

APPENDIX

INTRODUCTION

The lithologic descriptions given in this appendix refer to stratigraphic sections measured and described in the Wimberley area. The entire Cretaceous section exposed in the area, except the uppermost 46 feet, was measured and described. The weathering profiles, fossil content, lithologies, and correlations of the measured sections appear in Plate 2 (in pocket), where the measured section numbers and bed numbers correspond to those used here. The locations of those measured sections that are situated within the bounds of the thesis area are shown on Plate 1 (in pocket). A brief description of the locations of the measured sections appears at the beginning of each of the section descriptions.

These descriptions are a synthesis of descriptions made in the field using a 10X hand lens and descriptions of samples that were collected in the field, taken to the laboratory, sawed into slabs, etched with dilute (10%) hydrochloric acid, and examined with the aid of a binocular microscope having up to 60X magnification. Hence, those beds from which a sample was collected are described more completely and in greater detail than the beds from which no sample could be obtained. Sample collection points are shown in Plate 2.

Dolomite in particular is more clearly seen in the etched slab with a microscope than in small hand specimens in the field. Thus, beds from which a sample was taken that are recorded as dolomitic would possibly not have been called dolomitic had they been described only in the field. No insoluble residue studies were made, and consequently the presence of clay is often not noted except as implied in the use of the term "marl." Clay is, however, noted in several beds as "terrigenous clay."

The relative abundance of the constituents of the strata are noted by the following terms, which are listed in order of increasing abundance:

1. Rare — only 1 or two examples observed.
2. Occasional — several examples are present and are seen with moderate search effort.
3. Frequent — several examples are present and are seen with very little search effort.

4. Abundant – numerous examples are present and constitute up to 1% of the rock volume.
5. Very abundant – examples constitute 1-5% of the rock volume.
6. Extremely abundant – examples constitute 5-25% of the rock volume.

The percentages given in the descriptions, unless otherwise noted, refer to percentages of the total allochem portion of the rock.

The rock properties that are described, in the approximate order that they appear in the descriptions, are as follows:

1. Bed thickness
2. General rock name
3. Folk classification (1962) name
4. Allochem grain size
5. Allochem descriptions
6. Fossil content
7. Dolomite content
8. Crystal size of dolomite
9. Structures
10. Porosity
11. Hardness
12. Bedding characteristics
13. Fresh and weathered color
14. Extent of cover or calichification

Some of the above properties are deleted from some of the bed descriptions because they are not applicable or are not determinable.

Bed thickness: Bed thicknesses accurate to the nearest one-tenth foot are recorded.

General rock name: Three terms are used for general rock names: limestone, marl, and dolomite. If a bed is composed of two or all three of the rock types, the terms are combined.

“Limestone” is used for beds that have “normal” limestone textures; that is, a combination of allochems, micrite, and sparry calcite in varying proportions. “Marl” is a field term applied to poorly resistant, usually nodular beds (e. g. Figure 8 in text) that contain varying amounts of terrigenous clay. Although it is generally accepted that the difference between the weathering character of marls and limestones is caused by a higher clay content in the marls, the difference is probably more closely related to the

distribution of the clay within the bed; that is, the clay is homogeneously distributed throughout resistant limestone beds, but in the less resistant marls it is confined to very thin (less than 1 mm.) undulatory bands or laminae separated by equally thin bands of carbonate (R. L. Folk, personal communication).

“Dolomite” refers to soft, brown, saccharoidal, generally black or dark gray weathering (the latter probably caused by lichens) strata that were probably originally deposited as limestone-forming material but were subsequently dolomitized by a process not yet completely understood. Most of these beds display at least some trace of relict limestone texture.

Limestones that are partially dolomitized are called “dolomitic limestones” if they are less than 50% dolomite or if they clearly display limestone textures. Strata that are more than 50% dolomite or have their limestone textures mostly effaced by dolomitization are referred to as “calcareous dolomites.” “Marly limestones” are rocks that are transitional in composition and weathering character between marls and limestones.

Folk classification name: Folk’s limestone classification (1962) is used to classify the limestones, the marls, and those dolomites that retain enough relict texture for approximate classification. The term “muddy” is used in place of Folk’s “poorly washed” because it is shorter and more descriptive.

Allochem grain size: The Wentworth grain size scale is used to classify allochem grain size.

Allochem descriptions: The type of allochems present, which is indicated in the Folk classification name, is elaborated, and the shape, rounding, and sorting of the allochems are noted. Fragmented fossil allochems are referred to as “biogenic allochems.” The presence of coated grains (superficial oörites) is noted and, where possible, the composition of intraclasts is given.

Fossil content: The presence or abundance of identifiable fossils is noted in this section. The fossils described here are distinguished from biogenic allochems, which are described in the previous section, because they are identifiable, although in some cases no lower than the phylum level.

Dolomite content: This section describes the presence or abundance of dolomite in limestones or marls.

Crystal size of dolomite: The size of dolomite crystals in dolomites and dolomitic limestones is noted here. Most of the dolomites of the Glen Rose are medium crystalline (0.0625-0.25 mm.), but some are finely crystalline (0.0156-0.0625 mm.).

Structures: Those features of the strata that are of the next higher order of complexity than the textures are described here. Examples of the features recorded are cross bedding, burrowing, and "honeycomb structure." Honeycomb structure is a feature of burrowed limestones from which the burrow fill has weathered out leaving a complex of interconnected chambers of varying sizes. The resulting rock superficially resembles a honeycomb from a natural bee hive.

Porosity: The porosity of limestones, when it is present, is usually intergranular and that of dolomite is intercrystalline or has resulted from the leaching out of calcareous allochems. The amount of porosity is indicated by the terms very low, low, moderate, high, and very high or it is given as an approximate percentage of the total rock volume.

Hardness: The hardness of a stratum is indicated by the following terms, which are listed in order of increasing hardness:

1. Very soft
2. Soft
3. Moderately soft
4. Moderately hard
5. Hard
6. Very hard

Bedding characteristics: The bedding terms used in the descriptions are shown below with their approximate thickness equivalents:

1. Very thin bedded — less than 1/4" thick
2. Thin bedded — 1/4" to 2" thick
3. Medium bedded — 2" to 1' thick
4. Thick bedded — 1' to 3' thick
5. Very thick bedded — more than 3' thick

In addition to these, the terms massive and nodular are used. Massive indicates that no bedding planes were observed between the upper and lower contacts of the bed. Nodular

is used to refer to a lumpy, irregular weathering character that can be seen in Figure 4 of the text.

Fresh and weathered color: Since color is neither an invariable property of a bed nor a diagnostic rock feature, only general color terms, such as buff, tan, and light, medium, and dark gray, were used to describe the samples. The Geological Society of American Rock Color Chart equivalents of buff and tan, the two most commonly used terms, are, respectively, very pale orange (10YR8/2) to pale yellowish orange (10YR8/6) and grayish orange (10YR7/4) to dark yellowish orange (10YR6/6).

Extent of cover and calichification: If a bed is calichified or partially covered, its description is not as complete or as accurate as the descriptions of well exposed and unaltered beds. The extent of these limiting factors are the last property of the strata that is described.

MEASURED SECTION 1.

Measured Section 1 is on a cut bank of Bee Cave Creek approximately 1/2 mile northwest of the intersection of Jacob's Well and Mount Sharp Roads.

1. ——— Limestone: sparse biomicrite; medium to very coarse; 5% randomly oriented platy shell allochems; very abundant oyster fragments; abundant serpulids; hard; massive; buff; weathers grayish-brown.
2. 0.6' Limestone: packed biomicrite; fine to very coarse; 1-2% platy shell allochems; 5-10% reddish-brown stained allochems; frequent crab fragments; moderately hard; massive; tan to brown; weathers grayish brown.
3. 1.1' Limestone: packed biomicrite; very fine to granular; well rounded allochems; 10-20% randomly oriented platy shell allochems; frequent well rounded intraclasts; frequent coated grains; abundant serpulids; very abundant oyster fragments; extremely abundant crab fragments; occasional medium pebble size clam steinkerns; occasional miliolids and other foraminifers; hard; massive; buff; weathers medium gray.
4. 2.2' Limestone: sparse biomicrite; fine to very coarse; 5% randomly oriented platy shell allochems; rare crab fragments; occasional oyster fragments; frequent *Orbitolina* sp. in upper one-fourth; hard; slightly nodular; weathers dark gray.
5. 2.2' Limestone: sparse biomicrite; very fine to granular; 30% randomly oriented platy shell allochems, occasional well rounded intraclasts; abundant *Orbitolina* sp.; abundant miliolids and other foraminifers; occasional serpulids; occasional crab fragments; hard; massive; buff; weathers medium gray.
6. 1.2' Limestone: packed biomicrite; fine to very coarse; 5% randomly oriented platy shell allochems; abundant *Orbitolina* sp.; hard; massive; tan; weathers dark gray.
7. 0.7' Dolomitic limestone: packed biomicrite; fine to very coarse; frequent biomicrite intraclasts; 1-2% platy shell allochems; well rounded allochems; occasional hematite spots; micrite matrix completely replaced by dolomite; abundant *Orbitolina*; abundant miliolids and other foraminifers; occasional oyster fragments; hard; massive; buff; weathers dark gray.
8. 0.5' Dolomitic limestone: muddy *Orbitolina* sp. intraclastic biosparite; very fine sand to small pebble size; rounded intraclasts; spar cement partially dolomitized; rare pseudomorphs of hematite after pyrite; very abundant *Orbitolina* sp.; occasional pectins and *Tylostoma* sp.; abundant oyster fragments; hard; massive; tan; weathers light reddish-brown.

9. 0.8' Extremely dolomitic limestone: packed *Orbitolina* sp. biomicrite; fine to granular; occasional rounded biomicrite intraclasts; micrite matrix completely dolomitized; very abundant randomly oriented *Orbitolina* sp.; frequent oyster shells; very porous; laminated; moderately hard; massive; light gray; weathers medium gray.
10. 1.8' Limestone: packed biogenic intramicrite; very fine to granular; 60% randomly oriented platy shell allochems; intraclasts range in composition from packed biomicrite to biosparite; most intraclasts are laminated and are oriented at angles up to 30° to bedding; 5% reddish-brown stained allochems; extremely abundant *Orbitolina* sp.; occasional serpulids; abundant miliolids; occasional crab fragments; occasional oyster fragments; occasional pelecypod steinkerns; single pecten noted; hard; massive; buff; weathers medium gray.
11. 0.3' Limestone: packed biomicrite; fine to granular; larger allochems are well rounded; 5% randomly oriented platy shell allochems; faintly laminated; moderately hard; grayish-tan; weathers dark gray.
12. 5.5' Limestone: packed biomicrite; fine to very coarse; 10% randomly oriented platy shell allochems; becomes coarser grained and less muddy upward to muddy biosparite; very hard; massive; buff; weathers medium gray.
13. 3.5' Limestone: packed biomicrite; fine to coarse; occasional oyster fragments; hard; massive; tan; weathers medium gray.
14. 1.1' Limestone: sparse biomicrite; fine to coarse; abundant *Orbitolina* sp. at top; occasional oyster fragments; single large *Turitella* sp. noted; moderately hard; nodular; buff; weathers medium gray.
15. 0.3' Limestone: Lower one-half is packed *Orbitolina* sp. biomicrite; very fine to granular; occasional oyster fragments; occasional serpulid fragments; very abundant *Orbitolina* sp.; abundant miliolids and other foraminifers; occasional stromatoporoid fragments; tan to brown. Upper one-half is stromatoporoid biolithite; cellular; abundant pockets of sparse to packed biomicrite; cell voids are spar filled; tan to reddish-brown; hard; massive; weathers medium gray.
16. 1.7' Limestone: packed intraclastic biomicrite; fine to granular; abundant intraclasts of very muddy biosparite; occasional *Orbitolina* sp.; moderately hard; lumpy; buff; weathers medium gray.
17. 2.0' Limestone: packed biomicrite to very muddy biosparite; fine to granular; very argillaceous at base; rare crab fragments; moderately hard; weathers nodular; buff to tan; weathers medium to dark gray.
18. 1.9' Limestone: packed biogenic intramicrite; very fine sand to small pebble size; 5-10% light yellow-brown stained allochems; occasional oyster fragments;

abundant small pebble size intraclasts, mostly well rounded and light yellow-brown stained; occasional miliolids; rare *Orbitolina* sp.; rare serpulids; hard; buff; weathers medium gray.

19. 6.2' Limestone: sparse biomicrite; fine to coarse; occasional miliolids; moderately hard; nodular; buff; weathers light gray; mostly covered.
20. 8.2' Dolomitic limestone: packed biogenic intramicrite; very fine sand to small pebble size; abundant coated grains; intraclasts are well rounded and 60% are light yellow-brown stained; micrite matrix almost completely replaced by dolomite; occasional miliolids and other foraminifers; frequent serpulids at base; rare medium pebble size clam impressions; hard; massive; buff to tan; weathers medium gray.
21. 8.3' Dolomitic limestone: sparse to packed biomicrite; very fine to coarse; frequent randomly oriented platy shell allochems; very dolomitic micrite matrix; original limestone texture badly effaced by dolomitization; abundant miliolids and other foraminifers; rare *Orbitolina* sp.; occasional crab fragments at top; moderately porous; hard; massive; buff; weathers medium gray.
22. 19.3' Limestone: fossiliferous micrite to sparse biomicrite; fine to coarse; becomes slightly dolomitic upward; occasional miliolids; occasional serpulids at base; occasional crab fragments near middle; occasional clam impressions; hard; massive; buff to grayish-brown; weathers medium gray.
23. 5.9' Very dolomitic limestone: packed biomicrite; very fine to coarse; abundant reddish-brown hematite spots; frequent miliolids and other foraminifers; single large wood fragment noted; occasional *Porocystis globularis*, original limestone texture partially effaced by dolomitization; faintly laminated; hard; massive; buff; weathers dark gray; mostly covered in lower half.
24. 5.0' Dolomitic limestone: sparse to packed biomicrite; very fine sand to small pebble size; occasional randomly oriented platy shell allochems; frequent miliolids and abundant miliolid fragments; single large pebble size pelecypod noted; very dolomitic; original limestone texture partially effaced by dolomitization; moderately porous; very hard; massive; buff to tan; weathers medium to dark gray.
25. 1.3' Limestone: sparse biomicrite; fine to very coarse; 5% fine light yellow-brown stained allochems; occasional platy shell allochems oriented parallel to bedding; rare miliolids; faintly laminated; hard; flaggy; tan; weathers medium to dark gray.

26. 6.4' Dolomitic limestone: packed biomicrite; very fine to granular; occasional oyster fragments; frequent randomly oriented platy shell allochems; 5% light yellow-brown stained allochems; abundant miliolids and other foraminifers; very dolomitic; original limestone texture partially effaced by dolomitization; slightly burrowed with small diameter burrows; very hard; massive; buff to tan; weathers medium gray.

TOP OF MEMBER A.

27. 2.2' Marl: sparse to packed biomicrite; fine to very coarse; very abundant *Monopleura* sp.; occasional miliolids; occasional *Tousasia* sp.; occasional snails; moderately soft at base to moderately hard at top; thin nodular bedded; tan; weathers medium gray.
28. 0.8' Marly limestone: packed biomicrite; fine to coarse; 1-2% light yellow-brown stained allochems; rare miliolids; slightly dolomitic; moderately hard; massive; tan; weathers dark gray.
29. 1.1' Extremely dolomitic limestone: packed biomicrite; very fine to granular; abundant miliolids and other foraminifers; abundant small clam impressions; dolomitic; micrite matrix completely replaced by dolomite; moderately porous; tan; weathers black.

MEASURED SECTION 2.

Measured Section 2 is near the northwest corner of the thesis area on the east side of the valley of one of the tributaries of Cypress Creek.

1. ——— Extremely dolomitic limestone: sparse to packed biomicrite; very fine to coarse; frequent miliolids and other foraminifers; single echinoid plate noted; frequent reddish-brown hematite spots; micrite matrix completely dolomitized; original limestone texture partially effaced by dolomitization; medium crystalline dolomite; faintly laminated; hard; massive; buff; weathers medium gray.
2. 2.7' Dolomitic limestone: fossiliferous micrite; fine to coarse; 2-3% light yellow-brown stained allochems; occasional miliolids; dolomitic; hard; massive; weathers medium gray.
3. 5.0' Dolomitic limestone: sparse to packed biomicrite; very fine sand to small pebble size; occasional randomly oriented platy shell allochems; 5% light yellow-brown stained allochems; abundant miliolids; abundant *Toucasia* sp., apparently in patch reefs; abundant oyster shells; abundant reddish-brown hematite spots; moderately dolomitic at base to extremely dolomitic at top; micrite matrix completely dolomitized; original limestone texture partially effaced by dolomitization; medium crystalline dolomite; moderately porous; hard; massive; tan; weathers medium gray.
4. 2.1' Limestone: packed foraminifer biomicrite; fine to coarse; extremely abundant miliolids and other foraminifers; very abundant rudists in patches, mostly *Toucasia* sp. with occasional *Monopleura* sp.; hard; massive; tan; weathers medium gray.
5. 2.0' Extremely dolomitic limestone: sparse to packed miliolid biomicrite; fine sand to small pebble size; 2-3% randomly oriented platy shell allochems; extremely dolomitic; micrite matrix completely replaced by dolomite; medium crystalline dolomite; very porous; very abundant rudists in patches, especially at top; occasional small clam impressions noted; slightly burrowed; hard; massive; buff to tan with yellow-brown burrow fill; weathers light gray.

TOP OF MEMBER A

6. 2.0' Dolomitic limestone: sparse to packed biomicrite; fine sand to small pebble size; frequent thick-walled pelecypod fragments; abundant miliolids and other foraminifers; abundant *Toucasia* sp.; occasional *Monopleura* sp.; extensively dolomitized; original limestone texture partially effaced by dolomitization; medium crystalline dolomite; slightly porous; moderately hard; slightly nodular; light tan; weathers buff to medium gray.

7. 1.0' Dolomitic limestone: packed biomicrite; fine to very coarse; frequent miliolids; frequent granular to small pebble size *Toucasia* sp. fragments; moderately hard; slightly nodular; tan; weathers buff.
8. 4.0' Marly limestone: packed biogenic intramicrite; fine sand to small pebble size; intraclasts range in composition from fossiliferous micrite to packed biomicrite; intraclasts are angular and yellow to yellowish-brown; frequent coated grains; abundant randomly oriented platy shell allochems; abundant miliolids and other foraminifers; occasional serpulid fragments; abundant oyster fragments; rare snails; frequent reddish-brown hematite spots; moderately hard; becomes more resistant upward; nodular; grayish tan; weathers medium gray.
9. 0.5' Limestone: sparse to packed biogenic intramicrite; fine to granular; well rounded intraclasts; occasional oyster fragments; abundant miliolids and other foraminifers; frequent reddish-brown stained hematite spots; very dolomitic in upper portion; medium crystalline dolomite; hard; tan to yellowish brown; weathers buff.
10. 10.5' Covered. No description.
11. 1.8' Limestone: packed biomicrite; fine to granular; 10% randomly oriented platy shell allochems; abundant small to large pebble size clam impressions; occasional *Nerinea* sp.; moderately hard; massive; buff to tan; weathers medium gray.
12. 2.0' Dolomitic limestone: packed intraclastic biomicrite; very fine to granular; 30% randomly oriented platy shell allochems; 15% very coarse to granular well rounded intraclasts; occasional *Orbitolina* sp.; rare serpulids; occasional thick-walled pelecypod fragments; frequent miliolids and miliolid fragments; very dolomitic; micrite matrix completely replaced by dolomite; medium crystalline dolomite; low leached allochem porosity; hard; massive; buff; weathers medium gray.
13. 2.0' Dolomitic limestone: packed biomicrite; fine sand to small pebble size; abundant *Monopleura* sp. near base, decreasing in abundance upwards; occasional reddish-brown hematite spots; very dolomitic; micrite matrix almost completely replaced by dolomite; medium crystalline dolomite; moderately porous; hard; buff; weathers medium gray.
14. 0.7' Limestone: packed biomicrite; fine to very coarse; 10% randomly oriented platy shell allochems; occasional miliolids; rare serpulids; abundant *Monopleura* sp.; hard; massive; buff; weathers medium gray.
15. 0.3' Limestone: slightly muddy biosparite; medium to very coarse; poorly sorted; abundant miliolids and other foraminifers; very hard; massive; buff; weathers medium gray.

