



## **CONTACT INFORMATION**

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PRINTED: 08/16/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: SOUTHWEST SALT DEPOSIT

ALTERNATE NAMES:

LUKE SALT DEPOSIT  
MORTON SALT MINE  
ROACH AND BAKER

MARICOPA COUNTY MILS NUMBER: 412

LOCATION: TOWNSHIP 2 N RANGE 1 W SECTION 2 QUARTER SW  
LATITUDE: N 33DEG 32MIN 14SEC LONGITUDE: W 112DEG 20MIN 15SEC  
TOPO MAP NAME: EL MIRAGE - 7.5 MIN

CURRENT STATUS: PRODUCER

COMMODITY:

SODIUM COMMON SALT

BIBLIOGRAPHY:

ADMMR SOUTHWEST SALT DEPOSIT FILE  
SOLUTION WELLS ALSO IN NW4  
GEOPHYSICAL, GEOHYDROLOGICAL AND GEOCHEMICAL  
RECONN. OF LUKE SALT BODY, CENTRAL AZ USGS  
PP 753, 1972, 28 PAGES.

# Copper Eagle Natural Gas Storage

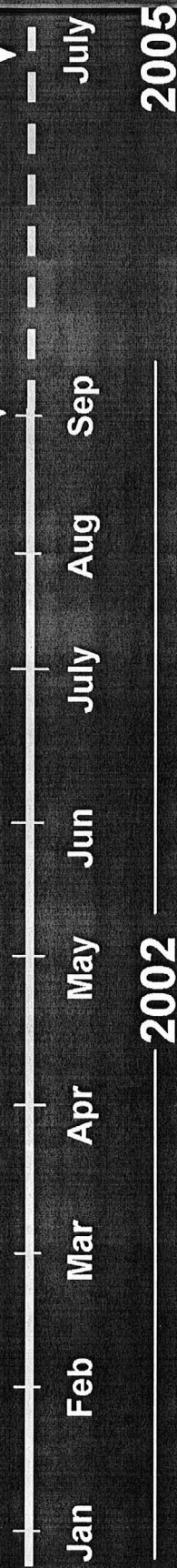
Drilling, testing, analysis

Negotiate bids for storage capacity

Prepare permits

Targeted Project approval

First Cavern in operation



# SUMMARY OF ACTIVITIES

AZGS 2002 AN. REP.

## OIL AND GAS CONSERVATION COMMISSION

7

The Arizona Oil and Gas Conservation Commission (OGCC) regulates the drilling for and production of oil, gas, helium, carbon dioxide, and geothermal resources. The Governor appoints five members of the commission. The sixth member, the State Land Commissioner, is ex officio. Commissioners are J. Dale Nations, Tucson, chairman; Robert L. Jones, Sun City West, vice chairman; Joseph J. Lane, Phoenix; Michele P. Negley, Phoenix; Robert L. Wagner, Yuma; and Michael E. Anable, State Land Commissioner. The OGCC met three times during fiscal year (FY) 2002.

The AZGS provides administrative and staff support for the OGCC, including issuing permits to drill, monitoring drilling, inspecting completed wells, compiling drilling and production data, and maintaining well files. Steven L. Rauzi is the Oil and Gas Administrator.

**Production and storage.** Oil production in 2001 totaled 60,297 barrels from 23 producing wells, up from 57,483 barrels from 21 wells in 2000. Gas production in 2001 totaled 307 million cubic feet from eight producing gas wells, down from 368 million cubic feet from nine wells in 2000.

Liquefied petroleum gas (LPG) transferred in 2001 through storage wells near Luke Air Force Base and Adamana included 127 million gallons in receipts and 107 million gallons in deliveries. In 2000, 108 million gallons were received and 97 million gallons were delivered. About 60 million gallons of LPG were in storage at year end, up from the 38 million gallons the previous year. Fourteen storage wells constructed in subsurface salt are currently in use.

Both of Arizona's refineries remained closed. The refineries, near Fredonia and Coolidge, have been shut down since January 1997 and August 1993, respectively. The refinery near Fredonia is now used for storage of asphalt products.

**Leasing.** In 2001, 381,000 acres were under lease for oil and gas exploration, up from 344,000 acres in 2000. State Trust land under lease in December 2001 totaled 274,500 acres, up from 250,000 acres in December 2000. Public land (federal) under lease in December 2001 totaled 106,500 acres, up from 94,000 acres in December 2000.

