

# PAJARO RIVER FLOOD RISK MANAGEMENT PROJECT SANTA CRUZ AND MONTEREY COUNTIES CALIFORNIA



OTHER SOCIAL EFFECTS
APPENDIX K OCTOBER 2018

# Appendix X Other Social Effects

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#### **ATTACHMENTS:**

Villages Flood Evacuation Map Letter of Support from Community

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# PAJARO RIVER FLOOD RISK MANAGEMENT STUDY GENERAL REEVALUATION REPORT AND ENVIRONMENTAL ASSESSMENT OTHER SOCIAL EFFECTS (OSE)

#### A. INTRODUCTION

Flood risk management (FRM) planning studies at the Corps of Engineers have focused primarily on the National Economic Development (NED) account to formulate and evaluate water resource infrastructure projects. In recent years, however, there has been a renewed emphasis on considering the Other Social Effects (OSE), Regional Economic Development (RED), and Environmental Quality (EQ) accounts when making investment decisions, as can be seen in the publication of Engineering Circular (EC) 1105-2-409, "Planning in a Collaborative Environment." EC 1105-2-409 encourages the use of all four accounts in order to develop water resource solutions that are more holistic and acceptable, and which take into account both national and local stakeholder interests.

The following sections describe the OSE assessment developed for the Pajaro River & Tributaries Flood Risk Management General Reevaluation Report (GRR).

#### **B. PURPOSE AND METHODOLOGY**

The OSE assessment is intended to provide a portrait of the social landscape of the Pajaro River & Tributaries study area and offer a glimpse into the potential vulnerability of the people that live there. In essence, the questions the OSE account attempts to answer are:

How are social connectedness, community social capital, and community resiliency likely to change in the absence of a solution to a water resource issue? How are vulnerable populations likely to be affected?

The metrics commonly used to answer these questions include:

- Social connectedness, which can be described using gender, race and ethnicity, age, rural versus urban communities, rental versus owner-occupied dwellings, and occupation
- Community social capital, which can be described using education, family structure, rural vs. urban communities, and population growth
- Community resilience, which can be described using income, political power, neighborhood prestige, employment loss, residential property characteristics, infrastructure and lifelines, family structure, and medical services

The assessment compares the other social effects associated with the without-project and with-project conditions. The 1% annual chance exceedance (ACE) floodplain was used as the baseline to assess effects.

#### C. REFERENCES

- Planning Guidance Notebook (ER 1105-2-100)
- Handbook on Applying "Other Social Effects" Factors in Corps of Engineers Water Resources Planning (IWR 09-R4)
- Planning in a Collaborative Environment, (EC) 1105-2-409
- Social Vulnerability to Environmental Hazards (Social Science Quarterly, Volume 84, Number 2, June 2003)
- Other Social Effects: A Primer (IWR 2013-R-02)
- Levee Screening Tool (LST), Levee Assessment for Pajaro River, San Francisco District.
- Pajaro Valley History, Watsonville Public Library (Website), Accessed 12 September 2017

#### D. EARLY HISTORY OF THE WATSONVILLE/PAJARO AREA

There is evidence, such as campsite remnants, which indicate that the Watsonville/Pajaro area was inhabited for more than ten thousand years by many different groups of native inhabitants. The first human inhabitants was the Native American tribe called the Costanoans, who settled along the fertile Pajaro Dunes.

The first European explorers arrived in 1796 and named the river that now separates Santa Cruz and Monterey Counties, Rio del Pajaro (River of the Bird), after seeing a large bird near the river. A second wave of European explorers began settling in Watsonville in 1847, and were soon joined by more people associated with the California Gold Rush of 1848, who were lured to the area by the relatively cheap land. These settlers would acquire large tracts of land to farm and ranch, practices that would shape the economy of Watsonville and Pajaro from that day forward.

In the years following the gold rush, immigrants from other countries and states would come to the area to work in the growing agricultural industry which produced a wide variety of crops. In fact, the area would evolve from livestock ranching, to grains and potatoes, to orchards, and eventually to many different types of row crops, such as strawberries and lettuce.

The City of Watsonville was incorporated on March 30, 1868 and is named after Judge John Watson. The Town of Pajaro is considered a census-designated place (CDP).

#### E. CURRENT SOCIAL LANDSCAPE

Describing the social landscape of the area provides an understanding of who lives in the study area, who has a stake in the problem or issue, and why it is important to them. A demographic profile of the area is performed using social statistics, and the information is presented in a meaningful way through the use of comparisons and rankings. It is important to note that the profile itself is not an OSE analysis but rather a data collection step that provides a basic level of understanding about the social conditions in the area; the data provides input into a more indepth analysis that targets areas of special concern or relevance to the water resources issue at hand. The basic social statistics discussed below and listed in Tables 1 and 2 are indicators used to portray basic information about the social life and the processes of the study area.

The City of Watsonville and the Town of Pajaro, which are located within the Pajaro River study area, are home to over 54,000 people. The greater metropolitan statistical area (MSA) of Santa Cruz/Watsonville, which is composed of Santa Cruz County, is home to approximately 275,000 people. The Town of Pajaro is located in Monterey County, which is in the Salinas MSA that has a total population of over 435,000. An MSA consists of a relatively high population density within a specific geographic region; the communities throughout the region are closely interconnected economically.

Overall, the study area has experienced stable growth over the last 10 to 15 years. Between 2000 and 2010, the City of Watsonville experienced a population increase of about 15% while the Town of Pajaro has actually seen a decline (about 9%) in its population over the same time period.

Importantly, between the 2000 and 2010 Census, the data indicate that the percentage of people living below the poverty level in the Town of Pajaro has increased by approximately 43%, which is more than twice the percentage of people living below the poverty level in the state of California as a whole. Relatedly, the median household income for the Town of Pajaro has declined by almost 6% from 2000 to 2010, which contrasts to the increase in median household income by about 24% in Watsonville during the same time period. The median household income in Pajaro is only about 59% of California's median household income.

Another important statistic is the percentage of owner occupied housing units versus the percentage of rental units. In Watsonville, about 44% of the residents own and live in their homes while about 56% rent; in Pajaro, about 23% of the residents own and live in their homes while about 77% of the residents rent. The percentage of renters in the Town of Pajaro far outweighs the percentage of renters in California as a whole, and may be a reflection of the large number of agricultural workers that come to the area on a seasonable basis.

Key statistics for Watsonville and Pajaro are presented in Tables 1 and 2, respectively.

Table 1: Basic Social Characteristic of the Watsonville Area - 2000 and 2010 Census Data

Social	Watsonville		Area - 2000 and 2010 Census Data California			
Statistic	2000	2010	% Δ	2000	2010	% Δ
Population	44,265	51,199	+15.7%	33,871,648	37,253,956	+10%
Age	11,203	21,177	. 15.770	22,071,010	57,255,750	. 1070
Median	27.4	29.2	+1.8 years	33.3	35.2	+5.7%
%>65	8.6%	8.3%	-3.5%	10.6%	11.4%	+7.5%
% <18	34.0%	31.5%	-7.4%	27.3%	25.0%	-8.4%
Race &						
Ethnicity Asian	Not Available	3.0%	N/A	10.9%	12.8%	+17.4%
Black	Not Available	0.4%	N/A	6.7%	5.8%	-13.4%
Hispanic or						
Latino	75.1%	81.4%	+8.4%	32.4%	37.6%	+16%
White	19.4%	13.7%	-29.4%	46.7%	40.1%	-14.1%
Other	5.5%	1.5%	-72.7%	4.3%	3.7%	+86%
Education						
% HS Graduates	49.1%	48.8%	+0.6%	81%	80.8%	-0.2%
% College Graduates	8.7%	8.7%	No change	30.5%	30.2%	-0.9%
Income and Poverty						
% Unemployed	9.1%	7.4%	-18.7%	4.3%	7.1%	+65%
Median Household Income	37,617	46,675	+24.0%	\$61,400	\$61,632	0%
% Below Poverty	19.7%	18.7%	-5.1%	15.3%	14.4%	-5.9%
Housing						
% Own	48.1%	44.0%	-8.5%	56%	55.9%	0%
% Rent	51.9%	56.0%	+7.9%	44%	44.1%	0%
Quality of Life						
Avg. Household Size	3.84	3.75	-2.3%	2.98	3.45	+16%
Language Other than English Spoken at Home	70.7%	74.0%	+4.7%	43.5%	43.2%	-0.7%
Mean Travel Time to Work (in minutes)	22.7	23.4	+3.1%	27.1	27	-0.4%

Table 2: Basic Social Characteristic of the Pajaro Area - 2000 and 2010 Census Data

