



Zone 7 Water Agency

Flood Protection Program

2014 Annual Report

May 2015

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OVERVIEW

Introduction and Background

Zone 7 of the Alameda County Flood Control & Water Conservation District (Zone 7) was established in 1957 by the voters of the Livermore-Amador Valley in order to place water management, including flood control, under local control through a locally-elected Board of Directors. Zone 7's programs for flood protection and water supply are integrated. Zone 7 provides for the regional management of storm waters in order to protect life, property and habitat from damage within its 430-square-mile service area. Since the 1960s, Zone 7 has imported water from the State Water Project and artificially recharged the local groundwater basin during the summer using otherwise dry flood control channels.

In addition to providing regional flood protection services, Zone 7 also provides wholesale potable water supply to the businesses and residents of Dublin, Livermore, Pleasanton and the Dougherty Valley portion of San Ramon; groundwater basin management for the Livermore-Amador Valley; and untreated irrigation water supplies to Eastern Alameda County agricultural customers.

Although many programs and projects satisfy multiple objectives, Zone 7's Flood Protection Program includes four major sub-programs. Additional details about these sub-programs and descriptions of some of the major activities which occurred during 2014 are in the sections which follow.

- Administration

Administration includes staffing and training, legal, safety, property management, and regulation compliance.

- Watershed Stakeholders Collaboration

The Watershed Stakeholder Collaboration Program includes participation in a variety of local and regional efforts with specific emphasis on collaboration with the many public and individual stakeholders in the watershed

- Capital Improvements

The key Capital Improvement Program (CIP) activities include planning, data collection, hydrologic and hydraulic modeling, financing and budgeting, design and construction management, and working with other entities such as developers, cities, and Non-Governmental Organizations (NGOs) to further partnerships on projects identified in the Stream Management Master Plan (SMMP).

- Maintenance

The key Maintenance program activities for the 37 miles of Zone 7-owned channel facilities include emergency repairs, routine maintenance and repairs, clearing debris from channels and access roads, vegetation management along the channels, inspections to ensure the system is in good working condition to receive and convey storm waters, and rehabilitation of existing facilities.

Highlighted Accomplishments from 2014

The following are some of the key accomplishments related to Zone 7's Flood Protection Program in 2014, all of which are described in more detail in the following chapters:

- Collaborated with local municipalities and park districts in their planning and construction of trail projects utilizing flood control channel maintenance access roads.
- In support of the Stream Management Master Plan (SMMP) updating effort, staff completed developing system-wide hydrology and hydraulic models that represent the existing conditions of the upper Alameda Creek watershed to help clarify program needs and priorities.
- Completed the installation of two stream gages adding to Zone 7's stream gaging network. The new gages are located on Alamo Canal and Chabot Canal in Pleasanton. These new gages will provide real time flow related information during storm events for hydrology and hydraulic model calibration and daily base flows and temperature readings for environmental studies.
- Initiated collaboration with the City of Dublin on the Chabot Canal Regional Stormwater Detention Project and with the East Bay Regional Park District on the completion of the Iron Horse Trail Extension Project through the City of Pleasanton.
- Zone 7 staff chaired three multi-agency working groups that support environmental studies and collaboration in the Alameda Creek watershed.
- Zone 7, in collaboration with the U.S. Department of Agriculture's Natural Resources Conservation Service, continued working on two bank stabilization projects in Line G-1-1 and the Pleasanton Canal (Line B-5), respectively.
- Zone 7 collaborated with the City of Pleasanton on an arroyo clean-up effort to remove tires, shopping carts and other debris along a two-mile reach of the Arroyo de la Laguna between I-580 and the Arroyo del Valle.
- Completed a majority of the planting plan of the Arroyo Mocho –Stanley Reach Project through the Living Arroyos Program. The Living Arroyos Program, a collaboration among Urban Creeks Council, City of Livermore and Zone 7, seeks to improve the urban

streams and streamside habitats of the Livermore-Amador Valley via local community engagement.

- Completed seven bank repairs totaling 850 linear feet, 15 soil bioengineering brush walls, 4,900 linear feet of access roadway, six outfall structure rehabilitations, 370 linear feet of concrete lining repairs, and two trash collector installations. Total construction cost was \$850,000. The planning, permitting, design and construction management was performed directly by Zone 7 staff.
- Zone 7 managed various maintenance activities such as vegetation management, downed tree removal, hydroseeding, fence and gate repairs, and debris and trash removal, totaling an additional \$500,000.
- Received reimbursement of over \$100,000 from Castlewood Country Club for emergency work related to the removal of large slabs of a collapsed concrete structure crossing which was obstructing the Arroyo de la Laguna flow within the Castlewood Country Club property in fall 2013 when a potential threat to public health and safety was identified.
- Staff development activities in 2014 included training in sediment turbidity analysis, hydrology and hydraulic modeling programs, hazardous materials handling and other safety-related classes. In addition, staff attended the Floodplain Management Association annual conference and the San Francisco Estuary annual conference.

ADMINISTRATION

Zone 7 Flood Protection Program's administrative tasks include those related to staffing, planning, budget preparation, preparing board agendas and presentations, updating and managing current agreements and contracts, issuing permits, and mitigation monitoring as appropriate. Zone 7 staff coordinated extensively with other agencies to minimize impacts to the public and utilize Zone 7-owned properties for other compatible community uses such as trails and public education. In addition, staff routinely engages with the public to address citizen complaints and inquiries.

Following is a description of the key administrative activities which occurred in 2014.

Mitigation Monitoring and Reporting Program

A typical Zone 7 Flood Control capital improvement project usually does not end after the construction is completed. Typically, a project requires ongoing monitoring and mitigation of impacts resulting from that project. As a requirement for project approval, Zone 7 must provide a mitigation and monitoring report to various regulatory agencies, such as the California Department of Fish and Wildlife, California Regional Water Quality Control Board, U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service, for a period of five to ten years after project completion to show that the mitigation for the improvements are doing what they were intended to do. Since 2013, with the completion of the Arroyo Mocho Stanley Reach Riparian Restoration and Channel Enhancement Project, Phase 1, Zone 7 began its monitoring and reporting requirements as stipulated in the regulatory permits for the project. Zone 7 is required to monitor both the biological and physical conditions of the restored channel reach for a period of ten years to insure that restoration work is viable and does not affect the channel integrity. Zone 7 staff performs the mitigation monitoring and reporting.

Contract Administration and Management

Zone 7 staff is responsible for administering and managing various consultant and vendor contracts related to flood protection projects and maintenance. This includes the preparation and administration of requests for proposals, contracts, and right-of-way documents. Staff is also responsible for preparing Zone 7 Board agenda items pertaining to flood protection.

