APPENDIX B: REMEDIATION PROGRAMS

Appendix B is submitted in support of Chevron Corporation’s March 6, 2012 Supplement to its February 22, 2012 Memorial Amicus Curiae in Opposition to the Request for Precautionary Measures Indicated to the Republic of Ecuador, and Filed by Plaintiffs’ Legal Representatives In Aguinda et al. v. Chevron Corp. on February 9, 2012.

I. Factual Background Concerning TexPet’s Remediation

A. Upon Expiration of the Consortium, TexPet Agreed To RemEDIATE Its Share of the Concession Area in Exchange for a Comprehensive Release

1. In 1964, Ecuador granted oil exploration and production rights in Ecuador’s Oriente region to TexPet and the Ecuadorian Gulf Oil Company through a concession contract,\(^1\) and the venture came to be known as the “Consortium.” By 1976, Ecuador’s state-owned oil company, PetroEcuador (formerly CEPE), had acquired a 62.5% majority interest in the Consortium, with TexPet retaining a 37.5% minority interest.\(^2\) TexPet was the operator for the Consortium until 1990, when Petroamazonas (a PetroEcuador subsidiary) took over that role. As operator, TexPet adhered to standard industry practices of the time related to environmental management, as later independent environmental audits confirmed. In 1992, the concession contract expired, the Consortium ended, and PetroEcuador became sole owner of all of the fields and installations.

2. After the Consortium expired, TexPet and Ecuador hired HBT Agra Limited, an independent environmental consulting firm, to conduct an environmental audit of the former concession area; TexPet separately hired Fugro-McClelland (West), Inc. for the same purpose. Both of these audits found minimal environmental impact arising from the Consortium’s operations, and recommended that certain remedial actions be taken.\(^3\) HBT Agra recommended environmental remediation that it estimated would cost approximately US$ 11 million,\(^4\) while Fugro-McClelland’s recommended similar remediation that it estimated would cost approximately US$ 8 million.\(^5\)

3. Between PetroEcuador and TexPet, only TexPet was willing to perform the remediation associated with the winding-up of the Consortium. TexPet accordingly agreed to perform remediation commensurate with its 37.5% minority interest in the Consortium in

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\(^1\) Concession Contract between the Government of Ecuador and TexPet, Feb. 21, 1964.


\(^4\) HBT Agra Ltd: Environmental Audit and Assessment of the PetroEcuador-Texaco Consortium Oil Fields Until June 30, 1990, Volume II, Oct. 1993, at i, 4-18 (Tables 4-5 to 4-8).

exchange for a release from any liability arising out of the Consortium's operations. Although the Republic of Ecuador acknowledged PetroEcuador's share of responsibility as 62.5% majority owner of the former Consortium, PetroEcuador claimed to lack funds to perform any environmental remediation at that time. The release agreement between TexPet, Ecuador, and PetroEcuador left PetroEcuador to perform any remaining remediation as part of its ongoing 100% operation and management of the former concession fields.


5. The Memorandum of Understanding developed through an open and transparent negotiation process, with environmental groups acting "in democratic representation of the peoples of the Ecuadorian Oriente and especially of the areas affected by petroleum operations and the indigenous organizations." Reflecting this cooperation with the government and various groups, including the Amazon Defense Front, Ecuadorian officials repeated, under oath, that the negotiations leading to these settlements were "open for all those who wanted to attend," and members of many environmental organizations, including the Amazon Defense Front, did attend. These Government officials saw themselves as the "facilitator[s]" of an open dialogue between the communities and TexPet, and followed orders from the "National Congress to take into account the problems that Amazonian groups were having." As a result of this dialogue, the environmental groups were "behind everything that was being done," leading to a final instrument that considered and accounted for the interests of individuals and communities in the concession areas.

6. On March 23, 1995, Ecuador, PetroEcuador, and TexPet executed a Scope of the Environmental Remedial Mitigation Work and Socio-Economic Compensation (the "Scope of Work") that listed the specific sites that TexPet would be obligated to remediate or otherwise address in accordance with the document's terms.

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14. R. Veiga Witness Statement, ¶ 26
7. On May 4, 1995, Ecuador, PetroEcuador, and TexPet executed a settlement agreement (the “1995 Settlement Agreement”), pursuant to which TexPet agreed to perform extensive “Environmental Remedial and Mitigation Work,” including “well pit site closure[s],” modifications to “production stations,” examination of “abandoned installations,” “Hydrocarbon contaminated soil remediation,” “ revegetation,” and the building of “containment dikes.” TexPet also agreed to provide “socio-economic compensation” for the affected areas.

8. TexPet Completed Its Remediation to Ecuador’s Approval, and Ecuador Released TexPet and Its Affiliates From Liability for Environmental Harm

1. TexPet Hired Woodward-Clyde to Prepare the Remedial Action Plan

8. The 1995 Settlement Agreement required TexPet to prepare a Remedial Action Plan (the “Action Plan”) to implement the Scope of Work. To prepare the Action Plan, TexPet hired a contractor from a list of independent environmental engineering companies approved by Ecuador’s Ministry of Energy and Mines on behalf of Ecuador and PetroEcuador. That company was Woodward-Clyde International, Inc. (“Woodward-Clyde”), now called URS Corporation—one of the most reputable environmental engineering firms in the world. As mandated by the 1995 Settlement Agreement, TexPet executed a “Service Agreement” with Woodward-Clyde setting out the terms and conditions under which the contractor would prepare the required Action Plan.

