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GAVIN NEWSOM, Governor
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January 14, 2026

Margaret Bruce, Executive Director
San Francisquito Creek Joint Powers Authority
750 Menlo Avenue, Suite 250
Menlo Park, CA, 94025

Attn: Tess Byler (TByler@sfcjpa.org)

Subject: Strategy to Advance Flood Protection, Ecosystems, and Recreation along San Francisco (SAFER) Bay Project, Draft Environmental Impact Report, SCH No. 2022040504, San Mateo County

Dear Margaret Bruce:

The California Department of Fish and Wildlife (CDFW) received a Notice of Availability of a Draft Environmental Impact Report (EIR) from San Francisquito Creek Joint Powers Authority (JPA) for the Strategy to Advance Flood Protection, Ecosystems, and Recreation along San Francisco (SAFER) Bay Project (Project) pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1] CDFW previously submitted comments in response to the Notice of Preparation of the draft EIR.

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).) CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802.) Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's Lake and Streambed Alteration (LSA) regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

REGULATORY REQUIREMENTS

California Endangered Species Act

Please be advised that a CESA Incidental Take Permit (ITP) must be obtained if the Project has the potential to result in "take" of plants or animals listed under CESA, either

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

during construction or over the life of the Project. Issuance of a CESA permit is subject to CEQA documentation; the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA permit.

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce the population of a threatened, rare, or endangered species. (Pub. Resources Code, §§ 21001, subd. (c), 21083; CEQA Guidelines, §§ 15380, 15064, and 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency's FOC does not eliminate the Project proponent's obligation to comply with Fish and Game Code section 2080.

Lake and Streambed Alteration

CDFW requires an LSA Notification, pursuant to Fish and Game Code section 1600 et. seq., for Project activities affecting lakes or streams and associated riparian habitat. Notification is required for any activity that may substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake, or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are subject to notification requirements. CDFW, as a Responsible Agency under CEQA, will consider the CEQA document for the Project and may issue an LSA Agreement. CDFW may not execute the final LSA Agreement (or ITP) until it has complied with CEQA as a Responsible Agency.

PROJECT DESCRIPTION SUMMARY

Proponent: San Francisquito Creek Joint Powers Authority (JPA)

Objective: The objective of the Project is to reduce risks to people, property, and infrastructure from current tidal flooding and projected sea level rise through engineered and natural features that enhance shoreline ecosystems and improve recreational activities. Primary Project activities include construction of shoreline protection features (levees, floodwalls, hybrid shoreline protection features, and flood risk reduction structures); habitat improvements [tidal salt marsh restoration, enhancement of habitat for the federally threatened and state species of special concern (SSC) western snowy plover (*Anarhynchus nivosus nivosus*), creation of seabird islands in the Ravenswood Pond Complex, and creation/restoration of salt marsh-upland transition habitat]; and construction/enhancement of recreational features (extending and replacing portions of the San Francisco Bay Trail and installing signage, viewing points, benches, and access points).

Location: The Project site is within the cities of East Palo Alto, Menlo Park, and Redwood City in San Mateo County. The Project site is located west of San Francisco Bay along approximately seven miles of shoreline, starting from O'Connor Street in East Palo Alto at San Francisquito Creek to Redwood City near the Menlo Park city boundary to the northwest. The Project includes actions within the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge), including Refuge-managed lands in the Ravenswood Pond Complex, in Faber and Laumeister marshes (owned by the City of Palo Alto), and in the Ravenswood Open Space Preserve (owned by Midpeninsula Regional Open Space District).

Timeframe: The Project will be constructed in two phases, with project-level components anticipated to begin in 2029 and finishing in 2031, and program-level components anticipated to begin in 2031 and finishing in 2034.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist JPA in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the document. Based on the potential for the Project to have a significant impact on biological resources, CDFW concludes that an EIR is appropriate for the Project.

