U.S. Department of the Interior
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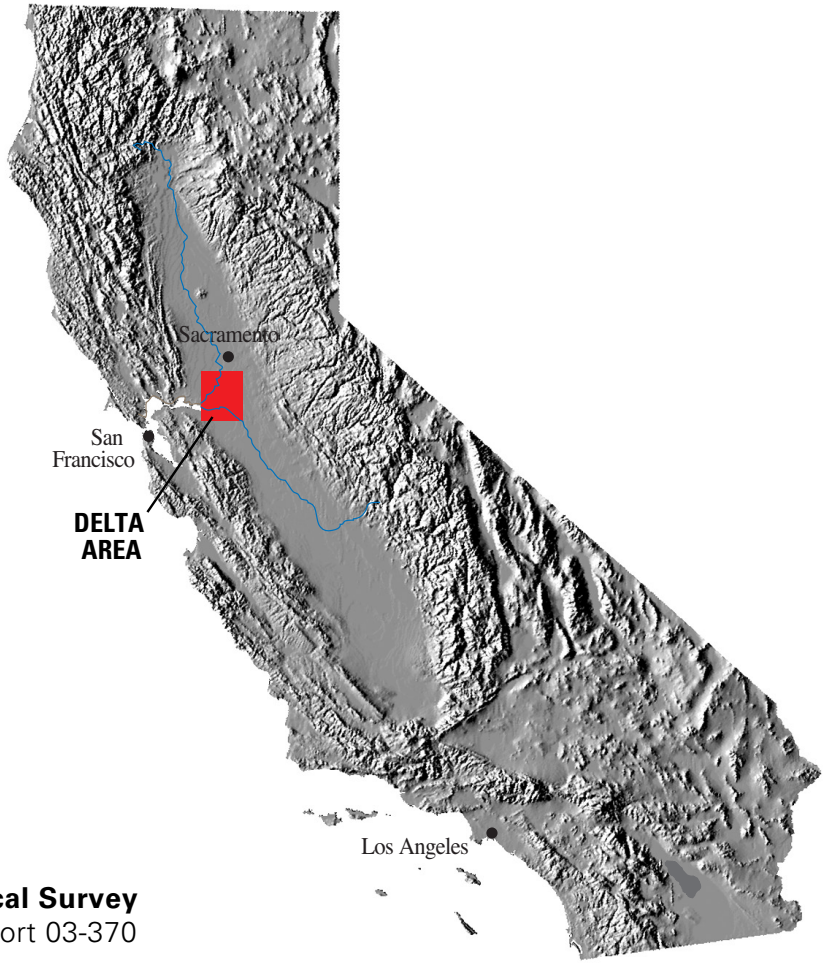
Carbon Fluxes, Water Levels, and Related Environmental Data, Twitchell Island, Sacramento-San Joaquin Delta, California, November 1992 through September 1995



U.S. Geological Survey
Open-File Report 03-370

Prepared in cooperation with the **California Department of Water Resources**

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By Barry D. Kerr, Bronwen Wang, *and* Judy Z. Drexler

U.S. GEOLOGICAL SURVEY

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CALIFORNIA DEPARTMENT OF WATER RESOURCES

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U.S. DEPARTMENT OF THE INTERIOR

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U.S. GEOLOGICAL SURVEY

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We would like to acknowledge the efforts and contribution of our field crew: Susan Bird, Michael Hunerlach, and Francis Huber.

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Denver, CO 80225-0286

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CONVERSION FACTORS, DEFINITIONS, AND ACKNOWLEDGMENT

Multiply	By	To obtain
acre	0.4047	square hectometer
centimeter	0.06102	inch
cubic meter (m^3)	264.2	gallon
foot (ft)	0.3048	meter
gram (g)	0.03527	ounce avoirdupois
inch (in.)	2.540	centimeter
kilogram (kg)	2.205	pound avoirdupois
kilogram per cubic meter (kg/m^3)	16.02	pound per cubic foot
liter (L)	0.2642	gallon
meter (m)	3.281	foot
mile (mi)	1.609	kilometer
square inch (in^2)	6.452	square centimeter
square mile (mi^2)	2.590	square kilometer

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$°F = (1.8 \times °C) + 32$$

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

Water year: the 12-month period October 1 to September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. For example, the year ending Sepember 30, 1993, is called the "1993 water year." In this report, unless specified otherwise, "years" refer to water years.

ABBREVIATIONS:

CO_2,	carbon dioxide
CH_4,	methane
g/cm^2,	gram per square centimeter
$gC/m^2/day$,	grams carbon per square meter per day

WELL NUMBERING SYSTEM

The well-numbering system used by the U.S. Geological Survey (USGS) and the State of California designates the location of wells according to the rectangular system for the subdivision of public lands (Bader, 1969). Well identification consists of a township number, north or south; the range number, east or west; and the section number. Each section is further divided into sixteen 40-acre tracts lettered consecutively (except I and O), beginning with A in the northeast corner of the section and progressing in a sinusoidal manner to R in the southeast corner. Within each 40-acrea tract, wells are sequentially numbered in the order in which they are inventoried. The final letter in a well identification number refers to the base line and meridian. Wells in this study area are referenced to the Mount Diablo base line and Meridian (M).

The station identification number used by the USGS for wells is principally for correlation and retrieval of computerized data and is not considered a State location number. The Twitchell Island extensometer number is 380544121403301 (latitude 38°05'44", longitude 121°40'33", sequence 01), and the water-level well numbers are 380544121403302 for pond F, 380544121403303 for pond M, and 380544121403304 for pond S.

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ABSTRACT

Most of the Sacramento-San Joaquin Delta was leveed, drained, and converted to agricultural use by the 1930s. Land-surface elevations have since subsided by more than 20 feet in some areas. Subsidence increases the likelihood of levee failure and flooding, which, in turn, jeopardizes water delivery and water quality in the Delta. This is of major concern because the Delta supplies water to two-thirds of California. Previous research has shown that oxidation of peat soils is the primary cause of subsidence in the Delta. Therefore, a possible strategy for remedying this situation is to convert drained agricultural fields back to wetlands, which are flooded at least part of the year. Rehabilitation of wetlands would promote the growth of peat, thereby mitigating and possibly reversing subsidence.

This report describes a study that evaluated this strategy. In three experimental enclosures or ponds, carbon inputs were measured in the form of plant biomass and outputs in the form of carbon dioxide (CO_2) and methane (CH_4) fluxes. Each of the ponds received one of the following water treatments: seasonally flooded, seasonally flooded and irrigated, or permanently flooded. Land-surface elevation, ground-water levels, and soil and air temperature also were measured. This report presents the data collected during the initial phase of the study, which ran from November 1992 through September 1995.

INTRODUCTION

The Sacramento-San Joaquin Delta is located at the confluence of the Sacramento and San Joaquin Rivers, at the eastern end of the Suisun Bay, California (fig. 1). The Delta includes more than 1,000 mi^2, and was once tidal marshland (Atwater, 1980). From 1867 through the 1930s, 2,250 mi of levees were built (Gilbert, 1917). This resulted in the formation of about 100 islands that are used primarily for agriculture.

Agricultural land in the Delta has undergone significant subsidence since drainage. Prokopovitch (1985) reported subsidence rates in the Delta between 0.092 to 0.384 ft/yr. Some of the islands in the central Delta are now more than 20 ft below sea level as a result of land subsidence. Causes of subsidence include oxidation of soil organic matter, mechanical compaction, wind erosion, anaerobic decomposition, and dissolution by ground water of soil organic matter (Weir, 1950; Armentano, 1980; Stephens and others, 1984; Prokopovitch, 1985). Rojstaczer and others (1991) showed that subsidence due to ground-water withdrawals and natural-gas extraction are not the primary causes of subsidence in the Delta. Rather, subsidence in the Delta is chiefly due to oxidation of organic peat soils subsequent to drainage for agriculture (Deverel and Rojstaczer, 1996).

Figure 1. Map showing location of the study site, Twitchell Island, Sacramento-San Joaquin Delta, California.

Subsidence is of major concern to the regional ecosystem, economy, and water distribution system because it increases the risk of levee failure. Levee integrity is threatened due to the increasing hydraulic gradient between water levels in the rivers and water levels on the islands, as well as possible seismic activity. The Delta is the transfer point for the majority of the water exported to southern California, where it is used for industrial purposes, irrigation, and domestic consumption. If levees failed in the Delta, the resulting upstream movement of brackish water from the San Francisco Bay could cause significant water-quality and usage problems, especially during a period of low river flow (Hundley, 1992).

A possible approach for subsidence mitigation involves flooding agricultural lands, thereby restoring wetlands and minimizing peat oxidation. The purpose of this project was to test this mitigation strategy in experimental enclosures that contained miniature wetland ecosystems. Each enclosure or pond received a different hydrologic treatment. The treatments included seasonally flooded (S for seasonal), seasonally flooded with subsequent irrigation (M for moist), and permanently flooded to a depth of about 14 inches (F for flooded). This report presents the preliminary data collected on Twitchell Island from November 1992 through September 1995. The data collected include carbon fluxes, water levels, and related environmental data.

DESCRIPTION OF WETLAND ENCLOSURES

The three wetland enclosures or ponds were situated near the southwestern end of Twitchell Island, in the western part of the Sacramento-San Joaquin Delta near Rio Vista (fig. 1). Twitchell Island is bordered by the San Joaquin River on the south, Threemile Slough on the west, and Sevenmile Slough on the north and west. The ponds are 32 ft x 32 ft in size and were constructed with 3.7 ft x 3.7 ft sheets of marine grade 3/4-inch plywood. The sheets were buried about 1 ft into the soil with the remaining 2.7 ft above ground. The plywood sheets were joined together using galvanized steel brackets with attached pipes that extend into the soil for additional stability. Heavy black plastic was used to line the inside of the walls and extend approximately 3 ft into the soil. Each pond was equipped with an elevated walkway to facilitate measurements without disturbing the sampling sites. Each pond contained an observation well for ground-water level measurements; eight elevation points for measuring land-surface elevations (spirit leveling); three permanently installed, flux chambers for measuring CO_2 and CH_4 fluxes; and a neutron-probe access tube for measuring soil moisture (fig. 2).

Pond S was seasonally flooded from early fall through winter and was drained during the spring and summer. Pond M was seasonally flooded, similarly to pond S; however, it was irrigated in June and August. Pond F was permanently flooded. Additionally, control sites that received no hydrologic treatments were established between ponds S and M (control site SM) and between ponds M and F (control site MF) (fig. 2). Each control site was equipped with a flux chamber, an elevation point, and a neutron-probe access tube.

An extensometer—an instrument that measures land-surface subsidence—and a water-table well were installed 60 ft east of the ponds. Data collected from this part of the site include land-surface elevation, ground-water level, and ground-water temperature.

The station identification number used by the USGS for wells is principally for correlation and retrieval of computerized data and is not considered a State location number. The Twitchell Island extensometer number is 380544121403301 (latitude 38°05'44", longitude 121°40'33", sequence number 01), and the water-level-well numbers are 380544121403302 for the well in pond F, 380544121403303 for pond M, and 380544121403304 for pond S.

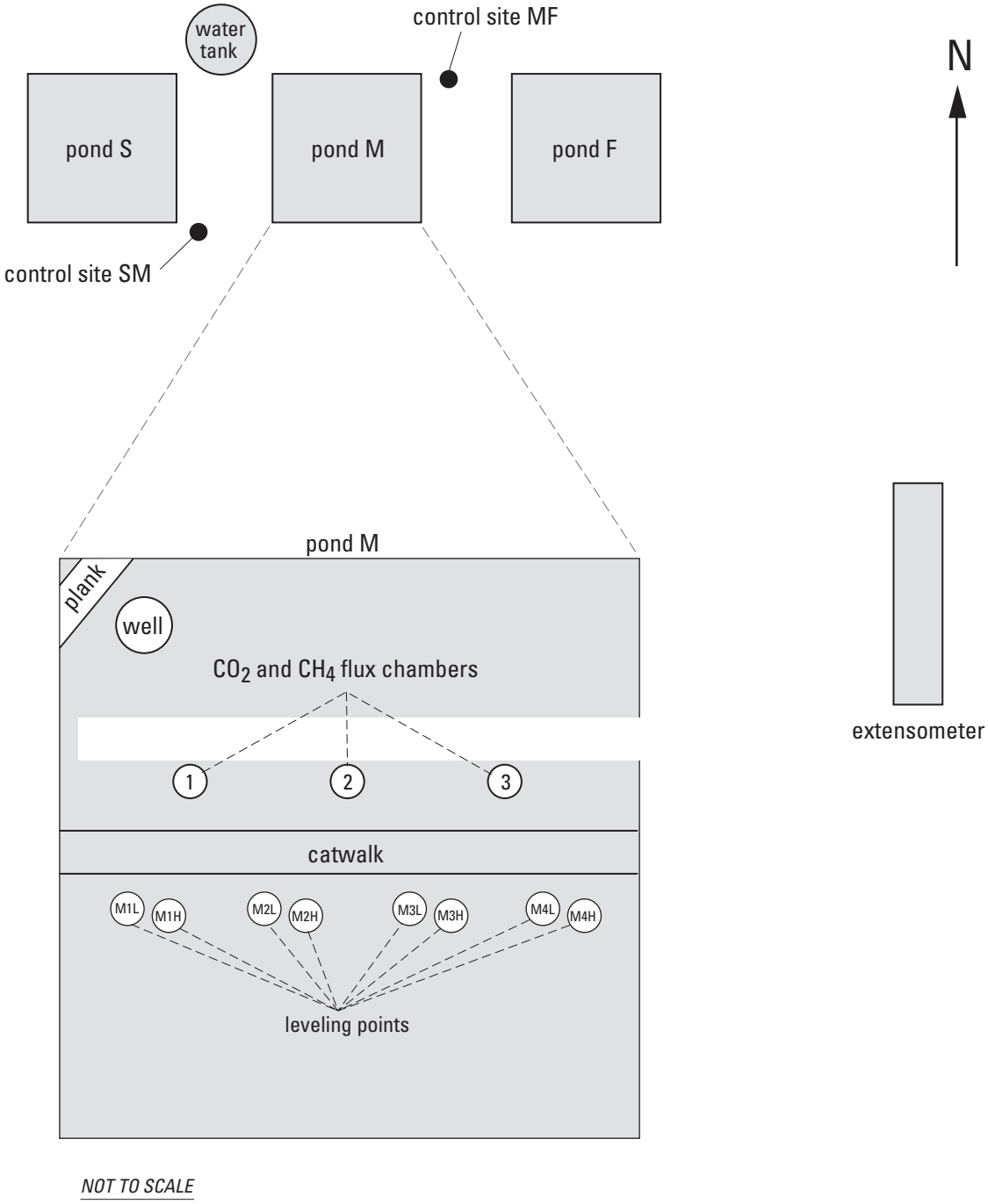

Figure 2. Diagram of ponds, control sites, and extensometer, Twitchell Island, California.

METHODS AND DATA

Soil Moisture

Soil cores were collected in July 1993 (when the neutron-probe access tubes were installed) at 0.5 ft intervals from 0.5 ft to 3.5 ft in depth. Cores were collected from each pond (S, M, and F) and at one of the two control sites (SM). Due to the high moisture content, it was impossible to collect soil cores at the second control site (MF). Soil-moisture content (kilograms of water per cubic meter of soil) was determined in the laboratory, using methods described by Bell and McCulloch (1983). A Troxler 3332 neutron moisture probe was used, concurrent with flux measurements, to measure soil-moisture content. Because soils consist of various materials other than water that contain hydrogen (and hydrogen is the key element involved in neutron-probe measurements), the gage must be calibrated in the field for individual soils (Troxler, 1983). A 4-minute standard count was made at the beginning of the measurement session and was used for all calculations for that day. One-minute measured counts were taken at 0.5-ft intervals from 0.5 ft to 3.5 ft in depth. The ratios of the measured counts of the neutron moisture probe at each of the different depths divided by the standard count were regressed as a third order polynomial with the volumetric soil-moisture values obtained in the lab (Troxler, 1983). We used regression equations to estimate soil volumetric moisture contents from the measured-count/standard-count ratios. Tables 1-4 present the data for soil-moisture content in kilograms per cubic meter at 0.5-ft depth intervals from 0.5 ft to 3.5 ft in depth, for the period from July 26, 1993, to July 14, 1995.

Soil Percent-Carbon Content and Bulk Density

Percent soil organic matter was determined by loss on ignition as described by Nelson and Sommers (1982). Soil bulk density was determined by the core method described by Blake and Hartge (1986) at each neutron-probe site except for control site MF. Because of the lack of cores at control site MF, the means of bulk density measurements at the other four sites were used to estimate the soil-moisture content for this site. This was necessary because volumetric moisture content is the product of bulk density and gravimetric moisture content. Gravimetric moisture is the weight of the water in a sample divided by the weight of the dry soil. Without an estimate of bulk densities for site MF, calculation of volumetric moisture contents for this site would not have been possible.

Table 5 presents bulk density and percent soil organic matter for the soil cores taken on July 26, 1993, at depths of about 0.5, 1.0, 1.5, 2.0, 2.5, and 3.0 ft.

Ground-Water Levels

Observation wells were 10 ft deep and were constructed of 2-in. outside diameter (OD) PVC pipe. Pipes were inserted 8 ft deep into hand-augured boreholes. The bottom 2.5 ft of PVC pipe in the ground was 2-in. diameter slotted (0.020-in. openings) PVC pipe with an end cap. The screened intervals were from about 5.5 ft to 8 ft below land surface. Soil removed from the boreholes was used to fill the annular space in the observation wells. Shaft encoders equipped with floats and counter-weights connected by stainless-steel tapes measured water levels hourly in the three ponds. The tapes have holes every 0.2 ft and match the shaft encoder pulleys. The shaft encoders have a resolution of 0.01 ft. All three ponds shared an automatic data recorder, which was powered by a battery and a solar panel. The extensometer well was equipped with a submersible pressure transducer, which measured water levels every hour.

Data from the automatic data recorders were retrieved from the sites on a monthly basis and uploaded to the USGS's Automated Data Processing System (ADAPS). Hand-held water-level measurements were made monthly as a quality control check. These were done with a steel tape in accordance with standard USGS field procedures (U.S. Geological Survey, 1977). Linear interpolations of corrections of digital data for shaft encoder and submersible pressure transducer drift were computed using any differences between the steel tape water-level measurements and the automatic data recorder values stored in ADAPS.

The daily mean ground-water levels for ponds S, M, and F are presented in tables 6-8, 9-11, and 12-14, respectively. The daily mean ground-water levels for the extensometer are presented in tables 15-17. These are the output data from the USGS ADAPS database and are the mean depth below land surface.

Elevation Measurements

Shallow, land-surface elevation changes were measured using an extensometer. This instrument consisted of three steel pipes supporting an instrument table that was lodged in concrete below the organic soil (approximately 10 ft deep). A linear variable differential transformer (LVDT) was mounted to the instrument table with nonferrous connectors. Measurements were generated by a rod extending from the LVDT and resting on an aluminum plate (0.24 in. thick and 16 in. square) that was flush with the land surface. The LVDT responded to slight upward or downward movements by registering a voltage. Data from the LVDT and ground-water well were sent hourly to a data logger. Dial-gage readings were made during monthly data retrievals, and the distance between the plate and the support structure was recorded as a quality-control check. The LVDT output, in millivolts, was converted in ADAPS to feet of land-surface subsidence relative to an arbitrary benchmark.

Spirit-level surveys were conducted periodically at eight sites within each pond, the two control sites, the plate at the top of the extensometer, the support table, and one benchmark. The eight leveling points in each pond were grouped in pairs, one "high" and one "low," and the pairs were evenly spaced along the south side of the catwalks (fig. 2). The "low" measuring points were plastic disks 3.25 in. in diameter with equilateral triangles cemented on top to form an open pyramid shape, and were about 0.104 ft above land surface. The "highs" were about 3.00 ft above land surface and were 1 in. OD PVC pipe sections that rested on top of 3.25 in. plastic bases. The benchmark has an elevation of -5.977 ft below sea level, the measuring point of which is about 1.62 ft above land surface. Duplicate readings were made to 0.001 ft, and these stadia-rod data were converted to average elevation values using the Statistical Analysis System (SAS Institute Inc., 1990).

Tables 18-21 present the spirit-level averages for each measuring date for ponds S, M, F and the control sites and extensometer, respectively. The values are actual elevations in feet below sea level of the measuring points (NGVD). As stated above, the "low" leveling points were about 0.104 ft above the actual ground surface and the "high" leveling points were about 3.00 ft above the actual ground surface.

The daily mean LVDT levels for the extensometer site are presented in tables 22-24. These are the output data from the USGS ADAPS database and represent the mean land-surface subsidence relative to the established datum.

