

# State Department of Geology and Mineral Industries

1069 State Office Building  
Portland 1, Oregon

## GYPSUM MINE ON THE SNAKE RIVER BELOW HUNTINGTON, Supplemental Report #1

Connor Creek District  
Baker County

### Foreword

In the fall of 1946 the writer's attention was directed to a showing of gypsum overlooked at the time the original examination of this property was made. A preliminary inspection of this occurrence revealed that contrary to the situation prevailing in other prospect workings previously visited, apparently substantial thicknesses of good appearing gypsum did exist here. Obscured outcrops necessitated the performance of some pick and shovel work before an appraisal of the occurrence could be made. With the assistance of a helper such an examination was made April 7, 1947. The following report includes a description of this occurrence together with comments on such data as have a bearing on the formation of the gypsum occurrences on the property as a whole.

Owner and location: It is probable that this occurrence is a part of the Certainteed Products Company's holdings as their Valley Prize placer is situated about where these claims occur as nearly as could be ascertained short of surveying the lines. The Valley Prize placer consists of 31.72 acres located in the NW $\frac{1}{4}$  of the NW $\frac{1}{4}$  of sec. 16, T. 13 S., R. 45 E. However, a patented lode claim, the OK (No. 301) recorded in the name of Mr. Buell McKeever, 336 Beach, 21st Street, Far Rockaway, N. Y., adjoins the Certainteed tract on the southeast, and the trend of this claim as shown on a Metzker map is essentially parallel to the strike of the exposed gypsum.

General information: This occurrence is situated at an elevation of between 2650 and 2750 feet. The elevation of the road directly below the prospect (where the road crosses the railroad tracks south of the Bay Horse mine) is 2245 feet. The

intervening distance between the prospect and the road is exceptionally steep and traversed by only occasional and random cow trails. Access to the prospect can best be accomplished by driving past the Bay Horse mine and on down the river to the Vin. Sullivan ranch where a steep, narrow, private ranch road angles back to fields situated on top of a terrace and north of the prospect. By driving through these fields to nearly their south end and then by cutting towards the river into the adjacent uncultivated land, and thence by working one's way on southward, it is possible to drive to a point slightly higher than the prospect and about  $3/8$  of a mile distant therefrom to the north.

Although early-day prospect work covered a fairly extensive area, and included one 100-foot tunnel, the prospect is today indistinct to the point where it can be readily overlooked unless the searcher knows the landmarks. The hillside on which the exposures occur is so steep that when viewed from a distance, no apparent vestige of any dumps remain to be seen. Much of the original prospect work consisted of the slicing off of narrow strips along the hillside by way of removing a thin mantle of soil from over the formation. The material thus dug has long since been scattered on the hillside below, and the faces made covered by material from above. Superimposed cattle paths serve to further obscure the nature of the workings. On the occasion of the preliminary examination the writer first examined a much more insignificant showing which was possessed of more obvious dumps and workings, mistakenly thinking it to be the reported occurrence. Attention was drawn to the larger prospect only by chance when the shadows combined to outline the portal of the tunnel for a few minutes.

The inconsequential showing with the obvious dumps and workings is situated directly on top of the craiglike exposures of rock directly above the Bay Horse mine, at an elevation of 2500 feet. A grass and sage-covered summit of a knoll exists directly above these workings, portion of which can be seen from selected points on the road below. The occurrence under discussion in this report is situated

several hundred yards to the south of the obvious set of workings and at an elevation approximately 150 feet higher. It is not superimposed by any level summit of a knoll, but instead the hillside continues rising above the occurrence for a considerable distance before beginning to level off. The occurrence cannot be seen from any point on the road below.

Development: Although indistinct when viewed from a distance, the evidence of prospecting is distinct enough to one actually on the site. This work covered a distance along the hill of perhaps 400 feet but was most abundant in the northernmost 200 feet of the section. The slices cut to face up the formation as mentioned previously were made on two main levels 100 feet apart vertically. Auxiliary cuts were made at points intermediate to, and above, and below these main levels. The 100-foot tunnel occurs on the lower level which is at an elevation of 2650 feet. Two additional, now caved but apparently shorter adits occur on this general level. No evidence of underground work was seen on the higher level. All of this work is of early vintage and undoubtedly dates back to the early portion of the period when the gypsum in this vicinity was being actively developed.

Geology: Gypsum is to be seen in many places in the area where these workings occur. Thicknesses of 3 to 5 feet of massive, white, finely crystalline gypsum are not uncommon, but in most places thinner gypsum streaks alternate with the host rock constituents of the "Gypsum formation" to form gypsiferous horizons of rather indefinite thicknesses. In one instance trenching revealed 9 feet of finely crystalline gypsum and neither wall was positively established. None of these showings, however, can be traced many feet laterally to indicate a body of any appreciable size in any one place. Instead, wide differences in both strikes and dips are to be noted over short distances as is the case at the main quarries (refer to initial report under this same title) and it is increasingly evident that the larger, most pure appearing gypsum bodies occur in close proximity to the fault of slip planes. The more impure gypsiferous horizons tend to have the flatter dips and to show more consistent trends

over larger areas than does the higher grade material. Faulting and a probable repetition of similar appearing horizons rendered the measuring of a reliable section here impracticable, but the typical red and green shales of Livingstone's "Gypsum formation" together with the associated limestone lenses and a distinctive brown rhyolite are all to be noted as occurring at many places within the bounds of the area under discussion. The distinctive red and green conglomerates occurring at the main working quarries, were, however, not seen here. A strong brecciation of some of the limestone was noted with gypsum filling the interstices.

In his description of the section at the main working quarries, Lindgren mentions that the gypsum occurred ". . . in part pure white and crystalline," and also "in part. . . it contains thin strata and films of greenish chloritic material." As was mentioned in the writer's initial report on these occurrences, none of the massive crystalline gypsum remained to be seen in place at the quarries. Both varieties do occur on this prospect however, as has already been stated. Although fairly good appearing, massive gypsum is exposed at the portal of the 100-foot tunnel, and also elsewhere along the cut on the same level as, and in the immediate vicinity of, said tunnel, no similar gypsum is to be seen in the tunnel. So varied are the dips and strikes in this particular area that it cannot positively be said that the tunnel follows the same horizon of the good appearing gypsum situated at the portal. The gypsum underground is predominantly thin bedded and alternating with like layers of greenish chloritic material, and also with impure limestone layers, as was the case at the main quarries.

Samples of both gypsum varieties were taken as follows:

No. 1 (HB-65) A 9-foot cut channel of the massive, white, finely crystalline gypsum exposed in a trench on the upper cut level.

No. 2 (HB-64) A 7-foot cut channel of the thin bedded chloritic gypsum obtained from the wall of the tunnel at a point 75 feet from the portal.

