South West Wetland Monitoring Program
Procedure for data input
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Last updated: 13 July 2020

Label and check gauge photographs

Photographs should be taken of gauges read at each wetland visited, check date and time of photograph to confirm wetland location. It is useful to use a standard system for naming photographs to enable you to quickly search your PC for all photos related to a particular site. Label SWWMP photos using following standard 'WWWWYYYYMMDDX' where:

WWWW	wetland code as per field sheet – in capitals (eg. BAMB)
YYYY	year
MM	month
DD	day
X	gauge id (eg. A,B,C etc)

A space can then be entered and other comments added eg:

PP	photo point (eg. PP1 = Photo point #1 or PPA = Photo point Gauge A)
BM	benchmark

Add the last three digits of the photo sequence number so that the order in which photographs have been taken is preserved (eg. #007). This is useful when many photos are taken of the same thing (eg. panorama of vegetation shots) and a unique number is needed to identify each photo. (eg. KWOR20080721 PP1 #234.jpg, KWOR20080721 PP1 #235.jpg relates to photos taken at Kwornicup on 21 July 2008 at Photo Point #1)

Save photos chronologically in folders under the photographers name. Sort photos within a folder according to 'Date taken' by using View, Sort by, Choose columns and select 'Date taken', this will enable you to view photographs in the sequence they were taken in.

Check photos against field sheets to confirm gauge id and depth have been recorded correctly.

Check data recorded on fieldsheet

1. SWWMP monitoring began at only four wetlands in 1977. Routine monitoring periods were adopted in 1978 as the nine-day period commencing on the second Saturday of the month for January, March, May, July & September. The November routine monitoring period is undertaken during the nine-day period commencing on the first Saturday of the month (this is to fit with historical Duck Shooting Season timetable). In November 1978 only, the monitoring period began on the second Saturday of November.
2. Depths should only record 'DRY' if wetland completely dry when visited. If water was sampled from pools in wetland but gauge was dry then depth should be recorded as a value less than the lake bed level (LBL) at the gauge (eg.>0.05m). The LBL of the dry gauge should also be recorded.
3. Depths are recorded as 'BD' (Believed Dry) if the wetland was dry in September and there has been little or no rain since then and the lake was therefore not visited in November.
4. At the following wetlands gauges have been installed by Department of Water. These gauges are generally installed at (m AHD) and these values need to be adjusted to local datum (m LD), based on deepest point of lake.
    - **Beverley (BEVE)** - convert WRC gauge reading to DPAW lake depth by deducting 8.16m. The top gauge level with the road is 10m, the middle gauge 9m and the bottom gauge 8m.
    - **Forrestdale (FORR)** - convert WRC gauge reading to DPAW lake depth by deducting 21.63m.
    - **Jandabup (JAND)** – convert WRC gauge reading to DPAW lake depth by deducting 43.76m.
    - **Joondalup (JOON)** – convert WRC gauge reading to DPAW lake depth by deducting 14.25m.
    - **Gibb Road (GIBB)** – convert WRC gauge reading to DPAW lake depth by deducting 23.84m.

5. At **Corrigin (CORR)** – the wetland may be dry but there may be water present in the dam within the wetland, this may be sampled and it should be noted in comments that 'samples taken from dam and wetland is dry'.
6. At **Bryde (BRYD)** – the wetland may be dry but there may be water present in man-made drainage channel to south of gauge, this may be sampled and it should be noted in comments that 'samples taken from drain and wetland is dry'.
7. Any gauge queries should be entered into SWWMP_Queries.xls and a copy sent to Alan Clarke for any gauge maintenance required.

