



## FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

*Capturing stormwater since 1956.*

File 180.902

**DATE:** October 12, 2016

**TO:** The Honorable Pedro Nava, Chair, Little Hoover Commission

**FROM:** Alan Hofmann, General Manager-Secretary  
Fresno Metropolitan Flood Control District

**RE: Little Hoover Commission Review of Special Districts and Climate Adaptation**

Thank you for inviting the Fresno Metropolitan Flood Control District to participate in the Little Hoover Commission's October 27th public hearing on California special districts and their climate adaptation efforts. We appreciate the opportunity to explain how and why we were formed, how we plan, finance, build and maintain flood control and storm drain infrastructure for the State's fifth largest city, and the close relationships between our agency and regional water suppliers.

The Fresno Metropolitan Flood Control District (District) is a "special act" district, created by the electorate to provide fully coordinated and comprehensive storm water management and related services on a regional basis through coordination among the Cities of Fresno and Clovis, and the County of Fresno. As an agency whose primary purpose is to plan, build and expand systems designed to safeguard the public from infrequent weather events, we offer our thoughts on the role climate change might play in our future.

Since its formation in 1956, the District, under the direction of its citizen Board of Directors, has implemented a master drainage plan, constructed approximately 650 miles of pipeline, purchased and constructed 161 local drainage basins and helped purchase, operate, and maintain eight flood control reservoirs and detention basins east of our community (see Attachment 1). Our system includes numerous interties with the Fresno Irrigation District's system of canals. The canal system allows excess winter-season storm water to be exported out of the metropolitan area, to adjacent farmlands, groundwater banking facilities or recharge facilities. This system also allows irrigation water released from two federal facilities; Pine Flat Reservoir (US Army Corps of Engineers) and Millerton Lake (Bureau of Reclamation), to be routed into our storm water management basins for summer-season groundwater recharge.

j:\wprocess\alanh (aeh)\2016\final lhc written testimony

5469 E. Olive Ave. • Fresno, CA 93727 • (559) 456-3292  
FAX (559) 456-3194 • [www.fresnofloodcontrol.org](http://www.fresnofloodcontrol.org)

Celebrating  
**60**  
Years of Service  
1956-2016

## **BACKGROUND**

### Location

The District is located in the north-central portion of Fresno County between the San Joaquin River and the Kings River. The District is authorized to control storm water within an urban and rural foothill watershed of approximately 400 square miles, known as the Fresno County Stream Group. The watershed extends eastward into the Sierra Nevada to an elevation of approximately 4,500 feet above sea level. The District service area includes the Fresno-Clovis metropolitan area, and unincorporated lands to the east and northeast.

### Origins of the District

Fresno was settled in 1872 as a railroad stop called Fresno Station, and was incorporated as a city in 1885. It was developed over the next several decades without the benefit of flood control or urban local storm drainage.

The sequence of events leading up to the formation of the District as a special purpose agency is part of the region's history, which includes overcoming the destruction from repeated flooding events during the first 100 years of development. Among the major floods our region has endured, are the floods of 1872, 1884, 1925, 1937, 1938, 1950, 1955, and 1969. It is remarkable to consider how much of our history has been shaped by the benefits and also the destructive power of water. It was the manmade diversion of water from the Kings River into a series of ditches that laid the groundwork for Fresno County to become the nation's leading agricultural region. Water controlled through dams on the Kings and San Joaquin Rivers has provided hydroelectric power to the region. Today, due to expenditures in infrastructure, our community enjoys water for recreation, agriculture, drinking water, industrial purposes, and landscaping.

The history of our region also includes many setbacks from damage caused by winter storms and melting snow overwhelming the banks of local creeks and streams. These streams originate in the foothills of the Sierra Nevada Mountains and enter the valley floor with a generally southwestern direction of flow. While these streams are intermittent, in some years producing little or no flow, in other years fast melting snow coupled with heavy rains cause the banks of the natural channel to overtop and water to flow overland flooding crops, roads, businesses and homes. The damage caused by these recurring events hampered economic development of the area and threatened public health and safety.

The history of flooding is a long one. In 1884, one year before the City of Fresno was incorporated, the business area and nearly all parts of town were submerged by waters from Big Dry Creek, Dog Creek and Fancher Creek, forcing travel by boat in the business district. In March of 1938, the overtopping of Big Dry Creek caused extensive flooding of an area of Fresno known as the "Fig Garden" area. Flood waters ranged in depth from one to four feet, damaging homes, eroding top soil from farms, and contaminating drinking water supply wells from overflowing septic tanks. This flood event brought about the construction of a 16,500 acre-foot reservoir on Big Dry Creek by the US Army Corps of Engineers in 1948.

