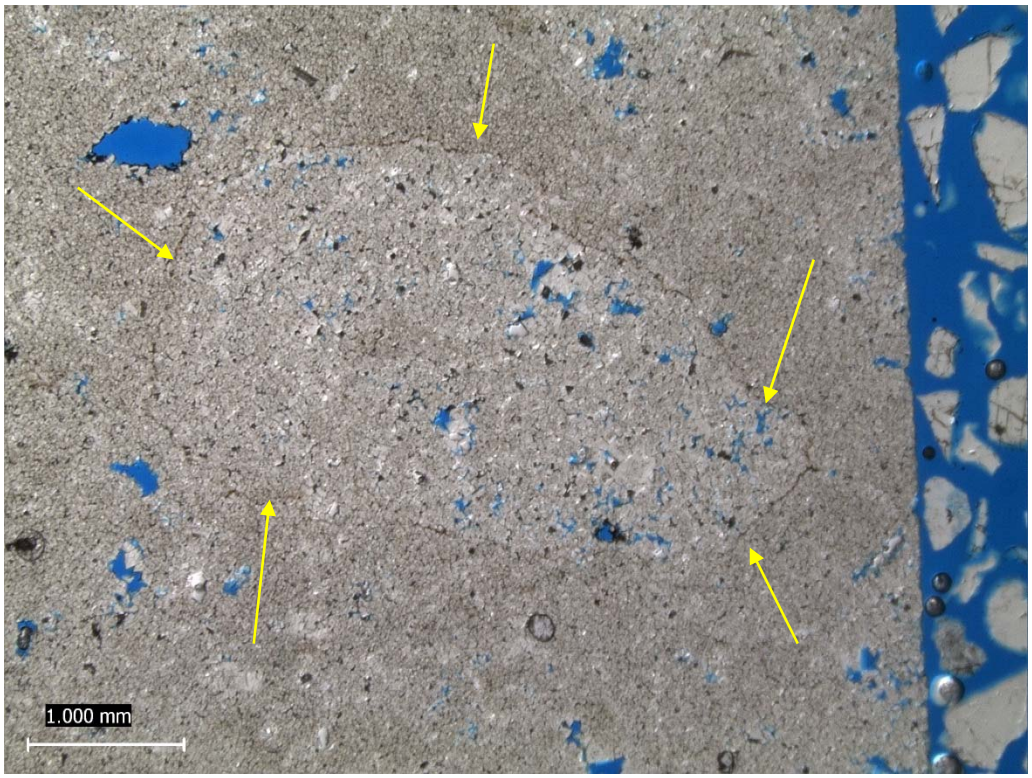
W-18811 1394.5-1395 ft. Dolomite. Inclusion-rich dolomite with moldic porosity (MO) and pyrite and or organic filled fracture (arrows). Transmitted light.



W-18811 1394.5-1395 ft. Dolomite. Inclusion-rich dolomite with larger dolomite crystals (d) filling moldic porosity (MO). Pyrite (Py) is also present. Transmitted light.



W-18811 1394.5-1395 ft. Dolomite. Dolomite with scattered pyrite (Py) and/or organics (O). Transmitted light.



W-18811 1394.5-1395 ft. Dolomite. Outline of a relict fossil in dolomite possibly an echinoid (arrows). Transmitted light.



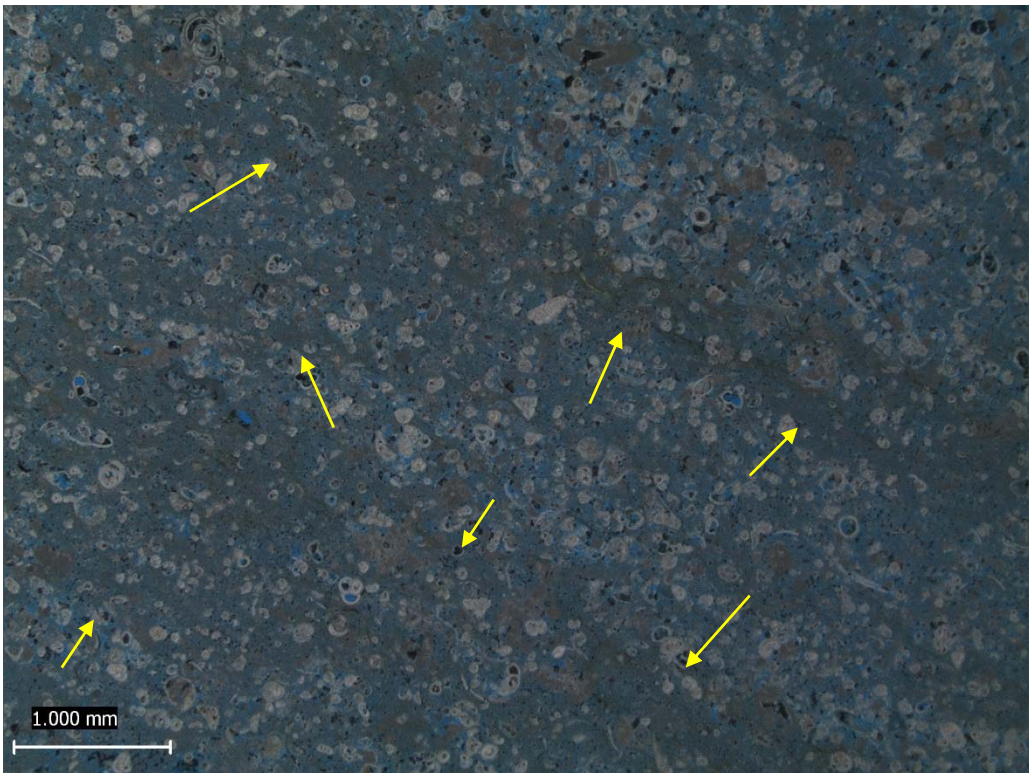
W-18811 (Brighton Reservation)

Depth:	1402-1402.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Foraminiferal packstone
Dominant Pore Type:	Microporosity, interparticle, and slight moldic
Porosity Amount:	~25 percent
Depositional Environment:	Shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.14, MgO=0.86, CaO=54.79) Trace Constituents (ppm): (As=2, Ba=1, Cd=BDL, Cr=3.3, Mo=8, Ni=4, Sb=BDL, Sr=412, U=3.94, V=30, SO_4=0.3)

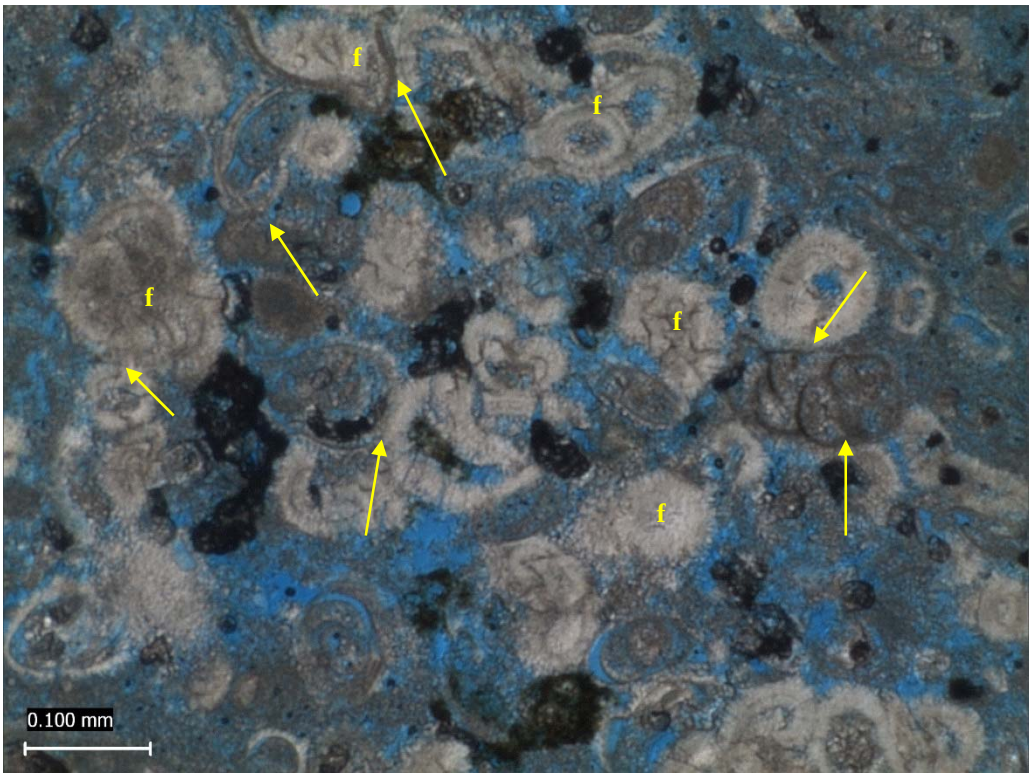
Description:

The section consists of limestone with scattered organics and/or iron sulfide. Allochems include foraminifera, ostracods, miliolids and red algae. Orientation of allochems in the section suggests tilted beds, or the section may have been cut non-parallel to the core. Laminae may be algal. There is some evidence of compaction in linear grain contacts. Some cementation is present especially around and filling foraminifera. Micrite envelopes are common. A few of the foraminifera appear to be planktonic suggesting there was open circulation to the ocean allowing the planktonics to drift to more shallow waters.

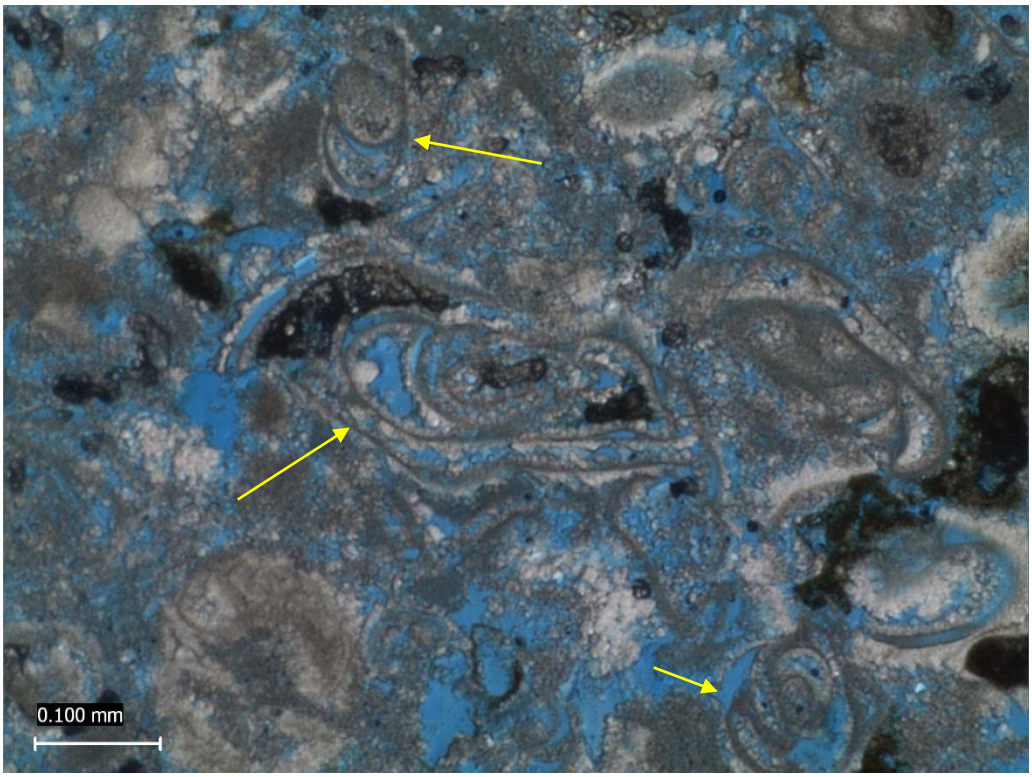
Depositional environment is likely subtidal to shallow marine with possible algal laminations (Thayer and Miller, 1984).



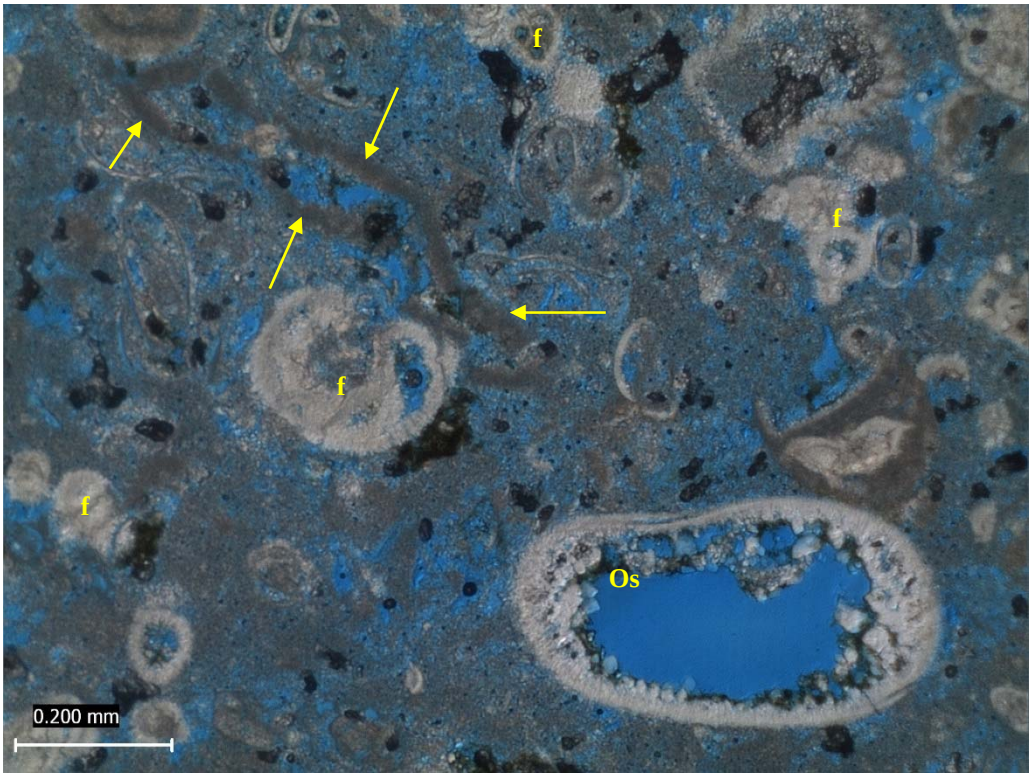
W-18811 1402.5-1402.5 ft. Foraminiferal packstone. Laminae (arrows) may be algal. Transmitted light.



W-18811 1402.5-1402.5 ft. Foraminiferal packstone. Cement filled foraminifera (f) exhibiting some compaction (arrows). Transmitted light.



W-18811 1402.5-1402.5 ft. Foraminiferal packstone. Micrite envelopes (arrows) of miliolids. Transmitted light.



W-18811 1402.5-1402.5 ft. Foraminiferal packstone. Foraminifera (f) and ostracods (Os) with cementation. Algal fragments (arrows). Transmitted light.



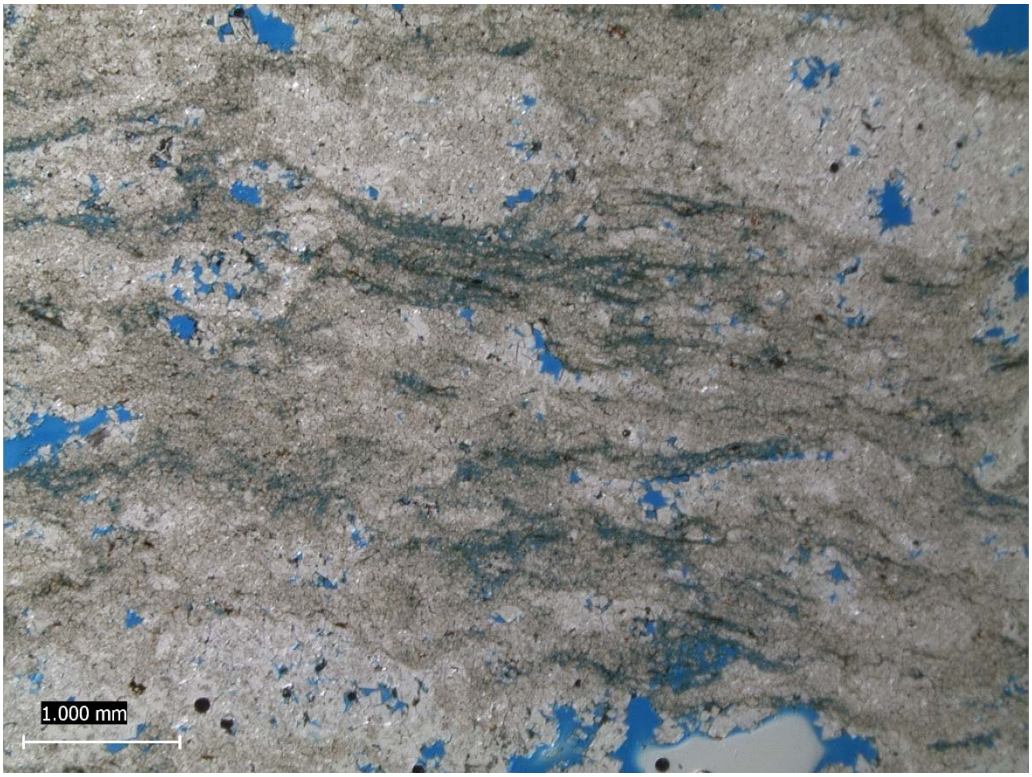
W-18811 (Brighton Reservation)

Depth:	1408-1408.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Laminated dolomite
Dominant Pore Type:	Intercrystalline and moldic
Porosity Amount:	~15 percent
Depositional Environment:	Subtidal
Whole Rock Analysis:	Major Elements (%): (SiO_2=2.00, MgO=18.01, CaO=32.25) Trace Constituents (ppm): (As=3, Ba=36, Cd=BDL, Cr=12.7, Mo=17, Ni=11, Sb=0.2, Sr=596, U=5.66, V=78, SO_4=0.5)

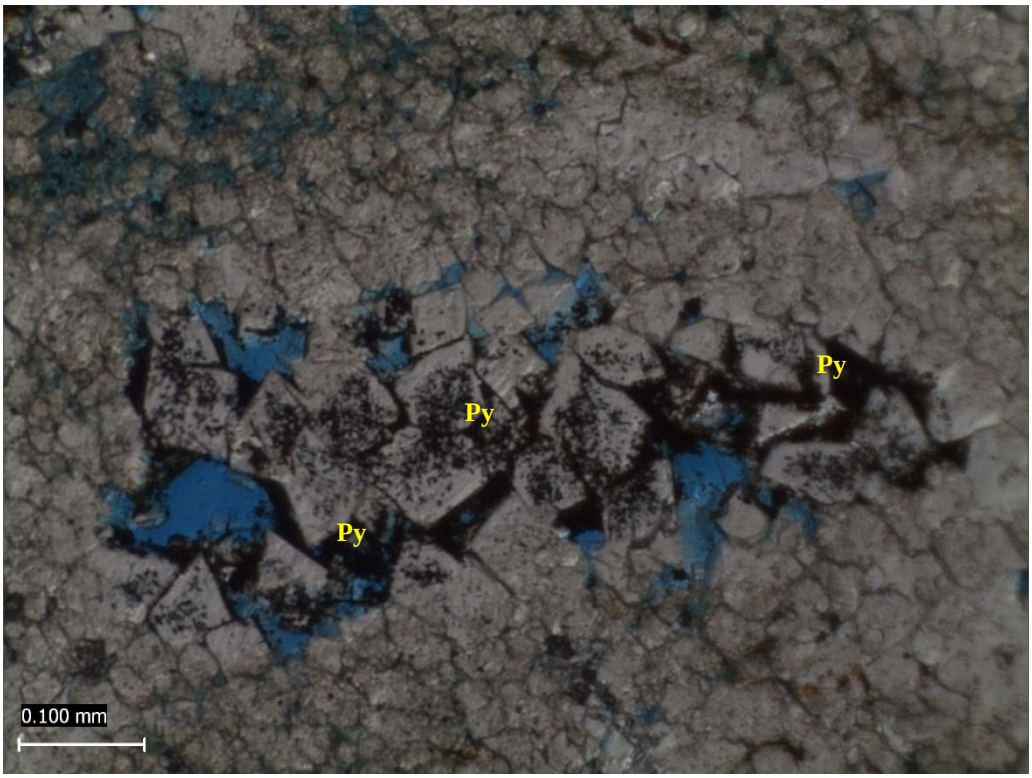
Description:

The section consists of dolomite with organics and pyrite. Allochems include relict molds of foraminifera and echinoids. Some of the echinoid molds are large. The molds have been filled or partially filled with coarser grained dolospar and traces of gypsum. Dolomite consists of mottled organic rich layers with some pyrite. The layers occasionally appear wispy and may be algal in origin.

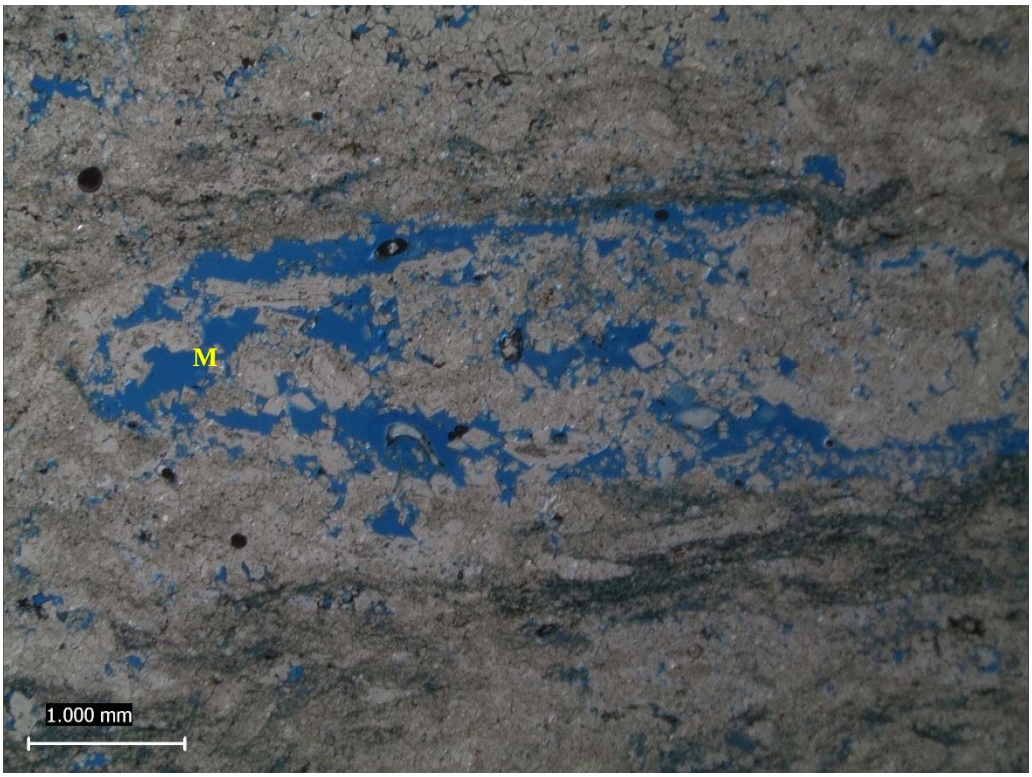
Depositional environment is difficult to determine because of dolomitization but due to the wispy organic laminae and echinoids it may be subtidal.



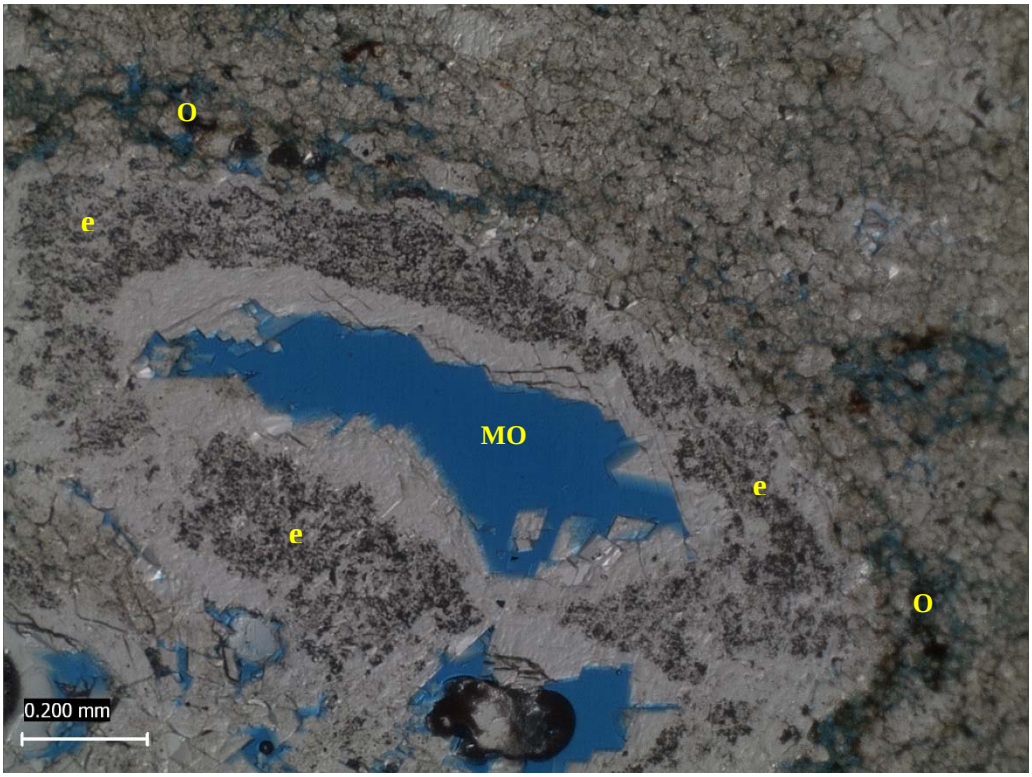
W-18811 1408-1408.5 ft. Laminated dolomite. Dolomite with mottled, wispy organic laminae. Transmitted light.



W-18811 1408-1408.5 ft. Laminated dolomite. Mold partially filled with coarser grained dolomite and pyrite/ iron sulfide (Py).Transmitted light.



W-18811 1408-1408.5 ft. Laminated dolomite. Echinoid mold (M) partially filled with dolomite rhombs surrounded by wispy organic laminae. Transmitted light.



W-18811 1408-1408.5 ft. Laminated dolomite. Echinoid (e) with syntaxial cement, moldic porosity (MO) in the center. Dolomite and organics (O) surround the echinoid. Transmitted light.



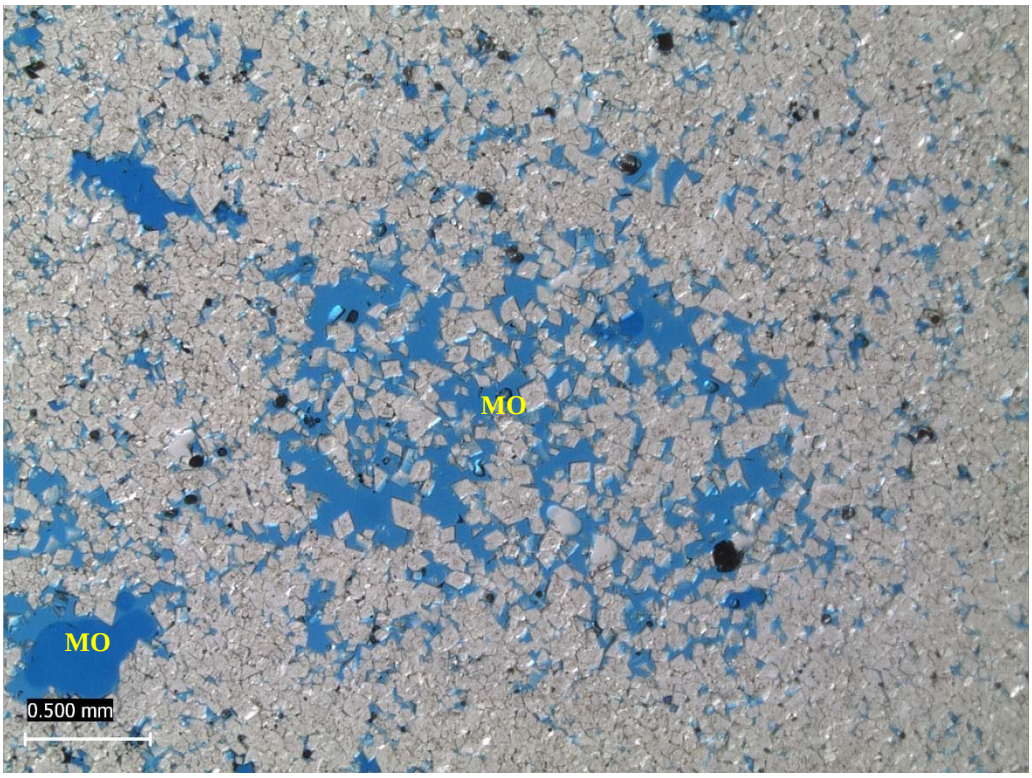
W-18811 (Brighton Reservation)

Depth:	1413.5-1414 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Dolomite
Dominant Pore Type:	Intercrystalline and moldic
Porosity Amount:	~15 percent
Depositional Environment:	Undetermined
Whole Rock Analysis:	Major Elements (%): (SiO_2=1.32, MgO=19.07, CaO=32.56) Trace Constituents (ppm): (As=2, Ba=9, Cd=BDL, Cr=15.3, Mo=7, Ni=6, Sb=0.2, Sr=329, U=4.43, V=34, SO_4=BDL)

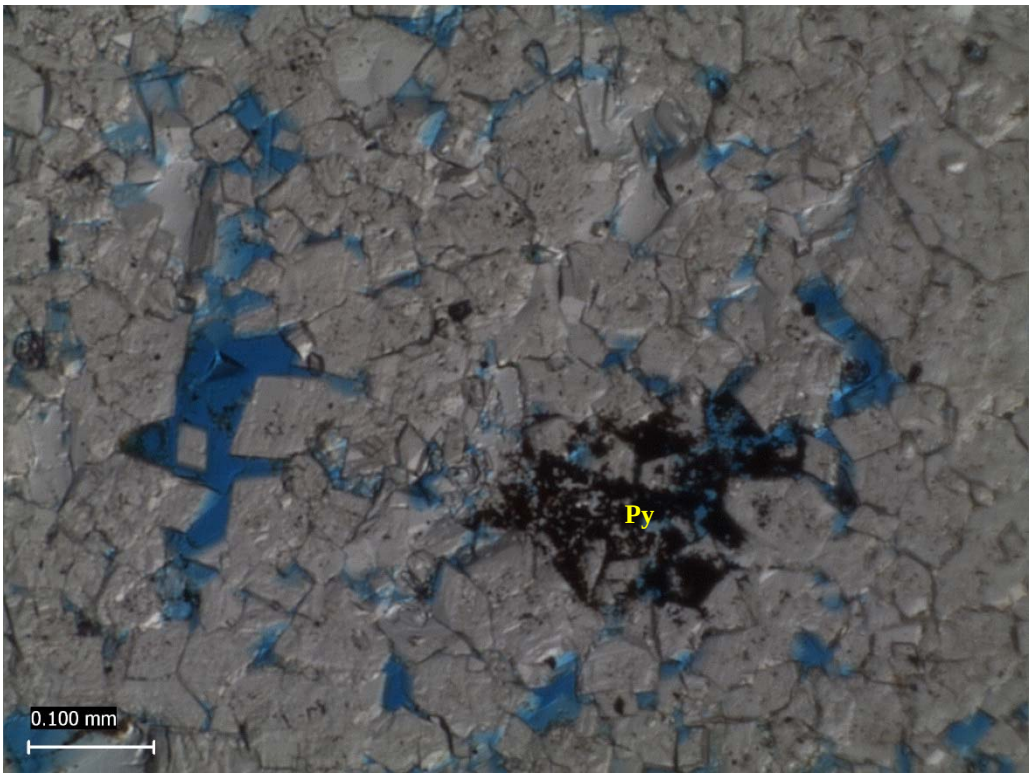
Description:

The section consists of dolomite with organics and/or pyrite. Allochems include relict molds of foraminifera and echinoids. Many of the molds are filled or partially filled with dolomite. The density and size of the dolomite rhombs vary. There is a fracture or organic layer running through the dolomite.

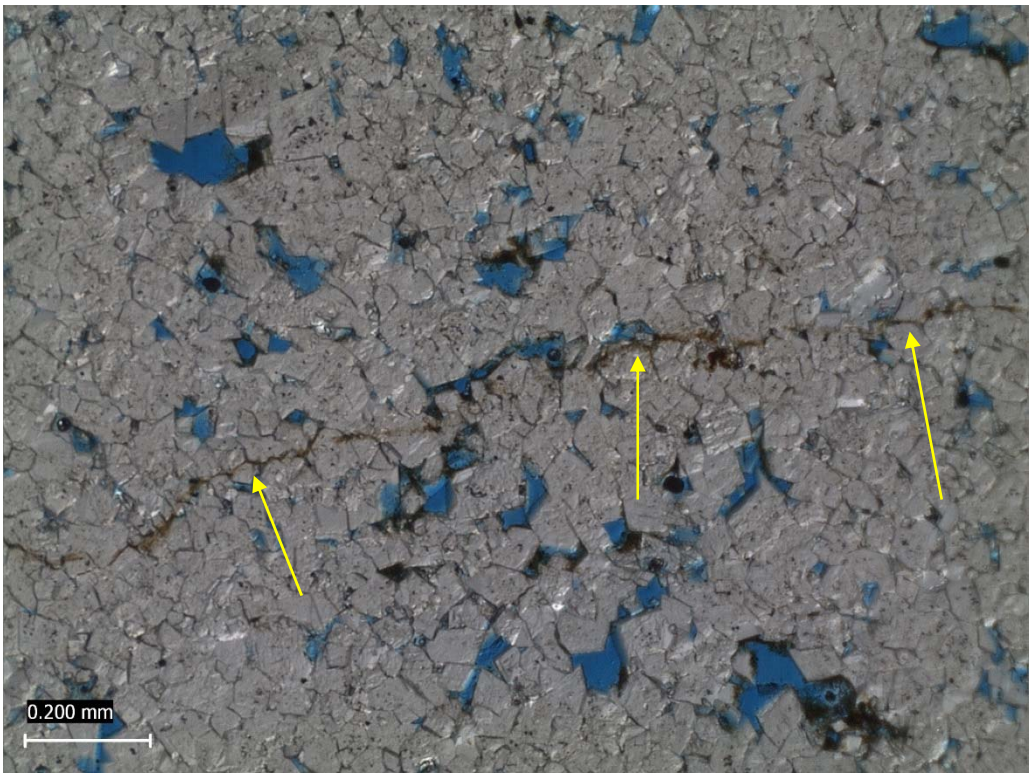
Depositional environment is obscured due to dolomitization.



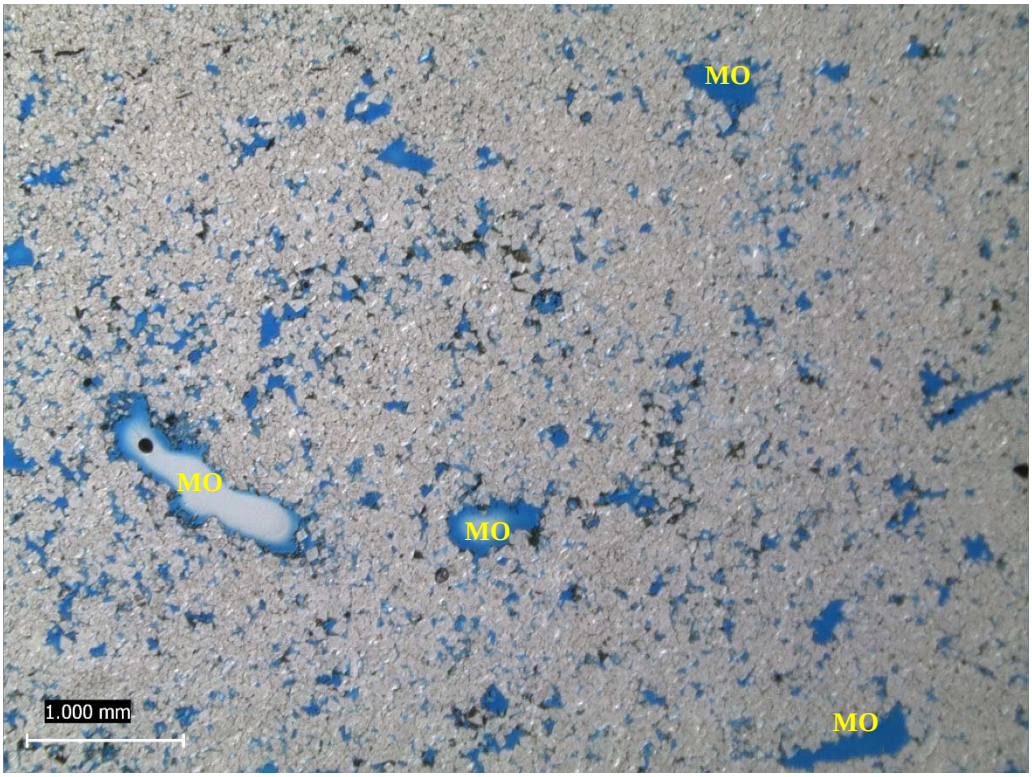
W-18811 1413.5-1414 ft. Dolomite. Moldic porosity (MO). Transmitted light.



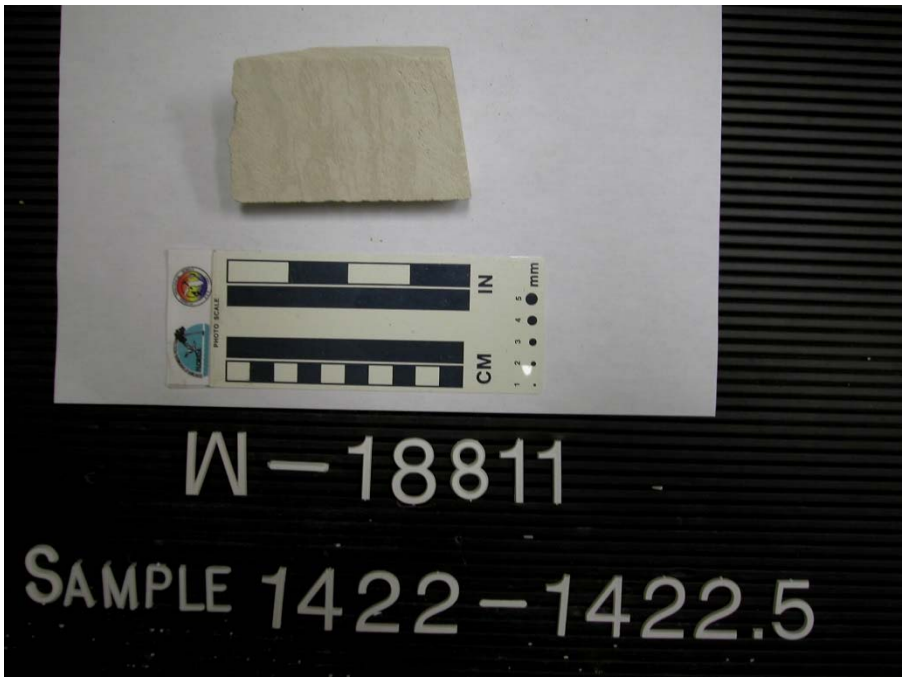
W-18811 1413.5-1414 ft. Dolomite. Dolomite with pyrite/ iron sulfide (Py). Transmitted light.



W-18811 1413.5-1414 ft. Dolomite. Organic layer (arrows) running through dolomite. Transmitted light.



W-18811 1413.5-1414 ft. Dolomite. Molds showing moldic porosity (MO). Transmitted light.



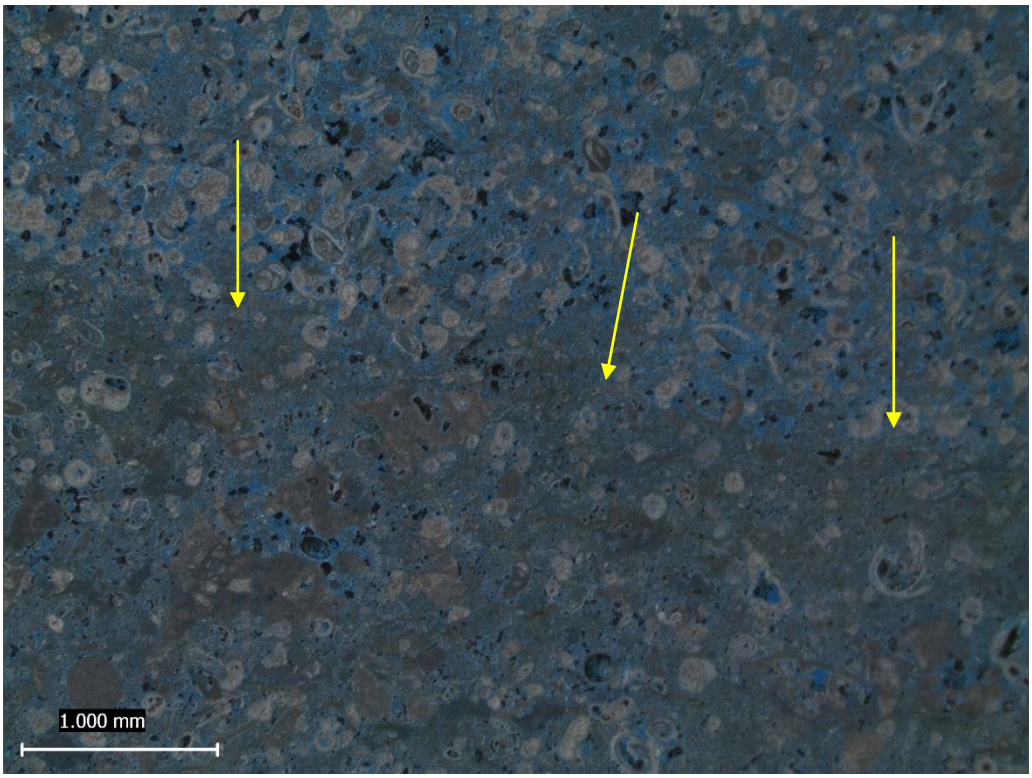
W-18811 (Brighton Reservation)

Depth:	1422-1422.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Mixed skeletal packstone
Dominant Pore Type:	Interparticle and microporosity
Porosity Amount:	~25 percent
Depositional Environment:	Subtidal to shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.13, MgO=0.91, CaO=55.05) Trace Constituents (ppm): (As=2, Ba=3, Cd=BDL, Cr=BDL, Mo=12, Ni=6, Sb=0.2, Sr=383, U=4.08, V=34, SO_4=0.3)

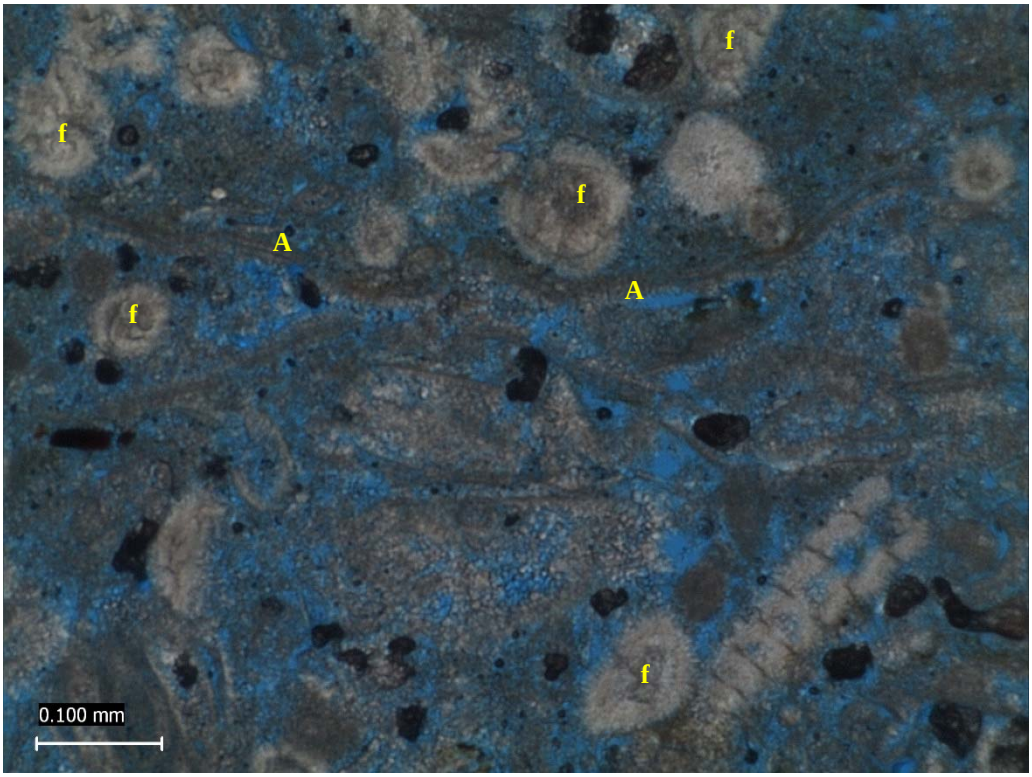
Description:

The section consists of limestone with organics and/or iron sulfide. Allochems include foraminifera, ostracods, echinoids, intraclasts, bryozoan, miliolids and various algal types. Section is mottled and has wispy laminae of algae. Minimal cementation occurs as overgrowths on and around the foraminifera. There is abundant microspar. There is some evidence of compaction.

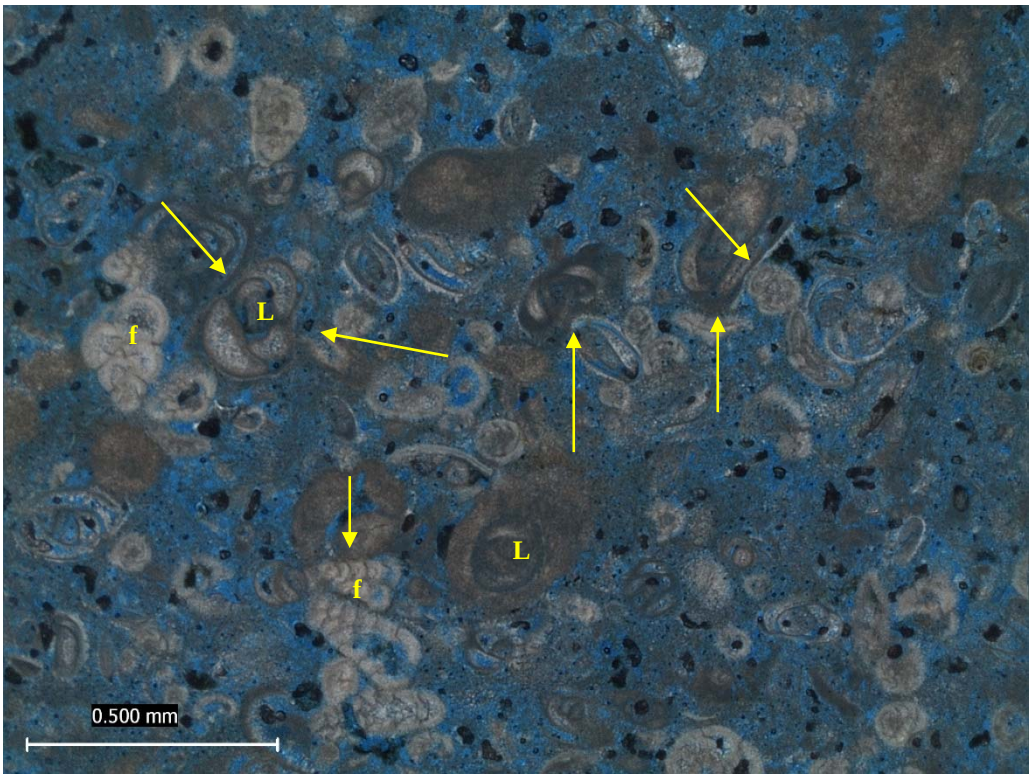
Depositional environment is likely subtidal to shallow marine with algal laminations and echinoids (Flügel, 2004).



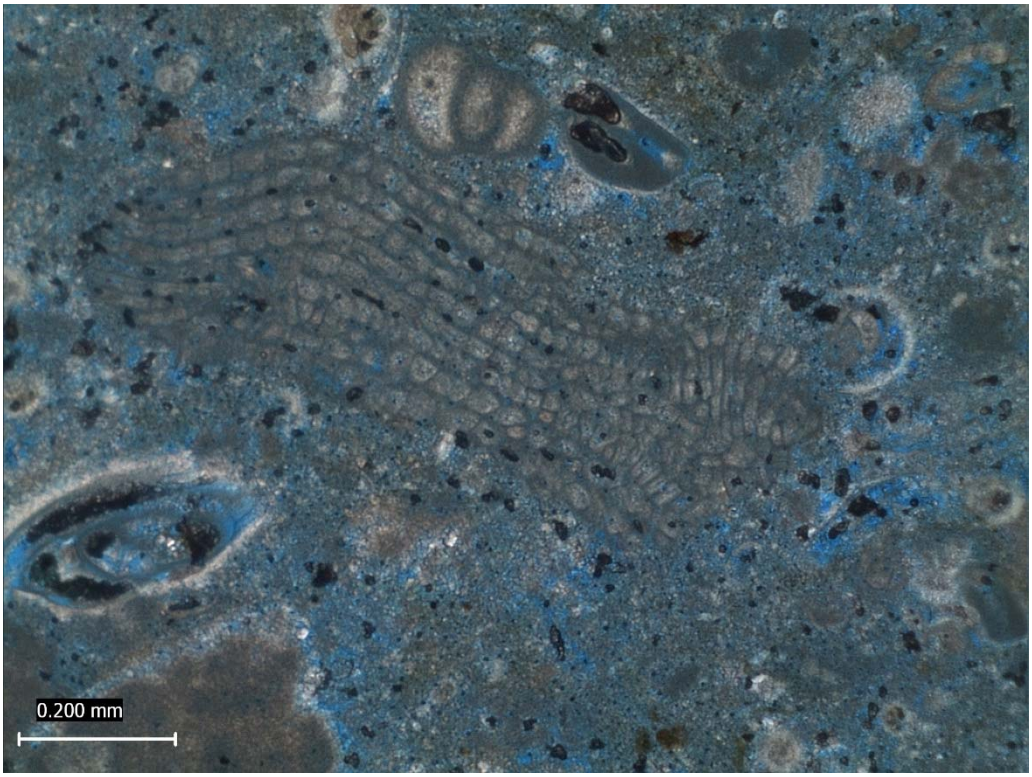
W-18811 1422-1422.5 ft. Mixed skeletal packstone. Algal lamina (arrows) in lower half. Transmitted light.



W-18811 1422-1422.5 ft. Mixed skeletal packstone. Foraminifera (f) and filamentous algae (A). Transmitted light.



W-18811 1422-1422.5 ft. Mixed skeletal packstone. Linear grain contacts (arrows) showing compaction has occurred. Miliolids (L) and foraminifera (f). Transmitted light.



W-18811 1422-1422.5 ft. Mixed skeletal packstone. Possible bryozoan or orbitolinid foraminifera fragment. Transmitted light.



