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PRELIMINARY ANALYSIS OF LEGAL OBSTACLES AND INCENTIVES TO THE DEVELOPMENT OF LOW-HEAD HYDROELECTRIC POWER IN THE NORTHEASTERN UNITED STATES

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INTRODUCTION

This report presents a preliminary analysis of the legal obstacles and incentives to the development of the low-head hydroelectric[1] potential of the nineteen Northeastern United States.[2] The intended subject matters of the report are the statutes and case laws of the nineteen states and the Federal Government which affect developers of small dams. However, as the reader will soon realize, the actual subject matters of this report are the legal uncertainty which confronts the developer of small dams and the regulatory burden to which the developer may be subjected once the uncertainty is resolved.

The reader should note well the preliminary nature of this report. Our objective has been to locate and describe the laws and doctrines which directly or indirectly affect developers of small dams. More definitive analysis of the regulatory scheme of each of the nineteen subject states and of each relevant Federal agency will be produced in the coming months. The report reaches no final conclusion concerning the nature or impact of any particular law or doctrine on the developer of small dams. Any such conclusions await further analysis and the contribution of energy producers, public officials, energy users and energy regulators to the evaluative phases of this project.

For ease of analysis, the mythical State of Hydrovania is described and its regulatory and legal systems analyzed. Hydrovania represents no particular state of the nineteen under study. It does, however, represent many of the

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[1] For the purposes of this study, a small dam, or low-head hydroelectric project, is any dam with a hydraulic head of less than one hundred (100) feet or a capacity of less than twenty-five (25) megawatts.

[2] The States are Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Ohio, Indiana, Michigan, Illinois, Wisconsin, Kentucky, Maryland, Delaware, Virginia and West Virginia.

common features of all the states under study. In many respects the similarities of the nineteen states, particularly with respect to energy industry structure, dependence on oil imported from outside the state, electric energy costs and legal and regulatory systems, are remarkable. This commonality leads to the conclusion that regional approaches and solutions to the problem of increasing the rate of development of small dams will have some measure of success and, perhaps more importantly, experiments in one state will bear useful information for activities in another state.

This report does not examine institutional obstacles and incentives to the development of small scale dams. Significant among institutional problems to be addressed are impacts of the development of small scale dams on existing electric transmission and distribution networks, generating reserves of public utilities and electric system reliability. Access to capital and capital markets by developers of small dams and relationships between dam owners and riparian owners, especially recreational lake front property owners, must also be explored. These problems and relationships will be examined in subsequent reports and will be based, in part, on field research and economic analyses.

II. THE STATE OF HYDROVANIA

The State of Hydrovania[1] is a mythical state. It has been chosen to represent characteristics and legal and regulatory systems more or less typical of the nineteen states under study. The features described for Hydrovania in this report are not all the relevant features of a particular state under study, but they should be representative enough of many important features of all nineteen states to give the reader insights into legal and institutional constraints confronted by small dam development.

A. PHYSICAL, DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

Hydrovania is located in the northeast quadrant of the United States and has a population of some 5,718,000 people (the average population of the nineteen (19) state region as of 1975, Statistical Abstract, 1977 at p. 11). The fossil fuel resources of Hydrovania consist of considerable reserves of deep mine and strippable coal and very little crude petroleum and natural gas. Existing hydropower facilities have an installed capacity of 426 MW (the average of the nineteen (19) states, Estimate of Hydroelectric Power Potential at Existing Dams, U.S. Army Corps of Engineers, 1977 at pp. B - 1 through B - 6).

The electric utility industry in Hydrovania is dominated by investor owned companies. Of the 12,500 MW of installed capacity investor owned utilities own or control 88%, the remainder being

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[1] The derivation is "Hydro" meaning water in Greek and "vania" the shortened "sylva" meaning forest in Latin or literally, "water in the woods," pun intended.

owned by industrial, municipal or rural cooperative entities. (Average of percentages of ownership of capacity by state with an approximate adjustment for privately owned, industrial facilities of 3%, Statistical Abstract, 1977, at p. 600). The bulk of power is generated by fossil fuel (coal, oil and natural gas) fired plants with nuclear plants accounting for 10% of the capacity. The percentage of installed capacity of hydroelectric plants has declined over the past 25 years to 3.4% installed capacity with a significant number of small dam (less than 25 MW) retirements occurring in the late 1950's and early 1960's.

The utilities producing electricity in Hydrovania are connected to a regional power pool which dispatches power by centrally controlled terminals on an economic dispatch basis. The only nuclear fired power plant in Hydrovania, a 1250 MW unit, came on line in 1977 after 6 1/2 years of protracted proceedings before the Hydrovania Public Utilities Commission, the Federal Environmental Protection Agency and Federal Nuclear Regulatory Commission. Considerable public controversey surrounded the licensing, construction and operation of the plant.

Average residential electric bills in Hydrovania as of 1975 for 500 kwh of usage were $17.52 per month. Only the states of Arizona, California, Minnesota, North Dakota and those within the New England and Middle Atlantic regions were higher. The national average monthly bill was $17.93. (The typical bill for Hydrovania was derived by taking an average of typical bills for the nineteen states under study. It should be noted the typical bills for New England and the Middle Atlantic Region are the highest in the country. Typical Electric Bills, 1975, Federal Power Commission, at pp. xiii - xiv.) Bills

for commercial and industrial customers in Hydrovania follow the same pattern. Id. at xxv, xxvi, xxix and xxx.

The public utilities in Hydrovania are authorized under public utility regulation to pass on increases and decreases in fuel costs over or under a base cost of fuel per 100 kwh without full ratemaking hearings. The rate design followed for residential customers by utilities in Hydrovania is the standard declining block rate design. A three part rate design (customer, demand and energy charge), which retains some features of the declining block design is used by Hydrovania utilities for commercial and industrial customers. Proceedings are presently pending before the Hydrovania P.U.C. to examine other forms of electric utility rate designs including marginal cost based and time of day rate designs. (1976 Annual Report on Utility and Carrier Regulation, National Association of Regulatory Utility Commissioners, at p. 398.)

Small dam potential (existing dams of less than 5 MW) for Hydrovania is estimated to be 632 MW. (Average of estimates contained in the Report, Estimate of National Hydroelectric Power Potential at Existing Dams, supra at pp. B - 1 through B - 6.) A more precise figure awaits the inventory presently being conducted. The potential for new dams of 5 MW or less is not known and also awaits the inventory noted previously.

At this writing there are other data that bear further research and scrutiny for Hydrovania such as utility load forecasts, existing installed capacity for hydroelectric dams of between 5 and 25 MW, state and local energy conservation efforts and their effects on energy consumption, appliance saturation by household and direct load management

techniques employed or under study by the state's electric utilities. As discussed previously, these data will emerge as on site interviews and case studies are conducted by the research team. At this point, and in the context set forth in this section, the regulatory and legal systems of Hydrovania will be described and tentatively analyzed.

B. REGULATION OF SMALL DAMS BY HYDROVANIA

1. The Common Law

Hydrovania is a riparian state in which owners of land abutting a waterway own to the thread of a non-navigable stream and the State owns the bed of all navigable streams. The bed of navigable streams is held in public trust by the State. Before the State may lease or sell the bed to a dam developer, it must determine that the public's right of navigation will not be abused and that the sale or lease is in the public interest. The "public interest" test is an analysis and balancing of the multiple or competing uses of the waterway.

A modified doctrine of reasonable use of the waterway has been adopted by the Supreme Court of Hydrovania. However, certain language in the decisions resembles that associated with the natural flow doctrine. It appears, although not to a legal certainty, that a hierarchy of water use priorities may exist in Hydrovania under which domestic uses are superior to energy uses.

Both the modified reasonable use theory and the definition of navigability currently in use in Hydrovania are the product of court decisions several decades old. Navigability in Hydrovania is determined by application of a commerce test: if the waterway has been used or useful in commerce, it is legally navigable. Recreation is not a part of the test and the waterway need not be "boatable." There is some

question whether, due to changes in society and water usage, the present members of the Hydrovania Supreme Court would follow those decisions to the letter or modify them extensively.

A similar uncertainty exists with regard to the determination of liability for dam breach. The most recent major Hydrovania dam liability decision was handed down in the 1930's. That decision utilized a negligence theory under which a dam owner is liable for only the damage caused by his failure to exercise ordinary care and diligence. However, the Supreme Court of Hydrovania, like most state supreme courts, looks to the law of other states when examining a case which requires application of theory not recently applied within the State. It is possible that Hydrovania will adopt a strict liability theory of dam breach, thereby increasing the risk of investment in dams.

2. The Hydrovania Mill Act

Early in the nineteenth century the Hydrovania Legislature adopted a Mill Act to increase the use of waterpower in Hydrovania. The Mill Act permits the owner of the bed of a stream to build a dam thereon and to pond the land of upstream riparians, so long as the dam is used to generate power. The owner must pay either annual or gross damages for loss of land to the upstream riparians. Homes, farms, orchards and industries may not be flooded under the Mill Act. The project must be begun within one year of obtaining the permit and completed within four years. Failure to begin or complete a project in the specified period voids the permit and allows upstream riparians to rely on the dam not being built.

3. Statutory Regulation in Hydrovania

The Hydrovania Department of Natural Resources (DNR) issues permits for dams to be built for any purpose in the navigable waters of Hydrovania. Dams of less than five feet in hydraulic head or less than ten acres of pondage are exempted from the permit requirement. The DNR fully regulates the design, construction, operation and maintenance of dams and conducts regular safety inspections. The DNR requires fish ladders to be constructed on dams in streams frequented by anadromous fishes. The developer is granted the power of eminent domain to assemble land once a permit is granted. This is an incentive to the use of small dams. To receive a permit, the applicant must satisfy a public interest test similar to that required by the FERC in Section 10(a) of the Federal Power Act.

The Hydrovania Public Utilities Commission (PUC) enjoys jurisdiction over a small dam only if the dam is in whole or in part a public utility. A public utility is defined in Hydrovania as "any person, firm, company, association or corporation which engages in the manufacture, production, generation or sale of electricity." Under this definition virtually every small dam is a public utility. An exemption exists for state and municipal corporations and for entities generating power for use rather than for sale. These exemptions are not an incentive to the private development of small dams for the sale of power to utilities in need of power. A public utility in Hydrovania is subject to account, rate and service regulation, each of which is a regulatory burden. Each public utility is assessed 1/2 of 1% of gross revenues to fund the PUC. This cost, as

well as the cost of carrying the regulatory burden of PUC requirements make Hydrovania's all-inclusive definition of a public utility a disincentive to the use of small dams.

The Hydrovania DNR also regulates a variety of other water-related activities. Among these are Soil and Water Conservation, Flood Control, Water Pollution Control, Protection of Wild and Scenic Rivers, Protection of Fish and Game and Protection of Wetlands.

Depending on the nature of a particular project, one or all of the water-related functions of the DNR may constitute legal obstacles to the construction or renovation of a small dam in Hydrovania. Soil and water conservation is accomplished in Hydrovania by the establishment of districts within particular watersheds. Although the DNR assists the regional districts in performing their duties, a small dam must conform to the plan developed within the region to achieve conservation of soil and water. Consequently, the developer must check with local and regional agencies to determine permit requirements, procedures and substantive standards.

A similar principle of regional or local control applies to compliance with Hydrovania's flood control program. As in the case of Soil and water conservation, the procedural focal point of any objection to the small dam is usually at the local level rather than at the level of the "lead" agency or the state level.

The Hydrovania DNR also administers the Wild and Scenic Rivers program. It has recommended that a number of relatively pristine waterways be designated by the Legislature as Wild and Scenic Rivers. Such action will bar construction of dams on the rivers, but will not bar continued use of present dams.

The protection of fish and game in Hydrovania is the responsibility of a division of the DNR, the Bureau of Fish and Game. Small dam developers must obtain a permit to build a dam from the Bureau. Fish ladders will be required and the agency will require compliance with siltation standards during construction. The Department of Fish and Game works closely with its federal counterpart, the Fish and Wildlife Service.

The Bureau of Public Land, also a component of DNR, supervises the lease or sale of the bed of navigable streams. The DNR permit to build a dam requires prior arrangement of conveyance of right, title or interest to the applicant of the right to use the steambed. If excavation of the streambed is contemplated, that also must be approved by the Bureau. Excavation may be required to build the footing for the dam or to produce gravel for construction material.

The DNR regulates the use of wetlands in Hydrovania. The filling, dredging or excavation of a wetland requires a permit from DNR. A permit from DNR should not be required unless the dam will have a direct impact on a wetland, such as in the draining of the wetland to generate power. This is most likely to occur where an old dam has created wetlands and a developer seeks to renovate the dam for the generation of power.

The preservation of historic and archeological sites in Hydrovania is the responsibility of the Office of Historic Preservation. An autonomous agency, the Office comments on dam permit applications which affect historic sites, such as old millhouses, or archeological sites, such as Indian burial grounds. A registry of such sites is maintained by the Office. Many of the Hydrovania sites have been

placed on the National Registry. A developer must check the Registry to determine if his site is listed. Public concern over the use of a site can result in a proposal that it be listed. Listing bars renovation which changes its character.

