Appendix 9F

Longhorn Domestic Water Well Mitigation Plan

Jenkens & Gilchrist

A PROFESSIONAL CORPORATION

1445 ROSS AVENUE
SUITE 3200
DALLAS, TEXAS 75202

(214) 855-4500
TELECOPIER (214) 855-4300

www.jenkens.com

AUSTIN, TEXAS
(512) 499-3800

CHICAGO, ILLINOIS
(312) 425-3900

HOUSTON, TEXAS
(713) 951-3300

LOS ANGELES, CALIFORNIA
(310) 820-8800

SAN ANTONIO, TEXAS
(210) 246-5000

WASHINGTON, D.C.
(202) 326-1500

July 11, 2000

Mr. Robert Davis
Radian International
8501 N. Mopac Blvd.
Austin, Texas 78759

<u>VIA FEDERAL EXPRESS</u>

Re: Longhorn Partners Pipeline, LP; Environmental Assessment

Dear Mr. Davis:

Per Vince Murchison s request, enclosed please find two copies of Longhorn s Domestic Water Well Mitigation Plan. This document has been bates labeled RAD 38076 through RAD 38080.

Very truly yours,

Jordan S. Haury
Paralegal to Wm. Vincent Murchison

:jsh

Enclosure

cc: Wm. Vincent Murchison (Firm w/ enc.)
Philip Phonebshek (Federal Express w/ enc.)
Roderick Seeley (First Class Mail w/o enc.)
Hector Pena (First Class Mail w/o enc.)
Lawrence Andrews (First Class Mail w/o enc.)
Thomas Jensen (First Class Mail w/o enc.)
Horst Greczmiel (Facsimile w/o enc.)

Longhorn Domestic Water Well Mitigation Plan

Approach

Potential product leaks from the Longhorn Pipeline could impact both domestic water wells and public water supply (PWS) water wells. Communities and individual landowners have raised this as an issue in the public comment hearings for the pipeline. The development of mitigation approach for these two types of wells, however, is different. Each type of well has separate issues and therefore separate approaches toward mitigation. For example, PWS water wells are regulated by Texas Natural Resource Conservation Commission (TNRCC). Through TNRCC regulation, the state maintains data files such that well locations, construction histories, hydrogeologic settings and production histories are known. With these data, specific PWS wells and well fields which might be susceptible to potential contamination can be identified and mitigation plans developed. The TNRCC, however, does not regulate domestic water wells. Because of this there are limited data available for domestic water wells.

The Longhorn pipeline transects primarily rural Texas, rather than urban areas of the state. Most of the water wells, which could be impacted by a pipeline leak, are domestic type wells rather municipal public water supply wells. Domestic water wells often are the primary source of water for many ranches, farms and other rural homesteads along the Longhorn pipeline. Loss of a water well from any source of contamination is critical. We have identified a well population of at least 870 wells in the LCRA region (Fayette to Kimble Counties) in a five-mile wide zone (2.5 miles on each side of the pipeline) (from Texas Natural Resource Information System (TNRIS) data system). We have identified over 800 wells in a five-mile-wide (2.5 zone on either side of the pipeline) from western Houston to Crane, Texas based on their presence on U.S.G.S. topographic maps. This only identifies wells in Texas State files and on topographic maps, which typically were mapped in the 1960's. The total number of wells in this zone along the pipeline is assumed to be greater, but there is no reasonable way to identify all the wells and determine whether they are susceptible to a pipe line spill. Sensitivity of a well to potential contamination from a pipeline spill depends on several factors which include: 1) the distance of the well from the pipeline, 2) the topography between the well and the pipeline, 3) the depth to ground water, 4) the size of the leak, 5) the hydrogeology of the well, and 6) the well construction (e.g. depth of casing, depth of screen, presence or absence of annular cement). In contrast to public water supply wells there is no state requirement that a landowner provide this type of information which is necessary for planning a proactive approach. Because of this lack of state data gathering, there is no comprehensive database of domestic water wells in the state. It is not feasible to develop individual mitigation plans for wells (such as EPA-recommended well head protection plans), which would protect any water well anywhere along the pipeline.

