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INSTREAM FLOWS, THE PUBLIC TRUST, AND THE FUTURE OF THE WEST

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INSTREAM FLOW PROTECTION IN THE WESTERN UNITED STATES: A PRACTICAL SYMPOSIUM

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Introduction

Twelve years ago a dozen undergraduate science students, most of them from Stanford University and the University of California at Davis, obtained some modest federal funding to undertake a study of environmental problems at California's Mono Lake.[1] That lake, an ancient and very salty body of water lying directly east of Yosemite National Park, had then received relatively little scientific (or political or legal) attention, compared to its more famous and far younger neighbor to the north, Lake Tahoe.[2] But in the several decades preceding 1976, Mono Lake had been severely impacted by water development projects undertaken by the City of Los Angeles. Those projects by the early 1970's were diverting about 100,000 acre-feet of fresh water a year from several of the streams which flow into the lake and were sending that water south to the Owens Valley and the two hundred thirty-three mile Los Angeles Aqueduct to the city.[3] This had led to a dramatic lowering in the water level of Mono Lake.[4]

The students set out to study the environmental consequences of Los Angeles' water projects in the Mono Basin. But, alarmed by what they found, they did not simply report back to the sponsoring agency, publish a scientific paper and move on to other work. Instead, some of them decided to organize politically in order to try to save Mono Lake. Among their concerns were the possibility of severe damage to the lake's food

supply for local and migratory bird populations,[5] as well as the prospect of substantial disruption of nesting patterns.[6]

The result of these initial student research and organizational efforts was the formation of the Mono Lake Committee,[7] which in turn set in motion a fascinating series of events. The story is not yet complete, but one clear consequence of the students' initiative has been an important evolution regarding the ancient legal doctrine on "public trust." This is undoubtedly of major importance to California water rights law today and may, like the development of the prior appropriation doctrine in the mid-nineteenth century courts in California,[8] ultimately be important to water rights law in all the western states, if not the entire nation. Whether this doctrinal evolution will lead to the "saving" of Mono Lake or comparable lakes and streams, as preservationists would understand that term, is however an entirely different matter. As to that, the consequences of the students' effort are far from certain.

In this paper I shall deal first with the doctrinal evolution represented by the Mono Lake decision handed down by a unanimous Supreme Court of California in 1983. I then will discuss post-1983 developments relevant to the integration of the public trust doctrine and water rights law in California; three possible scenarios regarding future developments of the public trust doctrine as a tool for the preservation of instream flow; and my perspectives on legal aspects of the future of free-flowing waters in the western landscape.

Doctrinal Evolution: From Tidelands Controversies to Mono Basin Water Diversions

Long before 1983 the courts in California had made it plain that the public trust doctrine has a significant function with regard to land associated with navigable water. The concept was employed as early as the 1850's with regard to land around the edge of San Francisco Bay,[9] and the courts at that time drew on an ancient tradition with regard to navigable bays and rivers.[10] The core idea was that because of the public's interest in navigation, commerce and fishing, private titles to tidelands and submerged lands would be held subject to a "public trust," often articulated as a public trust easement.[11] Notably, the legitimacy of private ownership and development of these special lands was thus usually accepted.[12] Perhaps that was inevitable, given the intense development pressure on much of California's coastal land during the nineteenth century. Furthermore, it was accepted that the public easement over small areas could be terminated in order to advance trust values in a large area.[13] But, in principle at least,[14] where those criteria for termination were not satisfied, the public right could not be extinguished.[15] Apparently in California such extinction cannot occur even by way of explicit legislative mandate,[16] so the doctrine takes on the dimensions of an implied constitutional limitation upon legislative power.[17]

During this century the California courts have been expansive in their elaboration of the public trust interest in lands associated with navigable water. Private persons have been

allowed standing to sue on the basis of the public trust doctrine,[18] and in dicta the courts have repeatedly stated that public trust interests encompass far more than the classical trilogy of navigation, commerce and fishing.[19] Of particular interest to those who support instream flow protection is judicial mention regarding tidelands of the preservation of public uses such as scientific study, open space and wildlife habitat.[20] Finally, recently the California Supreme Court laid to rest any suggestion that the public trust doctrine is limited to tideland or coastal areas. The key is not that land is on the coast, but that it is associated with navigable water. Thus, private titles to lands around the edge of inland navigable lakes such as Lake Tahoe and Clear Lake have been held to be burdened by the public trust easement.[21]

Typically the development proposal which would trigger a lawsuit invoking the public trust doctrine in California would involve something like a marina along the edge of a bay or buildings to be constructed on fill in a bay.[22] Prior to 1983 land development rather than water development was generally the concern,[23] although occasionally courts intimated that the public trust doctrine might have to do with protection of public interests in navigable water as well as those in land associated with navigable water.[24] Since the public uses in the classic trilogy--navigation, commerce and fishing--involve the use of water directly, and the use of associated land only indirectly, it required no great leap of imagination to suggest interference

with navigable water alone might trigger public trust review. To dry up a lake through diversion of the streams which feed it obviously destroys navigation and other water-dependent uses just as definitively as fill could ever do.

In 1977, when at the request of the Mono Lake Committee lawyers for national environmental protection organizations began to examine legal theories which might be used to protect inflows to the lake, the public trust doctrine quickly became a prime candidate. Inspired by an influential law review article which touted the doctrine as a tool by which preservationists could achieve effective judicial intervention in disputes over the allocation of natural resources,[25] researchers quickly seized on the idea of basing a legal challenge to the operations of the City of Los Angeles Department of Water and Power on the public trust doctrine.[26] About that same time a staff paper prepared for a blue-ribbon commission engaged in a review of California water law noted the logic of applying the public trust doctrine to protect instream flows,[27] and favorable commentary appeared elsewhere.[28] The momentum for a challenge was building, and suit was filed in 1979.[29] By 1983, after a series of procedural matters had been resolved,[30] the matter was before the Supreme Court of California for a decision on whether the plaintiffs could properly base their action upon the public trust doctrine.[31]

The Mono Lake opinion which emerged is an elegant and forceful analysis authored by Justice Allen Broussard. It is

unanimous on the fundamental question of the relevance of the public trust doctrine to damage to public uses of navigable waters caused by the exercise of appropriative rights.[32] The environmental threat to Mono Lake is noted, and the history of both the public trust and the appropriation doctrine are reviewed in some detail. Borrowing a phrase from an article by Professor Ralph Johnson,[33] Justice Broussard in his opinion describes the two doctrines as "on a collision course."[34] But he concludes the collision can be avoided and doctrinal harmony achieved if the California courts will simply integrate the two doctrines.[35] To do this, Justice Broussard suggests it will be necessary to modify somewhat the rigor with which, in his view, the public trust doctrine has been applied to land rights.[36] But, with this caveat, integration of the two doctrines will preserve the viability of California's massive water development system while minimizing environmental harm whenever feasible.[37]

The most serious threat to success for the plaintiffs in the Mono Lake suit in 1983 was an argument advanced by the state attorney general. This argument in effect acknowledged the logic of applying public trust doctrine thinking to water diversion situations, but provided an ingenious explanation of why that logic has not been developed in recent decades. The explanation is that the public trust doctrine, with its preservationist flavor, has been superceded by a public policy keyed more to water development than to preservation. The policy, formalized in a constitutional amendment in 1928,[38] calls for the maximum

reasonable beneficial use of water resources. According to this argument, any one reasonable beneficial use of water is by nature as acceptable constitutionally as any other--it is as if the public trust were to include irrigation, power production and municipal water supply as equal in stature to navigation, commerce and fishing.[39]

A consequence of this view advanced by the attorney general would be to sort out uses by priority, subject to the power of the state pursuant to the constitutional policy to make modifications in the name of reasonableness. Instream uses would be protected or enhanced not because a public property right is being vindicated, but because the state has broad authority to rearrange the rights of appropriators, for example those engaged in diversions from the source.[40]

Despite a series of recent judicial opinions in which state authority has been upheld or expanded,[41] Justice Broussard in the Mono Lake opinion resists any temptation to follow the line of reasoning suggested by the attorney general. His opinion acknowledges that the public trust doctrine serves to strengthen and broaden SWRCB authority--clearly the board's predecessor erred in 1940 in thinking that in passing on Los Angeles' application to appropriate water in Mono Basin the detrimental consequences for Mono Lake could not legally be taken into account.[42] But by keeping the public trust doctrine separate from the reasonable beneficial use doctrine, Justice Broussard is able to conclude the trust also imposes a duty on the state to

act to some extent in a way protective of in situ public trust uses of water.[43]

Although the Mono Lake opinion makes no reference to the fact, by 1983 it was clear there was a political stalemate in California with regard to the protection of instream uses of water. Late in the 1950's the legislature had taken some steps toward better instream protection, for example by providing that fish, wildlife and recreation uses are beneficial uses of water.[44] In 1972, on the heels of cancellation of a planned unit in the State Water Project,[45] a California Wild and Scenic Rivers Act was passed into law.[46] But then in 1979 the court of appeal in two different decisions held that private persons with no plans to divert or otherwise physically control water are not eligible to have their applications to appropriate water considered,[47] and efforts to overturn those rulings by legislation have been unsuccessful.[48] Similarly, efforts to provide for comprehensive instream flow regulations, as proposed by a blue-ribbon commission,[49] have been turned down by the legislature.[50] This occurred despite extensive documentation of the enormous damage to instream resources which has resulted from water development projects.[51] The court in earlier decisions had displayed an awareness of and sensitivity to the policy objectives of the Governor's Commission,[52] and a similar attitude on the instream protection question may have played some unarticulated part in the Mono Lake decision.

In conclusion, what the Mono Lake decision provided was approval of a theory: that the ancient public trust doctrine may in the proper circumstances serve to limit how much water may be diverted pursuant to an appropriative right. Los Angeles was not ordered to give up anything. Instead, it was put on notice that the environmentalist challenge could proceed and that the many obvious questions would have to be resolved later on. These include factual determinations as to the extent, if any, to which the city's diversions are causing or will cause harm to the public trust uses of Mono Lake; the methodology for integrating legitimate claims for protection pursuant to the public trust doctrine with equally legitimate claims to use water pursuant to the appropriation doctrine; whether diminution of use of water by an appropriator can in any public trust circumstance constitute a taking of property for which just compensation is owed; and, if so, the appropriate taking analysis to apply.

