



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION



Presentation Agenda:

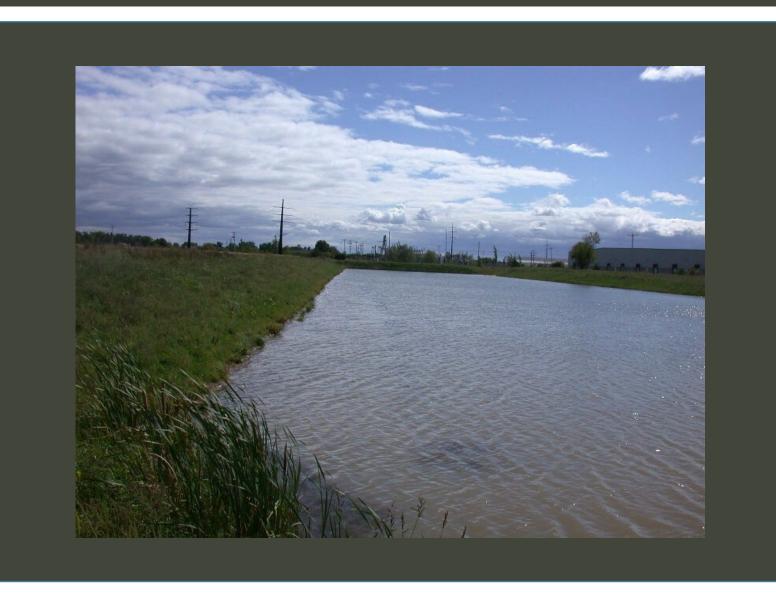
- Reading your permit:
 - Parameters, sample types, frequencies, units, etc.
- Filling out Part B:
 - Recording your data properly.
 - Acceptable qualifier codes.
 - Plant staffing.



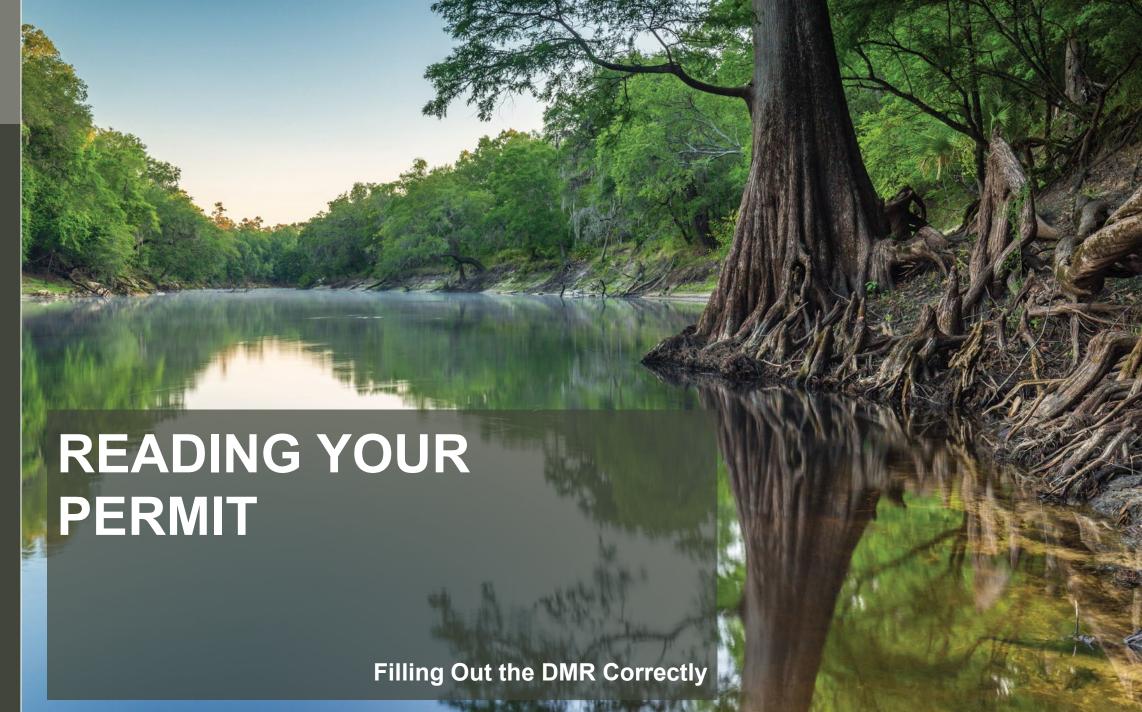
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Presentation Agenda