Calculate salinity from conductivity measurements

1. Refer to 'Procedure for measuring Conductivity / Salinity in laboratory' for laboratory procedures, results are manually recorded in Laboratory Book (Red).
2. Use SALCALC.xls to enter recorded conductivity in mS/m (undiluted sample). Note: Multiply mS/cm x 100 to convert to mS/m. For uS/cm divide by 10 to convert to mS/m. Samples with conductivity greater than 10 000 mS/m need to be be diluted and retested.
3. Salinity is calculated in SALCALC.xls using following method:
    - Where Conductivity <500 mS/m use **Conductivity mS/m x 0.0056 = ppt** (Reference: R. Schulz, Chemistry Centre letter dated 31/8/1992)
    - Where Conductivity >500 mS/m use **0.466(Conductivity mS/m / 100)^1.0878 = ppt** (W.D. Williams 1986, Conductivity and Salinity of Australian Salt Lakes)
4. Each sample is tested twice for conductivity – once by Alan Clarke and once by Yvonne Winchcombe. Results were compared with any discrepancies being checked and retested.
5. Transfer results to field sheet as Conductivity (mS/m) and Salinity (ppt) and note in comments how salinity determined, 'DPAW Cond & calc. salinity (Cond x 5.6)' or 'DPAW Cond & calc. salinity (Williams 1986)' and if sample was diluted.
6. For **Clifton (CLIF)** salinities have been separated into three sampling sites:
    - Inner Sedge Area Salinity sampled near limestone path (entered in column AE)
    - Outer Sedge Area Salinity sampled near Gauge C (entered in column AF)
    - Open water Salinity sampled near end of jetty (entered in column AG)
7. For **Jasper (JASP)** salinities have been separated according to methodology:
    - Chemistry Centre salinity by Total Dissolved Salts (entered in column AH)
    - Chemistry Centre salinity by Econd x factor (entered in column AI)
    - CALM Salinity – measured by various instruments (entered in column AJ)
    - CALM Salinity direct reading from Orion salinity meter (entered in column AK)
    - CALM Salinity calculated from CALM Conductivity x factor (entered in column AL
    - Instrument used to determine conductivity and salinity (entered in AM)

Data input (annual update)

1. Open new excel spreadsheed and call it YYYY-SWWMP Data input.xlsx (where YYYY is year). Standard format is:

Column	Type	Column Heading	Description
A	Text	Current/Historical	Currently monitored or Historical (C or H). Refers to routine monitoring as at Nov 2017, after this program largely discontinued.
B	Text	Code	4 letter wetland code – entered as capitals.
C	Text	Wetland name	Official name or Reserve name and number.
D	Text	Collector	Collectors code – initial of surname and first name followed by A, B if duplicates.
E	Date	Date	dd/mm/yyyy
F	Text	Routine Survey	(Yes/No) Yes if done during routine monitoring period.
G	Number	Sheet No	Historic records have sheet numbers.
H	Text	Gauge Id	Gauge identification letter.
I	Text	Recorded Depth	Recorded depth including units (m LD) as well as < (Less than values) or 'Dry' and 'Believed Dry' values.
J	Number	Depth (m)	Numeric depth value. Dry and Believed Dry entered as 0. Less than values entered as half the recorded value.