16. 0.4' Limestone: slightly muddy miliolid biosparite; fine to very coarse; 3% platy shell allochems oriented parallel to bedding; occasional intraclasts; 20% miliolids and other foraminifers; moderately burrowed with dolomitic biomicrite burrow fill; medium crystalline dolomite; very hard; massive; light brown with buff mottles; weathers medium gray.
17. 0.3' Limestone: packed biomicrite; medium to granular; 40% randomly oriented platy shell allochems; very hard; massive; tan; weathers medium gray.
18. 0.4' Limestone: muddy biosparite; fine to granular; extremely abundant reddish-brown stained hematite spots; extremely abundant spherical micrite filled organic allochems, probably ostracods; abundant miliolids and other foraminifers; reddish-brown; weathers light brown to medium gray.
19. 3.2' Marl: packed biomicrite; medium to very coarse; moderately soft; buff; weathers tan; partially covered and calichified.
20. 0.2' Limestone: sparse to packed biomicrite; fine to granular; 70-80% randomly oriented platy shell allochems; occasional miliolids; occasional spar filled fractures indicate dismicrite structure; frequent reddish-brown hematite spots; micrite content increases upward to fossiliferous micrite; many shell allochems replaced by hematite; tan to reddish-brown; weathers light gray.
21. 2.7' Dolomitic marl: sparse biomicrite; fine to very coarse; 1-2% very coarse randomly oriented platy shell allochems; dolomitic; moderately soft; buff; weathers buff; partially covered and calichified.
22. 9.6' Marl: mostly covered and calichified; upper one foot indicates fossiliferous micrite; medium to coarse; very soft; very thin flaggy bedded; reddish-brown; weathering color indeterminable.
23. 0.4' Limestone: packed biomicrite; fine to very coarse; 50% platy shell allochems oriented parallel to bedding; 70-80% coated grains; 5% reddish-brown stained allochems; abundant miliolids and other foraminifers; faintly laminated; weathers flaggy; hard; tan to light brown; weathers reddish-brown.
24. 1.5' Limestone: extremely muddy biosparite; fine to very coarse; 10% randomly oriented platy shell allochems; occasional reddish-brown hematite spots; frequent miliolids and miliolid fragments; occasional serpulids; occasional crab fragments; very abundant small to medium pebble size clam steinkerns; frequent gastropods; moderately burrowed; hard; massive with slight honeycomb structure; buff; weathers medium gray.
25. 2.2' Limestone: packed intraclastic biomicrite; medium to granular; 15% platy shell allochems oriented parallel to bedding at base and randomly oriented at top; massive; becomes flaggy bedded upward; moderately burrowed at top causing slight honeycomb structure; hard; tan; weathers medium gray.

26. 3.2' Marly limestone: sparse biomicrite; fine to coarse; 1-3% randomly oriented platy shell allochems; 5% light yellow-brown stained allochems; occasional small to medium pebble size thick walled pelecypod fragments; very dolomitic; moderately hard; slightly nodular; tan; weathers medium gray.
27. 8.5' Marl: badly covered; upper one foot indicates packed biomicrite; fine to very coarse; very abundant *Nerinea* sp.; abundant small to medium pebble size oyster fragments; very abundant *Orbitolina* sp.; frequent small to large pebble size pelecypod steinkerns; occasional crab fragments; moderately soft; nodular; buff; weathers medium gray. This bed is the "*Salenia texana* marl."
28. 0.8' Limestone: packed biomicrite; fine to very coarse; frequent small to medium pebble size clam steinkerns; abundant *Nerinea* sp.; frequent oyster fragments; massive to slightly nodular; moderately hard; tan; weathers medium gray.
29. 2.0' Slightly dolomitic limestone: sparse to packed biomicrite; fine to granular; abundant granular to medium pebble size well rounded intraclasts; frequent whole and fragmented miliolids and other foraminifers; occasional serpulids; occasional thick walled pelecypod fragments; frequent to abundant crab fragments; single crab claw noted; occasional *Nerinea* sp.; frequent small to large pebble size pelecypod steinkerns; dolomitic, original limestone texture slightly effaced by dolomitization; hard; massive; buff to tan; weathers light gray.
30. 0.2' Slightly dolomitic limestone: very muddy *Corbula harveyi* biosparite; very fine to granular; abundant *Corbula harveyi* steinkerns; allochems are well rounded; rare *Orbitolina* sp.; occasional miliolids and other foraminifers; occasional thick walled pelecypod fragments; occasional serpulids and serpulid fragments; moderately burrowed with packed biomicrite burrow fill; upper surface is rippled with a wavelength of approximately 1.5' and an amplitude of 0.21'; very hard; massive; buff to tan; weathers medium gray. This bed is the "*Corbula* bed."

TOP OF MEMBER B

MEASURED SECTION 3.

Measured Section 3 is about 0.1 mile southwest of the point where Cypress Creek crosses Tom Creek fault.

1. ——— Very dolomitic marly limestone: packed biomicrite; very fine to granular; abundant thick walled pelecypod fragments; 10% light yellow-brown allochems; occasional reddish-brown hematite spots; occasional serpulids; abundant miliolids and miliolid fragments; extensively burrowed; very dolomitic; original limestone texture slightly effaced by dolomitization; moderately hard; lumpy; massive; yellow with light reddish-brown mottles; weathers dark gray.
2. 6.1' Marl: packed biomicrite; very fine to very coarse; 5% randomly oriented platy shell allochems; abundant reddish-brown hematite spots; occasional miliolids; frequent serpulids; very fossiliferous with abundant *Salenia texana*, *Porocystis globularis*, *Hemiaster* sp., *Orbitolina* sp., oysters, and "heart clam" steinkerns; occasional *Neithea* sp.; occasional *Tylostoma* sp.; soft; very thin nodular bedded; single medium nodular bedded zone in middle; tan; mottled light brown. This bed is the "*Salenia texana* marl."
3. 1.2' Marly limestone: sparse to packed *Orbitolina* biomicrite; coarse to granular; 20% platy shell allochems; 10% light brown stained allochems; abundant *Orbitolina* sp.; occasional medium pebble size "heart clam" steinkerns; occasional *Hemiaster* sp.; single *Salenia texana* spine noted; occasional oyster fragments; occasional *Nerinea* sp.; moderately burrowed; moderately hard; lumpy; yellow-brown with light brown mottles; weathers buff to white.
4. 1.5' Very dolomitic limestone at base to limestone at top: packed biomicrite at base to muddy biosparite at top; very fine to granular; occasional coated grains; 5% well rounded intraclasts ranging in composition from sparse to packed biomicrite to very muddy biosparite; abundant randomly oriented platy shell allochems; 10% light brown allochems; occasional reddish-brown hematite spots; frequent *Orbitolina* sp.; abundant miliolids and other foraminifers; frequent serpulids; very dolomitic at base to slightly dolomitic at top; medium crystalline dolomite; original limestone texture slightly effaced by dolomitization; slightly porous; very hard; buff to light reddish-gray; weathers grayish brown.
5. 0.3' Limestone: muddy *Corbula harveyi* biosparite; fine sand to small pebble size; extremely abundant reddish-brown hematite spots; extremely abundant coated grains; abundant miliolids and other foraminifers; extremely abundant micrite filled *Corbula harveyi* casts; *Corbula*s are oriented with long dimension parallel to bedding; 10% of the *Corbula*s are spar filled; occasional geopetal structures; faintly laminated; very hard; light brown to tan; weathers reddish-brown; upper surface is rippled with a wavelength of approximately 1.3' and an amplitude of

approximately 0.2'; bearing of the ripple crests is approximately N75°E. This bed is the "Corbula bed."

TOP OF MEMBER B

6. 0.4' Limestone: packed biomicrite to slightly muddy biosparite; fine sand to small pebble size; abundant randomly oriented platy shell allochems; occasional reddish-brown hematite spots; very abundant *Corbula harveyi* steinkerns; approximately 10% of the *Corbulas* are spar filled; occasional serpulids; faintly bedded; reddish-brown; weathers dark reddish-brown.
7. 0.7' Marly limestone: very muddy biosparite; fine sand to small pebble size; 2-3% platy shell allochems; occasional *Corbula harveyi* at base to very abundant at top; moderately soft; thin bedded; apparently slightly argillaceous; light yellow-brown.
8. 4.6' Marl: calcareous mudstone; allochem content increases toward top; occasional oyster fragments and *Corbula* at top; apparently extremely argillaceous; very soft; very thin bedded; light yellow-brown; weathers light yellow-brown to medium gray, partially calichified.
9. 0.5' Limestone: very muddy *Corbula harveyi* biosparite to packed *Corbula harveyi* biomicrite; very fine sand to small pebble size; up to 60% platy shell allochems oriented parallel to bedding; abundant reddish-brown stained hematite spots; occasional miliolids and miliolid fragments; dolomitic with medium crystalline dolomite; upper part is extremely vuggy with vugs ranging in size from 1/8-1" vugs probably caused by dissolved evaporites; well laminated; very hard; thin marly zone in middle; tan.
10. 4.5' "Evaporite" bed: composed mostly of sparry calcite veins; shows some evidence of "distorted bedding" and collapse features, indicating it was originally deposited as an evaporite, and the evaporite minerals have been removed by solution.
11. 2.7' Marly limestone: sparse to packed biomicrite; fine to very coarse; 10% platy shell allochems oriented parallel to bedding, giving the rock a laminated appearance; abundant well rounded intraclasts; probably an intramicrite at base; slightly dolomitic; slight honeycomb structure indicates slight burrowing; very hard; massive; light grayish-tan with tan mottles; weathers light gray.
12. 1.1' Marl: very calcareous biogenic mudstone; medium to coarse; apparently very argillaceous; soft; thin bedded; tan; weathers black.
13. 0.9' Dolomitic limestone: sparse to packed biomicrite; very fine to coarse; becomes less biogenic upward to fossiliferous micrite; occasional reddish-brown

hematite spots; occasional to abundant miliolids and miliolid fragments; very dolomitic; micrite matrix completely replaced by dolomite; medium crystalline dolomite; slightly porous; original limestone texture partially effaced by dolomitization; moderately burrowed with packed biomicrite burrow fill; faintly laminated; hard; massive at base; thin to medium flaggy bedded at top; buff to light gray; weathers dark gray.

14. 1.5' Dolomitic limestone: sparse to packed biomicrite; very abundant randomly oriented platy shell allochems; very abundant oyster fragments at top; 10% light yellow-brown allochems; abundant miliolids and miliolid fragments; moderately dolomitic; medium crystalline dolomite; original limestone texture slightly effaced by dolomitization; moderately burrowed with packed biomicrite burrow fill; apparently very argillaceous; moderately soft; thin nodular bedded; tan; weathers light brown.
15. 2.3' Marly limestone: packed biogenic intramicrite to packed biomicrite; very fine sand to small pebble size; abundant coated grains; intraclasts are well rounded and range in composition from micrite to packed biomicrite to muddy biosparite with coated grains; 60% of the allochems are well rounded; 5-10% randomly oriented platy shell allochems; frequent reddish- to yellowish-brown hematite spots; rare glauconite grains in lower part; rare to abundant miliolids and other foraminifers; abundant cellular thick walled pelecypod fragments; slightly dolomitic with floating medium crystalline dolomite rhombs; moderate burrowing indicated by fossiliferous micrite patches within packed biomicrite; hard; massive; buff to tan; weathers dark gray.
16. 4.0' Marl: very calcareous biogenic mudstone to packed biomicrite; fine to very coarse; 5% platy shell allochems; apparently very argillaceous; abundant very fine to fine reddish-brown hematite spots; slightly dolomitic; moderately soft; very thin bedded to thin nodular bedded; partly calichified.
17. 0.8' Very dolomitic limestone: packed biomicrite; very fine to granular; 25% platy shell allochems oriented parallel to bedding; abundant miliolids and other foraminifers; very dolomitic; original limestone texture partially effaced by dolomitization; medium crystalline dolomite; slightly porous; hard; medium flaggy bedded; light brown to tan; weathers brown.
18. 1.5' Extremely dolomitic limestone: fossiliferous micrite to packed biomicrite; medium to very coarse; packed biomicrite patches have 60% platy shell allochems oriented parallel to bedding; very abundant reddish-brown hematite spots; extremely dolomitic; original limestone texture almost completely effaced by dolomitization; medium crystalline; saccharoidal; apparently very argillaceous; soft; massive; tan; weathers black; lower part is calichified.
19. 7.0' Marl: sparse to packed biomicrite; medium to coarse; apparently very argillaceous; slightly more resistant in middle; very soft; very thin nodular

bedded; tan; weathers light tan to black, calichified near the top where the allochems are leached out.

20. 4.8' Dolomitic limestone: sparse to packed biomicrite; very fine to granular; frequent randomly oriented platy shell allochems; occasional reddish-brown hematite spots; 5-10% light brown allochems; extremely abundant miliolids in middle; slight to moderate burrowing indicated by honeycomb structure and by mottling; very dolomitic; original limestone texture partially effaced by dolomitization; medium crystalline dolomite; saccharoidal; light yellow-brown to tan with red mottles.
21. 1.5' Limestone: packed biogenic intramicrite; fine to granular; intraclasts are well rounded and range in composition from fossiliferous micrite to packed biomicrite; many intraclasts contain coated grains; 5% randomly oriented platy shell allochems; abundant prismatic shell allochems; occasional green glauconite grains; occasional pelecypod fragments, some with cellular structure; moderately burrowed with poorly cemented burrow fill; moderate burrowing also indicated by well-developed honeycomb structure; hard; light grayish-brown to reddish-brown; weathers light gray.
22. 0.5' Marly limestone: packed biomicrite; medium to very coarse; single 3" vug observed; frequent 1-3" pelecypod steinkerns; moderately soft; thin nodular bedded; tan; weathers light gray; calichified and leached.
23. 4.2' Marl: very calcareous mudstone; occasional coarse allochems; apparently very argillaceous; very soft; very thin bedded; tan with medium gray mottles; weathers light gray; partially covered and calichified.
- 24,. 0.8' Dolomitic limestone: sparse to packed biomicrite to very muddy biosparite; fine to granular; 10-20% platy shell allochems oriented parallel to bedding, giving the rock a laminated appearance; frequent miliolids and miliolid fragments; very dolomitic; medium crystalline dolomite; saccharoidal; original limestone texture partially effaced by dolomitization; possible mudcracks at top; moderately burrowed in upper part; flaggy bedded; light brown to tan; weathers tan to light gray.
25. 0.8' Marl: biogenic very calcareous mudstone; medium to very coarse; apparently very argillaceous; very soft; very thin bedded; tan with medium gray mottles; weathers light tan; calichified.
26. 0.9' Limestone: packed biomicrite; fine sand to medium pebble size; 10-15% subrounded intraclasts, 20% of which are glauconitic; 30% randomly oriented platy shell allochems; abundant thick shelled pelecypod fragments, some of which are cellular; occasional miliolids and other foraminifers; abundant clams; abundant snails; abundant serpulids; slightly burrowed with poorly cemented burrow fill; very hard; massive; buff; weathers medium gray.

27. 0.9' Limestone: packed biomicrite; fine to granular; 5% dark gray very coarse sand to granular size possible foraminifer allochems; very hard; massive; buff; weathers medium gray.
28. 1.2' Marl: sparse biomicrite; fine to medium; apparently very argillaceous; soft; very thin bedded; tan; weathers light tan; calichified and leached.
29. 2.3' Limestone: packed biomicrite to muddy intraclastic biosparite; fine to very coarse; 15% subrounded small to medium pebble size intraclasts; 60% of the biogenic allochems are coated; biogenic allochems are well rounded; up to 75% platy shell allochems; occasional glauconite grains; frequent miliolids; hard; tan to grayish-tan; weathers medium gray.
30. 1.2' Marl: sparse biomicrite; fine to very coarse; apparently very argillaceous; very soft; very thin bedded; tan; weathers buff; calichified and leached.
31. 1.0' Limestone: very muddy biosparite; fine to granular; 50% of the allochems are coated; 50% platy shell allochems oriented parallel to bedding giving the rock a faint laminated appearance; abundant small pebble size intraclasts near middle; very hard; massive; buff; weathers light to medium gray.

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32. 4.5' Marl: sparse biomicrite; fine to coarse; grades upward into interbedded marl and more resistant biomicrite; apparently very argillaceous; very soft, becoming harder upward; very thin bedded; tan; weathers buff; calichified and leached.
33. 2.0' Very dolomitic limestone: fossiliferous micrite to sparse biomicrite; fine to very coarse; extremely abundant randomly oriented platy shell allochems; abundant reddish-brown hematite spots; abundant miliolids; very dolomitic; medium crystalline dolomite; moderately burrowed; poorly cemented dolomitic packed biomicrite burrow fill with high leached allochem porosity; burrowing also indicated by well developed honeycomb structure; very hard; massive; buff to yellow-brown with tan burrow fill; weathers light to medium gray.
34. 1.5' Marl: packed biomicrite; fine sand to small pebble size; apparently very argillaceous; frequent *Orbitolina* sp.; frequent oyster and other thick walled pelecypod fragments; occasional *Porocystis globularis*; apparently very intensely burrowed; grades upward into overlying bed; soft; very thin bedded; tan; weathers light tan to buff.
35. 4.0' Limestone: packed *Orbitolina* sp. biomicrite; fine sand to small pebble size; 10% medium to very coarse platy shell allochems; occasional glauconite grains; very abundant randomly oriented *Orbitolina* sp.; occasional oyster fragments; intensely burrowed; moderately hard; massive with slight honeycomb structure; buff with tan to reddish-brown mottles.

36. 4.0' Limestone: packed biomicrite to very muddy biosparite; fine sand to small pebble size; 20-30% coated grains in upper part; 10-15% randomly oriented platy shell allochems; occasional intraclasts; occasional glauconite grains; abundant rudists, mostly *Toucasia* sp. with some *Monopleura* sp.; abundant randomly oriented *Orbitolina* sp.; frequent miliolids and other foraminifers; abundant randomly oriented thick walled pelecypod fragments; slightly burrowed with poorly cemented burrow fill; burrowing also indicated by moderately to well developed honeycomb structure; very hard; massive; buff; weathers light gray.
37. 1.5' Marly limestone: packed biomicrite; fine to granular; 20% randomly oriented platy shell allochems; rare to abundant *Orbitolina* sp.; very abundant granular to small pebble size oyster fragments; occasional medium to large pebble size clam steinkerns; single *Tylostoma* sp. noted; frequent high spired snails; moderately hard; thin to medium slightly nodular bedded; tan; weathers light gray.
38. 1.0' Marl: sparse biomicrite; medium to granular; apparently very argillaceous; occasional *Orbitolina* sp.; occasional oyster fragments; soft; very thin bedded; tan with light yellow-brown mottles; weathers medium gray; calichified and leached.
39. 1.0' Limestone: packed biomicrite to muddy biosparite; fine to very coarse; allochems in biosparite portion are subrounded to well rounded; 10% platy shell allochems oriented parallel to bedding; occasional reddish-brown hematite spots; frequent miliolids and other foraminifers; occasional *Orbitolina* sp.; biomicrite occurs as patches in biosparite, indicating burrowing; burrowing also indicated by mottling; hard; massive; tan; weathers buff.
40. 1.0' Marl: too badly covered for adequate description; apparently very thin bedded; soft; tan to buff; weathers medium gray.
41. 2.5' Limestone: packed biomicrite to extremely muddy *Orbitolina* sp. biosparite; fine sand to small pebble size; abundant coated grains; 20% randomly oriented platy shell allochems; abundant randomly oriented *Orbitolina* sp.; occasional thick walled pelecypod fragments; abundant *Toucasia* sp.; occasional crab fragments; slightly porous; hard; massive; buff; weathers medium gray.
42. 1.3' Limestone: sparse biomicrite; fine to granular; 5% randomly oriented platy shell allochems; abundant oyster fragments up to small pebble size; very hard; tan; weathers dark gray.

