INTERNATIONAL STANDARDS IN ECUADOR'S AMAZON OIL FIELDS: THE PRIVATIZATION OF ENVIRONMENTAL LAW

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*290 I. Introduction

In December 1999, tens of thousands of protestors disrupted the Third Ministerial Meeting of the World Trade Organization ("WTO") in Seattle. Although the demonstrators represented diverse interests, they shared a common concern about the growing power of transnational corporations ("TNCs") and the consequences of corporate practices and globalization for the environment, labor, and human rights. The protests captured the interest of the mainstream media, and catapulted the debate about free trade into the public consciousness. A central element of the trade debate is disagreement about the relationship between free trade and globalization, on the one hand, and environmental and social standards and impacts, on the other.

Both critics and proponents of globalization agree that there has been a significant expansion, over the last decade, of international mechanisms to define and enforce economic rules that promote and protect global markets, and secure and advance the rights and economic interests of TNCs. But efforts by governments to articulate and enforce global norms to protect the environment, labor and human rights have lagged. A considerable gap remains between the noble promises in official speeches and documents, and the willingness or ability of governments to implement them. This

imbalance in international governance is illustrated by the fact that under the rules governing trade today, there is a meaningful legal mechanism to hold a company accountable for pirating a Madonna video, but not for contaminating the environment or using forced or child labor.

Critics of globalization see free trade as an environmentally and socially destructive force that harms more people than it benefits, and say it is naive to believe that corporations will voluntarily use their power for humanitarian purposes when it could affect "the bottom line." Proponents of free trade and globalization argue that trade and investment in developing countries bring not only economic development but also higher standards of environmental protection and human and labor rights. Especially since the Seattle protests, they increasingly recognize the need to pay greater attention to environmental and social concerns in order to, *291 in the words of United Nations Secretary General Kofi Annan, "give a human face to the global markets." [FN1] Nonetheless, they maintain that globalization is the best way to address environmental and social needs and concerns in the developing world, arguing that trade and investment offer opportunities to export international standards, promote the rule of law and good governance, and close the gap between the rich and poor.

Although a few officials, including former U.S. President Bill Clinton, have called for public rule-making at the global level to address at least some of the concerns raised by critics of globalization, most of the public discourse has emphasized private, voluntary initiatives by TNCs, rooted in corporate responsibility. [FN2] TNCs, they argue, increasingly recognize that good corporate citizenship not only is an ethical responsibility that comes with the growing reach of corporate power and rights, but also is good for business. In the environmental arena, this is consistent with emerging principles of the international law of sustainable development, which embrace international trade and direct national governments to fill the environmental law vacuum by developing effective national regulation to implement international commitments and protect the environment. [FN3] The popular view, then, is that corporate responsibility will complement nascent government regulation as developing nations gain environmental experience and capacity, and strengthen national democratic institutions and the rule of law, including environmental law.

These assumptions, however, are seldom checked against close observation of corporate behavior in the developing world. This Article seeks to help inform the trade debate by examining one initiative to implement international environmental standards in the Amazon Rainforest in Ecuador, by a U.S.-based oil company, Occidental Petroleum ("Occidental"). In this case, Occidental has used "international standards" to wrap its activities in a veneer of environmental excellence; reassure government officials *292 and local residents; cultivate confusion about standards and practices that apply to the operations; deflect meaningful oversight and transparency; and arbitrarily legitimize norms that have been defined by special interests. At the same time, the company has quietly negotiated an environmental law regime in its contract with Ecuador that seems designed to perpetuate and even legalize environmental self-regulation. These findings contradict the popular view that governments like Ecuador are on a "learning curve," and that foreign investment by TNCs strengthens the capacity of national officials to implement environmental law. [FN4] They suggest that, in order for international standards and corporate responsibility to promote the rule of law in environmental affairs, and reliably raise standards for environmental protection, the international community needs to move beyond statements of principle, and develop transparent and participatory mechanisms to independently monitor and evaluate claims of environmental excellence by TNCs. In addition, the practice of negotiating

environmental rules in contracts with TNCs raises serious questions of law and legitimacy, and should be publicly disclosed and debated before adherence to those contractual provisions becomes a litmus test for democratic development and the rule of law in Ecuador.

The Article begins with a general discussion of international standards, sustainable development and corporate responsibility, followed by an overview of Occidental's corporate policy and operations. It continues with a brief discussion of environmental law in Ecuador, and an introduction to the company's contract with the State. It then examines provisions in the contract that relate to international standards, and the implementation *293 by Occidental of the ISO 14001 standard for environmental management, which is commonly cited by corporate and government officials as the most important international standard for the operations. The Article continues with a discussion of additional provisions in the contract that define rules for environmental protection, including a provision that adopts Occidental's corporate environmental management plan ("EMP") as a legal standard. A detailed review of the EMP follows. The Article concludes that the EMP and contract operate together to cede environmental rule-making authority to Occidental, without public disclosure or meaningful review and approval by the government, and that this amounts to the privatization of environmental law. To shed light on the consequences of this legal framework, and levels of environmental protection, the Article then examines Occidental's operations in the oil fields, while acknowledging that the public record is murky in some important respects. It concludes with some general observations and recommendations. [FN5]

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II. International Standards, Sustainable Development, and Corporate Responsibility

The call for TNCs to serve as stewards of environmental and social responsibility in the developing world can be seen as a continuation and expansion of discussions about the role of business in promoting sustainable development, that gathered force over the last decade in the wake of the 1992 United Nations Conference on Environment and Development ("UNCED"). As governmental and nongovernmental actors prepared for UNCED, also known as the Earth Summit, representatives from industry promoted the idea that corporations can and will play a key role in implementing sustainable development. The Earth Summit became the first major United Nations-sponsored global conference with strong business participation, led by the International Chamber of Commerce (ICC) and the newly-formed Business Council for Sustainable Development. [FN6] At the Earth Summit, governments agreed that the current course of development is unsustainable, and pledged to change course.

Since then, the term "sustainable development" has become popular with governments, industry and nongovernmental organizations (NGOs). Its meaning, however, remains poorly defined. In essence, the concept of sustainable development recognizes the need to integrate environmental and development concerns and decision-making, in order to ensure that development not only meets the needs of present generations, *295 but also is fair to future generations. [FN7] In a prelude to the greater controversy to come, many environmentalists were disappointed by the failure of governments at the Earth Summit to define global rules to regulate corporate conduct to achieve sustainable development, and were skeptical of expressions of corporate goodwill. [FN8] The under-stated reality, however, seemed to be that governments were counting on private corporations to carry out and pay for sustainable development. [FN9]

One arena where the trade debate is played out with real world consequences is the development of oil and gas fields in indigenous territories in Amazonia. The Amazon

Rainforest is the world's largest remaining humid tropical forest. It contains the greatest biological diversity of any known ecosystem, is a natural carbon reservoir, and is believed to contain twenty to twenty-five percent of the world's flowing fresh water. It is generally regarded as an environmentally sensitive region, and is home to hundreds of ethnolinguistic groups of indigenous peoples whose health, well-being and cultural survival are closely linked with environmental quality. Oil and gas exploration and production are industrial activities. Among other environmental impacts, they typically generate large quantities of wastes with toxic constituents, in addition to presenting risks of oil and chemical spills. [FN10]

"Saving the Rainforest" became a popular cause with environmentalists and the public in the late 1980s. Around 1990, documentation of irresponsible oil field practices in Ecuador's Amazon region by the U.S.-based TNC, Texaco, and other companies, added a new issue to the rainforest *296 agenda. [FN11] The revelations spawned a surge in national and international concern about the impact of oil development on the environment and human rights in tropical forests, and buttressed longstanding local grievances. In response to growing international and local conflict and confrontation, some TNCs acknowledged that national governments have not implemented meaningful environmental regulation, and that local communities bear the costs of irresponsible development without sharing in the benefits. They publicly pledged to change their practices, and implement environmental protection and community relations measures that go beyond what is required of them by national governments in host countries. While recognizing that there have been problems in the past, a growing number of international companies--including Occidental in Ecuador--now claim to voluntarily abide by "international standards" or "best practice." [FN12] Although corporate officials generally cite ethical rather than legal obligations and responsibilities, national laws in a number of countries, including Ecuador, include general provisions that, in theory, require oil companies to abide by unspecified "international standards." [FN13] *297 The emerging recognition by some governments and TNCs that a double standard of environmental protection is no longer appropriate could be a significant development in government and corporate policy in Amazonia. [FN14] Nonetheless, the claim or requirement to abide by "international standards," "best practice" or some other variation of "world class," "responsible" standards and practices risks becoming a hollow platitude in many areas--and undermining rather than promoting national environmental law-- because affected communities, environmental and human rights advocates, and even government officials and policymakers do not really know what it means. To date, neither governments, industry, nor the academic community have clearly defined "international standards" and "best practice," nor determined how to measure *298 compliance. Like "sustainable development," the terms have become fashionable in corporate, governmental and some NGO circles; however, most of the public discourse has been very general, focusing on principles rather than the specifics of how to achieve them. [FN15] Especially in the corporate world, the terms are not used to refer to binding regulatory requirements, but rather, refer to non-binding goals. Most written commitments by international oil companies are general and inexplicit, and allow for considerable leeway in how to interpret them. Even the most innovative companies have not yet matched their claims--that they can extract oil and gas from fragile tropical forest ecosystems without harming the environment or local populations--with the information that is needed to verify their accuracy. [FN16] Government agencies continue to depend on training by the industry they are charged with regulating, and rely on industry analyses of environmental and public health issues. Environmental decision-making and monitoring are typically carried out behind closed

doors, without transparency or meaningful participation by affected communities and other stakeholders. On an international level, oil field standards and practices vary considerably in different locations. As a result, TNCs in the tropics essentially pick and choose which standards to apply, and how to measure compliance.

III. Occidental in Ecuador--Corporate Policy and Operations

According to corporate officials, Occidental is the largest U.S.-based producer of crude oil in Latin America. In Amazonia, the company has conducted exploration and production activities in Ecuador, Colombia and Peru. In the words of Occidental Oil and Gas Corporation's Worldwide Environmental Manager, Clark Hull, "down there, we're the big *299 guys." [FN17] Production facilities in Ecuador are the newest major project by the company. As a result, they incorporate Occidental's highest environmental standards. According to Hull, "for Oxy (Occidental), Ecuador is the top." [FN18] Activities there began in 1985, after the company's Ecuadorian subsidiary, Occidental Exploration and Production Company, Sucursal Ecuador ("Occidental Ecuador"), signed a contract with Ecuador's national oil company (CEPE, now Petroecuador) for the exploration and exploitation of hydrocarbons in a 200,000-hectare [FN19] area designated as "Block 15." Efforts to improve environmental practices and community relations began around 1990-91, after revelations about irresponsible oil field practices in Ecuador's Amazon region put a spotlight on the industry there. At the time, Occidental had conducted some oil exploration, but had not yet begun production activities.

Although Occidental prefers to maintain a low public profile, the company's Ecuador operations have nonetheless been promoted within selected circles in industry, government, NGOs that are considered "reputable" by the company, and local communities, as a successful new model of responsible "world class" environmental protection and community relations." [FN20] For example, in 1996, The Houston Chronicle reported that Occidental's production "seems a model of how oil can be extracted in environmentally sensitive areas of the tropics." [FN21] The following year, Oil and Gas Journal reported that Occidental "has implemented a comprehensive strategy of strict environmental protection measures and aggressive community relations initiatives" in Ecuador, and characterized the undertaking an "unqualified success" and a "world class" environmental operation. [FN22] On a local level, Occidental has repeatedly assured residents--who are aware of environmental devastation caused by the continued use of antiquated technology by other oil companies *300 in the region--that its operations use "tecnologia de punta," cutting edge technology.

Occidental has also produced a glossy Spanish-language brochure, entitled "Oxy, Certificada ISO 14001" ("Oxy, ISO 14001 Certified"), and a short English-language video called "The Human Face of Petroleum." [FN23] These materials paint a portrait of corporate responsibility. They say the 'right things,' and avow a commitment to protect the environment, respect indigenous cultures, be a good neighbor, and promote self-reliant sustainable development. Color photographs show proud and smiling indigenous residents and greenery in and around oil field installations. Even roofs, tanks and pipelines have been painted green.

The Ecuador materials are consistent with Occidental Oil and Gas Corporation's published corporate policy. Applicable worldwide, the company's "Health, Environment and Safety Management System ("HESMS") Guidance Manual" begins by affirming a commitment to "the highest standards of ethical conduct and social responsibility," and continues:

A key element in the area of social responsibility is our commitment to conduct our business in a manner which protects the environment, maintains a strong safety program for the workplace, and promotes sound occupational health standards among our employees. [FN24]
The manual includes a "Good Neighbor Policy" and ten "Health, Environment and Safety Principles." [FN25] Practices in Block 15, however, do not match the company's promises. Notwithstanding a worldwide policy to "support the concept of public accountability for HES [Health, Environment and Safety] performance and . . . report on our progress in measurable terms," [FN26] Occidental has refused to fully disclose the environmental standards it applies to operations in Ecuador, or information that is *301 needed to verify corporate claims of environmental excellence. In addition, the company's community relations are, from the perspective of local residents, characterized by serious problems. Among other issues, representatives of indigenous Quichua who live near wells and production facilities say that recent efforts by affected communities to participate in environmental monitoring and gain access to information about environmental standards and practices have been rebuffed by Occidental, and a number of grievances and concerns have not been resolved. [FN27]
Located in the upper Amazon basin, Block 15 crosses two major rivers, the Napo and the Aguarico, to the east (and downstream) of the oil boom towns, Puerto Francisco de Orellana (Coca) and Nueva Loja (Lago Agrio), respectively. It includes lands that have been titled to indigenous Quichua who live on and around the Napo River, and indigenous Secoya and Siona who live on and around the Aguarico River. [FN28] Block 15 also includes lands that have been designated as protected natural areas under Ecuadorian law: the entire Limoncocha Biological Reserve and Pañacocha Protected Forest, as well as parts of Yasuni National Park and Cuyabeno Wildlife Reserve.
Occidental initiated its search for oil in the western part of Block 15, conducting seismic studies and drilling exploratory wells. In July 1992, the company declared the comercialidad, or commercial marketability of early discoveries, and three weeks later Petroecuador authorized Occidental to begin extraction operations. [FN29] Production began in mid-1993. *302 In 1995, Occidental and Ecuador's government reached an agreement to expand exploratory activities throughout the remaining ninety-seven percent of Block 15. The first exploratory well under that program was drilled in 1996 in the southeastern corner of the Block, in the remote Quichua community of El Eden. Named Eden-1, the well located commercially valuable oil (Eden-Yuturi reserves). According to Oil and Gas Journal, Occidental estimates Block 15's total potential reserves at 300-400 million barrels, [FN30] an amount equivalent to roughly fifteen to twenty-one days of petroleum product consumption in the United States.
In 1997, Occidental proposed to re-negotiate its contract with Petroecuador, based on reforms to Ecuador's Law of Hydrocarbons that were intended to enhance the country's attractiveness to foreign investment in the oil and gas sector. In May 1999, Occidental and Ecuador, through Petroecuador, signed a modified contract. This contract ("the Contract"), which is currently in effect, contemplates the continued expansion of exploration and production in Block 15 and two adjacent areas. [FN31] Under the Contract, Occidental has the obligation and exclusive right to operate existing facilities in Block 15 until 2012, and to find, develop and operate subsequent discoveries until 2019.
According to corporate officials, Occidental produces some 18,000 barrels of oil per day, from twenty-two production wells located on six drilling platforms. A seventh platform is the site of a waste injection well. [FN32] The platforms and a central production facility ("CPF") are connected *303 by a network of unpaved roads, most of

which were built by Occidental for the operations. Alongside the roads, buried pipelines (flow lines) carry a mixture of oil, natural gas and formation water--extracted from the wells--to CPF. [FN33] Two flow lines cross under the Napo, but a bridge has not been built across the river. Instead, barges have been used to carry personnel, vehicles and equipment across the river at two locations.

At CPF, crude oil is separated from the natural gas and formation water. Oil field formation water is also commonly known as brine because it typically contains toxic levels of salts, in addition to hydrocarbons, heavy metals, and other chemicals. In Block 15, the ratio of brine to oil (water cut) is high, and, according to the company, roughly 65,000 barrels (2.73 million gallons) of brine wastes, better known as produced water, are generated every day. The separation process also generates some 4.5 million cubic feet of gas every day. According to Occidental, thirty percent of the gas is used by the company as an energy source for oil field operations; the rest is burned as a waste at CPF. [FN34] The forty-hectare site also includes storage and pumping facilities, living quarters for workers, offices, a sewage treatment system, and equipment maintenance facilities. [FN35]Additional flow lines carry produced water from separation facilities to injection wells.

CPF and the production and injection wells are located in four Quichua communities--Rio Jivino, Limoncocha, Itaya and Pompeya. Many other communities are potentially affected by those operations. For example, the Quichua community of Santa Elena is located across from the community of Limoncocha on Limoncocha Lake, and there are dozens of communities along the Napo River, downstream from the facilities. In addition, Occidental operates a landfill in the Shuar community of Yamanunka. From CPF, a 16.5 mile (27.5 km) secondary pipeline transports Amazon crude to Shushufindi Central Station, [FN36] currently owned and operated by Petroecuador. From there, it is transported via pipelines owned and operated by Petroecuador to Lago Agrio, and thence, over the Andes Mountains to the Pacific coast via the trans-Ecuadorian Pipeline *304 System ("SOTE"). A refinery and an export terminal are located on the coast.

By law, Occidental must maintain a five-year development plan ("Development Plan"), and update it on an annual basis for approval by Ecuador's Ministry of Energy and Mines ("MEM"). In an interview, corporate officials in Quito confirmed that Occidental seeks to incrementally expand operations throughout all of Block 15. However, they refused to disclose details, other than to say that the company planned to drill six wells over the next year. Three exploratory wells were slated for Secoya-Siona territory; officials refused to disclose the locations of the other wells. [FN37] Subsequently, residents reported drilling activities for additional production wells at existing platforms in Itaya and Pompeya, and the construction of a new platform for an exploratory well in the Quichua community of Sani Isla, in the eastern portion of Block 15. Additional seismic studies are also underway.

Although Occidental refuses to disclose its Development Plan, the company did provide a copy of the Contract, without the annexes, for this study. The Contract contemplates the development of new production operations in the Eden- Yuturi oil fields; however, construction of those facilities has reportedly been delayed because SOTE is already operating at full capacity. As a result, any additional production from new facilities in Block 15 could not be transported out of the Amazon region economically. Plans to build a second trans-Ecuadorian pipeline have been stalled for years because of political opposition in Ecuador. [FN38]

IV. Environmental Law and the Roots of Inequality Under the Law in Ecuador

In form, Ecuador is a constitutional democracy. In practice, democratic institutions are fragile, and a strong executive generally dominates the government. Longstanding

weaknesses include pervasive corruption *305 and a discredited judiciary and political class. [FN39] A popular saying, "the law is only for those with the ponchos," reflects the general belief that *306 only the most marginal citizens--the indigenous peoples--are not above the law. Indigenous peoples comprise an estimated forty percent of Ecuador's population. Ecuadorian society, however, is characterized by deep racism, widespread poverty, extreme inequality, and discrimination against indigenous peoples and the poor. [FN40] Illiterate Ecuadorians were not allowed to vote until 1979. Amazonian peoples live far from the centers of power and seat of government; poor transportation and communication services augment the geographical distance. Cultural, historical and linguistic distances further separate Amazonian peoples from their government. To the government, Amazonia is a vast land with few people, a frontier to be conquered, a source of revenue for the debt-burdened state, and a safety valve for land distribution and population pressures.

The oil boom in Ecuador's Amazon region began in the late 1960s, and has been the primary engine of change and environmental degradation in the region. It reflected and reinforced two tiers of inequality. As a so-called "Third World" country, Ecuador depended on TNCs to transfer petroleum technology, and finance, build and operate development facilities. [FN41] Within Ecuador, Amazonia is effectively a "Fourth World," where indigenous peoples also face disparities and inequities with respect to the dominant national culture.

According to the letter of the law, the Constitution is the supreme law of the land. In practice, however, constitutional law has been unstable and relatively easy to disregard and manipulate. [FN42] Ecuador has had nineteen *307 constitutions since becoming a republic in 1830. Both constitutional and statutory law recognize the public interest in a clean and healthy environment and charge the State with environmental protection responsibilities. Since 1984, Ecuador's constitutions have formally recognized the right of individuals to live in an environment "free from contamination." [FN43] The State bears a corresponding obligation:

It is the duty of the State to ensure that this right is not infringed upon and to promote the preservation of the natural world. The law will establish restrictions on the exercise of selected rights and liberties, in order to protect the environment. [FN44]

The current Constitution, adopted in 1998, expands environmental rights and obligations in a new chapter on group rights. The section begins with a provision that imposes environmental duties on the State:

The State shall protect the right of the population to live in a healthy and ecologically balanced environment, that guarantees sustainable development. [The State] shall ensure that this right is not affected and shall guarantee the preservation of nature. [FN45]

The provision continues by declaring that environmental protection, conservation of ecosystems and biodiversity, pollution prevention, recuperation of degraded areas, sustainable management of natural resources, and the maintenance of a system of protected natural areas that protect biodiversity and ecological services are "of public interest and shall be regulated in accordance with the law." [FN46] A subsequent provision recognizes and guarantees the right of affected communities to participate--on an informed basis--in decision-making by the State that could affect the environment. [FN47] These expanded rights and duties--including rights to environmental information and participation--echo emerging principles in international environmental law, particularly agreements to promote sustainable development. [FN48]

*308 The 1998 Constitution also includes a new section on the collective rights of indigenous peoples. [FN49] It recognizes and protects a number of cultural, political

and land rights that are relevant to development and the environment in Amazonia. As with the environmental provisions, the new collective rights of indigenous peoples echo emerging principles in international law, particularly some of the rights and duties in the International Labor Organization Convention concerning Indigenous and Tribal Peoples in Independent Countries ("ILO Convention 169"), which was ratified by Ecuador in 1998. For example, Article 84 (5) of the Constitution directs the state to "recognize and guarantee" the rights of indigenous *309 peoples,
to be consulted about plans and programs for exploration and exploitation of nonrenewable natural resources that are located in their lands and which could affect them environmentally or culturally; to participate in the benefits that those projects obtain, inasmuch as is possible and to receive compensation for socio-environmental damages that are caused to them. [FN50] Another provision recognizes and guarantees the right of indigenous peoples to participate in the "use, administration and conservation of the renewable natural resources that are located in their lands." [FN51]
Ecuador's legislation and regulations have included general exhortations to protect the environment and prevent pollution since at least the early 1970s. The 1972 Law of Waters prohibits "all water contamination that could affect human health or the development of flora and fauna," and directs various government agencies to enforce the law. [FN52] The Law *310 of Fishing and Fishing Development, adopted in 1974, also prohibits contamination of waters. [FN53]
The 1976 Law for the Prevention and Control of Environmental Contamination is dedicated entirely to pollution control. It declares "the protection of air, water and soil resources, and the conservation, improvement and reclamation of the environment . . . to be in the public interest," and prohibits contamination of water, air and soil. The law confers enforcement responsibility on an inter-agency group headed by the Minister of Public Health. Other members include the Minister of Energy and Mines, Minister of Agriculture and Livestock, Minister of Defense, Minister of Industry, Commerce and Integration, and the President of the National Planning and Coordination Board. [FN54]
In 1989, the Ministry of Public Health issued detailed water pollution regulations under the law. The regulations include some water quality standards, and require impact assessments, permits, and regular monitoring for new and existing discharges into surface and ground waters. [FN55] Regulations were issued for air pollution in 1991, and for noise emissions in 1990. [FN56] In theory, those requirements offer mechanisms for command-and-control or performance based regulation of significant sources of oil field pollution. In practice, the oil industry has ignored the regulations and successive governments have failed to implement and enforce them.
In practice, government intervention in the hydrocarbon sector has *311 been dominated by two powerful agencies. The Ministry of Energy and Mines ("MEM") (Ministerio de Energia y Minas, formerly the Ministry of Natural Resources) is charged with promoting oil development, and implementing and enforcing the Law of Hydrocarbons. [FN57] Petroecuador (formerly CEPE) was established to enable the State to participate in hydrocarbon development, both directly and by contracting with foreign and national operators and investors. [FN58] Since at least 1971, the Law of Hydrocarbons has included boilerplate environmental directives. [FN59] However, it was not until 1984 that an environmental unit was created in MEM. Currently under the direction of a Deputy Secretary for Environmental Protection, and known as SPA (Subsecretaría de Protección Ambiental), the unit has been seriously hamstrung by a lack of legal authority, resources, and political support from ministry officials. [FN60]
Although charged with responsibility for environmental oversight and control in Block 15, SPA has neither authority to levy sanctions nor needed technical capacity, including

environmental training or access to laboratories that can perform analyses of chemical samples. [FN61] The environmental unit *312 in Petroecuador, first created in 1990, is not involved or well-informed about the operations of foreign oil companies. [FN62] Officials in Ecuador's new Ministry of the Environment ("MMA") (Ministerio de Medio Ambiente) have expressed interest in regulating oil field operations; however, the agency does not yet have authority to do so. [FN63]

MEM first issued environmental regulations for hydrocarbon activities in 1988, but they applied only to operations "in national parks or equivalents." [FN64] In 1990, an effort by agency environmental staff to promulgate comprehensive regulations was cut off by high level officials. In lieu of the regulations, a weakened set of voluntary environmental guidelines was negotiated with industry and adopted as a "gentlemen's agreement." *313 [FN65] As with prior laws and regulations, the measures failed to improve oil field operations.

In 1992, MEM issued new environmental regulations after closed-door negotiations with industry ("1992 MEM Regulations"). [FN66] The regulations included environmental impact assessment requirements and some quantitative chemical standards for waste discharges into surface waters. As discussed infra, in the United States, EPA regulations have generally prohibited the discharge of onshore exploration and production wastes into fresh waters since 1979. Moreover, the choice of discharge standards in Ecuador is not supported by an administrative record, and some standards raise serious questions. [FN67] In addition, no monitoring, reporting or record-keeping is required, so the standards are not enforced. By contrast, MEM requires detailed reporting of financial and production-related data. [FN68]

Thus, despite a clear trend on paper toward increasingly detailed-- albeit incomplete--environmental requirements, implementation, oversight and compliance remain poor. Successive governments have repeatedly ratified the state's authority--and duty--to develop environmental law, but have failed to implement meaningful regulation in the oil fields. Exploration and production activities generate large quantities of wastes with toxic constituents, yet in practice the government does not even require operators to characterize, record or report the nature, volume or destiny of the wastes they discharge, dump or bury in the environment. The development and implementation of environmental law has been hindered by the absence of political will, a lack of resources and technical capacity, the failure of the rule of law and good governance generally, *314 and industry resistance to regulation. Especially in MEM and Petroecuador, environmental units have commonly been staffed with engineers who became "environmentalists" overnight, in the wake of the public outcry over oil field conditions, which began around 1990 and quickly forced government and industry to acknowledge the need for improvement. [FN69] In the environmental law vacuum, standards are set by corporate policy rather than by law, and TNCs apply and interpret standards, and measure and evaluate performance and outcomes, without meaningful oversight or transparency. [FN70]

V. Contracts and the Rule of Law

Occidental's contract with Petroecuador establishes the basic legal terms for the company's operations in Ecuador and its relationship with *315 the Ecuadorian State. Although the Contract requires Occidental to comply with Ecuadorian law, and provides that Ecuador's laws and regulations shall prevail in the event of a conflict between the law and a provision in the Contract, it is also intended to protect the company from changing legal requirements and other shortcomings in Ecuador's legal system. Longstanding deficiencies include: the failure of the rule of law generally; confusion about what many applicable laws and regulations require; high turnover and

instability among government officials, especially at the highest levels of government; widespread corruption; and a general atmosphere of uncertainty about how the law will be interpreted--and administered, ignored, or reformed--by successive governments. Ecuador's political class and government institutions, including the judiciary, are increasingly discredited and distrusted. [FN71] A deepening economic crisis and growing debt burden--not unrelated to problems in governance--have made the country increasingly desperate for foreign aid (including loans) and investment.

In return for aid and investment, successive governments have faced growing pressure from the United States and other international creditors, including the International Monetary Fund (IMF), to establish the rule of law, and promote stability and a predictable legal environment for foreign investors. Oil companies have long complained about changes in policies and contractual terms. [FN72] As a result, the need to 'honor' contracts with foreign investors has been emphasized by TNCs and international creditors as a key indicator of both Ecuador's democratic progress--and respect for the rule of law--and its suitability for new foreign aid and investment. [FN73] For practical purposes, then, despite its subordination *316 to Ecuador's laws on paper, [FN74] and a provision that the parties will not use diplomatic channels to resolve their disputes, [FN75] Occidental's Contract serves as the basic legal blueprint for the company's operations in Block 15, and for Ecuador, the political and economic stakes are high. [FN76]

*317 The Contract and negotiation that led to it have been denounced by a "group of citizens" to Ecuador's Commission for Civic Control of Corruption ("the Commission"), primarily on economic and procedural grounds. [FN77] It is currently under investigation by the Commission; however, *318 the legal authority of the Commission is limited. [FN78]

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VI. International Standards and Practices

In addition to public corporate statements and periodic accounts in the press, references to some variation of international standards or practice can also be found in a number of legal documents, including Ecuadorian law, Occidental's Contract with Ecuador, and the company's government-approved environmental management plan (EMP). Notwithstanding these references, there is considerable confusion in Ecuador about the content and source of applicable international standards and practices, and how to implement and monitor them. As a general matter, standards and standard-setting processes are not clear and transparent, and Occidental's operations and practices are not well understood outside of the company, even by government officials and local residents. There is no meaningful independent oversight to confirm the company's compliance with environmental requirements or assess environmental and social performance and outcomes.

A. Contractual Provisions

The main text of Occidental's Contract with Petroecuador includes eight references to some variation of international standards or practices, or to best practice. However, the precise meaning and import of the references are unclear, because the terms are not included in the long list of definitions in the Contract, and no specific norms or practices are identified. In addition, no sources, or standard-setting authorities, are specified.

The Contract provides that, for definitions not specified therein, the parties agree to use the definitions "contemplated" in Ecuador's Law of Hydrocarbons and regulations, as well as those "generally accepted by the international petroleum industry." [FN79] The

Law of Hydrocarbons includes a vague reference to international practice; since 1982, companies have been required to "[c]onduct petroleum operations in accordance with Laws and Regulations for the protection of the environment and the security of the country, and with relation to international practice in matters of preservation of the rich fisheries and farming industry." [FN80] However, neither the law nor regulations define "international practice" or explain the meaning of that requirement.

The language used to refer to international standards and practices in the Contract is also vague and general. Although the precise wording *320 varies somewhat, most relevant provisions refer to standards or practices that are generally used or accepted by the international petroleum industry. For example, the section on general obligations requires Occidental "to employ qualified personnel, as well as equipment, machinery, materials and technology, in accordance with the best norms and practices generally accepted by the international petroleum industry." [FN81] This provision is potentially significant because the Contract also provides that, as the operator of Block 15, Occidental has "technical responsibility" for oil field operations. [FN82] The obligation to use "the best norms and practices" means that, at least in theory, the company's discretion is not unlimited when it selects technology and conducts operations.

The section on environmental protection includes a similarly promising but vague requirement "[t]o use equipment, machinery, operational procedures and in general technologies that comply with the standards for environmental protection and practices used by the international petroleum industry, without prejudice to compliance with the regulations existing in the country." [FN83] Another provision requires Occidental "to incorporate tecnologia de punta [cutting edge technology], compatible with Ecuador's Amazon region, for both operations and the studies, reports and application of recommendations, that will be agreed to" by Occidental and Petroecuador. [FN84] The section on insurance obliges Occidental to obtain insurance for risks of contamination and damage to ecosystems, "in accordance with international petroleum practice." [FN85]

These provisions reflect Ecuador's interest in attracting what the oil industry calls "world class" modern petroleum operations, instead of cheap and antiquated, second-rate technology. Although for many government officials, "world class" is more about attracting foreign investment than protecting the environment, it also reflects a certain level of official discomfort with the history of oil development in Amazonia, and the country's international notoriety for shoddy environmental practices there. Those practices are the result of Ecuador's continuing failure to implement meaningful environmental regulation and the selection of standards and technology by Texaco when the oil boom began. As the *321 first company to discover commercial quantities of Amazon crude, Texaco transferred petroleum technology to Ecuador. That technology set the basic standards for oil field operations, but did not include environmental protection. [FN86] Texaco's workforce was so unaware of the hazards of crude oil in the 1970s and 1980s that skilled Ecuadorian workers applied it to their heads to prevent balding. They then sat in the sun or covered their hair with a plastic cap overnight; to remove the crude, they washed their hair with diesel. [FN87]

Presumably, the provisions in the Contract requiring Occidental to use international standards and practices are intended to help close the gap between oil field technology in Ecuador and the superior technology that is commonly used in wealthy industrial countries. The provisions also reflect a vague but widely held belief, encountered in many sectors of Ecuadorian society, that anything that is "international" is better than something that is Ecuadorian. Some Ecuadorians refer to this attitude as a "Third World mentality," and it is especially prevalent in matters of technology, economics and

industrial development. Ecuador was an agricultural country until the oil boom began. [FN88] In this context, "international" is frequently understood to mean "foreign," and especially the United States.

Despite this apparent intent, the language in the Contract may be too vague to have any measurable impact on oil field practices. The references to international standards and practices do not discriminate between practices in industrial countries and practices in developing countries. They also fail to distinguish legal, or governmental, standards and norms from industry standards and guidelines, or to differentiate between the law of foreign nations, such as the United States, and international law. Moreover, standing alone, the provisions in the Contract suggest that a definitive and credible body of comprehensive international standards and practices exist. This suggestion is potentially misleading because there is no international consensus on what "international standards" *322 and "best practice" really mean in the environmental arena, and there is no public international institution with legal authority to regulate exploration and production activities. Oil field standards and practices can vary considerably at different locations, even in industrial nations where regulatory regimes are relatively well established.

In the United States, for example, most oil field regulation varies from state to state, and standards and practices can also differ at different locations in the same state. [FN89] Interpretations of regulations can vary as well, and disputes about the meaning and requirements of applicable legal norms are not uncommon. In addition, environmental regulations in the United States are constantly evolving. In many jurisdictions, authorities have been revising oil and gas exploration and production standards, to require more stringent environmental protection. Even so, critics continue to attribute pollution and other environmental problems to the industry at a number of locations in the United States. In countries in the developing world, oil companies commonly use antiquated standards and practices similar to the ones that were established in Ecuador by Texaco.

Given the complex, variable and dynamic nature of environmental norms and practices in oil fields around the world, and the ambiguity of the language in the Contract, the precise meaning of the international standards obligations in the Contract is unclear. The provisions requiring Occidental to use standards and practices that are "used" or "accepted" by "the international petroleum industry" appear to establish widespread--or even worldwide--use or acceptance by international oil companies as the key criteria for selecting the applicable standards. This essentially means that the meaning of "best norms and practices" and "international standards" is what international oil companies, like Occidental, currently do and say. By using language that suggests that general use or acceptance is the applicable criteria, rather than "best practice" or "highest standards," the provisions in the Contract could operate primarily to help legalize and perpetuate the status quo, and eliminate *323 only the most obsolete and indefensible oil field practices. This interpretation would also mean that the international standards that are legally binding contractual obligations are not the same as the "international standards" that have been promised by the company in its public relations. Occidental has pledged to implement a "new model" of hydrocarbon operations to protect the fragile rainforest environment, and has associated this promise with its stature and standards as an international company. In its Contract, however, the company has not agreed to develop new and innovative practices, or even to necessarily use the best practices and most protective standards that are currently available, unless they are also commonly used by oil companies around the world.