The analytical results of these samples were:

No. 1 (HB-65)	Moisture at 58° C. . . . .	Trace
	Combined water at 217° C. . . . .	16.20%
	Sulfur trioxide (SO <sub>3</sub> ) . . . . .	36.94
	Sodium chloride (NaCl) . . . . .	Nil
	Insoluble . . . . .	8.90
	Iron & aluminum oxide . . . . .	2.06
	Calcium oxide (CaO) . . . . .	30.55
	Magnesia (MgO) . . . . .	1.52
	Carbon dioxide (CO <sub>2</sub> ) . . . . .	3.83
	Total . . . . .	100.00%

Calculated for evaluation\*

Gypsum . . . . .	77.40%
Excess CaO . . . . .	1.98
Calcined gypsum . . . . .	1.56
Other ingredients . . . . .	19.05
Total . . . . .	99.99%

From microscopic examination it was estimated this sample contained approximately 3/4 gypsum and 1/4 calcite. No anhydrite identified.

No. 2 (HB-64)	Moisture at 58° C. . . . .	Trace
	Combined water at 217° C. . . . .	11.92%
	Sulfur trioxide (SO <sub>3</sub> ) . . . . .	26.78
	Sodium chloride (NaCl) . . . . .	Nil
	Insoluble . . . . .	20.12
	Iron & aluminum oxide . . . . .	3.80
	Calcium oxide (CaO) . . . . .	24.10
	Magnesia (MgO) . . . . .	4.94
	Carbon dioxide (CO <sub>2</sub> ) . . . . .	8.34
	Total . . . . .	100.00%

Calculated for evaluation\*

Gypsum . . . . .	56.95%
Excess CaO . . . . .	1.62
Calcined gypsum . . . . .	0.47
Other ingredients . . . . .	40.96
Total . . . . .	100.00%

From microscopic examination it was estimated this sample contained approximately 2/3 gypsum and 1/3 chloritic rock with appreciable calcite.

\* American Soc. of Testing Materials method.

The foregoing analyses show an appreciable difference in grade between the two varieties.

Reference has been made to another gypsum occurrence situated a few hundred yards to the north of the foregoing occurrence. While the condition of the workings and dumps there is such as to attract attention, the occurrence is of quite small extent. The overall geologic conditions are the same as in the other occurrences; namely the same combinations of rock types and gypsum varieties with the same extremes in variation of dips over short distances.

Economics: Since mining would necessarily have to be done by underground methods, an evaluation of this prospect (the larger of the two mentioned) would properly require consideration of various aspects of the mining conditions and history of operations as encountered in the occurrences which were formerly operated. Briefly, those occurrences were first worked by open quarries. Such a quarry would have to be faced up here to provide a modicum of level working space. The amount of overburden, however, would necessitate underground operation within a short distance.

Although the old workings had very extensive underground development, this development was complicated by changing and often steep dips, and by numerous faults. (Refer to map of workings attached to initial Dogami report by NSW, May 1946) The repetition of better grade horizons separated by lower grade, or outright worthless horizons, often necessitated the carrying of a great working height with the resultant dilution of grade by the barren material or the problem of sorting it out. That such conditions would prevail here is clearly evidenced by the prevailing structural deformation of the formation to be seen on the surface.

The amount of the white, crystalline, or high-grade gypsum in evidence is very limited so that at best, the more abundant, but less pure strata with the chloritic partings must be regarded as the normal type and grade of material to be had here. It is such material that is to be seen in the old workings today, and while data on the subject is lacking, it is believed that similar material constituted the bulk of the ore mined by underground means. Reportedly, a progressive decrease in the grade was due to a gradual change of the ore from gypsum to anhydrite. In

this respect, the reports on the samples taken here state that no anhydrite was identified microscopically; that the chief gangue mineral other than chloritic rock was calcite.

Ore of such character would require appreciable beneficiation. Given a large deposit of ore this type and grade favorably situated for open pit mining, the occurrence would be well worth consideration. In the case of this prospect, however, the adverse underground mining picture together with the relative smallness of the occurrence, combine to decrease any attractiveness that might otherwise be attributed to it.

Although none are known to exist in Oregon today, several other deposits of gypsum are reported to occur in the "Gypsum formation" in the State of Idaho. Additional deposits may well occur in this formation in Oregon, but until a larger deposit with more favorable working conditions is demonstrated to exist, the picture of gypsum resources within the State of Oregon remains gloomy.

Report by: N. S. Wagner

Date: June 6, 1947

References: Initial Dogami report by Wagner, May 1946.

Lindgren: U. S. Geol. Survey Annual Report 22, 1901.

Livingstone: Idaho Bureau of Mines and Geology Pamphlet 13.

Moore: U. S. Geological Survey Bull. 875, 1937.

Maps in File No. 18 (Dogami).

Gypsum Mine

Gypsum

6/46

NAME

OLD NAMES

PRINCIPAL ORE

MINOR MINERALS

13S

45E

16-17-20-21-28-29

T

R

S

PUBLISHED REFERENCES

Lindgren 22<sup>nd</sup> Annual Rept, USGS, 1901, p 639 + 753  
Livingston Idaho Bureau Mines, Bull 13 page 5-  
More, U.S.G.S. Bull 875 page 7+8.

Baker ..... COUNTY

Conner Creek ..... AREA

..... ELEVATION

..... ROAD OR HIGHWAY

..... DISTANCE TO SHIPPING POINT

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S)

Distainted Products Company

Address

120 S La Salle St. Chicago Ill.

OPERATOR

none

Name of claims Area Pat. Unpat.

Gypsum Lode Mining Claim X

Big slide gypsum Lode Mining Claim X

River Bank Group X

Walley Pledge Placer X

EQUIPMENT ON PROPERTY

none

Name of claims Area Pat. Unpat.

F+E Placer X

Eunice, Katie-did and X

Bridal veil Group X





QSA Abstract *Minneapolis Meeting, Oct 1972 (104#7)*

MESOZOIC PLUTONISM AND MINERALIZATION OF THE SNAKE RIVER BOUNDARY AREA,  
IDAHO-OREGON

Field, Cyrus W., Department of Geology, Oregon State University,  
Corvallis, Oregon 97331; Bruce, Wayne R., The Hanna Mining Com-  
pany, P.O. Box 278, Missoula, Montana 59801; and Henricksen,  
Thomas A., Department of Geology, Oregon State University,  
Corvallis, Oregon 97331

Numerous small plutons and related hydrothermal deposits extend south-  
west from the Seven Devils Mountains for at least 135 km along a zone  
subparallel to the Snake River, and between the Jurassic or younger  
Wallowa Batholith to the northwest and the Cretaceous Idaho Batholith  
to the east. Some plutons (Cuddy Mtn., Sturgill Peak, Iron Mtn.) form  
composite stocks of noritic gabbro, quartz diorite, and granodiorite in  
order of emplacement. Differentiation trends (increasing  $\text{SiO}_2$ ,  $\text{Na}_2\text{O}$ , and  
 $\text{K}_2\text{O}$ ; other major oxides decreasing) are typical of the calc-alkaline  
magmas. Radiometric (K-Ar) dates suggest two distinct periods of em-  
placement (120-130 and 190-215 m.y.). Country rocks intruded by the  
plutons are eugeosynclinal metasedimentary-metavolcanic assemblages of  
Permian-Late Triassic-Early Jurassic age. Hydrothermal fissure and re-  
placement deposits are widespread and disseminated Cu-Mo deposits (Red  
Ledge and Peck, Cuddy, and Iron Mtns.) are potentially important. The  
latter are controlled by contacts and structure (including tourmaline  
breccias), associated with quartz-sericite and potassic alteration as-  
semblages (gains of  $\text{SiO}_2$ ,  $\text{K}_2\text{O}$ ,  $\text{B}_2\text{O}_3$ ), and are invariably related to late  
quartz-rich porphyry intrusions. Sulfur isotope data for sulfides (-5.8  
to +4.3 ‰), barite (+11.6 to +12.0 ‰), and "bedded" gypsum (+14.4  
to +14.9 ‰) deposits are consistent with a magmatic hydrothermal  
origin. Thus, the intrusions, associated mineral deposits, and country  
rocks for this part of the Columbia Arc exhibit pronounced compositional  
and temporal similarities to their respective counterparts elsewhere,  
from Alaska to California, along the Western Cordillera.

