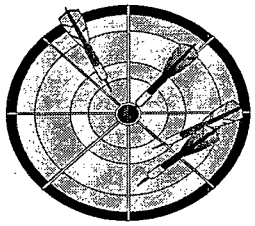

"Right on Target."
-D. Pace

ICR Update
Jim Walasek, Editor
Technical Support Center
April 1999

Utilities Submit Last of Data!

ICR Update Issue Number 17 - This information sheet, the **ICR Update**, is the seventeenth one to be issued by the Technical Support Center (TSC) of the Office of Ground Water and Drinking Water (OGWDW). Future issues will be distributed as needed to maintain information flow related to the ICR.

Editor's Note: Well, we're right on target with the utilities submitting the last month of data from the 18-month ICR monitoring effort by the end of this month. All that remains is the validation and analysis of that data, no small task!

Remember, **all** ICR utility data diskettes for the full 18-months of monitoring and the **Final Design** data transfer package (See p. 2-11 of the ICR Sampling Manual) are **due to EPA** by the **end of April 1999**. I have been calling ICR utilities lately (actually it's an ongoing effort) **encouraging them** (I'm being kind) to submit their diskettes for the next group of diskettes we will be uploading. As you know, if you actually read this rag, we are now **uploading three months of data at a time** for validation. The last set of reports that you received were for October, November and December 1997, plus a second set of validation reports for September 1997 (for your second review.) You were only given one opportunity to review the three months of data and resubmit diskettes. This will be the rule from now on, only **one review cycle** per set of validation reports. (*Actually, this was the plan all along, but a second review cycle was added in the beginning to help sort out problems.*) The next set of diskettes to be uploaded will be for the January, February, and March 1998 sampling periods. Therefore, it is very important that all utilities send in their diskettes now to **stay ahead** of the upload process.

Finally, I just wanted to remind the utilities and labs out there to update their ICR contact and address (and phone/fax) information when items change. For instance, with the glut of cell phones and fax machines there have been a lot of **new area codes** created. We here at EPA want to keep our records up to date, so if you have a change drop us a note on your letterhead.

Besides, who knows, it may speed up the arrival of the next ICR Update. This brings up another interesting point. Utility validation reports are sent to the name and address listed on the data transfer diskette. So, even if you send in your changes, we can't guarantee that the validation reports will be sent to the new contact and/or address unless the correct information was on the "last" diskette that was loaded into the system. (Note: This is not a problem for labs because TSC controls the addresses that are used by ICR-FED.)

SNAFU - The last issue of the ICR Update (February 1999) should have been sent at the end of January so you would actually have it in February, but because of a mixup (read "lost") at the mailing contractor's shop it wasn't mailed until the first of March. Sorry, I promise it won't happen again.

"Final Design" Deadline - Not to be confused with **"Final Jeopardy,"** but there could be similar consequences. The ICR Sampling Manual (EPA 814-B-96-001) discusses, on page 2-11, the **Final Design** data transfer package that must be submitted to EPA along with the last monthly reporting package. Both of these packages are due to EPA by the end of April 1999. The Final Design data, which are similar to the Initial Sampling Plan data, do not include sampling location and analytical parameters (because you will no longer be monitoring), but should accurately reflect the design of each PWS at the end of the 18-month ICR sampling period. Chapter 8 (Final Design) of the ICR Water Utility Database System Users' Guide (EPA-B-96-004) provides directions on **how to prepare and submit** the Final Design transfer package to EPA. One change that should be noted (see page 138) is the address to which you will be sending your diskette mailer. It is the same address that you have been using for the last few months of monthly monitoring submissions:

USEPA (ICR4600)
ICR Data Center - Attn: Ed Cottrill
Room 1115B East Tower
401 M Street, S.W.
Washington, DC 20460

Should you have any questions regarding the procedure for creating the Final Design transfer diskette you may contact the **ICR DMS Hotline** at **(703) 292-6170** (new number).

Y2K - Lately, several utilities have called to ask if the ICR Utility Database software is **Y2K compliant**. The answer is not a clear yes or no. The product (Microsoft Access Version 2.0) used to develop the software **is not** Y2K compliant. The software itself is also **not technically** Y2K compliant. However, EPA granted an **exemption** from the Y2K requirements, since the software is **not expected** to be used in the year 2000. Even if you do use the software in 2000 it will not affect your computer, but you should not submit data to EPA generated on your computer (using the ICR Water Utility or Laboratory QC Database Systems) after the year 1999. Therefore, it is doubly important that you submit your diskettes (and resubmission diskettes) to EPA on time.