The international standards requirements in the Contract could also fall short of some of the national standards that have been established on paper in Ecuador's laws and

regulations, if they are interpreted to require nothing more than the "lowest common denominator" among the myriad standards and practices required by various regulatory authorities around the world, including developing countries. [FN90] Provisions that refer to norms and practices "generally accepted" by the oil industry could be interpreted to represent the "lowest common denominator" among standards and practices that are not only used, but also favored, by international companies. Under that interpretation, standards and practices that are commonly implemented in industrial countries because of regulatory requirements might not be required in Block 15, if some companies consider them unnecessary or "over the top." Although a "lowest common denominator" interpretation of international standards would contradict the popular and official view in Ecuador, that international standards are meant to improve environmental practices beyond what is required by Ecuador's legislation, the language in the Contract allows Occidental and Petroecuador virtually unlimited discretion in how to select and interpret applicable international norms. [FN91]

The provisions in the Contract could also be interpreted as adopting standards and guidelines that have been published by oil industry trade groups such as the American Petroleum Institute ("API") and The Oil Industry International Exploration and Production Forum ("E & P Forum"). The legal and practical import of that interpretation for operations *324 in the field would also be limited, because most industry environmental and community relations "standards" are non-binding guidelines. Although they commonly include some provisions that, if implemented, could lead to some improvements in oil field operations, most provisions are too vague and aspirational to offer clear guidance or serve as meaningful legal standards. For example, industry guidelines routinely recognize the need to "minimize pollution," but leave companies considerable leeway in how to interpret and apply that policy. In addition, they frequently offer a menu of alternative practices, rather than specifying a precise standard or practice as the most effective environmental protection measure. When specific practices are flagged as particularly harmful to the environment--such as road building in tropical forests-- companies are advised to try to "avoid" those practices, when practicable, but they are clearly permitted and contemplated under the guidelines, at the company's discretion. [FN92]

Recent nonbinding guidelines prepared by the E & P Forum and United Nations Environment Programme (UNEP) Industry and Environment Center reflect similar deficiencies. The terms "best practice," "good practice" and "responsible standards" are used repeatedly and apparently interchangeably, but their meaning is vague. When specific standards and practices are catalogued, they do not necessarily follow or even identify the most environmentally protective standards and practices that apply in industrial countries. [FN93] For example, as discussed infra, the United States Environmental Protection Agency ("EPA") has generally prohibited the discharge of exploration and production wastes into fresh waters since 1979; however, this prohibition is not adopted as a guideline for "best practice," or even included among the litany of standards listed in a chart in the document. The guidelines clearly contemplate waste discharges into fresh waters, as well as other practices that are disfavored in the United States--and have been either restricted or prohibited in various states--such as annular injection. Annular injection is the injection of wastes into the annulus of a well, without isolating *325 contaminants from underground aquifers. [FN94]

Although the E & P Forum-UNEP guidelines affirm a number of important principles, such as the need for detailed planning, corporate commitment of financial and human resources, compliance monitoring, and environmental regulation by governments, they leave basic standards unclear, and suggest an aspirational approach to environmental

protection. The emphasis in the guidelines on continual improvement could help raise environmental standards; however, in the absence of clear standards that define a floor, or minimum standards for protection, this could be interpreted and applied to justify low levels of protection. In addition, the guidelines refer readers to E & P industry guidelines without review or analysis of their content. [FN95] This arbitrarily puts the United Nations's imprimatur on private norms that have been defined by special interests, and can contribute to confusion between private and public standards.
The World Bank has published non-binding internal guidelines for pollution prevention and abatement in projects financed by the World Bank Group. Those guidelines are intended to provide technical advice and guidance to staff and consultants who work on "pollution-related projects," and are comprised of general, pollutant-specific, and industry sector-specific guidelines. Onshore oil and gas development is one of forty industry sectors that are included. Significantly, the guidelines do not purport to embody "best practice" or the "highest" environmental standards that can be found among the nations of the world. Instead, they "represent good environmental management practices which can be achieved and maintained with the levels of skills and resources typically available in countries in which the World Bank group operates." [FN96]
*326 In the absence of meaningful procedures for government review and approval of selected international norms and practices to ensure that they are appropriate and effective, the provisions in the Contract could operate as a legalized--albeit inexplicit--form of self-regulation, effectively entrusting the state's authority to set certain standards to the companies whose conduct needs to be regulated, and allowing Occidental to pick and choose which of those standards to apply. Occidental and other international companies in Ecuador have aggressively promoted industry standards and guidelines under the general rubric of "international standards" and "best practice." As a result, private industry positions are commonly confused with public legal norms, and some industry standards are acquiring a cloak of public legal authority and legitimacy, that offers misleading assurances about environmental protection to Ecuadorians who do not understand where those standards come from or how they are developed.
The confusion about the sources of international standards is compounded by widespread ignorance about their content. Many people in Ecuador believe that a credible but enigmatic body of substantive international standards exists that can effectively protect the environment. Occidental and other international oil companies often seem to cultivate that myth and exploit the ignorance about international standards, in order *327 to reassure government officials, communities and other stakeholders about the quality and control of their operations. The growing confusion between private industry standards and public legal norms--and the arbitrary legitimization of industry standards and shadow self-regulation that it is nurturing--are fundamentally problematic because, despite the growing corporate discourse about environmental and social responsibility, oil industry standards and positions are driven first and foremost by the private needs and interests of oil companies. They do not necessarily protect the interests of the public. Ironically, it is the failure of self regulation by international oil companies in remote areas and the abysmal track record of the oil industry generally that has led to growing agreement about the need for international oil field standards. The confusion between international industry standards and legal norms is reinforced by both the language in the international standards provisions of Occidental's Contract, and the general discourse in Ecuador about the company's operations.

B. ISO 14001

In 1998, Occidental became the first company in Ecuador to obtain certification under ISO 14001. Currently, both corporate and government officials there cite ISO 14001 as the most important international environmental standard governing operations in Block 15. ISO 14001 is a private voluntary international standard for environmental management systems. It is designed to help corporations define and maintain environmental policies. However, it is not a performance standard and does not impose any substantive requirements; instead, it requires a series of procedures that form a management system. [FN97]

To be certified under ISO 14001, a company must: (1) establish an environmental policy that includes a commitment to comply with applicable laws and a commitment to work towards continual improvement and pollution prevention; and (2) develop an internal process to manage and *328 review that policy. [FN98] Each company, however, is expected to set its own environmental objectives and targets, and a policy to meet applicable national standards--even in developing countries like Ecuador--would satisfy the ISO standard. Two or more companies carrying out similar activities but with differing environmental performance may simultaneously comply with the standard. In addition, transparency is not required to meet the standard; however, some procedure for external and internal communication must exist. [FN99]

The certification process is conducted by private companies that are hired by the company seeking certification. It certifies management systems, and not outcomes or performance. [FN100] For example, a certifier would examine whether a company has a process to identify applicable legal requirements, but not whether it has complied with those requirements. In operations like Occidental's, where certifiers are contracted from abroad and work in a number of different countries and industries, the certifier may not be familiar with applicable national laws or have substantial technical expertise about the operations that are managed under the policy. Moreover, even when certifiers know that an operation is not in full compliance with applicable standards, certification will generally not be denied if the certifier believes that the company is making efforts to achieve compliance.

In Occidental's case, there is no systematic government oversight to review the company's compliance with Ecuadorian law. Notwithstanding this, problems have arisen in Block 15 that clearly demonstrate that at least some corners are cut, and operations are not in full compliance with legal requirements. For example, in 1997 a worker was killed on a barge that was operated for Occidental by a subcontractor to provide transportation across the Napo River. The barge got caught in a cable that crossed the river, and when the worker, Dumas Tello, tried to free the barge from the cable, it snapped and threw him into the river. His body was never found. [FN101] Subsequently, the Captain of the Port of Francisco de Orellana (Coca) determined that a number of laws had been violated: the captain of the barge was not licensed to operate that type of vessel; the motor was damaged and did not operate in reverse; no life preservers were available on the barge; and the worker was not otherwise wearing proper attire. In *329 addition to violations on the vessel, the cable that caused the accident had been placed across the river illegally, by another subcontractor for the company. That subcontractor, Seiscom Delta United, was carrying out seismic studies for Occidental, and did not have a permit from the marine authorities to suspend its cables across the river and obstruct navigation. [FN102]

When asked about the incident, corporate officials in Quito became annoyed, and insisted that Occidental had permission for the seismic line. [FN103] Although it is true that the company had permission from MEM to conduct the seismic studies, it did not

have permission to obstruct navigation on the river. After the accident, Seiscom Delta applied for that permission in order to continue the studies. This cavalier attitude towards the law illustrates a general attitude commonly found in the oil patch: once a company has an agreement with Petroecuador and MEM to conduct certain operations, it can essentially do as it pleases in the remote Amazon oil fields. [FN104] In the interview, Occidental officials denied any illegalities until asked about the report by the Captain of the Port, and the subsequent request for a permit. They insisted that the accident was an isolated incident; however, the blatant disregard of fundamental safety requirements by both of the subcontractors that were involved suggests that it reflects more systemic shortcomings. [FN105]

*330 Another Ecuadorian law that has been violated by Occidental is the prohibition on dumping materials into waters that threaten navigation by aquatic life. [FN106] Since 1996, a road built by the company to drill the exploratory well in El Eden has blocked the migration of fish from a lake into seasonally flooded forest. In addition to environmental impacts, this effectively destroyed a local fishery. In response to complaints by the community, Occidental paid a fine to El Eden, but has not repaired the damage. [FN107] It is unclear, then, how these and other possible violations of Ecuadorian law affect Occidental's ISO 14001 certification, or even whether the certifier knew about them. Occidental refuses to disclose the certifier's report, or any documents that were generated as part of the ISO process. [FN108]

For the most part, then, ISO 14001 is a qualitative and subjective standard that allows companies considerable discretion in how to interpret and implement it. The greatest value of the standard seems to be an internal one--it helps companies internalize an environmental culture. [FN109] In theory, if a company takes ISO 14001 seriously, employees will not only comply with environmental requirements, but also spend more time finding and correcting environmental problems. As a result, environmental performance should improve. However, ISO 14001 certification does not guarantee this result or even disclose whether it occurs, and does not answer the basic question of what substantive environmental standards the company applies to its operations. What Occidental's ISO 14001 certification does clearly mean is that the company's environmental paperwork is in order.

Notwithstanding this, environmental officials in Ecuador's government and other Ecuadorians believe that Occidental's ISO 14001 certification means that the operations in Block 15 meet some substantive international environmental standards, and that the company's compliance has been independently verified. Although no Ecuadorians interviewed for this study knew precisely what the standard requires, they all believed that Occidental's certification confirms that the company has successfully raised environmental standards beyond what is required by Ecuador's *331 national law, and that a credible--but enigmatic--international authority has audited Occidental's environmental performance. For example, MEM's Deputy Secretary for Environmental Protection, whose office, SPA, is formally charged with environmental oversight in Block 15 and other areas where oil development and mining are underway, described ISO 14001 as "ideal for the companies and the State." [FN110] He explained that, given the proliferation of oil and mining operations across huge geographical areas, and the agency's limited environmental staff, ISO 14001 "gives [them] certainty that the company operates well." [FN111]

The confidence and confusion surrounding Occidental's ISO certification are not entirely surprising because Occidental has aggressively promoted the certification in Ecuador as if it were a "Good Housekeeping Seal." In addition to distributing the "Oxy: ISO 14001 Certified" brochure, the company has placed a large sign on the road to CPF

announcing the certification. One prominent environmental official even added "ISO 14001 Certified" to the Occidental logo on his business card. In presentations, interviews and conversations, corporate officials regularly cite ISO 14001 as objective evidence of the company's environmental excellence. [FN112] Similarly, officials used the mystique of international *332 standards to dismiss questions about possible contamination by naturally occurring radioactive material ("NORM"). They admitted that NORM is present in Block 15, but said that no special environmental measures are required because it is found at levels that are below "international standards." When asked, however, officials could not identify the source or substance of those standards. [FN113]

Thus, the international standards requirements in Occidental's Contract are not only too vague to impose clear and meaningful new standards to raise levels of environmental protection in Block 15, but also--together with the growing official and public discourse about international standards--may serve to undermine national efforts to regulate oil field operations. They offer government officials and other stakeholders a false sense of security that standards and practices are improving, based on enigmatic norms that lie beyond the reach of national authorities with regard to both standard-setting and oversight mechanisms. In addition, they contribute to the arbitrary legitimization of norms that have been defined by special interests.

With the possible exception of the requirement in the Contract to use leading edge technology, the implementation of international standards and practices in Block 15 appears to be strictly a matter of ethics, or corporate responsibility, rather than law. Despite the radical reform of public environmental discourse in Ecuador to embrace international standards, the national laws and standards of Ecuador continue to set the basic legal standards for Occidental's operations, and at least some of those laws have been violated by the company with impunity. Moreover, other provisions in the Contract cede standard-setting authority to Occidental by adopting the company's environmental management plan *333 ("EMP") as an environmental standard for Block 15. [FN114] The EMP, discussed infra, authorizes Occidental to set and modify standards, to achieve "the same level of protection that is required in the United States," but does not define that level of protection and implies, erroneously, that a single "level" of protection is required in the United States. [FN115] The EMP and the Contract also fail to provide for government *334 review and approval, stakeholder consultation, or public disclosure of company-selected standards. [FN116]

C. Best Practice

In theory, a legal requirement to use "cutting edge" environmental technology could be one means to help raise environmental protection standards and close the gap between Ecuador's antiquated oil field technology and more modern technologies developed for use in wealthy industrial countries, where environmental protection standards are more demanding. However, like the other international standards provisions in the Contract, the import of the technology standard is uncertain because the language is vague and confusing. [FN117] The term, tecnologia de punta, is not defined, and its meaning is unclear. Does it require Occidental to use state-of-the-art technology, the best technology that is generally available, the best available technology that is economically reasonable, the best technology that is commonly used by the oil industry worldwide, or something else?

The phrase, "compatible with Ecuador's Amazon region" could add to the confusion. Clearly, there will always be a need to ensure that any technology that is used is capable of operating effectively in the region, considering both the sub-surface geological

conditions and above-ground environment. The language in the Contract, however, is unclear, and could arguably be interpreted to limit the introduction of new appropriate technology in the region, and perpetuate an international double standard for environmental technology. For example, there are no incinerators or landfills in Ecuador that use advanced technologies--widely used or legally required in the United States--for the disposal of hazardous and other solid wastes. Similarly, there are no laboratories with technology to perform sophisticated chemical analyses on samples of waters or soils. As a result, Occidental could argue that the Contract does not require use *335 of those technologies in Ecuador, even if they could operate effectively there, and are commonly used in the industrial world.

Finally, the "agreed to by the parties" clause appears to give Occidental a veto over the definition of "cutting edge technology" and, consequently, over the applicability and requirements of the standard. Although the language in the Contract is not entirely clear, it implies that Occidental and Petroecuador must reach an agreement to trigger the provision and oblige Occidental to use "cutting edge technology." The use of a negotiated standard, rather than one that has been imposed by public officials, is consistent with the general pattern of longstanding relations between Ecuador and foreign oil field operators. Since the oil boom began, Ecuador has depended on TNCs to transfer new technology and finance costly exploration and production activities. This economic and technological dependency, and the importance of oil revenues and investment to Ecuador's economy, gives foreign companies enormous leverage in their relations with the government. Despite Ecuador's nominal authority as a sovereign nation, the actual power that government officials can--or believe they can--exercise over foreign oil companies appears to be limited. [FN118]

*336 Instead of assuming an authoritative, command-and-control regulatory role in environmental affairs when dealing with TNCs that carry out exploration and production activities, the government has essentially behaved like the industry's junior business partner. [FN119] In negotiations, government officials have prioritized the need to promote oil production, locate additional reserves, and maximize the State's share of revenues and participation in hydrocarbon development, including production and marketing. They have used the State's leverage primarily to exercise control over economic aspects of development, including production rates, State ownership of oil and gas reserves, financial audits of investments and expenditures, and guarantees to ensure that TNCs finance continued exploratory activities in the areas licensed to them. [FN120]

*337 Environmental protection has been neglected by government officials, despite an abundance of legal requirements on paper, [FN121] many of which have been on the books for decades. In theory, the technology standard in the Contract could provide government officials a vehicle to participate more actively in environmental decision-making in Block 15. [FN122] However, the provision is written to ensure that the requirements of the standard will be limited to measures that are agreed to by the company, not imposed by the government. Moreover, although the provision appears to contemplate environmental negotiations between Occidental and Petroecuador, in practice, the environmental unit in Petroecuador is not involved in the operations of Occidental and other foreign companies. [FN123] Instead, environmental oversight is the responsibility of MEM, an agency that, like Petroecuador, has long prioritized the production of oil, and done little to control its environmental and social consequences. Because of the lack of experience in Ecuador with "cutting edge technology" and environmental protection generally, and the lack of official resources for environmental protection efforts, Occidental can be expected to have a considerable advantage over

government officials in any negotiations that might develop under the "best practice" provision. As a general matter, the resources and international experience of TNCs like Occidental give them a clear advantage when it comes to comprehending environmental technology and international standards, and, thus, managing the discourse about them in Ecuador. Occidental and other foreign companies use this imbalance effectively, illustrating the truth of the maxim, 'information is power.' The invocation of international standards has become a tool that companies use to help them maintain their dominance over environmental decision-making and implementation, and deflect and discourage meaningful oversight of their operations. This dynamic helps explain why Occidental has refused to publicly disclose the precise standards that govern its operations, and why government officials are not fully informed about the company's standards and practices. Occidental's control of environmental information reflects and *338 reinforces its control of environmental standards in Block 15. [FN124]

VII. The Privatization of Environmental Law

In 1995, the 1992 MEM Environmental Regulations were quietly revoked and replaced, following closed door talks with industry. [FN125] Many provisions, including the discharge standards, remain unchanged. One significant reform, however, appears on its face to grant government officials considerable latitude to modify environmental impact study (Estudio de Impactos Ambientales, EIA) requirements for foreign companies like Occidental, and contemplates the negotiation of particularized environmental law regimes in contracts with TNCs. [FN126]

MEM regulations require oil companies to prepare EIAs at every stage of development. In theory, EIAs should include comprehensive baseline data about environmental and socio-cultural conditions that exist before operations begin; assess the full range of possible environmental and socio-cultural impacts that could result from the operations; identify measures to mitigate adverse impacts; and include a detailed environmental management plan. [FN127] The 1992 regulations included a long list of information, analyses, and plans that should be included in EIAs. The 1995 reforms expand the list, and provide that, in applying the regulatory criteria for EIAs, "in cases of contracts for exploration and exploitation of hydrocarbons, the legal framework for environmental regulation of *339 each contract shall be taken into account." [FN128] The reforms also refer to the criteria as "guidelines," while the prior regulations treated them as a required "methodology." [FN129]

The changes are somewhat confusing because neither the Law of Hydrocarbons nor Ecuador's environmental legislation authorize officials in the executive branch or Petroecuador to negotiate particularized environmental regimes with TNCs, either during contract negotiations or the EIA process. Instead, they appear to set general standards that presumably should be implemented, applied and enforced in a consistent manner. In addition, the Law of Hydrocarbons explicitly requires oil companies to comply with environmental laws and regulations, [FN130] and the new regulations continue the historical legal trend of reaffirming the State's regulatory duties and authority. [FN131]

The modified provisions presumably apply to operations by any company other than Petroecuador, and imply that TNCs and Petroecuador define at least some special environmental rules during contract negotiations. Because the legal authority for this is unclear, the practice could be legally infirm, especially when negotiated provisions could be applied to contradict the Constitution or generally applicable laws or lawful regulations. Moreover, the procedure-- writing environmental rules that can affect the public behind closed doors in negotiations with special interests--substitutes stealthy private negotiations for democratic lawmaking and rational public interest

determinations by government agencies, and raises serious questions of legitimacy and accountability. It is legally dubious because it disregards the rights of local residents and other stakeholders to participate in environmental decision-making, and may also run afoul of separation of powers in Ecuador's government by bypassing the National Congress.

*340 The placement of the modified language in provisions governing EIAs reflects the reality of environmental law in Ecuador--in the absence of regulation by the State, the preparation of EIAs often serves as the primary standard-setting process for oil field operations. [FN132] Environmental management plans are part of EIAs, and generally set forth the most detailed compilation of standards and practices that companies apply to their activities; and, in theory, the baseline information and impact assessments serve as the "analytical basis" [FN133] for the selection of standards and practices. [FN134] In Block 15, Occidental Oil and Gas Corporation's Worldwide Environmental Manager, Clark Hull, described the environmental management plan (EMP) [FN135] prepared by the company in 1992 as part of the EIA required prior to beginning production operations (1992 EIA), as "the document which collates all regulatory, mitigation and standards practices to be employed by the project." [FN136]

Occidental's new Contract includes a number of provisions that relate to environmental protection. The segment entitled "Obligations of the Contractor [[Occidental]" includes a relatively long section dedicated to environmental protection. The opening provision obliges Occidental "to preserve the existing ecological balance" in the areas where it operates, "for which its actions shall be governed by the Environmental Management Plan and the pertinent regulations that are in effect in the country." *341 [FN137] The definitions in the Contract define "Environmental Management Plan" as Occidental's 1992 EMP. [FN138] By leading the environmental protection section with a reference to the company's EMP, and giving a corporate management plan equal and perhaps greater stature than Ecuadorian environmental regulations, the environmental law regime in the Contract seems designed to perpetuate and even legalize self-regulation in Block 15. The use of the EMP as a legal standard reflects and reinforces efforts to legitimize and legalize oil industry environmental norms, and is consistent with language in the international standards provisions, discussed supra, that could be interpreted as arbitrarily adopting oil industry norms wholesale.

Moreover, the reference in the provision to compliance with Ecuadorian laws and regulations is confusing because it is written in the present tense, rather than the subjunctive or future tense. [FN139] As a result, it could be interpreted to mean that, throughout the life of the Contract, Occidental's obligation to "preserve the ecological balance" will be governed by the 1992 EMP and environmental regulations that were in effect at the time the Contract was signed. If new and more rigorous environmental norms are adopted in the future, the company could argue that it is not required to comply with them. [FN140]

*342 A review of the 1992 EMP indicates that the environmental law regime in the Contract seeks to not only legalize norms that have been defined by the company in the document, but also cede rule-making authority to Occidental throughout the life of the operations, without requirements for public disclosure and consultation, or review and approval by government officials. This amounts to the privatization of environmental law, and represents a radical new direction for environmental law and policy in Ecuador. Contrary to the regulatory guideline calling for detailed environmental management plans, Occidental's EMP is vague in a number of important respects, and does not provide a clear and complete statement of standards and practices in Block 15. Moreover, it includes provisions that explicitly authorize the company to set

environmental standards in the future. At the same time, it includes standards that, as a substantive matter, are questionable under Ecuadorian law.

In theory, standards set by Occidental should comply with Ecuadorian law. But environmental law is weak and vague, and the discussion of Ecuadorian law in the 1992 EIA is superficial and incomplete. [FN141] Moreover, the EMP has not been updated to incorporate new developments in Ecuadorian constitutional and international law, that have entered into effect since the EMP was written. [FN142] In addition, Occidental's compliance*343 record--within the limited parameters of the law in Ecuador--is flawed. [FN143]

The environmental law regime established by the Contract is vague in another important respect. The required level of protection is unclear. The requirement cited above, "to preserve the existing ecological balance," could be interpreted as establishing a generally applicable performance standard that prohibits the degradation of waters and other natural resources. In theory, a 'no degradation' standard could require very high levels of protection, consistent with public promises by Occidental and other TNCs to develop hydrocarbon reserves in the Amazon Rainforest without harming the environment. It would also be consistent with language in Ecuadorian laws that prohibit pollution and other harmful impacts. [FN144] However, the provision in the Contract could be interpreted to allow considerable degradation, especially if adverse impacts appear to be confined to certain localities, and ecosystem-wide impacts cannot immediately be detected. It could also be interpreted to allow impacts that are detected but fall short of permanent ecosystem collapse, across a huge geographical area. In short, it is a standard that could mean many things to many people, at least until after disastrous--and irreversible-- consequences have become indisputable. In practice, it could operate as a hollow, indeterminate and ultimately meaningless standard because of the enormous gaps in scientific understanding of rainforest ecology and, thus, of the meaning of "ecological balance."

Although somewhat murky, the monitoring program in the EMP suggests that the standard may represent an attempt to legalize very low levels of environmental protection. The EMP establishes a single parameter to monitor the impact of Occidental's operations on flora and fauna: the *344 "lost [[biological] diversity." [FN145] This could be interpreted to mean that any impact on flora and fauna that falls short of extinction is acceptable. Similarly, the EMP standard for monitoring the impact of oil spills on natural resources does not require assessment or monitoring of possible chronic impacts on flora and fauna unless a fifty percent biotic mortality rate is documented in affected ecosystems within six months of the spill. [FN146]

In addition to the EMP, other environmental provisions in the Contract can be read to permit indeterminate levels of pollution and other impacts. One provision refers to "an acceptable level of negative impact" from future operations. It anticipates that EIAs will be required for new activities, in accordance with "applicable" MEM regulatory criteria, and states that they shall include environmental management plans that "avoid exceeding the maximum tolerable levels and reduce to an acceptable level the negative impacts" on the environment and local communities. [FN147] It is unclear: what the "maximum tolerable levels" are; what constitutes an "acceptable level" of negative impacts; who decides; and how this relates to provisions in Ecuadorian law that appear to establish a policy of preserving ecosystems and preventing pollution and other adverse impacts. It may also represent a retreat from the level of protection that was required--at least on paper--in contracts that were signed with TNCs around the time that Occidental arrived in Ecuador, in the mid- 1980s. [FN148]

*345 The problematic nature of the ambiguity in the management plan standard, and the width of the door it could open to legalized self-regulation, is compounded by another provision in the Contract. In the event that MEM does not approve or reject an EIA (and management plan) within the time frame designated by MEM regulations, then the agency's silence is deemed to constitute an approval by the agency. [FN149]
A similar provision applies to applications to Petroecuador that are required *346 or proposed by Occidental under the Contract. If Petroecuador fails to respond within the time frame specified in the Contract, or within fifteen working days if no time frame is designated, then "it shall be understood that Petroecuador has approved the corresponding proposal or required application." [FN150] This is known as "administrative silence," and is intended to compel government officials to respond in a timely manner to applications and other requests from the company. [FN151] Notwithstanding this, the use of administrative silence to approve EIAs is particularly troubling because management plans define important environmental standards and practices, including measures that are required to mitigate adverse impacts. [FN152]
*347 A "no degradation" reading of the "ecological balance" standard could also be contradicted by a third provision in the Contract, defining a vague standard for environmental remediation. That provision obliges Occidental to clean up and restore impacted areas to environmental conditions that are "similar" to pre-operation conditions. [FN153] Depending on how the term "similar" is interpreted and applied, that standard could undermine the spirit of legal provisions in Ecuador, including the rights of affected residents to seek judicial remedies to repair environmental threats or injuries. [FN154] It could also run afoul of promises made by Occidental to residents in at least some communities to fully restore affected areas.
Another variation of a generally applicable standard is found in the provision in the Contract on environmental oversight. It provides for "periodic" environmental and social audits by MEM and states that the purpose of audits is "to take precautions, as far as feasible, that . . . operations are carried out respecting human settlements and the environment." [FN155] Although the language is ambiguous, it could be interpreted as eschewing precise, binding standards altogether--at least for government oversight purposes--and, instead, obliging Occidental to "do what it can" to protect the environment and respect local populations. [FN156]
*348 In theory, comprehensive audits serve as the government's primary mechanism for environmental and social oversight of oil field activities, especially after EIAs and management plans have been approved for particular operations. [FN157] The use of soft, non-binding language in the only provision directly linking a substantive environmental standard to government oversight activities [FN158] reinforces the policy in the Contract to perpetuate and legalize environmental self-regulation in Block 15, by adopting oversight criteria that are too vague to enforce. In theory, the standard could raise a number of legal questions, depending on how it is interpreted and applied. MEM Environmental Regulations define the objective of the audits differently. Under those regulations, audits should be conducted by SPA at least every two years, in order to verify "compliance with Ecuadorian laws and regulations, and with the environmental management plan." [FN159]
As a result, the environmental law regime in the Contract could be applied to weaken substantive oversight standards in Block 15. It could also be applied to limit the frequency, scope and parameters of oversight activities. In another deviation from the language in the regulations, the audit provision in the Contract states that Occidental's EIAs will serve as the "exclusive base" for "periodic" environmental and social audits by MEM. [FN160] Although arguably ambiguous, the provision could be applied *349

to limit SPA audits in Block 15 to impacts that have been predicted, and norms that have been defined, in EIAs (and management plans), effectively freezing the scope and parameters of audits and oversight. This interpretation would increase environmental risks because audits or other investigations are needed to assess the accuracy of predictions in EIAs, and the effectiveness of management plans. To enhance environmental protection, the scope of audits and parameters of government oversight should be open to new information and developments, including information from sources other than Occidental, and changing legal requirements. MEM Environmental Regulations contemplate the use of EIAs as one base for the audits, but do not adopt them as the exclusive base. To the contrary, the regulations direct SPA to determine the "norms and scope" of audits. [FN161]

Although, in theory, these and any other disparities between contracted environmental law and public environmental law should be resolved in favor of the latter, in practice it is likely that MEM and Petroecuador will defer to language in the Contract. [FN162] This would not only favor Occidental's interest in perpetuating environmental self-regulation and limited government oversight, but also could help protect the company from accountability to third parties for environmental injuries, by limiting information that is generated by audits, and creating an exaggerated appearance of government regulation. [FN163]

*350 Other environmental provisions in the Contract that could be used to help limit Occidental's liability include a certification, discussed infra, that Occidental has complied with all EIA requirements up until the effective date of the Contract, and a statement that Occidental shall not be liable for pre-existing environmental conditions. [FN164] A recent draft agreement presented by Occidental to Comuna El Eden echoes this pattern, and provides further evidence of a legal strategy by the company to use negotiations to both (1) limit liability for environmental injuries; and (2) limit applicable environmental norms to the regime defined by Occidental in its EMP. [FN165]

*351 Whatever level of environmental performance is required of Occidental by the Contract, a comprehensive and credible record of baseline environmental conditions is needed to interpret and apply the standards in the Contract in a clear and rational way. The Contract implies that a reliable record exists. Although it recognizes that additional EIAs may be required for future operations, the Contract declares that Occidental has carried out all of the "studies, plans and programs related to the environment" that have been required of the company to date; that they have been presented to the competent authorities and approved by MEM; and that "it is herein placed on the record" that Occidental has complied with all EIA requirements up until the effective date of the Contract. [FN166] By law, EIAs should include comprehensive baseline information. However, the record of baseline conditions in Occidental's 1992 EIA is muddled, self-serving and incomplete, and does not support the determination. *352 [FN167] The certification in the Contract, then, arbitrarily legitimizes baseline determinations that were made by the company, in addition to contributing to an exaggerated appearance of government regulation in Block 15. [FN168]

VIII. Environmental Management Plan

The most detailed compilation of environmental standards and practices in Block 15 is found in the EMP, [FN169] prepared by Occidental in 1992 as part of the EIA ("1992 EIA") required before beginning production activities, and featured as a legal standard in the environmental law regime in the Contract. [FN170] According to Occidental, the EMP "collates all regulatory, mitigation and standards practices" [FN171] that apply to the operations. Notwithstanding this, the document does not provide a clear and

complete portrait of Occidental's standards, practices and operations. At the same time, it includes some troubling details and, when read with the *353 Contract, indicates that Ecuador has not only failed to implement environmental regulation in the oil fields, but also quietly--and arbitrarily-- ceded rule-making authority to a private company to regulate itself.

A. Standards and Practices

The EMP begins with a statement that makes it clear whose document it is, and who is in control:

Environmental protection is one of the highest priorities that Occidental Exploration and Production Company (OEPC) has included in the design of its operations and as such the environmental factor has been considered in the decision-making in order to reduce the impacts on the environment. [FN172]

The decision-making process and rationale are not explained, and the document continues with a list of six measures that are "among the decisions made for the design" of production operations. They include: locating production facilities far from populations; drilling directional wells; re-injecting formation water; using "impermeable" pits for drilling muds; burying pipelines, including flow lines that cross rivers; and limiting the width of roads. [FN173] The plan does not explain why these measures were selected or how they will be implemented; instead it states that the EMP has been designed "in order to guarantee the mechanisms that ensure that an adequate consideration of environmental factors will be given during the development of the Project." [FN174] This statement is confusing because, presumably, environmental factors have already been considered during the EIA process, and under Ecuadorian law, environmental management plans should detail the precise measures and practices that will be used to prevent and mitigate impacts, including monitoring. [FN175] The introduction to Occidental's EMP, however, suggests a "figure-it-out-as-we-go-along" approach to environmental planning, implementation and oversight.

A review of the document confirms that Occidental is unwilling to commit to a comprehensive set of clear standards and practices in its EMP. Instead, it makes a number of general commitments that leave the company with considerable leeway in how to interpret and implement them. For example, the initial list of five "design decisions" is followed by a long table that summarizes potential impacts from the operations and lists the measures that should be taken to mitigate them. One of the *354 mitigating measures, to prevent the degradation of surface waters, is that Occidental "will establish quality standards for all discharges based on Ecuadorian norms or applicable regulations in the United States." As discussed above, MEM Environmental Regulations include some discharge standards, most of which are listed in the EMP. [FN176] EPA regulations, however, have generally prohibited discharges of onshore exploration and production wastes since 1979; that standard is not mentioned in the EMP. [FN177] Other important--but equally vague--mitigating measures include "treatment" of wastes, "control of runoff," and "monitoring and follow-up of the quality of effluents and receiving waters." [FN178]

The table is followed by a summary discussion of four "principle mechanisms or programs" [FN179] that should be implemented by the company to execute the EMP. They include a Waste Management Plan, Natural Resources Recuperation and Protection Plan, Community Assistance Plan, and a Contingency Plan. Those programs are governed by what is called the "Comprehensive Program to Guarantee Environmental Quality" [FN180] and, together, they comprise the remainder of the text of the EMP. Many of the mitigating measures that are listed in the table, however, are

not discussed in those plans or otherwise integrated into the text of the EMP, leaving the reader to wonder whether, when, and how they will be implemented. For some measures, the company's ability to implement them is dubious, considering the scope of information included in the EIA.

For example, one measure to protect wildlife is to "locate infrastructure *355 to avoid environmentally sensitive areas." [FN181] At first glance, this approach appears promising; however, there is no analysis to indicate that it was implemented. Moreover, the EIA does not clearly identify the location of "environmentally sensitive areas" and important wildlife habitats, such as sites where endangered species feed, nest, and reproduce. A review of the sites selected by Occidental for its facilities suggests that the measure is a hollow promise, and that no location is so "environmentally sensitive" that it is off-limits to the company. For example, Occidental located production wells and roads in a wetland that comprised part of the only remaining undisturbed forest in the Limoncocha Biological Reserve. [FN182] At the time, the swampy forest was an important wildlife habitat and hunting area for local residents. Like other swamps, it is particularly vulnerable to spills and other pollution because it is generally a low energy habitat. It is also located on a flood plain between the Napo River and Lake Limoncocha. When Occidental drilled its first exploratory well in the area, the site became flooded. [FN183] Drilling operations were temporarily halted as the company fled the site. Residents who went to hunt in the flooded forest just after the rains reported seeing drums and other containers of chemicals that had been washed into the swamp from the drill site ("Laguna Spill"). Notwithstanding this, the company did not disclose the spill in the EIA and located production wells, pipelines and a new road in the area.

Another mitigating measure that has been disregarded was listed to minimize "conflicts with indigenous cultures, traditions and way of life." [FN184] It provides that Occidental "will maintain open and cooperative relations with the [local] communities, including the dissemination of the EMP among the communities in the area of influence of the Project." [FN185] During a visit to Block 15 in 1999, the author was present on three occasions when residents asked company officials for a copy of the environmental management plan that governs operations in their communities. *356 On each occasion, the company's representatives responded by saying that they were not authorized to distribute the document. When pressed, they advised the community to request it, and any other information they might seek, from the appropriate authorities. On each occasion a different appropriate authority was cited. [FN186] Subsequently, Occidental proffered a document entitled "Constancia," or "Record." Signed in 1992 by two delegates of the Indigenous Association of Limoncocha, it stated, for the record, that the delegates had participated in a working group to review Occidental's EMP. [FN187] The company offered the document as evidence that it does not hide environmental information and that residents already have a copy of the EMP. At the same time, however, it continued to refuse to show the EMP to current representatives of local communities. [FN188] This suggests that, to Occidental, community relations is a *357 checklist, prepared and executed by the company, rather than an ongoing, dynamic process, that needs to be responsive to the concerns, priorities and aspirations of local residents.

