Proposal for Information Collection
San Onofre Nuclear Generating Station
Southern California Edison

An *EDISON INTERNATIONAL* Company
San Onofre Nuclear Generating Station

Submitted In Compliance with
316(b) Phase II Regulatory Requirements

SONGS - Description

- Two nuclear fueled generating units (2, 3), each producing 1,100 MW
- Average Capacity = 96.9%
- Intake structures 3183 ft offshore
  - Velocity Capped riser system, 18' internal diameter intake pipes
- Louver system in forebay to deflect debris and direct fish to return system (FRS)
- Fish Chase procedure used
- Intake = 4 X 202,750 GPM = 1,167,840,000 GPD
- Through screen velocity is 3 ft per second
- Impingement has averaged ~ 25 metric tons for the period 1985-2003. Has dramatically increased recently to 125 metric tons in 2005.
  - By far the most impingement of any PP in CA.

“Existing” avoidance compliance alternatives

- Offshore intake with Velocity Caps
- Fish guidance system using Louvers and vanes
- Fish heat chase operational procedures
- Fish collection and return system
- Restoration

Facility Description

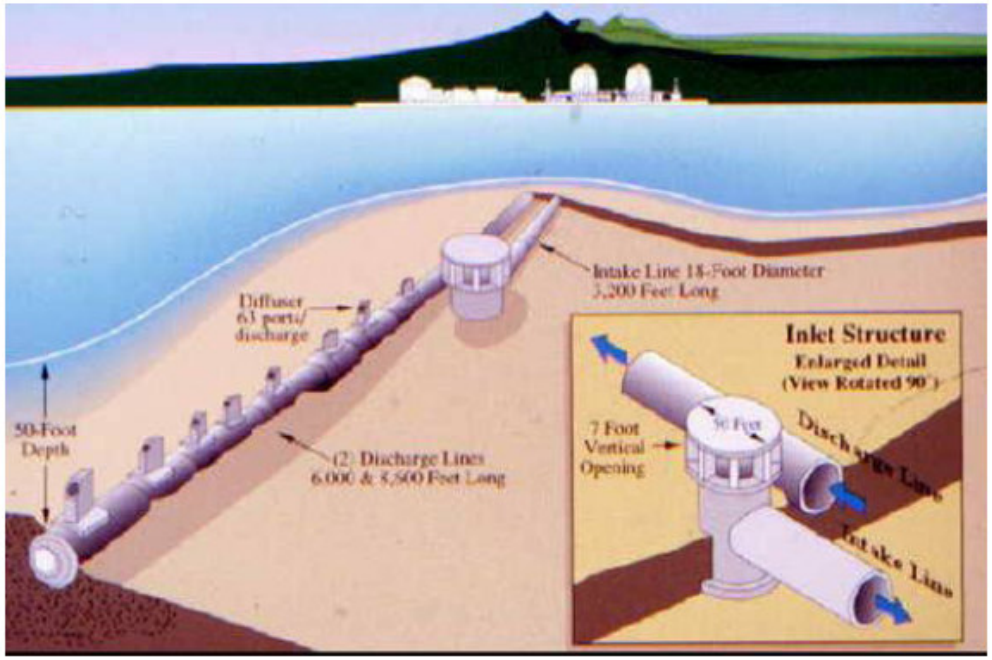


Figure 1 - Schematic of SONGS submerged offshore intake and velocity cap

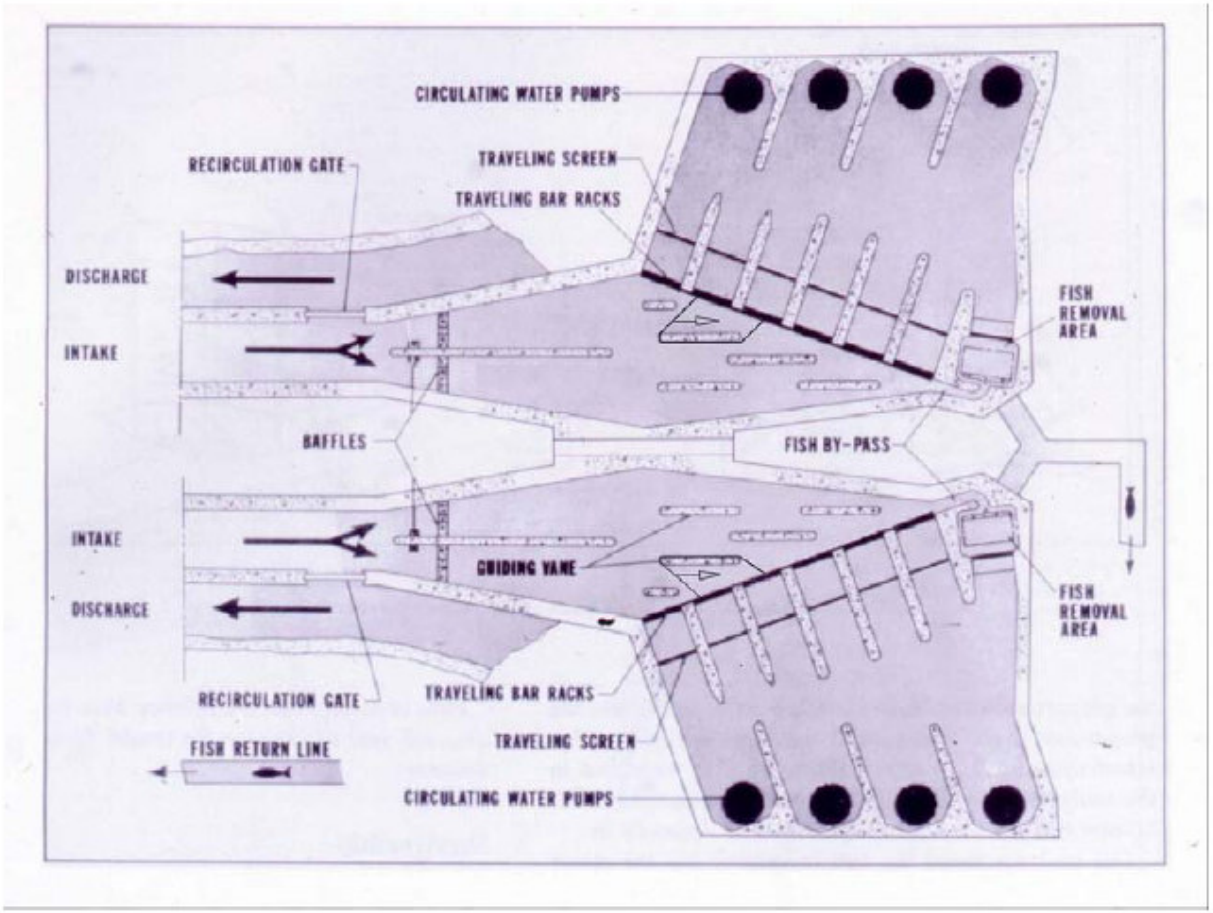


Figure 2 - Top view of SONGS on shore cooling water intake structure and fish return system

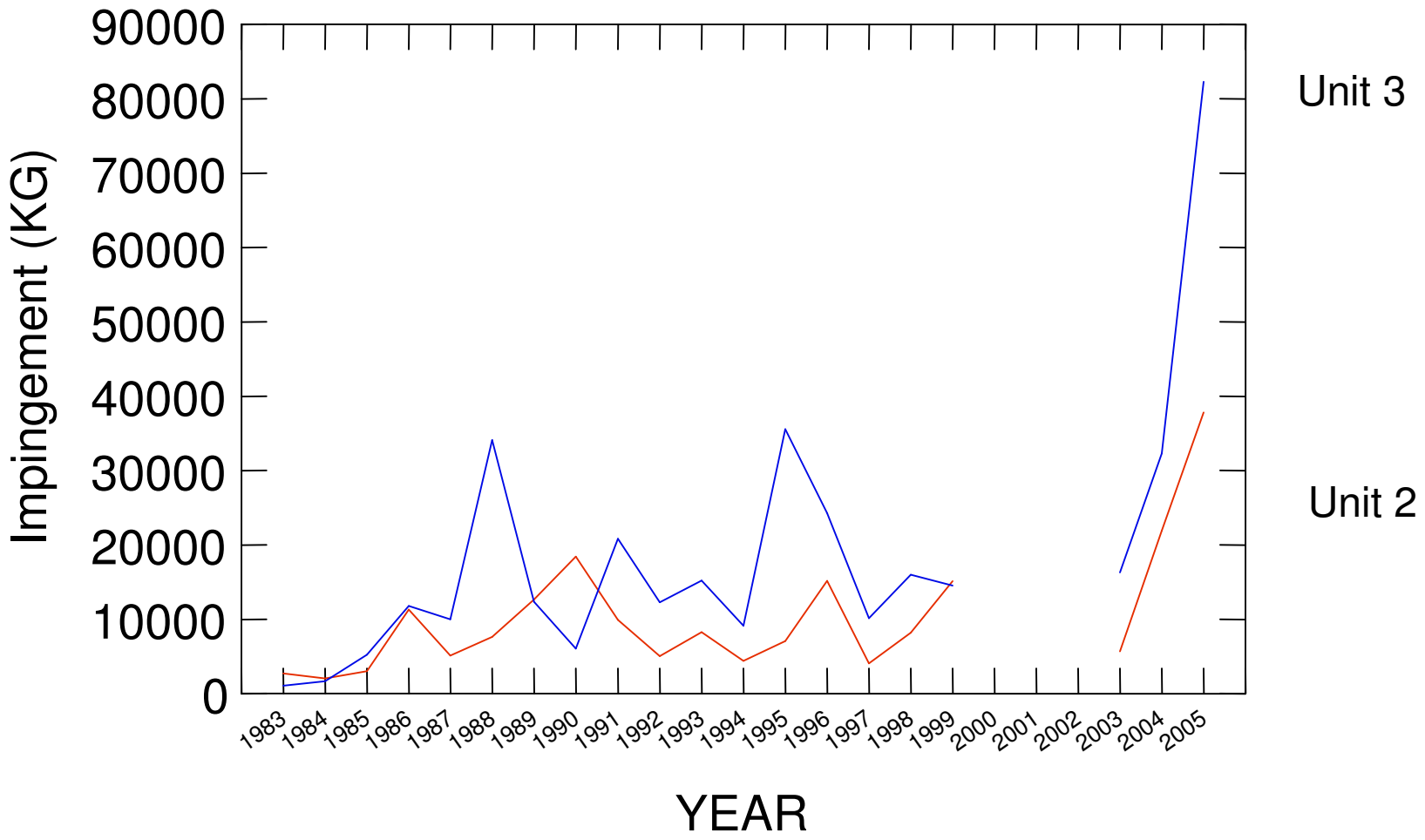
SONGS continued

- Operates under NEPA (RWQCB) and CEQA (CCC)
- CCC permit requires mitigation
  - Impingement – Behavioral Barriers
    - Implemented as Fish Chase procedure
  - Entrainment – wetland restoration
    - San Dieguito: 150 acres with partial credit for full tidal flow
  - Thermal effects – Artificial reef
    - 150 acre artificial reef off of San Clemente
  - PORK – white sea bass hatchery funding
  - Monitoring and remediation by independent scientists
    - Typically compared to the performance of reference sites
    - SAP
    - SCE funded staff scientists
    - For period equal to life of the Powerplant plus years of non-compliance