Rather than using a proactive approach (which is the basis of most elements within the Longhorn mitigation plan), an alternative approach is needed to protect these wells or to assure domestic well owners that water will be provided in case of contamination. A "reactive" type of mitigation is how most instances of ground-water contamination are currently resolved. An established regulatory approach is followed for most instances of ground-water contamination in Texas. The administrative legal code of the Texas Natural Resource Conservation Commission addresses ground-water contamination from several potential sources of contamination. When ground-water contamination occurs within Texas, the general approach toward mitigation and remediation is as follows.

1. A contaminant is prevented from entering the ground water by a secure form of isolation (e.g. landfill liners, non-corroding petroleum storage tanks).
2. Containment, however, is never entirely risk free; there is always the potential that some of the contaminant could leak and possibly contaminate ground water.
3. If a leak is observed at the source, it is cleaned up.
4. If the leak is not observed until it reaches a water well, it may contaminate the well.
5. Several actions can result after an apparent leak.
   a) The source of contamination is located and future contamination is prevented.
   b) The contaminant plume is remediated.
   c) If a water well is contaminated, the well is either
      1. cleaned up with an appropriate treatment technology, or
      2. An alternate water supply is provided.
6. The entity that has caused the contamination is responsible for cost of clean up.

<u>Longhorn Mitigation Plan for Domestic Water Wells</u>

Domestic water well contamination from a potential leak from the Longhorn pipeline could result from either a) a large volume, "instantaneous" leak associated with a rupture of the line, or b) a small leak which may be difficult to discern from monitoring of the pipeline. These two leak scenarios require different remediation strategies.

<u>Large Volume Leak</u>

In the case of a large volume leak the following mitigation actions would occur.

1. With a large volume leak there would be a shutdown of the pipeline and deployment of the Emergency Response Team (ERT) to contain the spill. The first responsibility of the ERT is to contain the surface spill, and limit the health and safety hazards. The second responsibility of the ERT is to contain any leak in the subsurface and prevent water well contamination.
2. With a large volume leak the spill has is assumed to have reached land surface, and product potentially flows away from the pipe down slope either as overland sheet flow or down streambeds. Direction and distance of flow can be predicted from topographic maps. Landowners in the direction of surface flow would be warned of the potential of their water wells being impacted.
3. Clean up of product plus contaminated soils would be initiated at the pipeline as quickly as possible. Clean up procedures would follow TNRCC guidelines.
4. Potential for water well contamination would be evaluated by reviewing distance to water wells, any information on well construction and local hydrogeologic conditions. Water wells in close proximity would be monitored for the chemical constituents of the spill and water levels to

determine hydraulic gradients. A monitoring well(s) may need to be installed to assess the extent of subsurface contamination and clean up approaches.

5. If a water well becomes contaminated, the Longhorn Pipeline would provide treatment technology either to clean up the water in the well or provide an alternate water supply. This alternate water source may be from another established water supply or by drilling of another water well in a non-impacted part of the aquifer. A temporary water supply will be provided until a permanent solution is in place.
6. Longhorn would be responsible for the costs of cleanup.

<u>Small Volume Leak</u>

The best method to prevent domestic water well contamination from small leaks is to prevent them from occurring at the pipeline. Longhorn has a mitigation plan in place, which is designed to prevent small pipeline leaks and includes elements such as pressure testing, smart pigging, and pressure monitoring. Upon implementation the Longhorn plan will become the standard of the industry. A small volume leak, however, is defined as being a leak that is small enough so that there is no surface expression of leaked product nor any evidence from pipeline pressure monitoring data of product loss. Under this scenario, the leak is undetectable at the pipeline. It is unlikely but possible that the only evidence of a pipeline leak may be when a domestic water well becomes contaminated. If this scenario occurs, Longhorn will use the following mitigation approach.