The State Land Department administers leasing on State Trust Land. The U.S. Bureau of Land Management administers leasing on federal lands.

**Drilling.** Five permits were issued to drill or re-enter in FY 2002. The average length of time to issue a permit was five working days. One hole was drilled.

Recent interest in building new gas-fired power plants has led three companies to investigate the feasibility of storing natural gas in large underground salt deposits. Copper Eagle Gas Storage, LLC is evaluating the suitability of storing natural gas in the Luke salt deposit. The company drilled the second of two stratigraphic holes to evaluate characteristics of the salt for storage and the underlying sedimentary units for brine disposal. Analysis of core samples of the salt indicated that the character of the salt is similar to that of other salt formations in the country where natural gas is stored safely. Copper Eagle plans to drill two additional stratigraphic holes in FY 2003.

Desert Crossing Gas Storage and Transportation System, LLC and Aquila Inc. have initiated studies of the feasibility of storing natural gas in the Red Lake salt deposit in the Hualapai Valley north of Kingman. Aquila was issued a permit for a stratigraphic test in FY 2002 but had not started drilling before the end of the fiscal year.

**Inspection and enforcement.** Staff made semiannual inspections of the 14 hydrocarbon-storage wells near Luke Air Base and Adamana, and witnessed the cementing of surface casing in the stratigraphic hole near Luke Air Force Base. Inspections are conducted to ensure that all wellhead valves, safety alarms, and emergency shutdown systems are in good working condition and that cement is circulated back to the surface when surface casing is set in a newly drilled well.

**Subsurface data.** The OGCC requires drilling operators to submit subsurface data, including rock samples, logs, and all test results, to the AZGS to be filed and archived. The files include information from more than 1,100 oil tests dating back to 1905. These drilling data add to the understanding of the geologic framework and subsurface mineral and energy resources. The AZGS maintains maps that show the location of oil, gas, and geothermal wells and the types of subsurface data that are available for examination. Subsurface samples from the stratigraphic hole near Luke Air Force Base were added to the sample repository.



**Verbal Information Summary and Meeting Report**

By Ken A. Phillips, Chief Engineer

March 19, 1999

Michele D. Jones, Facility Manager of the Morton International salt mine and solar evaporation plant at the Luke Salt deposit in Glendale presented a program on the mine at the Maricopa SME Section meeting the evening of March 18, 1999. The program which included slides of the operation gave considerable detail about the operation and Morton's salt business.

Maricopa	<b>AZMILS No. 412</b>
Primary name:	<b>SOUTHWEST SALT DEPOSIT</b>
Also known as the:	<b>LUKE SALT DEPOSIT</b>
	<b>MORTON SALT MINE</b>
	<b>ROACH AND BAKER</b>
ADMMR Mine file:	<b><u>SOUTHWEST SALT DEPOSIT</u></b> file ←

Morton produces halite (salt) from 24 operations in the United State and Canada. They produce salt by three different recovery methods depending on the characteristics of the ore body, climate of the production area, and the markets they are serving. The three production methods are (1) underground room and pillar mining, (2) vacuum pan evaporation from brine, and (3) solar evaporation from natural solutions, pumped natural brines, and dissolution brines. Morton's Luke Deposit operation uses solar evaporation from dissolution brine.

Underground salt mines are mined by room and pillar methods. Rooms are cubical with dimensions ranging from 40X40X40 feet to 125X125X125 feet. The pillars are a corresponding same size. Underground mined salt is used primarily for road deicing.

Vacuum pan evaporation recovers salt from brines using heat and vacuum. The crystallization process can be controlled to produce various particle characteristics and purity. Typical impurities in the brines are magnesium, calcium, and sulfate minerals. Vacuum pan salt is produced in a closed system such that food and pharmaceutical grades can be made.

Solar salt production uses solar energy to recover salt by crystallization from brines. Brine may be obtained from solution mining or evaporation from marine or lake sources. Since both evaporation and crystallization take place in open ponds, food and pharmaceutical grades cannot be produced. Production from the Luke Salt Body by Morton International is by solar crystallization from brines produced by solution mining.

At the Luke Salt Body Morton produces approximately 120,000 tons of halite (sodium chloride) from the Tertiary, non marine, high purity salt deposit. The deposit is exceptionally low in sulfates, magnesium, and calcium. It runs greater than 99.9% NaCl and contains between 15 and 30 cubic miles of salt. The top of the salt deposit is about 900' feet below the surface. Exploration drill holes 10,000 feet deep have bottomed in salt.