9. In July 1995, Woodward-Clyde conducted an environmental investigation of the specific sites and facilities listed in the Scope of Work in order to develop the Action Plan. Based on data gathered during this investigation, and following the standards delineated in the 1994 Memorandum of Understanding, the 1995 Scope of Work, and the 1995 Settlement Agreement, Woodward-Clyde classified pits, well sites, production stations, and other areas potentially requiring some remediation as either within or outside of TexPet’s remediation obligations.

10. In August 1995, Woodward-Clyde submitted a draft Action Plan to Ecuador, PetroEcuador, and TexPet. Following review and amendment, on September 8, 1995,

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17 1995 Settlement Agreement, Art. II.

18 *Id.* Art. III, 3.1 (citing Memorandum 005-SMA-95 of February 7, 1995, signed by the Subsecretary of the Environment).

19 TexPet originally signed an agreement with both Woodward-Clyde and Canonie Environmental Services, which was subsequently acquired by Smith Environmental. A subsidiary of Woodward-Clyde, Sert Ingenieurs-Conseils S.A., signed a remediation contract with TexPet to perform the work jointly with Smith Environmental. Ultimately, Sert Ingenieurs-Conseils, S.A. took over all responsibilities from Smith Environmental. For purposes of this document, all of these parties are referred to individually or collectively as “Woodward-Clyde.”

PetroEcuador, the Minister of Energy and Mines (acting on behalf of Ecuador), and TexPet signed and accepted the Action Plan.\textsuperscript{21} The Minister of Energy and Mines also issued a letter to TexPet's legal representative confirming that Ecuador accepted the Action Plan and agreed that the Action Plan met Ecuador's requirements.\textsuperscript{22}

2. The Remedial Action Plan

11. The Action Plan set forth the governing environmental remediation criteria and guidelines, and listed the various remedial actions that Woodward-Clyde would perform on behalf of TexPet to address every site and facility identified in the Scope of Work.\textsuperscript{23} The Action Plan specifically noted that the "[c]riteria and guidelines were developed in accordance with the Ecuadorian Regulations applicable at the signature date of the contract for the execution of the remedial action work (May 4, 1995), especially 'Acuerdo Ministerial No. 621 y Decreto Ejecutivo 1802' and current practice in tropical forest environment."\textsuperscript{24} The Action Plan also noted that "[t]he criteria for the treatment of soil and sludge was prepared considering current internationally accepted practice for soil and sludge remediation in tropical rainforest."\textsuperscript{25}

12. The Action Plan expressly indicated whether particular pits and other areas at each site listed in the Scope of Work and the Action Plan required remediation and, if so, whether TexPet was responsible for the remediation.\textsuperscript{26} It followed the categories designated for remediation in the Scope of Work. For each of these categories, the Action Plan set forth the specific remediation criteria.

13. The Action Plan also set out specific and detailed requirements governing sampling measures, testing procedures, and numerical acceptance criteria that the parties agreed were to be used to determine what, if any, remediation would be required at a particular location, and whether completed remediation work had been successful.\textsuperscript{27}

a. Pit Closure

14. The first step under the Action Plan was to determine whether the pits listed in the Scope of Work needed to be remediated.

15. The Action Plan set forth a physical process required to remediate a particular pit. Woodward-Clyde was to:

- (vii) prepare the site;
- (viii) remove debris and crude oil from the site, including washing the debris to remove oil;
- (ix) transport and deliver recovered oil to PetroEcuador;

\textsuperscript{21} Action Plan, at Signature Page.
\textsuperscript{22} Letter from Dr. Galo Abril Ojeda to Rodrigo Pérez dated 8 September 1995.
\textsuperscript{23} Action Plan, at 1.
\textsuperscript{24} \textit{Id} at 4 (emphasis added).
\textsuperscript{25} \textit{Id} at 4.
\textsuperscript{26} \textit{Id} at 1, and Tables 3-3 through 3-6.
\textsuperscript{27} Action Plan, at 8.
(x) treat and discharge the pit’s water in accordance with the water discharge criteria;
(xi) treat visibly contaminated soil;
(xii) treat any sludge; and
(xiii) backfill and regrade the pit with soil.  

The Action Plan also required Woodard-Clyde to wash, burn or transport to a landfill any trash in the area. The Action Plan’s remediation process was consistent with industry-standard methods for pit remediation at the time, and remains so today.

16. After a pit had been remediated, the Action Plan mandated that the cleaned site go through a multi-point sample analysis process. Ecuador requested, and the parties thereby agreed, to use a modified version of the Toxicity Characteristic Leaching Procedure (“TCLP”) test. The TCLP test is a standard U.S. Environmental Protection Agency (“USEPA”) test used to determine the amount of a contaminant, if any, that will leach out and potentially migrate into other areas when rain or other water moves through contaminated soil. Some modifications to the TCLP test method were necessary to make it practical for use in the field laboratory. During the remediation period, in March 1997, the parties added a TPH test on the soil as an additional standard applied prospectively to assess cleanup on newly remediated pits.

b. Other Remediation Action Requirements

17. The Action Plan also described equipment modifications that TexPet had to address at 13 of PetroEcuador’s active production stations. The modifications included work on produced-water filters, produced-water tanks, high-pressure injection pumps, transfer-booster pumps, and station piping.

