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WATER LAW IN THE REPUBLIC OF MEXICO

ABDON HERNANDEZ*

FOREWORD

The purpose of this presentation is to give you a general picture of the regulatory framework of water in Mexico and its complexities. For such purpose, we will first review the water situation from a geographical, meteorological and demographical perspective. The main part will be devoted to a brief review of the legal framework applicable to water in Mexico, commencing with the Federal Constitution, the National Waters Law, including a brief analysis thereof, the Official Mexican Standards (*NOM's*) related to water, and federal fees applicable to water.

Even though pursuant to Article 133 of Mexico's Federal Constitution, international treaties, together with the Constitution and laws derived therefrom are the "supreme law" law of the land, and this presentation refers to Water Law in Mexico, I will not refer to the US-Mexico waters' treaty of 1944 or the resolutions of the International Borders and Waters Commission.

THE WATER SITUATION AND PROBLEMS

In order to be able to fully understand the reasons behind a legal system and the regulatory framework, first we must know the meteorological, geographical and demographical implications and issues it attempts to regulate and control.

Water is a vital and essential component of our environment; however it is not readily available, thus its strategic value and the foundation of serious concerns among the governments around the world and the population at large.

On a personal individual basis, the water content in the human body is -on average- 50 liters or approximately 50 quarts; that is, 60% or almost two thirds of our bodies.

From the perspective of planet earth, water covers 72% of the 509 million square kilometers of the earth's surface and its volume represents approximately 1.4 billion cubic kilometers. However 97.5% of the water in planet earth is salt water in oceans, seas (including inland seas) and some underground water deposits, while fresh water represents only 2.5% of all the water in the world, of which 68.7% is in glaciers, 0.8% in permafrost, 30.1% in groundwater and 0.4% in surface and atmospheric water. Of the surface and atmospheric water, 67.4% is in freshwater lakes, 12.2% in soil moisture, 9.5% in the atmosphere, 8.5% in wetlands, 1.6% in rivers and 0.8% in biota. However, of all the groundwater and surface water, only

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1% is economically accessible to humankind in the form of rivers, lakes and reservoirs (natural or man-made) and shallow underground deposits.

Besides being scarce, water (including rainfall) is not evenly distributed around the world, within continents and even within specific countries; thus, arid and semi-arid regions account for only 6% of total annual rainfall and 2% of water flows (rivers and streams), worldwide.

Notwithstanding this relatively small amount of available water, it must satisfy all domestic, agricultural, aquaculture, industrial, and power generation needs throughout the world. Of all the groundwater and surface water extracted worldwide, 69% is for agriculture, 21% for industry and 10% for domestic consumption.

According to a United Nations Development Program study, 1.5 billion persons or 1 out of every 4 persons (one fourth of the earth's population) do not have access to potable water and approximately 15 million persons die each year due to lack of potable water and due to water related diseases (e.g., cholera and dysentery). By year 2025, close to 3 billion persons will not have access to a reliable water supply.

Currently, it is estimated that 70% of the water used is dedicated to agricultural activities, of which only a relative small portion humidifies the soil and is absorbed by the plants; the rest evaporates and therefore cannot be used for other purposes.

Other factors have an impact on water consumption, such as increasing urbanization and the development stage of a country. It is estimated that daily water consumption per capita, excluding agricultural uses, is 300 quarts in the USA and 100 to 200 liters in Europe and only a few liters in third world countries. The foregoing is a snapshot of the water situation in the world.

We now turn to Mexico. Mexico is not considered a "water poor" country. The water supply in Mexico is 4,997 cubic meters per year per inhabitant. Although lower than Brazil and the USA, it is higher than France (3,320 cubic meters/year/person) and substantially higher than countries such as Saudi Arabia, which has only 160 cubic meters per year per person.