Developments Since 1983: The Lower American River and Bay-Delta Disputes

In the Mono Lake litigation which produced the California Supreme Court's landmark decision, very little has been accomplished since 1983 to further the integration of the public trust doctrine and the prior appropriation doctrine.[53] Instead, the litigants have been preoccupied with the question of what forum will undertake that task.[54] The meaning and implementation of the 1983 mandate have, however, been under active consideration in regard to two other important water controversies in California. These will now be described in some

detail, for they provide useful factual contexts within which the reader can imagine alternatives for fleshing out what meaning the public trust doctrine will have or should have for the exercise of water rights. The nature of what will eventually emerge is crucial to answering the question whether the public trust doctrine will ever be the basis for effective protection or enhancement of instream values.

One of the non-Mono Lake California controversies involves a proposed diversion from the lower American River. This river, which flows through the heart of California's capital at Sacramento, was initially untouched by the massive federal Central Valley Project (CVP) begun in the 1930's.[55] But since World War II Congress has authorized three CVP dams on the lower American, as well as the Folsom South Canal to divert water from the river just above Sacramento.[56] (See map at Appendix A.)

To date only two of the three authorized dams and about twenty-seven miles of the canal have been constructed. Completion of the largest of the dams, Auburn Dam, is currently blocked by concerns over seismic safety, vehement opposition from environmental groups and questions about cost-sharing. Without Auburn Dam, a decision by the state providing for substantial instreams flows in the American River as it passes through Sacramento is not legally effective.[57] Nonetheless since 1962 the Sacramento County Board of Supervisors has invested more than twenty million dollars in an extensive parkway along both sides of the American River below the canal's point of diversion.[58]

The amenity value of the American River Parkway would be greatly decreased without the river's present instream flows, themselves in part a result of the two CVP dams already in place. One way to preserve those flows would be to complete the construction of Auburn Dam, but as noted above that course is now doubtful. In the absence of Auburn Dam or some substitute for it, to preserve those flows it is necessary to prevent or minimize future diversions of water to the Folsom South Canal.

To date the only water delivered through the canal is sold pursuant to a contract to deliver up to 75,000 acre-feet a year of cooling water to the Sacramento Municipal Utility District's troubled Rancho Seco nuclear power plant.[59] A second contract, however, entered into in 1970 by the U.S. Bureau of Reclamation, provides for delivery through the Folsom South Canal of up to 150,000 acre-feet annually to the East Bay Municipal Utility District (EBMUD). EBMUD plans at a future date to use water obtained pursuant to this contract to augment supplies for its service area in the rapidly growing region to the east of San Francisco.

The EBMUD-Bureau of Reclamation contract has been controversial. The Environmental Defense Fund (EDF) and others brought suit in the early 1970's against EBMUD with regard to its contract for American River water. The plaintiffs alleged if EBMUD took delivery of the water as contemplated by the contract, the district would be in violation of the reasonableness provision of the California constitution in two ways: first, it

would be ignoring its legal obligation to engage in a program to reclaim waste water; and second, by taking a water supply from an upstream location rather than an available downstream location, it would be precluding multiple beneficial use of much of the water in the lower American River.[60] In effect, EDF was asking that any diversion be from below Sacramento to maximize the amenity value of the parkway, e.g., the fishing and boating associated with substantial instream flows.

EDF and the County of Sacramento (an intervenor) were unsuccessful on the waste water reclamation claim, but the point of diversion claim survived an initial ruling by the California Supreme Court that any constraint imposed by the state constitution was preempted by operation of the federal Reclamation Act of 1902.[61] By the time the case had made its way to the U.S. Supreme Court and back to the state court system,[62] the 1983 Mono Lake decision was on the books. So in late 1984 when a California Superior Court appointed the State Water Resources Control Board (SWRCB) as referee in the case, the public trust doctrine was of major concern.

In the ensuing court reference proceeding before the SWRCB, the question of the integration of the public trust doctrine with conventional water rights--there, the contractual rights of EBMUD rather than the appropriative ones of the Bureau of Reclamation--was extensively debated. A lengthy legal report prepared by SWRCB staff expressed many conclusions regarding the public trust doctrine as it relates to California water law: for example,

that the doctrine applies to contractors for the use of water; that new projects to appropriate water may be required to release water at rates exceeding natural flow during some seasons to minimize harm to public trust resources; that the public trust may be considered notwithstanding the absence of all parties whose conduct might affect a river (e.g., the Bureau of Reclamation, not a party to the lawsuit); and that a diverter with the required water rights should be permitted to take water from a river whenever there is flow surplus to that necessary to maintain constitutionally reasonable public trust uses.[63]

These generally expansive understandings of the public trust doctrine were of little practical consequence to the plaintiffs, however, because the staff found as a matter of fact that even under conditions of maximum diversion pursuant to the EBMUD contract, there would be only a minor effect on the public trust uses of the lower American River.[64] Thus, although the public trust doctrine was treated as applicable to the situation, the difficult job of integration in the face of serious consequences to instream values from water project diversions was avoided.[65] So we learn little in the end of what the public trust doctrine means for existing water rights: it is as if, after an extensive fact-finding process, the decision were that Los Angeles' Mono Basin diversions are causing only minor adverse consequences for the natural resources dependent upon Mono Lake.

A similar result seems much less likely in California's other major current public trust water rights controversy,

although the relevant administrative hearing is only at an early stage. This controversy involves the protection and enhancement of water quality in the Sacramento-San Joaquin Delta, where a serious threat to water quality comes from salinity intrusion. (See map at Appendix B.)

Before the time of major water projects on the rivers of California's Central Valley, salinity often intruded beyond San Francisco Bay upward through the Delta. Sometimes it went as high as the City of Sacramento, normally late in the summer months when the runoff from the Sierra snowpack was over and the fall rains had not yet begun. By way of contrast, enormous unregulated flows in the winter and spring would often push the saline water back toward San Francisco Bay and the Pacific Ocean.[66]

One consequence of the many projects on rivers which flow toward San Francisco Bay has been to even out the instream flows. Flood control takes the peaks off the winter flows, and use of the river channels to deliver stored water augments the summer flows. As has happened with the lower American River, advantage has been taken of this new situation. In particular, there has been intensive development of the Delta for several important purposes: agriculture on the Delta's many islands; industry at several locations; and the export of water, both for agricultural use in the San Joaquin Valley and for municipal and industrial water supply in the Bay Area and in Southern California. In addition, many people have relied on the continued existence of

the fish and wildlife which live permanently in or pass through the Delta.

Many of these activities require, however, that nature not be permitted again to push saline waters up through the Delta. Much consideration at one time was given to proposals to construct a physical barrier somewhere in the estuary,[67] but instead the state has relied on a hydraulic barrier to do the job. The mechanism has been to place conditions on the permits to appropriate water of the two largest diverters from the Delta: the CVP and the State Water Project (SWP), which parallels the CVP in many respects. Most of the permits issued to the operators of those two projects since the late 1950's have contained conditions pertaining to water quality and to coordination of terms and conditions among the many CVP and SWP permits. The conditions contemplate that salinity control will be obtained either by a reduction or cessation of exports from the Delta or by releases from natural flow or water in storage at upstream facilities maintained by both projects.

In view of the complexity of the interaction of Delta inflow, Delta consumptive uses, export diversions, agricultural return flows and tidal action, the state has taken the position that salinity control conditions for the Delta should not be of unlimited duration. Instead, conditions are fixed on an interim basis, and jurisdiction is reserved to reexamine the situation and consider revised conditions as some point in the future.

The last decision made by the SWRCB in furtherance of this reserved jurisdiction was Decision 1485 (D1485) in 1978.[68] D1485 contemplated that the board would reopen its hearing on Delta salinity control by 1986,[69] in order to re-examine its standards in light of additional information gathered in the interim. The hearing was in fact reopened in the summer of 1987, and it has under consideration not only water quality problems in the Delta but also those in San Francisco Bay. The hearing is scheduled to continue periodically until a decision is issued in 1990. Phase I of the hearing has just been completed. It was designed to identify the beneficial uses of the waters of the San Francisco Bay-Delta estuary, to determine the water quality objectives that will maintain such uses and to gather recommendations on how the SWRCB should achieve these objectives.

The relevance and meaning of the public trust doctrine have been important subjects of consideration in Phase I of the Bay-Delta hearings. Enormous amounts of evidence have been introduced on the impact (or non-impact) of water projects and pollution on public trust uses of Bay-Delta waters.[70] Similarly, attention has been devoted to the benefit of exports of water from the Delta, thus laying the basis for any weighing of public trust damage and export benefit which may become necessary. And in submitting closing briefs many of the parties have set forth their understanding of what the public trust doctrine requires of the board.

Three Scenarios for the Future

In thinking about what difference the public trust doctrine might make with regards to water resource controversies such as those involving Mono Lake, the lower American River and the Bay-Delta, it may be useful to consider three possible scenarios for future development. Doubtless more than three can be suggested, and doubtless the future reality will not conform precisely to any of these three or other possible models. But consideration of these three possibilities may help to clarify the issues.

Scenario One. Scenario One might be called the "interpretation" scenario, in that the public trust doctrine here functions mainly as an aid in the interpretation or construction or fortification of other norms.

In this scenario the public trust doctrine is an evocative name for an elusive creature of the law--a sense that for certain special natural resources such as navigable water, great care must be taken. Of course, to what end care must be taken is never entirely clear. It may be the end is established by some sense of the direction in which public policy is moving in the period when the job of interpretation arises.

Professor Charles Wilkinson's study of the public trust doctrine in public land law is suggestive.[71] When the dominant public policy favored disposition of federal lands to states and settlers, the public trust doctrine supported the federal government's fiduciary obligation to hold land for future disposition.[72] When the federal government began to be a more

aggressive manager of its land, the doctrine supported extensive federal authority.[73] And when it was understood that the greatest threat to preservation of certain public values on federal lands might be the federal government itself, the public trust was used as a foundation for imposing obligations on the government.[74]

Another example of a trust notion, the significance of which has changed over time as public policy has shifted, is provided by the federal law dealing with tribes of Native Americans. Initially, the trust served as the basis for a federalist judge to resist the exercise of state power over tribes viewed as dependent upon the federal government.[75] Later, at the threshold of a period of intense pressure to assimilate Indians into the dominant society, the trust arising from the dependent status of tribes served to justify very extensive--even "plenary"-- federal power over tribes, even where no explicit constitutional basis could be found for the exercise of that power.[76] Finally, in recent years, when public policy has been more protective of tribal self-government, the trust has served as a basis for obligations imposed on the federal government vis-a-vis a tribe.[77]

With regard to water rights, the interpretation scenario would call for the public trust doctrine to be used to buttress the dominant contemporary public policies regarding water. One such policy that can be easily identified is the policy in favor of the protection and enhancement of water quality. This policy

has been important since the modern environmental protection movement gained the public's attention in the late 1960's and early 1970's, but it seems even more important now that there is great focus on toxics in drinking water supplies.

