

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

IN THE MATTER OF)
)
) Docket No. SDWA-08-99-0068
Murphy Exploration &)
Production Company,)
Murphy Oil USA, Inc.,)
Murphy Oil Corporation,)
Pioneer Natural Resource Company,) **EMERGENCY ADMINISTRATIVE ORDER**
W.R. Grace & Company-Conn.,)
AMARCO Resources Corporation,)
EPEC-Altamount Corporation,)
Marathon Oil Company)
)
Respondents)
)
)
East Poplar Oil Field)
Fort Peck Indian Reservation)
Montana)
)
Proceedings under)
Section 1431(a))
of the Safe Drinking Water)
Act, 42 U.S.C. §300g-i(a))

STATUTORY AUTHORITY

1. The following Findings are made and Order issued under the authority vested in the Administrator of the U.S. Environmental Protection Agency (EPA) by Section 1431(a) of the Safe Drinking Water Act (the Act), 42 U.S.C. §300i(a). The authority to take this action has been properly delegated to the undersigned EPA program supervisors.

ENFORCEMENT RESPONSIBILITY

2. EPA has primary enforcement responsibility for the Act on the Lands within the exterior boundary of the Fort Peck Indian Reservation in Roosevelt County in the State of Montana.

DESCRIPTION OF RESPONDENTS

3. Murphy Exploration & Production Company is a Delaware corporation doing business in the State of Montana and therefore is a "person" within the meaning of 40 CFR §141.2 and §144.2 and Section 1401(12) of the Act, 42 U.S.C. §300f(12).
4. Murphy Oil USA, Inc. is a Delaware corporation and did business in the state of Montana until status was withdrawn in 1994, and therefore is a "person" within the meaning of 40 CFR §141.2 and §144.2 and Section 1401(12) of the Act, 42 U.S.C. §300f(12).
5. Murphy Oil Corporation is a Delaware corporation and did business in the state of Montana and therefore is a "person" within the meaning of 40 CFR §141.2 and §144.2 and Section 1401(12) of the Act, 42 U.S.C. §300f(12). Murphy Oil Corporation was a publicly held corporation until 1991, at which time the parent company Murphy Oil Corporation acquired all of the company's stock. The acquisition was completed by forming a new subsidiary of the parent Murphy Oil Corporation known as Murphy Exploration & Production Company, which currently operates in the state of Montana.
3. Pioneer Natural Resources Company is a Delaware corporation and therefore a "person" within the meaning of 40 CFR §141.2 and §144.2 and Section 1401(12) of the Act, 42 U.S.C. §300f(12). Also known as Pioneer Natural Resources USA, Inc. Pioneer Natural Resources Company acquired the assets of Mesa Petroleum Co. Mesa Petroleum Co. did business in the state of Montana.
4. W.R. Grace & Co. is a Connecticut corporation and therefore a "person" within the meaning of 40 CFR §141.2 and §144.2 and Section 1401(12) of the Act, 42 U.S.C. §300f(12). Polumbus Petroleum Corporation in its merger with W.R. Grace & Co. became Grace Petroleum Corporation. Polumbus Petroleum Corporation merged with W.R. Grace & Co. a Connecticut corporation in 1976. Polumbus did business in the state of Montana.

5. AMARCO Resources Corporation is a Texas corporation and did business in the state of Montana and therefore is a "person" within the meaning of 40 CFR §141.2 and §144.2 and Section 1401(12) of the Act, 42 U.S.C. §300f(12). AMARCO Resources Corp. is also using the trade name Westdale, Inc. in Texas.
6. EPEC-Altamont Corporation is a Delaware corporation and did business in the state of Montana and therefore is a "person" within the meaning of 40 CFR §141.2 and §144.2 and Section 1401(12) of the Act, 42 U.S.C. §300f(12). Tenneco Oil Company (Tenneco-Altamont Corporation) merged with EPEC-Altamont Corporation and did business in the State of Montana.
7. Marathon Oil Company is an Ohio corporation and therefore a "person" within the meaning of 40 CFR §141.2 and §144.2 and Section 1401(12) of the Act, 42 U.S.C. §300f(12). TXO Production Corp. a Delaware corporation merged with Marathon Oil Company. TXO Production Corp was a trade name for Texas Oil & Gas Corp. a Delaware corporation.
8. Respondents own and/or operate or did own and/or operate oil and gas production facilities, including but not limited to oil or gas production wells, produced brine disposal wells, secondary recovery injection wells, drilled and abandoned dry holes, production and waste pits, storage tanks, oil/water separators, and distribution pipelines and pumping facilities, in portions of the East Poplar Oil Field located within Township 28 North, Range 51 East on the Fort Peck Indian Reservation in Roosevelt County in the State of Montana.