18. At abandoned facilities, the Action Plan required clean-up of contamination on the pad, pit closure, well plugging and abandonment, and revegetation of affected areas. Generally, contaminated soil and pits at the abandoned facilities were subject to the pit remediation criteria described above.

19. The Action Plan also required environmental remediation for identified areas of soil contamination, likely from spills, not contained within pits. As to these particularly identified areas, TexPet was required to remediate the areas presumed to pre-date June 30, 1990, with soil contamination that tested above 5,000 mg/kg TPH. In such cases, Woodard-Clyde excavated the soil for offsite treatment, and backfilled and regraded the treated area.

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29 Id. at 6.
30 Action Plan at Table 24.
31 Action Plan at 18.
32 Id. at 18.
33 Id. at 20.
20. Furthermore, the Action Plan required that secondary containment dikes around above-ground storage tanks be built at three designated sites. It specified the size of the required dikes and the dike construction materials.\textsuperscript{34}

21. Upon completion of the remedial action or cleanup at each site, TexPet had to file a completion notification with the Ministry of Energy and Mines, along with specified quality control documentation.\textsuperscript{35} The Ministry could either approve the work or notify TexPet that the work failed to meet the applicable standards.\textsuperscript{36} If the parties disagreed about the adequacy of any of the remedial work, an Independent Technical Arbitrator would decide the issue.\textsuperscript{27}

3. TexPet Remediated the Concession Area According to the Remedial Action Plan

22. Between October 1995 and September 1998, Woodward-Clyde completed all of the remedial actions that TexPet was required to perform under the 1995 Settlement Agreement, the Scope of Work, and the Action Plan.\textsuperscript{37} The Government of Ecuador provided a certification of completeness.\textsuperscript{38}

23. Once the work began, and as anticipated by the Scope of Work, some adjustments to the Action Plan were necessary. During the remediation process, Woodward-Clyde discovered 25 additional pre-1990 pits and seven additional pre-1990 spill areas.\textsuperscript{40} It investigated them, determined that some were contaminated, and added the contaminated ones to its work list.\textsuperscript{41} Twelve pits and one spill were also removed from the Action Plan’s task list because Woodward-Clyde’s field investigation found that PetroEcuador’s activities (after the remedial investigation inspection) had changed conditions at those sites.\textsuperscript{42} Ecuador reviewed and approved all of these additions to and deletions from the scope of TexPet’s remediation obligations.\textsuperscript{43}

24. The process for remediating pits closely followed, and was even more comprehensive than, the Action Plan’s basic cleanup requirements. Woodward-Clyde’s remediation consisted of an eight-step process:

(i) prepare the pit by clearing vegetation to gain access to the pit;
(ii) remove, clean, and burn or landfill the pit’s debris;

\textsuperscript{34} \textit{Id.} \textit{at} 33.
\textsuperscript{35} \textit{Id.} \textit{at} 2.
\textsuperscript{36} 1995 Settlement Agreement, Art. IV.
\textsuperscript{37} \textit{Id.} \textit{at} Art. IV.
\textsuperscript{39} \textit{Id.} \textit{at} 6-8.
\textsuperscript{40} \textit{Id.} \textit{at} 3-2.
\textsuperscript{41} \textit{Id.} \textit{at} 3-2.
\textsuperscript{42} \textit{Id.} \textit{at} 3-2.
\textsuperscript{43} \textit{See.} \textit{e.g.,} Global \textit{Acta} No. 52, Sept. 24, 1998, at 3, 4, 5, 6 and 7 (Eng.); 1998 Final Release at 2 and 3.
(iii) remove and process pumpable crude oil prior to injection in PetroEcuador’s pipeline and remove non-pumpable (asphalt-like) crude oil and dispose of it in concrete vaults;

(iv) treat water using filtration, flocculation, or aeration to remove solids; introduce oxygen into the water; and discharge it to a water body when post-treatment testing showed compliance with the applicable Ecuadorian water discharge standards;

(v) treat soil and sludge by performing bioremediation, stabilization, encapsulation, or surfactant-enhanced recovery (washing to remove oil) on soil removed from pits and spill zones,

(vi) sample remediated soils to ensure compliance with applicable cleanup standards;

(vii) backfill and grade the remediated pits; and

(viii) revegetate and regrade pits with native plants appropriate for the region and the identified land use.44

25. As the Government strongly encouraged, Woodward-Clyde hired local Ecuadorian subcontractors to perform the various pit-remediation tasks whenever possible.45 Ecuador approved the hiring of each subcontractor and the remediation technologies that each subcontractor would employ when performing its assignments.46 Woodward-Clyde personnel supervised the subcontractors’ field work to ensure their compliance with the Scope of Work and the Action Plan.47

26. In March 1997, when the remediation was well underway, the Government requested an additional cleanup criterion.48 For a pit to be considered closed after that date, its soil had to meet the existing TCLP leachate standard and also not exceed a TPH standard of 5,000 mg/kg.

