Introduction

House Bill 2477 (HB 2477) approved on March 16, 2017 stated in part:

Be it enacted by the General Assembly of Virginia:
1. *§ 1. That the Department of Health shall take steps to begin eliminating site evaluation and design services for onsite sewage systems and private wells provided by the Department. In doing so, the Department shall:*

…3. Expand efforts to educate the public concerning the design, operation, and maintenance of onsite sewage systems and private wells;

…7. Improve the collection and management of data about onsite sewage systems and private wells, including (i) creating a web-based reporting system for conventional onsite sewage system operation and maintenance, (ii) accepting applications and payments online, (iii) making onsite sewage system and private well records available online, (iv) creating a complete electronic record of all permitted onsite sewage systems and private wells in the Commonwealth, and (v) creating procedures for tracking Notices of Alleged Violations and corrective actions;

The entirety of House Bill 2477 may accessed online here: http://lis.virginia.gov/cgi-bin/legp604.exe?171+ful+CHAP0602+pdf

Responding to this legislation, and to inquiries regularly received from onsite and discharging wastewater treatment system stakeholders for O&M data, the Virginia Department of Health, Office of Environmental Health Services (OEHS) convened a committee consisting of OEHS staff to consider the issue of improving communication of operation and maintenance data to stakeholders.

The committee included the following OEHS personnel.

Douglas F. Canody, PE – Technical Services Engineer (Project Administrator)
Marcia J. Degen, Ph.D., PE, Environment Technical Services Administrator,
Sonal Iyer, Director of Data Management and Process Improvement
Angela Redwine, Chesapeake Bay TMDL Coordinator / GIS Analyst
Dwayne Roadcap, Director

This is the final report of the activities of the project committee. The following documents were considered by the committee during this process. Links to access these documents online are given after the document title.

12VAC5–610 - Sewage Handling and Disposal Regulations,
https://law.lis.virginia.gov/admincode/title12/agency5/chapter610/

12VAC5-613 – Regulations for Alternative Onsite Sewage Systems:

https://law.lis.virginia.gov/admincode/title12/agency5/chapter613/

12VAC5-640 – Alternative Discharging Sewage Treatment Regulations for Individual Single Family Dwellings -
https://law.lis.virginia.gov/admincode/title12/agency5/chapter640/

Problem Definition

The initial task to be accomplished was to define the problem to be solved. The problem definition developed by the Committee follows:

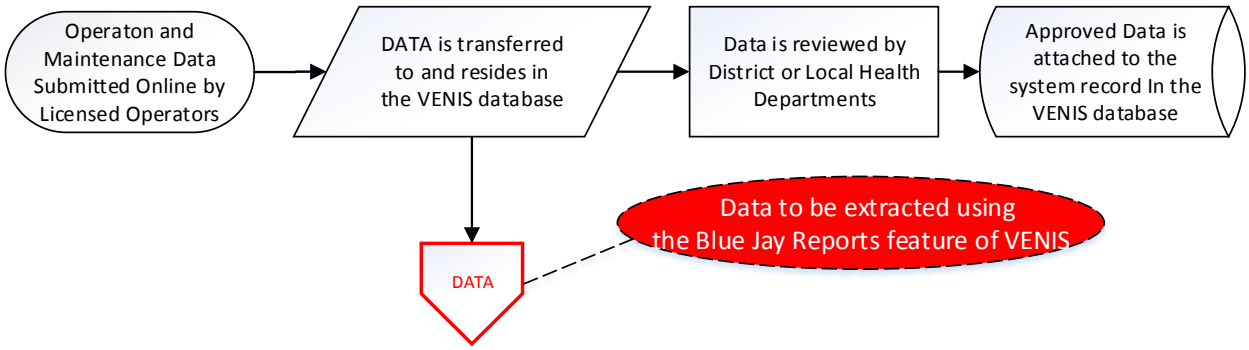
Operation, maintenance and monitoring data retained by OEHS is not readily available for review by those having a stake or interest in the performance and operational compliance of the wastewater treatment and disposal systems regulated by OEHS. These data are needed by stakeholders for verification of compliance with VDH regulations and the effective evaluation of system performance for the planning, financial, operation and maintenance needs of VDH regulated onsite, (OWTS) and alternative discharging single family home wastewater treatment systems (ADSS).

Project Approach

The chosen approach to solving this problem is extraction of data submitted by licensed system operators. There is a need to repackage and reorganize this data to optimize usefulness to stakeholders. Subsequent to this the repackaged data will be posted to online VDH data portals to facilitate access by stakeholders.

Data is currently reported by licensed operators using an online form. The format and content of the input form may be viewed as the attached Appendix 1, pages 1 – 6. Data reported online by operators resides in the VENIS database but is not "attached" to the individual system records until it has been reviewed by the District or Local Health Departments.

