

Control charts...Who needs them?

*Presented by:
AllMax Software, Inc.*

We all do!!

This course will take you through how a database can be used to track and report not only data used for reporting, but the data used to create control charts for your lab. Also addressed will be the process of uploading monthly reports to the state by exporting them from the database.



What is a Control Chart?

Control charting is a means of visually tracking performance to determine when a procedure is not meeting data quality objectives. Control charts indicate when a procedure is headed out of control so the analyst can pause, eliminate the source of the problem, and prevent the out-of-control situation.

Control Chart Definitions & Formulas

- UWL = Upper Warning Limits

Control Chart Definitions & Formulas

- UWL = Upper Warning Limits

Standard Solution:

Average of the Values + (2 * Standard Deviation of the Values)

Duplicate Solution:

2 * Standard Deviation of the Difference of the Values

Control Chart Definitions & Formulas

- UWL = Upper Warning Limits
- UAL = Upper Action Limits

Control Chart Definitions & Formulas

- UAL = Upper Action Limits

Standard Solution:

Average of the Values + (3 * Standard Deviation of the Values)

Duplicate Solution:

3 * Standard Deviation of the Difference of the Values

Control Chart Definitions & Formulas

- UWL = Upper Warning Limits
- UAL = Upper Action Limits
- LWL = Lower Warning Limits

Control Chart Definitions & Formulas

- LWL = Lower Warning Limits

Standard Solution:

Average of the Values - (2 * Standard Deviation of the Values)

Duplicate Solution:

-2 * Standard Deviation of the Difference of the Values

Control Chart Definitions & Formulas

- UWL = Upper Warning Limits
- UAL = Upper Action Limits
- LWL = Lower Warning Limits
- LAL = Lower Action Limits

Control Chart Definitions & Formulas

- LAL = Lower Action Limits

Standard Solution:

Average of the Values - ($3 * \text{Standard Deviation of the Values}$)

Duplicate Solution:

$-3 * \text{Standard Deviation of the Difference of the Values}$

Control Chart Definitions & Formulas

- UWL = Upper Warning Limits
- UAL = Upper Action Limits
- LWL = Lower Warning Limits
- LAL = Lower Action Limits

These values are used as constants on the chart.

Nitrate Check Standard Control Chart:

Results for the nitrate samples are entered into the database.

For our example these values span over a month time period.

Nitrate Check Standard Control Chart:

Calculations for UWL, UAL, LWL and LAL are ran on the nitrate Standard Deviation result.

