UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

OIL SHALE BRIEFING BOOK

REGION VIII DENVER COLORADO

575

R8
320

Briefing Book
prepared for Barbara Blum

February 15, 1980 Oil Shale Trip

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ITINERARY

Barbara Blum Oil Shale Trip

February 15, 1980

8:00 a.m.	Depart Denver Fly over of oil shale country (see enclosed maps - Tabs 2 and 3)
9:30 a.m.	Arrive Grand Junction
9:45 a.m.	Depart Grand Junction via helicopter
10:00 a.m.	Arrive C-b Tour C-b
11:30 a.m.	Leave C-b
12:00	Arrive Colony Lunch Tour Colony
2:00 p.m.	Briefing at Union
2:30 p.m.	Leave Union for Grand Junction airport via helicopter
3:00 p.m.	Press Conference
4:00 p.m.	Depart Grand Junction for Denver

Notes

1. Fly over will point out . . .

    - o Flat Tops Wilderness Area Class I
    - o Private developers on southern part of Piceance Basin - Colony, Union, Chevron, Occidental, Naval Oil Shale REserve, Paraho

2. Tour at C-b will include . . .

    - o Project briefing
    - o Underground in the shaft
    - o Tour of tract

3. Tour at Colony will include . . .

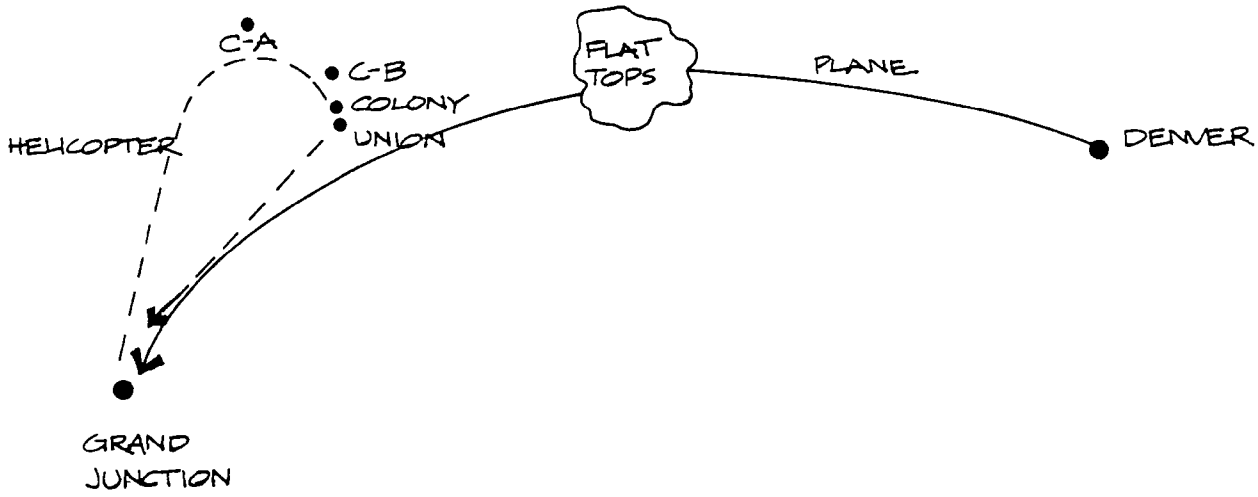
    - o Project briefing
    - o Underground mine tour
    - o View of retort
    - o Visit to spent shale revegetation

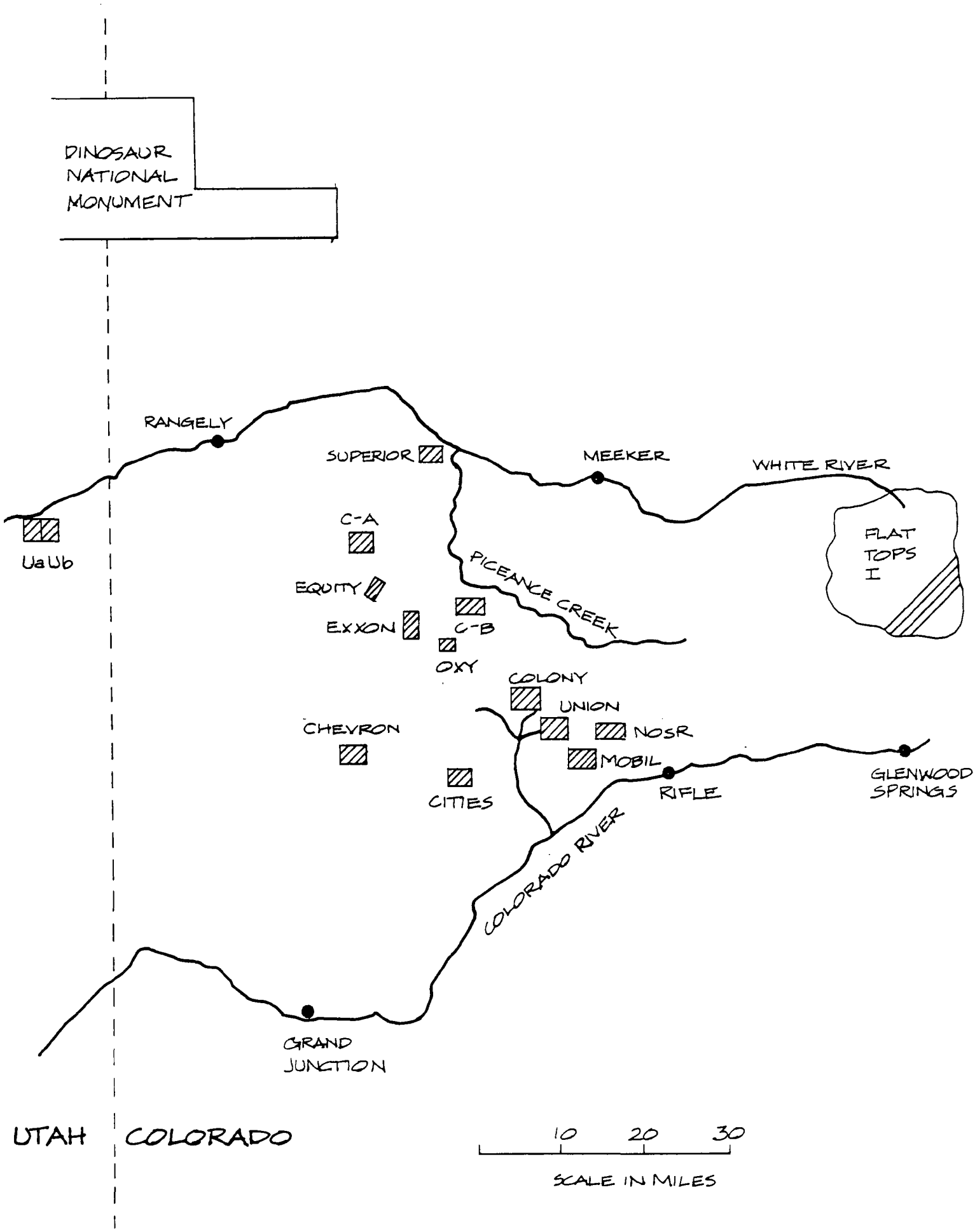
4. Tour at Union will include . . .

    - o Project briefing

Tour Group

Barbara Blum	Deputy Administrator EPA
Beth Sullivan	Special Assistant
Chris Palmer	Special Assistant - Energy
Roger Williams	Region VIII Administrator
Russ Fitch	Director, OPAIR
Terry Thoem	Director, Energy Office
Terry Ryan	Associated Press
Ed Andrieski	Associated Press
David Salisbury	Christian Science Monitor
Bob Tweedel	Denver Post
Bill Carr	KREX


C-A
C-B
COLONY
UNION
HELICOPTER
FLAT TOPS
PLANE
DENVER
GRAND JUNCTION


DINOSAUR NATIONAL MONUMENT
RANGELY
SUPERIOR
MEEKER
WHITE RIVER
FLAT TOPS I
PICEANCE CREEK
C-A
EQUITY
EXXON
C-B
OXY
Ua Ub
COLONY
UNION
NOSR
MOBIL
CHEVRON
CITIES
RIFLE
GLENWOOD SPRINGS
COLORADO RIVER
GRAND JUNCTION
UTAH
COLORADO
10 20 30
SCALE IN MILES

OIL SHALE INDUSTRY PROFILE

The development of oil shale has been "just around the corner" for at least 60 years. The heart of the problem facing a viable oil shale industry has been economics. While some companies talk about overly restrictive environmental requirements and of regulatory uncertainty as factors in the non-development of oil shale, close scrutiny of the situation brings one back to economics as the principal constraint. Other factors besides economics (environmental requirements and regulatory uncertainty to a much lesser degree) which have postponed the development of an oil shale industry include technical and legal uncertainties. Considerable work has been done over a number of years to remove many of the technical uncertainties surrounding oil shale processing. However, uncertainties regarding scale-up of technologies remain. The largest demonstration of retorting has been at a capacity of 1200 tons per day. Commercial size modules will be about six times larger. Two major legal constraints face a potential oil shale industry. The first consists of the contested ownership of 43,000 acres of unpatented mining claims filed on oil shale land under the mining law of 1872. The Mineral Leasing Act of 1920 made oil shale a leasable mineral. Recent court decisions have unheld the validity of the pre 1920 claims. The second legal uncertainty involves Federal vs State ownership of certain lands. Both Utah and Colorado have claimed Federal lands bearing oil shale under provisions of the Statehood Enabling Act of 1894.

Produced shale oil is entitled to the world free market price as a result ofactions by the President and DOE. Most companies were projecting a required price of about $25 per barrel in the 1978-79 time frame. Therefore, even with inflation, shale oil is becoming attractive at the present world market price of about $30 per barrel. Further adding to the attractiveness of shale oil is the certainty of a supply of oil, given recent events in the Middle East.

Shale oil is being produced in the USSR and in China. Commercial size projects are under construction in Brazil and Australia. The Federal Prototype Oil Shale Leasing Program was launched in the United States late in 1973 in order to demonstrate the viability of the technology and to define the environmental impacts of shale oil production. Operations via the modified in-site technique are proceeding on the two Colorado lease tracts. The two Utah lease tracts are involved in the land ownership legal battle. The two Wyoming tracts attracted no bidders. Development on private lands in Colorado appears to be destined to underground mining and surface retorting.

The President established a goal of production of 400,000 bpd of shale oil by 1990. Congress appears to be arriving at a similar production goal but to be accomplished by 1992. Due to the recent renewed interest in oil shale development DOI Secretary Andrus is evaluating the need for resumption of an oil shale leasing program prior to fulfillment of the Prototype Program objectives. A recent survey of oil shale company production goals by 1990 resulted in a total figure -f almost 700,000 bpd (see attached table). It should be strongly emphasized that these must be considered as posturing or planning figures and in no way represent firm commitments to proceed.

In conclusion, oil shale has had a great potential for years; it now appears that the 1980's will bring some development into being. The role, location, and mode of development will all bear upon the environmental acceptability of the industry.

PREDICTED SHALE OIL PRODUCTION LEVELS FROM WESTERN OIL SHALE RESOURCES
1980 — 1996
(BARRELS PER CALENDAR DAY)

NOV. 1979

	OIL SHALE PROJECTS		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
①	OCCIDENTAL OIL SHALE LEASE TRACT C-b	a	PILOT OPERATION, ENGR. PERMITTING, CONSTRUCTION →				6,250	30,000	50,000	50,000	87,500	140,000	200,000	COMMERCIAL OPERATION →					
②	PROJECT RIO BLANCO LEASE TRACT C-a	b	PILOT OPERATION, ENGR. PERMITTING, CONSTRUCTION →				19,000	45,600	76,000	COMMERCIAL OPERATION → ENGR, PERMITTING, CONSTRUCTION				90,800	111,600	135,000	COMMERCIAL OPERATION →		
③	GEOKINETICS, INC UINTA BASIN	c	SAME AS ABOVE →		3,000	5,000	10,000	15,000	25,000	40,000	50,000	→							
④	EQUITY OIL PICEANCE BASIN	d	PILOT OPERATION → PLANS DEPEND UPON OUTCOME OF PILOT OPERATIONS →																
⑤	NAVAL OIL SHALE RESERVE PICEANCE BASIN	e	FEASIBILITY STUDY →				DESIGN PERMITTING →		CONSTRUCTION →				28,000	41,500	50,000	COMMERCIAL OPERATION →			
⑥	DEMONSTRATION OF ABOVE GROUND RETORTING (DOE-PON)	f	MODULE DESIGN → MODULAR PLANT CONSTRUCTION →			8,000	4,000	END PROJECT											
⑦	DEMONSTRATION OF ADVANCED RETORT TECHNOLOGY (DOE-PON)	g	RESEARCH →				PILOT TESTS, ENGINEERING, PERMITTING MODULE CONSTRUCTION →						8,000	8,000	END PROJECT				
⑧	UNION OIL LONG RIDGE, PICEANCE BASIN	h	CONSTRUCTION →		9,500	MODULE OPER. CONSTRUCTION →		30,000	50,000	COMMERCIAL OPERATION → SCALE UP							75,000	100,000	→
⑨	COLONY/TOSCO PARACHUTE CREEK, PICEANCE BASIN	i	DESIGN, CONSTRUCTION →				25,900	38,400	46,200	COMMERCIAL OPERATION →									
⑩	TOSCO SAND WASH UINTA BASIN	j						PERMITTING, CONSTRUCTION →			23,100	46,200	→						
⑪	WHITE RIVER PROJECT LEASE TRACTS Uo, Ub, UINTA BASIN	k	EXACT SCHEDULE WILL DEPEND UPON OUTCOME OF LITIGATION →													45,000	90,000	→	
⑫	CHEVRON OIL PICEANCE BASIN	l	ENGR, PERMITTING, PILOT MODULE CONSTRUCTION →				7,000	15,600	24,200	32,800	41,400	50,000	66,600	83,200	100,000	→			
⑬	SUPERIOR OIL PICEANCE BASIN	m	PERMITTING, CONSTRUCTION →					6,700	10,000	12,000	COMMERCIAL OPERATION →								
⑭	MOBIL OIL PICEANCE BASIN	n	ENGINEERING, PERMITTING, CONSTRUCTION →						6,000	6,000	30,600	42,500	50,000	COMM. OPERATION SCALE UP →			78,000	91,500	100,000 →
⑮	CARTER OIL	o	ENGINEERING, PERMITTING, CONSTRUCTION →						18,800	24,900	30,000	45,000	60,000	COMMERCIAL OPERATION →					
⑯	CITIES SERVICES		NO DEFINITE PLANS AT THIS TIME																
	TOTAL PROJECTS		0	0	14,500	22,500	81,650	181,300	304,200	337,900	446,800	557,900	693,000	723,100	756,200	821,000	942,400	980,900	989,400

Status of Oil Shale Projects

COMMERCIAL PROJECTS

1. CATHEDRAL BLUFFS SHALE OIL CO. - Occidental & Tenneco(T3S,R96W,6PM

Bonus bid of $117.8 million paid to acquire rights to Tract C-b in 1974. Original partners, ARCO and TOSCO, withdrew in 1975. A third original partner, Shell, withdrew 11/76. Occidental joined(with Ashland as remaining partner)11/76. Ashland withdrew 2/14/79. On 9/4/79, Tenneco acquired half interest for $110 million. Modified DDP for 57,000 BPD modified in situ plant submitted March 1, 1977. DDP approved 8/30/77. EPA issued conditional PSD permit for first phase of development 12/16/77. Primary contractor is Ralph M. Parsons Company. Three headframes, two of concrete and one of steel, have been erected. As of mid-October the shaft depths were: Ventilation/ Escape - 910', Service - 725', Production - 726'.

Project cost: $1 billion

2. COLONY DEVELOPMENT OPERATION - ARCO (60%) and TOSCO (40%)(T5S,R95W,6PM)

Proposed 46,000 BPD project on Colony Dow West property near Grand Valley, Colorado. Underground room-and-pillar mining and TOSCO II retorting planned. Production would be 66,000 TPD of 35 GPT shale from a 60-ft. horizon in the Mahogany zone. Development suspended 10/4/74. Draft EIS covering plant, 196-mile pipeline to Lisbon, Utah, and minor land exchanges released 12/17/75. Final EIS has been approved. World price for shale oil and inclusion of shale oil in entitlements program increases likelihood that project will be reactivated. EPA issued conditional PSD permit 7/11/79. If a proposed $3/bbl tax credit indexed for inflation or equivalent incentive becomes law, Colony hopes the climate will improve to attract enough investment for reactivation of the project.

Project cost: Estimated at $1.132 billion(1977 dollars) including $20 million for community development.

3. UNION LONG RIDGE PROJECT - Union Oil Company of California (T5S,R95W,6PM)

In 1974, Union announced plans for a commercial project ranging in size from 50,000 BPD to as much as 150,000 BPD on some 22,000 acres of fee land near Grand Valley, Colorado. Land, shale and water resources are adequate. Underground room-and-pillar mining and Union "B" retorting would be employed. Union's "B" retort is a modification of their direct-heated,rock pump retort first tested in the late 1950's. Current plans are to proceed with a 9,000 BPD (10,000 TPD) prototype facility before expanding to commercial production. Environmental and engineering studies are substantially

COMMERCIAL PROJECTS (Contd.)

completed for prototype facility. Union has announced that it will proceed if a $3/bbl tax credit is enacted. EPA issued conditional PSD permit 7/31/79. Colorado Mined Land Reclamation Board issued permit 8/2/79.

Project cost: Approximately $100 million for 9,000 BPD module.

4. RIO BLANCO OIL SHALE COMPANY - Gulf & Standard(Indiana)(T2S,R99W,6PM)

Proposed project on federal Tract C-a in Piceance Creek basin, Colorado. Bonus bid of $210.3 million to acquire rights to tract; lease issued 3/1/74. Revised DDP calling for use of LLL Rubbilized In Situ Extraction(RISE) of shale oil submitted to Interior 5/77. Combination of modified in situ retorts and surface retorts(TOSCO II) will be used to produce 76,000 BPD. Five-year process development project will be conducted to prove in situ technology. Commercial facility scheduled to get underway in 1987. DDP approved 9/22/77. American Mine Services Inc. of Denver was awarded a $4 million contract 11/21/77 to sink a 15-foot wide, 971-foot deep shaft. EPA awarded PSD permit on 12/16/77. Primary contractor is Morrison-Knudsen Company with a $38.8 million contract. Tests are underway to determine underground water quantities. Agreement($6 million) reached 3/79 with Oxy for exchange of modified in situ technical data. On 8/31/79 approval was granted to modify in situ retorts using RBOSC design. On 7/16/79 announced 1-year design and cost study($4 million) that could lead to $100 million construction and operation of Lurgi-Ruhrgas surface retort demonstration plant. Shaft completed at 979' in 10/79, and outfitting is progressing. Surface processing facilities scheduled for completion 1st quarter of 1980. First burn is scheduled for April 1980.

Project cost: Four-year process development phase budgeted at $93 million. No cost estimate available for commercial facility.

5. WHITE RIVER SHALE PROJECT - Phillips, Sohio & Sunedco(T10,R94E,SLM)

Proposed joint development of federal lease Tracts U-a and U-b in the Uinta Basin near Bonanza, Utah. Bonus bid for Tract U-a was $76.6 million by Sun(now Sunedco) and Phillips. Bonus bid for Tract U-b was $45.1 million by White River Shale Oil Corporation (jointly owned by Phillips, Sohio and Sunedco). Rights to Tract U-b subsequently assigned to Sohio. Both leases issued 6/1/74. Detailed Development Plan filed with Interior 6/76 proposes modular development with ultimate expansion to 100,000 BPD. Application for one-year suspension of lease terms granted 10/76 based on environmental considerations. This suspension was superseded by a court injunction suspending the lease terms based on property title questions. WRSP's leases U-a and U-b are in jeopardy due to the existence of unpatented pre-1920 oil shale placer mining claims and

COMMERCIAL PROJECTS (Contd.)

by an, as yet unresolved,application for a state lease to the same property by Peninsula Mining associated with Utah's in-lieu land selection procedure. The injunction order suspending the U-a and U-b federal lease terms is uncontested and is in full force and effect. The final Environmental Baseline Study report was issued on 11/15/77 by WRSP. Utah approved White River Dam and Reservoir funding 2/78. EIS for the Dam is proceeding.

Project cost: Estimated at $1.61 billion for 100,000 BPD project (1975 dollars)

6. NAVY OIL SHALE RESERVE DEVELOPMENT - TRW Inc.

Navy issued RFP 6/77, calling for preparation of Master Development Plan for Naval Oil Shale Reserves 1,2, and 3. Objective is to put NOSR in position for large scale development of resources within five years. Contract awarded 6/22/78 to team composed of TRW, CF Braun & Company, Gulf Research & Development Company, Williams Bros. Engineering Company, and Tosco Corporation. Comparative analysis of NOSR 1 and eight other Piceance Creek basin properties has been completed. A production range of 50,000 to 200,000 BPD is being evaluated. Baseline environmental data are being obtained.

Project cost: $2.16 million through 10/1/79
$60 million in 4 annual options

7. CHEVRON RESOURCES CO.

Project feasibility study is ongoing. Project would consist of open pit mining and surface retorting. Feasibility plans are directed toward a 100,000 BPD operation by 1990. Baseline environmental data are being collected. Although on private land an EIS would be prepared because of offsite right-of-way approvals.

8. EXXON COAL USA, INC.

A request for land exchange was sent to BLM on December 28, 1979. Project feasibility study is ongoing.

9. SUPERIOR OIL CO. (T1N,R97W,6PM)

Proposed project involving production of shale oil, nahcolite, alumina and soda ash from a 6,500-acre privately owned tract in Piceance Creek basin near Meeker, Colorado. Underground mining and aboveground processing to yield shale oil, nahcolite, aluminum trihydrate, and soda ash. Facilities proposed to be constructed in modules of 11,586 BOPD from 26,176 TPD shale feed. Co-products

COMMERCIAL PROJECTS (Contd.)

would be 4,878 TPD of 80 percent nahcolite, 580 TPD alumina,and 1,005 soda ash. Land exchange request to block up economically viable property filed with Interior 12/73. Draft EIS issued by BLM 7/17/79.

Project cost: $300 million for one multi-mineral module
$473,459 for EIS

10. TOSCO SAND WASH PROJECT - Tosco Corp.(T9S,R21E,SLM)

Proposed 50,000 BPD project on 14,688 acres of state leases in Sand Wash area of Uinta basin near Vernal, Utah. State-approved unitization of 29 non-contiguous leases requires $8 million tract evaluation by 1985. Minimum royalty of $5 per acre begins in 1984 and increases to $50 per acre in 1993. Preliminary feasibility study completed for TOSCO II surface retorting. Process and engineering work underway. Environmental assessment underway on site, but no other field work being conducted. Tosco has drilled a core hole on the Sand Wash site as a preliminary step to shaft sinking and establishment of a test mine. The test mine would confirm economics and mining feasibility plans for the commercial project. Permits for this new work have been received from the state.

Project cost: Approximately $1 billion

11. OCCIDENTAL OIL SHALE, INC.,LOGAN WASH(T75,R97W,6PM)

Oxy is developing its modified in situ retorting technology on its Logan Wash site near De Beque, Colorado. Field tests have been underway since 1972. Initial tests were conducted on three small retorts measuring 30 feet square by 70 feet high. Tests are now being conducted on commercial scale retorts measuring 120 feet by 280 feet high. Thirty thousand barrels of oil were produced from first commercial retort between December 75 and June 76. A $60.5 million cost-sharing contract was signed 9/30/77 with DOE. Production from retort 5 was 11,287 barrels. Retort number 6 was rubblized 3/25/78. In mid-September, two weeks after ignition, a sill pillar collapsed within Retort 6, but there was no interruption in operation. As of 10/15/79 gross oil production from Retort #6 was 47,733 barrels. PSD permit for Retorts 7 & 8 awarded 11/1/79.

Project cost: To date at least $45 million spent
$60.5 million DOE cost-sharing contract

COMMERCIAL PROJECTS(Cont.)

12. PETROSIX - Petrobras (Petroleo Brasileiro, S.A.)

A 2,200 TPD Petrosix demonstration retort located near Sao Mateus do Sul, Parana, Brazil. The plant has been operated successfully near design capacity in a series of tests since 1972. A U.S. patent has been obtained on the process. A 50,000 BPD plant is now being designed. Preliminary indications favor a scaled-up facility about five miles from existing site. A 36-ft. inside diameter vertical retort is being designed for construction at the San Mateus plant site for cold-testing of shale feed and discharge devices. This is a scale-up factor of four over the existing 18-foot inside diameter retort. Part of commercialization project is underway, viz. mine expansion, engineering of the retort, and equipment procurement. Partial operation will begin in 1984, and full capacity will be reached in 1987.

Project cost: Total expenditures in excess of $35 million
Projected cost of 50,000 BPD plant is $1.3 billion

13. RUNDLE PROJECT - Central Pacific Minerals & Southern Pacific Petroleum

Development of the Rundle deposit in Queensland, Australia. Construction will begin in 1980 on two commercial demonstration modules using Superior and Lurgi-Ruhrgas processes. Production projected to be 20,000 BPD by 1982. By 1986, production would grow to 250,000 BPD from 40 retorts.

