Data Upload & Evaluation Tool

WY2013
NTN DATA UPLOADS

6 February 2014

Mary Ellen Ley, Mike Mallonee

WY2013 Data Upload Guidance

- WY2013 Nontidal Data Schedule

- DUET Lookup Tables and Formats

- DUETv2 Users Guide

- Consistency Check Process

- Field Blank & Replicate Data

- WY2014 Metadata

Schedule

- **4 December 2013**
  - DUETv2 to Production Mode
  - http://duet.chesapeakebay.net/

- **15 March 2014**
  - WY2013 NTN initial data submittals uploaded to DUET

- **31 March 2014**
  - WY2013 NTN data submittals accepted via DUET and imported into CBP WQ database

- **30 April 2014**
  - WY2013 NTN data provided to USGS for analyses

DUET Tables & Format

- Tables:
  - WQ_EVENT
  - WQ_DATA
  - WQ_DATA_BMDL
  - WQ_QAQC
  - WQ_CHLOROPHYLL
  - WQ_CRUISES
  - WQ_KD

- Fields and Formats:
  - Nontidal Lookup Tables - Version 3 (6 February 2014)
  - Tidal Lookup Tables - Version 2 (6 February 2014)

DUET Users Guide

- Data Upload and Evaluation Tool (DUET) User Guide
  - Version 2.1 (3 December 2013)
  - Prepared by Vistronix, Inc.

- This guide provides DUET background, user login information, and interface navigation instructions for all tidal and nontidal data providers/submitters.
  - System Tabs (upload file, reload file, view status, and replace file) functionality discussed.

DUET Video Interlude

- Vistronix has developed a series of five DUET video tutorials:
  - How to upload a file
  - How to reload a file
  - How to replace a file
  - How to view a files status
  - How to use the Processing History

DUET Video Tutorials

Consistency Checks

- ## Parameter Consistency
  - ○ Agency checks for parameter agreement
  - ○ Tailored to each data collector: 19 different sets
  - ○ Inconsistent results not reported, only "NQ" problem code

    NQ means that illogical differences between parameters is greater than analytical precision.

  - ○ Exceptions:

    1. Only applied to analytical results above the PQL or RL.

    2. Report all duplicate sample results, even if found to be inconsistent.

Parameter Consistency Checks

AGENCY	SOURCE	STATION_TYPE	EVENT_TYPE	STATION	CONSISTENCY CHECKS		
DEDNREC	DEDNREC	Primary	R, RSI, S, ONS or OS	304191, 302031	$[NH4W] + [NO23W] \leq [TN]$ $[NH4W] \leq [TN]$	$[PO4F] \leq [TP]$ $[NO23W] \leq [TN]$	$[DOC] \leq [TOC]$
USGSWV	USGSWV	Primary	R, RSI, S, ONS or OS	01604500, 01608500, 01616500, 01613030, 01616400, 01611500, 01618100	$[NH4F] + [NO23F] \leq [TN]$ $[PO4F] \leq [TP]$	$[NH4F] \leq [TN]$ $[NO2F] \leq [NO23F]$	$[NO23F] \leq [TN]$
USGSWV	USGSWV	Primary	R, RSI, S, ONS or OS	01595300, 01614000, 01636500	$[NH4F] + [NO23F] \leq [TDN]$ $[NH4F] \leq [TDN]$	$[NO2F] \leq [NO23F]$ $[NO23F] \leq [TDN]$	$[PO4F] \leq [TDP]$ $[TDP] \leq [TP]$
SRBC	SRBC	Primary	R, RSI, S, ONS or OS	01502500, 01503000, 01529500, 01511500	$[NH4W] \leq [TKNW]$ $[TKNF] \leq [TKNW]$ $[NO23F] \leq [NO23W]$	$[NH4F] \leq [TKNF]$ $[TDP] \leq [TP]$ $[NH4F] \leq [NH4W]$	$[PO4F] \leq [TDP]$
SRBC	SRBC or NYSDEC	Primary	R, RSI, S, ONS or OS	01515000, 01531000	$[NH4W] \leq [TKNW]$ $[TKNF] \leq [TKNW]$ $[NO23F] \leq [NO23W]$	$[NH4F] \leq [TKNF]$ $[NH4F] \leq [NH4W]$	$[PO4F] \leq [TDP]$ $[TDP] \leq [TP]$
MDDNR	MDDNR	Primary	R, RSI, S, ONS or OS	TUK0181, BEL0053, DER0015, GUN0258, NPA0165, GWN0115, PXT0972, TF1.2, GEO0009, WIL0013, ANT0047, CAC0148, MON0546, LXT0200, MGN0062, NWA0016, WCK0001, MKB0016, CVA0046, WIL0065	$[NH4F] + [NO23F] \leq [TDN]$ $[NH4F] \leq [TDN]$	$[PO4F] \leq [TDP]$ $[NO23F] \leq [TDN]$	$[NO2F] \leq [NO23F]$
MDDNR	USGSMD	Primary_RIM	R, RSI, S, ONS or OS	01491000, 01578310, 01594440, 01646580	$[NH4F] + [NO23F] \leq [TDN]$ $[NO2F] \leq [NO23F]$ $[PIC] \leq [PC]$	$[TDP] \leq [TP]$ $[VSS] \leq [TSS]$ $[NO23F] \leq [TDN]$	$[PO4F] \leq [TDP]$ $[HPO4F] \leq [TDP]$ $[NH4F] \leq [TDN]$