# State Department of Geology and Mineral Industries

LIBRARY  
OREGON DEPARTMENT OF GEOLOGY  
AND MINERAL INDUSTRIES  
910 STATE OFFICE BUILDING  
1400 S. W. FIFTH AVENUE  
PORTLAND, OREGON 97201

702 Woodlark Building  
Portland 5, Oregon

Report by: N. S. Wagner  
Date of exam: May, 1946

## THE GYPSUM MINE ON THE SNAKE RIVER BELOW HUNTINGTON

Baker County  
Conner Creek District

Forward: Gypsum was mined here in the 1890's by the Oregon Plaster Company. Subsequently the Certainteed Products Company installed a rather elaborate plant and production was maintained until approximately 1924 at which time the mine was closed and the plant completely dismantled. Progressive decrease in the grade of gypsum together with increasing costs and hazards of underground mining necessitated by the pitch of the deposit were, doubtless important factors behind the decision to cease operations.

Owner: Certainteed Products Company  
120 S. La Salle Street  
Chicago, Illinois

Location: T. 13 S., R. 45 E., Secs. 16, 17, 20, 21, 28, 29.

The bulk of the mineral occurrence and the site of the main workings is situated at an elevation of about 4000 feet. This is approximately 1 1/8 miles distant from the processing plant which is located on the Snake River and by the Robinette Branch of the Union Pacific railroad at an elevation of 2330. An aerial tram and a pack trail connected the plant and the mine when it was active, and a general utility supply road leads around the hills from the mine to both Huntington and Lime, Oregon. Access today is best accomplished by way of Lime from whence it is possible to drive to the Ernest Langley ranch by a steep, but good (in dry weather) two and a half mile road. The old supply road follows an essentially level grade after crossing the ridge immediately to the east of the ranch. This supply road could be driven with a jeep, but not by a larger car, and the distance to the bunkers at the head of the old aerial tram is 2 1/4 miles.

Claims: Six claims, or groups of claims, all patented, comprise these holdings as follows:

Gypsum Lode Mining Claim - - - - - 20.66 acres  
Big Slide Gypsum Lode Mining Claim - - - - - 20.66 acres

*no more railroad*

River Bank Placer Mining Claim	148.42 acres
Valley Prize Placer	31.72 "
E and E Placer	36.83 "
Lots 1, 2, 3, 4 comprising the Eunice, Katie-did, and Bridal Veil Placers	<u>165.54</u> " 423.83 "

History: Lindgren mentions 1800 tons of ore was mined in 1896, and this very probably represents the initial production of the occurrence. Little is known concerning the activities of this Oregon Plaster Company then, nor for that matter is much known about the later activities of the Certainteed Company. At one time, and presumably before the Aerial tram was installed, gyp was teamed to a kiln at Lime. During the later operations a camp of some 60 people was maintained at the mine alone. At the outset the gypsum was quarried and three separate and distinct quarry sites exist, two of which consists of a group of more or less coalescing individual pits. Underground mining was resorted to finally and from the extent of such portions of the workings as are accessible today it is evident that a very considerable tonnage of rock has been moved here. Rooms 60 to 100 feet wide, and as long, and 20 to 40 feet high, with some raises apparently carried even higher, are to be seen, and although only a portion of the underground workings at the northernmost quarry are accessible, surface evidence indicates the existence of similar workings beyond the other quarry faces. Dismantling and removal of equipment and buildings was so thorough that the bunkers alone constitute the only remaining structure.

Geology: Gypsum and anhydrite occurs in a series of sediments generally regarded as of Triassic age. These sediments are characterized by red and green slates and conglomeratic schists, but include limestones and gray tuffaceous schists and some agglomerates and rhyolites. Livingston, whose mapping has shown

this Triassic to extend from the Cuddy Mountains in Idaho to Oregon at this point on the Snake River, has differentiated the "Gypsum formation" from other members of the Triassic and pictured it separately on his Reconnaissance Geologic Map of the Snake River between Burnt River and Salt Creek. This map is confined to a section along the river and merely spots the formation at the site of the mine accordingly, but it gives a detailed section of the lower Triassic where it crosses the river beginning at the Bay Horse Mine two miles to the north. This section begins with a rhyolite which separates his Permian andesitic complex from the Triassic, and the major succeeding subdivisions of the Triassic are as follows: "Purplish conglomeratic schist which grades into fine shaly limestone, about 500 feet; greenstone, evidently a fine volcanic tuff, 375 feet; fine gray, yellowish, and purplish shales containing beds of gypsum, 1000 feet; limestone, 50 feet; purple conglomeratic schists, about 200 feet. Above this group lies a great thickness of clay slates, at least 20,000 feet, (the Connor Creek slates) which are overlain by massive limestone of unknown thickness."

Rock types conforming to those described in the foregoing section are to be found in the vicinity of the mine and on the hills above it to the west and to the north and south, but slides of both soil mantle and appreciably large sized masses of bedrock itself on the steep slopes, together with an abundance of faults and a repetition of similar appearing horizons within the formation, render the picture of the section on the hills obscure as compared to the section exposed along the river. Much painstaking mapping would be necessary to establish the section on the hill in detail.

Clearly, however, these Triassic rocks constitute the prevalent bedrock on the higher elevations to the west of the river. The lower portion (the "Gypsum formation" and its associated formations) trends from Livingston's Bay Horse-Prevost section to Lime where it is to be found along the Burnt River between

Lime and a point on the river about one mile above Huntington. Beyond Burnt River to the southwest this portion of the Triassic is overlain by Tertiary Lake beds and lavas, but islands of the characteristic red conglomerate and some of the red and green slates associated with the "Gypsum formation" are revealed along the upper reaches of Durbin Creek showing that these beds continue on well into Oregon.

The "Gypsum formation" at the site of the various mine workings is but partially exposed today due to the immense dumps from the underground workings, and those from the higher quarries which cover the lower portion of the section, and by normal talus and a general slacking of the formation in the quarry faces. Thus, while it is impossible to confirm it in detail today, the best description of the section that can be presented here is that given by Lindgren who examined the occurrence when the workings were first faced up. Lindgren's section of the "Gypsum formation" begins with limestone on top of which occurs 20 feet of gypsum. This is followed by 80 feet of red and green tuff slates which in turn are succeeded by 30-40 feet more of gypsum. Gypsiferous limestone and green tuff conclude the section. The gypsum is described as " ——— in part pure white and crystalline; in part, however, it contains thin strata and films of greenish chloritic material."

