

**KELSO CREEK FLOOD PROTECTION CORRIDOR PROGRAM
GRANT APPLICATION**

PROJECT DESCRIPTION

PROJECT LOCATION

Kelso Creek is located in Kern County, upstream of Lake Isabella, as shown on Figure 1 (vicinity map). Kelso Creek drains an area of about 160 square miles, flows from south to north, and is a tributary of the South Fork of the Kern River. Figure 2 shows the Project area (Improvement District No. 3) adjacent to Kelso Creek Road, and beginning approximately one mile from the turn off from Highway 178.

STATEMENT OF PROBLEM BEING ADDRESSED

Improvement District No. 3 of the Kern County Water Agency (“Agency”) is seeking funding to reduce the existing private property improvements which are in the Kelso Creek floodplain (principally in the west one-half of Sec 29 T26S R35E) and thereby reduce the potential flood damages, potential threat to life and health, and downstream liability; and, at the same time, enhance and expand a significant wildlife corridor. The situation with Kelso Creek exactly matches the goals of the Flood Protection Corridor Program because (i) the residences are in an area that cannot reasonably be made safe from future flooding, (ii) there are willing sellers who would like to move out of “harms way”, and (iii) acquiring the available properties will enhance the wildlife value of the area, and benefit the downstream agricultural lands.

The developed area of the Kelso Creek floodplain comprises 259 acres, which was divided into “ranchette” parcels in 1960, and has 129 dwellings, many of which are manufactured (or mobile) homes. According to the most recent Kern Council of Governments census information, 104 of the dwellings are occupied, mostly by the owners; the total population is 229 persons in the flood zone; the median age is 50, with 52 of the households with persons over 60 years old; and the median income is reported to be \$19,265.

About 30 years ago, a flood control levee (approximately 13,000 feet long) was constructed of the native sandy sediment materials to protect the residential area.

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However, the capacity of the levee (Kelso Creek channel on the west side of the levee) is approximately 2,500 cfs, which is less than a 10-year event (the 100-year flood event has been estimated at 22,700 cfs). Due to the topography and the levee design, high flows from Kelso Creek could pass around and behind the levee, as well as overtop it, and occupy its full natural floodplain. Although many years are dry in Southern California, it has taken significant flood fighting efforts to maintain the levee and protect the residences during the Kelso Creek flood events that have occurred. Also there are three drainage areas (Short, Cholla, and Cane canyons) that feed directly into the developed area behind the levee, with no protection provided to the subdivision. On July 30, 1984 there was a flood out of Short Canyon that destroyed three homes, damaged many others, and left sediment deposits up to 8 feet deep.

The risk of more serious floods from the Kelso Creek watershed is very real. Two years ago, a flood in Red Rock Canyon, which is on the other side of the mountain from Kelso Creek, produced a 12-foot high wall of water, and washed out the roadbed for Highway 14, which was much higher and much wider than the Kelso Creek levee. This same flood, in the Kelso Creek watershed, would likely have caused loss of life as well as extensive property damage. More recently (late in 2002), 16 inches of rain fell at Johnsondale (located north of Lake Isabella near the North Fork of the Kern River) overnight. It suddenly overflowed and flooded a riverbed that had been at a very low level. It raised Lake Isabella a reported five feet in 24 hours. Had that amount of water fallen in the Kelso Creek watershed, the levee would likely have breached, with the probability of extensive damage and possible loss of life.

It is very important that the Kelso Creek Flood Protection Corridor Program be implemented to reduce the risk of property damage and potential loss life, and to change the usage of this floodplain area away from residential use, and thereby also enhance its use as a wildlife corridor. In 1980, Kelso Creek was identified in the U.S. Fish and Wildlife Service inventory, "California's Important Fish and Wildlife Habitat", as one of California's top habitat protection opportunities. The Agency has already started this program by purchasing 20 acres within the Kelso Creek flood channel on the west side of the levee, to secure a portion of the flood channel.

