Proposed type sections for the Queen and Grayburg Formations of Guadaluian age in the Guadalupe Mountains, Eddy County, New Mexico

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section that the western outcrop, the two eastern outcrops occur in Bell Canyon sandstones at about the horizon of the Flaggy (McCombs) limestone member. Associated with the eastern outcrop is a prominent aragonite vein, a foot or more in width, striking north-northwest, parallel to the ridge of chalcedony blocks, at a distance of about 30 feet to the west of it.

I would interpret each of these ridges of silicified sandstone, as evidences of underlying intrusive dikes or plugs, as King did. Each of them, in my opinion, is a part of the siliceous mantle of an underlying igneous intrusion.

In this connection it should be noted that Magnolia Petroleum Company's Homer Cowden No. 1, located seven miles east-southeast of these chalcedony ridges, on line with their trend, drilled into a body of igneoug rock at a depth of 8730 feet and continued in it to a depth of 9140 feet. This body of igneous has been interpreted as a sill. Perhaps the source of this intrusion may also be the source of the solutious which so intensely silicified the conspicuous outcrops under discussion.

Megascopic inspection of cores cut from this sill show it to be a light gray, holocrystalline rock, with prominent black needles of some ferromagnesian mineral. Remarkable enough, it is extremely porous and made a copious flow of salt water on test. Joseph Neely of the Magnolia Petroleum Company, has kindly placed at my disposal the following petrographic analysis, made by Peter T. Flawn at the University of Texas, of the igneous material encountered in this well:

"1. Estimated mineral composition:
73% Plagioclase; zoned-oligoclase to andesine.
15% microcline microperite.
5% biotite; pale to reddish brown, partly altered to chlorite.
4% calcite, replacing the primary minerals and filling interstices between feldspar subhedra.
3% chlorite; from alteration of biotite.
Trace sericite; from alteration of feldspar
Trace quartz; a secondary mineral, associated with calcite in interstitial fillings.
Trace zircon
Trace apatite; needles and grains.

2. Grain size: average 2 m m
3. Fabric: hypidiomorphic granular
4. Rock name: lenco syendiorite (under other classifications, viz. Wahlstrom, this rock might be called a monozite)."

According to Flawn (1952) the tertiary intrusives of West Texas and eastern New Mexico generally consist of alkalic igneous rocks. The specimens collected from the two localities described above appear to fit into this classification and may reasonably be presumed to be of Tertiary age.

References

1949 – King, Phillip. Geology of the Southern Guadalupe Mountains, Texas U.S. Geological Survey Professional Paper 215 (1949) P. 103.

1928 – Darton, N.H. Red Beds and Associated Formations in New Mexico. U.S. Geological Survey Bulletin 794 (1928) P. 61.

1947 – Lang, W.B., Occurrence of Comanche rocks in Black River Valley, New Mexico. Amer Assoc. Petroleum Geologists Bull. Vol. 31 (1947) p.p. 1472-1478.

ABSTRACT

Proposed Type Sections for the Queen and Grayburg Formations of Guadalupian Age in the Guadalupe Mountains, Eddy County, New Mexico

