

## **4.20 FLOODPLAINS**

This section addresses the effects of the Proposed Project on existing floodplains in the vicinity of Gness Field Airport (DVO or Airport).

### **4.20.1 ENVIRONMENTAL SETTING**

#### **4.20.1.1 Regulatory Framework**

Floodplains are defined by Executive Order (EO) 11988, *Floodplain Management*, as “the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to an annual one percent or greater chance of flooding” (i.e., area inundated by a 100-year flood). U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, defines the values served by floodplains to include “natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, and forestry”.

EO 11988 directs Federal agencies to take actions to reduce the risk of flood loss, minimize flood impacts on human safety, health and welfare, and restore and preserve floodplain natural and beneficial values. To do this, the EO bans approving activities in a floodplain unless:

- (1) No practicable alternative exists; and
- (2) Measures to minimize unavoidable short-term and long –term impacts are included.

#### **4.20.1.2 Existing Conditions**

A Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), dated May 4, 2009,<sup>1</sup> was used to establish the boundary of the 100-year floodplain within the Detailed Study Area (DSA). The FIRM shows that all of DVO and the entire DSA for this study lies within the FEMA designated “100-year Floodplain with Additional Storm Wave Hazards,” also known as “Area of Special Flood Hazard Zone VE,” which describes high-risk coastal areas with a one percent or greater chance of flooding and an additional hazard associated with storm waves,<sup>2</sup> as shown in **Exhibit 4.20-1, *Floodplains***.

A system of manmade ditches and levees constructed along the Petaluma River provides flood protection for the Airport, including the runway, taxiway, aircraft parking areas, and the administrative offices. However, the FIRM shows the entire

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<sup>1</sup> Federal Emergency Management Agency, *Flood Insurance Rate Map*, Community Number 0601730175D. Available online at: <http://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10001&langId=-1&userType=G&panelIDs=06041C0175D&Type=ppb&nonprinted=&unmapped=> Accessed 5/27/09.

<sup>2</sup> *Definitions of FEMA Flood Zone Designations*, On-line at: <http://msc.fema.gov> Retrieved September 15, 2009.

Airport property to be located within the 100-year floodplain because the system of levees does not meet the physical criteria identified in the National Flood Insurance Program (NFIP) requirements as described in Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations (44 CFR Section 65.10). Therefore, for the purposes of this Environmental Impact Report (EIR), the Airport is considered to be located within the 100-year floodplain, but consideration will be given for the system of ditches and levees that help protect the Airport from flooding.

## **4.20.2 ENVIRONMENTAL IMPACTS AND MITIGATION**

### **4.20.2.1 Significance Criteria**

DOT Order 5650.2 contains policies and procedures for carrying out EO 11988. Based on DOT Order 5650.2, if an action includes development within a floodplain, the analysis shall indicate if the encroachment would be a "significant encroachment," that is, whether it would cause one or more of the following impacts:

- (1) The action would have a high probability of loss of human life;
- (2) The action would likely have substantial, encroachment-associated costs or damage, including interrupting aircraft service or loss of a vital transportation facility (e.g., flooding of a runway or taxiway; important navigational aid out of service due to flooding, etc.); or
- (3) The action would cause adverse impacts on natural and beneficial floodplain values.

