



SOUTH BAY OCEAN OUTFALL MONTHLY RECEIVING WATERS MONITORING REPORT

SOUTH BAY WATER RECLAMATION PLANT

NPDES Permit No. CA0109045
SDRWQCB Order No. R9-2013-0006

JUNE 2019
REVISED MARCH 2021

Environmental Monitoring and Technical Services
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April 1, 2021

Mr. David W. Gibson, Executive Officer
California Regional Water Quality Control Board
San Diego Region
2375 Northside Drive, Suite 100
San Diego, CA 92108

Attention: POTW Compliance Unit

Dear Mr. Gibson:

Enclosed is the revised June 2019 Monthly Receiving Waters Monitoring Report for the South Bay Ocean Outfall, South Bay Water Reclamation Plant as required per Order No. R9-2013-0006 as amended by Order Nos. R9-2014-0071 and R9-2017-0023, NPDES Permit No. CA0109045. This revised report is being submitted to address data integrity issues identified to the Board in the letter dated October 22, 2020, subject: "San Diego NPDES Shoreline Sampling Program Report."

This report includes raw ocean monitoring data and summaries of water quality parameters and ocean conditions measured during the month for the South Bay outfall region. Also included are summaries of compliance with the bacterial water-contact standards specified in the California Ocean Plan. These data are also presented in the monthly report submitted by the International Boundary and Water Commission, U.S. Section for discharge from the South Bay International Wastewater Treatment Plant (Order No. R9-2014-0009 as amended by Order Nos. R9-2014-0094, R9-2017-0024, R9-2019-0012, NPDES Permit No. CA0108928).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,



Peter S. Vroom, Ph.D.
Deputy Public Utilities Director

PV/rk

cc: U.S. Environmental Protection Agency, Region 9

INTRODUCTION

Monthly reports of water quality and ocean conditions from Playa Blanco, Mexico to Coronado, USA are submitted to the San Diego Regional Water Quality Control Board and U.S. EPA Region 9 in accordance with Order No. R9-2013-0006 as amended by Order Nos. R9-2014-0071 and R9-2017-0023, NPDES Permit No. CA0109045, for the South Bay Water Reclamation Plant (SBWRP), South Bay Ocean Outfall (SBOO). This report includes receiving waters monitoring data collected from all shore, kelp and offshore stations specified in the above order. Data for influent and effluent monitoring activities for the SBWRP are presented in separate reports.

MATERIALS AND METHODS

Shore Stations

Water quality monitoring was conducted at 11 stations located along the shore from Playa Blanca, Mexico to Coronado, USA (see station locations map). Three sites are located south of the international border (stations S0, S2, S3), while eight sites are in the United States (stations S4–S6 and S8–S12).

Seawater samples were collected from the surf zone at each station on a weekly basis. These samples were subsequently transported to the City's Marine Microbiology Laboratory and analyzed for the presence of total coliform, fecal coliform, and *Enterococcus* bacteria. Visual observations of water color and clarity, surf height, human or animal activity, and weather conditions were recorded at the time of sample collection. Wind speed and direction were measured using a hand-held anemometer with a compass.

Kelp Bed Stations

Seven kelp bed and other nearshore stations (I19, I24, I25, I26, I32, I39, I40; collectively referred to as "kelp" stations herein) were sampled four times during the month according to NPDES permit specifications. Six stations (I19, I24, I25, I26, I32, I40) are located along the 9-m depth contour, and one (I39) is located along the 18-m depth contour. Three of these stations, I25, I26, and I39, were selected based on their proximity to suitable substrates for the Imperial Beach kelp bed (see station locations map); however, this kelp bed has been historically transient and variable in terms of size and density. Thus, these three stations are only occasionally located within an area where kelp is actually found.

The seven kelp stations are sampled on a weekly basis during the month. Routine monitoring at each kelp site consists of collecting seawater samples at three discrete depths for bacteriological analyses (total coliforms, fecal coliforms, and *Enterococcus* bacteria) and generating water column profiles of various physical/chemical parameters, including water temperature, salinity, density, dissolved oxygen, pH, chlorophyll *a*, and transmissivity. Visual observations of weather and water conditions are also recorded at all stations.

Seawater samples at the kelp bed stations are primarily collected using a CTD-integrated rosette sampler with Niskin bottles. Aliquots for bacteriological analyses were drawn from these bottles into sterile sample bottles for processing at the City's Marine Microbiology Laboratory. Water column profiles of the various physical/chemical parameters were taken using a CTD. The CTD collected these physical/chemical data at a rate \geq 4 scans per second. The data were then internally averaged using the CTD proprietary software, Seasoft, to create water column profiles equivalent

to one reading per meter. Additionally, CTD profile data for each water sample depth are presented with the bacteriological data.

Offshore Stations

Quarterly offshore water quality sampling is typically conducted over three days during February, May, August, and November for a total of 40 stations during each month (see station locations map). These offshore stations (I1–I40) are arranged in a grid surrounding the discharge site, and are generally located along the 9, 19, 28, 38, and 55-m depth contours. The seven offshore sites designated as kelp bed stations (described above) are included as part of the monthly offshore water quality sampling, however the data from these seven stations are reported within the kelp bed station section of the report with the other four days of kelp bed water quality sampling. Monitoring at all sites included measurements of various physical/chemical parameters, including water temperature, salinity, density, dissolved oxygen, pH, chlorophyll *a*, transmissivity, and chromomorphic dissolved organic matter (CDOM). Visual observations of weather and water conditions were also recorded at all stations. Seawater samples for the analysis of indicator bacteria, suspended solids, and oil and grease concentrations were collected at 28 of the stations.

At these offshore stations, water samples for bacteriological analyses were collected using a rosette sampler with Niskin bottles. Measurements of the physical/chemical parameters listed above were taken using a Sea-Bird CTD. Additionally, CTD profile data for depths closest to those at which bacteriological samples were collected were extracted from the CTD profiles and are presented with the bacteriological data.

Bacteriological Reporting and Quality Assurance

Estimated values for bacteriological analyses are denoted by greater than (>), less than (<), or estimated (e) qualifiers and result from plates with colony counts above or below the permissible counting limits established in Bordner et al. (1978)^[1]. This document defines membrane filtration limits of 20–80 colonies per plate for total coliforms and 20–60 colonies per plate for fecal coliforms and *Enterococcus*. No Data (ND) is reported if plate counts from all dilutions have a total colony count of >200 per plate.

Results of the bacteriological analysis of seawater samples collected from each of the shore, kelp bed, and offshore stations located within State waters are assessed relative to the geometric mean and single sample maximum water-contact standards specified in the California Ocean Plan (Ocean Plan). The seven standards are defined as follows:

30-day Geometric Mean: The following standards are based on the geometric mean of the five most recent samples from each site.

- (1) Total coliform density shall not exceed 1000 CFU/100 mL;
- (2) Fecal coliform density shall not exceed 200 CFU/100 mL;
- (3) *Enterococcus* density shall not exceed 35 CFU/100 mL.

^[1]Bordner, R., J. Winter, and P. Scarpino (eds.). (1978). Microbiological Methods for Monitoring the Environment: Water and Wastes, EPA Research and Development, EPA-600/8-78-017. 337 p.

Single Sample Maximums:

- (1) Total coliform density shall not exceed 10,000 CFU/100 mL;
- (2) Fecal coliform density shall not exceed 400 CFU/100 mL;
- (3) *Enterococcus* density shall not exceed 104 CFU/100 mL;
- (4) Total coliform density shall not exceed 1,000 CFU/100 mL when the fecal coliform/total coliform ratio exceeds 0.1.

Compliance with the seven Ocean Plan standards are summarized below for the stations located in USA waters. In contrast, no such compliance summaries are presented for the three shore stations located in Mexican waters south of the International Border (i.e., S0, S2, and S3) since this region is not subject to the Ocean Plan standards.

Quality controls of bacteriological data include laboratory and field duplicate analyses. Laboratory duplicates are performed on approximately 10% of the water quality samples, while field duplicates are performed six times a month (see Appendix A). Laboratory duplicates represent two aliquots of the original sample that are split in the laboratory and analyzed by the same analyst using identical procedures within the same analytical run. The results of these analyses provide a measure of intra-analyst precision. In contrast, field duplicates represent two separate samples collected at the same time from the same site, which are handled under identical circumstances and treated exactly the same throughout field and lab procedures. The results of these analyses provide a measure of precision associated with sample collection, preservation, storage, and lab procedures. The sign test (see Gilbert, 1987) is used to statistically compare both the results from the laboratory duplicates, as well as the results from the field duplicates. These data will be further analyzed in the City's 2019 Quality Assurance Report, which will be completed in March 2020.

SUMMARY OF RESULTS

➤ Shoreline Water Quality Sampling

- Because of site access restrictions in Mexico, the South Bay shoreline sampling is typically carried out on the same day each week (i.e., Tuesday) in order to coordinate sampling between the Mexican and USA based stations. Seawater samples at the three shore stations located south of the USA/Mexico border (i.e., stations S0, S2 and S3) are presently collected by the Comisión Internacional de Límites y Aguas (CILA) and transported to the IBWC for subsequent delivery to the City's Marine Microbiology Lab, while samples from the eight stations located in USA waters are sampled by City staff.
- The 11 shore stations (S0, S2, S3, S4, S5, S6, S8, S9, S10, S11, S12) were sampled on June 4, 11, 18, 24, and 25. Subsequent to initial reporting, samples collected at stations S4, S6, S10, and S11 on June 18 were determined to be problematic. The results from these samples have been removed from this report.
- During June, three of the eight shore stations located north of the border were out of compliance with various California Ocean Plan (Ocean Plan) water contact standards on one or more days as follows (these standards do not apply to stations located in Mexican waters):
 - The 30-day geometric mean standard for total coliform densities was exceeded at station S5.

- The 30-day geometric mean standard for fecal coliform densities was exceeded at station S5.
- The 30-day geometric mean standard for *Enterococcus* bacteria was exceeded at stations S5 and S10.
- The single sample maximum (SSM) standard for fecal coliform densities was exceeded at station S9.
- The SSM standard that states total coliform densities shall not exceed 1000 CFU/100 mL when the fecal:total ratio exceeds 0.1 was exceeded at station S9.
- Per permit requirements, resamples were collected in response to these SSM exceedances (see Table 2.8 for details).
- Although the Ocean Plan standards do not apply to these stations, bacteria densities exceeded one or more benchmark levels (i.e., total coliforms >10,000 CFU/100mL; fecal coliforms >400 CFU/100 mL; *Enterococcus* >104 CFU/100 mL; total >1000 CFU/100 mL & F:T ratio >0.1) in seawater samples collected at station S0 on one or more days during the month.
- Historical analyses of Ocean Plan compliance rates for the South Bay outfall shore and kelp monitoring stations, combined with the results of satellite imagery data, suggest that outflows from the Tijuana River and Los Buenos Creek, as well as surface runoff during or after rain events (storms), are likely to be the cause of impacted water quality along the shore and in near shore recreational waters in the South Bay region. See the City of San Diego's most recent *Biennial Receiving Waters Monitoring and Assessment Report for the Point Loma and South Bay Ocean Outfalls* for details (<http://www.sandiego.gov/mwwd/environment/oceanmonitor/reports/index.shtml>).
- Notable observations for June included a sewage-like odor at station S5 on June 24.

➤ **Kelp Bed Water Quality Sampling**

- The seven kelp bed water quality stations (I19, I24, I25, I26, I32, I39, I40) were sampled four times during the month (i.e. June 3, 10, 17, 25).
- During June, each of the seven stations was in compliance with various Ocean Plan water contact standards.
- Water column temperatures ranged from 11.50 to 18.23°C. The difference between surface and bottom waters ranged from 0.24 to 5.91°C, indicating the water column was stratified at some of these sites during the month.
- Chlorophyll *a* concentrations ranged from 0.69 to 53.37 µg/L at the kelp bed stations, suggesting the presence of phytoplankton blooms during the month.
- Nothing of sewage origin was observed at any of the kelp stations.

➤ **Offshore Water Quality Sampling**

- Quarterly offshore water quality sampling was not conducted during June. The next quarterly sampling is scheduled for August 2019.



TABLES AND FIGURES



Figure 1.1 Station Map

Shore Stations

Table 2.1

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for total coliform bacteria at the SBOO shore stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >1,000 CFU/100 mL exceed the standard.

Date	S4	S5	S6	S8	S9	S10	S11	S12
01 Jun 2019	175	2067	329	92	112	499	268	473
02 Jun 2019	175	2067	146	92	112	499	268	295
03 Jun 2019	175	2067	146	92	112	499	268	295
04 Jun 2019	179	1300	155	108	214	438	160	277
05 Jun 2019	179	1300	155	108	214	438	160	277
06 Jun 2019	290	1829	120	291	225	797	110	250
07 Jun 2019	290	1829	120	291	225	797	110	250
08 Jun 2019	290	1829	120	291	225	797	110	250
09 Jun 2019	290	1829	120	291	225	797	110	250
10 Jun 2019	290	1829	120	291	225	797	110	250
11 Jun 2019	205	1466	66	170	221	504	78	190
12 Jun 2019	205	1466	66	170	221	504	78	190
13 Jun 2019	326	1452	53	63	225	862	51	82
14 Jun 2019	326	1452	53	63	225	862	51	82
15 Jun 2019	326	2425	53	63	225	862	51	44
16 Jun 2019	326	2425	53	63	225	862	51	44
17 Jun 2019	326	2425	53	63	225	862	51	44
18 Jun 2019	326	1423	53	50	221	862	51	60
19 Jun 2019	326	1423	53	50	221	862	51	60
20 Jun 2019	123	1423	29	36	225	481	20	79
21 Jun 2019	123	1423	29	36	225	481	20	79
22 Jun 2019	179	1051	29	36	225	287	20	79
23 Jun 2019	179	1051	29	36	225	287	20	79
24 Jun 2019	104	608	26	32	221	111	24	69
25 Jun 2019	104	608	26	32	221	111	24	69
26 Jun 2019	104	381	26	32	221	111	24	69
27 Jun 2019	52	204	29	36	225	50	26	94
28 Jun 2019	52	204	29	36	225	50	26	94
29 Jun 2019	52	114	29	36	225	50	26	94
30 Jun 2019	52	63	29	36	225	50	26	94

* Geometric mean calculated using n<5

Table 2.2

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for fecal coliform bacteria at the SBOO shore stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >200 CFU/100 mL exceed the standard.

Date	S4	S5	S6	S8	S9	S10	S11	S12
01 Jun 2019	50	535	35	10	6	170	24	26
02 Jun 2019	50	535	19	10	6	170	24	16
03 Jun 2019	50	535	19	10	6	170	24	16
04 Jun 2019	48	385	48	8	17	125	23	21
05 Jun 2019	48	385	48	8	17	125	23	21
06 Jun 2019	58	541	43	10	20	185	19	25
07 Jun 2019	58	541	43	10	20	185	19	25
08 Jun 2019	58	541	43	10	20	185	19	25
09 Jun 2019	58	541	43	10	20	185	19	25
10 Jun 2019	58	541	43	10	20	185	19	25
11 Jun 2019	44	393	27	8	20	125	16	27
12 Jun 2019	44	393	27	8	20	125	16	27
13 Jun 2019	81	423	25	3	21	176	12	14
14 Jun 2019	81	423	25	3	21	176	12	14
15 Jun 2019	81	827	25	4	21	176	12	8
16 Jun 2019	81	827	25	4	21	176	12	8
17 Jun 2019	81	827	25	4	21	176	12	8
18 Jun 2019	81	423	25	4	14	176	12	11
19 Jun 2019	81	423	25	4	14	176	12	11
20 Jun 2019	27	423	15	4	19	78	7	16
21 Jun 2019	27	423	15	4	19	78	7	16
22 Jun 2019	31	279	15	4	19	42	7	16
23 Jun 2019	31	279	15	4	19	42	7	16
24 Jun 2019	28	125	21	6	28	28	11	17
25 Jun 2019	28	125	21	6	28	28	11	17
26 Jun 2019	28	65	21	6	28	28	11	17
27 Jun 2019	20	29	36	4	47	17	19	29
28 Jun 2019	20	29	36	4	47	17	19	29
29 Jun 2019	20	17	36	4	47	17	19	29
30 Jun 2019	20	12	36	4	47	17	19	29

* Geometric mean calculated using n<5

Table 2.3

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for *Enterococcus* at the SBOO shore stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >35 CFU/100 mL exceed the standard.

Date	S4	S5	S6	S8	S9	S10	S11	S12
01 Jun 2019	13	481	6	4	3	49	6	8
02 Jun 2019	13	481	6	4	2	49	6	6
03 Jun 2019	13	481	6	4	2	49	6	6
04 Jun 2019	11	288	6	4	5	35	5	6
05 Jun 2019	11	288	6	4	5	35	5	6
06 Jun 2019	11	436	5	4	6	49	4	6
07 Jun 2019	11	436	5	4	6	49	4	6
08 Jun 2019	11	436	5	4	6	49	4	6
09 Jun 2019	11	436	5	4	6	49	4	6
10 Jun 2019	11	436	5	4	6	49	4	6
11 Jun 2019	10	255	5	4	8	35	4	6
12 Jun 2019	10	255	5	4	8	35	4	6
13 Jun 2019	14	418	6	2	10	43	4	4
14 Jun 2019	14	418	6	2	10	43	4	4
15 Jun 2019	14	418	6	2	10	43	4	4
16 Jun 2019	14	418	6	2	10	43	4	4
17 Jun 2019	14	418	6	2	10	43	4	4
18 Jun 2019	14	214	6	2	7	43	4	5
19 Jun 2019	14	214	6	2	7	43	4	5
20 Jun 2019	4	214	4	3	10	16	3	7
21 Jun 2019	4	214	4	3	10	16	3	7
22 Jun 2019	5	121	4	3	10	9	3	7
23 Jun 2019	5	121	4	3	10	9	3	7
24 Jun 2019	5	48	3	3	16	7	4	5
25 Jun 2019	5	48	3	3	16	7	4	5
26 Jun 2019	5	21	3	3	16	7	4	5
27 Jun 2019	5	9	4	3	26	5	5	7
28 Jun 2019	5	9	4	3	26	5	5	7
29 Jun 2019	5	7	4	3	26	5	5	7
30 Jun 2019	5	7	4	3	26	5	5	7

* Geometric mean calculated using n<5

Table 2.4

Summary of compliance at the SBOO shore stations with the Ocean Plan's Single Sample Maximum standard for total coliform bacteria, which states that total coliform density shall not exceed 10,000 CFU/100 mL.

Date	S4	S5	S6	S8	S9	S10	S11	S12
04 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
06 Jun 2019	ns	ns	ns	ns	IC	ns	ns	ns
11 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
18 Jun 2019	ns	IC	ns	IC	IC	ns	ns	IC
24 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 2.5

Summary of compliance at the SBOO shore stations with the Ocean Plan's Single Sample Maximum standard for fecal coliform bacteria, which states that fecal coliform density shall not exceed 400 CFU/100 mL.

Date	S4	S5	S6	S8	S9	S10	S11	S12
04 Jun 2019	IC	IC	IC	IC	E	IC	IC	IC
06 Jun 2019	ns	ns	ns	ns	IC	ns	ns	ns
11 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
18 Jun 2019	ns	IC	ns	IC	IC	ns	ns	IC
24 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 2.6

Summary of compliance at the SBOO shore stations with the Ocean Plan's Single Sample Maximum standard for *Enterococcus* bacteria, which states that *Enterococcus* density shall not exceed 104 CFU/100 mL.

Date	S4	S5	S6	S8	S9	S10	S11	S12
04 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
11 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
18 Jun 2019	ns	IC	ns	IC	IC	ns	ns	IC
24 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 2.7

Summary of compliance at the SBOO shore stations with the Ocean Plan's Single Sample Maximum standard for total coliform bacteria and the fecal/total coliform ratio (F:T), which states that total coliform density shall not exceed 1,000 CFU/100 mL when F:T > 0.1.

Date	S4	S5	S6	S8	S9	S10	S11	S12
04 Jun 2019	IC	IC	IC	IC	E	IC	IC	IC
06 Jun 2019	ns	ns	ns	ns	IC	ns	ns	ns
11 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
18 Jun 2019	ns	IC	ns	IC	IC	ns	ns	IC
24 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 2.8

Summary of water quality parameters at the SBOO shore stations for each sample date. Densities of total coliform (Total), fecal coliform (Fecal), and *Enterococcus* (Enter) are reported as CFU/100 mL. The fecal:total coliform ratio (F:T) is unitless. Comments follow the data summary.

Station	Date	Time	Total	Fecal	Enter	F:T
S0	04 Jun 2019	1105	60e	20e	22e	0.33
S0	11 Jun 2019	1045	2e	2e	2e	1.00
S0	18 Jun 2019	1105	140e	28e	140e	0.20
S0	25 Jun 2019	1115	2400e	640	900	0.27
S2	04 Jun 2019	1250	60e	4e	<2	0.07
S2	11 Jun 2019	1155	84	18e	12e	0.21
S2	18 Jun 2019	1205	4e	<2	2e	0.50
S2	25 Jun 2019	1035	<20	<2	<2	0.10
S3	04 Jun 2019	1215	20e	<20	<2	1.00
S3	11 Jun 2019	1130	18e	<2	6e	0.11
S3	18 Jun 2019	1135	<2	<2	4e	1.00
S3	25 Jun 2019	1000	<20	2e	<2	0.10
S4	04 Jun 2019	1023	<200	40e	6e	0.20
S4	11 Jun 2019	1021	36e	10e	6e	0.28
S4	18 Jun 2019		ns	ns	ns	ns
S4	24 Jun 2019	950	20e	20e	4e	1.00
S5	04 Jun 2019	920	20e	<20	8e	1.00
S5	11 Jun 2019	1052	<200	22e	6e	0.11
S5	18 Jun 2019	959	<20	<2	2e	0.10
S5	24 Jun 2019	850	<200	20e	20e	0.10
S6	04 Jun 2019	929	<200	<200	8e	1.00
S6	11 Jun 2019	1101	6e	4e	4e	0.67
S6	18 Jun 2019		ns	ns	ns	ns
S6	24 Jun 2019	916	20e	60e	2e	3.00
S8	04 Jun 2019	1159	<200	<2	<2	0.01
S8	11 Jun 2019	802	<20	<2	2e	0.10
S8	18 Jun 2019	928	<20	4e	6e	0.20
S8	24 Jun 2019	826	<20	<20	4e	1.00
S9	04 Jun 2019	1244	2800e	1400e	80e	0.50
S9	06 Jun 2019	912	26e	20e	ns	0.77
S9	11 Jun 2019	741	<200	<20	30e	0.10
S9	18 Jun 2019	847	<200	2e	2e	0.01
S9	24 Jun 2019	809	200e	<200	100e	1.00
S10	04 Jun 2019	1029	<200	<20	6e	0.10
S10	11 Jun 2019	1013	32e	12e	6e	0.38
S10	18 Jun 2019		ns	ns	ns	ns
S10	24 Jun 2019	1008	<20	20e	4e	1.00
S11	04 Jun 2019	925	<20	<20	2e	1.00
S11	11 Jun 2019	1057	<20	8e	8e	0.40
S11	18 Jun 2019		ns	ns	ns	ns
S11	24 Jun 2019	905	44	40e	10e	0.91
S12	04 Jun 2019	939	200e	<20	10e	0.10
S12	11 Jun 2019	1109	48	42	4e	0.88
S12	18 Jun 2019	944	<200	40e	24e	0.20

Station	Date	Time	Total	Fecal	Enteric	F:T
S12	24 Jun 2019	842	40e	<20	<2	0.50

ns = not sampled

ND = no data

Comments

Station	Date	Depth	Parameter	Comments
S9	06 Jun 2019			Resample
S0	25 Jun 2019			Mexican stations sampled on the next day
S2	25 Jun 2019			Mexican stations sampled on the next day
S3	25 Jun 2019			Mexican stations sampled on the next day

Table 2.9

Summary of visual observations made during the month for each SBOO shore station by sample date.

