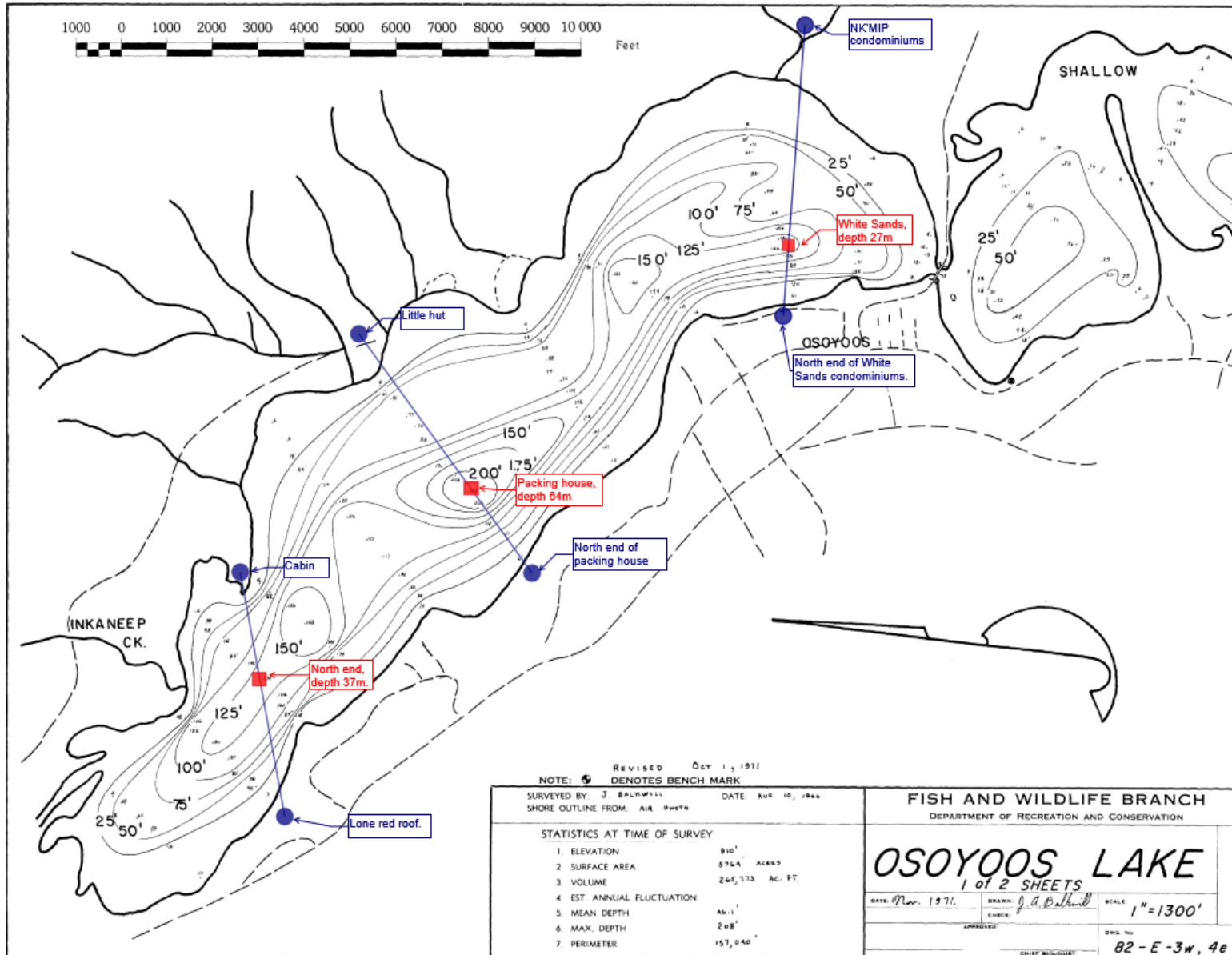


OSOYOOS LAKE WATER QUALITY SOCIETY

WATER TESTING 2017

OSOYOOS LAKE WATER QUALITY SOCIETY

WATER TEST LOCATIONS, NORTH BASIN



Water test locations, and depth:

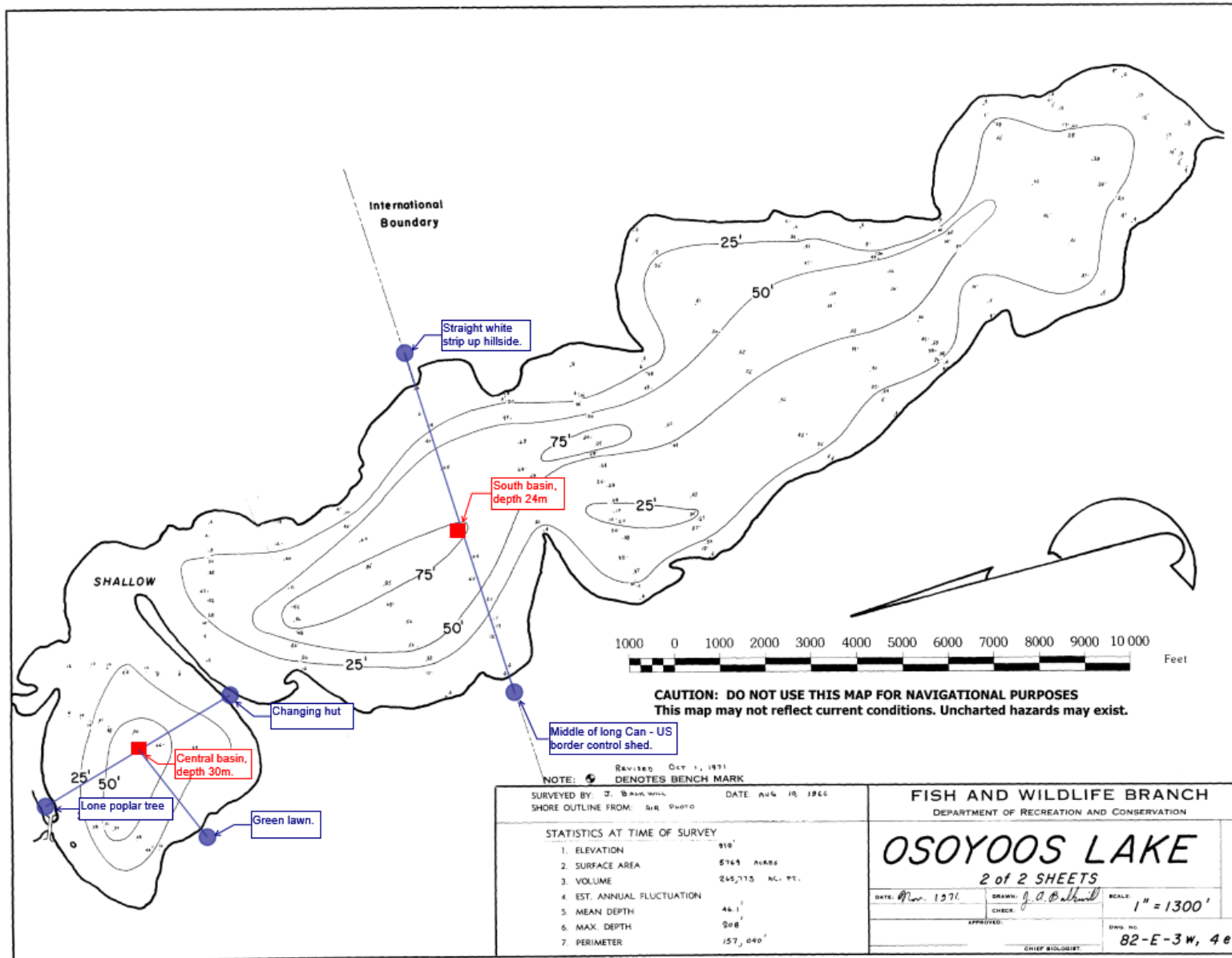
- North end, 37m.
- Packing House, 64m.
- White Sands, 27m.