A review of the four programs in the EMP shows that--although some important details are included--the plans are by no means comprehensive, and many important standards and practices are vague and unclear. For example, there is no clear and complete statement of the quantity, chemical composition and destiny of the waste streams and emissions that will be generated by the operations. Similarly, the precise locations

where wastes are buried, and where effluents and emissions are released into the environment, are not disclosed. [FN189]
In addition, a number of key assessments and decisions are explicitly and inexplicably left for the future, including: the location and technical specifications for one, and possibly two, solid waste landfills to be built and operated by the company; [FN190] the location of sites to mine sand and *358 gravel for construction activities; [FN191] the "concentration of contaminants [that will be] liberated into the environment" when effluents, or liquid wastes are discharged into surface waters; the baseline water quality in those receiving waters; and the frequency of chemical sampling for monitoring activities. [FN192] The information that is needed to make those determinations is precisely the kind of information that should be gathered, disclosed and assessed in the EIA. Its omission not only raises serious questions about the adequacy of the impact assessment in the 1992 EIA, but also suggests that environmental considerations are more of an afterthought than an integral part of project planning. If important baseline data is gathered and standards are set after the EIA and EMP have been approved, how can the possible environmental impacts of the project be assessed in a meaningful way and integrated into the project planning?
Presumably, these and other important future "determinations" [FN193] will be made internally by Occidental, which is assigned "exclusive responsibility" for many of the programs and activities in the EMP, including the waste management, monitoring, and oversight programs. [FN194] In addition to the major gaps in baseline information and applicable standards and practices, the EMP is written in a way that repeatedly anticipates the re-adjustment of standards, controls and methodologies. [FN195] Although a certain amount of review and adjustment can be expected for any "new model" of oil field operations, the EMP appears to allow this far beyond any reasonable need, and, most importantly, does not provide for disclosure, transparency, or government oversight as standard-setting and other environmental decision-making by the company proceeds. The result is a striking lack of clarity about the standards, practices, and oversight of the company's operations. This murkiness makes it impossible to verify Occidental's claims of environmental excellence or even to decipher the level of protection provided by environmental standards in Block 15, and has created a major source of frustration and anxiety for many residents in local communities.
In effect, then, the EMP creates a framework for self regulation by the company. In addition to the specific provisions discussed above, two general provisions are particularly troubling because they appear to give the company broad authority to set, and modify, the standards for its operations. *359 The Integral Program to Guarantee Environmental Quality, which "regulates" [FN196] all of the programs and mechanisms in the EMP, includes a section entitled "Environmental Norms." It provides:
OEPC (Occidental) will adopt the most applicable environmental codes, norms, and regulations in all phases of the Project. The application of those norms will be a dynamic process throughout the development of the Project, in order to comply with the policy of equivalence, which means that the same level of protection that is required in the United States, should be given, unless the standards in Ecuador are more strict. [FN197]
This language reflects Occidental's corporate policy at the time it wrote the EMP. Initially called "functional equivalence," and subsequently re-named "equivalent intent," the policy was one of the first variations of "international standards" adopted by an oil company in Amazonia. Although it sounds promising, "equivalent intent" suffers from the same problems that characterize the more recent international standards policies in

the oil patch. It is vague, and levels of protection vary considerably at different locations in the United States. As a result, it allows the company to pick and choose the standards to apply to its operations, without independent oversight. The vagueness of the policy, and the virtually unlimited discretion that is granted to Occidental under the EMP, is illustrated by the fact the Occidental has abandoned the policy of functional equivalence--yet that change apparently did not require the company to revise the EMP. According to Clark Hull, Occidental's policy was changed in 1995 to "worldwide standard of care," because some people in the oil industry, and internal auditors, had interpreted "equivalent intent" to require compliance with United States regulations. The worldwide standard of care policy allows variable standards around the world, where environments and exposure pathways are different. According to Hull, standard-setting under the new policy "lets the company apply good science and management techniques;" and Occidental has developed specific performance standards for Block 15 under the policy, since writing the EMP. [FN198] Notwithstanding this development, the company has refused to disclose those standards to the author or local residents.
The Integral Program to Guarantee Environmental Quality also provides for annual review of the EMP, "in order to determine the effectiveness of the application of its programs." Among other items, the review should include a "re-evaluation" of the environmental impacts of the operations, *360 and a comparison of those impacts with the impacts that were predicted in the EIA. Based on the review, the EMP should be "reprogrammed and adjusted." [FN199]
Together, these provisions confirm that standards in Block 15 can be moving targets, and that environmental protection is controlled by Occidental. [FN200] Instead of prescribing a body of clear standards to regulate the company's operations, justifying the selection of those standards, and establishing a program to implement, monitor and evaluate them, the EMP has been crafted to legalize Occidental's internal corporate environmental policy and management program, and authorize the company to modify standards and practices without public disclosure or government review and approval. As a result, the use of the EMP as a legal standard in the new Contract raises serious legal and ethical questions. Presumably, the company has made at least some of the decisions and determinations that are called for in the EMP, yet the document was not updated before it was incorporated into the Contract. This omission can only mean that Occidental and Ecuador are unwilling to commit to clear environmental standards, and that, for the most part, the State has ceded the authority to set environmental standards, and evaluate their effectiveness, to the company. This amounts to the privatization of environmental law. It is legally and ethically dubious because the State cannot constitutionally shirk its environmental and social duties, and legalize an environmental protection regime that allows private special interests to set legally binding standards in an arbitrary and capricious manner, behind closed doors. In addition, Ecuador's government does not have the authority to extinguish or disregard the rights of local residents--under both international law and the Constitution--to participate in decision-making that can affect the environment, or the rights of indigenous residents to be fully informed and consulted about plans and projects to exploit non-renewable resources in their territories. [FN201]

*361 B. "The Purloined Data" [FN202]
Two details disclosed in the EMP are particularly troubling. One relates to monitoring activities after an oil or chemical spill. It provides that within six months of the spill, "the biotic structure" of affected ecosystems should be evaluated; and in areas where the biotic mortality rate is found to exceed fifty percent, additional studies should be carried

out to determine whether there are chronic impacts from the spill. [FN203] This appears to set a standard that allows Occidental to disregard possible chronic impacts on flora and fauna from oil and chemical spills, unless a threshold fifty percent mortality rate can be documented, at an indeterminate time within six months of the spill. Although the standard is written to sound scientific and authoritative, it is not a scientifically defensible approach to spill response or natural resources monitoring. The shortcomings of the approach are compounded by the failure of the EMP to specify action levels for cleanups.

Those problems are further exacerbated by another detail in the EMP. The general monitoring program establishes a single parameter to monitor the impact of Occidental's operations on flora and fauna: the "lost [biological] diversity." [FN204] This provision could be interpreted to mean that any impact on flora and fauna that falls short of "lost diversity" is acceptable. That interpretation, however, would be inconsistent with responsible corporate conduct. [FN205] It would also be inconsistent with provisions in Ecuador's Law of Hydrocarbons that require oil companies to protect renewable natural resources and ensure that operations do not adversely affect the local economies of populations who live in the oil *362 patch. [FN206]

The failure of those standards and the EMP generally to offer meaningful protection to natural resources, and the shortcomings of allowing Occidental to police itself in environmental and social affairs, is illustrated by the Laguna Spill, discussed supra. In a brief discussion of baseline chemical data, Occidental's 1992 EIA reports that samples at one location in Lake Limoncocha show the presence of high levels of heavy metals, far in excess of water quality standards for any designated use. Occidental implies that the pollution was caused by Metropolitan Touring, a nature tour operator that used a dock in the lake near the sample site; and further implies that the contaminants are contained in a "closed" area of the Lake. [FN207] This implication is misleading because the area Occidental refers to is a narrow neck of the lake, that extends from the main body of the lake, but is not closed off or contained in any way. In addition, a table of data included in the EIA, but not discussed in detail in the text, reveals that the heavy metals found in the lake--arsenic, barium, cobalt, copper, lead, nickel, vanadium and zinc--are all contaminants that are typically associated with oil drilling activities. The table also shows that most of the same metals, as well as cadmium, mercury, silver and beryllium--were found at another site. The results from that site are not mentioned in the text. Although the location is not disclosed with precision, it appears to be somewhere in the swampy forests of the Limoncocha Biological Reserve, in the vicinity of the Laguna wells platform. [FN208] In addition, high levels of chromium and nickel were *363 found in two species of plants in the lake. [FN209]

Lake Limoncocha is an oxbow lake, created when the Napo River changed course, leaving a body of water. [FN210] The lake is still fed by the Napo River during periods of very heavy rains. One such rain occurred while Occidental was drilling the first Laguna exploratory well, at a site in the reserve. The flooding caused a temporary shutdown of drilling operations and the Laguna Spill. While the data in the EIA are too limited to be conclusive, there is no question that they are significant, and that it is considerably more likely that the pollution in the lake was caused by the Laguna Spill than by tourism. Nonetheless, the EIA does *364 not disclose the spill. [FN211] In addition, even though the levels of contaminants in both the lake and the swamp raise serious ecological and health concerns, [FN212] both sampling sites have apparently been abandoned by Occidental. Neither site is included in the water monitoring program in the EMP, [FN213] and there is no sampling of sediments or contaminants in flora and fauna. Moreover, under the natural resources standards defined in the EMP (and

discussed above), if another similar spill occurred today, the company's response would still be inadequate.
Local residents say that Occidental studied the lake "by itself" and told them that water quality is "good." In addition, notwithstanding the evidence of multiple violations of water quality standards, Occidental has reportedly told Ecuadorian government officials who currently manage Limoncocha Biological Reserve that--based on the company's sampling--water quality in the lake is "good," and the only contaminants of concern are coliforms, that come from sewage from a nearby training institute for bilingual professors. [FN214] Occidental reportedly refused an oral request from the Area Chief of the reserve to review the company's sampling data from the lake, citing a Petroecuador confidentiality policy. [FN215]
*365 It is difficult to interpret Occidental's failure to disclose or consider the Laguna Spill, and the limited scope of relevant monitoring in the EMP, as anything other than an attempt to cover up the spill, and quietly create a record that could be used to blame Metropolitan Touring for pollution in the lake, should the need arise. This is particularly egregious and irresponsible because the lake is an important fishing area for indigenous Quichua from a number of local communities, including Limoncocha, Rio Jivino, Santa Elena, Itaya, and San Antonio. People of all ages fish day and night. Heavy metals persist in the environment, and many metals are known to accumulate in the food chain. [FN216] They could potentially pose a health risk to local residents who eat fish from the lake, in addition to threatening wildlife. Both the lake and swamp are located in a national protected natural area, that was recently designated as a Wetland of International Importance, under the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention). [FN217]
In addition to raising serious questions about Occidental's operations, ethics and compliance with Ecuadorian law, the data suggest that even when precautions are taken in the oil patch, single incidents can occur--even during exploratory drilling activities--that can have far-reaching and longstanding consequences in a rainforest environment and harsh impacts on local communities. Occidental's failure to disclose, investigate and remedy the Laguna Spill shows how easy it is for oil companies to hide environmental problems in remote areas, and wrap themselves in a misleading veneer of corporate responsibility and international standards. [FN218] Neither local residents nor government officials in Ecuador's Ministry of the Environment, who manage the reserve and worked to designate it as a Ramsar site, were aware of the data until the author brought it to their attention.
*366
IX. Implementation of Major Design Decisions in the Environmental Management Plan
For routine operations in Block 15, the record is also murky in many important respects. Nonetheless, a review of the major "design decisions" highlighted by Occidental in the opening pages of the EMP can shed light on the standards and practices that have been implemented.

A. Site Selection
The first "design decision" listed in the EMP is that "production installations shall be located far from the populations around the Project." [FN219] On its face, this sounds reasonable because proper implementation could help minimize the intrusion, and reduce environmental and social impacts, on local residents. However, the basic information needed to implement and evaluate the measure is not included in the EMP or anywhere else in the 1992 EIA. [FN220] The study does not identify significant

environmental and socio-cultural impacts that could result from site selection decisions in Block 15, evaluate alternative locations, or suggest--beyond this vague statement--that those impacts were factors in decisions about where to locate production facilities. The EIA does not even disclose precisely where the production facilities are located in relation to local communities, or include clear and complete information about where people live, drink, bathe, wash clothes and dishes, garden, attend school, hunt, fish, and gather important natural resources. As a result, either Occidental did not implement this measure in a reasoned and serious way, or the company based implementation on information and reasoning that are not disclosed. A visit to Block 15 suggests that the measure was applied inconsistently and superficially. Many facilities are located near local populations, and even facilities in more distant lands can have major adverse impacts on indigenous populations.

The area where production facilities are currently located ("Production Project Area") is primarily inhabited by indigenous Quichua. Although *367 most communities have central areas where schools, community centers and a few homes are located, those areas are not major population centers, and family homes and gardens are dispersed through community lands. Community lands that do not have homes and gardens are mostly forests and swamps, and are used by residents for hunting, fishing and gathering. By Quichua standards, population density in the Production Project Area is high, and virtually all of the lands are used by people who live there. However, only one community, Limoncocha, has a centralized population center. Limoncocha is a former headquarters for the Summer Institute of Linguistics ("SIL"), a U.S.-based organization of evangelical Protestant missionaries, that has worked in Ecuador and around the world to contact and 'civilize' indigenous peoples, and translate the Bible into native languages. The group was formally expelled from Ecuador in 1981 and, currently, a training institute for bilingual professors occupies former SIL facilities. [FN221] A small military post is also located in the community. When Occidental arrived, Limoncocha was a quiet community, not unlike its neighbors except for periodic visits from tourists and occasional problems with drunken soldiers. Now it is evolving into a village.

Occidental located its central processing facility ("CPF") away from Limoncocha and other homes. This helps reduce contact between oil workers and residents, which--to its credit--the company has tried to discourage. However, the wells, roads and discharge site from the sewage treatment facility at CPF are located in and around areas with homes, and they have created a number of problems and concerns that have not been adequately addressed. For example, at least two families in Limoncocha who live in the area traversed by the main road complain that construction of the road has disrupted drainage in their gardens. Because it *368 is elevated, the road blocks runoff to adjacent lands; as a result, gardens alongside the road have flooded after heavy rains, killing crops. Occidental reportedly refused to pay compensation for the losses, and has not repaired the damage. In Limoncocha, Rio Jivino, and Itaya, Occidental destroyed crops near homes to build roads and drilling platforms; in some cases, residents have relocated their homes.

The community of Rio Jivino has been particularly hard hit by Occidental's siting decisions. The forty hectares selected by the company for the location of CPF was their most important hunting area. It was also a "reserve" that they were protecting for their children. Incredibly, the 1992 EIA does identify the location of CPF. According to residents, the company knew that the site was a hunting area and community reserve before it built CPF, because they tried to persuade the company to find another site.

Residents learned about the site after Occidental approached community officials with a proposal to "buy" the land. At the time, the land was legally titled to Comuna Rio Jivino. Under Ecuadorian law, indigenous lands that are titled to a comuna are the collective property of all the inhabitants who comprise the comuna. [FN222] Occidental did not ask residents for permission to work in Rio Jivino, and people there did not believe that they could say 'no' to the operations. They did, however, initially, refuse to sell the land, because of the importance of the area to them. They asked the company to find another site, but Occidental insisted, and eventually wore down the resistance to the sale. In the words of local residents, the company "compro consciencia" (bought conscience), in exchange for alcohol, fiestas, food and rides in company cars. Occidental promised residents "todo lo bueno para siempre" (all the best things forever), including jobs, transportation, fiestas and other benefits. Occidental also promised that it would not operate like Texaco and Petroecuador; to prevent pollution, it would use "tecnologia de punta" (cutting edge technology). For a few years, the company provided assistance to Rio Jivino; and relations were "good." After the operations were up and running, however, and had been showcased in press tours and the company- produced video, "The Human Face of Petroleum," residents say that Occidental changed. The company gradually withdrew its assistance, and now most people feel "dumped" or "thrown away" by the company. They say they were "tricked" by Occidental; and currently *369 only a favored few receive any benefits from the operations. [FN223]

In addition to feelings of betrayal, residents of Rio Jivino do not have anywhere to hunt in their own community. Hunting and other subsistence activities not only are fundamental to the health, nutrition and well-being of indigenous peoples, but also are important factors in the maintenance of their cultures and economic self-reliance. [FN224] As a result of Occidental's *370 site selection decision for CPF, an important element of the local subsistence economy has been destroyed and people require more food "from outside." Among other impacts, this has made them more dependent on a wage economy in an area where jobs are scarce. [FN225] As a general matter, many people say they eat less meat. To replace the protein in their diet they have increased fishing activities, especially in Lake Limoncocha. In addition to questions raised by "the purloined data" in the 1992 EIA, this change in subsistence activities may be putting some stress on fisheries in the lake and, consequently, could create conflict between the neighboring communities of Rio Jivino and Limoncocha. Some residents in Rio Jivino have expressed concerned about "talk" in Limoncocha that the community may try to ban them from fishing in the lake.

The major fishing area in Rio Jivino is the Jivino River. That river has been polluted by plantations of African Palm located upriver from the community, and from oil field operations by Texaco and Petroecuador. However, it is still an important natural resource for the people who live there. Residents fish and bathe in the river, and in some areas they also drink its waters. Occidental discharges effluent from the sewage treatment facilities at CPF directly into the river, at a location in the community that is near homes and fishing and bathing areas. Not surprisingly, many residents--who were not consulted about the location of the discharge or informed about the wastes that are poured into the river--are concerned that the company may be further degrading the quality of the water. In another gross omission, Occidental's 1992 EIA does not disclose the location of the discharge or the quantity or chemical composition of the waste stream; nor does it include meaningful baseline water quality data from the Jivino River or an assessment of the river's assimilation capacity. [FN226]

The EMP does include a list of five quantitative chemical standards for sewage discharges; [FN227] however, a statement to meet certain concentration *371 standards

is not enough to make a good analysis of the consequences of the discharge for the environment. With one exception, the EMP standards correspond to standards in MEM Environmental Regulations, which were first issued soon after the EMP was approved. Unlike MEM Environmental Regulations, the EMP does not include a standard for residual chlorine. This is a serious omission because Occidental uses chlorine to disinfect sewage, and the effluent that is discharged into the river undoubtedly contains chlorine. [FN228] Chlorine can react with oily wastes and organic material in the environment to create toxic organic halogens, or trihalomethanes ("THMs"). THMs are possible human carcinogens, and are known to cause cancer in animals. Despite this, Occidental does not monitor the Jivino River for organic halogens. [FN229] In addition, residents report that the company tells them the discharge has been "cured" and is safe to drink. The effluent standards in the regulations and EMP, *372 however, are not drinking water quality standards. [FN230]

The 1992 EIA can be read to suggest that impacts on water quality in the Jivino are not significant because the river is already polluted from other sources. However, that conclusion would be arbitrary because baseline water quality, and possible impacts on it, are not assessed. [FN231] Moreover, such an approach to environmental protection is not consistent with responsible environmental practices or Ecuadorian law, and is callous to the needs and concerns of local residents who depend on the river. Further degradation could virtually "kill" the river, and seriously harm the livelihood, health and well- being of the people. It would violate the spirit of a number of provisions in Ecuadorian law, including the Constitution, that generally prohibit pollution that degrades water quality, and may also be inconsistent with the standard in the Contract that requires Occidental "to preserve the existing ecological balance" where it works. [FN232]

In addition to questions and concerns about the ongoing sewage effluent discharges into the river, residents have reported mysterious itinerant discharges, that begin "violently." They have also expressed concern *373 about the possible impact of a waste injection well located very close to the river, and about how they can know that injected wastes are not getting into the river.

Although residents of Rio Jivino thought they were selling their land to the company, in fact, Occidental had solicited expropriation of the land, in favor of Petroecuador, so that it could work at the site regardless of the wishes of the community. The EMP is silent about standards and practices to gain access to lands that the company wants to use for its operations. Occidental's Contract, however, provides that Petroecuador must "solicit and obtain from MEM in a timely manner, upon petition from [Occidental] . . . the expropriation in favor of Petroecuador, of lands . . . that may be needed to carry out the obligations" of the company under the Contract. [FN233] Occidental's practice of securing the expropriation of all lands that are used for production facilities was confirmed to the author in an interview with the company's chief attorney in Quito; however, residents of Rio Jivino did not learn that their lands had been expropriated until after that interview. [FN234]

*374 Occidental's 1992 EIA also fails to mention expropriation or consider possible socio-cultural impacts of the practice. In addition, although the EIA includes three global statements about land tenure--which recognize that a considerable, albeit inconsistent, proportion of Block 15 is comprised of indigenous lands [FN235]--it does not clearly disclose who owns the land at the company work sites, or consider how the operations will impact land tenure or indigenous cultures. At best, this is an egregious oversight for a company that says it is committed to respecting indigenous cultures and land rights. Access to work sites is a major community relations issue for oil field

operators in Amazonia, and it is widely known that land tenure is critically important to indigenous peoples throughout the region. A more likely explanation is that Occidental deliberately withheld the information, as part of a general policy to conceal its practice of securing the expropriation of lands that it wants to use for production operations from both local residents and the public.

More recently, Occidental built a seven-kilometer road through a swamp in a remote Quichua community, El Eden. The road was used to transport personnel and equipment to the Eden-1 exploratory well site. The design did not provide for proper drainage and, instead of protecting the swamp, the company dumped soils removed from another area in wet areas as fill. Among other impacts, this caused fishkills in several streams that traverse the area; and despite complaints by local residents, the road continues to disrupt drainage in the wetland. It also blocks the migration of fish from a nearby lake. Previously, fish swam upstream after heavy rains to feed on fruits in the seasonally-flooded forest, but *375 they have not returned in significant numbers since the road was built. Residents have lost an important fishery and source of drinking and bathing water. [FN236] These impacts not only illustrate the need for a site selection standard that is more appropriate to local conditions, but also raises questions about Occidental's compliance with other applicable standards and practices. For example, the table in the EMP includes two mitigating measures that should have been applied to the siting and design decisions that caused the harmful impacts in El Eden. Both are intended to protect wildlife, and they include "locating infrastructure to avoid environmentally sensitive areas," discussed supra, and "protection of wetlands and their drainage." [FN237]

Events in El Eden also raise questions about Occidental's compliance with Ecuadorian law. Although generally vague, some provisions in Ecuador's laws and regulations are unambiguous. The Law of Fishing and Fishing Development prohibits dumping materials that can impede migration by fish. [FN238] Nonetheless, government officials have not acted to enforce the law. In response to demands by the community to use "better technology" to improve the road and repair the damage, Occidental agreed to pay a fine, but reportedly told residents that the work had already ended.

These problems demonstrate both the importance, to people and the environment, of standards and practices for selecting exploration and production sites, and the inescapable reality that, in Amazonia, site selection standards are intimately related to land access standards. The location of a number of facilities in Block 15 suggests that siting decisions there are based strictly on operational needs and convenience to the company. The vague but promising dictate in the EMP, to avoid environmentally sensitive areas, apparently has not been implemented. [FN239] The other standard for site selection in the EMP--while superficially appealing--is also vague. In remote areas, a standard that requires companies to locate facilities "far from the populations" [FN240] could be interpreted to mean "almost anywhere." In Block 15, it has been applied in a way *376 that is insensitive to indigenous cultures and their concept of territory, and inappropriate to land use patterns in affected communities.

Although the EMP is silent on land access standards and practices, the Contract effectively establishes a standard of access by fiat, by compelling the government to expropriate any lands that the company wants to use. This private-government compact for indigenous territories operates to eviscerate fundamental rights of indigenous peoples, including their rights to land, property, and participation in development decisions. It is also unethical and inconsistent with responsible corporate conduct and Occidental's own promises to respect indigenous cultures. [FN241]

B. Directional Drilling

The second design decision in the EMP is to drill "directional wells, to reduce the number of locations, and to use the same location (Drilling Island) to drill several directional wells." [FN242] This practice is commonly cited by international companies as an important measure to enhance environmental protection in tropical forests, because it reduces land take and clearing of the forest. [FN243] Current technology allows up to ten or *377 twelve wells to be drilled from a single platform, instead of clearing a separate platform and access road for each well. There is no question that this can be a dramatic aesthetic improvement if colonization around the wells can be controlled, and can significantly reduce other environmental and social impacts--including fragmentation of forest habitat--depending on the location and design of the facilities.

However, directional drilling may generate larger quantities of drilling wastes than vertical drilling, depending on the configuration of the hole(s). In addition, wastes from directional drilling may be more toxic than wastes from vertical drilling, because oil-based drilling muds may be needed, instead of water-based muds. As a result, the net environmental impact of directional drilling cannot be adequately assessed without considering waste management and disposal practices for drilling operations. [FN244] The waste management plan in the EMP offers some information, but is vague and incomplete in a number of important respects. Moreover, it includes two general norms that could conflict with the design decision to use directional drilling. Those norms include a preference for water-based drilling muds, because they are less toxic than oil-based muds, and a commitment to minimize the quantity of wastes generated by the operations. [FN245] The potential conflict is not recognized or considered in the 1992 EIA. Instead, a statement is included in the waste management *378 plan that "[i]n case it is necessary to use oil-based muds, they shall be managed in an environmentally acceptable manner." [FN246] "Environmentally acceptable" is not defined; but the language allows Occidental considerable discretion, and is not phrased to sound like a particularly rigorous standard. Presumably, it means what Occidental decides it means, at the time the need--also determined by the company--arises.

Waste handling practices during drilling activities in 1996 in Comuna El Eden appear to be representative of current practices in Block 15. Some of the drilling muds were recycled and reused; however, Occidental has refused to disclose the quantities and chemical composition of the mud and other wastes. Drilling wastes were dumped in a pair of open pits. Each pit had a single liner, made of synthetic material. In the pits, solid materials settled to the bottom. Liquids that floated above the solids, or supernatant, were siphoned off and discharged into the environment around the site. This violated Occidental's government-approved environmental management plan for Eden-1, which states that "waste waters will not be dumped into streams in the area but rather transported in pipes to the Napo River." [FN247] The reason for the special provision to remove wastewaters from the area is that the drilling platform is located near, and in the watershed of, Lake Yuturicocha. The lake is an important fishery for local residents and the site of a popular rainforest eco-tourism lodge. Like other lagoons, it is particularly vulnerable to pollution. Residents from the Quichua community of Samona Yuturi, where the lake is located, complained to Occidental about contamination from drilling activities; in response, the company reportedly demanded that they provide chemical analyses of the water, to prove that it was polluted. [FN248]

*379 Solid wastes that remained in the pits after the supernatant was removed were covered with dirt and abandoned in place. As with the liquid waste streams, the

company has refused to disclose the quantity and chemical composition of buried wastes; however, drilling wastes typically contain a number of toxic constituents, including hydrocarbons and heavy metals. [FN249] According to residents of El Eden, one of the pits exploded and spewed oily wastes onto the platform not long after the company completed drilling activities, closed the pits, and left the site. This incident suggests that hazardous materials may have been buried in the pits, with other drilling wastes.

According to the EMP, the supernatant should have been sampled before discharge. [FN250] However, this cannot be confirmed because Occidental has refused to disclose the details of its sampling activities or any sampling data. Generally, oil companies in Ecuador do not systematically sample effluents before discharge, despite the fact that MEM Environmental Regulations include quantitative chemical standards for those discharges. [FN251] The EMP includes a list of effluent standards, that correspond to the regulations. [FN252] When residents of El Eden expressed concern about the discharges during drilling there, Occidental reportedly told them that the effluent is "cured" prior to discharge, and that it is clean enough to drink. [FN253] This is highly unlikely; even if the effluent complied with standards in the EMP, it would not be suitable for drinking. [FN254]

For the most part, these practices do not appear to be significantly different from standards and practices established by Texaco in Ecuador, *380 because all of the pollution that is generated during drilling activities is released into the environment or buried in a way that presents a threat of release. The procedures to physically separate the wastes do not constitute "treatment" because they do not reduce the toxicity or mobility of the contaminants. The continued use of open pits increases the volume of wastes, as rainwater freely enters the pits and can become contaminated therein. What is different from Texaco's practices is that liquid and solid wastes are separated before they are abandoned in the environment, and the release of contaminants may be slower and more dispersed; the pH of the effluent may be adjusted before discharge; waste pits are covered with dirt after drilling, so that they do not overflow or continue to attract animals; and the liners and de-watering of waste pits could slow the seepage of contaminants from pits into soils and groundwaters.

In the United States, the most protective practice, from an environmental point of view, is to use a closed system of tanks, instead of pits, to handle wastes at the drill site; recycle and reuse drilling muds, as much as possible; separate small quantity, high toxicity wastes for special handling and disposal as hazardous wastes, [FN255] and remove other wastes from the site after drilling ends, for deep injection into a waste injection well, that does not use annular injection, or, alternatively, for landfarming or burial at a central waste disposal facility that is licensed to receive the wastes. [FN256] In Ecuador, there are no commercial waste disposal facilities *381 for drilling wastes or hazardous wastes. This is true at other locations in Amazonia as well; as a result, the proper disposal of drilling wastes continues to pose a serious challenge throughout the region.

C. Using "Impermeable" Pits for Drilling Muds

The third design decision highlighted in the EMP is the use of "impermeable" pits for drilling muds. [FN257] This measure is also related to waste handling and disposal activities at drill sites, and generally means that pits are lined with a synthetic membrane. As discussed supra, the most protective practice from an environmental point of view in the United States is to use closed tanks instead of waste pits, especially in areas with shallow groundwater. Moreover, the impermeability of synthetic liners has

been questioned by experts in the United States, because they commonly contain pinholes when they leave the manufacturer, and can be torn during installation. [FN258] Consequently, wastes in the pits can contaminate groundwater from the beginning of the operations. Over *382 time, liners degrade and within thirty years, they "turn to dust." [FN259] The use of liners in drilling waste pits may slow the pollution of groundwater while drilling activities are underway. However, to maximize environmental benefits, pits should only be used as a temporary measure, if at all. After drilling ends, all wastes should be removed from the pit, and taken off the drill site for proper treatment and disposal at a facility permitted for oil and gas field wastes. [FN260]
Occidental's pits, however, are effectively converted into landfills after drilling ends, as solid wastes from drilling activities are buried and abandoned there. [FN261] The explosion of the pit in El Eden suggests that the company may also use pits to bury other waste materials, in addition to solids from drilling muds and spoils from the hole. When asked about the manufacturer's life expectancy for the liners in Occidental's pits, the acting supervisor at CPF was surprised by the question and answered, "forever." [FN262] This is implausible. Nonetheless, the EMP does not provide for maintenance activities or groundwater monitoring around landfills at well sites that contain wastes from drilling activities.

D. Reinjection of Formation Water

The fourth measure highlighted in the EMP is the "reinjection of formation water." [FN263] If properly implemented, re-injection could lead to considerable improvements in environmental protection in the oil patch. Injection has long been a common waste disposal practice for produced water wastes in the United States. [FN264] The most commonly cited best *383 practice is to reinject wastes into the same geologic formation from which they were removed; however, that is not always possible, and wastes may also be injected into another deep formation. The receiving formation should be located below freshwater aquifers, and geologically isolated from them. Experience in the United States, however, shows that injection wells can become fountains of contamination--both in freshwater aquifers and above ground in soils and waters--if they are not properly designed, installed, operated, maintained, and monitored. Serious pollution problems have been documented in many states in the United States where underground injection is practiced. [FN265] In addition to known contamination problems, the critical question of long-term confinement of injected wastes in injection zones remains unanswered. Not enough is known about the behavior of injected wastes. Once injected, wastes are removed from control and management, and their subsurface migration to ground or surface waters cannot be accurately monitored. [FN266]
*384 In Block 15, Occidental's injection operations have not been independently audited, so it is impossible to assess the effectiveness of the practice. One important concern is corrosion--oil field brine corrodes injection wells and can escape into freshwater aquifers. Activity by sulfate- reducing bacteria can also cause corrosion. As a result, companies must be prepared to spend substantial amounts of money on maintenance activities-- including chemical additives to control corrosion and bacteria-- to ensure the continued proper operation of injection wells. [FN267] In addition, any wastes that contain naturally occurring radioactive material ("NORM") need special handling. The EMP does not include provisions for detecting and handling NORM. According to the company, NORM is present in Block 15, but it is "below international standards," so no special measures are undertaken. Company officials could not,

however, identify the source or substance of the applicable international standards. [FN268]
*385 There is also considerable confusion in Ecuador about the scope of Occidental's injection practices. Although the EMP only commits to the injection of formation water, many people confuse this with 'no discharge,' and assume that all wastes generated in Block 15 are injected. This is not surprising, because corporate officials commonly describe the operations as "zero discharge." [FN269] Residents, however, consistently report that supernatant from drilling wastes is discharged into the environment, and the EMP clearly contemplates that practice, in addition to some other low volume discharges, and the burial of solid wastes with toxic constituents. [FN270] In a series of interviews, corporate officials in Ecuador could not consistently account for all of the waste streams typically associated with oil field operations. For example, the handling and destiny of workover and other well stimulation wastes, and of the myriad low volume, high toxicity wastes that are typically used in the oil patch, are unclear. In addition, according to one well-informed expert, who requested anonymity, Occidental's injection capacity is not sufficient for all of its produced water, and the company injects only some seventy percent of its brine, discharging the rest.
In the United States, EPA regulations under the Clean Water Act have generally prohibited the discharge of onshore exploration and production wastes into fresh waters since 1979. The EPA zero discharge standard applies to all wastes from exploration and production activities, including produced water and drilling wastes, and is based on a determination by the agency that "no discharge" represents the (then) "best practicable control technology currently available ("BPT")." [FN271] For solid wastes, *386 many low volume, high toxicity wastes must be managed as hazardous wastes, under the Resource Conservation and Recovery Act. Other low volume, high toxicity wastes, as well as high volume oil field wastes--including drilling fluids and spoils, and other wastes uniquely associated with oil and gas exploration and production activities--are statutorily exempt from RCRA's hazardous waste requirements, and are regulated primarily by state laws. [FN272] The exemption is controversial because it is based on economic concerns rather than the absence of hazardous constituents. [FN273]
*387 As a general matter, most Quichua residents say that they do not know how Occidental operates in their communities, because the company has fenced off its operations and does not let them into the facilities. Despite this, there are some reports that raise serious concerns. Those reported activities include spraying produced water or other contaminated water on roads for dust control purposes; [FN274] dumping salty wastes near the Jivino River in Limoncocha; and dumping at night into a stream in Pompeya.
In addition, there have been reports of nighttime injection into an abandoned well in Pompeya. Local residents noticed a tanker truck on the road at night. For several nights, it went back and forth, to a "dry" exploratory well in the community. A group went to investigate, and noticed oil around the wellhead. They confronted Occidental, because they thought the company had lied when it told them the well was dry; if the *388 well was producing, they wanted an agreement to rent the land and share in the benefits of production. [FN275] In response, an official said the company was "reinjecting" into the well. When they asked why Occidental was working at night, he said, "because we work better at night." In response to an inquiry for this study, one company official denied the account and said that all wastes are injected into the three injection wells. [FN276] Another admitted that the company has done some annular injection, but would not disclose what had been injected or where. [FN277]

In the United States, state laws and lease agreements require oil companies to seal abandoned wells with cement plugs to a depth that is below fresh water aquifers, and seal off production formations, in order to prevent contaminants from migrating through the well to the surface or into groundwater aquifers. [FN278] Occidental apparently has not sealed the "dry" well in Pompeya. To convert a dry well into an injection well for oil production wastes in the United States, or operate an injection well that has been drilled for that purpose, a permit is required from EPA or a state that has been authorized by EPA to implement applicable federal regulations under the Safe Drinking Water Act. [FN279] Among other things, the regulations require construction of three layers of protection to prevent contamination of underground drinking water aquifers; regular mechanical integrity testing of injection wells; and monitoring, recordkeeping and reporting of the nature, source and cumulative volumes of injected fluids, in addition to injection pressure and flow rates during operations. [FN280] Injection of legally hazardous wastes into wells that are not permitted to receive them is a federal crime. [FN281]

*389 E. Burial of Pipelines

The fifth highlighted measure provides for pipelines (including flow lines) to be buried underground. [FN282] This practice reduces the risk of accidental spills from vehicles that collide into pipelines from the roads, and is also an aesthetic improvement. However, it could increase the risk of spills due to failures in the integrity of the pipeline system, and reduce the company's ability to detect leaks. Among other stresses, pipelines are subject to corrosion and abrasion. To prevent spills and leakage, all aging pipelines need systematic inspection, repair and rehabilitation. Burying the lines can make this considerably more difficult and expensive. According to one expert, buried pipelines in a rainforest should be replaced in their entirety after fifteen years; some oil field workers, however, say that lines could last considerably longer (or for less time), depending on how they are constructed. [FN283]

Occidental's assessment in the 1992 EIA of potential impacts from pipeline failures is incomplete and superficial. The EMP does not provide for pipeline replacement, or include measures to inspect and assess the state of the lines or otherwise prevent accidental spills of oil and other pollutants. According to corporate officials, the company uses cathodic protection and physical pigs to protect against corrosion, and the life expectancy of the pipelines is the life of the project. Occidental does not, however, use "smart pigs," because they are too expensive. [FN284] Smart pigs are generally considered to be much more reliable that physical pigs; however, even smart pigs may not detect corrosion in some areas of a pipeline. [FN285] Excavation and manual inspection with gamma radiography *390 and ultrasonic thickness measurements may be also needed to generate a complete picture of the condition of the line. [FN286] Moreover, it is questionable whether pigs can be used in flow lines, because they are narrower than secondary and other pipelines. According to a European study funded by the United Nations Environment Program, corrosion is already a major problem at CPF. [FN287] According to recent reports from residents of Limoncocha, there have been five spills from flow lines in their community in a period of less than one year. [FN288] Without proper inspection, repair and rehabilitation, the risk of spills and leakage from pipelines in Block 15 will increase considerably over time, and can be expected to present major long term environmental threats, even after Occidental leaves Block 15. [FN289]

F. Limiting the Width of Roads

The final design decision highlighted in the EMP is to limit the width *391 of roads. [FN290] The rationale for this is unclear, considering the breadth and nature of damages typically associated with road building in tropical forests. Limiting the width of a road does not appear to be significant, when compared with environmental and social impacts of road building generally. In addition to roads for production operations, Occidental--unlike some other companies--has also built roads for exploratory drilling activities. [FN291] Ecuador's new Ministry of the Environment considers roads in the Amazon region to be a major problem, including roads built in the last decade, where colonization has so far been limited. A current priority of the agency is to convince oil companies to accept a moratorium on new road construction in the region. [FN292] Government officials generally are excited about new production facilities that were built by another TNC, ARCO, without a permanent road. A high voltage electric monorail provides transportation along the pipeline. ARCO decided not to bury the line for environmental reasons. According to Oil and Gas Journal, project managers sought to "minimize excavation that would damage mature tree roots and cause corrosion." [FN293]

A significant change that is not highlighted in the EMP, but has been implemented by Occidental in Block 15, is the use of water for dust control on roads, instead of waste oil. If the company consistently uses clean water-- rather than wastewater--then the measure constitutes a major improvement over standards and practices established by Texaco. Corporate officials say they use only clean groundwater on the road; however, some residents offer conflicting reports, and say that the company has used contaminated water on at least some occasions. In addition, the environmental impact of using freshwater resources for road spraying is not assessed in the 1992 EIA. As a general matter, the EIA does not include a clear and comprehensive assessment of possible environmental and social impacts from road-building activities, and even asserts--without supporting evidence or analysis--that road maintenance activities will be a beneficial impact of Occidental's operations. [FN294] In addition to potential long-term and regional impacts, a number of local grievances have been linked to road construction in Block 15, including *392 dust pollution, noise, and the destruction of fisheries and crops due to disruption of natural drainage patterns. [FN295]

X. Conclusion and Recommendations

There is nothing new about environmental self-regulation by oil companies in Amazonia. The longstanding failure of governments to implement environmental law has effectively allowed companies to set the standards for their operations and police themselves. However, the failure of national governments to act to protect the environment has generally been regarded as a serious problem. At the Earth Summit, Ecuador and other governments pledged to change course, and implement national laws and regulations to protect the environment, and ensure that development is fair to future generations. Proponents of globalization argue that free trade helps developing nations do this, by exporting international standards and strengthening democratic institutions and the rule of law, including environmental law.