Station	Date	Parameter	Value
S0	04 Jun 2019	Arrive Time	1105
S0	04 Jun 2019	Weather	Cloudy
S0	04 Jun 2019	Wind Speed (kts)	3.1
S0	04 Jun 2019	Wind Dir	NE
S0	04 Jun 2019	Animal Life	10 Shorebirds
S0	04 Jun 2019	Floatables	None
S0	04 Jun 2019	Water Color	Green
S0	04 Jun 2019	Current Direction	N
S0	04 Jun 2019	Water Temp (C)	15
S0	04 Jun 2019	Wave Height Low (ft)	3
S0	04 Jun 2019	High Tide (ft)	3.7
S0	04 Jun 2019	High Tide Time	1111
S0	04 Jun 2019	Low Tide (ft)	1.9
S0	04 Jun 2019	Low Tide Time	1602
S0	04 Jun 2019	Comments	Kelp; Algae; 1 Person; Water clear; 0.5 L/s water flowing from storm drain
S0	11 Jun 2019	Arrive Time	1045
S0	11 Jun 2019	Weather	Sunny
S0	11 Jun 2019	Wind Speed (kts)	3.7
S0	11 Jun 2019	Wind Dir	SW
S0	11 Jun 2019	Animal Life	3 Dogs; 20 Seagulls
S0	11 Jun 2019	Floatables	None
S0	11 Jun 2019	Water Color	Green
S0	11 Jun 2019	Current Direction	N
S0	11 Jun 2019	Water Temp (C)	16
S0	11 Jun 2019	Wave Height Low (ft)	2
S0	11 Jun 2019	High Tide (ft)	3.9
S0	11 Jun 2019	High Tide Time	447
S0	11 Jun 2019	Low Tide (ft)	0.4
S0	11 Jun 2019	Low Tide Time	1115
S0	11 Jun 2019	Comments	Kelp; Algae; Water turbid; 0.5 L/s water flowing from storm drain
S0	18 Jun 2019	Arrive Time	1105
S0	18 Jun 2019	Weather	Cloudy
S0	18 Jun 2019	Wind Speed (kts)	3.6
S0	18 Jun 2019	Wind Dir	SW
S0	18 Jun 2019	Animal Life	3 Dogs; 20 Seagulls
S0	18 Jun 2019	Floatables	None
S0	18 Jun 2019	Water Color	Green
S0	18 Jun 2019	Current Direction	N
S0	18 Jun 2019	Water Temp (C)	16
S0	18 Jun 2019	Wave Height Low (ft)	3
S0	18 Jun 2019	High Tide (ft)	3.7
S0	18 Jun 2019	High Tide Time	1120
S0	18 Jun 2019	Low Tide (ft)	2.1
S0	18 Jun 2019	Low Tide Time	1608
S0	18 Jun 2019	Comments	Kelp; Algae; Water turbid; 1.0 L/s flow from storm drain; Red tide
S0	25 Jun 2019	Arrive Time	1115
S0	25 Jun 2019	Weather	Cloudy
S0	25 Jun 2019	Wind Speed (kts)	1.2
S0	25 Jun 2019	Wind Dir	SW
S0	25 Jun 2019	Animal Life	5 Birds

Station	Date	Parameter	Value
S0	25 Jun 2019	Floatables	None
S0	25 Jun 2019	Water Color	Green
S0	25 Jun 2019	Current Direction	N
S0	25 Jun 2019	Water Temp (C)	14
S0	25 Jun 2019	Wave Height Low (ft)	2
S0	25 Jun 2019	High Tide (ft)	4.2
S0	25 Jun 2019	High Tide Time	1658
S0	25 Jun 2019	Low Tide (ft)	1.1
S0	25 Jun 2019	Low Tide Time	1001
S0	25 Jun 2019	Comments	Kelp; Algae; Water clear; 1.0 L/s water flowing from storm drain
S2	04 Jun 2019	Arrive Time	1250
S2	04 Jun 2019	Weather	Cloudy
S2	04 Jun 2019	Wind Speed (kts)	3
S2	04 Jun 2019	Wind Dir	NE
S2	04 Jun 2019	Animal Life	5 Shorebirds; 1 Dog
S2	04 Jun 2019	Floatables	None
S2	04 Jun 2019	Water Color	Green
S2	04 Jun 2019	Current Direction	N
S2	04 Jun 2019	Water Temp (C)	15
S2	04 Jun 2019	Wave Height Low (ft)	3
S2	04 Jun 2019	High Tide (ft)	3.7
S2	04 Jun 2019	High Tide Time	1111
S2	04 Jun 2019	Low Tide (ft)	1.9
S2	04 Jun 2019	Low Tide Time	1602
S2	04 Jun 2019	Comments	Kelp; Algae; 2 Persons; Water clear; No flow from storm drain
S2	11 Jun 2019	Arrive Time	1155
S2	11 Jun 2019	Weather	Sunny
S2	11 Jun 2019	Wind Speed (kts)	4.9
S2	11 Jun 2019	Wind Dir	SW
S2	11 Jun 2019	Animal Life	2 Dogs; 20 Seagulls
S2	11 Jun 2019	Floatables	None
S2	11 Jun 2019	Water Color	Green
S2	11 Jun 2019	Current Direction	N
S2	11 Jun 2019	Water Temp (C)	16
S2	11 Jun 2019	Wave Height Low (ft)	2
S2	11 Jun 2019	High Tide (ft)	5.1
S2	11 Jun 2019	High Tide Time	1756
S2	11 Jun 2019	Low Tide (ft)	0.4
S2	11 Jun 2019	Low Tide Time	1115
S2	11 Jun 2019	Comments	Kelp; Algae; Water turbid; No flow from storm drain
S2	18 Jun 2019	Arrive Time	1205
S2	18 Jun 2019	Weather	Cloudy
S2	18 Jun 2019	Wind Speed (kts)	3.8
S2	18 Jun 2019	Wind Dir	SW
S2	18 Jun 2019	Animal Life	5 Dogs; 20 Seagulls
S2	18 Jun 2019	Floatables	None
S2	18 Jun 2019	Water Color	Green
S2	18 Jun 2019	Current Direction	N
S2	18 Jun 2019	Water Temp (C)	16
S2	18 Jun 2019	Wave Height Low (ft)	3
S2	18 Jun 2019	High Tide (ft)	3.7
S2	18 Jun 2019	High Tide Time	1120
S2	18 Jun 2019	Low Tide (ft)	2.1
S2	18 Jun 2019	Low Tide Time	1608
S2	18 Jun 2019	Comments	Kelp; Algae; 3 Persons; Water turbid; No flow from storm drain
S2	25 Jun 2019	Arrive Time	1035

Station	Date	Parameter	Value
S2	25 Jun 2019	Weather	Cloudy
S2	25 Jun 2019	Wind Speed (kts)	1.5
S2	25 Jun 2019	Wind Dir	SW
S2	25 Jun 2019	Animal Life	15 Birds
S2	25 Jun 2019	Floatables	None
S2	25 Jun 2019	Water Color	Green
S2	25 Jun 2019	Current Direction	N
S2	25 Jun 2019	Water Temp (C)	14
S2	25 Jun 2019	Wave Height Low (ft)	2
S2	25 Jun 2019	High Tide (ft)	4.2
S2	25 Jun 2019	High Tide Time	1658
S2	25 Jun 2019	Low Tide (ft)	1.1
S2	25 Jun 2019	Low Tide Time	1001
S2	25 Jun 2019	Comments	Kelp; Algae; 5 Persons; Water clear; No flow from storm drain
S3	04 Jun 2019	Arrive Time	1215
S3	04 Jun 2019	Weather	Cloudy
S3	04 Jun 2019	Wind Speed (kts)	3.1
S3	04 Jun 2019	Wind Dir	NE
S3	04 Jun 2019	Animal Life	5 Shorebirds; 1 Dog
S3	04 Jun 2019	Floatables	None
S3	04 Jun 2019	Water Color	Green
S3	04 Jun 2019	Current Direction	N
S3	04 Jun 2019	Water Temp (C)	15
S3	04 Jun 2019	Wave Height Low (ft)	3
S3	04 Jun 2019	High Tide (ft)	3.7
S3	04 Jun 2019	High Tide Time	1111
S3	04 Jun 2019	Low Tide (ft)	1.9
S3	04 Jun 2019	Low Tide Time	1602
S3	04 Jun 2019	Comments	Kelp; Algae; 3 Persons; Water clear; No flow from storm drain
S3	11 Jun 2019	Arrive Time	1130
S3	11 Jun 2019	Weather	Sunny
S3	11 Jun 2019	Wind Speed (kts)	4.6
S3	11 Jun 2019	Wind Dir	SW
S3	11 Jun 2019	Animal Life	2 Dogs; 20 Seagulls
S3	11 Jun 2019	Floatables	None
S3	11 Jun 2019	Water Color	Green
S3	11 Jun 2019	Current Direction	N
S3	11 Jun 2019	Water Temp (C)	16
S3	11 Jun 2019	Wave Height Low (ft)	2
S3	11 Jun 2019	High Tide (ft)	5.1
S3	11 Jun 2019	High Tide Time	1756
S3	11 Jun 2019	Low Tide (ft)	0.4
S3	11 Jun 2019	Low Tide Time	1115
S3	11 Jun 2019	Comments	Kelp; Algae; Water turbid; No flow from storm drain
S3	18 Jun 2019	Arrive Time	1135
S3	18 Jun 2019	Weather	Cloudy
S3	18 Jun 2019	Wind Speed (kts)	2.6
S3	18 Jun 2019	Wind Dir	SW
S3	18 Jun 2019	Animal Life	1 Dog; 20 Seagulls
S3	18 Jun 2019	Floatables	None
S3	18 Jun 2019	Water Color	Green
S3	18 Jun 2019	Current Direction	N
S3	18 Jun 2019	Water Temp (C)	15
S3	18 Jun 2019	Wave Height Low (ft)	3
S3	18 Jun 2019	High Tide (ft)	3.7
S3	18 Jun 2019	High Tide Time	1120
S3	18 Jun 2019	Low Tide (ft)	2.1
S3	18 Jun 2019	Low Tide Time	1608

Station	Date	Parameter	Value
S3	18 Jun 2019	Comments	Kelp; Algae; 10 Persons; Water turbid; No flow from storm drain
S3	25 Jun 2019	Arrive Time	1000
S3	25 Jun 2019	Weather	Cloudy
S3	25 Jun 2019	Wind Speed (kts)	2.1
S3	25 Jun 2019	Wind Dir	SW
S3	25 Jun 2019	Animal Life	15 Birds; 5 Dogs
S3	25 Jun 2019	Floatables	None
S3	25 Jun 2019	Water Color	Green
S3	25 Jun 2019	Current Direction	N
S3	25 Jun 2019	Water Temp (C)	14
S3	25 Jun 2019	Wave Height Low (ft)	2
S3	25 Jun 2019	High Tide (ft)	3.4
S3	25 Jun 2019	High Tide Time	311
S3	25 Jun 2019	Low Tide (ft)	1.1
S3	25 Jun 2019	Low Tide Time	1001
S3	25 Jun 2019	Comments	Kelp; Algae; 20 Persons; Water clear; No flow from storm drain
S4	04 Jun 2019	Arrive Time	1023
S4	04 Jun 2019	Weather	Cloudy
S4	04 Jun 2019	Wind Speed (kts)	6.4
S4	04 Jun 2019	Wind Dir	W
S4	04 Jun 2019	Animal Life	None
S4	04 Jun 2019	Floatables	None
S4	04 Jun 2019	Water Color	Green
S4	04 Jun 2019	Current Direction	W
S4	04 Jun 2019	Water Temp (C)	17.8
S4	04 Jun 2019	Wave Height Low (ft)	3
S4	04 Jun 2019	High Tide (ft)	3.7
S4	04 Jun 2019	High Tide Time	1111
S4	04 Jun 2019	Low Tide (ft)	-1.1
S4	04 Jun 2019	Low Tide Time	450
S4	04 Jun 2019	Comments	Kelp; Seagrass; Water clear
S4	11 Jun 2019	Arrive Time	1021
S4	11 Jun 2019	Weather	Overcast
S4	11 Jun 2019	Wind Speed (kts)	2.6
S4	11 Jun 2019	Wind Dir	W
S4	11 Jun 2019	Animal Life	7 Seagulls
S4	11 Jun 2019	Floatables	None
S4	11 Jun 2019	Water Color	Green
S4	11 Jun 2019	Current Direction	W
S4	11 Jun 2019	Water Temp (C)	18.8
S4	11 Jun 2019	Wave Height Low (ft)	2
S4	11 Jun 2019	High Tide (ft)	3.9
S4	11 Jun 2019	High Tide Time	447
S4	11 Jun 2019	Low Tide (ft)	0.4
S4	11 Jun 2019	Low Tide Time	1115
S4	11 Jun 2019	Comments	Kelp; Seagrass; Debris; Water clear
S4	24 Jun 2019	Arrive Time	950
S4	24 Jun 2019	Weather	Overcast
S4	24 Jun 2019	Wind Speed (kts)	3.1
S4	24 Jun 2019	Wind Dir	E
S4	24 Jun 2019	Animal Life	21 Godwits; 30 Seagulls
S4	24 Jun 2019	Floatables	Foam; Film
S4	24 Jun 2019	Water Color	Brown
S4	24 Jun 2019	Current Direction	E
S4	24 Jun 2019	Water Temp (C)	18

Station	Date	Parameter	Value
S4	24 Jun 2019	Wave Height Low (ft)	2
S4	24 Jun 2019	High Tide (ft)	3.9
S4	24 Jun 2019	High Tide Time	1615
S4	24 Jun 2019	Low Tide (ft)	0.8
S4	24 Jun 2019	Low Tide Time	912
S4	24 Jun 2019	Comments	Kelp; Seagrass; Algae; Debris; Water clear
S5	04 Jun 2019	Arrive Time	920
S5	04 Jun 2019	Weather	Cloudy
S5	04 Jun 2019	Wind Speed (kts)	4
S5	04 Jun 2019	Wind Dir	W
S5	04 Jun 2019	Animal Life	None
S5	04 Jun 2019	Floatables	None
S5	04 Jun 2019	Water Color	Green
S5	04 Jun 2019	Current Direction	N
S5	04 Jun 2019	Water Temp (C)	17.3
S5	04 Jun 2019	Wave Height Low (ft)	3
S5	04 Jun 2019	High Tide (ft)	3.7
S5	04 Jun 2019	High Tide Time	1111
S5	04 Jun 2019	Low Tide (ft)	-1.1
S5	04 Jun 2019	Low Tide Time	450
S5	04 Jun 2019	Comments	Kelp; Seagrass; Water clear
S5	11 Jun 2019	Arrive Time	1052
S5	11 Jun 2019	Weather	Cloudy
S5	11 Jun 2019	Wind Speed (kts)	4.8
S5	11 Jun 2019	Wind Dir	W
S5	11 Jun 2019	Animal Life	None
S5	11 Jun 2019	Floatables	None
S5	11 Jun 2019	Water Color	Green
S5	11 Jun 2019	Current Direction	W
S5	11 Jun 2019	Water Temp (C)	19.8
S5	11 Jun 2019	Wave Height Low (ft)	2
S5	11 Jun 2019	High Tide (ft)	3.9
S5	11 Jun 2019	High Tide Time	447
S5	11 Jun 2019	Low Tide (ft)	0.4
S5	11 Jun 2019	Low Tide Time	1115
S5	11 Jun 2019	Comments	Kelp; Seagrass; Water clear
S5	18 Jun 2019	Arrive Time	959
S5	18 Jun 2019	Weather	Drizzle
S5	18 Jun 2019	Wind Speed (kts)	3.3
S5	18 Jun 2019	Wind Dir	W
S5	18 Jun 2019	Animal Life	None
S5	18 Jun 2019	Floatables	None
S5	18 Jun 2019	Water Color	Green
S5	18 Jun 2019	Current Direction	N
S5	18 Jun 2019	Water Temp (C)	20.3
S5	18 Jun 2019	Wave Height Low (ft)	2
S5	18 Jun 2019	High Tide (ft)	3.7
S5	18 Jun 2019	High Tide Time	1120
S5	18 Jun 2019	Low Tide (ft)	-0.9
S5	18 Jun 2019	Low Tide Time	457
S5	18 Jun 2019	Comments	Kelp; Seagrass; Debris; Water clear
S5	24 Jun 2019	Arrive Time	850
S5	24 Jun 2019	Weather	Overcast
S5	24 Jun 2019	Wind Speed (kts)	7.7
S5	24 Jun 2019	Wind Dir	S
S5	24 Jun 2019	Animal Life	4 Pelicans
S5	24 Jun 2019	Floatables	Foam; Film

Station	Date	Parameter	Value
S5	24 Jun 2019	Water Color	Brown
S5	24 Jun 2019	Current Direction	S
S5	24 Jun 2019	Water Temp (C)	20.5
S5	24 Jun 2019	Wave Height Low (ft)	2
S5	24 Jun 2019	High Tide (ft)	3.8
S5	24 Jun 2019	High Tide Time	151
S5	24 Jun 2019	Low Tide (ft)	0.8
S5	24 Jun 2019	Low Tide Time	912
S5	24 Jun 2019	Comments	Kelp; Seagrass; Algae; Debris; Sewage-like odor; 1 Person; Water clear
S6	04 Jun 2019	Arrive Time	929
S6	04 Jun 2019	Weather	Cloudy
S6	04 Jun 2019	Wind Speed (kts)	4.4
S6	04 Jun 2019	Wind Dir	W
S6	04 Jun 2019	Animal Life	None
S6	04 Jun 2019	Floatables	None
S6	04 Jun 2019	Water Color	Green
S6	04 Jun 2019	Current Direction	N
S6	04 Jun 2019	Water Temp (C)	17.1
S6	04 Jun 2019	Wave Height Low (ft)	3
S6	04 Jun 2019	High Tide (ft)	3.7
S6	04 Jun 2019	High Tide Time	1111
S6	04 Jun 2019	Low Tide (ft)	-1.1
S6	04 Jun 2019	Low Tide Time	450
S6	04 Jun 2019	Comments	Kelp; Seagrass; 3 Persons; Water clear
S6	11 Jun 2019	Arrive Time	1101
S6	11 Jun 2019	Weather	Cloudy
S6	11 Jun 2019	Wind Speed (kts)	5.2
S6	11 Jun 2019	Wind Dir	SW
S6	11 Jun 2019	Animal Life	None
S6	11 Jun 2019	Floatables	None
S6	11 Jun 2019	Water Color	Green
S6	11 Jun 2019	Current Direction	SW
S6	11 Jun 2019	Water Temp (C)	19.6
S6	11 Jun 2019	Wave Height Low (ft)	2
S6	11 Jun 2019	High Tide (ft)	3.9
S6	11 Jun 2019	High Tide Time	447
S6	11 Jun 2019	Low Tide (ft)	0.4
S6	11 Jun 2019	Low Tide Time	1115
S6	11 Jun 2019	Comments	Kelp; Seagrass; 2 Persons; Water clear
S6	24 Jun 2019	Arrive Time	916
S6	24 Jun 2019	Weather	Overcast
S6	24 Jun 2019	Wind Speed (kts)	8.7
S6	24 Jun 2019	Wind Dir	E
S6	24 Jun 2019	Animal Life	8 Cormorants; 4 Pigeons
S6	24 Jun 2019	Floatables	Foam; Film
S6	24 Jun 2019	Water Color	Brown
S6	24 Jun 2019	Current Direction	E
S6	24 Jun 2019	Water Temp (C)	18.6
S6	24 Jun 2019	Wave Height Low (ft)	2
S6	24 Jun 2019	High Tide (ft)	3.9
S6	24 Jun 2019	High Tide Time	1615
S6	24 Jun 2019	Low Tide (ft)	0.8
S6	24 Jun 2019	Low Tide Time	912
S6	24 Jun 2019	Comments	Kelp; Seagrass; Debris; 3 Joggers; 3 Persons; Water clear; 1 Truck on beach
S8	04 Jun 2019	Arrive Time	1159

Station	Date	Parameter	Value
S8	04 Jun 2019	Weather	Cloudy
S8	04 Jun 2019	Wind Speed (kts)	5.5
S8	04 Jun 2019	Wind Dir	W
S8	04 Jun 2019	Animal Life	None
S8	04 Jun 2019	Floatables	None
S8	04 Jun 2019	Water Color	Green
S8	04 Jun 2019	Current Direction	N
S8	04 Jun 2019	Water Temp (C)	20.5
S8	04 Jun 2019	Wave Height Low (ft)	3
S8	04 Jun 2019	High Tide (ft)	3.7
S8	04 Jun 2019	High Tide Time	1111
S8	04 Jun 2019	Low Tide (ft)	1.9
S8	04 Jun 2019	Low Tide Time	1602
S8	04 Jun 2019	Comments	Kelp; Seagrass; 1 Person; Water clear
S8	11 Jun 2019	Arrive Time	802
S8	11 Jun 2019	Weather	Overcast
S8	11 Jun 2019	Wind Speed (kts)	0
S8	11 Jun 2019	Wind Dir	
S8	11 Jun 2019	Animal Life	19 Pelicans; 50 Seagulls
S8	11 Jun 2019	Floatables	Foam
S8	11 Jun 2019	Water Color	Green
S8	11 Jun 2019	Current Direction	N
S8	11 Jun 2019	Water Temp (C)	17
S8	11 Jun 2019	Wave Height Low (ft)	2
S8	11 Jun 2019	High Tide (ft)	3.9
S8	11 Jun 2019	High Tide Time	447
S8	11 Jun 2019	Low Tide (ft)	0.4
S8	11 Jun 2019	Low Tide Time	1115
S8	11 Jun 2019	Comments	Kelp; Seagrass; Debris; 9 Persons; Water clear
S8	18 Jun 2019	Arrive Time	928
S8	18 Jun 2019	Weather	Cloudy
S8	18 Jun 2019	Wind Speed (kts)	1.6
S8	18 Jun 2019	Wind Dir	W
S8	18 Jun 2019	Animal Life	None
S8	18 Jun 2019	Floatables	None
S8	18 Jun 2019	Water Color	Green
S8	18 Jun 2019	Current Direction	N
S8	18 Jun 2019	Water Temp (C)	20.1
S8	18 Jun 2019	Wave Height Low (ft)	2
S8	18 Jun 2019	High Tide (ft)	3.7
S8	18 Jun 2019	High Tide Time	1120
S8	18 Jun 2019	Low Tide (ft)	-0.9
S8	18 Jun 2019	Low Tide Time	457
S8	18 Jun 2019	Comments	Kelp; Seagrass; Water clear
S8	24 Jun 2019	Arrive Time	826
S8	24 Jun 2019	Weather	Overcast
S8	24 Jun 2019	Wind Speed (kts)	3.8
S8	24 Jun 2019	Wind Dir	S
S8	24 Jun 2019	Animal Life	40 Seagulls
S8	24 Jun 2019	Floatables	Foam
S8	24 Jun 2019	Water Color	Green
S8	24 Jun 2019	Current Direction	S
S8	24 Jun 2019	Water Temp (C)	19.3
S8	24 Jun 2019	Wave Height Low (ft)	1
S8	24 Jun 2019	High Tide (ft)	3.8
S8	24 Jun 2019	High Tide Time	151
S8	24 Jun 2019	Low Tide (ft)	0.8
S8	24 Jun 2019	Low Tide Time	912

