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0046

Volume 3 ; Book 7

TOMBSTONE

Mining District

Cochise County

ARIZONA

J.A.B.A. Reports and Maps
1981 to 1983

Southwestern
Exploration
Associates

Mineral Exploration &
Natural Resource
Consultants
Tucson, Arizona

Briscoe Notes (1981?)

1984

Tombstone Geologic Observation Notes

#1

Subject: The Ajax-Military Hill Horst Block vs. Tombstone Basin Grabin Block - their origins related to the hydrolic piston theory.

One of the perplexing problems involved in the understanding and interpretation of the Tombstone Mining District, is the origin of the circular shaped Tombstone Basin, which appeared to be surrounded on all exposed sides by structurally higher fault blocks. Adjacent to the south, is the Ajax-Military Hill Horst Block, bounded to the north by the Prompter Fault, to the west by the Ajax Fault and on the south by the Horquilla Fault. Directly west of the Tombstone Basin in the outcrop of the Schefflin granodiorite. To the east is primarily cover except an up-thrown block directly east of the Tombstone Extension, where Naco Group sediments have been up-thrown along a north-trending fault. Thus, the Tombstone Basin is relatively down-faulted, along the semi-circular Lucky Cuss Fault zone. Interpretation shows that the semi-circular Lucky Cuss probably continues in an arcuate shape, through the west end of the Tombstone townsite, and into the area to the north, possibly circling around and adjoining the up-thrown fault on the east side of the Tombstone Extension area. The Lucky Cuss fault zone curves southerly, and joins into the Prompter Fault zone. The resulting shape is a tear-drop like feature of the Tombstone Basin, with the point of the tear drop trending southeasterly.

The origin of this structural situation is undoubtedly related to the intrusion of Schefflin granodiorite and other intrusives along the northeastern quadrant of the Tombstone caldera, along which the Tombstone District lies. The area of the Military Hill-Ajax Horst appears to be a long lived zone of weakness, which trends in a easterly direction. Probably as early as the intrusion of the Schefflin granodiorite, magma flowed into and expanded the area of the Military-Ajax Horst. The area directly west of the Tombstone Basin, now occupied by the outcropping Schefflin granodiorite, was undoubtedly the weakest zone. Uplift and invasion of the granitic basement and overlying Paleozoic section (possibly repeated at least twice by the Cochise and Hedalgo thrust faults, Drewes, 1980), resulted in those strata being completely erroded off of the current Schefflin outcrop. During this magmatic upheaval, movement of the Tombstone Basin was relatively down, while movement of the Ajax-Military Hill Horster area was probably relatively up with structural breaking along the east-trending Prompter and Horquilla fault zones. The Schefflin granodiorite solidified during the ensuing period of quiessence. The next event was the researgence of the caldera with out pourings of highly gassed charged rhyolitic surges of the Uncle Sam Tuff unit. Weakness along the easterly-trending Prompter Horquilla zone is evidenced by feeder dikes trending westerly, just west of the Ajax fault in section   . The final magmatic-hydrolic activity took place approximately 60 to 63 million years ago when the area, probably under the Military-Ajax Horst area, was invaded by the last magmatic residuam of the Tombstone caldera - rhyolitic dikes, sills and apothesis which trend east-southeasterly along the Prompter Horquilla structural weak zone. These intrusions inflate an arch Paleozoic limestone in the area just to the east of the Jefferson Davis Memorial Highway, and may have resulted in substantial upward movement of the Miliary Hill-Horst, as indicated by fairly recent movement on the Ajax Fault, as well as intrusions of rhyolitic dikes parallel to that Fault. Additional mineralization could have followed these last igneous events.

During all of these events, piston-like action was exerted in the Ajax-Millitary Hill Horst in an upward fashion, resulting in magma flow in that direction. Magma removal from beneath the Tombstone Basin area probably resulted in relative downward movement in this area. Thus, it is not happenstance that the highest structural area - the Military Hill-Ajax Horst, and the lowest structural depression - the Tombstone Basin - lie side by side, separated by the Prompter Fault.

Tombstone Notes (6-25-51)

Tombstone Notes - 6/25/81

Observations on Geochem overlays related to the Tombstone 15" quad sheet

Silver Overlay

1. Suggestion of 2 pos. Ag centers - one centered in N-NE zone from Lindsey Ranch to about Uncle Sam Hill with lobe extending easterly S of Ajax hill.

   A second center is suggested to the N.E. of Tombstone in area of Walnut Gulch.

2. Potential along fringes of zone may be good. Since the zone is elongated NE-SW, about 45 degrees E of north, paralleling the structural grain, potential may be best on either side of this zone. Thus the area S.W of Bronkow Hill toward the Donnet Ranch may be important. The area around the Keller Ranch may be OK as is Sect. 17 area SE

Briscoe (6-26-81)

James A. Briscoe & Associates
Exploration Consultants:
Base and Precious Metals
Uranium, Oil, Gas & Coal

James A. Briscoe
Registered Professional Geologist

Thomas E. Waldrip, Jr.
Geologist Landman

June 26, 1981

Bill Hight, President
Tombstone Development Company
P. O. Box 1445
Grand Island, NE 68802

Re: Progress report for the week ending June 26, 1981

Dear Bill:

I spent the first two days of the week cataloging old 1950 era TDC property and underground mine maps, while the last five days of the week (through June 28) were spent in finalizing the Tombstone Development Company land acquisition progress map, Plate 1, which is being sent with this report.

Tom Waldrip spent Monday in the Phoenix State Land office reapplying for prospecting permits. The cost of the reapplication fees was $375. I might explain here that because of plane scheduling, every time Tom goes to Phoenix he has to spend the entire day. He has made good use of this time, however, in doing further necessary land checking with both the Bureau of Land Management on federal mining claims and with the state.

This past week we did file on Section 18, Township 20S., Range 22E., which lies one mile west of the State of Maine Mine (see Plate 1). This section is very important, as we have learned from a careful examination of Roger Newell's 1973 map that breccia pipes lie in the south west one quarter of this section. They indicate potential for porphyry copper type

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mineralization. We thought that we had obtained this section, wresting it away from the Stewart Mining Company, as the State Land people told Tom while he was at the State Land Department, that there had not been a simultaneous filing. However, later that afternoon, after Tom had left, they called me here in Tucson and said that they had been mistaken and that the Stewart Mining Company landman, who had arrived also at 8:00 Friday morning, had filed an application for a prospecting permit on this section. Thus, we have what is called a simultaneous filing. That is, both Tom Waldrip, acting for the Tombstone Development Company, and the landman for the Stewart Mining Company, filed applications simultaneously at 8:00 a.m., as soon as the office opened. Thus the State Land Department will have to have a drawing and award the prospecting permit to whoever wins the drawing. Since the Stewart Mining Company realizes they now have competition for that section, I believe that if they win the drawing, they will probably go ahead and pay the money required for a full one year lease, rather than risking it again by competing with us on the next filing date. The fact that their landman was also at the B.L.M. office before 8:00 waiting for the office to open indicates how much pressure there is for ground in the Tombstone Mining District.

EXPLANATION OF PLATE 1 - TOMBSTONE DEVELOPMENT COMPANY LAND ACQUISITION PROGRESS MAP.

Appended with this report are Plates 1, 3, 5, 6, 7, 8, and

1.b. Other maps, which will be sent as they are completed, will include Plates 2, 4, 9, 10, 11, 12, and 13. All of these maps are at the same scale except for map 1.b. which will be reduced photographically, or otherwise annotated onto Plate 1 when it is complete.

Plate 1 shows all of the various land acquired in the last two months by James A. Briscoe & Associates for the Tombstone Development Company. Shown in red, on a transparent overlay which is taped to Plate 1, are the Tombstone Development Company patented claims in the Tombstone Basin. Also shown in orange are the TDC claim group put in some years ago by Tom Pitcher.

All of the federal lode mining claims staked by James A. Briscoe & Associates for the Tombstone Development Company are called the TS Group Claims. At this time, there are 198 TS claims. Their numbers are not completely sequential since we were not able to stake all the claims that we had previously laid out because of ownership by other parties. However, all the 198 existing claims are essentially full-sized claims so there are 4,099 acres, or approximately 6.4 square miles under federal mining claim. All have been cornered except those in the Keller Ranch area (see weekly report for week ending June 5) which will require 145 posts at a cost of approximately $1,725.

By examining Plate 1, Bill, you can see that the new claims we have put in to the northeast of Tombstone, which are colored pink, are contiguous with the orange colored TDC claims that Tom

Pitcher had previously put it. Further geologic work that I have accomplished over the last two weeks, indicates that the remainder of Section 1 and Section 31 may be very favorable for a hidden porphyry copper target. I strongly recommend that we acquire these two sections, and Tom Waldrip has filed at the State Land Department last week, on Sections 6 and 36 (colored green), which are adjacent to the two federal sections. Once the claims are put in on the remainder of Section 1 and 31, any work done within the Tombstone Basin can be applied toward assessment work for the claims in Section 1 and 31, as well as Tom Pitcher's claims, since all are contiguous. Thus, we have a large block of ground that will cost the Tombstone Development Company no additional assessment work as long as work is continuing on the patented claims in the Tombstone Basin. As the potential for silver mineralization within these new claims is high, as well as the potential for porphyry copper mineralization, I feel this is very critical land.

In addition to the federal land, by glancing again at Plate 1, you can see the pattern of our substantial state lease acquisitions. Except for the green sections, for which we have applied, but for which the State Land Department has not yet made an award, we currently hold all of this ground through prospecting permit applications. In total, we have 32 square miles of state land in which the prospecting permits have been awarded, and six square miles in which applications are still pending. If we add to this total, the federal mining claims already put in, plus the approximate 6.5 square miles of additional federal mining claims, which I recommend, including the blocks to the northeast of Tombstone and in the western part of the Tombstone Three Brothers Hills area, and include the approximate 2,000 acres of patented land, the Tombstone Development Company now controls some 53 square miles of mineral property within the Tombstone Mining District. As you can see, the land holdings roughly describe a circular pattern centered approximately on Ajax Hill. Three other companies or entities control the central part of the District. These are Seth Horne, and the Stewart Mining Company, Alanco, (Tony Lane) who has acquired the old Tombstone Mineral Reserve ground, and the Escapule family, which holds most of the ground between Tombstone and the Three Brother's Hills area, south of the Schieffelin Monument. Once we have completed the additional recommended federal claim staking shown by the diagonal orange lines with the pink border on Plate 1, and the last state sections have been awarded, I think that there is one more strategic play we should make before pushing for the sale of the Tombstone Development Company. This would be to try and get an option from the Escapule family, the Seth Horne group and Anthony Lane. If this were done, essentially 100% of the available mineral land within the Tombstone District would be consolidated under the Tombstone Development Company.

Historically, of course, this is what the Tombstone Development Company was originally organized for, and it would be an interesting historical precedent to see it actually consolidate the entire District. It would also increase the attractiveness of the Company, I believe. This is simply a suggestion, which I would like you and the other management of the Tombstone Development Company to consider. I think it could be accomplished either by a lease-option agreement with the three entities mentioned, or possibly by simply a cooperative work-together agreement.

DUMP SAMPLE GEOCHEMISTRY

Plates 2 through 8 (some of which are not yet complete) are the results of geochemical samples from old mining dumps, taken by Roger Newell for his 1973 doctoral thesis. The metal zoning patterns revealed by these geochemical samples indicate that Tombstone is probably a very large porphyry copper system. The various trends indicate where the best mineral potential ground is within the Tombstone District, when this knowledge is combined with recent geologic data. This is of course what I had originally proposed to you, Bill, but these plates put it in a useful perspective for myself and other geologists. You can examine the geochemical data yourself by taking the different maps, which are for silver, zinc, lead, copper, molybdenum, and a combined molybdenum and zinc map, and overlaying them successively onto Plate 1. The corners of these maps are common, and Section 16 at Uncle Sam Hill, where the State of Maine Mine lies is drawn in on each of the geochemical maps.

SUMMARY

I hope that the land acquisition progress map, which I have been working so long and so diligently on, will help you to visualize the progress in land acquisition that we have been making. It has taken more time than I had anticipated, but the job is progressing towards its final stages and we are really not too far behind. We have approximately 46.4 square miles of ground now (assuming we get the state land we think we will) and are in the process of staking another 6.5 square miles of federal mining claims which will bring the total to 53 square miles, making the Tombstone Development Company, I believe, the largest land holder within the Tombstone District.

In order to expedite the reporting procedure, which I seem to be perenially behind with, my secretary and I have prepared the white ring binder that has been sent with this report with various subject dividers. In the future, we will simply send along information as we generate it and indicate where within the binder it should go. This, I think, will result in a easier way for you to keep your records, as well as a better way for me to transmit information to you in a timely manner. I wish to apologize for the delay in these most recent reports, but I have been working long hours towards getting them into a format in which they would be meaningful and clear. Every day, for the last week, I felt it would be finished, but it has taken much longer than I estimated to get it into a meaningful form. However, this form is working towards that which will be used in the technical presentation package for which we have the rough typesetting already prepared, included as the front piece for the ring binder.

Bank statements and ledger sheets showing expenditures and check numbers are included with this report, in the ring binder, under the heading "Bank Statements". Also note under the Land Acquisition heading, "State Leases"; we are required to file a notice with the State Land office that James A. Briscoe & Associates is working as an agent for Tombstone Development Company. Thus, the cat is out of the bag.

Very truly yours,

James A. Briscoe

JAB:mas

PLATES

Plate #

LAND STATUS MAP

1. Tombstone Development Company, Inc. Land Acquisition Map.

DUMP SAMPLE GEOCHEMISTRY

2. Dump sample location Map showing area of influence boundaries and Ajax Fault (A.F.), Prompter Fault (P.F.), and Horquilla Fault (H.F.).

3. Distribution pattern for high silver ratios in dump samples.

4. Distribution pattern for high zinc ratios in dump samples.

5. Distribution pattern for high lead ratios in dump samples.

6. Distribution pattern for high copper ratios in dump samples.

7. Distribution pattern for high molybdenum ratios in dump samples.

8. Distribution pattern for high molybdenum and zinc ratios in dump samples.

1.b. Unpatented claims - draft map - follows Plate 8 - will probably be annotated onto Plate 1 in the future when research complete.

MESQUITE TWIG BIOGEOCHEMISTRY

9. Silver in mesquite trees.

10. Zinc in mesquite trees.

11. Copper in mesquite trees.

12. Molybdenum in mesquite trees.

INTERPRETIVE MAPS

13. Potential target areas for economically mineralized zones interpreted from geochemical data, Plates 2 through 12.

PLATE #2

Dump sample location map showing area of influence boundaries and Ajax Fault (A.F.), Prompter Fault (P.F.), and Horquilla Fault (H.F.)

In preparation as of June 30, 1981

Map will be sent upon completion

PLATE #4

Distribution pattern for high zinc ratios in dump samples

In preparation as of June 30, 1981

Map will be sent upon completion

PLATE #9

Silver in mesquite trees

In preparation as of June 30, 1981

Map will be sent upon completion

PLATE #10

Zinc in mesquite trees

In preparation as of June 30, 1981

Map will be sent upon completion

PLATE #11

Copper in mesquite trees

In preparation as of June 30, 1981

Map will be sent upon completion

PLATE #12

Molybdenum in mesquite trees

In preparation as of June 30, 1981

Map will be sent upon completion

PLATE #13

Potential target areas for economically mineralized zones interpreted from geochemical data, Plates 2 through 12

In preparation as of June 30, 1981

Map will be sent upon completion

Tombstone Project
Progress Report (4-17-82)

Tombstone Project
PROGRESS REPORT
April 17, 1982

James A. Briscoe & Associates

Exploration Consultants:
Base and Precious Metals
Uranium, Oil, Gas & Coal

James A. Briscoe
Registered Professional Geologist

Thomas E. Waldrip, Jr.
Geologist — Landman

April 17, 1982

Bill Hight, President
Tombstone Development Company
P. O. Box 1445

RE: 1. Budget for the remainder of the year.
2. Additional property acquisition.
3. Comparison of Tombstone with recent mineral property sale.

Dear Bill & Frank:

Enclosed with this letter, which covers the above subjects, is a detailed property map at a scale of 1" = 2,000', covering the entire Tombstone District. A larger map, at a scale of 1" = 500' will follow in a few days. Errors were discovered on this map after our last meeting, but it has been re-drafted and is being proofed now. Also enclosed is a detailed ledger sheet of my proposed budget for the coming year. In order to make this letter as clear as possible, and so that we may go over its details, I am going to write it in a sentence outline form.

I. Budget for the remainder of the year.

A. Land acquisition.

1. Federal mining claims - $14,836. This depends on your decision, and I will cover the specifics in section two on recommended additional mining claims.

2. State lands.

a. The state prospecting permits, which we acquired in March include Sections 29, SE 1/4 of 30, NE 1/8 of 30, and 32, Township 20 South, Range 22 East. These are noted with small tags on the colored property map (Attachment 1).

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b. Critical sections related to mineralization, which we will acquire within the next 30 days, are the Southwest 1/4 of Section 8, Section 18 and Section 19 of Township 20 South, Range 22 East.

c. We will continue to file prospecting permit applications, then reapply for those applications on all remaining sections, which have a 4A and are colored red on the property map.

   1. The cost per month will be approximately what it was in 1981, or an average of $794.44 per month (see ledger sheet budget, Attachment 2), showing 1981 totals and the average cost per month.

   2. We have been traveling to Phoenix approximately every two weeks when the re-applications of state land come up, so that we can be at the State Land Department door to file re-applications. This is done because we have been getting competition for the critical sections from Energy Reserves Company, and Seth Horne - Stewart Mines, as well as occasional others on these permits. The cost of this travel in air fares, taxi, etc. is approximately $140 per month. When we acquire the additional land that is critical (see above), we will probably start mailing, by certified mail the applications, thus reducing the monthly cost to in the range of $30. However, I have left the $140 amount in the budget as a cushion.

d. Damage and restoration bonds.

   1. When we applied for State Prospecting Permits, we had to file cash bonds until we could buy bonds from my insurance company, which required signatures on the applications. This is now accomplished for the acquired lands. However, since we still have to get additional ground we will need some additional bonds. I have enclosed one

additional form for your signatures, and a letter from Sylvia Fodor of the Bond Department at Tucson Realty & Trust, which explains the details of this application. It will be a blanket application, which can be used so that future bonds in the Tombstone area can be obtained without separate applications and by my only having to pay the $30 fee for a $2,000 restoration bond.

2. These bonds are now extremely difficult to get for any one but major companies. We were fortunate to get them, and they will save substantial cash.

e. The prospecting permit section of the budget is for the actual permit which is for a period of 2 years at $2.00 per acre, and which requires the damage-restoration bond. Prior to this time, and in the future for the largest percentage of the land, we have been merely making prospecting permit applications, and then re-applying continually to give us a defacto hold on the land. This takes advantage of a loop hole in the state mining code and is considerably cheaper than getting the actual prospecting permits. The loophole is used by others also.

f. State mining leases - This is necessary before actual mining is done. I don't anticipate that we will have to go to that extent, however, I have shown it for demonstration purposes in the budget.

B. Report preparation.

1. James A. Briscoe & Associates - this includes Tom's time, my time and Mardee's time. As can be seen from the budget, we won't make further charges until after the report is completed. We don't see any further heavy technical work load after the report is completed, however, a great amount of time may have to be spent in negotiation. If such time turns out to be necessary, we can consider the situation at that time.

2. Contract Labor. The contract labor section of the budget is primarily drafting personnel. The drafting on this project has been much more difficult than I anticipated, and several more plates need to be produced. Most of the budget is for the additional plates and a cushion of $100 per month for the remainder of the year for unanticipated labor from August through September has been included. The labor, as usual, is at direct cost.

3. Reproduction and Typesetting. This covers the cost of the final amount of typesetting and xeroxing of the report.

4. Report preparation of $830 is for binding and report covers.

5. Telephone - expenses to date have been very low. During the negotiation phase, after the report is out, I anticipate that they will be much higher.

6. Other items on the budget are self explanatory.

C. Summary of the budget and percentage allocations.

1. The acquisition of additional mining claims is the most costly portion of the budget and consumes 31% of the projected total (see percentage 1982 column on the budget sheet). My reasons for the land acquisition is the subject of the next section of this letter. We do recommend that the land be acquired.

2. The next most expensive item which consumes 17.85% of the budget, is the reapplication for state prospecting permits. I also recommend this, as it allows control of approximately 41 square miles of state land at a cost of $0.32 per acre.

3. The contract labor amounts to 11.1% of the budget and is necessary to complete the report.

4. Prospecting permit fees account for 10.3% of the budget, and are critical as they cover the very strong porphyry copper alteration at Robbers Roost and the area south of the State of Maine and north of Charleston.

5. The damage and restoration bonds appear to account for 8.69%. However, the cash bonds which we had to remit, until we were able to get bonds from my insurance company, will be returned and used for the prospecting permits.

6. The total budget is $47,048.29, and allows the Tombstone Development Company to control the largest land position in the District for about $1.15 per acre. The monthly average will be $3,755.35, but most of that will come in the next 3 months.

II. Recommended additional mining claims.

A. The problem.

1. Until all of the land data was compiled on a precise topographic and geologic data base map, and carefully colored as to ownership, we could not clearly tell where open land was.

2. When this was done, it became apparent that:

a. Very important land to the west of the main block of TDC patented claims, southwest of the Tombstone townsite (No. 1 on yellow tags) remains open. This ground contains some of the best untested geologic targets. I previously thought it was covered by the TDC patented claims.

b. Some fractions to the north and southeast of the townsite remain open - No. 2 on the yellow tags.

c. Some fairly large fractions within the TDC patented claim block exist. These are also labeled "2" on the yellow tags. Their existence was recognized, but it was thought that they had been covered some years ago by staking by other people. Our research shows that they appear to be open to location.

d. South of the Prompter Fault, and the Great Carbonate and McKinley claims, owned by Mr. Frank Frankovich, there is about 1/2 section of Federal ground. I flew over this area last weekend and saw alteration in the sediments. This area (No. 3 on the yellow tags) would be contiguous with the existing TDC claim block put in by Tom Pitcher, and thus could be held indefinitely, as all work done by TEI/Austin Mining or other leassors on the patented land will apply as assessment work.

e. There is an odd T-shaped area of open Federal land on the east flank of the limestone hill, south of the Prompter Fault, and south of the Cub group, held by Wayne Winters. It is contiguous with, but southeast of the TDC claims put in by Tom Pitcher. (Labeled No. 5 on the yellow tags). My airplane flight showed that there is altered-mineralized ground in this area -- and I think it should be acquired by staking 17 mining claims. This ground would be contiguous with the TDC claims and as for d. above, assessment work on the patented group would apply here.

f. One 40 acre parcel of Federal ground surrounded by State leases belonging to Anthony Lane. This land lies about 4 miles east of Charleston, and is labeled No. 6 on the yellow tags. Two claims would cover it.

g. A small area of open land surrounded by Tenneco ground and the military reservation (No. 9 on the yellow tags), lies northwest of Charleston, about 1 mile. This area is within a porphyry copper alteration zone and is only about 3,000 feet northeast of recent exploration drilling work done by Tenneco which we observed from our airplane flight. Seven claims would cover it.

h. To the southwest of Fairbank, there is a small parcel of Federal ground (labeled No. 8) that we inadvertently left open. 5 claims would cover it.

i. Southwest of the Johnson Ranch (No. 9), there is about 2 1/2 sections of land that could be extremely important if the geochemical anomoly in this area is verified. It could be covered by about 84 claims. At this time, I don't know whether this is critical, and I have not included these claims in my budget. If later work verifies their extreme importance, then the claim work can be done at that time.

B. Mineral survey cost estimate.

1. Because of the complexity of putting in claims over fractions whose exact location is hard to determine, I felt that we should get a professional surveyor to do the job. This would eliminate:

a. Putting discovery posts on someone else's claims by poor surveying.

b. The possibility of leaving additional fractions.

c. Arguements about accuracy of the survey from potential purchaser or other claimants.

2. I asked for an estimate from Mr. Bill Marum, a registered mineral surveyor in the states of Arizona, California and Nevada. His estimate is appended with this report as Attachment 3. He estimates a cost of $28,000 to perform the work in the main part of the District.

3. Reviewing cost for claim staking last year, I found that our crews had an average cost of about $66 per claim, vs. Bill Marum's estimate of about $230 per claim. The difference is in the precision and survey technique, as well as the qualifications of the personnel involved. Also that there is no profit margin or overhead built into my figures.

C. My recommendations.

1. I think that we should stake the open ground in the main part of the District, (yellow tag 1,2,3,4 &5) as soon as possible.

If we don't:

a. There will be holes in the property block, making it less attractive for potential purchasers.

b. I will have to include the property map with the report proposal. It will be obvious that we don't control all of the land, and someone else will probably stake it up.

If we do:

a. We will considerably increase holdings over prime exploration ground in the area west of Tombstone (yellow tag No. 1), and I believe increase the value of the TDC holdings.

b. There will be no additional property owners to contend with.

c. All the ground is contiguous with existing patented ground, and as long as work is going on, no separate assessment work need be done on the new claim blocks.

2. I recommend that we stake all claims with James A. Briscoe & Associates, Inc. crews.

The advantages are:

a. The cost will be 1/2 to 1/3 of that charged by a registered mineral surveyor.

Disadvantages will be:

a. The survey will be 3rd or 4th order accuracy, not 1st or 2nd, as would be the case with the registered mineral surveyor.

b. We cannot be sure that all discovery posts, because of the survey accuracy, will be on open land, and thus some claims could be invalid. However, as our map is the best ever produced over the Tombstone district, and since we will be using it to file the claims, it is unlikely that we will ever be challenged.

c. If we ever get in a arguement about the claims, we won't have the advantage of a survey by a registered mineral surveyor.

I think the low risk of being challenged on the claims, and the cost factor combine to suggest that we not spend the money for an accurate survey by a registered mineral surveyor, but instead do it with our technicians.

3. At some point, an accurate survey of the land will have to be made. This will be done by the purchaser or joint venture partner of the Tombstone Development Company. Then all claim corners can be targeted, the area flown and an accurate topog map made. The aerial photography, and map drawing portion of this survey will probably run about $7,000 to $10,000, while

another $10,000 or more will have to be allocated to a ground survey, and targeting claims corners with white paper targets.

III. Comparison of Tombstone with recent mineral property sales - to develop a strategy to value and sell the Tombstone Development Company.

A. The problem - assets of the Tombstone Development Co. and how to value the assets.

1. What are the assets of the Tombstone Development Company?

a. Fee simple land.

1. Surface rights - undeveloped, 1,000 acres. (approximate).

2. Surface rights - historical, 102 acres. (approximate)

3. Mineral rights - 1,125.2 acres.

4. Water rights - 1,125.2 acres.

5. Oil rights - 1,125.2 acres.

b. Federal mineral rights land - lode mining claims. 548 claims at average of 18 acres each - 9864 acres.

1. Mineral rights in total - subject to no royalty.

2. Water rights - related to the possibility that more water than that necessary for mine use might have to be pumped from underground workings.

c. State mineral rights land - State prospecting permit applications and state prospecting permits. 26,240.52 acres, or approximately 41 square miles.

1. Mineral rights subject to a 5% NSR type of royalty payable to the state.

2. Water rights - related to the possibility that more water than that necessary for mine use might have to be pumped from underground workings.

d. Producing Mine.

1. The T.E.I. - Austin Mining Company lease - Production so far ranges between $16 and $20 million dollars gross value, subject to a 5% NSR royalty and/or a minimum royalty.

2. What are the values of the TDC assets?

a. Fee simple land.

1. Surface rights - it is reasonable that these surface rights should be valued like residential ground since they are adjacent to the town of Tombstone. Indeed, some of this ground is residential land within the town of Tombstone, though this will be treated under surface rights - historical. Comparison with similar land recently sold is valid. The recent sale of land near Casa Grande, Arizona to the Getty Oil Company for use as an open pit or underground copper mine area, is a good comparison. If we can equate TDC land value to this transaction, (attachment 6b) the following value can be assigned:

   Value per acre $7,111 x 1,000 acres of TDC surface rights outside the townsite = $7,111,000

2. Surface rights - historical - approximately 102 acres. I had really not given the historical value of the Tombstone Development Co. ground much thought until just the last day or two. However, it may be one of the most important assets of the Tombstone Development Company. All of the historic portion of Tombstone lies on TDC patented claims. The surface rights have been leased to the owners of the historic buildings for 99 years. These leases are now running out. As I have said before, it is critical not to deed this surface rights land away. It should have a high value to developers

of "old west" recreational towns, such as Westworld, which runs Old Tucson and Old Las Vegas, and is headquartered here in Tucson. There is roughly 102 acres that cover the historic portion of Tombstone. This land could be valued at $25,000 to $50,000 per acre (possibly more), or a total value of $2.5 to $5 million in round figures.

3. Mineral rights - 1,125.2 acres. The Tombstone Development Company controls essentially all of the mines with significant past production. It is reasonable to assume that as much mineral value remains as has been produced. This future production from the patented claims should be about $500 million (see attachments 7-11). A minimum 5% gross royalty from this production should be $25 million, or a value of $22,218.27 per acre. Since substantial high grade ore might justify a higher royalty, the time value of money could be considered to be effectively cancelled out and thus the $25 million price could be justified.

4. Water rights - 1,125.2 acres. In the future, the water price might be equivalent to that which the Central Arizona Project would charge for its water, less the cost of pumping and delivery. Of course a consumer would have to be found for the water. Potential consumers might be as follows:

   a. The mining company exploiting the mineral properties.

   b. Residential developments around Tombstone.

   c. The city of Tucson.

   d. The city of Sierra Vista.

Regardless of the buyer, we might compare the value of the water rights of the Tombstone Development Company on a per acre value with the price paid by the city of Tucson for "water farms" in the Avra Valley, bought by the City, or "water farms" in the Santa Cruz Valley, bought by the mines in the Pima Mining District. I estimate the purchase cost of these farms at $4,000 per acre x 1,125.2 acres of TDC land = $4,500,800.

5. Oil rights - The oil rights under the Tombstone Development ground are extremely hard to assess. As you know, Phillips Petroleum has drilled one unsuccessful(?) well, southeast of Tombstone on the Cowan Ranch, south of the Tombstone airport. Drilling has begun again about 13 miles west of Tombstone on the Fairbank Road between Fairbank and Sierra Vista. This drilling has not been announced publically, but it is assumed that it is being done by the Phillips Petroleum Company. If oil were discovered, the value of the Tombstone Development Company oil rights would certainly be enhanced. The only geologic factor that would be negative is the Tombstone area claims proximity to the plug of Schefflin granodiorite and associated igneous dikes. Since oilmen seem not to be too worried about igneous activity, it may not be much of a factor.

   Lease value at the present time would be about $2.00 per acre + 1/8 interest in the wells. Since we can't value undiscovered oil, only the bonus payment of about $2,000 can be considered. At the current time, it would be unwise to sell the oil rights for the bonus price.

6. Summary of estimated value of the Tombstone Development Co.'s fee ownership land is as follows:

Surface undeveloped	- 1,000	x $ 7,111	=	$ 7,111,000
Surface historical	- 102	x $50,000	=	$ 5,000,000
Mineral rights	- 1,125.2	x $22,218.27	=	$25,000,000
Water rights	- 1,125.2	x $ 4,000		4,500,800
			TOTAL	$41,611,800

b. Federal mineral rights land - lode mining claims.

1. Mineral rights on federal lode mining claims are not subject to royalty. The value of these rights are absolutely dependent on discovered mineral value, or indications of potential for discovery. Thus we must break the targets down and evaluate them individually. There are a number of targets which relate to alteration, geochemical, geological and geophysical patterns. As exploration work progresses, the number of these targets, as well as their value, will probably fluctuate, as increasing knowledge of the geology is obtained. Subject to many uncertainties, it appears at present that there are at least 10 mineral targets which lie either on or adjacent to mineral land currently held by the Tombstone Development Company, or has been recommended for acquisition by the Tombstone Development Company. Three targets lie on ground not held by TDC. These are targets 11, on the Ft. Huachuca Military Reservation in withdrawn ground, and 12 overlying Escapule ground, and 13 held by Alanco. These targets and their approximate value is as follows:

	In Millions
1. Tombstone Extension target. We can assume that future production will equal total past production of the Tombstone District.	$ 500.0
2. Northeast Tombstone - this is the area in which the productive veins project below cover and which appears to be on the edge of a moly anomoly. Assume future production will equal 1/2 previous production of the Tombstone District.	250.0
3. Tombstone west area - this area comprises the open un-staked ground to the west of the main block of Tombstone Development Co. patented claims and to the east, for the most part, of the Charleston Road. Assume future potential in this area will equal 1/4 of past production in the Tombstone District.	125.0
4. Airport zone - This area lies to the north and west of the Tombstone airport. Assume future production will equal the past production of the Tombstone District x 1/10 discount for lack of previous production.	50.0
5. Robbers Roost - This is the area of intense breccia pipe development and phyllic alteration in Section 29 & 30 to the west of Charleston Road. May be $2 billion in gross metal value copper potential, but Tombstone Development only controls 1/2 of the land necessary for mining. Thus 2,000 million x 1/2 = 1 billion x 1/10 discount rate for potentially very deep zone	100.0
6. Fox Gulch breccia pipes - This area covers sections 18, 19, 13, most of 7 and part of 8, Township 20 S., Range 22E. Large area of breccia pipe activity with interesting but unknown potential for reserves. Assume a $2 billion gross metal value potential but discount by 1/10 because of uncertainties = $200 million - 1/2 because of adjacent Horne, Escapule and Alanco ground.	100.0

7. Charleston magnetic anomoly- This is the largest aero-maganomoly in the district & appears to be related to a large intrusive mass of Schefflin granodiorite. This mass appears to be rimmed by strong phyllic alteration where exposed. Assume potential for a 1 billion ton porphyry copper orebody with fringing precious metal zones. Further assume $14/ton ore x 1 billion tons = $14 billion gross metal value. Discount 1/10 since we don't know if the ore underlies TDC ground or Tenneco ground = $1.4 billion. Discount 1/10 since no direct evidence of the ore, save only geophysics & alteration = 140.0

8. Johnson Ranch anomoly - This area has geochemical characteristics similar to Tombstone, and anomoly size the same as that over Tombstone. If it is indeed a Tombstone-like mineral zone, then bonanza grade ore could occur below the Quaternary alluvium. Production assumed to be equal to Tombstone's past and projected production which is $1 to $2 billion. Say $1 billion GMV, discounted by 1/2 because of complete alluvial cover. Then discount by 1/2 again because not all of land over anomoly is controlled by TDC 250.0

9. Government Draw - Keller Ranch area. Similar in geologic position related to the caldera structure, & geochem signature as Tombstone. Assume potential equal to previous production in Tombstone, and discount 1/10 since there has been no previous production = $50 million and then discount 1/10 for deep burial of favorable horizons below pre-mineral surface cover rock = 5.0

10. Northwest Fairbank Magnetic Anomoly - This appears to be a hidden apophysis of Schefflin granodiorite along the caldera fault, similar to the Schefflin granodiorite outcrop at Tombstone. Assume $2 billion potential in base and precious metals but discount 1/10 because of no surface expression = $200 million GMV, discounted by 1/10 as not all property is controlled = 20.0

11. FHMR (Ft Huachuca Military Reservation) aeromagnetic anomoly. This is another apparent apophysis of Shefflin granodiorite around the caldera margin, similar to #10. Assume $2 billion GMV potential. Discount 1/10 because of no surface expression = $200 million. Discount another 1/10 because of lack of exposed alteration = $20 million, discount by 1/100 because no property position is held over the mag-anomoly although it could be obtained with great difficulty. .2

12. Escapule anomoly. The Escapule ground covers veins in the Uncle Sam tuff sheet. These veins, where they intersect favorable horizons like those at Tombstone, could result in substantial ore bodies, the same order of magnitude as Tombstone. Assume $500 million GMV and discount by 1/10 because of overlying pre-mineral cover rock & Bisbee red beds = $50 million x 1/100 discount since no property position is held by the Tombstone Development Company, though mineral lease below 100' could be obtained 0.5

13. North & West Robbers Roost Pipe. Ground held by Alanco and Stewart Mines (Seth Horne), including part of the alteration zone around the Robbers Roost porphyry breccia area. Potential for $2 billion GMV x 1/2 since TDC controls at least 1/2 of the best ground = $1 billion x discount of 1/10 because of thick cover of pre-mineral cover rock at surface = $100 million x 1/100 because no property position or option on either Alanco or Seth Horne Stewart Mines ground = 1.0

2. Summary of potential of various targets within the Tombstone Caldera, after discounting various exploration risk factors - land primarily controlled by unpatented Federal lode mining claims.