The answers to flooding and drainage problems, however, were regional, extending from the foothills across multiple cities and broad reaches of the valley floor, and required a solution

beyond the ability of traditional agencies. From 1951 through 1956, citizens and businesses organized themselves into a cohesive storm water advocacy. The City of Fresno, County of Fresno, and the Fresno Irrigation District championed legislation to create a new, regional storm water agency. Major challenges were faced by those attempting to create the new agency. Floods did not respond to City and County boundaries, so the new agency had independent boundaries based on watersheds. Costs and taxes were a concern, so revenue authority needed to be limited. Traditional politics had hindered solutions, so the proposed agency needed a responsive, non-political governing body. Water was always in short supply, so storm water needed to be conserved. Also, the growing cities needed parks and open space, so the proposed agency needed authority to support recreation. Because many agencies impact urban growth, the agency needed to coordinate a unified storm water system.

#### Formation of the District

During the floods in December of 1955, it was Big Dry Creek Reservoir that prevented catastrophic overtopping of Big Dry Creek; however, Fancher Creek, Dog Creek, and Redbank Creek still flowed uncontrolled into the community causing substantial flood damage. Thousands of people were evacuated from homes on Christmas Day 1955. Coincidentally, earlier that year, the State legislature had authorized, subject to approval by local election, the formation of a new agency called the Fresno Metropolitan Flood Control District. In April of 1956, with the memory of recent flooding on the minds of most, the voters approved, by a 5-to-1 margin, the formation of the District, serving then a 54-square mile area, including Fresno and its rapidly growing suburbs.

The District Act, found in Chapter 73 of the State of California Water Code Appendix, states that the District was created "...for the purpose of acquiring and constructing facilities for flood control and the drainage of flood, storm and waste waters and the conservation of any thereof, and providing for the government powers of said district."

The Act provides:

- A governing board composed of seven non-political positions held by private citizens; four representing the City of Fresno, two representing the County of Fresno, and one representing the City of Clovis (Clovis became part of the District's service area in 1985).
- Taxes for operations and maintenance are limited to a small percentage of property tax collected within the District; 3% at present.
- Capital cost assignment to each parcel, proportionate to its share of system construction cost.
- A mandate to capture and use storm water to replenish groundwater.
- Authorization to use District facilities for recreation.

## Storm Drainage and Flood Control Master Planning

Systematic improvements in the regional control of storm drainage began with the formation of the District in 1956. Priorities included the separation of the storm drain and sanitary sewer systems. This relieved the waste water treatment plant from the burden of accepting storm flows, and allowed the District to establish more systematic methods of routing storm flows out of the community. Control over storm flows also opened up opportunities to retain storm water for local recharge.

Beyond the construction of needed drainage infrastructure in already developed areas, the District worked to acquire basin properties in response to city general plan and zoning updates. Knowing where development was planned, the expected density of the development, and the timing of urban expansion prompted the District to identify opportunities to proactively build storm drain facilities in areas that would need service.

Parallel to the work being done at the neighborhood level, the District recognized the need to manage the streams and drainage channels flowing towards the urban area. The District worked with Congress for thirty (30) years and was finally allocated funding for the construction of facilities to enlarge and enhance the flood control system. In cooperation with the U.S. Army Corps of Engineers (USACOE), the District entered into a Local Cooperation Agreement to assist in funding and assume primary responsibility for the operation and maintenance of Corps facilities built on the Fresno Stream Group east of the Fresno-Clovis metropolitan area. The District became the local sponsor of the USACOE Redbank-Fancher Creeks Flood Control Project, which consists of five of the system's major facilities. In the mid 1990's, the District increased the capacity of the largest USACOE dam, and built an additional dam and control structures to increase the level of protection afforded the urban area.

The progressive expansion and improvement of our system is governed by a Storm Drainage and Flood Control Master Plan. For the purposes of program planning, structure, service delivery, and financing, the District makes a distinction between flood control and local drainage services. The flood control program relates to the control, containment, and safe disposal of storm water that flows onto the valley floor from the eastern streams. The local drainage program relates to the collection and safe disposal of storm water runoff generated within the urban and rural watersheds or drainage areas. Collectively, these facilities comprise the Storm Drainage and Flood Control Master Plan. The local storm water retention basin system is designed to: 1) capture storm water during the rainy season to prevent flooding; 2) recharge the groundwater supply with storm water and other surface waters; and 3) provide recreation space for the community. The flood control system was built in accordance with the Corps design parameters to contain the 200 year storm event.

The urban collection system is comprised of a complex system of storm drain pipeline, pump stations and retention basins that capture and recharge storm water to the groundwater aquifer. The storm drainage pipeline system is designed to accept the peak flow rate of runoff from a two-year intensity storm event (a storm which has a 50% probability of occurring in any given year). When storm events occur that exceed the two-year intensity, ponding begins to occur in the streets until the pipeline system can remove the water. If the storm is sufficiently intense to generate more water than the street can store, the water will

continue to rise until it reaches a topographic outlet where it can escape down gradient. This escape route is a feature of the major storm routing system that protects properties from damage in rainfall or runoff events that exceed system design capacities.

The District requires development proposals to consider the flow path and potential flooding resulting from major storms. The developer must elevate building pads so that finish floor levels are above the anticipated high water elevation and establish an outlet flow path for the runoff of major storms through the use of street improvements, easements, or other public right-of-ways.