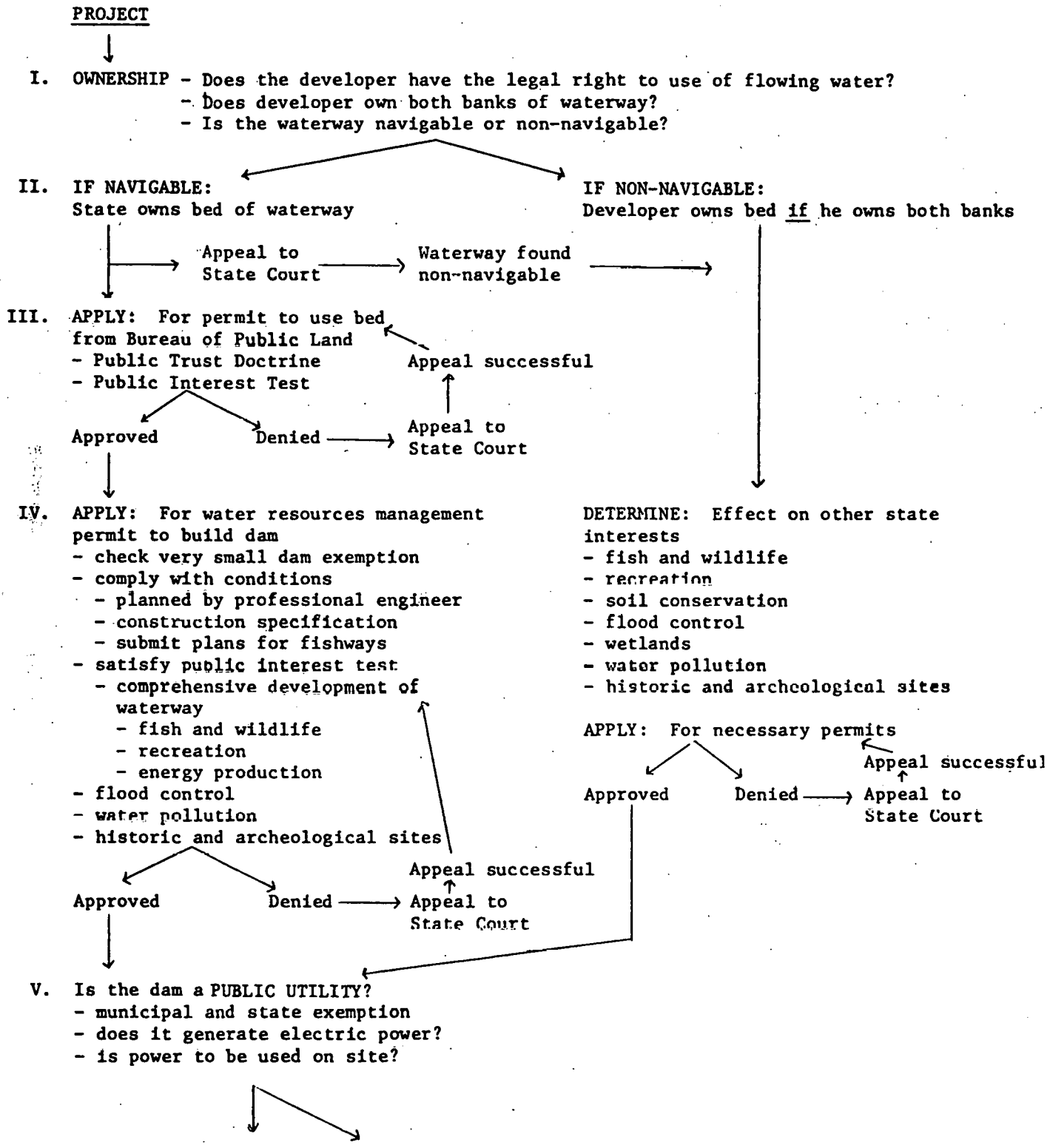
Water pollution control is a major activity of the Hydrovania DNR. The Bureau of Water Pollution Control implements the State plan developed pursuant to the Federal Water Pollution Control Act. The Bureau will comment on a permit application if a dam will disrupt minimum streamflow required to maintain established pollution levels.

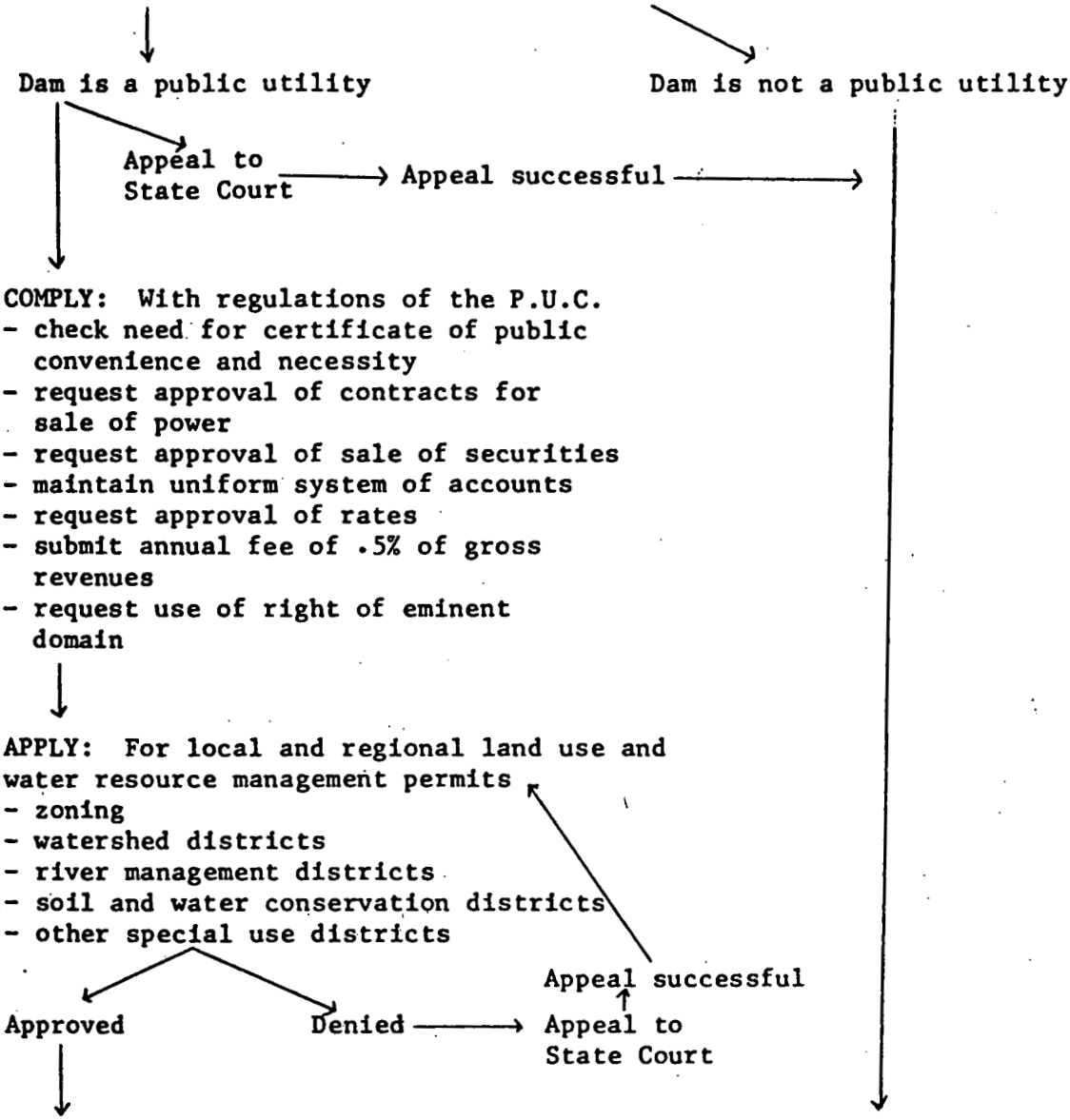
State and local land use controls will play a role in the building of a small dam in Hydrovania only if a county or municipality has adopted zoning which prohibits commercial activity at the damsite. Hydrovania has no shoreland zoning, state-wide land use controls or coastal zone management program. Hydrovania has enacted major facility siting legislation to provide one stop siting and close scrutiny of major energy projects. However, the legislation does not require consideration of projects of less than one hundred (100) megawatts.

4. Federal Law and Regulation in Hydrovania

As a state of the United States, Hydrovania is subject to Federal regulatory and legal systems. Accordingly, it is not necessary to discuss, solely in the context of Hydrovania, the relationship of state law and regulation to the Federal systems. This relationship and the Federal legal and regulatory systems are discussed in preliminary terms in the section that follows.

C. FLOW DIAGRAM OF REGULATION OF SMALL DAMS IN HYDROVANIA




Dam is a public utility
Dam is not a public utility
Appeal to State Court
Appeal successful
VI. COMPLY: With regulations of the P.U.C.
- check need for certificate of public convenience and necessity
- request approval of contracts for sale of power
- request approval of sale of securities
- maintain uniform system of accounts
- request approval of rates
- submit annual fee of .5% of gross revenues
- request use of right of eminent domain
VII. APPLY: For local and regional land use and water resource management permits
- zoning
- watershed districts
- river management districts
- soil and water conservation districts
- other special use districts
Approved
Denied
Appeal successful
Appeal to State Court
VIII. CONSTRUCTION, OPERATION AND MAINTENANCE OF DAM
- comply with conditions of all permits and licenses
- fishways
- siltation
- lake levels and stream flows
- utilize Hydrovania Mill Act
- estimate land to be flooded
- exclude orchards, factories, homes and farmland
- estimate cost of damage payments
- obtain liability insurance for dam breach
- determine whether Hydrovania will apply negligence theory or strict liability theory
- if strict liability theory, is project feasible under prevailing rates?
- if insurance unavailable, is project worth risk?

III. FEDERAL REGULATION OF SMALL DAMS

I. FEDERAL JURISDICTION OVER SMALL SCALE HYDROELECTRIC FACILITIES

A. The Importance of Federal Jurisdiction

One might well imagine that the damming of a small waterway in the midst of one of the sovereign United States, for the purpose of production of energy, would be a matter of only state or local concern. Windmills and solar energy devices, members of the same family of small scale, renewable resource technologies as small scale hydroelectric facilities (SSH) are in most states subject only to municipal zoning or building code regulation. However, for a variety of reasons which will be discussed in this report, the Federal government may exercise jurisdiction over the construction and operation of small dams, as well as the generation, sale and transmission of electric power produced at small dams. Obviously, compliance with Federal regulation is an additional, and in many cases, prohibitory expense for the small dam developer. If Federal regulation can be avoided, the developer need comply only with state and local laws and regulations.

B. The Constitutional Origins of Federal Jurisdiction

The exercise of Federal jurisdiction over SSH flows from one or more of five key provisions of the United States Constitution: the Commerce Power, the Proprietary Power, the War Power, the Treaty Power and the General Welfare Power.

1. The Commerce Power

The Commerce Power is founded in the Commerce Clause, which delegates to Congress the power " . . . to regulate Commerce with foreign nations, and among the several states, and with the Indian tribes. . ." The U.S. Supreme Court has ruled that this power extends as far as waterways are navigable. Navigability has been construed to mean once navigable, presently navigable or navigable after reasonable

improvements. The Federal Power Act incorporates these interpretations as the basis for Federal Energy Regulatory Commission (FERC) jurisdiction, and has been construed to vest the FERC with jurisdiction over projects on non-navigable waterways which might, because of their operation, affect navigable waterways.

2. The Proprietary Power

The Proprietary Power is an outgrowth of the Property Clause, which vests Congress with the power to regulate and dispose of property belonging to the United States. The Proprietary Power permits the sale and lease of Federal lands, as well as surplus water and electricity from government dams.

3. The War Power

The War Power gives Congress authority to collect taxes and expense revenues for the national defense. National defense has justified construction of hydroelectric dams to supply power to defense plants, and delegation of authority to remove obstacles to navigation to the U.S. Army Corps of Engineers.

4. The Treaty Power

The Treaty Power provides the President and the U.S. Senate with authority to enter into international agreements which have the effect of law in the United States. Under the Treaty Power, the United States entered into a treaty with Canada establishing the International Joint Commission, to regulate construction of dams causing international flowage.

5. The General Welfare Power

The General Welfare Power provides Congress with authority to levy taxes and expense funds for the general welfare of the nation. This

power justifies government owned power projects, as well as tax incentives and loan programs designed to achieve objectives usually within the province of the states.

C. The History of Federal Water Power Legislation

A review of the history of the development of Federal water power legislation shows both the importance of the control of waterways to a growing nation and the several ways in which the Constitution may be utilized to justify Federal regulation of water and energy production. During the late nineteenth century, Congress enacted the Rivers and Harbors Acts authorizing the Secretary of War to remove obstacles to navigation, including dams, from the nations' navigable waters, and requiring the permission of the Corps of Engineers for the construction of dams in such waters. At the close of the century, Congress enacted legislation granting free rights-of-way through Federal lands for reservoirs and for the generation and distribution of electric power. This policy was modified at the turn of the century by enactment of provisions allowing conditions to be imposed on licenses for the use of Federal land, and by transfer of authority for the licensing of national forest lands from the Department of the Interior to the Department of Agriculture. The Forest Service soon became the first Federal agency to charge a "reasonable fee" for the use of public land for hydroelectric development, and to place a fifty (50) year limit on licenses.