I. Mitigation Measure or Alternative and Related Impact Shortcoming

Would the Projecthave a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or U.S. Fish and Wildlife Service?

COMMENT 1: Page 3.4-27 – Mitigation Measure BIO-2: Preconstruction Survey

Issue: Mitigation Measure BIO-2: Preconstruction Survey states that the focused survey conducted for Congdon's tarplant (*Centromadia parryi* – California Rare Plant Rank 1B.1) will take place during the appropriate bloom season no more than three years prior to ground disturbance in a year with near-average or above-average precipitation, unless the biologist verifies that the species is flowering and detectable at a South Bay reference population despite below-average rainfall. The measure also states that if no Congdon's tarplants are detected in the focused survey, Mitigation Measure 3: Congdon's Tarplant Avoidance and Minimization and Mitigation Measure 4: Compensatory Mitigation for Congdon's Tarplant will be unnecessary.

Specific impact and why impact would occur: Conducting a focused survey for Congdon's tarplant up to three years prior to ground disturbance could result in impacts to this species since the plant would be undetected if it were to be present in the intervening season(s) between the focused survey and work commencement.

Evidence impact would be significant: If Congdon's tarplant were to be present in areas of disturbance by the Project without implementation of avoidance and minimization (as described in Mitigation Measure BIO-3: Congdon's Tarplant Avoidance and Minimization) and compensation (as described in Mitigation Measure BIO-4: Compensatory Mitigation for Congdon's Tarplant), an undetermined number of individuals of this species could be lost due to Project activities. Although not currently listed under CESA, according to the California Native Plant Society's Rare Plant Inventory, plants constituting California Rare Plant Rank 1B meet the definitions of rare, threatened, or endangered under Sections 1901, 2062, or 2067 of the California Fish and Game Code, and may be eligible for state listing.

Recommended Modification of Mitigation Measure BIO-2: Please revise Mitigation Measure BIO-2: Preconstruction Survey to state that focused surveys for Congdon's tarplant will occur during the appropriate blooming season for a minimum of two years, with one survey occurring within one year of ground disturbance associated with Project activities. In addition, a pre-activity survey should be conducted to look for individuals of Congdon's tarplant prior to initiating ground disturbing Project activities during the same season of work.

COMMENT 2: Page 3.4-27 – Mitigation Measure BIO-4: Compensatory Mitigation for Congdon's Tarplant

Issue: Mitigation Measure BIO-4: Compensatory Mitigation for Congdon's Tarplant includes language stating that separate Congdon's Tarplant Habitat Mitigation and Management Plans (CTHMMPs) may be prepared by each Project proponent. Since JPA is the Lead Agency and permit applicant for this Project, it appears that only one CTHMMP would be necessary, and that it would be prepared by JPA. CDFW recommends revising Mitigation Measure BIO-4 accordingly.

Issue: Mitigation Measure BIO-4: Compensatory Mitigation for Congdon's Tarplant states that if this species cannot be avoided, mitigation may include habitat occupied by this species will be preserved and managed in perpetuity at a minimum 1:1 ratio. However, it is not clear how the habitat will be preserved and managed in perpetuity. Please specify the legal instrument (e.g., conservation easement) JPA intends to use to accomplish preservation and management in perpetuity.

COMMENT 3: Page 3.4-31 – Mitigation Measure BIO-6: Crotch's Bumble Bee and Monarch Butterfly Avoidance and Minimization

Issue: Mitigation Measure BIO-6: Crotch's Bumble Bee (*Bombus crotchii*) and Monarch Butterfly Avoidance and Minimization discusses a pre-activity survey for foraging and nesting Crotch's bumble bee. A single pre-activity survey may not be sufficient to detect foraging and nesting Crotch's bumble bee.

Specific impact and why impact would occur: Conducting a single pre-activity survey for foraging and nesting Crotch's bumble bee (*Bombus crotchii*) could result in impacts to this species and its habitat if work proceeds without sufficient survey effort to detect species presence.