Zone 7 staff routinely receives requests from private entities, as well as public agencies, regarding use of a flood protection facility for their projects. While temporary access is usually granted through encroachment permits, long-term access is usually provided, when warranted, through a license agreement with another public agency. A license agreement spells out the terms of operating within a Zone 7 facility, as well as indemnifying Zone 7 from any liabilities that may occur from that entity's use of the property.

In 2014, Zone 7 staff worked on a number of requests for proposals, annual purchase orders, consultant contracts, and construction contract administration, as well as responded to several requests from developers. A trail license agreement amendment and a storm drain maintenance agreement were completed with the City of Pleasanton to allow for the construction and operation of a city-owned and maintained storm drain pipe and a recreational trail along a portion of the south boundary of the Zone 7-owned Lake I property off Mohr Avenue.

Encroachment Permit Program

The Encroachment Permit Program involves engineering design review, inspection, and issuance of encroachment permits. Encroachment permits are necessary when adjacent neighbors have exhausted all other options and request use of Zone 7's access roads for access to work within their properties, or when improvement work is proposed within Zone 7's right-of-way or easement by a local or state agency. The program involves developing permit terms, conditions, fees, insurance and bond requirements. In 2014, Zone 7 issued 36 permits to both private and public agencies and coordinated with applicants to provide safe access to Zone 7 facilities. See Appendix A for a list of encroachment permits issued.

U.S. Army Corps of Engineers PL 84-99 Federal Assistance Program

Zone 7 participates in the U.S. Army Corps of Engineers' (COE) PL 84-99 Federal Assistance Program. The program provides federal funding for Presidential-declared storm related disasters to complete and rehabilitate damaged and eligible facilities participating in the program. One of the conditions required to participate in the program is a bi-annual eligibility inspection conducted by the Army Corps inspectors on all eligible Zone 7 facilities. In 2014, no inspection was conducted by the Army Corps inspectors to determine continued eligibility status; however, staff continued with the necessary maintenance and upkeep work within the flood control facilities to ensure the upcoming 2015 inspection would be satisfactory.

Trail-Use Collaboration and Support

In 2014, Zone 7 staff continued collaboration with the City of Pleasanton, City of Livermore, City of Dublin, East Bay Regional Park District and local trail groups to make sure that the trail use and license agreement terms and conditions were up-to-date and reflected current concerns. In fall 2014, the Iron Horse Trail Extension Project through Pleasanton was completed and opened to the public. With the completion of this trail extension project, the public now can travel along trails between Pittsburg and Livermore without interruption. Further, staff participated in workshop discussions with the City of Dublin on their Dublin Bikeway and Pedestrian Master Plan update effort and provided technical support to the City of Pleasanton on a trail pavement project along a reach of the Arroyo Mocho from Sutter Gate Court to the new Stoneridge Bridge. The project is scheduled for construction in summer 2015. As incidents

relating to trail-use occurred, Zone 7 staff worked with the public to ensure safety as a number one priority.

Alameda Countywide Clean Water Program

In 2014, Zone 7 participated in the Alameda Countywide Clean Water Program by implementing best management practices in its maintenance activities, responding to illicit discharges, and contributing data for the Clean Water Program semi-annual reports. Per Clean Water Program requirements, staff kept track of violations such as shopping carts, debris, and spills in



the channels and prepared reports for the Clean Water Program. By staying proactive and being prepared for action when violations arose, Zone 7 has been able to effectively reduce the amount of runoff pollution. Zone 7 also participated in Earth Day 2014, Coastal Clean-Up Day and Dublin Pride Week activities.

In April 2014, Zone 7 collaborated with the City of Pleasanton on an arroyo clean-up effort to remove tires, shopping carts and other debris along a two-mile reach of the Arroyo de la Laguna between I-580 and Arroyo del Valle. Working in concert with the City, the City crew retrieved the debris from the channel floor and Zone 7's contractor worked behind the city crew to place the debris in a dump truck for proper disposal. A total of 82 tires, 2 carts and a lot of miscellaneous pipe debris, with an estimated weight of 3,000 pounds, were removed from the arroyo.

Joint Exercise of Powers Agreement for Aquatic Pesticides NPDES Permit

In compliance with the 2001 statewide General National Pollutant Discharge Elimination System (NPDES) Permit for the discharge of aquatic pesticides to waters of the United States, Zone 7 entered into a Joint Exercise of Powers Agreement (JEPA) in 2003 with the Contra Costa County Public Works Department, Contra Costa County Flood Control and Water Conservation District, Alameda County Public Works Agency, City of Antioch and City of Concord to monitor and

implement aquatic pesticide use. Flood Control staff is responsible for attending all meetings and administering contract agreements with the selected consultant. All JEPAs member agencies share equally in the costs of monitoring and testing for each pesticide being used and for the costs associated with coordination and administration of the JEPAs. With the NPDES permit, Zone 7 is in compliance when aquatic pesticides are used for keeping flood protection channels clear of obstructive vegetation.

Since the replacement of the 2001 general aquatic pesticide NPDES permit with the 2013 Statewide General NPDES Permit for Residual Aquatic Pesticide Discharges from Algae and Aquatic Weed Control Applications, Zone 7 continued to actively participate in the JEPAs work group to share common interest and knowledge with other Bay Area flood control agencies to ensure full compliance with the new permit requirements.

Employee Development and Staff Training

In 2014, Zone 7 staff had the opportunity to participate in a number of training classes to improve staff productivity and employee development. Classes included sediment turbidity analysis, hydrology and hydraulic modeling programs, hazardous materials handling and other safety-related classes. In addition, staff attended the Floodplain Management Association annual conference and the San Francisco State of the Estuary annual conference.

In the sediment turbidity analysis class, staff participated in a webinar discussing sediment transport and how to analyze sample results. Staff spent a week of training learning how to make sense of the data being collected and how to estimate sediment loads on the flood control system. The training will help staff make in-house evaluations once collaborative work with SFEI is complete.

At the Floodplain Management Conference titled “Keeping our Heads Above Water,” many beneficial topics were offered including HEC-RAS version 5, 2-D modeling, floodplain management, and drought issues. One interesting topic was Integrated Floodplain Management, which discussed the Gobernadora Multi-Purpose Basin. This project contained elements of water quality treatment, groundwater infiltration, and flood basins, which have similar elements to Zone 7’s plans for the Livermore area north of I-580 and upstream of Holmes Street Bridge on the Arroyo Mocho. Staff felt the conference had valuable information which will assist in the overall flood management effort.

With increased knowledge of these new programs, staff was able to accomplish daily tasks as well as new assignments with greater safety and efficiency.

