

Water Legislation in the Andean Pact Countries

by

David Rainey Daines, J.D.

Associate Professor,
Utah State University
and

Dr. Gonzalo Falconi H.

Legal Advisor to the Ecuadorian
Water Resources Institute

This work was supported in part by funds from
the United States Agency for International
Development under research contract No. AID csd/2167.

Library of Congress Cataloging in Publication Data

Daines, David Rainey

Water legislation in the Andean pact countries.

Translation of Legislación de aguas en los países del Grupo Andino.

Contributions and suggestions received from participants to the Andean Pact Water Law Seminar (Seminario de Leyes de Agua del Pacto Andino) held in Quito, Ecuador, in Jan. 1974.

1. Water — Laws and legislation — South America. I. Falconi H., Gonzalo, joint author. II. Title.

Law 346'.8'04691 74-16405

ISBN 0-87421-068-4

Published Logan, Utah, February, 1974

ACKNOWLEDGMENTS

We gratefully acknowledge the contributions and suggestions we received from the participants to the Andean Pact Water Law Seminar held in Quito, Ecuador in January 1974. Those participants were: From Bolivia; Eng. Hernando Acha B., Chief of the Department of Applied Geology of the Bolivian Geological Service; Eng. Mario Canedo D., Director General of the National Meteorological Service; Eng. Marcial Macias, Chief of the Division of Soils, Irrigation and Engineering of the Ministry of Agriculture; From Chile; Eng. Jorge Ismael Herrera H., Director General of Waters; and Dr. Gabriel Munoz G., Chief of the Legal Department, General Water Bureau; From Colombia; Eng. Rafael Barros L., Chief of Engineering and Water Use Division of INDERENA; Dr. Jesus A. Castano M., Chief of the Legal Section of CVC; Dr. Marv Galvis de Melendro, Assistant Manager of the Legal Department of INCORA; From Peru the following representatives from the General Water Bureau; Dr. Guillermo Arauco C., Legal Advisor; Eng. Julio Guerra T., Director of Irrigation Districts; Eng. Ruben E. Parra M., Program and Budget Director; and Eng. Raul Valles E., Associate Director; numerous participants from Ecuador; and Eng. Augustin Merea, Coordinator of the Irrigation Program of IICA.

We also acknowledge the direct support in this research effort provided by the Agency for International Development under research contract No. AIDcsd/2167, Utah State University, the Ecuadorian Water Resources Institute, USAID/Ecuador and the USAID Missions in all the Andean Pact countries.

The views expressed in this book do not necessarily reflect the opinions of any of the above named persons or institutions.

PREFACE

This work contains a summary statement of the laws and regulations relating to water rights and administration of those countries comprising the Andean Pact including Bolivia, Chile, Colombia, Ecuador and Peru. Venezuela, even though presently a member of the pact, was excluded due to its entry into the pact after the project materials had been collected. We recognize that in an attempt to establish some common basis for a summary and comparative treatment of legal and institutional principles we have in some cases sacrificed precise local significance.

The general scope of the subject matter as treated, relates to laws governing internal waters only and, therefore, does not include laws or treaties regulating the use of maritime waters, international lakes or rivers. Also excluded from consideration are customary practices related to water use, even though such factors may be important in determining actual water use practices. Regulations of municipalities or communities governing the use of culinary water by their inhabitants are not covered.

The general format is intended to provide a consistent framework within which legal and regulatory principles of these countries can be viewed in summary form under the same subject headings. The Table of Contents should assist in locating materials related to the same topic for each country and in the comparative section.

This study should be useful to national government officials, concerned governments officials, lawyers, legislators, engineers, administrators and economists. It should also find wide use among consulting firms, international lending institutions, foreign assistance organizations, researchers, educators and agricultural water users.

GENERAL TABLE OF CONTENTS

Title Numbers	Titles and Subtitles	Page Numbers					Comparative
		Bolivia	Chile	Colombia	Ecuador	Peru	
		(1)	(2)	(3)	(4)	(5)	(6)
()-1-0	INTRODUCTION	1	44	87	121	153	192
()-1-1	References and Key to Abbreviations	1	44	88	121	153	192
()-1-2	Geography	2	45	89	122	154	192
()-1-3	Climate	3	45	89	122	155	193
()-1-4	Population	3	46	89	123	155	193
()-1-5	Irrigation	3	46	89	123	155	194
()-2-0	LEGISLATION	3	46	89	123	155	194
()-2-1	Legislation in Force	3	46	89	123	155	194
()-2-2	Process for Legislative Change	4	46	90	123	156	195
()-3-0	ORGANIZATION FOR WATER ADMINISTRATION	4	46	90	123	156	195
()-3-1	General	4	46	90	123	156	
()-3-2	User Organizations	7	49	94	125	159	199
()-3-3	Registeries	8	52	95	127	161	203
()-4-0	OWNERSHIP AND CONTROL	8	53	95	128	161	203
()-4-1	State Ownership	8	53	95	128	161	203
()-4-2	Private Ownership	9	53	96	128	161	206
()-4-3	Ownership and Control of Riverbeds, etc	9	53	96	129	162	207
()-4-4	Control of Structures in Riverbeds, etc	10	55	97	130	162	210
()-5-0	RIGHT TO USE WATER	13	55	97	130	164	211
()-5-1	Uses Without Formality	13	55	98	131	164	212
()-5-2	Procedure for Obtaining a Use Right	15	57	99	131	164	214
()-5-3	Procedural Protection of Rights	18	62	106	133	169	220
()-5-4	Rights Under Prior Laws	19	65	107	137	169	223
()-5-5	Limitations and Obligations of Users	20	65	107	137	169	224
()-5-6	Loss of Rights	22	67	108	138	171	227

Title Numbers	Titles and Subtitles	Page Numbers					
		Bolivia	Chile	Colombia	Ecuador	Peru	Comparative
		(1)	(2)	(3)	(4)	(5)	(6)
()-6-0	OBLIGATORY WATER USE	23	63	110	139	172	230
()-7-0	PRIORITIES BETWEEN USE RIGHTS	23	69	110	139	172	231
()-7-1	Order of Priorities	23	69	110	139	172	231
()-7-2	How Priorities Operate	25	70	110	140	174	233
()-8-0	RIGHTS-OF-WAY RELATED TO WATER USE	25	70	111	140	175	233
()-8-1	Voluntary and Natural Rights of Way		70	111	141	175	233
()-8-2	Forcefully Imposed Rights of Way		72	112	141	176	235
()-8-3	Termination of Rights of Way	33	77	115	144	178	241
()-9-0	HARMFUL EFFECTS	34	78	116	144	179	242
()-9-1	Flood Erosion: Control and Conservation	34	78	116	144	179	242
()-9-2	Drainage	35	78	116	145	179	243
()-9-3	Contamination	35	78	116	145	179	244
()-9-4	Others						
()-10-0	FINANCING WORKS AND ADMINISTRATION	36	79	116	146	182	245
()-11-0	LEGISLATION ON USES OTHER THAN IRRIGATION	37	81	117	148	183	247
()-11-1	Domestic	37	81	117	148	183	247
()-11-2	Motive Power, Industrial and Electrical Generation	37	81	118	148	183	248
()-11-3	Transportation	38	82	118	148	184	249
()-11-4	Medicinal and Thermal	38	82	119	149	184	250
()-11-5	Mining	39	82	119	149	186	250
()-11-6	Others	39		119		186	251
()-12-0	SUBTERRANEAN WATERS	39	82	119	150	187	252
()-13-0	PENALTIES AND SANCTIONS	42	85	119	151	190	256

BOLIVIA

1-1-0 INTRODUCTION

1-1-1 *References and Key to Abbreviations*

A. *References*

The references in this section follow the subject matter to which they refer, and are in boldface parenthesis. These references are alphabetical and numerical symbols such as (CC 101). The letters refer to the law, code or regulation and the numbers refer to the article or section number. The key is as follows with the official Spanish citation following the English but in parenthesis:

(CC) = Civil Code (Codigo Civil de Octubre 25 de 1830).

(CM) = Mining Code (Codigo Civil de Minería de 1925).

(DH) = Decree Creating National Hydraulics Bureau (Decreto Ley No. 07388 of Noviembre 15, 1965).

(DN) = Decree Controlling Navigation (Decreto Supremo No. 08424 de 17 de Julio de 1968).

(DP) = Decree Creating SEMAPA (Decreto Supremo 08048 de 12 de Julio de 1967).

(LA) = Water Law 1879 (Decreto de 8 de Septiembre de 1879 elevado al rango de Ley en 28 de Noviembre de 1966).

(LC) = Law for Cochabamba Irrigation System (Ley de 9 de Enero de 1945 y Decreto Reglamentario No. 01264).

2 *References and Key Abbreviations*

- (AR) = Agrarian Reform Law 1953 (Decreto Ley No. 03464 de 2 de Agosto de 1953. Elevado al rango de ley por la de 29 de Octubre de 1906).
- (RC) = Regulation of the Cochabamba Irrigation System (Decreto Supremo No. 01264 8 de Julio 1948).
- (IR) = Irrigation Water Regulation 1967 (Reglamento de Aguas Para Irrigacion, Ministerio de Agricultura 1967).

B. *Abbreviations*

1. "Bureau" = Water and Electrification Bureau of the Ministry of Public Works, Communications and Transportation (see 1-3-1-C-1).
2. "Irrigation Division" = The Irrigation Division of the Ministry of Agriculture and Peasant Affairs (see 1-3-ID).

1-1-2 *Geography*

Bolivia is located near the center of the South American continent and is bordered by Peru on the north; Chile, on the south; Brazil, on the northeast; and Paraguay and Argentina, on the south. Bolivia is the only land locked country of the Andean Pact group. The land area is 424,163 square miles [1,098,582 square kilometers] and is divided into the high western plateau or Altiplano, the Yungas or mountain valley region and the tropical lowlands.

The Altiplano stretches for about 400 miles [640 kilometers] through western Bolivia and has an average width of approximately 90 miles [144 kilometers]. It is a flat plateau about 12,500 feet [3,811 meters] above sea level, contains Lake Titicaca, the highest navigable lake in the world and mountain peaks rising to 21,620 feet.

The Yungas, or mountain valley region, is located along the eastern slope of the Andes range. Thick forests characterize this frequently moist area.

The tropical lowlands represent about seven-tenths of the total land area. The area is moist and tropical in the north and becomes progressively drier as it stretches to the south and east. The northern portion is part of the Amazon drainage system, and the southern section is drained by the Pilcomayo River, a tributary of the Paraguay River.

1-1-3 *Climate*

In the Altiplano or plateau region, the rainfall occurs mainly during the summer months of December, January and February and varies from 15 to 28 inches [380 to 710 millimeters] per year. The temperature averages 45° F. [7° C.] and there are many permanently snowcapped peaks in this area.

In the upper Yungas or valley region, the average temperatures range between 50-55° F. [10-12 C.] and there is an annual rainfall of 25 inches [635 millimeters]. The lower areas average between 60-70° F. [15-21 C.] and measure an average rainfall of 35 inches [889 millimeters].

The tropical lowland temperatures average from 73° F. [12 C.] in the south to 80° F. [16 C.] in the north. Heavy rainfall averaging about 70 inches [1778 millimeters] per year falls between November and March in the northern lowlands with practically no rainfall the remainder of the year. The central lowlands rainfall averages 55 inches [1397 millimeters] per year and in the extreme south and east, 20 inches [508 millimeters] per year. Droughts, however, often occur from July to November.

1-1-4 *Population*

The present population of Bolivia is estimated to be 4,500,000. There are three population centers of over 100,000: LaPaz, the actual capital located on the Altiplano has over 450,000; Cochabamba, in the valley region, with over 100,000; and Santa Cruz, in the lowlands has over 125,000 population. The greater portion of the population, however, is rural and heavily concentrated in the Altiplano and high valley regions.

1-1-5 *Irrigation*

An estimated 1,798,160 acres [728,000 hectares] are under cultivation in Bolivia. Approximately 98,000 acres [40,000 hectares] of that area are irrigated.

The irrigated portion represents 5.5 percent of the cultivated land.

1-2-0 **LEGISLATION**1-2-1 *Legislation in Force*

There is a presidential commission functioning at the present time whose purpose is the drafting of new legislation with respect to waters and their administration.

The Water Law of 1879, in its original form, represented a rather complete regimen for the ownership, use distribution,

4 *Legislation in Force*

and administration of water. A substantial portion of this law is still in effect but has been amended or repealed in some significant aspects by later enactments. The enactments which most notably affected the original water law are the Constitution, which changed the concept of ownership; the Agrarian Reform Law, which legalized certain customary practices; and the Irrigation Regulations, which established a modified system for more important aspects of rights concessions, rights-of-way and subterranean water use for the limited purposes of irrigation. There are a number of other minor laws and regulations pertaining to special uses and changes in the administrative structure of the government for water administration. A law relating to the National Irrigation System at Cochabamba established a complete and distinct set of rules and regulations pertaining to water use and administration within the system.

1-2-2 *Process for Legislative Changes*

As stated in 1-3-1, the President of the Republic, in accordance with present law, has the power to change, modify, or abolish existing laws and regulations related to water administration and may delegate regulation making power to ministries or other government entities.

1-3-0 ORGANIZATION FOR WATER ADMINISTRATION

1-3-1 *General*

A. *Presidential Authority*

The President, under existing law, has the power to change, modify, or abolish existing laws and regulations related to water use and administration and thus is the ultimate authority in establishing water use policies within the country.

B. *Inter-Ministerial Technical-Legal Commission*

In 1969, a Technical-Legal Commission was established. The Commission was directed to study, revise and prepare a proposal for a General Water Law and its respective regulations. These proposals were to be drafted initially by the Ministry of Public Works. The other members of the Commission are representatives of: The Ministry of Foreign Relations and Culture; the Ministry of Agriculture and Campesino Affairs; The Ministry of National Defense; the Ministry of Coordination and Planning; and The National Agrarian Reform Council. The Commission is to have semi-annual meetings (*Supreme Resolution of November 8, 1969, 1*).

C. Ministry of Public Works, Communication and Transportation

The responsibilities of this Ministry related to water administration are vested in its Water and Electrification Bureau. The Bureau is under the Sub-Secretariat of Public Works but other sub-agencies of the Ministry also have water-related functions.

1. *Water and Electrification Bureau:* The divisions of this Bureau have the following responsibilities:

a. *The Water Division:* 1) presents projects for supply of potable water in the country; 2) plans hydroelectric plants for electrical supply; 3) coordinates execution of navigation plans with the National Bureau of Navigation; 4) maintains statistics for exploration of navigable rivers; 5) pays for works for the improvement of riverbeds and river regulation; 6) determines maximum weights for boats on navigable rivers; 7) on request of authorities, studies, constructs and administers defensive works in rivers; 8) controls entities dedicated to water programs; 9) regulates development of water resources dedicated to potable water supply; 10) resolves petitions for concessions and permits for the use of water except for irrigation; 11) installs and maintains measuring stations in the most important rivers.

b. *Division of Electrification:* 1) plans construction and renovation of electrical plants; 2) supervises and collaborates with local entities in the operation and maintenance of plants.

c. *Division of Works:* 1) constructs and renovates potable water and sewage systems through agreements with local authorities; 2) improves works of defense and control in navigable rivers; 3) executes works to improve riverbeds and for the control of and defense against rivers; 4) constructs electrical plants and works for local entities under agreements.

2. *The National Hydrological and Meteorological Service:* The service is nominally attached to the Ministry and collects and makes available data of the type suggested by its name. (Law of August 20, 1938; Law 08286 of March 6, 1968; Law 07388 of November 15, 1965).

D. Ministry of Agriculture and Campesino Affairs

1. *"Irrigation Division" of the Ministry of Agriculture:* [hereafter referred to as the "Irrigation Division"]. The "Irrigation Division" is vested with the responsibility of: 1) central-

izing irrigation activities of the country; 2) planning, designing and studying irrigation projects of small, medium and large size in the preliminary and final stages; 3) providing technical assistance to communities and cooperatives for the planning of projects of water use right concessions for irrigation and construction of works [for other responsibilities related to granting of water use right concessions for irrigation and control of irrigation works see other sections of this work, primarily 1-5-2-7A, 1-4-4-A (*Law of December 1, 1941 and IR*)].

2. *National Irrigation System No. 1* la Angostura: This is controlled by a special law which established the system. The system is administered by a General Manager whose office is a dependency of the "Irrigation Division" (LC 4). All aspects of the irrigation system including operation, maintenance, rights and obligations of users in the system, financing and general control are specified in the law and its regulations and come under the direction of the General Manager (LC, RC). Many laws and regulations of the system are referred to under other appropriate titles.

F. Ministry of Mines and Petroleum

Under the original Mining Code, the departmental representative of the Ministry had authority to grant mining use rights to public waters (CM 121). This is an apparent conflict with the law establishing the Water Bureau in the Ministry of Public Works. The law gave jurisdiction over water use concessions to that Bureau for all uses except irrigation and electrical generation (DH 6e).

F. National Bureau of Coordination and Planning

This Ministry level organization has a section responsible for planning and coordination between all ministries on matters related to natural resources including water.

G. Ministry of Public Health

This Ministry has a section responsible for studying health factors related to water and formulating programs for improvement of the potable water supply.

H. Other Local Organizations

Some other organizations are engaged in water works development and administration including cities, municipalities, campesino cooperatives, SEMAPA (see 1-11-1), a potable water supply entity for the Department of Cochabamba and the Bolivian Development Corporation.

1-3-2 *Users Organizations*

Irrigation users elect Water User Boards. The boards are the basic water distribution agencies (IR 33, 34). These organizations are designed to administer and enforce stream regulations adopted by the "Irrigation Division" as explained in 1-5-2-A-6 (IR 33).

The members of the Water Users Boards are elected by users within the area as recognized by the "Irrigation Division," or by representatives of these users in a General Assembly (IR 34).

The number of board members is unspecified but is determined in accordance with the number of users in the zone, the importance of the various related water uses and the extent of the stream or water deposit that is to be regulated. If the number of water use rights is limited, one person may assume the function of the board when justified in the opinion of the "Irrigation Division" (IR 36). These boards must be formally recognized by the "Irrigation Division" before they are legally constituted (IR 37).

The Boards function as representatives of the "Irrigation Division" and have the following attributes and obligations:

1. Regulate the distribution of the waters in accordance with the disposition contained in the stream regulation;
2. Control and police the stream and carry out the conservation and repair of the constructed works;
3. Formulate and submit for the consideration of the users, the budget of income and expenses for the application of the stream regulation and for the maintenance and conservation of the hydraulic works;
4. Collect and manage the funds that the users must contribute for the distribution of water and conservation of the works;
5. Call meetings of the users as necessary for the election of a new User Board,
6. Issue reports at the request of the "Irrigation Division" or their inspectors or employees;
7. Enforce compliance with the detailed conditions of the stream regulations (IR 38).

In addition to the foregoing responsibilities, the Boards are vested with jurisdiction over conflicts involving questions of fact between users as more specifically detailed in 1-5-3-A.

8 *Users Organizations*

The internal distribution of water and the manner of its execution is ordered by the User Boards but must be approved by the "Irrigation Division" before it has any binding effect (IR 28).

In order to finance the conservation of irrigation works, the Boards have authority to assess and collect required costs from the users. The costs are determined in proportion to the volume of water that each uses (IR 57).

Within the National Irrigation System at Cochabamba there exists a *General Water User Association* which plans the conservation work within the system (RC 13) and makes observations related to the budget (RC 38).

1-3-3 *Registries*

The "Irrigation Division" maintains a registry of authorizations and concessions granted for irrigation water uses for the purpose of evaluating the hydraulic resources and maintaining an inventory of irrigated surface in the country (IR 20).

Though other registries of water use rights are not specifically provided for by law, the administrative agencies granting the concessions maintain a registry of such rights and concessions.

1-4-0 OWNERSHIP AND CONTROL

Bolivian law clearly defines the ownership of waters in their most significant forms. However, the law is silent on the subject of ownership of some forms of water such as those from snows and glaciers.

1-4-1 *State Ownership*

The Bolivian Constitution provides that flowing, thermal, lake waters and their elements and physical force of waters that are susceptible to use are *original property of the state*. The conditions of its ownership, concession and use by third parties are established in the law (*Political Constitution 1961, Art. 138*).

The civil code provides that the large and small rivers that are navigable and floatable are *public property* (RI 1, CC 284). Other specific classes of water expressly declared to the public property are; rain waters that flow in torrents or in dry beds which are public property (LA 2); waters which raise continuously or discontinuously on public lands, waters of navigable rivers or streams, waters of non-navigable streams which are for culinary use (LA 4), waters which raise on

property owned by the government while they flow on such property, waste waters that leave property unused and thereafter pass through naturally formed public streams (LA 5), and the waters of naturally formed lakes and lagoons located on public lands (LA 19).

1-4-2 *Private Ownership*

The constitutional principle of "original property of the state" does not preclude individual private ownership of water. The following classes of water are declared to be private property: a) rain water that falls on or is collected on private property belongs to the owner of that property and he may use, conserve and store it provided third parties are not injured thereby (LA 1), b) waters that raise on private property are the property of the land owner while the water runs on his property (LA 5), c) waters which flow through private property after having flowed in public streams acquire the characteristics of private water for purposes of contingent use, d) waters which raise in private property and flow to another property become the property of the latter and each successive lower property owner on a contingent basis as the water flows through his property, e) waters which have served contingent uses may thereafter be acquired by the process of prescription by adverse use for a period of 30 years (LA 5, CC 1512, 1516) (These contingent uses may not interrupt rights earlier acquired by lower users), f) waters used in public works are the property of the municipality, g) waters which raise in higher land and flow through a series of lower properties may be acquired by the user in the order of their location by adverse use for a period of one year (LA 16), h) mineral-medicinal waters belong to the owner of the land where they raise subject to sanitary regulations (LA 18), i) subterranean waters belong to the owner of the land where they are raised either naturally or artificially (LA 20).

1-4-3 *Ownership and Control of Riverbeds, etc.*

A river or lake bed is defined as the land covered by waters at the ordinary high water mark (LA 47).

A. *State Ownership:* The following beds are property of the state: 1) the beds of all streams flowing through public lands (LA 44, 49), 2) the beds of all rivers which are navigable or floatable in all or part of their course (LA 50), 3) the beds of lakes or lagoons located on public lands or to which title is

expressly vested in the government (LA 55), 4) the concept of public ownership of the beds of rivers is also directly related to public rights-of-way on the banks of certain rivers as more particularly described in 1-8-1-A-2.

B. *Private Ownership*: For the purpose of defining property rights, "beds of streams or lakes" are defined as land that is covered by water during the ordinary high flow period in the natural water ways and such beds belong to bordering private property owners in the following cases (LA 47, 54):

1. Natural beds of gorges and ravines that are only covered with water during ordinary rains and that flow through private property (LA 43, 44, 45);

2. Beds of all streams or rivers which flow through private property and are not navigable or floatable in all or part of their course (LA 48, 49, 50);

3. Beds of all lakes and lagoons to which the State does not have title (LA 55).

C. *Flooding and Abandoned Beds*

Lands covered by water as a result of flood conditions remain the property of the land owner (LA 57).

When riverbeds are abandoned as a result of a natural change in the course of a river, the abandoned area belongs to the owner of the neighboring riparian land. If the abandoned bed is the dividing line between two properties, a new boundary is drawn longitudinally along the abandoned channel equidistant from each former property line (LA 58).

D. *Newly Formed Channels*

A navigable or floatable river that naturally changes its direction and opens a new riverbed on private property, becomes the property of the State. The owner of such property may regain his title to the property should the new bed dry up through natural or artificial means (LA 59). The owner must obtain permission to construct artificial works to change the course (LA 60) and the property thereafter remaining dry reverts to his ownership (LA 61).

E. *Alluvion and Transported Land*

Alluvion or gradual deposits of earth adhering to the banks of a water course belong to the riparian land owner based on the extension of his boundaries from the original river bank to the new high water mark (CC 301, LA 62, 68).

If the action of a river causes the separation of a definable

piece of land from one riparian property and transports it to lower property, the former owner may maintain his ownership for the purpose of returning the soil to his property within the following year. Should he fail to do so, such soil becomes the property of the lower owner (CC 302, LA 63).

F. Islands

If land, which formed a part of riparian property, becomes an island in a river it continues indefinitely as part of that property. The same rule applies to the ownership of islands formed by the division of a river that later re-unites (CC 303, 304, LA 64, 65). When new islands, not formerly part of riparian property in non-navigable rivers, are formed in a river, then such islands belong to the riparians based on a longitudinal division of the riverbed (LA 66). Islands of this type which are formed in navigable and floatable rivers belong to the State (LA 67).

G. Ownership of Materials Carried by Waters

Animals, wood, fruit, furniture and industrial products carried away by waters may be claimed by the finder. The true owner must claim them within six months after the finder has posted and published a notice of the salvaged goods through a local authority. If the true owner reclaims the items, he must pay the salvage and publication costs (LA 69).

Rubbish and branches which float and are carried by water belong to the riparian property where they are deposited (LA 70).

Trees which are uprooted and carried by waters belong to the owner of the property where they come to rest unless the former owner reclaims them within one month and pays the costs of salvage (LA 71). Submerged objects belong to their original owner provided that he extracts them from the riverbed within one year from the submerging; otherwise they belong to whoever salvages them with the permission of the local authority. If such objects create a danger to third parties, the local authority may limit the time for removal to less than a year (LA 72).

1-4-4 Control of Structures in Riverbeds, etc.

A. General

It is the responsibility of the "Bureau" to approve all programs, plans and works affecting the regulation, correction, and defense of natural water courses flowing within the national

territory (DH 6b). The "Irrigation Division" controls structures in artificial channels used to service irrigation (see below).

B. Irrigation Users

Irrigation water users are obligated to construct necessary works to regulate water currents or deposits, to divert and distribute waters, and to improve the stability of water courses and structures in general. This is done for the purpose of achieving good management and improved water use (IR 45).

The following works may be constructed only after obtaining authorization from the "Irrigation Division:" 1) works which may affect the course or flow system of a stream or river; 2) works which may affect the level of a lake or other water deposit; 3) works of defense against water action when the works occupy part of a river, stream or lake bed (IR 46).

All water concessioners must present plans for construction of hydraulic works to the "Irrigation Division" and also specify the order in which they deem it convenient to construct such works (IR 47).

The "Irrigation Division" may change the proposed order of construction of the works and must fix the form and terms under which the concessioner must make periodic reports related to the construction progress (IR 48). "Irrigation Division" inspectors verify compliance with the authorizations and in case of non-compliance, they may fix a prudential period within which compliance must be made (IR 49).

Collection works, diversion works and dams may be constructed in the location where the technical and economic conditions are most favorable and third parties may not oppose such construction if it is previously authorized (IR 50).

C. Works for Protection from Water:

Riparian land owners have the following powers:

1. to cultivate the banks of rivers etc.
2. to construct protective walls in river beds with notice to the local authority provided that it does not injure navigation, flotation or diversion of the water from its natural course or flooding when such works are in the beds of navigable and floatable rivers they must be authorized by the national government and in other cases by the Municipality (LA 73 and 74).

Petitions for such construction must contain a plan. A hearing must be held with notice to all bordering property

owners and one engineer. The municipality grants or denies the petition. If the works are small the specifications are general and apply to all property owners in the area and are designed to avoid damages caused to neighbors and third parties (LA 76).

If the works are significant in size the municipality can obligate all benefited property owners to contribute to the costs if a majority of such owners concur as determined in a public meeting. The costs are allocated according to the proportionate benefits received by the riparian owners (LA 77, 78; DH 6b). A commission appointed in the public meeting divides the costs and supervises the works. Those who consider themselves prejudiced by the proceedings can appeal to the municipality (LA 79; DH 6b).

The Municipality, or auxiliary commission in case of flood emergencies, may construct temporary works or destroy existing works to prevent or contain flooding. Such authorities are obligated to pay indemnification for destroyed works plus 5% per annum interest (LA 80).

Works for the protection of communities or rural roads of a district are the responsibility of the Municipality; those for protecting navigable rivers, public establishments or larger roads are the responsibility of the National Government (LA 81). Riparian property owners must contribute to the cost of such works proportionately to the benefit received as determined by expert opinions (LA 82, 83; DH 6b).

1-5-0 RIGHT TO USE WATER

1-5-1 *Uses Without Formality*

A. *Springs*

Springs that seep from the back into the same property are for the *exclusive use* of the property. This right includes mineral-medicinal springs (IR 3, LA 18). The owner of land where a spring surfaces may use the waters without formality even though the waters do not seep back into his property (LA 5).

B. *Riparian Rights*

Waters of lakes and lagoons whose shores belong to one single property owner are for his *exclusive use* if the available water does not exceed the property owner's needs. If the quantity available is more than his needs, then surrounding property owners may be granted concessions to use the excess. This riparian use right includes uses for irrigation, domestic

and industrial purposes (IR 4, LA 9).

Waters of natural streams flowing through or forming boundaries of properties may be used by the riparian property owner, as needed for irrigation of his lands without concessions or authorizations (RA 153, IR 5).

Rain waters flowing in public roadways may be used by bordering property owners for irrigation of their lands (LA 222).

C. *Domestic Needs*

The following waters may be used by anyone for drinking, washing clothes, removal in receptacles, bathing and watering or bathing of cattle (subject to the regulations of the municipal police):

1. Waters that flow through natural public streambeds (see also 1-4-3-A for definition) (LA 164);
2. Waters that surface on public lands (LA 4, 164);
3. All non-navigable streams that have existing public access ways for facilitating domestic use (LA 4, 164);
4. Waters that flow in private artificial canals provided they are diverted in pipes and do not detain the waters or otherwise prejudice the owner of the primary right. This use may be limited by a competent authority (LA 165);
5. Cattle may not be bathed or watered in waters of publicly owned canals except at designated points (LA 166). This use right without formality does not apply within the National Irrigation System at Cochabamba (RC 21a).

D. *Prescriptive Rights*

A system of customary rights called *mitas* or turns in water use, were prevalent by the time the Agrarian Reform law of 1953 was adopted. This customary system of turns or rotation was given express legal recognition by that law (RA 152).

The regulations provide that these uses are expressly confirmed as rights and can be reduced to a formal title in formal proceedings, where the concessioner proves that he has been using the waters in accordance with his claimed right for a period of five years prior to the date of his petition (see also 1-5-2-A-5) (IR 21, 22).

E. *Mining Uses*

Miners have a right without formality to use the waters flowing freely through their properties but must return them to their customary course (CM 114). Miners also have a right

to use waters discovered on their properties during mining explorations without formality (CM 118).

1-5-2 *Procedure for Obtaining a Use Right*

Jurisdiction over the granting of formal water use rights is administratively divided according to the purpose for which the water is destined.

A. *Irrigation Use*

1. *General*: The right to use water for irrigation in circumstances other than those cases specified in 1-4-1 may be acquired through an *Authorization* which may later be converted into a more permanent right called a *Concession* (IR 6, 12).

2. *Procedure for Obtaining an Authorization*

a. *Petitions*: Petitions must be presented to and processed by the "Irrigation Division" (IR 7). Petitions for *authorizations* must contain a general description of what is requested, a plan for the works to be constructed, the dimensions of the intake, a sectional and longitudinal canal plan and any other information deemed necessary (IR 8).

b. *Review and Approval*: If the petition meets the above requirements, the "Irrigation Division" must study the case and then either refuses or grants the *authorization*. If the petition is approved, a *Provisional Authorization* is issued, specifying the obligations of the user and the causes for the revocation of the *authorization* (IR 9). Since the rights created by these *authorizations* are of an uncertain or *precarious* character, they may be revoked and are non-transferable (IR 6).

c. *Notice and Opposition*: The *Provisional Authorization* must be published in a newspaper published in the place of the water use. Opposition may be presented by prejudiced third parties at any time between the date of the *authorization* and one year after the use could have begun under the terms of the *authorization* (IR 10).

If opposition is presented, the "Irrigation Division" must analyze and study the grounds for the opposition and declare the opposition either well-founded or unfounded, and suspend or confirm the *authorization* accordingly (IR 11).

3. *Procedure for Obtaining a Concession*:

a. *Final Inspection*: The "Irrigation Division" on its own motion or on the petition of an interested party, will make a site inspection one year after the beginning of the authorized

water use. The purpose of this inspection is to determine the final conditions for the use and the modifications that must be incorporated into the irrigation works (IR 12).

b. *Petition for Concession:* Petitions for *concessions* to irrigation water use must be preceded by an authorization as explained above and must be presented to the "Irrigation Division." Such petitions must contain: 1) the name and nationality of the petitioner; 2) the name of the stream, spring or deposit where the water is located; 3) the class of water, that is whether it is from a temporary or permanent source and whether from a spring or stream; 4) location of the appropriation or diversion indicating the distance and direction from a known point of reference; 5) the quantity or volume of water to be used; 6) the area to be irrigated and its approximate relation to the water source; 7) the bordering properties and the principal crops to be grown; and 8) a plan of the works to be constructed (IR 13).

c. *Procedure:* The petition is processed and resolved according to the general administrative procedural norms and no notice is required.

4. *Classes and Characteristics of Authorizations and Concessions:*

Authorizations, as earlier noted, are of an uncertain or *precarious* character and may be revoked. The rights created by them are personal to the authorized individual (IR 6).

Authorizations and *concessions* are both limited in that no holder or no property may enjoy a greater allotment of water than is required for the normal development of crops (IR 14).

Permanent concessions grant a use right to only a portion of the dependable minimum quantity of a water source. The quantity must coincide with the crop cycle requirements (IR 6, 15).

Conditional or uncertain concessions can be granted for water in excess of the dependable minimum available in the source. Such concessions may be used only on temporary crops (IR 16) and are limited to fixed periods and conditional quantities (IR 6).

5. *Formal Confirmation or Prescriptive Rights:*

a. *General:* As indicated in 1-5-1-D, rights of prescription or adverse use are recognized. A prescriptive use right holder may, at his option, obtain a formal confirmation of

such right. The basic requirement is that the petitioner has been using the waters during the five years previous to the date of the petition for confirmation (IR 22).

b. *Petition, Inspection, and Witnesses:* The petition for confirmation must be presented to the "Irrigation Division" which designates a commissioner to inspect the place of use. The petitioner must present three witnesses before the commissioner to substantiate the following: 1) the period in which the petitioner commenced the use of the water; 2) the purpose to which the water was applied and an estimate of the quantity used; 3) the seasons of the year and the hours of the day in which the water was used; 4) whether or not the appropriation was peaceful, and if not, a description of the controversies that arose; 5) if such controversies were brought before administrative authorities or courts, the resolution that resulted; 6) any other information deemed essential by the commissioner to qualify the prescriptive right to the water (IR 23).

c. *Commissioner's Report and Confirmation:* After the foregoing requisites are complied with, the commissioner must present a report with recommendations to the "Irrigation Division" concerning whether or not the confirmation should be granted, the terms, necessary modifications, and reforms in the works so that use can be made with security and without prejudice or loss of water to third parties (IR 24).

The "Irrigation Division" must grant the respective confirmation if the report is favorable to the petitioner. In case there are conflicts, the confirmation is granted with limitations and a prudential period is given to the party to make necessary alterations. The petition is denied in the event the report is not favorable (IR 25).

d. *Characteristics of Confirmation:* Confirmation of prescriptive rights have the same validity as concessions as they relate to standards, reasons for modification, extinction or revocation (IR 26).

6. *Modification and Stream Regulations:* The "Irrigation Division" is vested with the authority to study existing water uses in streams, river basins, or other water deposits. The uses, appropriations and rights related to such uses may be modified in accordance with the law in order to improve the efficiency of water distributions. The "Irrigation Division" may make special regulations establishing priorities when the available

18 *Procedure for Obtaining a Use Right*

water in a source is reduced below a point necessary to satisfy the permanent rights to the source (IR 27).

7. *Obtaining Use Rights in National Irrigation System at Cochabamba:* In order to obtain a water use right within the above system, the following procedure must be followed by the user: 1) he must be registered in the list of users maintained by the System Manager made from the plans of the system; 2) he must have signed a contract for the payment of his share of the amortized costs of the system; 3) he must have a receipt for a copy of the regulations for the system; 4) he must be a member of the General Users Association that covers his area; 5) he must be free of debts to the Manager of the System and the Users association; 6) he must maintain his ditches in a good state of repair; 7) and he must have his lands prepared for irrigation. Thereafter, the water will be allocated to the user by the Manager of the System (RC 19).

B. *Non-Irrigation Uses*

The "Bureau" has the authority to hear and grant all petitions for permits, licenses and concessions for the use of water resources except for irrigation (DH 6). Therefore, all petitions for such uses must be made to the "Bureau," and be processed in accordance with the administrative procedures required by that agency.

C. *Mining Uses*

Miners may obtain a use right to public waters, that is, to navigable or floatable streams, rivers or waters that surface on public lands, by a petition to the Superintendent of Mines in the department where the mine is located. The petition must specify the property where it will be used and the quantity of water needed.

The Superintendent determines if the petitioner is the owner of the property and processes the petition under the same terms and conditions provided for in the hearing of mining claims (CM 121).

1-5-3 *Procedural Protection of Rights*

A. *Disputes Between Irrigation Users*

1. *Between Users Belonging to the Same Water Users Association:* Disputes arising between members of the same Water Users Association are heard and resolved in the first instance by the Board of Directors of the Association (IR 39). If such disputes however, are questions of law, then they are

resolved in the first instance by the "Irrigation Division" (IR 85) and are subject to judicial review by regular courts (LA 289).

In those cases where the Users Association's Board of Directors have jurisdiction, they are required to hold hearings, conduct a verbal type of proceeding and maintain minutes and documentation that may be used for appeal purposes (IR 41). If a party deems the resolution prejudicial or unjust, he may appeal to the Regional Representative of the "Irrigation Division" and the final appeal on such questions is to the "Irrigation Division" (IR 40).

2. *Disputes Between Irrigation Users Not Members of the Same Association:* Water disputes between irrigation users who are not members of the same association are handled in the first instance through the "Irrigation Division" (IR 85) and judicial review power is vested in the ordinary courts (LA 289).

B. *Other Disputes Related to Water Use and Not Between Irrigation Users*

Other water disputes not covered in A above are within the jurisdiction of the ordinary courts.

The courts review all administrative resolutions related to water use dealing with: 1) acquired rights granted by the same administrative authority; 2) a right-of-way imposed on private property; 3) questions concerning damages and prejudices related to rights-of-way or encumbrances and their indemnification (LA 289).

Basic jurisdiction is vested in the ordinary courts in the first instance over irrigation questions regarding: 1) the ownership and possession of public and private waters; 2) the ownership of beaches, beds of rivers, streams and lakes; 3) rights-of-way based on civil code rights; 4) fishing rights, (LA 290); 5) disputes between individuals related to preferences in water use (LA 291).

1-5-4 *Rights Under Prior Laws*

The Water Law of 1876 contained a provision that recognized rights and property in waters legitimately acquired before its adoption. This recognition also included acquired prescriptive use rights or ownership (LA 293).

Practices regarding the division of water use rights according to turns and rotation [*mitas*], in effect on the date of the enactment of the Agrarian Reform Law of 1953 and the enact-

ment of the Irrigation Regulation of 1967, were given the full force of legal recognition (RA 151, 152, IR 21).

1-5-5 *Limitations and Obligations of Users*

A. *General*

All water use rights are subject to the following general limitations: 1) water cannot be utilized without a concession if the use results in prejudice to third parties; 2) a greater quantity of water may not be removed from a source than is authorized; 3) a dam or diversion cannot be constructed without proper authority; 4) waters may not be permitted or caused to overflow or escape from works intended to contain them; 5) organic wastes, garbage, colorants or substances of any nature that contaminate water rendering them unusable for irrigation, or that damage lands may not be discharged into water sources; 6) costs of operation and maintenance as determined in the regulations must be paid (IR 42); 7) hydrometric stations must be installed and maintained at the direction of the "Irrigation Division" (IR 32); 8) navigation or the free passage of boats may not be obstructed (LA 11).

For limitations and restrictions on rights acquired in *authorizations, concessions and confirmations* see 1-5-2-A-5. For obligations related to construction of works in streambeds see 1-4-4 (IR 45).

B. *Users in the National Irrigation System, La Angostura at Cochabamba*

Users in this system are subject to the following limitations, obligations and restrictions: 1) they must construct canal bridges and install drains necessary for transit within their property (RC 9); 2) they are obligated to perform the necessary conservation or maintenance work on their portion of the system or pay the System Manager (RC 13); 3) they must pay the System Manager for damages caused to the works resulting from the user's imprudence, bad faith or negligence and are obligated to make repairs at request of the Manager or reimburse the Manager for making the repairs (RC 22).

A series of obligations and limitations exist relating to the delivery of water to the users within a system which provides: 1) that when water is requested, the ditch rider gives notice to the representative of his irrigation section fixing the time that the water will be diverted from the canal; 2) water goes

first to the most distant user and then is delivered in order back to the canal diversion; 3) the user is responsible for the delivery of water from the canal diversion to the place of use and for damages resulting from that use; 4) water is distributed 24 hours a day; 5) all delivery requests must be made through the section representative; 6) a user or his representative must be present when the diversion gate is opened and must apply the water to his land in the amount needed for irrigation (RC 29).

C. Limitations on Rate of Beneficial Use

1. *General:* Riparian use rights are limited in quantity to the amount of water necessary for the irrigation of the riparian crops (IR 4, 5). Uses which are evidenced by *authorizations, concessions or confirmations* are limited so that no property may enjoy a greater allotment of water than is necessary for the normal development of its crops (IR 14).

2. *In the National System at Cochabamba:* Within this system the users may not allow the loss or wasteful use of water in irrigation and must observe the water management instruction of the System Manager (RC 20).

The quantity of water available in the system is limited by the supply of water from the dam. The quantity necessary for beneficial crop irrigation is determined by the irrigation coefficient observed in practice and experimental studies.

Pursuant to this general principle the following specific measures are adopted: 1) that the water is supplied only during the irrigation season as approved by the System Manager and as determined from practical observations and experimental studies; 2) that the annual minimum quantity allotted is 1.67 feet per acre [5,000 cubic meters per hectare] and the maximum is 3.34 feet [10,000 cubic meters] for the same period; 3) that the minimum loss in delivery is 5.28 gallons [20 liters] per second per canal system and the maximum depends on the capacity of the canal or works (RC 23).

D. Limitations on Sale and Transfer of Rights

Sale or commercialization of water is prohibited. Excesses of water in one zone or any given property must be allowed to pass freely to zones or properties that are in need of water (RA 154).

When one property owner transfers property upon which water is used to another property, the former owner must also

22 *Limitations and Obligations of Users*

transfer a *permanent concession* for the benefit of that property. The "Irrigation Division" must be notified in advance of the sale of the property by the purchasers for the purpose of transferring water rights or dividing the concession, should parcels be sold (IR 19).

1-5-6 *Loss of Rights*

A. *Expiration*

Concessions expire due to: 1) the expiration of the period for which they are granted; 2) the termination of the object for which the use was granted; 3) a revocation by the "Irrigation Division" (IR 17).

B. *Revocation*

Water use concessions may be administratively revoked for the following reasons: 1) failure to use the water for a period of three consecutive years or failure to use the water for three out of five years; 2) water use for purposes other than those fixed in the concession and water use on property other than the property specified in the concession; 3) if the user has been found guilty on two occasions for having taken a volume of water greater than authorized in his title with prejudice to third parties (IR 18).

C. *Suspension*

The "Irrigation Division" may suspend a water use right either temporarily or permanently for any infraction committed against the regulations as specified in 1-13-0 and for failure of the user to pay assessments imposed in accordance with the law (IR 42, 43, 82).

D. *Prescription*

The status of the law regarding the loss of rights to use water because of the adverse or other prescriptive uses is not clear. The Agrarian Reform Law of 1956 gave legal recognition to customary practices in effect at the time of the Law's enactment. This recognition was effective regardless of how long a particular customary use had been practiced. All legal rights which had existed prior to the date of the law and were inconsistent with the customary practices were also abolished (RA. 152). This provision was implemented in more detail by an Irrigation Regulation adopted in 1967 which recognized customary rights in effect on the later date provided that they had been in effect for five years. This provision also seems to have abolished all previous legal rights which

were inconsistent with this type of adverse use or prescriptive use right (IR 21, 22, 27). As pertains to irrigation uses, these provisions seem to have overridden a series of older laws that established required periods of adverse irrigation water use ranging from 20 to 30 years (LA 39, 190, 191, 198, 225).

E. *Expropriation*

Any water use right may be expropriated for *public purposes* upon payment of compensation to the use right holder (LA 205).

1-6-0 OBLIGATORY WATER USE

Beneficiaries of irrigation works constructed with funds of the State are required to pay prorated shares of the costs amortized over a period not to exceed the useful life of the project. The assessment is determined on a per hectare basis (IR 78, 79).

In the Cochabamba System every owner whose property is within the benefited area is required to pay the sum of 200 Bolivianos annually until his proportionate share of the costs of construction is paid. Other assessments cover the maintenance and operation costs of the system (LC 5). All properties within the area benefited by the project and which are suited to irrigation are not technically compelled to irrigate, but must pay their portion of the amortized costs of the project and the maintenance and operation costs. There is not, however, any apparent effective means provided for enforcement except suspension of the water supply (RC 31, 32).

Connections to public domestic supplies may be required if it is determined that it is necessary for public health reasons (DP 35).

1-7-0 PRIORITIES BETWEEN USE RIGHTS

1-7-1 *Order of Priorities*

A. *General*

In the process of granting concessions for the use of public waters, the following order of priorities apply:

1. Community and domestic supply;
2. Supply for railroads;
3. Irrigation;
4. Navigation canals;
5. Mills and other factories, ferry boats and floating bridges;
6. Fish culture.

Within any one category preference is given to the use of greatest importance and utility and in equal circumstances preference is given to the petition for a concession which was filed first (LA 204).

When a water source is used to supply community and domestic needs, that source may not be conceded for any other use unless the quantity exceeds 13.2 gallons [50 liters] per day per person (LA 208).

B. In the National System at Cochabamba

It is provided that if the water in the supply dam is insufficient to provide for all of the needs within the system, then the Manager shall observe the following order of preferences:

1. Domestic uses, public service and the supply for transportation within the System;
2. Irrigation of farms that are not larger than 12.5 acres [5 hectares], irrigation of farms not larger than 25 acres [10 hectares], industrial and motor force generation when necessary to avoid serious prejudice to the social and economic community interest;
3. Farms no larger than 50 acres [20 hectares], farms no larger than 74 acres [30 hectares], industrial uses, other irrigation, and motor force generation (RC 27).

There is also a sub-preference within irrigation use for the irrigation of crops that are of greatest importance within the plan for agricultural development of the country (RC 28).

The preferred uses specified are also subject to the following additional limitations: 1) the petitioner must have receptacles to receive water for domestic services and if conditions are not hygienic the System Manager is required to suspend the supply; 2) public service users must pay for the water service; 3) industrial uses are subordinate to irrigation and must pay an assessment equal to the full value of the water when the water is rendered unsuitable for irrigation because of the industrial contamination. If the water is returned without loss and suitable for irrigation they tax only 10% of the volume utilized (RC 21).

C. Use Priorities in Times of Scarcity

When sources of water supply fall below normal levels, the "Irrigation Division" has authority to regulate the distribution of the water. Unauthorized uses which have existed for less

than five years must be terminated in preference to other irrigation uses (IR 27). When the quantity in a water source falls below a certain percentage of the minimum dependable supply, then the water supply for each user is reduced according to the percentage of supply reduction below the dependable minimum (IR 31).

For uses other than irrigation, the priority system is based on the first concession in point of time. Thus, as the supply reduces to scarcity levels, later concessions are the first to have their rights suspended in descending time order (LA 238).

1-7-2 *How Priorities Operate*

The priorities in 1-7-1-A operate only in the process of granting concessions and do not apply to the process of changing uses once concessions have been granted. Those priorities specified in B and C apply to dividing a given source of water when the outstanding use rights exceed the amount of water available in the source.

Once a water use right or water ownership is established by concession or otherwise, there are a variety of circumstances under which that water may be expropriated and applied to other uses as follows:

1. Every use of public water is subject to expropriation for reasons of *public utility*. This right of expropriation applies in favor of higher priority uses under Section 1-7-1-A but not in favor of lower priority uses unless special dispositions confer such a right. All such expropriations require the payment of indemnification (LA 41, 205).

2. Mineral-medicinal waters of private use may be expropriated by the government for public health purposes or for use in curing of diseases (LA 18).

3. Irrigation water may be expropriated to serve mining uses, upon payment of compensation which includes damages for rendering the water unusable for irrigation by contamination resulting from the mining use (CM 115).

1-8-0 RIGHTS-OF-WAY RELATED TO WATER USE

A right-of-way is the right one has in buildings or neighboring lands to utilize them for his benefit and are established for the benefit of buildings or rural lands (CC 372, 373).

They are defined as rural and classified as continuous and discontinuous, apparent and non-apparent; those that arise from their natural situation or location, those that arise by

operation of law and those created by agreement of the interested parties (CC 374 to 378).

1-8-1 *Natural and Voluntary Rights-of-Way*

A. *Natural Rights-of-Way*

Some rights-of-way arise because of the physical inter-relationship between the land and the water. Such rights-of-way are described as follows:

1. *Natural Drainage Right-of-Way*: Lower properties are subject to a right-of-way to receive the waters that descend naturally from higher property, provided that the direction of flow is not changed by the hand of man. The right-of-way serves not only descending water but also any rock or soil that is naturally carried with the water. The higher owner may not alter the direction of the flow or dam the water without first establishing a special right-of-way (LA 93, CC 379).

If a water course is detained or its direction changed by natural causes, those incurring damages may require the land owner to remove the obstruction or allow the injured party to enter his land and remove the obstruction (LA 94).

The construction of works of defense against water, works to vary its course, repairs or reconstruction are the responsibility of the servient owner. The dominant owner must make the repairs himself or allow the lower servient owner to make them (LA 95). All persons benefiting from this work are required to pay their proportionate share of repair or construction costs according to the benefits received. Damages caused in the process of construction are paid by the negligent party (LA 96).

Lower property owners are entitled to indemnification from higher land owners for damages caused to the lower property by their negligence in water management (LA 97).

If, however, the lower owner makes use of the water, he cannot claim any damages related to the drainage (LA 98). Both the upper and lower owners have the right to construct dikes and walls to control or regulate water flow provided they do not unduly obstruct the descent of water (LA 99, 100).

The following principles apply to this class of rights-of-way:

a. Water rights can be acquired by lower users by adverse use of water by resident higher users for a period of 10 years, and 20 years against absent higher users, counted from the date of construction of diversion works by the lower owner (CC 380, 381).

b. The course of a river cannot be changed if it supplies villages or small communities but if such communities have not acquired a prescriptive right to use it they must pay indemnification for the right (CC 382).

2. *On Riparian Lands of Navigable and Floatable Rivers:* Lands bordering navigable or floatable rivers are subject to the following rights-of-way. These rights-of-way terminate if such river is later declared to be non-navigable or non-floatable.

a. *General Purpose:* There is a right-of-way on the banks of such rivers for a width of three meters to facilitate navigation, flotation, fishing and salvaging. This width can be extended when the circumstances require (LA 51).

b. *Tow Path:* There is a one meter width right-of-way for pedestrian towing and a two meter width for animal towing. This can be widened if necessary (LA 151, 152, 154). Plantings, fences or other objects that obstruct the right-of-way are prohibited. The property owner may, however, use the grasses or other plants that naturally grow on it (LA 156). Branches of trees and other growth can be cut and removed (LA 157). No compensation is payable for this right-of-way.

c. *Ferry Boat:* Mooring of such boats is permitted upon payment of indemnification through proceedings before the municipality (LA 158, 159).

d. *Floating Logs:* Beaching of logs is permitted to prevent their loss due to flood conditions. Compensation must be paid to the property owner for damages caused (LA 160).

e. *Salvaging:* Salvaging shipwrecked goods and other similar operations of urgency is a use which covers up to 20 meters width on riparian lands (LA 52, 161).

f. *Fishermen:* Fishermen may moor their boats, maintain and remove their fishing nets and temporarily deposit fish for up to three meters on the shore (LA 52, 162).

g. *Obstructions:* Removal of rock and other similar materials which are deposited by the water flow is permitted as a temporary right-of-way upon payment of the damages (LA 163). For other details see 1-4-3.

3. *Right-of-Way for Making Studies:* Persons engaged in making studies related to water use may enter lands for the purpose of verifying the studies. Notice must first be given to the owner of the property, or if he is not available, permission must be obtained from the municipality (LA 196).

B. Voluntary

Property owners may establish on their own land or on the land of others, such rights-of-way as the interested parties agree to if they are not against public policy. The extent of the right-of-way is determined by the title or agreement (CC 416). If there is more than one property owner all must ratify the agreement (CC 417).

C. Apparent Rights-of-Way

Rights-of-way are classified as apparent if they are marked by visible works such as a surface canal (CC 375).

D. Non-Apparent Rights-of-Way:

They are classified as non-apparent if not evidenced by some exterior visible sign (CC 375).

Continuous and apparent rights-of-way are acquired by title or by adverse possession for ten and twenty years (CC 418). Continuous and non-apparent and discontinuous and non-apparent rights-of-way are created by a title or adverse use for a long time (CC 419).

1-8-2 Forcefully Imposed Rights-of-Way

Sub-paragraph A, treats the subject of the legal imposition of canal rights-of-way as covered in the civil code and related laws. These rights-of-way apply when there is a public or private need. They are created by law and characterized by the reciprocal rights and obligations that apply to the dominant and servient property owners (CC 387 to 389).

A. General Canal Rights-of-Way

These rights-of-way may be created for the benefit of lands in need of irrigation and for industrial needs. The conveyance works must be at the expense of the interested party including fair indemnification to the servient owner (LA 103). This right-of-way cannot be imposed over homes, canals, patios or gardens related to homes (LA 104).

1. *Jurisdiction:* The executive branch of the government is vested with administrative jurisdiction to establish canal rights-of-way. Petitions are made to designated agencies (LA 117). When water use under a concession of public waters requires the imposition of a right-of-way, the granting of the right-of-way is an inherent part of the granting of the concession (LA 152, 193).

The ordinary courts have jurisdiction over appeals from

administrative resolutions related to rights-of-way in the following cases:

- a. when such resolutions attack acquired rights,
- b. when such proceedings forcefully impose rights-of-way or other limitations or encumbrances on private property,
- c. questions related compensation for damages resulting from limitations or encumbrances on property,
- d. in cases of expropriation without eviction and indemnification,
- e) rights-of-way evidenced by civil law titles (CC 291-3; LA 289, 290).

The "Irrigation Division" has jurisdiction over imposition of rights-of-way for irrigation (RI 52).

The jurisdiction of imposition at canal rights-of-way in urban areas is vested in local authorities in accord with their regulations.

2. *Justifiable Circumstances:* Canal rights-of-way may be forcefully imposed on property for: public services that do not require formal land expropriation (LA 115), objects of private interest, establishing or increasing irrigation, baths and industries, drainage of lagoons and water logged land, drainage of water from artificial wells and other drainage needs (LA 103, 111, 116).

If irrigated land is subdivided by inheritance, sale or otherwise a right-of-way is established over the several parts for the benefit of the others to continue the irrigation service according to the canal needs of the various properties and as determined by experts (LA 120).

3. *Procedure:* Interested parties must file a petition with the appropriate governmental agency and a hearing is held where the owners of the affected land must be present. The municipality is required to file a report on the subject of the petition (LA 117). If the proposed canal crosses a road, the petitioner must have permission from the corresponding road authority (LA 122).

If they are departmental or national roads they must have permission from the Department or Municipality, and if they cross navigational canals or rivers then the National Government must give its permission (LA 122).