- Filling out Part A:
 - Transcribing data properly.
 - o Basic calculations.
- Filling out Part D:
 - Water level relative to National Geodetic Vertical Datum (NGVD).
 - Units, Method Detection Limits (MDLs) and Analytical Tests.
- Resources.









READING YOUR PERMIT

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Relevant Contents of the Permit:

- Parameters what you are required to sample for.
- Reporting Units what units you are required to report in.
- Limits the effluent quality limits you are required to meet.
- Statistical Basis the type of calculation or reporting you are required to do.
- Frequency of Analysis how frequently you are required to monitor.
- Sample Type how you are required to sample.
- Monitoring Site Number where you are required to sample.
- Other notes other important pertinent information.
- Paper copy templates.



			Recl	aimed Water Limitations	Mon	itoring Requiren	ents	
Parameter.	TTolde	Max.	T invite	Statistical Proje	Frequency	Gamenta Trans	Monitoring Site	Notes
Parameter	Units	/Min	Limit	Statistical Basis	of Analysis	Sample Type	Number	Notes
BOD, Carbonaceous 5 day, 20C	mg/L	Max Max Max Max	20.0 30.0 45.0 60.0	Annual Average Monthly Average Weekly Average Single Sample	Monthly	Grab	EFA-1	
Solids, Total Suspended	mg/L	Max Max Max Max	20.0 30.0 45.0 60.0	Annual Average Monthly Average Weekly Average Single Sample	Monthly	Grab	EFA-1	
Coliform, Fecal	#/100mL	Max Max Max Max	200 200 400 800	Annual Average Monthly Geometric Mean 90th Percentile Single Sample	Monthly	Grab	EFA-1	See I.A.3 and I.A.4
pН	s.u.	Min Max	6.0 8.5	Single Sample Single Sample	5 Days/Week	Grab	EFA-1	
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	5 Days/Week	Grab	EFA-1	See I.A.5
Nitrogen, Total	mg/L	Max Max Max	10.0 12.5 20.0	Annual Average Monthly Average Single Sample	Monthly	Grab	EFA-1	
Phosphorus, Total (as P)	mg/L	Max Max Max	6.0 7.5 12.0	Annual Average Monthly Average Single Sample	Monthly	Grab	EFA-1	







- Record sample results and measurements from the logbook on the correct date on Part B.
- Record analytical results from any analytical reports on the correct date on Part B.
- All results should be recorded accurately and completely.
- Results from the logbook should be recorded exactly as they are read from the instrument/meter.
- Analytical results from lab reports should be recorded exactly (with a few exceptions...).



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Data Qualifier Codes:

- Help serve as indicators of special circumstances.
- Laboratories are required to use the data qualifier codes listed in Table 1 of Chapter 62-160, Florida Administrative Code (F.A.C.).
- These codes are only to be transferred onto Part B of the Discharge Monitoring Report (DMR) as part of your results.
- Use zeros for flow for days of no discharge.

CODE	DESCRIPTION/INSTRUCTIONS
<	The compound was analyzed for but not detected.
A	Value reported is the mean (average) of two or more determinations.
J	Estimated value, value not accurate.
Q	Sample held beyond the actual holding time.
Y	Laboratory analysis was from an unpreserved or improperly preserved sample.



What is the Method Detection Limit (MDL)?