## **FINANCE, REVENUES & EXPENDITURES**

The two primary sources of revenue for the District are property taxes and a special benefit assessment. The District has also received project-specific grant funding; such as the American Recovery & Reinvestment Act (ARRA), State Proposition 84 and 1E grants, and a Federal Economic Development Administration (EDA) grant. The primary expenditures come from the administration, design, construction and maintenance of storm drainage and flood control facilities that protect people and property in the cities of Fresno and Clovis.

### Property Taxes

This funding mechanism was established by the Fresno Metropolitan Flood Control District Act enacted in 1956 by the State Legislature. The Act established the authority for an annual property tax to carry out the objectives of the Act. The annual tax levy created was an “ad valorem” property tax to be based on a percentage of the fair market value of a piece of property.

In 1978, Proposition 13 substantially changed how property tax was assessed in California by capping property tax and limiting increases in the property value, which severely reduced the District’s funding. In the years following Proposition 13, the District received “bail out” money from the State.

Beginning in 1983, the District’s share of property tax was again significantly reduced by mandatory contributions of property tax to the Special District Augmentation Fund (SDAF). Faced with huge State budget deficits in 1992-1993 and 1993-1994, State officials began shifting property taxes from local governments (cities, counties, special districts, and redevelopment agencies) to schools thru the Educational Revenue Augmentation Fund (ERAF) in each county.

For Fiscal Year 2016-2017, total net Property Tax revenues are estimated to be \$10,632,514. Property Tax allocations are reduced, by approximately 34.2%, before distribution to the District, to fulfill mandatory property tax shifts to ERAF. The Fiscal Year 2015-2016 ERAF contribution was \$5,611,191.

### Special Benefit Assessment

Because of reduced property tax allocations and the need to fund the local cost share of the Redbank-Fancher Creeks Flood Control Project, in 1985, the Fresno Metropolitan Flood Control District Act was amended to allow for an alternative method of calculating an

annual assessment levy. The alternative method authorizes an assessment based upon the proportionate benefit to a parcel taking into account its zone, size, and land use, with respect to all other parcels in the District.

The first benefit assessment was authorized by the District Board of Directors on June 29, 1987 after a multi-year and very comprehensive study by a citizen's advisory committee. The committee recommended, and the Board adopted, a fee structure that took into consideration land use of a parcel as well as the parcel's zone of benefit.

The District has the authority to assess properties at a level of \$0.20 per \$100 of assessed property value; however, as shown on Attachment 2, the District only levies an amount equal to what is needed to fulfill the programs requirements. Taking the current fiscal year for example, the District had the authority to collect over \$22 million in benefit assessments, but actually collected less than \$9 million. In general terms, the District typically accepts about \$8 million in benefit assessment each year. Of this amount, about \$1.2 million goes to paying the debt service for a California Infrastructure and Economic Development Bank (CIEDB) loan, which is a \$30 million loan that financed the construction of major facilities in downtown Fresno. Another \$4 million in property assessment revenue goes to capital projects and \$2.8 million to the general fund. Anything remaining in the general fund at the end of the year goes into expansion of capital project construction.

#### Fees

**Drainage Fees:** The District funds construction of local drainage infrastructure with Drainage Fees. The Drainage Fees amount to a one-time per acre charge on each parcel of land to fund the infrastructure. The amount of the charge is proportionate to the runoff produced by the parcel. The Drainage Fees are collected at the time the parcel of land is developed or divided. These fees are intended to fund all or a major portion of the cost of the drainage facilities and improvements identified in the urban portion of the Storm Drainage and Flood Control Master Plan.

Pre-Paid Drainage Assessment Trust Funds (Trust Funds) have been established for each local drainage system. These Trust Funds are designated as Special Revenue Funds as required by the Governmental Generally Accepted Accounting Principles (Governmental GAAP). The Trust Funds are used to account for Drainage Fees collected as specified in the Subdivision Map Act, the Mitigation Fee Act, and the District's Drainage Fee Ordinance. As Drainage Fees are received, they are deposited and posted to the specific Trust account of the appropriate drainage area. These Trust accounts are also designated as Expendable Trust Funds, therefore, the funds are restricted and may only be used to fund construction obligations in the drainage area for which they were collected.

**Design/Development Review Fees:** In 2014, the District adopted, in consultation with the Building Industry Association (BIA), fees to cover costs associated with the review of development proposals. Revenue from this fee varies widely depending on development activity. In Fiscal Year 2015-16, revenues from this source totaled \$125,553.

**Dirt Permit Fees:** Construction of new storm water management basins yields large amounts of construction-grade fill material. The District's Dirt Permit Program charges a fee to contractors for fill material excavated and removed from the basins. The charge is currently set at \$0.90 per cubic yard of material and the revenue offsets the personnel costs to administer the program. Revenue from this program varies considerably from year to year;

**Park Fees:** In April 2016, the District established a reservation fee for the use of picnic pavilions at two of the District's parks. Fees vary from \$30-\$80 depending on the type of facility desired and length of visit. The fees are levied to offset the cost of staffing and maintaining the parks.