WATERSHED STAKEHOLDER COLLABORATION PROGRAM

The Watershed Stakeholder Collaboration Program is Zone 7's effort to participate in a variety of local and regional watershed efforts, with specific emphasis on collaboration with the many public and individual stakeholders in the Northern Alameda Creek Watershed. In 2014, Zone 7 staff chaired three multi-agency working groups that support environmental studies and collaboration in the watershed: the Alameda Creek Fisheries Restoration Workgroup, the Alameda Creek Watershed Forum (Council), and the Arroyo de la Laguna Agency Collaborative, as described below. Zone 7 also initiated a multi-partner collaboration program called Living Arroyos.

Alameda Creek Fisheries Restoration Workgroup

The Alameda Creek Fisheries Restoration Workgroup was formed in early 1999 as a collaborative effort among many parties focusing on water flows and habitat restoration in the Alameda Creek watershed to support steelhead trout. A Memorandum of Understanding (MOU) was authorized by the 17 Workgroup members in 2006, and Zone 7 is one of the core funding partners.

A comprehensive study plan, the "Alameda Creek Population Recovery Strategies and In-Stream Flow Assessment for Steelhead Trout," was completed in 2008. Work included an assessment of hydrologic and habitat conditions, identification of strategies for population recovery, and monitoring.

As Chair of this Workgroup, Zone 7 develops the agendas and facilitates the meetings. As a funding partner, we also help guide the studies done on behalf of the Workgroup, and seek ongoing collaboration with all stakeholders. Meetings are held quarterly and are open to the public.

These efforts are in addition to Zone 7's collaborative approach with the National Marine Fisheries Service, under the Statement of Understanding which focuses on NMFS preparation of a recovery plan for the Central California Coast Steelhead.

Alameda Creek Watershed Forum

The Alameda Creek Watershed Forum (formerly the Alameda Creek Watershed Council) consists of representatives from several local agencies, environmental groups, industries and organizations. The Forum's mission is to protect and enhance water-related beneficial uses and resources in the Alameda Creek Watershed in order to create a healthy and sustainable watershed for the community. The Forum promotes collaboration and the sharing of information among all stakeholders.

The Forum has previously held quarterly meetings and an annual conference. As Chair of the Forum, Zone 7 helps to develop the agendas and facilitates the meetings (in coordination with the Alameda County Resource Conservation District, who receives limited funding to assist). In an effort to better align with the needs and wishes of their stakeholders, the Forum is considering moving to two annual conferences and relying more on periodic “e-blasts” to disseminate useful information.

On November 6, 2014, the Alameda Creek Watershed Forum hosted a technical symposium called *Restoration in the Alameda Creek Watershed: Challenges and Solutions*. About 30 participants from agencies and organizations across the east bay gathered for focused discussions on topics including the urban streams restoration program, case study on permitting creek projects, role of a restoration nursery, and enhancing regional capacity for habitat project tracking and assessment.

On May 28, 2014, the Forum held its Annual Conference titled *Perspectives on the Alameda Creek Watershed: Resources, Restoration and Resilience from Bay to Ridge – and Beyond*. Over 60 conference participants enjoyed a jam-packed day of speakers from a wide array of agencies and organizations including Urban Creeks Council, San Francisco Public Utilities Commission, San Francisco Estuary Partnership, and US Geological Survey. Topics were idyllically presented in order from the baylands to the upper watershed, and included south bay salt ponds restoration, sea level rise and flood control, steelhead restoration, green infrastructure for stormwater pollution, and the plan for a new watershed center in Sunol.

Arroyo de la Laguna Agency Collaborative

The Arroyo de la Laguna Agency Collaborative is comprised of agencies and municipalities with facilities that drain into the arroyo itself and the greater Alameda Creek Watershed. More specifically, collaborators include the Alameda County Flood Control and Water Conservation District (Zone 5/6), Alameda County Water District, Contra Costa County Flood Control and Water Conservation District, San Francisco Public Utilities Commission, Zone 7, and the Cities of Dublin, Livermore, Pleasanton, and San Ramon. The Alameda County Resource Conservation District (RCD) and Natural Resources Conservation Service (NRCS) are also engaged in the Collaborative, as some of their work is in or around our waterways. This Collaborative discusses the arroyo as a whole to better understand the scientific and engineering data that is available along with what goals for the arroyo will benefit the stakeholders and local residents. The NRCS is particularly interested in working to better position the local agencies for possible future federal funding or grant opportunities.

Zone 7 serves as unofficial Chair of the Collaborative. In this capacity we set meetings and agendas, and help to foster inter-agency collaboration.

Living Arroyos Program

The Living Arroyos Program is a partnership between Zone 7, the City of Livermore, and the

Living Arroyos helps promote healthy streams while enhancing existing flood protection channels



Urban Creeks Council that was initiated in 2013. This program seeks to improve the urban streams and streamside habitats of the Livermore-Amador Valley and engage the local community. Under professional supervision, restoration apprentices (local college students) work with the community to plant native vegetation. The program increases opportunities for local residents to engage in hands-on stewardship and establish relationships to the streams in their own backyards, while contributing to long-term vegetation management strategies across the Valley.

To date, 400 individual volunteers and Living Arroyos staff have planted nearly 1,500 acorn sites (3 acorns per site) at the top of the bank, and over 3,000 riparian tree seedlings and willow stakes along a one-mile stretch of the Arroyo Mocho called the Stanley Reach Project. In Spring 2015, the Program will complete the final portion of the Stanley Reach planting plan by seeding the slopes with native grasses. This plant palette in three distinct zones compliments both floodplain management and function.

In addition, Living Arroyos helped plant oak seedlings along a portion of Arroyo Seco in Livermore where Caltrans removed or damaged mature oaks on Zone 7 property. Overall, the program has provided the community with a window to watershed stewardship, has improved habitat at minimal cost and served as a tool for public education.

Sediment Study



Zone 7 and SFEI staff in action

Beginning in the winter of 2010/11, Zone 7 undertook a sediment study to better understand the magnitude of the sediment transport process within the upper Alameda Creek watershed area. Understanding the way the system erodes and deposits sediment will allow Zone 7 to develop a more environmentally sound and cost effective

maintenance plan to reduce flooding risks from sediment buildup that can decrease stormwater carrying capacity in some areas. It will help Zone 7 clarify the need, location, size and maintenance frequency of sedimentation basins and other facilities used for stormwater detention during the SMMP updating process. Furthermore, it will provide basic data on sediment flows affecting various riparian habitats. In 2014, Zone 7 staff continued working with San Francisco Estuary Institute staff in this endeavor, as the past drought year provided little opportunity for sampling any sort of major storm event.