This case study, however, reveals a radical new development in environmental law in Ecuador. Occidental has negotiated a legal framework with the government that, for the most part, seems designed to perpetuate and even legalize the exclusive reliance on corporate environmental self-regulation. Whereas self-regulation historically occurred because of inaction by the State, in Occidental's current Contract with Ecuador, the government effectively cedes authority to the company to set environmental standards for its operations, without public disclosure and consultation, review and approval by government officials, or other democratic safeguards. [FN296] In effect, the State is

contracting environmental protection to Occidental, along with oil exploration and production activities; this represents the privatization of environmental law. As a matter of national policy, the new legal regime has not been publicly disclosed and debated in Ecuador. [FN297] This raises serious questions of law, legitimacy *393 and accountability, and could operate to undermine democracy and the rule of law in Ecuador, in addition to presenting environmental and social risks.

The privatization of environmental law represents an abdication by the State of one of its most basic responsibilities to its people. It is legally dubious in Ecuador because it contradicts the government's constitutional and statutory environmental duties; bypasses the national legislature; and effectively eviscerates the rights of indigenous peoples in Block 15 and other Ecuadorians to participate in environmental decisions that can affect them. As a policy matter, it is unwise, because it substitutes private law for public law without democratic safeguards, and transfers control over compliance with state objectives to the special interests that have to meet those objectives. It grants legislative and administrative powers to a foreign oil company, without clear standards or procedural safeguards. Occidental, like all private (non-State) companies, is profit-driven, and answers first and foremost to its stockholders. Environmental protection can be expensive, and conflict with private interests to reduce costs. Environmental decisions by Occidental must necessarily reflect the company's private interests. The legal regime defined by the Contract and EMP, however, does not allow for countervailing forces to balance those private decisions and protect the interests of the public, such as public notice, comment and scrutiny; or government approval, based on a rational determination of the public interest, that is guided by democratic legislation. The potential for abuse is unlimited. Political accountability is absent. Inequities in the distribution of political power in Ecuador are compounded. The privatization of environmental law sends a chilling message--that governments like Ecuador are not capable of implementing environmental law to regulate industrial development by TNCs.

Democracy and the rule of law mean many things to many people, but surely they do not mean that the power to write environmental law can be properly delegated to a foreign oil company, based on stealth negotiations between special interests and a small group of officials who belong to a discredited and distrusted political class. Before Occidental's Contract *394 becomes a litmus test for democratic development and the rule of law in Ecuador, it should itself respect the spirit of democracy and the law, including laws that favor the interests of local residents and the public. The Contract should be publicly disclosed and evaluated in Ecuador. To inform that discussion, Occidental should fully disclose the standards it selected, and other environmental information; and a credible, independent and transparent audit should be undertaken, to evaluate the company's environmental standards and performance. [FN298]

There is no question that international standards and corporate responsibility offer great promise for needed improvements in oil field operations in Ecuador and throughout Amazonia. At the same time, however, they are not without considerable peril. This study shows that "corporate responsibility" and "international standards" can operate to undermine the development of national environmental law and capacity, by arbitrarily legitimizing norms that have been defined by special interests, and reassuring government officials and other stakeholders that practices are improving, based on enigmatic standards that lie beyond the reach--or responsibility--of national authorities. For Occidental, the invocation of international standards is a tool that helps the company maintain dominance over environmental decision-making and implementation, and deflect and discourage meaningful oversight. International

standards mystify Ecuadorian environmental officials and local residents, and Occidental exploits their lack of information and experience to cultivate confusion about the standards and practices for its operations. Occidental uses the cloak of international standards and corporate responsibility to wrap its operations in a veneer of environmental excellence and social responsibility and beef up its public image.
Experience in Ecuador shows that international standards cannot be divorced from the social, economic, and political context in which they operate. At the same time, however, a major source of potential abuse can be linked to the widespread confusion, outside of industry circles, about the sources and substance of applicable norms. The international community can act to address that problem by developing transparent and participatory mechanisms that can be used to independently evaluate and verify environmental claims by TNCs at specific locations. Those mechanisms should: (1) clearly identify applicable standards, and their source; (2) verify compliance with applicable standards; (3) evaluate the effectiveness of standards by measuring environmental performance in concrete terms; (4) identify measures and standards that could be used to *395 raise environmental protection levels and repair damages; (5) develop transparent and credible monitoring and review protocols that could be implemented, for the most part, by national residents and officials, including local communities, throughout the life of the project; and (6) include a public outreach and education program that invites government officials, local residents, environmentalists, and other interested members of the public to participate in the review, and ensures that the findings and recommendations can serve as meaningful tools for environmental education. Two measures will be needed to enhance the credibility of the reviews: (1) the team conducting the review should include experts that have been selected by local communities and environmentalists, in addition to industry and government experts; and (2) and the work of the group must be transparent, and its findings recorded and justified.
At first blush, TNCs will likely resist this type of participatory audit, so some form of lawmaking, at the national or international level, may be needed. However, TNCs that are serious about raising environmental standards should welcome an opportunity to credibly demonstrate their progress, and get public recognition for environmental improvements. In addition, the interests of responsible TNCs will be served by distinguishing their activities from operations by free riders. Free riders are companies that do not raise standards; they can put other companies at a competitive disadvantage, and injure the public image of an entire industry.
By reviewing operations at specific locations, participatory audits would promote meaningful international standards by helping to move the discourse from vague generalities to concrete measures. They would respond directly to the real world needs of local residents who are concerned about the impact of operations in their communities, but feel overpowered by TNCs, neglected by their government, and without anywhere to turn for assistance or relief. Participatory audits could also help promote the development of national environmental law and democratic decision-making in countries like Ecuador, by nurturing and informing a dialogue, in concrete terms, between government officials, local residents, TNCs and other stakeholders about environmental standards and oversight. This would further serve to help governments implement international--and perhaps also national as in Ecuador--law commitments to guarantee the participation of indigenous peoples and affected residents in environmental decision-making and implementation. Finally, the audits offer a concrete mechanism to continually improve environmental standards and performance

at many locations in the developing world, and would help inform the international trade debate.
Some things are changing in the oil fields in Ecuador. But the companies *396 are still firmly in control of operations, including environmental standards and practices, and in some areas, local residents are frustrated, and sometimes angry. [FN299] In a few locations, including Block 15, TNCs may be beginning to raise levels of protection for some activities, at least in the short term. However, this is not certain, and requires independent verification and long-term monitoring. One critical question that cannot be answered from the public record in Block 15 is whether groundwater aquifers are protected from contamination by injection operations, landfills and buried pipelines. [FN300] In addition, there are a number of other unanswered questions and problems, clear room for improvement, and a need for transparency, oversight and accountability. Even under a best case scenario, with high standards and serious efforts at implementation, problems arise, and enormous risks and uncertainties remain. Corporate ethics and self- regulation should play a role in raising levels of environmental protection in the oil fields, but they are not a panacea that can replace government regulation.
In the Amazon Rainforest, the potential environmental, social and cultural costs of continued experimentation with industrial "sustainable" development are high. At best, the jury is still out on whether oil companies can extract oil and gas from a fragile rainforest environment without serious injury; the track record of the industry in Ecuador to date suggests that they cannot. Moreover, the cumulative impact of expanding oil, gas, and international pipeline projects throughout Amazonia has not been adequately assessed. At least some areas--including protected areas, swamps and flooded forests--should be off-limits to oil and gas development, and local communities that want a different model of development should have the right to turn away TNCs. [FN301] No new development should go forward in Amazonia until the oil industry has credibly demonstrated--by action at existing facilities rather than plans *397 for future ones--that it can honor promises to protect the environment and respect local cultures. [FN302] As a general matter, for international standards and corporate responsibility to play a constructive role in trade and development, reliably raise environmental standards, and help nations like Ecuador strengthen democratic institutions and develop environmental law, then, at a minimum, the applicable standards must be clear and transparent, and their effectiveness independently verified, with community involvement, in the light of the day.

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in Ecuador. Special thanks are also due to the environmental unit of Ecuador's Ministry of Energy and Mines.

[FN1]. United Nations Secretary General Kofi Annan, Address to the World Economic Forum, Davos, Switzerland (Jan. 31, 1999). Annan raised these concerns before the Seattle protests.

[FN2]. In Seattle, President Clinton called for labor standards to be included in trade agreements. This position was vehemently opposed by developing countries at the WTO meeting. As a general matter, governments and TNCs have opposed the development of an international environmental and social regulatory regime.

[FN3]. Another key principle recognizes the importance of broad public participation in environmental decision-making and implementation. See, e.g., U.N. Conference on Environment and Development, Rio Declaration on Environment and Development, princs. 10, 11, 12, 13, 16, 17, 20, 22, 27, U.N. Doc. A/Conf. 151/5/Rev.1 (1992), reprinted in 31 I.L.M. 874 (1992) [[hereinafter Rio Declaration]. The Rio Declaration was adopted by resolution of 178 governments but is not legally binding. Rather, it represents international consensus and provides evidence of customary international law. See also U.N. Conference on Environment and Development, Agenda 21, U.N. Doc. A/Conf. 151/26/Rev.1 Ch. 23 (1992) [hereinafter Agenda 21].

[FN4]. A related idea is that responsible TNCs can create new models to demonstrate that economic development and environmental protection can co- exist. Representatives of "responsible" companies are understandably reluctant to belittle national environmental standards and capacity on the record; however, they readily confirm that they go beyond what is required. In describing Royal Dutch/Shell's exploratory and planned production operations for the Camisea gas fields in Peru, corporate officials were unusually candid. When asked what the government requires of Shell in the environmental arena, one top environmental official said: "We tell them what they want.... The government requires that we keep our promises." Interview with Bruce Skinner, Health, Safety & Environment Manager, The Camisea Project, Bechtel-Cosapi- Odebrecht Consortuim, in Lima, Peru (July 7, 1998).
Another official was more visionary. He said that Peru's environmental guidelines are "young," but expressed hope that government officials are "on a learning curve." At the time, oversight was not significant; environmental officials primarily asked the company for documentation. However, Shell expected Peru's "environmental division--always the weakest group in any institution"--to change and become more active and competent over time. The company, he said, looked forward to working with the government to demonstrate a model operation that environmental officials could use to raise standards throughout the oil patch. Interview with Murray Jones, Chief of Health, Safety & Environment, Shell Prospecting and Development (Peru) B.V., in Lima, Peru (July 9 & 15, 1998).

[FN5]. In addition to the sources cited infra, the Article draws on the author's observations during regular visits since 1989 to oil field facilities and affected communities in Ecuador's Amazon region; participation in local, national and international fora; and interviews and ongoing dialogue with local residents, oil company workers and executives, religious and medical workers, and government officials, including environmental officials in successive Ecuadorian governments, and

some U.S. and European officials. From 1989-1996, the author resided primarily in Ecuador's capital, Quito. Documentation by the author--based on field work with the indigenous organization, FCUNAE (Federation of Comunas Union of Natives of the Ecuadorian Amazon)--of the environmental and social impact of oil development in Ecuador's Amazon region first alerted Ecuadorians outside of the region to the environmental costs of oil development in tropical forests and placed the issue on the national and international environmental and human rights policy agendas. See generally Judith Kimerling, Amazon Crude (NRDC 1991) (Spanish-language adaptation in Crudo Amazonico, Ediciones Abya Yala, 1993) [hereinafter Kimerling 1991]. Portions of Amazon Crude are reprinted in Judith Kimerling, Disregarding Environmental Law: Petroleum Development in Protected Natural Areas and Indigenous Homelands in Ecuadorian Amazon, 14 Hastings Int'l & Comp. L. Rev. 849 (1991). See also James Brooke, Oil and Tourism Don't Mix, Inciting Amazon Battle, N.Y. Times, Sept. 26, 1993, at A3 (referring to Amazon Crude as the Silent Spring of Ecuador's environmental movement). A follow-up study, supported by a research and writing grant from the John D. and Catherine T. MacArthur Foundation, examined environmental law in the oil fields and the rule of law in Ecuador. See generally Judith Kimerling, Rights, Responsibilities and Realities: Environmental Protection Law in Ecuador's Amazon Oil Fields, 2 Sw. J. of L. & Trade Am. 293 (1995) [hereinafter Kimerling 1995] (Spanish- language adaptation in El Derecho del Tambor, Ediciones Abya Yala, 1996).
FCUNAE is currently comprised of sixty-seven indigenous Quichua communities located in and near the lower Napo River basin, including communities affected by Occidental. Field work and interviews for this study were conducted in the summers of 1998, 1999 and 2000. Many residents and some oil workers and government officials spoke with the author in confidence, and asked that their names not be published because of concern about possible retribution from Occidental or Ecuador's government.

[FN6]. See generally International Chamber of Commerce (ICC), Business Charter for Sustainable Development (1991), at http://
www.iccwbo.org/home/environment/charter.asp (last visited Apr. 3, 2001); Stephen Schmidheiny, Changing Course: A Global Business Perspective on Development and the Environment (1992).
By 1997, the World Business Council for Sustainable Development (WBCSD) included 120 international companies from thirty-five countries and more than twenty industrial sectors "united by a shared commitment to the environment and to the principles of economic growth and sustainable development." World Business Counsel for Sustainable Development, Signals of Change, at 4 (1997) [[hereinafter Signals of Change]. In a report prepared for the United Nations General Assembly Special Session, "Earth Summit + 5," to review progress five years after UNCED, WBCSD claims that business has "changed a great deal since the decades preceding the 1992 Earth Summit" and made "substantial progress" toward implementing sustainable development. At the same time, it acknowledges that "society is still a long way from achieving sustainable development, and that further progress will require contributions from all sectors of society." Id. at 6. The report argues that free trade promotes sustainable development and higher environmental standards, but also recognizes that "there will always be a need for clear, effective, enforced regulations, especially in cases of threat to human health" and for "effective citizen participation in decision making." Id. at 6-7, 44-45, 48, 50-55.

These statements echo some of the principles that were agreed to at the Earth Summit, favoring free trade, the development of national environmental regulation, and broad public participation . See, e.g., Rio Declaration, supra note 3, at princs. 10-13, 16-17, 20, 22, 27.

[FN7]. The concept of sustainable development was first developed in the 1987 report of the World Commission on Environment and Development. World Commission on Environment and Development, Our Common Future 8 (1987) (also referred to as the "Brundtland Commission Report"). With the Earth Summit in 1992, the term became firmly embedded in policy and public discourse.

[FN8]. Instead, developing nations committed to develop effective regulation at the national level. See supra note 3. This is consistent with the position advocated by TNCs. As a general matter, TNCs have opposed international environmental regulation of their operations. At the same time, they have expressed support for the international harmonization of national laws and corporate standards. For a discussion of TNCs and international environmental standards, see Robert J. Fowler, International Environmental Standards for Transnational Corporations, 25 Envtl. L. 1 (1995).

[FN9]. Indeed, the 1990s saw a dramatic change in the patterns of international capital flows to developing countries. Development aid from industrial countries dropped, and private capital flows in the form of foreign direct investment ("FDI") increased. As a proportion of capital flowing into developing countries, FDI rose from thirty-three percent in 1991 to seventy- five percent in 1996. Signals of Change, supra note 6 at 44 (1997); see also World Bank, World Development Indicators (1997).

[FN10]. In addition to pollution, oil and gas exploration and production can cause dislocation of indigenous peoples, disease, forced or accelerated acculturation, dependency, deforestation, depletion of natural resources, habitat loss and fragmentation, disruption of natural drainage patterns, threatened or lost biodiversity, and impetus for further development.

[FN11]. See generally Kimerling 1991, supra note 5. Among other disclosures, oil production facilities at the time deliberately discharged 4.3 million gallons of wastes with toxic constituents into the environment every day; waste oil was applied to roads for dust control purposes; hundreds of open, unlined waste pits dotted the region, contaminating countless streams and rivers that served as local water supplies and fisheries; flares burned tens of millions of cubic feet of natural gas as a waste every day, without environmental controls; and oil company roads had opened an estimated one million hectares of tropical rain forest to colonization and deforestation by incoming settlers. In addition to impacts from routine operations, accidental spills from the main pipeline alone dumped some 16.8 million gallons of crude oil into the environment; by comparison, the Exxon Valdez spilled some 10.8 million gallons, in the largest oil spill in U.S. history.
For a recent study of the impact of oil field operations in the region on health in local communities, see generally, Manuel Amunárriz Institutue for Epidemiology and Community Health, Informe Yana Curi: Impacto de la actividad petrolera en la salud de poblaciones rurales de la Amazoní a Ecuatoriana [[Yana Curi Report: Impact of Petroleum Activity on the Health of Rural Populations in the Ecuadorian Amazon] (Ediciones Abya Yala, CICAME and Medicus Mundi Gipuzkoa) (investigation by Dr.

Miguel San Sebastián and Sandi Yura Health Promoters Association, finding elevated levels of miscarriage and other health problems among women in the study area, and a cancer cluster among men in one contaminated community).

[FN12]. At the time, Occidental did not make similar promises for existing operations in Peru or Colombia. Other companies in Ecuador included Conoco, Maxus (now Repsol-YPF), and ARCO. Both Conoco and ARCO have since sold their interests in Ecuador. In the Peruvian Amazon, operators that promised to voluntarily implement some variation of international standards or best practice during the 1990s included Royal Dutch/Shell Group, Mobil Corp. and Chevron. Occidental is currently under fire for its efforts to expand operations in Colombia, because of steadfast opposition by indigenous U'wa. The U'wa believe they have a duty to protect Mother Earth, and that oil extraction in their traditional territory would bleed her to death, in addition to attracting increased guerilla, paramilitary and military violence and conflict to the area.

[FN13]. Companies arguably also have a legal duty to use a reasonable level of care in their operations, irrespective of government regulation. In Ecuador, for example, the Civil Code establishes a general duty of care, similar to a common law duty in the United States. It is defined as the duty to use the same level of care as "a good father of a family." It applies generally to all conduct by all companies, and there is no principled reason why it should not apply to environmental practices by oil companies when others could be harmed thereby. Civil Code [Civ. C.], arts. 29, 2214-15, R.O. No. 399 (Dec. 29, 1982) (Ecuador). For a fuller discussion of Ecuador's Civil Code, see Kimerling 1995, supra note 5. In addition, for corporate decisions made in the United States, common law duties arguably apply even when actions to implement the decisions, and actionable impacts, occur abroad.

[FN14]. Consensus on this point does not necessarily extend to other regions or industrial sectors. As a general matter, TNCs have expressed growing support for the concept of going beyond legal requirements, to apply equivalent standards for corporate environmental management on a global basis. See, e.g., ICC, Business Charter for Sustainable Development, supra note 6, princ. 3 ("To continue to improve corporate policies, programs and environmental performance ... with legal requirements as a starting point; and to apply the same environmental criteria internationally.") The Business Charter for Sustainable Development was one of the earliest expressions of "international standards" for environmental protection in developing countries. It was launched by ICC in 1991. By 1997, it had been translated into twenty-three languages and supported by more than 2,500 companies. See Signals of Change, supra note 6, at 7. At the same time, industry has vigorously opposed public international rule- making and regulation. These apparently mixed signals can be reconciled by the view that TNCs favor voluntary international corporate standards, but oppose legally binding ones. Some observers argue that the groundswell of pledges by TNCs to embrace corporate responsibility is primarily an effort to preclude government regulation.
Nation states, especially developing countries, have consistently defended their sovereign right to determine their own environmental and development laws and policies, and agreed to a contradictory principle at the Earth Summit:
States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries may

be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.
Rio Declaration, supra note 3, at princ. 11. The principle of differentiated environmental standards is based on the belief that costly environmental requirements could undermine economic development, and that developing countries may choose to prioritize the generation of jobs and revenues over environmental concerns. Industrial nations, they say, became wealthy at great environmental expense, and should not expect poor countries to forego those trade-offs.

[FN15]. In U.S. domestic environmental law, the use of technology-based standards for pollution control is well developed for some sources. The specifics of this experience, however, are generally not brought to bear on the trade debate or public discussions of "best practice" for international oil field operations.

[FN16]. One company, Royal Dutch/Shell, launched an effort to change that trend. As part of the company's initiative to develop a new model for hydrocarbon operations in the Camisea gas fields in Peru, Shell reached out to a wide range of stakeholders and facilitated the distribution of information about environmental and social standards and practices. However, Shell abandoned full field development plans for Camisea a few months before construction was expected to begin, after failing to reach agreement with Peru over the distribution, pricing and export of gas. Occidental objects to any comparison with Shell, and argues--correctly--that it is easier to nurture good stakeholder relations about future plans, but considerably more difficult to maintain them after the operations are up and running. Telephone interview with Lawrence Meriage, Vice President, Executive Services and Public Affairs, Occidental Oil and Gas Corporation, and Clark Hull, Worldwide Environmental Manager, Occidental Oil and Gas Corporation (Oct. 22, 1999).

[FN17]. Interview with Clark Hull, Worldwide Environmental Manager, Occidental Oil and Gas Corporation, in Palo Alto, Cal. (Nov. 10, 1999) [[hereinafter Hull Interview].

[FN18]. Id.

[FN19]. One hectare is 100 meters x 100 meters or 2.47 acres; 200,000 hectares is 2,000 square kilometers.

[FN20]. Telephone interview with Lawrence Meriage, Vice President, Executive Services and Public Affairs, Occidental Oil and Gas Corporation (Dec. 7, 1998) [[hereinafter Meriage Interview I].

[FN21]. Dudley Althaus, Amazon's Empty Legacy; Big Oil Responds to Environment; Toll on Rain Forest, Culture Still Unacceptable to Critics, The Houston Chron., Dec. 15, 1996, at A1.

[FN22]. Bob Williams, Oxy's Strategy on Environment, Community Issues Key to Success of Project in Ecuador's Rain Forest, Oil & Gas J., Apr. 21, 1997, at 44 [hereinafter Williams 1997]. Oil and Gas Journal describes itself as "the Bible of the oil and gas industry for almost a century." Bob Williams, Petroleum's Brave New World, Oil & gas J., Dec. 13, 1999, at 3. The weekly magazine is widely circulated and read in

the industry; the author observed a stack of back issues on a desk in Occidental's Central Processing Facility (CPF) office.

[FN23]. Occidental Exploration and Production Company, Oxy, Certificada ISO 14001 [Oxy, ISO 14001 Certified], July 1998 (Ecuador). The brochure has been distributed in Ecuador. The video has been mailed to groups and individuals in the United States who inquire about operations in Ecuador.

[FN24]. Occidental Oil & Gas Corporation, Health, Environment and Safety Management System: Guidance Manual (Apr. 1997) [hereinafter HESMS Guidance Manual]. Occidental Oil & Gas is a subsidiary of Occidental Petroleum.

[FN25]. Id. at i, 6-7.

[FN26]. Id. at note 24, princ. 10. Principle 8 also recognizes the importance of disclosure, and states:
Appropriate officials, employees, contractors, customers and the public, who may be affected will be informed about relevant health, safety or environmental issues related to our facilities in a timely manner. Our facilities will regularly participate in an open dialogue with neighboring communities to share information and respond to the public's input or concerns about safety, health and environment....
Id. at princ. 8.

[FN27]. This finding is based on visits to affected indigenous Quichua communities in 1998-2000. Another major problem is Occidental's use of expropriation by Ecuador to secure access to lands for production facilities. See infra notes 233-35 and accompanying text. A full discussion of community relations is beyond the scope of this article. See generally Judith Kimerling, Uncommon Ground: Occidental's Land Access and Community Relations Standards and Practices in Quichua Communities in the Ecuadorian Amazon, 11 L. & Anthropology, 179-247 (2001) [hereinafter Kimerling 2001].

[FN28]. Residents of Block 15 include a relatively small number of settlers, or colonists, from Ecuador's highland and coastal regions ("colonos") and Shuar. The Shuar are indigenous to Ecuador's southern Amazon region and, like most colonos, migrated to the Napo and Aguarico basins in search of land, in the wake of the oil boom that followed the discovery of commercial quantities of Amazon crude in Ecuador by Texaco in 1967. See generally Kimerling 1991, supra note 5.

[FN29]. Contrato Modificatorio de Prestación de Servicios para la Exploración y Exploitación de Hidrocarburos (Petroleo Crudo) en el Bloque 15 de la Región Amazónica Ecuatoriana, Celebrado Entre el Estado Ecuatoriano por Intermedio de la Empresa Estatal Petroleos del Ecuador (Petroecuador) y la Compañia Occidental Exploration and Production Company, Sucursal Ecuador [[Modified Service Contract for the Exploration and Exploitation of Hydrocarbons (Crude Oil) in Block 15 in the Ecuadorian Amazon Region, Celebrated between the Ecuadorian State, through The State Oil Company of Ecuador (Petroecuador) and the Company Occidental Exploration and Production Company, Sucursal Ecuador], Quito (May 21, 1999), paras. 2.1-2.4 [hereinafter Contract]. The Contract as well as the environmental impact assessments and management plans, Ecuadorian legal provisions, and some other documents were

reviewed in Spanish, but are cited primarily in English for the reader's convenience. Translations are by the author.

[FN30]. Williams 1997, supra note 22, at 45.

[FN31]. In addition to reserves that are located exclusively in Block 15, Occidental has also been designated as the operator of two oil fields that span both Block 15 and adjacent areas that have been controlled by Petroecuador. As the operator of the campos unificados, unified oil fields, Occidental will assume operation of some of Petroecuador's existing production facilities, in addition to building new ones. The modifications also changed Occidental's contract from a service contract to a participation contract. See Contract, supra note 29. The contract approval process is discussed infra note 76.

[FN32]. Another injection well shares a platform with two producing wells, and a third injection well is located at the Central Processing Facility ("CPF"). Presentation by and interview with Marcos Ramirez, Acting Chief of Field Operations, Occidental Ecuador, and Jose Verdesoto, Acting Field Chief of Health, Safety and Environment, Occidental Ecuador, in Block 15, CPF, Ecuador (Aug. 9, 1999) [hereinafter CPF Visit].
A considerably higher production level--"around 30,000 barrels/day"--was subsequently reported by the Ecuadorian press, based on interviews with corporate officials. Oxy Significa 2,8% del PIB al Sector Petrolero [Oxy Signifies 2.8% of GNP in the Petroleum Sector], Hoy, June 29, 2000. The higher number may reflect Occidental's assumption of operations in unified oil fields that were previously managed by Petroecuador. The infrastructure, waste streams, standards and practices at those facilities are not included in this article; however, Petroecuador has an abysmal environmental record and reputation and, as a general matter, continues to follow standards and practices that were established in the region by Texaco when the oil boom began.

[FN33]. According to Occidental's pre-production environmental impact assessment, the flow lines total twenty-four miles (forty km), including two lines that pass under the Napo River, for a distance of 0.78 miles each (1.3 km). Occidental Exploration and Production Company, Estudio de Impacto y Plan de Manejo Ambiental, Bloque 15, Vol. I, Estudio de Impacto Ambiental [[Environmental Impact Study and Management Plan, Block 15, Vol. I, Environmental Impact Study], at 3 (1992) (prepared by Ambientec Ltda.) [[hereinafter 1992 EIA].

[FN34]. CPF Visit, supra note 32.

[FN35]. 1992 EIA, supra note 33, at 55.

[FN36]. Id. at 3.

[FN37]. Interview with Vicki Hollub, Chief of Field Operations and Acting General Manager, Occidental Ecuador, and Patricio Rivera, Safety & Environment Manager, Occidental Ecuador, in Quito, Ecuador (Aug. 18, 1999) [hereinafter Hollub and Rivera Interview].

[FN38]. The limited pipeline capacity to transport crude oil out of the Amazon currently limits production not only in Block 15 but also throughout the region. Opposition to a new pipeline has been led by oil workers' unions in Ecuador, including FETRAPEC and ASPEC, and allies with nationalist sentiments, who oppose privatization and private foreign control of the transportation of crude oil in the country. See generally Ivan Narvaez et al., Encadenados del Oleoducto [Chained to the Pipeline] (Quito: FETRAPEC 1996). Recent reports, however, suggest that construction of a new pipeline could begin in 2001. See, e.g., OCP: Tres Mesas para los Trabajos Previos [Heavy Crude Pipeline: Three Months for Preliminary Work], El Comercio, Feb. 20, 2001.

[FN39]. Ecuador reestablished democracy in 1979 after nine years of dictatorship, seven under military rule. The failure of the rule of law reflects the gap between legal ideals and social and political realties. The judiciary has failed to promote the rule of law through the impartial administration of justice. Despite repeated efforts at reform, the courts have become increasingly politicized, inefficient and corrupt. For a fuller discussion of environmental law and the administration of justice in Ecuador, see generally Kimerling 1995, supra note 5. For discussions of the administration of justice, see Organization of American States Inter-American Commission on Human Rights, Report on the Situation of Human Rights in Ecuador, Inter-Am. C.H.R., OEA/ser.L/V/II.96, doc. 10 rev.1 (Apr. 24, 1997); Laura Chinchilla & David Schodt, The Administration of Justice in Ecuador (1993); Center for the Administration of Justice, Ecuador Justice Sector Assessment: Social Soundness Analysis (1991); U.S. Dept. of State, Ecuador Country Report on Human Rights Practices for 1999 (2000); U.S. Dept. of State, Ecuador Country Report on Human Rights Practices for 1998 (Feb. 26, 1999).
Since the return to democracy, the great majority of legislative initiatives have originated in the executive branch. Because of power conflicts between political parties in the National Congress and the Executive, the latter has made frequent use of a procedure under which it characterizes proposed legislation as a law of "economic urgency." Fabian Corral, La Reestructuración Constitucional [The Constitutional Restructuring], 37 (Tomo II) Ruptura 25, 28. Under the Constitution in effect from 1979-1998, the Congress--or plenary of legislative committees, if the Congress was not in session--had fifteen days to approve, reform or modify the proposal. If the Congress failed to act within fifteen days, the Executive could promulgate the legislation as a "Law-Decree," effective upon publication in the Official Registry. Constitución Política de la República del Ecuador [Political Constitution of the Republic of Ecuador], tit. I, art. 66 (1979) [hereinafter 1979 Constitution]. The 1998 Constitution, currently in effect, retained the procedure but extended the period in which the Congress may act on the proposed legislation to thirty days. Constitución Política de la República del Ecuador [Political Constitution of the Republic of Ecuador], tit. V, ch. V, art. 155-56 (entered into effect Aug. 10, 1998) [hereinafter Constitution]. The new Constitution also strengthened the executive branch. Cf. Constitution, art. 130 (8) & (9); 1979 Constitution, art. 59(e), granting the Congress important powers to impeach high level officials in the executive and judicial branches for violating the law in the performance of their official duties; the current Constitution limits the grounds for impeachment of the President and Vice President to violations against national security, extortion, bribery, peculation and illicit enrichment.
For detailed accounts of politics and government in Ecuador that document historic patterns of volatility, contentiousness, personal rivalries, shifting alliances, regional

competition, rapid government turnover, periodic uncertainty about the power and authority of key institutions and officials, minimal systemic legitimacy, and the power of a small elite, see generally John D. Martz, Politics and Petroleum in Ecuador (1987); David Corkill & David Cubitt, Ecuador: Fragile Democracy (1988); Americas Watch and the Andean Commission of Jurists, Human Rights in Ecuador (1988). Between 1830 and 1895, twenty-one individuals and juntas occupied Ecuador's presidency for a total of thirty-four times; only six completed their constitutional term of office. Corkill & Cubitt at 10. From 1925-47, at least twenty-three governments passed through office. Martz at 66. Ecuador's current President, Gustavo Noboa, assumed office in 2000, after the elected president, Jamil Mahuad, was overthrown by a coalition of indigenous organizations and military officials. They formed a military-civilian junta, comprised of an army colonel, the president of the national indigenous organization, CONAIE, and a former Supreme Court judge. However, within hours, in the early dawn, the military withdrew support from the triumvirate and ceded power to Noboa, then Vice President. Noboa became Ecuador's fifth president in four years. He is not currently affiliated with any political party; each of the four preceding presidents was from a different political party. Interview with Sister Elsie Monge, Executive Director, CEDHU (Ecumenical Commission on Human Rights), in New York, NY (Mar. 25, 2001).

[FN40]. Since the oil boom began, some national social indicators such as life expectancy and literacy rates have improved, but the percentage of Ecuadorians living in poverty has grown. Chinchilla & Schodt, supra note 39, at 23. Figures reported in the press put the level at sixty-seven percent of the population in 1993, up from forty-seven percent in 1975. Nongovernmental figures put the poverty level as high as seventy-five percent. En el Ecuador el 67% es Pobre [In Ecuador Sixty-Seven Percent are Poor], El Comercio, Sept. 21, 1993.