However, the water problem in Mexico is not the absolute amount it receives each year via rainfall; the problem is its highly inconsistent distribution in terms of time and space. Thus, with an annual average rainfall of approximately 772 millimeters equivalent to 1.519 trillion cubic meters per year; by far the greatest volume is in Southwestern Mexico and 70% falls between June and September. The net result is that 80% of annual rainfall is in 30% of the Mexico's territory, in areas where we find 24% of the country's population in 52% of the country's municipalities, 10% of the irrigated land, 30% of the country's industry, and 23% of GNP is generated; while 20% of annual rainfall is in 70% of the country's territory, in areas where 76% of the population resides, 90% of irrigated land, 70% of industry and 48% of the municipalities are located and 77% of the GNP is generated. Of the total rainfall in Mexico, it is estimated that 70% is lost through evaporation, 27% flows above ground and only 3% is for replenishment of aquifers.

As to surface water, Mexico has 314 water basins, classified in 37 water regions and 13 water management regions; consisting of 42 main rivers with a year round average water flow of 410 cubic kilometers, around 60 natural lakes with 9.2 cubic kilometers and approximately 4,500 reservoirs with a volume of 120 cubic kilometers of fresh water, plus 137 coastal lagoons with 4.8 cubic kilometers of brackish water. As to underground aquifers, those, which receive the greatest

replenishment, are in Southern Mexico, while in the rest of the country such as the Mexico City Valley, north-central plateau (Durango, Zacatecas, San Luis Potosi) and the Northern belt, including the states bordering the US, there are severe water availability problems.

The greatest portion of available water is not for direct human consumption or use, to wit: according to a 1998 study by the Private Sector's Sustainable Development Study Center, water consumption was 2,330 cubic meters per second, of which 11.6% was for the general population, mainly in urban and suburban areas, 3.4% was for industrial activities and 85% for agriculture and aquaculture. Due to population growth and immigration to urban centers, by 2001, 76.3% was used for agriculture, 17% for the public, 5.1% for industrial purposes, 1.4% for aquaculture, and 0.2% for power generation of 27,606 gwh.

Of the water supply for industrial purposes, 53% goes to the sugar industry, 10% for the beverage and alcohol industries and 5% for each of the oil and petrochemicals sector, cellulose and paper, processed food, basic metals, and chemical industries. In 1994, 78.7 cubic meters per second were supplied to 1,387 industries located outside urban areas, but considered as important users in terms of water consumption and discharges. Seventy five per cent of the supply was from underground sources and the remaining 25% was from surface deposits. The quality of water is a critical factor for industries using water as a raw material or in its industrial processes, and it is estimated that 58% of available surface water is polluted and 21% as heavily polluted. However, in the last couple of months radio and TV have broadcast spots by the Water Consulting Council that of all the water in the country, only 5% is not polluted.

The other side of the coin is the disposal or discharge of water. The environmental authorities estimate that residual waters from urban centers amounts to 231 cubic meters per second, of which 174 cubic meters per second are discharged to drainage and sewer systems and only 43 cubic meters per second are treated, prior to their recycling or discharge into the environment. The magnitude of the pollutants is of approximately 1.8 million metric tons of Oxygen Biochemical Demand ("DBO"), a measuring unit for organic pollutants, of which only 34 thousand metric tons of DBO's are adequately treated before they are discharged into the environment. All these figures include water discharged by industries, which are connected to municipal sewer systems and cannot be separated from domestic discharges.

Reviewing all this information reminds us of the famous verse "Water, water everywhere, but not a drop to drink" in Samuel Taylor Coleridge's "*The Rhyme of the Ancient Mariner*."

REGULATORY FRAMEWORK

With the grim panorama facing Mexico regarding water availability and the multiple associated problems derived therefrom, including the recent and complex differences in US-Mexico relations due to water issues along our borders, we will focus our presentation on the regulatory framework, including: (i) the first and foremost legislation regarding water, the 1917 Mexican Constitution (*Constitución Política de los Estados Unidos Mexicanos*), (ii) the law regulating the Constitutional provisions which is the National Waters Law (*Ley de Aguas Nacionales*) and its

Regulations, (iii) a brief reference to Official Mexican Standards (*Normas Oficiales Mexicanas*, known in the legal and business communities as NOM's) applicable to water and (iv) the Federal Fees Law (*Ley Federal de Derechos*),

The 1917 Mexican Constitution

In order to understand Mexico's current legal system applicable to water, I feel it is necessary to review briefly the legal background and governmental agencies, which have had authority or been responsible for its management.