On December 11, a major storm event swept through the Livermore-Amador Valley. The rainfall event was forecast to be a 50-year event. However, by the time the front made its way through, it resulted in being more like a 25 year event. Flow-wise, however, the storm event was merely a 5 year event, as it appeared to be still too early in the season for any appreciable runoff to occur in the drought hit area (the dry ground allowed much of the precipitation to soak in). Staff participated in sediment sampling activities during the event, hoping to catch the peak flows, where sediment is at its greatest. Unfortunately, due to the unpredictable weather pattern, staff caught the initial peak flows, but missed the later peaking event; the collection of sediment samples was still deemed successful.

In August, staff participated in a Webinar discussing sediment transport and how to analyze sample results. Staff spent a week of training learning how to make sense of the data being collected and how to estimate sediment loads on the flood control system. The training will help staff make in-house evaluations, once collaborative work with SFEI is complete.

Lines B-5 and G-1-1 Revegetation Demonstration Project

With federal appropriation to the U.S. Natural Resources Conservation Service (NRCS) and in collaboration with the Alameda County Resource Conservation District (RCD), Zone 7 continued to oversee a demonstration project assessing the feasibility of improving bank stability at two locations in Pleasanton. Line G-1-1 has suffered many bank failures due to existing poor soil conditions. With limited

Line G-1-1 (sod installed on left)



Pleasanton Canal (planting on right)

additional flow capacity, deep-rooting native grasses (sod) were installed here in lieu of larger shrubs or trees to preserve stormwater flow capacity. A short distance away is Line B-5 (i.e., Pleasanton Canal), which has excess (i.e., 100-year storm) flow capacity above the 1% storm flow and could accommodate adding native trees and shrubs for bank stabilization. Following the planting in winter 2012 at both locations, a two-year

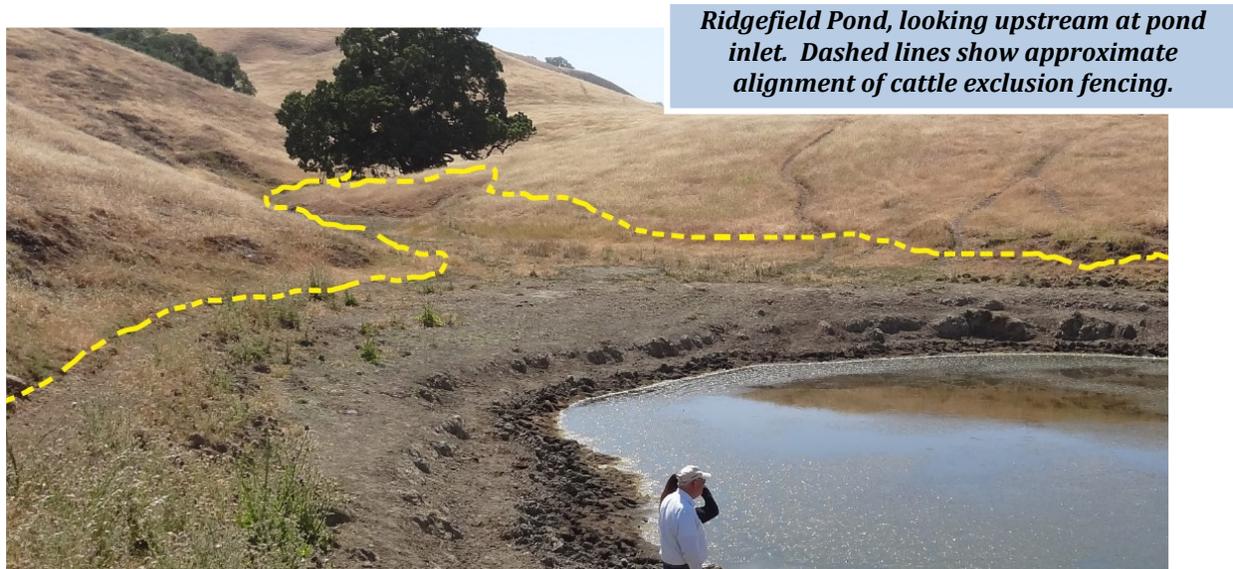
post planting monitoring program began to ensure the plants are thriving and receiving the proper care. While the monitoring work was completed and found to be satisfactory at the Line G-1-1 site in winter 2014, the Pleasanton Canal monitoring will continue until spring 2015.

Public Outreach

Zone 7 recognizes the importance of public concern over flood control activities. In 2014, Zone 7 staff documented, responded to, and investigated 116 complaints and inquiries. Typical inquiries included trail user complaints over graffiti and illegal dumping (e.g., shopping carts, tires, sofas, mattresses, etc.), complaints about downed tree branches and untrimmed vegetation on Zone 7's property, and neighbors' complaints of dust and vibration generated by construction equipment. By working calmly and reasonably with residents, staff was able to resolve many of these concerns while educating the public about flood protection activities. See Appendix B for a list of complaints and inquiries which occurred in 2014.

Lake Del Valle Property Update

Patterson Ranch, purchased by Zone 7 in 2013 for the purpose of watershed protection and preservation, is now referred to as the Lake Del Valle Property. In 2014, Zone 7 partnered with the Alameda County RCD and NRCS and current tenant Paul Banke in the evaluation and planning of several ponds improvement projects on the property that could be covered by the



NRCS Environmental Quality Incentives Program (EQIP).

The two high priority projects included in the application were approved and funded by EQIP and are now in the early stages of planning and design:

1. **Ridgefield Pond** – Install cattle exclusion fencing around the pond inlet.
2. **Chapman Pond** – Remove accumulated sediment and repair/reconstruct the embankment and spillway; and install cattle exclusion fencing around the pond inlet.

Both ponds are actively used for cattle and are known to provide habitat for California red-legged frogs (federally threatened; state species of special concern) and western pond turtles (state species of special concern). The proposed projects will improve the use of these ponds for both cattle and the special-status species.



Chapman Pond, showing the four components of the project: 1) exclusion fencing, 2) desedimentation, 3) embankment repair, and 4) spillway relocation and reconstruction.

If funds remain, a third project will be implemented which includes artificial basking sites for western pond turtles at Turtle Pond.

Preliminary engineering designs of Chapman Pond embankment and spillway.