[FN41]. Texaco's production contract with Ecuador ended in 1992. Currently, Petroecuador operates the former Texaco facilities and some additional ones it developed using technology acquired from Texaco. Ecuador still depends on TNCs to transfer new technology and finance most oil development activities.

[FN42]. See Hugo Ordoñez Espinoza, Diecisiete Apuntes para la Reforma Constitucional [Seventeen Notes for Constitutional Reform] 37 (Tomo II) Ruptura 57, 59-60 (1994). Many constitutional provisions have been copied from other countries. Id. Ordoñez Espinoza is a former President of the constitutional chamber of Ecuador's Supreme Court. He characterizes Ecuador's treatment of constitutional matters as "flippant, superficial and sometimes truly frivolous." Id.
One Ecuadorian jurist described the 1979 Constitution as "perhaps the most extreme example of the abstract application of political theory to a society." Corral, supra note 39, at 26. The rule of law itself is essentially a theoretical formality in a country that often lives informally. Id. A sign at a toll booth on the outskirts of Quito is illustrative. It reads: "Do not insist. Everyone must pay the toll." Another Ecuadorian jurist and former President of Ecuador's Tribunal of Constitutional Guarantees, Ernesto Lopez, describes current constitutional law in Ecuador as "science fiction." Interview with Dr. Ernesto Lopez Friere, in Quito, Ecuador (July 5, 2000).

[FN43]. Constitution, supra note 39, tit. III, ch. 2, art. 23, para. 6; in the former Constitution, the provision is found in Tit. II, sec. 1, art. 19, para. 2. The right is included in a list of "rights of the individual" guaranteed by the State.

[FN44]. Id.

[FN45]. Id. at art. 86.

[FN46]. Id.

[FN47]. Id. at ch. 5, sec. 2, art. 88 provides:
Every state decision that could affect the environment must consider the criteria of the community, prior [to making the decision], for which [the community] will be properly informed. The law shall guarantee their participation.

[FN48]. For example, the Rio Declaration states:
Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.
Rio Declaration, supra note 3, at princ. 10. See also supra note 14 for a discussion of princ. 11 (states shall enact effective environmental regulation). The Rio Declaration is non-binding but provides evidence of customary international law. One U.S. District Court has stated in dicta that "[t]he Rio Declaration may be declaratory of what it treated as pre-existing principles just as was the Declaration of Independence." Aguinda v. Texaco, Inc., No. 93 Civ. 7527, 1994 WL 142006 (S.D.N.Y. Apr. 11, 1994).

See also United Nations Convention on Biological Diversity, June 5, 1992, U.N. Doc DPI/1307, 31 I.L.M. 818 (1992). Art. 10(d) recognizes that popular participation is critical to the success of environmental protection strategies (State parties "shall, as far as possible and as appropriate ... support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced"). Ecuador ratified the Convention on Biological Diversity on Feb. 23, 1993. It entered into force on Dec. 29, 1993 and is a legally binding treaty. See also Agenda 21, supra note 3, at chs. 23-32 (identifying major social groups ("Major Groups") whose "commitment and genuine involvement" are "critical to the effective implementation" of sustainable development). Agenda 21 is a 472- page blueprint for sustainable development. Like the Rio Declaration, it is not legally binding, but was adopted at the Earth Summit and purportedly represents a high-level political commitment for implementation at the national level.
Notwithstanding advances in recognizing participatory rights for indigenous (and other) peoples, and the inclusion of "indigenous people and their communities" as a Major Group in Agenda 21, indigenous peoples were, for the most part, disappointed with the Earth Summit. Their participation in the conference and preparatory meetings was limited, and many felt like bystanders in a global negotiation over the future of their resources. In documents adopted at the Earth Summit, governments refused to recognize the rights of indigenous peoples to self-determination and ancestral territories; instead, they emphasized state sovereignty over natural resources and affirmed the right of States "to exploit their own resources pursuant to their own environmental and

development policies." Rio Declaration, supra note 3, princ. 2. From the perspective of indigenous peoples, the imposition of development activities in their lands, without consent, represents colonization of their territory by outsiders. The Earth Summit documents also failed to recognize the collective dimension of indigenous identity and rights. Governments refused to use the term "indigenous peoples"; instead they refer to "indigenous people and their communities." For a fuller discussion, see generally International Alliance of Indigenous-Tribal Peoples of the Tropical Forest, and European Alliance with Indigenous Peoples, Indigenous Peoples Participation in Global Environmental Negotiations (1997); Judith Kimerling, "The Human Face of Petroleum": Sustainable Development in Amazonia?, Rev. of Eur. Community & Int'l Envtl. L. (RECIEL) 10(1) (2001).

[FN49]. Constitution, supra note 39, at ch. 5, sec. 1.

[FN50]. Id. at ch. 5, sec. 1, art. 84, para. 5. Article 15, para. 2 of the ILO Convention 169 provides that:
In cases in which the State retains the ownership of mineral or sub-surface resources or rights to other resources pertaining to [indigenous] lands, governments shall establish or maintain procedures through which they shall consult these peoples, with a view to ascertaining whether and to what degree their interests would be prejudiced, before undertaking or permitting any programmes for the exploration or exploitation of such resources pertaining to their lands. The peoples concerned shall wherever possible participate in the benefits of such activities, and shall receive fair compensation for any damages which they may sustain as a result of such activities.
Convention Concerning Indigenous and Tribal Peoples in Independent Countries, I.L.O. Conv. 169, I.L.O., 76th Sess., reprinted in 28 I.L.M. 1382 (1989) [[hereinafter ILO Convention 169]. ILO Convention 169 entered into force Sept. 5, 1991; it was ratified by Ecuador on May 15, 1998. See also id. at art. 7 (participation rights).
Other provisions in Article 84 of the Constitution recognize and guarantee the rights of indigenous peoples to "maintain, develop and fortify their identity and traditions, in the spiritual, cultural, linguistic, social, political and economic [spheres]" (para 1); "to formulate priorities in plans and projects for the development and improvement of their economic and social conditions" (para. 13); to occupy ancestral lands and obtain legal title to them, without charge (para. 3); to retain communal lands as inalienable, indivisible and not subject to prescription or seizure, except under the authority of the State to expropriate lands for "public utility" (para 2); "to not be displaced, as peoples, from their lands" (para. 8); "to maintain, develop and administer their cultural and historical patrimony" (para. 10); "to conserve and promote their practices to manage biodiversity and its natural environment" (para 6); "to collective intellectual property rights for their ancestral knowledge; and to its valuation, use and development under the law" (para. 9); to have access to a quality bilingual education (para. 11); to conserve and develop traditional social organizations, and ways of living together and generating and exercising authority (para. 7); to use and protect "traditional medical systems, knowledge and practices, including the right to protect ritual and sacred sites, [and] plants, animals, minerals and ecosystems that are of vital interest from that point of view" (para. 12); "to use symbols and emblems that identify them" (para. 15); and "to participate, through representatives, in the official bodies that determine the law" (para. 14). Constitution, supra note 39, at art. 84.

[FN51]. Id. at art. 84, para. 4.

[FN52]. Ley de Aguas [Law of Waters], art. 22, R.O. No. 69 (May 30, 1972) (Ecuador). Regulations under that law, adopted in 1973, define contaminated water as:
[A]ll water, running or not, that presents degradation of its physical, chemical, or biological characteristics, as the result of the influence of any element of solid, liquid, gaseous, or radioactive material, or any other substance, which results in partial or total limitations on those waters for domestic, industrial, agricultural, fishing, recreational, or other uses.
President of the Republic, Reglamento General para la Aplicación de la Ley de Aguas [General Regulations for the Application of the Law of Waters], art. 89, R.O. No. 233 (Jan. 26, 1973) (Ecuador).

[FN53]. Ley de Pesca y Desarrollo Pesquero [Law of Fishing and Fishing Development], art. 47, R.O. No. 497 (Feb. 19, 1974), renumbered in R.O. No. 252 (Aug. 19, 1985); see also arts. 80, 15 & 92.

[FN54]. Ley para la Prevención y Control de la Contaminación Ambiental [[Law for the Prevention and Control of Environmental Contamination], ch. 1, para 1, R.O. No. 97 (May 31, 1976) (Ecuador) (translated in Food and Agriculture Legislation, Vol. 26-1 (1977)) [hereinafter Contamination Prevention Law].

[FN55]. See generally Ministry of Public Health, Reglamento para la Prevención y Control de la Contaminación Ambiental en lo Relativo al Recurso Agua [Regulations for the Prevention and Control of Environmental Contamination Related to Water Resources], R.O. No. 204 (June 5, 1989) (Ecuador) [hereinafter Water Pollution Regulations].

[FN56]. Ministry of Public Health, Reglamento que Establece las Normas de Calidad del Aire y sus Metodos de Medición [Regulations to Establish Air Quality Standards and Methods of Measurement], R.O. No. 726 (July 15, 1991) (Ecuador); Ministry of Public Health, Reglamento para la Prevención y Control de la Contaminación Ambiental Originado por la Emisión de Ruidos [Regulations for the Prevention and Control of Environmental Contamination Originating from the Emission of Noise], R.O. No. 560 (Nov. 12, 1990) (Ecuador).

[FN57]. Ley de Hidrocarburos [Law of Hydrocarbons], art. 6, R.O. No. 711 (Nov. 15, 1978), amended by R.O. No. 306 (Aug. 13, 1982) (Ecuador) [hereinafter Law of Hydrocarbons]. The Minister of Defense is also designated to develop and execute petroleum laws and policies in matters related to national defense.

[FN58]. Ley Especial de la Empresa Estatal Petroleos del Ecuador (Petroecuador) y sus Empresas Filiales [Special Law of the State Company Petroleos del Ecuador (Petroecuador) and its Subsidiaries], art. 2, R.O. No. 283 (Sept. 26, 1989) (Ecuador) [hereinafter Law of Petroecuador].

[FN59]. Early provisions required oil field operators to "adopt necessary measures to protect flora, fauna and other natural resources" (art. 31(t)); and prevent contamination of water, air and soil (art. 31(s)). In 1982, art. 31(s) of the Law of Hydrocarbons was amended to require oil companies to submit, for approval by MEM, "plans, programs and projects" to protect natural resources and prevent adverse social and economic

impacts on local communities. Art. 31(t) was amended to require operators to conduct operations in accordance with Ecuador's environmental laws and regulations, and international practice "in matters of preservation of the rich fisheries and farming industry." Law of Hydrocarbons, supra note 57. Subsequent amendments to the law, published in R.O. No. 446 (May 29. 1986), R.O. 283 (Sept. 26, 1989), R.O. No. 121 (Feb. 3, 1993), R.O. No. 326 (Nov. 29, 1993), R.O. No. 346 (Dec. 28, 1993), R.O. No. 523 (Sept. 9, 1994), retained the provisions.

[FN60]. Notwithstanding this state of affairs, MEM's 1987 Regulations for Hydrocarbon Operations continued the trend of including boilerplate environmental protection provisions in the law, by including a general duty to prevent contamination. See Ministry of Energy and Mines, Reglamento de Operaciones Hidrocarburiferas [Regulation for Hydrocarbon Operations], arts. 20(b) & 62, R.O. No. 681 (May 8, 1987) (Ecuador). SPA's limited influence with Occidental is illustrated by a statement by Clark Hull in response to a SPA Oficio asking Occidental to provide the author with requested environmental information for this study. He said that the Oficio is not controlling, because the company "does not answer contractually to SPA." Hull Interview, supra note 17. The Oficio is discussed infra at note 188.

[FN61]. SPA can recommend sanctions to the National Direction of Hydrocarbons ("DNH"), also in MEM. DNH officials have even less environmental expertise than environmental officials. See Ministry of Energy and Mines, Reglamento Ambiental para las Operaciones Hidrocarburiferas en el Ecuador [[Environmental Regulations for Hydrocarbon Operations in Ecuador], art. 5, R.O. No. 766 (Aug. 24, 1995) (Ecuador) [hereinafter MEM Environmental Regulations]; Contract, supra note 29, paras. 14.2 & 5.1.20.7.

[FN62]. Interview with Ivan Narvaez, Chief, Petroecuador Environmental Protection Unit ("UPA"), in Quito, Ecuador (Aug. 17, 1999) [hereinafter Narvaez Interview]. This is a political choice and is not mandated by the law establishing the unit. See Law of Petroecuador, supra note 58, art. 2.

[FN63]. In theory, MMA has some legal authority over activities in protected natural areas, which are administered by a unit of the agency. In practice, it does not exercise control over oil development operations in protected areas. The weakness of the agency in the oil fields is illustrated by Occidental's reported rejection of an oral request by the Area Chief for Limoncocha Biological Reserve to review chemical sampling data from Lake Limoncocha. See infra notes 214-15 and accompanying text.
MMA did, however, play an important role in securing a pair of presidential decrees in 1998 that declare 1,135,500 hectares in Amazonia off-limits to oil and mining development. The areas include lands occupied by the Tagaeri clan of the Huaorani people, who were dislocated by Texaco and have continued to resist all efforts by outsiders to contact them; and large areas in Yasuni National Park and Cuyabeno Wildlife Reserve. Constitutional President of the Republic, Decreta No. 551 [Decree No. 551] (Jan. 29, 1999) (Ecuador) (Cuyabeno-Imuya region); Constitutional President of the Republic, Decreta No. 552 [Decree No. 552] (Jan. 29, 1999) (Ecuador) (Tagaeri and Yasuni region). Reportedly, a commitment from the European Community to provide economic aid to administer the areas was an important factor in the decision. In addition, a history of violent encounters with the Tagaeri and lobbying by representatives of the Catholic Church, and growing international pressure to protect

Tagaeri territory, likely played a role. For example, in 1998 an international jury convoked by the government of Spain for its prestigious Bartolome de las Casas Prize, awarded an honorable mention to the Tagaeri. Acta de la Reunion del Jurado del Premio Bartolome de las Casas en su Octavo Edicion [Record of the Meeting of the Jury of the Eighth Issue of the Bartolome de las Casas Prize], Madrid, Oct. 7, 1998. For a fuller discussion of the Tagaeri, see Judith Kimerling, Dislocation, Evangelization and Contamination: Amazon Crude and the Huaorani People, in Ethnic Conflict and Governance in Comparative Perspective, Working Paper Series, No. 215 (Woodrow Wilson International Center for Scholars, 1995). The areas have not yet been demarcated, as called for in the decrees, and it remains to be seen whether the State will abide by the decrees.

[FN64]. Ministry of Energy and Mines, Normas para la Prevención, Control, y Rehabilitación del Medio Ambiente en las Actividades Hidrocarburiferas de Exploración y Explotación en los Parques Nacionales o Equivalentes [Rules for the Prevention, Control and Rehabilitation of the Environment in Hydrocarbon Activities of Exploration and Exploitation in National Parks or Equivalents], R.O. No. 004 (Aug. 16, 1988) (Ecuador). The legality of permitting commercial oil development activities in protected natural areas is questionable. See Kimerling 1995, supra note 5, at 342.

[FN65]. Kimerling 1991, supra note 5, at 48-50.

[FN66]. Ministry of Energy and Mines, Reglamento Ambiental para las Actividades Hidrocarburiferas en el Ecuador [Environmental Regulations for Hydrocarbon Operations in Ecuador], R.O. No. 888 (Mar. 6, 1992) (Ecuador) [[hereinafter 1992 MEM Regulations], repealed and replaced in 1995 by MEM Environmental Regulations, supra note 61. The reforms are discussed, infra Pt. VII; the provisions discussed above remain in effect.

[FN67]. For example, there are no standards for specific hydrocarbons that are particularly toxic. Instead, a single parameter--oil and grease--is used, and the acceptable level of fifteen parts per million (ppm) could be dangerously high at many sites because the flow rate and chemistry of receiving waters are not taken into account, and certain hydrocarbons, such as benzene and polynuclear aromatics (PAHs), can threaten human health and the environment at very low levels. See generally MEM Environmental Regulations, supra note 61.

[FN68]. See, e.g., Law of Hydrocarbons, supra note 57, art. 31; Regulation for Hydrocarbon Operations, supra note 60, arts. 8 (request for drilling permit requires technical justification), 10 (detailed sampling and reporting for drilling operations do not include waste management or other environmental information), 17 (final drilling reports do not include environmental information), 23, 26-27, 30, 33-38, 41-44, 60 & 72. Cf. id., arts. 20 and 62 (general duty to prevent contamination but no reporting or oversight mechanisms).

[FN69]. Ecuador's failure to act also reflects the legacy of the "school" of Texaco, where many officials in MEM and Petroecuador received their basic oil development education, but did not learn about environmental protection; the enormous disparities in political influence and resources between TNCs and affected residents; and economic pressure from a crushing debt burden and deepening economic crisis. Ecuador's debt

grew from U.S.$217 million in 1970 to U.S.$12.5 billion in 1990, more that the gross national product (GNP). According to press reports, interest payments on the debt accounted for fifty- two percent of Ecuador's budget in 2000.
Another problem is that some environmental officials in MEM and Petroecuador still do not believe in environmental protection. In addition, officials have an inherent conflict of interest because Ecuador has financial incentives to keep environmental expenditures down, in order to maximize revenues for the state. Many officials also fear that if environmental protection becomes costly, foreign investment will go elsewhere.

[FN70]. The continued lack of environmental oversight of international oil companies was acknowledged by top Ecuadorian environmental officials in a series of interviews conducted in 1999-2000 for this study. Officials included: the Deputy Secretary for Environmental Protection in MEM, who heads SPA; Deputy Secretary of the Ministry of the Environment (MMA); Chief of Petroecuador's Environmental Protection Unit; Area Chief for Limoncocha Biological Reserve; and the official in MMA's Protected Areas Department who oversees management of Limoncocha Biological Reserve. One official, the Director of the National Direction for Environmental Protection, who works under the Deputy Secretary for Environmental Protection in MEM, responded by saying that Ecuadorian law requires MEM to audit Occidental's compliance with its environmental management plan (EMP). However, he did not appear to be familiar with the EMP, was vague and uninformed about the implementation of the audit requirement in Block 15, and could not locate any audit or inspection reports, sampling results, or compliance information in a search of the agency's archives, conducted by archive staff. MEM Environmental Regulations require SPA to prepare a written technical report within fifteen days of an environmental audit; for inspections, a technical report is also required, for signature by participating government and corporate officials. MEM Environmental Regulations, supra note 61, at arts. 58-59.
The principal reasons cited by officials for the failure of regulatory efforts are the lack of technical capacity and equipment, and the lack of legal authority for environmental units. One official also cited the "philosophy" of high level MEM officials. Officials in both MEM and MMA said their agencies are working on regulatory reforms to address those deficiencies. For reports of interviews and findings from prior studies, see Kimerling 1995, supra note 5 and Kimerling 1991, supra note 5.

[FN71]. See, e.g, Steve H. Hanke, Ecuador Needs More Than a Dollars-for- Sucres Exchange, Wall St. J., Mar. 31, 2000, at A19; Larry Rother with Clifford Krauss, The Andes in Tumult, Shaken by Political Tremors, N.Y. Times, Apr. 23, 2000, at A3; Gonzalo Solano, Ecuador Indians Seek Congress End, Associated Press, Aug. 2, 2000; Oswaldo Leon, Ecuador: Firmas para la Consulta Popular [[Ecuador: Signatures for a Popular Referendum], Servicio Informativo "alai- amlatina," Aug. 3, 2000; s ee also supra note 39.

[FN72]. See, e.g., Oil in Ecuador: A Tale of Missed Opportunity; Development Lags as State Stalls Foreign Producers, Wall St. J., Apr. 3, 1997, at A15.

[FN73]. See, e.g., Letter from J. Curtis Struble, charge d'affaires, Embassy of the United States of America, Quito, to Melina Selverston, Coalition for Amazonian Peoples and their Environment (Dec. 27, 1996). The letter was sent in response to concerns raised by U.S. NGOs about alleged efforts by the U.S. embassy in Quito to discourage Ecuador from (1) supporting Ecuadorian plaintiffs seeking to sue Texaco in the United States,

based on operations in Ecuador; and (2) challenging an agreement between Texaco and Ecuador's previous government that purported to clean up affected areas and release Texaco from all environmental liabilities to Petroecuador and the Ecuadorian State. The letter states that the U.S. government has no position regarding the lawsuit, but admits that embassy officials met with Ecuador's then-Attorney General to question his efforts to invalidate the agreement, based on a policy favoring "the sanctity of contractual agreements." Id.

This message appears to have had considerable influence on officials in subsequent governments. Efforts to repudiate the agreement were abandoned, even by officials who publicly denounced the negotiation process that led to the accord, the agreement itself, and the work performed under it. Privately, they explained that, however unfortunate, Ecuador must honor the agreement, and all contracts, in order to attract foreign investment. Environmental officials who expressed those views did not appear to understand that the operation of the rule of law in the United States and international commerce allows for some contracts to be invalidated, under certain circumstances, based on a number of legal grounds. The lawsuit against Texaco is discussed briefly infra notes 120 & 163.

[FN74]. See, e.g., Contract, supra note 29, at paras. 22.1, 22.1.1, 22.1.4, 22.2, 5.1.18, 5.1.19, 5.1.20.11, 5.5.2, 17.4 & 17.5.

[FN75]. Id. at para. 22.2.1.

[FN76]. Occidental's initial contract with Petroecuador (then CEPE) was signed on January 25, 1985. Contract, supra note 29, at para. 2.1. For Petroecuador's General Manager at the time, Patricio Ribadeneira, the agreement marked a "new phase in the history of Ecuadorean hydrocarbons," in which foreign participation in exploration and production would again be welcomed. Martz, supra note 39, at 355. The economic bonanza and "easy money" from Texaco's discovery of Amazon crude had been relatively short-lived in Ecuador. Production--and revenues--began in 1972, but by 1977, Ecuador's economic growth was sustained only by a "flood of foreign borrowing" by the government. Id. at 207-08, 304. Impelled by a "deteriorating economic climate and growing alarm over the possible depletion of petroleum reserves," Ecuador reformed the Law of Hydrocarbons in 1982, in an effort to re-stimulate foreign investment in oil and gas exploration and production. The contract with Occidental was the first risk service agreement under the reformed legislation. Id. at 355; see generally Law of Hydrocarbons, supra note 57. According to Martz, Petroecuador (then CEPE) "labored energetically [in negotiations under the new law] to produce terms acceptable to [Occidental and other] bidding companies." Id. at 354.

Subsequently, Occidental and Petroecuador signed a number of complementary agreements; in 1995, after production operations were underway in western Block 15, the parties signed a Modified Contract, which included commitments for additional exploration by Occidental. Contract, supra note 29, para. 2.5. The exploratory well in El Eden was drilled under that agreement. See supra note 30 and accompanying text. Occidental told residents of El Eden that the well in their community was dry; however, it told Oil and Gas Journal that the find there was so significant that it "could itself justify construction of a pipeline to the western end" of Block 15. Williams 1997, supra note 22, at 45; see also Kimerling 2001, supra note 27, at 212-39.

Following the confirmation and discovery of commercial reserves in El Eden, Occidental sought to renegotiate the terms of its contract with Petroecuador, in order to

take advantage of reforms to the Law of Hydrocarbons that had been adopted in 1993 in a renewed effort to attract foreign investment. The reforms introduced a new type of contract, known as a participation contract. Law of Hydrocarbons, supra note 57 at art. 4. Occidental's initiative led to the current Contract. In a May 27, 1997 letter to Petroecuador, Occidental proposed changing its contract from a service contract to a participation contract. On July 7, 1997, Petroecuador agreed to negotiate. By December 29, 1998, negotiations between the two companies had concluded, and the negotiating committee from Petroecuador submitted the terms of the new agreement to Petroecuador's President and Administrative Council. The Administrative Council approved the terms on that same day; the President approved them on January 19, 1999. Contract, supra note 29, paras. 2.6-2.11. After formal approval by Petroecuador, the terms of the Contract were submitted for approval to a sequence of government agencies, including MEM, the Attorney General, the Joint Command of the Armed Forces, and the Special Committee on Bidding ("CEL"). CEL is a high-level inter-agency group established by the Law of Hydrocarbons to oversee the adjudication of oil development contracts. The Minister of Energy and Mines presides, the General Manager of Petroecuador serves as Secretary, and the other members include the Minister of National Defense; the Minister of Finances and Public Credit; and the Comptroller General of the State. Officials may not delegate their representation on CEL to anyone other than their immediate inferior. Law of Hydrocarbons, supra note 57, art. 18. All of the needed approvals were secured in rapid succession--on March 12, March 24, April 5, and April 26, respectively. Contract, supra note 29, paras. 2.12-2.16. Notwithstanding Ecuador's obligations under the Constitution and ILO Convention 169 to consult with affected indigenous residents and share the benefits of development with them, no government agency informed or consulted with Block 15 residents during the approval process, and the economic "participation" formula in the Contract to distribute revenues from the operations does not include them. See supra notes 47-51.
The terms agreed to by the negotiators from Petroecuador and Occidental apparently were not modified during the approval process, and on May 21, 1999, the new Contract was signed by the parties. Ecuador's President, Jamil Mahuad, signed as an "honorary witness." See Contract, supra note 29. The Contract was promptly announced to the national and international press, but not to residents of affected Quichua communities in Block 15. Although the Contract clearly contemplates the development of new production operations to exploit reserves in El Eden, in a July 1, 1999 meeting with the community (which the author attended), representatives of Occidental refused to confirm or deny that a new Contract had been signed. They also denied that the company had plans to work in the community. This reflects a general practice observed by the author in Quichua communities during this study, and reported by local residents, in which the State is absent, and the company rebuffs efforts by residents to gain access to information and participate in decision-making about development activities in their communities. See generally Kimerling 2001, supra note 27.

[FN77]. As indicated supra note 31, in addition to oil fields in Block 15, the Contract designates Occidental as the operator of two unified fields, located in both Block 15 and adjacent areas, that had been controlled by Petroecuador. See Convenio Operacional de Explotación Unificada de los Yacimientos Comunes "U" Inferior y "T" y los Yacimientos No Comunes en el Campo Limoncocha [Operational Agreement for Unified Exploitation of the Common Reserves Lower "U" and "T" and the Non-Common Reserves in Limoncocha Field] (May 21, 1999) (signed by Occidental Exploration and Production Company and Petroproducción and attached to the

Contract); Convenio Operacional de Explotación Unificada de los Yacimientos Comunes "M1," "M2," "U" y "T" en el Campo Unificado Eden-Yuturi [Operational Agreement for Unified Exploitation of the Common Reserves "M1," "M2," "U" and "T" in the Unified Eden-Yuturi Field] (May 21, 1999) (signed by Occidental Exploration and Production Company and Petroproducción and attached to the Contract).
On January 20, 1999, the day after Petroecuador approved the Contract, the decision to designate Occidental as operator of the unified fields and the Contract negotiations between Petroecuador and Occidental were formally denounced to Ecuador's Commission for Civic Control of Corruption. The complaint challenges the legality of the designation, negotiation, and approval process, and alleges that the agreement "will prejudice the State by a magnitude of $500 million" in lost revenues. Denuncia Perjuicio al Estado en 500 Millones de Dolares por Negociación de Campos Limoncocha y Eden- Yuturi con Empresa Occidental [Complaint for Damages to the State in the Amount of $500 Million Due to Negotiations with the Company Occidental for the Limoncocha and Eden-Yuturi Oil Fields] to Doctor Jorge Vivanco Mendieta, President of the Commission for Civic Control of Corruption, signed by Dr. Kaiser Arevalo B., Diego Cano M., Ricardo Ulcuango, Napolron Saltos G. and Alberto Acosta (Jan. 20, 1999). The complaint was signed by a member of Ecuador's National Congress, the Secretary General of a Petroecuador workers' union, CETAPE, the president of the indigenous organization that represents communities from Ecuador's Andes Mountains region, ECUARUNARI, and two respected intellectuals. It alleges that the decision to designate Occidental--instead of Petroecuador--as the operator of the unified fields reflects an ongoing policy to favor "foreign private interests" at the expense of national interests. Among other alleged violations of the law, the complaint challenges the failure to consult with affected indigenous peoples, as required by the Constitution and ILO Convention 169. See id. In a subsequent publication about the proceedings, one of the petitioners, Napoleon Saltos, elaborates on the charges. Among other irregularities, Saltos alleges a conflict of interest by a Petroecuador official who participated in the process as a representative of the state company. According to Saltos, the official, Manuel Echeverria, is a former President and Manager of Occidental Ecuador, and served as "the Coordinator" for Occidental during the negotiations. Saltos accuses Echeverria of using his influence in Petroecuador to secure Occidental's designation as operator of the unified fields with undue haste and without consideration--as required by law--of an internal technical-economic report that favors an alternative arrangement to develop the reserves. Napoleon Saltos Galarza, Etica y Corrupción Estudios de Casos: Informe Final del Proyecto "Etica y Corrupción" [Ethics and Corruption Case Studies: Final Report of the Project "Ethics and Corruption"] 393-415, 412 (1999).

[FN78]. After preliminary proceedings, the President of the commission sent an official communication ("Oficio") to the Minister of Energy and Mines. Dated March 31, 1999, the Oficio pre-dates the final approval of the Contract by CEL, but post-dates approvals by Petroecuador and MEM. It states that the evidence shows that (1) there is more than one alternative to develop the unified reserves; and (2) the constitutional right of affected indigenous peoples to be consulted about development activities had not been taken into account. Commission for Civic Control of Corruption, President, Oficio CCCC.99.0375, directed to Rene Ortiz, Minister of Energy and Mines, signed by Nicolas Espinosa, President of the Commission for Civic Control of Corruption (Mar. 30, 1999). The Oficio requests that the Minister (1) analyze all available alternatives during the process of re-negotiating Occidental's Contract, in order to protect the

interests of the State; (2) carry out the required consultations with affected communities; and (3) inform the commission about the process and final arrangement. Id.
The commission was created by Ecuador's 1998 Constitution, as an autonomous public agency. The Constitution directs the commission to "act in representation of the citizenry" to promote "the elimination of corruption," and receive complaints of alleged "illicit acts committed in State institutions, in order to investigate them and solicit their judgment and sanction." Constitution, supra note 39, at art. 220. In addition to investigating complaints, the commission is directed by statute to develop a national plan to prevent corruption. Ley de la Comisión De Control Cívico de la Corrupción [Law of the Commission for Civic Control of Corruption] [[hereinafter Law of the Commission] (Aug. 12, 1999) (Ecuador), art. 7(a). Although the commission may require state agencies and officials to provide information, and its findings carry considerable moral weight, the agency does not have legal authority to sanction corruption or, apparently, to prosecute the offenders. Constitution, arts. 220-221; Law of the Commission, art. 7. Notwithstanding the vague but potentially broad Constitutional dictate to "solicit" the "judgment and sanction" of official corruption--which arguably could be read to grant implied prosecutorial authority to the commission--the Constitution explicitly directs the commission to remit findings of corruption to Ecuador's Constitutionally- created Public Minister and Comptroller General of the State, for appropriate legal proceedings. See Constitution, arts. 211-213, 220-221; Law of the Commission, art. 7(f). The commission may also "solicit" sanctions by "the competent administrative authorities." Law of the Commission, art. 7(h).

[FN79]. Contract, supra note 29 at para. 3.4.4.

[FN80]. Law of Hydrocarbons, supra note 57, at art. 31(t).

[FN81]. Contract, supra note 29, at para. 5.1.8.

[FN82]. The Contract provides that Occidental, as the contractor "shall have technical responsibility with respect to the operations in the Participation Contract Area, in the terms established in this Participation Contract and the pertinent legal norms." Id. at para. 5.1.27.

[FN83]. Id. at para. 5.1.20.11.

[FN84]. Id. at para. 5.5.20.2.

[FN85]. Id. at para. 9.2.10. This is explicitly subject to approval by Petroecuador. See also id. at para. 9.2. Other provisions of the Contract refer to international practices that are used to set reasonable tariffs for the transportation of crude oil in pipelines. Id. at paras. 7.3 & 7.3.3.

[FN86]. For a fuller discussion of Texaco and Petroecuador's operations, see generally Kimerling 1991, supra note 5.

[FN87]. Interview with Bertha Margarita Yepez Silva, in Quito, Ecuador (Mar. 3, 1994). Yepez was a social worker for Texaco Petroleum Company, Texaco's Ecuadorian Subsidiary, from 1973-1989.

[FN88]. Unlike many Latin American countries, Ecuador did not participate in the process of industrialization spurred by import substitution policies in the 1930s. Efforts to move the country away from the dominant agro-exporting model began in the 1960s, and initially focused on textiles and food products. Martz, supra note 39, at 119-22. Notwithstanding those efforts, Ecuador's economic axis remained banana production until the oil boom began. The other principal export products were cocoa and coffee. Id. at 157. The start of the oil boom was rapid in Ecuador, and the oil industry quickly came to dominate the country's economy. Id. at 157, 370, 376.

[FN89]. See infra note 115 and Pt. IX, secs. B-E; see also American Petroleum Industry, Environmental Guidance Document: Waste Management in Exploration and Production Operations, API E5 (1997); Michelle A. McFaddin, Oil and Gas Field Waste Regulations Handbook (1996); Interstate Oil & Gas Compact Commission, IOGCC Environmental Guidelines for State Oil & Gas Regulatory Programs (1994) [hereinafter IOGCC Environmental Guidelines]; Interstate Oil Compact Commission, EPA/IOCC, Study of State Regulation of Oil and Gas Exploration and Production Waste (1990) [hereinafter Study of State Regulation]; U.S. Environmental Protection Agency, Office of Solid Wastes, Report to Congress, Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy, Volume 3 EPA/530-SW-86-003-D (draft for public comment) (1987).

[FN90]. Under this interpretation, Occidental would nonetheless be required to comply with Ecuadorian law.

[FN91]. In the unlikely event that Petroecuador and Occidental reach an impasse over the selection of applicable international standards, the language in the Contract is so vague that it would be of little or no use to Ecuador for enforcement purposes, to compel the use of any particular standard or technology.

[FN92]. See generally API Guidance Document, supra note 87, API E5; E & P Forum, Oil Industry Operating Guidelines for Tropical Rainforests, Report No. 2.49/170 (1991).
The soft and generalized nature of oil industry environmental guidelines differs considerably from the precision and clarity that generally characterize the myriad technical API standards for equipment, materials, and installation and engineering practices. The technical standards have been developed to support the reliable use of interchangeable equipment and materials, reduce customization, and facilitate communication between users and suppliers. See generally American Petroleum Industry, 2000 Publications, Programs and Services Catalog (2000).

[FN93]. E & P Forum-UNEP, Environmental Management in Oil and Gas Exploration and Production: an Overview of Issues and Management Approaches (1997).

[FN94]. See id; see also infra note 256.

[FN95]. See, e.g., E & P Forum-UNEP, supra notes 52-3.

[FN96]. The World Bank Group, Pollution Prevention and Abatement Handbook, 1998: Toward Cleaner Production (1998) at v-vi. [hereinafter World Bank 1998]. The guidelines were developed by a team from the World Bank and International Finance Corporation, in collaboration with the United Nations Industrial Development Organization and United Nations Environment Program. They are envisaged as "living" documents--to be monitored as they are implemented, and revised as needed, "in the light of the accumulated experience." Id. at vi.
The guidelines for onshore oil and gas development contain some clear norms, including a limited number of specific parameters and permissible levels for pollutants in wastewater discharges (effluents) and air emissions. Notably, they prohibit dilution in lieu of treatment, stating that "[d]ilution of air emissions or effluents to achieve these guidelines is unacceptable." Id. at 447. The general guidelines also prohibit dilution, stating, in bold print, that "dilution of effluents and air emissions to achieve maximum permitted values is unacceptable." Id. at 387 (boldface in original). However, the effectiveness of that norm in preventing water pollution from oil and gas operations can be expected to be limited, because the guidelines do not include chlorides as a parameter in effluents. Chlorides are typically found in toxic levels in oil field production wastes, and can also be found in drilling wastes, especially when water-based muds are used. A requirement to measure levels of chlorides, and the prohibition of dilution, could operate together to compel companies to significantly upgrade waste treatment and disposal systems, effectively proscribing the discharge of wastewater into surface waters in many areas. By not monitoring chlorides or total dissolved solids (which would include chlorides), oil companies may be able to meet the World Bank discharge standards by using relatively rudimentary waste management technology and practices that still contaminate surface water bodies and impact aquatic life. As discussed infra, in the United States--in part because of toxic levels of chlorides in wastewaters-- EPA regulations have generally prohibited the discharge of onshore oil field exploration and production wastes into fresh waters since 1979. See infra note 271 and accompanying text. Thus, the guidelines are significantly less protective than U.S. standards and regulations that have been in effect for decades. In addition, The World Bank guidelines for onshore oil and gas development are less protective than the general environmental guidelines found in the same document. For example, the permissible level of oil and grease in oil field effluents (20 parts per million, or ppm) is double the amount that is allowed under the general guidelines (10 ppm); the same disparity is found in the permitted levels for phenols (1.0 ppm and 0.5 ppm, respectively). World Bank 1998 at 389, 446. Finally, notwithstanding the provisions discussed above, most of the norms in the oil and gas guidelines are vague and aspirational. For example, operators are encouraged to "select less toxic biocides, corrosion inhibitors, and other chemicals," "minimize gas flaring," "minimize and control leakage from tanks and pipelines," "practice corrosion prevention," and "reduce the impacts" of wastewater discharges and oil spills. Id. at 446. This language is similar to that commonly used in industry guidelines and discussed above in this section. None of the corporate or government officials who were interviewed for this case study mentioned the World Bank guidelines as a source of international standards.