MEASURED SECTION 4

Measured Section 4 is in the northern part of the thesis area near the east-west segment of Mount Sharp Road.

- 1.—— Limestone: sparse biomicrite; medium grained; moderately burrowed; packed biomicrite burrow fill; tan; weathers light brown to tan.
2. 0.2' Limestone: slightly muddy to well washed biosparite; medium to coarse; 90% of the allochems are well rounded; 60% are coated; well sorted; 10% platy shell allochems oriented parallel to bedding or to cross beds; occasional miliolids; cross bedded and laminated; tan; weathers brownish-tan.
3. 1.0' Limestone: packed biomicrite to very muddy biosparite; fine to granular; very abundant coated grains; 60% randomly oriented platy shell allochems; rare glauconite grains; occasional reddish-brown hematite spots; abundant miliolids and miliolid fragments; unsorted; occasional small spar-filled articulated clams; occasional small gastropods; moderately burrowed; poorly developed honeycomb structure; slightly lumpy; massive; tan to light yellow-brown; weathers reddish-brown.
4. 3.2' Marl: calcareous mudstone to very argillaceous fossiliferous micrite; very thinly bedded; light brown with medium gray mottles; calichified.
5. 2.2' Limestone: very intraclastic packed biomicrite; biogenic allochem grain size ranges from fine to coarse, intraclasts are medium to granular; intraclasts are subround; 60% of the biogenic allochems are platy shell fragments; 80% of the intraclasts are olive green; slightly glauconitic; abundant miliolids and miliolid fragments; very abundant pelecypod fragments; moderately fossiliferous with medium to large pebble size clam steinkerns; occasional serpulids; occasional pectins; slightly dolomitic; medium crystalline dolomite; slightly to intensely burrowed; dolomitic burrow fill; massive; lumpy; buff with tan burrow mottles; weathers medium gray.
6. 1.5' Marl: very argillaceous fossiliferous micrite to calcareous mudstone; very thinly bedded; light brown with medium gray mottles; weathers black; calichified.
7. 2.5' Limestone: packed biomicrite to slightly muddy biosparite; medium to very coarse; allochems are rounded; 10% of the allochems are coated; very dolomitic muddy biosparite at base; dolomite content decreases upward; slightly glauconitic; abundant reddish-brown hematite spots; 10% coated mollusc fragments; intensely burrowed; massive; tan to light brown; weathers light brownish-gray.

8. 2.9' Limestone: sparse to packed biomicrite; medium to coarse; 25% randomly oriented platy shell allochems; moderately fossiliferous with medium size clam steinkerns and occasional oyster fragments; occasional sparry vug fill; massive; light yellowish-tan; weathers medium gray.
9. 0.4' Limestone: very muddy biosparite; medium to very coarse; laminated; massive; buff; weathers dark gray.

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10. 3.0' Marl: fossiliferous micrite; up to 30% terrigenous mud; very thinly bedded; light brown with medium gray mottles; weathers black; calichified.
11. 0.6' Dolomitic limestone: sparse to packed biomicrite; very fine to medium; 60% randomly oriented platy shell allochems; 60% of the allochems are pelecypod fragments; occasional reddish-brown hematite spots; 5% miliolids and other foraminifers; very dolomitic; medium crystalline dolomite; micrite matrix completely replaced by dolomite; intensely burrowed; massive; buff with tan mottles; weathers medium gray.
12. 1.6' Marl: sparse to packed biomicrite; medium to coarse; very argillaceous; very thin bedded to massive; light yellow-brown with medium gray mottles; calichified.
13. 1.7' Limestone: packed biomicrite; coarse grained; 5% of the allochems are intraclasts; moderately glauconitic; occasional serpulids; 10% platy pelecypod fragments; massive; tan; weathers medium gray.
14. 1.7' Marl: calcareous mudstone to fossiliferous micrite; coarse grained; up to 30% terrigenous mud; very thinly bedded; buff; weathers buff; abundant caliche lumps.
15. 1.2' Marl: calcareous mudstone to fossiliferous micrite; medium grained; up to 30% terrigenous mud; medium nodular bedded to lumpy; tan; weathers medium gray and reddish-brown.
16. 1.7' Dolomitic limestone: micrite; rare allochems are very fine sand to small pebble size; occasional reddish-brown hematite spots; dolomitic; medium crystalline dolomite; original limestone texture almost completely effaced by dolomitization; appears almost lithographic; massive; buff; weathers medium gray.
17. 1.2' Marl: fossiliferous micrite; coarse; up to 30% terrigenous mud; occasional mollusc fragments; occasional *Orbitolina* sp.; very thin bedded; light gray with light yellow-brown mottles; weathers medium gray; covered and calichified.

18. 2.3' Dolomitic limestone: packed *Orbitolina* sp. biomicrite; medium sand to small pebble size; 60% randomly oriented platy shell allochems; extremely abundant *Orbitolina* sp.; occasional reddish-brown hematite spots; abundant thick walled pelecypod fragments; very abundant coarse sand size mollusc fragments; very dolomitic; micrite matrix completely replaced by dolomite; medium crystalline dolomite; saccharoidol; moderately to intensely burrowed; massive; buff; weathers medium gray to light brown.
19. 0.9' Marl: sparse to packed *Orbitolina* sp. biomicrite; small pebble size; occasional rudists; tan to yellow-brown; weathers tan to light yellow-brown.
20. 3.0' Limestone: packed *Orbitolina* sp. biomicrite to very muddy *Orbitolina* sp. biosparite; fine sand to small pebble size; 30% randomly oriented platy shell allochems; occasional reddish-brown hematite spots; extremely abundant miliolids and other foraminifers; 50% of the allochems are randomly oriented *Orbitolina* sp.; 20% medium sand size pelecypod fragments; slightly burrowed; massive with slight honeycomb structure; buff; weathers medium gray.
21. 3.1' Marl: sparse *Orbitolina* sp. biomicrudite; granular to small pebble size; up to 30% terrigenous mud; abundant small to medium size clams; frequent oyster fragments; thin bedded; medium gray with light brown to tan mottles.
22. 2.3' Dolomitic limestone: packed biomicrite to very muddy biosparite; 70% randomly oriented platy shell allochems; abundant light brown coarse sand size intraclasts; occasional reddish-brown hematite spots; frequent to abundant randomly oriented *Orbitolina* sp.; abundant small to medium sand size mollusc fragments; occasional small to medium pebble size clams; micrite matrix completely replaced by dolomite; moderately burrowed; buff; weathers medium gray.
23. 2.8' Marl: sparse *Orbitolina* sp. biomicrite; granular; up to 30% terrigenous mud; occasional medium to large clam steinkerns; thinly bedded; medium gray with light brown to tan mottles.
24. 1.5' Marly limestone: sparse *Orbitolina* sp. biomicrite; granular; abundant clam steinkerns; medium nodular bedded; buff to tan.
25. 1.5' Marl: sparse *Orbitolina* sp. biomicrite; granular to small pebble size; up to 30% terrigenous mud; occasional mollusc fragments; occasional small to medium size clam steinkerns; rare echinoid fragments; very thin bedded; medium gray with tan to light brown mottles.
26. 1.9' Marly limestone: sparse biomicrite; medium grained; occasional oyster fragments; occasional serpulids; frequent medium size clam steinkerns; medium nodular bedded; tan with occasional brown mottles; weathers medium gray.

27. 2.3' Marl: sparse biomicrite; medium grained; occasional *Orbitolina* sp.; very thin bedded; buff to tan; weathers buff to tan; calichified.
28. 1.5' Marly limestone: sparse biomicrite; medium grained; abundant reddish-brown hematite spots; frequent medium pebble size clam steinkerns; medium nodular bedded; buff to tan; weathers dark gray.
29. 0.8' Marl: covered and calichified; weathered sample indicates fossiliferous micrite; thin bedded; tan with light brown mottles.
30. 1.8' Dolomitic limestone: sparse biomicrite; fine to very coarse; 60% randomly oriented platy shell allochems; 25% yellow-brown allochems; abundant miliolids and miliolid fragments; occasional *Orbitolina* sp.; occasional clam impressions; very dolomitic; medium crystalline dolomite; buff; weathers medium gray.
31. 1.2' Marl: fossiliferous micrite; coarse; up to 30% terrigenous mud; frequent *Orbitolina* sp.; frequent mollusc fragments; very thinly bedded; buff with light brown mottles; covered and calichified.
32. 1.5' Marly limestone: sparse biomicrite; medium to granular; very fossiliferous; abundant *Porocystis globularis*; abundant medium pebble size clam steinkerns; frequent *Orbitolina* sp.; frequent oyster fragments; occasional irregular echinoids, including *Hemiaster* sp.; thin to medium nodular bedded; tan; weathers buff.
33. 1.0' Marl: calcareous mudstone to sparse biomicrite; coarse; very thinly bedded; occasional *Porocystis globularis*; frequent *Orbitolina* sp.; occasional small clam impressions; occasional mollusc fragments; buff with light brown mottles.
34. 4.0' Dolomitic marly limestone: packed biomicrite; fine to granular; frequent reddish-brown hematite spots; very abundant randomly oriented *Orbitolina* sp.; abundant miliolids and miliolid fragments; dolomitic; medium crystalline dolomite; original limestone texture partly effaced by dolomitization; moderately to intensely burrowed with poorly cemented burrow fill; nodular; buff to tan; weathers light gray.
35. 4.0' Marl: sparse to packed biomicrite; medium grained; up to 30% terrigenous mud; occasional *Orbitolina* sp.; very thinly bedded; medium gray with light brown mottles; covered and calichified.
36. 1.3' Dolomitic limestone: sparse to packed biomicrite; fine to coarse; abundant reddish-brown hematite spots; apparently slightly recrystallized; abundant miliolids; very dolomitic; dolomite replaces micrite matrix and a few allochems; original limestone texture partially effaced by dolomitization; medium crystalline dolomite; saccharoidal; slightly to moderately burrowed with extremely dolomitic burrow fill; massive; light brown to tan; weathers medium gray.

37. 2.7' Marl: packed biomicrite; medium to granular; abundant *Orbitolina* sp.; intensely burrowed; packed biomicrite burrow fill; medium nodular bedded; light brown to tan; weathers grayish brown.
38. 1.5' Dolomitic limestone: very muddy biosparite; fine to coarse; subrounded allochems; abundant miliolids and miliolid fragments; 5% platy mollusc fragments; very dolomitic; medium crystalline dolomite; saccharoidal; original limestone texture partially effaced by dolomitization; well developed honeycomb structure; light brown to tan; weathers medium gray.
39. 2.1' Limestone: packed biomicrite; medium to coarse; rare *Orbitolina* sp.; moderately burrowed; burrow fill is coarse to granular; lumpy; buff to medium gray; weathers dark gray.
40. 2.2' Marly limestone: packed biomicrite; coarse to granular; frequent *Orbitolina* sp.; slightly dolomitic; massive to very thinly bedded; buff to tan; weathers light brownish-gray.
41. 2.3' Limestone: very muddy biosparite; coarse to granular; 30% platy mollusc fragments; moderately to intensely burrowed; brownish-gray; weathers medium gray.
42. 9.8' Covered. No description.
43. 0.4' Limestone: packed biomicrite; coarse; slightly laminated; lumpy; massive; tan; weathers dark gray to black.
44. 1.5' Limestone: slightly muddy biosparite; coarse; 40% light brown allochems; frequent serpulids; 10% platy mollusc fragments; tan; weathers medium gray.

MEASURED SECTION 5

Measured Section 5 is in the northern part of the thesis area about ½ mile north of the east-west segment of Mount Sharp Road.

1. Limestone: packed biomicrite; medium to very coarse; 5% platy mollusc fragments; 10% miliolids; apparently intensely burrowed; slightly lumpy; massive; yellowish-orange; weathers light brown and medium gray.
2. 1.4' Limestone: muddy biogenic intrasparite; medium to very coarse; 40% intraclasts; intraclasts are subrounded; occasional reddish-brown hematite spots; very abundant miliolids; medium bedded; light yellowish-gray; weathers dark gray.
3. 1.5' Covered. No description.
4. 0.6' Marly limestone: packed biomicrite; medium to coarse; apparently slightly recrystallized; rare *Orbitolina* sp.; moderately to intensely burrowed; very thin bedded; light yellowish-gray with yellow-brown burrow fill mottles; weathers light brownish-gray with mottles.
5. 0.8' Dolomitic limestone: muddy intraclastic biosparite; fine to granular; abundant coated grains; allochems are well rounded; 15% of the allochems are miliolids; very dolomitic; medium crystalline dolomite; moderately burrowed with poorly cemented burrow fill; well developed honeycomb structure; buff to light grayish brown; weathers medium gray.
6. 1.7' Limestone: slightly muddy biosparite; medium to very coarse; moderately sorted; slightly burrowed; massive; light grayish-brown; weathers light gray.
7. 0.6' Marly limestone: packed biomicrite; moderately to intensely burrowed; burrows are apparently oriented parallel to bedding; slightly nodular bedded; light grayish-yellow; weathers light gray.
8. 1.2' Limestone: packed biomicrite; medium to coarse; 15% randomly oriented platy mollusc fragments; 10% orangish-brown hematite stained allochems recrystallized from weathering; intensely burrowed; moderately developed honeycomb structure.
9. 2.4' Covered. No description.
10. 0.6' Marl: sparse biomicrite; medium to coarse; occasional *Orbitolina* sp.; light yellowish-brown; weathers light yellowish-brown; weathered and calichified.

11. 1.9' Limestone: biogenic intrasparite; medium to granular; well rounded allochems; poorly sorted; biogenic allochems are coated; 30% randomly oriented platy shell allochems; 20% light brown stained allochems; occasional serpulids; abundant *Orbitolina* sp.; buff.
12. 0.6' Limestone: very muddy biosparite; coarse to granular; 10% yellow-orange stained allochems; 40% randomly oriented platy mollusc fragments; light brownish-gray.
13. 0.5' Limestone: sparse to packed biomicrudite; medium sand to large pebble size; very fossiliferous with *Trigonia* sp.; abundant large pebble size clams; abundant *Tylostoma* sp.
14. 8.7' Mostly calichified and covered with float; two small exposures in the interval yielded the following descriptions:
 - a. Lower exposure: sparse biomicrite; very coarse; up to 30% terrigenous mud; marly; soft; very thin bedded; light greenish-gray; weathers light yellowish-gray.
 - b. Upper exposure: packed biomicrite; medium to coarse; 50% light brown allochems; moderately hard; massive; slightly nodular to lumpy.
15. 0.9' Dolomitic limestone: packed biomicrite; fine to very coarse; 5% randomly oriented platy mollusc fragments; frequent miliolids and miliolid fragments; extremely dolomitic; medium crystalline dolomite; original limestone texture partially effaced by dolomitization; saccharoidal; moderately porous; very hard; buff; weathers medium gray.
16. 2.6' Calcareous dolomite: medium crystalline; original limestone texture effaced by dolomitization; moderately porous; relict texture indicates sparse to packed biomicrite; abundant intraclasts; abundant miliolids; moderately burrowed; hard; massive; light gray; weathers medium gray.
17. 4.0' Limestone: packed biogenic intramicrite; coarse; intensely burrowed; moderately hard; slightly nodular to lumpy; massive; light brownish-gray with reddish-brown burrow fill; weathers medium gray.
18. 1.9' Limestone: slightly muddy biosparite; medium to very coarse; very abundant coated grains; unsorted; hard; massive; light brownish-gray; weathers medium gray.
19. 3.0' Limestone: miliolid biomicrite; medium to very coarse; moderately burrowed; moderately hard; massive; lumpy; light brownish-gray; weathers dark gray.
20. 2.3' Marly limestone: packed biomicrite; coarse; abundant mollusc fragments; massive; soft; light gray with reddish-brown mottles; weathers light gray; poorly exposed and covered at base; calichified.

21. 0.8' Dolomitic limestone: very muddy intraclastic miliolid biosparite; fine to very coarse; apparently partially recrystallized; intraclasts are well rounded; extremely abundant light brown stained allochems; 30% platy shell allochems oriented parallel to bedding giving the rock a faint laminated appearance; extremely abundant miliolids; moderately to intensely burrowed; well developed honeycomb structure; light grayish-tan; weathers medium gray.
22. 0.9' Limestone: very muddy biosparite; medium to very coarse; 10% miliolids; hard; massive; light grayish-brown; weathers medium gray.
23. 0.8' Limestone: packed biomicrite; coarse; hard; light gray; weathers dark gray; very poorly exposed and deeply weathered.
24. 1.2' Limestone: packed biomicrite; coarse; partially recrystallized; moderately burrowed; well developed honeycomb structure; hard; light yellowish-brown; weathers medium gray.
25. 1.0' Limestone: packed biomicrite; medium to coarse; partially recrystallized; intensely burrowed; moderately hard; massive; lumpy; tan to brown; weathers dark gray with light tan mottles.
26. 1.8' Limestone: slightly muddy biosparite; medium to very coarse; slightly recrystallized by weathering; occasional miliolids; slightly burrowed with muddy burrow fill; becomes moderately burrowed upward; hard; massive; buff; weathers medium gray.
27. 0.7' Limestone: biosparite; coarse to granular; unsorted; abundant miliolids; moderately burrowed; hard; well developed honeycomb structure; tan; weathers medium gray.
28. 1.4' Limestone: muddy biosparite; coarse; slightly recrystallized due to weathering; well sorted; 10% of the allochems are light reddish-brown stained; abundant miliolids; hard; massive; buff; weathers medium gray.
29. 2.2' Covered slope: float and weathered in-place rock indicate limestone; sparse to packed biomicrite; coarse; moderately burrowed; light yellow-brown; weathers light tan.
30. 0.9' Limestone: packed biomicrite; fine to very coarse; 10% light brown very coarse allochems; dolomitic; medium crystalline dolomite; massive; tan to light brown; weathers medium gray.

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31. 5.0' Dolomite: fine to medium crystalline; 5% leached allochem porosity; abundant light reddish-brown hematite spots; weathers blocky; massive; light grayish-brown; weathers buff with black mottles; mostly covered.

32. 2.0' Limestone: muddy biosparite; coarse to granular; 70% platy mollusc fragments oriented parallel to bedding; hard; buff; weathers medium gray.
33. --- Marly limestone: very muddy biosparite; 90% of the allochems are light brown to light reddish-brown stained; frequent miliolids; massive; reddish-brown; weathers very dark brown.

MEASURED SECTION 6

Measured Section 6 is on one of the cut banks of the Blanco River about 1½ miles southwest of Wimberley.

1. ——— Limestone: miliolid biosparite; fine to very coarse; moderately sorted; 2-3% randomly oriented platy shell allochems; 60% of the allochems are miliolids; moderately burrowed with very dolomitic packed miliolid biomicrite burrow fill; medium crystalline dolomite; massive; poorly developed honeycomb structure; hard; buff with tan burrow fill mottles; weathers medium gray.