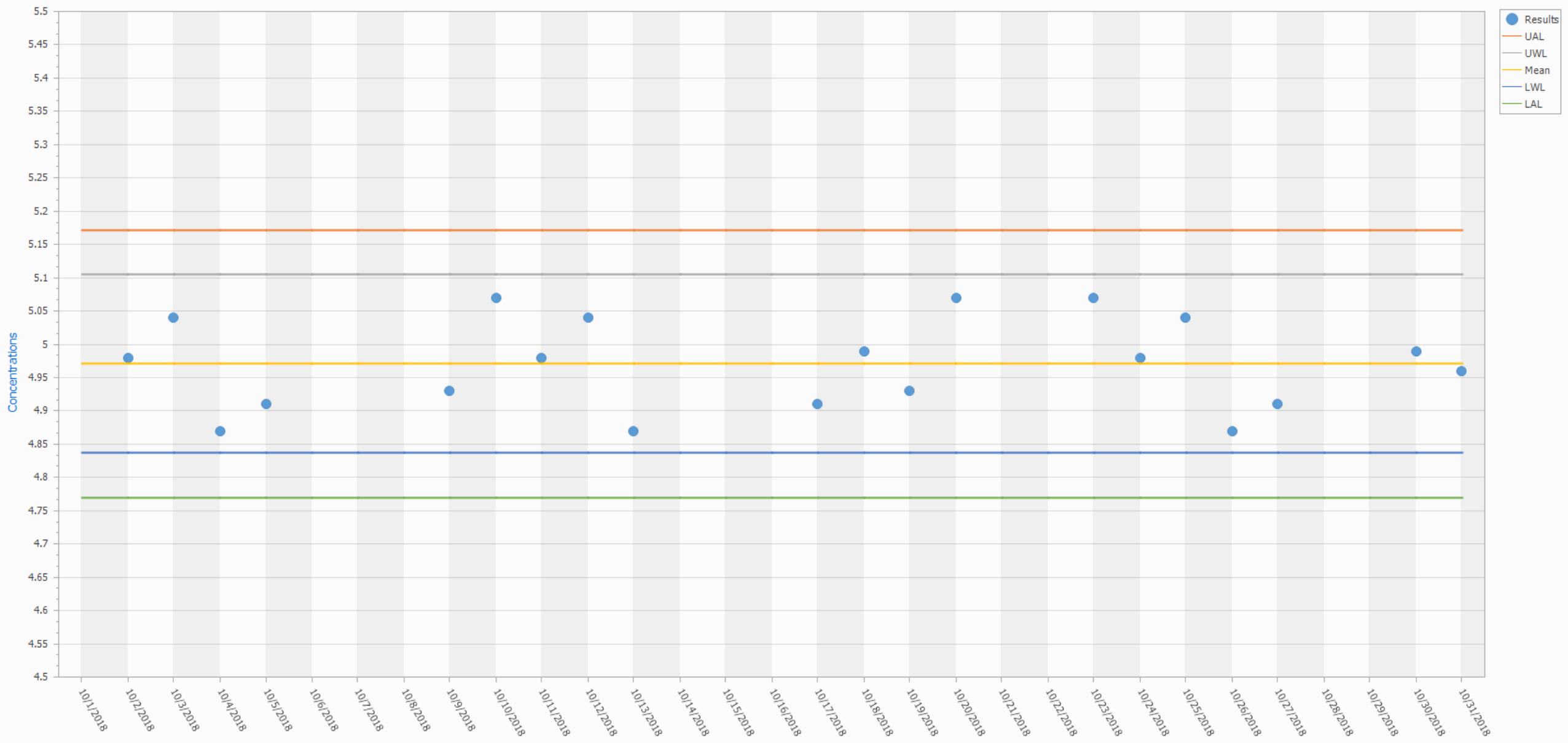
Nitrate Check Standard Control Chart:

Mean = 4.97

Standard Deviation = 0.07

- UWL $4.97 + (2 * 0.07) = 5.10$
- UAL $4.97 + (3 * 0.07) = 5.17$
- LWL $4.97 - (2 * 0.07) = 4.84$
- LAL $4.97 - (3 * 0.07) = 4.77$

Nitrate Check Standard



TSS Duplicate Control Chart:

Results for the TSS samples and the TSS duplicates are entered into the database.

For our example these values span over a month time period.

TSS Duplicate Control Chart:

A calculation is ran to get the difference between the TSS sample and the TSS duplicate.

Example: (Sample 1 Result – Duplicate 1 Result = Difference)

