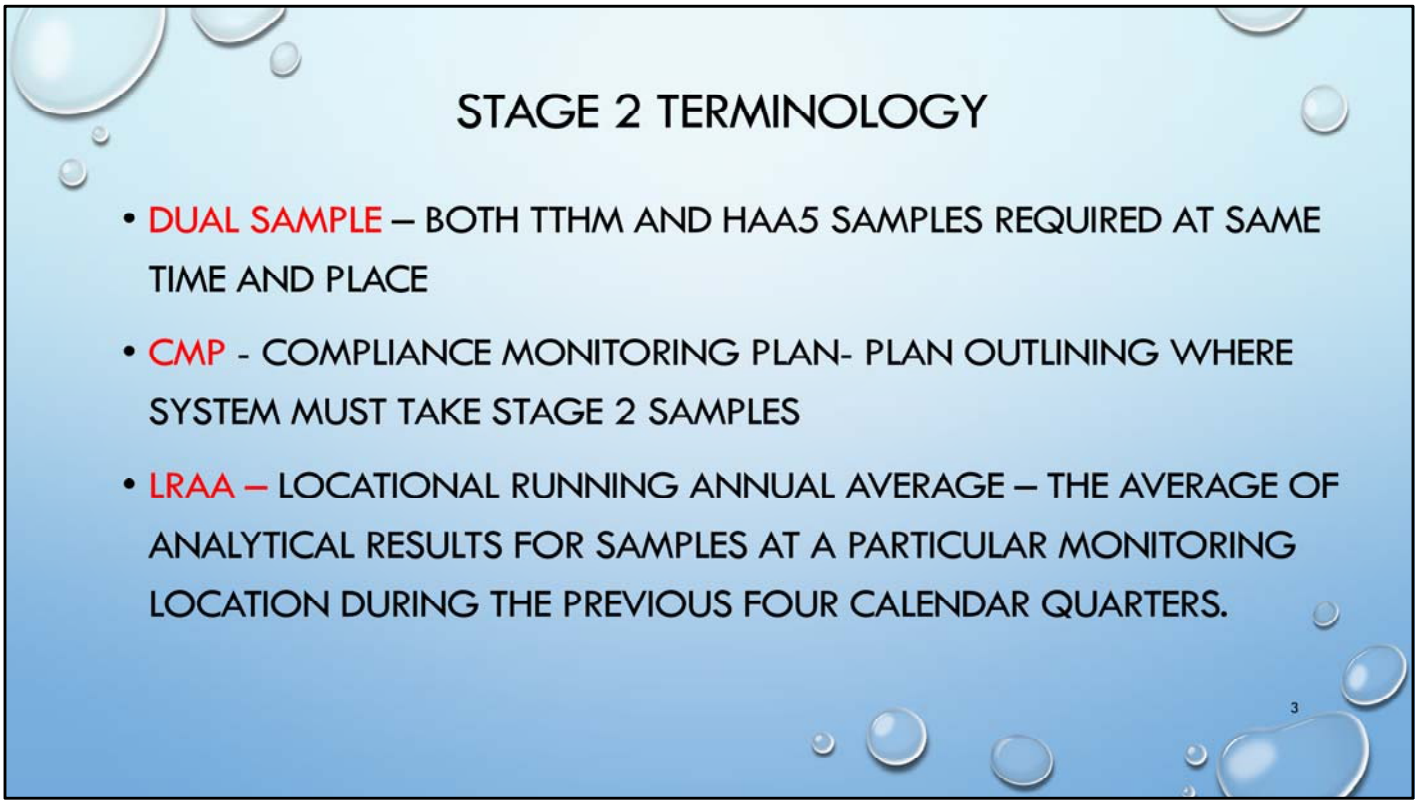
This presentation on the Stage 2 Disinfection By-Products (DBP's) is being done in addition to the Laboratory Guidance sent out in November, to clarify some new requirements of the Stage 2 Disinfection By-Products Rule so that laboratories may adjust their policies and procedures accordingly. DEC wishes to mitigate labs expending valuable resources to accept and analyze samples from Public Water Systems that cannot be used for compliance, and will be rejected by the DEC Drinking Water Program.

We will begin by giving a brief background of the rule, the Compliance Monitoring Plans and the background information used to create them, and then move into the monitoring requirements of the rule. One of the major differences in this rule are the requirements to collect samples from very specific locations and at specific time periods. So we will continue by discussing sample rejection policies and what we will do to provide compliance assistance. We will end the presentation by talking about some helpful hints for making decisions about samples and how to make the process easier for everyone.

One very important fact to keep in mind is that Stage 1 is over, there will be no more monitoring for it after 2013.