Social	c Social Characteristic of the Pajaro Are Pajaro		a - 2000 and 2	California		
Statistic	2000	2010	% Δ	2000	2010	% Δ
Population	3,384	3,070	-9.3%	33,871,648	37,253,956	+10%
Age	3,364	3,070	-9.3/0	33,871,048	37,233,930	11070
Median	22.8	25.6	+2.8 years	33.3	35.2	+5.7%
% >65	4.2%	4.2%	No change	10.6%	11.4%	+7.5%
% <18	39.6%	34.8%	-12.1%	27.3%	25.0%	-8.4%
Race &	39.070	34.070	-12.1/0	27.370	23.070	-0.470
Ethnicity						
Asian	Not Available	1.3%	N/A	10.9%	12.8%	+17.4%
Black	Not Available	0.2%	N/A	6.7%	5.8%	-13.4%
Hispanic or Latino	94.2%	94.1%	No change	32.4%	37.6%	+16%
White	3.7%	3.4%	-8%	46.7%	40.1%	-14.1%
Other	2.1%	1.0%	+52.3%	4.3%	3.7%	+86%
Education						
% HS Graduates	23.8%	31.3%	+31.5%	81%	80.8%	-0.2%
% College Graduates	1.5%	0.0%	Decrease	30.5%	30.2%	-0.9%
Income and Poverty						
% Unemployed	5.2%	21.0%	Four-fold increase	4.3%	7.1%	+65%
Median Household Income	38,315	36,094	-5.8%	\$61,400	\$61,632	0%
% Below Poverty	22.2%	31.9%	+43.7%	15.3%	14.4%	-5.9%
Housing						
% Own	27.0%	22.7%	-15.9%	56%	55.9%	0%
% Rent	73.0%	77.3%	+5.9%	44%	44.1%	0%
Quality of Life						
Avg. Household Size	5.28	4.91	-7.0%	2.98	3.45	+16%
Language Other than English Spoken at Home	85.4%	89.4 %	+13.0%	43.5%	43.2%	-0.7%
Mean Travel Time to Work (in minutes)	25.2	22.1	-12.3%	27.1	27	-0.4%

#### F. SOCIAL EFFECTS ASSESSMENT

A social effects assessment considers the social vulnerability and resiliency of a population. Social vulnerability refers to the sensitivity of a population to natural hazards, whereas social resiliency refers to the population's ability to respond to and recover from the impacts of a natural hazard. The characteristics that are recognized as having an influence on social vulnerability and resiliency generally include age, gender, race, and socioeconomic status as well as population segments with special needs or those without the normal social safety nets typically necessary to recover from a disaster. The quality of human settlements (e.g., housing type and construction, infrastructure, and lifelines) and the built environment also play an important role in assessing social vulnerability and resiliency, especially as these characteristics influence potential economic losses, injuries, and fatalities from natural hazards.

Other social effects dimensions can be categorized by the following key Human Needs as presented in the Institute of Water Resources *Other Social Effects: A Primer*'

#### Health and Safety

In the without project condition, flooding is likely due to an levee overtopping or an unexpected levee breach, as demonstrated by the occurrence of flooding in the proposed project area due to levee overtopping or failure in 1955, 1958, 1995, and 1998. Levee overtopping or unexpected levee breaches (i.e., when a levee breaches before floodwaters overtop the levee) have little to no warning time. During the 1995 flood, at least one life was lost as a result of the levee breach that occurred on the Pajaro River. Getting people out of harm's way can be impossible, and in the event that there is time to evacuate ahead of an unanticipated breach, language barriers and mobility issues are factors in the Pajaro and tributary floodplains that may slow down evacuation procedures. A levee overtopping event would allow more time for evacuations, however, even if 100% of the population received the evacuation message, some people would be reluctant to evacuate.

Flooding effects and/or threats are more significant for people with low incomes. A recent article in Scientific American (March 2018) suggests the economically disadvantaged population will face growing exposure to natural disaster activity. Research suggests that the wealthy population may have the resources to move away from areas facing natural disasters, leaving behind a disproportionately economically disadvantaged population. 2010 census data shows that 31.9 percent of the people in Pajaro and 18.7 percent of the people in Watsonville have incomes below the poverty level, as compared to 14.4 percent of the people in California. Between 2000 and 2010, the percentage of people in Pajaro with incomes below the poverty level increased 43.7 percent. Unless flooding risk is reduced, the continued threat of flooding in the area will contribute to growing income inequality for residents.

A flood event in the study area can result in the loss of housing, loss of employment (including both brick and mortar businesses as well as flooded farmlands), and loss of community services (clinics, churches, libraries, fire stations, etc), factors that can contribute to stress among those affected. Even the threat alone, in the absence of a flood event, can cause chronic stress. Sister

Rosa Dolores Rodriguez, SND, of Casa de la Cultura of Pajaro, says in an April 20, 2018 letter, "Every winter takes a profound psychological toll on people who are already marginalized, because the river may rise again and take away their homes or cause great damage once more."

There are significant evacuation concerns, particularly for the Town of Pajaro, where all of the evacuation route alternatives could be underwater because of the potentially rapid flood inundation resulting from a levee breach. Based on hydraulic modeling, the 1% annual chance exceedance flood event would inundate 0.5 miles of Main Street, 2.6 miles of San Juan Road, and 1.7 miles of Salinas Road, leaving no alternatives for safe evacuation.

Evacuation west to Highway 1 for residents of Pajaro as well as the City of Watsonville would also be at risk, because the highway crosses the river downstream where flood water depths would be greater and water levels would be higher. Evacuation upstream is towards points of higher constriction in the floodplain, where there is less escape opportunity from flooding.

Watsonville Community Hospital and Kaiser Permanente Watsonville Medical Offices are located north and/or west of the area of potential flooding, depending on the breach or overtopping location, making access difficult or potentially impossible using ground transportation for some areas including the Town of Pajaro. The nearest hospital to the south, Community Hospital of the Monterey Peninsula, is 28 miles from Pajaro, and Dominican Hospital in Santa Cruz is 15 miles from Watsonville. These facilities may be overwhelmed since flooding may be occurring regionally on other water courses such as the San Lorenzo River, Moss Landing, the Salinas River, and other locations.

In the Town of Pajaro, Pajaro Middle School, Clinica de Salud, CSVS Dental Clinic, Pajaro Branch Library, and Our Lady of Assumption Church are all within the flood zone and would be at risk of flooding. Critical infrastructure, including the Watsonville Water Treatment Plant, which serves approximately 65,000 people, could be compromised during a flood event. This could result in health hazards, including sewage overflows and sanitation system breakdowns.

Much of the Pajaro Valley water supply, including municipal, residential and agricultural, is from wells, many of which would be inundated and non-operational during and after a flood event. A flooding event would place two City of Watsonville drinking water wells, 72 domestic wells, and 169 agricultural wells at risk. Additionally, the Pajaro/Sunny Mesa Community Services District (PSMCSD) is the exclusive provider of potable water for the communities of Pajaro, Elkhorn and Prunedale. The majority of their infrastructure, including groundwater pumps, is located in the flood zone. It is widely known that floodwaters typically contain hazardous substances such as agricultural fertilizers and pesticides, fuel oils and gasoline/diesel, and human waste that would contaminate the water supply for these communities during a flood event. Don Rosa, General Manager for PSMCSD, says in an April 10, 2018 letter, "To allow [the inadequate flood protection] situation to persist is to risk a poor community's access to clean water."

#### Social Vulnerability and Resilience

The 2010 Census data shows that 74% of Watsonville residents and 89.4% of Pajaro residents speak a language other than English in their homes. While many of the residents may be bilingual, and emergency officials are able to provide messages in Spanish as well as English, there will likely be some information that is not readily available in Spanish, potentially putting non-English speakers at an increased risk.

The number of renters versus homeowners in the project area is very high (77.3% Pajaro units and 56% Watsonville units occupied by renters (based on 2010 census)). Renters tend to be less informed of the flood risk in the area because they are not targeted by insurance companies and do not usually pay flood insurance. Additionally, the high housing costs combined with the relatively low income levels in the area results in a higher-than-average number of people per household, which results in additional people in harm's way during a flood event (Pajaro average household size 4.91 compared to state average of 3.45 (based on 2010 census)). These low-income households often do not have the resources or options available to them to move somewhere else.

While the statistics show that Watsonville and Pajaro have lower-than-state-average populations of people over the age of 65, a closer look shows that the senior population is actually concentrated in the flood zone of Watsonville in the Pajaro Village and Bay Village communities (both restricted to age 55 and older). The elderly tend to be affected by flooding impacts more than the general population. Many of these residents have likely paid their mortgages or are renters and may not be required to pay into flood insurance, therefore, they may not be informed of the flood risk. In addition, they may be less mobile due to their age and less able to evacuate quickly during a flood event. Without the project, these senior communities and the people who live in them will continue to face an increased risk of flooding.

In 2011, there was a tsunami evacuation drill that provided an excellent example of the community's ability to respond to warnings, but showed how evacuations would be hindered during flooding. During the evacuation drill, Beach Street, which is low in the watershed and is the only access route for the residents of Pajaro Dunes, was gridlocked and the fire department was unable to move.

On another occasion, during a pre-2016 El Nino winter prep meeting, hundreds of local residents showed up and were "besides themselves" with fear.

During the 1995 flood event, residents were reported to have been evacuating on foot through floodwaters, which takes longer than evacuating in cars and may present an additional risk if timing is a factor. Many of the residents in these communities today, especially the elderly and those with low incomes, do not have cars, and would face similar challenges during a flood event.

**Table 3** provides a discussion of factors that may affect social vulnerability and resiliency and also provides a qualitative assessment of the Pajaro River & Tributaries study area based on indicator statistics from the 2010 U.S. Census. The "Discussion" column in the table is from the article, *Social Vulnerability to Environmental Hazards*, which was published in the June 2003 edition of Social Science Quarterly.

Table 3: Social Vulnerability and Resiliency Indicators – Pajaro/Watsonville Study Area Assessment

Indicator	Discussion	Study Area Assessment
Income, political power, and prestige	This measure focuses on the ability to absorb losses and enhance resilience to hazard impacts. Wealth enables communities to absorb and recover from losses more quickly due to insurance, social safety nets, and entitlement programs.	The median household income for Watsonville is 75.7% of the median for the state of California; for Pajaro it is 58.5%. Additionally, 18.7% of households in Watsonville and 31.9% of the households in Pajaro have incomes below the poverty line. Both communities are limited in wealth that is necessary to absorb and recover from losses.
Gender	Women can have a more difficult time during recovery than men, often due to sector-specific employment, lower wages, and family care responsibilities.	In Watsonville, women make up 44.3% of the work force while men make up 55.7%; in Pajaro, women make up 32.9% of the work force while men make up 67.1%. The smaller percentage of women in the workforce suggests that more women in these communities have family care responsibilities that may be negatively impacted by a flood event.  The median earnings for women in Watsonville was \$28,794 in 2015, which was about 88% of the median earnings for men; the median earnings for women in Pajaro was \$12,283 in 2015, which was about 67% of the median earnings for men. Women in these communities may tend towards unskilled labor positions which may be more susceptible to losses from a flood event.