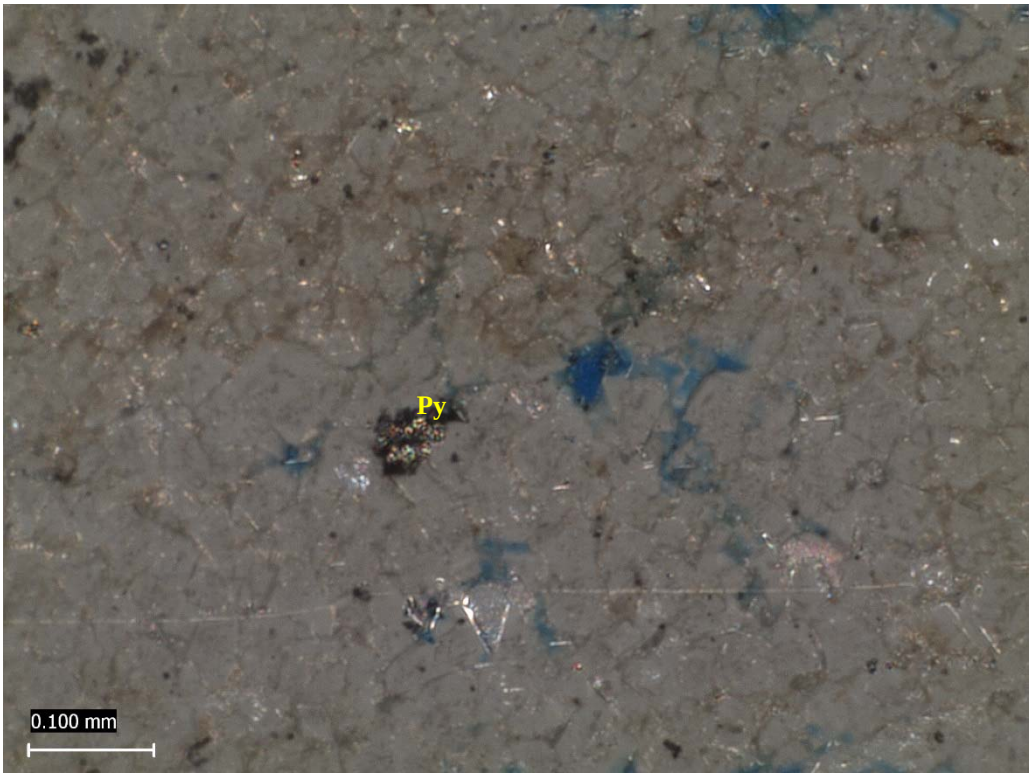
W-18811 (Brighton Reservation)

Depth:	1428-1428.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Dolomite
Dominant Pore Type:	Intercrystalline and moldic
Porosity Amount:	~10 percent
Depositional Environment:	Undetermined
Whole Rock Analysis:	Major Elements (%): (SiO_2=2.16, MgO=18.75, CaO=32.22) Trace Constituents (ppm): (As=3, Ba=9, Cd=BDL, Cr=15.0, Mo=8, Ni=6, Sb=0.3, Sr=355, U=6.4, V=55, SO_4=0.5)

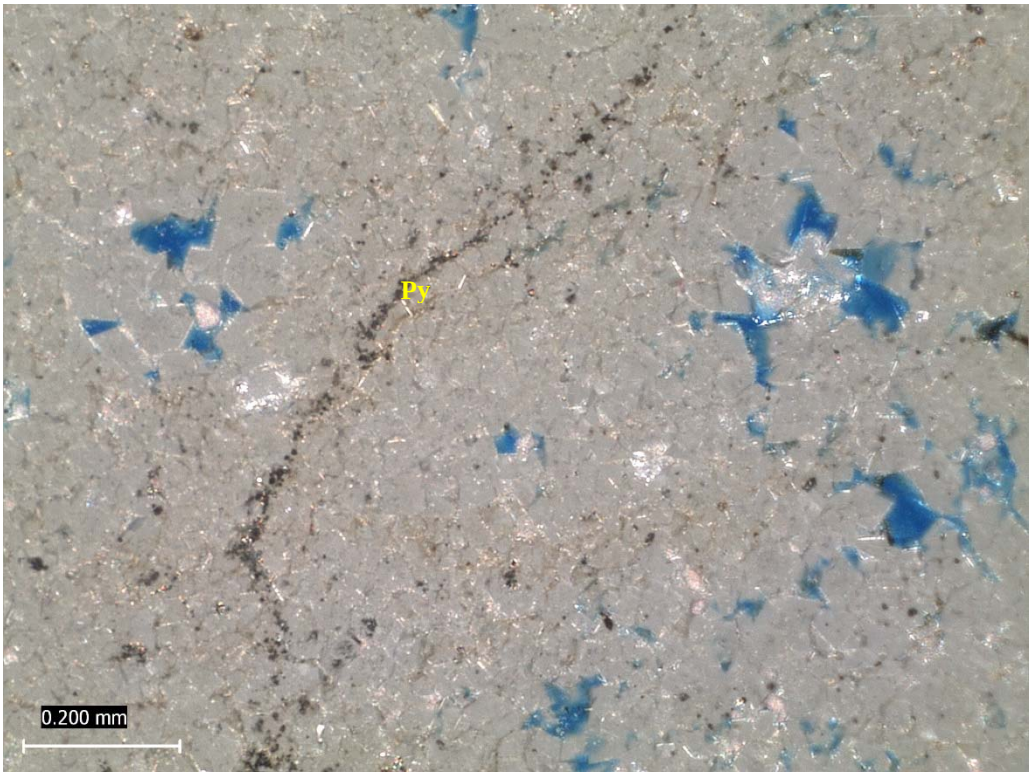
Description:

The section consists of dolomite with scattered pyrite and organics. Allochems include relict molds of echinoids. Dolomitization makes any other identification difficult. Dolomite is inclusion rich and mottled with wispy laminae of organics.

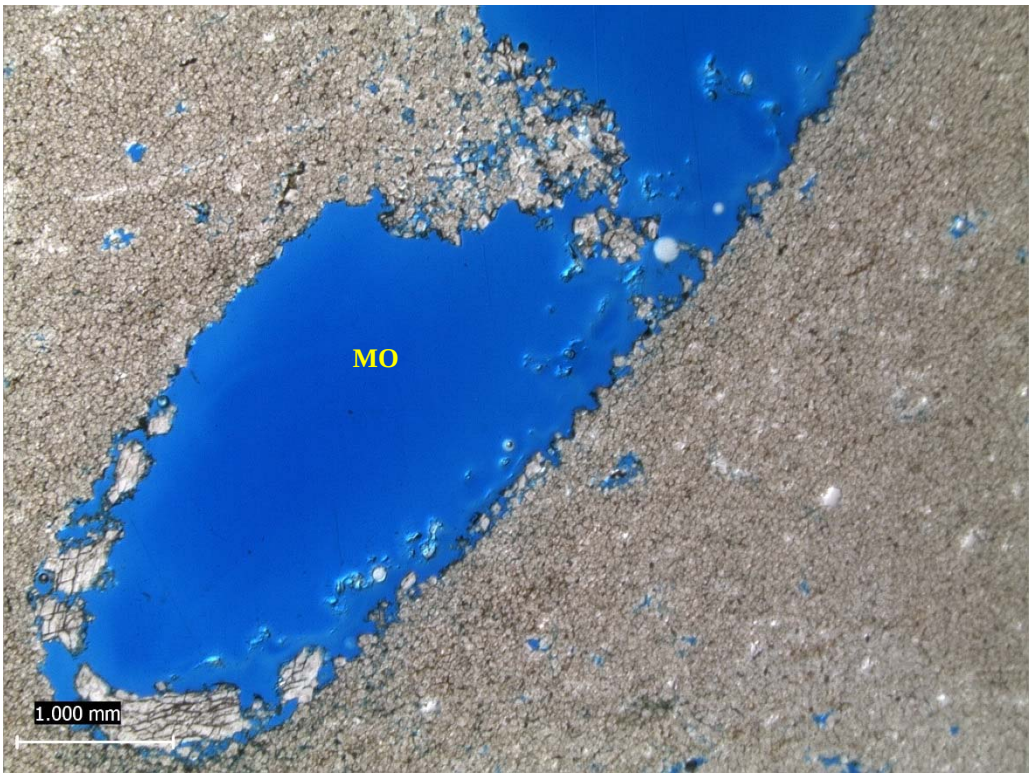
Depositional environment is obscured due to dolomitization.



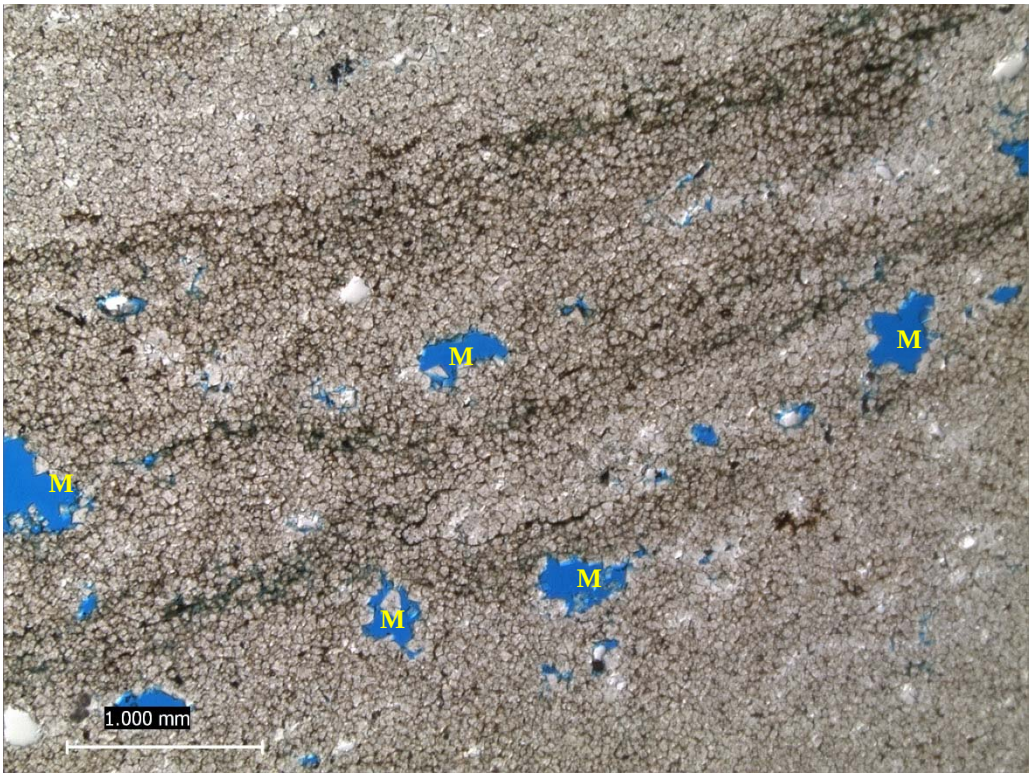
W-18811 1428-1428.5 ft. Dolomite. Dolomite with pyrite (Py). Reflected light.



W-18811 1428-1428.5 ft. Dolomite. Dolomite with wispy organics/pyrite (Py). Reflected light.



W-18811 1428-1428.5 ft. Dolomite. Large echinoid mold in dolomite, moldic porosity (MO). Transmitted light.



W-18811 1428-1428.5 ft. Dolomite. Smaller molds (M) possibly of foraminifera. Organic wispy layers throughout the dolomite. Transmitted light.



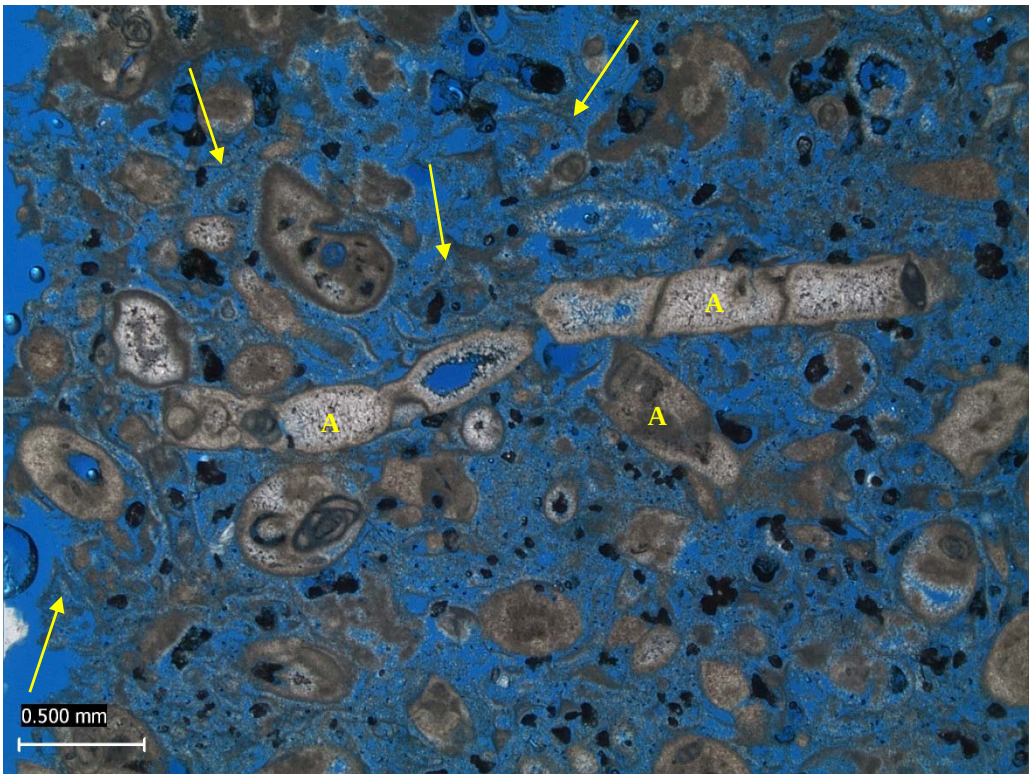
W-18811 (Brighton Reservation)

Depth:	1430-1430.5 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Mixed skeletal packstone
Dominant Pore Type:	Interparticle, moldic and microporosity
Porosity Amount:	~45 percent
Depositional Environment:	Lagoonal or brackish water
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.07, MgO=1.00, CaO=54.67) Trace Constituents (ppm): (As=2, Ba=BDL, Cd=BDL, Cr=3.1, Mo=6, Ni=BDL, Sb=0.2, Sr=500, U=2.84, V=5, SO_4=0.3)

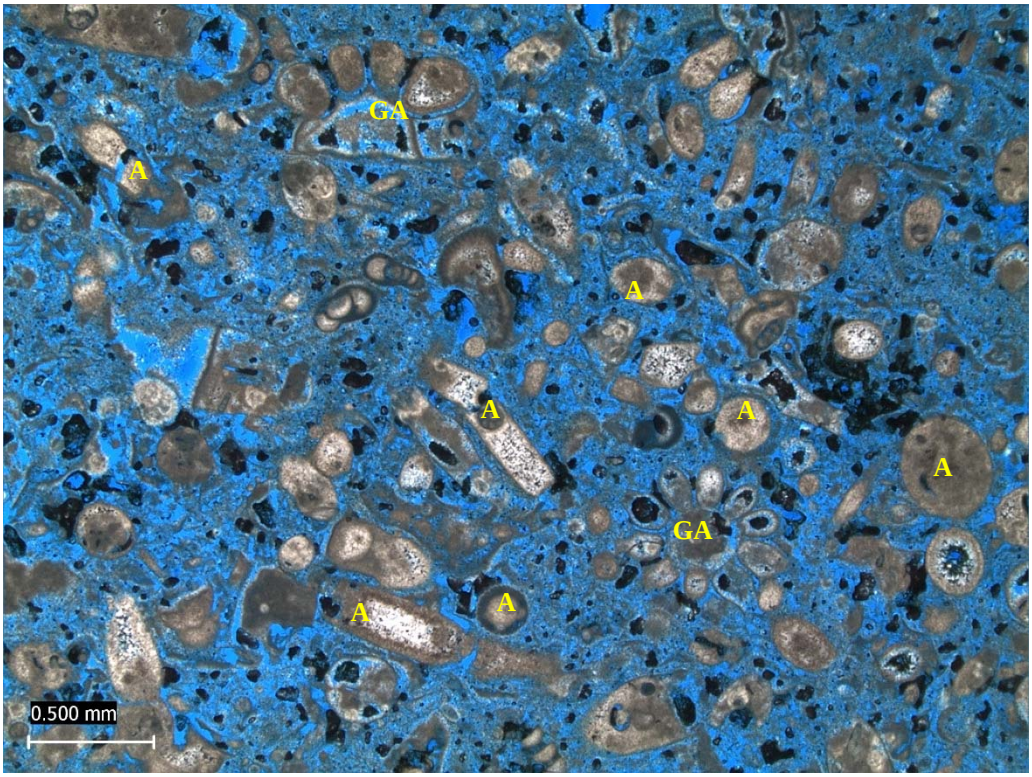
Description:

The section consists of limestone with organics and possible pyrite. Allochems include foraminifera, miliolids, intraclasts, bryozoan and abundant algae of various forms. Section is micritized making some identifications difficult. Micrite envelopes are common. There is minimal cementation with cement sometimes occurring around grains and within grains. There is abundant very fine grained spar in the matrix.

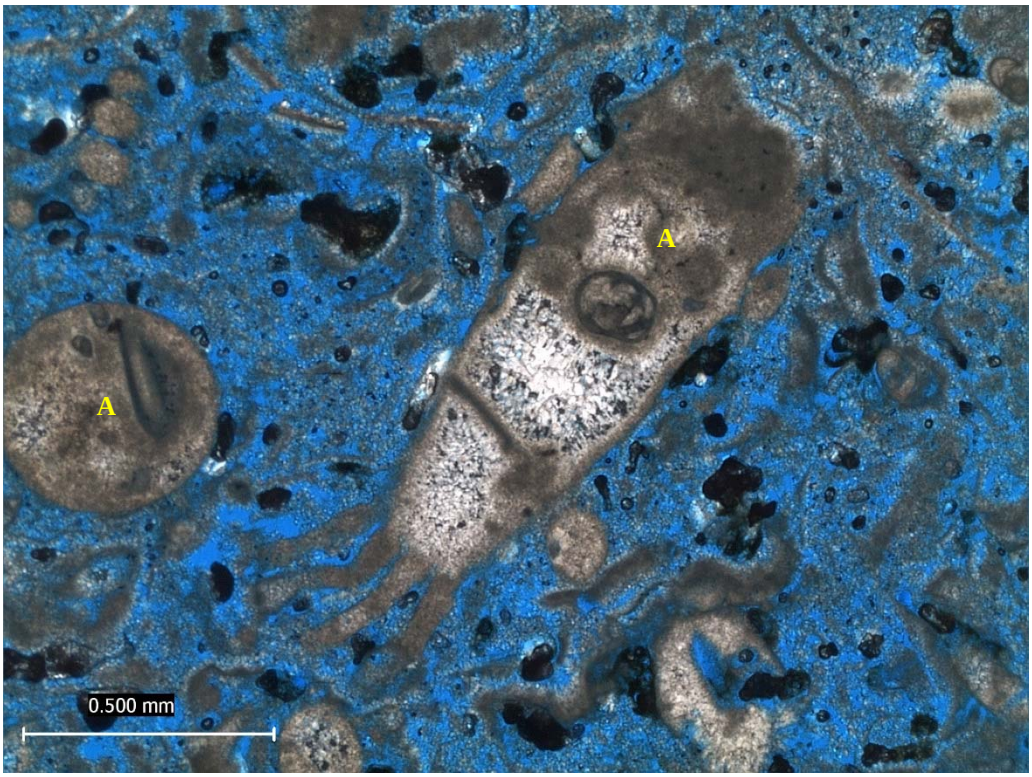
Depositional environment is likely a lagoonal or brackish water setting based on the presence of charophytes and green algae (Flügel, 2004).



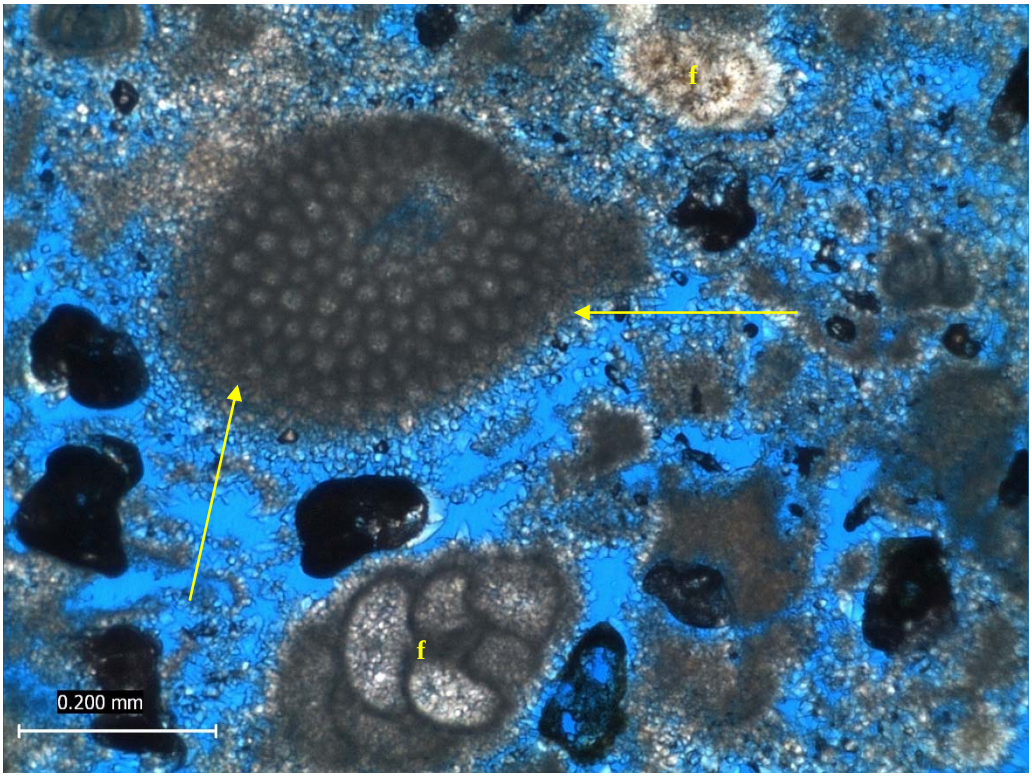
W-18811 1430-1430.5 ft. Mixed skeletal packstone. Algal fragments (A) and micrite envelopes (arrows). Transmitted light.



W-18811 1430-1430.5 ft. Mixed skeletal packstone. Various algal forms (A) including the green algae charophyte (GA). Transmitted light.



W-18811 1430-1430.5 ft. Mixed skeletal packstone. Possible green algal fragments (A). Transmitted light.



W-18811 1430-1430.5 ft. Mixed skeletal packstone. Possible algal fragment or bryozoan (arrow). Foraminifera (f). Note fine grained spar in the matrix. Transmitted light.



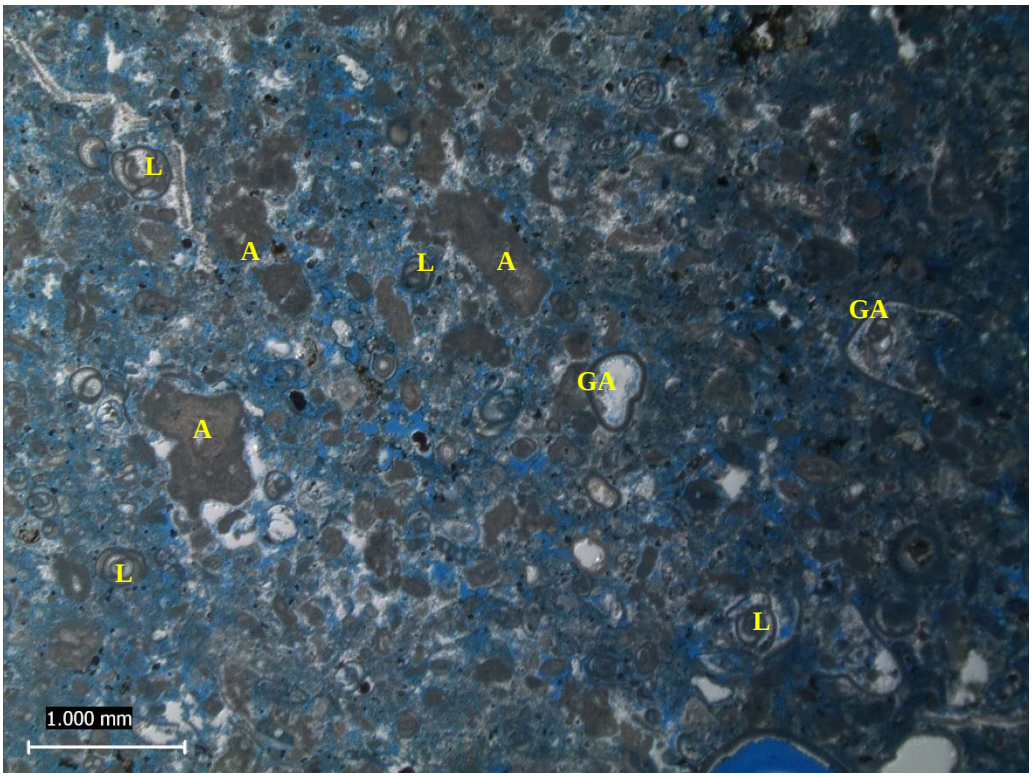
W-18811 (Brighton Reservation)

Depth:	1433.5-1434 ft BLS
Stratigraphic Unit:	Avon Park Formation
Lithofacies:	Mixed skeletal packstone
Dominant Pore Type:	Interparticle, moldic and microporosity
Porosity Amount:	~35 percent
Depositional Environment:	Subtidal to shallow marine
Whole Rock Analysis:	Major Elements (%): (SiO_2=0.18, MgO=0.73, CaO=55.95) Trace Constituents (ppm): (As=2, Ba=3, Cr=3.7, Mo=8, Ni=4, Sb=0.2, Sr=414, U=2.83, V=25, SO_4=BDL)

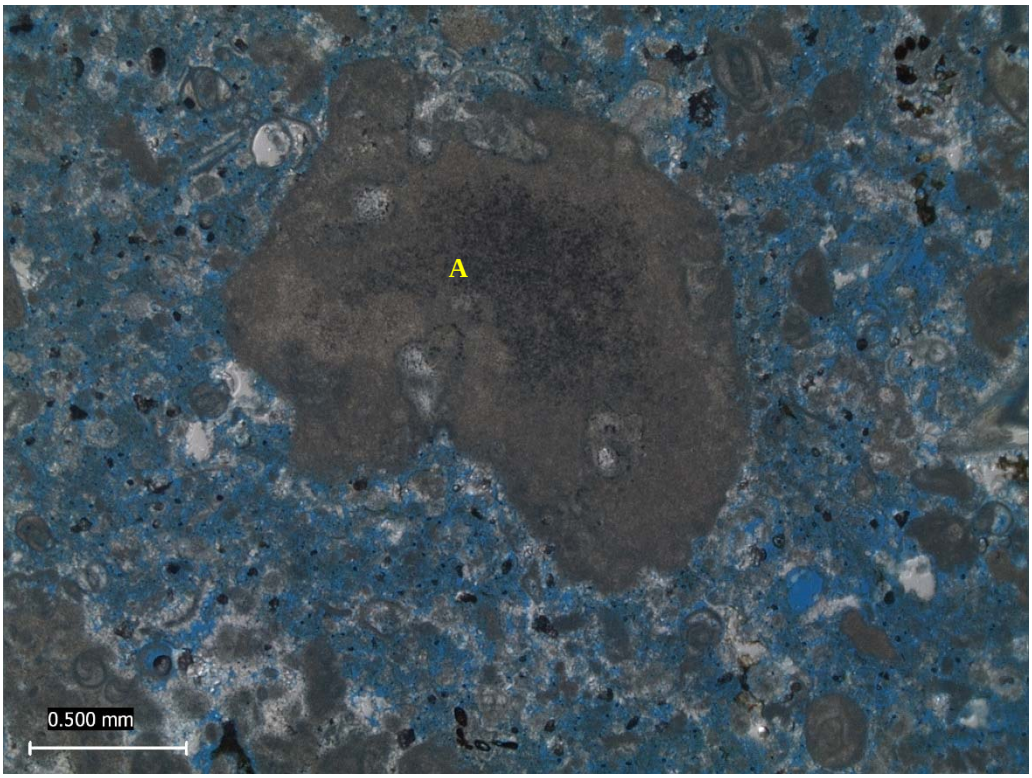
Description:

The section consists of limestone with organics and possible pyrite. Allochems include foraminifera, miliolids, intraclasts and various types of algae. Section is mottled indicating bioturbation. There is moderate cementation with cement filling some interparticle pore spaces as well as foraminifera and algal pieces. Section is highly micritized making identifications difficult.

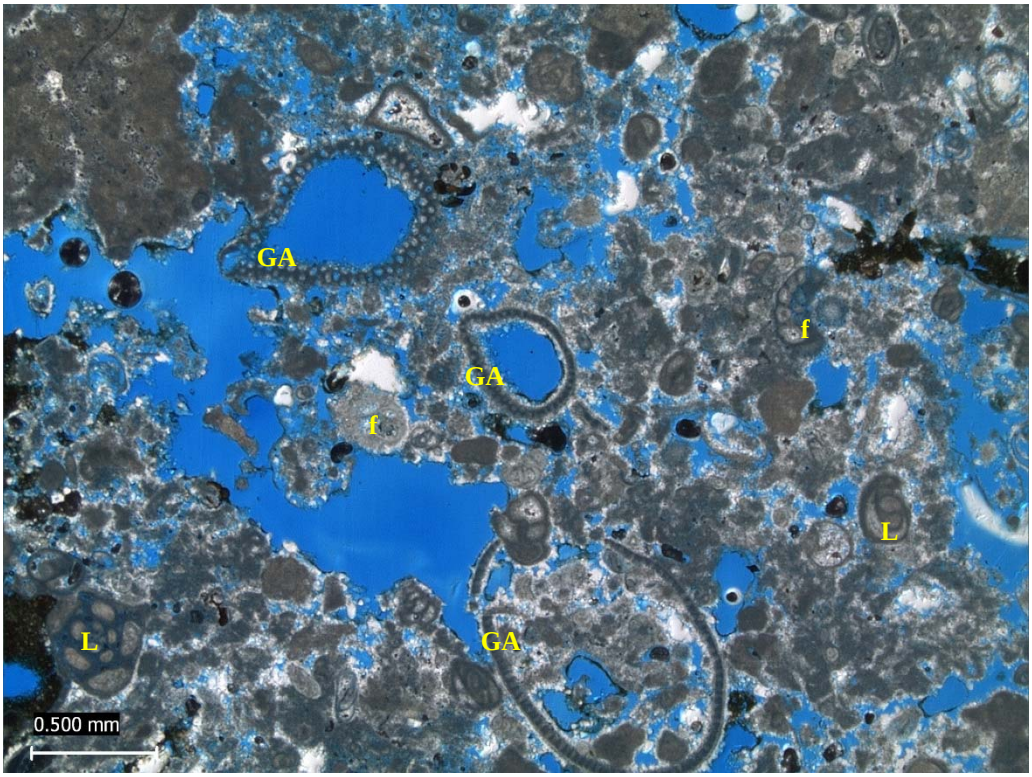
Depositional environment is likely shallow subtidal to shallow marine. Miliolids and green algae indicate shallow warm water of normal salinity (Flügel, 2004).



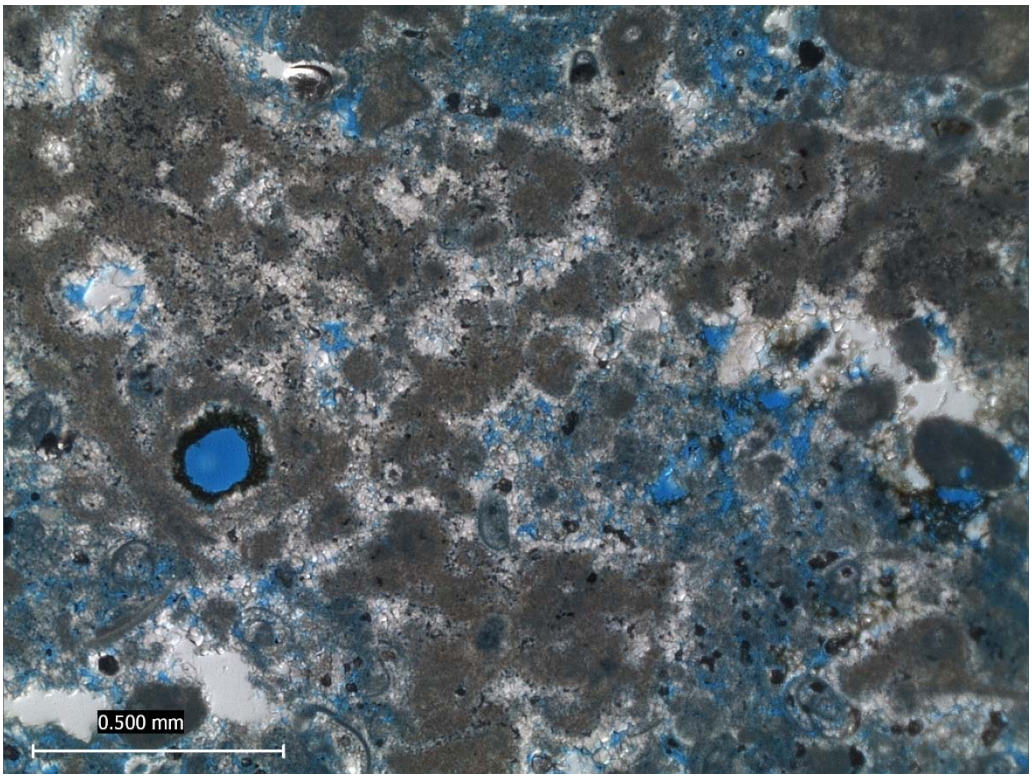
W-18811 1433.5-1434 ft. Mixed skeletal packstone. Red algae (A), green algae (GA) and miliolids (L). Transmitted light.



W-18811 1433.5-1434 ft. Mixed skeletal packstone. Fragment of red algae (A). Transmitted light.



W-18811 1433.5-1434 ft. Mixed skeletal packstone. Green algae (GA), miliolids (L) and foraminifera (f). Transmitted light.



W-18811 1433.5-1434 ft. Mixed skeletal packstone. Heavily micritized area with moderate cementation, identification is difficult but may be algal. Transmitted light.

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Appendix 1

Lithogeochemical analyses

W-18811 Brighton Reservation

W-18812 Paradise Run

BDL = below detection limit

Analyte Symbol	Depth_min	Depth_max	Formation*	County	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O
Unit Symbol	ft BLS	ft BLS			%	%	%	%	%	%	%	%
Detection Limit					0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01
Analysis Method					FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP
W-18811	748	748.5	Ocala Limestone	Glades	0.85	0.24	0.10	0.002	1.17	54.07	0.10	0.10
W-18811	806.5	807	Ocala Limestone	Glades	0.80	0.22	0.08	0.002	0.90	54.30	0.08	0.14
W-18811	883.5	884	Ocala Limestone	Glades	1.16	0.23	0.14	0.004	1.20	54.17	0.08	0.14
W-18811	971.5	972	Ocala Limestone	Glades	1.70	0.34	0.30	0.006	2.06	52.98	0.08	0.33
W-18811	1027	1027.5	Avon Park Formation	Glades	0.18	0.06	0.03	BDL	1.28	55.74	0.07	BDL
W-18811	1057.5	1058	Avon Park Formation	Glades	0.14	0.05	0.03	BDL	1.00	55.83	0.06	0.08
W-18811	1157.5	1158	Avon Park Formation	Glades	0.55	0.19	0.05	BDL	1.21	53.39	0.07	0.03
W-18811	1217	1217.5	Avon Park Formation	Glades	0.38	0.13	0.05	BDL	0.70	54.56	0.06	0.07
W-18811	1274.5	1275	Avon Park Formation	Glades	0.15	0.05	0.02	BDL	0.72	56.11	0.07	BDL
W-18811	1294	1294.5	Avon Park Formation	Glades	0.26	0.09	0.03	BDL	0.61	55.81	0.08	BDL
W-18811	1317	1317.5	Avon Park Formation	Glades	0.19	0.07	0.04	BDL	0.33	55.97	0.05	BDL
W-18811	1358	1358.5	Avon Park Formation	Glades	0.17	0.05	0.05	BDL	0.50	54.50	0.06	BDL
W-18811	1394.5	1395	Avon Park Formation	Glades	1.52	0.50	0.23	0.005	18.85	32.65	0.09	0.25
W-18811	1402	1402.5	Avon Park Formation	Glades	0.14	0.04	0.02	BDL	0.86	54.79	0.06	0.05
W-18811	1408	1408.5	Avon Park Formation	Glades	2.00	0.65	0.22	0.002	18.01	32.25	0.08	0.31
W-18811	1413.5	1414	Avon Park Formation	Glades	1.32	0.43	0.14	0.002	19.07	32.56	0.07	0.12
W-18811	1422	1422.5	Avon Park Formation	Glades	0.13	0.04	0.02	BDL	0.91	55.05	0.07	BDL
W-18811	1428	1428.5	Avon Park Formation	Glades	2.16	0.73	0.24	0.002	18.75	32.22	0.07	0.32
W-18811	1430	1430.5	Avon Park Formation	Glades	0.07	0.03	BDL	BDL	1.00	54.67	0.07	0.09
W-18811	1433.5	1434	Avon Park Formation	Glades	0.18	0.06	0.04	BDL	0.73	55.95	0.08	0.07
W-18812	458	458.8	Hawthorn Group	Glades	19.83	2.37	0.62	0.006	10.95	27.91	0.32	0.41
W-18812	463	463.5	Hawthorn Group	Glades	19.70	2.00	0.55	0.003	6.11	34.01	0.59	0.28
W-18812	464.5	465	Hawthorn Group	Glades	7.82	0.82	0.21	0.004	7.95	39.95	0.18	0.13
W-18812	799	799.5	Avon Park Formation	Glades	0.51	0.17	0.05	BDL	1.06	54.91	0.08	0.11
W-18812	801	801.5	Avon Park Formation	Glades	0.59	0.19	0.04	BDL	1.02	54.64	0.08	0.08
W-18812	803	803.5	Avon Park Formation	Glades	0.41	0.12	0.04	BDL	0.89	55.63	0.07	0.02
W-18812	807	807.5	Avon Park Formation	Glades	1.88	0.62	0.13	0.002	1.15	53.00	0.11	0.15
W-18812	1101	1101.5	Avon Park Formation	Glades	0.14	0.05	0.02	BDL	0.53	49.04	0.06	0.02
W-18812	1102.5	1103	Avon Park Formation	Glades	0.08	0.02	0.01	BDL	0.84	52.05	0.09	BDL
W-18812	1106.5	1107	Avon Park Formation	Glades	0.22	0.07	0.02	BDL	0.92	49.21	0.10	BDL
W-18812	1252.5	1253	Avon Park Formation	Glades	0.26	0.09	0.04	BDL	0.75	56.12	0.09	0.02
W-18812	1255	1255.5	Avon Park Formation	Glades	0.09	0.04	0.01	BDL	0.69	56.04	0.08	BDL
W-18812	1257.5	1258	Avon Park Formation	Glades	0.14	0.04	0.02	BDL	0.69	55.16	0.07	BDL
W-18812	1260	1260.5	Avon Park Formation	Glades	0.38	0.09	0.05	0.002	0.74	54.84	0.11	0.12
W-18812	1510	1512	Avon Park Formation	Glades	0.28	0.10	0.09	BDL	19.25	33.05	0.15	BDL
W-18812	1520	1525	Avon Park Formation	Glades	0.20	0.07	0.03	BDL	12.12	38.52	0.08	0.02
W-18812	1752.5	1753	Avon Park Formation	Glades	0.18	0.07	0.03	BDL	21.62	30.78	0.06	BDL
W-18812	1753	1754	Avon Park Formation	Glades	0.29	0.10	0.04	BDL	19.45	31.55	0.09	0.04
W-18812	1754	1755	Avon Park Formation	Glades	0.81	0.29	0.09	BDL	14.68	31.24	0.06	0.04
W-18812	1758.5	1759	Avon Park Formation	Glades	0.64	0.22	0.12	0.001	22.07	31.93	BDL	0.03

Analyte Symbol	Depth_min	Depth_max	Formation*	County	TiO2	P2O5	LOI	Total	Au	Ag	As	Ba
Unit Symbol	ft BLS	ft BLS			%	%	%	%	ppb	ppm	ppm	ppm
Detection Limit					0.001	0.01	0.01	0.01	1	0.5	1	1
Analysis Method					FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	INAA	TD-ICP	INAA	FUS-ICP
W-18811	748	748.5	Ocala Limestone	Glades	BDL	0.04	43.45	100.10	BDL	BDL	BDL	7
W-18811	806.5	807	Ocala Limestone	Glades	BDL	0.03	43.54	100.10	BDL	BDL	2	6
W-18811	883.5	884	Ocala Limestone	Glades	BDL	0.05	43.24	100.40	BDL	BDL	2	7
W-18811	971.5	972	Ocala Limestone	Glades	BDL	0.07	42.84	100.70	BDL	BDL	4	4
W-18811	1027	1027.5	Avon Park Formation	Glades	BDL	BDL	43.55	100.90	BDL	BDL	2	4
W-18811	1057.5	1058	Avon Park Formation	Glades	BDL	BDL	43.36	100.50	BDL	BDL	3	1
W-18811	1157.5	1158	Avon Park Formation	Glades	BDL	BDL	43.50	98.99	BDL	BDL	2	5
W-18811	1217	1217.5	Avon Park Formation	Glades	BDL	BDL	43.51	99.45	BDL	BDL	25	3
W-18811	1274.5	1275	Avon Park Formation	Glades	BDL	BDL	43.59	100.70	BDL	BDL	BDL	3
W-18811	1294	1294.5	Avon Park Formation	Glades	BDL	BDL	43.52	100.40	BDL	BDL	2	92
W-18811	1317	1317.5	Avon Park Formation	Glades	BDL	BDL	43.51	100.20	BDL	BDL	6	2
W-18811	1358	1358.5	Avon Park Formation	Glades	BDL	BDL	43.54	98.82	BDL	BDL	2	2
W-18811	1394.5	1395	Avon Park Formation	Glades	0.017	BDL	45.66	99.77	BDL	BDL	2	9
W-18811	1402	1402.5	Avon Park Formation	Glades	BDL	BDL	43.65	99.59	BDL	BDL	2	1
W-18811	1408	1408.5	Avon Park Formation	Glades	0.021	BDL	45.54	99.08	BDL	BDL	3	36
W-18811	1413.5	1414	Avon Park Formation	Glades	0.017	BDL	45.71	99.43	BDL	BDL	2	9
W-18811	1422	1422.5	Avon Park Formation	Glades	BDL	BDL	43.58	99.73	BDL	BDL	2	3
W-18811	1428	1428.5	Avon Park Formation	Glades	0.030	BDL	45.21	99.73	BDL	BDL	3	9
W-18811	1430	1430.5	Avon Park Formation	Glades	BDL	BDL	43.34	99.26	BDL	BDL	2	BDL
W-18811	1433.5	1434	Avon Park Formation	Glades	BDL	BDL	43.77	100.90	BDL	BDL	2	3
W-18812	458	458.8	Hawthorn Group	Glades	0.113	4.35	31.73	98.61	BDL	BDL	8	73
W-18812	463	463.5	Hawthorn Group	Glades	0.095	15.18	20.52	99.03	BDL	BDL	8	81
W-18812	464.5	465	Hawthorn Group	Glades	0.034	1.96	38.79	97.85	BDL	4.9	3	28
W-18812	799	799.5	Avon Park Formation	Glades	BDL	BDL	43.28	100.20	BDL	BDL	2	7
W-18812	801	801.5	Avon Park Formation	Glades	BDL	BDL	43.00	99.64	BDL	BDL	2	5
W-18812	803	803.5	Avon Park Formation	Glades	BDL	BDL	43.24	100.40	BDL	BDL	2	6
W-18812	807	807.5	Avon Park Formation	Glades	0.009	BDL	43.34	100.40	BDL	BDL	6	11
W-18812	1101	1101.5	Avon Park Formation	Glades	BDL	BDL	38.61	88.42	BDL	1.5	BDL	432
W-18812	1102.5	1103	Avon Park Formation	Glades	BDL	BDL	40.47	93.54	BDL	1.1	BDL	99
W-18812	1106.5	1107	Avon Park Formation	Glades	BDL	BDL	38.83	89.31	BDL	1.5	BDL	221
W-18812	1252.5	1253	Avon Park Formation	Glades	BDL	BDL	43.13	100.50	BDL	BDL	2	6
W-18812	1255	1255.5	Avon Park Formation	Glades	BDL	BDL	43.25	100.20	BDL	BDL	2	6
W-18812	1257.5	1258	Avon Park Formation	Glades	BDL	BDL	43.33	99.44	BDL	BDL	2	5
W-18812	1260	1260.5	Avon Park Formation	Glades	0.003	BDL	43.38	99.70	BDL	BDL	2	15
W-18812	1510	1512	Avon Park Formation	Glades	0.002	BDL	46.25	99.15	BDL	BDL	2	5
W-18812	1520	1525	Avon Park Formation	Glades	BDL	BDL	44.95	95.98	BDL	BDL	8	23
W-18812	1752.5	1753	Avon Park Formation	Glades	BDL	BDL	46.57	99.29	BDL	BDL	2	4
W-18812	1753	1754	Avon Park Formation	Glades	0.002	BDL	43.92	95.43	BDL	BDL	2	4
W-18812	1754	1755	Avon Park Formation	Glades	0.009	BDL	38.10	85.21	BDL	BDL	2	21
W-18812	1758.5	1759	Avon Park Formation	Glades	0.003	BDL	46.06	101.00	BDL	BDL	BDL	1

Analyte Symbol	Depth_min	Depth_max	Formation*	County	Be	Bi	Br	Cd	Co	Cr	Cs	Cu
Unit Symbol	ft BLS	ft BLS			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit					1	0.1	0.5	0.5	0.1	0.5	0.1	1
Analysis Method					FUS-ICP	FUS-MS	INAA	TD-ICP	INAA	INAA	FUS-MS	TD-ICP
W-18811	748	748.5	Ocala Limestone	Glades	BDL	BDL	5.3	BDL	1.1	14.2	BDL	1
W-18811	806.5	807	Ocala Limestone	Glades	BDL	BDL	4.3	0.5	0.8	22.0	BDL	2
W-18811	883.5	884	Ocala Limestone	Glades	BDL	BDL	4.6	BDL	0.8	18.2	BDL	2
W-18811	971.5	972	Ocala Limestone	Glades	BDL	BDL	3.0	BDL	1.4	16.7	0.1	2
W-18811	1027	1027.5	Avon Park Formation	Glades	BDL	BDL	2.3	BDL	1.0	5.3	BDL	1
W-18811	1057.5	1058	Avon Park Formation	Glades	BDL	BDL	3.4	BDL	0.6	3.0	BDL	1
W-18811	1157.5	1158	Avon Park Formation	Glades	BDL	BDL	4.2	BDL	0.8	5.5	BDL	1
W-18811	1217	1217.5	Avon Park Formation	Glades	BDL	BDL	6.4	BDL	0.8	5.4	BDL	2
W-18811	1274.5	1275	Avon Park Formation	Glades	BDL	BDL	1.5	BDL	0.9	3.4	BDL	BDL
W-18811	1294	1294.5	Avon Park Formation	Glades	BDL	0.2	2.2	BDL	0.6	4.0	0.2	1
W-18811	1317	1317.5	Avon Park Formation	Glades	BDL	BDL	1.4	BDL	0.8	3.0	BDL	BDL
W-18811	1358	1358.5	Avon Park Formation	Glades	BDL	BDL	BDL	0.9	BDL	BDL	BDL	2
W-18811	1394.5	1395	Avon Park Formation	Glades	BDL	BDL	1.5	BDL	1.1	14.0	0.3	1
W-18811	1402	1402.5	Avon Park Formation	Glades	BDL	BDL	3.7	BDL	0.8	3.3	BDL	BDL
W-18811	1408	1408.5	Avon Park Formation	Glades	BDL	BDL	4.3	BDL	1.3	12.7	0.2	3
W-18811	1413.5	1414	Avon Park Formation	Glades	BDL	BDL	1.8	BDL	0.9	15.3	0.2	BDL
W-18811	1422	1422.5	Avon Park Formation	Glades	BDL	0.1	4.8	BDL	0.9	BDL	BDL	BDL
W-18811	1428	1428.5	Avon Park Formation	Glades	BDL	BDL	2.2	BDL	1.0	15.0	0.3	2
W-18811	1430	1430.5	Avon Park Formation	Glades	BDL	BDL	1.4	BDL	1.1	3.1	BDL	BDL
W-18811	1433.5	1434	Avon Park Formation	Glades	BDL	BDL	3.1	BDL	1.2	3.7	BDL	BDL
W-18812	458	458.8	Hawthorn Group	Glades	BDL	BDL	8.8	3.0	1.7	96.0	0.8	6
W-18812	463	463.5	Hawthorn Group	Glades	BDL	0.2	8.9	9.6	BDL	102.0	0.5	6
W-18812	464.5	465	Hawthorn Group	Glades	BDL	BDL	3.6	0.7	0.8	42.2	0.2	3
W-18812	799	799.5	Avon Park Formation	Glades	BDL	BDL	5.0	BDL	0.5	5.5	BDL	3
W-18812	801	801.5	Avon Park Formation	Glades	BDL	BDL	4.7	BDL	0.5	5.3	BDL	1
W-18812	803	803.5	Avon Park Formation	Glades	BDL	BDL	2.8	BDL	0.5	5.3	BDL	BDL
W-18812	807	807.5	Avon Park Formation	Glades	BDL	BDL	5.3	BDL	0.5	10.4	0.1	2
W-18812	1101	1101.5	Avon Park Formation	Glades	BDL	BDL	1.5	BDL	0.3	3.0	BDL	BDL
W-18812	1102.5	1103	Avon Park Formation	Glades	BDL	5.7	2.0	BDL	0.3	3.2	BDL	BDL
W-18812	1106.5	1107	Avon Park Formation	Glades	BDL	BDL	23.5	BDL	1.1	3.1	BDL	1
W-18812	1252.5	1253	Avon Park Formation	Glades	BDL	BDL	17.1	BDL	0.8	3.2	BDL	BDL
W-18812	1255	1255.5	Avon Park Formation	Glades	BDL	BDL	5.7	BDL	0.4	2.3	BDL	BDL
W-18812	1257.5	1258	Avon Park Formation	Glades	BDL	BDL	6.2	BDL	0.5	BDL	BDL	BDL
W-18812	1260	1260.5	Avon Park Formation	Glades	BDL	BDL	7.9	BDL	0.5	4.6	BDL	1
W-18812	1510	1512	Avon Park Formation	Glades	BDL	BDL	9.8	BDL	0.5	4.6	BDL	BDL
W-18812	1520	1525	Avon Park Formation	Glades	BDL	BDL	18.9	BDL	0.7	4.2	BDL	1
W-18812	1752.5	1753	Avon Park Formation	Glades	BDL	BDL	4.7	BDL	0.5	3.0	BDL	5
W-18812	1753	1754	Avon Park Formation	Glades	BDL	BDL	2.0	BDL	0.4	BDL	BDL	BDL
W-18812	1754	1755	Avon Park Formation	Glades	BDL	BDL	5.7	BDL	0.5	5.6	0.2	1
W-18812	1758.5	1759	Avon Park Formation	Glades	BDL	BDL	11.3	BDL	1.1	11.3	BDL	4