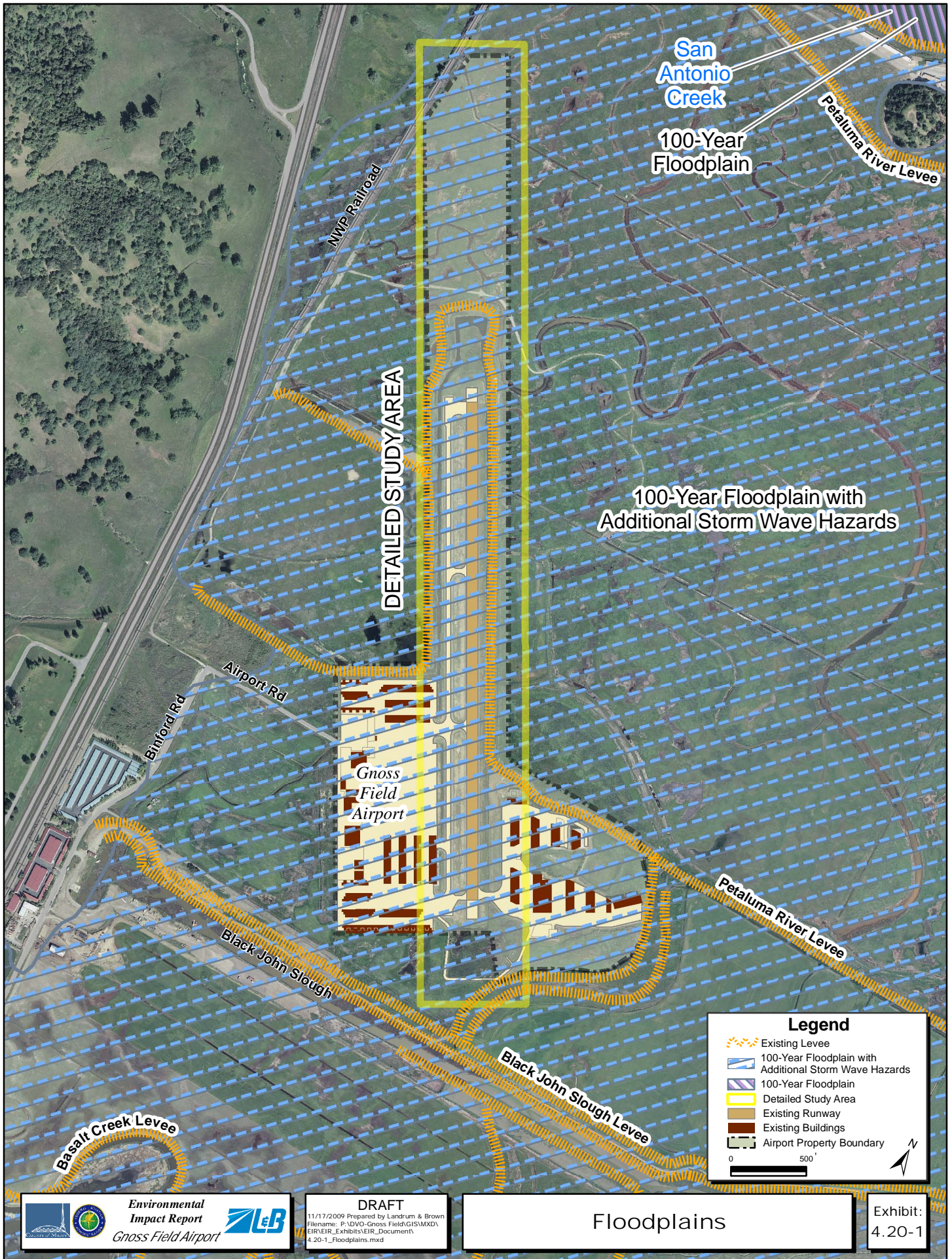
According to Appendix G of the California Environmental Quality Act (CEQA), a project would generally have a significant effect on floodplains if it would:

- Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;
- Place within the 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Cause inundation by seiche, tsunami, or mudflow.

### **4.20.2.2 Environmental Impacts of the Proposed Project**

#### **Impact 4.20-1: Development within the 100-year floodplain (less than significant).**

The project would include development within the 100-year floodplain of the proposed 1,100-foot extension of Runway 13, the extension of the parallel taxiway adjacent to the runway, and the extension of the levee and drainage ditch adjacent to Runway 13. Approximately 13 additional acres of the approximately 3,875 acre





100-year floodplain behind the airport levee would be encroached upon as discussed in Chapter Two, *Summary*, Chapter Six *Alternatives*, and Appendix D, *Runway Length Analysis*, off-site alternatives such as using another airport or another mode of transportation are not practicable as they do not meet the project purpose. No on-site alternatives other than extending the runway at DVO by a minimum of 1,100 feet to a total runway length of 4,400 feet would meet the project's purpose and need, which is to provide the necessary runway length for existing users to more efficiently use the Airport. In addition, FAA design standards require a 240-foot runway safety area at each end of the 4,400 foot runway to meet FAA airport design standards. Therefore it is not practicable to implement the Sponsor's Proposed Project or Alternative D without constructing the proposed runway extension in an area currently in the 100-year floodplain.