Background

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The following is a selected chronology, which is designed to provide background information relevant to this funding request:

- 1960 - Tract 2357 approved by the County of Kern, conditioned on construction of a two-foot berm at the southwest corner of the tract to protect it from flooding from Kelso Creek. (Apparently based upon incomplete or inaccurate flood hydrology information)
- 1966 - Berm built in 1960 destroyed by flows of about 5,800 cfs in Kelso Creek. (\$124,013* damage to Kelso Creek Road)
- 1969 - Flood flows of 1,900cfs. (\$44,319* damage to Kelso Creek Road)
- 1970 - Improvement District No. 3 formed by the Agency to maintain levee to be constructed by USACE.
 - Levee and channel constructed (\$167,680*). Stated design capacity of levee was 2,500 cfs. The channel and levee would benefit approximately 575 acres.
- 1976 - Large flood in excess of design capacity (11,000 cfs). Flows went through the residential area, but no significant damage to residential property because of effective flood fighting efforts, but severe damage to levee.
 - USACE rebuilt the levee (\$123,550*) , but refused to participate in the 1978 flood repair work or in any later levee funding or maintenance.
- 1978 - Another major flood in excess of design capacity (7,300 cfs); still no significant damage to residential property again because of significant flood fighting efforts, but major damage to the flood control improvements.
 - Flood control improvements rebuilt with Federal Disaster Assistance Administration funds (\$354,216*).
- 1983 - Levee damaged by flows in Kelso Creek (1,200 cfs).
 - FEMA funds used to pay for repairs (\$61,208*).
- 1987 - A lawsuit by a downstream property owner (i.e., outside of the Improvement District) as a result of the 1983 flood was decided. The court made a finding

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- that the levee diverted flows from its natural drainage course, depositing excess silt onto downstream lands and causing damage to crops and land.
- 1988 - The Agency engaged the services of Alliance Appraisal to establish a current market valuation for ID-3; valuation \$3 million dollars.
 - 1995 - Flows in Kelso Creek (1,600 cfs) damaged a portion of the levee system (\$39,672*) and adjacent farmland.
 - 1998 - Flows in Kelso Creek (1,300 cfs) again resulted in damages to the Kelso Creek levee system.
 - ID3 purchased 20 acres at the north end of the project to allow flood flows to spread out before leaving the Improvement District (\$45,606*).
 - Downstream landowners expressed concern about future damages to residential and farm land if sediment continues to accumulate downstream of levee.
 - 1999 - Levee restoration work completed with funding from the Natural Resources Conservation Service (\$208,405*).
 - Work completed to add cement grout to a portion of the riprap on levee (just upstream of Cottontail Lane).
 - Flood fighting claims paid by FEMA and Cal OES (\$30,157*).
 - 2000 - Remainder of riprap (just upstream of Cottontail Lane) grouted in place with cement.

Beginning in 1970 when the levee was reconstructed, a total of \$1,233,413* has been spent on levee repair, maintenance, and improvements. This does not include any flood fighting costs or operational costs of the Improvement District. Also, this does not include damages to the County Road or to private property over that period of time.

* *Costs adjusted to February 2003 price levels.*

Description of Existing Flood Control Improvements

The Kelso Creek Channel and Levee were constructed by the County of Kern and the

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U.S. Army Corps of Engineers, extending northward about 13,000 feet from a point in the northeast quarter of Section 5, Township 27 South, Range 35 East, MDB&M, just north of the Kelso Valley Road crossing of the Kelso Creek channel. The Agency provided the right-of-way and made certain relocations, and has operated and maintained the channel and levee since 1970. The levee has a top width of about 14 feet and stream side slopes of three horizontal to one vertical (3:1). The average height of the levee is five feet above natural ground. Concrete lining and riprap have been placed on limited portions of the stream side of the levee as funds became available to protect against erosion resulting from storm flows. The channel was designed to carry approximately 2,500 cfs (which is less than a 10-year flood) with no significant damages within the area of benefit. The project benefits about 575 acres in the existing Improvement District; about 259 acres subdivided to "ranchettes" (with 129 dwellings), about 125 acres developed to agricultural uses, and 190 acres of native vegetation (including 70 acres of BLM land). Figures 2 and 3 provide a relatively current aerial view of these lands.

The levee extends approximately one mile upstream from the subdivision; however, it does not connect to the east bank of the Kelso Creek channel, therefore, at high flows, some of the water can pass behind the levee. If all the water at high flows was diverted to the west side of the levee, it would take a very differently constructed and substantial levee (in both height and durability) to prevent it from being breached and causing catastrophic damages.