AGENCY	SOURCE	STATION_TYPE	EVENT_TYPE	STATION	CONSISTENCY CHECKS		
PADEP	SRBC	Primary	R, RSI, S, ONS or OS	WQN0201, WQN0214, WQN0273, WQN0301, WQN0305, WQN0401, WQN0204, WQN0210, WQN0223, WQN0229, WQN0243, WQN0263, WQN0271, WQN0272, WQN0302, WQN0404, WQN0445, WQN0448, WQN0226, WQN0281, WQN0282	$[NH4F] + [NO23F] \leq [TDN]$ $[TDN] \leq [TN]$ $[NH4W] + [NO23W] \leq [TN]$	$[PO4F] \leq [TDP]$ $[FSS] \leq [TSS]$ $[NO23F] \leq [TDN]$ $[NH4W] \leq [TN]$	$[NO23F] \leq [NO23W]$ $[TDP] \leq [TP]$ $[NO23W] \leq [TN]$ $[NH4F] \leq [TDN]$
PADEP	USGSPA	Primary	R, RSI, S, ONS or OS	WQN0317, WQN0410, WQN0224, WQN0217, WQN0212, WQN0269, WQN0278, WQN0280	$[NH4F] + [NO23F] \leq [TDN]$ $[TDN] \leq [TN]$ $[NH4W] + [NO23W] \leq [TN]$	$[PO4F] \leq [TDP]$ $[FSS] \leq [TSS]$ $[NO23F] \leq [TDN]$ $[NH4W] \leq [TN]$	$[NO23F] \leq [NO23W]$ $[TDP] \leq [TP]$ $[NO23W] \leq [TN]$ $[NH4F] \leq [TDN]$
PADEP	PADEP	Primary	R, RSI, S, ONS or OS	WQN0501, WQN0509, WQN0510, WQN0511, WQN0512, WQN0513	$[NH4F] + [NO23F] \leq [TDN]$ $[TDN] \leq [TN]$ $[NH4W] + [NO23W] \leq [TN]$	$[PO4F] \leq [TDP]$ $[FSS] \leq [TSS]$ $[NO23F] \leq [TDN]$ $[NH4W] \leq [TN]$	$[NO23F] \leq [NO23W]$ $[TDP] \leq [TP]$ $[NO23W] \leq [TN]$ $[NH4F] \leq [TDN]$
VADEQ	USGSVA	Primary_RIM	R, RSI, S, ONS or OS	TF5.0A, TF4.0P, TF5.0J, TF3.0, TF4.0M	$[NH4F] + [NO23F] \leq [TDN]$ $[TDN] \leq [TN]$	$[PO4F] \leq [TDP]$ $[NO23F] \leq [TDN]$	$[FSS] \leq [TSS]$ $[NH4F] \leq [TDN]$
VADEQ	USGSVA	Primary (Sampled as a Primary_RIM)	R, RSI, S, ONS or OS	2-JMS113.20	$[NH4F] + [NO23F] \leq [TDN]$ $[TDN] \leq [TN]$	$[PO4F] \leq [TDP]$ $[NO23F] \leq [TDN]$	$[FSS] \leq [TSS]$ $[NH4F] \leq [TDN]$
VADEQ	USGSVA	Primary	R, RSI, S, ONS or OS	1BNFS010.34, 1BSMT004.60, 1BSSF003.56, 2-CHK035.26, 3-RAP030.21, 8-NAR005.42, 1BMDD005.81, 1ADIF000.86, 7-DRN010.48, 1ASOQ006.73	$[NH4W] + [NO23W] \leq [TN]$ $[NO23W] \leq [TN]$	$[PO4F] \leq [TP]$ $[NH4W] \leq [TN]$	$[FSS] \leq [TSS]$

