



Monthly Receiving Waters Monitoring Report for the Point Loma Ocean Outfall

(Point Loma Metropolitan Wastewater Treatment Plant)

NPDES Permit No. CA0107409

January 2016



City of San Diego
Ocean Monitoring Program
Public Utilities Department
Environmental Monitoring and Technical Services Division



THE CITY OF SAN DIEGO

February 29, 2016

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 January 2016 Monthly Receiving Waters Monitoring Report for the Point Loma Ocean Outfall, Point Loma Wastewater Treatment Plant as required per Order No. R9-2009-0001, NPDES Permit No. CA0107409.

This report includes raw ocean monitoring data and summaries of water quality parameters and ocean conditions measured during the month for the Point Loma outfall region. Also included are summaries of compliance with the bacterial water-contact standards specified in the California Ocean Plan.

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

TDS:ger

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

Environmental Monitoring and Technical Services Division • Public Utilities

2392 Kincaid Road • San Diego, CA 92101-0811

Tel (619) 758-2300 Fax (619) 758-2309



REPORT OUTLINE

INTRODUCTION

METHODS

SUMMARY OF RESULTS

TABLES AND FIGURES

Station Locations (Map)

Shore Stations

Total Coliform Compliance Summary, Geometric Mean Standard
Fecal Coliform Compliance Summary, Geometric Mean Standard
Enterococcus Bacteria Compliance Summary, Geometric Mean Standard
Total Coliform Single Sample Maximum
Fecal Coliform Single Sample Maximum
Enterococcus Bacteria Single Sample Maximum
Fecal:Total Coliform Ratio Single Sample Maximum
Shore Station Water Quality Summary Data
Visual Observations

Kelp Stations

Total Coliform Compliance Summary, Geometric Mean Standard
Fecal Coliform Compliance Summary, Geometric Mean Standard
Enterococcus Bacteria Compliance Summary, Geometric Mean Standard
Total Coliform Single Sample Maximum
Fecal Coliform Single Sample Maximum
Enterococcus Bacteria Single Sample Maximum
Fecal:Total Coliform Ratio Single Sample Maximum
Kelp Station Water Quality Summary Data
Visual Observations
CTD Profile Data
CTD Profile Graphics

APPENDIX A

Quality Assurance

Water Quality Summary Data

INTRODUCTION

Monthly reports of water quality and ocean conditions for the San Diego coastal region surrounding the Point Loma Ocean Outfall are submitted to the San Diego Regional Water Quality Control Board and U.S. EPA Region 9 in accordance with Order No. R9-2009-0001, NPDES Permit No. CA0107409 for the Point Loma Wastewater Treatment Plant (PLWTP), Point Loma Ocean Outfall (PLOO). 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 PLWTP are presented in separate reports.

MATERIALS AND METHODS

Shore Stations

Water quality conditions are monitored at eight shore stations (D4, D5, D7–D12). These stations range from the tip of the Point Loma Peninsula to west of Mission Bay (see station locations map). Seawater samples are collected from the surf zone at each station five times during the month. These samples are subsequently transported to the City's Marine Microbiology Laboratory and analyzed for the presence of several types of fecal indicator bacteria (FIBs), including total coliforms, fecal coliforms, and *Enterococcus*. Visual observations of water color and clarity, surf height, human or animal activity, and weather conditions are also recorded at the time of sample collection. Wind speed and direction are measured using a hand-held anemometer with a compass.

Kelp Bed Stations

The eight kelp stations are sampled five times during the month according to permit specifications in order to monitor water quality conditions within the Point Loma kelp forest. These stations include three sites located along the inshore edge of the kelp bed paralleling the 9-m depth contour (i.e., stations C4, C5 and C6), and five sites located near the offshore edge of the kelp bed along the 18-m depth contour (i.e., stations A1, A6, A7, C7 and C8).

Routine weekly monitoring at each of the kelp bed sites consists primarily of collecting seawater samples at discrete depths to determine concentrations of indicator bacteria (i.e., total coliforms, fecal coliforms, and *Enterococcus*). Additional samples for ammonium analysis are collected at these same sites and depths on a quarterly basis in order to correspond to sampling at the offshore stations located within State waters that is typically scheduled during the months of February, May, August and November. Water column profiles of various physical/chemical parameters are also generated during each sampling event, and visual observations of weather and water conditions are recorded at each station.

Seawater samples at the kelp bed stations are primarily collected using a CTD-integrated rosette sampler with Niskin bottles. Aliquots for ammonium and bacteriological analyses are then drawn from these bottles into sterile sample bottles for processing at the City's Toxicology Laboratory (ammonium) and Marine Microbiology Laboratory (bacteria), respectively. Water column profiles of temperature, transmissivity, dissolved oxygen, pH, salinity, density, chlorophyll *a* are generated using a Sea-Bird conductivity, temperature and depth instrument (CTD), which collects these data at a rate of eight scans per second. These scans are then internally averaged to

create water column profiles with data readings at a rate of one per meter. The CTD data are presented in both graphical and tabular form. Additionally, data for depths closest to those where bacteriological samples are collected are extracted from the CTD profiles and presented with the bacteriological data.

Offshore Stations

Offshore water quality sampling is conducted quarterly typically during the months of February, May, August and November. A total of 36 offshore stations (F01–F36) are sampled during each survey usually over a 3-day period. Three of the stations (F01–F03) are located along the 18-m depth contour, while 11 stations are located along each of the following contours: 60 m (stations F04–F14); 80 m (stations F15–F25); 98 m (stations F26–F36). Of these 36 stations, 15 (F01–F03, F06–F14, F18–F20) are located within State jurisdictional waters (i.e., within 3 nautical miles of shore) and are subject to the California Ocean Plan's compliance standards.

Monitoring at all offshore sites includes measurements of *Enterococcus* bacteria, water temperature, salinity, density, dissolved oxygen, pH, chlorophyll *a*, transmissivity, chromomorphic dissolved organic matter (CDOM), and visual observations of weather and water conditions. Monitoring at sites within State waters also include the collection of discrete grab samples for ammonium analysis (see Table 4.2).

Seawater samples for ammonium and bacteriological analyses at the offshore stations are primarily collected using a CTD-integrated rosette sampler with Niskin bottles. Profiles of the various physical/chemical parameters (listed above) are taken using a Sea-Bird CTD. The CTD profile data are then presented in both graphical and tabular form. Additionally, data for depths closest to those at which bacteriological samples are collected are extracted from the CTD profiles and 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. 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]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.

- (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.

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.

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 2016 Quality Assurance Report, which will be completed in March 2017.

SUMMARY OF RESULTS

Shore Stations

During January 2016, two of the eight shore stations was out of compliance with various water-contact standards specified in the Ocean Plan as follows:

- The single sample maximum (SSM) standard for *Enterococcus* was exceeded at station D8 on January 28th.
- The geometric mean standard for *Enterococcus* was exceeded at stations D8 and D11 on one or more days during the month.
- Per permit requirements, resamples were collected in response to these SSM exceedances (see Table 2.8 for details).
- Over the years, elevated bacteria levels at shore and kelp bed stations have tended to be associated with rainfall events, heavy recreational use, or the presence of seabirds or decaying kelp and surfgrass. See the City of San Diego's most recent *Point Loma Ocean Outfall Annual Receiving Waters Monitoring and Assessment Report* for details (<http://www.sandiego.gov/mwwd/environment/oceanmonitor/reports/index.shtml>).
- Nothing of sewage origin was observed at any of the shore stations.

Kelp Bed Stations

- The eight kelp bed water quality stations (A1, A6, A7, C4, C5, C6, C7, C8) were sampled four times during January (i.e. January 4, 13, 19, 28). The fifth day of sampling scheduled for January 31 was canceled due to stormy weather.
- During January, each of the kelp bed stations was in compliance with all of the water-contact standards specified in the Ocean Plan for total coliform, fecal coliform, and *Enterococcus* bacteria.
- Water column temperatures ranged from 14.86 to 16.04°C during the month. The difference between surface and bottom waters ranged from 0.01 to 0.72°C, indicating that the water column was not stratified at the kelp bed stations during the month.
- Chlorophyll *a* concentrations ranged from 0.38 to 3.18 µg/L during January, suggesting the absence of phytoplankton blooms during the month.
- There were no notable visual observations for January.

Offshore Stations

- Quarterly sampling was not conducted during January at the offshore stations. The next quarterly sampling is scheduled for February 2016.



TABLES AND FIGURES

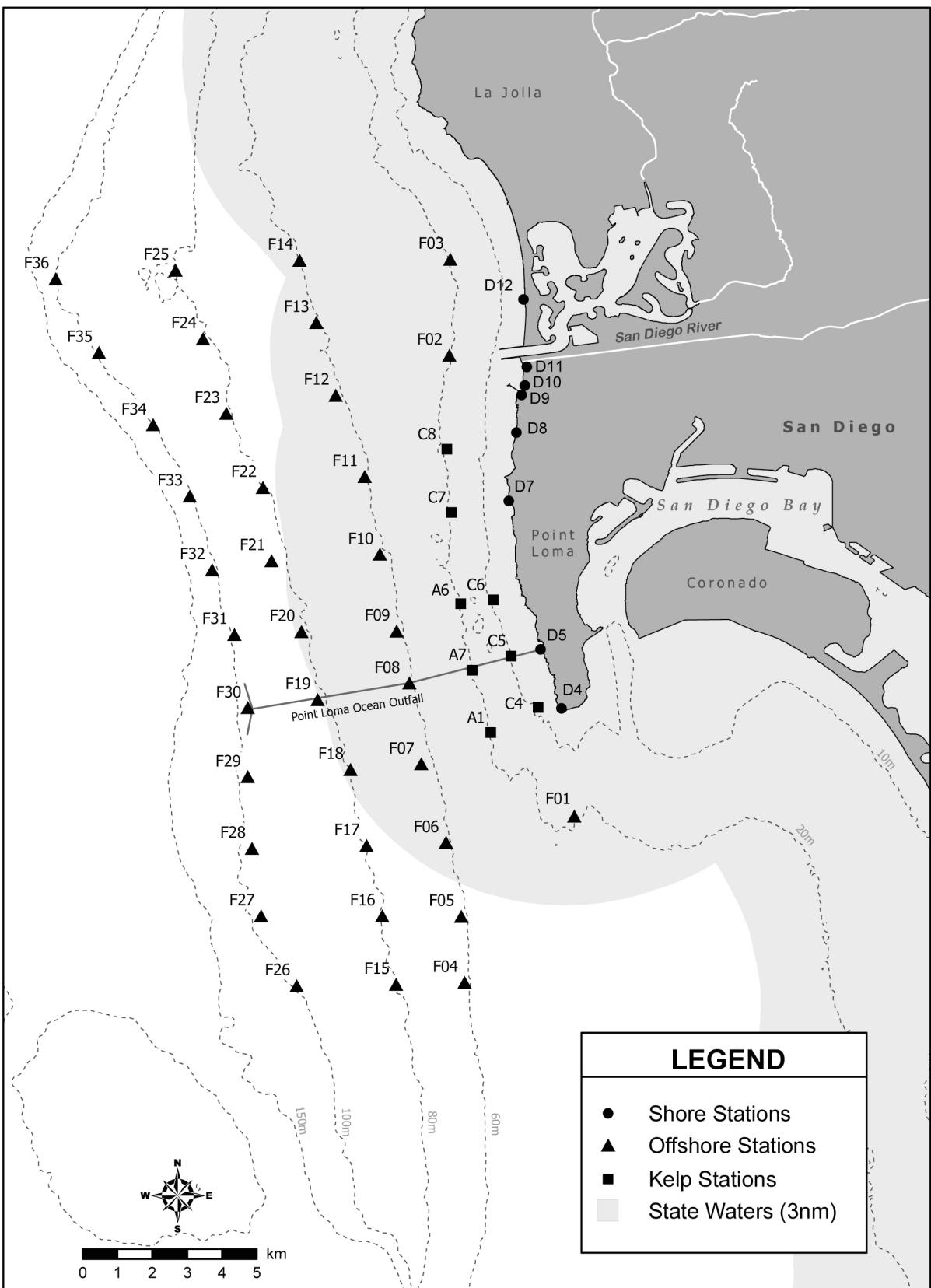


Figure 1.1 Station Map

Shore Stations

Table 2.1

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for total coliform bacteria at the PLOO 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	D4	D5	D7	D8	D9	D10	D11	D12
01 Jan 2016	16	17	8	50	13	29	29	11
02 Jan 2016	16	17	8	50	13	29	29	11
03 Jan 2016	16	17	8	50	13	29	29	11
04 Jan 2016	13	26	8	60	16	23	31	8
05 Jan 2016	19	27	11	74	15	24	54	11
06 Jan 2016	19	27	11	74	15	24	54	11
07 Jan 2016	19	27	11	74	15	24	54	11
08 Jan 2016	19	27	11	74	15	24	54	11
09 Jan 2016	19	27	11	74	15	24	54	11
10 Jan 2016	15	20	11	74	28	29	49	12
11 Jan 2016	15	20	11	74	28	29	49	12
12 Jan 2016	15	20	11	74	28	29	49	12
13 Jan 2016	15	20	11	74	28	29	49	12
14 Jan 2016	15	20	11	74	28	29	49	12
15 Jan 2016	15	20	11	74	28	29	49	12
16 Jan 2016	24	32	11	74	44	47	111	11
17 Jan 2016	24	32	11	74	44	47	111	11
18 Jan 2016	24	32	11	74	44	47	111	11
19 Jan 2016	24	32	11	74	44	47	111	11
20 Jan 2016	24	32	11	74	44	47	111	11
21 Jan 2016	24	32	11	74	44	47	111	11
22 Jan 2016	9	23	6	58	26	41	56	7
23 Jan 2016	9	23	6	58	26	41	56	7
24 Jan 2016	9	23	6	58	26	41	56	7
25 Jan 2016	9	23	6	58	26	41	56	7
26 Jan 2016	9	23	6	58	26	41	56	7
27 Jan 2016	9	23	6	58	26	41	56	7
28 Jan 2016	6	15	8	117	19	30	27	5
29 Jan 2016	6	15	8	117	19	30	27	5
30 Jan 2016	6	15	8	117	19	30	27	5
31 Jan 2016	6	15	8	117	19	30	27	5

* 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 PLOO 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	D4	D5	D7	D8	D9	D10	D11	D12
01 Jan 2016	4	4	2	8	3	8	4	5
02 Jan 2016	4	4	2	8	3	8	4	5
03 Jan 2016	4	4	2	8	3	8	4	5
04 Jan 2016	3	6	2	12	3	9	4	4
05 Jan 2016	4	8	2	18	3	12	4	4
06 Jan 2016	4	8	2	18	3	12	4	4
07 Jan 2016	4	8	2	18	3	12	4	4
08 Jan 2016	4	8	2	18	3	12	4	4
09 Jan 2016	4	8	2	18	3	12	4	4
10 Jan 2016	4	4	4	18	3	13	5	4
11 Jan 2016	4	4	4	18	3	13	5	4
12 Jan 2016	4	4	4	18	3	13	5	4
13 Jan 2016	4	4	4	18	3	13	5	4
14 Jan 2016	4	4	4	18	3	13	5	4
15 Jan 2016	4	4	4	18	3	13	5	4
16 Jan 2016	4	4	4	16	3	14	9	4
17 Jan 2016	4	4	4	16	3	14	9	4
18 Jan 2016	4	4	4	16	3	14	9	4
19 Jan 2016	4	4	4	16	3	14	9	4
20 Jan 2016	4	4	4	16	3	14	9	4
21 Jan 2016	4	4	4	16	3	14	9	4
22 Jan 2016	2	4	4	10	3	11	5	2
23 Jan 2016	2	4	4	10	3	11	5	2
24 Jan 2016	2	4	4	10	3	11	5	2
25 Jan 2016	2	4	4	10	3	11	5	2
26 Jan 2016	2	4	4	10	3	11	5	2
27 Jan 2016	2	4	4	10	3	11	5	2
28 Jan 2016	2	4	7	17	3	7	4	2
29 Jan 2016	2	4	7	17	3	7	4	2
30 Jan 2016	2	4	7	17	3	7	4	2
31 Jan 2016	2	4	7	17	3	7	4	2

* 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 PLOO 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	D4	D5	D7	D8	D9	D10	D11	D12
01 Jan 2016	3	5	2	14	4	11	19	15
02 Jan 2016	3	5	2	14	4	11	19	15
03 Jan 2016	3	5	2	14	4	11	19	15
04 Jan 2016	3	6	3	18	4	10	18	11
05 Jan 2016	3	6	3	24	4	14	24	15
06 Jan 2016	3	6	3	24	4	14	24	15
07 Jan 2016	3	6	3	24	4	14	24	15
08 Jan 2016	3	6	3	24	4	14	24	15
09 Jan 2016	3	6	3	24	4	14	24	15
10 Jan 2016	3	6	5	23	4	15	21	10
11 Jan 2016	3	6	5	23	4	15	21	10
12 Jan 2016	3	6	5	23	4	15	21	10
13 Jan 2016	3	6	5	23	4	15	21	10
14 Jan 2016	3	6	5	23	4	15	21	10
15 Jan 2016	3	6	5	23	4	15	21	10
16 Jan 2016	3	6	5	23	4	30	40	10
17 Jan 2016	3	6	5	23	4	30	40	10
18 Jan 2016	3	6	5	23	4	30	40	10
19 Jan 2016	3	6	5	23	4	30	40	10
20 Jan 2016	3	6	5	23	4	30	40	10
21 Jan 2016	3	6	5	23	4	30	40	10
22 Jan 2016	2	5	4	13	3	20	25	5
23 Jan 2016	2	5	4	13	3	20	25	3
24 Jan 2016	2	5	4	13	3	20	25	3
25 Jan 2016	2	5	4	13	3	20	25	3
26 Jan 2016	2	5	4	13	3	20	25	3
27 Jan 2016	2	5	4	13	3	20	25	3
28 Jan 2016	2	4	6	36	4	13	13	2
29 Jan 2016	2	4	6	33	4	13	13	2
30 Jan 2016	2	4	6	33	4	13	13	2
31 Jan 2016	2	4	6	33	4	13	13	2

* Geometric mean calculated using n<5

Table 2.4

Summary of compliance at the PLOO 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	D4	D5	D7	D8	D9	D10	D11	D12
04 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
10 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
16 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
22 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
28 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
29 Jan 2016	ns	ns	ns	ns	ns	ns	ns	ns

IC = In Compliance

E = Exceedance

ns = not sampled

Table 2.5

Summary of compliance at the PLOO 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	D4	D5	D7	D8	D9	D10	D11	D12
04 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
10 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
16 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
22 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
28 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
29 Jan 2016	ns	ns	ns	ns	ns	ns	ns	ns

IC = In Compliance

E = Exceedance

ns = not sampled

Table 2.6

Summary of compliance at the PLOO 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	D4	D5	D7	D8	D9	D10	D11	D12
04 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
10 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
16 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
22 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
28 Jan 2016	IC	IC	IC	E	IC	IC	IC	IC
29 Jan 2016	ns	ns	ns	IC	ns	ns	ns	ns

IC = In Compliance

E = Exceedance

ns = not sampled

Table 2.7

Summary of compliance at the PLOO 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	D4	D5	D7	D8	D9	D10	D11	D12
04 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
10 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
16 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
22 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC
28 Jan 2016	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

Table 2.8

Summary of water quality parameters at the PLOO 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
D4	04 Jan 2016	834	4e	<2	<2	0.500
	10 Jan 2016	830	20e	4e	2e	0.200
	16 Jan 2016	1027	<20	<2	<2	0.100
	22 Jan 2016	1051	<2	<2	<2	1.000
	28 Jan 2016	912	<2	<2	<2	1.000
D5	04 Jan 2016	819	220e	100	28e	0.455
	10 Jan 2016	816	<20	2e	4e	0.100
	16 Jan 2016	1046	<20	<2	<2	0.100
	22 Jan 2016	1118	4e	<2	<2	0.500
	28 Jan 2016	856	<2	<2	<2	1.000
D7	04 Jan 2016	902	8e	4e	8e	0.500
	10 Jan 2016	851	20e	40e	18e	2.000
	16 Jan 2016	954	<2	<2	<2	1.000
	22 Jan 2016	1137	<2	<2	<2	1.000
	28 Jan 2016	936	50	36e	10e	0.720
D8	04 Jan 2016	914	140e	100e	48	0.714
	10 Jan 2016	901	<200	4e	14e	0.020
	16 Jan 2016	938	20e	4e	<2	0.200
	22 Jan 2016	1026	60e	6e	6e	0.100
	28 Jan 2016	951	660	130e	7000	0.197
	29 Jan 2016	1248	ns	ns	24e	ns
D9	04 Jan 2016	924	44	8e	2e	0.182
	10 Jan 2016	912	400e	2e	12e	0.005
	16 Jan 2016	923	<20	2e	<2	0.100
	22 Jan 2016	1006	4e	<2	2e	0.500
	28 Jan 2016	1002	<2	<2	8e	1.000
D10	04 Jan 2016	943	8e	18e	6e	2.250
	10 Jan 2016	922	100e	10e	30e	0.100
	16 Jan 2016	905	140e	4e	66	0.029
	22 Jan 2016	952	10e	10e	8e	1.000
	28 Jan 2016	1011	22e	<2	4e	0.091
D11	04 Jan 2016	957	48	<2	12e	0.042
	10 Jan 2016	934	120e	6e	30e	0.050
	16 Jan 2016	852	600e	<20	90	0.033
	22 Jan 2016	940	<2	<2	6e	1.000
	28 Jan 2016	1021	2e	<2	2e	1.000

Station	Date	Time	Total	Fecal	Enteric	F:T
D12	04 Jan 2016	1016	2e	<2	<2	1.000
D12	10 Jan 2016	956	40e	4e	2e	0.100
D12	16 Jan 2016	833	2e	<2	2e	1.000
D12	22 Jan 2016	850	8e	2e	2e	0.250
D12	28 Jan 2016	1040	2e	<2	<2	1.000

ns = not sampled

ND = no data

Comments

Station	Date	Depth	Parameter	Comments
D8	29 Jan 2016			Resample

Table 2.9

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

Station	Date	Parameter	Value
D4	04 Jan 2016	Arrive Time	834
D4	04 Jan 2016	Weather	Cloudy
D4	04 Jan 2016	Wind Speed (kts)	6
D4	04 Jan 2016	Wind Dir	SW
D4	04 Jan 2016	Animal Life	None
D4	04 Jan 2016	Floatables	None
D4	04 Jan 2016	Water Color	Green
D4	04 Jan 2016	Current Direction	SW
D4	04 Jan 2016	Wave Height Low (ft)	3
D4	04 Jan 2016	High Tide (ft)	4.7
D4	04 Jan 2016	High Tide Time	458
D4	04 Jan 2016	Low Tide (ft)	0.9
D4	04 Jan 2016	Low Tide Time	1213
D4	04 Jan 2016	Comments	Kelp; Seagrass; Water clear
D4	10 Jan 2016	Arrive Time	830
D4	10 Jan 2016	Weather	Cloudy
D4	10 Jan 2016	Wind Speed (kts)	6.6
D4	10 Jan 2016	Wind Dir	SW
D4	10 Jan 2016	Animal Life	None
D4	10 Jan 2016	Floatables	None
D4	10 Jan 2016	Water Color	Green
D4	10 Jan 2016	Current Direction	SW
D4	10 Jan 2016	Wave Height Low (ft)	3
D4	10 Jan 2016	High Tide (ft)	6.2
D4	10 Jan 2016	High Tide Time	834
D4	10 Jan 2016	Low Tide (ft)	1.5
D4	10 Jan 2016	Low Tide Time	228
D4	10 Jan 2016	Comments	Kelp; Seagrass; Water clear
D4	16 Jan 2016	Arrive Time	1027
D4	16 Jan 2016	Weather	Partly Cloudy
D4	16 Jan 2016	Wind Speed (kts)	3.2
D4	16 Jan 2016	Wind Dir	NW
D4	16 Jan 2016	Animal Life	None
D4	16 Jan 2016	Floatables	None
D4	16 Jan 2016	Water Color	Green
D4	16 Jan 2016	Current Direction	NW
D4	16 Jan 2016	Wave Height Low (ft)	3
D4	16 Jan 2016	High Tide (ft)	3.4
D4	16 Jan 2016	High Tide Time	1407
D4	16 Jan 2016	Low Tide (ft)	1.5
D4	16 Jan 2016	Low Tide Time	835
D4	16 Jan 2016	Comments	Kelp; Algae; 2 Surfers; Water clear
D4	28 Jan 2016	Arrive Time	912
D4	28 Jan 2016	Weather	Sunny
D4	28 Jan 2016	Wind Speed (kts)	0.1
D4	28 Jan 2016	Wind Dir	SW
D4	28 Jan 2016	Animal Life	None
D4	28 Jan 2016	Floatables	None

Station	Date	Parameter	Value
D4	28 Jan 2016	Water Color	Green
D4	28 Jan 2016	Current Direction	SW
D4	28 Jan 2016	Wave Height Low (ft)	3
D4	28 Jan 2016	High Tide (ft)	4.2
D4	28 Jan 2016	High Tide Time	1105
D4	28 Jan 2016	Low Tide (ft)	1.7
D4	28 Jan 2016	Low Tide Time	525
D4	28 Jan 2016	Comments	Kelp; Seagrass; Water clear
D5	04 Jan 2016	Arrive Time	819
D5	04 Jan 2016	Weather	Cloudy
D5	04 Jan 2016	Wind Speed (kts)	5.6
D5	04 Jan 2016	Wind Dir	SW
D5	04 Jan 2016	Animal Life	None
D5	04 Jan 2016	Floatables	None
D5	04 Jan 2016	Water Color	Green
D5	04 Jan 2016	Current Direction	SW
D5	04 Jan 2016	Wave Height Low (ft)	4
D5	04 Jan 2016	High Tide (ft)	4.7
D5	04 Jan 2016	High Tide Time	458
D5	04 Jan 2016	Low Tide (ft)	0.9
D5	04 Jan 2016	Low Tide Time	1213
D5	04 Jan 2016	Comments	Kelp; Seagrass; Water clear
D5	10 Jan 2016	Arrive Time	816
D5	10 Jan 2016	Weather	Cloudy
D5	10 Jan 2016	Wind Speed (kts)	3.4
D5	10 Jan 2016	Wind Dir	SW
D5	10 Jan 2016	Animal Life	None
D5	10 Jan 2016	Floatables	None
D5	10 Jan 2016	Water Color	Green
D5	10 Jan 2016	Current Direction	SW
D5	10 Jan 2016	Wave Height Low (ft)	2
D5	10 Jan 2016	High Tide (ft)	6.2
D5	10 Jan 2016	High Tide Time	834
D5	10 Jan 2016	Low Tide (ft)	1.5
D5	10 Jan 2016	Low Tide Time	228
D5	10 Jan 2016	Comments	Kelp; Seagrass; Water clear
D5	16 Jan 2016	Arrive Time	1046
D5	16 Jan 2016	Weather	Sunny
D5	16 Jan 2016	Wind Speed (kts)	2.1
D5	16 Jan 2016	Wind Dir	N
D5	16 Jan 2016	Animal Life	2 Birds
D5	16 Jan 2016	Floatables	None
D5	16 Jan 2016	Water Color	Green
D5	16 Jan 2016	Current Direction	N
D5	16 Jan 2016	Wave Height Low (ft)	2
D5	16 Jan 2016	High Tide (ft)	3.4
D5	16 Jan 2016	High Tide Time	1407
D5	16 Jan 2016	Low Tide (ft)	1.5
D5	16 Jan 2016	Low Tide Time	835
D5	16 Jan 2016	Comments	Seagrass; Algae; Water clear
D5	28 Jan 2016	Arrive Time	856