Location references:

- Land marks, then depth.
- GPS coordinates are available.

OSOYOOS LAKE WATER QUALITY SOCIETY

WATER TEST LOCATIONS, CENTRAL AND SOUTH BASINS



Water test locations, and depth:

- Central basin, 30m.
- South basin, 24m.

Locations references:

- Land marks, then depth.
- GPS coordinates are available.

OSOYOOS LAKE WATER QUALITY SOCIETY

PONTOON BOAT, USED FOR WATER TESTING AT THE FIVE LOCATIONS



About the pontoon boat:

- Owned by OLWQS.
- Flat and low deck, good for water testing.
- Low profile, goes under bridge during summer.
- 50 HP 4-stroke outboard motor.

Picture from BH email 160717.

OSOYOOS LAKE WATER QUALITY SOCIETY

PONTOON BOAT, USED FOR WATER TESTING AT THE FIVE LOCATIONS



More about the pontoon boat:

- Purchased year 2003, new.

Picture from BH email 160717.

OSOYOOS LAKE WATER QUALITY SOCIETY

WATER TEST EQUIPMENT 2017

- Depth meter: Humminbird PiranhaMAX™ 160-dualBeam.
- Oxygen-Temperature-Conductivity meter: YSI Model 85 System with long cable for readings to 28m depth. Calibration occasionally required.
- pH meter: Hanna Instruments pH tester HI98127•HI98128. Calibration occasionally required.
- Depth water sample collector: Pipe and two balls. Used to collect water sample at 18m depth, for pH test.
- Secchi disk: A measure of water turbidity from surface.
- New pH meter: 7Pros pH meter. Not used, arrived just after 2017 season.



DATE: 19 July 2017	LOCATION: Rocky House
TIME: 10:15	CREW: CM, JG, SE, Kc
WIND DIRECTION: (CIRCLE ONE) N NE E SE S SW W NW	
WIND STRENGTH: (CIRCLE ONE) CALM LIGHT MODERATE STRONG	
WATER CONDITION: (CIRCLE ONE) CALM LIGHT RIPPLE SHALL WAVES WHITE-TOPS	
SKY CONDITION: (CIRCLE ONE) CLEAR SCATTERED BROKEN OVERCAST	
AIR TEMP: 26 °C	DEPTH: 64 metres
	SECCHI DISC: 3.9

DEPTH metres	TEMP °C	DISSOLVED O ₂	SPEC. COND	pH
Surface	23 23	8.6 8.4	280	8.40
2	22	8.7		
4	22	8.6		
6	22	8.2		
8	22	8.1		
10	21	8.0		
12	21	7.9		
14	17	6.6		
16	15	6.7		
18	11	7.3		
20	10	7.4		7.75
24	9	7.4		
28	9	7.2	290	

THERMOCLINE @: _____ metres

NOTES:

LAKE OSOYOOS WATER QUALITY SOCIETY

WATER TESTING 2017, EXAMPLE OF DATA RECORD SHEET:

- Data is recorded manually, and includes local weather observations.
- Water testing season: Each Wednesday morning in July, August, and September (13 Wednesdays).
- Five data sheets per Wednesday, unless water testing stopped due to strong winds and large waves.
- Data is transferred to spreadsheet tables, and presented in charts for the MoE.

OSOYOOS LAKE WATER QUALITY SOCIETY.

EXAMPLE OF DATA TABLE 1.

DATE	TIME	SKY CONDITION	WIND DIRECTION	WIND STRENGTH	WATER CONDITION	AIR TEMPERATURE (°C)	LAKE DEPTH (meters)	SECCHI DISC (meters)	TEMP, TOP (°C at 0m)	TEMP, BOTTOM (°C at 28m)	D.O. TOP (mg/l at 0m)	D.O. BOTTOM (mg/l at 28m)	SPEC. COND. - TOP (µS/cm)	SPEC. COND. - BTM (µS/cm)	pH TOP	pH BOTTOM (18 meters)	THERMOCLINE			NOTES	
																	DEPTH (meters)	TEMP (°C)	D.O. (ppm)		
DATA - PACKINGHOUSE - 2017																					
05-Jul-17	11:33 AM	Clear	-	Calm	Calm	30	64	3.4	23	8	8.2	7.1	269	282	8.75	7.86					
12-Jul-17	10:55 AM	Clear	SE	Calm/Light	Calm	27	64	3.2	23	8	7.8	6.8	276	295	7.00	6.98					
19-Jul-17	10:15 AM	Clear	SW	Light	Light ripple	26	64	3.9	23	9	8.6	7.2	280	290	8.48	7.75					
26-Jul-17	10:26 AM	Clear	-	Calm	Calm	26	64	4.0	24	8	7.3	6.0	286	290	8.64	8.04					
02-Aug-17																				Wind picking up, testing stopped after central Smoke.	
09-Aug-17	10:32 AM	Clear	-	Light	Small Waves	24	64	3.6	23	9	7.8	5.8	288	289	8.35	7.67					
16-Aug-17	10:36 AM	Clear	W	Light	Light ripple	26	64	4.5	23	9	8.0	5.4	292	290	8.44	7.89					
23-Aug-17	10:25 AM	Clear	-	Calm	Calm	29	64	5.0	23	9	8.2	5.1	294	291	8.31	7.74					
30-Aug-17	10:40 AM	Broken	-	Calm	Calm	23	63	4.6	22	9	7.8	4.6	295	291	8.15	8.10					
06-Sep-17	10:15 AM	Clear	-	Calm	Calm	22	64	5.3	22	9	8.0	4.4	298	292	7.93	7.83				Smokey	
13-Sep-17																				Testing canceled, high NW wind & white caps	
20-Sep-17	11:00 AM	Clear	-	Calm	Calm	14	64	5.5	18	9	7.7	3.6	300	294							pH meter not working
27-Sep-17	10:25 AM	Clear	W	Light	Light ripple	18	63	4.5	17	9	8.2	3.3	300	294	8.69	8.65					

OSOYOOS LAKE WATER QUALITY SOCIETY.

EXAMPLE OF DEPTH DATA TABLE 2.