Analyte Symbol	Depth_min	Depth_max	Formation*	County	Ga	Ge	Hf	Hg	In	Ir	Mo	Nb
Unit Symbol	ft BLS	ft BLS			ppm	ppm	ppm	ppb	ppm	ppb	ppm	ppm
Detection Limit					1	0.5	0.1	5	0.1	1	2	0.2
Analysis Method					FUS-MS	FUS-MS	FUS-MS	Hg-FIMS	FUS-MS	INAA	FUS-MS	FUS-MS
W-18811	748	748.5	Ocala Limestone	Glades	BDL	BDL	0.4	BDL	BDL	BDL	BDL	BDL
W-18811	806.5	807	Ocala Limestone	Glades	BDL	BDL	0.1	BDL	BDL	BDL	BDL	BDL
W-18811	883.5	884	Ocala Limestone	Glades	BDL	BDL	0.5	BDL	BDL	BDL	BDL	BDL
W-18811	971.5	972	Ocala Limestone	Glades	BDL	BDL	0.4	5	BDL	BDL	BDL	BDL
W-18811	1027	1027.5	Avon Park Formation	Glades	BDL	BDL	0.2	BDL	BDL	BDL	6	BDL
W-18811	1057.5	1058	Avon Park Formation	Glades	BDL	BDL	0.2	BDL	BDL	BDL	13	BDL
W-18811	1157.5	1158	Avon Park Formation	Glades	BDL	BDL	0.2	BDL	BDL	BDL	9	BDL
W-18811	1217	1217.5	Avon Park Formation	Glades	BDL	BDL	0.1	5	BDL	BDL	140	BDL
W-18811	1274.5	1275	Avon Park Formation	Glades	2	BDL	0.2	BDL	BDL	BDL	6	BDL
W-18811	1294	1294.5	Avon Park Formation	Glades	1	BDL	0.2	BDL	BDL	BDL	6	BDL
W-18811	1317	1317.5	Avon Park Formation	Glades	BDL	BDL	0.2	BDL	BDL	BDL	8	BDL
W-18811	1358	1358.5	Avon Park Formation	Glades	BDL	BDL	0.1	BDL	BDL	BDL	12	BDL
W-18811	1394.5	1395	Avon Park Formation	Glades	1	BDL	0.3	BDL	BDL	BDL	10	0.3
W-18811	1402	1402.5	Avon Park Formation	Glades	BDL	BDL	0.1	BDL	BDL	BDL	8	BDL
W-18811	1408	1408.5	Avon Park Formation	Glades	1	BDL	0.2	5	BDL	BDL	17	0.3
W-18811	1413.5	1414	Avon Park Formation	Glades	1	BDL	0.3	BDL	BDL	BDL	7	0.2
W-18811	1422	1422.5	Avon Park Formation	Glades	1	BDL	0.1	BDL	BDL	BDL	12	BDL
W-18811	1428	1428.5	Avon Park Formation	Glades	2	BDL	0.3	BDL	BDL	BDL	8	0.5
W-18811	1430	1430.5	Avon Park Formation	Glades	1	BDL	0.1	BDL	BDL	BDL	6	BDL
W-18811	1433.5	1434	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	8	BDL
W-18812	458	458.8	Hawthorn Group	Glades	3	BDL	1.4	10	BDL	BDL	8	2.0
W-18812	463	463.5	Hawthorn Group	Glades	4	BDL	1.7	22	BDL	BDL	6	2.5
W-18812	464.5	465	Hawthorn Group	Glades	BDL	BDL	0.9	BDL	BDL	BDL	6	0.7
W-18812	799	799.5	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	12	BDL
W-18812	801	801.5	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	12	BDL
W-18812	803	803.5	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	9	BDL
W-18812	807	807.5	Avon Park Formation	Glades	BDL	BDL	0.2	BDL	BDL	BDL	23	0.3
W-18812	1101	1101.5	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	3	BDL
W-18812	1102.5	1103	Avon Park Formation	Glades	BDL	BDL	0.5	BDL	BDL	BDL	8	BDL
W-18812	1106.5	1107	Avon Park Formation	Glades	BDL	BDL	0.3	BDL	BDL	BDL	15	BDL
W-18812	1252.5	1253	Avon Park Formation	Glades	BDL	BDL	0.2	BDL	BDL	BDL	12	BDL
W-18812	1255	1255.5	Avon Park Formation	Glades	BDL	BDL	0.2	BDL	BDL	BDL	18	BDL
W-18812	1257.5	1258	Avon Park Formation	Glades	BDL	BDL	0.3	BDL	BDL	BDL	19	BDL
W-18812	1260	1260.5	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	16	BDL
W-18812	1510	1512	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	10	BDL
W-18812	1520	1525	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	41	BDL
W-18812	1752.5	1753	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	11	BDL
W-18812	1753	1754	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	7	BDL
W-18812	1754	1755	Avon Park Formation	Glades	BDL	BDL	BDL	BDL	BDL	BDL	8	BDL
W-18812	1758.5	1759	Avon Park Formation	Glades	BDL	BDL	0.2	BDL	BDL	BDL	7	BDL

Analyte Symbol	Depth_min	Depth_max	Formation*	County	Ni	Pb	Rb	Sb	Sc	Se	Sn	Sr
Unit Symbol	ft BLS	ft BLS			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit					1	5	2	0.1	0.01	0.5	1	2
Analysis Method					TD-ICP	TD-ICP	FUS-MS	INAA	INAA	INAA	FUS-MS	FUS-ICP
W-18811	748	748.5	Ocala Limestone	Glades	3	BDL	BDL	0.2	0.46	BDL	BDL	567
W-18811	806.5	807	Ocala Limestone	Glades	6	BDL	BDL	0.2	0.41	BDL	BDL	596
W-18811	883.5	884	Ocala Limestone	Glades	5	BDL	BDL	0.3	0.35	BDL	BDL	675
W-18811	971.5	972	Ocala Limestone	Glades	5	BDL	2	0.6	0.48	BDL	BDL	554
W-18811	1027	1027.5	Avon Park Formation	Glades	BDL	BDL	BDL	0.2	0.12	BDL	BDL	614
W-18811	1057.5	1058	Avon Park Formation	Glades	1	BDL	BDL	0.4	0.09	BDL	BDL	517
W-18811	1157.5	1158	Avon Park Formation	Glades	3	BDL	BDL	0.2	0.19	BDL	BDL	683
W-18811	1217	1217.5	Avon Park Formation	Glades	7	BDL	BDL	3.4	0.16	BDL	BDL	516
W-18811	1274.5	1275	Avon Park Formation	Glades	2	BDL	BDL	0.2	0.09	BDL	BDL	481
W-18811	1294	1294.5	Avon Park Formation	Glades	2	BDL	3	0.3	0.16	BDL	BDL	608
W-18811	1317	1317.5	Avon Park Formation	Glades	4	BDL	BDL	0.9	0.15	BDL	BDL	510
W-18811	1358	1358.5	Avon Park Formation	Glades	11	BDL	BDL	0.3	BDL	BDL	BDL	494
W-18811	1394.5	1395	Avon Park Formation	Glades	4	BDL	4	BDL	0.49	BDL	BDL	306
W-18811	1402	1402.5	Avon Park Formation	Glades	4	BDL	BDL	BDL	0.07	BDL	BDL	412
W-18811	1408	1408.5	Avon Park Formation	Glades	11	BDL	4	0.2	0.64	BDL	BDL	596
W-18811	1413.5	1414	Avon Park Formation	Glades	6	BDL	3	0.2	0.43	BDL	BDL	329
W-18811	1422	1422.5	Avon Park Formation	Glades	6	BDL	BDL	0.2	0.07	BDL	BDL	383
W-18811	1428	1428.5	Avon Park Formation	Glades	6	BDL	5	0.3	0.75	BDL	BDL	355
W-18811	1430	1430.5	Avon Park Formation	Glades	BDL	BDL	BDL	0.2	0.11	BDL	BDL	500
W-18811	1433.5	1434	Avon Park Formation	Glades	4	BDL	BDL	0.2	0.12	BDL	BDL	414
W-18812	458	458.8	Hawthorn Group	Glades	18	BDL	16	0.7	2.92	BDL	BDL	1182
W-18812	463	463.5	Hawthorn Group	Glades	18	BDL	11	0.8	2.81	BDL	1	2920
W-18812	464.5	465	Hawthorn Group	Glades	7	BDL	5	0.6	1.10	BDL	BDL	676
W-18812	799	799.5	Avon Park Formation	Glades	4	BDL	BDL	1.0	0.14	BDL	BDL	622
W-18812	801	801.5	Avon Park Formation	Glades	3	14	BDL	0.8	0.13	BDL	BDL	566
W-18812	803	803.5	Avon Park Formation	Glades	2	BDL	BDL	0.5	0.12	BDL	BDL	614
W-18812	807	807.5	Avon Park Formation	Glades	6	BDL	2	0.8	0.33	BDL	BDL	971
W-18812	1101	1101.5	Avon Park Formation	Glades	BDL	BDL	BDL	0.4	0.06	BDL	BDL	58440
W-18812	1102.5	1103	Avon Park Formation	Glades	BDL	BDL	BDL	0.5	0.05	BDL	BDL	29260
W-18812	1106.5	1107	Avon Park Formation	Glades	5	BDL	BDL	1.1	0.08	BDL	BDL	50630
W-18812	1252.5	1253	Avon Park Formation	Glades	2	BDL	BDL	0.5	0.14	BDL	BDL	721
W-18812	1255	1255.5	Avon Park Formation	Glades	3	BDL	BDL	1.1	0.08	BDL	BDL	617
W-18812	1257.5	1258	Avon Park Formation	Glades	3	BDL	BDL	1.4	0.09	BDL	BDL	616
W-18812	1260	1260.5	Avon Park Formation	Glades	4	BDL	BDL	0.7	0.14	BDL	BDL	628
W-18812	1510	1512	Avon Park Formation	Glades	2	BDL	BDL	0.1	0.13	BDL	BDL	247
W-18812	1520	1525	Avon Park Formation	Glades	4	BDL	BDL	1.4	0.08	BDL	BDL	2880
W-18812	1752.5	1753	Avon Park Formation	Glades	3	BDL	BDL	0.2	0.08	BDL	BDL	118
W-18812	1753	1754	Avon Park Formation	Glades	1	BDL	BDL	0.2	0.11	BDL	BDL	151
W-18812	1754	1755	Avon Park Formation	Glades	BDL	BDL	3	0.2	0.32	BDL	BDL	2746
W-18812	1758.5	1759	Avon Park Formation	Glades	3	BDL	BDL	0.8	0.33	BDL	BDL	113

Analyte Symbol	Depth_min	Depth_max	Formation*	County	Ta	Th	U	V	W	Y	Zn	Zr
Unit Symbol	ft BLS	ft BLS			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit					0.1	0.05	0.05	5	1	1	1	1
Analysis Method					FUS-MS	FUS-MS	FUS-MS	FUS-ICP	INAA	FUS-ICP	TD-ICP	FUS-MS
W-18811	748	748.5	Ocala Limestone	Glades	BDL	0.44	2.70	13	BDL	4	3	16
W-18811	806.5	807	Ocala Limestone	Glades	BDL	0.37	2.73	14	BDL	4	3	6
W-18811	883.5	884	Ocala Limestone	Glades	BDL	0.35	2.65	13	BDL	3	3	19
W-18811	971.5	972	Ocala Limestone	Glades	BDL	0.49	2.78	24	BDL	3	6	13
W-18811	1027	1027.5	Avon Park Formation	Glades	BDL	BDL	2.91	10	BDL	BDL	BDL	10
W-18811	1057.5	1058	Avon Park Formation	Glades	BDL	BDL	3.70	17	BDL	BDL	1	10
W-18811	1157.5	1158	Avon Park Formation	Glades	BDL	0.10	4.64	24	BDL	BDL	2	8
W-18811	1217	1217.5	Avon Park Formation	Glades	BDL	0.09	5.87	40	BDL	BDL	4	6
W-18811	1274.5	1275	Avon Park Formation	Glades	BDL	0.09	6.19	11	BDL	BDL	BDL	9
W-18811	1294	1294.5	Avon Park Formation	Glades	BDL	0.12	4.17	30	BDL	BDL	1	7
W-18811	1317	1317.5	Avon Park Formation	Glades	BDL	BDL	3.32	12	BDL	BDL	1	8
W-18811	1358	1358.5	Avon Park Formation	Glades	BDL	0.07	3.83	22	BDL	BDL	1	6
W-18811	1394.5	1395	Avon Park Formation	Glades	BDL	0.29	6.38	27	BDL	BDL	4	10
W-18811	1402	1402.5	Avon Park Formation	Glades	BDL	BDL	3.94	30	BDL	BDL	BDL	5
W-18811	1408	1408.5	Avon Park Formation	Glades	BDL	0.32	5.66	78	BDL	BDL	5	10
W-18811	1413.5	1414	Avon Park Formation	Glades	BDL	0.23	4.43	34	BDL	BDL	3	10
W-18811	1422	1422.5	Avon Park Formation	Glades	BDL	BDL	4.08	34	BDL	BDL	BDL	5
W-18811	1428	1428.5	Avon Park Formation	Glades	BDL	0.35	6.40	55	BDL	BDL	4	12
W-18811	1430	1430.5	Avon Park Formation	Glades	BDL	BDL	2.84	5	BDL	BDL	BDL	5
W-18811	1433.5	1434	Avon Park Formation	Glades	BDL	BDL	2.83	25	BDL	BDL	1	4
W-18812	458	458.8	Hawthorn Group	Glades	0.1	2.68	9.49	38	BDL	39	38	56
W-18812	463	463.5	Hawthorn Group	Glades	0.2	5.03	37.60	40	BDL	94	77	76
W-18812	464.5	465	Hawthorn Group	Glades	BDL	0.81	8.10	17	BDL	14	16	37
W-18812	799	799.5	Avon Park Formation	Glades	BDL	0.11	3.34	20	BDL	BDL	1	2
W-18812	801	801.5	Avon Park Formation	Glades	BDL	0.18	3.70	15	BDL	BDL	2	2
W-18812	803	803.5	Avon Park Formation	Glades	BDL	0.07	3.04	13	BDL	BDL	2	1
W-18812	807	807.5	Avon Park Formation	Glades	BDL	0.58	2.89	31	BDL	1	3	5
W-18812	1101	1101.5	Avon Park Formation	Glades	BDL	BDL	3.57	17	BDL	BDL	1	3
W-18812	1102.5	1103	Avon Park Formation	Glades	BDL	BDL	5.96	27	BDL	BDL	2	19
W-18812	1106.5	1107	Avon Park Formation	Glades	BDL	BDL	4.34	32	BDL	BDL	BDL	14
W-18812	1252.5	1253	Avon Park Formation	Glades	BDL	0.07	4.80	19	BDL	BDL	1	11
W-18812	1255	1255.5	Avon Park Formation	Glades	BDL	BDL	3.89	16	BDL	BDL	1	9
W-18812	1257.5	1258	Avon Park Formation	Glades	BDL	BDL	4.07	19	BDL	BDL	BDL	BDL
W-18812	1260	1260.5	Avon Park Formation	Glades	BDL	BDL	3.60	24	BDL	2	1	2
W-18812	1510	1512	Avon Park Formation	Glades	BDL	BDL	3.21	44	BDL	BDL	2	2
W-18812	1520	1525	Avon Park Formation	Glades	BDL	0.05	3.96	36	BDL	BDL	1	1
W-18812	1752.5	1753	Avon Park Formation	Glades	BDL	BDL	2.12	25	BDL	BDL	1	BDL
W-18812	1753	1754	Avon Park Formation	Glades	BDL	0.06	2.08	20	BDL	BDL	2	BDL
W-18812	1754	1755	Avon Park Formation	Glades	BDL	0.15	2.74	12	BDL	BDL	12	3
W-18812	1758.5	1759	Avon Park Formation	Glades	BDL	0.17	4.34	15	BDL	BDL	4	9

Analyte Symbol	Depth_min	Depth_max	Formation*	County	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb
Unit Symbol	ft BLS	ft BLS			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit					0.05	0.1	0.02	0.05	0.01	0.005	0.02	0.01
Analysis Method					FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS
W-18811	748	748.5	Ocala Limestone	Glades	4.22	3.1	0.65	2.41	0.55	0.123	0.69	0.11
W-18811	806.5	807	Ocala Limestone	Glades	3.72	3.2	0.41	1.52	0.36	0.079	0.45	0.08
W-18811	883.5	884	Ocala Limestone	Glades	2.62	1.9	0.42	1.59	0.38	0.087	0.45	0.07
W-18811	971.5	972	Ocala Limestone	Glades	2.65	2.0	0.47	1.85	0.44	0.103	0.50	0.09
W-18811	1027	1027.5	Avon Park Formation	Glades	0.47	0.6	0.04	0.12	0.02	0.009	BDL	BDL
W-18811	1057.5	1058	Avon Park Formation	Glades	0.82	0.9	0.04	0.14	0.03	0.010	0.02	BDL
W-18811	1157.5	1158	Avon Park Formation	Glades	0.51	0.7	0.05	0.19	0.04	0.013	0.03	BDL
W-18811	1217	1217.5	Avon Park Formation	Glades	0.56	0.7	0.06	0.16	0.03	0.010	0.03	BDL
W-18811	1274.5	1275	Avon Park Formation	Glades	0.74	1.0	0.07	0.28	0.06	0.012	0.04	BDL
W-18811	1294	1294.5	Avon Park Formation	Glades	0.67	1.0	0.09	0.32	0.07	0.014	0.08	BDL
W-18811	1317	1317.5	Avon Park Formation	Glades	0.41	0.6	0.04	0.16	0.03	0.008	BDL	BDL
W-18811	1358	1358.5	Avon Park Formation	Glades	0.84	1.0	0.05	0.18	0.04	0.011	0.03	BDL
W-18811	1394.5	1395	Avon Park Formation	Glades	1.00	1.7	0.18	0.58	0.12	0.032	0.11	0.02
W-18811	1402	1402.5	Avon Park Formation	Glades	0.21	0.3	0.02	0.08	0.02	BDL	BDL	BDL
W-18811	1408	1408.5	Avon Park Formation	Glades	0.86	1.6	0.16	0.50	0.10	0.026	0.11	0.02
W-18811	1413.5	1414	Avon Park Formation	Glades	0.85	1.4	0.15	0.52	0.11	0.031	0.09	0.02
W-18811	1422	1422.5	Avon Park Formation	Glades	0.63	0.7	0.03	0.09	0.02	0.008	BDL	BDL
W-18811	1428	1428.5	Avon Park Formation	Glades	1.21	2.1	0.23	0.81	0.17	0.041	0.11	0.02
W-18811	1430	1430.5	Avon Park Formation	Glades	0.84	0.7	BDL	0.05	0.01	BDL	BDL	BDL
W-18811	1433.5	1434	Avon Park Formation	Glades	0.26	0.3	BDL	0.06	0.01	BDL	BDL	BDL
W-18812	458	458.8	Hawthorn Group	Glades	21.20	20.6	3.46	16.40	3.15	0.779	3.84	0.60
W-18812	463	463.5	Hawthorn Group	Glades	49.60	46.4	8.65	40.20	7.81	1.960	10.40	1.61
W-18812	464.5	465	Hawthorn Group	Glades	7.60	7.0	1.22	5.71	1.10	0.275	1.38	0.21
W-18812	799	799.5	Avon Park Formation	Glades	0.33	0.6	0.07	0.25	0.05	0.008	0.04	BDL
W-18812	801	801.5	Avon Park Formation	Glades	0.62	1.1	0.11	0.45	0.08	0.014	0.08	0.01
W-18812	803	803.5	Avon Park Formation	Glades	0.22	0.4	0.04	0.21	0.04	0.009	0.04	BDL
W-18812	807	807.5	Avon Park Formation	Glades	1.17	2.3	0.25	1.04	0.20	0.029	0.16	0.02
W-18812	1101	1101.5	Avon Park Formation	Glades	0.09	0.2	0.02	0.10	0.03	0.014	0.02	BDL
W-18812	1102.5	1103	Avon Park Formation	Glades	0.14	0.2	0.02	0.12	0.03	0.014	0.04	BDL
W-18812	1106.5	1107	Avon Park Formation	Glades	0.16	0.3	0.03	0.15	0.04	0.011	0.04	BDL
W-18812	1252.5	1253	Avon Park Formation	Glades	0.14	0.4	0.04	0.19	0.04	0.009	0.05	BDL
W-18812	1255	1255.5	Avon Park Formation	Glades	BDL	BDL	BDL	0.08	0.02	BDL	BDL	BDL
W-18812	1257.5	1258	Avon Park Formation	Glades	0.11	0.3	0.04	0.15	0.04	BDL	0.03	BDL
W-18812	1260	1260.5	Avon Park Formation	Glades	0.12	0.3	0.04	0.15	0.02	0.007	BDL	BDL
W-18812	1510	1512	Avon Park Formation	Glades	0.21	0.4	0.05	0.20	0.04	0.011	0.05	BDL
W-18812	1520	1525	Avon Park Formation	Glades	0.12	0.2	0.02	0.11	0.01	0.008	0.03	BDL
W-18812	1752.5	1753	Avon Park Formation	Glades	0.09	0.2	0.02	0.12	BDL	0.005	0.02	BDL
W-18812	1753	1754	Avon Park Formation	Glades	0.24	0.5	0.05	0.20	0.05	0.015	0.05	BDL
W-18812	1754	1755	Avon Park Formation	Glades	0.35	0.8	0.09	0.36	0.06	0.015	0.07	0.02
W-18812	1758.5	1759	Avon Park Formation	Glades	1.13	2.3	0.27	1.23	0.18	0.049	0.15	0.02

Analyte Symbol	Depth_min	Depth_max	Formation*	County	Dy	Ho	Er	Tl	Tm	Yb	Lu	Mass
Unit Symbol	ft BLS	ft BLS			ppm	ppm	ppm	ppm	ppm	ppm	ppm	g
Detection Limit					0.02	0.01	0.01	0.05	0.005	0.01	0.002	
Analysis Method					FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	FUS-MS	INAA
W-18811	748	748.5	Ocala Limestone	Glades	0.67	0.15	0.42	BDL	0.058	0.34	0.049	1.238
W-18811	806.5	807	Ocala Limestone	Glades	0.48	0.10	0.33	BDL	0.048	0.28	0.039	1.446
W-18811	883.5	884	Ocala Limestone	Glades	0.47	0.11	0.35	BDL	0.050	0.30	0.040	1.413
W-18811	971.5	972	Ocala Limestone	Glades	0.56	0.13	0.40	BDL	0.057	0.36	0.057	1.33
W-18811	1027	1027.5	Avon Park Formation	Glades	0.03	BDL	0.03	BDL	BDL	0.02	0.005	1.295
W-18811	1057.5	1058	Avon Park Formation	Glades	0.03	BDL	0.03	0.09	BDL	0.03	0.005	1.497
W-18811	1157.5	1158	Avon Park Formation	Glades	0.03	BDL	0.03	BDL	BDL	0.03	0.006	1.358
W-18811	1217	1217.5	Avon Park Formation	Glades	0.03	BDL	0.03	0.41	BDL	0.03	0.004	1.413
W-18811	1274.5	1275	Avon Park Formation	Glades	0.06	0.01	0.04	0.07	BDL	0.04	0.008	1.467
W-18811	1294	1294.5	Avon Park Formation	Glades	0.06	0.01	0.04	0.20	0.006	0.04	0.007	1.503
W-18811	1317	1317.5	Avon Park Formation	Glades	0.04	BDL	0.02	0.12	BDL	0.03	0.004	1.262
W-18811	1358	1358.5	Avon Park Formation	Glades	0.04	BDL	0.03	0.16	BDL	0.03	0.004	1.518
W-18811	1394.5	1395	Avon Park Formation	Glades	0.09	0.02	0.07	0.11	0.011	0.07	0.010	1.719
W-18811	1402	1402.5	Avon Park Formation	Glades	BDL	BDL	0.02	0.10	BDL	0.02	0.002	1.28
W-18811	1408	1408.5	Avon Park Formation	Glades	0.12	0.02	0.07	0.43	0.010	0.06	0.009	1.696
W-18811	1413.5	1414	Avon Park Formation	Glades	0.10	0.02	0.06	0.08	0.010	0.07	0.011	1.69
W-18811	1422	1422.5	Avon Park Formation	Glades	0.02	BDL	0.02	0.09	BDL	0.02	0.003	1.278
W-18811	1428	1428.5	Avon Park Formation	Glades	0.13	0.03	0.08	0.31	0.012	0.09	0.015	1.768
W-18811	1430	1430.5	Avon Park Formation	Glades	BDL	BDL	0.01	BDL	BDL	0.01	0.004	1.388
W-18811	1433.5	1434	Avon Park Formation	Glades	BDL	BDL	BDL	0.16	BDL	BDL	BDL	1.248
W-18812	458	458.8	Hawthorn Group	Glades	3.55	0.80	2.52	0.38	0.380	2.15	0.335	1.143
W-18812	463	463.5	Hawthorn Group	Glades	9.72	2.22	7.12	BDL	1.120	6.13	1.010	1.166
W-18812	464.5	465	Hawthorn Group	Glades	1.28	0.28	0.88	0.20	0.143	0.80	0.127	1.323
W-18812	799	799.5	Avon Park Formation	Glades	0.04	0.01	0.02	0.13	BDL	0.02	0.005	1.332
W-18812	801	801.5	Avon Park Formation	Glades	0.06	0.01	0.04	0.11	0.008	0.05	0.006	1.485
W-18812	803	803.5	Avon Park Formation	Glades	0.03	BDL	0.02	0.06	BDL	0.02	0.002	1.649
W-18812	807	807.5	Avon Park Formation	Glades	0.12	0.02	0.09	0.30	0.013	0.08	0.013	1.731
W-18812	1101	1101.5	Avon Park Formation	Glades	BDL	BDL	0.02	BDL	BDL	0.02	BDL	1.774
W-18812	1102.5	1103	Avon Park Formation	Glades	BDL	BDL	0.02	BDL	0.005	0.04	0.005	1.725
W-18812	1106.5	1107	Avon Park Formation	Glades	0.03	BDL	0.02	BDL	0.006	0.02	0.005	1.681
W-18812	1252.5	1253	Avon Park Formation	Glades	0.04	BDL	0.02	BDL	BDL	0.03	0.002	1.647
W-18812	1255	1255.5	Avon Park Formation	Glades	BDL	BDL	0.01	BDL	BDL	0.02	BDL	1.465
W-18812	1257.5	1258	Avon Park Formation	Glades	0.03	BDL	0.02	BDL	BDL	0.02	0.003	1.326
W-18812	1260	1260.5	Avon Park Formation	Glades	BDL	BDL	0.01	0.18	BDL	0.01	BDL	1.629
W-18812	1510	1512	Avon Park Formation	Glades	0.05	BDL	0.02	0.07	BDL	0.03	0.004	1.967
W-18812	1520	1525	Avon Park Formation	Glades	0.03	BDL	0.01	0.21	BDL	0.01	0.002	1.807
W-18812	1752.5	1753	Avon Park Formation	Glades	BDL	BDL	BDL	0.27	BDL	0.01	BDL	1.647
W-18812	1753	1754	Avon Park Formation	Glades	0.05	BDL	0.02	0.09	BDL	0.02	0.003	1.627
W-18812	1754	1755	Avon Park Formation	Glades	0.06	0.01	0.04	0.46	0.005	0.04	0.005	1.846
W-18812	1758.5	1759	Avon Park Formation	Glades	0.07	0.01	0.04	BDL	0.007	0.05	0.006	1.933

Analyte Symbol	Depth_min	Depth_max	Formation*	County	C-Total	C-Graph	C-Organ	CO2	Total S	SO4
Unit Symbol	ft BLS	ft BLS			%	%	%	%	%	%
Detection Limit					0.01	0.05	0.05	0.01	0.01	0.3
Analysis Method					IR	IR	IR	COUL	IR	IR
W-18811	748	748.5	Ocala Limestone	Glades	12.20	BDL	0.14	43.90	0.07	BDL
W-18811	806.5	807	Ocala Limestone	Glades	12.30	BDL	0.20	43.80	0.09	BDL
W-18811	883.5	884	Ocala Limestone	Glades	12.20	BDL	BDL	43.80	0.10	BDL
W-18811	971.5	972	Ocala Limestone	Glades	12.10	0.08	0.07	43.80	0.16	0.4
W-18811	1027	1027.5	Avon Park Formation	Glades	12.20	BDL	BDL	46.30	0.11	BDL
W-18811	1057.5	1058	Avon Park Formation	Glades	12.40	BDL	0.38	44.40	0.17	0.4
W-18811	1157.5	1158	Avon Park Formation	Glades	12.60	0.05	0.42	44.20	0.18	0.4
W-18811	1217	1217.5	Avon Park Formation	Glades	12.40	BDL	0.33	44.00	0.18	0.5
W-18811	1274.5	1275	Avon Park Formation	Glades	12.50	BDL	0.37	45.00	0.14	BDL
W-18811	1294	1294.5	Avon Park Formation	Glades	12.30	BDL	0.10	45.30	0.19	0.4
W-18811	1317	1317.5	Avon Park Formation	Glades	12.40	BDL	0.07	45.30	0.16	0.4
W-18811	1358	1358.5	Avon Park Formation	Glades	12.40	0.05	0.29	44.10	0.20	0.5
W-18811	1394.5	1395	Avon Park Formation	Glades	12.80	BDL	0.28	47.00	0.13	0.4
W-18811	1402	1402.5	Avon Park Formation	Glades	12.50	BDL	0.32	44.60	0.14	0.3
W-18811	1408	1408.5	Avon Park Formation	Glades	13.10	0.05	0.70	46.00	0.15	0.5
W-18811	1413.5	1414	Avon Park Formation	Glades	12.60	BDL	0.12	45.90	0.04	BDL
W-18811	1422	1422.5	Avon Park Formation	Glades	12.60	BDL	0.52	45.50	0.13	0.3
W-18811	1428	1428.5	Avon Park Formation	Glades	12.80	BDL	0.25	46.70	0.15	0.5
W-18811	1430	1430.5	Avon Park Formation	Glades	12.30	BDL	0.28	44.90	0.12	0.3
W-18811	1433.5	1434	Avon Park Formation	Glades	12.60	BDL	0.38	44.70	0.12	BDL
W-18812	458	458.8	Hawthorn Group	Glades	7.83	BDL	0.33	26.50	0.38	0.9
W-18812	463	463.5	Hawthorn Group	Glades	4.34	BDL	0.39	12.50	0.70	1.8
W-18812	464.5	465	Hawthorn Group	Glades	10.40	BDL	0.19	38.60	0.17	0.4
W-18812	799	799.5	Avon Park Formation	Glades	12.50	0.08	0.27	45.10	0.17	0.3
W-18812	801	801.5	Avon Park Formation	Glades	12.20	BDL	BDL	45.10	0.12	BDL
W-18812	803	803.5	Avon Park Formation	Glades	12.20	BDL	0.13	45.20	0.11	BDL
W-18812	807	807.5	Avon Park Formation	Glades	12.50	0.24	0.70	43.20	0.27	0.4
W-18812	1101	1101.5	Avon Park Formation	Glades	10.90	BDL	0.09	40.30	2.18	5.4
W-18812	1102.5	1103	Avon Park Formation	Glades	11.50	BDL	BDL	43.00	1.22	3.0
W-18812	1106.5	1107	Avon Park Formation	Glades	11.20	BDL	0.29	40.80	1.98	5.1
W-18812	1252.5	1253	Avon Park Formation	Glades	12.40	BDL	0.19	46.60	0.15	BDL
W-18812	1255	1255.5	Avon Park Formation	Glades	12.50	BDL	0.22	46.10	0.16	0.3
W-18812	1257.5	1258	Avon Park Formation	Glades	12.60	0.05	0.27	46.40	0.16	0.4
W-18812	1260	1260.5	Avon Park Formation	Glades	12.50	BDL	0.39	47.00	0.18	0.4
W-18812	1510	1512	Avon Park Formation	Glades	12.90	BDL	0.23	46.20	0.07	0.3
W-18812	1520	1525	Avon Park Formation	Glades	12.80	BDL	0.57	45.30	0.18	0.5
W-18812	1752.5	1753	Avon Park Formation	Glades	13.10	BDL	0.30	47.50	0.04	BDL
W-18812	1753	1754	Avon Park Formation	Glades	11.90	BDL	BDL	43.00	1.79	4.4
W-18812	1754	1755	Avon Park Formation	Glades	9.14	BDL	BDL	32.80	6.34	16.1
W-18812	1758.5	1759	Avon Park Formation	Glades	12.20	BDL	BDL	46.60	0.38	1.2

Appendix 2
Lithologic descriptions of selected core samples

WELL NUMBER: W-18812
20 SAMPLES FROM 458 TO 1759 FT. LAT = 27D 13M 05S
LON = 80D 57M 15S
ELEVATION: 20 FT

OWNER/DRILLER: SFWMD (HIF-42)
WORKED BY: CINDY FISCHLER

0 - 458 NOT SAMPLED

458 - 458.5 SILT-SIZE DOLOMITE;
POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
POOR INDURATION
SEDIMENTARY STRUCTURES: BIOTURBATED, MOTTLED
ACCESSORY MINERALS: PHOSPHATIC SAND, QUARTZ SAND
ORGANICS
FOSSILS: MOLLUSKS, ECHINOID, FOSSIL FRAGMENTS
BURROWS ARE FILLED WITH COARSER GRAINED PHOSPHATE AND QUARTZ. FINE GRAINED QUARTZ AND PHOSPHATE AND VERY FINE DOLOSILT AND QUARTZ THROUGHOUT.

458.5 - 463 NOT SAMPLED

463 - 463.5 LIMESTONE;
POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: INTRACLASTS, SKELETAL, CRYSTALS
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO GRANULE
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED, BIOTURBATED
ACCESSORY MINERALS: PHOSPHATIC SAND, QUARTZ SAND
PHOSPHATIC GRAVEL
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS
MEDIUM GRAINED SAND AND PHOSPHATE. MANY INTRACLASTS.

463.5 - 464.5 NOT SAMPLED

464.5 - 465 LIMESTONE;
POROSITY: INTERGRANULAR
GRAIN TYPE: PELLET, CRYSTALS, BIOGENIC
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: PHOSPHATIC SAND, QUARTZ SAND
DOLOMITE
VERY FINE GRAINED SAND. FINE TO MEDIUM GRAINED PHOSPHATE.
TRACE OF PYRITE.

465 - 799 NOT SAMPLED

799 - 799.5 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: SKELETAL, PELLET, CRYSTALS
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT

SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS, SPAR
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA
DICTYOCONUS. ECHINOIDS ARE RECRYSTALLIZED. IRON SULFIDE PRESENT.

799.5 - 801 NOT SAMPLED

801 - 801.5 PACKSTONE;
POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: PELLET, SKELETAL, CRYSTALS
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS, SPAR
FOSSILS: ECHINOID, BENTHIC FORAMINIFERA, MOLLUSKS
MILIOLIDS
SIMILAR TO ABOVE. DICTYOCONUS. AMOUNT OF MUD VARIES IN LAYERS. SOME PARTS COULD BE CALLED GRAINSTONE. ECHINOIDS ARE RECRYSTALLIZED. TRACE OF ORGANICS AND IRON SULFIDE.

801.5 - 803 NOT SAMPLED

803 - 803.5 PACKSTONE;
POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: PELLET, SKELETAL, CRYSTALS
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: SPAR, ORGANICS
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS
THIN WISPY LAMINAE OF IRON SULFIDE IN MUDDY LAYERS. MUD VARIES AS ABOVE.

803.5 - 807 NOT SAMPLED

807 - 807.5 PACKSTONE;
GRAIN TYPE: PELLET, SKELETAL, CALCILUTITE
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS, SPAR
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS, ECHINOID
FINER GRAINED LAMINAE HAVE THIN WISPY FLECKS OF ORGANICS THROUGHOUT. COARSER GRAINED LAMINAE IS MORE RECRYSTALLIZED. TRACE OF PYRITE.

807.5 - 1101 NOT SAMPLED

1101 - 1101.5 PACKSTONE;
POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE

GRAIN TYPE: CRYSTALS, PELLET, SKELETAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, ORGANIC MATRIX
ACCESSORY MINERALS: QUARTZ SAND
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, ALGAE
EUHEDRAL CRYSTALS FORMING IN LARGE VOIDS, PROBABLY MOLLUSK MOLDS. MEDIUM TO HIGH RECRYSTALLIZATION. DICTYOCONUS.

1101.5- 1102.5 NOT SAMPLED

1102.5- 1103 GRAINSTONE;
POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: PELLET, SKELETAL, CRYSTALS
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA
EUHEDRAL CRYSTALS FORMING IN VOIDS.
DICTYOCONUS.

1103 - 1106.5 NOT SAMPLED

1106.5- 1107 WACKESTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: PELLET, SKELETAL, CRYSTALS
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ SAND
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: ALGAE, BENTHIC FORAMINIFERA
CRINKLED ALGAL LAMINATIONS. EUHEDRAL CRYSTALS WITH SOME FORMING IN THE AGAL LAMINAE. TRACE OF IRON SULFIDE.

1107 - 1252.5 NOT SAMPLED

1252.5- 1253 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: SKELETAL, PELLET
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO COARSE
GOOD INDURATION
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ALGAE
MANY DICTYOCONUS. FABULARIA. TRACE OF PYRITE AND ORGANICS. SOME OF THE FORAMS HAVE BEEN PYRITIZED.

1253 - 1255 NOT SAMPLED

1255 - 1255.5 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: SKELETAL, PELLET
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM

GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA
MEDIUM TO HIGH RECRYSTALLIZATION. SOME WISPY CRINKLED ALGAL LAMINAE. SOME FORAMINIFERA ARE PYRITIZED. DICTYOCONUS.

1255.5- 1257.5 NOT SAMPLED

1257.5- 1258 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: SKELETAL, PELLET
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA
DICTYOCONUS. MEDIUM TO HIGH RECRYSTALLIZATION. TRACE OF ORGANICS AND IRON SULFIDE / PYRITE. FEW THIN WISPY LAMINAE OF ORGANICS.

1258 - 1260 NOT SAMPLED

1260 - 1260.5 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: SKELETAL, PELLET
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA
DICTYOCONUS. PYRITIZED FORAMINIFERA. CRINKLED ALGAL LAMINATIONS. LARGER LAYERS OF FINER AND COARSER MATERIAL (LAYERED BY GRAIN SIZE).

1260.5- 1510 NOT SAMPLED

1510 - 1512 DOLOSTONE;
POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: SUCROSIC
POOR RECOVERY DEPTH IS ESTIMATED FROM INTERVAL. DOLOSILT LINING VUGS.

1512 - 1520 NOT SAMPLED

1520 - 1525 DOLOSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX

ACCESSORY MINERALS: CALCILUTITE
POOR RECOVERY. DEPTH IS ESTIMATED FROM INTERVAL. DARK BROWN DOLOSTONE WITH LAYERED CHALKY CARBONATE WITH TAN DOLOMITE CRYSTALS WITHIN THE LIMESTONE. DOLOMITE CRYSTALS ARE SUBHEDRAL TO EUHEDRAL. SOME ALGAL LAMINAE IN THE CARBONATE LAYERS.

1525 - 1752.5 NOT SAMPLED

1752.5- 1753 DOLOSTONE;
POROSITY: INTERGRANULAR, MOLDIC
GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT
SEDIMENTARY STRUCTURES: BIOTURBATED, MOTTLED
ACCESSORY MINERALS: GYPSUM
OTHER FEATURES: DOLOMITIC
HEAVILY BIOTURBATED AND MOTTLED. SOME PORTIONS ARE VERY FINE GRAINED, OTHER PARTS MEDIUM TO COARSE GRAINED.

1753 - 1753.5 NOT SAMPLED

1753.5- 1754 DOLOSTONE;
POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS
GYPSUM FILLS MANY OF THE MOLDS. MOLDS NOT FILLED WITH GYPSUM ARE LINED WITH SPAR AND A FEW HAVE PYRITE. MOLLUSK AND TURRITELLA ARE LARGER THAN PREVIOUS INTERVAL.

1754 - 1754.5 NOT SAMPLED

1754.5- 1755 DOLOSTONE;
POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, ALGAE
MUCH MORE GYPSUM THAN PREVIOUS. DICTYOCONUS MOLDS. ALGAL LAMINATIONS. COARSE AND FINE GRAINED SECTIONS. PYRITE IN DOLOMITE AND GYPSUM.

1755 - 1758.5 NOT SAMPLED

1758.5- 1759 DOLOSTONE;
POROSITY: INTERGRANULAR, VUGULAR, MOLDIC; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION

ACCESSORY MINERALS: GYPSUM
OTHER FEATURES: HIGH RECRYSTALLIZATION
DICTYOCONUS MOLDS. MOLDS ARE LINED WITH DOLOMITE SUCROSIC.

WELL NUMBER: W-18811
20 SAMPLES FROM 748 TO 1434 FT. LAT = 27D 04M 42S
LON = 81D 07M 06S

ELEVATION: 25 FT

OWNER/DRILLER: SFWMD
WORKED BY: CINDY FISCHLER

0 - 748 NOT SAMPLED

748 - 748.5 LIMESTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL, PELLET
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, BIOTURBATED
ACCESSORY MINERALS: PYRITE- %
FOSSILS: BENTHIC FORAMINIFERA, BRYOZOA
ABUNDANT LEPIDOCYCLINA (LARGE). PYRITE PRESENT IN SOME OF THE LEPIDOCYCLINA AND SCATTERED IN THE MATRIX. SLIGHTLY MOTTLED.

748.5- 806.5 NOT SAMPLED

806.5- 807 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL, PELLET
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID
ECHINOIDS EXIST AS THIN MICRITE RIMS WITH SOME SPARRY CALCITE LINING. SOME PYRITE/IRON SULFIDE IN MATRIX. TRACE OF ORGANICS. LEPIDOCYCLINA.

807 - 883.5 NOT SAMPLED

883.5- 884 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL, PELLET
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: PYRITE- %
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID
LEPIDOCYCLINA, NUMMULITES. PYRITE IN MATRIX MORE THAN PREVIOUS SAMPLE. POSSIBLE GLAUCONITE?

884 - 971.5 NOT SAMPLED

971.5- 972 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, SKELETAL, PELLET
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRAVEL
GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: PYRITE- %, DOLOMITE- %
FOSSILS: BENTHIC FORAMINIFERA
LOTS OF PYRITE/IRON SULFIDE SOME WITHIN A GREENISH BLACK MATERIAL, POSSIBLY GLAUCONITE? LEPIDOCYCLINA. FINE DOLOMITE RHOMBS SCATTERED THROUGHOUT MATRIX.

972 - 1027 NOT SAMPLED

1027 - 1027.5 PACKSTONE;
POROSITY: MOLDIC, INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: PELLET, SKELETAL, BIOGENIC
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRANULE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ALGAE
ABUNDANT MILIOLIDS. DOLOMITE RHOMBS (FINE). SPAR LINING SOME MOLDS. GRAINSTONE LAMINAE WITH FINER THINNER MUDDY LAMINAE.

1027.5- 1057.5 NOT SAMPLED

1057.5- 1058 GRAINSTONE;
POROSITY: MOLDIC, INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: PELLET, SKELETAL, BIOGENIC
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO GRANULE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID
COSKINOLINA. DICTYOCONUS. RECRYSTALLIZED ECHINOIDS. TRACE OF ORGANICS. MEDIUM TO HIGH RECRYSTALLIZATION.

1058 - 1157.5 NOT SAMPLED

1157.5- 1158 LIMESTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: PELLET, CALCILUTITE, SKELETAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRANULE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED, MOTTLED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, ALGAE
ALGAL LAMINATIONS. ORGANICS AND OR IRON SULFIDE. DICTYOCONUS. ECHINOIDS ARE RECRYSTALLIZED.

1158 - 1217 NOT SAMPLED

1217 - 1217.5 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS, MOLDIC
GRAIN TYPE: PELLET, CALCILUTITE, SKELETAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO GRANULE

GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED, MOTTLED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: ALGAE, BENTHIC FORAMINIFERA
ALGAL LAMINATIONS.

1217.5- 1274.5 NOT SAMPLED

1274.5- 1275 GRAINSTONE;
POROSITY: INTERGRANULAR, VUGULAR, MOLDIC
GRAIN TYPE: PELLET, SKELETAL
GRAIN SIZE: COARSE; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ALGAE, MOLLUSKS
TRACE OF ORGANICS. LARGE AMOUNT OF CALCAREOUS ALGAE THROUGHOUT. DICTYOCONUS, LITUONELLA.

1275 - 1294 NOT SAMPLED

1294 - 1294.5 PACKSTONE;
POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: PELLET, SKELETAL, INTRACLASTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BIOTURBATED
OTHER FEATURES: DOLOMITIC, MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, MOLLUSKS, ALGAE
PACKSTONE TO GRAINSTONE. APPEARS BURROWS ARE FILLED WITH VERY CLEAN GRAINSTONE CONSISTING OF PELLETS AND FORAMINIFERA. ECHINOIDS ARE FILLED WITH SPAR. CALCAREOUS CORALLINE ALGAE.

1294.5- 1317 NOT SAMPLED

1317 - 1317.5 GRAINSTONE;
POROSITY: INTERGRANULAR, VUGULAR, MOLDIC
GRAIN TYPE: PELLET, SKELETAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
FOSSILS: BENTHIC FORAMINIFERA, ALGAE, ECHINOID, MOLLUSKS
ALTERNATING LAYERS OF CLEAN GRAINSTONE WITH LAYERS OF CORRALLINE ALGAE CONTAINING PELLETS AND FORAMINIFERA.

1317.5- 1358 NOT SAMPLED

1358 - 1358.5 GRAINSTONE;
POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: PELLET, SKELETAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED

OTHER FEATURES: DOLOMITIC
FOSSILS: BENTHIC FORAMINIFERA, MILIOLIDS
SOME LAYERS ARE MORE DOLOMITIC.

1358.5- 1394.5 NOT SAMPLED

1394.5- 1395 DOLOSTONE;
POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PYRITE- %
FOSSILS: FOSSIL MOLDS
SMALL MOLDS FILLED WITH DOLOSILT (RHOMBS). PYRITE IN SOME OF THE SMALL MOLDS AND VUGS. FOSSIL MOLDS OF FORAMINIFERA AND ECHINOIDS. EUHEDRAL TO ANHEDRAL.

1395 - 1402 NOT SAMPLED

1402 - 1402.5 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: PELLET, SKELETAL, CALCILUTITE
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
FOSSILS: BENTHIC FORAMINIFERA, ALGAE
THIN WISPY ALGAL LAMINATIONS. TRACE OF IRON SULFIDE THROUGHOUT.

1402.5- 1408 NOT SAMPLED

1408 - 1408.5 DOLOSTONE;
POROSITY: INTERCRYSTALLINE, MOLDIC, VUGULAR
90-100% ALTERED; EUHEDRAL
GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM- %
OTHER FEATURES: SUCROSIC, HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
SUBHEDRAL TO EUHEDRAL. SOME MOLDS FILLED WITH DOLOSPAR. FEW FILLED WITH GYPSUM. SOME GRAY DOLOSTONE FILLING MOLDS POSSIBLY ECHINOID MOLDS. LAYERING OBVIOUS FROM ORIENTATION OF MOLDS.

1408.5- 1413.5 NOT SAMPLED

1413.5- 1414 DOLOSTONE;
POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
EUHEDRAL
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED

ACCESSORY MINERALS: GYPSUM- %
OTHER FEATURES: SUCROSIC, HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
SUBHEDRAL TO EUHEDRAL. SMALL AMOUNT OF GYPSUM FILLING SOME MOLDS. POSSIBLY SOME PYRITE IN SOME OF THE MOLDS ALONG WITH DOLOSPAR.

1414 - 1422 NOT SAMPLED

1422 - 1422.5 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: PELLET, SKELETAL
GRAIN SIZE: FINE; RANGE: COARSE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, LAMINATED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA
THIN WISPY ALGAL LAMINATIONS. SMALL FLECKS OF PYRITE/IRON SULFIDE SCATTERED THROUGHOUT.

1422.5- 1428 NOT SAMPLED

1428 - 1428.5 DOLOSTONE;
POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED EUHEDRAL
GRAIN SIZE: FINE; RANGE: MEDIUM TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
OTHER FEATURES: SUCROSIC, HIGH RECRYSTALLIZATION
REDDISH BROWN SHINY MATERIAL LINING A FEW OF THE MOLDS. SOME MOLDS FILLED WITH DOLOSPAR. ECHINOID AND DICTYOCONUS MOLDS. SOME MOLDS CONTAIN PYRITE/IRON SULFIDE. SUBHEDRAL TO EUHEDRAL.

1428.5- 1430 NOT SAMPLED

1430 - 1430.5 PACKSTONE;
POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: PELLET, SKELETAL, CALCILUTITE
GRAIN SIZE: MEDIUM; RANGE: COARSE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ALGAE, FOSSIL MOLDS
MUDDY PACKSTONE. DICTYOCONUS. TRACE OF ORGANICS.

1430.5- 1433.5 NOT SAMPLED

1433.5- 1434 GRAINSTONE;
POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: PELLET, SKELETAL, CALCILUTITE
GRAIN SIZE: MEDIUM; RANGE: COARSE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT

FOSSILS: BENTHIC FORAMINIFERA, ALGAE, FOSSIL MOLDS
GRAINSTONE TO PACKSTONE. PYRITE AND OR IRON SULFIDE FLECKS
THROUGHOUT. TRACE OF ORGANICS.

Appendix 3
Scanning electron microscope images.
Depth in feet below land surface.

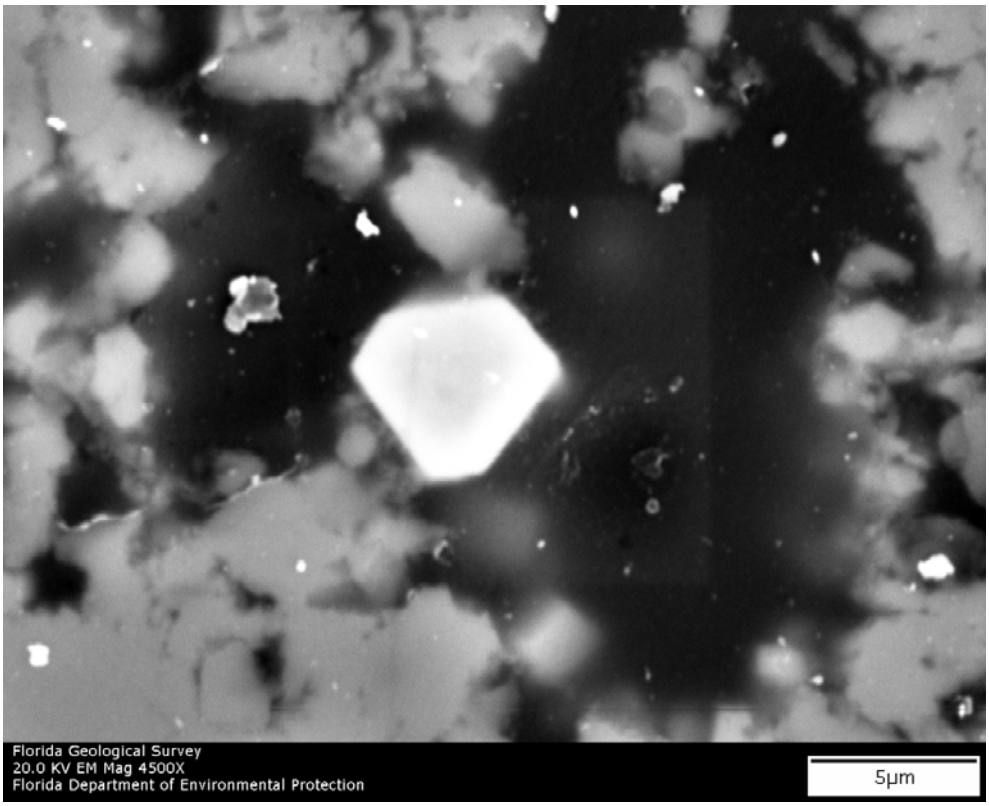
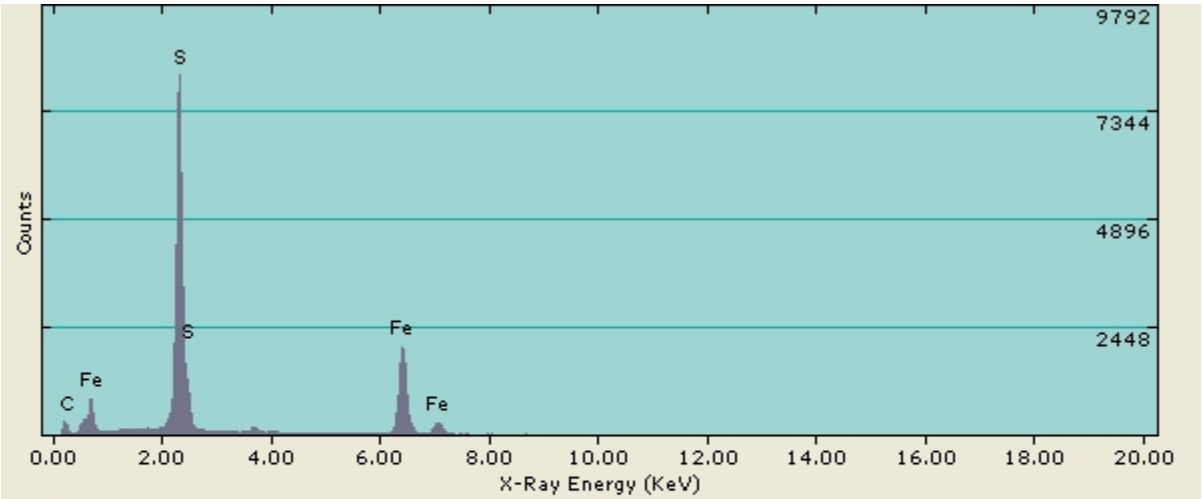


Figure 1. W-18812 799-799.5 ft. Secondary electron image of euhedral pyrite in limestone.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 04-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	6.62	1.19	0.28	19.16	0.0459	1237.3	0.79
S	49.10	1.17	0.17	53.26	0.4192	67131.7	0.94
Fe	44.29	1.18	0.27	27.58	0.4056	23287.2	0.95
Total	100.00						

Figure 2. W-18812 799-799.5 ft. Spectra of previous image.