- The MDL is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results.
- Reported as < and then the MDL, or for example "<1 #/100mL."
- The MDL value is specified in the analytical report.
- Values less than the MDL are considered to demonstrate compliance with an effluent limitation.



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What is the Practical Quantitation Limit (PQL)?

- The PQL is defined as the minimum concentration of an analyte that can be measured with a high degree of confidence that the analyte is present at the reported concentration.
- Data less than the PQL but greater than the MDL shall be reported as the value of the MDL.
 - Sometimes this data is noted with an "I" qualifier in analytical reports.
 - The "I" qualifier is not acceptable for use on Part B.

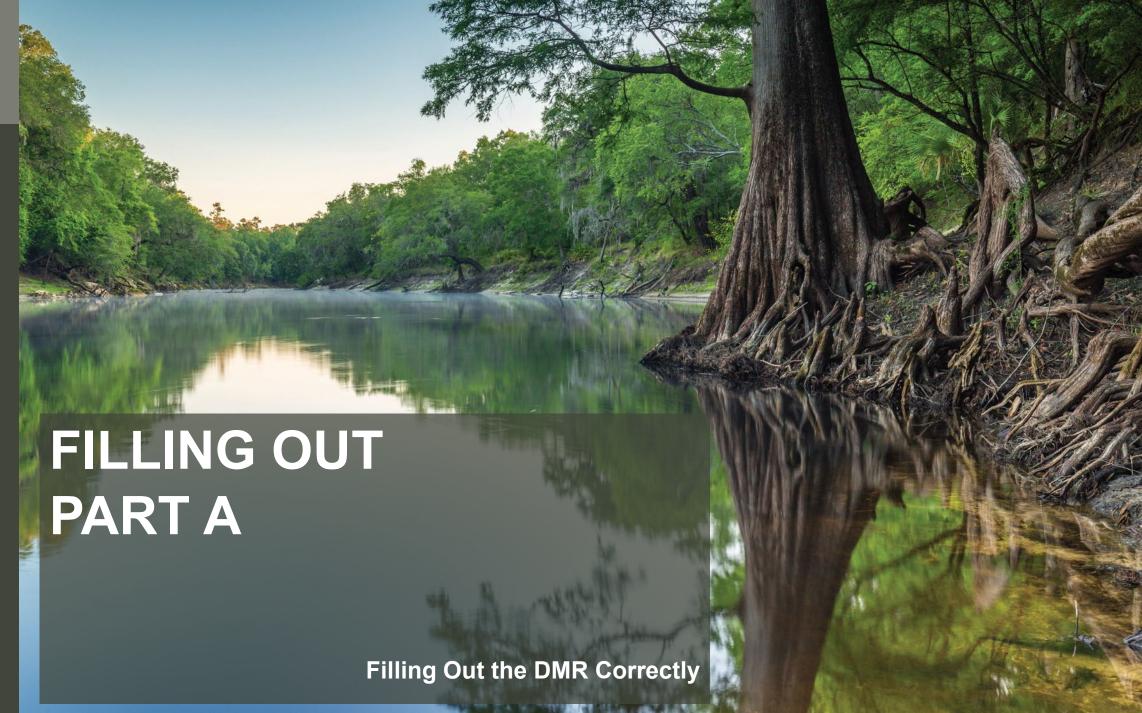


Plant Staffing Section:

- Must include all operators staffing the site.
- If more operators need to be recorded than space allows, the paper copy can be modified to include additional spaces.

Class:	Certificate No:	Name:
Class:	Certificate No:	Name:
Class:	Certificate No:	Name:
Class:	Certificate No:	Name:
	Class:	Class: Certificate No: Class: Certificate No:







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- Monthly Average for Flow:
 - All flow values during the monitoring period/# of days = monthly average.
- Quarterly Average for Flow:
 - Sum of last 3 monthly averages/3 = quarterly average.
- Annual Average for Flow:
 - Sum of last 12 monthly averages/12 = annual average.
- Percent Capacity = (TMADF/CAPACITY) * 100:
 - Rule 62-600.405, F.A.C. Planning for Wastewater Facilities Expansion.
- Report in units as specified on the DMR.