27. After remediating each site, consistent with the Action Plan’s specifications, Woodward-Clyde collected multi-point composite soil samples to confirm that the cleanup was successful.49 The samples were analyzed by an independent laboratory staffed with employees of the Universidad Central of Quito, and a subset of samples was sent to the United States for verification.50

28. For each remediated site, Woodward-Clyde provided Ecuador with the results of the confirmatory soil samples, photographs, and summaries of the completed work activity.51

44 Woodward-Clyde Final Report, Vol. 1 at 3-4 through 3-10.
46 Id. at 3-11.
47 Id. at 3-10.
50 Id. at 2-1.
51 Id. at 3-14.
Ecuador reviewed this information and approved the work that Woodward-Clyde completed for all sites assigned to TexPet for action. Occasionally, Ecuador required additional remediation work before it would issue its final approval of work completed at a particular site.

29. Woodward-Clyde performed remediation at 133 (or about 41%) of the 321 identified well sites. It remediated and closed 162 pits and six spill areas at those sites. The post-cleanup confirmatory soil sampling showed that Woodward-Clyde met the applicable cleanup standard for each site.

30. Woodward-Clyde completed other tasks assigned to TexPet under the Action Plan, including (i) construction of secondary containment at several production stations; (ii) delivery and installation of produced-water reinjection equipment; (iii) completion of a pipeline design and installation project; and (iv) construction of a plant so that PetroEcuador could reuse oil recovered from the pits. The treatment-conveyance and reinjection facilities began operating in 1996, and Ecuador certified that TexPet provided the required produced water treatment and discharge infrastructure.

31. TexPet also provided socio-economic compensation to Ecuador as required under the 1995 Settlement Agreement. In particular, it (i) paid Ecuador US$ 1 million to be used to build four schools and adjacent medical clinics; (ii) paid US$ 3.8 million to complete various social interest projects, including installing drinking water systems and sewage handling systems; (iii) paid US$ 1 million to fund natural resource projects to benefit indigenous peoples; and (iv) funded the purchase of an airplane to provide residents of the Oriente better access to healthcare.

32. Numerous contemporaneous documents demonstrate that TexPet conducted proper and complete remediation. In addition to interim documentation, Woodward-Clyde prepared a detailed final project report that described the completed tasks, and through presentation of appropriate post-remediation sampling data, photographs, and physical inspections by Government officials, established that every pit and other remediated area met the established acceptance criteria as determined by the results of samples analyzed by an independent laboratory.

33. Ultimately, TexPet spent approximately US$ 40 million to satisfy its environmental remediation and community development obligations mandated by the 1995 Settlement Agreement, the Scope of Work, and the Action Plan. Its costs for the remediation

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52 Id. at 3-14.
53 Id. at 3-1, 3-2 and Table 3-1, and 1-2, table 1-1.
54 Id. at 3-1, 3-2, and Table 3-1.
55 Id. at 3-15 through 3-21, 3-23, 3-25, 3-26, 3-28, and 3-30.
56 Id. at 7-2 through 7-8.
57 Id. at 7-8; see also 1998 Final Release.
58 1998 Final Release; see also Affidavit of Ricardo Reis Veiga, Jan. 16, 2007, ¶ 43; see also R. Veiga Witness Statement, ¶¶ 31, 39, 40.
60 R. Veiga Witness Statement, ¶ 41.
work alone were about US$ 34 million, which exceeded both HBT AGRA’s remediation cost estimate of US$ 13,274,000 and Fugro-McClelland’s remediation cost estimate of US$ 8,482,000.

4. Ecuador and PetroEcuador Formally Approved the Remediation Work

34. The responsible Government ministries and agencies oversaw, inspected and approved all of the environmental remediation work that Woodward-Clyde performed on TexPet’s behalf, and they fully documented their activities in a series of official records called “Actas.”

35. During the course of the remediation work, Government personnel conducted field inspections and certified that the required remediation and reclamation work was completed properly. Inspectors from the Ministry of Energy and Mines, PetroEcuador, and Petroproducción (called “fiscalizadores”) monitored and reported to senior Government officials on Woodward-Clyde’s field work. The fiscalizadores also certified and approved the pit classification. The fiscalizadores prepared 52 inspection Actas (“Working Actas”) detailing their observations and conclusions. These Working Actas summarized the fiscalizadores’ (i) personal inspections of the TexPet remediation sites; (ii) review of the site-specific sampling and laboratory analytical data; and (iii) assessment of Woodward-Clyde’s cleanup work. Additional Actas confirmed that TexPet had complied with its equipment donation, cash contribution, and other socio-economic obligations under the parties’ agreements.

36. As might be expected in a project of this magnitude, the fiscalizadores and TexPet officials occasionally disagreed about the status of particular sites. In those instances, the parties acted in accordance with the 1995 Settlement Agreement’s dispute resolution provision and referred the matter to a technical arbitrator for resolution. In all cases, Ecuador either accepted the original post-remediation data as proof of acceptable work, or granted approval after Woodward-Clyde had conducted requested supplemental work. Therefore, the parties

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65 See, e.g., Approval Acta for the Delivery and Acceptance of Meeting Minutes, Nov. 15, 1995 (TexPet pays $1 million); Approval Acta of Jan. 25, 1996 (TexPet provides equipment for water reinjection); Approval Acta of Oct. 29, 1996 (TexPet provides equipment to Petroproducción); Approval Acta of Nov. 13, 1997 (TexPet delivers $1 million for the construction of education centers and medical centers); J. Connor Expert Report at 34, Attachment D.
67 See e.g. Official Letter No. 199, TexPet Letter MP-155/96 dated June 12, 2006 to Economist Jorge Pareja Cuculón, Ministry of Energy and Mines, Masager of Petroproducción; Official Letter No. 3363 dated June 20,
ultimately resolved all disagreements to Ecuador's satisfaction, as contemporaneous official Government records confirm.\textsuperscript{64} The final Working Acta, dated September 24, 1998 ("Global Acta No. 52"), concluded that there were no open deficiencies (except a single unaddressed spill that could not be cleaned up because Petroproducción had not cleaned up and closed a pit at one of its sites).\textsuperscript{65}

