

Appendix D

LAC 43:XIX.§611.F.1 Compliant Plan

For this site, the Most Feasible Plan proposed by MP&A complies with the Louisiana Department of Environmental Quality's Risk Evaluation/Corrective Action Program (RECAP), which is the State's risk-based protocol for environmental evaluation and remediation. MP&A's proposed Most Feasible Plan may not rigidly comply with every aspect of Statewide Order 29-B and LDNR, Office of Conservation's interpretation of Statewide Order 29-B. This Appendix presents a plan that fully complies with Statewide Order 29-B without exceptions (referred to as a "29-B Only Plan" hereafter) and is submitted solely to comply with LAC 43:XIX.§611's requirements to submit a 29-B only plan to remediate La. R.S. 30:29 litigation sites.

The implementation of a 29-B Only Plan would be excessive, wasteful, unnecessary, technically impracticable, infeasible, potentially harmful, economically unsound, unreasonable, and would result in significantly more damage than benefit. While this 29-B Only Plan adheres to Statewide Order 29-B, MP&A does not support or endorse the adoption of this plan as the most feasible plan for this site.

In summary, in addition to the work proposed in the MP&A Most Feasible Plan, the 29-B Only Plan would include excavation/removal of soil and sediment with concentrations above the Statewide Order 29-B pit closure standards and implementing groundwater recovery to achieve as yet undefined background conditions but as explained below a 29-B Only Plan should not be adopted for this site because: (1) it is unnecessary given the current condition of the property, which meets RECAP and USEPA human health and ecological standards and continues to be used for its highest and best use; (2) a 29-B Only Plan is technically impracticable because it would result in significantly more damage than benefit to the environment and public health; (3) it would necessarily disrupt current and future E&P operations on the property; (4) it would ignore LDNR's approval of risk-based standards in the 2011 MOU; and (5) it is not the most feasible plan to protect the health, safety and welfare of the people of Louisiana. For these reasons, MP&A has submitted a plan, including the application of appropriate exceptions under Section 319 and the 2011 Memorandum of Understanding between LDNR and the Louisiana Department of Environmental Quality (LDEQ) to support the application of RECAP. MP&A requests that the RECAP-based plan it proposes be adopted as the most feasible plan for this site.

The 29-B Only Plan is not appropriate for this property, and should be rejected for the following reasons:

- The 2003 RECAP document provides the comprehensive risk-based program necessary for fully evaluating this complex, multi-media site. The US EPA, Louisiana, and other state risk-based standards have been developed and refined after Statewide Order 29-B; therefore, they provide standards that appropriately supplement 29-B standards;

- The February 2011 Memorandum of Understanding (MOU) between the LDNR and the LDEQ recognizes the application of RECAP, a risk-based approach to assessing the need for remediation as compared to the rigid 1986 Statewide Order 29-B pit closure standards, which are not risk-based and do not include numeric groundwater standards. Furthermore, the MOU states that all site evaluation or remediation plans or final results submitted pursuant to RECAP Management Option 3 (MO-3) assessments, or addressing air, surface water, water bottoms (sediments) or non-Statewide Order No. 29-B parameters shall be forwarded to DEQ for review and comment;
- The extensive, site specific Human Health and Ecological Risk Assessments and the Crab and Forage Fish Studies demonstrate that the site poses no unacceptable risk to human health and the environment. As outlined in the LDEQ's RECAP preamble, risk to human health and the environment is the primary consideration when remedial decisions are made. The full RECAP MO-3 Risk Assessment and Ecological Assessment findings fully support a Most Feasible Plan with exceptions to Statewide Order 29-B (i.e., use of the more rigorous and widely-accepted RECAP standards);
- Approximately 75 years of E&P activities (from 1940 to present) consisting of drilling and operation of many oil wells, drilling and operation of salt water disposal wells (SWDs), construction and use of canals, pits, pipelines, tanks, historic discharge of produced water into surface water bodies, etc., were authorized by the lessor to extract the maximum amount of oil and gas from the property at issue. Although these long-term industrial operations, as expected, have left an industrial footprint on the property (which remains an active oil and gas E&P site), that footprint has not affected the past, current or reasonably anticipated future highest and best use of the property and does not pose an unacceptable risk to human health or the environment;
- The majority of UNOCAL's E&P development on the property occurred well before the introduction of modern environmental regulations including the Statewide Order 29-B pit closure rules promulgated in 1986, before prohibition of the discharge of produced water to surface water bodies, modern well plugging and abandonment procedures, etc. Therefore, strict application of Statewide Order 29-B, as opposed to Louisiana's risk-based RECAP standards, is not reasonable;
- The water quality in the shallowest, potentially useable water bearing zone starting at a depth of approximately 40-feet below the ground surface is naturally salty, with natural chloride, Total Dissolved Solids (TDS), iron and manganese concentrations greatly exceeding the EPA Secondary Maximum Contaminant Levels (SMCLs). An active, long-term, large scale pumping remedy for this zone in an attempt to reduce constituents to background levels will likely induce downward movement of naturally saltier surface water and will not achieve any benefit; further, the remedy would not make the water desirable to drink because it would naturally remain above SMCLs.
- The only fresh, high quality, Class 1 aquifer, the Upper Sand of the Chicot Aquifer, underlying the property occurs at depths below approximately 400-feet, has been utilized as a viable source of water for drinking and other purposes for