The current process for handling of O&M data is summarized below as represented by the black outlined symbols:



The committee has concluded that the data to be reported online for the use of all stakeholders should be extracted from the VENIS database using the Blue Jay reports feature, before the data is reviewed by district or local health departments. As noted in the diagram above, the proposed insertion point of this extraction from the current process is represented by the red symbols.

This approach facilitates rapid reporting of monitoring results after operators have entered it online. Availability of data to stakeholders is not dependent upon local health departments to complete the review of the posted data prior to making it available to stakeholders. Furthermore, there is an existing Blue Jay report that enables

data retrieval prior to local health department review. This report contains the bulk of the fields that will be useful to stakeholders. The data from the Blue Jay report can be readily converted by OEHS after extraction and put into a format (Excel and PDF) that would be accessible to stakeholders using tools commonly in use. At this time there is no existing report available to OEHS that retrieves the necessary data after it is posted to the local databases in VENIS. Creating a new report would require the intervention of the current database provider, Healthspace, and also require significant VDH staff resources, which is not available at this point. The proposed approach will insure that data reported to VDH by system operators are made available to stakeholders through the health department website within 3 months or less of it being posted online by operators. (The committee has concluded that refreshing the data on a quarterly basis by OEHS staff is feasible at this time.) The list of data fields to be extracted from the reported data and posted online for stakeholder availability follows:

Note: The name of the data field listed below is generally self-explanatory with respect to the content of the field. However, where appropriate, additional clarification regarding the information in field is enclosed in parenthesis after the field name below.

1 Visit Date
2. Physical Building (from 911 address)
3 Physical Street (from 911 address)
4 Physical City (from 911 address)
5 Web County (political jurisdiction)
6 Treatment Unit 1 (process 1 name)
7 Treatment Unit 2 (process 2 name)
8 Disinfection (type or none)
9 Conveyance
10 Dispersal (type and includes discharges)
11 Distribution
12 Operator Name
13 Operator License Number
14 Certify (system condition as reported by operator)
15 Certify Date
16 Purpose (inspection purpose)
17 Pump-out Reason
18 Maint Needed
19 Maint Given
20 Collection Point (of samples)
21 Date Collected
22 Odor
23 Colour
24 TRC (total residual chlorine onsite test
25 Settleable Solids (onsite testing)
26 Actual Estimated Flow
27 Lab BOD (off site lab testing)
28 Lab Total Suspended Solids (off site)
29 Lab Total Nitrogen (off site lab testing)
30 Lab TRC (off site lab testing)
31 Lab Fecal Coliform (off site lab testing)
32 pH (onsite testing by operator)
33 DO (off site lab testing)
34 Lab Comments
35 Other Field

These 35 fields were selected from 97 fields of data currently available for population by licensed operators using the online form. (The complete list of the 97 fields may be seen on Appendix 2 to this document.)

The selection criteria included the following,

A. Elimination of redundant data,

B. Usefulness of the information to potential stakeholders,

C. The use of the data field in the data base,

D. Privacy concerns – while additional data can be obtained via FOIA requests, there is concern about posting Owner's names and other potentially sensitive information online. Providing the information via a FOIA request has an inherent accountability process that public access of posted data will not.

Also the fields have been ordered in an effort to optimize usefulness to all stakeholders.

Data limitations:

The following limitations of the available data are noted below:

1. Many systems are not currently reporting O&M data online as required. Available data indicates a there are a significantly larger number of systems of all types which are not indicated in the O&M data available.
2. Only laboratory sampling data entered into a data field are viewable. Laboratory sampling data are not always populated within the fields provided in the online form. Currently the system allows sample results to be attached to the online report as a separate file. These files are generally image based files which are very large, and are not readily accessible for digital retrieval. Data would have to be extracted by hand. Making this data available with present resources is not practical at the present time.
3. The data format of the fields is not uniform. Consequently, sorting data by uniform fields has limited functionality. While completing many of the fields requires the operator to use a drop down menu offering specific and appropriate choices, this is not always the case. Consequently, data entered into many of the fields is not of a standard form and is entered at the discretion of the operator. This results in essentially an infinite number of potential descriptors which does not facilitate easy categorization or query by standard means.
4. Reconsideration of the relevant data in view of current needs would be appropriate. Since the VENIS database was created, changes in applicable regulations have occurred as the result of treatment technology advances and subsequent utilization for OWTSs. As VDH migrates to a new data services provider (conversion projected to occur in 2018) there will be an opportunity for improvement of the data infrastructure.

Summary

While the posting of the currently available data will undoubtedly address critical needs of the stakeholders, this is not intended to be a final product. Ultimately, complete O&M reports should be made available online for all of those systems that are required to report Operation and Maintenance activities. However, this is beyond the present capabilities of the existing database, available resources and the scope of this committee's task.

