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RE: Amendment to B. Arville Touchet's Expert Report of July 11, 2010 for State of Louisiana and the Vermilion Parish School Board, et al vs. the Louisiana Land and Exploration Company, et al—Suite No. 82.162, Division "D"—File No. 12224-S in 15th Judicial Court for the Parish of Vermilion, State of Louisiana

The original report was based on ICON's laboratory data derived from sediment samples taken from canal bottoms. (Table 1—ICON Analytical Results & Table 2—MP & A Analytical Results of ICON splits) dealing with salinity—samples Sed. 1 through Sed. 33.

This amendment to the report is based on ICON Sampling Locations Figure 4-1 and Analytical Summary Table 4-1R dealing with salinity—samples AB1 through 16 and AB 18 through 22. These are split spoon and syringe samples taken in October and November 2006.

This amendment does not change the conclusions of the July 11, 2010 report.

The following is a summary of EC in mmhos/cm trends for individual soil data sample results by boring identification (ICON data from Table 4-1R):

AB1 0-3' EC 26.6	AB1 12-14' EC 4.03	AB1 40-42' EC 2.01
AB2 0-3' EC 27.6	AB2 4-6' EC 4.88	AB2 22-24' EC 0.35
AB3 0-3' EC 19.1	AB3 3-6' EC 5.72	AB3 18-20' EC 0.89
AB4 0-3' EC 25.6	AB4 4-6' EC 7.98	AB4 36-38' EC 0.92
AB5 0-6' EC 15.1	AB5 10-12' EC 6.60	AB5 18-20' EC 7.01
AB6 6-10' EC 3.78	AB6 12-14' EC 0.84	AB6 16-18' EC 1.36
AB7 6-8' EC 12.4	AB7 14-16' EC 2.33	AB7 18-20' EC 2.92
AB8 6-8' EC 10.9.	AB8 12-14' EC 2.34	AB8 20-22' EC 3.18
AB9 6-8' EC 6.11	AB9 12-14' EC 6.81	AB9 22-24' EC 4.36
AB10 4-6' EC6.33	AB10 12-14' EC 6.54	AB10 20-22' EC 2.87

AB11 4-6' EC 18.8	AB11 12-14' EC 5.32	AB11 18-20' EC 1.86
AB12 6-8' EC 11.7	AB12 14-16' EC 22.5	AB12 22-24' EC 12.5
AB13 0-3' EC 87.0	AB13 12-14' EC 11.5	AB13 24-26' EC 9.40
AB14 0-3' EC 26.1	AB14 12-14' EC 25.7	AB14 24-26' EC 9.08
AB15 0-6' EC 59.5	AB15 12-14' EC 14.1	AB15 18-20' EC 9.90
AB16 4-6' EC11.6	AB16 12-14' EC 15.4	AB16 24-26' EC 4.83
AB18 4-6' EC 10.8	AB18 12-14' EC 1.82	AB18 24-26' EC 2.77
AB19 4-6' EC 9.82	AB19 12-14' EC 4.04	AB19 14-16' EC 1.85
AB20 6-8' EC 18.4	AB20 12-14' EC 6.78	AB20 24-26' EC 1.22
AB21 4-6' EC 20.8	AB21 14-16' EC 9.91	AB21 16-18' EC 10.1
AB22 4-6' EC 20.3	AB22 12-14' EC 17.0	AB22 16-18' EC 10.8

The trend in EC of the 21 sample locations shows a decrease in salinity from top of the soils to the bottom of the soils.

The Holocene marsh sediments (moisture contents greater than 50 percent by weight or N-values > 0.75) and Pleistocene Beaumont dewatered sediments (moisture contents less than 50 percent by weight or N-values < 0.75) shows that the sodium chloride salt is trapped in the marsh soils and does not penetrate through the firm Pleistocene-age soils below.

The Gulf of Mexico once occupied the total area of the Cheniere Plain Marsh including the areas of chenieres. The soft marsh muds of the Holocene with N-values greater than 0.75 under the organic layers of the AOI are saline as indicated by ICON's background plot data (see Table 1 of Touchet's 7/11/2010 report.

This is due to the fact that Mississippi River delta muds were transported to the Cheniere Plain by the westerly flowing longshore (saline) currents of the Gulf of Mexico and deposited as the Cheniere Plain Marsh. The Cheniere Plain Marsh extends from Cheniere au Tigre-Southwest Pass area to well into Jefferson County, Texas.

According to the "Water Resources" section on Page 3 of The Soil Survey of Vermilion Parish produced by Darrell D. Carlson, Chief, Hydrologic Surveillance Section, Water Resources Division, U. S. Department of the Interior, I submit the following quotes: "Sources of fresh ground water in Vermilion Parish are the Abbeville unit, the upper sand unit, and the lower sand unit of the Chicot Aquifer system (10). The three units also contain salt water. The maximum depth of fresh water in the parish is about 800 feet below land surface".

"The Abbeville unit generally consists of fine to sandy silt that grades to sand and gravel with increasing depth. The unit ranges in thickness from 100 to250 feet and dips toward the south. It is recharged directly from the Vermilion River because water levels have been drawn to below the river stages. Water quality in the Abbeville unit reflects the quality of the Vermilion River because of the direct hydraulic connection. The unit contains some localized area of salt water as the result of the inland movement of seawater in the river during high tides. An intermittent recharge of brackish water into the aquifer during high tides is possible. Water from the Abbeville unit is primarily used for irrigation".

"The upper sand unit of the Chicot Aquifer system underlies and generally is separated from the Abbeville unit by a thin clay lense. Some areas do not have this lense".

(10) Carlson, D.D., and others. 1983. Water Resources Data—Louisiana Vol. II, South Louisiana.

Attached References: (to be mailed)

(1) Figure 4-1 (1 page) ICON
(2) Table 4-1R (4 pages) see columns on percent moisture and EC (ICON data)
(3) Figure 24 (1 page) Geological Cross Section (MP & A) map

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