Interestingly, in the most important public trust judicial decision in California since the 1983 Mono Lake ruling, the Court of Appeal drew on the public trust doctrine in the D1485 case mainly in order to support the authority of the SWRCB to enforce water quality standards for nonconsumptive, instream uses.[78] This point was made as one basis for refuting the contention of the Bureau of Reclamation that once a permit to appropriate has been issued, the SWRCB has no authority to modify it. The Court of Appeal there was able to draw on Justice Broussard's observation in the Mono Lake decision that appropriators of water have no "vested" right to divert in a manner harmful to the interests protected by the public trust.[79]

Significantly, independently of the public trust doctrine, it is clear appropriators of water in California have no vested right to use water unreasonably.[80] Indeed, the Court of Appeal itself noted that the SWRCB is "authorized to modify . . . permit terms under its power to prevent waste or unreasonable use or methods of diversion of water."[81] Furthermore, water quality standards could be enforced against permittees on the basis of statutory authority to reserve jurisdiction to impose new standards on projects in the name of the public interest.[82] Thus, both with regard to the enforcement of water quality

standards and the vestedness of water rights, the public trust doctrine served only to fortify an idea already found in the law.

Scenario Two. Scenario Two could be called the "consideration" scenario. Here the emphasis is upon the obligation of a resource allocator to consider all aspects, particularly all environmental aspects, of a resource allocation decision. In the Mono Lake situation, the SWRCB's predecessor board, when it issued the appropriation permits to Los Angeles in 1940, indicated under its view of the law it could not take into account the detrimental impact the diversions might have on the aesthetic and recreational value of the Mono Basin.[83] Clearly that view of what to consider in the exercise of resource allocation authority was wrong, as we now know from Justice Broussard's opinion.

As with the interpretation scenario, it is not clear how much the consideration scenario really adds to contemporary resource allocation decision-making. For decisions on new appropriations of water, in California at least there already are extensive consideration requirements in CEQA, the California Environmental Quality Act.[84] This statute, modeled upon the National Environmental Policy Act (NEPA),[85] mandates documentation as well as consideration in many situations. CEQA does not reach back to decisions made before 1970,[86] but as noted above earlier allocation decisions--at least those made after 1928--are subject to reexamination pursuant to the state

constitutional reasonableness requirement. And contemporary reexamination would come under CEQA.

The "consideration" scenario seems very consistent with the practice of the SWRCB since 1983. There has been no revolution in decision-making, or even any noticeable change except with regard to nomenclature. There are now "public trust" findings made in addition to or in lieu of other findings, but there is nothing to indicate any change in the content of decisions. Relatively little time has elapsed, of course, since 1983, and the SWRCB in the lower American River case or the Bay-Delta case or a possible future Mono Lake case might in fact move more boldly in response to the mandate to integrate the public trust and appropriative rights doctrines. But so far there are no discernible signs of such a bold response.

One result of the comparison of the public trust doctrine with CEQA (or NEPA) is to suggest that any change brought by Justice Broussard's opinion will be purely procedural. To the dismay of many environmentalists, NEPA and CEQA have turned out to be powerful procedural tools but entirely ineffective in laying down normative guidelines for the substance of agency action.[87] This is true even though the policy sections of those two statutes are rather detailed and generally preservationist in tone.[88] The public trust doctrine, although somewhat preservationist in its tidelands origins, lacks even the amount of substantive detail found in NEPA and CEQA.

Scenario Three. Scenario Three is a "property right" scenario. This scenario takes the "public trust" as literally analogous to a private trust, where, in addition to a trustee, there are beneficiaries and the latter are considered to be the equitable owners of the trust assets. For this understanding, with the public trust the state is the trustee of navigable waters and associated lands. Members of the public within the state are the beneficiaries and are therefore equitable owners of the waters and lands in question.

This understanding draws support both from the closely related Equal Footing doctrine of the federal law[89] - clearly a "property right" doctrine in its application to land under navigable or tidal water - and from statutory statements to the effect that all water within the state is "the property of the people of the state,"[90] although use rights may be acquired according to the law. It also draws on the implication in judicial pronouncements on the public trust doctrine that the legislature is constrained in its freedom to act by the people's property right--that, for example, in the words of Justice Broussard, the people's "common heritage of streams, lakes, marshlands and tidelands" may be surrendered by the state only "in rare cases when the abandonment of that right is consistent with the purposes of the trust."[91]

The most useful analogy for the property right scenario is the development of the "reserved" right of federal water rights law. Federal courts responded to the prospect of Indian tribes

settled on lands with inadequate water supplies by developing the notion that when Congress (or the executive exercising properly delegated authority) reserved public lands for tribes, it also impliedly reserved an adequate water supply.[92] The same idea was subsequently applied to other federal land reservations, such as national recreation areas, wildlife refugees, forests and parks.[93] Similarly, in a public trust property right scenario the emphasis would be upon judicial fashioning of a public right to deal with inadequate legislative provision of protection for instream values important to the public.

In the case of federal law reserved water rights, fifty-five years elapsed between the time the U.S. Supreme Court clearly established the right for the benefit of Indian tribes (1908) and the time the content of the right was laid down (1963).[94] Even now, it appears the standard as to content--"practically irrigable acreage"--may be limited to situations where the Indians are engaged in irrigation, as opposed, for example, to those where they need water to support a fishery. So it may similarly be that a period of time will be needed in state law to let the legitimacy of the public trust limitation on water rights become established, before courts begin the task of establishing the precise boundaries of the public's water right. For the time being it may be enough simply to say the public right requires enough water in a stream or in a lake to protect indefinitely - "whenever feasible" - the viability of the major public trust uses of the source.

Of the three scenarios under discussion, it is the property right scenario which has the greatest potential for impact in situations like the Mono Lake case where established (if not for these purposes "vested") water rights exist. Similarly, it is the property right scenario which is most likely to produce claims an unconstitutional taking has occurred. Los Angeles itself, as a creature of the state which is engaged in the putative taking, may encounter difficulty in presenting a taking argument.[95] But, in other situations, for example those where privately held rights are effectively limited because a public trust claim is held to have created a superior property right, it may be necessary to deal with the taking point. And this will occur in a context in which the U.S. Supreme Court, already arguably hostile to the public trust doctrine as understood by the California courts,[96] may have hardened its position on when a taking exists.[97] Nonetheless, the law with regard to "judicial" takings of this sort is far from settled,[98] making any prediction hazardous. And even if application of the public trust is held to have worked a taking, in California the damages to be awarded to appropriators which hold their water rights under a permit or license are limited to the "actual amount paid to the State."[99]

Free-Flowing Water and the Law in the West

For its first hundred years water law throughout the western states clearly was dominated by the claims of diverters.[100] Protection was provided almost exclusively for actions associated with diversion--the capture of water and, except in the case of

the production of electricity, the movement of that water to some place away from the source. The claims were numerous: for mining, agriculture, municipal water supply and other beneficial uses essential to the settlement and development of the arid West.

Occasionally, there were situations in those first hundred years when courts seemed to protect the natural integrity of rivers, but on closer examination those cases seem ultimately more concerned with out-of-the-stream considerations than with instream values. It is well-known, for example, that in 1884 courts in California used nuisance theory virtually to put an end to the practice of hydraulic mining.[101] The unfortunate consequence for rivers of that sort of mining was the creation of enormous amounts of mining debris, much of which ended up in rivers and the estuary downstream. But the heart of the nuisance actions was not that the water was degraded by the mining debris, but that the build-up of debris in the beds of rivers reduced the carrying capacity of the channels and led to increased flooding of and deposit of debris on farmland and towns near the river.[102] Protection of land away from the stream from damage by water, not protection of the integrity of a natural watercourse or protection of established or anticipated instream uses, was central to the decisions.

Similarly, in 1926 when the California Supreme Court vindicated Mrs. Herminghaus's famous riparian claim vis-a-vis the Southern California Edison project planned upstream,[103] it

protected her right as a riparian to seasonal flood waters because she wanted them as an inexpensive means for irrigation of her grazing land.[104] There was no sense that any instream value of the sort we discuss today was being protected.

During that first hundred years, the appropriation doctrine became the dominant legal vehicle for the satisfaction of diverters' claims. It was never the exclusive doctrine in the West. It had much less importance for groundwater than for surface water, and even for surface water some states recognized rights to divert water based on riparian,[105] pueblo,[106] or prescriptive status.[107] But clearly, to understand the heart of western surface water law from the 1850's to the 1950's, one has to understand the doctrine of prior appropriation.

For California, I think the 1950's is the appropriate decade to select for the beginnings of a change in attitude--for initial recognition that, alongside the diversion of water, there are important values represented by nondiversion or the "free" flow of water. Initially, this change was signaled by an amendment to the Water Code to the effect that certain instream uses of water are "beneficial" uses.[108] Thus, the concept in appropriation theory that the origin, measure and termination of an appropriative water right depend on beneficial use was adapted to the instream situation. The consequence was not that water could be appropriated for instream beneficial use,[109] but that appropriations for diversion could be limited by permit

conditions imposed in the name of the protection of an instream beneficial use.[110]

Since the 1950's other devices have emerged in the law for protection of instream values. The most dramatic and comprehensive is a wild or scenic river designation,[111] for it can preclude almost all development on the designated stretch of river. But others clearly exist: federal reserved rights,[112] instream flow appropriation,[113] water marketing,[114] flow preservation regulations,[115] and riparian rights are among the most interesting.[116] And condemnation deserves more attention than it has received.[117]

Among all these approaches to instream flow preservation we have the public trust doctrine. What are its comparative advantages, and will it spread throughout the West as prior appropriation once did?

I believe the comparative advantages of the public trust doctrine as a tool for instream flow protection are principally its ability to help undo past mistakes in an historically legitimate fashion and the fact the doctrine is a creature of state law. Each of these points requires elaboration.