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2. 0.9' Dolomitic limestone: miliolid bearing packed biomicrite; fine to coarse; 10% of the allochems are miliolids; 5% yellowish to reddish-brown stained allochems; abundant plant fragments; extremely dolomitic; medium crystalline dolomite, extent of dolomitization varies across bands parallel to bedding; very low (1-2%) porosity; moderately soft; nodular bedded; buff; weathers tan to medium gray.
3. 0.7' Dolomite: medium to coarsely crystalline; saccharoidal; variable porosity ranging from 5-20%; relict texture indicates sparse to packed biomicrite; medium to very coarse; relict burrowing indicated by patchy development of leached allochem porosity; moderately soft; massive; weathers blocky; mottled medium gray and tan; weathers dark gray to black.
4. 1.9' Dolomite: medium to coarsely crystalline; saccharoidal; very low (1-2%) porosity; very faint relict texture indicates sparse biomicrite; moderately soft; massive; weathers blocky; weathers dark gray to black.
5. 0.9' Dolomite: medium crystalline; low (1-2%) leached allochem porosity; massive; nearly textureless; moderately soft; weathers recessive and blocky; tan with light yellow-brown mottles; weathers dark gray to black.
6. 1.4' Dolomitic limestone: miliolid bearing biomicrite; medium to coarse; moderately sorted; 5% of the allochems are miliolids; 15% of the allochems are well rounded medium to coarse grained dark brown intraclasts; 25% light yellow-brown stained allochems; slightly dolomitic; medium crystalline floating dolomite rhombs; massive; moderately hard; tan; weathers medium gray.
7. 0.9' Dolomite: medium crystalline; up to 20% leached allochem porosity; saccharoidal; relict texture indicates packed biomicrite; medium to very coarse; massive; moderately soft; weathers blocky; tan with light yellow-brown mottles; weathers dark gray to black.

8. 1.9' Dolomite: medium crystalline; moderate (8-10%) leached allochem porosity; saccharoidal; relict texture indicates packed biomicrite; fine to very coarse; very slightly mottled gray and tan; moderate relict burrowing; massive; weathers blocky; moderately soft; weathers tan to dark gray.
9. 2.3' Dolomite: medium crystalline; high (15-20%) leached allochem porosity; relict texture indicates packed biomicrite; medium to very coarse; irregular development of porosity corresponds to mottled medium gray and tan color; abundant ½"-1" vugs throughout indicate possible leached evaporites; massive; weathers blocky; moderately soft; very soft and apparently argillaceous at base; weathers tan to dark gray.
10. 0.3' Very dolomitic limestone: packed biomicrite; medium to very coarse; platy shell allochems oriented parallel to bedding impart faint laminated appearance; very dolomitic; medium crystalline dolomite; saccharoidal; low (1-2%) porosity; slightly mottled; mudcracks at top; massive.
11. 1.4' Dolomitic limestone: packed biomicrite; fine to coarse; 5% randomly oriented platy shell allochems; 15% light yellow-brown stained allochems; frequent miliolids; rare crab and oyster fragments; moderately dolomitic; medium crystalline dolomite; moderately hard; thin nodular bedded; buff; weathers medium gray.
12. 0.8' Dolomite: medium crystalline; low (4-5%) porosity; relict texture indicates sparse to packed biomicrite; frequent miliolids; medium to very coarse; moderately hard; massive; weathers blocky; buff; weathers dark gray.
13. 2.2' Dolomite: fine to medium crystalline; saccharoidal; low (3-5%) porosity; abundant reddish-brown stained spots; relict texture too faint for interpretation; massive; weathers blocky; moderately soft; mottled medium gray and tan.
14. 5.8' Dolomitic marly limestone: packed biomicrite; fine to very coarse; 40% yellowish to reddish brown stained allochems; rare *Porocystis globularis*; occasional whole and fragmented oyster shells; extremely dolomitic; 10-20% dolomite occurring as medium crystalline floating rhombs; saccharoidal; low (2-5%) porosity; apparently very argillaceous; moderately hard; massive; weathers recessive to blocky; buff to medium gray; weathers tan.
15. 1.1' Dolomite: fine to coarse crystalline; relict texture indicates sparse to packed biomicrite; medium to very coarse; 70% randomly oriented platy shell allochems; moderate to high (5-15%) porosity; contains two laminated finely crystalline dolomite beds in upper half that are probably supratidal crusts; upper half has very coarse to granular leached allochem holes.

16. 3.5' Dolomite: medium to coarsely crystalline; saccharoidal; moderate to high (10-15%) leached allochem porosity; very faint relict texture indicates sparse to packed biomicrite; fine to coarse; lower 1/3 has irregular development of porosity indicating relict moderate to intense burrowing; massive; moderately soft; weathers blocky; tan with light yellow-brown mottles; weathers dark gray to black.
17. 1.9' Dolomite: medium crystalline; high (20-25%) porosity; saccharoidal; relict texture indicates packed biomicrite; fine to coarse; slightly burrowed; burrow fill is more porous than the unburrowed portion; slightly mottled; massive; weathers blocky; moderately soft; buff to tan; weathers buff to dark gray.
18. 1.5' Dolomitic limestone: packed biomicrite; medium to granular; frequent miliolids; frequent platy pelecypod fragments oriented parallel to bedding; 1-2% reddish-brown stained allochems; moderately dolomitic; dolomite replaces micrite leaving calcareous allochems; medium to coarsely crystalline dolomite; very faintly laminated; moderately hard; slightly nodular to flaggy; buff; weathers medium gray.
19. 1.0' Limestone: biogenic intramicrite; fine to coarse; 20% platy shell allochems oriented parallel to bedding; cross bedded; 30% of the allochems are intraclasts; 5% are miliolids; occasional patches of dolomitic biomicrite; moderately burrowed; hard; massive; slightly mottled; buff; weathers medium gray.
20. 1.1' Dolomite: medium crystalline; saccharoidal; high (20%) leached allochem porosity; 30% of the leached allochem pores are light yellow-brown stained; relict texture indicates packed biomicrite; medium to very coarse; 10% randomly oriented platy shell allochems; moderately soft; mottled tan and light yellow-brown.
21. 1.2' Marly limestone: packed biomicrite; fine to very coarse; 2-3% randomly oriented platy shell allochems; 20% light yellow-brown stained allochems; intensely burrowed; nodular to recessive; tan with buff burrow fill; weathers tan to medium gray; badly covered.
22. ——— Limestone: sparse to packed biomicrite; very fine to coarse; 1% randomly oriented platy shell allochems; 20% light yellow-brown stained allochems; occasional whole miliolids and abundant miliolid fragments; hard; massive; buff; mottled medium gray and tan to light yellow-brown; weathers medium gray.

MEASURED SECTION 7a

Measured Section 7a is a short distance east of the eastern margin of the thesis area about 1 mile southeast of Wimberley. Measured Sections 7a and 7b are two parts of a continuous section that are connected by a traverse. They are presented here separately because the lower part is situated just outside the eastern boundary of the thesis area.

1. --- Limestone: slightly intraclastic; slightly muddy; miliolid bearing biosparite; medium to granular; unsorted; 20% light brown allochems; 5-10% miliolids; hard; massive; tan.
2. 0.6' Very dolomitic limestone: miliolid bearing extremely muddy biosparite; very fine to very coarse; occasional coated grains; unsorted; 5% randomly oriented mollusc allochems; occasional medium to very coarse intraclasts; 10% miliolids; micrite matrix completely replaced by dolomite; medium crystalline dolomite; highly porous with intergranular porosity; slightly to moderately burrowed with extremely dolomitic burrow fill; massive; tan with light gray mottles.
3. 1.5' Dolomitic limestone: extremely muddy biosparite; medium to granular; occasional coated grains; 5% medium to very coarse intraclasts; intraclasts are yellow-brown to olive green; 5% light brown allochems; rare to frequent miliolids; micrite matrix completely replaced by dolomite; medium crystalline dolomite; highly porous with leached allochem porosity; saccharoidal; moderately burrowed at base; hard; buff to light grayish-brown; weathers dark gray.
4. 1.5' Marl: calcareous mudstone to packed biomicrite; medium to very coarse; allochems are brown; up to 30% terrigenous mud; occasional small clams; occasional serpulid fragments; intensely burrowed; moderately hard; massive; medium gray to dark gray with light gray mottles.
5. 1.5' Marl: packed biomicrite; medium to coarse; light brown allochems; up to 30% terrigenous mud; occasional small clams; moderately to intensely burrowed; soft; slightly nodular bedded to massive; light brown with medium gray mottles.
6. 1.2' Dolomitic limestone: very muddy biogenic intrasparite; medium to granular; frequent coated grains; intraclasts are yellow-brown to olive; many intraclasts are coated; slightly glauconitic; frequent miliolids; micrite matrix completely replaced by dolomite; medium crystalline dolomite; slightly to intensely burrowed with dolomitic burrow fill; hard; massive; light greenish-gray; weathers dark gray.
7. 2.0' Marl: packed biomicrite; medium grained; up to 30% terrigenous mud; moderately soft; slightly nodular bedded; massive; light greenish-gray; weathers buff.

8. 1.1' Dolomitic limestone: packed biomicrite to very muddy biosparite; fine to very coarse; frequent coated grains; high leached allochem porosity of medium sand to small pebble size; occasional oyster fragments; rare serpulids; rare randomly oriented platy mollusc fragments; hard; massive; light tan; weathers medium gray.
9. 0.7' Limestone: packed biomicrite; medium to coarse; 5% randomly oriented platy mollusc fragments; occasional miliolids; slightly dolomitic; moderately soft; massive; light tan; weathers medium gray.
10. 3.8' Dolomitic limestone: packed biomicrite to very muddy biosparite; fine to very coarse; frequent possible glauconite grains; extremely abundant miliolids; micrite matrix completely replaced by dolomite; highly porous with leached allochem porosity; medium crystalline dolomite; saccharoidal; hard; buff with medium gray mottles.
11. 0.9' Limestone: extremely muddy biosparite; medium to coarse; rare miliolids; moderately burrowed; lumpy; massive; light orangish-brown.
12. 1.3' Marl: packed biomicrite; medium to coarse; 1% light yellow-brown allochems; 20% terrigenous mud; slightly dolomitic; soft; very thinly bedded; light tan.
13. 4.0' Dolomitic marl: packed biomicrite to extremely muddy biosparite; fine to very coarse; abundant coated grains; subrounded; occasional miliolids; dolomitic; medium crystalline dolomite; very porous with leached allochems and intergranular porosity; intensely burrowed; hard; massive; light grayish-tan to buff.
14. 2.0' Marl: packed biomicrite; medium to very coarse; frequent medium pebble size mollusc fragments; subrounded; slightly dolomitic; moderately hard; very thin bedded to massive; light tan; weathers light yellow-brown.
15. 4.4' Very dolomitic limestone: packed miliolid biomicrite to extremely muddy miliolid biosparite; fine to very coarse; occasional to abundant randomly oriented platy shall allochems; abundant intraclasts; abundant reddish-brown hematite spots near top; frequent to very abundant miliolids; rare serpulids; moderately to very dolomitic; medium crystalline dolomite; saccharoidal; very porous with leached allochem porosity; original limestone texture slightly effaced by dolomitization near the top; moderately burrowed at the top; very hard; massive; tan with buff mottles; weathers dark gray.
16. 1.1' Dolomitic marl: packed biomicrite; medium to very coarse; reddish-brown allochems; moderately dolomitic; medium crystalline dolomite; moderately soft; thin nodular bedded; buff; weathers dark gray.

17. 1.3' Dolomitic limestone: extremely muddy miliolid biosparite; medium to very coarse; rounded allochems; 5% of the allochems are coated; occasional to extremely abundant miliolids; occasional crab fragments; moderately burrowed; slight to moderate leached allochem and intergranular porosity; moderately dolomitic with extremely dolomitic burrow fill; burrow fill is saccharoidal; hard; buff; weathers medium gray.
18. 1.7' Dolomitic limestone: muddy miliolid biosparite; medium to coarse; rounded allochems; sorted; abundant platy shell allochems oriented parallel to bedding; extremely abundant miliolids and other foraminifers; moderately porous with intergranular porosity; micrite matrix completely replaced by dolomite; saccharoidal; very hard; massive; buff; weathers medium gray.

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19. 2.3' Extremely dolomitic limestone: packed miliolid biomicrite; medium to coarse; 5% platy shell allochems oriented parallel to bedding; abundant reddish-brown hematite spots; extremely dolomitic; micrite matrix completely replaced by dolomite; saccharoidal; occasional patches of textureless dolomite; fine crystalline dolomite; dense; buff to light brownish-tan with reddish-brown mottles.
20. 1.2' Dolomitic marl: original limestone texture effaced by dolomitization; coarse grained ghost allochems; abundant reddish-brown hematite spots; very soft; massive; thin bedded; light brownish-tan.
21. 5.9' Dolomite: medium crystalline; saccharoidal; relict texture indicates sparse to packed biomicrite; abundant reddish-brown hematite spots; abundant ghost burrowing; moderate leached allochem porosity; 10-15% leached allochem porosity in burrow fill; swirled structure; massive; weathers blocky; tan with light yellow-brown mottles; weathers black.
22. 0.7' Dolomitic limestone: packed biogenic intramicrite; fine to granular; intraclasts are up to small pebble size and are elongate parallel to bedding; 10% platy shell mollusc fragments oriented parallel to bedding; abundant miliolids and miliolid fragments; moderately dolomitic; medium crystalline dolomite; original limestone texture partially effaced by dolomitization; slightly porous with leached allochem porosity; micrite matrix completely replaced by dolomite; laminated; massive; buff; weathers medium gray.
23. 9.9' Dolomitic marl: packed biomicrite; coarse to granular; 60% light brown allochems; abundant *Porocystis globularis*; up to 30% dolomite; medium crystalline dolomite; soft; thin nodular bedded; buff; weathers medium gray.
24. 0.9' Dolomitic limestone: packed biogenic intramicrite; fine to very coarse; intraclasts are well rounded and yellow-brown to green; 20% light

- reddish-brown allochems; abundant randomly oriented platy shell allochems; abundant miliolids; moderately dolomitic; medium crystalline dolomite; saccharoidal; original limestone texture partially effaced by dolomitization; single large vug noted; hard; massive; buff to light orangish-brown; weathers medium gray.
25. 1.3' Dolomitic limestone: packed miliolid biomicrite; medium to very coarse; 10% olive green to light brown glauconitic grains; abundant miliolids; moderately dolomitic; medium crystalline dolomite; moderately burrowed; extremely dolomitic burrow fill; hard.
 26. 2.0' Dolomitic marl: sparse biomicrite; coarse; moderately dolomitic; medium crystalline dolomite; intensely burrowed; soft; massive; light brown with tan mottles; weathers dark gray.
 27. 0.4' Very dolomitic limestone: sparse to packed biomicrite; medium to coarse; 3-5% randomly oriented platy shell allochems; frequent miliolids; very dolomitic; medium crystalline dolomite; saccharoidal; original limestone texture partially effaced by dolomitization; moderately hard; massive; buff; weathers dark gray.
 28. 2.2' Marl: sparse biomicrite; medium to coarse; moderately burrowed; soft; massive; grayish-tan with light yellow-brown mottles; weathers dark gray.
 29. 1.3' Dolomitic limestone: muddy intrasparite to slightly muddy biosparite; fine to granular; well rounded intraclasts; slightly glauconitic; abundant miliolids and other foraminifers; moderately dolomitic; saccharoidal; slightly porous with intergranular porosity; very hard; massive; tan; weathers medium gray.
 30. 4.5' Covered. Single small exposure in the middle of the interval yielded the following description — Dolomite: fine crystalline; dense; soft; light grayish-brown with light reddish-brown mottles; weathers buff with black mottles.
 31. 1.1' Limestone: packed biomicrite; medium to coarse; abundant serpulids; slightly dolomitic; slightly laminated; hard; light yellow; weathers medium gray.
 32. 1.0' Slightly dolomitic limestone: muddy intraclastic biosparite; coarse to granular; allochems are well rounded; 15% intraclasts; 40% light brown stained allochems; 5% platy shell allochems oriented parallel to bedding; abundant miliolids and other foraminifers; slightly dolomitic; medium crystalline dolomite; dolomite replaces both calcareous allochems and spar fill; high intergranular and leached allochem porosity; hard; light gray with buff mottles; weathers medium gray.

33. 1.0' Dolomitic limestone: packed miliolid biomicrite to extremely muddy biosparite; medium to coarse; 5% light yellow-brown intraclasts; extremely abundant miliolids; very dolomitic; medium crystalline dolomite; saccharoidal; high leached allochem porosity; moderately burrowed with extremely dolomitic poorly cemented burrow fill; hard; massive; tan to light brown with tan mottles; weathers medium gray.
34. 0.7' Dolomitic limestone: muddy miliolid biosparite; medium to granular; moderately rounded allochems; occasional to extremely abundant miliolids; very dolomitic; medium crystalline dolomite; dolomite replaces spar cement; saccharoidal; low leached allochem porosity; slightly burrowed; hard; massive; buff to light tan with light yellow burrow mottles; weathers light gray.
35. 1.5' Limestone: packed biomicrite to slightly muddy biosparite; fine to very coarse; biosparite occurs as patches within biomicrite; well rounded allochems; extremely abundant miliolids; slightly dolomitic in places; medium crystalline dolomite; slightly burrowed with muddy burrow fill; hard; massive; tan with buff mottles; weathers medium gray.
36. 3.2' Limestone: very muddy biosparite; medium to very coarse; 10% yellow-brown allochems; 1-2% coarse mollusc fragments; abundant small clam shells and impressions; occasional miliolids; slightly dolomitic; massive; buff; weathers medium gray.
37. 1.0' Dolomitic limestone: packed biomicrite to very muddy biosparite; fine to very coarse; occasional reddish-brown hematite spots; frequent to abundant miliolids; 15% mollusc fragments; very abundant *Monopleura* sp., most of which are filled with spar and micrite, usually with a mud core surrounded by a spar rim, all enclosed in a recrystallized *Monopleura* sp. shell; very hard; massive; extremely dolomitic with medium crystalline dolomite; saccharoidal; buff; weathers medium gray.
38. 2.3' Dolomitic limestone: packed miliolid biomicrite; fine to very coarse; occasional subrounded intraclasts; occasional platy shell allochems oriented parallel to bedding; abundant to extremely abundant miliolids; slightly dolomitic; medium crystalline dolomite; saccharoidal; micrite almost completely replaced by dolomite; occasional patches of textureless dolomite; rare granular reddish-brown vugs; hard; massive; weathers medium gray.

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39. 4.0' Marly limestone: packed biomicrite; medium to coarse; occasional miliolids; rare fossils include small snails; slightly dolomitic; medium crystalline dolomite; apparently intensely burrowed; moderately hard; medium nodular bedded to massive; tan; weathers buff to light gray.

40. 0.7' Dolomitic limestone: sparse to packed miliolid biomicrite; fine to coarse; slightly recrystallized; abundant to extremely abundant miliolids and miliolid fragments; micrite matrix almost completely replaced by dolomite; medium crystalline dolomite; saccharoidal; original limestone texture partially effaced by dolomitization; moderately burrowed; poorly developed honeycomb structure; hard; buff with tan mottles.
41. 1.2' Limestone: sparse biomicrite; medium to coarse; 1-2% randomly oriented platy mollusc fragments; abundant miliolids; slightly dolomitic; medium crystalline dolomite; hard; massive; light gray; weathers medium gray.
42. 4.2' Marl and limestone: covered marl overlain by more resistant limestone. Limestone is a sparse biomicrite; medium to coarse; occasional miliolids; slightly recrystallized; moderately burrowed; hard; moderately well developed honeycomb structure; buff; weathers medium gray.

MEASURED SECTION 7b

Measured Section 7b is near the eastern margin of the thesis area about 1.2 miles southeast of Wimberley.