Race and Ethnicity	Race and ethnicity may impose language and cultural barriers that affect access to post-disaster funding	The Hispanic/Latino community makes up 81.4% of the population in Watsonville and 94.1% of the population in Pajaro. Additionally, 74% of Watsonville households and 89.4% of Pajaro households speak a language other than English. While the communities may realize some increased resiliency due to the cohesiveness of the Hispanic/Latino populations, they will likely experience some vulnerability as well due to the language barrier, despite community leader efforts to provide bilingual
Age	Extremes on the age spectrum inhibit the movement out of harm's way. Parents lose time and money caring for children when daycare facilities are affected; the elderly may have mobility constraints or mobility concerns, increasing the burden of care and lack of resilience.	resources and warnings.  While the statistics show that Watsonville and Pajaro have lower-than-state-average populations of people over the age of 65, a closer look shows that the senior population is actually concentrated in the flood zone of Watsonville in the Pajaro Village and Bay Village communities (both restricted to age 55 and older). the percentage of residents younger than 18 (30-35%) is moderately higher than the state's (25%).
Employment Loss	The potential loss of employment following a disaster exacerbates the number of unemployed workers in a community, contributing to a slower recovery from the disaster.	The latest Census indicates that the current unemployment rate in Pajaro may be significantly higher than the state of California average. A flood event which causes additional unemployment may exacerbate the current unemployment rate. Both

		downtown Watsonville and downtown Pajaro are located in the flood zone, where a flood event could mean damage to businesses and lost jobs. Further, the lifeblood of the region's economy is agriculture, which would be significantly disrupted by a flood event that caused a loss of crops, and worse, a loss of multiple production years for organic farms. Foreseeably, thousands of farmworker jobs could be affected by a flood event in this region.
Rural/Urban	Rural residents may be more vulnerable due to lower incomes, and may be more dependent on locally-based resource extraction economies (farming and fishing). High-density areas (urban) complicate evacuation from harm's way.	The area is both urbanized (Watsonville) and rural (Pajaro and surrounding areas) and is dependent on agriculture as its main economic driver; median household incomes in both Watsonville and Pajaro are significantly lower than the state average.
Residential Property	The value, quality, and density of residential construction affect potential losses and recovery. For example, expensive homes are costly to replace, while mobile homes are easily destroyed and less resilient to hazards.	The area is composed of mostly average homes in terms of quality and value. Medium density neighborhoods are typical in Watsonville; and most of the Town of Pajaro is not densely populated and is surrounded by agricultural fields. The potential for residential property losses due to a flood event is high in both communities, however, as housing is concentrated in the flood zone.
Infrastructure and Lifelines	Loss of sewers, bridges, water, communications, and transportation infrastructure may place an insurmountable financial burden on the	All of the access routes for the Town of Pajaro, including the Main Street Bridge, could be damaged during a flood event. Highways 129 and

1	11 1.1 1.1 1.4 1.4	1701 (11 1 11 1
	smaller communities that lack	152 both have bridges that
	the financial resources to	cross the Pajaro and its
	rebuild.	tributary, Salsipuedes Creek,
		that could be damaged during
		a flood event.
		771 337 4 111 337 4
		The Watsonville Water
		Treatment Plant, which
		serves approximately 65,000
		people, could be
		compromised during a flood event.
		event.
		Much of the Pajaro Valley
		water supply, including
		municipal, residential and
		agricultural, is from wells,
		many of which would be
		inundated and non-
		operational during and after a
		flood event. A flooding event
		would place two City of
		Watsonville drinking water
		wells, 72 domestic wells, and
		169 agricultural wells at risk
		of contamination.
		Additionally, the
		Pajaro/Sunny Mesa
		Community Services District
		(PSMCSD) is the exclusive
		provider of potable water for
		the communities of Pajaro,
		Elkhorn and Prunedale. The
		majority of their
		infrastructure, including
		groundwater pumps, is
		located in the flood zone, and
		could be damaged during a
		flood event.
	People that rent typically do	The percentage of renters in
	so because they are either	the area is significant (about
	transient or do not have the	77% in Pajaro and about 56%
Renters	financial resources for home	in Watsonville), and is much
	ownership. They often lack	higher than the state average
	access to information about	of about 44%. The high rental
	financial aid during recovery.	population may contribute to

	In the most extreme cases, renters lack sufficient shelter options when lodging becomes uninhabitable or too costly to afford.	communication cohesion issues that may put them at an increased risk during a flood event; for example, renters may be less likely to have local alerts apps set up on their smart phones and may be less likely to have a landline to receive reverse-911 calls. Also, research indicates that renters do not have the same level of community pride as owners do, which may lead to financial and political challenges in redeveloping a community after a flood event.
Occupation	Some occupations, especially those of resource extraction, may be severely impacted by a hazard event. Self-employed fishermen suffer when their means of production is lost and may not have the requisite capital to resume work in a timely fashion and thus will seek alternative employment. Migrant workers engaged in agriculture and low skilled service jobs (e.g., housekeeping, childcare, and gardening) may similarly suffer, as disposable income fades and the need for services decline. Immigration status also affects occupational recovery.	The number of people that live in the area and work in resource extraction occupations is significant; the 2010 Census indicates that around 17% of the total work force in Watsonville worked in farming, fishing, and forestry occupations; in Pajaro, nearly half (47%) of the total work force worked in farming, fishing, and forestry occupations.
Family Structure	Families with large numbers of dependents or single-parent households often have limited finances to outsource care for dependents, and thus must juggle work responsibilities and care for	The literature indicates that families having greater than four persons have more financial difficulty than smaller families.  Accordingly, community planners need to be aware of

	family members. All affect the resilience to recover from hazards.	issues that may arise. The average household size in Watsonville (3.75) and Pajaro (4.91) are larger than that of the state of California (3.45), and the number of people under the age of 18 is 31.5% in Watsonville and 34.8% in Pajaro, again both larger than the state average of 25%. This data may indicate that there is a higher number of families with large numbers of dependents in this area that may have a more difficult time recovering from a flood event.
Education	Education is strongly linked to socioeconomic status, with higher educational attainment resulting in greater lifetime earnings. Lower education constrains the ability to understand warning information and access to recovery information.	About 50% of the population in Watsonville and about 30% in Pajaro have graduated from high school, which are relatively low percentages when compared to the state of California as a whole (about 80%). Additionally, less than 10% of the population of Watsonville and 0% of the population of Pajaro hold a bachelor's degree, compared to the state rate of 30%. The study area is significantly under-educated, leading to increased risk during a flood event and increased difficulties during recovery activities.
Population Growth	Counties experiencing rapid growth lack available quality housing; its social services network may not have had time to adjust to increased populations. New migrants may not speak the language and not be familiar with bureaucracies for obtaining relief or recovery	Watsonville has grown moderately over the 2000 to 2010 time period – with a population increase of about 15%, which translates to about a 1.45% average annual growth rate over the same time period. Pajaro has actually seen a decrease in population over the 2000 to

	information, all of which increases vulnerability.	2010 time period, from around 3,400 people to
		around 3,070.
Medical Services	Health care providers, including physicians, nursing homes, and hospitals are important post-event sources of relief. The lack of proximate medical services will lengthen immediate relief and result in longer recovery from disasters.	Watsonville Community Hospital and Kaiser Permanente Watsonville Medical Offices are located north and/or west of the area of potential flooding and may be difficult or impossible to access using ground transportation during a flood event for some areas including the Town of Pajaro. The nearest hospital to the south, Community Hospital of the Monterey Peninsula, is 28 miles from Pajaro, and Dominican Hospital in Santa Cruz is 15 miles from Watsonville. These facilities may be overwhelmed since flooding may also be occurring on the San Lorenzo River, Moss Landing, the Salinas River, etc.

#### Economic Vitality

Flooding could result in long-term losses for agriculture and therefore significant impacts to the community at large. Flooded agricultural lands would need to lie fallow for at least a year before crops could be harvested and sold. Crops that are designated as "organic", which are common in the region, would need to lie fallow for three years. The loss of production from agricultural lands that have been inundated by flood waters results in the loss of income for landowners and farm owners as well as the loss of jobs and/or wages for farm workers. In addition, migrant workers could leave the area and more residents could be living in poverty as a result of inability to work and earn wages, resulting in less spending region wide that would otherwise support local businesses. Local businesses located on the "Main Streets" of both Watsonville and Pajaro, due to their location in the flood zone, could be damaged by floodwaters, putting the heart and identity of these communities at risk.

#### Social Connectedness

Social connectedness is the fabric of the Pajaro River study area. The 55 and older residents of the Bay and Pajaro Villages are very well connected, neighborly, and protective of their neighborhood. However, they tend to be fearful that a flood could wipe out their homes, finances, or life as they know it. The agricultural land owners and tenant farmers are very connected and are acutely aware of the financial impact that a flood event could have. The Interlaken/Cutter community are also very well connected and cohesive community with extensive history of flooding and dealing with flood threat. Finally, the Hispanic and Latino community in both Watsonville and Pajaro are also well-connected. The social connections will serve these groups when evacuations are necessary and recovery efforts are initiated, however, the connectedness does little to prevent a flood that could devastate them.