At the Luke Salt Body Morton mines by solution wells. Wells have a concentric configuration. Fresh water is injected through the central pipe in the well and brine is recovered via a concentric annulus. In a typical well fresh water is injected at 3500' below the surface and brine is recovered from 1000' below the surface. Injection water is not heated, but is injected at ground water temperature which is about 80 F°. About 4 percent more water by volume is injected than is recovered to maintain a positive pressure in the cavity. Positive pressure helps to maintain the competency of the roof of the cavity and causes the brine to flow to the surface without being pumped. There are currently four brine wells; two are in use and two are plugged. The #3 well has been in operation for nearly 25 years. Its center injection pipe is 3" in diameter and the recovery annulus is 7<sup>3/8</sup>". The newer well in production has a 7<sup>3/8</sup>" injection pipe and a 10" recovery annulus. Recovered brine is 99-100% saturated with NaCl. In comparison, Morton's solar operation at the Great Salt Lake in Utah uses a brine of 17-20% NaCl.

Ground sonar has shown the salt cavern from the #3 well to be about 1500' tall and 200' in diameter at its widest point. The caverns are usually pear shaped with the stem up. A layer of mineral oil is maintained at the interface between the brine and the roof of the cavern to control cracking and dissolving of the cavern roof.

Recovered brine is deposited in lined ponds where solar evaporation causes salt to crystallize in the solution and a cake of salt to form in the ponds. (Michele Jones used the term "salt cake" to describe the cake salt. The term salt cake is the industrial term for sodium sulfate, ea. the mineral thenardite.) Ponds are lined with clay or a combination of clay and HDPE. Brine is maintained at a depth of 6-8" over the caked salt layer. Between 10 - 12 inches of salt grows in the ponds annually. Peak growth is about 2" per month in the long day - hot months of June, July, and August. Rain dilutes the brine in the open ponds and slows growth of the salt. Excessive rains may cause significant salt from the cake to return to solution. The normally high evaporation rate in the desert southwest causes a very fine salt crystal to be produced compared to those crystals produced from sea salt where evaporation is much slower.

Salt is harvested from cake salt in the bottom of the ponds by tracked machines with screw augers that cut the caked salt and feed a slurry pump. Cut depth is maintained by a laser leveling system. The pumped slurry is brine at 100% saturation with suspended salt crystals and caked salt. It is pumped to a wash plant where it is washed with brine over a screen. The wash plant discharges to an outdoor stockpile at about 10% moisture. Under normal weather conditions the moisture in the stockpiles drops to 2-4%. This salt is then loaded into a rotary dryer that discharges to screens. The screened salt is bagged, or pelletized and bagged, or stockpiled indoors for shipment.

Major markets for Morton's salt from the Luke Salt Deposit are chlor - alkali plants for water treatment, livestock feed, and water softener back flushing. The water softener back flushing material is pelletized into briquettes about the size of bar-b-que charcoal. Their market area is Arizona, parts of California, and the western parts of New Mexico and Texas.

Water is obtain for the operation from a grandfathered water right of 360 acre feet per year. Five fresh water wells are used to supply the water. The operation functions under Ground Water Protection Permits and Injection Well Permits. They are currently applying for Aquifer Protection Permits.

The operation has 38 employees, 98 acres of brine ponds, and a total site of 132 acres.

The deposit was discovered by Goodyear Farms in the 1950s, but the presence of salt was kept secret for many years. The first brine well was sunk in the 1960s and the first salt production was made by Gerry

Grott in the early 1970s under the name of Southwest Salt. Morton International acquired the operation from Gerry Grott 14 years ago. Morton still produces some bagged products under the label of Southwest Salt. Some interest continues in the concept that the salt deposit may be an indication of the presence of petroleum. The most recent wildcat well was drilled 2½ south of the salt mines to a depth of 6000' where it bottomed in salt.

Immediately north of Morton's operation Ameri Gas maintains three salt caverns, originally excavated by solution mining, to store LPG. Two are used for propane and one for butane.