Request for Backup Diskettes - A letter was recently sent to the ICR utilities requesting that they **create a backup diskette** of their ICR Utility Database System and send it to the ICR Data Center. This is so EPA can capture all the comments in the Analyte comment field. Currently, when utilities enter a QA comment in a "Comment" field at the **Analyte level** without entering a QA comment in the comment field at the **sample level**, the utility system does not have the capability to retrieve the comments at the Analyte level. To correct this situation a change to the **ICR Water Utility Database System** would be required. That would mean the creation of a new version (Version 1.2) of the software that would then have to be duplicated and sent to each ICR utility for installation. Then the utilities would have to generate a new transfer diskette for each of the 18 reporting periods. However, a simpler solution is for each utility to send a backup diskette of their ICR Utility Database to the EPA **ICR Data Center**. EPA will then write an algorithm (for ICR-FED) to obtain the QA comment field entries from the backup diskettes.

The backup diskette(s) should be created by utilities and sent to EPA **after** they have made any necessary corrections to the first six months of data in their system. Therefore, they should send in the backup diskette(s) at the same time they send in resubmission diskettes (if required) for sampling periods 03, 04, 05, and 06 (September, October, November, and December 1997). Refer to the letter for details, including special labeling instructions for the disks. (*The current deadline for submitting the resubmission diskettes is April 20, 1999.*)

Analysis of Membrane Treatment Study Results - The last two issues of ICR Update have included articles describing the analysis of data from the ICR treatment studies. The first article provided an overview of the data management plan, while the second provided an overview of the GAC data analysis plan. The **final installment** in this series will describe the analysis plan for the results from the membrane (nanofiltration) studies.

In general, two broad categories of information will be extracted during analysis of the membrane study results: productivity data and water quality data. **Productivity data** will be used to assess the ability of a membrane to produce water at an acceptable rate and without excessive cleaning requirements. **Feed and permeate water quality** will be used to assess the ability of a membrane process to remove disinfection byproduct (DBP) precursors.

Analysis of **productivity data** will focus on information necessary to estimate the cost and technical feasibility of implementing a nanofiltration process. Specifically, the following information will be extracted during analysis:

- Sustained rate of water production – impacts the size of a membrane facility.
- Cleaning interval – impacts the frequency at which the membrane system must be taken off-line and cleaned.
- Pressure requirements – impacts the energy costs associated with operating a nanofiltration system.

- Pretreatment process train – the processes upstream of the nanofiltration process will impact the rate of water production, cleaning interval and pressure requirements. Typically, advanced pretreatment processes will improve the overall productivity of the nanofiltration system; however, these advanced processes are generally more expensive.

Analysis of **water quality data** will focus on the removal of disinfection byproduct precursors. Specifically, removal of TOC, UV-254, bromide, and DBPs formed under simulated distribution system conditions will be assessed by comparing the feed and permeate concentrations of these parameters. Removal of general water quality parameters, such as hardness and total dissolved solids, will also be evaluated.

With respect to water quality, nanofiltration can be treated as a steady-state process over periods in which the feed water quality is relatively stable. However, the permeate and concentrate water quality from a nanofiltration process are impacted by changes in operating conditions such as recovery, flux, and concentrate recycle ratio. Furthermore, the operating conditions used during the bench- and pilot-scale tests may not reflect full-scale operating conditions. To address these concerns, the results from the treatment studies will be scaled-up.

A mathematical representation of a full-scale array will be used to develop estimates of full-scale permeate and concentrate water quality. This model will normalize the water quality data from different studies with respect to operating conditions, and will increase the relevancy of the data with respect to full-scale performance.

The analysis will also **evaluate the feasibility of blending** the permeate water with a portion of by-passed feed water. Blending can be used in a nanofiltration process since the permeate water quality typically exceeds the treatment objective. The benefits of blending include:

- Reduced size of the nanofiltration process train.
- Lower energy and operating costs.
- Smaller concentrate stream requiring treatment and/or disposal.
- Increased stability of the permeate resulting in lower post-treatment chemical addition.

Also, the feed/permeate blending analysis will allow for more equitable comparisons between the costs of GAC and nanofiltration treatment as DBP control strategies.

