GRCB 08-5 ENTERED

Hope Monzeglio

From: Randy Schmaltz [rschmaltz@giant.com]
Sent: Tuesday, January 11, 2005 10:31 AM
To: Wayne Price
Cc: Hope Monzeglio; Denny Foust; Robert Wilkinson; Ed Riege; Chad King; Cindy Hurtado; Dennis Tucker
Subject: Response to OCD's Barrier Conditional Approval

OCD- Response to Barrier Appro...

Wayne, please find enclosed Giant's Response to OCD's Barrier Conditional Approval.

<<OCD- Response to Barrier Approval 01-10-05.doc>>

Thanks

CERTIFIED MAIL # 7099 3220 0010 2242 4863

January 11, 2005

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 S. Saint Francis Drive
Santa Fe, New Mexico 87505

Re: Giant Bloomfield Refinery – OCD Conditional Approval of North Boundary Barrier Corrective Action Plan

Dear Mr. Price:

Giant received the December 17, 2004 letter from the New Mexico Oil Conservation Division (OCD) stating OCD's conditional approval of the November 17, 2004 Corrective Action Plan (CAP) submitted by Giant for the Bloomfield facility. The purpose of this letter is to provide OCD with the anticipated starting date of the barrier construction and to respond to several of the conditions stated in OCD's letter.

Giant has entered into a contract with Remedial Construction Services, L.P. (RECON) to construct the north boundary barrier. RECON, based in Houston, Texas, is a contractor that specializes in the construction of barrier walls for environmental applications. RECON is tentatively scheduled to mobilize to the Bloomfield refinery the week of January 17, 2005, with barrier excavation activities expected to begin the following week. Construction is anticipated to be completed by the end of March 2005. Giant's environmental consultant (Malcolm Pirnie) will provide a senior geotechnical engineer and a full-time resident engineer to oversee and document the barrier construction activities. The barrier type will be a soil-bentonite slurry wall with permeability less than or equal to 1×10^{-7} cm/sec and a minimum thickness of 30 inches.

Response to OCD Conditions of Approval

The following responses correspond to the conditions in OCD's December 17, 2004 approval letter.

1. Condition accepted by Giant.

2. Giant initially planned to key the barrier wall 5 feet into the Nacimiento Formation. However, discussions with a local excavation contractor with experience at the site revealed that achieving a 5-foot key depth using conventional excavation equipment is improbable without using rock-sawing and impact-hammer techniques. Further, hydraulic conductivity testing of samples taken from the Nacimiento Formation along the barrier alignment indicates the formation is essentially impervious to water migration in its upper one-foot interval (soil boring SB2-1004, permeability of 6×10^{-7} cm/sec at a depth of 12.0 to 12.5 feet below ground surface (bgs); soil boring SB5-1004, permeability of 1.2×10^{-9} cm/sec at 9.5 to 10.5 bgs). Refer to the November 11, 2004 investigation report by Precision Engineering (Appendix A of CAP) for the testing results. An annotated test results summary table is included with this letter (Attachment A).

   Based on the conditions noted above, the construction specifications for the barrier state the following requirements to minimize the potential underflow of fluids: The slurry wall shall be constructed with a minimum key-in depth of 3 feet into the Nacimiento Formation or until refusal is met, whichever is less in depth. Refusal shall be defined as 3 passes for a horizontal distance of 5 feet with less than 0.2 feet of total penetration. Passes shall be made utilizing 90 percent of the manufacturer's maximum-rated down pressure and breakout power of the excavator. The excavator shall have a minimum rated gross power of 140 horsepower.

   Flow net analyses are typically used to model seepage through earthen embankments (e.g., dams) and beneath impervious barriers (e.g. sheet pile and clay-material walls) where porous media flow conditions exist under appreciable hydraulic head. Since the proposed soil-bentonite wall will have a permeability less than or equal to 1×10^{-7} cm/sec, and the Nacimiento Formation into which it will be keyed is less permeable, any seepage, if it occurs, will not be through porous media exhibiting Darcy's Law behavior. As such, it is Giant's opinion that a flow net analysis is not technically applicable in this case and will not add technical benefit towards understanding seepage potential.

   Giant believes that seepage beneath the wall will be insignificant for these reasons:

   A) The groundwater seeps that have been observed and documented at the river bluff indicate that fluid movement is restricted to the sand and gravel deposits (Jackson Lake Terrace) at the interface of the Nacimiento Formation. No seepage has been observed from within the Nacimiento Formation. This observation is consistent with Precision Engineering's conclusion that the Formation does not contain or transmit water. (Appendix A of CAP).

   B) Groundwater levels measured in piezometers installed along the proposed barrier alignment show there is generally one foot of water or less on the top of the Nacimiento Formation. This is an inappreciable amount of hydrostatic head.

C) The quantity of flow migrating from the facility to the river bluff in the Jackson Lake Terrace gravels (across the entire proposed slurry wall alignment - over 2,600 feet in length) has been estimated (using the Darcy equation) to be less than 20 gallons per minute. This estimate assumes a saturated thickness of 2 feet on top of the Nacimiento Formation (greater than measured), a uniform gradient, and a moderate Jackson Lake Terrace permeability. This relatively low quantity of flow is consistent with the observed "isolated seeps" at the river bluff. As such, the amount of water anticipated to accumulate against the barrier is low.