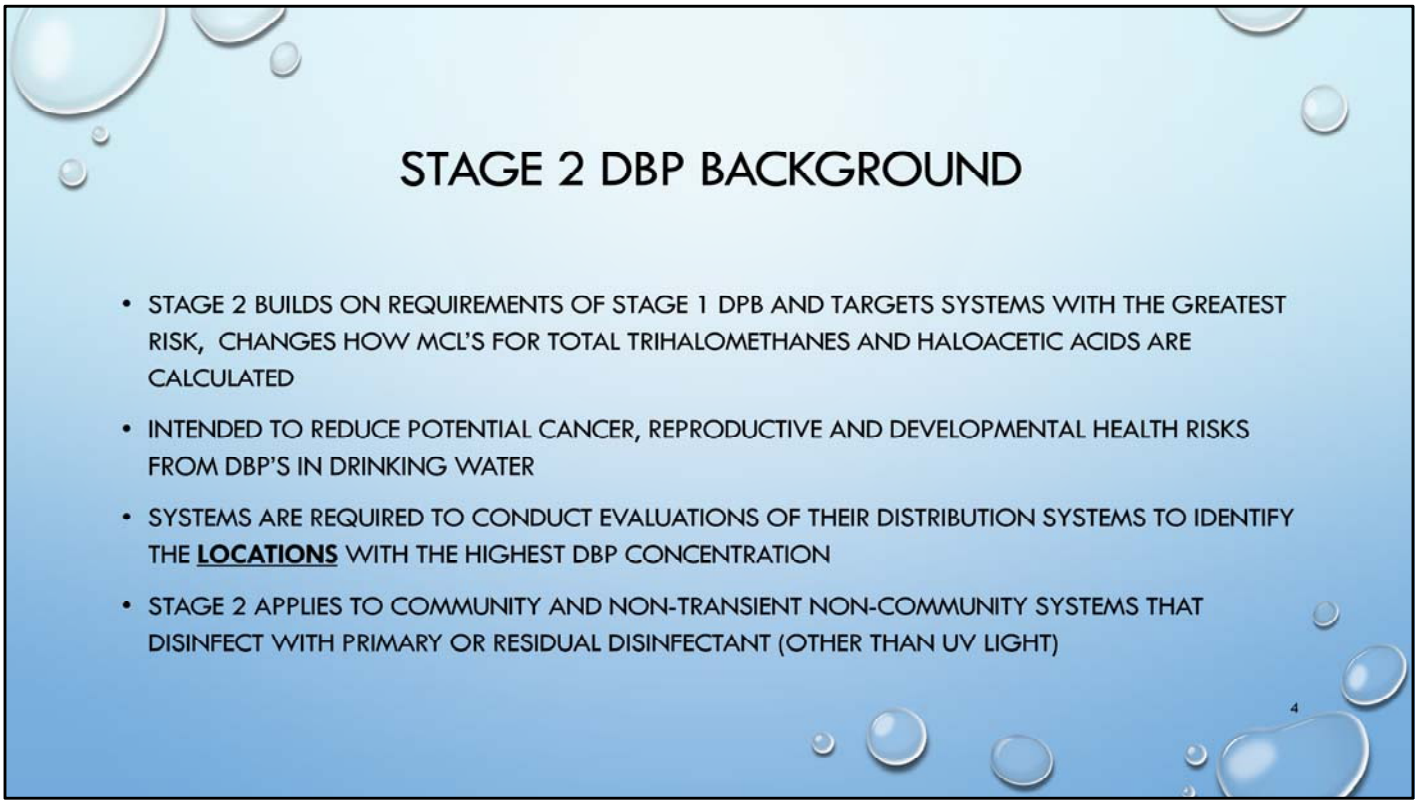


These are some terms that we will be using throughout the presentation, a couple may be new to some of you.

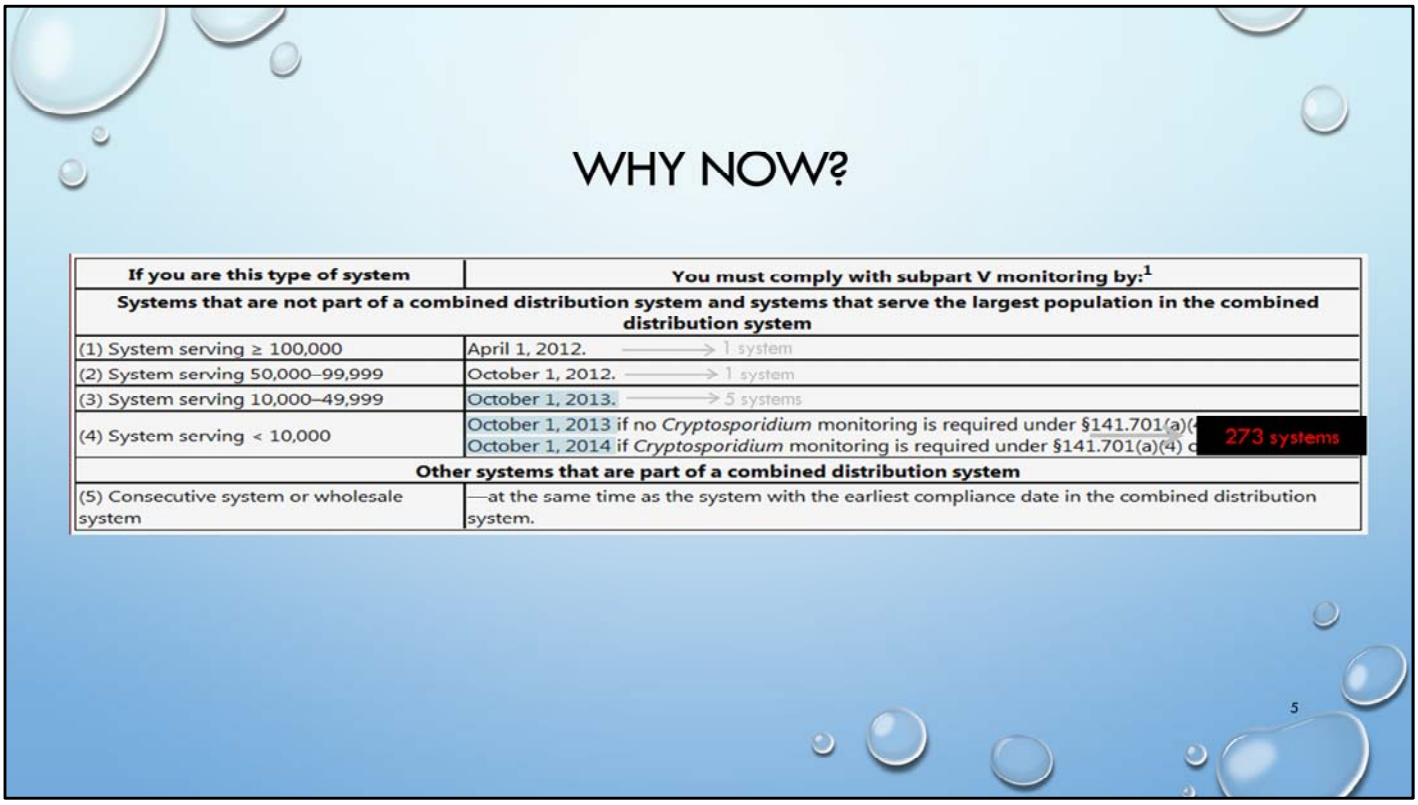
Dual Sample – Both TTHM and HAA5 samples are required to be sampled at the same time and place.