The process flow diagram in Appendix 3 is representative of the steps utilized to develop an interim solution to the defined problem. Also, a standard operating procedure for updating records posted to the website on a quarterly basis is attached as Appendix 4.

Alternative Onsite Sewage System Inspection Report

(* indicates a required field)

Operator Information

License #
12345

Email
jim.bowles@vdh.virginia.gov

First Name

Middle Name

Last Name

Suffix

Building #
307A

Street Name
Alleghany Ave.

Suite / Apt

City
Lynchburg

State
VA

Zip Code
24501

Country

Phone #
(434)237-8116

Owner

Owner Name *

Phone # (XXX) XXX-XXXX

Owner Mailing Address

Owner's Building #

Owner's Street Name / PO Box

Owner's Suite / Apt

Owner's City

Owner's State

Owner's Zip Code

System Location Information

Building # *

Street Name *

Suite / Apt

City

County / City *
Select County

Tax Map/GPIN #

HD ID #

System Information

Number of Septic/Trash tanks

Total Septic Tank Capacity

Gallons

Treatment Unit 1
Septic Tank Only

Treatment Unit 2
Septic Tank Only

Conveyance
None

Distribution
None

Dispersal
None

Disinfection
None

Maintenance Activity

Visit Date *(click calendar)* *
click calendar

Visit Time

Visit Purpose *
Routine, Scheduled

Actual/Estimated Flow (GPD)

Maintenance Needed

- Attached Growth Medium
- Auxiliary Filter (e.g. Spin Filter)
- Blower/Compressor/Aerator Operation
- Control Operation
- Disinfection
- Dispersal System Operation
- Distribution Pump Operation
- Effluent Screens
- Level Sensor (Float) Operation
- None

Maintenance Provided

- Attached Growth Medium
- Auxiliary Filter (e.g. Spin Filter)
- Blower/Compressor/Aerator Operation
- Control Operation
- Disinfection
- Dispersal System Operation
- Distribution Pump Operation
- Effluent Screens
- Level Sensor (Float) Operation
- None

Summary of Comments on http://healthspace.com/Clients/VDH/VDH_Online_Applications_Live

Page: 1

Number: 1 Author: vbf29384 Subject: Sticky Note Date: 3/2/2017 3:06:20 PM
see "AOSS_nspctnfrm_optns.docx" for list of options for "Treatment Unit 1 and Treatment Unit 2 options

on Appendix 1 page 6

Number: 2 Author: vbf29384 Subject: Sticky Note Date: 3/2/2017 3:07:25 PM
Options:
Gravity
Pump
Siphon

Number: 3 Author: vbf29384 Subject: Sticky Note Date: 3/2/2017 3:16:57 PM
Options
None
Chlorine
UV Light

Number: 4 Author: vbf29384 Subject: Sticky Note Date: 3/2/2017 2:35:26 PM
Manifold
Drip
Distribution Box

Number: 5 Author: vbf29384 Subject: Sticky Note Date: 3/2/2017 3:15:54 PM
see "AOSS_nspctnfrm_optns.docx" for list of options for "Dispersal"

on Appendix 1 page 6

Author: vbf29384 Subject: Sticky Note Date: 3/2/2017 3:04:46 PM

Number: 6 Author: vbf29384 Subject: Sticky Note Date: 3/2/2017 3:13:24 PM
Options
Routine-Scheduled
Follow-up
Initial Visit
Pump-Out Only

☐ Recirculation Pump
☐ Septic Tank Baffles
☐ Sludge/Scum Accumulation

☐ Recirculation Pump
☐ Septic Tank Baffles
☐ Sludge/Scum Accumulation

Comments

Field Tests

Odor

Turbidity / Color

pH SU

DO (aeration tank) mg/L

Settleable Solids %

TRC (after contact tank) mg/L

Other:

Laboratory Tests

Date Collected *(click calendar)* click calendar

Collection Point

Laboratory Name

BOD mg/L

TRC ppm

Fecal Coliform MPN/100 mL

Total Suspended Solids mg/L

Total Nitrogen mg/L

Total Phosphorus mg/L

Laboratory results are:
○ Attached to this report
○ Will be sent separately (Laboratory results must be submitted via this report website)

Comments

Attach Lab report at bottom of page!

System Pumpout

Reason for pumping Routine, Scheduled

Date Pumped *(click calendar)* click calendar

Disposal Site

Volume Pumped

Septic Tank 1 gallons

Septic Tank 2 gallons

Pump/Siphon Tank gallons

Treatment Unit 1 gallons

Treatment Unit 2 gallons

Other gallons

Pumpout Comments

Certification of Inspection and Results

I hereby certify
○ This AOSS is functioning as designed and in accordance with the performance/maintenance requirements of 12VAC5-613.
○ This AOSS should now return to normal function after having provided the above stated routine maintenance.
○ This AOSS is not functioning as designed or in accordance with the performance/maintenance requirements. The additional actions listed above are required to return the AOSS to normal function.