Gaseous Carbon-Flux Measurements

The closed static-flux chambers and the methods used to collect gaseous carbon samples for flux determinations are described by Deverel and others (1998). Three stainless-steel flux-chamber bases were pressed into the soil and left in place for the duration of the study in each pond and control site. When the sites had no standing water, water was poured into the base collars to provide a seal between the flux chambers and the bases. Flux-chamber tops were Mylar balloons, which were affixed with PVC collars at the start of each flux sampling. Each flux chamber had a gas-sampling tube affixed, which was purged prior to each sample. Flux chambers were fitted with thermocouples, so that flux-chamber temperatures could be recorded each time a sample was withdrawn. This allowed for ideal gas law corrections to be made to flux calculations. The flux chambers were left in the field with their collars removed between flux measurements to allow open exchange with the atmosphere. The flux-chamber sites were shaded with umbrellas and (or) tarps for a half-hour prior to the start of each chamber flux sampling to minimize the effects of photosynthesis. Samples were withdrawn at time zero and at equal intervals, usually 5 minutes apart, up to 20 minutes duration. Gas samples were collected in glass syringes equipped with Teflon Mininert valves that were closed after sampling. Soil temperatures were measured at depths of 4 and 12 in. at the conclusion of each flux-chamber sampling with an Omega digital thermometer model 450-AKT equipped with a 1-ft-long stainless-steel penetration thermocouple probe type K. The distance from the ground to the top of the flux chamber and the distance from any standing water in the flux-chamber base to the top of the flux chamber were recorded. The flux-chamber headspace volume was calculated from these measurements and used in the flux calculations. The CO_2 and CH_4 fluxes are reported as grams of carbon per square meter per day.

Samples were analyzed immediately in the field by gas chromatography (GC). Carbon dioxide was analyzed with a Microsensor Technology Inc. M200

gas chromatograph (GC) with a 10 in. x 0.02 in. ID HayeSep A column at 55 ^{o}C with a thermal conductivity detector. The GC was equipped with a sample vacuum pump and had an internal solid-state 10-microliter sample loop. CH_4 was analyzed with an Hnu model 301 GC equipped with a 6 ft x 1/8 in. OD Porapak T column at 60 ^{o}C, a flame ionization detector at 150 ^{o}C, and an exterior sample loop of 0.5 ml. Helium was the carrier gas for both GCs. Peak heights (CO_2) and peak areas (CH_4) were determined electronically and were regressed against known concentrations of CO_2/CH_4 combined standard gases mixed with nitrogen (Intermountain Specialty Gas, Nampa, Idaho). Standard concentrations of CO_2 were 321, 385, 741, 1,136, and 2,490 parts per million (ppm); standard concentrations of CH_4 were 1.1, 10, 34, 60.8, and 105 ppm. Standard linear regressions were used for the calibration of CO_2 and second order polynomial regressions for CH_4.

A quality-control (QC) sample of known concentration was included in each flux-chamber sampling and compared in the field with the standard peak for that concentration. QC samples deviating more than 10 percent from standards triggered a recalibration. Recalibrations were done after every three samplings regardless of the QC results.

Tables 25-35 present the CO_2 and CH_4 fluxes for sites S1, S2, S3, SM, M1, M2, M3, MF, F1, F2, and F3. In addition to the CO_2 and CH_4 fluxes, the average flux-chamber temperature, soil temperature at a depth of 1 ft, water depth in the flux chamber, the headspace, and the adjusted coefficient of determination for the CO_2 and CH_4 concentrations over time are listed by date.

Biomass Measurements

Above-ground plant biomass samples were collected from randomly chosen 2-ft x 2-ft plots within each pond. These plots were delineated with wooden stakes and string. The vegetation was cut with shears below the string to ground level. All collected vegetation was placed in paper bags that previously had been weighed and labeled. The samples were dried for 48 hours at 65 ^{o}C, ground, weighed, and analyzed for carbon content with a Perkin-Elmer Series II CHNS/O Analyzer model 2400. Table 36 shows the data from samples collected on October 13, 1993. Table 37 shows the data from samples collected on October 25, 1994. The data from samples collected on July 25, 1995, in pond S and on October 31, 1995, in ponds M and F are shown in table 38.

SUMMARY

Wetland enclosures were used to evaluate whether the act of restoring wetlands can mitigate and possibly reverse land-surface subsidence of peat. Three hydrologic treatments were tested to determine whether water management could significantly reduce carbon fluxes. The treatments were seasonally flooded, seasonally flooded and irrigated, and permanently flooded. Data for soil-moisture content, soil temperature, water level, land-surface elevation, carbon outputs (in the form of CO_2 and CH_4 fluxes), and carbon inputs (in the form of plant biomass) are presented in this report.

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TABLES

Table 1. Moisture content of soil cores collected at pond S, Twitchell Island, California

[Missing data are denoted as —]

Date	Moisture content, in kilograms per cubic meter						
	0.5 feet	1.0 feet	1.5 feet	2.0 feet	2.5 feet	3.0 feet	3.5 feet
7/26/93	153.18	378.28	627.56	839.39	892.00	902.90	912.85
7/28/93	148.97	365.66	628.57	850.39	870.94	890.08	896.15
8/12/93	141.97	361.92	623.90	821.44	866.73	891.48	909.23
8/23/93	146.23	360.94	627.92	817.67	881.24	891.59	907.60
9/8/93	147.72	376.07	636.75	857.52	890.76	888.86	906.42
9/21/93	150.73	369.08	640.15	844.97	847.30	869.70	884.16
9/27/93	141.54	371.40	825.52	850.18	866.47	862.74	880.89
10/6/93	166.69	383.35	648.43	858.51	878.72	878.72	902.69
11/5/93	469.17	608.20	669.47	833.48	873.07	883.44	898.99
11/18/93	501.90	608.70	652.16	819.54	868.08	867.16	881.95
11/30/93	502.49	601.54	651.29	815.75	857.22	858.60	880.25
2/23/94	560.68	608.90	659.90	824.01	864.81	863.88	875.47
3/4/94	578.99	603.23	712.77	847.49	867.00	867.07	885.25
3/16/94	562.01	584.66	704.87	837.10	858.83	856.52	880.57
4/11/94	519.42	578.30	718.31	856.93	859.25	859.25	871.30
4/29/94	373.57	513.75	726.59	867.70	857.92	856.99	876.08
5/11/94	423.67	549.27	722.39	864.92	864.45	866.34	889.39
5/20/94	391.74	525.79	724.52	873.57	865.13	871.69	884.82
6/27/94	241.65	457.16	714.92	850.54	858.90	861.69	874.23
7/14/94	244.44	450.95	—	—	—	—	—
7/27/94	234.07	455.09	708.43	812.38	859.68	864.36	878.88
8/22/94	232.37	449.79	692.41	854.77	860.37	858.04	881.37
9/8/94	238.44	436.26	686.34	849.64	852.90	851.04	882.76
10/26/94	256.81	451.35	694.06	829.31	856.64	847.84	865.90
4/12/95	583.57	605.90	704.54	840.88	857.16	852.97	880.42
4/17/95	615.92	602.93	691.56	804.32	849.33	856.75	866.50
5/17/95	615.93	605.60	719.70	847.42	868.55	864.79	886.86
6/28/95	397.58	555.82	716.41	855.87	856.34	860.57	887.33
7/14/95	260.58	452.05	712.16	848.99	855.99	854.59	884.48

Table 2. Moisture content of soil cores collected at control site SM, Twitchell Island, California

[Missing data are denoted as —]

Date	Moisture content, in kilograms per cubic meter						
	0.5 feet	1.0 feet	1.5 feet	2.0 feet	2.5 feet	3.0 feet	3.5 feet
7/26/93	179.59	400.82	640.19	801.12	835.58	841.92	863.23
7/27/93	170.38	400.01	633.27	811.27	831.65	835.72	848.41
7/28/93	171.83	393.41	633.75	802.61	802.16	820.92	830.31
7/29/93	168.48	392.00	628.82	786.26	815.97	828.39	841.25
7/30/93	171.94	396.74	652.56	795.53	813.51	836.44	856.22
7/31/93	173.98	400.34	648.56	792.02	831.19	849.41	919.55
8/2/93	178.83	394.84	653.14	802.55	822.35	841.25	861.05
8/4/93	170.28	398.89	653.14	791.30	804.80	828.65	855.65
8/12/93	169.15	392.96	637.32	782.51	795.01	823.60	844.60
8/23/93	169.52	406.45	642.47	792.01	791.11	832.10	849.66
9/7/93	177.31	414.12	664.18	795.84	799.50	826.93	852.98
9/8/93	169.45	414.71	650.43	796.22	801.67	832.56	852.09
9/10/93	173.84	417.51	661.64	797.31	805.03	819.09	854.94
9/13/93	174.46	411.79	659.08	783.18	794.06	835.72	852.94
9/15/93	160.45	411.26	635.39	780.80	784.80	815.49	837.72
9/21/93	171.69	419.40	647.47	784.04	791.18	818.40	840.72
9/27/93	176.61	196.19	648.41	781.50	790.84	809.98	831.35
10/6/93	194.87	421.91	656.15	798.23	783.39	822.95	837.34
10/21/93	219.48	493.43	662.02	789.35	783.52	811.32	852.12
10/22/93	205.91	523.73	650.69	780.75	774.53	816.26	834.01
10/25/93	212.31	549.93	660.22	786.66	790.70	820.74	842.26
10/27/93	236.49	553.56	668.74	782.14	788.36	801.26	830.16
10/29/93	218.41	542.75	657.07	772.27	770.50	804.17	836.96
11/1/93	239.66	560.24	658.43	788.01	793.83	813.56	842.71
11/5/93	250.37	565.50	650.71	786.86	797.68	817.97	836.91
11/18/93	402.92	571.43	643.08	780.63	784.61	809.38	829.29
11/30/93	455.29	567.23	644.35	784.05	791.10	807.41	825.03
2/23/94	540.13	580.48	649.22	789.37	814.20	815.97	827.51
3/4/94	548.79	572.87	652.69	810.98	819.01	820.35	832.83
3/16/94	494.03	576.30	652.37	781.08	801.42	819.11	831.50
4/11/94	416.39	572.06	654.99	802.23	805.77	809.32	819.52
4/29/94	315.75	453.41	661.91	795.11	801.80	820.51	824.07
5/11/94	348.94	482.59	667.54	800.75	815.15	825.95	834.05
5/20/94	340.99	480.43	657.98	801.46	811.32	831.05	844.95
6/22/94	245.73	428.04	669.04	796.26	799.39	829.41	833.89
6/23/94	239.64	412.32	648.02	785.18	793.17	824.25	824.25
6/24/94	248.65	417.82	651.44	802.26	803.15	827.32	831.35
6/27/94	250.07	422.01	656.15	772.55	762.78	805.43	832.53
6/29/94	240.59	416.92	665.76	769.14	794.20	814.79	829.56
7/1/94	242.82	428.86	670.26	780.07	767.36	830.44	839.97
7/27/94	239.90	420.88	655.60	771.62	755.05	823.13	831.65
8/15/94	224.20	424.64	668.29	803.91	815.87	838.39	843.45
8/16/94	222.29	411.12	672.79	779.34	803.17	826.55	835.09
8/17/94	220.28	422.36	658.35	779.05	803.47	835.57	835.11
8/22/94	212.75	412.70	653.71	780.91	779.58	815.28	829.56
9/8/94	210.07	410.47	648.80	776.90	801.00	820.19	813.94
10/26/94	206.89	427.11	645.55	782.90	788.67	801.96	825.00
4/6/95	540.45	595.49	—	—	—	—	—
4/12/95	522.00	588.32	651.53	800.64	812.21	821.56	822.89
4/17/95	520.18	585.88	647.58	790.95	805.16	826.47	821.14
5/17/95	507.79	586.84	676.23	799.31	819.97	824.01	831.20
6/28/95	338.44	504.19	673.98	811.88	824.01	832.54	826.26
7/14/95	301.83	455.95	656.53	790.99	814.67	815.56	813.33

Table 3. Moisture content of soil cores collected at pond M, Twitchell Island, California

Date	Moisture content, in kilograms per cubic meter						
	0.5 feet	1.0 feet	1.5 feet	2.0 feet	2.5 feet	3.0 feet	3.5 feet
07/26/93	230.44	468.97	684.98	752.95	746.70	764.63	791.32
07/27/93	558.54	576.87	683.53	748.94	743.52	773.52	790.18
07/28/93	471.39	577.41	686.71	740.96	754.93	752.46	780.82
07/29/93	393.03	564.77	679.00	738.96	740.60	744.68	767.11
07/30/93	361.01	552.48	685.65	743.14	748.10	755.13	790.70
07/31/93	365.50	563.67	551.52	693.54	682.65	757.64	756.80
08/02/93	358.42	547.60	686.27	741.32	747.12	765.33	791.41
08/04/93	326.97	536.01	677.16	742.15	745.05	763.68	785.61
08/12/93	293.87	531.80	668.22	729.04	728.22	756.16	786.98
08/23/93	248.94	509.97	674.87	728.32	729.97	746.96	785.91
09/07/93	245.28	494.22	693.97	724.67	743.17	760.41	792.79
09/08/93	602.25	596.82	696.67	729.25	726.33	763.09	789.00
09/10/93	484.83	590.85	690.19	716.49	736.52	747.37	787.86
09/13/93	369.81	580.62	673.53	693.94	728.94	746.02	786.02
09/15/93	341.29	563.00	662.81	678.35	711.07	735.62	765.89
09/21/93	308.40	549.39	666.81	673.79	715.66	747.27	771.09
09/27/93	283.04	528.69	675.27	722.76	712.93	743.64	761.25
10/06/93	282.43	528.08	677.79	722.87	725.35	748.10	778.29
04/29/94	501.70	594.73	674.23	723.81	705.37	742.26	761.93
05/11/94	348.90	579.06	677.99	692.89	722.28	741.74	776.92
05/20/94	329.12	555.13	676.80	685.05	712.68	735.78	769.60
06/20/94	214.93	442.58	680.12	720.05	706.88	739.81	767.39
06/22/94	448.33	569.47	686.08	726.47	717.81	734.29	772.20
06/23/94	411.74	563.23	680.82	722.47	708.18	737.17	769.02
06/24/94	371.37	551.27	686.71	722.11	708.94	742.69	769.04
06/27/94	287.46	496.70	683.88	676.11	701.45	730.47	761.12
06/29/94	264.74	478.81	681.77	719.64	713.88	739.40	771.92
07/01/94	253.18	464.80	688.10	725.25	728.59	741.53	781.18
07/27/94	220.47	449.16	681.55	725.23	712.87	737.18	777.15
08/15/94	227.12	454.21	691.45	742.19	727.81	747.69	789.13
08/16/94	545.87	571.09	682.76	737.76	717.08	744.38	772.50
08/17/94	451.50	570.01	696.43	734.28	716.39	751.74	773.78
08/22/94	339.60	542.00	668.45	693.08	706.63	739.06	766.16
09/08/94	277.20	480.01	669.68	702.94	703.35	732.08	771.50
10/26/94	283.86	502.32	681.25	691.85	703.67	738.72	759.50
04/17/95	604.88	594.67	660.82	679.60	706.55	735.95	765.75
05/17/95	599.92	599.51	676.77	694.54	709.83	744.95	773.87
06/28/95	523.07	592.48	675.12	691.24	714.79	736.27	768.50
07/14/95	591.38	588.92	680.14	736.44	716.30	733.97	763.97

Table 4. Moisture content of soil cores collected at control site MF, Twitchell Island, California

[Missing data are denoted as —]

Date	Moisture content, in kilograms per cubic meter						
	0.5 feet	1.0 feet	1.5 feet	2.0 feet	2.5 feet	3.0 feet	3.5 feet
07/26/93	132.12	377.32	709.83	801.22	822.48	838.31	850.98
07/27/93	160.58	413.78	764.48	845.41	869.54	887.53	921.13
07/28/93	150.32	409.39	758.56	833.25	865.46	887.86	906.07
07/29/93	139.22	418.66	750.00	833.88	855.66	894.59	899.68
07/30/93	173.68	447.57	758.57	839.85	855.82	881.66	902.33
07/31/93	173.23	446.88	774.79	856.17	876.16	893.29	918.04
08/02/93	171.93	417.86	771.47	842.95	863.17	883.39	905.96
08/04/93	165.35	430.56	756.43	837.78	872.57	877.75	910.19
08/12/93	157.79	421.06	740.82	828.58	847.25	877.13	891.60
08/23/93	156.06	427.17	751.45	832.41	855.00	882.30	906.77
09/07/93	155.63	420.75	738.42	840.64	857.36	886.50	907.04
09/08/93	158.58	458.05	774.13	835.35	864.77	884.71	915.55
09/10/93	160.83	470.45	773.91	835.07	850.72	881.06	904.77
09/13/93	158.21	465.37	750.75	834.52	856.76	873.80	905.98
09/15/93	144.18	461.55	737.57	818.42	836.55	870.47	875.12
09/21/93	152.07	481.80	746.70	819.92	847.43	862.36	895.00
09/27/93	169.87	330.79	749.85	831.24	855.42	858.21	887.98
10/06/93	175.09	475.76	757.64	829.98	840.79	870.86	898.57
10/21/93	206.53	524.65	764.99	910.70	387.84	877.90	896.64
10/22/93	220.03	535.44	754.37	808.17	829.97	861.98	886.10
10/25/93	208.41	576.65	757.03	818.87	845.11	874.16	896.18
10/27/93	212.49	585.16	757.55	810.06	837.48	862.57	889.52
10/29/93	214.12	565.07	743.33	811.39	836.85	860.46	886.39
11/01/93	221.06	647.87	769.21	830.58	846.04	869.00	893.83
11/05/93	245.22	673.45	759.19	827.97	851.05	875.08	25.22
11/18/93	583.05	685.65	762.83	814.59	837.23	864.96	883.45
11/30/93	625.71	684.19	745.89	810.36	825.10	857.80	889.11
04/11/94	617.46	682.34	757.88	815.81	832.03	868.17	885.78
04/29/94	359.47	554.99	767.73	824.99	843.61	860.83	896.21
05/11/94	215.66	547.65	774.30	828.84	847.65	392.00	888.09
05/20/94	355.99	537.30	775.30	827.30	846.98	861.04	882.59
06/20/94	231.92	454.06	771.59	821.63	840.80	863.72	884.76
06/22/94	232.11	525.13	767.12	828.91	849.04	862.61	901.93
06/23/94	239.51	505.75	771.07	817.45	841.11	860.59	883.31
06/24/94	241.27	492.87	773.46	833.32	851.09	868.86	881.02
06/27/94	232.74	461.16	762.92	820.03	840.92	864.13	885.95
06/29/94	234.73	463.41	766.91	825.84	858.11	860.91	891.78
07/01/94	245.23	476.14	769.16	836.49	855.93	885.33	895.29
07/27/94	233.52	459.60	760.57	833.59	849.04	861.68	893.04
08/15/94	240.91	453.24	766.45	852.92	863.97	892.80	900.00
08/16/94	242.74	580.52	767.97	838.91	851.59	864.28	888.24
08/17/94	243.00	560.45	774.45	828.77	851.92	868.46	900.11
08/22/94	246.75	478.07	740.63	811.99	838.57	864.22	882.88
09/08/94	232.76	452.88	748.10	823.65	845.57	860.03	882.88
10/26/94	325.70	—	—	—	—	—	—
04/12/95	682.41	689.85	766.12	822.87	836.82	854.96	873.56
04/17/95	669.49	684.79	757.15	823.02	837.40	863.37	887.49
05/17/95	660.74	687.97	778.08	825.49	846.14	860.69	887.45
06/28/95	353.78	532.14	768.23	833.47	848.96	859.29	879.94
07/14/95	324.44	615.72	774.90	831.85	839.78	854.25	885.53

Table 5. Bulk density and percent carbon content of soil on July 26, 1993, Twitchell Island, California

Pond	Depth (feet)	Bulk density	Percent carbon
S	0.50	0.92	12.59
S	1.00	1.00	11.11
S	1.50	1.02	13.13
S	2.08	0.25	76.43
S	2.58	0.22	65.08
S	3.21	0.19	59.47
SM	0.50	0.80	12.25
SM	1.00	0.97	12.73
SM	1.50	0.38	48.61
SM	2.00	0.23	45.63
SM	2.50	0.18	71.83
SM	3.00	0.16	66.75
M	0.39	0.74	15.94
M	0.98	0.91	16.20
M	1.15	0.82	19.64
M	1.57	0.29	22.50
M	2.23	0.14	54.47
M	3.08	No data	76.23
MF	0.50	0.82	No sample
MF	1.00	0.96	No sample
MF	1.50	0.56	No sample
MF	2.00	0.21	No sample
MF	2.50	0.18	No sample
MF	3.00	0.18	No sample