CMP- Compliance Monitoring Plan – this is the plan outlining where a system must take their Stage 2 routine monitoring samples.

LRAA- Locational Running Annual Average – The average of analytical results for samples at a particular monitoring location during the previous four calendar quarters.

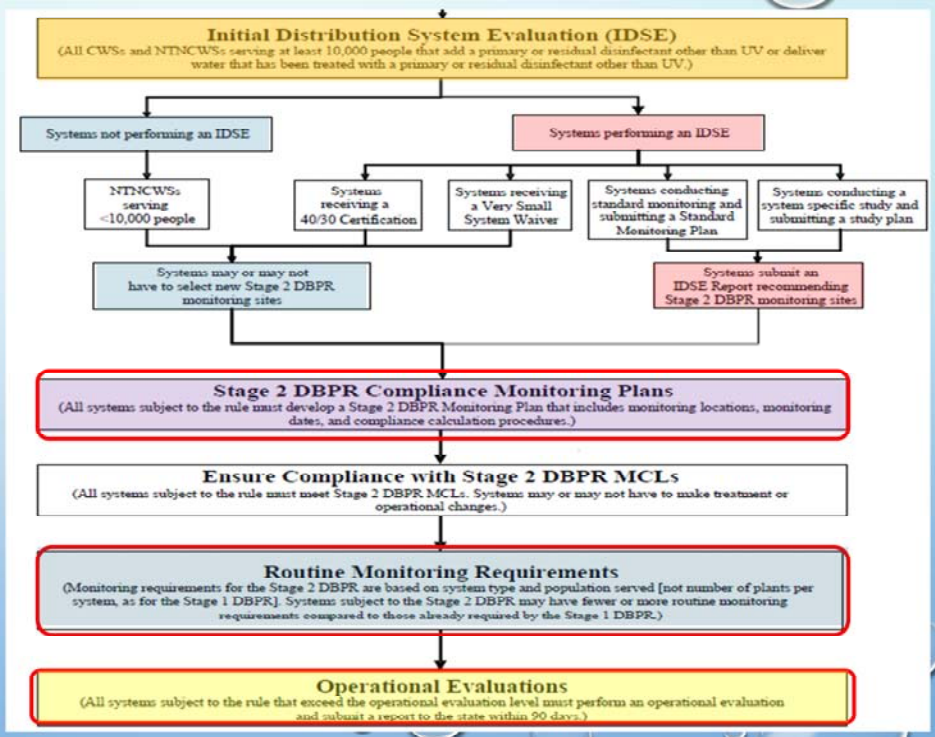


The Stage 2 DBPR builds upon the Stage 1 Rule to address higher risk public water systems by targeting the systems with the greatest risk for TTHM and HAA5, those with a larger population and/or with known DBP issues**.** This targeting is intended to reduce the potential for cancer, and reproductive and developmental health risks due to DBPs in drinking water. The MCL's remain the same as with the Stage 1 DBPR: 80 ug/L for TTHM and 60 ug/L for HAA5. However the MCL will be based on a locational running annual average (LRAA) instead of a system-wide running annual average. In order to determine the location with the highest DBP levels, systems were required to conduct an evaluation of their distribution system in one of several ways that we will talk about in a minute. The Stage 2 DBPR applies to community and non-transient non-community public water systems that disinfect with a primary or residual disinfectant, such as chlorine. This includes consecutive systems and water haulers.