Stonybrook Creek Fish Passage Improvement Project

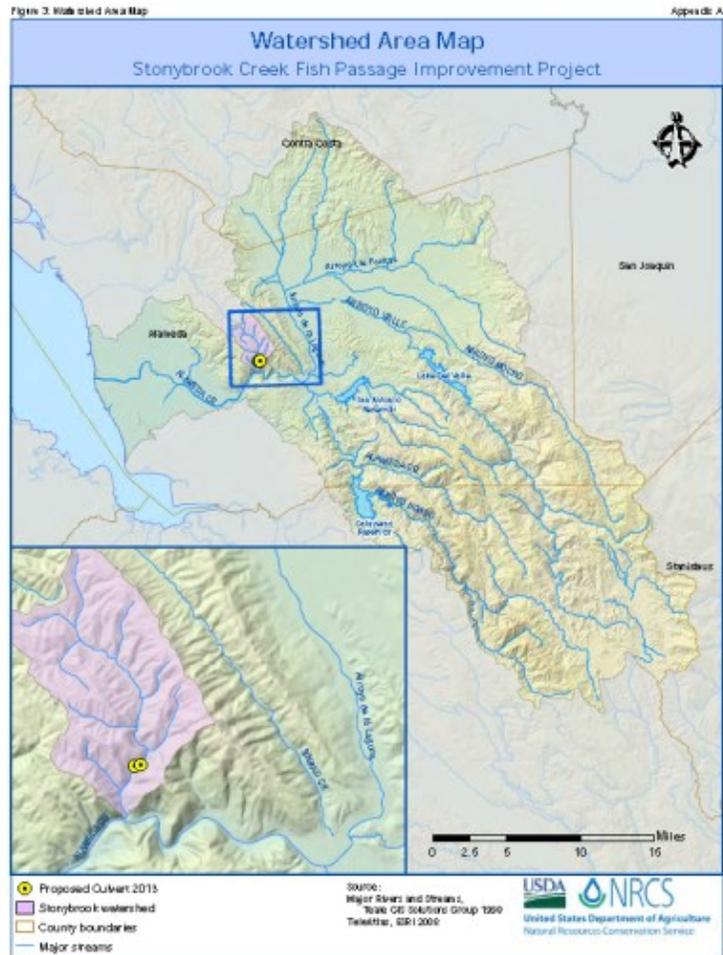
Stonybrook Creek is a tributary to Alameda Creek, which drains into San Francisco Bay. The confluence of the two creeks is located in Niles Canyon, approximately 13 river miles upstream from San Francisco Bay. The Stonybrook Creek watershed lies within Alameda County, about seven miles east of Hayward. Although within the Zone 7 Service Area, Zone 7 does not own any portion of the channel.

As Stonybrook Creek is the first major tributary to Alameda Creek upstream from the improved flood control channel, it may provide viable upstream habitat for steelhead on their return to the watershed. Historically, this creek supported anadromous fish species and in recent times a pair of Alameda Creek steelhead that were captured in the flood control channel, radio-tagged, and released in Niles Canyon. These fish spawned in Stonybrook Creek, with the offspring rearing in a nearby pool. In addition, resident rainbow trout are present and documented within the creek.

The primary purpose of this project is to minimize current fish barriers located along stream crossings. The barriers are located within the lower half of Stonybrook Creek with a steep, boulder/cobble-type substrate. Stream crossings along County-

maintained Palomares Road (located at culvert mile-post (MP) 8.60 and 8.75) are under-sized, have intercepted coarse sediment which would naturally have passed through the canyon and exited to Alameda Creek, creating a complete barrier for all lifestages of fish.

The project is being implemented jointly by the Alameda County Resource Conservation District and the Natural Resources Conservation Service. It is largely funded by a federal appropriation sponsored by Congressman Stark, as well as grant funding through the Environmental Protection Agency, and other miscellaneous funds from the Regional Water Quality Control Board. Still, a funding gap exists that Alameda County Public Works Agency (ACPWA) and Zone 7 Water Agency are collectively working to fill. Zone 7 is currently negotiating an MOU with the Resource Conservation District.



CAPITAL IMPROVEMENT PROGRAM

While Zone 7 owns and maintains approximately 37 miles of improved channels throughout the Livermore-Amador Valley, there are approximately 80 miles of unimproved channels that flow through the Alameda Creek Watershed. The function of the Capital Improvement Program is to address the Flood Protection needs of Zone 7 and continue to improve the overall Flood Protection infrastructure for the betterment of the public. This involves the administration, planning and implementation of the Stream Management Master Plan (SMMP) Program, its projects, as well as the administration and collection of Development Impact Fees for the SMMP. Staff provides hydrologic and hydraulic modeling support to assist in the re-assessment of SMMP projects, as well as to evaluate future development impacts. To assist in planning efforts, the 5-year Capital Improvement Program is adopted every two years. One project strives to improve Zone 7's data collection from stream gage monitoring systems, where it can be used for modeling purposes and an early-warning flood system can be implemented. When the opportunity arises, Zone 7 will often try to collaborate with other public entities and developers, to help implement core ideas of the SMMP, such as maintaining a natural floodplain or restoring channel reaches with biotechnical solutions. In addition, Staff provides review of development referrals, allowing staff to identify potential impacts to Zone 7 Flood Protection facilities.

Stream Management Master Plan (SMMP)

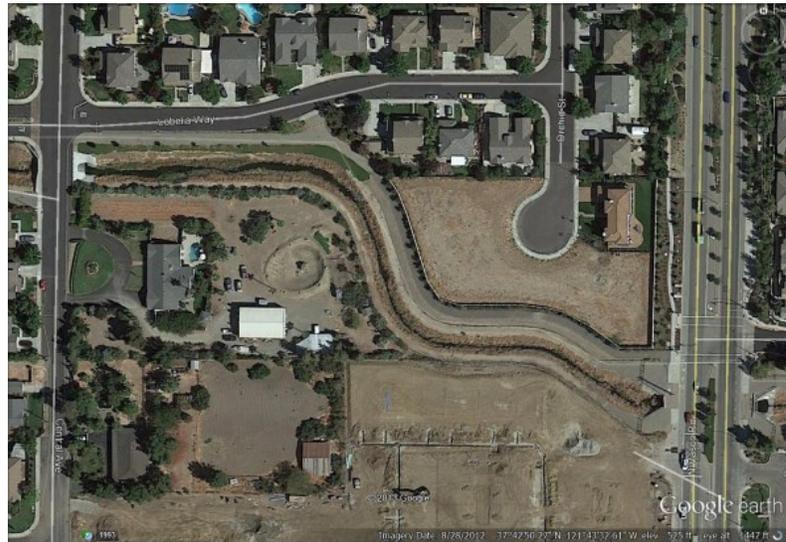
In August 2006, the Zone 7 Board adopted a new flood control master plan, the Stream Management Master Plan (SMMP). The SMMP includes 45 individual multi-benefit projects throughout the Livermore-Amador Valley while focusing mainly on regional storage of flood and storm waters within the Chain of Lakes. The SMMP also focuses on achieving project goals while providing multi-benefits, being environmentally friendly, and forming partnerships with related agencies.