Table 6. Daily mean water levels at pond S, 1993, Twitchell Island, California

[Missing data are denoted by —. Data collection started on May 11, 1993. Water levels are relative to land surface: Positive values signify measurements that are below land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	—	—	—	—	—	—	—	—	0.96	1.17	0.91	0.76
2	—	—	—	—	—	—	—	—	1.00	1.17	.95	.75
3	—	—	—	—	—	—	—	—	1.06	1.17	1.08	.75
4	—	—	—	—	—	—	—	—	1.00	1.17	1.10	.72
5	—	—	—	—	—	—	—	—	.92	1.18	1.09	.64
6	—	—	—	—	—	—	—	—	.94	1.57	1.05	.62
7	—	—	—	—	—	—	—	—	.93	1.61	1.01	.68
8	—	—	—	—	—	—	—	—	.91	1.62	1.00	.67
9	—	—	—	—	—	—	—	—	.95	1.61	1.01	.66
10	—	—	—	—	—	—	—	—	.97	1.61	1.04	.68
11	—	—	—	—	—	—	—	0.86	.97	1.60	1.04	.75
12	—	—	—	—	—	—	—	.88	1.00	1.60	.99	.78
13	—	—	—	—	—	—	—	.88	1.09	1.61	.89	.80
14	—	—	—	—	—	—	—	.88	1.13	1.64	.82	.84
15	—	—	—	—	—	—	—	.90	1.14	1.64	.77	.80
16	—	—	—	—	—	—	—	.93	1.15	1.64	.78	.76
17	—	—	—	—	—	—	—	.98	1.16	1.65	.85	.74
18	—	—	—	—	—	—	—	1.03	1.16	1.66	.87	.73
19	—	—	—	—	—	—	—	1.05	1.16	1.67	.88	.71
20	—	—	—	—	—	—	—	1.06	1.17	1.66	.88	.71
21	—	—	—	—	—	—	—	1.09	1.17	1.65	.87	.73
22	—	—	—	—	—	—	—	1.10	1.17	1.64	.87	.71
23	—	—	—	—	—	—	—	1.13	1.17	1.59	.89	.69
24	—	—	—	—	—	—	—	1.15	1.17	1.44	.91	.68
25	—	—	—	—	—	—	—	1.06	1.16	1.32	.92	.66
26	—	—	—	—	—	—	—	.98	1.16	1.18	.85	.66
27	—	—	—	—	—	—	—	.95	1.16	1.03	.80	.67
28	—	—	—	—	—	—	—	.96	1.16	.87	.76	.66
29	—	—	—	—	—	—	—	1.00	1.17	.83	.79	.64
30	—	—	—	—	—	—	—	.99	1.17	.88	.84	.69
31	—	—	—	—	—	—	—	.93	—	.89	.85	—

Table 7. Daily mean water levels at pond S, 1994, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	0.78	-0.11	-0.34	-0.46	-0.61	-0.44	-0.10	—	0.48	0.72	1.14	0.93
2	.77	-.30	-.46	-.47	-.58	-.42	-.10	—	.51	.72	1.13	.90
3	.75	-.14	-.39	-.51	-.56	-.41	-.09	—	.57	.72	1.06	.88
4	.70	-.04	-.36	-.53	-.58	-.38	-.07	—	.63	.73	.91	.86
5	.66	-.11	-.32	-.62	-.62	-.37	-.05	—	.62	.73	.81	.86
6	.62	-.30	-.25	-.69	-.56	-.35	-.03	—	.61	.73	.73	.88
7	.61	-.21	-.21	-.67	-.59	-.32	-.03	—	.63	.74	.67	.90
8	.60	-.09	-.19	-.67	-.57	-.31	—	—	.64	.74	.65	.91
9	.61	-.18	-.21	-.67	-.49	-.31	—	—	.63	.74	.62	.93
10	.60	-.37	-.24	-.67	-.49	-.31	—	—	.63	.75	.60	.99
11	.59	-.34	-.31	-.66	-.48	-.30	—	—	.65	.75	.56	1.05
12	.58	-.27	-.30	-.66	-.45	-.25	—	—	.65	.75	.59	.98
13	.55	-.18	-.32	-.66	-.45	-.24	—	—	.66	.76	.74	.99
14	.54	-.08	-.36	-.66	-.46	-.24	—	—	.67	.76	.76	1.00
15	.50	-.03	-.36	-.66	-.47	-.22	—	—	.67	.75	.68	.99
16	.47	-.08	-.36	-.66	-.49	-.19	—	—	.67	.76	.62	1.00
17	.46	-.13	-.36	-.65	-.54	-.17	—	.18	.68	.77	.61	1.04
18	.45	-.15	-.36	-.64	-.54	-.20	—	.15	.68	.86	.64	1.04
19	.44	-.33	-.36	-.66	-.54	-.17	—	.15	.68	.95	.76	1.01
20	.32	-.33	-.36	-.66	-.56	-.14	—	.14	.69	.95	.90	1.03
21	.07	-.30	-.41	-.66	-.54	-.13	—	.15	.69	.97	.96	1.03
22	-.03	-.27	-.51	-.65	-.50	-.14	—	.18	.69	.93	.96	1.04
23	.01	-.20	-.46	-.66	-.56	-.14	—	.22	.69	.90	.97	1.03
24	.03	-.15	-.40	-.66	-.65	-.17	—	.26	.70	.90	.94	.98
25	-.01	-.14	-.39	-.66	-.60	-.16	—	.27	.70	.93	.92	.97
26	-.05	-.14	-.40	-.66	-.55	-.15	—	.29	.70	.95	.91	.95
27	-.01	-.15	-.37	-.66	-.52	-.14	—	.30	.71	1.02	.87	.91
28	-.03	-.19	-.34	-.66	-.47	-.14	—	.33	.71	1.04	.92	.87
29	-.04	-.23	-.34	-.66	—	-.12	—	.36	.71	1.09	.92	.85
30	-.18	-.27	-.41	-.67	—	-.11	—	.39	.72	1.15	.90	.84
31	-.07	—	-.44	-.66	—	-.10	—	.42	—	1.15	.92	—

Table 8. Daily mean water levels at pond S, 1995, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	0.84	0.20	0.06	0.11	-0.34	-0.31	-0.49	-0.22	0.16	0.20	0.87	0.61
2	.81	.13	.06	-.15	-.34	-.31	-.49	-.22	.15	.19	.90	.63
3	.78	.20	.06	-.19	-.33	-.30	-.49	-.21	.16	.19	1.11	.64
4	.72	.22	.04	-.24	-.33	-.28	-.50	-.20	.17	.19	1.19	.64
5	.64	.18	.02	-.24	-.31	-.29	-.51	-.13	.18	.18	1.08	.65
6	.58	.05	.02	-.24	-.31	-.29	-.52	-.09	.18	.18	.80	.65
7	.54	.06	.04	-.28	-.30	-.30	-.52	-.09	.19	.17	.68	.65
8	.53	.08	-.01	-.30	-.30	-.32	-.53	-.08	.19	.16	.59	.64
9	.52	.09	-.02	-.34	-.29	-.36	-.53	-.09	.20	.15	.38	.65
10	.54	.08	.00	-.42	-.30	-.38	-.54	-.08	.20	.14	.24	.65
11	.58	.10	.03	-.38	-.30	-.39	-.54	-.07	.08	.13	.19	.65
12	.59	.11	.01	-.38	-.31	-.39	-.41	-.06	-.01	.12	.12	.65
13	.58	.15	.01	-.37	-.31	-.40	-.24	-.06	.09	.11	.12	.67
14	.59	.15	.01	-.37	-.32	-.41	-.20	-.06	.20	.10	.13	.66
15	.62	.12	.02	-.38	-.31	-.41	-.21	-.06	.20	.09	.14	.66
16	.65	-.03	.02	-.38	-.31	-.44	-.25	-.05	.20	.08	.16	.66
17	.67	-.07	.03	-.38	-.30	-.44	-.29	-.06	.20	.07	.17	.67
18	.64	.01	.05	-.38	-.30	-.43	-.36	-.05	.21	.07	.18	.84
19	.63	.03	.06	-.36	-.30	-.44	-.37	-.05	.21	.74	.18	.84
20	.64	.03	.01	-.36	-.29	-.44	-.40	-.03	.21	.77	.26	.85
21	.62	.03	-.04	-.36	-.29	-.44	-.40	-.03	.21	.79	.40	.85
22	.59	.04	.00	-.35	-.29	-.52	-.35	-.03	.22	.80	.42	.85
23	.59	.02	.01	-.35	-.30	-.56	-.32	-.03	.23	.81	.59	.85
24	.61	.01	.03	-.35	-.30	-.54	-.30	-.02	.22	.82	.58	.85
25	.59	.00	.05	-.36	-.30	-.54	-.27	-.02	.22	.82	.45	.85
26	.38	.02	.07	-.35	-.30	-.55	-.25	-.02	.23	.79	.44	.85
27	.09	.04	.08	-.35	-.30	-.53	-.24	-.02	.23	.80	.47	.84
28	.18	.04	.02	-.35	-.30	-.50	-.24	.00	.23	.81	.54	.84
29	.17	.05	-.07	-.35	—	-.48	-.23	.00	.22	.86	.56	.85
30	.24	.06	-.08	-.35	—	-.48	-.22	.00	.21	.86	.57	.85
31	.25	—	-.10	-.34	—	-.49	—	.08	—	.87	.57	—

Table 9. Daily mean water levels at pond M, 1993, Twitchell Island, California

[Missing data are denoted by —. Data collection started on May 11, 1993. Water levels are relative to land surface: Positive values signify measurements that are below land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	—	—	—	—	—	—	—	—	1.03	1.54	0.95	0.90
2	—	—	—	—	—	—	—	—	1.07	1.56	.96	.88
3	—	—	—	—	—	—	—	—	1.10	1.59	1.02	.88
4	—	—	—	—	—	—	—	—	1.08	1.57	1.14	.85
5	—	—	—	—	—	—	—	—	1.02	1.57	1.13	.82
6	—	—	—	—	—	—	—	—	1.02	1.59	1.09	.81
7	—	—	—	—	—	—	—	—	1.01	1.61	1.06	.76
8	—	—	—	—	—	—	—	—	.99	1.59	1.05	.35
9	—	—	—	—	—	—	—	—	1.01	1.58	1.06	.28
10	—	—	—	—	—	—	—	—	1.02	1.57	1.07	.47
11	—	—	—	—	—	—	—	0.92	1.02	1.57	1.06	.71
12	—	—	—	—	—	—	—	.93	1.05	1.58	1.04	.86
13	—	—	—	—	—	—	—	.94	1.09	1.59	.97	.91
14	—	—	—	—	—	—	—	.94	1.15	1.60	.92	.93
15	—	—	—	—	—	—	—	.95	1.17	1.60	.89	.90
16	—	—	—	—	—	—	—	.97	1.19	1.63	.88	.87
17	—	—	—	—	—	—	—	1.02	1.22	1.63	.90	.86
18	—	—	—	—	—	—	—	1.04	1.24	1.63	.93	.85
19	—	—	—	—	—	—	—	1.05	1.26	1.62	.99	.84
20	—	—	—	—	—	—	—	1.07	1.29	1.61	.99	.83
21	—	—	—	—	—	—	—	1.09	1.30	1.61	.97	.85
22	—	—	—	—	—	—	—	1.12	1.34	1.60	.96	.84
23	—	—	—	—	—	—	—	1.15	1.34	1.59	.98	.84
24	—	—	—	—	—	—	—	1.18	1.39	1.57	1.06	.83
25	—	—	—	—	—	—	—	1.10	1.43	1.49	1.08	.81
26	—	—	—	—	—	—	—	1.04	1.44	1.34	1.04	.81
27	—	—	—	—	—	—	—	1.03	1.47	1.11	.97	.81
28	—	—	—	—	—	—	—	1.04	1.49	.89	.93	.79
29	—	—	—	—	—	—	—	1.06	1.51	.89	.93	.78
30	—	—	—	—	—	—	—	1.06	1.53	.94	.95	.82
31	—	—	—	—	—	—	—	1.02	—	.95	.94	—

Table 10. Daily mean water levels at pond M, 1994, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	0.84	-0.04	-0.24	0-.32	-0.52	0-.58	-0.19	—	0.40	1.11	1.12	1.00
2	.84	-.05	-.26	-.32	-.50	-.57	-.19	—	.40	1.13	1.12	1.00
3	.83	-.05	-.27	-.33	-.48	-.57	-.20	—	.40	1.15	1.11	.99
4	.79	-.04	-.27	-.34	-.46	-.56	-.19	—	.40	1.16	1.08	.98
5	.76	-.03	-.27	-.34	-.45	-.56	-.19	—	.40	1.17	1.03	.97
6	.72	-.05	-.25	-.34	-.47	-.54	-.19	—	.41	1.18	.97	.98
7	.68	-.05	-.23	-.34	-.52	-.54	-.20	—	.41	1.21	.93	1.00
8	.64	-.04	-.23	-.35	-.49	-.52	—	—	.41	1.26	.92	1.01
9	.62	-.08	-.24	-.35	-.44	-.32	—	—	.42	1.28	.90	1.01
10	.62	-.20	-.26	-.35	-.45	-.19	—	—	.42	1.26	.88	1.00
11	.61	-.24	-.30	-.35	-.44	-.18	—	—	.52	1.21	.84	1.01
12	.58	-.23	-.28	-.34	-.43	-.17	—	—	.80	1.16	.83	1.01
13	.56	-.21	-.29	-.34	-.43	-.17	—	—	.81	1.06	.88	1.01
14	.56	-.18	-.31	-.35	-.44	-.16	—	—	.84	1.01	.90	1.02
15	.52	-.14	-.31	-.35	-.43	-.16	—	—	.88	.99	.82	1.02
16	.50	-.17	-.30	-.35	-.44	-.15	—	—	.90	.99	.60	1.02
17	.48	-.19	-.30	-.49	-.46	-.15	—	0.27	.89	.99	.63	1.04
18	.48	-.17	-.31	-.52	-.45	-.16	—	.26	.89	1.00	.68	1.04
19	.47	-.18	-.31	-.52	-.46	-.16	—	.27	.92	1.00	.76	1.02
20	.34	-.20	-.31	-.53	-.48	-.16	—	.28	.97	1.00	.85	1.03
21	.09	-.21	-.31	-.52	-.45	-.16	—	.29	.87	1.00	.90	1.04
22	.01	-.21	-.31	-.53	-.44	-.17	—	.31	.72	.98	.93	1.05
23	-.01	-.20	-.32	-.57	-.53	-.17	—	.34	.80	.96	.95	1.05
24	.00	-.20	-.31	-.58	-.60	-.17	—	.36	.88	.96	.96	1.02
25	.02	-.20	-.31	-.58	-.60	-.17	—	.37	.91	.97	.96	1.02
26	.02	-.19	-.32	-.57	-.59	-.18	—	.38	.94	.99	.95	1.00
27	.00	-.20	-.30	-.57	-.59	-.18	—	.40	.99	1.03	.95	.98
28	-.05	-.21	-.29	-.56	-.58	-.18	—	.40	1.03	1.06	.96	.95
29	-.05	-.22	-.29	-.54	—	-.18	—	.40	1.07	1.08	.97	.92
30	-.05	-.24	-.31	-.55	—	-.19	—	.40	1.10	1.11	.97	.91
31	-.05	—	-.31	-.55	—	-.19	—	.40	—	1.12	.99	—

Table 11. Daily mean water levels at pond M, 1995, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	0.91	0.03	-0.22	-0.38	-0.44	-0.35	-0.37	-0.20	0.12	0.37	0.59	0.45
2	.90	.04	-.22	-.40	-.43	-.35	-.37	-.19	.13	.39	.59	.45
3	.87	.05	-.23	-.42	-.42	-.34	-.37	-.19	.14	.40	.58	.45
4	.84	.05	-.25	-.43	-.41	-.34	-.36	-.18	.15	.42	.58	.45
5	.77	.04	-.25	-.43	-.40	-.34	-.36	-.18	.16	.43	.58	.45
6	.73	-.03	-.24	-.44	-.39	-.33	-.36	-.17	.17	.45	.57	.45
7	.68	-.04	-.23	-.45	-.39	-.33	-.36	-.16	.17	.46	.57	.45
8	.65	-.04	-.25	-.45	-.37	-.33	-.35	-.15	.18	.48	.60	.45
9	.62	-.06	-.28	-.46	-.37	-.35	-.33	-.15	.19	.49	.59	.45
10	.61	-.10	-.28	-.47	-.37	-.41	-.32	-.15	.20	.50	.53	.45
11	.62	-.10	-.27	-.46	-.37	-.44	-.31	-.15	.20	.52	.53	.45
12	.62	-.10	-.28	-.46	-.37	-.43	-.30	-.15	.21	.53	.52	.45
13	.62	-.05	-.29	-.46	-.37	-.42	-.30	-.14	.22	.55	.52	.45
14	.61	-.03	-.29	-.47	-.36	-.42	-.29	-.14	.23	.56	.52	.45
15	.64	-.05	-.29	-.47	-.41	-.42	-.29	-.14	.23	.58	.52	.45
16	.67	-.07	-.29	-.47	-.42	-.44	-.29	-.13	.24	.59	.51	.45
17	.67	-.10	-.29	-.47	-.42	-.45	-.27	-.09	.25	.61	.52	.45
18	.66	-.09	-.29	-.47	-.41	-.45	-.27	-.02	.26	.62	.51	.45
19	.64	-.07	-.29	-.47	-.41	-.44	-.26	.00	.26	.64	.51	.45
20	.63	-.07	-.31	-.47	-.40	-.45	-.25	.01	.27	.65	.51	.45
21	.62	-.07	-.37	-.47	-.40	-.45	-.25	.02	.28	.64	.50	.45
22	.59	-.06	-.36	-.47	-.39	-.48	-.25	.03	.29	.64	.50	.45
23	.58	-.11	-.37	-.47	-.38	-.51	-.25	.03	.29	.64	.49	.45
24	.57	-.27	-.36	-.48	-.37	-.50	-.24	.05	.30	.63	.49	.45
25	.56	-.27	-.34	-.48	-.37	-.49	-.22	.06	.31	.62	.48	.45
26	.48	-.26	-.33	-.47	-.36	-.48	-.21	.06	.32	.62	.48	.45
27	.22	-.24	-.32	-.46	-.35	-.47	-.21	.06	.32	.62	.47	.45
28	.12	-.23	-.34	-.46	-.35	-.45	-.21	.07	.33	.61	.47	.45
29	.00	-.23	-.36	-.45	—	-.40	-.20	.09	.33	.61	.46	.45
30	.02	-.23	-.36	-.45	—	-.38	-.20	.10	.35	.60	.46	.45
31	.03	—	-.37	-.45	—	-.38	—	.10	—	.60	.45	—

Table 12. Daily mean water levels at pond F, 1993, Twitchell Island, California

[Missing data are denoted by —. Data collection started on May 11, 1993. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	—	—	—	—	—	—	—	—	-0.68	-0.23	-0.23	-0.10
2	—	—	—	—	—	—	—	—	-.68	-.18	-.17	-.10
3	—	—	—	—	—	—	—	—	-.68	-.16	-.15	-.10
4	—	—	—	—	—	—	—	—	-.68	-.14	-.15	-.10
5	—	—	—	—	—	—	—	—	-.68	-.12	-.15	-.10
6	—	—	—	—	—	—	—	—	-.68	-.10	-.14	-.11
7	—	—	—	—	—	—	—	—	-.68	-.08	-.13	-.16
8	—	—	—	—	—	—	—	—	-.68	-.23	-.11	-.26
9	—	—	—	—	—	—	—	—	-.68	-.58	-.10	-.24
10	—	—	—	—	—	—	—	—	-.47	-.46	-.09	-.21
11	—	—	—	—	—	—	—	-0.55	-.34	-.37	-.08	-.20
12	—	—	—	—	—	—	—	-.59	-.45	-.34	-.08	-.19
13	—	—	—	—	—	—	—	-.60	-.43	-.34	-.10	-.18
14	—	—	—	—	—	—	—	-.60	-.44	-.33	-.12	-.17
15	—	—	—	—	—	—	—	-.61	-.47	-.30	-.12	-.19
16	—	—	—	—	—	—	—	-.61	-.44	-.27	-.12	-.20
17	—	—	—	—	—	—	—	-.62	-.41	-.21	-.11	-.21
18	—	—	—	—	—	—	—	-.63	-.40	-.16	-.11	-.23
19	—	—	—	—	—	—	—	-.64	-.42	-.13	-.10	-.24
20	—	—	—	—	—	—	—	-.64	-.41	-.11	-.09	-.24
21	—	—	—	—	—	—	—	-.64	-.38	-.10	-.09	-.30
22	—	—	—	—	—	—	—	-.65	-.37	-.08	-.08	-.40
23	—	—	—	—	—	—	—	-.65	-.34	-.06	-.11	-.38
24	—	—	—	—	—	—	—	-.65	-.30	-.05	-.18	-.37
25	—	—	—	—	—	—	—	-.65	-.28	-.05	-.15	-.36
26	—	—	—	—	—	—	—	-.65	-.25	-.17	-.14	-.35
27	—	—	—	—	—	—	—	-.65	-.19	-.32	-.12	-.37
28	—	—	—	—	—	—	—	-.65	-.17	-.31	-.11	-.41
29	—	—	—	—	—	—	—	-.66	-.20	-.29	-.10	-.40
30	—	—	—	—	—	—	—	-.67	-.24	-.27	-.09	-.38
31	—	—	—	—	—	—	—	-.67	—	-.26	-.09	—