37. From October 1995 to September 1998, Ecuador issued more than 15 approval Actas documenting its acceptance of Woodward-Clyde's cleanup work and TexPet's other undertakings. Nine approval Actas addressed specific lists of pits and other areas, described the work that had been performed, and certified Ecuador's agreement that TexPet had remediated the identified areas in accordance with the parties' agreement.\textsuperscript{70} Each of these approval Actas was supported by test data collected from the remediated sites, photographs, and other documentation.\textsuperscript{71} Ecuador's and TexPet's representatives signed each approval Acta.\textsuperscript{72}

5. The 1998 Final Release

38. On September 30, 1998, Ecuador, PetroEcuador, and TexPet executed the final Acta (the "1998 Final Release"). It certified that TexPet had performed all of its obligations under the 1995 Settlement Agreement, and fully released TexPet and all of its affiliates from any and all public environmental liability arising from the Consortium's operations.\textsuperscript{73} Ecuador and PetroEcuador retained responsibility for any remaining environmental impact and remediation work.

\textsuperscript{64} See, e.g., Working Acta No. 9-RAT-96 of June 5, 1996 at 4 (noting that the VISTA-1 pit should be sampled again using adequate instruments to determine if the remediation was successful), Approval Acta of Nov. 22, 1996 at 3 (noting that the remediation of the VISTA-1 pit had been approved) and Approval Acta of Mar. 20, 1997 (noting again that the remediation of the VISTA-1 pit had been approved), Working Acta No. 12-RAT-96 of June 25, 1996 at 2, Approval Acta of November 22, 1996 at 6 (noting that the remediation for the SSF-66.1 pit had been approved), and Approval Acta of Mar. 20, 1997 (noting again that the remediation of the SSF-66.1 pit had been approved); Working Acta No. 15-RAT-96 of July 16, 1996 at 4; Approval Acta of November 22, 1996 at 5 (noting that the remediation of the SA-90.1 pit had been approved), Working Acta No. 15-RAT-96 of July 16, 1996 at 7; Approval Acta of Nov. 22, 1996 at 5 (noting that the remediation of the SSF-30.3 pit had been approved) and Approval Acta of Mar. 20, 1997 (noting again that the remediation of the SSF-30.3 pit had been approved).

\textsuperscript{65} Global Acta No. 52, Sept. 24, 1998 at 5. Because Petroproducción had not cleaned up and closed a pit at its site, TexPet was no longer obligated to remediate that specific spill. Instead, the parties agreed that TexPet would pay a specified amount as a voluntary contribution. Additional Acta signed by the Ministry of Energy and Mines, PetroEcuador, Petroproducción and TexPet on Sept. 30, 1998.


\textsuperscript{72} See, e.g., Approval Acta, Feb. 26, 1996.

\textsuperscript{73} 1998 Final Release.
6. There Is No Significant Risk to Human Health or the Environment Associated with TexPet-Remediated Sites

39. Between five and ten years after TexPet completed the remediation, during the judicial inspection process in the Lago Agrio Litigation between 2003 and 2008, various technical experts conducted an evaluation of potential risks posed to human health of the areas that TexPet remediated. Chevron’s experts conducted analyses of a broad range of chemical components indicative of potential risk to human health. The health-based screening levels were based on US EPA, American Society for Testing and Materials (“ASTM”) and World Health Organization (“WHO”) guidelines that addressed health risk issues associated with chemical exposures. The experts evaluated whether environmental conditions at both remediated and unremediated sites presented potentially significant risks to human health by comparing the results from the laboratory analysis of 1082 soil samples from 46 sites and 458 water samples to these screening levels. The results of this comprehensive risk evaluation showed that the soil, sediments and water affected by the Consortium’s historical oilfield operations do not pose a measurable risk to the health of local residents or workers. None of the soil samples collected from TexPet-remediated pits or spills exhibited concentrations of any potentially toxic hydrocarbon constituents above screening levels.

40. Chevron’s experts also found that there was no current impact on surface water quality from the historical discharges of produced water in the former Concession area. Of the 458 water samples collected, 440 did not contain petroleum-related chemicals at concentrations in excess of health-based screening levels and therefore met the relevant risk-based screening levels. 18 water samples exceeded a risk-based screening value. But after site-specific examinations—following the US EPA and WHO methodology—at none of the sample locations was that water currently used as a drinking water supply. Consequently, no person could reasonably be exposed to the water at these locations in a manner that would result in a measurable health risk.

