Emails from Nancy Barber:

**11/2/2017**

Related to *ga\_nwis.csv* file:

the unique key for a site in NWIS is the combination of the 5-digit agency\_cd and the 15-digit site\_no. For SWUDS, most water quantity is stored on a conveyance which is a pair of these sites, so the key fields are the **from-agency** code and **from-site-no** and the **to-agency** code and **to-site no**. You might find it easier to create concatenated fields of these keys so you can use a single field for selections. Station name is supposed to be unique within a WSC database, but as I just found out today that's not always true. Maybe you hit some of those to throw off the count of unique names.

**11/9/2017**

General thoughts:

For the Georgia municipal and industrial withdrawals, we have an aggregated value **for each user**, not for each of the user's water sources. The data is not aggregated to the HUC8 in SWUDS--**it's' still pumpage by each user**, and I'm **not sure how the HUC8s were assigned to aggregate sites**--could have been a rigorous look to see if all the source sites were in the one HUC8, or more likely a HUC8 that is about where that facility lies was assigned, and the water sources may lie in nearby HUCs too.

To get from this facility-level aggregate to a reasonable withdrawal value for each HUC10, there would be several approaches based on where we are with the Georgia SWUDS setup and what information is available. None of them are very quick or easy, I'm afraid. **I haven't done a count of the M&I Aggregate GW sites in the ACF to see how many, how big they are**, etc. which affects the time needed for any of these.

Another complicating factor in the ACF that I'm not sure how you are factoring is is the **stacked aquifers with varying amounts of connection to the SW system**. For the City of Albany, for example: the GW permit covers, I think, withdrawals from 3 aquifers, 2 of which have no connection to the SW system in any short-term timeframe. Some Albany wells are completed in 2 or 3 aquifers so pumping by aquifer can't even be done by well--it has to be looked at in great detail. Then within the shallow Floridan, some areas have good GW/SW connection, others do not. I haven't looked enough at the water budget concepts to get my brain around how GW withdrawals from systems not connected to the SW system work out...

Here's my list of approaches to distributing GW pumpage to HUC10s or 12s, noting that none of these will fully get the distribution vertically (to the various source aquifers):

1. Best would be to examine each user's water sources and make determinations of the distribution of the aggregate withdrawal to each source. Very time consuming, must be done manually in all cases. We probably lack the information on well yields, etc needed to do this well in all cases.

2. Second best might be to look at the cloud of water sources for each facility and **determine which HUC10s (or HUC12s) the cloud covers**, and make some distribution of the aggregate withdrawal based on that. If SWUDS were fully set up the way we want, the cloud of wells would be attached to each aggregate withdrawal site and this might be semi-automated. Unfortunately the water-use project chief before Jaime **did not get the source sites connected to the aggregates**. So, this would have to be done by manually **retrieving the source sites based on permits (if they match) or owner names**, then looking at the distribution relative to HUC10s. Less time consuming than 1, involves a task that Georgia would like to get done (making those connections in SWUDS), but still a manual task that will take a good bit of time.

1/26/2018

* Subset permit.csv by sites that are ALLC or EPWS (see below)
* Ran some data summaries for R

3. Last one I can think of is to look simply at the **facility information (AG Sites??) like the street address (not sure how many of those are populated in the database) and make a call on the HUC10 distribution**. This is probably not bad for industrial plants, but would be pretty a poor approach for the City of Albany, for example. Still a manual task, and obviously the quality of the distribution of the withdrawals goes down again.

1/29/2018

* How many AG sites in have street addresses
  + 114 sites for the whole state

**11/26/2017**

Related to *ga-permits-nwisra-20171122.xlsx* file:

Looks like we have managed to enter several classes of permits (column CI). NPDS are the NPDES discharge permits, which should be on outfalls in general. **EPWS are the drinking water permits. ALLC are the Georgia withdrawal permits, and this is, I think, what you need.**  
  
The ALLC reflect 2 rounds of database work--Jaime may be able to add to my guesses here. The ones where the permit number (PERMIT\_TX in column CG) is in the format nnn-nnnn are mostly ones I entered in 2005 or so, and I think are master permit numbers assigned to a city or industry's overall permit. The first 3 digits are a county number assigned by the State which is NOT the FIPS code.  
  
 Later on, the Georgia EPD expanded this to add a sequence number for each water source (well or intake), giving a format of nnn-nnnn-nn. Steve Lawrence entered all of those.   
  
What I hope is that for most permits, you'll be able to find the **master permit number on an AG site** (representing the total pumpage), then find associated wells or intakes that **have the same initial 3+4 digits with different sequence numbers**. **All those wells and intakes will have lat-longs**, as it's required by a database rule. **If you turn up source sites with no master permit record** (and no water withdrawals), or **master permits and pumpage with no source sites**, we'll have to go back to the files or to GaEPD to try to see what happened with those.

1/29/2018

* We should be able to address these deficiencies if we find them
  + No Master = 876 (GW with no No AG)
  + No Child = 385 (AG with no GW)

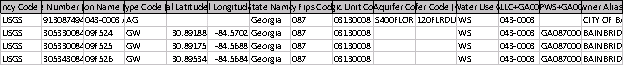
**1/19/18 (Jamie Painter’s email)**

Hey Scott and others,

So yes, the information in the **different permit\_txt fields** in SWUDS (**ALLC+GA009 and EPWS+GA009**) as well as **Site Owner Alias Name** field for the aggregate water use sites may also be included as an attribute for a GW site types in the GA NWIS database. If that linkage has been made it means **that the aggregate water withdrawals are from the wells (GW sites)** with identical information. The GW sites will have lat/longs and you could attribute the withdrawal totals to those locations or the HUC in which they fall. I can tell you that **not all aggregate water-use sites will have GW sites with permit\_txt information assigned**. Additionally, **not all wells for an aggregate water-use site are in the GA NWIS database**- that is a moving target as new wells come on line for industries/public suppliers and older wells are retired.

All that to say, yes! You might need an additional pull from GA NWIS/SWUDS to make this happen I am not completely sure what you got from Nancy,as I have really only looked when specifically asked to do so. Here is a little screen capture of a query for what is available through database links.

First record is the Aggregate site that has the withdrawal totals assigned to in SWUDS. The next three records are GW sites (wells) linked to the aggregate sites using the ALLC+GA009 field.



Does this add any further understanding on what is available?

Lets keeps this conversation going and see if we can get you closer to what you are wanting.