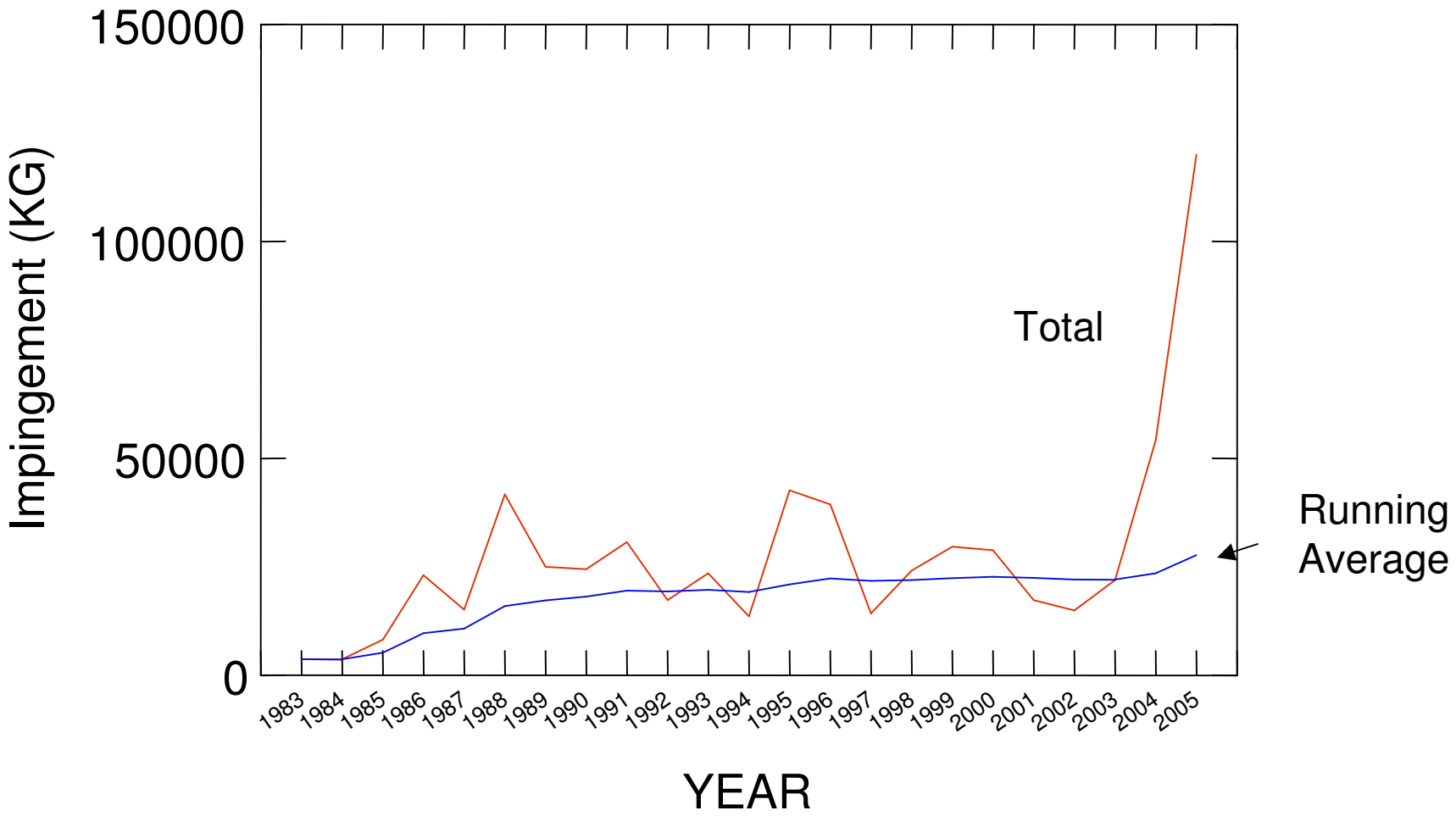
Effectiveness of FRS combined with Fish Chase procedure – CCC permit requirement

- CCC permit required evaluation of behavioral barriers to reduce fish impingement
  - Target 10% or greater
  - Light and sound evaluated and rejected
  - Fish Chase accepted as being in compliance with permit requirement
    - Target 10% reduction in impingement

