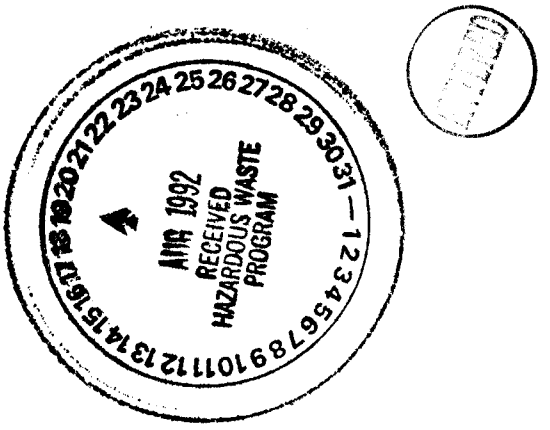
Bloomfield Refining Company
A Gary Energy Corporation Subsidiary

ENTERED

August 17, 1992



Mr. Marc Sides, Environmental Scientist
Hazardous and Radioactive Materials Bureau
P. O. Box 26110
525 Camino de Los Marquez
Santa Fe, New Mexico 87502

RE: Closure Plan
NMD 089 416 416

Dear Mr. Sides:

In accordance with your request of August 7, 1992, please find copies of our facility closure plans.

We are actively operating hazardous waste treatment impoundments for the purpose of treating wastewater designated as a D018 (benzene) hazardous waste. Our closure plan, as required under RCRA Part 265, and a very similar plan, as submitted with our Part B application and required under RCRA Part 264, is enclosed as per your request.

In addition, I have enclosed a copy of the "Final Closure Plan for the API Wastewater Ponds, Landfill, and Landfill Pond at the Bloomfield Refinery". This plan was submitted on August 10, 1986 in accordance with a November 26, 1985, U.S. EPA Consent Agreement and Final Order, Docket No. RCRA VI-501-H. All closure items in the plan have been completed with the exception of the alleged "landfill". The material in the landfill has been recovered for disposal in accordance with the plan. We have maintained that this material is non-hazardous, but subjected the material to the rigors of a delisting petition submitted in April 1991. A final determination on the delisting petition is desired to allow us the opportunity to dispose of the material in a manner that is warranted.

We are planning for clean closure of any hazardous waste units, thus no post-closure plans are required.

Please call me if you need any additional information.

Sincerely,

Chris Hawley
Environmental Manager

CH/jm

Enclosures

cc: Joe Warr
Dave Roderick
John Goodrich

General

Bloomfield Refining Company (BRC) operates three surface impoundments in the overall waste water treatment and disposal system that are considered hazardous waste surface impoundments because of a benzene content that may exceed 500 parts per billion. The waste water in these impoundments has been identified as a D018 (toxicity characteristic for benzene) hazardous waste under the RCRA regulations that became applicable on September 26, 1990.

The impoundments are identified as the south oily water pond (SOWP), the north oily water pond-west (NOWPW), and the north oily water pond-east (NOWPE). They are being used for aerobic treatment (both natural and enhanced). This treatment reduces benzene concentrations to below 500 ppb.

Approximately 100,800 gallons per day (70 gpm) of waste water are produced from refinery operations and routed from the API separator through the three impoundments in series. The three impoundments are each equipped with a single, 100 mil HDPE liner and are underlaid with a French drain, leak detection system.

The first of these impoundments, known as the SOWP, is 6 feet deep and has a surface area of about 7,800 square feet. The total volume is approximately 350,000 gallons. At 70 gpm, the sojourn time in the pond would be 3.5 days. The impoundment is equipped with two 5 hp aspirating aerators.

The second of these impoundments (NOWPW), also 6 feet deep, has a surface area of 10,000 square feet. Total volume is approximately 440,000 gallons. At 70 gpm, sojourn time would be 4.4 days. Water reaches this impoundment through an overflow pipe from the SOWP. The impoundment is equipped with a 2 hp aspirating aerator.

The third impoundment (NOWPE), also 6 feet deep, has a surface area of 7,500 square feet and a volume of approximately 330,000 gallons. Sojourn time through this pond at 70 gpm would be 3.3 days. It is fed through an overflow pipe from the NOWPW and discharges to a sump from where the treated, now non-hazardous, waste water is pumped to evaporation ponds located further downstream in the refinery waste water system. It is equipped with a two 2 hp aspirating aerators.