[FN97]. International Organization for Standardization, ISO 14001. Environmental Management Systems--Specifications with Guidance for Use (Geneva 1996) (hereinafter ISO 14001 Standard).

ISO 14001 was adopted in 1996 by the International Organization for Standardization ("ISO"), a nongovernmental organization that promotes international standardization for technologies, in order to "help rationalize the international trading process." International Organization for Standardization, Introduction to ISO, at http://www.iso.ch/infoe/intro.htm (last modified Jan. 8, 1999). Members of ISO include private and public national standards bodies. ISO was established in 1947, because of concern that non-harmonized standards for similar technologies would contribute to "technological barriers to trade." Id. One example of a commonly-used ISO International Standard defines features, such as optimal thickness, for credit cards and phone cards. Adherence to the standard allows cards to be used worldwide.

[FN98]. See ISO 14001 Standard, supra note 97.

[FN99]. Id.

[FN100]. Id.

[FN101]. Armada of Ecuador, Captain of the Port of Fransisco de Orellana (Coca), Oficio No. CAPORE-AYD-038-0 (Feb. 4, 1997).

[FN102]. Id. The incident was allegedly "hushed up," and apparently not many people--even in Ecuador's government--know about it. Representatives from Occidental reportedly told Tello's family that there was no proof that he had died, because they did not have a corpse. Tello's brother, however, traveled to the region to search for the body and find out what had happened. He appealed to the Captain of the Port to investigate the death. None of the government officials who were interviewed for this study know about the incident. The author learned about it because she knew the victim personally, and discussed the incident and response with his brother on several occasions in 1997-1998. She also spoke with a witness from a nearby Quichua community who was working for Seiscom Delta at the time.

[FN103]. Hollub and Rivera Interview, supra note 37.

[FN104]. In addition to disregarding safety laws and cutting corners in the operations, the barge subcontractor also violated Ecuador's labor laws by failing to pay social security taxes for Tello to the government. See generally Servicios Petroleros Galeth, Liquidación de Sueldo [Liquidation of Salary], Dumas Tello (Oct. 20-31, 1996); Servicios Petroleros Galeth, Liquidación de Sueldo [Liquidation of Salary], Dumas Tello (Nov. 1-30, 1996); and Servicios Petroleros Galeth, Liquidación de Sueldo [Liquidation of Salary], Dumas Tello (Dec. 1-31, 1996).

[FN105]. Hollub and Rivera Interview, supra note 37. In addition to the legal violations, the incident and response raise questions about Occidental Ecuador's implementation of the company's internal corporate policies. One of the ten "guiding Health, Environment and Safety (HES) principles" is to "utilize sound maintenance and work practices, safety-conscious design, employee training and incident investigations and corrective measures to prevent health, environment and safety incidents. Should an accident occur, we will be prepared to respond promptly, appropriately and professionally." A "feature" of the HES policy is to "select contractors considering their HES performance." HESMS Guidance Manual, supra note 24, at 6, 13.

[FN106]. Law of Fishing and Fishing Development, supra note 57, at arts. 47(e) & 80.

[FN107]. For a fuller discussion, see Kimerling 2001, supra note 27.

[FN108]. Most of the documents requested from Occidental for this study were not provided. See infra note 188.

[FN109]. Without doubt, the internalization of an environmental culture is an essential component of corporate responsibility and a needed change in the oil industry. However, reliance on corporate culture to undertake self- regulation is not sufficient, alone, to guarantee environmental protection.

[FN110]. Interview with Fausto Coral, Deputy Secretary for Environmental Protection, Ministry of Energy and Mines, in Quito, Ecuador (Aug. 17, 1999).

[FN111]. Id. The Deputy Secretary is the highest level environmental official with jurisdiction--and responsibilities--in the oil fields. His attitude of welcoming international standards and oversight is also noteworthy because it raises questions about the position that is commonly expressed by developing nations in international negotiations. Representatives of those governments have vigorously opposed international environmental regulation of development activities in favor of developing environmental law at the national level. Experience in Ecuador, however, suggests that at least some of the officials who bear direct and real-world responsibility for environmental regulation in developing countries would welcome international initiatives that measure environmental performance at specific locations, against international standards.
Similarly, Occidental has located production facilities in and near Limoncocha Biological Reserve, a protected natural area under Ecuadorian law and a designated Wetland of International Importance under the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat, Feb. 2, 1971, TIAS No. 11,084, 996 UNTS 245 [hereinafter Ramsar Convention]. The official in Ecuador's Ministry of the Environment ("MMA") Department of Protected Areas who oversees the management of the reserve explained that MMA does not monitor the impact of Occidental's operations on the reserve, or sample water quality in the lake that comprises the centerpiece of the protected area, Lake Limoncocha. He assumed, however, that Occidental's ISO 14001 certification means that the company does monitor water quality and other possible impacts on the reserve, according to parameters that meet international standards, and that Occidental's environmental performance there meets international standards. Telephone interview with Angel Onofa, Ministry of the Environment, Dept. of Protected Areas (May 3, 2000). Operations in the reserve are discussed infra Pt. VIII, sec. B, and Pt. IX, sec. A.

[FN112]. For example, during the author's official visit to CPF with three representatives of local communities, the company's formal presentation about environmental protection began by citing the certification. The ISO standard was described as a body of international norms, with which ninety-nine countries are affiliated, that has certified that Occidental's "Environmental Management Plan complies with international standards." When asked, "What are the standards?" the acting chief of field operations responded, "There are many." When asked what some of

the standards are, the official said that he did not remember all of them; no particular requirements were identified. When asked to clarify the statement about affiliated countries, officials said they did not know whether that refers to governments or nongovernmental institutions, like private companies. CPF Visit, supra note 32. This reflects and reinforces the confusion in Ecuador between public and private norms.
In an interview in Quito, Occidental's chief of field operations admitted that ISO 14001 does not verify whether the company complies with legal requirements; however, she argued that corporate culture is more important than government regulation, stating:
You know I could get away with violating the law in the United States if I wanted; I have worked there for ten years and there are no government inspections. We just fill out forms, so the corporate culture is more important.
Hollub and Rivera Interview, supra note 37; see also OXY, ISO 14001 Certified, supra note 23.

[FN113]. CPF Visit, supra note 32; Hollub and Rivera Interview, supra note 37. NORM is discussed infra at note 268.

[FN114]. See Contract, supra note 29, at para. 5.1.20.1; see also discussion in Pt. VII.

[FN115]. As discussed infra Pt. IX, secs. B-E, there are no comprehensive uniform environmental standards for oil and gas exploration and production in the United States. Although federal law includes some regulations that apply to oil field activities--such as limits on point source discharges under the Clean Water Act, 33 U.S.C. § 1321, and requirements for underground injection wells under the Safe Drinking Water Act, 42 U.S.C. § 300h-1-8-- most oil field regulation is controlled at the state level. Among the states, regulatory requirements can vary considerably. Monitoring and enforcement are also inconsistent. The Interstate Oil and Gas Compact Commission ("IOGCC") has adopted national environmental guidelines for exploration and production wastes, with funding and support from EPA. Study of State Regulation, supra note 89; IOGCC Environmental Guidelines, supra note 89. Founded in 1935, IOGCC now represents thirty-five oil and gas producing states. Id. at iv. The guidelines--first adopted in 1990 and updated in 1994--evolved from EPA's 1988 determination to exempt most oil field wastes from regulation as hazardous wastes under RCRA Subtitle C. See infra notes 272-73. They are intended to help states improve their regulatory programs in the absence of an overarching federal regulatory program for exploration and production wastes.
A nine-member advisory committee was established in 1989 to work with IOGCC's Council on Regulatory Needs and EPA to "recommend effective regulations, guidelines, and/or standards for state-level management of oil and gas production wastes." IOGCC Environmental Guidelines, supra note 89, at 2. Both Chris Shuey and Wilma Subra, cited infra, served on the advisory committee. Shuey describes the guidelines as "the lowest common denominator from a multi-interest process," that included industry and public interest environmental experts, and representatives from EPA and state regulatory agencies; they do not represent a regulatory determination. Telephone interview with Chris Shuey, Director, Community Water, Wastes & Toxics Program, Southwest Research and Information Center, Albuquerque, New Mexico (Jan. 29, 2001) [hereinafter Shuey Interview I].
The guidelines address administrative and technical issues, but for the most part are very general. See, e.g., infra note 268 (NORM guidelines). While some states have used them to improve their regulatory programs, IOGCC member states are under no legal

obligation to adopt the guidelines or conform their regulations to them. For states that adopt some or all of the guidelines, enforcement remains a state responsibility and there is no federal oversight of state enforcement or operator compliance with state requirements. Shuey Interview I. According to both Shuey and Subra, the lack of aggressive oversight and enforcement by federal and state agencies to ensure compliance with environmental regulations is a serious problem. In addition, not all standards and technology used in the United States are superior to standards and practices in developing nations; for example, some companies in some states still use unlined pits for waste disposal, and bury high-toxicity drilling muds and wastes at drill sites. Id.; telephone interview with Wilma Subra, President, Subra Company, New Iberia, LA (May 18, 1999) [[hereinafter Subra Interview I]. Another regulatory deficiency, cited by both Shuey and Subra, is the failure to characterize wells and other oil field facilities--with multiple waste streams, releases, and sources of contaminants--as an integrated operation, and to perform cumulative health assessments. See, e.g., infra note 256 (facilities not aggregated to form "major sources" under the Clean Air Act). Both Shuey and Subra resigned from the advisory committee in 1999 because of a lack of support from EPA to take needed action to address environmental and health impacts from oil field operations.

The lack of comprehensive national legal standards, consistent oil field practices, or consensus about what constitutes "best practice" for exploration and production operations makes comparisons between U.S. and Ecuadorian standards and practices difficult. A comprehensive review of standards and practices in the United States is beyond the scope of this article; however, some comparisons are offered infra Pt. IX, secs. B-E.

[FN116]. Occidental Exploration and Production Company, Estudio de Impacto y Plan de Manejo Ambiental, Bloque 15, Vol. II, Plan de Manejo Ambiental [[Environmental Impact Study and Management Plan, Block 15, Vol. II, Environmental Impact Study], at 25 (1992) (prepared by AMBIENTEC Ltda.) [[hereinafter EMP].

[FN117]. That provision requires Occidental "to incorporate tecnologia de punta (leading edge technology) compatible with Ecuador's Amazon region, for both operations and the studies, reports and application of recommendations, that will be agreed to by the parties" to the Contract, defined as Occidental and the Ecuadorian State, through Petroecuador. Contract, supra note 29, at para. 5.5.20.2.

[FN118]. Oil development accentuated Ecuador's dependence on foreign export markets and foreign investment, technology and expertise. As described by Martz in his study of petroleum policy in Ecuador through 1984, "leading policymakers often have less independent power than is believed," irrespective of who occupies the government and whether it is a civilian or military regime. Martz, supra note 39, at 395. Following the discovery of Amazon crude, the oil industry quickly came to dominate Ecuador's economy, and successive governments have viewed hydrocarbon development as the cornerstone of national development aspirations. As a result, the health of the oil industry is a central concern for the State. At the same time, Ecuador is a relatively small producer when compared with other oil exporting nations, so its impact on world markets is negligible. This makes Ecuador more vulnerable to international forces and pressures, such as the global economy, international oil market, and needs and demands of international oil companies.

Nationalist sentiments were stimulated in petroleum policymakers at the onset of the oil boom, but were soon "disappointed as international economic realities asserted themselves." Id. at 370. Traditionalist domestic elites also favored the interests of foreign oil companies. After initial gains in State control and participation in development activities during the early years of the oil boom, the balance of power shifted from Ecuador to the international companies. Id. at 376. Martz concludes that, in Ecuador's relations and negotiations with foreign oil companies, "occasional spurts of more independent and nationalistic petroleum policy were not sufficient to vitiate the multinationals' superiority." He predicts that:
[S]o long as petroleum is Ecuador's dominant economic force ... basic policy objectives will favor economic development over national sovereignty whenever the two are in serious conflict.... [Barring conditions of economic largesse, the State] will have little choice but to yield political control in order to maximize earnings and buttress the economy.... Barring the discovery of new major reserves, Ecuador will remain a marginal producer on the international market.... Whatever the regime, it will be hard-pressed to deal effectively with foreign corporations. It will be difficult at best to increase bargaining leverage.
Id. at 391-92.

[FN119]. Kimerling 1995, supra note 5.

[FN120]. See generally Martz, supra note 39; Kimerling 1995, supra note 5. Not surprisingly, Martz's detailed academic study of petroleum policy through 1984 does not mention environmental protection or relations with indigenous peoples whose traditional territories contain the oil reserves.
In a recent public forum in Quito about the legacy of Texaco in Ecuador (in which the author also participated), a key petroleum policymaker from the military government that ruled the nation when the oil boom began, General Rene Vargas Pazzos, expressed remorse for the State's treatment of indigenous peoples in Amazonia. With regard to environmental policy, he admitted that the State is not entirely free from blame, but said that officials were ignorant of the environmental risks and consequences of oil development, and trusted Texaco, as an international company, to use "adequate technology." Vargas, then an army colonel, served as the second General Manager of Petroecuador (then CEPE), from October 1973 through November 1975. From January 1976 through February 1977, he was Minister of Natural Resources (currently, the Ministry of Energy and Mines, or MEM). Martz, supra note 39 at 373. As a policymaker, Vargas had a technocratic style and was a strong advocate of nationalistic petroleum policies. Id. at 109, 160, 183. At the forum, he also expressed unequivocal support for the right of the "victims" of Texaco's operations to sue Texaco in U.S. courts, and characterized that company's operations as "criminal," because it "knew about environmental technology but did not apply it." Presentation by General Rene Vargas Pazzos to Forum Deuda Ecológico de Texaco: Impunidad o Restauración? [Texaco's Environmental Debt: Impunity or Restoration?] (Jan. 18, 2001) (sponsored by the National Congress of Ecuador Commission for Official Oversight, Third World Institute for Ecological Studies, and Acción Ecológica).
As mentioned infra note 163, a class action lawsuit was filed against Texaco in 1993 in federal court in New York. The case has generated considerable interest in Ecuador. In 1997, it was dismissed by the District Court, in favor of litigation in Ecuador, on the grounds of forum non conveniens, international comity, and failure to join Ecuador and Petroecuador as indispensable parties. Aguinda v. Texaco, Inc ., 945 F. Supp. 625

(S.D.N.Y. 1997). A postjudgment motion by Ecuador and Petroecuador to intervene was denied. Aguinda v. Texaco, Inc., 175 F.R.D. 50 (S.D.N.Y. 1997).
On appeal, the Second Circuit vacated and remanded the case for reconsideration. Jota v. Texaco, Inc., 157 F.3d 153 (2d Cir. 1998). It held that: (1) dismissal on the grounds of forum non conveniens and comity was erroneous in the absence of a condition requiring Texaco to submit to jurisdiction in Ecuador; (2) the lower court's reasoning with regard to plaintiffs' failure to join indispensable parties supports only dismissing claims that seek to enjoin activities currently under Ecuador's control; and (3) Ecuador's motion to intervene was late and did not include a full waiver of sovereign immunity. Id. A ruling on remand by the District Court is expected at any time. For a brief account of the history of the litigation, see Judith Kimerling, Oil Development in Ecuador and Peru: Law, Politics and the Environment, in Amazonia at the Crossroads: The Challenge of Sustainable Development (Tony Hall ed. 2000), at 81-88.

[FN121]. This failure to implement meaningful regulation is true of community relations as well, and continues despite Ecuador's ratification of international law instruments that expand environmental and indigenous rights and responsibilities; and the incorporation of group rights for indigenous peoples and expanded environmental rights in the Constitution in 1998. See supra notes 45-51 and accompanying text.

[FN122]. However, environmental standards that are negotiated with special interests behind closed doors raise serious questions of legitimacy and accountability.

[FN123]. Narvaez Interview, supra note 62.

[FN124]. Corporate officials in Ecuador claim that all environmental information is the "property" of Occidental and Petroecuador, the parties to the Contract. Interview with Alberto Gomez de la Torre, Legal Representative- Legal Manager, Occidental Ecuador, in Quito (July 23, 1999) [hereinafter Gomez Interview]. This contradicts the spirit of international environmental law relating to sustainable development and is dubious under Ecuador's constitutional and statutory law. For a discussion of information and community relations, see Kimerling 2001, supra note 27. For an account of Occidental's efforts to deflect requests for basic environmental information for this study, see infra note 188.

[FN125]. The reforms were published in Ecuador's Official Registry, and have been codified. See supra note 61. However, unlike the 1992 regulations, which were published with great fanfare, the reforms were not publicized. Many NGOs and other stakeholders do not know that the 1992 regulations have been replaced.

[FN126]. Another reform to the regulations was added to a provision that authorizes members of the public to denounce environmental pollution to SPA. The new language confers a cause of action on companies, to take legal action against a complainant when the compliant is "not proven or [is] unfounded." MEM Environmental Regulations, supra note 61, at art. 64; cf. 1992 MEM Regulations, supra note 66, at art. 47. According to Quichua in Block 15, Occidental commonly challenges residents who complain about pollution for technical proof. This practice discourages them from complaining because they do not have access to sampling equipment or environmental information that is generated and controlled by the company.

[FN127]. MEM Environmental Regulations, supra note 61, at arts. 52-54; cf. 1992 MEM Regulations, supra note 66, at art. 41.

[FN128]. 1992 MEM Regulations, supra note 66, at art. 52. Amendments to article 52 also added a provision that refers to international standards and modern technology that are "accepted" by the international oil industry. The provision states:
For the execution of environmental studies, modern technology that is internationally accepted by the petroleum industry, compatible with the protection of the environment, shall be used, and it shall be effectuated in conformance with the guidelines that are detailed in the articles that follow this article.

[FN129]. Id. at arts. 11, 16, 25, 52.

[FN130]. Art. 31 (t) requires companies:
[T]o conduct operations in accordance with Laws and Regulations for protection of the environment and national security, and with relation to international practice in matters of preservation of the rich fisheries and farming industry. For that end, in the contracts, the respective guarantees of contracting companies shall be evident.
Law of Hydrocarbons, supra note 57, at art. 31(t).

[FN131]. See, e.g., MEM Environmental Regulations, supra note 61, at art. 5.

[FN132]. The use of vague language to quietly rewrite regulations, in the absence of corresponding reforms to the Law of Hydrocarbons or environmental legislation, may also reflect an effort by MEM officials to open a legal door to allow TNCs and government officials to negotiate special environmental rules, without attracting public attention. Legislative action on controversial matters is much more likely to attract public notice and opposition.

[FN133]. E-mail from Clark Hull, Worldwide Environmental Manager, Occidental Oil and Gas Corporation, to Judith Kimerling (Apr. 17, 2000) (on file with author) [hereinafter Hull e-mail].

[FN134]. As a result, the potential scope of variances contemplated by the relaxed EIA requirements in the regulations is not limited to the adequacy of baseline information and impact assessments; it could also extend to substantive standards and practices. As a general matter, reforming EIA criteria to allow variances does not necessarily run afoul of the Law of Hydrocarbons or other laws; however, the absence of limitations or criteria for possible waivers is problematic and, in theory, could lead to arbitrary agency action and environmental and social consequences. For example, the failure to prepare an "abandonment plan" or oil spill contingency plan that includes an analysis of the "risks and behavior" of possible spills, could increase environmental risks. These concerns are theoretical at this time, because those and other requirements/guidelines have not been effectively enforced. As a general matter, EIAs by TNCs are seriously flawed by U.S. standards, but are routinely approved by MEM, without major changes.

[FN135]. EMP, supra note 116. The blanket incorporation of 1992 standards and practices into a contract that was negotiated in 1999 is puzzling, and raises questions about what Occidental means when it says the company is committed to using cutting edge technology.

[FN136]. Hull e-mail, supra note 133. As discussed infra, in Pt. VIII, the EMP is troubling in a number of respects and does not include a complete compilation of applicable Ecuadorian laws and regulations.

[FN137]. Contract, supra note 29, at para. 5.1.20.1.

[FN138]. Id. at para. 3.3.35.

[FN139]. In Spanish, use of the subjunctive tense would most clearly indicate that Occidental should comply with laws and regulations that are in effect at the time the determination is made.

[FN140]. This may sound absurd by U.S. standards, especially if applied to operations and facilities that are developed in the future. In the United States, environmental and other laws commonly evolve and change. Retroactive environmental requirements are not unusual because environmental regulation is often remedial in nature. New requirements may be phased in over time and existing operations grandfathered, but oil companies are not permitted to contractually freeze the environmental law framework for their activities indefinitely, and obtain blanket exemptions from any and all laws and regulations that might be enacted in the future.
Ecuador, however, is under tremendous pressure to provide a stable legal environment for foreign investors; and that interpretation (that Occidental is only required to comply with current regulations) could be supported by another pair of provisions that are also ambiguous with regard to changes in environmental law. The section on applicable law and jurisdiction begins as follows: "Applicable legislation: This Contract is governed exclusively by Ecuadorian legislation and it is understood to incorporate the laws in effect at the time of its celebration." Contract, supra note 29, at para. 22.1. That is followed by a statement that Occidental "declares, expressly, that is has full knowledge of the Ecuadorian legislation that is applicable to the Participation Contracts for the Exploration and Exploitation of Hydrocarbons." Id. at para. 22.1.1.
The environmental protection section includes a second reference to Ecuadorian law and regulations, that requires Occidental to "[c]omply and ensure that subcontractors comply with all laws, regulations and any other dispositions" that apply to the Contract in Ecuador. Id. at para. 5.1.18. A pair of subsequent provisions require subcontractors to comply with applicable laws and legal requirements. Id. at paras. 17.4 and 17.5. That language in those provisions does not resolve the ambiguity because it does not define applicable laws and regulations.

[FN141]. See generally 1992 EIA, supra note 33, at app. C.

[FN142]. The EMP is dated January 1992. Some recent legal developments are discussed supra notes 45-51 and accompanying text. Although the implementation of those rights and duties--including rights to information and participation in environmental decision-making--is primarily the responsibility of the State, Ecuador has effectively ceded both environmental protection and community relations in Block 15 to Occidental. According to Occidental, the EMP incorporates all applicable legal requirements. Hull E-mail, supra note 133. Despite this, the EMP ignores the rights of local residents, and Occidental's practices run roughshod over them. The company makes environmental decisions behind closed doors, without consultation; conceals

important information; and even proffers misleading information. At times, it seems to deliberately cultivate confusion in local communities about the operations and environmental standards and practices. Kimerling 2001, supra note 27. Other international law instruments that are relevant to oil field operations include the Convention on Biological Diversity, supra note 48, and United Nations Framework Convention on Climate Change, May 9, 1992, 31 I.L.M. 849 (1992) (entered into effect on Mar. 21, 1994). Both treaties were ratified by Ecuador on Feb. 23, 1993, and now form part of Ecuadorian national law. The treaties charge national governments with responsibility for implementation; however, Ecuador has not acted to implement them in the oil fields. Despite this, "corporate responsibility" and voluntary initiatives to implement "international standards" should include measures to help governments comply with their general commitments under the treaties. For example, the Framework Convention on Climate Change requires governments to identify sources and sinks for greenhouse gases, and conserve and enhance, as appropriate, sinks and reservoirs for those gases. See id. arts. 4.1 (a), (b), & (d). To facilitate compliance by Ecuador, Occidental could provide a clear and complete accounting of greenhouse gas emissions from its operations, identify natural sinks and reservoirs in Block 15, and assess how the operations will affect Ecuador's general obligations under the treaty.
Similarly, Occidental could conduct a biodiversity assessment in Block 15 that identifies important habitats for threatened and endangered species, and then work with government officials, local communities and environmentalists to develop measures to protect and monitor those species and their habitats. One important habitat, and natural carbon reservoir, is Pañacocha Protected Forest, discussed infra note 231. The reserve is home to at least twenty threatened or endangered species. E-mail from Randall Smith to Judith Kimerling, (June 22, 2000). It is especially vulnerable to pollution because it is a low energy system; in addition, noise from oil field operations can have adverse impacts on wildlife. As discussed infra notes 145-46 and Pt. VIII, sec. B, biodiversity monitoring and standards in the EMP are seriously flawed.

[FN143]. See supra notes 101-07 and accompanying text for examples of legal violations.

[FN144]. See, e.g., Law of Hydrocarbons, supra note 57, at art. 31(t); Law of Waters, supra note 52, art 22; General Regulations for the Application of the Law of Waters, supra note 52, arts. 89 & 90; Contamination Prevention Law, supra note 54, art. 3; Water Pollution Regulations, supra note 55, art. 89. A no degradation standard would also be consistent with constitutional provisions that require Ecuador to prevent contamination and protect ecological balance. Constitution, supra note 39, at arts. 23 (6) & 86.

[FN145]. EMP, supra note 116, at 22. The EMP is unclear about how Occidental should apply the standard and detect "lost diversity." The "determination" of baseline diversity and the selection of monitoring techniques and other possible "ecological indicators" are left to the future.
Humid tropical forests are so diverse that the vast majority of species in them have not even been identified by scientists; as a result, by the time "lost diversity" is detected by Occidental, it could represent irreparable harm and dramatic changes to the environment. A sounder and more protective approach would be to select indicator species of flora and fauna before operations begin, and monitor resident and migratory populations. Indicator species should include threatened and endangered species, and

species that are important to local populations; in addition, water quality should be monitored in aquatic habitats that could be affected by the operations. Experience shows that, to maximize protection of biodiversity, some habitats, such as Pañacocha Protected Forest, should be off-limits to drilling and construction. The 1992 EIA does not squarely assess the question of whether oil development is compatible with the preservation of wilderness. To date, experience in Ecuador's Amazon regions suggests that it is not.
Occidental has not implemented the biodiversity monitoring program and, currently, there is no monitoring of impacts on flora and fauna, even in Limoncocha Biological Reserve where production operations are underway. For further discussion of possible impacts on that reserve, and related deficiencies in the EMP, see infra Pt. VIII, sec. B and Pt. IX, sec. A.

[FN146]. EMP, supra note 116, at 18, 21-22. Both standards are discussed infra Pt. VIII, sec. B, and raise questions about EMP compliance with the spirit of Ecuadorian legal provisions.

[FN147]. Contract, supra note 29, at para. 5.1.20.5.

[FN148]. According to a June 1983 presidential decree establishing the legal "bases" for hydrocarbon contracts, TNCs should be obliged in contracts to:
perform all services covered under the Contract, according to the best international techniques and practices generally accepted in the hydrocarbon industry. Said services must be performed preserving the environment without causing any damage to public or private property. In case of pollution caused by the Contractor's operations, said Contractor must perform the pertinent tasks for removal of pollution, notwithstanding its responsibilities to third parties and to the appropriate authorities.
Ministry of Energy and Mines, Law 1775 of 6 June 1983 Containing Contracting Bases for Hydrocarbon Contracts (Ecuador) at art. 20.4.
Another provision states that contracts should require contractors to "adopt measures necessary for the protection of plants and wildlife and other natural resources, and, at the same time ... avoid polluting the air, water, and soil, in conformity with the respective legal provisions and international agreements." Id. at art. 33. Similarly, Texaco's 1973 production contract with Ecuador--formally adopted as law--required it "to adopt suitable measures to protect the flora, fauna, and other natural resources and to prevent contamination of water, air and soil under the control of pertinent organs of the state." President of the Republic, Decreta Supremo No. 925 [Supreme Decree No. 925], ch. IX, cl. 46.1 (Ecuador).
The language in Occidental's Contract is similar to vague language found in the "bases" for participation contracts, decreed in 1994. Ministry of Energy and Mines, Bases de Contratación de los Contratos de Participación para la Exploración y Explotación de Hidrocarburos [Bases for Contracting Participation Contracts for the Exploration and Exploitation of Hydrocarbons], R.O. No. 364 (Jan. 21, 1994) (Ecuador), at art. 7.2(c) [[hereinafter Participation Contract Bases]. See also regulations issued by MEM on the same day that apply to participation contracts. Ministry of Energy and Mines, Reglamento para la Aplicación de la Ley Reformatoria a la Ley de Hidrocarburos [Regulations to Apply Reforms to the Law of Hydrocarbons], R.O. No. 364 (Jan. 21, 1994) (Ecuador), as amended by R.O. No. 595 (Dec. 22, 1994), at art. 11(3) [hereinafter Hydrocarbon Reform Regulations], at art. 11, 25(3). However, the Law of Hydrocarbons and generally applicable environmental laws and regulations typically

use language that requires the prevention of contamination and other environmental injuries, and do not refer to "acceptable levels" of negative impacts. MEM Environmental Regulations include some effluent standards and vague references to reducing, preventing and minimizing the occurrence of negative impacts, but they do not define "acceptable levels" of negative impacts or use that term; moreover, they cite the "special priority" to prevent, control and avoid contamination and environmental damage, and the obligation to repair any damages and restore affected environments. MEM Environmental Regulations, supra note 61.
Although the language in Occidental's Contract may represent more realistic and achievable standards for oil field operations than the absolutist language found in the earlier provisions (and some industry public relations statements), it is too vague to compel any particular level of protection. Most importantly, the determination of what constitutes proper levels of protection is a matter of public values. As such, it should be made through legislation or a rational and transparent public interest determination pursuant to statutory standards and authority, rather than delegated to Occidental or decided in private negotiations that exclude all interested private parties except Occidental.

[FN149]. Contract, supra note 29, at para. 5.1.20.6. Under the regulations, the review is conducted by SPA. For production operations, the agency has thirty working days; for exploratory activities, it has fifteen. MEM Environmental Regulations, supra note 61, at arts. 26, 10, 15.

[FN150]. Contract, supra note 29, at para. 5.2.1.

[FN151]. This represents a double standard in Block 15, because a major complaint of Quichua residents is that Occidental does not respond to their requests and grievances. See generally Kimerling 2001, supra note 27.

[FN152]. The most comprehensive legal provisions governing EIAs are found in MEM Environmental Regulations, and do not include an administrative silence provision. However, MEM quietly amended the Participation Contract Bases and Hydrocarbon Reform Regulations in December 1994, to include a sixty day administrative silence provision for EIAs. See Participation Contract Bases, supra note 148, at art. 7.2, as amended by R.O. No. 595 (Dec. 22, 1994); Hydrocarbon Reform Regulations, supra note 148, at art. 11(3), as amended by R.O. No. 595 (Dec. 22, 1994).
Ecuador's Law of Modernization includes an administrative silence provision that applies generally to government agencies. Ley de Modernización del Estado Privitizaciones y Prestación de Servicios Públicos por parte de la Iniciativa Privada [Law of Modernization of the State, Privatizations, and Private Initiative to Render Public Services], art. 28, R.O. No. 349 (Dec. 31, 1993) (Ecuador) [hereinafter Law of Modernization]. Occidental's Contract includes an explicit reference to that law. However, it does not refer to another provision of the same law that requires agencies to articulate a reasoned basis for all decisions and determinations, presumably in writing, in order to inform all interested parties (which should include affected residents), or to an equally pertinent administrative regulation that requires notice to parties who may be affected by administrative proceedings, and an opportunity be heard. Law of Modernization, art. 31; Constitutional President of the Republic, Estatuto del Régimen Jurídico de la Función Ejecutiva [Standing Rule of the Administrative Law Regime of the Executive Function], arts. 119 & 12, R.O. No. 411 (Mar. 31, 1994) (Ecuador) [

[hereinafter Administrative Law Regulations]; see also Constitutional President of the Republic, Reglamento General de la Ley de Modernización del Estado, Privatizaciones y Prestación de Servicios Públicos por Parte de la Iniciativa Privada [General Regulations for the Law of Modernization of the State, Privatizations, and Private Initiative to Render Public Services], art. 19, R.O. No. 411 (Mar. 31, 1994) (Ecuador) [hereinafter Modernization Regulations].

There is an inherent contradiction between a requirement that agencies provide a reasoned basis for official decisions--which is also a fundamental tenet of administrative law in the United States, and is intended to ensure that decisions by government agencies are not arbitrary and capricious--and the automatic approval of applications when officials do not act within a specified time frame, irrespective of the substance and import of the application. Ecuador's Constitution also requires government officials to articulate a reasoned basis for official decisions that can affect persons, and guarantees affected residents the right to participate in environmental decision-making. Constitution, supra note 39, at arts. 24(13), 88 & 84(5).

As a result, the constitutionality of the Contract and regulatory provisions that permit EIA approvals through administrative silence is dubious, and any use of the Law of Modernization to approve other environmental applications would also raise serious constitutional questions. By embracing the administrative silence provision in the Law of Modernization, while disregarding other provisions in that and other laws that are less favorable to the company, including constitutional provisions that appear to prohibit environmental decision-making by administrative silence, the Contract creates a legal framework that could be used to apply Ecuador's law selectively. Similarly, the environmental provisions echo the constitutional requirement to protect ecological balance, but do not mention requirements to prevent pollution, preserve ecosystems, or promote access to environmental information and decision-making.

[FN153]. Contract, supra note 29, at para. 5.1.20.9.

[FN154]. For a discussion of Civil Code remedies that, in theory, could apply, see Kimerling 1995, supra note 5, at 351-77. Petroecuador and Occidental can contractually agree on how to allocate liability between them, as joint tortfeasers, but an effort to contractually limit Occidental's liability to third parties would raise separation of powers questions vis a vis the courts and legislature, as well as human rights and constitutional questions based on affected residents' rights to judicial remedies. As discussed above, an effort to contractually write public law relating to required cleanup levels also raises serious questions of law and legitimacy.

[FN155]. Contract, supra note 29, at para. 5.1.20.7.

[FN156]. This interpretation would fall short of the level of protection required by article 31(s) of the Law of Hydrocarbons, which requires companies to present for approval by MEM "plans, programs and projects and the respective financing so that exploration and exploitation activities do not adversely affect the economic and social organization of the population settled in the areas where the mentioned activities are undertaken and [do not adversely affect] the local renewable and nonrenewable natural resources." See Law of Hydrocarbons, supra note 57, at art. 31(s); see also Hydrocarbon Reform Regulations, supra note 148, at arts. 11(4) & 25(4); Participation Contract Bases, supra note 148, at art. 17.2. For a discussion of some of the impacts of

Occidental's operations on local communities and subsistence natural resources, see infra Pt. IX, sec. A.

[FN157]. In theory, another mechanism for environmental oversight could be the required annual approval, by MEM, of activities, investments, costs and expenses that are planned by contracted oil companies for the upcoming fiscal year, which should include environmental activities and expenditures. See Law of Hydrocarbons, supra note 57, art. 31; MEM Environmental Regulations, supra note 61, art. 5; Contract, supra note 29, at paras. 3.3.33, 3.3.36, 3.3.41 & 5.1.7.

[FN158]. Other provisions require Occidental to provide environmental information that is required by the Law of Hydrocarbons and implementing regulations to MEM and Petroecuador. See Contract, supra note 29, at paras. 5.1.10 & 5.1.11. Other provisions grant Petroecuador the right to verify and inspect compliance with the Contract and relevant law, according to timetables and procedures that are agreed to with Occidental. Id. at paras. 5.4.2 & 14.2. Another provision confers environmental and social oversight responsibility on SPA, but does not articulate a substantive environmental standard. Id. at para. 14.2. According to Occidental's Clark Hull, the company does not answer to SPA "on a contractual basis." Hull Interview, supra note 17. For a fuller discussion of the context of Hull's statement, see infra, at note 188.