Specific Problems

- Inadequate protection afforded by existing flood control improvements (less than 10-year runoff event) and assessed valuation would not likely support economic feasibility of any material improvement in the level of protection (based on past studies).
- Liability respecting downstream properties, i.e., outside of the Improvement District.
- Levee design does not provide any protection from potential floods from Short, Cholla, or Cane canyons. Short Creek flooded in 1984, destroyed three homes, and left up to 8 feet of sediment.

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- Ongoing use of resources is necessary to monitor storm water flows and for flood fighting efforts to prevent property losses.
- Difficult to fund O&M costs of existing flood control improvements owing to:
 - Flood control improvements which are easily damaged by the flow of water in Kelso Creek, thereby requiring frequent and relatively costly repairs.
 - Relatively small number of property owners with relatively low assessed valuation of the benefited properties.
 - High number of low-income and retired residents who can't afford to pay for levee improvements.
 - Legislation which has limited the Improvement District's ability to collect revenue.

DESCRIPTION OF PROJECT GEOGRAPHIC BOUNDARIES

Improvement District No. 3 ("District") was created to maintain the Kelso Creek levee; accordingly, the District encompasses the entire levee and the properties protected by it. The District contains 575 acres in Kelso Creek Canyon, is approximately 16,000 feet long, and averages 1,565 feet wide, extending from the levee to the east edge of the Kelso Creek floodplain. The District area begins approximately 0.9 mile up Kelso Creek Road from Highway 178. The Project area includes all of the District lands and the Kelso Creek flood channel on the west side of the levee. The Project area and the levee extend upstream (or south) from the development (Tract 2357) approximately one mile; this portion of the floodplain is in native vegetation. The Project area and District lands extend downstream of Tract 2357 approximately one mile; this portion of the floodplain is in agricultural production, mostly alfalfa.

The Project area is located fully within the 100-year floodplain designated by FEMA (reference FEMA maps in Appendix #3). Additionally, the Project area is located within the Kern County floodplain delineation for Kelso Creek, Short Canyon, Cholla Canyon, and Cane Canyon.

DESCRIPTION OF PROJECT APPROACH

The proposed Project involves reducing potential flood damages by (1) purchasing unimproved properties to eliminate the possibility of future development, (2) purchasing improved properties and removing structural improvements, and (3) purchasing flowage easements from owners of remaining improved properties, along with “floodproofing” to standards set forth in the current Kern County Floodplain Management Ordinance. Ultimately, the concept includes “abandonment” of existing flood control improvements, with the attendant elimination of downstream liability, and dissolution of the Improvement District. However, since the program is voluntary, this ultimate goal may not be realized as a part of this grant application. It is planned to accomplish the purchases, relocations, and removal of as many improvements as are willing (estimated to be 86 homes) within a period of five years after Project commencement. Five years would allow ample time for the necessary relocations to occur, while minimizing the impact on those relocating, as well as minimizing the impact on the local real estate market.

In addition to the preservation and enhancement of the flood corridor, the purchased land (both improved and unimproved) would be permanently dedicated to wildlife habitat, with no future development allowed. Further, the improved land would be subject to removal of structural improvements, general cleanup, and restoration (as necessary). It would be an interim benefit as properties are purchased and improvements are removed, if a corridor could be cleared and channelized for flows from Short, Cholla, and Cane Canyons, and for high flows from Kelso Creek to pass behind the levee.

Purchase Unimproved Properties

Unimproved properties would be purchased to eliminate the possibility of future development. A very important purchase of unimproved property would be a 105-acre parcel immediately upstream of the development and behind the levee, which is in native vegetation, and would be a significant wildlife benefit to maintain it as such and not allow it to be developed into homesites. The proposed conditions of such purchases include the following:

- All sales voluntary.

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- Seller receives “fair market value” based on an appraisal date prior to this information being made public; value would then be unaffected by the announcement.