the property, shows no evidence of impact, and can continue to be utilized in the future;

- A remedy of the magnitude required to attempt to fully comply with Statewide Order 29-B is technically impracticable (not able to achieve end goals in a reasonable time frame), particularly for groundwater;
- Implementation of a 29-B Only Plan would destroy portions of a thriving ecosystem in the effort to attain soil, sediment and groundwater concentrations that would provide no environmental benefit;
- A 29-B Only Plan remedy would consume valuable and limited disposal capacity at commercial disposal facilities, with no benefit;
- A 29-B Only Plan remedy would result in an increased risk of environmental damage from transportation and disposal of site residues;
- The implementation of a 29-B Only Plan would do nothing to change the current or reasonably anticipated future use of the property and would, in fact, impede operations for the duration of the remedy;
- E&P operations continue on this property and are likely to continue for the foreseeable future. Given the lack of risk presented by the site conditions, remediation in areas of active operations (as required by a 29-B Only Plan) is wasteful, creates an unnecessary risk of undesirable events during remediation, will not likely achieve any environmental benefit and could interrupt or relocate some of the current operator's activities;
- The risks posed by implementation of a massive 29-B Only Plan are significant and must be considered. They include the remobilization of constituents that are currently buried in sediments into the environment; generation of additional open water areas as a result of massive soil excavation and removal; potential for subsidence due to the extraction of large volumes of shallow groundwater; and downward migration of naturally salty water in Schooner Bayou and the existing oilfield access canals;
- As identified in the US National Contingency Plan (NCP), the ultimate selection of a remedy by the agency is dependent upon five primary balancing criteria including (1) long-term effectiveness and permanence; (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability, and (5) cost. Rigid application of Statewide Order 29-B (i.e., implementation of a 29-B Only Plan), is not consistent with these criteria. If two remedies are equally feasible, reliable, and provide the same level of protection the least expensive remedy should be selected. Both the capital and long-term operational and maintenance costs for the remedial period must be considered. The most expensive remedy is not always the most feasible or best approach; and
- Pits closed prior to January 20, 1986, are not considered existing pits subject to Statewide Order 29-B standards. Thus, implementation of a 29-B Only Plan is not appropriate.

For these reasons and the exceptions set forth in Section 3.3, MP&A does not support the implementation of a 29-B Only Plan. MP&A recommends the adoption of its Most Feasible Plan that applies RECAP (as provided for in the 2011 Memorandum of Understanding between LDNR and the Louisiana Department of Environmental Quality).