During the colonial period the *Ley de Indias* specified as a common characteristic of water that it was subject to the domain of the Spanish crown and permitted the granting of concessions or permits for the utilization of water. It was not until the 1957 Constitution that the Federal Congress was empowered to determine which waters were under federal jurisdiction and to enact laws related to their use.

Even though water availability vis-à-vis the size of the population had not reached the critical levels we face today, the Constitutional Congress who enacted Mexico's 1917 Constitution, went beyond and established the nation's domain over land, mineral resources, and water. As a result, the fifth paragraph of Mexico's 1917 Constitution defines which are "national waters" under the Federal Government's jurisdiction:

"The Nation has domain over waters in territorial seas in the extent and terms provided in international law; interior marine waters, lagoons and estuaries permanently or intermittently connected with the sea; naturally formed inland lakes directly connected with constant flow currents; rivers and their direct and indirect tributaries, as of the place in the riverbed where permanent, intermittent or torrential flow of water starts and up to the river's mouth in the national property seas, lakes, lagoons or estuaries; constant or intermittent water flows and their direct or indirect tributaries, when the riverbed throughout its length or part thereof is a country border or is a boundary between two states, or when it crosses state lines or the country's borders; lakes, lagoons and estuaries whose basins, zones or shores are crossed by the borders to two or more states or the Republic and a neighboring nation; or when the shoreline is the border of two states or the Republic and a neighboring nation; springs in beaches, maritime zones, riverbeds, riverbanks or lakeshores and inland currents to the extent determined by the law. Underground waters may be freely drilled through manmade works and appropriated by the landowner, but when public interest requires or other users may be affected, the Federal Executive may regulate their extraction and use and even specify "off-limits" zones, as well as for any other national property waters. Other waters not included in the foregoing list shall be considered an integral part of the land property in which they flow or are deposited, but if they are located in two or more parcels of land, they shall be deemed of public interest and shall be subject to regulations enacted by the States."

As can be seen, practically all the water in Mexico except for rainfall, and only before it hits the ground, is deemed to be "national waters."

The sixth paragraph of the Constitution further specifies that:

"In the cases referred to in the two previous paragraphs [mineral resources and national waters, respectively], the Nation's domain is an inalienable right not subject to adverse possession and the exploitation, use or utilization of the

resources mentioned therein by private individuals or corporate entities incorporated under the Mexican laws, can only be done through concessions granted by the Federal Executive in accordance with the rules and conditions established in the laws."

This concession's regime to some extent continues the colonial concept, except that the nation takes the place of the crown.

In addition to the foregoing, in a carry over from the 1857 Constitution, Section XVII of Constitutional Article 73, which lists the matters on which the Federal Congress can legislate, provides: "*Congress is empowered to: XVII.- Issue laws on the use and utilization of [national] waters under federal jurisdiction."*

This provision is the enabling constitutional support for the issuance of the National Waters Law, which regulates the above quoted fifth and sixth paragraphs of Article 27 of the Federal Constitution on water matters.

Finally, Article 115, which lists the matters over which municipalities have authority and responsibility, provides in Section I that: "*The municipalities, with the concurrence of the States, when necessary and as provided by the laws, will be responsible for the following public services*" and in subsection (a) specifies: "*potable water and sewer*".

