

ASSEMBLY COMMITTEE ON WATER, PARKS AND WILDLIFE

INFORMATIONAL HEARING BOND FUNDING FOR FLOOD PROTECTION AND SACRAMENTO/SAN JOAQUIN DELTA

March 13, 2007

Last November, California voters approved almost \$5 billion in bond funding for flood protection, particularly in the Central Valley. This approval resulted from heightened public attention to flood protection issues in light of the devastating flood losses in New Orleans after Hurricane Katrina. Gulf Coast devastation led to a growing public awareness of the flood risks to the Sacramento region, which suffers the greatest flood risk of any major urban area in the United States. Sustaining the broad statewide support for Central Valley flood protection will require careful allocation of limited bond funding, in order to accomplish the most cost-effective flood protection for the greatest number of human lives.

Hurricane Katrina was not the first call for improving Central Valley flood protection. Several events in recent years repeatedly have raised alarms about the risks and the State's responsibility and liability for the Central Valley flood management system. On a sunny June day in 2004, a private levee in the Sacramento-San Joaquin Delta unexpectedly collapsed and flooded a Delta island, shutting down a State highway, a major railroad line, and State Water Project pumps that ordinarily move Southern California drinking water south. The State alone spent \$45 million to repair the levee and pump out the island. In January 2005, the Department of Water Resources (DWR) issued a report explaining and calling for attention to the State's flood protection challenges. A few months later, the Yuba County Board of Supervisors approved new housing development on lands that were covered by 15 feet of water during the 1997 flood. That summer, the Legislature approved \$500-million in settlements of claims against the State for failed levees in the 1986 and 1997 floods, after a State appeals court held the State liable for failed levees. See, *Paterno v. State*, (2003) 113 Cal.App.4th 998; *rev. denied* March 17, 2004. . That fall, after Hurricane Katrina, the Assembly held two informational hearings on flood protection, at which DWR identified 24 critical erosion sites on Sacramento Valley levees, which were subject to failure during the next flood. In 2006, Governor Schwarzenegger declared a state of emergency to fix those 24 critical levee erosion sites, proposed a flood bond, and negotiated what became Proposition 1E for \$4.090 billion in flood funding.

I. The California Flood Management System

The 2003 *Paterno* decision unveiled a looming flood management system crisis that had been building for decades. A combination of an outdated flood management system, deferred

maintenance, diffused flood management responsibilities and substantial Central Valley growth and development produced serious risks of loss of life and damage to property from inundation of flood waters. The recent disaster arising out of Hurricane Katrina again highlighted certain flood vulnerabilities that California's Central Valley shares with Louisiana's Mississippi delta. These vulnerabilities include substantial dependence on aging levees. Most such levees were built decades ago, without the benefit of modern knowledge of flood risk, levee design, materials and technology.

A. History of California Flood Management

California has suffered from Central Valley flooding since its earliest days as a state. Native Americans had called the Central Valley the "inland sea" when water covered the valley during the winter. Immense stretches of farms and open lands, particularly in the Sacramento-San Joaquin Delta, flooded annually. In 1862, flood water – as deep as 20 feet – covered the young City of Sacramento, forcing Governor Leland Stanford to row across those waters to get to his inauguration. At the bottom of the watershed, the Delta's vast expanse was covered with water as it flowed toward the Golden Gate. This regular flooding of the Valley's river bottoms and adjacent lands led to early Californians trying to "control" the floods to protect their lives and livelihoods.

1. Flood Management in the 1800's

In the nineteenth century, individuals and local governments built most of the flood control facilities, usually levees. Farmers worked with neighbors to build levees to protect their lands. Cities would build levees to protect their citizens. In the Delta, prospective landowners could acquire land for \$1 per acre if they paid to construct the levees to "reclaim" and turn Delta areas into the islands that exist in the Delta today. Landowners often created levee maintenance districts (commonly called reclamation districts) or other entities that maintained the levees.

