



# Data Trending and Annual or Periodic Reporting Simplified with ALS Solutions

This is the second in a series of EnviroMails on new capabilities of *ALS Solutions*, highlighting powerful new tools to view and chart data trends over time and to prepare annual reports from test results at any given site or sampling location. *EnviroMail 46* introduced improved compliance reporting tools and automated guideline exceedance alerts.

## Graphical Data Trending Features

New charting tools within *ALS Solutions* allow quick and easy graphical trending of selected parameter test results. For example, Figure 1 shows Cadmium data trends over time, plotted against a site-specific CCME Freshwater Aquatic Life guideline. These plots are easily created in *ALS Solutions* for single or multiple parameters, with or without associated guidelines, across user-selectable timeframes, to quickly identify and visualize temporal data trends and inter-parameter correlations.

## Handling Variable Guideline Limits

Several Canadian guidelines are variable, with the final measure dependent on the results of other tests or sample properties (e.g. Cadmium guidelines may be dependent on Hardness). For variable guidelines, the default values configured in *ALS* guideline reports represent the most stringent limits. *ALS Solutions* allows users to calculate and input site-specific guidelines as a function of other test results, which can then be applied within data charts or tabular reports.

## Analyte Statistics over Time

Another valuable feature within *ALS Solutions* is the ability to generate and display statistical outputs for any test parameter over a specified time range. For example, the statistical outputs for Hardness in Figure 2 were used to calculate a location-specific Aquatic Life limit for Cadmium,

Figure 1. Cadmium Trending vs. Sample-Specific CCME Guideline

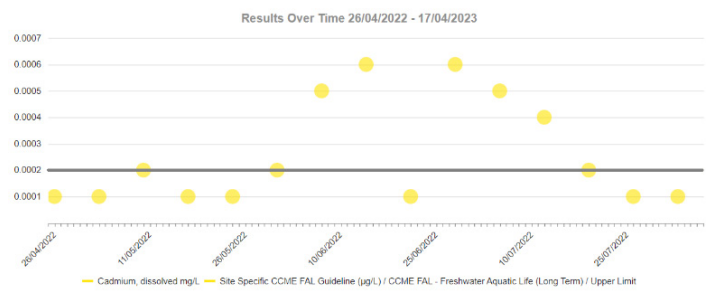
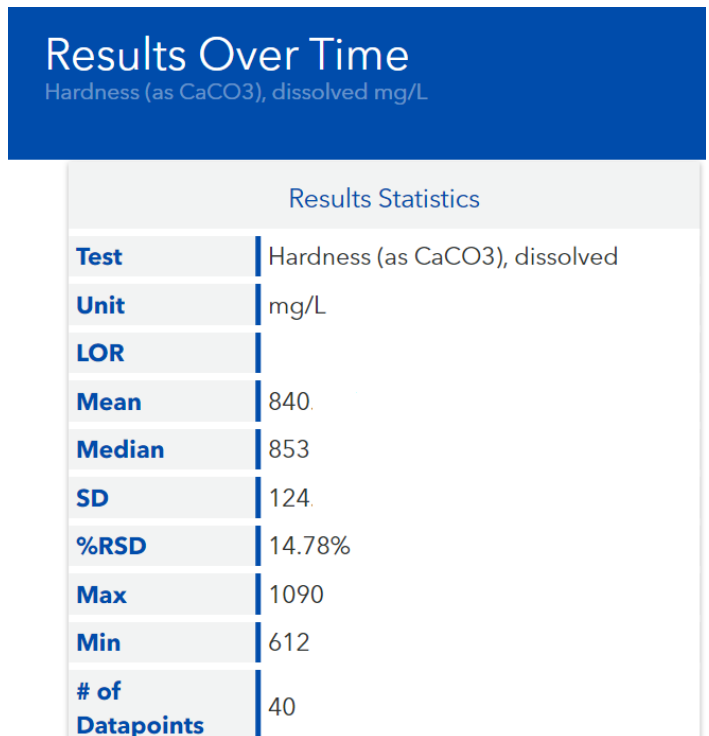


Figure 2. "View Results Over Time" Statistical Outputs



which was then applied to generate the trend plot for Cadmium in Figure 1. Calculated location-specific limits can also be used to create exceedance notifications or location-specific compliance reports, as discussed in *EnviroMail 46*.