Summary of Comments on AOSSnspctnfrm&ptns.pdf

Page: 3

Number: 1 Author: vbf29384 Subject: Sticky Note Date: 3/17/2017 10:49:24 AM

Options:
Routine Scheduled
System Overflow
Repair
Other

This report provided to AOSS owner on
Date *(click calendar)* 02-Mar-2017 at 02:26 PM Time

Operator Name
Jim Bowles

Operator License #
12345

You must certify the system before adding attachments!

Attachments & Additional Comments

Additional Comments

Attach Photos
Browse...

Attach Lab Results
Browse...

If you want to print or save a report, please do so before submitting the report to VDH.

If you view the shopping cart before submitting this report, the information above will be lost.

Print Report | Save Report Locally | Submit Report to VDH | View Shopping Cart

Drop Down Menu Options for "Treatment Unit 1", "Treatment Unit 2" and "Dispersal" Fields

AOSS O&M Report Input Form – prepared 3/17/17 – D.Canody

"Treatment Unit 1 and 2" Options

<option>None</option>
<option>Septic Tank Only</option>
<option>Adicor</option>
<option>Advanced Enviro-Septic (Presby)</option>
<option>Advanced Septic</option>
<option>Aero-flo ATU</option>
<option>Aerotech</option>
<option>Alliance</option>
<option>Aqua Aire ATU</option>
<option>Aqua Klear</option>
<option>Aqua Safe ATU</option>
<option>Aquarobic Mini Plant</option>
<option>Aquaworx Remediator</option>
<option>Best 1</option>
<option>BioCoir</option>
<option>Bio Barrier</option>
<option>Bioclere</option>
<option>Biogator 300</option>
<option>Biomicrobics MicroFAST</option>
<option>Biomicrobics Retrofast</option>
<option>Bionest</option>
<option>Busse Innovative Systeme</option>
<option>Cajun Aire ATU</option>
<option>Clearstream</option>
<option>Clearstream ATU</option>
<option>Constructed Wetland</option>
<option>Cromaglass</option>
<option>Delta Environmental Products, DF Series</option>
<option>Delta Environmental Products, UC Series</option>
<option>EcoPure</option>
<option>Ecoflo</option>
<option>EcoPod</option>
<option>Eljen Geotextile Sandfilter</option>
<option>EnviroAire</option>
<option>Enviro-Flo</option>
<option>Enviro-Guard ENV</option>
<option>EZ Treat Sandfilter</option>
<option>H-TWO-O</option>
<option>Hoot</option>
<option>Hydro-Action ATU</option>
<option>Jet ATU</option>
<option>Membrane Bioreactor</option>
<option>Microfast</option>
<option>Microseptic EnviroServer ATU</option>
<option>Mudbug</option>
<option>Multiflo FTB</option>
<option>Multiflo ATU</option>
<option>Nayadic ATU</option>
<option>Norweco Singulair ATU</option>
<option>Orenco Advantex</option>
<option>OxyPro</option>
<option>PremierTech, EFX</option>
<option>PremierTech, STB</option>
<option>Privy, Composting toilet</option>
<option>Privy, Incinerator toilet</option>
<option>Privy, Pit</option>
<option>Privy, Vault</option>
<option>Puraflo</option>
<option>Quanics</option>
<option>Sandfilter, High rate</option>
<option>Sandfilter, Non-recirculating</option>
<option>Sandfilter, Recirculating</option>
<option>SeptiTech</option>
<option>SludgeHammer</option>
<option>Southern Manufacturing Clean Machine</option>
<option>White Knight</option>
<option>Whitewater ATU</option>
<option>Zoeller</option>

"Dispersal Options"

<option>none</option>
<option>Aggregate Bed</option>
<option>Aggregate Trench</option>
<option>Alternative Discharge</option>
<option>Drip Tubing</option>
<option>Elevated Sand Mound</option>
<option>Gravel-Less Bed</option>
<option>Gravel-Less Trench</option>
<option>Spray Irrigation</option>

