Chapter 4: Building the Selected Set

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Client-Server Application

Before the user can view, edit, or report on the data in the NASIS database, the user must deliberately select a group of records from the permanent national database (server) and add them into the local database stored on their personal computer (client). The user will then query the local database to place a group of records into temporary edit tables, commonly referred to as the "selected set".

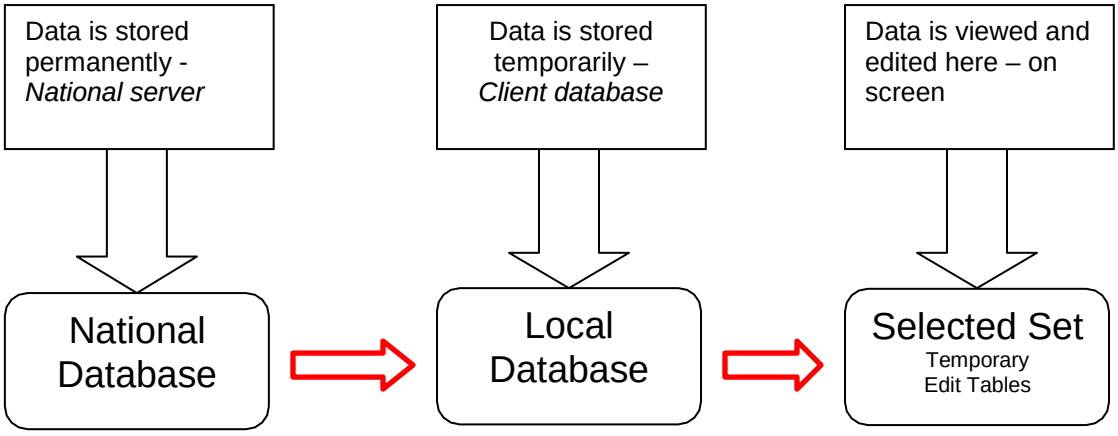


Figure 4-1: The new Client/Server concept includes three "databases"

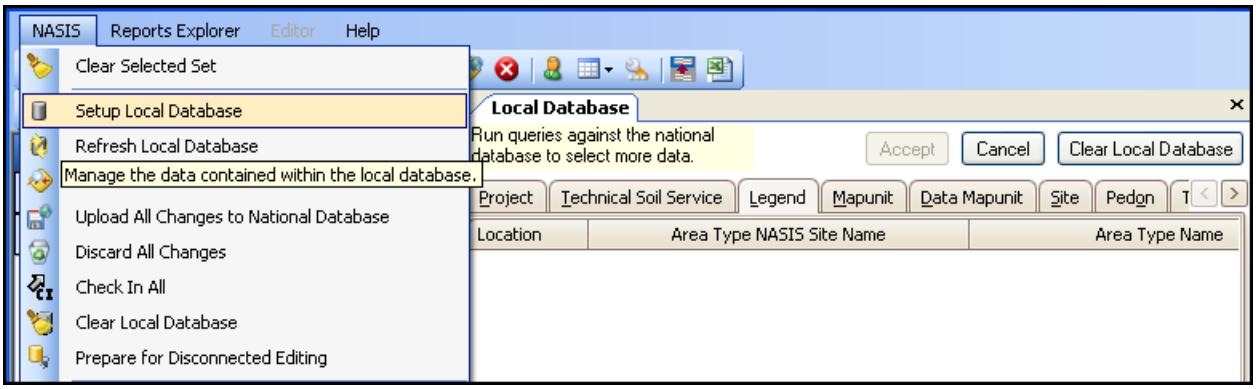
When NASIS is started for the first time, the "*Local database*" and the "*selected set*" are empty. Data must be queried and retrieved from the national database to populate the client's local database.

NOTE: When the database is initialized, there are many tables populated. The local database

contains data for all Area Types, Queries, Reports, Interpretations, Calculations, Validations and the NASIS Site/Group/User tables.

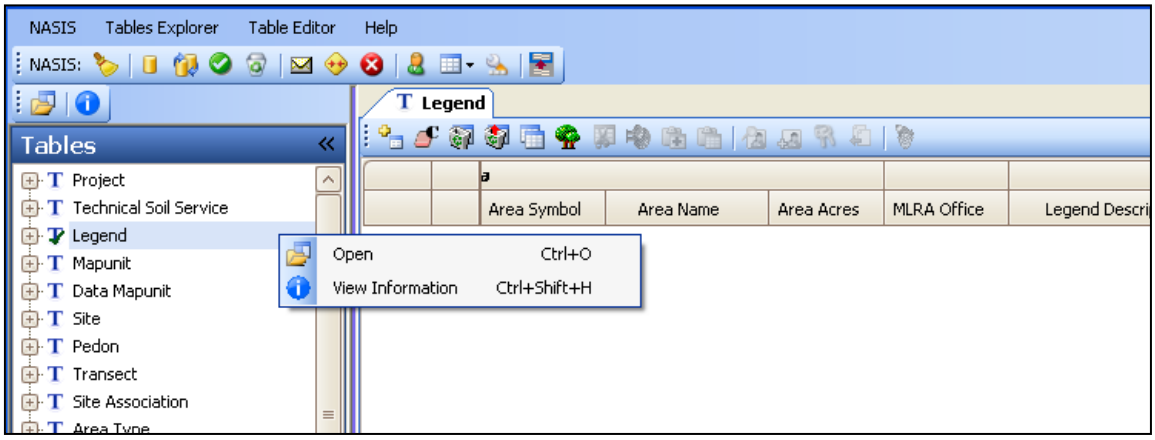
The empty **Local Database** can be verified:

Choose the "**NASIS**" menu option and select "**Setup Local Database**".
This command allows the user to view the data contained in the Local Database. It will open the Local Database Setup which allows the user to view the data that resides in the local database. The parent tables within each database object are displayed. These tabs can not be used to edit data. The Setup Local Database tab is used to verify data in the local database.



The empty **Selected Set** can be verified by:

Since no data is contained in the Local Database, it only makes sense that no data appears in the Selected Set. However, to verify:
Select "**Tables**" in the Explorer Panel
Click and Highlight the Legend table
Using the Tables Explorer menu or the right click menu, select "**Open**" to open the **Legend** table in the Editor Panel.
The table will appear in the Editor Panel (the "Selected Set") and will be empty.



Queries Explorer

The Queries Explorer manages queries. Before any work can begin in NASIS 6, data must be retrieved from the national database to populate the local database. Data must then be loaded from the local database into the selected set. The primary method of adding data to the Local Database or the Selected Set is to run a query, as shown below.

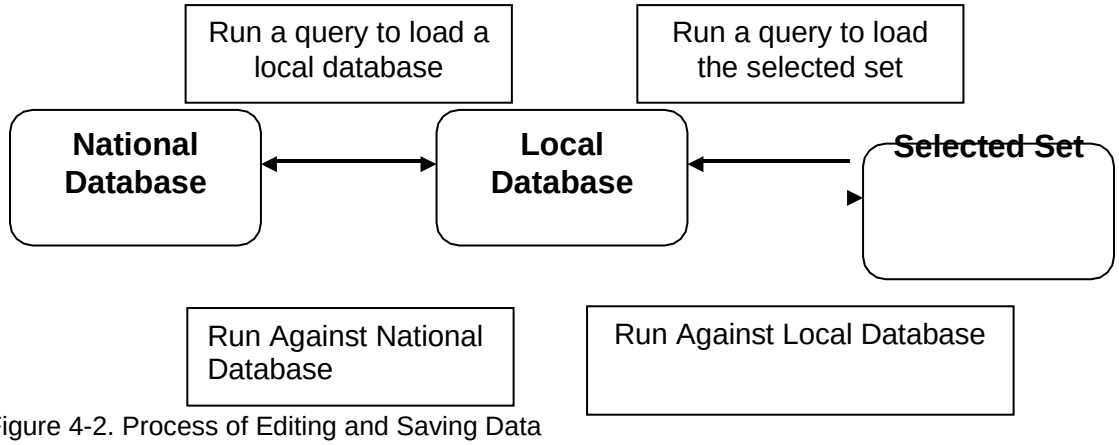
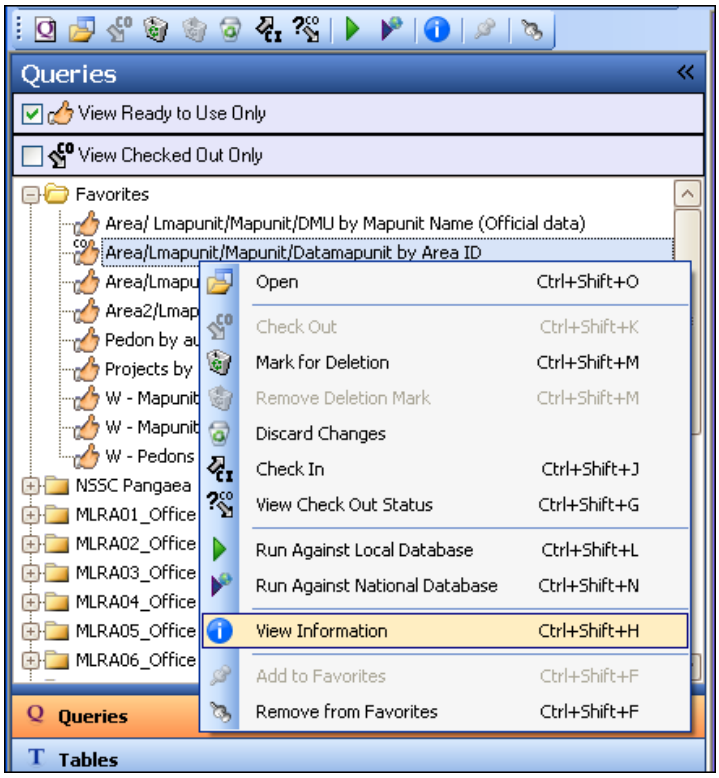