[FN159]. MEM Environmental Regulations, supra note 61, at art. 55. The interpretation of the purpose of the audits is based on the regulatory definition of "environmental audit." Id. at Annex No. 1.

[FN160]. Contract, supra note 29, at para. 5.1.20.7. As mentioned above, MEM environmental regulations require audits at least every two years; the failure of the Contract to adopt that requirement suggests that audits will be less frequent, and may reflect the failure of MEM to implement the audit requirement to date. In interviews, Occidental officials said there had been two audits, but refused to disclose the audit reports or any related information. Ecuadorian environmental officials either were unaware of any audits, or cited one audit, conducted in 1997 of a single seismic line in Pañacocha Protected Forest. That "audit" was prompted by a formal complaint to SPA by eco-tourism operators and environmentalists, and was extremely limited in scope. Under the MEM regulations, it should technically be considered as an "inspection" rather than an "audit." See MEM Environmental Regulations, supra at note 61, at arts. 58-59.
The inspection found that the line in the reserve had not been authorized, and resulted in a request by SPA's then-National Director of Environmental Protection, to MEM's National Director of Hydrocarbons ("DNH"), to sanction Occidental for working in the reserve without permission. SPA, Oficio No. 113-SPA-97 (May 27, 1997); Memorando [Memorandum] No. DINAPA-H-97, from National Director of Environmental Protection, to National Director of Hydrocarbons; Memorando [Memorandum] No. 739-DINAPA-H-568-96 (Dec. 23, 1996). When interviewed in 1999, the then-current National Director of Environmental Protection was aware of the request for sanctions, but did not know whether DNH had followed the recommendation. Interview with Fernando Oliva, National Director for Environmental Protection, MEM, in Quito, Ecuador (Aug. 17, 1999). According to Occidental, DNH did not sanction the company. Hollub and Rivera Interview, supra note 37.

MEM regulations require written audit and inspection reports. MEM Environmental Regulations, supra note 61, at arts. 58-9. A search of MEM environmental archives by archive staff did not locate any audit or inspection reports for Block 15.

[FN161]. MEM Environmental Regulations, supra note 61, at art. 55.

[FN162]. The Contract specifies a legal hierarchy in case of conflicts in legal documents: legislation prevails, followed by regulations, and then by the provisions of the Contract. Contract, supra note 29, at para. 22.1.4.

[FN163]. In 1993, a $1.5 billion class action lawsuit was filed against Texaco in federal court in White Plains, NY, on behalf of an estimated 30,000 indigenous and settler residents of Ecuador's Amazon region, who allegedly have been harmed by the company's pollution. One of Texaco's principal defenses is that the operations were heavily regulated by Ecuador. Among other issues, that allegation is relevant to international comity and forum non conveniens considerations, and whether the case should proceed in the United States, or be dismissed in favor of litigation in Ecuador. See Plaintiff's Complaint, Aguinda v. Texaco, Inc., No. 93 Civ. 7527, (S.D.N.Y. Apr. 11, 1994); Brief for Defendant-Appellee (Texaco), Jota v. Texaco, Inc., Nos. 97-9102(L), 97- 9104(CON), 97-9108(CON), submitted to the United States Court of Appeals for the Second Circuit, Jan. 7, 1998. See also supra at note 120.

[FN164]. See Contract, supra note 29, at paras. 5.1.20.4 & 5.1.20.12. In principle, the latter provision is a reasonable limitation on liability, consistent with generally applicable principles of civil liability. However, it requires an adequate record of conditions before and after the operations begin. As discussed infra notes 167-68, Pt. VIII and Pt. IX, sec. A, the baseline information in the 1992 EIA is incomplete, includes assertions that are not supported by the evidence, and repeatedly emphasizes degradation from other sources, including tourism. As a result, Occidental could use the provision in the Contract, and the record it has constructed in the EIA, to fend off or entangle efforts by the State to require remedial action in the future. The certification of the record in the EIA could also be used by Occidental to defend against allegations of injuries by third parties.
In addition, the Contract provides for a final, comprehensive and binding audit, to be concluded no later than six months before the Contract expires. Id. at para. 5.1.20.8. Other provisions, however, require Occidental and Petroecuador to maintain the confidentiality of "all technical and economic information" for five years after the Contract ends. Id. at para. 5.5.5; see also id. at para. 5.1.13. Occidental interprets the confidentiality provision--which prohibits the disclosure of information by one party without the written authorization of the other--to include environmental information, and has invoked it to rebuff requests for such basic documents as the 1992 EIA and EMP, and water sampling results from Lake Limoncocha.

[FN165]. The Draft Agreement would apply to new production operations in the Eden-Yuturi oil fields, expected to occupy roughly two hundred hectares of community lands in El Eden. It provides for the expropriation of those lands, pursuant to Ecuadorian law, and payments to the comuna that total more than $600,000 over the twenty-year life of the project. An environmental clause drafted by the company provides that, in the event of environmental injury, Occidental would either repair the damage or pay indemnification. This language, and the precedent discussed infra in the text

accompanying note 238, in which Occidental paid a fine to El Eden but did not repair damages or correct violations of the law caused by road construction in a wetland, suggests that the company may seek to limit environmental obligations in favor of less costly payments to local residents. However, even that commitment may prove illusory because, as drafted by the company, it would be limited to damages that are (1) caused by failure to comply with Occidental's environmental management plan; and (2) are "duly demonstrated, confirmed, and sanctioned by the competent environmental authorities." Borrador del Convenio Entre la Comunidad El Edén y OEPC para la Explotación Petrolera en Territorio de la Comunidad [Draft Agreement between the Community El Eden and OEPC (Occidental) for Petroleum Exploitation in Territory of the Community] (Nov. 15, 2000) (unsigned). There is no provision for damages caused by accidents or intentional actions that lie outside the prescriptions of the management plan. Id. The management plan is not identified; nor was an environmental impact study or management plan presented to El Eden with the draft agreement. As discussed supra, there is no meaningful oversight of Occidental's operations by the government, and environmental authorities in MEM may recommend sanctions, but do not have legal authority to levy them.

Efforts by Occidental to use agreements with local communities to limit environmental obligations would be legally dubious; however, residents have limited access to legal services and understanding of the law, and could be deterred by such provisions from asserting their rights. Already, there is evidence that Occidental has deflected at least some environmental grievances and inquiries from affected Quichua by ignoring or challenging people when they complain, and demanding technical proof when residents raise concerns about pollution. Kimerling 2001, supra note 27. In addition to the constitutional rights discussed supra, Ecuador's Civil Code includes a number of liability provisions that could apply to environmental injuries; the company could also conceivably be subject to U.S. common law obligations for injuries that result from decisions made by corporate officials in the United States. See Kimerling 1995, supra note 5, at 306-24, 351-57; see also Aguinda v. Texaco, Inc ., No. 93 Civ. 7527, 1994 WL 142006 at 8-9 (S.D.N.Y., Apr. 11, 1994). The right to effective access to judicial and administrative proceedings, including redress and remedy, not only is recognized by emerging principles of international environmental law in the field of sustainable development, but also is (along with the right to equality before the law) a recognized fundamental human right. See, e.g., Rio Declaration, supra note 3 at princ. 10; Universal Declaration of Human Rights, G.A. Res. 217A(III), U.N. GAOR, U.N. Doc. A/810 (1948), arts. 7, 8 and 10; International Covenant on Civil and Political Rights, G.A. Res. 2200(XXI), U.N. GAOR, Supp. No. 16, at 52, U.N. Doc. A/6316 (1966) (entered into force Mar. 23, 1976) (ratified by Ecuador Mar. 6, 1969), arts. 2, 14, 26; American Declaration on the Rights and Duties of Man, O.A.S. Res. XXX. O.A.S. Off. Rec. OEA/Ser. L/V/I.4 Rev. (1965), arts. XVIII, XXIV, II; American Convention on Human Rights, 1144 U.N.T.S. 123, O.A.S.T.S. No. 36, reprinted in Basic Documents Pertaining to Human Rights in the Inter-American System, OAS/Ser. L/V/I.4 rev. 7 at 23 (2000) (entered into force July 18, 1978) (ratified by Ecuador Dec. 28, 1977) at arts. 8, 25, 24. See also Constitution, supra note 39, at arts. 16-20, 23(1), 23(15), & 23(17). A full discussion of liability issues is beyond the scope of this article. Expropriation and Occidental's relations with El Eden prior to the Draft Agreement are discussed infra note 234; for fuller discussion, see Kimerling 2001, supra note 27.

[FN166]. Contract, supra note 29, at para. 5.1.20.4.

[FN167]. One major shortcoming is the lack of adequate water quality data. In addition, although the document is not entirely clear or consistent, when read as a whole it implies that there is widespread degradation in Block 15. This is not true for most of Block 15, and some of the degradation that does exist can be attributed to pre-production operations by Occidental. Although it includes some important information, the EIA does not: clearly identify pristine areas; provide clear and adequate information about baseline conditions in intervened areas (which are not uniform); or distinguish between degradation that is due to Occidental and degradation from other sources. It also contains potentially misleading information and assertions that are not supported by the evidence. See, e.g., the discussion of sampling data from Lake Limoncocha, Pt. VIII, sec. B.

[FN168]. The certification that Occidental has fully complied with EIA requirements is not supported by an administrative record. Instead, a list of approved "plans, studies and programs" is included in an annex to the Contract and, for at least some documents, the date and decree number of the official approval are identified. The absence of an administrative record providing a written memorial of the official acts and procedures used to conduct the reviews and setting forth the findings and rationale for the approvals is not surprising. It is unlikely that one exists because such records are typically not developed when EIAs are reviewed. This continues to be the practice, despite legal reforms that apply to administrative actions generally, and require public authorities to articulate the legal basis and rationale for decisions that affect persons. See Law of Modernization, supra note 152, at art. 31 (in effect since 1993); Modernization Regulations, supra note 152, at art. 19; Constitution, supra note 39, at art. 24(13) (in effect since 1998).
As a general matter, EIAs by TNCs are routinely approved by SPA without significant modification. This reflects and reinforces the general domination by oil companies of environmental decision-making for oil field operations. Notwithstanding constitutional reforms and international law principles that recognize broad rights to participate in environmental decision-making, there are no procedures for public notice, review or comment on draft EIAs. Until recently, EIAs were treated as confidential documents even after approval. Currently, SPA maintains an archive in Quito where final EIAs can be reviewed after approval. Occidental, however, apparently does not consider EIAs to be public documents.

[FN169]. EMP, supra note 116.

[FN170]. Contract, supra note 29, paras. 5.1.20.1 & 3.3.35.

[FN171]. Hull e-mail, supra note 133.

[FN172]. EMP, supra note 116, at 2.

[FN173]. Id. at 2-3.

[FN174]. Id. at 3.

[FN175]. MEM Environmental Regulations, supra note 61, art. 54; see also Contract, supra note 29, para. 5.1.20.5.

[FN176]. See supra notes 66-77 and accompanying text; see also infra notes 228-30, 252-54 and accompanying text.

[FN177]. This suggests that the language in the EMP may have been crafted to mislead readers into believing that Occidental complies with the same standards that would apply to operations if they were conducted in the United States. By referring to "applicable regulations," a literal reading of the text means that no United States standards are relevant, because they do not apply to discharges outside of the United States.

[FN178]. EMP, supra note 116, at 5-7. A separate table of potential impacts and mitigating measures appears at the end of the impact assessment section of the 1992 EIA. 1992 EIA, supra note 33, at 295-300. The information in the two tables, however, is not organized in the same way, so it is difficult to work with the tables together. In addition, some measures in the longer table in the assessment section have been omitted without explanation from the table in the EMP. This example illustrates a general pattern in the EIA, whereby information is presented in a piecemeal and disjointed manner, and both the information and analyses are mostly incomplete, frequently superficial, and sometimes internally inconsistent. This pattern makes the EIA a reader-unfriendly document, and paints a confused and murky portrait of baseline conditions, operations, and standards in Block 15. In addition, impact assessments are limited and highly segmented.

[FN179]. EMP, supra note 116, at 4.

[FN180]. Id. at 4, 13-35.

[FN181]. Id. at 5.

[FN182]. See 1992 EIA, supra note 33, at 92, 179-80, 186-87, 196-204, 248, 260-62; Occidental Exploration and Production Company, Evaluación del Impacto Ambiental (EIA), Pozo Laguna No. 1, [Environmental Impact Study, Well Laguna No. 1], at 1-12, 16 (Prepared by Ecuambiente S.A., undated); Occidental Exploration and Production Company, Plan de Manejo Ambiental, Pozo Laguna No. 1, [Environmental Management Plan, Well Laguna No. 1], at 1-2 (Prepared by Ecuambiente S.A., undated); Occidental Exploration and Production Company, Plan de Contengencias, Pozo Laguna No. 1 [Contingency Plan, Well Laguna No. 1], at 3 (Prepared by Ecuambiente S.A., undated). The well was drilled in 1991.

[FN183]. See infra note 211.

[FN184]. EMP, supra note 116, at 7.

[FN185]. Id.

[FN186]. The authorities included Petroecuador, Occidental Ecuador's General Manager, and a community relations supervisor. On one occasion the request related to planned operations, but the response was similar. The responses reflected two general patterns of practices observed during this study: (1) in response to requests for information, Occidental neither denied the requests nor provided the information;

instead, people were instructed to request the information again, and the procedures and authorizations demanded by the company seemed to change arbitrarily; and (2) company officials deny responsibility for withholding information by attributing decision-making power to others.
The Contract includes a confidentiality clause that requires the parties to obtain written authorization from the other party before disclosing any "technical [or] economic information" to third parties. Contract, supra note 29, at paras. 5.5.5 & 5.4.4. The provision does not mention environmental information; Occidental says it is included. However, applying the provision to environmental information would be constitutionally suspect, especially if it is used to withhold information from affected residents. It would also be questionable under international law and Ecuador's Law of Modernization. See Law of Modernization, supra note 152, at art. 32 (public access to public documents unless prohibited by special laws); Modernization Regulations, supra note 152, at art. 20 (public officials must facilitate access to documents); see also supra notes 47-51 and accompanying text.

[FN187]. Indigenous Association of Limoncocha, Constancia (Apr. 16, 1992).

[FN188]. The author obtained the EMP and 1992 EIA (with some missing pages) from a new archive maintained by MEM environmental officials. Subsequently, Occidental provided a copy of the same documents and a recent EIA for exploratory seismic studies. Most of the information requested from Occidental has not been provided. An initial letter requesting information for academic research about standards and practices, and follow-up phone calls, were not answered. Subsequently, Occidental sent the following: a copy of Oxy: ISO 14001 Certified, supra note 23; reprints of Oil and Gas Journal containing the article discussed supra note 22; a copy of the HESMS Guidance Manual, supra note 24; a copy of the HESMS Guidelines for Community Relations; and a copy of a company-produced video called "The Human Face of Petroleum." Subsequently, in response to repeated requests for EIAs, the environmental management plan and other specific documents, Occidental instructed the author to follow five different procedures. First, officials promised to provide all of the information upon submission of a written list to the company. After submitting such a list, the author was given a copy of the Contract and another ISO brochure, and told to resubmit the request and list in a letter directed to Petroecuador, because Occidental needs Petroecuador's permission to provide the information.
After re-submitting the request in a letter to Petroecuador, the author was told that the relevant authority is MEM, and that environmental officials there had instructed Occidental not to provide the information, because regulations require all such requests to be submitted directly to SPA. After obtaining an Oficio from the Deputy Secretary of the Ministry, who heads SPA, asking Occidental to provide the information, and stating that Ecuador's laws do not prohibit Occidental from distributing environmental and social information to international researchers, the company said the SPA Oficio is not determinative because Occidental "does not report to SPA on a contractual basis." Instead, it reports exclusively to Petroecuador. Hull Interview, supra note 17. (This response is curious; in addition to Occidental's prior referral, both the Contract and Ecuadorian law provide that SPA is responsible for environmental oversight in Block 15. See Oficio No. 0108- SPA-99, infra note 215.) The author was told that the request was under consideration at Occidental's U.S. headquarters; and that the interest shown by local residents in the research, and the formal request by the community delegation that participated in the author's official visit to CPF--asking Occidental to provide the

author (and the communities) with the requested information--"hurts" the "validity" of the research and information request. The author was also told that Occidental had developed specific environmental performance standards that post-date the EMP, but that they cannot be disclosed without authorization from the legal department in the United States. The author's request for the standards would be submitted to the lawyers, but she should not have "much hope" that it would be approved. The author was advised to "establish a relationship" with the company and "divorce the research" from any work with indigenous organizations, and given copies of HESMS Guidance Manual in English, Spanish and Farsi. Id.
Most recently, the author was told that Occidental's policy is to provide "all documents that are considered public information and that [Occidental has] permission, as a contractor to the Ecuadorian government, to distribute." She was instructed to submit a revised list of the information requested, for review by Occidental under that policy. Hull e-mail, supra note 133.

[FN189]. Effluents refers to liquid wastes that are discharged into the environment, usually into surface waters Emissions are pollutants that are released into the air.

[FN190]. EMP, supra note 116, at 46, 48. The EMP clearly contemplates construction of a landfill for "domestic solid wastes," and provides that "industrial" solid wastes may be buried in a "special" landfill or incinerated. As with the landfills, the location and specifications for the incinerator are not disclosed. In a troubling disclosure, the EMP states that leachate from the landfill(s) will be collected, passed through an "inspection box," and then discharged into the Napo or Jivino rivers, at an undisclosed location. Id. at 48. Both rivers are important natural resources for local communities.

[FN191]. Id. at 64.

[FN192]. Id. at 17-18.

[FN193]. Id. at 17.

[FN194]. Id. at 10.

[FN195]. See, e.g., id. at 16.

[FN196]. Id. at 4.

[FN197]. Id. at 25.

[FN198]. Hull Interview, supra note 17.

[FN199]. EMP, supra note 116, at 34-35. Notwithstanding this provision, the version of the EMP that was provided by both Occidental and MEM, in 2000 and 1999 respectively, is the same document that was submitted and approved in 1992, without modifications.

[FN200]. Similarly, the section in the Integral Program to Guarantee Environmental Quality that specifies quantitative standards for discharges and emissions begins with the following statement: "OEPC [Occidental] will adopt the most applicable emission

standards for liquid and gaseous residues, and noise. These standards will be updated as needed." Id. at 27.

[FN201]. See, e.g, Constitution, supra note 39, arts. 23(6), 84 & 86-91; see also supra notes 47-51 and accompanying text.

[FN202]. The title for this section is taken from a short story by Edgar Allan Poe, "The Purloined Letter." Poe's title refers to a letter that provided crucial evidence to solve a crime. The responsible party concealed the letter by placing it in the midst of a multitude of irrelevant, unconcealed documents, instead of attempting to hide it outside of plain view. In the words of Poe:
The minister had deposited the letter immediately beneath the nose of the whole world by way of best preventing any portion of that world from perceiving it ... [T]o conceal this letter, the minister had resorted to the comprehensive and sagacious expedient of not attempting to conceal it at all.
Edgar Allan Poe, The Purloined Letter, first published in The Gift (1845). The use of this title is not intended to suggest that the data was stolen.

[FN203]. EMP, supra note 116, at 18, 21-22.

[FN204]. Id. at 22.

[FN205]. In addition, Occidental's ability to detect the loss of diversity in time to protect flora and fauna is questionable. As with all impact monitoring, baseline data is needed before operations begin. The EMP is unclear about how Occidental will apply the standard; the "determination" of baseline diversity, and selection of monitoring techniques and other possible "ecological indicators" are left to the future. Not surprisingly, the monitoring program has not been implemented and, currently there is no monitoring of flora and fauna, even in Limoncocha Biological Reserve.

[FN206]. The law requires oil companies to present for approval by MEM "plans, programs and projects and the respective financing so that exploration and exploitation activities do not adversely affect the economic and social organization of the population settled in the areas where the mentioned activities are undertaken and [do not adversely affect] the local renewable and nonrenewable natural resources." Law of Hydrocarbons, supra note 57, at art. 31(s).

[FN207]. 1992 EIA, supra note 33, at 98.

[FN208]. In the lake, arsenic was found at 10.4 parts per million (ppm); lead at 45.6 ppm; cobalt at 40.6 ppm; nickel at 33.2 ppm; zinc at 218 ppm; copper at 242 ppm; vanadium at 80 ppm; and barium at 826 ppm. In the swamp, beryllium was found at 8.2 ppm; cadmium at 24.8 ppm; cobalt at 231 ppm; copper at 158 ppm; lead at 20.3 ppm; mercury at 1.04 ppm; nickel at 145 ppm; silver at 14.1 ppm; zinc at 988 ppm; and barium at 4,310 ppm. Id. at 96-97. For contaminants that are governed by Ecuador's Water Pollution Regulations, these levels are 43.6 to 98,800 times greater than water quality standards for human consumption and the protection of flora and fauna. Ecuador's water quality standards for water that requires "only disinfection" prior to use for human domestic consumption, expressed in mg/l (ppm), are 0.05 for arsenic; 1.0 for barium; 0.01 for cadmium; 1.0 for copper; 0.05 for lead; 0.002 for mercury; 0.05 for

silver; and 5.0 for zinc. For flora and fauna, in mg/l (ppm), they are 0.1 for arsenic; 0.1 for barium; 0.1 for beryllium; 0.01 for cadmium; 0.1 for copper; 0.01 for lead; 0.01 for mercury; 0.01 for nickel; 0.01 for silver; and 0.01 for zinc. Water Pollution Regulations, supra note 55, at arts. 18, 19, 25.

In the United States, EPA National Primary Drinking Water Regulations establish maximum contaminant levels for drinking water. Those levels, in mg/l (ppm), are: 0.05 for arsenic; 2.0 for barium; 0.004 for beryllium; 0.005 for cadmium; 1.3 for copper; 0.015 for lead (with a goal of 0); 0.002 for mercury. 40 C.F.R. § 141.23 (2000). In New York, State Public Health Law regulations include some additional standards, in mg/l (ppm): 0.1 for nickel; 0.1 for silver; and 5.0 for zinc. N.Y. Comp. Codes R. & Regs. tit. 10, §5-1.52 (1999).

The text does state, however, that "this [presence of high levels of heavy metals far in excess of water quality standards] does not occur in the three remaining sampling locations in the lake, where only the presence of two of those elements was detected at one of the locations, in much lower concentrations." 1992 EIA, supra note 33, at 100. A review of the data table shows that barium was found at 64.5 ppm and zinc at 30.7 ppm at another location in the lake; the other metals were not detected. Id. at 97. Although considerably lower than the levels of barium and zinc found elsewhere in the lake, these levels nonetheless also greatly exceed water quality standards for human consumption and the protection of flora and fauna, by 6 times to 3,700 times for zinc, and 64.5 to 645 times for barium.

The variation in the levels of contamination at different locations in the lake could be explained by the presence of a point source of contamination near the sampling location with the higher levels, and/or by limited mixing in the lake. The former explanation is most likely, and is consistent with the author's conclusion that the Laguna Spill is the most likely cause of the contamination. In addition, notwithstanding the variation, the higher levels of contamination could extend over a very large area in the lake (and swamp), and be a source of contamination for the lake as a whole. Further sampling is needed to fully characterize water quality in the lake, and should include sampling of sediments. Levels of heavy metals could be considerably higher in sediments than water, because they generally have a greater affinity for soils than water. Contaminated sediments could migrate in the lake, and be a source of water pollution. Interview with Dr. Mark R. Cullen, Professor of Medicine, Yale University, in New York (May 25, 2000).

[FN209]. These contaminants, both carcinogens, are also associated with oil drilling activities. Chromium levels are reported at 0.015% and 0.0003% dry weight; nickel levels are 0.03% and 0.004%. 1992 EIA, supra note 33, at 97.

The text and table also show that oil and grease were found at all four sampling locations in the lake; however, those results are summarily dismissed--without supporting data or analyses--as "surely of organic origin." Id. at 100. Oil and grease were not detected in the sample from the swamp. To distinguish hydrocarbons from naturally-occurring oils, samples should be analyzed for total petroleum hydrocarbons (TPH) rather than oil and grease. To better assess the environmental and human health impacts of hydrocarbon pollution, samples should also be analyzed for specific compounds such as benzene, toluene, ethylbenzene, xylenes (BTEX) and polynuclear aromatic hydrocarbons (PAHs).

[FN210]. Occidental Exploration and Production Company, Environmental Impact Study, Well Laguna No. 1, supra note 182, at 4.

[FN211]. In addition, Occidental officials who were asked about accidental spills for this study did not disclose the Laguna Spill. The author learned about it because she was working in Ecuador's Amazon region when the spill occurred, and residents who went hunting in the swamp after the rains told her they saw drums and containers there. The spill occurred in July, 1991. The samples were taken by an Occidental subcontractor in August, 1991. 1992 EIA, supra note 33, at 97.

[FN212]. Besides chromium and nickel, other proven or suspected human carcinogens found in the lake and/or swamp include arsenic, beryllium and cadmium; in addition, lead, cobalt and mercury are very toxic to humans. See generally Clinical Occupational and Environmental Medicine (L. Rosenstock & M.R. Cullen eds., 1994) [hereinafter Rosenstock et al.]. The author is grateful to Dr. Mark R. Cullen, Professor of Medicine, Yale University, for reviewing the data and sharing his expertise.

[FN213]. EMP, supra note 116, at 20. Although it is difficult to identify the precise location of the second site in the lake where Occidental found high levels of barium and zinc, see supra note 208, that site also appears to be abandoned by the company in the EMP sampling plan. EMP at 96.

[FN214]. The official in Ecuador's Ministry of the Environment, Department of Protected Areas, who reported this to the author, asked not to be named.

[FN215]. The official cited, supra note 214, also reported that Occidental gave the government an initial payment of US$100,000 to help manage the reserve, and currently provides US$10,000 annually.
As discussed supra note 188, Occidental has used a similar argument to rebuff efforts by the author to gain access to sampling data, notwithstanding a contradictory SPA Oficio. In the Oficio, MEM's Deputy Secretary of Environmental Protection states that Ecuador's laws and policy do not prohibit Occidental from distributing environmental information to international researchers, and asks the company to provide the author with sampling data and other requested information. MEM, Oficio No. 0108-SPA-99, from Fausto Corral Guevara, MEM Deputy Secretary of Environmental Protection, to Patricio Rivera, Chief of Environmental Control and Industrial Safety, Occidental Ecuador (Aug. 20, 1999). See also letter from Judith Kimerling to Fausto Corral Guevara, MEM Deputy Secretary of Environmental Protection (Aug. 19, 1999); letter from Judith Kimerling to Vicki Hollub, Acting Manager, Mauricio Avila, Acting Environmental Supervisor, Alberto Gomez, Chief Legal Department, Occidental Exploration and Production Company, Ecuador (July 27, 1999).

[FN216]. See generally Rosenstock, et al. supra note 212.

[FN217]. Limoncocha Biological Reserve was listed as a Ramsar site in 1998.

[FN218]. Of the ten "guiding principles" in Occidental's HESMS Manual, at least two apparently were not implemented in the wake of the Laguna Spill. Principle 7 provides that:
Subsidiaries of Occidental Petroleum Corporation will be responsible whenever remediation is required for any of our past operating and waste management practices at any active or inactive facility owned by that subsidiary. We will promptly correct any

conditions we have caused in our operations should they result in significant adverse health, safety or environmental impact.
HESMS Guidance Manual, supra note 24, at princ. 7. Principle 8 provides that members of the "public who may be affected will be informed about relevant health, safety or environmental issues related to our facilities in a timely manner." Id. at princ. 8.

[FN219]. EMP, supra note 116, at 2.

[FN220]. As a general matter, the socio-cultural baseline information in the EIA is incomplete and Euro-centric. The monitoring program in the EMP reflects and reinforces this superficial approach to socio-cultural impacts. It designates a single parameter--"the population composition in the area"--to monitor "socio-economic changes"; and the methodology is to conduct regular censuses. Although a vague statement is also included, that "[i]f possible, other socio-economic indicators will be included in this monitoring (health, migration, land tenure, for example)," the EIA does not include the baseline information that would be needed to do that, such as information about land tenure, local subsistence and cash economies, water sources and quality, health, and nutrition. Id. at 24-25.

[FN221]. SIL arrived in Ecuador in 1952. The 1981 Presidential Decree banning SIL activities there resulted from pressure from indigenous organizations and international criticism of SIL collaboration with governments and TNCs in a number of countries, to "pacify" indigenous peoples and open their lands to natural resource extraction activities. Corkill & Cubitt, supra note 39, at 109-111; Gerald Colby & Charlotte Dennett, Thy Will Be Done: The Conquest of the Amazon: Nelson Rockefeller and Evangelism in the Age of Oil 813 (1995). See also Kimerling, Dislocation, Evangelization and Contamination supra note 63 (discussing SIL collaboration with Texaco and Ecuador to relocate and pacify indigenous Huaorani).
For accounts of SIL activities in Ecuador from the perspective of the missionaries, see generally Elisabeth Elliot, Through the Gates of Splendor (Harper & Bros. 1957) (Huaorani); Rosemary Kingsland, A Saint Among Sinners (Collins 1980) (Huaorani); Ethel Emily Wallis, The Dayuma Story: Life Under Auca Spears (Spire Books 1971) (Huaorani); Frank & Marie Drown, Mission to the Headhunters (Harper & Bros. 1961) (Shuar). Notwithstanding the ban on SIL activities, some missionaries who were associated with the group have continued to work in Ecuador.

[FN222]. Ley de Comunas [Law of Comunas], arts. 6 & 7, R.O. No. 186 (Oct. 5, 1976) (Ecuador). Except for Limoncocha, all of the Quichua communities where Occidental has drilled wells or built production facilities are legally constituted comunas under Ecuadorian law.

[FN223]. Among other assistance, Occidental built a school and community center, gave families umbrellas and tanks to collect rain water, and trained health promoters. It initiated community development projects, including a chicken farm for women and a carpentry workshop. See Kimerling 2001, supra note 27. The carpentry "micro-enterprise" was described by Oil and Gas Journal as a "sustainable small business" to "boost the local economy." Williams 1997, supra note 22, at 47. Both the chicken and carpentry projects are highlighted by Occidental in its video, "The Human Face of Petroleum," as "self-management success stories." But according to local residents,

Occidental did not sustain support for the projects, and they had ended. As explained to the author by a former community official:
With small obras [works], [Occidental] won the friendship of the dirigentes [[community officials], and convinced the people.... Now, it is abandoning the friendship, little by little. People are molestas [upset]. The company has not complied with the agreements. We were like children with candy. Now the company does not help at all, except it gives a little money to the dirigentes. The coordination is lost. Community relations do not exist any more.... Now the company ignores us. Before, it conversed, and had a dialogue with us. If we protest, the company will call the fuerza publica [[Ecuadorian military].
Many residents in neighboring Limoncocha echo those views. An official of the Indigenous Association of Limoncocha explained to the author:
Oxy said it would give us this and this and this, and promised no contamination, everything clean. We believed the company, and supported it when it entered; we even went to the press, speaking well of the company, and saying that it helps us.... But after a few years the company turned against the people. Now it does not favor us.
Most of the community projects in Rio Jivino and Limoncocha that are highlighted in the video and Oil and Gas Journal had ended. For a fuller discussion, see generally Kimerling 2001, supra note 27. Notwithstanding those changes, Occidental provided copies of the video and article to the author in December 1998, in response to a request for information for this study. See supra note 188.

[FN224]. The importance of subsistence activities is explicitly recognized in ILO Convention 169. Art. 23(1) provides:
Handicrafts, rural and community-based industries, and subsistence economy and traditional activities of the peoples concerned, such as hunting, fishing, trapping, and gathering, shall be recognised as important factors in the maintenance of their cultures and in their economic self-reliance and development. Government shall, with the participation of these people and whenever appropriate, ensure that these activities are strengthened and promoted.
ILO Convention 169, supra note 50, at art. 23(1).
As a result, the culture, health and well being of indigenous peoples are intimately linked to the preservation of renewable natural resources that support local subsistence economies. In Block 15, the arrival of "development" in remote areas, with promises of "all the best things forever," invited indigenous people to move away from traditional subsistence toward a new cash economy. Occidental's operations, however, have failed to meet expectations in providing jobs and services. At the same time, they have impaired subsistence production. Exploration and production activities have threatened or harmed renewable natural resources in some locations, diminishing people's ability to continue a sustainable and self-reliant way of life, and reducing their resource base for sustainable development. To date, the distribution of environmental impacts and compensatory benefits from development has not been equitable.
According to interviews with local residents during the summers of 1999 and 2000, the majority of Quichua who live in the Project Production Area feel that they do not benefit from oil development. Increasingly, people are concerned about their health and food supply, and say that Occidental's development harms their quality of life more than it helps them.

[FN225]. Except for temporary work during seismic and construction activities, oil field employment opportunities for local residents are very limited. The lack of jobs is a

major complaint of many male residents in the Production Project Area, who say they were promised jobs by the company, before operations began in their communities.

[FN226]. Assimilation capacity refers to the amount of pollution that the river can receive, and assimilate, without causing the quality of the water to degrade.

[FN227]. EMP, supra note 116, at 29.

[FN228]. CPF Visit, supra note 32. This also raises questions about compliance with Ecuadorian law. It is not surprising that both these and the other set of effluent standards in the EMP are almost identical to the standards in MEM Environmental Regulations, because the regulations, first passed in 1992, were based on closed door negotiations between MEM and industry. See id. at 28; and MEM Environmental Regulations, supra note 61, at tbls. 3, 4. The 1992 MEM Regulations were repealed by the 1995 regulations; however, the discharge standards were not changed.

[FN229]. CPF visit, supra note 32. In addition, Occidental and MEM's discharge standard for total coliforms (1,000/100 ml) allows for concentrations that are 2.5 times greater than the levels adopted by Shell for its operations in Camisea, Peru (less than 400/100ml). Shell's standard was based on the World Bank pollution guidelines, discussed supra note 96 and accompanying text. See World Bank 1998, supra note 96, at 389. However, Shell had problems with its sewage treatment facilities and was not able to meet the standard during its operations. Interview and sampling data review with Gerrit van Eijk, P.T. Supplylink Technical Manager, Shell Prospecting and Development (Peru) B.V., in Nuevo Mundo Base Camp, Camisea, Peru (July 14, 1998). MEM Environmental Regulations do not include water quality standards, or monitoring, reporting or recordkeeping requirements for discharges or water quality in receiving waters. Water quality standards refer to the maximum levels of contaminants allowed in bodies of water, such as streams and rivers, and can vary depending on how the water is classified for use. Discharge (effluent) standards refer to levels that may be discharged into the environment (usually into surface waters).
The Ecuadorian water quality standards mentioned supra at note 208 are found in the Water Pollution Regulations, issued in 1989 by the Ministry of Public Health. Standards for water that is used for domestic consumption permit total coliforms levels of one hundred and fecal coliform levels of twenty, expressed in count per 100 cm3, but require disinfection before use. There are no standards for THMs. See Water Pollution Regulations, supra note 55.
In the United States, EPA drinking water regulations establish a maximum contaminant level goal ("MCLG") for total coliform bacteria of zero. 40 C.F.R. § 141.52 (2000). Maximum permissible contaminant levels ("MCL") provide that no more than five percent of water samples may be total coliform-positive in a month. For water systems that collect fewer than forty samples in a month, no more than one sample can be total coliform positive. Every sample that has total coliform must be analyzed for fecal coliform and zero fecal coliform is permitted. 40 C.F.R. § 141.63 (2000). Permitted levels for total THMs were recently re-evaluated, and lowered from 0.1 mg/L to 0.08 mg/L. See 40 C.F.R. § 141.64 (2000).

[FN230]. Compare MEM Environmental Regulations, supra note 61, at tbl. 3, with Water Pollution Regulations, supra note 55, at art. 19. For example, effluent standards in the EMP and MEM Environmental Regulations allow 1000/100 ml total coliform

bacteria, and do not limit fecal coliform as a separate parameter. Ecuadorian water quality regulations for human and domestic consumption limit total coliform bacteria to one hundred, and fecal coliform to twenty, and require disinfection prior to use. Disinfection is not defined but presumably is intended to kill bacteria and viruses. See supra note 229. As a general matter, effluent standards typically allow higher concentrations of contaminants than water quality standards, because they should take into account the assimilation capacity of receiving waters.