D) It appears the flow in the gravels at the interface of the Nacimiento Formation is controlled by the surface topography of the Formation and is not a uniform flow through the Terrace Gravels. Therefore, fluids that exist at the interface tend to migrate to low elevations in the top of the Nacimiento Formation and move along depressional troughs. These depressions will be targeted for fluids collection points that will be used to control hydrostatic head against the barrier. It is unlikely that water will accumulate along the full length of the barrier.

G) The hydrostatic head against the barrier at the collection points, even in a worst-case scenario (i.e., no fluid collection system), cannot exceed approximately 4 to 5 feet due to the hydraulic relief drain that exists beneath the Hammond Ditch. This small hydraulic head would not be sufficient to cause seepage beneath the wall through the Nacimiento Formation and would not likely cause seepage through the soil-bentonite barrier, even with its' higher permeability.

3. The barrier type will be a soil-bentonite slurry wall with permeability less than or equal to 1×10^{-7} cm/sec and a minimum thickness of 30 inches. The construction specifications require the soil-bentonite backfill mix design to be approved by Malcolm Pirnie. The specifications also require industry-standard quality control testing by the contractor during construction and verification permeability testing by an independent third-party laboratory.

4. As-built drawings and photo documentation are included in the construction procedures and will be provided to OCD as requested. Daily logs will be kept by the full-time on-site resident engineer.

5. Weekly progress reports and photos will be provided as requested.

6. Giant anticipates installing the fluid collection points in the second quarter of 2005 after construction of the barrier is complete. The contour of the Nacimiento Formation along the barrier alignment will be surveyed during construction to aid in locating collection points. A fluid collection system design will be submitted to OCD for approval prior to installation of the collection points.

7. A senior geotechnical engineer and a full-time resident engineer from Malcolm Pirnie will oversee and document the barrier construction activities. Due to the character of the Jackson Lake Terrace soils, a slurry trench excavation method will be used. As such, collection of representative soil samples from the trench at

prospective collection system locations is not technically possible. If these soil samples are necessary, Giant proposes they be obtained separately after barrier construction.

8. RECON will prepare a detailed construction activity schedule and Giant will provide a copy to OCD prior to start of construction. The schedule will be reviewed weekly during construction progress meetings and revisions will be made as necessary. Schedule changes will be communicated to OCD on a weekly basis.

9. Giant anticipates developing a monitoring plan concurrent with the collection system design. Conceptually, the plan will be based on monitoring hydraulic conditions on both sides of the barrier at locations where fluid accumulation is anticipated. The monitoring plan will be submitted to OCD for approval.

If you have any questions in this matter, please contact me at 505-632-4171.

Sincerely,

GIANT REFINING COMPANY

James R. Schmaltz
Environmental Manager

Cc: Denny Foust - OCD Aztec Office
Hope Monzeglio – NMED Hazardous Waste Bureau
Bob Wilkinson – EPA
Ed Riege
Chad King

Attachment A

Precision Engineering, Inc.
P.O. Box 422
Las Cruces, NM 88004
505-523-7674

Project Bloomfield-Hammond Ditch File No. 03-122 Date November 2, 2004

	Boring No.	PEI Lab No.	Depth ft.	Sieve Analysis %Passing 3"	2"	1½"	1"	3/4"	1/2"	3/8"	#4	#10	#20	#40	#60	#140	#200	Atterberg Limits LL	PI	Moisture %M	Unit Wt. PCF	Classification USCS	AASHTO
SB2-1004		46450	5.0-5.4							100	100	99	97	74	31	10	8.7		N/P	3.8		SP-SM	A-3
		46451	11.0-11.5				100	90	86	85	82	81	73	48	21	6	4.7		N/P	15.6		SP	A-1-b
SB5-1004		46452	9.0-10.0							100	100	71	57	45	37	28	23.8		N/P	5.6		SM	A-1-b
SB8-1004		46458	10.0-11.0				100	89	73	68	64	62	55	25	9	3	2.5		N/P	19.2		SP	A-1-b
SAND PILE @ GRVL PIT		46464	Surface								100	100	100	96	92	80	65.2		N/P	8.6		ML	A-4
		46465	Sruface							100	100	100	99	96	92	79	71.3		N/P	14.8		ML	A-4
	A.	46461	Surface	95	95	93	88	86	83	81	79	78	75	64	52	29	23.7		N/P	2.5		SM	A-2-4
	B.	46462	Surface	96	80	76	64	57	49	44	40	38	31	22	16	8	7.0		N/P	0.9		GP-GM	A-1-a
	C.	46463	Surface	94	86	76	64	54	43	38	32	29	23	14	9	6	5.3		N/P	1.1		GP-GM	A-1-a
SB2-1004		46456	12-12.5	Hydraulic Conductivity: 6.0 X10^{-7} cm/sec																13.3	118.7		
SB4-1004		46454	9.5-10.5	Hydraulic Conductivity: 1.2 X10^{-9} cm/sec																13.8	117.1		

A. HILLSIDE - 70 FEET NORTH OF MW-47 (APPROX. STA 5+20)
B. HILLSIDE - 60 FEET SOUTH OF MW-47 (APPROX. STA 3+90)
C. UNCLEAR - NORTHSIDE BY SYPHON - NEAR EAST END OF ALIGNMENT ?

C:\AAFWFILE\projects\2003\03-122 Bloom\[Grain Size Summary Hammond Ditch.xls]S1

Prepared By:

GIANT
REFINING COMPANY

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PHONE
505-632-8013
FAX
505-632-3911

50 ROAD 4990
P.O. BOX 159
BLOOMFIELD
NEW MEXICO
87413

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