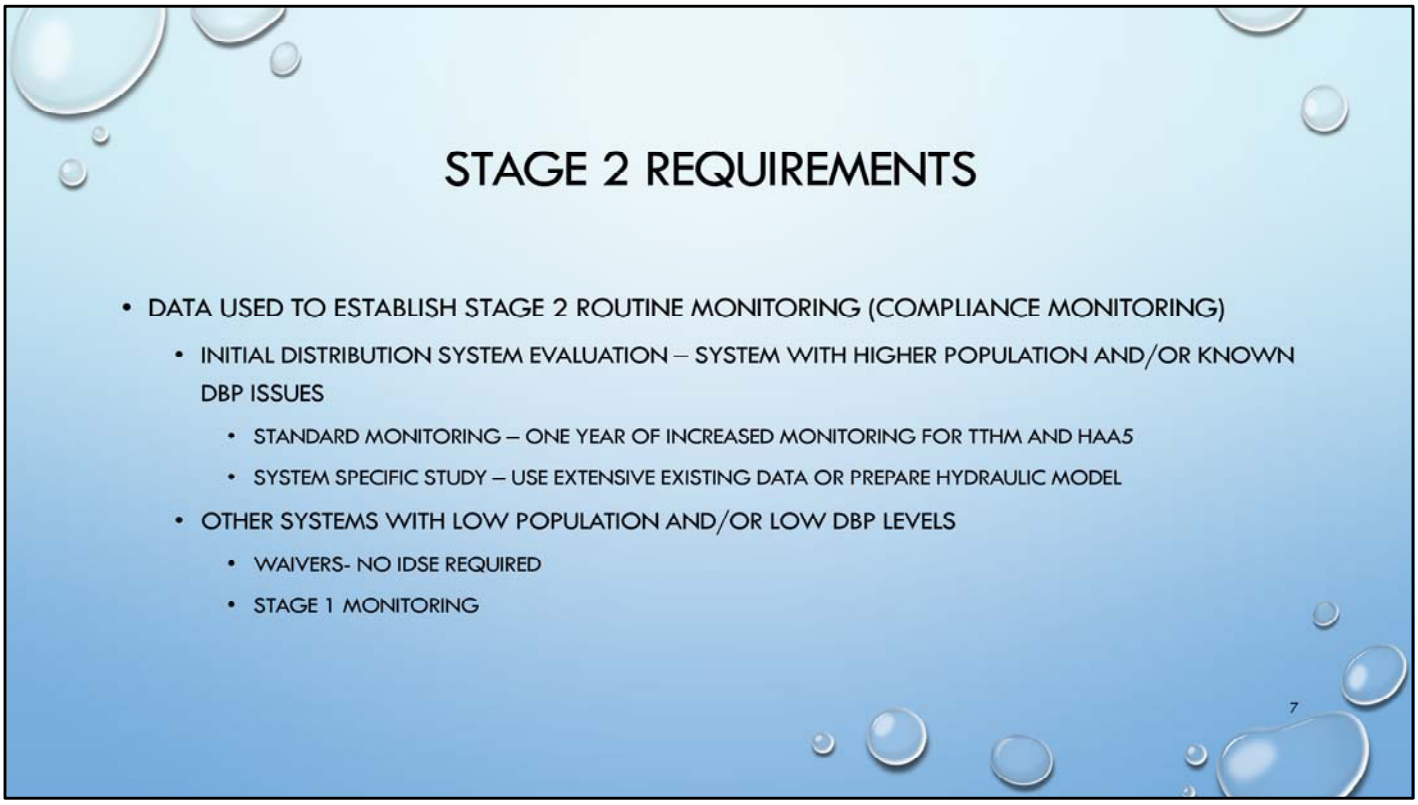


So you may be wondering why we are doing this training now, since the rule has been in effect for over a year. The effective date for compliance with the Stage 2 DBPR is based on population and you can see by this chart that most Alaskan systems were just required to begin monitoring in October 2013, since most of our systems have a population under 10,000 people.

SUMMARIZED STAGE 2 REQUIREMENTS



This slide shows a summary of the Stage 2 requirements. As you can see from this diagram, the initial requirement for the Stage 2 DBPR was for systems to conduct an evaluation of their distribution system. Nearly all of the Alaska PWS have completed this stage. Next, systems were to use the data collected to put together a Compliance Monitoring Plan and begin routine monitoring. There are some additional requirements of the rule shown on the slide; however, we won't be going over them as part of this training, as they are not related to monitoring.



As previously noted, to determine the information needed for the compliance monitoring plan, water systems either completed an Initial Distribution System Evaluation (IDSE) or used Stage 1 monitoring. Systems with a higher population and/or known DBP issues determined through Stage 1 monitoring were required to complete an IDSE; which included either standard monitoring, one year of additional monitoring at locations throughout the distribution system for both TTHM and HAA5, or a system specific study, using extensive existing data or preparing a hydraulic model. Water systems that have a very low population and/or low TTHM and HAA5 levels were granted waivers and were not required to do an IDSE. These systems were allowed to use DBP data from the Stage 1 routine monitoring.

Nearly all systems have completed the requirements needed to determine routine monitoring for Stage 2.

The information gathered was used to choose the specific locations for Stage 2 compliance. These specific locations represent the highest TTHM and HAA5 levels in the distribution system. As was previously noted, these specific locations are important because according to the Stage 2 DBPR compliance with the MCL is no longer based on the system wide Running Annual Average (RAA) that used of all the samples collected throughout the system's distribution system during the last 4 quarters, regardless of location, to determine compliance. Instead, compliance is now based on the Locational Running Annual Average calculated at each monitoring site. The primary objective of the LRAA is to reduce exposure to high DBP levels. If the DBP levels at any of these locations are too high, the entire system is out of compliance and will have to take corrective actions.

In addition, this data was used to determine the month/s of highest DBP levels, since Stage 2 is not only specific about the locations but also about the timing in which the samples are taken. The Stage 2 DBPR set up monitoring so that samples would be taken at regular intervals instead of potentially having samples taken in back to back months. For example, when a system is on quarterly monitoring, samples will now be required in the same month of each calendar quarter, whether it's the 1st, 2nd, or 3rd month. The same is true for systems that monitor annually, all Stage 2 routine monitoring must be done in the same month each year. The only exceptions to this is systems that are on reduced monitoring, which allows systems an entire quarter to monitor.

It is these locations and month/s of highest DBP levels that make up the system's Compliance Monitoring Plan (CMP) and will be used to determine compliance with the MCL. This is why all systems required to conduct monitoring under Stage 2 are required to develop a CMP, and why it is so important for samples to be collected and analyzed from the locations specified and in the timeframes required in plan. Drinking Water Program Staff have worked with systems and most now have a CMP.

As better seen in the next slide, Stage 2 compliance monitoring requirements will vary from system to system according to the type of source the system has and the number of people it serves.