Station	Date	Parameter	Value
D5	28 Jan 2016	Weather	Sunny
D5	28 Jan 2016	Wind Speed (kts)	0
D5	28 Jan 2016	Wind Dir	
D5	28 Jan 2016	Animal Life	None
D5	28 Jan 2016	Floatables	None
D5	28 Jan 2016	Water Color	Green
D5	28 Jan 2016	Current Direction	S
D5	28 Jan 2016	Wave Height Low (ft)	4
D5	28 Jan 2016	High Tide (ft)	4.2
D5	28 Jan 2016	High Tide Time	1105
D5	28 Jan 2016	Low Tide (ft)	1.7
D5	28 Jan 2016	Low Tide Time	525
D5	28 Jan 2016	Comments	Kelp; Seagrass; Water clear
D7	04 Jan 2016	Arrive Time	902
D7	04 Jan 2016	Weather	Cloudy
D7	04 Jan 2016	Wind Speed (kts)	0.9
D7	04 Jan 2016	Wind Dir	SW
D7	04 Jan 2016	Animal Life	None
D7	04 Jan 2016	Floatables	None
D7	04 Jan 2016	Water Color	Green
D7	04 Jan 2016	Current Direction	SW
D7	04 Jan 2016	Wave Height Low (ft)	3
D7	04 Jan 2016	High Tide (ft)	4.7
D7	04 Jan 2016	High Tide Time	458
D7	04 Jan 2016	Low Tide (ft)	0.9
D7	04 Jan 2016	Low Tide Time	1213
D7	04 Jan 2016	Comments	Kelp; Seagrass; Water clear
D7	10 Jan 2016	Arrive Time	851
D7	10 Jan 2016	Weather	Cloudy
D7	10 Jan 2016	Wind Speed (kts)	2.5
D7	10 Jan 2016	Wind Dir	SW
D7	10 Jan 2016	Animal Life	None
D7	10 Jan 2016	Floatables	None
D7	10 Jan 2016	Water Color	Green
D7	10 Jan 2016	Current Direction	SW
D7	10 Jan 2016	Wave Height Low (ft)	5
D7	10 Jan 2016	High Tide (ft)	6.2
D7	10 Jan 2016	High Tide Time	834
D7	10 Jan 2016	Low Tide (ft)	1.5
D7	10 Jan 2016	Low Tide Time	228
D7	10 Jan 2016	Comments	Kelp; Seagrass; Water clear
D7	16 Jan 2016	Arrive Time	954
D7	16 Jan 2016	Weather	Partly Cloudy
D7	16 Jan 2016	Wind Speed (kts)	1.8
D7	16 Jan 2016	Wind Dir	W
D7	16 Jan 2016	Animal Life	None
D7	16 Jan 2016	Floatables	None
D7	16 Jan 2016	Water Color	Green
D7	16 Jan 2016	Current Direction	W
D7	16 Jan 2016	Wave Height Low (ft)	4
D7	16 Jan 2016	High Tide (ft)	3.4
D7	16 Jan 2016	High Tide Time	1407

Station	Date	Parameter	Value
D7	16 Jan 2016	Low Tide (ft)	1.5
D7	16 Jan 2016	Low Tide Time	835
D7	16 Jan 2016	Comments	Kelp; Seagrass; Algae; 5 Surfers; Water clear
D7	28 Jan 2016	Arrive Time	936
D7	28 Jan 2016	Weather	Sunny
D7	28 Jan 2016	Wind Speed (kts)	0
D7	28 Jan 2016	Wind Dir	
D7	28 Jan 2016	Animal Life	None
D7	28 Jan 2016	Floatables	None
D7	28 Jan 2016	Water Color	Green
D7	28 Jan 2016	Current Direction	SW
D7	28 Jan 2016	Wave Height Low (ft)	4
D7	28 Jan 2016	High Tide (ft)	4.2
D7	28 Jan 2016	High Tide Time	1105
D7	28 Jan 2016	Low Tide (ft)	1.7
D7	28 Jan 2016	Low Tide Time	525
D7	28 Jan 2016	Comments	Kelp; Seagrass; 22 Surfers; Water clear
D8	04 Jan 2016	Arrive Time	914
D8	04 Jan 2016	Weather	Cloudy
D8	04 Jan 2016	Wind Speed (kts)	0.9
D8	04 Jan 2016	Wind Dir	SW
D8	04 Jan 2016	Animal Life	None
D8	04 Jan 2016	Floatables	None
D8	04 Jan 2016	Water Color	Green
D8	04 Jan 2016	Current Direction	SW
D8	04 Jan 2016	Wave Height Low (ft)	2
D8	04 Jan 2016	High Tide (ft)	4.7
D8	04 Jan 2016	High Tide Time	458
D8	04 Jan 2016	Low Tide (ft)	0.9
D8	04 Jan 2016	Low Tide Time	1213
D8	04 Jan 2016	Comments	Kelp; Seagrass; Water clear
D8	10 Jan 2016	Arrive Time	901
D8	10 Jan 2016	Weather	Cloudy
D8	10 Jan 2016	Wind Speed (kts)	2.9
D8	10 Jan 2016	Wind Dir	SW
D8	10 Jan 2016	Animal Life	None
D8	10 Jan 2016	Floatables	None
D8	10 Jan 2016	Water Color	Green
D8	10 Jan 2016	Current Direction	SW
D8	10 Jan 2016	Wave Height Low (ft)	3
D8	10 Jan 2016	High Tide (ft)	6.2
D8	10 Jan 2016	High Tide Time	834
D8	10 Jan 2016	Low Tide (ft)	1.5
D8	10 Jan 2016	Low Tide Time	228
D8	10 Jan 2016	Comments	Kelp; Seagrass; Water clear
D8	16 Jan 2016	Arrive Time	938
D8	16 Jan 2016	Weather	Cloudy
D8	16 Jan 2016	Wind Speed (kts)	2.2
D8	16 Jan 2016	Wind Dir	N
D8	16 Jan 2016	Animal Life	None
D8	16 Jan 2016	Floatables	None

Station	Date	Parameter	Value
D8	16 Jan 2016	Water Color	Green
D8	16 Jan 2016	Current Direction	N
D8	16 Jan 2016	Wave Height Low (ft)	3
D8	16 Jan 2016	High Tide (ft)	3.4
D8	16 Jan 2016	High Tide Time	1407
D8	16 Jan 2016	Low Tide (ft)	1.5
D8	16 Jan 2016	Low Tide Time	835
D8	16 Jan 2016	Comments	Algae; 1 Person; Water clear
D8	28 Jan 2016	Arrive Time	951
D8	28 Jan 2016	Weather	Sunny
D8	28 Jan 2016	Wind Speed (kts)	2.1
D8	28 Jan 2016	Wind Dir	SW
D8	28 Jan 2016	Animal Life	None
D8	28 Jan 2016	Floatables	None
D8	28 Jan 2016	Water Color	Green
D8	28 Jan 2016	Current Direction	SW
D8	28 Jan 2016	Wave Height Low (ft)	3
D8	28 Jan 2016	High Tide (ft)	4.2
D8	28 Jan 2016	High Tide Time	1105
D8	28 Jan 2016	Low Tide (ft)	1.7
D8	28 Jan 2016	Low Tide Time	525
D8	28 Jan 2016	Comments	Kelp; Seagrass; Water clear
D8	29 Jan 2016	Arrive Time	1248
D8	29 Jan 2016	Weather	Sunny
D8	29 Jan 2016	Wind Speed (kts)	5
D8	29 Jan 2016	Wind Dir	NW
D8	29 Jan 2016	Animal Life	None
D8	29 Jan 2016	Floatables	None
D8	29 Jan 2016	Water Color	Green
D8	29 Jan 2016	Current Direction	NW
D8	29 Jan 2016	Wave Height Low (ft)	5
D8	29 Jan 2016	High Tide (ft)	3.7
D8	29 Jan 2016	High Tide Time	1147
D8	29 Jan 2016	Low Tide (ft)	1
D8	29 Jan 2016	Low Tide Time	1820
D8	29 Jan 2016	Comments	Water turbid
D9	04 Jan 2016	Arrive Time	924
D9	04 Jan 2016	Weather	Cloudy
D9	04 Jan 2016	Wind Speed (kts)	0.3
D9	04 Jan 2016	Wind Dir	SW
D9	04 Jan 2016	Animal Life	None
D9	04 Jan 2016	Floatables	None
D9	04 Jan 2016	Water Color	Green
D9	04 Jan 2016	Current Direction	SW
D9	04 Jan 2016	Wave Height Low (ft)	3
D9	04 Jan 2016	High Tide (ft)	4.7
D9	04 Jan 2016	High Tide Time	458
D9	04 Jan 2016	Low Tide (ft)	0.9
D9	04 Jan 2016	Low Tide Time	1213
D9	04 Jan 2016	Comments	Kelp; Seagrass; 1 Person; Water clear
D9	10 Jan 2016	Arrive Time	912

Station	Date	Parameter	Value
D9	10 Jan 2016	Weather	Cloudy
D9	10 Jan 2016	Wind Speed (kts)	0.9
D9	10 Jan 2016	Wind Dir	SW
D9	10 Jan 2016	Animal Life	None
D9	10 Jan 2016	Floatables	None
D9	10 Jan 2016	Water Color	Green
D9	10 Jan 2016	Current Direction	SW
D9	10 Jan 2016	Wave Height Low (ft)	3
D9	10 Jan 2016	High Tide (ft)	6.2
D9	10 Jan 2016	High Tide Time	834
D9	10 Jan 2016	Low Tide (ft)	-1.2
D9	10 Jan 2016	Low Tide Time	1543
D9	10 Jan 2016	Comments	Kelp; Seagrass; Water clear
D9	16 Jan 2016	Arrive Time	923
D9	16 Jan 2016	Weather	Cloudy
D9	16 Jan 2016	Wind Speed (kts)	2.3
D9	16 Jan 2016	Wind Dir	NW
D9	16 Jan 2016	Animal Life	None
D9	16 Jan 2016	Floatables	None
D9	16 Jan 2016	Water Color	Green
D9	16 Jan 2016	Current Direction	NW
D9	16 Jan 2016	Wave Height Low (ft)	2
D9	16 Jan 2016	High Tide (ft)	3.4
D9	16 Jan 2016	High Tide Time	1407
D9	16 Jan 2016	Low Tide (ft)	1.5
D9	16 Jan 2016	Low Tide Time	835
D9	16 Jan 2016	Comments	Seagrass; Algae; 1 Person; Water clear
D9	28 Jan 2016	Arrive Time	1002
D9	28 Jan 2016	Weather	Sunny
D9	28 Jan 2016	Wind Speed (kts)	0
D9	28 Jan 2016	Wind Dir	
D9	28 Jan 2016	Animal Life	None
D9	28 Jan 2016	Floatables	None
D9	28 Jan 2016	Water Color	Green
D9	28 Jan 2016	Current Direction	SW
D9	28 Jan 2016	Wave Height Low (ft)	4
D9	28 Jan 2016	High Tide (ft)	4.2
D9	28 Jan 2016	High Tide Time	1105
D9	28 Jan 2016	Low Tide (ft)	1.7
D9	28 Jan 2016	Low Tide Time	525
D9	28 Jan 2016	Comments	Kelp; Seagrass; 6 Surfers; Water clear
D10	04 Jan 2016	Arrive Time	943
D10	04 Jan 2016	Weather	Cloudy
D10	04 Jan 2016	Wind Speed (kts)	5.6
D10	04 Jan 2016	Wind Dir	S
D10	04 Jan 2016	Animal Life	None
D10	04 Jan 2016	Floatables	None
D10	04 Jan 2016	Water Color	Green
D10	04 Jan 2016	Current Direction	S
D10	04 Jan 2016	Wave Height Low (ft)	4
D10	04 Jan 2016	High Tide (ft)	4.7
D10	04 Jan 2016	High Tide Time	458

Station	Date	Parameter	Value
D10	04 Jan 2016	Low Tide (ft)	0.9
D10	04 Jan 2016	Low Tide Time	1213
D10	04 Jan 2016	Comments	Kelp; Seagrass; 6 Surfers; Water clear
D10	10 Jan 2016	Arrive Time	922
D10	10 Jan 2016	Weather	Cloudy
D10	10 Jan 2016	Wind Speed (kts)	3.6
D10	10 Jan 2016	Wind Dir	SE
D10	10 Jan 2016	Animal Life	None
D10	10 Jan 2016	Floatables	None
D10	10 Jan 2016	Water Color	Green
D10	10 Jan 2016	Current Direction	SW
D10	10 Jan 2016	Wave Height Low (ft)	3
D10	10 Jan 2016	High Tide (ft)	6.2
D10	10 Jan 2016	High Tide Time	834
D10	10 Jan 2016	Low Tide (ft)	-1.2
D10	10 Jan 2016	Low Tide Time	1543
D10	10 Jan 2016	Comments	Kelp; Seagrass; Water clear
D10	16 Jan 2016	Arrive Time	905
D10	16 Jan 2016	Weather	Cloudy
D10	16 Jan 2016	Wind Speed (kts)	2.4
D10	16 Jan 2016	Wind Dir	NW
D10	16 Jan 2016	Animal Life	None
D10	16 Jan 2016	Floatables	None
D10	16 Jan 2016	Water Color	Green
D10	16 Jan 2016	Current Direction	NW
D10	16 Jan 2016	Wave Height Low (ft)	3
D10	16 Jan 2016	High Tide (ft)	3.4
D10	16 Jan 2016	High Tide Time	1407
D10	16 Jan 2016	Low Tide (ft)	1.5
D10	16 Jan 2016	Low Tide Time	835
D10	16 Jan 2016	Comments	Seagrass; 2 Persons; 5 Surfers; Water clear
D10	28 Jan 2016	Arrive Time	1011
D10	28 Jan 2016	Weather	Sunny
D10	28 Jan 2016	Wind Speed (kts)	3.4
D10	28 Jan 2016	Wind Dir	W
D10	28 Jan 2016	Animal Life	None
D10	28 Jan 2016	Floatables	None
D10	28 Jan 2016	Water Color	Green
D10	28 Jan 2016	Current Direction	S
D10	28 Jan 2016	Wave Height Low (ft)	6
D10	28 Jan 2016	High Tide (ft)	4.2
D10	28 Jan 2016	High Tide Time	1105
D10	28 Jan 2016	Low Tide (ft)	1.7
D10	28 Jan 2016	Low Tide Time	525
D10	28 Jan 2016	Comments	Kelp; Seagrass; 8 Surfers; Water clear
D11	04 Jan 2016	Arrive Time	957
D11	04 Jan 2016	Weather	Partly Cloudy
D11	04 Jan 2016	Wind Speed (kts)	3.1
D11	04 Jan 2016	Wind Dir	SW
D11	04 Jan 2016	Animal Life	None
D11	04 Jan 2016	Floatables	None

Station	Date	Parameter	Value
D11	04 Jan 2016	Water Color	Green
D11	04 Jan 2016	Current Direction	SW
D11	04 Jan 2016	Wave Height Low (ft)	4
D11	04 Jan 2016	High Tide (ft)	4.7
D11	04 Jan 2016	High Tide Time	458
D11	04 Jan 2016	Low Tide (ft)	0.9
D11	04 Jan 2016	Low Tide Time	1213
D11	04 Jan 2016	Comments	Kelp; Seagrass; 3 Persons; Water clear
D11	10 Jan 2016	Arrive Time	934
D11	10 Jan 2016	Weather	Cloudy
D11	10 Jan 2016	Wind Speed (kts)	1.7
D11	10 Jan 2016	Wind Dir	SE
D11	10 Jan 2016	Animal Life	None
D11	10 Jan 2016	Floatables	None
D11	10 Jan 2016	Water Color	Green
D11	10 Jan 2016	Current Direction	SW
D11	10 Jan 2016	Wave Height Low (ft)	4
D11	10 Jan 2016	High Tide (ft)	6.2
D11	10 Jan 2016	High Tide Time	834
D11	10 Jan 2016	Low Tide (ft)	-1.2
D11	10 Jan 2016	Low Tide Time	1543
D11	10 Jan 2016	Comments	Kelp; Seagrass; Water clear
D11	16 Jan 2016	Arrive Time	852
D11	16 Jan 2016	Weather	Cloudy
D11	16 Jan 2016	Wind Speed (kts)	1.3
D11	16 Jan 2016	Wind Dir	NW
D11	16 Jan 2016	Animal Life	None
D11	16 Jan 2016	Floatables	None
D11	16 Jan 2016	Water Color	Green
D11	16 Jan 2016	Current Direction	NW
D11	16 Jan 2016	Wave Height Low (ft)	3
D11	16 Jan 2016	High Tide (ft)	3.4
D11	16 Jan 2016	High Tide Time	1407
D11	16 Jan 2016	Low Tide (ft)	1.5
D11	16 Jan 2016	Low Tide Time	835
D11	16 Jan 2016	Comments	Seagrass; 4 Persons; 1 Surfer; Water clear
D11	28 Jan 2016	Arrive Time	1021
D11	28 Jan 2016	Weather	Sunny
D11	28 Jan 2016	Wind Speed (kts)	1.7
D11	28 Jan 2016	Wind Dir	W
D11	28 Jan 2016	Animal Life	None
D11	28 Jan 2016	Floatables	None
D11	28 Jan 2016	Water Color	Green
D11	28 Jan 2016	Current Direction	S
D11	28 Jan 2016	Wave Height Low (ft)	6
D11	28 Jan 2016	High Tide (ft)	4.2
D11	28 Jan 2016	High Tide Time	1105
D11	28 Jan 2016	Low Tide (ft)	1.7
D11	28 Jan 2016	Low Tide Time	525
D11	28 Jan 2016	Comments	Kelp; Seagrass; 13 Persons; 5 Surfers; Water clear
D12	04 Jan 2016	Arrive Time	1016

Station	Date	Parameter	Value
D12	04 Jan 2016	Weather	Cloudy
D12	04 Jan 2016	Wind Speed (kts)	1.6
D12	04 Jan 2016	Wind Dir	SW
D12	04 Jan 2016	Animal Life	None
D12	04 Jan 2016	Floatables	None
D12	04 Jan 2016	Water Color	Green
D12	04 Jan 2016	Current Direction	SW
D12	04 Jan 2016	Wave Height Low (ft)	4
D12	04 Jan 2016	High Tide (ft)	4.7
D12	04 Jan 2016	High Tide Time	458
D12	04 Jan 2016	Low Tide (ft)	0.9
D12	04 Jan 2016	Low Tide Time	1213
D12	04 Jan 2016	Comments	Kelp; Seagrass; 3 Persons; 1 Surfer; Water clear
D12	10 Jan 2016	Arrive Time	956
D12	10 Jan 2016	Weather	Cloudy
D12	10 Jan 2016	Wind Speed (kts)	2.3
D12	10 Jan 2016	Wind Dir	SE
D12	10 Jan 2016	Animal Life	None
D12	10 Jan 2016	Floatables	None
D12	10 Jan 2016	Water Color	Green
D12	10 Jan 2016	Current Direction	SW
D12	10 Jan 2016	Wave Height Low (ft)	3
D12	10 Jan 2016	High Tide (ft)	6.2
D12	10 Jan 2016	High Tide Time	834
D12	10 Jan 2016	Low Tide (ft)	-1.2
D12	10 Jan 2016	Low Tide Time	1543
D12	10 Jan 2016	Comments	Kelp; Seagrass; 9 Surfers; Water clear
D12	16 Jan 2016	Arrive Time	833
D12	16 Jan 2016	Weather	Cloudy
D12	16 Jan 2016	Wind Speed (kts)	0.1
D12	16 Jan 2016	Wind Dir	N
D12	16 Jan 2016	Animal Life	None
D12	16 Jan 2016	Floatables	None
D12	16 Jan 2016	Water Color	Green
D12	16 Jan 2016	Current Direction	N
D12	16 Jan 2016	Wave Height Low (ft)	3
D12	16 Jan 2016	High Tide (ft)	3.4
D12	16 Jan 2016	High Tide Time	1407
D12	16 Jan 2016	Low Tide (ft)	1.5
D12	16 Jan 2016	Low Tide Time	835
D12	16 Jan 2016	Comments	Seagrass; 4 Joggers; Water clear
D12	28 Jan 2016	Arrive Time	1040
D12	28 Jan 2016	Weather	Sunny
D12	28 Jan 2016	Wind Speed (kts)	3.8
D12	28 Jan 2016	Wind Dir	SW
D12	28 Jan 2016	Animal Life	None
D12	28 Jan 2016	Floatables	None
D12	28 Jan 2016	Water Color	Green
D12	28 Jan 2016	Current Direction	SW
D12	28 Jan 2016	Wave Height Low (ft)	4
D12	28 Jan 2016	High Tide (ft)	4.2
D12	28 Jan 2016	High Tide Time	1105

Station	Date	Parameter	Value
D12	28 Jan 2016	Low Tide (ft)	1.7
D12	28 Jan 2016	Low Tide Time	525
D12	28 Jan 2016	Comments	Kelp; Seagrass; 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 PLOO 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	A1	A6	A7	C4	C5	C6	C7	C8
01 Jan 2016	14	8	12	5	10	5	10	11
02 Jan 2016	14	8	12	5	10	5	10	11
03 Jan 2016	22*	11*	19*	4*	8*	7*	14*	12*
04 Jan 2016	14	8	13	3	6	7	9	8
05 Jan 2016	14	8	13	3	6	7	9	8
06 Jan 2016	14	8	13	3	6	7	9	8
07 Jan 2016	14	8	13	3	6	7	9	8
08 Jan 2016	22*	8*	14*	3*	7*	6*	10*	8*
09 Jan 2016	22*	8*	14*	3*	7*	6*	10*	8*
10 Jan 2016	22*	8*	14*	3*	7*	6*	10*	8*
11 Jan 2016	22*	8*	14*	3*	7*	6*	10*	8*
12 Jan 2016	22*	8*	14*	3*	7*	6*	10*	8*
13 Jan 2016	19	8	16	3	6	7	9	7
14 Jan 2016	12*	5*	10*	2*	3*	4*	6*	4*
15 Jan 2016	12*	5*	10*	2*	3*	4*	6*	4*
16 Jan 2016	10*	6*	8*	3*	2*	5*	3*	2*
17 Jan 2016	10*	6*	8*	3*	2*	5*	3*	2*
18 Jan 2016	10*	6*	8*	3*	2*	5*	3*	2*
19 Jan 2016	8*	6*	8*	4*	4*	7*	4*	3*
20 Jan 2016	5*	6*	8*	5*	4*	10*	5*	4*
21 Jan 2016	5*	6*	8*	5*	4*	10*	5*	4*
22 Jan 2016	5*	6*	8*	5*	4*	10*	5*	4*
23 Jan 2016	5*	6*	8*	5*	4*	10*	5*	4*
24 Jan 2016	5*	6*	8*	5*	4*	10*	5*	4*
25 Jan 2016	5*	6*	8*	5*	4*	10*	5*	4*
26 Jan 2016	5*	6*	8*	5*	4*	10*	5*	4*
27 Jan 2016	5*	6*	8*	5*	4*	10*	5*	4*
28 Jan 2016	4*	6*	6*	4*	4*	7*	4*	3*
29 Jan 2016	4*	6*	6*	4*	4*	7*	4*	3*
30 Jan 2016	4*	6*	6*	4*	4*	7*	4*	3*
31 Jan 2016	4*	6*	6*	4*	4*	7*	4*	3*

* 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 PLOO 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	A1	A6	A7	C4	C5	C6	C7	C8
01 Jan 2016	2	2	2	2	2	2	2	2
02 Jan 2016	2	2	2	2	2	2	2	2
03 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
04 Jan 2016	2	2	2	2	2	2	2	2
05 Jan 2016	2	2	2	2	2	2	2	2
06 Jan 2016	2	2	2	2	2	2	2	2
07 Jan 2016	2	2	2	2	2	2	2	2
08 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
09 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
10 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
11 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
12 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
13 Jan 2016	2	2	2	2	2	2	2	2
14 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
15 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
16 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
17 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
18 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
19 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
20 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
21 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
22 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
23 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
24 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
25 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
26 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
27 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
28 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
29 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
30 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
31 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*

* 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 PLOO 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	A1	A6	A7	C4	C5	C6	C7	C8
01 Jan 2016	3	2	2	2	2	2	2	2
02 Jan 2016	3	2	2	2	2	2	2	2
03 Jan 2016	4*	2*	2*	2*	2*	2*	2*	2*
04 Jan 2016	3	2	2	2	2	2	2	2
05 Jan 2016	3	2	2	2	2	2	2	2
06 Jan 2016	3	2	2	2	2	2	2	2
07 Jan 2016	3	2	2	2	2	2	2	2
08 Jan 2016	3*	2*	2*	2*	2*	2*	2*	2*
09 Jan 2016	3*	2*	2*	2*	2*	2*	2*	2*
10 Jan 2016	3*	2*	2*	2*	2*	2*	2*	2*
11 Jan 2016	3*	2*	2*	2*	2*	2*	2*	2*
12 Jan 2016	3*	2*	2*	2*	2*	2*	2*	2*
13 Jan 2016	3	2	2	2	2	2	2	2
14 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
15 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
16 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
17 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
18 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
19 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
20 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
21 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
22 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
23 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
24 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
25 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
26 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
27 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
28 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
29 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
30 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*
31 Jan 2016	2*	2*	2*	2*	2*	2*	2*	2*

