

ENTERED



December 24, 1996

50 Road 4990
P.O. Box 159
Bloomfield, New Mexico 87413
505
632-8013

Mr. Roger Anderson
Environmental Bureau Chief
Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

Re: Exploratory Boring Logs Giant Refining Company - Bloomfield (GW-001)

Dear Mr. Anderson:

Please find enclosed a copy of the boring (lithologic) logs from the recent drilling on the bluff above the San Juan River at the Bloomfield Refinery facility.

These borings were made to a depth of just below the river level as an attempt to characterize the Nacimiento formation and to verify that there was not a hydraulic conduit present in the Nacimiento formation for migration of hydrocarbon to the river level.

Please note that Giant is planning on drilling two borings on the sand bar adjacent to the river when the weather and site conditions allow.

Giant continues recovery operations through the culvert near the river and no sheen is present on the river.

If you require additional information, please do not hesitate to call me at (505) 632 8013.

Sincerely:

A handwritten signature in cursive script that reads "Lynn Shelton".

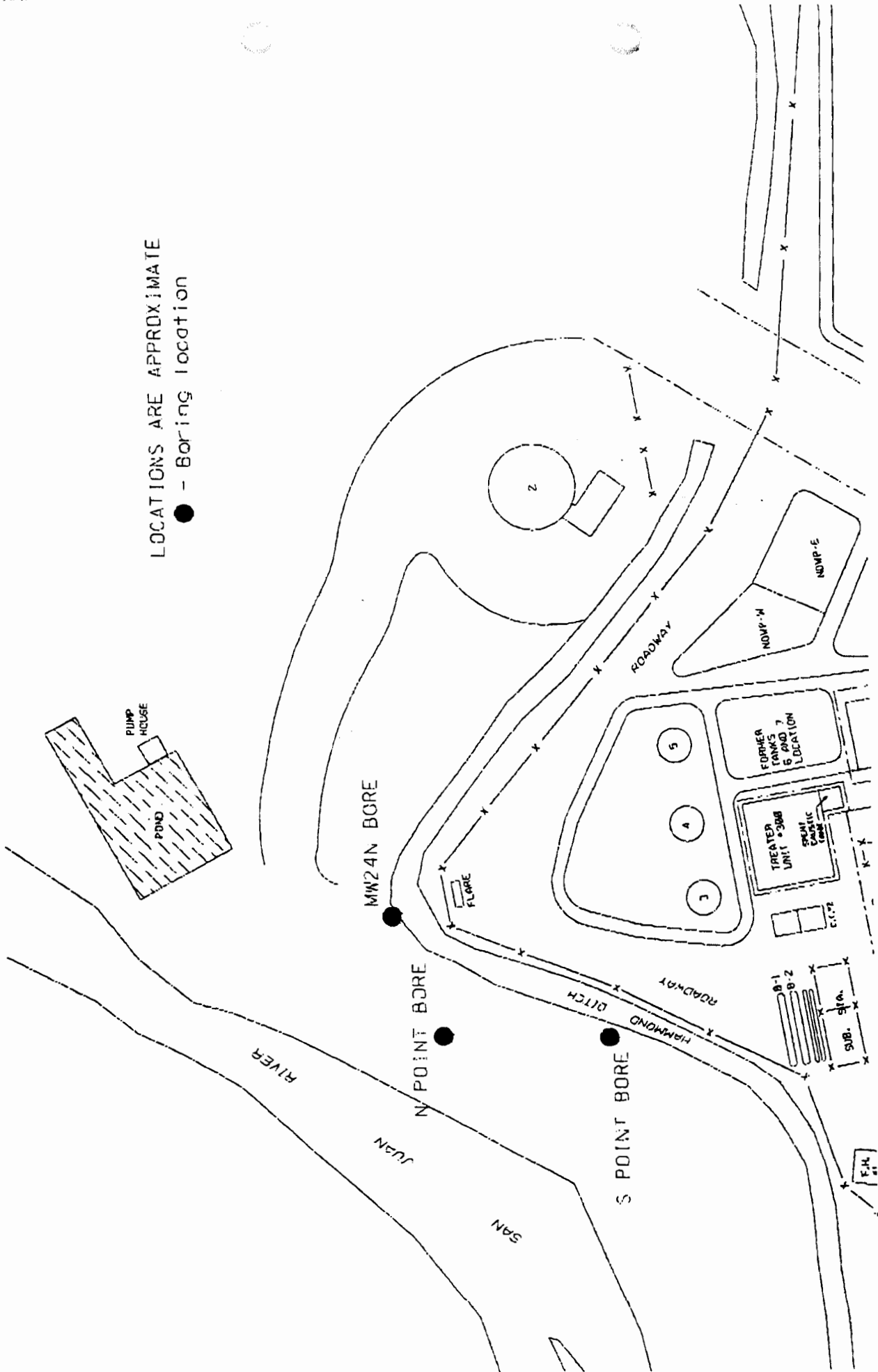
Lynn Shelton
Environmental Manager
Giant Refining Company - Bloomfield