## Annual/Periodic Report Formats

ALS Solutions also provides a simple way to create charts and tables for use in annual or periodic reports. Please follow the *ALS Solutions User Guide* to create a *Generic Annual Data Trending Report* from the *Excel Report Creation* icon in the *Project Management Links* widget. This report has been created with a wide variety of Excel templates to allow intuitive viewing and presentation of key test result information. The report can be customized by date, sample location, project, and analyte list, allowing customized creation of reports for any parameters of concern (e.g. analytes under permit) for any sample location over time. Dates may be filtered for monthly, quarterly, or yearly reporting, or for any other time period.

Figures 3 and 4 illustrate two tables from the generic report. Figure 3 summarizes the number and frequency of test results that pass or fail guideline limits for selected sample locations. Figure 4 shows a table that can be filtered to show any analytes responsible for failed guideline limits for any given sample location (e.g. Total Coliforms and E. coli for the example sample "Raw Water").

Figures 5 and 6 show two example chart formats generated by this report. Results can be displayed with standard or logarithmic scaling. There is also a configurable option to present results that are below the Limit of Reporting (<LOR) as zero, 1/2 LOR, or LOR on charts and Excel reports.

ALS Solutions has pre-configured options for eleven other Excel templates which can all be generated automatically in the *Generic Annual Data Trending Report*. Additional templates can be configured within ALS Solutions if required for specific applications, and any of Excel's charting functions can also be incorporated.

For more details, the *ALS Solutions User Guide* can be downloaded from the *Technical Support* widget on the home window of the application. Most of the features discussed above are accessed through the *View Results Over Time* and *Guideline Creation* sections of the application.

For initial account setup or to schedule an ALS Solutions demonstration, please contact your ALS Canada Project Manager. To setup and authorize new users and permissions, please contact your company's ALS Solutions administrator

Figure 3. Test Pass/Fail Evaluation by Sample Location

Name	Within Limit	Exceeds Limit	Total Tests	Within Limit %	Exceeds Limit %
Common Room	2	0	2	100	0
Kitchen Sink	8	0	32	25	0
Shop	4	0	4	100	0
Town Garage	28	2	30	93.33	6.67

Figure 4. Guideline Exceedance Summary for a Sample

Sample - ALS ID	Sample - Name	Sample - Sampling Date	Microbiological Tests			
			Coliforms, Escherichia coli [E. coli] MPN/100mL	Coliforms, Escherichia coli [E. coli] P/A/100mL	Coliforms, total MPN/100mL	Coliforms, total P/A/100mL
TY2200802-001	Raw Water	22-08-2022 09:30	0	2	2	
TY2201061-001	Raw Water	29-08-2022 07:45	0	1	1	
TY2201313-002	Raw Water	06-09-2022 08:10	0	0	0	
TY2201343-001	Raw Water	06-09-2022 10:00	N.R		N.R	
TY2201562-001	Raw Water	12-09-2022 14:00	0	2	2	
TY2201844-001	Raw Water	19-09-2022 08:30	1	2	2	
TY2202114-001	Raw Water	26-09-2022 10:05	0	1	1	
TY2202423-001	Raw Water	03-10-2022 09:30	0	2	2	
TY2202696-002	Raw Water	11-10-2022 07:24		Not Detected		Not Detected
TY2202723-001	Raw Water	11-10-2022 11:15	0	1	1	
TY2203009-001	Raw Water	17-10-2022 08:00	0	1	1	
TY2203335-001	Raw Water	24-10-2022 09:30	0	1	1	
TY2203588-001	Raw Water	31-10-2022 08:00	0	1	1	
TY2203808-001	Raw Water	07-11-2022 08:00		Not Detected		Not Detected
TY2203832-001	Raw Water	07-11-2022 08:15	0	1	1	
TY2204076-001	Raw Water	14-11-2022 10:00	0	1	1	
TY2204340-001	Raw Water	21-11-2022 09:20	0	1	1	
TY2204566-001	Raw Water	28-11-2022 09:00	0	1	1	
TY2302050-001	Raw Water	13-03-2023 09:00	0	0	0	

Figure 5. Results Over Time Chart (Point Format)

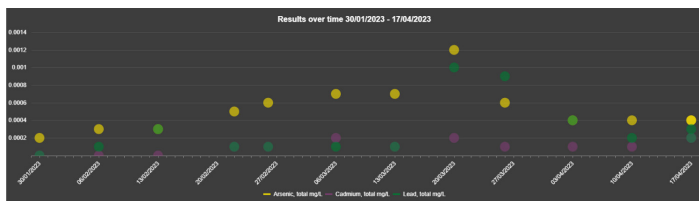


Figure 6. Results Over Time Chart (Line Format)