A servient land owner may oppose the granting of a right-of-way on the grounds that the petitioner is not the owner of

the water use concession or the land where it will be used, or that it is possible to locate the right-of-way on some other property with equal advantages (LA 123, 125, 191).

Formal opposition to the petition results in the transfer of the proceedings to ordinary courts where the matter is resolved in accordance with the rules for brief summary proceedings (LA 124, 125, 289, 290).

Canal rights-of-way may be granted temporarily or perpetually, that is, for more than 10 years (LA 126). If it is temporary the indemnification is based on twice the rental value for the temporary period plus the damages resulting to the other property. When the right-of-way terminates the beneficiary must return the area to its prior condition.

A temporary right-of-way is not extendable but can be converted into a permanent one by paying the additional indemnification.

4. *Location and Route:* Collection, diversion and impoundment works can be placed wherever the technical and economic conditions are most favorable (IR 50). The course of the canal shall be one that permits the free flow of water and is not excessively expensive because of the nature of the land. These alternatives must be the *least prejudicial* to cultivated land. *Least prejudicial* is defined as the course least prejudicial to the servient estate and least costly to the dominant owner. In doubtful cases the judge must decide in favor of the servient property (LA 105).

The right-of-way may not be imposed over buildings, corrals, patios, gardens, nor existing canals (LA 104, 118, 119, IR 55, RC 6).

A servient property owner with an existing canal on his property may oppose the construction of another one and offer the joint use of his own, unless the judge deems such use prejudicial. If joint use is approved, costs of construction, expansion, repair and maintenance are prorated according to the percentage of water that each owner conveys in the canal (LA 109, IR 51).

5. *Right-of-Way Width:* The width of the water conveyance structure is determined by the technical requirements for the water quantity involved (LA 130). The width of the marginal passageway on each side is determined by the width of the structure at the capacity water line as follows: a) canal

width of less than eight feet [two meters] has a passage way width of 33 feet [ten meters]; b) a canal width of between eight and 16 feet [two and five meters] has a passage way width of 76 feet [20 meters]; c) a canal width exceeding 16 feet [five meters] has a passage way width of 76 feet [20 meters] plus the width of the Canal. [These widths are for irrigation canals only] (LA 106, 131, IR 54). Other canals have passage way widths of not less than three feet [1 meter] (LA 106).

A temporary right-of-way for depositing construction materials and construction of the canal may exceed the above standards (LA 129).

6. *Type of Construction:* The water user must construct bridges, siphons, pipes and similar necessary works for facilitating the convenient passage of the canal with minimum inconvenience to other interested parties (LA 113, 132, IR 56).

The open ditch type of canal is to be constructed when no danger exists due to depth or location. Covered canals will be built when required by depth, closeness to buildings or homes, roads or when other compelling reasons exist.

The canal owner may choose to use pipe at his own option or by compulsion when the water is contaminated or contains noxious substances that cause damage to works or buildings (LA 121).

7. *Indemnification:* Indemnification to a servient property owner for land expropriated for a canal right-of-way is determined as follows: a) the value of the land occupied by the canal plus the value of the passageway as explained in 6; b) an additional ten per cent of that above amount; c) damages caused by filtrations, drainage and defects in the construction of the canal (LA 106).

The amount of indemnification paid for a canal used jointly by a servient and dominant owner is calculated by prorating the land costs and improvements based on the percentage of water conveyed by each owner (LA 109, IR 52).

8. *Rights and Obligations of the Parties:* The servient owner is obligated, after advance notice, to allow workers to enter his land to clean or repair the canal. He must also allow the entry of a watchman on previous notice at intervals fixed by the judge (LA 107).

A dominant owner has the right to prevent plantings or construction within the area of the canal and passage right-of-

32 *Forcefully Imposed Rights-of-Way*

way (IR 54, LA 108, RC 14). He may also strengthen the banks of the canal with sod, walls, or loose rock (LA 134) and prevent use of the water from the canal without his consent (LA 137).

9. *Duration:* Forcefully imposed rights-of-way may be either perpetual or temporary (LA 126). A temporary right-of-way may be converted into a perpetual right-of-way (LA 128). If a right-of-way is temporary a rent is paid rather than full indemnification (see also 1-8-3) (LA 127).

B. *Canals Constructed by the "Irrigation Division"*

The "Irrigation Division" is charged with responsibility for the planning, construction and operation of irrigation works constructed with national government funds. The acquisition of land necessary for the works and operation is declared to be of *public utility* which justifies expropriation (IR 72).

When construction is approved, notice of the project and a description of the lands included is then published in a newspaper in the *Department* where the project will be located (IR 74).

A final plan establishes the extent of the lands the proposed project will occupy for its dam and other works (IR 76). The "Irrigation Division" attempts to reach an agreement for compensation with the property owners and if not successful, they proceed with expropriation proceedings as in other cases (IR 77).

C. *Temporary Canal Right-of-Way*

The "Irrigation Division" is vested with power to authorize the temporary occupation of lands or canals in the following cases: 1) while a water user constructs the necessary works for conducting water or other special works for the improved distribution of water; 2) when a user needs to irrigate during the time he must also repair or construct his works that have been destroyed by natural causes; 3) if because of extreme drought in the area, it is indispensable that waters be conveyed in the works of another user to avoid conduction losses in the natural channel (IR 53).

D. *Rights-of-Way in the National System at Cochabamba*

All of the lands which benefited from the system were, by decree, subject to such rights-of-way as the system required. This included the land necessary for canals, drains and other structures required for the project. The lands which were

needed for project works but which were not also benefited by the project were expropriated in accordance with the general procedures (see sub-paragraph A above) (LC 2).

Canals within the system were required to be constructed in accordance with the plans of the system and were to be located on property lines where conditions permitted, so that they could be jointly used (RC 7, 8).

The rights-of-way for passage that border on the canals are determined as follows: 1) where actual canal width is less than three feet [one meter] the passageway is 76 feet [20 meters wide]; 2) when the canal is between three and eight feet [one and two meters] wide, the passageway is 82 feet [25 meters]; 3) when the actual canal width is between eight and ten feet [two and three meters], the passage is 98 feet wide [30 meters] (RC 16).

E. Removal of Water for Domestic Needs and Cattle Watering

A right-of-way for access to water sources for satisfying domestic needs and cattle watering may be imposed for reasons of public utility in favor of a community or a homestead after paying indemnification (LA 146). Such rights-of-way cannot be imposed over wells, cistern pools, buildings or lands enclosed by a wall (LA 147). When granted, they allow passage of persons and cattle to a point where they can satisfy their thirst (LA 148). The government imposes these rights-of-way in accordance with the procedures provided for canal rights-of-way and must fix the conditions for exercise of the right-of-way as well as the width and the point from which water may be removed (LA 149). The property owner may change the direction of the trail but not the point of entry onto his land (LA 150).

1-8-3 Termination of Rights-of-Way

A. Lapse

Canal rights-of-way lapse or terminate if the owner does not make use of it within the period fixed in the concession, even though compensation may have been paid to the servient owner.

B. Extinguishment

Established rights-of-way for canals are extinguished for the following reasons:

1. consolidation of the titles, that is when the title to

34 *Termination of Rights-of-Way*

the dominant and servient estates and the water use right are all vested in the same person (CC 431, LA 138).

2. the arrival of the day or the condition upon which the right-of-way was expressly declared to terminate if created in this manner (CC 432, LA 138).

3. non-use for a period of ten years either for impossibility, negligence of the dominant owner, or acts of the servient owner that are adverse to the right-of-way. The commencement of the period is counted from the time that the owner stops using a discontinuous right-of-way, that is, when the owner commits some act inconsistent with the right-of-way (CC 432, LA 138).

4. forceful expropriation for reasons of *public utility* (LA 138).

5. the arrival of the dominant estate to a condition where the water cannot be used on it. The right may be revived if the land returns to a state where water can be used within a period of ten years (CC 429, 430, LA 138).

6. express repudiation by the dominant owner (CC 433).

C. General Effect

Use of a right-of-way by anyone of a number of co-users prevents prescription from applying against any of them. If the prescriptive period cannot run against one of them because of a lack of capacity, such as the minority of one of the owners, then the rights of all are preserved (CC 435, 436, LA 139).

When a temporary canal right-of-way is extinguished by the passing of the time period, only the dominant owner has right to remove the materials that were originally his and must return the servient property to its original state or condition. This rule also applies to extinguishment by prescription for ten years (LA 140).

When a right-of-way is abandoned by a dominant owner the servient owner must return to the dominant owner the money that represents the value of the land but the servient owner need not pay for the improvements or surcharges (LA 112).

1-9-0 HARMFUL EFFECTS

1-9-1 *Flood, Erosion Control and Conservation*

The "Bureau" is responsible for the planning, construction and control of works for the defense, correction, regulation and

rectification of all natural water courses in the country (DH 1, 3).

Every irrigation water user is required to execute the works required to regulate the currents and improve the works to regulate the currents and improve the stability of structures to obtain improved water management (IR 45).

Water user organizations are obligated to control and police water sources and conserve the irrigation canals and works within their jurisdiction (see also 1-3-4 for related material) (IR 38, 57).

1-9-2 *Drainage*

Drainage districts may be formed where proposed drainage works will benefit more than one land owner. The owners of a majority of the land affected must agree to form the district. After forming the district, if any objecting users refuse to contribute to the costs of the project on a prorated basis, such persons are declared to have abandoned their land to those who contribute to the costs of the project (LA 84 to 92).

Rights-of-way for drainage canals and works have the same priority under the law as irrigation canals and may be forcefully imposed (see also 1-7-2-A) (LA 111)

The "Irrigation Division" is the designated state agency through which state financed drainage and salt removal projects for land improvement are designed and constructed (IR 71, 72a).

1-9-3 *Contamination*

The authority to police waters is vested in the national government as such authority relates to contamination of public health and personal security. Discharges into a stream or pond, of salt residues, animal slaughter wastes or any other material whose decomposition will prejudice good water quality, are prohibited (LA 270).

Industries introducing noxious elements into waters that are injurious to health or vegetation can be required to submit to municipal regulation to prevent contamination. Industries failing to comply with the regulations may have their water supply suspended and their industrial activity terminated (LA 263).

Administrative penalties may be applied to irrigation water users who discharge organic matter, wastes, colorants or any substance that renders water inappropriate for use in agricul-

36 *Contamination*

ture or that damage agricultural lands (IR 42 e, RC 14).

When the use of water for mining renders it unfit for lower agricultural use, the mining user must pay the lower agricultural users for the resulting damages (CM 116).

1-10-0 FINANCING WORKS AND ADMINISTRATION

A. *Irrigation Works Constructed with State Funds*

The general responsibility for construction of irrigation works with State funds is vested in the "Irrigation Division."

When the overall plans for such works are completed for the construction or modification of such a system they decree a moratorium on grants of additional concessions and authorizations for water use from that source (IR 71).

The costs of such projects are to be repaid to the government by the owners of the benefited land. The costs or assessment per hectare are determined by the following criteria: 1) the amount that results from prorating the costs of the works over the total area benefited; 2) the increase in production of the land resulting from irrigation; 3) the commercial value of the lands in the region or in similar areas before the construction, and the value of the same lands when under irrigation; 4) the payment capacity of the peasant farmers; 5) in no case shall the assessment exceed the formula resulting from the prorating of the costs between all of the benefited area (IR 78).

The owners of the benefited lands are obligated to pay this assessment over a period of time that in no case shall exceed the probable useful life of the works (IR 79). For each project, the details of the assessments and their amortization are fixed by special laws (IR 78).

In addition to this assessment for the amortization of the costs, the users within such systems are also required to pay an assessment for administration, operation and conservation of the works. Failure to pay results in termination of the water supply until payment is made (IR 81, 82).

B. *National System at Cochabamba*

The special regulations related to this system fixed an annual assessment of 200 Bolivianos for each hectare that is benefited by the system. The assessment is paid by each land owner until such time as all of the costs of the dams and works of the system have been repaid (LC 5).

The assessments for operation and maintenance of the

works are separate from the above and are determined as follows: 1) 50 Bolivianos per hectare whether or not the land owner uses the water; 2) 25 Bolivianos for every thousand cubic meters of water delivered to the user at his diversion gate. These were the original amounts fixed and are subject to periodic adjustments (LC 6). The system also receives income for its budgetary requirements from sale of electrical energy; assessments to industrial plants; and the sale of products and equipment (LC 7).

C. *Local Community Organizations*

Various systems for the payment of water-related works constructed at user or beneficiary initiative are provided by law. In all of these systems the majority of those benefited may compel the minority to contribute to works of common benefit (see section 1-4-4-B and 1-9-2).

1-11-0 LEGISLATION ON USES OTHER THAN IRRIGATION

1-11-1 *Domestic*

The preferred status given to domestic water uses is covered in 1-7-1. On a national level the control and supervision of organizations engaged in supplying and distributing potable water is the responsibility of the "Bureau" (DH 1).

A local organization created by national decree services domestic water needs for the entire Department of Cochabamba. The organization is called the *Municipal Service for Potable Water, Sewage Disposal and Storm Drainage* known as SEMAPA (DP 1).

The municipal governments perform the same function as SEMAPA within the other cities of the country.

Waters flowing through natural streambeds can be used by anyone for drinking or domestic purposes but are subject to municipal regulations (LA 164). Even waters in artificial canals may be extracted for the domestic needs of owners of lands through which they pass but are subject to certain limitations as to the method of extraction (LA 166).

Private companies may receive concessions of water to be distributed for domestic purposes but are subject to the limitations placed by the authority granting the concessions related to the tariffs that they may charge the domestic users (LA 214).

1-11-2 *Motive Power, Industrial and Electrical Generation*

For priorities related to these uses of water see 1-7-1. The use of water for the generation of hydraulic energy is declared

to be of *public utility* and therefore a proper object for the investment of public funds (IR 72b).

Within the National Irrigation System at Cochabamba industrial uses of water are subordinated to irrigation uses (RC 21c).

Industrial uses are protected by law from interference by navigation uses of water but they are subordinated to irrigation uses (RC 21c).

Municipalities may authorize the establishment of mill runs and industries which rely on motor force of water will be returned to the stream after use (LA 261). All irrigators using water from a canal must consent to any industrial or motor force uses of the water in the canal (LA 262).

See section 1-8-3 for provisions related to industrial contamination of water and its control.

Concessions for industrial uses of water are perpetual and are granted by the "Bureau" (LA 264, DH 6e).

1-11-3 *Transportation*

The Bolivian Naval Forces, a dependency of the National Ministry of Defense, is charged by law with the direction and administration of all river and lake navigation in Bolivia (DN 6).

The detailed regulation of water transportation and navigation in the rivers and lakes is the responsibility of this same organization (DN 14).

A series of provisions control various aspects of transportation uses of water including: 1) a process for public hearings to determine whether streams will be declared to be navigable or floatable (LA 174); 2) authority to designate launching and embarking locations on the banks of rivers and lakes, and expropriation of lands for this purpose (LA 175); 3) authorization for widening channels to make them appropriate for water transportation (LA 176); 4) provisions for payment of compensation to water users prejudiced by converting a river into a floatable and navigable river (LA 177); 5) establishment of ferry boat crossings on non-navigable or floatable rivers which will impede navigation (LA 179).

1-11-4 *Medicinal and Thermal*

These waters are regulated in the same manner as other waters except that the government, for purposes of promoting public health and after having consulted with the municipal

and medical authorities, may expropriate these classes of public waters when the owners refuse to voluntarily use them for such purposes (LA 18).

1-11-5 *Mining*

Miners have a right to use the waters that naturally flow through their properties for the exploitation of mines but must return the water to the stream after use (CM 114). If the waters, however, are destined to irrigation he cannot use them without an agreement with the irrigation users or after expropriation and payment of compensation (CM 115). If, after the mining use, the waters are contaminated and unfit for irrigation, the miner must pay the damages to the irrigation users (CM 116). If a miner discovers or raises water on his mining properties, he has the exclusive right to use these waters (CM 118). The excesses that pass to a neighboring mine may be used by the neighbor and he may acquire a prescriptive right by adverse use for six months if the right holder does not vary the course (CM 120). To use public waters, the miner must petition the "Bureau" or Superintendent of Mines (CM 121).

1-11-6 *Other Uses*

A. *Railroad Supply*

Railroads are authorized to use public waters (LA 217). If the required waters are being used for some other purpose, the railroad is given a right to expropriate those waters upon payment of compensation (LA 217).

B. *Fishing*

Fishing in navigable and floatable streams is permitted if done in accordance with local police regulations (LA 167). Permission of the owner is required for fishing in other streams or lakes (LA 168). If canals contain public water even though of private ownership they may be used for fishing provided that it does not interfere with the flow of the canal (LA 169). Limitations are placed on fishing devices in floatable streams (LA 172).

1-12-0 SUBTERRANEAN WATER

A. *General*

The "Bureau" must approve all programs or plans destined for the establishment, construction, amplification or improvement of services for the utilization of subterranean waters (DH 6b). The "Bureau" is also the granting authority for

permits, licenses and transfers for all subterranean water except those used in irrigation (DH 6e). The "Irrigation Division" is the agency responsible for granting subterranean water use rights for irrigation and controlling explorations (IR 60). Authorizations to explore for subterranean water on public lands are granted by the municipality (LA 27).

B. *Exploration Right*

1. *On Private Property*: A private property owner is the only one who may explore for subterranean water on his property and he may explore on his own property without any formal requirements (LA 20, IR 59).

2. *On Public Lands*:

a. *Process*: Individuals must have a formal authorization to explore for subterranean water on public lands (LA 23). The petition for such authorization must be presented to the municipality where the land is located and must designate the locality and the amount of land. The municipality may then either grant or deny the authorization (LA 27).

b. *Conditions*: The petitioner must deposit security against damages that might occur on the explored land in an amount between 100 and 2,000 pesos according to the case (LA 29). Other explorations are prohibited in the area where an authorization is outstanding (LA 30).

Within six months from the date of the authorization the exploration right terminates and a petition for a water use concession must be presented if the petitioner maintains his right for preference to the use of the discovered water (LA 31). This period is extended in explorations for artesian wells (LA 34).

C. *Right to Use*

1. *For Irrigation*: Authorizations and concessions for the use of subterranean water for irrigation are granted in accordance with the general norms for granting use rights to surface waters in accordance with studies that indicate the availability of water for rational exploitation (IR 60).

a. *Establishment of Subterranean Water Exploitation Zones*: In zones where there are substantial subterranean water resources, the "Irrigation Division" may declare *Zones for Exploitation of Subterranean Water*. Within these zones the "Irrigation Division" may determine the quantity of water that can be extracted, the number of wells that can be drilled,

their location, situation, depth and other characteristics (IR 61). Persons who have such a well will be authorized to raise only the limited amount of water that they need for irrigation purposes (IR 62).

Each zone has its own regulations which must be approved by the "Irrigation Division" (IR 63). As a method for the enforcement of the zone regulations, User Boards must be constituted for the zone in accordance with 1-3-2 (IR 68).

b. *General Conditions:* Artesian wells must be equipped with control valves to avoid loss of water (IR 64). Repairs that involve the widening, deepening or opening of a replacement well when the old one is no longer operative require an authorization (IR 65). Surface water concessioners who can prove that subterranean water uses prejudice their surface rights can require that such uses be terminated (IR 67).

c. *Use of Excesses from Neighboring Property:* A person who lacks sufficient water for his needs and can prove that the works to obtain water would be very costly, may use existing waters from neighboring properties if those properties have excess water available. If such owner elects to use excess well waters from his neighbor, he must solicit the appropriate authorization and indemnify the neighbor for the water and the rights-of-way related to such use (IR 66).

d. *Administrative Sanctions:* The exploitation of subterranean water without the required authorization is punishable administratively as provided in the following section, 1-13-0 (IR 69, 70).

2. *For Uses Other Than Irrigations:*

a. *Uses Without Formal Authorizations:* The owner of land may use the subterranean water for non-irrigation purposes without any formality provided that he observes the following restrictions. 1) that he does not raise water belonging to a neighbor; 2) that there is a spacing of at least eight feet [two meters] between wells in the cities and 49 feet [15 meters] in the country (LA 21).

b. *Authorization for Non-Irrigation Uses:* As earlier noted, the "Bureau" has authority to grant permits and licenses for non-irrigation uses of subterranean water (DH 6e). This class of water use grants apply to subterranean water discovered on public lands pursuant to an exploration right as discussed above. The petition must be presented within six

months from the date of authorization to explore if the petitioner is to retain his preference to such use. Notice of the petition must be given in a local newspaper of a hearing where the petition will be resolved by the "Bureau" after reports from expert witnesses (LA 31). The use right is lost if: 1) they do not request the water concession within six months from the date of the exploration authorization; 2) they do not complete the works within the period provided in the concession; 3) they close the well and do not use the waters (LA 33). These lapses or terminations are administratively declared by the "Bureau" (LA 33).

1-13-0 PENALTIES AND SANCTIONS

One of the most serious crimes related to water use is the destruction or damaging of canals, dikes, ditches or other works of public importance and carry heavy penalties (Penal Code Article 244).

The "Irrigation Division" is given authority to administratively punish the following acts: 1) using water without authorization or concession, with prejudice to third parties; 2) taking from regulated streams a greater quantity of water than one is entitled to with prejudice to third parties; 3) damming water in streams or constructing diversion works without proper authority; 4) causing or permitting waters to overflow or escape from works designed to contain them; 5) dumping into streambeds organic material, garbage, colorants or other contaminating substances which make the water inappropriate for agricultural use or injure the land; 6) failure to pay assessments levied for the expenses of maintenance and operation of irrigation works as provided in the regulations (IR 42).

The administrative penalty for the foregoing violations is in the following form: 1) by persuasive measures if the violations were not very serious or involved small quantities of water; 2) requirement of payment for the damages caused and by applying fines in accordance with the seriousness of the case; 3) temporary or permanent suspension of the authorization or concession for water use with indemnification to be paid to the concessioner for damages (IR 43).

Within the National Irrigation System at Cochabamba various crimes and penalties are prescribed with regard to water use. Any unauthorized use of water is sanctioned by a fine equal to ten times the value in cash of the volume of water

taken. This must be paid in cash within 15 days from the date of the judgment (RC 41). It is prohibited for users in the system to transfer their use right to others or to charge for the use by others of the canals of the system either in water or money. Violators are subject to a fine of 100 Bolivianos for the first violation, 500 Bolivianos for the second, and the third violation, the penalty is suspension of their right to use the water for a period of one year (RC 42).

CHILE

2-1-0 INTRODUCTION

2-1-1 *References and Key and Abbreviations*

A. *References*

The references in this section follow the subject matter to which they refer, and are in boldfaced parenthesis. These references are alphabetical and numerical symbols such as **(CC 101)**. The letters refer to the law, code or regulation and the numbers refer to the article or section number. The key is as follows with the official Spanish citation following the English but in parenthesis:

- (CC)** = Civil Code. (Codigo Civil, Edicion Oficial de 31 de Marzo de 1970, aprobada por Decreto No. 883, de 3 de Junio de 1970, del Ministerio de Justicia.)
- (CPC)** = Code of Civil Procedure (Codigo de Procedimiento Civil, Edicion Oficial al 31 de Marzo de 1970 aprobado por Decreto No. 1093, de 9 de Julio de 1970, del Ministerio de Justicia.)
- (LE)** = Law of Electrical Services (Ley General De Servicios Electricos, Decreto con Fuerza de Ley No. 4, de 24 de Julio de 1959.)
- (WC)** = Chilean Water Code, 1969. (Decreto No. 162 [Ministerio de Justicia], de 15 de Enero de 1969, publicado en el "Diario Oficial" de 12 de Marzo del mismo año.)
- (RA)** = Agrarian Reform Law, 1967 (Ley de Reforma Agraria del 28 de Julio de 1967, Ley No. 16, 640).

B. Abbreviations

- | | |
|-------------------------|--|
| 1. "Association" | = Canal Users Association —
(2-3-2-A-1) |
| 2. "Community" | = Water Community |
| 3. "Federation" | = Maintenance and Control
Federation |
| 4. "Users Organization" | = Above groups collectively or
separately |
| 5. "President" | = President of the Republic —
(2-3-1-A) |
| 6. "Bureau" | = General Water Bureau |
| 7. "Enterprise" | = National Irrigation Enterprise |
| 8. "Director" | = General Director of Waters |
| 9. "Department" | = Administrative Sub-division of
a Province |
| 10. "Governor" | = Executive Administrator of a
Department |

2-1-2 Geography

Chile is a long narrow country that stretches from the tip of South America, up the West Coast to the Southern border of Peru, about 2,560 miles [4,120 kilometers] and from the Pacific Coast to the top of the Andes Mountain range where it borders with Argentina on the east and Bolivia to the northeast. The geographically significant regions of the country contain coastal plains and Andean Mountain regions and range from north to south as follows.

The Northern Desert area includes about one-third of Chile's total land area of 100,000 square miles [250,000 square kilometers]. The Central Valley region covers an area of about 600 miles [965 kilometers] in length and contains most of the population, agricultural activity and industry. The Archipelago covers the southern 1,000 miles [1,600 kilometers] and is characterized by an irregular coastline, islands and the Andes range that rises rapidly to the east.

2-1-3 Climate

The climate is varied with seasonal changes becoming more pronounced in the southern regions. The Northern Desert area includes the Atacames Desert, one of the driest areas in the world. The Central Valley is relatively warm with rain in the winter months of June, July and August; and quite dry in

46 *General*

the summer months of December, January and February. Rainfall in this area varies from 20 to 70 inches [50 to 180 centimeters] per year. The Archipelago region is characterized with relatively rainy summer weather.

2-1-4 *Population*

The population of Chile is approximately 10,500,000. An estimated nine-tenths of this population is concentrated in the Central Valley region. The population of the capital city of Santiago is over 3,000,000 and there are about six other cities with populations between 100,000 and 300,000.

2-1-5 *Irrigation*

Approximately 13,585,000 acres [5,500,000 hectares] of land are cultivated in Chile, and of that area, 4,693,800 acres [1,900,000 hectares] are under irrigation almost exclusively in the Central Valley region.

2-2-0 LEGISLATION

2-2-1 *Legislation in Force*

The basic legislation on water laws and administration in Chile is essentially consolidated in the Chilean Water Code of 1969. The Civil Code has provisions related to basic rights concepts, ownership of riverbeds, and some rights-of-way provisions. Some procedural norms are found in the Code of Civil Procedure which protect acquired rights or provide for the establishment of rights for the use of water.

2-2-2 *Process of Legislative Change*

The basic law-making power is vested in the President at the time of this publication.

2-3-0 ORGANIZATION FOR WATER ADMINISTRATION

2-3-1 *General*

A. President of the Republic

Dispersed through this work are the various powers vested in the "President" with regard to water rights and administration as follows:

1. The "President," on the petition of the National Irrigation Enterprise and a report from the "Bureau," may reserve quantities of water for concession of rights for future beneficiaries of irrigation works to be constructed and owned by the Enterprise (WC 305).

2. For the purpose of preventing concessions for consumptive uses of water, the "President" may declare the complete

exhaustion of a water source. He may also remove the limitation when the conditions change (WC 47).

3. The "President" may fix and reserve quantities of water to satisfy future concessions for specified uses and special quantities of water (WC 48).

4. He establishes the rates of rational and beneficial use as explained in 2-5-5-B (WC 26, 27).

5. The "President" has the power to declare *drought zones*. In such zones, the ordinary priorities and use preferences become subject to change and are governed by special regulations fixed by the "Bureau" as described in 2-7-1 (WC 332).

6. The Director General of Waters is appointed by and serves at the pleasure of the "President" (WC 286).

7. The "President" may extinguish water use rights and apply them to domestic needs or economic development as provided in 2-5-6-C.

8. The articles of association of "Federations" and "Associations" must be approved by the "President" (see 2-3-2-B).

B. *General Bureau of Waters*

This agency is referred to in this work as the "Bureau." It is a division of the Ministry of Public Works and Transportation. For administrative purposes, however, the Director General of Waters is the Chief Executive Officer of this agency and is referred to as the "Director." He is appointed by and serves at the pleasure of the "President" (WC 286).

The "Bureau" is charged with executing policies contained in the Water Code. Many specific responsibilities and powers are found throughout the summary and will not be repeated in detail here. However, some of the general provisions related to the responsibilities of this agency are: 1) studying and planning improved water use to benefit the national economy; 2) policing water use, preventing destruction of irrigation works and use of waters without authorization or in a greater quantity than authorized; 3) maintaining a national hydrological service and the publication and distribution of information related thereto; 4) controlling, supervising and intervening in the operation of "Water Users Organizations," National Irrigation Enterprise and all water users in relation to the use of water (WC 288, 289); 5) assigning irrigation projects to the National Irrigation Enterprise or other such organizations (WC 287).

The "Director" is required: 1) to make internal regulations that are necessary for the proper application of the Water Code; 2) to direct, coordinate and pay for the services of personnel within the "Bureau;" 3) to present an annual budget to the Ministry of Public Works and Transportation; 4) to propose modifications to the same Ministry and delegate powers to personnel for determined periods (WC 290).

C. National Irrigation Enterprise

This agency is an administratively semi-autonomous agency of the National Government and is related to the Government through the Ministry of Public Works and Transportation (WC 299).

The organization is governed by a board of directors, the president of which is the Minister of Public Works and Transportation. Other members of the board are: 1) The Executive Vice-President of the Enterprise; 2) The Director General of Public Works or his representative; 3) The Director General of Waters; 4) The Executive Director of Agricultural Services or his representative; 5) The Executive Director of the Agrarian Reform Corporation or his representative; 6) The Executive Director of the Agricultural Development Institute or his representative; 7) The Executive Vice President of the Agrarian Reform Corporation; 8) A representative designated by the "President" (WC 308, 309).

The primary executive officers are the Executive Vice-President and a Secretary General. A Government Counsel or Lawyer is charged with insuring compliance with the law (WC 311, 312, 313).

The Enterprise is responsible, under the law, for: 1) studying, planning and constructing irrigation and drainage works for agricultural lands with government funds; 2) regulating the use of water between the beneficiaries of the works of the enterprise until they are organized into a "Users Organization" (WC 301, 302); 3) studying and executing repairs, unification and improvements of private irrigation works as assigned by the "Bureau;" 4) making agreements with individuals, companies, national institutions, international institutions, for construction of irrigation and drainage works for agricultural lands; 5) formulating programs, executing practices, and constructing works of conservation for watersheds and basins in agreement with the Ministry of Agriculture, to control erosion, sedimenta-

tion, floods and other phenomena that could affect irrigation works; 6) other responsibilities provided for in general and special laws (WL 301).

The enterprise has the power to expropriate lands necessary for the execution of its works as detailed in 2-8-2-E (WC 306). The agricultural lands benefited by the irrigation works of the Enterprise constitute zones of obligatory irrigation or drainage as more specifically explained in 2-6-0. The costs of the works and administration of the irrigation systems owned by the state are charged against the beneficiaries and the government as described in 2-10-0.

D. *Governors of Departments*

Departments are administrative sub-divisions of Provinces and the Governor is the chief executive officer of this unit of government. The Governor's office records and processes all documents before forwarding them to the "Bureau" in connection with water use concessions as provided in 2-5-2.

2-3-2 *User Organization*

A. *General*

Legislation governing the creation, operation and powers of user controlled water administration organizations is very extensive and detailed in the Water Code. These three types are:

1. *Canal Users Associations* [Asociaciones de Canalistas]: These organizations are referred to herein as "Associations" and are formal corporate type organizations. They are established for the purpose of receiving a quantity of water from a source and distributing it through artificial channels to shareholders in the "Association" according to their water use rights. "Associations" are given the responsibility of constructing, exploiting, conserving and improving diversion, conveyance and other necessary irrigation works of common use (WC 88, 89).
2. *Water Communities* (Comunidades de Aguas): These organizations are referred to herein as "Communities" and are informal entities similar to unincorporated associations. They are formed by operation of law when two or more water users divert and use water from the same artificial canal. They are governed by law and must distribute the water to members in accordance with their use rights (WC 152, 154). The "Communities" purpose is to receive a volume of water from a source and distribute it in artificial channels to its members according to their water use rights.

3. *Control and Maintenance Federations* [Juntas de Vigilancia]: These organizations are called "Federations" and are of the formal corporate type. The shareholders include all of the water users for areas as great as an entire river basin. The purpose of these organizations is to distribute water from natural channels to "Associations," "Communities" and others with use rights. Shareholders of "Associations" and members of "Communities" are represented in "Federations" by their presidents rather than individually. Those users not included in such organizations are individually represented (WC 165, 167).

4. *Formation*: "Communities" require no formal action for their formation and exist by operation of law. "Associations" must be formed by the agreement of all common users of water in a given canal or in the absence of an agreement, through the court procedure described in 2-5-3-B. This section also covers the formation of "Federations" (WC 90, 152, 170).

B. *Common Attributes of User Organizations*

Many of the laws governing the above organizations are identical or similar (WC 155, 168). In summary they operate much like corporations in common law jurisdictions established for the purpose of distributing water to shareholders and with the power to assess shareholders for operating costs. Each has articles of association which must ultimately be approved by the "President" except for the "Communities."

All of the organizations have annual shareholders meetings where members of the board of directors are elected. They manage the day to day affairs of the organizations. A president is the executive authority, and a secretary performs clerical functions. Other employees are selected by the boards. Rights and obligations between shareholders, boards of directors, officers and employees are also reasonably analogous to corporate relationships (WC 88 to 184).

In addition to the above general analogy the following specific common characteristics of these organizations are important. The regulation and control of water use between shareholders and members are governed by these organizations (WC 22). All such organizations are subject to direct control and intervention by the "Bureau" to assure that they function in accordance with the law (WC 288).

Assessments payable by shareholders for the cost of admin-

istration, maintenance and construction are prorated between shareholders on the basis of individual water right quantity in proportion to the total water right quantity of the organization. If those that benefit from certain improvements are less than all of the shareholders, then the actual beneficiaries share the assessment according to the same formula (WC 97, 115, 155, 168, 169).

In voting for members of a board of directors, each shareholder has one vote regardless of the quantity of his water right. However, if two or more persons have a right to less than one percent of all the water in a common channel they can be required to form a "Canal Users Association" without regard to the quality of their water right (WC 99, 130, 155, 168).

Shareholders must: 1) pay a fine for non-attendance at meetings, but may be represented by proxy (WC 113, 155, 168); 2) pay for the installation and repair of his diversion works and measuring devices (WC 109); 3) allow common use of his private canals by other shareholders on a cost sharing basis (WC 107, 113, 155, 168); 4) pay a penalty of two percent per month and have his water rights suspended for nonpayment of assessments (WC 116, 155, 168); 5) allow organization officials to enter his property to carry out their duties (WC 142, 155, 168).

The water distribution powers of these organizations are subject to suspension in drought zones declared by presidential decree and in such circumstances these powers are exercised by the "Bureau" (see 2-7-1) (WC 322).

The basic water use right remains with the member or shareholder and never passes to the organization. Artificial channels also remain as private property of individual shareholders and members (WC 101, 154, 169).

The following are significant attributes of the boards of directors of these organizations: 1) they have jurisdiction in the first instance to resolve water rights conflicts as described in 2-5-3-A; 2) the boards consist of between three and eleven members and are elected for one year terms; 3) they may require that local police authorities assist in the execution of their orders (WC 129, 134, 142, 155, 168); 4) they levy and collect assessments; 5) they repair, maintain and clean the canal and works; 6) they distribute water and protect the

basic distribution rights (WC 141, 155, 168).

C. *Principal Differences Between User Organizations*

"Associations" and "Federations" may pledge the credit of their shareholders as security for the payment of loans related to works and improvement and may issue bonds for those debts and make assessments against members to pay the bonds upon maturity (WC 102, 103, 104, 155, 168). "Communities" do not have this authority.

A "Community" exists without formal articles or formal action. It exists by operation of law provided that two or more persons own rights to use water in the same artificial canal and no "Association" has been organized. On the other hand "Associations" and "Federations" must be created through formal processes and their articles of association must ultimately be approved by the "President" (WC 170). A "Community" may be required to change its form to an "Association" on the petition of an interested party, the Judge, or the "Bureau" (WC 164).

A "Federation" has the responsibility to declare formal water shortages and establish special distribution regulations which restrict uses. They also present requests to the "President" for the declaration of the exhaustion of the water source as explained in 2-3-1-A (WC 165).

Water distributors are statutory officials of "Federations" and have the responsibility of carrying out distribution orders of the board of directors and policing water use in specified areas under the "Federations" control (WC 181, 182). Watchmen are also designated by law as having water police functions (WC 183). These officers are not expressly provided for by law in "Associations" or "Communities."

2-3-3 *Registeries*

The "Bureau" is required to maintain a Public Registry for recording the following: a) resolutions, data and information related to water use; b) resolutions affecting private water use rights, concessions or grants (WC 238).

The governor of each "Department" must maintain a registry where all petitions for water use rights are filed indicating the date and time received (WC 249).

Each water user organization discussed in 2-3-2 must maintain a registry of members or shareholders in which the water use right of each member and all changes are recorded (WC

105, 155, 168). The board of directors may order that the entries be obtained directly from the Public Registry maintained by the "Bureau" (WC 106, 155, 168).

2-4-0 OWNERSHIP AND CONTROL

According to law, some things (including waters) are declared to be common to all men and are not subject to ownership. No nation, corporation, or individual has the right to own them, and the use and enjoyment of such goods, as between individuals, is determined by the laws of that nation. Thus, there is a clear distinction made between the *ownership* of such goods, which no one including the nation may acquire, and *the right to their use and enjoyment*, which may be acquired only in accordance with the laws of the nation (CC 585).

The law is quite general and all encompassing in its treatment of water ownership (WC 9).

2-4-1 *State Ownership*

All waters within the national boundaries are declared to be the property of the state for public use (WC 9). These national waters for public use are classified as: 1) pluvial, or those proceeding directly from the rains (WC 1, 3); 2) terrestrial, both superficial and subterranean and both running and detained (WC 1, 4, 5, 6); 3) maritime or ocean waters (WC 1).

2-4-2 *Private Ownership*

No water can be privately owned and neither the *ownership* nor the *right to use* water can be acquired by the process of prescription (WC 9).

2-4-3 *Ownership and Control of Riverbeds, etc.*

The State is the *owner for public purposes* of natural riverbeds, channels and the beds of lakes, lagoons and marshes up to the point of the high water mark. However, lands bordering such water beds covered by water resulting from flood conditions, belong to the owner of the bordering property (WC 72, 77; CC 649 to 656).

The streambeds of those streams that flow intermittently are also property of the State. However, if the intermittent flow is a direct result of rains, then such beds belong to the riparian property owner (WC 73).

The riparian property owners may cultivate the beds of such rivers and lakes when they are not occupied with water even though they are *property of the State* (WC 72, 77).

Earth deposits which adhere to the bank of a lake or riverbed caused by gradual action of the water and called alluvion, become part of the riparian land owners property within his boundary lines which are extended directly to the high water mark. However, in inhabited ports such deposits become the property of the State. The land that is alternatively covered and uncovered by water in the periodic high and low levels constitutes part of the river bed and does not accede to the bordering lands (CC 649, 650).

When an extension of the boundary results in the boundaries crossing before they reach the high water mark, the triangle formed between the crossing of the lines and the high water mark is divided into two equal parts between contiguous owners based on a line commencing at the cross and extending to the high water mark (CC 651).

If land is moved by a flood or other natural force in a violent manner from one place to another, the former owner has a right to reclaim the soil by returning it to his property. He must do so within one year, however, or it becomes the property of the owner of the land to which it was transported (CC 652).

If land is covered by water as a result of flood conditions, that portion of the land left dry by the receding water within five years from the date of the flood reverts to the former owner (CC 653).

If a river changes its course, the bordering property owners may, with the permission of a competent authority, construct the necessary works to return it to its former course. The part that permanently remains dry reverts to the ownership of the riparian owner.

If there are two riparians, then the land is divided between them based on a division of the dry bed on an equal longitudinal line between the two contiguous owners (CC 654).

If a river divides into two arms that do not later join, the parts of the old bed that remain dry accede to the ownership of the adjoining properties in the same manner as alluvion (CC 655).

New islands that are formed in the rivers and lakes belong to the State (CC 597). However, the ownership of island-related properties that existed before the enactment of this provision are governed as follows:

1. Islands remain as parts of the bed when they are periodically covered by water at its high water mark.

2. Islands created by a river dividing and then reuniting remain the property of the former owner.

3. Those newly formed accede to the nearest property owner, determined by measuring an extension of his boundary lines to the islands or any part thereof (CC 646).

4. If different parts of a newly formed island are closer to one bordering property than another on different sides of a river the island is then divided equally between the two riparian properties.

5. If a new island arises from one that existed before, then it accedes to the riparian properties without other considerations.

6. The owners of a new island formed by a river also acquire accessions caused by alluvion.

7. New islands formed in a lake accede to the riparian properties that are closest but those riparian properties whose shortest distance to the island is more than half the diameter of the island measured in the line at the shortest distance do not receive part of the new island (CC 656).

2-4-4 *Control of Structures in Riverbeds, etc.*

Permission must be obtained from a competent authority before structures or works may be placed in natural streambeds except in the following cases (WC 74):

1. Streambeds may be used and cultivated by riparians without permission during seasons when they are not occupied by water (WC 72).

2. A concession to use water automatically carries with it the right to construct works necessary to make it effective, including the right to construct diversion works in natural streambeds (WC 13, 14, 40, 41).

2-5-0 RIGHT TO USE WATER

A *water use right* is a real administrative right and is subject to all of the conditions and limitations provided in the laws (WC 11). A holder is given the power to make his use right effective, including the right to construct necessary works related to its use (WC 13, 14). Private use of public waters is only permitted when granted by a competent authority except in cases specifically provided for in the law (WC 9).

56 *Uses Without Formality*

2-5-1 *Uses Without Formality*

A. *Owners of Rights Under Prior Laws*

All waters which were *private property* before the enactment of the Water Code of 1969 were expropriated and included in *public waters*. However, owners under the previous law are given a right to continue to use the same waters without formality (see also 2-5-4) (WC 10).

B. *Rain Waters*

Rain waters belong to the land owner while they remain on his land and before they enter natural streams of public use. The owner may store these waters on his land provided he does not prejudice the rights of third parties (WC 15).

A property owner may also utilize rain waters flowing in public roads and may divert the waters in order to use them. No prescriptive rights can be acquired over such waters (WC 16).

C. *Waste Waters*

Waste waters flowing in a natural way to neighboring properties may be used within those properties without obtaining a grant, unless such use is specifically prohibited by the "Bureau" (WC 87). *Waste Waters* are defined as waters that pass to another property after they have been used for irrigation. They are presumed abandoned once the property owner where they were used allows them to leave his property. Upon entering a natural or artificial channel the waste waters become part of the channel waters and lose their character as waste water (WC 85).

This right is not permanent nor obligatory on the part of the owner of the property where the waste water originates and is subject to the contingencies, necessities, manner of use and distribution employed on the property where it originates (WC 86).

D. *To Generate Motive Force*

The owner of property which borders on an artificial water channel, or through which such a channel passes, may use the waters for generating motive power without a grant, providing the channel owners are in accord with its use. Otherwise they must obtain permission from the "Bureau" (see also 2-11-2) (WC 224, 229).

E. *Water Discovered in Mineral Extraction, etc.*

Owners of mineral, coal, salt or petroleum deposits may

use the water discovered during their explorations and extractions. Formalities are not required, but use is limited to that needed for the operation of the property (WC 67).

F. Wells for Domestic Needs

Anyone may use subterranean water under his own property for drinking and domestic purposes without formality, even though the water may supply another well. However, if it completely stops the supply to another well, the user is obligated to terminate its use (WC 65).

2-5-2 *Procedure for Obtaining a Use Right*

Except as noted in the previous section, all water use rights must be acquired through a formal administrative proceeding before the "Bureau" (WC 12, 37, 39). There are however, four situations where the "Bureau" may grant use rights without following this process. Those four exceptions are: 1) The "Bureau" may make water use rights grants to the beneficiaries of water projects previously reserved by the "President" (WC 305); 2) On the recommendation of the National Health Service the "Bureau" without formality may grant use rights for domestic purposes to Cooperatives for Domestic Water Service (WC 52); 3) when one irrigated farm is subdivided; 4) when water is conceded to a reserve land owner under the Agrarian Reform Law (WC 12; RA 31).

The regular process for obtaining a use right is described as follows.

A. Conditions Precedent to Obtaining a Use Right

The following concurrent conditions must exist before one may be granted a water use right:

1. The applicant must be a natural person or legal entity (WC 45).
2. The applicant must provide security to guarantee effective use of the water right within the period fixed in the concession (WC 45).
3. The applicant must be the registered owner of the property where the water is to be used for irrigation (WC 45).
4. The waters applied for must not be lawfully used by some other person.
5. The water source cannot have been declared by the "President" to be exhausted or completely appropriated (see 2-3-1-A).

B. *Contents of Petition and Study*

The application or petition for a water use right must contain: 1) the name of the water source, the nature of the water [whether surface, subterranean, running, etc.] and the "Department" in which the waters are located; 2) the quantity of water requested; 3) the nature of the use to which it will be applied and the location where it will be used; 4) the manner or method by which it will be conveyed from the point of diversion to the place of use; 5) the precise location of the diversion works related to known points of reference and the manner of extracting the water; 6) the rights-of-way that must be imposed; 7) the normal minimum quantity of water that will be diverted or extracted from the diversion point; 8) a detailed list of all canal diversions and users below the proposed point of diversion; 9) the class of the requested grant, that is whether it is permanent, temporary, alternating, contingent, continuous, or discontinuous (see sub-paragraph M) (WC 250).

The petition must be accompanied by a preliminary technical study of the related works and an estimate of their cost and other data as required by the nature of the proposed grant (WC 251).

C. *Filing*

The petition and the study must be filed with the "Governor" of the "Department" where the diversion works will be located. However, in the Loa River Basin such documents must be filed with the Chief of the Province of Antofagasta. The "Governors" maintain a registry for filing and recording all such petitions within the period fixed in the concession (WC 45). On receipt of these documents, the "Governor" is required to forward all these petitions and studies to the "Bureau" which thereafter conducts all the proceedings related to the petition except as hereafter specified (WC 248, 249).

D. *Notice*

The "Governor" delivers a copy of the petition to the respective "Federation" (see 2-3-2). The petition is then published in three newspapers, one in the principal city of the "Department," one in the capital of the Province, and one in Santiago. The petitioner is required to pay the publication costs (WC 252).

E. *Opposition*

Those opposing the petition must file an answer with the

"Governor" within 30 days after the date of the last publication. This answer must be accompanied by supporting proof and be in a direct and simple form (WC 253). The petitioner will receive a copy of the answer by certified letter and he is required to file a reply within 15 days from the mailing date of the letter (WC 254). Thereafter all the documents are forwarded by the "Governor" to the "Bureau" (WC 255). If there are defects in the proceedings up to this point, the "Bureau" makes a demand on the interested party to cure the defect within a fixed period not to exceed 70 days. If the party fails to respond his rights are forfeited. The "Bureau" may at its discretion order a visual inspection of the area involved and charge the costs thereof against the parties (WC 256).

F. Provisional Concession

After the termination of the above proceedings, the "Bureau" executes an administrative resolution which contains a provisional concession and includes the following: 1) the name of the concessioner; 2) the name of the water source; 3) the quantity of water in metric time measurements and, if for energy development, the energy generating capacity; 4) the exact location of the diversion, the method of diversion, the means of conveyance and the energy to be developed; 5) the use to which it will be applied and the location of the land or industry where it will be used; 6) if it is for industrial use or power generation, the location where the water will be returned to the source of the supply; 7) the amount of money to be deposited to cover the costs of a visual inspection if this is ordered; 8) the quality of the grant, that is, whether it is permanent, contingent, continuous, discontinuous, or alternating in time with other rights (see subparagraph M); 9) a description of the lands or goods that must be utilized or expropriated for the construction of the works, diversions, or other rights-of-way; 10) the period granted to the concessioner to present his final plans, descriptive memorandum of the project, cost estimates and technical specifications. This period may be extended by the "Bureau" (WC 43, 44, 257).

This provisional concession gives to the concessioner the right to carry out detailed studies of the diversion and canal works on the property involved as a basis for the preparation of the final plans and specifications for the work (WC 258).

G. Effect of Final Approval of Plans

The final plans must be presented to the "Bureau" who approves them and fixes the period within which the described

work is to be commenced and terminated (WC 259). The approval of plans by the "Bureau" gives to the concessioner the following rights: 1) to provisionally use the land necessary for the construction of the diversion and the canals; 2) to transport to the diversion site the sand and gravel for the construction of the works. [The property owner may avoid imposition of this right-of-way by supplying materials needed at arbitrated prices]; 3) to construct the diversion works in the riverbeds; 4) and if necessary, to use land to supply electrical power to the construction site (WC 260).

The property owner must be indemnified for his damages before the water user can exercise the above rights. In the case of a disagreement as to the amount of indemnification it is resolved in the ordinary courts, and the judge also may order into execution the possession of the land after deposit with him of the sum fixed in the provisional concession for expropriated land or rights-of-way (WC 260).

H. Construction

The interested party may request approval of modification in the plans during the construction of the works, or before the initiation of the changes by submitting adequate proof of the need (WC 261). The "Bureau" may make inspections at any time during construction and the "Bureau" must be notified upon completion of the works. The "Bureau" may require modifications in the works within a fixed period (WC 262, 263).

I. Final Concession

After compliance with the above requirements the "Bureau" issues a resolution approving the works and granting the final concession. If the actual capacity of the works is less than was provided for in the provisional concession, the quantity shall be reduced in the final concession. This concession except as modified, contains the same elements as the provisional concession and is a formal public document signed by both concessioner and the official designated for that purpose (WC 266). If the concession is made to more than one concessioner, or involves a diversion from a canal where the users are not organized into a "Users Organization," the formation of such an organization exist, it must be revised to include the concessioner (see also 2-3-2) (WC 175).

J. Reconsideration and Appeal

The resolutions of the "Bureau" become effective immediately upon their promulgation. Nevertheless, any interested

party may request reconsideration of a resolution within a period of 30 days from the date of his notification of the entry of the resolution. If the "Bureau" does not act on the request for reconsideration within 30 days from the date of the filing of the request it is deemed to have refused the reconsideration (WC 296).

K. Enforcement of Resolutions

The "Bureau" may require the Provincial Chief or Departmental Governor to provide local police assistance for enforcement of its resolutions (WC 296). Resolutions which fix the amount of indemnification to be paid for land expropriations related to established rights-of-way may be contested in the ordinary courts within a period of 30 days following the date notified or after the "Bureau" has executed the resolution or the amendment of a reconsidered resolution according to the case (WC 297).

L. Notice of Resolutions

When a resolution is entered by the "Bureau" it is required to personally serve notice on all affected parties, or if this is impractical, by publishing the resolution in a newspaper in the principal city of the "Department" where the affected real property is located or if there is none then in one in the capital of the Province. If the affected land is located in more than one Department or Province the publication may be in any one of them. Personal notices are served by the official designated in the resolution (WC 298).

M. Characteristics of Concession

1. *Implied Characteristics:* By operation of law, certain rights are vested in the holder of a concession to use water. Thus: a) He is vested with the means necessary to exercise the right (WC 13); b) he may construct at his own cost the works which are necessary for the exercise of the right (WC 14); c) necessary rights-of-way over private property are implied by law without prejudice to the property owner's right to receive indemnification (WC 40); d) he may occupy public lands which are necessary to exercise his right (WC 41).

2. *Classifications:* Each concession may contain varying characteristics as to the manner in which it may be exercised as follows:

a. *Permanent Exercise:* This characteristic will not be implied and must be specified in the concession. It signifies

that the concessioner may use the waters belonging to him even though the supply in the water source is insufficient to satisfy all the granted rights (WC 17, 18, 19).

b. *Eventual Exercise*: All concessions which are not specifically designated to be of *permanent exercise* are of *eventual exercise*. This signifies that the concessioner only has a right to use the waters from the source during those periods when there is an excess above the necessities of all *permanent exercise* rights (WC 17, 18, 20).

c. *Continuous Exercise*: A right could be *continuous* and also either of *permanent* or *eventual* exercise. Its character as *continuous* signifies that it is a right in which a fixed quantity of water may be diverted continuously, but if it is also *eventual* the right would be subject to the existence of excesses in the source as explained in b above (WC 38).

d. *Discontinuous Exercise*: A right could be of a *discontinuous* exercise and also either *permanent* or *eventual*. Its character as *discontinuous* indicates that it can be exercised only during specified seasons or periods of time. If it is also *eventual*, it may not be exercised even during the permissible seasons or times if there is not an excess in the source of water supply as described in b above (WC 38).

e. *Alternating Exercises*: The "Director" may grant concessions over the same water to different persons for different uses and specify the time of day that each may use the waters. These rights are called rights of *alternating* exercise (WC 43).

f. *Summary*: Based on the above classes, any one concession could contain the following combinations of rights of exercise: 1) permanent, continuous or discontinuous; 2) permanent, discontinuous and alternating; 3) eventual, discontinuous and alternating; 4) eventual, continuous or discontinuous; 5) eventual, discontinuous and alternating; 6) or any combination of them.

Other related subjects are found in F and I above dealing with concessions and also in 2-5-5 dealing with limitations and obligations of users.

2-5-3 *Procedural Protection of Rights*

A. *Original Jurisdiction of Boards of Water Users Organizations*

1. *General*: The Boards of Directors of "Associations," "Communities," and "Federations" (see 2-3-2) constitute *Arbi-*

tration Boards and have original jurisdiction to hear and pronounce judgment over the following classes of water disputes: a) disputes related to the distribution or division of water between the shareholders of the organization; b) disputes between the shareholders of the same organization related to the exercise of their right as a shareholder; c) disputes between the shareholders of an organization and the organization related to the exercise of their rights as a shareholder; d) conflicts over construction or repair of control structures (WC 110, 144, 168).

2. *Procedure*: A claim is filed with the secretary of the Board, and within 24 hours the Board must meet to hear the complaint. The Board must notify the interested persons and provide them with an opportunity to be heard. The hearing must be completed and a decision rendered within 30 days after the filing of the claim. If the Board fails to render a decision within that time, the members of the Board are subject to a fine, and the jurisdiction over the controversy passes to the ordinary courts (WC 145). The resolutions or decisions must be signed by a majority of the Board members present and the interested parties are given notice of the resolution or decision by a certified letter. After notice has been given, the Board executes or enforces the decision and may request the assistance of the local police authorities in the enforcement (WC 146, CPC 636-644).

3. *Appeal*: Any interested party may appeal the decision at any time within six months from the date of the resolution. The right of appeal is made to the ordinary courts and is handled as a "summary claim." The original resolution is enforceable notwithstanding the appeal unless the judge in the ordinary court suspends the execution of the resolution. This class of appeal is given preference for an early hearing on the court calendar (WC 147).

B. *Original Jurisdiction of Ordinary Courts*

1. *General*: The articles of association for "Associations" and "Federations" must be formalized in a hearing before the Judge in Department where the river or canal is located (WC 89, 170). In the case of "Communities" which do not have formal articles of association, the rights of members are determined by the ordinary courts (WC 157). Articles of association for "Associations and Federations" establish the quantity of water rights of each shareholder in relation to other

shareholders and total the water allotment of the organization (WC 91, 157, 158, 172).

2. *Procedure:* The proceedings are initiated by an interested party or the "Bureau" by petition to the Judge of the Department where the water source is located, or if it is in more than one Department then to the Judge of the Provincial Capital, or if it is an interprovincial river then in the court of the oldest province (WC 89, 157, 170).