* Geometric mean calculated using n<5

Table 3.4

Summary of compliance at the PLOO 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	A1	A6	A7	C4	C5	C6	C7	C8
04 Jan 2016	IC							
13 Jan 2016	IC							
19 Jan 2016	IC							
28 Jan 2016	IC							

IC = In Compliance

E = Exceedance

ns = not sampled

Table 3.5

Summary of compliance at the PLOO 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	A1	A6	A7	C4	C5	C6	C7	C8
04 Jan 2016	IC							
13 Jan 2016	IC							
19 Jan 2016	IC							
28 Jan 2016	IC							

IC = In Compliance

E = Exceedance

ns = not sampled

Table 3.6

Summary of compliance at the PLOO 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	A1	A6	A7	C4	C5	C6	C7	C8
04 Jan 2016	IC							
13 Jan 2016	IC							
19 Jan 2016	IC							
28 Jan 2016	IC							

IC = In Compliance

E = Exceedance

ns = not sampled

Table 3.7

Summary of compliance at the PLOO 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	A1	A6	A7	C4	C5	C6	C7	C8
04 Jan 2016	IC							
13 Jan 2016	IC							
19 Jan 2016	IC							
28 Jan 2016	IC							

IC = In Compliance

E = Exceedance

ns = not sampled

Table 3.8

Summary of water quality parameters at the PLOO kelp stations for each sample date. Densities of total coliform (Total), fecal coliform (Fecal) and *Enterococcus* (Entero) bacteria are reported as CFU/100 mL; the fecal:total coliform ratio (F:T) is unitless; ammonium (N-NH₃) values are reported as mg/L; 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	Entero	F:T	N-NH ₃	Temp	XMS	DO	Sal	pH
A1	04 Jan 2016	1216	1	2e	<2	<2	1.00	ns	15.9	81.81	7.1	33.61	8.2
A1	04 Jan 2016	1216	12	<2	<2	<2	1.00	ns	15.9	83.52	7.6	33.62	8.2
A1	04 Jan 2016	1216	18	<2	<2	<2	1.00	ns	15.9	83.42	7.6	33.63	8.2
A1	13 Jan 2016	811	1	<2	<2	<2	1.00	ns	15.8	85.37	7.2	33.47	8.3
A1	13 Jan 2016	811	12	<20	<2	<2	0.10	ns	15.7	82.40	6.6	33.57	8.3
A1	13 Jan 2016	811	18	14e	<2	<2	0.14	ns	15.4	71.03	6.2	33.58	8.2
A1	19 Jan 2016	900	1	<2	<2	<2	1.00	ns	15.9	78.92	7.7	33.54	8.2
A1	19 Jan 2016	900	12	2e	<2	<2	1.00	ns	15.7	79.17	7.1	33.55	8.2
A1	19 Jan 2016	900	18	8e	<2	<2	0.25	ns	15.5	74.43	7.0	33.53	8.1
A1	28 Jan 2016	823	1	<2	<2	<2	1.00	ns	15.7	84.89	7.7	33.59	8.2
A1	28 Jan 2016	823	12	<2	<2	<2	1.00	ns	15.4	84.60	7.3	33.57	8.1
A1	28 Jan 2016	823	18	<2	<2	<2	1.00	ns	15.3	84.33	7.2	33.57	8.1
C4	04 Jan 2016	1229	1	<2	<2	<2	1.00	ns	15.6	77.99	7.4	33.54	8.2
C4	04 Jan 2016	1229	3	<2	<2	<2	1.00	ns	15.5	78.30	7.4	33.59	8.2
C4	04 Jan 2016	1229	9	<2	<2	<2	1.00	ns	15.3	72.66	6.2	33.62	8.2
C4	13 Jan 2016	1042	1	<2	<2	<2	1.00	ns	15.7	62.66	7.4	33.42	8.1
C4	13 Jan 2016	1042	3	2e	<2	<2	1.00	ns	15.7	60.67	7.4	33.43	8.1
C4	13 Jan 2016	1042	9	8e	<2	<2	0.25	ns	15.7	58.73	7.1	33.46	8.1
C4	19 Jan 2016	1116	1	<20	<2	<2	0.10	ns	15.8	47.85	8.0	33.48	8.1
C4	19 Jan 2016	1116	3	<20	<2	<2	0.10	ns	15.8	47.98	8.0	33.48	8.1
C4	19 Jan 2016	1116	9	20e	<2	2e	0.10	ns	15.3	50.28	6.6	33.50	8.1
C4	28 Jan 2016	1039	1	<2	<2	<2	1.00	ns	15.6	85.44	7.3	33.57	8.1
C4	28 Jan 2016	1039	3	<2	<2	<2	1.00	ns	15.4	85.13	7.3	33.57	8.1
C4	28 Jan 2016	1039	9	<2	<2	<2	1.00	ns	15.3	84.08	7.2	33.57	8.1
C5	04 Jan 2016	1149	1	<2	<2	<2	1.00	ns	15.9	79.38	6.3	33.56	8.2
C5	04 Jan 2016	1149	3	<2	<2	<2	1.00	ns	15.9	78.85	7.0	33.60	8.2
C5	04 Jan 2016	1149	9	<2	<2	<2	1.00	ns	15.8	78.41	7.0	33.61	8.2
C5	13 Jan 2016	1029	1	<2	<2	<2	1.00	ns	15.7	62.61	7.4	33.42	8.1
C5	13 Jan 2016	1029	3	<2	<2	<2	1.00	ns	15.7	60.85	7.4	33.43	8.1
C5	13 Jan 2016	1029	9	2e	2e	<2	1.00	ns	15.7	58.73	7.2	33.46	8.1
C5	19 Jan 2016	1101	1	<20	<2	<2	0.10	ns	15.8	58.60	7.6	33.49	8.1
C5	19 Jan 2016	1101	3	20e	<2	4e	0.10	ns	15.7	58.06	7.3	33.49	8.1
C5	19 Jan 2016	1101	9	20e	<2	2e	0.10	ns	15.4	52.89	6.7	33.50	8.1
C5	28 Jan 2016	1028	1	<2	<2	<2	1.00	ns	15.5	83.45	7.5	33.58	8.2
C5	28 Jan 2016	1028	3	<2	<2	<2	1.00	ns	15.4	81.80	7.5	33.58	8.2

Station	Date	Time	Depth	Total	Fecal	Enteric	F:T	N-NH3	Temp	XMS	DO	Sal	pH
C5	28 Jan 2016	1028	9	<2	<2	<2	1.00	ns	15.3	71.82	7.6	33.59	8.2
A6	04 Jan 2016	1116	1	4e	<2	<2	0.50	ns	16.0	86.15	6.2	33.62	8.2
A6	04 Jan 2016	1116	12	<2	<2	<2	1.00	ns	15.9	86.61	7.0	33.64	8.2
A6	04 Jan 2016	1116	18	<2	<2	<2	1.00	ns	15.8	86.08	6.8	33.65	8.2
A6	13 Jan 2016	900	1	<2	<2	<2	1.00	ns	15.8	70.98	7.3	33.40	8.1
A6	13 Jan 2016	900	12	2e	<2	<2	1.00	ns	15.8	75.67	6.8	33.46	8.1
A6	13 Jan 2016	900	18	20e	2e	2e	0.10	ns	15.6	59.85	6.4	33.50	8.1
A6	19 Jan 2016	951	1	2e	<2	<2	1.00	ns	15.7	67.20	7.6	33.49	8.2
A6	19 Jan 2016	951	12	6e	<2	<2	0.33	ns	15.7	66.80	7.6	33.49	8.2
A6	19 Jan 2016	951	18	<20	<2	4e	0.10	ns	15.7	66.60	7.4	33.50	8.2
A6	28 Jan 2016	907	1	<2	<2	<2	1.00	ns	15.6	85.56	7.5	33.58	8.1
A6	28 Jan 2016	907	12	6e	<2	<2	0.33	ns	15.4	85.37	7.3	33.57	8.1
A6	28 Jan 2016	907	18	6e	<2	<2	0.33	ns	15.3	84.37	7.2	33.56	8.1
C6	04 Jan 2016	1141	1	4e	2e	<2	0.50	ns	15.3	77.21	7.3	33.59	8.2
C6	04 Jan 2016	1141	3	2e	<2	<2	1.00	ns	15.3	76.59	6.4	33.60	8.2
C6	04 Jan 2016	1141	9	10e	<2	<2	0.20	ns	15.1	73.01	6.2	33.67	8.2
C6	13 Jan 2016	1018	1	<2	<2	<2	1.00	ns	15.9	73.34	7.3	33.42	8.1
C6	13 Jan 2016	1018	3	4e	<2	<2	0.50	ns	15.8	71.32	7.3	33.42	8.1
C6	13 Jan 2016	1018	9	<20	2e	<2	0.10	ns	15.8	61.73	7.3	33.43	8.1
C6	19 Jan 2016	1049	1	<20	<2	<2	0.10	ns	15.7	60.00	7.7	33.50	8.2
C6	19 Jan 2016	1049	3	20e	<2	<2	0.10	ns	15.7	59.69	7.5	33.50	8.2
C6	19 Jan 2016	1049	9	<20	<2	2e	0.10	ns	15.5	59.67	6.9	33.50	8.1
C6	28 Jan 2016	1011	1	<2	<2	<2	1.00	ns	15.5	77.56	7.5	33.57	8.1
C6	28 Jan 2016	1011	3	<2	<2	<2	1.00	ns	15.4	77.19	7.6	33.58	8.1
C6	28 Jan 2016	1011	9	<2	<2	<2	1.00	ns	15.3	59.62	7.4	33.57	8.1
A7	04 Jan 2016	1200	1	2e	<2	<2	1.00	ns	15.9	79.46	7.0	33.51	8.2
A7	04 Jan 2016	1200	12	2e	<2	<2	1.00	ns	15.8	85.31	7.4	33.64	8.2
A7	04 Jan 2016	1200	18	4e	<2	<2	0.50	ns	15.7	84.63	6.6	33.65	8.2
A7	13 Jan 2016	836	1	<2	<2	<2	1.00	ns	15.8	82.87	7.1	33.44	8.1
A7	13 Jan 2016	836	12	<2	<2	<2	1.00	ns	15.8	83.65	7.1	33.48	8.1
A7	13 Jan 2016	836	18	60e	<2	<2	0.03	ns	15.3	59.28	6.1	33.57	8.0
A7	19 Jan 2016	917	1	2e	<2	<2	1.00	ns	15.8	77.17	7.8	33.52	8.2
A7	19 Jan 2016	917	12	6e	<2	<2	0.33	ns	15.8	77.40	7.6	33.52	8.2
A7	19 Jan 2016	917	18	20e	<2	<2	0.10	ns	15.6	77.69	7.2	33.53	8.2
A7	28 Jan 2016	846	1	<2	<2	<2	1.00	ns	15.7	84.89	7.7	33.59	8.2
A7	28 Jan 2016	846	12	<2	<2	<2	1.00	ns	15.4	84.60	7.3	33.57	8.1
A7	28 Jan 2016	846	18	<2	<2	<2	1.00	ns	15.3	84.33	7.2	33.57	8.1
C7	04 Jan 2016	1057	1	<2	<2	<2	1.00	ns	15.9	85.65	6.7	33.64	8.2
C7	04 Jan 2016	1057	12	<2	<2	<2	1.00	ns	15.8	86.16	6.2	33.65	8.2
C7	04 Jan 2016	1057	18	<2	<2	<2	1.00	ns	15.8	78.80	5.8	33.66	8.2
C7	13 Jan 2016	925	1	<2	<2	<2	1.00	ns	15.8	82.16	7.5	33.37	8.1

Station	Date	Time	Depth	Total	Fecal	Enterο	F:T	N-NH3	Temp	XMS	DO	Sal	pH
C7	13 Jan 2016	925	12	2e	<2	<2	1.00	ns	15.9	74.50	6.9	33.48	8.1
C7	13 Jan 2016	925	18	<20	<2	2e	0.10	ns	15.8	53.81	6.3	33.55	8.1
C7	19 Jan 2016	1010	1	<2	<2	<2	1.00	ns	15.9	70.34	7.8	33.47	8.2
C7	19 Jan 2016	1010	12	2e	<2	<2	1.00	ns	15.8	67.45	7.6	33.48	8.2
C7	19 Jan 2016	1010	18	<20	<2	<2	0.10	ns	15.5	41.91	6.6	33.51	8.1
C7	28 Jan 2016	927	1	<2	<2	<2	1.00	ns	15.6	84.13	7.6	33.58	8.2
C7	28 Jan 2016	927	12	<2	<2	<2	1.00	ns	15.5	84.91	7.4	33.58	8.2
C7	28 Jan 2016	927	18	2e	<2	<2	1.00	ns	14.9	77.62	6.2	33.52	8.1
C8	04 Jan 2016	1005	1	2e	<2	<2	1.00	ns	15.8	86.37	7.7	33.63	8.2
C8	04 Jan 2016	1005	12	<2	<2	<2	1.00	ns	15.7	86.67	7.6	33.61	8.2
C8	04 Jan 2016	1005	18	<2	<2	<2	1.00	ns	15.7	85.95	7.7	33.61	8.2
C8	13 Jan 2016	944	1	<2	<2	<2	1.00	ns	15.7	79.95	7.5	33.41	8.1
C8	13 Jan 2016	944	12	<2	<2	<2	1.00	ns	15.7	80.58	7.5	33.42	8.1
C8	13 Jan 2016	944	18	4e	<2	2e	0.50	ns	15.9	83.66	7.0	33.55	8.1
C8	19 Jan 2016	1028	1	<2	<2	<2	1.00	ns	15.9	74.56	7.9	33.50	8.2
C8	19 Jan 2016	1028	12	22e	<2	<2	0.09	ns	15.8	74.39	7.8	33.51	8.2
C8	19 Jan 2016	1028	18	<2	<2	<2	1.00	ns	15.5	22.76	6.9	33.52	8.2
C8	28 Jan 2016	940	1	<2	<2	<2	1.00	ns	15.6	85.05	7.5	33.58	8.2
C8	28 Jan 2016	940	12	<2	<2	<2	1.00	ns	15.4	84.56	7.0	33.57	8.1
C8	28 Jan 2016	940	18	4e	<2	<2	0.50	ns	14.9	75.58	6.3	33.53	8.1

ns = not sampled

ND = no data

Table 3.9

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

Station	Date	Parameter	Value
A1	04 Jan 2016	Depth (m)	21
A1	04 Jan 2016	Arrive Time	1216
A1	04 Jan 2016	Depart Time	1220
A1	04 Jan 2016	Air Temp (C)	15
A1	04 Jan 2016	Weather	Rain
A1	04 Jan 2016	Visibility (mi)	2
A1	04 Jan 2016	Wind Speed (kts)	11
A1	04 Jan 2016	Wind Dir	NW
A1	04 Jan 2016	Water Color	Green
A1	04 Jan 2016	Wave Ht Low (ft)	5
A1	04 Jan 2016	Wave Period (sec)	7
A1	04 Jan 2016	Sea State	Confused swell
A1	04 Jan 2016	High Tide (ft)	4.74
A1	04 Jan 2016	High Tide Time	458
A1	04 Jan 2016	Low Tide (ft)	0.87
A1	04 Jan 2016	Low Tide Time	1213
A1	04 Jan 2016	Comments	Kelp
A1	13 Jan 2016	Depth (m)	18
A1	13 Jan 2016	Arrive Time	811
A1	13 Jan 2016	Depart Time	824
A1	13 Jan 2016	Air Temp (C)	13
A1	13 Jan 2016	Weather	Partly Cloudy
A1	13 Jan 2016	Visibility (mi)	2
A1	13 Jan 2016	Wind Speed (kts)	3
A1	13 Jan 2016	Wind Dir	N
A1	13 Jan 2016	Water Color	Green
A1	13 Jan 2016	Wave Ht Low (ft)	3
A1	13 Jan 2016	Wave Period (sec)	9
A1	13 Jan 2016	Sea State	Calm
A1	13 Jan 2016	High Tide (ft)	5.34
A1	13 Jan 2016	High Tide Time	1039
A1	13 Jan 2016	Low Tide (ft)	1.59
A1	13 Jan 2016	Low Tide Time	445
A1	13 Jan 2016	Comments	Kelp
A1	19 Jan 2016	Depth (m)	17
A1	19 Jan 2016	Arrive Time	900
A1	19 Jan 2016	Depart Time	913
A1	19 Jan 2016	Air Temp (C)	15
A1	19 Jan 2016	Weather	Clear
A1	19 Jan 2016	Visibility (mi)	12
A1	19 Jan 2016	Wind Speed (kts)	1
A1	19 Jan 2016	Wind Dir	SW
A1	19 Jan 2016	Water Color	Green
A1	19 Jan 2016	Wave Ht Low (ft)	6
A1	19 Jan 2016	Wave Period (sec)	13
A1	19 Jan 2016	Sea State	Calm
A1	19 Jan 2016	High Tide (ft)	5.54
A1	19 Jan 2016	High Tide Time	505
A1	19 Jan 2016	Low Tide (ft)	-0.22

Station	Date	Parameter	Value
A1	19 Jan 2016	Low Tide Time	1227
A1	19 Jan 2016	Comments	Kelp; Did not get 18th meter new CTD pressure sensor is located further off of bottom; Birds on station
A1	28 Jan 2016	Depth (m)	19
A1	28 Jan 2016	Arrive Time	823
A1	28 Jan 2016	Depart Time	845
A1	28 Jan 2016	Air Temp (C)	15
A1	28 Jan 2016	Weather	Partly Cloudy
A1	28 Jan 2016	Visibility (mi)	10
A1	28 Jan 2016	Wind Speed (kts)	2
A1	28 Jan 2016	Wind Dir	N
A1	28 Jan 2016	Water Color	Green
A1	28 Jan 2016	Wave Ht Low (ft)	3
A1	28 Jan 2016	Wave Period (sec)	9
A1	28 Jan 2016	Sea State	Calm
A1	28 Jan 2016	High Tide (ft)	4.24
A1	28 Jan 2016	High Tide Time	1105
A1	28 Jan 2016	Low Tide (ft)	1.69
A1	28 Jan 2016	Low Tide Time	525
A1	28 Jan 2016	Comments	Kelp
C4	04 Jan 2016	Depth (m)	10
C4	04 Jan 2016	Arrive Time	1229
C4	04 Jan 2016	Depart Time	1233
C4	04 Jan 2016	Air Temp (C)	15
C4	04 Jan 2016	Weather	Partly Cloudy
C4	04 Jan 2016	Visibility (mi)	6
C4	04 Jan 2016	Wind Speed (kts)	10
C4	04 Jan 2016	Wind Dir	NW
C4	04 Jan 2016	Water Color	Green
C4	04 Jan 2016	Wave Ht Low (ft)	5
C4	04 Jan 2016	Wave Period (sec)	7
C4	04 Jan 2016	Sea State	Confused swell
C4	04 Jan 2016	High Tide (ft)	4.74
C4	04 Jan 2016	High Tide Time	458
C4	04 Jan 2016	Low Tide (ft)	0.87
C4	04 Jan 2016	Low Tide Time	1213
C4	04 Jan 2016	Comments	Kelp; Lobster floats
C4	13 Jan 2016	Depth (m)	11
C4	13 Jan 2016	Arrive Time	1042
C4	13 Jan 2016	Depart Time	1052
C4	13 Jan 2016	Air Temp (C)	14
C4	13 Jan 2016	Weather	Partly Cloudy
C4	13 Jan 2016	Visibility (mi)	6
C4	13 Jan 2016	Wind Speed (kts)	4
C4	13 Jan 2016	Wind Dir	SW
C4	13 Jan 2016	Water Color	Green
C4	13 Jan 2016	Wave Ht Low (ft)	3
C4	13 Jan 2016	Wave Period (sec)	9
C4	13 Jan 2016	Sea State	Calm
C4	13 Jan 2016	High Tide (ft)	5.34
C4	13 Jan 2016	High Tide Time	1039
C4	13 Jan 2016	Low Tide (ft)	1.59

Station	Date	Parameter	Value
C4	13 Jan 2016	Low Tide Time	445
C4	13 Jan 2016	Comments	Kelp; Boats on station
C4	19 Jan 2016	Depth (m)	10
C4	19 Jan 2016	Arrive Time	1116
C4	19 Jan 2016	Depart Time	1143
C4	19 Jan 2016	Air Temp (C)	15
C4	19 Jan 2016	Weather	Overcast
C4	19 Jan 2016	Visibility (mi)	6
C4	19 Jan 2016	Wind Speed (kts)	16
C4	19 Jan 2016	Wind Dir	N
C4	19 Jan 2016	Water Color	Green
C4	19 Jan 2016	Wave Ht Low (ft)	7
C4	19 Jan 2016	Wave Period (sec)	13
C4	19 Jan 2016	Sea State	Heavy chop
C4	19 Jan 2016	High Tide (ft)	5.54
C4	19 Jan 2016	High Tide Time	505
C4	19 Jan 2016	Low Tide (ft)	-0.22
C4	19 Jan 2016	Low Tide Time	1227
C4	19 Jan 2016	Comments	Kelp; Windy large surf air bubbles may be present
C4	28 Jan 2016	Depth (m)	12
C4	28 Jan 2016	Arrive Time	1039
C4	28 Jan 2016	Depart Time	1046
C4	28 Jan 2016	Air Temp (C)	16
C4	28 Jan 2016	Weather	Clear
C4	28 Jan 2016	Visibility (mi)	10
C4	28 Jan 2016	Wind Speed (kts)	0
C4	28 Jan 2016	Wind Dir	
C4	28 Jan 2016	Water Color	Bluish-Green
C4	28 Jan 2016	Wave Ht Low (ft)	3
C4	28 Jan 2016	Wave Period (sec)	9
C4	28 Jan 2016	Sea State	Calm
C4	28 Jan 2016	High Tide (ft)	4.24
C4	28 Jan 2016	High Tide Time	1105
C4	28 Jan 2016	Low Tide (ft)	1.69
C4	28 Jan 2016	Low Tide Time	525
C4	28 Jan 2016	Comments	Kelp; Boats
C5	04 Jan 2016	Depth (m)	10
C5	04 Jan 2016	Arrive Time	1149
C5	04 Jan 2016	Depart Time	1153
C5	04 Jan 2016	Air Temp (C)	16
C5	04 Jan 2016	Weather	Overcast
C5	04 Jan 2016	Visibility (mi)	10
C5	04 Jan 2016	Wind Speed (kts)	8
C5	04 Jan 2016	Wind Dir	W
C5	04 Jan 2016	Water Color	Green
C5	04 Jan 2016	Wave Ht Low (ft)	5
C5	04 Jan 2016	Wave Period (sec)	7
C5	04 Jan 2016	Sea State	Confused swell
C5	04 Jan 2016	High Tide (ft)	4.74
C5	04 Jan 2016	High Tide Time	458
C5	04 Jan 2016	Low Tide (ft)	0.87
C5	04 Jan 2016	Low Tide Time	1213

Station	Date	Parameter	Value
C5	04 Jan 2016	Comments	Kelp; Lobster floats
C5	13 Jan 2016	Depth (m)	9
C5	13 Jan 2016	Arrive Time	1029
C5	13 Jan 2016	Depart Time	1036
C5	13 Jan 2016	Air Temp (C)	14
C5	13 Jan 2016	Weather	Partly Cloudy
C5	13 Jan 2016	Visibility (mi)	6
C5	13 Jan 2016	Wind Speed (kts)	2
C5	13 Jan 2016	Wind Dir	S
C5	13 Jan 2016	Water Color	Green
C5	13 Jan 2016	Wave Ht Low (ft)	3
C5	13 Jan 2016	Wave Period (sec)	9
C5	13 Jan 2016	Sea State	Calm
C5	13 Jan 2016	High Tide (ft)	5.34
C5	13 Jan 2016	High Tide Time	1039
C5	13 Jan 2016	Low Tide (ft)	1.59
C5	13 Jan 2016	Low Tide Time	445
C5	13 Jan 2016	Comments	Kelp; Kelp debris
C5	19 Jan 2016	Depth (m)	9
C5	19 Jan 2016	Arrive Time	1101
C5	19 Jan 2016	Depart Time	1109
C5	19 Jan 2016	Air Temp (C)	16
C5	19 Jan 2016	Weather	Overcast
C5	19 Jan 2016	Visibility (mi)	6
C5	19 Jan 2016	Wind Speed (kts)	13
C5	19 Jan 2016	Wind Dir	W
C5	19 Jan 2016	Water Color	Green
C5	19 Jan 2016	Wave Ht Low (ft)	7
C5	19 Jan 2016	Wave Period (sec)	13
C5	19 Jan 2016	Sea State	Heavy chop
C5	19 Jan 2016	High Tide (ft)	5.54
C5	19 Jan 2016	High Tide Time	505
C5	19 Jan 2016	Low Tide (ft)	-0.22
C5	19 Jan 2016	Low Tide Time	1227
C5	19 Jan 2016	Comments	Kelp
C5	28 Jan 2016	Depth (m)	11
C5	28 Jan 2016	Arrive Time	1028
C5	28 Jan 2016	Depart Time	1030
C5	28 Jan 2016	Air Temp (C)	16
C5	28 Jan 2016	Weather	Clear
C5	28 Jan 2016	Visibility (mi)	10
C5	28 Jan 2016	Wind Speed (kts)	0
C5	28 Jan 2016	Wind Dir	
C5	28 Jan 2016	Water Color	Green
C5	28 Jan 2016	Wave Ht Low (ft)	3
C5	28 Jan 2016	Wave Period (sec)	9
C5	28 Jan 2016	Sea State	Calm
C5	28 Jan 2016	High Tide (ft)	4.24
C5	28 Jan 2016	High Tide Time	1105
C5	28 Jan 2016	Low Tide (ft)	1.69
C5	28 Jan 2016	Low Tide Time	525
C5	28 Jan 2016	Comments	Kelp