265.111 and 265.228 Closure performance standard

At closure, all material in the units will be treated until they no longer exhibit hazardous waste characteristics and then removed, thus eliminating the need for further maintenance and control. The aerators are sized so that F037 waste is not generated during operation of the impoundments.

265.112 (b) (2) Method of closure

The surface impoundments are integral to the current operation of the refinery and will remain in operation throughout the life of the facility, unless alternatives to the current system are put into operation. If alternatives are installed, partial or full closure may occur prior to the expected facility life. For purposes of this plan, facility life is assumed to be 30 years.

Since the normal operation of the three surface impoundments results in the removal of benzene and other VOC contaminates, a closure activity would only involve a more vigorous and more carefully monitored "normal operation". The hazardous waste producing unit, the API separator, will be shut down or its discharge will be routed elsewhere as the first step in closure. Each of the three surface impoundments will be thoroughly aerated using the existing aerators. A diesel operated water pump can be used to increase the circulation rate of the water. Air will be further induced in the waste water with the use of fire nozzles. Suction will be taken off the bottom of the impoundments to cause the circulation of the bottom sediments.

After aeration, estimated to take one week per impoundment, the water in the impoundments will be tested for benzene content. If less than 500 parts per billion, the waste water, now non-hazardous, will be pumped from the impoundments to the refinery evaporation ponds for evaporation. Dirt and other sludges that may remain in the impoundments will be dried in place and then accumulated into piles in each impoundment. Each pile will be tested by the TCLP method for hazardous characteristics and if found to be hazardous, properly packaged and transported to an offsite hazardous waste disposal facility. A mobile wash company will be contracted to thoroughly wash the liners of each impoundment. The wash water will be analyzed for benzene concentration and, if less than 500 parts per billion, will be pumped to the refinery evaporation ponds for evaporation. If greater than 500 parts per billion, it will be aerated with the diesel pump until the benzene concentration is below 500 parts per billion and then pumped to the evaporation ponds.

265.112 (b) (3) Maximum inventory

The three hazardous waste surface impoundments are designed to contain a maximum of 1,120,000 gallons of waste water. This amount is the estimated maximum inventory of hazardous waste that will ever be on site during the active life of the facility.

265.112 (b) (4) Decontamination steps

Since the surface impoundments are lined, no soil decontamination steps will be required. All equipment used that will have contact with the hazardous waste water will be circulating non-hazardous waste water after the treatment is complete, but as an additional decontamination step, this equipment will be flushed with fresh water. The flush water will be tested for benzene concentration and if less that 500 parts per billion it will be pumped to the refinery evaporation ponds for evaporation. If the waste water is greater than 500 parts per billion, extremely unlikely, then the water will be aerated until shown to contain less than 500 parts per billion benzene and then pumped to the refinery evaporation ponds for evaporation. The flush step will then be repeated as necessary.

265.112 (b) (5) Other activities

Ground water monitoring, leachate collection, and run-on and run-off controls will not be required as a closure activity because the surface impoundments are lined and are designed such that run-on and run-off will not occur.

265.112 (b) (6) Schedule of closure

Description	Duration
Start of closure at end of facility life	(yr 2024)
Aeration of impoundments	2 weeks
Testing of treated waste water	1 week
Removal of treated waste water	1 week
Drying of residual solids	4 weeks
Testing of residual solids	1 week
Removal of residual solids	1 week
Washing of impoundments	1 week
Flushing of equipment	1 week
Final testing and certification	1 week
Total time required	13 weeks

265.142 Cost estimate for closure

The closure of the three surface impoundments used for the on-site treatment of refinery wastewater requires a cost estimate for closure under the rules of RCRA 265.142. Since these impoundments are undergoing continuous treatment in which the waste water stream, a D018 waste because of benzene concentration, is being rendered non-hazardous, closure will simply require:

1) Stop adding new waste to the treatment stream.
2) Continue treatment until TC characteristic is gone.
3) Empty impoundments.
4) Analyze sediments for TCLP characteristics.
5) Remove and dispose of sediments.