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75 Id. at 11, 47-51.
76 Id. at 65-7.
77 Id. at 11.
78 Id. at 65-7.
79 Id. at 26; J. Connor, Response to Statements by Mr. Cabrera regarding Alleged Impacts to Water Resources in the PetroEcuador-Concession Area, Aug. 29, 2008, at 6.
81 Id.
82 J. Connor Expert Report § 3.6(a). As Mr. Connor explains, “of the 18 water samples exceeding health-based levels, only 10 are from locations (i.e., surface water streams) that could be potentially considered as a potential future water resource, under any hypothetical scenario. All 10 of these sampling locations are within streams that, at the time of sample collection, were impacted along a limited distance due to on-going leaks or discharges of produced water by PetroEcuador. Interviews with local residents indicate that the affected portions of these streams are not used as drinking water supplies. In addition, available information indicates that PetroEcuador has undertaken actions to terminate these produced water leaks.” Id.
41. Furthermore, the results of a survey of vegetative conditions at 14 former discharge points found the vegetation to be dense and healthy, with no indication of vegetative stress as a result of past discharge of produced water.\textsuperscript{64}

II. \textbf{ALL ENVIRONMENTAL ISSUES IN THE ORIENTE ARE THE RESPONSIBILITY OF AND ARE BEING ADDRESSED BY THE REPUBLIC OF ECUADOR}

A. Over the Past Twenty Years, the Ecuadorian State-Owned Oil Company, PetroEcuador, Has Greatly Expanded Oil Production In the Former Concession Area

42. Since the Consortium ended in 1992, TexPet has had no ownership interest or involvement in any production activities in Ecuador, and PetroEcuador has been the sole owner of continuous and expanding oil producing operations in the former Concession Area. PetroEcuador in the ensuing years has drilled more new wells (597) than the Consortium drilled during its life (321).\textsuperscript{85}

43. PetroEcuador is a large and profitable oil company. It ranks among the top 100 oil companies in the world and is the fourth leading producer of oil and gas in Latin America. From 1992 to 2008, PetroEcuador's operations in the former concession produced over 1.2 billion barrels of crude oil with a market value of more than US$ 94 billion.\textsuperscript{86} And the Republic of Ecuador has granted many other oil concessions throughout the Amazon region. Hence, from 2002 through 2009, only 42% of Ecuador's Amazonian oil production came from the former concession.\textsuperscript{87} Today, Ecuador's oil industry thrives, producing more than 150 million barrels of crude oil annually,\textsuperscript{88} and Ecuador continues to expand its oil operations by offering new concession contracts to operators in the Amazon.\textsuperscript{89} The oil sector currently accounts for roughly half of all Ecuadorian exports, up to 40% of government revenues, and one third of the State’s tax revenue.\textsuperscript{90}

44. Since 1990, PetroEcuador and other petroleum companies operating within Ecuador have drilled 597 new wells and a correspondingly large number of new earthen pits.\textsuperscript{91} PetroEcuador is not only continually digging and utilizing earthen pits in the Oriente region, it

\textsuperscript{64} Id. at 26.

\textsuperscript{85} \textit{PetroEcuador Diagnoses Environmental Damage Caused by Crude Oil}, El Universo, Feb. 28, 2009; Chevron's Motion to the Lago Agrio Court in Response to G. Barros's Report, Jan. 14, 2010, at 5:50 p.m., at 19 (Eng.).

\textsuperscript{86} John Connor and William Hutton, Response to Proposal of Mr. Cabrera regarding Improvement of Infrastructure in Former PetroEcuador-TexPet Concession, Oriente Region, Ecuador, Aug. 29, 2008, at 1, 7.

\textsuperscript{87} Report of Brent Kaczmarek, July 1, 2011, ¶ 54.


\textsuperscript{91} EP PetroEcuador, Informe Estadístico, at 26 (2010).
also has created acres of "pit farms" inside and outside the former concession for the disposal of drilling wastes. The use of unlined earthen pits in the Oriente for the disposal of drilling waste continues to be permitted under Ecuadorian law.

45. Ecuadorian lawyer Pablo Fajardo, acknowledged PetroEcuador's relatively poor historical environmental practices before he began representing the Lago Agrio plaintiffs, saying:

"[PetroEcuador is] unreliable because what Petro[ecuador] says is one thing and what it does is the complete opposite. Since Texaco left here, Petro[ecuador] has inflicted more damage and many more disasters than Texaco itself. But they'd never, ever say that. So there's one spill after another; there's broken pipes, there's contamination of wetlands, of rivers, of streams in great magnitude. But since it's a state-owned company, since it's the same people involved in the laws and all, no one says a thing."

46. When Fajardo became a lawyer for the Plaintiffs, he acknowledged that PetroEcuador was responsible for contamination, but adopted the "legal theory" that Texaco is liable for all the contamination caused by PetroEcuador: "Our legal theory is that Texaco is liable for all of the existing damage, even that caused by PetroEcuador." To advance this fiction, the Plaintiffs stopped conducting environmental sample analysis that would tend to show that any contamination was PetroEcuador's, choosing instead to conduct tests that do not distinguish between new and old oil in the environment.


