Unregulated Contaminant Monitoring Rule (UCMR) Update: Completing UCMR 4 and Considerations for UCMR 5

National Environmental Monitoring Conference

August 5, 2020

Jillian Toothman, EPA

Office of Groundwater and Drinking Water
Standards and Risk Management Division
Technical Support Center
Cincinnati, OH

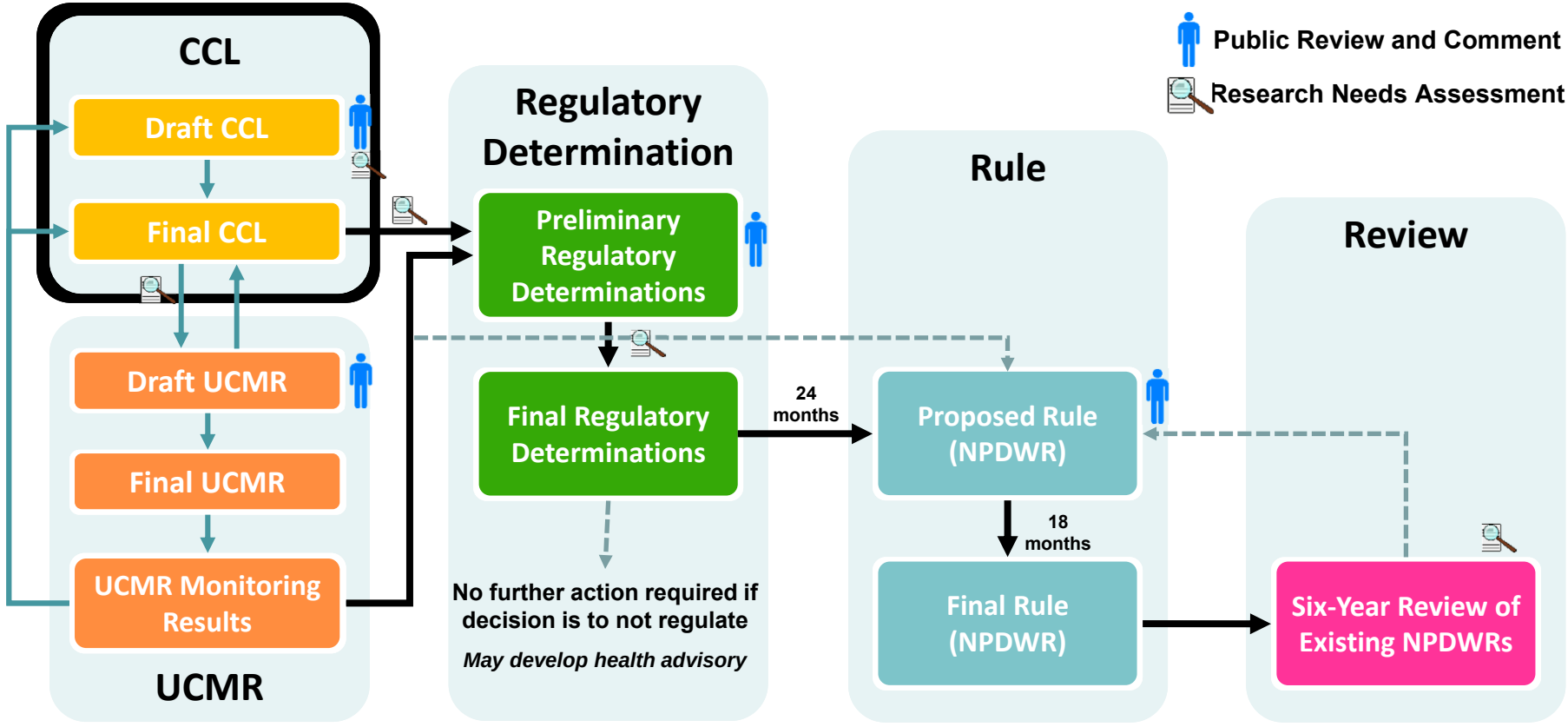
Disclaimer

The information in this presentation has been reviewed and approved for public dissemination in accordance with U.S. Environmental Protection Agency (EPA). The views expressed in this presentation are those of the author(s) and do not necessarily represent the views or policies of the Agency. Any mention of trade names or commercial products does not constitute EPA endorsement or recommendation for use.