	In Millions
1	500
2	250
3	125
4	50
5	100
6	100
7	140
8	250
9	5
10	20
11	0.2
12	0.5
13	1
	$1,541.7

We will assume that a 5% NSR royalty, which is approximately equal to 5% of the GMV would be obtainable on all of these various target areas. 5% of the total geologically discounted value of $1,541,700,000 would be $77.085 million. We will also have to assume that since the exploration time on all of these targets would be quite long, as would mine development, this net smelter return would not be received until the year 2,000, or 18 years from now. Assuming a discount rate of 15% over 18 years, the current discounted value of that $77 million dollars resulting from the 5% royalty would be $5.416 million.

3. Water rights. There may be some potential for sale of water, if water encountered in underground workings that may result from exploration on the lode mining claims is more than that necessary for mining and milling purposes. If such is the case, the

Tombstone Development company should retain a royalty on any water sold. This might be 25% of the net sale price, after deducting pumping and transmission costs. This value of such potential water rights is completely impossible to determine.

c. State mineral rights land.

1. Mineral rights on state land are subject to a 5% NSR type royalty. Because of this royalty, it is relatively difficult to get a further royalty on bulk disseminated mineral deposits which are low in value per ton. Thus, for evaluation purposes here, and because state prospecting permit land is so intermingled with federal mining claims, I think that we can assume that the state land merely enhances the potential for discovery on the Federal mineral ground. It is necessary to maintain the state land for this purpose, but for estimating purposes, rather than assigning a dollar value to the state land, we will just assume that it is a necessary adjunct to the federal land and that the total combination of federal and state ground has a current discounted value equal to that estimated for the federal ground.

2. Water rights. It is also possible that underground mining may generate more water than is necessary for mining operations. If this is the case, there is potential for sale of the excess water on which Tombstone Development Co. should retain a royalty. The state law has not been thoroughly researched on this matter, so it is not clear to me whether indeed the mining company can sell excess water.

d. Producing mine.

1. The current Tombstone Exploration, Inc./Austin Mining Company lease yields

income to the Tombstone Development Company in two ways:

a. A minimum royalty of $7,500/month

b. A royalty from production of not less than 5% NSR with a maximum production cost tallied against the NSR of 10% of the gross metal value of mined ore.

3. The money paid to the Tombstone Development Company as of the anniversary date of May 1, 1982, will be 36 months x $7,500/month + $6,000 initial payment = $276,000.

4. Production records from T.E.I., the manager of the project, have been unsatisfactory to date. However, there are independent sources available to me that suggest that between $16 and $17 million worth of precious metals may have been removed from the operation in the last 36 months. If 10% of the gross value per ton were deducted for the maximum allowable operating cost deduction called for in the contract, then 5% royalty should have been paid on $14.4 to $15.3 million dollars of production. Thus, a total royalty of $720,000 to $765,000, less the minimum royalty of $270,000, already paid, should have resulted in an additional payment of $450,000 to $495,000.

5. Future production over the next year or two will of course be highly dependent on the price of gold and silver. However, a reliable anonymous source tells me the following:

a. Silver has been sold forward at $9.00/oz.

b. I also assume that gold must have been sold forward in the range of $400/oz.

c. The recovered value of precious metal is approximately $16.20/ton.

d. Production rate is 1,500 tons per day and assuming a 6 day/week mining milling schedule, a $7,581,600/year gross cash flow would result. Subtracting out the 10% of the gross, which is the maximum deductible allowance for overhead, according to the lease agreement, 5% royalties should be paid on $6,823,444/year, or approximately $341,172/ year, payable to Tombstone Development Company.

6. Conclusions. If the Tombstone Development Company is sold, then the purchaser is actually buying a company with a significant income. This should have an obvious effect on the purchase price.

e. Vizina mine tour lease.

1. The Tombstone Development Company has leased the old Vizina mine to a concessioneer, and mine tours for tourists are conducted through the mine on a daily basis. The income from the lease is minimal.

f. Summary of estimated value of the Tombstone Development Company land holdings in the Tombstone Mining District, Cochise County, Arizona: (see next page).

PATENTED LAND:

1. Surface - undeveloped.	7,111,000	
2. Surface - historical.	5,000,000	
3. Mineral rights.	25,000,000	
4. Water rights.	4,500,000	
5. Oil rights.	?	

Sub-Total Patented Land		41,611,800

FEDERAL MINING CLAIMS

1. Mineral rights - Discounted value of hypothetical (as defined by the U.S. Geological Survey) reserves in 13 target areas. Assumed 5% NSR royalty on geologically discounted reserves, assumed to be paid 18 years in the future and discounted to present value using a 15% discount rate.	5,416,000	
2. Water rights.	?	

Sub-Total Federal Land		5,416,000

STATE LAND

1. Mineral rights.	?	
2. Water rights.	?	

Sub-Total State Land		?

PRODUCING MINE
(Tombstone Exploration/Austin Mining

1. Received minimum royalties.	276,000	
2. Calculated production royalties owed.	495,000	
3. Calculated production royalty payable to T.D.C. for 1982.	341,172	
4. Discounted 5 years of future royalties at the same rate as (3) above, using a 15% discount rate.	1,195,085	

Sub-Total Producing Mine		2,307,257
		==========
TOTAL		49,335,057*

(see next page)

*Please note: All of the data used to prepare the figures on the preceding page (23) are subject to varying degrees of uncertainty. They must, therefore, be considered to represent orders of magnitude, rather than precise accuracy. In the case of valuation of hypothetical (U.S. Geological Survey term - see Attachment 16) ore reserve, I have used several discount factors, and therefore, I believe they are conservative. In the case of TEI/Austin Mining lease, the calculated production was figured 3 different ways.

I will continue to refine and document these figures.

Very truly yours,

Jim Briscoe

James A. Briscoe

JAB/mas

Attachments

LIST OF ATTACHMENTS

1. Property Map - 1" = 2,000'

2. Proposed budget for 1982

3. Estimate for claim staking - Bill Marum, Registered Professional Surveyor

4. Current general ledger to April 11

5. General ledger to March 31

6. Tombstone cost/sale comparison
   a. "Getty wants to buy land for its copper", March 24, 1982, Tucson Citizen
   b. Pay Dirt, New Mexico edition, March 1982 - Noranda Exploration

7. Summary of recorded production in the Tombstone Mining District from 1879 to 1937

8. Production from 1879 to 1907

9. Production from 1908 - 1934

10. Production from 1935 - 1936

11. Production statistics from the Tombstone Extension Area - 1930 - 1937

12. "Can Copper Recover" - Article

13. "Plan to boost stock pile of strategic minerals", Wall Street Journal, April 11, 1982

14. "Mining Law" - Exerpts from U.S. Bureau of Mines, Minerals & Materials, February, 1982, page 3

15. "AMAX is Confident Molybdenum Business Will Rebound Soon", New Mexico Pay Dirt, March, 1982, page 52

16. Classification of Mineral Resources, U. S. Bureau of Mines and U. S. Geological Survey

Attachment 2

TDCS TRUST BUDGET OF OPERATING EXPENSES
DATE OF PRINTING: APRIL 11, 1982

ACCOUNTS PAYABLE:	3500.00
APRIL EST. COSTS	7052.50
SUB TOTAL	10552.50
BOND REFUND	4000.00
BUDGET REQUIREMENTS	6552.50

EXPENSES:	1981	% 1981	AVERAGE PER MONTH	JANUARY 1982	FEBRUARY 1982	MARCH 1982	APRIL 1982	ESTIMATE APRIL 1982	ESTIMATE MAY 1982	ESTIMATE JUNE 1982
JAB & ASSOC. MGMT	54000.00	54.42	6000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASSAY EXPENSE	22.50	0.02	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUTOMOTIVE RENTAL	4844.50	4.88	538.28	0.00	493.70	0.00	0.00	0.00	0.00	0.00
CONTRACT LABOR	14219.66	14.33	1579.96	1036.45	1282.00	207.75	327.48	1300.00	500.00	200.00
DRAFTING & BLUEPRINT	877.17	0.88	97.46	17.01	0.00	0.00	0.00	50.00	50.00	50.00
ENG. & FIELD SUPP.	3302.40	3.33	366.93	0.00	126.66	0.00	0.00	0.00	0.00	0.00
REPRO. & TYPESET	4624.40	4.66	513.82	34.87	295.98	259.90	48.85	475.00	50.00	50.00
REPORT PREPARATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	830.00	0.00	0.00
OUTSIDE CONSULTING	0.00	0.00	0.00	0.00	519.40	0.00	0.00	0.00	0.00	0.00
OFFICE SUP. & EXP.	265.20	0.27	29.47	348.23	25.30	24.11	0.00	25.00	25.00	25.00
POSTAGE & SHIPPING	37.36	0.04	4.15	243.52	24.08	22.12	36.43	250.00	10.00	5.00
PROMO ENTERTAINMENT	0.00	0.00	0.00	0.00	0.00	0.00	50.11	50.11	10.00	25.00
TELEPHONE	122.17	0.12	13.57	0.00	76.76	20.61	47.25	50.00	50.00	50.00
FTL-CLAIM STAKING	4074.89	4.11	452.77	0.00	261.52	0.00	0.00	0.00	0.00	0.00
PROS.PERMIT APPLI.	7150.00	7.21	794.44	175.00	500.00	575.00	300.00	794.44	794.44	794.44
MAPS & TECH. PUBL.	224.99	0.23	25.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00
FILING FEES-B.L.M.	2320.00	2.34	257.78	0.00	0.00	0.00	330.00	0.00	0.00	0.00
FILING FEES-COCH.CTY	1392.00	1.40	154.67	0.00	0.00	0.00	198.00	0.00	0.00	0.00
FTL-STATE LAND ACQ.	1749.84	1.76	194.43	82.49	140.00	137.95	75.00	140.00	140.00	140.00
DAMAGE & REST. BONDS	0.00	0.00	0.00	0.00	0.00	4000.00	90.00	90.00	0.00	0.00
PROS.PERMIT FEES	0.00	0.00	0.00	0.00	0.00	1843.78	480.82	3000.00	0.00	0.00
STATE MINING LEASES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
*CLAIM STAKING EST.						0.00			14836.00	
TOTAL	99227.08	100.00	11025.23	1961.57	3745.40	7091.22	1983.94	7054.55	16465.44	1339.44

EXPENSES:	ESTIMATE JULY 1982	ESTIMATE AUGUST 1982	ESTIMATE SEPTEMBER 1982	ESTIMATE OCTOBER 1982	ESTIMATE NOVEMBER 1982	ESTIMATE DECEMBER 1982	ESTIMATED TOTAL 1982	% 1982	AVERAGE PER MONTH
JAB & ASSOC. MGMT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASSAY EXPENSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUTOMOTIVE RENTAL	0.00	0.00	0.00	0.00	0.00	0.00	493.70	1.05	41.14
CONTRACT LABOR	200.00	100.00	100.00	100.00	100.00	100.00	5226.20	11.11	435.52
DRAFTING & BLUEPRINT	50.00	50.00	0.00	0.00	0.00	0.00	267.01	0.57	22.25
ENG. & FIELD SUPP.	0.00	0.00	0.00	0.00	0.00	0.00	126.66	0.27	10.56
REPRO. & TYPESET	50.00	50.00	50.00	50.00	50.00	50.00	1465.75	3.12	122.15
REPORT PREPARATION	0.00	0.00	0.00	0.00	0.00	0.00	830.00	1.76	69.17
OUTSIDE CONSULTING	0.00	0.00	0.00	0.00	0.00	0.00	519.40	1.10	43.28
OFFICE SUP. & EXP.	25.00	25.00	25.00	25.00	25.00	25.00	622.64	1.32	51.89
POSTAGE & SHIPPING	5.00	5.00	5.00	5.00	5.00	5.00	584.72	1.24	48.73
PROMO ENTERTAINMENT	25.00	25.00	25.00	25.00	25.00	25.00	235.11	0.50	19.59
TELEPHONE	150.00	100.00	50.00	50.00	10.00	10.00	617.37	1.31	51.45
FTL-CLAIM STAKING	0.00	0.00	0.00	0.00	0.00	0.00	261.52	0.56	21.79
PROS.PERMIT APPLI.	794.44	794.44	794.44	794.44	794.44	794.44	8399.96	17.85	700.00
MAPS & TECH. PUBL.	0.00	0.00	0.00	0.00	0.00	0.00	24.00	0.05	2.00
FILING FEES-B.L.M.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FILING FEES-COCH.CTY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FTL-STATE LAND ACQ.	140.00	140.00	140.00	140.00	140.00	140.00	1620.44	3.44	135.04
DAMAGE & REST. BONDS	0.00	0.00	0.00	0.00	0.00	0.00	4090.00	8.69	340.83
PROS.PERMIT FEES	0.00	0.00	0.00	0.00	0.00	0.00	4843.78	10.30	403.65
STATE MINING LEASES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
*CLAIM STAKING EST.							14836.00	31.53	1236.33
TOTAL	1439.44	1289.44	1189.44	1189.44	1149.44	1149.44	47048.20	100.00	3755.35

TDC INVESTMENT TO DATE:	112486.54
INTEREST INCOME TO DATE:	337.38
TOTAL	112823.92
TOTAL EXPENSES TO DATE:	114009.21
TOTAL	-1185.29
A/C JABA ADVANCES	-3500.00
CASH IN BANK & ICLAF	2314.71

*THIS WILL BE DISTRIBUTED TO FTL, AUTO RENTAL, CONTRACT LABOR, FILING FEES, ETC., AFTER WORK IS DONE

Attachment 2

MARUM and MARUM • INC.
Consulting Engineers and Surveyors

232 East Sixth Street
P.O. Box 731
Tucson • Arizona • 85702

(602) 624-1793

Andrew B. Marum • P.E.
~~E[illegible]d F. Marum • P.E.~~
~~William H. Baker • P.E.~~
William B. Marum • RLS

March 29, 1982
File No. 82-08

Mr. Jim Briscoe
5701 E. Glenn
Unit No. 120
Tucson, Arizona 85711

Dear Jim:

Pursuant to your request, we are pleased to submit the following proposal to provide claim staking services for your project near Tombstome.

As you are aware, the mining laws of the Federal Government and the State of Arizona require that all four corners and both end centers of each claim be monumented on the ground and the location notice be posted at one corner of the claim. In order for the claim to be valid, the location notice must be posted on open ground. Due to the irregular shape of the open ground and the fact that numerous "holes" appear to exist between the patented and unpatented claims, this project will be more complex than a normal claim staking project. Extensive research, both on the ground and in the office will be required to be sure that the open ground requirement is satisfied.

We understand that you will furnish copies of all mineral survey plats and claim maps bordering on the open ground, and also that you will provide the necessary personnel to build the monuments.

For each of the three phases we propose to accomplish the following items of work:

1. Research the existing claims, both patented and unpatented.
2. Mathematicially calculate the claim corners.
3. Search for and tie in existing corners where necessary.
4. Prepare claim forms for the new block of claims.
5. Set on the ground the position of the claim corners, end centers, and location monuments.

The fee shown for each of the phases is based on work having been accomplished in the previous phase. If phases are taken out of sequence, or if the work is not continuous, the fee shown may be renegotiated.

Attachment 3

Phase I (the westerly block)	$ 8,500
Phase II (scattered small parcels)	10,350
Phase III (the easterly block)	4,200
Total Fee for Phase I, II, III	$23,050

Filing fees with the County Recorder and BLM, research documents such as claim maps, mineral survey plats and field notes and G.L.O. plats and notes are excluded from the above fee.

The firm of Marum and Marum, Inc., has been in business since 1947, serving the Southern Arizona community, and in fact performed a rather extensive survey in this area in 1965, the results of which should greatly assist us in our research for this project.

All work will be done under my direct supervision, and in fact I intend to spend considerable time in the field on this project.

I am a reqistered U.S. Mineral Surveyor and am also licensed as a Land Surveyor in the states of Arizona, California, Nevada and New Mexico, with extensive experience in claim staking and retracement of patented land surveys.

If the above proposal is acceptable to you, we ask that you sign and return one copy of this letter, along with a retainer fee of 25% of the work authorized.

We are in a position to begin work immediately, and look forward to working with you on this project.

Very truly yours,

William B. Marum

William B. Marum, P.L.S.

WBN:dj

PROPOSAL ACCEPTABLE ______________________________

DATE ____________

Attachment 4

TDCS TRUST
PROFIT AND LOSS STATEMENT
APRIL 12, 1982

	CURRENT	%	YEAR-TO-DATE	%
INCOME				
INTEREST INCOME	0.00		13.79	
TDC CAPITAL INVESTMENT	0.00		17,052.57	
TOTAL	0.00	***	17,066.36	100.0
EXPENSES				
AUTOMOTIVE RENTAL	0.00	***	493.70	2.9
CONTRACT LABOR	327.48	***	2,853.68	16.7
DRAFTING & BLUEPRINT SUPPLI	0.00	***	17.01	0.1
ENGINEERING & FIELD SUPPLIE	0.00	***	126.66	0.7
REPRODUCTION & TYPESETTING	48.85	***	639.60	3.7
OUTSIDE CONSULTING EXPENSE	0.00	***	519.40	3.0
OFFICE SUPPLIES & EXPENSES	0.00	***	397.64	2.3
POSTAGE & SHIPPING	36.43	***	326.15	1.9
PROMOTIONAL EXPENSES(ENT.)	50.11	***	50.11	0.3
TELEPHONE	47.25	***	144.62	0.8
FTL - CLAIM STAKING	0.00	***	255.62	1.5
PROSPECTING PERMIT APPLICAT	<5,062.96>	<***>	2,030.82	11.9
MAPS & TECH. PUBLICATIONS	0.00	***	24.00	0.1
FILING FEES-B.L.M. CLAIMS	330.00	***	330.00	1.9
FILING FEES-COCHISE CTY.	198.00	***	198.00	1.2
FTL-STATE LAND ACQUISITION	75.00	***	441.34	2.6
DAMAGE & RESTORATION BONDS	4,090.00	***	4,090.00	24.0
PROSPECTING PERMIT FEES	1,843.78	***	1,843.78	10.8
TOTAL	1,983.94	***	14,782.13	86.6
NET INCOME <LOSS>	<1,983.94>	<***>	2,284.23	13.4

TDCS TRUST
BALANCE SHEET
APRIL 12, 1982

ASSETS			
	CASH IN BANK	2,140.42	
	CASH-ICLAF,INC.-DWR	174.29	
	TOTAL ASSETS		2,314.71
			==============
LIABILITIES			
	ACCOUNTS PAYABLE	3,500.00	
	TOTAL LIABILITIES		3,500.00
CAPITAL			
	EQUITY	<1,185.29>	
	TOTAL CAPITAL		<1,185.29>

	TOTAL LIABILITIES & CAPITAL		2,314.71
			==============

TDCS TRUST

TRIAL BALANCE
AS OF 04/12/82

ACCOUNT NUMBER	TYPE	ACCOUNT NAME	BALANCE
1010	ASSETS	CASH IN BANK	2,140.42
1020	ASSETS	CASH-ICLAF,INC.-DWR	174.29
1050	ASSETS	ACCOUNTS RECEIVABLE	0.00
2000	LIABILITIES	ACCOUNTS PAYABLE	3,500.00-
3000	CAPITAL	EQUITY	1,185.29
4000	INCOME	INTEREST INCOME	13.79-
4010	INCOME	TDC CAPITAL INVESTMENT	17,052.57-
4020	INCOME	MISCELLANEOUS INCOME	0.00
6000	EXPENSES	JAMES A. BRISCOE & ASSOCIATES	0.00
6010	EXPENSES	ASSAY EXPENSE	0.00
6020	EXPENSES	AUTOMOTIVE RENTAL	493.70
6030	EXPENSES	CONTRACT LABOR	2,853.68
6040	EXPENSES	GEOPHYSICS	0.00
6050	EXPENSES	DRAFTING & BLUEPRINT SUPPLIES	17.01
6060	EXPENSES	ENGINEERING & FIELD SUPPLIES	126.66
6070	EXPENSES	REPRODUCTION & TYPESETTING	639.60
6080	EXPENSES	EQUIPMENT RENTAL	0.00
6090	EXPENSES	OUTSIDE CONSULTING EXPENSE	519.40
6100	EXPENSES	OFFICE SUPPLIES & EXPENSES	397.64
6110	EXPENSES	POSTAGE & SHIPPING	326.15
6120	EXPENSES	PROMOTIONAL EXPENSES(ENT.)	50.11
6150	EXPENSES	TELEPHONE	144.62
6160	EXPENSES	FTL - CLAIM STAKING	255.62
6170	EXPENSES	PROSPECTING PERMIT APPLICATIO	2,030.82
6180	EXPENSES	MAPS & TECH. PUBLICATIONS	24.00
6190	EXPENSES	MISCELLANEOUS EXPENSE	0.00
6200	EXPENSES	FILING FEES-B.L.M. CLAIMS	330.00
6210	EXPENSES	FILING FEES-COCHISE CTY.	198.00
6220	EXPENSES	FTL-STATE LAND ACQUISITION	441.34
6230	EXPENSES	FTL-PVT(3RD) MIN.RTS.ACQUI.	0.00
6240	EXPENSES	FTL - PROMO	0.00
6250	EXPENSES	FTL-TECHNICAL STUDIES	0.00
6260	EXPENSES	DAMAGE & RESTORATION BONDS	4,090.00
6270	EXPENSES	PROSPECTING PERMIT FEES	1,843.78
6280	EXPENSES	STATE MINING LEASES	0.00
9999	INCOME	INCOME TRANSFER	2,284.23
	TOTAL		0.00

ACCT NO	ACCOUNT NAME	FOLIO	FORWARD	MONTH	BALANCE
1010	CASH IN BANK		4,124.36		
	CHECKS FOR MONTH	CD		1,983.94CR	
	SALES SUMMARY	IR		0.00	
	CASH RECEIPTS SUMMARY	CR		0.00	
					2,140.42
1020	CASH-ICLAF,INC.-DWR		174.29		174.29
1050	ACCOUNTS RECEIVABLE		0.00		
	SALES SUMMARY	IR		0.00	
	CASH RECEIPTS SUMMARY	CR		0.00	
					0.00
2000	ACCOUNTS PAYABLE		3,500.00CR		
	MERCH. PURCH. SUMMARY	MP		0.00	
					3,500.00CR
3000	EQUITY		798.65CR		798.65CR
4000	INTEREST INCOME		13.79CR		13.79CR
4010	TDC CAPITAL INVESTMENT		17,052.57CR		
	SALES SUMMARY	IR		0.00	
					17,052.57CR
4020	MISCELLANEOUS INCOME		0.00		
	SALES SUMMARY	IR		0.00	
					0.00
6020	AUTOMOTIVE RENTAL		493.70		493.70
6030	CONTRACT LABOR		2,526.20		
	DAVID HORNE	CK # 1380		89.65	
	DAVID HORNE	CK # 1388		73.70	
	SUSAN ANGELON	CK # 1390		78.63	
	THELMA J. MAC ARTHUR	CK # 1391		85.50	
					2,853.68
6050	DRAFTING & BLUEPRINT SU		17.01		17.01
6060	ENGINEERING & FIELD SUP		126.66		126.66
6070	REPRODUCTION & TYPESETT		590.75		
	JAMES A BRISCOE & ASSOCIA	CK # 1379		41.50	
	SUSAN ANGELON	CK # 1381		7.35	
					639.60
6090	OUTSIDE CONSULTING EXPE		519.40		519.40

ACCT NO	ACCOUNT NAME	FOLIO	FORWARD	MONTH	BALANCE
6100	OFFICE SUPPLIES & EXPEN		397.64		397.64
6110	POSTAGE & SHIPPING		289.72		
	JAMES A BRISCOE & ASSOCIA	CK # 1379		17.50	
	U. S. POSTMASTER	CK # 1384		9.35	
	U. S. POSTMASTER	CK # 1387		9.58	
					326.15
6120	PROMOTIONAL EXPENSES(EN		0.00		
	MARDEE STEWART	CK # 1378		50.11	
					50.11
6150	TELEPHONE		97.37		
	THOMAS E. WALDRIP, JR.	CK # 1377		3.53	
	JAMES A BRISCOE & ASSOCIA	CK # 1379		43.72	
					144.62
6160	FTL - CLAIM STAKING		255.62		255.62
6170	PROSPECTING PERMIT APPL		7,093.78		
	ARIZONA STATE LAND DEPART	CK # 1385		480.82	
	ARIZONA STATE LAND DEPART	CK # 1306		300.00	
	JE # 93	GJ		4,000.00CR	
	JE # 94	GJ		1,843.78CR	
					2,030.82
6180	MAPS & TECH. PUBLICATIO		24.00		24.00
6200	FILING FEES-B.L.M. CLAI		0.00		
	BUREAU OF LAND MANAGEMENT	CK # 1382		330.00	
					330.00
6210	FILING FEES-COCHISE CTY		0.00		
	COCHISE COUNTY RECORDER	CK # 1383		198.00	
					198.00
6220	FTL-STATE LAND ACQUISIT		366.34		
	DAVID HORNE	CK # 1389		75.00	
					441.34
6260	DAMAGE & RESTORATION BO		0.00		
	TUCSON REALTY & TRUST	CK # 1386		90.00	
	JE # 93	GJ		4,000.00	
					4,090.00
6270	PROSPECTING PERMIT FEES		0.00		
	JE # 94	GJ		1,843.78	
					1,843.78

ACCT NO	ACCOUNT NAME	FOLIO	FORWARD	MONTH	BALANCE
9999	INCOME TRANSFER		4,268.17		4,268.17
	TOTALS		0.00	0.00	0.00

NET INCOME(CR) OR LOSS(DB): 1,983.94

RESULTING EARNING AND INCOME TRANSFER ACCOUNTS:

3000	EQUITY	798.65CR	1,983.94	1,185.29
9999	INCOME TRANSFER	4,268.17	1,983.94CR	2,284.23

TDCS TRUST

GENERAL JOURNAL
AS OF 04/12/82

DATE	JE#	ACCOUNT	DEBIT	CREDIT
04/12/82	93	6260 DAMAGE & RESTORATION BONDS	4,000.00	
		6170 PROSPECTING PERMIT APPLICATION		4,000.00
		TO CORRECT ENTRY OF CK #1372		
04/12/82	94	6270 PROSPECTING PERMIT FEES	1,843.78	
		6170 PROSPECTING PERMIT APPLICATION		1,843.78
		TO CORRECT ENTRY OF CK #1370		
		TOTAL DEBITS	5,843.78	
		TOTAL CREDITS		5,843.78

TDCS TRUST

CASH DISBURSEMENTS
AS OF 04/12/82

DATE	PAYEE	CHECK NUMBER	ACCT NO.	SUB ACCT NO.	DETAIL	NET AMT.
04/01/82	THOMAS E. WALDRIP, JR.	1377	6150			3.53
04/01/82	MARDEE STEWART	1378	6120			50.11
04/01/82	JAMES A BRISCOE & ASSOCIA	1379	6110		17.50	
			6070		41.50	
			6150		43.72	102.72
04/02/82	DAVID HORNE	1380	6030			89.65
04/02/82	SUSAN ANGELON	1381	6070			7.35
04/05/82	BUREAU OF LAND MANAGEMENT	1382	6200			330.00
04/05/82	COCHISE COUNTY RECORDER	1383	6210			198.00
04/07/82	U. S. POSTMASTER	1384	6110			9.35
04/07/82	ARIZONA STATE LAND DEPART	1385	6170			480.82
04/07/82	TUCSON REALTY & TRUST	1386	6260			90.00
04/08/82	U. S. POSTMASTER	1387	6110			9.58
04/08/82	ARIZONA STATE LAND DEPART	1306	6170			300.00
04/08/82	DAVID HORNE	1388	6030			73.70
04/08/82	DAVID HORNE	1389	6220			75.00
04/08/82	SUSAN ANGELON	1390	6030			78.63
04/08/82	THELMA J. MAC ARTHUR	1391	6030			85.50
	TOTAL					1,983.94

TDCS TRUST

AS OF
04/12/82

ACCOUNTS RECEIVABLE LEDGER

CUSTOMER NO -- NAME		FOLIO	BALANCE FORWARD	CURRENT MONTH	BALANCE
1	TOMBSTONE DEVELOPMENT COM		0.00		0.00
2	JAMES A. BRISCOE & ASSOCI		0.00		0.00
	TOTALS		0.00	0.00	0.00

ACCOUNTS PAYABLE LEDGER

VENDOR NO -- NAME	FOLIO	BALANCE FORWARD	CURRENT MONTH	BALANCE
100 JAMES . BRISCOE & ASSOCIA		0.00		0.00
101 TOMBSTONE DEVELOPMENT COM		0.00		0.00
102 RAIM, ST. JOHN, FRENCH		0.00		0.00
TOTALS		0.00	0.00	0.00

Attachment 5

TDCS TRUST
PROFIT AND LOSS STATEMENT
MARCH 31, 1982

	CURRENT	%	YEAR-TO-DATE	%
INCOME				
INTEREST INCOME	5.99		13.79	
TDC CAPITAL INVESTMENT	9,681.00		17,052.57	
TOTAL	9,686.99	100.0	17,066.36	100.0
EXPENSES				
AUTOMOTIVE RENTAL	0.00	0.0	493.70	2.9
CONTRACT LABOR	207.75	2.1	2,526.20	14.8
DRAFTING & BLUEPRINT SUPPLI	0.00	0.0	17.01	0.1
ENGINEERING & FIELD SUPPLIE	0.00	0.0	126.66	0.7
REPRODUCTION & TYPESETTING	259.90	2.7	590.75	3.5
OUTSIDE CONSULTING EXPENSE	0.00	0.0	519.40	3.0
OFFICE SUPPLIES & EXPENSES	24.11	0.2	397.64	2.3
POSTAGE & SHIPPING	22.12	0.2	289.72	1.7
TELEPHONE	20.61	0.2	97.37	0.6
FTL - CLAIM STAKING	<5.90>	<0.1>	255.62	1.5
FILING FEES - STATE LAND	6,418.78	66.3	7,093.78	41.6
MAPS & TECH. PUBLICATIONS	0.00	0.0	24.00	0.1
FTL-STATE LAND ACQUISITION	143.85	1.5	366.34	2.1
TOTAL	7,091.22	73.2	12,798.19	75.0
NET INCOME <LOSS>	2,595.77	26.8	4,268.17	25.0

TDCS TRUST
BALANCE SHEET
MARCH 31, 1982

ASSETS			
	CASH IN BANK	4,124.36	
	CASH-ICLAF,INC.-DWR	174.29	
	TOTAL ASSETS		4,298.65
LIABILITIES			
	ACCOUNTS PAYABLE	3,500.00	
	TOTAL LIABILITIES		3,500.00
CAPITAL			
	EQUITY	798.65	
	TOTAL CAPITAL		798.65
	TOTAL LIABILITIES & CAPITAL		4,298.65

TDCS TRUST

TRIAL BALANCE
AS OF 03/31/82

ACCOUNT NUMBER	TYPE	ACCOUNT NAME	BALANCE
1010	ASSETS	CASH IN BANK	4,124.36
1020	ASSETS	CASH-ICLAF,INC.-DWR	174.29
1050	ASSETS	ACCOUNTS RECEIVABLE	0.00
2000	LIABILITIES	ACCOUNTS PAYABLE	3,500.00-
3000	CAPITAL	EQUITY	798.65-
4000	INCOME	INTEREST INCOME	13.79-
4010	INCOME	TDC CAPITAL INVESTMENT	17,052.57-
4020	INCOME	MISCELLANEOUS INCOME	0.00
6000	EXPENSES	JAMES A. BRISCOE & ASSOCIATES	0.00
6010	EXPENSES	ASSAY EXPENSE	0.00
6020	EXPENSES	AUTOMOTIVE RENTAL	493.70
6030	EXPENSES	CONTRACT LABOR	2,526.20
6040	EXPENSES	GEOPHYSICS	0.00
6050	EXPENSES	DRAFTING & BLUEPRINT SUPPLIES	17.01
6060	EXPENSES	ENGINEERING & FIELD SUPPLIES	126.66
6070	EXPENSES	REPRODUCTION & TYPESETTING	590.75
6080	EXPENSES	EQUIPMENT RENTAL	0.00
6090	EXPENSES	OUTSIDE CONSULTING EXPENSE	519.40
6100	EXPENSES	OFFICE SUPPLIES & EXPENSES	397.64
6110	EXPENSES	POSTAGE & SHIPPING	289.72
6120	EXPENSES	PROMOTIONAL EXPENSES(ENT.)	0.00
6150	EXPENSES	TELEPHONE	97.37
6160	EXPENSES	FTL - CLAIM STAKING	255.62
6170	EXPENSES	FILING FEES - STATE LAND	7,093.78
6180	EXPENSES	MAPS & TECH. PUBLICATIONS	24.00
6190	EXPENSES	MISCELLANEOUS EXPENSE	0.00
6200	EXPENSES	FILING FEES-B.L.M. CLAIMS	0.00
6210	EXPENSES	FILING FEES-COCHISE CTY.	0.00
6220	EXPENSES	FTL-STATE LAND ACQUISITION	366.34
6230	EXPENSES	FTL-PVT(3RD) MIN.RTS.ACQUI.	0.00
6240	EXPENSES	FTL - PROMO	0.00
6250	EXPENSES	FTL-TECHNICAL STUDIES	0.00
9999	INCOME	INCOME TRANSFER	4,268.17
	TOTAL		0.00

TDCS TRUST

AS OF 03/31/82

GENERAL LEDGER

ACCT NO	ACCOUNT NAME	FOLIO	FORWARD	MONTH	BALANCE
1010	CASH IN BANK		531.64		
	JE # 86	GJ		6.15	
	JE # 87	GJ		1,000.00	
	JE # 88	GJ		3,425.00	
	JE # 89	GJ		5.90	
	JE # 90	GJ		6,256.00	
	JE # 91	GJ		2.94	
	JE # 92	GJ		9.55CR	
	CHECKS FOR MONTH	CD		7,093.72CR	
	SALES SUMMARY	IR		0.00	
	CASH RECEIPTS SUMMARY	CR		0.00	
					4,124.36
1020	CASH-ICLAF,INC.-DWR		171.24		
	JE # 85	GJ		3.05	
					174.29
1050	ACCOUNTS RECEIVABLE		0.00		
	SALES SUMMARY	IR		0.00	
	CASH RECEIPTS SUMMARY	CR		0.00	
					0.00
2000	ACCOUNTS PAYABLE		2,500.00CR		
	JE # 87	GJ		1,000.00CR	
	MERCH. PURCH. SUMMARY	MP		0.00	
					3,500.00CR
3000	EQUITY		1,797.12		1,797.12
4000	INTEREST INCOME		7.80CR		
	JE # 85	GJ		3.05CR	
	JE # 91	GJ		2.94CR	
					13.79CR
4010	TDC CAPITAL INVESTMENT		7,371.57CR		
	JE # 88	GJ		3,425.00CR	
	JE # 90	GJ		6,256.00CR	
	SALES SUMMARY	IR		0.00	
					17,052.57CR
4020	MISCELLANEOUS INCOME		0.00		
	SALES SUMMARY	IR		0.00	
					0.00
6020	AUTOMOTIVE RENTAL		493.70		493.70
6030	CONTRACT LABOR		2,318.45		
	DAVID HORNE	CK # 1366		57.75	
	SUSAN ANGELON	CK # 1367		23.80	
	DAVID HORNE	CK # 1373		88.00	