#### **Identity (Community Identity)**

There are many multi-generation farming families in the study area that have been dealing with flooding on the Pajaro River dating back to flooding events prior to the construction of the existing Federal USACE levee system in 1949. Based on the local sponsor's conversations with local land owners, the history of flooding in the area plays into their identity. Regardless of how effective past flood mitigation and prevention activities were, environmental regulations and changing management of the river "pin" residents in a corner and make them feel helpless against protecting themselves. For example, as a result of environmental regulations, the residents can no longer proactively dredge or clear the channel themselves. Also, the "handshake" agreements with County drainage crews are no longer possible due to the outcome of a lawsuit resulting from the 1995 flood. In what is known as the Arreola lawsuit, Santa Cruz and Monterey Counties were found liable for extensive damage caused when the Pajaro River flooded during heavy rainfall is 1995. The plaintiffs' claim was that the counties failed to keep the project channels cleared which diminished the channel capacity and ultimately caused the levee to fail during the storm. The State of California was also found liable for damages caused; the plaintiffs alleged that the drainage culverts under State Highway 1 were too small to drain the flood and the resulting damming effect caused higher flood levels and destructive ponding.

Based on conversations with residents, many of them feel, based on past experiences, that when big storms and high water occurs, that a feeling of "this is it for me" takes over them. Because levee breaches have occurred (with water below the top of levee) there is a viewpoint that at any moment during the flood season, life threatening situations could arise. Past levee breaches have created an environment of high uncertainty: residents don't know where a levee break would occur, so many residents experience hopelessness.

#### **Community Participation**

The community actively participates in public meetings and other events related to flooding concerns. There were approximately 100 residents that attended the Public Meeting in Watsonville in November 2017 associated with the release of the Draft Report. If there is any lack of interest it may be associated with the drawn out process of project development for a FRM project of this scale and magnitude rather than any disinterest in flood protection or lack of fear regarding their predicament.

In preparation for flood season the City of Watsonville conducts biannual sandbagging preparation events every year; Santa Cruz County provides sandbags to residents at several locations.

Response to levee through-seepage during the wet winter of 2017 was met with incredibly rapid response by the Counties with placement of seepage berm and unanticipated quick placement of revetment rock by local contractors. The contractor is a long-time local outfit and was possible operating so quickly because of their local status.

#### Leisure and Recreation

Watsonville and Pajaro are lower-income mixed urban and rural communities whose residents have limited access to natural outdoor recreation. The levee system is one of the few places that is close enough to their homes that it can be reached by foot or bicycle, which is important to residents with limited transportation resources. Children in this area have been documented as having higher than average obesity rates within the state of CA. If the project is completed, the local sponsors would have an opportunity to increase recreational facilities and amenities, providing a great benefit to local residents, especially those who have a documented problem of poor health that could be improved with increased opportunities to exercise.

#### G. LIFE SAFETY EVALUATION

The San Francisco District's Levee Safety Section uses the Levee Screening Tool (LST) to assess levees within the District's geographic boundary. The LST provides an initial quantitative risk estimate to assist local, state, and federal stakeholders in identifying and prioritizing the funding needs for levees of concern. The information and data entered into the LST are collected from existing information/data. Life loss estimates are computed in the LST based on the information/data entered and for various scenario/conditions, including life loss during the day time, life loss during the night time, life loss assuming a levee breach prior to overtopping, and life loss assuming no breach until overtopping. Additional information about the levee screening tool and its computation processes can be found in, *Levee Screening Tool: Methodology and Application*, as listed in the reference section.

The results of the levee screenings performed for the Pajaro River study area were used in this OSE assessment to make preliminary estimates of life loss. The results of two scenarios modeled in the LST - levee breach prior to overtopping and no levee breach until overtopping - are presented here. For this assessment, the levee breach prior to overtopping scenario was assigned to the without-project condition and the no levee breach until overtopping was assigned to the with-project condition (Recommended Plan or RP). A comparison of potential fatalities under each condition and for various levee segments within the system is displayed in Table 4 below.

**Table 4: Statistical Life Loss Estimates** 

	Estimated Life Loss		
Levee Segment/Impact Area	Without-Project (Assumes Breach Prior to Overtopping)	Recommended Plan (Assumes No Breach Until Overtopping)	
Left Bank Pajaro			
River (Monterey	1	0	
County)			
Right Bank			
Pajaro River	4	2	
(Santa Cruz		2	
County)			

In addition to life loss estimates, other metrics were used to assess the vulnerability of individuals living in the study area, as listed in Table 5 below.

In any assessment that relies on assumptions, there is uncertainty. The life loss estimates under the with-project condition shown in Table 4 above assume no levee breach until overtopping. Importantly, while the Levee Screening Tool (LST) does not compute probabilities of a potential levee breach, the economic model (HEC-FDA) used in the National Economic Development (NED) Analysis does compute the annual exceedance probabilities (AEP) under without-project and with-project conditions using available engineering data. These probabilities can be tied to the life loss estimates computed in the LST in order to provide a more complete picture of the overall flood risk (consequence and chance). For example, the HEC-FDA results indicate that in the both the Town of Pajaro and the City of Watsonville, there is less than a 1% chance of flooding in any given year under the with-project condition, which can be tied to the estimated life loss of about 2 as shown in Table 4. Overall, the chance of flooding and therefore life loss is reduced with a project in place as compared to without a project in place. (Under without-project conditions, the chance of flooding from the Pajaro River in any given year is about a 1 in 15 or about 6.7%; the chance of flooding from the Tributaries in any given year is about a 1 in 4 to 1 in 5, or about 23%; life loss from Pajaro River flooding under the without-project condition is estimated to be about 5; life loss estimates from a Salsipuedes Creek levee breach were not completed.)

**Table 5: Description of Metrics Used to Evaluate Life Safety** 

Evaluation Metric	Description
Population at Risk (People)	Number of people within the 1% ACE floodplain based on the 2010 census block
	GIS data.
Critical Infrastructure (Facilities)	Number of fire stations, police stations, hospitals, senior living facilities, and jails that are of life safety significance; also includes substations, schools, power plants, chemical industry, colleges, intermodal shipping, heliports, petroleum bulk plants, and broadcast communication which may
	be of regional significance
Evacuation Routes (Number of Routes)	Assesses the vulnerability of populations with regard to the number of escape routes available during flood events.
Wise Use of Floodplains (Acres)	Potentially developable land within the 0.2% ACE floodplain. Acres of land with 1% ACE flood depths less than 3 feet.

Table 6 displays the comparison for the without-project and with-project (RP) conditions as they relate specifically to the life safety metrics summarized in Table 5.

**Table 6: Summary of Life Safety Metrics** 

<b>Evaluation Metric</b>	Alternative	
Evaluation Metric	Without-Project	Recommended Plan
Population at Risk (People)	15,000	0
Critical Infrastructure	33	0
(Facilities)	33	U
Evacuation Routes	TBD	TBD
(Number of Routes)	TBD	100
Wise Use of Floodplains		
(Number of acres that could	TBD	Approximately 2,700 acres
potentially be developed)		

<sup>&</sup>lt;sup>1</sup>Values based on 1% ACE event floodplain

<u>Population at Risk</u>: The population at risk of flooding from a 1% ACE flood event is about 15,000 for the without-project condition. Most of this population would be removed from the 1% ACE floodplain under the RP. Of special concern is the population segment over the age of 65 living within the study area since these individuals have been shown to be at a higher risk of life loss from flood events. The Pajaro/Watsonville community's senior population is slightly lower (about 4-8% of total population) than the senior population of the state of California (11.4%) as a whole, however, the senior population is concentrated in the flood hazard area, since Pajaro and Bay Villages, both 55 and older communities, are located adjacent to the levee system that is part of this project.

Additionally, the RP would provide flood protection to the Town of Pajaro, which falls significantly below the state averages for several metrics often used to characterize quality of life. For example, the median household income in the Town of Pajaro is just 58 percent of the state of California's (\$36,094 compared to \$61,632) and the percentage of people living below the poverty level in Pajaro is more than twice that of the state of California's (31.9% versus 14.4%). Further, high rates of poverty are strongly correlated with disabilities, lack of car ownership and other factors that pose an increase threat to life safety. Without an FRM project, flood risk in the Town of Pajaro will remain high, putting the community at a much greater disadvantage as compared to other communities in the study area.

<u>Critical Infrastructure</u>: Critical infrastructure is located within the Pajaro River & Tributaries study area. Critical infrastructure is a term used by governments to describe assets that are essential for the functioning of a society and an economy, from a national perspective. The facilities that are most commonly associated with the term include fire stations, police stations, hospitals, schools, senior living facilities, and prisons.

Both the Watsonville Fire Department and Police Department are located in the downtown area of Watsonville within the flood zone. In addition, both Watsonville High School and Pajaro Middle School are located in the flood zone. As discussed previously in this appendix, the senior population is concentrated in the flood zone within two 55-and-older villages.

Several government offices located within the inundation area could be directly impacted. The loss of city and county offices would severely disrupt a number of critical local government functions, at least temporarily. Records, both digital and hardcopy, have the potential to be lost. Floors of buildings above the effects of floodwaters would remain relatively untouched, but the bottom floors of large office buildings and their contents would most likely sustain damage. The disruption of government work could have major indirect impacts to people living outside of the immediate flood zone. While non-essential government workers would experience temporary unemployment, it is unlikely that government work would stop completely. In fact, after a flood event there would likely be a large need for more government action in the form of managing aid and organizing rebuilding efforts.

The RP significantly lowers the flood risk to critical infrastructure within the study area.