Agenda

- Overview of the UCMR Program
- UCMR 4 Requirements and Occurrence Data
- UCMR 5 Development

General Flow of SDWA Regulatory Processes



Increased specificity and confidence in the type of supporting data used (e.g., health, occurrence, treatment) is needed at each stage

UCMR

- SDWA section 1445(a)(2), as amended in 1996, established requirements for the UCMR Program:
  - Issue list of no more than 30 unregulated contaminants, once every 5 years
  - Require PWSs serving population >10,000 people as well as a nationally representative sample of small PWSs serving ≤10,000 people to monitor
  - Store analytical results in the National Contaminant Occurrence Database for Drinking Water (NCOD)
  - EPA funds shipping/analytical costs for small PWSs
- EPA manages program in partnership with States, tribes, and territories (herein after referred to as "States")

America's Water Infrastructure Act of 2018

- SDWA was amended in 2018 by Public Law 115-270
  - AWIA enacted October 23, 2018
- Key changes to UCMR (see SDWA section 1445(j)) include:
  - Require all small PWSs serving between 3,300 and 10,000 to monitor (~5,100 PWSs)
  - Ensure that only a representative sample of PWSs serving fewer than 3,300 people monitor (800 PWSs)
  - Monitoring at all applicable PWSs serving 10,000 or fewer is paid for by EPA
  - Small PWS monitoring program expands from 800 to nearly 6,000 PWSs
- Authorizes (but does not appropriate):
  - Additional $15,000,000 in each fiscal year for which monitoring is required to be carried out
- AWIA provisions apply to UCMR 5 and cycles thereafter, ***subject to the availability of appropriations and sufficient laboratory capacity***

UCMR History

- UCMR 1 (2001-2005, 26 contaminants)
  - Published in Federal Register (FR) on September 17, 1999
- UCMR 2 (2007-2011, 25 contaminants)
  - Published in FR on January 4, 2007
- UCMR 3 (2012-2016, 30 contaminants)
  - Published in FR on April 16, 2012
- UCMR 4 (2017-2021, 30 contaminants)
  - Published in FR on December 20, 2016
  - PWS sampling 2018-2020
- UCMR 5 (2022-2026)
  - Anticipating proposal late 2020 and final rule late 2021
  - PWS sampling 2023-2025

Each new UCMR cycle is established via a revision to the rule for the ongoing/preceding cycle

UCMR 4 (2017-2021)

UCMR 4 Applicability

System Size (# of people served)	10 Cyanotoxins	20 Additional Chemicals*	Total # of Systems per Size Category**
Small systems (25 – 10,000)	800 randomly selected surface water (SW) or ground water under the direct influence (GWUDI) of SW systems	800 randomly selected SW, GWUDI and ground water (GW) systems	1,600
Large systems*** (10,001 and over)	All SW or GWUDI systems (1,987)	All SW, GWUDI and GW systems (4,292)	4,292
TOTAL	2,787	5,092	5,892

*Only systems subject to the Disinfectants and Disinfection Byproduct Rule (D/DBPR) monitor for the haloacetic acids (HAAs) and indicators

**UCMR 4 applies to community water systems (CWSs) and non-transient non-community water systems (NTNCWSs)

***Figures subject to change based on corrections to population served as of 12/31/15

UCMR 4 Contaminants

Cyanotoxins - EPA Method 546 (Adda ELISA)	
"total microcystins"	
Cyanotoxins - EPA Method 544 (LC/MS/MS)	
microcystin-LA	microcystin-RR
microcystin-LF	microcystin-YR
microcystin-LR	nodularin-R
microcystin-LY	
Cyanotoxins - EPA Method 545 (LC/ECI-MS/MS)	
anatoxin-a	cylindrospermopsin
Metals - EPA Method 200.8 (ICP-MS) , SM or ASTM	
germanium	manganese
Semivolatile Organics - EPA Method 530 (GC/MS)	
butylated hydroxyanisole	quinolone
o-toluidine	