by
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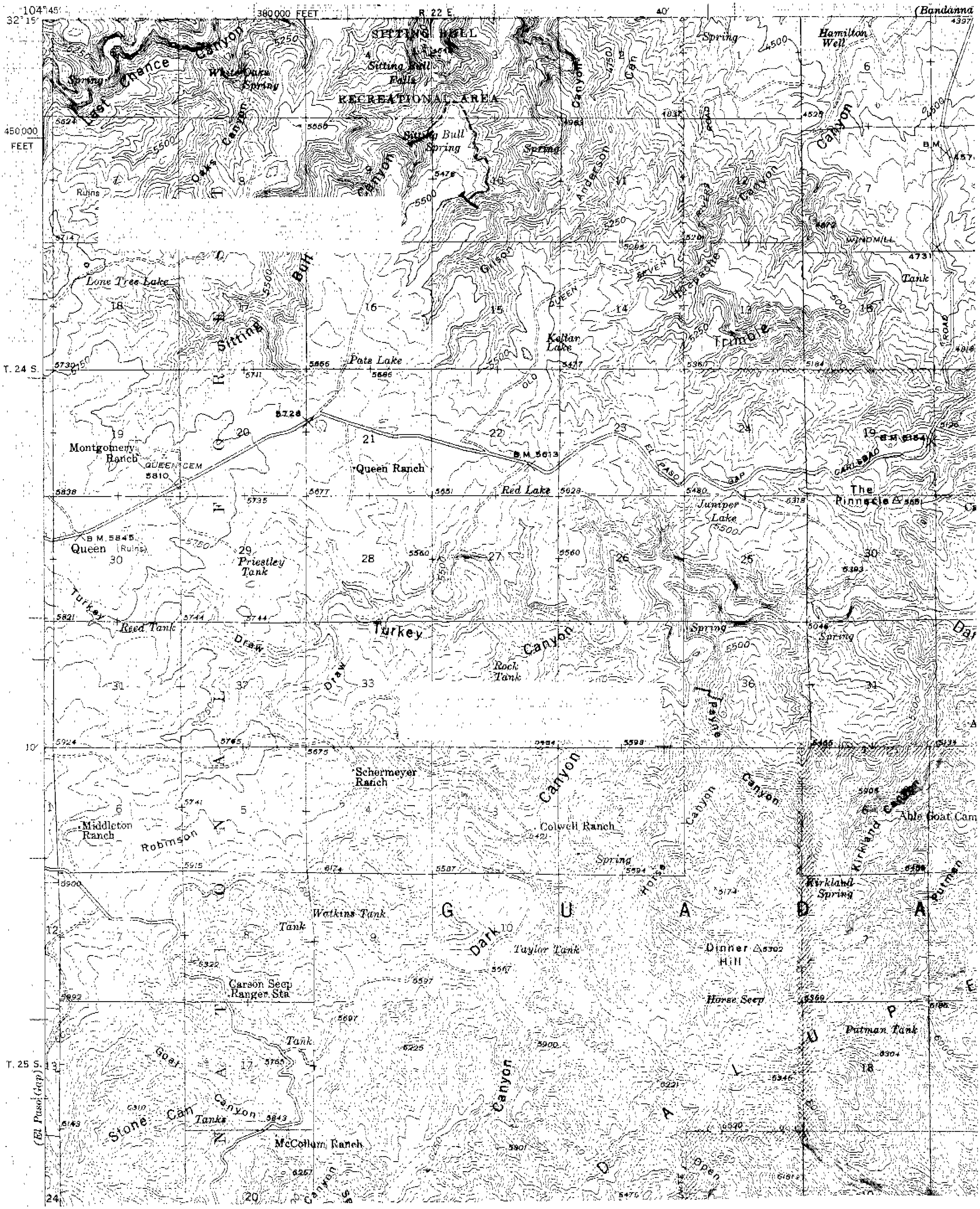
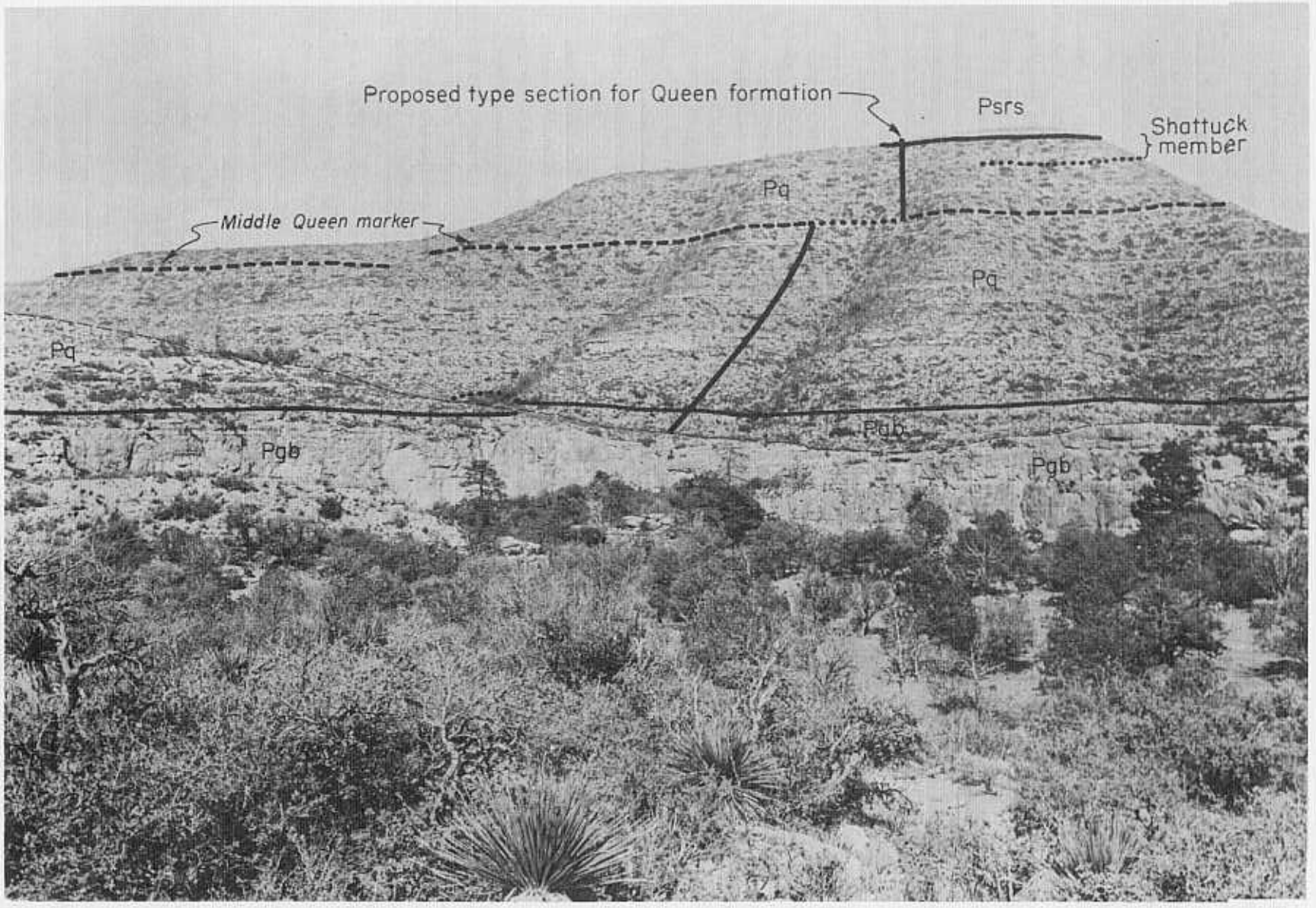
The "Queen sand" was named "from extensive outcrops in the vicinity of Queen Post Office" in Eddy County, New Mexico (Crandall, 1929) but no type section was designated, and no thickness was given. The Grayburg formation" was named by Dickey (1940) from an interval in a well drilled one mile north of the Grayburg pool in Eddy County. He stated, "The . . . . Grayburg undoubtedly crop (s) out in the Guadalupe Mountain area west of Carlsbad, and at some future time (it) should be measured and defined in this area." Recent mapping has shown that both units deserve formational status. Since a great deal of confusion has arisen because these two commonly used names have never been adequately defined in their surface outcrops, type sections are herewith proposed.