Project cost: $316 million (US) for 20,000 BPD
$2.16 billion (US) for 250,000 BPD

R&D PROJECTS

14. DOW CHEMICAL CO.

DOW was awarded a four-year contract by ERDA in March 1977, for production of fuels from Antrim oil shale formation. Project includes characterization and mapping of Antrim shale resources in Michigan Basin, evaluation of three in situ fracturing techniques on an 80-acre site belonging to DOW, and two in situ production tests. Explosive fracturing activities for the hydraulic fracturing subtask were completed in the 100 series wells. Well cleanout was almost completed and permeability studies and fracture evaluation will proceed as soon as it is complete. Evidence that there is communication between these wells continues to accumulate. The third and fourth shots in the explosive underreaming series were detonated in well #301. The well cavity was increased by a factor of 2.4 compared to the original borehole volume for a 62-foot section

R&D PROJECTS(Contd.)

after the third shot. The fourth shot produced more damage to the bottom section of well casing. For the chemical underreaming subtask, well #201 was notched in a limestone stringer below the Antrim formation. The well was hydrofractured with water but no communication with nearby wells was observed. Further evaluation of this subtask is underway. The data from extraction trials on the front site have been collected and processed. Analysis of product gases from the final trial showed that they had a total energy content 4.9 times the total solid fuel and gaseous fuel put into the well for ignition, thus establishing that significant quantities of Antrim shale had been affected by the operation. Ignition in well #305 in 10/79 gave indicati
combustion occurred.

Project cost: $14 million

15. EQUITY OIL COMPANY

Equity received a $6.5 million contract from ERDA in June 1977, for development of in situ technology using superheated steam. The work is being conducted on a one-acre site in the Piceance Creek basin of Colorado. The first phase of the contract has been completed which involved drilling two core holes near a previous steam injection site. Site evaluation has been completed. Start-up of field project occurred 6/79. As of mid-October 1979, steam was being injected at 950°F and 1,450 psi at a rate of 20,000 to 25,000 lb/hr(about 50% design rate). No shale oil had been produced.

Project cost: DOE cost-sharing contract for $6.5 million.

16. GEOKINETICS,INC.

Geokinetics has been conducting field tests to develop horizontal in situ retorting technology since 1973. Obtained ERDA contract 7/77 to develop technology in thin horizontal beds of oil shale in Uintah County, Utah. Porosity is established in formation by raising the shallow overburden during explosive fracturing of the shale formation. Total production to end of 1978 was 5,437 barrels.

Project cost: DOE cost-sharing contract valued at $9.2 million

R&D PROJECTS(Contd.)

17. LARAMIE ENERGY TECHNOLOGY CENTER

Laramie and Rocky Mountain Energy Co. have been conducting in situ shale oil production tests for several years near Rock Springs, Wyoming. Partial dismantling of Site 12 began 5/79, and post-operation water monitoring phase began 7/79.

Project cost: Undetermined

18. PARAHO OIL SHALE FULL SIZE MODULE PROGRAM - Paraho Development Corporation

Paraho is seeking six sponsors, each contributing $500,000, for Phase I of a 3-phase module program. Phase I consists of engineering and planning; Phase II is detailed design, procurement, and construction; and Phase III is operation. Paraho initiated Phase I at its own expense on 12/1/77.

Project cost: $4 million for 16-month Phase I
$75 million for 21-month Phase II
$14 million for 24-month Phase III

19. U.S. BUREAU OF MINES - Multi Minerals Corp.

USBM began drilling 10-foot diameter, 2,400-foot deep shaft 3/77. Objective is to mine samples of oil shale, nahcolite, and dawsonite from shale formation. Shaft may be used for ventilation in future experimental mine. Drilling operations were completed 10/2/77 at 2,371 feet. Shaft classified as gassy mine. Multi Mineral Corp. is performing experimental mining. EIS in preparation for "Integrated In Situ Process" testing.

Project cost: Over $8 million for shaft sinking.

ENVIRONMENTAL CONCERNS REGARDING OIL SHALE DEVELOPMENT

Mining and conversion of oil shale will degrade air quality, will consume precious water resources, may degrade surface and/or groundwater quality, will create solid and hazardous wastes to be disposed of properly, and will create significant population growth in a predominantly rural setting which translates into potential social and economic problems. That these things will occur is a given...the question is the magnitude and the significance of the occurrence. Key questions such as the following exist:

1. How much groundwater will be intercepted during mining?
2. What will the quality of potential discharges be?
3. Can groundwater quality be protected during and after in-situ retorting?
4. Can processed shale be disposed of properly without degrading ground or surface water quality?
5. Will revegetation of processed shale be successful over the long term?
6. What are the concentrations of various sulfur species in retort off gas streams?
7. What will be the air quality and visibility impacts on the Flat Tops Wilderness Area (nearest Class I area)?
8. What are the expected trace element concentrations in air, water, and solid waste residual streams?
9. Is conventional pollution control technology directly applicable to oil shale residuals? Is it as effective?
10. What is the expected population growth associated with the development of an oil shale industry?

Answers to the above questions (and perhaps other questions not yet posed) will in part determine the ability of individual plants and of an oil shale industry to be compatible with the desired environment for oil shale country.

Answers to some of the above questions may be partially answered by theoretical research work and limited-scope field investigations in the absence of <u>any</u> oil shale facilities. Answers to the remaining questions will necessarily be developed through rigorous testing programs and data analyses performed on facilities representative of commercial size.

Much has been said and written about the environmental advantages and disadvantages of in-situ development vs. surface retorting technology. Without hard data from operating facilities it is difficult to reach firm conclusions. However, surface retorting appears to have slightly greater air emissions and has more of a solid waste-processed shale disposal problem compared to in-situ. On the other hand in-situ development poses greater risks to groundwater movement and quality than does surface retorting. Firm data are desirable prior to the launching of a large industry.

EPA Regulatory Actions Affecting Oil Shale

Environmental regulatory actions which we have taken include -

EIS Reviews

- o Prototype Oil Shale Leasing Program (D and F)
- o Colony (D and F)
- o Superior (D)

PSD Permits Issued

o	C-a	1000 BPD	12-15-77
o	C-b	5000 BPD	12-15-77
o	Colony	50,000 BPD	7-11-78
o	Union	9000 BPD	7-31-79
o	Occidental	1000 BPD	11-1-79

NPDES Permits Issued

o	C-a	dewatering phase
o	C-b	dewatering phase
o	Occidental	experimental facility

Future regulatory involvement will include -

RCRA Permits

Final regulations scheduled for April 1980 may impose requirements applicable to processed shale.

UIC Permits

Reinjection of produced water will be subject to the requirements as a Class III well. Final regulations are scheduled for April 1980.

In the absence of air NSPS, water effluent guidelines, and solid waste disposal performance standards the Region has been using test engineering judgment. The Agency through the lead of ORD is preparing a series of oil shale documents which will provide "early guidance" on control technology expectations, monitoring methodologies, and impact assessment. The EMB Task Force - Alternative Fuels Group is responsible for the development and implementation of a regulatory and research strategy.

Region VIII Resource Overview

- 16% of Nation's land area
  3% of Nation's population
- 32% Federally owned land
- 10 million acres of Class I area
- 6.3 million people
- 25 Indian Reservations
- Energy Resources

		% of U.S. Total	Quads
Coal	197 billion tons	46	3430
Uranium	273,000	45	120
Petroleum	1.6 billion barrels	4.4	9
Oil Shale	731 billion barrels	100	464
Natural Gas	7.9 TCF	3.6	8

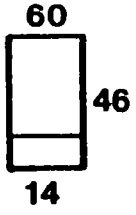
- Energy Production - 1980

Coal	140 million tons
Uranium	9,000 tons
Petroleum	750,000 BPD
Oil Shale	0
Natural Gas	0.6 TCF

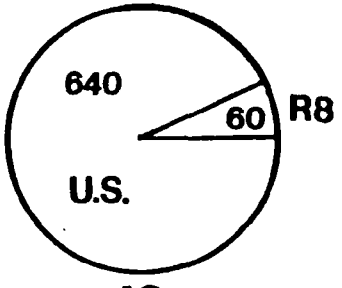
- Import/Export 1975

Production	6600 trillion BTUs
Export	4300 trillion BTUs

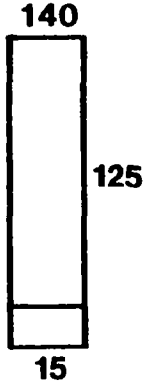
Coal



1975

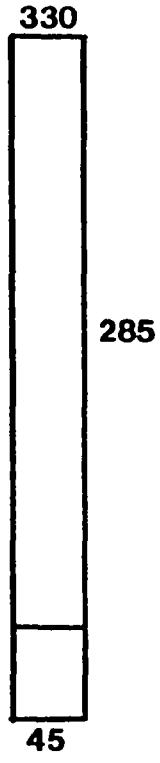


10%

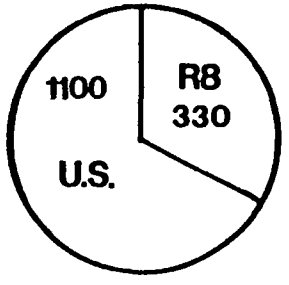


1980

MILLION TONS

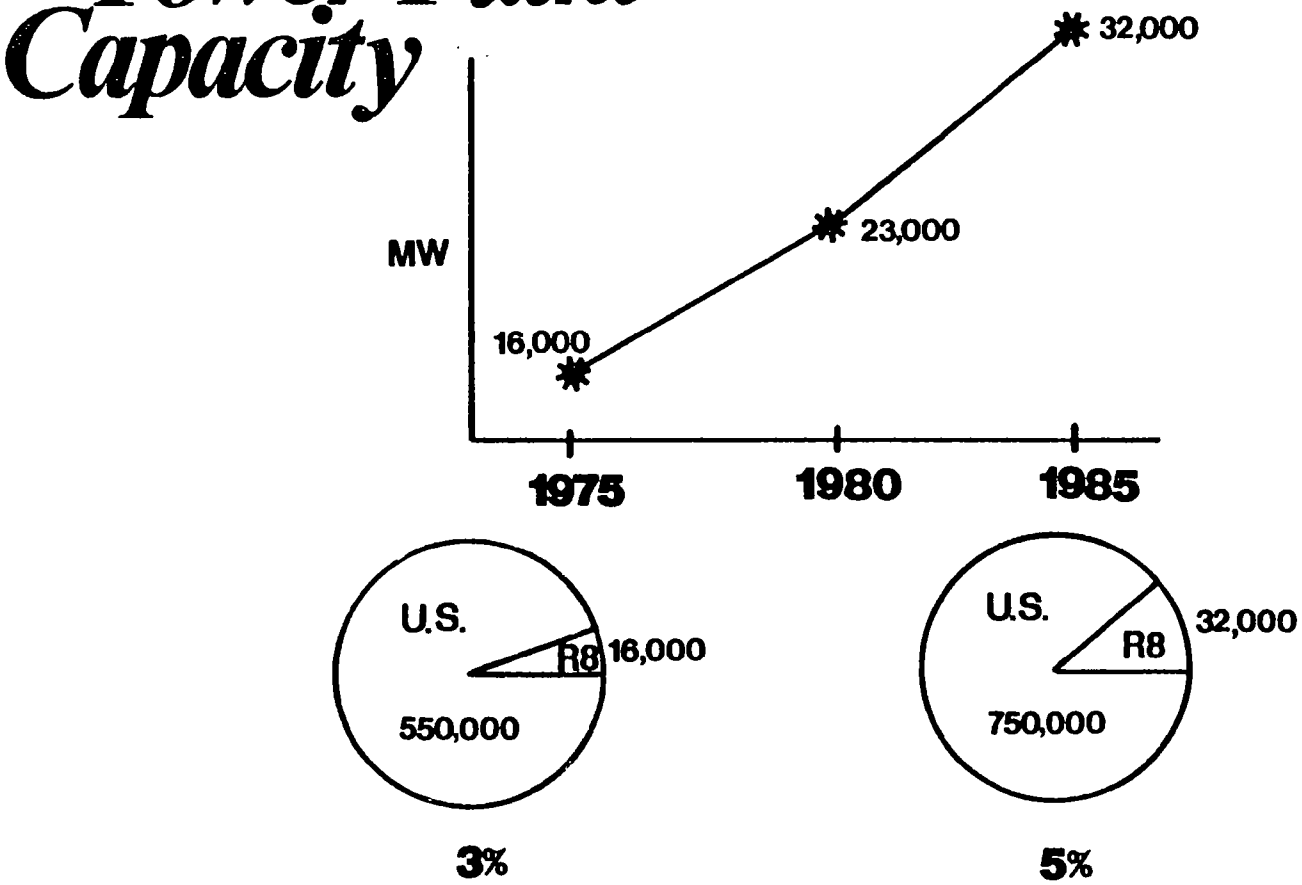


1985

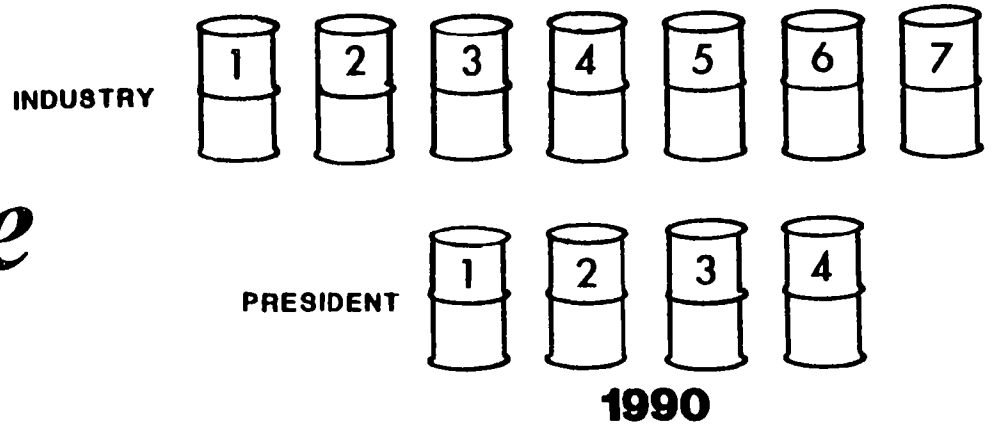


30%

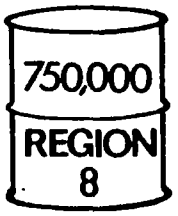
Power Plant Capacity

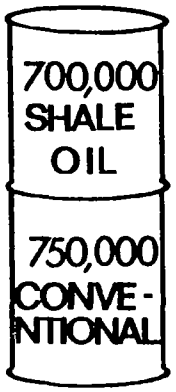


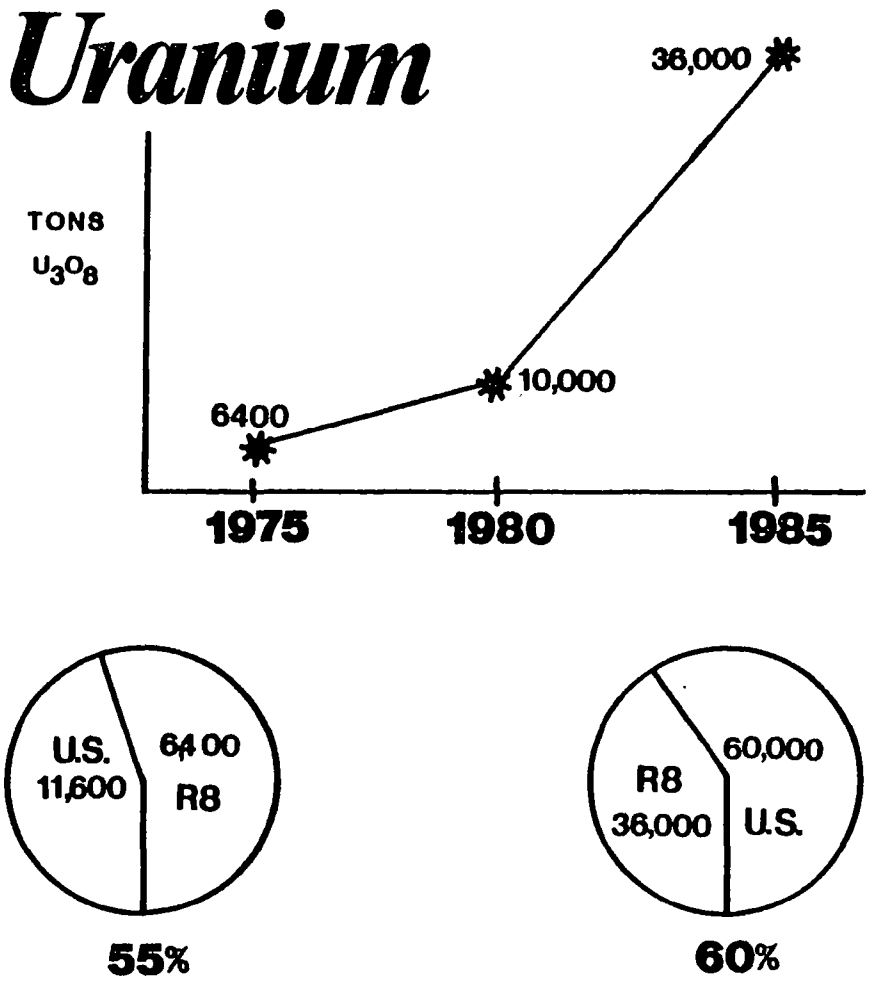
Oil Shale



1979






Uranium
TONS
U_3O_8
36,000
10,000
6400
1975
1980
1985
U.S.
11,600
6400
R8
55%
60,000
R8
36,000
U.S.
60%

ENERGY BRIEFS

EPA Region VIII States are rich in both energy and environmental resources. Clean air, free flowing streams, clean water, unspoiled landscapes, and the wide open spaces abound. Energy resources are colocated with these environmental resources. About fifty percent of the Nation's coal reserves, fifty percent of the uranium supply, essentially all of the economically attractive oil shale, and ten percent of the oil and gas reserves are found in Region VIII. An energy vs. the environmental potential exists.

- Coal resource - 200 billion tons reserve Region
  430 " " " U.S.
  84 " " strippable Region
  137 " " " U.S.

- Coal mining

	Year	Region	U.S.
	1975	70	640 million tons
	1980	140	750
projected	1985	300	1100

- Region VIII has permitted 100 million tpy of coal mining capacity from 19 mines through the PSD process in the past year and a half.

- Coal mining in the Region in 1978 consisted of 105 million tons from the surface (85 percent) and 15 million tons from underground (15 percent).

- The number of coal mines will increase from 74 in 1978 (42 surface/32 underground) to 134 (76 surface/58 underground).

- Coal fired power plant capacity will double between 1976 and 1985. Generating capacity will go from 16,000 MW to 32,000 MW.

- Uranium resources

U_3O_8 reserves	U.S.	315,000 tons
	Reg. VIII	131,000 tons

- Uranium production will triple between 1978 and about 1985. Development will occur from new open pits, underground mines and from in situ.

- Coal gasification - The first commercial high BTU gasification plant will be built near Beulah, N.D. and will be based on Lurgi technology. Construction will start in 1980.

- Coal liquefaction - No projects are planned. The President's and Congress' program envision 1 to 1.5 million BPD equivalent (i.e. 20 to 30 plants - half of which could be in the West) by 1990 - 1995.

- Oil shale - "The industry with the 60-year pregnancy".

- Oil shale resource 731 billion barrels
  compare to

U.S. proven reserve	35 billion
U.S. consumption 1978	6.5 "
Middle East	350 "
Alaska Prudhoe Bay	10 "
West Texas	8 "
Tract C-a alone	4 "

- Production Plans

President's Program	400,000 BPD	1990
Congress	?	1995
Company plans (speculative, however)	700,000 BPD	1990

- Key factors to oil shale development are

  - Congress action on economic incentive. Shale oil presently is entitled to World Market Price ($30/barrel). Companies say they can make 15% DCF ROI at $25-30/barrel.

  - PSD Class I air quality

  - Water availability above a 1,000,000 BPD industry

  - Socio economic solutions

  - State philosophies

- Oil reserves

Region VIII	2 billion barrels
U.S.	35 billion

- Oil Production - 1978

Region VIII	750,000 BPD
U.S.	8,000,000 BPD

- o Oil "Hot Prospects"
  - Overthrust Belt in Utah, Wyoming, and Montana
  - Williston Basin in N.D.

- o Conventional Gas Reserves

Region VIII	10 trillion scf
U.S.	237 "

- o Gas production - 1978

Region VIII	0.6 trillion scf
U.S.	21 "

- o Unconventional gas

  From tight sands in Region VIII there are 40 - 400 trillion scf recoverable.

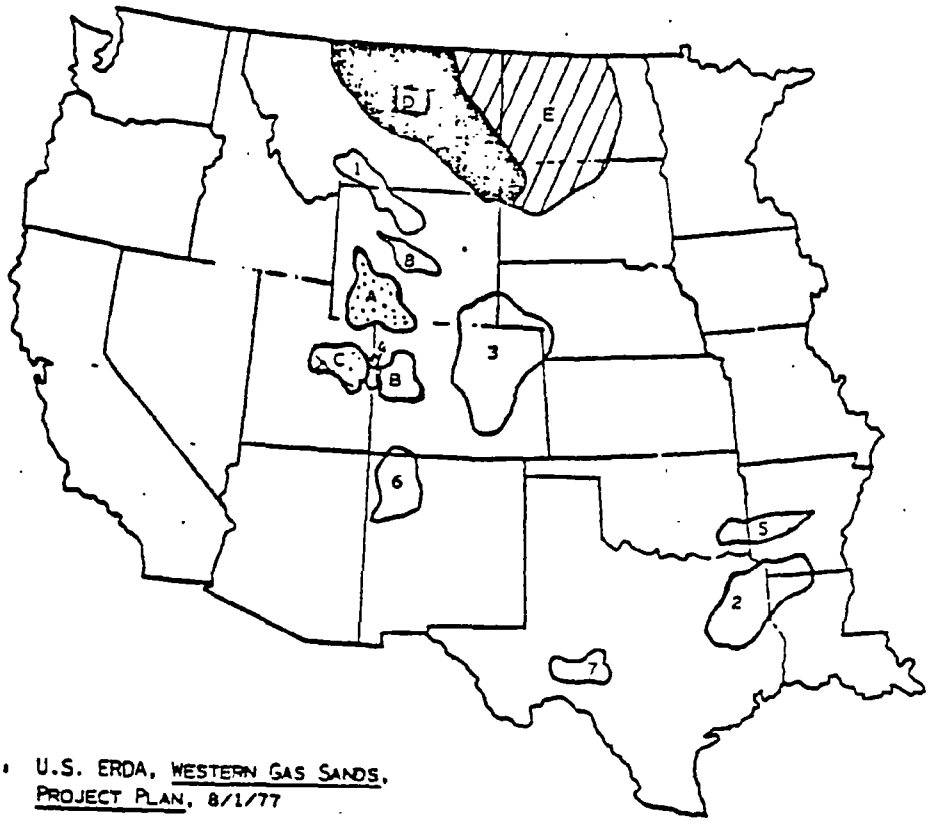
- o Tar sands resource 30 billion barrels

Location of Western Tight Sands Basins

ERDA'S PRIMARY STUDY AREAS	GEOLOGICAL AREA
A. GREATER GREEN RIVER BASIN	TERTIARY AND CRETACEOUS
B. PICEANCE BASIN	TERTIARY AND CRETACEOUS
C. UINTA BASIN	TERTIARY AND CRETACEOUS
D. NORTHERN GREAT PLAINS PROVINCE	CRETACEOUS
E. WILLISTON BASIN	CRETACEOUS

ADDITIONAL LOW-PERMEABILITY AREAS IN THE STUDY	
1. BIG HORN BASIN	TERTIARY AND CRETACEOUS
2. COTTON VALLEY TREND	JURRASSIC
3. DENVER BASIN	CRETACEOUS
4. DOUGLAS CREEK ARCH	CRETACEOUS
5. OUACHITA MOUNTAINS PROVINCE	MISSISSIPPIAN
6. SAN JUAN BASIN	CRETACEOUS
7. SONORA BASIN	PENNSYLVANIAN
8. WIND RIVER BASIN	TERTIARY AND CRETACEOUS

OTHER LOW-PERMEABILITY AREAS NOT INCLUDED IN STUDY	
a. ANADARKO BASIN	PENNSYLVANIAN
b. ARKOMA BASIN	PENNSYLVANIAN
c. FORTH WORTH BASIN	PENNSYLVANIAN
d. RATON BASIN	TERTIARY AND CRETACEOUS
e. SNAKE RIVER DOWNWARP	TERTIARY AND CRETACEOUS
f. WASATCH PLATEAU	CRETACEOUS
g. WESTERN GULF BASIN	TERTIARY AND CRETACEOUS



SOURCE: U.S. ERDA, WESTERN GAS SANDS, PROJECT PLAN, 8/1/77

Recoverable Reserves of Unconventional Gas

Recoverable U.S. reserves of unconventional natural gas are truly enormous. Tight sands natural gas recoverable reserves at current oil prices exceed the U.S.'s current proven oil reserves.

"Unconventional Gas" is natural gas from western and southwestern tight sands, from Devonian shale in the Appalachians and Midwest, from geopressurized methane along chiefly the Gulf of Mexico, from coal seams in most regions, and from very deep wells. Limited production, chiefly from the tight sands regions, has begun.

DOE's National Energy Plan estimates of recoverable reserves of unconventional gas were as follows:

Recoverable Unconventional Gas Reserves
(Trillions of Cubic Feet (Quads))

Tight Sands Formation	40	420
Devonian Shale	25	400
Coal Bed Methane	50	700
Geopressurized Methane	5,000	63,000

Source: NEP II, Table IV-6

Lewin and Associates and the Institute of Gas Technology have made similar estimates. To put these figures in perspective, we now import 16 quads of oil a year.