TDCS TRUST

AS OF
03/31/82

GENERAL LEDGER

ACCT NO	ACCOUNT NAME	FOLIO	FORWARD	MONTH	BALANCE
	SUSAN ANGELON	CK # 1374		27.20	
	DAVID HORNE	CK # 1376		11.00	
					2,526.20
6050	DRAFTING & BLUEPRINT SU		17.01		17.01
6060	ENGINEERING & FIELD SUP		126.66		126.66
6070	REPRODUCTION & TYPESETT		330.85		
	JAB & ASSOCIATES	CK # 1363		175.10	
	SUSAN ANGELON	CK # 1375		84.80	
					590.75
6090	OUTSIDE CONSULTING EXPE		519.40		519.40
6100	OFFICE SUPPLIES & EXPEN		373.53		
	SUPER CITY STATIONERS	CK # 1364		14.56	
	JE # 92	GJ		9.55	
					397.64
6110	POSTAGE & SHIPPING		267.60		
	JAB & ASSOCIATES	CK # 1363		12.40	
	U.S. POSTMASTER	CK # 1368		9.72	
					289.72
6150	TELEPHONE		76.76		
	JAB & ASSOCIATES	CK # 1363		19.28	
	THOMAS E. WALDRIP, JR.	CK # 1365		1.33	
					97.37
6160	FTL - CLAIM STAKING		261.52		
	JE # 89	GJ		5.90CR	
					255.62
6170	FILING FEES - STATE LAN		675.00		
	ARIZONA STATE LAND DEPART	CK # 1308		575.00	
	ARIZONA STATE LAND DEPART	CK # 1370		1,843.78	
	ARIZONA STATE LAND DEPT-B	CK # 1372		4,000.00	
					7,093.78
6180	MAPS & TECH. PUBLICATIO		24.00		24.00
6220	FTL-STATE LAND ACQUISIT		222.49		
	DAVID HORNE	CK # 1369		150.00	
	JE # 86	GJ		6.15CR	
					366.34
9999	INCOME TRANSFER		1,672.40		1,672.40
	TOTALS		0.00	0.00	0.00

ACCT NO	ACCOUNT NAME	FOLIO	FORWARD	MONTH	BALANCE

NET INCOME(CR) OR LOSS(DB): 2,595.77CR

RESULTING EARNING AND INCOME TRANSFER ACCOUNTS:

ACCT NO	ACCOUNT NAME	FOLIO	FORWARD	MONTH	BALANCE
3000	EQUITY		1,797.12	2,595.77CR	798.65CR
9999	INCOME TRANSFER		1,672.40	2,595.77	4,268.17

TDCS TRUST

GENERAL JOURNAL
AS OF 03/31/82

DATE	JE#	ACCOUNT	DEBIT	CREDIT
03/01/82	85	1020 CASH-ICLAF,INC.-DWR	3.05	
		4000 INTEREST INCOME		3.05
		INTEREST ON ICLAF ACCOUNT		
03/04/82	86	1010 CASH IN BANK	6.15	
		6220 FTL-STATE LAND ACQUISITION		6.15
		DAVID HORNE CHANGE FROM ADVANCE FOR TRIP TO PHOENIX FOR FILING		
03/12/82	87	1010 CASH IN BANK	1,000.00	
		2000 ACCOUNTS PAYABLE		1,000.00
		JABA, INC. ADVANCE TO OPERATING CPAPITAL		
03/16/82	88	1010 CASH IN BANK	3,425.00	
		4010 TDC CAPITAL INVESTMENT		3,425.00
		CHECK FROM TOMBSTONE DEVELOPMENT COMPANY		
03/22/82	89	1010 CASH IN BANK	5.90	
		6160 FTL - CLAIM STAKING		5.90
		DAVID HORNE CHANGE BACK FROM ADVANCE FOR TRIP TO PHOENIX FOR FILING		
03/22/82	90	1010 CASH IN BANK	6,256.00	
		4010 TDC CAPITAL INVESTMENT		6,256.00
		CHECK FROM TOMBSTONE DEVELOPMENT COMPANY		
03/22/82	91	1010 CASH IN BANK	2.94	
		4000 INTEREST INCOME		2.94
		INTEREST ON ARIZONA BANK CHECKING ACCOUNT		
03/22/82	92	6100 OFFICE SUPPLIES & EXPENSES	9.55	
		1010 CASH IN BANK		9.55
		SERVICE CHARGE ON ARIZONA BANK CHECKING ACCOUNT		
		TOTAL DEBITS	10,708.59	
		TOTAL CREDITS		10,708.59

TDCS TRUST

CASH DISBURSEMENTS
AS OF 03/31/82

DATE	PAYEE	CHECK NUMBER	ACCT NO.	SUB ACCT NO.	DETAIL	NET AMT.
03/01/82	JAB & ASSOCIATES	1363	6070		175.10	
			6110		12.40	
			6150		19.28	206.78
03/03/82	SUPER CITY STATIONERS	1364	6100			14.56
03/03/82	THOMAS E. WALDRIP, JR.	1365	6150			1.33
03/05/82	DAVID HORNE	1366	6030			57.75
03/05/82	SUSAN ANGELON	1367	6030			23.80
03/08/82	U.S. POSTMASTER	1368	6110			9.72
03/11/82	DAVID HORNE	1369	6220			150.00
03/11/82	ARIZONA STATE LAND DEPART	1308	6170			575.00
03/18/82	ARIZONA STATE LAND DEPART	1370	6170			1,843.78
03/18/82	VOID	1371				
03/18/82	ARIZONA STATE LAND DEPT-B	1372	6170		Cash bond pmnt	4,000.00
03/19/82	DAVID HORNE	1373	6030			88.00
03/26/82	SUSAN ANGELON	1374	6030			27.20
03/26/82	SUSAN ANGELON	1375	6070			84.80
03/26/82	DAVID HORNE	1376	6030			11.00
	TOTAL					7,093.72

AS OF
03/31/82

TDCS TRUST

ACCOUNTS PAYABLE LEDGER

VENDOR NO -- NAME		FOLIO	BALANCE FORWARD	CURRENT MONTH	BALANCE
100	JAMES . BRISCOE & ASSOCIA		0.00		0.00
101	TOMBSTONE DEVELOPMENT COM		0.00		0.00
102	RAIM, ST. JOHN, FRENCH		0.00		0.00
	TOTALS		0.00	0.00	0.00

AS OF 03/31/82

TDCS TRUST

ACCOUNTS RECEIVABLE LEDGER

CUSTOMER NO -- NAME		FOLIO	BALANCE FORWARD	CURRENT MONTH	BALANCE
1	TOMBSTONE DEVELOPMENT COM		0.00		0.00
2	JAMES A. BRISCOE & ASSOCI		0.00		0.00
	TOTALS		0.00	0.00	0.00

TOMBSTONE COST SALE COMPARISON

Attachment 6

	TOMBSTONE	CASA GRANDE	NORANDA - BARETTA
LAND			
SURFACE OWNERSHIP FEE (ACRES)	1102	1350	0
MINERAL OWNERSHIP FEE "	1125.2	1350	0
MINERAL OWNERSHIP FEDERAL "	8100	0	6458
MINERAL OWNERSHIP STATE "	26000	0	0
TOTAL MINERAL RIGHTS OWNED "	35225.2	1350	6458
MINERAL POTENTIAL (IN MILLIONS OF $)			
PAST PRODUCTION @ CURRENT VALUES*	500	0	0
KNOWN RESERVES (GMV IN $)*	0	0	0
PROXIMITY TO MINERAL CENTER	OVERLIES	1 MILE	OVERLIES
NUMBER OF KNOWN OR INFERRED DEPOSITS	3-5	1	1-2
APPROX. $ VALUE OF WORK TO DEFINE RESERVES	1	1	1
TIME BEFORE PRODUCTION ATTAINED	IN PRODUCTION	5 YEARS	5 YEARS
EST. OF GROSS CONTAINED METAL VALUE (GMV)	2000	5000	5000
SALE PRICE COMPONENTS			
SALE OF SURFACE RIGHTS	7.9	9.6	
SALE OF MINERAL RIGHTS	?	9.6	1.5
SALE OF WATER RIGHTS	RETAINED		
SALE OF OIL RIGHTS	RETAINED		
RETAINED ROYALTY	.05	.025	UNKNOWN
VALUE OF ROYALTY (ROYALTY X GMV)	100	125	
WORK COMMITMENT	2.5	?	2.5
SALE PRICE AS A % OF GMV	.00395	.00384	.00075

*CALCULATED TO CURRENT VALUES OF $1/LB. COPPER, $10/LB. MOLYBDENUM, $10/OZ. SILVER, $400/OZ. GOLD, $.50/LB. LEAD & $.40 ZINC.

Attachment 6a

Attachment 6b

SUMMARY OF RECORDED PRODUCTION FROM 1879 TO 1937
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER, $1.00 COPPER, $.50 LEAD, $.40 ZINC

Attachment 7

SOURCE & YEAR	TOTAL VALUE OF PRODUCTION IN YEAR PRODUCED	CALCULATED OUNCES OF GOLD PRODUCED	VALUE AT $400/OZ.	CALCULATED OUNCES OF SILVER PRODUCED	VALUE AT $10/OZ.	CALCULATED POUNDS OF LEAD PRODUCED	VALUE AT $.50/LB.	CALCULATED POUNDS OF COPPER PRODUCED	VALUE AT $1.00/LB.	CALCULATED POUNDS OF ZINC PRODUCED	VALUE AT $.40/LB.	TOTAL CURRENT VALUE OF PRODUCTION
J. B. TENNEY												
1879 TO 1907	28400000	192356	76942400	24338159	243381590	31805070	15902535	NRP*	NRP	NRP	NRP	336226525
MINERAL RESOURCES OF THE UNITED STATES												
1908 TO 1934	8138571	57971	23188400	6659692	66596920	23767829	11883915	2358495	2358495	1058234	423294	104451023
TOMBSTONE DEVELOPMENT TOMBSTONE MINING CO'S.												
1935 TO 1936	564437	6375	2550000	390305	3903050	3197305	1598653	157536	157536	NRP	NRP	8209239
TOMBSTONE EXTENSION												
1930 TO 1937	374972	1083	433056	1080491	10804907	6335734	3167867	NRP	NRP	NRP	NRP	14405829
TOTAL	37477980	257785	103113856	32468647	324686467	65105938	32552969	2516031	2516031	1058234	423294	463292616

*NO RECORDED PRODUCTION

PRODUCTION FROM 1879 TO 1907*
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER & $.50 LEAD

Attachment 8

YEAR	TOTAL VALUE OF PRODUCTION IN YEAR PRODUCED	CALCULATED** OUNCES OF GOLD @14% OF TOTAL PRODUCED	VALUE AT $400/OZ.	CALCULATED** OUNCES OF SILVER @81% OF TOTAL PRODUCED	VALUE AT $10/OZ.	CALCULATED** POUNDS OF LEAD*** @5% OF TOTAL PRODUCED	VALUE AT $.50/LB.	TOTAL CURRENT VALUE OF PRODUCTION
1879-1880	2318567	15704	6281555	1633078	16330776	2318567	1159284	23771615
1881	5040633	34141	13656287	3613197	36131971	5250659	2625330	52413588
1882	5202876	35240	14095842	3696780	36967803	5309057	2654529	53718174
1883	2881900	19519	7807760	2122126	21221264	3351047	1675523	30704547
1884	1380788	9352	3740887	1016762	10167621	1865930	932965	14841472
1885	1320976	8947	3578842	999991	9999912	1651220	825610	14404363
1886	1050000	7112	2844702	859091	8590909	1141304	570652	12006264
1887	600000	4064	1625544	495918	4959184	666667	333333	6918061
1888	600000	4064	1625544	517021	5170213	681818	340909	7136666
1889	250000	1693	677310	215426	2154255	320513	160256	2991822
1890	600000	4064	1625544	462857	4628571	666667	333333	6587449
1891	674650	4569	1827789	551986	5519864	784477	392238	7739891
1892	490000	3319	1327528	456207	4562069	597561	298780	6188377
1893	450000	3048	1219158	467308	4673077	608108	304054	6196289
1894	300000	2032	812772	244890	2448900	454545	227273	3488945
1895	300000	2032	812772	373846	3738462	468750	234375	4785609
1896	300000	2032	812772	357353	3573529	500000	250000	4636302
1897-1901	1539610	10428	4171174	2078474	20784735	1877573	938787	25894695
1902-1906	2550000	17271	6908563	3500847	35008475	2771739	1385870	43302907
1907	550000	3725	1490082	675000	6750000	518868	259434	8499516
TOTAL	28400000	192356	76942429	24338159	243381589	31805070	15902535	336226552

*"UNPUBLISHED FIGURES & ESTIMATES COMPILED BY J.B. TENNEY FROM OLD COMPANY REPORTS", ARIZONA BUREAU OF MINES, GEOLOGICAL SERIES, NO. 10, BULLETIN NO. 143

**AS REPORTED BY BUTLER & WILSON, "THE PRODUCTION OF THE TOMBSTONE DISTRICT BY VALUE WAS ABOUT 81% SILVER, 14% GOLD AND 5% LEAD, WITH MINOR COPPER AND MANGANESE". THE METAL PRODUCTION IN THIS TABLE WAS CALCULATED BY MULTIPLYING THOSE PERCENTAGES BY TOTAL DOLLAR PRODUCTION, AND THEN DIVIDING THE RESULTING FIGURE BY THE METAL PRICE FOR THAT YEAR TO YIELD A CALCULATED PRODUCTION IN TROY OUNCES, OR POUNDS.

***INCLUDED ARE SOME TRACES OF COPPER, MANGANESE & ZINC PRODUCTION.

PRODUCTION FROM 1908 TO 1934*
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER, $1.00 COPPER, $.50 LEAD & $.40 ZINC

Attachment 9

YEAR	TONS	GOLD (OUNCES)	VALUE AT $400/OZ.	SILVER (OUNCES)	VALUE AT $10/OZ.	COPPER (POUNDS)	VALUE AT $1.00/LB.	LEAD (POUNDS)	VALUE AT $.50/LB.	ZINC (POUNDS)	VALUE AT $.40/LB.	TOTAL CURRENT VALUE
1908	51266	4106	1642304	357414	3574140	7608	7608	1770794	885397	173313	69325	6178774
1909	27123	2280	911832	201700	2017000	27706	27706	1535637	767819	713116	285246	4009603
1910	4619	1062	424712	116520	1165200	31163	31163	305876	152938	0	0	1774013
1911	8797	2155	862196	224098	2240980	68209	68209	982010	491005	0	0	3662390
1912	7405	1363	545272	158377	1583770	27723	27723	617820	308910	0	0	2465675
1913	5760	1230	491824	126392	1263920	10657	10657	334923	167462	36503	14601	1948464
1914	6063	1380	552144	108868	1088680	14217	14217	234345	117173	39324	15730	1787943
1915	9003	1216	486404	100115	1001150	36075	36075	164136	82068	63386	25354	1631051
1916	57200	3950	1580144	343453	3434530	131546	131546	983983	491992	0	0	5638212
1917	57474	3373	1349220	444139	4441390	229488	229488	1278754	639377	0	0	6659475
1918	19507	1389	555760	283412	2834120	41503	41503	457183	228592	0	0	3659975
1919	27445	1946	778328	450366	4503660	290182	290182	289424	144712	0	0	5716882
1920	28946	1788	715104	456855	4568550	144010	144010	243946	121973	0	0	5549637
1921	18594	1057	422632	423688	4236880	132688	132688	678946	339473	0	0	5131673
1922	44347	2322	928980	613700	6137000	196740	196740	744529	372265	0	0	7634985
1923	32770	3093	1237040	495943	4959430	195485	195485	465914	232957	0	0	6624912
1924	15448	2459	983456	247642	2476420	72836	72836	465323	232662	0	0	3765374
1925	27760	2677	1070692	241381	2413810	77340	77340	1527019	763510	32592	13037	4338388
1926	47708	2990	1195860	220579	2205790	113476	113476	1970986	985493	0	0	4500619
1927	31196	2459	983456	159944	1599440	68867	68867	900178	450089	0	0	3101852
1928	24172	2297	918644	164161	1641610	135643	135643	247316	123658	0	0	2819555
1929	15601	1671	668216	99423	994230	86793	86793	843817	421909	0	0	2171148
1930	8734	1875	749800	74937	749370	32903	32903	936862	468431	0	0	2000504
1931	15623	2204	881568	101504	1015040	62440	62440	476814	238407	0	0	2197455
1932	5067	485	194096	48021	480210	24810	24810	1166700	583350	0	0	1282466
1933	7016	1441	576464	100323	1003230	27875	27875	1744270	872135	0	0	2479704
1934	3701	3706	1482448	296737	2967370	70512	70512	2400324	1200162	0	0	5720492
TOTAL	608345	57971	23188596	6659692	66596920	2358495	2358495	23767829	11883915	1058234	423294	104451219

*AS RECORDED IN "THE MINERAL RESOURCES OF THE UNITED STATES"

AVERAGE VALUE PER TON AT CURRENT PRICES (SEE ABOVE) - $\frac{\$104,451,219}{608,345} = \$171.69/\text{TON}$

PRODUCTION FROM 1935 TO 1936*
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER, $1.00 COPPER, $.50 LEAD, $.40 ZINC

Attachment 10

YEAR	TONS	GOLD (OUNCES)	VALUE AT $400/OZ.	SILVER (OUNCES)	VALUE AT $10/OZ.	COPPER (POUNDS)	VALUE AT $1.00/LB.	LEAD (POUNDS)	VALUE AT $.50/LB.	TOTAL CURRENT VALUE
1935	12907	3450	1380000	243087	2430870	103574	103574	2228288	1114144	5028588
1936	9305	2925	1170000	147218	1472180	53962	53962	969017	484509	3180651
TOTAL	22212	6375	2550000	390305	3903050	157536	157536	3197305	1598653	8209239

*AS STATED BY THE TOMBSTONE DEVELOPMENT CO. & THE TOMBSTONE MINING CO.

PRODUCTION STATISTICS OF THE TOMBSTONE MINING CO. FOR THE TOMBSTONE EXTENSION AREA - 1930 TO 1937
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER & $.50 LEAD

Attachment 11

OPERATOR	WET TONS	DRY TONS	GOLD (OUNCES)	VALUE AT $400/OZ.	SILVER (OUNCES)	VALUE AT $10/OZ.	LEAD (POUNDS)	VALUE AT $.50/LB.	TOTAL GROSS VALUE
TOMBSTONE MINING CO.									
1930	2910.78	2759.64	204.60	81840.00	21996.64	219966.40	887952.45	443976.23	745782.63
1931	311.66	299.69	44.21	17684.00	5800.71	58007.10	232098.67	116049.34	191740.44
1932	2482.88	2348.69	225.56	90224.00	32392.00	323920.00	1226722.00	613361.00	1027505.00
HAYWARD & RICHARDS									
1933	795.00	747.31	60.27	24108.00	9093.00	90930.00	336810.00	168405.00	283443.00
A. S. & R.									
1933	3041.00	2819.36	224.14	89656.00	37840.00	378400.00	1145565.00	572782.50	1040838.50
1934	2018.00	2006.20	116.38	46552.00	19836.00	198360.00	726559.00	363279.50	608191.50
HOLT & D'AUTREMONT									
1934	1195.01	1123.03	79.38	31752.00	15796.27	157962.70	553991.48	276995.74	466710.44
HASSELGREN & D'AUTREMONT									
1935	2308.64	2164.36	79.86	31944.00	27055.81	270558.10	842762.11	421381.06	723883.16
CARPER LEASE									
1935	196.71	183.35	8.14	3256.00	2421.26	24212.60	88951.82	44475.91	71944.51
TOMBSTONE MINING CO.									
1935	118.50	110.02	2.49	996.00	961.49	9614.90	39143.48	19571.74	30182.64
1936	80.78	75.93	2.36	944.00	648.74	6487.40	21970.27	10985.14	18416.54
1937	461.05	412.48	27.55	11020.00	4437.05	44370.50	167949.24	83974.62	139365.12
MACIA LEASE									
1936	96.48	88.96	3.56	1424.00	983.68	9836.80	36054.90	18027.45	29288.25
GALLAGHER LEASE									
1936	65.37	56.63	4.14	1656.00	1228.01	12280.10	29203.22	14601.61	28537.71
TOTAL	16081.86	15195.65	1082.64	433056.00	180490.66	1804906.60	6335733.64	3167866.82	5405829.42

AVERAGE VALUE PER TON AT CURRENT PRICES (SEE ABOVE) - $\frac{\$5,405,829.42}{15,195.65}$ = $355.75/TON

Attachment 12

Attachment 13

THE WALL STREET JOURNAL, Wednesday, April 7, 1982

[redacted]

U.S.S.R.

Attachment 14

According to official reports, national income in the U.S.S.R. rose by 3.2% in 1981 compared with 3.8% in 1980. Growth in national income did not attain the 1981 planned target of 3.4%. Industrial output in 1981 rose by 3.4% compared with 3.6% in 1980. Industrial labor productivity rose by 2.7% against a planned 3.6%.

Oil production rose by 0.9%, and natural gas production rose by 7%, while small increases were registered for raw steel, finished rolled steel, and steel pipe, and a decline was registered for iron ore. Production of coal, which is to be increasingly substituted for oil, suffered a 2% decline. Increases were obtained for electric energy, cement, and mineral fertilizer production, but were still short of planned targets.

ZIMBABWE

The mining industry in Zimbabwe, which prospered in past years despite economic sanctions, appears to be declining in terms of production. The index of crude mineral production has declined 10% in the past 2 years and 20% from the 1976 high. Only production of asbestos and tin increased, mainly as a result of new, previously committed capacity. Output of gold was unchanged, but output of all other major mineral commodities declined in a range of 6% for chromite and 30% for nickel and iron ore.

During 1981 an estimated 20,000 people emigrated from the country, including many white production supervisors and foremen. The loss of these workers to the mining industry has added substantially to the ineffeciencies growing in the industry.

A bill to establish a Minerals Marketing Commission (MMC) was signed in early March that gives the State control over the marketing of minerals. The Government has named Union Carbide Corp. and Anglo American Corp. as inappropriately managing their sales of ferrochrome and chromite. The MMC will henceforth review all sales contracts on a commission basis, with the right to decide if, when, and where products are to be marketed and at what price. It can impose stockpile levels on producing companies, withhold payments from companies for 30 days, and can form or acquire mining enterprises.

RARE MINERAL SITE

The famous Harding Pegmatite deposit has been given to the University of New Mexico in Albuquerque by an act of Congress. The property, located 10 miles east of Dixon, New Mexico, consists of a quarry and underground mine, and is to be preserved as a mineral collecting locality and demonstration laboratory. Discovered at the turn of the century, the deposit at various times has produced lepidolite, rare microlite and tantalite-columbite ores, beryl, and spodumene. Permission to visit the area should be obtained from the Chairman of the Department of Geology.

MINING LAW

The Supreme Court upheld a 1971 Indiana law that gives mineral rights back to the surface owner if the mineral rights are not exercised over a 20-year period. Exercise is defined as payment of taxes on the land, filing of claims, or mineral production.

A decision by the Nevada District Court in December, now on appeal to the State Supreme Court, would, in effect, permit the producer of minerals under one piece of property to condemn the minerals under an adjoining property if the owner of those minerals is not making a beneficial use of them. Under Nevada law, a mining company has the right to condemn land for a road to a mine or for a mill site. The District Court decision would extend this right of condemnation to mineral reserves also.

The State of Michigan has issued new regulations covering metal mining on State land. A new lease will be used that varies royalty fees according to mineral and market conditions, and mining companies will have to file annual exploration plans with the State, and provide for reclamation of the mining site.

PRODUCTION INCENTIVES

Title III of the Defense Production Act will not be used to subsidize domestic production of materials such as bauxite, cobalt, titanium, and guayule rubber, according to David Stockman, director of the Office of Management and Budget. The Adminstration instead will rely on recently passed tax incentives to encourage investment in production capacity and reduce U.S. dependence on foreign supplies of such materials.

TECHNICAL CENTER

On January 31, the Technical Development Center of the Minerals Sciences Division of UOP, Inc., officially ceased operations. Located in Tucson, Arizona, the Center conducted research and pilot plant studies on the recovery of chromium, cobalt, copper, iron, lead, nickel, titanium dioxide, and zinc from various minerals to develop technology for sale or license.

ALUMINUM

In March, Aluminum Corp. announced plans to shut down 15,000 tons per year of its share of production at the Eastalco smelter in Frederick, Maryland. Eastalco is owned 50% by Howmet Corp. and 50% by Alumax, Inc. This shutdown will reduce the U.S. primary aluminum smelting rate to 70% of capacity.

M. & K. Corp., Atwood, Indiana, has patented a process that separates the aluminum end-lids from bi-metal beverage cans, allowing the recovery of most of the aluminum from such cans.

In an effort to re-employ 1,500 laid-off workers at Kaiser Aluminum & Chemical Corp.'s Ravenwood primary aluminum smelter, Representative Staton (R-WV) has proposed a 2-year plan that would excuse the plant of business, occupational, and local property taxes, and would place the plant's power payments in escrow, allowing earned interest to accrue to Kaiser.

Alumax Inc. plans to spend $180 million to increase production by 50% at its aluminum reduction plant near Goose Creek, 30 miles northwest of Charleston, South Carolina. Since the Federal limit for sulfur dioxide emissions in the area has been reached, Alumax requested and subsequently received a variance from the Federal standard.

Attachment 15

306 Bell Building
Toledo, Ohio 43624

Tucson, Arizona 85705
(602) 623-2551

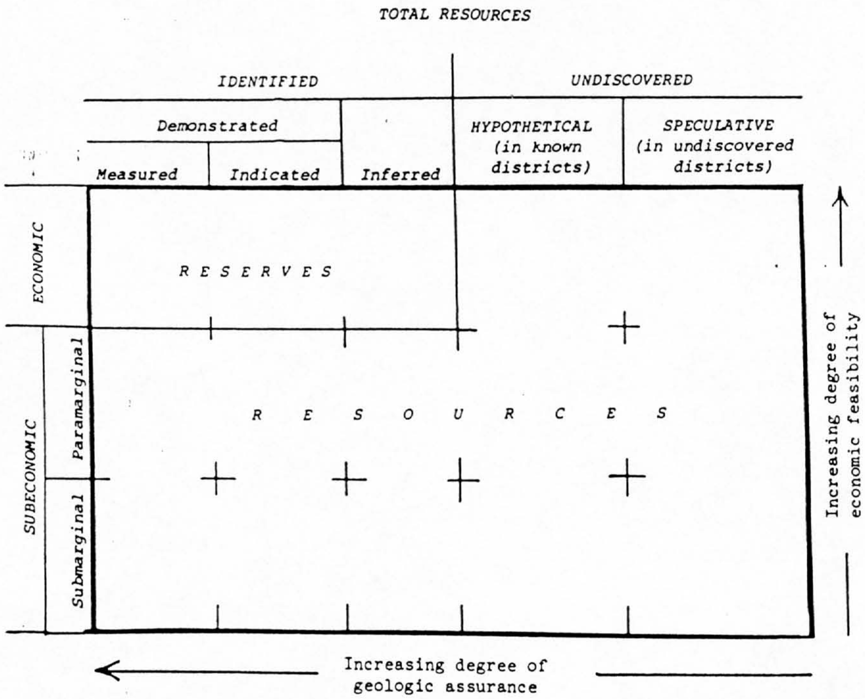

FIGURE 4.—Classification of Mineral Resources. From U.S. Bureau of Mines and U.S. Geological Survey (1967a, p. A2).

The following definitions for "measured," "indicated," and "inferred" are applicable to both identified economic resources (that is, reserves) and identified-subeconomic resources.

Measured: Material whose quality and quantity have been estimated, within a margin of error of less than 20 percent, from analyses and measurements from closely spaced and geologically well-known sample sites.

Indicated: Material whose quality and quantity have been estimated partly from sample analyses and measurements and partly from reasonable geologic projections.

Demonstrated: A collective term for the sum of materials in both measured and indicated resources.

Inferred: Material in unexplored but identified deposits whose quality and size have been estimated on the basis of geologic evidence and projection.

Identified-subeconomic resources: Known deposits not now economically minable.

Paramarginal: The portion of subeconomic resources that (a) is almost economically producible or (b) is not commercially available solely because of legal or political circumstances.

Submarginal: The portion of subeconomic resources which would require a substantially higher price (more than 1.5 times the price at the time of determination) or a major cost-reducing advance in technology to become economic.

Hypothetical resources: Undiscovered materials that may reasonably be expected to exist in a known mining district under known geologic conditions. Exploration that confirms their existence and reveals quantity and quality will permit their reclassification as a reserve or identified-subeconomic resource.

Speculative resources: Undiscovered materials that may occur either in known types of deposits in a favorable geologic setting where no dicoveries have been made or in as-yet-unknown types of deposits that remain to be recognized. Exploration that confirms their existence and reveals quantity and quality will permit their reclassification as reserves or identified-subeconomic resources.

The terms "proved," "probable," and "possible" (used by industry for economic evaluations of ore in specific deposits or districts) commonly have been used loosely and interchangeably with the terms "measured," "indicated," or "inferred" (used by the Department of the Interior mainly for regional or national estimates). "Proved" and "measured" are essentially synonymous. "Probable" and "possible," however, are not synonymous with "indicated" and "inferred." "Probable" and "possible" describe estimates of partly sampled deposits. In some definitions, for example, "probable" is used to describe deposits sampled on two or three sides and "possible" for deposits sampled only on one side; in the Bureau of Mines/Geological Survey definitions, both types of deposits would be described by the term "indicated."

Except in rare instances, the author's estimates of reserves and resources for a district or area should be presented in such a way as to conceal the figures for individual properties. Quotation of published estimates, however, is permissible so long as they are properly ascribed.

REFERENCES

Brobst, D. A., and Pratt, W. P., eds., 1973, United States mineral resources: U.S. Geological Survey Professional Paper 820, 722 p.

McKelvey, V. E., 1972 Mineral resource estimates and public policy: American Scientist, v. 60, no. 1, p. 32–40; reprinted *in* Brobst and Pratt, 1973, p. 9–19.

U.S. Bureau of Mines and U.S. Geological Survey, 1976a, Principles of the mineral resource classification system of the U.S. Bureau of Mines and U.S. Geological Survey: U.S. Geological Survey Bulletin 1450–A, p. A1–A5.

—— 1976b, Coal resources classification of the U.S. Bureau of Mines and U.S. Geological Survey: U.S. Geological Survey Bulletin 1450–B, p. B1–B7.

Attachment 16

Aeromag Profiles (1982)

JABA - TDC
1982 Report

A SUMMARY OF

THE TOMBSTONE DEVELOPMENT COMPANY LANDS

in the

TOMBSTONE CALDERA COMPLEX

COCHISE COUNTY, ARIZONA

A Geologic Appraisal and Estimate

of

Mineral Potential

By

James A. Briscoe
Registered Professional Geologist

Land Research and Property Maps

By

Thomas E. Waldrip, Jr.

November, 1982

Prepared by James A. Briscoe

James A. Briscoe & Associates, Inc.
Tucson, Arizona

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(Included Within This Report)

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SCALE 1:62,500

Plate 1: Geologic and structural map of the Tombstone 15 min. quadrangle - 1" = 1 mile; 1-62,500 (Complete and available upon request)

Plate 2: Alteration and mineralization map, on a geologic base, of the Tombstone 15 min. quadrangle - 1" = 1 mile; 1:62,500 (Incomplete)

SCALE 1:24,000

Plate 3: Property map at 1" = 2,000' on a topographic base showing all patented and unpatented mining claims determined from research into county, B.L.M. and private records. No recent surveys have been used to create this map (Complete and available upon request)

SCALE 1:6,000

Plate 4: Property map at 1" = 500' on a topographic and geologic base of the Tombstone Basin-Military Hill area. Source as in Plate #3 (Complete and available upon request)

Plate 5: Geologic and structural map of the Tombstone Basin-Military Hill area on a property and topographic base as in Plate #4 (Complete and available upon request)

Plate 6: Alteration map of the Tombstone Basin-Military Hill area on the same base as Plates #4 and #5 (Incomplete)

Plate 7: Geologic cross section G-G', 1" = 500' vertical scale = horizontal scale (Incomplete)

Plate 8: Geologic cross section H-H' (Incomplete)

Plate 9: Geologic cross section I-I' (Incomplete)

Plate 10: Geologic cross section J-J' (Incomplete)

SCALE 1:2,400

Plate 11: Property map of the Tombstone Basin and Tombstone Extension areas, 1" = 200', on a topographic and geologic base (Complete and available upon request)

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SUMMARY Cont.....

Stanford Doctoral thesis by Roger A. Newell in 1973, and a regional map by Harald Drewes, of the U.S.G.S., in 1980.

James Gilluly believed the mineralization at Tombstone to be of Mid-Tertiary age. More recent atomic age dates, show the intrusive rocks within the Tombstone area to range from 74 million to 63 million years in age, thus fixing the age of the District as Laramide.

In the early 70's, the large area of Uncle Sam porphyry, previously thought by Gilluley and others to be a sill-like mass, was recognized to be a welded tuff (ignimbrite). Recent work in this paper, by the author, has shown Tombstone to be a large Laramide caldera complex, indicated by the volcanic and intrusive rock assemblage, surface geology and regional aeromagnetic and gravity data. Mesothermal porphyry copper type alteration systems appear to be responsible for all metalization within the caldera complex, including the precious metal mineralization at Tombstone. Tombstone occupys the outer northeast rim of the caldera. Geologic and aeromagnetic projections along the caldera margin, suggest potential for additional mineral zones, such as Tombstone, around the periphery of the caldera. Some 45 square miles of pervasive, though variably altered rocks, are exposed in the eastern margin of the caldera. The western margin of the caldera falls primarily under cover, and is also inaccessible because of a military reservation. However, alteration appears to be present along the west margin of the caldera.

Total past production at Tombstone, in terms of $400 gold, $10 silver, $.50 lead, $1.00 copper and $.40 zinc, is approximately $463 million dollars. Geologic evaluation of ore bearing structures within the Tombstone Basin suggest that mineralization similar to that previously produced could aggregate approximately $3 billion, within the oxide zone, within 1,000 feet of the present surface. An open pitable ore body, in the range of 54 million tons of $25 per ton combined gold and silver, aggregating approximately $1 billion for the metal in place, is thought to be present along the Tranquility-Contention Zone, south of the town of Tombstone. An open pit mine is currently producing this grade of material on a lease from the Tombstone Development Company, at a rate of approximately 3,000 tons per day.

A geochemical anomaly with a signature similar to that of Tombstone exists along the caldera margin, but is completely hidden by alluvial cover. A similar precious metal occurence to that of Tombstone could be present below this geochemical anomaly.

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SUMMARY Cont.....