Table 13. Daily mean water levels at pond F, 1994, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	-0.37	-0.62	-0.77	-0.89	-0.83	-0.81	—	—	-0.33	-0.30	-0.19	-0.06
2	-.35	-.62	-.77	-.88	-.83	-.80	—	—	-.31	-.34	-.17	-.20
3	-.35	-.63	-.77	-.88	-.83	-.80	—	—	-.25	-.27	-.14	-.41
4	-.34	-.65	-.77	-.88	-.83	-.79	—	—	-.22	-.23	-.11	-.39
5	-.35	-.66	-.77	-.87	-.83	-.79	—	—	-.22	-.20	-.09	-.32
6	-.36	-.68	-.76	-.87	-.83	-.78	—	—	-.32	-.18	-.01	-.25
7	-.36	-.69	-.76	-.86	-.83	-.78	—	—	-.45	-.15	.06	-.21
8	-.36	-.70	-.76	-.86	-.83	-.77	—	—	-.43	-.13	.18	-.42
9	-.36	-.71	-.77	-.86	-.83	-.76	—	—	-.39	-.08	.32	-.78
10	-.36	-.74	-.77	-.85	-.83	-.76	—	—	-.36	.01	.42	-.71
11	-.36	-.78	-.81	-.85	-.83	-.75	—	—	-.31	.01	.48	-.63
12	-.36	-.80	-.80	-.85	-.83	-.75	—	—	-.26	-.14	.31	-.52
13	-.36	-.80	-.81	-.84	-.83	-.74	—	—	-.24	-.13	-.12	-.42
14	-.37	-.80	-.84	-.84	-.83	-.73	—	—	-.22	-.18	-.12	-.39
15	-.39	-.80	-.84	-.83	-.84	-.73	—	—	-.19	-.32	-.22	-.34
16	-.40	-.80	-.84	-.83	-.84	-.71	—	—	-.17	-.28	-.33	-.32
17	-.51	-.80	-.84	-.83	-.84	-.71	—	-0.54	-.16	-.24	-.26	-.24
18	-.52	-.79	-.84	-.82	-.84	-.72	—	-.53	-.14	-.25	-.22	-.20
19	-.53	-.79	-.84	-.82	-.84	-.72	—	-.51	-.15	-.32	-.18	-.19
20	-.54	-.79	-.84	-.81	-.84	-.73	—	-.61	-.26	-.28	-.14	-.16
21	-.55	-.80	-.87	-.81	-.84	-.73	—	-.71	-.46	-.25	-.11	-.14
22	-.57	-.80	-.93	-.82	-.84	-.74	—	-.69	-.46	-.22	-.21	-.14
23	-.57	-.78	-.92	-.82	-.84	-.74	—	-.66	-.42	-.20	-.42	-.13
24	-.57	-.78	-.92	-.82	-.84	-.75	—	-.61	-.37	-.18	-.38	-.12
25	-.58	-.78	-.91	-.82	-.83	-.75	—	-.53	-.32	-.14	-.32	-.11
26	-.58	-.77	-.91	-.82	-.82	-.76	—	-.45	-.25	-.11	-.26	-.10
27	-.58	-.77	-.91	-.82	-.82	-.76	—	-.43	-.32	-.13	-.21	-.07
28	-.58	-.77	-.90	-.82	-.81	—	—	-.41	-.41	-.36	-.18	-.05
29	-.61	-.78	-.90	-.82	—	—	—	-.38	-.35	-.31	-.15	-.02
30	-.61	-.78	-.90	-.83	—	—	—	-.37	-.27	-.26	-.12	-.01
31	-.61	—	-.89	-.83	—	—	—	-.35	—	-.23	-.09	—

Table 14. Daily mean water levels at pond F, 1995, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	0.00	-0.46	-0.65	-0.72	-0.97	0-.81	-0.98	-0.77	-0.23	-0.30	0.00	0.04
2	.01	-.46	-.65	-.72	-.97	-.83	-.98	-.77	-.30	-.28	.08	-.16
3	.04	-.46	-.65	-.73	-.96	-.87	-.98	-.77	-.37	-.26	.13	-.15
4	-.05	-.45	-.65	-.77	-.97	-.86	-.98	-.75	-.35	-.22	.23	-.13
5	-.28	-.46	-.65	-.77	-.97	-.86	-.97	-.72	-.32	-.17	.26	-.12
6	-.31	-.62	-.65	-.77	-.96	-.85	-.97	-.71	-.31	-.14	.27	-.19
7	-.34	-.63	-.65	-.77	-.96	-.84	-.97	-.70	-.28	-.12	.34	-.57
8	-.34	-.63	-.66	-.77	-.95	-.84	-.96	-.68	-.23	-.11	.13	-.73
9	-.35	-.64	-.69	-.81	-.95	-.87	-.88	-.69	-.18	-.10	-.05	-.62
10	-.36	-.64	-.69	-.98	-.95	-.92	-.82	-.68	-.16	-.09	-.06	-.57
11	-.36	-.65	-.69	-.96	-.96	-.93	-.80	-.66	-.14	-.08	-.05	-.49
12	-.36	-.65	-.69	-.93	-.96	-.92	-.77	-.65	-.12	-.07	-.06	-.34
13	-.36	-.65	-.69	-.93	-.94	-.92	-.76	-.66	-.10	-.07	-.05	-.30
14	-.34	-.65	-.70	-.94	-.92	-.92	-.74	-.66	-.09	-.09	-.04	-.28
15	-.31	-.65	-.71	-.95	-.91	-.93	-.74	-.67	-.10	-.12	-.04	-.25
16	-.28	-.66	-.71	-.96	-.91	-.94	-.73	-.67	-.14	-.11	-.02	-.22
17	-.27	-.66	-.70	-.96	-.90	-.95	-.74	-.66	-.14	-.24	.00	-.19
18	-.27	-.66	-.70	-.96	-.90	-.95	-.75	-.64	-.13	-.47	.01	-.15
19	-.27	-.66	-.70	-.96	-.89	-.97	-.75	-.63	-.13	-.42	.02	-.13
20	-.26	-.66	-.72	-.96	-.89	-1.00	-.74	-.59	-.12	-.36	.11	-.10
21	-.26	-.66	-.78	-.96	-.88	-1.00	-.74	-.54	-.10	-.29	.14	-.16
22	-.26	-.66	-.78	-.97	-.85	-1.04	-.73	-.50	-.07	-.25	.17	-.48
23	-.26	-.66	-.77	-.98	-.84	-1.04	-.72	-.46	-.06	-.23	.21	-.80
24	-.26	-.66	-.77	-.97	-.84	-1.03	-.72	-.44	-.05	-.21	.30	-.76
25	-.26	-.66	-.75	-.97	-.84	-1.02	-.68	-.42	-.03	-.19	.32	-.73
26	-.35	-.66	-.73	-.97	-.83	-1.01	-.73	-.40	-.01	-.18	.33	-.75
27	-.47	-.66	-.73	-.98	-.83	-.99	-.79	-.38	.01	-.16	.35	-.81
28	-.47	-.65	-.72	-.99	-.82	-.99	-.78	-.35	-.15	-.14	.44	-.78
29	-.47	-.65	-.72	-.97	—	-.99	-.78	-.33	-.37	-.11	.47	-.75
30	-.46	-.65	-.72	-.97	—	-.99	-.77	-.30	-.33	-.09	.43	-.71
31	-.46	—	-.72	-.97	—	-.98	—	-.28	—	-.06	.21	—

Table 15. Daily mean water levels at the extensometer, 1993, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	—	—	—	—	—	-0.42	-0.43	-0.20	-0.23	-0.23	-0.18	-0.25
2	—	—	—	—	—	-.40	-.43	-.19	-.23	-.23	-.18	-.24
3	—	—	—	—	—	-.39	-.43	-.21	-.24	-.23	-.18	-.23
4	—	—	—	—	—	-.37	-.42	-.22	-.26	-.23	-.19	-.24
5	—	—	—	—	—	-.36	-.41	-.21	-.28	-.24	-.19	-.24
6	—	—	—	—	—	-.35	-.40	-.22	-.29	-.24	-.19	-.24
7	—	—	—	—	—	-.34	-.39	-.21	-.31	-.24	-.19	-.24
8	—	—	—	—	—	-.34	-.38	-.20	-.30	-.24	-.18	-.24
9	—	—	—	—	—	-.34	-.38	-.19	-.28	-.23	-.17	-.24
10	—	—	—	—	—	-.34	-.37	-.19	-.29	-.22	-.16	-.25
11	—	—	—	—	—	-.34	-.35	-.19	-.34	-.22	-.17	-.24
12	—	—	—	—	-0.38	-.34	-.33	-.19	-.33	-.21	-.18	-.24
13	—	—	—	—	-.45	-.33	-.32	-.19	-.31	-.21	-.21	-.24
14	—	—	—	—	-.43	-.34	-.31	-.18	-.37	-.20	-.23	-.24
15	—	—	—	—	-.42	-.33	-.30	-.16	-.40	-.20	-.24	-.26
16	—	—	—	—	-.42	-.33	-.28	-.16	-.40	-.19	-.24	-.26
17	—	—	—	—	-.42	-.35	-.31	-.15	-.38	-.18	-.22	-.27
18	—	—	—	—	-.44	-.35	-.30	-.15	-.38	-.16	-.21	-.27
19	—	—	—	—	-.47	-.36	-.30	-.16	-.37	-.17	-.21	-.28
20	—	—	—	—	-.48	-.35	-.29	-.18	-.37	-.17	-.20	-.29
21	—	—	—	—	-.49	-.35	-.29	-.19	-.37	-.16	-.19	-.30
22	—	—	—	—	-.49	-.35	-.29	-.19	-.35	-.15	-.18	-.30
23	—	—	—	—	-.49	-.37	-.29	-.19	-.33	-.15	-.17	-.31
24	—	—	—	—	-.47	-.39	-.30	-.22	-.29	-.16	-.17	-.30
25	—	—	—	—	-.46	-.39	-.30	-.24	-.26	-.18	-.18	-.29
26	—	—	—	—	-.47	-.41	-.30	-.25	-.25	-.21	-.19	-.28
27	—	—	—	—	-.45	-.42	-.28	-.25	-.24	-.22	-.20	-.27
28	—	—	—	—	-.44	-.43	-.27	-.24	-.24	-.24	-.21	-.28
29	—	—	—	—	—	-.43	-.24	-.23	-.23	-.24	-.21	-.28
30	—	—	—	—	—	-.43	-.22	-.22	-.22	-.22	-.23	-.29
31	—	—	—	—	—	-.42	—	-.23	—	-.19	-.24	—

Table 16. Daily mean water levels at the extensometer, 1994, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface, in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	-0.29	-0.45	-0.49	-0.48	-0.42	-0.34	-0.24	-0.20	-0.15	-0.01	-0.02	0.01
2	-.30	-.45	-.47	-.47	-.41	-.33	-.23	-.19	-.14	.00	-.02	.00
3	-.30	-.45	-.46	-.46	-.40	-.32	-.23	-.17	-.12	.00	-.01	.00
4	-.31	-.46	-.46	-.46	-.40	-.31	-.22	-.16	-.12	-.02	-.01	.00
5	-.32	-.46	-.44	-.45	-.39	-.31	-.21	-.16	-.12	-.05	-.01	.01
6	-.33	-.46	-.44	-.44	-.40	-.31	-.21	-.18	-.12	-.06	-.01	.00
7	-.34	-.46	-.44	-.44	-.45	-.30	-.20	-.21	-.12	-.06	-.01	-.01
8	-.34	-.46	-.44	-.46	-.44	-.30	-.20	-.21	-.11	-.08	-.01	-.01
9	-.34	-.47	-.46	-.48	-.43	-.30	-.22	-.21	-.11	-.09	-.01	-.01
10	-.35	-.48	-.47	-.49	-.43	-.30	-.22	-.22	-.11	-.09	.00	-.01
11	-.36	-.50	-.51	-.49	-.42	-.29	-.21	-.22	-.12	-.09	.01	-.01
12	-.36	-.50	-.52	-.48	-.40	-.27	-.21	-.21	-.13	-.09	.03	-.02
13	-.36	-.49	-.51	-.48	-.39	-.25	-.21	-.20	-.13	-.08	.06	-.03
14	-.37	-.47	-.54	-.49	-.39	-.25	-.21	-.20	-.12	-.07	.06	-.03
15	-.38	-.46	-.54	-.50	-.38	-.25	-.21	-.19	-.10	-.06	.07	-.02
16	-.40	-.46	-.52	-.50	-.39	-.25	-.20	-.19	-.09	-.06	.07	-.03
17	-.41	-.46	-.51	-.49	-.43	-.24	-.19	-.20	-.08	-.05	.06	-.04
18	-.42	-.46	-.50	-.47	-.43	-.25	-.19	-.21	-.07	-.06	.02	-.05
19	-.43	-.44	-.49	-.48	-.42	-.25	-.18	-.21	-.06	-.08	.02	-.06
20	-.42	-.44	-.47	-.49	-.43	-.24	-.17	-.20	-.07	-.08	.03	-.07
21	-.41	-.44	-.46	-.48	-.41	-.23	-.16	-.19	-.08	-.08	.02	-.08
22	-.42	-.45	-.44	-.48	-.39	-.23	-.15	-.19	-.08	-.09	.02	-.09
23	-.41	-.45	-.44	-.50	-.37	-.23	-.16	-.18	-.08	-.10	.02	-.11
24	-.41	-.44	-.42	-.51	-.37	-.24	-.17	-.19	-.08	-.08	.02	-.12
25	-.40	-.44	-.43	-.50	-.36	-.25	-.18	-.19	-.07	-.07	.02	-.14
26	-.40	-.44	-.44	-.49	-.37	-.25	-.20	-.21	-.06	-.05	.02	-.15
27	-.41	-.45	-.45	-.48	-.36	-.25	-.20	-.21	-.05	-.04	.03	-.17
28	-.42	-.47	-.45	-.47	-.35	-.26	-.21	-.21	-.04	-.03	.03	-.17
29	-.43	-.50	-.45	-.45	—	-.26	-.21	-.18	-.02	-.02	.03	-.17
30	-.43	-.51	-.47	-.45	—	-.25	-.21	-.17	-.02	-.01	.03	-.17
31	-.44	—	-.48	-.44	—	-.24	—	-.17	—	-.01	.02	—

Table 17. Daily mean water levels at the extensometer, 1995, Twitchell Island, California

[Missing data are denoted by —. Water levels are relative to land surface: Positive values signify measurements that are below land surface; negative values signify measurements that are above land surface]

Day	Depth of water level below land surface , in feet											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	-0.18	-0.30	-0.31	-0.33	-0.43	-0.27	-0.42	-0.31	-0.17	-0.17	-0.03	-0.14
2	-.19	-.32	-.32	-.34	-.41	-.30	-.39	-.31	-.17	-.17	-.03	-.15
3	-.20	-.32	-.34	-.37	-.38	-.32	-.38	-.31	-.16	-.15	-.03	-.15
4	-.23	-.32	-.35	-.39	-.37	-.31	-.36	-.30	-.14	-.14	-.03	-.15
5	-.25	-.35	-.35	-.40	-.36	-.32	-.36	-.30	-.13	-.12	-.05	-.15
6	-.27	-.36	-.36	-.40	-.35	-.32	-.36	-.28	-.10	-.10	-.08	-.15
7	-.27	-.36	-.36	-.41	-.35	-.33	-.36	-.27	-.07	-.08	-.10	-.15
8	-.26	-.35	-.34	-.44	-.35	-.34	-.36	-.26	-.06	-.07	-.10	-.16
9	-.25	-.36	-.33	-.49	-.35	-.39	-.34	-.25	-.05	-.08	-.12	-.17
10	-.26	-.36	-.32	-.56	-.36	-.45	-.32	-.25	-.05	-.09	-.15	-.17
11	-.25	-.36	-.31	-.51	-.38	-.47	-.31	-.25	-.06	-.09	-.17	-.17
12	-.25	-.36	-.33	-.52	-.39	-.47	-.31	-.26	-.07	-.10	-.18	-.17
13	-.26	-.35	-.33	-.53	-.41	-.49	-.31	-.28	-.08	-.09	-.17	-.18
14	-.27	-.34	-.34	-.54	-.41	-.51	-.30	-.30	-.10	-.09	-.17	-.17
15	-.26	-.35	-.34	-.53	-.39	-.52	-.30	-.31	-.14	-.09	-.17	-.17
16	-.25	-.36	-.33	-.52	-.37	-.53	-.32	-.31	-.17	-.08	-.18	-.17
17	-.24	-.36	-.33	-.49	-.35	-.52	-.33	-.32	-.17	-.10	-.18	-.16
18	-.24	-.35	-.32	-.45	-.34	-.52	-.34	-.30	-.18	-.09	-.16	-.15
19	-.26	-.34	-.31	-.43	-.32	-.50	-.34	-.29	-.18	-.09	-.15	-.15
20	-.27	-.34	-.30	-.43	-.32	-.50	-.34	-.28	-.16	-.11	-.13	-.15
21	-.27	-.34	-.28	-.42	-.32	-.51	-.33	-.27	-.15	-.12	-.13	-.16
22	-.28	-.34	-.28	-.43	-.32	-.56	-.30	-.26	-.14	-.11	-.13	-.17
23	-.29	-.33	-.28	-.45	-.31	-.56	-.29	-.24	-.14	-.10	-.13	-.18
24	-.29	-.33	-.28	-.47	-.31	-.54	-.28	-.23	-.13	-.09	-.13	-.18
25	-.30	-.34	-.27	-.46	-.30	-.52	-.28	-.22	-.13	-.09	-.15	-.18
26	-.30	-.33	-.26	-.46	-.29	-.48	-.27	-.22	-.13	-.09	-.16	-.19
27	-.30	-.32	-.26	-.49	-.28	-.47	-.27	-.21	-.15	-.09	-.14	-.19
28	-.30	-.31	-.28	-.48	-.27	-.46	-.28	-.20	-.16	-.07	-.13	-.19
29	-.29	-.31	-.30	-.48	—	-.43	-.29	-.20	-.17	-.07	-.13	-.19
30	-.29	-.30	-.31	-.45	—	-.42	-.30	-.19	-.17	-.06	-.12	-.15
31	-.28	—	-.32	-.44	—	-.42	—	-.18	—	-.04	-.13	—

Table 18. Mean spirit levels at pond S, Twitchell Island, California

[Missing data are denoted by —. See fig. 2 for location of leveling points. Levels are in feet below sea level]

Date	Leveling point							
	S1L	S1H	S2L	S2H	S3L	S3H	S4L	S4H
11/15/92	-7.63	—	-7.33	—	-7.37	-4.52	-7.41	-4.51
12/3/92	-7.58	-4.73	-7.29	-4.40	-7.32	-4.48	-7.37	-4.47
1/27/93	-7.59	-4.73	-7.28	-4.39	-7.31	-4.46	-7.35	-4.45
2/22/93	-7.57	-4.71	-7.28	-4.39	-7.31	-4.46	-7.37	-4.46
3/24/93	-7.60	-4.73	-7.31	-4.42	-7.34	-4.49	-7.40	-4.49
4/12/93	-7.61	-4.74	-7.32	-4.43	-7.35	-4.49	-7.41	-4.50
4/29/93	-7.64	-4.77	-7.36	-4.47	-7.38	-4.53	-7.45	-4.54
5/6/93	-7.65	-4.78	-7.37	-4.48	-7.40	-4.58	-7.47	-4.56
6/7/93	-7.66	-4.79	-7.38	-4.49	-7.41	-4.55	-7.48	-4.56
6/29/93	-7.68	-4.80	-7.39	-4.50	-7.42	-4.56	-7.48	-4.57
7/13/93	-7.69	-4.82	-7.40	-4.51	-7.43	-4.57	-7.49	-4.58
7/26/93	-7.67	-4.80	-7.39	-4.50	-7.40	-4.56	-7.48	-4.57
8/12/93	-7.66	-4.79	-7.38	-4.49	-7.41	-4.54	-7.47	-4.56
8/23/93	-7.65	-4.78	-7.37	-4.48	-7.40	-4.54	-7.46	-4.55
9/8/93	-7.63	-4.76	-7.34	-4.45	-7.38	-4.52	-7.44	-4.53
9/21/93	-7.62	-4.75	-7.34	-4.45	-7.37	-4.51	-7.44	-4.52
10/20/93	-7.59	-4.72	-7.31	-4.42	-7.34	-4.48	-7.41	-4.49
11/19/93	-7.60	-4.74	-7.32	-4.43	-7.34	-4.49	-7.41	-4.49
12/1/93	-7.57	-4.70	-7.29	-4.40	-7.32	-4.47	-7.39	-4.48
1/5/94	-7.53	-4.66	-7.25	-4.36	-7.28	-4.43	-7.35	-4.44
1/21/94	-7.54	-4.67	-7.25	-4.36	-7.31	-4.43	-7.35	-4.44
2/4/94	-7.53	-4.66	-7.24	-4.36	-7.28	-4.42	-7.35	-4.44
2/16/94	-7.52	-4.65	-7.24	-4.35	-7.27	-4.42	-7.35	-4.44
3/2/94	-7.53	-4.66	-7.25	-4.36	-7.28	-4.43	-7.35	-4.44
3/14/94	-7.54	-4.67	-7.26	-4.37	-7.29	-4.44	-7.37	-4.45
3/28/94	-7.54	-4.67	-7.27	-4.38	-7.31	-4.45	-7.38	-4.47
4/13/94	-7.56	-4.69	-7.29	-4.40	-7.33	-4.47	-7.41	-4.49
5/2/94	-7.57	-4.70	-7.31	-4.42	-7.34	-4.48	-7.42	-4.50
5/26/94	-7.57	-4.70	-7.31	-4.42	-7.35	-4.49	-7.43	-4.51
6/8/94	-7.59	-4.72	-7.33	-4.44	-7.37	-4.51	-7.45	-4.53
7/1/94	-7.64	-4.76	-7.37	-4.47	-7.41	-4.54	-7.49	-4.57
7/13/94	-7.62	-4.75	-7.36	-4.46	-7.40	-4.53	-7.48	-4.56
7/29/94	-7.64	-4.76	-7.37	-4.48	-7.41	-4.54	-7.49	-4.57
8/23/94	-7.63	-4.76	-7.36	-4.47	-7.40	-4.54	-7.49	-4.57
9/9/94	-7.63	-4.76	-7.37	-4.48	-7.41	-4.55	-7.49	-4.57
11/1/94	-7.61	-4.74	-7.33	-4.44	—	—	-7.45	-4.53
12/5/94	-7.57	-4.70	-7.30	-4.41	-7.34	-4.49	-7.42	-4.51
1/23/95	-7.53	-4.66	-7.25	-4.37	-7.29	-4.44	-7.38	-4.46
2/22/95	-7.52	-4.65	-7.25	-4.37	-7.29	-4.44	-7.38	-4.46
4/12/95	-7.52	-4.65	-7.24	-4.36	-7.28	-4.43	-7.38	-4.46
5/16/95	-7.59	-4.72	-7.31	-4.43	-7.35	-4.50	-7.43	-4.52
6/27/95	-7.59	-4.71	-7.32	-4.43	-7.36	-4.50	-7.48	-4.54
7/25/95	-7.62	-4.74	-7.35	-4.47	-7.39	-4.54	-7.49	-4.57
8/30/95	-7.65	-4.69	-7.38	-4.43	-7.49	-4.60	-7.38	-4.47