The Gold Rush and the hydraulic mining that followed created a legacy that presented the greatest flood control challenge of the nineteenth century – an enormous volume of sediment that filled Northern California rivers, leaving little room for flood flows. Hydraulic mining was outlawed in 1884, but the legacy continued. In 1893, the Federal Government created the California Debris Commission to examine debris-related flood and navigation issues, primarily in the Sacramento Valley. The Commission uncovered, modified and adopted an 1880 flood control plan by the State Engineer, to address how best to reduce river sediment. The plan included a system of levees, weirs and bypass channels.

2. State Flood Management Program

In 1911, the State effectively adopted the flood plan from the California Debris Commission and created the Reclamation Board to implement the plan, working with the Federal Government. The State's adoption of a valley-wide flood management plan was meant to counteract local flood control projects that conflicted with each other, in what has been called "dog-eat-dog reclamation." Six years later, California gained federal authorization for the United States Army Corps of Engineers (the Corps) to collaborate with the State in building and maintaining the Sacramento River Flood Control Project.

For the next seven decades, the state and federal governments built or rebuilt levees, weirs and bypasses to increase conveyance of flood waters downstream. Project levees stretch about 1600 miles. The Corps often constructed the federal “project levees” in both the Sacramento and San Joaquin Basin from already existing private levees. In 1953, the Federal Government transferred the Sacramento River Flood Control Project to the State, which in turn passed responsibility for operation and maintenance to local reclamation districts.

The design goal of these flood facilities was to aid navigation and flush sediment remaining from the earlier hydraulic mining. These facilities also constrained the river to specific alignments, significantly reducing historic channel meandering and further isolating the rivers from their historic floodplains. In the second half of the twentieth century, federal, state and local agencies also built upstream reservoirs to retain some flood waters, to allow more measured releases after the flood danger had passed.

B. Responsibility for Today’s Flood Management System

Responsibility for operating California’s flood management system is diffuse, spread among multiple agencies at all three levels of government. Consistent with the United States Constitution’s Commerce Clause, the Corps has primary responsibility for regulating the flows (including flood waters) in the "waters of the United States," which include the Sacramento River and the San Joaquin River. In addition to its regulatory authority, the Corps has a long history of building water projects, particularly for flood control. Traditionally, Congress authorizes specific flood control projects for the Corps, usually in a "Water Resources Development Act" (WRDA), which ordinarily passes every 2-3 years. (Congress has not passed a WRDA since 2000, but is expected to pass one in the next few months.) Any substantial change to those water projects requires the Corps' authorization. As for federal Central Valley Project reservoirs with flood control space, the Bureau of Reclamation operates such reservoirs for flood control, under the Corps' direction.

1. State Responsibility for Flood Management

The State – through the Reclamation Board – shares in the costs of construction, assumes responsibility for the operation and maintenance of the facilities, and indemnifies the Federal Government for liability. For Central Valley flood management projects, the Reclamation Board delegates operation and maintenance to the Department of Water Resources (DWR) or local flood agencies. DWR’s primary responsibilities lie in the Sacramento Valley, while primarily local agencies take responsibility in the San Joaquin Valley.

The Reclamation Board has the legal responsibility for oversight of the entire Central Valley flood management system, although it resides, administratively, within DWR. The Board's jurisdiction extends through 14 counties and comprises 1.7 million acres lying along the most flood-prone portions of the two rivers. Its authorities include:

- cooperation with the Corps in building and operating the Central Valley flood management system (including levees)
- oversight of flood management facility operation and maintenance
- development and administration of floodways
- acquisition of property necessary for flood management
- regulation of encroachments on the flood management system

Perhaps most importantly, the Reclamation Board has authority to approve or deny any plan of land reclamation (*i.e.* development) or flood control that involves excavation near the rivers and their tributaries. Cal. Water Code § 8710. The geographic jurisdiction for this regulatory authority appears to apply to the entire floodplain. Specifically, without Reclamation Board approval, no construction can begin:

in the bed of or along or near the banks of the Sacramento or San Joaquin Rivers or any of their tributaries or connected therewith, or upon any land adjacent thereto, or within any of the overflow basins thereof, *or upon any land susceptible to overflow* therefrom.

Id. (emphasis added.) Historically, however, the Reclamation Board has not exercised this authority.