Notice of the hearing on the petition is given by four publications; three in a newspaper in the Judge's "Department," and one in a paper in Santiago. There must be a period of at least 10 days between publications. If no more than one person attends the hearing, the notice is repeated and the hearing is then held regardless of the number attending. If the interested parties are known to total less than four, then notice may be given by personal service of a citation (WC 90, 157, 171).

On the basis of the hearing, the technical studies, the report of the "Bureau" and the titles and precedents provided by the parties, the judge resolves the conflicting rights and declares the existence of the "Community," or in the case of "Associations" and "Federations" he orders the formulation of a legal entity and dictates the provisions of articles of association (WC 91, 158, 172). In the latter case, the articles of association must be approved by the "President" on advice of the "Bureau" before they become effective (WC 91, 173).

Conflicting claims to privileges or preferences by use right holders do not delay the formation of the "Association." The judge decides the form of their entry into the "Association" based solely on the titles and records.

3. *Review and Appeal:* Those persons who claim to have been prejudiced by the resolutions may have their claims heard before a judge at any time within five years from the date of the resolution or judgment (WC 92, 163, 174). Direct appeals from the resolutions or judgments are limited to a request to the higher court for a remanding of the cases for a re-hearing with instructions to the lower court as to how to proceed on re-hearing. The appeal does not include the right to an annulment of the proceedings. Executory judgments resulting from the new proceedings which modify earlier judgments are given preference on the court calendar.

Those who did not appear and claim their rights may do so

at any time at their own cost. Agreements and resolutions that result from new proceedings take precedence over previous determinations (WC 160, 162, 163). (See also Title 2-3-2).

2-5-4 *Rights Under Prior Laws*

All private ownership rights to water prior to the enactment of the Water Code were expropriated for the purpose of incorporating all waters into *public ownership*. The former owners are allowed to continue to use the waters that they formerly used but with all the limitations attached to *use rights* under the Water Code (see also 2-5-1-A) (WC 10).

A water use right holder affected by partial or total expropriation of his right may claim indemnification for the resulting damages. If the expropriation affects irrigation water then the indemnification is solely for the reduction in the value of the land that results from a new right which provides less water volume per hectare as determined by the "rate of rational and beneficial use" applied to the number of hectares that the farmer irrigated before the new law (see subtitle 2-5-5-B); (WC 32).

2-5-5 *Limitations and Obligations of Users*

A. *General*

All water use rights are subject to the following general limitations: 1) it is the concessioner's responsibility to pay for the works that are necessary for the exercise of the right (WC 14); 2) the "Bureau" has the right to change the source of supply provided that the concessioner obtains the same quantity and adequate quality from the substituted source (WC 24); 3) concessioner may not change the use to which the waters are applied without the authorization of the "Bureau" (WC 39); 4) water for irrigation may only be diverted or used when there is a necessity to irrigate and only in a measure adequate for the needs except when diverted for storage (WC 54); 5) water users in the Provinces of Tarapaca and Antofagasta must provide water for needed public services including government railroads without compensation (WC 69, 70, 71).

B. *Limitations as to the Rate of Beneficial and Rational Use*

1. *General:* The "President" may establish rates of rational and beneficial use of waters for various applications in specified geographical zones based on technical studies by the "Bureau" (WC 26).

2. *Definition:* The rate of rational and beneficial use for irrigation is defined to be the annual volume of water in metric time measurement obtained by adding the monthly distributions necessary to provide for the development of one hectare of land and considering the predominant or preferred crops of the region, the ecological conditions of the land and the use of efficient techniques of irrigation. This hectare rate is then multiplied by the number of hectares on the farm to arrive at the maximum annual volume of water which is further broken down into monthly distribution rates (WC 27).

3. *Procedure:* The first step in fixing such rates is a technical study by the "Bureau" that must be completed for the geographical area involved. Once the study is completed it is published in a newspaper or journal within the "Department" to which it applies. The portion of the study that is published must contain the conclusions of the study related to the recommended rates of use. The interested parties must be given an opportunity for a hearing before the "Bureau." Representation of the users in the hearing is confined to their representation by the president of their "Association" or "Community," if they are members of one of these organizations. The observations by these interested parties must be presented to the "Bureau" within 30 days from the 1st notice of publication. After the time period expires, the "President" establishes the rate of rational and beneficial use for that geographical zone in a Presidential Decree. The rate may be changed by the same procedure when any of the factors which formed the base for the rate are altered. These rates as well as modifications take effect at the end of the agriculture season following the date of the decree (WC 26).

4. *Effect of Rate Fixing:* The Presidential Decree fixing the rate of rational and beneficial use has the effect of totally or partially terminating, without compensation, all water use right regardless of its origin should the volume of water previously utilized for irrigation exceed the rate so fixed (see also 2-5-4) (WC 2, 3, 32).

C. *Sale, Rent or Transfer of Rights*

Water rights may not be assigned or transferred, except to the purchaser of the land or industry to which they are attached. The law is silent on water rentals, but presumably the same rule applies. When land is subdivided by inheritance

or sold in parts or otherwise, the "Bureau" must approve the division of the water rights related thereto (WC 12).

D. *Obligations*

Every water user is required to control his diversion from the source of his water with a gauge or measurement device in the form of a bulkhead or gate installed at his expense. If a community is benefited by such works, the State may contribute to the cost and provide technical assistance (WC 46). Failure to comply with this requirement may result in a fine (WC 113).

E. *Others*

For related material, see 2-5-2-F, I, and M.

2-5-6 *Loss of Rights*

A. *Suspension*

Water Users are required to execute irrigation works ordered by the "Bureau." If the users fail to do so, the "Bureau" may construct them and charge the costs against the corresponding users. If the users fail to pay the costs, their water rights may be suspended by the "Bureau" until the costs are paid (WC 23).

B. *Termination*

1. *Fixing Use Rates*: When the "President" fixes the rate of rational and beneficial use, as provided in 2-5-5-B, all use rights terminate to the extent that they exceed the rate so determined (WC 29).

2. *Obligatory Termination*: The "Bureau" is required to terminate use rights: a) when the water has not been used for a period of two consecutive years, b) if the water is used for two consecutive years for some purpose other than that for which it was granted; c) if the concessioner attempts to sell or transfers the right except as a part of the sale of the property to which it was attached (WC 12, 30, 39).

3. *Discretionary Termination*: The "Bureau" may terminate use rights for the following reasons: a) If for a period of less than two years the water is applied to some use other than that for which it was granted (WC 39); b) when a user diverts for irrigation use more water than required for his irrigation needs except for authorized storage (WC 30 54); c) if the concessioner fails to complete the works ordered by the "Bureau" within the time ordered, [however, this period may be extended] (WC 30); d) failure of the concessioner to comply with the

limitations and restrictions included in the temporary or final concessions (see 2-5-2-F, I) (WC 30, 257, 259, 263).

There is no indemnification for any of these lapsed or terminated rights (WC 30, 31).

C. *Expropriation*

1. *General*: The "President," at the request of the "Bureau" through a Supreme Decree, may declare total or partial extinction of water rights regardless of their origin for the following purposes: a) to apply the water to potable water or other domestic uses or; b) when the water is needed for the economic development of a zone (WC 28); c) when the "President" decrees areas of rational and beneficial use as provided in subtitle 2-5-5-B, the use may continue until new concessions are made by the "Bureau" to those waters (WC 35).

2. *Indemnification*: If a use right for irrigation is expropriated or extinguished as provided previously, there is no compensation or indemnification payable to the extent that the right expropriated exceeds the quantity of water calculated to be the rate of rational and beneficial use in accord with 2-5-5-B. Compensation is payable for expropriated water that does not exceed that rate. The amount of compensation is not determined by the market value of the water, but rather by the reduction in the value of land caused by elimination of, or reduction of, the water for irrigation (WC 32).

The amount of indemnification as determined by the foregoing formula must be paid with a down payment of 33 percent of the total and the balance in five equal annual installments. The balance must be readjusted in accordance with the official change in the consumer price index with an additional three percent per annum for interest added to this adjustment. The investments that have been made by the water user in the irrigation system within five years prior to the date of expropriation must be added to the 33 percent down payment (WC 34).

2-6-0 OBLIGATORY WATER USE

Areas benefited by works of irrigation constructed with state funds by the National Irrigation Enterprise constitute *zones of obligatory irrigation*. The determination of the amount and location of land included within such zones are determinations made by the "Bureau." The affirmative obligation to irrigate does not take effect until the system is declared to be in operation in parcels or totally (WC 316).

Certain peasant land owners who have been temporarily utilizing waters covered by a reserved water right and certain lands which are excluded from expropriation under the Agrarian Reform Law are exempt from this obligation to irrigate (WC 59, 62, 63, 64).

The effect of the obligation to irrigate seems to be more of a compulsory contribution by the landowners in the benefited zone to the cost of the works than one of a compulsory obligation to irrigation (see 2-10-0-A).

2-7-0 PRIORITIES BETWEEN USE RIGHTS

2-7-1 *Order of Priorities*

If more than one petition for water use rights to the same water are pending at the same time, the preference is to be awarded in the following order:

1. Drinking and potable water supplies to communities and industrial centers;
2. Domestic uses, community sewage disposal, health protection and disease prevention uses;
3. Other uses.

Within each category, the "Bureau" must give preference to those uses it deems to be of greatest importance and utility. Under equal conditions, the petitions within a category are preferred according to the date of the petition (WC 42).

Certain classes of concessions are given priorities in the process of water use as described in 2-5-2-M.

One who has discovered subterranean water pursuant to a valid exploration permit has a preferred right to a concession or grant to that water provided that the petition is made within six months after the expiration of the exploration permit (see also 2-12-0) (WC 64, 66, 278).

In times of unusual drought, the "President" may declare zones of scarcity on the petition or on the report of the "Bureau." Once this declaration is made, the "Bureau" may redistribute the available water in order to minimize the damages resulting from the drought and may suspend the functions of the "Users Organizations" and other systems for the division of the natural stream within the zones. The decree of the "President" and the resolutions of the "Bureau" made pursuant to this authority may be immediately enforced subject only to the future review by the National Controllers Office (WC 332).

70 *Order of Priorities*

A form of priority is given to the "President" in that he may declare any use right extinguished in order to serve other uses in conformity with the principles set out in 2-5-6-C.

2-7-2 *How Priorities Operate*

The Chilean law is amply clear as to how priorities operate and the previous section needs no elaboration.

2-8-0 RIGHTS-OF-WAY RELATED TO WATER USE

A right-of-way is defined as encumbrance on one parcel of property for the benefit of other property with a different owner or a limitation on ownership for the benefit of another (CC 820).

Rights-of-way are inseparable from land to which they actively or passively attach and acquire such permanence as is provided by law. The property which is encumbered is called the servient estate and the property benefited is called the dominant estate (CC 821-1).

Other classifications of rights-of-way and forms are: a) they are "active" with respect to the dominant estate (CC 821-2); b) they are passive if the servient owner is obligated to act affirmatively and "negative" when he is prohibited from doing something which he could have otherwise legally done (CC 823); c) "continuous" if they can be exercised without interruption and "discontinuous" if exercised at intervals of relatively long periods (CC 822); d) they are "apparent" if continuously exposed to view and "inapparent" when there is no visible indication of their existence and for prescription or adverse use can be classed as continuous and apparent or non-apparent or discontinuous and apparent or non-apparent; e) according to origin they are "natural," "legal" and "voluntary."

2-8-1 *Natural and Voluntary and Automatic Rights-of-Way*

As classified according to origin the following rights-of-way have special significance to water use:

A. *Natural Drainage Right-of-Way:*

Lower properties are subject to a right-of-way to receive the waters that descend naturally from higher property, provided that the direction of the flow is not changed by the intervention of man. However, one may not intervene in the natural drainage pattern to direct the drainage over other parts of the lower property without establishing a special right-of-way (WC 189, CC 833). Neither the servient owner nor the dominant owner may obstruct the right-of-way, and the dominant

owner may not increase the burden of the right-of-way (CC 833). Both owners have the right to construct dikes and walls provided that they do not unduly obstruct the descent of the water (WC 190, 191).

B. *On Riparian Lands of Navigable Rivers, etc.:*

Riparian lands bordering navigable and floatable rivers and lakes are subject to the following rights-of-way: a) to leave free space on the banks which is necessary for floatation and towing, [a width of three meters if for pedestrian towing, a width of eight meters for animal or mechanical towing, and if of greater width, there must be indemnification for the excess]; b) to allow such navigators to remove their boats from the water, secure them to trees, repair them, dry the sails, purchase, and sell their goods to the people along the bank; c) in case of emergency or urgent necessity, allow unloading of salvaged goods on the banks (WC 212, 214, 219, CC 839).

No one may plant crops or trees or place any structures in the tow path which would hinder its use (WC 218).

The "Bureau" determines which lakes and rivers are *navigable and floatable* (WC 215).

C. *Voluntary Rights-of-Way:*

Anyone may subject his property to such rights-of-way as he chooses and acquire them over neighboring properties with the consent of their owners provided they do not violate public policy or the law (CC 880, WC 235).

These rights-of-way may originate: 1) from a title, will, or contract or a practice which is reduced to a public document and accepted by the parties (CC 698); 2) in court decrees as provided by law (CC 880, WC 235); 3) by prescriptions or adverse use of an apparent right-of-way for a period of five years (CC 882-2, 884); 4) by declaration by the father of a family.

The title which establishes this class of rights-of-way can be supplied by a current express acknowledgement of the owner of the servient estate or in its absence an earlier acknowledgement (CC 881, 883).

3. *Official Rights of Entry:* Members of the board of directors and enforcement officials of "users organizations" have a right to enter private property when necessary to carry out their functions. If the property owner resists such entry the Board of Directors may require the assistance of the

local police authorities. The property owner who resists is also subject to a fine (WC 142).

The officials of the National Irrigation Enterprise are given a right to enter and occupy lands contiguous to the irrigation works of the enterprise when it is necessary to correct defects in the distributive system or to reinstate the service of the system. No previous notice is required to be given, but thereafter the Enterprise is required to indemnify the owner of the property for the damages resulting from the occupation (WC 324). Officials of the Enterprise may also enter private lands for the purpose of making the studies and preparations that are necessary for the construction of the irrigation works. The property owners are entitled to previous notice and also to indemnification for the damages caused (WC 325).

2-8-2 *Forcefully Imposed Rights-of-Way*

A. *Canal Rights-of-Way in General*

Property is subject to the imposition of a right-of-way for a canal as detailed in B1. The right-of-way consists of a way by which water may be conveyed through the servient property at the expense of the interested party and subject to the regulations of the water code (CC 861).

The water code in regulating water use rights gives to a user the means necessary to exercise his right including the right to remove the water from a source on neighboring property, the right to go to and from the source even though such rights may not have been expressly provided for in the title creating the right-of-way. (WC 13, 185; CC 628).

All forcible rights-of-way related to water use are imposed through administrative rather than judicial proceedings.

When a water use right is granted through the process described in 2-5-2, the rights-of-way necessary for utilizing the water are imposed as an integral part of that same proceeding. The procedural aspects of such rights-of-way are not repeated here, but the substantive provision will be covered in this title.

Also covered in this title are rights-of-way for canals and works of the National Irrigation Enterprise, those related to livestock watering, and conducting water in private canals and streams of public use.

B. *Related to Granting Water Use Rights*

One who has a right to use water is also vested with the means necessary to make the right effective. He may construct

the works that are necessary to exercise such right, but at his own cost (WC 13, 14, CC 841).

By operation of law, the concession of a water use right carries with it the imposition of such rights-of-way over public lands as are necessary to make the right effective (WC 41), and also to impose such rights-of-way over private property, subject only to the payment of the indemnification required (WC 40). The procedural requirements are integrated into the process for granting water use rights as provided in 2-5-2 (WC 250 to 266). The general substantive and some special procedural characteristics of these rights-of-way are hereafter described.

1. *Conditions Precedent*: All land is subject to the imposition of a right-of-way for a canal except land covered by homes, buildings, patios, stadium, gardens and landing fields (WC 192, 196). The property that will benefit from the right-of-way must need the water for growing crops or pastures, be a community that needs the water for the domestic needs of its inhabitants or an industry that needs the water to power its machines (WC 192).

2. *Characteristics*: The right-of-way consists of a passage way by which water may be conducted through the servient property at the expense of the dominant property owner (WC 193; CC 861). The right-of-way includes the right to construct the canal, the diversion works and also drains to discharge the water after its use into natural channels (WC 193, 210; CC 870).

a. *Route*: The route of the right-of-way through the servient property is determined by the following criteria: 1) the route that permits the free flow of water; and 2) that which according to the nature of the soil will not make it unduly costly.

Within these two limitations, the alternative that is given preference is the one that does the least damage and is the shortest. The shortest course is defined to be that which is the least prejudicial to the servient estate and least costly to the interested party. The granting authority must reconcile the interests of the parties and in doubtful cases must decide them in favor of the servient property (WC 195).

b. *Width*: The width of the right-of-way is basically determined by the technical requirements for the canal to carry

the water plus one meter width on each side of the canal as a passageway. The marginal width may be greater by agreement of the parties or by order of the judge when such additional width is required to contain the debris from maintenance and construction (WC 198, 210).

c. *Indemnification*: The interested party must pay the servient owner the value of the land occupied by the canal and the margins as described above, plus an additional ten percent of this total value. The interested party must also pay the damages caused by the construction, filtration and overflow which result from defects in the construction of the works (WC 198, 210).

d. *Type of Construction*: The general canal specification is for the open trench type. However, the covering of the canal may be required when it passes through communities or when it emits noxious odors. If canal coverings are required, it is not the responsibility of the canal owner if the conditions requiring the covering arise after the initial canal construction. However, should the owner receive some benefit from the covering, he must contribute to the costs on terms and conditions determined by the "Bureau." Resolutions of the "Bureau" fixing the amount to be paid for these covering costs may be collected through the regular judicial processes. The "Bureau" may suspend the water supply to anyone who fails to pay his portion of such costs (WC 201).

The works must be constructed in such a way as to prevent damaging infiltration, overflow, stagnation, rubbish and drift accumulation. The construction must include bridges, flumes and siphons as are necessary for the best administration and communication within the servient property (WC 194, 207).

e. *Rights and Obligations of the Parties*: The owner of the canal may prevent any plantings in the marginal space above referred to and may also re-enforce the banks of the canal, provided that in so doing he does not damage the servient property (WC 199).

The owner of the servient property may require those who petition for a canal right-of-way over his property to utilize an existing canal and share in the costs of maintenance, construction and repair, provided that no substantial prejudice results to the interests of the dominant owner (WC 200). Improvements can be made to the right-of-way by either party

provided they do not damage the interests of the other party (WC 203).

After giving notice to the owner of the servient estate, the dominant owner may enter the right-of-way and clean, maintain and repair the canal. Watchmen may make reasonable visits over the right-of-way (WC 204).

If the dominant estate is divided or partitioned, the right-of-way remains in force, not only in the former servient estate, but also over the upper portions of the partitioned property (WC 202).

If a right-of-way is abandoned, the ownership of the land reverts to the owner of the servient property without the necessity of returning the compensation originally paid (WC 209).

C. *Right-of-Way for Cattle Watering*

Every community, settlement, or property that lacks the necessary water for the watering of its animals is given a right to forcefully impose a right-of-way for cattle watering to a water source. The corresponding indemnification must be paid. This right-of-way consists of a right to the passage of animals over roads or usual paths to drink from waters on the servient property on fixed days and hours and at determined locations (WC 220).

This right-of-way may not be imposed over artesian or ordinary wells, cisterns, reservoirs, or water in containers on enclosed properties (WC 221).

The owners of mines which are worked with animals are also entitled to the benefit of this right-of-way (WC 222).

The servient owner may change the direction or location of the canal or the trail provided that he does not impede the exercise of the right (WC 220, 223).

D. *Conducting Water in Public Streams and Private Canals*

1. *Public Streams:* Water destined to private use can be conducted through public streambeds and can be extracted at a lower point with the authorization of the "Bureau." The user is obligated to pay all of the costs related to the introduction into and extraction of the water from the natural stream and also all resulting damages. The maintenance and conservation costs must be prorated between all users (WC 82).

Such a user may not remove more water than he introduced into the stream less the losses by evaporation and filtra-

tion, considering the distance it flows and the condition of the streambed (WC 83).

2. *Private Canals:* Private owners of canals are required to allow the introduction of other water into their private canals. Such owners have the right to be indemnified by the beneficiary for the damages caused by the introduction of the water into the canal. No damages result from the fact alone of the introduction of additional water into the canal or the works. The beneficiaries must contribute to the common expenses that result from their common use of the canal. In the event that a widening of the canal or other amplification or modification of the canal or works is required, the related costs and indemnification must be paid by the beneficiaries (WC 113-3).

E. *Canals, etc., of the National Irrigation Enterprise*

The expropriation of land necessary for the canals and irrigation works of the National Irrigation Enterprise is declared to be of public utility and is authorized by law. This right of expropriation also includes removal of the necessary sand and gravel and other land required in the construction process.

The expropriation process is initiated by a resolution of the Board of Directors of the Enterprise. Notice of the expropriation is given to the affected parties through publication of the resolution in the "*Diario Oficial*" and two publications in a newspaper in the principal city of the "Department" where the real property is located. If there is not such a newspaper in the "Department" then it must be published in the newspaper of the Province.

In these cases, the amount of indemnification payable to the land owner is determined by the official tax valuation in force at the time of the expropriation, plus the value of improvements that are not included in the valuation. The valuation of these additional improvements is determined in the first instance by the Enterprise in the original expropriation resolution.

If only a portion of a tax valued property is expropriated, then the determination of the value of that portion is the responsibility of the Bureau of Internal Revenue.

The interested parties may appeal the question of increased property value due to additional improvements which do not

appear in the official tax valuations. All other questions are final and non-appealable. An appeal on the question of increased value must be made within 15 days from the date of publication of the expropriation resolution to the Judge of Large Debts of the jurisdiction where the property is located. The proceedings before the judge are "Summary Proceedings."

The indemnification, once determined, is paid with 33 percent as a cash down payment with the balance payable in five equal annual installments. The installments are adjustable to inflation according to the Bureau of Census and Statistics consumer price index change plus an interest charge of three percent on the base price and 50 percent of the consumer price readjustment.

The Enterprise must pay into the Treasury the down payment as security for its payment to the land owner. If this is not paid within six months from the publication of the resolution, the land owner may petition the Judge of Large Debts for a cancellation of the resolution of expropriation. The Enterprise must be cited to appear and answer. The only valid defense is proof of certification of consignment of money to the Treasury.

Once the consignment of money is made, the Enterprise may require the Registry of Real Property to register ownership of property in the name of the Enterprise. At this time they may take possession of the land. Local authorities are required to assist in delivery of possession of property when this is necessary (WC 396).

2-8-3 *Termination of Rights-of-Way*

Rights-of-way related to water use are terminated or extinguished for the following reasons: 1) the lapse, extinction, nullification, rescission, or cancellation of the right by which it was constituted; 2) by the arrival of the day or condition on which it was expressly declared to terminate when created; 3) by confusion, that is, when title to servient and dominant estates become united in the same person (WC 236-237, CC 885); 4) by renunciation of the right-of-way by the owner of the dominant estate; 5) by non-use of the right-of-way for a period of ten years. The commencement of the period is counted from the time that the dominant owner stops using a right-of-way of discontinuous use. For those of continuous use, it commences at the time the dominant owner commits

78 *Termination of Rights-of-Way*

some act inconsistent with the right-of-way; 6) by changing the use to which the water is intended to be applied or the course of the canal in some limited situations (WC 236, CC 885); 7) once a canal is abandoned the exclusive use and enjoyment of that land vests in the owner of the servient estate without the need of returning any of the indemnification that he may have originally been paid (WC 209).

2-9-0 HARMFUL EFFECTS

2-9-1 *Flood, Erosion Control and Conservation*

The "Users Organizations" are each responsible for providing for the conservation of the water channels and irrigation works which are within their respective jurisdictions (WC 181-6, 141-21).

The National Irrigation Enterprise is responsible for formulating programs, encouraging practices and constructing works of conservation for specific watershed areas. This is done in coordination with the Ministry of Agriculture for control of erosion, sedimentation, flooding and other harmful effects of water that could adversely affect irrigation works (WC 301-d).

2-9-2 *Drainage*

The National Irrigation Enterprise is charged with the responsibility of planning and executing works for the drainage of agricultural lands with government funds (WC 301). The right is given to private individuals and to the National Irrigation Enterprise to impose rights-of-way for drainage canals in the same form as for the imposition of canals for water supplies (WC 205, 301-6).

2-9-3 *Contamination*

The primary control over water quality and contamination is accomplished through the "Bureau" by placing limitations in concessions for industrial power or non-culinary and non-irrigation users. Thus these concessions or grants contain specifications as to the condition or quality of water that these users must return to the water source (WC 57). The diversion of such waters from the water source, its use and return to the source, is required to be carried out in a manner that will not result in injury to the rights of third parties as to the quantity, quality or substance of the water. The "Bureau" is given regulatory power over the rules related to water quality as they apply to all classes of users (WC 58).

Users of water for generating motive force are subjected

to specific penalties for discharging substances into the water that alter the quality of the water (WC 232-2).

2-10-0 FINANCING WORKS AND ADMINISTRATION

A. *Constructed with State Funds*

The National Irrigation Enterprise is the exclusive organization through which funds of the government are channeled for construction of irrigation and drainage works for the benefit of agricultural lands (WC 301). The costs of construction, operation and maintenance of these systems are charged against the beneficiaries of these works according to the following formula.

In such projects the area included within the influence of the project as determined by the "Bureau," constitute zones of compulsory irrigation where the benefited land owners must pay for construction and operation costs of the system. The obligation commences when the Enterprise declares the system to be in operation which may be done in parcels within a zone (WC 316).

The beneficiary pays a permanent annual assessment based on the unit volume of water he is entitled to. This volume is determined in accordance with the rate of rational and beneficial use. Such volume is prorated on the basis of the total volume of water in the whole system and this ratio is applied to the total cost of the project. The annual assessment is arrived at by amortizing the individual beneficiaries assessment for a period not to exceed fifty years.

To determine the cost of the project in this formula, annual investments made by the Enterprise in the project are re-adjusted to the changes in the consumer price index. In justified cases the "President," on the recommendation of the Enterprise, may assign part of the costs to be born or paid by the government and not charged against the beneficiaries. These costs must be justified as indirect or intangible benefits to social or regional development or the national interest.

After consideration of the above factors the "President" fixes the assessment of each beneficiary on the recommendation of the Enterprise. The annual assessment once fixed is adjusted according to the changes in the consumer price index, but only to 70 percent of the index change. Assessments may be modified in the same way when the amount fixed is insufficient to continue the service.

Certain peasant land owners who have used a reserved water right and some lands excluded from expropriation under the Agrarian Reform Law are exempt from the obligation to irrigate (WC 317).

In addition to assessment for the costs of the project as provided above, beneficiaries are also required to pay their proportionate share of the direct operating and maintenance costs including the following items: cleaning; minor repairs to gates and mechanical devices; maintaining structures and special and general works; power and fuel necessary to operate the works and maintain the grounds. Extraordinary repairs and major replacements are paid by the Enterprise. If certain costs result in improvements to the system which increase the water available or reduce operating costs, these are treated as new capital investments and are charged accordingly (WC 318).

B. *Water Users Organizations*

Members of the "Communities" and shareholders of "Associations" and "Federations" are obligated to pay assessments to the organization to cover costs of administration, maintenance of the system and construction of the works. These costs are prorated between the shareholders according to the quantity of their right in proportion to the total quantity of all of the water rights in the organization. This ratio is then applied against all of such costs to arrive at the assessments. If those that benefit from certain improvements are less than all of the shareholders, then the actual beneficiaries share the costs according to the same formula (WC 97, 115, 155, 168, 169).

"Associations" and "Federations" have the power to pledge the credit of their shareholders to borrow money for the construction of irrigation works. They may issue bonds for the repayment of loans and impose assessments on the shareholders to pay the bonds on maturity. The State Bank of Chile is authorized to make loans for up to 75 percent of the value of the property and works of the "Federation" or "Association" (WC 100, 104).

C. *Individual Users*

Individual water use right holders are also specifically empowered to construct at their own costs the works that are necessary to utilize the water (WC 14).

2-11-0 LEGISLATION ON USES OTHER THAN IRRIGATION

2-11-1 *Domestic*

The preferred status given to domestic uses of water is covered in 2-7-1.

Grants of water use rights for domestic purposes may be made to individuals as well as municipalities (WC 50). Grants made to private persons for supplying water to the public are temporary and may not exceed 37 years in duration. At the expiration of this time all of the pipes and other accessories to the distribution systems pass to the ownership of the State (WC 51).

Grants of domestic water use rights to *Cooperatives of Potable Water Service* for supply to communities may be made by the "Bureau" without following the procedures normally required for grants of use rights (WC 52).

2-11-2 *Motive Power, Industrial and Electrical Generation*A. *Motive Force*

Water use right grants for generating motor force are limited to the amount of water actually required for the purpose. These grants are also conditioned on the return of the water to the original channel. The quality and conditions upon which it must be returned to the original source are determined by the "Bureau" and specified in the grant. The use of the water for this purpose must not impair its value for subsequent uses for other purposes (WC 56, 57, 59). It is further specified that uses for motive power must not damage use for irrigation and that such users must construct the works necessary to avoid damage to or irregularity in subsequent irrigation uses (WC 60).

Grants for this purpose are temporary and of a limited duration fixed by the "Bureau." However, at the end of the period the "Bureau" may grant an extension for another limited period (WC 59).

The following are special characteristics of a motive power use right: 1) power installations can be made on the main channel or on diversions provided that the regularity of water delivery in the main channel is not adversely affected (WC 226); 2) users must install control gates, auxiliary spillways, works to avoid overflow and filtration, bridges, flumes, and other necessary works; 3) the user must maintain and clean the works at his expense; 4) motive power users may not

82 *Motive Power, Industrial and Electrical Generation*

detain the water without the permission of the owner of the basic use right (WC 228). Criminal penalties are provided for converting the water to a use other than the use for which it was granted and also for contamination of the water (WC 232).

B. *Industrial Use*

All of the provisions related to uses for motive power generation as provided in the previous paragraph also apply to industrial uses of water.

C. *Electrical Generation*

Water use concessions for electrical generation are granted in the same manner and by the same authority as other use rights as above provided. However, rights to diversion works, canals, dams and other works related thereto are granted by the "President" based on a report of the Superintendent of Electrical Services (LE 1, 15). Generation works for a plant of less than 1,000 kilowatt generation capacity need not be approved (LE 2).

2-11-3 *Transportation*

Bridges, crossings or other structures related to water use must not injure or obstruct navigation (WC 84).

2-11-4 *Medicinal and Thermal*

Mineral or mineral-medicinal waters are those that in solution contain valuable substances for industry or medicine (WC 7). The obtaining of a use right to such waters is governed by the same principles as for other water as explained in 2-5-2 (WC 68).

2-11-5 *Mining Uses*

Mining uses are not given any special priority for use under the law (WC 42) and the granting and limiting of such uses is governed by the same principles related to other uses.

2-12-0 SUBTERRANEAN WATER

A. *Introduction*

The process for obtaining a right to use subterranean water after it has been located through exploration is substantially the same as obtaining a grant for any other type of water as provided in 2-5-2 (WC 65, 278). One significant difference is that a preference in granting a use right to such waters is given to the party who discovered the subterranean water through exercise of a valid exploration right, as will be discussed later (WC 64, 66). One may, however, utilize water

from wells on his own property for domestic uses without any formal grant (WC 65).

Special legislation dealing with subterranean waters relates to the right to explore for them rather than the right to use them and also to conditions and controls related to their use.

B. *Explorations*

1. *Right to Explore*: A private property owner may explore for subterranean water on his own land provided that the "Bureau" has not prohibited such exploration and further provided that the exploration is carried out in conformity with the regulations of the "Bureau" (WC 62). The right to explore on private lands is limited to the owner of the land and state agencies. Anyone, including state agencies, may explore on public lands including those public lands legally occupied by private persons.

2. *Permits on Unoccupied National Lands*: All applications for exploration permits for subterranean water on national lands must be filed with the "Governor" of the "Department" where the lands are located, except in the Provinces of Antofagasta and Tarapaca where they are filed with the chief administrative officer of the Province (WC 268). The application must contain: a) the location and extent of the proposed exploration; b) whether the land is irrigated, dry land, or enclosed; c) the use to which the water will be applied; d) a detailed specification of existing surface and subterranean water uses in the zone (WC 269).

The application must be accompanied by: a) a drilling study; b) a situational drawing; c) an explicative report; d) an approximate budget; e) other useful facts and data (WC 270).

The method of giving notice of the proceedings and the form of opposition is the same as covered in 2-5-2-D&E. The only valid grounds for opposition to such an application is either that a permit is already in existence for exploration of the same land or that an application for such a permit is filed and pending (WC 271).

On the basis of the above proceedings the "Bureau" either grants or denies the permit (WC 272). The permit has the following characteristics: a) the area covered by the permit may not exceed 12,350 acres (5,000 hectares); b) the maximum time period is for two years; c) it is made subject to payment

of a security deposit for damages based on the amount of area covered by the permit which is liquidated and settled by the "Bureau" upon termination of the work with the balance returned (WC 63, 272).

Such permits automatically vest in the holder the powers necessary to carry them out on the land (WC 260, 276). If the exploration work is not commenced within six months from the date of the permit or authorization, or if the holder fails to comply with the conditions specified in the permit, the "Bureau" must terminate the permit (WC 277). A permit holder has a preferred right to obtain a water use grant for water discovered during the exploration if he files a petition for such a use right within six months after the exploration permit expires (WC 64).

3. *Permits on Occupied National Lands:* Special restrictions and procedures relate to exploration rights on national lands which are lawfully possessed by individuals. If the possessor opposes an application for exploration the questions related to the right of entry are determined by a judge rather than the "Bureau". The judge may consider the report of experts in the matter of the right of entry and may not grant entry rights on lands that contain buildings, groves of trees, vineyards or other cultivated plants or crops (WC 273). All entry authorizations from the judge are subject to the following conditions: a) the number of workers that can enter the property are fixed and limited; b) the entry must be during a period when the land is not plowed, seeded, or when there is fruit; c) the exploration cannot extend beyond six months from the date of the entry resolutions; d) the applicant must indemnify the possessor of the land for all damages resulting from the exploration (WC 274).

4. *State Agencies — Private and National Lands:* National Institutions, Services and Companies have the power to make subterranean water explorations on private lands and National lands of all classes. Their authorizations for exploration are granted by the "Bureau" and are subject to the same conditions and limitations provided for in the last sentence of the previous paragraph. The owner or possessor of lands covered by such a permit must be indemnified by the exploring agency for damages caused by entry and exploration. The exploring

public agency is given a preference to obtain a use right to water so discovered (WC 66).

C. *Control of Subterranean Water Use and Explorations*

All explorations for subterranean water in Chile are regulated and when necessary prohibited by the "Bureau." Well drilling or construction of wells in violation of regulations of the "Bureau" or unlawful or unauthorized use of such waters is subject to a fine which is doubled on reoccurrence and the well may be closed. In addition to the sanctions mentioned above, the "Bureau" may order construction to be stopped on wells, or that subterranean sources be closed if it is determined that such use is a prejudice to the right of third parties or results in injury to the subsurface water bearing strata. If the owner of the works does not comply with the closing order that "Bureau" may close the well or source and charge the costs against the owner. These resolutions have executive power and may be enforced through the ordinary court system (WC 61).

2-13-0 PENALTIES AND SANCTIONS

Administrative fines are provided for all violations of the Water Code for which no fine is specifically mentioned in the article establishing the prohibition. The fine in such cases is fixed at an amount not to exceed two monthly salaries for an employee of commerce or industry in the Department of Santiago, but shall not be less than one-tenth of one such monthly salary (WC 283). Fines established in the various articles have limits calculated by reference to the same formula but vary in amount according to the gravity of the offense.

Unless otherwise provided in the articles of association for the User Organization, fines for non-attendance of members or shareholders at the annual meeting are not less than one percent nor more than 25 percent of one such salary (WC 113). For illegal tampering with diversion works the fine is not less than ten percent of one such salary and not more than four such monthly salaries and on re-occurrence may be doubled and tripled and the water right suspended (WC 118). Failure to install required measuring devices and misuse of water for motive power generation is subject to a fine of from one-tenth to two such monthly salaries (WC 46, 232). Violation of well drilling regulations and unlawful use of groundwater carry a fine of from zero to five monthly salaries to be doubled on

re-occurrence and the supply may be suspended (WC 61). Misuse of water by a motive power generation user carries a fine of from one-tenth to two such salaries and is doubled on re-occurrence (WC 232). A ditch rider or watchman for a "Federation" is subject to a fine of from one to 50 percent of such salary for failure to carry out his duties (WC 183).

The imposition of some fines is within the jurisdiction of the "Water User Organizations" where such is specifically provided in the law. In situations not otherwise specified, jurisdiction over the imposition of fines is vested in the "Bureau." These fines are levied after a hearing and have executory effect and can be collected through the regular judicial proceedings. Appeals from the imposition of fines can be made by giving notice to the interested party of the resolution establishing the fine (WC 282, 284).

The administrative fines are without prejudice to the regular criminal proceedings relating to acts which also violate the regular penal code.

COLOMBIA

3-1-1 INTRODUCTION

3-1-1 *References and Key to Abbreviations*

A. *References*

The references in this section follow the subject matter to which they refer, and are in boldface parenthesis. These references are alphabetical and numerical symbols such as (CC 101). The letters refer to the law, code or regulation and the numbers refer to the article or section number. The key is as follows with the official Spanish citation following the English but in parenthesis:

- (AR) = Agrarian Reform Law (Ley 135 de 1961).
- (ARA) = Amendment to Agrarian Reform Law (Ley 1 de 1968).
- (C) = Constitution (La Constitution Politica de Colombia de 1, 886 con las reformas).
- (CA) = Law Creating "CAR" 1961 (Ley 3a de 1961, Enero 31).
- (CC) = Civil Code (Codigo Civil, 26 de Mayo de 1873).
- (CM) = Mining Code (Codigo de Miniera).
- (CPC) = Code of Civil Procedure (Codigo de Procedimiento Civil, Decreto No. 1400 de 1970).
- (DR) = Water Use and Irrigation District Decree 1968 (Decreto No. 182 de 1968, Febrero 12).
- (FH) = Water Power Law, 1928 (Ley 113 de 1928, Noviembre 21).
- (IO) = Regulation of water policing law, 1969 (INDERENA Acuerdo No. 14 de 1969, Agosto 26).
- (R) = Decree re-structuring agricultural sector, 1968 (Decreto No. 2420 de 1968, Septiembre 24).

- (RWC) = Regulation of water control law, 1940 (Decreto No. 1382 de 1940, Julio 17).
- (RFH) = Regulation of water power law, 1931 (Decreto No. 1551 de 1931 Septiembre 7).
- (V) = Law on policing public waters, 1942 (Decreto No. 891 de 1942, Abril 2).
- (WC) = Water control law, 1940 (Decreto No. 1381 de 1940, Julio 17).
- (IR) = General Irrigation District Regulation (Reglamento General Para Distritos de Riego).
- (RV) = Vigilance Service Resolution (Acuerdo No. 27, de 1.970 Noviembre 20).

B. Abbreviations

1. "INDERENA" = Institute for the Development of Renewable Natural Resources. See 3-3-1-A-1 (Instituto de Desarrollo de los Recursos Naturales Renovables).
2. "CAR" = Autonomous Regional Corporation of Bogota and Surrounding Area. See 3-3-1-D (Corporacion Autonoma Regional de la Sabana de Bogota y de los Valles de Ubate y Chiquinquira).
3. "CVC" = Autonomous Regional Corporation of the Cauca. See 3-3-1-C (Corporacion Autonoma Regional del Cauca).
4. "Water Control Authority" = "INDERENA," "CAR" and "CVC" each acting within the area of their respective geographical jurisdiction.
5. "INCORA" = Colombia Institute of Agrarian Reform.

3-1-2 Geography

Colombia is the northernmost country on the South American continent. It is bordered on the west by the Pacific Ocean and on the northwest by the Caribbean Sea. Colombia's border with Panama is between these two coastal areas. Venezuela is its neighbor to the east and north and Brazil to the southeast. Peru and Ecuador form the southern border. Colombia has 439,513 square miles [1,133,943 square kilometers] of territory and three relatively distinct land regions as follows.

The Mountain region contains the Andes Mountains. They enter Colombia on the southern border and fan into three distinct mountain ranges from the south to the northeast and

somewhat parallel to the Pacific coastline. This area is characterized by deep valleys, basins and high mountains.

The Coastal Lowlands extend along the shores of the Pacific Ocean and the Caribbean Sea. The Pacific lowlands are mostly swamps and jungle while the Caribbean portion is generally fertile and productive agricultural land.

The Interior Plains represent three-fifths of the land area of Colombia and the elevation is slightly above sea level. The southern part is a vast jungle area and the northern part a grass covered expanse of land.

3-1-3 *Climate*

The climate varies primarily with altitude and fluctuates from extreme tropical heat to damp, humid cold. The Pacific lowlands have a hot, humid climate and the Caribbean coastal areas are drier. As the land slopes up into the foot hills the temperature stays hot and the rainfall increases. In the high plateaus, rain is frequent but light and the temperature averages 70° F. [21° C.]. The jungle areas are marked by heavy, year around rains.

3-1-4 *Population*

The population of Colombia is about 22,000,000 with over 55 percent living in urban areas. The capital, Bogota, is the largest city with approximately 3,000,000 people and a number of cities have over 700,000 population.

3-1-5 *Irrigation*

There are approximately 444,600 acres [180,000 hectares] of irrigated land in Colombia. The total cultivated area is estimated at 10,868,000 acres [4,400,000 hectares] and of the cultivated area, 4.1 percent is irrigated.

3-2-0 LEGISLATION

3-2-1 *Legislation in Force*

The Civil Code covers water ownership, use rights, ownership of riverbeds and related concepts, rights-of-way and priorities in water use. The Constitution describes the process for enacting or amending legislation. The Penal Code describes some crimes related to water use and the Code of Civil Procedure outlines procedural aspects of right-of-way imposition.

The Agrarian Reform Law establishes irrigation districts controlled by "INCORA" as a primary tool for carrying out agrarian reform. The policing of water use is the subject of many decrees and resolutions dating as far back as 1928. A num-

ber of these decrees also cover the use of water for generating motor force as well as establishing procedural and substantive rights relating to water use. The Water Control Law of 1940 and its regulations cover some of the basic principles related to the procedure and substance of water rights administration though these have been substantially modified by subsequent enactments.

3-2-2 *Process for Legislative Change*

The basic law making power is vested in the National Congress (C 76). A law related to water control or administration may originate in either chamber of congress (C 79). There is a permanent legislative commission that functions between congressional sessions where social or economic measures may be presented, considered and debated in the first instance, on the initiative of any member of congress (C 80). Before any measure becomes law it must pass through the following procedures: 1) it must be published by the congress before being submitted to a permanent congressional commission; 2) it must be approved in the first debate in the corresponding commission of each chamber; 3) it must be approved in each chamber in the second debate; 4) it must be submitted for the approval of the president which, if vetoed, may be overridden by a two-thirds majority of each chamber in a second debate (C 81, 88).

The laws enacted by congress are frequently general and broad in scope and vest in the President the power to adopt detailed regulations within certain limitations prescribed by the laws.

3-3-0 ORGANIZATION FOR WATER ADMINISTRATION

3-3-1 *General*

A. *"Water Control Authorities"*

"INDERENA," "CAR" and "CVC" have similar water control and administration authority in the different geographical areas within which they operate as hereafter explained.

1. "INDERENA:"

a. "INDERENA" is a semi-autonomous public entity governed by a board of directors and consisting of: 1) the Minister of Agriculture who is the president; 2) the manager of the Agricultural and Rural Bank; 3) the director of "INCORA;" 4) the director of the Agricultural and Livestock Marketing Institute [IDEM]; 5) the director of the Colombian

Agricultural and Livestock Institute [ICA]; 6) one member representing the farmers association, designated by the President of the Republic; 7) one other member also designated by the President (R 22, 27).

b. The general functions of "INDERENA" related to water use are: 1) to regulate the use of water, issue and supervise concessions and maintain a registry of users; 2) establish and administer reserve areas for the protection of the water sources and terminate these reserves; 3) direct the activities for the conservation and development of renewable natural resources; 4) directly apply the water in experimental plots to demonstrate systems; 5) organize water basins for integral development to improve water use and conservation; 6) promote reforestation activities and propose projects for the use of water resources to develop fish; 7) regulate the use of rivers and lakes in coordination with other public entities; 8) enforce renewable natural resource laws and regulations; 9) any other functions considered necessary to carry out the above functions. "INDERENA" functions may be delegated to other official agencies on a favorable vote of the Board of Directors and the Minister of Agriculture (R. 23).

c. The central office is headed by a General Manager and under him, in relation to water administration, is a Technical Assistant who supervises a number of divisions including the Division of Water and Soils. Within this Division there are sections for Water Administration, Water Basin Administration and Administration of Irrigation.

d. "INDERENA" is divided into six regional offices encompassing the entire country except those areas under the jurisdiction of "CVC" and "CAR." The director of each region is assigned the following water related functions: 1) processing stream regulations up to the point of publication of the notice see 3-5-2-C); 2) processing and rendering decisions on petitions for concessions and legalizations of water uses in unregulated streams (3-5-2-B); 3) imposing fines for water use violations; 4) policing and controlling compliance with stream regulations and supervising construction of irrigation works; 5) collecting water use taxes (IO 1-1).

Each region is in turn divided into sections headed by a Sectional Chief who has the following functions related to water administration: 1) processing petitions for concessions

and legalizations up to the point of the visual inspection and issuance of a report (3.5-2.8); 2) collecting taxes for water use, 3) administering the distribution of public water in coordination with Water Masters; 4) policing compliance with the obligation of water users as are imposed in concessions or basin regulations (IO 2).

Natural resource inspectors are also local officers of "INDERENA" with police and judicial powers as described in 3.5-3.C (IO 3-1).

e. Vigilance and Control Groups are dependencies of regional "INDERENA" offices that function in the limited areas of regulated rivers and streams (see 3.5-3.C) (VI, RVI) and with the following responsibilities: 1) enforcing compliance with laws, decrees and regulations on water use; 2) preventing and providing for the removal of obstructions in water courses, 3) enforcing compliance with conditions and obligations contained in concessions, regulations and resolutions; 4) giving notice to users to correct irregularities in water use [such notice is given through the local mayor and enforced by the police and if not complied with, notice is given to the proper authority to apply sanctions]; 5) advising "INDERENA" on matters related to the use of waters; 6) inspecting all irrigation canals at least once a week and at other times on the request of users, 7) suspending water uses when the user is delinquent in paying assessments, 8) reporting deficiencies in police enforcement related to water use (RV 2, RWC 53).

f. Water Masters [Fontaneros] are the officials of these vigilance groups who have the responsibility of policing and controlling water use in accordance with *stream regulations* (V 1-3, IO 4, 5).

A description of additional detailed responsibilities of "INDERENA" are found under the appropriate title headings in this work.

2. "CVC" - "CVC" promotes and administers resource development in a large geographical area surrounding the city of Cali. Within the area of its geographical jurisdiction "CVC" has the same powers and responsibilities related to water administration as are vested in "INDERENA" in paragraph A-2 above (R 23).

3. "CAR" - This organization promotes and administers resource development in a defined geographical area including

and surrounding the capital city of Bogota (CA 1, 2, 3). Within the area of its geographical jurisdiction "CAK" has all of the same express powers, as those vested in "INDERENA" in paragraph A 2 above.

B. Municipal Authorities

1. *Mayors* The municipal mayors and police officials are charged by law with enforcing the laws and regulations relating to water use control. This authority is frequently concurrent with the authority vested in Water Masters, Vigilance and Control Groups and Natural Resource Inspectors, as described above (IO 3-1). Mayors are also charged with the conservation, policing and correct utilization of waters of public use (WC 20).

2. *Police* The local police officials have the following specific duties: a) preventing unauthorized water uses, b) preventing tree cutting on protected watershed areas, c) granting permits for changing water courses, d) controlling concessions, licenses, permits and stream regulations related to water so that the users comply with the special conditions of the grants, e) controlling plantings on the banks of streams and rivers (RWC 53).

C. "INCORA"

1. *Central Organization* "INCORA" is a semi-autonomous public entity governed by a Board of Directors consisting of: a) the Minister of Agriculture, who is the president, b) one representative for each of the following: Rural Bank, the National Supply Institute, the agricultural cooperatives, the Geographical Institute, the Farmers Society of Colombia, the Colombian Cattlemen's Federation [representatives are chosen by the President of the Republic from organizational lists of those entities], the Catholic Social Organizations [designated by an Episcopal Conference], two rural workers [chosen by the President], the Armed Forces, two senators and two additional representatives [elected by those bodies with political parity and representing various regions of the country] (ARA 5).

2. *Irrigation Districts* "INCORA" is the basic entity of the government for executing agrarian reform laws. One of its basic legal tools for carrying out policies is the creation, operation and administration of Irrigation Districts. Lands may be expropriated, irrigation infrastructure constructed with funds of the state and the lands redistributed in the district

with continuing supervision and administration by "INCORA" (AR 3).

Each Irrigation District has its own administrative organization responsible for the planning, operation and administration of the agricultural and water resources within the district. The administrator of each District is directly responsible to the General Manager of "INCORA" in administrative matters. The central "INCORA" office provides technical assistance to the Districts through its engineering office.

3-3-2 *User Organizations*

A. *General*

There are no statutes establishing a special form for water user organizations outside of the Irrigation Districts of "INCORA" as described. However, there are a number of organizations established under general corporate, cooperative or association laws or practices, that serve in administering and controlling the water use between users in these organization.

B. *"INCORA" Irrigation Districts*

For the purpose of user organizations, "INCORA" Irrigation Districts are sub-divided into zones and within each zone the users elect a User Board in a general assembly. This Board consists of five members, three of whom are elected by the users with less than 49 acres (20 hectares) (DR 18, IR 15).

These Boards have the following functions: 1) cooperating with "INCORA" District officials in enforcing compliance with regulations; 2) petitioning the District Chief for enforcement of the rights of the users; 3) proposing administrative practices and construction of works for improved water use and agricultural development within their zones; 4) approving or disapproving budget and financing plans for construction and improvement of extraordinary works directly benefiting users in the Zone and submitting such budgets to the District Chief (IR 18).

The members of User Boards of all the Zones in a District meet in a District Water User Board Assembly and elect seven members of a General User Board. Four of the members must be elected by User Board members representing property holders with less than 49 acres (20 hectares) and the other three represent those with larger farms (DR 18, IR 21).

The functions of these General User Boards are to: 1) complain to the District Chiefs regarding errors or abuses by the Districts; 2) propose changes or discharges of District employees for justified and substantiated causes; 3) propose measures for improved water use in the District; 4) propose construction and improvements in district works; 5) approve or disapprove financing plans and submit them to the District Chief; 6) represent users in signing contracts entered into with public entities for the execution of studies and plans for works of collective benefit; 7) cooperate with the District Chief in matters related to improved development of the District; 8) control investments made pursuant to the above powers (IR 22). Costs of operation of these groups are assessed to the users according to the acres [hectares] of irrigated land they have in proportion to the total (IR 23).

3.3-2 *Registries*

"INDERENA" is required to maintain a registry of all natural or corporate entities that utilize waters (R 23a). Each Irrigation District of "INCORA" is also required to maintain a registry of users within the district containing their names, a property description and the legal status of use rights and crops associated with the use (DR 12).

3.4-0 OWNERSHIP AND CONTROL

3.4-1 *State Ownership*

Many classes of waters are declared to be *property of the State for public use* and thus, the State has the right to control and administer the use and enjoyment of such waters by those who obtain use rights under the law. However, the State is not the absolute owner (RWC 1).

Waters which are property of the State for public use include the following: 1) all waters flowing in natural channels except those which rise to the surface and disappear below the surface on the same property; 2) lakes and lagoons except those where the riparian lands belong to one owner and the water supply raises and disappears below the surface on the property; 3) water in artificial channels originally diverted from a source which is national property (CC 677, WC 2, RWC 2, DR 1). These definitions include both surface and subterranean waters. The State reserves the ownership and the use of public water for generating motor force except those waters destined to a farm or farm machinery (FM 3).

96 *State Ownership*

No one may acquire, by prescription, waters which are waters for public use (CC 2519).

Waters which are "Property of the State for Public Use" are further defined and limited by the following attributes: 1) they are not fiscal property of the state but are only subject to the control and administration of the state concerning the use and enjoyment of the waters by individuals; 2) the government as the Supreme Administrator of national property for public use must regulate water use of any stream or source when it deems regulation necessary or on petition of interested parties; 3) water regulations may be revised when the conditions change (CC 677, RCA & 223)

3-4-2 *Private Ownership*

The owner of land on which springs rise and disappear below the surface within his property boundaries is the owner of such water (CC 677, WC 2). The waters of lakes or lagoons whose shores belong entirely to one owner and whose water source rises and disappears below the surface on that property also belong to the property owner (WC 2). Waters that flow in artificial channels constructed at private expense belong to the channel owner providing such waters have been diverted from the above private sources (CC 895, WC 2, RWC 2, DR 1).

3-4-3 *Ownership and Control of Riverbeds etc.*

River and lakebeds containing state waters for public use are the property of the State (CC 677, 678). The boundary of this public ownership is the line of the periodic high water mark (CC 720). Those beds which are not included within this definition are private property. *Water caused land accretions are as follows*

1. Earth deposits which adhere to the bank of a lake or riverbed caused by gradual action of the water and called alluvion, become part of the riparian land owner's property within his boundary lines extended directly to the high water mark. However, in inhabited ports such deposits become the property of the State (CC 719, 720).

2. When an extension of boundary lines results in the boundaries crossing before they reach the high water mark, the triangle formed between the crossing of the lines and the high water mark is divided into two equal parts between the contiguous owners based on a line commencing at the cross and extending to the high water mark (CC 721).

3. If land is moved by a flood or other natural force in a violent manner the former owner has a right to reclaim it within one year, or it becomes the property of the owner of the land to which it was transported (CC 722).

4. When private property is flooded, that part which is reclaimed within the following ten years returns to its former private owner (CC 723).

New islands formed in the beds of rivers are subject to the following ownership rules. If such islands are covered with water during the high water periods then they are part of the bed and belong to the State. If the island is formed by a natural dividing and reuniting of the river then such land continues as the property of the former owners. If formed in a riverbed, an island accedes to the riparian property owners that are closest to the island or closest to any part of such island according to an extension of the riparian boundary lines (CC 726).

5. When a river changes its course, the owner of the property where the new channel passes may, with the permission of the "Water Authority," construct the works necessary to restore the flow to the old course. That part of the new bed that permanently remains dry accedes to the bordering properties based on an equal longitudinal division (CC 724).

6. When a river divides into two arms that later rejoin, the parts of the old bed that remain dry accede to the owners of the bordering property as described in the previous sentence (CC 725).

3-4-4 Control of Structures in Riverbeds, etc

No one may place any structures in riverbeds except with the permission of the "Water Control Authority" (CC 679). The planting of trees or plants in riverbeds or on the margin of the banks for a prescribed distance is prohibited (R 23h, WC 18). The "Water Control Authority" may grant permission for the extraction of sand, gravel, rock and other material from riverbeds provided that it does not interfere with mining or water use (Decree No. 1032, June 3, 1941, CA 4d, R 23).

3-5-0 RIGHT TO USE WATER

The right to use public waters in rivers and lakes for transit, irrigation, navigation and all other legitimate uses is specifically declared to be subject to all of the conditions provided by the laws and regulations (CC 678).