Many of the legal devices for instream flow protection are effective only with regard to diversion rights established in the future. An instream appropriation, for example is junior to all previously established appropriations. A wild and scenic rivers act normally is provided only for presently undeveloped stretches

of river. Conditions placed on an appropriation permit affect only that appropriation, not all which have gone before.

A public trust right, by way of contrast, to the extent it is understood as a public property right, can be viewed as in existence from time immemorial. In Justice Broussard's words, the right is part of the "common heritage" of the people,[118] like the air we breathe or the sky we enjoy. It predates any appropriative right, although in defining the scope of each kind of right accommodation in the name of fairness may be necessary.[119] The public trust right is thus available as a tool to correct mistakes of the past, to the extent that can be done without running afoul of a constitutional restriction.

The public trust doctrine is of course not the only means for dealing with the present consequences to past mistakes. Police power regulation can do the same thing, subject again to constitutional restraints. But police power regulation lacks the ancient historical roots of the public trust doctrine, which provide a legitimacy for an unusual legal regime for very special natural resources--a regime less accommodating of private interests in resources than is true in other areas. Furthermore, normally police power regulation is stated in general terms to apply across a range of situations. The public trust doctrine can be similarly stated, for example as a foundation for public access to dry sand areas of a state's beaches.[120] But it also can be tailored to the physical facts and political realities of individual situations. Thus, it may in the end operate

differently depending upon whether the situation is that of Mono Lake, the lower American River or the Bay-Delta. This may be a great advantage for a legal doctrine which, despite its ancient origins, is largely a new one in the instream flow protection arena.

A second comparative advantage of the public trust doctrine is its association with state law.[121] By way of contrast, the reserved right--which to some extent also allows the correction of past mistakes[122]--is a creature of the federal law.[123] And, with regard to water rights law in the West, federal law plays a secondary role. This has led the U.S. Supreme Court in recent years to emphasize that the paramount federal policy on western water rights is deference to state law and that consequently the scope of the federal law reserved right will be narrowly understood.[124] The public trust doctrine, as a creature of state law, need not be interpreted in the same restrictive manner.

Since 1983 there have been indications that the courts in some states other than California also find the public trust doctrine an attractive tool for the resolution of water resources controversies. The best example is Idaho, where shortly after the 1983 Mono Lake decision the supreme court emphasized in dicta that the public trust doctrine would be integrated with the appropriative rights doctrine in Idaho.[125] Then in 1985 the Idaho Supreme Court, in the context of a controversy over appropriative water rights, noted that statutory public interest requirements must be understood in the larger context of the

public trust doctrine.[126] This would require a public interest analysis not only upon filing of an application for a new water right permit, but also upon evidence of significant damage to public trust values from exercise of a water right created long ago.[127]

Montana also has employed the public trust doctrine in ways of interest to those interested in instream flow protection. In two decisions handed down in 1984, the Montana Supreme Court relied on the doctrine to protect public access to and use of streams for recreational purposes,[128] and recently it affirmed the constitutionality of most of a statute which codified that decision.[129] In one of the 1984 decisions, however, the court indicated that public use rights are subordinate to an established appropriative right.[130] Whether this point of view, clearly one inconsistent with the California and Idaho decisions, will be followed in case of an actual conflict between public use and a private appropriative right remains to be seen.[131]

Conclusion

Today we are witnesses at many places throughout the West of a broad change in thinking about the utilization of water resources. Few question the need in an arid region to use some of the limited supplies of surface waters for irrigation, municipal water supply and other beneficial uses which require diversions. But many believe that our institutions and legal standards geared to water development have in some instances gotten out of control and that as a consequence we need to do two

things. First, we must follow a more balanced approach in future water development projects--an approach far more sensitive to the environmental amenities threatened by these projects. Second, we must begin to think much more seriously about correcting at least some of the many situations where serious mistakes have been made in the past. For those of this point of view, environmental restoration is as important as more sensitive decision-making on future projects.

The public trust doctrine has its greatest potential as a tool for an aggressive approach to environmental restoration. There is great legitimacy to the claim of a public property right in navigable water. That right is expressed as the public trust doctrine, and it should become a viable basis for the restoration of instream flows or, in the case of Mono Lake, the restoration of needed water levels. Public trust proponents will do much less than is possible if they settle for an "interpretation" or "consideration" public trust scenario, when so much more is achievable in a "property right" scenario. In a time when a conservative official such as Secretary of the Interior Donald Hodel can seriously suggest study of the restoration of Hetch Hetchy Valley by the destruction of a major dam,[132] proposals to restore Mono Lake by augmenting inflows seem modest indeed. As in any reallocation of water rights, the legitimate needs of those like Los Angeles which have been relying on water projects cannot be ignored.[133] But the central task is to replace the status quo with a more balanced solution. For this, at Mono Lake

and perhaps at other locations throughout the West, the public trust doctrine can be an appropriate vehicle.

FOOTNOTES

1. The study was funded by the Student Originated Studies Program of the National Science Foundation. D. Winkler (ed.), An Ecological Study of Mono Lake, California 145 (1977) (Institute of Ecology Publication, No. 12; University of California, Davis). The Mono Basin Research Group consisted of five Stanford students, five UC Davis students and one student each from Earlham College and UC Santa Cruz, id. at 143, who undertook a program of field and laboratory work during the summer of 1976. D. Gaines, "Foreward: A Note on the History of Mono Lake," in Winkler, supra, at i.

2. Whereas Mono Lake is "one of the oldest lakes in North America," Mono Basin Ecosystem Study Committee, The Mono Basin Ecosystem: Effects of Changing Lake Level 18 (1987) (National Research Council; hereinafter "NRC Committee"), Lake Tahoe is "still described as oligotrophic, free from excess nourishment, rich in oxygen, or more generally, youthful." Ayer, "Water Quality Control at Lake Tahoe: Dissertation on Grasshopper Soup," 1 Ecology L.Q. 3, 4 (1971). Much of the study of Lake Tahoe has been organized and undertaken by Dr. Charles Goldman of UC Davis.

3. California Department of Water Resources, Report of Interagency Task Force on Mono Lake 11-13 (1979) (hereinafter, "DWR Task Force").

4. In recent times the historic high for the lake's water level was 6,428 feet above sea level on July 18, 1919. NRC

Committee, supra note 2, at 17. In 1941, when Los Angeles began its diversions, the level was about 6,417. Id. On December 17, 1981, the lake's water level reached an historic low of 6,372. Id. Several very wet years since then have caused some recovery, to 6,380 feet in August 1986. Id. at 16. An interagency task force recommended the lake level be stabilized at 6,388 feet, which on the basis of 1979 estimates would have required diversions by Los Angeles to be reduced about 85%. DWR Task Force, supra note 3, at 55.

5. The principal foods are brine shrimp and brine flies, and the students concluded that "although the possibility exists that the brine shrimp and fly larvae of Mono Lake may be able to adapt themselves physiologically to a slowly increasing salinity or to evolve a genetic tolerance enabling survival, the weight of evidence examined here indicates that the present populations of these animals will not be able to withstand the increasing salinity predicted for Mono Lake." Winkler, supra note 1, at 69. And they noted that if the food organisms disappear from the lake, "the bird populations which depend on them are almost sure to follow." Id. at 3. The increasing salinity is caused by a declining lake level, NRC Committee, supra note 2, at 44-48, which in turn is caused mainly by exports of water from the basin. This general view of the relationships between water export, lake elevation, salinity level, food organism survival and bird populations seems to be shared by the authors of a recent report published by the National Research Council. Id. at

2-6.

6. Winkler, supra note 1, at 3. Increased air pollution in the form of dust storms fed by material from the newly exposed alkaline mud flats around the lake's shoreline was also a concern. Id.

7. The Executive Director of the Mono Lake Committee asserted recently that "[i]f there had been no Mono Lake Research Group, I doubt there ever would have been a campaign to save the lake." Letter from Martha Davis to the author (February 19, 1988). Tragically, David Gaines--author of the forward to the research group's report and a major figure in the work of the Mono Lake Committee--was killed in an automobile accident in January of this year. Sacramento Bee, January 13, 1988, at A3.

8. Irwin v. Phillips, 5 Cal. 140 (1855). See generally R. Dunbar, Forging New Rights in Western Waters (1983).

9. Eldridge v. Cowell, 4 Cal. 80, 85 (1854).

10. Stevens, "The Public Trust: A Sovereign's Ancient Prerogative Becomes the People's Environmental Right," 14 U.C. Davis L. Rev. 195 (1980).

11. See generally Dunning, "The Significance of California's Public Trust Easement for California Water Rights Law," 14 U.C. Davis L. Rev. 357 (1980).

12. Id. at 368-374.

13. See id. at 370. A leading federal decision, in the application of Illinois law, made the same point somewhat more loosely in stating that legislatures could validly grant private

entities land under navigable waters for improvements related to commerce on those waters, e.g. wharves, or where occupation of the parcels does not "substantially impair the public interest in the lands and waters remaining . . . ." Illinois Central Railroad v. Illinois, 146 U.S. 387, 452 (1892).

14. In recently summarizing the California law regarding the duties and powers of the state as trustee, the California Supreme Court noted that the state may surrender public trust protection "only in rare cases when the abandonment of that right is consistent with the purposes of the trust." National Audubon Society v. Superior Court, 33 Cal.3d 419, 441, 658 P.2d 709, 189 Cal. Rptr. 346, 361 (hereinafter "Audubon"), cert. denied, 464 U.S. 977 (1983) (Emphasis added.) Unfortunately, there is no empirical study of land development in coastal areas of California which would allow one to judge the extent to which this principle has been reflected in practice. Elsewhere developers have contended that the public trust doctrine by obstructing clear title "makes it difficult to obtain mortgage financing or to ensure the alienability of urban property at its true value." Carlson, "The Public Trust Doctrine and Urban Waterfront Development in Massachusetts: What is a Public Purpose?", 7 Harv. Env. L. Rev. 71, 71 (1983). Lack of knowledge as to the practical consequences of the public trust doctrine for coastal land utilization and development make prediction about the consequences of the doctrine for water resources development particularly hazardous.

15. To sustain the public trust easement in the face of a legislative act of termination, one opinion suggested one must produce "evidence indicating that the abandonment of the public trust will impair the power of succeeding legislatures to protect, improve, and develop the public interest in commerce, navigation, and fisheries." Mallon v. City of Long Beach, 44 Cal.2d 199, 207, 282 P.2d 481, 486 (1955).