$$3.10 - 4.10 = -1.00$$

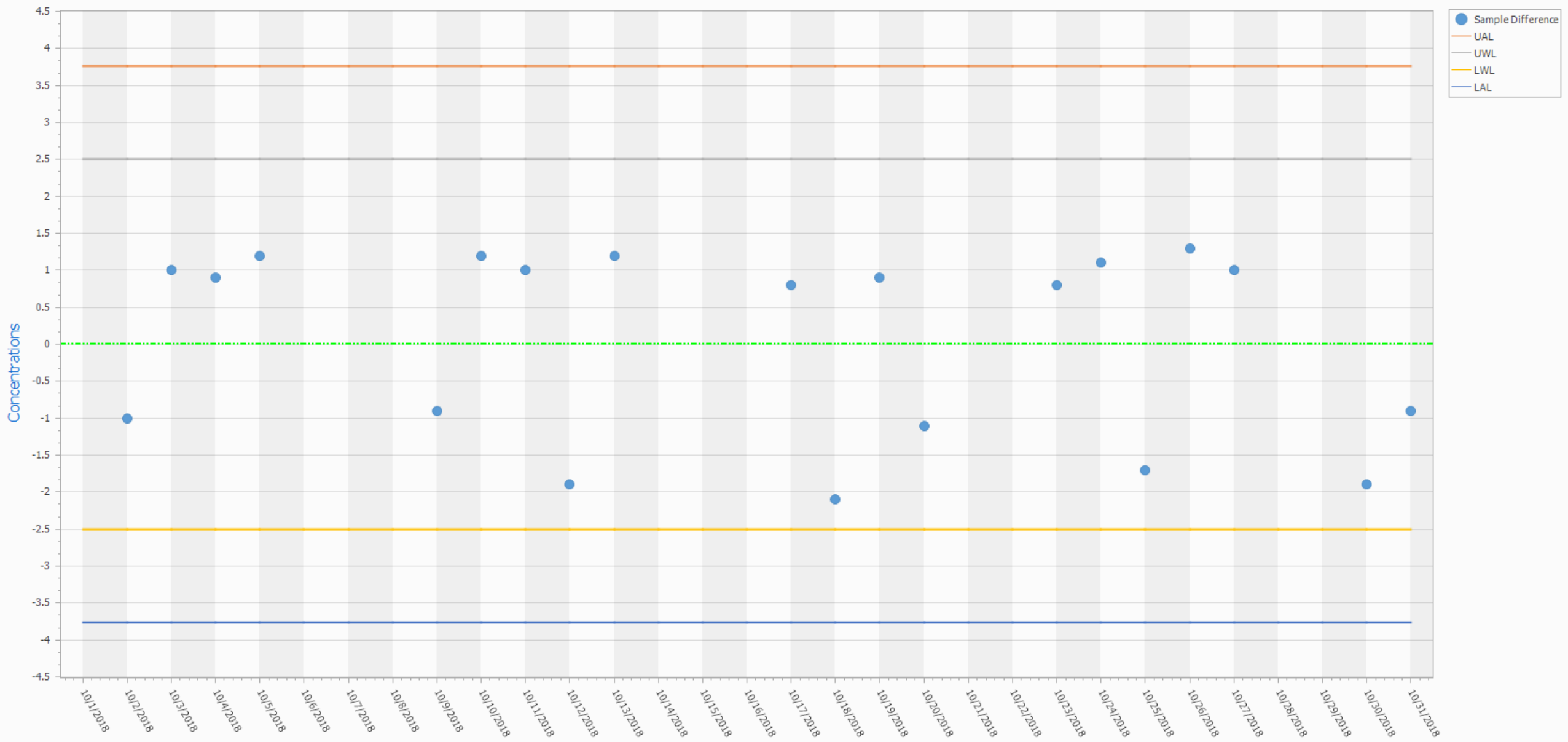
Calculations for UWL, UAL, LWL and LAL are ran on the Difference Standard Deviation result.

TSS Duplicate Control Chart:

Standard Deviation = 1.25

- UWL $2 * 1.25 = 2.51$
- UAL $3 * 1.25 = 3.76$
- LWL $- 2 * 1.25 = - 2.51$
- LAL $- 3 * 1.25 = - 3.76$

TSS Duplicate Samples





What's Next?

eDMR Submittal:

Once laboratory results, flow values and all other information needed for the monthly reports are entered into the database, you are now ready to prepare and submit them.

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Discharge Monitoring

- Create New Reports
- Edit an Open Report
- Submittals/Revisions

Discharge Monitoring > Create New Reports

Use this screen to start a new DMR. Blank DMRs are generated each monitoring period and listed below with status "NEW". Past DMRs are also listed with status "Open" or "Submitted".

[Search Panel](#)

Permit Number	Facility Name	Report Type	Report Frequency	Report Date	Status	Due Date	Online Entry	XML	Excel	View Form
1PE00003*PD	Middletown WWTP	4500	Monthly	11/01/2018 - 11/30/2018	NEW	12/20/2018				
1PK00003*MD	Beavercreek WRRF	4500	Monthly	11/01/2018 - 11/30/2018	NEW	12/20/2018				
1PE00003*PD	Middletown WWTP	4500	Monthly	10/01/2018 - 10/31/2018	NEW	11/20/2018				
1PK00003*MD	Beavercreek WRRF	4500	Monthly	10/01/2018 - 10/31/2018	NEW	11/20/2018				

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NOTE: The file will be named "requirement_543724"