**Grants:** The District has historically leveraged its financial resources through the application of grants to construct capital projects. Currently, capital projects are being funded in part by grants from the U.S. Economic Development Administration (EDA), and State Proposition 1E Round 1 and Round 2. The total funding necessary from the District to meet the 50% match for these three grants is approximately \$11,632,000. Previous grants obtained for a variety of infrastructure and parks improvement projects (built since 2009) have contributed over \$4.7 million to District improvements.

#### Loans

As a general rule, our primary source of infrastructure financing is cash. Notable exceptions have been three loans, two of which were State Revolving Fund (SRF) loans in the total amount of \$30 million. The first SRF loan was for \$20 million and was paid off May 18, 2012. The second SRF loan was for \$10 million and will be paid off January 5, 2018. The District obtained these loans when interest rates and regional property values were both rising rapidly. The low interest SRF loans were used to purchase storm water management basin properties for future use, effectively capturing these properties before they became inordinately expensive. Much of the land purchased was leased back to its original owners, allowing the District to maintain control of the property and defer maintenance costs until such time as the land was needed for the planned drainage system as the surrounding land developed.

The District also obtained a California Infrastructure and Economic Development Bank (CIEDB) loan to fund infrastructure in downtown Fresno, an older industrial area and an older neighborhood area post Proposition 218. This loan will be paid off in 2030.

#### Reserves

The District's policy for Budgeted Reserves requires that it be set at approximately 3.5% of the total budget. The Reserve for Fiscal Year 2016-2017 is \$850,000.00. The reserves are to be allocated, on an as needed basis, towards 1) July to December expenses, 2) unexpected revenue shortfalls, 3) unanticipated expenses, and 4) unanticipated projects. Due to the lack of a revenue source through the first six months of the fiscal year, the District holds in its yearly ending fund balance sufficient funds to meet the expenses of the District during the first six months of the next fiscal year.

The District holds within its Capital Projects Fund a fund balance to insure resources are available should there be a grant that the District is eligible for and matching funds are required. Most grant programs require a local match of 50% of the total project cost. In that reimbursements from state or federal granting agencies may take months or most of a year to arrive at the District, at the initiation of a grant project, the District makes plans to have on hand ALL the money for a project to get it going and keep it going, knowing that reimbursement may come much later (sometimes not until the project is complete). For this reason, a sufficiently large Capital Projects Fund balance must be retained to commit to such projects and keep them on schedule. The use of grants maximizes the District's limited capital funding.

### **LONG RANGE PLANNING**

The District maintains a five-year financial and capital project forecast that implements the District's Services Plan. Planned capital expenditures, especially land acquisitions, are largely a function of specific development activity and the variable pace at which the cities of Fresno and Clovis implement elements of their General Plans or approve re-zoning applications. In general terms, the location and timing of the extension of District drainage service is driven by urbanization. This being the case, our infrastructure plan operates on a relatively short time frame.

The District makes improvements to the existing storm drain system regularly. The capital improvement plan is centered on improvements to older neighborhoods and the pumping facilities necessary to move storm water. Facilities that connect basins to canals, called "interties," are also constructed regularly when basin capacity and service delivery align. Interties allow basins to receive canal water for recharge and be relieved of excess storm water, simultaneously enhancing public safety and improving groundwater conditions. In 1984, surface water was delivered for recharge to 27 District basins. As of 2009, 79 basins were intertied to the canal system and are available to accept recharge deliveries.

Most recently, improvements in the rural system (facilities to control the Fresno Stream Group and prevent flooding) have been constructed, or are under construction, in response to the availability of Prop 84 and Prop 1E grant funds. Using State matching grant funds, the District has been able to make improvements in elements of the Redbank and Fancher Creek Project to improve dam safety at Big Creek Reservoir, increase the capacity of the Fancher Creek Detention Basin, increase and stabilize channel flow in a section of Fancher Creek (through realignment of the channel and construction of a new bridge) and construct two large detention basins to regulate and recharge flood flows.

### **GROUNDWATER RECHARGE**

The regional aquifer underlying the cities of Fresno and Clovis has historically been overdrawn, creating groundwater overdraft. Groundwater extraction is only partially replaced by the natural percolation of stream flows and rainfall. Per the 2014 Sustainable Groundwater Management Act, the Fresno-Clovis area is in a "High Priority Critical Overdraft" and is required to be managed under a groundwater sustainability plan by January 2020. 'High priority' groundwater basins are defined as those underlying

populations that are heavily reliant on groundwater and may be experiencing serious impacts to this resource due to overdraft and/or water quality degradation.

The District plays an important role in providing the region with supplemental artificial recharge. The District's retention and detention basins are designed and operated to retain as much storm water as possible, minimizing discharges to receiving waters and maximizing percolation to groundwater. The system design standard provides for the retention of runoff generated by six inches of rainfall from a two-year intensity storm. During storm events, when runoff exceeds the system's storage capacity, excess runoff from each basin is discharged to other basins or to irrigation canals, creeks, or the San Joaquin River, via permanent pump stations, gravity flow or portable pumps. Under optimal conditions, storm water is not discharged from most retention basins (i.e. it is retained for recharge). Approximately 70-85% of the storm water runoff generated within the urban drainage areas can be retained.