In addition, the United States Geological Survey has recently informed the National Petroleum Council that their examination of drilling logs from old wells indicates the existence of previously uncounted tight sands gas deposits below 10,000 feet. These deposits are roughly equal to 400 quads (less than half recoverable), but they will cost the equivalent of $25 to $55 per barrel to recover because of the depth involved. These reserves are in addition to those shown in the table and illustrate an important point. These estimates only include discovered basins. No provision is made for new field discoveries.

Price will be the chief determinant of how quickly these reserves are developed. The Administration's proposed tax credit of 50 cents per thousand cubic feet for all forms of unconventional gas, specifically including tight sands, would make an enormous difference.

Production Estimates for Tight Sands Areas

Tight Sands production could provide the equivalent of up to 4 million barrels of oil a day by 1990:

Estimated Tight Sands Production
(in barrels of oil equivalent per day
assuming a $20/Barrel price
in 1979 dollars)

	Low		High
1985	800,000	to	1,850,000
1990	1,750,000	to	3,800,000
2000	2,100,000	to	3,350,000

Source: Lewin Associates (Report for DOE, 1978)

For comparison, the U.S. imported 8 million barrels of oil in 1978.

The actual level of production we achieve over the next decade will depend on the price of the gas produced, the risks, and the pace of technological development. Covering tight sands under the unconventional gas tax credit will help push production towards the upper end of these ranges.

REGULATORY ACTIONS
ENERGY FACILITIES

	1978	1979	1980	1981-85
EIS Reviews	9	32	35+	
PSD Permits	28	43	40+	
NPDES Permits	25	31	60+	
	62	106	135++	200 per year

ADDITIONAL IMPACTS ON REGULATORY ACTIVITIES OF PRESIDENT'S SYNFUELS PROGRAM

Facilities

Coal Mines	14	180 million TPY
Coal Synfuels	10	600,000 BPD
Oil Shale	7	350,000 BPD
Unconventional Gas	4	200,000 BPDOE
	35	

Associated Activities

- Water-for-Energy Resource Projects
- Transportation Systems
- Population Induced Power Plants
- Population Induced Sewage Treatment Plants

EPA JOURNAL
ENERGY--RE ION 8
BYLINE--ROGER WILLIAMS

"You realize, of course," my friend said, "that steet in front of your house is connected to every other road and highway in America." The statement kind of dangled there in the space between us. "It's only a matter of connections, turns and distances."

Unlike the highways he referred to, that particular converstation led nowhere, but his matter-of-fact observation has stayed with me.

That simple idea of connections, so elemental to understanding and dealing with environmental and energy issues, is routinely ignored by millions of Americans until a blackout, a strike, a foreign oil embargo or a sharp price increase brings the connections into sudden, discomforting focus.

Tonight, millions of lights, appliances, motors and gadgets will be switched on in Chicago. How many users or that electricity will realize that following the electrical wires in their homes would lead them to a coal strip mine on the Montana-Wyoming border?

There, power shovels 7 stories tall dig coal from the earth in 25 cubic yard bites, filling trains a mile long with 10,000 tons of coal. Sixteen such trains leave daily from Wyoming alone. A trainload arriving at a 1,000 megawatt power plant-- a not unusual size for an urban area and capable of providing the electrical needs for about a million homes-- is enough coal to last one day.

There, possibly, the connections are better understood because it is there that the environmental, social and economic impacts--good and bad--are felt.

And it is there (in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming) that EPA's Region 8 Office works at the difficult task of balancing the need for markedly increased domestic energy production and the need to preserve and protect some of the highest quality environment remaining in the Nation.

The Region has about half the Nation's coal reserves, some 200 billion tons with 84 billion tons available to today's strip mining techniques. Mining of that coal, at a rate of 60 million tons per year in 1975, doubled by 1978 and is projected to reach 300 million tons/year by 1985. Coal-fired power plant capacity, 16,000 megawatts (MW) in 1976 will double by 1985.

Uranium production is expected to triple between 1978 and 1985.

An oil shale resource estimated at 731 billion barrels--compared to total U.S. oil consumption of 6.5 billion barrels in 1978--seems to be nearing development with the industry currently awaiting an improved economic climate. The President's energy program envisions a 400,000 barrels per day oil shale industry by 1990.

Oil and conventional natural gas reserves in the Region are substantial and up to 400 trillion standard cubic feet of recoverable gas lie locked in "tight" sandstone and shale formations awaiting incentives to industry to make their recovery economical.

If the resource base is huge, so is the potential for environmental damage from its exploitation. Even the best controlled coal-fired power plants will emit thousands of tons of sulfur dioxide gas each year. Much

of that gas, through a series of chemical reactions in the air, becomes sulfate, obscuring visibility in this land of awesome vistas.

Scarce water in the arid and semi-arid West is consumed at the rate of 15,000 acre feet per year by a 1,000 MW power plant. Huge quantities are used in fugitive dust control, reclamation and other uses at mine sites. Mining may disturb underground water supplies as well.

Spent shale--the material remaining after shale has been crushed and burned to extract the "oil"--would fill entire mountain valleys under one of the mining/retorting plans. A shale industry, too, would consume large amounts of water.

Sudden, large population increases from the influx of energy project workers and their families overtax the abilities of primarily small rural communities to provide housing, schools, water, sewer and other essential services. Proper planning and "front-end" financial assistance are needed by many communities to help them cope with the boom and avoid negative impacts.

And, side-by-side with the resources are millions of acres of National parks and monuments, current and proposed wilderness areas and Indian reservations encompassing some of the most beautiful and primitive environment remaining in this country.

Many of those areas enjoy the special protection of Class I air quality under the Clean Air Act's "prevention of significant deterioration" policy. That policy, called PSD, is designed to protect areas where the air is already cleaner than required by National standards. PSD contains pollution limits far more stringent than the National standards.

More than one third--10 million acres--of the Nation's Class I areas are in this Region. There are hundreds of miles of sparkling, free-flowing

streams , wide open spaces and areas that offer a rare commodity--solitude. Those qualities attract millions of tourists annually and lead residents and visitors alike to understand--the West has a lot to lose.

Energy or energy-related proposals on-hand or expected in the next few years in the Region number in the hundreds. Each will involve EPA's review of permit responsibilities at one point or another.

Late in 1979, I directed the preparation of a regional energy policy, putting down on paper this Regional Office's commitments and procedures related to energy development.

The policy is our way of demonstrating to industry, environmentalists, other levels of government and interested citizens that this Region is committed to helping the Nation achieve energy self sufficiency.

But since we are first and foremost an environmental/health agency, assurance that environmental standards and objectives are not violated by energy facilities is the cornerstone of the policy. It is our experience in the Region that we can accomplish reasonable energy goals without weakening existing local, state and Federal environmental requirements.

High in the policy's objectives is a commitment to process key permits covering air and water discharges for energy facilities within six months of our receipt of a completed application. We will commit ourselves to similar timetables for review of permit applications under the Resource Conservation and Recovery Act and the underground injection program (to protect underground water supplies) when the rules for those programs are finalized.

Especially important, we will assist other agencies during the "scoping phase" of impact statement preparation to identify and resolve many potentially troublesome aspects of energy projects early to avoid delays inherent to protracted conflicts. Review of energy impact statements will be given highest priority.

We will provide a similar service to representatives of the energy industry itself, in seminars concentrating on details of permit application forms and other issues.

To the degree possible under various laws, we will consolidate our permit programs and develop procedures for a single joint application form. Internally and with other federal, state and local agencies, we will coordinate our reviews of energy project applications to cut out as much duplication as possible in reporting, application and monitoring requirements.

Our regional perception of the energy/environment and conservation connection is sharpened by the existence of our vast resources and we are increasing our promotion of conservation. We insist upon full consideration of energy conservation and recovery techniques, for instance, in plans for new sewage treatment facilities submitted by communities.

We are actively pursuing innovative and alternative waste treatment technologies and providing financial incentives for their application. Under RCRA and the President's Urban Policy Program we will fund programs aimed at turning wastes into resources, thereby saving or recovering energy.

In our review of energy proposals, we will carefully scrutinize energy demand projections since recent information indicates electrical demand is growing at a slower rate than most utilities have been accustomed to planning for.

We will look for and encourage water saving techniques on the part of industry as well, since water is so limited a resource here and must be shared by agriculture, communities and industry while its environmental uses are also protected.

Cooling techniques which use less water...the use of poorer quality waters for industrial purposes...and water management techniques which do not contribute to increasing salinity in the Colorado River Basin will receive favored treatment in the Regional Office.

We will markedly increase our communications with all parties concerned with Western energy development to reduce confusion and delays and to assure that the best possible projects are built.

We will continue to encourage and support strong State roles in guiding their own energy destinies and we will delegate Federal programs to the States just as quickly as they establish the needed authorities specified by the Congress.

In this era of intense public concern over energy supplies, we can only preserve the important benefits we have realized through environmental laws if we administer them as fairly, comprehensively and expeditiously as we can.

Like the roads in front of our houses, the path to energy self-sufficiency and environmental protection can take us anywhere we want to go. It's only a matter of connections, turns and distances. Working together, we can make the right choices.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII
1860 LINCOLN STREET
DENVER COLORADO 80295

November 1, 1979

Ref: 8EA

Dear Colleague:

States in the West are being called upon to provide additional energy resources to the Nation's energy supply. Government is being asked to provide timely and coordinated regulatory decision making. In consideration of these two demands, EPA Region VIII has developed an Energy Policy Statement. I am pleased to provide you with a draft copy of the statement for your information and comments.

The purpose of the statement is twofold. First, we want to reiterate our commitment to the protection and enhancement of the high quality environment presently enjoyed by citizens and visitors in the Region. Second, EPA is making a commitment to do our part in helping the Nation achieve energy self sufficiency. We believe that energy resource development and environmental protection can be compatible in most situations.

To assure that timely environmental decisions are made we are making a commitment to expeditious regulatory decision making. This includes placing special priority on energy projects. We are developing permit consolidation procedures. We are increasing the promotion of energy conservation measures and the encouragement of the use of renewable resources. We, of course, recognize that there will be times when environmental review of significant non-energy projects must receive higher priority than energy projects. Also, if the situation ever arose in which EPA had the decision to permit either an energy project or a non-energy project but not both, we would be legally mandated to respect the "first in time" concept.

EPA Region VIII views itself in a partnership role with local, State, and other Federal governments, with legislators, with the public, and with industry to see that reasonable energy production occurs in a compatible manner with environmental standards and objectives. We would like to continue to work closely with you and will continue to place a major emphasis on providing energy/environment information to interested persons.

I would be pleased to receive any comments which you may have on this Energy Policy Statement.

Sincerely,

Roger L. Williams
Regional Administrator

Enclosure

EPA REGION VIII

ENERGY POLICY STATEMENT

PURPOSE

This policy statement demonstrates EPA Region VIII's commitment to do its part in helping the Nation achieve energy self sufficiency. EPA Region VIII is also committed to the protection of the high quality environment presently enjoyed by the citizens and visitors in the Region. We believe that energy resource development and environmental protection can be compatible in most situations.

Magnificient vistas, pristine air, fertile plains, clean water, and untouched wilderness areas make up the Region's geography. Abundant energy resources coexist with these natural conditions. Essentially all of the Nation's oil shale resource, half of the Nation's coal reserves and half of the Nation's uranium deposits are found in the Region. Recent actions by the President and by Congress point toward an increased emphasis on the development of these energy resources. A delicate balance must be implemented to allow energy resource development to proceed in appropriate areas.

BACKGROUND

A cornerstone of the National Energy Supply Plan is the development of the Nation's abundant coal reserves. With fifty percent of the Nation's strippable reserves located in Region VIII states, coal development will continue to increase rapidly. The 1978 Regional production of about 100 million tons is projected to reach nearly 300 million tons by about 1985.

Along with the increase in coal mining, coal fired power plants are being constructed in the Region at an increasing rate. The electricity produced is transmitted to load centers in the Midwest, Southwest, West Coast and Northwest. Power plant capacity will double in the Region between now and 1985. At that time, almost half of the electricity produced will be exported from the Region.

The President's Energy Program will stimulate additional coal mining and power plant activity via the construction and operation of coal gasification and coal liquefaction plants. Mandatory conversion of power plants now burning oil or gas to coal will also increase the demand for Western coal.

Oil shale deposits in the Region comprise more than 90 percent of the oil shale resources found in the U.S. Estimates of recoverable reserves are placed at 600 billion barrels. By comparison the U.S. consumed slightly more than 6 billion barrels of oil in 1978. Oil shale deposits are concentrated in a relatively small area in Western Colorado, Northeastern Utah, and Southwestern Wyoming.

Vast uranium reserves exist in Wyoming, Colorado and Utah. Production of uranium ore is expected to almost triple by 1985. If a heavy National reliance upon nuclear energy develops, the Region's resources will be developed even further.

Development of these energy resources will change the environment and the life styles of the Region. Mining activities and fuel conversion facilities will generate vast amounts of solid waste. Construction and operation of synthetic fuel facilities and conventional power plants will consume water resources and release pollutants to the atmosphere. The labor and support force to construct and operate these mining and conversion facilities will rapidly increase population in predominantly rural settings. The potential for social and economic problems is great unless adequate and timely planning and financing are available. New transportation systems will have to be developed throughout the Region in order to satisfy resource and people needs.

A coordinated local, State, and Federal government/industry/ public effort is going to be necessary to ensure that energy resource development goals are achieved while environmental standards and objectives are maintained. EPA Region VIII has a responsibility to ensure that timely and effective coordination of environmental decisions occurs. Thorough environmental reviews and effective public participation are essential and will take time. However, through this policy statement we demonstrate our commitment to the reduction of unnecessary delays involved in our review of energy projects. EPA Region VIII's Energy Policy Coordination Office has the role of monitoring the progress and evaluating the benefits/impacts of this Energy Policy Statement.

POLICY

Region VIII of the Environmental Protection Agency (The Region) has established the following goals and objectives. The Region.....

...is committed to assuring that environmental standards and objectives, e.g. Prevention of Significant Deterioration (PSD) increments and water quality criteria, are not violated by energy facilities. It is not necessary to weaken existing local, state or Federal substantive environmental requirements to accomplish reasonable energy goals. The Region will maintain its present procedures which ensure full and timely public participation in its regulatory process.

...will expedite its regulatory decision making on all energy projects. Special priority will be placed on processing energy project permit applications. It is our objective to process energy project permit applications within six months of receipt of a complete application. Exceptions to the six month processing time would include circumstances such as the need for preparation of an EIS on a proposed permit or judicial challenges to the proposed permit. The Region will provide assistance in the scoping phase of any energy EIS to expedite issue identification and resolution. Energy facility EIS reviews will be performed consistent with Council on Environmental Quality (CEQ) guidelines. Special priority has been placed on many EIS's expected during the next year. This priority list will be reviewed annually.

...is actively developing consolidation of procedures for applying for, reviewing, and issuing environmentally-related project authorizations and is seeking to reduce or eliminate duplication of those requirements. The Region will coordinate its regulatory responsibilities and decisions with other Federal agencies and with appropriate State and local agencies. Delegation of permit programs to States, where authorized by law and warranted by circumstances, is an EPA policy which is being given the fullest credence and emphasis in Region VIII.

...is increasing the promotion of energy conservation measures, energy resource recovery and the development of renewable energy resources. Incentives are provided for these measures in awards for wastewater treatment plants, solid waste grants, and in air pollution control grants.

...will continue to provide assistance, within available resources, to state and local environmental agencies on energy issues. It must be recognized that secondary environmental impact potentially associated with energy development may be of as great, and as valid, a concern as potential "primary" impacts. Uncontrolled and unplanned rapid growth can result in inadequate drinking water supplies, overloaded wastewater treatment plants,

unpaved roads, and other environmental impacts. The project proponent must share in the management and mitigation of these secondary impacts. The Region will continue to provide assistance to local communities for growth management. The Region will assist the states and local agencies in their environmental regulatory decision making in order to expedite their review of energy projects.

...advocates selection of energy development options which minimize consumptive use of water, do not increase salinity levels in streams, and which preferentially utilize lower quality (e.g., saline) waters when feasible. The Region recognizes that energy and other resource and population developments may have significant cumulative, basin-wide water resource and water quality implications. Early development of comprehensive plans is highly desirable.

...advocates the phased modular development rather than immediate commercial scale construction of synthetic fuels facilities,e.g. oil shale, coal gasification and coal liquefaction plants. The Region will continue to work with EPA's Office of Research and Development toward a thorough research effort characterizing environmental residuals and assessing regional cumulative impacts. Based upon this more complete data base we will be able to more accurately define the environmental carrying capacity of geographical areas where synthetic fuel facilities may be concentrated.

...will provide information on energy/environmental matters to governmental agencies, the public, legislators, and industry. The Region will hold seminars and workshops on energy issues, publish reports on energy matters, and make quarterly status reports available on our permitting and EIS activities.

...will continue to promote energy conservation measures internally and with other Federal agencies. Actions such as employee use of mass transit and car pooling instead of individual automobiles, participation in the compressed work week, restrictions on building heating and cooling, elimination of unnecessary travel, etc. help reduce the demand for energy.

...will provide energy/environmental liaison to the public, industry, legislators, and government officials through the Energy Policy Coordination Office. This Office serves as the focal point for energy/environment information in the Regional Office.

POLICY IMPLEMENTATION

EPA Region VIII is committed to assuring that environmental standards and objectives, e.g. Prevention of Significant Deterioration (PSD) increments and water quality criteria, are not violated by energy facilities. It is not necessary to weaken existing local, state or Federal substantive environmental requirements to accomplish reasonable energy goals. The Region will maintain its present procedures which ensure full and timely public participation in its regulatory process.

1. Existing and future environmental standards and objectives will limit the degree of environmental degradation.

2. The Region will expedite regulatory decision-making, consolidate permit procedures and expedite the review of energy facilities. The Region will also thoroughly communicate its policies and decisions to legislators, public and industry.

3. The Region believes that it is unnecessary to grandfather future synthetic fuels facilities from future substantive requirements.

4. The Region will continue to provide opportunity for thorough and timely public review of its regulatory policies and decisions regarding energy facilities.

EPA Region VIII will expedite its regulatory decision making on all energy projects. Special priority will be placed on processing energy project permit applications. It is our objective to process energy project permit applications within six months of receipt of a complete application. Exceptions to the six month processing time would include circumstances such as the need for preparation of an EIS on a proposed permit or judicial challenges to the proposed permit. The Region will provide assistance in the scoping phase of any energy EIS to expedite issue identification and resolution. Energy facility EIS reviews will be performed consistent with Council on Environmental Quality (CEQ) guidelines. Special priority has been placed on many EIS's expected during the next year. This priority list will be reviewed annually.

1. The Air and Hazardous Materials Division will process Prevention of Significant Deterioration (PSD) permit applications for energy facilities within six months of a complete application.

2. The Enforcement Division will process National Pollutant Discharge Elimination System (NPDES) permit applications for energy facilities within six months of a receipt of a complete application.

3. Future permit responsibilities, such as those pursuant to the Resource Recovery and Conservation Act(RCRA) or Underground Injection Control (UIC), will be carried out as expeditiously as practicable. Since procedural regulations have not yet been promulgated it is not possible to specify a processing time objective at this time. Subsequent to promulgation of regulations, objectives will be established as has been done for PSD and NPDES processing.

4. The Water Division will place special emphasis on the review of Army Corps of Engineers proposed dredge and fill (404) permits for energy facilities. Submitted material will be reviewed as expeditiously as practicable with a goal of making a final Regional decision within six months.

5. Special priority will be assigned by all Divisions in the Region to the expeditious and thorough review of any energy related environmental impact statement (EIS). The Region will prepare EIS's, when required, for energy facilities as expeditiously as practicable.

6. The Water Division will assign special priority to providing early assistance to other Federal agencies in the identification and resolution of environmental issues associated with energy related EIS's.

7. The Energy Policy Coordination Office (EPCO) and the Office of Public Affairs and Intergovernmental Relations (OPAIR) will conduct annual seminars (first one in February 1980) for the energy industry to explain the details of permit application forms as well as any other issues which arise. This is designed to expedite the front end adequate application time for industry and to provide a better understanding of EPA policies by industry.

8. The Region will coordinate its permit application reviews with EIS reviews.

9. The Surveillance and Analysis Division will provide prompt retrieval and review of all revelant monitoring data and/or proposed monitoring programs associated with permit applications for energy facilities.

10. Where appropriate, the Region will follow applicable procedures to consider the cost and energy effectiveness of pollution control measures.

11. Consistent with the consolidated permit regulations, permit processing will be tracked by a central organizational unit within the Region. Appropriate follow-up actions will be taken.

EPA Region VIII is actively developing consolidation of procedures for applying for, reviewing, and issuing environmentally-related project authorizations and is seeking to reduce or eliminate duplication of these requirements. The Region will coordinate its regulatory responsibilities and decisions with other Federal agencies and with appropriate State and local agencies. Delegation of permit programs to States, where authorized by law and warranted by circumstances, is an EPA policy which is being given the fullest credence and emphasis in Region VIII.

1. EPA is actively developing procedures for the consolidation of permit programs under the NPDES, RCRA, UIC, and PSD authorities. A single joint application form is being developed. Commonality in procedural aspects and public hearings is being sought.

2. Coordinated reviews of energy facility applications will be performed.

3. The Region intends to continue to aggressively pursue the delegation of permit programs to the states where appropriate. Assistance will be provided to the states in the preparation for and smooth transition of these delegations.

4. The Region will provide technical assistance in the review of energy facility permit applications to states which have been delegated permit programs.

5. The Region will strongly encourage and assist the states to meet the same permit processing goals previously identified.

6. EPA will develop a Memorandum of Understanding with the Department of Interior, Office of Surface Mining, by early 1980 which will address coordination of similar responsibilities. Duplicative water discharge permit issuance and environmental monitoring requirements will be eliminated. Commonality of inspections and enforcement procedures will be sought.

7. EPA and the Department of Energy will develop a Memorandum of Understanding by early 1980 which will address coordination of environmental research programs related to the emerging synthetic fuels industry.

8. The Region will pursue participation with the Department of Interior in future coal and oil shale leasing activities. The Region will provide assistance to the early identification and resolution of any "red flag" issues.The Region will place special priority on seeking the definition of criteria for areas which are unsuitable for development.

9. The Energy Policy Coordination Office will establish formal links with State Energy Policy Coordinators. Routine communication and meetings will seek to ensure that the Region and the States have commonality in objectives or at least a common understanding of State/EPA energy/environmental policies.

10. Appropriate Divisions in the Region will communicate to their state counterparts on a continuing basis appropriate aspects of this Energy Policy Statement.

11. The Region will solicit from states, local units of governments, the public, and industry their views on the environmental questions which need to be answered regarding resource development. These environmental/energy research needs will be conveyed to EPA's Office of Research and Development. The Region will follow-up on the response to these needs and provide feedback to appropriate persons.

12. The Enforcement Division will provide detailed assistance to EPA Headquarters in the development of National Effluent Guidelines for energy facilities.

13. The Air and Hazardous Materials Division will provide detailed assistance to EPA Headquarters in the development of New Source Performance Standards for energy facilities.

14. The Energy Policy Coordination Office will continue to assist EPA Headquarters in the development of EPA regulatory and research strategies applicable to the emerging synthetic fuels industry.

15. Through the Federal Regional Council and the Federal Executive Board, the Region will communicate this Energy Policy Statement to other Federal agencies. Appropriate statements for their agency will be encouraged.

EPA Region VIII is increasing the promotion of energy conservation measures, energy resource recovery and the development of renewable energy resources. Incentives are provided for these measures in awards for wastewater treatment plants, solid waste grants, and in air pollution control grants.

1. The Water Division requires that energy conservation and energy recovery techniques be fully considered for all wastewater treatment plants. Facility plans are not approvable unless this consideration is provided by the applicant.

2. EPA provides special financial incentives for innovative and alternative technologies which promote energy resource recovery and/or energy conservation techniques. Additional funds are available for projects using techniques such as co-disposal of sludge and refuse, methane recovery, self sustaining incineration, co-incineration, solar collectors, etc., if the technique can demonstrate a 20 percent reduction in the facility's energy requirements.

3. The Region is aggressively pursuing extension of the funding authority established by section 205(i) of the Clean Water Act. An expiration date of September 30, 1981, was established for the credit of a maximum of 2 percent of the total construction grant funds toward the increase in Federal share from 75 to 85 percent for innovative and alternative technologies. The funding limit and the time limit both cause constraints in the full utilization of benefits.

4. The Region will strongly urge that active and passive solar systems be considered as alternatives to the development of non-renewable resources.

5. The Air and Hazardous Materials Division will continue to provide funding through RCRA and the President's Urban Policy Program for energy resource recovery projects. Two projects are funded in the Region at the present time. The Region will also aggressively pursue increased funding authorization for solid waste/energy resource recovery projects.

6. The Air and Hazardous Materials Division will continue, within available resources, to provide transportation planning grants. Benefits accrue in the form of both reduced air pollution and gasoline savings.

7. The Surveillance and Analysis Division will evaluate the application of solar powered systems for long term monitoring systems. A pilot particulate air monitoring program using solar power will be implemented by summer 1980.

8. The Region will aggressively promote and encourage support for the energy conservation measures and the development of renewable resources aspects of the President's energy program.

EPA Region VIII will continue to provide assistance, within its available resources, to state and local environmental agencies on energy issues. It must be recognized that secondary environmental impact potentially associated with energy development may be of as great, and as valid, a concern as potential "primary" impacts. Uncontrolled and unplanned rapid growth can result in inadequate drinking water supplies, overloaded wastewater treatment plants, unpaved roads, and other environmental impacts. The project proponent must share in the management and mitigation of these secondary impacts. The Region will continue to provide assistance to local communities for growth management. The Region will assist the states and local agencies in their environmental regulatory decision making in order to expedite their review of energy projects.

