

Water Security Agency and Ministry of Environment - Environmental Management System (SEEMS) Lab-Operator (LAB-OPR) Data File Format

If you have any questions regarding this document, please contact the Environmental Information Section of the Drinking Water and Wastewater Division of the Water Security Agency at 306-787-9138.

EPB 383 MAY 18

This document describes the electronic data file format and transmission protocol for submission of water and wastewater sample analytical results to the Water Security Agency and Ministry of Environment. The information is to be used by laboratories or by waterworks owners/operators in directing laboratories in meeting Water Security Agency and Ministry of Environment's analytical result submission requirements. Adherence to the sample submission format described below will aid in maintaining compliance with monitoring and reporting requirements found in operational permits issued by Water Security Agency and Ministry of Environment.

The Water Security Agency and Ministry of Environment are formalizing this electronic data submission format through operational permit conditions as a means to streamline information handling processes. Most Saskatchewan based laboratories are already able to carry out sample analysis result transfer to the department in the proper electronic format. This information will be of value to laboratory information management staff to help prepare needed analytical data reports. It is also intended to assist water or wastewater works owners and operators ensure that sample analytical results are properly received by the Water Security Agency and Ministry of Environment

These requirements apply to samples submitted to an accredited laboratory for analysis. Origins of the sample and the associated analytical result information include, but are not restricted to, treated drinking water plants and distribution systems, raw water-wells, water reservoirs, wastewater facilities and their discharges, use/compliance samples, piezometers and surface water. These requirements do not apply to on-site testing or process control measurements for chlorine residual or turbidity.

Introduction

The Lab Operator (LAB-OPR) data file is to be in ASCII text format. Each line of text is to be terminated with a carriage-return/line feed combination (DOS text line terminator: CR+LF, CHR(13)+CHR(10)), or terminated with a line feed character (UNIX text line terminator: LF, CHR(10)). Each text line represents one record of data.

LAB-OPR files will be transferred to an external FTP site. Site access will be provided upon request from the facility operator or the laboratory acting on behalf of the facility operator.

There are a number of different types of records in this file format, identified by the letter in the first column of the record. The record types are summarized below.

Record Type	Record Name	Description
S	Sample Header Record	Contains sample information. Required for LAB-OPR.
C	Sample Header Comment Record	Contains a text comment for a sample. Required for LAB-OPR.
M	Measurement Detail Record	Contains details about measurements made on a sample. Required for LAB-OPR.
K	Measurement Detail Comment Record	Contains a text comment for a measurement. Required for LAB-OPR.

File Naming

LAB-OPR files (i.e. files submitted by laboratories on behalf of facility operators) must adhere to the following naming conventions:

1. The filename must be unique and meaningful.
2. The filename must be either the data file sequence number for the given lab (date stamp is acceptable) or the work order number (if linked directly to invoicing).
3. The filename should be no longer than 20 characters (alpha-numeric).
4. The filename extension must be in uppercase, starting with an "M", followed by the 3-digit lab code assigned to the lab.
5. Total filename length is 25 (20.4).

For example, the first LAB-OPR file from lab 22 would be named: 20090723-00000001.M022. The second file would be named 20090723-00000002.M022, and so on. It is the laboratories' responsibility to maintain their file naming sequence. If a file is sent with a file name that has already been used, the file will be rejected.

Record Name Sample Header Record (Required Record)

Record Type S

Description This record type contains information about a sample.

Notes All fields are "fixed format". If optional data is not included, the appropriate character positions must be filled with spaces. Character fields that are not completely filled must be padded on the right with spaces. Numeric fields that are not completely filled must be padded on the left with zeros or spaces.

This record type is required for LAB-OPR files.

All dates must be in Central Standard Time (CST).

The "Required/Optional" columns indicate whether each field is Required (R) or O (Optional) for the file type: "LAB-OPR". An "n/a" (not applicable) in the Required/Optional column indicates that the field should be left blank as it is ignored for that type of file.