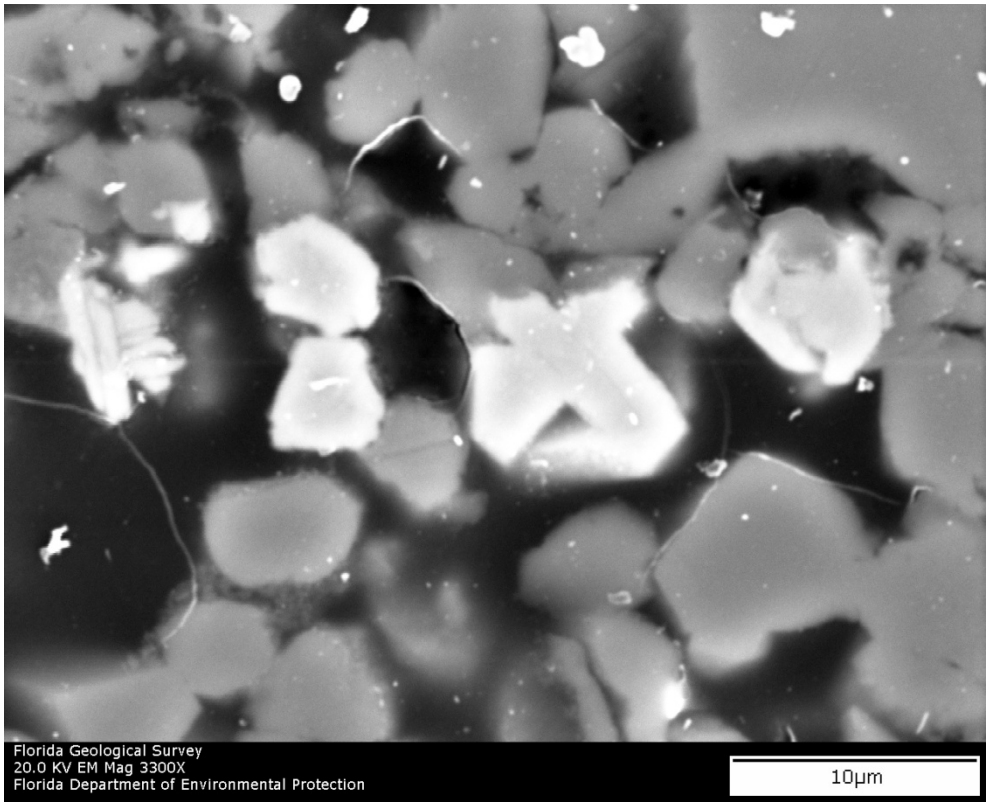


Figure 3. W-18812 799-799.5 ft. Secondary electron image of euhedral pyrite.

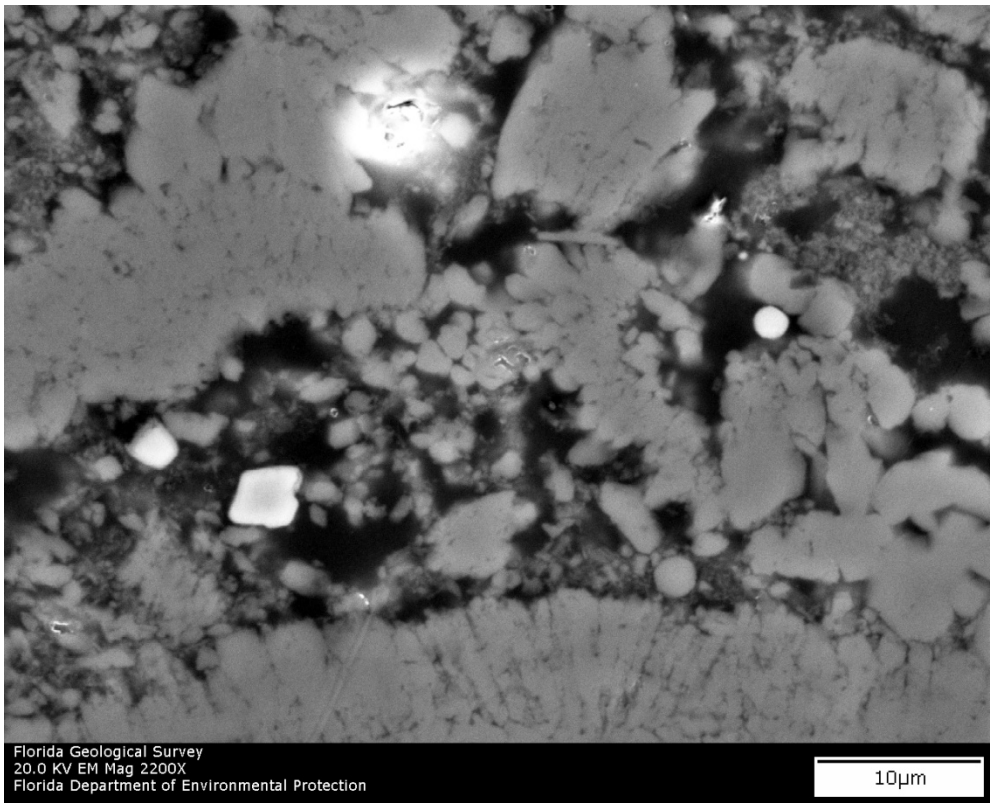


Figure 4. W-18812 803-908.5 ft. Secondary electron image of euhedral and framboidal pyrite.

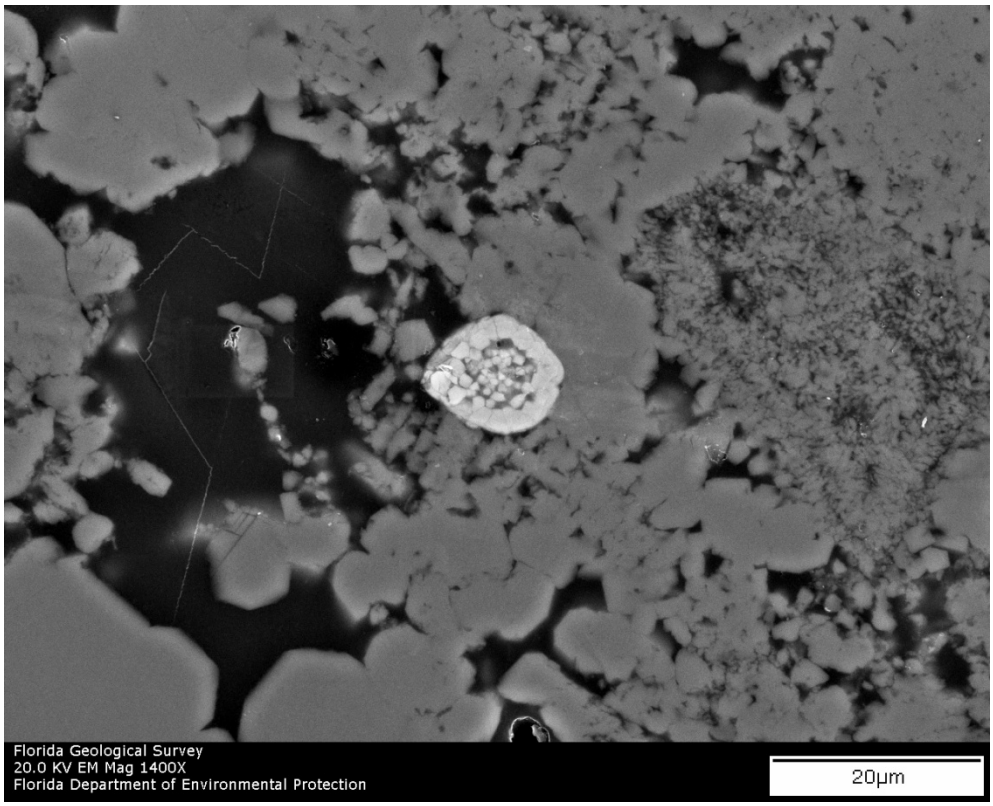


Figure 5. W-18812 803-803.5 ft. Secondary electron image of pyrite framboid.

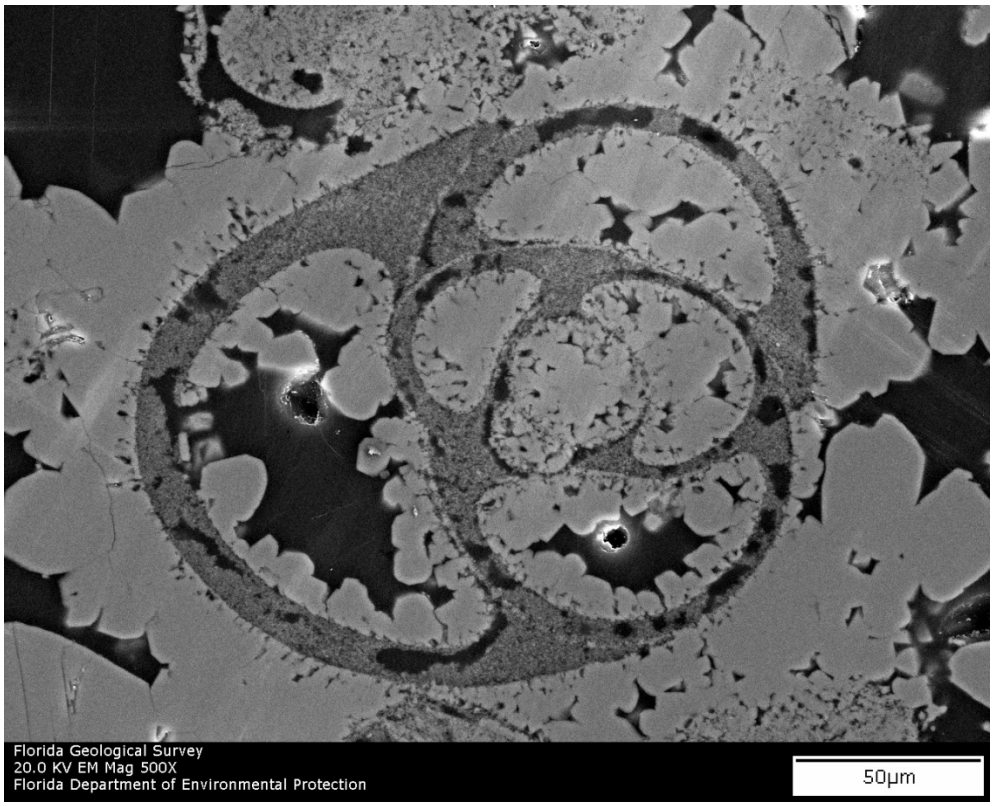


Figure 6. W-18812 803-803.5 ft. Secondary electron image of miliolid.

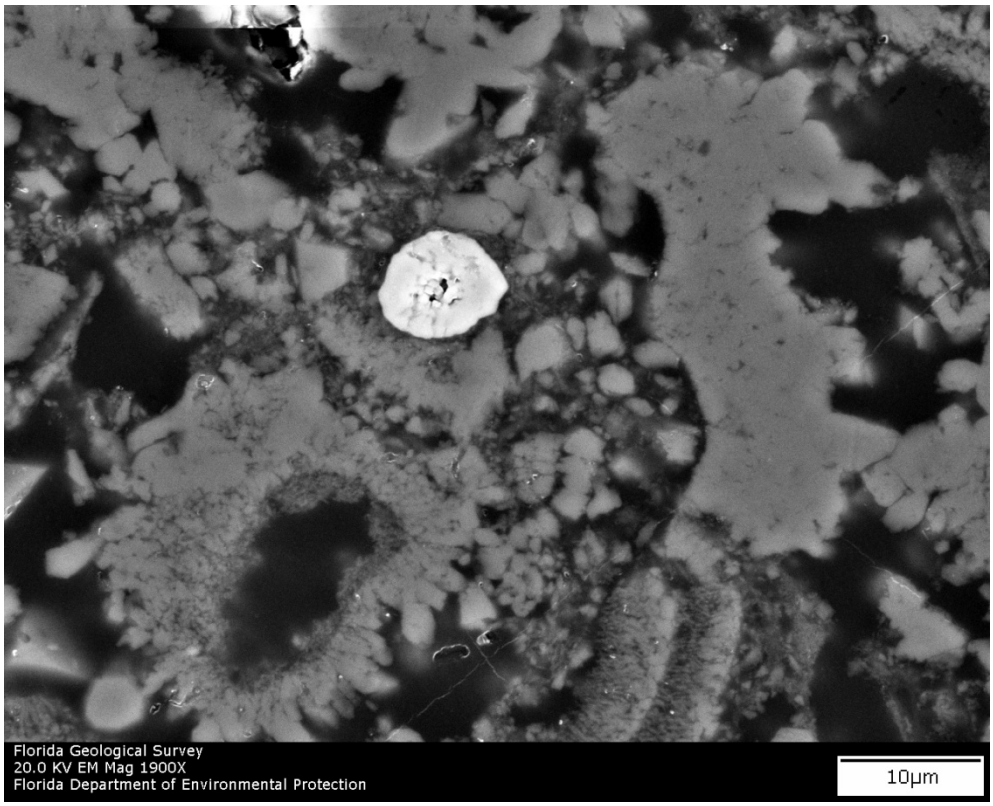
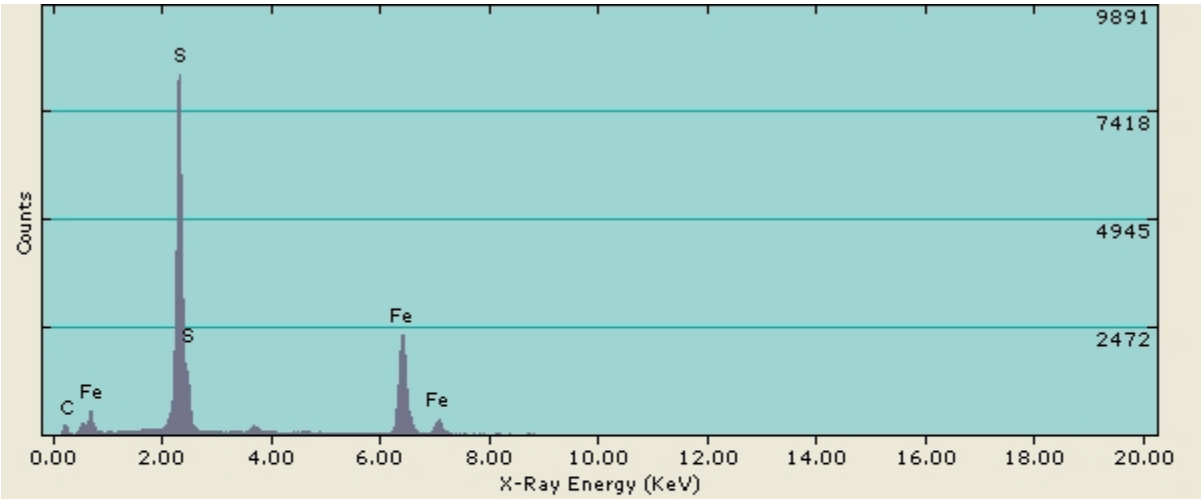


Figure 7. W-18812 803-803.5 ft. Secondary electron image of pyrite framboid.



Quantitative Results for Spectrum4
Analysis: Bulk Method: Standardless
Acquired 11-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	4.60	1.13	0.29	14.05	0.0322	911.7	0.78
S	47.57	1.13	0.15	54.49	0.4024	67658.9	0.94
Fe	47.83	1.25	0.23	31.45	0.4406	26552.0	0.96
Total	100.00						

Figure 8. W-18812 803-803.5 ft. Spectra of previous image.

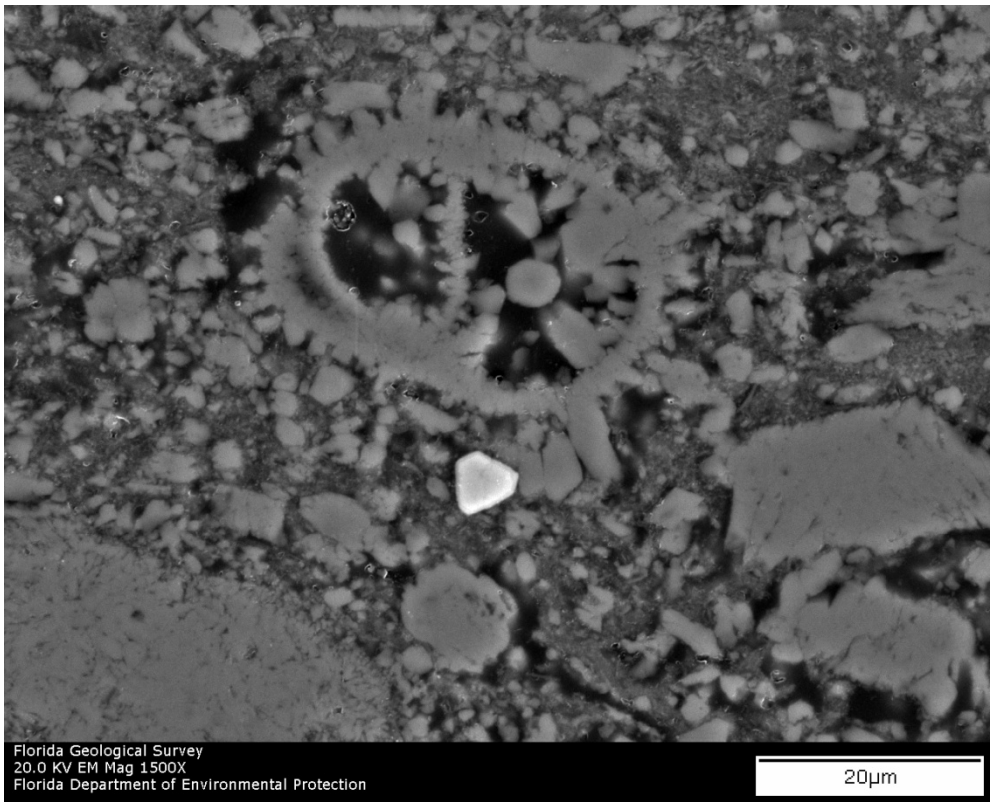


Figure 9. W-18812 807-807.5 ft. Secondary electron image of euhedral pyrite.

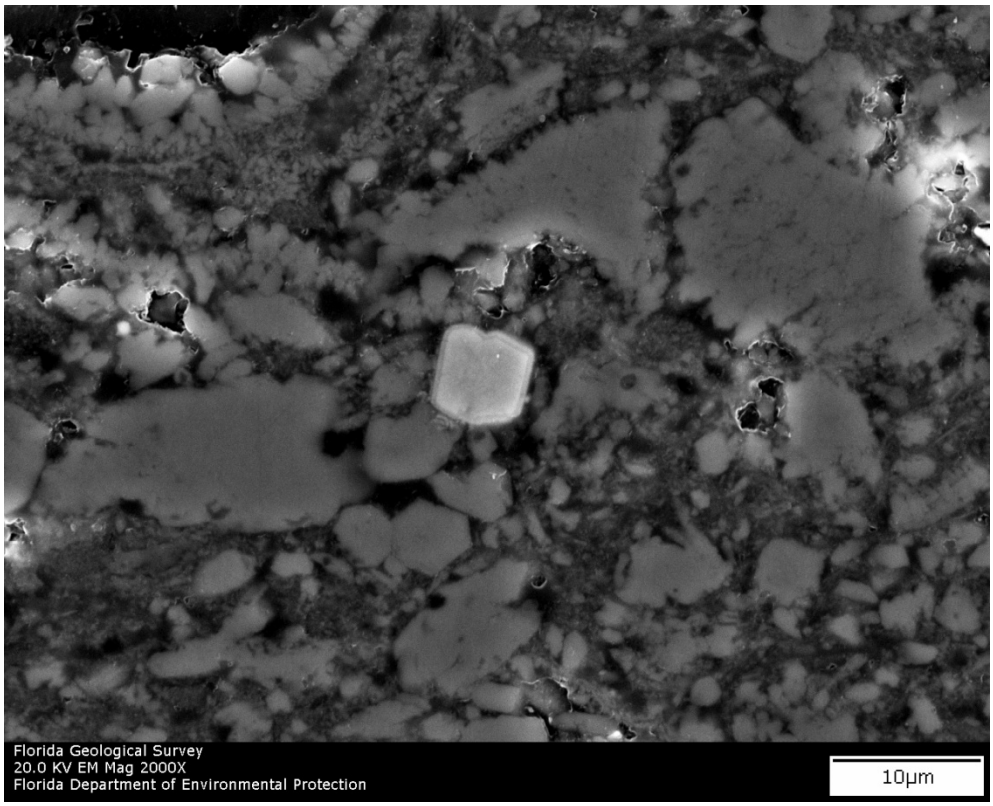


Figure 10. W-18812 807-807.5 ft. Secondary electron image of euhedral pyrite.

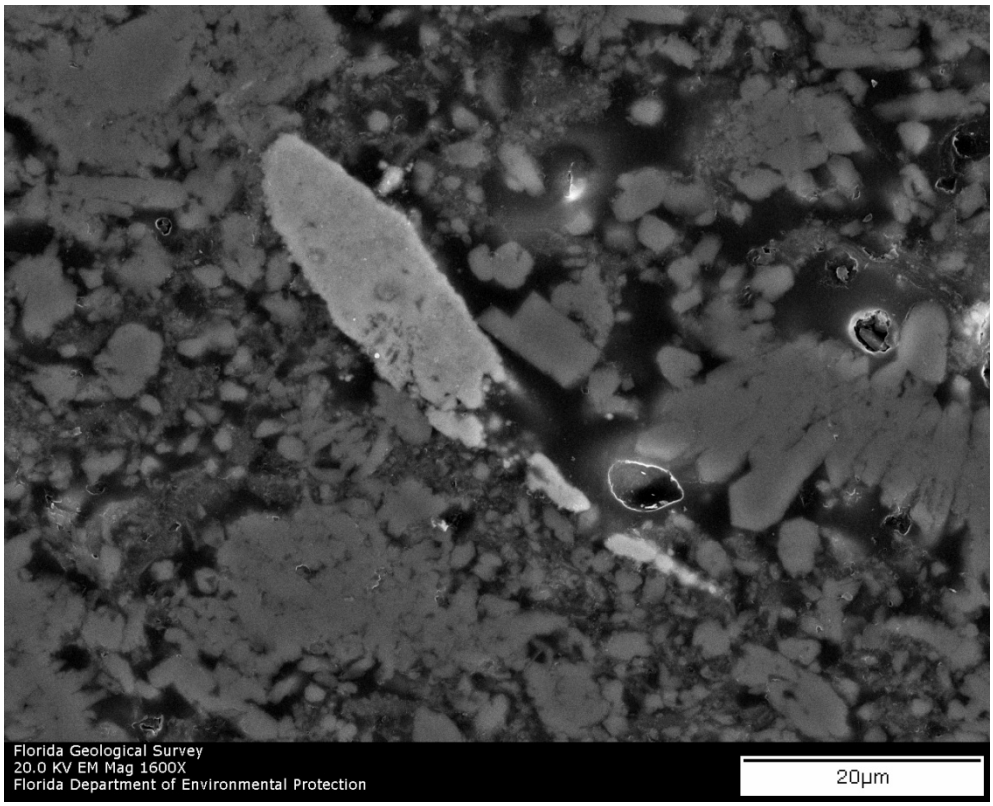
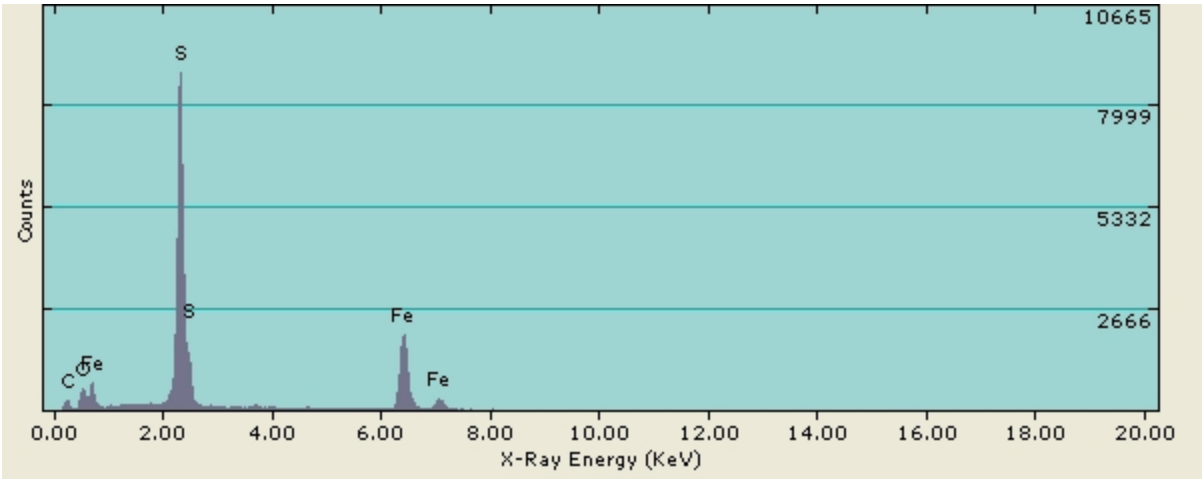


Figure 11. W-18812 807-807.5 ft. Secondary electron image of pyrite (possibly replacing a fossil).



Quantitative Results for Spectrum5
Analysis: Bulk Method: Standardless
Acquired 09-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	6.44	1.19	0.27	17.11	0.0443	1325.4	0.81
O	6.78	1.12	0.68	13.52	0.0347	2744.5	0.97
S	46.71	1.11	0.16	46.48	0.3996	70949.0	0.93
Fe	40.07	1.06	0.27	22.89	0.3646	23205.2	0.94
Total	100.00						

Figure 12. W-18812 807-807.5 ft. Spectra of previous image.

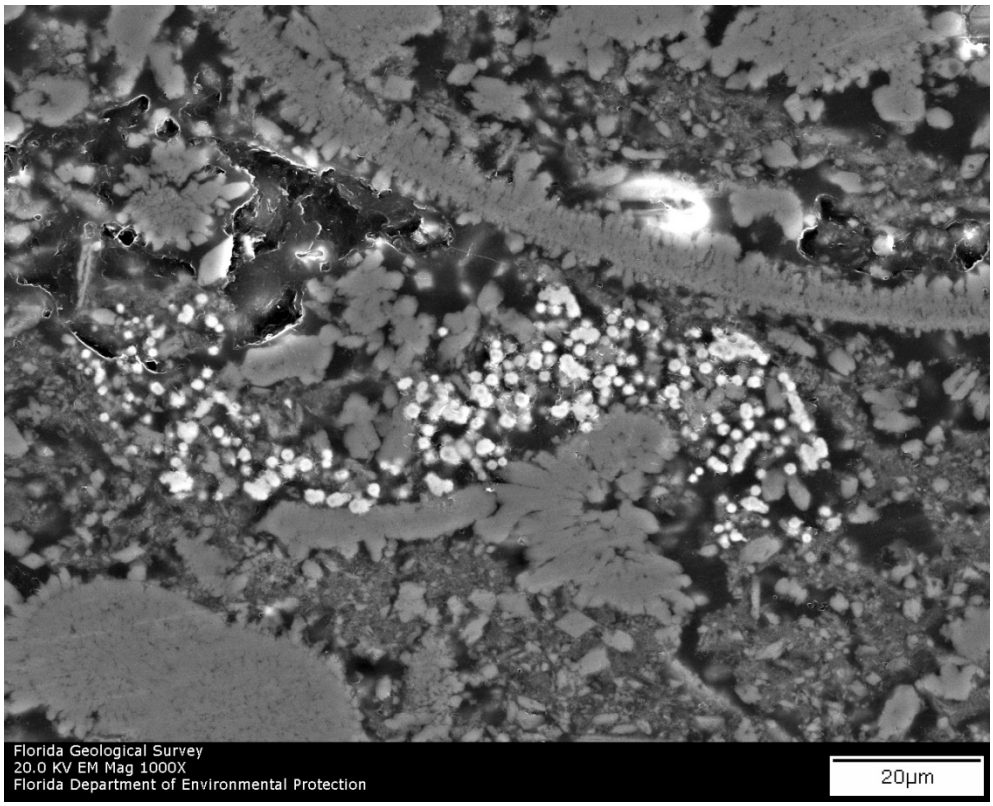
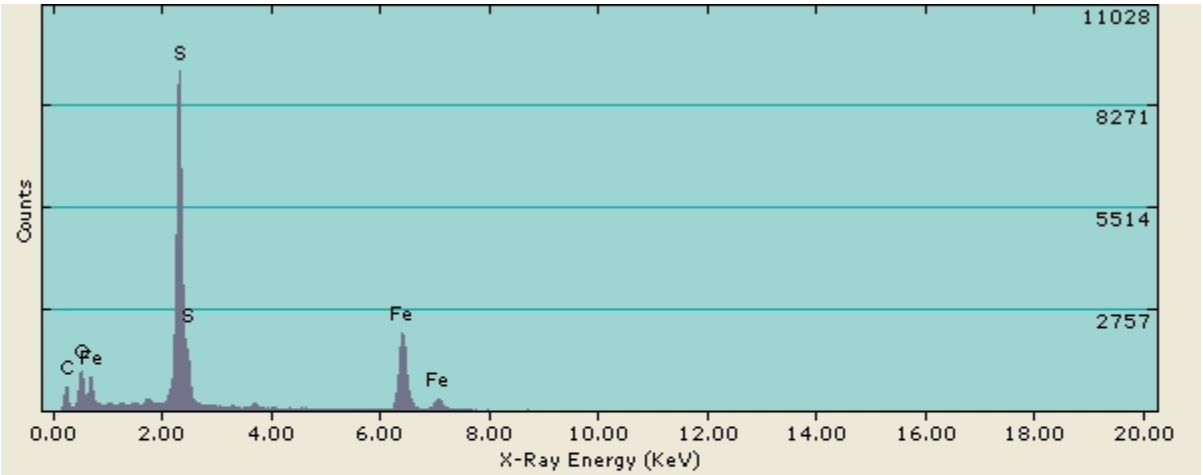


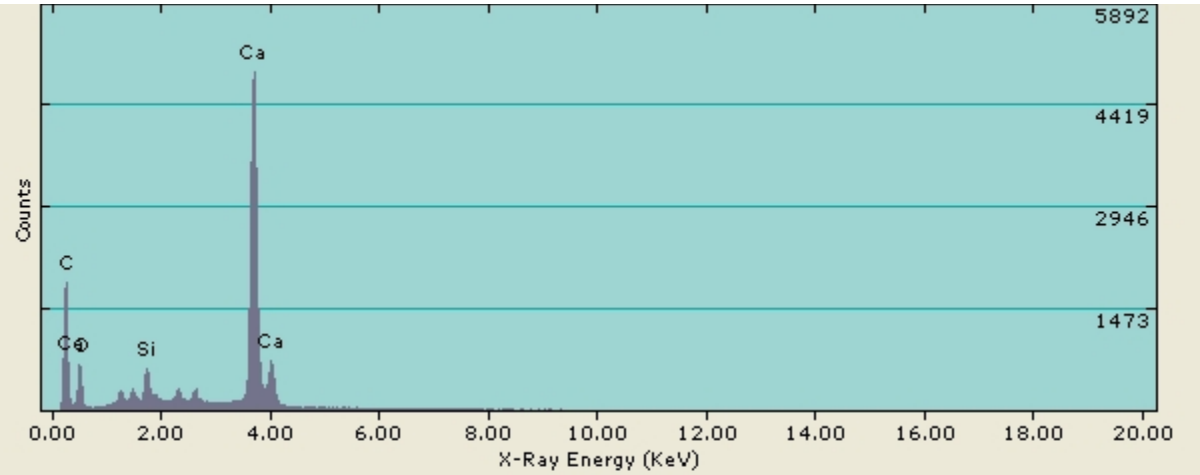
Figure 13. W-18812 807-807.5 ft. Secondary electron image of small pyrite framboids.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 11-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	13.42	0.86	0.18	29.75	0.0919	3363.2	0.86
O	12.62	0.76	0.44	21.01	0.0634	6130.4	0.96
S	39.52	0.95	0.15	32.82	0.3394	73767.7	0.94
Fe	34.43	1.10	0.25	16.42	0.3102	24172.2	0.96
Total	100.00						

Figure 14. W-18812 807-807.5 ft. Spectra of pyrite in previous image.



Quantitative Results for Spectrum3
Analysis: Bulk Method: Standardless
Acquired 11-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	38.57	1.19	0.18	58.97	0.4517	11104.3	0.91
O	17.92	1.04	0.49	20.57	0.0610	3961.2	0.98
Si	2.71	0.77	0.76	1.77	0.0213	3326.2	0.92
Ca	40.80	1.01	0.17	18.69	0.3933	43630.8	0.92
Total	100.00						

Figure 15. W-18812 807-807.5 ft. Spectra of fine-grained organic material in figure 13.

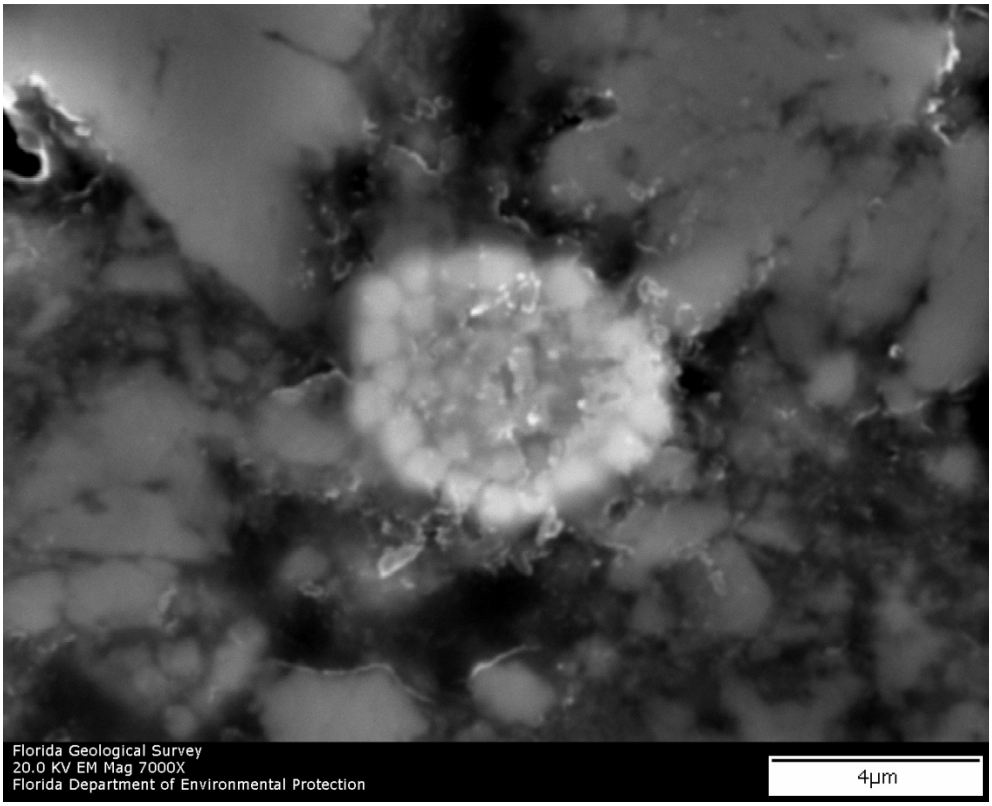


Figure 16. W-18812 807-807.5 ft. Secondary electron image of pyrite framboid.

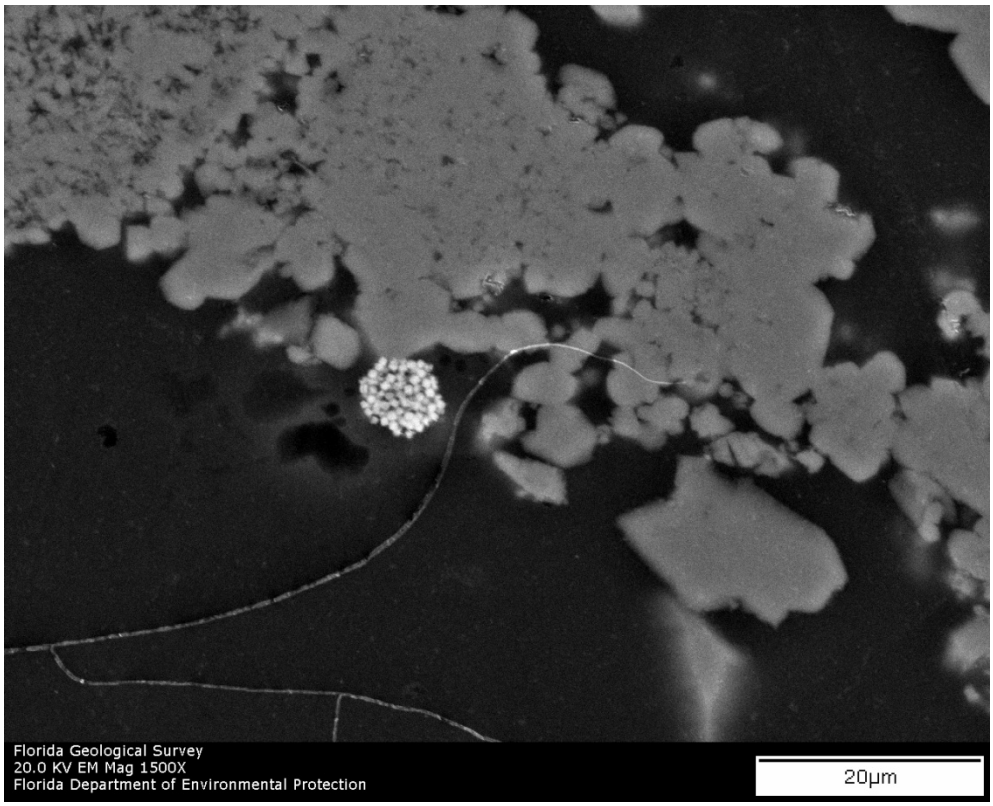


Figure 17. W-18812 1101-1101.5 ft. Secondary electron image of pyrite framboid.

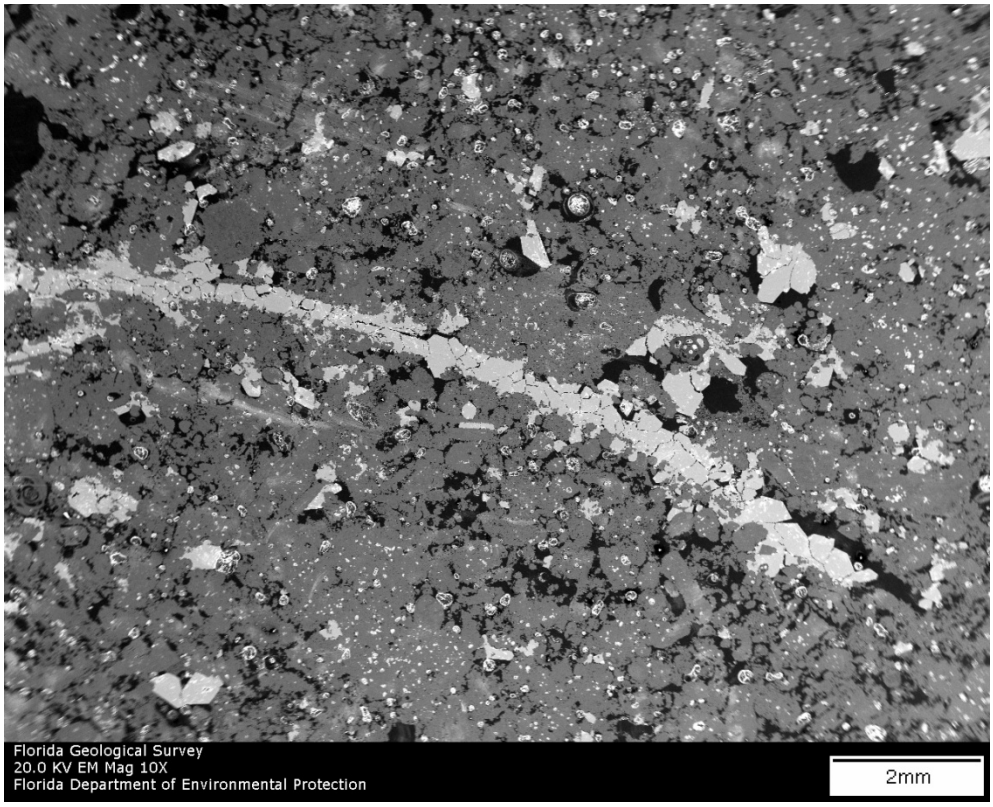


Figure 18. W-18812 1101-1101.5 ft. Secondary electron image of celestite and barite.

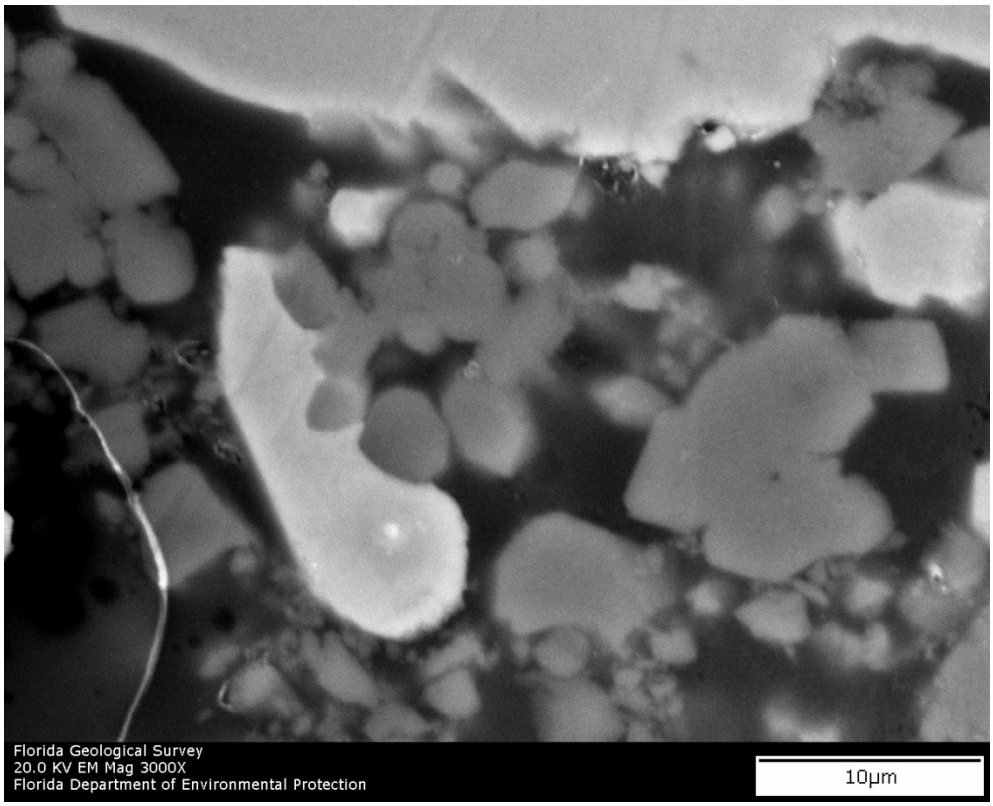
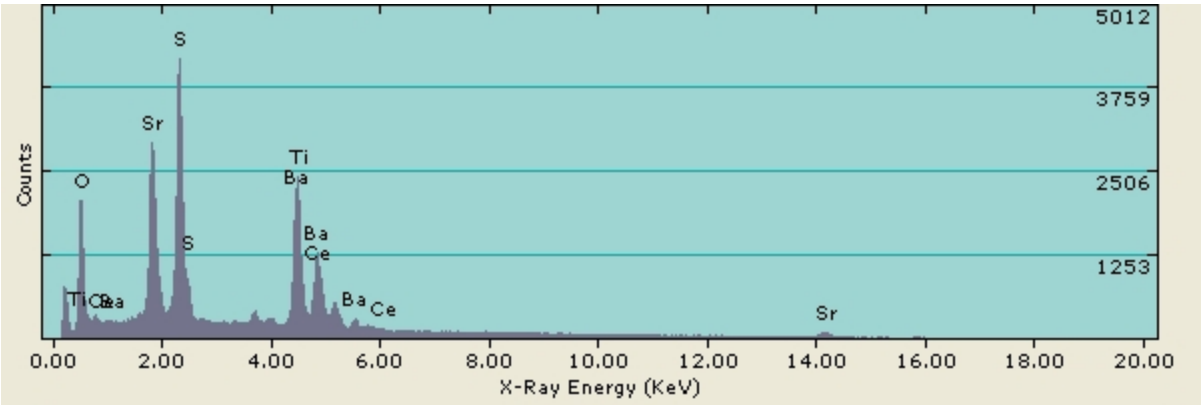


Figure 19. W-18812 1101-1101.5 ft. Secondary electron image of barite.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 13-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	12.18	0.78	0.08	27.00	0.0807	3675.5	0.80
O	27.37	1.12	0.32	45.56	0.1192	14352.0	1.00
S	17.10	0.83	0.27	14.20	0.1197	32427.2	0.91
Ti	8.45	0.89	0.39	4.70	0.0740	11632.7	0.83
Sr	16.24	0.82	0.41	4.93	0.1261	21856.1	0.84
Ba	16.44	0.85	0.46	3.19	0.1333	14760.2	0.90
Ce	2.23	0.68	1.21	0.42	0.0185	1910.2	0.90
Total	100.00						

Figure 20. W-18812 1101-1101.5 ft. Spectra of barite in previous image.

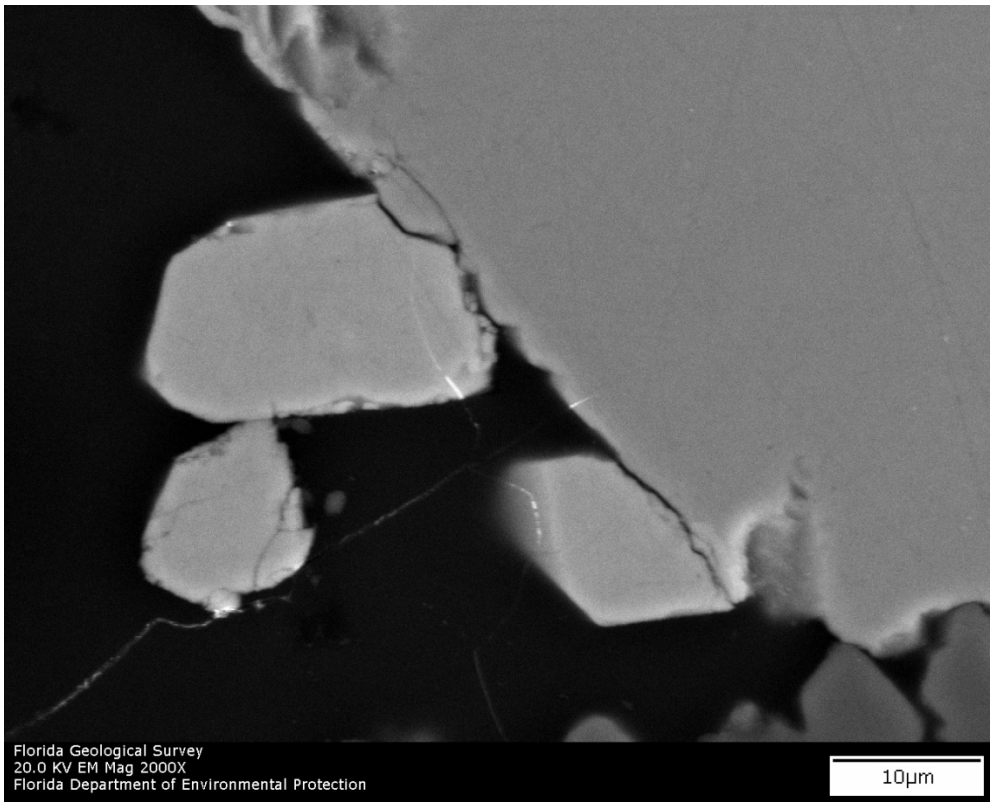
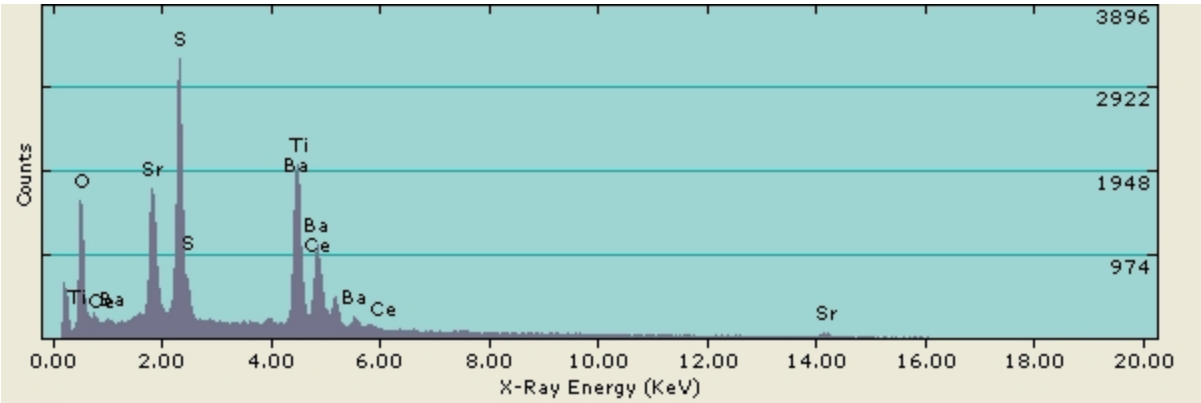


Figure 21. W-18812 1101-1101.5 ft. Secondary electron image of barite.



Quantitative Results for Spectrum16
Analysis: Bulk Method: Standardless
Acquired 13-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	14.01	0.89	0.09	30.15	0.0924	3277.4	0.80
O	27.52	1.15	0.37	44.47	0.1222	11458.7	0.99
S	15.96	0.81	0.31	12.87	0.1155	24363.9	0.91
Ti	9.12	0.79	0.43	4.93	0.0805	9851.2	0.84
Sr	12.35	0.70	0.56	3.64	0.0938	12661.9	0.83
Ba	18.60	0.93	0.50	3.50	0.1518	13096.0	0.89
Ce	2.43	0.73	1.33	0.45	0.0202	1630.2	0.90
Total	100.00						

Figure 22. W-18812 1101-1101.5 ft. Spectra of barite in previous image.