Lindgren gave the dip of the formation as gentle westerly but dips of between 20 to 50 degrees and from the northwest to nearly due east in extreme cases are the rule in those portions of the subsequently-made underground workings as are open to inspection today. Most of these dips reflect fault movements, and indeed there has been so many minor adjustments and compensations within the deposit that establishment of a true formational dip is difficult. Moore gives the strike as 60 degrees northeast with a dip of 30 degrees to the northwest. Current observations are in general accord with Moore's determinations but with perhaps a tendency to bear the dip even more to the north.

Mention has already been made to the effect that mining had been conducted on

three different operational sites. These are all at essentially the same elevation (4000') on the slope of the valley wall which here roughly parallels the river on a north 30 degrees east trend. The distance between the southernmost and northernmost of these workings is 3/4 miles. With a formational strike and dip as given above (N. 60 E., 30 degrees to the NW) the "Gypsum formation" at any one location would diverge rapidly from the river and would be found cutting diagonally across the hills to the west high above where it now is were this normal course not offset by faults. The three independent operational sites each represent faulted segments in which the formation has been brought back to approximately the same elevation above the river in each case, and the close parallelism of the apparent trend of the "Gypsum formation" with the river here created by this situation is illusion only. This illusion is further strengthened by the trail and tramway which interconnect the workings and by the huge waste dump which completely blankets the area between the two largest workings.

Origin of gypsum and anhydrite occurrences such as these could be sedimentary and due to conditions prevailing when the associated red and green shales and limestones were accumulating. It could also be due to the action of sulphuric waters on the limestone and although no field and laboratory time was devoted to a study of genesis, it is distinctly possible that such an origin as this accounts for the gypsum here. The close association of the gypsum and anhydrite with the faults and brecciated limestone may well reflect such a relationship. Evidence that the waters which effected the Bay Horse copper-silver mineralization occurring in and between the Permian andesites and the Triassic rhyolite underlying the "Gypsum formation," a short distance, affected also the "Gypsum formation," is to be found in an old prospect pit in one of the limestones lenses in the "Gypsum formation." This pit is situated about midway between the Gyp Mines and the Bay Horse Mine. The quartz and the copper-silver mineralization it reveals further points to the possibility that mineralizing waters could have been instrumental

in altering the limestone and limey shales of the "Gypsum formation" to the anhydrite and gypsum in that it shows such waters did exist.

Whether the faults at the site of the mine gave actual access to such waters as just postulated and are related to the creation of the ore body accordingly, or not, they have without doubt contributed to a loss from the ore-body of a very substantial amount of material. A landslide, or series of slides, has spread a crushed and ground up mass of the "Gypsum formation" clear to the Snake River. This slide material as exposed by the road and railroad cuts is to be seen for a distance of over a half mile beginning opposite the island a few hundred feet downriver from the processing plant. It extends for three quarters of a mile or so back from the river to the foot of the slope below the workings. The surface of this mass forms a high valley flanked on the north and south by hills of the Permian and on the West by the slope of the main ridge which is Permian surmounted by Triassic. The general level of this valley floor is 350 feet above the river measured at the crest near the river.

No data is available concerning the average thickness of this slide mass, but the fact that the road and railroad cuts expose this material exclusively for a half mile or more at essentially river level shows that the present river channel was already to about its present depth and profile before the slide occurred. Thus it is apparent that these slides are of relatively recent age in terms of geologic time, and that the 350 foot height of the slide scarp above the river can be regarded as a rough clue to the thickness of the slide mass. The now buried pre-slide profile doubtless reduces this thickness towards the direction of the tail of the slide, but even so the tonnage of material involved in this slide is tremendous. A slide of smaller areal extent, but appreciable thickness, occurs on the older one where its tail abuts the bedrock hill, and this slide evidently came from the northernmost of the occurrences as a skim of refuse from its wake is to be seen on the slope between it and those deposits.



Economics: In speaking of the mine Moore states that, "The gypsum was completely mined out -- and that all that is now left is the unaltered anhydrite." Since his examination was made in 1930 and 31, it is possible that more of the underground workings were available for inspection then, than there are now. Certainly little in the way of highgrade gypsum is to be seen in the workings today.

Even if the development of reserves here seemed probable, exploitation would necessarily have to be by underground mining methods which would be complicated to a considerable extent by the hazardous conditions and large caves present in much of the existing workings.

The amount of gypsum and anhydrite lost to the slide is unknown as is likewise the nature of its occurrence and distribution therein. A very considerable tonnage could be involved, but beyond doubt these minerals were ground up and to a great extent mixed with the associated shales, etc., which condition quite likely precludes the existence of mineable ore. However, this very fragmentation may have assisted in a substantial alteration of the anhydrite content of this slide to gypsum by exposing it to the action of ground waters and air. Thus a recemented body, or bodies, of gypsum of indefinite size and purity might well exist within the slide mass. Only by drilling or test pitting could this be determined, but here again the nature of the enclosing matrix would be unfavorable for large-scale underground methods so that unless such gypsum bodies as might occur, do occur sufficiently near the surface to permit stripping of the overburden, their exploitation would be costly.

Accompanying this report is:

1. Map of the accessible underground workings.
2. Photographic supplement showing general terrain, the various workings and significant geologic features.

*in Baker  
office*

References quoted include:

1. Lindgren, Twenty Second Annual Report of the U.S.G.S.
2. Livingston, Pamphlet 13 of the Idaho Bureau of Mines and Geology.
3. Moore, Bulletin 875 of the U.S.G.S.

Informants include:

1. Messrs. McClennehen and Woods of the Oregon Portland Cement Company; Mr. Hinchey and Mr. Langley.

Samples assayed - refer:

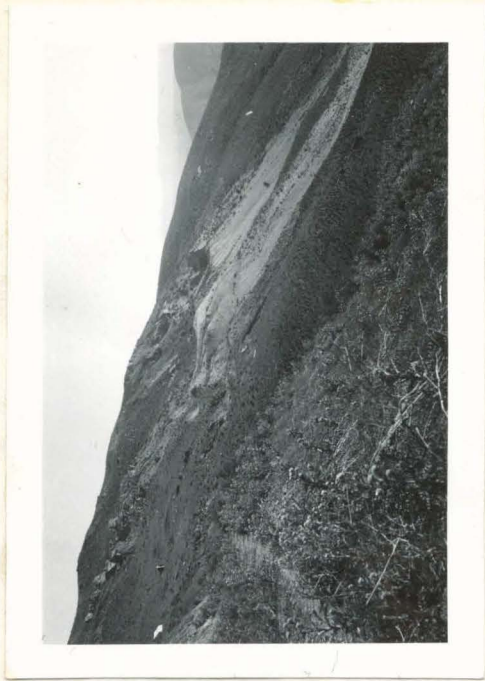
GB-86 and GB-87.