Evidence impact would be significant: If foraging Crotch's bumble bee and/or its nesting habitat were to be present in areas of disturbance by the Project, an undetermined number of individuals of this species could be lost due to Project activities. Crotch's bumble bee is listed as state candidate endangered.

Recommended Modification of Mitigation Measure BIO-6: Crotch's Bumble Bee and Monarch Butterfly Avoidance and Minimization: CDFW recommends conducting multiple appropriately timed surveys as described in CDFW's *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* (dated June 6, 2023 – see pdf at https://wildlife.ca.gov/Conservation/CESA#bumble-bee.)

COMMENT 4: Page 3.4-35 – Mitigation Measure BIO-7: Minimize Underwater Noise Impacts

Issue: Mitigation Measure BIO-7: Minimize Underwater Noise Impacts states that a Hydroacoustic Monitoring Plan will be prepared and approved by the National Marine Fisheries Service (NMFS). The Hydroacoustic Monitoring Plan should be provided to CDFW, in addition to NMFS, for review and approval, as this will be a condition of approval for CDFW authorization of the Project under any necessary permitting.

Recommended Modification of Mitigation Measure BIO-7: Please revise Mitigation Measure BIO-7: Minimize Underwater Noise Impacts to include review and approval of the Hydroacoustic Monitoring Plan by CDFW, in addition to NMFS.

Issue: Mitigation Measure BIO-7 states that the Hydroacoustic Monitoring Plan will include the use of a bubble curtain during any impact pile driving. Please be aware that bubble curtains may not effectively attenuate underwater sound when used in shallow water environments.

Recommended Modification of Mitigation Measure BIO-7: Mitigation Measure BIO-7 should be revised to state that due to the shallow environment, hydroacoustic modeling of potential underwater sound levels, and areas impacted, should reflect that bubble curtains may not be an effective attenuation measure for all piles.

COMMENT 5: Page 3.4-36 – Mitigation Measure BIO-9: Fish Exclusion at Dewatering Sites

Issue: Mitigation Measure BIO-9: Fish Exclusion at Dewater Sites describes the method of fish exclusion during installation of cofferdams to dewater Project sites and indicates the potential need to use a dipnet or seine to capture and transport any fish remaining within the cofferdams. Please be aware that CDFW authorization is necessary to handle any CESA-listed species and common species during collection of aquatic species from dewatered areas.

Recommended Modification of Mitigation Measure BIO-9: Please revise Mitigation Measure BIO-9 to reflect that any handling of CESA-listed or common fish species during dewatering or other project activities will require authorization from CDFW.

COMMENT 6: Page 3.4-37 – Mitigation Measure BIO-11: Minimize Operation and Maintenance Impacts

Issue: Mitigation Measure BIO-11: Minimize Operation and Maintenance Impacts describes use of a fish screen on pumps to prevent fish from being pumped into managed ponds during water level management activities.

Recommended Modification of Mitigation Measure BIO-11: Please revise Mitigation Measure BIO-11 to include language that states all intakes pumping or passively moving water from San Francisco Bay or tidal channels should be fitted with a protective fish screen consistent with *Department of Fish and Game Fish Screening Criteria*, dated June 19, 2000 (Attachment 1) and be capable of preventing entrainment of CESA-listed fish species, specifically the state threatened longfin smelt (*Spirinchus thaleichthys*). Note that screens should meet criteria listed for the federal and state threatened Delta smelt (*Hypomesus transpacificus*) in Attachment 1, as the same criteria are used for longfin smelt. In addition, language in Mitigation Measure BIO-11 should be included that states all fish screen designs should be reviewed and approved by CDFW prior to construction and implementation of fish screens.