1. Longhorn has identified a zone within which Longhorn will provide assistance if a domestic water well becomes contaminated from pipeline product. Within this zone, the owner of a water well who believes his well has become contaminated by a leak from the Longhorn pipeline would contact Longhorn with their concerns. The width of this zone is determined by the regional hydrogeologic setting for that area. The most important hydrogeologic parameter controlling the width of this zone (i.e the lateral extent of potential contamination) is whether the matrix of the aquifer is composed of a porous media or a fractured or karstic geologic material. If flow is in a "porous" rock then the distance a potential contaminant can flow is much more limited than in a fractured rock. Mace and others (1997) found that over 75% of all (about 6,000) underground storage tank (UST) leaks in Texas had plume lengths of less than 250 feet. This was largely caused by the natural slow flow rate of ground water in porous aquifers in conjunction with the rapid degradation of hydrocarbons by the naturally occurring microorganisms within the aquifer. In fractured or karstic aquifers, flow velocities are expected to be higher and therefore the "zone" on either side of the pipeline should be wider. Because of these variations in flow rates by aquifer type, Longhorn proposes to vary the width of the zone by aquifer type for the five aquifer regions.
   a. Cenozoic sand aquifers between Houston to Austin, 500 ft either side of the pipeline for a total width of 1,000 ft. These aquifers are predominantly sand or sandstone aquifers.

b. Edwards aquifer recharge zone (EARZ) in south Austin. One-half mile south of the pipeline and to the Colorado River on the north side of the pipeline. The Edwards aquifer in this region is a permeable limestone aquifer.
c. Trinity aquifer and Paleozoic aquifers from west of the City of Austin to Kimble County. 1,000 ft either side of the pipeline for a total width of 2,000 ft. These aquifers are predominantly moderate to low permeability aquifers for which fracture flow may be important.
d. Edwards/ Trinity aquifer from Kimble County to Crane County. 2.5 miles on either side of the pipeline for a total width of five miles. These aquifers may contain sections with highly karstic permeabilities and sections with low permeabilities. A general lack of information in this region prevents an accurate hydrogeologic characterization of its aquifer.
e. Various aquifers from Crane County to El Paso. 1,000 ft either side of the pipeline for a total width of 2,000 ft. The pipeline from Crane County to El Paso crosses large sections of sparsely populated stretches of either alluvium, clays, or Paleozoic bedrock aquifers.

2. Longhorn will quickly evaluate the complaint by conducting a preliminary hydrogeologic investigation with available information and by sampling the well water for the presence of refined petroleum products. Potential for water well contamination would be determined by reviewing distance from the pipeline to water wells, information on well construction and local hydrogeologic conditions. Longhorn will work expeditiously to test for the presence of refined products in the water sample.
3. If it is possible that a leak has occurred from the Longhorn pipeline and is contaminating a well, Longhorn will conduct appropriate engineering tests to determine whether the leak could be from the Longhorn Pipeline or not, and if so, the location of the leak; a pipeline leak would be repaired and responded to accordingly.
4. Cleanup of product and contaminated soils would be initiated at the pipeline following established emergency response procedures. Cleanup procedures would follow TNRCC guidelines.
5. If a water well does become contaminated from the Longhorn pipeline, Longhorn would provide treatment technology to clean up the water in the well or provide an alternate water supply. This alternate water supply may be from another established water supply or the drilling of another water well in a non-impacted part of the aquifer. A temporary water supply will be provided until a permanent solution is in place.
6. Longhorn would be responsible for the costs of cleanup.

<u>Summary</u>

The domestic/ stock water wells along the Longhorn pipeline could be contaminated if there is a pipeline leak into the ground water. It is not possible, however, to develop separate mitigation plans for each well; therefore, an approach has been developed. In the case of a large spill, the spill will be contained and cleaned up at the pipeline. Water wells that could become contaminated will be monitored. If contamination does occur, Longhorn will mitigate and be responsible for mitigation costs. In the case of small undetectable releases, Longhorn will investigate complaints of product contamination from water well owners within a hydrogeologically-established zone to determine if there has been a pipeline leak and if water well remediation is necessary. Longhorn will be responsible for the costs of cleanup if the source of the contamination is from the pipeline. In either case, water well owners will be allowed to select from available alternatives.

This document addresses the issue of how to develop a methodology for mitigating domestic/stock water wells. Specific procedures may need to be developed and included in the emergency response plans or other appropriate sections of the Mitigation Plan.