The 29-B Only Remedy is based on the following scope and general assumptions:

- The property is a submerged wetland and there are, therefore, no salt standards applicable to the property;
- Assessment and removal of soils and sediments will be performed at each location where the Statewide Order 29-B pit closure standards have been exceeded. Specifically, this includes the locations shown in Figure 42 of MP&A's Feasible Plan: B2 (10-10.5' bgs); B9 (8-9' bgs); B13 (7.5-9.5' bgs); AB-18 (10-12' bgs); SED6 (0-2' bgs); SED20 (2-4' bgs); SED23 (0-2' bgs); SED26 (0-2' bgs); SED28 (0-4' bgs); SED29 (0-4' bgs); SED30 (0-2' bgs); SED31 (0-4' bgs); SED32 (0-2' bgs); SED33 (0-22' bgs); SS-8 (2-4' bgs); WL-1 (0-2' bgs); WL-3 (0-6' bgs); WL-4 (0-12.5' bgs); WL-5 (0-13' bgs); and WL-7 (4-6' bgs). WL-4 and WL-5 are located within the Tank Battery B former pit, which is included in MP&A's Feasible Evaluation/Remediation Plan;
- Evaluation and pumping to address groundwater where concentrations indicate any increase in concentrations over background (which has not been established for the property). This is based on the assumption that Statewide Order 29-B requires that groundwater be remediated to background conditions, regardless of risk or lack of risk posed by the conditions;

The following steps would be implemented as part of this 29-B Only Plan:

- Submit a plan to LDNR Office of Conservation for assessment and design activities;
- Apply for Coastal Use Permit and U.S. Army Corps of Engineers Wetlands Permit for assessment and remediation activities;
- Perform an assessment to delineate soil/sediment to Statewide Order 29-B closure standards at each of the areas listed above, to evaluate background groundwater conditions, and to obtain data needed to design a groundwater pumping system;
- Perform design activities for groundwater pumping;
- Submit a detailed implementation plan to LDNR OOC for remediation activities;
- Revise, if necessary, the Coastal Use Permit and U.S. Army Corps of Engineers Wetlands Permit applications;
- Excavate and transport offsite soil/sediment that exceeds Statewide Order 29-B standards;
- Backfill non-sediment areas to original grade;
- Re-establish vegetation;
- Install groundwater extraction wells; and
- Install groundwater recovery system and operate for a period of up to 30 years.

It has been assumed that the groundwater pumping remedy will continue for a period of 30 years. The time frame cannot be determined until pump tests and pilot testing is complete. The 30-year-time frame is consistent with EPA guidance on estimating the costs for groundwater pump and treat remedies.

In addition, much of the removal area is located within the footprint of the current operator's active facilities. The remedy will cause the disruption, or complete shutdown, of oil and gas production in the field and the costs of this business interruption will be significant and have not been included in the estimate.

The details of this plan and estimated implementation cost are included in Tables D-1, D-2 and D-3.

The hypothetical schedule for implementing a 29-B Only Plan would be generally as follows:

- Submit a Coastal Use Permit (CUP) application – approximately 60 days after adoption of the 29-B Only Plan;
- Receipt of the CUP would require at least 3 to 6 months, if it was possible to obtain LDNR Office of Coastal Management and U.S. Army Corps of Engineers approval;
- Assessment activities (soil/sediment sampling and groundwater assessment) would require approximately 6 months to complete;
- Soil and sediment remediation would require approximately 3 months to complete;
- Groundwater treatment system design and installation would require approximately 6 months to complete; and
- The groundwater extraction and disposal would be performed for up to 30 years.