COMMENT 7: Page 3.4-43 – Mitigation Measure BIO-14: General Wildlife Impact Minimization Measures

Issue: Mitigation Measure BIO-14: General Wildlife Impact Minimization Measures includes a bullet stating that viewing platforms, kiosks, benches, interpretive displays, and other focal areas for public use will be located a minimum of 300 feet from high-quality western snowy plover nesting habitat. Mitigation Measure BIO-14 does not include language describing a minimum buffer between public access features and suitable habitat for the federal and state endangered and state fully protected California Ridgway's rail (*Rallus obsoletus obsoletus*) or state threatened and state fully protected California black rail (*Laterallus jamaicensis coturniculus*).

Specific impact and why impact would occur: Placing public access features in close proximity to habitat suitable for either species of rail could lead to disruption of foraging activities, flushing of rails off of upland refugial habitat during high tides, as well as flushing rails off of active nests and potentially leading to nest abandonment or nest predation events.

Evidence impact would be significant: Repeated and prolonged disturbance of state listed/state fully protected rail species associated with public access features could lead to nest abandonment or reduced frequency or duration of care for young; increased nest predation; disturbance of rails out of upland refugia during high tides; and decreased time spent foraging that may result in reduced health or vigor of all life stages.

Recommended Modification of Mitigation Measure BIO-14: Please revise Mitigation Measure BIO-14 to include language specifying a minimum buffer of 700 feet between proposed public access features and habitat suitable for California Ridgway's rail and California black rail to minimize disturbance to these sensitive species as a result of public access activities. If it is not possible to maintain a 700-foot buffer, CDFW suggests including some type of low-profile vegetative screening between public access features and suitable rail habitat, or seasonal closure of public access features during rail breeding season (February 1-August 31) to reduce the likelihood of impacts to rails.

COMMENT 8: Page 3.4-47 – Mitigation Measure BIO-16: Breeding Season Habitat Buffers

Issue: Mitigation Measure BIO-16: Breeding Season Habitat Buffers states that if breeding rails are present, construction activities will not occur within 700 feet of an identified California Ridgway's rail calling center, or within 300 feet of a California black rail calling center during the breeding season.

Recommended Modification to Mitigation Measure BIO-16: Since California black rails are a sensitive marsh species susceptible to disturbance similar to California Ridgway's rail, please revise Mitigation Measure BIO-16 to include a 700-foot buffer between California black rail calling centers and construction activities during the rail breeding season. A 700-foot buffer should also apply to any staging areas, as Figure 2-26 shows staging areas positioned in close proximity to the Don Edwards National Wildlife Refuge Faber and Laumeister marshes. If establishing 700-foot buffers around breeding rail detections is not feasible, noise reducing modifications to equipment as well as portable acoustic barriers/blankets placed near noise sources may be appropriate to reduce auditory and visual impacts to breeding rails. Note that these features may be appropriate regardless of time of year to minimize impacts to foraging rails as well.

COMMENT 9: Page 3.4-52 – Mitigation Measure BIO-19: Preconstruction Surveys for Other Nesting Birds

Issue: Mitigation Measure BIO-19: Preconstruction Surveys for Other Nesting Birds states that during the breeding season of February through August 31, nesting bird surveys will be conducted for raptors within 300 feet, and for all other nesting birds within 100 feet of construction, operation, and maintenance activities. The proposed distances between Project activities and potentially active raptor and non-raptor nests are not sufficient to identify potentially nesting birds that may be impacted by Project activities. In addition, the measure does not specify a date for the beginning of nesting bird breeding season within February.

Specific impact and why impact would occur: Without preconstruction nesting bird surveys suitably sited to detect nesting birds in and surrounding the Project site, Project activities may result in direct mortality of nesting adults or young; nest abandonment; and reduction in reproductive success.

Evidence impact would be significant: White-tailed kite (*Elanus leucurus*) is a state species fully protected species under California Fish and Game Code (§ 3511) and the northern harrier (*Circus hudsonius*) is a state SSC. In addition, take of nesting birds, birds in the orders Falconiformes or Strigiformes, and migratory nongame birds as designated in the federal Migratory Bird Treaty Act is a violation of Fish and Game Code (§ 3503, § 3503.5, and § 3513).