\[93\] Ecuadorian Acuerdo 621(b), Decree 2982, and Decree 1215 specifically allow the use of unlined earthen pits for waste storage. PetroEcuador also continues to utilize other practices that the Lago Agrio plaintiffs disclaim as "scientific fraud" in the Chevron case. For example, the Toxicity Characteristic Leaching Procedure (TCLP) test continues to be used by PetroEcuador to monitor environmental conditions at production sites, see, e.g., Diagnóstico y Plan de Manejo Ambiental del Sistema de Oleoducto Transneuquino y Sistema de Polílidos de Shushufindi – Quito y Esmeraldas – Quito, at VII - PRH – 9, available at www.EPPetroEcuador.ec, and continues to be approved by the Ecuadorian government. Executive Decree 1215, Table 5. See also Registro Oficial No. 377, Feb. 3, 2011, http://www.derechoecuador.com/index2.php?option=com_content&cntentid=16073 (approving Diagnóstico y Plan de Manejo Ambiental del Sistema de Oleoducto Transneuquino y Sistema de Polílidos de Shushufindi – Quito y Esmeraldas – Quito).


\[96\] DONZ-HDD-0056423 ("Finally[,] we need to stop analyzing for BTEX and GRO. TPH and DRO are fine, but the analysis and reporting of GRO and BTEX data is self-defeating electric to show that the contamination is much more recent [than] we would desire, and that would lead to an [argument] that the contamination is by PetroEcuador rather than Texaco . . . ."); DONZ-HDD-0054028 ("[The request comes from a meeting of senior lawyers representing the litigation which suggested that the analyses for BTEX and GRO would be counterproductive to the case because it argues for more recent contamination and that implies PetroEcuador rather than Texaco."); DONZ-HDD-0053453 ("We have made a decision to delete the analyses of [GRO], and [BTEX] from our analytical protocols because the findings of these compounds would argue for a more recent spill of PetroEcuador origin rather than of Texaco's origin. The other spill or deposit, the less likely it is to have volatile compounds in it"); DONZ00027275 ("The fact that there is GRO in the samples is indicative of the fact that the contamination is relatively recent and may be from PetroEcuador. This is precisely what Texaco will argue, and there seems to be corroborative evidence for this position from other statements.")
B. The Government of Ecuador Is Responsible For Addressing Any Existing Environmental Issues In The Former Concession Area

47. As set forth in detail in Appendix B to this submission, between 1995 and 1998 TexPet conducted an extensive environmental remediation program of its agreed share of the former Concession area. On September 30, 1998, Ecuador, PetroEcuador, and TexPet executed the 1998 Final Release. It certified that TexPet had performed all of its obligations under the 1995 Settlement Agreement, and fully released TexPet and all of its affiliates from any and all public environmental liability arising from the Consortium’s operations. Ecuador and PetroEcuador retained responsibility for any remaining environmental impact and remediation work.

48. In February 2001, eleven years after TexPet ceased operating oil facilities in the Oriente and three years after the TexPet remediation was completed, the Government of Ecuador enacted Executive Decree 1215 for the Regulation of the Hydrocarbon Industry.  

49. Article 59 of Executive Decree 1215 states that open pits must be closed, and provides guidelines for the closure of pits.

50. To comply with the requirements set forth in Article 59 of Executive Decree 1215, on October 28, 2002, Petroproducción and the National Environmental Protection Management (DINAPA, Dirección Nacional de Protección Ambiental) Guide 002-01 (Guide for the Preparation, Submission & Execution of Remediation Programs in the Hydrocarbon Area), created the “Project for the Elimination of Pits in the Amazon District” (referred to by the acronym “PEPDA”). DINAPA, reviewed and granted provisional approval for PEPDA in 2002.

51. The goal of PEPDA was to “eliminate all of the contaminated pits in its areas of operation.”

52. In May 2006, Marcelo Muñoz, Director of DINAPA, stated before the Ecuadorian Congress that although TexPet had remediated a third of the pits, “for over 30 years PetroEcuador had not done anything regarding the ones that were the state-owned company’s

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99 “ART. 59. Treatment and closing of pits. Where pits contain weathered crude or have been poorly managed, the regulated parties must see to their cleaning, the recovery of the crude, and the treatment, plugging, and/or revegetation of each of same with species native to the zone, based on the remediation program or project to be submitted by the company, as specified in Art. 16 of these Regulations, for approval by the Office of the Undersecretary of Environmental Protection.”
100 PEPDA was created by means of Official Document No. DINAPA-CSA-661-0210336 on October 28, 2002.
responsibility to remediate." He announced that "this year we shall undertake the remediation of 81 pits, plus another 100 pits . . . . This is an unprecedented fact, and I say this because nothing had been done for 32 years, but now we have decided to start working and hope this shall continue and can work jointly."

53. Approximately five months later, on October 5, 2006, PetroEcuador ran a full-page advertisement in El Comercio, which stated: "Through a 1995 agreement between the Ecuadorian State and Texaco, the company started an Environmental Remediation Plan in order to correct the effects of its operations by remediating 165 pits. The State owned PETROECUADOR, through its subsidiary Petroproducción, continues with the cleanup of the remaining 264 pits which were not treated by Texaco." The advertisement continued: "The Project [PEPDA] [is] . . . an ongoing plan which seeks to eliminate all contaminated pits in their areas of operation, by using appropriate equipment and technologies."

54. Other public statements demonstrate that PetroEcuador’s remediation activities are ongoing. For instance, the 2007 PEPDA Annual Report also stated that Petroproducción "can assume all the decontamination in the Amazon District through [PEPDA]."

55. Moreover, according to a published article, the "Ministry of the Environment, through the Environmental Remediation Unit, decided to assume the comprehensive remediation of the areas contaminated by petroleum production since the 70s, including the areas that are the subject of litigation."