AGENCY	SOURCE	STATION_TYPE	EVENT_TYPE	STATION	CONSISTENCY CHECKS		
VADEQ	VADEQ/SCRO or USGSVA	Primary	R, RSI, S, ONS or OS	2-JMS279.41, 2-APP110.93	$[NH4W] + [NO23W] \leq [TN]$ $[NO23W] \leq [TN]$	$[PO4F] \leq [TP]$ $[NH4W] \leq [TN]$	$[FSS] \leq [TSS]$
VADEQ	VADEQ/NRO or USGSVA	Primary	R, RSI, S, ONS or OS	1AACO014.57, 3-RPP147.49, 8-MPN094.94	$[NH4W] + [NO23W] \leq [TN]$ $[NO23W] \leq [TN]$	$[PO4F] \leq [TP]$ $[NH4W] \leq [TN]$	$[FSS] \leq [TSS]$
VADEQ	VADEQ/VRO or USGSVA	Primary	R, RSI, S, ONS or OS	2-RVN015.97, 1BSSF100.10	$[NH4W] + [NO23W] \leq [TN]$ $[NO23W] \leq [TN]$	$[PO4F] \leq [TP]$ $[NH4W] \leq [TN]$	$[FSS] \leq [TSS]$
VADEQ	VADEQ/NRO	Secondary	R	3-RAP066.54, 3-ROB001.90, 8-POR008.97, 1ACAX004.57	$[NH4W] + [NO23W] \leq [TN]$ $[NO23W] \leq [TN]$	$[PO4F] \leq [TP]$ $[NH4W] \leq [TN]$	$[FSS] \leq [TSS]$
VADEQ	VADEQ/VRO	Secondary	R	1BSTH027.85, 2-BCC004.71, 2-BLP000.79, 2-CFP004.67, 2-MCM005.12, 2-MRY014.78	$[NH4W] + [NO23W] \leq [TN]$ $[NO23W] \leq [TN]$	$[PO4F] \leq [TP]$ $[NH4W] \leq [TN]$	$[FSS] \leq [TSS]$
VADEQ	VADEQ/PRO	Secondary	R	8-LTL009.54, 2-DPC005.20	$[NH4W] + [NO23W] \leq [TN]$ $[NO23W] \leq [TN]$	$[PO4F] \leq [TP]$ $[NH4W] \leq [TN]$	$[FSS] \leq [TSS]$

NOTE: Any parameter value between the MDL and RL (Qualifier = "G") is not subject to the consistency check.

Consistency Check Example

"I have a PO$_4$ result of 0.024 mg/L, which is higher than the TDP result of 0.014. Is this a case where I would delete both values in the DUET submittal?"

> PO$_4$ RL = 0.004 mg/L
> TDP RL = 0.010 mg/L

Use the higher RL to assess difference.   Here difference must be < 0.010 mg/L

$$[PO4] - [TDP] = 0.024 - 0.014 = 0.010 \text{ mg/L}$$

The difference is exactly the same as the TDP reporting limit. However, the criterion for QQ is < RL, not ≤ RL. Therefore, without additional info. from the lab, you would withhold the data and assign a "NQ" problem code.

Alternatively, you could have the lab investigate the inconsistency in results and see if there was a reporting error, or if there is a reason to justify keeping data, e.g., RLs may have changed, one test may have been problematic, etc.