Staff continues to plan and implement key ideas of the SMMP. Staff continues work (hydrologic and hydraulic modeling) that will help identify potential problem areas, as well as updating the SMMP projects. With new development starting to pick up once again, more opportunities are becoming available to allow Zone 7 to collaborate with developers prior to project implementation and to incorporate key SMMP ideas into these projects. For 2014, Staff initiated discussions to implement a couple of SMMP projects, described below.

Development Impact Fees (DIF) continue to be collected to mitigate for the creation of new impervious surfaces created by new developments. While the SMMP is in the process of being updated, the DIF remains unchanged until the update is complete. Additional funding sources may be necessary to implement the SMMP in whole. Long-term financial planning for SMMP projects is ongoing and will be addressed as part of the SMMP Update.

Arroyo las Positas Channel Widening Improvements (SMMP Project R.1-7)

The reach of the Arroyo las Positas between Central Avenue and Vasco Road was acquired by Zone 7 from Alameda County in 2011; upon transfer, the reach was in a partially-improved state. The channel seemed to be undersized to carry 100-year storm flows and did not have full maintenance roads along the top of bank. In 2012, Zone 7 worked with an adjacent landowner to the south to pilot an experimental stormwater/channel overflow detention area. Construction work for the development, including the detention area, began in 2012 and was completed in 2014.



Zone 7 also initiated preliminary channel expansion design work as well as contacted a second adjacent neighbor to the west to explore the possibility of acquiring a narrow strip of the owner's property to accommodate the proposed channel width in order to bring this reach of the Arroyo las Positas into compliance with Zone 7's typical design standards. Staff initiated hydraulic modeling work and biological resources studies to support project permitting and construction in 2013. In 2014, the City of Livermore asked to partner with Zone 7 to improve the culvert at Central Avenue as part of the widening project. During 2014, Zone 7 was working on updating hydrology and hydraulics in Livermore, and it became apparent that the initial flooding concerns may have been conservatively estimated. In December 2014, the decision was made to defer the project, as recent hydraulic analyses by Zone 7, as well as the City of Livermore's engineering consultant, seemed to indicate minor flooding overtopping the channel banks in some parts of the project area, but not enough to constitute a threat to public safety or property.

Chabot Canal Regional Stormwater Detention (SMMP Project R.8-2)

In 2014, Zone 7 staff continued to work with the City of Dublin, the U.S. Army, and the Developer, Argent Management (Suncal), to incorporate regional flood protection elements of the SMMP into the Dublin Crossings development. The purpose of these elements is to provide regional flood detention storage in the Camp Parks area to reduce the risk of flooding and potential sediment loading, while promoting a more natural creek through the proposed development that mimics historical conditions. The project will also create additional capacity in areas experiencing bank slides, allowing Zone 7 to plant riparian vegetation that will help stabilize the banks in an environmentally-sensitive manner. The initial plans for detention

to see the changing flows as the water moves through the system as opposed to evaluations of the highest flow against highest incoming flows. This effort provided more realistic results.

The study results are being used to review the 2006 Stream Management Master Plan recommendations for improving flood protection in the valley. The study is in draft form as it is being reviewed and enhanced to further define the actual watershed conditions.

Development Referral Review Program

The Development Referral Program is an interagency program designed to keep public agencies abreast of public projects and private developments that may have an impact on an agency's facilities or operations. Staff reviews and evaluates other public agencies' and private parties' development plans and inquiries, environmental documents (CEQA), master plans, improvement plans, and engineering studies for potential impacts on Zone 7 flood control facilities and/or proposed projects identified in the SMMP. In 2014, Zone 7 staff conducted 12 reviews. Typical reviews included evaluating the Dublin Crossing development impact on Chabot Canal in Dublin; extension of a maintenance access road easement within the Oaks Business Park in Livermore; review of new car dealer and retail developments within the Staples Ranch area of Pleasanton.

Arroyo Mocho Stanley Reach Riparian Restoration and Channel Enhancement Pilot Project

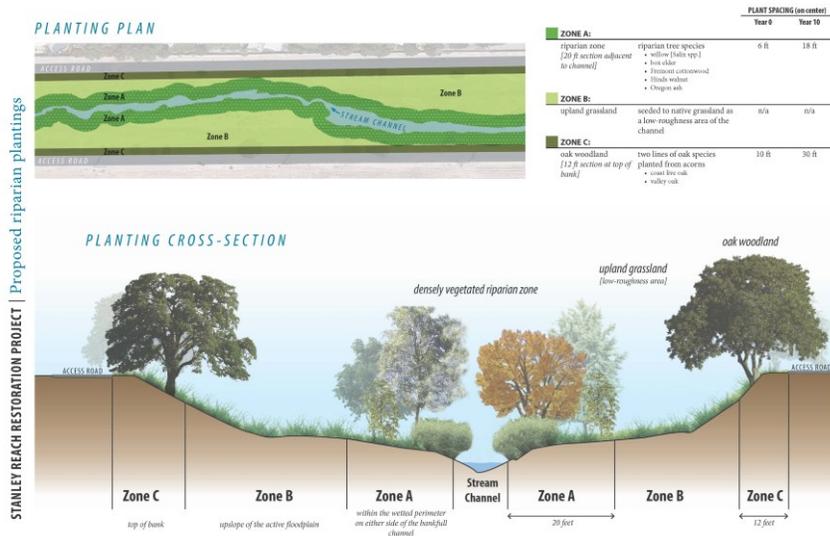
Work on this project continued in 2014 with the installation of 12 acres of riparian plantings via the Living Arroyos Program (see page 10).

Beginning in 2014, staff prepared an As-Built Report required for submittal to the Resources (permitting) Agencies in spring 2015. Staff also began to develop a framework for the Annual Monitoring Report, which will be due annually for 10 years beginning in December 2015.



Also of note, the resources agencies have been supportive of allowing other agencies to meet their own project mitigation requirements by reimbursing Zone 7 for certain costs related to construction of this restoration project. In 2013, the Alameda County Surplus Property Authority was successful in meeting their permit requirements this way. In 2014, with actual

project costs now in hand, staff revised the reimbursement unit cost (cost per acre and cost per channel linear foot), and held discussions with four more entities (both public agencies and private entities) in need of mitigation credits. At the time of this report, one of these private entities has been successful in meeting their permit requirements by reimbursing Zone 7 for Stanley Reach project costs. In total there are 13.5 acres available as mitigation credits; to date, Zone 7 has been reimbursed for about 4 acres.



New Stream Flow Gaging Stations

In 2014, Zone 7 identified the need to expand its network of streamflow gages in the Livermore Valley. The recent hydrologic and hydraulic modeling efforts require an extensive record of streamflow data to be utilized to help calibrate and verify modeling efforts.