#### Flood Warning and River Gaging System

The Santa Cruz County Flood Control and Water Conservation District – Zone 7 has a long history of providing flood warning services to the residents of the Pajaro River watershed. Zone 7 operates independent flood warning gage networks that rely on overlapping radio backbones with a common concentration point and data storage and dissemination services. Zone 7 also supports the United States Geological Survey in operating and maintaining stream gages on lower Corralitos Creek (Corralitos Creek at Freedom CA, gage #11159200) and on the Pajaro

-

<sup>&</sup>lt;sup>1</sup>The above analysis is based on the US Census Bureau 2000-2010 American Community Survey comparing Santa Cruz and Monterey Counties to the Town of Pajaro.

River (Pajaro River at Chittenden CA, gage #11159000). The City of Watsonville independently operates and maintains a network of real-time water level gages on the Pajaro River and Salsipuedes Creek (Pajaro River at Main Street, Salsipuedes Creek at Highway 129, and Salsipuedes Creek at East Lake Avenue). Zone 7's flood warning systems rely on Automated Local Evaluation in Real Time (ALERT) protocol radio communications. ALERT gage transmissions are largely event driven. Reports are triggered based on changing hydrologic conditions at the remote sites. Event driven reports are effective at reporting changing conditions in real time. Data from these systems are used to support flood monitoring operations by the local agencies as well as the National Weather Service, and the California Nevada River Forecast Center.

#### **Evacuation Routes**

The City of Watsonville has developed evacuation maps for the Villages neighborhood, located just upstream from the confluences of Salsipuedes Creek and the Pajaro River. (A copy of the Evacuation Map is attached) This is a senior community where residents need to be 55 years or older. This map identifies evacuation routes and responder routes and identifies the location of the 100 year Annual Chance Exceedance (ACE) flood plain and the 500 year ACE floodplain. The Town of Pajaro does not have an established evacuation plan, however, without the project, it is likely that all routes would be impassable during a flood event.

Community awareness of the flood risk is good. Flood risk and levee safety have been covered extensively over the last few years by all the local media. As discussed above Santa Cruz County and Watsonville have an extensive Flood Warning and River Gaging System. The City of Watsonville website has flood information. The Emergency Operations and Emergency Evacuation plans discuss communication with the local media to instruct the public during emergencies. However, even with extensive warning systems and operational plans, people may be unwilling, unable, or unaware to respond effectively.

#### H. WITHOUT-PROJECT AND WITH-PROJECT COMPARISON

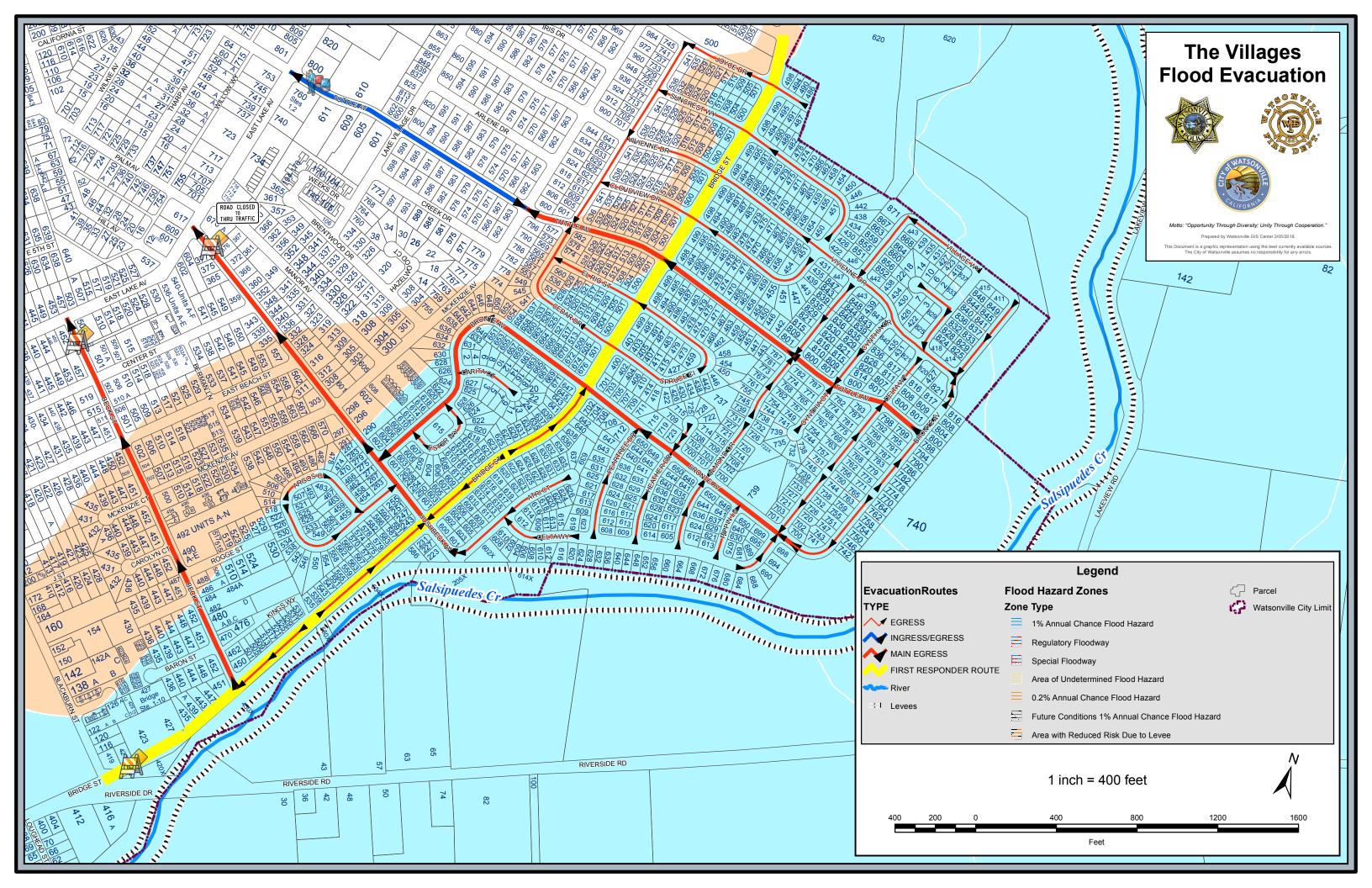
An assessment of the beneficial and adverse effects associated with the without-project condition and the Recommended Plan (RP) (Alternative 1 on the Main Stem Pajaro River and Alternative 6 on the Tributaries) was made. The social effects of the alternatives have both direct and indirect effects. Direct effects come from construction of the projects, whereas indirect effects come from the effects of the project on the existing social landscape. The alternatives are characterized using descriptors related to magnitude (number of individuals affected), location (concentration of effects), timing and duration (when the effects will start and how long they are expected to last), and associated risks. Table 7 provides a description of the effects of the without-project condition and the RP.

Table 7: Effects of the Recommended Plan (RP)

<b>Table 7: Effects of the Recom</b>		
	Without-Project	RP
Alternative Description	T	
	The Recommended Plan (Alternative 1-Mainstem and Alternative 6-Tributaries) is not implemented/constructed.	Improvements to the Pajaro River levees protecting the Town of Pajaro and the City of Watsonville; construction of levees along Corralitos Creek which would protect the City of Watsonville and the Orchard Park neighborhood.
Other Social Effects (OSE)		
Summary	Continued flood risk and frequent flooding, especially along the Tributaries; repeated expenditure of costs related to flood fighting.	Life safety risk is significantly reduced; flood fighting costs significantly reduced or eliminated.
Population at Risk (PAR)	Approximately 15,000 people are at high risk from a 1% ACE flood	The risk from a 1% ACE flood is significantly reduced for the majority of the population at risk in Watsonville and Pajaro.
Loss of Life	Potential loss of life: 5	Potential loss of life: 2
Critical Infrastructure	Critical infrastructure at risk: Schools (4), Fire Department (1), Police Department (1), U.S. Post Office (1), Several City & County buildings (e.g., Superior Court of Santa Cruz County), oil and gas facilities and pipelines, hazmat locations (industry with hazardous materials)	0 critical infrastructure at risk
Evacuation Routes	Limited evacuation routes for the Town of Pajaro would be available if flood event occurs. Some potential evacuation routes would be inundated.	Evacuation routes would be available in the event of a flood
Wise Use of Floodplains	0 available acres	The land surrounding the Town of Pajaro is currently used for agriculture (primarily for growing strawberries) and existing land use codes restrict the

		agricultural areas from
		development. There are
		approximately 2,700 acres of
		farmland that would be
		protected from the 1% ACE
		flood event.
Social Vulnerability	The community may be	Flood risk to the Watsonville
	characterized as having a high	and Pajaro communities is
	level of social vulnerability	reduced, and social
	based on the social	vulnerability is minimized
	vulnerability indicators	due to the decrease in chance
	presented in Table 3.	of a flood occurring.
Residual Risk and	Residual risk remains high	Residual risk for life safety is
Consequences	throughout the study area.	significantly reduced.

It is important to realize that while the RP would significantly reduce the overall flood risk to the City of Watsonville and the Town of Pajaro, the risk will not be, and never will be, completely removed. In other words, while the project would significantly reduce the chance of flooding, the residents of these communities and the hundreds of homes and businesses would still remain susceptible to larger flood events that exceed the project design.