As with the GAC data, the results from the analysis of the membrane study data will be transferred to a **relational** database. The querying capability of this database will allow the user to aggregate different information from these studies in order to conduct a wide range of analyses.

This will be a very effective tool for evaluating the ability of nanofiltration to meet different regulatory targets for a variety of source waters. However, the accuracy of this tool is **only as good as the data generated** during the studies, and we are relying on the hard work and dedication of everyone involved in these studies to provide the highest quality data.

Help is on the Way! - With April here at last, the **testing phase** of the treatment study requirement is drawing to a close, and utilities, consultants and laboratories are working to produce the ***Final Reports*** for these studies. Much of the reporting format has been standardized through the use of spreadsheets, i.e., the *Data Collection Spreadsheets* and the *Summary Report Spreadsheets*. However, there are still many questions regarding the compilation of these complex data sets.

To provide some assistance during the preparation of these *Final Reports*, we have developed a ***Help Packet***. This packet will be mailed to all utilities conducting treatment studies in late April, and it will be posted on the OGWDW homepage. This *Help Packet* will include:

- A **concise summary** of the reporting requirements
- A list of commonly asked **questions and answers**
- **Tips and guidelines** for entering data into the *Data Collection Spreadsheets*
- **Example checklists** that will be used during the review of these *Final Reports*
- A **list of resources** available to provide additional technical assistance.

Also keep in mind that you can **still** submit your results to EPA for **preliminary** review. This is one way to ensure that your *Final Report* will make it through the review process with little or no comment, and this will **save everyone time and effort**.

Supplemental Surveys Underway - Finally, the long awaited **ICR Supplemental Surveys for Large and Medium Systems** began the first week of March 1999! The surveys are going quite well after a couple initial difficulties with sampling schedules. These voluntary surveys for large *(serving ≥100K people)* and medium *(serving 10K to <100K people)* surface water systems will provide valuable information to use with ICR data in developing the **Long Term 2 Surface Water Treatment Rule** (LT2SWTR). Eighty-seven plants are participating in the Large and Medium Surveys which will run from March 1999 through February 2000. Treatment plants are collecting **biweekly samples** for *Cryptosporidium* (using Method 1622), total coliform, *E. coli*, and basic water quality parameters. Plants are also collecting **monthly samples** for disinfection byproduct precursors (TOC, ammonia, bromide, and UV254). Once the combined kit (both *Cryptosporidium* and *Giardia*) for **Method 1622** is fully validated, we hope to add analysis for *Giardia* during the later months of the survey.

One potentially significant issue, though, has emerged this month regarding analysis of bacteriological samples. Participating utilities had agreed to **enumerate total coliform and *E. coli*** as part of their responsibilities as participants in the surveys. Since the start, a few utilities have indicated that they cannot conduct the enumeration techniques. We consider enumerated coliform data to be essential for future survey data analysis (i.e., protozoan indicator analysis), as well as very valuable data for individual utilities to have for their systems. Therefore, we ask **all** utilities to make **every** effort to conduct the enumerative bacteriological analyses as per the survey design.

And **we haven't forgotten** about systems serving less than 10,000 people... the **Small System Survey** is scheduled to begin by May 1999! Letters confirming the participation of 40 plants have been sent out and we are scheduled to **begin sampling on April 19, 1999**. The Small System Survey design is the same as that for Medium Systems with the exception of *Cryptosporidium* analysis (the Small System Survey will sample only for coliforms, water quality, and disinfection byproduct precursors). EPA hopes to be able to identify **indicator relationships** among source water *Cryptosporidium* concentrations, water quality, bacteria, and byproduct precursors using the **combined data** from all three supplemental surveys.

For further information regarding these surveys, please contact Heather Shank-Givens at 202-260-0063, GIVENS.HEATHER@epamail.epa.gov, or Crystal Rodgers at 202-260-0676, rodgers.crystal@epamail.epa.gov.

Method 1622 - The **final procedure for Method 1622** (January 1999 version) is available. The method is currently being used to support the supplemental surveys. **Round robin validation** for Method 1623 (derivation of Method 1622 which tests for *Cryptosporidium* and *Giardia* using the Dynal prototype combined IMS kits) is well underway. Most of the data for this validation process has been received and is undergoing review and analysis. The anticipated completion date for the round robin validation for the combined *Cryptosporidium* and *Giardia* IMS kit is April 30, 1999.

For further information please contact Crystal Rodgers at 202-260-0676 or at rodgers.crystal@epamail.epa.gov.

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