We must point out that in the *Diario Oficial* of August 14, 2001, the Federal Constitution was amended to recognize the rights of indigenous villages and communities. As to natural resources, the initial proposal to amend the Constitution, known as *Ley COCOPA*, provided that they had a preferential right over land, forests, etc., except those subject to the national domain. Based on the above quoted fifth paragraph of Constitutional Article 27, national waters were excluded from such preferential right. However, in Article 2, Section A, sub-section VI of the constitutional amendment enacted, indigenous villages and communities are granted a preferential right over natural resources (which include minerals and water) and excludes only strategic areas, which -pursuant to Constitutional Article 28- means that only oil and hydrocarbons and radioactive minerals are excluded from their preferential right. Evidently a "preferential right" can apply only when there is an alternative right of a third party. Consequently, the specific laws, including the National Waters Law and the Mining Law must regulate when and how such preferential right can be exercised.

National Water Law

General Overview

As mentioned before, pursuant to the Constitutional authority granted to the Federal Legislative Branch, Congress has enacted laws regulating national waters in Mexico. The first law applicable to "national waters" was the Irrigation Law of 1926 and the creation of the National Irrigation Commission. In 1946 the Ministry of Hydraulic Resources was created. The 1926 law was superseded by the Federal Waters Law of 1972, which congregated sundry laws and regulations regarding water under the then current and fashionable political philosophy of high governmental intervention.

The current National Waters Law ("NWL") was published in the Official Gazette (*Diario Oficial de la Federación*) on December 1, 1992, and became effective on

December 2, 1992. It is regulatory of Constitutional Article 27 on water matters. It is the most important piece of legislation regarding water, including residual water and can be deemed to take a more modern approach, including the form in which private enterprise can participate in the construction and operation of hydraulic infrastructure.

It contains 124 articles in 10 Titles, namely: (1) General Provisions, (2) Water Management, (3) Hydraulic Programming, (4) Rights to Use or Utilization of National Waters, (5) Regulated, Off-Limits and Reserve Zones, (6) Uses of Water, (7) Prevention and Control of Water Pollution, (8) Investment in Hydraulic Infrastructure, (9) National Property entrusted to the National Water Commission and (10) Violations, Penalties and Recourses.

The stated purpose is to regulate the exploitation and use or utilization of national waters, its distribution and control, as well as its quantitative and qualitative conservation in order to achieve sustainable development. It confirms the national domain over national waters, even if they are deviated from their natural causeway or basin, or their affluence thereto is blocked or they are treated; residual waters derived therefrom are also deemed national waters. It also provides that all users of national waters are obligated to pay fees for the use of national waters, including the payment of certain fees for discharges in order to prevent the pollution of rivers and aquifers, as provided in the Federal Fees Law (*Ley Federal de Derechos*).

Consistent with the provisions of the Federal Public Administration Organic Law (*Ley Organica de la Administracion Publica Federal*) the NWL also reallocated the authority regarding water quality. With the creation of the renamed Ministry of the Environment and Natural Resources (*Secretaria del Medio Ambiente y Recursos Naturales*, generally identified as SEMARNAT), under whose jurisdiction is the National Water Commission (*Comisión Nacional del Agua*, generally identified as CNA), as an "unconcentrated" government agency, all federal authority regarding waters is under the jurisdiction of said ministry. However, perhaps as a result of the inherited inertia on the distribution of authority over water matters among the now defunct Ministries of Agriculture and Hydraulic Resources and of Urban Development and Ecology and the old Ministry of Social Development, certain regulatory authority was assigned to the National Ecology Institute ("INE") which is responsible for the issuance of NOM's; while specific discharge conditions, discharge permits and surveillance of compliance therewith are entrusted to the CNA. We do point out that the Federal Environmental Protection Prosecution office (*Procuraduria Federal de Protección al Ambiente* known as PROFEPA), the agency responsible for the surveillance of compliance with environmental regulations, does not have authority on water discharge matters, which limits the efficiency and efficacy of the environmental policies.

The NWL preserves the constitutional principle that the use and utilization of national waters can only be done through concessions.

Water Uses

The NWL expressly contemplates certain "permitted" uses of water, to wit: (i) public urban use, (ii) agricultural use, (iii) power generation and (iv) other productive activities.