[FN231]. This reflects a general pattern, in which the 1992 EIA paints a vague and murky picture of generalized environmental degradation throughout Block 15, identifies multiple sources of pollution, and seems to imply that areas affected by other activities do not require careful protection. This portrait is misleading, because Block 15 includes not only a wealth of renewable natural resources that provide secure and sustainable sources of food, water, medicines, and shelter for indigenous populations, but also vast tracts of intact rain forest and wetlands.
For example, the 56,000 hectare, ecologically spectacular Pañacocha Protected Forest is located in Block 15. The reserve is a major wetland, with a blackwater river system, lagoons, swamps and flooded forests. It is home to at least twenty threatened or endangered species of fauna, including the Amazon River Dolphin, jaguar, puma, Brazilian Tapir, Common Woolly Monkey, Salvin's Curassow, Blue-throated Piping Guan, and paiche. Fish and bird populations are diverse and abundant, even for the Amazon Rainforest. E-mail from Randall Smith to Judith Kimerling (June 22, 2000). The area is particularly vulnerable to pollution because it is a low energy system with little flushing or wave action to remove contaminants, and like other swampy areas would be especially difficult--if not impossible--to remedy in the event of a spill; in addition, noise from oil field operations can have adverse impacts on wildlife. In areas where natural resources have been degraded, such an approach to environmental protection is not consistent with responsible practice, and is insensitive to residents who depend on natural resources already under stress.

[FN232]. Contract, supra note 29, para. 5.1.20.1.

[FN233]. Id. at para. 5.2.8.

[FN234]. Gomez Interview, supra note 124. Similarly, residents of Pompeya, Itaya and Limoncocha did not know that their lands had been expropriated until after that interview. In Pompeya, where Occidental built two drilling platforms and access roads, residents believed that the community still owned the lands. One platform contains production wells; the other is the site of an exploratory well that, according to Occidental, is "dry." Residents thought Occidental was renting the production site from the community, and occupying the other without permission. In Itaya, where expropriation proceedings were conducted in 1997 for a road, and in 1998 for a well site and access road, there was considerable confusion about the negotiations with Occidental and some of the "benefits." No one, however, knew that land had been expropriated, and there appeared to be a consensus that Occidental had attempted to buy land, but that the community had not consented to sell it. In Limoncocha, residents believed that they had sold land to the company.
The author questioned Occidental about expropriation after attending an assembly in El Eden on July 1, 1999, in which residents learned that community lands had been expropriated without their knowledge. After drilling the exploratory well Eden-1 in

1996, Occidental told the comuna that the well was dry, but did not restore the site as promised. Residents believed that Occidental was "occupying" their lands without permission, and sought to negotiate a rental agreement for use of the land. Occidental refused to negotiate, and insisted on "buying" the land. The comuna refused to sell the land because it would violate community norms. In the words of one man, "it would be like cutting off an arm of our mother, to sell." In 1998, the comuna wrote to corporate officials in Quito and, subsequently, to the president of Occidental in the United States, asking the company to meet with the community to resolve the dispute. Neither letter was answered and, in response to inquiries, Occidental's Vice President for Executive Services and Public Affairs provided the author with misleading information about the company's land access standards and practices. He said that the letter was "puzzling and bizarre" because Occidental does not buy land; El Eden is on the "fringe" of Block 15 and Petroecuador, not Occidental, works there; and, as a worldwide policy, the company does not work in any indigenous lands without the peoples' permission. He stated that Occidental supports indigenous land rights and respects the right of indigenous peoples to say "no" to oil development. Meriage Interview I, supra note 20; Interview with Lawrence Meriage, Vice President, Executive Services and Public Affairs, Occidental Oil and Gas Corporation (Mar. 15, 1999) [hereinafter Meriage Interview II].
Nearly a year later, residents of El Eden threatened to tear down an antenna that Occidental had erected on the occupied lands if the company did not send someone to resolve the dispute. In May 1999, a meeting took place, but residents said the company "made them dizzy" with talk about laws. They still did not understand why Occidental refused to negotiate a rental agreement and decided to hold another meeting and invite outsiders who could help them understand what the company said. At that meeting (which the author attended), Occidental said that the government had expropriated the land more than a year prior; that the company was not involved in the decision to expropriate; and that the law requires expropriation, so Occidental cannot legally negotiate a rental agreement or any alternative arrangement. At the same time, Occidental denied that it had plans to work at the site. Prior to the meeting, however, the new Contract was signed and reported in the press. The author and another guest informed the comuna about the press reports, which had mentioned plans to develop the Eden reserves; at the meeting, however, Occidental refused to confirm or deny that the Contract had been signed.

[FN235]. 1992 EIA, supra note 33. On pages 79-80, the EIA states that sixty-one percent of the lands in Block 15 are "Indigenous Areas." On pages 271-72, it states that sixty-two percent and eighty-five percent, respectively, of Block 15 have been legally adjudicated to indigenous Quichua, Siona-Secoya and Shuar. The numbers seem low because they do not account for indigenous groups who use and occupy state-owned lands in protected natural areas.

[FN236]. The author first visited the site in 1998, and walked the full length of the road and drilling platform. She returned to El Eden in 1999 and 2000. In addition to field observations, she participated in community meetings, interviewed residents, and reviewed documents in the community's archive relating to Occidental. For a fuller discussion, see Kimerling 2001, supra note 27.

[FN237]. EMP, supra note 116, at 5.

[FN238]. Law of Fishing and Fishing Development, supra note 57, at arts. 47(e) & 80.

[FN239]. Facilities in environmentally and socially sensitive areas include CPF; the wells, roads, and pipelines in the wetlands and flood plain of the Limoncocha Biological Reserve; and the road in El Eden.

[FN240]. The standard is found in EMP, supra note 116, at 2.

[FN241]. The expropriation of indigenous lands is so offensive to local residents and the public that Occidental concealed the practice for years, and denies responsibility now that it has been disclosed. Kimerling 2001, supra note 27. This vividly demonstrates the limits of voluntary environmental and human rights standards, and shows how easy it is for TNCs to misrepresent their practices in remote areas to international audiences, saying 'all the right things' while acting otherwise. According to government and corporate officials, some other companies use the State's power of expropriation; others do not. For a fuller discussion, see id.
A statement by a resident at the July 1, 1999 assembly in El Eden, after he realized that community lands had been expropriated, shows how deeply disrespectful and unsettling the practice is to indigenous peoples, and also reflects general frustration with Occidental's community relations:
We do not agree to sell land ... Indigenous peoples have never sold land in the lower Napo [River area] ... Oxy is an international company--why didn't Oxy inform us, that it is going to work in this way? ... It seems that Oxy does not respect us, and thinks we are animals, incompetents. We are human beings, we are capable. We are not saying no to Oxy or the government, but our land is not for sale. We have said this many times; why won't you listen?
The response to the speaker by one of Occidental's representatives, a community relations officer, suggests that he did not understand the sentiments that were being expressed. He said, "We will respect you ... you can be sure that if I see you in Limoncocha, I will greet you." The assembly is discussed supra, note 234.

[FN242]. EMP, supra note 116, at 2.

[FN243]. See, e.g., E & P Forum, supra note 92, at 12; E & P Forum-UNEP, supra note 93, at 10. Conoco Ecuador Ltd., Conoco Ecuador Ltd. In the Rainforest (undated brochure distributed by the company, c. 1989-91); letter from Alex B. Chapman, Manager, Environmental Protection Project, Conoco Ecuador Ltd., to Jamie Perkins (July 5, 1990) (response to letter expressing concern about Conoco Ecuador oil development project); Maxus Ecuador, Inc., Maxus (Sept. 1992) (informational handout distributed by Maxus to people who express concern about operations in Ecuador); letter from Boris Abad, Chief of Government Affairs and Environment, Maxus Ecuador, Inc., to Ivonne Ramos, Accion Ecologica (June 15, 1993) (response to request for information from Ecuadorian environmental NGO); Maxus Ecuador, Inc., Plan de Manejo Ambiental Bloque 16 (Block 16 Environmental Management Plan) (Sept. 1991), at 13; Shell Prospecting and Development (Peru), The Camisea Project, Peru, Briefing Paper 7 (May 13, 1997), at 7; Shell Prospecting and Development (Peru), The Camisea Project, Peru Stakeholder Consultation Workshop, Fact Sheet (Dec. 1997), at 1.

[FN244]. Drilling wastes include drilling muds and other chemicals, including industrial solvents, that are brought to the work site for use during drilling; as well as cuttings,

hydrocarbons and formation water that are removed from the hole during drilling and testing. Drilling muds serve as a lubricant, coolant and pressurizer during drilling; they also help remove debris from the hole and form a cake-like lining inside the hole to seal it. The exact chemical composition of drilling muds varies from hole to hole and even at different depths within the same hole, but they are typically made from clays, barite and chemical additives, and can be water- or oil-based. Many of the additives are very toxic, and can include thickeners, biocides, bactericides, corrosion inhibitors, and chemicals to control the pH.
Drilling mud wastes can also be mixed with hydrocarbons and other substances from the hole, and typically contain a variety of toxic substances. Waste spoils from the hole can also contain a number of toxic substances, because they are coated with drilling muds and may come from formations that contain hydrocarbons, salts and other chemicals. See generally Kimerling 1991, supra note 5. More recent advances in directional drilling in the United States may enable up to one-third less drilling from the surface, using synthetic based fluids such as esters and olefins. These compounds are less toxic and more biodegradable than traditional oil-based muds. Telephone interview with Marvin B. Rubin, Engineering Branch Chief, Effluent Limitations Guidelines Program, Office of Water, U.S. EPA (Mar. 23, 2001).

[FN245]. EMP, supra note 116, at 41; see also id. at 42, 49.

[FN246]. Id. at 41, 49 (the same statement appears twice).

[FN247]. Occidental Exploration and Production Company, Estudio de Impacto Ambiental en el Area de Influenca del Pozo Eden, del Bloque No. 15- Oxy [[Environmental Impact Study in the Area of Influence of Well Eden of Block No. 15] (Mar. 1996) (prepared by Corporation CDC-Ecuador), at 114.

[FN248]. Because residents do not have access to sampling equipment, they were discouraged from pursuing their grievance. This incident reflects a general pattern of practices reported by Quichua in Block 15, in which the company belittles their environmental concerns and complaints, and challenges them to prove allegations of contamination with "technical data." At the same time, Occidental refuses to disclose data and other information to verify its performance, or allow residents to participate in monitoring activities in a meaningful way. This contradicts Occidental's own corporate environmental policies, to inform members of the public who "may be affected" about health, safety and environmental issues, and to "regularly participate in an open dialogue with neighboring communities to share information and respond to the public's input or concerns about safety, health and the environment." HESMS Guidance Manual, supra note 24, at 6-7.
The practice bullies, demeans and discourages people; as one former official of Comuna Rio Jivino explained to the author: "We have almost no rights because they have machinery, and say we must have proof to complain. But we do not have an apparatus."

[FN249]. Kimerling 1991, supra note 5, at 59-61.

[FN250]. EMP supra note 116, at 49-51.

[FN251]. Kimerling 1995, supra note 5, at 338. Similarly, a search of MEM environmental archives by archive staff for this study did not locate any sampling

protocols or data for Block 15. As discussed supra, the regulations do not include sampling, monitoring, reporting or record-keeping requirements for discharges. See MEM Environmental Regulations, supra note 61.

[FN252]. EMP supra note 116, at 28; MEM Environmental Regulations, supra note 61, tbl. 4.

[FN253]. Notwithstanding an agreement with Comuna El Eden not to "impede" environmental monitoring by the community during drilling, residents report that Occidental refused to allow the "community guard" to observe drilling operations. On three occasions, the company reportedly stopped him from entering the drilling platform, saying it was "too dangerous." See Acta de Mutuo Acuerdo, Compania Occidenthal [sic] y la Comunidad El Eden Hasta la Termiación de un Pozo por Perforar [Act of Mutual Agreement, Occidental Company and the Community El Eden, Until the Termination of One Well to be Drilled] (signed by Occidental and Comuna El Eden) (Nov. 14, 1996).

[FN254]. In addition to the deliberate activities in the watershed of Lake Yuturicocha during drilling operations, residents of El Eden report that a helicopter dropped a load of cargo into the wetlands on its way to the well site, which has not been located and recovered; and diesel spilled into a stream in the area when a truck had an accident on the road to the platform. More recently, a number of residents expressed concern about a series of fishkills after rains, downstream from the platform.

[FN255]. In the United States, federal law requires special management and disposal of legally hazardous wastes. Hazardous waste landfills should have double liners, leak detection, and a leachate collection and treatment system; monitoring and record-keeping are also required. See generally Solid Waste Disposal Act, as amended by Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901-6992k (1997) and implementing regulations. Most, but not all, oil and gas exploration and production wastes are exempt from RCRA's mandates for hazardous wastes; however, if exempt waste is mixed with nonexempt waste, then the entire mixture is deemed hazardous. For a discussion of the RCRA exemption for oil and gas exploration and production wastes, see infra note 272 and accompanying text.

[FN256]. "Best practices" for oil exploration and production are not codified in the United States, with the possible exception of technology-based standards for point source discharges under the Clean Water Act. Discussed infra note 271, they generally ban the discharge of oil and gas exploration and production wastes into fresh waters . Regulations under the Clean Air Act also include technology-based standards; however, their applicability in oil and gas fields is very limited, except for gas plants and flares, because exploration and production facilities are not aggregated to form "major sources" under the law. 42 U.S.C. § 7412(b). In addition, hydrogen sulfide (H2S) is not a "hazardous air pollutant" for the purposes of the act. 42 U.S.C. § 7412(n)(4)(A). Finally, the Clean Air Act Amendments of 1990 exempt oil and gas production wells and associated equipment from being listed as an "area source," unless they are located in a metropolitan area with a population greater than one million. 42 U.S.C. § 7412(n)(4)(B). Performance standards for flares are found at 40 C.F.R. § 60.18. Flares should only be used for emergency situations. Id.

Although the term "best practice" has become popular in some circles, considerable disagreement and controversy remain over its meaning in the oil patch, even among experts in the United States. As a general matter, it is easier to identify disfavored oil field practices, than favored ones.

Based on a review of federal and some state laws, and interviews with state and federal regulators, oil industry workers, and experts who work with affected communities, conducted over a number of years, some practices can be identified that are widely disfavored in the United States, and have been banned or limited in a number of states, or by federal law. One example is the discharge of wastes from point sources into fresh waters, mentioned above (and discussed infra). Another is annular injection (the injection of wastes down the annulus of a well), a practice that has been banned in some states and requires special permission from landowners in others. Similarly, the use of waste pits has been increasingly limited, especially in areas with high water tables.

Notwithstanding this, considerable controversy remains about alternative practices, especially for the disposal of wastes. Deep well injection, burial and land application (including bioremediation) of wastes are controversial in the United States. Environmentalists and some other non- industry experts, who acknowledge that those practices are better than others, are by no means confident that they are environmentally friendly. Oil exploration and production is an industrial activity, and can have serious adverse environmental impacts even in the United States; in addition, some commercial waste disposal facilities have poor environmental records. This helps explain why most of the public debate about oil development in the United States has focused on whether and where exploration and production activities should go forward, rather than on the details of particular practices or standards for those operations.

A full discussion of standards and practices in the United States is beyond the scope of this article. For a fuller discussion, see generally IOGCC Environmental Guidelines, supra note 89; U.S. EPA, Office of Solid Wastes, Report to Congress, Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy, supra note 89; McFaddin, supra note 89; EPA/IOCC, Study of State Regulation, supra note 89. For the discussion in this article, the author is especially grateful to Marvin B. Rubin, Chris Shuey, Wilma Subra, and Rick Lowerre for generously sharing their expertise, and to Paul Kinzie, Karen McDaniel, and Betty Tabor for research assistance.

[FN257]. EMP, supra note 116, at 3.

[FN258]. 58. Subra Interview I, supra note 115.

[FN259]. Id.

[FN260]. Telephone interview with Marvin B. Rubin, Engineering Branch Chief, Effluent limitations Guidelines Program, Office of Water, USEPA, Washington, DC (Mar. 21, 2001) [hereinafter Rubin Interview].

[FN261]. See 1992 EIA, supra note 33, at 22; EMP, supra note 116, at 50. The burial of wastes in pits has also been confirmed by a number of local residents.

[FN262]. CPF Visit, supra note 32.

[FN263]. EMP, supra note 116, at 2. Formation water refers to water in underground geologic formations; in this case, it refers to water in the hydrocarbon-bearing formations. Formation water is extracted at producing wells in a mixture with oil and natural gas, and pumped to CPF. At CPF, oil, gas and water are separated. Some separation may also take place at well sites. In addition to toxic levels of salts, formation water typically contains hydrocarbons, heavy metals and other chemicals. The EMP refers to injection of "formation water"; this is somewhat confusing because usually the term "produced water" is used to refer to the aqueous waste stream from the separation process. In addition to formation water, produced water--also know as oil field brine--can contain chemicals that have been injected down a well or used in the separation process. Even after separation, produced water commonly contains high levels of hydrocarbons, metals and other chemical substances, in addition to toxic levels of salts. In some areas, produced water contains naturally-occurring radioactive material (NORM).

[FN264]. In the United States, the practice was used as early as 1928. Beginning in 1969, reports in technical journals raised questions and concerns about the environmental impact of unregulated injection of oil field and other wastes. Problems and concerns linked to underground waste injection included groundwater contamination, well blowouts, and earthquakes. McFaddin, supra note 89, at 119.
In 1974, Congress passed the Safe Drinking Water Act. The law directed the EPA to set standards for public drinking water supplies and protect underground drinking water sources. See generally 42 U.S.C. §§ 300f- 300j-25 (2000). Section 300h directed EPA to establish minimum regulatory requirements for State underground injection programs.
Regulations under that provision were first promulgated in 1980. Known as the Underground Injection Control (UIC) regulations, they establish five classes of underground injection wells. Class II wells are defined as wells used to inject fluids that are brought to the surface during oil and gas production, and wells used for enhanced recovery of hydrocarbons and some underground storage of oil and natural gas. See generally 40 C.F.R. § 144 (2000). Currently, some state authorities have been delegated the authority, by EPA, to enforce UIC regulations; in other states, that authority has not been delegated and EPA implements and enforces the UIC regulations.

[FN265]. See, e.g., U.S. Environmental Protection Agency, Mid-Course Evaluation of the Class II Underground Injection Control Program: Final Report of the Mid-Course Evaluation Workgroup (Aug. 22, 1989); U.S. General Accounting Office, GAO/Rced-89-97, Underground Waste Disposal (1989). The reports reviewed EPA UIC regulations for Class II wells for injection of oil and gas wastes, and concluded that the regulations were inadequate to protect the environment. In 1993, EPA drafted proposed amendments to the regulations. The oil and gas industry (and API) vigorously opposed EPA's efforts to strengthen the Class II UIC regulatory program. McFaddin, supra note 89, at 125. The drafted amendments were tabled by high level EPA officials, and subsequently withdrawn.
Ecuador does not have a regulatory program for underground injection activities. Government officials who were interviewed for this study did appear to know much about injection operations and/or oversight, and rely on Occidental and other companies to monitor and oversee their own injection activities. Injection standards set forth in the EMP are vague, and the document does not contain the information that is needed to

compare Occidental's practices with legal requirements that apply to operations in the United States.

[FN266]. Telephone interview with Wilma Subra, President, Subra Company, New Iberia, Louisiana (Oct. 27, 2000) [hereinafter Subra Interview II]. In addition to releases from improperly constructed and/or operated injection wells, injected wastes can migrate into fresh water aquifers or to the surface through improperly abandoned well bores, or faults, fractures or geologic changes in overlying confining zone(s). According to an official in EPA's Office of Water, who asked not to be named, detailed geological mapping and other measures to prevent releases from injection wells and zones are key, because "by the time you find it, it's too late ... you cannot remove the wastes or build a containment [system]." (Interview, Mar. 29, 2001.)

[FN267]. Rubin interview, supra note 260.

[FN268]. Hollub and Rivera Interview, supra note 37; CPF Visit, supra note 32. When present in subsurface oil and gas formations, NORM is typically transported to the surface in produced waters. NORM can deposit in oil field equipment and may be found in scales, sludges, contaminated soils, and other exploration and production wastes. IOGCC Environmental Guidelines, supra note 89, at 50. NORM is most likely to precipitate out and concentrate at any location where the product stream is concentrated, slows down or changes direction, such as pit and tank bottoms, valves, and pipeline (including flow lines) elbows and flanges (where pieces of pipeline are joined). Subra Interview II, supra note 266; telephone interview with Chris Shuey, Director, Community Water, Wastes & Toxics Program, Southwest Research and Information Center, Albuquerque, New Mexico (Mar. 16, 1998) [hereinafter Shuey Interview II]. In the United States, no federal (or international) regulations specifically address NORM-contaminated waste and materials. Some states have adopted regulations for the management and disposal of NORM-contaminated materials; other states have been studying the issue. McFaddin, supra note 89, at 2-5. IOGCC Environmental Guidelines recommend that:

States should adopt an oil field NORM regulatory program that addresses identification, use, possession, transport, storage, transfer, decontamination, and disposal to protect human health and the environment. States may choose not to adopt such a program if they find, based on field monitoring data and other scientific information, that significant levels of NORM do not occur in a state's oil and gas E & P [exploration and production] industry. States that make such a finding should periodically reevaluate the basis for that determination.

IOGCC Environmental Guidelines, supra note 89, at 50. The guidelines do not define "significant levels of NORM"; instead, they recommend that states develop a definition for NORM, and establish numerical action levels above which NORM is regulated, in addition to standards and procedures for identifying NORM. Id. at 50-51. They further recommend that "landowner notification may be required as a condition of disposal." Id. at 52. Ecuadorian environmental regulations do not address NORM-contaminated wastes and materials.

[FN269]. Hollub and Rivera Interview, supra note 37; CPF Visit, supra note 32; Meriage Interview I, supra note 20. For example, according to Meriage, the company "injects everything, even runoff;" however, the CPF visit confirmed that this is not true. According to Hollub, Occidental has discharged all wastes from wells, including

drilling wastes, since 1991. However, in 1991, the company had not yet installed any injection wells. See id.

[FN270]. EMP, supra note 116, at 17, 27-28, 42-53; see also 1992 EIA, supra note 33, at 90, 98, 104.

[FN271]. 40 C.F.R. § 435.32 (2000). The no discharge standard does not apply to effluents from stripper wells, defined as wells that produce less than ten barrels of crude oil per day; or "beneficial use" discharges, which, in practice, are limited to operations in certain arid and semi-arid areas, where produced water meets federal effluent limitations and "has a use in agriculture or wildlife propagation." See 40 C.F.R. § 435.60 & § 435.50 (2001), respectively.
In 1996, EPA adopted a no discharge standard for effluents from coastal shoreline oil and gas facilities except for Cook Inlet, Alaska. The definition of coastal, in general, means any location in or on water landward of the shoreline, based on the inner boundary of the territorial seas. This encompasses many shoreline areas such as bays, inlets and wetlands, including the North Slope of Alaska. The standard is based on application of the best available technology standard economically achievable ("BAT") for existing coastal operations. 40 C.F.R. § 435.40 (2001). For new facilities, it is based on standards of performance for new sources ("NSPS"), based on best demonstrated available technology ("BDAT"). 40 C.F.R. § 435.47 (2001). See also U.S. Environmental Protection Agency, Office of Water, Development Document for Final Effluent Limitations Guidelines and Standards for the Coastal Subcategory of the Oil and Gas Extraction Point Source Category, EPA- 821-R-96-023 (Oct. 1996).
Cook Inlet is a deepwater marine environment. However, the exemption from the zero discharge standard there is based on non-water quality factors: economics and technology. EPA determined that zero discharge of produced water "is not economically achievable," see id. at XIV-18, and that zero discharge of all drilling wastes is "not technologically available." Id. at XIV-6-12. As a general matter, when EPA establishes effluent limitations standards and guidelines, "it does so based on a determination, supported by analyses contained in the rulemaking record that facilities ... [subject to the limitation] can technologically and economically achieve the requirements of the rule." Id. at II-3.
The effluent standards are part of EPA's National Pollutant Discharge Elimination System ("NPDES"), established pursuant to the Federal Water Pollution Control Act ("FWPCA"), better known as the Clean Water Act. 33 U.S.C. §§ 1251-1387 (2000). The program governs point source discharges, and prohibits the discharge of pollutants from any point source into surface waters of the United States, without a permit. The definition of "surface waters" can include lands that are adjacent to surface waters; however, as a general matter, the program does not apply when wastes are discharged or applied to soils.

[FN272]. See generally RCRA, supra note 255. Subtitle C of RCRA creates a cradle-to-grave regulatory program governing the generation, transportation, treatment, storage and disposal of hazardous waste, defined as "solid waste" that exhibits a hazardous characteristic or is specifically listed as hazardous by regulation. For the statutory exemption of oil and gas exploration and production wastes, see 42 U.S.C. § 6921(2) (1997). EPA regulations defining "hazardous waste" are found at 40 C.F.R. § 261 (2000). For EPA's regulatory determination, which lists many, but not all exempt and nonexempt oil field wastes, see 53 Fed. Reg. 25,453 (July 6, 1988), clarified at 58 Fed.

Reg. 15,284 (Mar. 22, 1993). Produced water is among the exempt wastes, but is regulated under the federal Clean Water Act as a point source discharge.
Because of the exemption, most solid wastes from exploration and production activities are regulated by state law. See, e.g., Alaska Admin. Code tit. 18, § 60 (2000) (Solid Waste Management Regulations); see also IOGCC Environmental Guidelines, supra note 89. In addition to state regulation, local laws and agreements with landowners can include environmental provisions that apply to waste disposal and pit closure and other site reclamation operations at some locations; many lease agreements, however, are very general. Telephone interview with Wilma Subra, President, Subra Company, New Iberia, Louisiana (Aug. 28, 2000) [hereinafter Subra Interview III]; IOGCC Environmental Guidelines, supra note 89.

[FN273]. Congress was concerned about the economic impact of subjecting huge quantities of large volume exploration and production wastes to the strict requirements of RCRA Subtitle C. In a report to Congress required under the statute, EPA determined that regulation of oil field wastes under RCRA Subtitle C "would have a substantial impact on the U.S. economy." U.S. Environmental Protection Agency, Office of Solid Wastes, supra note 89, vol. 4, at 45. The agency determined that full compliance would cost industry as much as $12.125 billion, and cost consumers up to $6.4 billion annually. It predicted that domestic oil production would decline from four to eighteen percent by the year 2000. Id. at 25-29 & 45-46. The report also found that:
Documented damages suggest that all major types of [oil field] wastes and waste management practices have been associated to some degree with endangerment of human health and damage to the environment. The principal types of wastes responsible for the damage cases include general reserve pit wastes (primarily drilling fluids and drill cuttings, but also miscellaneous wastes such as pipe dope, rigwash, diesel fuel, and crude oil); fracturing fluids; production chemicals; waste crude oil; produced water; and a variety of miscellaneous wastes associated with exploration, development or production. The principal types of damages sometimes caused by these wastes include contamination of drinking-water aquifers and foods above levels considered safe for consumption, chemical contamination of livestock, reduction of property values, damage to native vegetation, destruction of wetlands, and endangerment of wildlife and impairment of wildlife habitat.
Id. at 41-42.
The principal constituents of concern identified by EPA in the wastes include arsenic, benzene, sodium, chloride, boron, cadmium, chromium and mobile salts; however, the agency concluded, based on limited risk modeling, that "complete adherence to existing State [regulatory] requirements would preclude most types of damages." Id. at 42-43. At the same time, it determined that "[d]amages may occur in some instances even where wastes are managed in accordance with currently applicable State and Federal requirements." Id. at 43. The report recommended that Congress maintain the Subtitle C exemption for most oil field wastes, but noted the desirability of enhancing the implementation and enforcement of existing state and federal programs to manage oil and gas wastes, including a review of existing federal and state authorities that could serve as "a means for implementing any necessary additional controls." Id. at 47-51. As discussed supra note 89, the IOGCC Environmental Guidelines evolved from the decision to exempt most oil field waste from RCRA Subtitle C.
For a discussion of the exemption, see Daniel L. McKay, RCRA's Oil Field Wastes Exemption and CERCLA's Petroleum Exclusion: Are They Justified?, 15 J. Energy, Nat. Resources, & Envtl. L. 41 (1995).

[FN274]. According to company officials, Occidental uses only clean groundwater for dust control purposes. CPF Visit, supra note 32; Hollub and Rivera Interview, supra note 37.

[FN275]. At the time, residents did not know about the expropriation of their lands.

[FN276]. CPF Visit, supra note 32.

[FN277]. Hollub and Rivera Interview, supra note 37. It is unclear whether the injection activities in Pompeya were annular injection. Annular injection is generally out of favor in the United States, because injected wastes are not isolated from surrounding formations and can contaminate freshwater aquifers. See supra note 256.

[FN278]. 78. Subra Interview III, supra note 272.

[FN279]. 79. See generally 42 U.S.C. § 300h (2000); 40 C.F.R. § 144 (2000).

[FN280]. Information about the site's geology, hydrology and lithology must be presented with the permit application, and reviewed by agency staff to ensure that wastes are injected into a geologic formation that is not interconnected with drinking water supply sources (actual or potential), either naturally or as a result of fracturing or fissuring from oil field activities. Permit applications must also include a plugging and abandonment plan, and operators are required to maintain financial assurance to ensure that wells will be properly closed, plugged and abandoned. See generally 42 U.S.C. § 300h (2000); 40 C.F.R. § 144 (2000). In some locations, landowner permission is also required. Subra Interview III, supra note 272.

[FN281]. See generally 42 U.S.C. §§ 6901-6992k (1997).

[FN282]. EMP, supra note 116, at 3.

[FN283]. According to foreign oil field workers based in Ecuador, Occidental was the first company there to use an expensive machine to coat the inside of pipelines during construction. The coating can provide effective and long- lasting protection against corrosion; however, the application process had not been perfected, and there are almost certainly pinholes where the coating was not properly applied. As a result, all of the corrosion can be expected to concentrate at those locations, and with time, the integrity of the line will fail. Without the internal coating, corrosion would be more dispersed, and may not lead as quickly to ruptures in the line. This suggests that new, cutting edge technology may unexpectedly operate to increase environmental risks, when applications have not been adequately tested and perfected in the field; and some features of new models for oil field operations can be experimental rather than proven models.

[FN284]. CPF Visit, supra note 32.

[FN285]. Corrosion may be more systematic in a wet climate. Technically, pigs do not detect corrosion. Rather, physical pigs are run through pipelines to clean out scale, sludge and sediment that accumulate on internal surfaces, thereby enhancing longevity.

"Smart" pigs also detect irregularities in the internal surfaces of pipelines. By detecting thinning in pipeline walls, "smart" pigs can be used to inspect pipelines for the effects of internal corrosion, allowing assessment of the potential for leaks, cracks and voids (hollow areas inside a pipeline wall.) Cathodic protection mitigates corrosion. Shuey Interview I, supra note 115; see also John L. Kennedy, Oil and Gas Pipeline Fundamentals (2d ed. 1993); Rules of Flow, Metal Studied in U.K. Corrosion Failures, Oil and Gas J. (Aug. 16, 1999).

[FN286]. See, e.g., Rules of Flow, supra note 285.

[FN287]. Jorg Hettler et. al., Environmental Problems of Petroleum Production in the Amazon Lowlands of Ecuador, Final report of a study funded by the United Nations Environment Programme, Berlin, 1996. The study did not systematically review operations or impacts in Block 15, and primarily discusses conditions elsewhere. Among other information, the report includes data showing groundwater contamination from waste pits built and operated by Texaco and Petroecuador, and some surface water contamination. Despite the United Nations sponsorship, the significance of the data for affected communities, and the growing recognition in international environmental law of the importance of broad public participation and access to information, the study has not been publicly reported or widely distributed outside of government and industry. The author's work is cited in the report; but she did not learn about the study until after a copy of the report was leaked to her in 1999, from an Ecuadorian government agency. The source requested anonymity, because of concern that oil companies would disapprove, and become less cooperative.

[FN288]. The spills occurred between late 1999 and July 2000. According to residents, two were from flow lines that carry a mixture of oil, brine and gas to CPF; the other three occurred at the same place, where a flow line carrying produced water (most likely to an injection well) "exploded" and spilled wastes into a swamp in the watershed of Lake Limoncocha. Occidental reportedly repaired the lines quickly, and told residents who complained that the produced water is "not chemicals, it is salt"; and "it is natural, harmless; you can drink it." This is similar to a general pattern of practice reported by Quichua in Block 15, in which Occidental assures residents that waste discharges do not contain contaminants, and are safe to drink.

[FN289]. Most likely, Petroecuador will continue to operate facilities in Block 15 after Occidental's Contract expires. Occidental is legally required to hand over production facilities to Petroecuador at that time. Law of Hydrocarbons, supra note 57, art. 29; Contract, supra note 29, paras. 5.1.21 & 18.6. In the United States, spills from flow lines are not uncommon, and the paucity of specific regulatory requirements for corrosion inspections and periodic replacement of pipelines (including flow lines) has been criticized outside of the industry. Shuey Interview I, supra note 115; Subra Interview II, supra note 266.

[FN290]. EMP, supra note 116, at 3.

[FN291]. Use of helicopter transport is generally regarded as a better environmental and social practice.

[FN292]. Interview with Jorge Alban, Deputy Secretary, Ministry of the Environment, in Quito, Ecuador (Aug. 19, 1999).

[FN293]. Bob Williams, ARCO's Villano Project: Improvised Solutions in Ecuador's Rainforest, Oil & Gas J. 22 (Aug. 2, 1999). Since building the facilities, ARCO was purchased by British Petroleum (BP). BP sold ARCO's interests in Ecuador, and the facilities are now operated by Agip.

[FN294]. See 1992 EIA, supra note 33.

[FN295]. See supra Pt. IX, sec. A and accompanying text; Kimerling 2001, supra note 27.

[FN296]. As discussed supra, the Contract also includes provisions that seem designed to try to limit Occidental's liability for environmental injuries. As with self-regulation, environmental accountability has traditionally been limited because of State inaction, and in particular, the absence of impartial fora for victims of environmental wrongdoing. As the possibility of legal liability--at some time in the future--increases for injuries caused by the international operations of TNCs, Occidental and Ecuador appear to have negotiated contractual provisions that can be used to help protect the company and limit environmental liability. Some of those provisions are highlighted, supra notes 163-65 and accompanying text; however, a full discussion of liability issues is beyond the scope of this article.

[FN297]. Proposals to privatize certain assets and operations, including the generation and distribution of electricity, telephone and water service, social security, road-building and crude oil transportation, have been controversial in Ecuador because of economic and nationalist concerns. As a result, progress towards privatization has been limited, when compared with other countries in Latin America. The lack of national consensus on privatization and other neo- liberal economic policies, including increases in the price of gasoline and natural gas, have contributed to outbreaks of social unrest in recent years. Notwithstanding the spotlight on privatization in Ecuador, the public debate has not included proposals for the privatization of environmental law. This is not surprising because such proposals would likely generate considerable controversy and could contribute to social unrest.

[FN298]. For a more detailed proposal, see Kimerling 2001, supra note 27, at 244-45.

[FN299]. In October 2000, an oil worker was speared and wounded by an indigenous Huaorani, after his nine-month-old infant died. A Colombian company working in the area, Petrocol, was blamed for the death, because it had failed to provide medical assistance or transportation. In a communication to the press, the Huaorani organization, ONHAE, explained the incident as a reflection of "the extreme conditions in which our people live because of the petroleum companies in the territory, [prompting] the return of old Huaorani traditions for defense and vengeance." Organization of the Huaorani Nationality of the Ecuadorian Amazon - ONHAE, Comunicado de Prensa [Press Communication] (Oct. 10, 2000). Five oil "blocks" cover eighty percent of Huaorani territory, and there is no "serious" prior consultation with the Huaorani or credible environmental and social controls or monitoring. Id.

[FN300]. Injection can increase the risk of groundwater contamination; as a result, it could operate to lower levels of aquifer protection, and create new problems, especially in deeper strata.

[FN301]. This includes uncontacted and isolated groups of indigenous peoples, whose territories should be off-limits to industry and other development by outsiders.

[FN302]. The environmental NGOs Oilwatch and Acción Ecológica have called for a moratorium on new oil development in Ecuador. See Esperanza Martínez, Moratoria a la Actividad Petrolera [Moratorium on Petroleum Activities], in El Ecuador Post Petrolero [Post-petroleum Ecuador] (2000).
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