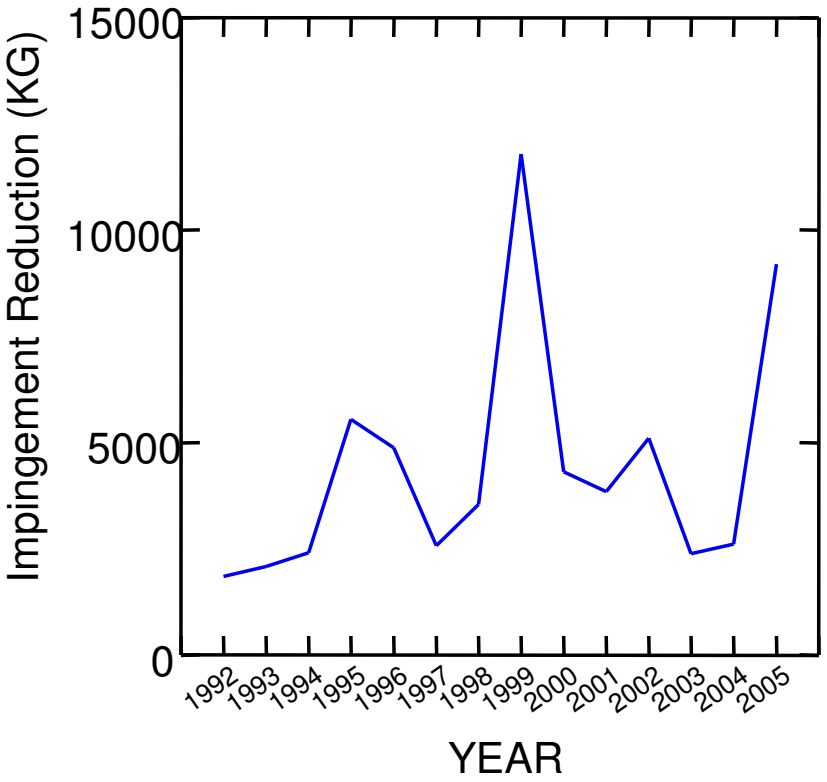
Units 2 and 3 Impingement

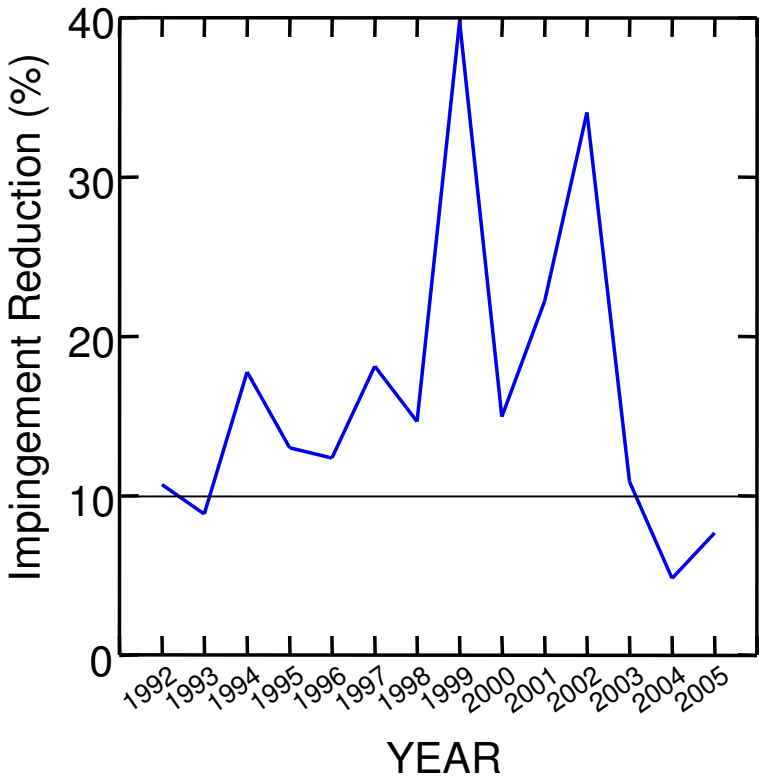


Total and average Impingement



Impingement reduction due to Fish Chase





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Restoring the San Dieguito wetlands

The declining wetlands along the San Dieguito Lagoon in Del Mar will be rejuvenated. Southern California Edison is undertaking a mitigation project for fish lost at the San Onofre Nuclear Generating Station. To do this, 150 acres of wetlands will be created.

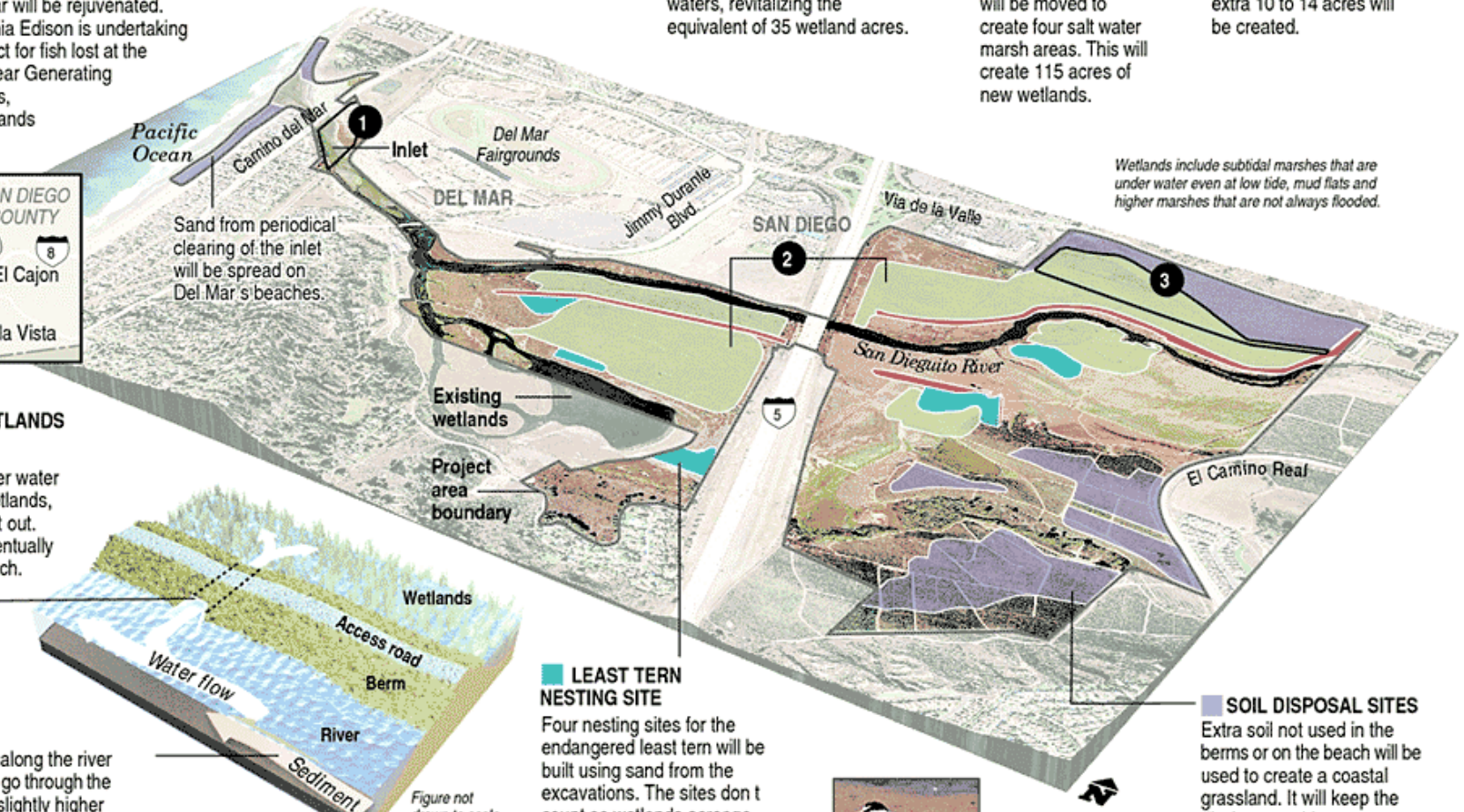
REACHING 150 ACRES OF WETLANDS...