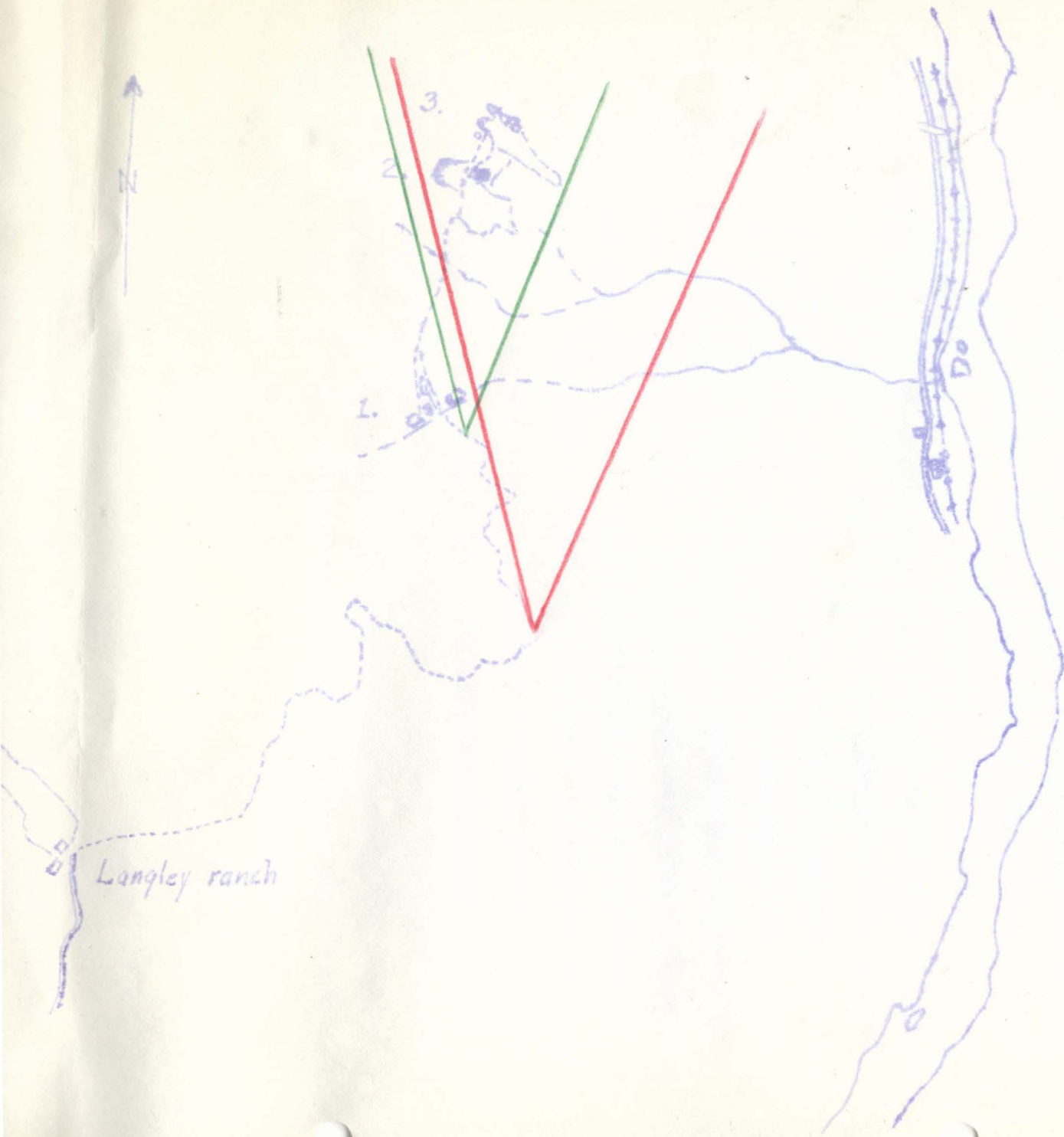
# State Department of Geology and Mineral Industries

---

702 Woodlark Building  
Portland 5, Oregon

The structure shown on this map includes only some of the most conspicuous faults and dips as the condition of these workings was deemed too hazardous to justify a more prolonged and painstaking examination. That shown, however, serves to give a picture of the general nature of the prevailing conditions.

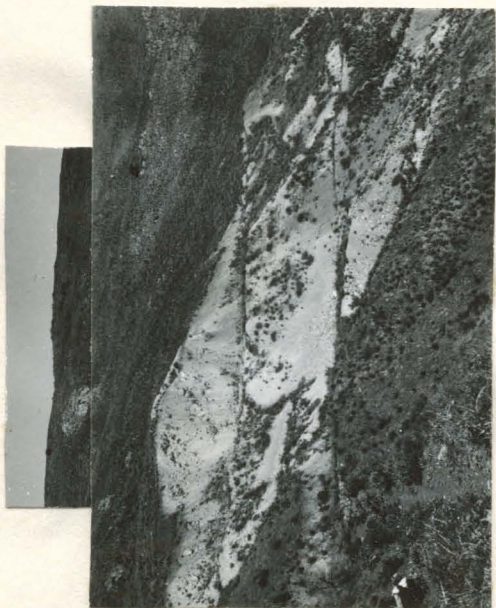
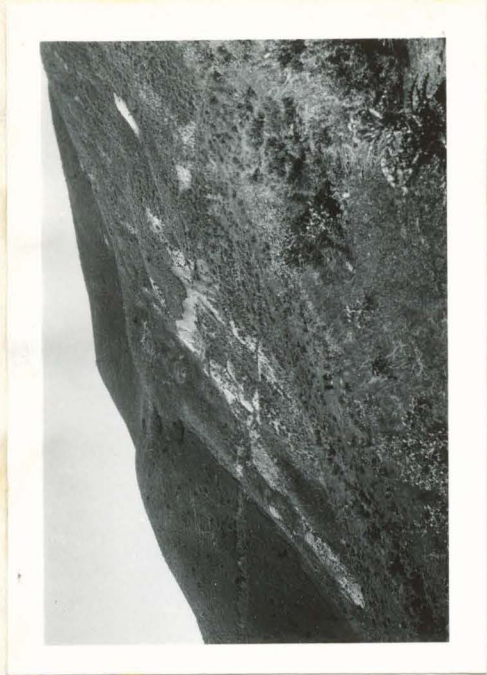


