

Supplemental work for  
RWQCB sponsored  
Dugdale project.  
\$50,000 necessary  
to complete funding  
for this supplemental  
phase and 6-months  
to complete.

December 12, 2008

Parker/Dugdale  
Revised Budget for Algae/NH<sub>4</sub> Study

## Budget Justification

We currently (12/08) have \$20,000 remaining in the original subcontract to apply to the budget below.

### Task 1: River Transects

River transects will be performed using the RV Questuary on three dates in spring 2009 (Mid February, late February, mid March). During each transect, 7 stations will be sampled with water collected (including vertical profiles of salinity, temperature and PAR) for analysis of inorganic nutrients, chlorophyll-a, flow cytometry, dissolved inorganic carbon and primary production and nitrogen uptake (using stable isotopes <sup>13</sup>C and <sup>15</sup>N). Costs of overnight lodging in Sacramento for science and ships crew are included. \$10,674

### Task 2: Grow Outs

During two of the above transect dates we will collect water for and perform a series of replicated (3x) 5-day “growout” experiments using water at Garcia Bend, River Mile 44 and Central Bay (1x) (Control). “Growouts” with: ambient Garcia Bend nutrients, Garcia Bend with added NH<sub>4</sub> (to levels equivalent to River Mile 44), Garcia Bend with added NO<sub>3</sub> (to DIN equivalent to River Mile 44) and ambient River Mile 44 will be compared. Daily samples for nutrients, dissolved inorganic carbon, chlorophyll a, and C and N uptake will be analyzed. A total of 26 individual “growout” experiments will be conducted. \$5,076

### Task 3: Clean NH<sub>4</sub> additions

During one of the above transects we will collect water from Garcia Bend and perform a series of short term incubations with increasing amounts of NH<sub>4</sub>. Treatments will include ambient NH<sub>4</sub>, 4 μmol L<sup>-1</sup> NH<sub>4</sub>, 20 μmol L<sup>-1</sup> NH<sub>4</sub>, and 100 μmol L<sup>-1</sup> NH<sub>4</sub>. Each of these treatments will be done in triplicate for a total 12 bottles. Analysis will include nutrients, dissolved inorganic carbon, and C and N uptake (stable isotope methods). \$1,524

### Task 4: Wastewater Effluent dilutions

As described in the previous proposal we will complete the serial dilution of wastewater. We have \$12,000 budgeted for this task.

### Task 5: Management / Data report

We have budgeted 4 months salary support for one graduate student to complete experiments and analysis and one semester tuition reimbursement. In addition, we have budgeted 3 months of support for A. Parker and 0.5 mo. support for R. Dugdale for project management and preparation of data reports. We will also present our results at the NH<sub>4</sub> Summit in June 2009. \$34,036.24

|  |                    |           |             |            |  |
|--|--------------------|-----------|-------------|------------|--|
| <b>1) Transects</b>                              |                    |           |             |            |  |
| Number of transects                              | number of stations |           | replicates  |            | costs  |
|  | 3                  | 7         |             | 2          |  |
| nutrients  |                    |           |             |            | 1470   |
| DIC  |                    |           |             |            | 504  |
| 15NH <sub>4</sub>                                |                    |           |             |            | 1680   |
| 15NO <sub>3</sub>                                |                    |           |             |            | 1680   |
| Chl  |                    |           |             |            | 840  |
| Questuary (6 days @ \$600-)                      |                    |           |             |            | 3600   |
| Travel for Questuary (hotel for captain/science) |                    |           |             |            | 1150   |
|  |                    |           |             |            | <b>Subtotal analytical cost for transects</b>            |
|  |                    |           |             |            | <b>10924</b>   |
| <b>2) Grow outs</b>                              |                    |           |             |            |  |
|  | number of grow     | number of | number of   | replicates |  |
|  | 4                  | 5         | 2           | 3          | 120  |
| nutrients  |                    |           |             |            | 4200   |
| DIC  |                    |           |             |            | 36   |
| 15NH <sub>4</sub>                                |                    |           |             |            | 120  |
| 15NO <sub>3</sub>                                |                    |           |             |            | 120  |
| Chl  |                    |           |             |            | 600  |
|  |                    |           |             |            | <b>subtotal</b>  |
|  |                    |           |             |            | <b>5076</b>  |
| <b>3) Clean NH<sub>4</sub> exps</b>              |                    |           |             |            |  |
| treatments                                       | replicates         |           | total       |            | cost   |
|  | 4                  | 3         |             | 12         |  |
| nutrients  |                    |           |             |            | 420  |
| DIC  |                    |           |             |            | 144  |
| 15NH <sub>4</sub>                                |                    |           |             |            | 480  |
| 15NO <sub>3</sub>                                |                    |           |             |            | 480  |
|  |                    |           |             |            | <b>Subtotal analytical cost for clean NH<sub>4</sub></b> |
|  |                    |           |             |            | <b>1524</b>  |
| <b>4) wastewater dilution</b>                    |                    |           |             |            |  |
|  |                    |           |             |            | <b>12,000</b>  |
| <b>5) Personnel</b>                              |                    |           |             |            |  |
| student  | time (mo)          |           | cost per mo |            | total  |
|  | 4                  |           | 1500        |            | 6000   |
|  | fringe             |           | 0.02        |            | 120  |
| Tuition  |                    |           |             |            | 2500   |
| management/oversight                             | 3                  |           | 4300        |            | 12900  |
|  | fringe             |           | 0.47        |            | 6063   |
| Dugdale  | 0.5                |           | 10385       |            | 5192.5   |
|  | fringe             |           | 0.2428      |            | 1260.739   |
|  |                    |           |             |            | <b>subtotal Personnel</b>                                |
|  |                    |           |             |            | <b>34036.24</b>  |
|  |                    |           |             |            | <b>grand subtotal</b>                                    |
|  |                    |           |             |            | <b>63,560</b>  |
| overhead/IDC                                     | 0.1                |           |             |            | 6356.024   |
| <b>Total</b>                                     |                    |           |             |            | <b>69,916</b>  |