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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 80-32

WASTE DISCHARGE REQUIREMENTS
FOR
REPUBLIC GEOTHERMAL, INC.
EXPLORATORY DEEP-TEST WELLS
East Mesa Area - Imperial County

The California Regional Water Quality Control Board, Colorado River Basin Region, finds that:

1. Republic Geothermal, Inc. (hereinafter also referred to as the discharger), 11823 E. Slauson Avenue, Suite One, Santa Fe Springs, CA 90670, submitted a Report of Waste Discharge, dated January 15, 1980.

2. The discharger proposes to drill 7 exploratory geothermal wells at the following locations:

Well No.	Location
14-5	SW¼, SW¼, NW¼ of Section 5, T16S, R17E, SBB&M
14-31	SW¼, SW¼, NW¼ of Section 31, T15S, R17E, SBB&M
32-31	SW¼, NE¼, NW¼ of Section 31, T15S, R17E, SBB&M
38-31	SW¼, SE¼, SW¼ of Section 31, T15S, R17E, SBB&M
54-31	SW¼, SW¼, NE¼ of Section 31, T15S, R17E, SBB&M
14-32	SW¼, SW¼, NW¼ of Section 32, T15S, R17E, SBB&M
38-32	SW¼, SE¼, SW¼ of Section 32, T15S, R17E, SBB&M

Superseded by 86-19 3/19/86

3. A mud sump, 250 feet by 90 feet by 7 feet deep with an approximate capacity of 420,000 gallons, would be constructed at each well site.

4. The discharger proposes to discharge into each sump a maximum of 231,000 gallons of drilling mud. Following some evaporation, the non-toxic residual mud would be removed from each sump and either spread on the surface of existing or proposed roads and pads for stabilization of sand, or discharged at a solid waste disposal site approved by the Regional Board to receive this waste.

5. The drilling mud components which may be used are:

Bentonite	Sepiolite	Barium sulfate
Lignite	Sodium tetraphosphate	Cypan
Causitc soda	Sodium carbonate	Bit lube
Mica	Sodium chloride	Thread dope
Tannic acid	Oil	Pipelax
Cane fiber	Ground nutshells	Detergent
Lime	Sodium Bicarbonate	Blown asphalt

Bentonite, Lignite and Sepiolite are the main components; the other substances are additives and may or may not be used depending on the particular drilling conditions.

6. The discharger proposes to discharge into the mud sumps or into steel tanks approximately 6.09 million gallons of clean-out fluid and geothermal flow test fluid with a total dissolved solids concentration not expected to exceed 2,300 mg/l. Final disposal would be by subsurface reinjection, or after some evaporation, the non-toxic residual fluid would be used for dust control on roads and pads, or discharged at a waste disposal site approved by the Regional Board to receive this waste.

7. The discharger is hereby informed that there are no solid waste disposal sites in the Colorado River Basin Region at this time that have been approved by the Regional Board to receive geothermal salt wastes.

8. Flow from production testing of geothermal wells would be injected back into the geothermal reservoir.

9. The Water Quality Control Plan for the West Colorado River Basin Region was adopted an April 10, 1975. The Basin Plan contains water quality objectives for Imperial Hydrologic Unit.

10. Two shallow groundwater monitoring wells located near the SW corner of Section 30, T15S, R17E, SBB&M have TDS reported at 1600 and 1700 mg/l. Seven other shallow monitoring wells located south of the discharger's area (Sections 5 & 6, T16S, R17E, SBB&M), have TDS reported to range from 1,100 to 14,000 mg/l.

11. The Regional Board approved on March 26, 1980 a Negative Declaration for these wells in accordance with California Environmental Quality Act and State Guidelines. The Board determines that there will be no substantial adverse change in the environment as a result of this project.

12. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the proposed discharge.

13. The Board in a public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, Republic Geothermal, Inc. shall comply with the following:

A. Discharge Specifications

1. Neither the treatment nor the discharge of wastes shall create a pollution or a nuisance as defined in Division 7 of the California Water Code.

2. Geothermal fluids and other wastes shall not enter any rivers, canals, drainage channels, or drains (including subsurface drainage systems) which could provide flow or seepage to Salton Sea.

3. Temporary storage of drilling mud, drill cuttings, cleanout fluid and flow test fluid in other than a sump from which there is no seepage or overflow, is prohibited (unless fluid contained therein has a total dissolved solids concentration which is less than 2300 mg/l, and is non-toxic.)

4. The surface discharge of geothermal fluids, other than into mud sumps or for use in maintaining access roads, well pads, and other improvements in the general area, is prohibited.