Mesothermal replacement deposits, primarily of zinc and lead in the upper Paleozoic section, and copper in the lower Paleozoic section below Tombstone, are thought to exist. Though the lead-silver-zinc manto deposits probably begin within 1,000 feet of the present surface, copper replacements probably occur in the Cambrian Abrigo Formation and Devonian Martin Formation, as is characteristic in other Paleozoic hosted porphyry copper deposits in Arizona and southwestern New Mexico. In spite of the difference in age (180 m.y. vs. 65 to 75 m.y.), the replacement deposits in the Abrigo and Martin at Bisbee may be similar to those beneath Tombstone.

Multiple porphyry copper centers may occur, associated with Laramide granodioritic to quartz monzonitic plutons, within the caldera complex. One such center occurs at the Robbers Roost - Charleston Lead Mine area, where intense phyllic alteration and breccia pipe activity are exposed by erosion. Here too, the hydrothermal system is superimposed on the Paleozoic sedimentary sequence, hidden beneath the Uncle Sam quartz latite tuffs, Silver Bell type andesites and rhyolites. Zinc, lead and copper replacement bodies are to be expected in this area, rather than igneous hosted copper porphyrys.

The Tombstone Development Company controls essentially all of the significant past producing mines within the Tombstone Basin by ownership of some 91 patented mining claims. It has also consolidated other targets over the complex. These are being held by some 548 lode mining claims and 41 square miles of state leases.

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SUMMARY

The Tombstone Mining District, then in Arizona Territory, was discovered by Ed Schiefflin, son of California 49er's, in 1877. Tombstone, though isolated and subject to maurading Indians and outlaws in its early days, was affected by world events through their effect on silver prices. With Schiefflin's discovery of rich silver mineralization at Tombstone, silver prices began a decline from which they would not see the same price of silver as in the year of discovery, for 86 years. During the 34 year period from 1877 to 1915, when most of the ore was produced at Tombstone, declining silver prices, financial panics and the removal of the U. S. currency from the silver standard had immeasurably more affect on the mines than the Earp-Clanton feud, Apaches and bandits and underground waters. In 1911, prices of approximately $0.55 per ounce (less than half of that in effect when Schiefflin discovered Tombstone) brought the demise of efforts to unwater the mines, and the bankruptcy of the Development Corporation of America and its Tombstone Consolidated Mines subsidiary. The Phelps Dodge Corporation operated the mines in a desultory fashion from 1914 through 1933, when the Tombstone Development Corporation, under Ed Holderness, was formed. The higher gold price instituted by Roosevelt in 1932, stimulated some development for a few years, as did World War II. However, production never came close to the halcyon years between 1877 and 1910. The Tombstone Development Company properties have been operated and explored only sporadically from the end of World War II to the present time.

Tombstone has primarily been a silver camp, though significant gold and lead, and subordinate copper, zinc and manganese has also been produced. Production has come mainly from mineralized vein fractures, cutting folded lower Cretaceous sediments of the Bisbee group within the Tombstone Basin. Ninety-five percent or more of the production is from 0 - 600 feet below the surface, and is primarily from oxide ore minerals.

The average grade for all of the recorded production within the District is 0.21 ounces gold, 25.89 ounces silver, 2.6% lead, 0.10% copper and small amounts of zinc and manganese. Approximately 1.25 million tons of ore was produced, though this is an estimate, since in the early most productive years, no accurate record of tonnage was maintained.

The Butler-Wilson volume, published by the Arizona Bureau of Mines in 1938, is the major professional treatise on the District. The 1956 U.S.G.S Professional Paper 281, "General geology of central Cochise County" by James Gilluly, included the Tombstone area. More recent important contributions include a

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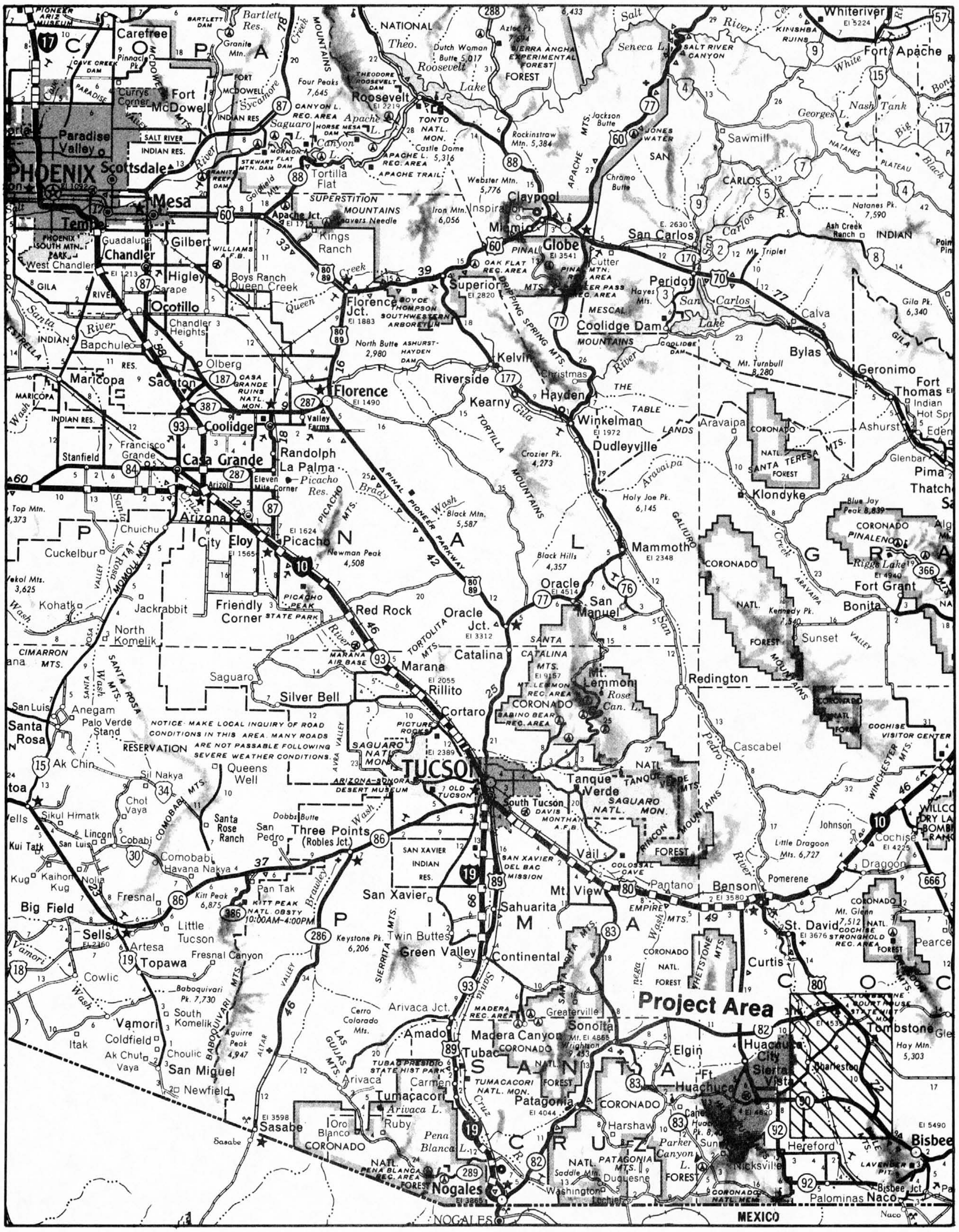
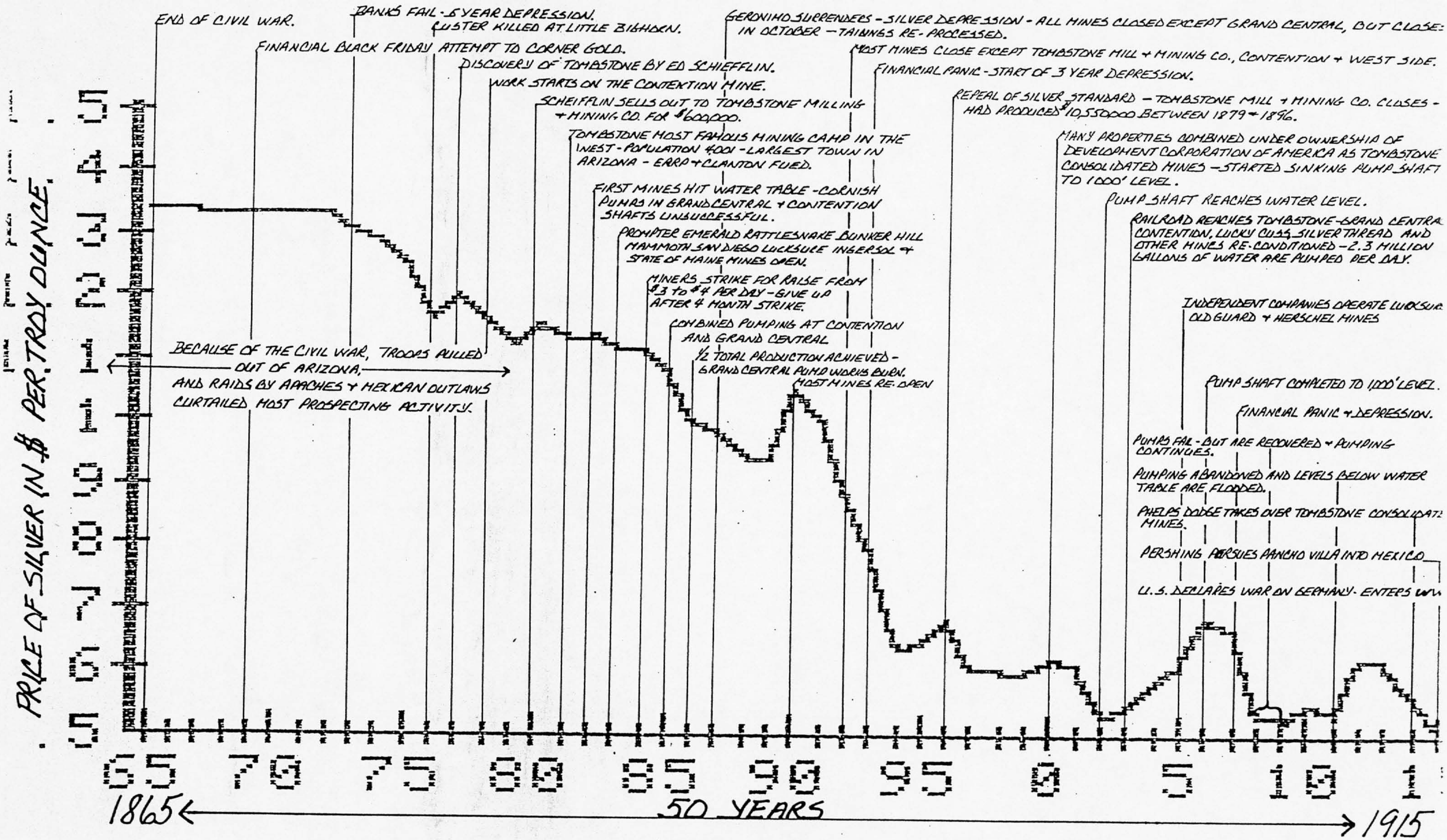


Figure 2. Highway map showing the location of the Project Area in relation to Tucson and Phoenix, Arizona



SILVER
YEARS : 1865-1915

James A. Briscoe & Associates, Inc.
Tucson, Arizona

Prepared by James A. Briscoe

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SUMMARY OF TOTAL RECORDED PRODUCTION AT TOMBSTONE
1879 TO 1937
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER, $1.00 COPPER, $.50 LEAD, $.40 ZINC

SOURCE & YEAR	TOTAL VALUE OF PRODUCTION IN YEAR PRODUCED	CALCULATED OUNCES OF GOLD PRODUCED	VALUE AT $400/OZ.	CALCULATED OUNCES OF SILVER PRODUCED	VALUE AT $10/OZ.	CALCULATED POUNDS OF LEAD PRODUCED	VALUE AT $.50/LB.	CALCULATED POUNDS OF COPPER PRODUCED	VALUE AT $1.00/LB.	CALCULATED POUNDS OF ZINC PRODUCED	VALUE AT $.40/LB.	TOTAL CURRENT VALUE OF PRODUCTION
J. B. TENNEY												
1879 TO 1907	28400000	192356	76942400	24338159	243381590	31805070	15902535	NRP*	NRP	NRP	NRP	336226525
MINERAL RESOURCES OF THE UNITED STATES												
1908 TO 1934	8138571	57971	23188400	6659692	66596920	23767829	11883915	2358495	2358495	1058234	423294	104451023
TOMBSTONE DEVELOPMENT TOMBSTONE MINING CO'S.												
1935 TO 1936	564437	6375	2550000	390305	3903050	3197305	1598653	157536	157536	NRP	NRP	8209239
TOMBSTONE EXTENSION												
1930 TO 1937	374972	1083	433056	1080491	10804907	6335734	3167867	NRP	NRP	NRP	NRP	14405829
TOTAL	37477980	257785	103113856	32468647	324686467	65105938	32552969	2516031	2516031	1058234	423294	463292616
AVERAGE/TON**		0.21	82.22	25.89	258.90	51.91	25.96	2.01	2.01	0.84	0.34	369.42

*NO RECORDED PRODUCTION

**TOTAL TONNAGE ASSUMED TO BE - 1254097

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PRODUCTION OF THE TOMBSTONE MINING DISTRICT
1879 TO 1907*
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER & $.50 LEAD

YEAR	TOTAL VALUE OF PRODUCTION IN YEAR PRODUCED	CALCULATED** OUNCES OF GOLD @14% OF TOTAL PRODUCED	VALUE AT $400/OZ.	CALCULATED** OUNCES OF SILVER @81% OF TOTAL PRODUCED	VALUE AT $10/OZ.	CALCULATED** POUNDS OF LEAD*** @5% OF TOTAL PRODUCED	VALUE AT $.50/LB.	TOTAL CURRENT VALUE OF PRODUCTION
1879-1880	2318567	15704	6281555	1633078	16330776	2318567	1159284	23771615
1881	5040633	34141	13656287	3613197	36131971	5250659	2625330	52413588
1882	5202876	35240	14095842	3696780	36967803	5309057	2654529	53718174
1883	2881900	19519	7807760	2122126	21221264	3351047	1675523	30704547
1884	1380788	9352	3740887	1016762	10167621	1865930	932965	14841472
1885	1320976	8947	3578842	999991	9999912	1651220	825610	14404363
1886	1050000	7112	2844702	859091	8590909	1141304	570652	12006264
1887	600000	4064	1625544	495918	4959184	666667	333333	6918061
1888	600000	4064	1625544	517021	5170213	681818	340909	7136666
1889	250000	1693	677310	215426	2154255	320513	160256	2991822
1890	600000	4064	1625544	462857	4628571	666667	333333	6587449
1891	674650	4569	1827789	551986	5519864	784477	392238	7739891
1892	490000	3319	1327528	456207	4562069	597561	298780	6188377
1893	450000	3048	1219158	467308	4673077	608108	304054	6196289
1894	300000	2032	812772	244890	2448900	454545	227273	3488945
1895	300000	2032	812772	373846	3738462	468750	234375	4785609
1896	300000	2032	812772	357353	3573529	500000	250000	4636302
1897-1901	1539610	10428	4171174	2078474	20784735	1877573	938787	25894695
1902-1906	2550000	17271	6908563	3500847	35008475	2771739	1385870	43302907
1907	550000	3725	1490082	675000	6750000	518868	259434	8499516
TOTAL	28400000	192356	76942429	24338159	243381589	31805070	15902535	336226552
AVERAGE/TON****		0.32	126.48	40.01	400.07	52.28	26.14	552.69

*"UNPUBLISHED FIGURES & ESTIMATES COMPILED BY J.B. TENNEY FROM OLD COMPANY REPORTS", ARIZONA BUREAU OF MINES, GEOLOGICAL SERIES, NO. 10, BULLETIN NO. 143 (BUTLER & WILSON)

**AS REPORTED BY BUTLER & WILSON, "THE PRODUCTION OF THE TOMBSTONE DISTRICT BY VALUE WAS ABOUT 81% SILVER, 14% GOLD AND 5% LEAD, WITH MINOR COPPER AND MANGANESE". THE METAL PRODUCTION IN THIS TABLE WAS CALCULATED BY MULTIPLYING THOSE PERCENTAGES BY TOTAL DOLLAR PRODUCTION, AND THEN DIVIDING THE RESULTING FIGURE BY THE METAL PRICE FOR THAT YEAR TO YIELD A CALCULATED PRODUCTION IN TROY OUNCES, OR POUNDS.

***INCLUDED ARE SOME TRACES OF COPPER, MANGANESE & ZINC PRODUCTION.

****ASSUME TONNAGE MINED FROM 1879 TO 1907 EQUAL TO THAT FROM 1908 TO 1934 - 608345 TONS

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PRODUCTION OF THE TOMBSTONE MINING DISTRICT
1908 TO 1934*
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER, $1.00 COPPER, $.50 LEAD & $.40 ZINC

YEAR	TONS	GOLD (OUNCES)	VALUE AT $400/OZ.	SILVER (OUNCES)	VALUE AT $10/OZ.	COPPER (POUNDS)	VALUE AT $1.00/LB.	LEAD (POUNDS)	VALUE AT $.50/LB.	ZINC (POUNDS)	VALUE AT $.40/LB.	TOTAL CURRENT VALUE
1908	51266	4106	1642304	357414	3574140	7608	7608	177094	88597	173313	69325	6178774
1909	27123	2280	911832	201700	2017000	27706	27706	1535637	767819	713116	285246	4009603
1910	4619	1062	424712	116520	1165200	31163	31163	305876	152938	0	0	1774013
1911	8797	2155	862196	224098	2240980	68209	68209	982010	491005	0	0	3662390
1912	7405	1363	545272	158377	1583770	27723	27723	617820	308910	0	0	2465675
1913	5760	1230	491824	126392	1263920	10657	10657	334923	167462	36503	14601	1948464
1914	6063	1380	552144	108868	1088680	14217	14217	234345	117173	39324	15730	1787943
1915	9003	1216	486404	100115	1001150	36075	36075	164136	82068	63386	25354	1631051
1916	57200	3950	1580144	343453	3434530	131546	131546	983983	491992	0	0	5638212
1917	57474	3373	1349220	444139	4441390	229488	229488	1278754	639377	0	0	6659475
1918	19507	1389	555760	283412	2834120	41503	41503	457183	228592	0	0	3659975
1919	27445	1946	778328	450366	4503660	290182	290182	289424	144712	0	0	5716882
1920	28946	1788	715104	456855	4568550	144010	144010	243946	121973	0	0	5549637
1921	18594	1057	422632	423688	4236880	132688	132688	678946	339473	0	0	5131673
1922	44347	2322	928980	613700	6137000	196740	196740	744529	372265	0	0	7634985
1923	32770	3093	1237040	495943	4959430	195485	195485	465914	232957	0	0	6624912
1924	15448	2459	983456	247642	2476420	72836	72836	465323	232662	0	0	3765374
1925	27760	2677	1070692	241381	2413810	77340	77340	1527019	763510	32592	13037	4338388
1926	47708	2990	1195860	220579	2205790	113476	113476	1970986	985493	0	0	4500619
1927	31196	2459	983456	159944	1599440	68867	68867	900178	450089	0	0	3101852
1928	24172	2297	918644	164161	1641610	135643	135643	247316	123658	0	0	2819555
1929	15601	1671	668216	99423	994230	86793	86793	843817	421909	0	0	2171148
1930	8734	1875	749800	74937	749370	32903	32903	936862	468431	0	0	2000504
1931	15623	2204	881568	101504	1015040	62440	62440	476814	238407	0	0	2197455
1932	5067	485	194096	48021	480210	24810	24810	1166700	583350	0	0	1282466
1933	7016	1441	576464	100323	1003230	27875	27875	1744270	872135	0	0	2479704
1934	3701	3706	1482448	296737	2967370	70512	70512	2400324	1200162	0	0	5720492
TOTAL	608345	57971	23188596	6659692	66596920	2358495	2358495	23767829	11883915	1058234	423294	104451219
AVERAGE/TON		0.10	38.12	10.95	109.47	3.88	3.88	39.07	19.53	1.74	0.70	171.70

*AS RECORDED IN "THE MINERAL RESOURCES OF THE UNITED STATES"

AVERAGE VALUE PER TON AT CURRENT PRICES (SEE ABOVE) - $\frac{\$104,451,219}{608,345} = \$171.70/\text{TON}$

James A. Briscoe & Associates, Inc.
Tucson, Arizona

Prepared by James A. Briscoe

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PRODUCTION OF THE TOMBSTONE MINING DISTRICT
1935 TO 1936*
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER, $1.00 COPPER, $.50 LEAD, $.40 ZINC

YEAR	TONS	GOLD (OUNCES)	VALUE AT $400/OZ.	SILVER (OUNCES)	VALUE AT $10/OZ.	COPPER (POUNDS)	VALUE AT $1.00/LB.	LEAD (POUNDS)	VALUE AT $.50/LB.	TOTAL CURRENT VALUE
1935	12907	3450	1380000	243087	2430870	103574	103574	2228288	1114144	5028588
1936	9305	2925	1170000	147218	1472180	53962	53962	969017	484509	3180651
TOTAL	22212	6375	2550000	390305	3903050	157536	157536	3197305	1598653	8209239
AVERAGE/TON		0.29	114.80	17.57	175.72	7.09	7.09	143.94	71.97	369.59

*AS STATED BY THE TOMBSTONE DEVELOPMENT CO. & THE TOMBSTONE MINING CO.

James A. Briscoe & Associates, Inc.
Tucson, Arizona

Prepared by James A. Briscoe

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TOMBSTONE EXTENSION AREA
PRODUCTION STATISTICS OF THE TOMBSTONE MINING CO. FOR THE TOMBSTONE EXTENSION AREA - 1930 TO 1937
CALCULATED TO CURRENT VALUES - $400 GOLD, $10 SILVER & $.50 LEAD

OPERATOR	WET TONS	DRY TONS	GOLD (OUNCES)	VALUE AT $400/OZ.	SILVER (OUNCES)	VALUE AT $10/OZ.	LEAD (POUNDS)	VALUE AT $.50/LB.	TOTAL GROSS VALUE
TOMBSTONE MINING CO.									
1930	2910.78	2759.64	204.60	81840.00	21996.64	219966.40	887952.45	443976.23	745782.63
1931	311.66	299.69	44.21	17684.00	5800.71	58007.10	232098.67	116049.34	191740.44
1932	2482.88	2348.69	225.56	90224.00	32392.00	323920.00	1226722.00	613361.00	1027505.00
HAYWARD & RICHARDS									
1933	795.00	747.31	60.27	24108.00	9093.00	90930.00	336810.00	168405.00	283443.00
A. S. & R.									
1933	3041.00	2819.36	224.14	89656.00	37840.00	378400.00	1145565.00	572782.50	1040838.50
1934	2018.00	2006.20	116.38	46552.00	19836.00	198360.00	726559.00	363279.50	608191.50
HOLT & D'AUTREMONT									
1934	1195.01	1123.03	79.38	31752.00	15796.27	157962.70	553991.48	276995.74	466710.44
HASSELGREN & D'AUTREMONT									
1935	2308.64	2164.36	79.86	31944.00	27055.81	270558.10	842762.11	421381.06	723883.16
CARPER LEASE									
1935	196.71	183.35	8.14	3256.00	2421.26	24212.60	88951.82	44475.91	71944.51
TOMBSTONE MINING CO.									
1935	118.50	110.02	2.49	996.00	961.49	9614.90	39143.48	19571.74	30182.64
1936	80.78	75.93	2.36	944.00	648.74	6487.40	21970.27	10985.14	18416.54
1937	461.05	412.48	27.55	11020.00	4437.05	44370.50	167949.24	83974.62	139365.12
MACIA LEASE									
1936	96.48	88.96	3.56	1424.00	983.68	9836.80	36054.90	18027.45	29288.25
GALLAGHER LEASE									
1936	65.37	56.63	4.14	1656.00	1228.01	12280.10	29203.22	14601.61	28537.71
TOTAL	16081.86	15195.65	1082.64	433056.00	180490.66	1804906.60	6335733.64	3167866.82	5405829.42
AVERAGE/TON			0.07	28.50	11.88	118.78	416.94	208.47	355.75

AVERAGE VALUE PER TON AT CURRENT PRICES (SEE ABOVE) - $5,405,829.42 / 15,195.65 = $355.75/TON

James A. Briscoe & Associates, Inc.
Tucson, Arizona

Prepared by James A. Briscoe

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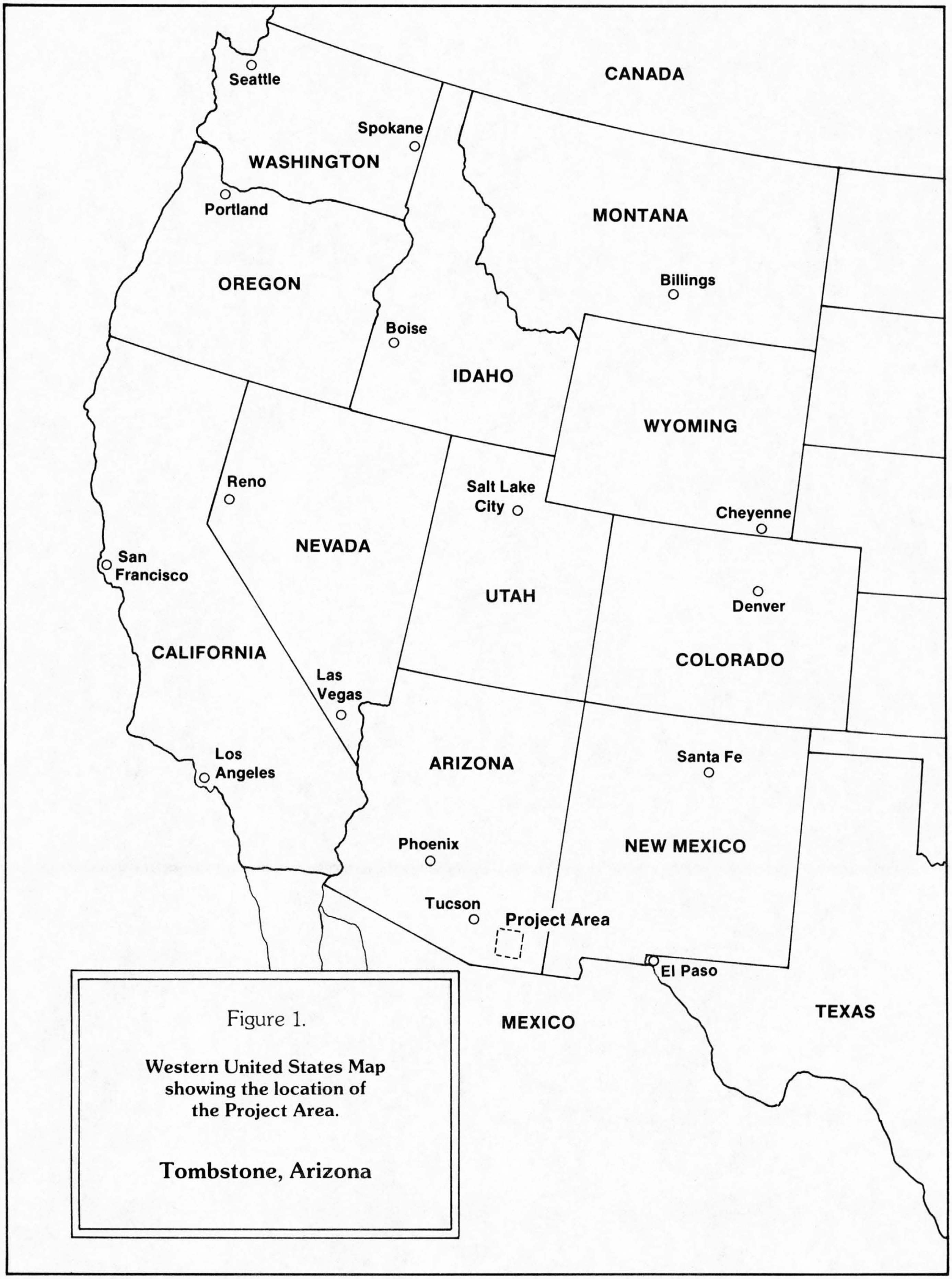

Figure 1.

Western United States Map showing the location of the Project Area.

Tombstone, Arizona

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Explanation

Geology

QTgu — OLDER OR UNDIFFERENTIATED SURFICAL DEPOSITS (HOLOCENE TO OLIGOCENE):—Gravel, sand and silt (Pleistocene and Pliocene)—Mainly alluvium of basins; includes some colluvium and landslide deposits. Generally light pinkish gray, weakly indurated and with poorly rounded clasts; locally well indurated. Thickness several meters to hundreds of meters.

QTb — Basalt (Pleistocene to Pliocene)—Lava flows, pyroclastic rocks and some intercalated gravel. Thickness several meters to a few hundred meters in most places. Radiometrically dated at 0.25, 1.0, and 3.2 m.y. old.

Tva — Extensive andesite and dacite (Miocene and Upper Oligocene)—Lava flows, pyroclastic rocks, some intercalated epiclastic rocks and dikes. Mostly gray, fine-grained porphyritic rocks; includes some very coarse feldspar porphyry andesite (Turkey track porphyry, an informal term of Cooper, 1961). Thickness mostly several meters to several tens of meters. Dated at 24, 25, 27, 33, and 39 m.y.

Tv — Extrusive rhyolite and rhyodacite (Miocene and Upper Oligocene—Lava flows, welded tuff, pyroclastic rocks and some intercalated epiclastic rocks. Light-gray to grayish pink, vitric to fine-grained, porphyritic. Commonly a few tens to a few thousand of meters thick. Dated at 23, 24, 25, 26, 26, 26, and 27 m.y. An additional date of 47 m.y., if substantiated, may indicate the presence of Eocene rocks in the lower member of the S O Volcanics of Cochise Co.

Tlc — Lower conglomerate, gravel, and sand (Oligocene and Eocene?)—Alluvium, commonly grayish-red deposits of small, well rounded, nonvolcanic clasts. Mostly several meters to a few tens of meters thick.

Tlv — UPPER CORDILLERAN (LARAMIDE) IGNEOUS ROCKS (LOWER PALEOCENE)—Lower volcanic rocks—Rhyolite to andesite lava flows, pyroclastic rocks, and some intercalated epiclastic rocks. Dated at 57 m.y. Possibly younger age to east.

TKp — MAIN CORDILLERAN (LARAMIDE) IGNEOUS ROCKS:—Porphyritic and aplitic intrusive rocks (Paleocene and Upper Cretaceous)—Mostly latitic porphyry to dacitic porphyry in small stocks and plugs and aplitic bodies not associated with other granitoid stocks. Dated at ... 63, 63, 64, and 65 m.y.

Kib — Fluidized intrusive breccia ... age unknown, but penetrates, and thus younger than Uncle Sam porphyry.

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Ka — Andesitic to dacitic volcanic breccia.—Includes parts of Solero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics,,and all of Demetrie Volcanics and Silverbell Formation of Courtright (1958). Commonly contains large blocks of exotic rocks and locally includes some sedimentary rocks and intrusive rocks. Several tens of meters to several hundreds of meters thick in most places.

Klg — Lower quartz monzonite and graodiorite—Includes some quartz diorite; appears in small stocks. Locally associated with mineralization. Dated at 70, 71, 72, 73, 74, 74, 74, and 76 m.y. The Schiefflin granodorite at Tombstone is 72 m.y.

Kb — BISBEE FORMATION OR GROUP, UNDIFFERENTIATED (LOWER CRETACEOUS):—Upper part of Bisbee Formation or Group, undifferentiated, and related rocks.—Includes upper part of Bisbee Formation, Mural Limestone, Morita, Cintura, Willow Canyon, Apache Canyon, Shellenberger Canyon and Turney Ranch Formations (not listed in stratigraphic sequence) of the Bisbee Group, Amole Arkose of Bryant and Kinnison (1954), and Angelic Arkose. Consists of brownish- to reddish-arkose, gray siltstone, sandstone, conglomerate, and some fossiliferous gray limestone. Commonly several hundred meters thick

Jg — GRANITE AND QUARTZ MONZONITE (JURASSIC)—Stocks of pinkish-gray coarse-grained rock. Locally associated with mineralization. Dated at 140, 148, 149, 149, 150, 153, 160, 161, 167, 178, 185 m.y.

PIPs — Sedimentary rocks (Lower Permian and Upper Pennsylvanian)—consists of Epitaph Dolomite (Lower Permian), Colina Limestone (Lower Permian), and Earp Formation (Lower Permian and Upper Pennsylvanian), undifferentiated. Epitaph Dolomite is a dark- to light-gray slightly cherty dolomite, limestone, marl, siltstone, and gypsum, 120-280 meters thick. Colina Limestone is a medium gray, thick-bedded, sparsely cherty, and sparsely fossiliferous limestone 120-280 meters thick. Earp Formation is a pale-red siltstone, mudstone, shale, and limestone, 120-240 meters thick.

IPh — Horquilla Limestone (Upper and Middle Pennsylvanian)—Light-pinkish-gray, thick- to thin-bedded, cherty, fossiliferous limestone and intercalated pale-brown to pale-reddish-gray siltstone that increases in abundance upward. Typically 300-490 meters thick.

MDs — SEDIMENTARY ROCKS (MISSISSIPPIAN AND DEVONIAN)—Consists mainly of Escabrosa Limestone (Mississippian)—locally (Armstrong and Silberman, 1974) called Escabrosa Group—and Martin Formation (Upper Devonian), undifferentiated. In part of the Chiricahua Mountains also includes Paradise Formation (Upper Mississippian) and Portal Formation of Sabins, 1957a (Upper Devonian). In the Little Dragoon Mountains and some adjacent hills also includes Black Prince Limestone, whose fauna and correlation show strongest affinities with Mississippian rocks but which may include some Pennsylvanian rocks. Escabrosa Limestone is a medium-gray, massive to thick-bedded, commonly crinoidal, cherty, fossiliferous limestone 90-310 meters thick. Martin Formation is thick- to thin-bedded, gray to brown dolomite, gray sparsely fossiliferous, and some siltstone and sandstone, 90-120 meters thick. Paradise Formation is a brown, fossiliferous, shaly limestone. Portal Formation is a black shale and limestone 6-105 meters thick. Black Prince Limestone is pinkish-gray limestone with a basal shale and chert conglomerate, as much as 52 meters thick.

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€s — Sedimentary rocks (Upper and Middle Cambrian)—Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartzite (Middle Cambrian), undifferentiated.

Yg — GRANITOID ROCKS (PRECAMBRIAN Y).—Mainly granodiorite and quartz monsonite, unfoliated to foliated, in part metamorphosed. Generally in stocks, which ahve been little studied.

Xp — PINAL SCHIST (PRECAMBRIAN X)—Chlorite schist, phyllite, and some metavolcanic rocks, metavolcanic rocks, metaquartzite, metaquartzite conglomerate, and gneiss. One metavolcanic rock dated at 1715 m.y.

CONTACT—Dotted where concealed.

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DIKES—Showing dip.

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45 — Normal

45 — Reverse

Strike-slip—Arrow couple shows relative displacement. Single arrow shows movement of active block.

Major thrust fault—Sawteeth on upper plate

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EXOTIC-BLOCK BRECCIA—Rock contains chip or block inclusions of rock different from those of host or other blocks nearby. Typically of volcanic-tectonic or sedimentary-tectonic origin; excludes Tertiary megabreccia deposits.

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72x — COLLECTION SITE—Radiogenically dated rock showing age in millions of years. Query before symbol where precise location uncertain.