As the use of waterways for hydroelectric generation increased, so did public concern over the effect of this increase on other uses of waterways. In 1908, President Roosevelt created the Inland Waterways Commission to formulate a comprehensive plan for the development of waterways to benefit the entire nation, rather than localized, single purpose users. Conservationists continued to fight for creation of a body to make water resource decisions in the public interest during this period. In 1917, President

Wilson created the Committee on Water Power to explore alternative procedures for water power decision making. The committee drafted a bill, later to become the Federal Power Act, under which the Secretaries of War, Interior and Agriculture administered the newly created Federal Power Commission. The Act was amended in 1930 to provide for full time commissioners. The commission was renamed the Federal Energy Regulatory Commission in 1977.

II. THE FEDERAL ENERGY REGULATORY COMMISSION

A. Jurisdiction of the FERC Over Hydroelectric Projects

The FERC is the primary Federal agency involved in the regulation of dams used to generate electricity. The FERC regulates the construction and operation of hydroelectric dams under Part I of the Federal Power Act and the sale of electricity in interstate commerce under Part II of the Act. The FERC enjoys jurisdiction over four (4) varieties of hydroelectric projects.

1. Projects Located on Navigable Waterways

The FERC must license any hydroelectric project to be constructed on any waterway which has ever been, is, or may become navigable for purposes of commerce, as in floating logs to mill.

2. Projects Affecting Interstate Commerce

The FERC must license hydroelectric projects located on non-navigable waterways if they affect interstate commerce. Commerce may be affected in either of two ways:

(a) operation of the project in such a way as to affect the flow of water in a navigable waterway of which the non-navigable waterway is a tributary, or

(b) connection of the project to an interstate transmission grid,

even though the project has no interstate sales. Clearly, any hydroelectric project with interstate rates would trigger the jurisdictional requirements of both Parts I and II of the Act.

3. Projects Which Utilize Federal Land

The FERC must license hydroelectric projects which utilize public lands and reservations belonging to the Federal government. These terms do not include all Federal lands. Public lands are those which may be devoted to private use under the public land laws. Such lands are generally administered by the Department of Interior. Reservations include national forests, Indian reservations and other Federal lands withheld from private use. Neither term includes national parks or national monuments. The FERC has the power to reserve Federal lands for hydroelectric development.

4. Projects Which Utilize Surplus Water or Water Power from Government Dams

The Property clause has been construed to apply to electricity generated at a government dam and to water made available at a government dam. Consequently, the FERC licenses the use of Federal tangible property, just as it licenses the use of Federal real property to be used for the generation of hydroelectric power.

B. Determining FERC Jurisdiction

As the previous section reveals, the jurisdictional tenacles of the FERC reach to most hydroelectric dams of significant size. When the developer is uncertain as to FERC jurisdiction, two methods are available to settle the issue. First, the developer may seek an informal letter of opinion from the FERC staff. Second, the developer may file a declaration of intent with the FERC, providing the FERC with sufficient data to

formally determine whether it enjoys jurisdiction over a particular project. The declaration of intent is mandatory for all new projects and for all projects constructed prior to 1935 which are undergoing significant modifications.

C. The Issuance of Hydroelectric Licenses by the FERC

Once the jurisdictional uncertainty has been resolved, the prospective developer may file with the FERC for either a preliminary permit or a license.

1. The Preliminary Permit

If a developer wants to secure his claim to a particular site and to protect the investment required to complete the studies required to file a license application, he may file an application for a preliminary permit with the FERC. Granting of the permit gives the recipient a priority of application for the particular site. As with licenses, preference is given to public entities where they are equally qualified. The application is brief and easy to complete. Where no opposition is voiced to issuance of the permit, the Director of the Office of Electric Power may issue the permit without hearing or Commission action.

2. Licenses

At present, the FERC issues two types of hydroelectric licenses: one for projects of less than 1.5 mw in capacity (minor project) and one for larger (major) projects. In the near future, the FERC will revamp its license structure to issue licenses persuant to separate procedures for: a) minor projects, b) existing facilities greater than 1.5 mw in capacity, and c) new projects. The significance of the size and

distinction is not the rights granted by the license, but the procedures required to obtain the license. In all cases, public entities receive preference, and the Commission may recommend to the Congress that the Federal government develop a site brought to the Commission's attention by a license application.

(a) The Licensing of Minor Projects

The FERC recently promulgated a "short form" application to streamline minor project applications. The short form requires basic information on the size, location, use and ownership of the project, as well as evidence of compliance with state water laws and other state laws, a brief description of environmental impact and comments from other Federal agencies consulted prior to filing of the application. Significantly, no environmental impact statement is required for minor projects. Upon filing, notice of the application is published in the Federal Register and in local newspapers. Agencies are notified by mail. FERC decision-making time on minor projects has averaged about two years in the past. With the short form, the FERC hopes to decrease delay to one year. Interested parties may intervene in FERC minor license proceedings. FERC decisions may be appealed to the U.S. Circuit Court of Appeals.

(b) The Licensing of Major Projects

The licensing of hydroelectric projects in excess of 1.5 mw of capacity, both new and existing, is presently a very complicated process. When the FERC implements changes to comply with Congressional directives to streamline the process, and to implement

the policy objectives of the FERC Chairman, the procedures for major licenses will be somewhat simplified. Whether the reforms save both agency and developer time and effort remains to be seen.

(1) The Application

The major project applicant must file a completed form and Exhibits A through W, as required by the FERC, to explicate various aspects of the project. Preparation of the exhibit requires completion of all studies and design work, selection of equipment, procurement of land and water rights and obtainment of state permits. The more significant exhibits are Exhibit R, describing the impact of the project on recreational values and mitigation efforts to be undertaken; Exhibit S, describing project impact on fish and wildlife, and mitigation efforts to be undertaken; Exhibit V, describing the impact of the project on natural, historic and scenic values; and Exhibit W, the project environmental impact report. These exhibits are designed to facilitate FERC compliance with provisions of the Federal Power Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act and the National Environmental Policy Act.

(2) The Environmental Impact Statement

The purpose of Exhibit W is to assist the FERC in determining whether the granting of the project license will be a "major federal action significantly affecting the

quality of the human environment." If it is, the FERC must prepare both a draft environmental impact statement (DEIS) and a final environmental impact statement (FEIS). In practice, the renovation of existing sites and the construction of new small projects are held by the FERC not to require an EIS. This policy saves the small developer considerable expense and delay. The preparation, circulation and evaluation of an EIS adds at least a year to the delay in project approval, and can cost the developer hundreds of thousands of dollars.

If an EIS must be prepared on a project, the National Environmental Policy Act (NEPA) requires evaluation of the environmental impact of the proposed project; unavoidable adverse environmental impacts of the project; alternatives which might achieve the same result; the relationship between the short-term use of the project environment and the maintenance and enhancement of long-term productivity; and, finally, any irreversible and irretrievable commitments of resources involved in the project. It is worth noting that one of every ten EIS prepared pursuant to NEPA has resulted in litigation. The FERC implements NEPA by assembling an EIS Task Force from the staff of appropriate FERC offices to prepare a DEIS from the application and comments from Federal agencies. The DEIS is circulated for comment to Federal, state and local agencies, as well as interested

parties and experts. Upon receipt of comments, the Task Force reviews the EIS to produce the FEIS. If issues remain unresolved in the FEIS, an administrative law judge will decide the issues after the FERC staff and intervenors file briefs and submit evidence. The FERC must specifically accept or reject the findings of the judge on points contested in the EIS. Any person with standing may intervene on the basis of the EIS.

If an EIS is not required, the FERC must prepare a "negative determination" showing that the commission took a hard look at the environmental impact of the project and convincingly demonstrated that the impact was not significant. This determination may be appealed, and will be closely scrutinized by reviewing courts.

Pursuant to an Executive Order issued by President Carter in 1977, the Council on Environmental Quality (CEQ) has recently promulgated final regulations designed to radically transform the way Federal agencies, including the FERC, implement NEPA. The regulations, replacing the prior CEQ guidelines which were advisory in nature, will have the effect of law. The new regulations are intended to change the EIS from a post-planning checklist to a document designed to force the mitigation of environmental impacts. The regulations also seek to make the EIS a timely decision-making document which will satisfy the information needs of all agencies. In addition, CEQ will become the

arbiter of disputes between lead agencies and other agencies involved in the licensing process. Federal agencies, including independent agencies like the FERC, have, ineffect, had their EIS regulations "supplemented" by the CEQ regulations.

(3) Evaluation of the Project by the FERC

Upon filing of the application and nine (9) copies, the application is docketed and sent to appropriate FERC offices. If the offices find deficencies, the applicant is given thirty (30) days to correct the deficencies. Once the application is complete, the Application Office assigns a Project Manager (PM) and an attorney from the Office of General Counsel to the project. The PM prepares a project description for circulation for comment to appropriate Federal, state, regional and local agencies. Received comments are forwarded to the applicant for response. The PM combines reports from FERC offices to create a Power Memorandum, the FERC decision-making document. The Power Memorandum is circulated to offices for comment, then to the Office of General Counsel for preparation of a Commission Order denying or granting the license. The Order, the Power Memorandum and the FEIS are forwarded to the Commissioners for a decision. The decision of the FERC may be appealed to a U.S. Circuit Court of Appeals.

D. Additional FERC Powers Important to Hydroelectric Projects

1. Waiver of License Conditions

In licensing minor projects the FERC may, in its discretion,

waive many of the conditions usually inserted in hydroelectric licenses, such as payment of annual dam charges and maintenance of depreciation reserves. The fifty (50) year license limitation may not be waived. Waiver of conditions is a clear incentive for small projects.

2. The Power of Eminent Domain

The Federal Power Act gives the licensee who has made an unsuccessful, but bona fide, effort to acquire project lands through eminent domain the authority to acquire an unimproved dam site.

3. Annual Dam Charges and Use Fees

The FERC charges licensees five cents per kw of installed capacity, up to a capacity of two thousand kw as an annual license fee. The remaining expenses of the hydroelectric regulation activities of the FERC are apportioned among dams in excess of two thousand kw capacity on the basis of capacity. The FERC also computes use fees charge to licensees who utilize government dams or water from government dams. Unfortunately, the FERC use fee computation method creates a bias which favors fossil fuel generation since it computes the value of the license by comparing it with the cost of generating the same amount of power by fossil fuel generation. The fee is one-half of the difference between the cost of fossil fuel and hydro generation. The effect of this policy is to encourage the continued disuse of the hundreds of Corps of Engineers and Bureau of Reclamation navigation, irrigation and flood control facilities capable of producing hydropower.

E. Small Dams and the National Energy Act

As part of what is now known as the National Energy Act, Congress enacted the Public Utilities Regulatory Policies Act of 1978. Portions of this Act

will be significant incentives to the development of small scale hydroelectric facilities. Under Title II of the Act, the FERC must promulgate regulations, enforced by the state PUCs, requiring utilities to purchase power generated by "small power producers" at "just and reasonable rates". Dams of eighty (80) megawatts or less will be considered small power producers. The just and reasonable rate may not discriminate against the ultimate consumer and may not exceed the marginal cost of the purchasing utility's alternative sources, but it may reflect the increased risk the small power producer takes because it is not a regulated utility guaranteed an opportunity to earn a fair rate of return. Title II also allows an "electric utility" to petition the FERC to force a utility to wheel power from a small power producer to the electric utility, and allows the small power producer to petition to FERC for interconnection with the grid. Finally, the Act permits the FERC to exempt small power producers from certain provisions of Part II of the Federal Power Act, the Public Utility Holding Company Act, and state laws and regulations concerning rates and financial matters. Depending on the content of the regulations promulgated to implement the Act, these provisions can become significant incentives to the development of small scale hydroelectric facilities by decreasing the burden of regulation and increasing access to purchasers of electricity. Title IV of the Act creates a feasibility study and construction loan program which will also be an important incentive to SSH development if fully funded by the President and Congress.

III. THE REGULATION OF CONSTRUCTION IN AND THE DISCHARGE OF DREDGE, FILL AND OTHER MATERIALS INTO NAVIGABLE WATERWAYS

A. The U.S. Army Corps of Engineers

Pursuant to the Rivers and Harbors Act, the Corps is authorized to license dams in navigable waterways and to remove unlicensed obstacles to navigation, such as dams. However, these provisions of the Rivers and Harbors Act have been pre-empted by Section 10(e) of the Federal Power Act, which provides that hydroelectric facilities affecting navigable waters may not be licensed by the FERC until approved by the Corps. The Corps exercises this authority by commenting on FERC license applications.