Cost Estimate

	Amount
Vigorous aeration with diesel pump	
Operator: 168 hrs x $25/hr	$ 4,200
Fuel for pump: 8gph x $1.50/hr x 168 hrs	2,020
Testing of treated water	
Benzene: 6 samples x $90/sample	540
Testing of residual solids	
TCLP: 6 samples x $700/sample	4,200
Removal of residual solids	
Labor: 2 each x 40 hrs/ea x $25/hr	2,000
Disposal: 40000 lbs x $0.08/lb + $2200 frt	5,400
Washing of impoundments	
Mobil wash: 16 hrs x $60/hr	960
Flushing of equipment	
Mobil wash: 8 hrs x $60/hr	480
Final testing and certification	1,000
Total closure cost	$ 20,800

Date?

8.0 Closure Plan

8.1 Background

This section of the RCRA Part B permit application[6] contains the closure plan for the Bloomfield Refining Company (BRC) wastewater treatment surface impoundments.

8.2 Scope and Objectives

The RCRA regulations require that hazardous waste treatment, storage and disposal facilities have written closure plans available for inspection. This closure plan specifies when the three surface impoundments are expected to be closed, the sequence and scheduling of closure, the maximum hazardous waste material inventory, and the decontamination procedures, etc. The intent of this closure plan is to define closure steps to ensure closure is done in such a manner as to avoid release of hazardous materials to the environment and endangerment of human health.

8.3 The Facility Description

BRCs operations are located at their refinery located in northwestern New Mexico on a bluff adjacent to the San Juan River, south and east of the town of Bloomfield, New Mexico. BRC operations include a petroleum refinery plant, product loading facilities, raw water treatment facilities, four solar evaporation ponds, a spray field, and three wastewater treatment ponds. These wastewater treatment ponds are

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[6] This closure plan is written pursuant to the requirements of 40 CFR Part 264, Subpart G, issued by the United States Environmental Protection Agency, as authorized by Subtitle C of the Resource Conservation and Recovery Act (RCRA) of 1976 (as amended).

regulated as RCRA hazardous waste surface impoundments, because benzene[7] concentrations may exceed 0.5 mg/l. Approximately 70 gallons per minute of wastewater are produced from refinery operations and routed from the API separator through the three impoundments in series. The facilities addressed in this plan are the three wastewater treatment ponds.

The three ponds: the south oily water pond (SOWP), the north oily water pond-east (NOWP-E), and the north oily water pond-west (NOWP.-W), are used for natural and enhanced aerobic treatment. Each of the three ponds is equipped with either 2 or 5 horsepower aspirating aerators and/or a 2 horsepower splash aerator. Flow in this treatment system originates at the API separator and runs first to the SOWP. From the SOWP, the water flows to the NOWP.-W then to the NOWP-E which discharges to a sump where it is pumped to the evaporation ponds located further downstream in the refinery wastewater system. This treatment system reduces benzene concentrations to below 0.5 mg/l. The locations of these facilities are shown in Figure 10.1.

The NOWP-W and the NOWP-E are divided by a concrete wall. In 1982, these ponds were lined with a 100-mil high-density Polyethylene liner by Permanent Lining Systems of Odessa, Texas. A french drain collection system consisting of 4-inch PVC perforated pipe was installed at the time the liners were installed. The drain collection system was installed to detect any leakage through the pond liners. The PVC piping leads to a common observation well where any leakage from the ponds can be detected. At the time of installation of the leak detection system and liner, all visible discolored soil was removed .

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[7] EPA hazardous waste number D018; A solid waste exhibits this characteristic of toxicity for the contaminant benzene if, using the test methods described in Appendix II of 40 CFR 261.24 or equivalent methods approved by the administrator under the procedures set forth in 40 CFR §§260.21, the extract from a representative sample of the waste contains a concentration of benzene above the regulatory action level of 0.5 mg/l.

The first impoundment to receive the wastewater is the SOWP. It is 6 feet deep and has a surface area of about 7,800 square feet. The total volume is approximately 350,000 gallons with a holding time of ~~3.3~~ 3.5 days. The impoundment is equipped with two 5 horsepower aspirating aerators. Water exits this impoundment and enters the NOWP.-W.