Table 19. Mean spirit levels at pond M, Twitchell Island, California

[Missing data are denoted by —. See fig. 2 for location of leveling points. Levels are in feet below sea level]

Date	Leveling point							
	M1L	M1H	M2L	M2H	M3L	M3H	M4L	M4H
11/15/92	-7.49	-4.56	-7.61	-4.74	-7.49	-4.58	-7.48	-4.58
12/3/92	-7.45	-4.63	-7.57	-4.71	-7.47	-4.56	-7.45	-4.57
1/27/93	-7.48	-4.54	-7.62	-4.75	-7.52	-4.61	-7.50	-4.61
2/22/93	-7.47	-4.55	-7.61	-4.75	-7.51	-4.61	-7.50	-4.60
3/24/93	-7.48	-4.56	-7.62	-4.76	-7.53	-4.62	-7.52	-4.62
4/12/93	-7.50	-4.57	-7.64	-4.77	-7.54	-4.63	-7.54	-4.64
4/29/93	-7.55	-4.62	-7.68	-4.81	-7.59	-4.68	-7.59	-4.69
5/6/93	-7.57	-4.65	-7.71	-4.84	-7.62	-4.71	-7.62	-4.71
6/7/93	-7.57	-4.64	-7.70	-4.84	-7.61	-4.70	-7.61	-4.70
6/29/93	-7.59	-4.66	-7.73	-4.86	-7.64	-4.72	-7.63	-4.72
7/13/93	-7.60	-4.67	-7.74	-4.87	-7.64	-4.73	-7.63	-4.73
7/26/93	-7.59	-4.66	-7.72	-4.85	-7.62	-4.71	-7.62	-4.71
7/27/93	-7.58	-4.65	-7.72	-4.86	-7.63	-4.72	-7.62	-4.71
7/28/93	-7.57	-4.64	-7.71	-4.84	-7.62	-4.70	-7.61	-4.70
7/29/93	-7.56	-4.64	-7.70	-4.84	-7.61	-4.70	-7.60	-4.70
7/30/93	-7.57	-4.64	-7.71	-4.84	-7.61	-4.70	-7.61	-4.70
7/31/93	-7.57	-4.64	-7.70	-4.83	-7.61	-4.70	-7.60	-4.69
8/2/93	-7.57	-4.64	-7.70	-4.83	-7.61	-4.70	-7.60	-4.70
8/4/93	-7.57	-4.64	-7.71	-4.84	-7.61	-4.70	-7.61	-4.70
8/12/93	-7.57	-4.64	-7.71	-4.84	-7.62	-4.70	-7.61	-4.70
8/23/93	-7.56	-4.63	-7.70	-4.83	-7.60	-4.69	-7.60	-4.69
9/7/93	-7.53	-4.60	-7.67	-4.80	-7.57	-4.66	-7.57	-4.66
9/8/93	-7.55	-4.62	-7.70	-4.83	-7.60	-4.69	—	-4.69
9/21/93	-7.53	-4.60	-7.67	-4.80	-7.57	-4.66	—	-4.66
10/20/93	-7.49	-4.56	-7.62	-4.75	-7.52	-4.61	—	-4.61
11/19/93	-7.51	-4.59	-7.66	-4.79	-7.56	-4.65	—	-4.65
12/1/93	-7.50	-4.58	-7.65	-4.78	-7.55	-4.64	—	-4.64
1/5/94	-7.47	-4.54	-7.60	-4.74	-7.51	-4.60	—	-4.60
1/21/94	-7.45	-4.53	-7.59	-4.72	-7.49	-4.58	—	-4.58
2/4/94	-7.46	-4.54	-7.60	-4.73	-7.50	-4.59	—	-4.60
2/16/94	-7.47	-4.55	-7.61	-4.75	-7.52	-4.61	—	-4.61
3/2/94	-7.48	-4.56	-7.63	-4.76	-7.53	-4.62	—	-4.62
3/14/94	-7.48	-4.56	-7.63	-4.76	-7.53	-4.62	—	-4.63
3/28/94	-7.50	-4.58	-7.64	-4.78	-7.55	-4.64	—	-4.64
4/13/94	-7.52	-4.60	-7.66	-4.80	-7.57	-4.66	—	-4.66
5/2/94	-7.51	-4.59	-7.65	-4.79	-7.56	-4.64	—	-4.65
5/26/94	-7.53	-4.61	-7.66	-4.78	-7.56	-4.65	—	-4.66
6/8/94	-7.55	-4.63	-7.69	-4.81	-7.59	-4.68	—	-4.69
7/1/94	-7.60	-4.68	-7.76	-4.88	-7.66	-4.74	—	-4.75
7/13/94	-7.60	-4.67	-7.75	-4.87	-7.65	-4.73	—	-4.73
7/29/94	-7.60	-4.67	-7.75	-4.87	-7.65	-4.73	—	-4.73
8/23/94	-7.60	-4.68	-7.75	-4.88	-7.66	-4.74	—	-4.74
9/9/94	-7.61	-4.68	-7.75	-4.88	-7.66	-4.74	—	-4.74
11/1/94	-7.57	-4.64	-7.72	-4.85	-7.62	-4.71	—	-4.70
12/5/94	-7.55	-4.63	-7.70	-4.83	-7.60	-4.69	—	-4.68
1/23/95	-7.54	-4.62	-7.69	-4.82	-7.60	-4.69	—	-4.68
2/22/95	-7.55	-4.63	-7.70	-4.84	-7.61	-4.70	—	-4.69
4/12/95	-7.53	-4.61	-7.69	-4.82	-7.59	-4.68	—	-4.68
5/16/95	-7.56	-4.65	-7.72	-4.86	-7.63	-4.72	—	-4.72
6/27/95	-7.56	-4.65	-7.72	-4.85	-7.63	-4.72	—	-4.72
7/25/95	-7.60	-4.69	-7.76	-4.89	-7.67	-4.76	—	-4.76
8/30/95	-7.63	-4.71	-7.79	-4.92	-7.70	-4.79	—	—

Table 20. Mean spirit levels at pond F, Twitchell Island, California

[See fig. 2 for location of leveling points. Levels are in feet below sea level]

Date	Leveling point							
	F1L	F1H	F2L	F2H	F3L	F3H	F4L	F4H
11/15/92	-7.63	-4.60	-7.52	-4.63	-7.45	-4.54	-7.52	-4.61
12/3/92	-7.58	-4.64	-7.54	-4.67	-7.46	-4.57	-7.54	-4.64
1/27/93	-7.56	-4.64	-7.54	-4.67	-7.46	-4.57	-7.54	-4.64
2/22/93	-7.57	-4.65	-7.55	-4.68	-7.48	-4.57	-7.55	-4.64
3/24/93	-7.59	-4.67	-7.56	-4.69	-7.48	-4.59	-7.55	-4.65
4/12/93	-7.59	-4.67	-7.57	-4.69	-7.48	-4.59	-7.55	-4.66
4/29/93	-7.62	-4.70	-7.59	-4.72	-7.51	-4.61	-7.57	-4.68
5/6/93	-7.67	-4.75	-7.65	-4.77	-7.55	-4.66	-7.62	-4.72
6/7/93	-7.59	-4.67	-7.56	-4.69	-7.48	-4.59	-7.56	-4.66
6/29/93	-7.61	-4.69	-7.59	-4.71	-7.52	-4.61	-7.57	-4.67
7/13/93	-7.65	-4.72	-7.63	-4.75	-7.55	-4.65	-7.60	-4.70
7/26/93	-7.66	-4.73	-7.64	-4.76	-7.56	-4.66	-7.61	-4.71
8/12/93	-7.62	-4.69	-7.60	-4.72	-7.54	-4.62	-7.58	-4.68
8/23/93	-7.61	-4.67	-7.58	-4.70	-7.53	-4.60	-7.56	-4.67
9/8/93	-7.62	-4.68	-7.60	-4.71	-7.52	-4.61	-7.58	-4.67
9/21/93	-7.60	-4.65	-7.57	-4.68	-7.51	-4.58	-7.55	-4.65
10/20/93	-7.56	-4.62	-7.54	-4.65	-7.47	-4.56	-7.53	-4.63
11/19/93	-7.55	-4.61	-7.53	-4.64	-7.45	-4.54	-7.51	-4.61
12/1/93	-7.56	-4.62	-7.54	-4.65	-7.46	-4.56	-7.53	-4.62
1/5/94	-7.57	-4.63	-7.55	-4.66	-7.47	-4.57	-7.54	-4.63
1/21/94	-7.56	-4.62	-7.55	-4.66	-7.47	-4.56	-7.53	-4.63
2/4/94	-7.57	-4.63	-7.56	-4.67	-7.48	-4.57	-7.54	-4.64
2/16/94	-7.58	-4.64	-7.57	-4.68	-7.49	-4.59	-7.55	-4.65
3/2/94	-7.60	-4.65	-7.59	-4.70	-7.51	-4.60	-7.57	-4.66
3/14/94	-7.61	-4.67	-7.59	-4.70	-7.52	-4.61	-7.57	-4.67
3/28/94	-7.60	-4.66	-7.59	-4.69	-7.50	-4.60	-7.57	-4.66
4/13/94	-7.60	-4.66	-7.59	-4.69	-7.51	-4.60	-7.57	-4.66
5/2/94	-7.60	-4.66	-7.58	-4.69	-7.50	-4.59	-7.56	-4.65
5/26/94	-7.63	-4.69	-7.62	-4.73	-7.54	-4.63	-7.59	-4.69
6/8/94	-7.65	-4.71	-7.64	-4.75	-7.56	-4.65	-7.61	-4.70
7/1/94	-7.68	-4.74	-7.66	-4.77	-7.58	-4.67	-7.62	-4.72
7/13/94	-7.65	-4.71	-7.63	-4.74	-7.55	-4.64	-7.61	-4.70
7/29/94	-7.67	-4.72	-7.65	-4.76	-7.57	-4.66	-7.63	-4.72
8/23/94	-7.68	-4.73	-7.66	-4.77	-7.58	-4.68	-7.64	-4.73
9/9/94	-7.69	-4.75	-7.68	-4.79	-7.60	-4.69	-7.64	-4.74
11/1/94	-7.61	-4.66	-7.57	-4.70	-7.52	-4.61	-7.58	-4.67
12/5/94	-7.59	-4.64	-7.55	-4.69	-7.50	-4.60	-7.56	-4.66
1/23/95	-7.60	-4.65	-7.56	-4.69	-7.50	-4.60	-7.55	-4.65
2/22/95	-7.64	-4.69	-7.61	-4.74	-7.55	-4.65	-7.60	-4.70
4/12/95	-7.64	-4.69	-7.61	-4.74	-7.55	-4.64	-7.60	-4.69
5/16/95	-7.66	-4.70	-7.62	-4.75	-7.56	-4.65	-7.61	-4.71
6/27/95	-7.68	-4.73	-7.64	-4.77	-7.58	-4.67	-7.64	-4.73
7/25/95	-7.70	-4.77	-7.66	-4.79	-7.60	-4.69	-7.66	-4.74
8/30/95	-7.70	-4.77	-7.66	-4.79	-7.60	-4.69	-7.67	-4.75

Table 21. Mean spirit levels at the control sites and extensometer, Twitchell Island, California

[Missing data are denoted by —. See fig. 2 for location of control sites and extensometer. Levels are in feet below sea level]

Date	Control site		Extensometer	
	SM	MF	Plate	Table
11/15/92	—	—	—	—
12/03/92	—	—	—	—
01/27/93	—	—	—	—
02/22/93	—	—	-7.14	-6.91
03/24/93	—	—	-7.15	-6.90
04/12/93	—	—	-7.15	-6.90
04/29/93	—	—	-7.16	-6.90
05/06/93	-7.53	-7.59	-7.17	-6.90
06/07/93	-7.54	-7.60	-7.17	-6.90
06/29/93	-7.55	-7.62	-7.17	-6.91
07/13/93	-7.56	-7.62	-7.18	-6.91
07/26/93	-7.54	-7.62	-7.20	-6.91
07/27/93	-7.54	-7.61	-7.20	-6.91
07/28/93	-7.54	-7.61	-7.20	-6.91
07/29/93	-7.52	-7.60	-7.20	-6.92
07/30/93	-7.53	-7.60	-7.20	-6.92
07/31/93	-7.54	-7.59	—	—
08/02/93	-7.54	-7.59	-7.20	-6.92
08/04/93	-7.55	-7.60	-7.20	-6.92
08/12/93	-7.55	-7.60	-7.20	-6.92
08/23/93	-7.54	-7.59	-7.20	-6.92
09/07/93	-7.51	-7.56	-7.20	-6.92
09/08/93	-7.51	-7.57	-7.20	-6.93
09/21/93	-7.51	-7.55	-7.18	-6.92
10/20/93	-7.46	-7.49	-7.14	-6.92
11/19/93	-7.43	-7.45	-7.12	-6.92
12/01/93	-7.44	-7.45	-7.12	-6.92
01/05/94	-7.43	-7.43	-7.11	-6.92
01/21/94	-7.42	-7.42	-7.11	-6.92
02/04/94	-7.42	-7.41	-7.11	-6.92
02/16/94	-7.43	-7.42	-7.11	-6.92
03/02/94	-7.44	-7.43	-7.11	-6.92
03/14/94	-7.46	-7.45	-7.13	-6.92
03/28/94	-7.52	-7.46	-7.13	-6.92
04/13/94	-7.56	-7.48	-7.14	-6.92
05/02/94	-7.58	-7.51	-7.14	-6.92
05/26/94	-7.60	-7.53	-7.14	-6.92
06/08/94	-7.62	-7.56	-7.14	-6.91
07/01/94	-7.67	-7.63	-7.16	-6.92
07/13/94	-7.66	-7.63	-7.17	-6.92
07/29/94	-7.67	-7.62	-7.19	-6.92
08/23/94	-7.66	-7.63	-7.21	-6.93
09/09/94	-7.65	-7.62	-7.21	-6.93
11/01/94	-7.59	-7.52	-7.15	-6.92
12/05/94	-7.58	-7.50	-7.13	-6.92
01/23/95	-7.53	-7.45	-7.11	-6.92
02/22/95	-7.55	-7.47	-7.12	-6.93
04/12/95	-7.54	-7.46	-7.12	-6.92
05/16/95	-7.58	-7.49	-7.13	-6.93
06/27/95	-7.61	-7.59	-7.15	-6.93
07/25/95	-7.66	-7.62	-7.17	-6.92
08/30/95	-7.67	-7.63	-7.18	-6.93

Table 22. Daily mean elevation change relative to established datum as measured by extensometer, 1993, Twitchell Island, California

[Missing data are denoted by —. Values are in feet]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	—	—	—	—	0.04	0.03	0.03	0.00	-0.01	0.00	-0.01	-0.01
2	—	—	—	—	.03	.02	.03	.00	-.01	.00	-.01	-.01
3	—	—	—	—	.03	.02	.03	.00	.00	.00	-.02	-.01
4	—	—	—	—	.03	.02	.03	.00	.00	.00	-.02	-.01
5	—	—	—	—	.03	.02	.03	.00	.00	.00	-.02	-.01
6	—	—	—	—	.03	.02	.03	.00	.00	.00	-.02	-.01
7	—	—	—	—	.03	.01	.03	.00	.00	.00	-.02	-.01
8	—	—	—	—	.03	.01	.03	.00	.00	.00	-.02	-.01
9	—	—	—	—	.03	.01	.03	.00	.00	.00	-.02	-.01
10	—	—	—	—	.03	.01	.02	-.01	.00	.00	-.02	-.01
11	—	—	—	—	.03	.01	.02	-.01	.01	.00	-.02	-.01
12	—	—	—	—	.03	.01	.02	-.01	.02	.00	-.02	-.01
13	—	—	—	—	.03	.01	.02	-.01	.01	-.01	-.01	-.01
14	—	—	—	—	.03	.01	.02	-.01	.02	-.01	-.01	-.01
15	—	—	—	—	.03	.01	.01	-.01	.03	-.01	-.01	.00
16	—	—	—	—	.02	.01	.01	-.01	.02	-.01	-.01	.00
17	—	—	—	—	.02	.02	.01	-.01	.02	-.01	-.01	.00
18	—	—	—	—	.02	.02	.01	-.01	.02	-.01	-.01	.00
19	—	—	—	—	.03	.02	.01	-.01	.02	-.01	-.01	.00
20	—	—	—	—	.03	.02	.01	-.01	.02	-.01	-.01	.00
21	—	—	—	—	.03	.02	.01	-.01	.02	-.01	-.01	.01
22	—	—	—	—	.03	.02	.01	-.01	.02	-.01	-.01	.01
23	—	—	—	—	.03	.02	.01	-.01	.01	-.02	-.01	.01
24	—	—	—	—	.03	.02	.01	-.01	.01	-.02	-.02	.01
25	—	—	—	—	.03	.02	.01	-.01	.01	-.02	-.02	.01
26	—	—	—	—	.03	.03	.01	-.01	.01	-.01	-.02	.01
27	—	—	—	—	.03	.03	.01	.00	.00	-.01	-.01	.01
28	—	—	—	-0.05	.03	.03	.01	.00	.00	-.01	-.01	.01
29	—	—	—	-.01	—	.03	.00	-.01	.00	-.01	-.01	.01
30	—	—	—	.04	—	.03	.00	-.01	.00	-.01	-.01	.01
31	—	—	—	.04	—	.03	—	-.01	—	-.01	-.01	—

Table 23. Daily mean elevation change relative to established datum as measured by extensometer, 1994, Twitchell Island, California

[Missing data are denoted by —. Values are in feet]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	0.01	0.05	0.06	0.06	0.07	0.06	0.05	0.04	0.04	0.02	0.00	-0.02
2	.01	.05	.06	.06	.06	.06	.05	.04	.04	.02	.00	-.02
3	.01	.05	.06	.06	.06	.06	.05	.04	.03	.01	.00	-.02
4	.01	.05	.06	.06	.06	.06	.04	.04	.03	.01	.00	-.01
5	.02	.05	.06	.06	.06	.06	.04	.04	.03	.01	.00	-.02
6	.02	.05	.06	.06	.06	.06	.04	.04	.03	.01	.00	-.02
7	.02	.05	.06	.06	.06	.06	.04	.04	.03	.01	.00	-.02
8	.02	.06	.06	.06	.07	.05	.04	.04	.03	.01	.00	-.02
9	.02	.05	.06	.06	.07	.05	.04	.04	.03	.01	.00	-.02
10	.02	.06	.06	.06	.07	.05	.04	.04	.03	.01	-.01	-.02
11	.02	.06	.06	.06	.07	.05	.04	.04	.03	.01	-.01	-.02
12	.03	.06	.06	.06	.06	.05	.04	.04	.03	.01	-.01	-.01
13	.03	.06	.06	.06	.06	.05	.04	.04	.03	.01	-.01	-.01
14	.03	.06	.06	.06	.06	.05	.04	.04	.03	.01	-.01	-.01
15	.03	.06	.07	.06	.06	.05	.04	.04	.03	.01	-.02	-.01
16	.03	.06	.07	.06	.06	.05	.04	.04	.03	.01	-.02	-.01
17	.04	.06	.07	.06	.06	.05	.04	.04	.03	.01	-.02	-.01
18	.04	.06	.07	.06	.06	.05	.04	.04	.03	.01	-.02	-.01
19	.04	.06	.07	.06	.06	.05	.04	.04	.02	.01	-.02	-.01
20	.04	.06	.06	.06	.06	.05	.04	.04	.02	.01	-.02	-.01
21	.04	.06	.06	.06	.06	.05	.04	.04	.02	.01	-.02	-.01
22	.04	.06	.06	.06	.06	.05	.04	.04	.03	.01	-.02	-.01
23	.04	.06	.06	.07	.06	.05	.04	.04	.03	.01	-.02	.00
24	.04	.06	.06	.07	.06	.05	.04	.04	.03	.01	-.02	.00
25	.04	.06	.06	.07	.06	.05	.04	.04	.02	.01	-.02	.00
26	.04	.06	.06	.07	.06	.05	.04	.04	.02	.01	-.02	.00
27	.04	.06	.06	.07	.06	.05	.04	.04	.02	.01	-.02	.01
28	.04	.06	.06	.07	.06	.05	.04	.04	.02	.01	-.02	.01
29	.04	.06	.06	.07	—	.05	.04	.04	.02	.00	-.02	.01
30	.05	.06	.06	.07	—	.05	.04	.04	.02	.00	-.02	.01
31	.05	—	.06	.07	—	.05	—	.04	—	.00	-.02	—