Pesticides - EPA Method 525.3 (GC/MS)	
alpha-hexachlorocyclohexane	profenofos
chlorpyrifos	tebuconazole
dimethipin	total permethrin (cis- & trans)
ethoprop	tribufos
oxyfluorfen	
DBPs - EPA Method 552.3 (GC/ECD) or 557 (IC/ECI-MS/MS)	
HAA5 (regulated)	HAA9
HAA6Br	
Alcohols - EPA Method 541 (GC/MS)	
1-butanol	2-propen-1-ol
2-methoxyethanol	

Timeline of UCMR 4 Activities

2017	2018	2019	2020	2021
Pre-sampling Activity • Continuation of Lab Approval Program • PWS SDWARS registration • Partnership Agreements (PA) and State Monitoring Plans (SMP) • Customer Retrieval Key (CRK) letters • Inventory (LSIs, SSIs, MRSs) • Design kits, Sample Tracking Forms (STFs) and sampling instructions (small) • Ground Water Rep. Monitoring Plan (GWRMP) submittals • Outreach/trainings	**Assessment Monitoring (AM)** ⟷ **EPA Implementation Activities** • Provide compliance assistance • Implement small system monitoring • Post data quarterly to NCOD **PWS Sample Collection; Laboratory Analysis; Reporting** • All large systems serving > 10,000 people; • 800 SW and GWUDI small systems serving ≤ 10,000 people for cyanotoxins; • 800 small systems serving ≤ 10,000 people for the 20 additional contaminants.			**Post-sampling Activity** **PWSs, Laboratories** • Complete resampling, as needed • Conclude data reporting **EPA** • Finalize NCOD • Continued enforcement

SDWARS4

- Safe Drinking Water Accession and Review System (SDWARS) used by PWSs and UCMR 4 approved laboratories to report results
- Internet-based electronic reporting system that utilizes a secure access portal, the CDX, to gain access to SDWARS4
  - https://cdx.epa.gov/
  - https://www.epa.gov/dwucmr/reporting-requirements-fourth-unregulated-contaminant-monitoring-rule-ucmr-4
- "SDWARS4 Instructions for Public Water Systems and Laboratories" (June 2018)
  - https://www.epa.gov/sites/production/files/2017-07/documents/sdwars4-instructions.pdf
- November 2017 SDWARS training webinar (Slides and YouTube videos)
  - https://www.epa.gov/dwucmr/unregulated-contaminant-monitoring-rule-ucmr-meetings-and-materials

SDWARS4 Laboratories Workflow

(Appendix has workflow for large and small PWSs)

1. **Log in to CDX and select SDWARS4**
2. **Add or update client list**
   - Add PWSs to your client list to be able to review their inventory/schedule and upload data
3. **Review inventory/schedule for selected clients**
4. **Upload file**
   - Upload sample and QC data either via text file or XML file format
   - Upload tracker provides real time feedback on the upload status of the file and the individual samples within the file
   - All QC criteria as required in the lab approval manual must be met for samples to pass QC in SDWARS
   - The flat file and XML file specifications documents list which QC samples must be reported with field samples in each batch
   - Batches reported without all QC samples will not pass QC in SDWARS until the missing samples have been successfully loaded
   - For issues with uploading data please contact CI_TSC-UCMR@epa.gov; provide the file and screen shots

SDWARS4 Laboratories Workflow

5. **Edit data**
   - Edit sample collection information or field sample results and approve samples waiting in lab hold only
   - Data cannot be approved until it has passed all QC criteria in SDWARS
   - Multiple samples can be processed through QC
   - Samples that cannot otherwise be approved can be removed
6. **Enter TOC/Br (optional)**
   - Option to manually enter TOC/Br data (target audience: utility labs only authorized for TOC/Br methods)
7. **Review data**
   - Search for, review and approve any sample that your lab has submitted
8. **How to change notification preferences**
   - Receive notification when a PWS returns samples to your laboratory
9. **Nominate user for your Laboratory (optional)**
   - Read the terms and conditions and provide CRK to nominee

Access to Sample Results

- Large systems
  - Laboratory posts results to SDWARS within 120 days of sample collection
  - PWS can review and submit to State and EPA within 60 days of laboratory's post (default approval after 60 days)
  - CDX/SDWARS4 account holders and contacts will get a notification when analytical results are posted
- Small systems
  - EPA contracted laboratory posts results to SDWARS within 60 days of sample collection
  - EPA will review, ~~pay~~ and approve the data submitted
  - Viewable to PWS, State and EPA in SDWARS after EPA approval
  - CDX/SDWARS4 account holders and contacts will get a notification when analytical results are posted
- Results published publicly in the National Contaminant Occurrence Database (NCOD) ~quarterly https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule

Data Summary (July 2020)

- ~520,000 sample results (at EP) from ~4,800 PWSs for metals, semivolatile organics, pesticides, & alcohols
- ~74,000 sample results (at EP, SW only, 8 sample events) from ~2,600 PWSs for cyanotoxins
  - Method 544 for the 6 individual microcystins is only analyzed if Method 546 has a detection
- ~150,000 sample results (at Stage 2 D/DBPR locations) from ~4,600 PWSs for HAAs
- These results represent approximately two year's worth of monitoring (i.e., two of the three years)

UCMR 5 (2022-2026)

Draft Timeline of UCMR 5 Activities

2018	2019	2020	2021
← **UCMR 5 Development** →			**Publish Final Rule**
Method Development Stakeholder Meeting **(June 6, 2018)** https://www.epa.gov/dwanalyticalmethods/learn-about-drinking-water-analytical-methods	Pre-Proposal Stakeholder Meeting **(July 16, 2019)** https://www.epa.gov/dwucmr/unregulated-contaminant-monitoring-rule-ucmr-meetings-and-materials	Publish Proposal, 60 day Public Comment Period, Stakeholder Meeting **(Late 2020)**	Publish UCMR 5 Final Rule **(Late 2021)**
		Post Proposal: Initiate Implementation → • **Lab Approval** • PWS SDWARS registration/notification/Inventory • Partnership Agreements (PAs), State Monitoring Plans (SMPs), Small System Inventory (SSI), Large System Inventory (LSI) • Ground Water Representative Monitoring Plan (GWRMP) submittal • Outreach/trainings	

Draft Timeline of UCMR 5 Activities

2022	2023	2024	2025	2026
Pre-sampling Activity • **Continuation of Lab Approval** • **Small Systems Contract RFP** • PWS SDWARS registration/notification/Inventory • PAs, SMPs, SSIs, LSIs • GWRMP submittal • Outreach/trainings	← **Sampling Period** →			**Post-sampling Activity** **PWSs, Laboratories** • Complete resampling, as needed • Conclude data reporting **EPA** • Finalize NCOD • Continued enforcement, as needed
	EPA Implementation Activities • Provide compliance assistance • Implement small system monitoring • Post data quarterly to NCOD **PWS Sample Collection; Laboratory Analysis; Reporting** • All PWSs serving 3,300 or more people • Representative sample of small PWSs serving fewer than 3,300 people			

CCL and Related Candidates for UCMR 5

Method 200.7
Lithium

Method 525.3	
Chlorothalonil	Norflurazon (527)
Hexazinone (527)	Phorate
Metribuzin (551.1)	Prometryn (527)
Napropamide	Trifluralin (551.1)

Method 527
Bifenthrin
Esfenvalerate
Malathion

Method 531.2
Carbaryl
Methomyl

Method 538
Acephate
Dicrotophos

Light blue highlight = CCL 4 analyte with a completed method
Purple highlight = CCL 4 analyte with a method in development

Method 542	
Erythromycin	Gemfibrozil
Carbamazepine	Naproxen
Diazepam	Phenytoin
Diclofenac (sodium salt)	Sulfamethoxazole
Enalapril (maleate salt)	Triclosan
Fluoxetine (HCl)	Trimethoprim

Method 551.1
Dichloroacetonitrile (DCAN)
Dibromoacetonitrile (DBAN)
Trichloroacetonitrile (TCAN)
Bromochloroacetonitrile (BCAN)

Method 556.1
Formaldehyde
Acetaldehyde

Method 558 (In Development)
N-Methyl-2-pyrrolidone
Urethane

Method 559 (In Development)
Nonylphenol
Octylphenol

Method In Development (to be determined)
Legionella pneumophila
Mycobacterium avium

CCL and Related Candidates for UCMR 5 (cont'd)