43. 2.0' Marl: sparse to packed biomicrite; fine to coarse; up to 30% terrigenous mud; sparse small clams and snails; very soft; very thin bedded to massive; light gray with light brown mottles.
44. 4.3' Marl: packed biomicrite; fine to very coarse; 5% coarse to very coarse light yellow-brown allochems; sparsely fossiliferous with occasional serpulids, *Trigonia* sp., oysters, occasional small to large clams; 10% medium to coarse platy mollusc fragments; slightly dolomitic; intensely burrowed; moderately hard; medium nodular bedded; tan; weathers buff with medium gray mottles
45. 2.5' Marl: fossiliferous micrite to sparse biomicrite; medium to granular; up to 30% terrigenous mud; frequent granular to small pebble size mollusc fragments; rare high spired snails; very soft; very thin bedded to massive; medium gray with yellow-brown mottles; weathers medium gray with yellow-brown mottles.
46. 0.8' Limestone: very muddy biosparite; medium to very coarse; abundant granular mollusc allochems; abundant miliolids; occasional small clams and pelecypods; moderately to intensely burrowed; hard; massive; tan; weathers medium gray
47. 3.2' Marl: packed biomicrite; medium to very coarse; abundant miliolids; occasional coarse randomly oriented platy mollusc fragments; intensely burrowed; moderately hard; buff; weathers medium gray.
48. 2.0' Marly limestone: packed biomicrite; fine to very coarse; rare miliolids; 5% coarse sand to small pebble size randomly oriented platy mollusc fragments; intensely burrowed; moderately hard; massive; buff; weathers medium gray
49. 2.0' Marl: packed biomicrite; medium to very coarse; 2% dark reddish-brown allochems; intensely burrowed; moderately hard; thin to medium nodular bedded to massive; buff with brown mottles; weathers medium gray
50. 1.5' Dolomitic limestone: packed intraclastic biomicrite to extremely muddy biosparite; fine to granular; very abundant randomly oriented platy shell allochems; 15% yellow-brown intraclasts; abundant reddish-brown hematite spots; frequent mollusc fragments recrystallized to sparry calcite; rare to abundant miliolids and other foraminifers; very dolomitic; micrite matrix completely replaced by dolomite; medium crystalline; saccharoidal; original limestone texture partially effaced by dolomitization; moderately burrowed; abundant spar filled vugs; hard; moderately well developed honeycomb structure; buff to tan with light reddish-brown mottles.

51. 1.0' Limestone: muddy biosparite; medium sand to small pebble size; abundant coated grains; allochems are subrounded to well rounded; 80% of the allochems are light reddish-brown; occasional randomly oriented platy shell allochems; 40% granular to small pebble size mollusc fragments; abundant spar filled gastropods; very hard; massive; buff to light reddish-brown; weathers dark gray.
52. 2.5' Marl: fossiliferous micrite to sparse biomicrite; coarse to very coarse; up to 30% terrigenous mud; very soft; very thin bedded to massive; grayish brown; weathers buff; covered.
53. 0.8' Descriptions from two units as follows:
- Lower unit: Limestone; sparse biomicrite; fine to medium; frequent miliolids; moderately soft; massive; buff; weathers medium gray.
 - Upper unit: Limestone; slightly muddy intraclastic biosparite; medium to coarse; allochems are rounded to well rounded; well sorted; extremely abundant intraclasts; intraclasts are light reddish-brown to yellow-brown; 10% dark reddish-brown allochems; abundant to extremely abundant miliolids and other foraminifers; thin laminae of medium crystalline dolomite near base; very hard; low angle cross bedded; massive; buff to tan; weathers medium gray.
54. 4.0' Marl: sparse biomicrite; fine to medium; apparently contains terrigenous mud; slightly fossiliferous; frequent small clam impressions; single bone fragment noted; occasional crab fragments; occasional *Trigonia* sp. impressions; occasional *Nerinea* sp. and other high spired gastropods; abundant crab claws at top; moderately soft; thin nodular bedded; grayish tan; weathers grayish tan with light reddish-brown mottles.
55. 0.9' Marly limestone: sparse biomicrite; fine to coarse; brown allochems; moderately burrowed; moderately hard; well developed honeycomb structure; light brown to buff; weathers medium gray.
56. 4.0' Marly limestone: packed biomicrite; medium to very coarse; 15% light yellow-brown allochems; up to 20% terrigenous mud; slightly dolomitic; medium crystalline dolomite; moderately to intensely burrowed; moderately hard; massive; buff with tan mottles; weathers buff to light gray.
57. 1.2' Dolomitic limestone: sparse to packed biomicrite; fine to very coarse; abundant reddish-brown intraclasts; occasional to abundant miliolids; extremely dolomitic; medium crystalline dolomite; saccharoidal; micrite matrix completely replaced by dolomite; original limestone texture partially effaced by dolomitization; hard; buff; weathers buff to light gray.
58. 2.6' Marly limestone: packed biomicrite; medium to granular; slightly glauconitic; occasional to frequent crab fragments; frequent oyster fragments; slightly

- dolomitic; medium crystalline dolomite; extensively burrowed; muddy, extremely dolomitic burrow fill; moderately hard; massive to lumpy; lower part is medium to light gray with black stained allochems; light brown in upper part; weathers light gray.
59. 4.3' Dolomitic marl: packed biomicrite; medium to granular; light yellow-brown allochems; very dolomitic; medium crystalline dolomite; apparently intensely burrowed; moderately soft; nodular bedded; buff with light brown mottles; weathers light gray to buff.
60. 1.1' Calcareous dolomite: medium crystalline; saccharoidal; high leached allochem porosity; faint relict texture indicates packed biomicrite; medium to coarse; occasional randomly oriented platy shell allochems; frequent reddish-brown hematite spots; abundant miliolids; moderately burrowed; ghost allochems in burrow fill; moderately soft; light grayish-brown to tan; weathers dark grayish-brown to black.
61. 2.6' Dolomitic limestone: sparse to packed biomicrite; medium to very coarse; light yellow brown allochems; very dolomitic; medium crystalline dolomite; moderately burrowed; extremely dolomitic burrow fill; moderately soft; massive to lumpy; light grayish brown with abundant light reddish-brown mottles; weathers medium gray.
62. 4.0' Dolomitic marl: packed biomicrite; medium to granular; 20% reddish-brown allochems; abundantly fossiliferous with abundant oyster fragments; occasional crab fragments; occasional *Loriola* sp.; rare *Trigonia* sp.; rare pectins; frequent snail steinkerns; occasional *Nerinea* sp.; occasional clam steinkerns; occasional *Neithea* sp.; rare serpulids; very dolomitic; medium crystalline dolomite; intensely burrowed; extremely dolomitic burrow fill; moderately soft; buff with reddish-brown mottles.
63. 5.1' Dolomitic marly limestone: packed biomicrite; medium to very coarse; 15% reddish-brown allochems; 5% randomly oriented coarse platy mollusc fragments; occasional oyster fragments; very dolomitic; medium crystalline dolomite; apparently intensely burrowed; moderately hard; massive; slightly lumpy; buff; weathers medium gray.
64. 1.0' Limestone: packed biomicrite; 5% light yellow-brown allochems; 3% platy mollusc allochems oriented parallel to bedding; slightly dolomitic; medium crystalline dolomite; faintly laminated; hard; massive; buff; weathers medium gray.
65. 3.5' Dolomitic marly limestone: sparse to packed biomicrite; medium to coarse; abundant yellowish-brown hematite spots; occasional miliolids; very dolomitic; saccharoidal; original limestone texture partially effaced by dolomitization; moderately burrowed; moderately hard; buff with tan mottles; weathers medium gray.

66. 6.5' Dolomitic marl: packed biomicrite; medium to coarse; up to 30% terrigenous mud; occasional *Nerinea* sp.; abundant oysters; occasional *Loriola* sp.; moderately dolomitic; medium crystalline dolomite; moderately soft; reddish-brown with buff mottles; weathers dark reddish-brown.
67. 5.7' Dolomitic marly limestone: fossiliferous micrite to sparse biomicrite; medium to coarse; occasional miliolids; very dolomitic; up to 30% dolomite; medium crystalline dolomite; intensely burrowed; moderately hard; massive; buff with tan mottles.
68. 0.8' Limestone: packed biomicrite; medium to coarse; 5% light yellow-brown allochems; slightly dolomitic; medium crystalline dolomite; intensely burrowed; hard; massive; buff with tan mottles.
69. 7.7' Dolomitic limestone: packed biomicrite; fine to coarse; frequent miliolids, decreasing in number upward; frequent randomly oriented coarse sand size platy shell allochems; slightly dolomitic; medium crystalline dolomite; massive; buff; weathers medium gray.

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70. 2.3' Extremely dolomitic limestone: packed biomicrite; fine to coarse; occasional miliolids at base, increasing in number upward to very abundant; 5% yellow brown allochems; extremely dolomitic; medium crystalline dolomite; saccharoidal; massive; buff; weathers medium gray; takes on porous structureless dolomite appearance when weathered.
71. 2.5' Marly limestone: packed biomicrite; medium to coarse; poorly sorted; 10% iron stained allochems; 5% platy pelecypod fragments; thin nodular bedded; light brown to tan.
72. 1.2' Dolomitic limestone: packed biomicrite to muddy biosparite; fine to coarse; well sorted; well rounded; 5% light brown allochems; frequent yellow-brown intraclasts; occasional to abundant miliolids; 5% platy pelecypod fragments; very dolomitic; medium crystalline dolomite; saccharoidal; original limestone texture partially effaced by dolomitization; massive; tan.
73. 2.2' Marly limestone: packed biomicrite; medium to very coarse; moderately sorted; 5% of the allochems are iron stained; 10% randomly oriented pelecypod fragments; occasional oyster fragments; up to 20% dolomite; moderately to intensely burrowed; thin nodular bedded.
74. 2.0' Dolomite: medium crystalline; 10% leached allochem porosity 5% of the pores are hematite filled; rare ghost allochems; thin to medium bedded with very thinly bedded dolomitic biomicrite at base; buff to tan

75. 0.8' Very dolomitic marly limestone: packed biomicrite; medium to very coarse; moderately sorted; occasional miliolids mostly in burrow fill; very dolomitic; medium crystalline dolomite; massive; intensely burrowed; light tan with buff to light brown burrow mottles.
76. 1.2' Very dolomitic marly limestone: sparse biomicrite; contains occasional patches of probable burrow fill with very abundant miliolids; very dolomitic; up to 50% dolomite; medium crystalline dolomite; intensely burrowed; massive; light gray with dark gray burrow mottles.
77. 2.5' Very dolomitic limestone: packed biomicrite; medium to very coarse; 10% iron stained allochems; very dolomitic; medium crystalline dolomite; thin to medium nodular bedded; light gray with dark gray mottles.
78. 1.3' Very dolomitic limestone: packed biomicrite; medium sand to small pebble size; poorly sorted; abundant iron stained allochems; 10% randomly oriented pelecypod fragments; abundant miliolids in burrow fill; very dolomitic; up to 30% dolomite in burrow fill; moderately to intensely burrowed; thin nodular bedded; buff to reddish-brown.
79. 3.0' Dolomitic marl: packed biogenic intramicrite; coarse to granular; poorly sorted; 40% of the allochems are very coarse intraclasts; 10% randomly oriented platy pelecypod fragments; moderately dolomitic; very dolomitic in muddy burrow fill; moderately burrowed; thin nodular bedded; light tan to white with buff burrow mottles.
80. 2.7' Dolomite: medium crystalline; 15% leached allochem porosity; occasional ghost allochems; 60% of the ghost allochems are hematite filled; massive to medium bedded; weathers blocky; light brown to buff.
81. 4.3' Extremely dolomitic limestone: packed biomicrite; medium to very coarse; poorly sorted; abundant yellow-brown intraclasts; abundant miliolids and other foraminifers; extremely dolomitic; medium crystalline dolomite; saccharoidal; original limestone texture partially effaced by dolomitization; high intergranular and leached allochem porosity; intensely burrowed; irregularly laminated at base; massive; tan.
82. 5.0' Dolomite: medium crystalline; 15% leached allochem porosity; 85% of the leached allochems are hematite filled; medium bedded to massive; grayish-brown.
83. 8.0' Extremely dolomitic marl: packed biomicrite; medium to coarse; original limestone texture partially effaced by dolomitization; 50% of the allochems are limonite or hematite stained; extremely dolomitic; up to 50% dolomite; medium crystalline dolomite; moderately to intensely burrowed; very light tan

84. 5.0' Dolomite: medium to coarsely crystalline; 20% leached allochem porosity with most pores containing limonite or hematite; occasional miliolids and miliolid fragments.
85. 10.0' Extremely dolomitic marl: packed biomicrite; medium to granular; poorly sorted; abundant hematite stained allochems; abundant medium pebble size oyster fragments; extremely dolomitic; up to 50% dolomite; moderately to intensely burrowed; thin to medium nodular bedded.
86. 3.5' Covered. Probably the same as bed 85.
87. 2.2' Dolomite: medium crystalline; saccharoidal; high leached allochem porosity; relict texture indicates packed biomicrite; medium to coarse; 40% of the leached allochem pores are hematite stained; medium bedded; weathers blocky; buff to tan.
88. 1.6' Extremely dolomitic limestone: original limestone partially effaced by dolomitization; faint relict texture indicates packed biomicrite; medium to very coarse; occasional yellow-brown intraclasts; occasional miliolids; 3% of the allochems are platy pelecypod fragments oriented parallel to bedding; medium crystalline dolomite; saccharoidal; moderate intergranular and leached allochem porosity; 5-10% of the allochems are iron stained; thin to medium flaggy bedded; light tan.
89. 0.8' Dolomitic limestone: packed biomicrite to well washed biosparite; fine sand to small pebble size; moderately sorted; occasional sand size allochems are well rounded; abundant platy shell allochems oriented parallel to bedding, giving the rock a faint laminated appearance; very abundant miliolids; very dolomitic; medium crystalline dolomite; extent of dolomitization is patchy and effaces original limestone texture in some places; low leached allochem porosity; buff.
90. 1.8' Extremely dolomitic limestone: packed biomicrite; medium to coarse; 15% of the allochems are hematite stained; most allochems are ghost; very dolomitic; up to 50% dolomite; massive; light tan to buff.
91. 0.7' Extremely dolomitic marl: packed biomicrite; coarse to granular; poorly sorted; extremely dolomitic; moderately to intensely burrowed; thin nodular bedded; light brown to tan.
92. 0.7' Dolomite: medium crystalline; 5% moldic porosity; massive to medium bedded; light grayish brown.
93. 1.2' Marl: fossiliferous micrite; occasional hematite spots, possibly associated with plant fragments; burrowed; thin nodular bedded; weathers with lumpy surface; buff to tan with brown patches.

94. 1.5' Dolomite: medium crystalline; low porosity; grades into overlying bed; massive, tan to brown.
95. 1.1' Dolomite: medium crystalline; 15% leached allochem porosity; moderately burrowed; lumpy weathering surface; light brown with gray mottles.
96. 1.9' Dolomitic limestone: packed miliolid biomicrite to muddy biosparite; medium to granular; moderately sorted; frequent to abundant intraclasts; 20% pelecypod fragments oriented parallel to bedding; extremely abundant miliolids; extremely dolomitic; medium crystalline dolomite; original limestone texture partially effaced by dolomitization; moderately burrowed; massive; buff to tan
97. 2.5' Dolomite: medium crystalline; 5% leached allochem porosity, increasing upward to 20%; occasional ghost burrowing; massive; weathers blocky; weathers medium gray to tan.
98. 0.3' Limestone: biosparite; coarse to granular; moderately sorted; 80% of the allochems are platy pelecypod fragments oriented parallel to bedding; laminated.
99. 5.0' Marl: packed biomicrite; medium to very coarse; poorly sorted; 25% of the allochems are iron stained; abundant *Nerinea* sp.; abundant *Turritella* sp.; abundant small clams; abundant *Exogyra* sp.; up to 40% dolomite; moderately to intensely burrowed; massive; lumpy weathering surface
100. 3.3' Dolomitic marl: fossiliferous micrite; very argillaceous; very dolomitic; occasional spots and patches of iron stain; some small iron stain spots may be associated with plant fragments; massive
101. 3.4' Dolomite; medium crystalline; 5% leached allochem porosity; up to 30% porosity in middle; medium to thick bedded; light grayish-tan
102. 3.0' Dolomite: medium crystalline; 15% leached allochem porosity; occasional ghost allochems; moderately burrowed; lumpy weathering surface; buff; mottled.
103. 0.9' Dolomitic marl: packed biomicrite; medium to very coarse; moderately sorted; very dolomitic; up to 50% dolomite; intensely burrowed; thin nodular bedded; light reddish-brown; weathers buff
104. 10.0' Dolomite: medium crystalline; 5-10% leached allochem porosity; up to 20% porosity in middle; moderately burrowed at base; massive through the rest; buff with tan mottles.
105. 3.0' Dolomite: medium crystalline; less than 5% porosity; abundant undolomitized allochems; moderately burrowed; very porous burrow fill; contains abundant gypsum; slightly nodular in some parts; weathers white at top

106. 5.0' Dolomite: medium crystalline; porosity ranges from 0-10%; occasional ghost miliolids and platy pelecypod fragments oriented parallel to bedding; massive; light brown; white calichified weathering surface.
107. 0.6' Dolomite: medium to finely crystalline; abundant ghost allochems indicate relict laminated structure; thin to medium bedded; light brown to tan; weathers white.
108. 1.1' Dolomite: medium crystalline; moderately to extensively burrowed; variable porosity, with burrow fill most porous; lumpy to nodular on weathered surface; abundant secondary calcite in veinlets or vugs.
109. 11.5' Dolomite: medium crystalline; low leached allochem porosity; original limestone texture completely effaced by dolomitization; tan to yellowish-brown with reddish-brown iron stained mottles; mostly covered and calichified.

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110. 1.8' Limestone: biosparite; medium to very coarse; moderately sorted; frequent platy pelecypod fragments oriented parallel to bedding, giving the bed a faint laminated appearance; occasional oysters, probably *Exogyra* sp.; possibly dolomitic; 15-20% porosity; moderately to extensively burrowed; dark grayish brown.
111. 0.8' Limestone: biosparite; medium to very coarse; partially recrystallized; abundant *Nerinea* sp.; moderately burrowed; massive; light gray.
112. 3.2' Covered and calichified. No description.
113. 1.3' Dolomitic limestone: packed biomicrite to muddy biosparite; fine to very coarse; moderately sorted; subrounded to well rounded; 10% iron stained biogenic allochems; very abundant miliolids; very dolomitic; medium crystalline dolomite; micrite matrix completely replaced by dolomite; original limestone texture partially effaced by dolomitization; moderately burrowed; well developed honeycomb structure; tan to light brown.
114. 0.7' Limestone: muddy biosparite; fine sand to small pebble size; moderately sorted; rounded to well rounded; 15% randomly oriented platy pelecypod fragments; abundant miliolids; very abundant small to medium pebble size snails and clams; very abundant *Nerinea* sp.; slightly burrowed with dolomitic burrow fill; buff with tan mottles.
115. 7.5' Covered and calichified. No description.
116. 1.5' Dolomitic limestone: packed biomicrite to slightly muddy biosparite; fine to very coarse; occasional coated grains; moderately to well rounded biogenic

- allochems; very abundant miliolids and miliolid fragments; very abundant granular to small pebble size gastropods, most of which are leached out leaving large pores; gastropods are high spired and parallel to bedding; occasional echinoid fragments; very high leached allochem and intergranular porosity; yellow-brown to light brown.
117. 0.5' Dolomitic limestone: packed biomicrite with bored fossiliferous micrite cap; fine to very coarse; moderately sorted; well rounded; abundant miliolids and miliolid fragments; extremely dolomitic; fine to medium crystalline dolomite; original limestone texture partially effaced by dolomitization; bore holes are filled with material of same composition as underlying biomicrite; bore holes are 1/8" in diameter and are spaced approximately 3/8" apart; packed biomicrite in lower part is yellow-brown; fossiliferous micrite portion in cap is gray.
118. 2.2' Limestone: packed biomicrite to muddy biosparite; medium to very coarse; allochems are rounded to well rounded; occasional coated grains; frequent platy shell allochems oriented parallel to bedding, giving the rock a faint laminated appearance; abundant intraclasts up to 2" in length; 20-40% of the allochems are miliolids; slightly dolomitic in patches; massive; light tan.
119. 2.5' Limestone: packed biomicrite to muddy biosparite; fine to very coarse; subrounded to well rounded allochems; moderately sorted; 5% of the allochems are randomly oriented platy pelecypod fragments; 10% of the allochems are yellow-brown stained; abundant coated grains; very abundant miliolids and other foraminifers; occasional sparry gastropods; packed biomicrite occurs as patches in muddy biosparite; slightly to moderately burrowed; moderately well developed honeycomb structure; light brown to tan.
120. 1.3' Limestone: slightly muddy biosparite; fine to granular; poorly sorted; 20-30% of the allochems are randomly oriented pelecypod fragments; occasional miliolids; slightly to moderately burrowed; some sparry calcite vug filling; moderately well developed honeycomb structure; light tan.
121. 0.5' Limestone: slightly muddy biosparite; fine to coarse; poorly sorted; 2% of the allochems are iron stained; abundant miliolids; laminated; massive; tan to buff.
122. 1.0' Limestone: packed biomicrite to well washed biosparite; medium to granular; subrounded to well rounded; well sorted; frequent coated grains; very abundant reddish-brown hematite spots; occasional miliolids; very fossiliferous; abundant high spired gastropods; very abundant oysters and other pelecypods; abundant *Monopleura* sp.; abundant *Nerinea* sp.; brown.