Station	Date	Parameter	Value
S8	24 Jun 2019	Comments	Kelp; Seagrass; 8 Persons; 1 Surfer; 1 Boat; Water clear; 1 Kayak
S9	04 Jun 2019	Arrive Time	1244
S9	04 Jun 2019	Weather	Cloudy
S9	04 Jun 2019	Wind Speed (kts)	6.5
S9	04 Jun 2019	Wind Dir	W
S9	04 Jun 2019	Animal Life	None
S9	04 Jun 2019	Floatables	None
S9	04 Jun 2019	Water Color	Green
S9	04 Jun 2019	Current Direction	N
S9	04 Jun 2019	Water Temp (C)	15.8
S9	04 Jun 2019	Wave Height Low (ft)	2
S9	04 Jun 2019	High Tide (ft)	3.7
S9	04 Jun 2019	High Tide Time	1111
S9	04 Jun 2019	Low Tide (ft)	1.9
S9	04 Jun 2019	Low Tide Time	1602
S9	04 Jun 2019	Comments	Kelp; Seagrass; 2 Persons; Water clear
S9	06 Jun 2019	Arrive Time	912
S9	06 Jun 2019	Weather	Overcast
S9	06 Jun 2019	Wind Speed (kts)	4.4
S9	06 Jun 2019	Wind Dir	E
S9	06 Jun 2019	Animal Life	48 Sanderlings
S9	06 Jun 2019	Floatables	None
S9	06 Jun 2019	Water Color	Green
S9	06 Jun 2019	Current Direction	E
S9	06 Jun 2019	Water Temp (C)	18
S9	06 Jun 2019	Wave Height Low (ft)	2
S9	06 Jun 2019	High Tide (ft)	3.6
S9	06 Jun 2019	High Tide Time	1303
S9	06 Jun 2019	Low Tide (ft)	-1
S9	06 Jun 2019	Low Tide Time	626
S9	06 Jun 2019	Comments	Resample; Kelp; Seagrass; Debris; 2 Joggers; 7 Persons; 2 Surfers; 1 Tractor; Water clear; Lots of seagrass/kelp on beach; Tractor moving sand and kelp on beach
S9	11 Jun 2019	Arrive Time	741
S9	11 Jun 2019	Weather	Overcast
S9	11 Jun 2019	Wind Speed (kts)	2.9
S9	11 Jun 2019	Wind Dir	E
S9	11 Jun 2019	Animal Life	6 Seagulls
S9	11 Jun 2019	Floatables	None
S9	11 Jun 2019	Water Color	Green
S9	11 Jun 2019	Current Direction	N
S9	11 Jun 2019	Water Temp (C)	18
S9	11 Jun 2019	Wave Height Low (ft)	2
S9	11 Jun 2019	High Tide (ft)	3.9
S9	11 Jun 2019	High Tide Time	447
S9	11 Jun 2019	Low Tide (ft)	0.4
S9	11 Jun 2019	Low Tide Time	1115
S9	11 Jun 2019	Comments	Kelp; Seagrass; Debris; 3 Persons; Water clear
S9	18 Jun 2019	Arrive Time	847
S9	18 Jun 2019	Weather	Cloudy
S9	18 Jun 2019	Wind Speed (kts)	1.8
S9	18 Jun 2019	Wind Dir	W
S9	18 Jun 2019	Animal Life	None
S9	18 Jun 2019	Floatables	None
S9	18 Jun 2019	Water Color	Green
S9	18 Jun 2019	Current Direction	N

Station	Date	Parameter	Value
S9	18 Jun 2019	Water Temp (C)	20.1
S9	18 Jun 2019	Wave Height Low (ft)	3
S9	18 Jun 2019	High Tide (ft)	3.7
S9	18 Jun 2019	High Tide Time	1120
S9	18 Jun 2019	Low Tide (ft)	-0.9
S9	18 Jun 2019	Low Tide Time	457
S9	18 Jun 2019	Comments	Kelp; Seagrass; 7 Persons; Water clear
S9	24 Jun 2019	Arrive Time	809
S9	24 Jun 2019	Weather	Overcast
S9	24 Jun 2019	Wind Speed (kts)	3.1
S9	24 Jun 2019	Wind Dir	E
S9	24 Jun 2019	Animal Life	32 Seagulls
S9	24 Jun 2019	Floatables	Foam; Film
S9	24 Jun 2019	Water Color	Brown
S9	24 Jun 2019	Current Direction	E
S9	24 Jun 2019	Water Temp (C)	18.7
S9	24 Jun 2019	Wave Height Low (ft)	1
S9	24 Jun 2019	High Tide (ft)	3.8
S9	24 Jun 2019	High Tide Time	151
S9	24 Jun 2019	Low Tide (ft)	0.8
S9	24 Jun 2019	Low Tide Time	912
S9	24 Jun 2019	Comments	Kelp; Seagrass; Algae; 1 Jogger; 8 Persons; 3 Surfers; 20 Swimmers; Water clear; 2 Trucks on beach
S10	04 Jun 2019	Arrive Time	1029
S10	04 Jun 2019	Weather	Cloudy
S10	04 Jun 2019	Wind Speed (kts)	6.6
S10	04 Jun 2019	Wind Dir	W
S10	04 Jun 2019	Animal Life	None
S10	04 Jun 2019	Floatables	None
S10	04 Jun 2019	Water Color	Green
S10	04 Jun 2019	Current Direction	N
S10	04 Jun 2019	Water Temp (C)	17.9
S10	04 Jun 2019	Wave Height Low (ft)	3
S10	04 Jun 2019	High Tide (ft)	3.7
S10	04 Jun 2019	High Tide Time	1111
S10	04 Jun 2019	Low Tide (ft)	-1.1
S10	04 Jun 2019	Low Tide Time	450
S10	04 Jun 2019	Comments	Kelp; Seagrass; Water clear
S10	11 Jun 2019	Arrive Time	1013
S10	11 Jun 2019	Weather	Overcast
S10	11 Jun 2019	Wind Speed (kts)	4.8
S10	11 Jun 2019	Wind Dir	W
S10	11 Jun 2019	Animal Life	4 Horses
S10	11 Jun 2019	Floatables	None
S10	11 Jun 2019	Water Color	Green
S10	11 Jun 2019	Current Direction	W
S10	11 Jun 2019	Water Temp (C)	19.2
S10	11 Jun 2019	Wave Height Low (ft)	3
S10	11 Jun 2019	High Tide (ft)	3.9
S10	11 Jun 2019	High Tide Time	447
S10	11 Jun 2019	Low Tide (ft)	0.4
S10	11 Jun 2019	Low Tide Time	1115
S10	11 Jun 2019	Comments	Kelp; Seagrass; 4 Persons; Water clear
S10	24 Jun 2019	Arrive Time	1008
S10	24 Jun 2019	Weather	Overcast
S10	24 Jun 2019	Wind Speed (kts)	3
S10	24 Jun 2019	Wind Dir	E

Station	Date	Parameter	Value
S10	24 Jun 2019	Animal Life	1 Godwit; 2 Pelicans; 1 Seagull
S10	24 Jun 2019	Floatables	Foam; Film
S10	24 Jun 2019	Water Color	Brown
S10	24 Jun 2019	Current Direction	E
S10	24 Jun 2019	Water Temp (C)	18.7
S10	24 Jun 2019	Wave Height Low (ft)	2
S10	24 Jun 2019	High Tide (ft)	3.9
S10	24 Jun 2019	High Tide Time	1615
S10	24 Jun 2019	Low Tide (ft)	0.8
S10	24 Jun 2019	Low Tide Time	912
S10	24 Jun 2019	Comments	Kelp; Seagrass; Debris; Water clear
S11	04 Jun 2019	Arrive Time	925
S11	04 Jun 2019	Weather	Cloudy
S11	04 Jun 2019	Wind Speed (kts)	4.2
S11	04 Jun 2019	Wind Dir	W
S11	04 Jun 2019	Animal Life	None
S11	04 Jun 2019	Floatables	None
S11	04 Jun 2019	Water Color	Green
S11	04 Jun 2019	Current Direction	N
S11	04 Jun 2019	Water Temp (C)	17
S11	04 Jun 2019	Wave Height Low (ft)	3
S11	04 Jun 2019	High Tide (ft)	3.7
S11	04 Jun 2019	High Tide Time	1111
S11	04 Jun 2019	Low Tide (ft)	-1.1
S11	04 Jun 2019	Low Tide Time	450
S11	04 Jun 2019	Comments	Kelp; Seagrass; Water clear
S11	11 Jun 2019	Arrive Time	1057
S11	11 Jun 2019	Weather	Cloudy
S11	11 Jun 2019	Wind Speed (kts)	4.6
S11	11 Jun 2019	Wind Dir	W
S11	11 Jun 2019	Animal Life	None
S11	11 Jun 2019	Floatables	None
S11	11 Jun 2019	Water Color	Green
S11	11 Jun 2019	Current Direction	W
S11	11 Jun 2019	Water Temp (C)	19
S11	11 Jun 2019	Wave Height Low (ft)	2
S11	11 Jun 2019	High Tide (ft)	3.9
S11	11 Jun 2019	High Tide Time	447
S11	11 Jun 2019	Low Tide (ft)	0.4
S11	11 Jun 2019	Low Tide Time	1115
S11	11 Jun 2019	Comments	Kelp; Seagrass; 1 Person; Water clear
S11	24 Jun 2019	Arrive Time	905
S11	24 Jun 2019	Weather	Overcast
S11	24 Jun 2019	Wind Speed (kts)	6.4
S11	24 Jun 2019	Wind Dir	S
S11	24 Jun 2019	Animal Life	2 Dogs; 1 White crane
S11	24 Jun 2019	Floatables	Foam; Film
S11	24 Jun 2019	Water Color	Brown
S11	24 Jun 2019	Current Direction	S
S11	24 Jun 2019	Water Temp (C)	18.6
S11	24 Jun 2019	Wave Height Low (ft)	2
S11	24 Jun 2019	High Tide (ft)	3.9
S11	24 Jun 2019	High Tide Time	1615
S11	24 Jun 2019	Low Tide (ft)	0.8
S11	24 Jun 2019	Low Tide Time	912
S11	24 Jun 2019	Comments	Kelp; Seagrass; Algae; 7 Persons; Water clear
S12	04 Jun 2019	Arrive Time	939

Station	Date	Parameter	Value
S12	04 Jun 2019	Weather	Cloudy
S12	04 Jun 2019	Wind Speed (kts)	4.8
S12	04 Jun 2019	Wind Dir	W
S12	04 Jun 2019	Animal Life	None
S12	04 Jun 2019	Floatables	None
S12	04 Jun 2019	Water Color	Green
S12	04 Jun 2019	Current Direction	N
S12	04 Jun 2019	Water Temp (C)	17.3
S12	04 Jun 2019	Wave Height Low (ft)	3
S12	04 Jun 2019	High Tide (ft)	3.7
S12	04 Jun 2019	High Tide Time	1111
S12	04 Jun 2019	Low Tide (ft)	-1.1
S12	04 Jun 2019	Low Tide Time	450
S12	04 Jun 2019	Comments	Kelp; Seagrass; 2 Persons; Water clear
S12	11 Jun 2019	Arrive Time	1109
S12	11 Jun 2019	Weather	Cloudy
S12	11 Jun 2019	Wind Speed (kts)	3.8
S12	11 Jun 2019	Wind Dir	W
S12	11 Jun 2019	Animal Life	None
S12	11 Jun 2019	Floatables	None
S12	11 Jun 2019	Water Color	Green
S12	11 Jun 2019	Current Direction	W
S12	11 Jun 2019	Water Temp (C)	19.8
S12	11 Jun 2019	Wave Height Low (ft)	2
S12	11 Jun 2019	High Tide (ft)	3.9
S12	11 Jun 2019	High Tide Time	447
S12	11 Jun 2019	Low Tide (ft)	0.4
S12	11 Jun 2019	Low Tide Time	1115
S12	11 Jun 2019	Comments	Kelp; Seagrass; 40 Persons; Water clear
S12	18 Jun 2019	Arrive Time	944
S12	18 Jun 2019	Weather	Cloudy
S12	18 Jun 2019	Wind Speed (kts)	2.6
S12	18 Jun 2019	Wind Dir	W
S12	18 Jun 2019	Animal Life	None
S12	18 Jun 2019	Floatables	None
S12	18 Jun 2019	Water Color	Green
S12	18 Jun 2019	Current Direction	N
S12	18 Jun 2019	Water Temp (C)	19.9
S12	18 Jun 2019	Wave Height Low (ft)	3
S12	18 Jun 2019	High Tide (ft)	3.7
S12	18 Jun 2019	High Tide Time	1120
S12	18 Jun 2019	Low Tide (ft)	-0.9
S12	18 Jun 2019	Low Tide Time	457
S12	18 Jun 2019	Comments	Kelp; Seagrass; 1 Surfer; Water clear
S12	24 Jun 2019	Arrive Time	842
S12	24 Jun 2019	Weather	Overcast
S12	24 Jun 2019	Wind Speed (kts)	3.2
S12	24 Jun 2019	Wind Dir	E
S12	24 Jun 2019	Animal Life	1 Dog; 40 Grebes
S12	24 Jun 2019	Floatables	Foam; Film
S12	24 Jun 2019	Water Color	Green
S12	24 Jun 2019	Current Direction	E
S12	24 Jun 2019	Water Temp (C)	18.6
S12	24 Jun 2019	Wave Height Low (ft)	2
S12	24 Jun 2019	High Tide (ft)	3.8
S12	24 Jun 2019	High Tide Time	151
S12	24 Jun 2019	Low Tide (ft)	0.8
S12	24 Jun 2019	Low Tide Time	912

Station	Date	Parameter	Value
S12	24 Jun 2019	Comments	Kelp; Seagrass; Debris; 1 Jogger; 8 Persons; Water clear

Kelp Stations

Table 3.1

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for total coliform bacteria at the SBOO kelp stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >1,000 CFU/100 mL exceed the standard.

Date	I19	I24	I25	I26	I32	I39	I40
01 Jun 2019	37	7	6	7	12	3	87
02 Jun 2019	37	7	6	7	12	3	87
03 Jun 2019	33	10	7	5	17	3	91
04 Jun 2019	33	10	7	5	17	3	91
05 Jun 2019	68	14	9	6	17	3	208
06 Jun 2019	68	14	9	6	17	3	208
07 Jun 2019	68	14	9	6	17	3	208
08 Jun 2019	68	14	9	6	17	3	208
09 Jun 2019	68	14	9	6	17	3	208
10 Jun 2019	70	18	12	9	16	4	174
11 Jun 2019	70	18	12	9	16	4	174
12 Jun 2019	171	28	19	13	7	5	102
13 Jun 2019	171	28	19	13	7	5	102
14 Jun 2019	171	28	19	13	7	5	102
15 Jun 2019	171	28	19	13	7	5	102
16 Jun 2019	171	28	19	13	7	5	102
17 Jun 2019	111	17	12	9	9	5	95
18 Jun 2019	111	17	12	9	9	5	95
19 Jun 2019	111	17	12	9	9	5	95
20 Jun 2019	111	17	12	9	9	5	95
21 Jun 2019	111	17	12	9	9	5	95
22 Jun 2019	75	28	19	7	13	4	97
23 Jun 2019	75	28	19	7	13	4	97
24 Jun 2019	75	28	19	7	13	4	97
25 Jun 2019	52	24	12	5	10	4	63
26 Jun 2019	52	24	12	5	10	4	63
27 Jun 2019	52	24	12	5	10	4	63
28 Jun 2019	25	14	6	4	14	4	52
29 Jun 2019	25	14	6	4	14	4	52
30 Jun 2019	25	14	6	4	14	4	52

* Geometric mean calculated using n<5

Table 3.2

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for fecal coliform bacteria at the SBOO kelp stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >200 CFU/100 mL exceed the standard.

Date	I19	I24	I25	I26	I32	I39	I40
01 Jun 2019	16	6	4	3	6	2	24
02 Jun 2019	16	6	4	3	6	2	24
03 Jun 2019	15	6	3	3	5	2	21
04 Jun 2019	15	6	3	3	5	2	21
05 Jun 2019	24	8	4	3	5	2	37
06 Jun 2019	24	8	4	3	5	2	37
07 Jun 2019	24	8	4	3	5	2	37
08 Jun 2019	24	8	4	3	5	2	37
09 Jun 2019	24	8	4	3	5	2	37
10 Jun 2019	18	10	4	3	4	2	29
11 Jun 2019	18	10	4	3	4	2	29
12 Jun 2019	31	13	5	3	2	3	18
13 Jun 2019	31	13	5	3	2	3	18
14 Jun 2019	31	13	5	3	2	3	18
15 Jun 2019	31	13	5	3	2	3	18
16 Jun 2019	31	13	5	3	2	3	18
17 Jun 2019	18	9	4	3	2	2	16
18 Jun 2019	18	9	4	3	2	2	16
19 Jun 2019	18	9	4	3	2	2	16
20 Jun 2019	18	9	4	3	2	2	16
21 Jun 2019	18	9	4	3	2	2	16
22 Jun 2019	11	13	5	2	2	2	13
23 Jun 2019	11	13	5	2	2	2	13
24 Jun 2019	11	13	5	2	2	2	13
25 Jun 2019	8	10	4	2	2	2	9
26 Jun 2019	8	10	4	2	2	2	9
27 Jun 2019	8	10	4	2	2	2	9
28 Jun 2019	4	5	3	2	2	2	7
29 Jun 2019	4	5	3	2	2	2	7
30 Jun 2019	4	5	3	2	2	2	7

* Geometric mean calculated using n<5

Table 3.3

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for *Enterococcus* at the SBOO kelp stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >35 CFU/100 mL exceed the standard.

Date	I19	I24	I25	I26	I32	I39	I40
01 Jun 2019	4	2	2	2	2	2	4
02 Jun 2019	4	2	2	2	2	2	4
03 Jun 2019	4	3	2	2	2	2	4
04 Jun 2019	4	3	2	2	2	2	4
05 Jun 2019	5	3	2	2	2	2	5
06 Jun 2019	5	3	2	2	2	2	5
07 Jun 2019	5	3	2	2	2	2	5
08 Jun 2019	5	3	2	2	2	2	5
09 Jun 2019	5	3	2	2	2	2	5
10 Jun 2019	5	3	2	2	2	2	5
11 Jun 2019	5	3	2	2	2	2	5
12 Jun 2019	6	3	2	2	2	2	4
13 Jun 2019	6	3	2	2	2	2	4
14 Jun 2019	6	3	2	2	2	2	4
15 Jun 2019	6	3	2	2	2	2	4
16 Jun 2019	6	3	2	2	2	2	4
17 Jun 2019	5	3	2	2	2	2	4
18 Jun 2019	5	3	2	2	2	2	4
19 Jun 2019	5	3	2	2	2	2	4
20 Jun 2019	5	3	2	2	2	2	4
21 Jun 2019	5	3	2	2	2	2	4
22 Jun 2019	4	3	2	2	2	2	4
23 Jun 2019	4	3	2	2	2	2	4
24 Jun 2019	4	3	2	2	2	2	4
25 Jun 2019	4	3	2	2	2	2	4
26 Jun 2019	4	3	2	2	2	2	4
27 Jun 2019	4	3	2	2	2	2	4
28 Jun 2019	3	3	2	2	2	2	4
29 Jun 2019	3	3	2	2	2	2	4
30 Jun 2019	3	3	2	2	2	2	4

* Geometric mean calculated using n<5

Table 3.4

Summary of compliance at the SBOO kelp stations with the Ocean Plan's Single Sample Maximum standard for total coliform bacteria, which states that total coliform density shall not exceed 10,000 CFU/100 mL.

Date	I19	I24	I25	I26	I32	I39	I40
03 Jun 2019	IC						
10 Jun 2019	IC						
17 Jun 2019	IC						
25 Jun 2019	IC						

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 3.5

Summary of compliance at the SBOO kelp stations with the Ocean Plan's Single Sample Maximum standard for fecal coliform bacteria, which states that fecal coliform density shall not exceed 400 CFU/100 mL.

Date	I19	I24	I25	I26	I32	I39	I40
03 Jun 2019	IC						
10 Jun 2019	IC						
17 Jun 2019	IC						
25 Jun 2019	IC						

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 3.6

Summary of compliance at the SBOO kelp stations with the Ocean Plan's Single Sample Maximum standard for *Enterococcus* bacteria, which states that *Enterococcus* density shall not exceed 104 CFU/100 mL.

Date	I19	I24	I25	I26	I32	I39	I40
03 Jun 2019	IC						
10 Jun 2019	IC						
17 Jun 2019	IC						
25 Jun 2019	IC						

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 3.7

Summary of compliance at the SBOO kelp stations with the Ocean Plan's Single Sample Maximum standard for total coliform bacteria and the fecal/total coliform ratio (F:T), which states that total coliform density shall not exceed 1,000 CFU/100 mL when F:T > 0.1.

Date	I19	I24	I25	I26	I32	I39	I40
03 Jun 2019	IC						
10 Jun 2019	IC						
17 Jun 2019	IC						
25 Jun 2019	IC						

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 3.8

Summary of water quality parameters at the SBOO kelp stations for each sample date. Densities of total coliform (Total), fecal coliform (Fecal) and *Enterococcus* (Enter) bacteria are reported as CFU/100 mL; the fecal:total coliform ratio (F:T) is unitless; values for temperature (Temp, °C), transmissivity (XMS, %), dissolved oxygen (DO, mg/L), salinity (Sal, ppt) and pH were extracted from CTD profile data for depths closest to those at which the bacteriological samples were collected. Comments follow the data summary.