Draft Method 533	
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	4,8-dioxa-3H-perfluorononanoic acid (ADONA) (537.1)
1H, 1H, 2H, 2H-perfluorohexane sulfonic acid (4:2 FTS)	Hexafluoropropylene oxide dimer acid (HFPO-DA) (537.1)
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	Perfluorobutanesulfonic acid (PFBS) (537.1)
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	Perfluorodecanoic acid (PFDA) (537.1)
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	Perfluorododecanoic acid (PFDoA) (537.1)
Perfluoro-3-methoxypropanoic acid (PFMPA)	Perfluoroheptanoic acid (PFHpA) (537.1)
Perfluoro-4-methoxybutanoic acid (PFMBA)	Perfluorohexanoic acid (PFHxA) (537.1)
Perfluorobutanoic acid (PFBA)	Perfluorohexanesulfonic acid (PFHxS) (537.1)
Perfluoroheptanesulfonic acid (PFHpS)	Perfluorononanoic acid (PFNA) (537.1)
Perfluoropentanesulfonic acid (PFPeS)	Perfluorooctanesulfonic acid (PFOS) (537.1)
Perfluoropentanoic acid (PFPeA)	Perfluorooctanoic acid (PFOA) (537.1)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS) (537.1)	Perfluoroundecanoic acid (PFUnA) (537.1)
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS) (537.1)	

PFAS Analytes Unique to Method 537.1	
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	Perfluorotetradecanoic acid (PFTA)
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	Perfluorotridecanoic acid (PFTrDA)

Light blue highlight = CCL 4 analyte with a completed method

Anticipated Process for Laboratory Approval Program

- Expected to be similar to the process used for all previous UCMR cycles
- Only EPA approved laboratories can analyze UCMR samples collected at PWSs
  - Approval is by method and by individual laboratory locations
  - A laboratory may apply for approval for any method(s)
- Laboratories need to meet:
  - UCMR 5 approval program criteria
  - Required equipment criteria
  - Laboratory performance criteria
  - Data reporting in text file format to SDWARS
- Labs would still need to be approved to support UCMR 5 even if already certified by state, primacy entity or accredited through the National Environmental Laboratory Accreditation Program (NELAP) for a particular method

Laboratory Approval General Procedure

- Step 1: Request to Participate via UCMR Lab Approval Coordinator
- Step 2: Registration
- Step 3: Application Package
- Step 4: EPA Review of Application Package
- Step 5: Proficiency Testing (PT)
- Step 6: EPA approval

Laboratory Approval Manual

- Procedures for obtaining UCMR approval and procedures for revocation of approval
- QA requirements
- QC requirements
  - Minimum reporting level (MRL) verification
  - Initial demonstration of capability
  - Initial calibration
  - Continuing calibration checks
  - Surrogate and internal standard criteria
  - Reagent blanks and fortified blanks
  - QC samples
  - Spiked field samples
  - Field reagent blank criteria (if required by the method)
- Sample handling requirements

Typical Criteria for Maintaining Approval

- Adhere to QA/QC measures in the methods, rule language, and the Laboratory Approval Manual
- Post occurrence data and required QC data via SDWARS within prescribed timeframe
- Respond to inquires or requests from the Laboratory Approval Coordinator
- Participate and pass on-site and/or paper audits

Future Opportunities

AWIA BOTTOM LINE relative to UCMR 5 and beyond:

- More than 7 times the number of small PWSs than in prior UCMR cycles; analyses by EPA's contract labs (~5800 small PWS vs 800 small PWSs)
- EPA establishes multiple award laboratory contracts for this support (RFP early 2022)
- Labs interested in competing for a contract need to be approved in all methods
- EPA will need at least 6, possibly 10 contract labs for UCMR 5
- **Interested?**
  - Register your lab immediately after we propose UCMR 5 (anticipated ~~fall~~ late 2020),
  - Submit complete applications as soon as you can,
  - Get into the first performance testing study offered by EPA,
  - Earn status early as an "EPA approved" UCMR 5 lab.