Chabot Canal gaging station

With a network of nine streamflow gages spread out across the Livermore Valley, Staff identified multiple locations that lacked any historical streamflow data. Zone 7 was able to add two stream gages to their network in 2014 to better estimate streamflow coming from Dublin and to develop an Early Flood Warning System. A Joint Funding Agreement for Water Resources Investigations was executed with the U.S. Geological Survey (USGS) for one of the gages and the other was developed and constructed by Zone 7 staff.

Alamo Canal gaging station



The Alamo gage re-established a previous streamflow gaging station along Alamo Canal. The location was chosen because USGS previously operated and monitored a streamflow gage in that general location and the limited historic data could be related

to future readings (longer data sets are more valuable for estimating trends.) The location is complex and has many challenges in relation to hydraulic properties. The site is above the Arroyo Mocho - Arroyo de la Laguna confluence which has back water effects and is near a tributary of the G-1-1 channel. The area has no bridge crossing making physical measurements during high flows impossible or dangerous. USGS has had experience with putting in cables and cable cars to facilitate taking safe measurements.

The second streamflow gage station is located on Chabot Canal in Pleasanton. The gage is located below Stoneridge Drive on the east side of the canal. Its location was chosen to provide information not only on flow coming down Chabot Canal but also to avoid any backwater conditions from Arroyo Mocho. Arroyo Mocho is the channel that receives the water from the canal. The new stream gage will assist with real time information during major storm events and low flow and temperature readings for environmental studies.

Early Flood Warning System Development

In 2014, Zone 7 started developing an Early Flood Warning System to help assist staff in the early identification of any potential flooding events. The Early Flood Warning System requires a large network of streamflow gages being able to provide real-time streamflow data in the Livermore Valley. In 2014, staff added two streamflow gages to help provide real time data during storm events, as well as expand Zone 7's streamflow data collection. There are several stream gages providing information for the general drainage area but there was limited information from the Dublin area. Adding stream gages is merely the first step in developing the warning system. The detailed hydrology and hydraulic study of the upper Alameda Creek watershed which passes through Zone 7 boundaries is still being developed. Once the results of the study identify areas of concern, staff will be able to better place monitoring and recording instruments to help provide early warnings when rising water may be impacting the communities surrounding the channels.

More work will be done in 2015 and beyond to better define areas of concern and protocols to identify issues when they start to escalate and require attention. The rainfall and stream flow data will be reviewed and analyzed to help implement a reasonable Early Warning System.

MAINTENANCE PROGRAM

Zone 7 owns and maintains approximately 37 miles of improved channels throughout the Livermore-Amador Valley. Maintenance is one of the Flood Protection Program's highest priorities and involves routine, major, and emergency maintenance and repair of Zone 7's flood protection facilities. Such activities are directed toward preventing minor problems from becoming major flooding problems, minimizing damage to private property through proactive planning, preserving and maximizing flood carrying capacity of existing creeks and channels, and post-storm rehabilitation of flood protection facilities damaged in storms.

To implement the various maintenance projects, Zone 7 staff is responsible for all aspects of the project, including program management, planning, scheduling, CEQA compliance, permit acquisition, surveying, design, cost estimates, construction management and inspection. Following is a description of some maintenance activities that were conducted in 2014.

Line B-2-1 Concrete Structure Stabilization Project in Pleasanton



Before

The bottom portion of the concrete confluence structure was separated from the top.



After

Concrete grout was used to fill in the gap and stabilize the structure.

Line K Bank and Maintenance Roadway Repair (Tassajara Creek) at Adams Pool Solutions



Adams Pool Solutions diverted some of their storm water from their corporation yard onto the Zone 7 owned Tassajara Creek area causing extensive damages to the channel bank and maintenance roadway. Adams Pool Solutions did not have the resources to repair the damages prior to the beginning of the rainy season in Fall 2014. Zone 7 stepped up to complete the needed repair just in time before the State Department of Fish and Wildlife closed its window for allowing work



in the creek. Zone 7 worked with Adams Pool Solutions and recovered Zone 7's project related expenses.

Annual Maintenance/Repairs

In 2014, Zone 7 staff identified, planned, designed and managed the \$850,000 Annual Maintenance and Emergency Contract with Fanfa, Inc. The work included:

- Completed seven bank repairs totaling 850 linear feet,
- 15 soil bioengineering brush walls,
- 4,900 linear feet of access roadway,
- Six outfall structure rehabilitations,
- 370 linear feet of concrete lining repairs, and
- Two trash collector installations

The following highlights a few of the key projects implemented under this year's contract:

Line J-1 Concrete Lining Repair



***South San Ramon Creek Maintenance
Roadway Renovation***



Arroyo Mocho Bank Repair





*South San Ramon Creek
trash collector installation to
comply with Regional Water
Quality Control Board's
requirements*



Vegetation Management Program

In 2014, Zone 7 staff administered a Vegetation Management Program, which cleared obstructive vegetation such as weeds and tall grasses that could impair the flow of water in channels and vehicle access along channel access roads. The program also aimed at reducing the fire fuel loads per the requirements of the local Fire Marshals. In addition, herbicides were applied to inhibit the growth of obstructive vegetation and control weed growth.

With the exception of clearing vegetation for annual maintenance/repair projects by staff, in 2014 the majority of vegetation clearing was handled through various maintenance contractors under annual service contracts. Zone 7 utilized the following contract labor providers to assist with such maintenance activities under Zone 7's direction: Livermore Area Recreation and Park District, Urban Creeks Council, California Conservation Corps, East Bay Conservation Corps, Pacheco Brothers Gardening, Inc., and Bruce Balata Mowing.



Contract with LARPD - \$250,000

In 2014, Zone 7 contracted with the Livermore Area Recreation and Park District (LARPD) to provide contract labor for vegetation management activities within Zone 7's facilities. Such activities included spraying of maintenance roadways and control of broad leaf plants and aquatic vegetation within the facilities.

Soil Bio-Engineering for Bank and Channel Stability with UCC - \$50,000

In 2014, Zone 7 used the services and expertise of Urban Creeks Council (UCC) for soil bio-engineering to temporarily repair and stabilize channel embankments within Zone 7's facilities. In all, UCC completed 15 projects throughout the Pleasanton-Dublin-Livermore area. Soil bio-engineering is the use of plant material like willows to stabilize the soil. As this plant material grows, the roots form a network around the eroded section of the toe and stabilize the soil thereby preventing further erosion. This soil-bioengineering is preferred over "hard engineering" since it is habitat friendly and has the potential for growth into permanent living structures. Some of the advantages of this method are: less expensive than rock rip rap, create habitat,

encourage sediment accumulation, redirect scouring flood flows, protect localized erosion area, stabilize bank soil, effective



for simple/small sites and good for increasing vegetative cover along stream.