Station	Date	Time	Depth	Total	Fecal	Enter	F:T	Temp	XMS	DO	Sal	pH
I19	03 Jun 2019	1101	2	<20	<20	6e	1.00	17.5	50.43	9.5	33.64	8.3
I19	03 Jun 2019	1101	6	20e	6e	4e	0.30	15.6	54.11	8.6	33.65	8.1
I19	03 Jun 2019	1101	11	24e	<2	<2	0.08	14.2	64.83	5.8	33.63	7.8
I19	10 Jun 2019	1101	2	12e	<2	<2	0.17	16.8	72.21	10.0	33.65	8.2
I19	10 Jun 2019	1101	6	92	2e	2e	0.02	15.5	64.43	8.2	33.65	8.0
I19	10 Jun 2019	1101	11	140e	12e	6e	0.09	14.6	67.51	7.1	33.66	7.9
I19	17 Jun 2019	1030	2	<20	<2	<2	0.10	17.3	68.13	9.3	33.67	8.4
I19	17 Jun 2019	1030	6	<20	<2	<2	0.10	16.9	70.01	8.8	33.68	8.4
I19	17 Jun 2019	1030	11	<20	<2	<2	0.10	16.7	72.01	8.1	33.67	8.4
I19	25 Jun 2019	1100	2	10e	2e	8e	0.20	16.6	18.13	9.1	33.62	8.3
I19	25 Jun 2019	1100	6	12e	<2	2e	0.17	13.9	76.14	5.1	33.64	8.2
I19	25 Jun 2019	1100	11	12e	<2	6e	0.17	13.6	67.71	4.3	33.63	8.1
I24	03 Jun 2019	1123	2	<2	<2	<2	1.00	17.8	72.72	10.1	33.67	8.2
I24	03 Jun 2019	1123	6	40e	<2	18e	0.05	16.3	63.47	7.4	33.69	8.1
I24	03 Jun 2019	1123	11	40e	<20	4e	0.50	13.6	66.24	4.8	33.65	7.7
I24	10 Jun 2019	1122	2	20e	20e	<2	1.00	17.2	63.11	11.2	33.65	8.2
I24	10 Jun 2019	1122	6	60e	10e	<2	0.17	16.6	56.07	9.9	33.65	8.2
I24	10 Jun 2019	1122	11	80	22e	4e	0.28	15.6	77.52	8.6	33.65	8.0
I24	17 Jun 2019	1051	2	<2	<2	<2	1.00	17.5	77.49	8.7	33.69	8.4
I24	17 Jun 2019	1051	6	2e	<2	2e	1.00	16.6	76.40	7.4	33.71	8.4
I24	17 Jun 2019	1051	11	<2	<2	<2	1.00	13.8	78.64	5.5	33.63	8.3
I24	25 Jun 2019	1124	2	<2	<2	<2	1.00	17.3	57.83	9.4	33.67	8.4
I24	25 Jun 2019	1124	6	<20	<2	<2	0.10	16.5	39.73	7.2	33.69	8.3
I24	25 Jun 2019	1124	11	<20	4e	<2	0.20	13.8	77.30	4.5	33.66	8.2
I25	03 Jun 2019	1130	2	<2	<2	<2	1.00	17.6	73.91	9.7	33.67	8.2
I25	03 Jun 2019	1130	6	<20	<2	<2	0.10	17.3	72.85	9.1	33.69	8.2
I25	03 Jun 2019	1130	9	14e	<2	<2	0.14	14.2	71.03	5.3	33.61	7.8
I25	10 Jun 2019	1131	2	18e	<2	4e	0.11	17.4	59.26	11.5	33.64	8.3
I25	10 Jun 2019	1131	6	32e	6e	2e	0.19	16.8	62.37	10.3	33.67	8.2
I25	10 Jun 2019	1131	9	58	12e	2e	0.21	16.0	74.10	9.0	33.60	8.0
I25	17 Jun 2019	1057	2	<2	<2	<2	1.00	17.4	77.53	8.7	33.69	8.4
I25	17 Jun 2019	1057	6	<2	<2	<2	1.00	16.2	76.54	7.0	33.75	8.4
I25	17 Jun 2019	1057	9	<2	<2	<2	1.00	13.4	80.83	5.6	33.63	8.3
I25	25 Jun 2019	1134	2	<2	<2	<2	1.00	17.4	63.85	9.3	33.66	8.4
I25	25 Jun 2019	1134	6	<2	<2	<2	1.00	17.0	53.64	8.4	33.67	8.4
I25	25 Jun 2019	1134	9	<2	<2	<2	1.00	15.5	74.03	6.8	33.56	8.3
I26	03 Jun 2019	1139	2	<2	<2	<2	1.00	17.6	69.79	10.1	33.68	8.3
I26	03 Jun 2019	1139	6	<2	<2	<2	1.00	17.5	73.24	9.5	33.67	8.2
I26	03 Jun 2019	1139	9	2e	<2	<2	1.00	15.2	74.49	7.3	33.67	8.0

Station	Date	Time	Depth	Total	Fecal	Enter	F:T	Temp	XMS	DO	Sal	pH
I26	10 Jun 2019	1142	2	6e	<2	<2	0.33	18.2	63.31	11.1	33.65	8.3
I26	10 Jun 2019	1142	6	22e	2e	<2	0.09	16.1	68.20	8.6	33.68	8.1
I26	10 Jun 2019	1142	9	60e	4e	<2	0.07	15.2	74.84	7.3	33.61	8.0
I26	17 Jun 2019	1106	2	<2	<2	<2	1.00	17.0	76.09	8.8	33.69	8.4
I26	17 Jun 2019	1106	6	<2	<2	<2	1.00	16.5	75.07	8.3	33.68	8.3
I26	17 Jun 2019	1106	9	<2	<2	<2	1.00	13.8	73.82	5.8	33.75	8.3
I26	25 Jun 2019	1153	2	<2	<2	<2	1.00	17.5	64.59	9.0	33.68	8.3
I26	25 Jun 2019	1153	6	<2	<2	<2	1.00	15.8	71.46	5.6	33.67	8.3
I26	25 Jun 2019	1153	9	2e	4e	<2	2.00	14.1	79.20	3.4	33.63	8.2
I32	03 Jun 2019	1152	2	<2	<2	<2	1.00	17.8	69.37	10.1	33.68	8.2
I32	03 Jun 2019	1152	6	<2	<2	<2	1.00	17.6	63.69	9.6	33.66	8.2
I32	03 Jun 2019	1152	9	<200	<2	<2	0.01	17.3	60.87	8.3	33.66	8.2
I32	10 Jun 2019	1155	2	<2	<2	<2	1.00	18.1	53.00	8.8	33.65	8.2
I32	10 Jun 2019	1155	6	16e	4e	4e	0.25	15.2	63.92	6.8	33.63	7.9
I32	10 Jun 2019	1155	9	16e	<2	<2	0.12	14.9	63.33	5.8	33.62	7.9
I32	17 Jun 2019	1119	2	<20	<2	<2	0.10	16.8	68.08	9.2	33.67	8.4
I32	17 Jun 2019	1119	6	<20	<2	<2	0.10	16.8	68.10	9.0	33.67	8.4
I32	17 Jun 2019	1119	9	<20	<2	<2	0.10	16.8	68.80	8.6	33.67	8.4
I32	25 Jun 2019	1209	2	<2	<2	<2	1.00	17.3	70.82	8.4	33.68	8.3
I32	25 Jun 2019	1209	6	<2	2e	<2	1.00	16.1	61.36	6.5	33.71	8.3
I32	25 Jun 2019	1209	9	4e	<2	<2	0.50	13.7	70.22	4.2	33.70	8.2
I39	03 Jun 2019	1037	2	<2	<2	<2	1.00	17.6	68.49	10.5	33.68	8.3
I39	03 Jun 2019	1037	12	<2	<2	<2	1.00	13.5	74.68	6.9	33.65	8.0
I39	03 Jun 2019	1037	18	2e	<2	<2	1.00	12.1	74.36	4.0	33.66	7.6
I39	10 Jun 2019	1137	2	<20	6e	2e	0.30	17.8	57.22	11.4	33.66	8.3
I39	10 Jun 2019	1137	12	16e	4e	2e	0.25	15.6	73.68	8.9	33.66	8.1
I39	10 Jun 2019	1137	18	20e	2e	2e	0.10	14.7	77.79	7.6	33.66	8.0
I39	17 Jun 2019	1009	2	<2	<2	<2	1.00	17.4	76.71	8.3	33.69	8.4
I39	17 Jun 2019	1009	12	4e	<2	<2	0.50	12.2	85.76	5.1	33.64	8.2
I39	17 Jun 2019	1009	18	<2	<2	<2	1.00	11.5	86.61	4.9	33.67	8.2
I39	25 Jun 2019	1035	2	<2	<2	<2	1.00	17.6	78.97	9.3	33.65	8.4
I39	25 Jun 2019	1035	12	6e	<2	<2	0.33	13.4	79.94	4.5	33.63	8.2
I39	25 Jun 2019	1035	18	4e	<2	<2	0.50	12.9	82.89	4.1	33.64	8.1
I40	03 Jun 2019	1114	2	20e	<20	<2	1.00	17.3	39.52	9.2	33.59	8.3
I40	03 Jun 2019	1114	6	100e	14e	10e	0.14	14.9	56.60	6.8	33.64	8.0
I40	03 Jun 2019	1114	9	200e	<2	2e	0.01	14.3	64.20	5.3	33.64	7.8
I40	10 Jun 2019	1111	2	160e	2e	2e	0.01	16.9	69.35	8.8	33.64	8.1
I40	10 Jun 2019	1111	6	34e	28e	12e	0.82	16.1	68.96	8.8	33.65	8.1
I40	10 Jun 2019	1111	9	60e	4e	6e	0.07	15.6	70.03	8.5	33.65	8.0
I40	17 Jun 2019	1042	2	<2	<2	<2	1.00	17.6	74.31	9.1	33.69	8.4
I40	17 Jun 2019	1042	6	<20	4e	<2	0.20	17.5	72.74	8.8	33.69	8.4
I40	17 Jun 2019	1042	9	<200	20e	10e	0.10	17.1	56.43	7.2	33.69	8.4
I40	25 Jun 2019	1113	2	<20	<2	<2	0.10	16.5	45.73	8.0	33.64	8.3
I40	25 Jun 2019	1113	6	6e	<2	4e	0.33	14.5	72.05	6.1	33.64	8.2
I40	25 Jun 2019	1113	9	8e	4e	<2	0.50	13.9	77.77	4.7	33.64	8.2

ns = not sampled

ND = no data

Table 3.9

Summary of visual observations made during the month for each SBOO kelp station by sample date.

Station	Date	Parameter	Value
I19	03 Jun 2019	Depth (m)	12
I19	03 Jun 2019	Arrive Time	1101
I19	03 Jun 2019	Depart Time	1104
I19	03 Jun 2019	Air Temp (C)	16
I19	03 Jun 2019	Weather	Continuous layer of clouds
I19	03 Jun 2019	Visibility (mi)	5
I19	03 Jun 2019	Wind Speed (kts)	5
I19	03 Jun 2019	Wind Dir	NW
I19	03 Jun 2019	Water Color	Brown
I19	03 Jun 2019	Wave Ht Low (ft)	1
I19	03 Jun 2019	Wave Period (sec)	13
I19	03 Jun 2019	Sea State	Calm
I19	03 Jun 2019	High Tide (ft)	3.78
I19	03 Jun 2019	High Tide Time	1023
I19	03 Jun 2019	Low Tide (ft)	1.64
I19	03 Jun 2019	Low Tide Time	1524
I19	03 Jun 2019	Comments	none
I19	10 Jun 2019	Depth (m)	11
I19	10 Jun 2019	Arrive Time	1101
I19	10 Jun 2019	Depart Time	1103
I19	10 Jun 2019	Air Temp (C)	17
I19	10 Jun 2019	Weather	Fog
I19	10 Jun 2019	Visibility (mi)	< 1
I19	10 Jun 2019	Wind Speed (kts)	7
I19	10 Jun 2019	Wind Dir	NW
I19	10 Jun 2019	Water Color	Brownish-Green
I19	10 Jun 2019	Wave Ht Low (ft)	3
I19	10 Jun 2019	Wave Period (sec)	9
I19	10 Jun 2019	Sea State	Calm
I19	10 Jun 2019	High Tide (ft)	4.22
I19	10 Jun 2019	High Tide Time	320
I19	10 Jun 2019	Low Tide (ft)	0.14
I19	10 Jun 2019	Low Tide Time	1020
I19	10 Jun 2019	Comments	none
I19	17 Jun 2019	Depth (m)	12
I19	17 Jun 2019	Arrive Time	1030
I19	17 Jun 2019	Depart Time	1037
I19	17 Jun 2019	Air Temp (C)	16
I19	17 Jun 2019	Weather	Drizzle
I19	17 Jun 2019	Visibility (mi)	10
I19	17 Jun 2019	Wind Speed (kts)	2
I19	17 Jun 2019	Wind Dir	SW
I19	17 Jun 2019	Water Color	Green
I19	17 Jun 2019	Wave Ht Low (ft)	3
I19	17 Jun 2019	Wave Period (sec)	16
I19	17 Jun 2019	Sea State	Calm
I19	17 Jun 2019	High Tide (ft)	3.77
I19	17 Jun 2019	High Tide Time	1037
I19	17 Jun 2019	Low Tide (ft)	1.9
I19	17 Jun 2019	Low Tide Time	1530
I19	17 Jun 2019	Comments	none
I19	25 Jun 2019	Depth (m)	11
I19	25 Jun 2019	Arrive Time	1100

Station	Date	Parameter	Value
I19	25 Jun 2019	Depart Time	1104
I19	25 Jun 2019	Air Temp (C)	17
I19	25 Jun 2019	Weather	Partly Cloudy
I19	25 Jun 2019	Visibility (mi)	5
I19	25 Jun 2019	Wind Speed (kts)	4
I19	25 Jun 2019	Wind Dir	W
I19	25 Jun 2019	Water Color	Reddish-Brown
I19	25 Jun 2019	Wave Ht Low (ft)	3
I19	25 Jun 2019	Wave Period (sec)	9
I19	25 Jun 2019	Sea State	Calm
I19	25 Jun 2019	High Tide (ft)	3.41
I19	25 Jun 2019	High Tide Time	311
I19	25 Jun 2019	Low Tide (ft)	1.11
I19	25 Jun 2019	Low Tide Time	1001
I19	25 Jun 2019	Comments	Red tide
I24	03 Jun 2019	Depth (m)	11
I24	03 Jun 2019	Arrive Time	1123
I24	03 Jun 2019	Depart Time	1125
I24	03 Jun 2019	Air Temp (C)	17
I24	03 Jun 2019	Weather	Continuous layer of clouds
I24	03 Jun 2019	Visibility (mi)	6
I24	03 Jun 2019	Wind Speed (kts)	4
I24	03 Jun 2019	Wind Dir	NW
I24	03 Jun 2019	Water Color	Greenish-Brown
I24	03 Jun 2019	Wave Ht Low (ft)	1
I24	03 Jun 2019	Wave Period (sec)	13
I24	03 Jun 2019	Sea State	Calm
I24	03 Jun 2019	High Tide (ft)	3.78
I24	03 Jun 2019	High Tide Time	1023
I24	03 Jun 2019	Low Tide (ft)	1.64
I24	03 Jun 2019	Low Tide Time	1524
I24	03 Jun 2019	Comments	none
I24	10 Jun 2019	Depth (m)	10
I24	10 Jun 2019	Arrive Time	1122
I24	10 Jun 2019	Depart Time	1127
I24	10 Jun 2019	Air Temp (C)	17
I24	10 Jun 2019	Weather	Haze
I24	10 Jun 2019	Visibility (mi)	2
I24	10 Jun 2019	Wind Speed (kts)	11
I24	10 Jun 2019	Wind Dir	W
I24	10 Jun 2019	Water Color	Reddish-Brown
I24	10 Jun 2019	Wave Ht Low (ft)	3
I24	10 Jun 2019	Wave Period (sec)	9
I24	10 Jun 2019	Sea State	Calm
I24	10 Jun 2019	High Tide (ft)	4.22
I24	10 Jun 2019	High Tide Time	320
I24	10 Jun 2019	Low Tide (ft)	0.14
I24	10 Jun 2019	Low Tide Time	1020
I24	10 Jun 2019	Comments	Red-brown water; High pH and DO
I24	17 Jun 2019	Depth (m)	10
I24	17 Jun 2019	Arrive Time	1051
I24	17 Jun 2019	Depart Time	1055
I24	17 Jun 2019	Air Temp (C)	16
I24	17 Jun 2019	Weather	Drizzle
I24	17 Jun 2019	Visibility (mi)	10
I24	17 Jun 2019	Wind Speed (kts)	3
I24	17 Jun 2019	Wind Dir	SW
I24	17 Jun 2019	Water Color	Green

Station	Date	Parameter	Value
I24	17 Jun 2019	Wave Ht Low (ft)	3
I24	17 Jun 2019	Wave Period (sec)	16
I24	17 Jun 2019	Sea State	Calm
I24	17 Jun 2019	High Tide (ft)	3.77
I24	17 Jun 2019	High Tide Time	1037
I24	17 Jun 2019	Low Tide (ft)	1.9
I24	17 Jun 2019	Low Tide Time	1530
I24	17 Jun 2019	Comments	none
I24	25 Jun 2019	Depth (m)	11
I24	25 Jun 2019	Arrive Time	1124
I24	25 Jun 2019	Depart Time	1127
I24	25 Jun 2019	Air Temp (C)	17
I24	25 Jun 2019	Weather	Partly Cloudy
I24	25 Jun 2019	Visibility (mi)	5
I24	25 Jun 2019	Wind Speed (kts)	3
I24	25 Jun 2019	Wind Dir	SW
I24	25 Jun 2019	Water Color	Greenish-Brown
I24	25 Jun 2019	Wave Ht Low (ft)	3
I24	25 Jun 2019	Wave Period (sec)	9
I24	25 Jun 2019	Sea State	Calm
I24	25 Jun 2019	High Tide (ft)	3.41
I24	25 Jun 2019	High Tide Time	311
I24	25 Jun 2019	Low Tide (ft)	1.11
I24	25 Jun 2019	Low Tide Time	1001
I24	25 Jun 2019	Comments	Possible red tide
I25	03 Jun 2019	Depth (m)	9
I25	03 Jun 2019	Arrive Time	1130
I25	03 Jun 2019	Depart Time	1132
I25	03 Jun 2019	Air Temp (C)	16
I25	03 Jun 2019	Weather	Continuous layer of clouds
I25	03 Jun 2019	Visibility (mi)	6
I25	03 Jun 2019	Wind Speed (kts)	4
I25	03 Jun 2019	Wind Dir	W
I25	03 Jun 2019	Water Color	Greenish-Brown
I25	03 Jun 2019	Wave Ht Low (ft)	1
I25	03 Jun 2019	Wave Period (sec)	13
I25	03 Jun 2019	Sea State	Calm
I25	03 Jun 2019	High Tide (ft)	3.78
I25	03 Jun 2019	High Tide Time	1023
I25	03 Jun 2019	Low Tide (ft)	1.64
I25	03 Jun 2019	Low Tide Time	1524
I25	03 Jun 2019	Comments	none
I25	10 Jun 2019	Depth (m)	9
I25	10 Jun 2019	Arrive Time	1131
I25	10 Jun 2019	Depart Time	1136
I25	10 Jun 2019	Air Temp (C)	17
I25	10 Jun 2019	Weather	Haze
I25	10 Jun 2019	Visibility (mi)	1
I25	10 Jun 2019	Wind Speed (kts)	13
I25	10 Jun 2019	Wind Dir	NW
I25	10 Jun 2019	Water Color	Reddish-Brown
I25	10 Jun 2019	Wave Ht Low (ft)	3
I25	10 Jun 2019	Wave Period (sec)	9
I25	10 Jun 2019	Sea State	Calm
I25	10 Jun 2019	High Tide (ft)	4.22
I25	10 Jun 2019	High Tide Time	320
I25	10 Jun 2019	Low Tide (ft)	0.14
I25	10 Jun 2019	Low Tide Time	1020

Station	Date	Parameter	Value
I25	10 Jun 2019	Comments	Shallow CTD cast due to low tide
I25	17 Jun 2019	Depth (m)	10
I25	17 Jun 2019	Arrive Time	1057
I25	17 Jun 2019	Depart Time	1101
I25	17 Jun 2019	Air Temp (C)	16
I25	17 Jun 2019	Weather	Drizzle
I25	17 Jun 2019	Visibility (mi)	10
I25	17 Jun 2019	Wind Speed (kts)	6
I25	17 Jun 2019	Wind Dir	SW
I25	17 Jun 2019	Water Color	Green
I25	17 Jun 2019	Wave Ht Low (ft)	3
I25	17 Jun 2019	Wave Period (sec)	16
I25	17 Jun 2019	Sea State	Calm
I25	17 Jun 2019	High Tide (ft)	3.77
I25	17 Jun 2019	High Tide Time	1037
I25	17 Jun 2019	Low Tide (ft)	1.9
I25	17 Jun 2019	Low Tide Time	1530
I25	17 Jun 2019	Comments	none
I25	25 Jun 2019	Depth (m)	9
I25	25 Jun 2019	Arrive Time	1134
I25	25 Jun 2019	Depart Time	1142
I25	25 Jun 2019	Air Temp (C)	17
I25	25 Jun 2019	Weather	Partly Cloudy
I25	25 Jun 2019	Visibility (mi)	5
I25	25 Jun 2019	Wind Speed (kts)	4
I25	25 Jun 2019	Wind Dir	W
I25	25 Jun 2019	Water Color	Greenish-Brown
I25	25 Jun 2019	Wave Ht Low (ft)	3
I25	25 Jun 2019	Wave Period (sec)	9
I25	25 Jun 2019	Sea State	Calm
I25	25 Jun 2019	High Tide (ft)	3.41
I25	25 Jun 2019	High Tide Time	311
I25	25 Jun 2019	Low Tide (ft)	1.11
I25	25 Jun 2019	Low Tide Time	1001
I25	25 Jun 2019	Comments	none
I26	03 Jun 2019	Depth (m)	9
I26	03 Jun 2019	Arrive Time	1139
I26	03 Jun 2019	Depart Time	1141
I26	03 Jun 2019	Air Temp (C)	16
I26	03 Jun 2019	Weather	Continuous layer of clouds
I26	03 Jun 2019	Visibility (mi)	6
I26	03 Jun 2019	Wind Speed (kts)	4
I26	03 Jun 2019	Wind Dir	W
I26	03 Jun 2019	Water Color	Greenish-Brown
I26	03 Jun 2019	Wave Ht Low (ft)	1
I26	03 Jun 2019	Wave Period (sec)	13
I26	03 Jun 2019	Sea State	Calm
I26	03 Jun 2019	High Tide (ft)	3.78
I26	03 Jun 2019	High Tide Time	1023
I26	03 Jun 2019	Low Tide (ft)	1.64
I26	03 Jun 2019	Low Tide Time	1524
I26	03 Jun 2019	Comments	none
I26	10 Jun 2019	Depth (m)	9
I26	10 Jun 2019	Arrive Time	1142
I26	10 Jun 2019	Depart Time	1155
I26	10 Jun 2019	Air Temp (C)	17
I26	10 Jun 2019	Weather	Fog

Station	Date	Parameter	Value
I26	10 Jun 2019	Visibility (mi)	< 1
I26	10 Jun 2019	Wind Speed (kts)	12
I26	10 Jun 2019	Wind Dir	NW
I26	10 Jun 2019	Water Color	Reddish-Brown
I26	10 Jun 2019	Wave Ht Low (ft)	3
I26	10 Jun 2019	Wave Period (sec)	9
I26	10 Jun 2019	Sea State	Calm
I26	10 Jun 2019	High Tide (ft)	4.22
I26	10 Jun 2019	High Tide Time	320
I26	10 Jun 2019	Low Tide (ft)	0.14
I26	10 Jun 2019	Low Tide Time	1020
I26	10 Jun 2019	Comments	none
I26	17 Jun 2019	Depth (m)	10
I26	17 Jun 2019	Arrive Time	1106
I26	17 Jun 2019	Depart Time	1110
I26	17 Jun 2019	Air Temp (C)	16
I26	17 Jun 2019	Weather	Drizzle
I26	17 Jun 2019	Visibility (mi)	10
I26	17 Jun 2019	Wind Speed (kts)	2
I26	17 Jun 2019	Wind Dir	SW
I26	17 Jun 2019	Water Color	Green
I26	17 Jun 2019	Wave Ht Low (ft)	3
I26	17 Jun 2019	Wave Period (sec)	16
I26	17 Jun 2019	Sea State	Calm
I26	17 Jun 2019	High Tide (ft)	3.77
I26	17 Jun 2019	High Tide Time	1037
I26	17 Jun 2019	Low Tide (ft)	1.9
I26	17 Jun 2019	Low Tide Time	1530
I26	17 Jun 2019	Comments	none
I26	25 Jun 2019	Depth (m)	10
I26	25 Jun 2019	Arrive Time	1153
I26	25 Jun 2019	Depart Time	1155
I26	25 Jun 2019	Air Temp (C)	17
I26	25 Jun 2019	Weather	Partly Cloudy
I26	25 Jun 2019	Visibility (mi)	5
I26	25 Jun 2019	Wind Speed (kts)	4
I26	25 Jun 2019	Wind Dir	W
I26	25 Jun 2019	Water Color	Greenish-Brown
I26	25 Jun 2019	Wave Ht Low (ft)	3
I26	25 Jun 2019	Wave Period (sec)	9
I26	25 Jun 2019	Sea State	Calm
I26	25 Jun 2019	High Tide (ft)	3.41
I26	25 Jun 2019	High Tide Time	311
I26	25 Jun 2019	Low Tide (ft)	1.11
I26	25 Jun 2019	Low Tide Time	1001
I26	25 Jun 2019	Comments	none
I32	03 Jun 2019	Depth (m)	11
I32	03 Jun 2019	Arrive Time	1152
I32	03 Jun 2019	Depart Time	1154
I32	03 Jun 2019	Air Temp (C)	17
I32	03 Jun 2019	Weather	Continuous layer of clouds
I32	03 Jun 2019	Visibility (mi)	6
I32	03 Jun 2019	Wind Speed (kts)	7
I32	03 Jun 2019	Wind Dir	W
I32	03 Jun 2019	Water Color	Greenish-Brown
I32	03 Jun 2019	Wave Ht Low (ft)	1
I32	03 Jun 2019	Wave Period (sec)	13
I32	03 Jun 2019	Sea State	Calm