TLs/tls

Enclosure

cc: w/enclosure Denny Foust, OCD Aztec

LOCATIONS ARE APPROXIMATE
● - Boring location



PROJECT: Bloomfield Refinery
Bluff Investigation

LOG OF TEST BORINGS

ELEVATION: 85'
TOTAL DEPTH: 85'
LOGGED BY: Kingsley
DATE: 12/10/1996
STATIC WATER: 10.2'
BORING ID: MW24N Bore
PAGE: 1

DEPTH	T	E	E	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
0-10.2	00000000	00000000	00000000	<ul style="list-style-type: none"> ▼ Cobbles, gravelly, sandy, very dense, rounded and disked, composed of chrySTALLINE intrusives and high density metamorphic rocks, dry to 10.2 feet where the soil becomes water bearing. Generally light colored rocks and light brown fine grained soils. ▼ As above but water bearing. Materials coated black and have hydrocarbon odor. ▼ Odor is of older fatted hydrocarbon. Sheen on water, no free hydrocarbon observed. 	
10.2-12.5	00000000				
12.5	00000000				
12.5-39.0	*****	20		<ul style="list-style-type: none"> ▼ Sandstone, fine, poorly cemented, argillaceous, hand sample crumbles, grey blue, wet but not water bearing, weak hydrocarbon odor, mod. dense, massive (no jointing) ▼ Yellow brown color at 13.0', no hydrocarbon odor, slightly less moisture. ▼ Blue grey at 15.0', no hydrocarbon odor. Sandstone dries white to light grey. ▼ Sample recovery 100%. Cores are high quality. Core rate using carbide NWD4 bit approx. 1'/min ▼ Thin (<1cm) carbonaceous shale seams, appears coaly, random orientation but typically near flat lying. No free water, samples moist. 	
39.0	*****				
39.0-42.0	-----	40		<ul style="list-style-type: none"> ▼ Shale, damp to moist, no water at interface of sandstone above and shale, blue grey to steel grey, crumbles easily in hand samples but dense in situ. Core rate 3"/min 	
42.0	-----				
42.0-85.0	*****	60		<ul style="list-style-type: none"> ▼ No jointing observed in cores. Recovery 100%. Occasional sandstone stringer 16" or less in thickness (rare). Cores are high quality. Some carbonaceous zones. ▼ Sandstone, fine, weakly cemented, argillaceous, sample crumbles with difficulty, grey to light brown, some calcite filling along flat lying bedding planes, moist dense, more cemented than sandstone above. Core rate 7"/min. ▼ Some shale in very thin lenses >60'. 	
85.0	*****	80			
TD					

LOGGED BY: Kingsley

SIZE AND TYPE OF BORING: 8-5/8 od HSA to 12.5', NWD4 core to 85'

PROJECT: Bloomfield Refinery
 Bluff Investigation

LOG OF TEST BORINGS

DEPTH	T	E	E	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAIN SIZE, ETC.)	PID (ppm)
0-11.7	00000000	00000000	00000000	▼ Cobbles, gravelly, sandy, very dense, rounded and disked, composed of chrySTALLINE intrusives and high density metamorphic rocks, dry to 11.7 feet where the soil becomes water bearing. Generally light colored rocks and light brown fine grained soils.	
11.7-12.0	00000000	00000000	00000000	▼ As above but water bearing. Materials coated black and have hydrocarbon odor.	
12.0	00000000	00000000	00000000	▼ Odor is of older fatted hydrocarbon. No sheen observed, no free hydrocarbon.	
12.0-34.7	*****	*****	*****	▼ Sandstone, fine, poorly cemented, argillaceous, hand sample crumbles, grey blue, wet but not water bearing, weak hydrocarbon odor to 13.0. >13.0 no odor, mod. dense Yellow brown color at 13.0'. no hydrocarbon odor, slightly less moisture.	
	*****	20	*****	▼ Auger drill to 20.0'. Rotary drill using NWD4 core with carbide bit to TD.	
	*****	*****	*****	▼ 21'-23' carbonaceous shale laminae in the sandstone <5mm. >25' sandstone is yellow streaked (limonitic banding).	
	*****	*****	*****	▼	
	*****	*****	*****	▼	
	*****	*****	*****	▼	
34.7	*****	*****	*****	▼	
34.7-52.0	-----	-----	-----	▼ Shale, damp to moist, no water at interface of sandstone above and shale, blue grey to steel grey, crumbles easily in hand samples but dense in situ. Core rate 2"/min	
	-----	40	-----	▼ No jointing observed in cores. Recovery 100%. Cores are high quality.	
	-----	-----	-----	▼	
	-----	-----	-----	▼	
	-----	-----	-----	▼	
	-----	-----	-----	▼	
52.0	-----	-----	-----	▼	
52.0-80.0	*****	*****	*****	▼ Sandstone, fine, moderately cemented, argillaceous, sample difficult to crumble, grey to light brown, some calcite filling along flat lying bedding planes, moist dense, more cemented than sandstone above. Core rate 5"/min.	
	*****	60	*****	▼	
	*****	*****	*****	▼	
	*****	*****	*****	▼	
	*****	*****	*****	▼	
	*****	*****	*****	▼ mud volume virtually unchanged during the coring.	
	*****	*****	*****	▼ significantly more dense at 73'. Core rate 3"/min.	
	*****	*****	*****	▼	
	*****	*****	*****	▼	
80.0	*****	80	*****	▼	
TD					