1. The Region will work with the states in the development of state consolidated permit programs.

2. The Region will provide planning assistance to the states in their energy/environmental pollution control strategies.

3. The Water Division will provide continuing assistance to "208" planning agencies in efforts to coordinate with Office of Surface Mining activities. This will ensure that coal mining operations develop consistent with the maintainence of local water quality management goals and objectives. The Region will aggressively pursue continued financial assistance for energy 208's.

4. The Region will continue to work with the Colorado River Salinity Forum and the Colorado River Basin states in the development and implementation of salinity control plans.

5. The Energy Policy Coordination Office will continue to support the Federal Regional Council Energy Impact Office in providing growth management assistance to energy communities.

6. The Region will assist the states in expeditious decision making on their water quality standards setting process. Colorado and Utah will receive priority attention.

EPA Region VIII advocates selection of energy development options which minimize consumptive use of water, do not increase salinity levels in streams, and which preferentially utilize lower quality (e.g., saline) waters when feasible. The Region recognizes that energy and other resource and population developments may have significant cumulative, basin-wide water resource and water quality implications. Early development of comprehensive plans is highly desirable.

1. The Water Division will strongly request that any energy conversion facility EIS evaluate alternatives which minimize consumptive water use. An example would be full consideration of dry and/or wet/dry cooling techniques. Other appropriate water conservation and water reuse opportunities should also be evaluated.

2. The Region will strongly encourage that, when possible, energy development facilities utilize poorer quality water not suitable for domestic, municipal, or agricultural purposes as opposed to higher quality water. An example would be the use of highly saline water for energy development/conversion activities.

3. In the Colorado River Basin, the Enforcement Division will review industrial effluent discharges for consistency with the Salinity Control Forum adopted and EPA approved "Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program." In essence, this policy has the primary objective of no salt discharge whenever practicable.

4. Adequate disposal of solid wastes to prevent leaching and effective reclamation practices to minimize surface runoff should be implemented by energy facilities. All aspects of the exploration, mining, conversion, disposal, and reclamation phases of energy development should adopt appropriate Best Management Practices to minimize adverse water quality impacts.

5. The Region will assist states, Regional agencies, and other units of local government to develop comprehensive water resource management plans which take into account the long-term water needs of the energy industry and other users; which address the needs for control of discharges to surface waters; and which identify and protect aquifers, as appropriate, from contamination and depletion.

EPA Region VIII advocates the phased modular development rather than immediate commercial scale construction of synthetic fuels facilities, e.g. oil shale, coal gasification and coal liquefaction plants. The Region will continue to work with EPA's Office of Research and Development toward a thorough research effort characterizing environmental residuals and assessing regional cumulative impacts. Based upon this more complete data base we will be able to more accurately define the environmental carrying capacity of geographical areas where synthetic fuel facilities may be concentrated.

1. Instead of a crash program designed to immediately construct and operate commercial size synthetic fuel facilities, the Region encourages the synthetic fuels industry to adopt a phased modular development program. The Region will communicate the benefits of this approach which include gradual population growth, elimination of uncertainty in the data base, minimization of catastrophic environmental risks, and reduction of chances for technological and economic failure.

2. The Energy Policy Coordination Office and the Air and Hazardous Materials Division will encourage industry to provide for air pollution controls beyond BACT on their proposed facilities. By doing so, the maximum amount of energy production can occur in an area which is limited by air quality constraints.

3. The Energy Policy Coordination Office will continue to identify energy research targets of opportunity and needs to the Office of Research and Development. The Region will aggressively support ORD budget requests to conduct such studies.

EPA Region VIII will provide information on energy/environmental matters to governmental agencies, the public, legislators, and industry. The Region will hold seminars and workshops on energy issues, publish reports on energy matters, and make quarterly status reports available on our permitting and EIS activities.

1. The Region will communicate EPA energy/environment policy to all possible interested persons. These include legislators, industry, public, governmental officials, universities, and the environmental community.

2. The Office of Public Affairs and Intergovernmental Relations (OPAIR) will prepare press releases, arrange meetings with legislators, seek speaking engagements, and organize public meetings in order to communicate the Region's policies. OPAIR will place special priority on the communication of this Energy Policy Statement.

3. OPAIR will seek forums with industry such as trade association meetings, conventions, etc., to discuss energy/environment issues, objectives and policies.

4. OPAIR will continue to provide for toll free telephone service (800-525-3022) for Montana, North Dakota, South Dakota, Utah, Wyoming, and (800-332-3321) for non-Metro Denver, Colorado.

5. OPAIR and the Energy Policy Coordination Office will provide an energy/environment information service. Permit status reports, EPA energy/environment research reports, and National energy policy information will routinely be distributed to the Region's Energy Interested Party mailing list.

6. OPAIR will arrange for periodic press briefings and media interviews with Regional senior staff on energy issues.

7. OPAIR will prepare press releases on major permitted energy facilities.

8. The Region will make staff available to any Congressional staff or Congressman to provide energy/environment information.

9. The Region will maintain a close working relationship with environmental organizations on energy/environmental matters. Informal meetings will be held on at least a bimonthly basis. Energy project updates will be provided at these meetings.

10. The Region and the public environmental organizations will strive to identify any potential "red flag environmental issues" early in an energy facility planning stage.

11. The Region will communicate National and Regional energy policies to the environmental community.

12. OPAIR, in conjunction with the appropriate Division, will prepare a layman's guide to the various EPA permit programs.

13. OPAIR will provide prompt information on EPA regulations, policies, etc. which affect energy facilities to our Energy Interested Party mailing list.

14. The Region will make information available on past PSD and NPDES decisions which aid in the definition of BACT and Best Available Technology (BAT). It is expected that information on past PSD decisions for surface mining and for natural gas recovery facilities will be summarized by early 1980.

15. The Region will make available a quarterly status report on permit and EIS actions.

16. EPA will provide regulatory and administrative policy guidance to the emerging synthetic fuels industry. A report for the oil shale industry will be issued in March 1980. A report on coal gasification/liquefaction will be published in late 1980.

17. The Energy Policy Coordination Office will make results of EPA's energy/environment research program available.

18. The Energy Policy Coordination Office and OPAIR will publish semi-annual status reports on the progress and benefits of the implementation of programs described in this Energy Policy Statement.

EPA Region VIII will continue to promote energy conservation measures internally and with other Federal agencies. Actions such as employee use of mass transit and car pooling instead of individual automobile, participation in the compressed work week, restrictions on building heating and cooling, elimination of unnecessary travel, etc. help reduce the demand for energy.

1. The Air and Hazardous Materials Division will continue to communicate the benefits of reduced air pollution and energy conservation of activities which reduce vehicle miles traveled. Region VIII employees have and will be encouraged to continue to rely upon mass transit and car pooling alternatives to single occupancy vehicles.

2. The Region will continue to implement the compressed work schedule. Benefits in terms of vehicle miles travelled reductions will be evaluated.

3. The Region will continue to encourage Building Management through GSA to observe the building heating and cooling restrictions. Unnecessary lighting will be turned off.

4. The Energy Policy Coordination Office will continue to work with the Department of Energy in the communication of energy conservation methods and their benefits.

EPA Region VIII will provide energy/environmental liaison to the public, industry, legislators, and government officials through the Energy Policy Coordination Office. This Office serves as the focal point for energy/environment information in the Regional Office.

1. The Energy Policy Coordination Office will continue to serve as an energy focal point in the Regional Office.

2. The Energy Policy Coordination Office will monitor and evaluate the implementation and the effectiveness of this Energy Policy.

For further information on specific aspects of this Energy policy please contact any of the following individuals.

Name	Telephone	Title/Responsibility
Roger L. Williams	837-3895	Regional Administrator
Terry L. Thoem	837-5914	Director, Energy Policy Coordination Office
Thomas A. Speicher	837-3826	Regional Counsel (Acting)
Russell W. Fitch	837-5927	Director, Office of Public Affairs and Intergovernmental Relations
Charles C. Gomez	837-3276	Director,Civil Rights and Urban Affairs
David D. Emery	837-3846	Director, Management Division
Lance C. Vinson	837-3868	Director, Enforcement Division
Irwin L. Dickstein	837-4935	Director, Surveillance and Analysis Division
Robert L. Duprey	837-2407	Director, Air and Hazardous Materials Division
David E. Standley	837-4871	Director, Water Division
Ivan W. Dodson, Jr.	406/449-5432	Director, Montana Operations Office
Norm Huey	837-3763	Air, PSD Permit
Bob Burm	837-4901	Water, NPDES permit
Jack Hoffbuhr	837-2731	Water, UIC permit
Jon Yeagley	837-2221	Solid Waste permit
Dale Vodehnal	837-4812	"404" permit
Bill Geise	837-4831	EIS reviews
Marshall Payne	837-4261	Monitoring Programs
Tom Entzminger	837-2226	Data Analyses
John Tucker	837-2721	Water Quality Planning
Dave Kircher	837-3711	Air Quality Planning
Paul Ferraro	837-2351	Permits Tracking
Mike Hammer	837-2751	Community Impacts

Lou Johnson	837-3926	Toxics
Stuart McDonald	837-5927	Congressional liaison
Rich Lathrop	837-5927	Media liaison
Charles Stevens	837-5927	Environmental liaison
Gordon Weller	837-5927	Industry liaison

ENERGY

ENVIRONMENT

conservation energy

Denver Post
11/2/79

'Fast Track' for Energy Approved

Energy Development

Oil shale

60—Rocky Mountain News Fri., Nov. 2, 1979, Denver, Colo.

U.S. aid for energy plan

R.M. News
10/24/79

Evanston: boom town on U.S. oil frontier

Colorado Oil Project

Utah's Coal Deposits

Casper Star
Tri D. 10/26/79

Officials not worried about gasification plant

Feuds

EPA 'no' is forecast

Radiation

Air Pollution Perils Scenery in West's Parks

Risk of Cancer In Oil Shale Industry Aired

Acid rain and Utah coal

Wilderness bill

Saving Our Last Wild Rivers

Rocky Mountain West

Denver Post 1/6/80

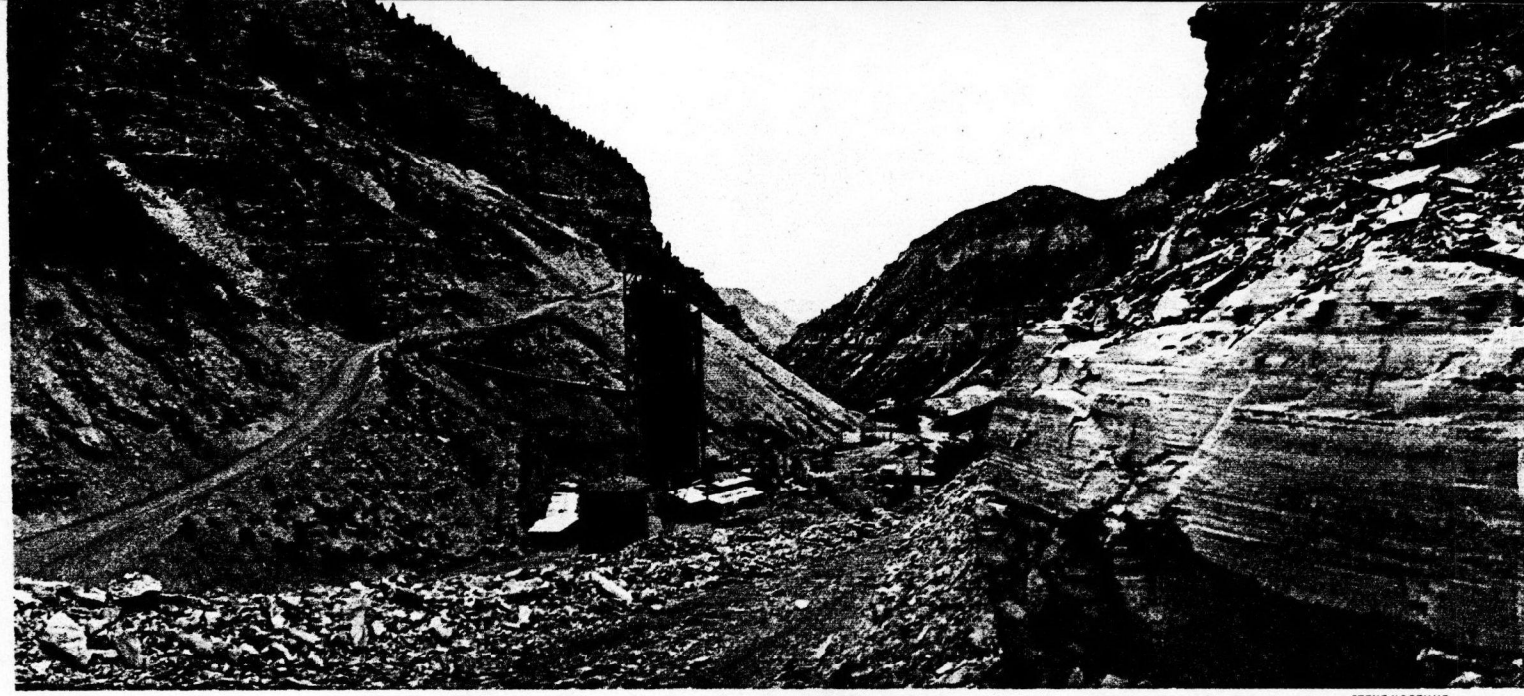
Colorado-Ute Chief: EPA Rushes Blindly Into Visibility-Rules Field

Perspective

Water Quality

Air Quality

Panel to Study Vanishing Farmlands



Colony's pilot plant near Grand Valley, Colo., where the ground-up stone is cooked in order to extract the precious fuel

STEVE NORTHUP

Energy

Tapping the Riches of Shale

Venturesome companies bet big on "the rock that burns"

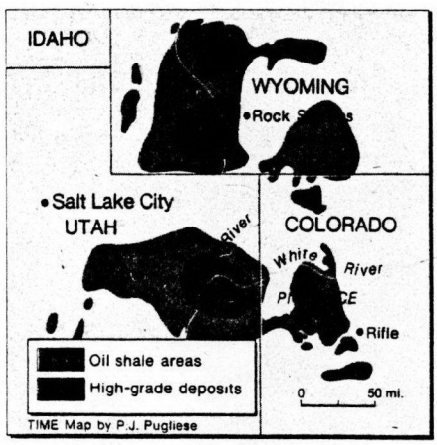
Once again the turmoil in Iran emphasizes American dependence upon what Jimmy Carter calls the "thin line of oil tankers stretching halfway around the earth to one of the most unstable regions in the world." The drive to gain some freedom from OPEC by developing domestic energy sources has never been more pressing. Last week the Senate easily adopted by a vote of 65 to 19 a $20 billion synthetic-fuel program that, among other things, would turn the nation's vast coal deposits into oil and gas. But of all the old and new sources of petroleum now being freshly examined, none is more promising or as controversial as the oil-bearing rock known as shale.

Venturesome companies are betting millions on shale as they plunge deep into development projects that could soon foster a new energy industry. TIME Los Angeles Bureau Chief William Rademaekers reports from the heart of the U.S. shale country:

The dirt road running up Parachute Creek in western Colorado winds through an ever steeper canyon. As the road climbs, it deteriorates into first a stream bed and then a cliff-hugging path that passes a blackened ledge of shale rock that was struck by lightning two years ago and spouted flames for three days. The Indians once dubbed the magic mineral "the rock that burns."

Finally, at an altitude of 8,200 ft., the track breaks through onto a rolling plateau of sagebrush, juniper and pine. It is here, on this remote plateau, southwest of Rifle, Colo., that Caterpillars of the Colony Development Operation have already cut 300 yds. into a mountain of shale. Near by, in another canyon, Union Oil engineers monitor a conveyor belt delivering a stream of shale into a giant funnel. Some 40 miles south, at Logan's Wash, Occidental Petroleum miners have cut two mine faces into the sides of a shale mountain. Farther northwest lies another tract of shale land soon to be developed by Gulf Oil and Standard of Indiana.

This is the Piceance Basin, the heart



TIME Map by P.J. Pugliese

of a geological formation containing the world's biggest known deposit of oil shale. Locked in the mottled rock is the energy equivalent of about 1.2 trillion bbl. of oil, or roughly 40 times the nation's present proven reserves of liquid petroleum.

Actually, "shale oil" is neither shale nor oil. The rock is marl, a variety of limestone laced with a solid fossil fuel called kerogen. The kerogen was deposited 40 million years ago in the form of millions of tons of vegetable matter that collected on the bottom of a mammoth freshwater lake that then covered Utah, Wyoming and Colorado. But these lake-bed accumulations were never subjected to temperatures as high as 300° F and to extreme pressures that in time created underground deposits of readily usable liquid oil and natural gas. Now man must finish nature's work.

For years shale oil remained undeveloped because conventional petroleum always hovered about $2 below the projected price of shale. Capital development costs have inflated almost as fast as OPEC prices. In the 1960s, when crude was selling for $2 a bbl., estimates were that oil from rock could be produced for $4 a bbl. Now, with world prices going up almost daily beyond the $23.50 OPEC level, shale oil may be produced for $30. But spurred by the ever higher price of crude, a group of energy entrepreneurs aim toward turning out more than 200,000 bbl. of shale oil a day by 1990. This surpasses the av-

erage amount of crude oil imported so far this year from Iran.

Shale drillers know where to find their fuel, but they differ on the best way to get it out. Essentially, shale rock must be "cooked" at 900° F so that the kerogen can be vaporized and extracted. Two processes have been developed to do this.

One is an above-ground method in which the shale is "distilled" in somewhat the same way that moonshiners extract alcohol from corn mash. After the shale is mined, the rock is crushed. Union Oil then moves shale chunks through a towering surface retort, where hot gases heat it to release the kerogen. Colony uses a different process: it cooks finely ground shale in giant drums by mixing the marl with superheated, marble-size ceramic balls that distribute the temperature evenly and vaporize the kerogen. The balls are then separated from the spent shale by a screen, reheated and used again.

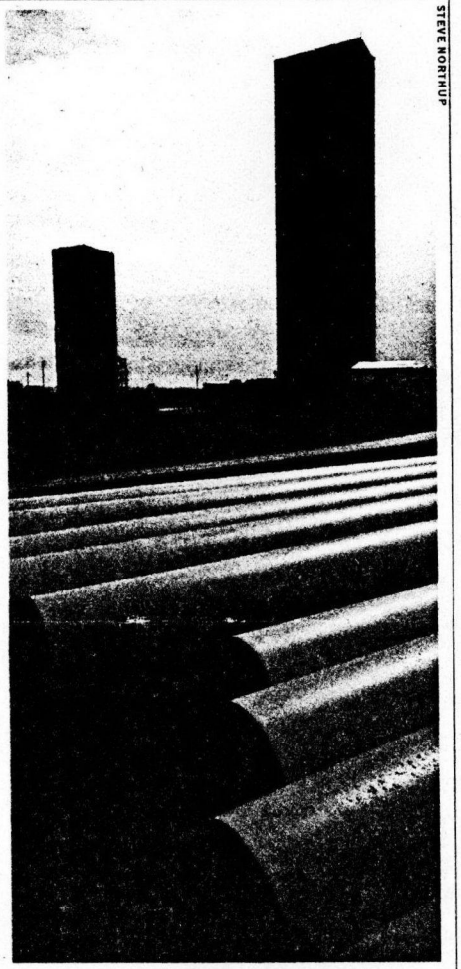
A second, more radical method involves cooking the shale underground. Occidental, which has pioneered this process, plans to dig at least 2,000 chambers connected by tunnels under a 5,000-acre shale tract leased from the Government. The chambers, each about the size of a football field and 250 ft. to 300 ft. high, are created by drilling parallel tunnels leading from a vertical mineshaft into the rock at two different depths. The shale in between is then reduced to rubble by explosions in both the top and bottom. Each chamber is sealed, and pilot-light burners are lowered to start cooking the rock. Kerogen released from the shale settles to the bottom of the chamber and is piped out. Occidental engineers have already "fired" six giant chambers at an experimental facility at Logan's Wash—with mixed results. In an experiment last July, the roof of the chamber collapsed. In others, the yield of shale oil was not as high as expected.

Whatever extraction method is used,

NORTHUP

A chunk of kerogen-rich marl limestone

For days, a ledge spouted flames.



STEVE NORTHUP

Support towers for Occidental's mining gear

the investment will be enormous. Union's proposed 9,000-bbl.-a-day plant would cost $130 million; Occidental's 50,000-bbl.-a-day operation carries a $1 billion price tag. Colony's process, because of its size and capital investment, would be the most expensive: $1.5 billion to $2 billion for 50,000 bbl. of oil a day.

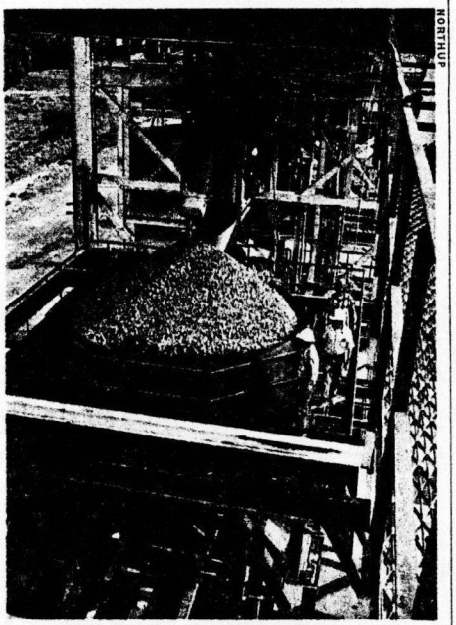
The Government stands ready to help because shale oil is an important part of Jimmy Carter's energy program. The Administration is more optimistic than oilmen: it envisages the production of 400,000 bbl. a day by 1990. Carter wants Congress to grant shale developers a tax credit of $3 a bbl. to make shale oil prices competitive with those of conventional petroleum. In addition to the Senate's $20 billion program, the Administration is providing $2.2 billion in fiscal 1980, largely for shale.

But if the energy companies and Washington policymakers are sold on shale, others are not. Colorado Governor Richard Lamm protests that any crash development program "could do irreparable damage to our water supply, to our communities, to our environment." State officials, local representatives of the Environmental Protection Agency, the Sierra Club and similar groups are allied to stop or at least to stall shale development. Water, a precious resource in the tri-state region, is one of their greatest concerns. Conservationists claim that shale extraction could use from one to five barrels of water for each barrel of oil, but company officials maintain much less would be required. Critics also argue that the underground marl-cooking process could release salts, and perhaps even arsenic, into the region's ground water. Shale opponents protest finally that the surface-retorting process leaves piles of rubble and dust behind that would ruin the pristine Rocky Mountain valleys. A 400,000-bbl.-a-day industry would require 500,000 tons of shale to be mined, retorted and in some cases relocated.

Nonetheless, opponents are willing to permit small test projects of the new energy so that the impact of unknown technologies can be fully measured. Says Terry Thoem, a director of the Denver EPA: "We have been studying shale for years, and now we would like to see some further development on a limited scale to get further data on a shale industry's impact—on water tables, on soil, on just about everything."

The energy companies insist they can respond to the environmental concerns. They claim that their water requirements would be reasonable. Company officials also say that the underground cooking process seals the chambers, actually fuses the rock, and prevents salts from leaching into ground water. Firms plan to contour the piles of leftover shale rubble and to plant them with local wild flowers and grasses; tests have shown good results. And most of the industry agrees that the first production units should be small test sites rather than giant plants.

Although the first shale patent was granted in England in 1694 and called for distilling "oyle from a kind of stone," oil from the dark, veined rock so far has not been developed primarily because conventional petroleum has always been cheaper. Now, at last, economic necessity and innovative technology may lead to tapping the vast potential of shale. ■

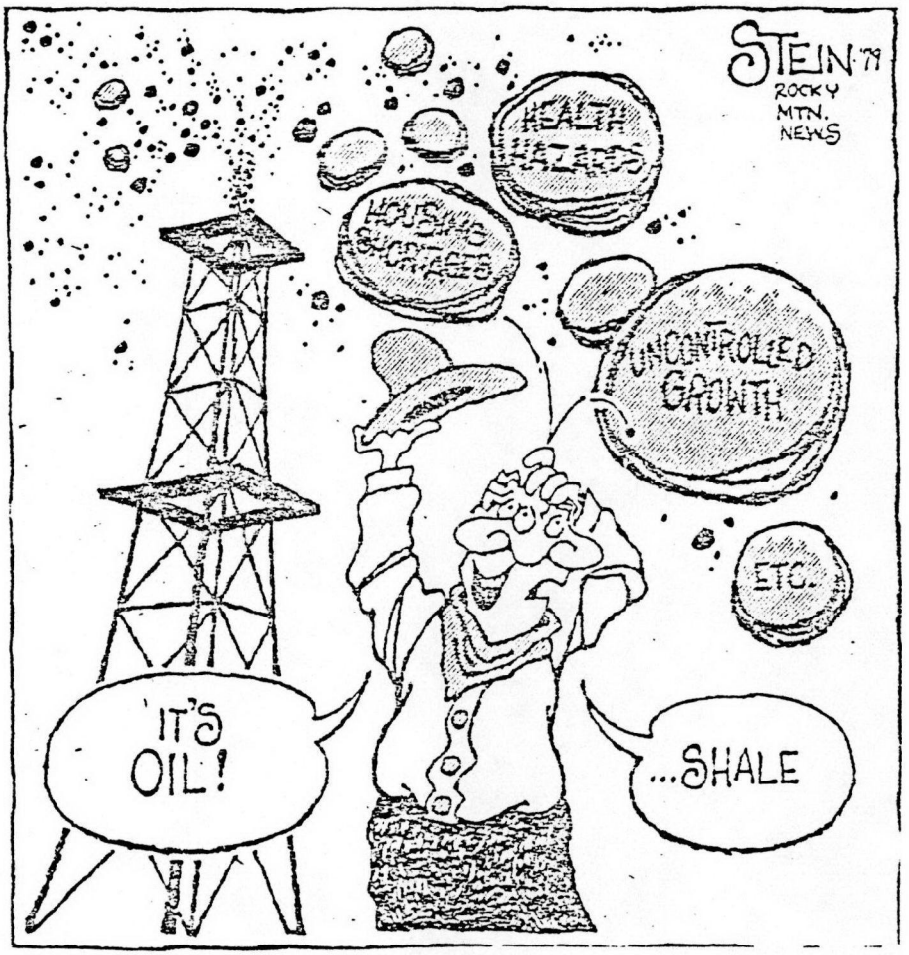


NORTHUP

Crushed minerals at the Union Oil retort

Now man must finish nature's work.