Field No.	Field Name	Description	Required/Optional		Data Type	Data Format	Data Length	Start Pos.	End Pos.
				LAB-OPR					
1	Record Type	S		R	Char	X	1	1	1
2	Record Number	Sequential number of each record in the file		R	Num	999999	6	2	7
3	Sample No.	Sample number issued by SE		n/a	Char	X(10)	10	8	17
4	Sample Date	Date sample was taken from station		R	Date	YYYYMMDDHHMISS	14	18	31
5	Sample End Date	Date sample was completed from station		O	Date	YYYYMMDDHHMISS	14	32	45
6	Sent Date	Date sample was sent to the lab		n/a	Date	YYYYMMDDHHMISS	14	46	59
7	Received Date	Date sample was received by the lab		R	Date	YYYYMMDDHHMISS	14	60	73
8	Returned Date	Date sample data was returned to SE		n/a	Date	YYYYMMDDHHMISS	14	74	87
9	Lab Code	ID code of lab where measurements are done**		R	Char	X(3)	3	88	90
10	Lab Sample Number	Sample number used internally by the lab	LJ	R	Char	X(20)	20	91	110
11	Station No.	Station #, issued by SE, where sample was obtained**		R	Char	X(10)	10	111	120
12	Project No.	Project # sample was collected for**		n/a	Char	X(6)	6	121	126
13	Agency Code	Code to identify agency responsible for sample**		n/a	Char	X(4)	4	127	130
14	Sample Matrix Code	Code to define sample matrix **		R	Char	X(2)	2	131	132
15	Number Caught	Number of discrete biota caught in a single sample		n/a	Num	99999	5	133	137
16	Number Kept	Number of biota kept from a single sample		n/a	Num	99999	5	138	142
17	Sample Type Code	Code which identifies the type of sample**		R	Char	X(2)	2	143	144

Field No.	Field Name	Description	Required/Optional	Data Type	Data Format	Data Length	Start Pos.	End Pos.
18	Collection Code	Code which identifies how sample was collected**	n/a	Char	X(3)	3	145	147
19	Group Sample No	Number for samples that are linked to other samples	n/a	Char	X(10)	10	148	157
20	Sample Cross Ref (Approval Id)	Cross reference for agency or project	R #	Char	X(20)	20	158	177
21	Sample Depth	Depth sample was taken at	n/a	Num	99999.9	7	178	184
22	Sampler ID 1	First ID number of person who collected the sample	n/a	Num	99999999	8	185	192
23	Sampler ID 2	Second ID number of person who collected sample	n/a	Num	99999999	8	193	200
24	Sampler ID 3	Third ID number of person who collected sample	n/a	Num	99999999	8	201	208
25	Sample Frequency Code	Code to indicate the frequency of the sampling**	n/a	Char	X(5)	5	209	213
26	Reading Type	Code to indicate the reading type**	n/a	Char	X(3)	3	214	216

* Required if supplied by Saskatchewan Environment, blank otherwise.

** If populated, must be a valid SE code.

For Labs, if the data is associated with a particular approval (e.g. for bacteriological data), this field will contain the approval id associated with the measurement.

Record Name Sample Header Comment (Required Record)

Record Type C

Description This record contains comments pertaining to a sample.

Notes All fields are "fixed format". If optional data is not included, the appropriate character positions must be filled with spaces. Character fields that are not completely filled must be padded on the right with spaces. Numeric fields that are not completely filled must be padded on the left with zeros or spaces.

This record type is required for LAB-OPR files. For labs, this record contains the written site description from the chemical analysis request sheet. Additional lab comments regarding the sample can be appended to the site description by the lab.

Only one comment record is allowed for each sample record.

The lab sample number field in each C record must relate to a corresponding S record (sample header record) in the data file with the same lab sample number.

The "Required/Optional" columns indicate whether each field is Required (R) or O (Optional) for the file type: "LAB-OPR". An "n/a" (not applicable) in the Required / Optional column indicates that the field should be left blank as it is ignored for that type of file.

Field No.	Field Name	Description	Required/Optional		Data Type	Data Format	Data Length	Start Pos.	End Pos.
				LAB-OPR					
1	Record Type	C		R	Char	X	1	1	1
2	Record Number	Sequential number of each record in the file		R	Num	999999	6	2	7
3	Lab Sample Number	Sample number used internally by the lab	LJ	R	Char	X(20)	20	8	27
4	Comment	Text comment describing sample		R	Char	X(255) (Maximum size is 255 characters. This field is terminated by the line feed character.)	0 to 255	28	27 to 282

Record Name Measurement Detail Record (Required Record)

Record Type M

Description This record type contains details of measurements pertaining to a sample.