FINDINGS

9. The Quaternary Deposits are the most recent geologic deposits of the Cenozoic Era, covering approximately the past 1.65 millions years. These Quaternary Deposits in the East Poplar Oil Field area consist mainly of the Winota Gravel, Sprole Silt, glacial till,

fan alluvium and colluvium, and alluvium. The Pleistocene Wiota Gravel, Spole Silt, glacial till, and dune sand are referred to as “glacial deposits”. Lithologic logs from the monitoring wells drilled in the area show depths ranging from of 55 to 100 feet. The Pleistocene and Holocene fan alluvium and colluvium and Holocene alluvium are referred to as “alluvium” and overlie the glacial deposits in many areas with depths ranging from 20 to 56 feet. The alluvium underlies flood plain deposits. Water in Quaternary deposits east of the Poplar River generally moves westward toward the river where it merges with southward-flowing ground water in the Poplar River valley.

Downward movement of water from the Quaternary deposits is not a significant problem, the underlying Bearpaw Shale is relatively impermeable and forms a confining layer.

10. These Quaternary glacial deposits and alluvium are the sole developed source of ground water for private resident wells in and around the East Poplar Oil Field and the Poplar, Montana and tribally-owned Poplar Head Start Center public water supply systems. Depth to the water table below land surface in this area generally ranges from about 5 to 44 feet in the alluvium and 7 to 139 feet in the glacial deposits.
11. The Quaternary Deposits form an unconfined aquifer which contains a sufficient quantity of ground water to supply a public water system. A public water system (PWS), as defined by 40 C.F.R. § 141.2, means a system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year.
12. The Quaternary Deposits are an underground source of drinking water (USDW). A USDW, as defined under 40 C.F.R. § 144.3, means an aquifer or its portion which supplies any PWS or which contains a sufficient quantity of ground water to supply a public water system; and currently supplies drinking water for human consumption or

contains fewer than 10,000 mg/L total dissolved solids. Past sampling from private ground water wells in the area showed total dissolved solids content ranging from 427-2,680 mg/L (as discussed in the U.S. Geological Survey study below).

13. The United States Geological Survey (USGS) has conducted an extensive ground water investigation of saline-water contamination in and around the East Poplar Oil Field. The USGS reviewed ground water and surface water quality data from existing private water wells, new monitoring wells, oil wells, brine-injection wells, and the Poplar River in the East Poplar Oil Field area. Additionally, the USGS completed an electromagnetic geophysical survey, by measuring the electromagnetic apparent conductivity corrected for local anomalies (wells, pipelines, etc.), over a 21.6 square mile area to assist in the delineating the extent of the saline-water contamination plumes. Uncontaminated ground-water in the area had total dissolved solids content ranging from 427-2,680 mg/L. The areas delineated by the ground water study as part of the brine contaminated plumes contained total dissolved solid levels as high as 91,100 mg/L. In July 1999, EPA took ground water samples from the wells at private homes within the area shown by the USGS study to have brine contamination. EPA found TDS levels at these homes to range from 1850 to 4890 mg/L.
14. EPA collected water samples at several of the home sites in the contamination area to determine if any contamination by hydrocarbons or volatile organic compounds (VOCs) was also a concern. Brine contamination plumes associated with oil and gas production operations will have remnants of hydrocarbons from the production formation. Samples taken by both EPA at the existing home sites and USGS at several monitoring wells showed benzene contamination. A sample taken at one home site had benzene contamination between 58-78 ug/L or 0.058-0.078 mg/L, while other samples taken at USGS monitoring wells in the field were between 1.58-4.86 ug/L or 0.00158-0.00486

mg/L.