Station	Date	Parameter	Value
A6	04 Jan 2016	Depth (m)	19
A6	04 Jan 2016	Arrive Time	1116
A6	04 Jan 2016	Depart Time	1127
A6	04 Jan 2016	Air Temp (C)	15
A6	04 Jan 2016	Weather	Rain
A6	04 Jan 2016	Visibility (mi)	5
A6	04 Jan 2016	Wind Speed (kts)	9
A6	04 Jan 2016	Wind Dir	N
A6	04 Jan 2016	Water Color	Green
A6	04 Jan 2016	Wave Ht Low (ft)	5
A6	04 Jan 2016	Wave Period (sec)	7
A6	04 Jan 2016	Sea State	Confused swell
A6	04 Jan 2016	High Tide (ft)	4.74
A6	04 Jan 2016	High Tide Time	458
A6	04 Jan 2016	Low Tide (ft)	0.87
A6	04 Jan 2016	Low Tide Time	1213
A6	04 Jan 2016	Comments	Boats; Hard to stay on station with the wind
A6	13 Jan 2016	Depth (m)	18
A6	13 Jan 2016	Arrive Time	900
A6	13 Jan 2016	Depart Time	911
A6	13 Jan 2016	Air Temp (C)	13
A6	13 Jan 2016	Weather	Fog
A6	13 Jan 2016	Visibility (mi)	2
A6	13 Jan 2016	Wind Speed (kts)	12
A6	13 Jan 2016	Wind Dir	SW
A6	13 Jan 2016	Water Color	Green
A6	13 Jan 2016	Wave Ht Low (ft)	3
A6	13 Jan 2016	Wave Period (sec)	9
A6	13 Jan 2016	Sea State	Calm
A6	13 Jan 2016	High Tide (ft)	5.34
A6	13 Jan 2016	High Tide Time	1039
A6	13 Jan 2016	Low Tide (ft)	1.59
A6	13 Jan 2016	Low Tide Time	445
A6	13 Jan 2016	Comments	Kelp
A6	19 Jan 2016	Depth (m)	19
A6	19 Jan 2016	Arrive Time	951
A6	19 Jan 2016	Depart Time	958
A6	19 Jan 2016	Air Temp (C)	15
A6	19 Jan 2016	Weather	Overcast
A6	19 Jan 2016	Visibility (mi)	6
A6	19 Jan 2016	Wind Speed (kts)	6
A6	19 Jan 2016	Wind Dir	SW
A6	19 Jan 2016	Water Color	Green
A6	19 Jan 2016	Wave Ht Low (ft)	6
A6	19 Jan 2016	Wave Period (sec)	13
A6	19 Jan 2016	Sea State	Calm
A6	19 Jan 2016	High Tide (ft)	5.54
A6	19 Jan 2016	High Tide Time	505
A6	19 Jan 2016	Low Tide (ft)	-0.22
A6	19 Jan 2016	Low Tide Time	1227
A6	19 Jan 2016	Comments	Kelp

Station	Date	Parameter	Value
A6	28 Jan 2016	Depth (m)	20
A6	28 Jan 2016	Arrive Time	907
A6	28 Jan 2016	Depart Time	912
A6	28 Jan 2016	Air Temp (C)	16
A6	28 Jan 2016	Weather	Partly Cloudy
A6	28 Jan 2016	Visibility (mi)	10
A6	28 Jan 2016	Wind Speed (kts)	1
A6	28 Jan 2016	Wind Dir	SW
A6	28 Jan 2016	Water Color	Green
A6	28 Jan 2016	Wave Ht Low (ft)	3
A6	28 Jan 2016	Wave Period (sec)	9
A6	28 Jan 2016	Sea State	Calm
A6	28 Jan 2016	High Tide (ft)	4.24
A6	28 Jan 2016	High Tide Time	1105
A6	28 Jan 2016	Low Tide (ft)	1.69
A6	28 Jan 2016	Low Tide Time	525
A6	28 Jan 2016	Comments	Kelp; Boats
C6	04 Jan 2016	Depth (m)	11
C6	04 Jan 2016	Arrive Time	1141
C6	04 Jan 2016	Depart Time	1142
C6	04 Jan 2016	Air Temp (C)	15
C6	04 Jan 2016	Weather	Thunderstorm
C6	04 Jan 2016	Visibility (mi)	10
C6	04 Jan 2016	Wind Speed (kts)	12
C6	04 Jan 2016	Wind Dir	SE
C6	04 Jan 2016	Water Color	Green
C6	04 Jan 2016	Wave Ht Low (ft)	6
C6	04 Jan 2016	Wave Period (sec)	7
C6	04 Jan 2016	Sea State	Confused swell
C6	04 Jan 2016	High Tide (ft)	4.74
C6	04 Jan 2016	High Tide Time	458
C6	04 Jan 2016	Low Tide (ft)	0.87
C6	04 Jan 2016	Low Tide Time	1213
C6	04 Jan 2016	Comments	Kelp
C6	13 Jan 2016	Depth (m)	10
C6	13 Jan 2016	Arrive Time	1018
C6	13 Jan 2016	Depart Time	1022
C6	13 Jan 2016	Air Temp (C)	14
C6	13 Jan 2016	Weather	Partly Cloudy
C6	13 Jan 2016	Visibility (mi)	6
C6	13 Jan 2016	Wind Speed (kts)	2
C6	13 Jan 2016	Wind Dir	W
C6	13 Jan 2016	Water Color	Green
C6	13 Jan 2016	Wave Ht Low (ft)	3
C6	13 Jan 2016	Wave Period (sec)	9
C6	13 Jan 2016	Sea State	Calm
C6	13 Jan 2016	High Tide (ft)	5.34
C6	13 Jan 2016	High Tide Time	1039
C6	13 Jan 2016	Low Tide (ft)	1.59
C6	13 Jan 2016	Low Tide Time	445
C6	13 Jan 2016	Comments	Kelp
C6	19 Jan 2016	Depth (m)	9

Station	Date	Parameter	Value
C6	19 Jan 2016	Arrive Time	1049
C6	19 Jan 2016	Depart Time	1052
C6	19 Jan 2016	Air Temp (C)	16
C6	19 Jan 2016	Weather	Overcast
C6	19 Jan 2016	Visibility (mi)	6
C6	19 Jan 2016	Wind Speed (kts)	12
C6	19 Jan 2016	Wind Dir	S
C6	19 Jan 2016	Water Color	Green
C6	19 Jan 2016	Wave Ht Low (ft)	7
C6	19 Jan 2016	Wave Period (sec)	13
C6	19 Jan 2016	Sea State	Light chop
C6	19 Jan 2016	High Tide (ft)	5.54
C6	19 Jan 2016	High Tide Time	505
C6	19 Jan 2016	Low Tide (ft)	-0.22
C6	19 Jan 2016	Low Tide Time	1227
C6	19 Jan 2016	Comments	Kelp; Large surf air bubbles
C6	28 Jan 2016	Depth (m)	10
C6	28 Jan 2016	Arrive Time	1011
C6	28 Jan 2016	Depart Time	1020
C6	28 Jan 2016	Air Temp (C)	16
C6	28 Jan 2016	Weather	Clear
C6	28 Jan 2016	Visibility (mi)	10
C6	28 Jan 2016	Wind Speed (kts)	2
C6	28 Jan 2016	Wind Dir	W
C6	28 Jan 2016	Water Color	Green
C6	28 Jan 2016	Wave Ht Low (ft)	3
C6	28 Jan 2016	Wave Period (sec)	9
C6	28 Jan 2016	Sea State	Calm
C6	28 Jan 2016	High Tide (ft)	4.24
C6	28 Jan 2016	High Tide Time	1105
C6	28 Jan 2016	Low Tide (ft)	1.69
C6	28 Jan 2016	Low Tide Time	525
C6	28 Jan 2016	Comments	Kelp
A7	04 Jan 2016	Depth (m)	18
A7	04 Jan 2016	Arrive Time	1200
A7	04 Jan 2016	Depart Time	1207
A7	04 Jan 2016	Air Temp (C)	15
A7	04 Jan 2016	Weather	Overcast
A7	04 Jan 2016	Visibility (mi)	10
A7	04 Jan 2016	Wind Speed (kts)	9
A7	04 Jan 2016	Wind Dir	E
A7	04 Jan 2016	Water Color	Green
A7	04 Jan 2016	Wave Ht Low (ft)	5
A7	04 Jan 2016	Wave Period (sec)	7
A7	04 Jan 2016	Sea State	Confused swell
A7	04 Jan 2016	High Tide (ft)	4.74
A7	04 Jan 2016	High Tide Time	458
A7	04 Jan 2016	Low Tide (ft)	0.87
A7	04 Jan 2016	Low Tide Time	1213
A7	04 Jan 2016	Comments	Kelp
A7	13 Jan 2016	Depth (m)	19
A7	13 Jan 2016	Arrive Time	836

Station	Date	Parameter	Value
A7	13 Jan 2016	Depart Time	847
A7	13 Jan 2016	Air Temp (C)	13
A7	13 Jan 2016	Weather	Fog
A7	13 Jan 2016	Visibility (mi)	2
A7	13 Jan 2016	Wind Speed (kts)	4
A7	13 Jan 2016	Wind Dir	W
A7	13 Jan 2016	Water Color	Green
A7	13 Jan 2016	Wave Ht Low (ft)	3
A7	13 Jan 2016	Wave Period (sec)	9
A7	13 Jan 2016	Sea State	Calm
A7	13 Jan 2016	High Tide (ft)	5.34
A7	13 Jan 2016	High Tide Time	1039
A7	13 Jan 2016	Low Tide (ft)	1.59
A7	13 Jan 2016	Low Tide Time	445
A7	13 Jan 2016	Comments	Kelp
A7	19 Jan 2016	Depth (m)	17
A7	19 Jan 2016	Arrive Time	917
A7	19 Jan 2016	Depart Time	926
A7	19 Jan 2016	Air Temp (C)	15
A7	19 Jan 2016	Weather	Clear
A7	19 Jan 2016	Visibility (mi)	12
A7	19 Jan 2016	Wind Speed (kts)	6
A7	19 Jan 2016	Wind Dir	SE
A7	19 Jan 2016	Water Color	Green
A7	19 Jan 2016	Wave Ht Low (ft)	6
A7	19 Jan 2016	Wave Period (sec)	13
A7	19 Jan 2016	Sea State	Calm
A7	19 Jan 2016	High Tide (ft)	5.54
A7	19 Jan 2016	High Tide Time	505
A7	19 Jan 2016	Low Tide (ft)	-0.22
A7	19 Jan 2016	Low Tide Time	1227
A7	19 Jan 2016	Comments	Did not get 18th meter new CTD pressure sensor is located further off of bottom; Birds on station; Kelp
A7	28 Jan 2016	Depth (m)	20
A7	28 Jan 2016	Arrive Time	846
A7	28 Jan 2016	Depart Time	851
A7	28 Jan 2016	Air Temp (C)	16
A7	28 Jan 2016	Weather	Partly Cloudy
A7	28 Jan 2016	Visibility (mi)	10
A7	28 Jan 2016	Wind Speed (kts)	0
A7	28 Jan 2016	Wind Dir	
A7	28 Jan 2016	Water Color	Green
A7	28 Jan 2016	Wave Ht Low (ft)	3
A7	28 Jan 2016	Wave Period (sec)	9
A7	28 Jan 2016	Sea State	Calm
A7	28 Jan 2016	High Tide (ft)	4.24
A7	28 Jan 2016	High Tide Time	1105
A7	28 Jan 2016	Low Tide (ft)	1.69
A7	28 Jan 2016	Low Tide Time	525
A7	28 Jan 2016	Comments	Kelp; Red Tuna crab at surface
C7	04 Jan 2016	Depth (m)	18
C7	04 Jan 2016	Arrive Time	1057

Station	Date	Parameter	Value
C7	04 Jan 2016	Depart Time	1108
C7	04 Jan 2016	Air Temp (C)	16
C7	04 Jan 2016	Weather	Rain
C7	04 Jan 2016	Visibility (mi)	3
C7	04 Jan 2016	Wind Speed (kts)	13
C7	04 Jan 2016	Wind Dir	NW
C7	04 Jan 2016	Water Color	Green
C7	04 Jan 2016	Wave Ht Low (ft)	5
C7	04 Jan 2016	Wave Period (sec)	7
C7	04 Jan 2016	Sea State	Confused swell
C7	04 Jan 2016	High Tide (ft)	4.74
C7	04 Jan 2016	High Tide Time	458
C7	04 Jan 2016	Low Tide (ft)	0.87
C7	04 Jan 2016	Low Tide Time	1213
C7	04 Jan 2016	Comments	Kelp; 2-3 Hundred cormorants on station
C7	13 Jan 2016	Depth (m)	18
C7	13 Jan 2016	Arrive Time	925
C7	13 Jan 2016	Depart Time	934
C7	13 Jan 2016	Air Temp (C)	14
C7	13 Jan 2016	Weather	Partly Cloudy
C7	13 Jan 2016	Visibility (mi)	6
C7	13 Jan 2016	Wind Speed (kts)	5
C7	13 Jan 2016	Wind Dir	SE
C7	13 Jan 2016	Water Color	Green
C7	13 Jan 2016	Wave Ht Low (ft)	3
C7	13 Jan 2016	Wave Period (sec)	9
C7	13 Jan 2016	Sea State	Calm
C7	13 Jan 2016	High Tide (ft)	5.34
C7	13 Jan 2016	High Tide Time	1039
C7	13 Jan 2016	Low Tide (ft)	1.59
C7	13 Jan 2016	Low Tide Time	445
C7	13 Jan 2016	Comments	Kelp
C7	19 Jan 2016	Depth (m)	18
C7	19 Jan 2016	Arrive Time	1010
C7	19 Jan 2016	Depart Time	1022
C7	19 Jan 2016	Air Temp (C)	15
C7	19 Jan 2016	Weather	Overcast
C7	19 Jan 2016	Visibility (mi)	6
C7	19 Jan 2016	Wind Speed (kts)	9
C7	19 Jan 2016	Wind Dir	SE
C7	19 Jan 2016	Water Color	Green
C7	19 Jan 2016	Wave Ht Low (ft)	6
C7	19 Jan 2016	Wave Period (sec)	13
C7	19 Jan 2016	Sea State	Calm
C7	19 Jan 2016	High Tide (ft)	5.54
C7	19 Jan 2016	High Tide Time	505
C7	19 Jan 2016	Low Tide (ft)	-0.22
C7	19 Jan 2016	Low Tide Time	1227
C7	19 Jan 2016	Comments	Kelp
C7	28 Jan 2016	Depth (m)	19
C7	28 Jan 2016	Arrive Time	927
C7	28 Jan 2016	Depart Time	932

Station	Date	Parameter	Value
C7	28 Jan 2016	Air Temp (C)	16
C7	28 Jan 2016	Weather	Partly Cloudy
C7	28 Jan 2016	Visibility (mi)	10
C7	28 Jan 2016	Wind Speed (kts)	0
C7	28 Jan 2016	Wind Dir	
C7	28 Jan 2016	Water Color	Green
C7	28 Jan 2016	Wave Ht Low (ft)	3
C7	28 Jan 2016	Wave Period (sec)	9
C7	28 Jan 2016	Sea State	Calm
C7	28 Jan 2016	High Tide (ft)	4.24
C7	28 Jan 2016	High Tide Time	1105
C7	28 Jan 2016	Low Tide (ft)	1.69
C7	28 Jan 2016	Low Tide Time	525
C7	28 Jan 2016	Comments	Kelp
C8	04 Jan 2016	Depth (m)	18
C8	04 Jan 2016	Arrive Time	1005
C8	04 Jan 2016	Depart Time	1017
C8	04 Jan 2016	Air Temp (C)	15
C8	04 Jan 2016	Weather	Rain
C8	04 Jan 2016	Visibility (mi)	5
C8	04 Jan 2016	Wind Speed (kts)	7
C8	04 Jan 2016	Wind Dir	N
C8	04 Jan 2016	Water Color	Green
C8	04 Jan 2016	Wave Ht Low (ft)	5
C8	04 Jan 2016	Wave Period (sec)	7
C8	04 Jan 2016	Sea State	Wind ripples
C8	04 Jan 2016	High Tide (ft)	4.74
C8	04 Jan 2016	High Tide Time	458
C8	04 Jan 2016	Low Tide (ft)	0.87
C8	04 Jan 2016	Low Tide Time	1213
C8	04 Jan 2016	Comments	Kelp
C8	13 Jan 2016	Depth (m)	19
C8	13 Jan 2016	Arrive Time	944
C8	13 Jan 2016	Depart Time	1000
C8	13 Jan 2016	Air Temp (C)	14
C8	13 Jan 2016	Weather	Partly Cloudy
C8	13 Jan 2016	Visibility (mi)	6
C8	13 Jan 2016	Wind Speed (kts)	4
C8	13 Jan 2016	Wind Dir	NW
C8	13 Jan 2016	Water Color	Green
C8	13 Jan 2016	Wave Ht Low (ft)	3
C8	13 Jan 2016	Wave Period (sec)	9
C8	13 Jan 2016	Sea State	Calm
C8	13 Jan 2016	High Tide (ft)	5.34
C8	13 Jan 2016	High Tide Time	1039
C8	13 Jan 2016	Low Tide (ft)	1.59
C8	13 Jan 2016	Low Tide Time	445
C8	13 Jan 2016	Comments	Kelp
C8	19 Jan 2016	Depth (m)	18
C8	19 Jan 2016	Arrive Time	1028
C8	19 Jan 2016	Depart Time	1032
C8	19 Jan 2016	Air Temp (C)	15

Station	Date	Parameter	Value
C8	19 Jan 2016	Weather	Overcast
C8	19 Jan 2016	Visibility (mi)	6
C8	19 Jan 2016	Wind Speed (kts)	10
C8	19 Jan 2016	Wind Dir	E
C8	19 Jan 2016	Water Color	Green
C8	19 Jan 2016	Wave Ht Low (ft)	6
C8	19 Jan 2016	Wave Period (sec)	13
C8	19 Jan 2016	Sea State	Calm
C8	19 Jan 2016	High Tide (ft)	5.54
C8	19 Jan 2016	High Tide Time	505
C8	19 Jan 2016	Low Tide (ft)	-0.22
C8	19 Jan 2016	Low Tide Time	1227
C8	19 Jan 2016	Comments	Kelp
C8	28 Jan 2016	Depth (m)	19
C8	28 Jan 2016	Arrive Time	940
C8	28 Jan 2016	Depart Time	946
C8	28 Jan 2016	Air Temp (C)	16
C8	28 Jan 2016	Weather	Clear
C8	28 Jan 2016	Visibility (mi)	10
C8	28 Jan 2016	Wind Speed (kts)	0
C8	28 Jan 2016	Wind Dir	
C8	28 Jan 2016	Water Color	Green
C8	28 Jan 2016	Wave Ht Low (ft)	3
C8	28 Jan 2016	Wave Period (sec)	9
C8	28 Jan 2016	Sea State	Calm
C8	28 Jan 2016	High Tide (ft)	4.24
C8	28 Jan 2016	High Tide Time	1105
C8	28 Jan 2016	Low Tide (ft)	1.69
C8	28 Jan 2016	Low Tide Time	525
C8	28 Jan 2016	Comments	Kelp; Boats

Table 3.10

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

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
A1	04 Jan 2016	1	15.87	81.81	7.1	33.61	8.2	24.7	0.98
A1	04 Jan 2016	2	15.87	82.60	7.0	33.61	8.2	24.7	1.10
A1	04 Jan 2016	3	15.87	83.13	6.7	33.55	8.2	24.7	1.04
A1	04 Jan 2016	4	15.87	83.74	6.9	33.62	8.2	24.7	0.96
A1	04 Jan 2016	5	15.87	83.40	6.9	33.62	8.2	24.7	1.02
A1	04 Jan 2016	6	15.88	82.87	7.0	33.61	8.2	24.7	0.90
A1	04 Jan 2016	7	15.88	82.77	6.9	33.61	8.2	24.7	1.05
A1	04 Jan 2016	8	15.88	83.15	6.6	33.62	8.2	24.7	0.98
A1	04 Jan 2016	9	15.88	83.33	6.7	33.62	8.2	24.7	1.11
A1	04 Jan 2016	10	15.88	83.22	7.2	33.62	8.2	24.7	1.07
A1	04 Jan 2016	11	15.88	83.50	7.6	33.62	8.2	24.7	1.12
A1	04 Jan 2016	12	15.88	83.52	7.6	33.62	8.2	24.7	1.11
A1	04 Jan 2016	13	15.88	83.43	7.6	33.62	8.2	24.7	1.08
A1	04 Jan 2016	14	15.88	83.47	7.6	33.62	8.2	24.7	1.08
A1	04 Jan 2016	15	15.88	83.41	7.6	33.62	8.2	24.7	1.09
A1	04 Jan 2016	16	15.88	83.14	7.6	33.63	8.2	24.7	1.12
A1	04 Jan 2016	17	15.88	82.97	7.6	33.63	8.2	24.7	1.15
A1	04 Jan 2016	18	15.88	83.42	7.6	33.63	8.2	24.7	1.14
A1	13 Jan 2016	1	15.75	85.37	7.2	33.47	8.3	24.6	1.23
A1	13 Jan 2016	2	15.76	85.52	7.2	33.47	8.3	24.6	1.29
A1	13 Jan 2016	3	15.76	85.58	7.2	33.47	8.3	24.6	1.36
A1	13 Jan 2016	4	15.76	85.53	7.2	33.47	8.3	24.6	1.46
A1	13 Jan 2016	5	15.76	85.56	7.2	33.47	8.3	24.6	1.50
A1	13 Jan 2016	6	15.76	85.48	7.2	33.47	8.3	24.6	1.52
A1	13 Jan 2016	7	15.76	85.40	7.2	33.47	8.3	24.6	1.52
A1	13 Jan 2016	8	15.76	85.46	7.2	33.48	8.3	24.6	1.51
A1	13 Jan 2016	9	15.76	85.25	7.1	33.48	8.3	24.6	1.45
A1	13 Jan 2016	10	15.76	84.89	7.0	33.51	8.3	24.7	1.29
A1	13 Jan 2016	11	15.74	84.48	6.8	33.55	8.3	24.7	1.11
A1	13 Jan 2016	12	15.70	82.40	6.6	33.57	8.3	24.7	0.96
A1	13 Jan 2016	13	15.63	80.89	6.5	33.57	8.3	24.7	0.84
A1	13 Jan 2016	14	15.60	77.71	6.5	33.57	8.2	24.7	0.83
A1	13 Jan 2016	15	15.58	76.82	6.4	33.57	8.2	24.7	0.79
A1	13 Jan 2016	16	15.54	75.60	6.3	33.57	8.2	24.8	0.74
A1	13 Jan 2016	17	15.48	73.34	6.2	33.58	8.2	24.8	0.70
A1	13 Jan 2016	18	15.45	71.03	6.2	33.58	8.2	24.8	0.68
A1	19 Jan 2016	1	15.88	78.92	7.7	33.54	8.2	24.7	1.71
A1	19 Jan 2016	2	15.88	78.92	7.7	33.54	8.2	24.7	1.69
A1	19 Jan 2016	3	15.88	78.93	7.7	33.54	8.2	24.7	1.76
A1	19 Jan 2016	4	15.87	78.67	7.7	33.54	8.2	24.7	1.97
A1	19 Jan 2016	5	15.86	78.67	7.6	33.54	8.2	24.7	2.15
A1	19 Jan 2016	6	15.85	78.81	7.6	33.54	8.2	24.7	2.31
A1	19 Jan 2016	7	15.85	78.79	7.6	33.55	8.2	24.7	2.36
A1	19 Jan 2016	8	15.83	78.98	7.5	33.55	8.2	24.7	2.31
A1	19 Jan 2016	9	15.83	79.31	7.4	33.55	8.2	24.7	2.30
A1	19 Jan 2016	10	15.81	79.28	7.4	33.55	8.2	24.7	2.18
A1	19 Jan 2016	11	15.75	79.47	7.2	33.55	8.2	24.7	2.03
A1	19 Jan 2016	12	15.70	79.17	7.1	33.55	8.2	24.7	1.90
A1	19 Jan 2016	13	15.69	78.52	7.1	33.55	8.2	24.7	1.87

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
A1	19 Jan 2016	14	15.59	77.23	7.0	33.54	8.2	24.7	1.65
A1	19 Jan 2016	15	15.52	75.78	6.9	33.54	8.2	24.7	1.50
A1	19 Jan 2016	16	15.51	75.54	7.0	33.54	8.1	24.7	1.43
A1	19 Jan 2016	17	15.50	74.43	7.0	33.53	8.1	24.7	1.40
A1	28 Jan 2016	1	15.70	84.89	7.7	33.59	8.2	24.7	0.95
A1	28 Jan 2016	2	15.69	84.90	7.7	33.59	8.2	24.7	0.94
A1	28 Jan 2016	3	15.68	84.86	7.6	33.59	8.2	24.7	1.00
A1	28 Jan 2016	4	15.63	84.88	7.6	33.58	8.2	24.7	1.04
A1	28 Jan 2016	5	15.59	85.14	7.5	33.58	8.2	24.7	1.06
A1	28 Jan 2016	6	15.53	85.02	7.4	33.58	8.2	24.8	1.05
A1	28 Jan 2016	7	15.48	85.01	7.4	33.58	8.1	24.8	1.10
A1	28 Jan 2016	8	15.43	84.96	7.3	33.57	8.1	24.8	1.09
A1	28 Jan 2016	9	15.39	84.80	7.2	33.57	8.1	24.8	1.07
A1	28 Jan 2016	10	15.38	84.66	7.2	33.57	8.1	24.8	1.08
A1	28 Jan 2016	11	15.36	84.64	7.2	33.57	8.1	24.8	1.09
A1	28 Jan 2016	12	15.37	84.60	7.3	33.57	8.1	24.8	1.11
A1	28 Jan 2016	13	15.38	84.62	7.2	33.57	8.1	24.8	1.11
A1	28 Jan 2016	14	15.37	84.50	7.2	33.57	8.1	24.8	1.07
A1	28 Jan 2016	15	15.37	84.49	7.2	33.57	8.1	24.8	1.08
A1	28 Jan 2016	16	15.37	84.44	7.2	33.57	8.1	24.8	1.08
A1	28 Jan 2016	17	15.36	84.49	7.2	33.57	8.1	24.8	1.06
A1	28 Jan 2016	18	15.28	84.33	7.2	33.57	8.1	24.8	0.96
C4	04 Jan 2016	1	15.55	77.99	7.4	33.54	8.2	24.7	1.42
C4	04 Jan 2016	2	15.59	77.97	7.6	33.55	8.2	24.7	1.69
C4	04 Jan 2016	3	15.50	78.30	7.4	33.59	8.2	24.8	1.18
C4	04 Jan 2016	4	15.37	77.87	7.4	33.63	8.2	24.8	1.33
C4	04 Jan 2016	5	15.34	76.80	7.3	33.62	8.2	24.8	2.08
C4	04 Jan 2016	6	15.33	76.00	7.2	33.62	8.2	24.8	3.18
C4	04 Jan 2016	7	15.33	75.13	7.0	33.62	8.2	24.8	1.75
C4	04 Jan 2016	8	15.32	74.10	6.6	33.62	8.2	24.8	1.56
C4	04 Jan 2016	9	15.32	72.66	6.2	33.62	8.2	24.8	1.80
C4	04 Jan 2016	10	15.33	59.76	6.0	33.62	8.2	24.8	1.25
C4	13 Jan 2016	1	15.74	62.66	7.4	33.42	8.1	24.6	0.81
C4	13 Jan 2016	2	15.71	62.27	7.4	33.43	8.1	24.6	0.93
C4	13 Jan 2016	3	15.70	60.67	7.4	33.43	8.1	24.6	1.01
C4	13 Jan 2016	4	15.70	59.40	7.3	33.44	8.1	24.6	1.02
C4	13 Jan 2016	5	15.71	58.77	7.3	33.44	8.1	24.6	0.97
C4	13 Jan 2016	6	15.71	58.03	7.2	33.44	8.1	24.6	0.97
C4	13 Jan 2016	7	15.71	58.74	7.2	33.44	8.1	24.6	0.95
C4	13 Jan 2016	8	15.71	58.82	7.2	33.44	8.1	24.6	0.92
C4	13 Jan 2016	9	15.73	58.73	7.1	33.46	8.1	24.6	0.90
C4	13 Jan 2016	10	15.72	58.32	7.1	33.46	8.1	24.6	0.85
C4	19 Jan 2016	1	15.83	47.85	8.0	33.48	8.1	24.6	0.78
C4	19 Jan 2016	2	15.83	47.69	8.0	33.48	8.1	24.6	0.87
C4	19 Jan 2016	3	15.83	47.98	8.0	33.48	8.1	24.6	1.06
C4	19 Jan 2016	4	15.81	47.58	8.0	33.48	8.1	24.6	1.22
C4	19 Jan 2016	5	15.80	47.03	7.9	33.48	8.1	24.6	1.26
C4	19 Jan 2016	6	15.73	46.62	7.6	33.49	8.1	24.6	1.20
C4	19 Jan 2016	7	15.51	48.59	7.0	33.50	8.1	24.7	1.08
C4	19 Jan 2016	8	15.38	50.95	6.7	33.51	8.1	24.7	0.97
C4	19 Jan 2016	9	15.35	50.28	6.6	33.50	8.1	24.7	0.95