September 14, 2018

U.S. Army Corps of Engineers 440 G Street, NW Washington, D.C. 20314-1000

**RE: Support for Pajaro River Levee Project** 

To Whom It May Concern:

The California Strawberry Commission (CSC) represents strawberry farmers, shippers and processors in the state of California. California strawberry farmers produce nearly 90 percent of the U.S. grown strawberries and contribute more than \$2 billion in annual revenue, creating more than 55,000 on-farm jobs and over 70,000 jobs in the supply chain.

The Pajaro Valley is very important to the vitality of our industry as strawberries are the highest value crop in Santa Cruz County and second highest in Monterey County. There are significant investments associated with agricultural production in Pajaro Valley. Approximately \$70,000 per acre is invested into the production and harvest of strawberries. These investments support the local communities and provide economic stability in the region. Likewise, the health of the local communities and environment is imperative to local agriculture.

In 1995, the Pajaro Valley suffered a levee break which created millions of dollars in damages and took years for the region to recover. New challenges, such as increased food safety regulations, would make recovery of the land for growing food more difficult. This region is amongst the most agriculturally productive in the nation and the safety of the food grown here is of the utmost importance. There is no flexibility in adhering to federal food safety standards and recovering from massive flooding could easily wipe out the production in the area for one year, depending on the gravity of the destruction. A catastrophic event (such as another levee break) would result in a loss of jobs which would be disastrous for employees and our communities.



The current condition of the existing levee includes vulnerability to fractures or breaks with potential devastation to the entire Pajaro Valley. CSC urges you to revaluate this project's qualification for NEPA Exec Order 12898 which "ensure[s] that all communities and persons across this Nation live in a safe and healthful environment." Reconsideration of the cost-benefit analysis would also be prudent in this case. Both the rural economies of Santa Cruz and Monterey Counties are closely intertwined.

For the reasons listed above, we urge the Army Corps of Engineers to prioritize strengthening the levee system on Salsipuedes Creek and Pajaro River as you continue your evaluation process.

Sincerely,

Mark Martinez

Vice President, Public Policy

Mark Mattern

California Strawberry Commission



Driscoll's 345 Westridge Drive Watsonville, CA 95076

September 14, 2018

U.S. Army Corps of Engineers 440 G Street NW Washington, D.C. 20314-1000

RE: Pajaro River Flood Risk Reduction Project

To Whom It May Concern:

Driscoll's is a global fresh berry company headquartered in Watsonville, California. We are a family owned company and we strive to enrich the communities where we do business. Our community of origin, Watsonville, is in desperate need of levee improvements. We are writing to express our support for the Pajaro River Flood Risk Reduction Project and to urge you to strongly consider the "Other Social Effects" that aren't captured in the USACE cost-benefit ratio.

We are a proud agricultural community and the fields of specialty crops in Monterey and Santa Cruz Counties are where many of our community members work. Watsonville fruit production represents a significant proportion of Driscoll's global revenue. Our business relies on the farmers who grow our fruit on hundreds of acres and the thousands of people who they employ. Our agricultural community is at risk from a levee failure which could severely impact crops, jobs and our local economy.

Our farmers' large investment into their crops is at risk each year when we get significant rainfall, as just last year the river almost tipped from the levees. If a strawberry field is subject to a major flood, rendering it inaccessible, all investment, future revenue and jobs on that farm are lost for the year. That loss from a single farm could mean millions lost to our local economy.

We urge you to meet the upcoming deadlines to move the Pajaro River Flood Risk Reduction Project forward and to please consider the consequences that inaction will have on our community.

Sincerely,

**Emily Gardner** 

Water Resources Manager

Eng Mh



## Grower-Shipper Association of Central California "OUR MEMBERS: PARTNERS PRODUCING PROSPERITY"

September 13, 2018

U.S. Army Corps of Engineers 440 G Street NW Washington, D.C. 20314-1000

Re: Pajaro Valley Levee Project - SUPPORT

To Whom It May Concern:

The Grower-Shipper Association is a trade association that includes growers, shippers and processors of vegetables, strawberries, mushrooms, wine grapes and more crops operating in Monterey, Santa Cruz, San Benito and Santa Clara Counties. We are writing to express our support for Pajaro Valley levee improvements, as are being considered by the Army Corps of Engineers.

#### Value of Agricultural Industry in Region

As you know, the Pajaro River system courses through vibrant agricultural settings that provide nutritious food to our nation and prosperous jobs to our region. In Monterey County in 2014, a study was conducted to illustrate the economic contributions of agriculture in that county alone. Here are some of the highlights of that study, "Economic Contributions of Monterey County Agriculture: Leading the Field Through Diversity and Technology". I've included a copy of this 2015 study for your reference.

- Monterey County agriculture directly employs 1 in 5 workers, and contributes 18.5% of the counties direct economic output at over \$5 billion obviously the indirect economic output is even greater.
- Agriculture is the #1 Economic Driver in Monterey County, accounting for 18.5% of all direct economic output. <sup>1</sup>
- Agriculture pumps *nearly a million dollars per hour* into the county economy (\$926,757 to be exact in 2013).
- Agriculture is the county's top employer, with 23.7% of the county's 235,425 jobs.
- Without Agriculture, all other segments of our economy and community will weaken.
  - o Runner-up economic drivers: #2 Government; #3 Real Estate; #4 Tourism
- In 2013, agricultural production directly employed 53,550 people in Monterey County.
  - o In 2009, this number was 42,176. Thus, farm production directly added 11,374 jobs (27%) in four years.

<sup>&</sup>lt;sup>1</sup> https://www.co.monterey.ca.us/home/showdocument?id=1545

- This figure encompasses a wide range of production-related jobs, including not just growing and harvesting, but also sales, marketing and many other roles.
- o It does not include food processing jobs.
- Agricultural production creates \$6.97 billion in total economic output within Monterey County, of which \$2.08 billion were multiplier effects.
  - o Indirect and induced spending supported an additional 17,799 jobs within the county, bringing agriculture-related production's total employment to 71,349.
- Above and beyond this number, Local food processing produced an estimated \$787 million in direct output. Multiplier effects bring the total value to \$1.15 billion.
  - The sector directly employed 2,152 workers. These workers and their employers spent enough money in the local economy to support an additional 2,553 jobs, bringing Monterey County's total food processing employment effect to 4,705.
- The total economic contribution of Monterey County agriculture was \$8.12 billion. This consists of \$5.68 billion in direct output from production and processing, plus \$2.44 billion in multiplier effects.

Similarly, a report was also issued in Santa Cruz County titled "Economic Contributions of Santa Cruz County Agriculture" in 2013. I've included a copy of this 2013 study for your reference, as well.

#### This report found that:

- Santa Cruz County agriculture contributes a total of \$1.46 billion to the local economy, including:
  - \$898 million in direct economic output, which represents 5.2% of the county's total direct economic output.
  - o \$563 million in additional economic output in the form of expenditures by agriculture companies and their employees.
- Santa Cruz County agriculture provides 11,085 jobs in Santa Cruz County economy, including:
  - o 6,151 direct employees, which is 4.5% of all jobs in the county or about 1 out of every twenty workers.
  - 4,934 additional jobs made possible by expenditures by agriculture companies and their employees.

#### **Flooding Concerns**

Due to food safety rules, growers of leafy greens must now wait 30-60 days to plant on fields after flood waters have receded. Those who have already planted lose substantially, and the delayed planting schedules affect the jobs of people that would have normally been working in those fields, processing product from those fields, and so on down the chain.

Of the leafy greens grown in California, 99% are grown by farmers following the Leafy Green Marketing Handler Agreement Metrics. Handlers who sign up for this voluntary program may only sell product grown by growers abiding by these metrics. Although the program is voluntary, the large majority of buyers of California produce require adherence to this program, hence its high rate of participation and it is now aligned with the FDA's Produce Safety Rule, meaning

that by following the LGMA metrics, growers and handlers are complying with this now mandatory rule. These metrics include long time-periods for replanting and wide buffers in the event of a flood, all of which contribute to losses by the grower, their workers, and auxiliary businesses (tractor companies, shippers, coolers, trucking, etc.). These metrics have been attached for your reference.

In the November 4, 2005 FDA "Letter to California Firms that Grow, Pack, Process, or Ship Fresh and Fresh-cut Lettuce/leafy greens" the agency stated that it "considers ready to eat crops (such as lettuce/leafy greens) that have been in contact with flood waters to be adulterated due to potential exposure to sewage, animal waste, heavy metals, pathogenic microorganisms, or other contaminants. FDA is not aware of any method of reconditioning these crops that will provide a reasonable assurance of safety for human food use or otherwise bring them into compliance with the law. Therefore, FDA recommends that such crops be excluded from the human food supply and disposed of in a manner that ensures they do not contaminate unaffected crops during harvesting, storage or distribution. The FDA went further, stating that "Adulterated food may be subject to seizure under the Federal Food, Drug, and Cosmetic Act, and those responsible for its introduction or delivery for introduction into interstate commerce may be enjoined from continuing to do so or prosecuted for having done so. Food produced under unsanitary conditions whereby it may be rendered injurious to health is adulterated under § 402(a)(4) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 342(a) 891 (4); (US FDA 2004)."

The Monterey County Water Resources Agency (MCWRA) estimates that during the storms of March 2011 and associated flooding, approximately 1,279 acres of croplands were damaged by the Salinas River floods, resulting in the loss of over \$4 million of gross production value. (MCWRA, 2011). Such estimations could easily be applied to a Pajaro River flood. Please see a copy of the flood damage survey "Salinas River Watershed March 2011 Storm and Flood Damage & Losses Survey Response Summary" we refer to attached.