98 *Rights to Use Water*

3-5-1 *Uses Without Formality*

A. *Riparian Rights*

The owner of property that borders a public stream may use the waters for his domestic needs, irrigation of his property, powering of his mills or other machines and for animal watering. He must, however, return the unused excess to the same stream before the stream leaves his property (WC 12, RWC 9, CC 892). For general limitations on this use right see 3-5-5.

Riparians may not use water without a concession in river basins or sources which are formally regulated as explained in 3-5-2-C. Riparian rights are also substantially limited in areas where the water diversion is from the same source and above "INCORA's" point of diversion for water supplying an Irrigation District of "INCORA." In these areas all diversions must be authorized by formal concessions (DR 4, 5).

B. *Rain Water*

The owner of bordering property may utilize rain waters that flow in public streets and roads and may divert such waters as he chooses. No one may deprive such owners of this right through prescription (CC 896).

C. *Mill or Motive Power*

One may construct on his own property, or on the property of another with his consent, a mill, engine or similar work and utilize the waters that flow by it even though they are destined for other uses. He cannot diminish the flow or injure the water use rights previously acquired by others. This use cannot be made of water flowing in artificial canals constructed at private expense (CC 1001).

D. *Water Falls*

Water falls with a capacity for power generation of less than 100 horsepower may be utilized without authorization (FH 17).

E. *Mining*

Miners may divert and use national waters to work mines and provide water for motive force for mining without authorization (see also 3-11-5) (WC 12).

F. *Legalizing Unauthorized Uses*

Certain unauthorized uses are recognized in statutes permitting the granting authority to legalize existing unauthorized uses either by granting concessions based on these uses or by incorporating such uses into formal stream regulations (WC 14, RWC 14, 42).

3-5-2 Procedure for Obtaining a Use Rights

A. General

A use right for public waters can only be obtained through the process of formal petition and concession, or the process of formal stream regulation or amendments, except as specified in 3-5-1. These processes are more specifically described hereafter.

"Water Control Authorities" are vested with the power to grant concessions to use water, either directly or in the process of establishing river basin regulations (R 23, RWC 48, CA 4d).

Irrigation Districts of "INCORA" grant and control water use rights within such districts, but the rights granted differ fundamentally from concessions as provided in sub-paragraph D (DR 10).

B. Concessions

1. *Conditions.* All water use rights except those covered in 3-4-1 require a formal petition and concession (CC 683, 892; FH 8, 9; WC 12). Concessions may be made to the following persons for the following uses: a) to a community for the domestic needs of its inhabitants, b) to a property owner for domestic use, cattle watering and irrigation of crops or pastures; c) to an industrial establishment for powering its machines; d) in all other cases deemed convenient by the "Water Control Authority" (WC 6).

2. *Petition.* A petition for a concession must contain the following: a) the name of the water source for the proposed diversion; b) the quantity of water desired expressed in liters per second; c) the uses to which the water will be applied; d) the amount of land and class of crops to be irrigated; e) the name of the farm or properties to be benefited and their location; f) the time duration of the concession; g) the period of time for construction; date the service will commence; and potential electrical force of water power generation if for more than 100 horsepower; or if it is for domestic water service; h) whether or not they have the necessary rights-of-way and if judicial processes are required for their imposition; i) such other information as the petitioner may provide (RWC 11, 21, RFH 1).

All beneficiaries must sign the petition and must share the costs of the proceedings in proportion to the quantity of water

they will receive (RWC 21). The petition must be accompanied by a certificate of proof of the petitioner's right to possession of the land where the water is to be applied. The land purchase documents must be filed when necessary to show a chain of title from the record owner (RWC 21).

If the petition is for water power generation it must be accompanied by the following additional documents: a) a sketch of the area along the water source from the point of diversion to the point where the water will be returned to the source, indicating the extent and ownership of bordering lands; b) an explanation of the amount of land and type of materials that will be needed for construction of the works; c) measurements of the high, low and average flow of the river or source at the diversion point and a description of the measuring method (RFH 2).

3. *Filing* The petition must be filed with the proper "Water Control Authority" as indicated above in A. In the case of "INDERENA," the country is divided into regions, each directed by a chief who processes the concessions (IO 1-2). This chief conducts the proceedings through the point of the on-site inspection and the report hereafter discussed (IO 2).

4. *Review and Documentation*: The "Authority" reviews the contents of the petition to determine its compliance with the law. The petitioner must supply the following additional documentation: a) water measurements of the water source in the manner indicated except when already known; b) a general or detailed plan of the land to be benefited, if requested; c) plans and specifications for the proposed diversion works; d) if for domestic public water service, calculations justifying the quantity requested in relation to the present population and the probable increase over 25 years; e) if for rural domestic public water service, a justification of the proposed assessments to consumers and the proposed internal regulations of the company; f) other documents deemed necessary to compliment the petition and complete the presentation of the facts of the case (RWC 22). The requirement for documentation may be waived if the quantity requested is small in comparison to the water available (RWC 24).

5. *Procedure for On-Site Inspection*: After the above documentation is received, the authority may order an on-site inspection at the cost of the petitioner. This inspection is

made by three experts, preferably engineers, in addition to the chief or administrator in charge. The three experts consist of one named by the interested parties, one named by the administrator in charge and an engineer from the "Water Control Authority."

The inspection is made to determine the following facts: a) whether or not there are water diversions between the proposed diversion site and the return flow site that would be prejudiced by the proposed diversion; b) whether or not the diversion works or canals will occupy land not belonging to the petitioner, considering physical conditions on petitioner's land that might require use of other property; c) circumstances that prevent the return of the excess to the same source from which it was taken (RWC 23, RFI 5).

The chief or administrator in charge is required to post an inspection notice in a public place at least five days before the ordered on-site inspection. The notice must indicate the day, hour and purpose of the inspection so that those whose rights might be prejudiced can intervene (RWC 23). The experts examine the area and personally carry out the investigations and studies they consider necessary. They may ask questions of third persons and receive their testimony. The chief or administrator may make such observations to the experts as he deems convenient and be present at the examination and during the experiments, but he cannot be involved in the deliberation of the experts. The experts deliberate among themselves and render an opinion within the time fixed. The third expert only renders his opinion on matters upon which the other two experts do not agree. The opinion must be clear, precise and explain the examination, experiments and fundamental technical principles upon which the opinion is based (CPC 237, RWC 23).

6. *Opposition to the Petition.* Anyone interested in the subject matter may oppose the granting of a concession. This is done by filing their objections together with an explanation of their reasons. The administrator in charge may demand additional documentation from the opposing party as he deems necessary for an improved illustration of the facts (RWC 25).

7. *Granting of the Concession.* The administrator in charge either grants or denies the concession in the first instance based on the above documentation and proceedings.

8. *Characteristics of the Concession:* Concessions may only be granted for fixed periods and may only be extended during the last year of the term for which they were granted, except for reasons of public convenience (RWC 27).

Conditions may be imposed in the concession by the granting authority. The "Water Control Authority" is given the power to enforce the observance of these conditions by imposing fines on the user or by suspending the right, should he fail to comply (RWC 36, 37).

Provisions related to the characteristics of rights-of-way must be considered by the fixing of the point of diversion in the concession (RWC 28).

Excerpts of all concessions must be published in the Official Diary. Within 15 days after their publication, five authenticated copies of the publication must be presented to the "Water Control Authority" (RWC 35).

9. *Changes or Amendments:* Changes in the terms and conditions in concessions can only be made with previous authority from the "Water Control Authority" (RWC 34).

After the concession is granted, the concessioner may be required to obtain a right-of-way to conduct the water to his property. Such rights-of-way must be obtained through the regular judicial processes and the concessioner must report and file the final judgment with the concession granting authority so that any needed amendments can be made to accommodate the terms of the civil judgment with respect to the right-of-way (RWC 32).

C. *Stream Regulations*

1. *General:* The "Water Control Authority" has the power to subject all water use rights in all or part of a river basin to detailed regulation. This regulation specifically defines, limits and coordinates all interrelated use rights in the regulated area (WC 15, RWC 15, 42, R 22, 23). The rights fixed in these regulations have the same effect as a concession and therefore terminate or modify informal use rights, including riparian rights and previously existing concessions (RWC 48, DR 4). Within these regulated areas new rights may be granted or existing rights modified or changed by amendments to the river basin regulation (RWC 49, DR 2).

2. *Initiation and Study:* The process of regulating a river basin is initiated by the petition of an interested water user

or by "INDERENA" without a petition (RWC 15). The "Water Control Authority" is required to make a general improved water use study of the river basin. The study must consider as factors: a) actual uses of water within the areas; b) actual water requirements for present water users; c) water requirements for future water users; d) any other documentation considered convenient for determining the water requirements or water use regulation within the basin (RWC 42, IO 1-1).

After the completion of this preliminary study, the authority has the option of two procedures as follows: a) formulating a preliminary River Basin Regulation without a hearing by a panel of experts as described in the following sub-paragraph 3; b) ordering a hearing of a panel of experts prior to the formulation of the resolution with notice given to the interested parties who may participate in the procedure as provided in sub-paragraph 4 (RWC 43, 44, 45).

3. *Regulation Without Hearing of Experts:* If the interested parties do not designate the expert allotted to them or fail to attend the hearing then the expert is named by the minister, authority, or commission.

If they do not order a hearing the regulation is supported by an on-site inspection by officials of the authority (RWC 43). This procedure results from the negligence of the interested parties.

4. *Notice of Hearing:* If the "Authority" does order an on-site inspection and a hearing by a panel of experts in accordance with its option, the proceedings are as follows:

a. All interested parties must be personally notified, if possible, of the proceedings that are pending and of the appointment of panel members as well as the time and place of the formal hearing. If personal notifications cannot be given to all interested parties then the following public notices are also required: i) the posting of a notice in a public place in the conducting official's office for a period of five working days; ii) publication on two occasions in two newspapers of greatest circulation in the department or municipality. Notices must include a statement of the object of the proceedings, the day and hour of the hearing, the designation of the expert panel members and other information considered necessary (RWC 44).

b. The hearing is conducted by an official of the "Water Control Authority." When possible, the panel of three experts are engineers. The "Water Control Authority" and interested parties, or a majority of them, each designate one expert. The third expert is appointed only in case of disagreement between the other. He is designated by the other two experts or by the "Water Control Authority" in case the experts do not agree on his selection. If the interested parties do not agree to the procedure or fail to designate their expert, then he is named by the "Water Control Authority" (RWC 43). The detailed regulation is formulated through the panel's proceedings, however, the other interested parties must be given an opportunity to present the defense of their rights and points of view in writing (RWC 45).

5. *Factors Considered in Stream Regulations* In the process of making a river basin regulation, a number of factors are considered with the goal of adjusting past legal and illegal uses to a definable and controllable system of regulation (WC 15, RWC 42). Thus, what may have been an unauthorized use before the regulation may be legalized (RWC 42), and what previously may have been a vague reserve riparian right may be limited to a fixed quantity in certain seasons and also be subject to turns and other controls (RWC 47). A presumption exists that there are legally imposed rights-of-way over all land on which canals actually exist for the benefit of other property (RWC 46).

6. *Contents and Effects*: Regulation does not adversely affect the right of action that the government or individuals have when diversions of water prejudice their rights. A regulation also constitutes authority to carry out the water appropriations in the regulation (RWC 47).

River basin regulations must be published in the Official Diary (RWC 48). They have the same effect as a concession (RWC 48). Once a regulation is established within certain specified departments the "Water Control Authority" is required to incorporate the areas into Water Control Groups (RV 7).

7. *Revision and Change*: Once a zone has been placed under the control of a river basin regulation, the only method for the acquisition of a new use right or the amendment of an existing right in the regulated area, is through the process of

a change or revision in the overall river basin regulation (DR 3).

D. Authorizations in "INCORA" Districts

1. *Conditions Precedent:* Before a user may obtain a use right, he must comply with the following conditions: a) he must not be indebted to the District for assessments, fines or other sanctions; b) tertiary canals and ditches must be clean and adequate drains provided; c) land must be well-prepared and level; d) a user must have presented a crop program for the season within the time fixed; e) he or his representative must be present at the intake to receive the water and sign the receipt; f) a user must maintain ditches and control the water from the place of delivery to his land; g) a user must comply with the other regulations imposed by the district (IR 44, DR 10).

2. *Irrigation Plans:* Water use rights within districts may be refused for failure of the user to conform to irrigation plans for the district (IR 36, DR 15, 17). These plans are made by the Chief of the District and a consultative committee composed of user representatives, the Agrarian Reform Director, a representative of the agrarian credit organization and representatives of other entities concerned with agricultural development in the area of the district (IR 37, 38, DR 15).

In formulating the plans, the following factors must be considered: a) crop cycles and water requirements; b) quantity of water available during the crop cycle to cover the needs of the plan on a month to month basis; c) suggestions made by the National Government as to preferred crops under the national or regional agricultural programs; d) crops that the users are most interested in producing; e) credit and market possibilities for each crop; f) best soil use to avoid or improve conditions of salinity or dangerously high water tables (IR 39).

In those cases where sufficient information for formulating such a plan is not available, the distribution of water may be based on a simple liter per second allotment to each hectare for each user with similar agricultural conditions (IR 40).

3. *Order for Irrigation Service.* After the user has complied with the above conditions, the Operations Section of the District issues an order for irrigation service, or if a petition for irrigation is made within 48 hours of the desired service, it may be made directly to the Canal Inspector.

3-5-3 *Procedural Protection of Rights*

A. *General*

In general, disputes and procedures related to water use are processed and heard in the same manner as other civil disputes before ordinary courts in accordance with the rule established in the Code of Civil Procedure (CPC 12). Jurisdiction in the first instance is vested in municipal or circuit courts based on the amount of money involved or the nature of the controversy (CPC 14, 15, 16, 17).

Special cases of administrative jurisdiction over water disputes and other special procedural norms applicable to water, in particular, are discussed later.

B. *"INCORA" Irrigation Districts*

Within irrigation districts of "INCORA" the administration of the district is vested with exclusive original jurisdiction to determine questions of fact that relate to the district regulations and water use within the district (IR 3-8).

C. *Natural Resources Inspectors*

In unregulated streams (see 3-5-2-C) Natural Resources Inspectors are vested with jurisdiction in the first instance to hear and decide disputes involving: 1) conflicts between water users when these conflicts do not involve a crime in the use of unregulated streams; 2) cutting trees that protect watersheds; 3) planting trees in beds or banks of streams that impede the normal flow of water; 4) the violation of conditions imposed on water right holders in concessions (IO 3-1). Appeals on such matters follow the general administrative appeal course.

D. *Police Initiative*

When "INDERENA" receives notice of illegal uses, may investigate the facts and stop such uses (WC 16, RWC 16). The nearest police authority may also act on request or on its own initiative to order the removal of obstructions in water ways such as plantings and trees (CC 996, WC 17, RWC 1-19). Such action is appealable to the next highest administrative authority in "INDERENA" within ten days after the interested parties have been notified of the order (WC 1-19, RWC 19, 20).

E. *Special Possessory Actions Related to Water Use*

The protection of water use rights and interests in right-of-way related to water use, come within the scope of rights that can be protected in possessory actions (CC 976, 977, 978).

Water related possessory actions are for: 1) injunctions against works in the servient property that would impede a right-of-way (CC 987); 2) injunctions against works that divert flowing waters and cause damage (CC 993); 3) requiring the property owner through which the stream flows to remove any obstructions or allow the lower user to do so (CC 996); 4) recovering damages from a property owner who wrongfully dams or diverts water onto adjoining property; damages are doubled on recurrence (CC 997).

3-5-4 *Rights Under Prior Law*

Water concessions granted by a competent authority must be granted without prejudice to rights acquired earlier in the same waters (C 918, C 30). However, if the value of rights are diminished by a new law which is based on public utility or the social interest as defined by the legislature then the old right can be expropriated upon payment of just compensation (C 30).

There are other specific enactments which also protect acquired rights from changes imposed by new laws in the case of generation of motor force (FH 3, 14) and all canal diversions (WC 7, RWC 7).

3-5-5 *Limitations and Obligations of Users*

A. Riparian Rights

There are areas where riparians may not divert and use water unless they obtain a concession. Thus, riparian rights do not exist in regulated river basins nor in unregulated rivers above a point of diversion for an Irrigation District of "INCORA." (see 3-5-2.C)

In those limited geographical areas where riparian rights are recognized, the following limitations apply to such rights. 1) by rights acquired by lower users to the same water by prescription for eight years from the construction of apparent works for use of the water of other title; 2) uses must not interfere with navigation or flotation which is carried out in accordance with law or with the mutual rights of other riparians; 3) such waters may be expropriated for the domestic needs of the inhabitants of a community upon payment of just compensation to the riparian (CC 893, RWC 42); 4) water must be diverted from the stream within the riparian's property and the unused excesses returned to the same stream before such stream leaves his property; 5) necessary conveyance works

must be constructed for the return of the water to the stream; 6) use must not adversely affect the culinary, irrigation or industrial uses; 7) water may be used only on the riparian's property; 8) the amount diverted is limited to the riparian's needs; 9) if the stream flows between two riparians' properties, then neither can withdraw more than half the stream as a maximum (RWC 9).

B. Irrigation Districts of "INCORA"

Water users within Irrigation Districts of "INCORA" have the following obligations: 1) to pay all assessments legally assessed by the District, 2) to construct on their property the works necessary for irrigation and drainage, 3) to allow District employees access to property to determine conditions of irrigation works and class of crops, 4) to comply with irrigation plans of the district (DR 21); 5) must not allow loss or excessive use of water in irrigation, 6) to receive the water according to the turns established during daytime or night-time (IR 45).

C. Sale, Rent or Transfer

Water use rights cannot be transferred by sale, gift, barter or any other method, nor rented or encumbered. Personal rights may not be acquired over them except when a transfer involves the transfer of the property on which the water was to have been applied according to the original concession or riparian right (RWC 4). Even when a transfer involves the transfer of land, it must be approved by the "Water Control Authority" who may refuse to allow it for reasons of public interest (RWC 33).

D. General

All users are required to install measuring devices at their point of diversion or other appropriate location to measure the water (WC 9, RWC 39, DR 13). Municipalities and Departments are prohibited from taxing water use (RWC 3).

3-5-6 Loss of Rights

A. Forfeiture

The Legislature and the President have the power to fix and determine the causes for which water use rights may be forfeited. In order to declare a forfeiture, "INDERENA" is required to give notice to the interested party specifying the reason for the proposed forfeiture. The party then has 15 days

within which to rectify the conditions specified for the forfeiture or to formulate his defense (WC 10, FH 13, RWC 38b, 39).

The following are specific causes for forfeiture of water use rights provided by law:

1. Failure of the water user to install water measurement and control devices at his point of diversion (RWC 30, 38a).
2. Failure of a company, which supplies water as a public service, to comply with the conditions of its concession or failure to make efficient, regular and continuous delivery of water (RWC 31, 38a).
3. Attempts by the user or concession holder to sell or transfer his water use right without the approval of the "Water Control Authority" (RWC 33, 38a).
4. Failure of a concessioner to observe the express conditions contained in the concession unless the prior approval of the "Water Control Authority" is obtained (RWC 34, 38e).
5. Failure to begin or complete construction of canals or electric plants within the time fixed or failure to provide service within the time period specified in the grant except when the delay is due to an act of God duly proved (RWC 38d).
6. Failure of a public service company to provide service during a period of 30 working days except when such failures are caused by an act of God duly proved (RWC 38e).
7. Failure to utilize the water for a period of five years.
8. Failure to pay fines imposed for violating the express conditions of the concession (RWC 37, 38g).

B. *Right-of-Way Proceedings*

A concession to use water may be granted by the proper administrative authority before the concessioner has obtained the necessary rights-of-way to convey the water to his property. These rights-of-way must be imposed by judicial process. At such time as the judgment of the court is obtained with regard to the right-of-way, such judgment must be filed with the concession granting authority and the concession must thereafter be changed, amended or forfeited to conform to the court decree concerning the right-of-way (RWC 32).

C. *Lapse of Water Power Generation Rights*

Concessions of power generation rights are granted for fixed periods of time and lapse when that period passes (FH 12, 16).

110 *Loss of Rights*

D. Expropriation of Water Falls

The government may expropriate water falls if needed for state use upon payment of reasonable indemnification (FH 7).

3-6-0 OBLIGATORY WATER USE

In Irrigation Districts of "INCORA," the users may be required to follow the irrigation plans adopted for each district (See 3-5-2-D-2). In order to be obligatory these plans must be adopted by the Government and the committee of the District as indicated in the above reference (DR 15, 17). Land within an Irrigation District of "INCORA" may be expropriated for failure of the owner to comply with irrigation plans (DR 17).

3-7-0 PRIORITIES BETWEEN USE RIGHTS

3-7-1 Order of Priorities

A. General

There is no statute which expressly establishes a priority among various water uses. However, there is a provision that miners may not construct works which deprive the land owner of water necessary for the following uses: 1) domestic needs; 2) cattle watering ; 3) irrigating established crops and plantings; 4) machine power or industrial use; and 5) irrigation of new plantings. These uses are protected as against mining use diversions whether established or in the process of being established (CM 176, 208). No express priority between the above uses is established, even though they are mentioned in the above order.

B. Irrigation Districts of "INCORA"

A system of priorities is established for water use during periods of water scarcity within the Irrigation District of "INCORA" as follows: 1) supply of population centers lying within the district for the domestic needs of the inhabitants; 2) supply of domestic needs for district inhabitants; 3) livestock watering; 4) irrigation of lands within the district in accordance with the irrigation plans; 5) electric power generation; 6) supply of industrial establishments where the water is required for powering machinery; 7) other uses as established by the National Government (DR 14, IR 28).

3-7-2 How Priorities Operate

The priorities provided in A above seem to provide a group of uses that take precedence over mining uses but does not establish any priorities between those uses nor explain how any such priorities would operate. Priorities established in

B above operate in periods of water scarcity within the district and in this sense establish a definable set of priorities. There is no express provision giving preference to concessions or use rights which are granted earlier than others (CC 918).

3-8-0 RIGHTS-OF-WAY RELATED TO WATER USE

A right-of-way is defined as an encumbrance imposed on one property for the benefit of another (CC 870). He that has a right-of-way also has the legal power to exercise it, and may remove water from a source on neighboring property, and may go to and from the source even though not expressly given this right in the title (CC 885, 924m 986). They are inseparable from the property to which they are attached (CC 883).

Rights-of-way are classified as:

1. *Continuous*: Those that can be or are exercised permanently without the intervention of man, such as a canal right-of-way (CC 881).

2. *Discontinuous*: Those that are exercised at relatively long time intervals and involve the intervention of man such as those for transit (CC 881).

3. *Positive*: Those that impose on the owner of the servient property the obligation to allow something to be done such as construction of canals and transit rights-of-way.

4. *Negative*: Those which impose a prohibition on the servient owner to refrain from doing something he could have otherwise legally done.

5. *Apparent*: Those which are continuously exposed to view such as a trail.

6. *Non-apparent*: Those which are not continuously exposed to view.

The general classifications according to origin of rights-of-way are natural (CC 891 to 896); legal (CC 897 to 936); and voluntary (CC 937 to 941) and are considered later.

3-8-1 *Voluntary and Natural Rights-of-Way*

A. *Natural Drainage*

This class of rights-of-way result from the natural location of property in relation to other natural features. No express or implied act nor legal formalities are required to establish these rights-of-way.

The natural drainage right-of-way requires the lower property owner to allow the natural drainage from upper property to pass through his land provided that the course

112 *Voluntary and Natural Rights-of-Way*

of the water is not altered by man. One may not intervene and direct the course of a stream from its natural course unless a special right-of-way is established. The owners of the upper or lower property cannot do anything which would alter or aggravate the use of such right-of-way (CC 891).

B. *Voluntary*

1. *Express*: Anyone may subject his property to such rights-of-way as he chooses and acquire them over neighboring properties with the consent of the owners, provided such agreements do not violate the law (CC 937).

2. *Implied*: A right-of-way is given by implication when the property owner establishes a continuous and apparent service over part of his property for the benefit of another part and later sells or transfers one of the parts without making reference to the service (CC 938).

3. *Prescriptive*: Open and notorious use of a right-of-way for a canal over a period of ten years from the date of the construction of the works establishes a right-of-way by prescription (CC 973, 939, 2518, 2520).

C. *Legal on Riparian Lands*

Legal rights-of-way are related to public needs or individual uses. As they pertain to the public they are recognized on riparian lands as necessary for navigation and flotation (CC 887). Such riparian land rights-of-way are described in more detail as consisting of 1) a right to a tow path, 2) a right to remove boats onto the shore and tie them to trees for repairs and removal of sails, 3) the right to sell goods to riparian land owners but such river users may not make public sales of goods without permission. The riparian owner may not cut trees that boats are tied to (CC 898).

3-8-2 *Forcefully Imposed Rights-of-Way*

A. *General*

All rights-of-way over private property must be imposed through judicial rather than administrative proceedings. The Government may administratively grant rights-of-way over public lands for the benefit of communities or private properties which border such public lands (RWC 8, FH 6). Though the authority granting a water use concession may not grant a right-of-way necessary for the exercise of the concession, rights-of-way that will be needed must be specified in the petition for the water use concession. The probable characteristics of

a right-of-way that might be granted through the judicial process in future proceedings is a factor to be considered by the "Water Control Authority" in establishing the characteristics of the water use concession (RWC 22, 28).

B. Conditions Precedent

All land is subject to the imposition of a right-of-way for a canal except land covered by homes, buildings, corrals, patios and gardens (CC 919, 920). The property that will benefit from the right-of-way must need the water for the domestic use of its inhabitants, for the irrigation of its crops or pastures, or be an industrial establishment that requires water for powering its machines (CC 919).

C. Characteristics

The right-of-way consists of a passageway by which water may be conducted through the servient property at the expense of the dominant property owner (CC 919). This right extends to irrigation and drainage canals (CC 928).

1. *Route* The route of the right-of-way through the servient property is determined by the judge based on the following criteria: a) the route that permits the free flow of the water; b) the route that will not be unduly costly because of the nature of the soil. Within these two limitations the alternative is preferred that does the least damage and is the shortest. The shortest course is defined to be that which is least prejudicial to the servient estate and least costly to the interested party, unless the contrary is proved. The judge must reconcile the interests of the parties and in doubtful cases must decide in favor of the servient property interests (CC 922).

2. *Indemnification* The interested party must pay the servient owner the value of the land occupied by the canal and the margins as described above, plus an additional ten percent of this total value. The interested party must also pay the damages caused by the construction, filtration and overflow which result from defects in the construction of the works (CC 923).

3. *Type of Construction* The works must be constructed to prevent damaging filtration, overflow, stagnation, rubbish and drift accumulation. The construction must include bridges, flumes and siphons as necessary for the best administration and communication within the servient property (CC 921, 930).

4. *Rights and Obligations of the Parties:* The owner of the canal may prevent all crops, plantings or new works from being placed in the lateral space of a right-of-way (CC 925).

The owner of the servient property may require those who petition for a canal right-of-way over his property to utilize an existing canal and share in the costs of maintenance, construction and repair, provided that no substantial prejudice results to the interests of the dominant owner (CC 923). If the dominant owner of a canal elects to introduce a greater quantity of water in the canal than originally provided for, he may do so but must indemnify the servient owner for all resulting damages (CC 927).

The servient owner must allow the entrance of workers to clean and repair the canal but must be given previous notice. He must also allow the entrance of an inspector or watchman but only at intervals fixed by the judge in the event that the parties cannot agree (CC 924).

D. Procedure

Rights-of-way are imposed in summary proceedings in the ordinary courts (CPC 414). A complaint is filed containing the legal requirements; it is reviewed and accepted by the judge, and a summons is served within ten days after acceptance (CPC 85, 86, 87, 415). Everyone who has an interest in the dominant or servient property, according to the official recordings, must be served with a summons (CPC 428).

The defendants have two months after the service of summons to file their answers to the complaint (CPC 90, 400, 416). The judge then fixes a period not to exceed 20 days for the submission of proof. During this time the necessary hearings are scheduled (CPC 404, 405, 418). Expert witnesses must view the property involved to verify the facts and formulate the route and conditions for the proposed right-of-way. Anyone who has been in actual possession of the property for more than a year must be joined as parties to the action (CPC 428).

After the period has expired for the submission of evidence, the parties are given an opportunity to present briefs and final arguments for a period of five days (CPC 419). The court then enters the judgment (CPC 420). The judgment must fix the amount to be paid by the plaintiff as indemnification

for the right-of-way, or for the restitution of the land as the case may be, and when such amount has been paid the judgment must be formally filed in the public recorder's registry at which time the judgment takes effect (CPC 428). These judgments may be appealed as in other civil cases (CPC 350, 407, 421). An authenticated copy of the judgment must be filed with the administrative authority granting the water use right within 30 days following the execution of the judgment (RWC 32).

E. Administrative Procedure on Public Lands

The government is authorized to grant licenses or rights-of-way for canals over national property, streets, plazas and other public ways and such rights-of-way are imposed through regular administrative proceedings (FH 10, RWC 8).

F. Canals and Works for "INCORA" Districts

When rights-of-way are required for the canals and works of "INCORA" Districts, an abbreviated procedure requires a period of negotiation with the property owner. If no agreement is reached for the imposition of the right-of-way, the expropriation proceeding is filed and the land may be occupied. Indemnification is paid in accordance with appraisements made by expert assessors of the Geographical Institute (Decree 1112 of 1952, Articles 46 to 63).

3-8-3 *Termination of Rights-of-Way*

Rights-of-way related to water use are terminated or extinguished for the following reasons: 1) by the termination of the water use right; 2) by the arrival of the day or the condition on which it was expressly declared to terminate; 3) by confusion or, that is, when titles to the servient and dominant estates become united in the same person; 4) by renunciation of the right-of-way by the owner of the dominant estate; 5) by non-use of the right-of-way for a period of 20 years commencing at the time the dominant owner stops using a right-of-way of continuous use, or for those of discontinuous use, it commences at the time the dominant owner commits some act inconsistent with the right-of-way (CC 942).

If the dominant estate belongs to more than one person in undivided interests, then the interruption of the prescription by any one such owner effectively protects the right of all (CC 943).

116 *Termination of Rights-of-Way*

3-8-0 HARMFUL EFFECTS

3-9-1 *Flood, Erosion Control and Conservation*

The responsibilities of "INERENA" include: 1) establishing and administering zones for the protection of water, forests and soils; 2) establishing and administering programs for the improved conservation and development of all renewable natural resources; 3) organizing river basins of integrated development for improved conservation and use of renewable natural resources. These functions can be delegated to other government entities by the favorable vote of the Board of Directors of the Ministry of Agriculture (R 22, 23).

Private property owners and those cultivating public lands are prohibited from cutting forests protecting water sources on private or public lands. Trees may only be harvested with the permission of the government (RWC 17). The nearest police agency is responsible for the enforcement of these laws in zones of protection (RWC 53). Inspectors of Natural Resources regulate the cutting of forests that protect water sources (IO 3-1-b).

The conservation and improvement of irrigation works within Districts of "INCORA" are responsibilities of the District Administration (DR 9).

3-9-2 *Drainage*

Providing adequate drainage is one of the functions of "INCORA" Irrigation Districts. These districts are defined as agricultural units that have works that protect the area against floods and provide for the drainage of land under a program of rational exploitation (DR 9).

3-9-3 *Contamination*

Riparian users may not contaminate water destined to culinary, domestic, irrigation or industrial uses (RWC 9).

"CAR," within its geographical area, has the responsibility of preventing water contamination. Every new water discharge within this area must be authorized by "CAR" and is subject to its regulations and control (CA 4e).

3-10-0 FINANCING WORKS AND ADMINISTRATION

A. *Irrigation Districts of "INCORA"*

The Districts of "INCORA" are financed as part of the overall Agrarian Reform program of the country. Under this program the beneficiaries of this program pay for the land, the irrigation and drainage works and stream flow regulation

by paying these bonds which are amortized in periods of 15 or 25 years at interest rates of either two or seven percent per annum depending on certain factors (ARA 20, AR 75, 77).

The administration, repair and maintenance costs of the Districts are paid by the users. The amount of the assessment is based on the annual budget of the District and divided into assessments against all of the users in the District. It is calculated on a basic fixed amount per user and an added amount which is based on the volume of water the user consumes (DR 16).

B. *Vigilance and Control Groups*

These groups function only in controlling regulated rivers and are under the authority of the regional offices of "INDERENA." Their functions of policing water use, cleaning and maintenance within the regulated area they serve, is financed by assessments to the users in the area (V 1).

3-11-0 LEGISLATION ON USES OTHER THAN IRRIGATION

3-11-1 *Domestic*

Water cannot be removed or diverted from streams for domestic uses except in accordance with the law (CC 683). One of the uses that a riparian may make of the waters that flow through his property is to satisfy the domestic and stock watering needs on his own property (RWC 1, 9). Riparian rights are subject to expropriation by communities needing the water for domestic use (CC 803-3). The government can grant the use of streets, roads and public ways and public property as canal rights-of-way for domestic uses of water (RFH 10). Concessions may be granted for domestic water use as follows: 1) for the domestic needs of a community, 2) for a farm or property needing the water for domestic service; 3) for cattle watering (WC 6, RWC 6).

In making inspections related to proposed concessions the protection of existing domestic uses is required by law (RFH 5). Public service companies furnishing water to ordinary users are subject to the tariffs and quality controls of "INDERENA" (RFH 11).

The priority for uses in periods of scarcity within "INCORA" Irrigation Districts gives first preference to the domestic uses of communities, then to the domestic needs of the inhabitants of the district and cattle watering with all other uses following in priority (DR 14).

3-11-2 *Motive Power, Industrial and Electrical Generation*

A. *Motive Power and Electrical Generation*

There is extensive legislation on the use of water for generating motive power and electricity (FH, RFH). The National Government controls *ownership and use* of the force that can be generated with water but excluding water force used for the benefit of a farm or powering farm machinery (FH 3).

Though the National Government reserved the power to control such use, it also authorized the granting of use rights to such water force for motive or electrical generation to local government entities, companies and private individuals. Such use rights are limited to not more than 50 years (FH 4, 5).

They are acquired through the same proceedings as are indicated in 3-5-2-B and references in that section detail special requirements for acquiring use rights for motive power generation. Users generating up to 100 horsepower may use the water without a concession (FH 9).

Motive force users may not interfere with other uses (FH 6) and when such uses do interfere there must be expropriation proceedings and payment of compensation (FH 7).

When water power users sell the generated electricity, the rates charged are subject to governmental control (RFH 6, 11).

B. *Industrial Users*

In the law there is frequently no distinction made between industrial uses and the uses mentioned in the previous paragraph. Thus, many industrial uses are directly related to powering machinery or generation of electricity. However, rights to industrial uses are granted by the same processes, terms and conditions as uses for other purposes (FH 10). Industrial uses are given a priority in use as explained in 3-7-1.

3-11-3 *Transportation*

The use of the water for transit and navigation are public interest uses and are subject to control by laws and regulations (CC 678). Riparian water users may not exercise their use right in a way that violates the laws and ordinances protecting and benefiting navigation and floatation on the public streams, rivers and lakes (CC 893).

3-11-4 Medicinal and Thermal

There are no significant special provisions in the law regarding this use.

3-11-5 Mining

No permission is required for the diversion and use of water from public streams for powering machinery to work mines within the limitations provided in the mining code. Such use is exempt from the general requirement of obtaining a concession from the government provided that the force is limited to mining development (WC 12).

The right is limited and may not prejudice or injure public works, communities or water used by communities, domestic uses of individuals (CM 175, 208), or deprive the land owner of water necessary for the use of his family, crops, machines, industries and irrigation (CM 176). As between various mining uses of the same water, preference is given the miner who first discovered the water (CM 205).

3-11-6 Other

"INDERENA" is charged with the execution of programs for the development and repopulation of fish and other aquatic life (R 23f).

3-12-0 SUBTERRANEAN WATERS

Anyone may place a well on his own property even though it does diminish the water supply of another well. A well must be closed if water produced is not sufficient to be of utility or if the damage to third parties is greater than his benefits (CC 1002).

The "Water Control Authorities" are specifically charged with the regulation, administration, conservation and development of subterranean waters (R 22, 23, CA 4a).

3-13-0 PENALTIES AND SANCTIONS

Policeing water use is the subject of special legislation that imposes water law enforcement responsibilities on various agencies and officials. These responsibilities are included in section 3-3-1 in reference to "INDERENA," Vigilance and Control Groups, Water Masters, police officials and mayors. "Water Control Authorities" are required to investigate all illegal uses of water and initiate proceedings to terminate such uses (WC 16).

Police authorities enforce the removal of plants and trees in the streams and on the banks that impede the free flow of

the water (WC 18). "Water Control Authorities" have the power to impose fines not to exceed 500 pesos for infringement of the conditions and obligations imposed in concessions or stream regulations (WC 20, RWC 36, 37). Failure to pay the fines may result in termination of a water use right (RWC 38g).

A water user's failure to construct works required by government order to control and regulate water use is subject to a 500 peso fine (RWC 50).

Cutting trees that protect water courses or planting trees or plants in streambeds are illegal acts and subject to a fine of from 20 to 200 pesos. Injured third parties may also initiate regular civil or penal actions for recourse against the same acts (RWC 17, 19).

Water theft or illegal use of water that results in prejudice to third parties is subject to prosecution under the Penal Code provisions for regular criminal prosecutions. All persons over 21 years of age having knowledge of such crimes are required to file a formal complaint (Penal Code 423, RWC 56).

All administrative or criminal fines imposed for violations of laws or regulations are payable to the National Treasury (RWC 59).

Public Service Companies who furnish water to the public and charge more than the maximum rate established by the government or charge preferential rates as between customers are subject to a fine of up to 500 pesos (RFH 16).

Within Irrigation Districts of "INCORA" the district chief may impose fines of up to 2,000 pesos and indefinitely suspend the use right of any user who: 1) steals irrigation water; 2) uses grave profanity, threatens or assaults district officers; 3) destroys the work of other users; 4) commits clandestine acts that injure third parties; 5) closes or obstructs maintenance roads; 6) sells or transfers the water to neighboring property; 7) damages the structures, canals or equipment of the districts (DR 22, 23, IR i31).

ECUADOR

4-1-0 INTRODUCTION

4-1-1 *References and Key to Abbreviations*

A. *References*

The references in this section follow the subject matter to which they refer, and are in boldfaced parenthesis. These references are alphabetical and numerical symbols such as (CC 101). The letters refer to the law, code or regulation and the numbers refer to the article or section number. The key is as follows with the official Spanish citation following the English but in parenthesis:

- (CC) = Civil Code of Ecuador, 1970 (Código Civil, Séptima Edición de 20 de Noviembre de 1970, publicada en Suplemento No. 104 del Registro Oficial.)
- (CP) = Penal Code (Código Penal, Suplemento del No. 147 de Registro Oficial del 22 de Enero de 1971).
- (CPC) = Code of Civil Procedure (Código de Procedimiento Civil, Constitución y Leyes de la República del Ecuador, 1960).
- (CS) = Health Code, 1971 (Código de la Salud, Registro Oficial, No. 158 de 8 de Febrero de 1971.)
- (IN) = Law Creating the Ecuadorian Institute of Water Resources 1966 (Ley de Creación del Instituto Ecuatoriano de Recursos Hidráulicos, Decreto No. 1551, publicado en el Registro Oficial No. 158 del 11 de Noviembre de 1966.)
- (LA) = Water Law, 1972 (Ley de Aguas de 18 de

122 *References and Key to Abbreviations*

- Mayo de 1972, publicada en el Registro Oficial No. 69, 30 de Mayo de 1972.)
- (LC) = Law of Roads, 1964 (Ley de Caminos, Decreto Supremo No. 1351, expedido el 30 de Junio de 1964, promulgado en el Registro Oficial No. 285, de 7 de Julio de 1964)
- (LM) = General Law of Mining (Ley General de Minería, 10 de Agosto de 1971, Decreto Supremo 1461, Registro Oficial 511 de 2 de Febrero de 1965)
- (RA) = General Regulation of the Water Law (Reglamento de la Ley de Aguas, Decreto Supremo 10 de 18 de Enero de 1973, Registro Oficial 233 de Enero de 1973)

B. *Abbreviations*

"INERHI" = Ecuadorian Water Resources Institute (Instituto Ecuatoriano de Recursos Hidráulicos)

4-1-2 *Geography*

Ecuador is a triangularly shaped country, bordered on the west by the Pacific Ocean, on the southeast by Peru and on the north by Colombia. There are 108,204 square miles (280,250 square kilometers) of territory which is divided into three distinct geographical zones including: 1) the Sierra or Andes Highland zone, located in the inland mountain range and running parallel to the coast, 2) the coastal Guayas Basin and surrounding lowland areas, 3) the eastern Amazon River Basin area commonly known as the *Oriente*.

4-1-3 *Climate*

The general climate and rainfall vary greatly within the country. The Sierra is characterized by many micro-climates which vary in temperature and rainfall from very dry to humid. The *Oriente* becomes progressively more humid with more rainfall toward the east. Here too, there is slight seasonal variation in the rainfall pattern. The coastal areas are marked with micro-climates but tend to be hot and humid with heavy seasonal rainfall and relatively dry seasons as well. However, within this zone there are fairly extensive deserts that sustain practically no vegetation. This relatively small country on the equator has extremes of permanently snow capped volcanic peaks rising up to 20,701 feet (6,310 meters) and low tropical

jungles of the Amazon and Guayas Basin and the desert like areas of the coast

4-1-4 *Population*

The population of Ecuador by the latest census is around 6,500,000. There are three principal urban centers - Guayaquil on the coast and Quito and Cuenca in the Sierra. However, the greater portion of the population is rural, agricultural and located primarily in the coastal and sierra regions with little population in the *Oriente*.

4-1-5 *Irrigation*

Irrigation is an important factor in agricultural production in Ecuador. There is an estimated 438,602 acres (177,500 hectares) of irrigated land. This represents 1.67 percent of all cultivated land and .16 percent of all the land in the country.

4-2-0 LEGISLATION

4-2-1 *Legislation in Force*

The following is a general view of the various enactments related to water law and administration which are now in force. The Water Law and Civil Code contain most of the substantive provisions related to water rights. A majority of the procedural provisions related to water administration are also found in the Water Law. The law creating "INERHI" is the basic administrative organization enactment but it also contains substantive and procedural provisions.

The Regulations of the Water Law define and amplify the basic concepts established in the Water Law.

The following codes and laws also relate to the subjects generally suggested by their titles: Civil Procedure, Penal, Health, Mining, Agrarian Reform and Colonization and Roads.

4-2-2 *Process for Legislative Change*

Legislative changes in Ecuador are initiated by a legislative Commission and require the approval of the Council of the Ministers of the Government and the signature of the President of the Republic.

4-3-0 ORGANIZATION FOR WATER ADMINISTRATION

4-3-1 *General*

A. "INERHI"

1. *General* "INERHI" is a semi-autonomous government entity through which the water resources of the country are protected, controlled and administered. Involvement of other agencies in the administration of water is indirect or through

their representation on the board of directors of "INERHI" as hereafter described.

2. *Central Organization*

a. "INERHI" is managed by a board of directors. The President of the Board is the Minister of Agriculture and the four members of the board consist of the Technical Director of the General Office of Economic Planning or his representative, the Executive Director of the Institute of Agrarian Reform and Colonization, an elected representative of the private agricultural interests and the Manager of the National Development Bank or his Credit Manager (IN 5).

b. The Executive Director is designated by the Minister of Agriculture. He serves a four year term, is a non-voting member of the board of directors and is directly responsible to the board for the management of the affairs of the Institute (IN 9, 10).

c. The basic function of "INERHI" is to direct the improved use and protection of the water resources of the country (IN 2). Specific responsibilities include, 1) planning the improved use and development of water, 2) making evaluations and inventories of the water resource, 3) establishing zones of protection; 4) declaring states of emergency and dictating measures that are necessary for the protection of water; 5) executing programs for the protection and development of water basins (LA 13); 6) hearing and processing petitions for water use concessions and resolving conflicts over water use (IN 3). Other more specific duties are detailed in other parts of this work.

d. The Advisory Water Council acts as a special committee of the Board of Directors. The Council hears administrative appeals from the decisions of the regional agencies of "INERHI" and also advises the Board of Directors in establishing general policy for "INERHI" (LA 81, RA 2). "INERHI's" legal advisor serves as the general secretary to this Council (RA 3, 12). For an explanation of the procedural functions of the Council see 4-4-2-E.

3. *Regional Agencies* "INERHI" has eight regional agencies that exercise local jurisdiction over defined river basins and are administered by a Chief (RA 1, 14). Other agency officers are an engineer, legal advisor and a secretary (RA 15, 18). The agency has the responsibility for exercising jurisdic-

tion in the first instance over petitions for concessions of water (see 4-5-2), resolving conflicts over water use (see 4-5-3) and imposition of sanctions and penalties for violations of the water law and its regulations (see 4-13-0) (RA 19, 20).

B. *CEDEGE* This is a special regional development commission. CEDEGE jurisdiction is limited to the Guayas River Basin. Within the basin, its powers encompass most phases of general development including the promotion of irrigated agriculture. CEDEGE may initiate the creation of special irrigation districts within the basin but the internal regulations of such districts must be approved by "INERHI."

C. *Others* "INERHI," on petition of interested parties, is the authority that grants all classes of water use concessions. However, other agencies must approve some classes of uses before a petition can be initiated. These agencies include: the Ecuadorian Institute of Sanitary Works for culinary uses (RA 100); the Ecuadorian Institute of Electrification for electrical energy production (RA 115); CENDES for industrial production (RA 116); the General Bureau of Geology and Mines for mining uses (RA 117); the Ministry of Public Health for medicinal and mineral waters (RA 97, 100). There are a number of other local entities such as municipalities that have constructed and operated small irrigation projects.

4-3-2 *User Organizations*

A. *Water User Associations*

1. *General* The formation of user associations is mandatory when more than five water users have water use rights from a common water source. These associations are structured along general corporate lines, and are subject to the technical, administrative and legal supervision of "INERHI" (RA 27, 29).

The organization meeting for the Association may be called either by "INERHI" or interested parties by notifying water concessioners eight days prior to a general assembly meeting. The meeting is held for the purpose of electing a Board of Directors. The notice may be given by a radio or press proclamation or through personal service of a citation on the users (RA 28).

2. *General Assembly* The General Assembly is the main authority of the Water Users Associations and functions by electing the Board of Directors of the Association and also hears and considers annual reports of work accomplished and

investments made. Each water user within the area has one vote if he holds a water use concession recognized by "INERHI" regardless of the quantity of the water use right (RA 31, 32).

3. *Board of Directors* The Board is composed of a President, Vice-President, Secretary, Controller, Administrator, Treasurer and one member representing each secondary canal. Each Board member serves for a one year term. The positions are obligatory and without pay except for the Administrator and Treasurer whose salaries are fixed in the internal regulations. A Board member must be a concession holder with a right to vote and may not be delinquent in his obligations to the Board (RA 33).

The Board has the following powers and obligations: a) to comply with all "INERHI" directives; b) to protect users' rights and to enforce water laws and regulations and the Board's internal regulations; c) to adopt internal operating rules; d) to maintain a registry of users with detailed information regarding their rights; e) to establish irrigation turns and submit them to "INERHI" for approval each November; f) to plan and control the efficient operation and maintenance of the canal and related works; g) to require the installation of proper measuring devices by the users; h) to approve the budget prepared by the administrator; i) to control investments made in accordance with the budget; j) to sanction users for failure to comply with their obligations; k) to review reports from the officers; l) to make an annual report of "INERHI" including details on investments, work accomplished, action taken by officers to furnish copies of the records (RA 36); m) and to arbitrate disputes between users (RA 39). The officers of the Board have duties indicated by their titles (RA 44, 45, 46) and, in addition, the administrator serves as the water master or police authority with regard to water use within the area (RA 47).

The source of revenue for the operation of the board comes from assessments made to the users or members of the association paid either in work or money (RA 42).

B. Irrigation and Drainage Commissions

1. *General* A special type of user organization is provided for the management of an irrigation system constructed with state funds. These are generally called Irrigation and Drainage Commissions but may also carry the name of the

related river or works. In order to create these commissions, interested parties must have the prior approval of "INERHI." This approval is given only after the submission of technical studies, budgets and funding proposals that demonstrate the need and feasibility of the Commission (RA 48).

"INERHI" exercises supervision and control over the commissions to insure that they comply with their goals and functions. The decisions of "INERHI" with respect to commissions are obligatory (RA 49).

2. *Regulations.* Each commission has its own internal regulations approved by "INERHI." These regulations describe the area and scope of its jurisdiction and regulate its activities, relations within the Commission, rights between users relative to use and distribution of the water and other activities related to social and economic development (RA 50).

The commissions, in coordination with "INERHI" and the various bureaus of the Ministry of Production, formulate tentative or alternative cultivation and irrigation plans for the area. These plans are readjusted in accordance with the availability of water (RA 51). The irrigation and drainage works constructed by the commissions must conform to specifications of "INERHI" and an annual inventory of such works constructed by the commission must be submitted to "INERHI" (RA 52).

See 4-10-0 for the detailed financing procedures for works constructed by the commissions. Obligatory water use as discussed in 4-6-0 applies to users in Irrigation and Drainage Commissions.

C. *Others*

The above two types of user organizations are specifically provided for by law for managing water use. Cooperatives, associations of farmers and native communal organizations are also known to be directly involved in the management of water distribution to members but other laws not dealing specifically with water administration govern their formation and operation.

4-3-3 *Registers*

A. *"INERHI"*

All water users were required to register their water use rights with "INERHI" within one year from the date of the Water Law and ending on May 18, 1973 (LA 98). All new resolutions granting or denying concessions made after May 18,

1072 are also required to be registered with "INERIII" (LA 23, 98).

B. *Water User Associations*

A registry maintained in the records of Water User Associations (see 4-3-2.A) must contain the following information supplied by each user who is a member of the association: 1) user's name; 2) date of the title to the water use right or concession; 3) volume of water covered by the right; 4) name, location and amount of land within the farm; 5) location and type of water measuring device; 6) capacity of the diversion and canal works; 7) amount of area that can be irrigated; 8) name of the water source, canal or other works that supply the intakes; 9) number of diversions and intakes to the farm; 10) amount of land in each type of crop and when it is planted; 11) area to be covered by crops in the following year; 12) such other information as may be required by the Association regulations (RA 37).

4-4-0 OWNERSHIP AND CONTROL

Some things, including waters, are declared to be common to all men and are not subject to ownership. According to the law, no nation, corporation or individual has the right to own them. The use and enjoyment of such goods, as between individuals within a nation, are determined by the laws of that nation (CC 621, 1155).

The law is specific and all inclusive in its treatment of the ownership and control of waters (LA 1, 2, 3).

4-4-1 *State Ownership*

All water within the nation is declared to be national property for public use. This provision is amplified by the declaration that the waters of rivers, lakes, lagoons, springs that rise and die within the same property, subterranean water regardless of where it is raised, snows, natural water falls and other water sources are national property for public use. This public ownership cannot be lost nor transferred by any method or appropriation or prescription (LA 1, 2).

4-4-2 *Private Ownership*

No private rights of water ownership exist nor can they be acquired. All private water ownership rights that existed before enactment of the law were abolished. [See 4-5-0, 1, 2, & 4 for a discussion of the right of utilization of waters (LA 3).

4-4-3 *Ownership and Control of Riverbeds, etc.*

In principle, the beds and subsoil of lakes, lagoons, rivers, streams and other permanent courses or impoundments of water are property of the state for public use (LA 4). This public ownership extends to the average high water mark on the bank. Details defining the limits of this ownership are left to special laws (CC 631-2) as follows:

1. Earth deposits which adhere to the bank of a lake or riverbed, caused by the gradual action of water and called *alluvion*, become part of the riparian land owner's property within his boundary lines which are extended directly to the water, provided that such deposits remain above the high water mark. However, in inhabited ports such deposits become the property of the State (CC 631, 685, 686).

When an extension of the boundary results in the boundaries crossing before they reach the high water mark, the triangle formed between crossing of the lines and the high water mark is divided into two equal parts between the contiguous owners on a line commencing at the cross and extending to the high water mark (CC 686).

2. If land is moved by a flood or other natural force in a violent manner from one location to another, the former owner has a right to reclaim the land by returning it to his property. He must do so within one year or it becomes the property of the landowner where it was deposited (CC 687).

3. If property is covered by water as a result of flood conditions, the ownership remains with the former owner when the water recedes (CC 688; LA 10).

4. If a river changes its course, the bordering property owners may, with the authorization of "INERHI," construct the necessary works to return it to its former course. The riparians or bordering property owners then own the part of the bed that permanently remains dry. If there are two riparians, then the land is divided between them based on a division of the dry bed on an equal longitudinal line between the two contiguous owners. The right provided in this paragraph must be exercised within two years after the change of course (LA 11).

5. If a river divides into two arms that do not later join, the parts of the old bed that remain dry accede to the adjoining

130 *Ownership and Control of Riverbeds*

property owners in the same manner as in sub-paragraph "a" above (CC 690).

6. New islands that are formed in rivers and lakes belong to the State (CC 632). However, the ownership of existing islands are governed by the following principles: a) islands periodically covered by water at its high water mark remain as part of the bed of the lake or stream; b) islands created by the river dividing and then reuniting, remain the property of the former owner; c) islands that are newly formed accede to the nearest property owner, by measuring an extension of his boundary to the island or any part thereof and islands that are in part closer to two different properties are divided between them according to the same standard (CC 691).

4-5-4 *Control of Structures in Riverbeds, etc.*

Riparian land owners may construct defenses on the banks of water courses in the form of plantings, walls, pilings, retaining works and others. However, they must first inform "INERHI," and based on an inspection they are either granted or denied the authorization (LA 9).

In the event of a change in the river bed the owner of the new bed can construct the works necessary to return the flow to the previous bed with authorization from INERHI even though prejudice may result to the new owners of the old river bed (LA 11).

Changes in points of water diversion or construction of dams in either natural or artificial water channels may only be made with the prior authorization of "INERHI" (LA 35, 56, 71).

Riparian owners may not prevent others from constructing defenses against the waters to protect lower properties (LA 60).

Anyone violating provisions related to structures must remove the works, return things to their previous condition, replace the natural or artificial protection and pay the cost of replacement of the works and is responsible for damages and prejudices caused by such action (LA 78).

The construction of unauthorized works in riverbeds and destruction of natural and artificial defenses against the water are offenses administratively punishable as provided in 4-13-0 (RA 23).

4-6-0 **RIGHT TO USE WATER**

A right of utilization of waters is defined as a non-transfer-

able administrative authorization in accordance with the requirements prescribed in the law (LA 5). The general power to regulate and limit the use of waters is vested in "INERHI" (LA 8, IN3). All water uses are subject to the existence of the resources, the needs of the communities, farms, industries, and the priorities fixed by law (LA 33).

The state guarantees to use right holders the use of the water with the limitations that are necessary for its efficient and productive use (LA 12).

4-5-1 *Uses Without Formality*

The following limited types of water uses may be made without obtaining a concession:

1. Water use for domestic service (LA 14).
2. Use of canal water for domestic needs and cattle watering by property owners who have canal rights-of-way crossing their property providing he does not dam, divert, or contaminate the water. No right exists to any continuing future service (LA 70).
3. Rain water use and storage in tanks, cisterns or reservoirs for purposes of irrigation, industrial use or any other purpose, provided that third parties' rights are not prejudiced (LA 99).