Public Urban Use

The extraction and use of national water by state or municipal water and sewer systems is done through "allotments" (*asignaciones*), the equivalent to a concession but granted to governments or agencies thereof. The allotments must include provisions as to how the payment of water use and discharge fees will be financed. Allotments are valid even if the water and sewer systems are managed by semi-governmental, state or municipal, agencies or granted to private individuals or corporations under concession or contract. Water delivered to such entities by the CNA is done "in block."

The water and sewer system is responsible for the handling of water from the point of extraction or delivery in block by the CNA and up to the point of discharge.

Agricultural Use

Concessions may be granted to *ejidos*, agrarian communities (*comunidades agrarias*) and their individual members, or private individuals or corporate entities, which own agricultural, cattle, or forestlands, as well as to irrigation systems, units or districts. Several landowners may organize in irrigation systems, units or districts. Irrigation systems, units and districts must have a set of regulations establishing the rules for the distribution and management of water, protection of individual members' water rights; operation and maintenance of the system, penalties for breaches of the regulations, rules for the transfer of water rights, etc.

The Federal Government may create and organize irrigation districts with similar rules as those applicable to irrigation systems.

Power Generation

The NWL provides that the CNA will readily grant allotments of water to the Federal Electricity Commission (*Comisión Federal de Electricidad*) for the generation of electricity. The law also allows private individuals or companies to apply for concession for power generation in the cases allowed by the Federal Electricity Law (*Ley del Servicio Público de Energía Eléctrica*). However, no concession will be required for small-scale hydroelectric power generation.

Other Productive Activities

Water concessions may be granted for industrial activities, aquaculture, tourism or any other productive activities. The CNA is obligated to promote aquaculture in national waters and, in certain cases, no concession is required.

Concessions

As mentioned earlier, the Federal Constitution provides that the owner of the land may freely appropriate underground waters, unless the public interest or other users may be affected, in which case a concession is required. Consistent with the foregoing, the NWL contemplates that the extraction and use (*explotación, uso o aprovechamiento*) of underground waters in regulated and "off-limits" zones, by individuals or corporate entities, as well as national waters (i.e., rivers, reservoirs, lakes, etc.), may only be done through concessions granted by the Federal Executive Branch through the CNA. In the case of its exploitation by agencies or

decentralized organizations of the federal, state or municipal administrations, it is done through "allotments," which have the same requirements and treatment as concessions.

The concession application must include: (i) the name and address of the petitioner, (ii) the basin, region and locality to which the application refers, (iii) the specific point where the water will be sourced, (iv) required consumption volume, (v) initial use for the water, (vi) point of discharge including quantity and quality, (vii) proposed works to be built or installed or characteristics of existing installations for their extraction and use as well as for discharges, and (viii) term of the concession requested. The CNA has a term of 90 business days to grant the concession, as of the date of filing of the application and provided all the requisite information has been furnished. Once a concession or "assignment" is granted, the water may be used for an activity different from the one specified in the application, provided the "*consumptive use*" does not change. It merely requires a notice to the CNA for updating or revision of the permit and recordal in the Public Water Rights Registry. Otherwise, the prior approval by the CNA is required. The NWL defines "consumptive use" as the volume of water of a given quality consumed for a specific activity, determined as the volume of water extracted of a given quality minus the volume water discharged of a given quality.

The term of a concession or assignment is not less than 5 nor more than 50 years, which may be extended for the same term, provided the concession holder has not incurred in an infringement, which may result in the cancellation of the concession.

Concessions may be suspended in case of (i) failure to pay the applicable fees, (ii) failure to permit an inspection or measurement of the installations, and (iii) failure to comply with the terms and conditions of the concession. The suspension is lifted when the said breaches are cured.