The second impoundment, the NOWP.-W, is 6 feet deep and has a surface area of 10,000 square feet. Total volume is 440,000 gallons with a holding time of 4.4 days. Water reaches this impoundment through an overflow pipe form the SOWP. This impoundment is equipped with a 2 horsepower aspirating aerator. Water exits this impoundment and enters the NOWP-E.

The third impoundment, the NOWP-E, is 6 feet deep and has a surface area of 7,500 square feet. Total volume is 330,000 gallons with a holding time of 3.3 days. This impoundment is equipped with ~~a 2 horsepower aspirating aerator and a 2 horsepower splash aerator.~~ two 2 horsepower aspirating aerators. Water enters this impoundment through an overflow pipe from the NOWP.-W and discharges to a sump where it is pumped to evaporation ponds.

8.4 Plan Availability

Copies of this plan will be maintained at the plant site and will be available to authorized representatives of the EPA and the New Mexico Environmental Division (NMED) when requested. The plan will be readily available to plant personnel directly involved in closure activities.

8.5 Revisions to the Closure Plan

This closure plan will be amended whenever any change in operating practices or the facility design would affect the sequence of steps and/or scheduling as outlined. The

closure plan will also be amended whenever the regulations change in such a way as to affect this closure plan.

If this closure plan is modified, BRC will submit the updated closure plan to EPA on or before 90 days of the expected date of closure of any of the API wastewater surface impoundments. The expected date of closure would begin the last day any hazardous waste is discharge into the wastewater surface impoundments.

The EPA will have 90 days to disapprove or modify this closure plan. Submission of written comments by the public (a newspaper notice will be given by EPA) will be allowed and BRC will have the opportunity to request modifications to the plan for 30 days after the notice.

8.6 General

This closure plan includes a description of partial and final closure activities, an estimate of the maximum waste inventory, and the steps necessary to decontaminate equipment and close the wastewater surface impoundments. For the purposes of this closure plan, the wastewater surface impoundments are expected to be closed in 30 years.

8.7 Closure Performance Standard

When the NOWP.-W and the NOWP-E, were lined in 1982 all visible discolored soil was removed. At the request of the EPA and NMED, BRC sampled the soils underneath the ponds to a depth of 6-12 inches. Tests were run for residual contamination during the week of October 14, 1985. The samples from each pond were analyzed for the following:

Benzene

Toluene

Xylene

Phenols

Total lead

Total chromium

Although small concentrations of xylenes were detected in a single composite sample in the SOWP, none of the test results indicated significant residual contamination beneath the pond liners. Thus the soils below the ponds were considered clean at the time the liners were installed. The leak detection system under the ponds detected a small leak immediately after the monitoring system was installed and immediately after the 1985 sampling and analysis. The ponds were immediately drained and the leaks patched. No leaks have since been detected.

The SOWP is the first surface impoundment to receive the waste. If any contaminate is present in the waste system, it should be present in the SOWP. Hence a single grab sample was collected in the top 6 inches near the influent end of the SOWP and analyzed for "Skinner List" constituents. The "Skinner List" is a list of RCRA Appendix VIII constituents expected to be present in a petroleum refinery wastes. None of the "Skinner List" constituents were present at detectable concentrations. Based on this analytical data, the soils underneath the ponds are considered clean of any of the contaminates in the "Skinner List".

Table 8-1

On February 20, 1991 a sample from the NOWP-E discharge was analyzed for BTEX compounds.

Parameter	SOWP-discharge	NOWP.-W-discharge	NOWP-E-discharge
Benzene[7]			358 µg/l
Toluene[7]			470 µg/l
Ethylbenzene[7]			(not detected)
p, m-Xylene[7]			214 µg/l
o-Xylene[7]			97 µg/l

On March 7, 1991 a sample from the NOWP-E discharge was analyzed for BTEX compounds.

Parameter	SOWP-discharge	NOWP.-W-discharge	NOWP-E-discharge
Benzene[6]			218 µg/l
Toluene[6]			383 µg/l
Ethylbenzene[6]			54 µg/l
p, m-Xylene[6]			273 µg/l
o-Xylene[6]			102 µg/l

On April 8, 1991 a sample from the NOWP-E discharge was analyzed for BTEX compounds.