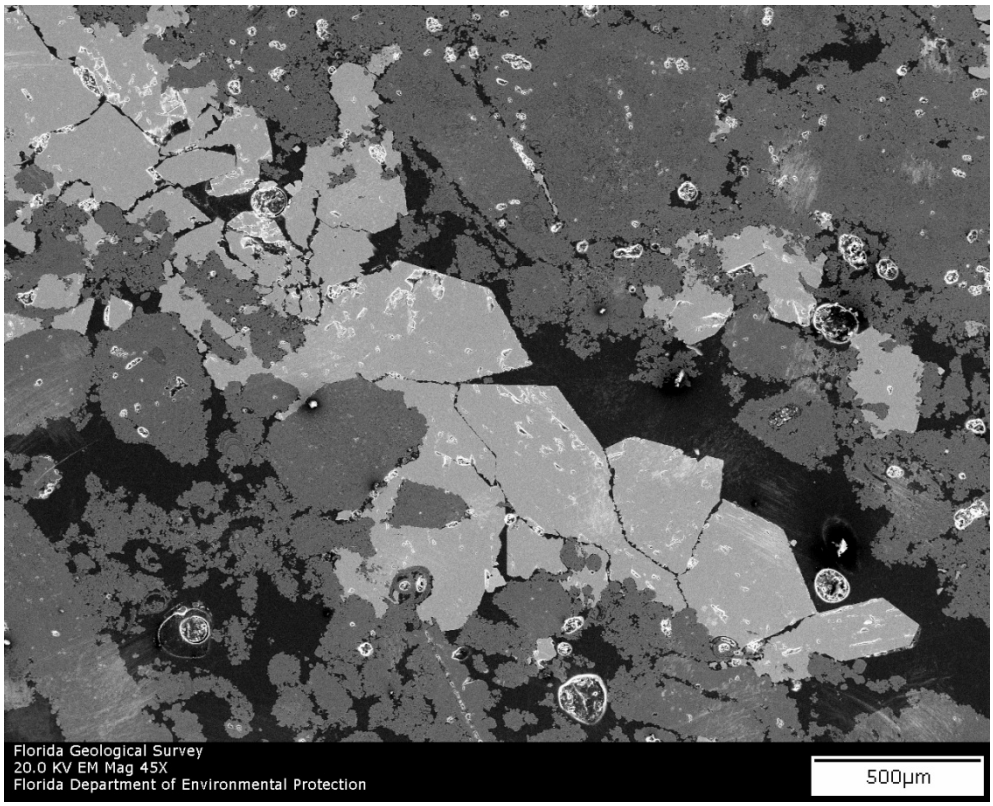
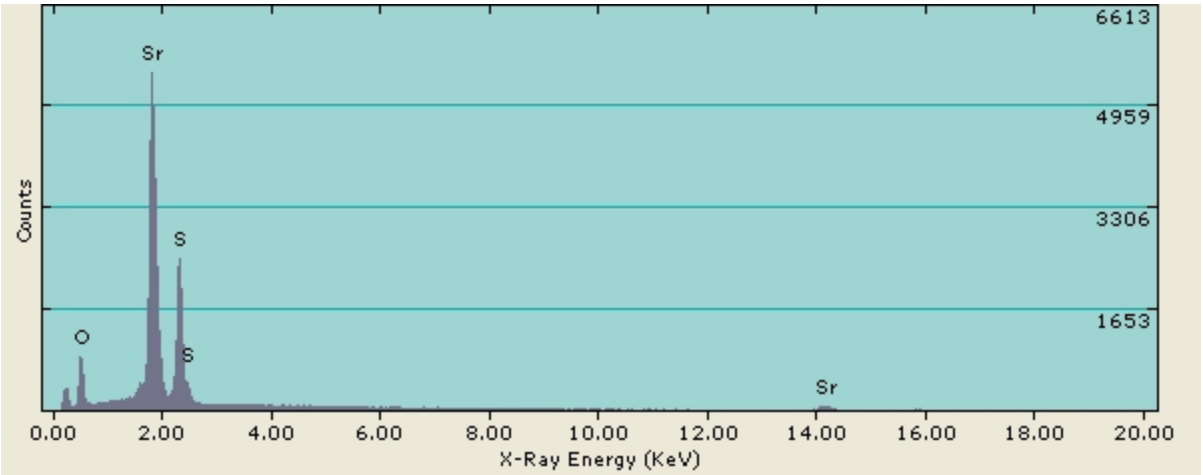


Figure 23. W-18812 1101-1101.5 ft. Secondary electron image of celestite.



Quantitative Results for Spectrum2
Analysis: Bulk Method: Standardless
Acquired 12-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	9.16	0.90	0.37	23.51	0.0732	1919.6	0.84
O	19.57	1.06	0.46	37.71	0.0767	5318.5	0.99
S	22.53	1.01	0.43	21.66	0.1234	19262.6	0.91
Sr	48.74	1.20	0.26	17.11	0.4633	46228.9	0.84
Total	100.00						

Figure 24. W-18812 1101-1101.5 ft. Spectra of celestite in previous image.

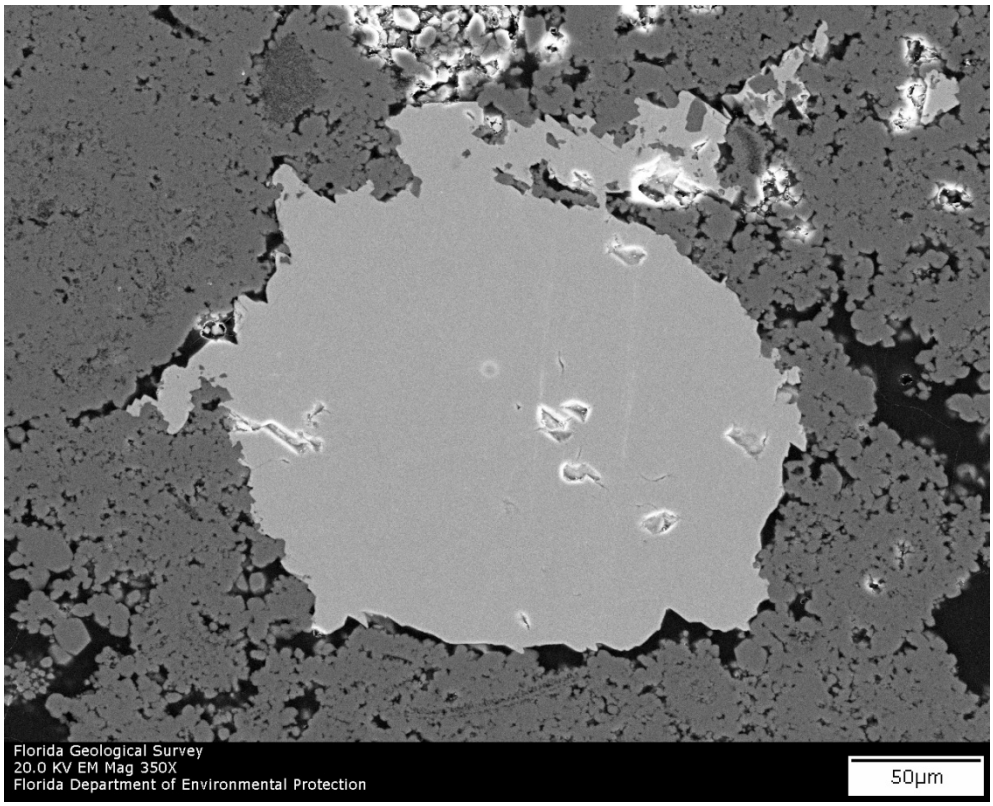
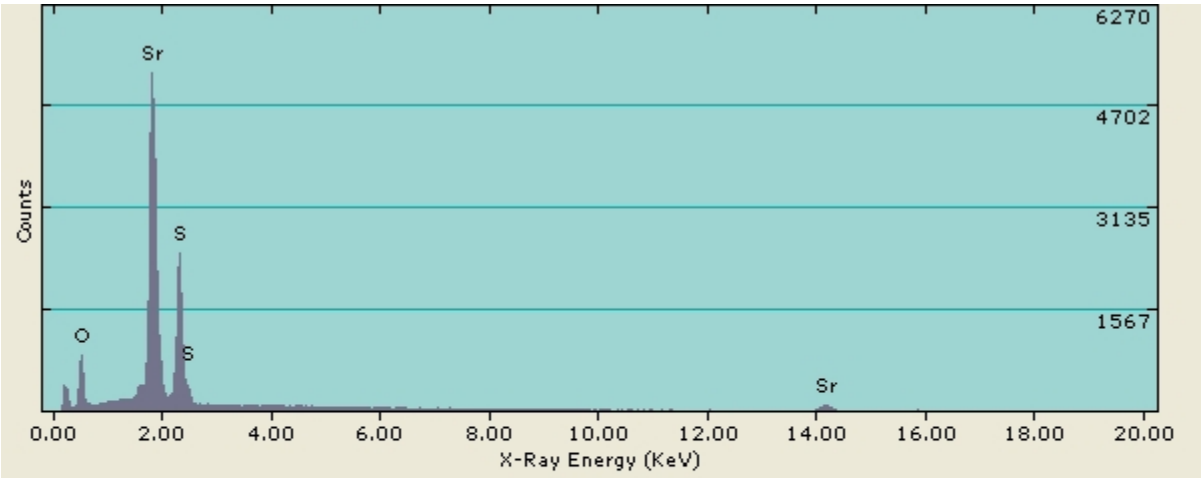


Figure 25. W-18812 1101-1101.5 ft. Secondary electron image of celestite.



Quantitative Results for Spectrum2
Analysis: Bulk Method: Standardless
Acquired 12-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	9.08	0.92	0.37	23.63	0.0725	1828.5	0.82
O	18.68	1.04	0.47	36.47	0.0732	4877.4	1.00
S	22.97	1.02	0.43	22.38	0.1255	18823.8	0.91
Sr	49.27	1.22	0.26	17.52	0.4693	45011.1	0.83
Total	100.00						

Figure 26. W-18812 1101-1101.5 ft. Spectra of celestite in previous image.

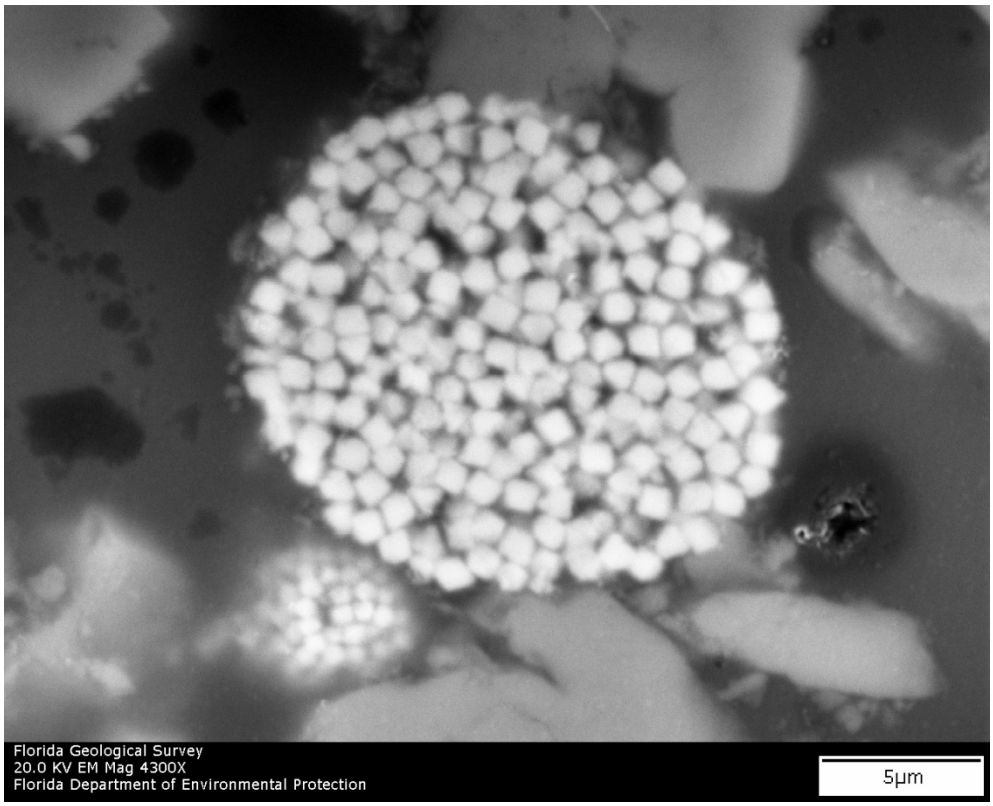


Figure 27. W-18812 1106.5-1107 ft. Secondary electron image of pyrite framboid.

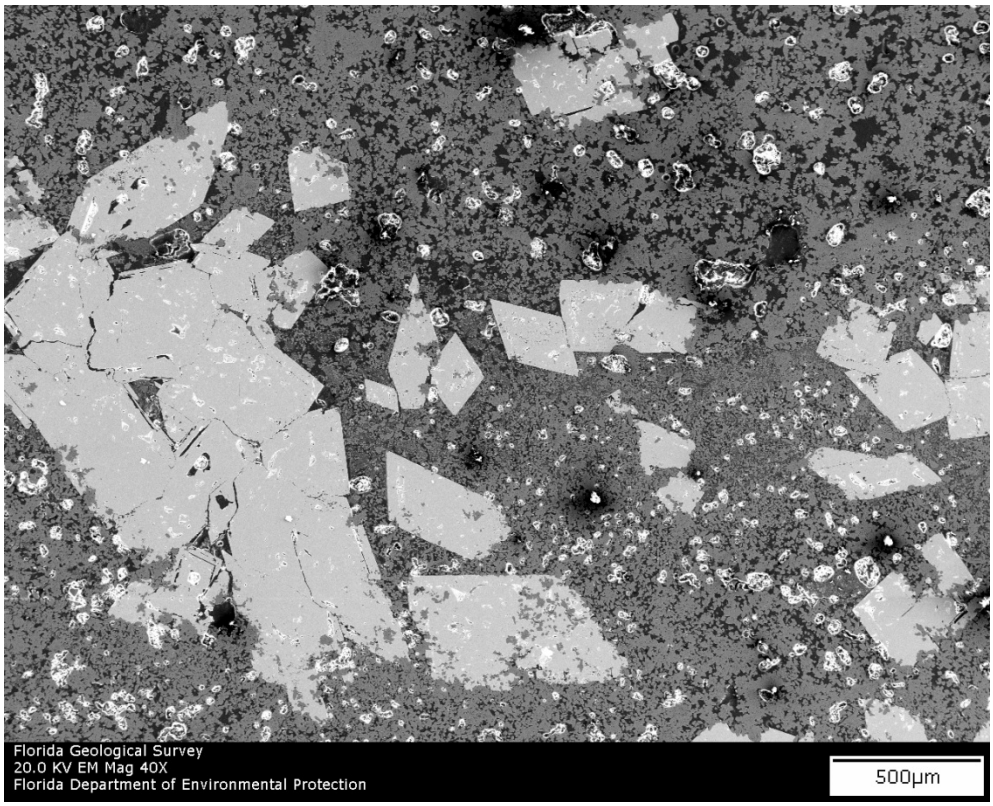


Figure 28. W-18812 1106.5-1107 ft. Secondary electron image of celestite.

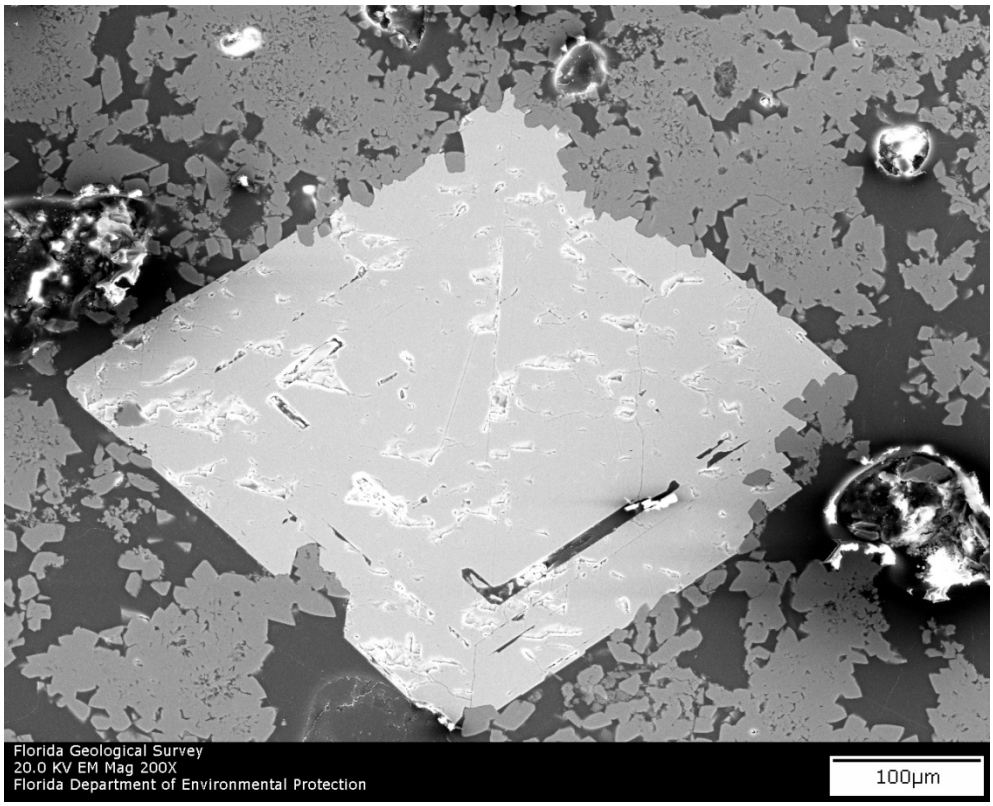
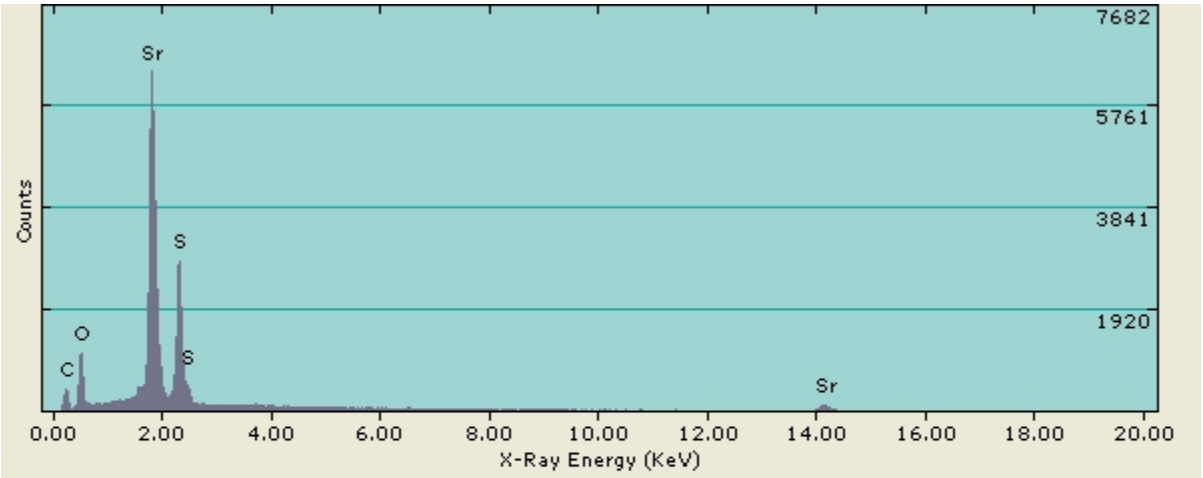


Figure 29. W-18812 1106.5-1107 ft. Secondary electron image of celestite.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 16-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	8.55	0.99	0.34	21.99	0.0681	2084.3	0.85
O	20.24	1.06	0.41	39.06	0.0794	6423.8	0.97
S	22.75	1.00	0.38	21.91	0.1249	22681.2	0.94
Sr	48.46	1.18	0.23	17.04	0.4601	53382.8	0.86
Total	100.00						

Figure 30. W-18812 1106.5-1107 ft. Spectra of celestite in previous image.

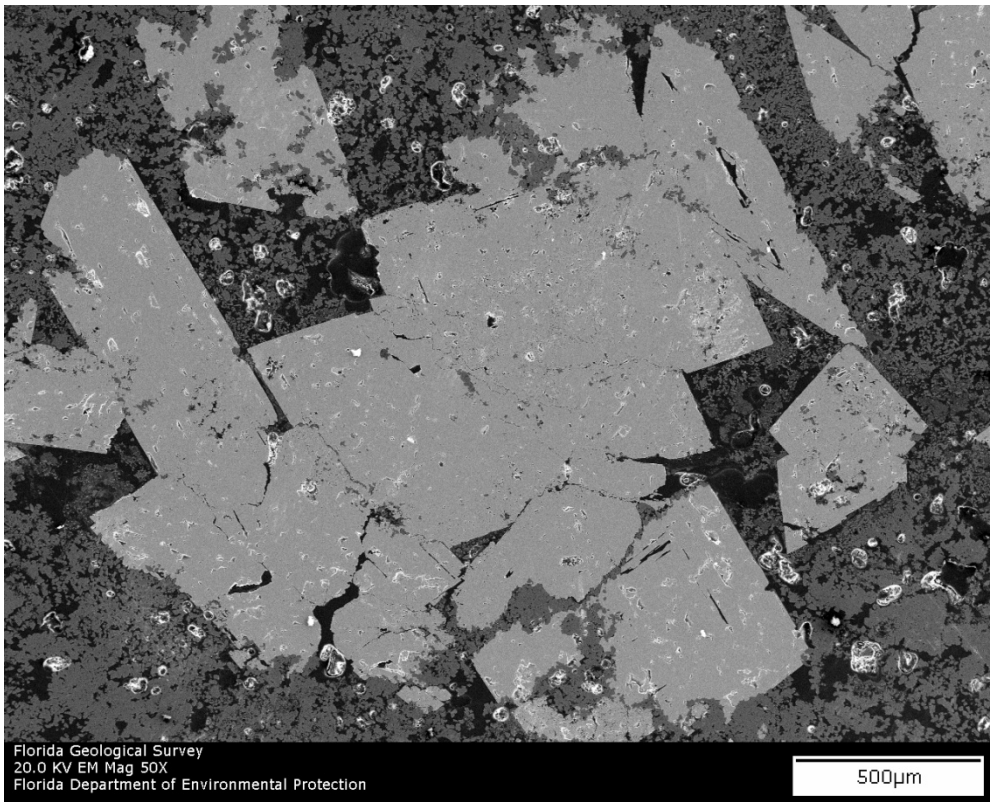
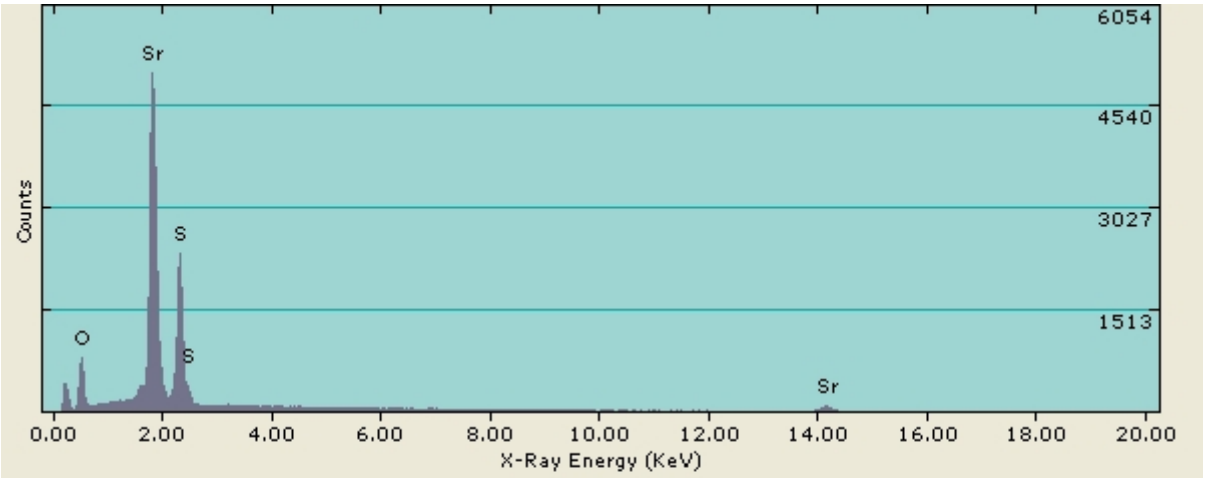


Figure 31. W-18812 1106.5-1107 ft. Secondary electron image of celestite.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 13-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	9.68	0.80	0.36	24.57	0.0770	1893.6	0.82
O	19.46	1.07	0.47	37.10	0.0762	4953.9	1.00
S	22.70	1.01	0.43	21.60	0.1249	18277.8	0.91
Sr	48.17	1.20	0.26	16.73	0.4579	42844.1	0.83
Total	100.00						

Figure 32. W-18812 1106.5-1107 ft. Spectra of celestite in previous image.

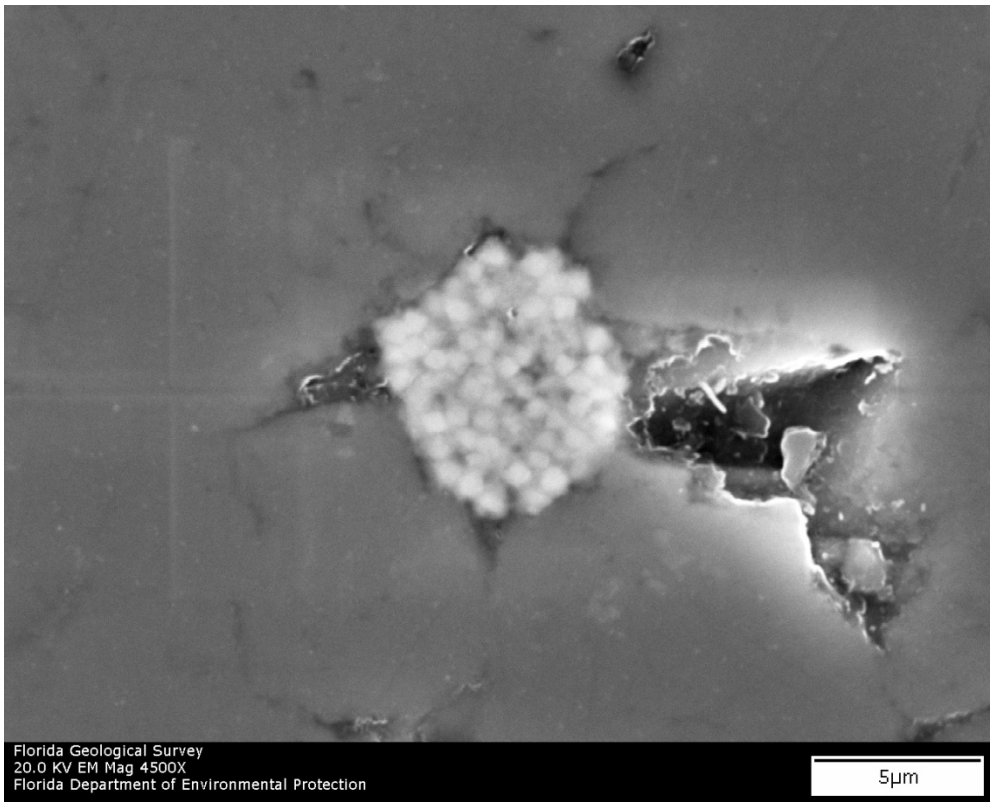


Figure 33. W-18812 1510-1512 ft. Secondary electron image of pyrite framboid.

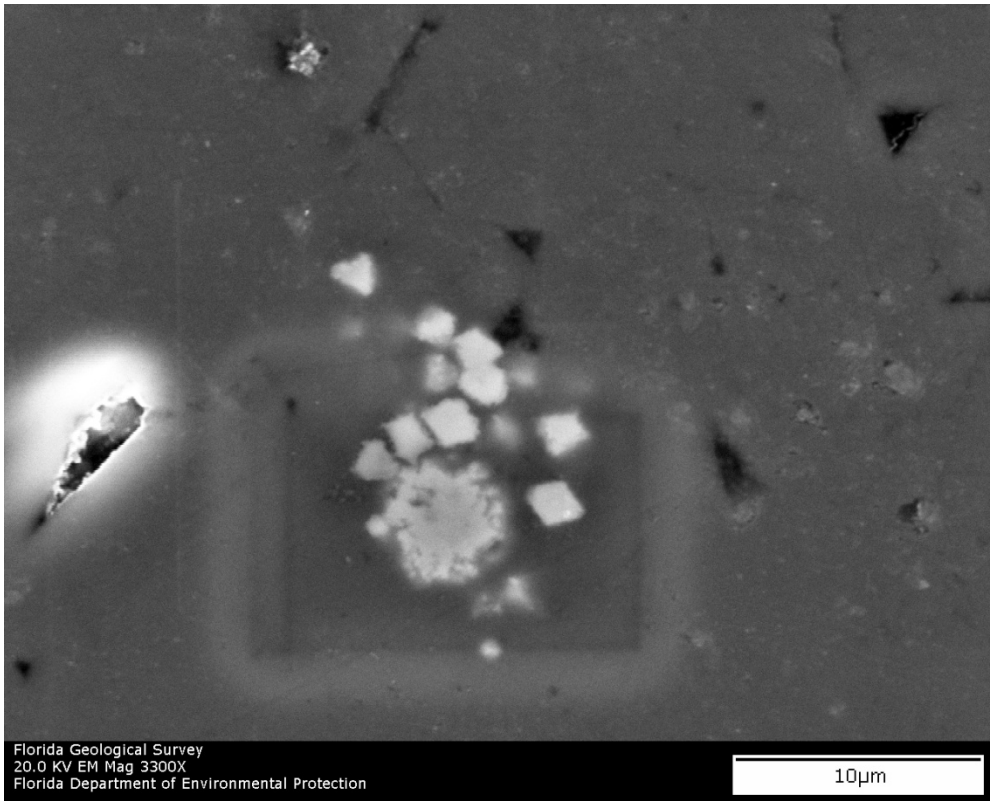


Figure 34. W-18812 1510-1512ft. Secondary electron image of pyrite.

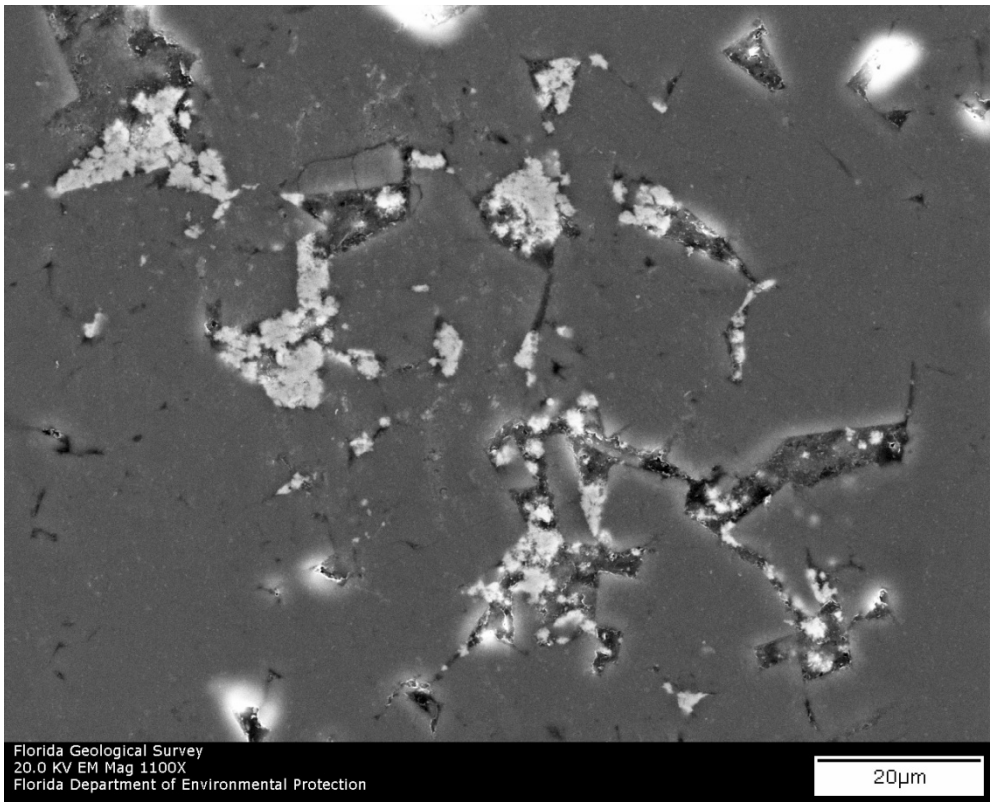


Figure 35. W-18812 1510-1512ft. Secondary electron image of clustered pyrite framboids.

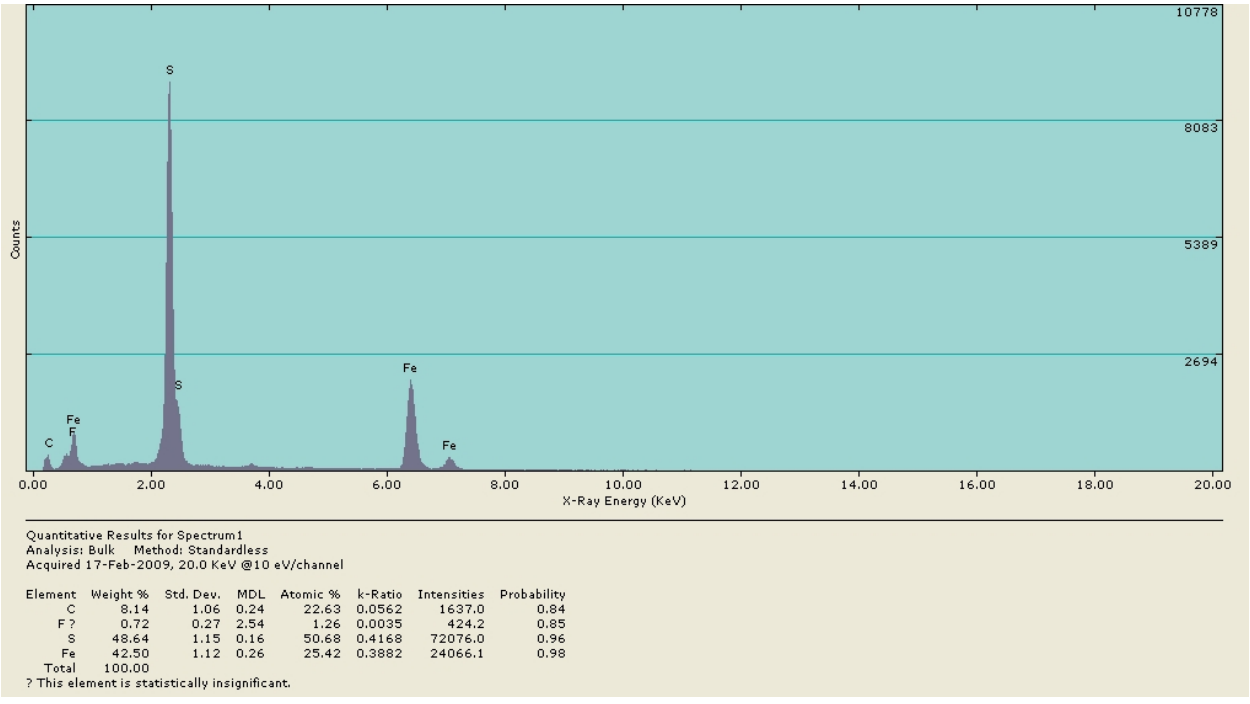


Figure 36. W-18812 1510-1512 ft. Spectra of pyrite in previous image.

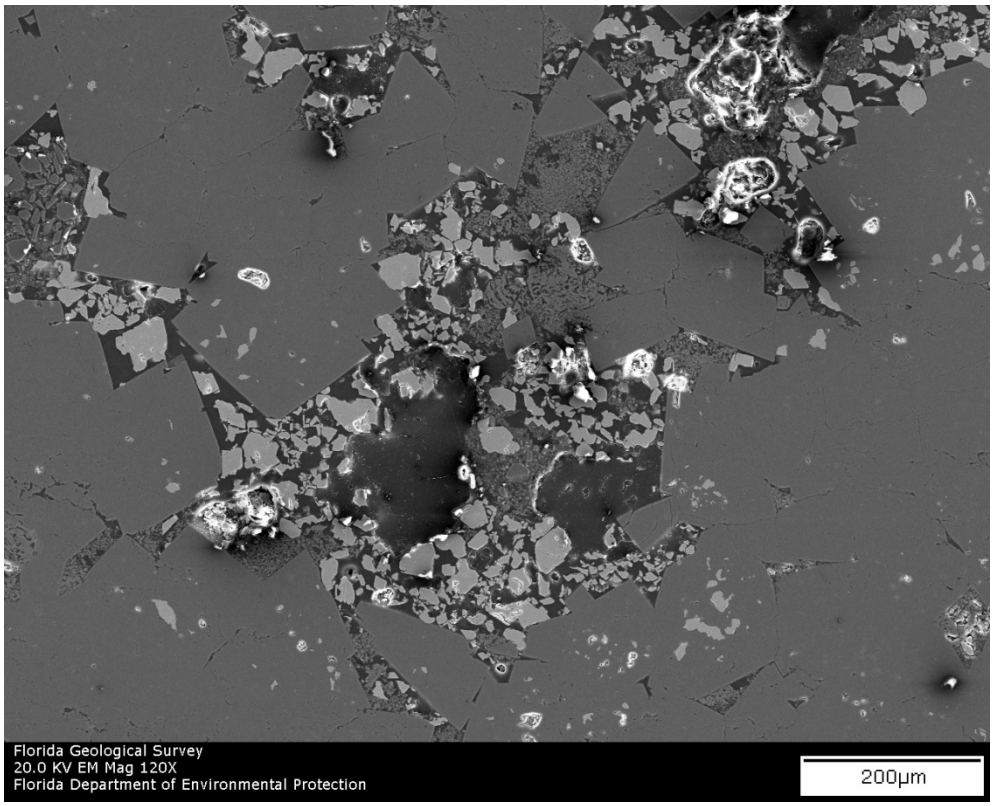


Figure 37. W-18812 1520-1525 ft. Secondary electron image of celestite.

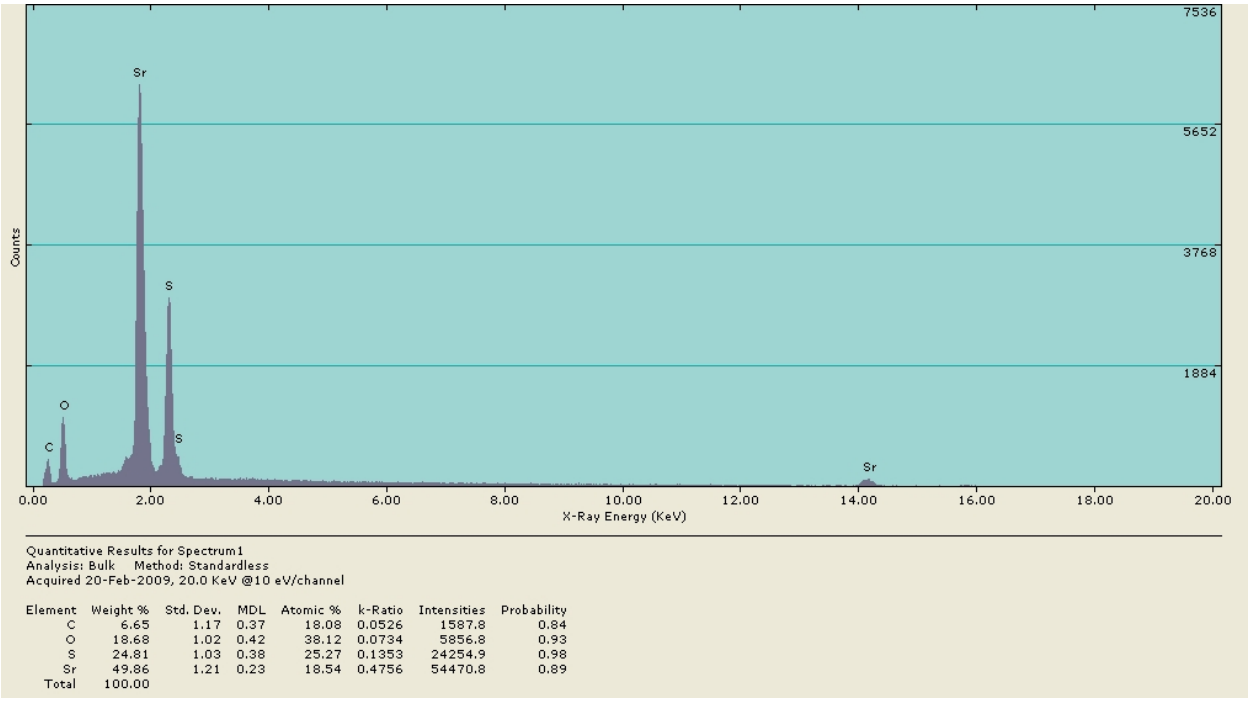


Figure 38. W-18812 1520-1525 ft. Spectra of celestite in previous image.

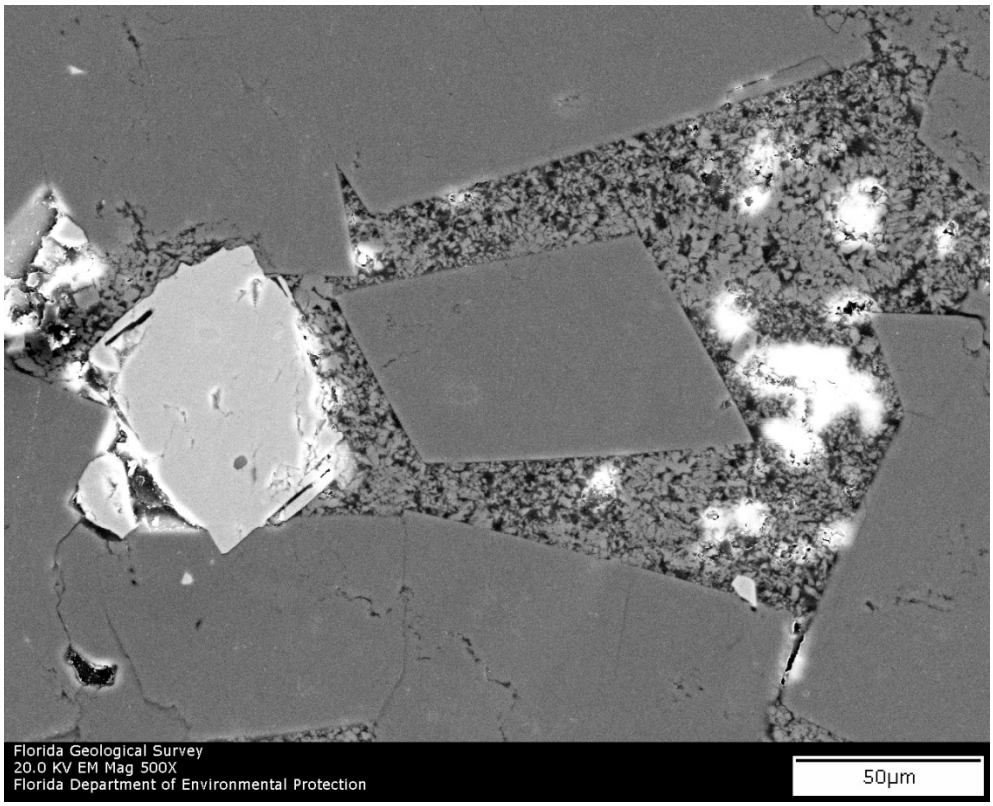


Figure 39. W-18812 1520-1525 ft. Secondary electron image of celestite.

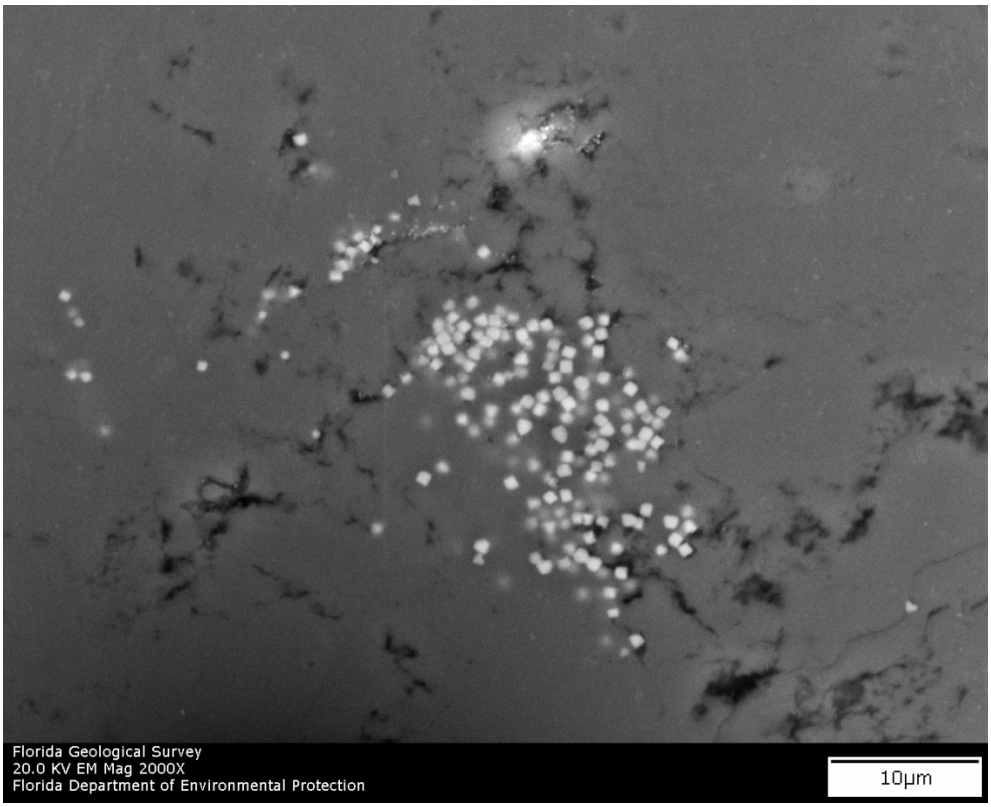


Figure 40. W-18812 1520-1525 ft. Secondary electron image of pyrite.

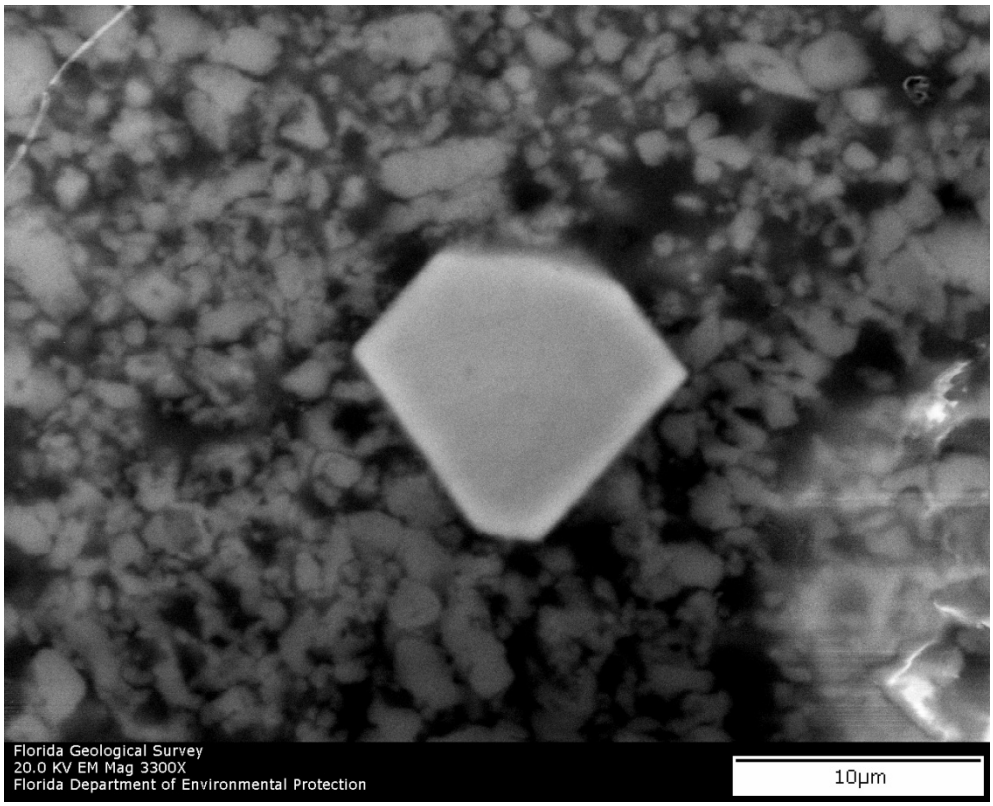


Figure 41. W-18812 1520-1525 ft. Secondary electron image of pyrite crystal.

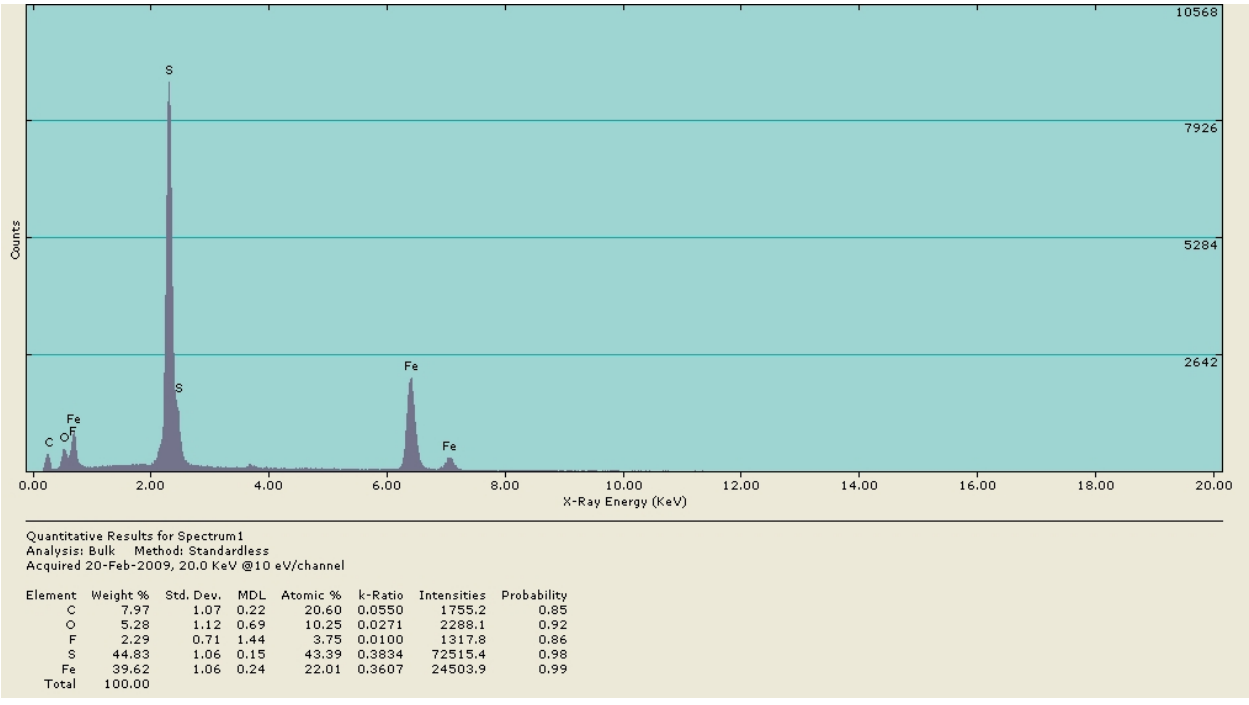


Figure 42. W-18812 1520-1525 ft. Spectra of pyrite in previous image.