The Department of Water Resources also plays a significant role in California's flood management system, with staff "on the ground" inspecting and maintaining many miles of levees and other flood management facilities. DWR inspects and evaluates the maintenance of all of the State's federally designated project levees and channels. While most project levees are maintained by local agencies, DWR may perform the levee maintenance where the levees provide broad system benefits and local interests are unable to perform satisfactory maintenance. DWR also maintains the Sacramento River system channels (*e.g.* dredging), while local agencies maintain the San Joaquin River system channels. DWR's Division of Flood Management describes its mission as follows:

The mission of the Division of Flood Management is to prevent loss of life and reduce property damage caused by floods, to facilitate recovery efforts following any natural disaster, and to carry out its public safety responsibilities in ways that preserve and restore the environment.

2. Local Agencies

Local agencies play a significant role in flood management. Their activities and responsibilities are as diverse as their legal structures. These local agencies include levee maintenance and reclamation districts, counties, cities and water districts. In many areas, these local agencies maintain, operate, and assume responsibility for project levees and other flood management facilities, on the State's behalf. In 1986, federal and state law shifted greater financial responsibility for flood management facility construction to local agencies, which today typically pay 25% (or more) of construction or rehabilitation costs for federal-state project facilities. In other cases, local agencies pay the entire cost of flood management, but remain subject to Reclamation Board and Corps of Engineers oversight.

C. Liability Risks Arising from Current Flood Project Conditions

The State's flood management system in the Central Valley includes reservoirs with flood detention space, approximately 1,600 miles of project levees, and a series of overflow weirs and bypass channels (*e.g.* Yolo Bypass). An enclosed map shows the location of the project levees. In areas that show no project levees, local landowners or agencies may maintain private levees or other protections for local lands. The State's system discharges through the Sacramento-San Joaquin Delta, which contains about 1,000 miles of non-project, private levees, which are generally maintained by local reclamation districts.

Levee failures, similar to those in New Orleans, have drawn the most attention. Such failures in the 1986 and 1997 floods led to the 2005 legislative approval for settling claims against the State for approximately \$500 million. Levee failures may be caused by overtopping, seepage, instability (*e.g.* settling), burrowing animals, or erosion. Because many levees were deliberately built close to the river channel to help scour mining debris from rivers and improve navigation, erosion has become a major problem. After a 2006 emergency declaration directed repair of 24 critical erosion sites, an *additional* 71 critical erosion sites were discovered last summer.

Levees also may be weakened by subsidence on lands behind the levees, which undermines the levee's foundation. In some cases, subsidence occurs because of groundwater overdraft. Delta levees (approximately 1,000 miles, with 700 miles privately maintained in the heart of the Delta) remain the most at risk due to subsidence, which has led to some lands behind levees falling as much as 25 feet below the adjacent water level. This Delta subsidence arises from the nature of Delta peat soils, which have oxidized and disappeared after decades of farming. Scientists estimate that 2,700 cubic meters of organic soil are lost daily.

In recent years, both federal and state agencies have prepared reports emphasizing the deteriorating conditions of the Central Valley flood management system. In January 2005, DWR issued a "White Paper" regarding flood management, noting that powerful flood flows have eroded levees and deferred maintenance has not caught up. In addition, the White Paper observed that the Central Valley's growing population is pushing new housing developments and job centers into areas that are particularly vulnerable to flooding. DWR has estimated the following risks from flood damage:

- 500,000 people in floodplains
- 2 million acres of cultivated acreage
- 200,000 structures with a value of \$47 billion

The DWR White Paper concluded: "These factors have created a ticking time-bomb for flood management in California."

In December 2002, the Corps issued an "Interim Report" on its Sacramento and San Joaquin River Basins Comprehensive Study, which arose out of the devastation from the 1997 floods. In assessing the existing flood management system, the Corps identified the following issues:

- reduced flood conveyance capacity, due to reduced flow area (from sediment, vegetation growth and encroaching development), poor levee foundation conditions, deteriorating levees, and subsidence.
- "choke points" created by infrastructure development (*e.g.* bridges)
- substantial reliance on Sacramento Valley bypass system, with reduced bypass capacity
- reduced ecosystem function from constraining river channels from the historic floodplain
- reservoir flood capacity

Key Terms

- land subsidence

The Interim Report estimated average annual flood damages of \$246 million in the Sacramento system and \$31 million in the San Joaquin system. These estimates reflect the average *annual* flood costs, meaning that the actual one-time costs would be substantially higher. These estimates therefore represent the annual cost to California of not improving its Central Valley flood system.