Station	Date	Parameter	Value
I32	03 Jun 2019	High Tide (ft)	3.78
I32	03 Jun 2019	High Tide Time	1023
I32	03 Jun 2019	Low Tide (ft)	1.64
I32	03 Jun 2019	Low Tide Time	1524
I32	03 Jun 2019	Comments	none
I32	10 Jun 2019	Depth (m)	10
I32	10 Jun 2019	Arrive Time	1155
I32	10 Jun 2019	Depart Time	1201
I32	10 Jun 2019	Air Temp (C)	17
I32	10 Jun 2019	Weather	Haze
I32	10 Jun 2019	Visibility (mi)	3
I32	10 Jun 2019	Wind Speed (kts)	18
I32	10 Jun 2019	Wind Dir	W
I32	10 Jun 2019	Water Color	Reddish-Brown
I32	10 Jun 2019	Wave Ht Low (ft)	3
I32	10 Jun 2019	Wave Period (sec)	9
I32	10 Jun 2019	Sea State	Calm
I32	10 Jun 2019	High Tide (ft)	4.22
I32	10 Jun 2019	High Tide Time	320
I32	10 Jun 2019	Low Tide (ft)	0.14
I32	10 Jun 2019	Low Tide Time	1020
I32	10 Jun 2019	Comments	none
I32	17 Jun 2019	Depth (m)	11
I32	17 Jun 2019	Arrive Time	1119
I32	17 Jun 2019	Depart Time	1122
I32	17 Jun 2019	Air Temp (C)	16
I32	17 Jun 2019	Weather	Drizzle
I32	17 Jun 2019	Visibility (mi)	10
I32	17 Jun 2019	Wind Speed (kts)	5
I32	17 Jun 2019	Wind Dir	SW
I32	17 Jun 2019	Water Color	Greenish-Brown
I32	17 Jun 2019	Wave Ht Low (ft)	3
I32	17 Jun 2019	Wave Period (sec)	16
I32	17 Jun 2019	Sea State	Calm
I32	17 Jun 2019	High Tide (ft)	3.77
I32	17 Jun 2019	High Tide Time	1037
I32	17 Jun 2019	Low Tide (ft)	1.9
I32	17 Jun 2019	Low Tide Time	1530
I32	17 Jun 2019	Comments	none
I32	25 Jun 2019	Depth (m)	11
I32	25 Jun 2019	Arrive Time	1209
I32	25 Jun 2019	Depart Time	1211
I32	25 Jun 2019	Air Temp (C)	17
I32	25 Jun 2019	Weather	Partly Cloudy
I32	25 Jun 2019	Visibility (mi)	5
I32	25 Jun 2019	Wind Speed (kts)	9
I32	25 Jun 2019	Wind Dir	W
I32	25 Jun 2019	Water Color	Green
I32	25 Jun 2019	Wave Ht Low (ft)	3
I32	25 Jun 2019	Wave Period (sec)	9
I32	25 Jun 2019	Sea State	Calm
I32	25 Jun 2019	High Tide (ft)	3.41
I32	25 Jun 2019	High Tide Time	311
I32	25 Jun 2019	Low Tide (ft)	1.11
I32	25 Jun 2019	Low Tide Time	1001
I32	25 Jun 2019	Comments	none
I39	03 Jun 2019	Depth (m)	20

Station	Date	Parameter	Value
I39	03 Jun 2019	Arrive Time	1037
I39	03 Jun 2019	Depart Time	1042
I39	03 Jun 2019	Air Temp (C)	16
I39	03 Jun 2019	Weather	Continuous layer of clouds
I39	03 Jun 2019	Visibility (mi)	5
I39	03 Jun 2019	Wind Speed (kts)	4
I39	03 Jun 2019	Wind Dir	W
I39	03 Jun 2019	Water Color	Greenish-Blue
I39	03 Jun 2019	Wave Ht Low (ft)	1
I39	03 Jun 2019	Wave Period (sec)	13
I39	03 Jun 2019	Sea State	Calm
I39	03 Jun 2019	High Tide (ft)	3.78
I39	03 Jun 2019	High Tide Time	1023
I39	03 Jun 2019	Low Tide (ft)	1.64
I39	03 Jun 2019	Low Tide Time	1524
I39	03 Jun 2019	Comments	none
I39	10 Jun 2019	Depth (m)	19
I39	10 Jun 2019	Arrive Time	1037
I39	10 Jun 2019	Depart Time	1042
I39	10 Jun 2019	Air Temp (C)	17
I39	10 Jun 2019	Weather	Fog
I39	10 Jun 2019	Visibility (mi)	< 1
I39	10 Jun 2019	Wind Speed (kts)	12
I39	10 Jun 2019	Wind Dir	NW
I39	10 Jun 2019	Water Color	Brownish-Green
I39	10 Jun 2019	Wave Ht Low (ft)	3
I39	10 Jun 2019	Wave Period (sec)	9
I39	10 Jun 2019	Sea State	Calm
I39	10 Jun 2019	High Tide (ft)	4.22
I39	10 Jun 2019	High Tide Time	320
I39	10 Jun 2019	Low Tide (ft)	0.14
I39	10 Jun 2019	Low Tide Time	1020
I39	10 Jun 2019	Comments	none
I39	17 Jun 2019	Depth (m)	20
I39	17 Jun 2019	Arrive Time	1009
I39	17 Jun 2019	Depart Time	1014
I39	17 Jun 2019	Air Temp (C)	16
I39	17 Jun 2019	Weather	Drizzle
I39	17 Jun 2019	Visibility (mi)	10
I39	17 Jun 2019	Wind Speed (kts)	6
I39	17 Jun 2019	Wind Dir	SW
I39	17 Jun 2019	Water Color	Green
I39	17 Jun 2019	Wave Ht Low (ft)	3
I39	17 Jun 2019	Wave Period (sec)	16
I39	17 Jun 2019	Sea State	Calm
I39	17 Jun 2019	High Tide (ft)	3.77
I39	17 Jun 2019	High Tide Time	1037
I39	17 Jun 2019	Low Tide (ft)	1.9
I39	17 Jun 2019	Low Tide Time	1530
I39	17 Jun 2019	Comments	none
I39	25 Jun 2019	Depth (m)	19
I39	25 Jun 2019	Arrive Time	1035
I39	25 Jun 2019	Depart Time	1038
I39	25 Jun 2019	Air Temp (C)	17
I39	25 Jun 2019	Weather	Partly Cloudy
I39	25 Jun 2019	Visibility (mi)	5
I39	25 Jun 2019	Wind Speed (kts)	9
I39	25 Jun 2019	Wind Dir	W

Station	Date	Parameter	Value
I39	25 Jun 2019	Water Color	Green
I39	25 Jun 2019	Wave Ht Low (ft)	3
I39	25 Jun 2019	Wave Period (sec)	9
I39	25 Jun 2019	Sea State	Calm
I39	25 Jun 2019	High Tide (ft)	3.41
I39	25 Jun 2019	High Tide Time	311
I39	25 Jun 2019	Low Tide (ft)	1.11
I39	25 Jun 2019	Low Tide Time	1001
I39	25 Jun 2019	Comments	none
I40	03 Jun 2019	Depth (m)	11
I40	03 Jun 2019	Arrive Time	1114
I40	03 Jun 2019	Depart Time	1116
I40	03 Jun 2019	Air Temp (C)	16
I40	03 Jun 2019	Weather	Continuous layer of clouds
I40	03 Jun 2019	Visibility (mi)	5
I40	03 Jun 2019	Wind Speed (kts)	5
I40	03 Jun 2019	Wind Dir	NW
I40	03 Jun 2019	Water Color	Brown
I40	03 Jun 2019	Wave Ht Low (ft)	1
I40	03 Jun 2019	Wave Period (sec)	13
I40	03 Jun 2019	Sea State	Calm
I40	03 Jun 2019	High Tide (ft)	3.78
I40	03 Jun 2019	High Tide Time	1023
I40	03 Jun 2019	Low Tide (ft)	1.64
I40	03 Jun 2019	Low Tide Time	1524
I40	03 Jun 2019	Comments	none
I40	10 Jun 2019	Depth (m)	10
I40	10 Jun 2019	Arrive Time	1111
I40	10 Jun 2019	Depart Time	1116
I40	10 Jun 2019	Air Temp (C)	17
I40	10 Jun 2019	Weather	Haze
I40	10 Jun 2019	Visibility (mi)	2
I40	10 Jun 2019	Wind Speed (kts)	10
I40	10 Jun 2019	Wind Dir	NW
I40	10 Jun 2019	Water Color	Brownish-Green
I40	10 Jun 2019	Wave Ht Low (ft)	3
I40	10 Jun 2019	Wave Period (sec)	9
I40	10 Jun 2019	Sea State	Calm
I40	10 Jun 2019	High Tide (ft)	4.22
I40	10 Jun 2019	High Tide Time	320
I40	10 Jun 2019	Low Tide (ft)	0.14
I40	10 Jun 2019	Low Tide Time	1020
I40	10 Jun 2019	Comments	none
I40	17 Jun 2019	Depth (m)	12
I40	17 Jun 2019	Arrive Time	1042
I40	17 Jun 2019	Depart Time	1046
I40	17 Jun 2019	Air Temp (C)	16
I40	17 Jun 2019	Weather	Drizzle
I40	17 Jun 2019	Visibility (mi)	10
I40	17 Jun 2019	Wind Speed (kts)	2
I40	17 Jun 2019	Wind Dir	SW
I40	17 Jun 2019	Water Color	Green
I40	17 Jun 2019	Wave Ht Low (ft)	3
I40	17 Jun 2019	Wave Period (sec)	16
I40	17 Jun 2019	Sea State	Calm
I40	17 Jun 2019	High Tide (ft)	3.77
I40	17 Jun 2019	High Tide Time	1037
I40	17 Jun 2019	Low Tide (ft)	1.9

Station	Date	Parameter	Value
I40	17 Jun 2019	Low Tide Time	1530
I40	17 Jun 2019	Comments	none
I40	25 Jun 2019	Depth (m)	10
I40	25 Jun 2019	Arrive Time	1113
I40	25 Jun 2019	Depart Time	1116
I40	25 Jun 2019	Air Temp (C)	17
I40	25 Jun 2019	Weather	Partly Cloudy
I40	25 Jun 2019	Visibility (mi)	5
I40	25 Jun 2019	Wind Speed (kts)	6
I40	25 Jun 2019	Wind Dir	W
I40	25 Jun 2019	Water Color	Greenish-Brown
I40	25 Jun 2019	Wave Ht Low (ft)	3
I40	25 Jun 2019	Wave Period (sec)	9
I40	25 Jun 2019	Sea State	Calm
I40	25 Jun 2019	High Tide (ft)	3.41
I40	25 Jun 2019	High Tide Time	311
I40	25 Jun 2019	Low Tide (ft)	1.11
I40	25 Jun 2019	Low Tide Time	1001
I40	25 Jun 2019	Comments	Possible red tide

Table 3.10

Summary of CTD profile data from the SBOO kelp stations for each sample date.

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
I19	03 Jun 2019	1	17.57	55.14	9.9	33.64	8.3	24.3	12.81
I19	03 Jun 2019	2	17.49	50.43	9.5	33.64	8.3	24.4	19.59
I19	03 Jun 2019	3	17.34	46.34	8.8	33.64	8.3	24.4	20.95
I19	03 Jun 2019	4	17.01	47.86	8.1	33.66	8.3	24.5	17.48
I19	03 Jun 2019	5	16.50	50.12	7.9	33.66	8.2	24.6	16.79
I19	03 Jun 2019	6	15.58	54.11	8.6	33.65	8.1	24.8	14.63
I19	03 Jun 2019	7	15.25	61.21	8.2	33.64	8.1	24.9	10.73
I19	03 Jun 2019	8	14.87	67.12	7.1	33.64	8.0	25.0	7.69
I19	03 Jun 2019	9	14.52	65.85	5.9	33.65	7.9	25.0	5.80
I19	03 Jun 2019	10	14.21	64.83	5.8	33.63	7.8	25.1	4.31
I19	10 Jun 2019	1	16.81	72.12	10.0	33.65	8.2	24.5	1.46
I19	10 Jun 2019	2	16.78	72.21	10.0	33.65	8.2	24.5	1.46
I19	10 Jun 2019	3	16.66	70.47	9.8	33.66	8.2	24.6	1.82
I19	10 Jun 2019	4	16.24	66.51	9.2	33.68	8.1	24.7	2.98
I19	10 Jun 2019	5	15.66	63.38	8.5	33.67	8.1	24.8	4.62
I19	10 Jun 2019	6	15.52	64.43	8.2	33.65	8.0	24.8	5.61
I19	10 Jun 2019	7	15.32	62.89	7.9	33.65	8.0	24.9	6.40
I19	10 Jun 2019	8	15.22	62.61	7.7	33.65	8.0	24.9	6.50
I19	10 Jun 2019	9	15.06	66.08	7.4	33.66	8.0	24.9	5.93
I19	10 Jun 2019	10	14.55	67.51	7.1	33.66	7.9	25.0	4.69
I19	17 Jun 2019	1	17.31	68.16	9.3	33.67	8.4	24.4	8.38
I19	17 Jun 2019	2	17.30	68.13	9.3	33.67	8.4	24.4	8.57
I19	17 Jun 2019	3	17.29	68.20	9.2	33.67	8.4	24.4	8.73
I19	17 Jun 2019	4	17.23	68.13	9.2	33.68	8.4	24.4	8.99
I19	17 Jun 2019	5	17.06	68.41	9.0	33.68	8.4	24.5	8.33
I19	17 Jun 2019	6	16.92	70.01	8.8	33.68	8.4	24.5	7.57
I19	17 Jun 2019	7	16.84	71.02	8.7	33.67	8.4	24.5	7.23
I19	17 Jun 2019	8	16.77	71.53	8.5	33.67	8.4	24.6	6.90
I19	17 Jun 2019	9	16.70	71.94	8.4	33.67	8.4	24.6	6.69
I19	17 Jun 2019	10	16.67	72.01	8.1	33.67	8.4	24.6	6.63
I19	25 Jun 2019	1	16.43	19.46	9.1	33.62	8.3	24.6	51.67
I19	25 Jun 2019	2	16.57	18.13	9.1	33.62	8.3	24.6	53.37
I19	25 Jun 2019	3	15.14	37.28	6.7	33.75	8.3	25.0	42.36
I19	25 Jun 2019	4	14.43	66.88	5.5	33.64	8.3	25.0	17.01
I19	25 Jun 2019	5	14.09	71.55	5.2	33.66	8.2	25.1	10.11
I19	25 Jun 2019	6	13.86	76.14	5.1	33.64	8.2	25.2	6.24
I19	25 Jun 2019	7	13.70	77.35	4.7	33.64	8.2	25.2	4.72
I19	25 Jun 2019	8	13.64	73.88	4.4	33.63	8.2	25.2	4.46
I19	25 Jun 2019	9	13.64	72.11	4.3	33.63	8.1	25.2	4.54
I19	25 Jun 2019	10	13.63	67.71	4.3	33.63	8.1	25.2	5.32
I24	03 Jun 2019	1	17.79	72.96	10.0	33.67	8.2	24.3	2.50
I24	03 Jun 2019	2	17.77	72.72	10.1	33.67	8.2	24.3	2.93
I24	03 Jun 2019	3	17.75	72.12	10.1	33.67	8.2	24.3	4.26
I24	03 Jun 2019	4	17.69	69.95	9.8	33.67	8.2	24.3	6.17
I24	03 Jun 2019	5	17.26	68.14	8.8	33.70	8.2	24.5	9.16
I24	03 Jun 2019	6	16.29	63.47	7.4	33.69	8.1	24.7	13.75
I24	03 Jun 2019	7	15.50	61.60	6.7	33.67	8.0	24.8	12.85
I24	03 Jun 2019	8	14.78	62.06	6.4	33.66	8.0	25.0	11.05
I24	03 Jun 2019	9	14.51	64.32	5.8	33.63	7.9	25.0	8.35
I24	03 Jun 2019	10	14.12	65.57	5.1	33.65	7.8	25.1	6.06
I24	03 Jun 2019	11	13.60	66.24	4.8	33.65	7.7	25.2	5.10

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
I24	10 Jun 2019	1	17.24	63.20	11.2	33.64	8.2	24.4	3.03
I24	10 Jun 2019	2	17.22	63.11	11.2	33.65	8.2	24.4	3.30
I24	10 Jun 2019	3	17.19	62.15	11.2	33.65	8.2	24.4	4.57
I24	10 Jun 2019	4	16.92	59.69	10.7	33.67	8.2	24.5	8.16
I24	10 Jun 2019	5	16.72	56.48	10.4	33.65	8.2	24.5	13.46
I24	10 Jun 2019	6	16.61	56.07	9.9	33.65	8.2	24.6	16.65
I24	10 Jun 2019	7	16.26	60.30	9.1	33.65	8.1	24.6	18.67
I24	10 Jun 2019	8	15.70	72.77	8.6	33.68	8.1	24.8	12.05
I24	10 Jun 2019	9	15.64	76.77	8.5	33.65	8.0	24.8	5.96
I24	10 Jun 2019	10	15.63	77.52	8.6	33.65	8.0	24.8	3.97
I24	17 Jun 2019	1	17.59	77.59	8.7	33.69	8.4	24.4	2.94
I24	17 Jun 2019	2	17.54	77.49	8.7	33.69	8.4	24.4	3.30
I24	17 Jun 2019	3	17.38	77.23	8.7	33.70	8.4	24.4	4.33
I24	17 Jun 2019	4	17.20	76.62	8.7	33.69	8.4	24.5	4.68
I24	17 Jun 2019	5	16.98	77.05	8.4	33.70	8.4	24.5	4.58
I24	17 Jun 2019	6	16.56	76.40	7.4	33.71	8.4	24.6	5.39
I24	17 Jun 2019	7	15.13	72.87	6.3	33.76	8.4	25.0	5.20
I24	17 Jun 2019	8	13.90	77.15	5.6	33.69	8.3	25.2	3.13
I24	17 Jun 2019	9	13.85	79.12	5.5	33.63	8.3	25.2	1.85
I24	17 Jun 2019	10	13.82	78.64	5.5	33.63	8.3	25.2	1.38
I24	25 Jun 2019	1	17.36	58.29	9.4	33.66	8.4	24.4	10.04
I24	25 Jun 2019	2	17.29	57.83	9.4	33.67	8.4	24.4	12.63
I24	25 Jun 2019	3	17.11	52.90	9.2	33.67	8.4	24.5	22.21
I24	25 Jun 2019	4	16.96	45.08	8.9	33.66	8.4	24.5	31.13
I24	25 Jun 2019	5	16.90	40.49	8.4	33.67	8.4	24.5	33.71
I24	25 Jun 2019	6	16.49	39.73	7.2	33.69	8.3	24.6	29.31
I24	25 Jun 2019	7	15.72	50.97	6.5	33.69	8.3	24.8	18.19
I24	25 Jun 2019	8	14.86	65.98	6.5	33.71	8.3	25.0	10.96
I24	25 Jun 2019	9	14.19	74.30	5.5	33.67	8.3	25.1	6.88
I24	25 Jun 2019	10	13.84	77.30	4.5	33.66	8.2	25.2	4.57
I25	03 Jun 2019	1	17.60	73.91	9.6	33.67	8.2	24.4	3.26
I25	03 Jun 2019	2	17.60	73.91	9.7	33.67	8.2	24.4	3.35
I25	03 Jun 2019	3	17.59	73.87	9.6	33.67	8.2	24.4	3.65
I25	03 Jun 2019	4	17.56	73.37	9.6	33.67	8.2	24.4	4.32
I25	03 Jun 2019	5	17.53	72.99	9.5	33.67	8.2	24.4	5.27
I25	03 Jun 2019	6	17.28	72.85	9.1	33.69	8.2	24.4	5.75
I25	03 Jun 2019	7	16.11	69.68	7.7	33.70	8.1	24.7	7.88
I25	03 Jun 2019	8	14.91	67.98	6.0	33.71	7.9	25.0	8.42
I25	03 Jun 2019	9	14.18	71.03	5.3	33.61	7.8	25.1	5.68
I25	10 Jun 2019	1	17.43	58.27	11.5	33.62	8.3	24.4	4.60
I25	10 Jun 2019	2	17.42	59.26	11.5	33.64	8.3	24.4	5.10
I25	10 Jun 2019	3	17.39	57.17	11.5	33.65	8.3	24.4	6.96
I25	10 Jun 2019	4	17.20	51.76	11.6	33.65	8.3	24.4	13.59
I25	10 Jun 2019	5	17.12	55.76	11.4	33.65	8.3	24.4	17.40
I25	10 Jun 2019	6	16.76	62.37	10.3	33.67	8.2	24.5	14.90
I25	10 Jun 2019	7	16.34	59.26	9.1	33.67	8.1	24.6	12.17
I25	10 Jun 2019	8	15.99	74.10	9.0	33.60	8.0	24.7	9.37
I25	17 Jun 2019	1	17.47	77.48	8.8	33.69	8.4	24.4	2.93
I25	17 Jun 2019	2	17.39	77.53	8.7	33.69	8.4	24.4	3.50
I25	17 Jun 2019	3	17.20	77.37	8.6	33.69	8.4	24.5	4.41
I25	17 Jun 2019	4	16.99	76.64	8.5	33.69	8.4	24.5	4.88
I25	17 Jun 2019	5	16.77	76.66	8.2	33.69	8.4	24.6	5.08
I25	17 Jun 2019	6	16.16	76.54	7.0	33.75	8.4	24.7	5.45
I25	17 Jun 2019	7	13.57	77.49	5.8	33.81	8.3	25.4	3.73
I25	17 Jun 2019	8	13.41	80.95	5.5	33.64	8.3	25.3	2.31
I25	17 Jun 2019	9	13.44	80.83	5.6	33.63	8.3	25.2	1.61

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
I25	25 Jun 2019	1	17.40	64.36	9.4	33.66	8.4	24.4	6.61
I25	25 Jun 2019	2	17.41	63.85	9.3	33.66	8.4	24.4	7.60
I25	25 Jun 2019	3	17.37	62.81	9.3	33.66	8.4	24.4	10.96
I25	25 Jun 2019	4	17.31	61.67	9.2	33.66	8.4	24.4	13.90
I25	25 Jun 2019	5	17.14	59.28	8.9	33.67	8.4	24.5	16.93
I25	25 Jun 2019	6	16.99	53.64	8.4	33.67	8.4	24.5	20.15
I25	25 Jun 2019	7	16.73	48.69	7.5	33.67	8.3	24.6	20.90
I25	25 Jun 2019	8	16.20	56.88	6.5	33.73	8.3	24.7	15.84
I25	25 Jun 2019	9	15.49	74.03	6.8	33.56	8.3	24.8	9.68
I26	03 Jun 2019	1	17.68	69.91	10.3	33.67	8.3	24.3	3.88
I26	03 Jun 2019	2	17.63	69.79	10.1	33.68	8.3	24.3	4.21
I26	03 Jun 2019	3	17.56	70.58	9.9	33.67	8.2	24.4	4.77
I26	03 Jun 2019	4	17.52	71.49	9.7	33.67	8.2	24.4	4.84
I26	03 Jun 2019	5	17.51	72.30	9.6	33.67	8.2	24.4	4.80
I26	03 Jun 2019	6	17.49	73.24	9.5	33.67	8.2	24.4	4.58
I26	03 Jun 2019	7	17.38	74.18	9.4	33.68	8.2	24.4	4.28
I26	03 Jun 2019	8	16.62	74.55	8.8	33.72	8.2	24.6	3.97
I26	03 Jun 2019	9	15.18	74.49	7.3	33.67	8.0	24.9	4.48
I26	10 Jun 2019	1	18.23	63.25	11.3	33.65	8.3	24.2	2.49
I26	10 Jun 2019	2	18.22	63.31	11.1	33.65	8.3	24.2	2.59
I26	10 Jun 2019	3	17.85	63.33	10.6	33.68	8.3	24.3	3.09
I26	10 Jun 2019	4	17.68	66.74	10.1	33.64	8.3	24.3	3.71
I26	10 Jun 2019	5	16.93	69.28	9.2	33.70	8.2	24.5	3.97
I26	10 Jun 2019	6	16.06	68.20	8.6	33.68	8.1	24.7	5.26
I26	10 Jun 2019	7	15.51	70.65	8.0	33.67	8.0	24.8	6.19
I26	10 Jun 2019	8	15.19	73.67	7.3	33.64	8.0	24.9	5.14
I26	10 Jun 2019	9	15.24	74.84	7.3	33.61	8.0	24.8	4.26
I26	17 Jun 2019	1	17.08	75.99	8.9	33.68	8.4	24.5	3.01
I26	17 Jun 2019	2	17.00	76.09	8.8	33.69	8.4	24.5	3.76
I26	17 Jun 2019	3	16.84	74.74	8.7	33.68	8.4	24.5	5.12
I26	17 Jun 2019	4	16.66	74.24	8.5	33.69	8.4	24.6	5.62
I26	17 Jun 2019	5	16.56	75.22	8.4	33.68	8.3	24.6	5.87
I26	17 Jun 2019	6	16.48	75.07	8.3	33.68	8.3	24.6	6.14
I26	17 Jun 2019	7	16.43	74.97	8.0	33.67	8.3	24.6	6.23
I26	17 Jun 2019	8	16.07	74.39	7.0	33.73	8.3	24.8	6.37
I26	17 Jun 2019	9	13.82	73.82	5.8	33.75	8.3	25.3	4.90
I26	25 Jun 2019	1	17.55	64.49	9.3	33.66	8.3	24.4	4.12
I26	25 Jun 2019	2	17.54	64.59	9.0	33.68	8.3	24.4	4.88
I26	25 Jun 2019	3	16.91	61.76	8.1	33.70	8.3	24.5	7.68
I26	25 Jun 2019	4	16.38	65.14	7.5	33.67	8.3	24.6	7.04
I26	25 Jun 2019	5	16.18	70.11	6.8	33.66	8.3	24.7	6.57
I26	25 Jun 2019	6	15.80	71.46	5.6	33.67	8.3	24.8	6.70
I26	25 Jun 2019	7	14.54	70.45	4.2	33.74	8.3	25.1	6.06
I26	25 Jun 2019	8	14.14	74.12	3.5	33.64	8.2	25.1	3.63
I26	25 Jun 2019	9	14.12	79.20	3.4	33.63	8.2	25.1	2.13
I32	03 Jun 2019	1	17.79	69.54	10.2	33.68	8.2	24.3	3.75
I32	03 Jun 2019	2	17.77	69.37	10.1	33.68	8.2	24.3	4.62
I32	03 Jun 2019	3	17.71	68.10	10.1	33.68	8.2	24.3	6.77
I32	03 Jun 2019	4	17.68	66.69	10.1	33.67	8.2	24.3	8.35
I32	03 Jun 2019	5	17.65	64.84	9.8	33.67	8.2	24.3	9.29
I32	03 Jun 2019	6	17.60	63.69	9.6	33.66	8.2	24.3	9.57
I32	03 Jun 2019	7	17.58	62.65	9.5	33.66	8.2	24.4	9.60
I32	03 Jun 2019	8	17.52	62.18	9.1	33.66	8.2	24.4	9.03
I32	03 Jun 2019	9	17.31	60.87	8.3	33.66	8.2	24.4	8.10
I32	03 Jun 2019	10	16.44	57.88	7.8	33.70	8.2	24.6	6.82