1. Sand will be removed from the inlet to let in tidal waters, revitalizing the equivalent of 35 wetland acres.
2. Two million cubic yards of earth will be moved to create four salt water marsh areas. This will create 115 acres of new wetlands.

... AND THEN SOME

3. To make a more complete marsh, an extra 10 to 14 acres will be created.

Wetlands include subtidal marshes that are under water even at low tide, mud flats and higher marshes that are not always flooded.



Sand from periodical clearing of the inlet will be spread on Del Mar's beaches.

BERMS: WETLANDS GATEKEEPERS

The berms let river water through to the wetlands, keeping sediment out. The sediment eventually travels to the beach.

Pipes within the berm pass river water through during a flood.

Sediment travels along the river bottom, too low to go through the pipes, which are slightly higher than the normal river level.

Figure not drawn to scale.

LEAST TERN NESTING SITE

Four nesting sites for the endangered least tern will be built using sand from the excavations. The sites don t count as wetlands acreage. Rather they are built for the Del Mar Fairgrounds as mitigation in exchange for access to the inlet.

Least tern

SOIL DISPOSAL SITES

Extra soil not used in the berms or on the beach will be used to create a coastal grassland. It will keep the dirt from washing away.

SOURCES: Southern California Edison; Project Design Consultants; Least tern photo courtesy Southern California Edison; Aerial photo courtesy Project Design Consultants

SHAFFER GRUBB / Union-Tribune

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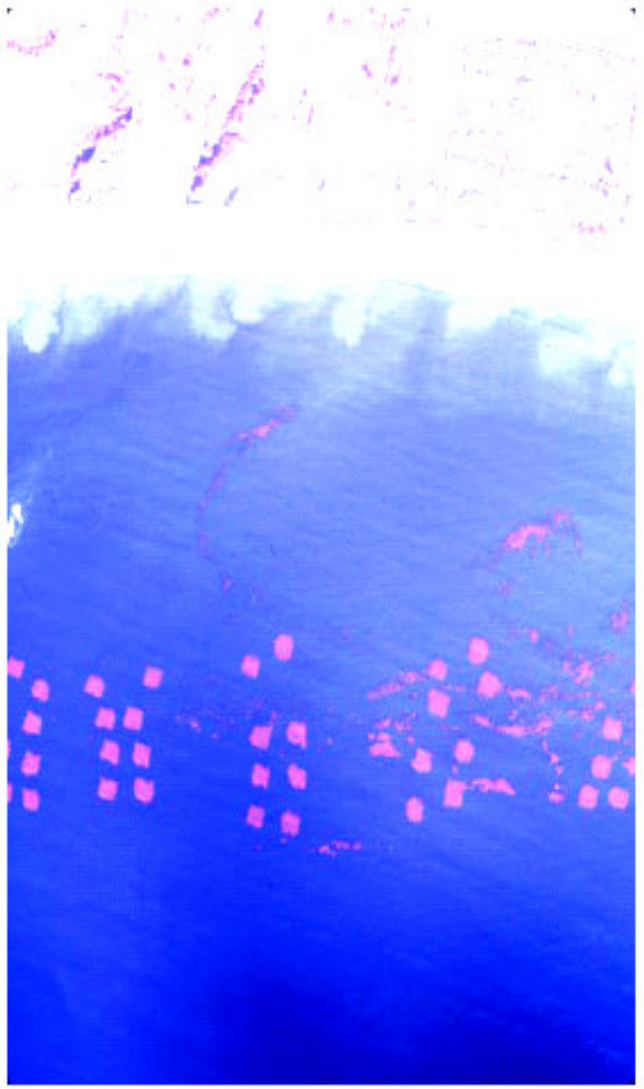
San Clemente Artificial Reef