SITTING BULL
RECREATIONAL AREA
Sitting Bull Falls
Sitting Bull Spring
Last Chance Canyon
White Oaks Spring
Oaks Canyon
Hamilton Well
Anderson
Canyon
Lone Tree Lake
Sitting Bull
Pats Lake
Kellar Lake
Trimble
Montgomery Ranch
QUEEN CEM
Queen Ranch
Red Lake
EL PASO GAP
CARLSBAD
The Pinnacle
Juniper Lake
Queen (Ruins)
Priestley Tank
Turkey Draw
Reed Tank
Turkey Canyon
Rock Tank
Spring
Payne
Schermeyer Ranch
Colwell Ranch
Middleton Ranch
Robinson
Kirkland Spring
Able Goat Camp
Watkins Tank
Dark Canyon
Taylor Tank
Dinner Hill
Horse Seep
Patman Tank
Carson Seep Ranger Sta
Goat Canyon
Stone Can
Tanks
McCollum Ranch
Open
G U A D A L U P E
Windmill
T. 24 S.
T. 25 S.
R. 22 E.
(El Paso Gap)
(Bandanna



Proposed type section for the Queen formation on the west wall of Dark Canyon, in the SW¼ of Sec. 36, T. 24S, R. 22 E. Seven Rivers Formation (Psrs) caps the hill, underlain by 421 feet of Queen (Pq). The base of the measured section is in the Grayburg formation (Pgb), and is hidden by the ridge in the foreground. The Shattuck member of the Queen formation (proposed by Newell, et. al., 1953) has been recognized as the uppermost 99 feet of the Queen at this locality. A dolomite ledge locally mapped as the "Middle Queen Marker" is shown by the dashed line.