Maximum and Minimum Value Reporting:

- Reporting this value doesn't require any calculation.
- Review the values that were reported on Part B of the DMR for the entire month and report the highest number wherever it says "Max."
- If you see "Min" under a limit, report the lowest of all the values for that parameter.
- If either of these values is a non-detect, report it as <MDL. For example, <2.0 mg/L.



Monthly Average for Effluent Quality Data:

- Sum of data/# of observations = monthly average.
- Rule 62-620.200(27), F.A.C., defines "monthly average discharge limitation" as
 the maximum monthly average pollutant value allowed by the permit and
 calculated as the arithmetic mean of each reclaimed water or effluent sample
 collected on a separate day during a period of 30 consecutive days.
- For the monthly average, report the arithmetic average of the daily values for the calendar month.



Annual Average for Effluent Quality Data:

- Sum of the last 12 monthly averages/12 = annual average.
- Rule 62-620.200(2), F.A.C., defines "annual average discharge limitation" as
 the maximum annual average pollutant value allowed by the permit and
 calculated as the arithmetic mean of the 12 monthly average reclaimed water
 or effluent samples collected during any consecutive 12-month period.
- Do not include zero values for the months of no discharge in the calculated annual average.



Weekly Average for Effluent Quality Data:

- Rule 62-620.200(57), F.A.C., defines a "weekly average discharge limitation" as the maximum weekly average pollutant value allowed by the permit.
- When reporting the weekly average on Part A, report the maximum of the weekly averages for the month.
- A week is a consecutive seven-day period, typically Sunday Saturday.
- When calculating the weekly average, divide by the number of samples, not the number of days.



Weekly Averages and Partial Weeks:

 The weekly average should be calculated by considering the partial week at the end of a month as part of the partial week on the following month.

APRI	L 201	1							
S	\mathbf{M}	T	W	T	F	\mathbf{S}			
1	2	3	4	5	6	7			
8	9	10	11	12	13	14			
15	16	17	18	19	20	21			
22	23	24	25	26	27	28			
29	30								
(Shaded area shows partial week at the end of the									
month.	Those of	days sh	ould be	used to	calcul	ate a			
weekly o	average	in Maj	v, not A	pril.)					



MDLs:

- A value of one-half the MDL or one-half the effluent limit, whichever is lower, shall be used for that sample when necessary to calculate an average for that parameter.
- Values less than the MDL are considered to demonstrate compliance with an effluent limitation.



MDLs:

- To calculate the monthly average, add together the results with the following considerations:
 - Any value that is accompanied by a < symbol needs to be halved when calculating the averages, i.e. <1.0 values will be 0.5 when calculating.
 - All values not accompanied by a < symbol can be added as reported.



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Example Calculation using Results Below the MDL:

- (1.2+1.0+3.0+1.0+0.5+0.5+1.6+0.5+0.5+0.5+1.2+0.5
 +1.6+1.2+2.0+1.0+0.5+2.0+0.5+0.5)/20 samples
 taken =1.065mg/L
- The value reported on DMR Part A is 1.1 mg/L when accounting for significant figures.