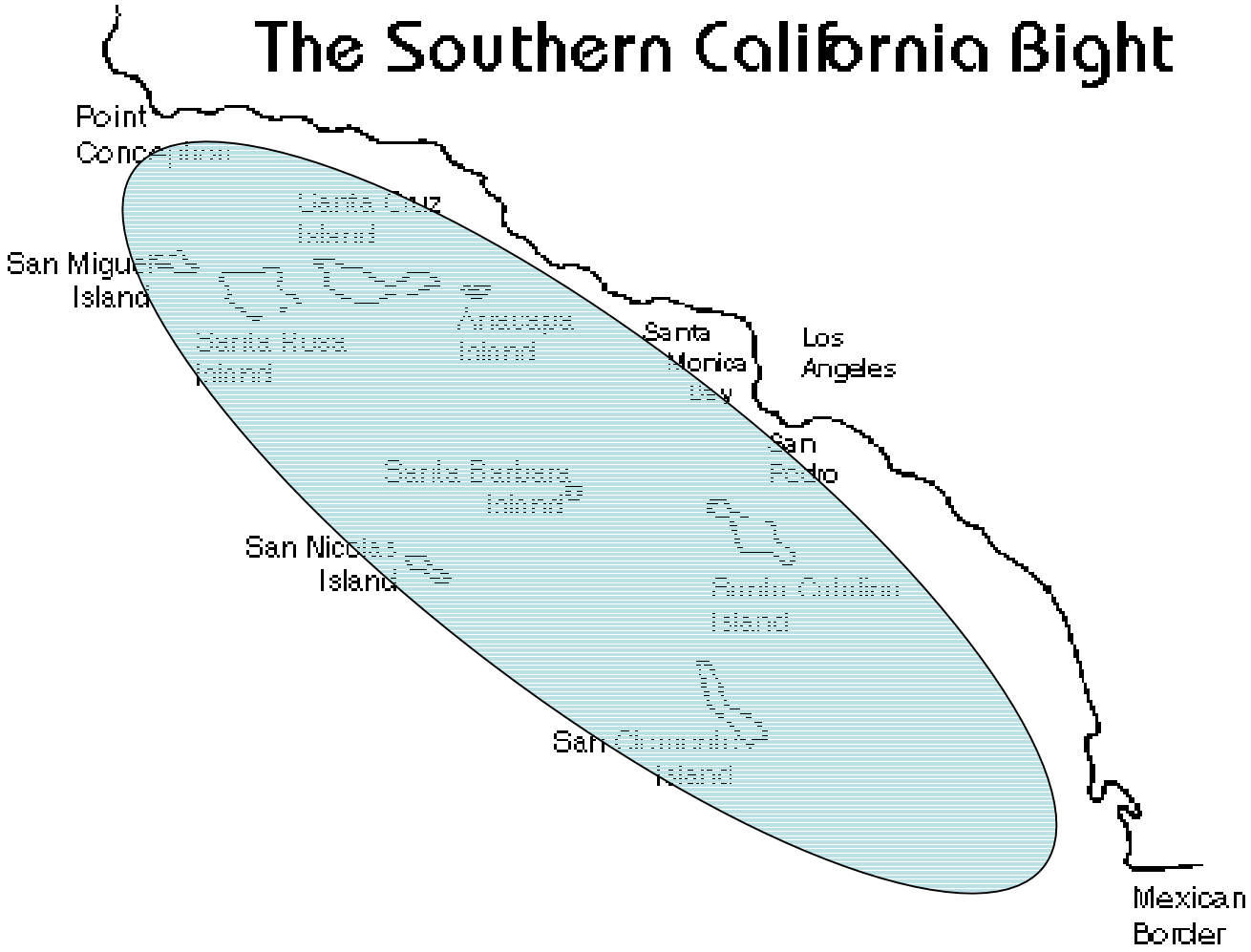
“Considered” new avoidance compliance alternatives

- Narrow Slot cylindrical wedgewire screens
  - Considered possible
- Ristroph Travelling Water Screens
  - Infeasible

Previous Biological Studies

- All studies done by Marine Review Committee
  - Independent entity
- Entrainment
  - 1979-1986
  - Found significant effects – in sort of Pm assessment
    - Source water body is southern California Bight
- Impingement
  - 1983-1994, weekly
  - 1994-1998, monthly
  - 1998-current quarterly + heat treatments

Source Water Body



Proposed new Biological sampling

Program	Duration	Sampling Frequency	Data Collected
Impingement Monitoring	1 year	Biweekly – One 24-hour sample every two weeks, year-round plus heat treatments.	Counts and biomass by species and life stage, length frequency, scale/otolith samples, specimen condition, collection efficiency, ancillary environmental and operation data
Fish Chase	1 year	Concurrent with all heat treatment operations at both Units 2 and 3.	Estimated count and biomass of all identifiable fish and target invertebrates.
Entrainment Monitoring	1 year	Approximately biweekly for one year; plankton net samples taken from intake screenwell[1] – 4 samples at 6-hr intervals covering a 24-hour period, year-round. Sample schedule may vary depending on heat treatment and maintenance outage schedules.	Counts and densities (#/volume) by species and life stage, length frequency of target taxa, ancillary environmental and operation data
Source Water Plankton Monitoring	1 year	Monthly at 6-hour intervals over 24-hour period, coinciding, when possible, with in-plant entrainment monitoring.	Counts and densities of fish larvae and targeted invertebrate larvae by species and life stage, length frequency of target taxa, ancillary environmental and operational data.
FRS Studies (impingement & entrainment)	1-year	Bi-weekly, concurrent with impingement samples. Samples netted from fish return elevator. 4 samples at 12-hr intervals covering 24-hr period.	Counts and biomass by species and life stage, length frequency of target taxa, and condition (i.e., any indication of impaired swimming ability in elevator.