Table 24. Daily mean elevation change relative to established datum as measured by extensometer, 1995, Twitchell Island, California

[Missing data are denoted by —. Values are in feet]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	0.01	0.03	0.04	0.05	0.06	0.05	0.07	0.06	0.05	0.03	0.01	0.01
2	.01	.03	.04	.05	.06	.05	.07	.06	.04	.03	.00	.01
3	.01	.04	.04	.05	.06	.05	.07	.06	.04	.03	.00	.01
4	.02	.04	.05	.05	.06	.05	.07	.06	.04	.03	.00	.01
5	.02	.04	.05	.05	.06	.05	.07	.06	.04	.03	.00	.01
6	.02	.04	.05	.05	.06	.05	.07	.06	.04	.03	.00	.01
7	.02	.04	.05	.05	.06	.05	.07	.06	.03	.03	.00	.01
8	.02	.04	.05	.06	.06	.06	.07	.06	.03	.02	.00	.01
9	.02	.04	.05	.06	.06	.06	.07	.05	.03	.02	.00	.01
10	.02	.04	.04	.06	.06	.06	.07	.05	.03	.02	.01	.01
11	.02	.04	.04	.06	.06	.07	.07	.05	.03	.02	.01	.01
12	.02	.04	.04	.06	.06	.07	.07	.05	.03	.02	.02	.01
13	.02	.04	.05	.06	.06	.07	.06	.05	.03	.02	.02	.01
14	.02	.04	.05	.06	.06	.07	.06	.05	.02	.02	.02	.01
15	.02	.04	.05	.06	.06	.07	.06	.05	.03	.02	.02	.01
16	.02	.04	.05	.06	.06	.07	.06	.06	.03	.02	.02	.01
17	.02	.04	.05	.06	.06	.07	.06	.06	.03	.02	.02	.01
18	.02	.04	.05	.06	.06	.07	.06	.06	.03	.02	.02	.01
19	.02	.04	.05	.06	.06	.07	.06	.06	.03	.02	.02	.01
20	.02	.04	.04	.06	.06	.07	.06	.06	.03	.02	.02	.01
21	.03	.04	.04	.06	.06	.07	.06	.06	.03	.01	.02	.01
22	.03	.04	.04	.06	.06	.07	.06	.06	.03	.01	.02	.01
23	.03	.04	.04	.06	.06	.07	.06	.05	.03	.01	.02	.01
24	.03	.04	.04	.06	.06	.07	.06	.05	.03	.01	.01	.01
25	.03	.04	.04	.06	.05	.07	.06	.05	.03	.01	.02	.02
26	.03	.04	.04	.06	.05	.07	.06	.05	.03	.01	.02	.02
27	.03	.04	.04	.06	.05	.07	.06	.05	.03	.01	.02	.02
28	.03	.04	.04	.06	.05	.07	.06	.05	.03	.01	.02	.02
29	.03	.04	.04	.06	—	.07	.06	.05	.03	.01	.02	.02
30	.03	.04	.04	.06	—	.07	.06	.05	.03	.01	.01	.02
31	.03	—	.04	.06	—	.07	—	.05	—	.01	.01	—

Table 25. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site S1, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/14/93	31.58	22.8	0.000	46.489	7.358	0.986	—	—
07/28/93	25.48	21.3	0.000	27.739	8.190	0.989	—	—
08/12/93	28.66	21.6	0.000	27.978	3.017	0.856	—	—
08/23/93	27.54	21.7	0.000	28.351	6.900	0.663	—	—
09/08/93	34.60	20.9	0.000	28.138	2.763	0.998	—	—
09/27/93	28.18	18.2	0.000	27.420	0.738	0.728	—	—
10/06/93	21.30	17.1	0.000	27.978	2.395	0.953	—	—
10/19/93	22.98	17.8	0.000	48.324	2.554	0.979	0.007	0.214
10/21/93	23.64	16.6	9.842	41.382	0.299	0.090	0.000	-0.331
10/22/93	20.90	—	17.264	36.648	0.276	0.861	0.005	-0.383
10/25/93	23.96	—	0.000	48.457	2.800	0.990	-0.001	-0.327
10/27/93	23.04	—	12.383	40.319	-0.260	0.127	0.004	0.072
10/29/93	22.98	—	0.000	48.085	2.835	0.930	-0.034	0.362
11/01/93	25.94	—	0.000	27.659	3.269	0.740	0.001	-0.284
11/05/93	23.74	—	0.000	48.139	2.410	0.953	0.007	0.969
11/18/93	16.64	9.1	0.000	48.350	0.785	0.986	0.003	0.315
11/30/93	14.70	9.0	0.000	48.936	0.866	0.419	-0.004	-0.100
01/10/94	9.96	—	14.605	38.404	0.300	0.835	-0.001	-0.113
01/20/94	14.46	—	10.160	41.489	—	—	-0.001	-0.173
02/02/94	11.78	—	7.779	22.872	—	—	0.000	-0.059
02/04/94	13.00	—	5.398	27.255	0.010	-0.332	—	—
02/16/94	18.74	—	0.000	27.659	—	—	0.002	0.953
02/23/94	14.23	8.2	1.270	27.021	0.242	0.991	—	—
03/02/94	20.82	—	0.000	27.766	—	—	0.005	0.931
03/04/94	18.84	11.8	0.000	28.085	-0.079	0.234	—	—
03/14/94	22.72	—	0.000	27.978	—	—	0.002	0.988
03/16/94	17.12	11.1	0.000	27.659	2.054	0.978	—	—
03/28/94	25.38	—	0.000	27.978	—	—	0.003	0.973
04/11/94	19.18	11.9	0.000	27.553	-0.408	0.411	—	—
04/13/94	27.98	—	0.000	27.819	—	—	0.001	0.520
04/29/94	19.32	13.9	0.000	27.553	1.856	0.946	—	—
05/02/94	25.06	—	0.000	30.531	—	—	0.002	0.881
05/11/94	25.70	15.7	0.000	28.005	5.300	0.998	—	—
05/18/94	26.90	—	0.000	27.659	—	—	0.000	-0.138
05/20/94	24.44	15.6	0.000	27.446	4.548	0.987	—	—
06/06/94	25.84	18.6	0.000	27.500	6.909	0.995	—	—
06/08/94	29.80	—	0.000	27.712	—	—	-0.005	0.292
06/27/94	34.56	21.7	0.000	27.819	3.894	0.974	-0.004	0.036
07/14/94	31.00	23.6	0.000	27.978	7.421	0.998	0.001	-0.151
07/27/94	33.90	19.6	0.000	27.181	5.126	0.988	—	—
07/29/94	36.64	—	0.000	27.340	—	—	-0.003	0.406
08/22/94	24.94	19.5	0.000	27.374	2.681	0.987	—	—
09/08/94	26.44	19.6	0.000	27.234	2.761	0.994	—	—
10/24/94	22.84	—	0.000	27.288	—	—	0.000	0.340
10/26/94	23.62	14.3	0.000	27.234	2.918	0.987	—	—
10/28/94	19.82	—	0.000	28.085	2.760	0.999	-0.001	0.154
11/01/94	19.78	—	6.350	22.978	2.732	0.986	-0.001	-0.241
11/23/94	12.12	6.8	6.191	23.191	0.987	0.902	—	—
11/28/94	11.60	—	11.910	19.574	—	—	0.000	-0.482
03/27/95	17.46	—	11.748	20.851	-0.068	-0.311	0.003	0.563
05/17/95	23.60	—	12.065	12.659	0.527	0.991	0.003	0.980
07/11/95	25.36	—	0.000	20.851	5.883	0.987	0.040	0.764
07/11/95	25.36	—	0.000	20.851	5.883	0.987	0.040	0.764

Table 26. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site S2, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/14/93	31.12	22.80	0.00	45.851	1.264	0.958	-0.003	-0.100
07/28/93	25.70	21.70	0.00	27.659	2.061	0.999	—	—
08/12/93	30.00	21.50	0.00	27.074	1.912	0.957	—	—
08/23/93	33.32	22.60	0.00	27.207	1.942	0.918	—	—
09/08/93	35.74	21.50	0.00	27.393	1.670	0.924	—	—
09/27/93	28.76	19.90	0.00	26.835	2.907	0.540	—	—
10/06/93	20.92	17.40	0.00	26.861	2.026	0.968	—	—
10/19/93	25.08	17.40	0.00	47.686	1.346	0.936	-0.001	-0.256
10/21/93	23.32	16.90	2.30	46.276	0.511	0.341	-0.001	0.544
10/22/93	21.48	—	9.80	40.558	0.274	0.332	-0.004	0.202
10/25/93	25.14	—	0.00	47.606	2.837	0.908	0.013	0.256
10/27/93	25.16	—	4.29	44.574	0.143	0.467	-0.004	0.103
10/29/93	23.62	—	0.00	47.340	4.239	0.997	-0.014	-0.123
11/05/93	24.50	—	0.00	47.394	5.546	0.983	-0.001	-0.170
11/18/93	16.20	9.20	0.00	47.819	1.075	0.916	-0.003	-0.132
11/30/93	14.94	8.80	0.00	47.553	0.826	0.940	0.001	-0.315
01/10/94	10.63	6.00	6.67	42.340	0.706	0.446	0.001	-0.308
01/20/94	14.66	—	1.67	44.946	0.000	—	0.002	-0.386
02/02/94	12.12	—	0.00	27.340	0.000	—	-0.001	0.775
02/04/94	14.78	—	0.00	27.340	0.015	-0.315	—	—
02/16/94	17.84	—	0.00	26.702	0.000	—	-0.001	0.395
02/23/94	15.20	7.90	0.00	26.595	0.451	0.999	—	—
03/02/94	20.64	—	0.00	27.021	0.000		0.000	-0.319
03/04/94	19.62	12.40	0.00	27.606	0.269	0.202	—	—
03/14/94	24.73	—	0.00	26.915	0.000	—	0.000	0.748
03/16/94	16.46	11.30	0.00	26.595	0.453	0.402	—	—
03/28/94	24.36	—	0.00	26.808	0.000	—	0.000	0.469
04/11/94	21.20	13.70	0.00	26.702	0.555	0.973	—	—
04/13/94	25.06	—	0.00	26.595	0.000	—	0.000	0.366
04/29/94	20.04	14.40	0.00	26.569	1.130	0.933		
05/02/94	25.48	—	0.00	27.287	—	—	0.004	0.755
05/11/94	25.96	16.90	0.00	26.782	3.337	0.975	—	—
05/18/94	27.22		0.00	26.810	—	—	0.004	0.726
05/20/94	25.82	16.40	0.00	26.622	2.715	0.985	—	—
06/06/94	26.82	20.10	0.00	26.649	2.996	0.973	—	—
06/08/94	24.62	—	0.00	26.968	—	—	0.003	-0.192
06/27/94	33.48	24.00	0.00	27.234	2.149	0.972	0.001	-0.202
07/14/94	36.50	23.90	0.00	26.808	4.948	0.993	-0.002	0.803
07/27/94	36.90	23.40	0.00	26.915	2.482	0.982	—	—
07/29/94	36.56	—	0.00	27.074	—	—	-0.003	0.673
08/22/94	26.74	21.70	0.00	26.276	0.872	0.936	—	—
09/08/94	27.22	20.60	0.00	26.489	3.033	0.942	—	—
10/24/94	23.84	—	0.00	26.649	—	—	0.000	-0.198
10/26/94	24.72	14.20	0.00	26.542	1.742	0.950	—	—
10/28/94	22.64	—	0.00	27.606	4.033	0.987	0.000	-0.185
11/01/94	20.02	—	0.00	26.808	2.550	0.983	-0.003	-0.226
11/23/94	13.54	7.30	0.00	26.861	1.151	0.996	—	—
11/28/94	11.46	—	5.40	22.978	—	—	-0.001	0.339
12/20/94	9.88	—	0.00	26.861	1.047	0.982	—	—
02/24/95	14.60	—	7.62	21.489	0.042	-0.228	0.001	0.286
03/27/95	19.02	—	3.33	24.149	-0.118	-0.228	0.001	0.411
04/17/95	15.48	—	10.64	19.574	-0.894	0.952	-0.001	0.501
05/17/95	22.82	—	4.45	16.170	1.406	0.994	0.003	0.621
06/22/95	34.54	—	0.00	18.936	6.193	0.994	0.015	0.986
07/11/95	26.38	—	0.00	19.042	3.061	0.996	0.007	0.990
09/07/95	32.56	—	0.00	22.127	1.203	0.891	—	—

Table 27. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site S3, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/28/93	24.90	21.20	0.00	28.218	0.321	0.993	—	—
08/12/93	31.42	21.10	0.00	27.606	1.504	0.941	—	—
08/23/93	33.32	22.80	0.00	28.324	2.227	0.947	—	—
09/08/93	35.38	21.90	0.00	28.165	2.222	0.976	—	—
09/27/93	30.70	19.20	0.00	27.978	0.403	0.774	—	—
10/06/93	21.84	17.80	0.00	27.978	0.901	0.943	—	—
10/19/93	25.34	17.00	0.00	48.936	1.940	0.890	-0.005	0.770
10/21/93	22.84	16.70	3.97	45.957	0.561	0.286	0.000	-0.055
10/22/93	22.00	—	11.19	40.425	0.052	-0.226	-0.007	0.060
10/25/93	25.58	—	0.00	49.042	5.952	0.988	0.002	-0.320
10/27/93	24.74	—	6.99	44.733	0.507	0.786	-0.002	0.255
10/29/93	24.76	—	0.00	48.563	4.403	0.996	0.018	-0.202
11/05/93	24.74	—	0.00	48.297	5.987	0.991	-0.001	-0.290
11/18/93	17.26	9.50	0.00	48.616	1.199	0.822	0.000	-0.078
11/30/93	15.32	8.20	0.00	48.510	1.644	0.966	0.001	-0.163
01/10/94	11.20	—	9.21	42.446	0.045	-0.263	-0.001	-0.196
01/20/94	14.14	—	4.13	45.531	—	—	-0.001	0.123
02/02/94	12.78	—	2.22	26.489	—	—	0.001	0.407
02/04/94	15.48	—	0.00	28.085	-0.038	-0.039	—	—
02/16/94	18.84	—	0.00	28.085	—		0.002	0.801
02/23/94	15.73	8.00	0.00	28.191	0.302	0.978	—	—
03/02/94	21.60	—	0.00	27.872	—		0.000	-0.117
03/04/94	20.74	13.00	0.00	28.085	0.349	0.452	—	—
03/14/94	22.78	—	0.00	27.978	—		0.001	0.930
03/16/94	16.56	11.50	0.00	27.234	1.403	0.981	—	—
03/28/94	24.62	—	0.00	27.872	—	—	0.000	-0.268
04/11/94	22.32	13.20	0.00	27.393	1.234	0.950	—	—
04/13/94	25.08	—	0.00	27.766	—	—	-0.001	0.214
04/29/94	19.92	14.50	0.00	27.579	4.019	0.998	—	—
05/02/94	21.46	—	0.00	27.765	—	—	-0.001	0.599
05/11/94	24.96	16.70	0.00	27.367	5.041	0.997	—	—
05/18/94	23.28	—	0.00	27.579	—	—	0.000	-0.187
05/20/94	29.86	16.30	0.00	27.473	5.433	0.998	—	—
06/06/94	27.12	19.80	0.00	27.553	7.742	0.996	—	—
06/08/94	32.18	—	0.00	27.340	—	—	0.000	-0.271
06/27/94	35.10	21.20	0.00	27.446	7.450	0.999	0.000	-0.332
07/14/94	39.76	25.50	0.00	27.234	6.531	0.999	-0.003	0.628
07/27/94	36.48	23.60	0.00	27.393	6.900	1.000	—	—
07/29/94	40.44	—	0.00	27.925	—	—	-0.001	-0.038
08/22/94	27.04	23.00	0.00	27.446	2.897	0.997	—	—
09/08/94	27.64	21.10	0.00	27.074	5.979	0.995	—	—
10/24/94	23.24	—	0.00	27.021	—		-0.001	0.666
10/26/94	24.22	14.90	0.00	27.367	2.040	0.995	—	—
10/28/94	22.98	—	0.00	28.085	5.307	0.982	0.001	0.482
11/23/94	14.38	7.50	0.95	26.808	1.564	0.990	—	—
11/28/94	11.38	—	7.62	22.127	—	—	0.000	0.697
12/20/94	9.22	—	0.00	27.127	1.377	0.999	—	—
02/24/95	14.98	—	10.16	20.638	0.055	0.165	0.001	0.114
04/17/95	15.74	—	12.38	18.404	-0.473	0.875	0.000	-0.237
06/22/95	33.46	—	0.00	20.213	8.875	0.993	0.161	0.966
09/07/95	33.88	—	0.00	22.021	0.754	0.948	—	—

Table 28. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at control site SM, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/14/93	—	—	—	—	—	—	—	—
07/26/93	—	—	—	—	—	—	—	—
07/27/93	27.94	23.50	0.00	28.750	2.745	0.998	-0.002	-0.136
07/28/93	22.50	22.60	0.00	28.750	4.485	0.978	0.000	-0.327
07/29/93	23.20	—	0.00	28.514	3.217	0.960	—	—
07/30/93	28.54	23.50	0.00	28.298	3.345	0.987	—	—
07/31/93	37.52	23.60	0.00	28.431	2.606	0.958	—	—
08/02/93	35.40	25.10	0.00	28.563	4.189	0.978	—	—
08/04/93	26.42	24.40	0.00	28.351	4.282	0.978	—	—
08/12/93	29.84	23.60	0.00	28.377	-0.560	0.713	—	—
08/23/93	35.70	25.20	0.00	28.457	6.710	0.827	—	—
09/07/93	32.84	24.10	0.00	28.537	3.480	0.999	—	—
09/08/93	28.62	23.80	0.00	28.484	2.875	0.980	—	—
09/10/93	27.44	23.40	0.00	30.691	3.200	0.931	—	—
09/13/93	29.24	22.50	0.00	30.372	3.233	0.978	—	—
09/15/93	21.72	21.60	0.00	30.638	1.322	0.845	—	—
09/27/93	32.30	21.60	0.00	28.457	1.569	0.985	—	—
10/06/93	24.76	19.20	0.00	28.298	1.692	0.953	—	—
10/19/93	25.90	17.80	0.00	28.457	2.099	0.989	0.099	0.988
10/21/93	23.38	17.20	0.00	27.978	1.216	0.913	0.005	0.984
10/22/93	25.06	17.00	0.00	28.271	0.879	0.883	0.017	0.691
10/25/93	27.24	17.20	0.00	28.138	1.124	0.964	0.040	0.997
10/27/93	27.34	17.10	0.00	28.457	0.859	0.964	0.043	0.988
10/29/93	25.80	16.70	0.00	28.085	0.999	0.970	0.121	0.975
11/01/93	25.06	—	0.00	28.244	0.733	0.870	0.059	0.987
11/05/93	25.12	—	0.00	28.112	1.604	0.870	0.150	0.905
11/18/93	20.16	10.40	0.00	28.191	1.852	0.992	0.000	0.743
11/30/93	14.12	8.50	0.00	28.244	2.593	0.930	-0.001	-0.100
01/10/94	10.46	6.50	0.71	27.500	0.018	-0.332	0.001	0.771
01/20/94	25.78	—	1.27	27.234	—	—	0.002	0.096
02/02/94	11.54	—	0.40	27.924	—	—	0.114	0.715
02/04/94	18.94	7.80	0.32	27.234	0.339	0.831	—	—
02/16/94	20.32	—	0.00	28.298	—	—	0.027	0.994
02/23/94	16.30	8.30	1.03	27.181	-0.102	0.267	—	—
03/02/94	25.60	—	0.00	27.872	—	—	0.087	0.990
03/04/94	22.36	13.10	0.00	28.085	0.484	0.162	—	—
03/14/94	31.38	—	0.00	27.978	—	—	0.016	0.952
03/16/94	16.80	13.20	0.00	27.446	-0.009	-0.332	—	—
03/28/94	29.46	—	0.00	27.659	—	—	0.012	0.976
04/11/94	23.42	14.20	0.00	27.287	3.642	0.875	—	—
04/13/94	30.08	—	0.00	27.766	—	—	-0.022	-0.124
04/29/94	25.48	16.20	0.00	27.686	15.150	0.996	—	—
05/11/94	25.38	17.30	0.00	27.633	7.071	0.971	—	—
05/20/94	31.30	16.80	0.00	27.553	9.966	0.978	—	—

Table 28. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at control site SM—Continued