Parameter	Solids, Total Suspended (TSS) mg/L	Fecal Coliform #/100mL	Oil and Grease mg/L
Code	00530	74055	00556
Monitoring Site	EFD-001	EFD-001	EFD-001
1	MNR	MNR	MNR
2	MNR	MNR	MNR
3	1.2	<1.0	MNR
4	1.0	<1.0	MNR
5	3.0	<1.0	MNR
6	1.0	<1.0	MNR
7	<1.0	<1.0	MNR
8	MNR	MNR	MNR
9	MNR	MNR	MNR
10	<1.0	<1.0	MNR
11	1.6	<1.0	MNR
12	<1.0	<1.0	MNR
13	<1.0	<1.0	MNR
14	<1.0	<1.0	<1.4
15	MNR	MNR	MNR
16	MNR	MNR	MNR
17	1.2	<1.0	MNR
18	<1.0	<1.0	MNR
19	1.6	<1.0	MNR
20	1.2	<1.0	MNR
21	2.0	<1.0	MNR
22	MNR	MNR	MNR
23	MNR	MNR	MNR
24	1.0	<1.0	MNR
25	<1.0	<1.0	MNR
26	2.0	<1.0	MNR
27	<1.0	<1.0	MNR
28	<1.0	<1.0	MNR
29	MNR	MNR	MNR
Total	21.3	10.0	<1.4
Monthly Average	1.1	0.50	<1.4



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Example Calculation using Results Below the MDL:

- Since 0.50 is less than the MDL, the MDL (<1.0)
 would be reported on Part A.

Parameter	Solids, Total Suspended (TSS) mg/L	Fecal Coliform #/100mL	Oil and Grease mg/L
Code	00530	74055	00556
Monitoring Site	EFD-001	EFD-001	EFD-001
1	MNR	MNR	MNR
2	MNR	MNR	MNR
3	1.2	<1.0	MNR
4	1.0	<1.0	MNR
5	3.0	<1.0	MNR
6	1.0	<1.0	MNR
7	<1.0	<1.0	MNR
8	MNR	MNR	MNR
9	MNR	MNR	MNR
10	<1.0	<1.0	MNR
11	1.6	<1.0	MNR
12	<1.0	<1.0	MNR
13	<1.0	<1.0	MNR
14	<1.0	<1.0	<1.4
15	MNR	MNR	MNR
16	MNR	MNR	MNR
17	1.2	<1.0	MNR
18	<1.0	<1.0	MNR
19	1.6	<1.0	MNR
20	1.2	<1.0	MNR
21	2.0	<1.0	MNR
22	MNR	MNR	MNR
23	MNR	MNR	MNR
24	1.0	<1.0	MNR
25	<1.0	<1.0	MNR
26	2.0	<1.0	MNR
27	<1.0	<1.0	MNR
28	<1.0	<1.0	MNR
29	MNR	MNR	MNR
Total	21.3	10.0	<1.4
Monthly Average	1.1	0.50	<1.4



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How to Report an Average using Significant Figures:

- The significant figures of a given number are those significant or important digits, which convey the meaning according to its accuracy.
- Important that data is transcribed onto Part B correctly, so you know the correct number of sig figs.

The lab reported the following weekly values in mg/L: 5.0, 5.25, 4.95, and 5.134. The monthly average before rounding is 5.0835 mg/L. The monthly average should be reported on Part A of the DMR as 5.1 mg/L.

0.0560

How many significant figures?



How to Calculate a Monthly Geometric Mean:

- Rule 62-600.200(26), F.A.C., defines "Geometric mean" as the nth root of the product of n numbers.
- Multiply all samples by each other and raise the resulting product to the 1/nth power.
- Alternatively, use the Log10 method: take the sum of log10 transformations of each value, calculate the arithmetic mean, and then take the inverse log10 of the mean.





Power method

$$X_{\sigma} = [3*4*5*6*7*8]^{1/6}$$

$$X_g = [20,160]^{1/6} = 5.22$$

$$x_g$$
 = $[3*4*5*6*7*8]^{1/6}$
 x_g = $[20,160]^{1/6}$ = 5.22
 x_g = 5 (rounded for reporting)

Log₁₀ method

$$\log(x_g) = \frac{[\log(3) + \log(4) + \log(5) + \log(6) + \log(7) + \log(8)]}{[\log(3) + \log(4) + \log(5) + \log(6) + \log(7) + \log(8)]}$$

$$log(x_g) = \frac{4.304}{6} = \frac{0.717}{6}$$
 $x_g = 10^{[0.717]} = 5.22$
 $x_g = 5$ (rounded for re-

5 (rounded for reporting)



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How to Calculate the 90th Percentile:

- List the fecal coliform values obtained during the month in ascending order.
- Report the value of the sample that corresponds to the 90th percentile (multiply the number of samples by 0.9).
- The 90th Percentile should not be reported as a percentage!