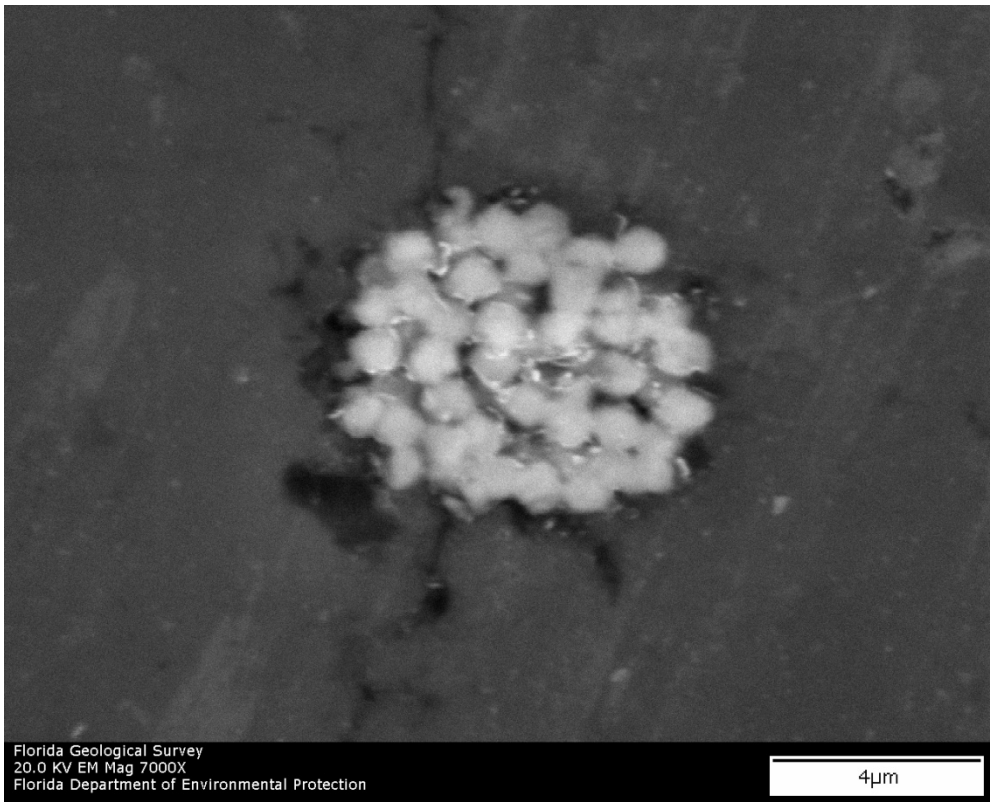


Figure 43. W-18812 1520-1525 ft. Secondary electron image of pyrite framboid.

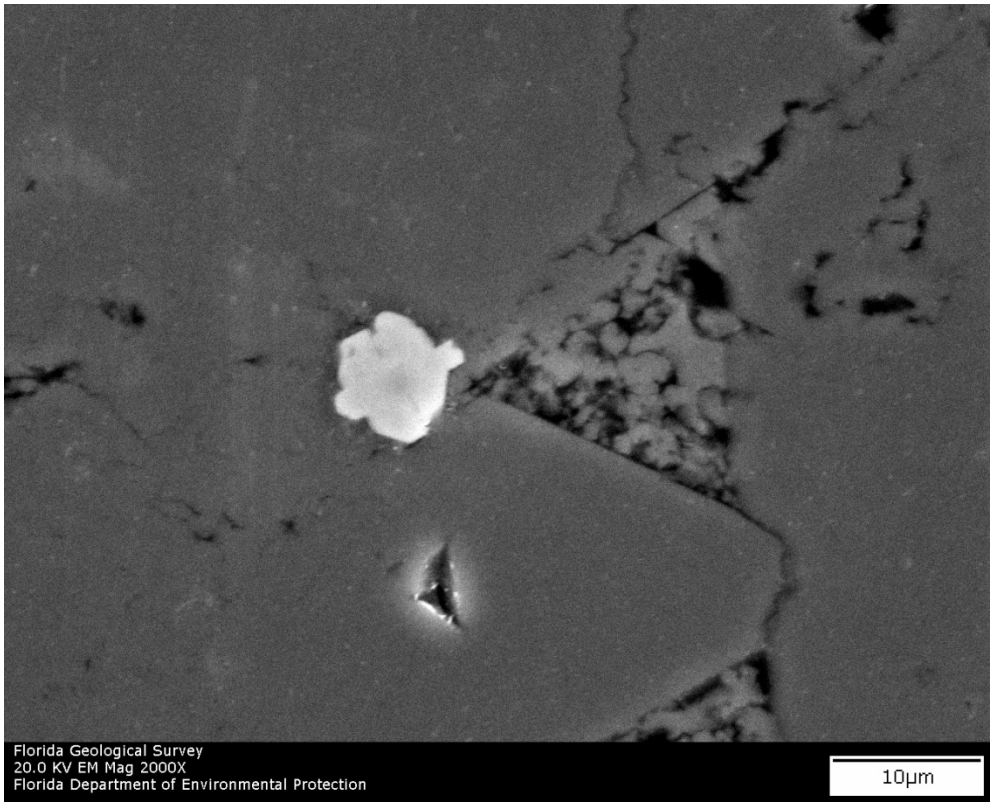


Figure 44. W-18812 1520-1525 ft. Secondary electron image of pyrite crystal.

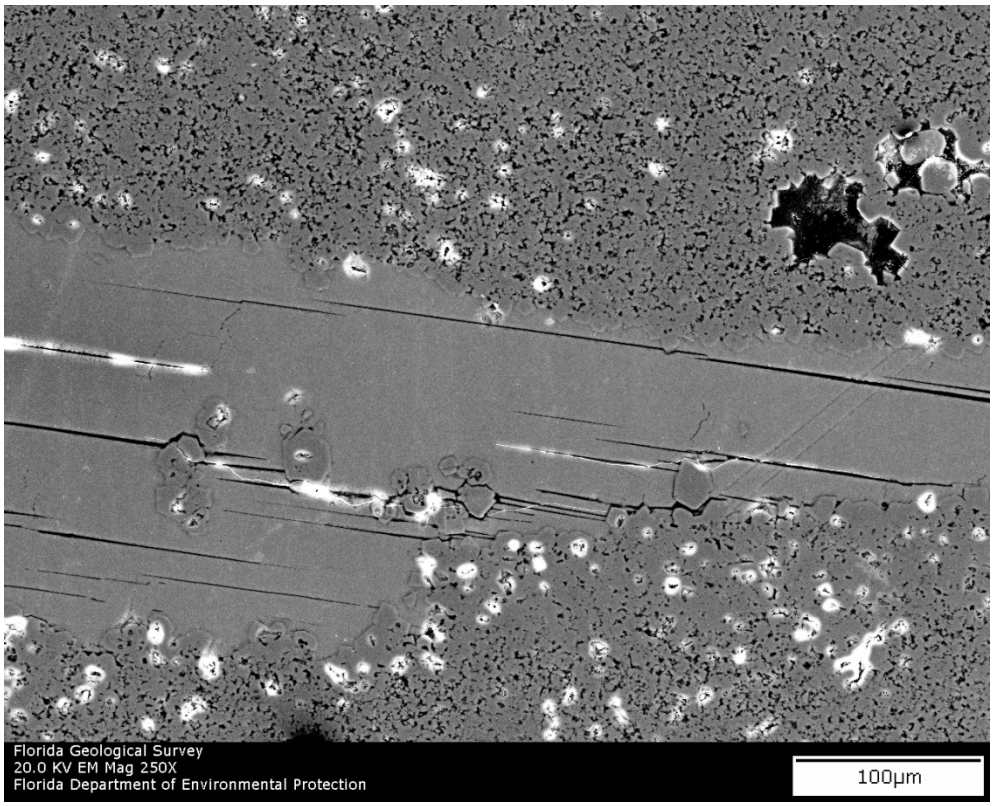


Figure 45. W-18812 1753-1753.5 ft. Secondary electron image of gypsum.

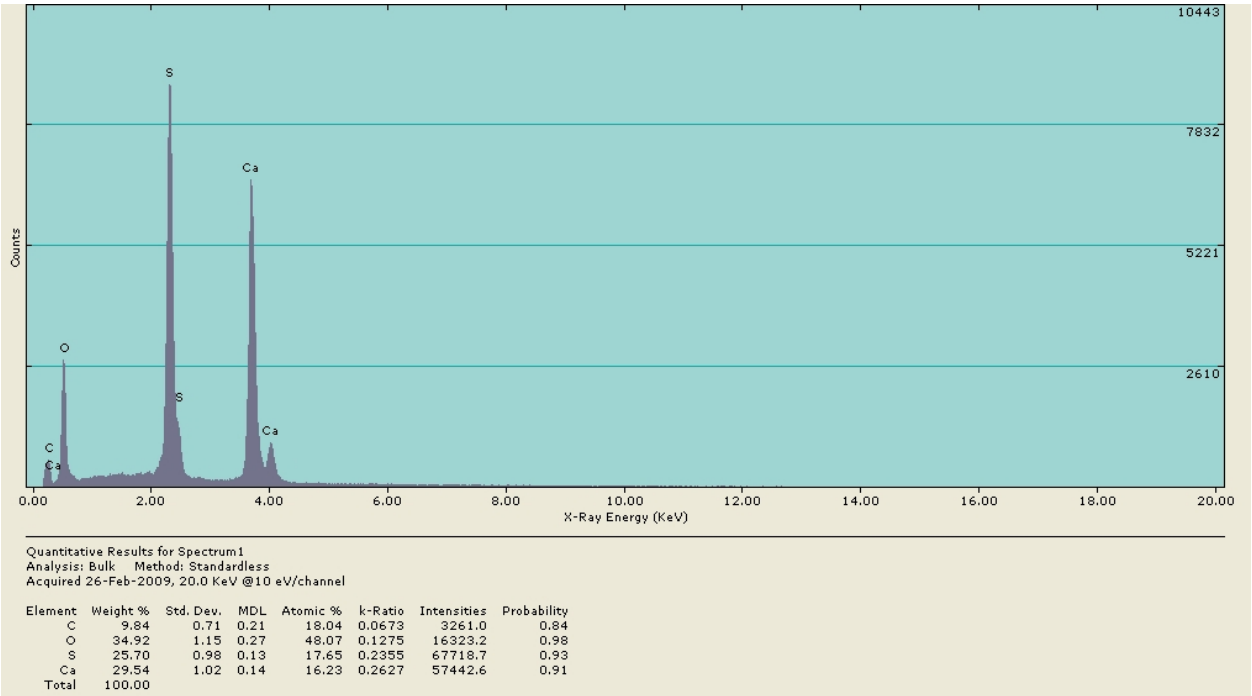


Figure 46. W-18812 1753-1753.5 ft. Spectra of gypsum in previous image.

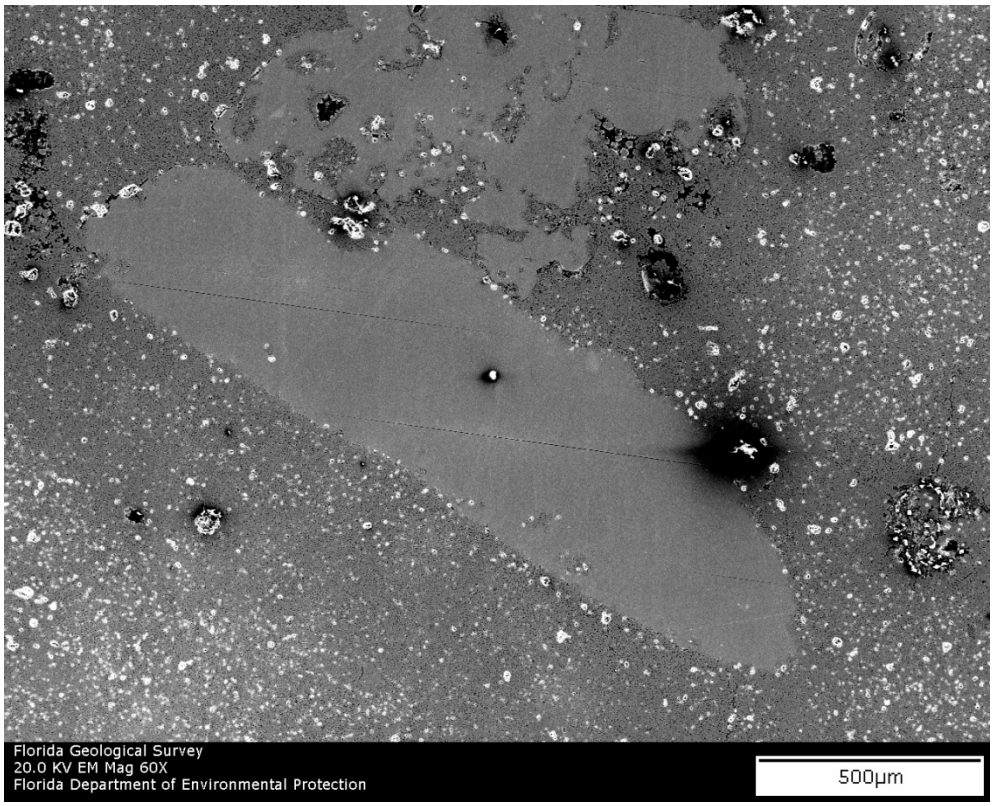
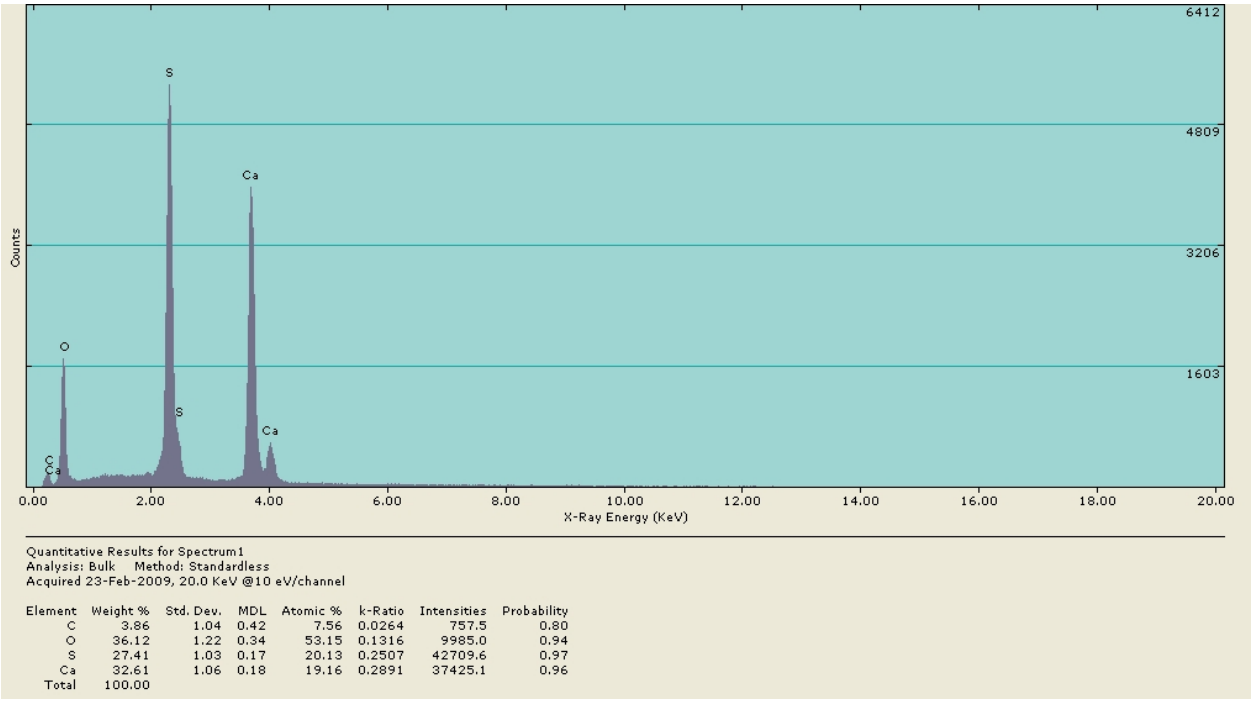


Figure 47. W-18812 1753-1753.5 ft. Secondary electron image of gypsum.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 23-Feb-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	3.86	1.04	0.42	7.56	0.0264	757.5	0.80
O	36.12	1.22	0.34	53.15	0.1316	9985.0	0.94
S	27.41	1.03	0.17	20.13	0.2507	42709.6	0.97
Ca	32.61	1.06	0.18	19.16	0.2891	37425.1	0.96
Total	100.00						

Figure 48. W-18812 1753-1753.5 ft. Spectra of gypsum in previous image.

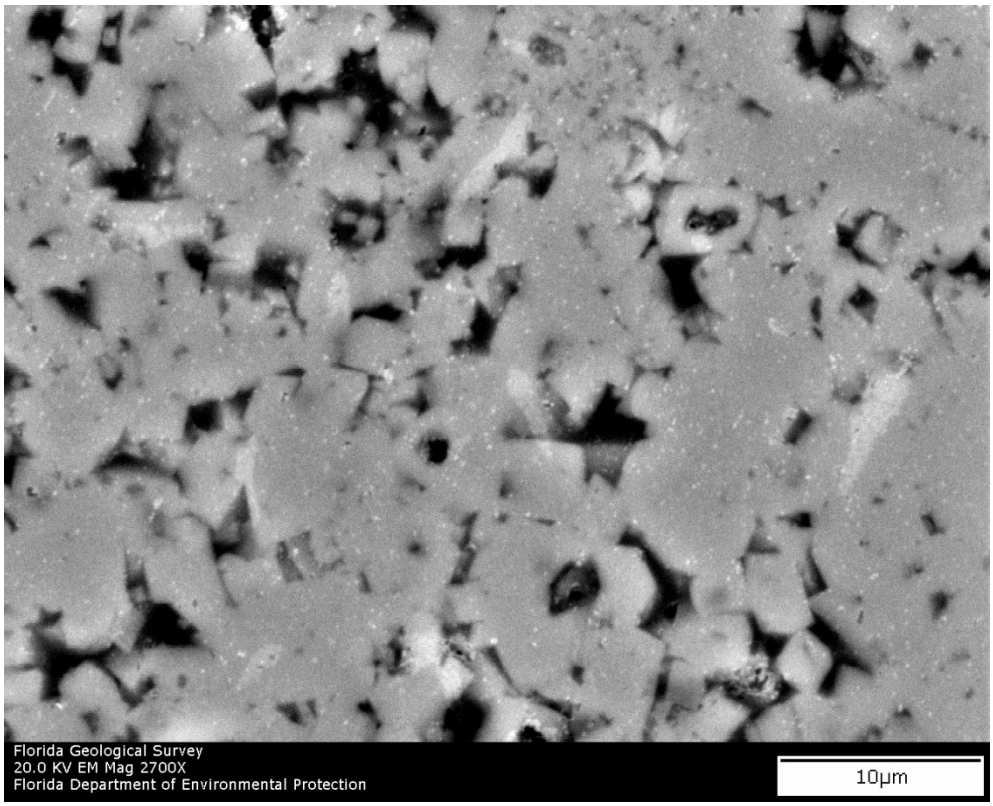


Figure 49. W-18812 1753-1753.5 ft. Secondary electron image of dolomite.

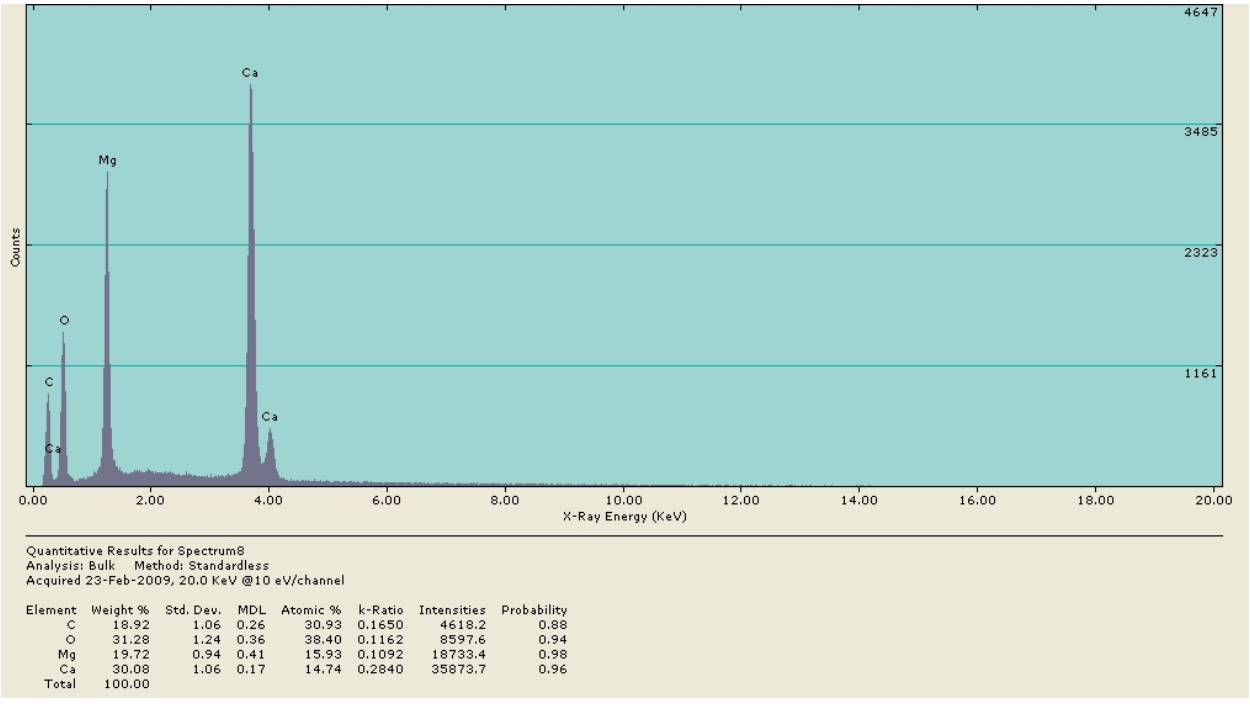


Figure 50. W-18812 1753-1753.5 ft. Spectra of dolomite in previous image.

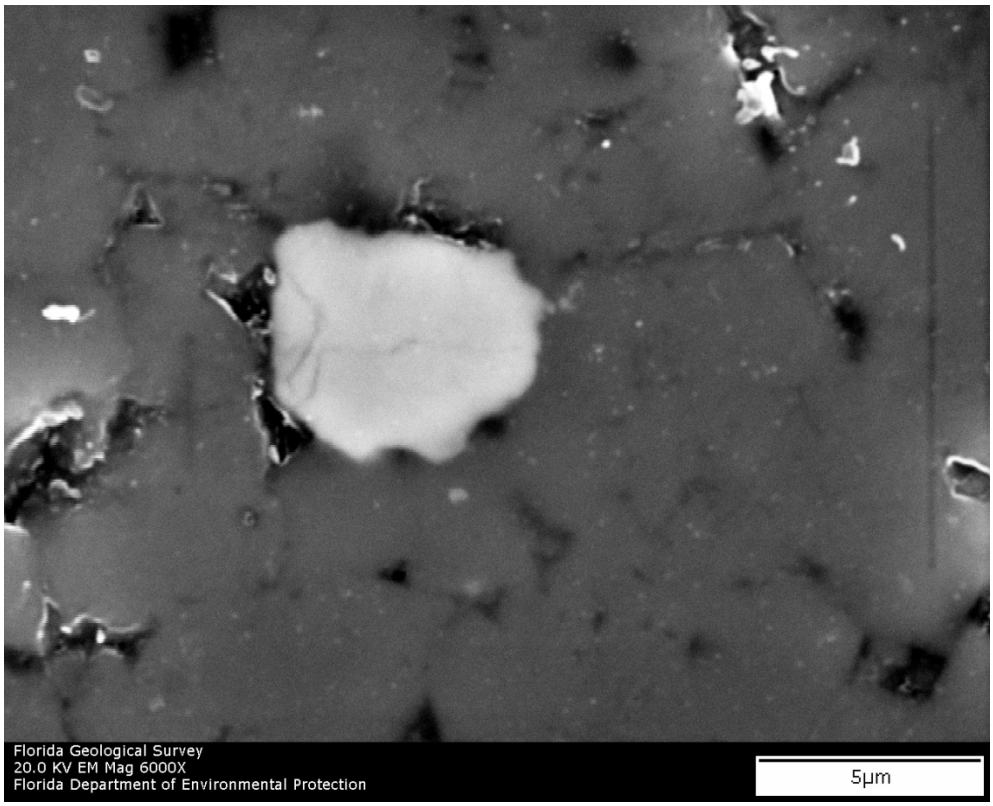
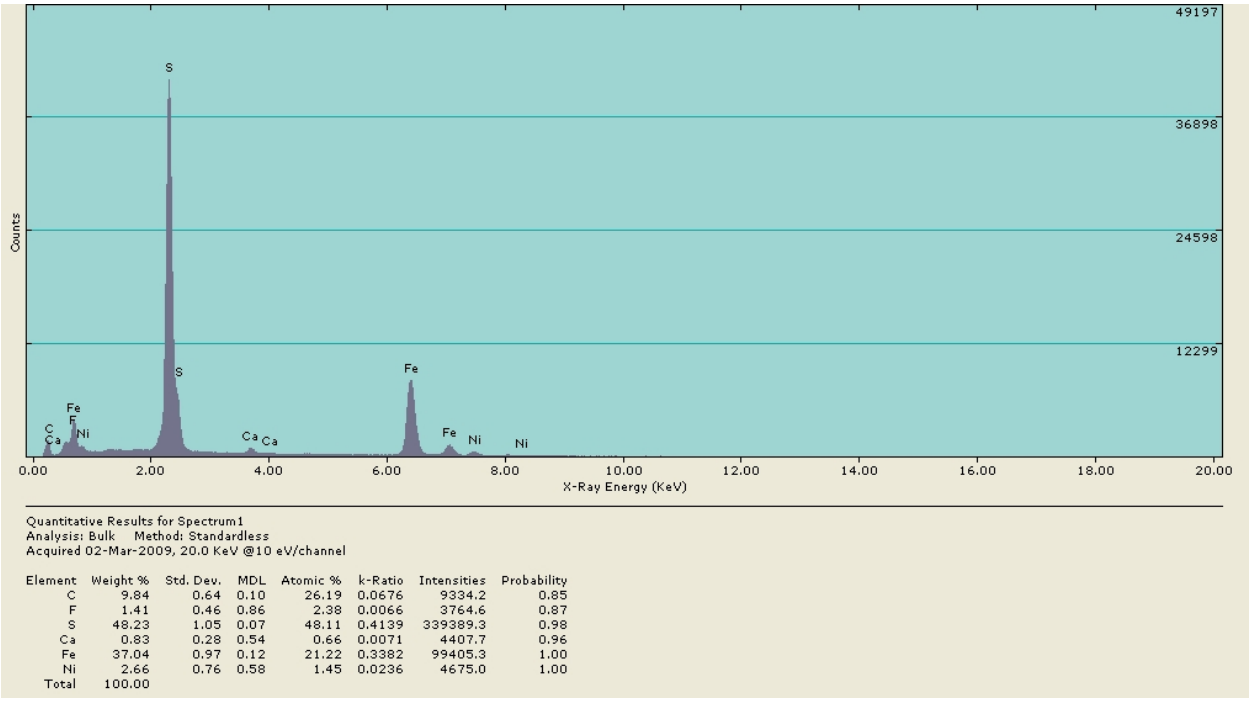


Figure 51. W-18812 1754.5-1755 ft. Secondary electron image of pyrite crystal.



Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	9.84	0.64	0.10	26.19	0.0676	9334.2	0.85
F	1.41	0.46	0.86	2.38	0.0066	3764.6	0.87
S	48.23	1.05	0.07	48.11	0.4139	339389.3	0.98
Ca	0.83	0.28	0.54	0.66	0.0071	4407.7	0.96
Fe	37.04	0.97	0.12	21.22	0.3382	99405.3	1.00
Ni	2.66	0.76	0.58	1.45	0.0236	4675.0	1.00
Total	100.00						

Figure 52. W-18812 1754.5-1755 ft. Spectra of pyrite containing nickel in previous image.

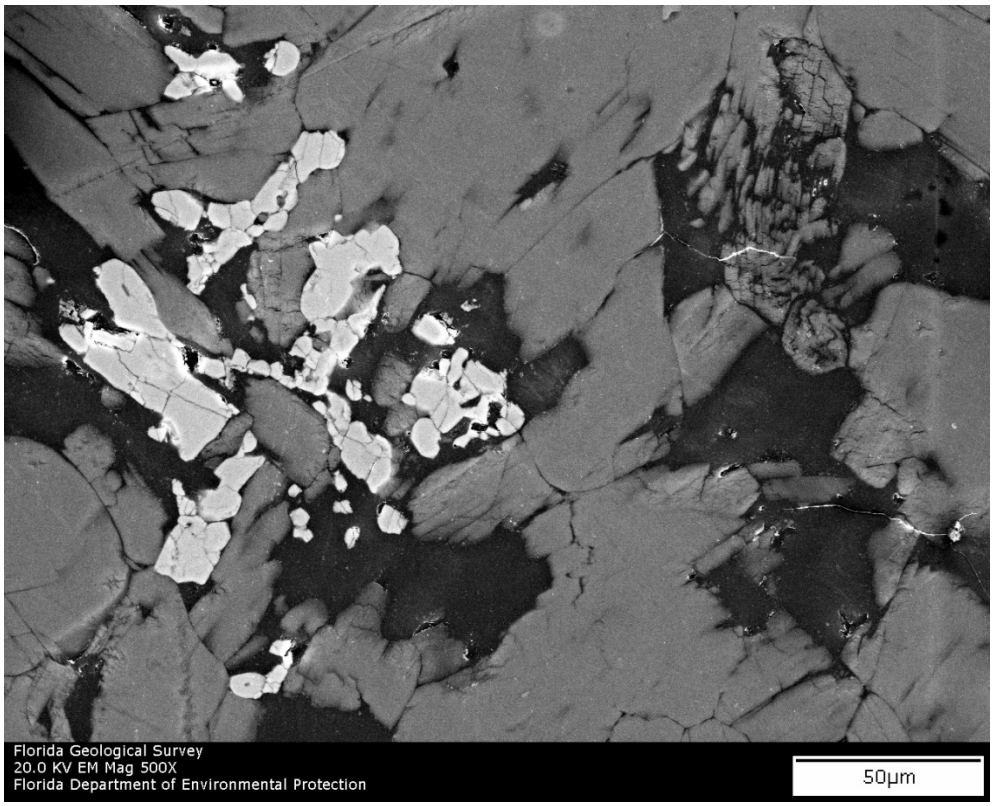
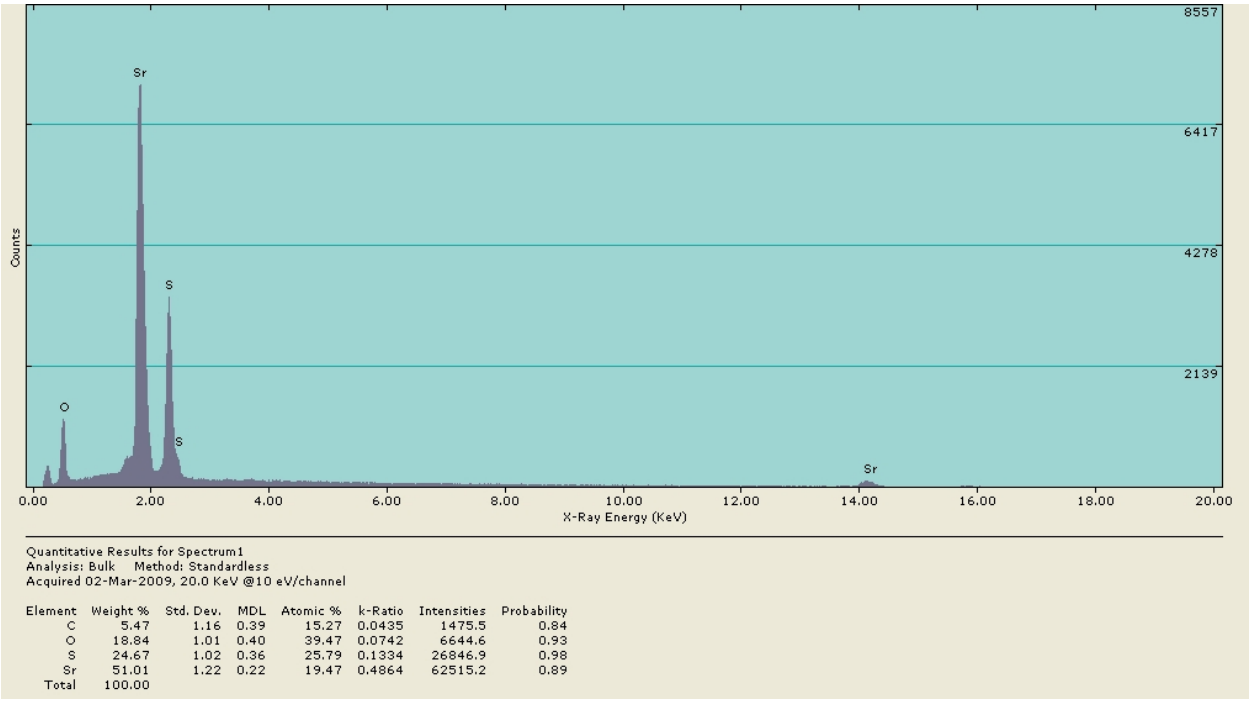
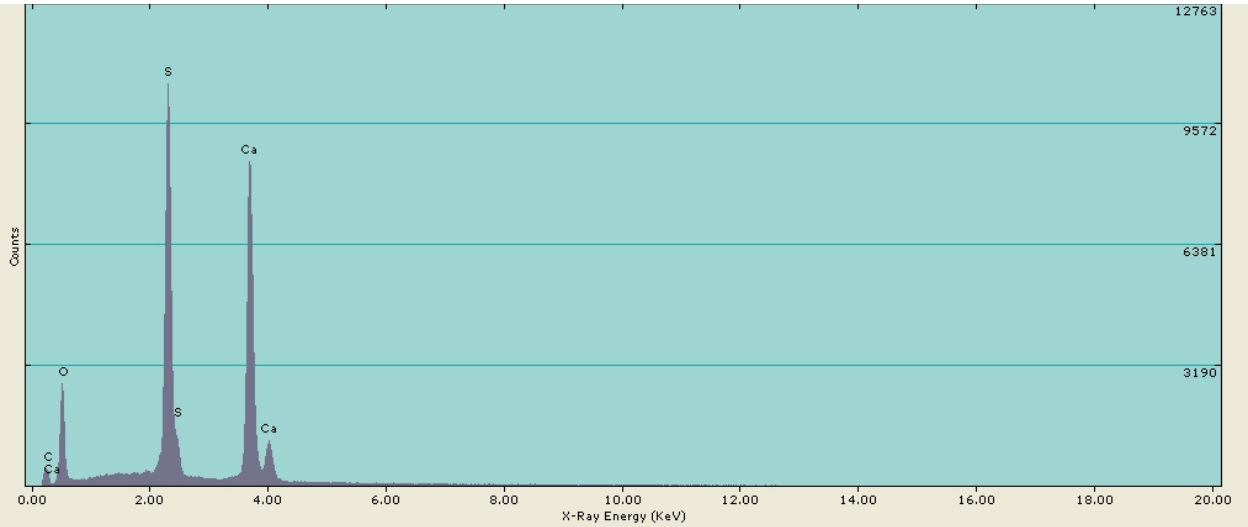


Figure 53. W-18812 1754.5-1755 ft. Secondary electron image of celestite in gypsum.



Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	5.47	1.16	0.39	15.27	0.0435	1475.5	0.84
O	18.84	1.01	0.40	39.47	0.0742	6644.6	0.93
S	24.67	1.02	0.36	25.79	0.1334	26846.9	0.98
Sr	51.01	1.22	0.22	19.47	0.4864	62515.2	0.89
Total	100.00						

Figure 54. W-18812 1754.5-1755 ft. Spectra of celestite from previous image.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 02-Mar-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	5.71	1.14	0.27	11.54	0.0392	2147.1	0.81
O	29.63	1.14	0.27	44.99	0.1060	15340.3	0.94
S	28.24	0.99	0.13	21.39	0.2601	84574.3	0.97
Ca	36.42	0.99	0.13	22.07	0.3231	79832.2	0.96
Total	100.00						

Figure 55. W-18812 1754.5-1755 ft. Spectra of gypsum from figure 53.



Figure 56. W-18812 1754.5-1755 ft. Secondary electron image of pyrite framboid.

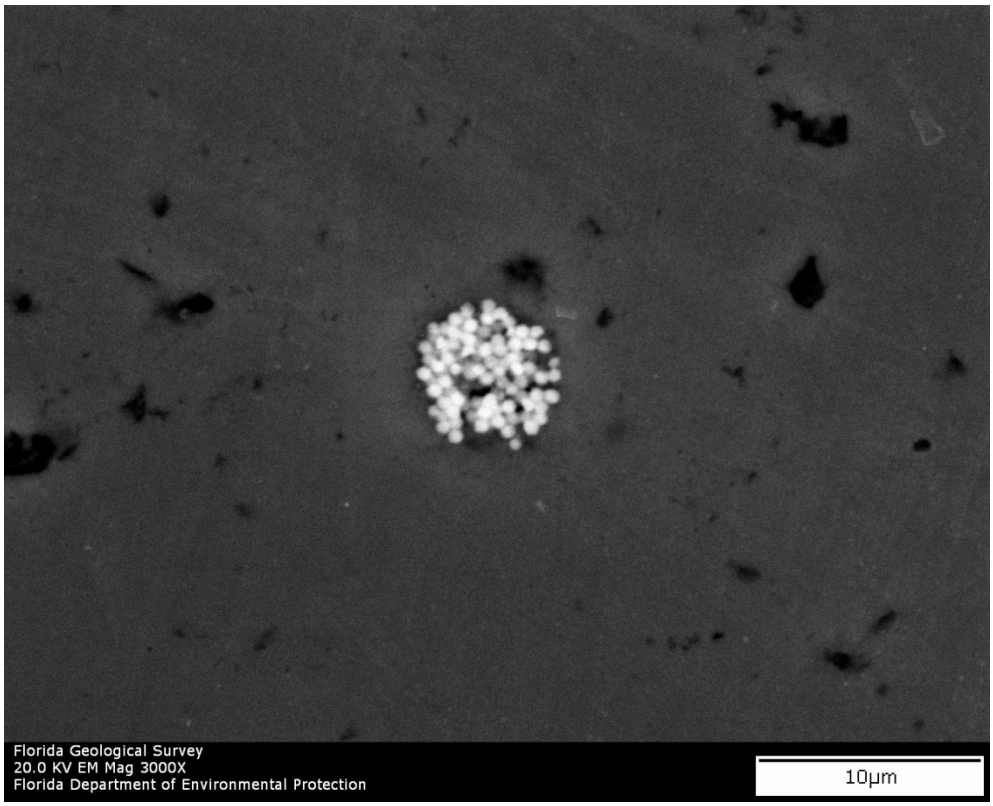
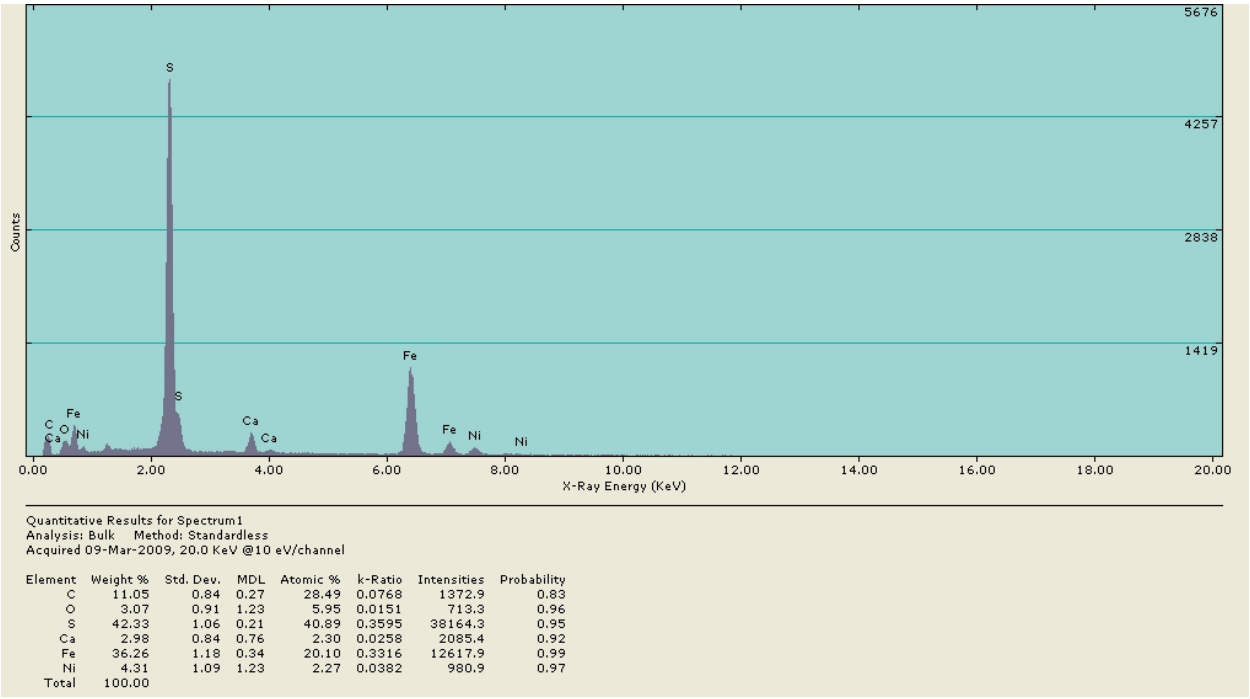


Figure 57. W-18812 1758.5-1759 ft. Secondary electron image of pyrite framboid.



Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	11.05	0.84	0.27	28.49	0.0768	1372.9	0.83
O	3.07	0.91	1.23	5.95	0.0151	713.3	0.96
S	42.33	1.06	0.21	40.89	0.3595	38164.3	0.95
Ca	2.98	0.84	0.76	2.30	0.0258	2085.4	0.92
Fe	36.26	1.18	0.34	20.10	0.3316	12617.9	0.99
Ni	4.31	1.09	1.23	2.27	0.0382	980.9	0.97
Total	100.00						

Figure 58. W-18812 1758.5-1759 ft. Spectra of pyrite framboid containing nickel in above image.

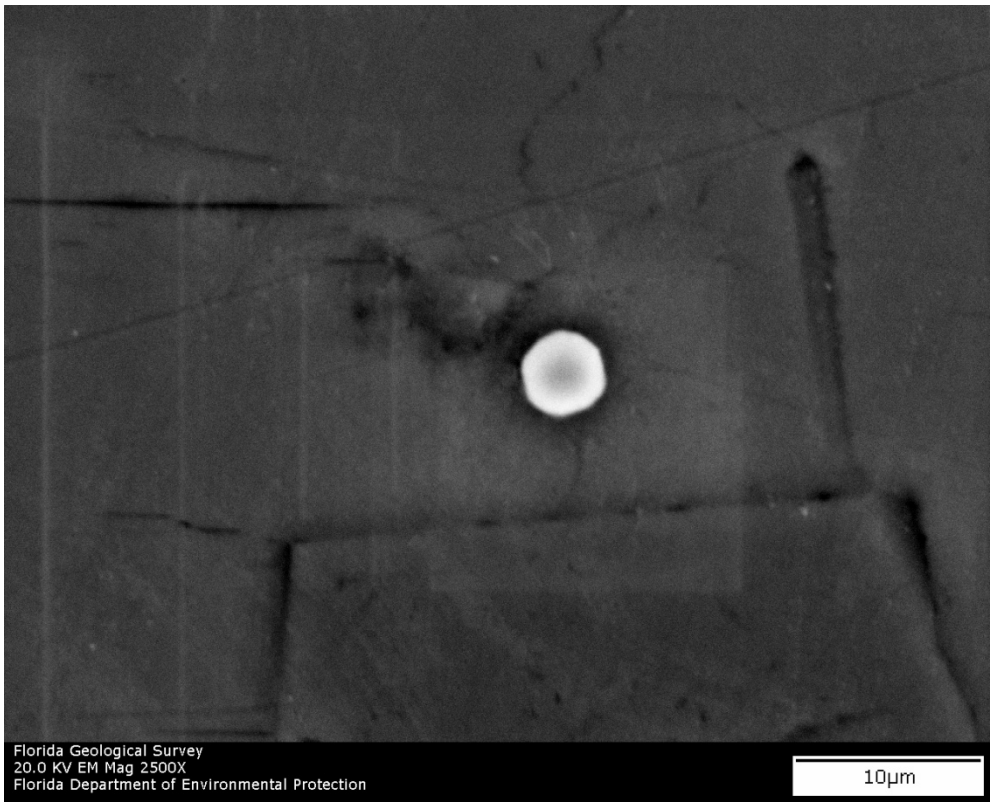


Figure 59. W-18812 1758.5-1759 ft. Secondary electron image of pyrite crystal.

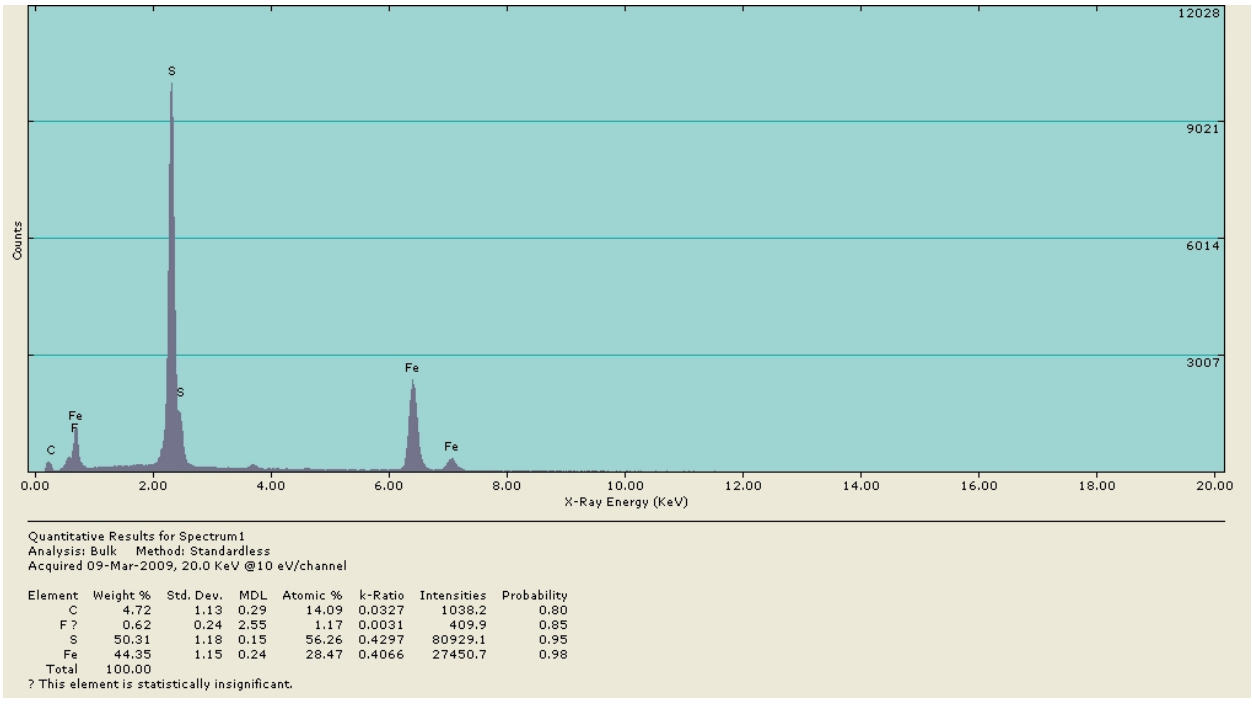
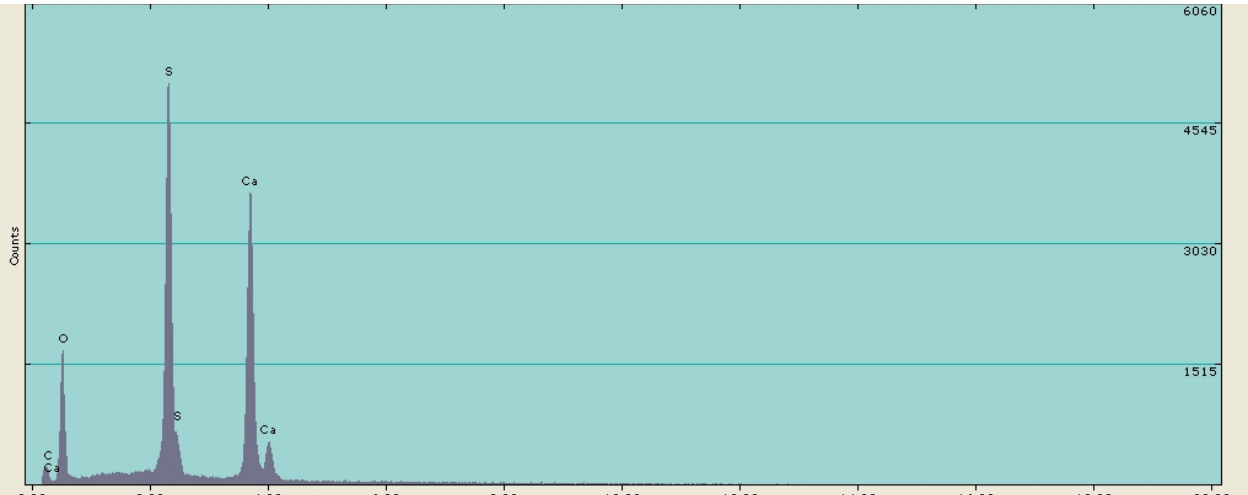


Figure 60. W-18812 1758.5-1759 ft. Spectra of pyrite crystal in previous image.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 09-Mar-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	5.51	1.19	0.36	10.46	0.0376	1042.4	0.79
O	37.25	1.22	0.35	53.14	0.1365	9995.2	0.97
S	26.64	1.02	0.17	18.96	0.2434	40033.1	0.95
Ca	30.61	1.07	0.18	17.43	0.2716	33959.8	0.93
Total	100.00						

Figure 61. W-18812 1758.5-1759 ft. Spectra of gypsum in previous image (figure 59).