4-5-2 *Procedure for Obtaining a Use Right*

A. *General*

A right to the utilization of waters may be acquired by anyone who possesses real property or by an industry in which the water will be utilized. The concessioner need not have any title to the property where the water is used other than a possessory right (LA 5). Except as noted in 4-5-1, no one may utilize waters unless he obtains a concession from "INERHI" through the process hereafter described (LA 14, 70, 83). A special provision authorizes the granting of concessions to waste waters but the procedure is the same as for all other uses (LA 48).

B. *Petition and Contents*

Chiefs of "INERHI" regional agencies have jurisdiction to grant concessions of water utilization rights. The petitions are filed with the officials and they resolve any questions raised in the first instance (LA 79, 80, RA 12, 16).

1. *General* The following elements must be contained in the petition:

132 *Procedure for Obtaining a Use Right*

- a. the name of the stream, river or other source from which the water will be taken and the Parrish, District and Province in which it is located,
- b. the quantity needed and the place of diversion,
- c. the names and addresses of the users,
- d. the object to which the water will be applied,
- e. the plans for the works and installations to be constructed,
- f. the time within which the works will be executed,
- g. the technical studies that justify and define the petition as determined by the regulations (LA 84).

2. *Uses Other Than Irrigation* When the proposed use is for other than irrigation the following requisites apply:

- a. for energy generation, electrical and mining uses, especially those included in the General Development plan, they must present a petition to INERHI and a feasibility study approved by the Electrification Institute. The study must conform to the specifications of both institutes. Users for these purposes must treat the water before returning it to a public stream if this is determined to be necessary (LA 40; RA 115).

- b. for construction and operation of industries they must present feasibility studies to INERHI approved by CENDES (industrial development institute) and prepare studies in accordance with technical specifications of both agencies (RA 116).

- c. for mineral development, the petition to INERHI must be accompanied by a feasibility study approved by the Bureau of Geology and Mines and conform to the technical specifications of both agencies (RA 117).

Additional studies and documentation may be required in relation to concessions for these uses (RA 118).

3. *Irrigation of Less Than 1,250 Acres [500 hectares]:* When the petition is for the irrigation of from 25 to 1,250 acres [10 to 500 hectares], then it must contain the following documentation in addition to that provided in paragraph 1:

- a. objectives, description and importance of the project and a description of existing irrigation works,

- b. location,

- c. available technical information including plans and topographical maps, surface to be irrigated, water source, water

analysis, soil studies, drainage possibilities and water requirements,

- d. work program,
- e. costs and investments including project costs, service, and maintenance costs, capital repayment and a calendar of tentative investments,
- f. estimated income and benefits,
- g. estimated profits,
- h. social and economic evaluation,
- i. possible financing,
- j. designs, plans, specifications and other studies justifying the project (RA 111).

4. *Irrigation of More Than 1,250 Acres (500 hectares):* Petitions for irrigation concession for more than 1,250 acres [500 hectares] must comply with the requirements detailed in paragraph 1 and in addition must comply with the requirements of the *Manual of Standards for Planning Irrigation and Drainage Systems* prepared by "INERHI" (RA 112).

C. Notice

The Chief of the Agency determines whether or not the petition conforms to the law and if it does, he orders that a notice be given as follows:

1. The notice must cite the known and unknown users and must contain an extract of the petition. It must be published three times with a period of eight days between each publication in a newspaper designated by the Chief of the Agency or District. If there are none published in the capital of the District or Province, then it must be published in one of the papers in Quito, Guayaquil or Cuenca. A notice of the proposed use must also be posted in three of the most frequented places in the principal town of the Parish. Citations must be personally served to known users from the source.

2. The notice must also specify that one or more experts will be designated from the technical staff of "INERHI" to study the matters referred to in the petition.

3. All interested parties are ordered to file their address with the appropriate office within the time fixed in the notice (LA 85, RA 17c).

D. Hearing and Procedure

If no opposition is presented within a period of 20 days from the last newspaper publication, it is not necessary for the

Chief of the Agency to hold a hearing. When there is no opposition, the Chief must consider the technical report of "INERHI" and resolve the petition within an additional five days from the termination of the period (LA 86, RA 17).

If opposition is presented, a hearing of conciliation must be convened and if no agreement is reached between the parties, then the proceedings enter the contested trial period and the Chief of the Agency receives evidence for a period of ten days. In the process of the trial the Chief is required to apply the law on the basis of equitable principles and review the evidence in accordance with the rules of procedure. The Chief may order such proceedings and proof as he deems convenient. After the conclusion of the period of proof, the judge who is the Chief must make his decision within a period of 30 days (LA 86).

E. Appeals

Within a period of ten days from the receipt of the notice of the resolution the parties have a right to request a nullification of the resolution or may appeal on the merits to the Consultive Water Council. This council consists of three members. (see section 4-3-1-A-2d for organizational structure). The Consultive Council must resolve the appeal within 30 days from the filing date of the appeal (LA 81, 90, RA 1, 2, 3, 6).

Anyone who considers himself prejudiced by the resolutions in the first and second instance and is without other remedies, may appeal to the Adverse Administrative Tribunal (LA 82).

All of the above proceedings are governed by the Code of Civil Procedure and the water law (LA 86).

F. Changes in Concessions

All changes in water diversion points and transfer of water use rights require the authorization of "INERHI" (LA 35). The modification of a concession is resolved as a continuation of the same proceeding in which the concession was originally granted (LA 87).

G. Characteristics of Concessions

The characteristics of concessions are:

1. They are uncertain or contingent in that they are conditioned on the availability of water and the real needs of the object for which they are granted (LA 7, 33, 38).

2. Restricted grants may be made for limited or undetermined periods (LA 23, RA 78).

3. They are subject to suspension, modification and cancellation when the use is not efficient or the use or the manner of use is different from that specified in the concession.

4. Rights lapse or terminate when the object of the use terminates, or at the end of the period specified in the concession or when the supply reduces so that the use is impossible (LA 32).

5. Concessions are non transferable.

6. Concessions place a burden on the user to pay a water use tax (LA 18, RA 79).

7. Concessions are obligatory, thus, except as noted, individuals may not use water without a concession (LA 10).

8. Two or more uses can be granted in the same concession and the different uses and places of use must be specified in the concession (LA 26, 27, RA 77).

9. The period of the concession is for the economically useful life of the use, and for irrigation uses it is not less than ten years and is renewable (RA 78).

H. Projects Constructed with State Funds or Loans

Users who come under the jurisdiction of Irrigation Districts of "INERHI" or an Irrigation and Drainage Commission (see section 4-3-1, 4-3-2-B), obtain an annual use right based on a contract with the District or Commission. This use application must be filed in November prior to the year of the expected water use and includes a description of the area to be irrigated, the crop plan and specific crops to be grown.

A contract is signed by the user and the District or Commission which contains the following: 1) name of the District or Commission, 2) number of the contract, place and date; 3) the name of the water user, 4) location of the land; 5) amount of land; 6) number of the diversion measuring device and lot; 7) water volume requested and approved; 8) amount of assessment and contract price; 9) other necessary data (RA 71).

4-5-3 *Procedural Protection of Rights*

A. Jurisdiction

When controversies arise between users of water from the same canal they are arbitrated first between the parties with the intervention of the Board of Directors of the Water Users Association (see 4-3-2-A). If no agreement is reached

the matter is resolved by "INERH" as hereafter provided (RA 39).

Jurisdiction over all disputes concerning rights and obligations related to the Water Law is vested in "INERH." However, when "INERH" is a party to a petition for water use or a dispute over waters classified as waste or subterranean waters, then the jurisdiction is vested in the Superior Court (LA 70, IN 21).

The procedure for resolving such disputes is identical to the procedure provided in 4-5-2 B to E (LA 70 to 86 and 90).

B. General Criteria

Disputes which were pending in courts at the time of enactment of the new water law continue to be heard by the same tribunals until their final resolution but in accordance with the new law (LA 105).

The administrative judges in the first and second instance (see 4-5-2) are directed by law to apply the water law with a criteria of equity and evaluate the proof in accordance with established procedural rules and may require the proceedings and proof they deem convenient (LA 94, RA 6).

C. Possessory Actions

The holders of use rights may protect their interest in a *possessory action*, which gives them the power to conserve and recuperate their water use rights through proceedings before "INERH" (CC 843, 890).

The Civil Code under the title of "Special Possessory Actions" provides for specifications for protecting interests in water use as follows:

1. A lower property owner may require a higher property owner to dismantle or modify works that interrupt natural water drainage patterns and cause damage to his property or deprive him of his rightful water use (CC 889, 1000).

2. If flooding or deprivation of water is caused by an accumulation of mud, rocks or sticks, the lower owner may force the upper owner to remove them or may enter the property to do it himself (CC 1003; LA 68)

3. If waters are used on one property and damages result to bordering properties due to negligence in discharging the waters, those affected are given a right of action for the damages sustained. If there is a recurrence, the damaged owner

is entitled to receive twice the amount of the actual damages (CC 1004).

4-5-4 *Rights Under Prior Laws*

All owners of water use rights which existed before the enactment of the Water Law of 1972 were allowed to continue the use for a period of one year after May 18, 1972. Such pre-existing rights may be converted into use rights in accordance with the new law only by complying with the formalities described (LA 2, 3, 98; RA 104).

All such pre-existing right holders, in order to preserve a use right under the new law, were required to register their use right with "INERHI" on or before May 18, 1973. The registration contained a description of the water source and the quantity of the water used and was without charge (LA 98). Subterranean users were required to file a report with "INERHI" with respect to their existing wells (RA 124).

Pre-existing users of culinary, domestic, sewage, energy generation, mining and industrial water were also required to obtain new use concessions (RA 109, 119).

4-5-5 *Limitations and Obligations of Users*

A. *Beneficial Use*

All water utilization rights are limited in quantity by the amount of water that can beneficially be used. These limitations are administratively imposed as a result of technical studies by "INERHI" in the process of granting concessions or thereafter on the motion of "INERHI" (LA 7, 8, 12, IN 31).

B. *Sale, Rent or Transfer*

Water use rights are declared to be outside commerce and cannot be sold, rented or transferred (LA 2, 102). If the owner of a utilization right sells or transfers the ownership of the land or industry where the water is used, the new owner must apply for a new water utilization right.

C. *General Limitations*

The following limitations apply to water utilization rights: 1) they are limited to the availability of water and the actual needs of the user (LA 7, 8, 12, RA 51); 2) the use must not interfere with prior uses; 3) the works must be approved by "INERHI" (LA 24).

The system for the distribution and multiple use of water from a common source is regulated on the basis of technical criteria and may involve a percentage division of the supply

and turns or intervals for irrigation as may be established by "INERHI" (see also the related material in 4.3.2-G) (RA 41).

D. General Obligations

A concessioner of a water use right is obligated to: 1) construct the works necessary for the exercise of his right; 2) construct the works necessary to guarantee that he receives only the amount of water conceded and in the form ordered by "INERHI" (RA 38, LA 6, 15); 3) use the water with great efficiency and economy; 4) contribute to the conservation and maintenance of works that facilitate his water use (LA 21); 5) pay the tariffs related to the granting of water use concessions (LA 18, RA 72); 6) prevent the loss of water and maintain his canals in good condition; 7) pay damages to third persons resulting from his negligence (RA 41).

4.5.6 Loss of Rights

A. General

Failure of a concessioner to use water in an efficient manner or his use of the water for purposes other than those fixed in the concession may result in the cancellation, suspension, or modification of the concession (LA 31).

B. Termination

Water use rights lapse: 1) at the termination of the object for which they were granted; 2) at the termination of the authorized use period; 3) for a reduction in the water supply which renders the water use impossible (LA 32).

Failure to pay "INERHI" the annual water concession tax may also result in a lapse or termination of the use right. "INERHI" must give notice to those who are delinquent each year during the last half of November. Failure to pay by December 31st results in the termination of the use right (see also 4.4.4) (RA 79).

C. Temporary Suspension

Water use rights may be temporarily suspended as a result of four or more violations of any one provision of the water law. The following procedures initiated by the Chief of the Agency are required before the suspension is effective: 1) a written report is filed with the Technical Director of "INERHI" detailing the violations and the fines imposed; 2) the Technical Director petitions the Ministry of Natural Resources and Tourism for a favorable opinion regarding the suspension which must be issued within 30 days; 3) a similar

opinion must be obtained from the Minister of Social Provision and Labor if the suspension might result in labor disputes; 4) failure to respond within 30 days is treated as favoring suspension (LA 77, RA 22, 24).

"INERHI" may temporarily suspend use rights when necessary for the construction of works, canals or other water related structures. They must, however, previously consult with the affected users to coordinate the suspension and avoid major damage. If damage does result to private works then they must be assessed and paid for by the responsible party (LA 29, RA 105).

Failure of the user to pay assessments to his users organization may also result in the suspension of his right while he is in default (RA 43c).

4-6-0 OBLIGATORY WATER USE

Property owners with land that could be directly benefited by irrigation works constructed by State entities have an affirmative obligation to use waters from the system to irrigate their land. The law requires them to contribute to the costs of the system whether or not they use the water unless they fall within one of the following exclusions (LA 51, 52, 53).

The following owners within the zone influenced by state financed irrigation works are excluded from the obligation to contribute to the costs of the works if their lands:

1. have a 20 percent slope or more (LA 51),
2. cannot be gravity irrigated (RA 62),
3. soils do not permit efficient agricultural production,
4. have other available water unless the supply is not sufficient for the needs of farm, then, they are assessed on the difference between the amount of water they have and the amount technically needed to complete irrigation requirements (LA 52).

The application of these exclusions is determined on the basis of a petition to the Chief of the Agency of "INERHI" and his decision can be appealed to the Technical Director of "INERHI" (See 4-10-0 for the formula for calculation of assessment) (RA 63).

4-7-0 PRIORITIES BETWEEN USE RIGHTS

4-7-1 *Order of Priorities*

Concessions for water utilization are granted in accordance with the following order of priorities:

140 *Order of Priorities*

1) community supply, domestic needs and cattle watering; 2) agriculture and livestock raising; 3) energy, industrial and mining uses; 4) other uses.

During social emergencies and scarcity impairing normal use, "INERHI" may vary the above priorities except for "a" (LA 34, RA 85).

If the water in a given source is insufficient to satisfy multiple demands for its use, preference is given to those uses that *serve the best economic and social interests of the country* (LA 25). This determination is made by "INERHI" and must be based on documents, reports, studies justifying the preferences, technical evaluations, social-economic studies and legal studies (RA 102).

4-7-2 *How Priorities Operate*

The above priorities apply basically to the process of granting concessions. Once concessions are granted, the use cannot be changed except that the water may be expropriated for community culinary supply upon the payment of indemnification (CC 801).

4-8-0 RIGHTS-OF-WAY RELATED TO WATER USE

A right-of-way is an encumbrance imposed on one property for the benefit of another with a different owner (CC 876), and exercised continuously without the need for the intervention are classified as follows: 1) *continuous*, those which may be of man such a canal right-of-way; 2) *discontinuous*, those exercised at relatively long time intervals and require the intervention of man such as those for passage (CC 878); 1) *positive*, when the servient owner must allow something to be done; 2) *negative*, when the servient owner is prohibited from doing something he could have otherwise legally done (CC 879); 3) *apparent*, when continuously exposed to view such as a path or road and; 4) *inapparent*, when hidden from view (CC 880).

Classification of rights-of-way according to the source of their creation are: 1) *natural*, those that arise from the location of the land; 2) *legal*, those imposed by law and; 3) *voluntary*, those established by consent or acts of man (CC 887).

The water law refers to natural and forcefully imposed rights-of-ways (LA 61, 62 to 73), and the regulation provides that such rights-of-way cannot be used for purposes other than those for which they were established unless the parties and INERHI agree (RA 129). Owners of riparian lands bordering

water sources must allow passage over lands bordering such sources for transit, policing, fishing and other services for a width determined by INERHI (RA 130). No indemnification is payable to the owners of such lands but those using them are liable for damages resulting from their negligent use (LA 55).

Some rights-of-way exist due to the physical situation of property or relationships between persons and do not require any express or implied act

4.8.1 *Natural Rights-of-Way*

The owner of higher property has a right-of-way over lower property allowing waters to drain naturally from his property through lower property, provided that the water course is not altered by the intervention of man. No compensation is payable for this right-of-way. "INERHI," however, may authorize the change of a water course for such drainage (CC 880, LA 61).

4.8.2 *Forcefully Imposed Rights-of-Way*

All forceful rights-of-way are imposed through administrative proceedings before "INERHI" (LA 62) and the Chief of the Regional Agency is vested with jurisdiction to hear such petitions in the first instance (LA 88).

A. *Conditions Precedent*

All property is subject to the imposition of canal rights-of-way and also those for construction, diversion works, dams, drainage works, policing and passageways in favor of another farm that needs water (LA 62). The basic right-of-way gives to the party the right to conduct water through the servient estate at the beneficiaries' expense and he is obligated to construct the works and drains that are necessary for best water use and protection of the servient property (LA 62, 63; RA 145, 147).

B. *Legal Characteristics*

A Right-of-Way is an encumbrance on one property called the *servient estate* for the benefit of another property called the *dominant estate* (CC 876, 877) and gives the dominant owner the right to conduct water over the *servient estate* at his expense (RA 131). This is an implied obligation to construct works necessary for use of the water and protection of the servient estate.

C. *Physical Characteristics*

1. *Route:* "INERHI" determines the route and technical

characteristics of a canal and agreeably adjusts the interests of the various parties whenever possible. Doubtful questions are to be decided in favor of the servient property (RA 133).

2. *Construction and Accessory Works:* Canals are generally of the open ditch type and of a width necessary to conveniently convey the water plus an area of not less than 3.28 feet [one meter] on each side of the canal for conservation, maintenance and cleaning of the canal. "ENERM" determines this width and also specifies those cases where the canals must be covered or the water piped and the specifications of the construction and materials (RA 134).

The canal must not allow overflowing, filtering, flooding, backing or accumulation of trash. In appropriate locations the dominant owner must construct bridges, roads, drains, sewers and other works necessary for the efficient conveyance of the water and allow the normal activities within the servient estate (RA 132).

D. Rights and Obligations of the Parties

1. The servient owner is required to allow necessary passage along the right-of-way for policing, entrance of workers and material for cleaning, repair and maintenance. Prior notice of the entry must be given to the manager of the servient property (LA 63, RA 137).

2. The dominant owner must take measures required to avoid overflow, filtrations or other damages to the servient estate resulting from construction, conservation, operation or preservation of the irrigation works. "ENERM" may order such construction or repair as is necessary for this purpose and fix a time period within which it must be completed (LA 68).

3. When a right-of-way crosses public ways the dominant owner is required to construct and maintain necessary works to avoid inconvenience or damage to the public way (LA 64).

4. A servient owner may use the water that flows through a canal on his property for domestic needs and cattle watering but does not acquire any continuing right in the water and may not dam, divert or contaminate it (LA 70).

5. All co-users of a canal right-of-way are required to contribute to the construction, repair and maintenance costs on a prorated basis determined by the percentage of their water rights as compared with the total in the canal (RA 143).

E. Indemnification

When rights-of-way are forcefully imposed over a farm or other property, the servient owner is only entitled to indemnification if the area covered by the right-of-way represents more than ten percent of the farm or property or if it results in depreciation of more than five percent of the total value of the servient farm or property. "INERHI" determines questions related to the valuations and may consider the official valuations made for tax purposes (LA 02, RA 135). Questions of amount of indemnification for rights-of-way are heard by ordinary courts (LA 01).

F. Procedure

The procedure for imposition of a right-of-way is essentially the same as provided in 4-5-2 (LA 00, 00). However, if controversies arise over the delivery of the money representing indemnification for a right-of-way, the money is to be delivered to the Provincial judge to be disposed of by him as he deems proper (LA 02).

G. Common Use of Existing Canals

A property owner who needs water and has a right to use water may forcefully acquire a right to convey that water in existing canals. The new user must pay for the occupation and improvements necessary for accommodating the greater quantity of water. "INERHI" makes the technical and economic studies, authorizes the co-use, supervises the construction and fixes the amount of payment (LA 05, RA 130). After the alterations are complete and the payment is made "INERHI" establishes a legal co-right-of-way (RA 140).

The following factors govern the amount that a new co-user must pay in addition to the costs attributable to accommodate the increased flow in the canal:

1. No payment is made for use of canals over 30 years old.
2. For works less than 30 years old, a depreciation rate of eight percent per year is applied.
3. The payment for such work is twenty percent of the unamortized cost of the canal as attributed to each new beneficiaries' share. It may be paid in cash, on time, individually or as a group and another twenty-five percent of such amount is paid for improvement of the works. If no additional works are needed, then this one-fourth of the value is paid to the owners. The payment may be made over a period of up to five years without interest depending on the economic and

144 *Forcefully Imposed Rights-of-Way*

social conditions of the new users of the canal. Proper payment guarantees must be given (RA 141, 142).

All co-users and beneficiaries contribute to all costs associated with the right-of-way on a prorated basis according to the volume of water that is allotted to them (RA 143).

H. Rights-of-Way for Studies and Works:

The works which must be constructed to exercise a water use right must conform to the specifications and studies of INERHI. Failure to comply with such requirements can be penalized by suspension, destruction or modification of the works (LA 56). Works must be constructed within the period fixed by INERHI and if the user fails to do so the construction may be done by INERHI and charged to the beneficiaries who must also pay damages caused by the delay. The use right may also be suspended (LA 59).

INERHI may temporarily or permanently occupy lands necessary to carry out studies, construct works to protect the banks of water courses and install hydrometric stations (RA 150).

4-8-3 *Termination of Rights-of-Way*

Rights-of-way related to water use lapse or terminate under the following circumstances:

1. When the petitioner for a right-of-way does not construct the required works within the period of time prescribed by "INERHI";
2. When the right-of-way is not used for a period of more than two consecutive years without just cause;
3. When the object of the right-of-way use terminates;
4. When the right-of-way is used for a purpose other than that for which it was authorized;
5. At the conclusion of the period of a temporary right-of-way (LA 71);

When a right-of-way is declared extinguished, all the improvements and the exclusive ownership and use revert to the servient property (LA 72).

4-9-0 *HARMFUL EFFECTS*

4-9-1 *Flood, Erosion Control and Conservation*

Works dedicated to the conservation, preservation and increase of water resources are declared to be works of national character and the investment of public funds in such works is justified (LA 16).

"INERHI" is responsible for: 1) promoting the formation of water user organizations to conserve canals; 2) collaborating with other agencies in the preservation of river basins (IN 3e-g); 3) regulating the protection of waters and water basins (LA 13).

The Forest Service and "INERHI" are directed to implement the technical measures necessary for conservation, protection and improvement of water basins and especially those measures needed to avoid erosion, fires, excessive grazing, harmful deforestation and enforce those measures adopted (RA 86).

INERHI must issue a favorable opinion before the Forest Service can authorize forest exploitations or declare special zones of forest protection (RA 87).

4-0-2 *Drainage*

All of the processes related to the imposition of a right-of-way for irrigation are also provided for facilitating drainage (see 4-8-2-A). Drainage of land is declared to be a proper object for the investment of state funds (LA 40).

4-0-3 *Contamination*

Contaminating waters in a way that adversely affects human health or development of aquatic plants and animal life is prohibited. "INERHI" in collaboration with the Ministry of Public Health and other state agencies is charged with regulating and enforcing compliance with this provision (LA 22).

Contaminated water is defined as water that is deteriorated in its physical, chemical or biological state as a result of the introduction of solid, liquified, gaseous, radioactive or other substances and thereby becomes partially or totally limited in its useability for domestic, industrial, agricultural, fishing, recreational or other uses (RA 80).

Noxious change is defined as a change produced by the influence of solid, liquid, or gaseous contaminants by depositing materials or by any other action thus causing or increasing the grade of deterioration of water and modifying its physical or biological qualities and prejudicing other water users (RA 90).

All users, including municipalities, industries and other users, are required to analyze the effluent waters from their use in order to determine the grade of contamination. "INERHI" supervises the analysis and when necessary verifies the results given by the interested parties.

146 *Contamination*

They also fix maximum limits for tolerance of contamination for various substances. If the analysis proves higher than the permissible limits, the user may be required to subject the water to treatment and may also be subject to the penalties provided for contamination (LA 91).

"INERHI," in cooperation with the Ministry of Health, is charged with the responsibility of supervising the functioning of plants that treat contaminated waters (LA 92).

4-10-0 FINANCING WORKS AND ADMINISTRATION

A. "INERHI"

1. *General:* The sources of revenue provided by law for the operation of "INERHI" are: a) funds collected under the principle of payment for services rendered; b) annual taxes on concessions for the use of water; c) general budgetary assignments by the national government; d) annual assignments in the General Budget of the State designated for financing the irrigation program; e) foreign and national loans obtained to comply with the goals of the Institute; f) amounts collected under the concept of users payment for dams and irrigation works; g) the property initially acquired by "INERHI" at the time of its creation; h) gifts to the institute (IN 13).

2. *Concession Taxes:* "INERHI" collects an annual tax through its regional offices that is imposed on all types of water use concessions except those for culinary use (LA 18, 104). The amount of the tax is as follows: a) .0028 cents [.007 sucres] per cubic meter according to the volume specified in the concession for irrigation uses without a measuring device; b) .0045 cents [.007 sucres] per cubic meter according to the volume specified in the concession for irrigation uses without a measuring device; c) .0045 cents [.0012 sucres] per cubic meter used for irrigation uses with a measuring device; d) .0045 cents [.0012 sucres] per cubic meter used for subterranean irrigation by pumping; e) \$1.40 [35 sucres] annually per each horsepower of generating capacity for production of motor force; f) for industrial uses according to the following table based on the total annual volume used:

Base Cubic Meters	Excess Cubic Meters	Tax Base Sucres (25 to Dollar)	Excess C/1000m ³
	1,000		15 Sucres
10,000	100,000	150 Sucres	12 Sucres
100,000	1,000,000	1,230 Sucres	10 Sucres
1,000,000	10,000,000	10,230 Sucres	8 Sucres
10,000,000	100,000,000	82,230 Sucres	6 Sucres
100,000,000		622,230 Sucres	5 Sucres

The volume is measured by measuring devices installed at the expense of the user; g) .0028 cents [.0007 sucres] per cubic meter for electrical generation; h) .008 cents [.02 sucres] per .26 gallons [liter] for mineral water which is industrially processed and sold in bottles; i) \$40.00 [1,000 sucres] for recreation purposes (RA 72).

The taxes are payable at the regional agency of "INERHI" where the concession was processed (RA 76). "INERHI" is required to give notice of payment due in the last half of November of each year and if payment is not made before December 31st of that year, the concession is forfeited (RA 70). "INERHI" may apply to the President for changes in the amount of the tax at five year intervals (RA 75).

B. *Financing Users in Irrigation and Drainage Commissions*

For information regarding the organization of irrigation and drainage commissions see 4-3-2-B. These commissions differ from other user organizations in that they are the intermediary through which the member user may apply for comprehensive agricultural production loans to national and private banks for general agricultural purposes including on farm irrigation and drainage works (RA 54). Credit applications from the commissions are forwarded to "INERHI" who in turn circulates the information to the National Development Bank and other credit institutions (RA 55). When loans are approved through this process, technical assistance to the borrower is provided by "INERHI," the National Development Bank and the Irrigation and Drainage Commission to insure the proper use of the water and land (RA 59). The loans are supervised and controlled by the National Development Bank (RA 60).

C. *Financing Works Constructed with State Funds*

Irrigation and drainage projects constructed with state funds by central or regional agencies of the state are required to be paid for by the beneficiaries who also pay the costs of maintenance and operation. However, those works which are constructed for reasons of social service and do not influence economic production are not charged against the beneficiaries (LA 17).

The cost of construction of these state financed works is assessed against the beneficiaries based on the amount of irrigable land of each beneficiary calculated in accordance with 4-6-0 and prorated against the total cost of such works and

the total irrigable land within the entire project (RA 64). Areas above the canal that must be irrigated by pumping pay an assessment equal to 50 percent of those lands irrigated by gravity (RA 67).

D. Operation, Repair and Maintenance Assessments

Water users are required to contribute to the cost of maintenance, cleaning, repair and administration of the irrigation works that they benefit from. The cost is determined in proportion to the quantity of water used by each prorated between all of the use rights benefiting from the canal or works and applied against the total costs of maintenance, cleaning, repair and administration (LA 21, 75).

4-11-0 LEGISLATION ON USES OTHER THAN IRRIGATION

4-11-1 *Domestic*

See 4-7-1 for priorities given to domestic uses of water.

Municipalities, Provincial Councils and other public or private organizations supplying water to communities for culinary and sanitary needs must obtain a concession from INERHI for such uses.

Rights-of-way imposed for access to water for satisfying domestic needs and cattle watering use are subject to the construction of the works prescribed by "INERHI" to avoid contamination of the water source (RA 108).

Individual domestic users who take water directly from the water source may do so without a concession (LA 70, RA 109). Culinary water users are exempt from payment of annual water use taxes (LA 18).

4-11-2 *Motive Power, Industrial and Electrical Generation*

For special provisions in other sections related to these uses see 4-7-1 on priorities and 4-10-0-A-2 on water taxes. Before "INERHI" may process a petition for a water concession, the petitioner must first obtain approval of a study of the proposed energy generation use from the Ecuadorian Institute of Electrification (RA 115) and from CENDES for industrial use (RA 116).

A special preference is given to granting concessions for energy generation and industrial purposes when these activities are included in the general development plans of the country (LA 40).

4-11-3 *Transportation*

Concessions for water use rights related to navigation and

flotation can only be granted with the prior approval of the Naval Forces. If national security is affected then the Joint Command of the Armed Forces must also give a favorable report (LA 30).

4-11-4 *Mineral and Thermal*

"INERH" is charged with the basic responsibility for control, exploration and exploitation of mineral, thermal and medicinal waters. They must inventory, classify and evaluate the therapeutic, industrial and tourist value of such waters. This basic "INERH" responsibility must be coordinated with the General Office of Tourism and the Ministry of Public Health (LA 16).

Exploitation rights to these waters are preferably granted to government agencies or municipalities but they may also be exploited through concessions to individuals. Private users operating under a concession must surrender the installations and works to the state without indemnification at the end of the concession period (LA 16).

Various classes of the above waters are defined by the regulations (RA 93, 94, 95, 96). Concessions may be granted by "INERH" to use *natural medicinal waters* only after receiving the favorable report of the Ministry of Health (RA 96).

"INERH" has the power to declare protected zones surrounding mineral water sources (RA 98). Owners of the surface lands within these zones are subject to the technical regulations of "INERH" and may not install septic tanks. The surface owner must also allow the concessioner or owner of the mineral well to develop and use the mineral water (RA 99). These mineral sources must be analyzed periodically to detect significant changes in composition, temperature, bacteriological or chemical content. If such changes occur, the Ministry of Health and "INERH" may order proper protective measures (RA 100). Development and protective structures in mineral springs must be carried out by the concessioner under the control of "INERH" (RA 101).

4-11-5 *Mining*

Before concessions can be granted by "INERH" for the use of waters in mining operations the General Bureau of Geology and Mines must approve the use studies (RA 117).

"INERH" may require that mining users treat the water

before it is returned to the streams or natural channels. Preferences are given to those mining uses which are contemplated in the General Development Plan (LA 40).

4-12-0 SUBTERRANEAN WATER

A. *Exploration*

No one may explore for subterranean water unless he has obtained an authorization from "INERH" (LA 41, RA 120-a).

B. *Control of Well Drilling*

All persons or entities who engage in drilling wells to raise subterranean water must obtain a license for such activity from "INERH" (LA 41, 44).

The annual license fee for drillers is \$40.00 [1,000 Sucres]. Before a license is granted, "INERH" must verify that the drilling company is legally established and has the technical and economic capacity to perform such work (RA 123).

Those engaged in exploration or raising of subterranean water must supply the following information to "INERH" with respect to their activities:

1. A general description of the well, its situation, depth, method of drilling, location with respect to other existing wells and preferably located on a map of the Military Geographical Institute or an aerial photograph. If neither of these exist then on a drawing of the area and region.

2. A well log of all of the drillings carried out, whether or not water is discovered and a description and analysis of the geological formations, spacing, composition, permeability, storage, production from the aquifers, actual production and techniques employed in the various phases of drilling.

3. Data obtained from the well including, elevation of the well opening, static water level, pump down level, measuring method and information as to water levels in the observation wells.

4. Quality of the water from physical, chemical and bacteriological analysis.

5. Static monthly levels during use (RA 121).

All of the above information must be certified by a registered engineer who was involved in drilling (RA 122).

C. *Concessions to Use Subterranean Water*

To obtain a concession for subterranean water use, one

must comply with the following special requirements in addition to those provided in 4.5.2.

1. Solicit "INERHI" for exploration and raising permits indicating the location of the well in relation to existing wells.

2. The individual petitioner or authorized company who drilled the well must supply to "INERHI" all the technical data related to the drilling.

3. When the water is raised and the quantity determined a petition may be made for a water use concession.

4. It must be established that raising the water will not injure the subterranean aquifers nor the surface area included in the radial influence of the well or collecting gallery.

5. It must be established that the raising does not produce interference with other wells, collecting galleries or water sources (LA 41, RA 120).

Individuals may obtain a right to raise subterranean water on the land of other property owners. However, the owner of the land where the water is raised has a preference in obtaining a concession to use any water from the well in excess of the needs of the user (LA 42).

D. Modifications and Control

"INERHI" may at any time, order the modification of methods, systems or installations deemed inadequate for raising waters (RA 43).

4-13-0 PENALTIES AND SANCTIONS

Jurisdiction to impose administrative sanctions or penalties provided for in the Water Law and its regulations is vested in the Chiefs of the Regional Agencies of "INERHI" within whose jurisdiction the infractions are committed. There is no appeal from his decision in these matters (LA 95, RA 19).

The Chief of the Agency has 24 hours from the time he is advised of a violation of a law or regulation to issue a citation to the alleged violator. The citation must include a copy of the complaint or statement of the charges. The accused must appear before the Chief within 72 hours after the service of the citation for trial and judgment. The defendant can present such defense as the Chief deems convenient and if found guilty the Chief may impose the sanction at the end of the hearing (RA 20).

In determining the amount of the fine the Chief shall consider the seriousness of the offense, the surrounding cir-

162 *Penalties and Sanctions*

circumstances and the amount shall not be less than \$20.00 [500 Sucre] and in no case more than 100 percent of the benefits obtained or damages caused. To determine such benefits or damages the Chief of the Agency names an expert from "INERHI" who must file his report in no less than eight nor more than 30 days. The violator may also name an expert who files a report within the same period. Based on these reports the chief resolves the question of amount of benefits or damages (LA 77).

If the infraction involves the construction of works or the destruction of defenses then in addition to the fine the Chief may order the removal of the works or reconstruction of the defenses and establishes periods for compliance. If the violator does not comply the Chief may order the work done and charge the costs plus 20 percent to the violator (LA 78).

If the violation involves a crime under the Penal Code then such matters are processed before the regular courts. If the violation involves water use, "INERHI" may order any temporary measures necessary to avoid damages to third parties while the case is pending.

If the infraction is committed three or more times, suspension of water use may result as provided in 4-5-6-C (RA 24).

PERU

5-1-0 INTRODUCTION

5-1-1 *References and Key to Abbreviations*

A. *References*

The references in this section follow the subject matter to which they refer, and are in boldfaced parenthesis. These references are alphabetical and numerical symbols such as (CC 101). The letters refer to the law, code or regulation and the numbers refer to the article or section number. The key is as follows with the official Spanish citation following the English but in parenthesis:

- (AR) = Agrarian Reform Law, 1969. (Ley de Reforma Agraria, Ley No. 17716, 24 de Julio de 1969.)
- (CC) = Civil Code of Peru (Codigo Civil, Ley 8305 promulgado por D.S. del 30 de Agosto, 1936, con modificaciones hasta 1971, Editorial Mercurio S. A., Lima, Peru.)
- (CP) = Penal Code of Peru (Codigo Penal, Ley 4868 del 11 de Enero de 1924 anotado y Concordado con las ultimas modificaciones introducidas hasta 1971, Editorial Mercurio S. A., Lima, Peru.)
- (PA) = General Administrative Procedural Regulations (Reglamento de Normas Generales de Procedimientos Administrativos, Decreto Supremo No. 006-SC, del 11 de Noviembre de 1967.)
- (PR) = Regulation of Water and Land Concessions (D.S. No. 16 del 4 de Junio de 1958).

- (RA) = Regulation of Titles I, II & III of the General Water Law (Decreto Supremo No. 261-69-AP, 12 de Diciembre de 1969 y Decreto Supremo No. 41-70 A, 20 de Febrero de 1970.)
- (RB) = Regulation of Title IV of the General Water Law (Decreto Supremo No. 274-69-AP/DGA, 30 de Diciembre de 1969.)
- (RC) = Regulation of Title V of the General Water Law (Decreto Supremo No. 275-69-AD/DGAI, 30 de Diciembre de 1969.)
- (RD) = Regulation of Title VIII of the General Water Law (Decreto Supremo No. 473-71-AG, de 23 Noviembre de 1971.)
- (RE) = Regulation of Title X of the General Water Law (Decreto Supremo No. 495-71, de 1 Diciembre de 1971.)
- (WL) = General Water Law, 1969. (Ley General de Aguas, Decreto Ley No. 17752, 24 de Julio de 1969.)

B. Key to Abbreviations

1. "Bureau" = General Water Bureau. A central administrative agency, which is a dependency of the Ministry of Agriculture (see 5-3-1-F).
2. "Irrigation District" = User level "Water Authority" which covers a defined geographic river basin and is administered by a "Technical Administrator" (see 5-3-1-G).
3. "Ministry" = Ministry of Agriculture (see 5-3-1-E).
4. "Sanitary Authority" = The Bureau of Environmental Health of the Ministry of Health (see 5-3-1-H).
5. "Technical Administrator" = Chief administrative officer of the "Irrigation Districts" (see 5-3-1-G).
6. "Water Authority" = A series of agencies related to water administration including the "Ministry," "Irrigation Districts" and Agrarian Zones (see 5-3-1-D).
7. "Director" = Director General of Waters.
8. "Minister" = Minister of Agriculture.

5-1-2 Geography

Peru is bordered on the west by the Pacific Ocean, on the north by Ecuador and Colombia, on the east by Brazil and

Bolivia and on the southeast by Chile. It encompasses an area of 496,223 square miles [1,285,218 square kilometers] of territory.

There are three distinct land regions in the country. The Coastal Region extends from the Pacific Ocean to the Andes Mountain Range. It averages 40 miles [64 kilometers] in width and stretches about 1,909 miles [3,079 kilometers] from north to south. It is primarily desert country although crossed by 52 rivers with headwaters in the Andes.

The Mountain Region consists of the Andes Mountain Range which has three parallel sub-ranges interspersed with deep mountain valleys. Lake Titicaca, the highest navigable lake in the world, is located on the eastern border.

The Plains Region includes the eastern slope of the Andes and a vast flat expanse of the Amazon River Basin.

5-1-3 *Climate*

The Coastal Zone is characterized by less than 2 inches [52 millimeters] of rainfall per year and temperatures that average about 73° F. [23° C.] in the summer around January and about 61° F. [16° C.] in the winter around July.

The rainfall in the mountains varies between 10 and 50 inches [250 and 1270 millimeters] per year with average temperatures ranging between 44° F. to 51° F. [7° C. to 11° C.] from winter to summer respectively.

On the eastern plains there are high temperatures, averaging in some places 80° F. [27° C.] and annual rainfall of from 50 to 80 inches [1270 to 3090 millimeters].

5-1-4 *Population*

Peru has a population of approximately 14,000,000. The rural-urban population division is about equal. Lima, the capital, has the largest urban concentration with around 2,500,000 population and four other cities have over 100,000 population each.

5-1-5 *Irrigation*

Of the estimated 6,089,001 acres of land [2,465,184 hectares] under cultivation in the country, approximately 2,598,210 acres [1,051,907 hectares] are irrigated. This represents 41 percent of all cultivated land that is under irrigation.

5-2-0 LEGISLATION

5-2-1 *Legislation in Force*

Laws and dispositions related to water rights and adminis-

156 *Legislation in Force*

tration in Peru are integrated into the Water Law of July 24, 1960 and its regulations. The influence of other codes or laws on the material covered in this treatise is minimal.

5-2-2 *Process for Legislative Change*

Laws are enacted and changed through executive processes in Peru which consists of the execution of a new law or amendments by the President of the Republic and his council of ministers.

5-3-0 ORGANIZATION FOR WATER ADMINISTRATION

5-3-1 *General*

A. *President of the Republic*

The President of the Republic is vested with certain primary powers related to water use, planning and administration which he exercises through the execution of Supreme Decrees. The "Ministry" initiates and processes the preliminary proposals related to the exercise of those powers and presents them to the President for his signature in the form of a Supreme Decree (WL 7, RA 10). Powers that fall in this class are specified in paragraphs D and E.

B. *Superior Water Council*

The Superior Water Council is a presidential advisory group for problems related to altering and fixing preferences in water use and water matters with inter-sectional implications (RA 12, WL 135).

The Council is composed of the Director General of Waters who is its president, the Director General of Electrification, the Director General of Industry, the Director General of Mines, the Director of Integrated Health Services, the Director General of Sanitation Works and the Director General of the National Meteorological and Hydrological Services (WL 135 as amended).

C. *National System for Planning Economic and Social Development*

The State formulates the general policy for the development and use of water within the alternatives provided by the National System for Planning Economic and Social Development. This system is composed of the following institutions:

1. The National Office for Evaluation of Natural Resources [ONERN], which makes the studies for the inventorying, classification and evaluation of present and potential water uses;

2. The National Meteorological and Hydrological Service [SENAMHI], who makes and maintains studies for all river basins of the type implied by its name;

3. The "Ministry" whose functions are described in section E;

4. The Ministry of Health whose water-related functions are described in section H;

5. The Ministry of Housing in relation to the promotion, construction, administration and supply of culinary water and urban sewage (RA 3).

D. *Water Authority*

The law vests extensive powers in the "Water Authority" which is composed of the "Minister," the Directors of the Agrarian Zones and the "Technical Directors of the Irrigation Districts" (RE 1, 2). The responsibilities of this authority will be discussed under the titles of these various entities in the following paragraphs.

E. *"Ministry of Agriculture"*

The broad water administrative powers of the "Ministry" can basically be divided into two categories:

1. One category includes matters which must be processed and prepared by the "Ministry" but become effective only through a Supreme Decree signed by the President. These powers are:

a. To reserve water for any purpose consistent with the public interest for renewable periods of two years.

b. To organize zones, water basins or valleys for improved or more rational use of water based on: hydrological evaluation studies of seasonal fluctuations of water demands for various water uses, ecological studies, climatological studies, zoning of crops, studies of supply systems, and studies of existing irrigation systems in the zone. Once this reorganization is ordered it is executed by the Director of the Zone.

c. To declare zones of protection in areas where the water conservation, or increased supply can be improved, or limit or prohibit activities in order to avoid adverse effects of water.

d. To declare states of emergency in affected "Irrigation Districts," in order to eliminate or reduce the damages that result from drought or excessive contamination of waters and guarantee that the water is used in the public interest.

e. To authorize the transfer of water from one water basin to another whenever technical and economic studies justify it and when the necessities of the country require it to promote development or control of water systems, or increase the water supply for one or more uses of waters (WL 7, RA 10).

f. Fix water use taxes for each use by Districts, Basins or water systems.

2. The second category of powers vests in the "Ministry" the responsibility over matters resolved by the "Ministry" without Presidential approval. These responsibilities include:

a. The formulation and execution of state irrigation control projects, irrigation improvements and conservation, increase of water resources and defenses against the erosive action of waters.

b. The granting of various water use rights and the resolution of all conflicts related to water use and distribution (RA 3, RE 3).

Many of these responsibilities are delegated to administrative dependencies of the "Ministry" for initial or final processing as hereafter described.

F. General Bureau of Waters

This agency is presided over by the Director General of Waters and is a direct administrative dependency of the "Ministry." (RE 1, 2). The Director hears and resolves all matters of a national or inter-sectional nature related to: distribution of waters; promotion of multiple, rational and efficient use of water; elaboration and execution of state irrigation projects; control and improvement of irrigation and drainage; making ecological studies; making and maintaining a census of water users; and other matters related to these specialties (RE 4).

G. Technical Administrator of "Irrigation Districts"

"Irrigation Districts" generally include one or more river basins in the coastal zone of the country and are managed by a "Technical Administrator." "Irrigation District" organizations are direct administrative dependencies of the Agrarian Zones which are administrative dependencies of the "Ministry." There are generally a number of "Irrigation Districts" in each zone and twelve Agrarian Zones in the country. The "Technical Administrator" of an "Irrigation District" is part of the "Water Authority" and exercises the administrative and judicial authority in water matters in the first instance within the

"District" (RE 2, 5, 6, 7, 8).

H. *Ministry of Health and the "Sanitary Authority"*

The Ministry of Health protects water against contamination and pollution and is responsible for studying, inventorying, classifying and granting use licenses for mineral and medicinal waters for therapeutic, industrial and tourist purposes (RA 14).

The "Sanitary Authority" is the Bureau of Environmental Health, an administrative dependency of the Ministry of Health (RA 68) and carries out its water function relating to contamination control (see 5-9-3).

I. *Agrarian Courts*

The Agrarian Court is the court of last resort from all administrative resolutions and decisions rendered in the final administrative instance by the "Ministry" related to waters (see 5-5-2-F) (AR 153).

J. *Explanation of Scope of this Section*

The above summary is a general overview of the administrative organization of the government for water administration. Many of the more detailed and specific functions of these agencies are described in later parts of this section.

5-3-2 *Users Organization*

There are two levels of water users organizations, a Water Users Council for an entire "Irrigation District" and an organization of users within an irrigation sector or sub-sector called the Commission of Irrigators. Both are described in more detail as follows:

A. *Water Users Council for Irrigation District*

1. *Organization:* For water administration purposes the country is divided into "Irrigation Districts" which consists of one or more river basins in the coastal zone (see 5-3-1-C). Water users within each of these districts are required to form a Water Users Council (RE 2, 5, 6, 7, 8).

The Council consists of one representative from each irrigation sector of the District, a representative from each culinary water supply company or if none exists then a representative of the culinary water users; and two representatives from all other classes of users (RE 18). There must be at least five agricultural users as council members and 40 percent of such user members must have farming plots of no greater than three times the *family unit size*. Determination of qualifications are made by the "Water Authority" and based on the user

consensus. Only those users who are not delinquent in the payment of assessments may participate (RE 19, 20). Council members are elected for two year terms and can be elected for two such terms (RE 21). The board of directors of the Council includes a President, Treasurer, two members and a Secretary. They must maintain a minute book and accounts. Agreements must be approved by a majority of the members (RE 22).

After the Council is formed it must be recognized officially by a resolution of the "Ministry" (RE 23). The "Water Authority" publishes notices of the assembly meetings for the Council in a newspaper at least 48 hours before the meeting and by posting a notice 15 days in advance. If attendance is less than 51 percent of the users, notice of another meeting is given and a second meeting is held regardless of the number attending.

2. *Functions:* The attributes and functions of the Council are as follows:

- a. Prepare, propose and execute studies and works for improved use and development of renewable natural resources;
- b. Intervene in the formulation and execution of cultivation and irrigation plans (see 5-5-5-C);
- c. Attend meetings called by the District Water Authority;
- d. Comment on the budget formulated by the Technical Administrator for the conservation and improvement of the irrigation and drainage infrastructure of the District; collect assessments to pay the costs related to those items as well as administrative work and labor costs related to their duties; make tri-annual reports (RE 24).

B. Commission of Irrigators for Sectors or Subsectors of Districts

All of the users in each sector or sub-sector of an "Irrigation District" are required to form a Commission of Irrigators (RE 17). Irrigators with small and medium sized farms, associations of farmers and rural farm communities within the area must be represented on the Commission (RE 25). The controlling board of the Commission consists of five members with a President, Secretary, Treasurer, and at least one additional member (RE 26). The Commissions are basically controlled by the same regulations as the Water Councils and have the same responsibilities within the area (RE 27, 28, 29, 30).

However, the organization need only be recognized officially by the Technical Administrator of the District (RE 31).

5-3-3 *Registries*

Anyone who has obtained an authorization or license for water use (see 5-5-2-D & E) must record it in a poll maintained by the "Irrigation District." Until the right is registered, the holder may not use the water. Use rights are property of the State and not of the concessioner and may therefore not be registered as part of the title to the real property (WL 37, RA 93).

All agricultural water users must be inscribed in the official users poll maintained by the Technical Administrators of the "Irrigation Districts," where the licenses and authorizations are found before such user may be considered for inclusion in the Cultivation and Irrigation Plans for the coming year.

Each Agrarian Zone is required to maintain a poll of persons who have licenses or authorizations to use water (RA 94).

The "Bureau" is also required to maintain a poll of users. The information is provided by the Technical Administrators of the Districts who are required to annually submit a copy of up to date polls of the district for verification by the "Bureau" (RA 94).

The specifications and conditions contained in the resolutions or grants must be recorded in the user polls (RA 95).

5-4-0 OWNERSHIP AND CONTROL

Peruvian law is detailed and comprehensive in its treatment of the subject of ownership of waters.

5-4-1 *State Ownership*

All waters are specifically declared to be *property of the State for public use*. These waters include all subterranean, surface and atmospheric waters in all of their natural physical states.

This *ownership for public use* may not be sold, transferred or obtained by another by prescription (WL 1, 4, 52, 59, CC 822). The subject of sale and transfer of a *right to use water* is treated in 5-5-5-B.

5-4-2 *Private Ownership*

There is no private ownership of any waters in Peru and no private ownership rights can be acquired over waters (WL 1).

162 *Ownership and Control of Riverbeds*

5-4-3 *Ownership and Control of Riverbeds, etc.*

The following lands related to water use are specifically declared to be the property of the State and cannot be sold or lost by prescription or otherwise: 1) riparian lands reserved by the President for national defense, public service, drainage, ornamentation, recreation or other purposes; 2) riverbeds, lake beds and natural streambeds; 3) subterranean strata through which subterranean water flows or in which such water exists; 4) land covered by snow and glaciers; 5) alluvion or land deposits resulting from the natural water action or artificial works in the rivers, lakes, lagoons, and other courses or impoundments of water (WL 5, CC 822).

Also constituting state property are existing islands and those that are formed in the sea, lakes, lagoons, estuaries and rivers; excepting those that result from a change in the course or a branching of a river. Such state lands may be sold for housing purposes or agrarian reform programs and use rights to such lands may be granted for other purposes (WL 5, 6, RA 9).

The river and lake beds may only be occupied or cultivated by authorization of the "Ministry" (WL 80), except on the Eastern Watershed (WL 81).

When new water channels are opened on private land by natural causes or when the original channel is widened by erosion (WL 83), the ownership of the channel passes to the state unless; 1) the owner initiates works to restore the water to its original channel within one year; or 2) if he fails to conclude the works within the time set by a competent authority, except when he is prevented from so doing by an act of God duly proved (WL 82).

The Executive Authority may make concessions or grants of abandoned natural water courses under the Agrarian Reform Law (WL 82).

The separation of lands resulting from the opening of a new water channel does not alter the ownership of such lands (WL 84).

The use and exploitation of mineral and other materials in streambeds is controlled by the Water Authority who may grant permits for such purposes (WL 100).

5-4-4 *Control of Structures in Riverbeds, etc.*

No one can change the riverbeds except for purposes of

social and economic utility and in those cases determined by the Executive Authority. An authorization for such changes must be granted by the "Ministry" or the Ministry of Health based on previous studies (RA 30).

Water users are obligated to construct necessary protective structures on the banks of a water course or canal for the full length of the canal or course that benefits the user. The "Water Authority" determines in each case the extent of the canal or water way that the user is responsible for and the type and characteristics of the required works (WI 97). Other users who benefit from such works must contribute proportionally to their costs (WI 96).

The State may contribute to the costs of such works if they benefit *family agricultural units* and may construct works destined to protect communities, works that change the course of rivers, works that are of general public interest or works of public service. If such works specifically benefit private property in a direct way the owners thereof must also pay their proportionate share of the costs (WI 18, 98).

The "Irrigation District" is required to identify needed works and must program the construction of such works (RA 43, 47).

In case of eminent flood danger or other emergencies, property owners may construct works of defense on the banks of the streams without permission of the "Water Authority" but must notify the authority within ten days from the date the works were commenced. Such works must be temporary in nature and constructed on the banks of the water ways. They must conform to the specified regulations so that damage to a third party does not occur and they are subject to inspection and review by the "Water Authority."

In such emergency situations the "Water Authority" may order the execution of such works or may actually construct them in order to avoid immediate damage. Once the emergency has passed, the "Water Authority" may order the removal of such works and the replacement of damaged works or the construction of new works as deemed necessary. The costs of any demolition or construction must be charged proportionally against those who are directly or indirectly benefited (WI 95).

5-5-0 RIGHT TO USE WATER

A right to use water may only be granted when the use is in harmony with the social interests and development of the country (WL 1, RA 1).

5-5-1 Uses Without Formality

A. Domestic

Anyone may utilize water for the satisfaction of individual primary necessities by taking the water directly from the water source but may not divert the water without obtaining a concession (WL 8). The "Water Authority" and "Sanitary Authority" are required to provide access zones to water to satisfy public domestic needs (WL 39). It is clear that if a proposed use is to serve group domestic needs rather than individual needs and the water must be diverted to accomplish the use, then a grant or concession is required (WL 40, RA 13).

B. Vehicle

Anyone may make occasional use of water from any water source to supply the needs of a vehicle that he is driving provided that such use does not injure the interests of third parties (RA 171).

5-5-2 Procedure for Obtaining a Use Right

A. General

All use rights are granted through administrative rather than judicial proceedings. Everyone, including national and local public entities, is required to obtain a concession for water use except in those cases noted in 5-5-1 (WL 8, RA 13). Concessions are divided into three classes: *Permits, Licenses and Authorizations*. These classes are distinguished primarily by differences in permanence and priority of the type of use right represented by each as more specifically defined hereafter (WL 28).

Grants to use international waters must be made in accordance with international agreements and, in addition to the other requirements, must be approved by the Ministry of Foreign Relations (RA 8).

B. Conditions Precedent

Before any class of water use right can be granted the following concurrent conditions must exist: 1) the proposed use cannot interfere with the satisfaction of use rights previously granted; 2) it must be proven that the use will not

result in the contamination or loss of water sources, 3) the waters are of a quantity, quality and availability which is appropriate to the proposed use; 4) the proposed use will not adversely affect authorized public uses, 5) prior approval must be obtained for the works of storage, wells, conveyances, production, regeneration, utilization drainage, measurement and other necessary works (WL 32, RA 90); 6) the use must be in harmony with the social interests and development of the country, 7) the "Ministry" must not have reserved the use of the water (RA 10a).

Once an irrigation use right is granted the following conditions must exist before it can be used: 1) must be inscribed in the Irrigation District users poll, 2) the irrigation works must be in good condition, 3) water taxes must be paid as fixed by the "Water Authority" (LA 49).

When the proposed use is for irrigation the following additional conditions precedent must exist: 1) the applicant must be registered in the poll of users in the "Irrigation District", 2) the property must be in good condition for irrigation, 3) the user must guarantee the payment of the water tariff and assessments as fixed by the "Water Authority" (WL 49).

C. Permits

Permits are granted in the first instance by the "Technical Administrator" of the "Irrigation District" where the water source is located and are preferably granted for agricultural uses. Permits are distinguished from other grants by specific restrictions, limitations and uncertainty as follows:

1. Permits may be granted for the use of waters existing in a source which exceed the amount needed to satisfy the more permanent types of grants.