5. Geothermal fluids spread on roads or pads shall not have a total dissolved solids concentration that exceeds 2300 mg/l, and shall be non-toxic.

6. Adequate protective works and maintenance shall be provided to assure that the sumps will not become eroded or otherwise damaged during the project period, and/or until all well drilling, well cleanout, and flow test materials are removed.

7. A minimum freeboard of at least two (2) feet shall be maintained in each sump.

8. Fluids discharged by subsurface injection shall not be discharged into any subsurface zone which has a total dissolved solids concentration of less than 10,000 mg/l, unless the total dissolved solids of the injection water is less than or equal to that of the receiving water.

9. Drilling muds, with extractable water containing a total dissolved solids concentration exceeding 6,000 mg/l, and brine and salt wastes, shall be discharged at a Class I or Class II-1 disposal site approved by the Regional Board to receive said wastes.

10. Drilling muds, with extractable water containing a total dissolved solids concentration which is less than 6,000 mg/l, and not containing hazardous wastes* may be disposed of at a Class II-2 disposal site approved by the Regional Board to receive said wastes, and/or used for stabilization of roads and pads.

11. Final disposal of residual wastes in accordance with Specifications No. 8, 9, and 10 above, and cleanup of all contents, shall be accomplished upon abandonment of operations. Lack of construction or operational activity on the site for a period of one year shall constitute abandonment for the purposes of this Order.

B. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 80-32 and "General Provisions for Monitoring and Reporting", and future revisions thereto, as specified by the Executive Officer.

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*See Attachment A

2. At least 5 days prior to the discharge of any materials into each sump, the discharger shall submit to the Regional Board a technical report showing the construction of the sump, and a certificate signed by a California Registered Civil Engineer stating that the sump and attendant facilities are constructed to meet the requirements of this Order.

I, Arthur Swajian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on March 26, 1980.

Arthur Swajian
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ATTACHMENT A

Threshold Limit Concentrations for Persistent and Bioaccumulative Toxic Substances

Drilling mud, cuttings, and other geothermal wastes containing the following substances having concentrations equal to or greater than those listed below are designated as hazardous by the State of California Department of Health Services.

		Soluble Threshold Limit mg/kg	Total Threshold Limit net weight mg/kg
1.	Arsenic and compounds	5	50
2.	Barium (excluding barite) and compounds	100	1,000
3.	Lead compounds, inorganic	5	50
4.	Lead compounds, organic	--	13
5.	Manganese compounds	100	1,000
6.	Zinc compounds	17	170

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 80-32
FOR
REPUBLIC GEOTHERMAL, INC.
EXPLORATORY DEEP-TEST WELLS
East Mesa Area - Imperial County

Location: Sections 31 and 32, T15S, R17E, SBB&M
Section 5, T16S, R17E, SBB&M

MONITORING

Republic Geothermal, Inc. shall report monitoring data to the Regional Board in accordance with the following schedule:

Constituents	Units	Reporting Frequency
1. Volume of geothermal wastes contained in each sump.	Gallons	Monthly
2. Volume of total amount of saline drilling muds and salt and brine waste hauled to a Class I or Class II-1 solid waste disposal site, and name of site.	Gallons	Monthly
3. Volume and total dissolved solids concentration of non-saline drilling muds hauled to a Class II-2 solid waste disposal site and name of site, or used for road and pad stabilization.	Gallons and mg/l	Monthly
4. Total dissolved solids concentration of waste fluid injected into injection well(s).	mg/l	Monthly
5. Total dissolved solids concentration of groundwater contained in strata receiving waste fluid injection	mg/l	At least 10 days prior to commencement of injection

Constituents	Units	Reporting Frequency
6. Representative samples of drilling mud, cuttings and geothermal fluid to be discharged at Class II-2 solid waste disposal sites shall be analyzed for the following constituents and the results reported to the Regional Board.		5 days prior to discharge
a. Arsenic and compounds	mg/kg	
b. Barium (excluding barite) and compounds	mg/kg	
c. Lead compounds, inorganic	mg/kg	
d. Lead compounds, organic	mg/kg	
e. Manganese compounds	mg/kg	
f. Zinc compounds	mg/kg	

7. At least 5 days prior to the discharge of any drilling mud or geothermal materials into a mud sump or other container, the discharger shall submit to the Regional Board a technical report on the construction of said container, and a certificate signed by a California Registered Civil Engineer stating that the container and attendant facilities are constructed to meet the requirements contained in Board Order No. 80-32.

8. At least 10 days before the initial discharge of any geothermal fluids from each well, the discharger shall report said initial discharge to the Board.

9. Immediate reporting of any accidental spillage or release of waste material, and plan for immediate measures being taken to correct same and to limit detrimental effects.