Roads and Highways

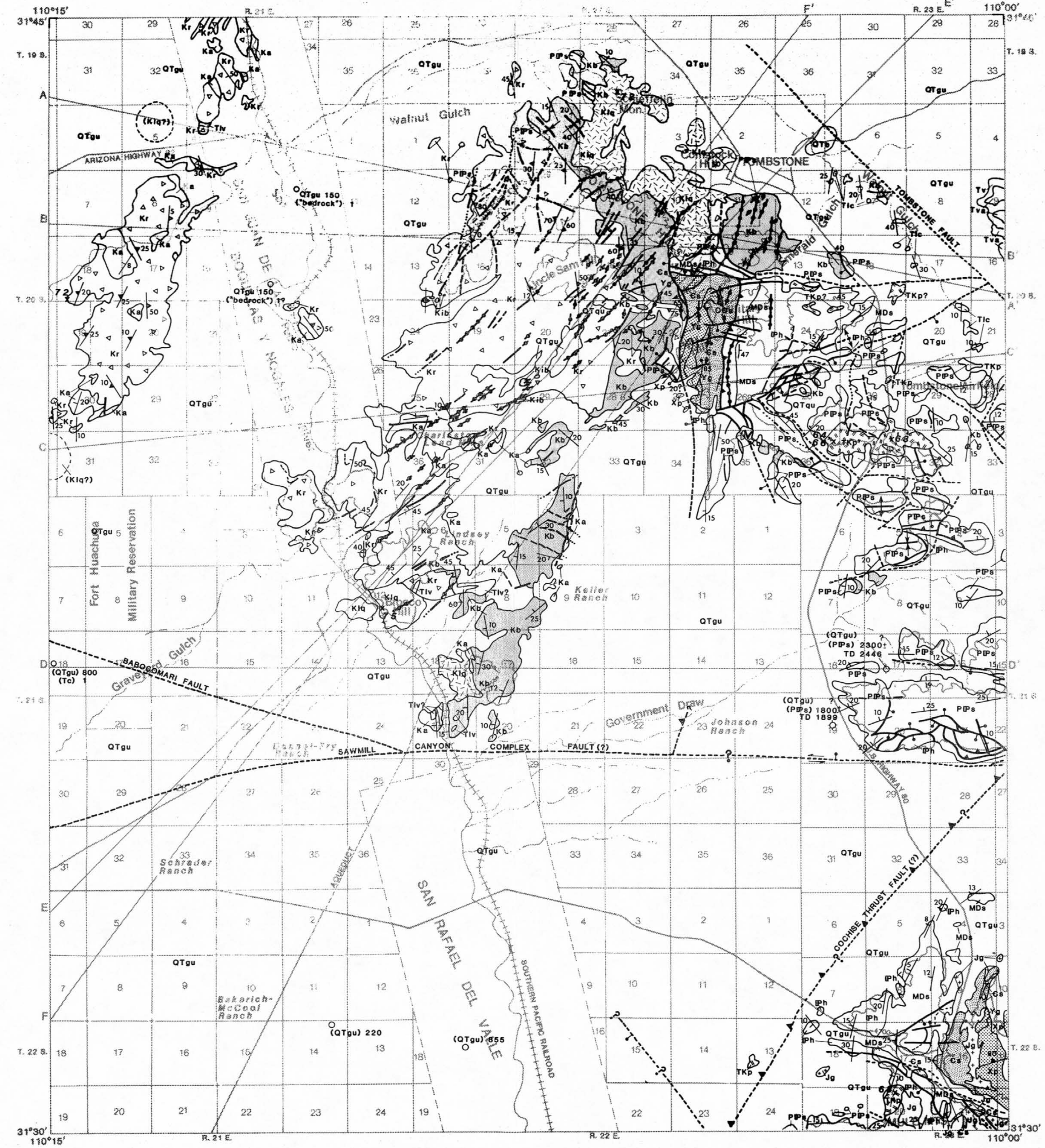
Dry wash

Southern Pacific Railroad

Government Reservation Boundary

Aqueduct

A——A' Cross section line



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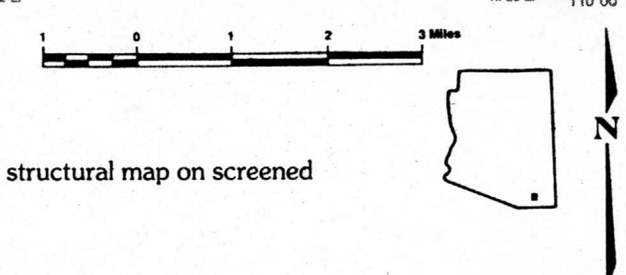
Tombstone, Arizona



Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

Figure 3. Generalized geological and structural map on screened topographic base.

By James A. Briscoe

James A. Briscoe and Associates

Tucson, Arizona

Page 13

Explanation

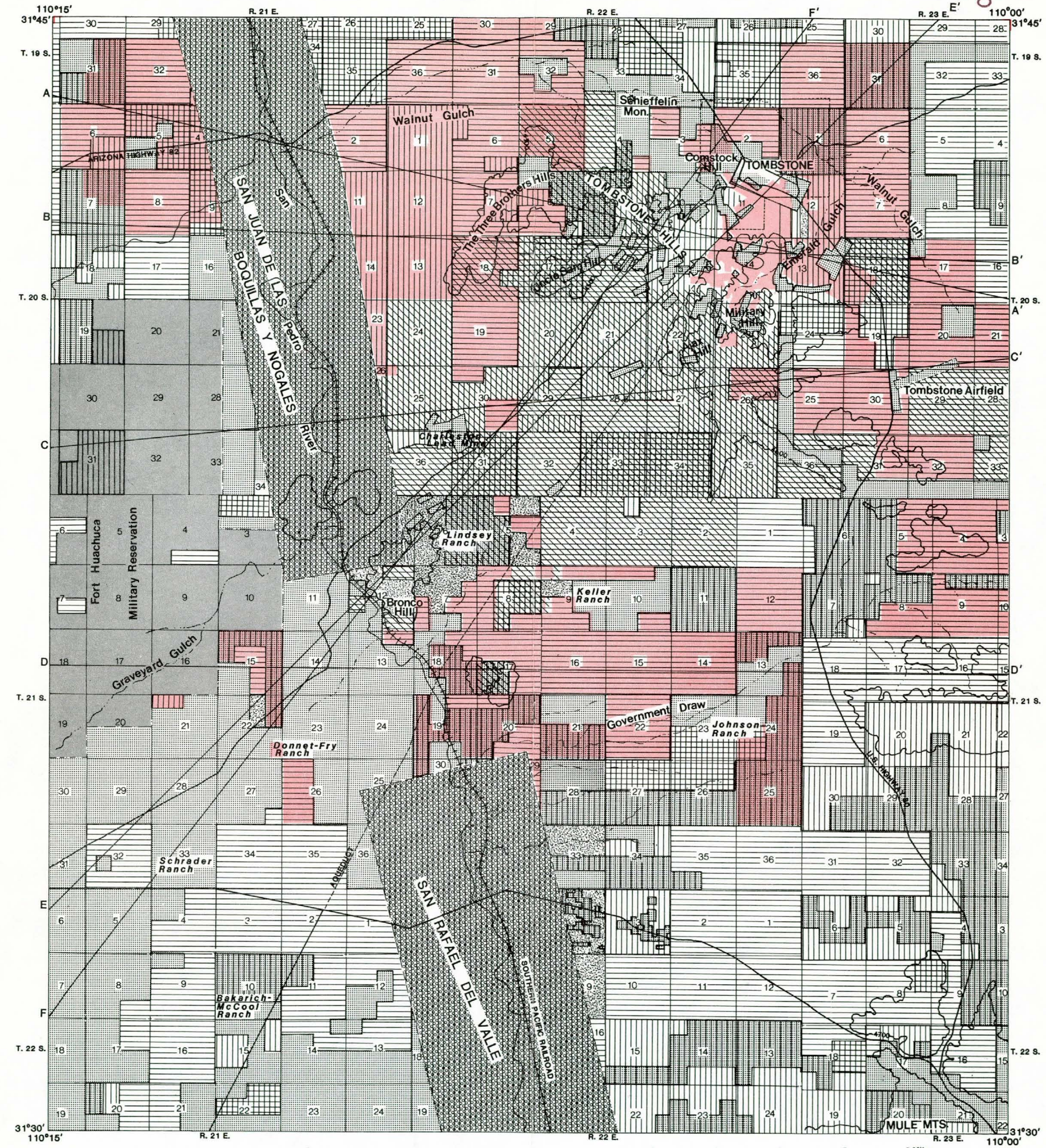
Land Status

- Public Domain - Mineral and Surface owned by Federal Government.
- State Domain - Mineral and Surface owned by State of Arizona.
- Public Domain Mineral and Surface. Mineral owned by Federal Government; Surface owned by State of Arizona.
- Fee Simple - Mineral and Surface privately owned.
- Fee Simple Surface and Public Domain Mineral Private Surface ownership Mineral owned by Federal Government.
- Spanish Land Grants - Fee Simple. Mineral and Surface privately owned; Reservation of Gold, Silver and Mercury to Federal Government.
- Military Reservation - Restricted Mineral Entry. Not open to Mining.
- Water & Power Resource Service & Various other Withdrawals - Not open to Mineral Entry or Mining.
- Mineral and Surface owned by Federal Government. Mineral Rights privately claimed.
- Mineral and Surface owned by State of Arizona. Mineral leases, prospecting permits or applications privately held.
- Public Domain Mineral and State of Arizona Surface. Mineral rights privately claimed.
- Public Domain Mineral and Fee Simple Surface. Mineral rights privately claimed.

Tombstone Development Company, Inc. Lands

- Public Domain Mineral and Surface. Mineral rights claimed by Tombstone Development Company, Inc.
- Mineral and Surface owned by State of Arizona. Prospecting permits or applications held by Tombstone Development Company.
- Public Domain Mineral and Surface owned by State of Arizona. Mineral rights claimed by Tombstone Development Company, Inc.
- Patented Mining Claims owned by Tombstone Development Company, Inc.
- Public Domain Mineral and Fee Simple Surface. Mineral rights claimed by Tombstone Development Company, Inc.
- Fee Simple Surface and State of Arizona Mineral. Prospecting Permit held by Tombstone Development Company, Inc.

- Roads and Highways
- Dry wash
- Southern Pacific Railroad
- Government Reservation Boundary
- Aqueduct
- Cross section line



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Tombstone, Arizona

Land Status Map, Tombstone
15 min. Quadrangle

By Thomas E. Waldrip, Jr.
James A. Briscoe and Associates
Tucson, Arizona

1 0 1 2 3 Miles

N

Figure 5. Property map showing ownership of major holdings of mineral rights in the Tombstone area. Red overprint shows state, federal and private land and lands with mineral rights held by the Tombstone Development Company as of October 15, 1981.

Explanation

Geology

QTgu — OLDER OR UNDIFFERENTIATED SURFICAL DEPOSITS (HOLOCENE TO OLIGOCENE):—Gravel, sand, and silt (Pleistocene and Pliocene—Mainly alluvium of basins; includes some colluvium and landslide deposits. Generally light-pinkish gray, weakly indurated, and with poorly rounded clasts; locally well indurated. Thickness several meters to hundreds of meters.

QTb — Basalt (Pleistocene to Pliocene)—Lava flows, pyroclastic rocks, and some intercalated gravel. Thickness several meters to a few hundred meters in most places. Radiometrically dated at 0.25, 1.0, and 3.2 m.y. old

Tva — Extensive andesite and dacite (Miocene and Upper Oligocene)—Lava flows, pyroclastic rocks, some intercalated epiclastic rocks, and dikes. Mostly gray, fine-grained, porphyritic rocks; includes some very coarse feldspar porphyry andesite (Turkey track porphyry, an informal term of Cooper, 1961). Thickness mostly several meters to several tens of meters. Dated at 24, 25, 27, 33, and 39 m.y.

Tv — Extrusive rhyolite and rhyodacite (Miocene and Upper Oligocene—Lava flows, welded tuff, pyroclastic rocks, and some intercalated epiclastic rocks. Light-gray to grayish-pink, vitric to fine-grained, porphyritic. Commonly a few tens to a few thousand of meters thick. Dated at 23, 24, 25, 26, 26, 26, and 27 m.y. An additional date of 47 m.y., if substantiated, may indicate the presence of Eocene rocks in the lower member of the S O Volcanics of Cochise Co.

Tlc — Lower conglomerate, gravel, and sand (Oligocene and Eocene?)—Alluvium; commonly grayish-red deposits of small, well rounded, nonvolcanic clasts. Mostly several meters to a few tens of meters thick.

Tlv — UPPER CORDILLERAN (LARAMIDE) IGNEOUS ROCKS (LOWER PALEOCENE):—Lower volcanic rocks—Rhyolite to andesite lava flows, pyroclastic rocks, and some intercalated epiclastic rocks. Dated at 57 m.y. Possibly younger age to east.

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Jg — GRANITE AND QUARTZ MONZONITE (JURASSIC)—Stocks of pinkish-gray coarse-grained rock. Locally associated with mineralization. Dated at 140, 148, 149, 149, 150, 153, 160, 161, 167, 178, 185 m.y.

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Normal

Reverse

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Anticline.

Syncline.

Inclined strike and dip of beds.

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Roads and Highways

Dry wash

Southern Pacific Railroad

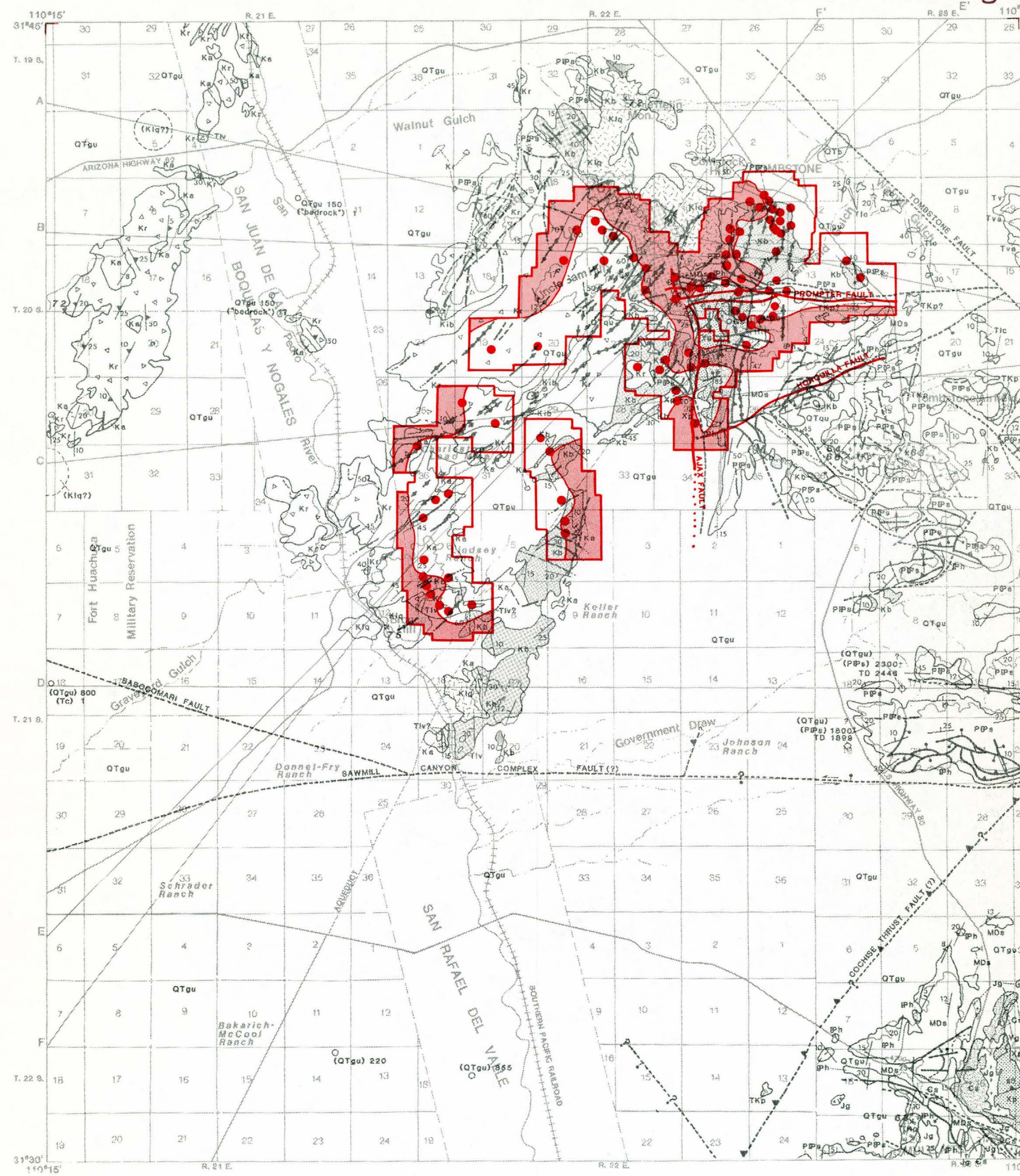
Government Reservation Boundary

Aqueduct

A———A' Cross section line

● Dump sample location

Silver



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1 0 1 2 3 Miles

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Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

By James A. Briscoe
James A. Briscoe and Associates
Tucson, Arizona

Figure 6. Dump sample location map showing area of influence boundaries and the Ajax, Prompter, and Horquilla faults, from Newell, R.A., 1973.

Distribution pattern for high silver ratios in dump samples (in red).

Explanation

Geology

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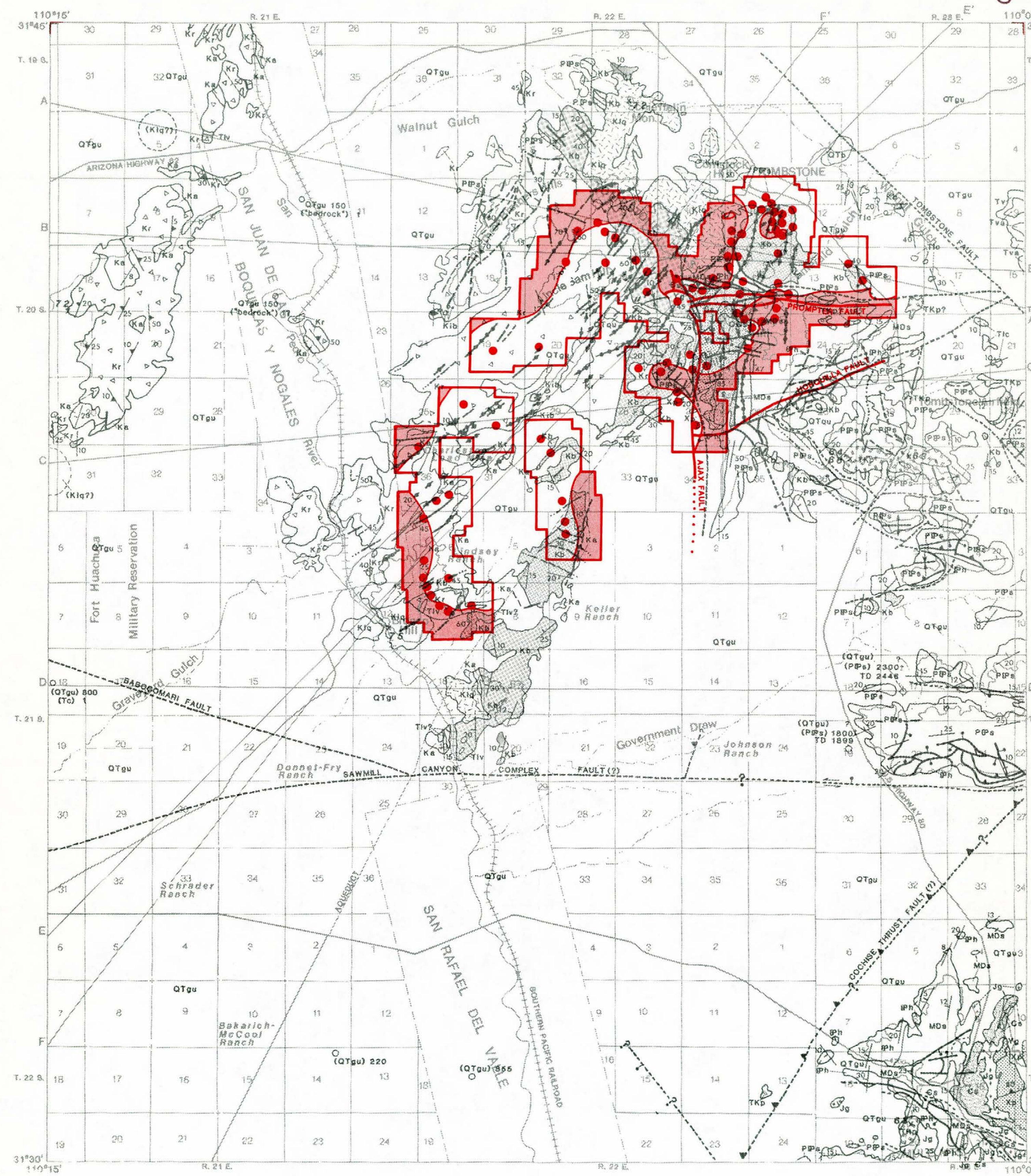
Dump sample location

Zinc



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1 0 1 2 3 Miles

N

Figure 7. Dump sample location map showing area of influence boundaries and the Ajax, Prompter, and Horquilla faults, from Newell, R.A., 1973.

Distribution pattern for high zinc ratio in dump samples (in red).

Page 16

Explanation

Geology

QTgu — OLDER OR UNDIFFERENTIATED SURFICAL DEPOSITS (HOLOCENE TO OLIGOCENE):—Gravel, sand, and silt (Pleistocene and Pliocene—Mainly alluvium of basins; includes some colluvium and landslide deposits. Generally light-pinkish gray, weakly indurated, and with poorly rounded clasts; locally well indurated. Thickness several meters to hundreds of meters.

QTb — Basalt (Pleistocene to Pliocene)—Lava flows, pyroclastic rocks, and some intercalated gravel. Thickness several meters to a few hundred meters in most places. Radiometrically dated at 0.25, 1.0, and 3.2 m.y. old

Tva — Extensive andesite and dacite (Miocene and Upper Oligocene)—Lava flows, pyroclastic rocks, some intercalated epiclastic rocks, and dikes. Mostly gray, fine-grained, porphyritic rocks; includes some very coarse feldspar porphyry andesite (Turkey track porphyry, an informal term of Cooper, 1961). Thickness mostly several meters to several tens of meters. Dated at 24, 25, 27, 33, and 39 m.y.

Tv — Extrusive rhyolite and rhyodacite (Miocene and Upper Oligocene—Lava flows, welded tuff, pyroclastic rocks, and some intercalated epiclastic rocks. Light-gray to grayish-pink, vitric to fine-grained, porphyritic. Commonly a few tens to a few thousand of meters thick. Dated at 23, 24, 25, 26, 26, 26, and 27 m.y. An additional date of 47 m.y., if substantiated, may indicate the presence of Eocene rocks in the lower member of the S O Volcanics of Cochise Co.

Tlc — Lower conglomerate, gravel, and sand (Oligocene and Eocene?)—Alluvium; commonly grayish-red deposits of small, well rounded, nonvolcanic clasts. Mostly several meters to a few tens of meters thick.

Tlv — UPPER CORDILLERAN (LARAMIDE) IGNEOUS ROCKS (LOWER PALEOCENE):—Lower volcanic rocks—Rhyolite to andesite lava flows, pyroclastic rocks, and some intercalated epiclastic rocks. Dated at 57 m.y. Possibly younger age to east.

TKp — MAIN CORDILLERAN (LARAMIDE) IGNEOUS ROCKS:—Porphyritic and aplitic intrusive rocks (Paleocene and Upper Cretaceous)—Mostly latitic porphyry to dacitic porphyry in small stocks and plugs and aplitic bodies not associated with other granitoid stocks. Dated at 61, 63, 63, 64, and 65 m.y.

Kib — Fluidized intrusive breccia—exact age unknown, but penetrates, and thus younger than Uncle Sam porphyry.

Kr — Rhyodacite tuff and welded tuff.—Includes parts of Salero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Red Bay Rhyolite, Cat Mountain Rhyolite of Brown (1939) and Uncle Sam Prophyry. Includes local intrusive bodies and locally contains fragments of exotic rocks. Thickness commonly several tens of meters to several hundreds of meters. Dated at 66(?), 70, 72, 73, and 73 m.y. The Uncle Sam, in the Tombstone area, is dated 72 m.y.

Ka — Andesitic to dacitic volcanic breccia.—Includes parts of Solero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Demetrie Volcanics and Silverbell Formation of Courtright (1958). Commonly contains large blocks of exotic rocks and locally includes some sedimentary rocks and intrusive rocks. Several tens of meters to several hundreds of meters thick in most places.

Klq — Lower quartz monzonite and graodiorite—Includes some quartz diorite; appears in small stocks. Locally associated with mineralization. Dated at 70, 71, 72, 73, 74, 74, 74, and 76 m.y. The Schiefflin granodorite at Tombstone is 72 m.y.

Kb — BISBEE FORMATION OR GROUP, UNDIFFERENTIATED (LOWER CRETACEOUS):—Upper part of Bisbee Formation or Group, undifferentiated, and related rocks.—Includes upper part of Bisbee Formation, Mural Limestone, Morita, Cintura, Willow Canyon, Apache Canyon, Shellenberger Canyon and Turney Ranch Formations (not listed in stratigraphic sequence) of the Bisbee Group, Amole Arkose of Bryant and Kinnison (1954), and Angelic Arkose. Consists of brownish- to reddish-arkose, gray siltstone, sandstone, conglomerate, and some fossiliferous gray limestone. Commonly several hundred meters thick

Jg — GRANITE AND QUARTZ MONZONITE (JURASSIC)—Stocks of pinkish-gray coarse-grained rock. Locally associated with mineralization. Dated at 140, 148, 149, 149, 150, 153, 160, 161, 167, 178, 185 m.y.

PIPs — Sedimentary rocks (Lower Permian and Upper Pennsylvanian)—consists of Epitaph Dolomite (Lower Permian), Colina Limestone (Lower Permian), and Earp Formation (Lower Permian and Upper Pennsylvanian), undifferentiated. Epitaph Dolomite is a dark- to light-gray slightly cherty dolomite, limestone, marl, siltstone, and gypsum, 120-280 meters thick. Colina Limestone is a medium gray, thick-bedded, sparsely cherty, and sparsely fossiliferous limestone 120-280 meters thick. Earp Formation is a pale-red siltstone, mudstone, shale, and limestone, 120-240 meters thick.

IPh — Horquilla Limestone (Upper and Middle Pennsylvanian)—Light-pinkish-gray, thick- to thin-bedded, cherty, fossiliferous limestone and intercalated pale-brown to pale-reddish-gray siltstone that increases in abundance upward. Typically 300-490 meters thick.

MDs — SEDIMENTARY ROCKS (MISSISSIPPIAN AND DEVONIAN)—Consists mainly of Escabrosa Limestone (Mississippian)—locally (Armstrong and Silberman, 1974) called Escabrosa Group—and Martin Formation (Upper Devonian), undifferentiated. In part of the Chiricahua Mountains also includes Paradise Formation (Upper Mississippian) and Portal Formation of Sabins, 1957a (Upper Devonian). In the Little Dragoon Mountains and some adjacent hills also includes Black Prince Limestone, whose fauna and correlation show strongest affinities with Mississippian rocks but which may include some Pennsylvanian rocks. Escabrosa Limestone is a medium-gray, massive to thick-bedded, commonly crinoidal, cherty, fossiliferous limestone 90-310 meters thick. Martin Formation is thick- to thin-bedded, gray to brown dolomite, gray sparsely fossiliferous, and some siltstone and sandstone, 90-120 meters thick. Paradise Formation is a brown, fossiliferous, shaly limestone. Portal Formation is a black shale and limestone 6-105 meters thick. Black Prince Limestone is pinkish-gray limestone with a basal shale and chert conglomerate, as much as 52 meters thick.

OЄs — SEDIMENTARY ROCKS (LOWER ORDOVICIAN TO MIDDLE CAMBRIAN):—El Paso Limestone (Lower Ordovician and Upper Cambrian), Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartz (Middle Cambrian), undifferentiated.—El Paso Limestone is a gray, thin-bedded cherty limestone and dolomite 90 meters to about 220 meters thick. Abrigo Formation is a brown, thin-bedded fossiliferous limestone, sandstone, quartzite, and shale, 210-240 meters thick. Bolsa Quartzite is a brown to white or purplish-gray, thick-bedded, coarse-grained quartzite and sandstone with a basal conglomerate, 90-180 meters thick. To the east, equivalents of part of the Abrigo Formation and Bolsa Quartzite are known as the Coronado Sandstone.

Єs — Sedimentary rocks (Upper and Middle Cambrian)—Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartzite (Middle Cambrian), undifferentiated.

Yg — GRANITOID ROCKS (PRECAMBRIAN Y):—Mainly granodiorite and quartz monsonite, unfoliated to foliated, in part metamorphosed. Generally in stocks, which ahve been little studied.

Xp — PINAL SCHIST (PRECAMBRIAN X)—Chlorite schist, phyllite, and some metavolcanic rocks, metavolcanic rocks, metaquartzite, metaquartzite conglomerate, and gneiss. One metavolcanic rock dated at 1715 m.y.

CONTACT—Dotted where concealed.

MARKER HORIZON—Dotted where concealed.

DIKES—Showing dip.

70 — FAULTS—Showing dip. Dotted where concealed or intruded; ball and bar on downthrown side.

45 — Normal

45 — Reverse

Strike-slip—Arrow couple shows relative displacement. Single arrow shows movement of active block.

Major thrust fault—Sawteeth on upper plate.

Thrust fault—Sawteeth on upper plate.

Anticline.

Syncline.

30 — Inclined strike and dip of beds.

EXOTIC-BLOCK BRECCIA—Rock contains chip or block inclusions of rock different from those of host or other blocks nearby. Typically of volcanic-tectonic or sedimentary-tectonic origin; excludes Tertiary megabreccia deposits.

(QTgu) 157 — Site of well or generalized site of several wells, showing unit penetrated, if known, and depth of well, in feet. 100 feet equals 30.5 meters.

72x — COLLECTION SITE—Radiogenically dated rock showing age in millions of years. Query before symbol where precise location uncertain.

Roads and Highways

Dry wash

Southern Pacific Railroad

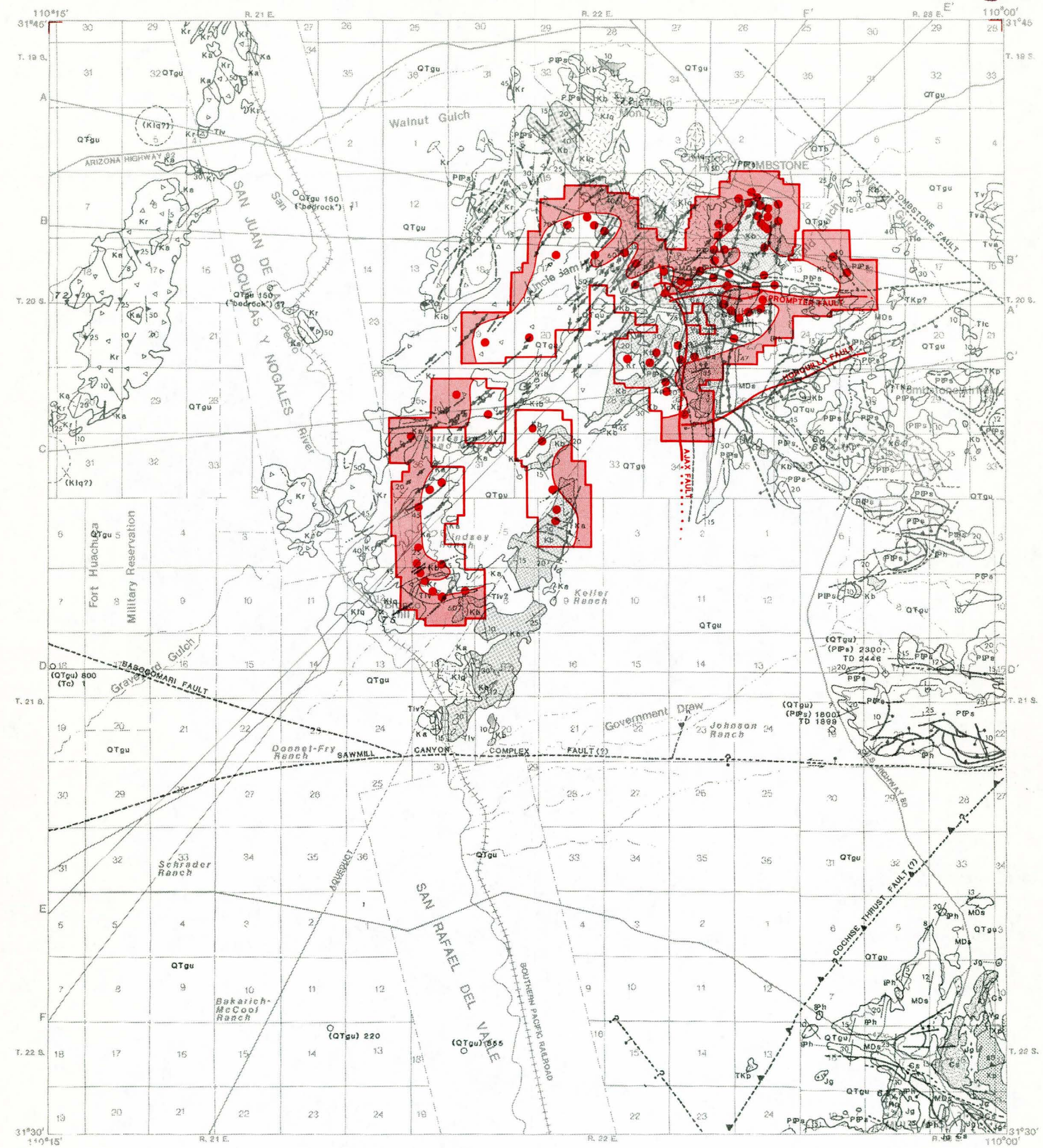
Government Reservation Boundary

Aqueduct

A—A' Cross section line

● Dump sample location

Lead



Tombstone Development Company, Inc.
Tombstone, Arizona

Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

By James A. Briscoe
James A. Briscoe and Associates
Tucson, Arizona

1 0 1 2 3 Miles

N

Figure 8. Dump sample location map showing area of influence boundaries and the Ajax, Prompter, and Horquilla faults, from Newell, R.A., 1973.

Distribution pattern for high lead ratios in dump samples (in red).

Page 17

Explanation

Geology

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EXOTIC-BLOCK BRECCIA—Rock contains chip or block inclusions of rock different from those of host or other blocks nearby. Typically of volcanic-tectonic or sedimentary-tectonic origin; excludes Tertiary megabreccia deposits.