Parameter	SOWP-discharge	NOWP.-W-discharge	NOWP-E-discharge
Benzene[4]			270 µg/l
Toluene[5]			398 µg/l
Ethylbenzene[5]			(not detected)
p, m-Xylene[5]			88 µg/l
o-Xylene[5]			45 µg/l

[7] Detection limit 10 µg/l

[6] Detection limit 2 µg/l

[4] Detection limit 20 µg/l

Table 8-1 (continued)

On May 3, 1991 a sample from each of the three pond discharges was analyzed for BTEX compounds.

Parameter	SOWP-discharge	NOWP.-W-discharge	NOWP-E-discharge
Benzene[4]	1204 µg/l	668 µg/l	149 µg/l
Toluene[4]	2282 µg/l	1038 µg/l	209 µg/l
Ethylbenzene[4]	1197 µg/l	115 µg/l	22 µg/l
p, m-Xylene[4]	2052 µg/l	720 µg/l	375 µg/l
o-Xylene[4]	535 µg/l	478 µg/l	183 µg/l

On July 2, 1991 a sample from two of the pond discharges were analyzed for BTEX compounds.

Parameter	SOWP-discharge	NOWP.-W-discharge	NOWP-E-discharge
Benzene[5]	(not detected)	12.7 µg/l	(not detected)
Toluene[3]	(not detected)	(not detected)	(not detected)
Ethylbenzene[3]	(not detected)	(not detected)	(not detected)
p, m-Xylene[3]	48.4 µg/l	375 µg/l	8.0 µg/l
o-Xylene[3]	6.4 µg/l	220 µg/l	(not detected)

On August 6, 1991 a sample from each of the three pond discharges was analyzed for BTEX compounds.

Parameter	SOWP-discharge	NOWP.-W-discharge	NOWP-E-discharge
Benzene[6]	(not detected)	(not detected)	2.7 µg/l
Toluene[2]	5.0 µg/l	6.2 µg/l	3.6 µg/l
Ethylbenzene[2]	(not detected)	(not detected)	(not detected)
p, m-Xylene[2]	(not detected)	(not detected)	5.8 µg/l
o-Xylene[2]	2.8 µg/l	2.6 µg/l	5.4 µg/l

[4] Detection limit 20 µg/l

[5] Detection limit 5 µg/l

[6] Detection limit 2.5 µg/l

All the analytical data from the NOWP-E indicates that after 11.11 days of aerobic treatment the benzene levels have dropped below the regulatory action limit of 0.5 mg/l. The Toluene, Ethylbenzene, p,m-Xylene, and o-Xylene are below their RCRA action level concentrations.

The above data illustrates that this type of treatment reduces the benzene contamination to below the regulatory limits in the SOWP which has a holding time of 3.5 days. The aerators in all three ponds are sized so that F037 waste is not generated during operation of the impoundments.

At closure, all materials in the three ponds: the liners, pumps, aerators, closure equipment, etc will be decontaminated to below the regulatory limit for benzene and then they will be removed. Thus there will be no need for further maintenance and control after clean closure.

8.8 Maximum Waste Inventory

The maximum waste inventory is the combined capacity of the three ponds, which is 1,120,000 gallons. This may include some sludge at the bottom of the three ponds.

8.9 Clean Closure

The surface impoundments are integral to the current operation of the refinery and will remain in operation throughout the life of the facility, unless an alternative to the current system is put into operation. If an alternative is installed, a partial or full closure may occur prior to the completion of the expected facility life of 30 years.

Since the normal operation of the three surface impoundments results in the removal of benzene and other volatile organic compounds (VOCs), the closure will be a more

vigorous and more carefully monitored "normal operation". The closure will proceed as follows:

1- The hazardous waste production unit, the API separator, will be shut down or its discharge wastes will be rerouted elsewhere.

2- Each of the three surface impoundments will be thoroughly aerated using the existing aerators. A diesel operated water pump will be used to increase the circulation rate of the water and to re-suspend any sludge that may be on the bottom of the ponds. Suction will be taken off the bottom of the impoundments to help cause the circulation of the bottom sediments. The diesel pump will provide additional air through the discharge nozzles (fire nozzles).

3- A- The ponds will be aerated for about one week to 11 days per impoundment.