#### Conclusion

We understand that Army Corps considers a cost-benefit analysis when determining which projects to fund, which can put lower-income communities, like some of those surrounding the Pajaro River system, at a disadvantage. We hope that our letter and others will help the Army Corps of Engineers to see the bigger impact of their decision. These levee improvements not only impact homes, they also impact the businesses and fields that provide jobs and healthy lifestyles to people and communities in and around the Pajaro Valley and far beyond.

Sincerely,

Silva Silva

Abby Taylor-Silva

Vice President, Policy & Communications

Grower-Shipper Association of Central California

831.422.8844

abby@growershipper.com



### Salinas River Watershed March 2011 Storm and Flood Damage & Losses Survey Response Summary

The Monterey County Agricultural Commissioner conducted a survey of growers to estimate the extent of damages and losses experienced as a result of flooding and storm water runoff that occurred within the Salinas River watershed during March 2011. A total of 127 operations responded, a response rate of 21%. Of those responding, 22 reported damage and losses resulting from the March 2011 storms and flooding. Approximately 1279 acres of croplands (487 planted, 792 unplanted) were damaged as a result of flood waters from the Salinas River and its tributaries. Another 421 acres of crops were damaged by runoff or surface water.

In addition to direct crop and cropland impacts, 10 respondents were delayed or unable to plant 285 acres of vegetables that were scheduled to be planted as a result of flooding. Respondents had to wait an average of 67 days before planting scheduled crops; wait times ranged from 38 to 120 days.

Based on values reported in the 2010 Crop Report, the damage reported by survey respondents resulted in approximately \$4,024,000 lost gross production value. Respondents reported \$1,545,000 lost or unrecovered growing costs that had been invested in the crops destroyed by the flooding and storm runoff. Another \$1,002,000 was reported for clean up, ranch repair costs, and other losses.

### Total Respondents = 127 Respondents Reporting Damage or Losses = 22

1. Were any of your <u>crops or crop lands</u> impacted by flood water from the Salinas River, or its tributaries, entering your fields during March, 2011?

Yes = 13

2. When did the impact and damage occur?

Various dates in March 2011

3. How many acres of crops or croplands were impacted by flooding from Salinas River or tributaries?

Salinas River acreage

452 Acres of crops inundated with flood water

35 Acres of <u>crops</u> adjacent to the flood water that

won't be harvested due to flood-related impacts

776 Acres of unplanted crop lands inundated

Tributaries to Salinas River acreage

- 0 Acres of crops inundated with flood water
- O Acres of <u>crops</u> adjacent to the flood water that won't be harvested due to flood-related impacts
- 16 Acres of unplanted crop lands inundated

#### 4. What crops were in the ground and affected by flooding from river or tributaries?

Salinas River acreage

Artichoke 80 acres Asparagus 45 acres Broccoli 72 acres

Cauliflower	8 acres
Head Lettuce	15 acres
Lettuce	128 acres
Spinach	9 acres
Other Vegetables	42 acres

- 5. Estimate the loss of your growing costs to date due to the flooding from Salinas River or tributaries.
  - \$ 1,177,660 growing costs lost or unrecovered
- 6. Do you anticipate being delayed or unable to plant scheduled crops on or adjacent to the flooded ground?

$$Yes = 10$$

7. What scheduled crops and acres of crops are unable to be planted?

Salinas River acreage

Broccoli	110 acres
Carrots	49 acres
Head Lettuce	20 acres
Lettuce	70 acres
Vegetables	36 acres

8. Estimate how long you waited or will wait to replant?

67 days on average

9. Were any of your crops impacted by inundation from runoff or surface water (<u>not</u> river or tributary flood water) in your fields in March, 2011?

$$Yes = 7$$

10. What crops were in the ground and impacted by runoff or surface water (not river or tributary flood water)?

Broccoli	22 acres
Bulbs	116 acres
Grapes	130 acres
Head Lettuce	4 acres
Leaf Lettuce	2 acres
Lettuce	66 acres
Romaine Lettuce	11 acre
Strawberries	70 acres

11. Estimate the loss of your growing costs to date and damages due to inundation from runoff and surface water (not river or tributary flood water).

\$ 367,200 growing costs lost or unrecovered

\$ 540,500 damages or other losses

12. Estimate the clean up and ranch repair costs (<u>not</u> costs reported elsewhere on this form) incurred and anticipated due to flooding and inundation. May include repair of structures, pumps, wells, etc.:

\$ 461,661 clean up and ranch repair costs





office (831) 751-3100 • www.montereycfb.com

September 12, 2018

U.S. Army Corps of Engineers 440 G Street NW Washington, D.C. 20314-1000

RE: Pajaro Valley Levee Project - SUPPORT

To Whom It May Concern:

Monterey County Farm Bureau represents family farmers and ranchers in the interest of protecting and promoting agriculture throughout our County. Since 1917, Farm Bureau strives to improve the ability of those engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of our local resources.

Both Monterey and Santa Cruz Counties are coastal with strong economic sectors of Agriculture producing many of the fresh vegetables, leafy greens, and berries that are part of our healthy diet.

These prime agricultural production lands are under threat of flooding from the Pajaro River due to the inadequacy of the levee system. This has proven to be true when floodwaters forced local farmer operators to seek legal restitution when the levees failed in 1995. In 2017 there nearly was an overtopping of the levees due to heavy precipitation and river flows.

With new and stricter Federal food safety measures impeding reuse of a flooded field, minimally for three or more months up to a year, the financial viability of local farming operations depends on the safety and security of these levees and their flood protections.

Local water supplies are threatened by inadequate levee protections along the Pajaro River; the vast majority of municipal infrastructure, including groundwater pumps, is located in the floodplain. There are several of public schools located in the Pajaro River flood zone, including Watsonville High School. And, as already mentioned, some of the most valuable farmland in our Nation.

We urge prompt approval of the plans for Pajaro Valley levee improvements. We've waited long enough.

Sincerely.

Norman C./Groot Executive/Director



631.722.1224 · fax: 831.722.3128 info@elpajarocdc.org 23 East Beach Street #209, Watsonville, CA 95076 www.elpajarocdc.org

Att: Army Corps of Engineers

To Whom It May Concern,

My name is Carmen Herrera-Mansir, executive director for El Pajaro Community Development Corporation. Our mission is to "promote equal access to economic opportunity" by promoting the creation and expansion of micro and small business. Our nonprofit has been in operation since 1979, and we help underprivileged entrepreneurs in Santa Cruz, Monterey and San Benito counties reach for the American dream. Our goal is to help them create successful businesses by lowering the initial investment costs and providing technical training, access to financing, business incubation space and other resources.

Over the years, we have supported the creation and expansion of hundreds of businesses that include restaurants, flower shops, IT companies, tuxedo rental stores, farms and more find their footing and grow, providing local jobs and putting money into the local economy. We also offer job retraining and a four-week business courses to local CalWORKs recipients to help them become more self-sufficient and create work opportunities through self-employment.

In 1996, we were critical in helping many local small businesses survive the flooding along the Pajaro River. For a small business, any operational interruption caused by natural disaster can be fatal, and we were able to help these businesses survive what otherwise would have been a catastrophic event. At the time, businesses affected by the flood in Pajaro were supported in accessing about 2 million dollars in financing.

Unfortunately, many of the small business we helped remain at risk of closure due to the ongoing threat posed by inadequate flood protection along the Pajaro River. They are vital to our local economy, and the loss of any of them could have a cascading effect on residents. It is true that these are not the kind of multimillion dollar corporations that would improve the cost-benefit analysis of the Pajaro River levee project. It is just as true that they are just as important to the fabric of the community.

In fact, El Pajaro CDC itself is threatened by the inadequate protections along the Pajaro River, as we are located in the floodplain as well. Our Kitchen Incubator, a 22,000.00 facility that houses over 40 food entrepreneurs and a food hub sits right by the river. These businesses provide jobs to about 70 individuals. Unfortunately, these communities have grown up around these levies, and remain threatened by years of inactivity. Fortunately, we are finally within reach of a solution.

We urge the Army Corps to move this project forward.

Thank you,

Executive Director,

Pajaro Community Development Corporation



**Bay Village Homeowners Association** P.O. Box 986 Watsonville, Calif. 95077

Dear U.S. Army Corps of Engineers,

We represent the residents of Bay Village, a 55-and-older senior community in Watsonville, nestled behind a levee protecting Salsipuedes Creek just north of where it merges with the Pajaro River. We are a tightly knit, tranquil community of 600 single-level homes (all built on concrete slabs) where residents work together and come together to solve problems.

Bay Village's relationship to the levee is significant. It provides residents here with a source of recreation and protects us from the river. But the flood protection is also inadequate, a fact that is neither in dispute by any engineer not lost on any resident. The levee represents a threat not only to our livelihoods, but also to our lives.

There is an ongoing financial cost to us. Our residents, many of whom are on fixed incomes, pay a premium for flood insurance, and some who own their homes outright simply go without it, making them vulnerable to losing everything in the event of a catastrophic flood. The poor levee protection places these already vulnerable residents — many of whom are veterans and have otherwise served their country and their community — at greater risk for losing everything they've worked so hard throughout their lives to build.

We understand the Army Corps must assess the cost-benefit ratio of each proposal, and that a lifetime of memories would not factor into any decision. However, there are factors beyond the ties we have to each other and our community. We believe there is a significant risk to the lives of residents.

There are over 900 homes in the senior community that includes Bay Village. Yet along the primary evacuation route for this community, Highway 152, the hourly evacuation route is only 900. In the event of a disaster, the route must serve to evacuate not only our neighborhood, but several others as well. This is a recipe for a true catastrophe, with the potential for many of our residents to get stuck in their homes and in their neighborhood with little chance of evacuation. Many of our residents are also confined to their homes due to illness or disability and there would not be time to get them out.