II. Policy Issues Arising Out of Flood Bond Funding

In developing what became Proposition 1E, the legislative flood bond, the Legislature held several hearings on Governor Schwarzenegger's proposed bond measure, which originally proposed \$1 billion for flood protection in a 2006 ballot measure. Numerous issues arose as to how to spend flood bond funding. The Governor's proposal included many specific directions and limitations on the funding, which led to legislative debate. Ultimately, the legislative bond measure authorized large pots of money for multiple purposes, with minimal legislative direction. The legislative issues therefore remain to be resolved.

A. Priorities

In its January 2007 report, the Legislative Analyst's Office (LAO) identified the need for spending priorities as one of the most critical needs for legislative direction. This funding priorities issue threads through numerous flood policy issues. Emergency levee repairs enjoy broad, bi-partisan support as the top priority due to public safety concerns. That priority led to a 2006 \$500 million appropriation from the General Fund for immediate expenditure for those purposes, after the Governor issued an emergency declaration to get critical erosion sites fixed. Beyond that consensus on emergency repairs, there remain several other types of activities authorized by the bonds, which will require further prioritization by the Legislature:

- *Repair.* While emergency repairs may enjoy broad support, more comprehensive "repairs" may not enjoy unanimous support. The largest pot of funding in Proposition 1E (\$3 billion) authorizes spending on "repair, rehabilitation, reconstruction, or replacement of levees, weirs, bypasses, and facilities of the State Plan of Flood Control" (*i.e.* State flood project facilities). Drawing the line between simple repairs and more complex (and costly) rehabilitation/reconstruction presents a challenge for legislators and DWR.
- *"Ready-to-Go Projects."* DWR already has identified and developed several flood projects involving rehabilitation or reconstruction of levees, including ones that will be setback from the original levee to provide greater flood capacity. These "early implementation" projects may be ready, but some question whether readiness should serve as the key criteria in project selection, particularly those areas that do not have ready projects. The Legislature may consider setting criteria for how to choose among projects that are further developed.
- *Evaluation & Mapping.* Propositions 1E and 84 provide funding for evaluation of the conditions of the State's Central Valley flood facilities. Neither the State nor the Federal Government has ever completed a comprehensive levee evaluation in light of new information about the risks of "underseepage," where flood water seeps under the levee, undermining levee stability and possibly leading to failure. Many of the State levees were built before engineering standards were developed and simply adopted by the federal-state

flood project. This evaluation is necessary, at this point, because the Federal Emergency Management Agency (FEMA) is in the process of preparing new, digitized flood risk maps and will not certify old levees until the local community (or the State) provides sufficient scientific documentation. This federal mapping program, which is underfunded, leads to a separate funding priority issue as to how much the State should assume the lead for developing new flood risk maps, which could be adopted by the Federal Government.

- *Local Flood Planning & Projects.* While the Federal Government traditionally has taken the lead in improving or rebuilding levees, federal funding dropped in recent years as Gulf Coast reconstruction took priority. This new State funding, however, cannot pay for the entire cost of improving Central Valley flood protection, leading to a larger role for local communities. The State therefore can provide incentive funding to local communities, to the extent that a community takes some responsibility for improving flood protection and does not simply rely on State facilities. Although Prop 1E does not explicitly authorize financial assistance for local communities, its provisions require the Governor to “secure the maximum feasible federal and matching funds,” which suggests that local financial assistance is allowed.
- *State Plan of Flood Control.* Prop 1E defines the term “State Plan of Flood Control,” which originated, in concept, from the 2003 *Paterno* court decision, but does not actually exist in any comprehensive form. 2006 legislation set the terms for DWR and the Reclamation Board to develop such a plan, but the legislation was vetoed. DWR now proposes to complete such a State Plan in four years, but has not received any legislative direction as to the nature of that plan beyond the bond’s definition.
- *Floodway Corridors.* Prop 1E allocated \$290 million to flood mapping and “floodway corridors,” which are areas that take flood flows out of the river channels, either for bypassing urban areas or restoring groundwater. The Central Valley flood system needs additional flood flow capacity, which these floodway corridors can provide. They also may increase or improve important habitat.
- *Environmental Mitigation.* Prop 1E authorizes use of this money for environmental mitigation projects related to the flood system. Mitigation may include additional riparian habitat. Such mitigation funding may be allocated to each flood project or to environmental mitigation projects generally, in the form of a mitigation banking program.
- *New Flood Protection Facilities for Urban Areas.* The bond also may be used for the State to build new facilities or adopt local facilities that would provide greater flood protection for urban areas. The effect on the scope of the State's liability from more facilities is unclear.
- *Delta Levee Funding.* The \$3 billion block of funding includes allowance for spending on the Delta levee program.

