

# Lessons Learned from the Oil Shale RD&D Environmental Assessments

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# Proposed RD&D Projects

Company	Projects	Basin	State
Shell	3	Piceance	Colorado
EGL	1	Piceance	Colorado
Chevron	1	Piceance	Colorado
OSEC	1	Uinta	Utah

# Proposed RD&D Technologies

Company	Projects	Technology
Shell	3	In-situ
EGL	1	In-situ
Chevron	1	In-situ
OSEC	1	Underground mining/surface retorting

# Public Perception of Environmental Impacts

# Changes Since the 1970s and 1980s that Affect Environmental Impacts

- ▶ Changes in Planned Oil Shale Development Technologies
- ▶ Changes in the Environment

# Changes in Planned Oil Shale Development Technologies

# 1973 Final EIS for the Prototype Oil Shale Leasing Program Anticipated Development by 1985

Technology	Number of Mines	Daily Production (bbl each)	Total Daily Production (bbl)
Surface mine/surface retort	1	100,000	100,000
Surface mine/surface retort	1	150,000	150,000
Underground mine/surface retort	11	50,000	550,000
In-situ mine	4	50,000	200,000
		<b>Total</b>	<b>1,000,000</b>

# Land Requirements

(30 years operation, 100,000 bbl/day production)

<b>Technology</b>	<b>Mine (acres)</b>	<b>Surface Facilities (acres)</b>	<b>Total (acres)</b>
Surface mine/surface retort	6,650	280	6,930
Underground mine/surface retort	4,420	280	4,700
In-situ mine	388-3,580	100	488-3,680



# Land Impacts

- ▶ Vegetation – extent of cover, community composition, successional state
- ▶ Land Use – wildlife habitat, grazing, recreation, petroleum production

# Water Requirements (100,000 bbl/day production)

<b>Technology</b>	<b>Water Consumption (acre-feet/year)</b>
Surface mine/surface retort	16,800
Underground mine/surface retort	17,400
In-situ mine	8,800



# Water Impacts

▶ Water Quality

▶ Water Supplies

# Air Emissions

## ▶ Particulate Matter

- Construction dust and vehicular emissions
- Blasting
- Mining
- Overburden and spent shale disposal operations

## ▶ Gaseous Emissions

- Retorting
- Oil upgrading operations

# Operating Labor Requirements (100,000 bbl/day production)

Technology	Workers
Surface mine/surface retort	2,190
Underground mine/surface retort	2,190
In-situ mine	2,870

# Changes in the Environment

- ▶ Additional sources of contaminants
- ▶ Increased competition for resources

# A Challenge for the Oil Shale Industry

# Questions and Comments