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Given: 10 values – 8, 4, 5, 20, 7, 6, 34, 22, 4, and 18, find the 90<sup>th</sup> percentile value.
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Step 1. List the values in ascending order: 4, 4, 5, 6, 7, 8, 18, 20, 22, 34

Step 2. Multiply the number of samples by 0.9: 0.9*10 = 9

Step 3. Report the 9th value from the series in Step 1 as the 90th percentile value: 22.



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How to Calculate Percent Less than Detection:

- Count the number of observations for fecal coliforms on Part B that were not detected.
- Divide this number of observations by the total number of observations.
- Multiply by 100 and round to the nearest integer.

Given: 10 values – <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, <1.0, and 200, find the percent less than detection

Step 1. Count the number of non-detect samples: 9 samples were non-detect.

Step 2. Count the number of total samples taken: 10 samples were taken in total.

Step 3. Divide the non-detect samples by the total number and multiply by 100: 9/10 = 0.9 * 100 = 90% less than detection.



Missing Data Codes:

When results are not available, the use of the following codes is required:

CODE	DESCRIPTION/INSTRUCTIONS
ANC	Analysis not conducted.
DRY	Dry Well
FLD	Flood disaster.
IFS	Insufficient flow for sampling.
LS	Lost sample.
MNR	Monitoring not required this period.

NOD No discharge from/to site. OPS Operations were shut down so no sample could be taken. OTH Other. Please enter an explanation of why monitoring data were not available.	CODE	DESCRIPTION/INSTRUCTIONS
SEF Sampling equipment failure.	NOD OPS OTH	No discharge from/to site. Operations were shut down so no sample could be taken. Other. Please enter an explanation of why monitoring data were not available.

Comments and additional documentation can also be submitted where needed.



Other Important Information:

- Rule 62-620.610(18), F.A.C., even sample results that are in addition to the
 minimum monitoring requirements in a permit should be used to calculate the
 average, minimum, and maximum values for reporting to the department.
- Follow customary rules when rounding data. When rounding, anything 5 or greater should be rounded up, and anything less than 5 should be rounded down.







Common Part D Issues:

- Water level relative to NGVD is improperly reported.
- Units for heavy metals are incorrect.
- MDL reported on Part D does not match the analytical report.
- Analytical method reported on Part D does not match the analytical report.



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Water Level Relative to NGVD:

- NGVD is the national standard reference datum for elevations, formerly referred to as Mean Sea Level of 1929.
- You need the surveyed elevation in NGVD of the top of the casing.
- The sampler must measure the static depth to water.
- Surveyed elevation static depth to water = water level relative to NGVD.
- This is crucial for understanding the hydraulic gradient.



Reporting Units on Part D:

- Heavy metals are commonly reported on analytical reports in milligrams/Liter (mg/L).
- The limits specified within the permit and DMR are in micrograms/Liter (ug/L).
- Conversion factor: 1 milligram = 1000 micrograms.



Filling Out Other Required Information:

- The MDL may vary from lab report to lab report.
- The analytical method may vary from lab to lab.
- Sampling equipment/filtering may vary from sampling event to sampling event.
- Ensure that all of these are accurate on each Part D submittal.