Concessions terminate due to (i) expiration of the term, (ii) revocation due to (a) disposition of water in excess of the authorized volume, provided it has been previously suspended for the same breach, (b) failure to pay fees, provided it has been previously suspended for the same breach, (c) failure to build the installations for the use and quality control of water specified in the law and its regulations; (d) transferring water rights infringing the law, or (e) breach of the law, provided it has been previously suspended for the same breach and a penalty imposed; (iii) lapse due to failure to use the concession during 3 consecutive years; (iv) "recovery" of the concession due to public interest, with the payment of an indemnification to be determined by experts; or (v) court resolution.

An important innovation in the National Waters Law was the creation of the Public Water Rights Registry, which grants legal certainty to the concession holder and particularly in the case of transfer of water rights. The following documents must be recorded in the Registry: (i) concession titles, (ii) discharge permits, (iii) extensions, suspensions and termination of concessions and permits, (iv) contracts related to the whole or partial transfer of water rights, and (v) certificates issued by the Commission.

Concessions or "allotments" can be transferred and assigned, thereby opening the possibility of creating a "water rights market." A concession and the rights and obligations thereunder may be transferred without prior governmental authorization if the characteristics of the concession are not altered, requiring only filing of a notice with the Public Water Rights Registry. However, if third party rights,

hydrological or environmental conditions of the basins, or aquifers may be affected, the prior approval by the National Water Commission is required.

Regulated, "Off-Limits" and Reserve Zones

The Federal Executive may determine that certain areas, regions or zones are regulated, off-limits (*zonas de veda*) or reserves in order to (i) prevent or remedy the overexploitation of an aquifer, (ii) protect or restore an ecosystem, (iii) preserve potable water sources or protect them from pollution, (iv) preserve and control the quality of water, or (v) extraordinary water shortage or drought.

When a zone is "regulated" the Federal Executive will predetermine maximum extraction and discharge volumes, which may be authorized in a concession, as well as any additional conditions as, may be deemed necessary. This also applies in the case of extraordinary shortage or drought or over exploitation. These areas are determined in Executive Decrees. "Off-limits" zones are also determined by Executive Decree, which must include the declaration that the creation is of "public interest," the characteristics of the "off-limits" declaration, the conditions under which the Commission may impose permanent or temporary conditions for the extraction or discharge of water, through NOM's; the maximum extraction volumes allowed and the duration of the "off-limits" declaration. The net effect is that no new wells may be drilled, unless a previously authorized well is permanently closed and a new one drilled in lieu thereof. This also applies in the case of transfer of water rights. Reserve zones are those in which limits on the use of water are established.

A substantial portion of the national territory has been declared "off-limits" which includes all of central Mexico and a good number of municipalities in the States neighboring the central region. Likewise a good portion of the area covered by the northern States, even though –for example- only half of the State of Coahuila is "off-limits."

Prevention and Control of Pollution

Because of the heavy pollution levels of Mexico's water supplies and an ever-growing concern for the environment, an important part of the NWL is Title Seven, which refers to the prevention and control of pollution. The NWL provides that the CNA will determine mandatory parameters for wastewater discharges, absorption and dilution capacity of national water bodies and the load of pollutants that they may receive, through National Water Bodies Classification Declarations, which must contain the above-mentioned parameters.

Individuals and corporations require a CNA permit to discharge wastewater, whether it is continuous, intermittent or fortuitous, in national waters or other national property, including the sea, or when the wastewater can or will infiltrate national lands or other lands if the underground or aquifers are exposed to pollution. In certain limited cases the CNA may require only a simple notice in specific basins, aquifers, areas or localities. The discharge of wastewater to sewer systems in urban centers is the responsibility of the municipalities.

A wastewater discharge permit application must be resolved by the CNA within 60 business days, and if it does not grant the permit within such period, the applicant may start discharging wastewater. When the CNA grants the permit, it may impose

specific discharge conditions, different from those set forth in the application. The discharge permit must specify the location and description of the discharge in terms of volume and quality and the safeguard measures that must be adopted to prevent and control pollution, as well as the duration of the permit. The permits must have at least the same duration as the concession for the extraction of national waters. The infiltration of wastewater to recharge aquifers must comply with the applicable NOM's.