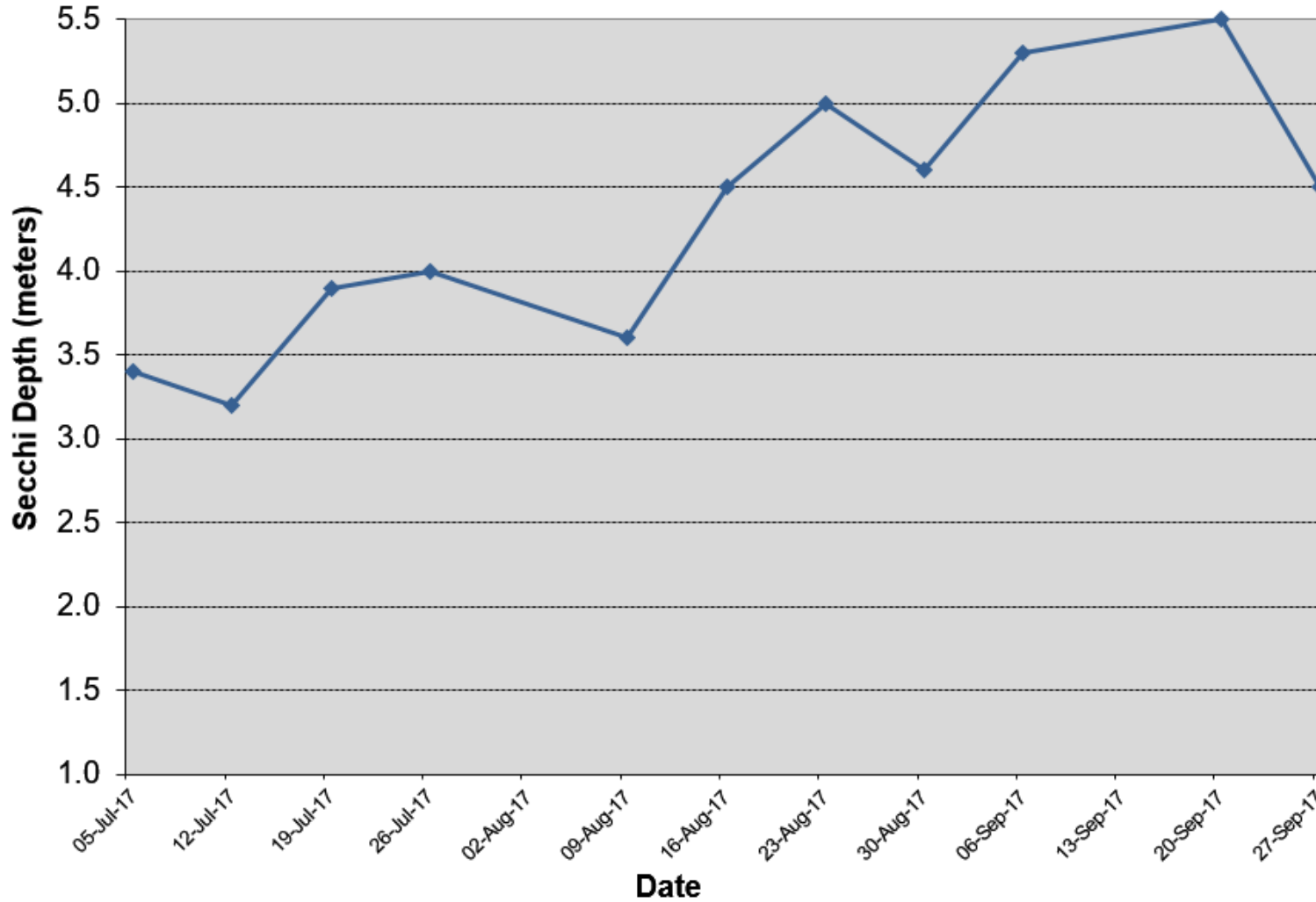
DEPTH DATA - PACKINGHOUSE 2017													
		Temperature (°C)											
Depth (m)	05-Jul-17	12-Jul-17	19-Jul-17	26-Jul-17	02-Aug-17	09-Aug-17	16-Aug-17	23-Aug-17	30-Aug-17	06-Sep-17	13-Sep-17	20-Sep-17	27-Sep-17
0	23	23	23	24		22.5	23	23	22	21.8		18.1	17.3
2	21	22	22	24		22.6	22	23	22	21.8		17.9	17.3
4	21	21	22	22		22.6	22	23	22	21.8		17.9	17.2
6	21	21	22	21		22.5	22	23	22	21.9		17.9	17.2
8	20	21	22	21		22.4	22	22	21	21.6		17.9	17.1
10	19	21	21	21		22.3	22	22	21	21.4		17.9	17.1
12	17	19	21	21		22.1	22	22	21	21.2		17.9	17.1
14	17	17	17	18		20.0	20	21	20	20.3		17.9	17.0
16	14	14	15	14		15.1	14	16	16	16.1		17.5	16.8
18	11	12	11	11		11.3	11	12	12	12.7		12.6	15.4
20	10	10	10	10		9.8	10	10	10	9.9		10.0	10.5
24	9	8	9	9		8.9	9	9	9	9.0		8.9	9.0
28	8	8	9	8		8.6	9	9	9	8.8		8.6	8.7

		Dissolved Oxygen (mg/L)											
Depth (m)	05-Jul-17	12-Jul-17	19-Jul-17	26-Jul-17	02-Aug-17	09-Aug-17	16-Aug-17	23-Aug-17	30-Aug-17	06-Sep-17	13-Sep-17	20-Sep-17	27-Sep-17
0	8.2	7.8	8.6	7.3		7.8	8.0	8.2	7.8	8.0		7.7	8.2
2	8.3	7.7	8.7	7.4		7.8	7.9	8.2	7.8	8.0		7.8	8.2
4	8.2	7.9	8.6	7.4		7.7	7.9	8.1	7.8	7.9		7.7	8.2
6	7.8	7.5	8.2	7.3		7.7	7.9	8.2	7.5	7.9		7.7	8.2
8	7.8	7.5	8.1	7.0		7.6	7.9	8.1	7.0	7.4		7.6	8.0
10	7.5	7.4	8.0	7.0		7.5	7.7	7.6	6.8	7.3		7.7	8.0
12	7.3	6.7	7.9	7.0		7.3	7.3	7.5	6.7	6.7		7.7	8.0
14	7.2	6.5	6.6	5.6		6.0	5.4	7.0	5.7	5.8		7.6	7.7
16	7.0	6.4	6.7	5.7		4.9	4.6	4.3	3.5	3.7		7.4	7.8
18	7.2	6.4	7.3	6.1		5.7	5.5	5.1	4.4	3.9		3.7	5.8
20	7.3	6.9	7.4	6.2		5.8	5.7	5.6	4.4	4.6		3.8	3.6
24	7.3	6.4	7.4	6.0		5.8	5.7	5.4	4.7	4.5		3.8	3.6
28	7.1	6.8	7.2	6.0		5.8	5.4	5.1	4.6	4.4		3.6	3.3