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Roads and Highways

Dry wash

Southern Pacific Railroad

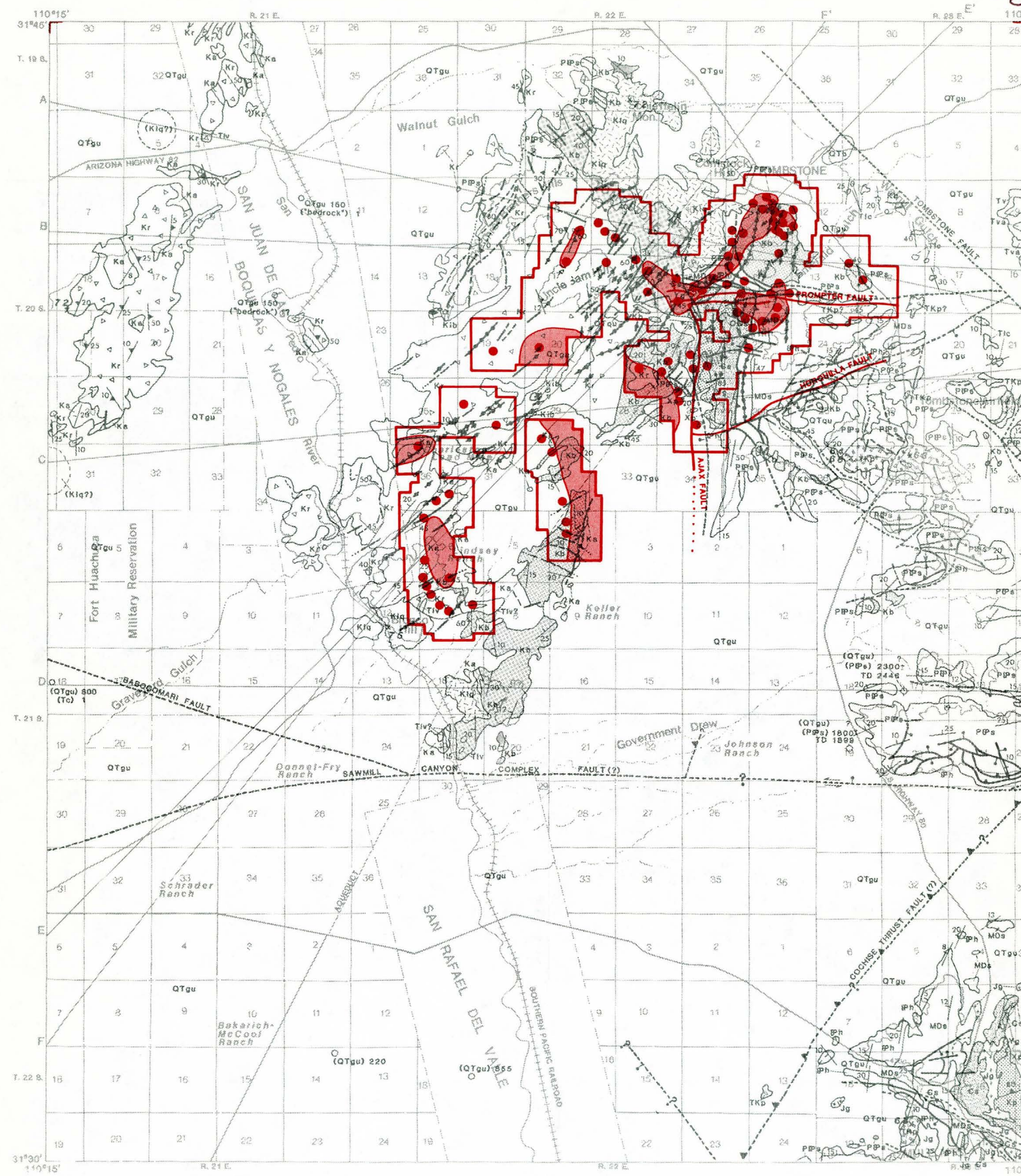
Government Reservation Boundary

Aqueduct

A———A' Cross section line

Dump sample location

Copper



Tombstone Development Company, Inc.
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By James A. Briscoe
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1 0 1 2 3 Miles

N

Figure 9. Dump sample location map showing area of influence boundaries and the Ajax, Prompter, and Horquilla faults, from Newell, R.A., 1973.

Distribution pattern for high copper ratios in dump samples (in red).

Explanation

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Roads and Highways

Dry wash

Southern Pacific Railroad

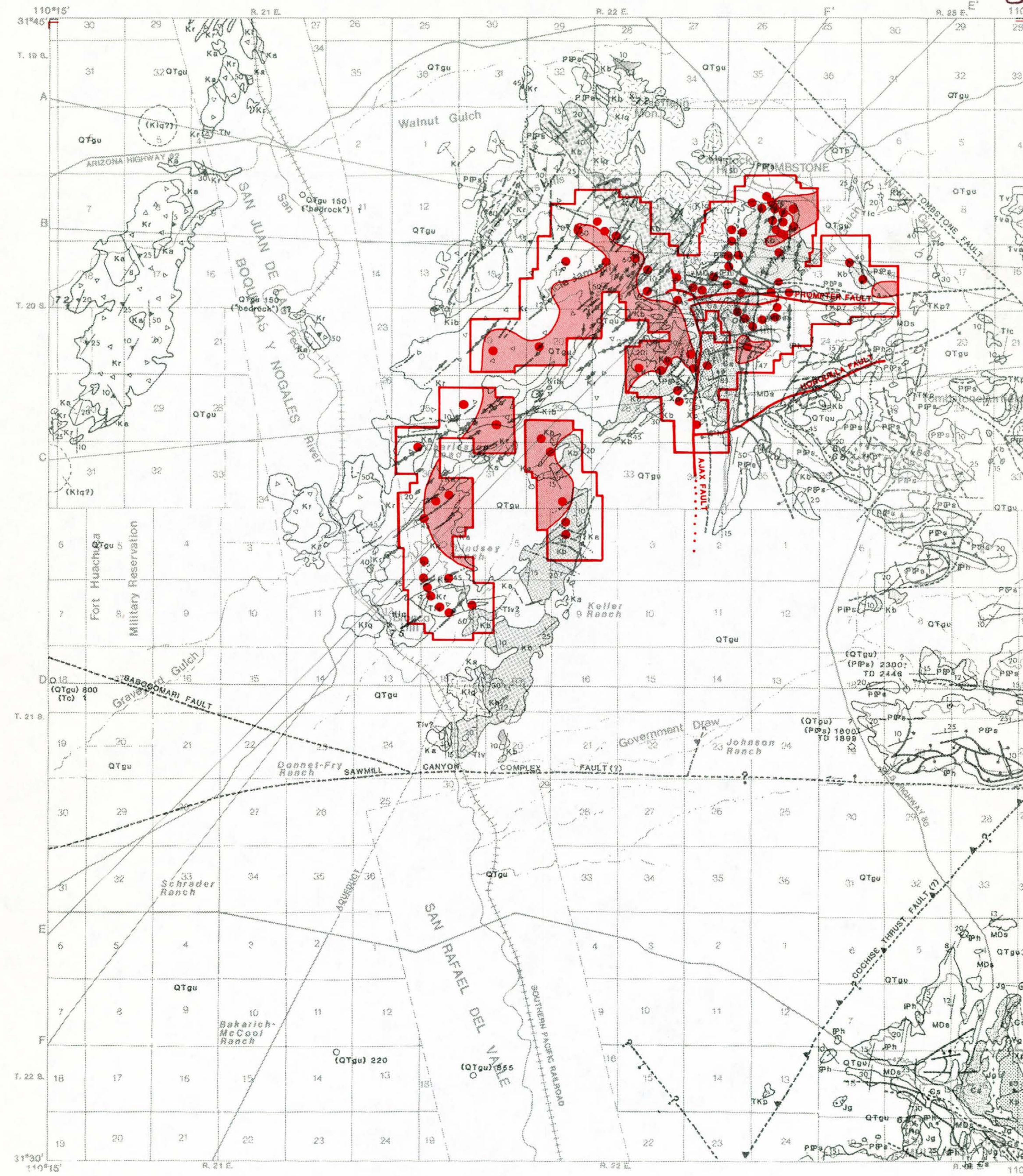
Government Reservation Boundary

Aqueduct

A—A' Cross section line

Dump sample location

Molybdenum



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Distribution pattern for high molybdenum ratios in dump samples (in red).

Explanation

Geology

OLDER OR UNDIFFERENTIATED SURFICAL DEPOSITS (HOLOCENE TO OLIGOCENE):—Gravel, sand, and silt (Pleistocene and Pliocene—Mainly alluvium of basins; includes some colluvium and landslide deposits. Generally light-pinkish gray, weakly indurated, and with poorly rounded clasts; locally well indurated. Thickness several meters to hundreds of meters.

Basalt (Pleistocene to Pliocene)—Lava flows, pyroclastic rocks, and some intercalated gravel. Thickness several meters to a few hundred meters in most places. Radiometrically dated at 0.25, 1.0, and 3.2 m.y. old

Extensive andesite and dacite (Miocene and Upper Oligocene)—Lava flows, pyroclastic rocks, some intercalated epiclastic rocks, and dikes. Mostly gray, fine-grained, porphyritic rocks; includes some very coarse feldspar porphyry andesite (Turkey track porphyry, an informal term of Cooper, 1961). Thickness mostly several meters to several tens of meters. Dated at 24, 25, 27, 33, and 39 m.y.

Extrusive rhyolite and rhyodacite (Miocene and Upper Oligocene—Lava flows, welded tuff, pyroclastic rocks, and some intercalated epiclastic rocks. Light-gray to grayish-pink, vitric to fine-grained, porphyritic. Commonly a few tens to a few thousand of meters thick. Dated at 23, 24, 25, 26, 26, 26, and 27 m.y. An additional date of 47 m.y., if substantiated, may indicate the presence of Eocene rocks in the lower member of the S O Volcanics of Cochise Co.

Lower conglomerate, gravel, and sand (Oligocene and Eocene?)—Alluvium; commonly grayish-red deposits of small, well rounded, nonvolcanic clasts. Mostly several meters to a few tens of meters thick.

UPPER CORDILLERAN (LARAMIDE) IGNEOUS ROCKS (LOWER PALEOCENE):—Lower volcanic rocks—Rhyolite to andesite lava flows, pyroclastic rocks, and some intercalated epiclastic rocks. Dated at 57 m.y. Possibly younger age to east.

MAIN CORDILLERAN (LARAMIDE) IGNEOUS ROCKS:—Porphyritic and aplitic intrusive rocks (Paleocene and Upper Cretaceous)—Mostly latitic porphyry to dacitic porphyry in small stocks and plugs and aplitic bodies not associated with other granitoid stocks. Dated at 61, 63, 63, 64, and 65 m.y.

Fluidized intrusive breccia—exact age unknown, but penetrates, and thus younger than Uncle Sam porphyry.

Rhyodacite tuff and welded tuff.—Includes parts of Salero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Red Bay Rhyolite, Cat Mountain Rhyolite of Brown (1939) and Uncle Sam Prophyry. Includes local intrusive bodies and locally contains fragments of exotic rocks. Thickness commonly several tens of meters to several hundreds of meters. Dated at 66(?), 70, 72, 73, and 73 m.y. The Uncle Sam, in the Tombstone area, is dated 72 m.y.

Andesitic to dacitic volcanic breccia.—Includes parts of Solero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Demetrie Volcanics and Silverbell Formation of Courtright (1958). Commonly contains large blocks of exotic rocks and locally includes some sedimentary rocks and intrusive rocks. Several tens of meters to several hundreds of meters thick in most places.

Lower quartz monzonite and graodiorite—Includes some quartz diorite; appears in small stocks. Locally associated with mineralization. Dated at 70, 71, 72, 73, 74, 74, 74, and 76 m.y. The Schiefflin granodorite at Tombstone is 72 m.y.

BISBEE FORMATION OR GROUP, UNDIFFERENTIATED (LOWER CRETACEOUS):—Upper part of Bisbee Formation or Group, undifferentiated, and related rocks.—Includes upper part of Bisbee Formation, Mural Limestone, Morita, Cintura, Willow Canyon, Apache Canyon, Shellenberger Canyon and Turney Ranch Formations (not listed in stratigraphic sequence) of the Bisbee Group, Amole Arkose of Bryant and Kinnison (1954), and Angelic Arkose. Consists of brownish- to reddish-arkose, gray siltstone, sandstone, conglomerate, and some fossiliferous gray limestone. Commonly several hundred meters thick

GRANITE AND QUARTZ MONZONITE (JURASSIC)—Stocks of pinkish-gray coarse-grained rock. Locally associated with mineralization. Dated at 140, 148, 149, 149, 150, 153, 160, 161, 167, 178, 185 m.y.

Sedimentary rocks (Lower Permian and Upper Pennsylvanian)—consists of Epitaph Dolomite (Lower Permian), Colina Limestone (Lower Permian), and Earp Formation (Lower Permian and Upper Pennsylvanian), undifferentiated. Epitaph Dolomite is a dark- to light-gray slightly cherty dolomite, limestone, marl, siltstone, and gypsum, 120-280 meters thick. Colina Limestone is a medium gray, thick-bedded, sparsely cherty, and sparsely fossiliferous limestone 120-280 meters thick. Earp Formation is a pale-red siltstone, mudstone, shale, and limestone, 120-240 meters thick.

Horquilla Limestone (Upper and Middle Pennsylvanian)—Light-pinkish-gray, thick- to thin-bedded, cherty, fossiliferous limestone and intercalated pale-brown to pale-reddish-gray siltstone that increases in abundance upward. Typically 300-490 meters thick.

SEDIMENTARY ROCKS (MISSISSIPPIAN AND DEVONIAN)—Consists mainly of Escabrosa Limestone (Mississippian)—locally (Armstrong and Silberman, 1974) called Escabrosa Group—and Martin Formation (Upper Devonian), undifferentiated. In part of the Chiricahua Mountains also includes Paradise Formation (Upper Mississippian) and Portal Formation of Sabins, 1957a (Upper Devonian). In the Little Dragoon Mountains and some adjacent hills also includes Black Prince Limestone, whose fauna and correlation show strongest affinities with Mississippian rocks but which may include some Pennsylvanian rocks. Escabrosa Limestone is a medium-gray, massive to thick-bedded, commonly crinoidal, cherty, fossiliferous limestone 90-310 meters thick. Martin Formation is thick- to thin-bedded, gray to brown dolomite, gray sparsely fossiliferous, and some siltstone and sandstone, 90-120 meters thick. Paradise Formation is a brown, fossiliferous, shaly limestone. Portal Formation is a black shale and limestone 6-105 meters thick. Black Prince Limestone is pinkish-gray limestone with a basal shale and chert conglomerate, as much as 52 meters thick.

SEDIMENTARY ROCKS (LOWER ORDOVICIAN TO MIDDLE CAMBRIAN):—El Paso Limestone (Lower Ordovician and Upper Cambrian), Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartz (Middle Cambrian), undifferentiated.—El Paso Limestone is a gray, thin-bedded cherty limestone and dolomite 90 meters to about 220 meters thick. Abrigo Formation is a brown, thin-bedded fossiliferous limestone, sandstone, quartzite, and shale, 210-240 meters thick. Bolsa Quartzite is a brown to white or purplish-gray, thick-bedded, coarse-grained quartzite and sandstone with a basal conglomerate, 90-180 meters thick. To the east, equivalents of part of the Abrigo Formation and Bolsa Quartzite are known as the Coronado Sandstone.

Sedimentary rocks (Upper and Middle Cambrian)—Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartzite (Middle Cambrian), undifferentiated.

GRANITOID ROCKS (PRECAMBRIAN Y):—Mainly granodiorite and quartz monsonite, unfoliated to foliated, in part metamorphosed. Generally in stocks, which ahve been little studied.

PINAL SCHIST (PRECAMBRIAN X)—Chlorite schist, phyllite, and some metavolcanic rocks, metavolcanic rocks, metaquartzite, metaquartzite conglomerate, and gneiss. One metavolcanic rock dated at 1715 m.y.

CONTACT—Dotted where concealed.

MARKER HORIZON—Dotted where concealed.

DIKES—Showing dip.

FAULTS—Showing dip. Dotted where concealed or intruded; ball and bar on downthrown side.

Normal

Reverse

Strike-slip—Arrow couple shows relative displacement. Single arrow shows movement of active block.

Major thrust fault—Sawteeth on upper plate.

Thrust fault—Sawteeth on upper plate.

Anticline.

Syncline.

Inclined strike and dip of beds.

EXOTIC-BLOCK BRECCIA—Rock contains chip or block inclusions of rock different from those of host or other blocks nearby. Typically of volcanic-tectonic or sedimentary-tectonic origin; excludes Tertiary megabreccia deposits.

(QTgu) 157 — Site of well or generalized site of several wells, showing unit penetrated, if known, and depth of well, in feet. 100 feet equals 30.5 meters.

72x — COLLECTION SITE—Radiogenically dated rock showing age in millions of years. Query before symbol where precise location uncertain.

Roads and Highways

Dry wash

Southern Pacific Railroad

Government Reservation Boundary

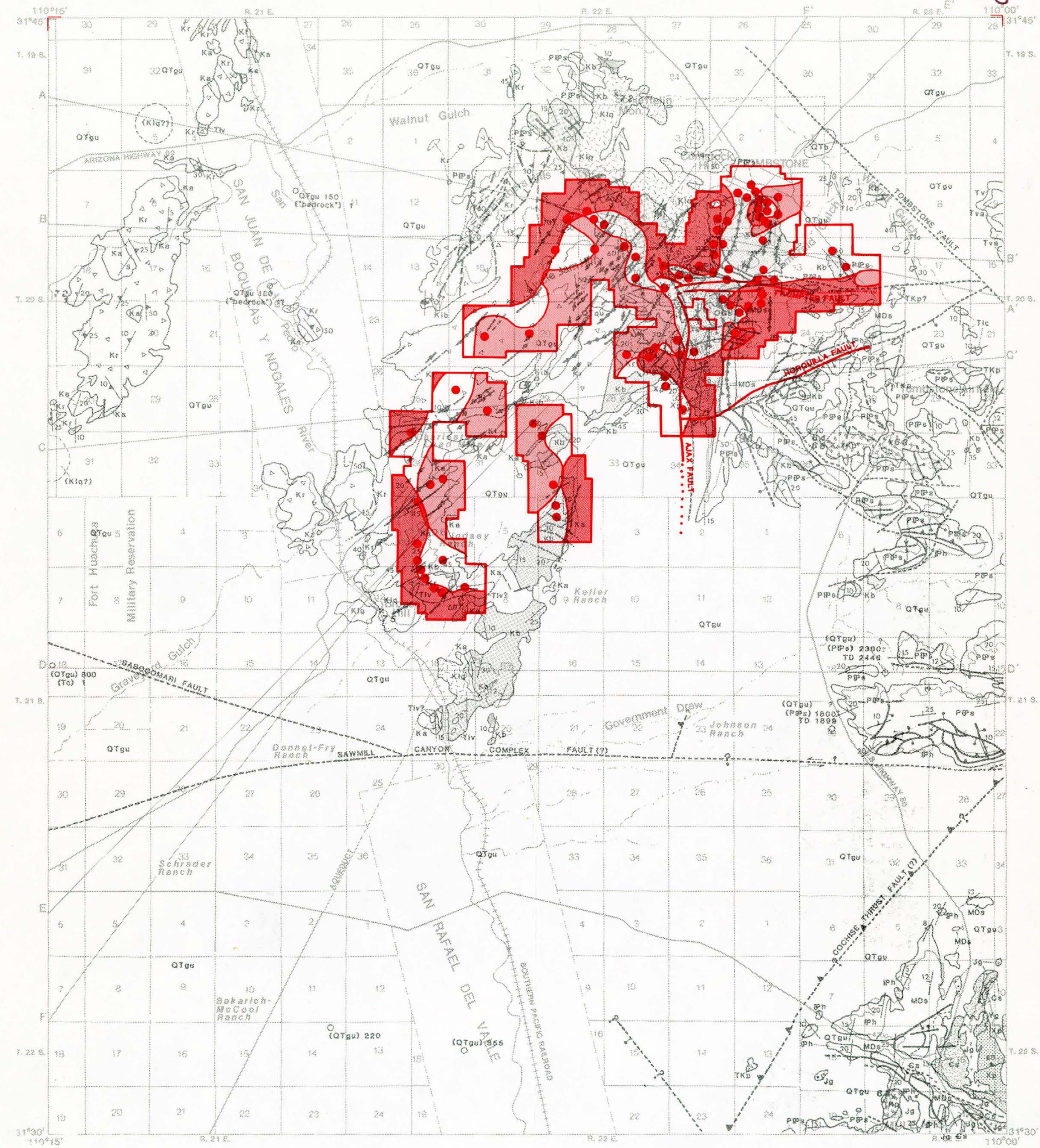
Aqueduct

Cross section line

Dump sample location

Molybdenum

Zinc



Tombstone Development Company, Inc.
Tombstone, Arizona

Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

By James A. Briscoe
James A. Briscoe and Associates
Tucson, Arizona

1 0 1 2 3 Miles

N

Figure 11. Dump sample location map showing area of influence boundaries and the Ajax, Prompter, and Horquilla faults, from Newell, R.A., 1973.

Distribution pattern for high molybdenum and zinc ratios in dump samples (in red).

Explanation

Geology

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QTb — Basalt (Pleistocene to Pliocene)—Lava flows, pyroclastic rocks, and some intercalated gravel. Thickness several meters to a few hundred meters in most places. Radiometrically dated at 0.25, 1.0, and 3.2 m.y. old

Tva — Extensive andesite and dacite (Miocene and Upper Oligocene)—Lava flows, pyroclastic rocks, some intercalated epiclastic rocks, and dikes. Mostly gray, fine-grained, porphyritic rocks; includes some very coarse feldspar porphyry andesite (Turkey track porphyry, an informal term of Cooper, 1961). Thickness mostly several meters to several tens of meters. Dated at 24, 25, 27, 33, and 39 m.y.

Tv — Extrusive rhyolite and rhyodacite (Miocene and Upper Oligocene—Lava flows, welded tuff, pyroclastic rocks, and some intercalated epiclastic rocks. Light-gray to grayish-pink, vitric to fine-grained, porphyritic. Commonly a few tens to a few thousand of meters thick. Dated at 23, 24, 25, 26, 26, 26, and 27 m.y. An additional date of 47 m.y., if substantiated, may indicate the presence of Eocene rocks in the lower member of the S O Volcanics of Cochise Co.

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Kib — Fluidized intrusive breccia—exact age unknown, but penetrates, and thus younger than Uncle Sam porphyry.

Kr — Rhyodacite tuff and welded tuff.—Includes parts of Salero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Red Bay Rhyolite, Cat Mountain Rhyolite of Brown (1939) and Uncle Sam Prophyry. Includes local intrusive bodies and locally contains fragments of exotic rocks. Thickness commonly several tens of meters to several hundreds of meters. Dated at 66(?), 70, 72, 73, and 73 m.y. The Uncle Sam, in the Tombstone area, is dated 72 m.y.

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Jg — GRANITE AND QUARTZ MONZONITE (JURASSIC)—Stocks of pinkish-gray coarse-grained rock. Locally associated with mineralization. Dated at 140, 148, 149, 149, 150, 153, 160, 161, 167, 178, 185 m.y.

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IPh — Horquilla Limestone (Upper and Middle Pennsylvanian)—Light-pinkish-gray, thick- to thin-bedded, cherty, fossiliferous limestone and intercalated pale-brown to pale-reddish-gray siltstone that increases in abundance upward. Typically 300-490 meters thick.

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CONTACT—Dotted where concealed.

MARKER HORIZON—Dotted where concealed.

DIKES—Showing dip.

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45 — Normal

45 — Reverse

Strike-slip—Arrow couple shows relative displacement. Single arrow shows movement of active block.

Major thrust fault—Sawteeth on upper plate.

Thrust fault—Sawteeth on upper plate.

Anticline.

Syncline.

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72x — COLLECTION SITE—Radiogenically dated rock showing age in millions of years. Query before symbol where precise location uncertain.

Roads and Highways

Dry wash

Southern Pacific Railroad

Government Reservation Boundary

Aqueduct

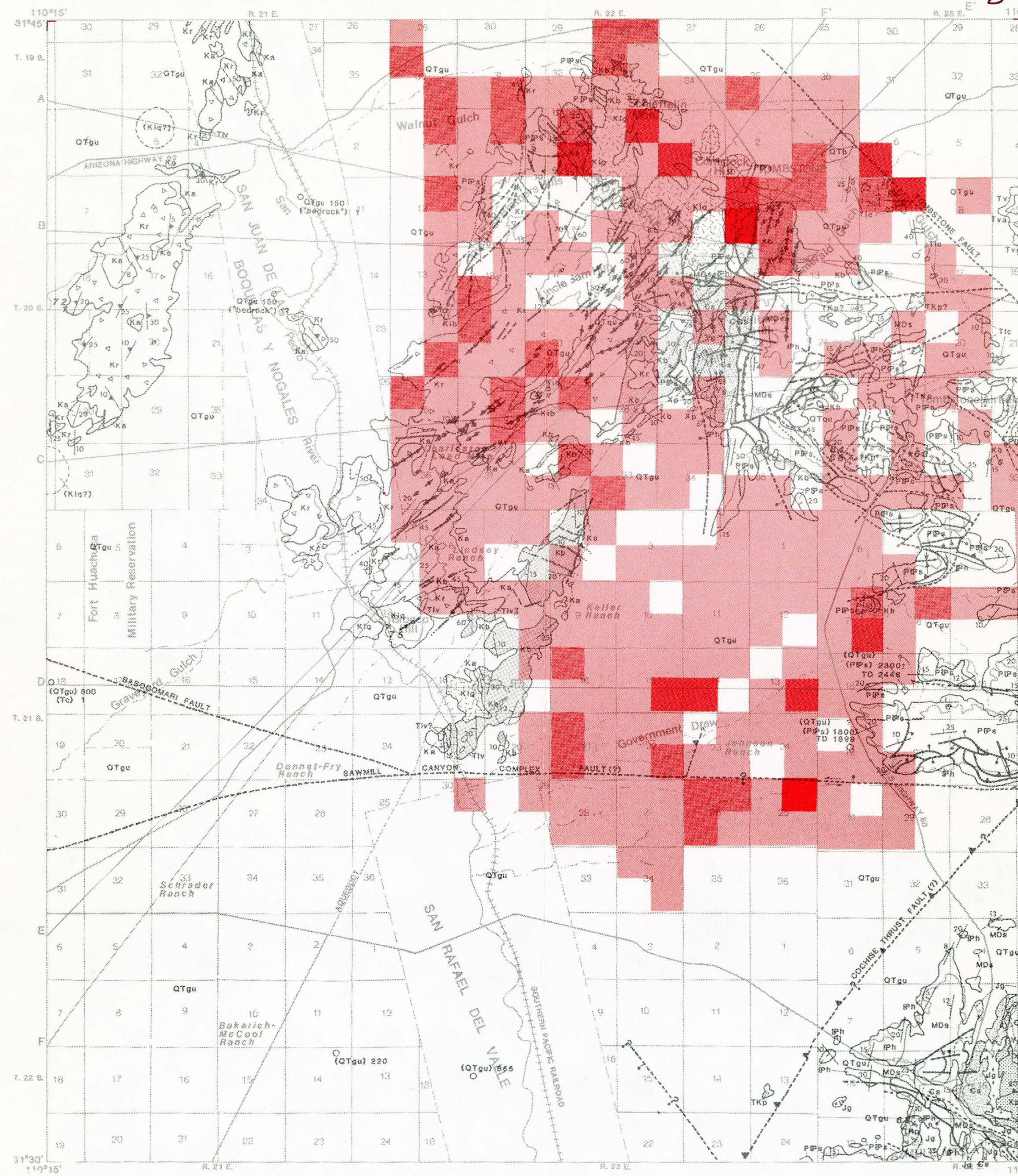
A—A' Cross section line

≤ 1 ppm

1.1 - 2 ppm

2.1 - 3 ppm

≥ 3 ppm



Tombstone Development Company, Inc.
Tombstone, Arizona

0 1 2 3 Miles

N

Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

Figure 12. Distribution pattern of silver in mesquite trees (in red), from Newell, R.A., 1973.

By James A. Briscoe
James A. Briscoe and Associates
Tucson, Arizona

Explanation

Geology

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Roads and Highways

Dry wash

Southern Pacific Railroad

Government Reservation Boundary

Aqueduct

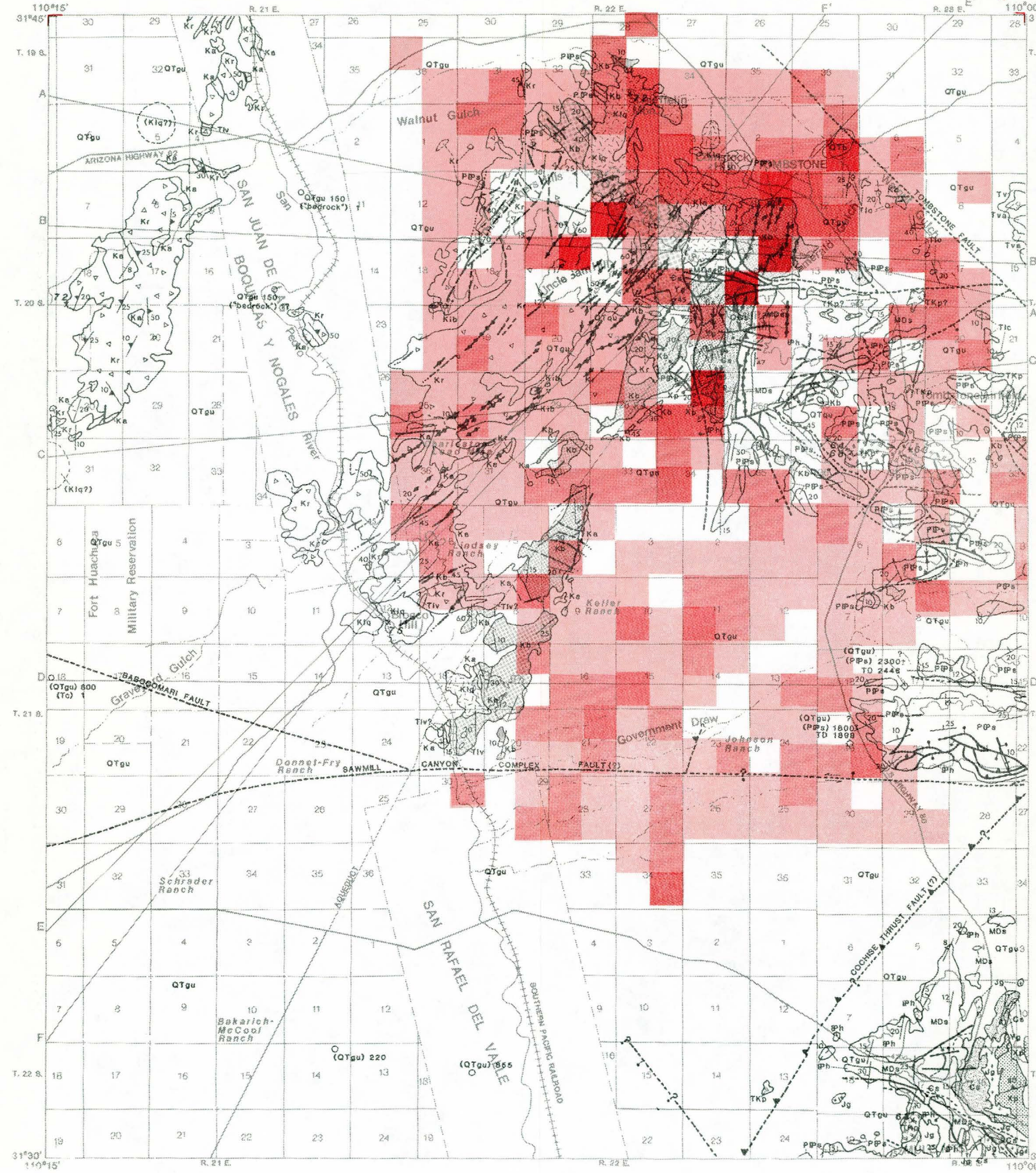
A——A' Cross section line

≤ 400 ppm

401 - 600 ppm

601 - 800 ppm

≥ 800 ppm



1 0 1 2 3 Miles

N

Tombstone Development Company, Inc.
Tombstone, Arizona

Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

Figure 13. Distribution pattern of zinc in mesquite trees (in red), from Newell, R.A., 1973.

By James A. Briscoe
James A. Briscoe and Associates
Tucson, Arizona

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QTgu — OLDER OR UNDIFFERENTIATED SURFICAL DEPOSITS (HOLOCENE TO OLIGOCENE):—Gravel, sand, and silt (Pleistocene and Pliocene—Mainly alluvium of basins; includes some colluvium and landslide deposits. Generally light-pinkish gray, weakly indurated, and with poorly rounded clasts; locally well indurated. Thickness several meters to hundreds of meters.

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Tva — Extensive andesite and dacite (Miocene and Upper Oligocene)—Lava flows, pyroclastic rocks, some intercalated epiclastic rocks, and dikes. Mostly gray, fine-grained, porphyritic rocks; includes some very coarse feldspar porphyry andesite (Turkey track porphyry, an informal term of Cooper, 1961). Thickness mostly several meters to several tens of meters. Dated at 24, 25, 27, 33, and 39 m.y.

Tv — Extrusive rhyolite and rhyodacite (Miocene and Upper Oligocene—Lava flows, welded tuff, pyroclastic rocks, and some intercalated epiclastic rocks. Light-gray to grayish-pink, vitric to fine-grained, porphyritic. Commonly a few tens to a few thousand of meters thick. Dated at 23, 24, 25, 26, 26, 26, and 27 m.y. An additional date of 47 m.y., if substantiated, may indicate the presence of Eocene rocks in the lower member of the S O Volcanics of Cochise Co.

Tlc — Lower conglomerate, gravel, and sand (Oligocene and Eocene?)—Alluvium; commonly grayish-red deposits of small, well rounded, nonvolcanic clasts. Mostly several meters to a few tens of meters thick.

Tlv — UPPER CORDILLERAN (LARAMIDE) IGNEOUS ROCKS (LOWER PALEOCENE):—Lower volcanic rocks—Rhyolite to andesite lava flows, pyroclastic rocks, and some intercalated epiclastic rocks. Dated at 57 m.y. Possibly younger age to east.

TKp — MAIN CORDILLERAN (LARAMIDE) IGNEOUS ROCKS:—Porphyritic and aplitic intrusive rocks (Paleocene and Upper Cretaceous)—Mostly latitic porphyry to dacitic porphyry in small stocks and plugs and aplitic bodies not associated with other granitoid stocks. Dated at 61, 63, 63, 64, and 65 m.y.

Kib — Fluidized intrusive breccia—exact age unknown, but penetrates, and thus younger than Uncle Sam porphyry.

Kr — Rhyodacite tuff and welded tuff.—Includes parts of Salero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Red Bay Rhyolite, Cat Mountain Rhyolite of Brown (1939) and Uncle Sam Prophyry. Includes local intrusive bodies and locally contains fragments of exotic rocks. Thickness commonly several tens of meters to several hundreds of meters. Dated at 66(?), 70, 72, 73, and 73 m.y. The Uncle Sam, in the Tombstone area, is dated 72 m.y.

Ka — Andesitic to dacitic volcanic breccia.—Includes parts of Solero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Demetrie Volcanics and Silverbell Formation of Courtright (1958). Commonly contains large blocks of exotic rocks and locally includes some sedimentary rocks and intrusive rocks. Several tens of meters to several hundreds of meters thick in most places.

Klq — Lower quartz monzonite and graodiorite—Includes some quartz diorite; appears in small stocks. Locally associated with mineralization. Dated at 70, 71, 72, 73, 74, 74, 74, and 76 m.y. The Schiefflin granodorite at Tombstone is 72 m.y.