15. Under the Primary Drinking Water Standards, the maximum contaminant level (MCL) for benzene, as set forth in 40 C.F.R. § 141.61, is 0.005 mg/L. Secondary Drinking Water Standards, as set out in 40 C.F.R. § 143.3, for dissolved-solids is 500 mg/L.
16. The presence and entry of benzene at levels as high as .078 mg/L in the Quaternary Deposits USDW may present an imminent and substantial endangerment to the health of persons.
17. Benzene is a known human carcinogen. A causal relationship between benzene exposure and leukemia has been clearly established. Benzene exposure has also been associated with cancer of the lymph system (lymphoma), lung cancer, and bladder (urothelial) cancer. Benzene may increase the risk of cancer in humans who are exposed at lower levels over a long period of time.
18. The presence and entry of dissolved-solids at levels between 10,000 and 91,100 mg/L where found in the Quaternary Deposits USDW may present an imminent and substantial endangerment to the health of persons.
19. Total dissolved solids in excess of 1,000-2,000 mg/L is unpalatable and will not be voluntarily consumed by individuals. If an individual has no other source of water and is forced to consume water with TDS levels over 10,000 mg/L, the adverse health effects include severe osmotic diarrhea and severe dehydration. Continued consumption after the onset of the above conditions may result in death.
20. Contaminants, including dissolved-solids and benzene are present in, entering, and are likely to continue to enter the Quaternary Deposits.
21. Based upon the data obtained regarding the geology in the affected area, the general direction of groundwater migration in the USDW and water quality assessments from monitoring and private wells, and review of historical land use in the area, EPA has determined that Respondents' oil production practices and/or equipment have caused or

- contributed and/or are continuing to cause or contribute to the endangerment of a USDW.
22. EPA has consulted with the Assiniboine and Sioux Tribes of the Fort Peck Reservation prior to issuing this Order. The Tribes notified EPA that they have not taken an action to protect the health of persons from the contaminants that are likely to be present in the Quaternary Deposits USDW.
23. To date, no governmental action has been taken to protect the health of persons from the contaminants that are likely to be present in the Quaternary Deposits USDW due to Respondents' operations of their oil production operations. The State of Montana, which does not have jurisdiction in this case, has been contacted by EPA. The State notified EPA that it has not taken an action and does not intend to take an action in this case.
24. EPA, therefore, finds that the actions ordered below are authorized under Section 1431 of the Act, 42 U.S.C. §300(i), and are necessary in order to protect the health of persons.

EMERGENCY ADMINISTRATIVE ORDER

25. Based on the foregoing findings of fact, taking into account the imminent and substantial endangerment to the health of persons and other such matters as justice may require, including the administrative record, and under authority of §1431(i) of the Act, 42 U.S.C. §300(i), compliance with the following provisions is hereby ordered:

A. **PROVIDE TEMPORARY SAFE DRINKING WATER SOURCE TO IDENTIFIED RESIDENCES**

The Respondents shall immediately provide an alternative source of water that meets the EPA drinking water standards (40 C.F.R. Part 142) for drinking and cooking to the residences of the contaminated area. The water shall be provided in the quantity of one gallon per person per day in each residence. This water is to be provided on a regular basis in an easily accessible manner to the residence. The residences known to have

contaminated water or which have drinking water which is threatened with contamination at this time are listed below and on the attached map (Attachment #1) :

Current Resident	City	State	Residence Address	Sec	TwN	Rge
Kohl, Danny	Poplar	MT	5097 Road 251	15	29N	51E
Lien, Birdell	Poplar	MT	4849 Road 2050	20	29N	51E
Zimmerman, Bill	Poplar	MT	5448 Road 251	01	28N	51E
Abbott, Joe	Poplar	MT	5540 Road 75	04	28N	51E
Kirn, Audrey	Poplar	MT	5584 Road 75	08	28N	51E
Kirn, Michael	Poplar	MT	5632 Road 75	08	28N	51E
Gray Hawk, Rachel	Poplar	MT	5647 Road 75	16	28N	51E
Trottier, Tim & Donna	Poplar	MT	5713 Road 75	16	28N	51E
Lockman, William	Poplar	MT	5715 Road 75	16	28N	51E
Four Bears, Charles	Poplar	MT	5678 Road 75	17	28N	51E
Martell, Rene & Josi	Poplar	MT	5666 Road 75	17	28N	51E
Ricker Sr., George & Helen	Poplar	MT	5712 Road 75	17	28N	51E
Bleazard, Ross & Laura	Poplar	MT	5866 Road 150	29	28N	51E
Whitmer, Warren & Donna	Poplar	Mt	58702 Road 75	29	28N	51E
Loegering, Mavis	Poplar	MT	5910 Road 150	29	28N	51E
Kirn Sr., Jesse	Poplar	MT	6037 Road 150	32	28N	51E
Grandchamp, Denise	Poplar	MT	5947 Road 75	33	28N	51E
Grainger, Trivian	Poplar	MT	5957 Road 75	33	28N	51E

After further study there may be a need to supply other types of domestic water.