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
C4	19 Jan 2016	10	15.33	47.38	6.6	33.50	8.1	24.7	0.92
C4	19 Jan 2016	11	15.33	44.59	6.6	33.50	8.1	24.7	0.93
C4	28 Jan 2016	1	15.57	85.44	7.3	33.57	8.1	24.7	0.38
C4	28 Jan 2016	2	15.60	85.53	7.3	33.57	8.1	24.7	0.39
C4	28 Jan 2016	3	15.43	85.13	7.3	33.57	8.1	24.8	0.45
C4	28 Jan 2016	4	15.38	84.75	7.3	33.57	8.2	24.8	0.56
C4	28 Jan 2016	5	15.36	84.47	7.3	33.57	8.1	24.8	0.63
C4	28 Jan 2016	6	15.36	84.65	7.2	33.57	8.1	24.8	0.65
C4	28 Jan 2016	7	15.36	84.83	7.2	33.57	8.1	24.8	0.71
C4	28 Jan 2016	8	15.35	84.66	7.2	33.57	8.1	24.8	0.75
C4	28 Jan 2016	9	15.33	84.08	7.2	33.57	8.1	24.8	0.84
C5	04 Jan 2016	1	15.88	79.38	6.3	33.56	8.2	24.6	0.76
C5	04 Jan 2016	2	15.88	75.81	6.6	33.41	8.2	24.3	1.12
C5	04 Jan 2016	3	15.87	78.85	7.0	33.60	8.2	24.7	0.97
C5	04 Jan 2016	4	15.87	80.01	7.1	33.62	8.2	24.7	0.80
C5	04 Jan 2016	5	15.86	80.20	7.0	33.62	8.2	24.7	0.68
C5	04 Jan 2016	6	15.86	80.27	7.1	33.57	8.2	24.7	0.68
C5	04 Jan 2016	7	15.85	80.18	6.9	33.62	8.2	24.7	0.70
C5	04 Jan 2016	8	15.84	78.23	6.9	33.61	8.2	24.7	0.63
C5	04 Jan 2016	9	15.84	78.41	7.0	33.61	8.2	24.7	0.66
C5	04 Jan 2016	10	15.84	78.30	6.4	33.63	8.2	24.7	0.69
C5	04 Jan 2016	11	15.78	76.59	5.8	33.65	8.2	24.8	0.72
C5	13 Jan 2016	1	15.74	62.61	7.4	33.42	8.1	24.6	0.79
C5	13 Jan 2016	2	15.71	62.27	7.4	33.43	8.1	24.6	0.93
C5	13 Jan 2016	3	15.70	60.85	7.4	33.43	8.1	24.6	1.02
C5	13 Jan 2016	4	15.70	59.32	7.3	33.44	8.1	24.6	1.01
C5	13 Jan 2016	5	15.71	58.78	7.3	33.44	8.1	24.6	0.97
C5	13 Jan 2016	6	15.71	58.13	7.3	33.44	8.1	24.6	0.97
C5	13 Jan 2016	7	15.71	58.88	7.3	33.44	8.1	24.6	0.95
C5	13 Jan 2016	8	15.71	58.90	7.2	33.45	8.1	24.6	0.91
C5	13 Jan 2016	9	15.73	58.73	7.2	33.46	8.1	24.6	0.90
C5	13 Jan 2016	10	15.72	58.31	7.1	33.46	8.1	24.6	0.86
C5	13 Jan 2016	11	15.71	53.64	7.2	33.46	8.1	24.6	0.87
C5	19 Jan 2016	1	15.76	58.60	7.6	33.49	8.1	24.6	0.69
C5	19 Jan 2016	2	15.76	58.56	7.5	33.49	8.1	24.6	0.78
C5	19 Jan 2016	3	15.68	58.06	7.3	33.49	8.1	24.7	0.97
C5	19 Jan 2016	4	15.62	58.12	7.2	33.49	8.1	24.7	1.05
C5	19 Jan 2016	5	15.52	57.89	6.9	33.50	8.1	24.7	1.02
C5	19 Jan 2016	6	15.42	54.53	6.8	33.50	8.1	24.7	1.00
C5	19 Jan 2016	7	15.42	53.71	6.8	33.50	8.1	24.7	1.02
C5	19 Jan 2016	8	15.41	53.79	6.7	33.50	8.1	24.7	1.05
C5	19 Jan 2016	9	15.40	52.89	6.7	33.50	8.1	24.7	1.01
C5	28 Jan 2016	1	15.53	83.45	7.5	33.58	8.2	24.8	0.60
C5	28 Jan 2016	2	15.48	82.88	7.5	33.59	8.2	24.8	0.61
C5	28 Jan 2016	3	15.44	81.80	7.5	33.58	8.2	24.8	0.64
C5	28 Jan 2016	4	15.40	81.05	7.5	33.58	8.2	24.8	0.70
C5	28 Jan 2016	5	15.38	80.68	7.5	33.58	8.2	24.8	0.75
C5	28 Jan 2016	6	15.35	79.08	7.5	33.59	8.2	24.8	0.84
C5	28 Jan 2016	7	15.34	78.16	7.5	33.59	8.2	24.8	0.89
C5	28 Jan 2016	8	15.30	75.82	7.6	33.59	8.2	24.8	0.93

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
C5	28 Jan 2016	9	15.27	71.82	7.6	33.59	8.2	24.8	0.93
C5	28 Jan 2016	10	15.25	70.71	7.7	33.59	8.2	24.8	0.92
A6	04 Jan 2016	1	16.04	86.15	6.2	33.62	8.2	24.7	0.68
A6	04 Jan 2016	2	16.04	86.53	6.8	33.60	8.2	24.7	0.65
A6	04 Jan 2016	3	16.04	86.99	7.1	33.56	8.2	24.6	0.65
A6	04 Jan 2016	4	16.02	86.79	6.7	33.61	8.2	24.7	0.69
A6	04 Jan 2016	5	16.01	86.70	6.7	33.57	8.2	24.6	0.72
A6	04 Jan 2016	6	16.00	86.58	6.9	33.64	8.2	24.7	0.80
A6	04 Jan 2016	7	15.99	86.46	6.6	33.64	8.2	24.7	0.80
A6	04 Jan 2016	8	15.96	86.09	6.6	33.60	8.2	24.7	0.79
A6	04 Jan 2016	9	15.95	86.26	7.0	33.62	8.2	24.7	0.78
A6	04 Jan 2016	10	15.95	86.33	7.0	33.66	8.2	24.7	0.79
A6	04 Jan 2016	11	15.94	86.16	7.0	33.64	8.2	24.7	0.82
A6	04 Jan 2016	12	15.91	86.61	7.0	33.64	8.2	24.7	0.85
A6	04 Jan 2016	13	15.91	86.72	6.8	33.64	8.2	24.7	0.99
A6	04 Jan 2016	14	15.89	86.70	6.8	33.64	8.2	24.7	0.88
A6	04 Jan 2016	15	15.87	86.65	7.0	33.64	8.2	24.7	0.95
A6	04 Jan 2016	16	15.86	86.52	7.0	33.65	8.2	24.7	0.94
A6	04 Jan 2016	17	15.84	86.35	7.0	33.65	8.2	24.7	0.96
A6	04 Jan 2016	18	15.82	86.08	6.8	33.65	8.2	24.8	1.00
A6	04 Jan 2016	19	15.81	85.45	6.8	33.65	8.2	24.8	0.97
A6	04 Jan 2016	20	15.80	85.10	7.2	33.65	8.2	24.8	0.90
A6	04 Jan 2016	21	15.80	85.54	7.3	33.65	8.2	24.8	0.89
A6	13 Jan 2016	1	15.77	70.98	7.3	33.40	8.1	24.6	1.27
A6	13 Jan 2016	2	15.77	65.38	7.3	33.40	8.1	24.6	1.27
A6	13 Jan 2016	3	15.77	73.61	7.3	33.41	8.1	24.6	1.43
A6	13 Jan 2016	4	15.77	75.55	7.3	33.41	8.1	24.6	1.48
A6	13 Jan 2016	5	15.77	76.30	7.3	33.41	8.1	24.6	1.49
A6	13 Jan 2016	6	15.78	76.27	7.3	33.41	8.1	24.6	1.46
A6	13 Jan 2016	7	15.78	76.24	7.2	33.42	8.1	24.6	1.42
A6	13 Jan 2016	8	15.79	76.08	7.2	33.42	8.1	24.6	1.35
A6	13 Jan 2016	9	15.80	76.06	7.1	33.43	8.1	24.6	1.32
A6	13 Jan 2016	10	15.81	75.87	7.1	33.44	8.1	24.6	1.26
A6	13 Jan 2016	11	15.82	75.71	6.9	33.45	8.1	24.6	1.17
A6	13 Jan 2016	12	15.82	75.67	6.8	33.46	8.1	24.6	1.10
A6	13 Jan 2016	13	15.82	75.15	6.7	33.48	8.1	24.6	1.02
A6	13 Jan 2016	14	15.80	75.05	6.8	33.48	8.1	24.6	1.00
A6	13 Jan 2016	15	15.75	74.74	6.7	33.47	8.1	24.6	0.97
A6	13 Jan 2016	16	15.68	72.87	6.6	33.48	8.1	24.6	0.96
A6	13 Jan 2016	17	15.64	68.23	6.5	33.49	8.1	24.7	0.95
A6	13 Jan 2016	18	15.60	59.85	6.4	33.50	8.1	24.7	0.91
A6	13 Jan 2016	19	15.57	55.19	6.4	33.51	8.1	24.7	0.89
A6	13 Jan 2016	20	15.55	52.42	6.4	33.52	8.0	24.7	0.90
A6	19 Jan 2016	1	15.73	67.20	7.6	33.49	8.2	24.6	0.99
A6	19 Jan 2016	2	15.72	66.84	7.6	33.49	8.2	24.7	1.20
A6	19 Jan 2016	3	15.72	66.31	7.6	33.49	8.2	24.7	1.40
A6	19 Jan 2016	4	15.72	66.80	7.6	33.49	8.2	24.6	1.48
A6	19 Jan 2016	5	15.72	66.68	7.5	33.49	8.2	24.6	1.53
A6	19 Jan 2016	6	15.72	66.80	7.5	33.49	8.2	24.7	1.59
A6	19 Jan 2016	7	15.70	66.66	7.5	33.49	8.2	24.7	1.58
A6	19 Jan 2016	8	15.74	67.33	7.6	33.49	8.2	24.6	0.95
A6	19 Jan 2016	9	15.73	67.20	7.6	33.49	8.2	24.6	0.99

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
A6	19 Jan 2016	10	15.72	66.84	7.6	33.49	8.2	24.7	1.20
A6	19 Jan 2016	11	15.72	66.31	7.6	33.49	8.2	24.7	1.40
A6	19 Jan 2016	12	15.72	66.80	7.6	33.49	8.2	24.6	1.48
A6	19 Jan 2016	13	15.72	66.68	7.5	33.49	8.2	24.6	1.53
A6	19 Jan 2016	14	15.72	66.80	7.5	33.49	8.2	24.7	1.59
A6	19 Jan 2016	15	15.70	66.66	7.5	33.49	8.2	24.7	1.58
A6	19 Jan 2016	16	15.67	66.86	7.4	33.50	8.2	24.7	1.63
A6	19 Jan 2016	17	15.67	66.58	7.4	33.50	8.2	24.7	1.59
A6	19 Jan 2016	18	15.67	66.60	7.4	33.50	8.2	24.7	1.60
A6	19 Jan 2016	19	15.63	66.88	7.3	33.50	8.2	24.7	1.53
A6	19 Jan 2016	20	15.60	66.97	7.2	33.50	8.1	24.7	1.49
A6	19 Jan 2016	21	15.56	67.14	7.1	33.50	8.1	24.7	1.43
A6	28 Jan 2016	1	15.58	85.56	7.5	33.58	8.1	24.7	0.93
A6	28 Jan 2016	2	15.58	85.48	7.5	33.58	8.1	24.7	0.96
A6	28 Jan 2016	3	15.57	85.61	7.5	33.58	8.2	24.7	0.98
A6	28 Jan 2016	4	15.55	85.61	7.4	33.58	8.1	24.8	1.05
A6	28 Jan 2016	5	15.53	85.46	7.4	33.58	8.1	24.8	1.11
A6	28 Jan 2016	6	15.51	85.32	7.4	33.58	8.1	24.8	1.13
A6	28 Jan 2016	7	15.50	85.38	7.4	33.57	8.1	24.8	1.18
A6	28 Jan 2016	8	15.49	85.20	7.4	33.57	8.1	24.8	1.19
A6	28 Jan 2016	9	15.48	85.29	7.4	33.57	8.1	24.8	1.17
A6	28 Jan 2016	10	15.47	85.32	7.4	33.57	8.1	24.8	1.15
A6	28 Jan 2016	11	15.44	85.20	7.3	33.57	8.1	24.8	1.14
A6	28 Jan 2016	12	15.42	85.37	7.3	33.57	8.1	24.8	1.07
A6	28 Jan 2016	13	15.39	85.25	7.3	33.57	8.1	24.8	0.96
A6	28 Jan 2016	14	15.36	85.20	7.2	33.57	8.1	24.8	0.88
A6	28 Jan 2016	15	15.35	85.03	7.2	33.57	8.1	24.8	0.82
A6	28 Jan 2016	16	15.33	84.84	7.2	33.57	8.1	24.8	0.79
A6	28 Jan 2016	17	15.31	84.52	7.2	33.56	8.1	24.8	0.71
A6	28 Jan 2016	18	15.31	84.37	7.2	33.56	8.1	24.8	0.69
C6	04 Jan 2016	1	15.28	77.21	7.3	33.59	8.2	24.8	0.68
C6	04 Jan 2016	2	15.27	73.58	6.8	33.59	8.2	24.8	0.72
C6	04 Jan 2016	3	15.27	76.59	6.4	33.60	8.2	24.8	0.67
C6	04 Jan 2016	4	15.25	75.99	6.2	33.58	8.2	24.8	0.70
C6	04 Jan 2016	5	15.22	69.70	6.2	33.65	8.2	24.9	0.63
C6	04 Jan 2016	6	15.24	73.64	6.4	33.64	8.2	24.9	0.72
C6	04 Jan 2016	7	15.16	75.15	6.5	33.69	8.2	24.9	0.71
C6	04 Jan 2016	8	15.14	74.23	6.3	33.68	8.2	24.9	0.71
C6	04 Jan 2016	9	15.14	73.01	6.2	33.67	8.2	24.9	0.72
C6	04 Jan 2016	10	15.17	70.11	6.4	33.45	8.2	24.7	0.77
C6	13 Jan 2016	1	15.88	73.34	7.3	33.42	8.1	24.6	0.88
C6	13 Jan 2016	2	15.85	72.57	7.3	33.42	8.1	24.6	1.01
C6	13 Jan 2016	3	15.80	71.32	7.3	33.42	8.1	24.6	1.11
C6	13 Jan 2016	4	15.78	70.08	7.4	33.42	8.1	24.6	1.15
C6	13 Jan 2016	5	15.77	67.47	7.4	33.42	8.1	24.6	1.13
C6	13 Jan 2016	6	15.77	64.45	7.4	33.42	8.1	24.6	1.08
C6	13 Jan 2016	7	15.76	64.01	7.4	33.43	8.1	24.6	1.02
C6	13 Jan 2016	8	15.77	63.50	7.3	33.42	8.1	24.6	1.02
C6	13 Jan 2016	9	15.78	61.73	7.3	33.43	8.1	24.6	1.01
C6	13 Jan 2016	10	15.79	59.16	7.3	33.43	8.1	24.6	0.94
C6	19 Jan 2016	1	15.73	60.00	7.7	33.50	8.2	24.7	0.90

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
C6	19 Jan 2016	2	15.71	59.76	7.6	33.50	8.2	24.7	1.01
C6	19 Jan 2016	3	15.66	59.69	7.5	33.50	8.2	24.7	1.23
C6	19 Jan 2016	4	15.67	59.19	7.5	33.50	8.1	24.7	1.31
C6	19 Jan 2016	5	15.67	59.10	7.4	33.50	8.1	24.7	1.30
C6	19 Jan 2016	6	15.57	59.74	7.1	33.50	8.1	24.7	1.25
C6	19 Jan 2016	7	15.54	60.84	7.0	33.50	8.1	24.7	1.18
C6	19 Jan 2016	8	15.52	60.63	6.9	33.50	8.1	24.7	1.17
C6	19 Jan 2016	9	15.51	59.67	6.9	33.50	8.1	24.7	1.05
C6	19 Jan 2016	10	15.46	57.57	6.8	33.50	8.1	24.7	1.08
C6	28 Jan 2016	1	15.46	77.56	7.5	33.57	8.1	24.8	0.57
C6	28 Jan 2016	2	15.44	78.00	7.5	33.58	8.1	24.8	0.62
C6	28 Jan 2016	3	15.40	77.19	7.6	33.58	8.1	24.8	0.72
C6	28 Jan 2016	4	15.38	76.95	7.6	33.58	8.1	24.8	0.85
C6	28 Jan 2016	5	15.34	74.17	7.6	33.58	8.1	24.8	0.90
C6	28 Jan 2016	6	15.32	70.29	7.6	33.58	8.1	24.8	0.95
C6	28 Jan 2016	7	15.29	61.87	7.4	33.57	8.1	24.8	0.97
C6	28 Jan 2016	8	15.29	59.96	7.4	33.57	8.1	24.8	0.98
C6	28 Jan 2016	9	15.28	59.62	7.4	33.57	8.1	24.8	0.95
A7	04 Jan 2016	1	15.90	79.46	7.0	33.51	8.2	24.6	1.15
A7	04 Jan 2016	2	15.90	75.49	6.9	33.58	8.2	24.7	1.08
A7	04 Jan 2016	3	15.89	83.52	6.7	33.52	8.2	24.6	1.09
A7	04 Jan 2016	4	15.89	81.55	6.4	33.58	8.2	24.7	1.16
A7	04 Jan 2016	5	15.89	84.88	6.2	33.63	8.2	24.7	1.19
A7	04 Jan 2016	6	15.89	85.16	6.4	33.63	8.2	24.7	1.15
A7	04 Jan 2016	7	15.88	85.01	6.4	33.63	8.2	24.7	1.38
A7	04 Jan 2016	8	15.87	85.12	6.1	33.63	8.2	24.7	1.26
A7	04 Jan 2016	9	15.87	85.15	6.2	33.63	8.2	24.7	1.23
A7	04 Jan 2016	10	15.86	85.33	6.6	33.64	8.2	24.7	1.17
A7	04 Jan 2016	11	15.86	85.33	7.2	33.64	8.2	24.7	1.06
A7	04 Jan 2016	12	15.85	85.31	7.4	33.64	8.2	24.7	1.32
A7	04 Jan 2016	13	15.85	85.14	7.2	33.64	8.2	24.7	1.01
A7	04 Jan 2016	14	15.84	85.30	7.3	33.64	8.2	24.7	1.06
A7	04 Jan 2016	15	15.84	85.19	7.3	33.64	8.2	24.7	1.12
A7	04 Jan 2016	16	15.82	84.99	6.9	33.65	8.2	24.7	1.30
A7	04 Jan 2016	17	15.76	84.69	6.6	33.65	8.2	24.8	1.11
A7	04 Jan 2016	18	15.71	84.63	6.6	33.65	8.2	24.8	1.11
A7	04 Jan 2016	19	15.71	84.41	6.8	33.65	8.2	24.8	1.36
A7	04 Jan 2016	20	15.70	82.21	6.4	33.65	8.2	24.8	1.30
A7	04 Jan 2016	21	15.70	82.54	6.0	33.65	8.2	24.8	1.05
A7	13 Jan 2016	1	15.77	82.87	7.1	33.44	8.1	24.6	1.17
A7	13 Jan 2016	2	15.77	82.86	7.1	33.43	8.1	24.6	1.23
A7	13 Jan 2016	3	15.77	82.84	7.1	33.43	8.1	24.6	1.38
A7	13 Jan 2016	4	15.77	83.02	7.1	33.43	8.1	24.6	1.49
A7	13 Jan 2016	5	15.77	82.80	7.1	33.43	8.1	24.6	1.56
A7	13 Jan 2016	6	15.77	82.95	7.1	33.43	8.1	24.6	1.61
A7	13 Jan 2016	7	15.77	82.84	7.2	33.44	8.1	24.6	1.61
A7	13 Jan 2016	8	15.77	82.94	7.1	33.44	8.1	24.6	1.57
A7	13 Jan 2016	9	15.77	83.15	7.1	33.44	8.1	24.6	1.53
A7	13 Jan 2016	10	15.80	82.96	7.1	33.45	8.1	24.6	1.50
A7	13 Jan 2016	11	15.81	83.39	7.1	33.46	8.1	24.6	1.46
A7	13 Jan 2016	12	15.83	83.65	7.1	33.48	8.1	24.6	1.39
A7	13 Jan 2016	13	15.87	83.70	6.9	33.51	8.1	24.6	1.26

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
A7	13 Jan 2016	14	15.83	83.77	6.7	33.54	8.1	24.7	1.06
A7	13 Jan 2016	15	15.65	81.71	6.4	33.55	8.1	24.7	0.89
A7	13 Jan 2016	16	15.41	76.25	6.1	33.56	8.1	24.8	0.78
A7	13 Jan 2016	17	15.35	66.00	6.1	33.57	8.0	24.8	0.71
A7	13 Jan 2016	18	15.35	59.28	6.1	33.57	8.0	24.8	0.70
A7	19 Jan 2016	1	15.80	77.17	7.8	33.52	8.2	24.7	1.73
A7	19 Jan 2016	2	15.80	77.13	7.8	33.52	8.2	24.7	1.78
A7	19 Jan 2016	3	15.79	77.11	7.7	33.52	8.2	24.7	2.03
A7	19 Jan 2016	4	15.78	77.12	7.7	33.52	8.2	24.7	2.30
A7	19 Jan 2016	5	15.80	77.17	7.8	33.52	8.2	24.7	1.73
A7	19 Jan 2016	6	15.80	77.13	7.8	33.52	8.2	24.7	1.78
A7	19 Jan 2016	7	15.79	77.11	7.7	33.52	8.2	24.7	2.03
A7	19 Jan 2016	8	15.78	77.12	7.7	33.52	8.2	24.7	2.30
A7	19 Jan 2016	9	15.78	77.15	7.7	33.52	8.2	24.7	2.53
A7	19 Jan 2016	10	15.78	77.22	7.7	33.52	8.2	24.7	2.72
A7	19 Jan 2016	11	15.77	77.28	7.7	33.52	8.2	24.7	2.84
A7	19 Jan 2016	12	15.77	77.40	7.6	33.52	8.2	24.7	2.88
A7	19 Jan 2016	13	15.75	77.52	7.5	33.53	8.2	24.7	2.84
A7	19 Jan 2016	14	15.75	77.57	7.5	33.53	8.2	24.7	2.80
A7	19 Jan 2016	15	15.74	77.77	7.5	33.53	8.2	24.7	2.79
A7	19 Jan 2016	16	15.74	77.90	7.5	33.53	8.2	24.7	2.74
A7	19 Jan 2016	17	15.70	77.90	7.4	33.53	8.2	24.7	2.51
A7	19 Jan 2016	18	15.64	77.69	7.2	33.53	8.2	24.7	2.26
A7	19 Jan 2016	19	15.58	77.41	7.1	33.53	8.2	24.7	2.02
A7	19 Jan 2016	20	15.48	75.92	6.9	33.53	8.2	24.7	1.74
A7	28 Jan 2016	1	15.70	84.89	7.7	33.59	8.2	24.7	0.95
A7	28 Jan 2016	2	15.69	84.90	7.7	33.59	8.2	24.7	0.94
A7	28 Jan 2016	3	15.68	84.86	7.6	33.59	8.2	24.7	1.00
A7	28 Jan 2016	4	15.63	84.88	7.6	33.58	8.2	24.7	1.04
A7	28 Jan 2016	5	15.59	85.14	7.5	33.58	8.2	24.7	1.06
A7	28 Jan 2016	6	15.53	85.02	7.4	33.58	8.2	24.8	1.05
A7	28 Jan 2016	7	15.48	85.01	7.4	33.58	8.1	24.8	1.10
A7	28 Jan 2016	8	15.43	84.96	7.3	33.57	8.1	24.8	1.09
A7	28 Jan 2016	9	15.39	84.80	7.2	33.57	8.1	24.8	1.07
A7	28 Jan 2016	10	15.38	84.66	7.2	33.57	8.1	24.8	1.08
A7	28 Jan 2016	11	15.36	84.64	7.2	33.57	8.1	24.8	1.09
A7	28 Jan 2016	12	15.37	84.60	7.3	33.57	8.1	24.8	1.11
A7	28 Jan 2016	13	15.38	84.62	7.2	33.57	8.1	24.8	1.11
A7	28 Jan 2016	14	15.37	84.50	7.2	33.57	8.1	24.8	1.07
A7	28 Jan 2016	15	15.37	84.49	7.2	33.57	8.1	24.8	1.08
A7	28 Jan 2016	16	15.37	84.44	7.2	33.57	8.1	24.8	1.08
A7	28 Jan 2016	17	15.36	84.49	7.2	33.57	8.1	24.8	1.06
A7	28 Jan 2016	18	15.28	84.33	7.2	33.57	8.1	24.8	0.96
C7	04 Jan 2016	1	15.88	85.65	6.7	33.64	8.2	24.7	1.46
C7	04 Jan 2016	2	15.87	86.01	6.4	33.64	8.2	24.7	1.43
C7	04 Jan 2016	3	15.87	86.05	6.3	33.63	8.2	24.7	1.58
C7	04 Jan 2016	4	15.87	85.99	6.4	33.64	8.2	24.7	1.27
C7	04 Jan 2016	5	15.86	86.15	6.6	33.65	8.2	24.7	1.63
C7	04 Jan 2016	6	15.86	86.30	6.8	33.64	8.2	24.7	1.47
C7	04 Jan 2016	7	15.85	86.25	6.7	33.65	8.2	24.7	1.35
C7	04 Jan 2016	8	15.84	86.17	6.5	33.63	8.2	24.7	1.38
C7	04 Jan 2016	9	15.84	86.28	6.6	33.64	8.2	24.7	1.20