R.M. News 10/23/79



Local Energy Boom?

On the West Side

By ROBERT TWEEDELL
Western Slope Bureau

CEDAREDGE — With impetus provided by friends and foes, western Colorado's "energy boom," still only an echo in many areas, is gaining momentum.

The friends include, presumably, the U.S. Department of Energy, as well as several other federal and state agencies, a number of corporations and an assortment of other private interests.

The foes include — again, presumably — Iran, the Soviet Union and Afghanistan, whose recent activities have spurred efforts to expand America's sources of energy and minerals.

The Energy Department bestirred itself last week and announced that it's finally getting ready to allocate the first $200 million of $2.2 billion it plans to spend on synthetic fuel development.

The department's announcement was followed quickly by indications that the Paraho Development Corp., Superior Oil Co. and the Tosco Corp. will accelerate their plans to make commercial shale oil production a long-awaited reality.

PARAHO, A Grand Junction-based firm which has been operating a small experimental shale oil facility on the U.S. Naval Oil Shale Reserve west of Rifle, is set to begin negotiations with the Energy Department on a $6.5 million contract for design and cost estimate of a full-size, above-ground module retort.

If the negotiations are successful, they could lead to construction of a new Paraho plant about 40 miles southeast of Vernal, Utah.

Paraho decided to abandon its operation near Rifle because it has been unable to obtain an environmental impact statement on the site — the paperwork is bogged down somewhere in the Energy Department.

So the impact of the Paraho operation on western Colorado apparently will be indirect.

Tosco, which has demonstrated its surface retorting technology at the Colony Oil Shale Project north of Grand Valley, in association with Atlantic-Richfield, also plans to build a demonstration plant south of Vernal if an Energy Department contract is forthcoming.

Again, the effect on the Western Slope would be indirect. But that doesn't mean it wouldn't be important, with short- and long-range implications for the environment and the economy.

The proposed Paraho plant would produce between 6,000 and 10,000 barrels of oil a day from a supply of shale estimated to contain 57 million barrels. Tosco has reservations about a plant that small for its process and hopes to convince the Energy Department that one twice that big should be built.

SUPERIOR OIL Co., which has demonstrated still another above-ground process for extracting oil from shale, expects to build a commercial plant at a site in the Piceance Basin northwest of Rifle. Superior's plans depend in large part on the successful completion of a land swap that must be approved by the U.S. Interior Department. A decision is expected by mid-year.

Another entrant in the field, Union Oil Co., last week reiterated its interest in building a commercial oil shale facility at its location on Parachute Creek in Garfield County. Union is awaiting favorable action by Congress on the proposed $3 a barrel tax credit. In the meantime, the company is proceeding on schedule with planning and engineering work.

The activity in the oil shale field is being paralleled, at a somewhat slower pace and on a smaller scale, by mining operations.

At Crested Butte, Climax Molybdenum is treading down a road that ends with an environmental impact statement and various operating permits for its mine on nearby Mount Emmons. In spite of strong opposition by town residents, it is a good bet that the mine will open in a few years, along with a mill to process the ore.

To the east, the Homestake Mining Co. is moving right along with its uranium mining and milling project.

Near Ouray, the famous old Camp Bird Mine, revitalized by the soaring prices of silver and gold, is back in operation — at a make-ready level — and is expected to be in production by the end of the year.

COAL MINING is spotty, depending in part on whether the coal is for use in the coking ovens of steel mills or to fuel electric power plants.

In the latter case, demand will continue to grow. The Colorado-Ute Electric Association, for example, already involved in the huge new coal-fired plant at Craig, is busy buying or taking options on big hunks of land in several Western Slope counties, one of which will become the site of another big power plant.

The availability of coal will be a key factor in locating the facility.

As the Energy Department's synthetic fuels program is further unfolded, either by it or some other federal agency, one result will be the mining of coal for conversion to liquids and gases. Private industry already is preparing to build plants for coal gasification and liquefaction.

The "energy boom" is reverberating more and more up and down the Western Slope, causing at once exhilaration and despair. Advocates of economic growth and what they deem as progress are generally pleased; devotees of a disappearing lifestyle are dejected.

Jimmy Durante used to say that "everybody wants to get into the act." On the Western Slope, as time passes, everyone is going to get into the act, one way or another, whether they want to.

Officers Arrest 2 After Scuffle

Two men were in custody Saturday, accused of assaulting a Denver police officer who was going to question them about the possible theft of a pair of gloves from a car.

Officer John Diaz, 26, had been summoned to the 1700 block of Bryant Street by a man who said he had found someone in his car when he returned to it about 12:20 a.m. Saturday after a concert at McNichols Sports Arena. The man told Diaz that a pair of gloves was missing from the car and that the man who had been in the car was sitting with another man in a pickup truck nearby.

According to Diaz and the car's owner, when Diaz approached the two men in the truck, they attempted to run over him. Diaz said he fired six shots at the pickup truck's tires. The two men then got out of the truck and began scuffling with Diaz, police said.

Other police soon arrived and the two men were arrested. They were identified as Michael Balerio, 19, of 5281 W. 17th Ave., Lakewood, and Jacob Cisneros, 18, of 8811 Hastings Way, Westminster. They were being held for investigation of assault and for theft from a vehicle.

Diaz was treated and released from Denver General Hospital.

Last 2 Decades Show Colorado Coal Boom

By BRUCE WILKINSON
Denver Post Business Writer

Whatever its problems may be in other parts of the country, coal is once again king in Colorado as far as the energy industry is concerned.

In 21 years, coal production has risen some sixfold — from a post World War II low of 2.97 million tons in 1958 to what is estimated at nearly 18 million tons in 1979.

Already well past its peak of 12.5 million tons in 1918, Colorado coal production is expected to reach between 19.5 and 20 million tons in 1980 and to continue advancing steadily during the 1980s.

In economic terms, coal has shown even greater growth because of substantial price increases that have accompanied the hefty tonnage gains.

In 1971, the more than 5.3 million tons extracted were valued at only about $20 million (an average price of $5.70 per ton). In 1974, 6.96 million tons contributed about $88 million to the state's economy. And in 1976, 9.46 million tons were valued at $145 million — more than double that of 1974.

THIS YEAR, production of the once-neglected heat source (now calculated at $18.50 to $19 per ton) has added up to at least $333 million. Next year's anticipated yield — approaching 20 million tons — is expected to account for more than $400 million in new wealth.

In terms of jobs, Colorado's coal mines have been a major growth area within the mining industry but accounting for less than 1 percent of the state's employment. There are about 4,350 people employed in coal mining compared with about 2,100 at the end of 1975 and a low of between 1,200 and 1,300 toward the end of 1973, according to the Colorado Division of Mines.

The number of miners is far below that in coal's original heyday, but industry people are averaging $20,000 to $24,000 a year now and work year round where employment used to be seasonal.

COLORADO HAS 49 underground and 25 surface mines contributing about the same tonnage each because surface mines tend to be larger. The bulk of Colorado's coal is going to the big utilities for use in generating electricity in addition to the fairly sizable amount that continues to be mined by CF&I Steel for its own use from mines near Trinidad.

Despite fairly large-scale coal mining early in the century and today's energetic activity, all the coal mining to date has brought the removal of only about 650 million tons from an estimated minable reserves of 450 billion tons, according to Andy Deborski, chief coal mine inspector for Colorado.

Routt County continues to be out front as the state's biggest coal-producing county with 5.9 million tons mined in the first 10 months of the year. Moffat County is in second place with 4 million tons reported for the same period. A major portion of the 1979 estimated increase of more than 3.5 million tons will be from these two counties, Deborski said.

ANOTHER FAST-DEVELOPING coal-mining area is Gunnison County, which produced 1.4 million tons by the end of October and is expected to be up 300,000 tons for the year. Continued production increases are expected in Delta County, where about 900,000 tons are being mined each year, the bulk accounted for by the 3-year-old Orchard Valley Mine.

Las Animas County remains a steady producer at about 850,000 tons a year, a large percentage being mined by and for CF&I Steel Corp. Fremont County, once one of southern Colorado's most active coal areas, is producing about 160,000 tons a year, but it comes from smaller underground mines that aren't being expanded.

IT DOESN'T REQUIRE much analysis to see why Colorado's coal production machine has been revved up in the last seven or eight years after the era in which coal had been supplanted to a considerable extent by natural gas as the primary heat source for the area's power plants.

In the early 1970s, Public Service Co. of Colorado, by far the region's largest utility company, was drawing on natural gas for about 60 percent of the fuel needs of its power plants. Now the Denver-based wholesale and retail supplier of electricity generates more than 90 percent of its power with coal-fired stations.

Bill Martin, manager of electric planning and analysis for PSC, estimated the company will have burned more than 6 million tons of coal this year at its metropolitan Denver plants and its Comanche Plant, just east of Pueblo. This compares with "a little over 2 million tons" in 1970.

WHEN THE 500-MEGAWATT Pawnee Power Plant being built by PSC outside Brush goes on stream late in 1980, the utility will need almost another 2 million tons a year, putting its total usage over the 8 million ton level.

Colorado-Ute Electric Association, the Montrose-based cooperative wholesale power supplier for 13 Colorado rural electric associations in western and southern Colorado, was burning only a half million tons a year in 1966 when its chief power facility was the Hayden No. 1 unit. By 1977, with the addition of the second unit at Hayden, Colorado-Ute was using 1.5 million tons a year.

IN 1980, Colorado-Ute power plants will be consuming 3.6 million tons, with the first 400-megawatt Craig Station unit of the Yampa Project operating throughout all of 1980 and the second unit on line most of the year, said Robert A. Hoving, director of public information.

After the Craig Station No. 3 unit is added in 1983, he said, annual consumption will be about 5.1 million tons.

THE MONTROSE UTILITY signed a contract on Dec. 10 valued at slightly more than $1 billion with Colo-Wyo Coal Co. for 70 million tons of coal to be supplied over 35 years from the Colo-Wyo Mine 20 miles south of the Craig Station. This coal will be used primarily by Craig Unit No. 3.

Colorado Springs, through its Department of Public Utilities, has shifted from a primary emphasis on natural gas as late as 1973 to a virtually all-coal fuel program. The municipal utility's usage of coal grew from 176,000 tons of coal in 1973 to 880,000 tons of coal in 1978 at its Martin Drake Power Plant. Consumption is expected to be 1,274,000 tons in 1980, with the addition of the 200-megawatt Ray D. Nixon Power Plant. Its entire output initially will be sold to PSCo.

The Platte River Power Authority, which is owned by Fort Collins, Loveland, Longmont and Estes Park, is becoming a sizable user of coal as a 16 percent owner of the first two Craig Station Units.

Colorado is, on balance, a coal exporter even though its largest user, PSC brings most of its coal in from Wyoming.

Colorado Coal Facts 1970—1980

Year	Production	Tonnage Shipped Out	Value Per Ton	Total Value
1980	*19.5-20 mil.	*7.5-8 mil.	*$20-21	*$400 mil.
1979	*18 mil.	*6.5-7 mil.	*$18.50-19	*$333 mil.
1978	14 36 mil.	5 89 mil.	$17.30	$249 mil.
1977	11.97 mil.	4.31 mil.	$16.48	$196 5 mil.
1976	9.46 mil.	2 76 mil.	$15.17	$145 mil.
1975	8.36 mil.	2.56 mil.	$10.51	$88 mil.
1974	6.96 mil.	2.86 mil.	$ 9 85	$69.5 mil
1973	6.23 mil.	1.72 mil.	$ 8 14	$50 mil
1972	5.53 mil.	1.3 mil.	$6.10	$37 5 mil
1971	5.31 mil.	1.68 mil.	$ 5.70	$50 2 mil
1970	6.02 mil.	1.54 mil.	$ 5 70	$34.2 mil.


BACK FOR ANOTHER FIX?

of an on air intake duct designed for Lockheed-California Co.'s L-1011 Tri-

shaped funnel is to scoop air into the plane's tail jet engine.

Scattered oil shale reserves

Colony, BLM swap land on Western Slope

Colony Development Operation Monday announced a 337-acre land swap with the Bureau of Land Management in western Colorado.

The land exchange involved Colony's acquisition of several small, scattered tracts of public lands containing oil shale reserves in Garfield County.

Colony deeded a like amount of acreage adjacent to the U.S. Naval Oil Shale Reserve to the government.

The tracts acquired by Colony are within its 8,000-acre block of oil shale holdings.

"This is another significant step in proceeding toward commercialization of the Colony project," said Les Ludlam, Colony manager.

"It will permit us to develop a more efficient mining plan and serves to prevent the waste of federal resources," he said.

Colony Development Operation, which is also known as Colony Development Co., has secured most of the necessary permits and is "cautiously optimistic" that conditions will allow the start of construction of a 47,000 barrels per day commercial plant before the end of 1980, Ludlam said.

This plant, Ludlam said, will "produce a very attractive product which can be reprocessed into a variety of transportation fuels at almost any refinery in the U.S."

The BLM, according to Colony, acknowledged that the exchange was the first involving oil shale reserves by the federal agency since the issuance of executive orders withdrawing oil shale lands from development.

Colony Development is a joint venture of Atlantic Richfield Co. and TOSCO Corp. ARCO has 60 percent of the venture and is operator of the project. TOSCO has 40 percent.

The project is about 15 miles north of Grand Valley.

which a[illegible] cilities in its own area, he said.

to bring it on stream," added

"We need to persuade n makers in the outside work benefit to use solar energy," h

Relying on those who w "moral obligation would r penetration" into the ener lace, Veigel said.

"It has to be to the adv owner, of the home build everyone else," he said

"We have to remove som rounds solar energy," Veige

The morning-long briefi ters discussed a number o tions of SERI. SERI emplo involved in a variety of oth mation functions in additio search and data collection

SERI is involved with C lishers of the non-profit C testing of various system protection duties, plus att solar industry itself as to

Salt Lake Trib.
11/13/79

New Policy

EPA to Expedite Project Permits

By Robert S. Halliday
Tribune Environmental Specialist

The Environmental Protection Agency is gearing to put energy projects on a fast track to permit approval.

In a draft of its new energy policy, EPA Region 8, Denver, said it will expedite its regulatory decisions on all energy projects, granting them special priority for action. The objective is to process energy project permit applications within six months.

The EPA said, however, it is committed to assuring that environmental standards and objectives are not violated by energy facilities, adding that "it is not necessary to weaken existing local state and federal substantive environmental requirements to accomplish reasonable energy goals."

Provide Assist

The EPA regional office said it will provide assistance in the scoping phase of any energy environmental impact statement to expedite identification and resolution of issues.

It is also developing a consolidation of procedures for application, review and issuance of project authorizations and is seeking to reduce or eliminate duplication of requirements.

The agency advocates selection of energy development options that minimize consumptive use of water, do not increase stream salinity and utilize lower-quality (saline) waters when feasible.

It favors phased modular development rather than immediate commercial-scale construction of synthetic fuels facilities . . . oil shale, coal gasification and liquefaction plants.

Promote Measures

The EPA offic said it will also continue to promote energy conservation measures internally and with other federal agencies.

It will develop a "memorandum of understanding" early in 1980 with the Department of Energy on coordination of environmental research programs related to the emerging synfuels industry and seek participation with the Department of Interior in future coal and oil shale leasing activities.

The agency is increasing energy conservation promotion by adding incentives in awards for wastewater treatment plants, solid waste grants and air pollution control grants.

Energy conservation and recovery techniques will be fully considered for wastewater treatment Plants and the facility plans will not be approved unless this consideration is provided by the applicant.

The phased modular approach to synfuels development (rather than a crash program) will mean more gradual population growth eliminate much uncertainty in the data base, minimize catastrophic environmental risks and reduce chances for technological and economic failure, the EPA office reported.

Salt Lake Trib.
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p. 3C

Up and Down the Street

West to Insist on Energy Role

By Robert H. Woody
Tribune Business Editor

ST. GEORGE — Just after the Middle East oil embargo in 1973, there were apocalyptic utterances that the West would become "a national sacrifice area" in the name of securing the nation's energy independence.

It hasn't happened yet.

But, now Congress is laying the legislation for a powerful energy mobilization board, and the president talks about a $161 billion synthetic fuels program.

Will Utah and the other western states (wherein lie much of the synthetic fuel minerals coal, oil shale and tar sands) bow down and be sacrificied?

Gov. Scott M. Matheson made it clear Tuesday at the Utah Mining Association convention, that Utah and the other western states are heading the federal government off at the pass.

There is a concensus among western governors, he said, that the states must be participants in any decisions or programs on synthetic fuels.

Action by States

And, the governors have developed a four point "effirmative action" policy to apply to energy minerals and which could apply to any other minerals — or even the $30 billion MX missile project — in establishing a complimentary federal-state policy.

Mainly, the program calls for:

— Intergovernmental cooperation.

— Phased development of synthetic fuels ("A hypothetical combination of five projects constructed concurrently within the same area could be devastating. My concept of phased development is to encourage quality development within the environmental and socio economic carrying capacities of the areas.")

— Meaningful conservation efforts.

— And impact assistance from the federal government to deal with such sudden needs as worker housing, schools, hospitals, etc.

The concept of a powerful energy mobilization board, said Gov. Matheson, is a snare and delusion. "Instead of re-examining the accumulated capacity of a decade of environmental enthusiasm, Congress has created another spool of federal red tape. . . ."

He added that new western governors have told President Carter that state water rights must be respected.

There already is an effort by the Interior Department solicitor to assert a new class of water claims called "non-reserve rights."

The governors will meet shortly with Interior Secretary Cecil Andrus, he said, "to challenge this new effort to circumvent state law."

Criticism of Laws

Allen Overton Jr., president of the American Mining Congress in Wash., D.C., termed the result of the nation's environmental laws and regulations and land withdrawals a "case of self-imposed paucity in the midst of plenty. And I am profoundly concerned about what it portends for Americans in an increasingly competitive and still dangerous world."

There are stark geopolitical risks in the fact that the United States is becoming increasingly dependent on foreign sources — many of them located in the most volatile parts of the globe — for many of the commodities that are basic to modern civilization.

The convention wrapped up with a business meeting. Members approved in principle a single resolution supporting Sens. Jake Garn and Orrin Hatch's bill to cause transfer of federal lands to the states. The resolution now goes to consideration of the association's executive committee.

SPECIAL REPORT

REGION VIII: ROCKY MOUNTAIN REGION FACES DILEMMA OF BALANCING ENERGY DEVELOPMENT, PROTECTION OF ENVIRONMENT

Only recently has the image of Region VIII (the Rocky Mountain region) as predominantly a center of tourism and agriculture begun to change — both in the eyes of Westerners and in the eyes of those outside the region.

The states that comprise the region — Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming — contain the majestic mountains, arid deserts, lush forests, and vast prairies that make up the traditional picture of the region. Much of the region is either federal land, Indian reservations, or wilderness areas.

The changing image of the region, like so many changes in the last few years, is related to energy. Region VIII contains one-half of U.S. oil shale, coal reserves, and uranium deposits — all energy resources that increasingly are being exploited as the future of other energy supplies becomes uncertain.

In an area of great natural beauty, energy development in appropriate areas requires, in the words of a draft energy policy prepared by the Environmental Protection Agency's regional office in Denver, "a delicate balance" (Current Developments, December 14, p. 1663).

"Region VIII is divided between those who want economic growth and those who want to preserve the environment — and the environmentalists really flock here," said Roger Williams, the newly appointed deputy regional administrator.

"The issues are more intense out here and more polarized. There's so much emotion in the West," said Williams.

Because of its low population density, the region is relatively clean — "what is correction in the East, is prevention out here."

Cities are few and far between in the region.

It's an area low in population and large in land size. As Larry Gazda, head of EPA's waste management branch, commented, "In dealing with just the state of Montana, it's a day to fly up and a day to fly back."

But because of the size and sparse population of the region, it's also relatively clean. "What is correction in the East, is prevention out here," said Williams. "Clearly we don't have pollution problems."

"In the Chicago region, with all its problems, they don't have to look very hard to find legal cases to take to court," said Gazda. "We look more to apply pressure than to taking to court. Our enforcement is used in terms of enlightenment about what can happen — followed by pressure. There's just not an awful lot of enforcement cases."

Williams went on to explain that although the region has no massive pollution problems, every community seems to have its hot spots, many recently surfacing as the energy thrust moves westward.

Williams believes the region can withstand the promised pollution that accompanies energy growth. "We can have energy growth and still protect the environment," he said.

He defined the energy boom in Region VIII to include oil, uranium, and coal power — "We have processed 40 PSD (prevention of significant deterioration) permits recently, with 68 on the drawing boards. That's high when you're talking about power plants. By 1990, there will be 160 additional projects.

"We have 28 synfuel facilities in the region, 30 new coal mines and Bellaire, the largest coal mine in the United States, is in our region. The Solar Energy Research Institute (SERI) is located here, making us the Detroit of the solar industry. There's a potential eight oil shale facilities, which will move approximately 70 tons of rock a day. That would make it bigger than Alberta, Canada.

"Someplace down the road the reality of all this is going to hit us. And we're going to have to ask the question of how to create more energy without risk," Williams said.

Clearly, Williams is not opposed to development, but only to development that cannot be reconciled with environmental protection.

"We have to accommodate more energy. I'm committed to having new projects in Region VIII," Williams said.

He said that at present it takes 12 to 18 months to process new PSD permits. "Today that length of time is unacceptable," Williams said. He is pushing to have the review and processing time for permits reduced.

"With the cooperation of the industry on the front end, we should be able to make a final decision in six months by tightening up our bureaucracy," Williams said.

Concrete evidence of the region's intentions is contained in its draft energy policy. "It is not necessary to weaken existing local, state, or federal substantive environmental requirements to accomplish reasonable energy goals," the policy says. What the regional office hopes to do is to let permit applications for energy projects go to the head of the line. However, the policy says, when an environmental impact statement needs to be prepared, or when there are judicial challenges to a proposed permit, it may be impossible to stick to the six-month period.

How long the region will have a free hand to set its own procedures for issuing permits to energy projects remains to be seen. The federal Energy Mobilization Board bill now in a House-Senate conference would, in the House version (HR 4985), allow substantive waivers from some environmental laws in certain circumstances. While it is still unclear whether this provision will survive the conference, it does seem certain that any "fast track" provisions that federal law makes for energy projects will have substantial repercussions on Region VIII.

Editor's Note: This Special Report is the eighth of a series of Environment Reporter profiles of the 10 EPA regions. The previous Special Report, on EPA Region VII, was published on page 1697 of the December 21 issue.

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Williams admitted the real thrust of energy development will be more severely tested in the future. Meanwhile, EPA sits with an uneasy partnership with the states and in the middle with everyone else.

At the end of the legislative session, described as the longest and most bitter in Colorado's history because of the air pollution bill, the bill remained unpassed and was left for another round next year.

What are some key issues?

Air. On a clear day in Denver, one can almost see the mountains through the smog. Denver and Salt Lake City are most heavily affected by smog, with Pueblo, Colo., running a close third.

"Denver sits in a bowl and we don't get good movement of air. In fact, we took a film of the air moving out and it showed it moving right back in," Gazda said

In Denver, the dirty air is caused primarily by the automobile. Without a mass transit system, the more than 1 6 million population drive the city streets throughout the 55-mile length of the sprawling city, usually alone in their cars.

The state legislature set an air pollution bill as top priority for passage this year. However, at the end of the legislative session, which was described as the longest and most bitter in Colorado's legislative history because of the bill, the bill remained unpassed and delayed for another round next year

In the legislative fray, the state Senate approved an annual emissions inspection and maintenance program in its version of SB 1, which was the major pollution control bill being considered at the session.

The House, however, substituted a mandatory annual tune-up program for automobiles to control air pollution. The bill set standards for the inspecting garages and for each automobile model year after 1968.

As the Senate and House sparred well after the session usually closes, EPA was, as some accused, "silently" vetoing either plan, putting at stake millions of federal dollars in highway and sewers funding for Denver and other Front Range cities.

All three entities agreed finally to the delay of any bill while a committee formed, made up of Senate and House members, to study the two rival vehicle emissions programs with the results to be reported to the 1980 legislature.

EPA is making its best progress in reviewing state implementation plans in Region VIII.

However, despite the setbacks on inspection and maintenance, it's in Region VIII where EPA is making the best progress in reviewing and taking action on state implementation plans (SIPs), Robert Schell, of EPA's air quality programs development division in Research Triangle Park, N.C , said.

All six states in the region have submitted their revised SIPs to EPA and the agency has taken final action on three — Wyoming, South Dakota, and Colorado And portions of Montana's plan are very close to final approval, Schell said

While the agency is doing a good job processing SIPs from Region VIII, Schell said, the quality of the plans has been mixed (Current Developments, August 3, p. 927).