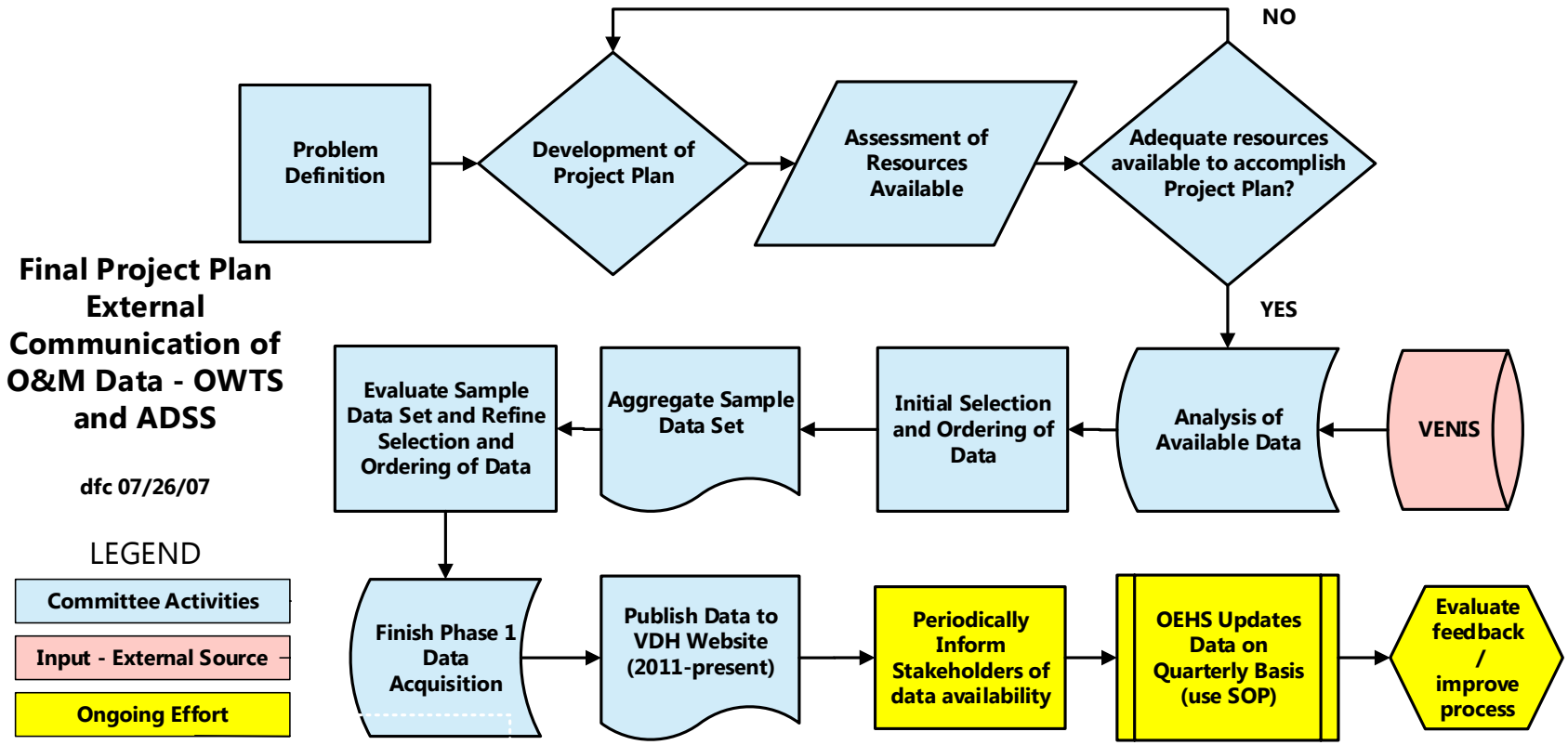
Appendix 2

Fields Available for Population in VENIS

1 Approved
2 Well Driller UNID
3 Contractor Company Name
4 Web County
5 Actual Estimated Flow
6 Additional Comments
7 Analysis Attached
8 Approved
9 Certified
10 Certify
11 Certify Date
12 Certify Purpose
13 Certify Time
14 Certify Web County
15 Collection Point
16 Colour
17 Comments
18 Contractor Area Phone
19 Contractor Company Name 20 Contractor First Name
21 Contractor L Name
22 Contractor Mailing Building 23 Contractor Mailing City
24 Contractor Mailing Country 25 Contractor Mailing Postal Code 26 Contractor Mailing Province 27 Contractor Mailing Suite
28 Contractor Middle Name
29 Contractor Street
30 Conveyance
31 C Suffix
32 Date Collected
33 Date Created
34 Date Pumped
35 DELETED
36 Disinfection
37 Dispersal
38 Distribution
39 DO
40 Document ID
41 Email Address
42 HDID
43 Lab BOD
44 Lab Comments
45 Lab Fecal Coliform
46 Lab Name or ID?
47 Lab Total Nitrogen
48 Lab Total Phosphorus
49 Lab Total Suspended Solids
50 Lab TRC
51 Legal Description
52 Licence Number
53 Maint Given
54 Maint Needed
55 Notes Date Created
56 Notes Date Last Modified
57 Number Of Tanks
58 Odor
59 Operator Licence Number
60 Operator Name
61 Other Field
62 Owner Area Phone
63 Building #
64 Owner Mailing City
65 Owner Mailing Postal Code
66 Owner Mailing Province
67 Owner Mailing Street
68 Owner Mailing Suite
69 Owner Phone
70 Owners Name
71 P H
72 Phone
73 Physical Address
74 Physical Building
75 Physical City
76 Physical Street
77 Physical Suite
78 Pumpout Comments
79 Pumpout Disposal
80 Pumpout Other
81 Pumpout Pump Tank
82 Pumpout Reason
83 Pumpout Septic Tank 1
84 Pumpout Septic Tank 2
85 Pumpout Treatment 1
86 Pumpout Treatment 2
87 Purpose
88 Settleable Solids (%)
89 Source
90 Tank Capacity
91 TRC
92 Treatment Unit 1
93 Treatment Unit 2
94 Visit Date
95 Visit Time
96 Web County
97 Well Driller UNID