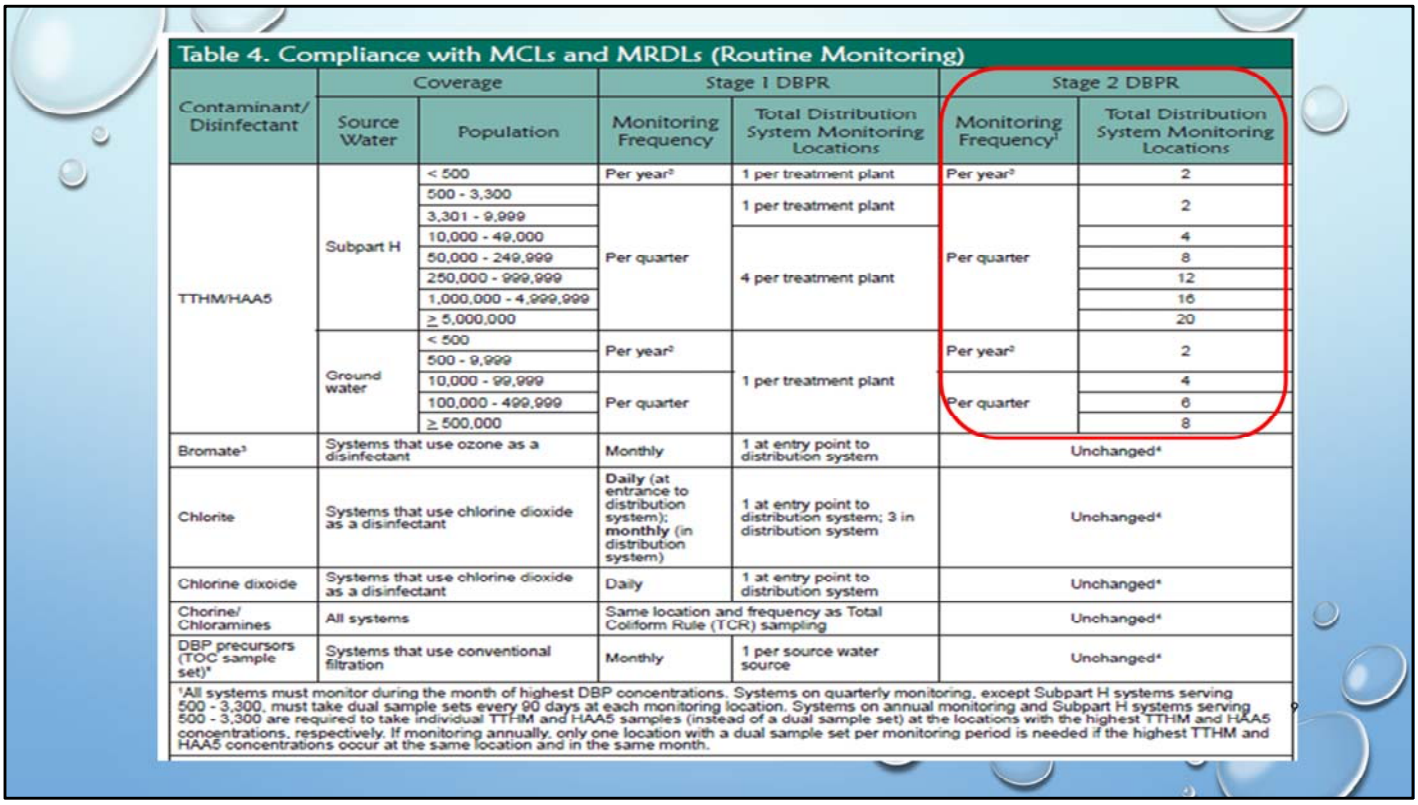
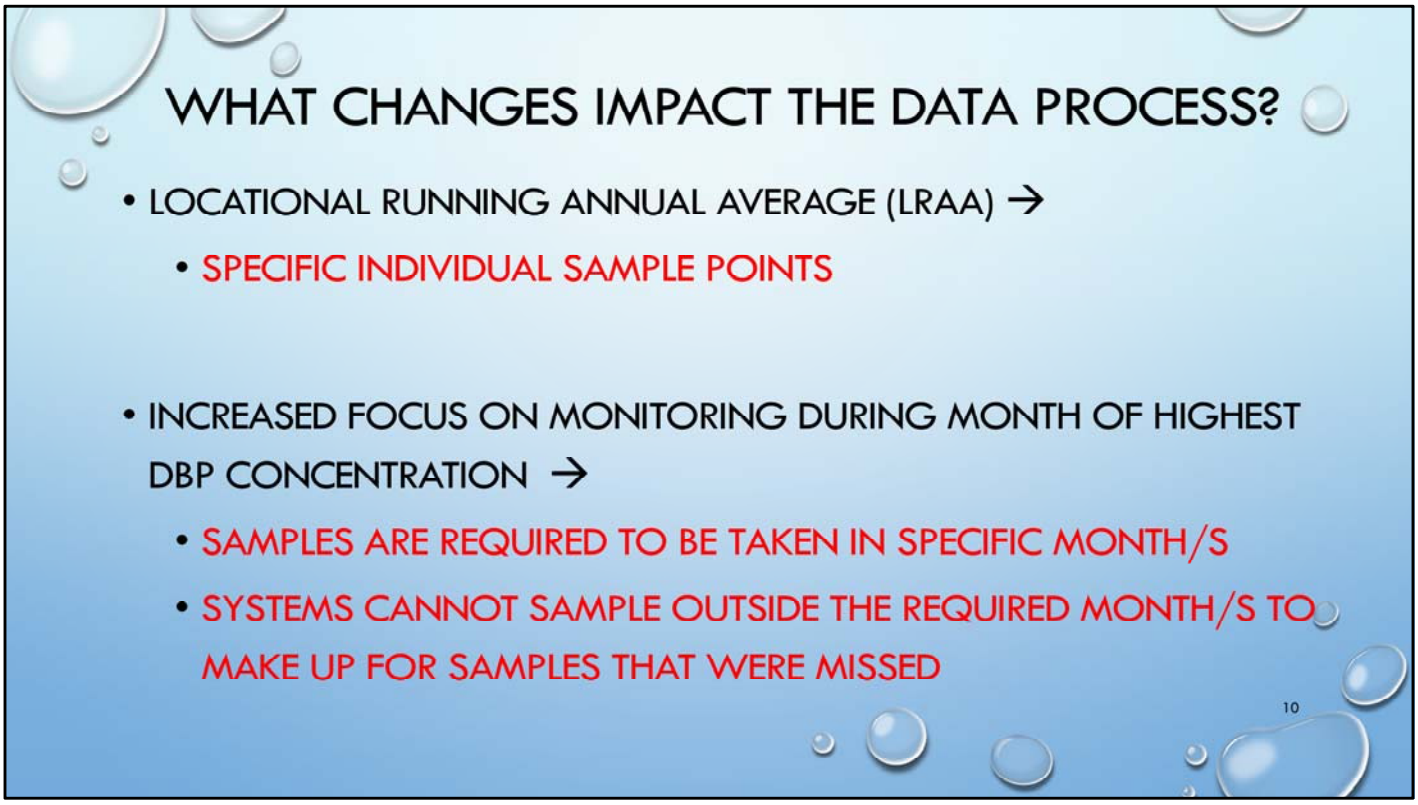