The District estimates that on a yearly average, approximately 17,000 acre-feet of locally-generated storm water is recharged to the groundwater aquifer from the local storm drainage system. This volume varies greatly depending on the amount of rainfall in a season and the distribution of storm events over time. Further, as urbanization continues and more elements of the District's system become operational, the volume of storm water captured and recharged increases.

The degree to which the District can leave storm water in basins for recharge is determined by hydrologic modelling. In 1995, a hydrologic model was developed to simulate the performance of the District's storm drainage system for a single storm event based upon historic rainfall records over the entire District. The model was updated in January 2016 to include data from rainfall years 1997-2013 and expanded to simulate these additional storm events. Currently, the model uses rainfall data collected from 1948 to 2013.

In addition to recharging storm water generated by precipitation within the metropolitan area, the District also maintains surface water import/groundwater recharge contracts with the Fresno Irrigation District (FID) and the Cities of Fresno and Clovis. These interagency contracts provide for dry season delivery of imported surface water into storm water basins for recharge. The cities have significant water entitlements to the San Joaquin and Kings Rivers (combined total of 165,000 acre-feet). FID's own surface water entitlements range from 300,000 to 500,000 acre-feet each year.

The cities pay a service charge on the surface water entitlement discharged into the basins to partially offset the recharge operation and maintenance costs. To date, the District's General Fund has funded the portion of the costs not recovered.

Deliveries to District basins under recharge contracts typically occur March through October. However, deliveries may occur during any prolonged dry weather period. Delivery is sometimes permitted if less than normal rainfall occurs. Recharge deliveries may be interrupted during any rainy period; the District maintains as its first operational priority the

protection of people and property from flood damage. As the District system continues to grow, recharge capabilities will increase.

In the future, the District may also be able to use Big Dry Creek, Redbank Creek and Fancher Creek reservoirs for recharge. Provisions in the Federal 2016 Water Resources Development Act (currently under consideration by Congress) include direction to the U.S. Army Corps of Engineers to work with reservoir-operating local agencies on “re-operation” of dams to improve water storage and recharge capabilities. The District has placed a request with the Corps to assist with defining the re-operation potential of our largest facility, Big Dry Creek Reservoir.

## **WEATHER, CLIMATE, AND EVOLUTION OF THE SYSTEM**

With regard to climate change and adaptation, the primary sources of information the District has consulted, to date, are the 2006 Department of Water Resources Technical Memorandum “Progress on Incorporating Climate Change into Management of California’s Water Resources”; the 2009 California Climate Adaptation Strategy (California Natural Resources Agency); and the Little Hoover Commission’s own 2014 “Governing California Through Climate Change”. A discussion on the District’s Master Plan system and how it is continually evolving to adjust to the changes in climate follows.

### Local Storm Drain System

The design and development of our storm drain system is driven by our knowledge of historical weather patterns. Records of local rainfall go back as far as 1887; however, the more reliable rainfall record begins in 1949 with the establishment of a weather station at the Fresno Air Terminal (now called Fresno-Yosemite International Airport). The National Weather Service (NWS) compiles data to produce the average annual rainfall totals for the Fresno area. The annual rainfall is calculated on a 30-year average and is updated by NWS every ten years. The District generates a more-detailed analysis by calculating a running 30-year average each year. This data shows a definite upward trend in annual rainfall totals, with the annual average rainfall total rising from about 9 inches in the 1940’s to about 11 inches at present. Using this trend of increasing rainfall, the District has made some adjustments to the design of our storm drainage system by increasing basin storage, maximizing pipeline capacity, and incurring an overland flow route for high intensity rainfall events, as described below:

Basins developed before 1969 have a rainfall capacity standard of approximately three (3) inches. The District has modified several of these older basins over the years to increase their capacity. The modifications have included basin expansions, alternate pumping configurations and modified designs to maximize capacity. The basins acquired after 1969 have at least six (6) inches of rainfall capacity.

The District updated its basin capacity criteria and design standards again in June of 1982, with new basins designed to contain approximately 70% of the annual average runoff based on the average annual rainfall. The 1982 standards added an additional 20% (twenty-percent) supplemental capacity above the six (6) inch standard, which provided flexibility

for the development community to make land use changes that might increase impermeable area.

In 1997, a rainfall variance factor was added in response to data showing variances in rainfall totals across the Fresno/Clovis Area. The new data identified increased rainfall totals to the northeast and decreased rainfall totals to the southwest. The District has also begun discussions on the implementation of a higher capacity standard for basins that could accommodate such a standard to capture and store more storm water.