The National Water Commission

Before we review briefly the role of the National Water Commission, we should review first the regulatory agencies that have been entrusted with responsibility and authority over water matters. With the enactment of the 1926 Irrigation Law, the National Water Commission was created. In 1946 the Ministry of Hydraulic Resources was created. Under its jurisdiction, river basin commissions were created with the purpose of institutionalizing the expectations of regional growth and ambitious hydraulic projects were initiated, particularly in Northwestern Mexico. In 1975 the first National Waters Plan was promulgated. In 1976 the Ministry of Agriculture and the Ministry of Hydraulic Resources were merged into the Ministry of Agriculture and Hydraulic Resources responsible of the comprehensive attention of the productive rural sector, while the urban water supply responsibility was entrusted to the Ministry of Human Settlements and Public Works, subsequently decentralized to each municipality. The Ministry of Agriculture and Hydraulic Resources was also responsible of conducting the national hydraulic planning and the construction of great water works (dams and reservoirs) in order to provide water in block to population centers, with the assistance of the National Waters Plan's Commission, later transformed into the Mexican Water Technology Institute. In 1989 the National Waters Commission was created as an "unconcentrated" agency of the above mentioned ministry, and was assigned all the ministry's responsibilities on water matters. When the now called Ministry of the Environment and Natural Resources was created, the National Waters Commission (*SEMARNAT*) was re-assigned to it, and currently is under its jurisdiction.

The CNA is responsible for the management of the water resources in order to ensure that its extraction, distribution, use and conservation are done efficiently and fairly. One of its main roles is regulatory and has the responsibility for the application of the Law, including granting of concessions and allotments, amendments thereto, authorizing transfers of concessions (when required); granting discharge permits, surveillance of compliance with concession and discharge conditions, etc. Its activities are focused on the supply of water in terms of quantity, quality and continuity for the various users, based on the premise of its efficient use and taking into consideration that its supply contributes to the welfare of the population, it is a factor for the economic development of the various regions of Mexico and that the sources of supply for the future are preserved. Consistent with the above, the CNA has adopted the following strategies: (i) improving the use of hydraulic resources and infrastructure, (ii) managing water supplies efficiently, and (iii) modernizing the organizational structure of the sector.

National Official Standards (NOM's)

The Federal Metrology and Standards Law (*Ley Federal de Metrología y Normalización*), published in the *Diario Oficial* on July 1, 1992, regulate NOM's. This law defines NOM's as obligatory general rules issued, in accordance with the law, by a competent governmental agency for the purposes set forth in Article 40 of said law, which include environmental, commerce, health, safety and hygiene, labor, communications, transportation, etc.

In light of the foregoing, NOM's regarding national waters may be defined as "general rules issued by SEMARNAT or the CNA, regarding conservation, safety and quality in the exploitation, use and management of national waters."

Although some members of the legal community in Mexico believe that most NOM's are unconstitutional, because NOM's are tantamount to regulations and, under Article 89 of Mexico's Federal Constitution, regulatory powers are vested solely and exclusively in the President of Mexico; consequently, NOM's enacted by a Ministry and not by the President go beyond the constitutional authority of the ministries. However, as far as I know, this position has not been tested in Mexico's Federal Court system.

Currently there are in effect 3 environmental NOM's, 9 NOM's are related to safety and hygiene, operational requirements, water connections and metering, and 1 NOM is related to health. These NOM's refer to limits in pollutants contained in wastewater discharged in national waters or municipal sewer systems, or in treated water used in public services; to characteristics of municipal sewer systems, water connections and metering in homes, requirements in the drilling, maintenance, rehabilitation and closure of wells, to prevent pollution of aquifers; characteristics of septic tanks to prevent pollution of the soil and aquifers, construction and operation of water tanks; sanitary requirements for the supply of water for human use and consumption, sampling procedures to test water for human use.

The infringement of NOM's can result in penalties (fines), suspension of concessions or permits and cancellation of concessions or permits.