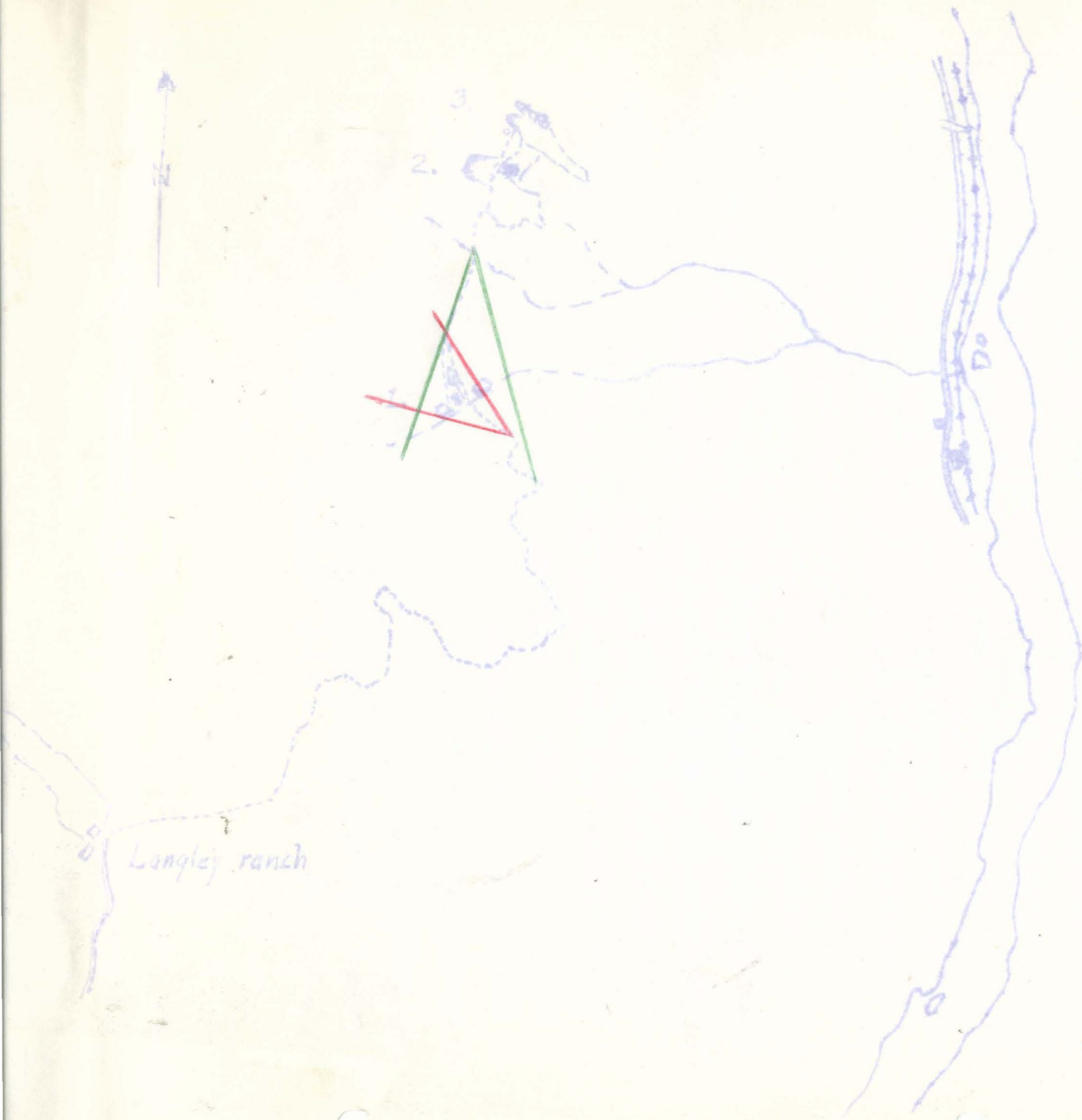


The mine workings as seen from two points on the trail.

In the picture showing the workings in the distance, illusion is such that the Snake River appears to be at a higher elevation than it actually is. The ridge which constitutes the west wall of the canyon as seen in the right half of the picture is perhaps a thousand feet above the river.

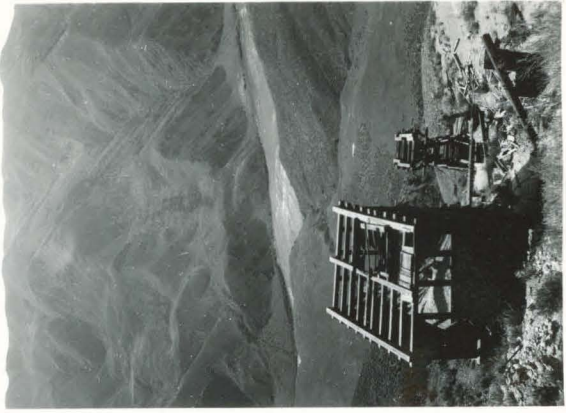
In the close-up picture, the workings shown include the two largest pits, which, due to the angle at which the picture was taken, appear as only one large one. Actually they are 800' apart measured from center to center of pits. The continuous dump spread around the hill between them serves to obscure their true individuality.





The #1 group of workings. This is one of the two sites which Lindgren might have seen at the time of his inspection in the 1890's, but the slacked dumps so thoroughly obscure the bedrock that it is not possible to confirm his section at this time. Some drifting may have been done here as suggested by dumps and what appear to be caved portals, however, such underground workings as may exist here are obviously meagre as compared with those at the other quarry sites.

In the picture taken looking to the southward, the gully just past the workings marks a fault. Livingstones Permain andesite complex occurs from this point south to where the trail first turns west and only skims off the "Gypsum Formation" are to be found on the hills above the trail. From this point south the "Gypsum Formation" is to be found to the west and at a much higher elevation.



c.