Purchase Improved Properties

Improved properties would be purchased from those residents of the tract who choose to sell and relocate. The proposed conditions of such purchases include the following:

- All sales voluntary.
- Seller receives “fair market value” based on an appraisal date prior to this information being made public; value would then be unaffected by the announcement.
- Seller would be encouraged to remove their improvements as an incentive to sell their property and to reduce demolition costs; the exception would be water well equipment and watering systems.
- A short-term lease-back option with the Improvement District would be helpful for many homeowners, so they could sell and have some time to build another residence with the value received from their present property.
- Improvements will be removed within six months of the property being vacated.
- Some of the homeowners would like to relocate, but their mobile homes are no longer road worthy and have depreciated in value to where the assessed value would be insufficient for them to obtain a new residence. Therefore, some special cases may need replacement value compensation or other considerations (which is reflected in the Project cost estimate as “relocation assistance”).
- Funds will probably be needed to provide for the homeowner’s moving expense or other incentives and costs, so there will not be disadvantages to relocating.

Purchase Flowage Easements and “Floodproofing”

After a period of time designated for the priority of purchasing properties, flowage easements and a release of liability would be purchased from those residents of improved properties who choose not to sell and relocate. The proposed conditions of such purchases include the following:

- All sales voluntary.
- “Floodproof” property in accordance with requirements of the Kern County Floodplain Management Ordinance.
- Seller of easement must sign waiver of future flood liability.
- Transaction must be recorded, and become a permanent deed restriction, which must be disclosed in any listing and title report, and disclosed to and accepted by the buyer in any future sale.

Examples of Non-Flood Proofed Homes



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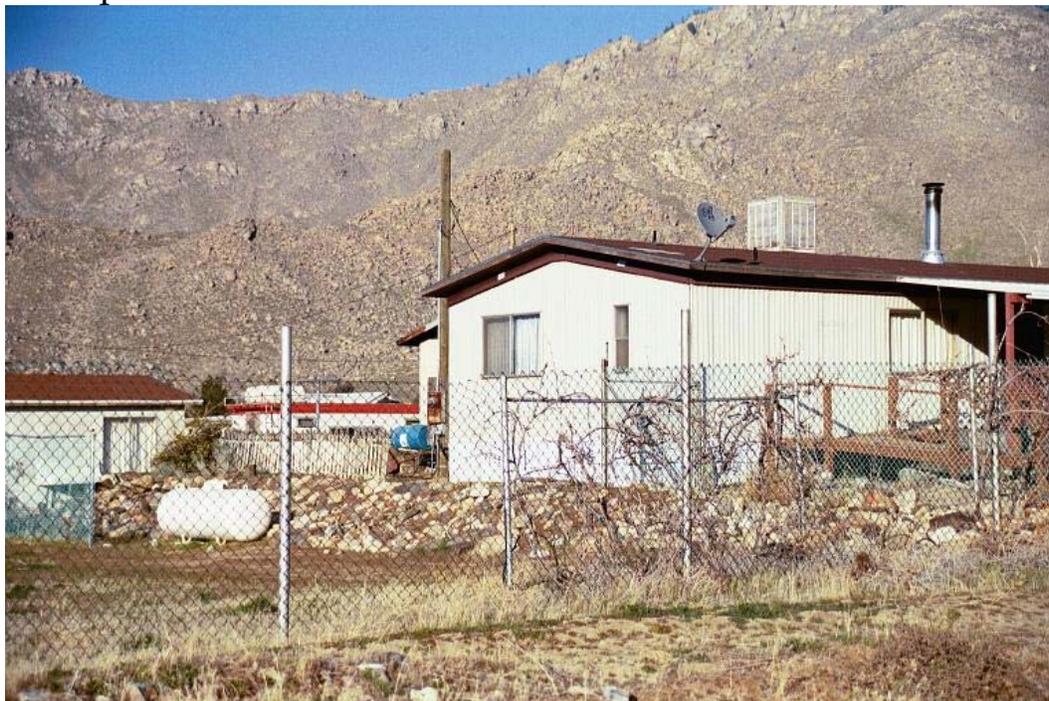
Examples of Non-Flood Proofed Homes



Examples of Flood Proofed Homes



Examples of Flood Proofed Homes



EXPECTED OUTCOME AND BENEFITS OF PROJECT

There are four principal results and benefits which are expected from implementation of the flood corridor protection project in Kelso Creek.