OSOYOOS LAKE WATER QUALITY SOCIETY

EXAMPLE OF SECCHI CHART

Osoyoos Lake at Packing house - Secchi Depth 2017



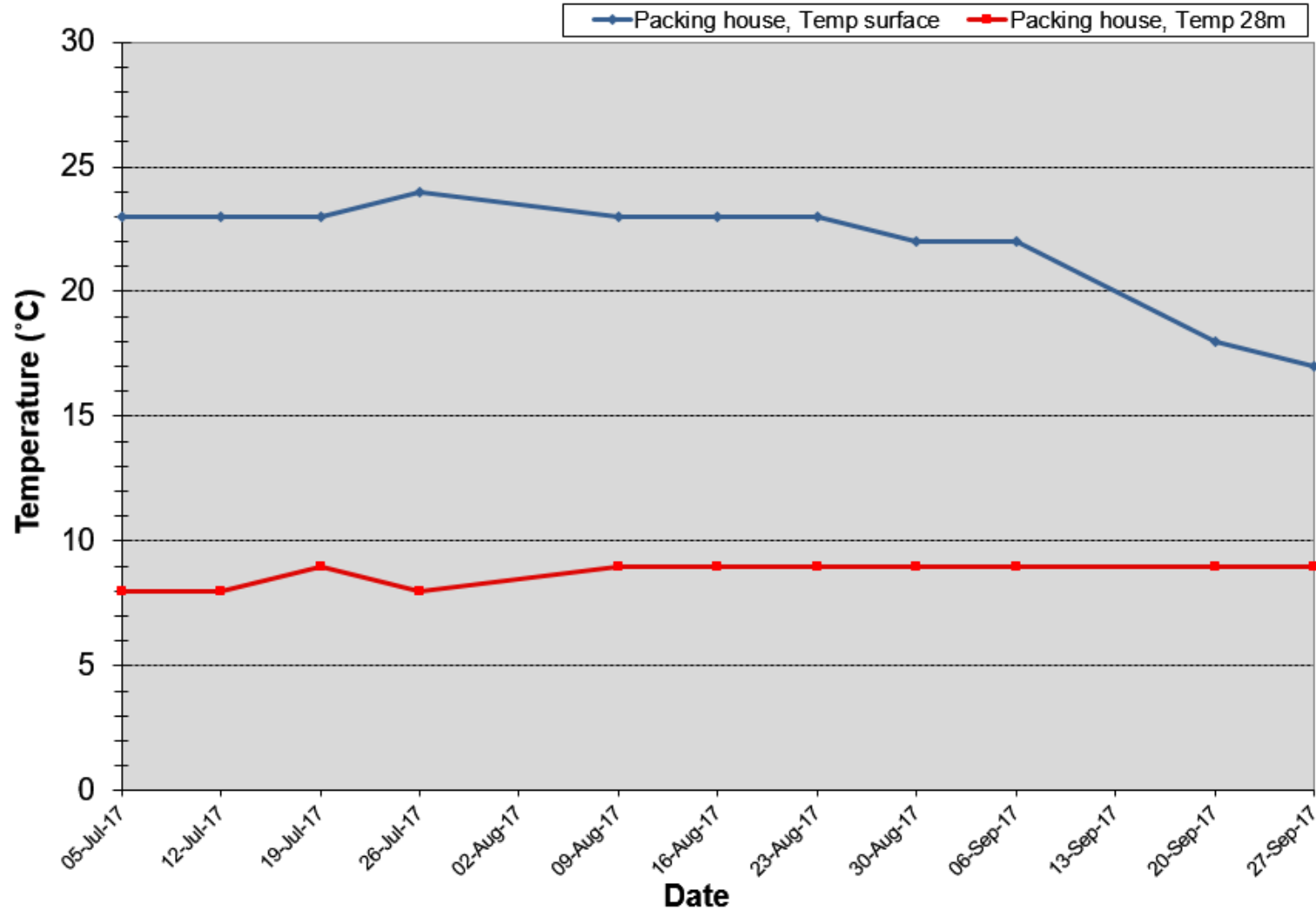
Objective value: $\geq 3.5\text{m}$,
seasonal mean May to
September.

Objective source: MoE report
'OsoyoosWQOFinal_1 ---'

OSOYOOS LAKE WATER QUALITY SOCIETY

EXAMPLE OF SURFACE AND BOTTOM TEMPERATURE CHART

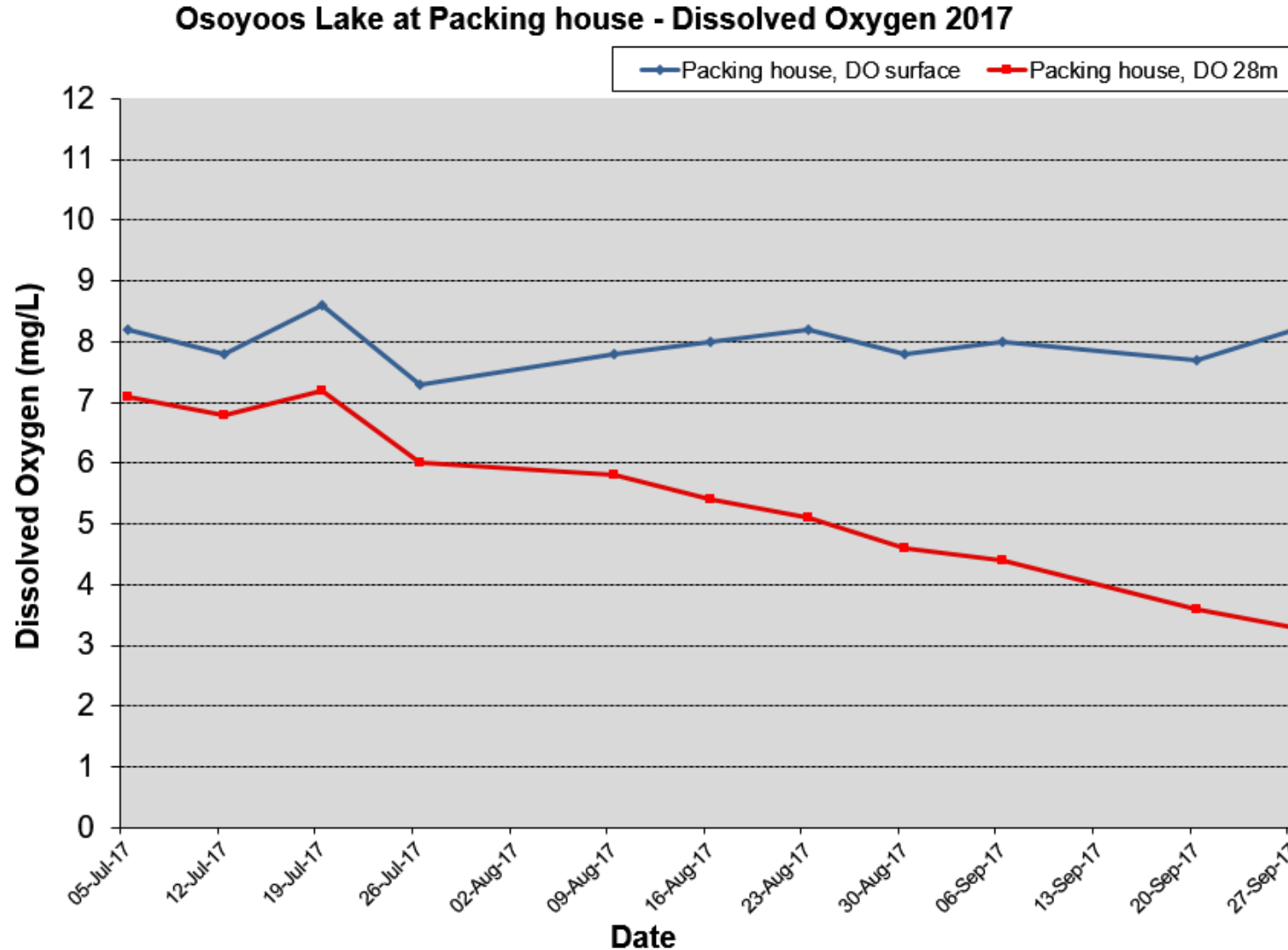
Osoyoos Lake at Packing house - Water Temperature 2017