2. Permits may be granted for future excess water but are conditional and subject to the eventual availability of water.

3. When permits are granted for agricultural water uses, they must be conditioned to use on specific crops.

4. If the excess waters for which a permit is granted do not exist or the supply diminishes or disappears, the permit is cancelled and the permit holder has no claim for damages resulting from the cancellation (WL 29, RA 86, 112, RE 2, 5, 7).

D. Authorizations

Authorizations are considered in the first instance by the Technical Director of the "Irrigation District" but are

granted by a resolution of the "Ministry." All such authorizations are for the use of water for fixed and limited periods of time and are granted for the following purposes:

1. To carry out studies or execute works or other construction;
2. For other temporary works and special uses (WL 28, 30, RA 87).

E. Licenses

Licenses are granted through a Supreme Resolution of the President and are prepared and approved by the "Ministry." The petition, however, is considered in the first instance by the Technical Administrator of the "Irrigation District "

Licenses are more durable and certain than other types of grants and are not subject to the many uncertainties of permits and authorizations as previously discussed. However, they are subject to other restrictions and limitations referred to in other parts of this summary (WL 28, 29, 30, 31, RA 88, 112, RE 2, 5, 7).

F. Process

Anyone with legal capacity may present a petition to the irrigation district administrator for a water use concession (WL 133, PA 4, RE 9). The conditions and processes for submitting petitions are as follows:

1. *The Petition Must Contain* a) the name, domicile and number of the election certificate of the person or the identification number of a foreigner, and if a lawyer is doing the work then the same information with regard to the lawyer; b) the number of liters per second, the water source, the point of diversion, and a description of the project; c) the place, date and signature or fingerprint of the petitioner; d) the authority to whom it is directed; e) the signature of the lawyer (PA 64, PR 1, 2).

2. *Hearing and Resolution* On the basis of the proof presented by the petitioner, the Technical Director of the "Irrigation District" notifies interested parties of the claim and within a reasonable period makes a decision based on the proof presented (RE 10, PR)

3. *Re-Hearing and Appeal* Interested parties may ask for a re-hearing of the resolution before the Administrator of the District or the Director General of Irrigation within 15 days from the date of notification of the decision. The Director

General of Irrigation makes a decision and his decision is elevated to a resolution of the "Ministry." This process exhausts the administrative remedies (RE 11, 12, 13).

Once the administrative remedies are exhausted, the interested parties have a final right of appeal to the Agrarian Tribunal in the form of an *Action for Nullity or Contradiction of an Administrative Resolution* (WI, 132).

G. Characteristics of Grants

Characteristics that are peculiar to specific types of grants were discussed earlier. The following characteristics apply to all types of grants.

All water uses are declared to be contingent or eventual and subject to the availability of water and the real needs of the user. Use rights must be exercised as a function of the social interest and the development of the country (WI, 26).

The "Water Authority" may control the exercise of use rights by establishing the following systems for water distribution and thus provide a more efficient system: 1) concentrate use of all of the available water in certain irrigation sectors for limited periods of time; 2) close higher diversions on a river or canal so that the water can be utilized in the lower diversions; 3) establish systems of turns between users; 4) establish other systems of diversion and division in natural and artificial water ways (WI, 18).

All water measurements are expressed in volumetric units determined by control and measurement devices which the users are obligated to install (WI, 11, RA 19, 20). For a discussion of related subjects, see 5-5-5.

H. Authorization of Sewage Water Use for Irrigation

In addition to the procedures required for obtaining a water use right as described above there are special requirements for obtaining a right to use sewage water for irrigation (RA 182). These use rights are granted through a *license* as provided above, but the petition for a license must be accompanied by an authorization from the Ministry of Health (RA 190).

A petition for this authorization is made to the "Sanitary Authority" and must include the initial petition, an engineering study justifying the project, plans for the zone to be irrigated, the system of works and the treatment works when necessary,

the type of crop to be grown and the payment of assessments (RA 192).

After the granting of such authorization based on studies by the "Sanitary Authority," notice of the authorization is given to the "Ministry" and the Health Zone or Hospital Area involved (RA 193).

The following are special conditions precedent to the granting of such authorizations: 1) the user may not alter the characteristics of the sewage discharge system if water is removed directly from the system; 2) the system must be so constructed and operated that it does not connect with or interfere with regular irrigation canals or streams (RA 195); 3) vegetable or fruits with short stocks, root varieties or those that might touch the ground and that will be consumed in their natural state cannot be irrigated with such waters (RA 196); 4) the lands must be fenced and signs of specified sizes posted advising the public that the lands are irrigated with sewage water and prohibiting entry (RA 198); 5) non-treated waters may not be closer than 1,640 feet [500 meters] to dwellings or communities (RA 199); 6) the use may not interfere with wells or public health (RA 200).

After compliance with these conditions, the following additional restrictions and limitations apply to crops for human or cattle consumption.

1. Vegetables or fruits which are boiled before consumption may be irrigated with effluents from primary or secondary treatment plants but are subject to strict controls;

2. Vegetables or fruits for human consumption that will be industrially processed may be irrigated with sewage effluent after primary treatment. The crop must not be harvested within less than 20 days after the last irrigation and such required time lapse must be specified in the water use authorization;

3. Crops of an industrial species such as cotton, corn, sugarcane and fruits that do not touch the ground may be irrigated from non-treated effluents if the fields are prepared for sub-surface type irrigation or if there is more than 20 days between the last irrigation and the harvest, as specified in the water use authorization;

4. Crops for cattle feed, such as alfalfa, grasses or corn may be irrigated with sewage water after subsection to secondary

treatment. Milk cows are not allowed access to the field and cannot eat the forage until it has been stored for at least 20 days after harvest (RA 197).

5-5-3 *Procedural Protection of Rights*

Everyone is given an administrative right against any act or omission which violates their rights or any of the provisions of the Water Law (WL 129, RE 9, PA 5). The administrative jurisdiction to hear and resolve such disputes in the first instance is vested in the "Technical Administrator" of the "Irrigation District" where the water is located (WL 133, RE 5, 7).

The process for initiating, hearing and appealing disputes over water use is identical to that provided for the granting of petitions for water use rights as explained in 5-5-2-F. All such proceedings are administrative in nature.

5-5-4 *Rights Under Prior Laws*

Use rights existing at the time of enactment of the Water Law of 1969 must be converted into "permits," "authorizations," or "licenses" at the following times:

- a. When a zone, water basin or valley is declared to be in a state of reorganization in order to carry out a program of improved water use;
- b. When the Agrarian Reform law is applied to a zone;
- c. When property ownership is transferred;
- d. When deemed convenient by the executive authority for technical, economic or social reasons;
- e. On the request of interested parties (WL 144; RA 93; RE 10).

5-5-5 *Limitations and Obligations of Users*

A. General

There are a series of *obligations* imposed on water users that frequently operate as restrictions or limitations on the nature of the use right.

These limitations or obligations, as the case may be, are: 1) employ the water with efficiency and in a quantity no greater than authorized (WL 20, 50); 2) utilize the water only in the authorized area (WL 20, 36); 3) construct the works required for the measurement, control and conveyance of the water as ordered by and within the time fixed by the authority (WL 11, 20, RA 19); 4) prevent overflow of the works (WL 20); 5) avoid damage or prejudice to others; 6) contribute propor-

tionally to the cost of maintenance, construction and rights-of-way benefiting the user and subscribe to a schedule of benefits for such charges (WL 12, 20); 7) inform the "Water Authority" when not all of the water authorized is being used (WL 20); 8) comply with the regulations of the "Irrigation Districts" and other competent authorities; 9) obtain authorization from the "Water Authority" for changes in distribution and diversion programs (RA 30, 92).

The "Water Authority" has the power to change a user's source of water provided that the quantity and quality of the substitute is similar to the original source and technical studies demonstrate the feasibility of the change (WL 7; RA 11, 12).

All use rights are subject to the natural fluctuations of the natural water sources (RA 83).

A use right may be terminated or suspended for failure to comply with these obligations (WL 93, 116, 119). Other material related to this subject can be found in 5-5-2-G.

B. Sale, Rent or Transfer

The water represented by a grant is required to be used for the purpose and in the place specified in the grant (WL 20, 36, 117). Thus, a sale, rent or transfer may not result in a change of the use nor the place of use. If the property or industry on which the water was to be used is rented, sold or otherwise transferred, then the use right may also be transferred, but only with the approval of the authority that made the grant or concession (WL 1).

C. Beneficial Use and Cultivation Plans

When water use rights are granted without sufficient information to determine the crop demands for water and when excessive water use might cause damage to agricultural lands, the "Technical Administrator" of the "Irrigation District" fixes the maximum quantity that can be used based on a visual inspection of the land involved (RA 132).

If sufficient information exists, the supply of water to each agricultural user is adjusted and controlled by the Irrigation District Administrator in accordance with the requirements of that particular property and the crops grown in accordance with the *Cultivation and Irrigation Plan* (WL 43, RA 99, 113).

These plans are formulated by the "Water Authority" in coordination with the Water Users Associations and the Agrarian Authority. These groups are required to consider

the following factors in establishing such plans in those irrigation districts with an *adequate water supply*: 1) hydrological and agricultural conditions of the district; 2) directives of the "Ministry" as they relate to the regional and national agricultural plans; 3) user preferences; 4) credit and market potential of each crop (WL 44, 45, RA 113).

To facilitate the formulation of these plans, the National Hydrological and Meteorological Service and the "Bureau" are required to furnish the "Irrigation District" administrators with the estimates of water availability (RA 114).

5-5-6 *Loss of Rights*

A. *Temporary Loss by Suspension*

A water use right may be temporarily suspended for the following reasons: 1) violation of the contamination or sanitation control regulations [the right can be restored upon correction] (WL 25); 2) when the water is needed for the execution of public or private works or for water conservation programs as determined by the "Water Authority" (WL 38, RA 96, 97); 3) failure of the user to construct the required works within the time specified in a concession [restored on compliance] (WL 93); 4) violation of the water laws or related rules and regulations until such time as the related fine and damages are paid and the required improvements are made (WL 119).

B. *Termination*

Water use rights terminate: 1) when the use to which they are applied terminates, 2) when it is an "authorization" and the time for which it was granted terminates; 3) in other cases as may be provided by the law or its regulations (WL 115).

C. *Lapse*

Water use rights are declared by law to lapse or terminate: 1) when a user fails to utilize the water either completely or partially in accordance with the "Irrigation District's" Annual Cultivation and Irrigation Plan, (see 5-5-5-C) except when the variance results from an *act of God* or a verified accident; 2) when a user fails to pay levied assessments for two consecutive years, except when there has been a suspension of the right or a valid extension resulting from a public calamity decreed by the President; 3) when a user fails to comply with the obligations imposed under the law (see 5-5-5) (WL 116).

D. Revocation

A water use right may be revoked, nullified or cancelled when: 1) the "Water Authority" applies the water to a higher priority use under the law [compensation must be paid except when the new use is domestic] (see 5-7-1, 2) (WL 35); 2) the use right consists of a *permit*, and there is insufficient surplus water to satisfy the needs of the user (see 5-5-2-C) (WL 20); 3) the water right is transferred in whole or part to someone other than the right holder without authorization (see 5-5-5-B); 4) the water covered by the grant has been used repeatedly by someone other than the right holder; 5) the water is applied to a use or to property other than as specified in the grant; 6) the water user has been fined twice within a consecutive period of two years for the same violation of the water law or its regulations (WL 117).

E. Procedure and Effect

The termination, lapse, revocation or suspension of water use rights must be administratively declared after the competent authority has received such proof as it deems relevant. The interested parties have the recourse of appeal as described in 5-5-3 (WL 116).

5-6-0 OBLIGATORY WATER USE

Peruvian Law establishes an affirmative obligation to use water as provided in the Irrigation and Cultivation Plans. The users within an Irrigation District participate in the formation of the plans. Those who do not follow the plan are subject to the loss of their water and the Agrarian Reform Law is applied to their land (WL 43, 44, 45, 116, 118).

5-7-0 PRIORITIES BETWEEN USE RIGHTS

5-7-1 Order of Priorities

A. General

An order of preference between various uses of water is established as follows:

1. For primary necessities, the supply of communities and sanitary needs of the communities (WL 27, RA 33, 84, 100, 104);
2. For watering and developing animals (WL 27, RA 84);
3. For agriculture (WL 27, RA 84);
 - a. Irrigation of agricultural lands with existing irrigation systems;

- b. Irrigation of specified crops with excesses of water on agricultural lands with existing irrigation systems;
 - c. Improvement of soils;
 - d. Irrigation (see 5-5-6-C related to making of cultivation plans) (WL 42).
- 4. For energy generation (WL 27);
 - a. Projects included in the national, regional or zone plans;
 - b. Community public services;
 - c. Cooperative company services;
 - d. Services to private companies;
 - e. Other service (RA 134).
 - 5. For industrial and mining use (RA 134);
 - a. Exploitation in national and local development plans for export from Peru under the Andean Economic Pact;
 - b. Exploitation of metals or chemicals that are important components for development of state-promoted industries;
 - c. Other exploitations (RA 144).
 - 6. For other uses (WL 27) and preferably those included in activities which are part of and consistent with the national development plans (WL 55). Other uses which are mentioned in the law are fish and flora cultivation (WL 55), recreation, tourism, and public amusement (WL 57).

B. *Priorities in Times of Scarcity*

An emergency water scarcity level and the declaration of emergencies resulting from such levels are declared and determined by the "Ministry" for each river basin or "Irrigation District." When the water supply falls below that scarcity level, a different sub-system of priorities for agricultural uses becomes operative as follows: 1) permanent crops and 2) those preferences fixed by the "Ministry" (WL 7c, 47, RA 10d, 119).

Once a state of emergency has been declared, the "Water Authority" is responsible for issuing and enforcing appropriate orders to protect, control and supply the available waters for the collective benefit and general interest. "The Water Authority" must give first preference to the supply of communities and primary necessities. If the emergency results from contamination, the "Sanitary Authority" is vested with the same powers (WL 17, RA 33, 36, 37, 38, 124).

C. *Change of Order of Priorities*

The Executive Authority is vested with the power to change

the preferential order of water uses described in paragraph A [except the domestic use preference]. In making the change, he must first give consideration to the following factors: 1) characteristics of the river basins or distribution systems; 2) availability of water; 3) water policy; 4) agrarian reform plans; 5) uses of greatest public and social interest and of greatest economic interest (WL 27, RA 84, 85).

5-7-2 *How Priorities Operate*

A. *General*

When administrative grants are made and there are two or more applications for different uses of the same waters, the priorities in the previous section must be observed if there is not sufficient water to satisfy all pending petitions. However, if there is more than one application pending for the same use of water and there is not sufficient water to satisfy all the needs, then the granting authority must give priority to the application that *better serves the social interest* (WL 33, RA 84).

The "Water Authority" has power to revoke a use right so that the water can be applied to a use with a higher priority as specified in the previous section. Under these circumstances, the owner of the revoked right is entitled to indemnification except when the use is for the domestic needs of a community (WL 35, RA 104, 105).

Where water resources are insufficient to satisfy the needs of a specific use interested parties may petition the "Ministry" for a declaration of priority over existing uses in accordance with the preferences established for the zone. The procedure must include studies of the zone where the uses should be revoked and a study of the values and indemnification to be paid. The "Technical Administrator" of the "Irrigation District" makes the studies and presents the supporting proof as a basis for the granting or denial of the petition. The Director General and Consultive Water Council dictate the supreme resolution either granting or denying the petition (RA 91).

B. *Social Indemnification*

If an agricultural user cannot plant or irrigate crops because of a scarcity, formally declared in accordance with 5-7-1-B, all of the water users within the affected "Irrigation District" must participate in providing the deprived user with

his vital necessities and the costs expended in the preparation of his land (WL 40, RA 120).

5-8-0 RIGHTS-OF-WAY RELATED TO WATER USE

5-8-1 *Voluntary and Natural Rights-of-Way*

A. *Natural Drainage*

All lower lands must receive waters which, without the intervention of man, naturally flow from upper to lower lands. This right-of-way also applies to any materials that are naturally carried with such waters. Interested parties may construct works to change the course of the waters with the permission of the competent authority, provided that no prejudice results to third parties (WL 103, RD 4, 9). This right-of-way does not apply to artificially raised waters and waste waters from irrigation or industry (RD 5).

The upper owner may erect structures to control the water without impeding its flow (RD 6). The lower owner may also erect control structures as long as the right-of-way burden to upper property is not increased (RD 7). If the water course is impeded with rocks or wood that could cause damming and flooding, the upper owner may be required to remove such obstructions (RD 8).

B. *Over Riparian Lands*

Riparian properties are subject to a right-of-way for public access to streams, rivers or lakes for the satisfaction of domestic water needs, navigation, transit, fishing and other services. The width of this right-of-way is determined by the "Water Authority" after giving due consideration to the customs of use. There is no indemnification payable for these rights-of-way. Those using them are responsible for the damages resulting from their misuse (WL 79).

C. *Public Authority Right of Entry*

Competent public authorities are given a right to enter private property to carry out their functions and may do so without giving prior notice. Before making studies and inspections, they must give notice to the landowner (WL 10, RA 31, 32). Impeding the entry of such officials is a criminal offense (WL 120).

D. *Emergency Right of Entry*

In emergency situations, anyone may enter property for the purpose of removing an obstruction in a water way or removing any other cause for eminent danger as long as cir-

circumstances indispensably justify such entry (WL 16).

E. Access to Satisfy Domestic Needs

The "Water Authority" and the Department of Health are responsible for fixing zones of free access to natural streams and open artificial water courses for the satisfaction of domestic needs. (WL 39).

F. Voluntary Rights-of-Way

Anyone may voluntarily subject his property to a right-of-way for water use. A party may not bring formal action to establish a right-of-way until he has attempted to arrive at an agreement with the servient owner. Such agreements must be approved by the "Water Authority" (RD 11).

5-8-2 Forcefully Imposed Rights-of-Way

A. General

Rights-of-way and their modifications may be forcefully imposed when it is necessary or convenient for public or private property purposes related to water use. Purposes for which these rights-of-way may be imposed include: construction and operation of irrigation works, dams, diversions, extraction, canals for irrigation and drainage, maintenance roads, the protection of banks and works for conservation and preservation of waters, cattle watering and removal of water as in the case of expropriation (WL 104, RD 1, 3, 10, 14, 18, 19). Inherent in any right-of-way for a canal or ditch is the corresponding right of passage of a width and characteristics determined by the granting authority (WL 105, 106).

B. Characteristics

The width of passage ways related to canal rights-of-way are determined by the granting authority (WL 105, 106).

If a right-of-way crosses a public or private road or other canal works, the dominant owner must construct whatever works are necessary to avoid damage to such structures (WL 108). The granting authority may control the construction to minimize the damages and inconvenience (WL 107).

If a dominant owner utilizes an existing canal or works, he is obligated to pay for the added works required and must contribute proportionally to the costs of the existing canal and pay other damages resulting from his joint use (WL 108).

Canals or ditches are of open ditch type when not dangerous due to depth or location and if they do not present other inconveniences. The ditches must be covered when required

by their depths, closeness to housing or roads, or if they constitute a general danger. Pipes or tubes are required when waters may infect others, absorb noxious substances, cause danger to works or buildings, and otherwise when deemed necessary (RD 16). A servient owner may cover a canal provided that he does not change the technical conditions of the use nor impede cleaning or repair (RD 17).

One who has a right-of-way also has, with written authorization from the "Water Authority," access right to the property as is needed for the care and conservation of his works. The authorization must contain the purpose of entry and the persons authorized to enter and the dates of entry. This notice must be given to the servient owner and specify the conditions of the entry that protect the property from damages (WI 109, RD 24).

Impeding or obstructing a right-of-way is prohibited and no alterations or modifications can be made in them without the approval of a competent authority (WI 110).

C. Procedure

1. *Studies* Parties interested in obtaining a right of-way may enter private property to study its feasibility with authorization from the "Water Authority" (RD 21, 22).

2. *Petition* A petition for establishing a right-of-way must be presented to the "Water Authority" of the "Irrigation District" and must contain the following information: a) the name and address of the owner of the property to be subject to the right-of-way; b) the technical and material fundamentals of the proposed right-of-way; c) the nature of the right-of-way; d) the duration of the right-of-way; e) the condition of the servient land including the works and buildings on it and the crops that will be affected; f) the technical study and plans indicating the area to be occupied; g) such other documentation as is deemed necessary (RD 25). The "Water Authority" receives the petition only if it complies with the foregoing requirements or is corrected within the time fixed (RD 26, 27).

3. *Process and Resolution* If the petition is accepted, the "Water Authority" must act on it within 15 days, based on the information contained in the petition. The resolution establishing it must contain the characteristics of the right-of-way and the amount of indemnification to be paid and other conditions in conformity with the study (WI 138, 139, RD 28).

Based on the favorable opinion of the Director General of Waters and Irrigation, the matter is elevated to the level of a Ministerial Resolution in which: the constitution of the right-of-way is declared; the public convenience and utility is declared; the characteristics are fixed; the amount of indemnification and all other necessary or convenient provisions are declared (RD 29).

4. *Opposition*: Interested parties may demand reconsideration of the Ministerial Resolution within 15 days from the date of notification of the resolution. The only grounds for reconsideration are that the right-of-way can be established in other places with equal advantages and at similar cost and less inconvenience to the servient estate (RD 32). If reconsideration is refused, the interested parties have 15 days from the refusal to appeal before the "Ministry" and once this administrative appeal is completed, the administrative remedies are exhausted. The only question which is not final in the administrative line of appeal is the amount of indemnification. On this question, the interested party may appeal to the Agrarian Tribunal for a determination of the amount of indemnification. This proceeding does not delay the establishment of the right-of-way which is final and non-appealable (WL 138, 139, RD 33).

5. *Execution*: The Ministerial Resolution of the right-of-way obligates the interested party to pay the amount of indemnification fixed and obligates the servient owner to permit the occupation of the land necessary for making studies, explorations and works (WL 140, RD 34).

6. *Indemnification*: The amount of indemnification in the case of a temporary right-of-way is estimated as a rental value of the property during the time occupied plus the damage and prejudices fixed at a reasonable level (RD 35). If the right-of-way is permanent, then the amount is based on the value of the occupied land plus the damage and prejudice caused to the servient estate (RD 36).

No indemnification is payable if the servient land is not productive (RD 12).

When the two parties agree on the value to be paid, the administrative proceedings can be shortened (WL 141).

5-8-3 *Termination of Rights-of-Way*

Rights-of-way are terminated when: 1) the works related

to them are not constructed within the time originally prescribed, 2) the servient owner proves that the right-of-way has not been utilized for a period of two consecutive years, 3) the purpose for which it was authorized has been accomplished, 4) it has been used for a purpose other than that for which it was granted, or 5) the period for which a temporary right of way was given or obtained has terminated (WL 112).

5-9-0 HARMFUL EFFECTS

5-9-1 *Flood, Erosion Control and Conservation*

The "Ministry" is required to promote programs of watershed and forest protection related to water resource conservation. The scope of such programs also includes channeling water courses and preserving them against erosion (WL 10).

Every individual user is obligated to prevent the overflow of his water works (WL 20f). Works designed to control erosion must be approved by the "Water Authority" and all users are obligated to protect the banks of the water channels to prevent erosion. Where collective benefit is derived from works of protection from erosion, those that benefit are required to contribute to the costs in proportion to the benefits received (WL 94-97, RD 18).

The "Water Authority" has the power to dictate and enforce regulations to avoid water use due to runoff, percolation, evaporation, flooding, inadequate use or other causes with the goal of providing maximum water availability and a higher use efficiency (WL 19).

5-9-2 *Drainage*

Every water use is obligated to construct and maintain the necessary works for the evacuation of drainage water (WL 20, RA 17). When excessive irrigation results in damage to the soil or other zones, the "Sanitary Authority" may order the drainage of swamps for health protection (WL 99). For a discussion of the preference given to the construction of drainage systems in state financed works, see 5-10-0-B (WL 91). Authorizations for the leaching of saline soils may be granted (RA 112c).

5-9-3 *Contamination*

A. *General*

The Ministry of Health is required to make and enforce regulations that control and end contamination (WL 10, RA 14). The varying of water distribution systems or changing the

nature or quality of water is forbidden unless authorized. Authorization may not be granted if the change would be damaging to public health (WL 14, RA 30).

In the event of an emergency caused by excessive water contamination, the "Sanitary Authority" establishes the regulations to protect, control and supply the water for the benefit of the general interest, giving preference to supplying domestic needs (WL 17, RA 35-38).

Contamination of water in violation of the regulations of the competent authority is a crime. Offenders are required to repair all damages and also are subject to fines (WL 122). If contamination of water is an inevitable result of the exercise of a use right, then the revocation or restriction of the use right is authorized (WL 22). The actual suspension of water uses because of contamination violations is enforced by the "Water Authority" at the request of the "Sanitary Authority" (WL 28).

Avoiding water contamination is a primary consideration in the proceedings establishing zones for access to water for domestic use (WL 39).

The "Sanitary Authority," for reasons of health, may order the drainage of swampy lands (WL 99).

B. Control of Discharges

The discharge of any solids, liquids or gaseous substances into water is prohibited if it endangers human health or the normal development of flora or fauna. Any such discharge must be approved by the "Sanitary Authority" and must be in accord with the limitations hereafter discussed (WL 22, RA 57, 58, 61, 145, 173).

Establishments which were discharging residues into waters before the enactment of the regulations were required to file documentation of their use with the Bureau of Environmental Health of the Ministry of Health within six months after the enactment of the regulation, and this documentation must include a detailed description and analysis of the contents of their discharges (RA 174).

When such documentation or new request for a discharge authorization is filed, the "Sanitary Authority" makes its own detailed study of the discharge, and this study is partially paid for by the interested party (RA 176). The "Sanitary Authority" then files its report fixing the needed characteristics,

changes or modifications and fixes a specific time limit for making modifications (RA 177). These requirements need be met only in the Coastal Zone of the country (RA 178).

At such time as the above requisites are complied with, the authorization of the "Sanitary Authority" may be issued in which the following must be specified: 1) approval of the works and installations; 2) location of the industry and the point at which the waste will be discharged, 3) classification of the water course; 4) quantity and characteristics of the discharge; 5) assessment to be paid and how it will be paid; 6) causes for revocation of the right, 7) period of duration of the authorization (RA 179).

Domestic and community discharges into streams must comply with classification established for the coastal zone, and the "Sanitary Authority" may fix periods within which they must comply with the regulations.

The Sanitary Authority must revise and study all discharges of water residues in the coastal zones for the purpose of modifying existing works at the time of enactment of the water law. The "Authority" may restrict or prohibit discharges which do not meet the quality standards of the law and regulations (RA 80, 81, 180, 181).

C. Classification of Waters

Waters in the Coastal Zone of the country are divided into five classifications according to their maximum percentage content of color, floating solids, oil and grease, phenol, toxic or potentially toxic substances including 13 specified chemical elements, bacilli, biochemical oxygen demand, dissolved oxygen and PH. As the class rises from one to five, the uses to which the water may be applied become more restrictive. The class of contamination level of effluents that can be discharged into such waters also becomes more restrictive as the class increases. The permissible uses under these classifications vary from potable water supply, unlimited agricultural use and recreation, to the more restrictive and higher numbered classes which may only be applied to industrial use. Discharges in all classes are limited to those that, with or without treatment, do not alter the characteristics of the water source, excepting temperature changes. A slightly different classification is made with respect to *zoo* waters (RA 56, 81).

5-10-0 FINANCING WORKS AND ADMINISTRATION

A. General

The financing of studies and works for conservation, preservation, increase of resources and improvement of management as they relate to water, are all declared works of "public utility and necessity" and, therefore, justify the investment of state funds (WL 9).

The "Ministry" annually fixes the tariffs for the various uses of water (RA 21, 53). These tariffs are based on the unit volume of use as applied to a fair apportionment of costs related to the administration, upkeep, repair and improvement of the works. From these tariff charges, they pay the costs related to such items as they accrue in the "Irrigation Districts." The users of water from wells who are included within the cultivation plans of the districts are reimbursed for well operating and maintenance costs (WL 12, RA 22, 23, 40).

One of the pre-requisites for obtaining a right to use water for agricultural purposes is that the user provide a guarantee for the payment of the quotas and assessments as fixed by the "Water Authority" (WL 49c).

All administrative fines levied and collected for violations of the water laws and regulations become part of a special fund used for studies or works to improve water use within the "Irrigation District" where the fines were collected (WL 126).

Water Users Councils also collect and disburse assessments charged to members for upkeep and repair of works administered by the council (RA 50).

The state charges the cost of the irrigation regulation works to those who directly or indirectly benefit from them in proportions and under conditions established by the executive authority (WL 18, RA 39, 40).

B. Priorities in State Financed Projects

In making studies and constructing works destined to facilitate the use of water in agriculture, the following order of preference is established: 1) improvement of structures for measuring, diverting, distributing and controlling waters; 2) regulation of irrigation; 3) drainage of cultivated land; 4) recuperation of abandoned lands or lands on which production is reduced because of a high water table through the process of drainage; 5) irrigation (WL 91).

5-11-0 LEGISLATION ON USES OTHER THAN IRRIGATION**5-11-1 Domestic****A. First Priority**

The first order of priorities for water use is the satisfaction of primary necessities and community supply (WL 27, 40, 47, RA 100, 101, 104). Other classes of water use rights may be revoked without the payment of compensation in order to satisfy the domestic needs of a community (WL 35, 40, RA 105). In declared states of emergency, the "Water Authority" and "Sanitary Authority" must respect the priority of the communities' domestic water needs (WL 17, 17). They are required to provide access to water sources for individuals and communities without an adequate culinary water supply (RA 39). Planning and execution of works for the supply of culinary water are responsibilities of the Ministries of Health and Housing (RA 100). The control of water quality for culinary supply is the responsibility of the "Sanitary Authority" and Ministry of Housing (RA 101). Tariffs charged by companies supplying culinary water must be approved by the Ministry of Housing (RA 106).

B. Second Priority

The use of water for cattle raising is the second priority for water use (WL 27b, RA 107). The use of subterranean water is preferred, if available, for such purposes (RA 108).

5-11-2 Motive Power, Industrial and Electrical Generation

Energy generation use shares the fourth order of priorities with industrial and mining uses for preferential use of water as explained in 5-7-1 (WL 27). These uses are granted through licenses by the "Ministry" (see 5-5-2-F) (RA 134, 140). Water applied to such uses must be returned to the water channel after use in the place indicated in the license. The user is required to report to the "Water Authority" the plan for diversion and fluctuation of the discharge from the use (WL 53, RA 89, 136, 137).

The energy potential of all waters regardless of the source is declared to be the property of the State (RA 133). Water used for these purposes may also be the subject of use grants for other purposes, since they do not consume the water (RA 138).

The use of subterranean sources for industrial needs is preferred if available (RA 141).

5-11-3 *Transportation*

The use of water ways for transportation is not one of the specified preferred uses of water. However, a type of preference is provided by prohibiting the employment of artificial systems that impede or make difficult the normal course of the waters or their navigation or floatation (WL 56, RA 161).

Transportation companies may obtain licenses for the water use required for maintaining their transportation services (RA 170).

5-11-4 *Medicinal and Thermal*

Medicinal-mineral water uses are not specifically listed in priorities or preferential uses of water and, therefore, the uses related to such waters come within the last order of priorities called *other uses* (WL 27). There is a special title in the Water Law which treats the subject of mineral-medicinal waters and specifies the conditions of their use (WL 71). A series of detailed regulations also exist relating to the use of such waters by bath houses (RC 35 to 41) and bottling plants (RC 42-46).

A. *General Administration*

The studies of mineral-medicinal water sources and granting of licenses for their use are responsibilities of the Ministry of Health. The Ministry is required to inventory, classify and evaluate the therapeutic, industrial and tourist uses of these waters in coordination with the National Board of Tourism and other concerned organizations of the State (WL 72).

The Bureau of Environmental Health of the Ministry of Health is the "Sanitary Authority" (RC 12) and has the following duties and powers with respect to the mineral-medicinal waters: 1) supervise compliance with regulations related to use of these waters (RC 13); 2) maintain a registry of mineral-medicinal water sources and a poll of users (RC 14); 3) study, hear and resolve petitions related to the use of these waters and prepare related reports (RC 14); 4) inspect bottling plants and bath houses before and after they begin functioning to determine compliance with regulations (RC 16); 5) convert titles from previous uses into licenses (RC 17); 6) collaborate with other sectors of the Ministry of Health; 7) authorize and control public notices given by organizations using such waters (RC 19); 8) verify the quality, quantity and characteristics of the water before granting licenses (RC 20).

B. *Priorities and Procedures*

The National Tourism Enterprise is given preference in the exploitation of mineral-medicinal waters and may obtain a license for such use without the necessity of public bidding (WL 73, RC 67).

When such waters are not exploited by the State, granting a license is based on open public bid (RC 67). However, the "Sanitary Authority" may fix priorities for such uses based on the following criteria: 1) general social interest; 2) therapeutic value of the source; 3) facilities for exploitation as they relate to communication; 4) tourist interests; 5) the appropriate quantity for intensive exploitation of bottling plants or bath houses (RC 10).

The application for use must contain: 1) precedents of title for former uses; 2) guarantees for construction of the works; 3) quantity of water requested; 4) minimum time required to construct and commence operation of the works; 5) users of such waters at the time of the new water law in 1969 were required to present the following documentation to the Sanitary Authority: a) a copy of the legal title to the property; b) a topographic plan with elevation curves; c) a general water distribution plan within the plant; d) complete analysis of the water; e) measurements of the capacity of the water source and the quantity needed; f) investments made and those required for exploitation (RC 11, 25). If offers are equal, preference is given to the discoverer of the source (RC 11). The application must be accompanied by extensively documented studies (RC 25, 32).

A license for the use of mineral-medicinal waters must contain: 1) approval of plans for works and installations; 2) location and characteristics of the source and the place of use; 3) name and address of user; 4) period of use which is from 20 to 30 years; 5) quantity of water and specific use; 6) tariffs and other obligations of the user; 7) conditions under which the license will be lost or forfeited (RC 31, 32).

Land and rights-of-way may be expropriated for facilitating the use of mineral-medicinal waters (RC 33).

C. *Classification of Waters*

Mineral-medicinal waters are classified according to temperature, osmotic pressure, radio active potential and physical

and chemical properties. The responsibility for making these classifications is in the "Sanitary Authority" (RC 23).

5-11-5 Mining

The use of water for mining is within the fourth order of priorities for water use (WL 27). For priorities between various mining uses, see 5-7-1-5.

Mining users may be required to construct settling ponds for residues according to specifications of the "Water Authority" and "Sanitation Authority" in order to avoid contamination of water and land (WL 54, RA 145), and such rights may be suspended if necessary to avoid contamination (RA 146). A competent authority has the right to control related works their location, design and removal in order to provide for the unloading of residues and solid material which comes from mining and other uses (WL 85, 86, 87).

The working and development of materials transported and deposited by waters in streambeds are controlled and supervised by the "Water Authority." It grants permits and prescribes the conditions for the development and use of such materials (WL 100), thus, insuring that these uses do not interfere with other uses (RA 149).

Miners who discover water in the exploration and development of the mines must report it to the "Bureau" (RA 148).

5-11-6 Others

A. Fishing and Aquatic Flora

The "Ministry" may grant rights to use the waters and public streambeds for cultivating flora and fauna. Preference is given to those activities that come within State development plans (WL 55, RA 154). The right, once obtained, carries with it the right to plant the species in accordance with approved plans (RA 155). The applications for these uses must be supported by feasibility studies (RA 156).

The following restrictions apply to the above uses: 1) they may not impede navigation (RA 161); 2) they may not modify the physical, chemical or biological condition of the water to the prejudice of other uses (RA 162); 3) such users must pay an annual license fee (RA 165). The "Water Authority" and Marine Authority are charged with the enforcement of regulations related to this use (RA 165).

The State is charged with responsibility of promoting the development of fish and aquatic flora (WL 55, RA 163).

B. *Recreation and Tourism*

The "Ministry" may grant water use rights for recreational and tourist uses in the communities and places designated for this purpose (WL 57, RA 166). Urban planning organizations are directed to consider in their planning, the water demands for recreational purposes (RA 167). Water may be used for other purposes after its use for recreation, but must not be rendered unfit by the recreation use (RA 168).

C. *General*

Water uses for other goals not specified may also be granted but are subject to the regulations and procedures provided in the law (RA 172)

6-12-0 SUBTERRANEAN WATERS

A. *Control of Exploration*

All persons drilling wells for the purpose of locating or raising subterranean water as a primary or secondary activity must obtain a license from and be registered with the "Bureau" (WL 68, RB 61, 64). Applications for licenses may be refused if the applicant is unable to execute the drilling work. Conditions and limitations may be imposed on license holders. Licenses may be revoked for failure to comply with these conditions and regulations (RB 62, 72).

Such persons must also obtain a drilling authorization for each attempted drilling and must exhibit both the license and specific drilling authorization near the place of work. The drilling authorization is obtained from the "Technical Administrator" of the "Irrigation District" (RB 65).

As a pre-requisite to obtaining a license, the driller must have in his employ at least one engineer specialized in drilling (RB 66). Drilling licenses are renewable every four years (RB 67).

The driller must make available to the authorities all drilling information, even on unsuccessful attempts (WL 69, RB 68, 70), and the "Bureau" may inspect the operations at any time (RB 71). The driller must maintain a drilling log indicating the work done, materials and water encountered and must retain samples every two meters, for delivery to the "Water Authority" Inspectors (RB 76). Progress must be logged at the end of every work turn (RB 77). The personnel of the "Irrigation District" or the "Bureau" have access to the drilling area and may order the work stopped if the drilling

alters the water quality or the sub-surface hydrology of the aquifers (RB 78).

The drillers must employ technical security measures as required by the regulations, including emergency closing capability if contamination or blowing are possibilities (RB 75).

One may explore for subterranean water on the land of others if technical studies show there is no reasonable possibility of locating water on his own land (WL 63).

Individuals, who are doing their own drilling on their own or rented land, must also obtain a drilling authorization from the "Irrigation District" and the "Bureau" (RB 79).

Anyone who discovers subterranean water as a result of any activity must inform the Technical Director of the Irrigation District.

Waters discovered in an exploration process may not be used until a permit, license or authorization is obtained for their use (WL 70, RB 80).

B. Procedure for Obtaining a Concession

A petition for a license, permit or authorization to use subterranean waters, once discovered, is presented to the "Technical Administrator" of the "Irrigation District" who forwards it to the Director General of Waters (RB 15). The petition must conform to the requirements cited in 5-5-2-B and 5-5-5-A and must establish the following: 1) the rising water does not cause chemical or physical conditions that injuriously alter the conditions that injuriously alter the conditions of the water bearing strata or the water reservoir or radius of the surface influenced by the well which might be on their private property; 2) that it does not produce interference with other wells or water sources (WL 32, 62).

The "Ministry" is required to make studies evaluating subterranean water resources and all licenses must conform to the studies (RB 41). Wells may be deepened or the uses changed through the process of granting a new license (RB 42).

C. Preferences Between Uses

When subterranean waters are not sufficient to satisfy all demands, the "Bureau" on the advice of the "Technical Administrator" of the "Irrigation District" establishes the order of preference based on the following: community supply, cattle watering, industry, mining and agriculture. If, in the application of this order of priorities some agricultural users are

deprived of water use, they must be indemnified for their loss. If the source is insufficiently resupplied to meet the demands, then no new rights can be granted from that source (RB 23).

D. General Controls and Limitations on Users

The "Water Authority" is vested with the following powers over subterranean water users: 1) to impose conditions in grants related to agricultural, ecological-technical and economical feasibility of the crops (RB 19); 2) approve all works and studies (RB 50, 54); 3) to establish specifications for works (RB 52); 4) to provide for works of artificial re-supply of aquifers with excess surface waters (RB 53); 5) to control drainage programs that affect subterranean waters (RB 55); 6) to supervise contractors in construction of State financed works (RB 55); 7) to register private companies engaged in making groundwater studies and receive information from them (RB 57); 8) to restrict or suspend rights when surface water use rights are adversely affected (RB 27, 28).

The "Technical Administrator" has the following powers related to control of subterranean water uses: 1) to require use of lower valley areas to insure more rational use; 2) to require water application to soils of high water retention qualities; 3) to require application to short cycle crops, low water demand crops or high water retention crops; 4) to require that the irrigation system permit high use efficiency and may require sprinkle irrigation (WL 65, RB 21); 5) to determine well spacing and maximum draw rate to avoid interference with other wells (WL 64, RB 39, 40); 6) to approve all applications for modifying the lifting and distribution systems (WL 66, RB 44).

The users are required to meet all of the discretionary regulations mentioned, install sealed measuring devices as ordered by the Director General of Waters and advise him when they do not function (RB 46, 47, 48).

E. Pollution and Contamination Control

The control of pollution, salinity and other dangers resulting from or affecting subterranean water use are the responsibilities of the "Bureau" (RB 6, 14), and specifically included the control of discharges of residues into subterranean waters (RB 9).

The "Bureau" may declare protected zones for specified distances around wells used for drinking water (RB 10) and

must periodically submit tests of the water to the "Sanitary Authority" (RB 11). The use of septic tanks are prohibited if they result in subterranean water contamination (RB 12).

F. *Joint Uses and Users Associations*

If the amount of water raised in a well exceeds the petitioner's needs, then third parties can acquire rights to the excess by agreement or by administrative order of the "Water Authority" (RB 43). This is possible only if studies show there is no danger to the water resource nor to the water bearing aquifers (RB 35).

5-13-0 PENALTIES AND SANCTIONS

Anyone violating the provisions of the Water Law and the corresponding rules or regulations, is subject to an administrative penalty in the form of a fine of not less than 300 Soles nor greater than 50,000 Soles according to the gravity of the offense. The means for enforcing the payment of the fine is suspending the supply of water until the works have been executed or the fine has been paid as the case may be (WL 119).

A more severe administrative penalty of not less than 500 Soles nor greater than 100,000 Soles is provided for the man who: 1) utilizes water without authorization, or in a quantity greater than authorized; 2) illegally damns, diverts or detains water or applies it to an unauthorized use; 3) impedes or obstructs legitimate use of the water; 4) damages or obstructs natural or artificial protection of the banks of the river or watershed; 5) obstructs or impedes the entrance of the "Water Authority" or those authorized by them to enter public property (WL 120). The violator must, in addition to the payment of the fine, restore the altered condition to its previous state or pay the costs of replacement, close the well and indemnify for damages and injuries caused thereby (WL 121). If the violator fails to comply within the specified time, the fine is doubled and if non-compliance continues, the fine is doubled again, with the ultimate penalty being the cancellation of his authorization, permit or license to use the water (WL 123, 124). The limits of these fines are re-determined by the President every five years (WL 126).

As part of the penalty for construction of unauthorized works, the infractor may be required to remove or destroy them and restore the area to its prior condition, or be fined in an amount not to exceed 50 percent of the value of the works.

He is also responsible for damages and injuries occasioned thereby. If the removal or demolition of the works is ordered but not carried out, the "Water Authority" may do it and charge the costs to the infractor.

Political authorities are obligated to dispatch police assistance to the "Water Authority" or "Sanitary Authority" when requested in the execution of their functions under the water law (WL 131).

The proceeds of the fines constitute a special fund in the agency that collects them for studies or executing works for the improved use of water within the corresponding administrative jurisdiction (WL 126).

Officials and employees of the public entities who are responsible for the application of the Water Law may not be owners nor co-owners of rural lands, shareholders, nor tenants of land holding corporations, nor relatives within the third degree of consanguinity of any such persons within the area under their jurisdiction and may not contract with such persons (WL 127).

Regular criminal proceedings under the Penal Code are provided for serious infractions (WL 121) and also for violation of the contamination control and health provisions of the water law or its regulations (WL 122, 123). Failure to comply with the residue discharge regulations is subject to a fine of from 5,000 to 100,000 Soles de Oro. The violator must also repair the resulting damages (RA 214). The use of sewage water for irrigation without authorization is subject to a fine of from 1,000 to 20,000 Soles de Oro (RA 217). The fines may be doubled on reoccurrence (RA 218). All administrative fines related to contamination go into the budget of the Environmental Health Agency (RA 219).

Under the Penal Code, one who intentionally contaminates potable water destined for human or cattle consumption is subject to imprisonment for one month to five years. If the contamination was a result of negligence, the violator is subject to a penalty of three months income or up to two years in prison (CP 274).

COMPARATIVE

6-1-0 INTRODUCTION

6-1-1 *References and Key to Abbreviations:*

The references and abbreviations contained in this comparative section are the same as those provided in the separate country sections except that they are preceded by the country abbreviations.

The country abbreviations and form of references are as follows:

Bo. = Bolivia. Bo. (CC 136) = Bolivian Civil Code, Article 136. See section 1-1-1 for specific references and abbreviations.

Ch. = Chile. Ch. (CC 136) = Chilean Civil Code, Article 136. See section 2-1-1 for specific references and abbreviations.

Co. = Colombia. Co. (CC 136) = Colombian Civil Code, Article 136. See Section 3-1-1 for specific references and abbreviations.

Ec. = Ecuador. Ec. (CC 136) = Ecuadorian Civil Code, Article 136. See Section 4-1-1 for specific references and abbreviations.

Pe. = Peru. Pe. (CC 136) = Peruvian Civil Code, Article 136. See Section 5-1-1 for specific references and abbreviations.

6-1-2 *Geography*

The Andes Mountain Range is a natural feature that is common to all of the countries in this area. It rises to heights of over 21,000 feet [6,401 meters], the highest elevation in the Western Hemisphere. The area between the Andes Moun-

tain Range and the Pacific Ocean is a relatively flat coastal plain that is quite narrow and contains many Andes fed rivers that flow a relatively short distance to the Ocean. Also located in the Andes Mountain Range, between Peru and Bolivia, is Lake Titicaca, the highest navigable lake in the world. All of the countries except Chile include a large area on the east side of the Andes. These areas are low, generally flat, Amazon River Basin areas with heavy rains and hot temperatures.

Peru has the largest land area of these countries with 496,223 square miles [1,285,218 square kilometers] of territory. Following, in order of size, are Colombia, Bolivia, Chile and Ecuador, the smallest, with 108,204 square miles [280,250 square kilometers]. The entire region encompasses an area of 1,756,662 square miles [4,549,755 square kilometers].

Bolivia is the only country that does not include some Pacific Ocean coastline. Colombia has both Pacific Ocean and Caribbean Sea frontage.

6-1-3 *Climate*

The climate of this zone is greatly varied. There are parts of the Atacama Desert in the coastal area of northern Chile and southern Peru where there has been no recorded rainfall. Desert like areas also cover other coastal areas of Peru, Ecuador, the Caribbean coast of Colombia and the Chaco area of south-eastern Bolivia.

The Andes Mountain Region includes micro climates of arid, semi-arid and humid zones.

The Pacific Coast of Colombia has the highest recorded annual rainfall in the Western Hemisphere.

There are many areas where the average annual rainfall is high, but that are seasonally arid. The seasonal variations in climate include parts of Ecuador and Colombia that correspond to the Northern Hemispheric changes and the south of Chile where strong seasonal changes correspond to the extremes of the southern hemispheric changes. In every country, there are mountain peaks of sufficient altitude that they remain permanently snow capped.

6-1-4 *Population*

According to recent population estimates, the countries rank in population as follows: Colombia, 22,000,000; Peru, 14,000,000; Chile, 11,000,000; Ecuador, 6,000,000; and Bolivia, 4,500,000; for a total of 57,500,000.

There are few inhabitants in the Amazon Basin areas of these countries. The mountain regions of Ecuador, Peru and Bolivia are quite densely populated and in many instances, there is a high percentage of indigenous inhabitants. There are large urban concentrations in the mountain areas of Bolivia, Ecuador and Colombia, and the coastal regions of all the countries.

6-1-5 *Irrigation*

According to recent estimates the total irrigated area in each country is as follows: Bolivia 98,000 acres (40,000 hectares); Chile 4,693,000 acres (1,900,000 hectares); Colombia 444,600 acres (180,000 hectares); Ecuador 438,602 acres (177,500 hectares); Peru 2,598,210 acres (1,051,907 hectares).

6-2-0 LEGISLATION

6-2-1 *Legislation in Force*

Sweeping changes have occurred in the water laws of Chile, Peru [in 1969] and Ecuador [in 1972] in the form of new water laws or codes. These relatively brief laws in Ecuador and Peru have been amplified by detailed regulations. The scope of coverage in these new codes varies to a marked degree. Not all legislation bearing on the subject of water rights and administration is covered in these special water codes, laws and regulations, therefore, reference is frequently made to other laws and regulations.

In Colombia, there has been no recent overall consolidation or codification of the laws related to water law and administration. However, there have been some changes of principal legislative provisions which were basically established in the 1940's.

Bolivia has an official water law review commission functioning although no new legislation has yet resulted from this effort. Much of the water law of 1879 is still in force, but there are some more recent enactments that, in limited areas, modify the effect of the ancient water law.

The civil, penal, mining and civil procedural codes of all the countries contain varying degrees of relevant provisions. Chile's Water Code provides great detail on the operation and functioning of water user organizations, but such matters are only briefly and generally treated in the Water Laws and regulations of Ecuador and Peru. Similar differences of scope

of the subject matter are quite common in comparisons of legislation and regulation between countries.

6-2-2 *Process for Legislative Change*

Changes in legislation in Colombia require adoption by elected legislative bodies and substantial rule-making authority has, in general, been delegated to the executive branch of government. In Bolivia, Chile, Peru and Ecuador laws and regulations are adopted by the President and frequently with concurrence of the council of ministers and on recommendations from commissions.

6-3-0 ORGANIZATION FOR WATER ADMINISTRATION

The purpose of this section is to provide a general comparative overview of the administrative structure of the governments related to water resource administration. Comparisons of governmental agencies concerned with such specific functions as the granting of water use rights, rights-of-way, subterranean waters, etc., are found in the sections related to those functional aspects of administration. The separate country summaries contain some additional details. *Administration*, as used in this comparative section, is a general, uncertain term and could include one or more of the functional aspects of water administration.

A. *Sources of Power to Establish or Change Organization*

In all of the Andes countries, governmental power is centralized in the national government. There are no federal type governments where states within a country have independent authority to legislate or execute. Departmental, provincial and other subdivisions of the government exist for the administrative convenience of and are under the control of the central governments.

In Bolivia, Ecuador and Peru, the president of the country is the supreme authority in both legislative and executive matters and has the inherent power to change the laws and regulations, the organizational structure of the government for water administration and to execute the policies established in the laws. In Chile and Colombia, the president executes laws enacted by elected legislative bodies as provided in the constitutions.

In all the countries, the presidents are specifically vested with powers over water administration either by executive made laws or by congressional enactment. These powers may

be delegated by laws or regulations to lower level executive agencies.

B. Direct Powers of Chief Executive or President

Specific laws or regulations vest in the president of Chile affirmative powers with respect to water administration including: 1) reserving the use of water for future beneficiaries of state financed projects; 2) declaring the exhaustion of water sources which terminates the granting of water use concessions from that water source; 3) establishing specific volume limitations on irrigation water rights in given areas; 4) declaring drought zones; 5) appointing and removing the Director General of Waters; 6) extinguishing use rights to apply the water to other purposes; 7) approving the articles of association for user organizations, Ch. (WC 26, 28, 47, 286, 305, 332).

In Peru, certain dispositions related to water administration must be executed by a Supreme Decree of the President. Proposals for these matters are initiated on a ministerial level and include: 1) reserving water for future uses for renewable two year periods; 2) organizing zones for improved water use; 3) declaring special zones for protection of water resources; 4) declaring states of emergency resulting from drought, flooding or contamination of waters; 5) authorizing the transfer of water between water basins, Pe. (WL 7, RA 10).

C. National Advisory or Coordinating Groups

1. *Advisory:* In Peru, a Superior Water Council advises the President on problems dealing with altering and fixing preferences in water use and other matters with inter-sectional implications. The council is composed of directors of water related sub-ministerial bureaus, including: the director Bureau of Waters and Irrigation, who is the President; and the directors of Bureaus of Electrification, Industry, Mines, Health Services, Sanitation Services, Meteorological and Hydrological Services, Pe (WL 135, RA 12).

Now functioning in Bolivia is an inter-ministerial, technical-legal commission that advises the president on new water legislation. The primary commission responsibility rests with the representative of the Ministry of Public Works and Transportation. Other representatives are from the Ministries of Agriculture, Defense, Coordination and Planning and the Agrarian Reform Council, Bo. (Supreme Resolution of November 8, 1969).

2. *Coordinating*: In Peru, the formulation of general water use policies is carried out through the National System for Planning Economic and Social Development. This system is composed of the following public entities: a) The National Office of Evaluation of Natural Resources [ONERN]; b) The National Meteorological and Hydrological Service [SENAMHI]; c) The Ministry of Agriculture and Fisheries; d) The Ministry of Health; e) The Ministry of Housing, Pe. (RA 2, 3).

In all of the countries there is a ministerial or subministerial group with the primary function of coordinating the policy making process of the government between organizations related to water resources administration.

3. *Ministerial and Sub-Ministerial Authority*: In Bolivia and Peru, substantial responsibility for water administration and control is vested in one or more of the Ministries. In Peru, the Ministry of Agriculture is vested with responsibility for water administration for many significant uses; but in Bolivia, the Ministry of Agriculture's power is limited to water administration for irrigation only, and the Ministry of Public Works, Communication and Transportation controls other uses, Bo. (Law of August 20, 1938; Law 08286 of March 5, 1968; Law 07388 of November, 1965; Law of December 1, 1941; IR); Pe. (WL 7; RA 5, 10; RE 3).

In Chile, the General Water Bureau is attached to the Ministry of Public Works and Transportation, but is quite independent of the Ministry because the Chief is appointed by and serves at the pleasure of the President and his duties and powers are prescribed by law rather than by administrative directive from the Ministry, (WC 286). There are no regional offices of the General Water Bureau prescribed by law.

In Peru, many of the basic water administration decisions are made by the Administrators of the various Irrigation Districts which are sub-regional administrative dependencies of the Ministry of Agriculture, Pe. (RE 4, 7). The General Bureau of Waters is a central dependent agency of the ministry and has the responsibility of resolving inter-regional water administration problems (RE 1, 2, 4).

Both the Ministry of Public Works, Communication and Transportation and the Ministry of Agriculture in Bolivia carry out their water administration functions through dependent central bureaus or divisions. (*op. cit.*)

D. *Semi-Autonomous Government Institutes*

1. *General:* Chile, Colombia and Ecuador have one or more semi-autonomous government institutes that are responsible for water use or administration. The Ecuadorian Institute of Water Resources, referred to as INERHI, has more water use and administration authority than any other single organization in the Andes Region, Ec. (IN 2, 3; RA 1; LA 13, 79).

The Colombian Institute for the Development of Renewable Natural Resources, (INDERENA) administers and controls the use of water and other renewable natural resources within its jurisdiction, Co. (R 23). However, there are two significant geographical areas in Colombia that are not under its control, Co. (R 23; CA 1, 2, 3). The Colombian Agrarian Reform Institute is organizationally similar, but its water use activities are limited to the construction, operation and management of irrigation districts constructed with state funds, Co. (AR 3, ARA 5).

The National Irrigation Enterprise in Chile is responsible for constructing and operating irrigation projects with national funds, and though its name does not include *institute* its administrative structure is essentially the same, Ch. (WC 299, 301, 308).

2. *Organization:* These institutes are all public corporation type entities governed by a board of directors and one of the Ministers of State serves as its president. In Ecuador, the Minister of Agriculture is president Ec. (IN 5); in Colombia, the Minister of Agriculture serves as president of both INCORA and INDERENA, Co. (R 22, 27; ARA 5); and in Chile, the Minister of Public Works and Transportation is president, Ch. (WC 308, 309). The majority of board members are heads of sub-ministerial bureaus or agencies usually connected with finance and agriculture. Frequently there are one or more representatives of private agricultural interests on the Board (*Ibid.* three previous references).