The suggested type section for the Queen formation is located 5 miles S. 75° E. from the site of the Queen Post Office on the west wall of Dark Canyon, in the SW¼ of Sec. 36, T. 24 S., R. 22 E., where 421' of alternating sandstone and sandy dolomite are exposed. Here the Queen underlies the Seven Rivers formation and overlies the Grayburg. The Shattuck member of the Queen formation proposed by Newell (1953) has been recognized as the uppermost 100' of this section.

The proposed surface type section of the Grayburg formation is located on a spur and in an unnamed canyon above Sitting Bull Spring, in the NE¼ of Sec. 9, T. 24 S., 4. 22 E., where a total thickness of 475' of alternating sandstone and dolomites is exposed.

Editor's Note:

The above abstract and Illustrations by William B. Moran, Union Oil Company of California, are included through the courtesy of the Geological Society of America to which the paper has been submitted for publication. A clarification of the "Queen – Grayburg" by redefinition is long overdue . Mr. Moran's work represents a valuable contribution to the stratigraphy of this region.

OIL PRODUCTION FROM THE GUADALUPE SERIES IN EDDY COUNTY, NEW MEXICO

by
Vilas P. Sheldon

The Guadalupe Series is sub-divided into seven formations, the names and approximate thicknesses being as presented in the following tabulation. Separate names are used for the basin and the back-reef facies due to common practice and usage among geologists working in the area.

Back-Reef	Thickness in Back-Reef	Basin
Tansill	200	
Yates	400	
Seven Rivers	600	Bell Canyon
Queen	300	
Grayburg	400	
Upper San Andres	800	Cherry Canyon
Lower San Andres	600	

Lower San Andres – Cherry Canyon

At the opening of Guadalupe time about the southeastern two-thirds of Eddy County was within the sedimentary environment of the Delaware basin. The entire county was covered by a shallow sea but the subsiding basin was partially cut off from the shallow bordering area by a lime bank-reef complex. The basin proper was receiving deposition of sand and silt which is usually dark grey to black in color. There are a few layers of limestone in the basin and the sand and silt is often calcareous but for the most part, the sedimentation is sand and silt. It is probable that the water was deep enough to have a high carbon dioxide content which would tend to dissolve the carbonates. There are layers of clean and sorted sand throughout the section and these layers are porous. Where the sand is clean and free of silt it has a light grey color, appearing a buff-orange in outcrops, probably due to oxidation. Bordering the basin there was a rather wide, very shallow lime bank which was too high to receive the sand and silt deposition. This bank was possibly due to a living organic algal reef, in that the reef acted as a catalyst in precipitation of carbonates. The writer does not view the San Andres lime bank as a barrier reef, but visualizes it as a chain of low relief debris mounds lined up by wave and current action. Very possibly the oolitic and granular material is debris created by the waves from a living reef, however, that source need not be the only possible source. The situation was that this lime bank was a high platform area and wave action piled up a lime debris chain of keys which shut off the sea behind it from the subsiding basin. The barrier was so effective that the broad expanse of shallow water behind it was evaporated faster than fresh water entered and apparently but little clastic material was entering from the low land masses bordering the sea. These reef-locked lagoons, or evaporative basins, existed all through the Permian and the sequence of of deposition is always the same. Most of the water that did enter the lagoons came from the open basin through the barrier and the concentration of salts in the water became progressively greater as the distance behind the barrier increased. There was a continuous inward flow of water from the basin to the lagoon to compensate for the evaporative loss. As this water moved, it was continuously evaporating, the silicates precipitating first, then the carbonates, both limestone and dolomite, then the sulphates, followed by the chlorides. There are many critical points of super-saturation involved and often several salts would precipitate in the same area resulting in intergranular mixtures. And then too, changes in fresh water inflow changed the chemical balance resulting in laminated layers of the several salts. Since carbonates were thus chemically precipitated behind the barrier, it is reasonable to postulate that the oolites