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
C7	04 Jan 2016	10	15.84	86.08	6.5	33.65	8.2	24.7	1.04
C7	04 Jan 2016	11	15.83	86.29	6.2	33.65	8.2	24.7	1.09
C7	04 Jan 2016	12	15.83	86.16	6.2	33.65	8.2	24.8	1.22
C7	04 Jan 2016	13	15.82	85.91	6.4	33.66	8.2	24.8	1.22
C7	04 Jan 2016	14	15.81	85.88	6.6	33.66	8.2	24.8	1.43
C7	04 Jan 2016	15	15.79	85.07	6.8	33.67	8.2	24.8	1.03
C7	04 Jan 2016	16	15.78	83.79	6.9	33.67	8.2	24.8	1.15
C7	04 Jan 2016	17	15.78	80.60	6.3	33.66	8.2	24.8	1.61
C7	04 Jan 2016	18	15.77	78.80	5.8	33.66	8.2	24.8	1.08
C7	13 Jan 2016	1	15.83	82.16	7.5	33.37	8.1	24.5	1.39
C7	13 Jan 2016	2	15.83	82.23	7.5	33.37	8.1	24.5	1.57
C7	13 Jan 2016	3	15.83	82.16	7.5	33.38	8.1	24.5	1.75
C7	13 Jan 2016	4	15.84	82.03	7.5	33.38	8.1	24.5	1.86
C7	13 Jan 2016	5	15.89	81.99	7.4	33.41	8.1	24.5	1.88
C7	13 Jan 2016	6	15.93	81.97	7.3	33.44	8.1	24.6	1.77
C7	13 Jan 2016	7	15.95	81.67	7.3	33.46	8.1	24.6	1.56
C7	13 Jan 2016	8	15.95	79.96	7.2	33.46	8.1	24.6	1.43
C7	13 Jan 2016	9	15.95	79.89	7.1	33.47	8.1	24.6	1.30
C7	13 Jan 2016	10	15.93	78.55	7.1	33.47	8.1	24.6	1.20
C7	13 Jan 2016	11	15.92	75.68	7.0	33.48	8.1	24.6	1.14
C7	13 Jan 2016	12	15.93	74.50	6.9	33.48	8.1	24.6	1.12
C7	13 Jan 2016	13	15.93	73.36	6.8	33.49	8.1	24.6	1.07
C7	13 Jan 2016	14	15.92	72.41	6.6	33.51	8.1	24.6	1.00
C7	13 Jan 2016	15	15.88	73.11	6.4	33.52	8.1	24.6	0.91
C7	13 Jan 2016	16	15.83	72.64	6.3	33.54	8.1	24.7	0.88
C7	13 Jan 2016	17	15.81	66.99	6.3	33.55	8.1	24.7	0.88
C7	13 Jan 2016	18	15.81	53.81	6.3	33.55	8.1	24.7	0.89
C7	19 Jan 2016	1	15.87	70.34	7.8	33.47	8.2	24.6	1.09
C7	19 Jan 2016	2	15.85	69.67	7.8	33.47	8.2	24.6	1.14
C7	19 Jan 2016	3	15.80	68.26	7.8	33.47	8.2	24.6	1.39
C7	19 Jan 2016	4	15.78	67.06	7.8	33.47	8.2	24.6	1.64
C7	19 Jan 2016	5	15.77	67.09	7.7	33.47	8.2	24.6	1.77
C7	19 Jan 2016	6	15.76	67.04	7.7	33.47	8.2	24.6	1.83
C7	19 Jan 2016	7	15.76	66.93	7.7	33.47	8.2	24.6	1.85
C7	19 Jan 2016	8	15.77	65.90	7.7	33.47	8.2	24.6	1.84
C7	19 Jan 2016	9	15.77	46.49	7.7	33.47	8.2	24.6	1.83
C7	19 Jan 2016	10	15.76	55.58	7.7	33.47	8.2	24.6	1.82
C7	19 Jan 2016	11	15.76	67.29	7.7	33.48	8.2	24.6	1.84
C7	19 Jan 2016	12	15.75	67.45	7.6	33.48	8.2	24.6	1.82
C7	19 Jan 2016	13	15.73	67.47	7.4	33.48	8.2	24.6	1.77
C7	19 Jan 2016	14	15.63	66.00	7.0	33.49	8.2	24.7	1.49
C7	19 Jan 2016	15	15.51	57.48	6.6	33.51	8.1	24.7	1.23
C7	19 Jan 2016	16	15.49	53.64	6.5	33.51	8.1	24.7	1.16
C7	19 Jan 2016	17	15.49	41.91	6.6	33.51	8.1	24.7	1.17
C7	28 Jan 2016	1	15.58	84.13	7.6	33.58	8.2	24.8	0.98
C7	28 Jan 2016	2	15.57	83.87	7.6	33.58	8.2	24.8	0.96
C7	28 Jan 2016	3	15.57	84.25	7.6	33.58	8.2	24.8	0.95
C7	28 Jan 2016	4	15.56	84.32	7.5	33.58	8.2	24.8	1.02
C7	28 Jan 2016	5	15.56	84.31	7.5	33.58	8.2	24.8	1.05
C7	28 Jan 2016	6	15.54	84.40	7.5	33.58	8.2	24.8	1.13
C7	28 Jan 2016	7	15.51	84.49	7.5	33.58	8.2	24.8	1.24
C7	28 Jan 2016	8	15.51	84.63	7.5	33.58	8.2	24.8	1.27

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
C7	28 Jan 2016	9	15.50	84.69	7.4	33.58	8.2	24.8	1.29
C7	28 Jan 2016	10	15.49	84.65	7.4	33.58	8.2	24.8	1.31
C7	28 Jan 2016	11	15.49	84.77	7.4	33.58	8.2	24.8	1.37
C7	28 Jan 2016	12	15.49	84.91	7.4	33.58	8.2	24.8	1.30
C7	28 Jan 2016	13	15.48	84.84	7.4	33.58	8.2	24.8	1.31
C7	28 Jan 2016	14	15.44	85.09	7.3	33.57	8.2	24.8	1.20
C7	28 Jan 2016	15	15.34	85.00	7.0	33.56	8.1	24.8	1.10
C7	28 Jan 2016	16	14.91	82.10	6.3	33.54	8.1	24.9	0.85
C7	28 Jan 2016	17	14.86	78.57	6.2	33.52	8.1	24.9	0.71
C7	28 Jan 2016	18	14.87	77.62	6.2	33.52	8.1	24.9	0.66
C8	04 Jan 2016	1	15.81	86.37	7.7	33.63	8.2	24.7	0.87
C8	04 Jan 2016	2	15.81	85.81	7.7	33.63	8.2	24.7	0.90
C8	04 Jan 2016	3	15.81	86.60	7.6	33.63	8.2	24.7	0.89
C8	04 Jan 2016	4	15.81	86.70	7.7	33.62	8.2	24.7	0.93
C8	04 Jan 2016	5	15.80	86.63	7.6	33.62	8.2	24.7	0.97
C8	04 Jan 2016	6	15.74	86.46	7.6	33.62	8.2	24.7	0.99
C8	04 Jan 2016	7	15.75	86.62	7.6	33.62	8.2	24.7	0.95
C8	04 Jan 2016	8	15.74	86.61	7.6	33.62	8.2	24.7	0.95
C8	04 Jan 2016	9	15.74	86.52	7.6	33.62	8.2	24.7	0.95
C8	04 Jan 2016	10	15.73	86.70	7.6	33.62	8.2	24.7	1.00
C8	04 Jan 2016	11	15.73	86.65	7.6	33.62	8.2	24.7	0.95
C8	04 Jan 2016	12	15.72	86.67	7.6	33.61	8.2	24.7	0.97
C8	04 Jan 2016	13	15.71	86.69	7.7	33.61	8.2	24.7	0.91
C8	04 Jan 2016	14	15.68	86.52	7.6	33.61	8.2	24.8	0.95
C8	04 Jan 2016	15	15.66	85.64	7.6	33.61	8.2	24.8	0.92
C8	04 Jan 2016	16	15.66	85.49	7.6	33.60	8.2	24.8	0.92
C8	04 Jan 2016	17	15.66	85.92	7.7	33.61	8.2	24.8	0.91
C8	04 Jan 2016	18	15.66	85.95	7.7	33.61	8.2	24.8	0.86
C8	04 Jan 2016	19	15.66	85.75	7.7	33.60	8.2	24.7	0.88
C8	13 Jan 2016	1	15.74	79.95	7.5	33.41	8.1	24.6	1.36
C8	13 Jan 2016	2	15.73	78.49	7.6	33.41	8.1	24.6	1.51
C8	13 Jan 2016	3	15.74	78.96	7.6	33.41	8.1	24.6	1.62
C8	13 Jan 2016	4	15.73	79.95	7.6	33.41	8.1	24.6	1.76
C8	13 Jan 2016	5	15.74	80.13	7.6	33.41	8.1	24.6	1.87
C8	13 Jan 2016	6	15.74	80.20	7.6	33.41	8.1	24.6	1.95
C8	13 Jan 2016	7	15.73	80.19	7.6	33.41	8.1	24.6	2.03
C8	13 Jan 2016	8	15.73	80.27	7.5	33.41	8.1	24.6	2.14
C8	13 Jan 2016	9	15.72	80.48	7.5	33.41	8.1	24.6	2.17
C8	13 Jan 2016	10	15.72	80.43	7.6	33.41	8.1	24.6	2.12
C8	13 Jan 2016	11	15.72	80.34	7.5	33.41	8.1	24.6	2.15
C8	13 Jan 2016	12	15.72	80.58	7.5	33.42	8.1	24.6	2.07
C8	13 Jan 2016	13	15.72	80.57	7.5	33.42	8.1	24.6	2.06
C8	13 Jan 2016	14	15.71	80.67	7.5	33.42	8.1	24.6	2.01
C8	13 Jan 2016	15	15.71	80.66	7.5	33.42	8.1	24.6	1.90
C8	13 Jan 2016	16	15.77	80.58	7.3	33.45	8.1	24.6	1.68
C8	13 Jan 2016	17	15.91	81.93	7.1	33.54	8.1	24.6	1.44
C8	13 Jan 2016	18	15.90	83.66	7.0	33.55	8.1	24.7	1.34
C8	13 Jan 2016	19	15.90	69.34	7.0	33.55	8.1	24.7	1.32
C8	13 Jan 2016	20	15.89	57.65	7.0	33.55	8.1	24.7	1.33
C8	19 Jan 2016	1	15.91	74.56	7.9	33.50	8.2	24.6	1.30
C8	19 Jan 2016	2	15.91	74.55	7.9	33.50	8.2	24.6	1.39
C8	19 Jan 2016	3	15.90	74.45	7.8	33.51	8.2	24.6	1.71

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens ($\sigma\text{-t}$)	Chlor ($\mu\text{g/L}$)
C8	19 Jan 2016	4	15.89	74.40	7.8	33.51	8.2	24.6	2.03
C8	19 Jan 2016	5	15.89	74.36	7.8	33.51	8.2	24.6	2.26
C8	19 Jan 2016	6	15.89	74.32	7.9	33.51	8.2	24.6	2.42
C8	19 Jan 2016	7	15.87	74.32	7.8	33.51	8.2	24.6	2.54
C8	19 Jan 2016	8	15.87	74.30	7.9	33.51	8.2	24.6	2.63
C8	19 Jan 2016	9	15.86	74.26	7.8	33.51	8.2	24.6	2.64
C8	19 Jan 2016	10	15.85	74.16	7.8	33.51	8.2	24.6	2.68
C8	19 Jan 2016	11	15.84	74.34	7.8	33.51	8.2	24.6	2.69
C8	19 Jan 2016	12	15.84	74.39	7.8	33.51	8.2	24.6	2.66
C8	19 Jan 2016	13	15.84	74.48	7.7	33.51	8.2	24.6	2.58
C8	19 Jan 2016	14	15.79	74.77	7.4	33.51	8.2	24.7	2.37
C8	19 Jan 2016	15	15.66	70.40	7.1	33.52	8.2	24.7	2.16
C8	19 Jan 2016	16	15.58	59.24	7.0	33.52	8.2	24.7	2.11
C8	19 Jan 2016	17	15.54	41.60	6.9	33.52	8.2	24.7	2.24
C8	19 Jan 2016	18	15.53	22.76	6.9	33.52	8.2	24.7	2.49
C8	28 Jan 2016	1	15.65	85.05	7.5	33.58	8.2	24.7	0.70
C8	28 Jan 2016	2	15.63	84.61	7.5	33.58	8.2	24.7	0.71
C8	28 Jan 2016	3	15.62	84.72	7.5	33.58	8.2	24.7	0.79
C8	28 Jan 2016	4	15.61	84.88	7.5	33.58	8.2	24.7	0.88
C8	28 Jan 2016	5	15.61	84.60	7.5	33.58	8.2	24.7	0.99
C8	28 Jan 2016	6	15.60	84.68	7.5	33.58	8.2	24.7	1.07
C8	28 Jan 2016	7	15.57	84.78	7.4	33.58	8.2	24.8	1.16
C8	28 Jan 2016	8	15.57	84.75	7.4	33.58	8.2	24.8	1.23
C8	28 Jan 2016	9	15.53	84.80	7.3	33.58	8.2	24.8	1.29
C8	28 Jan 2016	10	15.52	84.92	7.3	33.58	8.2	24.8	1.35
C8	28 Jan 2016	11	15.46	84.83	7.2	33.57	8.2	24.8	1.34
C8	28 Jan 2016	12	15.37	84.56	7.0	33.57	8.1	24.8	1.31
C8	28 Jan 2016	13	15.33	84.08	7.0	33.56	8.1	24.8	1.37
C8	28 Jan 2016	14	15.21	83.37	6.8	33.56	8.1	24.8	1.46
C8	28 Jan 2016	15	15.19	83.19	6.8	33.55	8.1	24.8	1.28
C8	28 Jan 2016	16	15.16	82.37	6.7	33.55	8.1	24.8	1.14
C8	28 Jan 2016	17	15.05	80.41	6.4	33.54	8.1	24.8	1.07
C8	28 Jan 2016	18	14.93	75.58	6.3	33.53	8.1	24.9	0.93