Consistency Problem Codes

PROBLEM	DESCRIPTION
QQ	PART EXCEEDS WHOLE VALUE YET DIFFERENCE IS WITHIN ANALYTICAL PRECISION (PQL or REPORTING LIMIT)
NQ	PART EXCEEDS WHOLE VALUE AND DIFFERENCE IS **NOT** WITHIN ANALYTICAL PRECISION
IQ	CANNOT DETERMINE IF PART EXCEEDS WHOLE VALUE AND WHETHER OR NOT DIFFERENCE IS WITHIN ANALYTICAL PRECISION
NV	NEGATIVE CALCULATED VALUE IS VALID GIVEN PRECISION OF MEASURED WATER QUALITY PARAMETERS; ACTUAL CALCULATED CONCENTRATION LIKELY IS LOW; POSSIBLY LESS THAN PQLS OF MEASURED WATER QUALITY PARAMETERS

EXCEPTION: Report all "NQ" Duplicate Sample data, regardless of consistency check results.

Reporting Field Blank and Duplicate Data

http://go.funpic.hu

Submitting QC Sample Results to DUET

- ## WQ_DATA Table
  - Field Duplicates: FS1/FS2 and S1/S2
  - Field Blanks (FBs)
    - Submit values <MDL and <Reporting Limit
    - Values to at least 3 figures, even if insignificant
- ## WQ_QAQC Table
  - Source Water Blanks (SWBs)
  - Equipment Blanks (EBs)
- ## WQ_DATA_BMDL Table
  - Field Duplicate Numerical Results <MDL

WQ_DATA Table
Replicate sample

Field Name	Example #1	Example #2
PROJECT	NTN	NTN
SOURCE	USGSWV	PADEP
SAMPLE_DATE	10/17/2011	2/14/2012
SAMPLE_TIME	9:15	12:20
DEPTH	0.0 (meters)	0.0 (meters)
LAYER	VH	VH
SAMPLE_TYPE	HVIC	HVIC
SAMPLE_ID (replicate type)	**FS2**	**S1**
PARAMETER	TDN	TDN
QUALIFIER		<
VALUE	0.112 (RL = 0.10)	0.01 (MDL = 0.01)
PROBLEM		

WQ_DATA Table
Blank Sample

Field Name	Example #1	Example #2
PROJECT	NTN	NTN
SOURCE	SRBC	USGSPA
SAMPLE_DATE	11/11/2011	6/6/2012
SAMPLE_TIME	12:00	14:14
DEPTH	0.0 (meters)	0.0 (meters)
LAYER	VH	VH
SAMPLE_TYPE	HVIC	HVIC
SAMPLE_ID Replicate_Type	**FB**	**FB**
PARAMETER	TDN	TDN
QUALIFIER	<	G
VALUE	0.00956 (MDL = 0.010)	0.0158 (RL = 0.030)
PROBLEM		BB

WQ_QAQC Table
Source Water & Equipment Blanks

Field Name	Example #1	Example #2
PROJECT, SOURCE, AGENCY, PROGRAM	NTN, DEDNREC, DEDNREC, NTWQM	NTN, USGSMD, MDDNR, NTWQM
STATION	302031	01491000
SAMPLE_DATE_TIME	4/8/2011 8:31:00 AM	3/12/2012 9:45:00 AM
DEPTH	0.0 (meters)	0.0 (meters)
LAYER	VH	VH
SAMPLE_REPLICATE_TYPE	**SWB**	**EB**
PARAMETER	TDN	TDN
QUALIFIER	G	
REPORTED_VALUE	**0.0256** (MDL = 0.01)	**0.0408** (RL = 0.03)
PROBLEM		I (suspect value verified correct)

WQ_DATA_BMDL Table

Field Name	Example Entry
PROJECT	NTN
SOURCE	MDDNR
SAMPLE_DATE	8/6/2012
SAMPLE_TIME	12:25
DEPTH	0.0 (meters)
LAYER	VH
SAMPLE_TYPE	HVIC
SAMPLE_ID (replicate type)	**S1**
PARAMETER	TDP
VALUE	0.0009 (MDL = 0.0010)
PROBLEM	

WY2014 Metadata

- Changes in:
  - Stations : New, upgraded or discontinued
  - Parameters Analyzed
  - Lab Methods, Detection limits

  - Necessary for DUET _completeness_ & _calculated parameter_ routines

- Implement 2013 QC Sampling Design
  - Blanks: 1 field blank/station/year
  - Duplicates: 2 duplicate pairs/station/year, up to 24 pairs