Kb — BISBEE FORMATION OR GROUP, UNDIFFERENTIATED (LOWER CRETACEOUS):—Upper part of Bisbee Formation or Group, undifferentiated, and related rocks.—Includes upper part of Bisbee Formation, Mural Limestone, Morita, Cintura, Willow Canyon, Apache Canyon, Shellenberger Canyon and Turney Ranch Formations (not listed in stratigraphic sequence) of the Bisbee Group, Amole Arkose of Bryant and Kinnison (1954), and Angelic Arkose. Consists of brownish- to reddish-arkose, gray siltstone, sandstone, conglomerate, and some fossiliferous gray limestone. Commonly several hundred meters thick

Jg — GRANITE AND QUARTZ MONZONITE (JURASSIC)—Stocks of pinkish-gray coarse-grained rock. Locally associated with mineralization. Dated at 140, 148, 149, 149, 150, 153, 160, 161, 167, 178, 185 m.y.

PIPs — Sedimentary rocks (Lower Permian and Upper Pennsylvanian)—consists of Epitaph Dolomite (Lower Permian), Colina Limestone (Lower Permian), and Earp Formation (Lower Permian and Upper Pennsylvanian), undifferentiated. Epitaph Dolomite is a dark- to light-gray slightly cherty dolomite, limestone, marl, siltstone, and gypsum, 120-280 meters thick. Colina Limestone is a medium gray, thick-bedded, sparsely cherty, and sparsely fossiliferous limestone 120-280 meters thick. Earp Formation is a pale-red siltstone, mudstone, shale, and limestone, 120-240 meters thick.

IPh — Horquilla Limestone (Upper and Middle Pennsylvanian)—Light-pinkish-gray, thick- to thin-bedded, cherty, fossiliferous limestone and intercalated pale-brown to pale-reddish-gray siltstone that increases in abundance upward. Typically 300-490 meters thick.

MDs — SEDIMENTARY ROCKS (MISSISSIPPIAN AND DEVONIAN)—Consists mainly of Escabrosa Limestone (Mississippian)—locally (Armstrong and Silberman, 1974) called Escabrosa Group—and Martin Formation (Upper Devonian), undifferentiated. In part of the Chiricahua Mountains also includes Paradise Formation (Upper Mississippian) and Portal Formation of Sabins, 1957a (Upper Devonian). In the Little Dragoon Mountains and some adjacent hills also includes Black Prince Limestone, whose fauna and correlation show strongest affinities with Mississippian rocks but which may include some Pennsylvanian rocks. Escabrosa Limestone is a medium-gray, massive to thick-bedded, commonly crinoidal, cherty, fossiliferous limestone 90-310 meters thick. Martin Formation is thick- to thin-bedded, gray to brown dolomite, gray sparsely fossiliferous, and some siltstone and sandstone, 90-120 meters thick. Paradise Formation is a brown, fossiliferous, shaly limestone. Portal Formation is a black shale and limestone 6-105 meters thick. Black Prince Limestone is pinkish-gray limestone with a basal shale and chert conglomerate, as much as 52 meters thick.

OЄs — SEDIMENTARY ROCKS (LOWER ORDOVICIAN TO MIDDLE CAMBRIAN):—El Paso Limestone (Lower Ordovician and Upper Cambrian), Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartz (Middle Cambrian), undifferentiated.—El Paso Limestone is a gray, thin-bedded cherty limestone and dolomite 90 meters to about 220 meters thick. Abrigo Formation is a brown, thin-bedded fossiliferous limestone, sandstone, quartzite, and shale, 210-240 meters thick. Bolsa Quartzite is a brown to white or purplish-gray, thick-bedded, coarse-grained quartzite and sandstone with a basal conglomerate, 90-180 meters thick. To the east, equivalents of part of the Abngo Formation and Bolsa Quartzite are known as the Coronado Sandstone.

Єs — Sedimentary rocks (Upper and Middle Cambrian)—Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartzite (Middle Cambrian), undifferentiated.

Yg — GRANITOID ROCKS (PRECAMBRIAN Y):—Mainly granodiorite and quartz monsonite, unfoliated to foliated, in part metamorphosed. Generally in stocks, which ahve been little studied.

Xp — PINAL SCHIST (PRECAMBRIAN X)—Chlorite schist, phyllite, and some metavolcanic rocks, metavolcanic rocks, metaquartzite, metaquartzite conglomerate, and gneiss. One metavolcanic rock dated at 1715 m.y.

CONTACT—Dotted where concealed.

MARKER HORIZON—Dotted where concealed.

DIKES—Showing dip.

70 — FAULTS—Showing dip. Dotted where concealed or intruded; ball and bar on downthrown side.

45 — Normal

45 — Reverse

Strike-slip—Arrow couple shows relative displacement. Single arrow shows movement of active block.

Major thrust fault—Sawteeth on upper plate.

Thrust fault—Sawteeth on upper plate.

Anticline.

Syncline.

30 — Inclined strike and dip of beds.

EXOTIC-BLOCK BRECCIA—Rock contains chip or block inclusions of rock different from those of host or other blocks nearby. Typically of volcanic-tectonic or sedimentary-tectonic origin; excludes Tertiary megabreccia deposits.

(QTgu) 157 — Site of well or generalized site of several wells, showing unit penetrated, if known, and depth of well, in feet. 100 feet equals 30.5 meters.

72x — COLLECTION SITE—Radiogenically dated rock showing age in millions of years. Query before symbol where precise location uncertain.

Roads and Highways

Dry wash

Southern Pacific Railroad

Government Reservation Boundary

Aqueduct

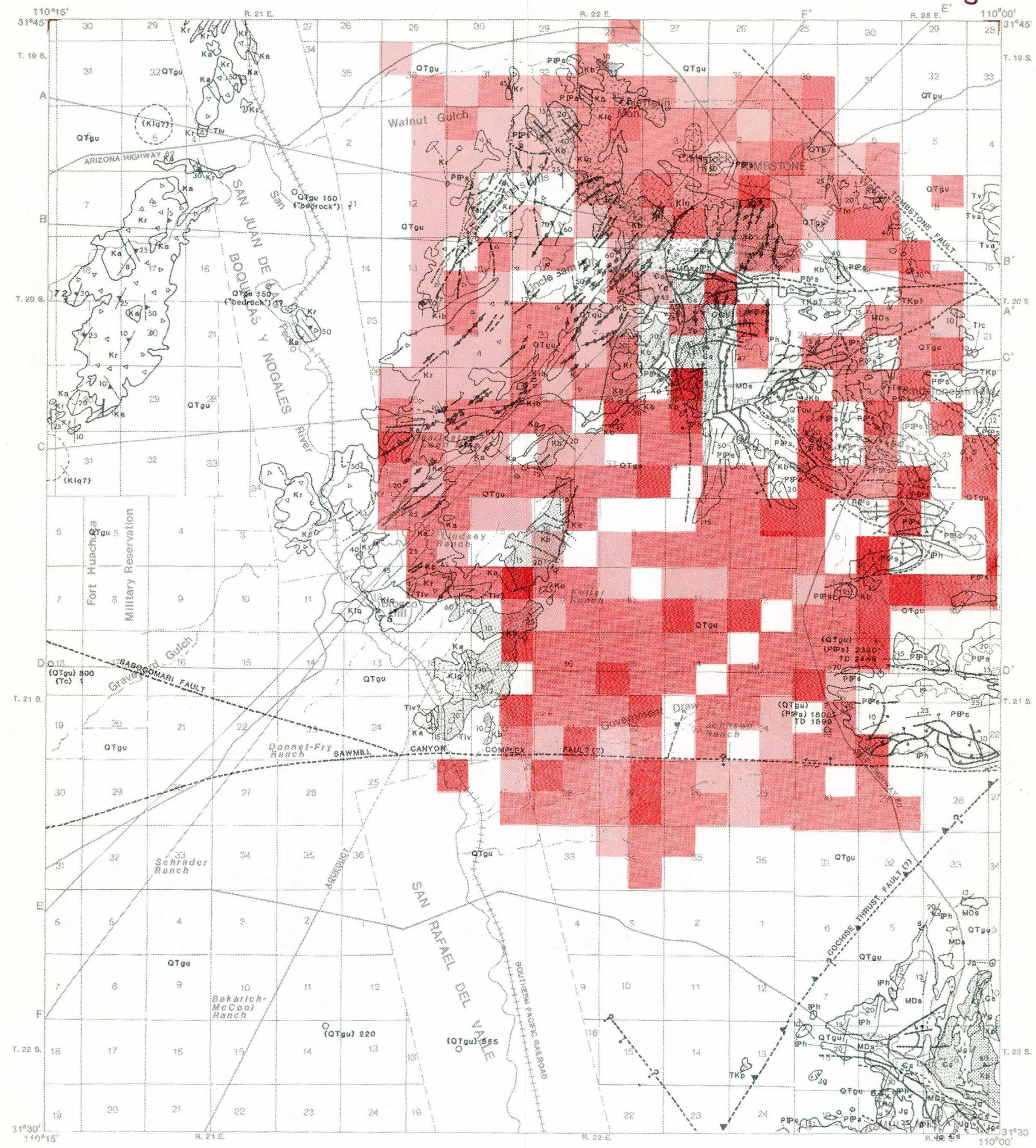
A——A′ Cross section line

≤ 100 ppm

101 - 150 ppm

151 - 200 ppm

≥ 200 ppm



Tombstone Development Company, Inc.
Tombstone, Arizona

1 0 1 2 3 Miles

N

Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

Figure 14. Distribution pattern of copper in mesquite trees (in red), from Newell, R.A., 1973.

By James A. Briscoe
James A. Briscoe and Associates
Tucson, Arizona

Explanation

Geology

- **QTgu** — OLDER OR UNDIFFERENTIATED SURFICAL DEPOSITS (HOLOCENE TO OLIGOCENE):—Gravel, sand, and silt (Pleistocene and Pliocene—Mainly alluvium of basins; includes some colluvium and landslide deposits. Generally light-pinkish gray, weakly indurated, and with poorly rounded clasts; locally well indurated. Thickness several meters to hundreds of meters.
- **QTb** — Basalt (Pleistocene to Pliocene)—Lava flows, pyroclastic rocks, and some intercalated gravel. Thickness several meters to a few hundred meters in most places. Radiometrically dated at 0.25, 1.0, and 3.2 m.y. old
- **Tva** — Extensive andesite and dacite (Miocene and Upper Oligocene)—Lava flows, pyroclastic rocks, some intercalated epiclastic rocks, and dikes. Mostly gray, fine-grained, porphyritic rocks; includes some very coarse feldspar porphyry andesite (Turkey track porphyry, an informal term of Cooper, 1961). Thickness mostly several meters to several tens of meters. Dated at 24, 25, 27, 33, and 39 m.y.
- **Tv** — Extrusive rhyolite and rhyodacite (Miocene and Upper Oligocene—Lava flows, welded tuff, pyroclastic rocks, and some intercalated epiclastic rocks. Light-gray to grayish-pink, vitric to fine-grained, porphyritic. Commonly a few tens to a few thousand of meters thick. Dated at 23, 24, 25, 26, 26, 26, and 27 m.y. An additional date of 47 m.y., if substantiated, may indicate the presence of Eocene rocks in the lower member of the S O Volcanics of Cochise Co.
- **Tlc** — Lower conglomerate, gravel, and sand (Oligocene and Eocene?)—Alluvium; commonly grayish-red deposits of small, well rounded, nonvolcanic clasts. Mostly several meters to a few tens of meters thick.
- **Tlv** — UPPER CORDILLERAN (LARAMIDE) IGNEOUS ROCKS (LOWER PALEOCENE):—Lower volcanic rocks—Rhyolite to andesite lava flows, pyroclastic rocks, and some intercalated epiclastic rocks. Dated at 57 m.y. Possibly younger age to east.
- **TKp** — MAIN CORDILLERAN (LARAMIDE) IGNEOUS ROCKS:—Porphyritic and aplitic intrusive rocks (Paleocene and Upper Cretaceous)—Mostly latitic porphyry to dacitic porphyry in small stocks and plugs and aplitic bodies not associated with other granitoid stocks. Dated at 61, 63, 63, 64, and 65 m.y.
- **Kib** — Fluidized intrusive breccia—exact age unknown, but penetrates, and thus younger than Uncle Sam porphyry.
- **Kr** — Rhyodacite tuff and welded tuff.—Includes parts of Salero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Red Bay Rhyolite, Cat Mountain Rhyolite of Brown (1939) and Uncle Sam Prophyry. Includes local intrusive bodies and locally contains fragments of exotic rocks. Thickness commonly several tens of meters to several hundreds of meters. Dated at 66(?), 70, 72, 73, and 73 m.y. The Uncle Sam, in the Tombstone area, is dated 72 m.y.
- **Ka** — Andesitic to dacitic volcanic breccia.—Includes parts of Solero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Demetrie Volcanics and Silverbell Formation of Courtright (1958). Commonly contains large blocks of exotic rocks and locally includes some sedimentary rocks and intrusive rocks. Several tens of meters to several hundreds of meters thick in most places.
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- **Kb** — BISBEE FORMATION OR GROUP, UNDIFFERENTIATED (LOWER CRETACEOUS):—Upper part of Bisbee Formation or Group, undifferentiated, and related rocks.—Includes upper part of Bisbee Formation, Mural Limestone, Morita, Cintura, Willow Canyon, Apache Canyon, Shellenberger Canyon and Turney Ranch Formations (not listed in stratigraphic sequence) of the Bisbee Group, Amole Arkose of Bryant and Kinnison (1954), and Angelic Arkose. Consists of brownish- to reddish-arkose, gray siltstone, sandstone, conglomerate, and some fossiliferous gray limestone. Commonly several hundred meters thick
- **Jg** — GRANITE AND QUARTZ MONZONITE (JURASSIC)—Stocks of pinkish-gray coarse-grained rock. Locally associated with mineralization. Dated at 140, 148, 149, 149, 150, 153, 160, 161, 167, 178, 185 m.y.
- **PIPs** — Sedimentary rocks (Lower Permian and Upper Pennsylvanian)—consists of Epitaph Dolomite (Lower Permian), Colina Limestone (Lower Permian), and Earp Formation (Lower Permian and Upper Pennsylvanian), undifferentiated. Epitaph Dolomite is a dark- to light-gray slightly cherty dolomite, limestone, marl, siltstone, and gypsum, 120-280 meters thick. Colina Limestone is a medium gray, thick-bedded, sparsely cherty, and sparsely fossiliferous limestone 120-280 meters thick. Earp Formation is a pale-red siltstone, mudstone, shale, and limestone, 120-240 meters thick.
- **IPh** — Horquilla Limestone (Upper and Middle Pennsylvanian)—Light-pinkish-gray, thick- to thin-bedded, cherty, fossiliferous limestone and intercalated pale-brown to pale-reddish-gray siltstone that increases in abundance upward. Typically 300-490 meters thick.
- **MDs** — SEDIMENTARY ROCKS (MISSISSIPPIAN AND DEVONIAN)—Consists mainly of Escabrosa Limestone (Mississippian)—locally (Armstrong and Silberman, 1974) called Escabrosa Group—and Martin Formation (Upper Devonian), undifferentiated. In part of the Chiricahua Mountains also includes Paradise Formation (Upper Mississippian) and Portal Formation of Sabins, 1957a (Upper Devonian). In the Little Dragoon Mountains and some adjacent hills also includes Black Prince Limestone, whose fauna and correlation show strongest affinities with Mississippian rocks but which may include some Pennsylvanian rocks. Escabrosa Limestone is a medium-gray, massive to thick-bedded, commonly crinoidal, cherty, fossiliferous limestone 90-310 meters thick. Martin Formation is thick- to thin-bedded, gray to brown dolomite, gray sparsely fossiliferous, and some siltstone and sandstone, 90-120 meters thick. Paradise Formation is a brown, fossiliferous, shaly limestone. Portal Formation is a black shale and limestone 6-105 meters thick. Black Prince Limestone is pinkish-gray limestone with a basal shale and chert conglomerate, as much as 52 meters thick.
- **OCs** — SEDIMENTARY ROCKS (LOWER ORDOVICIAN TO MIDDLE CAMBRIAN):—El Paso Limestone (Lower Ordovician and Upper Cambrian), Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartz (Middle Cambrian), undifferentiated.—El Paso Limestone is a gray, thin-bedded cherty limestone and dolomite 90 meters to about 220 meters thick. Abrigo Formation is a brown, thin-bedded fossiliferous limestone, sandstone, quartzite, and shale, 210-240 meters thick. Bolsa Quartzite is a brown to white or purplish-gray, thick-bedded, coarse-grained quartzite and sandstone with a basal conglomerate, 90-180 meters thick. To the east, equivalents of part of the Abrigo Formation and Bolsa Quartzite are known as the Coronado Sandstone.
- **Cs** — Sedimentary rocks (Upper and Middle Cambrian)—Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartzite (Middle Cambrian), undifferentiated.
- **Yg** — GRANITOID ROCKS (PRECAMBRIAN Y):—Mainly granodiorite and quartz monsonite, unfoliated to foliated, in part metamorphosed. Generally in stocks, which ahve been little studied.
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CONTACT—Dotted where concealed.

MARKER HORIZON—Dotted where concealed.

DIKES—Showing dip.

70 — FAULTS—Showing dip. Dotted where concealed or intruded; ball and bar on downthrown side.

45 — Normal

45 — Reverse

Strike-slip—Arrow couple shows relative displacement. Single arrow shows movement of active block.

Major thrust fault—Sawteeth on upper plate.

Thrust fault—Sawteeth on upper plate.

Anticline.

Syncline.

30 — Inclined strike and dip of beds.

EXOTIC-BLOCK BRECCIA—Rock contains chip or block inclusions of rock different from those of host or other blocks nearby. Typically of volcanic-tectonic or sedimentary-tectonic origin; excludes Tertiary megabreccia deposits.

(QTgu) 157 — Site of well or generalized site of several wells, showing unit penetrated, if known, and depth of well, in feet. 100 feet equals 30.5 meters.

72_x — COLLECTION SITE—Radiogenically dated rock showing age in millions of years. Query before symbol where precise location uncertain.

Roads and Highways

Dry wash

Southern Pacific Railroad

Government Reservation Boundary

Aqueduct

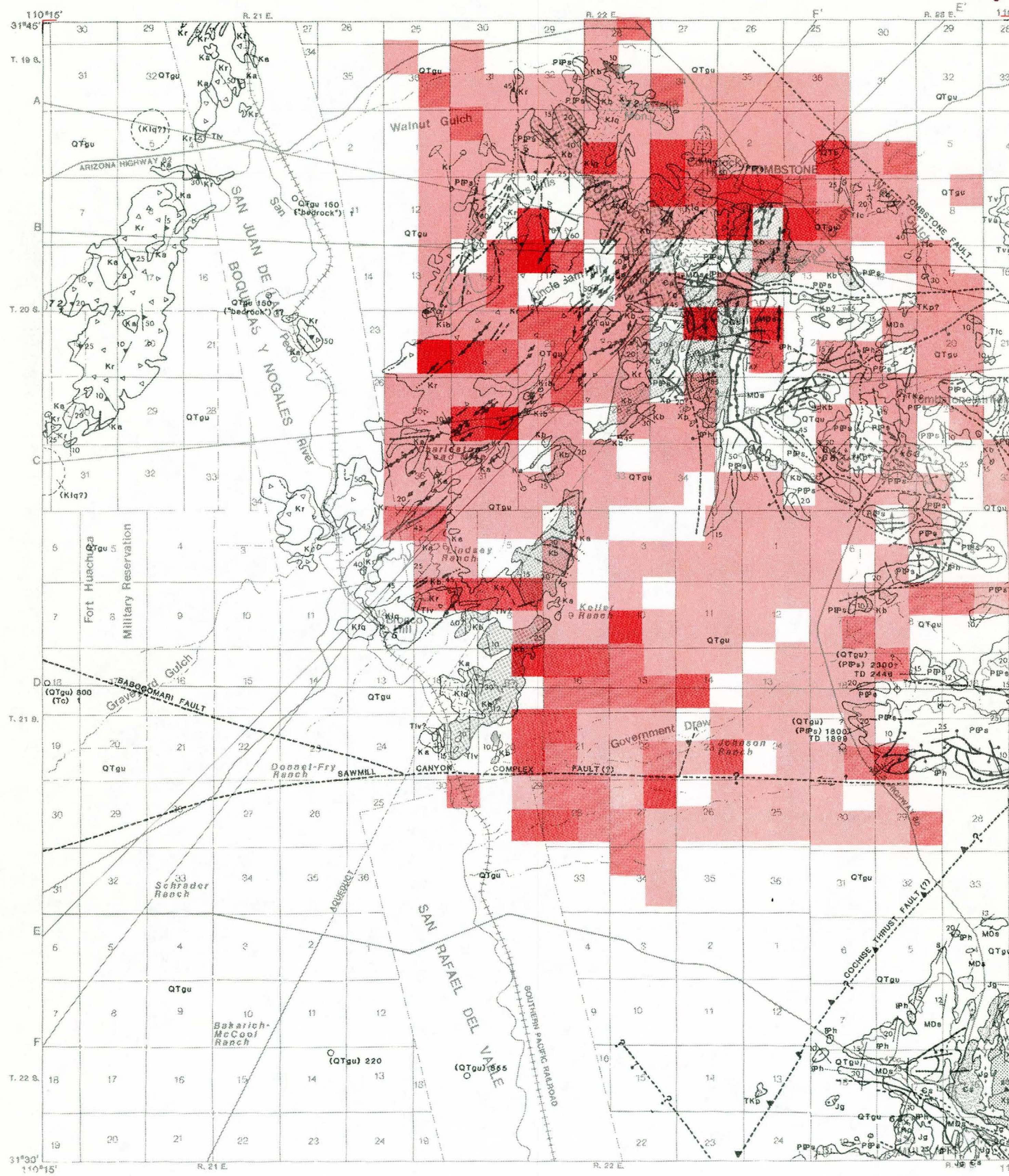
A———A' Cross section line

≤ 5 ppm

5.1 - 9 ppm

9.1 - 14 ppm

≥ 14 ppm



Tombstone Development Company, Inc.
Tombstone, Arizona

1 0 1 2 3 Miles

N

Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

Figure 15. Distribution pattern of molybdenum in mesquite trees (in red), from Newell, R.A., 1973.

By James A. Briscoe
James A. Briscoe and Associates
Tucson, Arizona

Explanation

Geology

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CONTACT—Dotted where concealed.

MARKER HORIZON—Dotted where concealed.

DIKES—Showing dip.

FAULTS—Showing dip. Dotted where concealed or intruded; ball and bar on downthrown side. (70)

Normal (45)

Reverse (45)

Strike-slip—Arrow couple shows relative displacement. Single arrow shows movement of active block.

Major thrust fault—Sawteeth on upper plate.

Thrust fault—Sawteeth on upper plate.

Anticline.

Syncline.

(30) Inclined strike and dip of beds.

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Roads and Highways

Dry wash

Southern Pacific Railroad

Government Reservation Boundary

Aqueduct

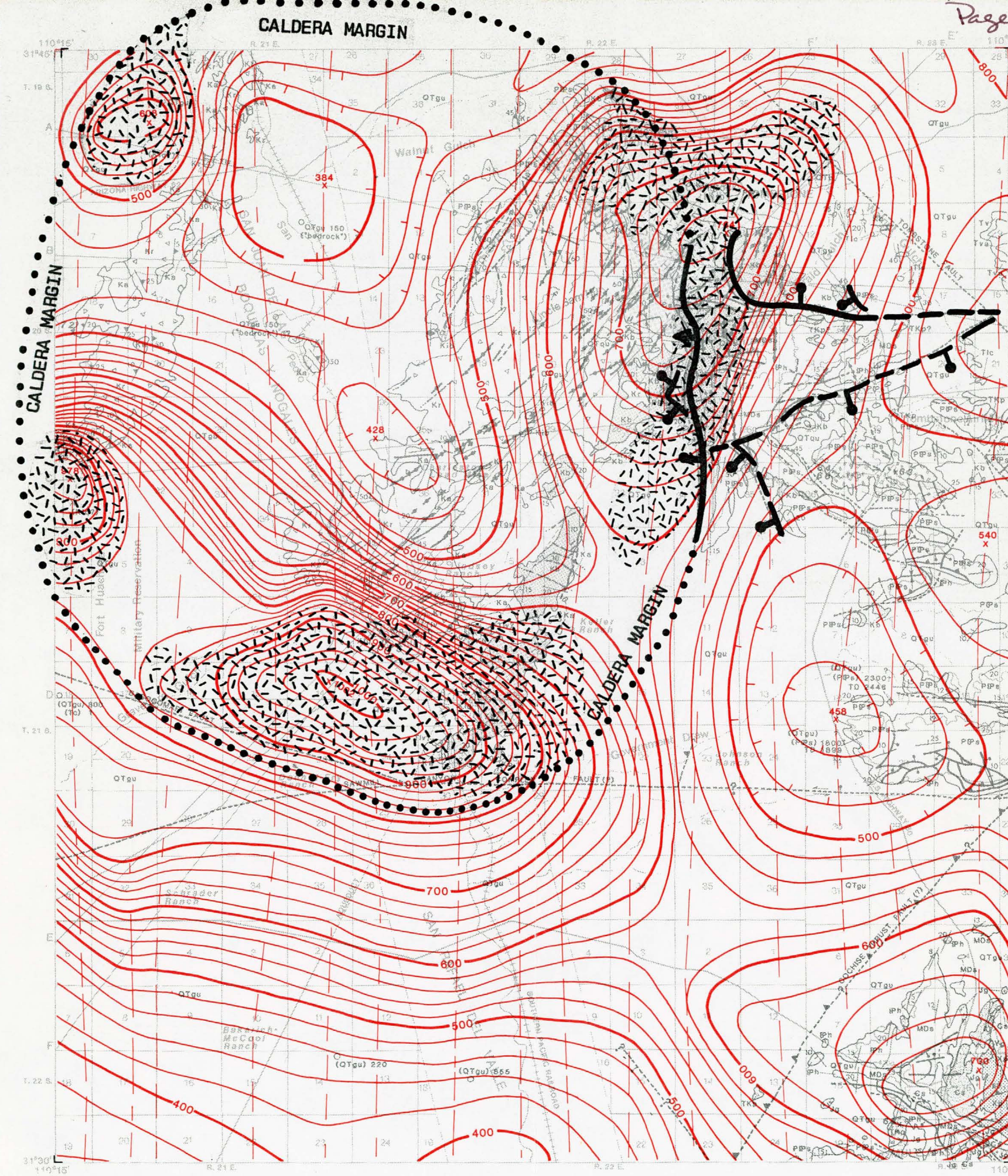
A———A' Cross section line

Flight line

Index contour line

Contour line

Contour interval: 25 gammas



Tombstone Development Company, Inc.
Tombstone, Arizona

Scale: 1 0 1 2 3 Miles

N

Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

By James A. Briscoe
James A. Briscoe and Associates
Tucson, Arizona

Figure 16. Aeromagnetic map of the Tombstone area.

From *Residual Aeromagnetic map of Southeastern Arizona*, Sauck, W.A., and Sumner, J.S., 1970. From Andreason, G.E., Mitchell, C.M., and Tyson, N.S., 1965

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Explanation

Geology

- **QTgu** — OLDER OR UNDIFFERENTIATED SURFICAL DEPOSITS (HOLOCENE TO OLIGOCENE):—Gravel, sand, and silt (Pleistocene and Pliocene—Mainly alluvium of basins; includes some colluvium and landslide deposits. Generally light-pinkish gray, weakly indurated, and with poorly rounded clasts; locally well indurated. Thickness several meters to hundreds of meters.
- **QTb** — Basalt (Pleistocene to Pliocene)—Lava flows, pyroclastic rocks, and some intercalated gravel. Thickness several meters to a few hundred meters in most places. Radiometrically dated at 0.25, 1.0, and 3.2 m.y. old
- **Tva** — Extensive andesite and dacite (Miocene and Upper Oligocene)—Lava flows, pyroclastic rocks, some intercalated epiclastic rocks, and dikes. Mostly gray, fine-grained, porphyritic rocks; includes some very coarse feldspar porphyry andesite (Turkey track porphyry, an informal term of Cooper, 1961). Thickness mostly several meters to several tens of meters. Dated at 24, 25, 27, 33, and 39 m.y.
- **Tv** — Extrusive rhyolite and rhyodacite (Miocene and Upper Oligocene—Lava flows, welded tuff, pyroclastic rocks, and some intercalated epiclastic rocks. Light-gray to grayish-pink, vitric to fine-grained, porphyritic. Commonly a few tens to a few thousand of meters thick. Dated at 23, 24, 25, 26, 26, 26, and 27 m.y. An additional date of 47 m.y., if substantiated, may indicate the presence of Eocene rocks in the lower member of the S O Volcanics of Cochise Co.
- **Tlc** — Lower conglomerate, gravel, and sand (Oligocene and Eocene?)—Alluvium; commonly grayish-red deposits of small, well rounded, nonvolcanic clasts. Mostly several meters to a few tens of meters thick.
- **Tlv** — UPPER CORDILLERAN (LARAMIDE) IGNEOUS ROCKS (LOWER PALEOCENE):—Lower volcanic rocks—Rhyolite to andesite lava flows, pyroclastic rocks, and some intercalated epiclastic rocks. Dated at 57 m.y. Possibly younger age to east.
- **TKp** — MAIN CORDILLERAN (LARAMIDE) IGNEOUS ROCKS:—Porphyritic and aplitic intrusive rocks (Paleocene and Upper Cretaceous)—Mostly latitic porphyry to dacitic porphyry in small stocks and plugs and aplitic bodies not associated with other granitoid stocks. Dated at 61, 63, 63, 64, and 65 m.y.
- **Kib** — Fluidized intrusive breccia—exact age unknown, but penetrates, and thus younger than Uncle Sam porphyry.
- **Kr** — Rhyodacite tuff and welded tuff.—Includes parts of Salero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Red Bay Rhyolite, Cat Mountain Rhyolite of Brown (1939) and Uncle Sam Prophyry. Includes local intrusive bodies and locally contains fragments of exotic rocks. Thickness commonly several tens of meters to several hundreds of meters. Dated at 66(?), 70, 72, 73, and 73 m.y. The Uncle Sam, in the Tombstone area, is dated 72 m.y.
- **Ka** — Andesitic to dacitic volcanic breccia.—Includes parts of Solero Formation, Sugarloaf Quartz Latite, and Bronco Volcanics, and all of Demetrie Volcanics and Silverbell Formation of Courtright (1958). Commonly contains large blocks of exotic rocks and locally includes some sedimentary rocks and intrusive rocks. Several tens of meters to several hundreds of meters thick in most places.
- **Klg** — Lower quartz monzonite and graodiorite—Includes some quartz diorite; appears in small stocks. Locally associated with mineralization. Dated at 70, 71, 72, 73, 74, 74, 74, and 76 m.y. The Schiefflin granodorite at Tombstone is 72 m.y.
- **Kb** — BISBEE FORMATION OR GROUP, UNDIFFERENTIATED (LOWER CRETACEOUS):—Upper part of Bisbee Formation or Group, undifferentiated, and related rocks.—Includes upper part of Bisbee Formation, Mural Limestone, Morita, Cintura, Willow Canyon, Apache Canyon, Shellenberger Canyon and Turney Ranch Formations (not listed in stratigraphic sequence) of the Bisbee Group, Amole Arkose of Bryant and Kinnison (1954), and Angelic Arkose. Consists of brownish- to reddish-arkose, gray siltstone, sandstone, conglomerate, and some fossiliferous gray limestone. Commonly several hundred meters thick
- **Jg** — GRANITE AND QUARTZ MONZONITE (JURASSIC)—Stocks of pinkish-gray coarse-grained rock. Locally associated with mineralization. Dated at 140, 148, 149, 149, 150, 153, 160, 161, 167, 178, 185 m.y.
- **PIPs** — Sedimentary rocks (Lower Permian and Upper Pennsylvanian)—consists of Epitaph Dolomite (Lower Permian), Colina Limestone (Lower Permian), and Earp Formation (Lower Permian and Upper Pennsylvanian), undifferentiated. Epitaph Dolomite is a dark- to light-gray slightly cherty dolomite, limestone, marl, siltstone, and gypsum, 120-280 meters thick. Colina Limestone is a medium gray, thick-bedded, sparsely cherty, and sparsely fossiliferous limestone 120-280 meters thick. Earp Formation is a pale-red siltstone, mudstone, shale, and limestone, 120-240 meters thick.
- **IPh** — Horquilla Limestone (Upper and Middle Pennsylvanian)—Light-pinkish-gray, thick- to thin-bedded, cherty, fossiliferous limestone and intercalated pale-brown to pale-reddish-gray siltstone that increases in abundance upward. Typically 300-490 meters thick.
- **MDs** — SEDIMENTARY ROCKS (MISSISSIPPIAN AND DEVONIAN)—Consists mainly of Escabrosa Limestone (Mississippian)—locally (Armstrong and Silberman, 1974) called Escabrosa Group—and Martin Formation (Upper Devonian), undifferentiated. In part of the Chiricahua Mountains also includes Paradise Formation (Upper Mississippian) and Portal Formation of Sabins, 1957a (Upper Devonian). In the Little Dragoon Mountains and some adjacent hills also includes Black Prince Limestone, whose fauna and correlation show strongest affinities with Mississippian rocks but which may include some Pennsylvanian rocks. Escabrosa Limestone is a medium-gray, massive to thick-bedded, commonly crinoidal, cherty, fossiliferous limestone 90-310 meters thick. Martin Formation is thick- to thin-bedded, gray to brown dolomite, gray sparsely fossiliferous, and some siltstone and sandstone, 90-120 meters thick. Paradise Formation is a brown, fossiliferous, shaly limestone. Portal Formation is a black shale and limestone 6-105 meters thick. Black Prince Limestone is pinkish-gray limestone with a basal shale and chert conglomerate, as much as 52 meters thick.
- **O€s** — SEDIMENTARY ROCKS (LOWER ORDOVICIAN TO MIDDLE CAMBRIAN):—El Paso Limestone (Lower Ordovician and Upper Cambrian), Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartz (Middle Cambrian), undifferentiated.—El Paso Limestone is a gray, thin-bedded cherty limestone and dolomite 90 meters to about 220 meters thick. Abrigo Formation is a brown, thin-bedded fossiliferous limestone, sandstone, quartzite, and shale, 210-240 meters thick. Bolsa Quartzite is a brown to white or purplish-gray, thick-bedded, coarse-grained quartzite and sandstone with a basal conglomerate, 90-180 meters thick. To the east, equivalents of part of the Abrigo Formation and Bolsa Quartzite are known as the Coronado Sandstone.
- **€s** — Sedimentary rocks (Upper and Middle Cambrian)—Abrigo Formation (Upper and Middle Cambrian), and Bolsa Quartzite (Middle Cambrian), undifferentiated.
- **Yg** — GRANITOID ROCKS (PRECAMBRIAN Y):—Mainly granodiorite and quartz monsonite, unfoliated to foliated, in part metamorphosed. Generally in stocks, which ahve been little studied.
- **Xp** — PINAL SCHIST (PRECAMBRIAN X)—Chlorite schist, phyllite, and some metavolcanic rocks, metavolcanic rocks, metaquartzite, metaquartzite conglomerate, and gneiss. One metavolcanic rock dated at 1715 m.y.

CONTACT—Dotted where concealed.

MARKER HORIZON—Dotted where concealed.

DIKES—Showing dip.

FAULTS—Showing dip. Dotted where concealed or intruded; ball and bar on downthrown side. (70)

- Normal (45)
- Reverse (45)
- Strike-slip—Arrow couple shows relative displacement. Single arrow shows movement of active block.

Major thrust fault—Sawteeth on upper plate.

Thrust fault—Sawteeth on upper plate.

Anticline.

Syncline.

(30) Inclined strike and dip of beds.

EXOTIC-BLOCK BRECCIA—Rock contains chip or block inclusions of rock different from those of host or other blocks nearby. Typically of volcanic-tectonic or sedimentary-tectonic origin; excludes Tertiary megabreccia deposits.