1. A significant reduction in the number of people living in the Kelso Creek floodplain and the ultimate relocation of all the affected residences. There are 229 persons now living in the Kelso Creek floodplain which would be moved out of a significant flood hazard area under this program. By purchasing the unimproved lots and a 105-acre parcel of developable land, a potential of 210 persons would not be moving into the floodplain, for a total of 439 persons who's safety and property would be protected by this flood protection corridor program.
2. The second outcome of this Project would be a significant reduction in potential damages. The Agency, in their "Report of Special Benefit Assessment" (June

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2002), estimated the damages to the existing development without the protection of the levee. As shown below, using these cost factors, the estimated potential flood damages to the private property in the Kelso Creek floodplain could be \$4.5 million for each major flood event which exceeded the capacity of the levee. Purchasing the private property and removing the improvements would eliminate this significant flood damage risk and costs.

Homes with flood protection	64ea	at	\$27,000	=	\$1,728,000
Homes with no flood protection	68ea	at	\$40,000	=	\$2,720,000
Vacant lots	69 acres	at	\$800/acre	=	<u>\$55,200</u>
Estimated maximum damages to private properties.					\$4,503,200

According to the 2002 Assessment data for the Improvement District, the total assessed value of all the properties within the District is \$5,165,151, and the assessed value of all the improvements is \$3,207,358. As can be seen, the potential of flood damage and rebuilding costs, for just one large event, exceeds the assessed value of all the improvements and nearly matches the total property value within the floodplain. Therefore, it appears to have more economic merit to relocate the private properties rather than continue to try to protect them from floods.

3. The third major benefit from this Project would be to eliminate the continued expense of maintaining and repairing the flood levee. As discussed earlier, a total of \$1,233,413 (in 2003 dollars) has been spent on the levee since 1969.
4. The fourth major benefit of this Project is the high value of the area as wildlife habitat and as a wildlife corridor. This approximately 500-acre floodplain area is located directly between two wildlife areas owned and maintained by the California Audubon Society; the Kern River Preserve, and a 156-acre parcel further up Kelso Creek Canyon from the Improvement District, with important riparian habitat. The Kern River Preserve and Kelso Creek Canyon are described by the Audubon Society as “the *California Crossroads* for birds, acting as the biological center of five distinct ecological areas that come together at the Preserve – the Sierra Nevada, the Mojave Desert, the Central Valley, the Great Basin of the Eastern Sierra and Southern California Chaparral. The result is a

veritable Eden for birds and for bird-watchers in this *temperate jungle!*" In this regard, the Project includes the recommendation that a stand of cottonwood trees be established in the area of the floodplain that is now in residences, for the benefit of wildlife. Reference Appendix #1 for Audubon Society information on this area.

PROJECT APPROACH JUSTIFICATION

As described, the approach is to purchase the residences in the floodplain and have them relocate to safe ground because it is not reasonably practicable to protect them from significant flood risk. It would cost on the order of \$8 million to construct a levee that could protect the properties from a 100-year flood; however, it would magnify the downstream damage by concentrating these higher flows to the west side of the canyon and toward a downstream subdivision. Further, there are three drainages that flow into the residential area from the east (i.e, behind the levee) and can cause major flood damage as was experienced in 1984.

The only feasible option in this situation is to purchase the properties with funds from Flood Protection Corridor Program, which are intended for this very purpose. The Kern County Water Agency has operated Improvement District No. 3 for 30 years to maintain the levee and can be the entity to purchase the properties and implement the Project. The best use of this floodplain tract is for wildlife habitat. The Audubon Society, or a similar organization, would likely be the owners in the long term and would provide long-term management.

Implementation of this Project would have minimal impact on County property tax revenues because the residents would relocate within the County.

PROJECT SUPPORTERS

Listed following are those groups or entities which have expressed support for the above-described Project:

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- Citizens Advisory Committee (comprised of landowners within the Improvement District)
- Board of Directors of Kern County Water Agency
- Audubon California, Kern River Preserve
- Bureau of Land Management
- State Department of Fish and Game

Perhaps most importantly, two public meetings have been held and a questionnaire has been sent to all landowners in the Improvement District regarding the proposed Project. It is significant that before the approval of any funding, almost 65 percent of the homeowners responded to the questionnaire indicating some degree of interest in selling their properties in the floodplain. A summary of the responses and copies of the questionnaires are included in Appendix #9.