GROUNDWATER MONITORING REPORT - PART D

Facility Name: Permit Number: County:				Monitoring Well ID: Well Type: Description:	MWB-173204 Background Jasmine Cay Background	Report Frequency: Program:	Quarterly Domestic
Office:	South District			Re-submitted DMR:			
Monitoring Period		From:	To:	Date Sample Obtained:			
				Time Sample Obtained:			
Was the well purged be	fore sampling?	Yes No					

Parameter	PARM Code	Sample Measurement	Permit Requirement	Units	Sample Type	Frequency of Analysis	Detection Limits	Analysis Method	Sampling Equipment Used	Samples Filtered (L/F/N)
Water Level Relative to NGVD	82545		Report	ft	In Situ	Quarterly				
Nitrogen, Nitrate, Total (as N)	00620		Report	mg/L	Grab	Quarterly				
Solids, Total Dissolved (TDS)	70295		Report	mg/L	Grab	Quarterly				
Arsenic, Total Recoverable	00978		Report	ug/L	Grab	Quarterly				
Chloride (as Cl)	00940		Report	mg/L	Grab	Quarterly				
Cadmium, Total Recoverable	01113		Report	ug/L	Grab	Quarterly				
Chromium, Total Recoverable	01118		Report	ug/L	Grab	Quarterly				
Lead, Total Recoverable	01114		Report	ug/L	Grab	Quarterly				
Coliform, Fecal	74055		Report	#/100mL	Grab	Quarterly				
pH	00400		Report	s.u.	In Situ	Quarterly				
Sulfate, Total	00945		Report	mg/L	Grab	Quarterly				
Turbidity	00070		Report	NTU	Grab	Quarterly				
Specific Conductance	00095		Report	umhos/cm	Grab	Quarterly				
Temperature (C), Water	00010		Report	Deg C	In Situ	Quarterly				
Oxygen, <u>Dissolved</u> (DO)	00300		Report	mg/L	In Situ	Quarterly				

Helpful Tips for Completing the DMR:

 https://floridadep.gov/water/water-compliance-assurance/documents/helpfultips-completing-dmrs.

Oculus:

https://depedms.dep.state.fl.us/Oculus/servlet/login.

• EzDMR:

 https://floridadep.gov/water/water-compliance-assurance/content/gettingstarted-ezdmr.



HELPFUL TIPS FOR COMPLETING THE DMR FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DMR Helpful Tips

REPORTING WATER QUALITY DATA

Unlike calculating flow averages, the definitions in Rules 62-620.200 and 62-600.200, F.A.C., indicate that averages for most pollutants (excluding fecal coliform, which will be discussed later), and their associated effluent limitations, are calculated based on the arithmetic mean of any samples collected during the period. That is, pollutant averages are generally calculated by dividing the sum of the concentrations or mass values by the number of individual measurements during a given period.

In accordance with Rule 62-620.610(18), F.A.C., when averaging results or determining other reporting values (e.g., maximums) for the DMRs, all observations obtained for a reporting period in accordance with DEP approved methods shall be used for each effluent quality parameter. Thus, even sample results that are in addition to the minimum monitoring requirements in a permit should be used to calculate the average, minimum, and maximum values for reporting to the Department.

DAILY EFFLUENT QUALITY DATA

Daily effluent quality data is normally reported on Part B of the DMR on days during which a discharge to a particular reuse or disposal system occurred. If the permit requires "daily" sampling, the permittee should sample on each day that a discharge occurs. If discharge occurs on six days, the underlying measurement results should contain six entries – one for each day of discharge. If the permit requires weekly sampling, the permittee must sample on at least one day during which discharge occurred within each weekly period (e.g., a Sunday to Saturday period).

If there was no discharge during the course of a week, no entry would be made within that week. However, it is recommended that the permittee sample at the first occurrence of a discharge to ensure that required sampling is accomplished during the month.

DMR Helpful Tips

PERCENT LESS THAN DETECTION

If you are required to report the percentage of fecal coliform observations that were less than detection during the month, count the number of observations for fecal coliforms on Part B that were less than detection, divide by the total number of fecal coliform observations during the month, multiply by 100%, and round to the nearest integer.