NOTE: The file will be named “requirement_543724”

```
<?xml version="1.0" encoding="UTF-8"?>
- <eDMR>
  - <MetaData>
    <SchemaIdentification>e-DMR Schema version 1.2</SchemaIdentification>
    <SchemaDescription>e-DMR Work Group Schema version 1.2</SchemaDescription>
    <SchemaPurpose>Electronic Discharge Monitoring Report submissions</SchemaPurpose>
    <SchemaVersion>1.2</SchemaVersion>
    <SchemaCreateBy>e-DMR XML Schema Work Group</SchemaCreateBy>
    <SchemaCreateDate>2002-02-28</SchemaCreateDate>
    <SchemaLastUpdateBy>e-DMR XML Schema Work Group</SchemaLastUpdateBy>
    <SchemaLastUpdateDate>2003-10-20</SchemaLastUpdateDate>
    <SchemaContactInformation>leopard.matthew@epa.gov, and Edmr_support@enfotech.com </SchemaContactInformation>
  </MetaData>
  - <Receiver>
    <AgencyName>Ohio EPA</AgencyName>
    <ReceivercontactName>EDMR Administrator</ReceivercontactName>
    <ReceivercontactTitle>EDMR Administrator</ReceivercontactTitle>
    - <ReceiverMailAddress>
      <MailingAddressText/>
      <SupplementalAddressText/>
      <MailingAddressCityName/>
      <MailingAddressStateUSPSCode>OH</MailingAddressStateUSPSCode>
      <MailingAddressStateName/>
      <MailingAddressCountryName/>
      <MailingAddressZIPCode/>
    </ReceiverMailAddress>
  </Receiver>
</eDMR>
```

Produce and Export Reports:

Produce Reports

Report Date:

Report Name	Report Type	Report Description	Selected	Status	Verify Data	Print	Export
001 Final (SUMMER ONLY)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
001 Final Pg 1 (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
001 Final Pg 2 (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
588 Sludge (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
601 Influent (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
801 Upstream (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
801 Upstream (SUMMER ONLY)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
901 Downstream (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
901 Downstream (SUMMER ONLY)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Number of Reports: 9 (9 selected)

Produce and Export Reports:

Produce Reports

Report Date:

Report Name	Report Type	Report Description	Selected	Status	Verify Data	Print	Export
001 Final (SUMMER ONLY)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
001 Final Pg 1 (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
001 Final Pg 2 (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
588 Sludge (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
601 Influent (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
801 Upstream (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
801 Upstream (SUMMER ONLY)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
901 Downstream (ALL MONTHS)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
901 Downstream (SUMMER ONLY)	Ohio_4500	Ohio 4500	<input checked="" type="checkbox"/>	OK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Number of Reports: 9 (9 selected)

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Discharge Monitoring > Create New Reports > Online Entry

Choose a report option and click Continue or Exit.

Report Options

- Online Entry Form
- Xml Upload

Exit

Continue

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Discharge Monitoring > Create New Reports > Online Entry

Choose a report option and click Continue or Exit.

Report Options

- Online Entry Form
- Xml Upload

Exit

Continue

Select and upload the file:

The screenshot shows a web browser window with the Ohio EPA eBusiness Center interface. The browser's address bar shows the URL <https://ebiz.epa.ohio.gov/portalAction.li>. The page title is "Ohio EPA - eBusiness Center". The main content area is titled "XML Upload" and includes a breadcrumb trail: "Discharge Monitoring > Create New Reports > Online Entry > XML Upload". A green banner at the top of the main content area reads: "Use this screen to upload and validate an e-DMR XML file." Below this banner is a progress indicator with five steps: 1. Upload Xml (active), 2. Edit Form, 3. Attachment, 4. Review, and 5. Submit. The "Upload Xml" section contains a "Select File" label, a "Choose File" button, and the text "No file chosen". Below this is a "File Validation" label and a large empty text area. At the bottom of the page, there are two green buttons: "Cancel" on the left and "Upload" on the right. The left sidebar contains navigation links for "Home" and "Help", and a "Discharge Monitoring" menu with options: "Create New Reports", "Edit an Open Report", and "Submittals/Revisions".

Conclusion:

In summary, use what is best for you. Preparing charts and reports are an important part of a laboratory. Make sure you have the tools needed to make your job easy. Remember: work smarter, not harder.

Thank You!