Respondents, upon notification by EPA, shall deliver this alternative source of water until such time as the local water source has been deemed by EPA as safe for consumptive use or a permanent alternative source of water is provided. As the contamination plume moves through the aquifer, other residence(s) or municipalities may be added to the list above, and this Order will be amended.

B. SUBMIT CLEANUP AND PERMANENT ALTERNATIVE WATER SUPPLY PROPOSALS

Respondents shall submit to EPA within 120 days of the receipt of this order a proposal for cleaning up the contamination plume(s) and a proposed plan for a permanent alternative water supply. The proposed plan for cleanup of the contamination plume(s) shall include, but not be limited to, the information listed below:

1. Proposed method(s) to capture existing plume, to include:
 - a. Containment
 - b. Diversion of ground water
 - c. Monitoring of Plume
2. Proposed method(s) to treat or dispose of captured plume, to include:
 - a. Extraction of contaminants
 - b. Disposal of contaminants
 - c. Clean-up levels
3. Determination of lateral and vertical extent of ground water contamination, to include:
 - a. Salinity determination
 - b. Benzene determination
 - c. Total organic carbon determination
 - d. Cl:Br ratio
 - e. Ground water flow direction
 - f. Ground water flow rate
4. Proposed method(s) to prevent further contamination, to include:
 - a. Containment at surface
 - b. Corrective action on leaking wells
 - c. Corrective action on leaking pits and ponds
 - d. Corrective actions on leaking tanks
 - e. Corrective action on leaking transportation lines

The proposed plan for a permanent alternative water source shall be developed and approved by an independent engineer and shall take into consideration at least the factors listed below:

1. Water source
2. Source water yield
3. Source water quality (meets all EPA Drinking Water standards and if it meets criteria as a public water supply, must follow PWS regulatory requirements)
4. Long-term management of alternative water source

C. PREPARE AND SUBMIT WELL INFORMATION

The Respondents shall provide a historical record for each well listed and any other wells drilled, completed, reworked, converted, operated or plugged by Respondents within the sections of Township 28N and Range 51E, Sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, and 24. Attached is a non-inclusive list of wells by Section, Township, and Range, and by company, for which the Respondents must provide the well

information listed below (Attachment #2). The drilling, construction, well rework, conversion, plugging and other pertinent records submitted should include but not be limited to the information listed below. In each case service company records associated with each well activity shall be included. Respondents shall include information on each instance of well integrity failures, that involved casing leaks, flow behind the casing and/or any fluids surfacing at or near the wellheads. Respondents shall include information listed below:

1. Well Name and API Identification Number
2. Well location
3. Current well status for each well: Active, Shut-in, Temporarily Abandoned, Plugged
4. Well Construction Information
 - a. Date Well Drilled
 - b. Date Well Completed
 - c. Total Depth
 - d. Plug Back Depth
 - e. Drilling Record
 - f. Completion Record (include diagram)
 - g. Cementing Record (including estimated cement tops with assumptions for calculations and cement bond logs)
5. Well Rework Information
 - a. Date of Well Rework
 - b. Reason for Rework (If due to casing leak, location of leak if known)
 - c. Records of Well Logs and Tests Performed
 - d. Record of Rework
 - e. Date Well Recommended Injection or Production
6. Temporarily Abandoned (TA) or Shut-in Wells Information
 - a. Date(s) Well Shut-in or TA
 - b. Reason for TA or Shut-in of Well
 - c. Was Well Shut-in or TA'd With the Equipment in the Well?
 - d. If Not, What Equipment Was Removed and When, Provide a Record of Work if Possible
 - e. Is the Well Capable of Resuming Injection or Production Without a Rework?
7. Well Conversion Information
 - a. Date(s) Well Converted from Production to Injection
 - b. Date(s) Well Converted from Injection to Production
 - c. Record of Conversion Activity
8. Plugging and Abandonment Information
 - a. Plug and Abandonment Plan

- b. Plugging Record
- c. Were Any Problems Experienced During the Plugging Process, Involving Such Things as Pulling of Equipment, Setting Plugs, Water Flow to Surface?