Recommended Modification to Mitigation Measure BIO-19: Please modify Mitigation Measure BIO-19 with the following:

- Minimum survey radii surrounding the work area will be the following: 1) 250 feet for passerines; 2) 500 feet for small raptors such as accipiters; and 3) 1,000 feet for larger raptors such as buteos. Depending on the line of sight between areas containing potential active nests and Project activities, these suggested minimum survey radii may need to be expanded.

- Nesting season surveys to begin January 15 for early-season nesting species such as hummingbirds.

COMMENT 10: Pages 3.4-54 – 3.4-56 – Mitigation Measure BIO-21: Preconstruction Surveys for Burrowing Owl, Mitigation Measure BIO-22: Burrowing Owl Buffers and Monitoring, and Mitigation Measure BIO-23: Passive Relocation Burrowing Owl

Issue: Mitigation Measure BIO-21: Preconstruction Surveys for Burrowing Owl describes surveying for the state candidate endangered burrowing owl (*Athene cunicularia*) in potentially suitable burrowing owl habitat within 250 feet of ground disturbance. Mitigation Measure BIO-22: Burrowing Owl Buffers and Monitoring describes establishment of a 250-foot non-disturbance buffer during burrowing owl breeding season. Mitigation Measure BIO-23: Passive Relocation Burrowing Owl describes potential passive relocation of burrowing owl during the non-breeding season, with approval of CDFW.

Recommended Modification to Mitigation Measure BIO-21, BIO-22, and BIO-23: Please revise Mitigation Measure BIO-21, Mitigation Measure BIO-22, and Mitigation Measure BIO-23 to be consistent with information found in CDFW's Staff Report on Burrowing Owl Mitigation (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline). In addition, a portion of the Project appears to be within the boundary of proposed expanded study area and permit area for the Burrowing owl Conservation Strategy in the Santa Clara Valley Habitat Plan (https://scv-habitatagency.org/354/Habitat-Plan-Amendment). Any proposed survey methodology, buffers, or potential passive relocation must be consistent with these documents.

II. Editorial Comments and/or Suggestions

There appears to be a typographical error when cross-referencing Figure 2-13 and Figure 2-15. Figure 2-13 is an aerial photo showing the locations of typical sections F1 and F2, with the legend referring to Figure 2-15 to view the typical sections. However, Figure 2-15 shows typical sections F1 and F3.

ATTACHMENTS

Attachment 1 – *Department of Fish and Game Fish Screening Criteria*

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e).) Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNDDB field survey form can be filled out and submitted online at the following link: https://wildlife.ca.gov/Data/CNDDB/Submitting-Data. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

ENVIRONMENTAL DOCUMENT FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of environmental document filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the environmental document filing fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.)

CONCLUSION

CDFW appreciates the opportunity to comment on the draft EIR to assist JPA in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Tami Schane, Senior Environmental Scientist (Specialist), at Tami.Schane@wildlife.ca.gov; or Mitsuko Grube, Senior Environmental Scientist (Supervisory), at Mitsuko.Grube@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Erin Chappell
B77E9A6211EF486...

Erin Chappell
Regional Manager
Bay Delta Region

Attachment 1 – *Department of Fish and Game Fish Screening Criteria*

ec: Office of Land Use and Climate Innovation (SCH No. 2022040504
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EXHIBIT A
DEPARTMENT OF FISH AND GAME
FISH SCREENING CRITERIA
June 19, 2000

1. STRUCTURE PLACEMENT

A. Streams And Rivers (flowing water): The screen face shall be parallel to the flow and adjacent bankline (water's edge), with the screen face at or streamward of a line defined by the annual low-flow water's edge.

The upstream and downstream transitions to the screen structure shall be designed and constructed to match the bankline, minimizing eddies upstream of, in front of, and downstream of, the screen.

Where feasible, this "on-stream" fish screen structure placement is preferred by the California Department of Fish and Game.