**Table D-1
Statewide Order 29-B Only Plan**

*East White Lake Oil and Gas Field
Vermilion Parish, Louisiana*

	<u>Unit Cost</u>	<u>Units</u>	<u>Quantity</u>	<u>Cost</u>	<u>Cost Basis</u>
<u>Permitting, Planning and Reporting</u>					
Work Plan Development	\$25,000	unit	1	\$25,000	MP&A Estimate
Permitting (Coastal Use and Wetlands)	\$25,000	unit	1	\$25,000	MP&A Estimate
Closure Report Preparation and Submittal	\$50,000	unit	1	\$50,000	MP&A Estimate
<i>Permitting and Planning Subtotal</i>				<u>\$100,000</u>	
<u>Tank Battery B Pit Closure (Removal and Backfill approximately 1700 cubic yards)</u>					
Mobilization and Barge Charters	\$30,000	unit	1	\$30,000	SED-15 Area Unit Cost
Excavation and Transport to Disposal Facility	\$17,500	day	6	\$105,000	SED-15 Area Unit Cost
Purchase Backfill	\$19.50	cy	2,210	\$43,095	SED-15 Area Unit Cost
Receive, Transport and Place Backfill	\$18,000	day	6	\$108,000	SED-15 Area Unit Cost
Grade and Reseed	\$3,000	unit	1	\$3,000	SED-15 Area Unit Cost
Disposal of Excavated Material	\$23.50	bbl	8,160	\$191,760	ECOSERVE Rate
Barge Cleaning	\$6,000	barge	4	\$24,000	ECOSERVE Rate
Construction Oversight	\$1,300	day	12	\$15,600	MP&A Estimate
Sampling and Analytical	\$7,500	unit	1	\$7,500	MP&A Estimate
<i>Pit Closure Subtotal</i>				<u>\$527,955</u>	
<u>Delineation and Assessment Activities</u>					
Soil delineation (SED-28,-29,-30; WL-1,-3,-7; and AB-18)	\$50,000	lump	1	\$50,000	MPA Estimate
Sediment Delineation (B-2, 9, 13; SED-6,-20,-23,-31,-32,-33; SS-8)	\$50,000	lump	1	\$50,000	MPA Estimate
Groundwater background study and delineation to background	\$100,000	lump	1	\$100,000	MPA Estimate
<i>Delineation and Assessment Subtotal</i>				<u>\$200,000</u>	
<u>Additional Soil Removal (Removal and Backfill of four areas, estimated approximately 31,400 cubic yards)</u>					
Soil removal areas around SED-28,-29 and -30; WL-1,-3, and -7; and AB-18.					
Combined area to be excavated		acres	4.3		Review of data and historical aerials
Depths of Excavation (SED-28,-29,-30 Area)		feet	4		MPA Estimate
Depths of Excavation (WL-1,-3 Area)		feet	6		MPA Estimate
Depths of Excavation (WL-7 Area)		feet	6		MPA Estimate
Depths of Excavation (AB-18 Area)		feet	12		MPA Estimate
Volume Removed		cy	31,360		MPA Estimate
Volume Removed		bbl	150,528		4.8 bbl/cy
Production Rate (Excavation)		cy/day	500		MPA Estimate
Production Rate (Backfill)		cy/day	1,000		MPA Estimate
Mobilization and Barge Charters	\$30,000	unit	1	\$30,000	SED-15 Area Unit Cost
Excavation and Transport to Disposal Facility	\$17,500	day	63	\$1,097,600	Production Rate of 500 cy/day
Purchase Backfill	\$19.50	cy	40,768	\$794,976	Based on excavated volume adjusted by a factor of 1.3
Receive, Transport and Place Backfill	\$18,000	day	41	\$733,824	Production Rate of 500 cy/day
Grade and Reseed	\$2,000	acre	4.3	\$8,600	MP&A Estimate
Disposal of Excavated Material	\$23.50	bbl	150,528	\$3,537,408	ECOSERVE Rate
Barge Cleaning	\$6,000	barge	6	\$36,000	ECOSERVE Rate
Sheet Pile Purchase and Initial Placement	\$1,200	foot	500	\$600,000	Crown Estimate
Move and reset sheet pile	\$400	foot	2,269	\$907,600	Crown Estimate, perimeter for areas
Construction Oversight	\$1,300	day	73	\$94,786	Assumes 75% of the time concurrent excavation & backfill
Sampling and Analytical	\$2,000	acre	4.3	\$8,600	MP&A Estimate
<i>Soil Removal Subtotal</i>				<u>\$7,849,394</u>	
<u>Sediment Removal (Removal of Approximately 11,390 cy)</u>					
Delineate and excavate areas around B-2, 9 and 13; SED-6,-20,-23,-26,-31,-32, and -33; and SS-8.					
Combined area to be excavated		acres	1.5		MPA Estimate
Depths of Excavation (weighted average)		feet	4.7		MPA Estimate
Volume Removed		cy	11,386		MPA Estimate
Volume Removed		bbl	54,653		4.8 bbl/cy
Production Rate		cy/day	2,000		clamshell for sediments
Mobilization and Barge Charters	\$30,000	unit	1	\$30,000	SED-15 Area Unit Cost
Excavation and Transport to Disposal Facility	\$17,500	day	6	\$99,628	Production Rate of 2000 cy/day
Purchase Backfill	\$19.50	cy	14,802	\$288,635	Based on excavated volume adjusted by a factor of 1.3
Receive, Transport and Place Backfill	\$18,000	day	7	\$133,216	Production Rate of 2000 cy/day
Disposal of Excavated Material	\$23.50	bbl	54,653	\$1,284,341	ECOSERVE Rate
Barge Cleaning	\$6,000	barge	4	\$24,000	ECOSERVE Rate
Construction Oversight	\$1,300	day	8	\$9,806	Assumes 75% of the time concurrent excavation & backfill
Sampling and Analytical	\$2,000	acre	10	\$20,000	MP&A Estimate
<i>Sediment Removal Subtotal</i>				<u>\$1,889,626</u>	
<i>Subtotal</i>				<u>\$10,366,974</u>	
20% Contingency				<u>\$2,073,395</u>	
Subtotal with contingency				<u>\$12,440,369</u>	
<u>Statewide Order 29-B Compliant Groundwater Remedy</u>					
Groundwater Remediation Estimate				\$10,110,000	Annual Cost Basis
Net Present Value - Groundwater Remediation				\$6,932,207	Net Present Value Basis
TOTAL				<u>\$19,372,577</u>	Net Present Value Basis
			OR...	<u>\$19,400,000</u>	

