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WQMREVIEW
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1-OVERVIEW
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Wqmreview is the water-quality monitor portion of the larger auto_review program that automates the production of record packets and assists with record checking, reviewing, and electronic archival for multiple record types. Wqmreview is designed to work for standard continuous water-temperature, specific conductance, dissolved oxygen, pH, and turbidity stations. Wqmreview requires stations to have a data-descriptor (DD) with a recognized parameter code. Wqmreview does not currently support input/output type DD's with ratings or other water-quality parameters at this point. Wqmreview also does not currently support non-USGS/non-database 01 stations, although it's hoped to add support for those at some point along with the ability to process input/output type DD's (salinity, some analog WT sensors, etc...), other common parameters, and even "generic" parameters for other record types where similar output would be useful.

The program produces a number of plots and tables that have traditionally been included in records packets as well as some based on other programs and scripts such as qw_uv and monplot, written by the author prior to this release. Program can currently only be run interactively with output sent to the screen as tkg2 plots/text tables, sent straight to printers, or stored as files in a central output/archival area located at /SWR on the NWIS machine where installed (in PDF format - output location is optional but is tied to the area specified for swreview - see the readme.swreview.txt file for more information on settings). The output area can then be set up to display within the Windows environment of users' PC's via SAMBA and/or set up to display on the web via a local webserver with links automatically added to station's SIMS/RMS pages or viewed via local website (see the New England website at <http://me.water.usgs.gov/usgs/AUTOSWR/> or WI website at <http://privusgs1.er.usgs.gov/pls/apex/f?p=125:1:3910960099889031>). Output is separated into directories as /SWR/stationID/QWMon/Parameter/WY, or optionally /SWR/station_list_name/stationID/QWMON/Parameter/WY, where stationID is the valid numerical ID for the station, WY is the water year for that set of output, Parameter is a short-hand abbreviation of the parameter name (SC, WT, DO, pH, TBY) and station_list_name is the name of a file of station IDs maintained within swreview that usually corresponds to a field office station list, but could also be a WSC station list if multiple WSCs share a server (or it could even be a list of stations individual personnel are responsible for or any other type of desired station division). Note that SIMS/RMS Auto_Review links require no station_list's be used - an option can be set to maintain 2 output areas, one for SIMS/RMS display with no station_list divisions and another for local filesystem access with station_list divisions if desired. Contact gs-w-OSW_scripts for information on that option.

The program currently cannot be run off of the command line and will not update output automatically as the swreview script can. This enhancement will be considered in the future depending on future time-series software developments upcoming at the time of initial development.

Beyond the obvious time-savings of having one program produce the bulk of the materials in a record packet with little user input required, wqmreview also provides an electronic records packet that should help facilitate the checking and reviewing of records between field offices within a WSC, between WSCs, and even with the discipline offices. Once the output area is mapped to a user's PC, it also becomes quite easy to add photos, scanned or electronic inspection notes, station analyses, station descriptions, GRSAT xml files, etc... to the area to create a complete electronic record packet. This would allow the bulk of WSC or discipline-office routine reviews to be carried out remotely, saving the hassle and expense of much of the on-site visit. On-site visits could be performed simply to review equipment and facilities. The packets also provide an easily accessible on-site archive of the records that can either be kept on-hand or placed on storage-media for retrieval. The feasibility of producing PDF 1-a electronic archivable files is also being researched. These files could be electronically archived at the national archives although the usefulness of this is questionable given the fact the NWIS database has been designated a NARA approved archive itself.

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END OVERVIEW
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2-DIRECTORY STRUCTURE
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The Wqmreview portion of the Auto_Review package consists of the following main directories at /usr/opt/Auto_Review:

- /Logs - Currently only contains basic usage information for wqmreview. Could be used more extensively in possible future updates.
- /Programs - Contains programs/scripts necessary for the base functions of wqmreview.

/Settings - Contains station-specific user-configurable settings file. Most global auto_review settings are contained in the Swreview/Settings directory.
/Templates - Contains the tkg2 templates necessary for wqmreview plotting.

Contents of these directories will be discussed in more detail in their respective sections below.

OUTPUT DIRECTORY

Default file output is produced in the /SWR/ directory (or the directory set by the "outdirectory" setting in the /usr/opt/Auto_Review/Swreview/Settings/swr_settings file).