Date Printed: 11/20/97

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

INFORMATION SUMMARY

Information from: **Carol O'Brian**

Company: Arizona Revenue Department

Address:

City, State ZIP: Phoenix

Phone:

**MINE:** Luke salt deposit

ADMMR Mine File: Southwest Salt Deposit

County: Maricopa

AzMILS Number: 412

SUMMARY

Carol O'Brian reported, in response to questions about mines listed on the State Revenue Department's centrally assessed mine property list, that Roach and Baker is the owner of the Luke Salt Deposit, [Maricopa AzMILS 412] mined by Morton Salt in Glendale.

Ken A. Phillips, Chief Engineer

Date: November 20, 1997



*Southwest Salt Deposit (file)*

Samples here described from the mine listed below are contained in the AzDMMR collection of reference samples.

Date Taken: 08/13/93

Sample Number: 08/13/93-007

MINE: Luke Salt

COUNTY: Maricopa

LOCATION: Northeast corner of Glendale and Dysart roads

DESCRIPTION: Medium coarse solar salt

MATERIAL: Sodium Chloride

COMMENTS: Collected on trip with Jean Dupree of U.S. Bureau of Mines.

Date Printed: 01/21/93

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

Information from: U S Bureau of Mines

Company:

Address:

City, State ZIP:

Phone:

MINE: Southwest Salt Mine

ADMMR Mine File: Southwest Salt Deposit

County: Maricopa

AzMILS Number: 421

SUMMARY

The annual capacity of the Southwest Salt Mine operation is listed as 150,000 shorts tons per year in the U.S. Bureau of Mines Directory of Companies and Plants Producing Salt in the United States - 1991.

Ken A. Phillips, Chief Engineer      Date: Jan. 21. 1993

*Southwest Salt Deposit file  
Maricopa County*

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1992

**MORTON SALT DIVISION**  
Morton International

**Southwest Salt Mine T2N R1W Sec. 2**

13000 W. Glendale Ave., Glendale, AZ 85307 - Phone 247-3000 - Employees: 32 -  
Solution mining via wells - Solar evaporation of brines - Produces salt for  
water softeners, domestic, agricultural, and industrial use -Underground  
solution cavities are used for propane and butane storage.  
Plant Manager Gary McFarlin

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1991

**MORTON SALT DIVISION**  
**Morton International**

**Southwest Salt Mine T2N R1W Sec. 2**

13000 W. Glendale Ave., Glendale, AZ 85307-2408 - Phone 247-3000 -  
Employees: 27 - Solution mining via wells - Solar evaporation of brines  
- Produces salt for water softeners, domestic, agricultural, and industrial  
use - underground solution cavities are used for propane and butane  
storage.

Plant Manager ..... Gary  
McFarlin



ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1990

**MORTON SALT DIVISION**  
**Morton International**

**Southwest Salt Mine T2N R1W Sec. 2**

13000 W. Glendale Ave., Glendale, AZ 85307-2408 - Phone 247-3000 -  
Employees: 27 - Solution mining via wells - Solar evaporation of brines  
- Produces salt for water softeners, domestic, agricultural, and industrial  
use - underground solution cavities are used for propane and butane  
storage.

Plant Manager ..... Gary McFarlin

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1989

**MORTON SALT DIVISION**  
**Morton International**

**Southwest Salt Mine**

T2N R1W Sec. 2

13000 W. Glendale Ave., Glendale 85307-2408 - Phone 247-3000 - Employees  
27 - Solution mining via wells - Solar evaporation of brines - Produces  
salt for water softeners, domestic, agricultural and industrial use -  
Underground solution cavities are used for propane and butane storage.

Plant Manager ..... Gary McFarlin

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1988

**MORTON SALT DIVISION**  
**Morton Thiokol Inc.**

**Southwest Salt Mine**

T2N R1W Sec. 2

13000 W. Glendale Ave., Glendale 85307-2408 - Phone 247-3000 - Employees 27  
- Solution mining via wells - Solar evaporation of brines - Produces salt  
for water softeners, domestic, agricultural and industrial use -  
Underground solution cavities are used for propane and butane storage.

Facility Manager ..... Dan Border

Stopped at Southwest Salt Company. Mr. Grott, manager, wasn't in yet but the workmen said they were producing about to capacity. GW WR 11/5/73

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Gerry Scott, Southwest Salt Company, called regarding some mines. He said SW Salt sold 32,000 tons of salt last year, mainly for water softeners, but were installing a larger dry kiln in order to increase sales of sacked salt. He also said both Inspiration and San Manuel were taking 300 tons/month and that Georgia-Pacific is going to build a caustic plant here which will increase their sales. GW WR 11/26/76

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MG WR 10/25/85: At the end of June, 1985, the Southwest Salt Company was sold to the Morton Salt Company. The "Southwest" name is retained. Mr. G. J. Grott has retired.