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
I32	10 Jun 2019	1	18.18	53.08	8.8	33.65	8.2	24.2	3.81
I32	10 Jun 2019	2	18.13	53.00	8.8	33.65	8.2	24.2	4.56
I32	10 Jun 2019	3	18.05	51.41	8.7	33.65	8.2	24.2	8.36
I32	10 Jun 2019	4	16.96	53.45	8.0	33.76	8.2	24.6	9.80
I32	10 Jun 2019	5	15.51	62.94	7.1	33.67	8.0	24.8	7.45
I32	10 Jun 2019	6	15.25	63.92	6.8	33.63	7.9	24.9	5.44
I32	10 Jun 2019	7	15.06	70.94	6.8	33.63	7.9	24.9	4.25
I32	10 Jun 2019	8	14.98	73.98	6.5	33.62	7.9	24.9	3.11
I32	10 Jun 2019	9	14.89	63.33	5.8	33.62	7.9	24.9	3.27
I32	10 Jun 2019	10	14.94	57.83	5.9	33.61	7.8	24.9	3.82
I32	17 Jun 2019	1	16.87	68.45	9.3	33.67	8.4	24.5	7.02
I32	17 Jun 2019	2	16.83	68.08	9.2	33.67	8.4	24.5	8.66
I32	17 Jun 2019	3	16.82	67.27	9.1	33.67	8.4	24.5	9.77
I32	17 Jun 2019	4	16.82	67.40	9.1	33.67	8.4	24.5	9.63
I32	17 Jun 2019	5	16.82	68.09	9.0	33.67	8.4	24.5	9.61
I32	17 Jun 2019	6	16.81	68.10	9.0	33.67	8.4	24.5	9.62
I32	17 Jun 2019	7	16.80	68.34	8.9	33.67	8.4	24.5	9.33
I32	17 Jun 2019	8	16.79	68.52	8.8	33.67	8.4	24.5	8.72
I32	17 Jun 2019	9	16.77	68.80	8.6	33.67	8.4	24.6	8.37
I32	17 Jun 2019	10	16.63	69.06	8.4	33.68	8.4	24.6	6.60
I32	25 Jun 2019	1	17.36	71.80	8.5	33.67	8.3	24.4	1.59
I32	25 Jun 2019	2	17.32	70.82	8.4	33.68	8.3	24.4	1.74
I32	25 Jun 2019	3	17.28	68.14	8.4	33.67	8.3	24.4	2.74
I32	25 Jun 2019	4	17.17	65.52	8.0	33.69	8.3	24.5	4.85
I32	25 Jun 2019	5	16.62	62.35	7.2	33.72	8.3	24.6	8.28
I32	25 Jun 2019	6	16.11	61.36	6.5	33.71	8.3	24.7	10.44
I32	25 Jun 2019	7	15.16	61.09	5.8	33.76	8.3	25.0	11.60
I32	25 Jun 2019	8	14.49	66.99	5.1	33.72	8.2	25.1	11.36
I32	25 Jun 2019	9	13.69	70.22	4.2	33.70	8.2	25.2	8.95
I32	25 Jun 2019	10	13.68	71.97	3.8	33.64	8.2	25.2	5.85
I39	03 Jun 2019	1	17.74	68.65	10.8	33.67	8.3	24.3	3.54
I39	03 Jun 2019	2	17.61	68.49	10.5	33.68	8.3	24.4	4.02
I39	03 Jun 2019	3	16.97	68.71	9.9	33.71	8.2	24.5	4.65
I39	03 Jun 2019	4	16.19	70.14	9.8	33.67	8.2	24.7	5.30
I39	03 Jun 2019	5	15.92	70.59	9.7	33.65	8.2	24.7	6.08
I39	03 Jun 2019	6	15.69	70.46	9.4	33.64	8.1	24.8	6.03
I39	03 Jun 2019	7	15.40	71.27	9.1	33.65	8.1	24.8	5.55
I39	03 Jun 2019	8	14.99	71.49	8.9	33.65	8.1	24.9	5.24
I39	03 Jun 2019	9	14.67	72.53	9.0	33.62	8.1	25.0	4.81
I39	03 Jun 2019	10	14.45	73.93	8.9	33.63	8.1	25.0	4.44
I39	03 Jun 2019	11	14.03	74.35	8.2	33.64	8.0	25.1	4.27
I39	03 Jun 2019	12	13.48	74.68	6.9	33.65	8.0	25.2	3.97
I39	03 Jun 2019	13	13.21	74.07	5.7	33.63	7.8	25.3	3.66
I39	03 Jun 2019	14	13.00	73.21	5.1	33.64	7.8	25.3	3.59
I39	03 Jun 2019	15	12.76	74.75	4.7	33.64	7.7	25.4	3.05
I39	03 Jun 2019	16	12.63	75.97	4.4	33.64	7.7	25.4	2.85
I39	03 Jun 2019	17	12.42	75.52	4.2	33.65	7.7	25.5	3.34
I39	03 Jun 2019	18	12.05	74.36	4.0	33.66	7.6	25.5	3.81
I39	10 Jun 2019	1	17.85	57.16	11.5	33.65	8.3	24.3	5.52
I39	10 Jun 2019	2	17.80	57.22	11.4	33.66	8.3	24.3	7.09
I39	10 Jun 2019	3	17.72	56.22	11.2	33.66	8.3	24.3	10.80
I39	10 Jun 2019	4	17.55	62.47	10.8	33.66	8.3	24.4	10.70
I39	10 Jun 2019	5	17.23	70.41	10.1	33.68	8.2	24.4	7.09
I39	10 Jun 2019	6	16.15	71.15	9.6	33.70	8.2	24.7	5.92
I39	10 Jun 2019	7	15.96	72.66	9.4	33.66	8.1	24.7	5.56
I39	10 Jun 2019	8	15.78	73.73	9.2	33.66	8.1	24.8	5.05

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
I39	10 Jun 2019	9	15.72	73.69	9.1	33.65	8.1	24.8	4.89
I39	10 Jun 2019	10	15.69	73.54	9.1	33.65	8.1	24.8	4.73
I39	10 Jun 2019	11	15.68	73.57	9.1	33.65	8.1	24.8	4.99
I39	10 Jun 2019	12	15.64	73.68	8.9	33.66	8.1	24.8	4.98
I39	10 Jun 2019	13	15.48	72.97	8.6	33.66	8.1	24.8	5.46
I39	10 Jun 2019	14	15.17	72.75	8.2	33.68	8.0	24.9	5.82
I39	10 Jun 2019	15	14.77	75.47	7.7	33.67	8.0	25.0	5.05
I39	10 Jun 2019	16	14.72	77.07	7.6	33.65	8.0	25.0	4.40
I39	10 Jun 2019	17	14.72	77.34	7.6	33.65	8.0	25.0	3.84
I39	10 Jun 2019	18	14.69	77.79	7.6	33.66	8.0	25.0	3.56
I39	17 Jun 2019	1	17.41	76.28	8.6	33.69	8.4	24.4	3.81
I39	17 Jun 2019	2	17.35	76.71	8.3	33.69	8.4	24.4	4.32
I39	17 Jun 2019	3	17.00	76.36	7.7	33.71	8.4	24.5	5.04
I39	17 Jun 2019	4	15.72	75.49	7.1	33.77	8.3	24.9	4.29
I39	17 Jun 2019	5	14.51	78.23	6.6	33.71	8.3	25.1	3.00
I39	17 Jun 2019	6	13.98	81.09	6.4	33.67	8.3	25.2	2.43
I39	17 Jun 2019	7	13.58	82.64	6.1	33.65	8.3	25.2	2.15
I39	17 Jun 2019	8	13.44	82.87	5.8	33.63	8.3	25.2	2.01
I39	17 Jun 2019	9	12.91	83.42	5.5	33.69	8.3	25.4	1.81
I39	17 Jun 2019	10	12.40	85.04	5.3	33.65	8.2	25.5	1.34
I39	17 Jun 2019	11	12.30	85.72	5.2	33.64	8.2	25.5	1.16
I39	17 Jun 2019	12	12.20	85.76	5.1	33.64	8.2	25.5	1.07
I39	17 Jun 2019	13	12.00	86.15	5.1	33.66	8.2	25.5	0.89
I39	17 Jun 2019	14	11.91	86.47	5.0	33.65	8.2	25.6	0.80
I39	17 Jun 2019	15	11.70	86.62	4.9	33.67	8.2	25.6	0.79
I39	17 Jun 2019	16	11.56	86.65	4.9	33.67	8.2	25.6	0.81
I39	17 Jun 2019	17	11.51	86.69	4.9	33.66	8.2	25.6	0.70
I39	17 Jun 2019	18	11.50	86.61	4.9	33.67	8.2	25.6	0.69
I39	25 Jun 2019	1	17.62	79.22	9.3	33.65	8.4	24.3	1.57
I39	25 Jun 2019	2	17.61	78.97	9.3	33.65	8.4	24.3	1.68
I39	25 Jun 2019	3	17.54	77.12	9.2	33.66	8.4	24.4	2.72
I39	25 Jun 2019	4	17.37	72.64	9.1	33.66	8.4	24.4	5.10
I39	25 Jun 2019	5	17.24	71.58	9.1	33.66	8.4	24.4	6.63
I39	25 Jun 2019	6	17.11	73.63	9.0	33.65	8.4	24.5	6.59
I39	25 Jun 2019	7	16.12	75.98	8.7	33.74	8.4	24.7	5.82
I39	25 Jun 2019	8	14.80	75.88	8.6	33.67	8.4	25.0	6.31
I39	25 Jun 2019	9	14.66	72.30	8.1	33.62	8.3	25.0	8.01
I39	25 Jun 2019	10	14.10	74.33	6.6	33.67	8.3	25.1	8.11
I39	25 Jun 2019	11	13.45	77.80	4.9	33.64	8.3	25.2	6.21
I39	25 Jun 2019	12	13.38	79.94	4.5	33.63	8.2	25.3	4.48
I39	25 Jun 2019	13	13.21	80.43	4.4	33.64	8.2	25.3	3.37
I39	25 Jun 2019	14	13.19	81.23	4.4	33.64	8.2	25.3	2.75
I39	25 Jun 2019	15	13.05	81.03	4.4	33.64	8.2	25.3	2.67
I39	25 Jun 2019	16	12.96	82.05	4.3	33.64	8.2	25.3	2.18
I39	25 Jun 2019	17	12.89	82.08	4.2	33.65	8.2	25.4	1.78
I39	25 Jun 2019	18	12.88	82.89	4.1	33.64	8.1	25.4	1.51
I40	03 Jun 2019	1	17.48	43.59	9.3	33.59	8.3	24.3	20.29
I40	03 Jun 2019	2	17.30	39.52	9.2	33.59	8.3	24.4	25.69
I40	03 Jun 2019	3	16.97	36.84	8.7	33.61	8.3	24.5	29.61
I40	03 Jun 2019	4	16.16	39.93	8.1	33.68	8.2	24.7	27.56
I40	03 Jun 2019	5	15.32	51.32	7.4	33.68	8.1	24.9	21.86
I40	03 Jun 2019	6	14.95	56.60	6.8	33.64	8.0	24.9	15.40
I40	03 Jun 2019	7	14.71	66.44	6.4	33.63	7.9	25.0	8.56
I40	03 Jun 2019	8	14.58	70.10	6.1	33.62	7.9	25.0	4.71
I40	03 Jun 2019	9	14.34	64.20	5.3	33.64	7.8	25.1	3.94
I40	03 Jun 2019	10	14.12	63.09	4.6	33.62	7.7	25.1	3.62
I40	10 Jun 2019	1	16.98	69.70	8.8	33.63	8.1	24.5	1.46

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
I40	10 Jun 2019	2	16.89	69.35	8.8	33.64	8.1	24.5	1.64
I40	10 Jun 2019	3	16.73	68.64	9.0	33.64	8.1	24.5	2.18
I40	10 Jun 2019	4	16.60	67.22	9.2	33.65	8.1	24.6	3.45
I40	10 Jun 2019	5	16.22	66.65	9.1	33.66	8.1	24.7	5.47
I40	10 Jun 2019	6	16.11	68.96	8.8	33.65	8.1	24.7	6.27
I40	10 Jun 2019	7	15.76	74.18	8.8	33.67	8.1	24.8	4.97
I40	10 Jun 2019	8	15.64	75.21	8.7	33.66	8.0	24.8	3.89
I40	10 Jun 2019	9	15.60	70.03	8.5	33.65	8.0	24.8	2.88
I40	17 Jun 2019	1	17.59	74.81	9.1	33.69	8.4	24.4	4.52
I40	17 Jun 2019	2	17.59	74.31	9.1	33.69	8.4	24.4	4.74
I40	17 Jun 2019	3	17.58	74.65	9.1	33.69	8.4	24.4	5.58
I40	17 Jun 2019	4	17.57	73.93	9.1	33.69	8.4	24.4	6.43
I40	17 Jun 2019	5	17.56	73.69	9.1	33.69	8.4	24.4	7.00
I40	17 Jun 2019	6	17.53	72.74	8.8	33.69	8.4	24.4	7.96
I40	17 Jun 2019	7	17.35	69.18	8.2	33.70	8.4	24.4	11.13
I40	17 Jun 2019	8	17.28	61.47	7.8	33.68	8.4	24.4	14.65
I40	17 Jun 2019	9	17.12	56.43	7.2	33.69	8.4	24.5	18.58
I40	17 Jun 2019	10	16.45	56.58	6.2	33.74	8.4	24.7	14.87
I40	25 Jun 2019	1	16.70	44.98	8.3	33.63	8.3	24.5	12.66
I40	25 Jun 2019	2	16.54	45.73	8.0	33.64	8.3	24.6	17.19
I40	25 Jun 2019	3	16.16	48.33	7.3	33.67	8.3	24.7	19.44
I40	25 Jun 2019	4	14.81	62.76	7.0	33.66	8.3	25.0	13.13
I40	25 Jun 2019	5	14.87	71.82	6.6	33.63	8.3	24.9	10.20
I40	25 Jun 2019	6	14.48	72.05	6.1	33.64	8.2	25.0	9.20
I40	25 Jun 2019	7	14.24	76.96	5.6	33.64	8.2	25.1	5.82
I40	25 Jun 2019	8	14.09	75.95	4.8	33.64	8.2	25.1	4.17
I40	25 Jun 2019	9	13.88	77.77	4.7	33.64	8.2	25.2	3.38
I40	25 Jun 2019	10	13.85	71.51	4.4	33.63	8.2	25.2	7.23