The Corps also issues permits for the discharge of dredge and fill material under Section 404 of the Clean Water Act. Importantly, the jurisdiction of the Corps under the Clean Water Act extends beyond navigable waters to any waters of the United States.

B. The Environmental Protection Agency

The Environmental Protection Agency (EPA) is charged with the protection and enhancement of the quality of the nations waters, primarily through the Clean Water Act, formerly known as the Federal Water Pollution Control Act. Because of the structure of the Act, the EPA may have no authority over the construction or operation of dams.

Section 401 of the Act requires any applicant for a Federal license for an activity which might result in a discharge into navigable waters to provide the licensing agency with certification from the state that the activity will comply with effluent limitations and standards established by the state pursuant to the Act. Thus, only in states not exercising certification authority pursuant to the Act will the EPA have a role in dam licensing. The FERC requires that the 401 certificate be acquired prior to filing a license application with the FERC. The Section 401 certificate is an obstacle to SSH only where states have adopted a "seven day minimum flow" standard, which

impairs the operation of the dam. The seven day minimum flow standard represents the level attained by the waterway diring the seven days of lowest flow in a ten (10) year period. Clearly, if flow drops below this level, the dam must release water to raise the flow. This may be a particular problem with dams used to produce peaking power.

EPA may also gain jurisdiction over SSH pursuant to Section 402 of the Act. Section 402 establishes the National Pollution Discharge Elimination System (NPDES), which requires a permit for the discharge of any pollutant into navigable waters. Although EPA has previously held in separate letters of opinion that dams are not point sources subject to NPDES regulation, a procedural victory won by the South Carolina Wildlife Federation in a suit to enjoin construction of a Corps dam and a petition for rulemaking filed with the EPA by the National Wildlife Federation have raised the serious possibility that dams will be subject to NPDES regulation. The plaintiffs and petitioners in these controversies allege that dams add trace metals and oxygen-deficient water to downstream waters. The Corps and the Utility Water Act Group deny that dams add pollutants to water and contend that any trace minerals are absorbed from the bottom land of reservoirs. If SSH are subjected to NPDES regulation, a significant obstacle to the development of SSH will have been raised.

IV. The Protection of Fish, Wildlife and Endangered Species

The protection and enhancement of fish, wildlife and endangered species is primarily the responsibility of the Department of Interior, but the Department of Commerce and the FERC also play a role.

A. The Federal Energy Regulatory Commission

1. The Construction of Fishways.

Section 18 of the Federal Power Act mandates that the FERC shall require licenses to construct and operate such fishways as are perscribed by the U.S. Fish and Wildlife Service, the National Marine Fisheries

Service. Although these agencies view their powers as advisory rather than as mandatory, the power of the FERC to require fishways makes fishways a significant obstacle to new dams and a smaller obstacle to the retrofitting of old dams. When barriers lie between the ocean and a dam, the FERC merely requires that fishways be constructed when the barriers are removed or equipped with fishways.

2. Evaluation of Project Effect on Fish and Wildlife

The United States Supreme Court has ruled that fishing is a recreational use of rivers which must be considered when the FERC evaluates whether a dam project is in the public interest. The Court in the same case also said the FERC must consider the effect of the project on anadromous fish and on wildlife. Thus, even without the Fish and Wildlife Coordination Act, the FERC must consider the effects of a project on fish and wildlife.

B. The Departments of Interior and Commerce

1. The Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act, administered by the Departments of Interior and Commerce, requires that Federal agencies licensing dams impounding more than ten acres of water consult the Departments and state fish and wildlife agencies to determine how fish and wildlife may be conserved and enhanced. The Act requires provision for wildlife management in licensed projects and wildlife conservation plans approved jointly by the FERC, the Department Secretary and the state fish and wildlife agency. Specific mitigation measures are left to the discretion of the FERC, but the Act is an important piece of environmental legislation.

2. A Reinvigorated FWCA and NEPA.

The Act may become stronger when the Departments issue new regulations vigorously implementing the Act, as directed by President Carter. Since the Act applies to projects which may not require an EIS, the Act may present greater obstacles than NEPA does to the development of SSH. It is worth noting that the wildlife agencies do not agree with the several court decisions which hold that a NEPA EIS satisfies the FWCA. When NEPA is reinvigorated by the new CEQ regulations and the FWCA is reinvigorated by the new joint regulations of Interior and Commerce, SSH developers may have new obstacles to surmount.

C. Dormant Incentives to SSH Development.

1. Under the Anadromous Fish Conservation Act and the Fish Restoration and Management Projects Act, the Secretary of Interior is authorized to expend funds for purposes which can easily be construed to include the construction of fishways. The only obstacles to such programs are a lack of funds and contrary policies adopted by the officials.

2. The Corps of Engineers is authorized to construct fishways or river and harbor improvements in navigable waterways pursuant to the Rivers and Harbors Act of 1888.

D. The Protection of Endangered Species

The Endangered Species Act vests the Secretaries of Interior and Commerce with authority to protect species in danger of extinction or likely to become in danger of extinction. Any threatened species may be added to the Endangered Species List and regulations may be issued by the Secretary of Interior to protect the species. The regulations may include designation of a range or critical habitat in which commercial activity may not take place

without permission of the Secretary. However, the grounds for permission is economic hardship, and exemptions for small dams are unlikely. Congress enacted an additional procedure to obtain exemptions from the Act in 1978, but these procedures are designed for large projects, such as the huge Tellico Dam. It is doubtful the two review panels created by Congress would exempt a small dam from the strictures of the Act. Thus the Act is an insurmountable obstacle if a small dam threatens a listed specie. Developers must check the lists of protected species published regularly in the Federal Register and the Code of Federal Regulations.

V. The Preservation of Historic Places, Archeological Sites and Natural Areas.

The preservation of historic places, archeological sites and natural areas presents unique problems to the SSH developer because the areas and places protected, like endangered species, have no common outward characteristics.

A. Historic and Archeological Preservation

1. Projects on Federally Owned or Controlled Lands

Projects effecting historic or archeological sites on Federally owned or controlled lands must be permitted by the Secretary of Interior, through the National Park Service.

2. Hydroelectric Projects in General

Before the FERC may license a project which will pond more than forty acres of water, or which may have some effect on historic or archeological materials, the project must be brought to the attention of the Secretary of Interior. The Secretary may relocate such materials, using public funds from project appropriations if necessary.

B. Projects Listed in or Eligible for Listing in the National Register

The National Register, a list of sites nominated for their historic significance by government agencies concerned with historic preservation, may pose

the most significant obstacle to SSH of the several Federal institutions created to protect historic and archeological sites. Listing of property in the Register has no effect on private owners, but requires Federal licensing agencies to consider the effect of the project on properties listed or eligible for listing in the Register. A complex procedure is established by regulation by which the FERC must evaluate the effect of a project on a site and negotiate agreements on methods of impact avoidance or mitigation with the Executive Director of the Advisory Council on Historic Preservation and the State Historic Preservation Offices. The FERC gives weight to the policies of the Advisory Council on Historic Preservation in considering license applications, in part because of the demands of NEPA and the FERC's own regulations. The time and expense of discovering the historic or archeological values affected by a project can be a significant obstacle to SSH, as can the process of negotiating and mitigating adverse effects. One incentive to SSH exists under the Tax Reform Act of 1976. Under the Act, a developer who restores an historic site, such as a mill, may gain a significant tax break by amortizing the cost of rehabilitation over a five year period. It should also be noted that a FERC report suggested that price-fixing and territorial allocation may be a problem among some experts who must be hired to comply with FERC historic and archeological preservation guidelines.

C. The Preservation of Natural Areas

1. The National Wilderness Preservation System

Created by Congress in 1967, the National Wilderness Preservation System permits the designation for protection purposes of wilderness areas on Federal lands. Commercial activity is generally prohibited in these areas. However, dams may be built and operated in wilderness areas if the President finds such use is in the public interest. The President may attach

conditions to any permit. The effect of the System is to remove authority from the FERC to dedicate designated lands to power production.

2. The National Trails System

Established to protect walking, hiking and camping trails on Federal, state and private lands, the National Trails System neither prohibits nor permits dams.

3. Wild and Scenic Rivers

The Wild and Scenic Rivers Act is the most serious obstacle to SSH of the several Federal statutes which protect natural areas. Under the Act, wild and free flowing rivers are designated by Congress as waterways worthy of protection. Rivers may be designated as wild, scenic or recreational. Designation of a river prohibits the issuance of a FERC license for a project on the river. In addition, the FERC may not issue a license for a project on any river listed as a potential addition to the System until such time after 1981 when three years have elapsed since Congress added the last river to the list of potential additions.

4. The National Wildlife Refuge System

The National Wildlife Refuge System is a consolidation of the various areas administered by the Department of Interior for the conservation of fish and wildlife. The Secretary of Interior may permit any use of a wildlife refuge which does not conflict with the purpose for which the area was established. U.S.Fish and Wildlife Service regulations provide for permits for the construction of transmission lines and generating units in wildlife refuges.

VI. Regulation of the Use of Federal Lands

Since a significant portion of the nation's SSH potential lies on Federal lands, Federal land management policy is important to the small developer.

A. The Federal Energy Regulatory Commission

The Federal Power Act vests the FERC with authority to designate and reserve most Federal land to hydroelectric production. Once reserved, only Congress or the FERC may lift the reservation on lands. However, because of the passage of the Federal Land Policy Management Act (FLPMA), questions have been raised concerning FERC's authority to grant rights of way within the National Forest system. The FERC has commented on the joint regulations proposed to implement FLPMA. Developers should attempt to satisfy all agencies while the controversy continues. The FERC's power to reserve Federal lands is a significant incentive to SSH.

B. The Bureau of Indian Affairs and Indian Lands

The Bureau of Indian Affairs exercises Federal sovereignty over the lands of Native Americans. A developer seeking to develop a site on such lands must obtain a permit from the Bureau. If the local tribe has organized pursuant to Federal law and Congress has recognized the rights of the tribe to control their land, the reservational powers of the FERC would not apply and the permission of the tribe must be obtained. Reasonable annual charges must be paid to the tribe by the licensee. Tribal lands may be taken by eminent domain.

C. The National Park Service

The National Park Service regulates the use of national parks, monuments and reservations not controlled by the Department of the Army. Permits are required for the use of lands regulated by the Service.

D. The Bureau of Land Management

Operating under increased powers granted by FLPMA, the Bureau administers public land subject to the control of the Department of Interior. The Bureau permits various uses of regulated lands.

E. The National Forest Service

The National Forest Service, part of the Department of Agriculture, regulates the use of National Forests, in part to maintain favorable water flows. National Forests may be used for hydroelectric projects.

F. Public Rights In and Under Navigable Rivers

The Federal Government own and may lease water under navigable rivers flowing through Federal lands. The Federal Government has relinquished any claim to title to lands beneath navigable waters which lie within state boundaries.

VII. Federal Dam Construction and Power Distribution Agencies

Agencies of the Federal government have constructed and now operate and maintain a significant percentage of the nation's hydroelectric capacity. These agencies, along with the Federal power distribution agencies, are available institutions for the development of SSH by the Federal government at existing government irrigation, navigation and flood control facilities, as well as at facilities constructed in the future.

A. The U.S. Army Corps of Engineers

The Corps constructs facilities for flood control, navigation, soil and beach erosion control and river and harbor improvement purposes thoughout the nation. The Corps must gain the permission of Congress to construct such facilities. To justify construction, the Corps employs complex cost-benefit formulae which include the benefits of the secondary purposes of the project, such as power production. Private developers may obtain permits for installation of turbines at Corps facilities, where hydroelectric potential lies untapped.

B. The Power Administrations

The Federal government has created several Power Administrations to market

power generated at Corps projects. Only one, the Southeastern Power Administration serves any of the Northeastern states which are the subject of this grant. Most of the Northeastern states, unlike the rest of the nation, are not serviced by a Power Administration. The absence of a Federal marketing entity in the region diminishes the likelihood of efficient use of existing Federal facilities and inhibits the construction of other facilities. Power sold by the Power Administration is sold at cost, with a preference given to public entities.

C. The Tennessee Valley Authority

The TVA is a Congressionally created corporation charged with controlling floods in the Tennessee River Valley. However, its principal activity is the generation of hydroelectric power at flood control dams. Power sold by the TVA to public retailers serves over 2.5 million people. Small dam developers seeking to develop dams on the Tennessee River or its tributaries must obtain the permission of the TVA.

D. The Bureau of Reclamation

The Bureau of Reclamation constructs land reclamation and irrigation facilities in the West. By permit, BUREC facilities may be used by private developers for hydroelectric generators.

E. The Federal Energy Regulatory Commission

The FERC may deny a license application and recommend to Congress that the Federal government develop a project.

VIII. Additional Federal Agencies Concerned with Small Scale Hydroelectric Dams

A. The River Basins Commissions

The River Basins Commissions have been established by a combination of Executive Orders, state legislation and Congressional legislation ratifying multi-state compacts pursuant to the Compacts Clause of the U.S. Constitution.

The purpose of the Commissions is to serve as basin-wide policy-making bodies concerned with the use of large river basisns. An example of their usefulness is the study of the development of small scale hydroelectric power currently being conducted by the New England River Basins Commission.