Notes All fields are "fixed format". If optional data is not included, the appropriate character positions must be filled with spaces. Character fields that are not completely filled must be padded on the right with spaces. Numeric fields that are not completely filled must be padded on the left with zeros or spaces.

The lab sample number field in each M record must relate to a corresponding S record in the data file with the same lab sample number.

All dates must be in Central Standard Time (CST).

The "Required/Optional" columns indicate whether each field is Required (R) or O (Optional) for the file type: "LAB-OPR". An "n/a" (not applicable) in the Required/Optional column indicates that the field should be left blank as it is ignored for that type of file.

Field No.	Field Name	Description	Required/Optional		Data Type	Data Format	Data Length	Start Pos.	End Pos.
				LAB-OPR					
1	Record Type	M		R	Char	X	1	1	1
2	Record Number	Sequential number of each record in the file		R	Num	999999	6	2	7
3	Lab Sample Number	Sample number used internally by the lab	LJ	R	Char	X(20)	20	8	27
4	Measurement No.	Measurement sequence number within a sample		R	Num	999999999	9	28	36
5	Project No.	Project number measurement is for		n/a	Char	X(6)	6	37	42
6	Tissue Item No	Tissue item the measurement is from		n/a	Num	999999	6	43	48
7	Measurement Date	Date measurement was made		R	Date	YYYYMMDDHHMISS	14	49	62
8	VMV Code	VMV parameter code for measurement**		R	Num	999999	6	63	68
9	Value	Numeric value of measurement		R ****	Num	9999999.99999	12	69	80
10	Flag	Flag to qualify measurement value**		O	Char	X	1	81	81
11	Pretreatment Code	Code for any pretreatment of the sample		n/a	Char	X	1	82	82
12	Sample Detect Limit	Detection limit for measurement		O ***	Char	X(15)	15	83	97
13	Value Type Code	Code to describe the type of value measured		n/a	Char	X(2)	2	98	99
14	Qualifier 1	First qualifier for measured value**		O	Char	X(4)	4	100	103
15	Qualifier 2	Second qualifier for measured value**		O	Char	X(4)	4	104	107
16	Qualifier 3	Third qualifier for measured value**		O	Char	X(4)	4	108	111
17	Qualifier 4	Fourth qualifier for measured value**		O	Char	X(4)	4	112	115
18	Qualifier 5	Fifth qualifier for measured value**		O	Char	X(4)	4	116	119

Field No.	Field Name	Description	Required/Optional		Data Type	Data Format	Data Length	Start Pos.	End Pos.
19	Qualifier 6	Sixth qualifier for measured value**		O	Char	X(4)	4	120	123
20	Qualifier 7	Seventh qualifier for measured value**		O	Char	X(4)	4	124	127
21	Missing Meas. Code	Code to indicate reason for a missing		O	Char	X(3)	3	128	130

- # Either Value or Missing Measurement Code is required - one or the other, but not both.
- * Required if supplied by Saskatchewan Environment, blank otherwise.
- ** If populated, must be a valid SE code.
- *** Required if actual detection limit differs from the standard VMV parameter's detection limit.
- **** The maximum value for this field is 9999999 (seven characters) with no decimal point or 9999999.99999 (seven characters with up to five decimal places). **At any time, it can not have more than five decimal places.**

Record Name Measurement Detail Comment (Required Record)

Description This required record contains comments pertaining to a measurement.

Notes All fields are "fixed format". If optional data is not included, the appropriate character positions must be filled with spaces. Character fields that are not completely filled must be padded on the right with spaces. Numeric fields that are not completely filled must be padded on the left with zeros or spaces.

If a comment record is included, all fields in the comment record are required.

Only one comment record is allowed for each measurement record.

The lab sample number, measurement type and measurement number fields in each K record must relate to a corresponding M (measurement detail record) in the data file with the same lab sample number, measurement type and measurement number.