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123. ——— Marl: fossiliferous micrite; coarse to granular; very fossiliferous with abundant *Exogyra texana*, occasional large clam steinkerns; frequent to abundant randomly oriented pelecypod fragments; extensively burrowed; medium nodular bedded.

MEASURED SECTION 8

Measured Section 8 is near the eastern margin of the thesis area about 1.2 miles southeast of Wimberley.

1. 1.5' Limestone: slightly muddy biosparite; fine to very coarse; poorly sorted; abundant miliolids; sparry vug filling; massive

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2. 10.7' Marl: sparse biomicrite; fine to granular; very fossiliferous with abundant *Exogyra texana*, randomly oriented pelecypod fragments, gastropods, small to large clam steinkerns; intensely burrowed; thin bedded; faintly to well mottled.

TOP OF THE BEE CAVE

3. 1.5' Limestone: biogenic muddy intrasparite; medium to very coarse; moderately sorted; abundant biogenic allochems; most of the biogenic allochems are coated and well rounded; abundant platy shell allochems moderately well oriented parallel to bedding, giving the bed a faint laminated appearance at its base; frequent miliolids; occasional glauconite grains.
4. 1.5' Limestone: intraclastic sparse biomicrite to packed intramicrite; medium to very coarse; poorly sorted; up to 40% of the allochems are light brown intraclasts; intraclast content increases upward.
5. 1.8' Covered. No description.
6. 1.8' Limestone: biosparite; medium to coarse; well sorted; subrounded to well rounded; 10% light brown allochems; frequent miliolids and other foraminifers; faintly laminated in upper part; buff.

MEASURED SECTION 9

Measured Section 9 is about 0.3 miles east of the eastern margin of the thesis area about 1.6 miles southeast of Wimberley and about 0.3 miles east of Measured Section 7b.

1. ——— Limestone: intraclastic biosparite: medium to granular; unsorted; rounded to well rounded; intraclasts are of small pebble size; abundant miliolids; occasional small pebble size oyster fragments; massive; tan to buff; weathers medium gray.
2. 6.1' Dolomitic limestone: packed biomicrite to muddy biosparite; medium to very coarse; abundant coated grains; abundant miliolids and other foraminifers; very dolomitic; medium crystalline dolomite; original limestone texture partially effaced by dolomitization; slightly to moderately burrowed; porous dolomite burrow fill; massive; lumpy; light yellow-brown to tan; weathers medium gray
3. 1.1' Limestone: slightly muddy biosparite; fine to coarse; unsorted; rounded to well rounded; abundant light brown stained allochems; frequent intraclasts; abundant miliolids and other foraminifers; slightly dolomitic; medium crystalline dolomite; massive; light tan; weathers medium gray.
4. 1.7' Limestone: intraclastic slightly muddy biosparite; medium to coarse; moderately sorted; rounded to well rounded; abundant reddish-brown hematite spots; occasional miliolids; very fossiliferous with abundant small pebble size oyster fragments, abundant high spired snails, including *Nerinea* sp., and abundant thick walled pelecypod fragments; slightly to moderately burrowed, with packed biomicrite burrow fill; massive; reddish to dark yellowish-brown; weathers reddish to dark yellowish-brown.

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5. 10.5' Marl: calcareous mudstone to fossiliferous micrudite; up to 30% terrigenous mud; slightly glauconitic; abundant *Exogyra texana* interspersed throughout; occasional medium size clam and snail steinkerns; apparently intensely burrowed; medium nodular bedded; buff to light tan; weathers buff to light tan

TOP OF THE BEE CAVE

6. 0.5' Limestone: muddy biosparite; medium to coarse; grain size increases to granular at top; unsorted; 25% light brown allochems; abundant granular to small pebble size oyster fragments oriented parallel to bedding; massive; light brown and tan with reddish-brown mottles.
7. 5.8' Dolomitic limestone: packed biomicrite; medium to coarse; abundant light reddish-brown iron stained allochems; very abundant whole and fragmented

oysters at base; very fossiliferous at base; moderately dolomitic; medium crystalline dolomite; intensely burrowed; becomes moderately burrowed with extremely dolomitic burrow fill toward top; massive; lumpy; tan to buff; becomes white with light brown mottles toward top.

8. 2.3' Dolomitic limestone: packed biomicrite to slightly muddy biosparite; fine to coarse; moderately sorted; frequent platy shell allochems oriented parallel to bedding, giving the rock a faint laminated appearance; frequent yellow-brown intraclasts; abundant miliolids; extremely dolomitic; medium crystalline dolomite; saccharoidal; micrite matrix completely replaced by dolomite; original limestone texture partially effaced by dolomitization; burrowing increases upward from slight to moderate; massive; buff to tan; weathers medium gray.
9. 2.8' Marl: sparse biomicrite; medium grained; contains much terrigenous mud; intensely burrowed; very thin nodular bedded; light yellow-brown; weathers light yellow-brown.
10. 2.0' Dolomite: medium crystalline; saccharoidal; 10% leached allochem porosity; relict texture indicates packed biomicrite; frequent yellow-brown stained leached allochem pores; abundant coarse sand size reddish-brown hematite spots; moderate burrowing causes poorly developed honeycomb structure; light brown; weathers light gray to tan.

MEASURED SECTION 10

Measured Section 10 is on the west side of Texas F.M. 12 about 2 3 air miles south of Wimberley.

1. ——— Dolomite: medium to coarsely crystalline; collapse breccia features indicate previous presence of gypsum; medium bedded; shows relict algal mat structure; light brown to reddish-brown; weathers dark gray to black.
2. 1.3' Dolomite: medium crystalline; well developed collapse breccia and undulatory bedding; thin bedded; light brown to tan; weathers dark gray to black.
3. 2.0' Pulverulite?: thin to medium undulatory bedded; contains many veins of finely to very coarsely crystalline calcite; probably evaporitic in origin; abundant dissolved gypsum collapse features; vuggy; light reddish-brown; weathers light reddish-brown.
4. 1.6' Pulverulite?: medium undulatory bedded; abundant coarsely to very coarsely crystalline calcite veins; abundant solution collapse features; probably evaporitic in origin; very vuggy; lumpy; gray to light brown; weathers white to dark gray
5. 2.8' Extremely dolomitic limestone: original limestone texture nearly effaced by dolomitization; medium crystalline dolomite; porosity ranges from 0-10%; relict texture indicates muddy biosparite; medium to very coarse; extremely abundant yellow-brown intraclasts; occasional relict laminations probably of algal mat origin; abundant miliolids and miliolid fragments; poorly developed collapse features near middle; medium bedded; tan to light brown with reddish-brown mottles; weathers tan to black.
6. 2.8' Pulverulite?: covered and calichified; apparently a pulverulite bed laced with medium to coarsely crystalline sparry calcite veins; abundant vugs, collapse breccia and other evidences of solution.
7. 2.8' Dolomite: medium crystalline; abundant coarse sand size allochems; frequent small reddish-brown hematite spots; laced with calcite veins and isolated 1" to 4" calcite nodules; relict laminated structure; massive with two thin bedded units in middle; light yellow-brown.
8. 7.6' Pulverulite?: complexly interlaced with sparry calcite veins; contains occasional patches of dolomite; dolomite is medium crystalline; dolomite is light brown and weathers black; calcite is light brown with occasional bright reddish-brown spots.

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9. 1.0' Limestone: biosparite; frequent coarse ghost allochems; occasional intraclasts; abundant oysters at base.
10. 1.7' Dolomite: medium crystalline; relict texture indicates sparse biomicrite; intensely burrowed; massive and lumpy; tan with brown mottles; weathers black.
11. 1.0' Dolomitic limestone: packed biomicrite; medium to granular; unsorted; abundant gastropods at top; moderately burrowed; light brown with tan burrow fill; weathers medium gray.
12. 0.9' Limestone: muddy intraclastic biosparite; fine to granular; unsorted; abundant subrounded to well rounded intraclasts; frequent coated grains; abundant randomly oriented platy shell allochems; intraclasts are light yellow-brown; extremely abundant miliolids; massive; light tan; weathers medium gray.
13. 1.4' Dolomitic limestone: packed biomicrite; medium to coarse; unsorted; massive; very dolomitic; medium crystalline dolomite; uppermost unit is slightly lumpy; tan with reddish-brown mottles; weathers dark gray.
14. 0.7' Dolomitic limestone: sparse biomicrite; coarse; very dolomitic; medium crystalline dolomite; grades upward into very dolomitic biomicrudite, as 1-1½" gastropods become more abundant; intensely burrowed; massive; slightly lumpy; tan to light brown; contains reddish-brown mottles; weathers black.
15. 1.0' Very dolomitic limestone: sparse biomicrite; medium to coarse; abundant ghost miliolids; very dolomitic; medium crystalline dolomite; massive; tan with reddish-brown spots and mottles; weathers black.
16. 0.7' Dolomitic marl: packed biomicrite; medium grained; very dolomitic; medium crystalline dolomite; very thin bedded to laminated; yellow-brown to tan with abundant reddish-brown spots and mottles.
17. 1.7' Extremely dolomitic limestone: packed biomicrite; abundant medium sand size light reddish-brown spots; extremely dolomitic; medium crystalline dolomite; micrite matrix completely replaced by dolomite; saccharoidal; original limestone texture partially effaced by dolomitization; intensely burrowed with burrow fill apparently more muddy and more dolomitic than unburrowed portion; massive; lumpy; light tan, weathers black.
18. 1.7' Dolomitic limestone: packed biomicrite; medium to coarse; 5% randomly oriented platy mollusc fragments; abundant coarse sand to granular reddish-brown hematite spots; very dolomitic; medium crystalline dolomite; massive; resistant; tan; weathers medium gray.

19. 3.9' Dolomitic limestone: miliolid bearing biosparite; fine to very coarse; well sorted; rounded to well rounded; frequent coated grains; occasional to abundant medium to large pebble size dolomitic intraclasts; slightly fossiliferous; very abundant miliolids and other foraminifers; very cavernous with small caves partially filled with terra rosa; laminated; medium bedded; light brown; weathers medium gray.
20. 3.7' Limestone: muddy biosparite; medium grained; unsorted; 5% randomly oriented platy mollusc fragments; abundant whole and fragmented oysters dispersed throughout; moderately burrowed; massive; lumpy; tan; weathers medium gray.
21. 0.7' Dolomitic limestone: packed biomicrite to muddy biosparite; medium to coarse; subrounded to well rounded; frequent yellow-brown intraclasts; 2% of the allochems are granular to small pebble size platy pelecypod fragments; occasional rudists; abundant miliolids and other foraminifers; slightly burrowed with porous packed biomicrite burrow fill; poorly developed honeycomb structure; massive; tan with yellow-brown mottles; weathers medium gray.
22. 1.3' Limestone: slightly muddy miliolid biosparite; medium grained; 10% miliolids; occasional spar filled vugs; massive; tan; weathers medium gray.

MEASURED SECTION 11

Measured Section 11 is near the southwest corner of the thesis area about 0.7 miles south of Texas F.M. 32 and 0.9 miles east of the west boundary of the area.

1. 1.0' Limestone: intraclastic biosparite; medium grained; sorted; approximately 20% of the allochems are intraclasts; intraclasts are up to ½" in diameter; occasional granular pelecypod fragments, probably oysters; slightly burrowed; massive; buff; weathers white to tan.
2. 3.5' Limestone: muddy biosparite; fine to medium; unsorted; 20% reddish-brown allochems; occasional *Exogyra* sp.; moderately burrowed; massive to lumpy; light brown to tan; weathers light brown to tan.
3. 3.3' Dolomite: medium crystalline; abundant reddish-brown iron stained ghost allochems; grades into calcareous dolomite upwards; light brown; weathers black; calichified.
4. 1.0' Extremely dolomitic limestone: medium crystalline dolomite; saccharoidal; original limestone texture is almost completely effaced by dolomitization; relict texture indicates packed biomicrite; fine to coarse; abundant yellow-brown intraclasts; slightly porous with leached allochem porosity; moderate relict burrowing; massive and lumpy; buff; weathers buff.
5. 2.5' Covered. No description.
6. 1.0' Limestone: muddy to well washed biosparite; medium to coarse; moderately sorted; subrounded to well rounded; abundant randomly oriented platy shell allochems; medium to granular intraclasts; 10% of the allochems are miliolids and other foraminifers; frequent thick walled pelecypod fragments; laminated; massive; buff to light tan; weathers gray to black.
7. 3.5' Dolomitic limestone: packed biomicrite to muddy biosparite; fine to very coarse; 10% of the allochems are iron stained; 5% are randomly oriented platy shell allochems; abundant miliolids and other foraminifers; occasional randomly oriented pelecypod fragments; very dolomitic; medium crystalline dolomite; low leached allochem porosity; moderately burrowed; white to light tan; weathers tan.

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8. 2.0' Dolomitic limestone: packed oyster fragment biomicrite; medium to coarse grained; 10% of the allochems are iron stained; abundant *Exogyra texana*; very dolomitic; intensely burrowed; nodular to lumpy; brown to white.

9. 1.3' Extremely dolomitic limestone: original limestone texture partially effaced by dolomitization; faint relict texture indicates packed biomicrite; medium to coarse; slightly glauconitic; medium crystalline dolomite; saccharoidal; moderately burrowed; tan to yellow-brown; weathers black to buff.
10. 7.1' Marl: fossiliferous micrudite; sand size allochems not visible; *Exogyra texana* occurs in restricted zones; tan; covered and calichified.

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11. 1.4' Dolomitic limestone: packed biomicrite; fine to coarse; unsorted; 10% of the allochems are iron stained; frequent randomly oriented platy shell allochems; abundant yellow-brown medium sand size intraclasts; occasional dark reddish-brown hematite spots; occasional thick walled pelecypod fragments; original limestone texture partially effaced by dolomitization; moderately burrowed; massive with poorly developed honeycomb structure; light brown to tan.
12. 4.5' Marl: covered and calichified; apparently a medium grained packed biomicrite.
13. 1.0' Limestone: biosparite; very fine to fine; sorted; rounded; 30% of the allochems are light brown stained; buff to tan.
14. 1.5' Dolomitic limestone: packed biomicrite to slightly muddy biosparite; medium grained; very well sorted; subrounded to well rounded; occasional coated grains; frequent reddish-brown allochems; 3-5% of the allochems are mollusc fragments; slightly dolomitic; medium crystalline dolomite; slightly burrowed with porous very dolomitic biomicrite burrow fill; buff.
15. 15.7' Dolomite: medium crystalline; abundant reddish-brown iron stained ghost allochems; abundant spar filled veinlets; extensively burrowed; massive; lumpy; nodular where weathered; light grayish-brown mottled.
16. 1.0' Dolomitic limestone: muddy biosparite; medium to coarse; abundant light reddish-brown iron stained allochems; abundant *Toucasia* sp.; dolomitic; medium crystalline dolomite; mud content decreases upward; massive; light tan to buff; weathers grayish brown.
17. 0.8' Dolomite: medium crystalline; saccharoidal; moderate porosity; relict texture indicates sparse to packed biomicrite; medium to very coarse; unsorted; frequent light brown iron stained allochems; abundant brown stained leached allochem holes; laminated and cross bedded; light tan to medium gray with tan mottles; weathers medium gray to black.

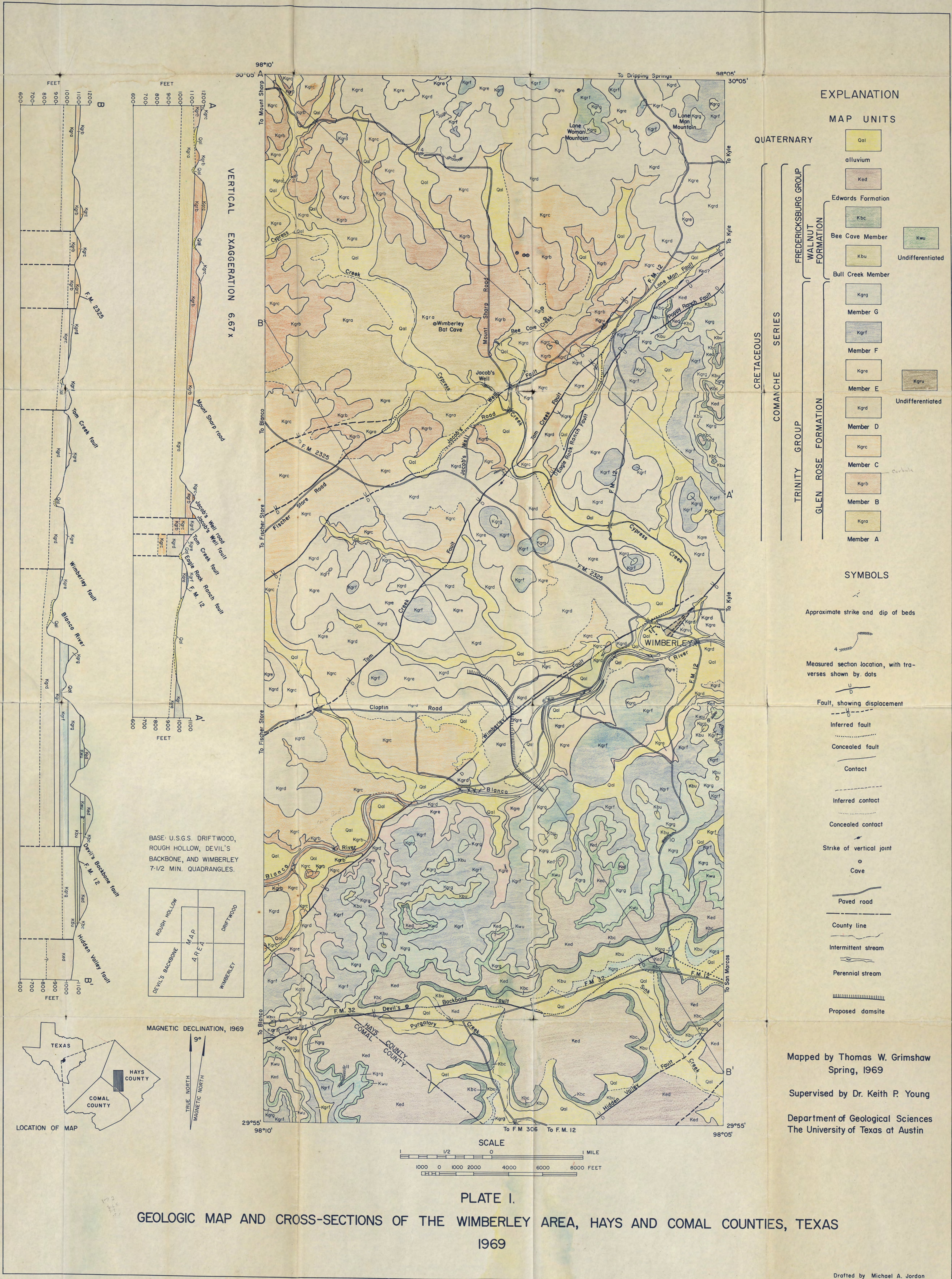
18. 1.1' Dolomitic limestone: intraclastic biosparite; fine; unsorted; intraclasts are coarse to granular; frequent *Toucasia* sp.; buff to tan; weathers black.
19. 1.0' Extremely dolomitic limestone: original limestone texture partially effaced by dolomitization; medium crystalline dolomite; faint relict texture indicates fossiliferous micrite to sparse biomicrite; fine to medium; frequent randomly oriented platy shell allochems; abundant spar filled fractures; occasional miliolids; abundant *Monopleura* sp. and *Toucasia* sp.; massive; tan with yellow-brown mottles.
20. 2.0' Dolomite: medium crystalline; up to 10% leached allochem porosity; occasional ghost pelecypod allochems; massive; blocky; light brown to tan; weathers black; partially covered.
21. 1.7' Limestone: medium grained; recrystallized; occasional faint ghost allochems; poorly bedded; light brown to tan; weathers grayish-white.
22. 1.0' Dolomitic limestone: packed biomicrite; medium to coarse; abundant reddish-brown stained allochems; dolomite is medium crystalline; massive.
23. 8.0' Covered and calichified. No description.
24. 1.5' Limestone: partially recrystallized from weathering; sparry; poorly developed honeycomb structure; massive; light brown; weathers medium gray to white.
25. 4.5' Covered and calichified. No description.
26. 4.3' Extremely dolomitic limestone: original limestone texture largely effaced by dolomitization; fine to medium crystalline dolomite; faint relict texture indicates packed biomicrite; medium grained; occasional platy shell allochems oriented parallel to bedding; abundant miliolids and miliolid fragments; faintly laminated; massive; buff to light tan; weathers buff to light tan.
27. 5.0' Calcareous dolomite: original limestone texture almost completely effaced by dolomitization; fine to medium crystalline dolomite; faint relict texture indicates packed biomicrite; medium to coarse; low leached allochem porosity; ghost allochems are medium sand size; poorly developed honeycomb structure; buff with tan mottles.
28. 1.0' Limestone: partially recrystallized from weathering; abundant biogenic allochems of medium sand size; abundant granular pelecypod and gastropod fragments; massive; light gray to white; weathers dark gray.
29. 4.0' Limestone: partially recrystallized from weathering; lumpy; massive; light brown to tan; weathers brownish-gray.