16. See supra, note 14. Although these dicta are fascinating, I have not found any example in the recently reported California decisions of a judicially invalidated conveyance or a development judicially prohibited on public trust grounds following explicit legislative approval. The best example from another state is People ex rel. Scott v. Chicago Park District, 66 Ill. 2d 65, 360 N.E.2d 773 (1976). There the Illinois legislature conveyed land beneath Lake Michigan to U.S. Steel for construction of a new factory. The legislation included a finding that the grant was made in aid of commerce and would create no impairment of the public interest in the remaining lands and waters. Id. at 80, 360 N.E.2d at 781. The court termed the public benefit "too indirect, intangible and elusive" to satisfy the criteria for termination; found private benefit to be the "direct and dominating" purpose of the grant; and invalidated it. Id. at 80-81, 360 N.E.2d at 781. Presumably, the result would be the same if, instead of attempting to place the situation within the ambit of the established public trust termination criteria, the Illinois

legislature simply stated that the prior criteria were eliminated and termination could occur for whatever reason (or no reason) deemed suitable by it.

17. It is interesting to compare this implied constitutional aspect of the state law public trust doctrine with the similar quality accorded the federal law "Equal Footing" doctrine. The latter provides that the U.S. government holds title to land under navigable water in territories in trust for future states and that upon admission to the Union a beneficiary state automatically takes title to such land. Pollard v. Hagan, 44 U.S. (3 How.) 212 (1845). Although a state's beneficial interest can be defeated in some circumstances, see e.g. Choctaw Nation v. Oklahoma, 397 U.S. 620 (1970); cf. Utah Div. of State Lands v. U.S., 107 S. Ct. 2318 (1987), where such do not exist the federal government must acknowledge state ownership of the land, despite the lack of any explicit constitutional language to that effect. This puts states created from federal territories on the same footing as states formed by the original thirteen colonies.

18. Marks v. Whitney, 6 Cal.3d 251, 491 P.2d 374, 98 Cal. Rptr. 790 (1971).

19. Id. at 259, 491 P.2d at 380, 98 Cal. Rptr. at 796.

20. Id. at 259-60, 491 P.2d at 380, 98 Cal. Rptr. at 796. Water quality control will perhaps soon be added to the list. See generally Johnson, "The Emerging Recognition of a Public Interest in Water: Water Quality Control by the Public Trust

Doctrine," in D. Getches (ed.), Water and the American West: Essays in Honor of Raphael J. Moses (1987).

21. State of California v. Superior Court (Fogerty), 29 Cal.3d 240, 172 Cal. Rptr. 713, 625 P.2d 256, cert. denied, 454 U.S. 865 (1981) (Lake Tahoe); State of California v. Superior Court (Lyon), 29 Cal.3d 210, 172 Cal. Rptr. 696, 625 P.2d 239, cert. denied, 454 U.S. 865 (1981) (Clear Lake). Such land lies between the high and low water marks of these lakes. In the aftermath of Nollen v. California Coastal Commission, 107 S. Ct. 3141 (1987) (beach access condition in a permit struck down as not substantially furthering governmental purposes that would justify denial of the permit), there may now be renewed interest in the relevance of the public trust doctrine for dry sand areas adjacent to both inland lakes and the ocean. See Matthews v. Bay Head Improvement Association, 95 N.J. 306, 471 A.2d 355, cert. denied, 469 U.S. 821 (1984).

22. Marks v. Whitney, 6 Cal.3d 251, 261, 491 P.2d 374, 381, 98 Cal. Rptr. 790, 797 (1971) (marina on Tomales Bay); Atwood v. Hammond, 4 Cal.2d 31, 37, 48 P.2d 20, 25 (1935) (public buildings on reclaimed area in San Diego Bay).

23. See generally Dunning, supra note 11.

24. See People v. Gold Run Ditch & Mining Co., 66 Cal. 138, 151-2, 4 P. 1152, 1159 (1884); People v. Russ, 132 Cal. 102, 64 P. 111 (1901).

25. Sax, The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention, 68 Mich. L. Rev. 473

(1970).

26. Other theories under consideration included the contention that the city's use of water was in violation of the reasonableness limitation in the California Constitution, Cal. Const. art. X, § 2, and the argument that federal littoral rights to the waters of Mono Lake should be asserted to obtain some restoration of the lake's water level. The first argument was abandoned, but the second one was pursued in petitions filed by the Sierra Club and the Natural Resources Defense Council with the Secretary of the Interior. The premise of the second argument - that federal agencies such as the forest service have littoral rights in California - was recently reaffirmed by the Supreme Court of California. In re Water of Hallett Creek Stream System, No. S.F. 25133 (Cal. S. Ct. Feb. 18, 1988). The State of California has filed a petition for rehearing in Hallett Creek, and an attorney for the state has indicated the state will seek review by the U.S. Supreme Court. Association of California Water Agencies, 16 ACWA NEWS 3 (Number 5) (March 7, 1988). Even if federal agencies have littoral rights in California, they may insist they have no duty to assert them. See Abrams, "Water in the Western Wilderness: The Duty to Assert Reserved Water Rights," 1986 U. Ill. L. Rev. 387 (1987).

27. A. Schneider, Legal Aspects of Instream Water Uses in California 6-29 (1978). See also Governor's Commission to Review California Water Rights Law, Final Report 110 (1978).

28. Robie, "The Public Interest in Water Rights

Administration," 23 Rocky Mt. Min. L. Inst. 917, 927 (1977).

29. In addition to alleging violation of the public trust, the complaint filed by the National Audubon Society and others alleged violation of Article XVI, Section 6 of the California Constitution (gift of public money); a cloud on plaintiff's public trust title; public and private nuisance; and violation of Article X, Section 4 of the California Constitution (access to navigable water). An amended complaint filed after removal of the case to federal court added a claim arising under the federal common law of nuisance.

30. These matters are discussed in Dunning, "The Public Trust Doctrine and Western Water Law: Discord or Harmony?", 30 Rocky Mtn. Min. L. Inst. 17-1, 17-28 to 17-29 (1984).

31. Another event which increased interest in and awareness of the public trust doctrine in California between 1978 and 1983 was a two day conference in 1980 at UC Davis attended by some 650 people. One part of that conference dealt with "The Public Trust Doctrine and Inland Water Resources." The conference proceedings were published at H. Dunning (ed.), The Public Trust Doctrine in Natural Resources Law and Management (1981), a volume which is no longer in print. Several of the conference papers also appear at 14 U.C. Davis L. Rev. (1980).

32. The court divided on the question whether the courts and the State Water Resources Control Board have concurrent jurisdiction over suits to determine rights to water. The majority expressed doubts on this point, Audubon, 33 Cal.3d at

451, 658 P.2d at 731, 189 Cal. Rptr. at 368, cert. denied, 464 U.S. 977 (1983), but concluded in the affirmative.

33. Johnson, "Public Trust Protection for Stream Flows and Lake Levels," 14 U.C. Davis L. Rev. 233, 233 (1980).

34. Audubon, 33 Cal.3d at 425, 658 P.2d at 712, 189 Cal. Rptr. at 349, cert. denied, 464 U.S. 977 (1983).

35. Justice Broussard notes that to administer the appropriative water rights system without consideration of the public trust doctrine "may cause unnecessary and unjustified harm to trust interests." Id. at 446, 658 P.2d at 728, 189 Cal. Rptr. at 365, cert. denied, 464 U.S. 977 (1983).

36. He observes that the "prosperity and habitability" of much of California are built upon "the diversion of great quantities of water from its streams for purposes unconnected to any navigation, commerce, fishing, recreation, or ecological use relating to the source stream" and concludes from that observation that the state "must have the power to grant non-vested usufructuary rights to appropriate water even if diversions harm public trust uses." Id. at 426, 658 P.2d at 712, 189 Cal. Rptr. at 349, cert. denied, 464 U.S. 977 (1983). At another point in the opinion this power is grounded upon "current and historical necessity." Id. at 446, 658 P.2d at 727, 189 Cal. Rptr. at 364, cert. denied, 464 U.S. 977 (1983). Although the Mono Lake opinion suggests the rules of inland water resources are thus different from those for tidelands and submerged lands, it is likely in reality many of the latter in fact have been

filled for purposes "unconnected to any navigation, commerce, fishing, recreation, or ecological use" relating to the navigable water. See note 14 supra; see generally Dunning, supra note 11.

37. Another important element in Justice Broussard's analysis is the conclusion that diversions from streams whose navigability has not been established implicate the public trust doctrine where the public trust uses of a downstream navigable lake or river are impaired. Id. at 436, 658 P.2d at 720, 189 Cal. Rptr. at 357, cert. denied, 464 U.S. 977 (1983). The navigability of Mono Lake was established in City of Los Angeles v. Aitken, 10 Cal. App. 2d 460, 466, 52 P.2d 585, 588 (1935), but no decision has been made on the navigability of the various fresh water creeks which flow into the lake. On the elusive concept of navigability, see generally Frank, "Forever Free: Navigability, Inland Waterways, and the Expanding Public Interest," 16 U.C. Davis L. Rev. 519 (1983).

38. Cal. Const., Art. X, § 2.

39. See generally Walston, "The Public Trust Doctrine in the Water Rights Context: The Wrong Environmental Remedy," 22 Santa Clara L. Rev. 63 (1982). Independently of the public trust doctrine, there are statements of use preference in California water rights law, e.g. Cal. Water Code §§ 106, 1254 (West 1971), but these and other similarly specific directives have generally been superceded by the more general "public interest" standard for new appropriations of surface water resources. See United States v. State Water Resources Control Board, 182 Cal. App. 3d

82, 103-04, 227 Cal. Rptr. 161, 169-70 (1986).

40. A similarly broad view of the state's reasonable beneficial use authority was evidenced in a recent decision of California Court of Appeal that has come to be known (after the author of the opinion) as the "Racanelli" decision. There, in a situation where water rights are being limited in order to achieve water quality objectives, the court indicated that where diversions of water cause adverse effects, the State Water Resources Control Board has authority "to modify . . . permits to curtail . . . use of water on the ground that . . . use and diversion of the water [has] become unreasonable." Id. at 130, 227 Cal. Rptr. at 187. In light of this decision, perhaps the environmentalists in the Mono Lake litigation erred in not asserting a violation of Article X, Section 2 of the California constitution (reasonable beneficial use). See supra, note 26.