Objective value: None

OSOYOOS LAKE WATER QUALITY SOCIETY

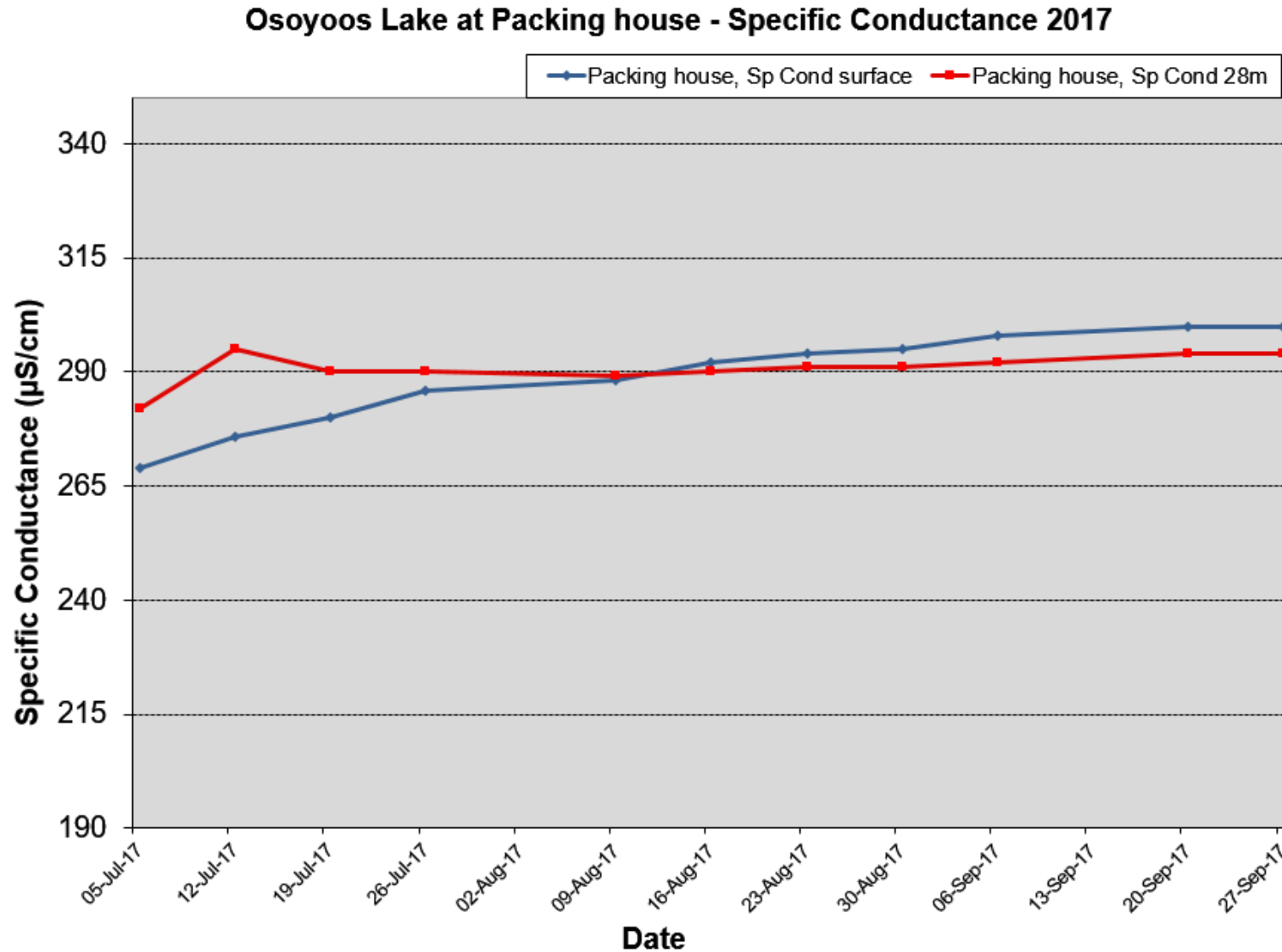
EXAMPLE OF SURFACE AND BOTTOM DISSOLVED OXYGEN CHART



Objective value: None for surface and 24m.