NA = not available

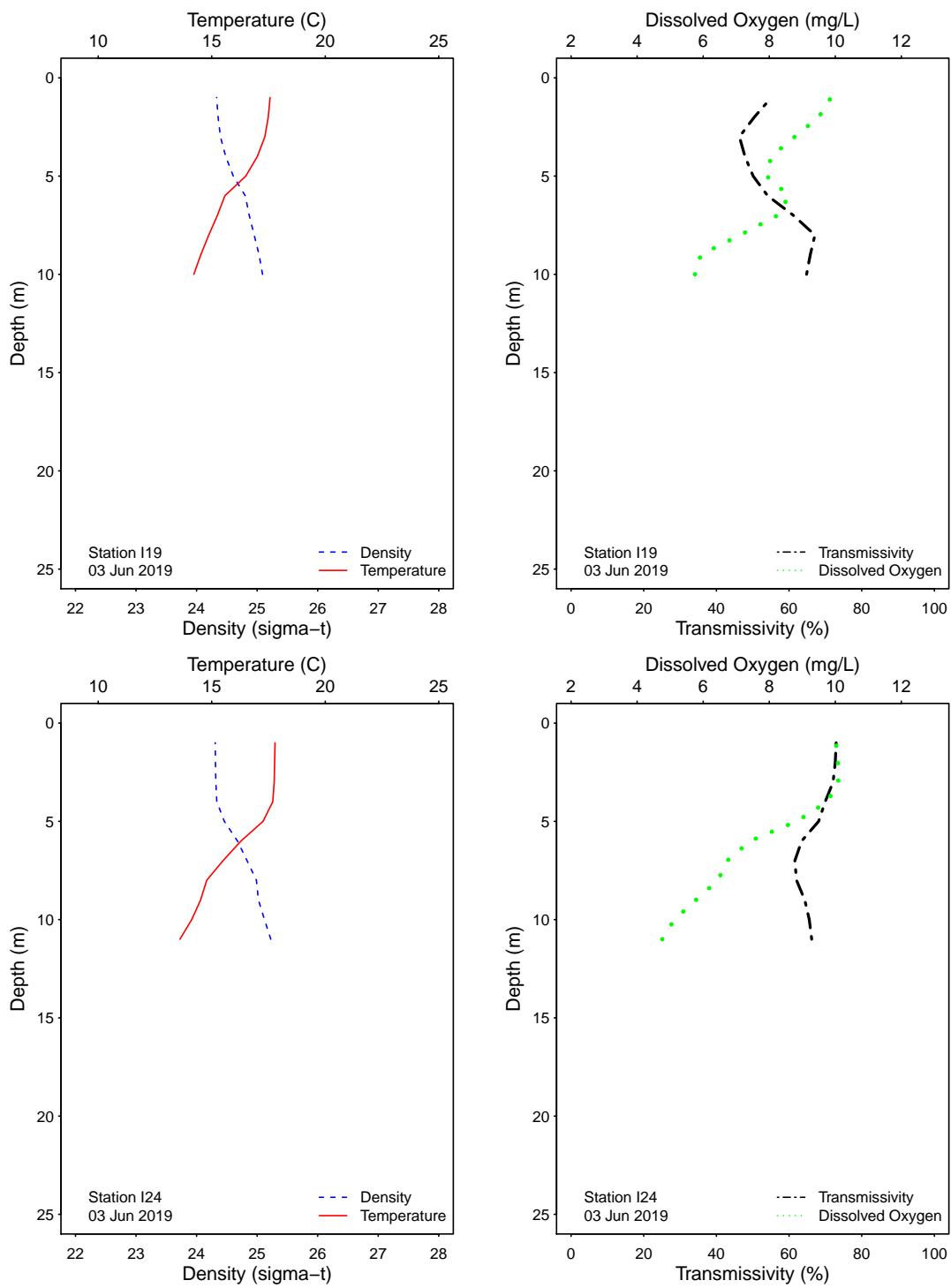


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

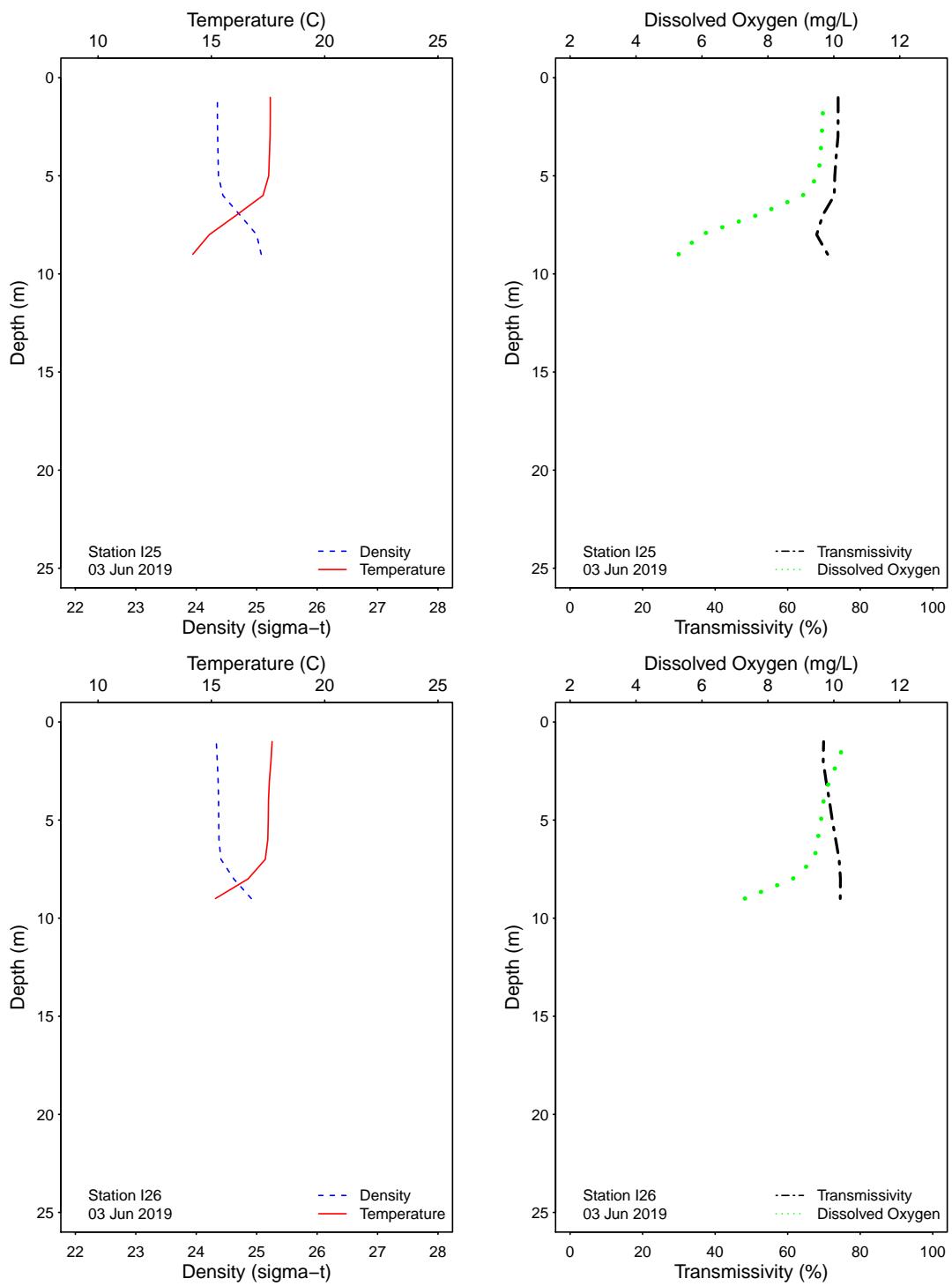


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

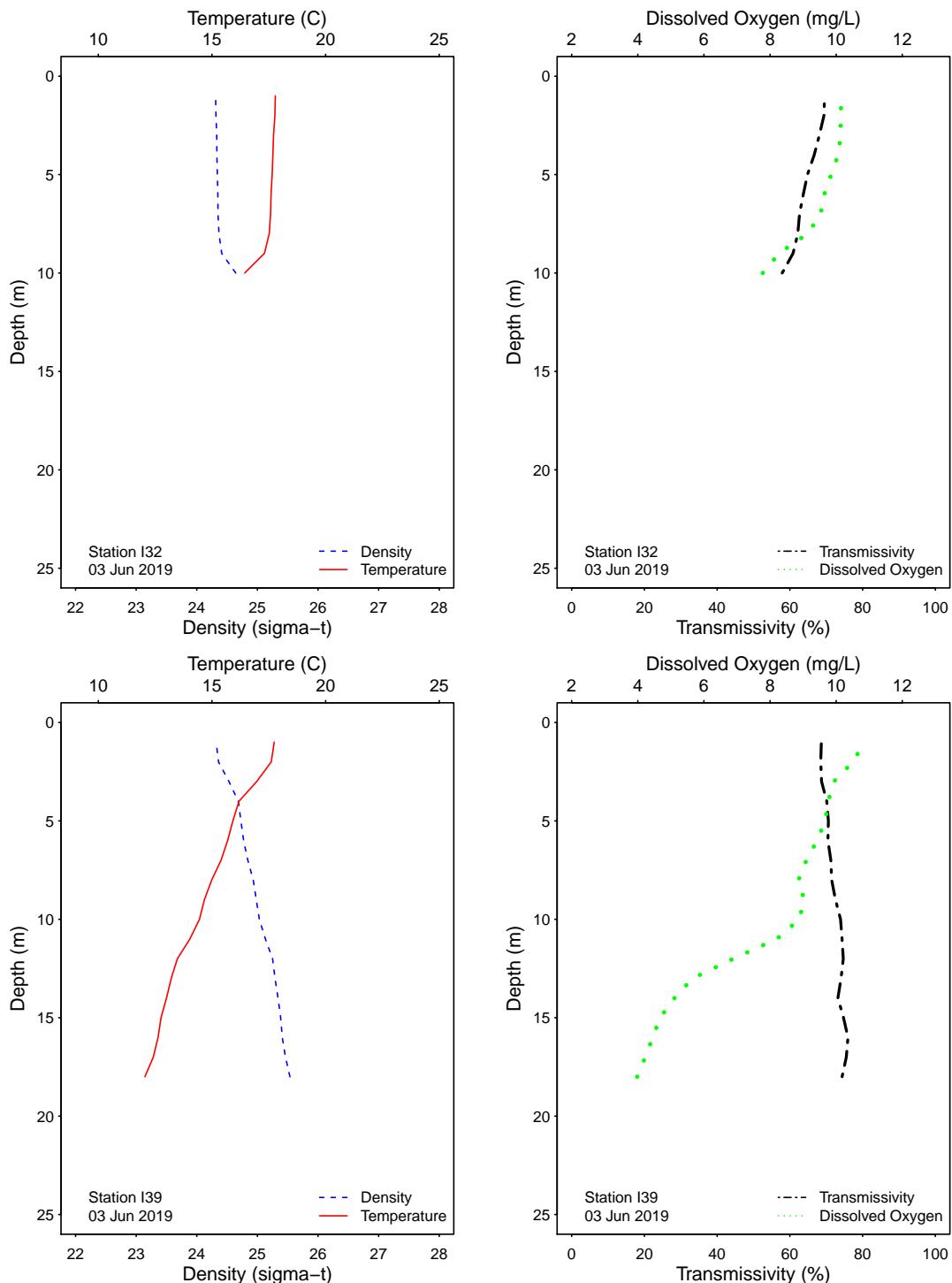


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

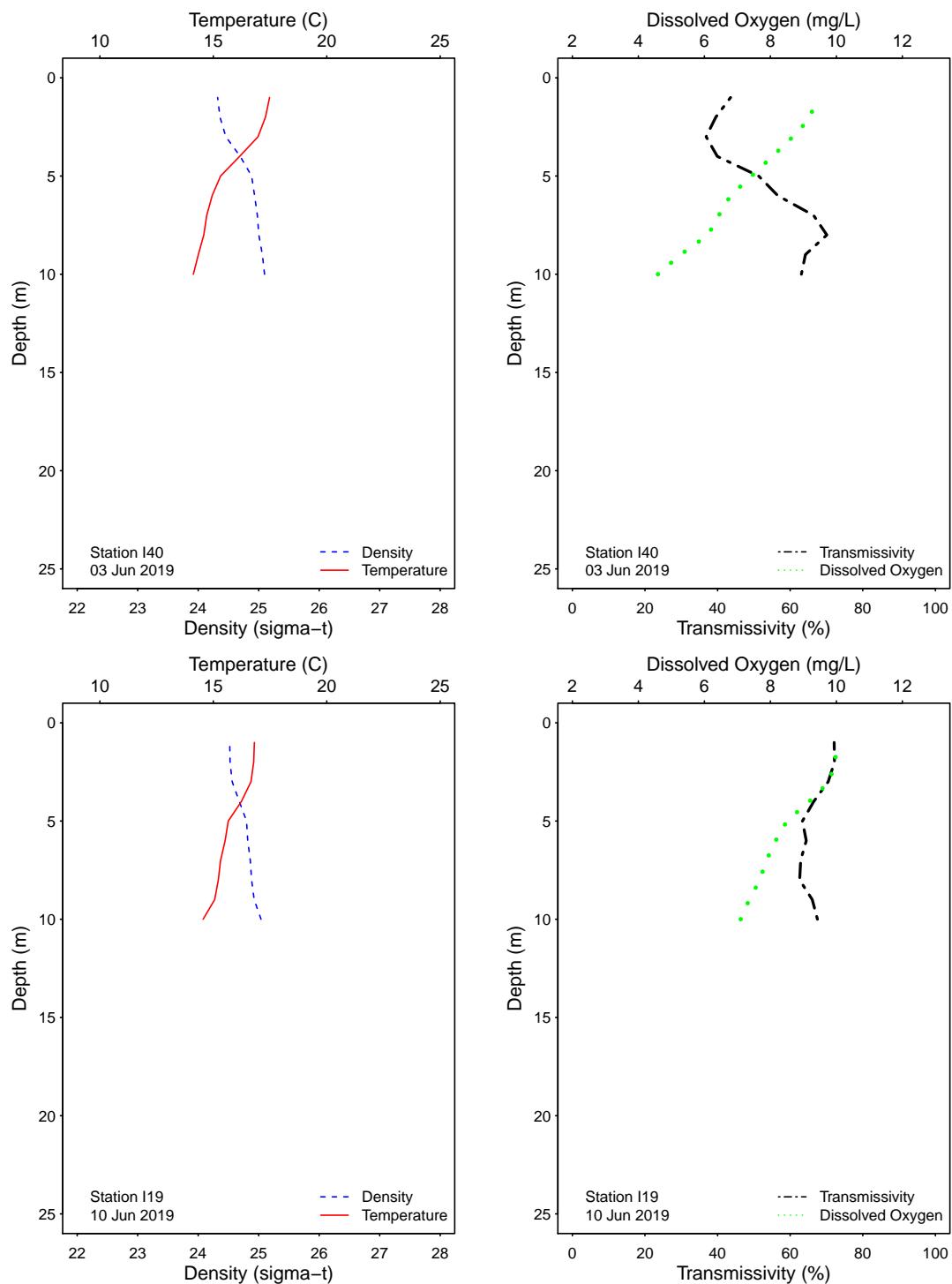


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

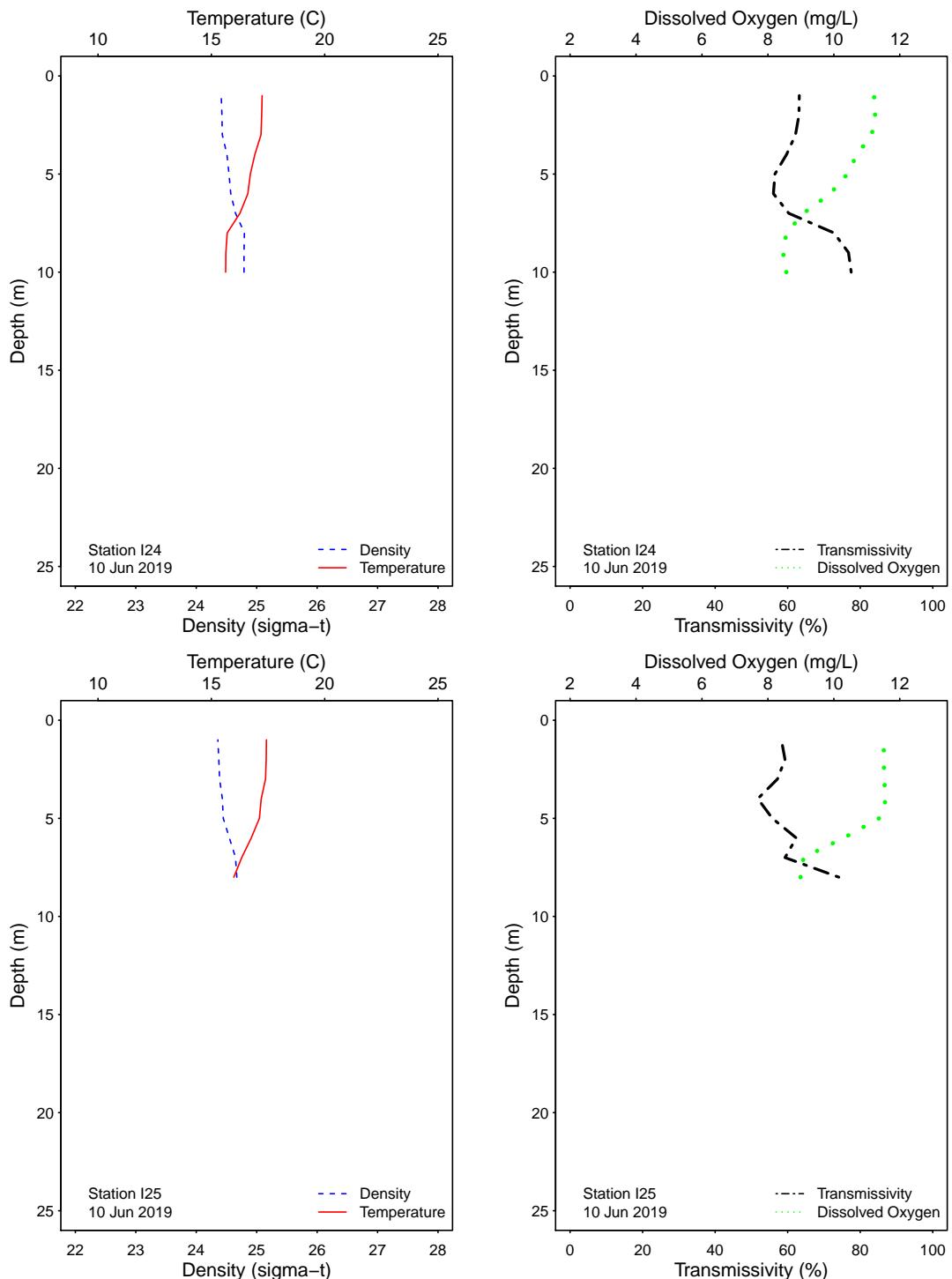


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

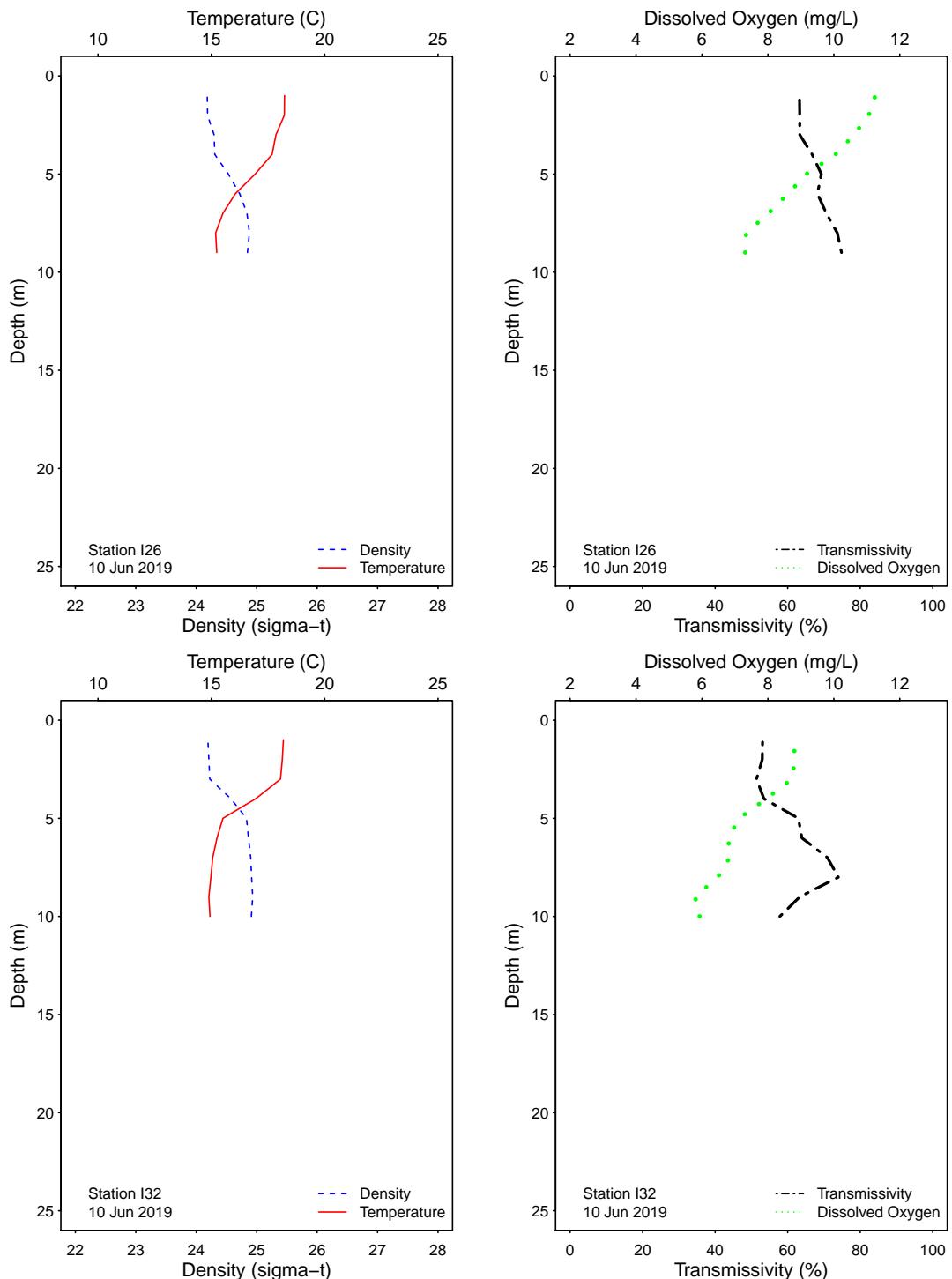


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

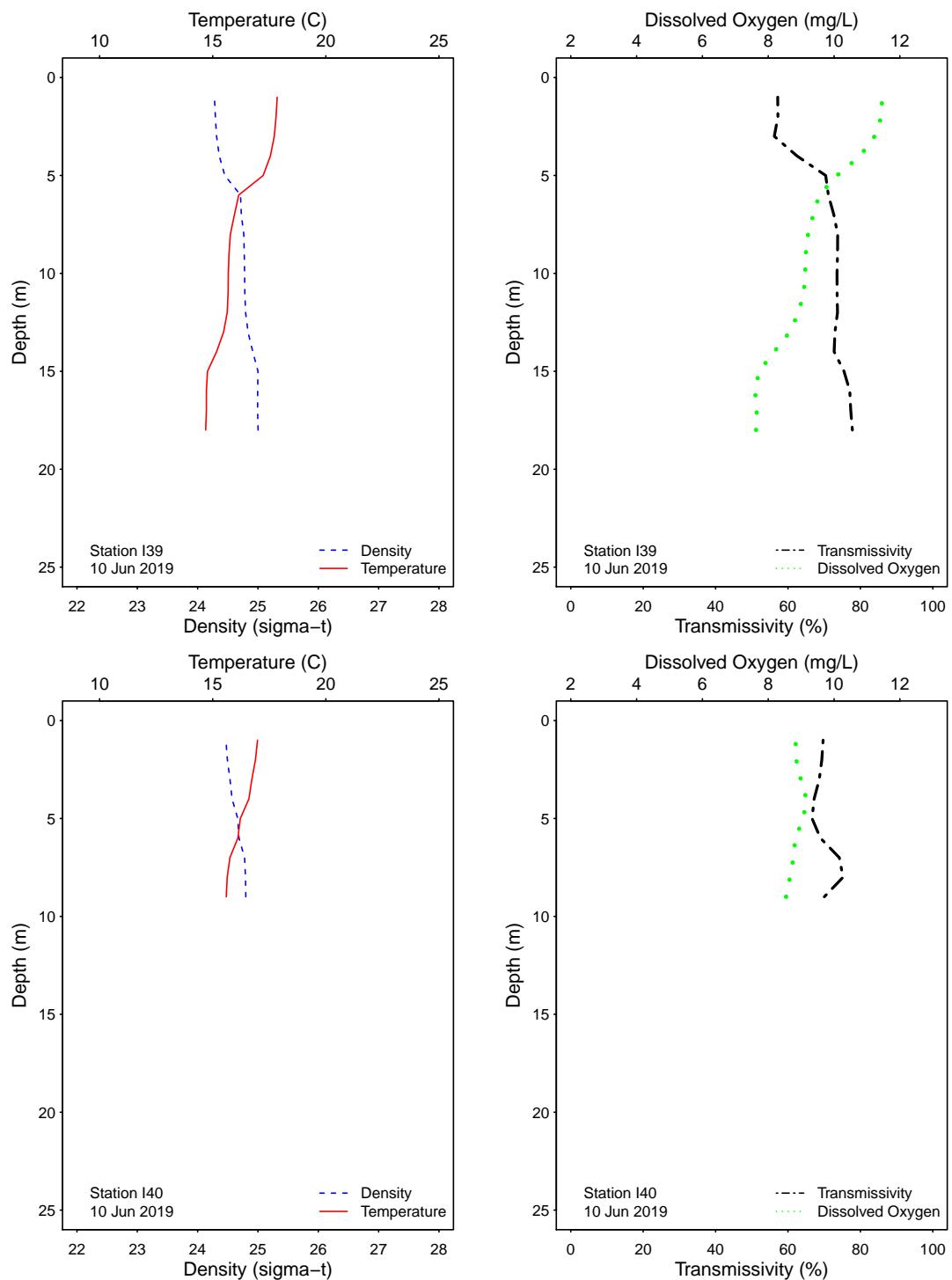


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

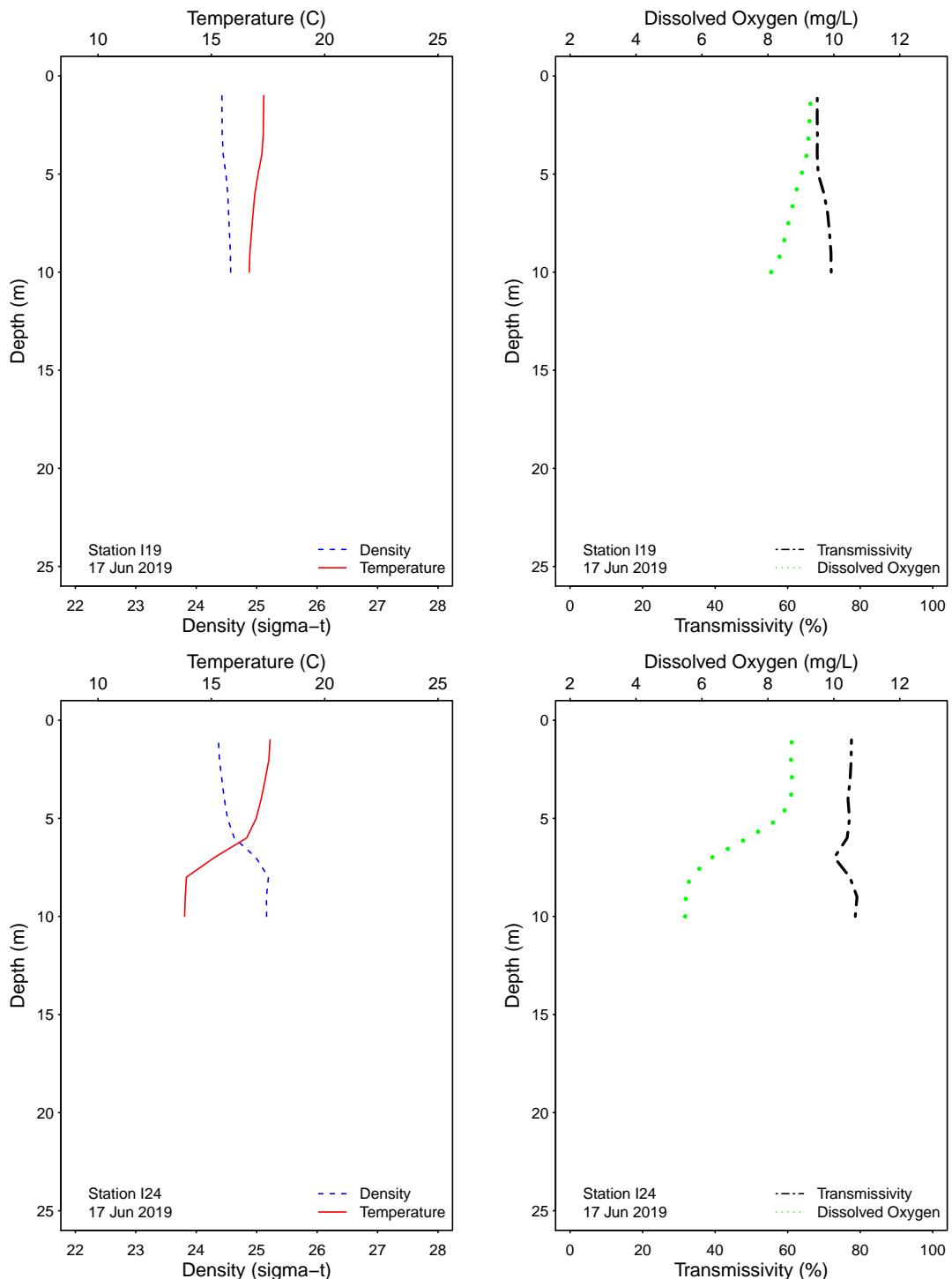


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

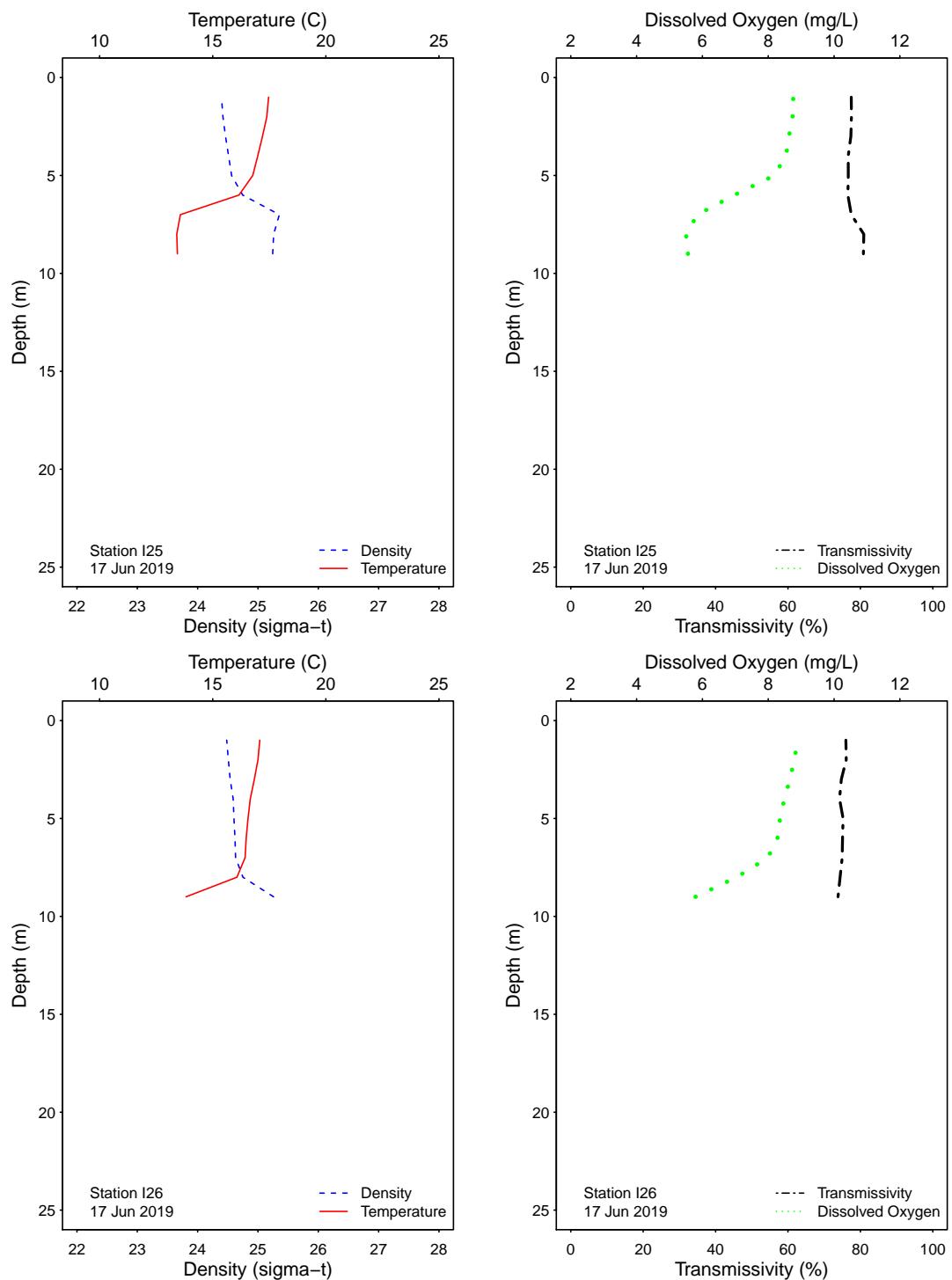


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

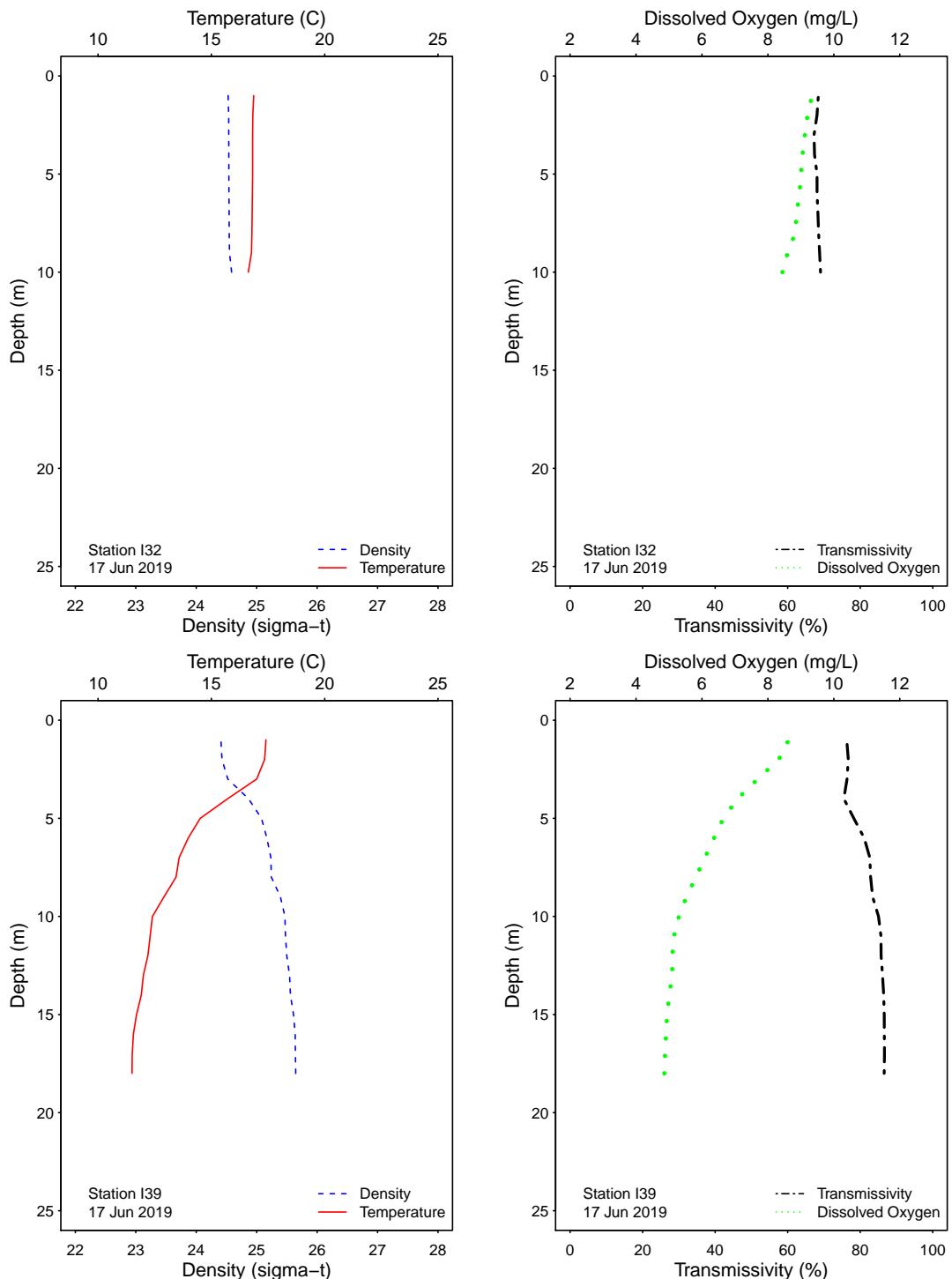


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

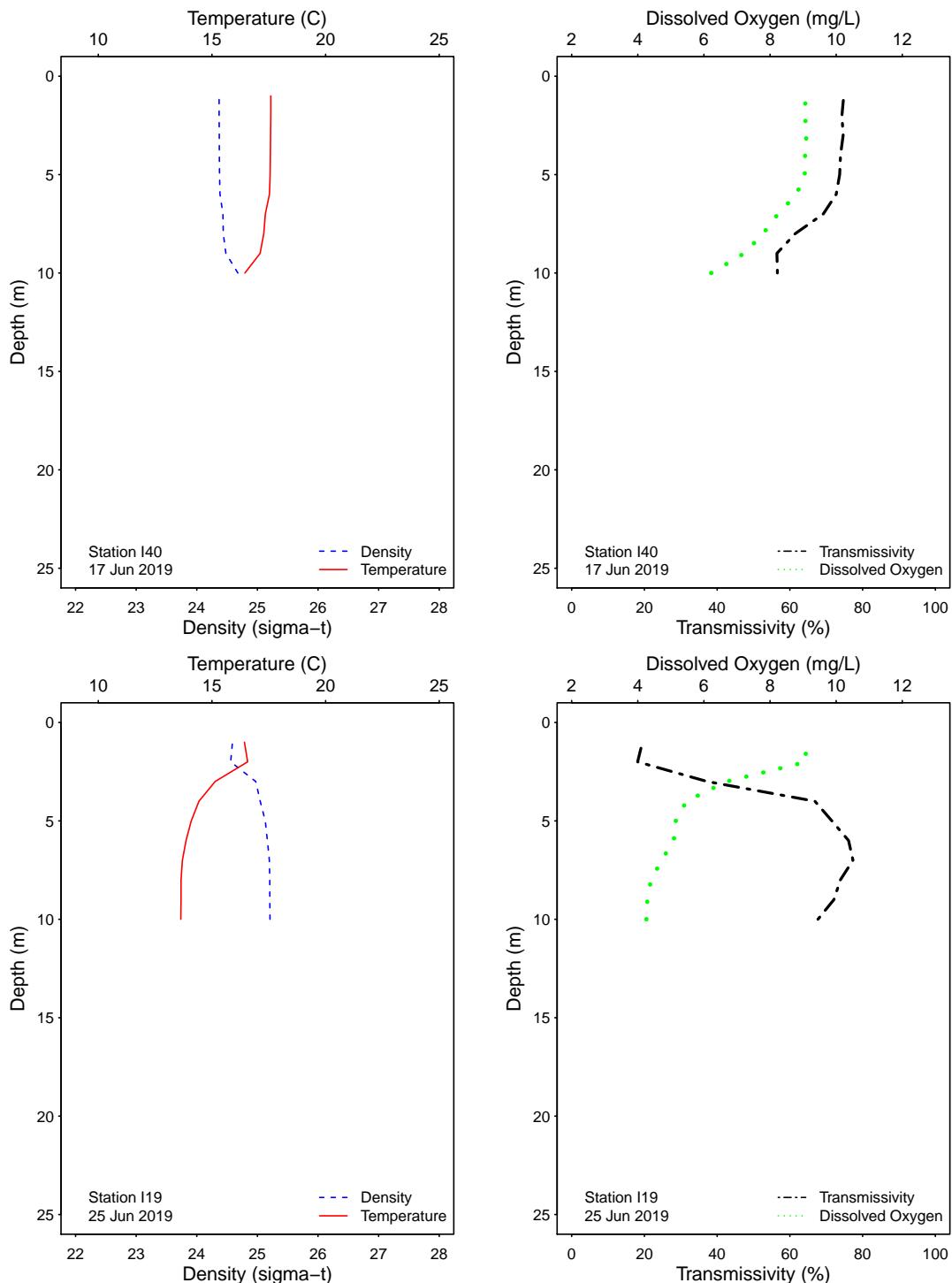


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

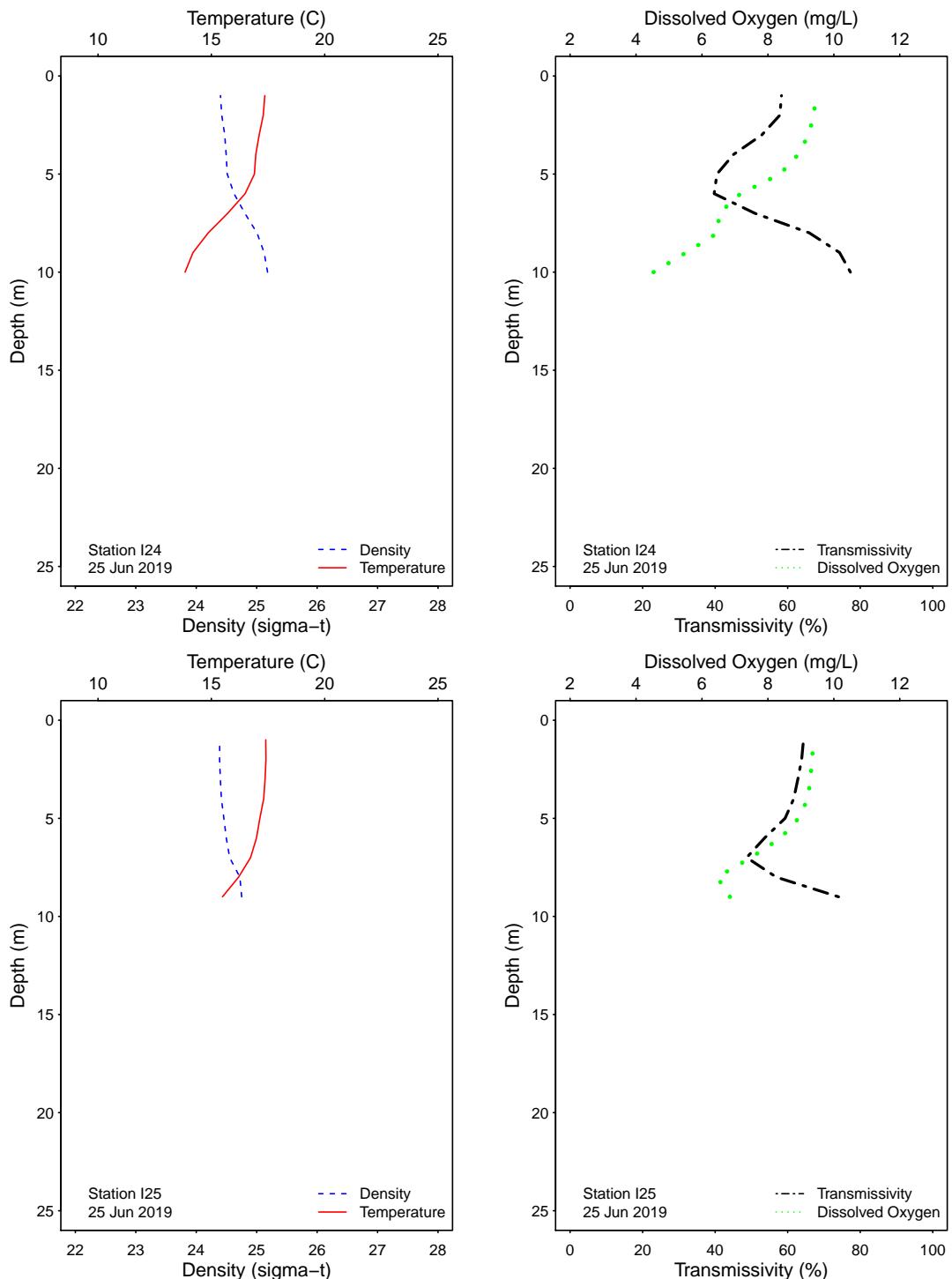


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

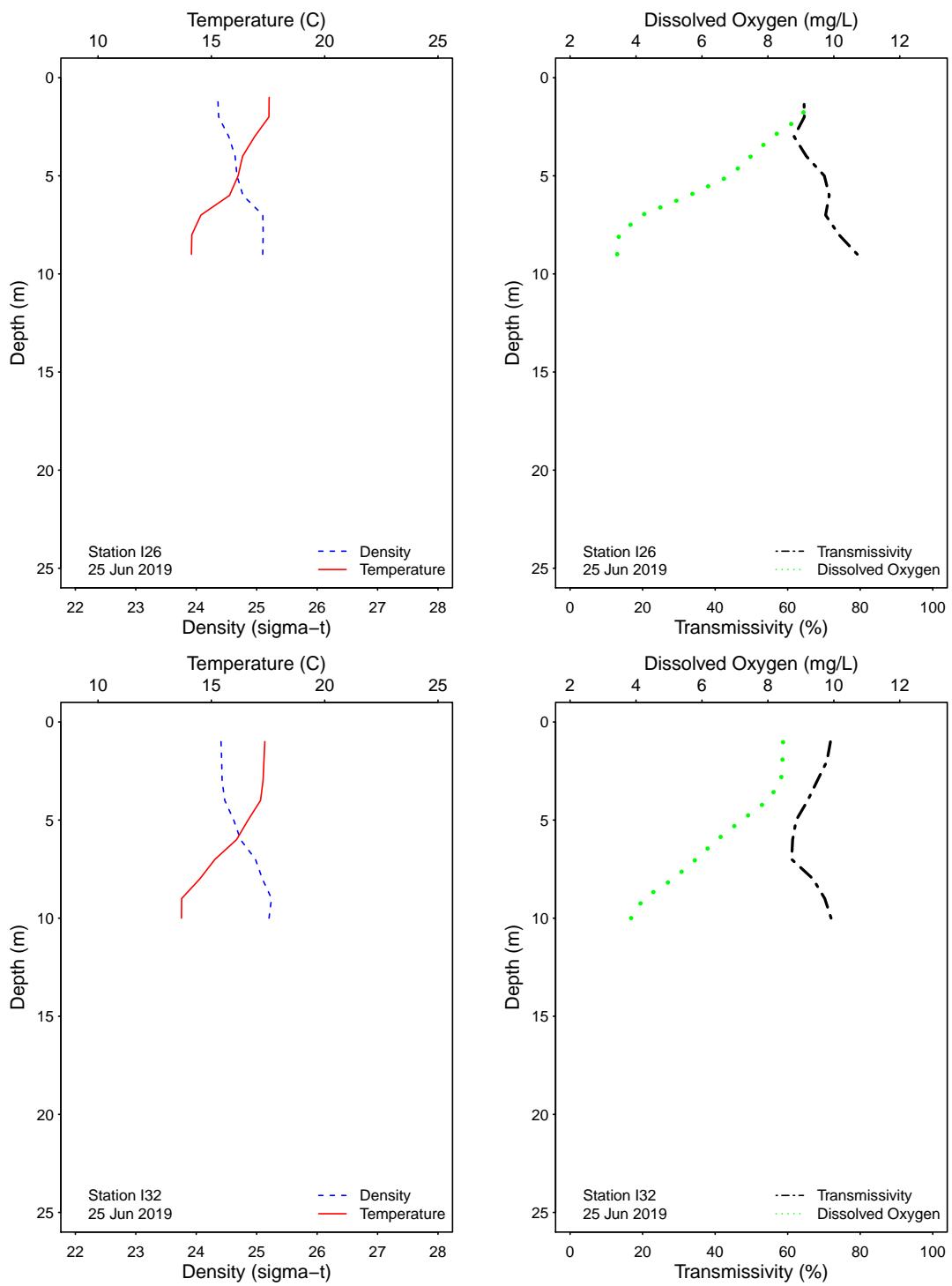


