

State of California

The Resources Agency

Memorandum

To : FILES

Date: September 15, 1980

Telephone: ATSS ()

From : Department of Fish and Game

Subject: Investigation of Molasses Spill into Petaluma River at Hunt & Behren Grain & Feed Company, 30 Lakeville Highway, Petaluma, Sonoma County

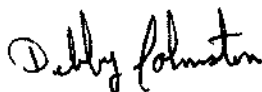
On August 17, 1980, 7,000 gallons (6,200 lbs) of molasses was lost into the Petaluma River just south of the Lakeville Highway Bridge. Ted Wooster and Debby Johnston were asked the following day by Warden Tom Kasnick to investigate the condition of the fish population in the vicinity of the spill.

Our investigation began at 1500 hours on August 18, 1980, on an incoming tide (high tide was at 1903 hrs.). The river was brown in color and smelled strongly of molasses. We met with Hossain Kazemi (CRWQCB) who mentioned that earlier he had seen many dead fish at low tide. At the time of our inspection only two dead fish were found but several hundred yellowfin gobies (Acanthogobius flavimanus) were observed alive along the shoreline and air-water interface but were greatly stressed. The shoreline was littered with motionless but still live yellowfin gobies. Yellowfin gobies naturally inhabit the bottom substrate of streams and bays. Two oxygen samples taken and analyzed indicated 0.0 mg/l of oxygen in the water.

Returning on the following day, August 19, 1980, very few live fish were observed as most of the live fish seen on the previous day were now dead blanketing the shorelines. The oxygen levels still indicated no oxygen in the water. On one shoreline, just under the Lakeville Highway Bridge there was an average of 1.0 fish/square foot and 1.5 invertebrates/square foot. The fish were mainly yellowfin gobies while the invertebrates were composed equally by a single species of crab and shrimp. To better estimate the damage a canoe was taken upstream to the confluence of Lynch Creek, while counts of dead fish were taken as accurately as possible. A total of 2,841 fish were counted on that day. This figure is low because of predation on dead fish by rats and birds, low overhanging plants into the river also obstructed views of the shoreline containing dead fish. An estimate of total lost fish ranges between 5,000-6,000 while an estimate of invertebrate loss is in excess of 9,000 organisms. Approximately three miles of the Petaluma River was affected from the "D" Street Bridge northward to the confluence of Lynch Creek. Approximately two miles of the River was completely decimated of all aquatic life. Actual counts and species lists can be found in the attached tables.

Returning to the spill site on August 22, 1980 we discovered that the river had turned black throughout the water column. There was a white sulfide layer on the surface and the smell was typical of H₂S. At 0730 during an incoming tide the dissolved oxygen in the water was 0.6 mg/l.

On August 23, 1980, a circulating water pump was installed to help increase the oxygen levels in the water and further speed the breakdown of the molasses. Dissolved oxygen levels were recorded at the Lakeville Highway Bridge which were 0.4 mg/l oxygen. Three stations were established to record the extent of newly oxygenated water in the Petaluma River. The values can be found in the attached tables. The surface aerator was removed on August 29, 1980 as the oxygen levels in the Petaluma River at the three stations had reached super-saturated levels. The river had returned to a "normal" color and the odor was no longer detectable.



Debby Johnston
Laboratory Assistant
Region 3

DJ/cls

cc: Tom Kasnick
Ted Wooster
Hossain Kazemi, RWQCB
Mike Rugg
Debby Johnston

TABLES

Species List

| | |
|---------------------------------|------------------------|
| <u>Acanthogobius flavimanus</u> | yellowfin gobie |
| <u>Menidia audens</u> | Mississippi silverside |
| <u>Dorosoma petenense</u> | threadfin shad |
| <u>Morone saxtilis</u> | striped bass |
| <u>Cyprinus carpio</u> | carp |
| <u>Cottus aleuticus</u> | coast range sculpin |
| <u>Hemigrapsus oregonensis</u> | shore crab |
| <u>Palemon macrodactylus</u> | Korean shrimp |

| | | |
|-----------------|---------------------------|---|
| August 19, 1980 | 2,817 yellowfin gobies | |
| | 6 Mississippi silversides | Invertebrates were too numerous to count but estimates of losses greater than 9,000 are not excessive |
| | 4 striped bass | |
| | 2 threadfin shad | |
| | 12 carp | |
| | <u>2,841</u> total fish | |

Dissolved Oxygen mg/l

| | | | | | | | |
|-------------------|------------------|-------------|-------------|-------------|-------------|-------------|------------|
| | <u>8-18-1980</u> | <u>8-19</u> | <u>8-22</u> | <u>8-23</u> | <u>8-28</u> | <u>8-29</u> | <u>9-5</u> |
| Lakeville H. B. | 0.0 | 0.0 | 0.6 | 0.4 | 7.6 | >15.0 | 9.2 |
| Payren St. B. | | | | | 8.0 | >15.0 | 9.4 |
| Washington St. B. | | | | | 7.7 | 12.2 | 9.1 |