For example, Wyoming's SIP was the first one the agency took final action on and that action was approval. But the next SIP it took a final action on was South Dakota's — a disapproval because the plan had inadequate new source review regulations

The agency was also close to taking final action on Utah's plan, but that action would have been to disapprove it. Instead, EPA held off, Schell said, because Utah was working actively to correct the plan's efficient strategies to attain ambient air quality standards.

Colorado's plan was conditionally approved with the stipulation that by March 1980 several deficiencies be remedied.

Conditional approval was given because of deficiencies to the plan's ozone and carbon monoxide attainment strategy for Denver, carbon monoxide plan for Colorado Springs, and total suspended particulates plan for Pueblo.

Conditional approvals also were given for the plan's volatile organic compound regulations, new source review regulations, and its auto inspection and maintenance plan authorization (August 3, p 927).

Areas of Pristine Air Quality

The region has many areas of pristine air quality, usually around its national forests. The EPA has been active and direct when that quality has been threatened.

For example, construction permits for two huge coal-fired power plants in Colstrip, Mont., were denied when they threatened the pristine quality of the air over the Northern Cheyenne Indian Reservation, 12 miles away.

The Montana Power Company, head of a consortium of 26 utilities, has two plants already producing a combined 700 megawatts of power. The two new ones, with 778-megawatt units of power each, would have passed national air standards. But the reservation with its Class I Air Quality, the first area to have this protective designation, would have had its standard violated 19 times in one year.

EPA recently approved the company's current proposal of 95 percent removal of sulfur dioxide, which replaced the previous 82 percent, and particulates controlled to 99.6 percent, ending a three-year battle.

"This was a big victory for us," said Rich Lathrop, head of EPA's public awareness office. "It sets precedents."

EPA says it's hard to create awareness of the dangers of abandoned uranium milling sites.

But EPA doesn't always win. With copper mines and smelters surrounding Salt Lake City, sulfur dioxide levels are not even mentioned in its state implementation plan. And in Wyoming, with its small population resulting in an even smaller tax base, the Wyoming Mining Association has been able traditionally to fight any radiation control regulation. It's the only state without a radiation control act.

"And they have half the supply of radiuim," said Paul Snuth Smith is the region's outspoken director of the radiation control program

In the last few years, the Western states, and Colorado in particular, have started identifying old uranium sites — everywhere from under a pancake house in Denver to a housing development in Grand Junction, Colo., which was built

over a radioactive fill because the mine tailings from a local uranium mill were free.

Seventy-five percent of the ore that comes from uranium is in this region and 100 percent of the oil from oil shale. So far, 22 inactive uranium-milling sites have been identified in Colorado and Utah

"We've been identifying abandoned sites since 1960, but it's been hard to create an awareness of the dangers of the sites. A lot of this stuff we can't do a lot about. If you live downwind of a radon pile, that's the luck of the draw," Smith said.

He said radioactive dust is blowing over Durango, Colo., causing an increased health hazard for the city. The same dangers are happening in other Colorado cities, Smith said.

More than a dozen sites were found near Paradox Valley, Colo., the remains of a radium refinery established after Marie Curie discovered the radioactive substance might cure cancer. Smith said the fate of the waste products in Colorado and Utah still isn't known.

One official said he feared Colorado would be left "holding the nation's radioactive garbage bag" as disposal sites are debated for radium, uranium, and other hazardous nuclear wastes. As Gazda said, "Nobody wants it in their backyard."

EPA participated in drafting a federal-state remedial program. Under the 1978 Uranium Mill Tailings Radiation Control Act, the Energy Department recently assigned clean-up priorities at processing sites, and many of those given a high priority are in Colorado and Wyoming (See related story, p. 1751).

The radioactivity problem spreads into water — from the Dakotas to California — as a result of the long-term use of low-level radiation from uranium mining and natural occurrence of the mineral.

EPA measured radiation levels in water. Smith said the occurrence of dangerously high radiation levels in drinking water in communities where a mine is located has been evidenced. Smith recommended a reevaluation of uranium-caused radiation in drinking water supplies in Western states with the idea of upgrading water companies' treatment facilities, improving discharge treatment systems at uranium mines or changing to another available water source.

Other situations also create dangers — yellowcake (uranium oxide) spills from uranium mines and oil spills from truck accidents in the mountains when brakes fail — each causing equally insidious dangers.

And there are other issues. This summer EPA granted farmers in South Dakota permission to use insecticides to fight a serious infestation of grasshoppers that threatened animal forage. The use, says the National Audubon Society, is also killing an entire songbird population, plus other wild fowl. The issue is going to court.

The Jackson Airport in Grand Teton National Park is the only commercial airport within a park boundary — possibly endangering the air quality and raising the noise level. Now airport officials are requesting commercial jet service. EPA is monitoring the issue, so far finding the noise levels unacceptably high.

Colorado's 'sagebrush rebellion' involves a claim by the state that, because of an inaccurate survey 100 years ago, the Federal Government owes the state 10,000 acres of land rich in oil shale.

Colorado's newest land fight is called the "sagebrush rebellion," by which Colorado is laying claim to some 10,000 acres of federal land, mostly on the Western Slope where it's oil-shale rich with potential energy development.

Colorado's Governor Dick Lamm claims the Federal Government owes Colorado the Bureau of Land Management land because of an inaccurate survey 100 years ago.

The fight is similar to one in Utah, which a few years ago also chose some shale land on federal property as land owed to the state. A lawsuit is now pending before the courts, as sides are being formed in this newest angle to energy development.

MX Missile Project

Another looming issue is the building of the MX missile project. If current Air Force plans go ahead, this huge project could involve use of land four times the size of Connecticut and construction of 10,000 miles of "racetrack" to enable missiles to be moved between shelters. The best location, according to the Air Force, is desert. There is growing concern about the availability of water for the projects, and about the effect of moving in thousands of construction workers and their families into such sparsely populated areas (December 14, p. 1639).

EPA's Williams is finding most environmental issues don't stop at state borders. Water quality in Colorado affects all the states in which its tributaries flow. Poor air quality in Utah threatens Colorado's air quality.

"There's a lot of polarization of issues — couple that with strong states' rights motivation," Williams said. "States want their own programs, but fight at every turn on conditions.

"But we respect states' rights, even though that sometimes makes for a difficult partnership between us. We are an independent regulatory agency. We try not to politicize EPA — that would be a big mistake," Williams said.

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cond, filed with EPA in October 1978, analyzed project effects of MX full-scale engineering.

The second EIS identified a number of environmental aspects of the project including effects on wildlife, water availability — said to be "highly site-dependent", loss of recreational areas, loss of habitat and vegetative cover, and particulate air pollution during construction.

According to Russell Shay, of the Sierra Club's national conservation staff, one of the major concerns is availability of water Construction of the project is expected to require building of a new town whose population is variously estimated to be between 50,000 and 100,000. This will require considerable amounts of water and energy, Shay said.

Air Force General Hecker told a public hearing that unappropriated water rights would be used, Shay said, but was not specific about how these rights would be obtained. There have been suggestions that water would be brought from as far away as California, or even the Columbia River system, Shay said. "The Air Force believes that it can solve the water problem, and they're so determined to go ahead that they're not going to let anything stop them," he said.

The Air Force's Stern said, however, that "in and of itself" the MX project would not use "that much water," once completed. Water would be needed in the largest quantities during construction, and this need might be met by drilling into deeper aquifers, he said.

Third EIS

The Air Force said that it is preparing a third environmental impact statement "to assist decisionmakers in selecting future deployment locations for the MX advanced intercontinental ballistic missile." According to a November 30 announcement, the EIS will analyze the environmental effects of deploying MX missiles in one or more locations, will examine the effects of withdrawing federal land from the public domain for the MX, and will consider the results of segregating or restricting these lands from specified general land and mineral laws.

The first stage in the preparation of the EIS is formulating and defining issues for EIS study, known under the new CEQ regulations on impact statements as "scoping." The Air Force plans to publish the results of the scoping process in January 1980 and has set a deadline of January 15, 1980, for comments on what the EIS should cover.

The draft EIS is scheduled for completion in spring 1980, after which the Air Force plans to seek public comments. A final EIS will be made public in the fall 1980, the Air Force said, and decisions on site selections, restricting uses of federal lands, and withdrawing and acquiring land areas for initial MX deployment would follow in late 1980 or early 1981.

Further information is available from the Ballistic Missile Office, Civil Engineering Division (BMO/MNBD) Norton Air Roce Force Base, Calif. 92409, (714 382-6891.

Energy

OIL SHALE COMPANIES RUSHING FOR PSD PERMITS IN COLORADO

Oil shale companies are rushing to apply for facility permits in Colorado so they will be able to use the rapidly dwindling prevention of significant deterioration (PSD) increments.

The situation in Colorado, industry and Environmental Protection Agency representatives say, reflects what is becoming an increasingly difficult issue to deal with — excessive demand for PSD increments connected with increased energy production in the West

The Piceance Basin, in Northwestern Colorado and Northeastern Utah, is a Class II area, about 40 miles from the Flat Tops Wilderness Area, a Class I area. Beneath the basin lies 94 percent of U.S. shale oil resources, 85 percent in Colorado and 9 percent in Utah.

Oil companies lease the four federal shale oil tracts in the basin, two of which are in Colorado and two in Utah.

Occidental Oil Shale Incorporated and Tenneco Oil Shale Company, which together lease one of the Colorado tracts, are planning to submit an application to EPA in January for a 200,000 barrel-a-day oil shale plant.

And that move is prompting the company that leases the other Colorado tract, Rio Blanco Oil Shale Company, a general partnership owned by the Gulf and Standard oil companies, to rush its permit application to EPA, also for a 200,000 barrel-a-day facility.

Rio Blanco, knowing of Occidental's and Tenneco's plans "got nervous because they thought they might not be able to fully utilize their tracts," said EPA Region VIII Director of Energy Policy Coordination Terry L. Thoem, adding that "other companies are rethinking how fast they want to come in with their applications, too."

Basin Capacity Being Used Up

The companies seem to have good reason to be nervous.

According to EPA's "preliminary and conservative" estimate, the basin's total air pollution capacity under PSD would be totally consumed by 200,000 barrels a day production — and EPA already has granted PSD permits for 65,000 barrels a day of that capacity, Thoem said (Current Developments, July 20, p. 719).

And EPA intends to grant PSD permits to qualified applicants on a first in line basis, which Thoem said, is implied in the PSD regulations.

Furthermore, Thoem said the line for oil-shale permits may be just beginning to form. "Chevron, Texaco, City Service, Exxon, Mobil — you name it, they all have [private] land here, about 200,000 acres. And all of those companies have oil shale plans."

Thoem stressed that a number of factors may ameliorate the situation, such as better, less conservative modeling and citing plants farther away from the Class I area. But he conceded that "there's going to be some trouble."

"I wouldn't say EPA is worried. EPA is struggling with it and thinking about it, and certainly industry is worried," Thoem said.

Pressure To Make Application

Jay Knepper, Rio Blanco's senior engineer on the oil shale project, says the company feels "a definite and very strong pressure to make an application."

Furthermore, Knepper said, "Rushing could cause wasted time and money. Any application we could produce now would not have the benefit of engineering field work. So anything we came in with would almost certainly have to be changed as a result of the test " But, he said, the company must apply now.

Knepper agreed, however, that granting permits on a first come, first serve basis is rational. "While it's logical and nobody sees any other way to do it, there's probably no basis for it in law. But to do it any other way, EPA would have to make some very difficult judgments."

"It's going to be an extremely interesting situation," Knepper said "We are going to have to face this issue, though, if we are going to increase energy production."

Referring to PSD, Knepper said, "EPA is uncomfortable with it. Congress gave them this Clean Air Act and now we are going to see its true implications."

Production Goals 'Can Be Met'

Thoem, however, said EPA thinks the PSD constraints will not thwart President Carter's oil shale production goal of 400,000 barrels a day.

If the oil shale plants are split between Colorado and Utah, the 400,000 barrel a day goal can be met, Thoem said.

The 200,000 barrel a day capacity for the basin — which includes Utah — Thoem said is conservative, and with better modeling the plants could be sited farther from the Flat Tops Wilderness Area, which lies to the east in Colorado.

However, he said, there are no current plans for oil shale production on the two federal lease tracts in Utah because environmentalists are challenging in court the federal government's right to lease the Utah land.

Terrain Model Needed

Meanwhile, a regional complex terrain model is "vitally" needed in order to model with accuracy the effects of long-range transport of pollutants on the Class I area, Thoem said. Results of current, standard modeling, he said, are uncertain, and as the distance increases so does the uncertainty.

Furthermore, Thoem said, the 200,000 barrel-a-day total capacity figure is a linear assumption based on the modeling for the Colony Development Operation's PSD permit. Colony's proposed plant would be the closest one to the Flat Tops Wilderness area — another reason why the 200,000 barrel figure is conservative, he said.

"EPA is very comfortable that that level is safe based on conservative assumptions. With different assumptions, maybe we could give more," Thoem said.

EPA faces the same situation in North Dakota, where the Class I increment in the Theodore Roosevelt National Park already "has been essentially consumed," Thoem said.

Thoem said that as far as he knows, the recent plans for increased energy production are making the "PSD increments felt," for the first time.

And many more applications for energy facility permits are expected after Congress passes its energy legislation, Thoem said (see related story below).

Litigation

EPA RACE-TO-THE-COURTHOUSE RULES SUSTAINED BY U.S. FOURTH CIRCUIT

The Environmental Protection Agency's attempt to impose some order on the filing of petitions for review of the Clean Water Act's final National Pollution Discharge Elimination System (NPDES) permit regulations was upheld December 4 by a U.S. court of appeals (*VEPCO v. EPA*, Nos. 79-1308, 79-1323, 79-1333, 79-1347) (Current Developments, July 27, p. 782).

EPA set 1:00 p.m. Eastern time, seven days after the NPDES regulations were published in the Federal Register, as the effective date for purposes of seeking judicial review.

The U.S. Court of Appeals for the Fourth Circuit characterized EPA's action as a reasonable effort to avoid some "confusion and expense and unseemliness that had developed in the statutorily inspired races to the courthouse," to allow all parties to read and consider the regulations before seeking review, and to eliminate the "unfair advantage of those parties who find out first that an unannounced physical event constituting 'promulgation' has occurred."

The "triggering device" established by EPA for judicial review was, said the court, a valid exercise of the Agency's statutory powers.

All petitions for review filed prior to June 14, 1979, at 1:00 p.m. Eastern time were ordered dismissed as premature by the court.

Racing to the courthouse to file petitions for review is inspired by 28 U.S.C. Section 2112(a) which requires that when an agency order is challenged in more than one court of appeals, the agency record is to be filed in the court where filing occurred first, and all other actions are to be transferred to the court of first filing. Filing first, then, after promulgation of the challenged regulations, gives the petitioner the advantage of selecting a court of appeals perceived to be favorable to the petitioner's desired disposition of the case, said the court.

Energy

EPA'S REGION VIII ISSUES DRAFT OF NEW ENERGY PLANT PERMIT POLICY

The Environmental Protection Agency's Region VIII office, which covers six Western states, issued a draft policy for issuing permits to new energy facilities that says the office will try to process applications within six months.

The draft policy acknowledges the potentially serious environmental and social problems that could accompany the projected increase in energy production in the West. And the statement outlines a general policy aimed at expediting energy production while minimizing those problems.

The draft policy said the region will try to process energy facility permit applications within six months of receiving a complete application. Exceptions, however, would be when a proposed permit needed an environmental impact statement, or if court challenges held up the permitting, the draft policy said.

EPA will coordinate its work with other federal, state and local agencies, and will delegate as much permitting authority as possible to states, the draft policy said.

"*It is not necessary to weaken existing local, state or* federal substantive environmental requirements to accomplish reasonable energy goals," the draft policy said.

The policy also:

- Advocates selecting energy options that minimize the use of water, do not increase the salinity levels in streams, and use lower quality water, such as saline water; and
- Advocates the phased modular development of synthetic fuel facilities, rather than their immediate commercial scale construction.

Furthermore, the policy said that exempting synthetic fuel facilities from future substantive environmental regulations is unnecessary.

Region VIII is circulating the draft policy among state, local, industry, and environmental representatives for comment.

The region plans to issue the final policy — which would have no legal authority — in January, said Region VIII's Director of Energy Policy Coordination Terry L. Thoem.

The draft policy is published in the Full Text Section of this issue.

Comments on the draft should be sent to Thoem at EPA Region VIII, 1860 Lincoln St., Denver, Colo., 80295.

Energy

ARMY SECRETARY APPROVES PERMIT FOR OIL REFINERY IN PORTSMOUTH, VA.

Secretary of the Army Clifford L. Alexander December 11 announced a final decision to grant a permit for construction of the Hampton Roads Energy Company's proposed refinery at Portsmouth, Va.

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unnecessary delay," he said. "Accordingly, we oppose the Udall-Wirth substitute."

The Commerce bill, with the Santini-Lujan amendment, will "substantially achieve the Administration's objectives," Duncan said. This version, however, allows substantive waivers, and the Administration "would strongly prefer a bill with no provision for waiver of substantive laws, except for those which might be covered by a 'grandfather' provision," he said.

Duncan said the Administration will support an amended version of the Commerce bill. Congressman Bob Eckhardt (D-Tex) plans to offer an amendment to remove provisions for substantive waivers and to provide for court reviews of board decisions to grandfather projects after project decision schedules are set.

The Administration "does not seek authority for any substantive waiver, and will support efforts to delete this authority on the House floor," Duncan said. "However, should the choice ultimatey fall between the Udall-Wirth substitute and the Commerce Committee bill as amended by the Santini-Lujan amendment, we would support the latter as closest to our position, because it avoids the delays inherent in the addition of new opportunities for judicial review."

Energy

ADMINISTRATION SHIFTS POLICY TOWARD CONSERVATION, BLUM SAYS

In a major policy shift, the administration is placing heavy emphasis on energy conservation, but is not retreating — at least now — from its commitment to synfuels, Environmental Protection Agency Deputy Administrator Barbara Blum said.

The administration is looking at ways to encourage large-scale private investment in making existing homes and buildings more energy efficient, Blum said October 29 in an interview with Environment Reporter.

"I think it's the right way to go," Blum said. "We have to hit the energy problem on all fronts, but the front that was most overlooked, was the energy conservation front."

To the disappointment of environmentalists, former Energy Secretary James Schlesinger placed little emphasis on using energy conservation to reduce dependence on foreign oil.

However, at a Harvard University energy seminar two weeks ago, new Energy Secretary Charles Duncan broke with his predecessor by coming out strongly for solar energy and energy conservation.

"That was probably the first time I had heard or heard of a major energy speech made by the Department of Energy on energy conservation," Blum said.

The switch, she said, came with the realization that energy conservation can provide a greater barrel of oil per capita savings than any other energy alternative.

Synfuels

"Until we can see if energy conservation takes," Blum said, "the administration considers it important to continue its synfuel efforts."

"But if energy conservation comes along as I think it will — if we can educate people and find long-term financing — we may find there isn't as great a need for synfuels."

Producing and burning synfuels cleanly is expensive, and increasingly is being recognized as inflationary, Blum said.

EPA unsuccessfully pushed for a greater stress on energy conservation in the President's July energy message, Blum

confirmed, adding that the Council on Environmental Quality and "elements in DOE" also tried to further that position.

RCRA: 'Search and Seizure'

On another matter, Blum said, EPA probably will change its strategy for assessing and investigating hazardous waste sites

Currently, as hazardous waste sites are discovered the task force lists them according to priority for cleanup and enforcement.

However, Blum said the agency will be moving toward a "search and seizure" operation, whereby hazardous waste dump sites will be actively sought out and EPA, working with a state, will decide if it is an immediate danger that should be removed or contained.

"I hesitated to do it, and Doug [Costle] hesitated, too, because it's difficult to panic the public when you don't have a mechanism in place to remedy it," Blum said. "But I think we've got our task force together enough now so we can deal with these emergency sites. So even though we have our hands full, it would be better to try to discover these sites."

The operation would work only if the states agree to take the lead with EPA providing back-up and technical assistance, Blum said.

Wildlife

HOUSE APPROVES FUNDING BILL FOR SPECIES ACT, PLACES ESSA UNDER INTERIOR

The House of Representatives October 24 passed HR 2218 which would reauthorize the Endangered Species Act through fiscal 1982 and which would clarify the administrative procedures for carrying out the Act.

The bill which was designated as S 1143, would authorize $25.6 million to the Department of Interior and $3 million to the Commerce Department in each of the next three fiscal years. In addition, $600,000 would be authorized for the Endangered Species Committee and review board process established under the 1978 amendments to the Act.

The Senate passed a simple reauthorization bill (S 1143) in June (Current Developments, June 22, p. 286).

Passage of the House bill without weakening amendments was secured by President Carter in exchange for his signature on an energy and water appropriations bill that contained a rider exempting Tellico Dam from all laws prohibiting the dam's construction (September 28, p. 1239).

The most controversial amendment adopted by the House was introduced in the Rules Committee by Fisheries subcommittee Chairman John B. Breaux (D-La) as a technical amendment. Breaux's amendment would move the Endangered Species Scientific Authority — an independent panel which advises Interior's Fish and Wildlife Service on limiting exports of endangered species — into the Interior Department. The amendment originally included other restrictive provisions concerning the role of ESSA but were dropped because of opposition expressed by the State Department, environmentalists, and the committee minority member Congressman Paul McCloskey, Jr. (R-Calif) who said these amendments would violate the Convention on International Trade in Endangered Species (CITES). Other committee members were upset because they did not have a chance to vote on the package last May (May 4, p. 15).

Another amendment adopted by the House, and introduced by Congressman Edwin B. Forsythe (R-NJ), would authorize $1 5 million, $1.75 million, and $1.85 million respectively in fiscal 1980-82 to the Department of Agriculture to monitor

Brennan continued that stay to give the Supreme Court as a whole the opportunity to hear the matter, but the Court vacated the stay.

Sara Bates, attorney for the Conservation Law Foundation, said the Supreme Court could have continued the stay of the sale while the appeals court considered the preliminary injunction appeal, and ultimately, the disposition of the case on the merits.

Currently, the plaintiffs' request for an expedited appeal of the preliminary injunction denial is before the First Circuit; the litigation of the case on the merits remains before the federal district court for Massachusetts.

Sale Rescheduled

Because Sale 42 was not held November 6, the Interior Department is required by its regulations to provide 30 days notice in the Federal Register of a rescheduled sale.

Interior was expected November 13 to announce rescheduling of the sale for December 18.

General Policy

COSTLE SAYS, SINCE 1977 AIR ACT, 83 COAL PLANT PERMITS APPROVED

Although industry argued that the prevention of significant deterioration provisions in the 1977 Clean Air Act amendments would "chill" new construction, the Environmental Protection Agency has since approved 83 of 85 permit applications received for new coal-fired plants, with the final two permits to be approved soon, according to EPA Administrator Douglas M. Costle.

The approval of the permits will result in 18 million tons of new coal-fired capacity, 20 percent more than in 1978. Costle told the sixth annual Environment and Safety Briefing Session, sponsored by the Bureau of National Affairs, Inc., on November 8.

"Yes, we can go to coal and protect environmental standards," Costle said.

Costle, who is also chairman of the interagency regulatory council set up to streamline the federal regulatory process, said that the average time taken by EPA to deal with permit applications for new coal-fired plants was five and a half months.

Referring to the need to cut red tape in the regulatory process, Costle said that the multiplicity of permits needed for new projects is "less of a problem at the federal level" than at the state and local level.

Costle said that the Energy Mobilization Board in the Administration's energy proposal is needed to bring new energy facilities through the "complicated regulatory maze" for quick decisions on permits.

Regulatory Reform Saving Billions

President Carter's regulatory reform efforts are "saving billions of dollars, millions of hours" but comprehensive, permanent reform requires new legislation approved by Congress, according to Costle.

Costle said that Carter's message to Congress last April on the benefits and shortcomings of federal regulation have resulted in substantial savings to government and industry. Costle said, however, that Congress should act on the President's legislative proposal, the Regulation Reform Act of 1979. He said the bill would make permanent the improvements already initiated by Carter within the Executive Branch and would extend them to the independent federal agencies.

Costle pointed out that the Federal Government has 90 regulatory offices issuing a total of 7,000 rules per year. About 2,000 of these rules have a significant impact on state and local governments or private industry and about 100 have major economic impacts, Costle said.

Costle said that federal environmental rules alone impose direct costs of almost $20 billion per year, with state and local environmental rules costing even more. Costle cited a 1979 study by the Business Roundtable showing that federal regulation costs 48 large companies $2.6 billion.

Regulations Must Give Money's Worth

"If we are to continue our progress, we must ensure that regulation gives Americans their money's worth," Costle said.

Costle said airline deregulation, which many airlines had opposed, saved travelers $2.5 billion in the first year and boosted airline profits. EPA regulations lowering the level of water pollution controls on 64 nontoxic polluting industries saved about $200 million in control costs (Current Developments, August 31, p. 1070). EPA's air bubble policy, allowing plant managers to choose the most economical air emissions control strategy, will save up to 25 percent of control costs, he said.

Costle said the Du Pont de Nemours Chambers works in New Jersey saved $15 million through the application of the air bubble policy to reduce its "significant hydrocarbon emissions." He said the conventional emission reduction approach would have reduced hydrocarbon emissions by 85 percent at a cost of $20 million, while application of the air bubble policy reduced emissions by 89 percent at a cost of $5 million.