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

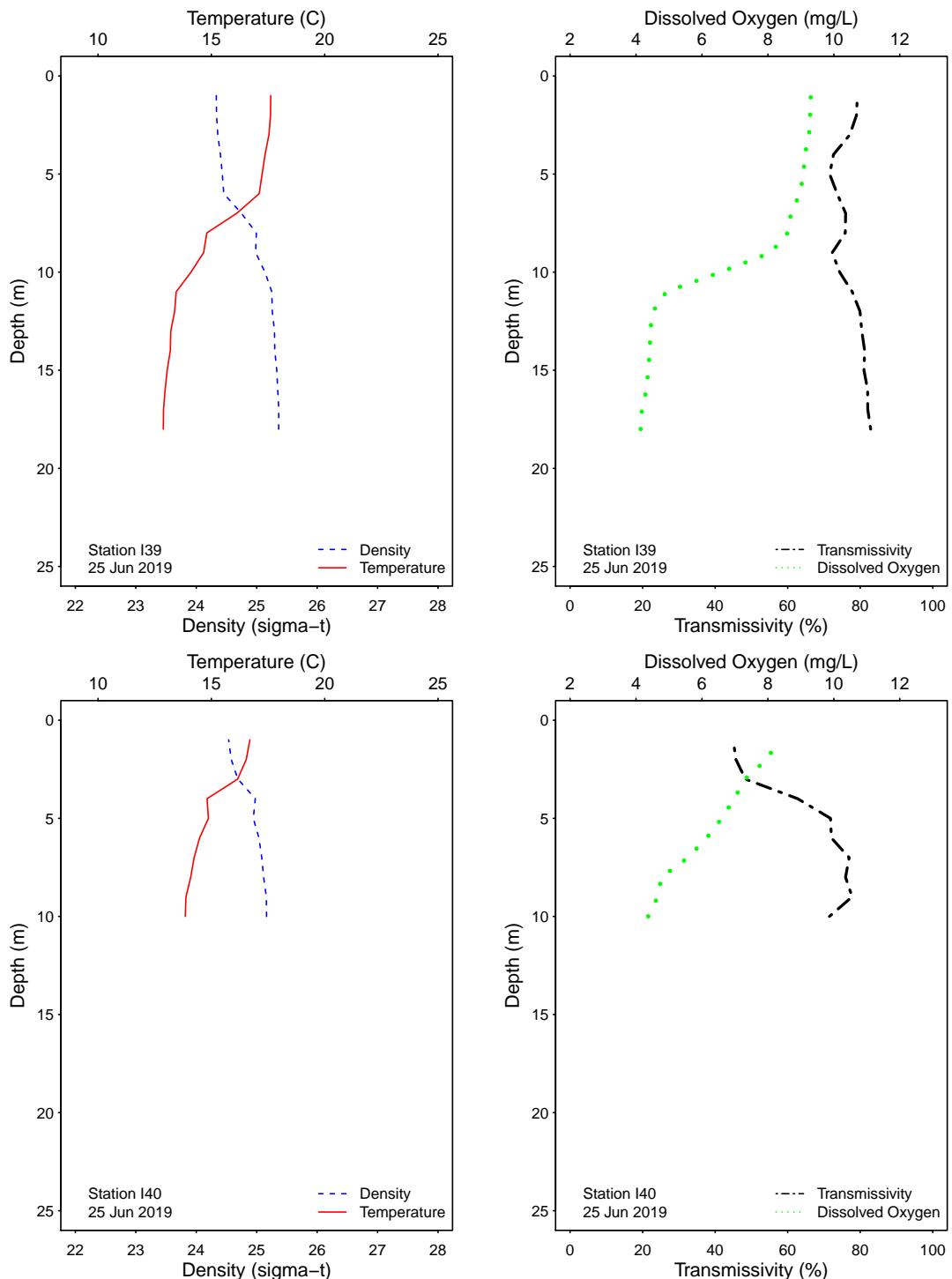


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

APPENDIX A

Quality Assurance

Table A.1

Summary of bacteriological quality assurance field and lab duplicate sample analyses at selected SBOO stations. Densities of total coliform (Total), fecal coliform (Fecal), and *Enterococcus* (Entero) are reported as CFU/100 mL.

Station	Date	Depth	Analyst	Procedure	Total	Fecal	Entero
I19	03 Jun 2019	6	JT	LAB DUPLICATE	20e	2e	6e
I19	10 Jun 2019	6	JLT	LAB DUPLICATE	100e	10e	<2
I19	17 Jun 2019	6	AR	LAB DUPLICATE	<20	<2	<2
I19	25 Jun 2019	6	BS	LAB DUPLICATE	12e	2e	2e
I40	03 Jun 2019	6	JT	LAB DUPLICATE	60e	2e	2e
I40	10 Jun 2019	6	JLT	LAB DUPLICATE	200e	26e	6e
I40	17 Jun 2019	6	AR	LAB DUPLICATE	<200	<2	2e
I40	25 Jun 2019	6	JF	LAB DUPLICATE	4e	<2	4e
S12	04 Jun 2019		JLT	FIELD DUPLICATE	600e	32e	14e
S12	04 Jun 2019		JLT	LAB DUPLICATE	<200	40e	24e
S12	11 Jun 2019		JLT	FIELD DUPLICATE	10e	12e	2e
S12	11 Jun 2019		JLT	LAB DUPLICATE	32e	18e	<2
S12	18 Jun 2019		AE	FIELD DUPLICATE	200e	60e	10e
S12	18 Jun 2019		AE	LAB DUPLICATE	<200	40e	16e
S12	24 Jun 2019		AE	FIELD DUPLICATE	20e	<20	8e
S12	24 Jun 2019		AE	LAB DUPLICATE	<20	<20	<20

ns = not sampled

ND = no data