OSOYOOS LAKE WATER QUALITY SOCIETY

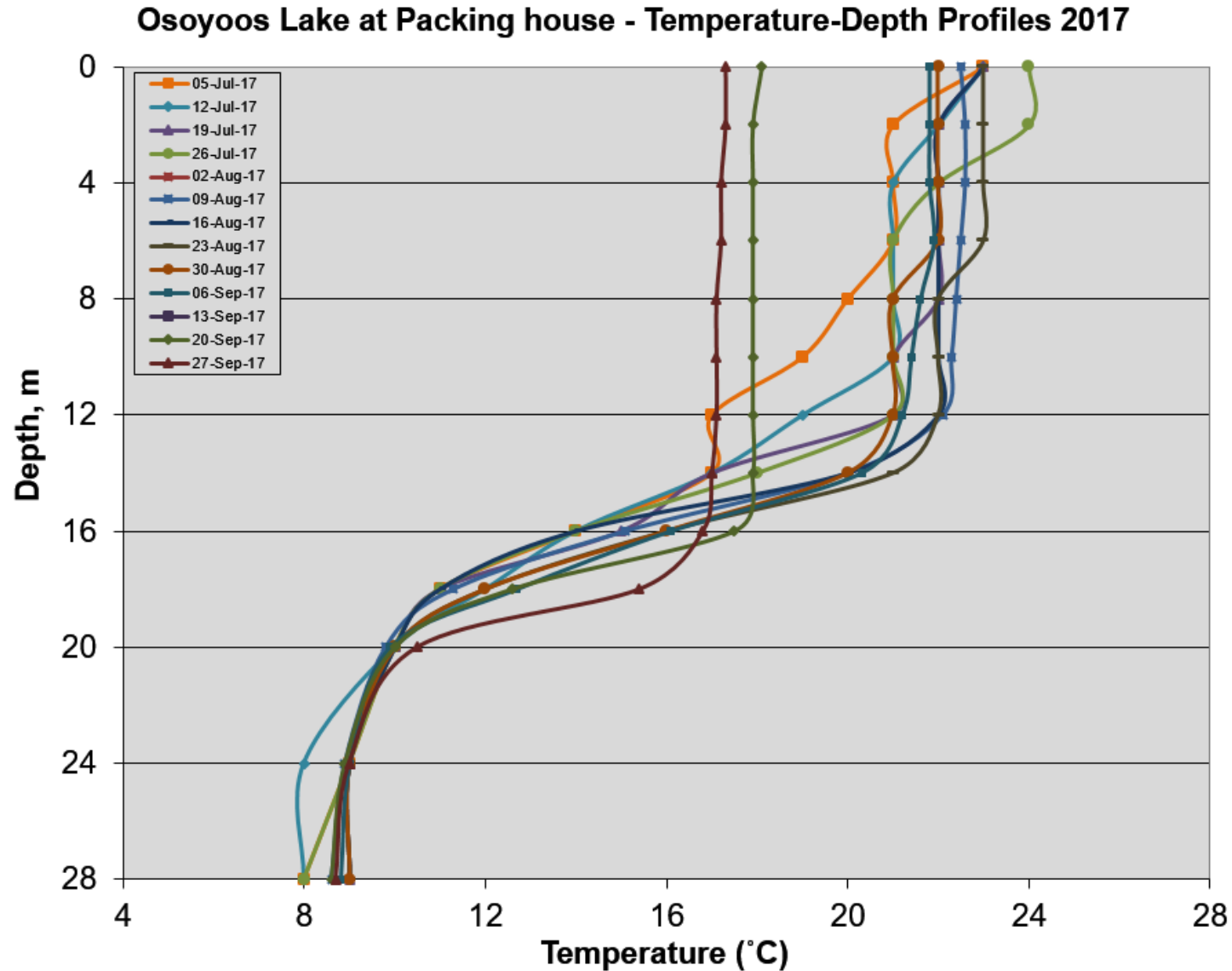
EXAMPLE OF SURFACE AND BOTTOM SPECIFIC CONDUCTIVITY (25 C) CHART



Objective value: None.

OSOYOOS LAKE WATER QUALITY SOCIETY

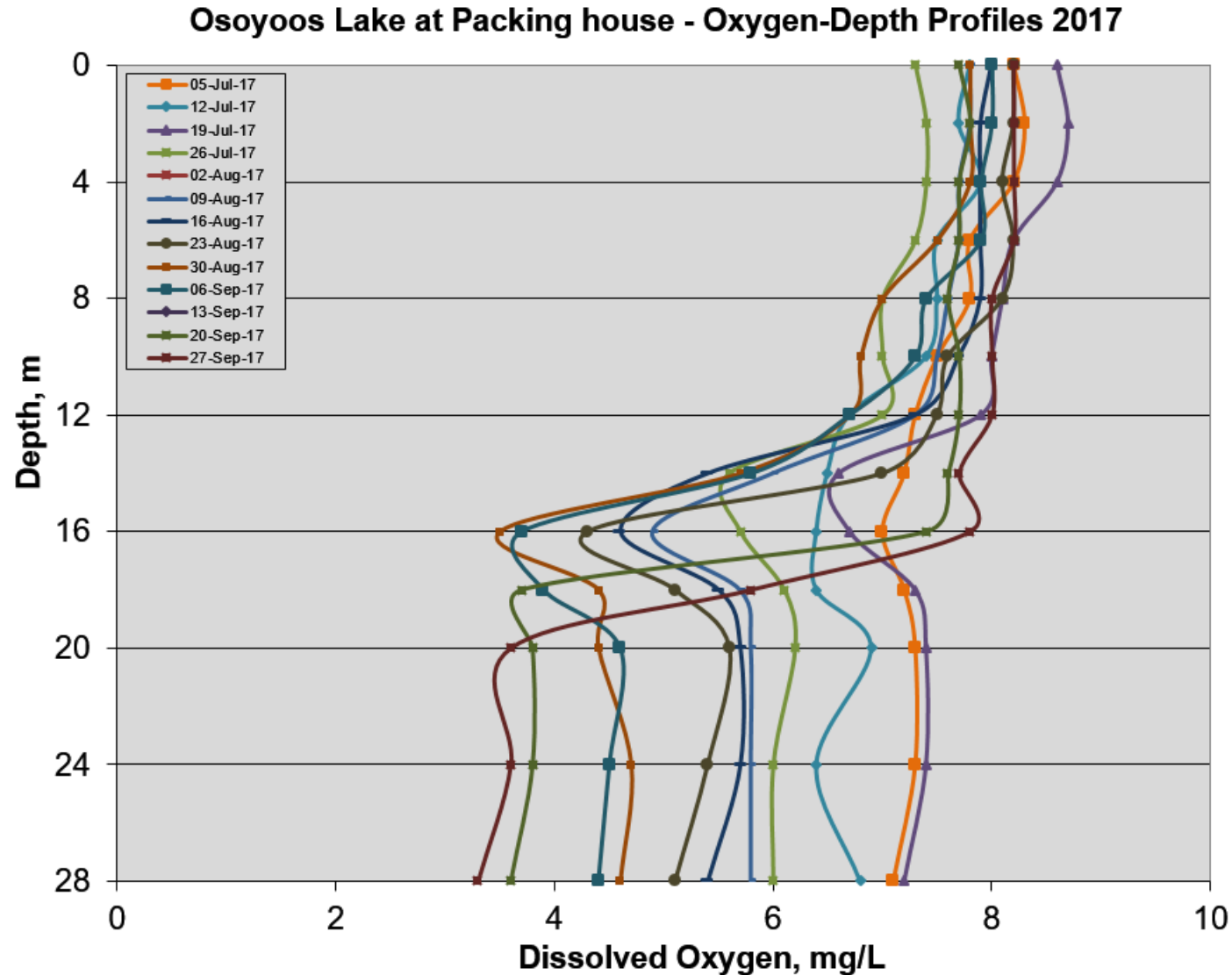
EXAMPLE OF TEMPERATURE-DEPTH PROFILE CHART



Objective value: None.