30. 3.0' Calcareous dolomite: fine to medium crystalline; original limestone texture almost completely effaced by dolomitization; relict texture indicates sparse biomicrite; medium to coarse; unsorted; occasional platy shell allochems; frequent light brown allochems; occasional miliolids; occasional small clams; intensely burrowed; medium to coarse packed biomicrite burrow fill; massive; light gray to buff; weathers medium gray.
31. 3.0' Limestone: largely recrystallized from weathering; appears to be a packed biomicrite; fine to medium; abundant medium to granular pelecypod and gastropod fragments; massive; light gray to white; weathers medium gray.
32. 8.0' Limestone: partially recrystallized from weathering; probably was originally a muddy biosparite; medium grained; abundant platy mollusc fragments; low leached allochem porosity; poorly developed honeycomb structure; light brown to tan; weathers dark gray; covered and calichified.
33. 2.0' Limestone: partially recrystallized from weathering; moderately burrowed; burrow fill has high leached allochem porosity.
34. 7.0' Covered: grass and float covered slope; float indicates probable recrystallized limestone containing chert. Chert is knobby, irregular, and rounded, with no apparent bedding control; light grayish blue with white patina; concentrically banded near the edges; contains miliolids and other biogenic allochems.
35. 1.0' Limestone: recrystallized from weathering; biosparite; 5% of the allochems are platy mollusc fragments oriented parallel to bedding, giving the rock a faint laminated appearance; massive; light gray; weathers medium gray.
36. 2.0' Limestone: partially recrystallized from weathering; moderately burrowed with packed biomicrite burrow fill and sparse biomicrite unburrowed portion; light gray to tan; weathers medium gray.
37. 1.5' Limestone: muddy intraclastic biosparite; medium to very coarse; 1% granular to small pebble size intraclasts; most are light brown iron stained; abundant platy mollusc fragments moderately well oriented parallel to bedding; massive; light gray; weathers medium gray; slightly recrystallized from weathering.
38. 4.5' Calcareous dolomite: fine to medium crystalline; relict texture indicates fossiliferous micrite to sparse biomicrite; fine to coarse; very abundant thick walled platy pelecypod fragments oriented parallel to bedding; occasional orange intraclasts; frequent miliolids and miliolid fragments; moderately burrowed with coarse dolomitic burrow fill; massive; medium gray; weathers medium gray.

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LIBERTY CLASP 7½ x 10½
LIBERTY ENV. CORP.



EXPLANATION

MAP UNITS

- QUATERNARY
- Qal alluvium
- FREDERICKSBURG GROUP
- WALNUT FORMATION
- Ked Edwards Formation
 - Kbc Bee Cave Member
 - Kbu Undifferentiated
 - Kbu Bull Creek Member
- CRETACEOUS
- COMANCHE SERIES
- TRINITY GROUP
- GLEN ROSE FORMATION
- Kgrg Member G
 - Kgrf Member F
 - Kgre Member E
 - Kgrd Undifferentiated
 - Kgrd Member D
 - Kgrc Member C
 - Kgrb Member B
 - Kgra Member A

SYMBOLS

- Approximate strike and dip of beds
- Measured section location, with traverses shown by dots
- Fault, showing displacement
- Inferred fault
- Concealed fault
- Contact
- Inferred contact
- Concealed contact
- Strike of vertical joint
- Cave
- Paved road
- County line
- Intermittent stream
- Perennial stream
- Proposed damsite

BASE: U.S.G.S. DRIFTWOOD, ROUGH HOLLOW, DEVIL'S BACKBONE, AND WIMBERLEY 7-1/2 MIN. QUADRANGLES.

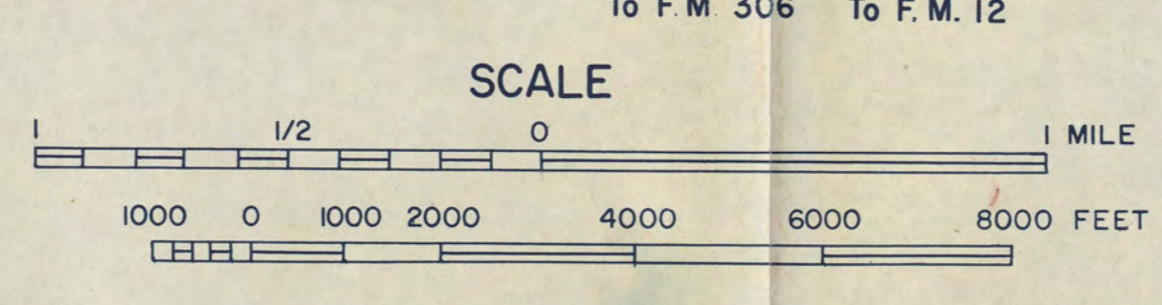
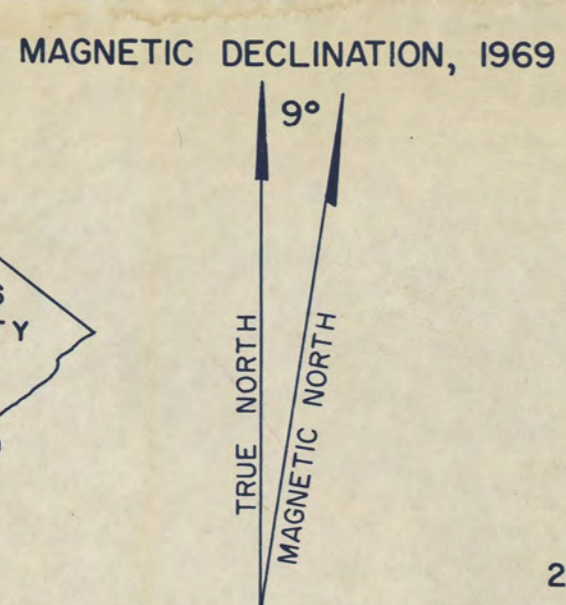
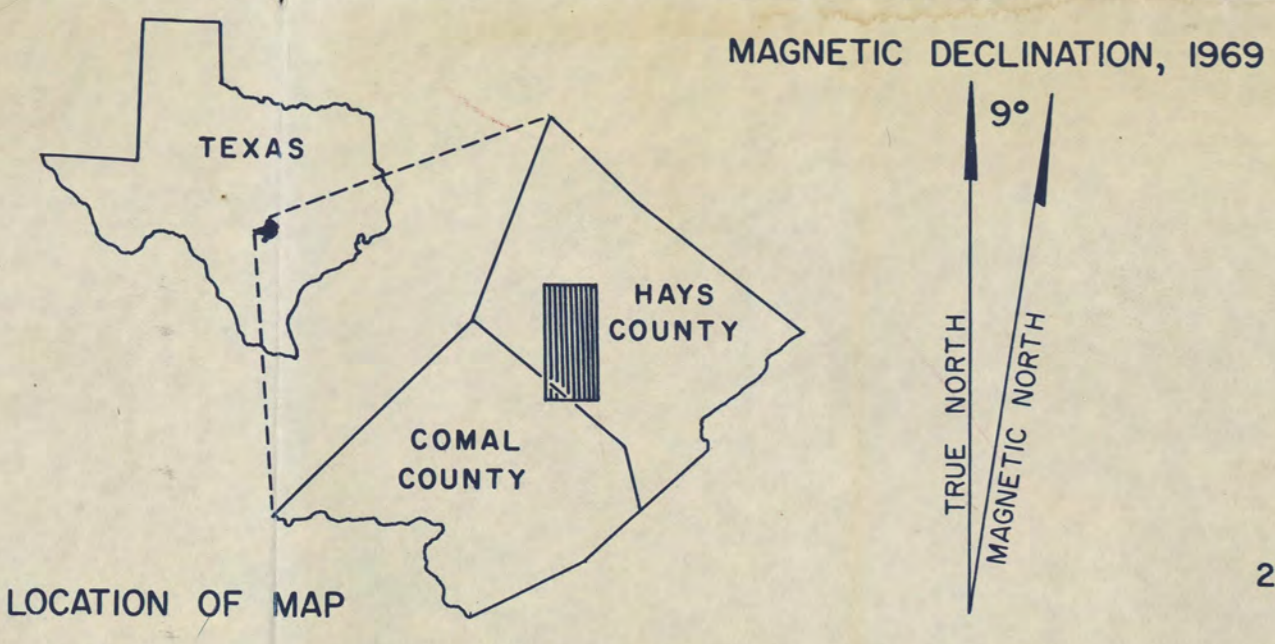
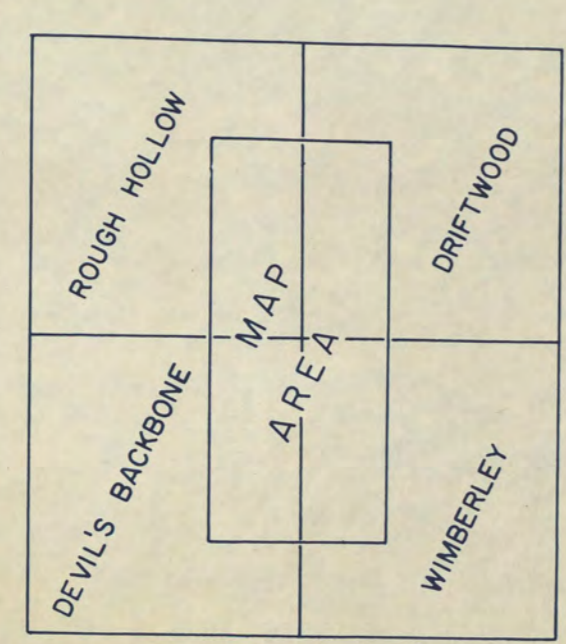


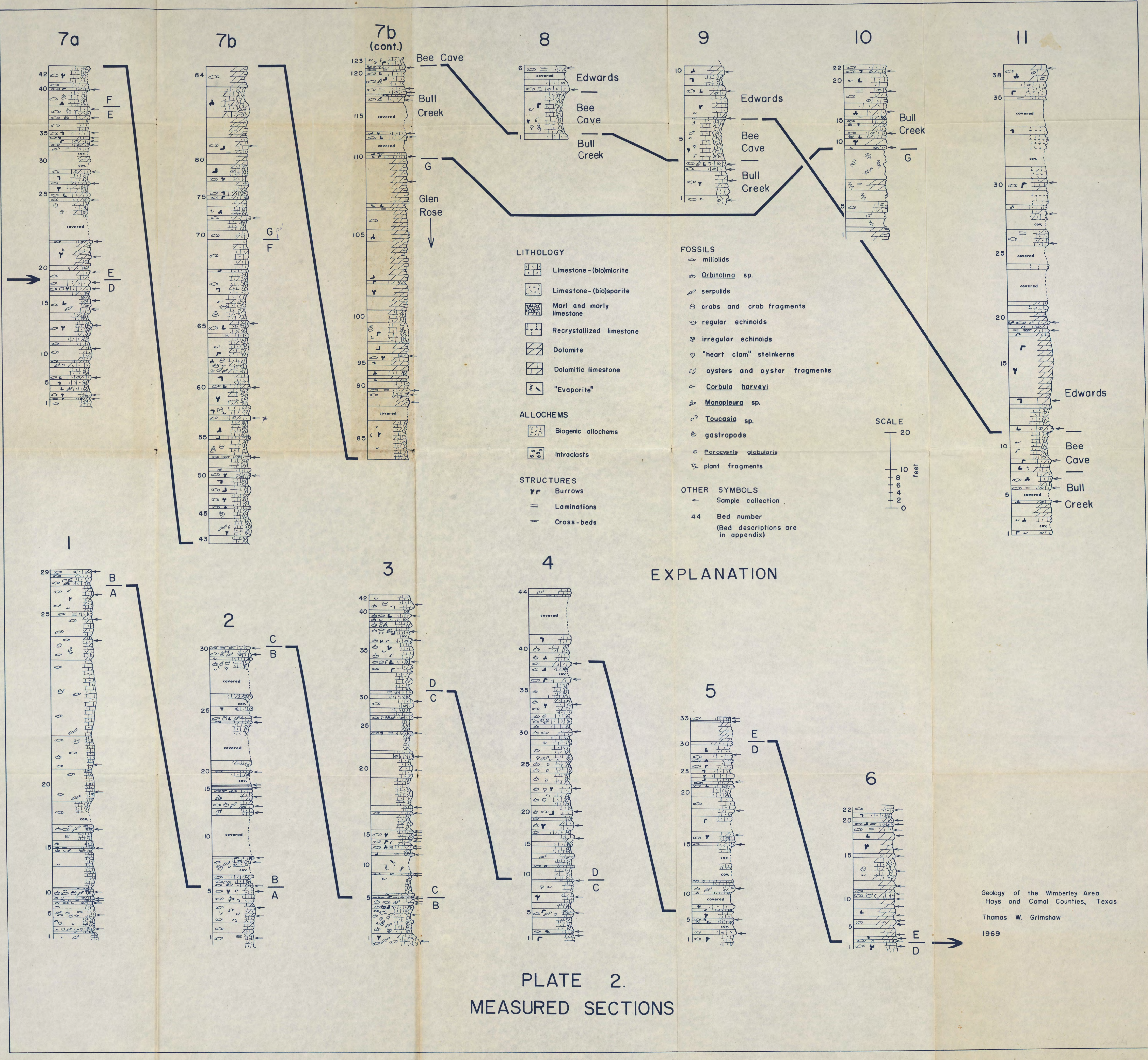
PLATE I.
GEOLOGIC MAP AND CROSS-SECTIONS OF THE WIMBERLEY AREA, HAYS AND COMAL COUNTIES, TEXAS
1969