NA = not available

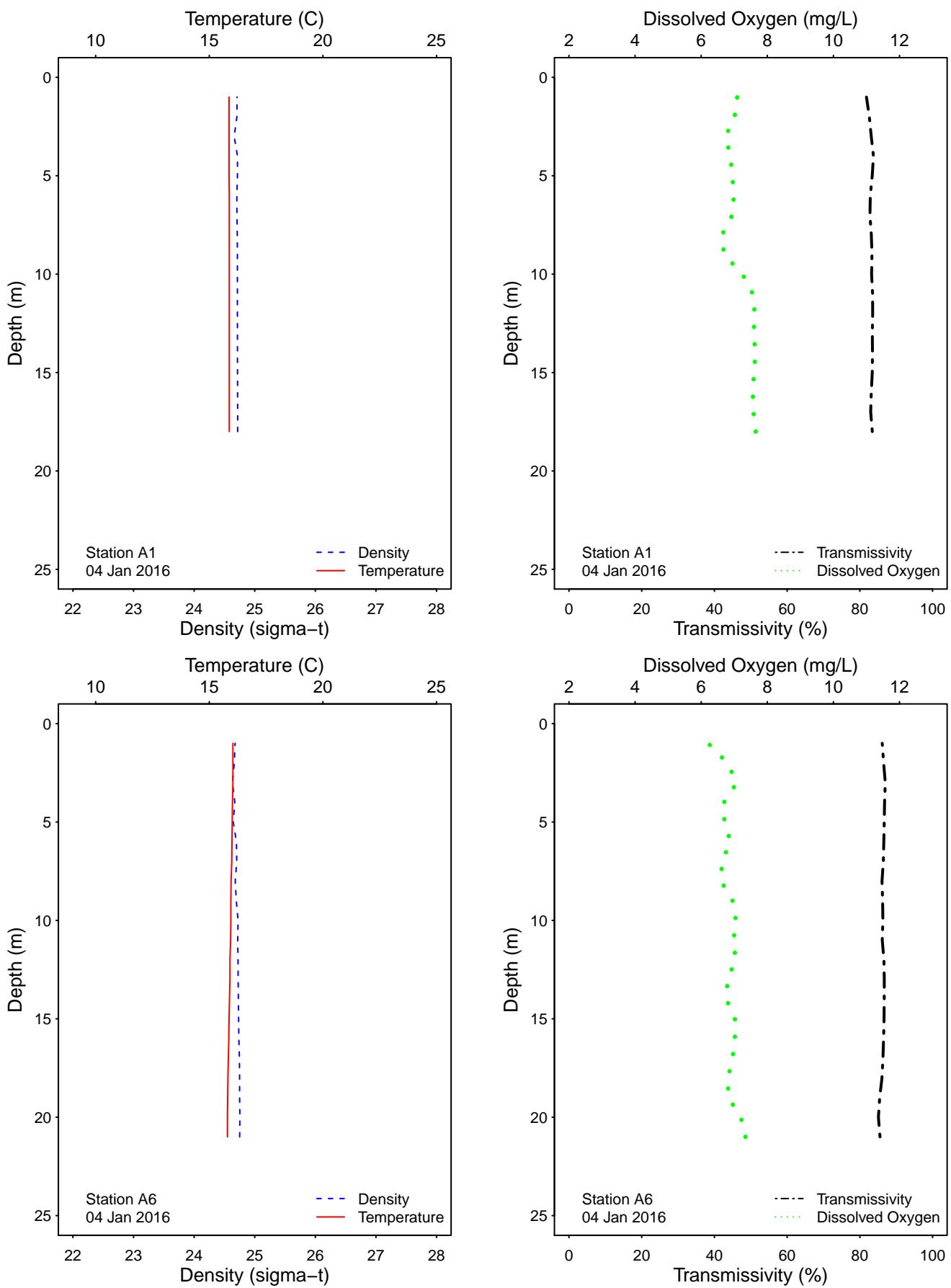


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

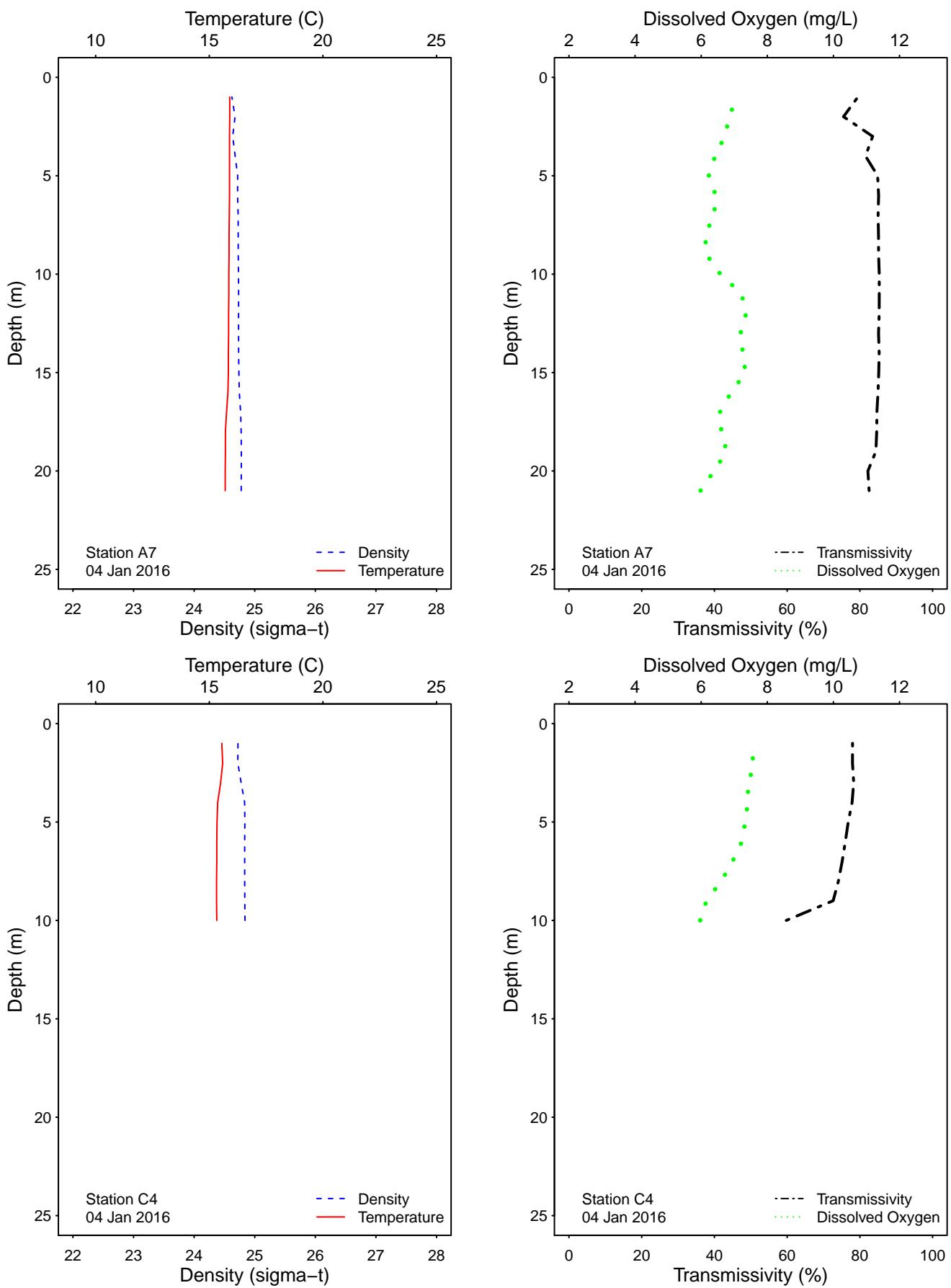


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

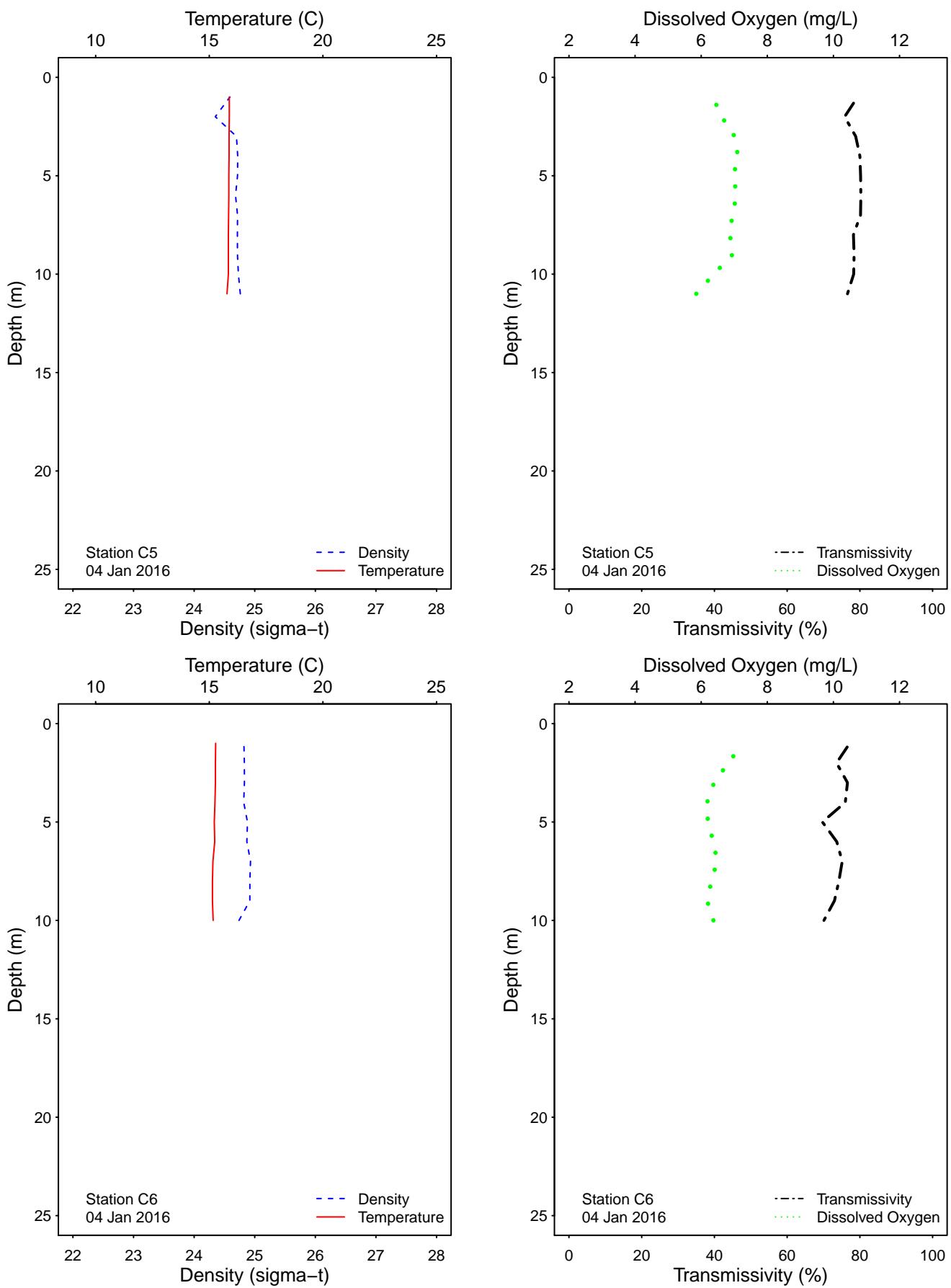


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

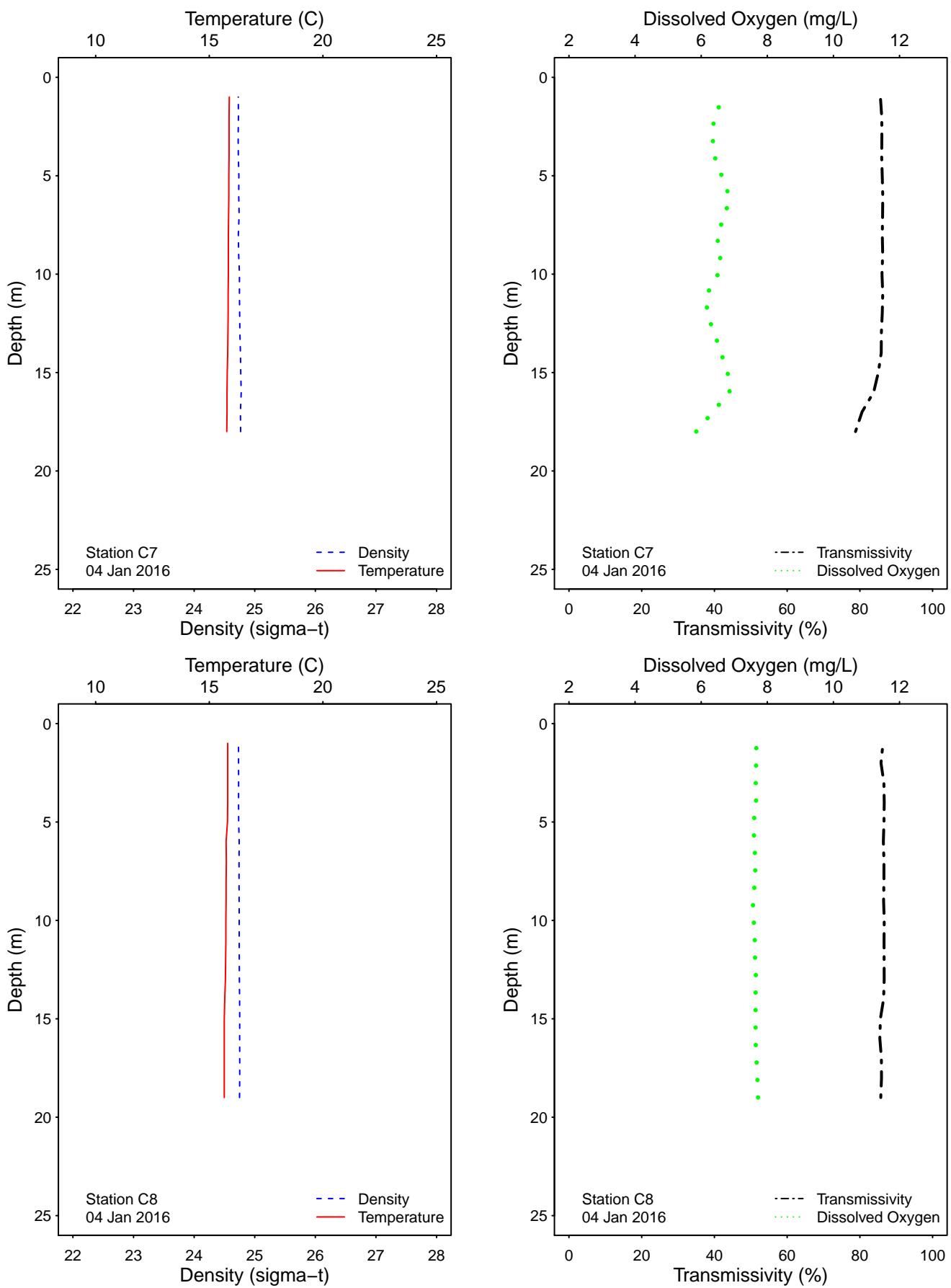


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

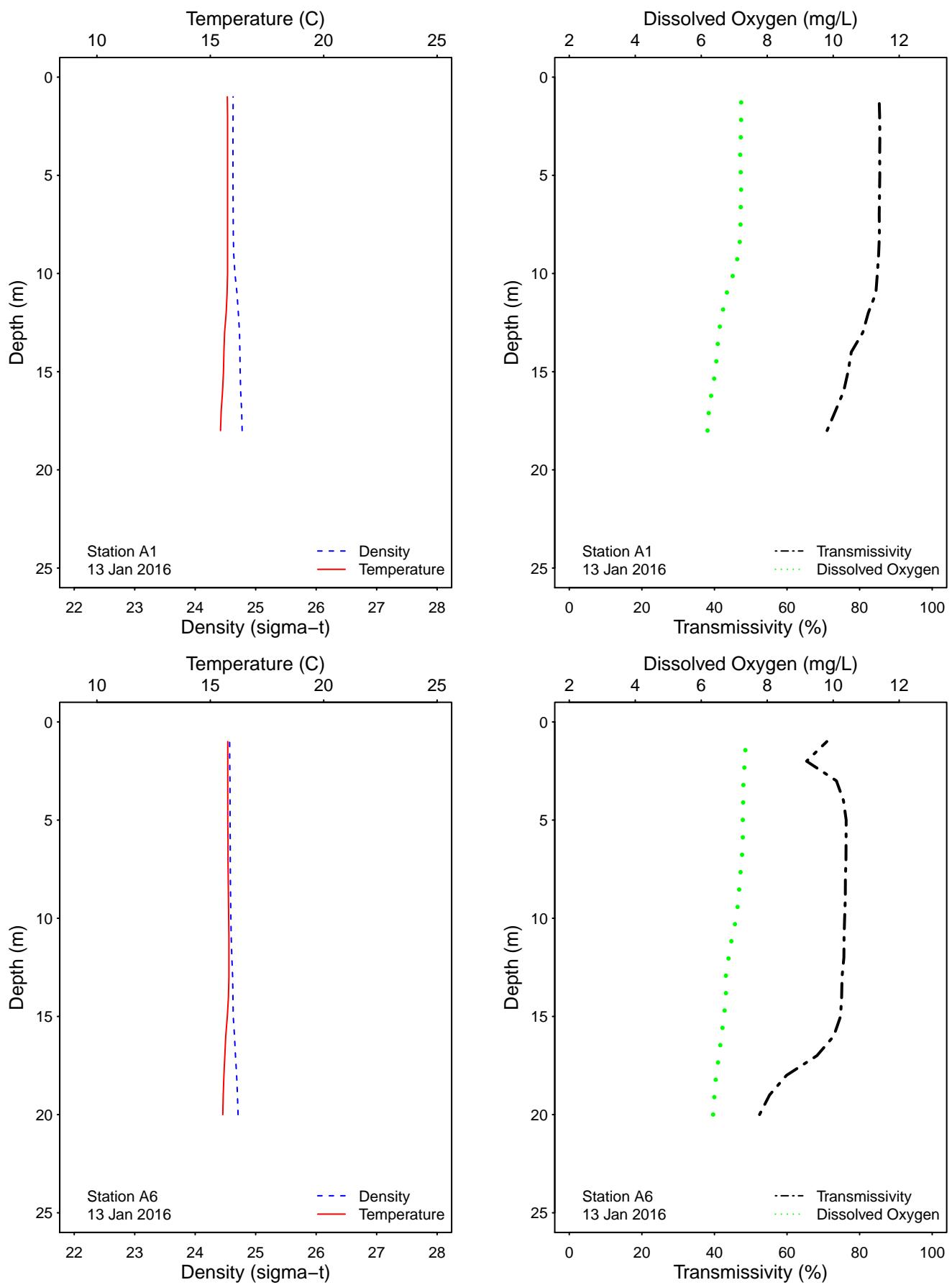


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

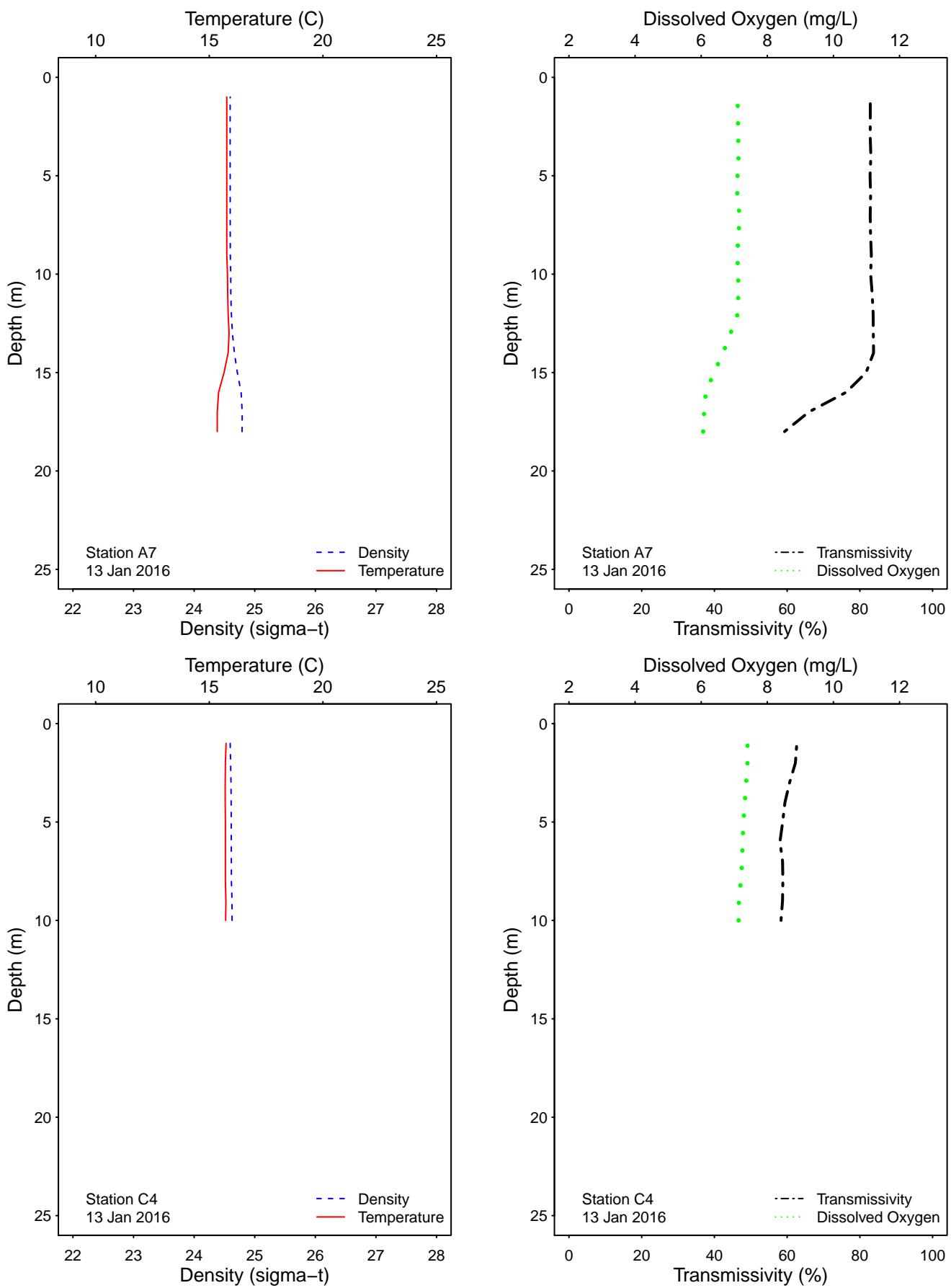


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

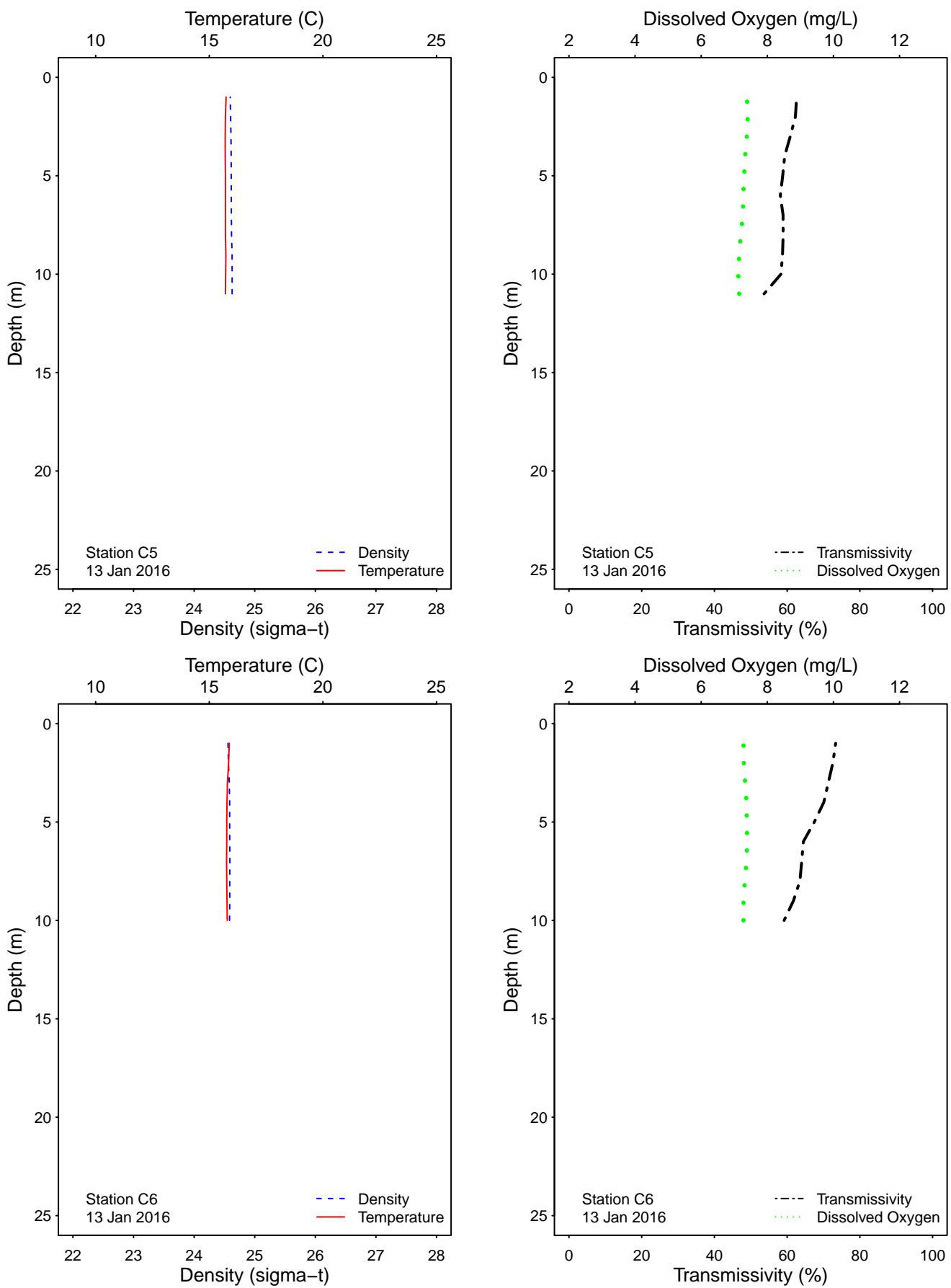


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

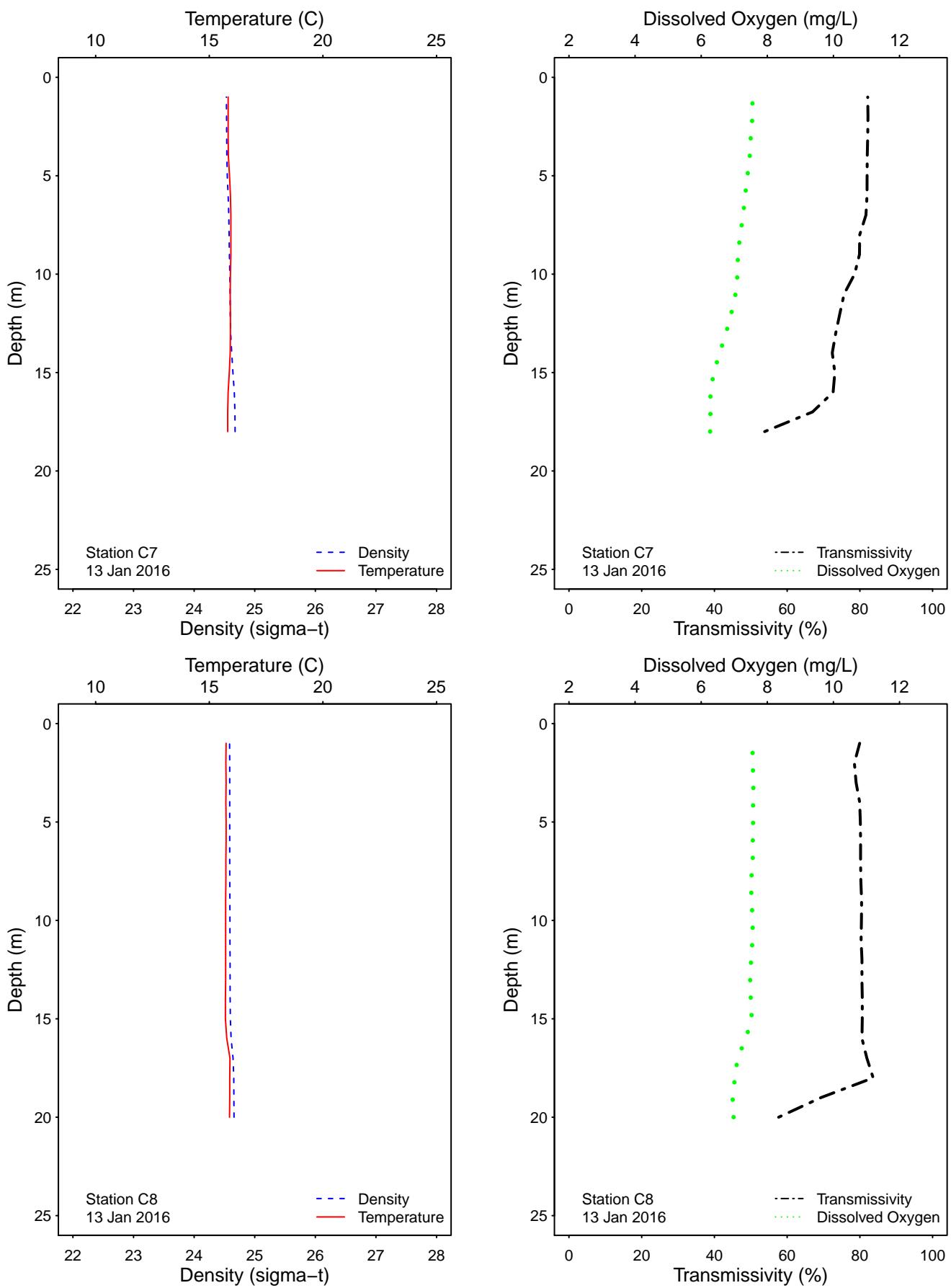


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

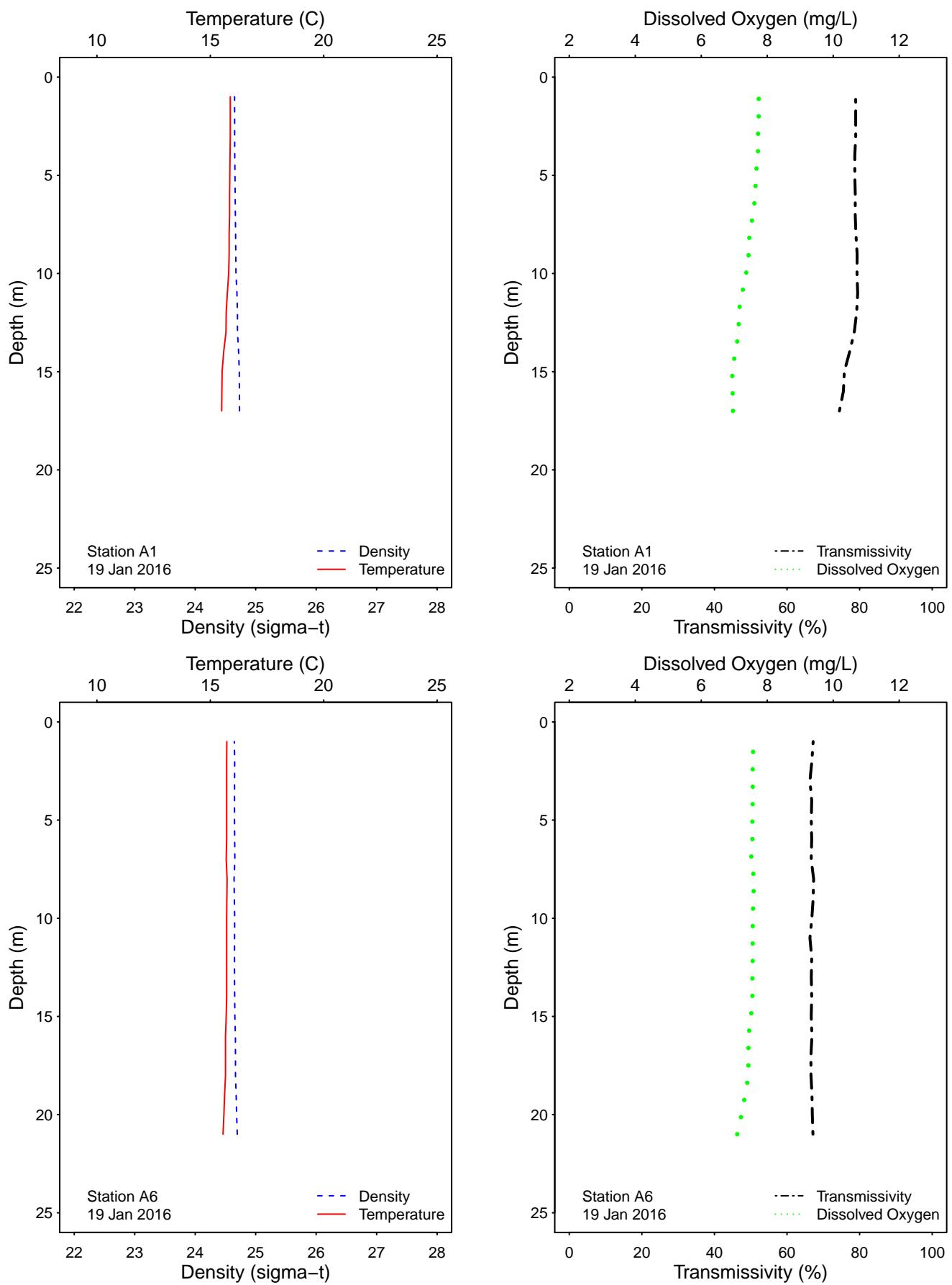


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

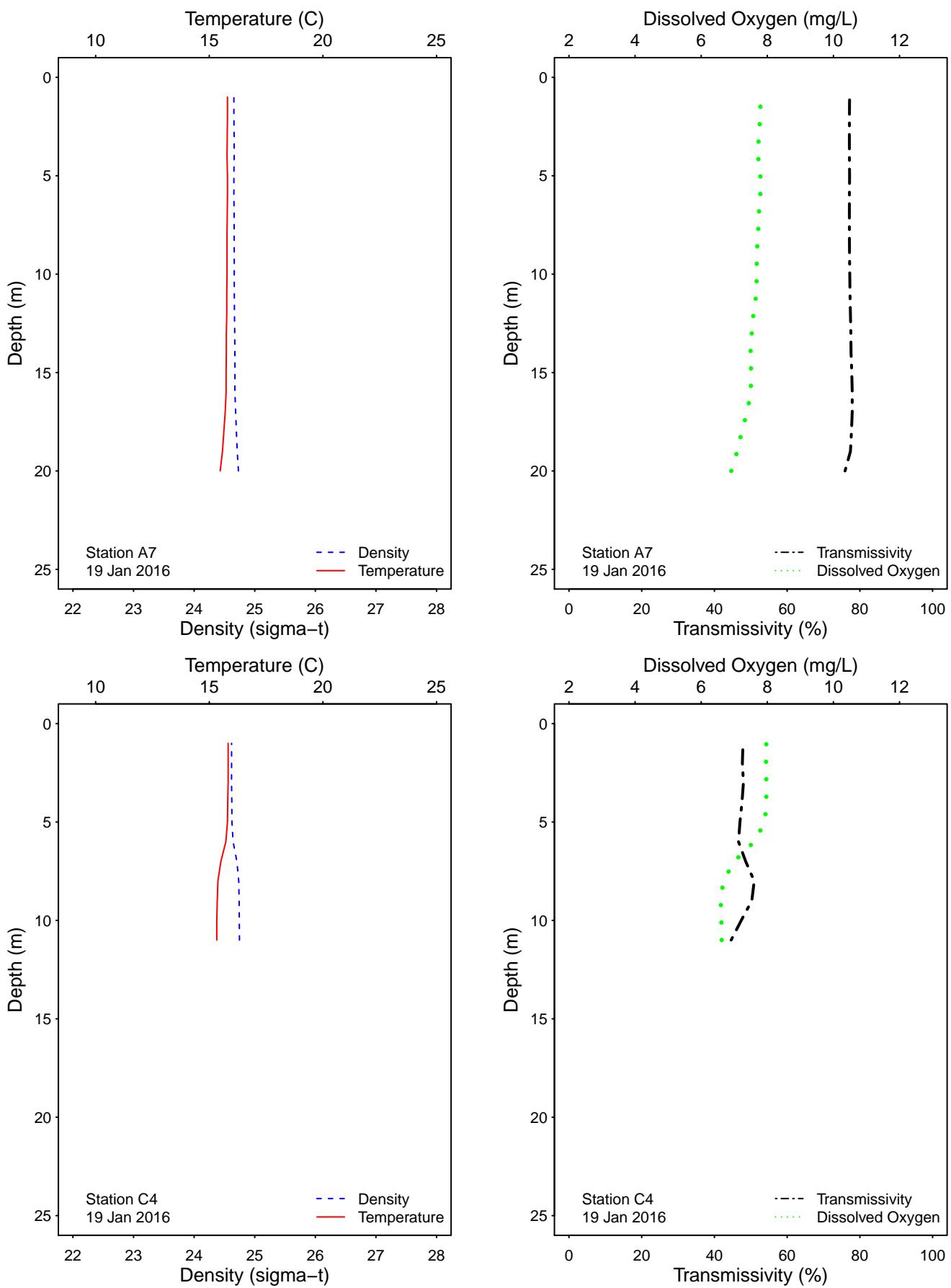


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

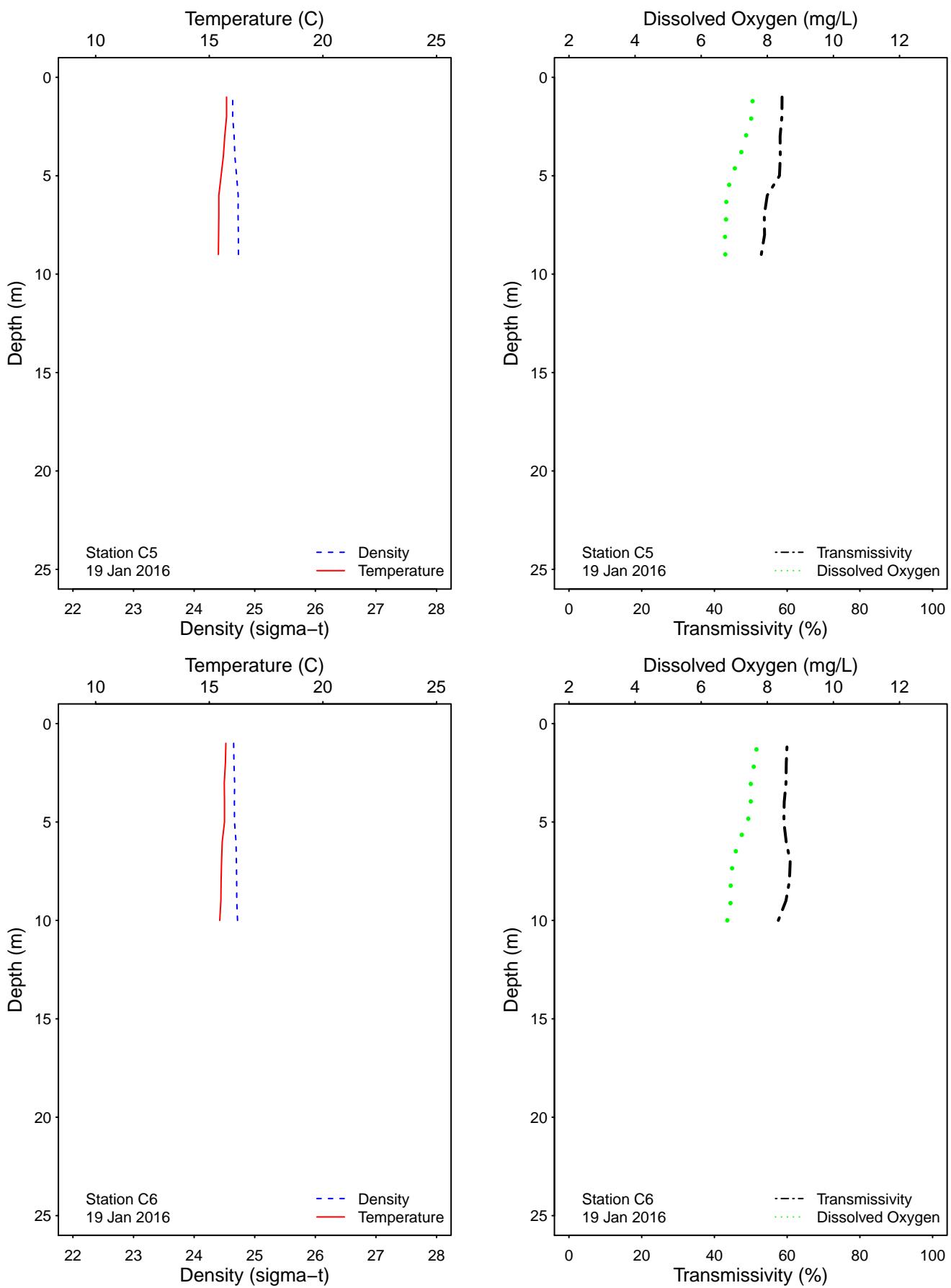


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

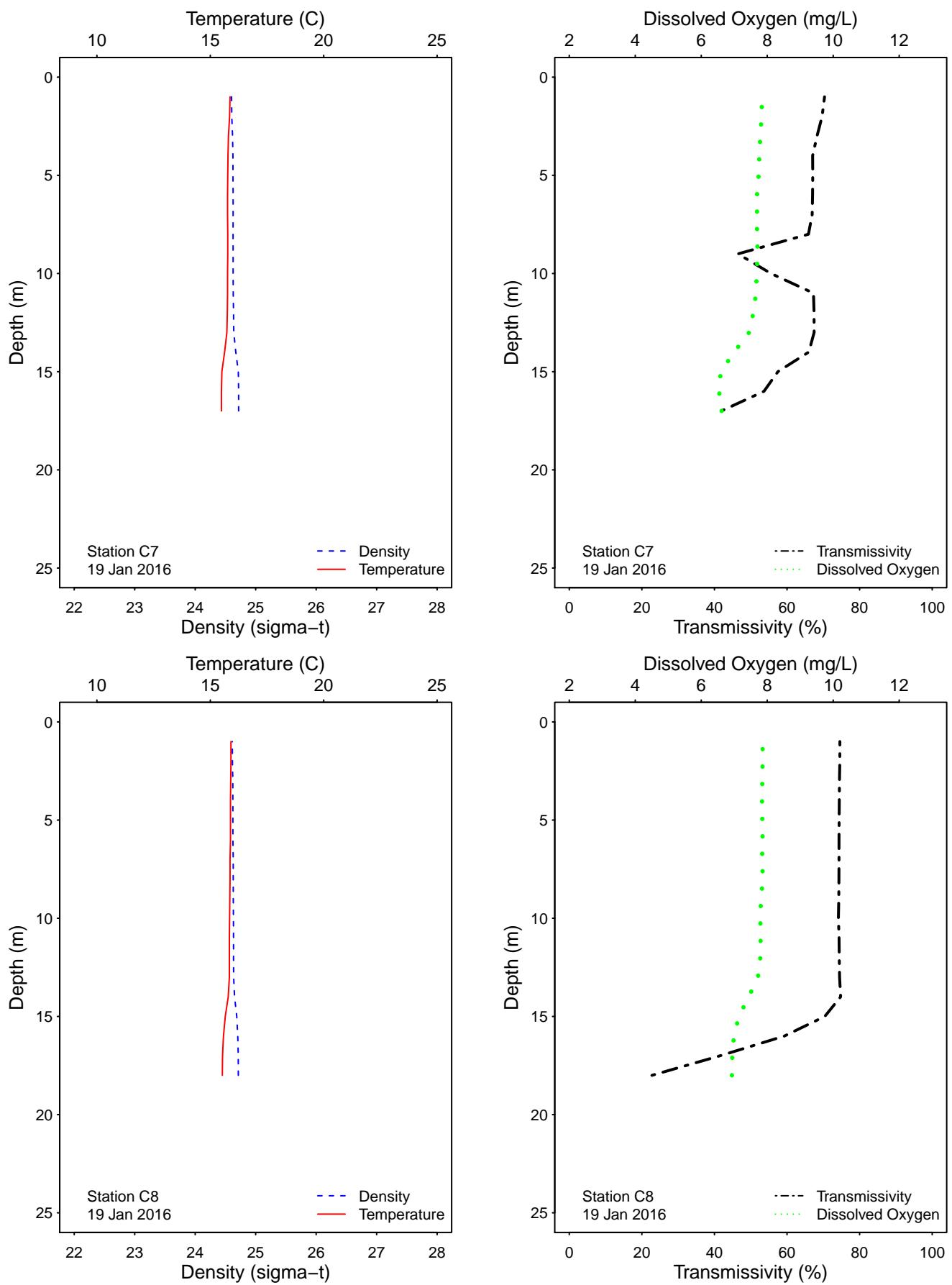


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

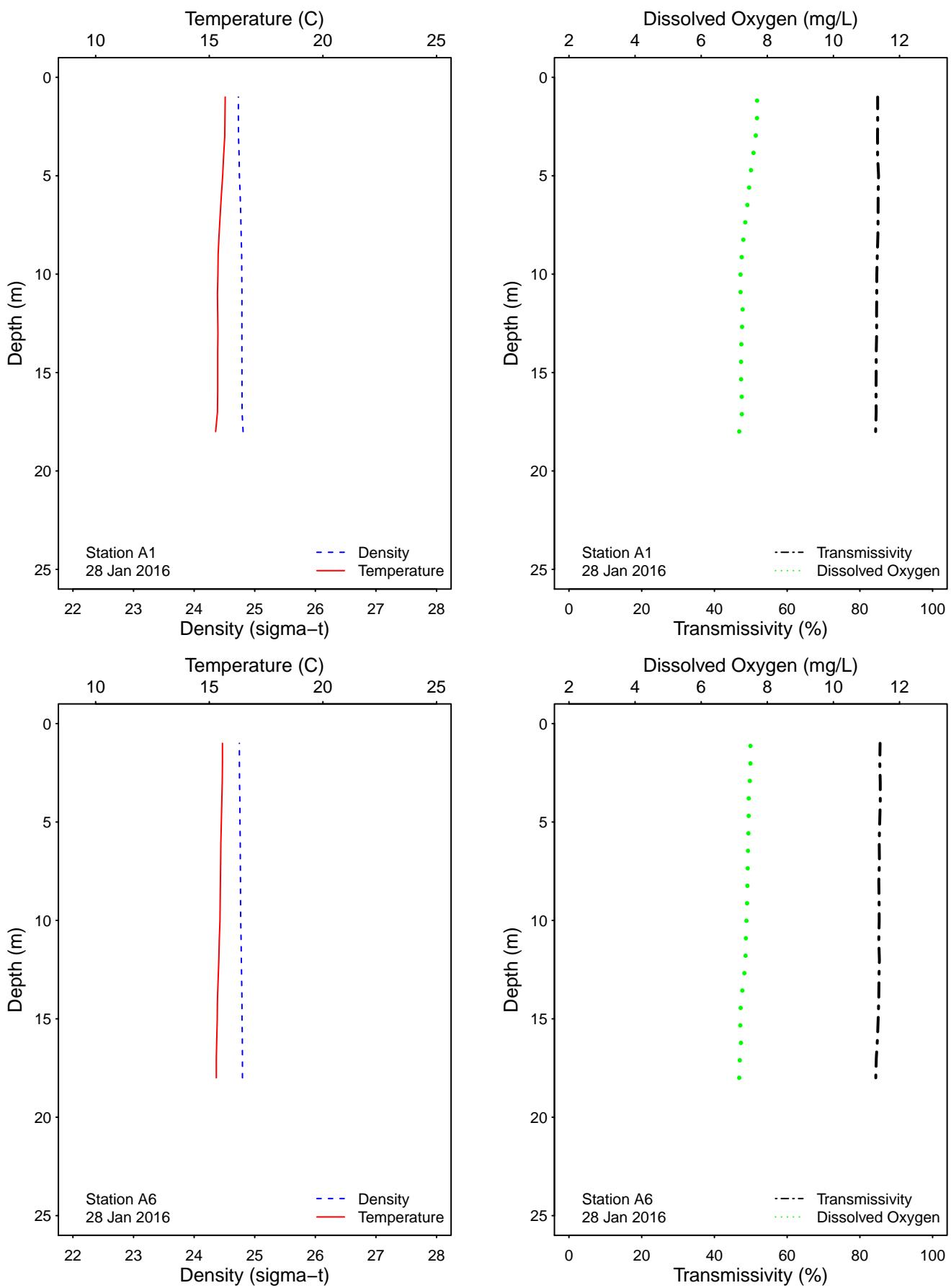


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

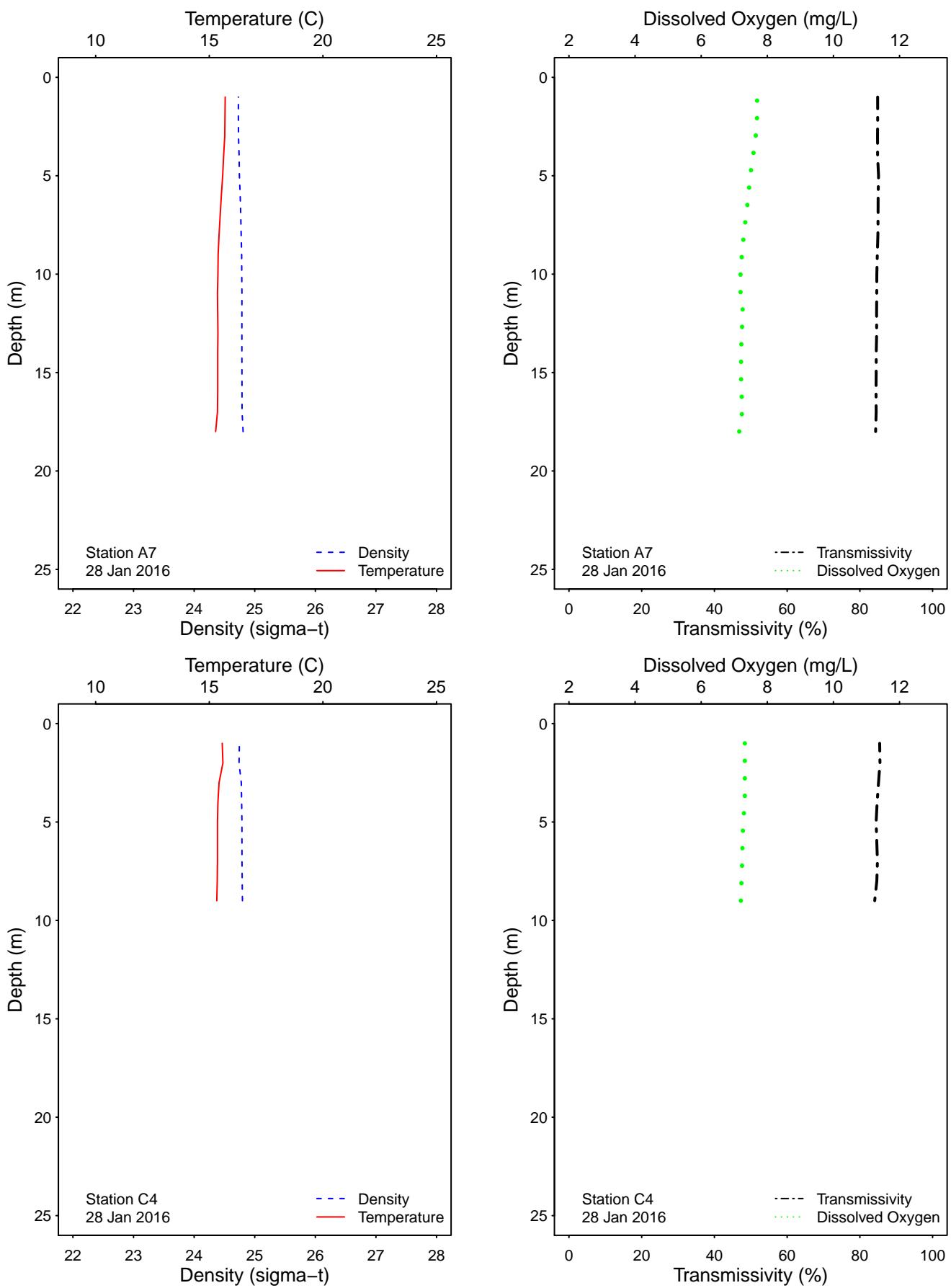


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