OSOYOOS LAKE WATER QUALITY SOCIETY

EXAMPLE OF DISSOLVED OXYGEN-DEPTH PROFILE CHART



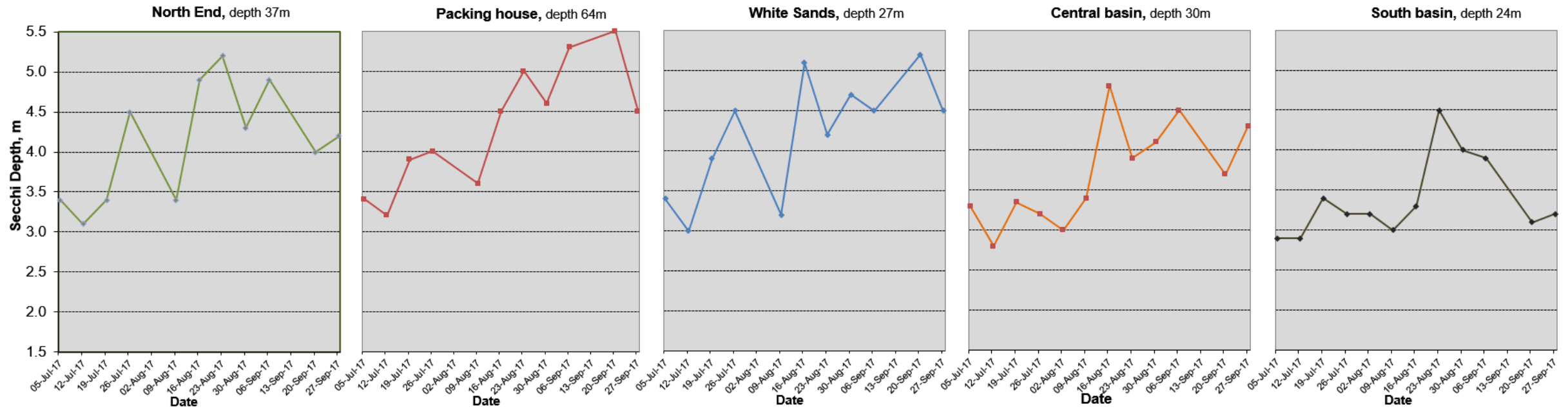
Objective value: ≥ 5.8 mg/L at 15m on August 15th.

Objective source: MoE report 'OsoyoosWQOFinal_1 ---'

OSOYOOS LAKE WATER QUALITY SOCIETY

COMPARISON CHARTS 2017 - SECCHI DEPTH, NORTH END TO SOUTH BASIN IN THE DIRECTION OF WATER FLOW

OBJECTIVE VALUE: ≥ 3.5 m mean, May to September.

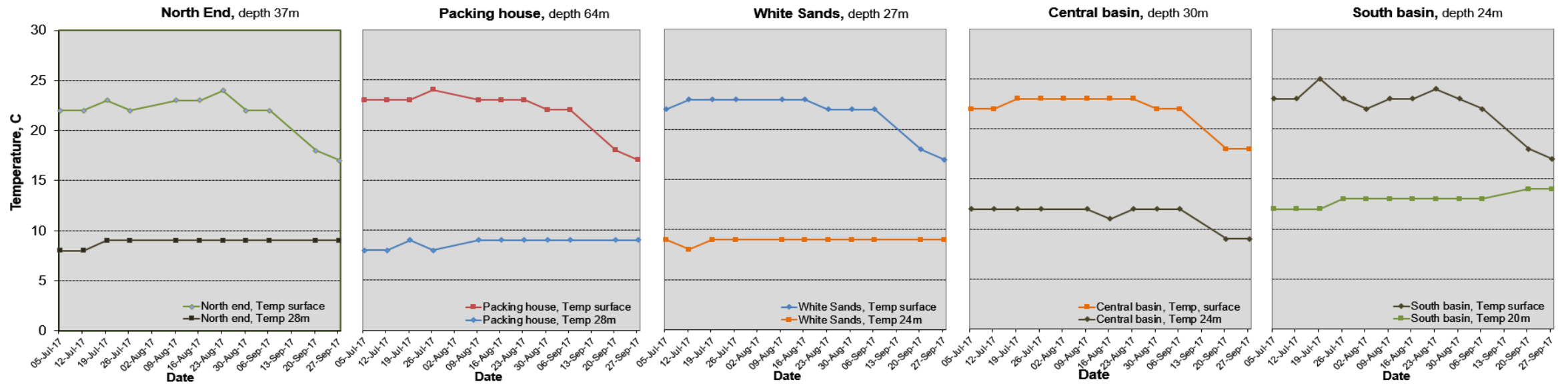


OBSERVATION: A trend towards the South basin having lowest Secchi depths, or highest turbidity.

OSOYOOS LAKE WATER QUALITY SOCIETY

COMPARISON CHARTS 2017 - TOP AND BOTTOM TEMPERATURES, NORTH END TO SOUTH BASIN IN THE DIRECTION OF WATER FLOW.

OBJECTIVE VALUE: None.

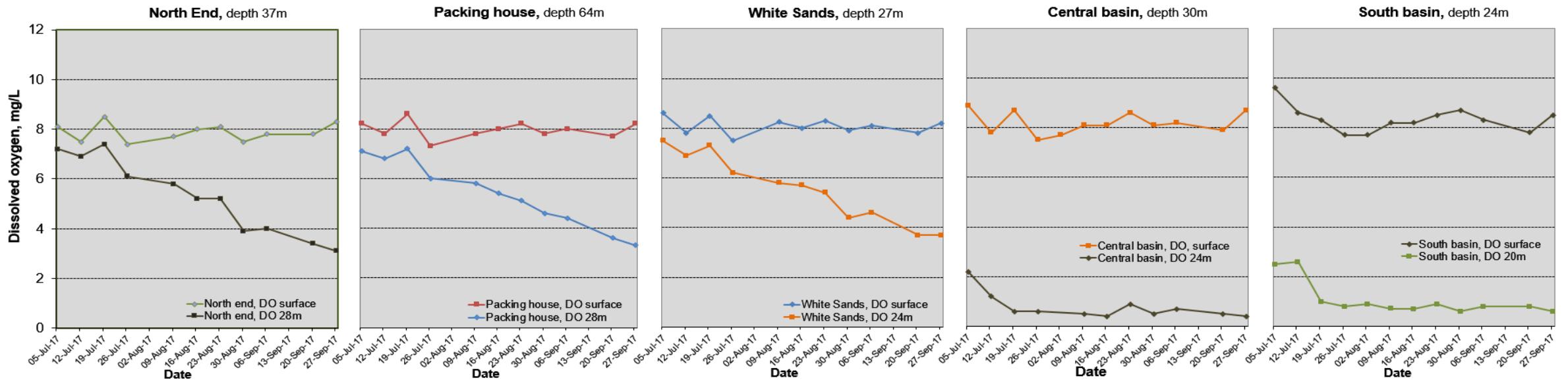


OBSERVATION: Steady cold bottom temperatures for the North basin locations.

OSOYOOS LAKE WATER QUALITY SOCIETY

COMPARISON CHARTS 2017 - TOP AND BOTTOM DISSOLVED OXYGEN,
NORTH END TO SOUTH BASIN IN THE DIRECTION OF WATER FLOW.

OBJECTIVE VALUE: None.