K	Number	pH	Numeric pH value.
L	Text	Recorded Salinity	Recorded salinity with units (ppt).
M	Number	Salinity (ppt)	Numeric salinity value.
N	Number	Conductivity (mS/m)	Numeric conductivity value (entered as standardized units in mS/m).
O	Number	Chemistry Centre Conductivity (mS/m)	Chemistry Centre conductivity value (standardized units as mS/m).
P	Text	Recorded Total Phosphorus (Unfilt)	Chemistry Centre Unfiltered Total Phosphorus with units (mg/l). Includes < (less than) values.
Q	Number	Total Phosphorus (Unfilt) (mg/l)	Numeric Chemistry Centre Unfiltered Total Phosphorus (mg/l). Less than values entered as half the recorded value.
R	Text	Recorded Total Soluble Phosphorus (Filt)	Chemistry Centre Filtered Total Phosphorus with units (mg/l). Includes < (less than) values.
S	Number	Total Soluble Phosphorus (Filt) (mg/l)	Numeric Chemistry Centre Filtered Phosphorus (mg/l). Less than values entered as half the recorded value.
T	Text	Recorded Total Nitrogen (Unfilt)	Chemistry Centre Unfiltered Total Nitrogen with units (mg/l).
U	Number	Total Nitrogen (Unfilt) (mg/l)	Numeric Chemistry Centre Unfiltered Total Nitrogen (mg/l).
V	Text	Recorded Total Soluble Nitrogen (Filt)	Chemistry Centre Total Soluble (Filtered) Nitrogen with units (mg/l).
W	Number	Total Soluble Nitrogen (Filt) (mg/l)	Numeric value Chemistry Centre Total Soluble (Filtered) Nitrogen (mg/l).
X	Text	LBL Gauge Id	Gauge identification where Lake Bed Level recorded (base of gauge).
Y	Number	Lake Bed Level (m)	Lake Bed Level (m) - recorded when Dry at gauge.
Z	Text	Comment	To include how salinity determined. (eg. DPAW Cond & calc. salinity (Williams 1986).
AA	Number	Nitrate N_NO3 (mg/l)	Chem. Centre Nitrate result supplied in Nov 1998 and Nov 2000. Also provided in full ionic analysis results but these results have not been entered into database (except for Moates).
AB	Number	Reactive Phosphorus P_SR (mg/l)	Chem. Centre Reactive Phosphorus result supplied in Sep 1999 and Nov 1999.
AC	Number	Nearshore LBL (m)	Lake bed Level (m) of Nearshore gauge (prior to 1998 gauges referred to as Nearshore and Offshore when two separate gauges installed at wetland).
AD	Number	OffShore LBL (m)	Lake bed Level (m) of Nearshore gauge (prior to 1998 gauges referred to as Nearshore and Offshore when two separate gauges installed at wetland).
AE	Number	CLIF Inner Sedge Area Salinity (ppt)	Lake Clifton salinity - sampled near limestone path.
AF	Number	CLIF Outer Sedge Area Salinity (ppt)	Lake Clifton salinity - sampled near Gauge C.
AG	Number	CLIF Open water Salinity (ppt)	Lake Clifton salinity - sampled near end of Jetty.
AH	Number	JASP Chemistry Centre Salinity TDS (ppt)	Lake Jasper salinity - Chemistry Centre (Total Dissolved Salts).
AI	Number	JASP Chemistry Centre Salinity (Econd x 0.56) (ppt)	Lake Jasper salinity - calculated from Chemistry Centre Econd x factor (0.56).

AJ	Number	JASP CALM Salinity (ppt)	Lake Jasper salinity - CALM (ppt).
AK	Number	JASP CALM Orion direct salinity reading (ppt)	Lake Jasper salinity - direct reading Orion salinity meter (ppt).
AL	Number	JASP CALM Calc. Salinity (Econd x 0.56) (ppt)	Lake Jasper salinity - calculated from CALM Econd x factor (0.56).
AM	Number	JASP Salinity - CALM Instrument	Lake Jasper salinity - Instrument used to determine Econd/salinity.

2. Enter data from all fieldsheets for the year and check that comments include how salinity determined, Dry and BD have 'Depth' recorded as 0 and 'Routine' has been entered as Yes or No. When complete sort by wetland code and date.

Update individual wetland files and graphs

1. Open individual wetland file (.xls) and copy new records from the Data input file to the bottom of each individual wetland. (Update the wetland name and gauge label name.)
2. For Clifton (CLIF) separate salinity values by sample site.
3. For Jasper (JASP) separate salinity values by methodology.
4. For each individual wetland update filters and graphs by:
    - Remove filter from 'Routine Sep & Nov' worksheet and use CTRL-A to copy all data from 'Data Worksheet' to 'Routine Sep & Nov' worksheet. Reapply filters (Routine = Yes) (Date = September, November).
    - Remove filter from 'Routine two monthly' worksheet and use CTRL-A to copy all data from 'Data Worksheet' to 'Routine two monthly'' worksheet. Reapply filters (Routine = Yes) (Date = January, March, May, July)
    - Update data on graphs (Select data and edit series – set to 300 rows) and update graph X-axis dates to 1/7/yyyy. Use previous report to compare updated graph with previous graphs.
    - NOTE: Negative depths may be recorded at some wetlands where the base of the lake is mobile or the gauge is not located according to the deepest point of the lake bed (usually within a few cm) For graphing purposes negative values have been altered to zero for the following wetlands COLL, FORR, NINE, POOR, TAAN, WALY, WHIN and WHIW.
5. Save individual wetland file.