Guadalupe
Small Tributaries Loads

New contaminant Data and Preliminary Interpretations

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SFEI

Collaborators
MLML, AXYX, AMS, Texas, USGS, and RSL
Sampling Overview

<table>
<thead>
<tr>
<th>Type</th>
<th>Nº of samples</th>
<th>Results in</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB’s</td>
<td>16</td>
<td>19%</td>
</tr>
<tr>
<td>Hg</td>
<td>26</td>
<td>90%</td>
</tr>
<tr>
<td>Other TMs</td>
<td>26</td>
<td>42%</td>
</tr>
<tr>
<td>Suspended sediment</td>
<td>26</td>
<td>90%</td>
</tr>
<tr>
<td>Dissolved Organic Carbon</td>
<td>20</td>
<td>80%</td>
</tr>
<tr>
<td>Particulate Organic Carbon</td>
<td>20</td>
<td>80%</td>
</tr>
</tbody>
</table>
Sampling Relative to Discharge

Storm 1

Discharge (cfs)

Turbidity (NTU)

Date / time

San Francisco Estuary Institute
Sampling Relative to Discharge

Stor ms 2, 3, 4, and 5

Date / time

Discharge (cfs)
Turbidity (NTU)
Sampling Relative to Discharge

Storm 6 and 7

Date / time

Discharge (cfs)

Turbidity (NTU)
Sampling Relative to Discharge

Storm 8

Discharge (cfs) vs. Turbidity (NTU) over the period from March 1st to March 7th, 2003.

- Discharge (cfs) peaks on March 15th, 2003, at approximately 1,500 cfs.
- Turbidity (NTU) increases significantly during the peak discharge and returns to baseline levels after the storm.

Graph indicates that turbidity increases with discharge, reaching a peak on March 15th, 2003, and decreasing as discharge returns to baseline levels.

San Francisco Estuary Institute
Sampling Relative to Discharge

Storm 9

Date / time

Discharge (cfs)

Turbidity (NTU)

San Francisco Estuary Institute
### Monthly Concentrations

(Note do not quote – preliminary data - some aspects of SFEI QA still to occur)

<table>
<thead>
<tr>
<th></th>
<th>Number of samples</th>
<th>SSC (mg/L)</th>
<th>Hg (µg/L)</th>
<th>Hg (µg/g)</th>
<th>Cu (µg/L)</th>
<th>Ni (µg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov</td>
<td>1*</td>
<td>50</td>
<td>4.66</td>
<td>93.9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dec</td>
<td>19</td>
<td>32-967</td>
<td>0.18-18.67</td>
<td>1.0-47.9</td>
<td>8-46</td>
<td>13-113</td>
</tr>
<tr>
<td>Mar</td>
<td>1</td>
<td>282</td>
<td>6.81</td>
<td>24.2</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Apr</td>
<td>1</td>
<td>225</td>
<td>5.77</td>
<td>25.7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>May</td>
<td>1</td>
<td>18</td>
<td>5.15</td>
<td>279.4</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* There are a further 3 to be analyzed
Correlative Relationships
Turbidity – SSC

(Note do not quote – preliminary data - some aspects of SFEI QA still to occur)

\[[\text{SSC}] = 1.38 \times [\text{Turbidity}] \quad R^2 = 0.90\]
Correlative Relationships
Turbidity – Hg
(Note do not quote – preliminary data - some aspects of SFEI QA still to occur)

$y = 0.0029x + 0.0741 \quad R^2 = 0.9151$

Turbidity (NTU) vs Hg (ug/L)

12/13 19:15 - 12/16 10:00
Correlative Relationships
Turbidity – Hg
(Note do not quote – preliminary data - some aspects of SFEI QA still to occur)

12/16 10:45 - 12/17 10:00

$y = -2.1956 \ln(x) + 17.382$  $R^2 = 0.9543$
Correlative Relationships

Turbidity – Hg

(Note do not quote – preliminary data - some aspects of SFEI QA still to occur)
December Flood Month

- ~44% of the WY 2003 discharge
- ~67% of the suspended sediment load
- ~1:6 year return event

Discharge (Guadalupe R. @ San Jose 11169000)
- Maximum daily = 1,770 cfs
- Maximum instantaneous = 6,160 cfs
Loads
(Note - do not quote – preliminary analysis – no verification)

- Hg December = 95kg
- Hg Annual >200 kg
- Cu Annual = ~1,800 kg
- Ni Annual = ~4,100 kg
Add the following components for Hg

- Routine monthly for period with no floods (~3 samples)
- Sample 3 hours before expected flood event (~6 samples)
- Sample 1 week after flood event (~6 samples)

Total ~15 extra samples