Most of the Commissions possess no direct authority over the development of small dams. The exceptions to this rule are the Delaware and Susquehanna River Basins Commissions, which have the authority to regulate use of certain interstate waterways. However, the policy-making function of all the Commissions will be important to the development of small scale hydroelectric plants because of the concern for multiple uses of the waterways. In addition, the Commissions play an important role in the development of comprehensive plans for the development of waterways. Such plans will become of increasing importance in FERC decision-making.

B. The International Joint Commission

The International Joint Commission (IJC) was created by treaty to regulate uses of boundary waters which would affect water levels on either side of the United States-Canadian border. The construction of any dam which would so affect boundary waters must be approved by the Commissions. To do technical analyses and investigations, the IJC borrows staff from Federal agencies. Decisions by the IJC are not Federal but international decisions. Accordingly, they are not appealable, but may be indirectly challenged in court by collateral procedures.

C. The Water Resources Council

The Water Resources Council coordinates the budgets and programs of the various River Basins Commissions, conducts research and monitors water supplies in each region. In addition, the Council advises the President and Congress on the development of the nation's water resources.

D. The Office of Water Research and Technology

The Office of Water Research and Technology coordinates water resources research programs as established under the Water Resource Research Act of 1970. This includes coordination of grant programs to state designated research centers.

E. The Office of Science and Technology Policy

The Office of Science and Technology Policy (OSTP), part of the Office of Management and Budget, conducts studies and advises the President on problems in science and technology. The OSTP is currently coordinating an extensive study of dam safety procedures in the Federal government.

IX. FEDERAL TAX ISSUES RELATING TO SMALL DAMS

The following summary is intended to provide a concise overview of those aspects of Federal Income Tax law which have particular applicability to SSH development. It does not purport to contain a complete analysis of the tax ramifications of SSH investment and operation. The emphasis is on those provisions which have a unique application to SSH projects.*

A. Deductions from Gross Income

Perhaps the most telling provisions of the Internal Revenue Code regarding the financial well-being of a SSH project in the early years of its existence are those provisions which allow for (1) current deductions from gross income of ordinary and necessary business expenses, (2) depreciation of certain capital expenditures and (3) net operating loss carryovers.

(1) Ordinary and Necessary Business Expenses

Internal Revenue Code (IRC) § 162 allows as a deduction from gross income those expenses incurred in the ordinary cause of running a business. In the case of SSH developers these expenses include legal fees associated with applications for renewal of operating licenses.

(2) Depreciation of Certain Capital Expenditures

Internal Revenue Code (IRC) § 167 provides an incentive to invest in certain types of property. The general rule is

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* (IDB) - Industrial Development Bond
(ITC) - Investment Tax Credit
(IRC) - Internal Revenue Code
(SSH) - Small Scale Hydroelectric

to the effect that the amount so invested may be deducted from gross income over the useful life of the property acquired. The following expenditures have been accorded this treatment: legal and engineering fees associated with property acquisition, land preparation in relation to construction of a dam, Rev. Ruling 72-96; and, flowage easement acquisition with Rev. Ruling 71-121.

It should be noted that legal fees associated with the initial acquisition of a license renewable for an indefinite period constitutes a non-mortizable capital expenditure deductible only when the license is revoked or abandoned.

(3) Net Operating Loss Carryover: IRC § 172

Corporations involved in SHH development may be entitled to utilize the net operating loss carryover provision of the IRC. In essence, this entitles a corporation to apply the excess of its deductions (with certain adjustments) over its gross income against its gross income in subsequent tax years. A net operating loss may be carried forward for five (5) years. Thus, a developer whose income flow develops years after deductible expenses are incurred does not lose the value of the deductions.

B. Investment Tax Credit: IRC §§ 38. 46. 48

The ITC provided in the Internal Revenue Code § 38 is available for investments in depreciable tangible property tied to production and other specified business activities. Treas. Reg. 1.48 - 11d includes property used as an integral part of the furnishing of electrical energy among that which is subject to the ITC. Many of the facilities and

related equipment involved in hydroelectric power projects are eligible for ITC treatment. These include the dam, generator, turbines and housing facilities. See Rev. Rulings 72-223 and 73-466. However, fish ladders are not held by the IRC to be property to which the investment tax credit applies.

C. Exemption from Industrial Development Bond Status: IRC § 103

The interest paid on certain obligations of public entities is exempt from Federal Income Tax. Where the funds of a municipal bond are used to fund a facility for the local furnishing of electric energy or a facility for the furnishing of water, as those phrases are defined in the Treasury Regulations, the interest paid to purchasers of those bonds is tax free. Thus, public SSH developers may use this funding mechanism to attract otherwise unavailable capital.

X Federal Loan Programs Relating to Small Dams

Introduction

This summary is an effort to describe several of the various Federal loan programs which may be available to a developer of a small-scale hydroelectric dam. Although this description is not inclusive of all potential sources of Federal funding for small dams, it indicates several primary agencies which may assist a developer in financing a project.

Department of Energy Small Hydroelectric Projects Loan Program

A loan program which may serve as an important source of funding for dam developers was established as part of the National Energy Act, enacted in November of 1978. The purpose of the program, to be administered by the Department of Energy, is to provide incentives for the construction of small hydroelectric power projects in connection with existing dams. The program includes funding for feasibility studies and application preparation, as well as loan funds to help the costs of construction projects. Qualifying projects must have no more than 15,000 kw of installed capacity and have no adverse effects on fish and wildlife, on recreational uses of water, and on stream flow. Under this program, the DOE will make loans of up to 75% of the project costs.

Small Business Administration Loan Programs

A. Small Energy-Oriented Firms Loan Program

The purpose of this SBA loan program is to assist small energy-oriented firms and developers of alternative energy sources. Established by the Small Business Energy Loan Act of 1978, this program will provide direct and guaranteed loans to finance the implementation of hydroelectric power equipment. The goal of the program is to provide a means for small business concerns to enter, continue, or expand in the fields of manufacturing, selling, installing, servicing, and developing specific energy measures, through

loans and loan guarantees, seminars and training grants.

The eligibility requirements for this program are similar to those applicable to the SBA business and state and local development company loan programs, described below. The SSH developer must own an independently operated business not dominant in its field. In addition, the developer must be unable to obtain financial assistance from private lenders. The most commonly distributed loans will in all likelihood be guaranteed loans, since direct loans are not approved if a guaranteed loan is available. Further information on this program may be obtained by contacting Ms. Evelyn Cherry, Chief, Special Projects Division, Office of Financing, Small Business Administration, Washington, D.C.,202-653-6696.

B. Small Business Loan Program

Established by the Samll Business Act, the Small Business Loan Program is designed to assist small businesses obtain funding to construct, expand, or convert facilities, to purchase building equipment or materials and for working capital. Applicants must be unable to obtain funding from non-Federal sources to qualify for the program. To be eligible, the applicant must be a "small"business,independently owned and operated and not dominant in its field. A small business engaged in generation, transmission, and/or distribution of electric energy for sale may not generate more than 4 million megawatts. Direct and guaranteed loans are available under this program; however, due to the lack of Congressional appropriations, currently most of the loans being made are guaranteed. Additional information on this program and the state and local development company loan program may be obtained by contacting the local office of the SBA.

C. State and Local Development Company Loans

Under this program, direct and guaranteed loans are provided to state and local development companies to assist small businesses with equity capital and for the purchase of land, buildings and machinery. Enacted as part of the Small Business

Investment Act of 1958, the SLDCL program requires that a state development company be incorporated under a special state law with authority to assist small businesses throughout the state. Loans are available to local development companies which are incorporated under general state corporation statutes, either on a profit or nonprofit basis, for the purpose of promoting economic growth in a particular community within the state. The corporations must be formed by public-spirited citizens interested in the planned economic growth of a community with at least 75 percent ownership and control held by persons living or doing business in the community.

Unlike other SBA loan programs, the SLDCL funds are not loans of "last resort", i.e., funding need not be unavailable from other sources before the developer applies for the loan. The potential beneficiaries under this program are small businesses which are independently owned and operated for profit and not dominant in the field. Presently few if any communities have utilzied the SLDCL program for small dam development. However, it is probable that a local entity interested in constructing a dam to provide electricity for business and local use would be eligible for funding from a state or local development company.

Farmers Home Administration Business and Industrial Loan Program

The goal of the FmHa funding is to provide financial assistance for improving, developing or financing business and industry and improving the economic and environmental conditions in rural areas. Established by the Consolidated Farm and Rural Development Act, this program authorizes FmHa to provide guaranteed and insured loans to qualifying applicants. Applicants eligible for the loans may be a cooperative, corporation, partnership, trust or legal entity organized and operated on a profit or nonprofit basis, or a municipality, county or other political subdivision of a state or an individual in rural areas. Preference is given to those projects in areas other than cities having a population of more than 25,000.

The loans available under the FmHa program could be an important source of financial assistance to the SSH developer. To be eligible for the loan, it is not necessary that the developer be unable to obtain credit elsewhere. In addition to providing funds for buildings, plants, equipment and utility extensions, the loans are available to enable purchasing and development of land, easements, rights-of-way, buildings, facilities, leases or materials. This could be particularly helpful to the SSH developer who is forced to purchase rights-of-ways and easements around the dam site. Another crucial advantage to the FmHa loans is that they tend to be significantly larger in amount than those authorized by SBA. Further information on the business and industrial loan program may be obtained by contacting a Regional Office of the FmHa.

Rural Electrification Administration Loans and Loan Guarantees

Authorized by the Rural Electrification Act of 1936, the REA loan program provides long-term insured loans to qualified organizations for the purpose of supplying central station service on a continuing basis in rural areas. Applicants may be rural electric cooperatives, public utility districts, power companies, municipalities and other qualified power suppliers. The primary purpose of the REA loan is to finance the construction and operation of generating plants, electric transmission lines or systems to provide initial and continued service to persons in rural areas. REA loans are generally available only when a rural area is without central station service. However, if a project in a rural area is already being financed by a REA loan, the same project may be eligible for additional loan funds for the construction of a small dam as an extension of the original project. Further information on this program may be obtained by contacting Mr. Joseph Vellone, Director of Power Supply, Rural Electrification Administration, Washington, D.C. 202-447-8863.

IV. STATE REGULATION OF SMALL DAMS

A. COMMON LAW DOCTRINE

1. Riparianism, Reasonable Use and Navigability

The first legal obstacle any developer of low-head hydroelectric (LHH) power must surmount is the need to have legal title to the use of the water flowing past the site of the dam. Although every state allows possession of a property right in flowing water, Eastern and Western States have developed antagonistic theories of property rights in water. Western States employ the doctrine of prior appropriation, a theory which begins with the separation of water rights from the ownership of land. Under this doctrine, the legal right to the use of the flowing water accrues in the earlier user rather than in the owner of riparian land. Eastern States, including each of the nineteen states which are the subject of this study, utilize the doctrine of riparianism. Under riparian theory, the property right in the use of flowing water rests in the owner of the banks or bed of the watercourse. In practice, the most significant difference between the two doctrines is that riparianism increases the cost of the use of the water by requiring ownership of abutting land, as well as the mechanisms to convert the flowing water to energy.

Riparian land is land which borders a watercourse. Under the law of each of the subject states a watercourse is a body of water which has a reasonably well-defined channel with a bed and banks through which water flows. The watercourse may flow intermittently. Title to riparian land along non-navigable streams extends to the middle of the stream and includes the bed below in most states. If a riparian owner holds land on both sides of such stream, his title embraces the entire bed within the lines of the abutting property. Title to the bed of navigable streams is held by the

state in most cases. In some states, title to the bed is held by the respective riparian owners, as is the case with non-navigable streams. However, such title is held in subordination to a public easement of navigation.

Riparianism is a legal obstacle to the use of small dams for two reasons. First, it requires that a dam developer have right, title or interest to both sides of a non-navigable waterway, and permission from the state to utilize the bed of a navigable waterway, before a dam may be constructed. Second, riparianism also regulates the use which may be made of the flowing water by riparian owners. Two similar theories of use have developed in the nineteen states, each with different consequences for small dams. The two theories are reasonable use and natural flow. Under both theories, the nature of the property right is not in the water, but in its use.

Under reasonable use theory, each riparian proprietor has the right to make use of the water in the stream or river provided such use does not unreasonably interfere with the like use by other riparians. Reasonable use constitutes the measure and limit of the water right. Reasonableness is a question of fact to be determined under the circumstance of each case. Such factors as stream size, the state of civilization, climate conditions, customs of neighborhoods and types of uses involved may be utilized in the determination of reasonableness.

Under natural flow theory, a riparian proprietor has the right to have the stream remain in its substantially natural state, i.e. free from any unreasonable diminution in quantity and any unreasonable pollution in quality. If the quantity or quality of the water is affected by an upper riparian's use, a lower riparian owner may maintain an action even though such use causes him no injury or damage.