B- The water in the impoundments will be tested for toxicity characteristic (TC) for benzene using the sampling and test methods outlined in SW-846[8]. Two random samples will be pulled per impoundment while the impoundment is being well mixed by the existing aerators and the diesel operated water pump.

C- 1- A- If the benzene tests of the wastewater is $\leq$ 0.5 mg/l, then aeration for that pond will stop.

B- The wastewater, now non-hazardous, will be pumped from the impoundments to the refinery evaporation ponds for evaporation.

2- If the benzene tests of the wastewater is $\geq$ 0.5 mg/l, then aeration for that pond will continue for an additional 11 days and the above procedures repeated.

D- Dirt and other sludges that may remain in the impoundments will be dried in place and then accumulated into piles in each impoundment.

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[8] Test Methods for Evaluating solid Waste, EPA, November 1986, Third edition

E- Two random composite samples, representative of the whole pile, will be taken from the pile of dried pond sludges and dirt and will be tested for toxicity characteristics.

1- If the dried sludges fail the TC test then the dirt and other sludges remaining after evaporation will be properly packaged and transported to an approved off-site hazardous waste disposal facility.

2- If the dried sludges pass the TC test then the dirt and other sludges remaining after evaporation will be disposed of as non-hazardous waste.

5- A mobile wash company will be contracted to thoroughly hydroblast clean the liner of each impoundment, all ancillary equipment, and the 4" PVC piping used in the leak detection system until all the liners, and all the ancillary equipment, until the wash water used in the cleaning test is below 0.5 mg/l for benzene.

6- The wash water will be analyzed for benzene using the tests sampling method outlined in SW-846[9], method 8020. Two random samples will be pulled from the wash water while the wash water is being well mixed.

7- A- If the benzene concentration in the wash water is found to be below 0.5 mg/l, then the water will be pumped to the refinery's evaporation ponds for evaporation.

B- If the benzene concentration in the wash water is found to be above 0.5 mg/l, then the water will be aerated with the diesel pump until the benzene concentration is below the 0.5 mg/l.

1- If the concentration can not be lowered below 0.5 mg/l, then allow water to evaporate and manage sludges as a hazardous waste.

2- If the concentration is lowered below 0.5 mg/l, then the water will be pumped to the refinery's evaporation ponds.

8- A- The cleaned liners and 4" PVC piping used in the leak detection system will be removed and disposed of as non-hazardous waste.

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[9] Test Methods for Evaluating solid Waste, EPA, November 1986, Third edition

B- All ancillary equipment used in the clean up will be decontaminated by thorough washing and testing of the rinse water.

8.10 Closure Schedule and Closure Cost Estimate

TABLE 8-2

SCHEDULE OF CLOSURE

Description	Duration (weeks)
Start of closure at the end of the facility life	0
Aeration of impoundments	1 - 2
Testing of treated wastewater	1
Removal of treated wastewater	1
Drying of residual solids	4
Testing of residual solids	1
Removal of residual solids	1
Washing of impoundments	1
Flushing of equipment	1
Final testing and certification	1
Total time Required:	13 Weeks

TABLE 8-3

COST ESTIMATE

1-	Vigorous aeration with diesel pump	
	168 Operator hours @ $25/hour	$ 4,200
	Diesel fuel: 8 gallons/hour X $1.50/gallon X 168 hours	2,020
2-	Testing of Treated water	
	Testing for Benzene: 6 samples @$90/sample	540
3-	Testing of residual solids	
	TCLP: 6 samples @ $700/sample	4,200
4-	Removal of residual solids	
	Labor: 80 Manhours @ $25/hour	2,000
	Disposal: 40,000 lbs @ 8¢/lb	3,200
	Transportation:	2,200
5-	Impoundment decontamination	
	Mobil wash: 16 hours @ $60/hour	960
6-	Equipment decontamination	
	Mobil wash: 8 hours @ $60/hour	480
7-	Final testing and certification	1,000
	Total closure cost	$20,800

8.11 Contingent Closure

In the event that the closure procedure described in Section 8.9 is not feasible at the time of closure, BRC will submit an alternative post closure plan. If post closure ground water monitoring is required, the well system described in Section 7.0 will be utilized.