Federal Fees' Law (Ley Federal de Derechos)

The Federal Fees' Law was originally published in the *Diario Oficial* on December 31, 1981; however, it has suffered numerous amendments and revisions and each year, when Congress enacts the Federal Revenues Law (*Ley de Ingresos de la Federación*), most of the applicable rates payable are changed. The basic principle is that fees are payable in consideration for the use of goods, property or assets subject to public domain and for services rendered the government or agencies thereof. Fees are automatically updated semiannually based on an index published by the Treasury Ministry (*Secretaría de Hacienda y Crédito Público*) determined by inflation.

In the case of water, fees are payable for the granting of concessions and allotments, amendments thereto, recordal in the Public Water Registry; however, the most important fees payable apply to the extraction and use of national waters and the discharge of wastewaters.

The rates applicable for the use of national waters depend on the user. Concession holders pay a fee, which varies according to the "water availability zone," per cubic meter of water extracted; however, water allotted to States and

Municipalities, agencies thereof or under concession, for the rendering of water distribution or sewer services, pay a fee per 1,000 cubic meters, which is substantially lower than the fee payable by a private concession holder. The law considers nine water availability zones, which are determined in studies conducted by CNA and published in the *Diario Oficial* and are based on the scarcity or abundance and quality of water and, therefore, take into consideration the geographical location of the municipalities included therein and their characteristics, e.g., deserts, arid and semi-arid areas, wetlands, basins, river flows, etc.

There are some exceptions, to wit: (i) national waters used for domestic needs and watering by persons engaged in farming or husbandry activities, provided they are not diverted from their natural course, (ii) use of wastewater, when the consumption of fresh water is reduced in the same proportion, or obtained from municipal or industrial wastewater collection systems, (iii) water flowing from mines, to the extent not used in the treatment and milling of ores; (iv) national waters used for agriculture, (v) national waters used by educational institutions (except sports fields), (vi) water returned to its original source, provided the concession holder has a "quality of water certificate" issued by the CNA (this certificate is valid for one year only); (vii) use of brackish water, i.e., water which has more than 2,500 milligrams of dissolved solids, duly certified by CNA, (viii) use of water by rural communities with a population of not more than 2,500 persons; and (ix) use by non-profit public or private entities devoted to medical attention or free schooling to rural communities with not more than 2,500 inhabitants.

As a fiscal mechanism to reduce the pollution of aquifers, rivers, lakes, reservoirs, the Federal Fees Law also contemplates the payment of fees for the discharge of wastewater or residual water. The fees vary and are determined by a complex formula, which considers (a) the type of receiving body and (b) the content of pollutants in the wastewater. For this purpose the law classifies the receiving body by Type A, Type B, or Type C. The list of receiving bodies in each type is very lengthy.

No discharge fees are payable in the following cases (i) when the discharge complies with the parameters specified in the "particular discharge conditions" (*condiciones particulares de descarga* also known as CPD's) in the discharge permit, (ii) when the discharge complies with the permitted limits of pollutants, only if the CPD's were determined prior to January 7, 1997 (grandfather clause), (iii) when the discharge does not comply with the maximum limits set forth in the law or the CPD, if a program to comply therewith is submitted to CNA and approved by it, (iv) when the discharge is done to municipal sewer systems, (v) when the wastewater or residual water discharges has not been degraded and (vi) wastewater from agricultural irrigation.

CONCLUSIONS

The conclusions from all of the foregoing are that: (i) water is going to be the precious commodity of the Twenty First Century in lieu of traditional precious commodities such as gold, silver and platinum, (ii) in light of the limited water supply, Mexico faces a difficult challenge to provide water to the population for all uses and applications, (iii) the regulatory framework for water in Mexico is quite complex, particularly the determination of applicable fees, (iv) the National Waters

Law must be amended to regulate the preferential rights of indigenous towns and communities, and (iv) there are numerous opportunities, business and otherwise, related to water issues.

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