INERHI has a central organization and regional offices, called agencies, which have duties specified by statute, Ec. (RA 1, 13, 14). INDERENA also has regional offices with duties prescribed by law, Co. (IO 1). INCORA's primary interest in construction and operation of Irrigation Districts is carried out through an administrative organization for each district, Co. (DR 6, 7). In Chile the National Irrigation Enterprise

is a central organization with an administrative organization for each irrigation project that it constructs, Ch. (WC 301, 302).
E. Local or Regional Autonomous Agencies

Certain water administration functions are vested in municipal authorities and semi-autonomous regional authorities. This pattern is more apparent in Colombia than any other country. General water administration functions for the area surrounding Bogota and Cali are vested in the Autonomous Corporation for the Development of the Plains of Bogota and the Autonomous Corporation for the Development of the Region of the Cauca, Co. (CA 1, 2, 3; R 23).

In Ecuador, the Corporation for the Development of the Guyas River Basin has limited water administration authority to initiate the organization of irrigation districts within its jurisdiction.

Mayors and local police officials in Colombia are specifically charged with responsibilities for enforcement of water laws and regulations, Co. (WC 20, RWC 53). However, in most countries, local police have responsibility under general laws for enforcement of criminal laws pertaining to water use.

6-3-2 *User Organizations*

A. *General*

This section covers a discussion of water user organizations administering water use and controlled by the votes of water users rather than directives of the central government.

B. *Common Characteristics*

In each of the countries there is at least one type of water administration organization in which water users function as shareholders or members and thus control the organization, Bo. (IR 33, 34); Ch. (WC 88, 152, 165); Co. (DR 18); Ec. (RA 27, 29, 48); Pe. (RE 17). The users meet annually in a general assembly and elect a board of directors to control the routine affairs of the organization, Bo. (IR 34); Ch. (WC 119, 179); Co. (DR 18, IR 16); Ec. (RA 32); Pe. (RE 17). They are operated on funds collected through assessments to shareholders or members, Bo. (IR 38); Ch. (WC 115, 155, 168); Co. (IR 23); Ec. (RA 42); Pe. (RE 24). The organizations exercise varying degrees of authority over water distribution, Bo. (IR 38); Ch. (WC 88, 165, 167); Co. (IR 18); Ec. (RA 36); Pe. (RE 24), and are all subject to some degree of control or supervision by an agency of the central government, Bo. (IR

38); Ch. (WC 88, 152); Co. (DR 18; IR 14); Ec. (RA 27, 29); Pe. (RE 17) in addition to the general limitations provided by law.

C. Area Covered by Organization

1. *Basic User Organizations:* The extent of the geographical jurisdiction of these organizations is based on different criteria as follows: a) Bolivian jurisdiction is determined by the Irrigation Division; b) Chilean jurisdiction covers all the users from an artificial canal if there are at least two; c) Colombian user organization jurisdiction covers a zone within an Irrigation District of INCORA; d) Ecuadorian organization jurisdiction includes all the users from a common water source provided there are five or more users; e) Peruvian jurisdiction includes each sector of official Irrigation Districts, Bo. (IA 33); Ch. (WC 88, 152); So. (DR 18, IR 14; Ec. (RA 27, 29); Pe. (RE 17).

2. *Federations of User Organizations:* In three countries there are federation type users organizations where representatives of basic organizations meet in an assembly of federated water user organizations and function as a federation. Chilean user Federations include representatives of all user organizations within a water basin and in Colombia and Peru they include all members of all boards of directors of user organizations within all zones of an irrigation district, Ch. (WC 165); Co. (DR 18, 21); Pe. (RE 18).

D. Organization and Voting

Formal articles of association or internal rules are required for the formation of user organizations. These articles or rules must be approved by a government agency in Bolivia, Chile, Ecuador and Peru. However, in Chile one of the three types of user organizations exists by operation of law and requires no formalities for its existence, Bo. (IR 37); Ch. (WC 89, 152, 164, 173); Ec. (RA 27, 36, 50); Pe. (RE 23, 31).

The power that the vote of each user has in electing members of the Boards of Directors differs. In Chile, the voting right is determined by the quantity of the users water right and in Ecuador each user has one vote regardless of the relative quantity of his water right or extent of his land holdings. Users in Colombia with farms of less than 49 acres [20 hectares] elect three members of the board, and those with more land elect the other two members. In Peru, small, medium and

large farms and communities within the zone are all entitled to at least one representative on the Board of Directors, Ch. (WC 179); Co. (DR 18; IR 15); Ec. (RA 31); Pe. (RE 26).

The Board of Directors consists of one or more members in Bolivia; three to eleven members in Chile; five in Colombia with seven in the federations; seven or more in Ecuador; and five in Peru, Bo. (IR 36); Ch. (134); Co. (IR 18); Ec. (RA 39); Pe. (RE 26).

In Chile, the members of shareholders of the boards must pay fines for failure to attend meetings, Ch. (WC 113).

E. *General Functions*

User organizations in Colombia and Peru have little direct authority in the administration or distribution of water on a user level. Their functions consist of advising the Irrigation District officials who administer and distribute the water. These officials are not administratively accountable to the user organization, but rather to an agency of the central government, Co. (IR 18, 22); Pe. (RE 24).

In Colombia, the user organization advisory functions consist of proposing improvements in district administration and irrigation works and complaining of errors and abuses by district personnel, Co. (IR 22).

The user organizations in Peru make recommendations to Irrigation District officials with respect to the district budget, propose construction and make annual reports, Pe. (RE 24).

In Peru, water use for irrigation must conform to irrigation and cultivation plans, and in Ecuador, cultivation plans, are related to the granting of credit to users. User organizations in both Ecuador and Peru participate with and advise government agencies in formulating these cultivation and irrigation plans, Ec. (RA 51); Pe. (5-5-0-C).

Bolivia's User Associations are *representatives* of a central government agency, but have extensive direct administrative powers over water distribution to their members, Bo. (IR 28, 38, 39). User organizations in Ecuador and Chile also have basic control over the distribution of water to their members, but a central government agency has the right to prescribe the contents of the basic charter of the organization and has general supervisory power over their activities, Ch. (WC 288); Ec. (RA 27).

Policing water use within an association's area of jurisdiction is a primary function of such organizations in Bolivia, Chile and Ecuador. The officer or water master who is responsible to the association actually provides surveillance over the canals to determine that the users are receiving their rightful allotment of water at the proper time. The water master enforces the law and initiates formal criminal complaints before civil authorities for misuse of, or illegal water use, Bo. (IR 38); Ch. (WC 22, 141, 142, 177, 181, 183); Ec. (RA 36).

F. Resolving User Conflicts

In Bolivia, Chile and Ecuador, the Boards of Directors have the power or jurisdiction to resolve some types of water use conflicts. The user organization Board of Directors in Chile judges disputes dealing with its shareholder's rights, distribution of water between shareholders and disputes with the organization. In Bolivia, the Board of Directors in the first instance decides questions of fact related to water use conflicts between shareholders of the organization. In Ecuador, shareholders must submit to a conciliation process before the Board of Directors before a water dispute may be submitted to INERHI, Bo. (IR 39); Ch. (WC 110, 144, 168); Ec. (RA 39).

G. Assessments to Members

Assessments for the costs of carrying out user association functions in Bolivia and Chile are pro-rated among the members of the association according to the quantity of the water right, Bo. (IR 57); Ch. (WC 115). Assessments in Colombia are paid according to the land surface irrigated as compared with the total irrigated land surface in the area of the organization, Co. (IR 23).

In Chile and Ecuador, the user association may suspend the water supply to a member who is delinquent in the payment of his assessment, Ch. (WC 116, 155, 168); Ec. (RA 36).

H. Other Types of Organizations

The organizations previously referred to in this section are established exclusively for the administration of water. In all of these countries, the laws provide for general cooperative, corporate, association and indigenous communal organizations. Though the purpose of such organizations is not limited to water distribution, they are frequently established by water users as organizations for distributing water. This is recognized

to be the case in Ecuador and Colombia and to some degree in the other countries.

6-3-3 *Registries*

In all the countries, except Bolivia, any given water use concession must be registered or filed in more than one government office. In Chile, Colombia, Ecuador and Bolivia, the user or grants water use concessions is required to maintain a registry of all water concessions granted in the country, Bo. (IR 20); Ch. (WC 238); Co. (RA 23); Ec. (LA 98). Irrigation Districts in Peru and Colombia and water user organizations in Chile and Ecuador are also required by law to maintain a registry or poll of their users which includes a description of their rights to use water, Ch. (WC 105); Co. (DR 12); Ec. (RA 37); Pe. (WL 49).

There is no central government registry in Peru, but each Agrarian Zone [there are nine in the country] maintains a poll of water users, Pe. (RA 94).

In most countries, there are registries or recording offices which receive and file documents pertaining to real and personal property transfers. These recording offices have historically served, to one degree or another, as registries for water use rights.

6-4-0 OWNERSHIP AND CONTROL

As noted later, the terminology used to define the ownership and control of water is uniform, except in Bolivia. However, there are substantial variations in the classes of waters which expressly belong to the state.

6-4-1 *State Ownership*

A. *General Terminology*

In all the countries, except Bolivia, certain classes of waters are declared to be *property of the state for public use*, Ch. (WC 9); Co. (CC 677, RWC 1); Ec. (LA 2); Pe. (WL 1, 4, 52, 59). Though this phrase is not always defined in any detail in the laws or jurisprudence, the Colombian statutory definition would seem to have general application. This definition states that *property of the state for public use*, as it applies to water, does not vest the state with the incidents of absolute ownership, but only gives to the state the right to control the use and enjoyment of the water by those who obtain a use right or are granted a use right in accordance with the law, Co. (RWC 1).

Another common consequence of waters being property of the state for public use is that the water ownership cannot be acquired by prescription, Ch. (CC 585); Co. (CC 2519); Ec. (LA 2); Pe. (WL 1; CC 822).

A Bolivian constitutional provision declares that certain waters are *the original property of the state*, Bo. (Political Constitution, 1961, Article 136 and IR 1). There is no jurisprudential or statutory elaboration on the meaning of the provision, but the term does not seem to preclude the possibility that subsequent to the states *original ownership* of the waters, individuals might acquire ownership by transfer from the state or by prescription.

B. *Public Waters*

The most inclusive declaration of state water ownership for public use is found in the Peruvian and Ecuadorian laws which state that *all waters* are in this category. These laws specifically declare all surface, subsurface and atmospheric waters in all physical states to be public property, Ec. (LA 1, 2); Pe. (WL 1, 4, 52, 59).

The Chilean declaration is equally as broad as it relates surface and subsurface waters, but only approaches the subject of atmospheric waters by declaring that waters which proceed directly from the rains are public waters which apparently does not refer to atmospheric water. The Chilean provision does not contain that all encompassing phrase, *in all its natural states*, in its definition, Ch. (WC 1, 3, 4, 5, 9).

The Colombian law makes no reference to waters of the atmosphere being property of the state for public use. A land owner may use as he likes the rain water that flows in public streets and may divert the same. State ownership for public purposes of surface and subterranean waters is limited to: 1) waters that flow in natural streambeds; 2) waters of lakes and lagoons; 3) waters in artificial canals, originally diverted from sources which are national property for public use, Co. (CC 677, 896; WC 2; RWC 2; DR 1).

The general scope of the Bolivians' *original ownership* of waters by the state is similar to that of Colombia, that is, it includes natural bodies of water, both flowing and static and both surface and subsurface, Bo. (Const., 136). The Bolivian concept of *original ownership of the state*, which remains without statutory or jurisprudential definition, raises a serious

question about the permanence and extent of such state ownership, Bo. (Const., 136).

The hydraulic force generated with water power is also declared to be owned by the state for public purposes in Colombia and Bolivia, Bo. (Const., 136); Co. (FH 3).

C. *Ownership Vacuum*

The laws in some cases fail to define who owns some classes of water. Bolivia and Colombia have no express declaration as to who owns atmospheric waters or waters in the form of glaciers, ice or snow on the surface. Chile does not define ownership of atmospheric waters.

D. *Limitations on State Ownership*

Some declarations, as found in Ecuador and Peru, appear to be limitless in scope and seem to include all water in all forms and states, Ec. (LA 1, 2); Pe. (WL 1, 4, 52, 59). It must be recognized, however, that at some point in the physical water cycle many forms of water pass beyond the *ownership* or *control* of the state. Water consumed by animals and plants that are private property becomes the private property of the owner of the plant or animal as does water which is placed in bottles and sold, or absorbed or consumed in industrial processes. At some point, all of these waters effectively pass beyond the administrative control of the state and no longer are property of the state for public use regardless of all inclusive statutory definitions.

A statutory declaration of state ownership for public use of a given class of water would seem to be ineffective unless the state, by law or regulation, controls the manner in which the water of that class will be used by the public or individuals. Such declarations of state ownership standing alone are no more than an assertion of a future right of control. This would seem to be the case with atmospheric waters and those of the glaciers and snows in Peru and Ecuador, Ec. (LA 1); Pe. (WL 1, 4, 52, 59).

The state, in some cases, has effectively abdicated its right to control of public waters by expressly giving unlimited control and unrestricted use rights to individuals. This applies to some classes of riparian use rights in Bolivia and to a more limited extent in Colombia, Bo. (LA 18, 19, 222; IR 3, 4, 5); Co. (CC 892, WC 12, RWC 9).

6-4-2 *Private Ownership*

The concept of *private ownership* of waters must be viewed in terms of what private ownership signifies. In a general sense, no *private ownership* right to water is absolute. There are always restrictions and limitations as to the way in which an ownership right may be exercised. The number and nature of restrictions on the exercise of the rights are more decisive in determining the degree of control or ownership than the simple reference to *ownership*. The state may classify certain waters as *privately owned*, but if the state exercises substantial control over the use of the waters, then it would be more accurate to say that the user had only a *right to use the waters* as opposed to *ownership*. On the other hand, a *right of utilization* as designated by the law may constitute an *ownership* right if the degree of control exercised by the states is minimal. Thus, the difference between *ownership* of waters and a *right to use* them is a matter of the degree of state control rather than absolute principles.

In another sense, statutes do classify waters as *property of the state for public use* or *owned* by individuals and provide that those in the former class may only be owned by the state and that individuals may only obtain a *right to use* such waters. There are some useful comparisons within the Andean countries involving these use rights.

Those situations where statutes recognize *private ownership* of waters are rare. In Chile, Ecuador and Peru, there are clear and all encompassing statutory denials of any *private ownership* rights in waters. It is specifically provided in those countries that no such ownership rights may be acquired by any method, Ch. (WC 9); Ec. (LA 2, 3).

Colombia has two classes of water which are private property. Springs rising on private land are owned by the land owner, provided that the spring disappears below the surface on the same property. When the shoreline of a lake or lagoon is owned by one person, the waters are also his property provided that the water source feeding the lake or lagoon is within the same property boundaries and the water does not leave the property in a surface stream, Co. (CC 677; WC 2).

The status of *private ownership* of waters in Bolivia is in doubt because of a constitutional provision declaring certain waters to be *originally owned* by the state. This does not seem

to preclude the later transfer of this ownership to individuals acquired by transfer or prescription. Aside from this declaration, is it clear that rain water, which falls on land, is the private property of the owner of the land where it falls, **Bo. (Const., 136)**.

6-4-3 *Ownership and Control of Riverbeds, etc.*

A. *State Ownership*

In all of the countries, except Bolivia, the beds of all rivers, lakes and lagoons belong to the state for public purposes, **Ch. (WC 72, 73); Co. (CC 678); Ec. (LA 4); Pe. (CC 822, WL 5)**. In Bolivia the beds of only those rivers that are navigable, floatable, or which flow through public lands, belong to the state. Lake and lagoon beds in Bolivia belong to the state when the state has the express title to such lands, **Bo. (LA 50)**.

In Chile, a statutory definition provides that when a stream only flows as direct result of a rain, then the bed belongs to the riparian owner. If, however, an intermittent flow results from causes other than the direct rains, then the bed belongs to the state for public purposes. There is a lack of precise definition of what constitutes a *river* in all the other countries, **Ch. (WC 73)**.

The boundary which divides a riverbed from private riparian lands is uniformly defined as a line on the bank which is formed at the ordinary high water mark of a river or lake. Lands covered by water during flood conditions continue as the property of the private owner during and after such flood conditions, **Bo. (LA 54); Ch. (WC 77); Co. (CC 720); Ec. (CC 631-632)**.

B. *Private Ownership*

Only in Bolivia and Chile are there express declarations of private ownership of river or lake beds. Private riparian land owners in Bolivia own the following river beds: 1) gorge or ravine beds that are only covered with water during high rains; 2) river or stream beds which flow through private property and are not navigable or floatable; 3) lake and lagoon beds to which the state does not have specific express title, **Bo. (LA 43 to 50)**.

In Chile the beds of streams where water flows only as a direct result of rains are the property of the riparian land owner, **Ch. (WC 73)**.

C. *Effect of Changes in Location:*

1. *Flooding:* In all of the countries except Peru a specific law provides that when land is covered by flood conditions, the property so covered continues to belong to its former owner, Bo. (LA 57); Ch. (CC 63); Co. (CC 723; WC 72, 77); Ec. (CC 688).

However, in Chile the flood water must recede within five years or the property ownership will pass to the state, Ch. (CC 653). In Colombia the land must be reclaimed from the flood within ten years or the ownership passes to the state Co. (CC 723; WC 72, 77).

2. *Alluvion:* *Alluvion* is the gradual accumulation of soil deposits carried by water which adhere to the banks of rivers and lakes and, thus, increase the land area between the riparian lands and the new high water mark of a stream or lake. This land increase is the subject of special treatment under the laws of all these countries.

In Peru, all land increases resulting from alluvion belong to the state for public purposes, Pe. (WL 5; CC 822).

Alluvion accumulations of inhabited ports in Chile, Ecuador and Colombia are property of the state for public use. Outside of these port areas, *alluvion* accumulations belong to riparian land owners based on an extension of their boundaries to the high water mark of the river or lake. All *alluvion* increases in Bolivia belong to the riparian property owners, Bo. (CC 301; LA 62, 68); Ch. (CC 649, 650); Co. (CC 719, 720).

Chile, Colombia and Ecuador also treat the special problem of overlapping boundary lines that cross when they are extended from the former bank to the new high water mark forming a triangle. The triangle is divided equally between the two adjoining riparian owners, Ch. (CC 651); Co. (CC 721); Ec. (CC 686).

3. *Land Movement:* In all the countries except Peru a landowner has the right to reclaim land moved by the action of a river or stream and deposited at a lower point. If the land is not returned to the property of the former owner within one year from the separation, it becomes the property of the lower land owner where it was deposited, Bo. (CC 302; LA 63); Ch. (CC 652); Co. (CC 722); Ec. (CC 687).

4. *Change in Course:* Two land ownership problems resulting from the natural change of course that occur in rivers and

streams are treated by the laws. These problems concern the ownership of a new river bed and the ownership of the abandoned bed where the river formerly flowed.

The general rule is that the new bed occupied by the changed river course becomes the property of the state. However, this is subject to the former property owners right to regain his title by constructing works to return the flow to the old course with the permission of the state water control authority. In Peru, there is a variation of this rule which provides that the ownership of the new river bed remains with the property owner for one year after the change in course. The state thereafter becomes the owner unless works are approved and construction begun within a year to return the flow to the old course.

In Chile, Colombia and Ecuador the reclaimed bed is divided on an equal longitudinal division if the water is successfully returned to its old channel and there are riparian land owners on both sides of the bed, Bo. (LA 59, 61); Ch. (CC 654); Co. (CC 724); Ec. (LA 11); Pe. (WL 82).

The other problem related to a river changing its course deals with the ownership of the old river bed. In all of the countries except Peru, abandoned waterways become the property of the bordering riparian owners. If the bed is a dividing line between two properties, then the bed is divided between such property owners on the basis of an equal longitudinal division of the abandoned bed. Natural abandoned waterways in Peru are subject to disposition by the executive authority under the terms of the agrarian reform law, Bo. (LA 58); Ch. (CC 655); Co. (CC 725); Ec. (CC 690); Pe. (WL 82).

D. *Ownership of Islands*

The rules regarding ownership of islands formed in riverbeds is uniform in all the countries except Peru as follows: 1) islands formed by the dividing and rejoining of a river and all islands which formerly were part of bordering properties remain as property of the riparian owner; 2) islands which are covered with water at the average high water mark are part of the riverbed for ownership purposes; 3) islands which are not *newly formed* belong to the bordering property owners or riparians, and if there is a different riparian on each side, the island belongs to or is divided on the basis of its position with respect to the midline of the riverbed, Bo. (CC 303, 304;

LA 64, 65, 66, 67); Ch. (CC 597, 646); Co. (CC 726); Ec. (CC 632, 691).

In Peru, all islands formed within bodies of water are property of the state and may be sold by the state for housing purposes or for agrarian reform programs and the state may also grant use rights to such lands for other purposes, Pe. (WL 5, 6, 7).

E. *Cultivation and Use of Beds*

Though the state owns the river beds in Chile, the bordering riparian owners may cultivate those beds when they are not occupied with water. In Peru, the Water Authority may grant permits for the exploitation of minerals and other materials in stream beds, Ch. (WC 72); Pe. (WL 80, 81).

F. *Ownership of Materials Carried by Waters*

Bolivian law contains a unique provision which describes how a finder of property carried or deposited by water on banks of streams may notify the true owner and how such finder may acquire the ownership if the owner fails to claim the property within fixed periods, Bo. (LA 69-72).

6-4-4 *Control of Structures in Riverbeds, etc.*

A. *Previous Authorization Required for Construction*

In all the countries, an authorization must be obtained from a competent government authority before anyone may place or construct any kind of structure in a river or lake bed. A limited exception to this rule in Peru is that in case of sudden danger from floods, one may place emergency protective structures in water courses without government permission but must give notice within ten days after the construction of such works is commenced, Bo. (DH 6b; IR 46); Ch. (WC 74); Co. (CC 697); Ec. (LA 9, 35, 56, 71); Pe. (RA 30).

There is little detail provided for the procedures in obtaining such authorizations except where the request is coupled with a petition for the concession of a water use right as provided in 6-5-2.

B. *Control of Construction*

The Irrigation Division in Bolivia determines the specifications for works related to irrigation water use and the time for their construction and makes periodic inspections of the work to enforce compliance with its orders. Such works are to be placed at the most technically feasible location.

If the use is not related to irrigation, then a method is

provided where such works are constructed through a special commission aided by an engineer and under the direction of the Bureau of Water Works, Bo. (DH 6b; LA 79).

In Peru, certain emergency works may be constructed without previous government agency authority but after the emergency has passed the Water Bureau may order the removal or modification of these emergency works, Pe. (WL 95).

In Ecuador, "INERHI" establishes the technical specifications for all irrigation and drainage works, Ec. (IN 3c).

Though little detail is provided in other codes as to conditions related to the construction of such works, it is assumed that inherent in the power of a government agency to approve or deny authorization is also the implied power to prescribe conditions for such construction.

C. *Obligations of Riparians and Water Users*

There are many instances where riparians with land bordering streams and rivers and water users have affirmative obligations to construct or pay for the construction of various types of works in riverbeds and streams. Generally, water users are required by law to construct the diversion, measurement, control structures and canals that are necessary incidents to the water use, Bo. (IR 45); Pe. (WL 97). (See 6-5-5).

A riparian land owner in Bolivia who is not a water user may be involuntarily required to contribute to the cost of protective works in a river or stream if they protect his property, and if a majority of other affected riparians agree, Bo. (LA 77). The obligation to pay for protective works is apportioned between the beneficiaries of such works in proportion to the benefits that they individually receive, Bo. (LA 77; DH 6b).

D. *Prohibitions and Penalties*

In Colombia, the planting of trees or plants in the riverbeds or on the banks for a prescribed distance is prohibited, and in Ecuador, anyone violating the law restricting construction in riverbeds or destruction of the natural protection against the water may be required to replace the works, remove them and pay the damages according to the circumstances of the case, Co. (R 23h); Ec. (RA 23).

6-5-0 RIGHT TO USE WATER

For a discussion of some of the principles differentiating between a *right to use water* and the *ownership* of water, see

6-4-2. The subtitles and discussions are designed to explain in detail the nature of a right to use water and the surrounding limitations and restrictions.

Some of the more general statutory definitions include that of Peru which defines the right, as a limited one, which may only be granted when the use to which the water will be applied is in harmony with the social interests and development of the country. In Ecuador, a *right of utilization* is a non-transferable administrative authorization granted in accordance with the requirements of the law. A water use right in Colombia is subject to all of the conditions provided in the law and regulations, and in Chile it is a real administrative right subject to all of the conditions and limitations provided in the laws, Ch. (WC 11); Co. (CC 678); Ec. (LA 5); Pe. (WL 1, RA 1).

6-5-1 *Uses Without Formality*

A. *General*

This section describes those occasions when one may lawfully use public waters without making a formal application or petition to a government agency.

B. *Domestic, Culinary and Cattle Watering*

In every country, except Peru, the law permits the use of water by individuals for their domestic needs without specific administrative authorization. The nature and extent of this right varies from country to country.

In Bolivia, specified classes of waters may be used without formality for a wide range of domestic type uses. The classes include: 1) waters that surface on public lands; 2) waters in private stream beds with public access ways; 3) waters that flow in artificial canals and are diverted in pipes without detaining the water; 4) waters flowing through public stream beds. These waters may be used by anyone for drinking, washing clothes, removal in receptacles, personal bathing and bathing or watering of cattle, subject to local police regulations, Bo. (LA 4, 164, 165).

In Chile, the express statutory right to use water without formality for domestic purposes is limited to the use of subterranean water for culinary uses on the property, Ch. (WC 65).

The informal domestic use right in Colombia is limited to a riparian's right to remove and use water from a stream for his domestic needs and cattle watering, but there are many

areas of Colombia where even this riparian right does not exist, Co. (RWC 9; CC 892).

In Ecuador and Peru, anyone may use water without formality for individual domestic needs. In Ecuador, however, a concession must be obtained to divert water for the domestic needs of a number of people or a community. In Peru, such informal domestic use must be satisfied by removing the water directly from the water source in a receptacle, but the water may not be diverted from a water source without a concession, Ec. (LA 14); Pe. (WL 40; RA 13).

One restriction on these informal domestic uses is related to public access to streams and sources that are bordered by private property. This situation frequently poses a greater obstacle to the water use than the use right itself. This problem is treated in section 6-8-1 and 2 and 6-11-1.

C. *Mining Uses*

In Bolivia and Chile, the owners of mines may, without formality, use the water that they discover during their mining operations or explorations. In Bolivia and Colombia, miners may divert and use waters that flow through their properties for their mining operation without formal authorization, Bo. (CM 114, 118); Ch. (WC 67); Co. (WC 12).

For further discussion of other aspects of these uses, see 6-11-5.

D. *Motive Power and Electrical Generation*

One may establish a mill driven by water power without authorization in Chile and Colombia. In Chile this right applies only to owners of property bordering artificial water channels and in Colombia it applies to the owners of riparian properties on natural channels or those who have the consent of the riparians to use the lands. The right is limited in both countries to uses that do not injure or diminish other use rights, Ch. (WC 224, 229); Co. (CC 1001).

Water falls with an electrical generation capacity of less than 100 horsepower may be used by individuals for power generation in Colombia without authorization, Co. (FH 17).

E. *Riparian Rights*

In Bolivia, the owner of the entire shoreline of a lake or lagoon is entitled to the exclusive use of the waters from such lake to the extent of his needs for irrigation, domestic or industrial uses. The riparians on natural streams may also use

the water from the streams without concessions or authorizations, Bo. (IR 4, 5; LA 9; RA 153).

Bolivian property owners may also use springs that rise within his property, Bo. (IR 3; LA 5, 18).

Riparians on some streams and rivers may use the waters from these sources without formality for domestic needs, irrigation, powering his mills or machines and animal watering, but this informal use right does not apply on streams that are subjected to formal regulation or in streams above diversion points for Government Irrigation Districts, Co. (CC 892; WC 12; RWC 9; DR 4, 5).

F. Adverse Use, Appropriative Rights or Prescriptive Rights

In Bolivia, one may acquire a use right by appropriation and use of water for a period of five years. The appropriation may contain some elements of adverse or prescriptive use or if the water did not belong to another before the new use commenced, then it appears to be in the nature of an appropriative right, Bo. (RA 152; IR 21, 22).

Certain actual uses which are not permitted by law at a given time may be recognized and given legal status in the process of regulating streams and rivers in Colombia, Co. (WC 14; RWC 42).

G. Rain Water

There are express statutes allowing owners of property that border public streets to use the rain waters flowing in the streets in Bolivia, Chile and Colombia, Bo. (LA 222); Ch. (WC 16); Co. (CC 896).

Statutes in Chile and Ecuador give a landowner the right to use rain waters that fall on his land and store such waters provided that the storage does not prejudice third parties, Ch. (WC 15); Ec. (LA 99).

H. Vehicle Use

In Peru, anyone may make occasional use of water from any source for maintenance of motor vehicles provided that third parties are not injured, Pe. (RA 171).

6-5-2 *Procedure for Obtaining a Formal Use Right*

A. General

Uses in this section are formal in nature and are subject to the requirement of obtaining a formal grant.

Formal use rights are granted through administrative rather than judicial proceedings in all of the Andean countries,

Bo. (IR 9; DH 6; CM 121); **Ch.** (WC 37); **Co.** (IO 1-2, 2); **Ec.** (LA 14, 79, 83); **Pe.** (WL 133; PA 4; RE 9). The administrative grants are called by various names and frequently there is more than one class of grant in each country.

B. Classes of Grants

Both Bolivia and Chile have preliminary and final grants. In Bolivia, the first grant is called an *authorization* and must be followed, after compliance with certain requirements, by a *concession*, **Bo.**(IR 9, 13). In Chile, each grant goes through two stages in the process of becoming final. The first stage is called a *preliminary concession* and the last is a *final concession*, **Ch.** (WC 257, 266). In Peru, there are three different classes of administrative use grants which vary in permanency but do not consecutively follow each other as in the case of Bolivia and Chile. The Peruvian grants are designated as *permits*, *authorizations* and *licenses*, with the latter being the most permanent. A higher administrative level of government authority must ultimately approve these grants depending on their permanence, **Pe.** (WL 28, 29, 30, 31, 32). In Colombia and Ecuador there is one type of administrative use called a *concession* **Co.** (CC 683, 892; FH 8); **Ec.** (LA 79, 80, RA 17). A process of selective stream or river *regulation* in Colombia results in a formal regulatory document interrelating all rights within a given geographical area and may include new rights as well as previous informal rights and recognize previous illegal uses. This *regulation* has the effect of a *concession* as it describes individual water rights, **Co.** (WC 15; RWC 15, 42, 48; R 22, 23; DR 4). Stream *regulations* are also referred to in the Bolivian laws, but little detail is provided as to the procedure or contents, **Bo.** (IR 27).

In zones that are serviced by irrigation works constructed at state expense, the use rights are year to year obligatory water rental contracts on the part of the user as in Irrigation Districts of INCORA in Colombia, Irrigation Districts of INERHI in Ecuador, and the National Irrigation System in Cochabamba, Bolivia, **Bo.** (RC 19); **Co.** (IR 45; DR 10).

C. Conditions Precedent to Grants

Chile and Peru prescribe a series of conditions precedent to the granting of a use right or concession. Both countries require that the water applied for cannot be lawfully used by other persons, thus giving a form of preference to earlier uses.

It is also required that the water must not be reserved for other uses, Ch. (WC 45); Pe. (WL 32). In addition, the applicant in Chile must be a natural person or legal entity who is the registered owner of the property where the water will be used for irrigation and suitable security must be provided to guarantee effective use of the right, Ch. (WC 45).

In Peru, the following conditions apply: 1) The use must not result in contamination or loss of the water; 2) The water must be appropriate and available for use; 3) The water use cannot adversely affect public uses; 4) Previous approval of the works must be obtained; 5) The use must be in harmony with social interests and development of the country. If the water is for irrigation then the user must also be registered in the Irrigation District's user poll, his property must be in good condition for irrigation and he must guarantee payment of the water tariff and assessments, Pe. (WL 32; RA 90).

D. *Contents of Petition*

Elements that must be included in a petition for a water use grant in these countries are as follows: 1) the name and signature of the petitioner in all countries; 2) the name of the water source in all countries; 3) the exact location of the proposed point of diversion in Bolivia, Chile, Ecuador and Peru; 4) the area to be irrigated in Bolivia; 5) the use to which the water will be applied in Chile, Colombia and Ecuador; 6) the plans for the works to be constructed in Bolivia, Chile and Ecuador; 7) the amount of time required for construction of the works in Colombia and Ecuador; 8) the quantity of water needed in all countries; 9) the location of the water use in Chile and Colombia; 10) a list of other users from the same water source in Chile and Ecuador; 11) the crops that will be irrigated in Bolivia; 12) the rights-of-way that must be imposed in Chile, Colombia, Ecuador and Peru [see also right-of-way section 6-8-2]; 13) if there are various classes of grant then the class requested in Chile, Bo. (IR 13); Ch. (WC 250 Co. (RWC 21; RFH 1); Ec. (LA 84); Pe. (PA 64, PATA 1, 2

Though these are the detailed requirements specified in the laws of the various countries, most statutes are broad enough to allow the administrative agency to require other pertinent information. The following general requirements are included: 1) In Bolivia, a general description of what is requested; 2) In Peru, a concise statement of the fundament

facts and rights that support the petition; 3) In Colombia, such other information as the petitioner chooses to provide; 4) In Chile, other data as required by the nature of the proposed grant, Bo. (IR 13); Ch. (WC 250); Co. (RWC 21; RFH 1); Ec. (LA 84).

In Bolivia, where there are two stages to every grant, the second rather than the first stage of the petition requires more detail, Bo. (IR 8, 13). On the other hand, in Chile the detail is required in the petition for the first or provisional concession and no petition is required for the final concession, Ch. (WC 250, 265).

In Ecuador, the requirements for detail in the petition increases as the area to be irrigated by the petitioner increases, Ec. (RA 111, 112).

E. *Filing of Petitions*

Petitions are filed in the local or regional office of the administrative authority authorized to grant the petition in Colombia, Ecuador and Peru. The regional agencies of INERHI in Ecuador, INDERENA in Colombia and Irrigation Districts in Peru are the local agencies who receive, initially process, and act on petitions for water use. In Bolivia, it is the central government agencies who are vested with this power, but this function could be carried out through regional agencies of the Ministries, Bo. (DH 6; CM 121; IR 7); Ch. (WC 248, 249); Co. (IO 1-2, 2); Ec. (LA 79, 80; RA 13, 16); Pe. (WL 133; PA 4).

F. *Review of Petition*

After filing the petition, it is reviewed by an authority to determine whether or not it complies with the law prior to the giving of notice or other proceedings in Chile, Colombia and Ecuador, Ch. (WC 256); Co. (RWC 22); Ec. (LA 85; RA 13, 17e).

G. *Notices*

In Bolivia and Peru, the administrative proceedings and initial hearing are conducted without general notice being given. In these countries the right to oppose the grant comes after it has been approved. The granting resolution is published in a newspaper. In Chile, Colombia and Ecuador, the general notice to interested parties and the right to oppose the petition comes before and during the consideration of the petition by the administrative agency, Bo. (IR 10, 11); Ch.

(WC 252); Co. (RWC 23); Ec. (LA 85; RA 13, 17e); Pe. (RE 11, 12, 13).

The manner of giving notice varies between countries as follows: 1) *authorizations* in Bolivia must be published in the *publication medium* available in the place of the water use, Bo. (IR 9); 2) *authorizations* in Chile must be published in three newspapers, one in the *Department*, one in the *Province*, and one in the *Capital City of the Country*, Ch. (WC 252); 3) *authorizations* in Colombia must be posted in a *public place*, Co. (RWC 23); 4) in Ecuador all known users from the source must be personally served with a citation and the petition must also be published in a newspaper, Ec. (LA 85; RA 13, 17e); 5) in Peru *authorizations* or the initial resolution must be published in the official diary, Pe. (PA 4, 64).

H. *Opposition*

The right of interested third parties to oppose a new water use grant is universally recognized. The proceedings in which the opposition may be presented varies between countries.

In Bolivia, opposition may be presented within one year after the preliminary *authorization* is granted. The opposition is thus resolved before the granting of a *concession*, Bo. (IR 10). In Peru, on the other hand, the opposition must be presented as a request for reconsideration of the resolution granting a use right, Pe. (RE 11).

In Chile and Ecuador, the opposition must be presented before and resolved in the hearing on the petition for water use. The opposition must be presented within 30 days after the last publication of the notice of the petition in Chile and within 20 days in Ecuador, Ch. (WC 253); Ec. (LA 86).

In Colombia, opposition may be presented pursuant to public notice posted at the site of the inspection. The inspection is carried out by a panel of experts at the location of the proposed use, Co. (RWC 23, 25).

I. *Inspection of the Site*

In Bolivia, Chile and Colombia, part of the evidence which forms the basis for resolving the petition and opposition includes observations made at on-site inspections of the place of use and the water source. This inspection is mandatory in Bolivia and optional in Chile and Colombia, Bo. (IR 12); Ch. (WC 256); Co. (RWC 23; RFH 5), and may also be included as

part of the proof in Ecuador and Peru under the general wording of their statutes.

The inspection in Bolivia is performed by a *commissioner* designated by the Irrigation Division who reports to the division. A *panel of experts* makes the on-site inspection in Colombia and reports its findings to the Water Control Authority. In Chile, Ecuador and Peru, the inspection is made by the administrative authority who has the power to grant the petition, Bo. (IR 24); Co. (RWC 23; RFH 5).

J. Characteristics of Grants

Frequently a class of grant or type of concession may give a preferred right to a dependable minimum quantity of water in a water source. Other types or classes are subordinate to this minimum dependable quantity in a water source. Thus, in Bolivia and Chile there are *permanent concessions* given to this dependable minimum supply. *Licenses* in Peru are basically similar in the nature of their priority, Bo. (IR 6, 15); Ch. (WC 17, 18, 19); Pe. (WL 28, 29, 30, 31; RA 88, 112).

The grants or concessions for excesses in the source above this minimum dependable quantity are expressed in different terms. In Bolivia, they are called *conditional or uncertain concessions*; in Chile, they may take the form of *concession of eventual exercise*. In Peru, they are called *permits*, Bo. (IR 6, 16); Ch. (WC 17, 18, 20); Pe. (WL 29; RA 86, 112).

The granting authority probably has inherent power within reasonable limits to specify the quantity, division or time intervals and seasons in which the right may be exercised. This limiting and controlling power is expressed in Peru and Colombia, Co. (RWC 36, 37); Pe. (WL 48). In some cases, the manner of this division is expressed in the law or regulations in detail. In Chile, a right can be *continuous, discontinuous* or *alternating with other rights*, Ch. (WC 38, 43).

K. General Content of Grant Documents

Since a concession or grant is the culmination of proceedings involving proof or evidence submitted pursuant to a petition, the grant document will usually contain a determination by the court of all issues raised by the claims in the petition. Sometimes the requirement for this detail is implied and sometimes it is specified in the laws, however, general reference is made to the previous paragraph D related to contents of the petition.

L. *Special Proceedings*

In Peru, there is a special and detailed procedure for obtaining a right to irrigate crops with untreated sewage water and with partially treated sewage water. The types of crops and water application practices are controlled to avoid harmful results, **Pe. (RA 192-200)**.

INCORA Irrigation Districts in Colombia and areas of the National Irrigation System in Bolivia grant the right to use water through an annual contract between the systems and the users based on the availability of water, the condition of the property to beneficially use water, conformity with cultivation plans, and the nondelinquency of the user in the payment of his assessment to the district organization, **Bo. (RC 19); Co. (IR 37-40; DR 10-13)**.

In Colombia, there is a special process for establishing river basin regulations. Through this process all rights within the area are established or redefined in one document which has the same effect as multiple concessions. The process involves a technical study of all water uses by the water control authority, public notice and opportunity for hearing, **Co. (WC 15; RWC 15, 42-48; DR 2)**. River regulations are also authorized in Bolivia, but there is little detail provided as to the procedure, **Bo. (IR 27)**.

In Bolivia, there is also a proceeding through which previous informal rights and appropriative uses may be formalized. This process is called a *confirmation*, **Bo. (IR 23-26)**.

6-5-3 *Procedural Protection of Rights*

A. *Original Jurisdiction over Water Disputes*

1. *Boards of Directors of Water User Associations:* Varying degrees of jurisdiction over the determination of water use disputes is vested in boards of directors of the water users associations of Chile, Bolivia and Ecuador.

In Chile, this user board jurisdiction is exclusive and extends to the following: a) all water use disputes between shareholders within the user organization; b) all matters related to the exercise of a shareholder's rights in the organization; c) all disputes between shareholders and the water user organization related to the exercise of their rights, **Ch. (WC 110, 144, 168)**. In Bolivia, the jurisdiction of the Association's board of directors is limited to deciding questions of *fact* in

disputes between shareholders of the same association, **Bo. (IR 39, 85)**.

In Ecuador, the board serves as a mandatory conciliation board in disputes between shareholders; that is, they must attempt to bring the parties to an agreement before administrative action can be commenced to formally resolve the dispute, **Ec. (RA 39)**.

2. *Administrative Agency Original Jurisdiction:* In Bolivia, the Irrigation Division of the Ministry of Agriculture has original jurisdiction over questions of *law* arising between irrigation users and also serves as an appellate court on questions of *fact* decided in the first instance by Water User Boards, **Bo. (IR 85)**.

In Colombia, regional officials of INDERENA, called *Natural Resource Inspectors*, have limited jurisdiction over water use disputes on *unregulated streams*. This limited jurisdiction extends to disputes between water users which do not involve crimes and expressly includes violations of conditions imposed in water use concessions. Administrators of INCORA Irrigation Districts decide all questions of *fact* arising between water users within the district, **Co. (IO 3-1; IR 3, 8)**.

In Ecuador, jurisdiction in the first instance to decide water use disputes is vested in the chiefs of the regional agencies of INERHI, **Ec. (LA 79, 80; RA 13)**.

Peru also vests in the Administrator of each Irrigation District the original jurisdiction over all water disputes within the district, **Pe. (WL 133; RE 5, 7)**.

3. *Ordinary Court Original Jurisdiction:* The ordinary courts have no original jurisdiction over water disputes in Ecuador or Peru.

In Bolivia, the ordinary courts have original jurisdiction over water use disputes where one or more of the disputed uses is not an irrigation use and also over irrigation use disputes between users of different user organizations, **Bo. (IR 85; LA 290, 291)**.

The ordinary courts in Chile establish basic rights as between users of the same users organization. In this process, courts resolve conflicting claims and have original jurisdiction in all water disputes except those between users in the same user organization, **Ch. (WC 91, 147, 157, 158, 172)**.

B. Appellate Jurisdiction over Water Disputes

In Bolivia, the Irrigation Division has jurisdiction to hear appeals on questions of fact raised in proceedings before the Boards of Directors of the Users Associations. However, appellate jurisdiction over all administrative resolutions relating to water disputes is vested in the ordinary courts, Bo. (IR 85; LA 289, 290, 291).

In Chile, appeals from decisions of the boards of directors of the users associations are made to the ordinary courts. The appeal proceeds with a hearing of the interested parties and such documentary proof as the court may determine is necessary, Ch. (WC 160, 162).

In Colombia, appeals from the decisions of the Natural Resources inspectors follow the administrative appeal line, that is, through the regional offices of INDERENA to the central administration of INDERENA, the Ministry of Agriculture and finally to the Administrative Court.

Appeals in matters within the original jurisdiction of ordinary courts in Colombia go through the regular judicial appeal procedure provided for in the code of civil procedure, Co. (CPC 12).

In Ecuador and Peru, where all the original jurisdiction is administrative in nature, the appeal route within the administrative hierarchy must be exhausted before a final appeal can be made to the Agrarian Court in Peru and the Adverse Administrative Court in Ecuador. The administrative appeal route is exhausted by a hearing before the Ministry of Agriculture in Peru and before the Consultive Water Council in Ecuador, Ec. (LA 82, 90, 96; RA 1, 2, 3, 6); Pe. (WL 132; RE 11, 12, 13).

C. Procedure

A summary or verbal type hearing is specified by law in Bolivia for water dispute hearings. In Ecuador and Peru, the proceedings are conducted in accordance with general administrative and judicial norms. In Colombia and Chile, the judicial procedure in resolving claims is the same as provided for in the Code of Civil Procedure, Bo. (IR 41); Ch. (WC 157, 90); Co. (CPC 12); Ec. (LA 96); Pe. (WL 129; RE 9, 10, 11; PA 5).

D. Forms of Action

In Colombia and Ecuador, the Civil Codes provide for specific forms of possessory actions which can be used to

protect interests in water and related right-of-ways, Co. (CC 976-978, 987, 993, 996, 997); Ec. (CC 752, 753, 843, 889, 890, 1000, 1002, 1004).

E. Time Intervals for Protecting Rights

The time limitations within which one must take affirmative action to protect his rights against claims or the time within which appeals must be made are not always provided for in water related laws or statutes but follow the general rules applied to all administrative or judicial proceedings as the case may be.

In Chile, however, the board of directors of a users association must complete the proceedings and render a judgment within 30 days from the date the complaint is filed and if they fail to do so, the members of the board are subject to a fine and lose jurisdiction over the proceedings. Appeals from resolutions of the board may be made at any time within six months from the day they are entered and preference is granted to water controversies on the court calendar. If a third party is prejudiced by an administrative resolution, he has five years within which to appeal the resolution, Ch. (WC 145, 147, 174).

In Ecuador, the initial hearing before a regional chief is open to the receipt of evidence for ten days, and a decision must be rendered within 30 days thereafter. Appeals must be filed within ten days after the parties have been notified of the decision. The appeal is to the Consultive Water Council which must render a decision within 30 days from the date the appeal is filed with it. There is a further appeal to the Adverse Administrative Tribunal, Ec. (LA 86, 90; RA 6).

In Peru, the interested parties are given 15 days from the time that the Administrator of the Irrigation District enters a resolution within which to request a re-hearing or appeal the controversy. The appeal must pass through administrative channels to the Ministry of Agriculture. This exhausts all the administrative remedies and the only recourse beyond this is to appeal to the Agrarian Tribunal in the form of an Action for Nullity or Contradiction of an Administrative resolution, Pe. (WL 132; RE 11, 12, 13).

6-5-4 *Rights Under Prior Laws*

A significant aspect of water rights is the effect that new laws have on ownership or water use rights acquired under older laws. Old rights may be fully protected or adversely

affected as to quantity, quality and manner of exercise and may be effectively nullified with or without compensation.

Bolivian law basically preserves rights which were acquired prior to the adoption of a new law unless the right conflicts with a customary practice of water turns which was given priority over all other legal water use claims by the Agrarian Reform Law of 1953, Bo. (LA 293; RA 151, 152).

In Colombia, prior rights are recognized but may be expropriated with compensation when a new law so specifies, for purposes of public utility or protecting social interests, Co. (CC 918; C 30).

In Chile, all rights under laws which predated the Water Code of 1968 were allowed to continue, but with substantial restrictions and modifications. When the new restrictions and modifications resulted in a reduced quantity of water to a point below a standard called a *rate of rational and beneficial use*, then the former owner or user is entitled to compensation. If, however, the reduction does not fall below that point, he is not entitled to compensation for his lost right, Ch. (WC 10, 32).

In Ecuador and Peru, pre-existing rights were required to be converted into *use rights* under the new water codes and no compensation was payable for any reduction in the quantity, quality, or manner of exercise of the right, Ec. (LA 3); Pe. (WL 144; RA 93, RE 16).

6-5-5 *Limitations and Obligations of Users*

A. *Beneficial Use Limitation*

In all of the countries a user may only obtain a use right for an amount of water not exceeding that which can be *beneficially used*. This basic common concept is expressed in different terms and various methods are employed by the laws to determine how to fix and apply this limitation. In Bolivia, it is expressed for riparian users in terms of *the amount of water necessary for the irrigation of riparian crops* and for uses covered by grants to *the amount of water necessary for the normal development of crops*, Bo. (IR 4, 5. 14; RC 23). In Chile, it is called the *rate of rational and beneficial use for irrigation*, and great detail is provided as to how the rate is established, Ch. (WC 26, 27). In Ecuador it is *the amount of water that can be beneficially used* and in Peru, *the amount*

of water necessary to meet crop requirements, Ec. (LA 7, 12; IN 3i); Pe. (LA 9, 43; RA; RA 99, 1i3).

No detail is provided as to how the beneficial use limitation is to be determined in Bolivia, Colombia or Ecuador. In these countries, the best available technical information regarding crop requirements and conveyance losses constitutes the basis for establishing limitations imposed in the process of granting water use rights. Thus, a technical study of soil, crops, climatological factors and conveyance losses as they bear on crop requirements, could form the basis for such decisions in the process of making individual water use grants.

Chile has a unique system for fixing maximum water quantity use rate per hectare. The rate applies to all irrigation uses within a given geographical zone. The Director of Waters determines the extent of the zone, conducts the technical studies of *average* factors affecting irrigation requirements within the zone, such as soils, crops, climatological factors and other pertinent information. When the study is complete, general notice is given within the area and interested parties are given an opportunity to be heard concerning fixing of the rate. The rate must ultimately be approved by the President. Once the rate is fixed, it applies to all farms within the area and is reduced to an allotment of water equal to the hectare *rate of rational and beneficial use*, multiplied by the number of hectares in the farm on an annual basis and then divided into monthly allotments based on the crop cycle, Ch. (WC 26-32).

In Colombia, a detailed technical study of irrigation requirements in an area that is covered by a stream regulation, results in fixing beneficial use limitations. This differs from the Chilean system in that each user might receive a different per hectare rate determined by individual differences in crops, soils or climatological conditions, Co. (WC 15; RWC 15, 42; R 22, 23).

In the National Irrigation System of Bolivia, the rate of use is determined by *irrigation coefficients observed in practice and experimental studies*, Bo. (RC 23).

Government imposed crop plans and irrigation plans influence the determination of beneficial use rates of INCORA Irrigation Districts in Colombia and in Peru. These plans for various districts are designed to establish cropping patterns in accordance with central and regional planning. This pro-

gram is imposed on water users and applies use coefficients related to specific crops. However, in Peru when there is insufficient information for the Irrigation District Administrator to establish Cultivation Plans, he may fix the rate of beneficial use based solely on a visual inspection of the land involved, Co. (IR 36-39); Pe. (WL 44, 45; RA 113).

B. Limitations on Sale, Rent or Transfer of Rights

One common attribute of a water use right in all countries is that the right is specifically attached to the land where it is to be used and cannot be severed from the land and sold, bartered or rented for use on other land.

The only type of transfer allowed is from a seller to a purchaser of the land to which the water use right is attached. In Chile, Colombia and Peru the water authority must approve transfers of the water right to the new purchaser of the land. In Ecuador, the new purchaser must apply for a new water use concession and the seller's old right is terminated, Bo. (RA 154; IR 19); Ch (WC 12); Co. (RWC 4, 33); Ec. (LA 2, 102); Pe. (WL 36, 117).

C. Obligation to Construct Irrigation Works

Users are implicitly or expressly obligated to pay for all of the works and construction necessary to effectively exercise their use rights. This obligation is expressed in the laws of Chile, Colombia, Ecuador and Peru. Users also have a universal obligation to install measuring devices to insure that they divert only their rightful quantity of water, Ch. (WC 14, 46); Co. (DR 13, 21, WC 9; RWC 30); Ec. (RA 38; LA 6, 15); Pe. (WL 11, 20; RA 19).

D. Change of Water Source

By express statute in Chile and Peru, the water authority is given the power to change the water source from which a user diverts his water, provided that the quantity and quality in the substituted source is sufficient for the user's needs, Ch. (WC 24); Pe. (RA 11).

E. Assessments and Taxes

A user is obligated to pay certain taxes and assessments related to his water use in all countries. This obligation applies to the user's proportionate share of maintenance and operation costs for the canals that he uses. These maintenance and operation services are performed through a local users organization or are shared in common by users of the system. In

Ecuador, a tariff is charged against all users for their use of water as a publicly owned commodity, Bo. (IR 42); Co. (DR 21); Ec. (LA 12, 21); Pe. (WL 12, 20).

F. *Riparian Rights Limitations*

In Colombia, riparian use rights, which are still recognized in some areas, are subject to the following limitations: 1) they cannot divert water that lower users have acquired prior rights to; 2) they cannot interfere with navigation, flotation or the mutual rights of other riparians; 3) they are subject to expropriation for domestic needs of a community on payment of compensation; 4) they must divert water from and return it to the stream within the riparian property; 5) they cannot adversely affect quality of the water; 6) they are limited in place of use to riparian's property and in quantity to his needs; 7) if the stream flows between two riparians, one cannot remove more than half of the stream, Co. (CC 893; RWC 9).

G. *Others in General*

Some other noteworthy limitations and obligations are imposed on users in some of the countries. In Bolivia, users must install and maintain hydrometric stations as required by the Irrigation Division, Bo. (IR 32). In Chile, users in some areas must furnish water for all public services including railroad needs, Ch. (WC 69, 70, 71). There is a series of conditions precedent to the granting of use rights discussed in 6-5-2 which could be construed as limitations or restrictions on water use rights.

6-5-6 *Loss of Rights*

For a variety of reasons, use rights may be lost through suspension, lapse, termination, revocation, forfeiture or cancellation. Losses will be treated under basic headings related to their causes with the question of the legal effect for that cause treated comparatively for each country. A temporary loss will be called a *suspension* and permanent losses will be divided into those that occur by the passage of time under given conditions and those that must result from affirmative administrative action of some government agency.

A. *Broad Grounds for Loss*

Some of the countries provide broad and sweeping grounds for suspension, lapse or revocation of rights which include a great number of specific grounds. Thus, in Peru a use right may be terminated when the user fails to *comply with obliga-*

tions imposed under the law, and in Ecuador for failure of a concessioner to use the water in an efficient manner, Pe. (WL 116); Ec. (LA 31).

B. *Non-use*

Failure to use the water for various time periods is an express condition that may result in the termination or suspension of a water use right in Bolivia, Chile and Colombia. The time periods vary as does the legal effect.

In Chile, the lapse or loss is partial or complete when the water is not used for a period of two years or if the right is renounced or disclaimed.

In Colombia the user is given an opportunity to avoid the revocation by re-establishing the use after notification. The period that may justify such action in Bolivia is non-use for three consecutive years or for three out of five years; in Chile, non-use for two consecutive years; and in Colombia, non-use for five years, Bo. (IR 18); Ch. (WC 12, 30, 39); Co. (RWC 38f).

C. *Unauthorized Uses*

In Bolivia and Peru, a concession *may be* revoked if the water is used for some purpose other than authorized. In Chile, revocation is discretionary if the unauthorized use is for less than two years and mandatory if for more than two years. An Ecuadorian concession can either be suspended, revoked or modified if the water is used for a purpose other than that for which it was granted, Bo. (IR 18); Ch. (WC 12, 30, 39); Ec. (LA 31); Pe. (WL 117).

D. *Unauthorized Sale*

As noted in 6-5-5-B the water right is attached to the land and cannot be transferred or sold for use on other property in any of the countries. Attempted illegal or unauthorized sale or transfer of a right is grounds for revocation of the use right in Bolivia, Colombia, Ecuador and Peru and for mandatory total or partial revocation in Chile, Bo. (IR 18); Ch. (WC 12, 30, 39); Ec (LA 31); Pe. (WL 117).