Most of the nineteen states apply the doctrine of riparian rights without distinguishing between the theories. The result is that most states apply a "reasonable use" theory. Even states that have articulated a natural flow theory, such as Kentucky, have maintained that any diminution in quantity of a stream, in order to be actionable, must be unreasonable in respect to an owner who is harmed by it. However, that the application of the riparian rights doctrine has resulted in a "reasonable use" standard is not always so clear. For example, in Illinois the state court decisions include considerable discussion of the natural flow theory. There is significant uncertainty as to whether the net effect has been a "reasonable use" standard. In New Jersey, the natural flow theory is applied to some circumstances, such as the sale of water for use on non-riparian lands, while the reasonable use theory is applied in others, such as domestic use or irrigation.

Determination of which theory applies is important to the developer of small dams because natural flow theory exercises a greater constraint on the use of water. This may be an incentive to the developer since it means that where natural flow theory applies, a developer can place greater reliance on the continued availability of a required volume of water. Furthermore, under reasonable use theory, many states have created priorities of use among riparians. Domestic use has the highest priority. Thus, in the event a municipality is a riparian owner and takes water for public water supply, a dam owner may be deprived of necessary flow. See, e.g., Canton v. Shock 66 Ohio St. 19, 63 N.E. 600 (1902).

An additional legal obstacle presented by riparianism is the uncertainty over whether a given watercourse is navigable or non-navigable. This determination is important to the developer of small dams because a finding

of non-navigability may relieve the developer of the need to comply with extensive state statutes and regulations.

The question of navigability is a matter of state law. Most of the nineteen subject states have adopted a modification of the federal definition of navigability. In these definitions, navigability is equated with waterborne commerce. It is not necessary that the watercourse be able to float large ships; if the waterway has been used or useful in commerce at all, such as in the floating of logs to mill, that is sufficient. A few other states have incorporated notions of Public Trust into determinations of navigability. In these states usefulness for recreation will support a classification of navigability.

One difficulty the determination of navigability presents to the developer of a small dam is one of evidence. It is not uncommon for courts to utilize data and documents hundreds of years old in making a determination. It would be easier for the developer if the analysis were limited to more recent uses of the waterway.

2. Public Trust Doctrine

Public Trust doctrine can exist in common law, statutory or constitutional form in a state. It is important because it defines the duty the State owes to the public in administering state resources, such as the bed of navigable streams.

In most states, title to the bed of a navigable river is held by the state. In some, title is still technically with the riparian owners. However, even in these latter states, title is held subject to the public easement of navigation. A state's power within the area of navigation is plenary. When it acts to preserve or improve navigation on a navigable

waterway, the qualified rights of the respective riparian owners recede. A riparian's right to maintain a dam on a navigable river is therefore subordinate to a state's plenary power to regulate the use and obstruction of such river.

Significant portions of the common law Public Trust Doctrine have been incorporated by the states within their constitutions and statutory law. One of the most striking examples of Public Trust Doctrine incorporation into a state constitution is in Pennsylvania. Pennsylvania's Public Trust Amendment asserts that the state's natural resources are the common property of all the people. The amendment has been held to be self-executing by the Pennsylvania courts. Other states have Public Trust language within their constitutional provisions. However, execution has been generally left to the legislatures.

The significance of Public Trust Doctrine to the developer of small dams varies to the extent the doctrine of a particular state limits the power of the state to grant rights to the developer.

3. Liability for Dam Breach

One of the more significant legal obstacles to the development of small dams is the legal uncertainty as to how, if at all, a dam developer may be held liable for the damage caused by the breach of a dam. This uncertainty is important because the two legal theories which may be used to determine the extent of liability have different financial effects on the developer and his insurance rates. The uncertainty exists because the dominant legal theory of negligence has been employed with decreasing frequency by courts in recent years while the minority theory of strict liability has enjoyed increasing popularity. Thus, although negligence theory predominates, a developer must consider the possibility that his

state will abandon negligence in favor of strict liability.

Eleven (11) of the nineteen Northeastern states impose a duty of ordinary care and diligence on dam owners in the construction and operation of dams. Owners are held liable only for damage proximately caused by negligence on their part. If the breach is not found to have been caused by the negligence of the owner, the owner is not liable for damage caused by the breach.

Massachusetts and Michigan apply the doctrine of strict liability in the event of a dam breach. Under strict liability, the owner is liable for all damages which were foreseeable at the time of construction (or reconstruction) if the dam were to breach even though the breach is not caused by any fault of the owner.

The standard utilized in the remaining six (6) states is unsettled, but it appears to be based on negligence theory.

Most of the states which have relied on the negligence theory have no significant dam breach cases within the last thirty (30) or forty (40) years. The two states which employ strict liability employed that theory in 1968 and 1975. The trend therefore, appears to be toward strict liability. If such a trend in fact exists, it will constitute an obstacle to the use of small dams in general and particularly to the renovation of older dams*. The increased risk imposed by the strict liability theory will make attraction of capital more costly and,

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*New Hampshire is the only state of the group studied which has bucked this apparent trend. In a well-considered opinion, the Supreme Court of New Hampshire adopted the negligence theory: Moulton v. Groveton Papers Co. 112 N.H. 50, 289 A. 2d 68 (1972).

accordingly, increase the cost of owning and operating dams, especially to small entrepreneurs and to entities whose access to capital markets is limited. Risk avoidance by insurance coverage will also be more costly and, in fact, may be unavailable because of difficulties insurance carriers may have in determining a ratable risk of loss.

It should be noted that all states relieve dam owners from liability for breaches caused by an Act of God, such as a major flood. However, whether a particular natural event is an Act of God requires judicial determination, and from the research undertaken to date, the standards employed to determine whether a natural event constitutes an Act of God vary from state to state and are of uncertain scope.

B. STATUTORY MODIFICATIONS OF THE COMMON LAW: THE MILL ACTS

Most Eastern States adopted Mill Acts early in their history to permit greater use of waterways for power generation. Mill Acts are an example of successful incentives to the development of low-head hydroelectric dams. As a result of the Mill Acts, most New England states relied primarily on waterpower to generate electricity until as recently as the 1950's. See Statistical Abstract of the United States, pp. 600 - 606, 1977. Mill Acts permit the exercise of property rights in the use of water in a manner which, without legislative authorization, would be subject to court orders enjoining the use. Most common among these uses are the ponding of water which causes upstream riparian flooding and the right to enter and use abutting land for the repair or prevention of a breach. See, e.g., Del. Code Ann. T. 23 § 1903. Mill Acts sanctioned the flooding of certain less valuable upstream uses of land on the condition the developer compensate upstream riparians. Compensation might be in gross or annual. Other dams and high value agricultural and domestic uses could not be flooded. So that other

riparians might anticipate the use of their land, most states required that the project be initiated and completed within a specified time. Some states grant developers the right to condemn land needed for the dam and appurtenant machinery in a manner similar to that provided in eminent domain statutes. See, e.g., Ky. Rev. Stat. § 182.170 (Supp. 1976). The standard applied to the request for condemnation is whether, on balance, the public interest will be served by taking the land from its present use and using it to generate power.

The Mill Acts were primarily responsible for the construction of the thousands of small dams, many of which still exist, in the nineteen states. Although some states have modified their Mill Acts recently, they remain an incentive to the use of small dams.

C. STATE STATUTORY REGULATION OF SMALL DAMS

1. PUBLIC UTILITIES COMMISSIONS

Each of the nineteen Northeastern states has created the administrative equivalent of a Public Utilities Commission (PUC) to regulate certain types of natural or state created monopolies. A PUC may be an obstacle to the development of small dams if a project is subject to regulation as a public utility, or if the PUC licenses dams as part of its regulation of the states' water resources. To the extent a state's definition of what constitutes a public utility is vague, legal uncertainty again becomes an obstacle or disincentive to a developer.

A plurality of states define a public utility as any person or entity which engages in the production or sale of electricity. Such a definition clearly includes any small dam used to generate electric power. The remaining states employ a more refined definition of a public utility to exclude various entities from general regulation by the PUC. Many exclude power produced by municipal or state owned corporations, power generation units which produce power to be consumed by the producer and units which produce power only for out-of-state consumption. New Hampshire exempts facilities of less than five (5) megawatts of capacity in an effort to increase the use of small dams. Still other states utilize a more flexible common law definition pursuant to which a public utility is subject to regulation whenever its rates or actions will have a significant effect on the public interest.

The importance of a state's definition of public utility may be seen by examination of the regulatory burden to which public utilities are subject. Nearly every state requires public utilities to maintain a uniform

system of accounts, to provide safe and adequate service and to receive advance approval of its rates. Certificates of public convenience and necessity must be obtained in most states before generating units, including dams, may be constructed. Contracts for the sale or purchase of power usually must be approved by the PUC. Sales of securities, stock or long term debt, require prior approval by the PUC. In a minority of the states covered by this report, the issuance of short term debt is subject to PUC approval. The states require a wide variety of reports to be submitted by public utilities, including energy conservation estimates, load forecasts, lists of officials and their duties and reports on safety practices. A number of states combine consideration of environmental factors with energy decision-making by mandating issuance of certificates of environmental compatibility prior to approval of construction of generating faciltiies or transmission lines. To finance PUC activities, a plurality of states annually assess each utility an amount of money based on the gross revenues of the utility. Although some states exempt very small utilities or assess a minimum fee, the assessment is a direct cost factor to be considered by the dam developer. In addition to this regulatory burden, two states create additional uncertainty by retaining authority to revoke certain permits or to void a particular contract. In Indiana, the PUC issues only "indeterminate permits" for certain projects. By acceptance of an "indeterminate permit" a utility waives its rights to insist upon court adjudication of a taking of the land and property subject to the permit by a municipality or to object to revocation of the permit for cause by the PUC. Wisconsin retains the right to void contracts for the sale of hydropower when such contracts interfere with reasonable service within the state.

On the other hand, classification of a dam project as a public utility

has two distinct advantages. First, if the project is associated with specfic customers and is granted a monopoly over their service area, it is not subjected to competition. Second, most states grant public utilities the right of eminent domain, subject to approval in its excercise by the PUC. Eminent domain is particularly helpful in assembling the property rights necessary to complete a dam project.

A handful of PUC's also license dams pursuant to their authority to regulate the states' water resources. In these states an applicant must show that his project will contribute to the comprehensive development of the waterway and serve the public interest. This test is similar to the test set forth in Section 10(a) of the Federal Power Act. The regulatory burden accompanying application for such a license depends on the development of the public interest test in the particular state. The most significant factor in the test is usually the effect of the project on recreation and fish and game.

In one state, Wisconsin, the PUC (the Wisconsin designation is the Public Service Commission) also performs the function of an energy facility siting agency. This combination of regulatory and siting functions may be viewed as reducing constraints to small dam development in that a developer need not engage in two proceedings before two separate agencies for what is, in fact, a single project.

2. DEPARTMENTS OF NATURAL RESOURCES

Since dams utilize water to generate power, public agencies which regulate the use of water and other natural resources frequently constitute an obstacle to the development of small dams. The significance of the obstacle varies with the legislatively mandated objectives of the agency and the extent to which the proposed dam conflicts with those objectives.

The vast majority of the subject states have established a major public agency to regulate the use of natural resources and to develop and implement environmental policy. Most of these agencies were created within the last ten (10) years by a reorganization of a wide variety of bureaus, commissions, departments and councils which originally were created to promote the use of a particular natural resource. Significantly, as the names of these new agencies frequently indicate, the reorganization was accompanied by a legislative cancellation of the earlier legislative intent and replacement by a new philosophy of conservation. A handful of subject states, New Hampshire, Illinois and Virginia, have not created Departments of Natural Resources or their equivalent. They retain a more traditional administrative structure consisting of smaller agencies with both regulatory and developmental powers. These states have also enacted considerably fewer environmental laws. Each type of administrative structure presents obstacles and incentives to the developer.

No two of the subject states have created Departments of Natural Resources with identical powers. The powers of a Department of Natural Resources vary according to the scope of activities the Department regulates. The size and scope of Departments differ significantly from state to state. However, Departments regulating similar activities in different states usually do so in approximately the same way. For that reason, the discussion of the legal obstacles presented by Departments of Natural Resources will be organized according to agency function or activity, rather than by the name of the agency.

A. REGULATION OF WATER RESOURCES

Several Departments of Natural Resources are authorized to regulate the use of water resources by the issuance of dam permits.

Since any dam constructed in navigable waters of the state without a permit constitutes a nuisance and may be removed by court order, securing a permit is a legal obstacle for any developer. However, his first obstacle is to determine whether a permit is required at all. The developer usually must determine whether the watercourse is navigable. Navigability is determined according to state law. A few states maintain no distinction between dams on the basis of the navigability of the waterway, but most require permits for dams on navigable waterways. The developer must then examine the statutory exemptions for dams of a certain size. Kentucky, for example, exempts dams under twenty-five (25) feet in height or with a reservoir of more than fifty (50) acre feet from the permit requirement. Most states exempt only small dams. Michigan, for example, exempts dams with a height of less than five (5) feet or a pondage of less than five (5) acres and those which have a drainage area of less than one (1) square mile and are used for soil conservation purposes. New Jersey requires permits for any dam which raises lake levels five (5) or more feet. Such a dam would not require a permit if it drained an area of less than one-half (1/2) a square mile and ponded less than one hundred (100) square acres. In states in which the Public Utilities Commission licenses power dams, the Department of Natural Resources lacks jurisdiction over such dams. A few states vest the Department of Natural Resources with authority to remove obstructions in waterways.