Appendix 3 – Page 1 of 1

External Communication of O&M Data – Implemented Project Plan



Standard Operating Procedures for Preparing O&M Inspection Reports and Data for Posting to VDH Website

October 1, 2017

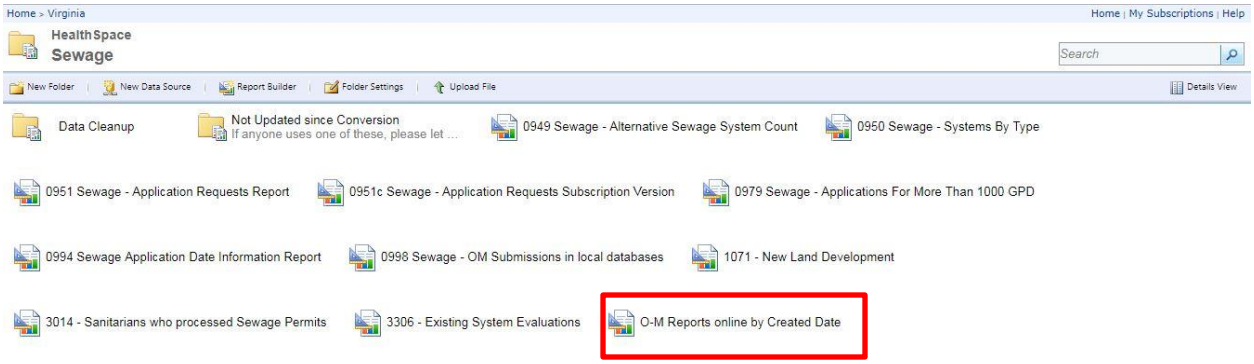
In the 2017 General Assembly session, VDH was directed by SB1577 to evaluate the regulatory requirement to perform a 180-day biochemical oxygen demand sampling of small alternative onsite sewage systems (<1,000 GPD). Concurrently, VDH received complaints from private sector consultants that the sampling data were not accessible except through a Freedom of Information Act request. As a result, a component of the SB1577 evaluation process is to make sampling data and the broader operation and maintenance (O&M) reports for alternative onsite sewage systems and alternative discharging systems available online to stakeholders and the general public.

Operation, maintenance, and monitoring data retained by Office of Environmental Health Services (OEHS) is not currently readily available for review by those having a stake or interest in the performance and operational compliance of the wastewater treatment and disposal systems regulated by OEHS. These data are needed by stakeholders for verification of compliance with VDH regulations and the effective evaluation of system performance for the planning, financial, operation, and maintenance needs of VDH regulated wastewater treatment systems.

The following procedures allow VDH to generate and transform the O&M and sampling data into a standard format for posting to the OEHS web page. This will allow the public to view and download data in an Excel format from O&M inspection reports submitted to VDH by onsite sewage systems operators.

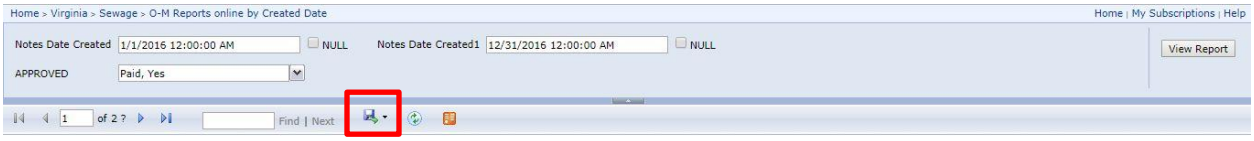
Step 1. Run the BlueJay standard report.

Access the BlueJay reporting website, via the VENIS database or a web browser, and navigate to the Sewage Folder. Open the report titled “O-M Reports online by Created Date.”



Enter the earliest date in your time period of interest in the **Notes Date Created** field and the ending date of your time period of interest in the **Notes Date Created1** field (e.g. 1/1/2016 and 12/31/2016). In the **Approved** field, select Paid and Yes from the dropdown menu. Click View Report.