NO MORE THAN 10 PERCENT VALUE

In accordance with the basic and high level disinfection requirements in Rules 62-600.440(5) and (6), F.A.C., your permit may state that no more than 10 percent of the samples during a period of 30 consecutive days shall exceed a certain number of fecal coliform values per 100 mL of sample. If this fecal coliform requirement is contained in your permit, then a 90th percentile value will be reported on the DMR. To report the 90th percentile value, list the fecal coliform values obtained during the month in ascending order. Report the value of the sample that corresponds to the 90th percentile (multiply the number of samples by 0.9). For example, for 30 samples, report the corresponding fecal coliform number for the 27th value of ascending order. See EXAMPLE 9 for finding and reporting the 90th percentile (no more than 10%) value.

NOTE: The 90th Percentile should not be reported as a percentage!

EXAMPLE 9 - FINDING THE 90th PERCENTILE VALUE

Given: 10 values – 8, 4, 5, 20, 7, 6, 34, 22, 4, and 18, find the 90th percentile value.

Step 1. List the values in ascending order: 4, 4, 5, 6, 7, 8, 18, 20, 22, 34

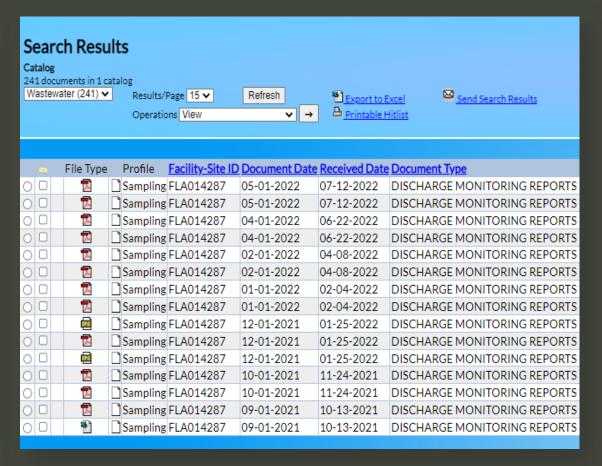
Step 2. Multiply the number of samples by 0.9: 0.9*10 = 9

Step 3. Report the 9th value from the series in Step 1 as the 90th percentile value: 22.



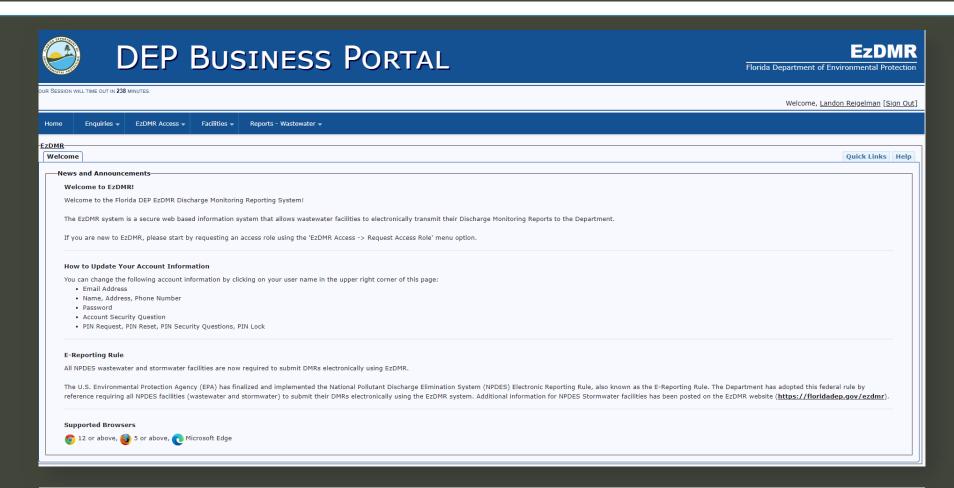
OCULUS FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION







EZDMR FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION



Beta EzDMR: https://betaenv.dep.state.fl.us/DepEzDMR.