B. In Canals (flowing water): The screen structure shall be located as close to the river source as practical, in an effort to minimize the approach channel length and the fish return bypass length. This "in canal" fish screen location shall only be used where an "on-stream" screen design is not feasible. This situation is most common at existing diversion dams with headgate structures.

The National Marine Fisheries Service - Southwest Region "Fish Screening Criteria for Anadromous Salmonids, January 1997" shall be used for these types of installations.

C. Small Pumped Diversions: Small pumped diversions (less than 40 cubic-feet per second) which are screened using "manufactured, self-contained" screens shall conform to the National Marine Fisheries Service - Southwest Region "Fish Screening Criteria for Anadromous Salmonids, January 1997."

D. Non-Flowing Waters (tidal areas, lakes and reservoirs): The preferred location for the diversion intake structure shall be offshore, in deep water, to minimize fish contact with the diversion. Other configurations will be considered as exceptions to the screening criteria as described in Section 5.F. below.

2. APPROACH VELOCITY (Local velocity component perpendicular to the screen face)

A. Flow Uniformity: The design of the screen shall distribute the approach velocity uniformly across the face of the screen. Provisions shall be made in the design of the screen to allow for adjustment of flow patterns. The intent is to ensure uniform flow distribution through the entire face of the screen as it is constructed and operated.

B. Self-Cleaning Screens:[1]

The U.S. Fish and Wildlife Service has selected a 0.2 feet per second approach velocity for use in waters where the Delta smelt is found. Thus, fish screens in the Sacramento-San Joaquin Delta and San Francisco Estuary should use this criterion for design purposes. In addition:

1. Streams and Rivers (flowing waters) - exposure to the fish screen shall not exceed fifteen minutes.

[1] Approach velocities in the June 19, 2000 Fish Screening Criteria that are inapplicable if delta smelt are present are omitted.

2. In Canals (flowing waters) - a bypass entrance shall be located every one-minute of travel time along the screen face.
3. Non-Flowing Waters (tidal areas, lakes and reservoirs) - The specific screen approach velocity shall be determined for each installation, based on the delta smelt life stage being protected. Velocities which exceed those described above will require a variance to these criteria (see Section 5.F. below).

C. Screens Which Are Not Self-Cleaning: The screens shall be designed with an approach velocity one-fourth that outlined in Section B. above. The screen shall be cleaned before the approach velocity exceeds the criteria described in Section B.

D. Frequency Of Cleaning: Fish screens shall be cleaned as frequently as necessary to prevent flow impedance and violation of the approach velocity criteria. A cleaning cycle once every 5 minutes is deemed to meet this standard.

E. Screen Area Calculation: The required wetted screen area (square feet), excluding the area affected by structural components (i.e., pore space or open area), is calculated by dividing the **maximum** diverted flow (cubic-feet per second) by the allowable approach velocity (feet per second). Example:

1.0 cubic-feet per second / 0.2 feet per second = 5.0 square feet of pore space

Unless otherwise specifically agreed to, this calculation shall be done at the **minimum** stream stage.

3. SWEEPING VELOCITY (Velocity component parallel to screen face)

A. In Streams And Rivers: The sweeping velocity should be at least two times the allowable approach velocity.

B. In Canals: The sweeping velocity shall exceed the allowable approach velocity. Experience has shown that sweeping velocities of 2.0 feet per second (or greater) are preferable.

C. Design Considerations: Screen faces shall be designed flush with any adjacent screen bay piers or walls, to allow an unimpeded flow of water parallel to the screen face.

4. SCREEN OPENINGS

A. Porosity: The screen surface shall have a minimum open area of 27 percent. We recommend the maximum possible open area consistent with the availability of appropriate material, and structural design considerations.
The use of open areas less than 40 percent shall include consideration of increasing the screen surface area, to reduce slot velocities, assisting in both fish protection and screen cleaning.

B. Round Openings: Round openings in the screening shall not exceed 3.96mm (5/32in). In waters where steelhead rainbow trout fry are present, this dimension shall not exceed 2.38mm (3/32in).