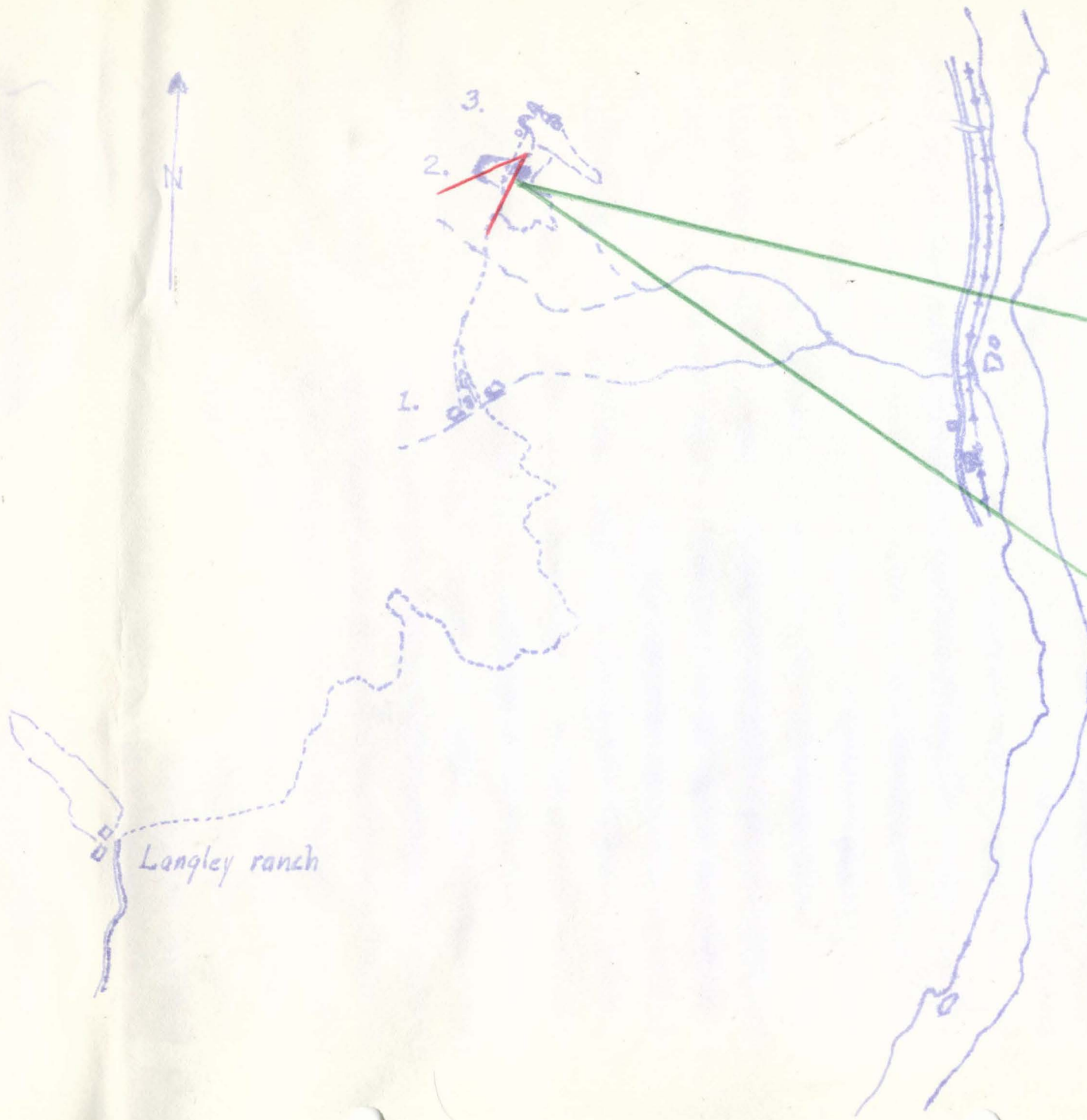


b.



a.





Pictures a and b show the #2 pit which is the largest single pit on the property. It was impossible to set-up so as to get more than an oblique view, but some idea of scale can be judged from the fact that the piles of waste on the quarry floor are higher than a man. In picture a the camera was situated on the east bank and at the point of the foremost of these waste piles. Tramways on the quarry floor between waste piles give evidence of large scale underground operations here. Note the electric cable pole in the tramway in picture b.

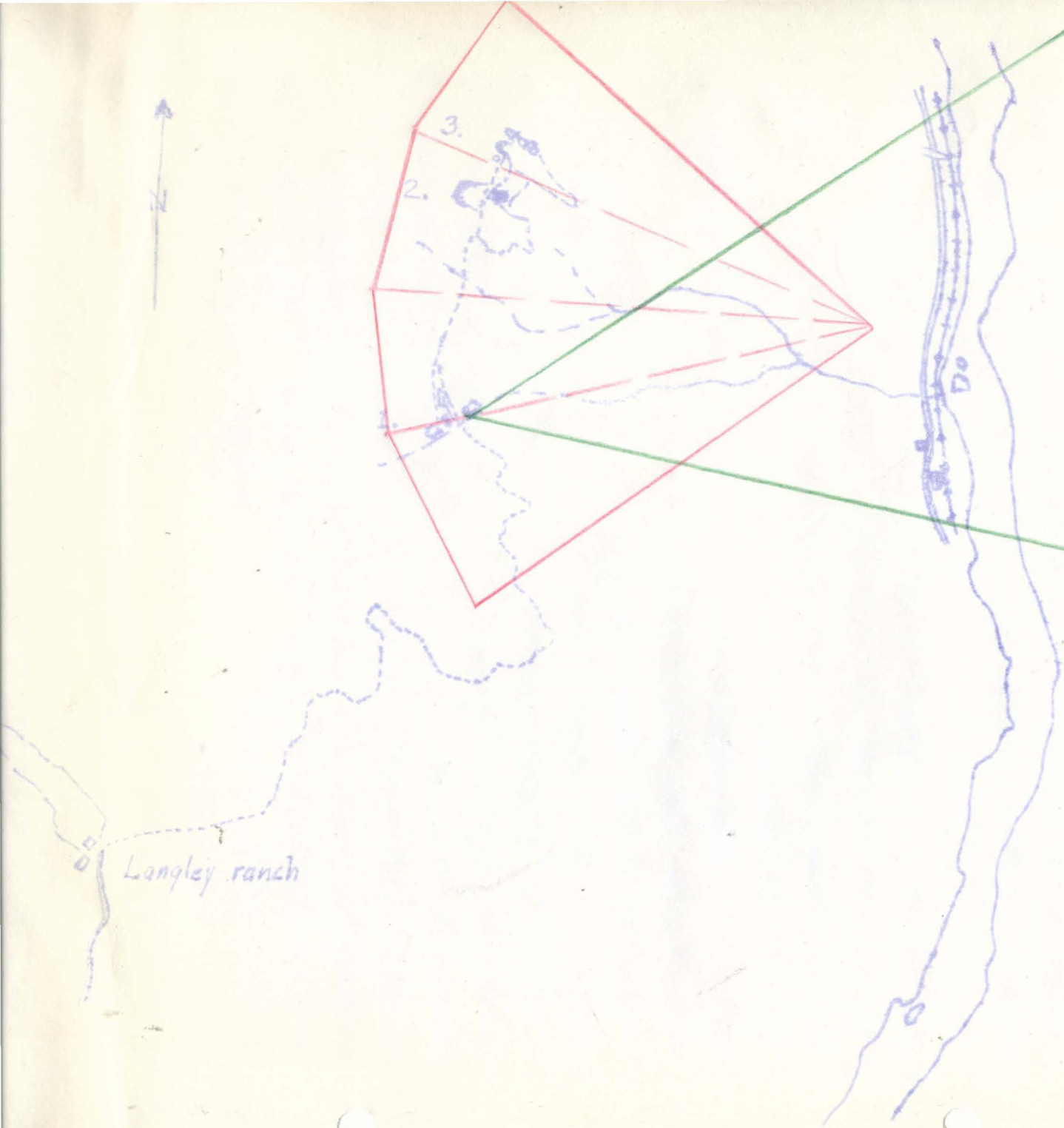
Picture c is taken looking directly down the route of the aerial tramway. This bunker is situated within a stone's throw of the spot where picture b was taken, but the camera had tipped down sharply to get it. The white spot on the flat just above the tram head is spilled gypsum. Elevation of bunkers is 3950'; spilled gypsum estimated 2900'; processing plant (to be seen in picture) is on the east bank at 2300'.