Mapped by Thomas W. Grimshaw
Spring, 1969

Supervised by Dr. Keith P. Young

Department of Geological Sciences
The University of Texas at Austin

Drafted by Michael A. Jordan



7a

7b

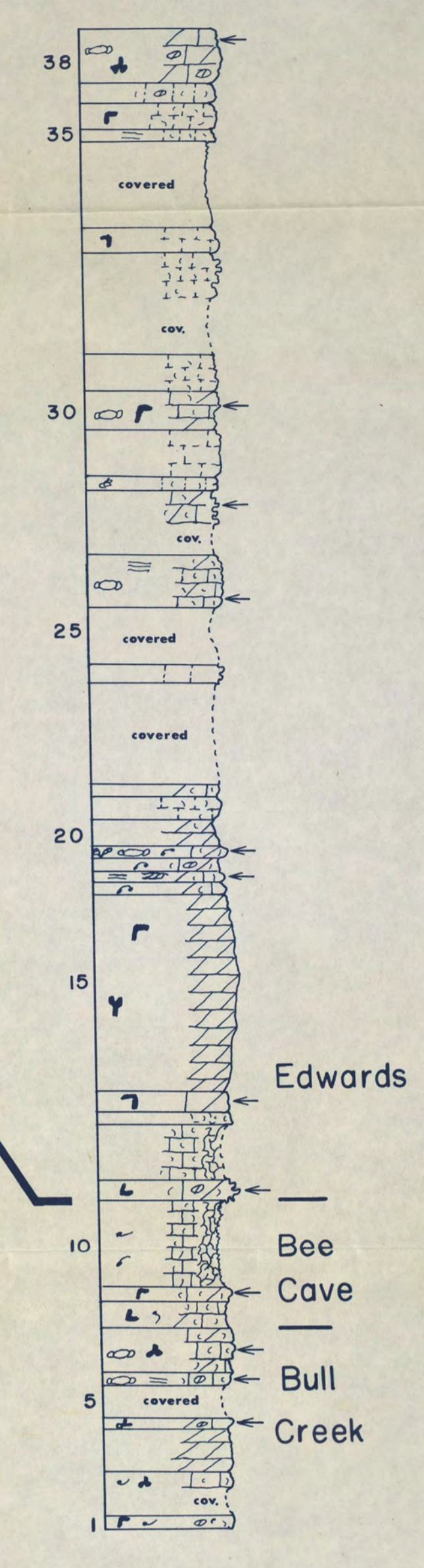
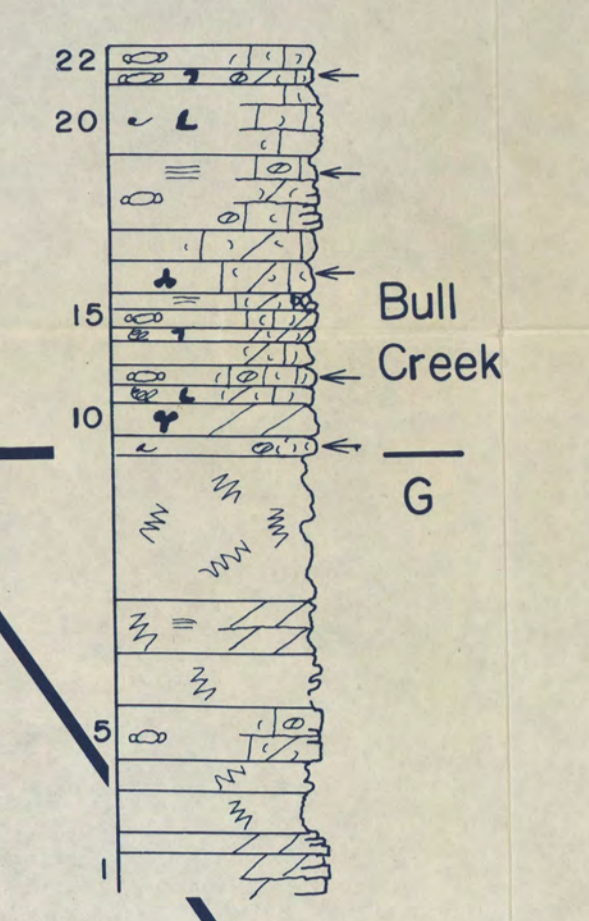
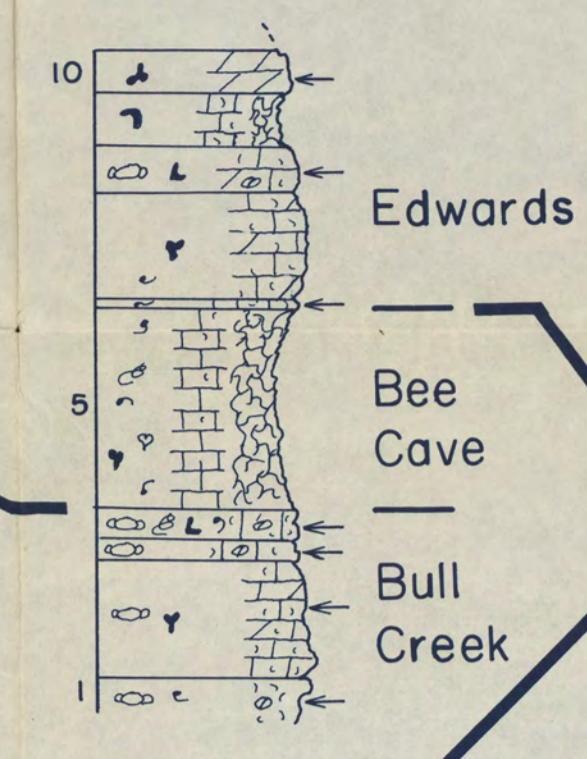
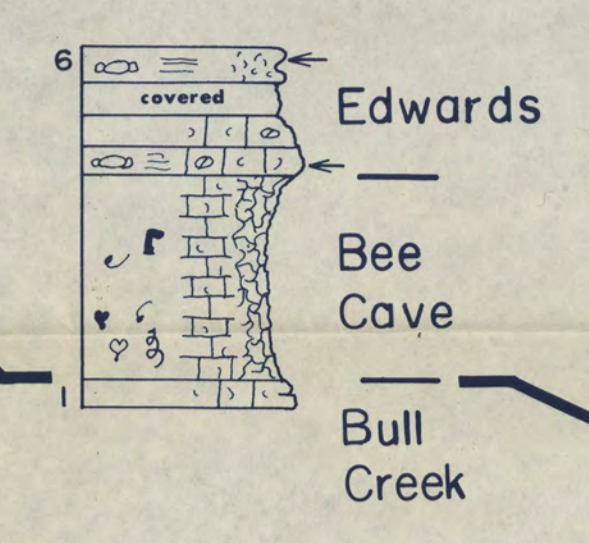
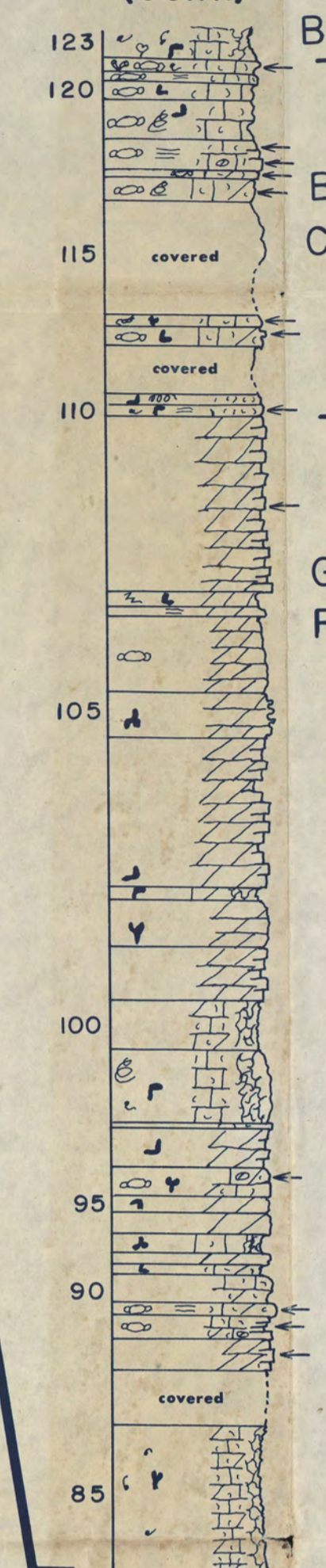
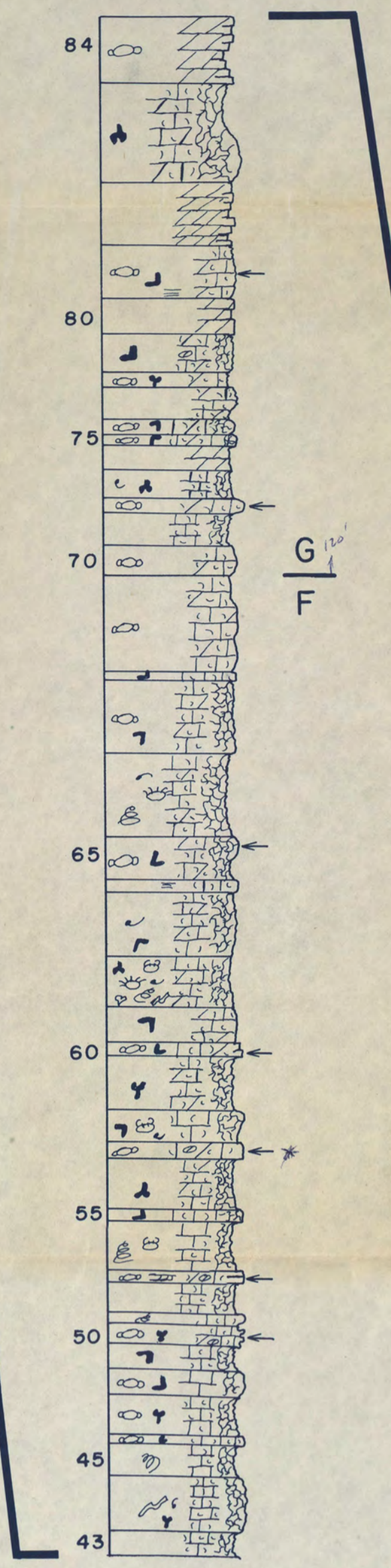
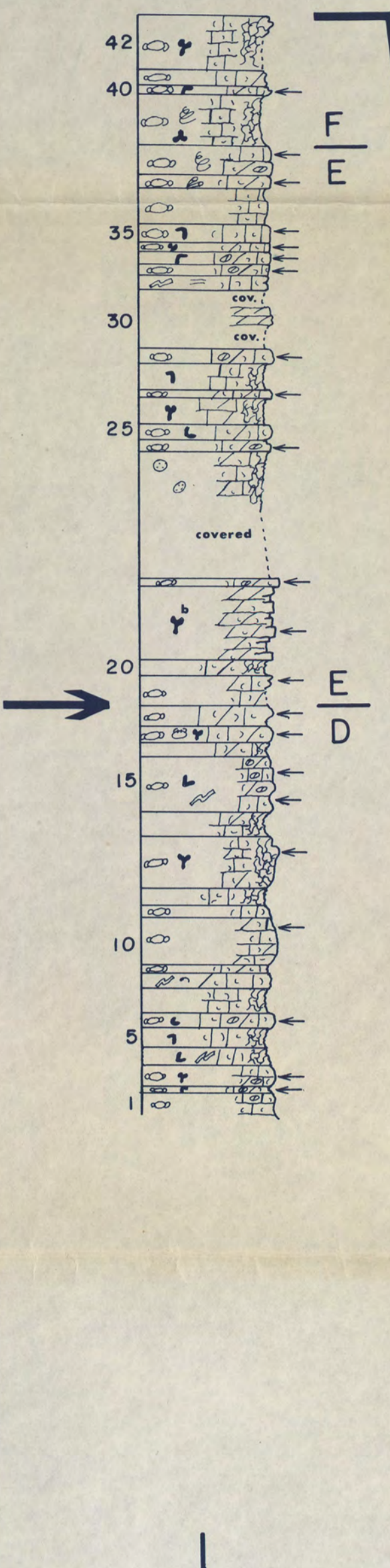
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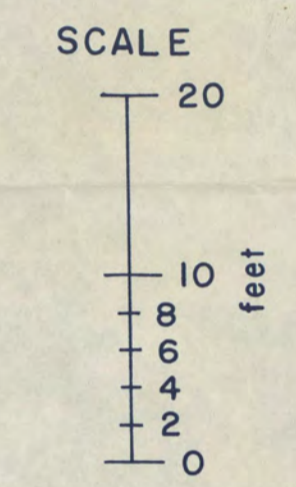
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11



- LITHOLOGY**
- Limestone - (bio)micrite
 - Limestone - (bio)sparite
 - Marl and marly limestone
 - Recrystallized limestone
 - Dolomite
 - Dolomitic limestone
 - "Evaporite"
- ALLOCHEMS**
- Biogenic allochems
 - Intraclasts
- STRUCTURES**
- Burrows
 - Laminations
 - Cross-beds

- FOSSILS**
- miliolids
 - Orbitalina* sp.
 - serpulids
 - crabs and crab fragments
 - regular echinoids
 - irregular echinoids
 - "heart clam" steinkerns
 - oysters and oyster fragments
 - Corbula harveyi*
 - Monopleura* sp.
 - Toucasia* sp.
 - gastropods
 - Porocystis globularis*
 - plant fragments
- OTHER SYMBOLS**
- Sample collection
 - 44 Bed number (Bed descriptions are in appendix)



EXPLANATION

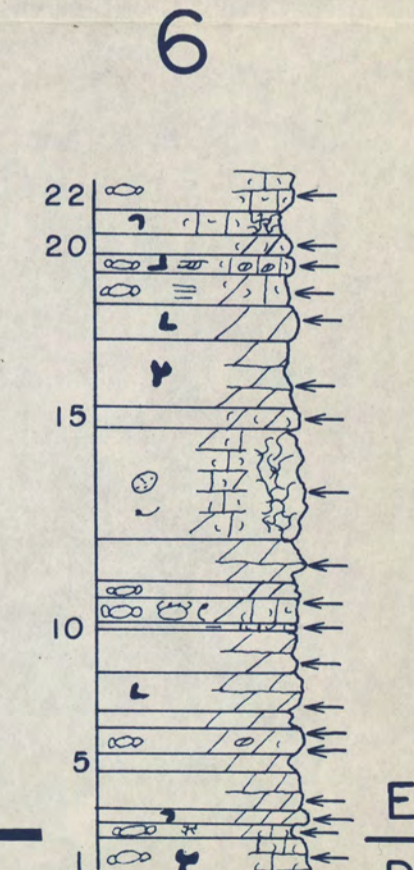
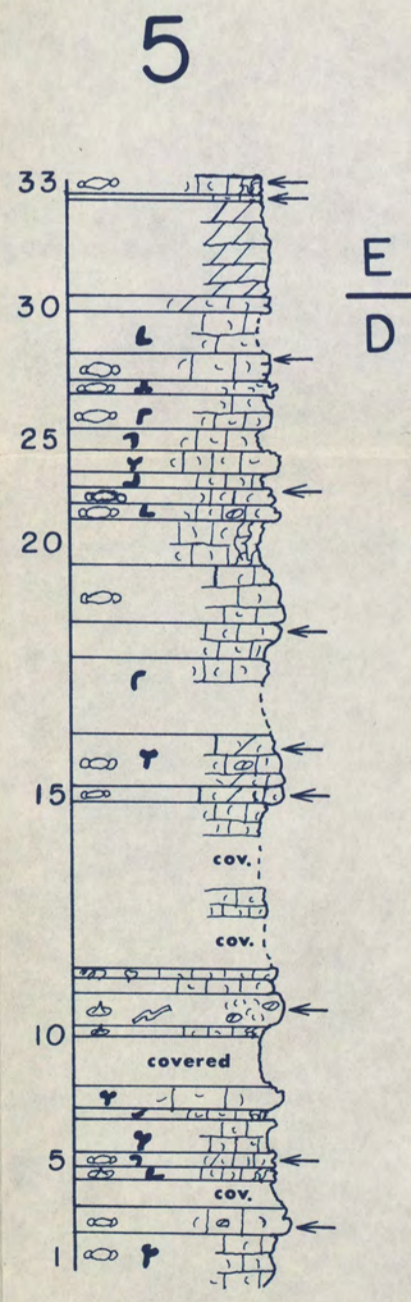
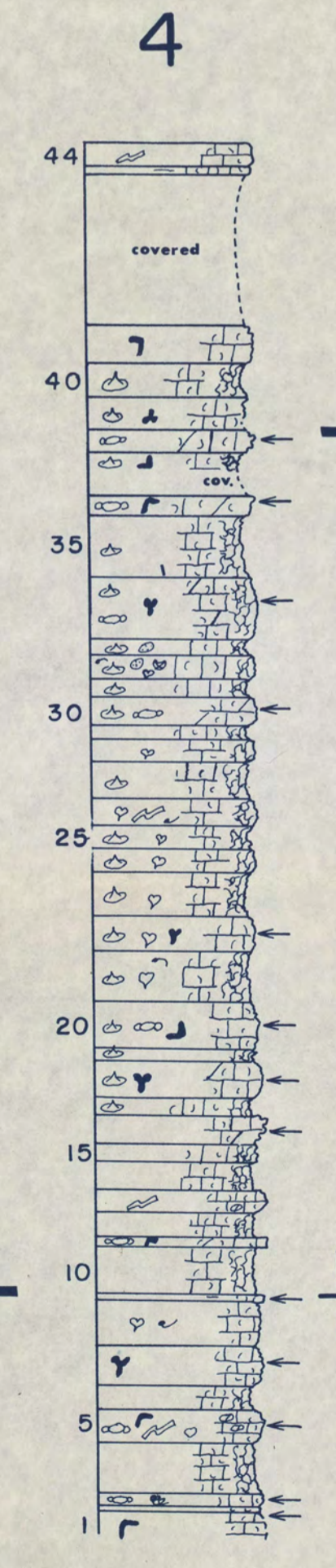
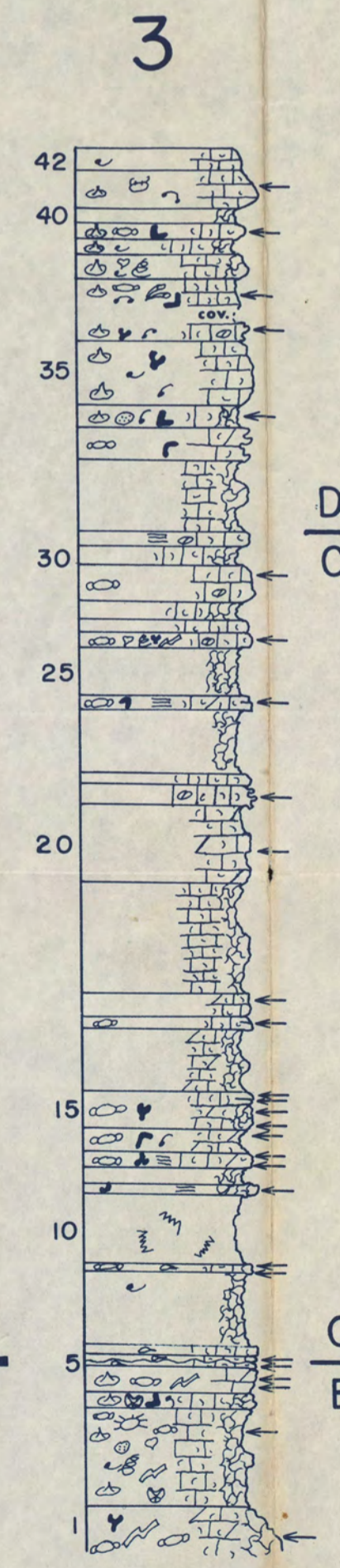
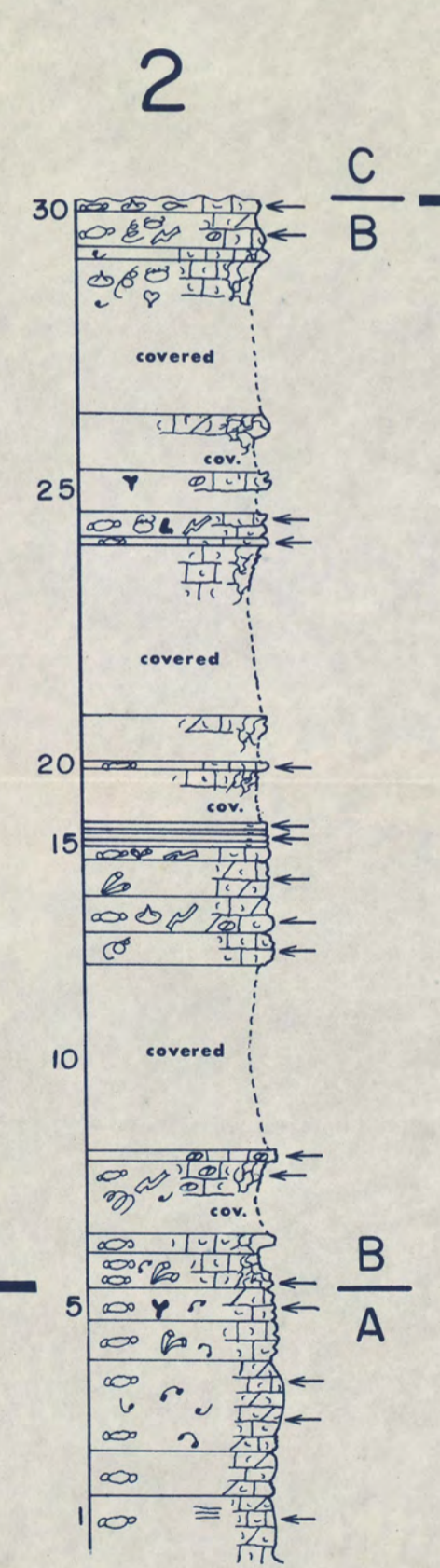
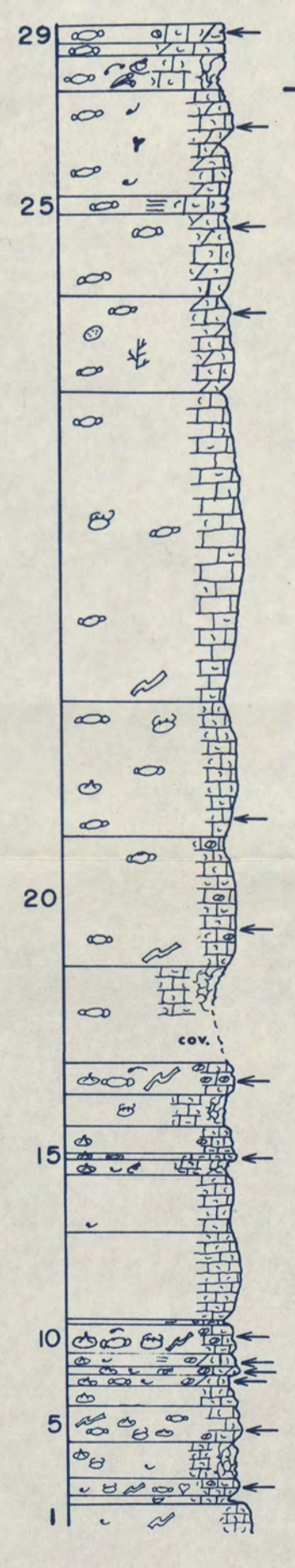


PLATE 2.
MEASURED SECTIONS

Geology of the Wimberley Area
Hays and Comal Counties, Texas
Thomas W. Grimshaw
1969