Sub-directories are created under this main directory for field office/WSC (optionally), station ID, QWmon (to differentiate from swreview output...), parameter short-name, and water year or specific time period (depending on retrieval period entered).

i.e. /SWR/Pueblo/07109500/QWMON/SC/2007/ would be the output directory for a 2007 water year retrieval for a specific conductance (SC) DD at station 07109500 (if 07109500 was included in the list of stations contained in the /usr/opt/Auto_Review/Swreview/Controlfiles/Fieldoffice/Pueblo file).
See the /Fieldoffices directory section in the readme.swreview.txt file for more information on field office/WSC station division lists and output directory structure.

Non-water year retrievals will be placed in a begperiod_to_endperiod directory as opposed to a water year directory. This allows users to produce output based on water years or based on worked record periods that will correspond to RMS and NWIS record periods. This is slightly different functionality from swreview as it was felt getting a "bigger picture" of recent data wasn't as critical for monitor records as it is for stage-discharge records, so the allowance was made to divide things up either way in wqmreview. It should be noted that any batch/automated retrievals developed in the future will still likely be tied to water year retrievals due to complications of using "any" period...

END DIRECTORY STRUCTURE

----- 3-/Settings -----

The swreview Settings directory contains a Stationspecific directory which contains all of the saved individualized station-specific settings for individual sites. Default settings are set at the top of the /usr/opt/Auto_Review/Wqmreview/Programs/wqmreview script.

END SETTINGS

----- 4-/Programs -----

The scripts below perform the base functions of wqmreview. Without these, the program wouldn't function. Other necessary scripts including ascii2pdf and fastgaprdb.pl are included in the /Swreview/Programs/ area and are covered in the readme.swreview.txt file:

*wqmreview

This is the base wqmreview script that produces all of the station output.

Usage: wqmreview

All necessary information is prompted for within the script.

All other program options are set within the station-specific config files that can be updated to the settings chosen from the wqmreview main menu.

Upon initially running a station, the script will default to settings set at the top of the wqmreview script and primary DD's for recognized parameter codes will be selected. User can add or remove DD's and change settings as desired and then save them as the defaults for that station. Those will be the defaults seen for that station for all future users until later changes are saved.

Script retrieval period will always default to a water year period corresponding to the current calendar year (if the current date is in year 2011, the 2011 water year will be the default retrieval period). Dates can be changed from the main menu but can not be saved.

Users should be able to cross water year boundaries with retrievals, but only output for 2 different water years can be produced at once and that option is not as well tested as water year retrievals.

Output overview:

1. Unit value plots:

Monthly or entire period plots of unit values are generated for every period with data during the analysis. Each plot will contain two graphs, an upper graph showing the selected DD's data and the lower graph showing discharge or stage data for the same period (or actually any other reference data desired, although plots are setup for that type of data). Both graphs have many standard and optional plotting elements including such things as edited and computed unit values, data correction unit values, daily values, monitor inspection readings, reference site data, data correction entry with set number and remarks, and QWDATA field measurements for that parameter (if user has sufficient access to QWDATA). Data aging of the unit values is shown via color coded "rugging" at the bottom of the top plot.

2. Adaps tables:

A set of commonly used ADAPS tables can also be included in the output:

- uv inventory tables of edited and computed data
- site visit reports
- DV table (including all stats set up to be stored in the DD processor)
- EOY summary
- Adaps station analysis
- primary report (optional) - Wqmreview will recompute the record to make sure that periods being displayed truly reflect the data contained in the database and to help avoid errors during the data-aging process.
- QWDATA table (optional with sufficient access to QWDATA...) - field measurements for that parameter entered into QWDATA for reference and for display of historical monitor inspection data at WSC's that entered inspection data there.

END PROGRAMS

5-/Logs

This directory contains all the various logs written by the wqmreview program.

Currently only a monthly usage report is contained here. Additional logs will be added with potential future enhancements.

END LOGS

6-/Templates

This directory contains tkg2 templates for all the plots produced in the wqmreview program. Templates can be modified and re-saved using tkg2, but caution should be used as improper changes can cause the templates to become unusable (keep copies). Future Auto_Review updates may also overwrite any modifications made, causing updates to be lost. See the Tkg2 documentation for more information on template modification.

END TEMPLATES

Please contact GS-W_OSW_Scripts@usgs.gov if you have any questions, comments, requests, etc...

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END WQMREVIEW
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