Notes:

- Volume assumptions are stated within each subsection.
- Unit prices on pit closure activities include markup on contracted tasks.
- Backfill quantity based on 30% increase from in-place to loose cubic yards.
- For 29-B exceedance remediation, backfill is not included for canal sediment locations.
- For canals with O&G exceedances greater than 3.0% area of impact assumed to be width of canal by 50 ft length (for O&G less than 3% 25 ft length)

Table D-2
Statewide Order 29-B Only Plan Groundwater Recovery and Disposal Cost Estimate

East White Lake Oil and Gas Field
Vermilion Parish, Louisiana

<u>Initial RW Installation, Pump Test, and Pilot Evaluation</u>	<u>Unit Cost</u>	<u>Units</u>	<u>Quantity</u>	<u>Cost</u>	<u>Cost Basis</u>
Drill Rig Mobilization/Demobilization	\$1,850	unit	1	\$2,035	05/27/2014 Walker Hill Estimate
Sonic Drill Rig and Crew (one four-inch well and one two-inch well)	\$5,500	day	5	\$30,250	05/27/2014 Walker Hill Estimate
Four-inch PVC Well Materials	\$25	foot	60	\$1,650	05/27/2014 Walker Hill Estimate
Two-inch PVC Well Materials	\$12	unit	60	\$792	05/27/2014 Walker Hill Estimate
Drill Crew Per Diem	\$300	day	5	\$1,650	05/27/2014 Walker Hill Estimate
Above-grade Surface Completions	\$600	unit	2	\$1,320	05/27/2014 Walker Hill Estimate
2 HP 55 GPM Well Pump, Motor, and Control Box	\$2,500	unit	1	\$2,750	05/27/2014 Walker Hill Estimate
Boat/Barge for Access to Drilling Locations	\$4,800	unit	5	\$26,400	05/27/2014 Walker Hill Estimate
Temporary Electrical Hookup	\$3,000	unit	1	\$3,300	MP&A Cost
MP&A Oversight, Development, and Equipment	\$1,500	day	6	\$9,000	MP&A Cost
MP&A Labor for 72-Hour Pump Test	\$3,750	day	3	\$11,250	MP&A Cost
Data Loggers for Pump Test	\$2,000	unit	2	\$4,400	MP&A Cost
Water Barge for Pump Test	\$350	day	4	\$1,540	Crain Brothers Estimate
Data Evaluation and Reporting	\$7,500	unit	1	\$7,500	MP&A Cost
<i>Initial RW Installation, Pump Test, and Pilot Evaluation Subtotal</i>				<u>\$103,837</u>	Includes 10% markup on contracted items
<u>Final GW RW Installation - Assume Ten Additional Recovery Well</u> <i>(5 wells to 60 ft bgs and 5 wells to 90 ft bgs)</i>	<u>Unit Cost</u>	<u>Units</u>	<u>Quantity</u>	<u>Cost</u>	<u>Cost Basis</u>
Drill Rig Mobilization/Demobilization	\$1,850	unit	1	\$2,035	05/27/2014 Walker Hill Estimate
Sonic Drill Rig and Crew (one four-inch well)	\$5,500	day	15	\$90,750	05/27/2014 Walker Hill Estimate
Four-inch PVC Well Materials	\$25	foot	750	\$20,625	05/27/2014 Walker Hill Estimate
Drill Crew Per Diem	\$300	day	15	\$4,950	05/27/2014 Walker Hill Estimate
Above-grade Surface Completions	\$600	unit	15	\$9,900	05/27/2014 Walker Hill Estimate
2 HP 55 GPM Well Pump, Motor, and Control Box	\$2,500	unit	10	\$27,500	05/27/2014 Walker Hill Estimate
Boat/Barge for Access to Drilling Locations	\$4,800	unit	15	\$79,200	05/27/2014 Walker Hill Estimate
MP&A Oversight, Development, and Equipment	\$1,250	day	15	\$18,750	MP&A Cost