In order to determine if these improvements would result in a significant encroachment, each of the issues, as defined by DOT Order 5650.2, *Floodplain Management and Protection*, and by Appendix G of CEQA, are addressed below:

- The project would not have a high probability of loss of human life, would not place housing within a 100-year flood hazard area, and would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. Further, the project would not:
  - Place within the 100-year flood hazard area structures which would impede or redirect flood flows;
  - Construct new buildings or any structure designed for human habitation;
  - Change the Airport access road, thereby increasing the risk of preventing access during a flood event;
  - Decrease the safety or ability to use the Airport during a flood event; or
  - Increase the likelihood of flood-induced spills of hazardous materials.
- The project would not have substantial, encroachment-associated costs or damage. The proposed development would occur within a 100-year floodplain, but the existing ditch and levee system would be extended to provide flood protection for the runway, taxiway, aircraft parking areas, and administrative offices. As a result, the Airport would be at no greater risk for flood damage than it currently is today.
- The development would occur within a large contiguous floodplain that encompasses the Airport and continues east until reaching the Petaluma River. The size of the contiguous area is approximately 3,875 acres. The project would extend the existing levee and ditch system to the northwest and result in an additional 13 acres of land being protected by a levee. Impounding this relatively small area (less than one percent of contiguous area) would not result in new areas being subject to 100-year floods, nor would it result in existing areas subject to 100-year floods becoming more prone to floods.

- The project would not cause adverse impacts on natural and beneficial floodplain values. The proposed development would result in a larger land area being developed and the extension of the ditch and levee system. However, due to the size of the floodplain in and around the Airport, there would be no adverse impacts on the natural and beneficial floodplain values. Based on analysis in this section and in other sections of this EIR, the project would not result in significant impacts to agricultural activities, aquacultural activities, aquatic or terrestrial organisms, flood control, groundwater recharge, or water quality.
- A seiche is a standing wave in an enclosed or partially enclosed body of water (seen on lakes, bays, and seas) that is caused by strong winds blowing across a long axis in the lake or embayment. Since the project area is located approximately four miles from the northwestern shoreline of the San Pablo Bay, seiche effects as a result of the project would be unlikely. Likewise, mudflows would be unlikely due to the location of the project area at nearly sea level and not atop a hillslope. Tsunamis are oceanic waves that are generated by earthquakes, submarine volcanic eruptions, or large submarine landslides. The waves are generally formed in groups that may have very long wavelengths (several miles to more than 100 miles), but only a few feet high. As a tsunami enters shallow water near coastlines, the wave velocity diminishes and the wave height increases. If the trough of the wave reaches land first, the arrival of a tsunami is preceded by recession of coastal waters; if the crest of the wave reaches land first, there would be a rise in water level. The large waves that follow can crest at heights of more than 50 feet and strike with devastating force. As demonstrated in Section 4.3, *Geology, Soils, and Seismicity*, of this chapter, since the study area is more than four miles from San Pablo Bay and seventeen miles from the nearest coastline, the potential for this condition is considered low.

With this project, approximately 13 additional acres of the approximately 3,875 acre 100-year floodplain behind the airport levee would be encroached upon, but because the existing Airport levee and drainage ditch system would be extended to surround and protect the proposed runway and taxiway extension and the size of the development in relationship to the size of the surrounding floodplain would make the development unlikely to negatively affect surrounding uses, it would not cause a significant encroachment, as would be evidenced by an increase in the risk of human hazards or property damage from flood waters, or degrade natural and beneficial floodplain values. Therefore, the project impact on the floodplain, and the possibility of the project being subject to flood waters is deemed less-than-significant.

**Mitigation:** None required.

#### **4.20.3 CUMULATIVE IMPACTS OF THE PROPOSED PROJECT**

Because the project would not result in significant impacts to floodplains, it would therefore not result in subsequent contribution to cumulative impacts to floodplains.