Impingement proposed study

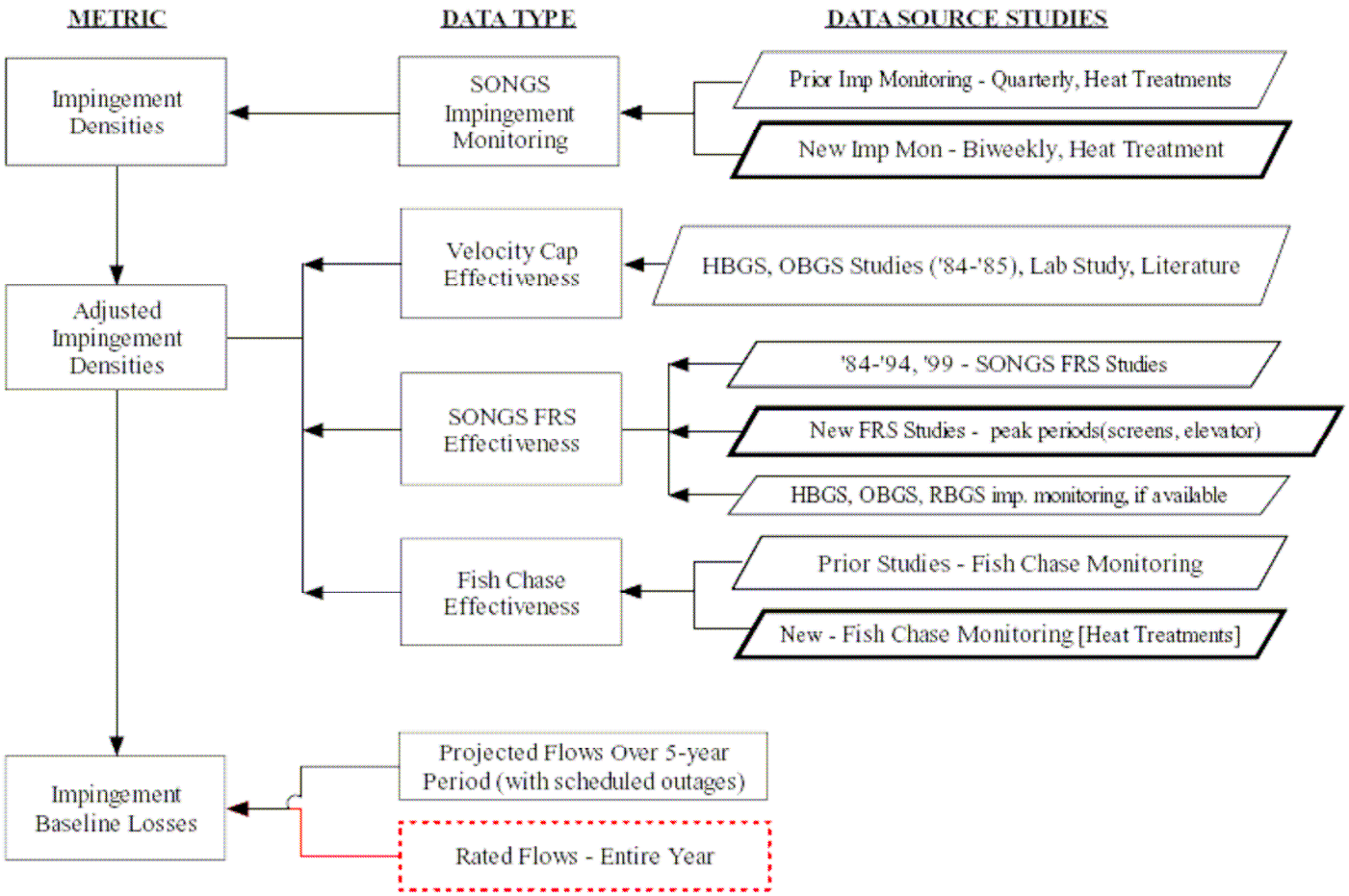


Figure 4-1. Conceptual model for estimating baseline impingement losses at the San Onofre Nuclear Generating Station (proposed field studies shown in bolded boxes).