The "Required/Optional" columns indicate whether each field is Required (R) or O (Optional) for the file types: "LAB-OPR". An "n/a" (not applicable) in the Required/Optional column indicates that the field should be left blank as it is ignored for that type of file.

Field No.	Field Name	Description	Required/Optional		Data Type	Data Format	Data Length	Start Pos.	End Pos.
				LAB-OPR					
1	Record Type	K		R	Char	X	1	1	1
2	Record Number	Sequential number of each record in the file		R	Num	999999	6	2	7
3	Lab Sample Number	Sample number used internally by the lab	LJ	R	Char	X(20)	20	8	27
4	Measurement Type	M=Measurement		R	Char	X	1	28	28
5	Measurement No.	Measurement number for this comment		R	Num	999999999	9	29	37
6	Comment	Text comment describing measurement		R	Char	X(255) (Maximum size is 255 characters. This field is terminated by the line feed character.)	1 to 255	38	37 to 292

Special Considerations

Reporting of Bacteriological Samples

To meet Water Security Agency and Ministry of Environment's analytical result submission requirements, samples that are bacteriological in nature, that is to say, samples that are submitted by an operation as per the bacteriological monitoring requirements within the operation's permit to operate, have special formatting to comply with operational compliance reporting. Bacteriological samples are defined as samples that are being analyzed for the following parameters:

BACTERIOLOGICAL PARAMETERS
background colonies fecal
background colonies total
chlorine free - client
chlorine total - client
coliforms fecal
coliforms total
Escherichia coli
turbidity - client

When reporting bacteriological samples, the sample matrix and sample type will change depending on the "bacti type". In addition, a qualifier will need to be set for the individual parameters of coliform fecal and coliforms total and Escherichia coli accordingly, based on the "bacti type":

BACTI TYPE	MATRIX	TYPE	QUALIFIER ¹
"REGULAR"	9	1	
"REPEAT"	9	33	RPT
"SPECIAL"	9	33	SPCL
"OTHER"	15	1	

Please note that not every parameter in the sample will have a "repeat" or a "special" qualifier; only the coliform and E. coli parameters will require these qualifiers according to the "bacti type". These matrix/type/qualifier combinations pertain to bacteriological samples ONLY; trihalomethane, "general chemical", "health and toxicity", halo acetic acid, sewage, surface water samples can not be "REPEATS" or "SPECIALS" or "OTHERS".

¹ Please see Qualifier Fields for Record Type "M" on pages 6 and 7.

SAMPLE FIXED FILE FORMAT:

EXAMPLE OF FIXED FORMAT FILE for LAB-OPR:

```
S000007          20170810083200          20170811083200          022061204 MW 22860          SK05JG0011          9          1          2138
C000008061204 MW 22860          COMMUNITY NAME-SAMPLE LOCATION
M000009061204 MW 22860          000000001          20170811115100106087000000.00000
K000010061204 MW 22860          M000000001COLIFORM REGULAR
M000011061204 MW 22860          000000002          20170811115100106088000000.00000
K000012061204 MW 22860          M000000002E.COLI REGULAR
M000013061204 MW 22860          000000003          20170811083200099205000000.69000
K000014061204 MW 22860          M000000003FREE CHLORINE
M000015061204 MW 22860          000000004          20170811p083200099204000000.88000
K000016061204 MW 22860          M000000004TOTAL CHLORINE
```

EXAMPLE OF FIXED FORMAT FILE for LAB-OPR for REPEAT "BACTI" SAMPLE

```
S000017          20170810083200          20170811083200          022061204 MW 22861          SK05JG0011          9          33          2138
C000018061205 MW 22861          COMMUNITY NAME-SAMPLE LOCATION REPEAT
M000019061205 MW 22861          000000001          20061205115100106087000000.00000          RPT
K000020061205 MW 22861          M000000001COLIFORM REPEAT
M000021061205 MW 22861          000000002          20061205115100106088000000.00000          RPT
K000022061205 MW 22861          M000000002E.COLI REPEAT
M000023061205 MW 22861          000000003          20061204083200099205000000.69000
K000024061205 MW 22861          M000000003FREE CHLORINE
M000025061205 MW 22861          000000004          20061204083200099204000000.88000
K000026061205 MW 22861          M000000004TOTAL CHLORINE
```