Agencies which regulate water resources possess the power to condition dam permits on compliance with conditions set forth

in their organic statute or in agency regulations. The conditions and requirements attached to a permit are an additional regulatory burden for the developer. Most agencies require submission of dam plans prepared by a registered professional engineer. The right to dictate design, material and method of construction lies with the agency. Violation of agency regulations may be a misdemeanor. Fishways, underspills and other design structures may be mandated. New York and Ohio require the posting of a bond to guarantee completion of the project. Where fishways are required of all dams, several states have specific authority to obtain court orders directing their construction. In Michigan, the state may order fishways built and add the cost to the owner's local tax bill for the dam. Michigan also allows the director of the agency to abrogate the regulation requiring fishways where they would be impractical or unnecessary. Pennsylvania allows annual stocking of the waterway as an alternative to fish ladders. Every state retains the right to inspect a dam, although some do not inspect very small dams. A few states require that the developer guarantee a minimum stream flow or that he petition a court to set minimum lake levels.

A significant minority of states limit the period of ownership of the permit, usually for thirty (30) or forty (40) years. After expiration of the period, the local municipality may have first opportunity to obtain the permit or to purchase the dam. New York requires that the dam furnish free power to the state, and retains the right to regulate the use, distribution and price of power produced for private sale. New Jersey requires the

permission of a majority of the littoral owners before a dam in existence for more than twenty (20) years may be removed.

Regulation by the water resources management component carries two incentives to the use of small dams. Many agencies possess the power of eminent domain and permit its use by licensees. Use of the power of eminent domain facilitates the assemblage of property. The second incentive flows from the obligation of the water resources management agency to seek the efficient use of the waterway. Once a permit is issued, the developer is relatively certain that the agency will not approve a project which will diminish the head of an existing site and thereby destroy the investment of the developer. New York provides an interesting example of the allocative function of a water resources management agency. Where a waterway has two dams, each of which intereferes with the production of the other, New York will order both dams removed and replaced by a single, more efficient dam. The owners of the original dams become the co-owners of the new dam, with their ownership share proportional to the relative values of the original dams.

The ultimate obstacle presented by a water resources management agency is satisfaction of the "public interest" test which is a prerequisite to issuance of a permit. Public interest tests are as comprehensive as they are vague. As when employed by state PUC's, such tests resemble the test articulated in Section 10(a) of the Federal Power Act. The test normally requires a balancing of the values of energy production, protection of fish and game, enhancement of recreation and safeguarding of historic and archeological sites. The complexity of the test will depend on the number

of state agencies interested in the multiple uses of the waterway and whether a formal process, such as an Environmental Impact Statement (EIS) process, exists for collection and consideration of comment on a project by agencies. A sizable minority of the subject states have created an EIS process which parallels the federal EIS process.

B. WATER POLLUTION CONTROL

Most Departments of Natural Resources contain an agency which regulates water pollution. Each primary state agency which regulates water pollution does so under a delegation of authority from the Federal government pursuant to the Federal Water Pollution Control Act. Pursuant to the Act states classify waterways according to pollution levels, establish clean-up goals and regulate pollution by the issuance of permits. None of the subject states consider water discharged from small dams to be a point source of pollution. Whether deoxygenated water discharged from the lower level of a large dam would be a pollutant remains an open question. However, even without the emergence of that obstacle, a dam which impounds water or otherwise disrupts the level of flow may also disrupt water pollution control programs which depend on a regular flow of water. This legal obstacle is most likely to take the form of a comment on the proposed dam by the water pollution control agency.

C. SOIL CONSERVATION AND FLOOD CONTROL

The control of soil erosion and prevention of flood damage are major concerns of every Department of Natural Resources. Because dams assist in preventing erosion and in minimizing flood

damage, it may be inaccurate to describe agencies which oversee these programs as legal obstacles. It is accurate, however, to note that the large number of relatively autonomous regional and local agencies which regulate soil erosion and flood control may confuse a developer with their different regulations and cause considerable delay by their relatively informal procedures. The subject states allow the formation of a great variety of special purpose districts, including soil conservation districts, watershed management districts, river and reservoir regulatory districts, river improvement districts, flood control districts and flood plain management districts. Some states create such districts by Private and Special Acts of the Legislature. Others permit their creation as an exercise of Home Rule. Often the districts are granted the power to lay taxes, regulate water levels and streamflow, confer the power of eminent domain and seize, repair or breach dams.

D. PROTECTION OF WILD AND SCENIC RIVERS

A majority of the subject states have created programs within the Department of Natural Resources to designate and regulate wild and scenic rivers. Created after passage of the Federal Wild and Scenic Rivers Act, these state programs require legislative action to designate a river a wild and scenic river. Designation in most states prohibits use of the river for commercial purposes, such as the generation of power. If generation is allowed, it must be by run of the river facilities. The presence of a dam or dams does not generally bar designation as a wild and scenic river. Maryland designates rivers as either wild or scenic depending

on their length, extent of development and whether they are free flowing. Maryland also provides for just compensation for property taken by such a designation. West Virginia has enacted a Natural Streams Preservation Act to keep streams free flowing and unimpaired. This Act appears to be similar to the Wild and Scenic River Acts.

The designation of wild and scenic rivers is more than an obstacle to small dams; it is usually a total bar to the use of a river for power generation. It is common in Wild and Scenic rivers legislation in the states studied that certain specific rivers or parts of them are designated "natural", "wild" or "scenic". However, it is also common that the authorized agency is empowered to designate additional rivers or parts of rivers as natural, wild or scenic. To the extent that uncertainty exists as to whether a particular river will receive designation, the uncertainty may, in and of itself, forestall small dam development.

E. PROTECTION OF FISH AND GAME

Each of the nineteen Northeastern states has created as least one agency to protect the fish and game of the state. Most states have placed this agency within the Department of Natural Resources. Fish and game agencies constitute a legal obstacle to small dams to the extent a particular project is perceived to present an obstacle to the migration of anadromous fishes. Many fish and game agencies are empowered to require construction of fishways. Those which are not so empowered usually comment on applications pending before other agencies empowered to require fishways, such as the water resource management agencies discussed previously. Methods

used to determine the need for and design of fishways appear to be uniform among the states. None are codified in state statutes. Fish and game agencies also have authority to regulate the effects of construction activity on fish and game, such as siltation caused by dredging and filling. By regulating the effect, some control is exercised over the method of construction.

F. SALE, LEASE OR EXCAVATION OF PUBLIC LAND

The bed of navigable streams in most of the nineteen Northeastern states belongs to the state. Although these states permitted use of bottomland without regulation until recently, most now regulate its use through a Department or Bureau of Public Lands or through other components of Departments of Natural Resources. Since ownership of a property right in flowing water accrues to the owner of the bottomland, the need to negotiate conveyance of title, right or interest from the state is a legal obstacle. The major difficulty in the negotiation may be determination of the value of the bottomland. If a state employs "holdout" strategies to maximize income from sales or leases, a disincentive to small dam development will be created.

Excavation of sand and gravel from stream beds is also regulated by several Departments of Natural Resources. This form of regulation should be an obstacle only to the extent that the regulation is intended to protect fish resources.

G. PROTECTION OF NATURAL OR CRITICAL AREAS

Several of the subject states have acted to protect certain unusual or ecologically important areas by placing them on a Natural

or Critical Area Registry. This activity, which is commonly performed by Departments of Natural Resources, will be an obstacle when a dam will be located within or will affect a registered area. Examples of natural or critical areas are deer yards, swamps or bogs, habitats for rare or endangered species, unusual geological formations and areas of exceptional beauty. Some states require permits for use or development of registered areas. Other states require only that notice be given by the developer to the Registry. The Registry then notifies agencies whose responsibility it may be to protect the particular area. Since the Registry has no geographic or jurisdictional boundaries, a developer must check with the registry to determine whether a particular site has been listed.

H. PROTECTION OF WETLANDS

Most of the nineteen states have enacted legislation protecting wetlands from development. The Atlantic states protect both coastal and inland wetlands. The power to issue permits to dredge, fill or flood a wetland are issued by Departments of Natural Resources in nearly every state. Some states maintain separate Wetlands Control Boards or Commissions. The regulation of wetlands is most likely to become a legal obstacle where a dam has created a wetland and the drawing of water for power production will drain the wetland. Few dams are likely to be built in areas where wetlands occur naturally.

I. SHORELAND ZONING AND LAND USE CONTROL

A minority of the nineteen states empower Departments of Natural Resources to adopt zoning regulations for particular areas of the state. Most of these states allow the Department to zone the shorelands of lakes and streams in which the public has a property right.

In Maine, for example, the state owns the beds of navigable streams, natural ponds in excess of ten (10) acres in area and artificial ponds in excess of thirty (30) acres. If a community fails to zone a shoreline, the state may adopt interim zoning to protect the body of water. Typically, shoreland zoning extends a specified distance upland from the shoreline. Shoreland zoning may constitute an obstacle to the use of small dams if either the municipality or the state prohibits the use of land for energy production or commercial purposes. The states also have jurisdiction to zone state owned land, as well as unorganized territories in which the state is the only organized form of government. Zoning of this sort is accomplished by Land Use Regulation Commissions or their administrative equivalent.

J. ENVIRONMENTAL IMPACT ASSESSMENT

As noted earlier in this report, a minority of the subject states have adopted miniature versions of the National Environmental Policy Act (NEPA) for use in regulating the environmental impact of the activities of the state. For both procedural and substantive reasons, these Acts may be legal obstacles confronting small dam developers on the state level. The Acts are significant substantively because they require analysis and quantification of hitherto unquantifiable environmental amenities. The impact on these values by the project must be weighed against the benefits of the project on both a short and long term basis. By this method, the environmental cost of the project is placed in the calculus of decision-making by state governments regarding small dams. The "Little NEPA's" are important procedurally for two reasons. First,

they provide a mechanism for involving agencies which lack permit granting authority regarding dams in the dam permit decision-making process. Secondly, they provide opponents of small dam projects with an additional opportunity to allege error in the granting of a dam permit: the failure to properly quantify, analyze and evaluate the effect of the project on the environment. Thus, since the possibility of litigation is increased, the possibility of delay in the granting of the permit is increased. The cost of such legal uncertainty is an obstacle to the developer of small dams. In addition, the developer must pay the cost of all studies required by the Acts. This cost increases the cost of the speculative investment and the cost of the entire project if the project is finally approved.

K. ENVIRONMENTAL FUNDS

The State of Maryland imposes a surcharge on each kilowatt of electricity sold in the state to fund a long-term study of ways to minimize the environmental effects of the production of electricity. Although this affects small dams no more than any other method of electric generation within Maryland, it is a marginal disincentive to the use of Maryland sites in general.

L. PRESERVATION OF HISTORIC AND ARCHEOLOGICAL SITES

The vast majority of the nineteen Northeastern states have established agencies to preserve historic and archeological sites. A number of these agencies have been placed within the Department of Natural Resources. The majority, however, either are autonomous or are within Cultural Affairs Departments. Historic and archeological preservation agencies are an obstacle to small dam development

only when the dam site has been designated as an historic site, as in the case of an old mill, or when the site has archeological value, as in the case of an Indian fishing area or burial ground. These agencies, like the Natural or Critical area agencies, maintain registries of designated sites. The designation of a site usually prohibits its use for commercial purposes.

M. MAJOR FACILITY SITING ACTS

A majority of the nineteen Northeastern states have created agencies or councils to license major electric or industrial facilities. The purpose of these agencies is to provide a more streamlined licensing procedure and to ensure the full environmental impact of such facilities is considered. However, only the State of Wisconsin considers a twenty-five (25) megawatt dam to be a major facility subject to the siting act.

3. OTHER ADMINISTRATIVE SCHEMES

Of the nineteen subject states, only New Hampshire, Virginia and Illinois have not created a Department of Natural Resources. New Hampshire regulates the development of water resources through the Water Resources Board. The Board is charged to meet the public need for dams and water supply. Accordingly, the Board may construct and operate dams for the public use and benefit, or it may do so for private benefit on a contractual basis with the permission of the Governor and Executive Council. The Board constitutes a legal obstacle to small dams because it requires developers to obtain permits, comply with design, construction and maintenance standards and submit to safety inspections. It would appear, however, that the Board

is more of an incentive to small dam development than a hinderance because the Board regulates waterways so that they may be used efficiently, provides experience and expertise in the field to developers and offers low interest, state-guaranteed loans to developers.

Virginia has transferred to a State Water Control Board all the powers of the Division of Water Resources of the Department of Conservation. The Board manages all waters for the state. However, the power to license dams in Virginia is vested in the State Corporation Commission. The Water Control Board, along with the Department of Conservation and Economic Development performs many of the functions of the Departments of Natural Resources of other states.

Illinois regulates dams through the Department of Transportation. The Department performs functions similar to most agencies charged with the direct regulation of dams.