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
06/06/94	30.48	20.70	0.00	27.500	16.370	0.999	—	—
06/09/94	19.74	—	0.00	27.553	—	—	-0.006	0.244
06/20/94	33.18	21.00	0.00	27.633	3.299	0.971	0.001	0.456
06/22/94	35.30	21.40	0.00	27.633	3.339	0.997	0.000	-0.332
06/23/94	37.98	20.50	0.00	27.659	4.092	0.999	0.000	-0.321
06/24/94	37.30	21.10	0.00	27.766	4.436	0.986	0.000	-0.265
06/27/94	38.88	23.00	0.00	27.340	3.837	0.964	0.000	-0.333
06/29/94	28.08	23.00	0.00	27.606	3.619	0.988	0.001	0.098
07/01/94	38.04	21.40	0.00	27.500	3.884	0.947	—	—
07/14/94	38.02	23.90	0.00	28.191	4.991	0.988	-0.001	-0.228
07/27/94	35.76	24.40	0.00	27.633	3.742	0.968	—	—
07/29/94	28.70	—	0.00	27.446	—	—	0.001	0.356
08/15/94	44.54	24.00	0.00	27.553	3.083	0.991	-0.001	0.396
08/16/94	37.96	22.00	0.00	27.606	2.302	0.988	-0.001	0.900
08/17/94	36.70	23.90	0.00	27.712	3.191	0.998	-0.001	0.583
08/22/94	34.86	23.00	0.00	27.606	2.605	0.972	—	—
08/23/94	31.94	—	0.00	27.500	—	—	0.000	-0.217
09/08/94	32.06	22.30	0.00	27.473	1.877	0.956	—	—
09/15/94	34.00	—	0.00	27.553	—	—	0.087	0.979
10/24/94	26.08	—	0.00	27.713	—	—	0.002	0.633
10/26/94	27.68	16.40	0.00	27.712	0.794	0.982	—	—
10/28/94	26.22	—	0.00	28.085	1.195	0.982	0.000	-0.218
11/01/94	18.28	—	0.00	27.872	1.082	0.811	0.012	0.706
11/23/94	15.40	7.90	0.00	27.659	1.209	0.979	0.000	—
11/28/94	8.40	—	0.00	27.766	—	—	-0.002	0.672
12/20/94	7.40	—	0.00	27.446	0.905	0.984	—	—
02/24/95	13.66	—	0.63	27.340	0.966	0.977	-0.010	0.886
03/27/95	21.30	22.90	2.54	26.170	1.716	0.840	0.012	0.999
04/17/95	16.54	13.00	0.00	27.925	1.517	0.982	0.012	0.991
05/17/95	31.34	16.20	0.00	20.000	6.063	0.999	0.012	0.986
06/22/95	33.16	18.80	0.00	20.000	7.020	0.999	0.000	-0.262
07/11/95	29.74	21.10	0.00	19.893	2.702	0.942	0.011	0.875
09/07/95	30.28	—	0.00	19.893	3.087	0.988	—	—

Table 29. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site M1, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/26/93	29.92	20.10	0.00	28.484	7.245	0.959	—	—
07/27/93	29.98	—	0.00	47.553	0.377	-0.105	0.000	-0.333
07/28/93	23.78	—	0.00	47.659	-1.658	0.984	-0.002	-0.287
07/29/93	22.70	19.10	0.00	28.453	1.973	0.877	—	—
07/30/93	27.94	19.60	0.00	28.617	2.250	0.955	—	—
07/31/93	34.20	20.10	0.00	27.792	4.625	0.928	—	—
08/02/93	35.86	22.10	0.00	28.510	3.897	0.946	—	—
08/04/93	27.20	20.60	0.00	28.377	4.086	0.955	—	—
08/12/93	30.72	19.50	0.00	28.324	4.110	0.962	—	—
08/23/93	34.88	20.30	0.00	28.298	3.156	0.992	—	—
09/07/93	30.86	20.00	0.00	28.032	3.493	0.927	—	—
09/08/93	28.12	19.90	21.95	30.239	-0.061	-0.301	—	—
09/10/93	26.16	19.00	0.00	30.239	1.796	0.968	-0.001	-0.009
09/13/93	28.04	18.50	0.00	29.920	3.570	0.997	—	—
09/14/93	28.04	—	0.00	29.920	—	—	0.004	0.476
09/15/93	20.32	16.70	0.00	28.936	2.237	0.986	—	—
09/27/93	31.70	17.20	0.00	28.032	2.891	0.977	—	—
10/06/93	23.12	16.00	0.00	28.404	1.780	0.982	—	—
10/19/93	25.16	15.80	0.00	48.217	2.668	0.973	-0.001	0.033
10/21/93	22.62	—	17.94	36.781	0.342	0.772	0.001	-0.201
10/22/93	24.58	—	17.15	37.526	0.215	0.102	0.001	-0.319
10/25/93	28.40	—	11.75	48.723	3.978	0.931	-0.026	0.436
10/27/93	26.42	—	12.54	40.691	2.130	0.899	-0.002	0.732
10/29/93	25.32	—	16.83	36.968	1.915	0.979	-0.005	-0.242
11/01/93	22.64	—	12.94	19.122	0.811	0.459	-0.006	-0.049
11/05/93	23.78	—	10.40	41.702	1.020	0.919	0.005	0.741
11/18/93	16.88	9.30	17.46	36.489	0.667	0.878	0.001	0.914
11/30/93	16.42	7.60	15.32	28.563	0.106	0.018	0.002	-0.148
01/10/94	6.02	—	9.84	42.234	-0.174	0.845	0.006	0.891
01/20/94	15.94	—	10.80	42.127	—	—	0.014	0.374
02/02/94	14.22	—	12.70	19.787	—	—	-0.001	-0.150
02/04/94	15.36	—	11.75	19.787	0.082	0.499	—	—
02/16/94	19.02	—	10.80	20.213	—	—	0.007	0.934
02/23/94	15.78	—	15.88	17.021	0.421	0.910	—	—
03/02/94	22.92	—	14.92	17.872	—	—	0.021	0.661
03/04/94	21.90	—	13.65	18.723	0.264	0.780	—	—
03/14/94	25.02	—	7.86	22.181	—	—	0.030	0.415
03/16/94	14.94	10.80	7.78	22.659	0.396	0.867	—	—
03/28/94	25.28	—	6.91	23.191	—	—	0.044	0.521
04/11/94	21.96	11.40	0.00	27.446	0.457	0.747	—	—
04/13/94	25.95	—	10.95	20.638	—	—	0.005	0.916
04/29/94	19.28	12.90	0.00	27.712	2.461	0.961	—	—
05/02/94	25.88	—	0.00	27.712	—	—	0.011	0.974
05/11/94	25.58	15.60	0.00	27.792	4.132	0.994	—	—

Table 29. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site M1—Continued]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
05/18/94	26.22	—	0.00	27.500	—	—	0.000	-0.270
05/20/94	28.28	15.40	0.00	27.500	2.830	0.992	—	—
06/06/94	26.98	17.40	0.00	27.553	4.245	0.965	—	—
06/08/94	17.98	—	0.00	27.819	—	—	0.003	0.995
06/20/94	31.50	17.90	0.00	27.686	3.398	0.946	0.005	0.620
06/22/94	32.74	18.00	0.00	27.553	2.921	0.998	-0.001	-0.083
06/23/94	27.30	18.50	0.00	27.872	2.788	0.996	0.000	-0.004
06/24/94	28.50	27.70	0.00	27.553	2.918	0.941	0.000	-0.321
06/27/94	32.52	18.70	0.00	27.553	5.802	0.998	0.059	0.977
06/29/94	27.78	18.30	0.00	27.653	6.623	0.994	0.004	0.657
07/01/94	33.82	19.30	0.00	27.579	6.527	0.975	—	—
07/14/94	34.18	20.30	0.00	28.032	7.041	0.960	0.009	0.753
07/27/94	30.02	19.20	0.00	27.579	6.291	0.997	—	—
07/29/94	32.66	—	0.00	28.191	—	—	0.004	0.989
08/15/94	33.20	22.40	0.00	27.872	5.710	0.981	0.004	0.686
08/16/94	31.68	22.40	2.06	26.595	2.243	0.996	-0.001	0.527
08/17/94	29.24	17.70	0.00	27.659	3.627	0.988	0.000	0.085
08/22/94	26.94	19.20	0.00	27.819	3.240	0.982	—	—
08/23/94	28.44	—	0.00	27.819	—	—	0.112	0.976
09/08/94	26.92	18.20	0.00	27.526	4.137	0.994	—	—
09/15/94	24.55	—	0.00	27.500	—	—	0.000	0.990
10/24/94	23.22	—	0.00	27.872	—	—	0.000	-0.255
10/26/94	24.40	14.20	0.00	27.526	0.968	0.899	—	—
10/28/94	22.36	—	13.65	18.723	1.209	0.999	-0.001	0.748
11/01/94	15.18	—	16.03	16.915	1.785	0.983	-0.014	0.514
11/23/94	12.48	6.70	5.48	23.830	0.567	0.904	—	—
11/28/94	11.26	—	20.96	13.617	—	—	0.002	0.903
12/20/94	8.38	—	17.54	15.904	1.206	0.998	—	—
03/27/95	18.44	—	27.94	8.830	0.220	0.877	-0.003	0.071
05/17/95	25.82	—	18.57	7.979	0.329	0.884	0.008	0.678
07/11/95	26.48	—	1.27	19.361	0.960	0.918	0.035	0.630

Table 30. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site M2, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/14/93	30.50	20.10	0.00	46.569	6.779	0.988	0.008	-0.052
07/26/93	29.32	20.10	0.00	28.138	5.580	0.968	0.000	-0.481
07/27/93	29.02	—	0.00	46.595	0.759	0.494	0.007	0.908
07/28/93	24.98	—	0.00	47.127	2.599	0.981	-0.004	-0.085
07/29/93	23.60	19.40	0.00	27.602	3.138	0.915	—	—
07/30/93	28.60	19.50	0.00	27.234	3.603	0.982	—	—
07/31/93	34.64	19.60	0.00	27.207	5.895	0.961	—	—
08/02/93	36.10	21.20	0.00	27.872	5.192	0.975	—	—
08/04/93	28.02	20.80	0.00	27.686	5.296	0.975	—	—
08/12/93	33.40	—	0.00	27.500	5.436	0.992	—	—
08/23/93	34.44	20.40	0.00	27.446	4.680	0.998	—	—
09/07/93	31.10	20.00	0.00	27.447	3.453	0.998	—	—
09/08/93	29.90	19.80	23.73	29.228	1.305	0.957	—	—
09/10/93	26.50	19.40	0.00	27.127	3.355	0.947	0.001	-0.248
09/13/93	28.62	18.90	0.00	29.202	3.727	0.983	—	—
09/14/93	28.62	—	—	29.202	—	—	0.003	0.113
09/15/93	20.40	17.90	0.00	29.255	2.679	0.938	—	—
09/27/93	31.64	16.90	0.00	27.872	2.813	0.982	—	—
10/06/93	22.82	16.40	0.00	27.712	2.750	0.923	—	—
10/19/93	24.92	16.20	0.00	39.148	1.929	0.834	0.006	0.739
10/21/93	22.54	—	15.08	38.218	-1.079	0.354	0.000	-0.329
10/22/93	25.56	—	15.91	39.148	0.628	0.806	0.002	-0.248
10/25/93	28.26	—	11.59	40.319	1.455	0.801	0.007	-0.067
10/27/93	26.82	—	9.69	42.287	0.526	0.728	0.001	0.004
10/29/93	25.54	—	14.13	39.468	0.891	0.945	0.003	-0.269
11/05/93	23.78	—	7.03	43.407	1.542	0.906	-0.002	0.086
11/18/93	15.62	8.00	18.65	35.053	0.333	0.794	0.000	-0.265
11/30/93	15.06	7.60	12.22	32.234	0.342	0.759	0.000	-0.298
01/10/94	7.18	5.80	7.14	43.829	0.045	-0.125	0.005	0.473
01/20/94	15.58	—	7.14	43.936	—	—	0.000	-0.333
02/02/94	13.78	—	8.73	20.957	—	—	0.008	0.931
02/04/94	14.68	—	9.05	21.489	0.004	-0.332	—	—
02/16/94	18.18	—	14.13	18.298	—	—	0.003	0.947
02/23/94	17.70	—	13.81	18.085	0.149	0.902	—	—
03/02/94	23.34	—	12.14	19.361	—	—	0.003	0.438
03/04/94	22.08	—	11.59	19.468	0.051	-0.058	—	—
03/14/94	23.84	—	6.35	23.191	—	—	0.004	0.936
03/16/94	15.64	10.90	4.45	24.255	0.015	-0.324	—	—
03/28/94	25.44	—	6.35	23.191	—	—	0.000	0.860
04/11/94	24.78	11.50	0.00	27.287	0.335	0.438	—	—
04/13/94	25.80	—	7.78	22.127	—	—	0.018	0.909
04/29/94	19.36	13.10	0.00	27.181	4.381	0.993	—	—
05/02/94	25.30	—	0.00	27.287	—	—	0.031	0.987
05/11/94	24.30	15.40	0.00	27.074	3.091	0.969	—	—

Table 30. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site M2—Continued

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
05/18/94	27.10	—	0.00	27.207	—	—	0.003	0.993
05/20/94	27.40	15.20	0.00	27.127	3.885	0.969	—	—
06/06/94	26.78	17.20	0.00	27.074	6.473	0.993	—	—
06/08/94	17.64	—	0.00	27.446	—	—	0.007	0.972
06/20/94	30.14	18.20	0.00	27.127	7.160	0.930	0.008	0.968
06/22/94	30.98	19.00	0.00	27.154	5.777	0.989	0.009	0.983
06/23/94	28.38	18.00	0.00	27.181	4.811	0.955	0.012	0.915
06/24/94	28.30	17.80	0.00	27.181	5.898	0.994	0.008	0.975
06/27/94	37.68	18.60	0.00	27.234	4.404	0.979	0.003	-0.124
06/29/94	28.40	18.60	0.00	27.446	3.553	0.992	0.003	0.974
07/01/94	34.66	19.70	0.00	27.181	6.268	0.995	—	—
07/14/94	34.30	21.40	0.00	27.606	8.468	0.996	0.007	0.953
07/27/94	28.88	18.90	0.00	27.234	6.481	0.989	—	—
07/29/94	32.16	—	0.00	—	—	—	0.006	0.994
08/15/94	36.82	19.20	0.00	27.287	8.958	0.994	0.002	-0.163
08/16/94	33.96	21.20	0.00	27.287	5.126	0.998	0.007	0.896
08/17/94	32.12	19.50	0.00	27.181	5.182	0.988	0.008	0.986
08/22/94	30.96	20.40	0.00	26.968	3.778	0.995	—	—
08/23/94	31.70	—	0.00	26.915	—	—	0.005	0.951
09/08/94	26.02	18.70	0.00	26.941	5.243	0.999	—	—
09/15/94	26.06	—	0.00	27.127	—	—	0.005	0.993
10/24/94	24.28	—	0.00	27.127	—	—	0.004	0.997
10/26/94	22.34	14.20	0.00	27.074	3.198	0.971	—	—
10/28/94	22.66	—	11.59	19.468	1.471	0.950	0.003	0.605
11/23/94	12.26	7.00	2.30	25.532	1.536	0.996	—	—
11/28/94	12.14	—	17.46	15.319	—	—	0.005	0.977
02/24/95	14.68	—	19.69	14.042	0.445	0.862	0.052	0.626
03/27/95	20.66	—	25.40	10.106	0.350	0.642	0.008	0.850
04/17/95	13.36	—	13.02	18.298	0.695	0.930	0.022	0.740
05/17/95	28.74	—	15.88	9.149	1.943	0.998	0.032	0.952
06/22/95	34.34	—	5.08	16.702	8.358	1.000	0.038	0.965
07/11/95	27.12	—	0.00	19.787	2.666	0.997	0.048	0.996
09/06/95	34.64	—	0.00	19.787	1.988	0.990	0.339	0.994

Table 31. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site M3, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/14/93	29.82	19.80	0.00	46.329	8.219	0.999	0.012	-0.014
07/26/93	27.62	19.70	0.00	28.191	16.810	0.998	0.003	-0.072
07/27/93	28.66	—	0.00	46.489	0.493	0.083	0.000	-0.113
07/28/93	25.74	—	0.00	46.063	0.815	0.962	0.008	0.240
07/29/93	25.30	19.20	0.00	28.453	2.055	0.864	—	—
07/30/93	29.88	19.30	0.00	27.819	5.608	0.986	—	—
07/31/93	36.44	19.50	0.00	27.260	4.294	0.996	—	—
08/02/93	36.58	21.20	0.00	27.553	4.888	0.982	—	—
08/04/93	28.62	20.80	0.00	27.181	4.949	0.982	—	—
08/12/93	30.00	—	0.00	27.234	4.965	0.893	—	—
08/23/93	33.52	20.40	0.00	27.526	6.168	0.972	—	—
09/07/93	31.96	19.60	0.00	27.287	2.733	0.998	—	—
09/08/93	31.20	20.40	24.33	29.468	3.918	0.969	—	—
09/10/93	27.04	19.60	0.00	29.095	4.548	0.935	-0.004	0.619
09/13/93	29.16	18.90	0.00	29.228	5.915	0.988	—	—
09/14/93	29.16	—	0.00	29.228	—	—	0.006	0.526
09/15/93	20.24	18.00	0.00	27.712	4.808	0.896	—	—
09/27/93	30.88	17.00	0.00	27.420	2.015	0.991	—	—
10/06/93	22.80	16.40	0.00	27.500	3.450	0.977	—	—
10/19/93	24.64	16.10	0.00	38.936	2.435	0.965	0.008	0.965
10/21/93	23.50	—	15.32	38.085	0.630	0.961	0.001	-0.113
10/22/93	25.60	—	13.93	38.617	0.970	0.944	-0.005	-0.040
10/25/93	29.12	—	14.29	39.361	2.415	0.936	0.001	-0.294
10/27/93	26.98	—	9.68	41.914	1.845	0.872	0.003	0.783
10/29/93	24.72	—	13.34	38.829	2.194	0.929	-0.025	0.258
11/05/93	21.42	—	6.15	43.083	1.126	0.718	0.005	0.415
11/18/93	15.26	8.20	17.15	37.234	0.568	0.963	0.001	0.116
11/30/93	14.48	7.60	11.75	32.446	0.296	0.706	0.003	0.463
01/10/94	7.60	—	7.14	43.404	0.100	-0.289	0.001	-0.074
01/20/94	16.12	—	6.67	43.404	—	—	0.039	0.415
02/02/94	13.96	—	8.89	20.851	—	—	0.000	0.808
02/04/94	15.28	—	8.89	21.064	0.198	0.709	—	—
02/16/94	18.52	—	8.81	20.957	—	—	0.036	0.756
02/23/94	16.68	—	13.33	18.510	0.422	0.918	—	—
03/02/94	24.28	—	11.43	19.574	—	—	0.008	0.616
03/04/94	21.94	—	10.00	20.425	0.280	0.993	—	—
03/14/94	24.18	—	5.72	23.404	—	—	0.028	0.413
03/16/94	16.12	11.00	5.40	23.617	0.423	0.882	—	—
03/28/94	24.78	—	5.72	23.191	—	—	0.003	0.529
04/11/94	24.30	12.00	0.00	27.074	1.130	0.925	—	—
04/13/94	25.20	—	8.62	22.234	—	—	0.002	0.952
04/29/94	17.86	12.80	0.00	26.861	5.140	0.956	—	—
05/02/94	25.62	—	0.00	27.021	—	—	-0.001	0.597

Table 31. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site M3—Continued

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
05/11/94	21.10	14.90	0.00	26.968	5.597	0.989	—	—
05/18/94	30.14	—	0.00	27.101	—	—	0.002	0.978
05/20/94	26.90	15.00	0.00	26.968	4.442	0.992	—	—
06/06/94	27.16	17.40	0.00	26.994	3.404	0.956	—	—
06/08/94	16.42	—	0.00	27.127	—	—	0.010	0.856
06/20/94	31.58	20.00	0.00	27.021	2.883	0.999	0.009	0.973
06/22/94	30.34	19.70	0.00	26.968	3.388	0.998	0.001	-0.021
06/23/94	29.54	18.30	0.00	27.127	2.227	0.954	0.002	0.937
06/24/94	29.54	17.70	0.00	27.074	1.950	0.868	0.001	-0.050
06/27/94	36.42	18.80	0.00	27.234	5.190	0.987	0.009	0.959
06/29/94	29.42	18.30	0.00	26.968	2.890	0.943	0.007	0.984
07/01/94	34.78	19.20	0.00	26.702	3.923	0.992	—	—
07/14/94	31.68	20.00	0.00	27.606	5.862	0.988	0.006	0.890
07/27/94	24.62	18.80	0.00	26.968	5.449	0.988	—	—
07/29/94	32.50	—	0.00	27.340	—	—	0.007	0.995
08/15/94	34.36	17.30	0.00	27.234	4.176	0.982	0.037	0.878
08/16/94	33.72	22.20	0.00	27.127	2.816	0.998	0.001	0.773
08/17/94	31.48	20.60	0.00	27.181	3.683	0.982	0.002	0.948
08/22/94	28.92	20.40	0.00	27.500	2.955	0.972	—	—
08/23/94	28.58	—	0.00	27.021	—	—	0.004	0.993
09/08/94	25.16	18.10	0.00	26.861	3.774	0.938	—	—
09/15/94	24.30	—	0.00	26.808	—	—	0.002	0.901
10/24/94	23.30	—	0.00	26.649	—	—	0.002	0.963
10/26/94	22.62	14.00	0.00	26.941	1.844	0.938	—	—
10/28/94	22.56	—	10.00	20.425	0.719	0.889	0.001	0.526
11/01/94	14.32	—	13.34	18.191	1.090	0.940	0.000	-0.272
11/23/94	11.60	6.60	1.98	25.532	0.547	0.773	—	—
11/28/94	11.76	19.05	14.47	17.393	—	—	0.007	0.970
12/20/94	8.60	—	14.29	17.393	0.939	0.996	—	—
02/24/95	14.56	—	19.05	14.468	0.477	0.982	0.043	0.808
04/17/95	14.34	—	13.34	18.298	0.540	0.940	0.037	0.957
06/22/95	34.48	—	4.13	17.127	0.589	0.897	0.050	0.685
09/06/95	34.14	—	0.00	19.681	1.486	0.802	1.069	0.864