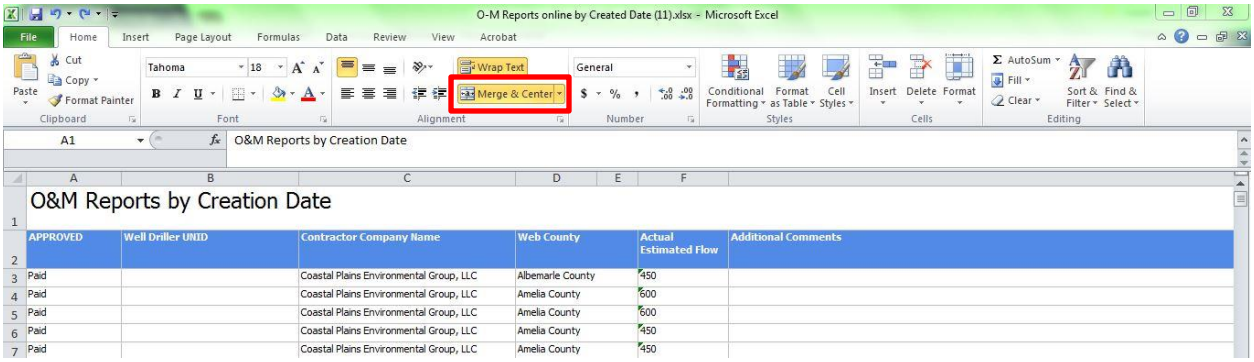
Depending on your browser, you may or may not see data populate the screen. Once you see the button highlighted in red below, the report is complete. Select the dropdown menu and export the table in the Excel format. Once you open the spreadsheet, click Enable Editing near the top of the page and save the spreadsheet in .xlsx format to your desired location.



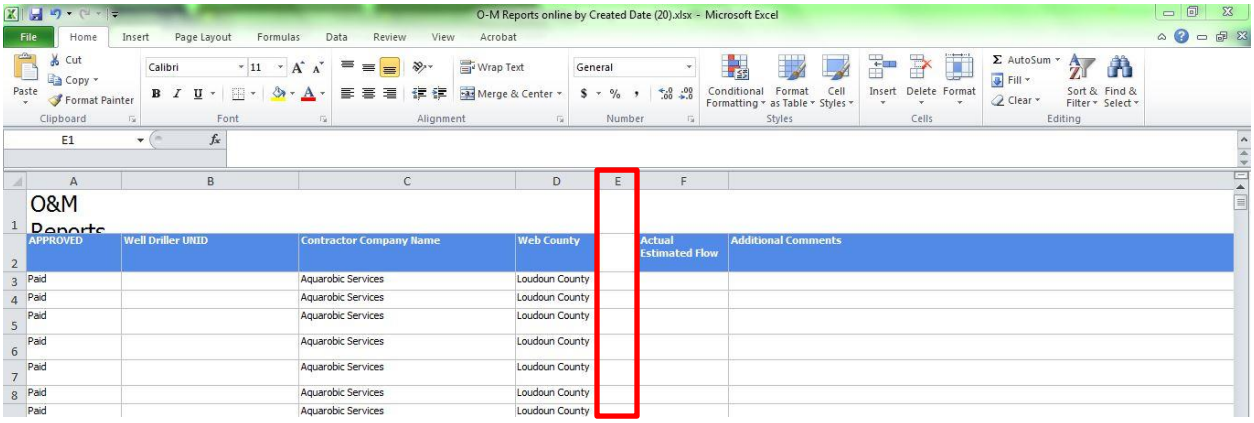
Step 2. Modify spreadsheet to retain and reorder selected data fields.

A. Prepare report formatting.

Select all rows and columns by pressing CTRL + A keys, then click **Merge & Center** button near the center of the Home menu bar.



Delete column E.



B. Remove duplicate and unnecessary fields.

Starting with the farthest right column (CT), delete the following columns working back towards column A:

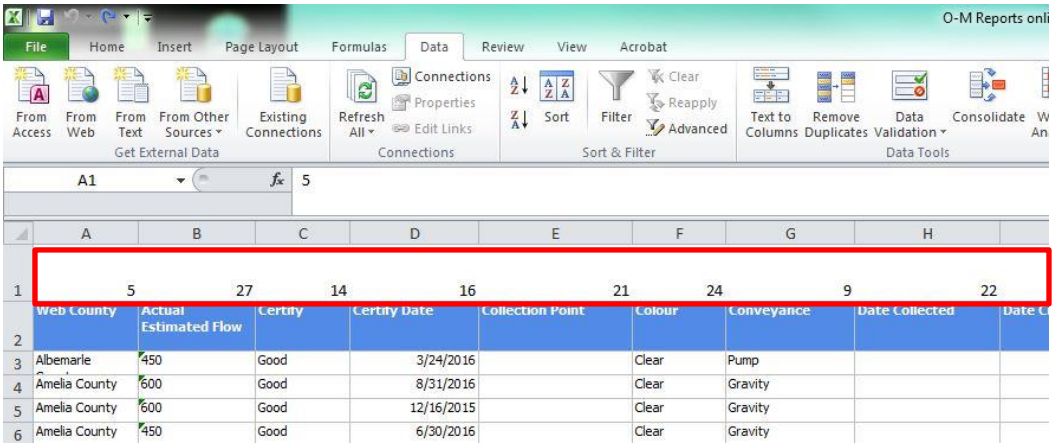
CT, CS, CR, CQ, CL, CK, CH, CG, CF, CE, CC, CB, CA, BZ, BY, BU, BT, BR, BQ, BP, BO, BN, BM, BL, BK, BJ, BE, BD, BC, AZ, AY, AV, AT, AP, AO, AN, AI, AH, AE, AC, AB, AA, Z, Y, X, W, V, U, T, S, R, Q, N, M, L, I, H, G, F, C, B, A