Less Red Tape

In addition, Costle said, elimination of unnecessary regulations and paperwork, mandated by the President, has resulted in:

- OSHA cutting 924 standards "that did not contribute to worker safety," and exempting 40,000 low-risk businesses from annual reporting requirements;
- EPA speeding up its average processing time for rural water treatment applications by more than a year, saving local governments several hundred millions of dollars annually; and,
- HEW reducing its reporting burden in its educational programs by an estimated 274,000 hours annually.

Costle also said that the Administration recently discovered that 21 federal laws regulate carcinogens under seven different agencies. He said that the Regulatory Council will be coordinating the seven agencies on carcinogens.

Costle said the purpose of Carter's reforms were to "get rid of bad regulations, to save the good, and to improve federal management of the regulatory process."

Post-War Chemical Industry Growth

"Our modern, industrialized society has created problems no government ever had to deal with" Costle said. Chemicals had been manufactured from natural products until 1945, and there was much less need for controls. The synthetic chemicals industry has developed rapidly since then. Now about 4.5 million chemicals are known, with 45,000 in commercial distribution, and "it takes a team of scientists, 300 mice, two to three years, and about $300,000 to determine whether a single suspect chemical causes cancer," he said.

"Big society has spawned a thousand problems that the founding fathers could not dream of," he said. Although these new laws make sense by themselves, "The accretion of these laws slowly builds a cumulative burden that can interfere with business without bestowing any compensatory benefit on society," Costle said.

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Costle said that the government must get rid of unnecessarily discriminatory rules, restore competition to "healthy mature industries that do not need regulations passed in a time of monopoly 75 or 100 years ago," and enable U.S. business to devote its energies to production.

Questioned about legal challenges by industry and conservationists to EPA regulations, Costle said the main effect is the delay in the effectiveness of the regulations and the uncertainty of investment planning.

He said the Federal Government is trying to do a better job in its regulations, and cited as a good example the new source performance standards for coal fired plants under the Clean Air Act. Costle said these regulations cost the Government $100 million and two years to complete but that the regulations are defensible in the courts.

"If government does a better job analyzing its regulations, we will have less to argue about," Costle said. He said the biggest mistake would be for EPA to give up in the face of litigation challenging the validity of rules and to say, "let the court write the rules."

Litigation

TOXIC WASTE RULES EXPEDITED HEARING SET BY FEDERAL COURT FOR DECEMBER 12

The U.S. District Court for the District of Columbia granted November 5 the Environmental Defense Fund's motion for an expedited hearing on the status report submitted by Douglas Costle on the development of regulations under the Resource Conservation and Recovery Act (*EDF v. Plehn*, Nos. 78-1715, 78-1689, 78-1734, 78-1899).

The hearing for review of the Environmental Protection Agency Administrator's status affidavit is scheduled for December 12. The motion filed October 23 by the state of Illinois and several environmental groups requested that the court set a new and realistic schedule of compliance for the adoption by the agency of regulations pursuant to RCRA (Current Developments, November 2, p. 1473).

Motor Vehicles

EPA DENIES REQUESTS TO DELAY 1981 CARBON MONOXIDE STANDARDS

The Environmental Protection Agency November 9 denied requests to delay the 1981 and 1982 carbon monoxide emission standards for three foreign auto companies and granted another foreign automaker part of its request.

The agency granted a one-year waiver of the 1981 standard to Toyo Kogyo of Japan for the four-cylinder, 91-inch cubic inch and 120 cubic inch displacement engines used in its Mazda models.

EPA denied requests from Fugi Industries for its 97-cubic inch and 109-cubic inch Subaru engines, Nissan for eight of its four-cylinder engines used in Datsun models and Toyo Kogyo for its 70-cubic inch engine used in Mazda models. Renault was denied a waiver on its four-cylinder 85-cubic inch engine.

In August, EPA denied the majority of requests for waivers of the 1981 carbon monoxide standard from American Motors Corporation, General Motors Corporation, Chrysler Corporation, Volkswagen of America, Toyota Motor Sales and Britain's BL Limited formerly British Leyland (*Current Developments*, August 31, p. 1073).

1981 Standards Can Be Met

EPA says the majority of domestic and foreign automakers can meet the more stringent 1981 carbon monoxide standards, which allow 3.4 grams of the pollutant per mile. The current carbon monoxide standard is 7 grams per mile.

"I am encouraged by the progress the auto industry has made in developing technology to meet the 1981 standard," EPA Administrator Douglas M. Costle said.

The engines can incorporate the effective control technology to meet the 1981 standards even considering costs, driveability and fuel economy, Costle said.

Waivers were granted for two engine models manufactured by Toyo Kogyo because for those engines meeting the standards would have required consumers to replace the catalytic controls within the first 50,000 miles. "Placing these extra burden on consumers was not deemed to be effective control technology," Costle said.

Air Pollution

OZONE DEPLETION, SKIN CANCER RISK GREATER THAN 1976 PREDICTION, NAS SAYS

Continued worldwide growth of chlorofluorocarbon (CFC) use at the present rate will deplete stratospheric ozone by 56 percent and will increase the incidence of skin cancer by 200 to 300 percent, according to two studies performed for the Environmental Protection Agency.

If uses of CFCs are held to the 1977 level, a 16.5 percent ozone reduction and a 66 percent skin cancer increase will result, the studies say.

Even a 25 percent decrease in CFC emissions in 1983 would deplete stratospheric ozone by 13 percent and would result in a 52 percent skin cancer increase, the studies say.

Both studies, along with a third now undergoing EPA review, will be used to determine the need for additional regulation of CFCs under the Toxic Substances Control Act, EPA officials said.

The first study was performed by the National Academy of Sciences under an EPA contract. The study predicts that ozone depletion will be more than double the seven-percent level of depletion predicted in a 1976 NAS study.

The second study, performed by the National Cancer Institute under EPA contract, says each 1 percent reduction in the ozone layer results in a 4 percent increase in skin cancer.

Reduction of the ozone layer exposes the earth to greater levels of ultraviolet radiation, which is known to be a causative factor in skin cancer development.

Both reports are scheduled for delivery to EPA during the coming week. Executive summaries of the reports, however, outline the effects of various levels of CFC use and compare them with expected skin cancer rates.

Based on constant 1977 CFC production levels, ozone depletion will reach 16.5 percent early in the next century, the NAS study says.

A National Aeronautics and Space Administration study, based on 1975 CFC emissions, predicted an 11 to 14 percent ozone depletion. The 1976 NAS study used 1973 CFC release rates when it arrived at the 7 percent depletion figure cited in the 1976 NAS report.

CFC Uses Increasing

According to the NAS report summary, EPA estimates that world CFC production will increase by 5 percent each year through 1990 for F-11 and F-12 and by about 8 to 9 percent a year for F-113 and F-114.

According to the NAS summary, production of F-11 and F-12 has not increased significantly since the 1976 study

EPA REGION VIII'S DRAFT ENERGY POLICY

EPA REGION VIII
ENERGY POLICY STATEMENT

PURPOSE

This policy statement demonstrates EPA Region VIII's commitment to do its part in helping the Nation achieve energy self sufficiency. EPA Region VIII is also committed to the protection of the high quality environment presently enjoyed by the citizens and visitors in the Region. We believe that energy resource development and environmental protection can be compatible in most situations.

Magnificent vista's, pristine air, fertile plains, clean water, and untouched wilderness areas make up the Region's geography. Abundant energy resources coexist with these natural conditions. Essentially all of the Nation's oil shale resource, half of the Nation's coal reserves and half of the Nation's uranium deposits are found in the Region. Recent actions by the President and by Congress point toward an increased emphasis on the development of these energy resources A delicate balance must be implemented to allow energy resource development to proceed in appropriate areas.

BACKGROUND

A cornerstone of the National Energy Supply Plan is the development of the Nation's abundant coal reserves. With fifty percent of the Nation's strippable reserves located in Region VIII states, coal development will continue to increase rapidly. The 1978 Regional production of about 100 million tons is projected to reach nearly 300 million tons by about 1985.

Along with the increase in coal mining, coal fired power plants are being constructed in the Region at an increasing rate. The electricity produced is transmitted to load centers in the Midwest, Southwest , West Coast and Northwest. Power plant capacity will double in the Region between now and 1985. At that time, almost half of the electricity produced will be exported from the Region.

The President's Energy Program will stimulate additional coal mining and power plant activity via the construction and operation of coal gasification and coal liquefaction plants. Mandatory conversion of power plants now burning oil or gas to coal will also increase the demand for Western coal.

Oil shale deposits in the Region comprise more than 90 percent of oil shale resources found in the U S Estimates of recoverable reserves are placed at 600 billion barrels. By comparison the U.S. consumed slightly more than 6 billion barrels of oil in 1978. Oil shale deposits are concentrated in a relatively small area in Western Colorado Northeastern Utah, and Southwestern Wyoming.

Vast uranium reserves exist in Wyoming, Colorado and Utah. Production of uranium ore is expected to almost triple by 1985 If a heavy National reliance upon nuclear energy develops, the Region's resources will be developed even further

POLICY

Region VIII of the Environmental Protection Agency (The Region) has established the following goals and objectives. The Region ...

... is committed to assuring that environmental standards and objectives, e.g. Prevention of Significant Deterioration (PSD) increments and water quality criteria, are not violated by energy facilities. It is not necessary to weaken existing local, state or Federal substantive environmental requirements to accomplish reasonable energy goals. The Region will maintain its present procedures which ensure full and timely public participation in its regulatory process.

... will expedite its regulatory decision making on all energy projects. Special priority will be placed on processing energy project permit applications. It is our objective to process energy project permit applications within six months of receipt of a complete application. Exceptions to the six month processing time would include circumstances such as the need for preparation of an EIS on a proposed permit or judicial challenges to the proposed permit. The Region will provide assistance in the scoping phase of any energy EIS to expedite issue identification and resolution. Energy facility EIS reviews will be performed consistent with Council on Environmental Quality (CEQ) guidelines. Special priority has been placed on many EIS's expected during the next year This priority list will be reviewed annually.

... is actively developing consolidation of procedures for applying for, reviewing, and issuing environmentally-related project authorizations and is seeking to reduce or eliminate duplication of those requirements. The Region will coordinate its regulatory responsibilities and decisions with other Federal agencies and with appropriate State and local agencies. Delegation of permit programs to States, where authorized by law and warranted by circumstances, is an EPA policy which is being given the fullest credence and emphasis in Region VIII.

Development of these energy resources will change the environment and the life styles of the Region. Mining activities and fuel conversion facilities will generate vast amounts of solid waste. Construction and operation of synthetic fuel facilities and conventional power plants will consume water resources and release pollutants to the atmosphere. The labor and support force to construct and operate these mining and conversion facilities will rapidly increase population in predominantly rural settings. The potential for social and economic problems is great unless adequate and timely planning and financing are available. New transportation systems will have to be de- and people needs

A coordinated local, State, and Federal government industry/public effort is going to be necessary to ensure that energy resource development goals are achieved while environmental standards and objectives are maintained. EPA Region VIII has a responsibility to ensure that timely and effective coordination of environmental decisions occurs Thorough environmental reviews and effective public participation are essential and will take time How-

Solid Waste

EPA OFFICIAL SAYS SOLID WASTE WORST ENVIRONMENTAL RISK OF SYNFUELS

The solid waste problem is the worst environmental risk associated with the production of synthetic fuels because its risks are unknown, according to an Environmental Protection Agency official.

Environmentalists also agree with this assessment.

But the technology will be developed to solve possible health-related problems, and the solid waste problem will ...t impede development of oil shale and other synthetic fuels, a key part of President Carter's recent energy program, said Terry Thoem, director of EPA's Energy Policy Coordination Office in EPA Region VIII, Denver, Colo., where a very large portion of synthetic fuels production will take place.

Thoem August 21 told Environment Reporter that development of U.S. oil shale reserves, however, could yield cancer-causing waste materials, including benzo-a-pyrene (BAP), a known mutagen, and certain nitrogen compounds. Thoem said that this fact nonetheless does not mean that the President's energy program causes cancer-causing wastes.

Thoem said that no one has yet determined what levels of the cancerous substances would appear in the waste materials from process shale or shale oil and what concen... ations would be hazardous to human health.

In addition to determining what levels and concentrations are hazardous, Thoem said, the chance for human exposure from the process shale or shale oil also must be determined.

According to Thoem, no commercial oil shale processing plant has yet begun to operate, although the first is scheduled for completion in Colorado within five years. Colorado ...s about 85 percent of U.S. oil shale reserves, buried in the Green River Formation, particularly in the Piceance Basin.

Under President Carter's energy program, 2.5 million barrels of synthetic fuels, including 400,000 barrels of shale oil, would be produced daily by 1990. Eight oil shale plants are planned, each producing about 50,000 barrels daily. Thoem said that probably two of the oil shale plants would be ... Utah, and six in Colorado.

60,000 Tons of Waste To Be Produced Per Plant Daily

Thoem said that each of the projected commercial surface oil shale plants producing 50,000 barrels of oil shale daily would also have the undesirable effect of producing 60,000 tons of waste materials that would have to be disposed of each day. The in situ, or underground, oil shale operations ...ould produce only 30,000 to 40,000 tons of waste materials ...er day.

"If you don't dispose of these waste materials correctly, there is a potential for water getting into them, and leaching out toxic materials. If it gets into streams or groundwater, it has the potential for contamination," Thoem told Environment Reporter.

Thoem said that EPA, the Energy Department, and the ...merican Petroleum Institute are studying the oil extraction process and its wastes to determine possible carcinogenic effects. He said EPA is looking at what levels of BAP are in process shale oil and what concentration would be in leachate that could get into surface or groundwater.

He said EPA is also studying industry proposals for ways to dispose of process shale waste materials. Some proposals in...ude disposing of waste materials in impermeably lined gulches or canyons. The waste materials would be placed in the impermeably lined ponds, the water would evaporate, and the remaining residue would be covered over with an impermeable or strong material at the end of the life of the plant — after 30 or 40 years, Thoem said.

He said the impermeable layer above and below the pon... would prevent the waste material or contaminated wate... from leaching out of the pond.

Thoen said other industry proposals, including using th... processed shale itself in a compacted form as an im... permeable water holding material, are not so good. Althoug... industry claimed this method is effective, government ex... perts conducted tests showing it to be 99 percent ineffective Thoem said.

"It's questions like that that leave us concerned," Thoem said.

Environmentalists agree that the solid waste problem i... the "most serious environmental hazard associated with oi... shale" and other synthetic fuels production, according t... Friends of the Earth and other environmental groups (Current Developments, July 20, p. 722.

Environmentalists believe it to be unwise to commit billions of dollars to oil shale and other synthetic fuels development until safety, health, and environmental questions associated with the technology are determined.

Air Pollution

EPA ALLOWS NEW METHOD FOR SHOWING COMPLIANCE WITH OHIO AIR REGULATIONS

The Environmental Protection Agency said August 22 that it will accept an alternate method of demonstrating compliance with the federally promulgated Ohio sulfur dioxide regulations (44 FR 49296).

The original policy statement on this subject, issued by EPA on February 15, 1978, authorized coal analysis conducted in accordance with American Society for Testing and Materials methods D 3176, based on a 24-hour period of fuel averaging as an alternate means of demonstrating compliance.

EPA now says it will accept coal analysis based on a 24-hour period taking into account two exceedances, as determined by fuel sampling, at any single source in any consecutive 30-day period, with each day completing a new 30-day period.

Kansas

GOVERNMENT AGENCIES INVESTIGATING TOXICS-CONTAMINATED CATTLE DEATHS

State and Federal Government agencies are investigating the cause of death for 54 cattle in Kansas found to have "extremely high" concentrations of polychlorinated biphenyls (PCBs) in body fat.

Region VII of the Environmental Protection Agency August 17 announced an investigation in which the Food and Drug Administration, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service, and Kansas Department of Health and Environment are cooperating. They are looking into the deaths of 54 of 168 cattle delivered by Don Busenitz of Newton, Kan., to Pawnee Valley Feedlot, Hanson, Kan. The cattle died seven days after delivery.

EPA said Busenitz used waste transformer oil, containing carcinogenic PCBs, in animal back rubbers. EPA in April issued final rules prohibiting PCB manufacture and restricting use (Current Developments, April 27, p. 2390).

The state ordered Busenitz and Pawnee Valley Feedlot to hold remaining animals or animal materials until investigations are complete. The Kansas Department of Health and Environment ordered Jayhawk Rendering Plant, Garden City, Kansas, which processed the 54 PCB-con-

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Shale production near?

By ELLEN WHEELER
News Staff

After decades of big talk and false starts, a working shale-oil industry might actually be on the horizon in Colorado, according to those in the business.

It's true the talk isn't as big as it used to be.

In 1971 the federal government projected that national production of oil from "the rock that burns" would reach 1 million barrels a day by 1990.

Eight years later, no oil is being produced from shale, except for a small amount used in testing. And President Carter's recently stated goal of 400,000 barrels a day by 1990 is considered by many to be ambitious if not impossible. Some industry sources say a more realistic goal would be 200,000 barrels a day.

IN COLORADO, Interior Department officials in 1971 expected the 5,000-acre tracts to produce 150,000 barrels of oil a day by the early 1980s.

Work is continuing on those tracts, but no oil has been produced yet from either. Rio Blanco Oil Shale, operator of the area designated Tract C-a (see map), won't decide until 1981 if it will build a commercial operation. Occidental Oil Shale predicts initial production in 1984 of only 5,000 barrels a day from Tract C-b.

In spite of the richness of the resource that lies beneath Western land, the promise of oil shale development never has been fulfilled — usually because of cheap imported crude oil.

In fact, veteran oil shale watchers are fond of pointing out that commercial production has been "just around the corner" since the early part of this century.

With foreign oil no longer a bargain, oil shale once again seems to be "just around the corner." Prices for oil from shale are estimated at between $20 and $35 a barrel now, compared with an Arab oil price of $23.50 a barrel.

BUT IN ORDER for the shale industry to get off the ground, industry and government sources say, there will have to be either federal economic incentives or higher oil prices, or both.

"The uncertainty remains," says Henry O. Ash, director of the Department of the Interior's Oil Shale Environmental Advisory Panel. "There's a lot more talk, news articles and a lot of consultants running around, but nothing has really changed.

"You have to be an optimist to be involved in oil shale."

Judged by current activity, the industry seems to be long on optimists. Despite the increasing costs, delays, environmental problems and a history of punctured boomlets, virtually everyone involved with Colorado oil shale predicts a boom will start soon.

It will take five to 10 years from the time a company announces its plans for a commercial facility — generally one that processes 25,000 tons of shale or more a day — until it is at full production.

What has kept the industry's interest strong throughout its darker moments is a rich resource in the Green River Formation underlying about 16,000 square miles of Colorado, Utah and Wyoming.

AN ESTIMATED 1.8 trillion barrels of oil are held within the marlstone, commonly known as oil shale, in that formation. From 80 billion to several hundred billion barrels of that are economically recoverable.

About 80 percent of the richest shale lies within northwestern Colorado's Piceance Basin, where dozens of oil companies and individuals have holdings. Some have done extensive development work, while others are waiting until shale production is commercially feasible before investing further.

The federal government is by far the largest owner of shale, with about 80 percent of the total resource.

If and when shale development occurs, the two companies likely to be first out of the gate in Colorado are Union Oil Co. and Colony Development Operation, both of which have extensive shale property in Garfield County near Grand Valley.

BOTH COMPANIES have stated their preference for a proposed $3 a barrel tax credit, which proponents point out wouldn't obligate the government to any spending unless industry actually produces oil. And both have produced some oil from shale.

Colony, a joint venture of Arco and TOSCO, has obtained almost all the permits it needs to build and operate a 45,000-barrel-a-day facility on its 8,000-acre site, including a federal air pollution permit.

The company also is considering initial production of only 25,000 barrels a day, in part because of concerns about rapid growth expressed by regional officials, according to Colony manager Les Ludlam.

Each ton of Colony's rich shale will produce about 35 gallons of oil, he said. The final product will either be a high-grade crude sent for refining to Rocky Mountain refineries or will be upgraded by Colony to a diesel or fuel-oil level.

Colony mined 1 million tons of shale between 1969 and 1972, retorting it in a 1,000-ton-a-day facility. Faced with inflation and uncertain national energy policies, the company suspended its operations in 1974.

"THE ECONOMIES of the project are beginning to look better," said Ludlam. But "all of our plans are really tied to seeing something come out of Congress."

Colony's neighbor, Union Oil, also has obtained most of the necessary permits. For several years in the 1950s it operated a retort near Grand Valley, processing up to 1,200 tons of ore and producing about 300 barrels of oil a day.

Union plans to build a 9,000-barrel-a-day facility initially and hopes for production of 150,000 barrels a day by 1995.

"If Congress enacts the $3 a barrel tax credit or other appropriate risk-sharing, we are ready," said Union spokesman John Hopkins.

It would take 2½ years to have the prototype facility in operation, he said.

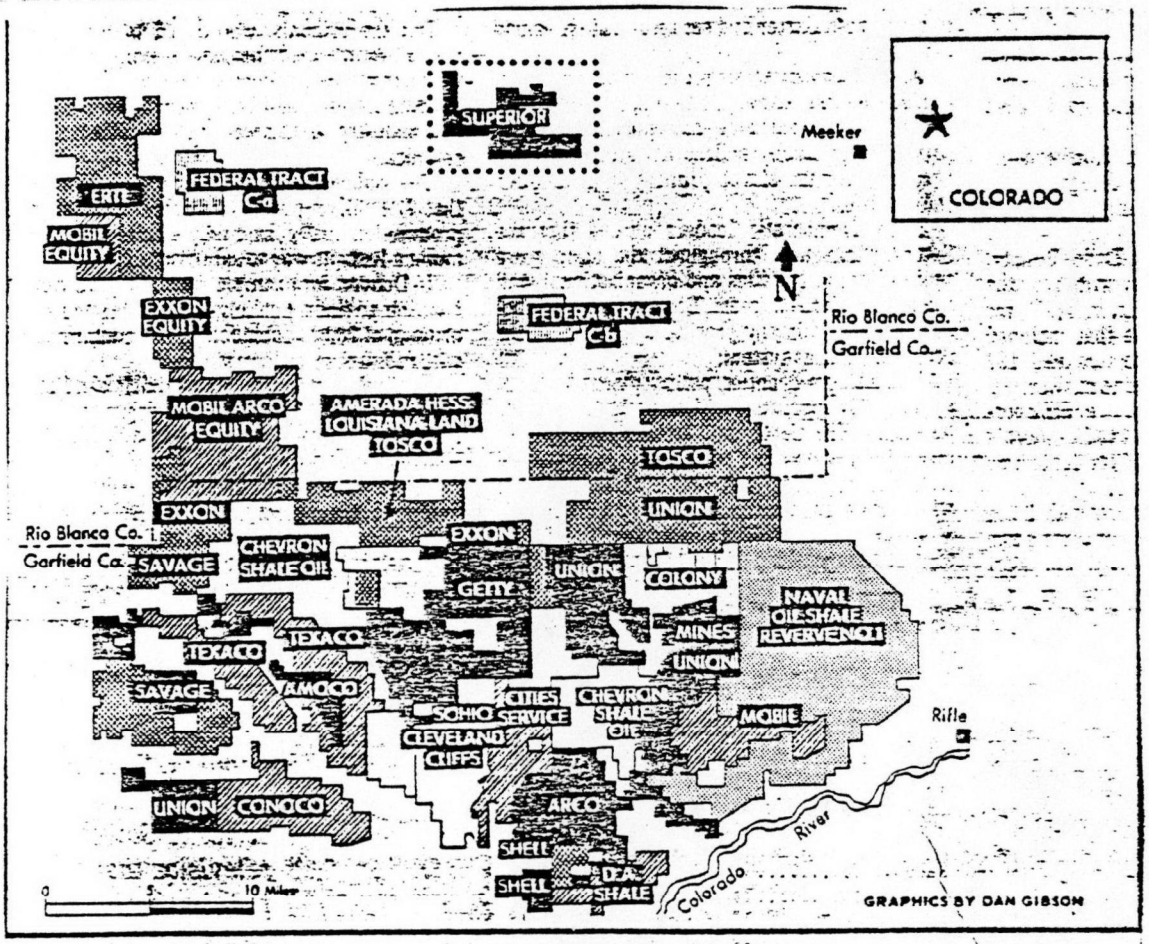
Other active companies include:

—Occidental, operator of federal tract C-b and a pioneer in "in situ," or underground, retorting. It has produced 50,000 barrels of oil at its privately owned Logan Wash test site near Debeque and is building facilities for modified in situ retorting on the federal tract. (Modified in situ involves mining of some of the rock first to create an underground cavern.) First production of 5,000 barrels a day is expected in 1984.

Full-scale production is set for 1986, with a goal of 50,000 barrels a day.

—RIO BLANCO OIL Shale Co., operator of tract C-a. Gulf and Standard of Indiana are the participants in this project, which has purchased Occidental's modified in situ technology and is building facilities for underground retorting. By the end of 1981, the company plans to finish burning three test retorts.

Only then, after spending $260 million since its formation, will Rio Blanco decide whether to go ahead with a commercial-sized project originally pegged at 76,000 barrels a day.



Oil companies and their pieces of Colorado's Piceance Basin. Most of those tracts and controlling firms are indicated above. The Superior Oil Co. tract at the top of the map actually is about 15 miles north of federal tract C-a. The state map indicates location of the Piceance Basin.

—Paraho Development Corp., which just finished producing an undisclosed amount of oil from Israeli shale at its Anvil Points site. Originally a consortium of 17 oil companies, Paraho had produced about 110,000 barrels of oil prior to the Israeli run.

About 100,000 barrels of that was produced in 1977 and 1978 from federal shale under contract with the Navy.