D. PREPARE AND SUBMIT TANK AND PIPELINE INFORMATION

Respondents shall provide information on all current and past tanks, associated tank battery equipment, oil/water separators, and pipelines used in the East Poplar Oil Field for the production of oil and gas in the township, range, and sections listed Paragraph C above, including but not limited to: Tank Batteries 8-D, 80-D, South Central, A, C, D, F, G, H, K, and R. Respondents shall provide the information listed below:

1. Location of tank
2. Tank size and construction
3. Duration of tank use
4. Information on leaking tank bottoms or any other type of tank integrity failure(s)
5. Information on spill incidents at or near the tanks and tank batteries, including those from unloading transport trucks into the tanks.
6. Location of all pipelines (identify as surface or subsurface)
7. Information on any leaks or spills from pipelines leading to and from the tanks and wells
8. Information on pipeline failures on the surface and subsurface.

E. PROVIDE INFORMATION ON PIT(S) USED IN THE PRODUCTION OF OIL OR GAS

Respondents shall provide information on all current and abandoned pits used for well construction, oil and gas production, well workovers, product and waste storage, evaporation and disposal of fluid products and wastes in the sections listed for in the East Poplar Oil Field for the production of oil and gas in the township, range, and sections listed in Paragraph C above. Respondents shall include information on the construction for each pit, date pit constructed, duration of pit use, for what the pit was used, types of wastes placed in the pit, and, if abandoned, record of abandonment.

F. PROVIDE GEOLOGIC AND HYDROLOGIC FIELD INFORMATION

Respondents shall provide a formation depth cross section for the portion of the field drilled, constructed, operated, and/or plugged well(s) by each Respondent. Respondents

shall provide information on all formations found to contain water above the injection or production formation being used by their wells. Respondents shall provide information on formation pressures for production and/or injection formations, over a time line from well construction to well plugging. Unless otherwise specified, all reports and notifications herein required shall be submitted to:

Carol Bowden
U.S. Environmental Protection Agency
Office of Enforcement, Compliance
and Environmental Justice
Technical Enforcement Program (8ENF-T)
999 18th Street, Suite 500
Denver, Colorado 80202-2466
Telephone (303) 312-6485

Not more than 48 hours after receipt of this Order, Respondents shall contact Ms. Carol Bowden at the above address and telephone number to advise her of their intentions to comply with this Order. If that 48 hour time period occurs on a weekend or holiday, Respondents shall contact Ms. Bowden by 10:00 a.m. on the first EPA work day (Monday through Friday) after said holiday or weekend.

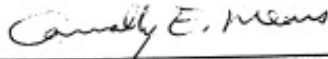
GENERAL PROVISIONS

26. The provisions of this order shall apply to and be binding upon Respondents, their officers, directors, agents, successors and assigns. Notice of this Order shall be given to any successors in interest prior to transfer of any of the oil and gas facilities or their operation. Action or inaction of any persons, firms, contractors, employees, agents, or corporations acting under, through or for Respondents, shall not excuse any failure of Respondents to fully perform their obligations under this Order.
27. This Order does not constitute a waiver, suspension, or modification of the requirements of any federal statute, regulation, or condition of any permit issued thereunder, including the requirements of the Safe Drinking Water Act, which remain in full force and effect.

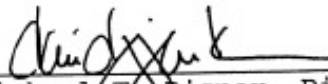
Issuance of this Order is not an election by EPA to forgo any civil or any criminal action otherwise authorized under the Act.

28. Violation of any term of this Order may subject Respondents to an administrative civil penalty of up to \$15,000 for each day in which such violation occurs or failure to comply continues pursuant to §1431(b) of the Act, 42 U.S.C. §300i(b). In addition, actions or omissions which violate any requirements of the SDWA or its implementing regulations may subject Respondents to a civil penalty of not more than \$27,500 per day per violation pursuant to §1423 of the Act, 42 U.S.C. §300h-2.
29. This Emergency Administrative Order is a final agency action by EPA.
30. This Emergency Administrative Order is binding on all Respondents, and each Respondent is jointly and severally liable hereunder.
31. The effective date of this Order shall be the date of issuance.

Issued this 5th day of NOVEMBER, 1999.



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