56. President Correa also announced the remediation, stating in 2009 that the Government of Ecuador would "remediate all environmental liabilities." He further stated, "We expect to finish remediating most of the environmental liabilities in about seven to ten years that those 40 years of irresponsible operations in the Amazon region have left us."

57. An article appearing in El Universo in 2009 reported a $96.74 million remediation plan to take place from 2009-2013, encompassing the remediation of all areas impacted by petroleum over the previous four decades, based on a release from the Ministry of the Environment. And when PetroEcuador reaffirmed its responsibility to remediate in December 2011, it announced an estimated cost to remediate all the oil pits and spills in the Ecuadorian

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103 Id.
105 Id.; see also Victor Gómez, Ecuador will clean up areas in $18 bln Chevron case, Reuters, Dec. 15, 2011; Mercedes Alvaro and Isabel Ordóñez, PetroEcuador: To Spend $70 Million Cleaning Amazon Jungle Oil Pollution, Dow Jones Newswires, Dec. 16, 2011.
108 President Rafael Correa, Citizen’s Connection – Dialogue with the President, Nov. 7, 2009.
Amazon of US$ 70 million. The government itself has touted the fiscal soundness of the project, noting that "PEPDA is performed under the direct management method... which makes it possible for the project's costs to be the lowest in the market. This has facilitated significant financial savings for PETROPRODUCCIÓN, which can assume all the decontamination in the Amazon District through the project."

58. In December 2011, PetroEcuador reaffirmed its responsibility to remediate. General manager Marco Calvopina admitted to reporters that "[t]he pollution is in areas assigned to us and we've got the obligation to clean them up," and that "[w]e're going to record all the cleaning up that we do because we obviously know that there's a court case going on."

C. **PetroEcuador Is Cleaning Up All Remaining Pits And Spills In The Oriente**

59. Published reports confirm that the PEPDA remediation has been ongoing. According to official reports, there are 31 pits that have DINAPA certification of complete pit remediation. Twenty-three of these pits are included in the 2008 Annual Report of Activities, five are listed in the 2007 PEPDA Annual Report, one is listed in the PetroEcuador SA-74 spill report and two are listed in the expert Gerardo Barros's report submitted to the court in April, 2010.

60. At least an additional thirty-six pits have been remediated and are awaiting DINAPA certification. In addition, more than 145 pits are in various stages of remediation, for a total of 202 pits that have either been reported as fully remediated or are in the process of remediation by PetroEcuador.

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12. Victor Gómez, *Ecuador will clean up areas in $18 bln Chevron case*, Reuters (Dec. 14, 2011). See also Mercedes Alvaro and Isabel Ordonez, *PetroEcuador: To Spend $70 Million Cleaning Amazon Jungle Oil Pollution*, Dow Jones Newswires (Dec. 17, 2011) (PetroEcuador plans "to clean up the environmental pollution from all the petroleum areas currently operated by PetroEcuador, which may include areas polluted by private companies, including among them Chevron, 'PetroEcuador's general manager Marco Calvopina told Dow Jones Newswires."


15. Some of the pits on PEPDA's original list of pits to be remediated by 2010 (PEPDA 2007 Annual Report, attached as Annex A to Chevron's motion dated Sept. 15, 2008 at 2:14 p.m., Record at 147022-147138, 147047, 147068) have been used by the Plaintiffs for public relations purposes. For example, dignitaries and international media have visited sites such as Auarico 4 (AG-4), Shushufindi 38 (SSF-38), and Shushufindi 61 (SSF-61). Remediation was begun by PetroEcuador at these sites by the end of 2007, but remediation efforts have been suspended at SSF-61 and AG-4. Expert Cabrera's request to halt PetroEcuador remediation, filed on July 12, 2007 at 10:15 a.m., Record at 131336-37; Order of Oct. 3, 2007 at 11:00 a.m., Record at 132846-56, 132849v. Remediation at SSF-38 was delayed until late 2009. PEPDA 2008 Annual Report; Report on the
61. In addition, the 2010 PetroEcuador statistical report discussed ongoing remediation of sites through 2010. The report noted that, in 2010, PetroEcuador had conducted remediation work on 11 pits in the Lago field, 11 pits in the Sacha field, and 8 pits in the Shushufindi field. The company reported remediating 7,190 cubic meters of soil in the Lago field, 3,000 cubic meters in Sacha, and 3,200 cubic meters in Shushufindi.  

62. Photographic evidence further confirms that the PEPDA remediation has been ongoing. The following photographs demonstrate PEPDA’s remediation of a pit at Sacha-78.  

Collection of solid wastes and treatment of water (July 15 – November 8, 2005)
Cleaning and remediation of contaminated soil (April 16 – May 31, 2006)
Revegetation of the remediated pit area (July 31 – August 2, 2006)\textsuperscript{129}

63. The PetroEcuador remediation complies with Ecuadorian law. Even the Lago Agrio judgment admits that, while it retroactively imposes much higher remediation standards on Chevron, PetroEcuador’s ongoing environmental remediation meets the standards of Ecuadorian law: “based on the evidence submitted by the parties in relation to the work performed by PetroEcuador in remediation of various fields, we can observe in all them that which is established in the laws governing the subject was accurately observed.”\textsuperscript{131}

\textsuperscript{129} Record at 148107.

\textsuperscript{131} Lago Agrio Judgment at 91-92.