Considering the multitude of demands for use of this limited flood funding, the Legislature faces a substantial challenge in setting priorities among these demands.

B. Other Policy Issues Central to Flood Protection Expenditures

Because the State's past flood control policies have been integral to the development of the Central Valley and its economy, this new infusion of funding for flood protection generates numerous policy issues. These issues relate both directly to flood protection as well as to the overall future of the Central Valley. The flood system transformed the Central Valley from an "inland sea" to a thriving agricultural and urban region. Some recent revelations about the flood system, from Hurricane Katrina to the downgrading of some of Sacramento's recently developed neighborhoods, have led to questions as to the Valley's economic future, particularly for those areas immediately adjacent to the major rivers, where the flooding would be deepest. The Legislature's decisions as to how to spend this bond funding may guide the future development, to minimize the flood risks for both human life and property, thereby reducing the liability exposure on the General Fund arising out of future failures of the flood protection system.

- *Floodplain Land Use.* The Central Valley's explosive growth in the last quarter century has expanded the flood protection challenge – increasing the scope of the lives and property at risk, filling the places where flood waters flowed in the past, and limiting the options for improving flood protection in the future, particularly when homes are built flush up against existing levees. Much of the levee system was built to protect farm land, recognizing the possibility that large floods may inundate those lands. They were not built to protect the newer urban areas that have filled the Valley in recent decades. In 2006 hearings, Assembly committees identified the "disconnect" between floodplain land-use decisions (local government) and flood protection decisions (State), leading to communities with inadequate flood protection.
- *Flood Protection Standards.* FEMA has established the "100-year" flood standard (*i.e.* 1-in-100 chance of flooding every year) as the minimum threshold for new development, and most communities comply. If a community does not have 100-year protection, then homeowners are required to buy federal government flood insurance to obtain a mortgage. It is not uncommon for local officials to declare that their communities are "not in the floodplain" once they have achieved this minimum federal standard. In 2006, the Legislature considered legislation that would have set a 200-year standard for certain new developments. The appropriate level of flood protection remains an important issue for the Legislature's funding decisions:
 - *What level of flood protection should improvements achieve?*
 - *Should flood protection distinguish among urban, small towns and rural areas?*
 - *Should State funding concentrate on existing urban centers or extend to areas planned for development in the near future?*
- *Emergency Response Preparedness.* Hurricane Katrina highlighted the importance of adequate preparation for flood emergencies, which come eventually in the Central Valley. As some experts have observed (as far back as the 1800's): "There are two kinds of levees – those that have failed and those that will fail." Preparing Central Valley communities for evacuation and emergency response will require increased attention. In 2006, the Legislature considered legislation conditioning state funding on an adequate emergency response plan.