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KAP WR 9/6/85: A visit was made to the Southwest Salt solution salt mining operation at Dysart Road and Glendale Avenue in Glendale. The previous owner, Jerry Grott, has sold the operation to the Morton Salt Company, Division of Thicol. Mr. Grott has been retained as a consultant, but he is not generally at the operation. The new General Manager is Dan Border. Morton purchased the operation as the best way to get into South West and Southern California markets. Immediate plans are to clean up the site and replace some of the homemade equipment with commercially available systems. For the time being the name will remain Southwest Salt.

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NJN WR 11/27/87: Southwest Salt Co (file) has changed their name and report that they are now using Morton Salt, a Division of Morton Thiokol, as their operating name in Arizona. This is consistent with Morton buying the plant two years ago. Operations at the facility (Southwest Salt Deposit - file) continue as they did under Jerry Grott, the founder of Southwest Salt.

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Active Mine List Oct. 1970 - 4 men - Mr. Kimura, Box 1237, Litchfield Park.

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Visited Southwest Salt Co., where Barnes Drilling Co. of Casa Grande, is drilling another salt recovery hole, collared at 14". Mr. Grott, President of Southwest Salt said the hole was 3412 ft. but had 680 ft. of 6" casing stuck in it. He showed a piece of cored salt; when asked for a piece of it he said he had to send it to Humble Oil Co. lab for analysis. GW WR 1-1-71

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Went to Southwest Salt Co. They began pumping brine into six evaporating ponds yesterday and according to Mr. Grott, they will continue to do so. Otherwise, the well tends to accumulate silt, which is deleterious and difficult to handle. GW WR 3-29-71

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The Southwest Salt Co. ten miles west of Glendale began pumping brine from their new well March 24, 1971. The original well was abandoned because it was of too small a diameter. They also have a new water well; water from it is used to dissolve the salt deposit. GW QR 4-8-71

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Directory of Mining - August 1971 - 4 men.

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The Southwest Salt Company brine well has come into production at an undisclosed rate. GW QR 9/71

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The Southwest Salt Company continues to produce salt from their brine well 10 miles west of Glendale for cattle feed supplement. GW QR 2/72

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Went to Southwest Salt Company which is now in operation selling mainly salt for water softeners. Salt crystals are harvested from underwater to eliminate the blowing dust problem then dewatered in two classifiers in tandem then dried in a 4 x 30' rotary gas-fired drier. Five men are presently employed; the foreman is Don Duke and Jerry Grott is president and manager. GW WR 4/19/72

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A visit was made to the Southwest Salt Company plant 10 miles west of Glendale. Mr. Groth said their sales were increasing due to recent contracts to furnish salt for mixed cattle feed. However, their major purchasers are still the water softener companies. Harvested salt from the evaporation pits (250' x 1100') is dewatered by a drag classifier. A front-end loader picks it up and feeds a 4' x 30' gas fired dryer. From the dryer it is conveyed to a roll crusher and then to a double deck vibrating screen which makes 3 sizes of the dried material for sale. The two finer sizes (-10 & +10) are stored in a 40' x 60' steel shed with a concrete floor. GW WR 11/28/72

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Active Mine List - October 1972 - Empl. 4

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SOUTHWEST SALT CORP.

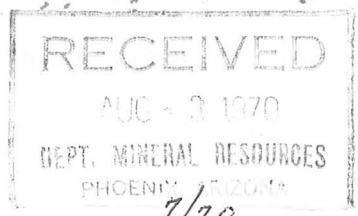
Went to Southwest Salt Corp. 10 miles west of Glendale. Met Messrs. Meeske and Kimura. Presently four men are employed, mostly on construction work. The plant consists of one 6" well 4500 feet deep, which has salt deposit from 890 feet. Water is pumped from an irrigation canal into the hole thru a 3" pipe and the brine is forced to the surface thru the casing into one of these three ponds 200' x 1100'. No salt has been harvested or sold as yet. Construction of warehouses and bagging facilities are in progress. Another well of larger diameter is to be drilled later this year. Mr. Kimura estimates that one ton of salt is recovered from 1000 gallons of water. A natural gas evaporating facility is being built which will produce about 70 tons of salt per day; this is to be used mainly during the winter months.