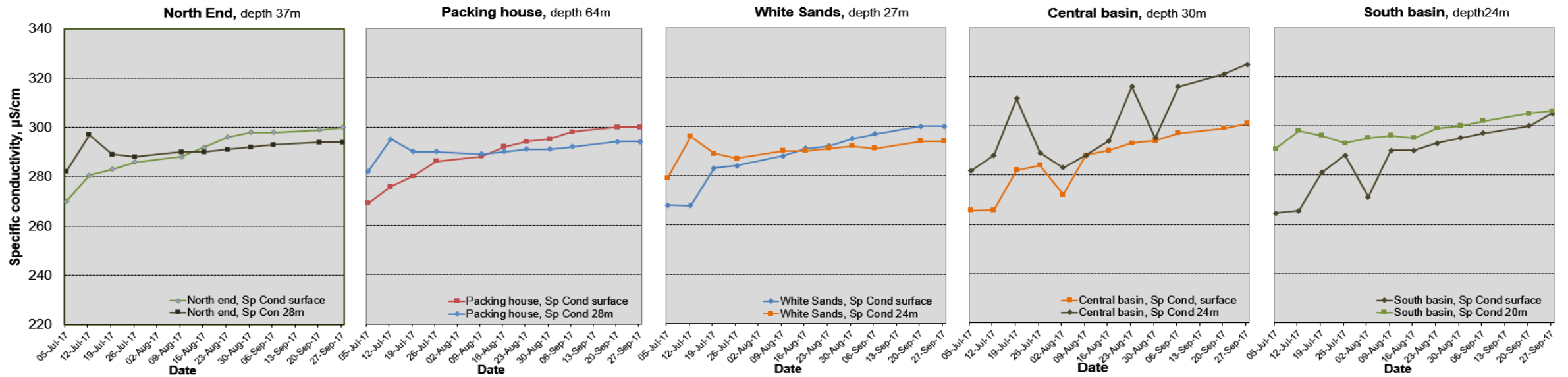


OBSERVATION: A decline of bottom dissolved oxygen for the North basin locations, very low values for the Central and South basins.

OSOYOOS LAKE WATER QUALITY SOCIETY

COMPARISON CHARTS 2017 - TOP AND BOTTOM SPECIFIC CONDUCTIVITY (25 C),
NORTH END TO SOUTH BASIN IN THE DIRECTION OF WATER FLOW.

OBJECTIVE VALUE: None.

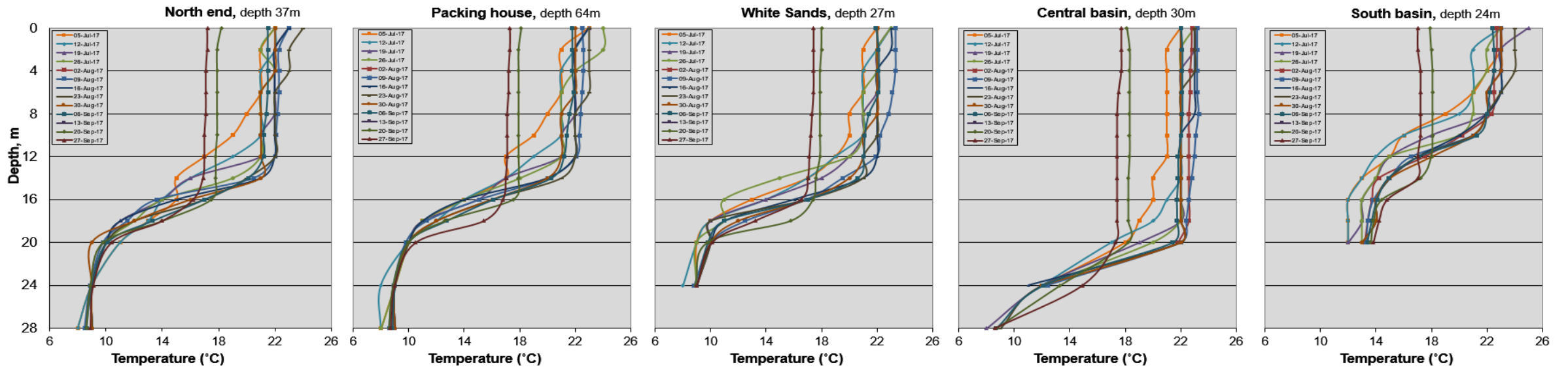


OBSERVATION: A similar steady trending of Specific conductivity for the North basin locations, and cross-over mid-August.

OSOYOOS LAKE WATER QUALITY SOCIETY

COMPARISON CHARTS 2017 - TEMPERATURE-DEPTH PROFILES, NORTH
END TO SOUTH BASIN IN THE DIRECTION OF WATER FLOW.

OBJECTIVE VALUE: None.

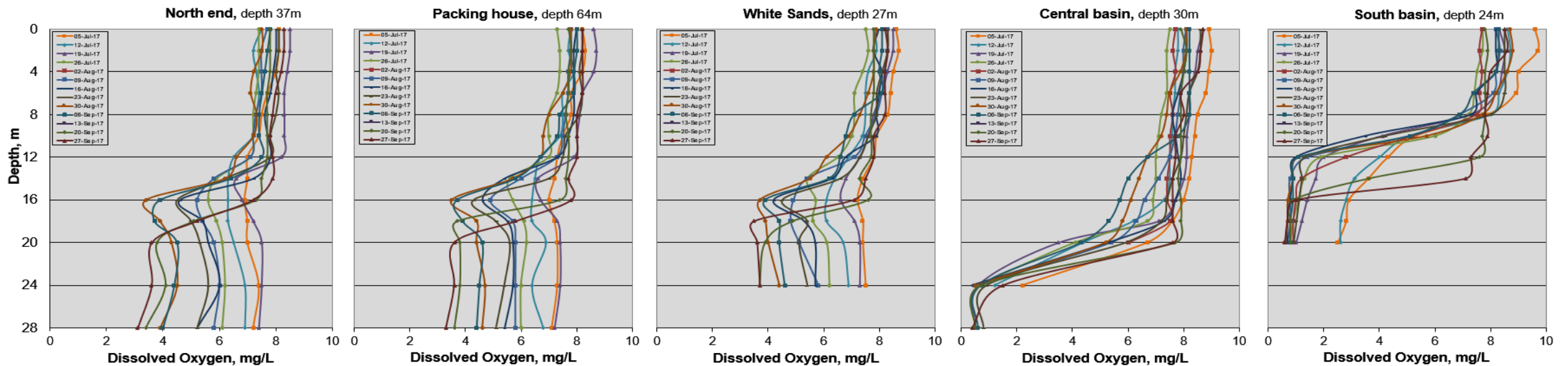


OBSERVATION: Thermoclines are seen at all locations over the testing season.

OSOYOOS LAKE WATER QUALITY SOCIETY

COMPARISON CHARTS 2017 - DISSOLVED OXYGEN-DEPTH PROFILES,
NORTH END TO SOUTH BASIN IN THE DIRECTION OF WATER FLOW.

OBJECTIVE VALUE: ≥ 5.8 mg/L at 15m on August 15th.



OBSERVATION: Objective, actual values – NE 5.9, PH 5.0, WS 5.2, CB 7.8, SB 0.9. Oxygen declines are seen at all locations. North basin locations, below 16m, show a spread of trends that move to lower values over the testing season.

THE END