C. Correct a field name.

In column F, correct the field name to “Color”.

D. Reorder remaining fields.

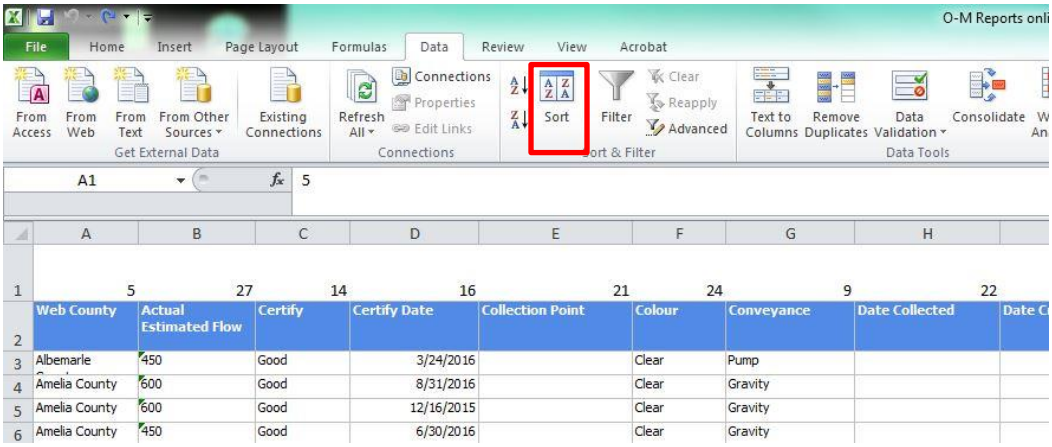
In Row 1, enter the number corresponding to each column below (i.e., Column A, enter “4” in Row 1, Column B, enter “27” in Row 1, etc.):



Column	Field Name	Number to Enter In Row 1
A	Web County	5
B	Actual Estimated Flow	27
C	Certify	14
D	Certify Date	16
E	Collection Point	21
F	Color	24
G	Conveyance	9
H	Date Collected	22
I	Date Created	15
J	Disinfection	8
K	Dispersal	10
L	Distribution	11
M	DO	34
N	Lab BOD	28
O	Lab Comments	35
P	Lab Fecal Coliform	32
Q	Lab Total Nitrogen	30
R	Lab Total Suspended Solids	29
S	Lab TRC	31
T	Maint Given	20
U	Maint Needed	19
V	Odor	23
W	Operator License Number	13
X	Operator Name	12
Y	Other Field	36
Z	PH	33

AA	Physical Building	2
AB	Physical City	4
AC	Physical Street	3
AD	Pumpout Reason	18
AE	Purpose	17
AF	Settleable Solids	26
AG	TRC	25
AH	Treatment Unit 1	6
AI	Treatment Unit 2	7
AJ	Visit Date	1

Select Row 1, then select the Sort button in the Data tab on the menu ribbon.



	A	B	C	D	E	F	G	H
1	5	27	14	16	21	24	9	22
2	Web County	Actual Estimated Flow	Certify	Certify Date	Collection Point	Colour	Conveyance	Date Collected
3	Albemarle	450	Good	3/24/2016		Clear	Pump	
4	Amelia County	600	Good	8/31/2016		Clear	Gravity	
5	Amelia County	600	Good	12/16/2015		Clear	Gravity	
6	Amelia County	450	Good	6/30/2016		Clear	Gravity	

Click “Sort”, then choose “Options” and select “Sort Left to Right”. In the dropdown menu beside “Sort by” select Row 1. Then click “OK”.

Step 3: Post data to OEHS website.

The above report is to be generated and posted online monthly by the 25th of the month following the previous quarter (April 25 for Q1 January 1 – March 31, July 25 for Q2 April 1 – June 30, and October 25 for Q3 July 1 – September 30). The quarterly data file will be saved in the following convention:

Q[X][Year]_Onsite O-M Reports

At the end of a year, an annual report will be generated that will replace the quarterly reports. The annual report is to be completed by January 25th for the previous year and posted to the website by February 25.