Currently, the storm water management basins are operated during each month to store at least the drainage equivalent of what could be expected from the precipitation yielded by the largest historical 48-hour storm. As noted earlier, the storm drainage pipeline system is designed to carry the peak flow rate of runoff from a two year intensity storm event (i.e. a storm which has a 50% probability of occurring in any given year). When larger storms occur it is critical that a major storm event escape route has been included as a design feature in the design of development. This protects properties from damage in storm events which exceed system design capacities. It is this design standard that protects life and property from the change in magnitude or duration of storm events due to climate change,

The system is a blend of passive and actively-managed elements. The functionality and operability of the system allows adjustments to the system to accommodate varying weather patterns. A key element in the operations of the system is the implementation of telemetry and automation to monitor and control facilities from its Fresno Operations Center.

#### Control of the Fresno Stream Group

The rural streams that historically flooded the Fresno-Clovis area are controlled by a system of dams and basins, some of which were built by the District, others which were built by the USACOE and later conveyed by the Corps to the District by the Local Cooperation Agreement. The District, as the agency now responsible for operation and maintenance of all of these facilities and the associated network of streams and channels, has made continual improvements to the system to increase its capacity and reliability. The target level of service for the rural reservoirs is to protect the metropolitan area against a 200-year flood. Only one facility remains to be developed to this standard; the Fancher Creek Detention Basin presently only provides 100-year flood protection. Once fully excavated, it will meet the District's 200-year flood protection expectation. It should be noted that Fancher Creek Basin is not a standalone facility – it operates in tandem with the upstream Fancher Creek Reservoir, the District's second largest impoundment, which itself is a 200-year facility. In short, the District's system of rural impoundments is already built to a level capable of handling runoff events larger than those experienced since the first Corps-built facilities came on line in the 1940's.

#### Area of Concern for Urban Flooding

While the District's drainage system is being designed and implemented consistent with the District's design standards, the downtown area of the City of Fresno is most susceptible to flooding from major storm events. A concerted effort is being made to review and determine modifications to the drainage system to protect the large investment in the downtown area. There is a need to insure that a major storm outflow is available to remove

storm water from the downtown area should large storms impact this area. The economy of the downtown area would be significantly impacted if there were major storms. A solution for removal of a large amount of storm water from downtown is currently being studied and implementation is planned in the near future.

## **COMMUNICATIONS WITH THE COMMUNITY**

The District communicates with its constituency in many ways. Regular outreach tools include newsletters, press releases, television, radio, digital and transit advertising, interviews with local news media, outreach to schools through provision of free classroom info-graphics, posters, and PowerPoint and in-class presentations, the District website, use of social media, presence at public events, presentations before local professional groups and service organizations, participation by several managers and staff in many interagency committees and work groups, hosting of public involvement projects, such as tree planting events at storm water basins, and, in certain cases, direct mailings to neighbors of project locations.

The District's audiences include businesses, state and local elected officials, non-profit organizations and professional associations. A recent and large-scale local outreach was the June, 2016, four-page special insert in the Fresno Bee newspaper designed to commemorate the 60<sup>th</sup> anniversary of the District's creation by local voters. The insert was included in a Sunday edition of the Fresno Bee to reach the largest number of people, and tells the story of the history of the area's flooding and drought, the origins of the District, the facilities it is responsible to build and maintain, what those facilities do to benefit Fresno and Clovis by providing flood control, urban drainage, groundwater recharge and recreation, how the District's work is funded, and who governs and does the daily work.

The District publishes and distributes a quarterly newsletter, "*Flood Line*" that reports on infrastructure work being done to protect the community and preserve its water resources, and success in receiving grants to offset local costs for infrastructure construction, and collaboration with other local agencies in provision of services and regional planning. As an example, in 2011, the District completed infrastructure work at Fancher Creek Detention Basin that resulted in changes to FEMA flood maps and removal of 650 parcels from the Zone A and its mandatory flood insurance requirements. A news release was prepared with that announcement, and also published within a story in the Spring 2011 edition of the newsletter detailing the scope of the project and its public protection benefits and project partnerships with the Fresno Irrigation District and Caltrans Region 6, and informational letters were sent directly to the owners of the 650 parcels.

## **REGION-WIDE INTERAGENCY COORDINATION**

The District interacts with a wide range of local, state and federal interests in the course of building, operating and maintaining flood control and urban drainage systems.

### Fresno Irrigation District, USBR and USACOE

The District's recharge program operates at the center of a complex web of contractual and physical infrastructure connections. As discussed in other sections of this testimony, the District has, for decades, been working with the cities of Fresno and Clovis to rout city-

owned surface water entitlements through Fresno Irrigation District canals into District storm water basins for recharge. These cities have specified rights to water originating from Millerton Lake, which is a U.S. Bureau of Reclamation reservoir, and to water stored behind Pine Flat Dam, which is a U.S. Army Corps of Engineers facility. Releases from these federal facilities are administered by the Friant Water Authority, in the case of Millerton Lake, and the Kings River Water Association, in the case of Pine Flat Dam.