Mr. Gerald Grott, President of Southwest Salt Co. came in to inquire about antimony deposits in Arizona. He said he has developed a hydrometallurgical process for concentrating antimony ore both oxide and sulphide.

GW WR 7/10/70

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DEPARTMENT OF MINERAL RESOURCES  
State of Arizona  
MINE OWNER'S REPORT



Date.....

1. Mine: SOUTHWEST SALT Co.
2. Location: Sec..... Twp..... Range..... Nearest Town LITCHFIELD PARK Distance 3 Miles  
Direction SOUTH Nearest R.R. LITCHFIELD PARK Distance 4-5 Miles  
Road Conditions PAVED
3. Mining District and County: MARICOPA
4. Former Name of Mine: ARIZONA SALT Co.
5. Owner: SOUTHWEST SALT Co., INC.  
Address: P.O. 1237, LITCHFIELD PARK, ARIZ. 85340
6. Operator: Same  
Address: .....
7. Principal Minerals: SALT (Na Cl.)
8. Number of Claims: Lode..... Patented..... Unpatented.....  
Placer..... Patented..... Unpatented.....
9. Type of Surrounding Terrain: AGRICULTURAL LAND
10. Geology and Mineralization: EVAPORITE DEPOSIT @ 820' BELOW SURFACE  
Mostly UNCONOLIDATED SEDIMENTARY TO SALT
11. Dimension and Value of Ore Body: N.A.

Please give as complete information as possible and attach copies of engineer's reports, shipment returns, maps, etc. if you wish to have them available in this Department's files for inspection by prospective lessors or buyers.

(over)



Southwest Salt Co. (H)

RCB/MS

# ARIZONA DEPARTMENT OF HEALTH SERVICES

BRUCE BABBITT, Governor  
LLOYD F. NOVICK, M.D., M.P.H., Director

## NOTICE OF PROPOSED ACTION

by the

State of Arizona  
Department of Health Services  
Division of Environmental Health Services  
2005 North Central Avenue  
Phoenix, Arizona 85004

(602) 257-2270

On Application for a Permit under the  
Water Pollution Control Permit System  
of the State of Arizona, Requirements  
for Facilities Affecting Groundwater  
Quality



The Arizona Department of Health Services (Department) is issuing the following notice of proposed action under the Arizona Compilation of Rules and Regulations (A.C.R.R.) Title 9, Chapter 20, Article 2.

The Department has received a complete application for a Groundwater Quality Protection Permit and has prepared tentative determinations regarding the permit.

On the basis of preliminary review of the requirements of A.C.R.R. Title 9, Chapter 20, Article 2 regulations, the Director proposes to issue a Groundwater Quality Protection permit to the following applicant subject to certain special and general conditions.

Public Notice No. 75-86-AZGW

September 8, 1986

X

Southwest Salt Company  
13000 West Glendale  
Glendale, Arizona 85307  
Groundwater Quality Protection Permit No. G-0045-07

This facility is an existing facility which produces salt through brine evaporation. The draft permit includes the existing lined brine evaporation ponds and proposed additional lined ponds. The facility is designed and operated as a total containment system, and has water balance monitoring in effect. Depth to groundwater is approximately 340 feet below the site, and groundwater quality is poor with respect to dissolved salts due to the presence of the Luke Salt Body beneath the facility. Groundwater quality monitoring and reporting is required for data gathering purposes.

The Administrative Record, which includes the application, draft permit conditions and other relevant documents, is available for public review Monday

*The Department of Health Services is An Equal Opportunity Affirmative Action Employer.*



through Friday from 8:00 a.m. to 5:00 p.m. at the address below. A copy of the draft permit may be obtained by calling or writing to the address below.

Persons wishing to comment upon or object to the proposed determinations or request a public hearing pursuant to A.C.R.R. Title 9-20-223.C should submit their comments or request in writing within thirty (30) days from the date of this notice, either in person or by mail to:

State of Arizona  
Department of Health Services  
Attn: OWWQM - Water Permits Unit  
2005 North Central Avenue  
Phoenix, Arizona 85004

Telephone: (602) 257-2270

All comments or objections submitted within thirty (30) days from the date of this notice will be considered in the formulation of the final determinations regarding the application. If the response to this notice indicates a significant degree of public desire for a public hearing, the Director shall hold one in accordance with A.C.R.R. Title 9-20-223.C. A public notice of such hearing will be issued at least thirty (30) days prior to the hearing. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

The Director will finalize a determination on the permit within thirty (30) days following the last date on which comments may be submitted.