Table 32. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at control site MF, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/27/93	28.66	22.40	0.00	28.484	6.089	0.999	0.002	0.344
07/28/93	26.04	21.90	0.00	28.590	4.691	0.989	0.002	-0.231
07/29/93	25.40	—	0.00	28.406	2.803	0.888	—	—
07/30/93	33.64	21.80	0.00	29.149	6.151	0.965	—	—
07/31/93	38.60	22.00	0.00	29.893	5.129	0.998	—	—
08/02/93	39.34	24.20	0.00	30.000	6.166	0.982	—	—
08/04/93	30.88	23.30	0.00	29.441	6.220	0.982	—	—
08/12/93	33.26	23.10	0.00	29.282	4.961	0.996	—	—
08/23/93	35.55	—	0.00	30.000	—	—	0.038	0.970
09/07/93	30.34	23.30	0.00	29.734	4.264	0.990	—	—
09/08/93	36.06	22.50	0.00	29.574	3.741	0.990	—	—
09/10/93	30.88	23.20	0.00	31.755	3.986	0.981	—	—
09/13/93	35.02	22.10	0.00	31.595	4.894	0.991	—	—
09/15/93	24.88	21.00	0.00	30.319	4.412	0.990	—	—
09/27/93	34.26	20.50	0.00	29.548	3.238	0.983	—	—
10/06/93	24.36	19.40	0.00	28.803	3.200	0.996	—	—
10/19/93	24.58	18.50	0.00	29.441	3.180	0.954	0.012	0.976
10/21/93	25.98	18.50	0.00	29.707	2.309	0.991	-0.014	0.280
10/22/93	30.00	17.50	0.00	29.681	1.610	0.975	0.009	0.611
10/25/93	30.26	17.40	0.00	29.521	4.103	0.966	0.018	0.976
10/27/93	29.62	17.40	0.00	29.521	3.250	0.558	0.014	0.958
10/29/93	26.08	16.60	0.00	30.000	1.828	0.987	0.008	-0.059
11/01/93	22.52	—	0.00	29.734	1.060	0.937	0.035	0.985
11/05/93	15.10	—	0.00	29.335	1.539	0.947	0.007	0.971
11/18/93	14.48	9.90	0.00	29.415	2.793	0.993	0.000	-0.330
11/30/93	12.02	8.10	1.75	26.702	0.445	0.702	-0.002	0.480
01/10/94	11.66	7.00	3.18	26.064	1.202	0.985	0.001	0.654
01/20/94	20.58	—	2.06	27.553	—	—	0.010	0.945
02/02/94	13.40	—	1.11	28.404	—	—	0.001	0.796
02/04/94	17.36	6.60	1.27	27.978	0.110	-0.173	—	—
02/16/94	20.44	—	1.51	26.968	—	—	-0.001	-0.303
02/23/94	17.22	9.00	1.11	27.340	0.102	0.050	—	—
03/02/94	26.52	—	0.00	28.085	—	—	0.003	0.719
03/04/94	23.30	13.20	0.64	27.340	0.489	0.767	—	—
03/14/94	28.64	—	0.00	28.191	—	—	-0.004	-0.074
03/16/94	16.88	12.70	0.79	27.553	-0.832	0.568	—	—
03/28/94	25.80	—	0.79	27.659	—	—	0.000	-0.276
04/11/94	25.04	13.90	0.00	27.872	4.793	0.959	—	—
04/13/94	25.44	—	0.00	27.234	—	—	0.011	0.934
04/29/94	19.28	14.60	0.00	27.101	7.225	0.996	—	—
05/11/94	17.54	16.10	0.00	27.473	7.284	0.993	—	—
05/20/94	25.26	16.20	0.00	27.367	7.010	0.998	—	—
06/06/94	23.00	18.70	0.00	27.446	5.687	0.999	—	—
06/09/94	19.36	—	0.00	27.659	—	—	-0.010	0.503

Table 32. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at control site MF—Continued

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
06/20/94	32.92	22.30	0.00	26.861	4.418	0.998	-0.002	0.737
06/22/94	39.58	19.70	0.00	27.048	2.717	0.997	0.000	-0.313
06/23/94	33.68	19.80	0.00	27.181	4.749	0.999	0.001	0.463
06/24/94	35.22	22.30	0.00	27.234	5.246	0.992	0.003	0.709
06/27/94	37.26	20.40	0.00	27.127	5.581	0.981	0.000	-0.331
06/29/94	34.22	20.30	0.00	27.340	10.860	0.997	0.000	-0.327
07/01/94	31.76	20.90	0.00	28.085	9.002	0.997	—	—
07/14/94	31.36	26.70	0.00	27.606	14.830	0.993	-0.001	-0.256
07/27/94	22.44	21.00	0.00	26.941	12.230	0.999	—	—
07/29/94	28.10	—	0.00	27.021	—	—	0.000	-0.065
08/15/94	35.42	22.50	0.00	27.127	14.450	0.998	0.000	-0.333
08/16/94	37.70	24.30	0.00	27.340	8.671	0.994	0.001	0.535
08/17/94	39.30	23.40	0.00	26.702	8.870	0.999	0.001	0.161
08/22/94	32.14	18.40	0.00	26.595	9.745	1.000	—	—
08/23/94	35.36	—	0.00	26.755	—	—	0.004	0.727
09/08/94	22.20	20.60	0.00	27.234	7.522	0.997	—	—
09/15/94	42.08	—	0.00	27.021	—	—	0.002	0.986
10/24/94	29.76	—	0.00	26.276	—	—	0.008	0.942
10/26/94	20.84	15.40	0.00	26.542	7.868	0.993	—	—
10/28/94	26.40	—	0.64	27.553	5.868	0.996	0.007	0.803
11/23/94	10.42	7.30	0.00	26.915	2.610	0.995	—	—
11/28/94	9.20	—	3.02	25.106	—	—	0.000	-0.307
12/20/94	7.80	—	0.95	27.500	2.315	0.909	—	—
02/24/95	16.36	—	0.64	27.021	1.939	0.991	-0.004	0.904
03/27/95	24.42	22.30	3.02	25.638	2.149	0.951	0.073	0.997
04/17/95	16.18	13.00	0.00	27.021	1.525	0.384	0.035	0.874
05/17/95	32.52	—	0.00	19.787	2.696	0.987	0.004	0.988
06/22/95	37.34	34.10	0.00	19.574	10.172	0.999	0.009	0.986
07/11/95	28.24	20.70	0.00	20.425	7.985	0.999	0.007	0.988
09/06/95	35.10	—	0.00	20.213	7.424	0.993	0.014	0.938

Table 33. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site F1, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/14/93	28.43	—	27.94	49.467	—	—	0.052	0.894
07/28/93	25.00	—	28.73	29.255	—	—	1.291	0.811
08/12/93	26.84	—	14.29	38.936	2.636	0.328	3.546	0.551
08/23/93	30.40	—	11.11	41.276	—	—	4.874	0.605
09/07/93	31.32	—	19.37	36.516	—	—	0.610	0.956
09/21/93	23.04	—	12.94	31.246	—	—	0.058	0.879
10/06/93	20.90	—	15.84	35.797	—	—	1.412	0.928
10/19/93	21.30	—	16.35	39.255	—	—	0.549	0.934
11/05/93	22.42	—	16.35	37.021	—	—	0.044	-0.155
11/19/93	17.28	—	53.02	35.531	—	—	0.019	0.969
12/01/93	16.86	—	52.71	35.319	—	—	0.063	0.674
01/05/94	9.04	—	24.29	16.808	—	—	0.023	0.273
01/20/94	15.92	—	25.72	33.617	—	—	0.161	0.799
02/02/94	14.22	—	28.73	32.340	—	—	0.230	0.475
02/16/94	19.52	—	27.62	31.701	—	—	0.109	0.749
03/02/94	24.22	—	29.05	30.638	—	—	0.055	0.870
03/14/94	27.66	—	26.99	32.766	—	—	0.074	0.883
03/28/94	27.58	—	22.70	35.957	—	—	0.016	0.656
04/13/94	25.78	—	16.99	38.457	—	—	4.201	0.844
05/18/94	18.86	—	15.76	37.659	—	—	2.389	0.747
06/09/94	18.00	—	22.30	34.946	—	—	0.206	0.644
06/29/94	37.52	—	21.59	36.170	—	—	0.523	0.688
07/14/94	39.64	—	6.11	45.053	—	—	0.119	0.641
07/29/94	32.54	—	18.49	36.063	—	—	1.030	0.816
08/23/94	29.96	—	21.75	32.978	—	—	0.008	0.877
09/15/94	31.78	—	12.30	40.000	—	—	0.666	0.956
10/24/94	22.90	—	4.84	44.255	—	—	0.007	0.352
11/28/94	12.22	—	18.10	36.808	—	—	0.013	0.311
12/08/94	12.04	—	15.56	36.063	0.301	0.023	—	—
12/20/94	7.88	—	18.73	34.840	0.669	0.940	—	—
03/27/95	18.84	—	34.29	24.149	0.058	-0.283	0.154	0.944
05/17/95	30.18	—	23.32	24.255	-0.086	0.000	0.252	0.868
07/11/95	28.80	28.80	8.26	34.468	3.250	0.964	0.101	0.270

Table 34. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site F2, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/14/93	28.56	—	25.40	51.489	—	—	0.516	0.938
07/28/93	25.00	—	24.13	32.021	—	—	0.134	0.980
08/12/93	27.32	—	11.27	41.648	-0.252	-0.267	0.126	0.928
08/23/93	30.45	—	8.26	36.808	—	—	0.030	0.652
09/07/93	27.35	—	17.30	38.377	—	—	0.545	0.965
09/21/93	23.00	—	11.43	34.149	—	—	0.131	0.937
10/06/93	20.68	—	13.73	38.031	—	—	0.004	0.984
10/19/93	21.40	—	15.40	39.787	—	—	0.296	0.887
11/05/93	23.68	—	14.61	40.053	—	—	0.027	0.970
11/19/93	16.98	—	57.15	38.297	—	—	0.047	0.751
12/01/93	16.54	—	56.04	37.533	—	—	0.028	0.736
01/05/94	8.98	—	22.86	20.904	—	—	0.083	0.750
01/20/94	16.50	—	22.30	35.904	—	—	0.190	0.931
02/02/94	13.28	—	24.29	34.787	—	—	0.000	-0.333
02/16/94	19.42	—	26.35	33.617	—	—	0.159	0.842
03/02/94	25.06	—	28.10	32.553	—	—	0.019	0.726
03/14/94	28.02	—	20.96	37.021	—	—	0.601	0.943
03/28/94	26.34	—	20.00	37.978	—	—	0.042	0.659
04/13/94	26.98	—	15.24	40.851	—	—	1.061	0.854
05/18/94	19.36	—	12.86	40.265	—	—	0.309	0.818
06/09/94	18.22	—	20.72	37.659	—	—	0.526	-0.167
06/29/94	37.52	—	16.67	38.723	—	—	0.844	0.749
07/14/94	31.88	—	3.81	46.542	—	—	0.075	0.079
07/29/94	43.40	—	16.19	37.872	—	—	0.768	0.934
08/23/94	32.60	—	19.69	35.531	—	—	0.141	0.653
09/15/94	32.58	—	8.18	42.606	—	—	0.154	0.840
10/24/94	23.72	—	3.65	45.957	—	—	0.011	0.842
11/28/94	13.86	—	13.34	39.574	—	—	0.036	0.997
12/08/94	11.96	—	10.95	38.297	0.713	0.939	—	—
02/24/95	13.80	—	27.31	29.787	0.910	0.997	0.045	0.523
03/27/95	15.58	—	29.69	26.489	0.556	0.044	0.171	0.962
04/17/95	15.62	—	20.96	33.297	0.454	0.843	0.211	0.314
05/17/95	27.70	—	22.23	26.808	0.934	0.920	0.071	0.963
06/22/95	37.38	—	11.11	33.829	7.550	0.975	0.523	0.934
07/11/95	27.48	—	5.24	36.808	4.410	0.981	0.148	0.950
09/06/95	35.43	—	7.46	35.425	1.830	0.989	0.010	0.865

Table 35. Mean chamber temperature, soil temperature, water depth, head space, CO_2 fluxes, CH_4 fluxes, and adjusted R^2 for flux regression at pond site F3, Twitchell Island, California

[Missing data are denoted by —. °C, degrees Celsius; g C/m^2/day, grams of carbon per square meter per day]

Date	Mean temperature (°C)	Soil temperature (°C)	Water depth (centimeters)	Head space (liters)	CO_2 flux (g C/m^2/day)	CO_2 adjusted R^2 (g C/m^2/day)	CH_4 flux (g C/m^2/day)	CH_4 adjusted R^2 (g C/m^2/day)
07/14/93	30.05	—	24.29	53.084	—	—	1.537	0.963
07/28/93	25.00	—	22.70	33.829	—	—	-0.196	0.673
08/12/93	27.40	—	11.43	40.638	-0.465	-0.301	-0.015	0.303
08/23/93	30.90	—	8.41	35.797	—	—	0.856	0.719
09/07/93	28.78	—	14.45	39.867	—	—	0.114	0.866
09/21/93	23.80	—	11.43	42.978	—	—	0.598	0.815
10/06/93	21.75	—	11.11	39.547	—	—	0.001	0.996
10/19/93	22.58	—	15.00	41.010	—	—	0.136	0.889
11/05/93	24.50	—	14.60	40.531	—	—	0.880	0.590
11/19/93	17.54	—	56.99	38.191	—	—	0.011	0.220
12/01/93	16.56	—	56.20	37.659	—	—	-0.001	-0.177
01/05/94	8.78	—	23.02	20.851	—	—	0.141	0.626
01/20/94	17.72	—	22.07	36.276	—	—	0.204	0.956
02/02/94	13.24	—	24.13	34.893	—	—	0.055	-0.194
02/16/94	18.84	—	24.29	34.042	—	—	0.020	0.031
03/02/94	25.04	—	26.65	33.191	—	—	0.124	0.798
03/14/94	26.80	—	23.02	36.170	—	—	0.031	0.518
03/28/94	26.10	—	17.78	38.723	—	—	0.229	0.210
04/13/94	27.20	—	15.08	41.276	—	—	0.246	0.696
05/18/94	18.94	—	11.03	40.425	—	—	0.948	0.739
06/09/94	17.96	—	18.81	39.308	—	—	0.316	0.932
06/29/94	41.16	—	16.99	39.148	—	—	0.043	0.981
07/14/94	31.28	—	0.16	47.446	—	—	0.153	0.976
07/29/94	32.70	—	13.97	38.297	—	—	0.446	0.991
08/23/94	29.90	—	16.12	36.063	—	—	0.281	0.983
09/15/94	31.00	—	6.83	42.127	—	—	0.484	0.988
10/24/94	23.22	—	0.00	46.276	—	—	0.417	0.990
11/28/94	12.50	—	9.84	39.893	—	—	0.144	0.863
12/08/94	10.60	—	11.43	38.297	2.253	0.701	—	—
12/20/94	8.10	—	13.85	37.287	0.984	0.974	—	—
02/24/95	12.90	—	25.40	30.000	1.834	0.960	0.123	0.848
04/17/95	15.50	—	19.05	33.829	1.466	0.921	0.379	0.389
06/22/95	37.24	—	7.30	34.255	3.839	0.996	0.177	0.980
09/06/95	31.40	—	3.02	35.957	5.268	0.999	0.132	0.978

Table 36. Biomass measurements based on vegetation sampling on October 13, 1993, Twitchell Island, California

[Missing data are denoted by —]

Sample	Grams corrected dry weight	Mean	Grams biomass per square centimeter	Percent carbon		Average percent carbon	Grams carbon	Grams carbon per square centimeter[1]
				Rep 1	Rep 2			
S1	816.740	608.642	0.164	38.33	39.02	38.68	315.874	0.085
S2	688.080	608.642	—	27.27	34.78	31.03	213.477	0.057
S3	852.050	—	—	37.53	39.10	38.32	326.463	0.088
S4	402.660	—	—	40.12	39.54	39.83	160.379	0.043
S5	283.680	—	—	42.43	41.62	42.03	119.217	0.032
M1	915.150	648.697	0.175	40.65	40.17	40.41	369.812	0.100
M2	540.700	—	—	39.99	38.83	39.41	213.090	0.057
M3	541.000	—	—	39.93	39.68	39.81	215.345	0.058
M4	466.430	—	—	38.98	39.89	39.44	183.937	0.049
M5	960.000	—	—	40.44	41.04	40.74	391.104	0.105
M6	468.900	—	—	37.67	39.28	38.48	180.409	0.049
F1	650.100	629.800	0.169	—	—	—	—	—
F2	525.000	—	—	42.14	42.56	42.35	222.338	0.060
F3	538.600	—	—	42.88	42.77	42.83	230.655	0.062
F4	739.000	—	—	41.70	41.52	41.61	307.498	0.083
F5	696.300	—	—	43.39	42.83	43.11	300.175	0.081

[1]Grams carbon per square centimeter:
S: Average = 0.061; standard deviation = 0.025
M: Average = 0.070; standard deviation = 0.026
F: Average = 0.071; standard deviation = 0.012

Table 37. Biomass measurements based on vegetation sampling on October 25, 1994, Twitchell Island, California

Sample	Grams corrected dry weight	Percent carbon			Average percent carbon	Grams carbon	Grams carbon per square centimeter[1]
		Rep 1	Rep 2	Rep 3			
S1	736.7	41.37	40.61	42.29	41.42	305.2	0.082
S2	486.2	40.02	41.43	41.7	41.05	199.6	0.054
S3	609.3	41.86	43.5	43.13	42.83	261.0	0.070
M1	827.5	41.56	41.39	41.68	41.54	343.8	0.093
M2	585.2	38.57	39.5	39.59	39.22	229.5	0.062
M3	458.1	41.3	41.07	40.8	41.06	188.1	0.051
M4	566.6	40.16	39.7	39.78	39.88	226.0	0.061
F1	1275.2	42.57	43.32	43.41	43.10	549.6	0.148
F2	1192.8	43.12	43.59	43.54	43.42	517.9	0.139
F3	1589.8	44.58	45.17	44.94	44.90	713.8	0.192

[1]Grams carbon per square centimeter:
S: Average = 0.069; standard deviation = 0.014
M: Average = 0.066
F: Average = 0.160; standard deviation = 0.028

Table 38. Biomass measurements based on vegetation sampling on July 25, 1995 (pond S), and October 31, 1995 (ponds M and F), Twitchell Island, California

[Missing data are denoted by —]

Sample	Grams corrected dry weight	Mean	Grams biomass per square centimeter	Standard error	Percent carbon									Average percent carbon	Grams carbon	Grams carbon per square centimeter[1]
					Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9			
S1	317.9	—	—	—	42.11	42.18	42.99	39.95	40.98	42.48	—	—	—	41.78	132.84	0.036
S2	409.3	352.8	949.3	76.764	43.78	44.1	44.67	—	—	—	—	—	—	44.18	180.85	0.049
S3	331.1	—	—	—	42.24	41.62	41.81	—	—	—	—	—	—	41.89	138.68	0.037
M1	1070.1	—	—	—	43.17	43.73	42.95	43.28	—	—	—	—	—	43.28	463.18	0.125
M2	1163.5	1333.3	3588.0	587.242	37.01	36.24	32.67	33.64	—	—	—	—	—	34.89	405.93	0.109
M3	1766.5	—	—	—	43.6	42.89	35.81	34.21	—	—	—	—	—	39.13	691.17	0.186
F1	1985.8	—	—	—	31.48	32.36	31.95	35.35	31.97	—	—	—	—	32.62	647.82	0.174
F2	2356.5	2072.6	5577.3	391.489	42.03	42	41.05	41.1	40.59	37.85	39.05	36.58	36.17	39.60	933.22	0.251
F3	1875.4	—	—	—	44.95	45.29	41.66	41.91	33.44	35.55	32.81	38.58		39.27	736.55	0.198

[1]Grams carbon per square centimeter:
Pond S: Average = 0.041; standard deviation = 0.007
Pond M: Average = 0.140; standard deviation = 0.041
Pond F: Average = 0.208; standard deviation = 0.039