We have been steadfast advocates for a solution, and we thank you for taking the time to listen to our concerns. We urge the Army Corps of Engineers to take steps to address the problem by improving the levee system on Salsipuedes Creek and Pajaro River.

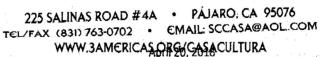
Thank you,

The Board of the Bay Village Homeowners Association



# Casa de la Cultura







Dear U.S. Army Corps of Engineers,

My name is Sister Rosa Dolores Rodriguez. I am a member of the Sisters of Notre Dame de Namur. When the devastating 1989 Loma Prieta earthquake struck our area, I was Director of Catholic Charities in Watsonville. I became acutely aware of the needs of the surrounding communities — especially those in close proximity to the Pajaro River.

Those needs led to the foundation of Casa de la Cultura Center in Pajaro, a nonprofit that assists the farmworker resident community by offering comprehensive services, including health, education and financial support. In doing so, we help sustain the people who help put food on the tables of all of us.

Casa de la Cultura Center was present when the levees broke in 1995, helping to evacuate families to safer ground. We shared in the recovery effort. Those were challenging times not soon forgotten, and every winter renews the ominous threat that it may happen again. Every winter takes a profound psychological toll on people who are already marginalized, because the river may rise again and take away their homes or cause great damage once more.

For years and years since, we have heard discussions about improving the Pajaro River levees. The need has never been disputed, not by the Army Corps nor anyone familiar with the project; however, nothing has ever happened. We are now on the threshold of real progress. We should not turn away now.

There has not been an adequate level of investment in the town of Pajaro. We fought and continue to fight for those investments, in the form of streetlights, new housing and other needed infrastructure. We understand that the same lack of investment is keeping the levee proposal from ranking as a higher priority when the Army Corps analyzes the costs and benefits of the project. Perhaps if the levees were improved, more investment would come. It is a cycle that must be broken, a wrong that must be corrected.

I myself come from a family of migrant workers, and I have worked closely with migrant workers for many years. I know the difficulties they face in their daily lives. Improving the flood protection along the Pajaro River would help safeguard their livelihoods and their lives. More than that, it would bring them peace of mind.

I pray the Army Corps would consider improvements to the Pajaro River levee system at this crucial time. As Jane Goodall said, "What you do makes a difference, and you have to decide what kind of difference you want to make."

Thank you for your consideration and attention to this very important issue for these communities in the Pajaro Valley close to the Pajaro River! Peace!

Sincerely,

Sister Rosa Dolores Rodriquez, ,SND



Dear Army Corps of Engineers,

My name is Carmen Herrera-Mansir, executive director for El Pajaro Community Development Corporation. Our mission is to "promote equal access to economic opportunity" by promoting the creation and expansion of micro and small business. Our nonprofit has been in operation since 1979, and we help underprivileged entrepreneurs in Santa Cruz, Monterey and San Benito counties reach for the American dream. Our goal is to help them create successful businesses by lowering the initial investment costs and providing technical training, access to financing, business incubation space and other resources.

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We urge the Army Corps to move this project forward.

Thank you,

Carmen Herrera-Mansir

Executive Director, El Pajaro Community Development Corporation

Pajaro Village Homeowners Association 739 Bronte Ave. Watsonville, Calif. 95076

Pajaro Vista Homeowners Association TBD Watsonville, Calif. 95076

Dear U.S. Army Corps of Engineers,

We represent the residents of Pajaro Village and Pajaro Vista, communities for residents aged 55 years and older in Watsonville. Together, we represent several hundred residents protected by the Pajaro Levee system, and we have closely followed the development of this project as it is vital to our safety and security.

We are keenly aware of the deficient flood protection along the levee system. This costs us not only through elevated homeowner's insurance costs and risk exposure, but also through the discomfort we feel every winter when the river starts to rise. Will we be dealing with flooding this year? Are we safe in our homes? These kinds of questions are routine to our residents.

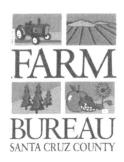
We ask the Army Corps to consider our residents when making a decision to fund the project. We understand that the protection of seniors does not fit easily onto a ledger when analyzing the costs of the project, which is why we are writing. We believe the protection of our neighborhood is a worthy goal that should be considered when analyzing the project.

There are several hundred homes in our community. Should we see a major flood, evacuation routes out of our neighborhood are inadequate. Improved levee protection would help assure our residents that they are safe in their homes, and that the extremely high flood insurance costs will be eliminated.

Thank you for taking the time to listen to our concerns. We trust the Army Corps will make the best decision for the protection of the people that live near the Pajaro River and Salsipuedes Creek.

Thank you,

The Boards of the Pajaro Village and Pajaro Vista Homeowners Associations



141 Monte Vista Avenue, Watson : Le, CA 951 6 P. (831) 724-1356 F. (831) 724-5821 sccfb@sbcglobal.net www.sccfb.com

March 28, 2018

Headquarters
U.S. Army Corps of Engineers
441 G Street NW
Washington, DC 20314-1000

RE: Letter of Support for Pajaro Valley Levee Project

Dear Army Corps of Engineers,

Santa Cruz County and the Pajaro Valley particular has a rich farming history. Many of the foods people enjoy across the country, from Martinelli's Cider to the berries on your kitchen table, came from this region.

Today, despite its well-deserved reputation as a beach town and surfing mecca, agriculture remains the leading industry in Santa Cruz County. Our crops had a value of \$537 million in 2016, and provided countless jobs to residents. We produce a cornucopia of products. And 90 percent of this agricultural production is concentrated in the lower Pajaro Valley. It is this region's identity. The likelihood of flooding puts that identity under a constant threat. The poorly designed levees represent an ongoing risk to our crops, our equipment and the livelihood of our workers.

Since the 1950s, the Army Corps has acknowledged the inadequacy of the levees. This fact has had a lasting impact on this county, including several flooding and near-flooding incidents. In 1995, our farmers were forced into court to seek redress over a levee breach. No one wants to see this situation continue; we all want it to end.

P ease approve the plans which have been submitted to allow levee improvement.

Sincerely,

Thomas Broz

President



March 22, 2018

OFFICE OF THE SUPERINTENDENT

Dear Army Corps of Engineers,

Dr. Michelle Rodriguez Superintendent I am Michele Rodriguez, superintendent of the Pajaro Valley Unified School District. Our district includes more than 20,000 students, nearly 85 percent of whom are minorities, primarily Latino.

The safety of our students, their families and our staff is our highest priority. Over the years, the District has been impacted by storms and natural disasters numerous times, including recently when were forced to relocate an elementary school in response to a long-term road closure. Our District is resilient and not easily moved by changes in weather patterns.

Several of our schools are in the Pajaro River flood zone, including Watsonville High School. At those locations, the poor levels of flood protection along the Pajaro River levees represent the biggest ongoing threat to the safety of our students and staff, as well as school property. Last winter, we closely monitored developments along the Pajaro River with our community partners. We have evacuations plans in place for all our schools, of course, but hope that we do not need to use them.

Improving levee protection along the Pajaro River should be a priority. Schools should be a place of comfort, safety and learning, not a place where children go to be in harm's way during severe storms. The levees breached twice in the mid-1990s, and the river came close to topping its banks last year. Without significant levee improvements, it is bound to happen again.

#### **Board of Education**

Leslie De Rose President

Maria Orozco Vice President/Clerk

Georgia Acosta

Kimberly De Serpa

Karen Osmundson

Jeff Ursino

Willie Yahiro

Student Trustee Perla I. Pineda Leon We understand that Army Corps must base funding decisions partly on cost-benefit analysis, which puts poorer communities like Watsonville at a disadvantage. We urge you to go beyond those calculations and join us in making sure our students believe that they are not only worthy of investment, but of protection.

We ask the Army Corps to give all due consideration to this important project, and take appropriate steps to improve levee protections for the benefit of students, staff and broader community the District serves.

Thank you,
Michele Rodriguez
Superintendent of Schools
Pajaro Valley Unified School District

### PAJARO/SUNNY MESA

#### COMMUNITY SERVICES DISTRICT 136 San Juan Road Royal Oaks, CA 95076 (831) 722-1389 • (831) 663-2181 • Fax (831) 722-2137

info@pajarosunnymesa.com

March 21, 2018

Dear Army Corps of Engineers,

My name is Don Rosa, General Manager of the Pajaro/Sunny Mesa Community Services District (PSMCSD). PSMCSD serves 1,500 water connections in Northern Monterey County, serving an area bordered by the Pajaro River in the north, Moss Landing in the west and the Highway 101 corridor in the south.

We are the only public agency providing public potable water services in the disadvantaged Pajaro, Elkhorn, and Prunedale communities. As with any water agency on the Monterey Bay, we are entirely self-reliant for water.

Unfortunately, our water supplies are threatened by inadequate protections along the Pajaro River levees. The vast majority of our infrastructure, including groundwater pumps, are located in the floodplain. As I'm sure you are aware, the town of Pajaro has previously flooded due to inadequate flood protection. Absent significant levee upgrades, it may happen again.

To allow this situation to persist is to risk a poor community's access to clean water. We here at the PSMCSD understand the Army Corps must factor in the cost-benefit analysis when it comes to funding decisions, but we strongly feel that those kinds of analysis miss the true risk to the community of inaction. The health and disease risks presented by a lack of access to potable water during a 100-year flood scenario are severe and incalculable.

We trust the Army Corps is taking all due diligence in considering this project. We appreciate your expertise and for taking the time to consider the impact of insufficient flood protection on such a basic service as access to clean water.

Thank you,

Don Rosa General Manager, Pajaro/Sunny Mesa Community Services District