PARAHO IS SEEKING federal funds for planning of a project that could be located at Anvil Points or on its private reserves in the Piceance Basin or Utah. Program director Harry Pforzheimer said the output hasn't been determined but could be both oil and gas equivalent to about 8,000 barrels a day of oil.

—Superior Oil Co., which has been waiting since 1973 for approval of a proposed land exchange with the Bureau of Land Management. A decision on the exchange is expected from Interior by mid-1980, and at that time Superior will decide if the project is economically feasible. Its plans call for production of an average of 11,500 barrels a day on a site near Meeker.

—Equity Oil Co., which recently began testing in situ technology under contract to the Department of Energy on less than one acre in the Piceance Basin. The company hopes to extract 70 percent of an estimated 636,000 barrels of oil under the tract.

IN ADDITION TO these firms, a number of major oil companies hold oil shale reserves, including Conoco, Texaco, Exxon, Shell, Chevron and Mobil.

Chevron, with about 40,000 acres of prime shale land, is preparing plans for a 100,000-barrel-a-day facility within 10 years. It is looking for front-end incentives from the government, such as accelerated depreciation and investment tax credit increases.

Exxon recently began inquiries into a possible land exchange with the federal government in an effort to consolidate its holdings into more easily mined blocks. It, too, is interested in tax credits, as well guaranteed purchase agreements or grants that would be paid back should the project become profitable.

Shale decisions to be made far from sites

Colorado's energy boom

By ELLEN WHEELER
News Staff

The crucial decisions that will determine if Colorado shale is developed probably will be made far from the Western Slope — in places such as Washington and Riyadh, Saudi Arabia.

Most veterans of oil shale's ups and downs over the years say the industry's development this time around hinges on two factors:

—Whether Congress decides the federal government should lend more than just moral support to the industry.

—How soon and how high the member nations of the Organization of Petroleum Exporting Countries raise their prices for oil.

"Within the next five years, (an oil shale industry) has to happen," said John S. Hutchins, an energy industry consultant and former president of Cameron Engineers in Denver.

"If Congress doesn't do something, the next time OPEC meets it could make it happen," Hutchins said. "Congress has the option of speeding up the start of production."

The OPEC oil price stands at $23.50 a barrel, compared with current estimates for a barrel of shale oil ranging from $20 to $35. Liquids from coal are more expensive, with some cost estimates exceeding $40 a barrel.

Given OPEC's recent expressions of concern that the decline of the dollar is eating away at the real income of its members — as well as their view that they must earn what they can before their oil is depleted — it's likely that the price won't hold at $23.50 for long.

That gives some encouragement to the oil shale industry.

And it looks like Congress, having lost some enthusiasm for President Carter's proposed $83

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billion "crash" synthetic fuels program, will approve a number of lower-priced incentives by the end of the year.

A variety of proposals, including tax credits, loans, loan guarantees and guaranteed prices and purchases, are under consideration. What seems apparent, according to members of Congress and their aides, is that incentives aimed at gradual development of synthetic fuels will be approved.

The shale industry is looking for cash from the government because of the high capital cost of facilities, now estimated at $15,000 to $20,000 per barrel of daily capacity. That compares with estimates of $3,000 a barrel just 10 years ago.

"From the beginning, it has been clear the question was not whether to develop synthetic fuels but rather how to do it, how fast and at what cost," said Sen. Gary Hart, D-Colo., who chaired the Budget Committee's Task Force on Synthetic Fuels.

Hart also said he thinks Congress will approve incentives that "emphasize production rather than construction — incentives such as tax credits and price guarantees."

In the Senate, the Energy Committee has backed a two-phase synthetic fuels program that would cost $20 billion in the first phase. In addition to its energy package, the Senate Finance Committee also is considering those measures which relate to taxation.

In addition, the committee is holding hearings Thursday and Friday on Hart's proposal to allocate $1.75 billion for aid to energy-impacted towns.

That would provide grants for planning and immediate assistance and then loans as up-front money for schools, roads and other facilities. The loans would be paid back to a fund at the state level from which other towns could draw.

The House has passed legislation providing purchase guarantees for synthetic fuels, but other legislation for loans and loan guarantees still is before the Ways and Means Committee. Also before that committee is a proposal for the $3 a barrel credit, sponsored by Rep. James Johnson, R-Colo.

The budget committees of both houses are likely to agree on a ceiling for energy spending, according to Rep. Timothy Wirth, D-Colo. He said the energy package would include funds for plants testing each synthetic fuels technology, as well as increased spending for conservation and solar energy. A couple of oil shale projects might be funded next year under the legislation, he said.

One aspect of the administration's energy proposals that has caused particular concern in Western states is the plan for an Energy Mobilization Board to cut red tape on energy projects. The Senate already has passed a bill which Hart and Sen. William Armstrong, R-Colo., argued against because they said it gave the board too much power to waive state laws.

A floor fight is likely over the two House proposals for the EMB, one of which Westerners oppose because of the same override powers.

The other bill, proposed by Rep. Morris Udall, D-Ariz., and backed by most Western congressmen and governors, would set up a board that could expedite projects, but with no substantive overrides.

Even if Congress had become convinced of the need for a crash program, there are indications that other limits — such as construction capacity — would make it impossible.

"We find that the controlling restraint will probably be construction industry capability to engineer, design and construct plants," said a report prepared by Cameron Engineers for the Synthetic Fuels Task Force of the U.S. Senate Budget Committee.

"Achieving a production level on the order of the announced administration goals could require 50 percent of the total existing capability of the industry," it continued. "Without a wartime level of effort and significant diversions from the rest of the economy, this will limit synfuels output by 1990 to less than 2 million barrels per day."

Carter's goal had been 2½ million barrels a day — 400,000 of them from oil shale.

In addition, Hutchins pointed out that the rate of growth will be limited somewhat by the ability of towns in northwest Colorado to absorb development.

The ultimate size of the industry — as opposed to rate of growth — will be limited by factors such as water supply and possible environmental problems, Hutchins said.

The environmental impacts could include air and water pollution, harm to wildlife, production of toxic substances, disturbance of the land's surface, and creation of great amounts of waste material.

The Environmental Protection Agency, while acknowledging the potential of environmental harm from shale oil production, has taken the position that none of the problems presents an insurmountable barrier to development.

"Our belief is that environmental constraints won't pose significant barriers for an individual facility," said Terry Thoem, head of the agency's regional energy office in Denver.

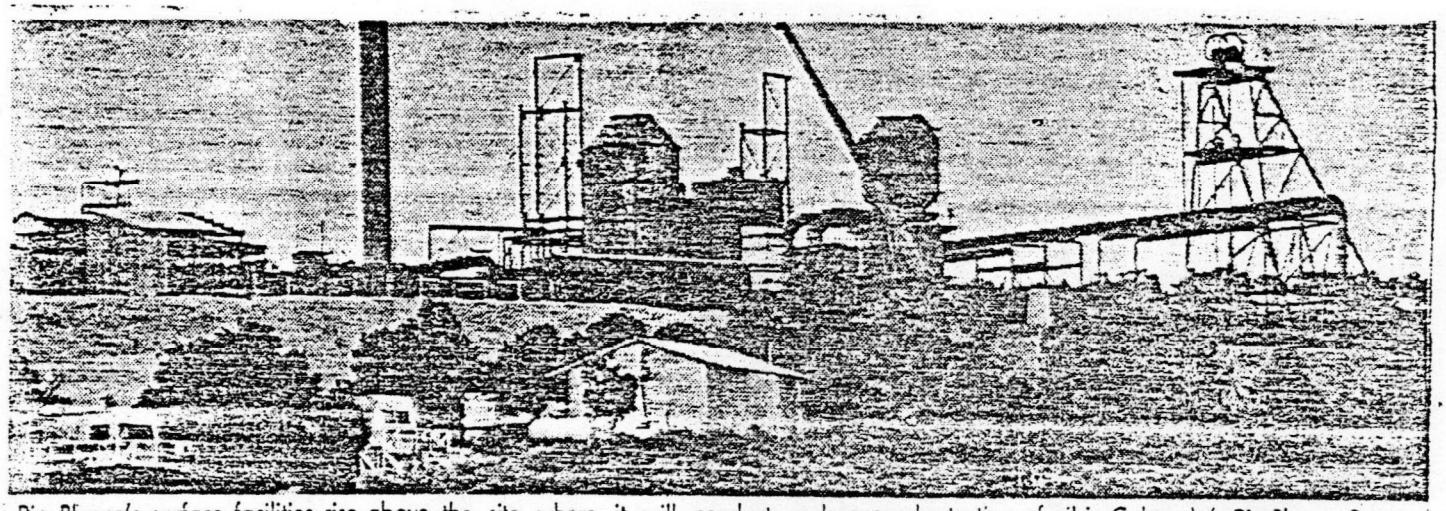
Those constraints, however, could limit the size of the industry, he said. EPA is comfortable with an industry large enough to produce 200,000 barrels of oil a day.

Although the agency is apprehensive about 400,000 barrels a day, Thoem said, "With careful siting and adequate controls, we probably will be able to do that — as long as it's spread in Colorado and Utah."

A number of studies are under way within EPA and the Department of Energy on the release of toxic and carcinogenic substances from both raw and processed shale, and EPA is preparing a document that will list the environmental effects of shale development and what controls might be required.

That document probably will be out early in 1980, Thoem said.

"We've got an obligation to make sure the industry develops in a safe and sane fashion," he said. But the problem so far, according to Thoem, is the lack of solid evidence on environmental effects.



Rio Blanco's surface facilities rise above the site where it will conduct underground retorting of oil in Colorado's Rio Blanco County.

In any case, both EPA and the industry maintain that the only way to judge the real effect of shale processing is to get a few plants in operation and see what happens.

"We've always maintained that we need to have something go out there, some modular-scale plants ... You can then better design control equipment for a commercial facility," Thoem said.

Neither EPA nor the state of Colorado considers water supply a problem for the oil shale industry.

"We estimate that there are adequate water supplies to provide the needs of a 500,000-barrel-per-day oil shale industry without a trade-off between competing uses," said Harris Sherman, head of the state Department of Natural Resources.

He said development beyond that level could especially affect agriculture, which is an important part of the economy in oil shale country.

"It has been state policy to encourage a strong agricultural economy in northwestern Colorado," Sherman said. "We want to continue to see agriculture thrive in that portion of the state."

Sherman said the most important question for the 500,000-barrel-a-day industry relates to water storage, rather than supply.

"Colorado will clearly need additional storage to provide the needs of the oil shale industry," he said.

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Coal's impact on synfuels still years away

Colorado's energy boom

By ELLEN WHEELER
News Staff

Since President Carter announced his $88 billion synthetic fuel proposals, much of the discussion on coal's possible contributions to national energy production has centered on development of sophisticated techniques for turning it into liquid or gas.

Although Colorado coal production is expected to increase steadily — possibly doubling or tripling by 1985 — most experts say that will have little to do with synthetic fuels — at least in the next 10 to 15 years.

Instead, most of the state's coal probably will be mined and shipped to electricity-generating plants, where it well be burned to produce steam.

"Coal is a resource whose time has come," says Cecil Roberts, energy minerals coordinator for the Colorado office of the Bureau of Land Management.

Few argue with the notion that the country's abundant coal reserves must be developed if the United States is to reduce dependence on oil imports. According to government figures, coal represents 90 percent of the nation's fossil fuel reserve, but it currently is used to meet only 18 percent of the country's energy needs.

The coal reserves in Colorado have been estimated at about 15 billion tons — about three-quarters of that minable by underground methods and the rest by surface methods. For the most part, surface mining is the most probable method for northwestern Colorado, with underground mining more feasible in the Delta and Trinidad areas.

In 1978, state coal production surpassed 14.3 million tons, breaking the record of 12.6 million tons set in 1913.

By 1985, production in the state is expected to range between 25 million and 50 million tons, according to a number of estimates.

But two factors probably will have a lot to do with whether that projected growth over present levels actually occurs.

One is the demand for coal, which has increased only slightly since 1977, in spite of government efforts to encourage industry to stop burning oil and start burning coal. Industry has complained that the signals from government on switching to coal have been confusing and sometimes contradictory.

The National Coal Association, in a letter to President Carter last spring, noted that the industry can produce far more coal than it can find buyers for. Although production capacity stands at about 850 million tons a year, the association said, production in 1979 is expected to be only 713 million tons.

Growth in coal use through 1985, according to the trade group, will depend on increased demand for electricity, construction of new coal-fired power plants, substitution of coal for oil and gas, air quality requirements, enforcement of strip mining law and the effects of higher transportation costs.

A second factor affecting coal development is the renewed federal leasing program, under which the first coal lease sales since 1971 will begin in January 1981. Over the following three years, the Interior Department plans to lease tracts that will produce 1.5 billion tons of coal.

The first sales, occurring over two years, will cover the Green River-Hams Fork region of Wyoming and northwestern Colorado. A lease target of 321 million tons has been set for the region.

Industry and some members of Congress have criticized the government for moving too slowly on leasing — while environmentalists have been concerned that it will move too quickly.

The federal government, by most estimates, owns about 60 percent of Western coal. But it is believed to control development of about 80 percent because of land ownership patterns.

Water supply is one factor that could help limit the ways in which coal is used Colorado, according to Jerome Morse, a professor at the Colorado School of Mines and consultant to the Colorado Energy Research Institute. Transmission of electricity from mine-mouth power plants to out-of-state users is unlikely because of the large amounts of water required, he said.

"It takes seven times as much water for a conventional electric power plant as to move the same amount of energy through a slurry pipeline," said Morse. Production of synthetic liquid and gaseous fuel from coal also can use significantly more water than slurry, according to a report Morse prepared for CERI.

Should oil shale development occur on the Western Slope, that also would put demands on the state's water supply, although a state study has said water is available for production of 500,000 barrels of shale oil a day.

Harris Sherman, director of the state Department of Natural Resources, said coal mining won't compete with oil shale for water supplies. Coal development could come in conflict with oil shale, he said, if there were extensive coal-fired power plants or production of synthetic fuels from coal.

The only coal synfuels project under way in Colorado now is a 60-ton-a-day pilot gasification plant being built in Golden by Denver-based Enrecon Inc.

Radon Tolman, president of the firm, said the plant will be finished early next year. By 1983, Enrecon hopes to build a 600-ton-a-day demonstration plant, he said.

Colorado Interstate Gas, a prime supplier of natural gas to Public Service Co., also is considering participation in a proposed coal-gasification project in Wyoming.

CIG spokesman Jack Chandler said the company has been asked by a group of firms if it would be interested in buying gas produced from such a project. He declined to give the exact location.

The group is one of several interested in obtaining Department of Energy funding under an upcoming program, Chandler said.

Such a coal gasification project would produce gas with about 300 to 400 British thermal units, he said, a relatively low level. That compares with pipeline-quality natural gas — of about 964 Btu — delivered to CIG's customers, according to Chandler.

The low-Btu gas could be used as turbine fuel or for ammonia or methanol production, Chandler said, or it could be upgraded to pipeline quality.

If gasification should become more economically feasible, it eventually could spur development of low-Btu lignite coal in the Denver Basin coal region.

"In situ," or underground, gasification techniques have been shown to make lignite more economically recoverable than it is by traditional mining methods.

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Small towns brace for coal, shale impact

By ELLEN WHEELER
News Staff

If a community has a distinct personality, says Rangely Mayor Cecil Lollar, his town is like an oil field worker who's ready to leave the old behind and move on to something bigger and better.

But Meeker, only 78 miles away in eastern Rio Blanco County, is more like a Nebraska farmer, says Lollar. It's comfortably settled and not at all eager for the change that will come with growth.

One of the ironies of Colorado's energy development is that so far it's Meeker that has been doing the growing.

Both towns are in an area that's expected to boom in the next few years because of rapid development of coal and oil shale and, to a lesser extent, uranium.

So far, growth has been slower than many expected because of delays in oil shale development. Those delays have been a blessing to the affected towns, according to community officials, because they've had several extra years to get ready.

Rangely and Meeker have seen the experience of other so-called boom towns — Rock Springs, Wyo., being the most notorious example — with social problems such as increased crime, alcoholism, family problems, poor mental health and inflation. They've also seen rapid growth overcrowding nearby Craig and Rifle.

Officials of the two towns are trying to prepare for the new residents by planning and building needed streets, sewers, schools and other facilities. They hope that by looking ahead they can avoid the Rock Springs experience.

But despite the well-documented problems, Rangely looks forward to growth as bringing an injection of new life.

"I'm fortunate to represent a community that wants the growth," said Lollar. "Here, everybody is looking forward to the future."

Rangely is no stranger to energy booms, for it was founded in 1946 during an oil boom. Located in arid country near the Utah border, the town once had about 4,500 residents. Townsfolk would like to see it that populous again.

At the start of this year, Rangely had an estimated population of 1,900, only a small increase from the 1,371 recorded in a 1977 special census.

According to population projections just released by the Colorado West Area Council of Governments, Rangely's population should peak at more than 8,600 in 1984.

"We're geared up for a population of 6,000 to 6,500," Lollar said recently. The town has built a new water treatment plant, recreation center and elementary school, and has added to sewer facilities, in anticipation of growth.

"We're planned — as much as a person can plan," said Lollar.

The only problems he foresees are a lack of housing — a problem Meeker and other energy boom towns share — and lack of a good shopping area. But he said one company is ready to build new housing as soon as growth justifies a minimum of 100 new homes a year.

Rangely's desire to grow has been thwarted in part because it lacks a direct road to the nearest federal oil shale lease tract, C-a. It's 70 miles from town by the existing road, but by a direct route it would be only 25 miles away.

Last of four articles

Lollar said the town has gained only 11 new families from oil shale so far. Many workers on C-a, operated by Rio Blanco Oil Shale, and tract C-b, operated by Occidental Oil Shale, are living in Meeker or Rifle, both of which are a shorter drive by present roads.

Rifle is attractive to newcomers because its location on Interstate 70 provides easy access to Glenwood Springs and Denver to the east or Grand Junction to the south.

Lollar said he hopes the Legislature, which has balked at funding the shorter road until it's sure that C-a will be commercially developed, will agree to fund its construction in three phases. The first would be a gravel, all-weather road, ready by fall of 1980.

Rio Blanco spokesmen have said a decision won't be made on commercial development of tract C-a until the firm finishes burning three test retorts in 1981.

Lollar, whose personality theory extends to corporations, describes Rio Blanco Oil Shale as a company wearing a "conservative, dark gray suit."

"I'm really jealous sometimes of Rifle, dealing with Oxy (Occidental)," Lollar said. "I really do believe in the long run that we're better off dealing with Rio Blanco," he said, but its conservative projections have hurt Rangely's ability to get funding for the road and capital for housing and other construction.

No matter what the oil shale firm decides to do, it doesn't look like Rangely's growth will be postponed much longer.

Two sites have been proposed for a power plant that will supply electricity to Utah. One is just six miles east of Rangely and the other 14 miles to the west across the Utah border.

About 800 workers will be employed during construction of the plant, Lollar said, and 300 will work there once it's in operation. In addition, the coal that will fuel the plant will be mined near the proposed plant site east of Rangely. About 300 will work there.

The state originally opposed construction of the plant in Colorado, Lollar said, but has changed its position.

"All the pollution will come into Colorado, all the impact will come here — everything but the tax base," if the plant is built in Utah, he said.

Population projections for Rangely — which assume commercial operation of C-a, Superior Oil Co.'s oil shale tract, and the coal mine for the Utah power project — foresee growth to 2,223 in 1980 and 4,729 in 1983.

As eager for growth as he is, Lollar said, "My attitude would be completely different if I owned acreage at the edge of Meeker. It's a much prettier town."

Surrounded by picturesque farms and ranches in the White River Valley, Meeker is apprehensive that rapid growth will change its quiet and comfortable way of life.

Founded in the 1870s, Meeker is the county seat. Its substantial-looking courthouse dominates an established downtown shopping area.

"I think if you asked the typical older citizen on the street, you'd get the answer that he'd just as soon build a brick wall around the community" to keep out the growth, said Duane Rehborg, Rio Blanco County planner and a Meeker resident.

Yet those same residents are voting for bond issues to increase the capacity of the schools and sewer facilities, because they don't want to be overwhelmed when the boom does come.

So far, Meeker has been growing by about 10 to 15 percent a year, Rehborg said. But the population is expected to double by 1981.

In 1977, at the time of the special census, Meeker had a slightly smaller population than Rangely, with a total of 1,848. But, by January 1979, the population was up to 2,250, according to the Council of Governments.

That growth is expected to pick up speed, bringing the town to a population of 4,523 in 1981, more than 9,300 in 1983 and 12,500 in 1985. Those projections are based on the continued operations of Colo-Wyo Coal Co. and Northern Coal, the Superior oil shale project, and commercial operations at federal oil shale tracts C-a and C-b.

"People is not our problem now," said Rehborg. "The problem is getting ready for the growth."

Housing is the town's most critical immediate need, Rehborg said.

"If you went out to try to rent a house or apartment in Meeker, you couldn't find one," said Rehborg. Aggravating the situation is inflation that has hit all the northwestern Colorado communities.

The median cost of a house in Meeker rose from $46,000 the first six months of 1978 to $51,000 the rest of the year, according to one survey. It then dropped, apparently because of a drop in the number of construction workers at tract C-b, to $49,100.

Housing problems have been alleviated somewhat by Occidental Oil Shale, which paid two years rent in advance for three new apartment buildings. The apartments are filled, and the company is getting its money back.

The increases in housing and other costs are especially worrisome to Meeker officials because almost 30 percent of its residents are elderly. That's about 60 percent above the national average, Rehborg said.

"The cost of rents and the cost of living has gone really out of sight," Rehborg said, "and the elderly person can't get the better job that's available to younger workers" because of energy development.

Having done about as much planning as they can until the people actually arrive, northwestern Colorado officials say their communities now need money.

The towns "really have a need for front-end money," said Bob Demos of the Colorado West Area Council of Governments. "Too often we let things deteriorate and then try to go in and reconstruct them," he said.

"Unfortunately, most funding programs are aimed at problems after they've occurred."

The new industry certainly will create a tax base for the county, but it takes about five years for taxes to catch up with the needs, according to the officials.

Two funds are available to help communities mitigate impact: the oil shale trust with about $60 million, and the mineral leasing fund — including money from the state minerals severance tax and lease fees — with about $6 million.

Only a small amount of the shale trust fund plus annual earnings on are distributed each year.

In comparison, Rehborg said it would cost $300 million to $500 million for Rio Blanco County alone to be completely ready for the growth.

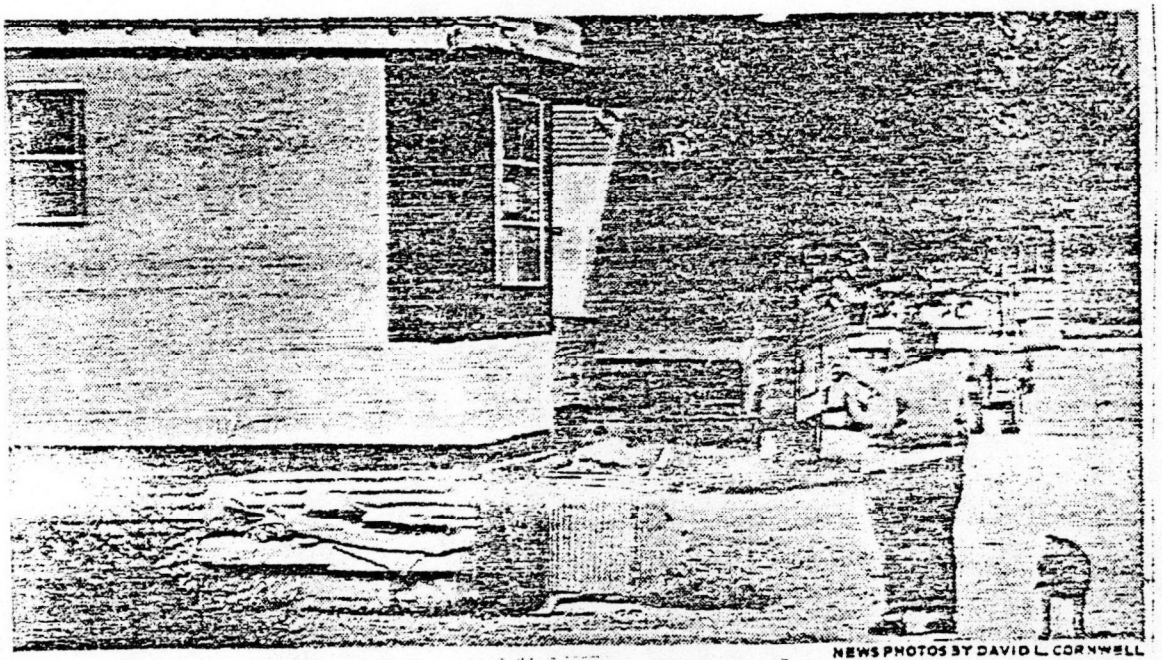
Some front-end funding could come from the federal government if Congress approves a $1.75 billion measure proposed by Sen. Gary Hart, D-Colo. Hearings will be conducted later this week on that bill, which would provide grants for planning and loans as up-front money for schools, roads and other facilities.

John Johnson, a planner with the West Area COG, said the communities "to date . . . have been doing an excellent job."

But continuing that depends on having enough money to provide for all the newcomers, he said.

"They could easily wipe out the oil shale trust fund and still not have enough," Johnson said.

Solving the communities' problems goes "hand in hand with the ability to develop sufficient amounts of energy in the region," he said.



NEWS PHOTOS BY DAVID L. CORNWELL

Lack of housing may be the most serious problem facing the small towns of northwestern Colorado hit by energy development. Mobile home parks such as this one in Rangely are becoming common.