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

1. This report is a preliminary overview of the legal and regulatory systems of the Federal Government and the nineteen states under study. It is based for the most part on library research supplemented by some interviews and on site visits at state agencies. The underlying documentation for the report consists of nineteen memoranda averaging forty pages in length for each state and memoranda on subjects coming within the scope of Federal regulatory and legal systems.

2. The report for the most part is a description of the common features and common problems with respect to small dam development in the various states and before the Federal Government. However, some legal obstacles and incentives are readily identified and warrant further research.

3. Two problems common to all states under study and the Federal Government are legal uncertainties and regulatory burden. Legal uncertainty is fostered by imprecise legal terminology and the open ended nature of agency jurisdiction as conferred by broad enabling legislation. The regulatory burden, which may require two or three applications for a license or permit, and preparation of voluminous and technical impact statements as well as hearings before two or more agencies for each small dam, appears specifically designed to deal with large, complex and environmentally obtrusive projects. Unfortunately, regulatory requirements somewhat indiscriminately sweep small projects such as rehabilitation programs

for existing small dams, within the elaborate net of multi-permits, detailed and technical impact statements and public hearing requirements.

4. Some specific obstacles at the state level are:

   (a) uncertainties concerning the scope of riparian rights under state law;

   (b) uncertainty concerning dam owner's liability for dam breach and the concomitant effect this uncertainty has on the availability of affordable insurance;

   (c) uncertainty as to the status of a producing small dam under state public utility regulation and the regulatory burdens, in terms of costs of complying with public utility regulatory requirements, if a producing small dam is considered to be a public utility;

   (d) the requirement of some states that a dam owner obtain a permit or some other agency approval from a Department of Natural Resources, a Bureau of Water Pollution, a Public Utility Commission, a Soil and Conservation District, and a Bureau of Public Lands, and the attendant delay in construction or rehabilitation of the small dam under consideration;

   (e) the requirement of fish ladders or other fisheries preservation devices by state fish and game agencies and in particular, the lack of sufficient, available public funding for such devices.

5. Some specific obstacles at the Federal level are:

   (a) the uncertain scope of F.E.R.C. jurisdiction and the difficult process of obtaining a waiver of jurisdiction;

(b) the technical, costly and slow permit application - licensing process of the F.E.R.C., which process is compounded by either the requirement that the F.E.R.C. prepare and circulate an environmental impact statement or the requirement that the F.E.R.C. prepare a negative determination;

(c) the "requirement" of fish ladders or other fisheries preservation devices which requirement arises by virtue of comments recommending such devices during the environmental impact statement process, and the absence of adequate public funding for such devices.

6. Some state incentives are:

(a) exemption from public utility regulation in New Hampshire of dams of 5 MW or less;

(b) one-stop licensing under study in Massachusetts and apparently in effect in Wisconsin;

(c) mill dams legislation which historically provided significant incentives for small dam development, especially in New England;

(d) compulsory risk pooling of uninsurable or uninsured risks as prescribed by legislation in New Hampshire.

7. Some incentives at the Federal level are:

(a) although of very limited impact, the recently promulgated short form license regulations of the F.E.R.C. for small dams;

(b) the proposed "streamlined" regulations for the environmental impact statement process of the Council on Environmental Quality;

(c) proposed Federal legislation on dam inspections and safety and studies of the problem of the availability of insurance established by that legislation.

8. The legal obstacles and incentives identified in paragraphs 4, 5, 6 and 7 above are not exhaustive nor is the magnitude of the effect of such incentives and obstacles on the rate of development of small dams known at this time. The research which will be conducted in the future by case studies, on-site interviews and access to less formal legal materials such as interagency agreements, municipal ordinances and informal agency guidelines and regulations will enable the study team to flesh out a full and complete description of the legal and regulatory systems of the Federal and state agencies under study. As more information is gathered the impact of particular constraints or incentives will come into better focus and alternative incentives, not presently in existence, will be explored.

9. Accordingly, one part of the study team will next commence field and in-depth research into the Federal regulatory and legal systems. Of necessity, interviews of key F.E.R.C., C.E.Q., Corps, Department of Interior and E.P.A. personnel will be conducted. Actual cases involving small dam projects and F.E.R.C. licensing and environmental impact statement or negative declaration processes will be studied in detail. Another part of the study team will commence field research for the six New England states in much the same way as the field investigation of the Federal system will be conducted.

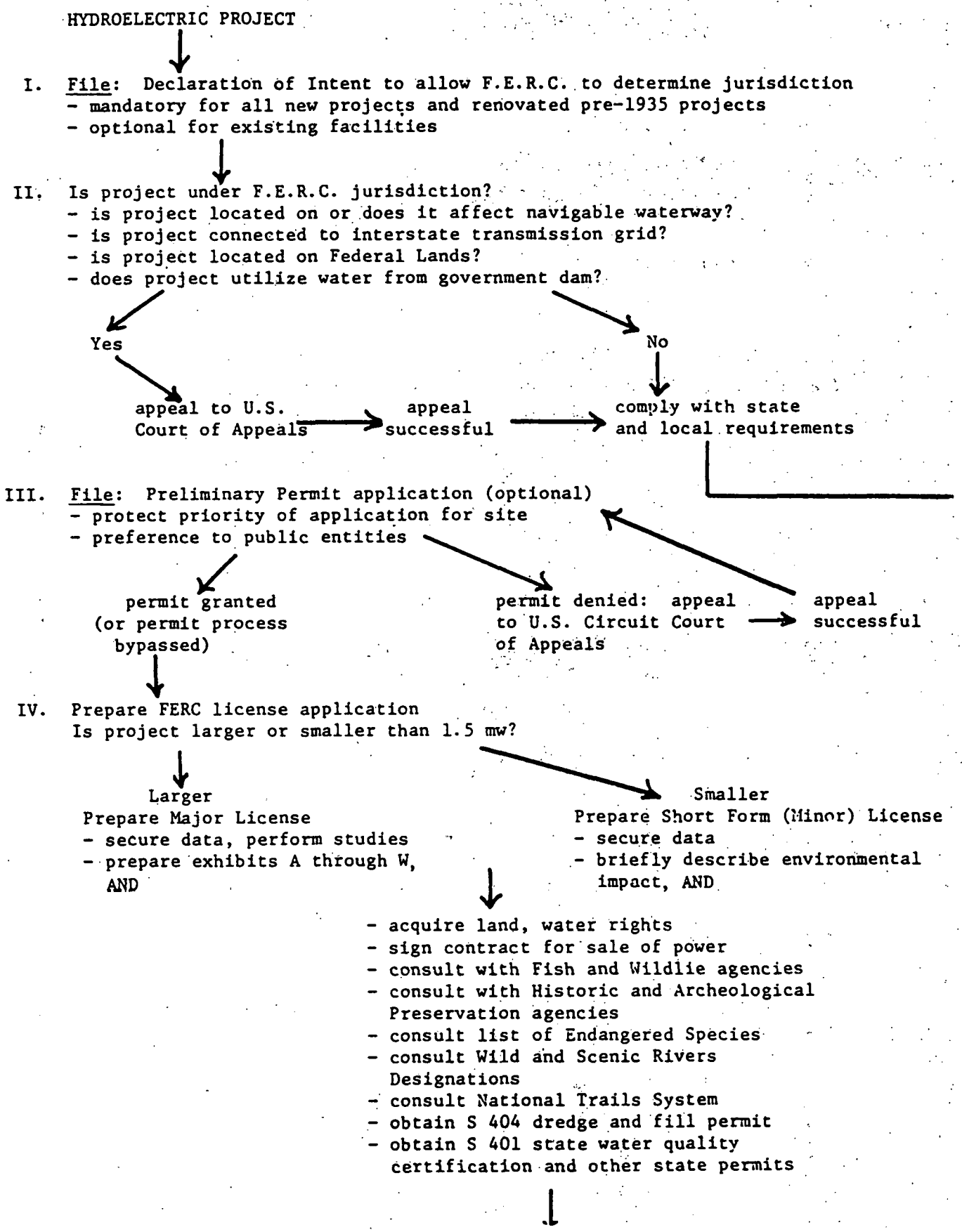
10. Institutional obstacles and incentives will also be identified, described and analyzed in future research. Among these obstacles and incentives are the impact of small dams on the electric utility industry, the effect

of the availability of capital on the rate of development of small dams and the relationships of dam owners to riparian owners. Material obtained in connection with institutional studies will be the subject of additional research papers.

11. As information is developed, this information will be supplied to the study team at Thayer which is in the process of building the computer model which will assist the study team in determining the impact of particular constraints or incentives on the rate of development of small dams. To this end, bi-weekly meetings are taking place and will continue to take place between Franklin Pierce and Thayer personnel.

FEDERAL REGULATION OF SMALL DAMS

F.E.R.C. REGULATION



V. File: License application with F.E.R.C.
- F.E.R.C. offices review for deficiencies

Accepted and Docketed

Rejected-- returned with deficiency letter → corrected applicatio refiled with F.E.R.C

VI. F.E.R.C. begins processing license application

Applications section appoints project manager, reviews for general adequacy

Environmental analysis section reviews impact, decides if EIS required	power site lands section reviews status of U.S. lands	project analysis section reviews efficacy of project	power supply and reliability section reviews effect on grid	Office of General Counsel reviews legal adequacy

<u>EIS Required</u> for major new projects with significant impacts

EIS Task Force formed
- one representative from each FERC office
- Draft EIS (DEIS) prepared from application and agency comments on application

DEIS circulated for comment to agencies, parties, experts, intervenors
- comments received, passed on to applicant
- applicant response received

Final EIS prepared, circulated

Contested issues decided by Administration Law Judge

Appealed to U.S. Court of Appeals ← intervenors

Appeal successful

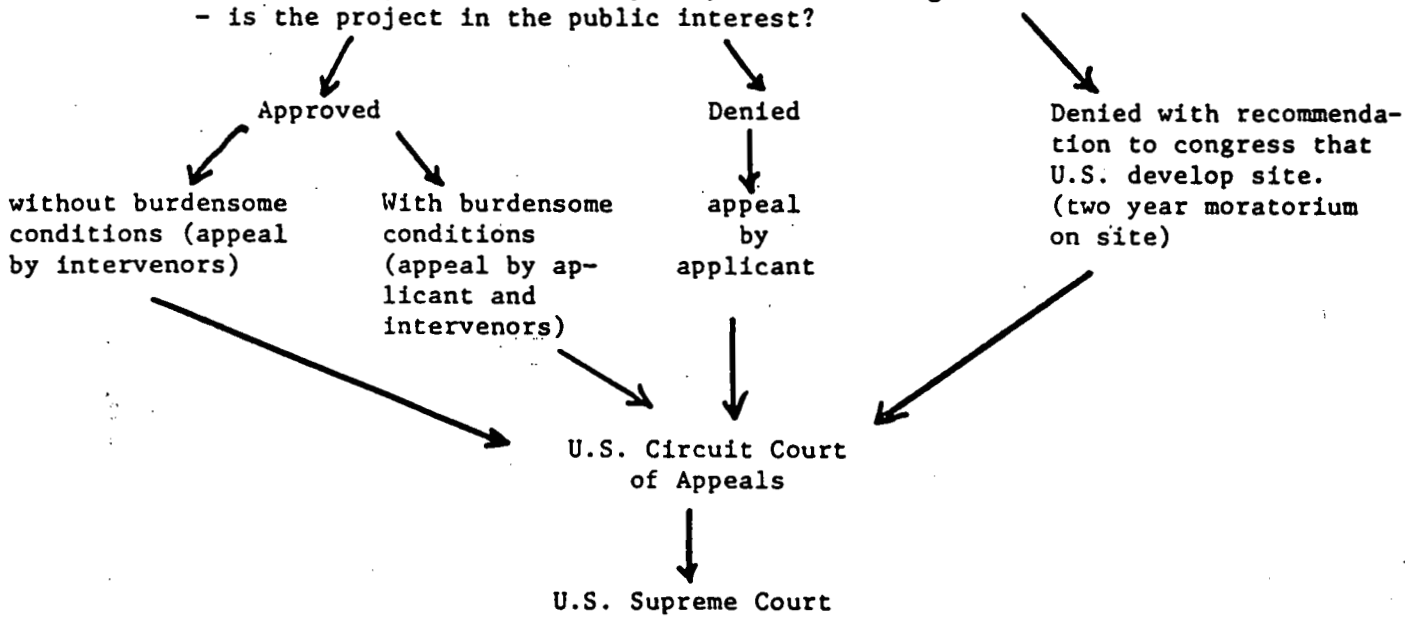
<u>No EIS Required</u> for minor projects, existing projects, and major new projects with no impact (negative determination prepared)

Project Manager receives Comments by F.E.R.C. offices on application

Project Manager prepares Powe Memorandum
- Office of General Counsel prepares Commission Order

VII. Commissioners receive Power Memorandum, final EIS, Commission Order

VIII. Commission Acts on License Application
- is the project that best adapted to the comprehensive development of the waterway?
- is the project best developed by the Federal government?
- is the project in the public interest?



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