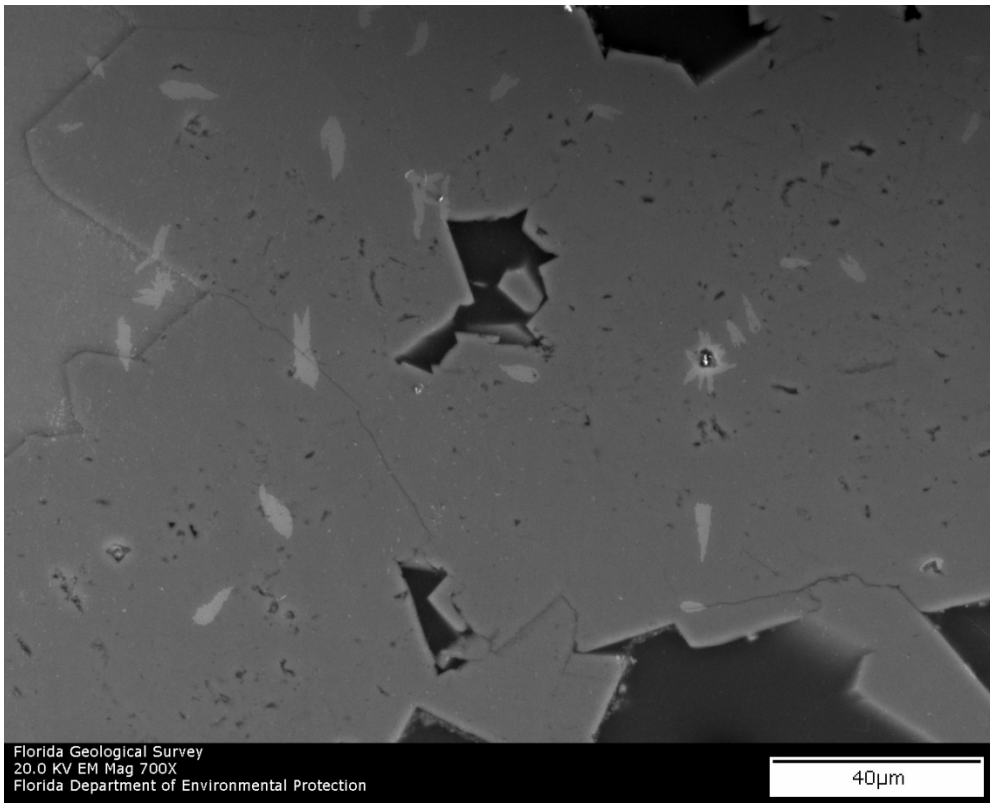


Figure 62. W-18812 1758.5-1759 ft. Secondary electron image of dolomite.

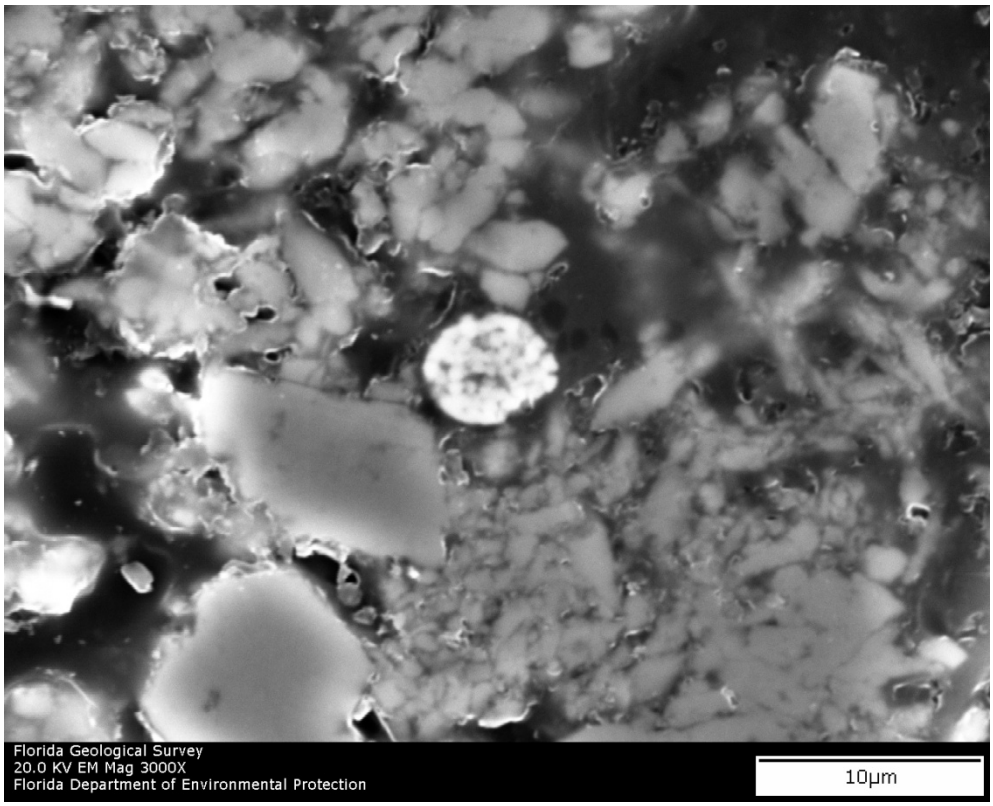


Figure 63. W-18811 1197.5-1198 ft. Secondary electron image of pyrite framboid.

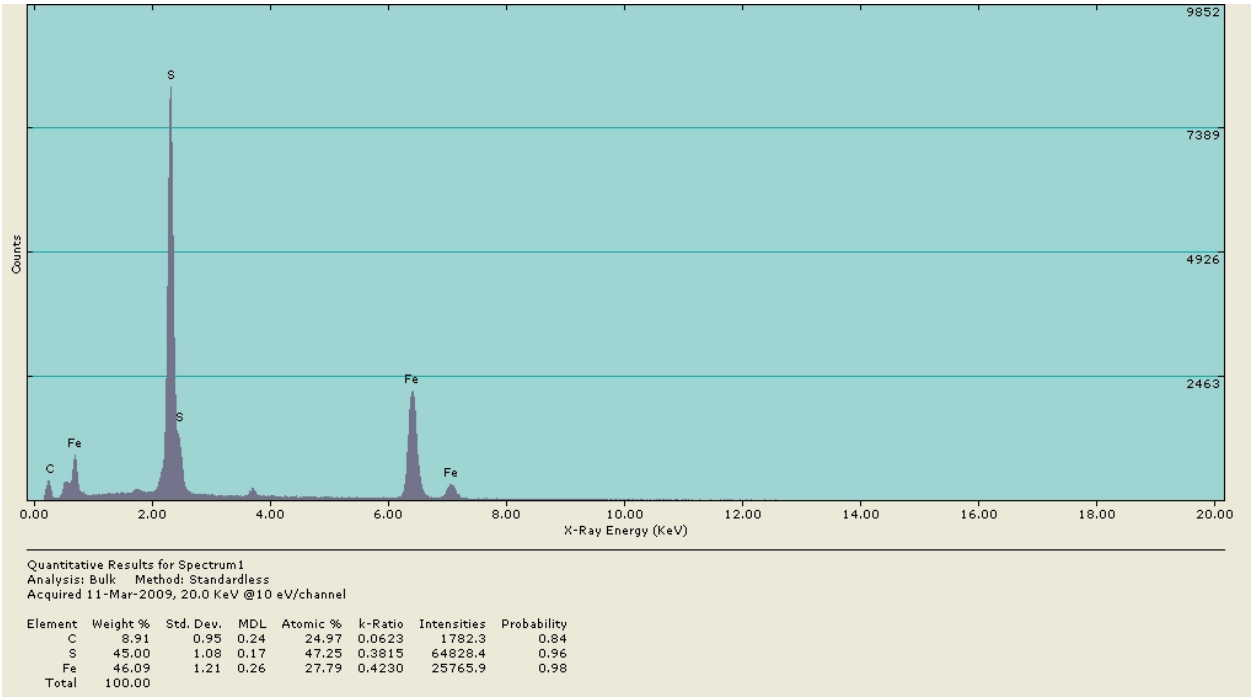


Figure 64. W-18811 1197.5-1198 ft. Spectra of pyrite framboid in above image.

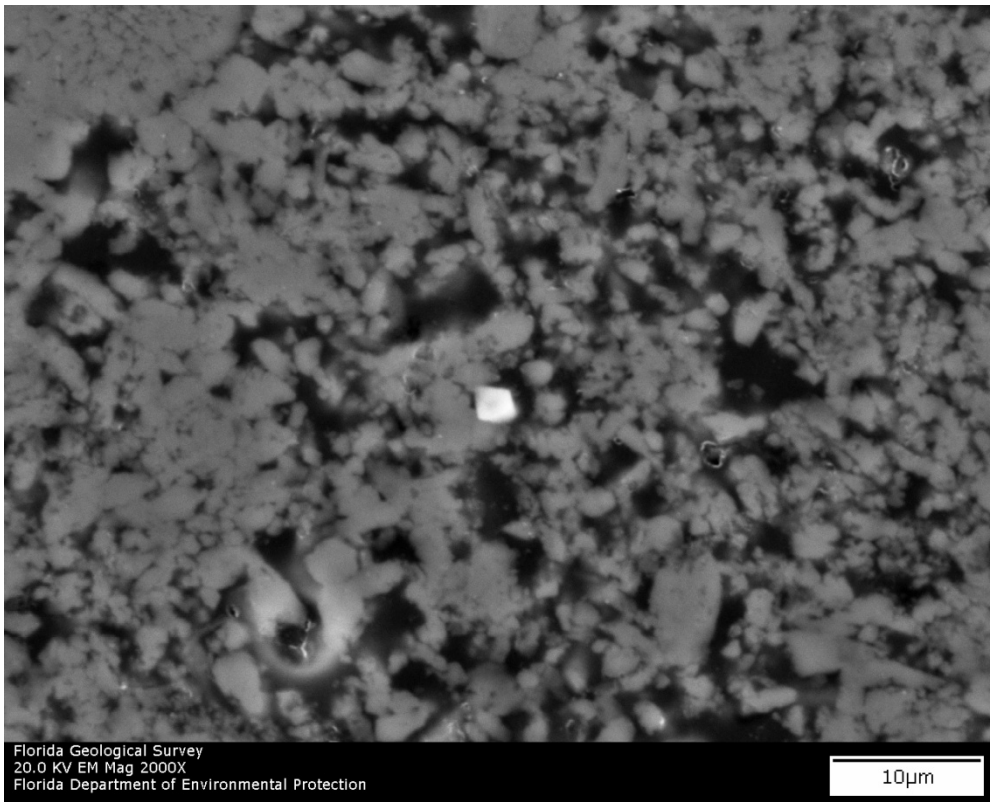


Figure 65. W-18811 1197.5-1198 ft. Secondary electron image of pyrite crystal.

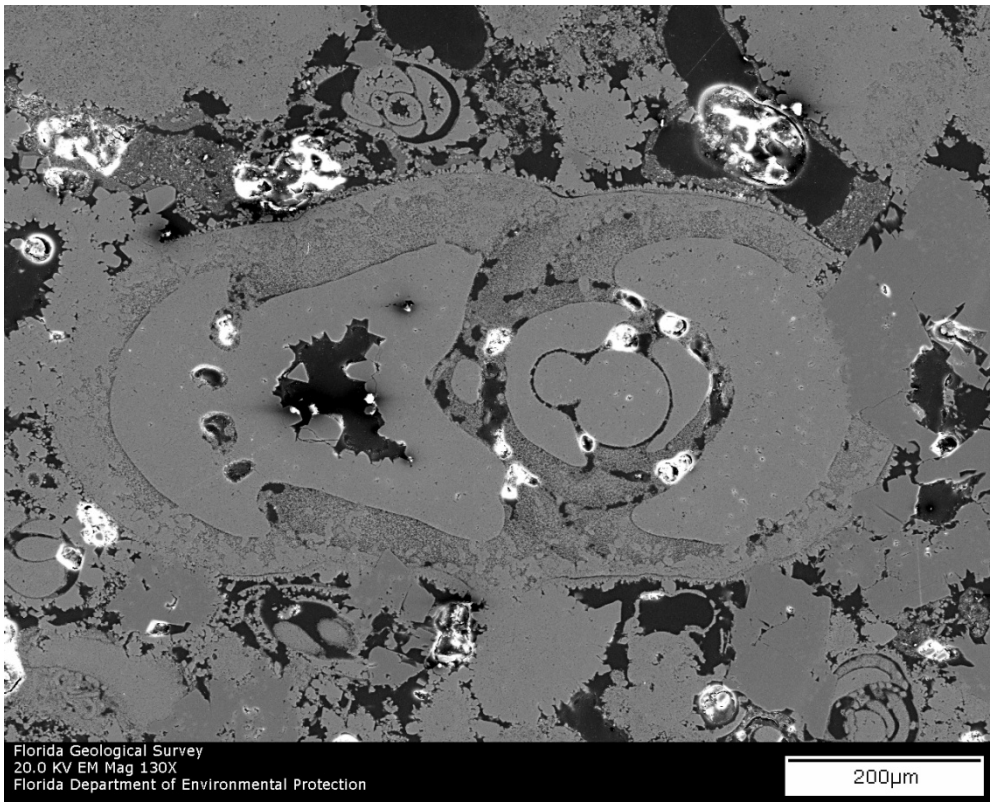


Figure 66. W-18811 1197.5-1198 ft. Secondary electron image of miliolid.

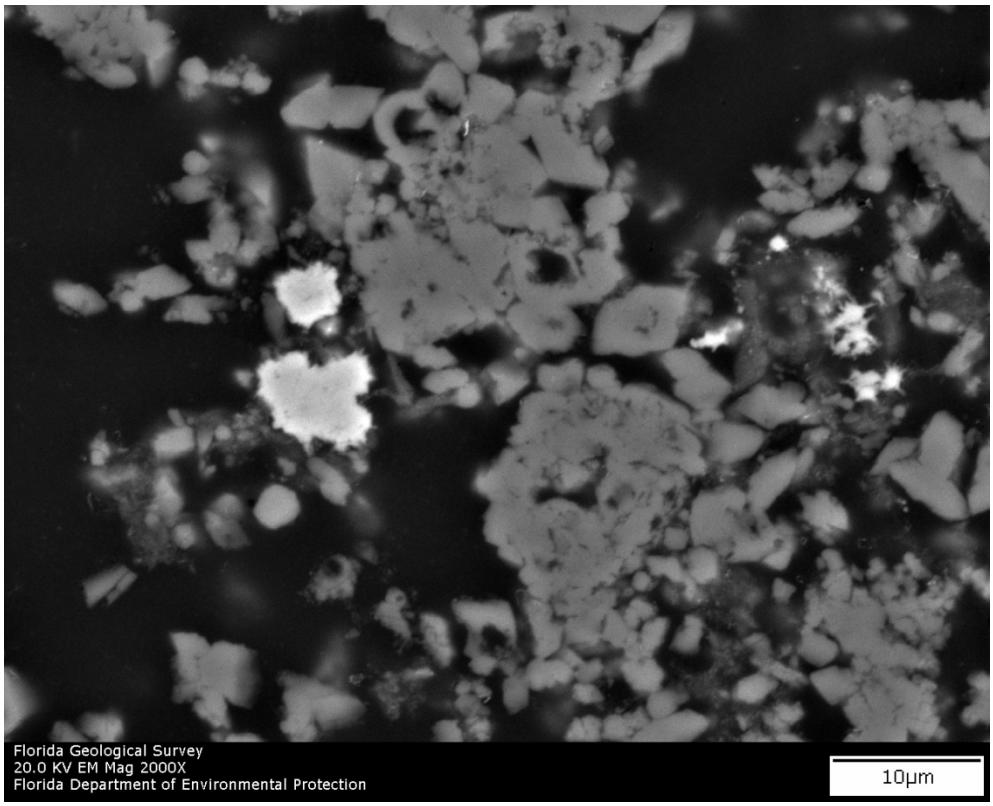


Figure 67. W-18811 1217-1217.5 ft. Secondary electron image of pyrite.

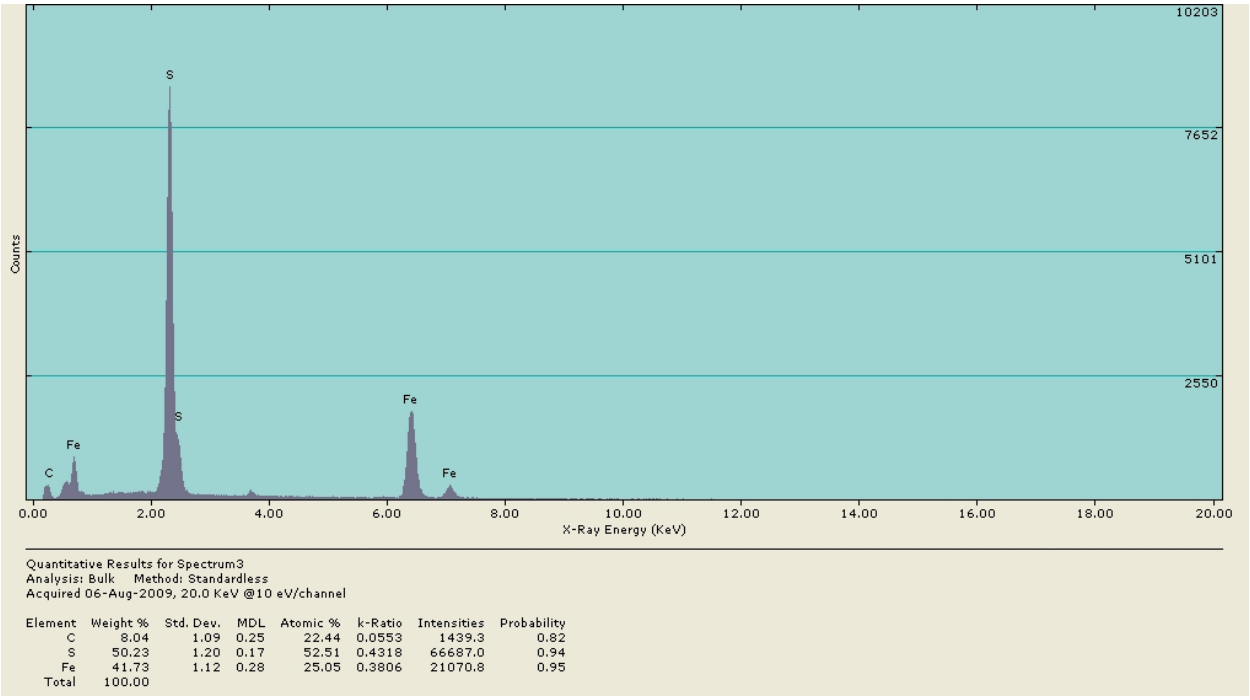


Figure 68. W-18811 1197.5-1198 ft. Spectra of pyrite in above image.

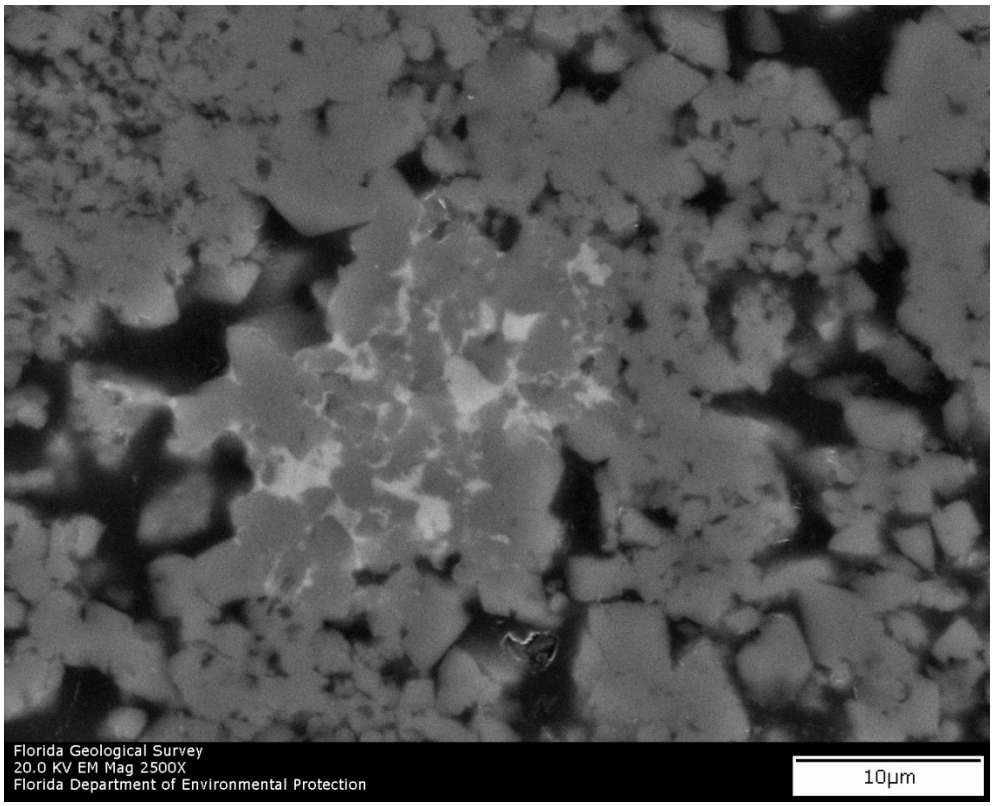


Figure 69. W-18811 1217-1217.5 ft. Secondary electron image of possible powellite.

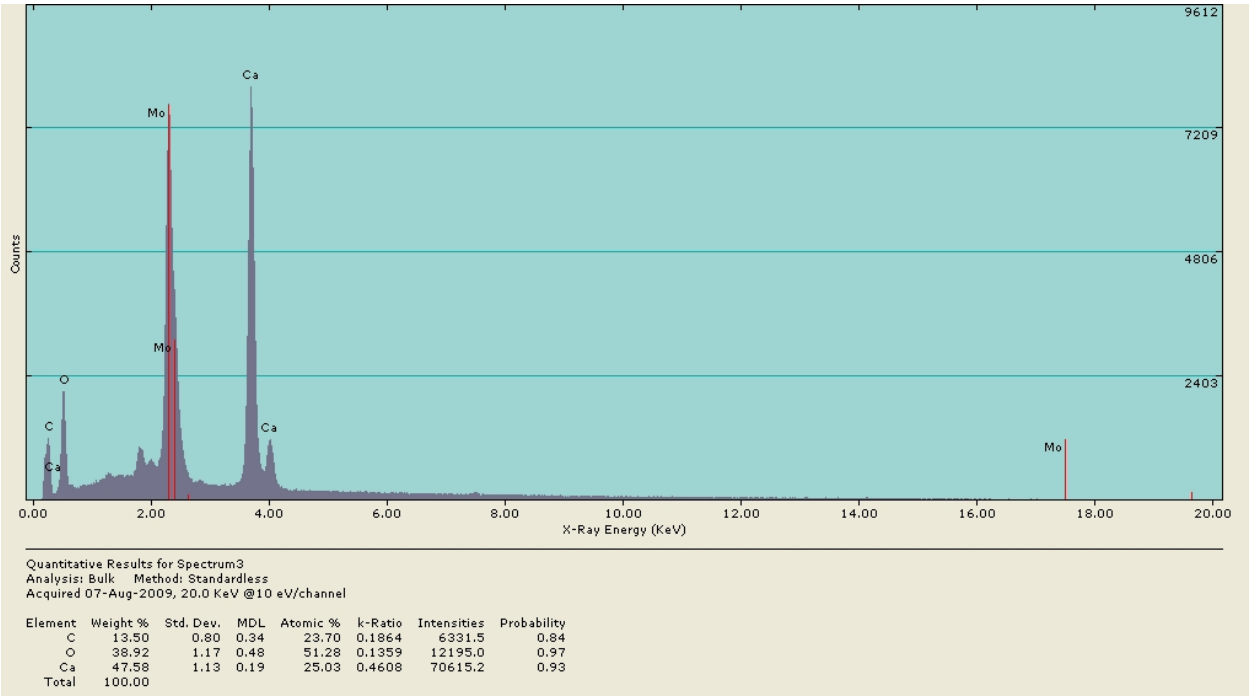


Figure 70. W-18811 1217-1217.5 ft. Spectra of possible powellite in above image. Peak is most likely Mo as spectra and image do not appear to be gypsum.

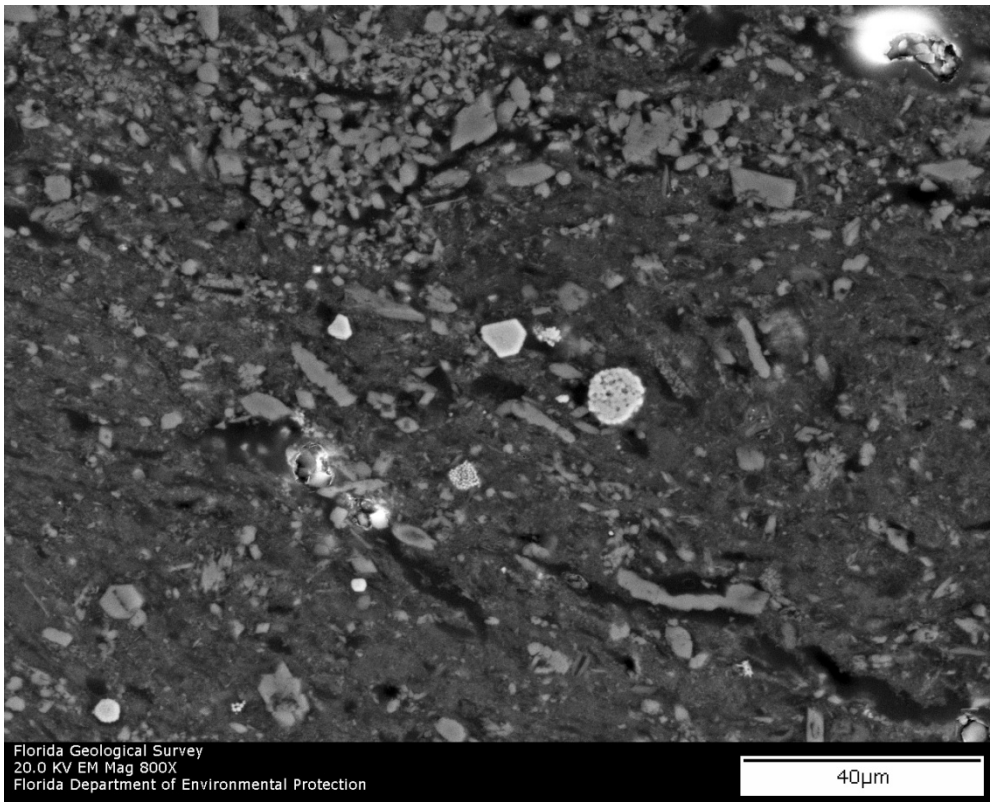


Figure 71. W-18811 1217-1217.5 ft. Secondary electron image of pyrites in fine grained lamina.

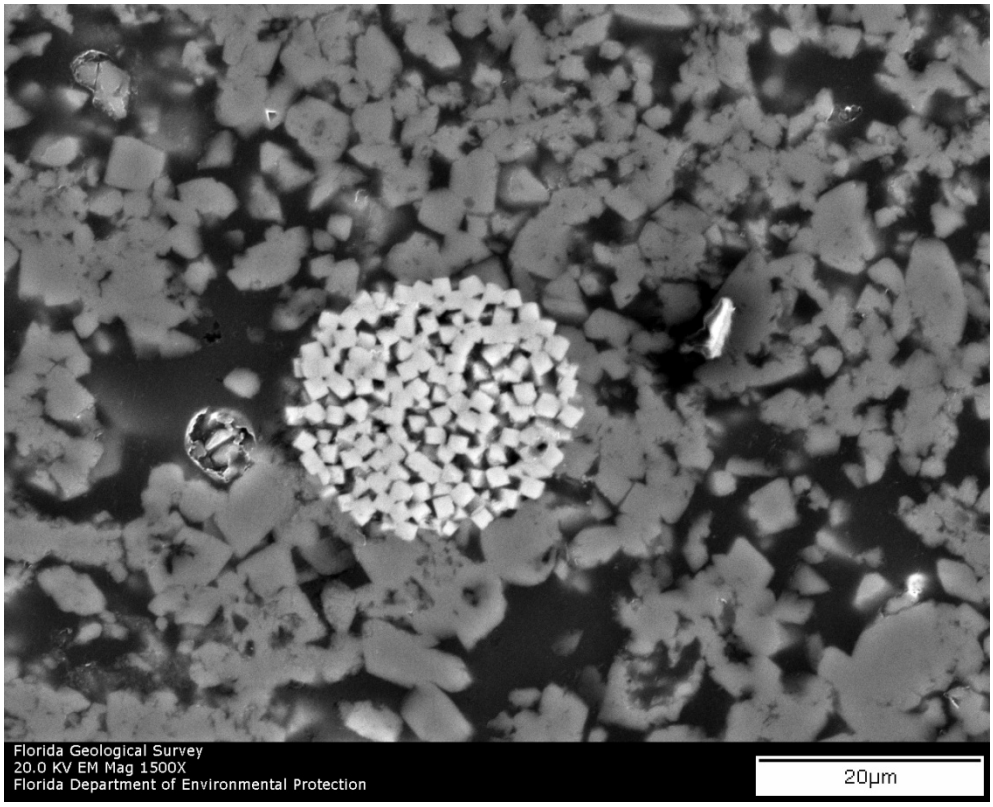


Figure 72. W-18811 1217-1217.5 ft. Secondary electron image of pyrite framboid.

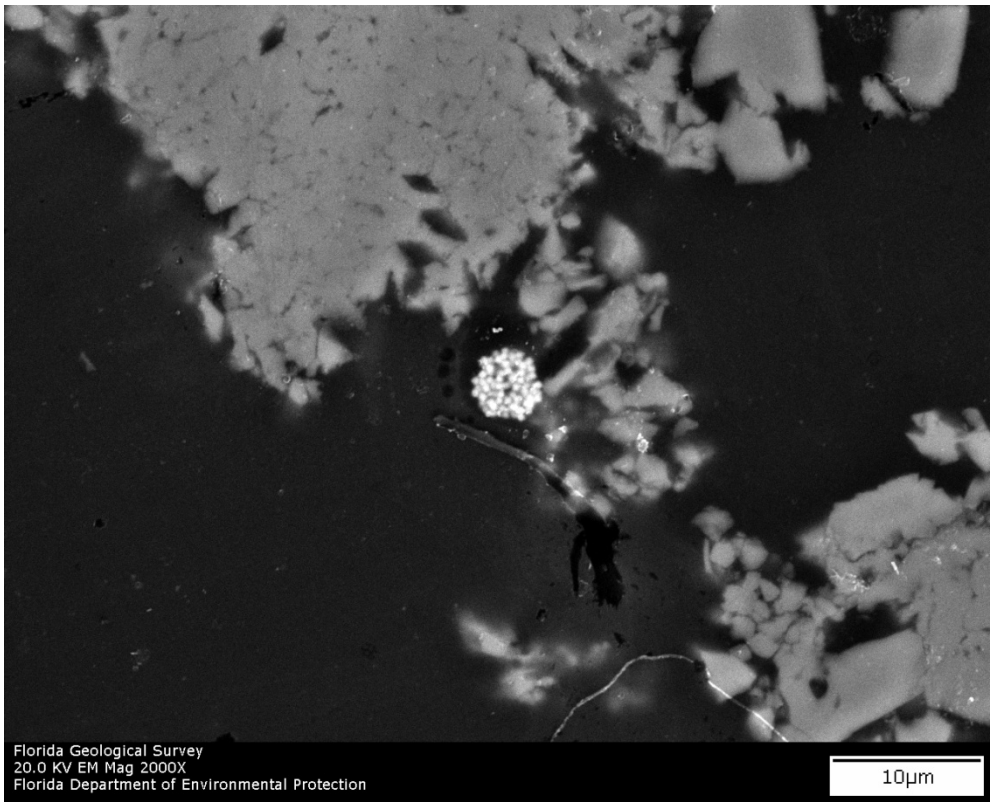


Figure 73. W-18811 1274.5-1275 ft. Secondary electron image of pyrite framboid.

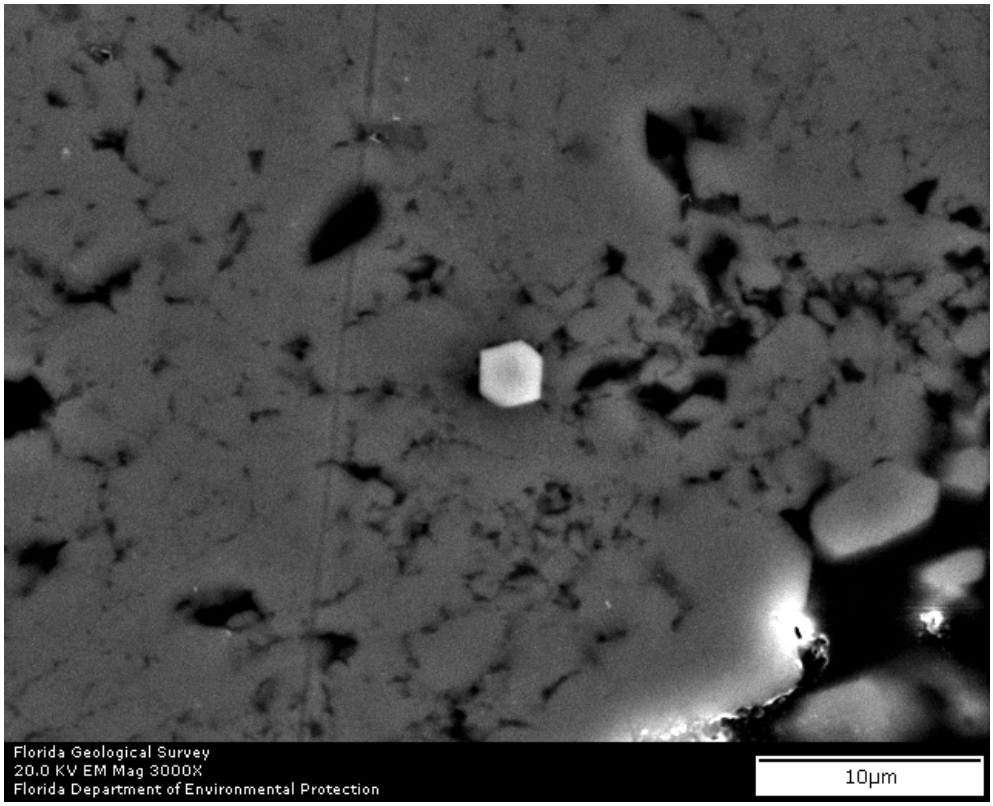


Figure 74. W-18811 1274.5-1275 ft. Secondary electron image of pyrite crystal.

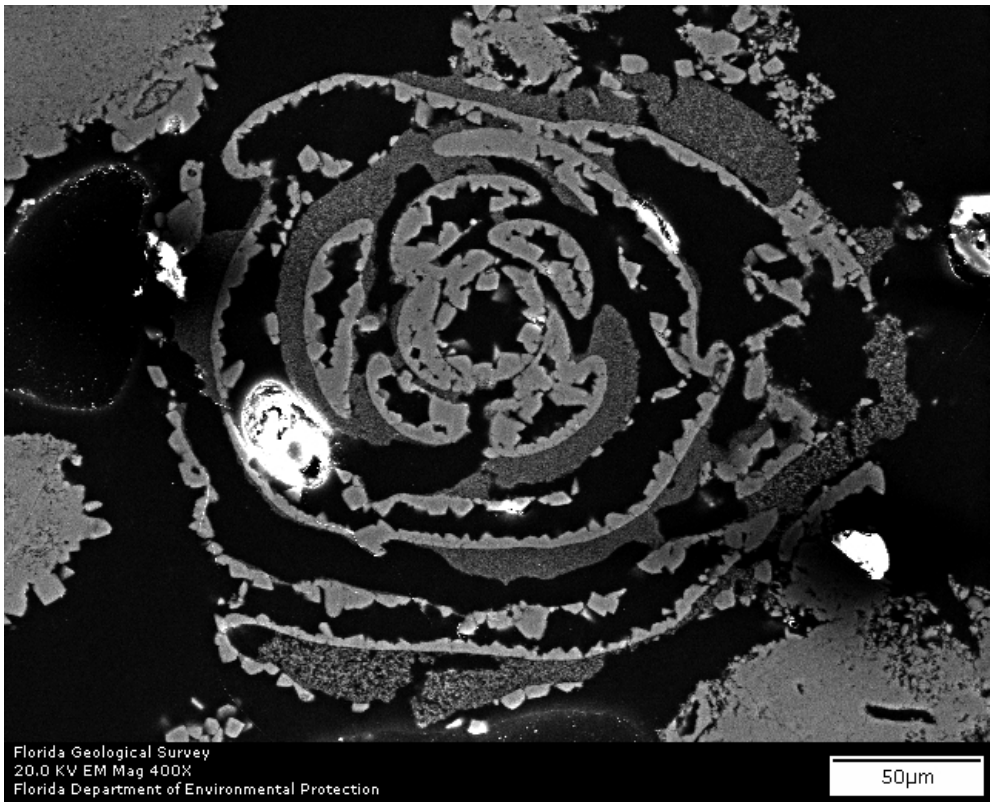


Figure 75. W-18811 1274.5-1275 ft. Secondary electron image of micritized miliolid.

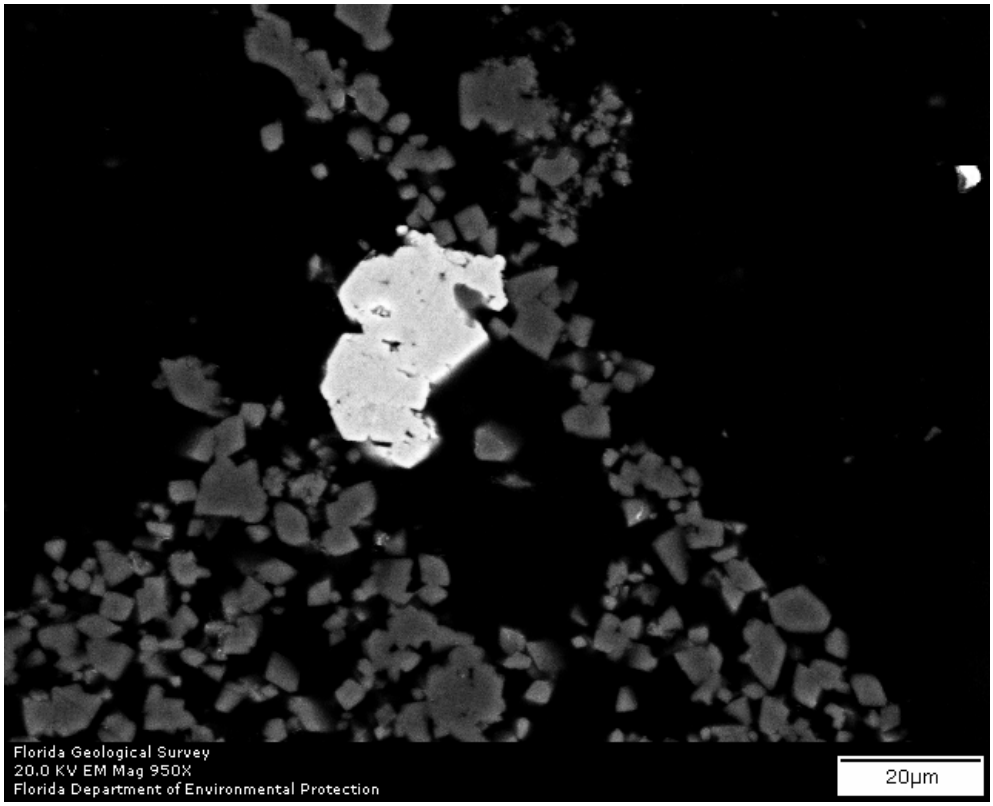
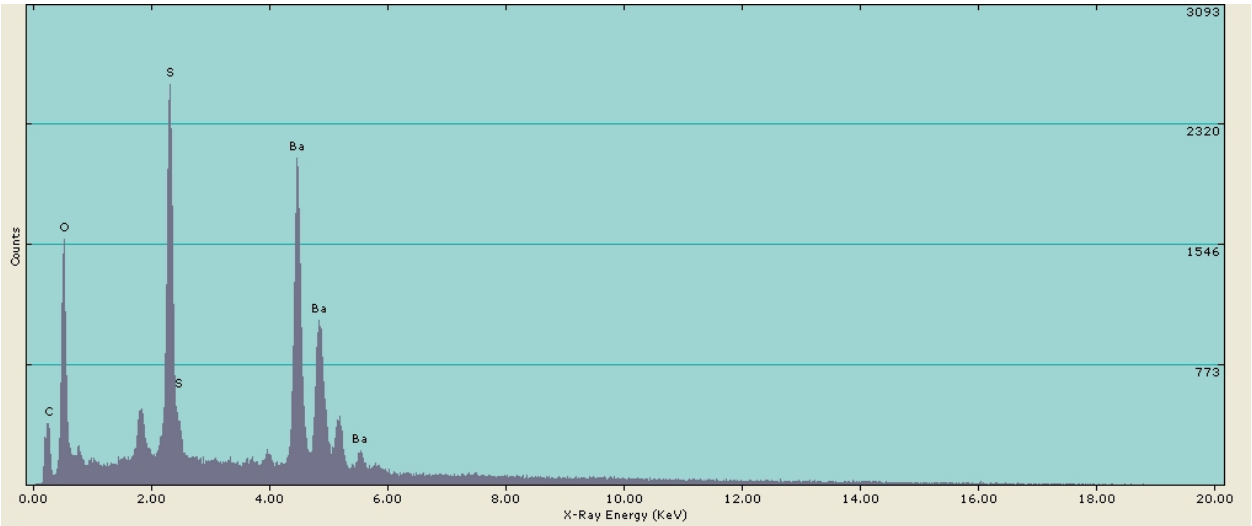


Figure 76. W-18811 1294-1294.5 ft. Secondary electron image of barite.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 11-Aug-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	12.81	0.87	0.30	29.73	0.1063	2255.2	0.83
O	25.79	1.13	0.32	44.94	0.1892	10599.1	0.98
S	19.31	0.93	0.32	16.79	0.1515	19090.4	0.94
Ba	42.10	1.15	0.43	8.55	0.3508	18091.0	0.93
Total	100.00						

Figure 77. W-18811 1294-1294.5 ft. Spectra of barite in previous image.

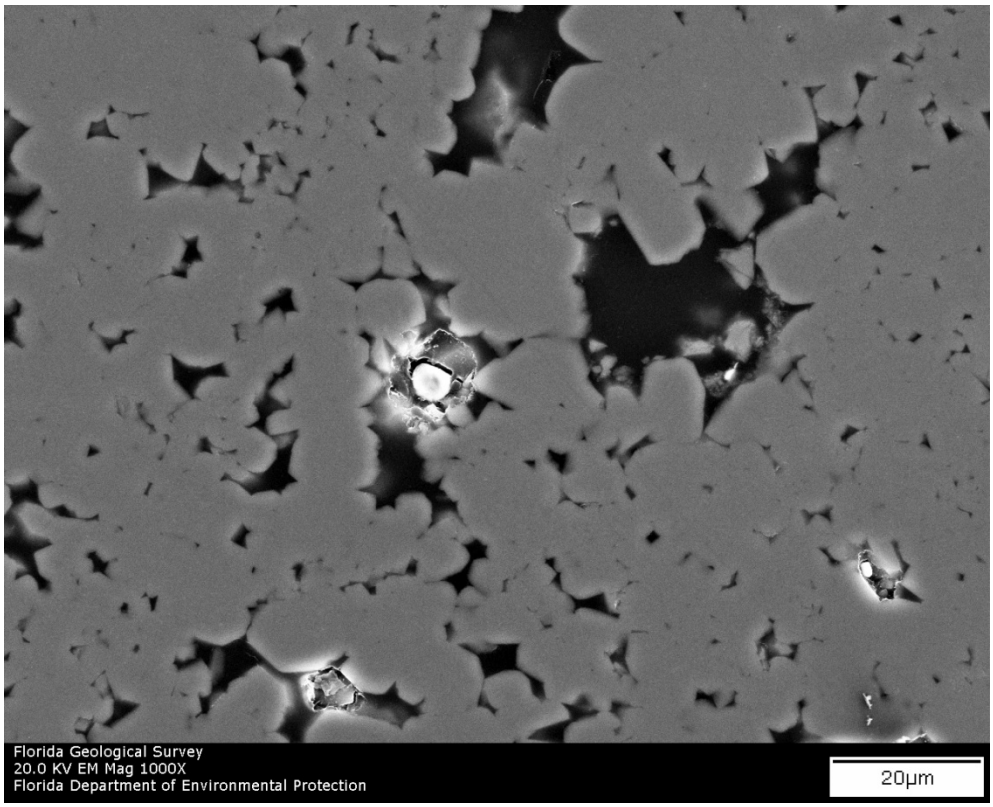


Figure 78. W-18811 1316-1316.5 ft. Secondary electron image of pyrites.

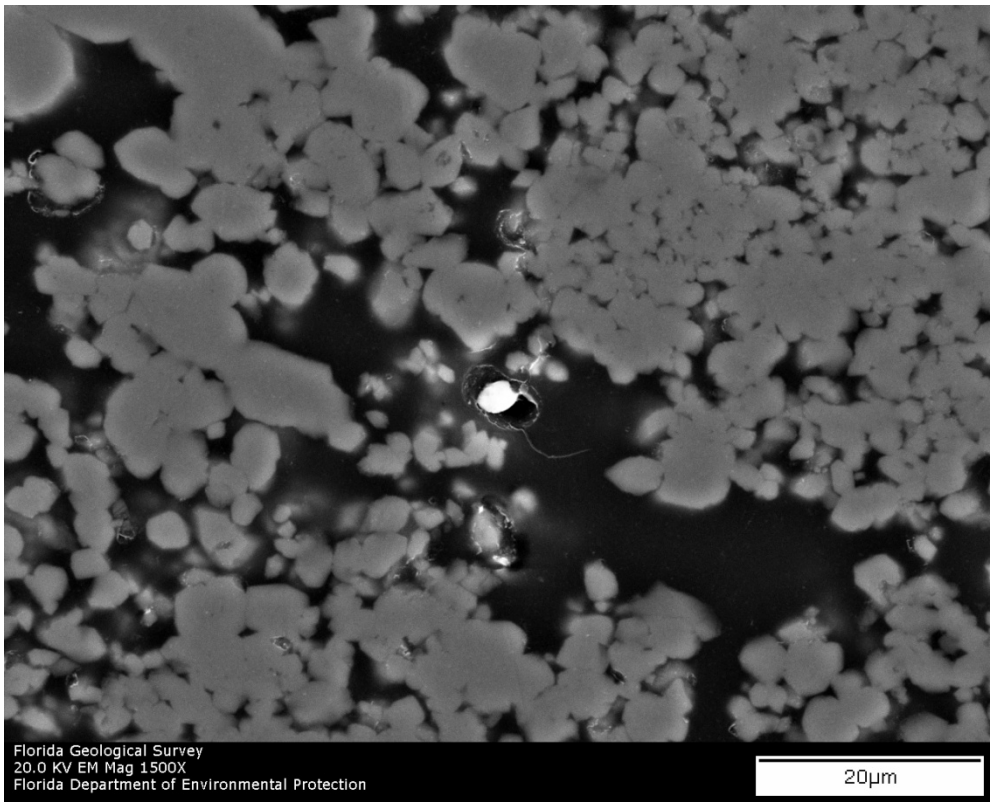
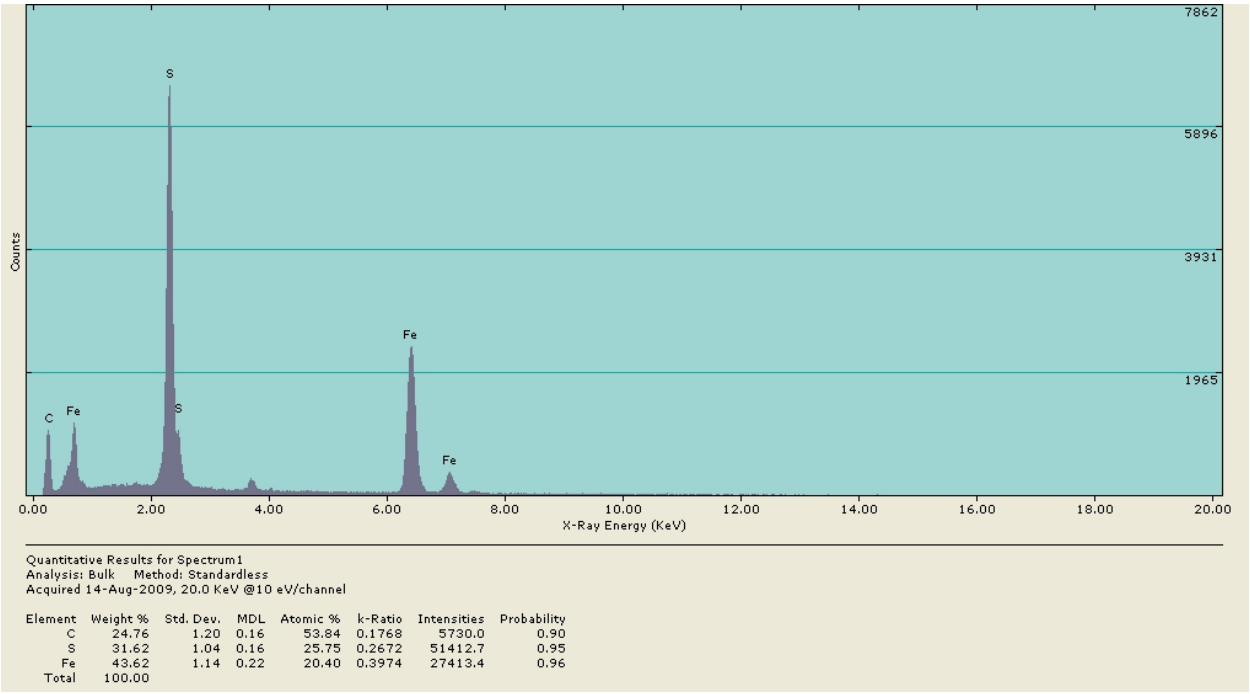


Figure 79. W-18811 1316-1316.5 ft. Secondary electron image of pyrite.



Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	24.76	1.20	0.16	53.84	0.1768	5730.0	0.90
S	31.62	1.04	0.16	25.75	0.2672	51412.7	0.95
Fe	43.62	1.14	0.22	20.40	0.3974	27413.4	0.96
Total	100.00						

Figure 80. W-18811 1316-1316.5 ft. Spectra of pyrite in above image.