(QTgu) 157 — Site of well or generalized site of several wells, showing unit penetrated, if known, and depth of well, in feet. 100 feet equals 30.5 meters.

72x — COLLECTION SITE—Radiogenically dated rock showing age in millions of years. Query before symbol where precise location uncertain.

Roads and Highways

Dry wash

Southern Pacific Railroad

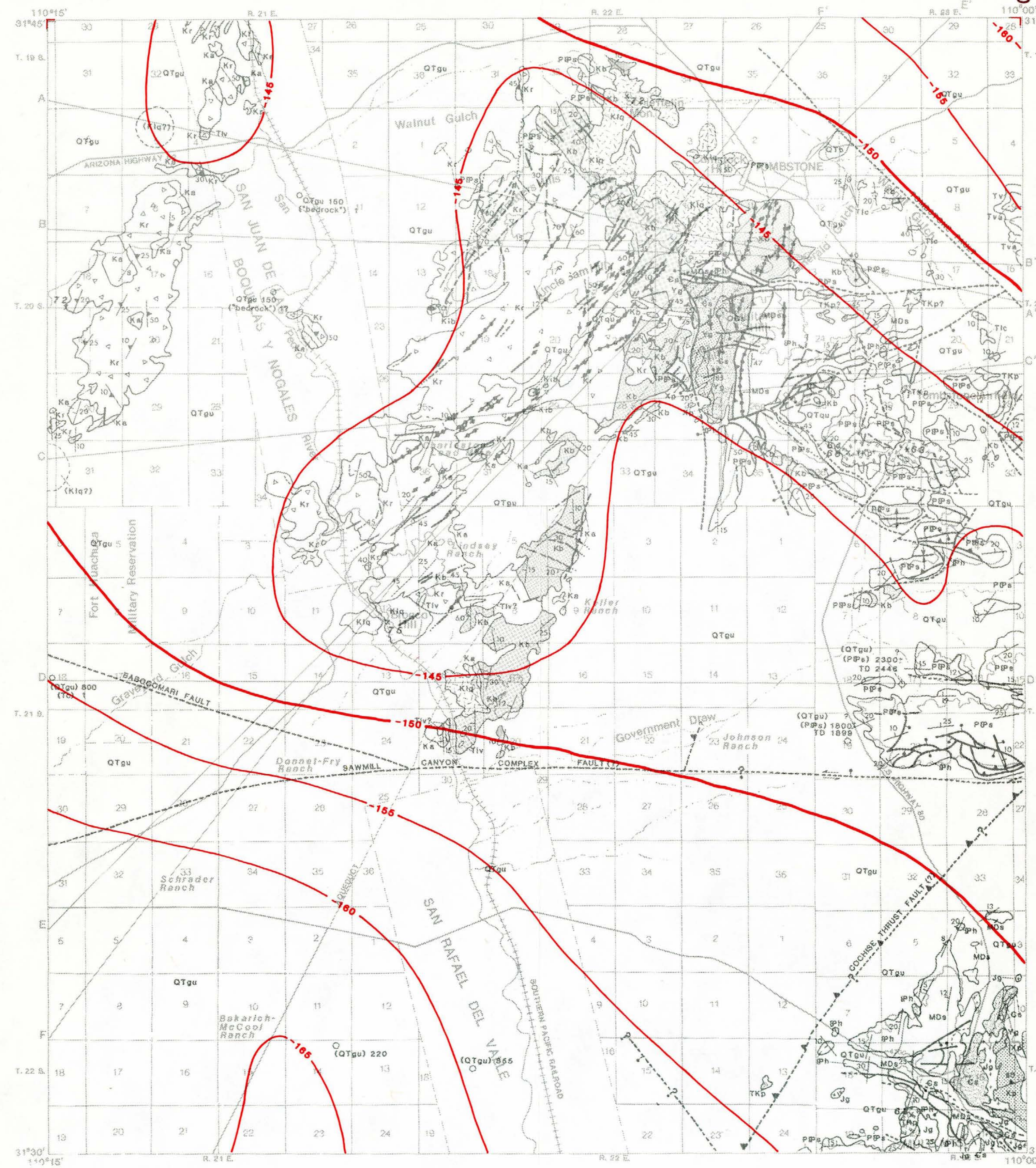
Government Reservation Boundary

Aqueduct

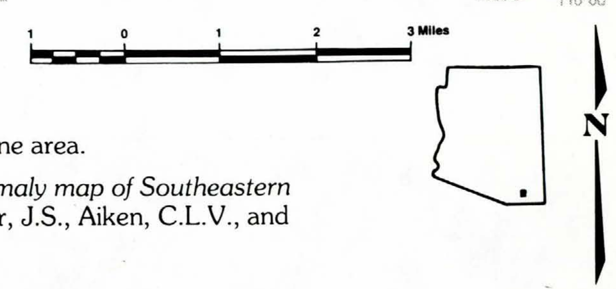
A———A' Cross section line

-150 Gravity contour line

Contour interval: 5 milligals



Tombstone Development Company, Inc.
Tombstone, Arizona



Geology adopted from Drewes, Harold, 1980, and Newell, R.A., 1973.

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Figure 17. Gravity map of the Tombstone area.

From *Bouguer Gravity Anomaly map of Southeastern Arizona,* West, E.E., Sumner, J.S., Aiken, C.L.V., and Conley, J.N., 1973.

SUMMARY OF GEOLOGICALLY "INDICATED" ORE IN THE TOMBSTONE BASIN
BETWEEN 0 - 1,000 FEET BELOW CURRENT SURFACE

	TONS OF ORE	AVERAGE GRADE OF GOLD	TOTAL OUNCES OF OF GOLD	TOTAL DOLLAR VALUE AT $400 GOLD	AVERAGE GRADE OF SILVER	TOTAL OUNCES OF OF SILVER	TOTAL DOLLAR VALUE AT $10 SILVER	AVERAGE GRADE OF COPPER	TOTAL POUNDS OF OF COPPER	TOTAL DOLLAR VALUE AT $1 COPPER	AVERAGE GRADE OF LEAD	TOTAL POUNDS OF LEAD	TOTAL DOLLAR VALUE AT $.50 LEAD	AVERAGE GRADE OF ZINC	TOTAL POUNDS OF ZINC	TOTAL DOLLAR VALUE AT $.40 ZINC	GROSS METAL VALUE (GMV) IN $	AVERAGE VALUE PER TON
LOW GRADE OPEN PIT ORE																		
1. TRANQUILITY-CONTENTION GRAND CENTRAL AREA OPEN PIT (CONSERVATIVE EST.)	52840000	.021	1109640	443856000	1.65	87186000	871860000	0	0	0	0	0	0	0	0	0	1315716000	24.9
TOTAL LOW GRADE	52840000	.021	1109640	443856000	1.65	87186000	871860000	0	0	0	0	0	0	0	0	0	1315716000	24.9
HIGH GRADE UNDERGROUND ORE																		
2. EMPIRE ANTICLINE & ITS PROJECTIONS	1570000	.21	329700	131880000	25.89	40647300	406473000	2.01	3155700	3155700	51.91	81498700	40749350	.84	1318800	527520	582785570	371.201
3. ROLLS & FISSURES SOUTHWEST OF AXIAL PLANE OF EMPIRE ANTICLINE	2650000	.21	556500	222600000	25.89	68608500	686085000	2.01	5326500	5326500	51.91	137561500	68780750	.84	2226000	890400	983682650	371.201
4. TOMBSTONE EXTENSION BLOCK = EMPIRE ANTICLINE + ROLLS & FISSURES	4220000	.21	886200	354480000	25.89	109255800	1092558000	2.01	8482200	8482200	51.91	219060200	109530100	.84	3544800	1417920	1566468220	371.201
TOTAL HIGH GRADE ORE	8440000		1772400	708960000		218511600	2185116000		16964400	16964400		438120400	219060200		7089600	2835840	3132936440	371.201
GRAND TOTAL GROSS CONTAINED METAL IN THE TOMBSTONE BASIN BETWEEN 0-1,000 FT. BELOW CURRENT SURFACE			2882040	1152816000		305697600	3056976000		16964400	16964400		438120400	219060200		7089600	2835840	4448652440	

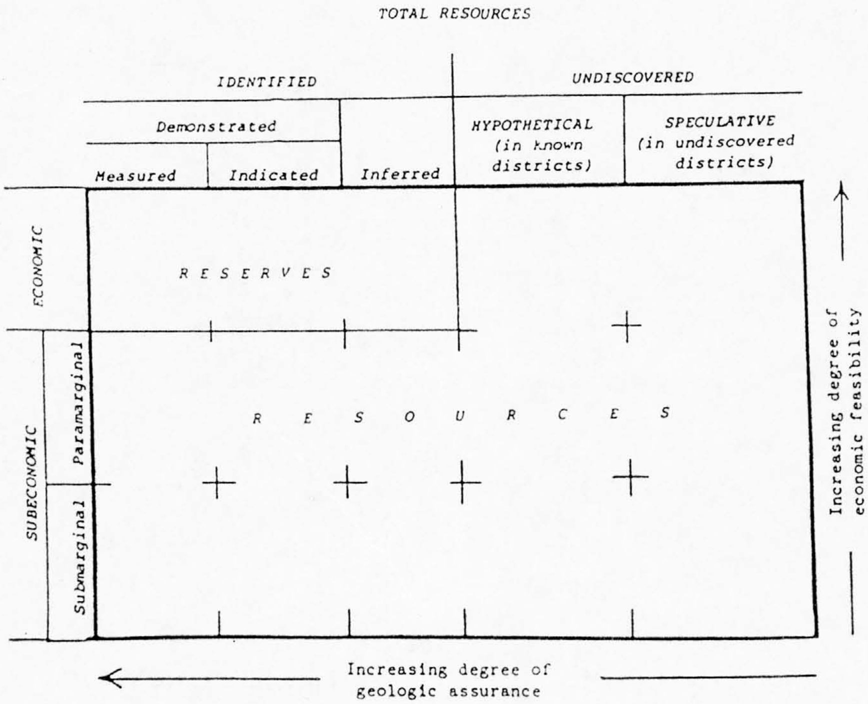

FIGURE 4.–Classification of Mineral Resources. From U.S. Bureau of Mines and U.S. Geological Survey (1967a, p. A2).

Measured: Material whose quality and quantity have been estimated, within a margin of error of less than 20 percent, from analyses and measurements from closely spaced and geologically well-known sample sites.

Indicated: Material whose quality and quantity have been estimated partly from sample analyses and measurements and partly from reasonable geologic projections.

Demonstrated: A collective term for the sum of materials in both measured and indicated resources.

Inferred: Material in unexplored but identified deposits whose quality and size have been estimated on the basis of geologic evidence and projection.

Identified-subeconomic resources: Known deposits not now economically minable.

Paramarginal: The portion of subeconomic resources that (a) is almost economically producible or (b) is not commercially available solely because of legal or political circumstances.

Submarginal: The portion of subeconomic resources which would require a substantially higher price (more than 1.5 times the price at the time of determination) or a major cost-reducing advance in technology to become economic.

Hypothetical resources: Undiscovered materials that may reasonably be expected to exist in a known mining district under known geologic conditions. Exploration that confirms their existence and reveals quantity and quality will permit their reclassification as a reserve or identified-subeconomic resource.

Speculative resources: Undiscovered materials that may occur either in known types of deposits in a favorable geologic setting where no dicoveries have been made or in as-yet-unknown types of deposits that remain to be recognized. Exploration that confirms their existence and reveals quantity and quality will permit their reclassification as reserves or identified-subeconomic resources.

DEFINITION OF ORE RESERVE TERMS

as used by James A. Briscoe & Associates, Inc.

Measured	Identified resources for which tonnage is computed from dimensions revealed in outcrops, trenches, workings and drill holes, and for which grade is computed from the results of detailed sampling. The sites for inspection, sampling and measurement are spaced so closely, and the geologic character is so well defined that size, shape and mineral content are well established. The computed tonnage and grade are judged to be accurate within limits which are stated, and no such limit is judged to be different from the computed tonnage or grade by more than 20 percent.
Indicated	Identified resources for which tonnage and grade are computed partly from specific measurements, samples or production data, and partly from projection for a reasonable distance on the basis of geologic evidence. The sites available for inspection, measurement and sampling are too widely or otherwise inappropriately spaced to permit the mineral bodies to be outlined completely or the grade to be established throughout.
Inferred	Identified resources for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit, and for which there are few, if any, samples or measurements. Continuity or repetition is assumed on the basis of geologic evidence, which may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. Estimates of inferred reserves or resources should include a statement of the specific limits within which the inferred material may lie.
Hypothetical	Identified resources for which tonnage and grade are poorly known. The sites available for inspection, measurement and sampling are inaccessible or have not been thoroughly examined in the field. Generally, all of the parameters necessary for calculating reserves (i.e. volume and grade) are based on geologic projections or assumptions.

U.S. Geological Survey, 1975, Mineral Resource Perspectives 1975: U.S. Geol. Survey Prof. Paper 940.

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1982-83 Notes on
TEI Ore Reserves, Prod.

Tombstone, Az 1982-83
Notes on TEI - Ore Reserves,
Production etc.

6,250.0

\$7.55 / Ton to mine & process

Avg. grade from July report

Avg 0.023 Au 53 = 0.012 × 500 = 6
1.8 46 = 0.83 × \$12 = 9.93
\$15.93 / T

15.93 − \$7.55 = \$8.38 × 3,000 = \$25,140 / day

× 5 d/w × 4.33 w/mo = \$544,281 / mo

× 12 mos = 6,531,372 − \$3 mm invested

= 3,531,372 × 40% = 1,412,548.80

COST FIGURES ON MINING AND PROCESSING TOMBSTONE ORES

FROM CHARLES ESCAPULE, OCTOBER, 1982

1. In State of Maine

5.82 oz. Ag in gob & 0.029 oz. Au

or $58.20 Ag + $11.60 Au = $69.80

In average rock around veins it runs

0.22 oz Ag & 0.017 oz. Au

or $ 2.20 Ag + $ 6.80 Au = $ 9.00

At T.E.I., it costs $.62/ton to mine $ $6.80 to process for a total cost of $7.42 + stripping of 0.21 tons x .62 = 7.42 + .13 = $7.55

Concluded:

You could mine $10.00 rock profitably.

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CALCULATION OF TOTAL TONNAGE OF

TOMBSTONE BASIN WORKINGS

--NOT INCLUDING STOPES--

Total footage all headings is 156,160

Assume headings were 7' x 6' - a generous figure - could have been more like 6' x 5', but higher figure will make up for unmapped headings.

7' x 6' x 156,160' = 6,558,720 ft - 12 f /ton = 546,560

The recorded tonnage mined from 1908 to 1934 was 608,345 tons - close to the calculated headdings - tonnage.

Also, the 71 Mineral Ltd. heap was ~ 750,000 tons -
Assume the development tonnage was 1/2 mined tonnage - 546,560

Prepared by James A. Briscoe

James A. Briscoe & Associates, Inc.
Tucson, Arizona

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SUMMARY OF POTENTIAL OPEN PIT ORE IN

HEAD CENTER, CONTENTION AND GRAND CENTRAL AREA

Conservative - ore to 400 feet below the surface

32.9 million tons

average	0.021 Au X $400/oz. =	$ 8.40
	1.65 Ag X $ 10/oz. =	16.50
		$24.90

or

690,000 oz. Au X $400 =	$276,360,000
54,285,000 oz. Ag X $ 10 =	$542,850,000
	$819,210,000

Optimistic - ore to 530 feet below survace - approximately the Contention #6 level.

57 million tons
(same average grade as above)

or

1.197 mm oz. Au X $400 =	$ 478,000,000
94.05 mm oz. Ag X $ 10 =	$ 940,050,000
	$1,418,050,000

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ESTIMATED ORE RESERVES ALONG THE CONTENTION DIKE

FROM HEAD CENTER TO GRAND CENTRAL

--3,300'--

Estimated from Plate VIII - Butler & Wilson

I 0 to 2 level

570' wide X 150' deep = 85,500 sq. ft.

II 2 to 3 level

500' wide X 100' deep = 50,000 sq. ft.

III 3 to 4 level

400' wide X 100' deep = 40,000 sq. ft.

IV 4 to 5 level

250' wide X 100' deep = 25,000 sq. ft

V 5 to 6 level

160' wide X 90' deep = 7,200 sq. ft.

207,700

207,700 X 3,300' = 685,410,000 - 12 f /t = 57 mm tons

STRIP RATIO

1. 1/2 (240' X 240') = 28,800 sq.ft.

2. 1/2 (180' x 160') = 14,400 sq.ft.

43,200

43,200 X 3,300 = 142,560,000 f - 12 f /Ton
= 11,880,000 waste/ton

Waste/Ore ratio = $\frac{11.88}{57.00}$ = 0.21 Waste/Ton

Assume ore value of $20/ton - recoverable

57,000,000 Tons X $20/Ton = $1,140,000,000

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CONSERVATIVE ORE RESERVE ESTIMATE

Assume disseminated mineralization average at $25/Ton extends 100' out from centers of dikes, along 3,300' length

1. 160' X 140' = 22,400 sq. ft. X 3,300 = 73,920,000

   - 12 = 6,160,000 Tons X $25 = $154,000,000

2. 230' x 150' = 34,500 sq. ft. X 3,300 = 113,850,000

   - 12 = 9,487,500 Tons X $25 = $281,875,000

3. 1/2 h (a+b) = 1/2 200 (300 +110) = 41,000 sq. ft.

   X 3,300 = 135,300,000 f - 12 = 11,300,000 tons

   X $25 = $281,875,000

4. 1/2 bh = 1/2 (160 X 270) = 21,600 sq. ft.

   X 3,300 = 71,280,000 f - 12 = 5,940,000 Tons

   X $25 = $148,500,000

TOTALS

119,500 sq.ft. X 3,300' = 394,350,000 - 12 f /T = 32,862,500 T

X $25/Ton = $821,562,500

Assume gross of $3.858/Ton, as per fall of 1982,

then

32,862,500 Tons X $3.858 = $126,783,520
(gross before Briscoe)

Assume 10% available for distribution,

then

$12,600,000 X 40% = $5,040,000

T.D.C. Royalty

32,862,500 million tons X $0.602 = $19,783,225

James A. Briscoe & Associates, Inc.
Tucson, Arizona

Prepared by James A. Briscoe

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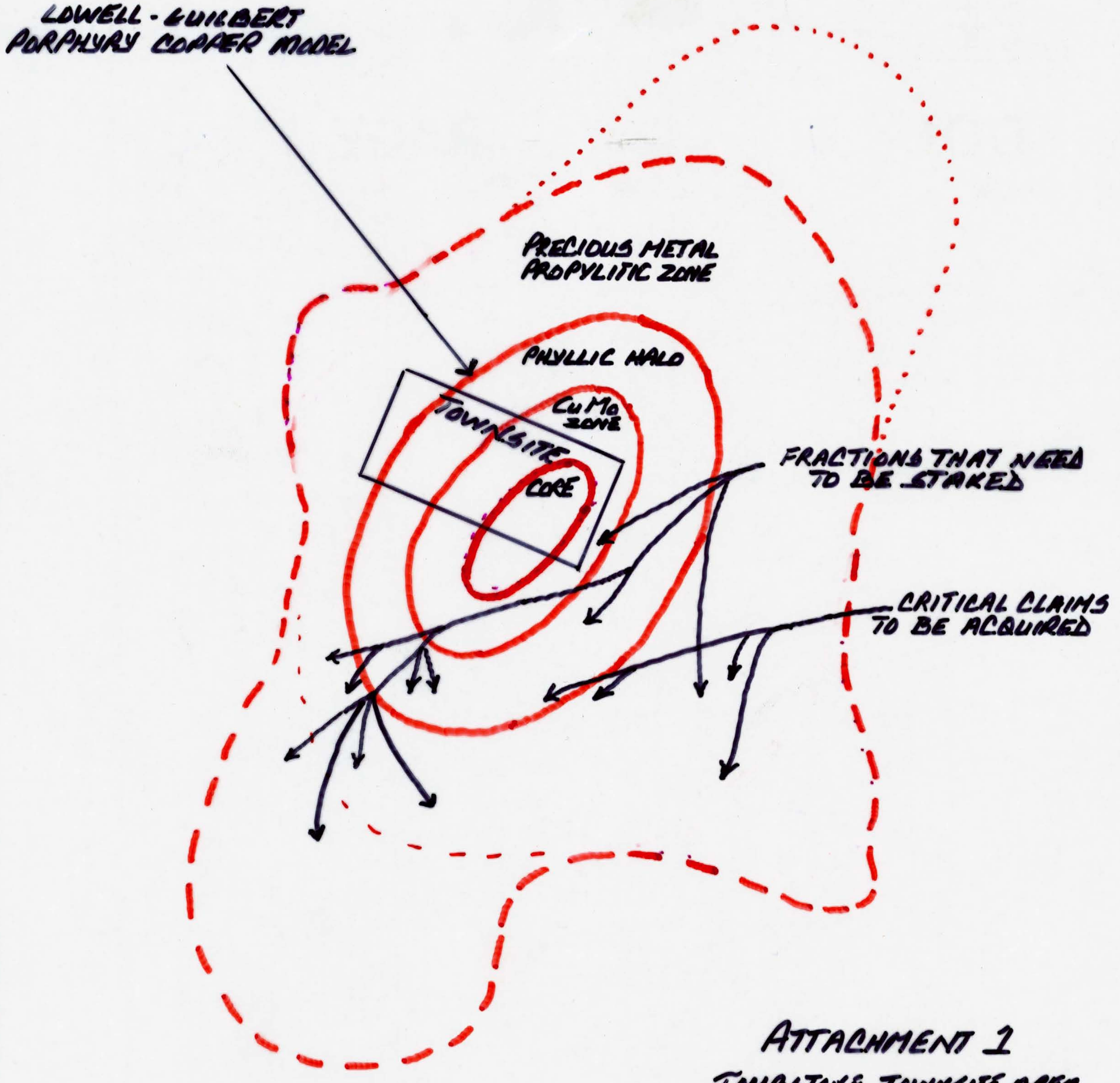
Show & Tell TMD
overlays (1983?)

OUT

FILE NUMBER OR NAME OUT	DATE	OUT TO	FILE NUMBER OR NAME OUT	DATE	OUT TO	FILE NUMBER OR NAME OUT	DATE
JMG Model TS	3/27/92	JAB					

RBT NESSb
303
988-7556

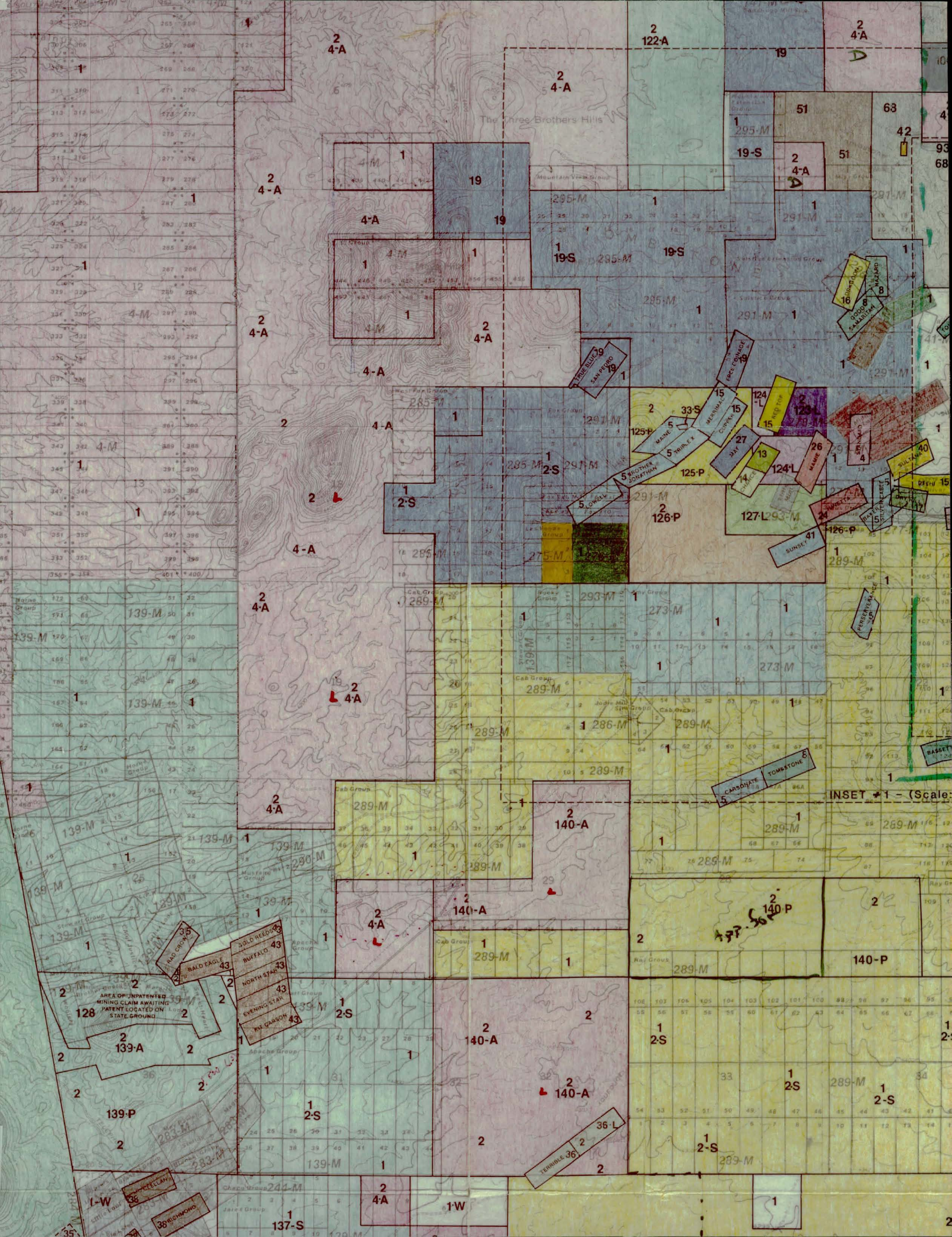
...ANGELES – LOGAN, OH. – McGREGOR, TX. U.S.A.



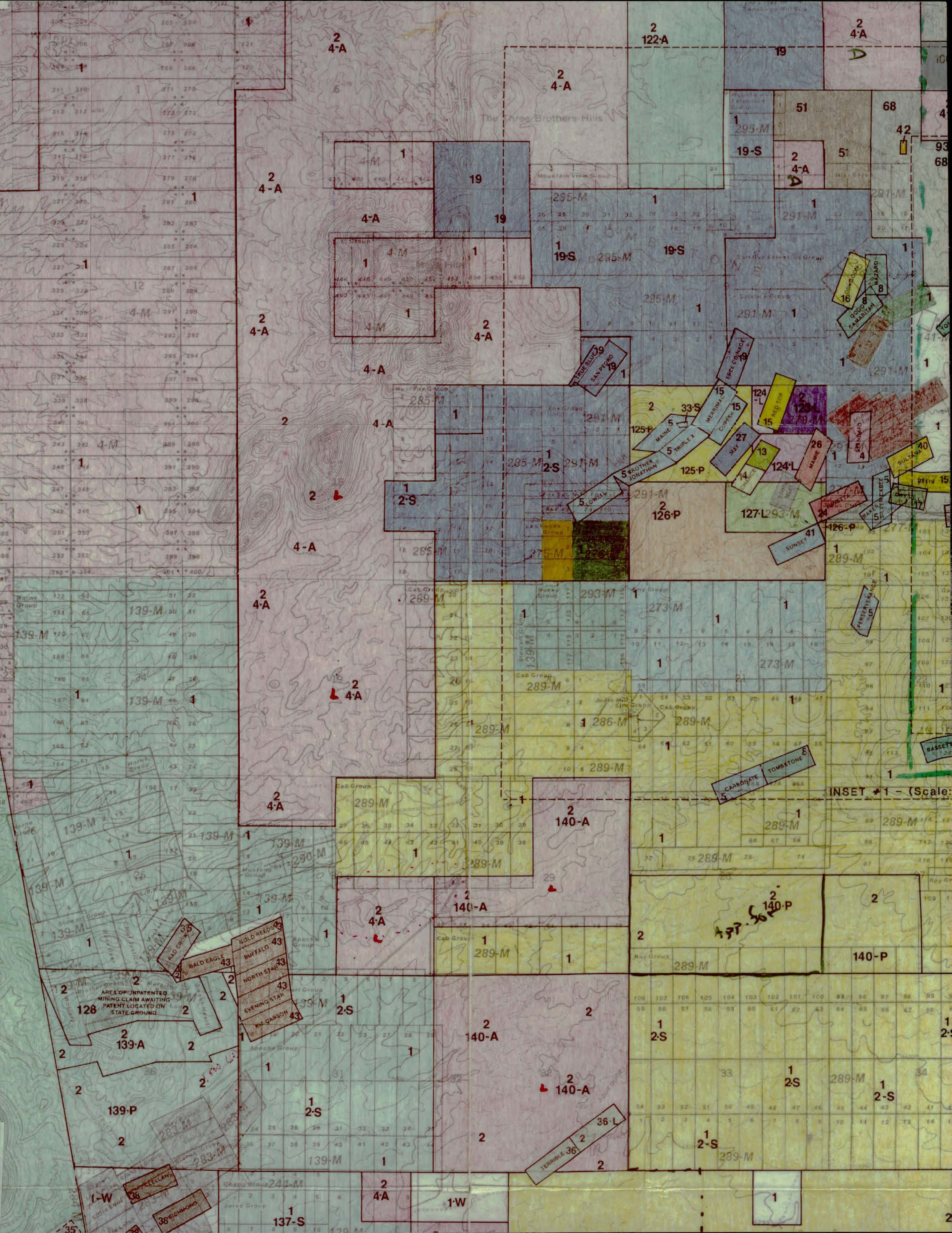
ATTACHMENT 1

TOMBSTONE TOWNSITE AREA
CLAIM MAP

SCALE 1" = 3,000'



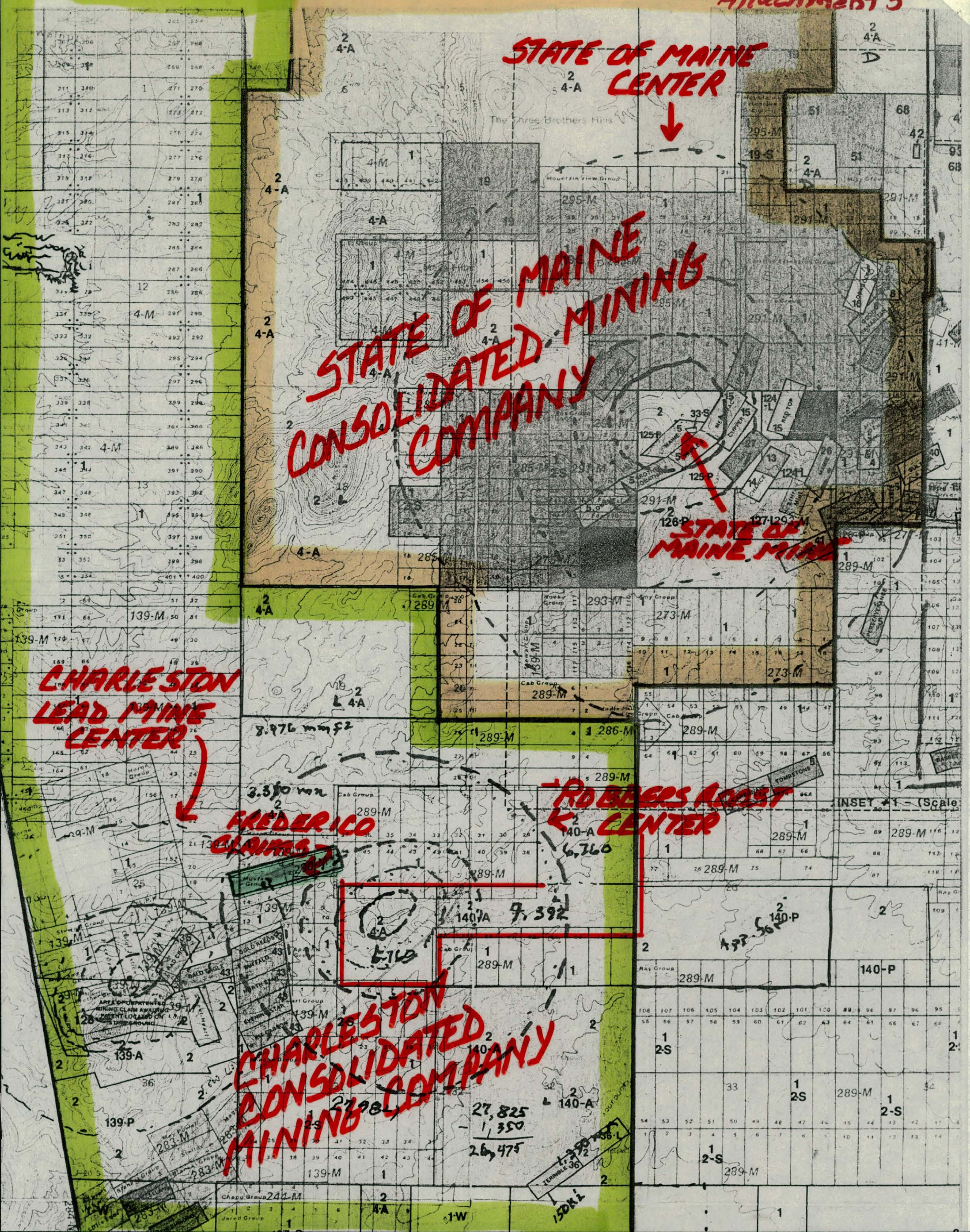
The Three Brothers Hills
Mountain View Group
INSET #1 - (Scale:
AREA OF UNPATENTED MINING CLAIM AWAITING PATENT LOCATED ON STATE GROUND
SAN PEDRO
TRUE BLUE
BROTHER JONATHAN
LOWELL
CARBONATE
TOMBSTONE
SUNSET
MAMIE
SOLO REEDS
BALD EAGLE
BUFFALO
NORTH STAR
EVENING STAR
KIT CARSON
TERRIBLE
Cab Group
Ray Group
Apache Group
Chaco Group
Jared Group



The Three Brothers Hills
INSET #1 - (Scale:
AREA OF UNPATENTED MINING CLAIM AWAITING PATENT LOCATED ON STATE GROUND
4-A
122-A
19-S
295-M
291-M
285-M
2-S
126-P
127-L
124-L
125-P
289-M
293-M
273-M
286-M
139-M
140-A
140-P
139-A
139-P
128
283-M
244-M
137-S
1-W
36-L
TRUE BLUE
SAN PEDRO
RED TOP
MAINE
TRIPLE X
BROTHER JONATHAN
LOWELL
MAMIE
SUNSET
CARBONATE
TOMBSTONE
PERSEVERANCE
GOOD SAMARITAN
HAZARD
SULTANA
BASSETT
GOLD REEDS
BALD EAGLE
BUFFALO
NORTH STAR
EVENING STAR
KIT CARSON
TERRIBLE
RICHMOND


The Three Brothers Hills
Mountain View Group
Cab Group
Ray Group
INSET #1 - (Scale:
AREA OF UNPATENTED MINING CLAIM AWAITING PATENT LOCATED IN STATE GROUND
SAN PEDRO
MAINE
TRIPLE X
RED TOP
SUNSET
CARBONATE
TOMBSTONE
GOLD REEF
BUFFALO
NORTH STAR
EVENING STAR
6,760
7,392
27,825
- 1,350
26,475

Attachment 3



Attachment 3