- *Sustainable Flood Protection.* The State has spent 100's of millions of dollars in the last year to patch approximately 30 critical levee erosion sites, only to have 71 new critical erosion sites develop in 2006. The substantial cost of merely patching erosion suggests that the State cannot afford to keep patching all erosion sites well into the future, particularly if floods grow and continue eroding levees now that all the mining sediment has been washed downstream. DWR has proposed redesigning the flood system to reduce flood flows, thereby reducing levee erosion.
- *Federal/State/Local Responsibilities.* Debates among federal, state and local officials as to responsibility for various aspects of the flood system have raged for decades. Recent reductions in federal funding and this infusion of State funding have further reduced the clarity of responsibilities among the three levels of government. At the federal level, the State may have opportunities for greater federal regulatory flexibility, as the State funds federal government operations (\$225 million in the last year). The State funding allows for the possibility that the State may assume more of a leadership role, doing activities that the Federal Government traditionally did. The State funding also can allow the State to provide incentive funding for local governments to accept greater responsibility for protection of their own citizens.
- *Who: DWR or Reclamation Board?* The Reclamation Board is nested within DWR, but has its own independent duties and authority, to some extent. In the last 18 months, the Reclamation Board has come under fire, particularly after the Governor fired the entire Board and replaced the members with his own appointees who then approved controversial development projects in the Delta. The Legislature passed Reclamation Board reform legislation last year, but it was vetoed. The question therefore remains: which organization will lead in deciding how to spend this flood funding.
- *Liability for Failed Levees.* The 2003 *Paterno* court decision held the State liable when a levee failed in 1987 because the State did not have a "reasonable plan" for flood control. The State paid more than \$500 million to settle the *Paterno* lawsuit and another suit arising out of a 1997 levee failure. In the last session, the Governor and the Legislature considered ways to shift some of that liability to local governments, particularly when a local government accepts state money for flood protection, but that liability issue remains unresolved.
- *Flood Insurance.* Because of the extreme risk of flood losses, private insurance companies generally do not insure against floods. Instead, the Federal Government created the National Flood Insurance Program (NFIP) to insure against those losses, working closely with the U.S. Army Corps of Engineers to develop flood protection projects to reduce the risk. Homeowners in areas with less than 100-year protection are required to have insurance, but areas with levees that are believed to provide 100-year protection are not required to have flood insurance, regardless the extent of the risk or the anticipated depth of flooding. (100-year flood protection translates to a 1-in-4 chance of flooding during the life of a typical 30-year mortgage.) The Legislature has considered requiring communities with less than 200-year flood protection to buy flood insurance.
- *Project vs. Non-Project Levees.* Prop 1E dedicates the bulk of its funding to improving the State-owned flood protection project in the Central Valley. Some cities, however, are protected by non-project levees, which may not receive State funding for improvements.

III. The Delta Challenge

At the bottom of the Central Valley flood system lies the Sacramento-San Joaquin Delta (Delta), the literal and figurative heart of the California water system. The Delta raises numerous State funding issues – bond and otherwise. For the purposes of this bond funding hearing, the most important issue relates to the difficulties of maintaining the privately owned Delta levees, which create the Delta of islands and sloughs we know today.

A. The Delta Levee System

When Americans arrived in the Central Valley, they found an area at the confluence of two powerful rivers – the Sacramento and the San Joaquin – that had received sediment over millions of years, creating a rich and robust wetland comprised largely of peat soils. For much of the year, this was a shallow wetland. During the summer, however, some islands would emerge with small natural levees allowing high spots to go dry. Starting in the 1860's, local farmers began building levees to “reclaim” these islands and establish their property ownership for \$1/acre.

Since statehood, the Delta has continued to change. The peat soils the farmers found have oxidized or blown away when farmers plowed their fields, leading to subsidence of islands – as much as 25 feet below sea level. Numerous levees have failed over the years, leading to inundated islands, which usually were then restored and pumped out. Beginning in the 1940's the Delta became the conveyance device for federal and state water projects to move Sacramento River water south to San Joaquin Valley farms and Southern California cities.

Because Delta levees remain in private hands, the State's challenge is to balance public and private interests in maintaining these levees. Because these levees form the channels through which state and federal water supplies are conveyed south to Delta pumping facilities, the State has an interest in Delta levees. Just as importantly, the Delta has remained the most valuable estuary ecosystem on the west coast of north or south America. The levees, while changing the natural system, provide freshwater channels and riverine habitat for fish and wildlife that depend on the Delta.

DWR operates a Delta levee program, which includes two parts – Special Projects and Subventions. Special Projects focus on protecting the levees where there is a strong state interest, such as conveyance to the SWP pumps in the South Delta. The subventions program provides State funding for up to 75% of the cost of maintaining or improving the Delta's private levees. The 75% cost-share expires in 2010. DWR is slated to complete a new "Delta Risk Management Strategy" at the end of the year, which would propose a new strategy and priorities for funding Delta levee projects.