Entrainment Study Plan

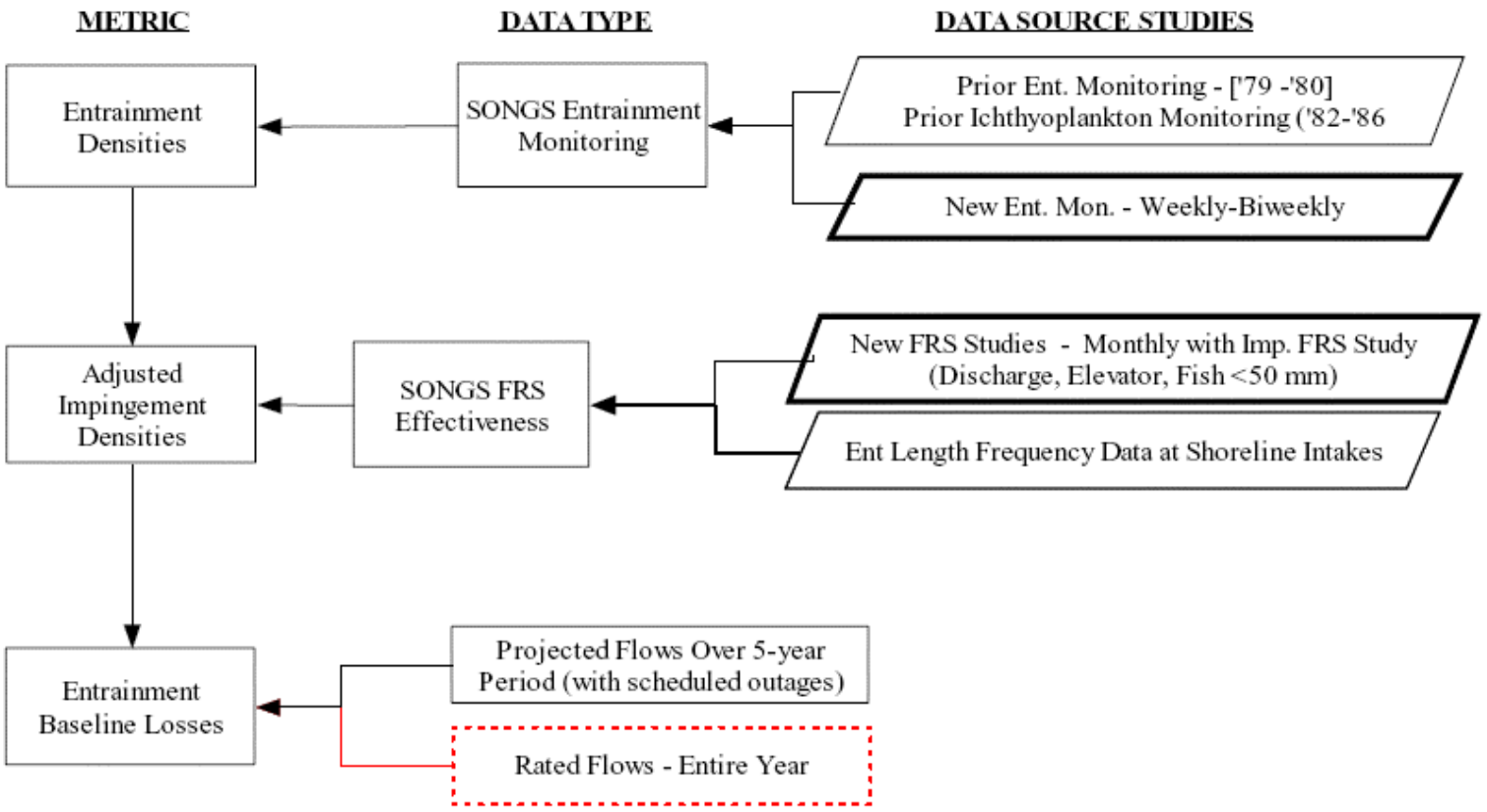


Figure 5-2. Conceptual model for estimating baseline entrainment losses at the San Onofre Nuclear Generating Station (proposed field studies shown in bolded boxes).

Entrainment sampling

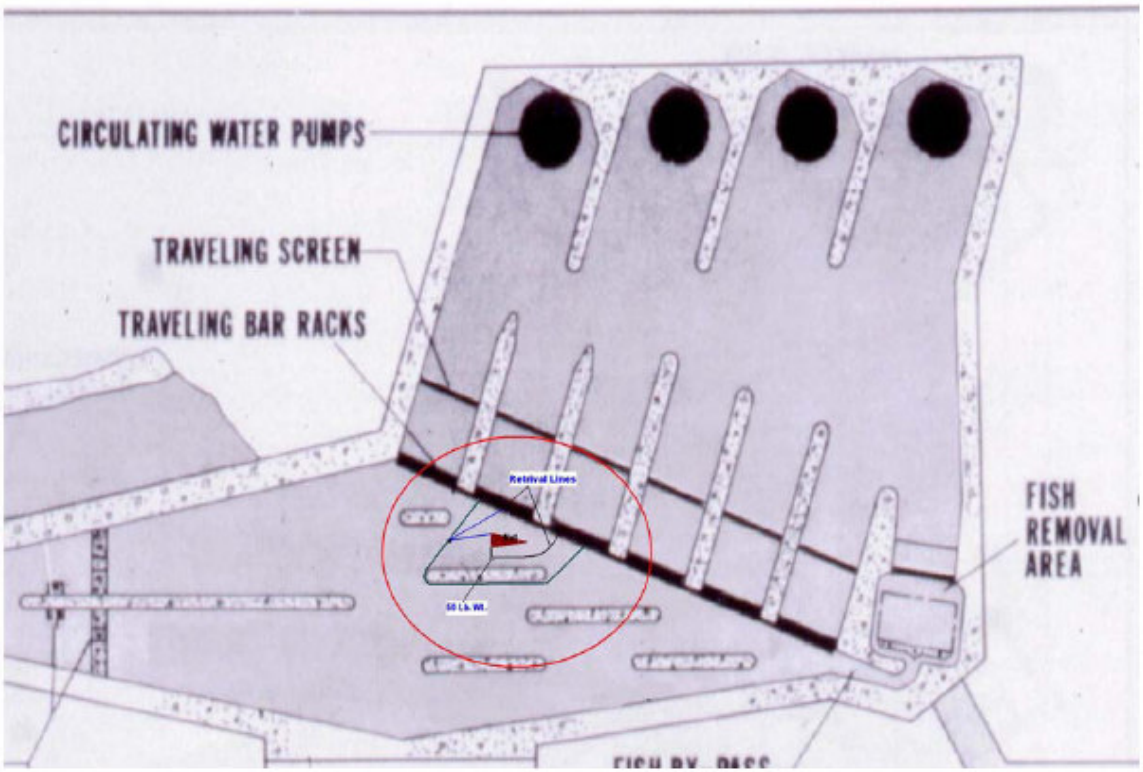


Figure 5-1. Location of In-Plant Entrainment Sampler.