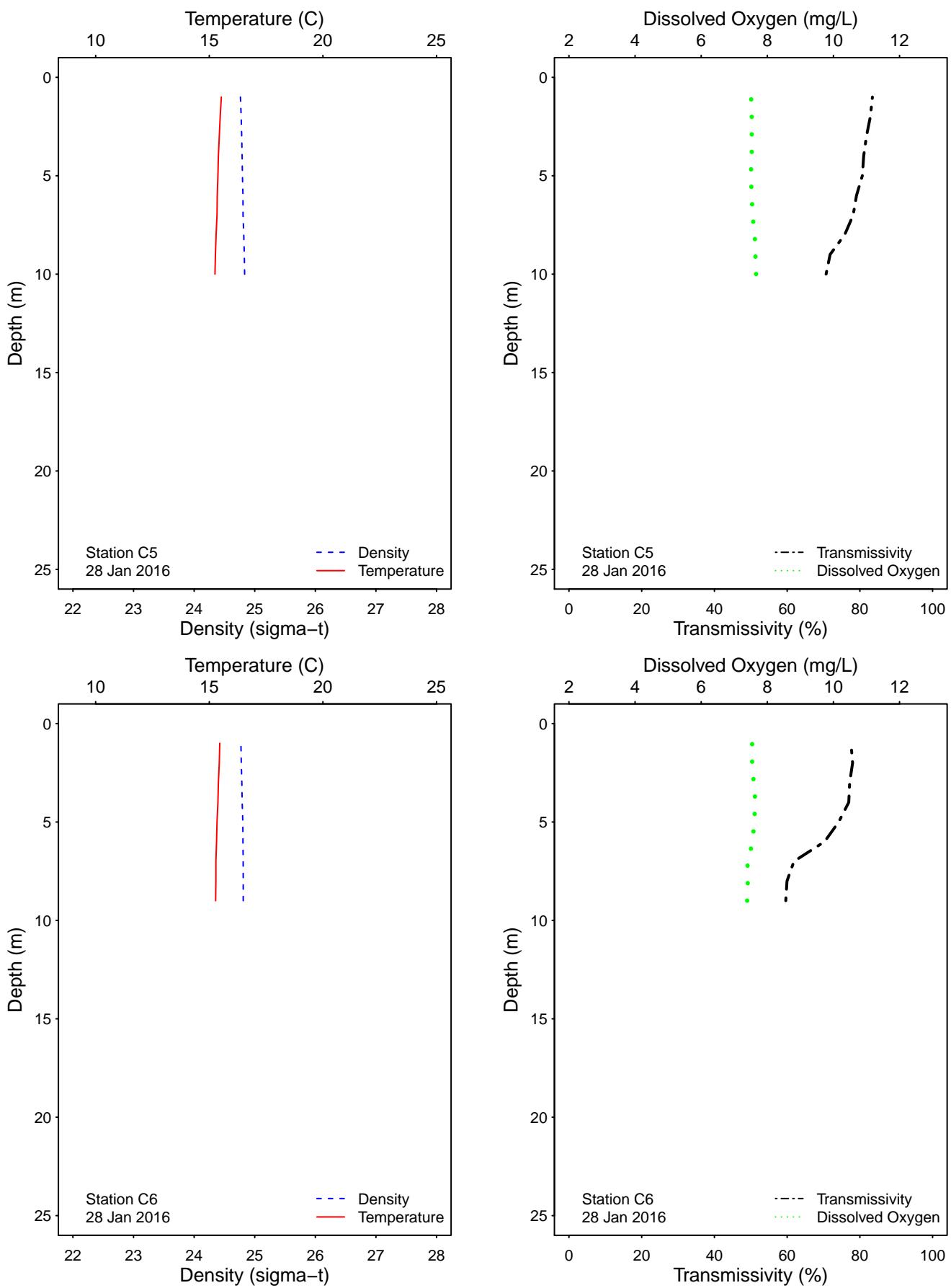


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

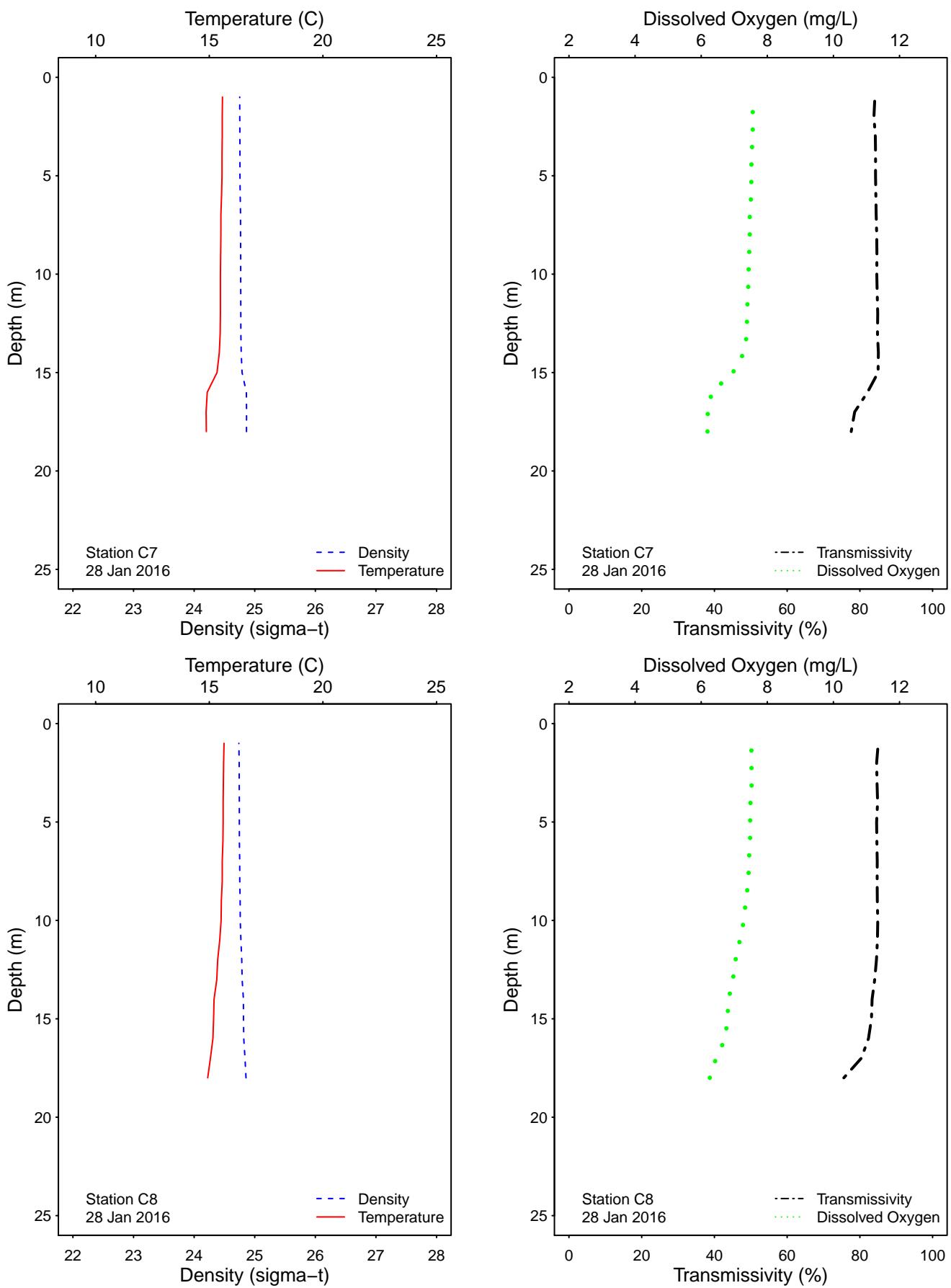


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

This page intentionally left blank

APPENDIX A

Quality Assurance

Table A.1

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

Station	Date	Depth	Analyst	Procedure	Total	Fecal	Enter
A7	04 Jan 2016	18	JT	LAB DUPLICATE	2e	<2	<2
A7	13 Jan 2016	18	LMA	LAB DUPLICATE	80e	6e	2e
A7	19 Jan 2016	18	LMA	LAB DUPLICATE	16e	<2	2e
A7	28 Jan 2016	18	SR	LAB DUPLICATE	<2	<2	<2
C7	04 Jan 2016	18	SR	LAB DUPLICATE	<2	<2	<2
C7	13 Jan 2016	18	SR	LAB DUPLICATE	<20	<2	2e
C7	19 Jan 2016	18	JT	LAB DUPLICATE	<20	<2	<2
C7	28 Jan 2016	18	SR	LAB DUPLICATE	4e	<2	<2
C8	04 Jan 2016	12	SR	LAB DUPLICATE	<2	<2	<2
C8	13 Jan 2016	12	SR	LAB DUPLICATE	2e	<2	<2
C8	19 Jan 2016	12	LMA	LAB DUPLICATE	12e	<2	<2
C8	28 Jan 2016	12	SR	LAB DUPLICATE	<2	<2	<2
D8	04 Jan 2016		AR	FIELD DUPLICATE	600e	40e	50
D8	04 Jan 2016		AR	LAB DUPLICATE	200e	80e	42
D8	10 Jan 2016		AR	FIELD DUPLICATE	40e	16e	20e
D8	10 Jan 2016		AR	LAB DUPLICATE	40e	10e	16e
D8	16 Jan 2016		SR	FIELD DUPLICATE	<20	<2	2e
D8	16 Jan 2016		SR	LAB DUPLICATE	20e	4e	2e
D8	22 Jan 2016		SR	FIELD DUPLICATE	60e	6e	12e
D8	22 Jan 2016		SR	LAB DUPLICATE	40e	2e	4e
D8	28 Jan 2016		LMA	FIELD DUPLICATE	660	160e	4800
D8	28 Jan 2016		LMA	LAB DUPLICATE	680	180e	2600e

ns = not sampled

ND = no data