The #3 quarry. For proper perspective the picture should be bent to conform with the line drawn under it. A series of pits coalesce both laterally and vertically to comprise these workings. By reconstructing conditions to what they might have been at the outset of operations it is apparent that this may be the site examined by Lindgren for dimension and strikes as in evidence then could conform in a general way to those reported by him. Subsequent operations, however, have revealed a complexity of steeper and varying strikes than noted by Lindgren, and at the same time the dumps from the higher pits and from the underground workings effectively obscure much of the lower portion of the section

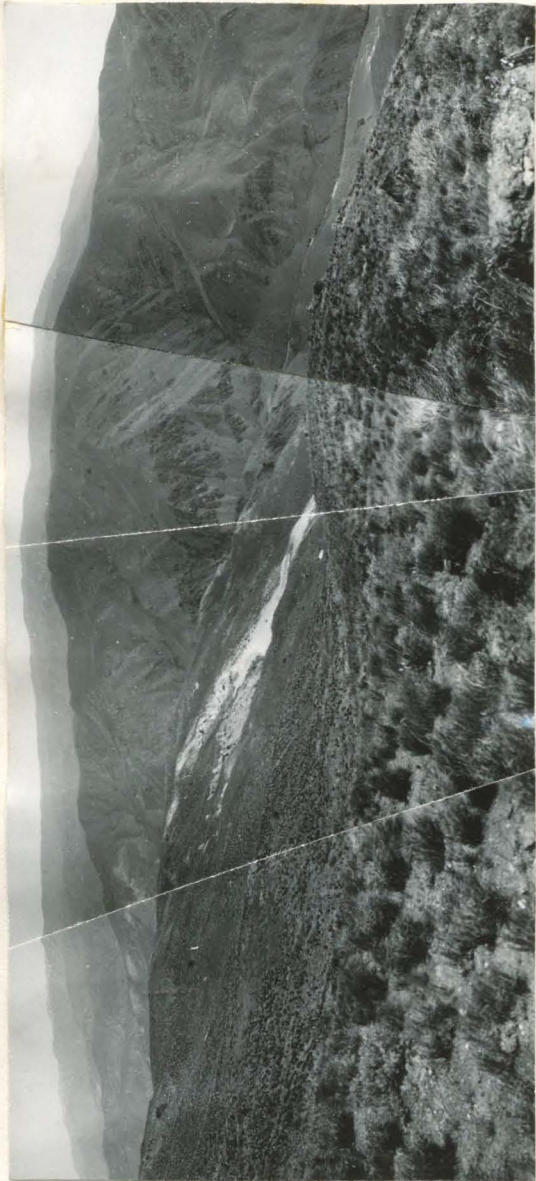
The cave on the hill at the extreme left of the picture is the cave shown on the map of the underground workings accompanying this report. The tunnel portal shown on the map is situated in the face of the adjacent quarry.

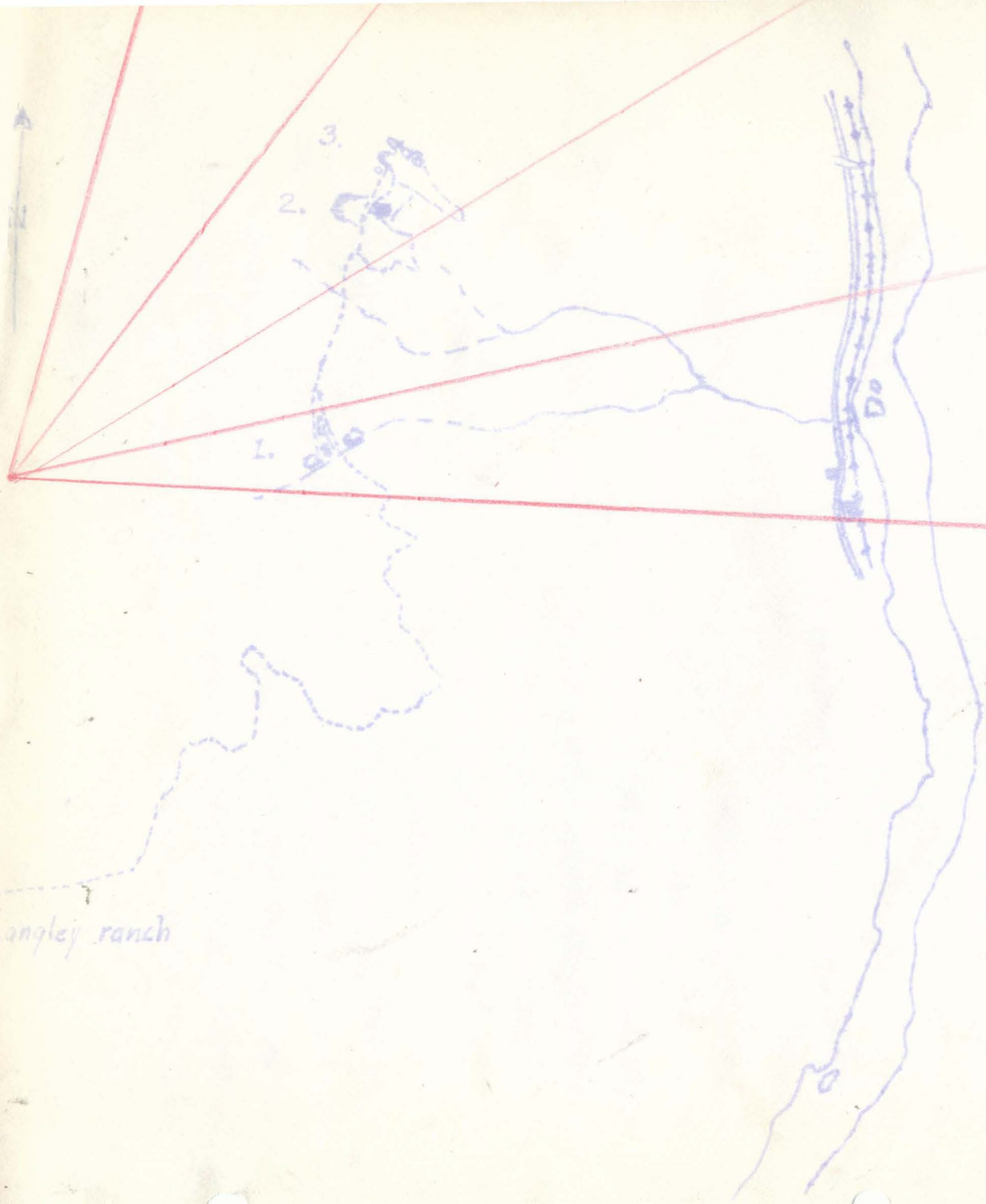


Picture a is the valley far below the workings but still 350' (Point X) above the river. This is composed of the "Gypsum Formation" which has slid, or faulted, or both, from the horizon of the workings.

Picture b is from the spot X on the foregoing picture. The spilled gypsum seen in a is above the sagebrushes on the hill in the left foreground, and from other vantage points, it appears that the mass comprising this hill is a fairly recent slide from the gypsum at the #2 and #3 workings. What appears to be workings in the lower right of picture c is in reality ground-up remnants of the "Gypsum Formation" smeared on the Permian rocks on the line between said workings and this hill.

It is very probable that substantial amounts of gypsum have been lost to these slides.





General panorama from a bench above the mine workings. The track level of the main dumps is barely visible in this picture at the lowest point of the workings, and the elevation of this track level is 4000'. The summit of the ridge immediately back of this ridge is 5000' which shows graphically just how much climbing Lindgren did ----- "Near the summit----gently dipping beds." The generalizing old-----

Oh well, permission is granted in advance for the re-writing of this page. The picture doesn't add much to the report anyway.

Langley ranch