GW Recovery Distribution Piping and Fittings	\$29,386	unit	1	\$32,324	ICON Cost - 11 wells x 10 wells
Plumbing, Two-man Crew	\$130	man hr	220	\$31,460	ICON Cost - 11 wells x 10 wells
Electrical Hookup	\$350	hr	110	\$42,350	ICON Cost - 11 wells x 10 wells
Storage Tank for Recovered Groundwater	\$25,000	unit	2	\$55,000	MP&A Cost
Permitting and Reporting	\$15,000	unit	1	\$15,000	MP&A Cost
<i>Final GW RW Installation Subtotal</i>				<u>\$429,844</u>	Includes 10% markup on contracted items

**Table D-2
Statewide Order 29-B Only Plan Groundwater Recovery and Disposal Cost Estimate**

*East White Lake Oil and Gas Field
Vermilion Parish, Louisiana*

<u>Monitoring Well Surveying</u>	<u>Unit Cost</u>	<u>Units</u>	<u>Quantity</u>		<u>Cost</u>	<u>Cost Basis</u>
Two-man Survey Crew plus Equipment and Office	\$2,500	day	5		\$12,500	MP&A Estimate
<i>Monitoring Well Surveying Subtotal</i>					<i>\$16,500</i>	Includes 10% markup on contracted items
 <u>On-site Disposal Capital Costs</u>	 <u>Unit Cost</u>	 <u>Units</u>	 <u>Quantity</u>		 <u>Cost</u>	 <u>Cost Basis</u>
Disposal Wells	\$1,000,000	unit	2		\$2,000,000	MP&A Estimate, Peak Energy
Three-inch Flowline at 8,000 Linear Feet to Connect to Existing Operations	\$30	feet	8,000		\$240,000	Estimate from Peak Energy
<i>On-site Disposal Capital Costs Subtotal</i>					<i>\$2,240,000</i>	
 <u>Recovery Operation and Maintenance</u>	 <u>Unit Cost</u>	 <u>Units</u>	 <u>Quantity</u>	 <u>Quarterly or Annual</u>	 <u>Cost</u>	 <u>Cost Basis</u>
Energy Consumption (Recovery Pumps)	\$0.08	kWh	133,700	120	\$1,411,867	MP&A Estimate (Vermilion Parish 2013)
Personnel (O&M)	\$65	hr	312	120	\$2,433,600	MP&A Estimate - Assumes 24 hours per week
Project Management	\$100	hr	20	120	\$240,000	MP&A Estimate - Assumes 20 hours per quarter
Miscellaneous Equipment	\$2,000	year	1	30	\$66,000	MP&A Estimate
Pump Replacement (every five years)	\$5,000	year	1	30	\$165,000	MP&A Estimate
Quarterly Sampling	\$15,000	year	1	30	\$450,000	MP&A Estimate
<i>Recovery Operation and Maintenance Subtotal</i>					<i>\$4,766,467</i>	Includes 10% markup on contracted items
 <u>Project Management and Reporting</u>	 <u>Unit Cost</u>	 <u>Units</u>	 <u>Quantity</u>	 <u>Years</u>	 <u>Cost</u>	 <u>Cost Basis</u>
Project Management	\$5,000	year	1	30	\$150,000	MP&A Estimate
Data Evaluation and Reporting	\$20,000	year	1	30	\$600,000	MP&A Estimate
<i>Project Management and Reporting Subtotal</i>					<i>\$750,000</i>	
 <u>On-site Disposal Operation and Maintenance (Annual)</u>	 <u>Unit Cost</u>	 <u>Units</u>	 <u>Quantity</u>	 <u>Years</u>	 <u>Cost</u>	 <u>Cost Basis</u>
Chemical Treatment (Biocide)	\$10,000	year	1	30	\$300,000	ICON Unit Cost
Acid Wash SWD (\$100,000 every two years)	\$50,000	year	1	30	\$1,500,000	MP&A Cost
<i>On-site Disposal Operation and Maintenance (Annual) Subtotal</i>					<i>\$1,800,000</i>	
 Total Cost - 30 Years of Operation					\$10,106,648	
				SAY . . .	\$10,110,000	