LOGGED BY: Kingsley

SIZE AND TYPE OF BORING: 8-5/8 od HSA to 20', NWD4 core to 80'

PROJECT: Bloomfield Refinery
 Bluff Investigation

LOG OF TEST BORINGS

DEPTH	TEST LOG	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAIN SIZE, ETC.)	PID (Dom)
0-19.5	SOILS	Cobbles, gravelly, sandy, very dense, rounded and disked, composed of crystalline intrusives and high density metamorphic rocks, dry to 19.5 feet where the soil becomes water bearing. Generally light colored rocks and light brown fine grained soils.	
19.5-22.0	20	As above but water bearing. Materials coated black and have hydrocarbon odor. Odor is of older fetted hydrocarbon. Slight sheen observed, no free hydrocarbon.	
22.0			
22.0-36.0	*****	Sandstone, fine, poorly cemented, argillaceous, hand sample crumbles, grey blue, wet but not water bearing, weak hydrocarbon odor to 22.6, >22.6 no odor, mod. dense Auger drill to 25.0'. Rotary drill using NWD4 core with carbide bit to TD. Some limonitic banding >30'.	
36.0	*****		
36.0-50.5	40	Shale, damp to moist, no water at interface of sandstone above and shale, blue grey to steel grey, crumbles easily in hand samples but dense in situ. Core rate 2"/min. No jointing observed in cores. Recovery 100%. Cores are high quality.	
50.5	*****		
50.5-85.0	60	Sandstone, fine, moderately cemented, argillaceous, sample difficult to crumble, grey to light brown, some calcite filling along flat lying bedding planes, moist dense, more cemented than sandstone above. Core rate 4.5"/min. mud volume virtually unchanged during the coring. more dense at 75'. Core rate 3.5"/min.	
85.0	80		
TD			

LOGGED BY: Kingsley

SIZE AND TYPE OF BORING: 8-5/8 od HSA to 25.0' NWD4 core to 85'

GIANT REFINING COMPANY - BLOOMFIELD

GROUNDWATER MEASUREMENTS

11/21/96

Well Number	Depth to SPH	Depth to Water	Total Depth	SPH Thickness	Well Number	Depth to SPH	Depth to Water	Total Depth	SPH Thickness
MW-1*	NA	17.74	21.43		MW-31	NA	33.36	39.14	
MW-5*	NA	45.56	51.61		RW-22	22.61	22.82	35.55	0.41
MW-33	NA	21.47	25.49		RW-23	20.02	20.03	35.31	0.01
MW-32	NA	24.48	27.50		RW-18**	27.32	27.44	39.43	0.12
MW-27	17.90	17.91	24.40	0.01	RW-14	34.62	35.03	43.08	0.41
MW-26	16.39	16.42	25.11	0.03	RW-15**	NA	34.19	43.70	
MW-34	13.32	13.50	20.96	0.18	RW-16	32.81	33.57	41.81	0.76
MW-11	NA	10.30	22.70		RW-17	31.37	32.12	41.27	0.75
MW-12	NA	10.70	15.18		RW-19	28.09	28.68	36.69	0.59
MW-20**	NA	18.47	27.12		MW-4	25.58	26.16	30.90	0.58
MW-9**	21.82	21.84	33.98	0.02	P-2	25.05	25.71	38.18	0.66
MW-21**	NA	20.35	30.44		RW-2	25.91	25.96	37.60	0.05
P-1	NA	26.30	38.81		MP-1	24.23	25.27	29.78	1.04
RW-1	NA	27.64	40.68		MP-2	24.99	26.12	29.67	1.13
RW-3	NA	18.86	33.81		MP-4	25.95	27.23	32.89	1.28
MW-25	31.66	32.04	41.20	0.38	MP-3	25.96	27.08	31.59	1.12
MW-13	NA	33.36	39.14		P-3	NA	9.35	22.74	
MW-23	26.22	26.54	37.07	0.32 (1)					

* OCD Wells

** RCRA Wells

(1) Measurements taken 1/3/97

TLS 1/97