10. Report of completion of removal of all geothermal wastes from the sump - reported within one week following completion of work.

11. At least 10 days prior to destruction of the sump, the discharger shall request a Regional Board staff inspection and approval of the cleanup procedure.

REPORTING

The above monitoring program shall be implemented immediately upon commencement of discharge at the site.

Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Reports for Item 9 (above) shall be forwarded immediately, and if at all possible, shall be preceded by phone communication to the Regional Board's office (714) 346-7491. Copies of the reports submitted to the Board pursuant to this Monitoring and Reporting program shall be maintained at the operations site, and shall also be made available to staff of the Regional Board upon request.

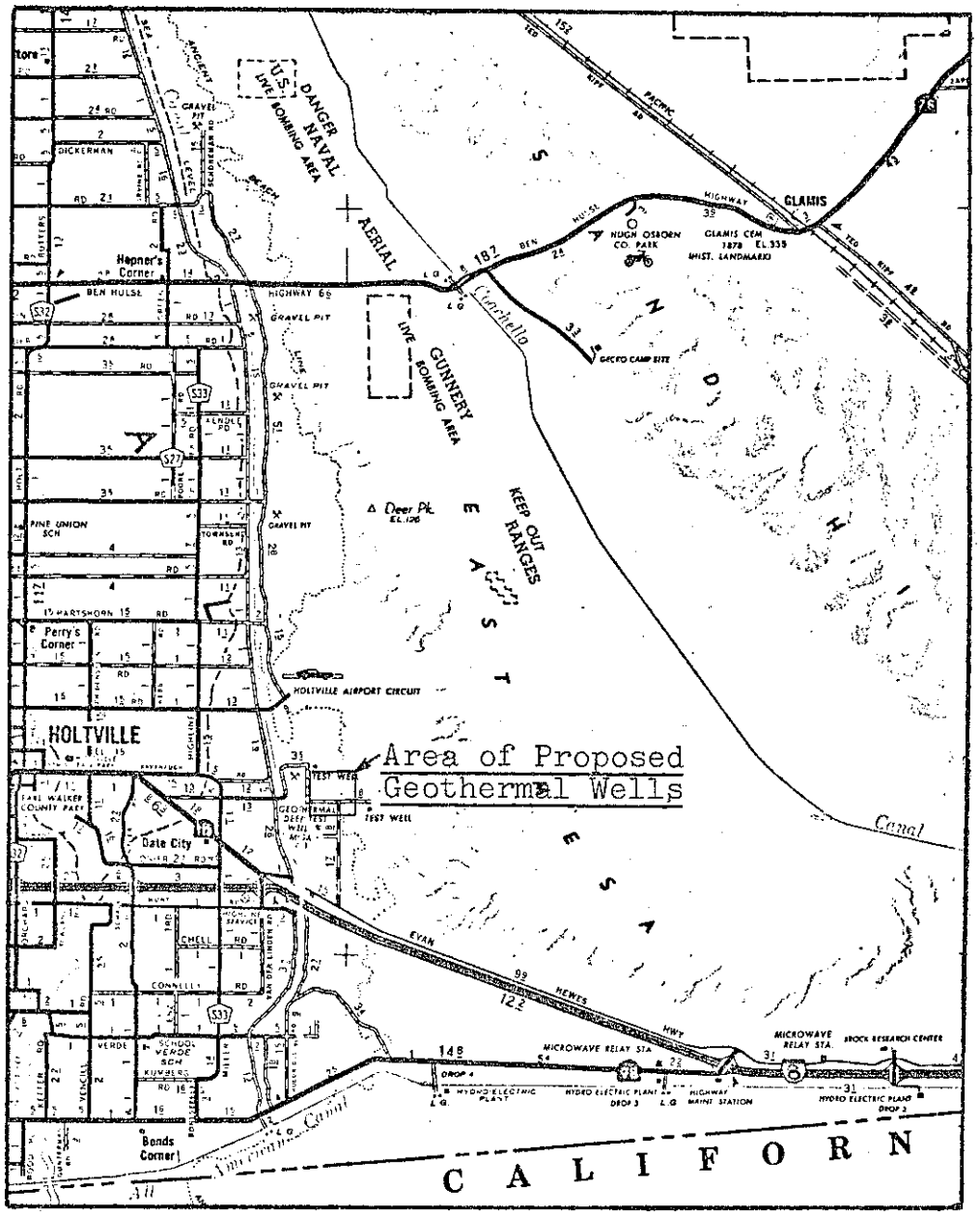
Mail reports to:

California Regional Water Quality Control Board
Colorado River Basin Region
73-271 Highway 111, Suite 21
Palm Desert, CA 92260

Ordered by Arthur Swajian
Executive Officer

March 26, 1980
Date

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - 7



N.