DISCLAIMER NOTE: AWIA authorizes (but does not *appropriate*) funds

Questions

- For general questions and schedule/inventory changes:
  - UCMR Message Center: (800) 949-1581 or UCMR4@glec.com
  - UCMR_Sampling_Coordinator@epa.gov
- SDWARS4/CDX accounts or technical issues:
  - CDX Help Desk: (888) 890-1995 or helpdesk@epacdx.net
- For assistance with uploading data to SDWARS:
  - CI_TSC-UCMR@epa.gov
- For Lab Approval Program, method and QC questions:
  - UCMR_Lab_Approval@epa.gov

Thank You

Appendix A: SDWARS4 Large Systems Workflow

- **Step 1: Log in to CDX and select SDWARS4**
  - This will automatically open your notification letter
  - No account??? Contact CDX Help Desk (888) 890-1995 or helpdesk@epacdx.net
- **Step 2: Read and accept the Notification Letter**
  - The letter can be printed and viewed at any time
- **Step 3: Add official and technical contacts**
  - Check boxes to receive SDWARS4 notifications for the entered contacts
  - The CDX/SDWARS4 account holder will receive the notifications
- **Step 4: Review Inventory**
  - Contact UCMR4@glec.com or UCMR_Sampling_Coordinator@epa.gov to add, edit, remove inventory
  - SDWARS4 notices regarding missing inventory
- **Step 5: Review sampling schedules**
  - Contact UCMR_Sampling_Coordinator@epa.gov for schedule changes, provide PWSID, facility ID etc. and reason for change
  - Receive SDWARS4 sampling reminders the month before

Appendix A: SDWARS4 Large Systems Workflow

- **Step 6: Enter data elements/comments**
  - Select "Schedule/Data Elements" from the navigation panel and select monitoring type
  - Input responses to the required data elements at time of collection for each sample point/sample event; you can pre-populate with previous responses for that location
  - Responses to data elements are required for **AM 2 (HAAs)** and **AM 3 (cyanotoxins)** schedules
  - Receive SDWARS4 reminders if missing data elements (has nothing to do with your analytical results)
  - Input comments to denote valid reasons for not collecting a sample (e.g., inactive/closed wells, matrix effects, unable to resample cyanotoxins prior to next sampling event). **A valid comment will adjust expectations and bring you into compliance**

Appendix A: SDWARS4 Large Systems Workflow

- **Step 7: Review sample result data**
  - Receive a SDWARS4 notification when sample results are posted by laboratory
  - Log into your CDX/SDWARS account and click “Review Data” on the navigation panel
  - Search by Sample ID or a wildcard (%) to search for all Sample IDs at your PWS
  - Review and accept sample results within 60 days
  - Click on the analyte for the QC associated with the field sample results; hover text provides definitions where applicable
- **Step 8: Add zip codes**
  - Type zip codes or copy and paste
- **Step 9: Nominate a user for your PWS (optional)**
  - Read the terms and conditions and provide customer retrieval key (CRK) to nominee

Appendix B: SDWARS4 Small System Workflow

- **Step 1: Log in to CDX and select SDWARS4**
  - This will automatically open your notification letter
  - No account??? Contact CDX Help Desk (888) 890-1995 or helpdesk@epacdx.net
- **Step 2: Read and accept the Notification Letter**
  - The letter can be printed and viewed at any time
- **Step 3: Contact information**
  - EPA uploads the contact information from the Monitoring Review Sheet (MRS) (sent to you by EPA's contractor Great Lakes Environmental Center Inc. (GLEC)) or provided by your State
- **Step 4: Inventory**
  - EPA uploads inventory information from the MRS (sent to you by GLEC) or provided by your State
- **Step 5: Review sampling schedules**
  - Receive a SDWARS4 sampling reminder
  - Contact GLEC at UCMR4@glec.com if you have sampling schedule questions/issues

Appendix B: SDWARS4 Small System Workflow

- **Step 6: Data elements/comments**
  - Fill out your Sample Tracking Form (STF) in your sampling kit(s) sent to you by GLEC; EPA uploads your data element responses to SDWARS4
- **Step 7: View sample result data**
  - Receive a SDWARS4 notification when sample results are posted
  - Log into your CDX/SDWARS account and click “Review Data” on the navigation panel
  - Search by Sample ID or a wildcard (%) to search for all Sample IDs at your PWS
  - Click on the analyte for the QC associated with the field sample results; hover text provides definitions where applicable
- **Step 8: Zip codes**
  - EPA uploads the contact information from the Monitoring Review Sheet (MRS) (sent to you by GLEC) or provided by your State
- **Step 9: Nominate a user for your PWS (optional)**
  - Read the terms and conditions and provide CRK to nominee