Table 4. Compliance with MCLs and MRDLs (Routine Monitoring)

Contaminant/ Disinfectant	Coverage		Stage 1 DBPR		Stage 2 DBPR	
	Source Water	Population	Monitoring Frequency	Total Distribution System Monitoring Locations	Monitoring Frequency[1]	Total Distribution System Monitoring Locations
TTHM/HAA5	Subpart H	< 500	Per year[2]	1 per treatment plant	Per year[2]	2
		500 - 3,300	Per quarter	1 per treatment plant	Per quarter	2
		3,301 - 9,999				4
		10,000 - 49,000		4 per treatment plant		8
		50,000 - 249,999				12
		250,000 - 999,999				16
		1,000,000 - 4,999,999				20
		≥ 5,000,000				
	Ground water	< 500	Per year[2]	1 per treatment plant	Per year[2]	2
		500 - 9,999				
		10,000 - 99,999	Per quarter		Per quarter	4
		100,000 - 499,999				6
		≥ 500,000				8
Bromate[3]	Systems that use ozone as a disinfectant		Monthly	1 at entry point to distribution system	Unchanged[4]	
Chlorite	Systems that use chlorine dioxide as a disinfectant		**Daily** (at entrance to distribution system); **monthly** (in distribution system)	1 at entry point to distribution system; 3 in distribution system	Unchanged[4]	
Chlorine dioxide	Systems that use chlorine dioxide as a disinfectant		Daily	1 at entry point to distribution system	Unchanged[4]	
Chorine/ Chloramines	All systems		Same location and frequency as Total Coliform Rule (TCR) sampling		Unchanged[4]	
DBP precursors (TOC sample set)[5]	Systems that use conventional filtration		Monthly	1 per source water source	Unchanged[4]	