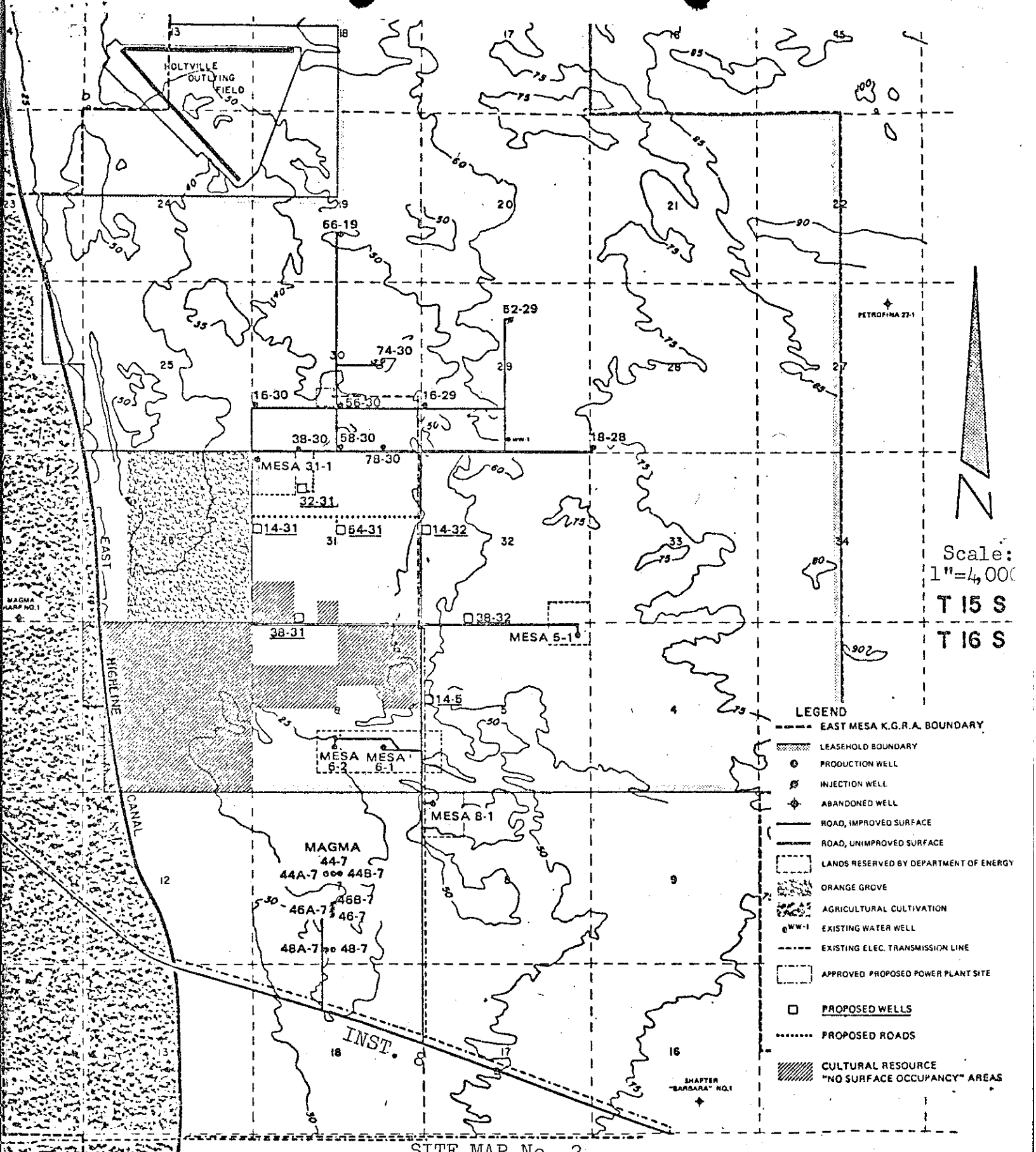
Scale:

1" = 4.5 mi.

SITE MAP No. 1

REPUBLIC GEOTHERMAL, INC.
EXPLORATORY DEEP-TEST WELLS
East Mesa Area - Imperial County

Order No. 80-32



SITE MAP No. 2
REPUBLIC GEOTHERMAL, INC.
EXPLORATORY DEEP-TEST WELLS
East Mesa Area - Imperial County
Sections 31 and 32, T15S, R17E, SBB&M
Section 5, T16S, R17E, SBB&M

Order No. 80-32