C. Square Openings: Square openings in screening shall not exceed 3.96mm (5/32in) measured diagonally. In waters where steelhead rainbow trout fry are present, this dimension shall not exceed 2.38mm (3/32in) measured diagonally.

D. Slotted Openings: Slotted openings shall not exceed 2.38mm (3/32in) in width. In waters where steelhead rainbow trout fry are present, this dimension shall not exceed 1.75mm (0.0689in).

EXHIBIT A
DEPARTMENT OF FISH AND GAME
FISH SCREENING CRITERIA
June 19, 2000

5. SCREEN CONSTRUCTION

A. Material Selection: Screens may be constructed of any rigid material, perforated, woven, or slotted that provides water passage while physically excluding fish. The largest possible screen open area which is consistent with other project requirements should be used. Reducing the screen slot velocity is desirable both to protect fish and to ease cleaning requirements. Care should be taken to avoid the use of materials with sharp edges or projections which could harm fish.

B. Corrosion and Fouling Protection: Stainless steel or other corrosion-resistant material is the screen material recommended to reduce clogging due to corrosion. The use of both active and passive corrosion protection systems should be considered. Consideration should be given to anti-fouling material choices, to reduce biological fouling problems. Care should be taken not to use materials deemed deleterious to fish and other wildlife.

C. Project Review and Approval: Plans and design calculations, which show that all the applicable screening criteria have been met, shall be provided to the Department before written approval can be granted by the Regional Manager, Bay Delta Region.

The approval shall be documented in writing to the project sponsor, with a copy to the Deputy Director, Resource Management and Policy Division. Such approval may include a requirement for post-construction evaluation, monitoring and reporting.

D. Assurances: All fish screens constructed after the effective date of these criteria shall be designed and constructed to satisfy the current criteria. Owners of existing screens, approved by the Department prior to the effective date of these criteria, shall not be required to upgrade their facilities to satisfy the current criteria unless:

1. The controlling screen components deteriorate and require replacement (i.e., change the opening size or opening orientation when the screen panels or rotary drum screen coverings need replacing),

2. Relocation, modification or reconstruction (i.e., a change of screen alignment or an increase in the intake size to satisfy diversion requirements) of the intake facilities, or

3. The owner proposes to increase the rate of diversion which would result in violation of the criteria without additional modifications.

E. Supplemental Criteria: Supplemental criteria may be issued by the Department for a project, to accommodate new fish screening technology or to address species-specific or site-specific circumstances.

F. Variances: Written variances to these criteria may be granted with the approval of the Regional Manager, Bay Delta Region and concurrence from the Deputy Director, Resource Management and Policy Division. At a minimum, the rationale for the variance must be described and justified in the request. Evaluation and monitoring may be required as a condition of any variance, to ensure that the requested variance does not result in a reduced level of protection for the aquatic resources.

EXHIBIT A
DEPARTMENT OF FISH AND GAME
FISH SCREENING CRITERIA
June 19, 2000

It is the responsibility of the project sponsor to obtain the most current version of the appropriate fish screen criteria. Project sponsors should contact the Department of Fish and Game and the U.S. Fish and Wildlife Service (for projects in anadromous and fresh waters) for guidance.

Copies of the current criteria are available from the Department of Fish and Game Bay Delta Region; 7329 Silverado Trail/P.O. Box 46, Yountville, CA 94599, (707) 944-5500.

Technical assistance can be obtained directly from the Habitat Conservation Branch; 1416 Ninth Street, Sacramento, CA 95814 - (916) 653-1070.

The National Marine Fisheries Service Southwest Region "Fish Screening Criteria for Anadromous Salmonids, January 1997" is available at: http://swr.ucsd.edu/hcd/fishscrn.htm and from their Southwest Region, 777 Sonoma Avenue, Room 325, Santa Rosa, CA 95402 - (707) 575-6050.