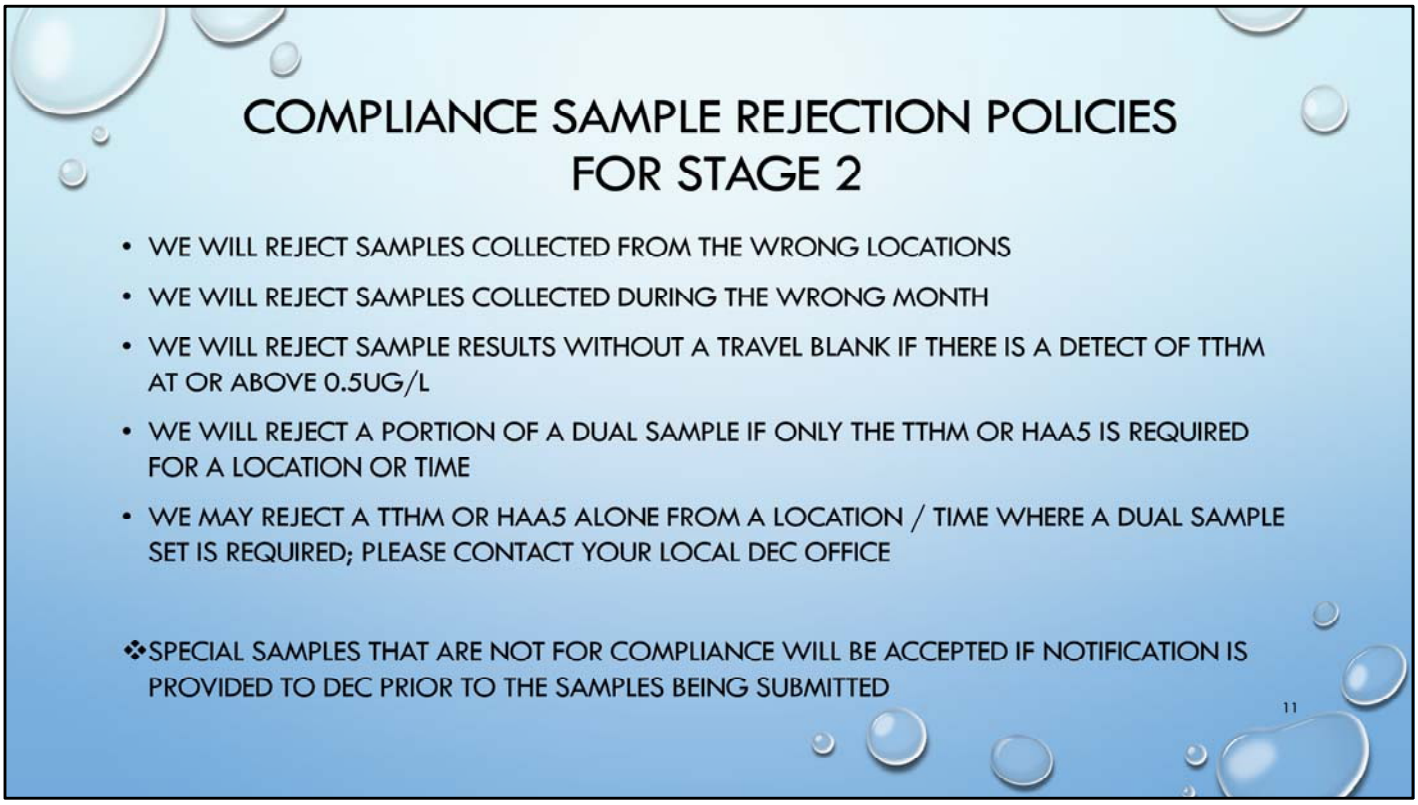
[1]All systems must monitor during the month of highest DBP concentrations. Systems on quarterly monitoring, except Subpart H systems serving 500 - 3,300, must take dual sample sets every 90 days at each monitoring location. Systems on annual monitoring and Subpart H systems serving 500 - 3,300 are required to take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. If monitoring annually, only one location with a dual sample set per monitoring period is needed if the highest TTHM and HAA5 concentrations occur at the same location and in the same month.

This table shows the number of monitoring locations required based on system population and source type. If you look at this table in the regulations, please be sure to look at the fine print on the bottom of the table. The important thing to note is that the actual sample details will be in each system's Compliance Monitoring Plan.



We have talked about all of the information collected for each system to create the CMP. Although it sounds pretty straight forward, this can actually be very complicated based on the water system because the location of the highest TTHM may not be the location of highest HAA5 and the month of highest TTHM may not be the same as the month with the highest levels of HAA5. Also, based on the population and type of source a system uses, a single TTHM or single HAA5 sample may be required for some systems; and dual samples, (both TTHM/HAA5) may be required for others.

So, how does all this affect everyone: water systems, labs and DEC? The monitoring established in the CMP not only needs to guide the water systems in collecting samples at specific locations for the LRAA and during specific times to obtain samples when DBP levels are the highest; this same information has been entered into the DW Program's SDWIS database and will be used to determine the system's compliance. In addition, systems cannot sample outside the required month/s to make up for samples that were missed. Since these are requirements in the Stage 2 Rule and we have little state discretion on this, we will only be accepting routine monitoring samples that are collected from the correct locations and during the correct timeframes, according to each system's CMP. It is ultimately the water system's responsibility to monitor according to their CMP. However, in order to avoid accepting and analyzing samples that DEC will not be able to accept, we recommend that you make all of your staff aware of this so that the lab does not accept compliance samples from the wrong location or month.



DEC will be rejecting any compliance samples collected outside the parameters established in the system's CMP. This includes samples taken from wrong locations. It is very important that the actual sample location be entered by the lab in the Electronic Data Reporting System (EDRS) sample location field, so that DEC staff can tell that the sample was taken from the correct location and does not reject the sample. Please note that this field is 20 characters long, so locations with more than 20 characters should be abbreviated in a way that still denotes the actual sample location. Additional information may be put in the comments field if needed.

Samples collected during the wrong month/s will also be rejected.