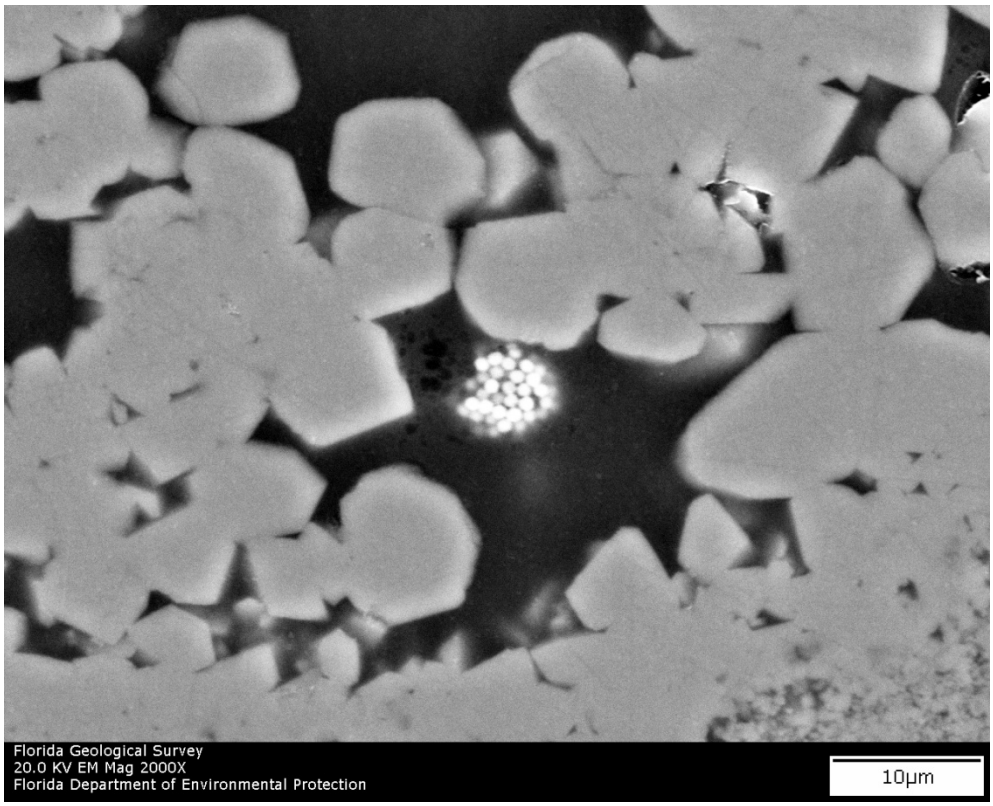
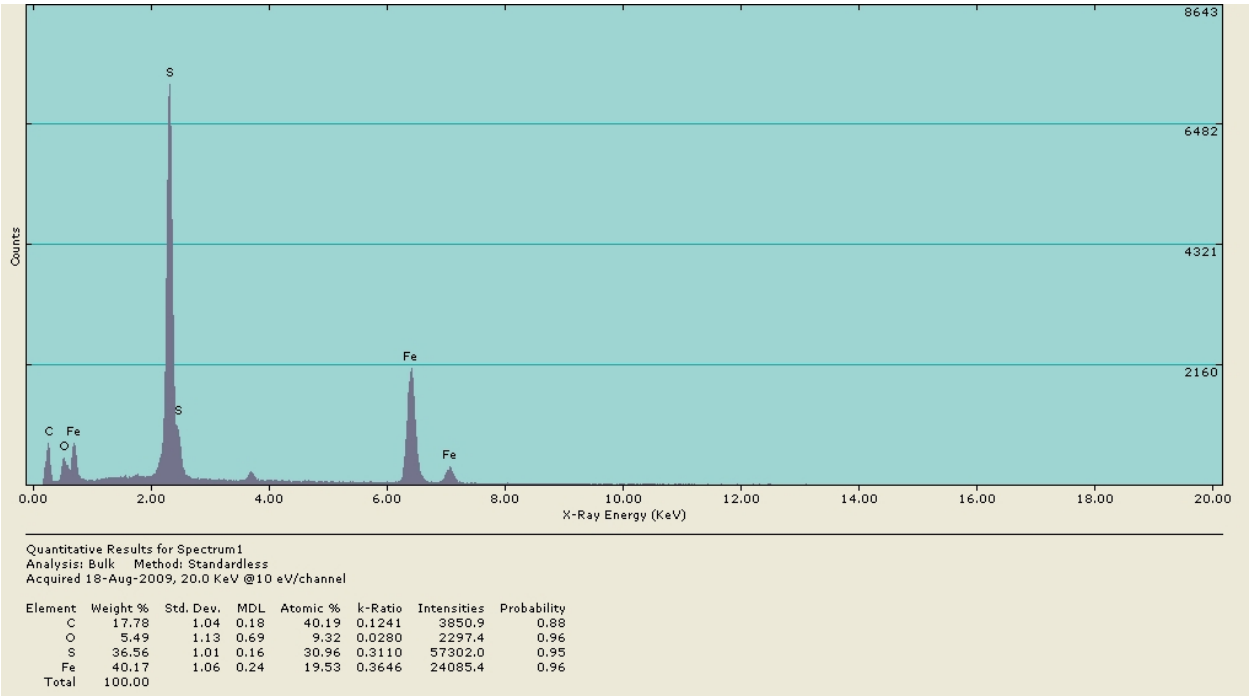


Figure 81. W-18811 1317-1317.5 ft. Secondary electron image of pyrite framboid.



Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	17.78	1.04	0.18	40.19	0.1241	3850.9	0.88
O	5.49	1.13	0.69	9.32	0.0280	2297.4	0.96
S	36.56	1.01	0.16	30.96	0.3110	57302.0	0.95
Fe	40.17	1.06	0.24	19.53	0.3646	24085.4	0.96
Total	100.00						

Figure 82. W-18811 1317-1317.5 ft. Spectra of pyrite in above image.

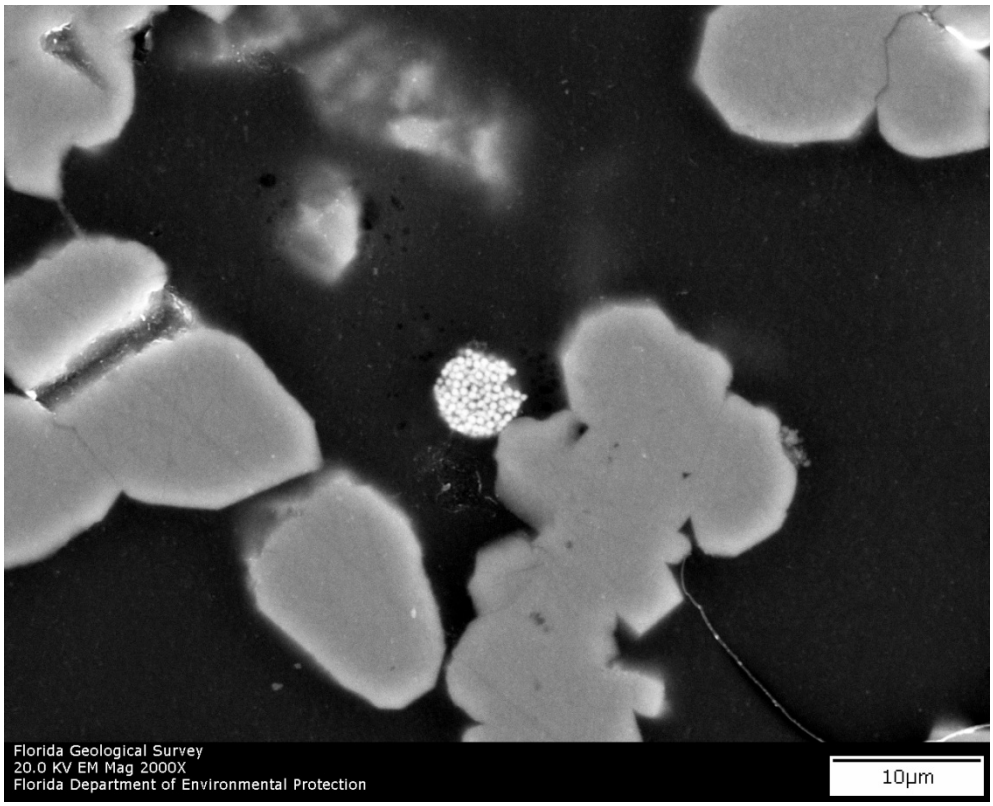


Figure 83. W-18811 1317-1317.5 ft. Secondary electron image of pyrite framboid.

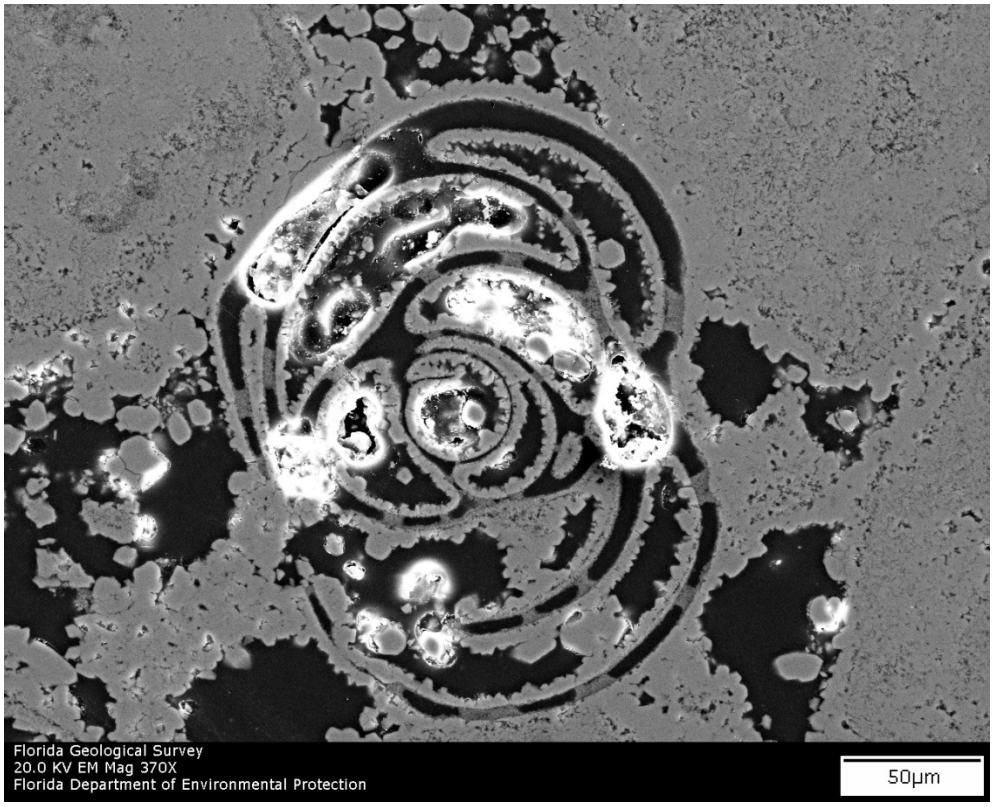


Figure 84. W-18811 1317-1317.5 ft. Secondary electron image of micritized miliolid.

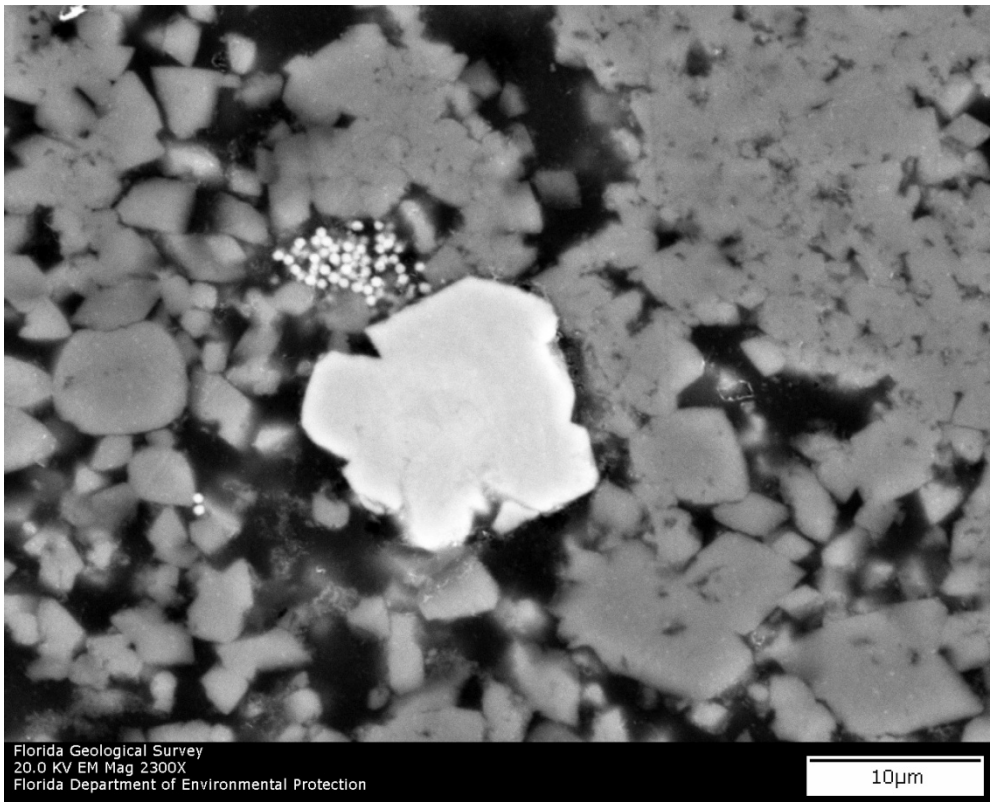


Figure 85. W-18811 1355-1355.5 ft. Secondary electron image of pyrite crystal and framboid.

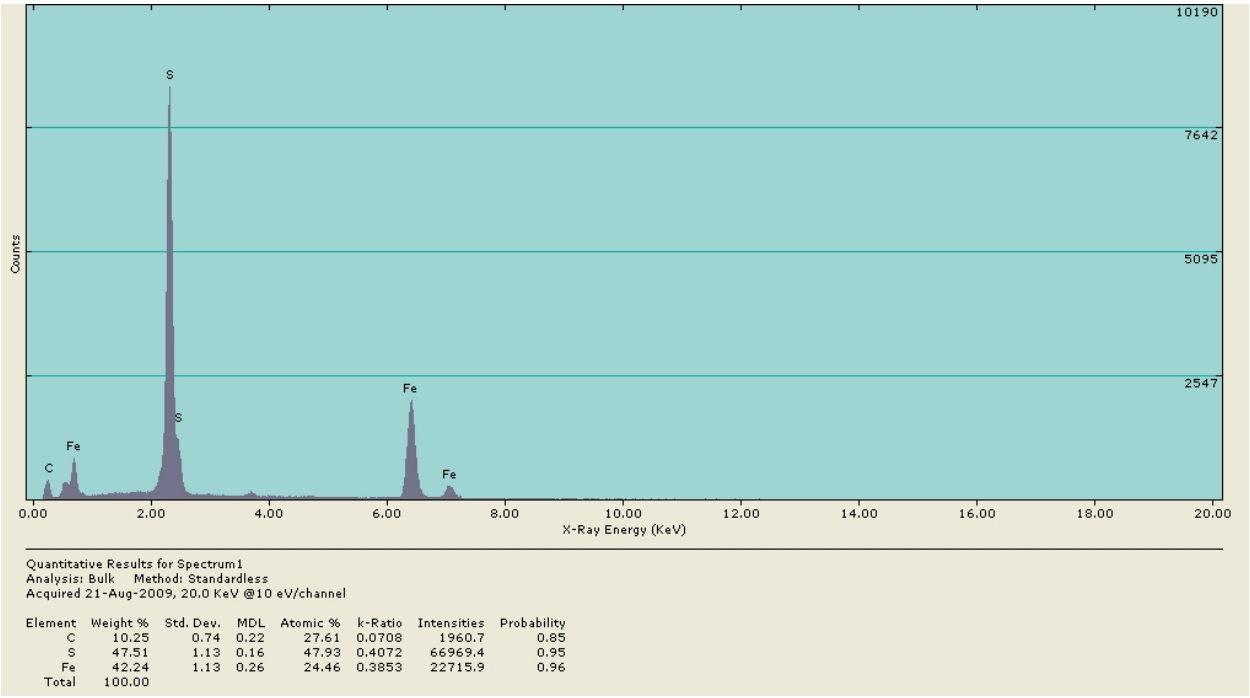


Figure 86. W-18811 1355-1355.5 ft. Spectra of pyrite crystal in above image.

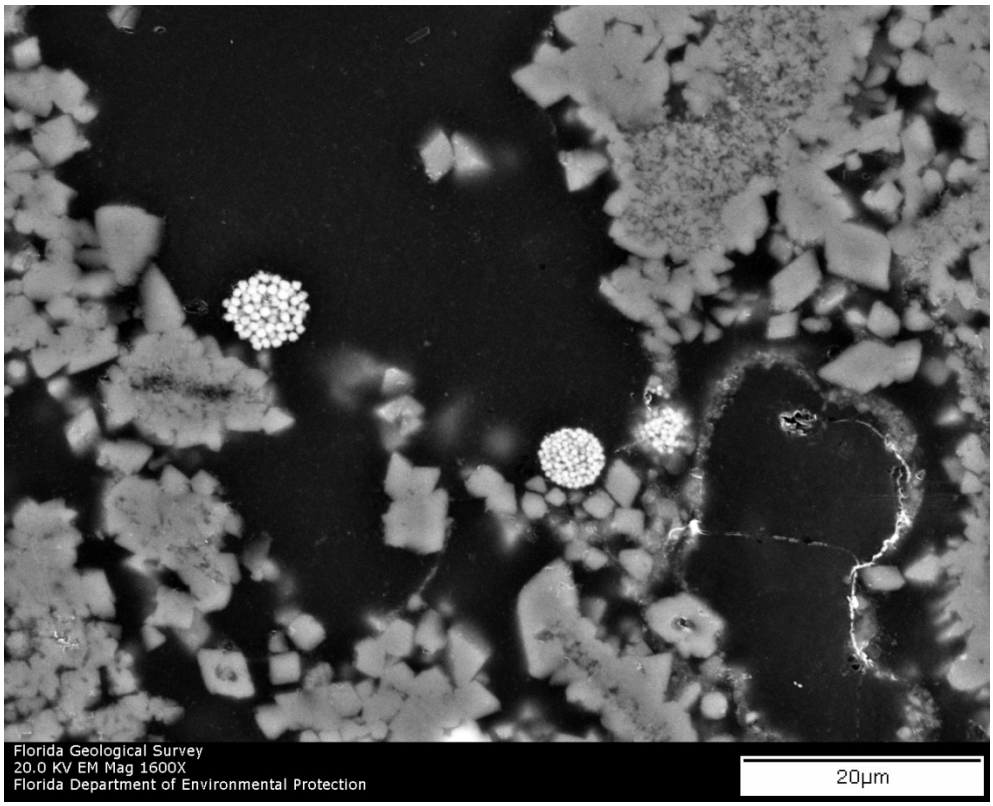


Figure 87. W-18811 1355-1355.5 ft. Secondary electron image of pyrite framboids.

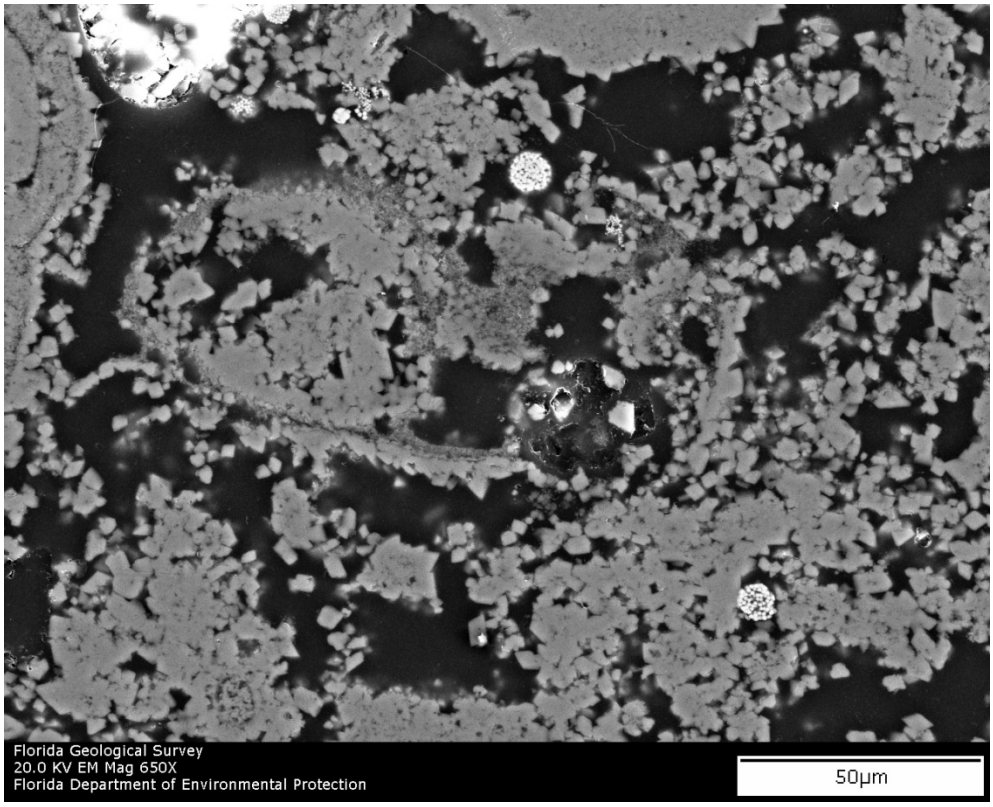


Figure 88. W-18811 1355-1355.5 ft. Secondary electron image of several pyrite framboids.

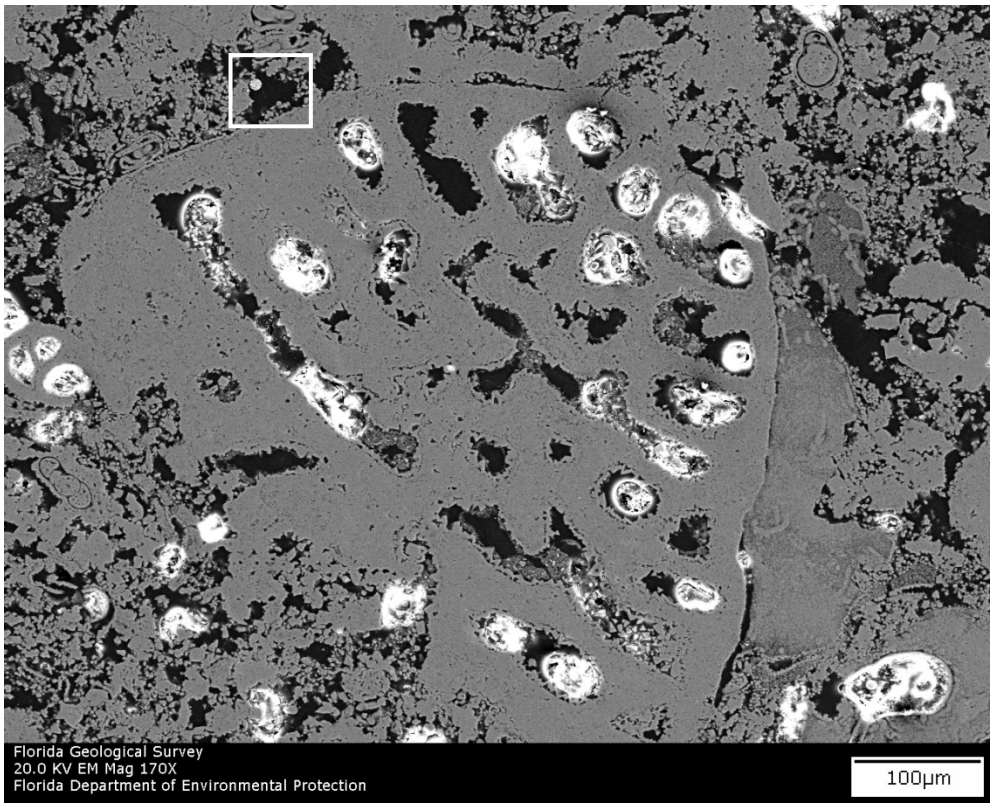


Figure 89. W-18811 1355-1355.5 ft. Secondary electron image of orbitolinid. Bright areas are due to charging.

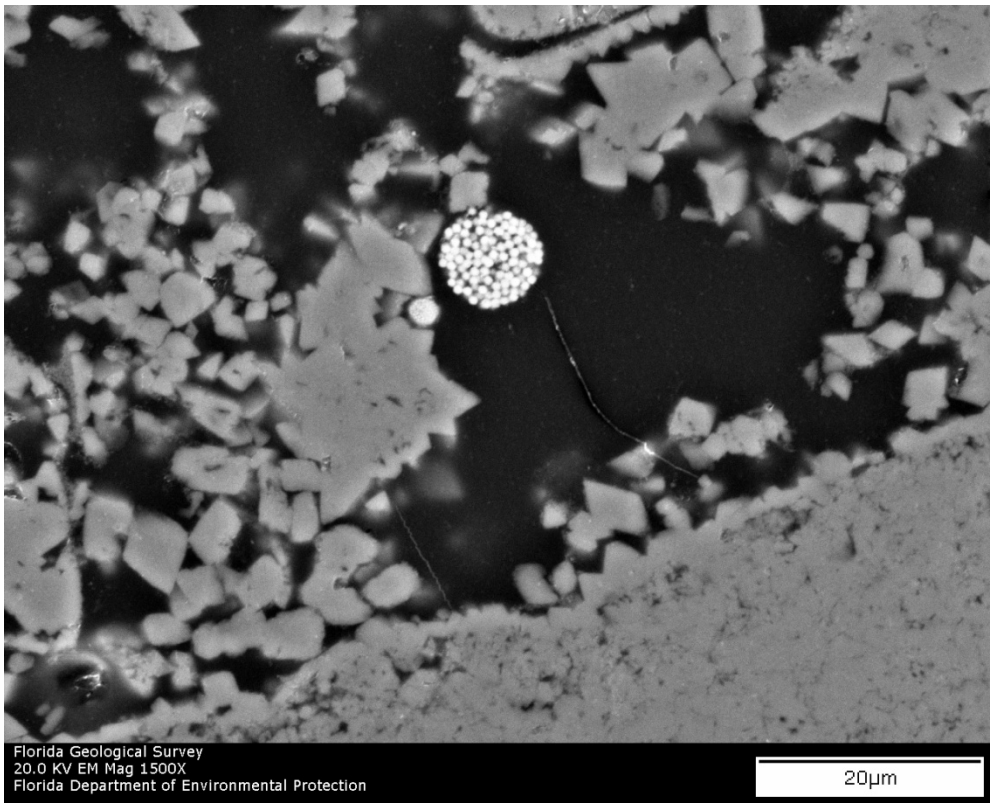


Figure 90. W-18811 1355-1355.5 ft. Secondary electron image of pyrite framboids from upper left corner of previous image (box).

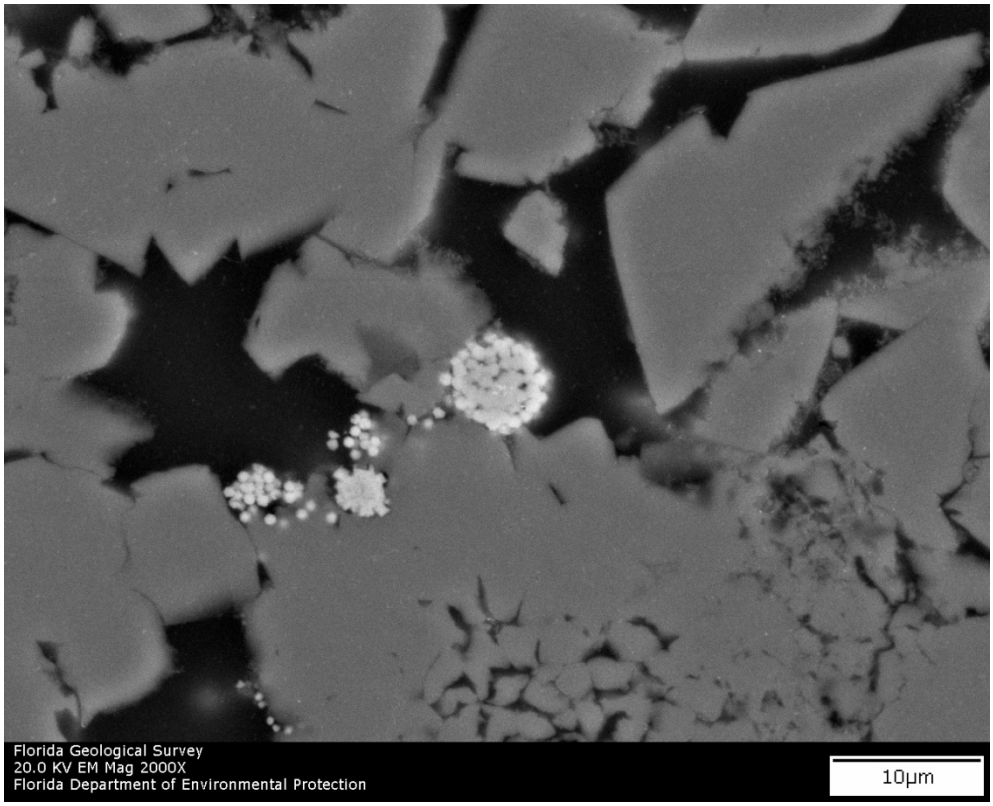
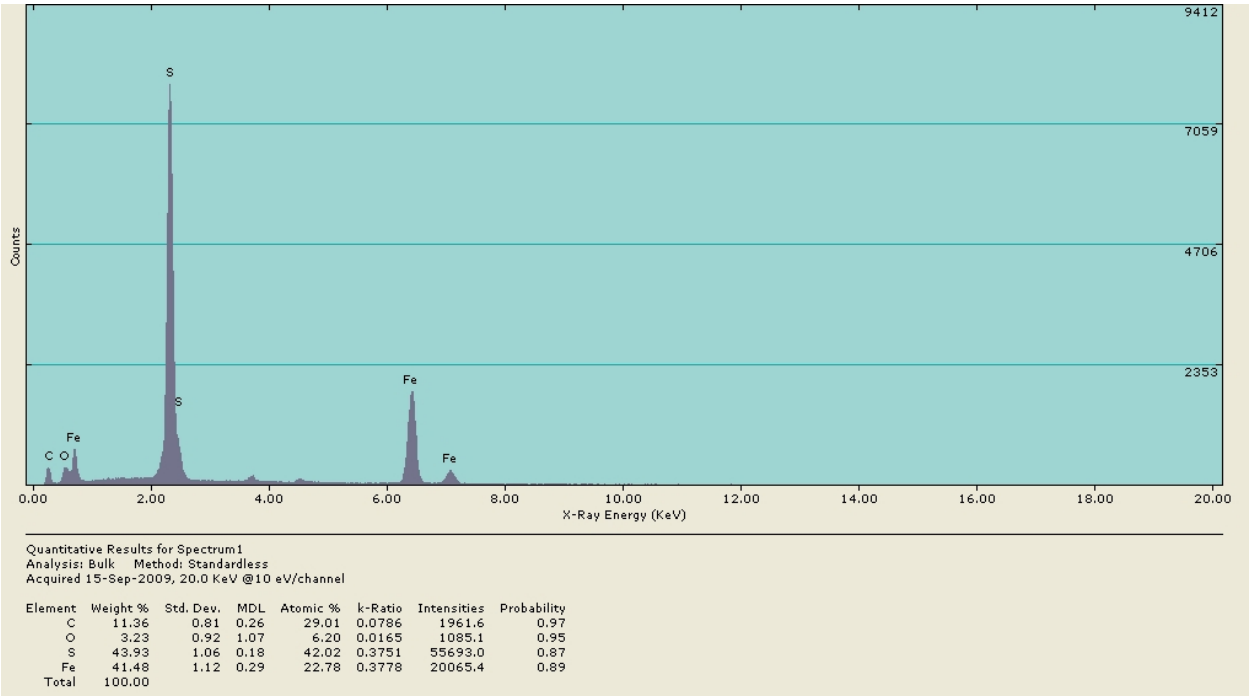


Figure 91. W-18811 1358-1358.5 ft. Secondary electron image of pyrite framboids.



Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	11.36	0.81	0.26	29.01	0.0786	1961.6	0.97
O	3.23	0.92	1.07	6.20	0.0165	1085.1	0.95
S	43.93	1.06	0.18	42.02	0.3751	55693.0	0.87
Fe	41.48	1.12	0.29	22.78	0.3778	20065.4	0.89
Total	100.00						

Figure 92. W-18811 1358-1358.5 ft. Spectra of pyrite framboid in above image.

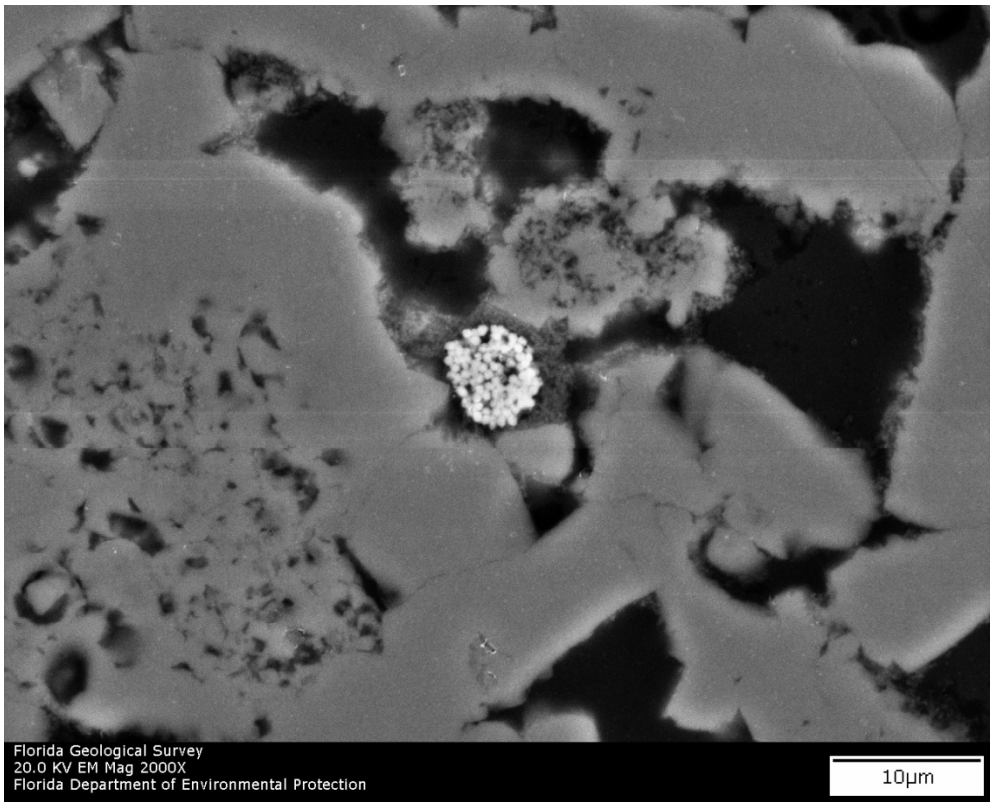


Figure 93. W-18811 1358-1358.5 ft. Secondary electron image of pyrite framboid.

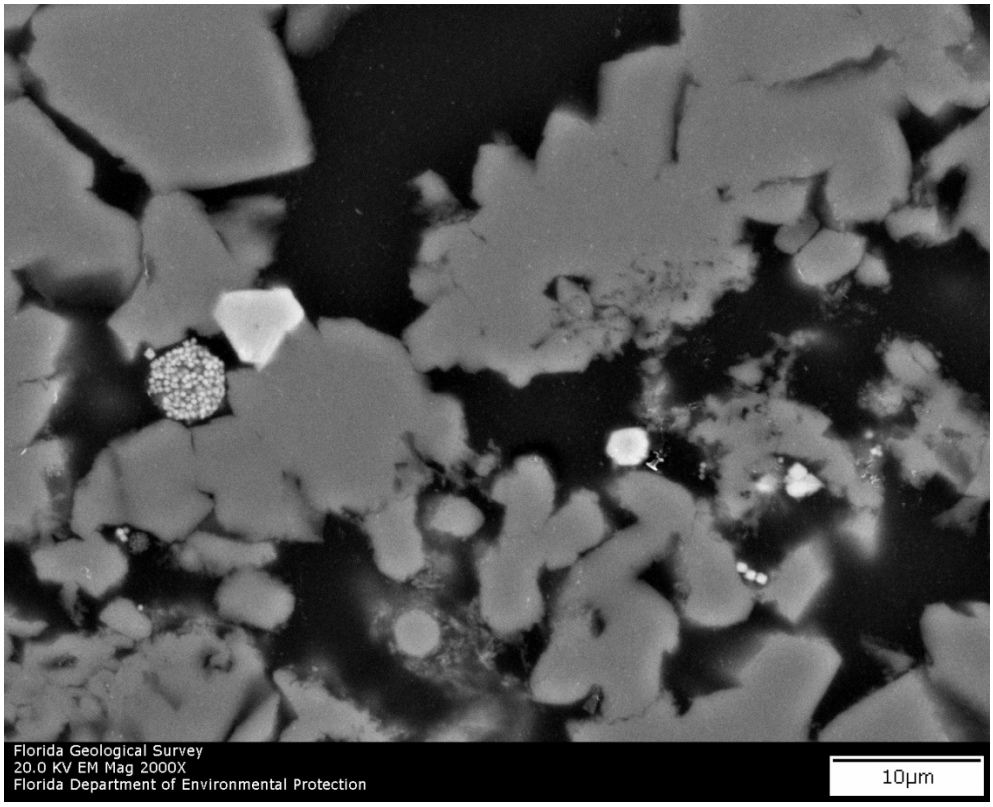


Figure 94. W-18811 1358-1358.5 ft. Secondary electron image of pyrite crystals and framboids.

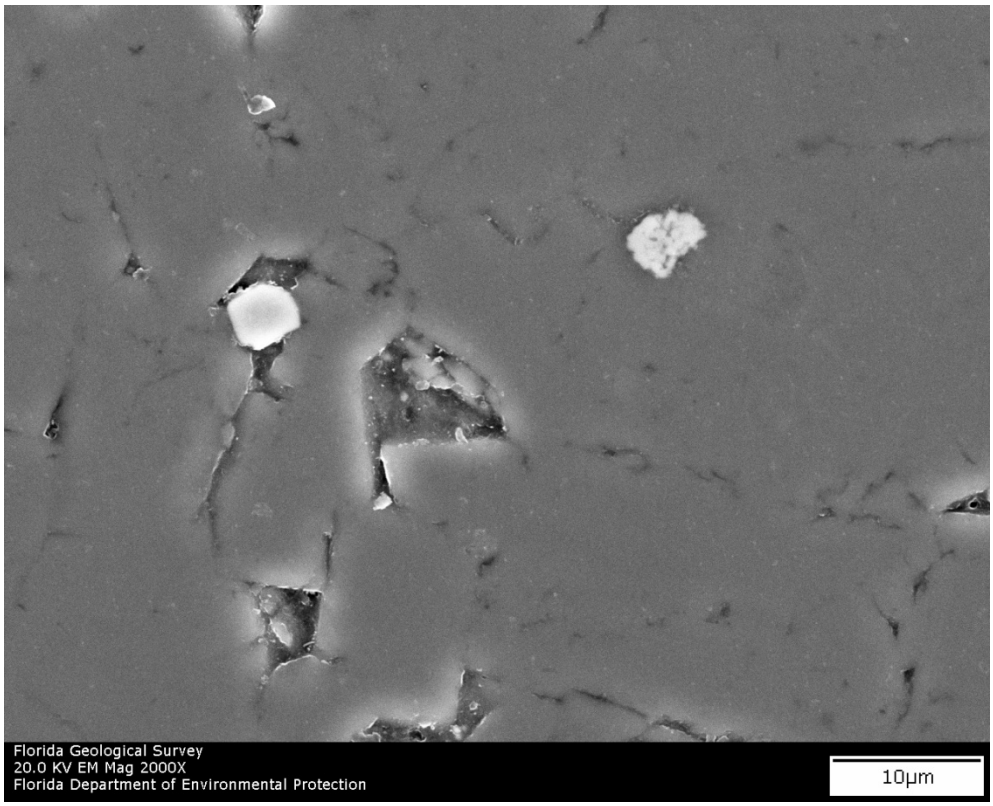
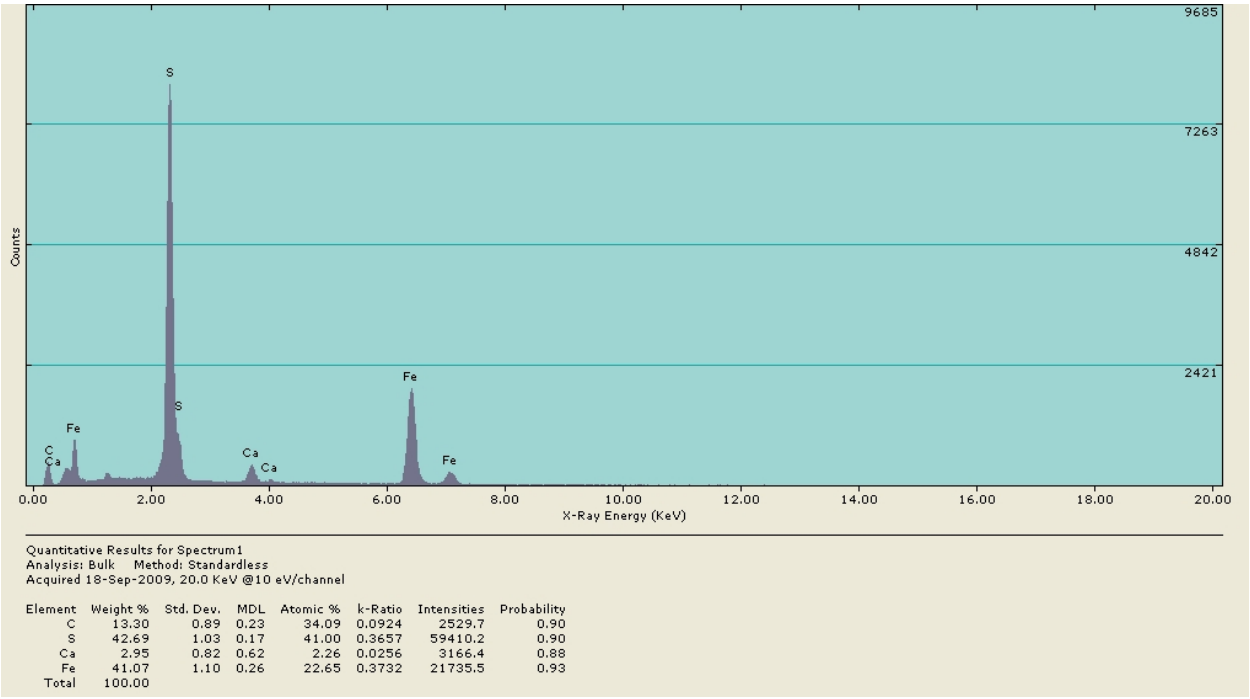


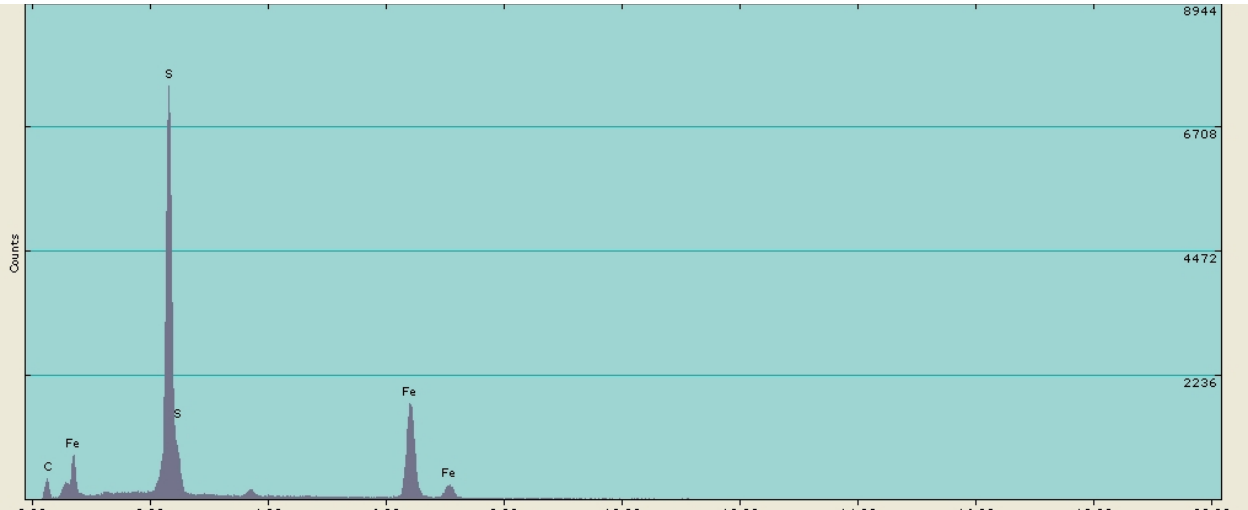
Figure 95. W-18811 1394.5-1395 ft. Secondary electron image of pyrite crystal and framboid.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 18-Sep-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	13.30	0.89	0.23	34.09	0.0924	2529.7	0.90
S	42.69	1.03	0.17	41.00	0.3657	59410.2	0.90
Ca	2.95	0.82	0.62	2.26	0.0256	3166.4	0.88
Fe	41.07	1.10	0.26	22.65	0.3732	21735.5	0.93
Total	100.00						

Figure 96. W-18811 1394.5-1395 ft. Spectra of pyrite framboid in above image.



Quantitative Results for Spectrum1
Analysis: Bulk Method: Standardless
Acquired 18-Sep-2009, 20.0 KeV @10 eV/channel

Element	Weight %	Std. Dev.	MDL	Atomic %	k-Ratio	Intensities	Probability
C	10.91	0.80	0.27	29.17	0.0756	1731.4	0.89
S	45.92	1.12	0.19	46.00	0.3923	53443.5	0.89
Fe	43.17	1.17	0.29	24.83	0.3943	19219.0	0.93
Total	100.00						

Figure 97. W-18811 1394.5-1395 ft. Spectra of pyrite crystal from previous image (figure 95).

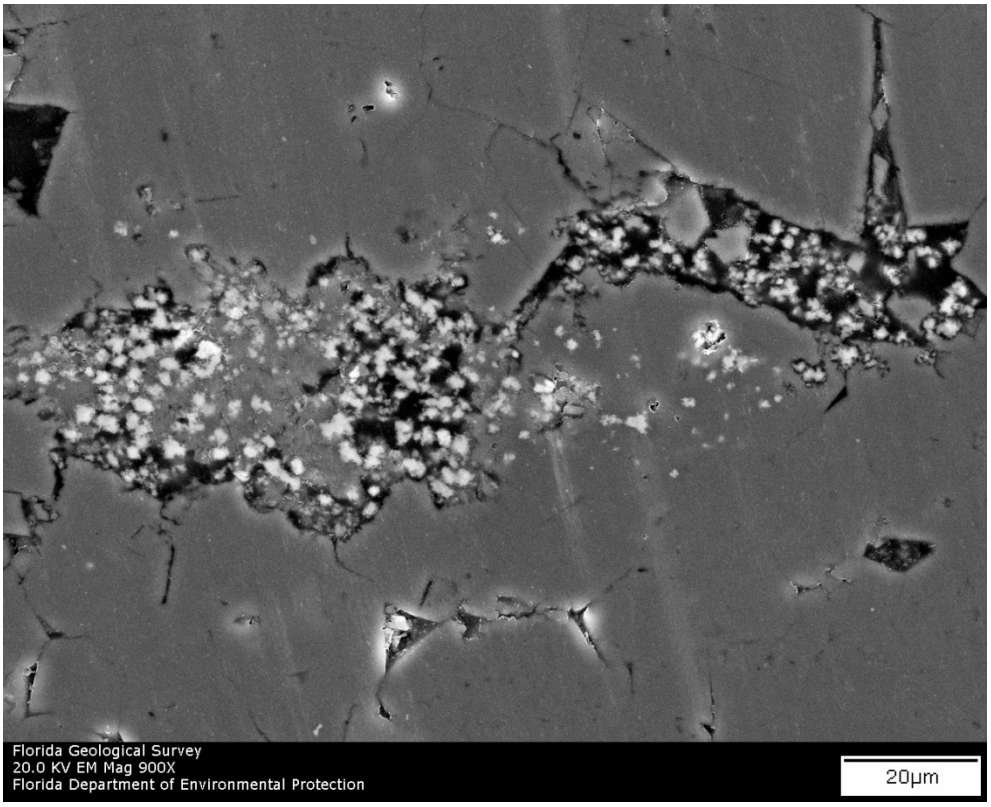


Figure 98. W-18811 1394.5-1395 ft. Secondary electron image of pyrite clusters in dolomite.

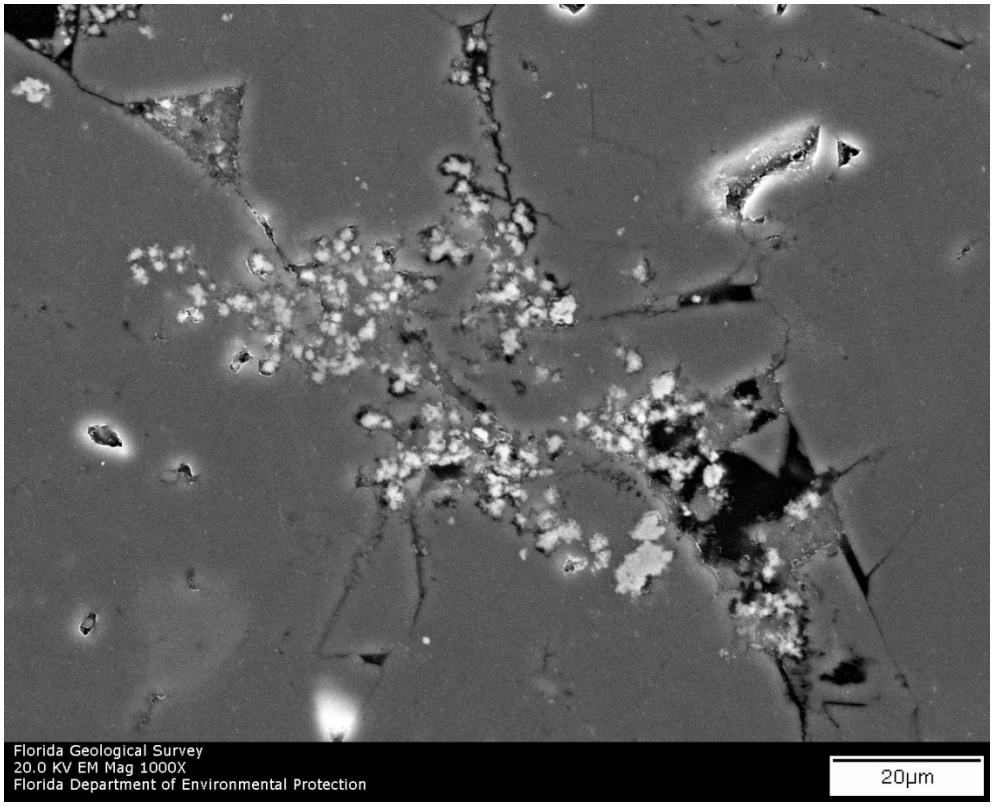


Figure 99. W-18811 1394.5-1395 ft. Secondary electron image of pyrite clusters in dolomite.

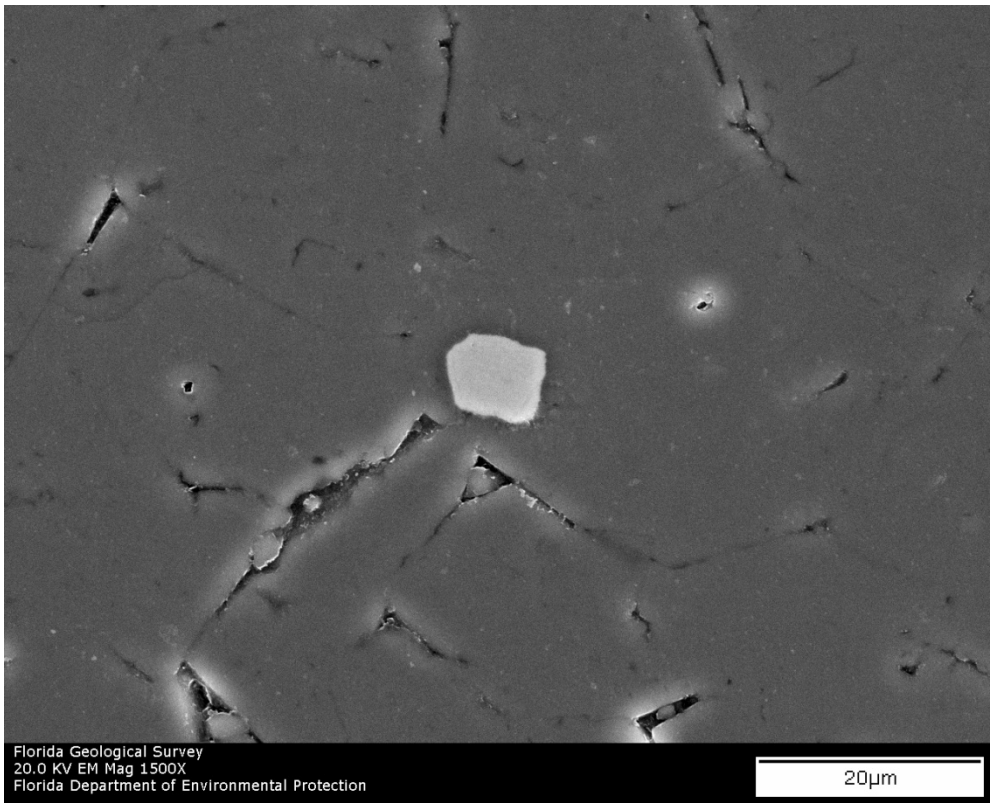


Figure 100. W-18811 1394.5-1395 ft. Secondary electron image of pyrite crystal in dolomite.