**Table D-3
Net Present Value Calculation - 29-B Only Plan Groundwater Treatment Remedy**

*East White Lake Oil and Gas Field
Vermilion Parish, Louisiana*

Capital Costs				
<u>t</u>	<u>x</u>	<u>rate</u>	<u>Amount</u>	
0	\$2,790,181	0.04	<u>\$2,790,181</u>	Wells & Equipment Purchase & Installation Costs - 11 Wells
		Subtotal	\$2,790,181	

Plume A - Ground Water Recovery System Operation and Maintenance and Transportation and Disposal Costs

<u>t</u>	<u>x</u>	<u>rate</u>	<u>Annual Cost</u>	
1	\$243,882	0.04	\$234,502	Annual O&M Cost based upon annual cost for 11 wells
2	\$243,882	0.04	\$225,483	
3	\$243,882	0.04	\$216,810	
4	\$243,882	0.04	\$208,472	
5	\$243,882	0.04	\$200,453	
6	\$243,882	0.04	\$192,744	
7	\$243,882	0.04	\$185,330	
8	\$243,882	0.04	\$178,202	
9	\$243,882	0.04	\$171,348	
10	\$243,882	0.04	\$164,758	
11	\$243,882	0.04	\$158,421	
12	\$243,882	0.04	\$152,328	
13	\$243,882	0.04	\$146,469	
14	\$243,882	0.04	\$140,836	
15	\$243,882	0.04	\$135,419	
16	\$243,882	0.04	\$130,211	
17	\$243,882	0.04	\$125,203	
18	\$243,882	0.04	\$120,387	
19	\$243,882	0.04	\$115,757	
20	\$243,882	0.04	\$111,305	
21	\$243,882	0.04	\$107,024	
22	\$243,882	0.04	\$102,907	
23	\$243,882	0.04	\$98,949	
24	\$243,882	0.04	\$95,144	
25	\$243,882	0.04	\$91,484	
26	\$243,882	0.04	\$87,966	
27	\$243,882	0.04	\$84,582	
28	\$243,882	0.04	\$81,329	
29	\$243,882	0.04	\$78,201	
30	\$243,882	0.04	\$75,193	
		Subtotal	\$4,142,026	

Total of Equip, Install, O&M, & T& D Costs **\$6,932,207**

Notes:
Present value equation from A Guide to Developing and Documenting Cost Estimates During the Feasibility Study (EPA 540-R-00-002, July 2000).
Discount rate from: <http://www.ofi.state.la.us/Legal%20Judicial%20Rate.htm>