E. *Breach of Grant Conditions*

Conditions may be imposed in water concessions or grants and a breach of any of these conditions is grounds for revocation of the use right in Chile and Colombia, Ch. (WC 30); Co. (RWC 34, 37, 38c).

F. *Excessive Use*

In Bolivia, a right may be revoked if the user is convicted on two occasions of taking more water than he is entitled to and third parties are prejudiced. Diversion of more water than was granted for irrigation is grounds for termination of the right in Chile, Bo. (IR 18); Ch. (WC 30).

G. *Violation of Laws or Regulations*

Except in Chile, violation of a water law or regulations may result in a suspension or revocation of a water right depending on a number of variable factors. Any infraction of the water use regulations in Bolivia may result in suspension or revocation of the right. In Colombia, delinquency in paying fines imposed for failure to observe conditions specified in the concession may result in revocation of the use right. Two or more violations of any one provision of the Water Law in Ecuador may result in temporary suspension of the right. In Peru, revocation may result if the user has been fined twice within a two year period for the violation of the same water law or regulation, Bo. (IR 42, 43, 82); Co. (RWC 37, 388); Ec. (LA 77; RA 22, 24); Pe. (WL 116).

H. *Failure to Pay Assessments or Tariffs*

Failure of a user to pay assessments levied for his share of maintenance and operation costs related to his water supply are frequently specified as grounds for suspension of a water right. In Bolivia, the right may be permanently or temporarily revoked for failure to pay assessments. In Ecuador, such failure results in suspension, and in Peru, the right may be terminated if the assessments remain delinquent for two years or more. In Ecuador, failure to pay annual water tariffs for a water use right levied by and payable to the central government water control institute may also result in revocation of the water right, Bo. (IR 42, 43, 82); Ec. (RA 43c); Pe. (WL 116).

I. *Failure to Construct Works*

New water use grants in Chile, Colombia and Peru frequently have a fixed time period within which the irrigation works must be constructed, and provisions are made for revocation of the right if this requirement is not met.

Failure of the user to install the required water measurement and diversion control works is specified as grounds for revocation of the water right in Colombia, Ch. (WC 30); Co. (RWC 30, 38a, d); Pe. (WL 93).

J. Automatic Lapse

The laws in Bolivia, Ecuador and Peru expressly declare that use rights lapse when the period for which a grant was made expires and the object to which the water was applied ceases, Bo. (IR 17); Ec. (LA 32); Pe. (WL 115).

K. Other Causes

In Chile, rights which exceed the rational and beneficial use rate fixed by the President terminate when the rate is so fixed. Rights in Peru may be temporarily suspended if they violate contamination or sanitation control regulations and lapse or terminate when the user fails to comply with Cultivation and Irrigation Plans. In Bolivia, they may be lost to another who prescribes or adversely uses them (see also 6-7-2 for subject related to priorities and expropriation), Ch. (WC 29); Bo. (RA 152); Pe. (WL 116; RA 130, 131).

L. Temporary Suspension to Aid in Construction

In Ecuador and Peru, a right may be temporarily suspended so that the water may be used for construction of works or may be removed from streams so that the works can be constructed, Ec. (LA 29; RA 105); Pe. (WL 38; RA 96, 97).

M. Procedure

In Peru, all terminations, lapses, revocations or suspensions of water rights must be administratively declared after a hearing, and interested parties have a right to appeal. In Colombia, forfeitures may only be declared after the interested party has been given notice of the reason and 15 days within which to rectify the condition or formulate his defense, Co. (WC 10; RWC 39); Pe. (WL 143).

6-6-0 OBLIGATORY WATER USE

In all the countries, landowners with lands under the influence of irrigation works constructed with state funds must pay their proportionate share of the construction costs of the projects. Differing terminology is used to accomplish this goal. In Chile and Ecuador, the areas benefited are referred to as areas of obligatory irrigation. In Bolivia, Colombia and Peru, the obligation is directly referred to as an obligation to contribute proportionately to the cost of the state financed irrigation works.

In Ecuador, there are a number of landowners within the area covered by such a project who are exempt from the obligation to irrigate, based on unsuitability of lands for irrigation

or the availability of other water. The varying formulas for the compulsory contributions to the cost of the works by the landowners are covered in 6-10-0, Bo. (IR 79; LC 5; RC 31, 32); Ch. (WC 316, 317); Co. (DR 15 ,17); Ec. (LA 51, 52, 53; RA 62, 63); Pe. (WL 43, 44, 45, 116, 118).

6-7-0 PRIORITIES BETWEEN USE RIGHTS

6-7-1 *Order of Priorities*

A. *Primary Preferences*

Though the effect of a numerical listing of use priorities may vary from country to country, there is in each country a numbered order of preferences for water uses as follows:

1. *First preference:* a) Bolivia -- community and domestic supply; b) Chile — drinking, community and industrial supplies; c) Colombia — domestic needs; d) Ecuador — community supply, domestic needs and cattle watering; e) Peru — primary necessities, supply and sanitary needs of communities.

2. *Second preference:* a) Bolivia — railroad supply; b) Chile — domestic uses, community sewage disposal, health protection and disease prevention; c) Colombia — cattle watering; d) Ecuador — agriculture and livestock raising; e) Peru — cattle development and watering.

3. *Third preference:* a) Bolivia -- irrigation; b) Colombia — irrigating established crops and plantings; c) Ecuador — energy generation; mining and industrial uses; d) Peru — agriculture.

4) *Fourth preference:* a) Bolivia — navigation canals; b) Colombia — machine power or industrial use; c) Peru -- energy generation.

5. *Fifth preference:* a) Bolivia — industrial use, ferry boats and floating bridges; b) Colombia — irrigation of new plantings; c) Peru — industrial and mining use.

6. *Sixth preference:* in Bolivia only — fish culture, Bo. (LA 294); Ch. (WC 42); Co. (CM 176, 208); Ec. (LA 34); Pe. (WL 27).

In Bolivia and Colombia, there is a special order of priorities that applies to water use under the influence of irrigation works constructed with state funds, Bo. (RC 27, 28); Co. (DR 14; IR 28).

B. *Sub-Preferences Within a Category*

In Bolivia and Chile, if there is more than one petition pending for water use within the same category, then preference

must be given to that use declared to be of *greatest importance*. If the uses are of equal importance, the priority is given to the petition that was filed first.

In Ecuador, preference is given to the use that serves the best economic and social interest of the country and in Peru there are specific and detailed sub-preferences listed which rank various agricultural, energy generation, industrial and mining uses, Bo. (LA 204); Ch. (WC 42); Ec. (LA 25); Pe. (WL 42; RA 84, 134, 144).

C. *Priorities in Periods of Scarcity*

All of the countries, except Colombia, have special provisions for priorities and water distribution schemes during periods of drought or scarcity. In Bolivia, during such periods, priorities for all uses are based on a chronological scale according to the date of the grant. However, irrigation rights more than five years old share an equal percentage reduction in their water right. In Chile, the President declares zones of scarcity which gives the Water Bureau the power to redistribute the water *to minimize the damages resulting from the drought*. In Ecuador, INERHI may vary the legal preference order for water use, but it may not change the first priority of domestic uses.

The Ministry of Agriculture in Peru fixes a water level in each river basin below which a *scarcity* is deemed to exist. Should the water supply reach the scarcity level, a new system of priorities applies, giving first preference to domestic uses, second to irrigation of permanent crops and third to other priorities as determined by the Ministry of Agriculture, Bo. (IR 31; LA 238); Ch. (WC 332); Ec. (LA 34; RA 85); Pe. (WL 7c, 117; RA 10, 33-38).

D. *Change in Priorities*

In Peru, the President is vested with power to change the order of priorities in water use based on such factors as the characteristics of the distribution system, availability of water, water policy, agrarian reform plans and uses of greatest public, social and economic interest. In Chile, the President may extinguish one use right in order to apply the water to another use should he determine that it is needed for culinary use or the economic development of the zone, Ch. (WC 28); Pe. (WL 27; RA 84, 85).

6-7-2 *How Priorities Operate*

The basic priorities established by law have universal application to the process in which water use rights are granted. When more than one water use petition for the same water is pending and there is not enough water to satisfy all the petitioners, then those priorities apply. However, in Colombia, the law only purports to establish uses that have priority over mining uses.

In Bolivia, Peru and Chile, the preferences also apply to changing uses through expropriation. This means that if a water source is insufficient to satisfy a new use and that use is superior in priority rank to existing uses, the old use may be expropriated on payment of compensation to serve the new use, Bo. (LA 18, 41, 205; CM 115); Ch. (WC 28, 42, 332); Co. (CC 918); Ec. (CC 891); Pe. (WL 33, 35, 46; RA 84, 91, 104, 105, 126).

6-8-0 RIGHTS-OF-WAY RELATED TO WATER USE

6-8-1 *Natural and Voluntary Rights-of-Way*

A. *Natural Drainage Right-of-Way*: It is universally recognized that lower lands are subject to a right-of-way to receive the waters that descend naturally from higher land, provided that the direction of the flow is not altered by the hand of man. In Bolivia, Chile and Peru, both lower and upper owners may construct walls and dykes to control the water flow provided that it does not injure the other party. In Bolivia and Peru, provision is made to allow the lower owner to enter the upper property to remove flow obstructions or he may require the upper land owner to do so, Bo. (LA 93-100; CC 379); Ch. (CC 883; WC 189, 190, 191); Co. (CC 891); Ec. CCC 889; LA 61); Pe. (WL 103; RD 4, 5, 9).

B. *Rights-of-Way over Riparian Property*: In all of the countries, a class of right-of-way exists over lands which border on natural water courses. These rights-of-way vary in purpose and scope from country to country.

Peru and Ecuador impose these rights-of-way in broad terms and subject riparian lands to public uses for policing, transit, fishing, navigation and domestic water removal. The width and purpose of such rights-of-way in these countries are determined by the water authority and there is no compensation paid to the landowner.

In Colombia, this right-of-way is limited to a navigational tow path and the right to remove boats onto the shore for repairs, removal of sails and sale of goods by navigators to riparians.

This same type of right-of-way applies in Bolivia and Chile, but extends only to lands bordering navigable and floatable rivers and lakes.

In Bolivia, rights-of-way over riparian lands that border floatable and navigable rivers and lakes are defined in greater detail and include: a) a general purpose passageway of three meters width to service navigation, fishing and salvaging; b) a tow path, one meter wide for pedestrians and two meters wide for towing by animals; c) ferry boat mooring and beaching of logs; d) salvaging shipwrecked goods for up to 20 meters on the beach; e) servicing fishing boats for up to three meters width. Some of the above rights-of-way carry with them the right of compensation for the injured landowner, Bo. (LA 51, 52, 151-163); Ch. (CC 839; WC 214, 215, 218, 219); Co. (CC 898); Ec. (CC 896; LA 55; RA 130); Pe. (WL 79).

C. Right of Entry to Make Studies, etc.: In Bolivia, Chile, Ecuador and Peru, a right is given to officials of government agencies and private individuals to enter private property to make and verify studies related to water use. Before entry can be made, officials of government institutions must give notice to the property owner in Bolivia and Ecuador. Such officials may enter without giving notice in Peru and Chile. Private individuals may also enter other private property for the same purposes in Bolivia and Ecuador, but must obtain approval from a government agency for the entry. Indemnification must be paid to the property owners for damages caused by these entries, Bo. (LA 196); Ch. (WC 325; CC 880); Co. (CC 937); Ec. (CC 944, 947); Pe. (RD 11).

D. Other Related Rights-of-Way: In Peru, anyone may enter property in emergency situations to remove obstructions from a water way or to remove any other cause for eminent danger when justified by the circumstances. The Peruvian Water Authority is also responsible for fixing free access zones to water for the satisfaction of primary necessities, Pe. (WL 39).

E. Voluntary Rights-of-Way

1. *Express:* It is a universal rule that a right-of-way may be established by agreement between the owners of dominant

and servient properties provided that such agreements are not in violation of the law or public policy. In Peru, an attempt by the parties to arrive at an agreement is a pre-requisite to the right to bring an action to forcefully impose a right-of-way, Bo. (CC 416, 417); Ch. (WC 325; CC 880); Co. (CC 937); Ec. (CC 944, 947); Pe. (RD 11).

2. *Implied*: In all the countries, except Peru, a right-of-way for a canal arises by implication when a property owner establishes a continuous and apparent water conveyance service over part of his property for the benefit of another part and later sells one of the parts without making reference to the service, Bo. (LA 120); Ch. (CC 881, 883); Co. (CC 938); Ec. (CC 945).

3. *Prescriptive*: If one allows another to openly and notoriously use a canal, a right-of-way by prescription is thereby established in Bolivia, Chile, Colombia and Ecuador. If such right-of-way is continuous and apparent, the period of use that is required to establish it is ten years from the date of its construction in Bolivia and Colombia, and five years in Chile and Ecuador, Bo. (CC 418); Ch. (CC 882, 884); Co. (CC 973, 939, 2518, 2520); Ec. (CC 946, 948, 2436, 2442).

6-8-2 *Forcefully Imposed Rights-of-Way*

A. *Canal and Related Works*

1. *Jurisdiction*: In all of the Andean countries, rights-of-way for canals and related works may be forcefully imposed over private and public lands for the benefit of private individuals and government entities who need water. Jurisdiction to impose canal rights-of-way is vested in the administrative authority that grants water use rights in all of the countries with the exception of Colombia. Jurisdiction in Colombia is vested in the ordinary courts, Bo. (LA 117, 193); Ch. (WC 40, 250); Co. (RWC 8; FH 6); Ec. (LA 62, 88); Pe. (RD 25, 26, 27).

2. *Purpose*: Peruvian law specifies that a right-of-way may be imposed when it is necessary or convenient for public or private purpose related to water use. In Chile and Colombia, they may be imposed when *necessary to exercise a water use right*, and in Ecuador it is based on a *need to convey water*. In Bolivia, the law specifies that rights-of-way may be imposed for objects of public or private interest, for establishing or increasing irrigation, for bath houses or industries and for all

types of drainage, Bo. (LA 103, 111, 115, 116); Ch. (WC 13, 14; CC 841); Co. (CC 919); Ec. (CC 918; LA 62); Pe. (WL 104; RD 1, 3, 10, 14, 18).

3. *Property Subject to Rights-of-Way*: In Bolivia, Chile and Colombia, land covered by homes, buildings, corrals, patios and gardens are not subject to the imposition of canal rights-of-way, Bo. (LA 104, 118, 119; IR 55); Ch. (WC 192, 196); Co. (CC 920).

4. *Location and Route*: The course of a canal through servient property is governed by similar guidelines in Bolivia, Chile and Colombia. The course must permit the free flow of water without making it unduly costly according to the nature of the land. Within these limitations, the *shortest* alternative is given preference and defined to be that which is least damaging to the servient estate and least costly to the interested party. Doubtful questions are to be decided in favor of the servient property interests.

In Ecuador and Peru, the granting authority simply determines the route with the preferred technical characteristic with the added provision in Ecuador that doubtful questions are to be decided in favor of the servient property, Bo. (LA 105); Ch. (WC 195); Co. (CC 922); Ec. (RA 133); Pe. (WL 138, 139; RD 28).

5. *Type of Construction*: In Bolivia, Chile, Ecuador and Peru, canals are of the open ditch type. However, piping or covering may be required by the granting authority to avoid hazards caused by close proximity to populated areas or unusual depth. Another common provision found in the laws of Bolivia, Chile, Colombia and Ecuador requires canal construction of the type that will not allow overflowing, filtering, flooding, backing or accumulation of trash. The dominant owner must construct bridges, siphons, pipes and other necessary works to facilitate the passage of the canal through the servient estate with a minimum of inconvenience to communication, Bo. (LA 113, 132; IR 56); Ch. (WC 194, 201, 207); Co. (CC 921); Ec. (RA 133); Pe. (RD 16, 17).

6. *Width*: The width of the water conveying portion of the canal is always determined by the technical requirements for the amount of water to be conveyed, the grade or slope and other technical factors. However, there are formulas provided by law for the width of the passage way on each side

of the canal itself that also constitutes part of the right-of-way. In Chile, Colombia and Ecuador, the width is specified to be not less than one meter on each side of the canal itself and may be extended to a greater width where necessary. In Bolivia, the marginal width increases by specified distances as the canal width is increased in size and varies from ten meters to 30 meters in marginal width, Bo. (LA 106, 130; IR 54; RC 14); Ch. (WC 198, 210); Co. (CC 923); Ec. (RA 134); Pe. (WL 105, 106).

7. *Co-Use of Canals*: The owner of property may require one desiring to convey water through his property to jointly use an existing canal unless it is determined that the existing canal cannot serve the needs of both. These co-users share the costs of construction and maintenance on a prorated basis according to the amount of water each conveys in the canal. This is the rule in all the countries and is extended in Ecuador and Colombia to give the dominant owner the right to forcefully acquire a use right in existing canals on other property. In Ecuador, a detailed scheme is provided for fixing the value that the dominant owner must pay for co-use of a canal, Bo. (LA 106; IR 51); Ch. (WC 113-3); Co. (CC 926); Ec. (LA 65; RA 139-143); Pe. (WL 108).

8. *Indemnification*: The standard for indemnification that must be paid is identical in Bolivia, Chile and Colombia. The dominant owner must pay the servient owner, in cash, an amount equal to the value of the land occupied by the canal and the marginal passageways on both sides, plus ten percent of this total, plus damages caused by filtrations, drainage and defects in the construction of the canal.

In Peru, temporary canal rights-of-way are compensated for on the basis of a rental value of the property for the period occupied plus any damages and prejudices caused. Where the right-of-way is permanent, indemnification must be the value of the occupied land plus damages and prejudices caused. However, no indemnification is payable if the servient land is not productive. In Ecuador, the basic land valuation and amount of other damages form a base for determining whether or not indemnification must be paid. If the amount of land occupied by the right-of-way and its marginal passageways is less than ten percent of the total farm area and if the depreciation in value of the total servient estate is less than

five percent, then no indemnification need be paid, Bo. (LA 106); Ch. (WC 198, 210); Co. (CC 923); Ec. (LA 62; RA 135); Pe. (WL 141; RD 12, 35, 36).

9. *Rights and Obligations of the Parties:* The servient owner, in all countries, must allow workers entry rights to the canal and passageways to clean, maintain and repair the canal and must also allow the entry of watchmen to police the canal. The dominant owner must notify the servient owner prior to entries for cleaning, repairing and maintaining the canal in all of countries except Peru. Entry times for a watchman to police the canal in Bolivia and Colombia must be fixed by a judge, and watchman entry in Chile must be made with previous notice to the servient owner. In Peru, all entries for these purposes require a specific authorization from the Irrigation District Administrator specifying the times and purposes of the entry and specifying conditions necessary to protect the servient property.

The dominant owner may prevent plantings, construction or obstructions within the area of the right-of-way and the passageway by express statute in Bolivia, Chile, Colombia and Peru, and such right is implied in Ecuador. Only in Ecuador is the servient owner given a right to use the water flowing through the canal for limited domestic and cattle watering purposes, Bo. (LA 107, 108, 134, 137); Ch. (WC 199, 204); Co. (CC 924, 925); Ec. (LA 63; RA 137); Pe. (WL 109, 110; RD 24).

10. *Procedure:* The formal proceedings related to obtaining a canal right-of-way in Chile and Ecuador are part of the same proceedings for granting a water use right. When a canal right-of-way is needed but no new water right is required, the same procedure is followed as for obtaining the right-of-way (see 6-5-2).

In Peru, special procedural requirements must be met and a separate petition must be made for a canal right-of-way. The petition, directed to the Administrator of the Irrigation District, must contain the name of the servient owner, the technical requirements, general nature, duration, condition of the land and buildings affected and a technical study and plans of the area to be occupied as they pertain to the proposed right-of-way. The Administrator acts on the petition within 15 days by resolution containing the characteristics of the

right-of-way and amount of indemnification. The resolution must be acted on favorably by the Director General of Waters and then elevated to a resolution of the Ministry of Agriculture before it becomes operative. This resolution is published in the Official Diary and interested parties are given 15 days after publication to request reconsideration. The only basis for reconsideration is that there are other locations for the right-of-way that present equal advantages at similar costs and less inconvenience to the servient estate. Appeal can be made to the Ministry of Agriculture and their decision is final as to all matters except the amount of indemnification which can be appealed to the Agrarian Court.

In Bolivia, persons interested in acquiring a right-of-way make an application to the government agency. The agency must hold a hearing at which affected landowners must be present. A servient owner may formally oppose the granting of the right-of-way on the grounds that the petitioner does not have a right to use the water to be conveyed, that he is not the owner of the property where the water will be applied, or there is a better location for the right-of-way. However, once opposition is formally filed, the proceedings must be transferred to the ordinary courts where the objections are resolved according to rules for brief summary proceedings.

In Colombia, judicial proceedings for a right-of-way imposition require that a complaint must be filed with the ordinary court. The judge reviews the complaint, and if it meets the legal requirements, a summons is issued and served on the servient landowner defendant within ten days after the complaint is accepted. All persons with an official interest in the property must be personally served with a summons. The defendants have two months after service of the summons within which to answer the complaint and the judge fixes a period of 20 days to receive the proof. Experts must also inspect the property. After the conclusion of the proof, the parties present briefs on the law and final arguments and the court enters a judgment. The judgment fixes the amount to be paid as indemnification and upon receipt of such payment the judgment is filed in the recorder's office. The judgment can be appealed as in other civil cases and must also be filed with the administrative authority who granted the related water use right, Bo. (LA 117, 123, 124, 125, 289, 290; IR 52); Ch. (WC

250); Co. (CPC 428); Ec. (LA 88, 89, 92); Pe. (WL 138-140; RL 28-33).

B. *Canals Constructed with State Funds*

In Bolivia, Chile and Colombia, a special administrative proceeding is prescribed for the acquisition of canal rights-of-way for irrigation projects constructed with state funds. In Bolivia, the Irrigation Division is required to publish notice of areas to be used for canals in state financed irrigator systems and negotiate a price for the lands with the owners. If no agreement is reached, they proceed with expropriation as in other cases. In the National Irrigation System in Bolivia, all farm properties which benefited from the system were required to give to the system the necessary canal rights-of-way without compensation. Those lands which are needed but do not benefit from the system are required to be expropriated as in other cases.

In Chile, the National Irrigation Enterprise has the power to impose canal rights-of-way necessary for state financed irrigation projects by issuing and publishing a notice of expropriation in the *Official Diary* and a local newspaper where the real property is located. Indemnification is determined by official tax valuations plus the value of more recent improvements as determined by the Enterprise in its resolution. If only a portion of the tax valued property is involved, the value is then determined by the Bureau of Internal Revenue. The resolution of the Enterprise may only be appealed on the question of valuation of the improvements added since the last tax valuation and the appeal is to the *Judge of Large Debts*. Once the amount of indemnification is fixed, it is payable with 33 percent down and the balance payable over five years with 3 percent interest plus inflation adjustments.

In Colombia, the Irrigation Districts of INCORA must negotiate with landowners for the purchase of rights-of-way, and if no agreement is reached, then they must file regular proceedings for expropriation of a right-of-way in accordance with the standard judicial procedure. Indemnification is based on appraisements made by expert appraisers of the Geographical Institute, Bo. (IR 72-77; LC 2; RC 8); Ch. (WC 306); Co. (Decree 1112 of 1952, articles 46-63).

C. *Canals on Public Lands and Streams*

In Chile and Colombia, private individuals may obtain a

right to convey water through public streambeds, public streets and public waterways or public lands through administrative proceedings. In Chile, the user is obligated to pay all costs related to the introduction and extraction of such water and also pay his prorated share of the costs of maintenance of the system and must reduce the volume that he extracts by the amount of added seepage and evaporation losses, Ch. (WC 82, 83); Co. (FH 10; RWC 8).

D. *Forceful Rights-of-Ways for Access to Water*

In Bolivia and Chile, individuals or communities that lack water for cattle and domestic needs may forcefully impose a right-of-way over other property for a path to a water source on paying indemnification. Access cannot be obtained to use private wells, cisterns or over lands enclosed by a wall. When granted, the right-of-way allows passage of people and cattle to a point where they can satisfy their thirst. The same general procedures are followed as provided for imposing canal rights-of-way. The owner of the property may change the direction of the path but may not change the point of entry or the purpose, Bo. (LA 146-150); Ch. (WC 220-223).

6-8-3 *Termination of Rights-of-Way*

A. *Causes for Termination*

The following causes for termination of rights-of-way are provided by laws as follows:

1. For non-use or failure to use a right-of-way for specified periods of time. Colombia specifies a non-use period of 20 years; Bolivia and Chile, ten years; Ecuador, more than two consecutive years; and Peru, two years. For continuous rights-of-way in Colombia, Bolivia and Chile, this time commences when the owner stops using the right-of-way, and for those that are discontinuous, the period starts when the dominant owner commits some act inconsistent with the right-of-way.

2. By termination of the time for fulfillment of the condition upon which a right-of-way was expressly limited or conditioned in all the countries.

3. When the purpose for which the right-of-way was granted terminates, which could include the loss of the water right or the discontinuance of the water use on the dominant property in all the countries.

4. By a confusion of titles between the dominant and servient estate, that is, when the title to both properties be-

comes vested in the same person in Bolivia, Colombia and Chile.

5. When the right-of-way has been used for a purpose other than that for which it was granted in Peru and Ecuador.

6. When the petitioner for a right-of-way fails to construct the works required within the time required by the granting authority in Bolivia, Peru and Ecuador.

7. By changing the land served by the right-of-way in Chile.

8. By express renunciation of the right-of-way by the dominant owner in Bolivia, Chile and Colombia.

B. *Reversion*

When a right-of-way is terminated or abandoned in Bolivia, Chile and Ecuador, the land, free of the right-of-way encumbrance, reverts to the servient owner. In Chile and Ecuador, none of the indemnification originally paid need be returned by the servient owner to the dominant owner. However, in Bolivia the servient owner must return the part of the indemnification that represented the value of the land, Bo. (CC 429-436; LA 112, 138, 139); Ch. (WC 209, 236, 237; CC 885); Co. (CC 942, 943); Ec. (LA 71, 72); Pe. (WL 112).

6-9-0 HARMFUL EFFECTS

6-9-1 *Flood, Erosion Control and Conservation*

Most of the legislation is quite general and non-specific in fixing responsibility for conservation of water resources and for protection against flood and erosion.

Individual water users are delegated responsibility for some or all of these functions related to the water channels that service individual users. Thus, in Peru, all users are obligated to protect water channel banks to prevent erosion. In Bolivia, they must execute required works to regulate water flow and improve the stability of structures to improve water management. In Colombia, individual landowners may not cut trees in order to protect forests and watersheds.

Water User Associations have affirmative obligations to conserve the canals and works within the area of their jurisdiction in Bolivia and Chile. One or more agencies of the central government are frequently given the overall responsibility for planning and construction of works and enforcement of flood, erosion control and water conservation measures. In Bolivia, the Water Bureau of the Ministry of Public Works is responsible for planning, construction and controlling works

for defense, correction, regulation and rectification of all natural water courses in the country. In Chile, the National Irrigation Enterprise cooperates with the Ministry of Agriculture in controlling erosion, sedimentation, flooding and other harmful effects of water that could adversely affect irrigation works. INERHI and the Forest Service in Ecuador are directed to conserve, protect and improve water basins, particularly to take such measures as are needed to prevent erosion, fires, excessive grazing and harmful deforestation and to enforce the measures taken. In Colombia, INDERENA has overall responsibility for establishing and administering zones for water, forest and soil protection and establishing programs for conservation of all renewable natural resources including water. The Ministry of Agriculture in Peru must promote programs of watershed and forest protection related to water resource conservation including channeling water courses and protecting them against erosive action. The Water Authority is given regulatory power to prevent water loss from runoff, percolation, evaporation, flooding and other causes, Bo. (DH 1, 3; IR 38, 45, 57); Ch. (WC 141-2, 181-6, 301-d); Co. (R 22, 23; RWC 17, 53; IO 3-1-b); Ec. (LA 13, 16; RA 86, 87); Pe. (WL 10, 94-97).

6-9-2 *Drainage*

In Bolivia, Colombia and Chile, the agencies that are charged with constructing government financed irrigation works are also charged with the same responsibility relating to drainage works.

Rights-of-way may be imposed in all of the countries for private or public benefit to aid in water drainage to the same extent as canals for irrigation water as provided in 6-8-2.

In Peru, the Water Authority may for health reasons order the drainage of swamps, caused by excessive irrigation. Also, special authorizations may be granted for leaching of salty soils and the drainage of water used in the leaching process.

In Bolivia, special drainage districts may be formed with the consent of the landowners who would benefit by drainage works and those who refuse to contribute their prorated share of the works are deemed to have abandoned their lands to those contributing to the costs of the works, Bo. (LA 84-92, 111; IR 71, 72a); Ch. (WC 205, 301-306); Co. (DR 6); Ec. (LA 49); Pe. (WL 91, 99).

6-9-3 Contamination

A. Definition

For the purpose of prohibiting pollution or contamination of water or administratively controlling water quality, a wide variety of definitions are provided for "pollution" or "contamination."

In Bolivia, these definitions include *noxious elements — injurious to health or vegetation*, and in another article, *salt residues, animal slaughter wastes or any other material whose decomposition will prejudice good water quality*. As applied to contamination of irrigation water, the definition is *organic matter, wastes, colorants and any substance that renders water inappropriate for use in agriculture or that damages agricultural soils*.

In Chile, industrial discharges are considered contaminating if *the quality of the discharge injures third parties*. Contamination has no further statutory definition in Colombia but is subject to regulation in some areas.

A more detailed technical definition of contamination is provided in Ecuador and states: *physical, chemical or biological deterioration of water resulting from introduction of solid, liquid, gaseous or radioactive substances which render the water partially or totally unuseable for domestic, industrial, agricultural, fishing, recreational or other uses*. Peru prohibits the discharge of any solids, liquids, or gaseous substances into water if it endangers human health or the normal development of plants or wildlife, Bo. (LA 263, 270; IR 42e; RC 14); Ch. (WC 58, 232-2); Co. (RWC 9; CA 4e); Ec. (RA 89); Pe. (WL 22; RA 57, 145, 173).

B. Administrative Control

Though contamination of water is defined and prohibited, in some cases, there is no specific scheme provided for control. Thus, in Colombia, riparians may not contaminate water used for drinking, domestic, irrigation or industrial uses, but no specific implementing provisions exist. In Bolivia, when use of water for mining renders it unfit for agricultural use, the mining user must pay damages to the lower irrigation user, but no provision is made to terminate the contamination.

In Chile and in one area of Colombia, the water authority that makes a water use grant may establish conditions and quality standards as part of the water use grant for the water

that is discharged from the industrial use. This ties discharge quality into the permits for water use.

In Peru and Ecuador, everyone who discharges substances including water into public water ways must comply with quality standards as to the material discharged and obtain a permit. The standards in Peru for what may be discharged are based on specific quality classifications of river basins in the coastal zone. These classifications not only limit discharges into streams, but also limit the purposes for which various water sources can be used.

In Bolivia, industries that introduce or discharge noxious elements into waters are required to submit to municipal *regulation*, Bo. (LA 263); Ch. (WC 57); Co. (CA 4e); Ec. (RA 91, 92); Pe. (WL 22; RA 57, 58, 61, 145).

C. *Testing and Classification*

In Ecuador, the water user is required to perform periodic tests of his discharges under the supervision of INERHI, who also establishes the amount of contaminant that any given user may discharge.

In Peru, detailed regulations established five classes of water according to maximum levels of specified contaminating substances found in them. As the classes increase from one to five, the uses to which the water may be applied is uniformly limited to those that, with or without treatment, do not alter the characteristics of the water source, Ec. (RA 91, 92); Pe. (RA 81).

D. *Enforcement*

Violators of pollution or contamination control statutes or regulations are subject to administrative or criminal penalties in all of the countries. Suspension of the violator's water use right is one penalty for industrial pollution in Bolivia, Peru and Chile. In Ecuador, there must be four violations of the same law before a use can be suspended, Bo. (LA 263, 270; IR 42e; RC 14); Ch. (WC 58, 232-2); Co. (CA 4e); Ec. (LA 91, 92); Pe. (WL 10, 22, 25, 122).

6-10-0 FINANCING WORKS AND ADMINISTRATION

A. *Repayment for State Financed Works*

State financed irrigation projects are recognized as valid for investment of central government funds in all the countries. Repayment to the government by the landowners who benefit from the irrigation works is also required by the laws of all

the countries. The form of the repayment varies from country to country.

Within the National Irrigation System in Bolivia, the irrigation project construction costs were determined. Each hectare of land benefited was assessed the sum of 200 Bolivianos annually. This annual hectare amount was paid until all of the costs of the project were repaid. Other state financed projects in Bolivia and Ecuador are repaid by the beneficiaries based on a rate not exceeding total costs of the project and divided on a hectare basis between all of the landowners who benefit from the project. The amount is then amortized over a reasonable period of time not to exceed the probable life of the works. The government may absorb some costs based on extenuating socio-economic conditions of the landowners in Bolivia.

Repayment for irrigation works in Colombia is merged with the financing of the overall agrarian reform program. Under this program, those who receive land parcels within an irrigation district of INCORA pay for the land and for the irrigation and drainage improvements by executing bonds for such costs. The costs are amortized in periods of 15 or 25 years at interest rates of two or seven percent.

The beneficiaries of such projects in Chile re-pay the project costs based on the amount of water they are entitled to receive from the system and compared with the total available in the system. This amount is then amortized over a period of not to exceed fifty years. Some of the costs can be born by the government if they are determined and have an indirect or intangible benefit to the social or regional development or the national interest, Bo. (LC 5; IR 78, 79); Ch. (WC 316, 317); Co. (AR 70, 75, 77); Ec. (LA 17; RA 64, 67).

B. Operation and Maintenance Costs

Operation and maintenance functions for irrigation works and systems are administered by various types of organizations including agencies of the central government that manage projects constructed with state funds or by irrigation districts in Peru. Water user associations also perform operation and maintenance functions. It is a uniform rule that those users who come under the jurisdiction of any of these organizations must pay their prorated share of all the annual operation and maintenance costs of the system. The rate is based on the

total of such costs apportioned among the users according to their prorated share of all the water in the system, Bo. (IR 81, 82; LC 7); Ch. (WC 115, 155, 168, 318); Co. (DR 16; V 1); Ec. (LA 21, 75); Pe. (WL 12; RA 21, 22, 23, 49).

C. *Financing Available to Users*

Irrigation and Drainage Commissions in Ecuador are government approved and controlled water user organizations designed as a vehicle through which individual water users may apply for credit to national and private banks for loans, not only to construct irrigation works but for comprehensive agricultural credit. INERHI is required to aid these commissions in making loan proposals to the banks for this credit.

In Chile, the two types of users associations that are of the formal corporate variety have the authority to pledge the credit of the individual users or shareholders for loans from the State Bank of Chile to construct irrigation works. The Bank may loan up to 75 percent of the value of the property or works of the users organization under these arrangements, Ch. (WC 100, 104); Ec. (RA 54, 55).

D. *Water Use Taxes*

Ecuador levies a tax on concessions for the use of water as a publicly owned commodity. This tax is not related to maintenance, operation or the value of irrigation works from which the user benefits but a tax on the right to use the water. The amount of the tax varies with the use and different rates are applied to different uses except culinary use which is exempt. The rate is a fixed rate per cubic meter either as actually measured by use or according to the amount awarded in the concession, Ec. (LA 18, 104; RA 72, 75, 76).

6-11-0 LEGISLATION ON USES OTHER THAN IRRIGATION

6-11-1 *Domestic*

Significant aspects of legislation dealing with various domestic water uses are contained in other sections and will not be repeated here. For a detailed discussion of domestic water use priorities, see 6-7-1 and 6-7-2. For domestic uses that are permitted without the necessity of obtaining a grant, see 6-5-1-B.

In general, municipal governments manage and control water diversion and distribution for community purposes and obtain that right from the national water authority for these community uses. Private water companies are recognized and controlled by laws which regulate the manner of their operation

in Bolivia and Colombia and Cooperative Culinary Water Service Companies are recognized in Chile. A municipal culinary water service was created by a national law in Bolivia for the area in and around the city of Cochabamba. No attempt is made in this work to cover all the details or regulations of those entities governing the supply of culinary water to culinary users, Bo. (DP 1; LA 214); Ch. (WC 50, 51, 52); Co. (RFH 11; WC 6; RWC 6); Ec. (RA 108); Pe (RA 106).

In the national governments, the lines of administrative responsibility with regard to the management of the use of domestic water differ from other water uses in some cases. Responsibility for the control and supervision of organizations engaged in supplying and distributing culinary water in Bolivia is vested in the Water Bureau of the Ministry of Public Works. In Peru, the Ministry of Health and Ministry of Housing are responsible for planning and executing works for the supply of culinary water, and culinary water quality control is under the jurisdiction of the Sanitary Authority and the Ministry of Housing, Bo. (DH 1); Pe. (LA 39).

There are provisions which grant a basic right to those individuals who need water for domestic purposes to expropriate water being used for other purposes upon payment of just compensation. However, in Peru no compensation need be paid when water is expropriated for domestic uses, Pe. (WL 35; RA 100, 106).

6-11-2 *Motive Power, Industrial and Electrical Generation*

Much of the substance of other subject headings applies directly to these water uses. Particularly applicable is section 6-5-1, related to Uses Without Formality; 6-5-2, Procedure for Obtaining a Use Right; 6-7-0 [1 and 2], related to Priorities; and 6-9-3 related to Contamination. Only specific matters not covered in the above sections will be treated here.

Some special conditions apply to motive power use rights in that they must not interfere with other uses in Chile and Colombia. Water use grants for motive force and electrical generation uses have specific time limits in some countries. In Colombia, they are limited to not more than 50 years and are for temporary periods or limited duration in Chile.

In Chile, motive power generation use rights holders may make power generation installations in the main channel of a waterway or a secondary canal provided that the regularity

of water delivery in the main channel is not adversely affected. The user must install all the works necessary to permit the efficient management and use of the water and bear the expense of cleaning and maintaining the works. They cannot detain the water without permission of the other lower users.

Electrical generation uses are permitted without the necessity of obtaining a grant if the power generation capacity is under 1,000 kilowatts in Chile and 100 horsepower in Colombia. Energy and motive force generation uses in Bolivia, Chile and Peru are conditional on the water being returned to the stream after the use in an undiminished quantity.

In Ecuador, use rights are granted for these purposes by the water control institute, but the uses must be approved by the electrical and industrial development agencies before a petition for these uses may be considered by the water authority, Bo. (LA 261); Ch. (WC 56-60; LE 1, 2, 15); Co. (FH 10, 17); Ec. (LA 40; RA 115, 116); Pe. (WL 27; RA 136).

6-11-3 *Transportation*

Section 6-8-1 describes rights-of-ways over riparian lands for the benefit of navigators of rivers and lakes.

Structures are prohibited in rivers and lakes which impede navigation in Chile, Colombia and Peru. In Colombia, riparian water users may not exercise their water use rights in a way that would adversely affect transportation.

In Peru, transportation companies must obtain licenses for use of waters for their transportation services. In Ecuador, any use right which may affect navigation or floatation is subject to approval of the Naval Forces and if it affects national security, then the favorable report of the Joint Command of the Armed Forces is also required.

General administrative control of all river and lake navigation in Bolivia is the responsibility of the Bolivian Naval Forces. Specific provision is made for controlling various aspects of transportation uses of waters including: 1) a hearing process by which determinations are made as to whether or not rivers are *navigable or floatable*; 2) giving the forces authority to designate embarking and launching locations on banks of rivers and lakes; 3) expropriation power to acquire such sites; 4) authority to widen channels to accommodate transportation; 5) power to establish ferry boat crossings on both navigable and non-navigable rivers, Bo. (DN 1-15; LA 174-179); Ch.

(WC 84); Co. (CC 893-2); Ec. (LA 30); Pe. (WL 56; RA 161, 170).

6-11-4 *Medicinal and Thermal*

In Chile, there is special separate legislation on control, use and administration of these waters. In Colombia, they are subject to the same general laws as other classes of water. Legislation in Bolivia gives a priority for the use of these waters for promoting public health and when such waters are under the control of individuals who refuse to apply them to this purpose, they may be expropriated by the government for health applications. In Peru and Ecuador, control and use of medicinal and thermal waters is subject to extensive special legislation. INERHI in Ecuador grants use rights to such waters, but only after a favorable report from the Ministry of Health. These two agencies cooperatively control the exploration and exploitation of such sources and classify, evaluate and inventory the industrial and tourist value of the waters. Preference is given to state agencies to use and exploit these waters, but private users may also obtain concessions for limited periods at the termination of which all the related works revert to the ownership of the state without indemnification. INERHI may declare special protective zones around these water sources and must conduct regular chemical analysis of the water.

The Peruvian law and regulations vest the Ministry of Health and its *Sanitary Authority* with the responsibility for granting licenses for the use of these waters and for their general study and control which includes classification, testing and inspecting plants that use them. The National Tourism Enterprise is given a preference in obtaining a use right to these waters without public bidding as required of private applicants. Applications for licenses must contain documents of title to former uses, guarantees offered to secure construction of the works, and the time required to commence operation. The license must contain the approval of the plans of works, location of use, name and address of user, the period of use which must be between 20 and 30 years, the quantity of water, tariffs and other obligations, and conditions for loss or forfeiture, Bo. (LA 18); Ch. (WC 7, 68); Ec. (LA 46, 47; RA 93-101); Pe. (WL 71-78; RC 1-46).

6-11-5 *Mining*

Much of the special legislation concerning water use for

mining focuses on the subjects of preferences and priorities, the right to use such waters without formalities, and the control of contamination resulting from this use. In Bolivia and Colombia, miners have the right to use waters flowing through or discovered in their operations, without formality provided that lower use rights are not damaged. A series of successive priorities between mining users are also provided in Bolivia. In Ecuador, INERHI grants concessions for mining uses the same way as other rights are granted, but they must first have a favorable opinion from the General Bureau of Geology and Mines. Miners may also be required to subject the water to treatment before it is discharged into streams. In Peru, mining users may be required to use settling ponds to avoid contamination. The location, design and control of the works for handling the residues and solid material coming from the mining operation are subject to the control of the Water and Sanitation Authorities, Bo. (CM 114-121); Co. (WC 12; CM 175, 176, 205, 208); Ec. (LA 40; RA 117); Pe. (WL 51, 54; RA 145-149).

6-11-6 *Other Uses*

Some noteworthy legislation is found on other water uses in some of the countries as follows:

A. *Fishing*

It is recognized that fishing regulations probably exist in most of the countries apart from basic water legislation. However, in Bolivia, Colombia and Peru, some aspects of this use are provided in the water laws.

In Bolivia, fishing on floatable and navigable rivers is subject only to local police regulations but in other rivers permission of the riparian owners is required. Fishing is also permitted in canals.

In Peru and Colombia, state agencies are charged with promoting the development of fish and water plants.

Use of water for fish and aquatic plant development is one of the purposes for which water use rights may be granted in Peru. The following restrictions apply to these uses of water in Peru; they may not impede navigation; nor modify physical, chemical or biological condition of the water to the prejudice of other uses; and an annual license fee must be paid. The Water and Marine Authorities enforce these regulations, Bo. (LA 167-172); Co. (R 23f); Pe. (WL 55; RA 154, 155, 156, 161-165).

B. *Supply of Railroads*

In Bolivia, railroads are given the right to expropriate water when necessary to maintain their operation but must pay compensation, **Bo. (LA 217)**.

C. *Recreation and Tourism*

In Peru, the Ministry of Agriculture may grant water use rights for recreational and tourist uses in designated areas. Planning entities are required to consider present and future water demands for recreational purposes. Recreation uses may not render the water unfit for other uses, **Pe. (WL 57; RA 166-168)**.

6-12-0 SUBTERRANEAN WATER

A. *General Scope of Exploration and Use Rights*

Subject to the general control and limitations hereafter explained, a property owner may explore for and obtain a concession to use subterranean water under his own property in all the countries. Rights to explore for and use subterranean water located on other private property or on public lands varies from country to country. Private parties have no exploration or use right for such water on private lands of others in Bolivia, Chile or Colombia. In Ecuador, such a right exists and in Peru private explorations and use rights can be obtained to use subterranean water on other private land if technical studies indicate that the applicant does not have a reasonable possibility of locating such water on his own land.

The right for private individuals to explore for and use such waters under public lands is recognized in Bolivia, Ecuador, Peru and Chile. Government agencies have the same inherent right to explore for and use subterranean waters on government lands with permission of the particular agency possessing or controlling the lands and also have the same power as individuals to explore for and use water on private lands in Ecuador and Peru. Such authority is expressly given to government agencies in Chile, **Bo. (LA 20, 21, 27; IR 59); Ch. (WC 62, 66, 273, 274); Co. (WC 1002); Ec. (LA 41, 42; RA 120a); Pe. (WL 63; RB 79)**.

B. *Exploration Right*

A property owner may explore for subterranean water on his own property without government authorization in Bolivia and Colombia and also in Chile provided that the Bureau has not expressly prohibited it. In Ecuador and Peru, *authoriza-*

tions or *licenses* are required for all exploratory drilling operations. In Chile, *exploration permits* must be obtained from the *Bureau* before an individual or government agency can explore on private property.

Exploration permits or authorizations on national lands in Bolivia require a security deposit to provide indemnification against damages to the land and are controlled by the *Bureau* for all uses, except irrigation. These permits terminate six months from the date granted.

In Chile, the characteristics of the permits depend on the type of land involved. On unoccupied national lands, an application must be filed with the Governor containing the location and type of land, whether irrigated, dry or fenced and must be accompanied by a drilling study, situational drawing, report, and budget. Notice is given and the Bureau grants or denies the permit except when there is another exploration application pending for the same national land. Permits cover not more than 12,350 acres [5,000 hectares] for a period of less than two years and are subject to a security deposit for damages caused. The work must commence within six months and the permit holder has a preference to use the water found. For such permits on occupied national lands, questions related to the right of entry are decided by a judge and must not include entry authorization on land covered by buildings, trees or cultivated crops. The permit holder is subject to limitations on number of workers, seasons of entry and are limited to six months exploration time. Indemnification must be paid for damages to the occupant. Public agencies rights to explore on private lands are subject to these same limitations, Bo. (LA 20, 21); Ch. (WC 62, 66, 268, 269, 273); Co. (CC 1002); Ec. (LA 41; RA 120a); Pe. (RB 61, 64).

C. *Control of Drilling Operations*

In Ecuador and Peru, all persons drilling wells to locate or raise subterranean water must obtain a license from the water authority. Licenses will be granted only if the applicant can demonstrate the technical and economic capability of carrying out drilling operations. Drilling companies are required to furnish detailed information to the water authorities concerning their operations. In Ecuador, this information includes: 1) a description of the well, depth, location, drilling method and proximity to other wells; 2) well log and geological

analysis, formations, spacing, composition, permeability, storage, production of aquifers, water found and drilling techniques employed; 3) data from well e.g.; evaluation of opening, static water level, pump down level, measuring method and information on water levels and in observation wells; 4) water quality from physical, chemical and bacteriological analysis; 5) static levels during use. Verification of this information must be made by a certified engineer.

The information to be furnished in Peru is somewhat similar and includes maintaining a drilling log containing: 1) work performed; 2) materials and water encountered; 3) retained sample for every 2 meters of depth; 4) progress must be logged at end of every working day and made available to inspectors from the "Bureau."

In Chile, each exploration on land other than that of the owner requires a separate permit or authorization in which the detailed conditions regarding the exploration process are specified. These conditions could include many factors relating to the supply of information and technical capability of the drilling concern, but are primarily directed to the protection of the interests of the landowner where the exploration is being conducted, Ch. (WC 63, 66, 268-276); Ec. (LA 41, 44; RA 120-123); Pe. (WL 68-70; RB 61-79).

D. *Right to Use Subterranean Water*

In Bolivia, Chile, Ecuador and Peru, water that is discovered pursuant to a valid exploration or drilling permit may not be used. A use right must first be obtained by following the same process as is required for surface waters (see 6-5-2).

In Bolivia and Chile, preference is given to one who discovered the subterranean water through the exercise of a valid exploration permit provided that he applies for a use right within a limited time period. In Bolivia, the use right must be applied for within six months from the date the exploration authorization was issued, and in Chile, the preference is maintained if the application is filed within six months after the exploration permit expires.

In Ecuador and Peru, a petition for a use right to subterranean waters must contain all of the requisites established in 6-5-2 and additional requirements. In Ecuador, the petitioner must supply all the technical data to INERHI relating to the well, establishing that the use will not injure subterranean

aquifers or surface water within the influence of the well and establish that no interference is produced with other wells or water sources.

Some classes of subterranean water may be used without obtaining a formal use right including, in Chile, domestic use of wells on the users property and in Colombia, for all uses from wells on the users property, Bo. (DH 6e, IR 60; LA 31, 33); Ch. (WC 64, 65, 66); Ec. (LA 41; RA 120); Pe. (WL 59, 62; RB 15, 32).

E. *Controls and Limitations on Use*

Administrative control over the use of subterranean water is expressed in general terms in Colombia where the water control authorities have the *power to administer, regulate and conserve the development of subterranean water*, and in Ecuador where INERHI may at any time order the modification of methods, systems or installations deemed inadequate for raising subterranean waters. In Chile, the Bureau may stop construction on wells or close subterranean water sources if they determine that the use results in prejudice to third parties or injury to subsurface water bearing strata. If the owner fails to comply with the Bureau's order, the Bureau may close the well.

The Irrigation District Administrator in Peru determines well spacing and draw rates to avoid interference between wells, controls modifications of well systems, determines use methods related to efficiency and may require sprinkler irrigation, controls types of crops raised and types of soils and may require application only to lower valley areas. The Director General of Waters must approve all works and studies, establishes specifications for works, provides works for artificial resupply of subterranean aquifers, controls drainage affecting subterranean waters and restricts or suspends rights when surface water use rights are adversely affected, Ch. (WC 61); Co. (R 22, 23; CA 4a); Ec. (LA 43); Pe. (WL 64, 65, 66; RB 21, 39, 40, 44-48).

F. *Preferences or Priorities*

Only in Peru is there a special preference order for the use of subterranean water. This order is established by the Bureau of Waters on advice from the Irrigation District Administrator. This preference applies when there is a water shortage and is based on consideration of needs for: Community or culinary supply, cattle watering, industry, mining and agri-

culture. If the application of the preferences deprives agricultural users of water, then they must be indemnified for their loss. In Ecuador, a second preference is given to a property owner to acquire a use right to water raised by a third party on his property in excess of the third parties needs, Ec. (LA 42); Pe. (RB 23).

G. *Joint Uses*

In Bolivia and Peru, if a well yields more water than the property owner requires for his use, his neighbors may acquire a right to use the excess provided that they do not have other reasonably priced alternatives for acquiring water, Bo. (IR 66); Pe. (RB 34, 35, 43).

H. *Contamination*

Only in Peru are there special provisions relating to the control of contamination in subterranean waters. The Water Bureau is given the power to control residue discharges into subterranean waters and may declare protected areas around wells for drinking water. The Bureau must submit tests of such water to the "Sanitary Authority." Septic tank sewage disposal is prohibited if subterranean water contamination results, Pe. (RB 6, 9-14).

I. *Development Zones*

In Bolivia, the "Irrigation Division" may declare special zones for exploitation of subterranean water within which they may exercise more detailed control over subterranean water use including the number, spacing, draw and characteristics of the wells, (IR 61, 62, 63, 68).

6-13-0 PENALTIES AND SANCTIONS

A. *General*

Certain acts related to water use and non-compliance with the laws and regulations are violations of the criminal statutes in all countries and conviction results in penalties which may include fines and imprisonment. Some of the more common criminal acts related to water use are theft, contamination, poisoning, the destruction of channels, dikes and other related works. These violations are prosecuted in the ordinary criminal courts. There are special regulations dealing with administrative penalties or sanctions that are intended to directly aid in the administration of water laws and are enforced by administrative authorities rather than criminal courts as summarized

here, Bo. (Penal Code Art. 604); Co. (PC 423; RWC 56); Ec. (RA 25); Pe. (WL 121, 122, 123; CP 274).

B. *Administrative Jurisdiction*

One or more administrative agencies of the state in all countries is authorized to impose fines and other sanctions for a variety of acts related to water control and administration. The administrative authorities vested with jurisdiction to impose and enforce the sanctions are the Chief of the regional offices of INERHI in Ecuador, the administrator of the Irrigation Districts in Peru, and the Water Bureau in Chile.

In Bolivia, irrigation use violations in general are under the jurisdiction of the Irrigation Division. INDERENA, CVC, CAR and Irrigation Districts of INCORA have jurisdiction over imposition of penalties related to water use that occur within the area of their authority, as does the National Irrigation System at Cochabamba, Bolivia, Bo. (IR 42; RC 41); Ch. (WC 282, 284); Co. (WC 20; RWC 36, 37; DR 22, 23; IR 101); Ec. (RA 19); Pe. (WL 119).

C. *Acts*

The description of acts which are subject to administrative fines or sanctions in Chile, Ecuador and Peru, is uniformly broad in scope in that *any violation of the water law or its regulations* is the basis for sanctions or penalties. In Bolivia and Colombia, those acts which are subject to administrative sanction are listed separately and specifically. Some of the specific acts justifying the imposition of sanctions are:

1. Bolivia — water theft, damming or obstruction of water without authority, allowing overflow of works, dumping contaminants into water sources, failure to pay levied assessments and attempted transfer of use rights in the National System.

2. Chile — non-attendance of shareholders at user association meetings, tampering with irrigation works, failure to install measuring devices, unlawful subterranean water use, misuse of water for motive power generation, and failure of a water master to carry out his duties.

3. Colombia — violation of conditions in a concession, failure to construct required irrigation works, cutting trees that protect water courses, water theft, profanity or threats to district officials, destruction of works, clandestine acts that injure third parties, obstructing maintenance roads, selling or transferring water and damaging district works.

4. Ecuador — all violations of the water law and its regulations.

5. Peru — water theft, illegal dams, diversions or unauthorized uses, obstructing the functions of the water authority, Bo. (IR 42; RC 41, 42); Ch. (WC 46, 61, 113, 118, 183, 232); Co. (RWC 17, 19, 50, 56; DR 22, 23; IR 101; PC 423); Ec. (LA 77, 95, RA 19); Pe. (WL 120-126).

D. Fines and Penalties

Various types of sanctions and penalties are provided for by the law. In Bolivia, Chile, Ecuador and in INCORA Districts in Colombia, water rights may be suspended as a penalty for specified violations. This suspension is dependent upon a previous conviction for the same offense on more than one occasion. A minimum of three previous similar offenses are prerequisites in National System in Bolivia, Chile and Peru.

The amount of the fines for specific violations vary and are described in more detail in the separate country summaries. However, some overall provisions are of general application. In Bolivia, fines imposed by the Irrigation Division are in an amount *determined by the gravity of the case* and in the National System, unauthorized water use carries a penalty equal to ten times the cash value of the water taken. In Chile, the general fine limitation is not more than a monthly salary for an employee in industry or commerce as it fluctuates according to official determination. In Colombia fines are imposed by water control authorities and are limited to not more than 500 pesos. The fine limit in Ecuador is not less than 500 sucres and not more than the benefits obtained or damages caused. The general limitation in Peru is not less than 300 soles and not more than 50,000 soles, according to the gravity of the offense.

There are also common provisions for doubling or tripling the fines on reoccurrence of the same administrative violation, Bo. (IR 43; RC 41, 42, 43); Ch. (WC 283); Co. (WC 20; RWC 37, 38); Ec. (LA 77); Pe. (WL 119-125).