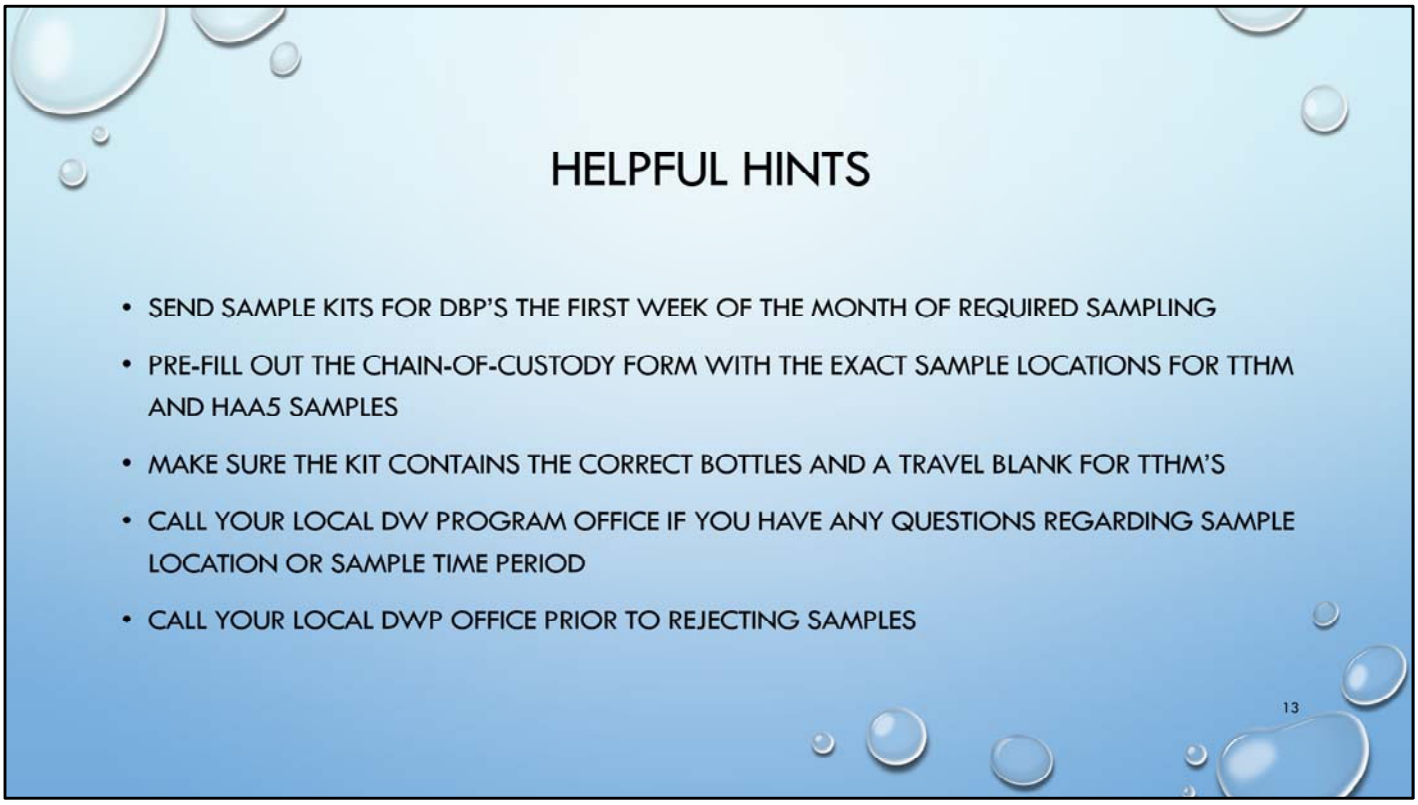
As is already the case, all samples that have a detect of 0.5 ug/L or higher must have a travel blank, or the sample will be rejected. In addition, if only a TTHM or HAA5 is required from a specific site instead of a dual sample set, the portion, TTHM or HAA5, not required from that site will be rejected. Conversely, if a dual sample set is required and only the TTHM or HAA5 are available, please contact your local DEC office; as depending on the circumstances, the sample may be rejected. In these cases, if it is possible for a resample to be obtained, both the TTHM and HAA5 need to be resampled; if a resample is not possible, the TTHM or HAA5 will be accepted. These will be handled on a case-by-case basis, so communication with the DEC office will be beneficial for everyone.

Please note that special samples that are not for routine monitoring compliance will be accepted by DEC; however, it is important that notification be provided to DEC prior to the sample being submitted so that the sample isn't automatically rejected and so a specific sample point can be created in the SDWIS database for the data. This is a consequence of having to have exact sample locations entered into our database for Stage 2 samples.

While we are all getting used to the new requirements, DW Program staff will be available to provide assistance to both water systems and labs. We can provide the monitoring information from a system's CMP or a spreadsheet of the Stage 2 monitoring information for systems that a lab specifically asks for. Please note that we will not be providing a list of all systems and their monitoring requirements to any lab.

Our staff is available to assist labs in answering questions and making decisions on sampling locations, sample time periods, and accepting or rejecting Stage 2 compliance samples. We encourage communication from the labs, to help avoid samples being submitted to us that we will have to reject or from a lab rejecting a sample from a water system that DEC would have accepted.

The annual water system monitoring summary is being updated and will include Stage 2 monitoring requirements by the end of March 2014. As usual, monitoring summaries will be posted on the DW Program's Drinking Water Watch website. Please remember that monitoring summaries are compiled using the data that the DW Program has at the time the monitoring summary is created. **Do not assume that a system is overdue for monitoring without talking to DEC, unless the water system themselves tells you that they are.**



These are some items that we feel may be helpful for labs for Stage 2 monitoring:

Send sample kits for Stage 2 monitoring the first week of the month that sampling is required. Many water system operators take samples as soon as a sample kit arrives; so if the kit arrives before the start of the required month, the samples may be taken in the wrong month and have to be rejected. In addition, if the sample kit arrives at the system towards the end of the required month, there may not be enough time for the system to send in a second sample if a re-sample is needed for any reason.

Since sample locations for Stage 2 monitoring have already been determined and are included in each system's CMP, the exact sample locations can be filled out on the chain-of-custody forms by the lab prior to the sample kit being sent to the water system. This would not only be a good reminder for the water system to sample at the correct location, it would also help eliminate any mistakes being made on the forms that may lead to confusion regarding the sample location and the potential for the sample to be rejected.

By making sure that the sample kit contains the correct bottles and a travel blank for TTHM's, the lab can help the water system sample only what is required and subsequently accepted by DEC. For example, if single TTHM, and not a dual sample set, is required in a certain month; ensure that only the TTHM and travel blank bottles are sent out that month.

If in doubt contact your local DW Program office if you have any questions. The specific monitoring requirements established in this rule are new and very different than we have all be used to. By working together, we will make this transition much easier.

Lastly, as previously noted, call your local DW Program prior to rejecting samples. Taking the little extra time to get a double check will go a long way in helping water systems meet the compliance requirements of the Stage 2 DBPR and that your lab will maximize it's resources on analyses that will be accepted by DEC.

Does anyone have any questions?