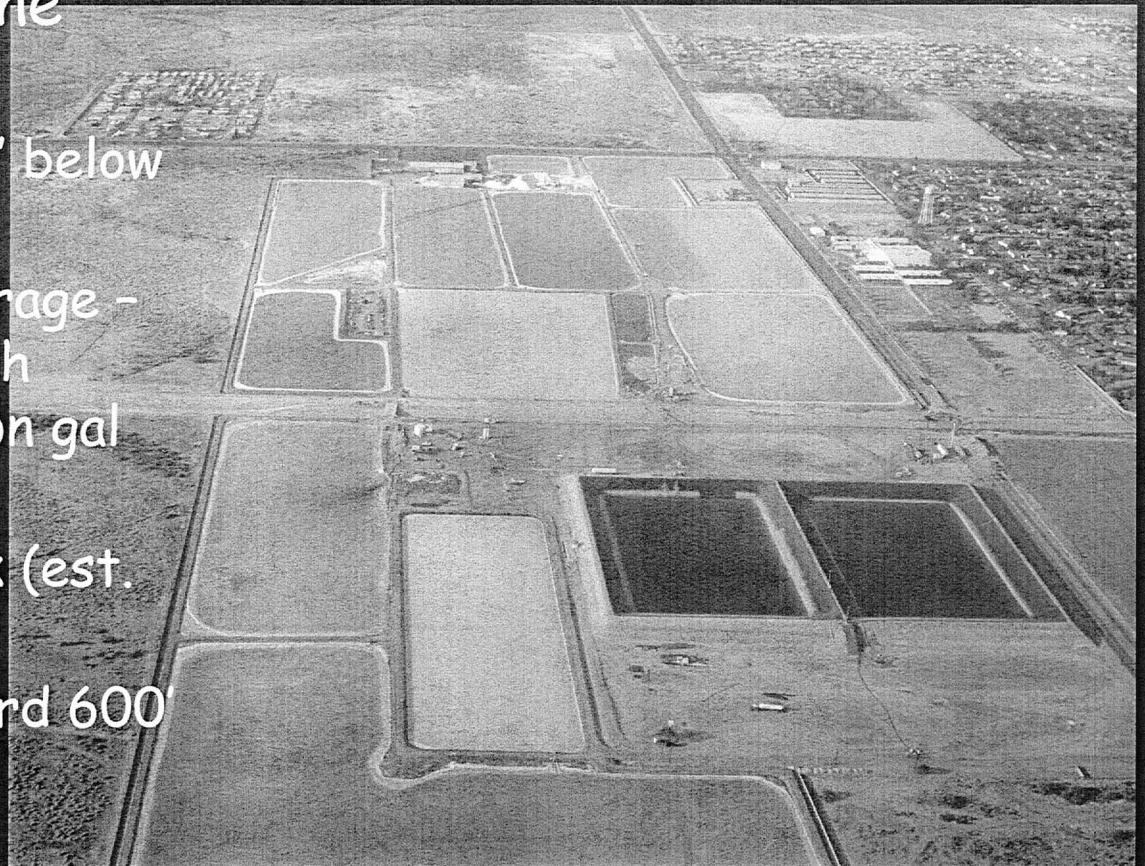
Please bring the foregoing notice to the attention of all persons you know would be interested in this matter.

~ 2000

# Luke Salt Body

## Evaporites of Pleistocene playa

- ❖ salt mine: salt is 880' below surface
- ❖ propane & butane storage - at least 3 cavities with capacities of 30 million gal (1000'x70')
- ❖ could be 10,000' thick (est. 100 cubic miles salt)
- ❖ may have moved upward 600'



# 21st Forum on the Geology of Industrial Minerals

Program With Abstracts

*Aggregates to Zeolites (AZ)*

April 9-12, 1985

at the  
Holiday Inn Broadway  
Tucson, Arizona

sponsored by  
Geological Survey Branch  
Arizona Bureau of Geology  
and Mineral Technology  
University of Arizona  
Tucson, Arizona