B. Other Delta Issues

Because the array of Delta issues will be considered in more detail during a joint Senate-Assembly informational hearing on a new Delta vision, on March 15, 2007, this paper will simply identify those issues for future discussion:

- *Ecosystem Collapse.* In the last two years, the Legislature has received reports of a substantial decline of the Delta ecosystem, with both fish and the food chain suffering a serious drop in abundance.
- *Water Project Operations.* Since the State and the Federal Government executed a “record of decision” for the CALFED Bay-Delta Program in 2000, the State Water Project has pumped record-high amounts of water out of the Delta, which has contributed to the ecosystem decline. DWR recently declared surplus water in the Delta, despite recent scientific evidence of a connection between SWP winter-time pumping and fishery mortality.
- *Water Quality: Contaminants & Salinity.* As the bottom of two river systems, the Delta receives contaminants from both agricultural and urban runoff. Under current state policy, the Delta also has to contend with salinity intrusion from San Francisco Bay (not to mention the salinity flowing from San Joaquin River runoff).
- *Invasive Species.* World trade has led to introduction of invasive species from several different sources, including ship ballast water. The current focus of attention rests on certain clam species, which may consume much of the Delta’s food web supporting the larger fishery.
- *Governance.* The CALFED Bay-Delta Program has lost most of its credibility, and the Legislature shifted all funding for the California Bay-Delta Authority to the Secretary of Resources. CALFED focused on water project operations, ecosystem restoration, water quality and, lastly, Delta levee integrity. The Delta land-use also has led to governance challenge, with the Delta Protection Commission exercising its authority – for the first time – to overturn a development approval in Clarksburg.
- *Urbanization.* The Clarksburg/Sugar Mill controversy is just one example of the urbanization pressures on the edges – and in the middle – of the Delta. Several residential projects are undergoing regulatory review by state and federal agencies with jurisdiction over the Delta. Urbanization poses risks for Delta water quality, due to the nature of urban runoff.

IV. Recent Floodplain Development Controversies

In the Central Valley, proposed housing developments in floodplains continue to draw attention. The public attention led to a broader awareness of the flood challenges faced in the Central Valley, and may have contributed to voters approving the flood bonds. While the bonds may not specifically address these projects, there may be lessons from these experiences that may contribute to the State’s flood funding policies.

- **Clarksburg/Sugar Mill (Yolo County):** Yolo County’s approval of this mixed-use development (including new homes) was appealed to the Delta Protection Commission, which overturned the County’s approval as inconsistent with the Delta resource plan and not providing sufficient flood protection.

- **Mossdale Landing (City of Lathrop):** The Reclamation Board expressed concern about this 500-unit mixed use development west of Interstate 5. The Board cited concern over inadequate levees, which were not improved when the Corps of Engineers restored them after the 1997 flood, and flooding due to “a rise of the groundwater level on the landside of the San Joaquin River.”
- **Natomas (City of Sacramento):** This area north of downtown Sacramento was not developed until 1998, after the Army Corps of Engineers certified that the levees surrounding Natomas provided 100-year protection. More than 65,000 people now live in Natomas, including some members of the Legislature. Recent investigations showed that the levees do not provide 100-year protection, so Natomas residents may be required to purchase flood insurance. Some parts of Natomas are anticipated to flood as deep as 20 feet. DWR sent notice to the City and County of Sacramento that this area is at risk, and suggesting that further development should be put on hold until flood protection can be improved.
- **Plumas Lakes (Yuba County):** The Yuba County Board of Supervisors approved this project despite recent history of flooding (1997) in the aptly named Plumas Lakes. The Reclamation Board has been working with Yuba County and a newly created, developer-funded levee agency to address flood risks. The Reclamation Board approved a speed-up of new housing construction before sufficient flood protection is completed, in order to fund the construction of new flood protection facilities.
- **River Islands (City of Lathrop):** This proposal involves 11,000 new homes on a Delta island. Last year, the Reclamation Board approved this development’s construction of 300-foot-wide levees that will include luxury homes on top. This area along the San Joaquin River flooded in 1997, thereby reducing the flood flows and hydraulic pressure flowing downstream to Stockton.