#### Integrated Regional Water Management Plan (IRWMP)

The District is a member of the Upper Kings Basin Integrated Regional Water Management Authority (“Kings Basin Water Authority”). Along with the District, the Authority Board of Directors includes eight cities, two counties, three irrigation districts, two water districts and the Kings River Conservation District (KRCD). The Kings River Conservation District is the lead agency staffing and coordinating the IRWMP effort.

The Kings Basin Water Authority’s IRWMP Region consists of the geographic areas under the jurisdiction of the Water Authority members and includes the majority of the Kings Groundwater Basin. The total land area of the IRWMP region is 610,000 acres with an irrigated land area of about 480,000 acres. The IRWMP Region also includes regional and smaller local water agencies and spans over parts of three counties: Fresno, Kings, and Tulare

Since the early 2000s, the Kings Basin Water Authority has received over \$55 million in state financial support for use toward planning activities and to construct projects that address groundwater, water conservation and efficiency, water quality, riparian habitat, flood corridors, and disadvantaged communities. The District, as a participant in the IRWMP, has built several Authority-approved projects of regional benefit. These include a collection of Prop 84-funded system improvements

It should be recognized that the Kings Basin Water Authority/IRWMP is a political unit and not a hydrologic unit. Although the establishment of IRWMPs statewide was intended to regionalize the planning and funding of water management systems on a watershed basis, like many IRWMPs, the Kings Basin Water Authority’s IRWMP plan area does not correspond to a particular surface water or ground water hydrologic area.

#### North Kings Sub-Basin Groundwater Sustainability Agency

The North Kings Sub-Basin Groundwater Sustainability Agency (GSA) is being formed to implement the 2014 Sustainable Groundwater Management Act (SGMA). While the District will only be an interested party and not a member of the GSA - because we are not a water rights holder or water supplier - we will play a central role in helping the community meet the demands of SGMA through our growing capacity to recharge storm water and irrigation water.

The District’s Board of Directors adopted the GSA’s foundational Memorandum of Understanding (MOU) in October, 2015. The GSA is comprised of many of the same organizations that have worked together since 2006 to implement the Fresno Area Regional

Groundwater Management Plan, and the more recent Upper Kings Basin Integrated Regional Water Management Plan.

The emphasis on groundwater sustainability has made the District take another look at how it could capture more storm water. Since SGMA requires the management of groundwater basins, and the District overlies and recharges the community's Sole Source Aquifer, it is natural that the Kings Basin GSA will work to maximize use of the District's system and the District model to meet SGMA-mandated goals. Ultimately, coordinating surface and groundwater management and funding around the GSA seems likely to yield much more efficient conjunctive use solutions than trying to accomplish the same through the Integrated Regional Water Management Plan process.

## **FUTURE NEEDS**

### Re-Operation of Major Reservoirs

The District entered into a Local Cooperation Agreement (LCA) with the USACOE in 1987 for construction of the Redbank and Fancher Creeks flood control project (Project). The Project makes use of pre-existing Corps-built dams that protect Fresno and Clovis from runoff generated in rural streams east of these communities. One element of the Project was the enlargement of the Big Dry Creek Dam and Reservoir, located northeast of Fresno and Clovis. Because of the LCA, Big Dry Creek Dam is now operated and maintained by the District, along with all the other features of the Project. The District operates these facilities in accordance with storm water accumulation limits and release protocols established by the USACOE (called the Water Control Manual).

The District believes that several of our "USACOE" facilities could be "re-operated" in order to improve the storage and routing of storm water in ways that can increase regional recharge and help address groundwater depletion in our groundwater basin. Re-operation could take the form of modifying the rules that govern when water must be released from our reservoirs, in ways that take into account modern weather and runoff forecasting methods unavailable when the dams were first built and the USACOE established the specific operating parameters for each facility.

In pursuit of an opportunity to explore the re-operation potential of the Project, the District has been communicating with the Sacramento District of the USACOE about possible "reoperation" of our Redbank and Fancher Creeks Projects.

We note that both the House and Senate versions of the 2016 Water Resources Development Act (H.R. 5303 and S. 2848) provide direction to the USACOE to work with local non-federal agencies, such as our District, to assist in the review and modification of the operating criteria to help increase the State's water supply. Should the Act pass with these provisions intact, it will be a critical step towards optimizing the recharge contribution of our largest reservoir.