41. People v. Shirokow, 26 Cal.3d 301, 605 P.2d 859, 162 Cal. Rptr. 30 (1980); In re Waters of Long Valley Creek System, 25 Cal.3d 339, 599 P.2d 656, 158 Cal. Rptr. 350 (1979); see Bank of America v. State Water Resources Control Board, 42 Cal. App. 3d 198, 116 Cal. Rptr. 770 (1974).

42. Audubon, 33 Cal.3d at 427-28, 658 P.2d at 713-14, 189 Cal. Rptr. at 350-51, cert. denied, 464 U.S. 977 (1983). The agency based its position on use preference provisions, supra note 39, which favor domestic use over other uses.

43. This is qualified only in that public trust uses must themselves pass the constitutional reasonableness test. Id. at

443, 658 P.2d at 725, 189 Cal. Rptr. at 362, cert. denied, 464 U.S. 977 (1983).

44. Cal. Water Code §§ 1243 (West, 1971).

45. M. Reisner, Cadillac Desert 371-73 (1986) (Dos Rios Dam).

46. Cal. Pub. Res. Code, §§ 5093.50 et seq. (West 1984).

47. Fullerton v. State Water Resources Control Board, 90 Cal. App. 3d 590, 153 Cal. Rptr. 518 (1979); California Trout, Inc. v. State Water Resources Control Board, 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979).

48. An initiative, which, among many other changes, would have permitted appropriation without physical control, was defeated in November 1982.

49. Governor's Commission to Review California Water Rights Law, Final Report 112-114 (1978).

50. In recent years the legislative leader of efforts to improve instream protection in California has been Assemblyman Robert Campbell.

51. References are provided in Schneider, supra note 27.

52. See, e.g., the two California Supreme Court opinions cited supra note 41.

53. Some developments of interest have occurred in litigation over fisheries in the lower reaches of two of the creeks which are tributary to Mono Lake and are sources of water exported from the Mono Basin by Los Angeles. As a result of unusually wet years from 1982 through 1986, substantial releases

of water were made from the city's dams into these lower reaches. Significant numbers of trout were released with the water, and they caused fisheries to be reestablished or augmented below the dams. A fisherman and two fishing organizations then filed a lawsuit based both on the California Environmental Quality Act (CEQA) and on Fish and Game Code Section 5937 in which they sought injunctive relief against the city again dewatering the lower reaches by failing to release water from the Grant Lake Dam on Rush Creek. Section 5937 provides that the owner of any dam shall release "sufficient" water "to keep in good condition any fish that may . . . exist below the dam." See generally Comment, "Use It or Lose It: California Fish and Game Code Section 5937 and Instream Fishery Resources," 14 U.C. Davis L. Rev. 431 (1980).

The plaintiffs in the Rush Creek fishery case lost on the CEQA ground, Dahlgren v. City of Los Angeles, No. 8092, slip op. at 13 (Mono Cty. Sup. Ct. Aug. 17, 1985), and with regard to the code section the court noted if it is mandatory it gives "absolute priority to fish" and as such may violate the reasonable beneficial use provision of the state constitution (Art. X, Section 2). Id. at 15. The court, however, suggested that in light of Audubon the code section might be read as non-mandatory and the court might instead use the Audubon principles "to balance the public trust values in Lower Rush Creek vs. the needs of the people of the City of Los Angeles." Id. Subsequently the court required the city to maintain a release of

at least nineteen cubic feet per second from the dam. These releases continue today, while an instream flow study of lower Rush Creek is being carried out.

Subsequently similar developments occurred with regard to lower Lee Vining Creek. As a result of a wet winter in 1986 the three miles between the city dam and Mono Lake received large amounts of spilled water for six weeks and with it three hundred adult trout. Metropolitan Water District of Southern California, Focus 3 (Number 2, 1988). These augmented a self-sustaining trout fishery which had survived on intermittent spills and other inflow. Id.; Mono Lake Committee v. City of Los Angeles, No. 8608, slip op. at 3 (Mono Cty. Sup. Ct. Oct. 21, 1987). In a lawsuit based upon both the public trust doctrine and Fish and Game Code Section 5937, the plaintiff won a preliminary injunction which requires the city to release up to five cubic feet per second of water from its dam in order to maintain a minimum flow of three cfs at the beginning of a designated downstream reach. Id. at 10. This outcome was said to be the result of "weighing and balancing the proposed water uses, with the concomitant right of perpetual review, as declared in Audubon," id. at 7, pending a full trial on the merits. Meanwhile an instream flow study of lower Lee Vining Creek is underway.

Preservation of fish in Lee Vining Creek does not, of course, directly or necessarily further any public trust use of Mono Lake. But the court stated its belief that the creek with

its fish and habitat "could reasonably be held to come under an extended application of public trust consideration . . . independent of any considerations of navigability of Lee Vining Creek." Water development interests estimate the annual cost of the replacement water and power at $1.2 million. Metropolitan Water District of Southern California, supra this note.

In addition to these actions, the National Audubon Society and the Mono Lake Committee filed a mandamus action in state court to compel the State Water Resources Control Board to incorporate in the Mono Basin licenses issued to the City of Los Angeles language requiring downstream releases of water in compliance with Fish and Game Code Section 5937. They were unsuccessful in the trial court, National Audubon Society v. State Water Resources Control Board, Nos. 336712 and 336715 (Sacramento Sup. Ct. July 30, 1986), and presently are pursuing the matter on appeal.

54. Nearly eighteen months after the final decision of the California Supreme Court and the remand of the matter to the federal district court, that court decided that all claims except that based on the federal common law of nuisance should be severed and remanded to the state court system in order to avoid an inappropriate exercise of federal pendent jurisdiction over issues of state law. National Audubon Society v. Department of Water and Power, No. Civil S-80-127 LKK, slip opinion at 34 (E.D. Cal. Nov. 8, 1984). That decision is currently pending on appeal in the Ninth Circuit (Nos. 85-2046, 85-2105, 85-2236, 85-2237 and

85-2238).

55. On the CVP, see generally E. Cooper, Aqueduct Empire (1968).

56. At one time the federal plan was to extend that canal some three hundred miles down the east side of the San Joaquin Valley, in order to deliver water to various points as far south as Kern County. Id. at 161-2.

57. The decision, D1400, is explicit that the substantial instream flows approved are required only once Auburn Dam is constructed.

58. Water Education Foundation, Western Water 5 (Nov./Dec. 1985).

59. Id. at 6. Historically Rancho Seco has used about one-third of the contracted amount. The Sacramento Bee, March 7, 1988, at B2, col. 4. Approximately an additional 175,000 acre-feet of American River water are sold annually by the U.S. Bureau of Reclamation to others, mostly local cities and water agencies, who hold contractual rights for up to 935,000 acre-feet of water. Id. at B1, col. 5.

60. Environmental Defense Fund, Inc. v. East Bay Municipal Utility District, 52 Cal. App. 3d 828, 125 Cal. Rptr. 601 (1975).

61. Environmental Defense Fund, Inc. v. East Bay Municipal Utility District, 20 Cal.3d 327, 572 P.2d 1128, 142 Cal. Rptr. 904 (1977).

62. Environmental Defense Fund, Inc. v. East Bay Municipal Utility District, 439 U.S. 811 (1978) (judgment vacated and case

remanded).

63. California State Water Resources Control Board, Legal Report (1987).

64. California State Water Resources Control Board, Draft Report of Referee (1987).

65. The draft report of referee prepared by staff, id., is now before the full board for consideration, and several days of hearing have been completed.

66. Cooper, supra note 55, at 266.

67. Id. at 266-67 (Reber Plan).

68. This decision was challenged in litigation, and a trial court overturned it in several respects. On appeal, the court was critical of several agency determinations, but it left D1485 intact as hearings on a decision to replace it were about to begin. United States v. State Water Resources Control Board, 182 Cal. App. 3d 82, 227 Cal. Rptr. 161 (1986) (Racanelli decision).

69. State Water Resources Control Board, Decision 1485 18 (1978).

70. The breadth of material being considered is attributable largely to critical comments in the Racanelli decision. D1485 aimed to maintain "without project" conditions in the Delta, with "project" meaning only the CVP and the State Water Project. Other diverters and polluters were not considered, but this meant that "the Board erroneously based its water quality objectives on the unjustified premise that upstream users retained unlimited access to upstream waters, while the

projects and Delta parties were entitled only to share the remaining water flows." United States v. State Water Resources Control Board, 182 Cal. App. 3d 82, 118, 227 Cal. Rptr. 161, 179 (1986). More generally, the decision criticized the SWRCB's decision to exercise its water quality and water rights functions in a single proceeding and suggested that as a consequence of that "unwise" procedure "the water quality standards were established only at a level which could be enforced against the projects." Id. at 119-20, 227 Cal. Rptr. at 180.

71. Wilkinson, "The Public Trust Doctrine in Public Land Law," 14 U.C. Davis L. Rev. 269 (1980).

72. Pollard v. Hagan, 44 U.S. (3 How.) 212 (1845) is a leading example. See supra note 17.

73. A good example is Camfield v. United States, 167 U.S. 518, 524 (1897). Light v. United States, 220 U.S. 523, 537 (1911), is termed the leading case by Wilkinson. Supra note 71, at 282.

74. By far the best example of this is the Redwood National Park litigation. Sierra Club v. Department of the Interior, 376 F. Supp. 90 (N.D. Cal. 1974); 398 F. Supp. 284 (N.D. Cal. 1975); and 424 F. Supp. 172 (N.D. Cal. 1976).

75. Cherokee Nation v. Georgia, 30 U.S. (5 Pet.) 1 (1831); see also Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832).

76. United States v. Kagama, 118 U.S. 375 (1886).

77. See, e.g., Morton v. Ruiz, 415 U.S. 199 (1974).

78. United States v. State Water Resources Control Board,

182 Cal. App. 3d 82, 148-52, 227 Cal. Rptr. 161, 200-02 (1986).

79. Id. at 150, 227 Cal. Rptr. at 201.

80. Erickson v. Queen Valley Ranch Company, 22 Cal. App. 3d 578, 99 Cal. Rptr. 446 (1971).

81. United States v. State Water Resources Control Board, 182 Cal. App. 3d 82, 129, 227 Cal. Rptr. 161, 187 (1986)

82. Cal. Water Code § 1394 (West 1971).

83. Audubon, 33 Cal.3d at 427-28, 658 P.2d at 713-14, 189 Cal. Rptr. at 350-51, cert. denied, 464 U.S. 977 (1983).

84. Cal. Pub. Res. Code §§ 21000 et seq. (West 1986).

85. 42 U.S.C. §§ 4331 et seq. (1977).