Contract with Bruce Balala Mowing - \$95,000

In 2014, Zone 7 staff administered and managed an annual contract with Bruce Balala Mowing to provide District-wide mowing services for all 37 miles of Zone 7 channels. The mowing consisted of cutting tall weeds and grasses along channel embankments to meet the local Fire Marshal's requirements for establishing a fire break.

Bruce Balala mows the grass per Fire Department's request on Alamo Canal in Pleasanton.



Contracts with California Conservation Corps (CCC) and East Bay Conservation Corps (EBCC) - \$50,000 each

In 2014, annual contracts with the CCC and EBCC involved labor crew usage for projects requiring manual labor such as the facility winterization program, trash/debris cleanup and trimming of trees and vegetation.



Contract with Pacheco Brothers Gardening, Inc., Landscape Contractor - \$30,000

Zone 7 uses this annual contract for more specific vegetation maintenance, such as

tree trimming to ensure adequate vehicle clearance, removal of broken tree limbs and replanting of trees where applicable.



Inspection Program

Throughout the year, Zone 7 staff performed inspections to ensure that Zone 7's flood protection channels were ready for the next big storm event. The inspection program is comprised of multiple elements including routine facilities inspection, project-specific inspection, storm watch inspection, and on-call emergency response.

Routine Facilities Inspection

Zone 7 staff performed routine inspections by thoroughly inspecting Zone 7 facilities and past repair projects at a minimum of once per month and documenting any problems. Problematic areas were tracked on a spreadsheet with relevant information, such as description, priority, location, and dates. These spreadsheets are used to prioritize future repairs and improvements.

Project-Specific Inspection

Zone 7 staff performed inspections for both Maintenance and Capital Program-related projects. Staff is generally responsible for inspecting any project that requires an encroachment permit from Zone 7 as well. Staff inspectors act as the eyes and ears for the project engineer and report their findings on a daily basis. Only after communicating with the project engineer does the inspector inform a contractor of the directive.

Storm Watch Inspection

During major storm events, Zone 7 staff immediately shift into a pre-emergency response mode, working to minimize the loss of life and property. Flood-fighting activities such as responding to emergency phone calls, storm monitoring, and field patrolling were top priorities during the storm season. Zone 7 staff documented all areas that are more prone to problems during storms.

On-Call Emergency Response

For emergency situations, such as flooding, major damage to facilities, or other property related issues (e.g., hazardous materials spilled into Zone 7's flood protection facilities), Zone 7 staff are on-call and ready to respond as necessary. In addition, Zone 7 issues annual contracts to support these efforts. During 2014, Fanfa, Inc., crews were available to assist Zone 7 staff by providing both labor and equipment to deal with such emergencies. In 2014, there were no flooding emergencies; however, Zone 7 staff responded to one incident where spilled fuel was cleaned up before it got through the storm drain into Zone 7-owned flood facilities.

Horizontal Drilling Bank Stabilization Program

This program involves the installation of a number of horizontal drains to minimize bank instability due to the high groundwater table or otherwise trapped water along the west bank of Alamo Canal. These horizontal drains are perforated PVC pipes that are strategically installed at locations with seepage evident in the bank. Perforations are designed to capture the surrounding water and empty it into the channel, releasing hydrostatic pressure and thereby minimizing bank failures. This program also involves a monitoring program to evaluate



the effectiveness of the drains and periodic surveying of the banks. No horizontal drains were installed in 2014 but staff continues to monitor the channel embankments.

Miscellaneous Facility Maintenance Activities

Facility Fencing Repairs

Zone 7 protects its facilities from trespassers through the use of fencing along the property line. When fencing is damaged, it becomes a liability to Zone 7 if the fencing is not repaired. An



annual fencing contract with a fencing contractor has been utilized to repair fences that have been cut or damaged, install new fence netting and perform access gate repair to maintain the required level of safety and security in Zone 7-owned facilities.

Hydroseeding



After channel embankment repairs, all denuded areas are hydroseeded by Zone 7 contractors. Hydroseeding of repaired embankments encourages the re-establishment of appropriate vegetative cover. In 2014, roughly two acres were hydroseeded and met this California State

Department of Fish and Wildlife permit requirement.



Homeless Encampments



Homeless encampments along flood protection facilities are another issue Zone 7 had to deal with under the routine maintenance program. In 2014, staff,

with the assistance of the respective cities' Police Departments, removed and cleaned up one site in Dublin, one site in Pleasanton and four sites in



Livermore. Camps had to be promptly removed before they became a safety and sanitation liability to the agency and the trash/debris left behind inhibited flow within the creeks.

Storm Drain Pipe Inspection

Some of Zone 7's storm drain pipes are aged, corroded and leaking, thereby causing channel embankment failure. Inspection of the storm drain pipes is needed and is routinely performed as part of facility inspections to locate and repair damaged pipes before possible embankment failure.

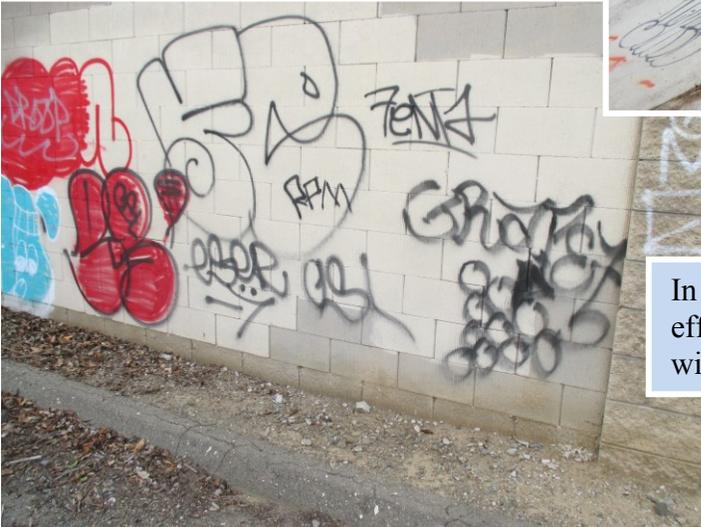
Proactive replacement of corroded storm drain piping has prevented embankment failure in many of Zone 7's flood control facilities. Inspections continued in 2014.

Rodent Control

When considering the maintenance of a flood protection facility, the inevitable subject of rodent control always arises. Rodents, specifically ground squirrels, cause damage to the flood control banks by burrowing through the ground, causing water intrusion and destabilization of the flood control banks. In 2014, a colony of red tailed foxes also caused damage to Zone 7's Facilities. Zone 7 has an outside rodent control contract to control and trap rodents within the 37 miles of channels own by Zone 7 to minimize damage that is caused by animal burrowing.



Graffiti Abatement



In 2014, Zone 7 staff continued efforts to abate graffiti found within flood control facilities.