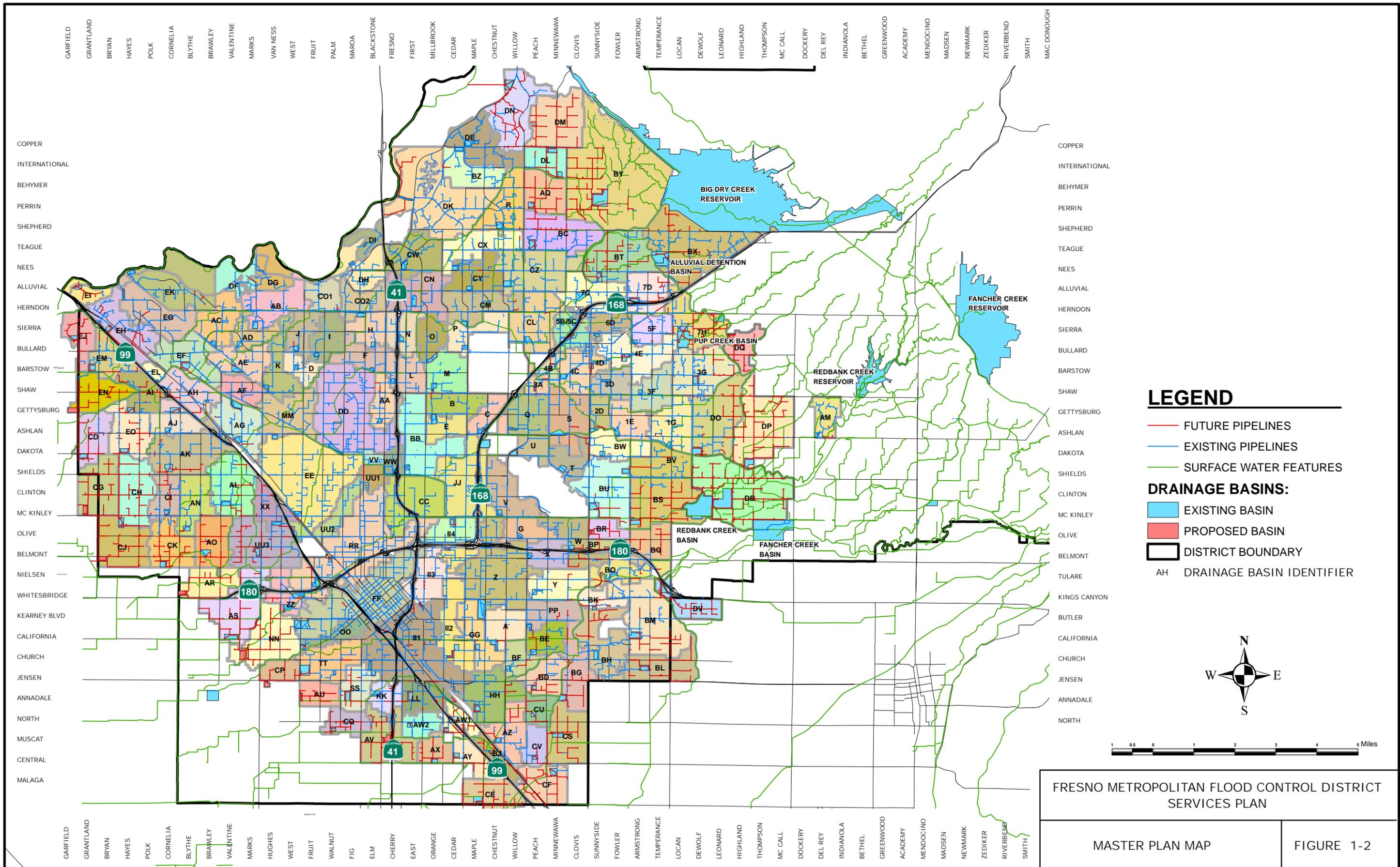
## **RECOMMENDATIONS TO THE COMMISSION**

The creation of the District provided the Cities of Fresno and Clovis with a special district that was empowered to insure that an urban storm drainage system would be constructed to protect the cities. The cities were no longer required to provide the staffing or financial resources to provide these services. The creation of a special district insured that this element of the public infrastructure would be completed in the most economical and efficient manner possible.

The major implication of creating a special district to perform a specific task (urban drainage and flood control) is that the public recognized that there was a need not being met. The people decided that an important element in the community was not being properly implemented and they, through creation of a special district, insured that the need would be met. The District is a product of a public procedure to create an agency with the expertise and funding to insure that a storm drainage system would be installed to protect life and property. It is questionable that the city's general fund would have had sufficient resources to implement a storm water management system as robust as the District's. Especially today, many cities are having trouble finding the resources necessary to implement not only urban drainage infrastructure, but fund the requirements of federal regulations that continue to be imposed on storm water.

In the realm of storm water and climate change, there is a real need to have strong engineering expertise to understand the implications of a change in weather patterns. An agency dedicated to the purpose of implementation and creation of a system has the resources to make the necessary changes due to their singular purpose.

The implication of climate change on storm water special districts will require them to focus on how their systems and standards for development will work with unknown weather patterns. There should be a review of system standards to assure the community that it is protected should there be an abundance of rain or irregular rainfall patterns.



**LEGEND**

- FUTURE PIPELINES
  - EXISTING PIPELINES
  - SURFACE WATER FEATURES
- DRAINAGE BASINS:**
- EXISTING BASIN
  - PROPOSED BASIN
  - DISTRICT BOUNDARY
- AH DRAINAGE BASIN IDENTIFIER



FRESNO METROPOLITAN FLOOD CONTROL DISTRICT SERVICES PLAN

MASTER PLAN MAP

FIGURE 1-2

# Assessment Tax All Years