86. See County of Inyo v. Yorty, 32 Cal. App. 3d 795, 806, 108 Cal. Rptr. 377, 385 (1973); cf. Cal. Pub. Res. Code § 21169 (West 1977).

87. Sax, "The (Unhappy) Truth About NEPA," 26 Okla. L. Rev. 239 (1973); cf. Strycker's Bay Neighborhood Council, Inc. v. Karlen, 444 U.S. 223 (1980).

88. NEPA, for example, declares that it is the continuing policy of the federal government to use all practicable means "to create and maintain conditions under which man and nature can exist in productive harmony." National Environmental Policy Act § 101, 42 U.S.C. § 4331 (1977); CEQA, inter alia, initially declared that the state policy was to ensure that the long-term protection of the environment shall be "the" guiding criterion in public decisions. California Environmental Quality Act, Cal. Pub. Res. Code § 21001 (West 1977). In 1979 this was qualified

by the addition of the following: "consistent with the provision of a decent home and suitable living environment for every Californian." California Environmental Quality Act, Cal. Pub. Res. Code § 21001 (West 1986).

89. See supra note 17. The relationship between the Equal Footing and public trust doctrines is considered in some detail in the recent decision in Phillips Petroleum Co. v. Mississippi, No. 86-870 (U.S. S. Ct. Feb. 23, 1988) (states upon entering Union acquire title to all land beneath water subject to tidal influence, even if the water was not navigable-in-fact).

90. Cal. Water Code § 102 (West 1971); see generally Note, "The Public Trust Doctrine as a Source of State Reserved Water Rights," 63 Den. U. L. Rev. 585 (1986).

91. Audubon, 33 Cal.3d at 441, 658 P.2d at 724, 189 Cal. Rptr. at 361, cert. denied, 464 U.S. 977 (1983).

92. Winters v. United States, 207 U.S. 564 (1908).

93. Arizona v. California, 373 U.S. 546 (1963); United States v. City and County of Denver, 656 P.2d 1 (S. Ct. Colo. 1982).

94. From Winters v. United States, 207 U.S. 564 (1908) to Arizona v. California, 373 U.S. 546 (1963).

95. Trenton v. New Jersey, 262 U.S. 182 (1923).

96. See Summa Corp. v. California ex rel. State Lands Commission, 466 U.S. 198, 205 (1984). But cf. Phillips Petroleum Co. v. Mississippi, No. 86-870 (U.S. S. Ct. Feb. 23, 1988).

97. See Nollan v. California Coastal Commission, 107 S. Ct.

3141 (1987).

98. Robinson v. Ariyoshi, 753 F.2d 1468 (9th Cir. 1985), vacated and remanded, 106 S. Ct. 3269 (1986); _____ F. Supp. _____ (D. Haw. 1987) (No. Civ. 74-32) (LEXIS 10953) (appeal pending) (change in state water rights law as an unconstitutional taking); cf. O'Brien, "New Conditions for Old Water Rights: An Examination of the Sources and Limits of State Authority" (to appear - Rocky Mtn. Min. L. Inst.) ("Consistent with Nollan, courts should closely scrutinize terms and conditions which affect [the priority] of the appropriative right."); Lazarus, "Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine," 71 Iowa L. Rev. 631, 674-75 (1986) (the public trust doctrine "adds little to the degree of governmental immunity from taking challenges to governmental environmental protection and conservation measures.")

99. Cal. Water Code § 1629 (West 1951) (license to appropriate); Cal. Water Code § 1392 (West 1951) (same language regarding permit to appropriate). These provisions, of course, deal with the water right but not the physical facilities which may be useless if there is no water right. As to the latter, in the comparable situation in federal power law, when the government takes over project works upon the expiration of a licensee, the licensee is only entitled to payment for its "net investment." 16 U.S.C. § 807 (a) (1985). That term is defined at 16 U.S.C. § 796 (1985).

100. See generally Dunbar, supra note 8.

101. People v. Gold Run Ditch & Mining Co., 656 Cal. 138, 4 P. 1152 (1884); Woodruff v. North Bloomfield Mining Co., 18 F. 753 (9th Cir. 1884).

102. Id. at 758-61. Mention was also made of injuries to navigation. Id. at 761-62. See generally Ziebarth, "California's First Environmental Battle," 4 Cal. Lawyer 56, 58 (No. 8, 1984).

103. Herminghaus v. Southern California Edison Co., 200 Cal. 81, 252 P.607 (1926), cert. dismissed, 275 U.S. 486 (1927).

104. This decision led directly to enactment of an anti-waste, pro-water development amendment to the state constitution, Cal. Const. Art. X, Section 2.

105. Of the Western states, California has been the most protective of the riparian water right. Recently, in fact, the California Supreme Court unanimously confirmed that federal agencies can claim these rights on the same basis as private landowners. In re Water of Hallett Creek Stream System, supra note 26.

106. City of Los Angeles v. City of San Fernando, 14 Cal.3d 199, 537 P.2d 1250, 123 Cal. Rptr. 1 (1975).

107. People v. Shirokow, 26 Cal.3d 301, 605 P.2d 859, 162 Cal. Rptr. 30 (1980).

108. Cal. Water Code § 1243 (1971) (enacted 1959).

109. Where no physical control is taken of the water, such appropriation is prohibited in California. Fullerton v. State

Water Resources Control Board, 90 Cal. App. 3d 590, 153 Cal. Rptr. 518 (1979); California Trout, Inc. v. State Water Resources Control Board, 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979).

110. In D1485, this was done to protect such uses identified in a water quality control plan. See supra note 68.

111. Cal. Pub. Res. Code § 5093.50 et seq. (West 1986); Wild and Scenic Rivers Act, 16 U.S.C. § 1271 (1985).

112. Although such rights arising by implication of the Organic Administration Act of June 4, 1897, 16 U.S.C. § 473 et seq., have been narrowly construed, United States v. New Mexico, 438 U.S. 696 (1978) (to serve only principal purposes of a national forest, which do not include aesthetics, recreation or fish preservation), other statutes may have a broader meaning. Sierra Club v. Block, 622 F. Supp. 842 (D. Colo. 1985), appeal pending (Wilderness Act basis for reserved right to instream flows).

113. See generally Tarlock, "Appropriation for Instream Flow Maintenance: A Progress Report on 'New' Public Western Water Rights," 1978 Utah L. Rev. 211 (1978).

114. Although the term "water marketing" is often used to describe the initial sales of water from a new water development project, the current policy debate on the concept focuses on the reallocation of water rights through market mechanisms. See generally Oeltjen & Fischer, "Allocation of Rights to Water: Preferences, Priorities, and the Role of the Market," 57 Neb. L. Rev. 245 (1978). Instream protection can be achieved, for

example, if senior diversion rights can be purchased and dedicated to nondiversion. Ways to restructure water rights and otherwise encourage private markets to "produce" instream flow are discussed in T. Anderson, Water Crisis: Ending the Policy Drought 73-85 (1983).

115. Proposals for such regulation can be found at Governor's Commission to Review California Water Rights Law, Final Report 113-14 and 120-28 (1978).

116. Recent litigation in California over the question whether federal agencies hold riparian water rights under state law was triggered by a Forest Service claim as a riparian to water for "wildlife enhancement." In re Water of Hallett Creek Stream System, No. S.F. 25133, slip op. at 3 (Cal. Sup. Ct. Feb. 18, 1988) (petition for limited reconsideration pending). A proposal to deny federal agencies state law riparian rights but permit them instream flow appropriations for public purposes is presented in Comment, "California Water for National Forests: Reserved Rights, Riparian Rights, and Instream Appropriations," 20 U.C. Davis L. Rev. 921, 950-53 (1987).

117. See supra, note 99, regarding conditions precedent which would affect the valuation of appropriative rights to water held under permit or license in California.

118. Audubon, 33 Cal.3d at 425, 658 P.2d at 712, 189 Cal. Rptr. at 349.

119. This has frequently occurred in the tidelands and submerged lands cases, City of Berkeley v. Superior Court, 26

Cal.3d 515, 606 P.2d 362, 162 Cal. Rptr. 327, cert. denied, sub nom. Santa Fe Land Improvement Co. v. City of Berkeley, 449 U.S. 840 (1980); Illinois Central R.R. v. Illinois, 146 U.S. 387 (1892), and in fact in waters rights cases generally there is far more bending of doctrinal "rules" to achieve a result perceived as fair than is commonly recognized. See generally Dunning, "State Equitable Apportionment of Western Water Resources," 66 Neb. L. Rev. 76 (1987).

120. Matthews v. Bay Head Improvement Association, Inc., 95 N.J. 306, 471 A.2d 355 (1984).

121. A leading federal precedent treats the doctrine as one of state law, Illinois Central Railroad Co. v. Illinois, 146 U.S. 387, 436-37 (1892), and has been so construed in a later decision. Appleby v. New York, 271 U.S. 364, 395 n.13 (1926). On the other hand, the public trust doctrine is closely related to the federal Equal Footing doctrine, supra notes 17 and 89. Furthermore, whether the public trust doctrine is founded on sovereignty or prior ownership, the federal government generally has both and consequently could in theory develop a federal law public trust doctrine. In some sense this has been done for federal public lands, supra note 71, and it could in the future be done with regard to navigable water. Perhaps the well-recognized existence of a Commerce Clause-based federal navigational servitude has inhibited such a development.

122. The priority of a reserved water right is the date upon which the associated federal land was reserved for

particular federal purposes. Cappaert v. United States, 426 U.S. 128 (1976). Generally such dates are rather early, so if the scope of a reserved right is sufficient to encompass an instream use, exercise of that right may preclude dewatering of a stream by the exercise of junior rights to divert.

123. See supra, note 112.

124. United States v. New Mexico, 438 U.S. 696 (1978).

125. Kootenai Environmental Alliance, Inc. v. Panhandle Yacht Club, Inc., 105 Idaho 622, 671 P.2d 1085 (1983). The court followed Illinois Central in attributing implied constitutional status to the public trust doctrine. It said that doctrine "at all times forms the outer boundaries of permissible government action with respect to public trust resources." Id. at 632, 671 P.2d at 1095. It also included property values among the trust interests protected by the doctrine.

126. Shokal v. Dunn, 109 Idaho 330, 336 n.2, 707 P.2d 441, 447 n.2 (1985).

127. Both Shokal and Kootenai are clear that any grant to use state waters is subject to the public trust. Id; Kootenai Environmental Alliance, Inc. v. Panhandle Yacht Club, Inc., 105 Idaho 622, 631, 671 P.2d 1085, 1094 (1983). Interestingly, whereas Kootenai repeatedly describes the trust as applicable to "navigable" water, id. passim, Shokal says the state holds "all" waters in trust. Shokal v. Dunn, 109 Idaho 330, 336 n.2, 707 P.2d 441, 447 n.2 (1985).

128. Montana Coalition for Stream Access v. Hildreth, 684

P.2d 1088 (1984); Montana Coalition for Stream Access v. Curran, 682 P.2d 163 (1984); cf. Gibson v. Kelly, 15 Mont. 417, 423, 39 P. 517, 519 (1895).

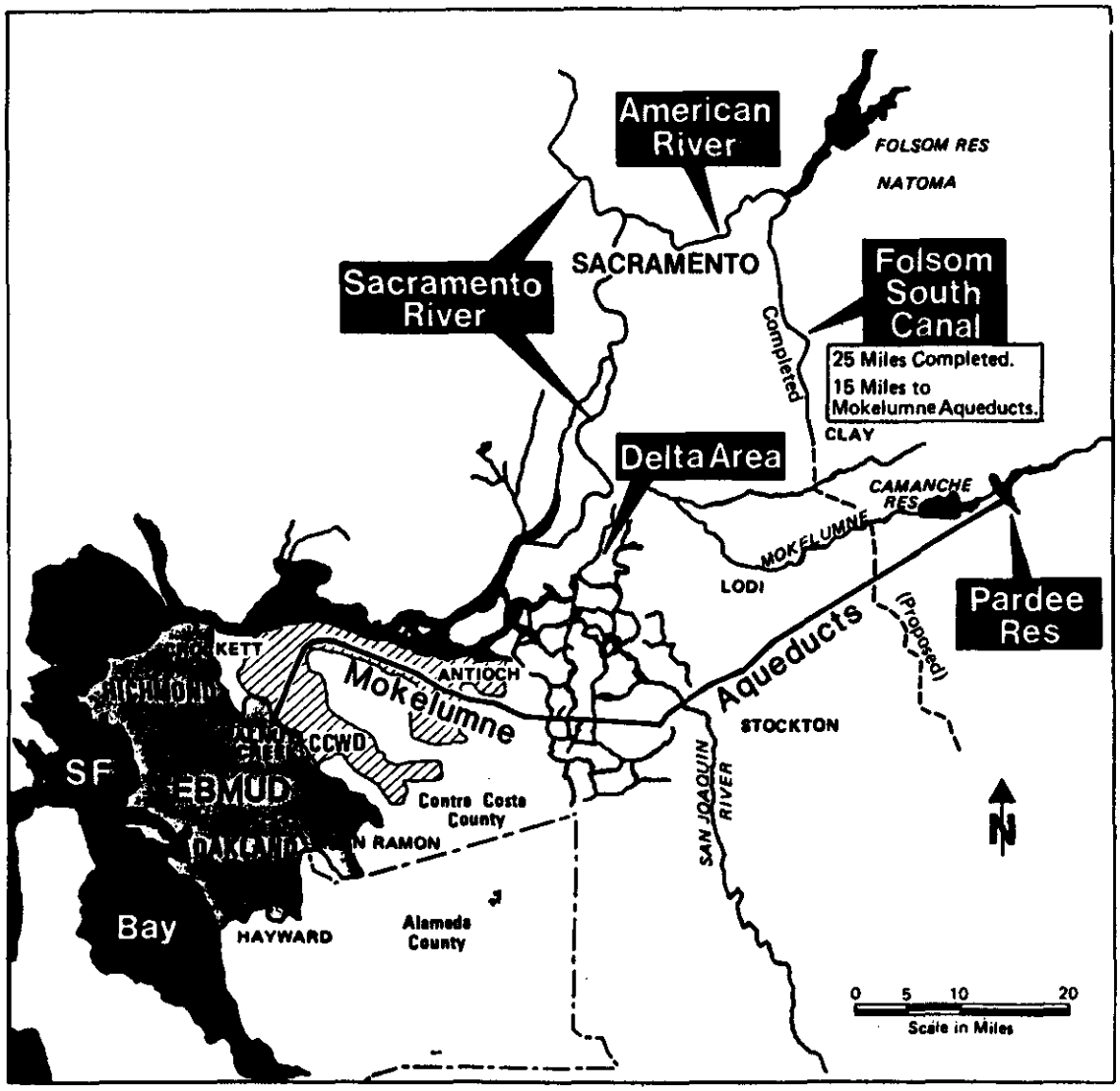
129. Galt v. State, 731 P.2d 912 (1987).

130. Montana Coalition for Stream Access v. Curran, 682 P.2d at 170.

131. Comment, "An Analysis of the Potential Conflict Between the Prior Appropriation and Public Trust Doctrines in Montana Water Law," 8 Pub. Land L. Rev. 81, 112 (1987) ("Under Montana's current expression of the public trust doctrine no ground exists for the court to effect a reallocation of a vested water right in favor of a broad recreational use without requiring just compensation.")

132. See generally 12 Environs No. 1 (January 1988) (published by the Environmental Law Society of the UC Davis School of Law).

133. Currently the Environmental Defense Fund is preparing a study on the water and power alternatives for Los Angeles should the city's water diversions from the Mono Basin be reduced. This follows on the heels of the National Academy of Science report supporting the contention of the Mono Basin Research Group that those diversions are causing serious environmental damage. See supra note 5. Also in preparation by the Forest Service is a study on the appropriate water level in Mono Lake from a land management point of view. The service has important land management responsibilities in the basin.


American River
FOLSOM RES
NATOMA
Sacramento River
SACRAMENTO
Folsom South Canal
Completed
25 Miles Completed.
15 Miles to Mokelumne Aqueducts.
CLAY
Delta Area
CAMANCHE RES
MOKELUMNE
LODI
Pardee Res
Aqueducts
(Proposed)
ANTIOCH
Mokelumne
CCWD
STOCKTON
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Bay
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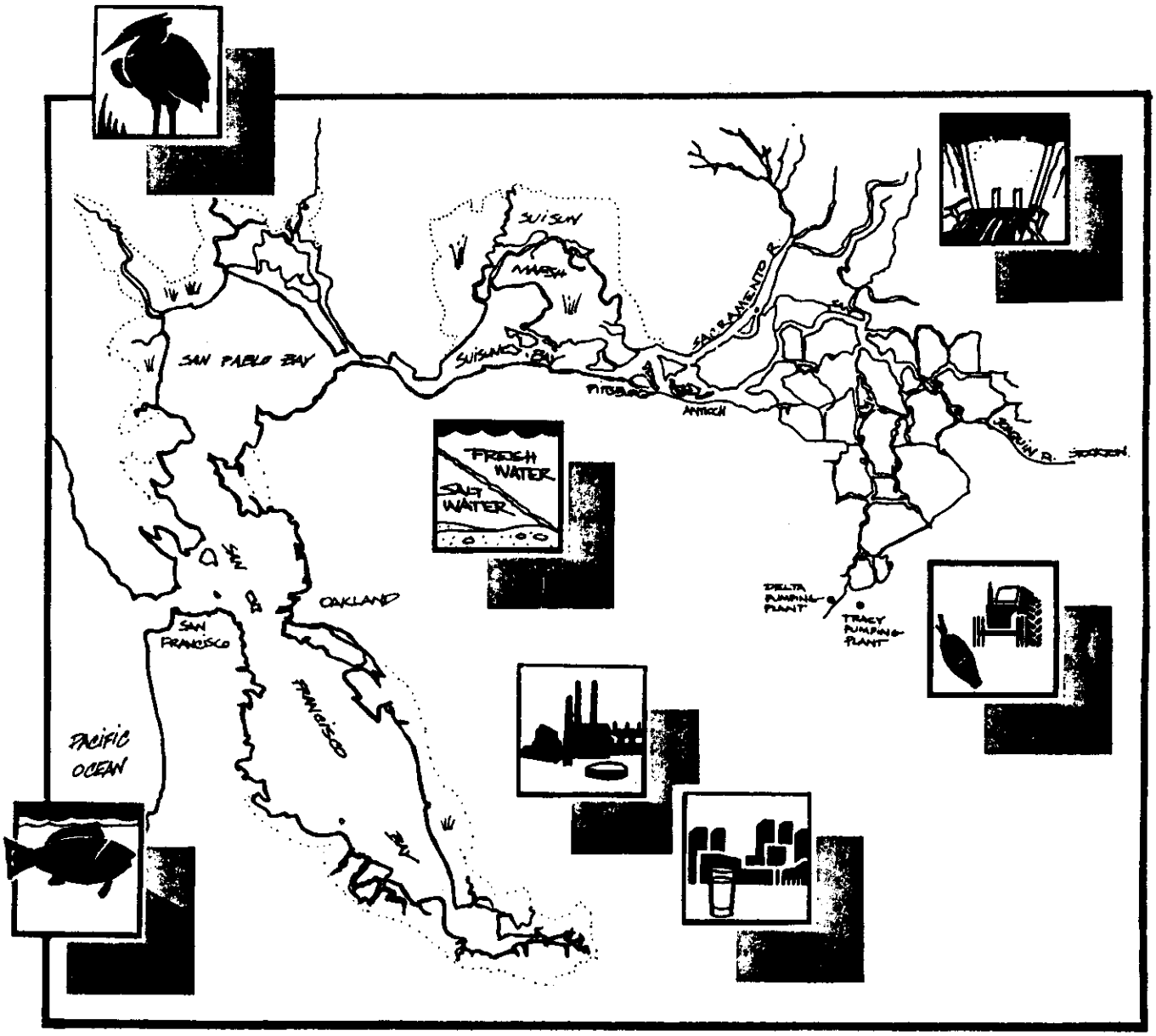
Scale in Miles

APPENDIX A


SUISUN
MARSH
SUISUN BAY
SAN PABLO BAY
SACRAMENTO R.
FRESH WATER
SALT WATER
OAKLAND
SAN FRANCISCO
PACIFIC OCEAN
DELTA PUMPING PLANT
TRACY PUMPING PLANT

APPENDIX B