Figure 4-2. Process of Editing and Saving Data

The NASIS Queries Explorer provides the user the ability to create or run Structured Query Language scripts to load data from either the national database or the local database. The NASIS Site is opened by clicking on the plus sign to the left of the site name. The Queries Explorer is organized by NASIS Sites. Opening this "tree" provides access to those queries written by the members of that particular site.



The addition of the "Favorites" folder provides the user the ability to sift through all the queries in any NASIS site and to add preferred queries to the users' "Favorites" list.

The Queries Explorer allows the user to filter the queries based on those queries that are set "Ready for Use" (thumbs up or not ready to use: "thumbs down") or those queries the user has "Checked Out" (the CO in the upper left corner of the report name – see Area/Lmapunit/ Mapunit/Datamapunit …).

The Queries Explorer allows the user to create and edit queries. It is also used to run a query either Against the National Database (to populate the local database) or Against the Local Database (to build the selected set). The right click menu provides the same tools to check out the query, delete or undelete, discard changes, Check edits In, Run Against

Local Database or Run Against National Database, to view information on the query object, or to add or remove the query to/from the favorites. These same menu functions are available on the Queries Explorer menu.

Local Database Process Steps

The process steps to build a Local Database are:

1. Identify an appropriate query from the "**Queries Explorer Panel**".

2. The query will be run using the menu option "**Run Against the National Database**".

3. Only one Target Table is allowed on a national "run", therefore choose the highest level table as the Target Table. When a query is "**Run Against National Database**" the query will download all data linked to that Target Table. This will be explained in more detail later in this document.

4. The "Setup Local Database" screen will appear. All queried data will be assigned the Location" of "**National**". The user will make the decision to "**Accept**", "**Cancel**" or "**Clear Local Database**". If the user chooses "**Accept**" then the data will be downloaded and stored in the Local Database. Likewise, the user can choose to "**Cancel**" the query. The "**Clear Local Database**" function is used to clear the local database of previously stored data.

5. Upon selection of "**Accept**", the local database is populated.

Selected Set Process Steps

The process steps to build a selected set are:

1. To build the "**Selected set**", identify an appropriate query from the "Queries **Explorer Pan**el".

2. Run the query using the menu option "**Run Against Local Database**".

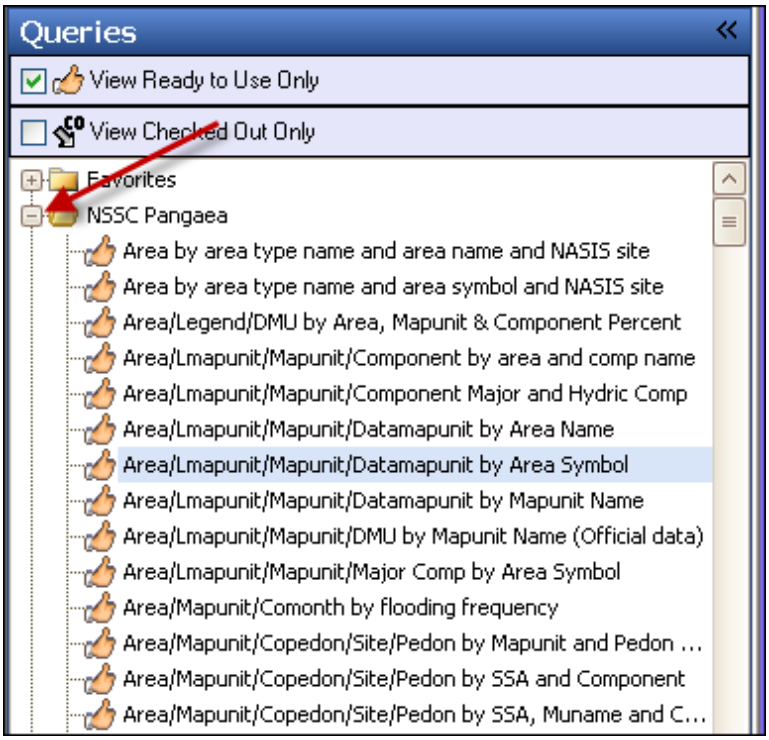
3. Target Tables can be assigned to filter for the appropriate data to build the selected set.

4. Using the "**Tables Explorer Panel**", open the appropriate table to view the data within the "selected set".

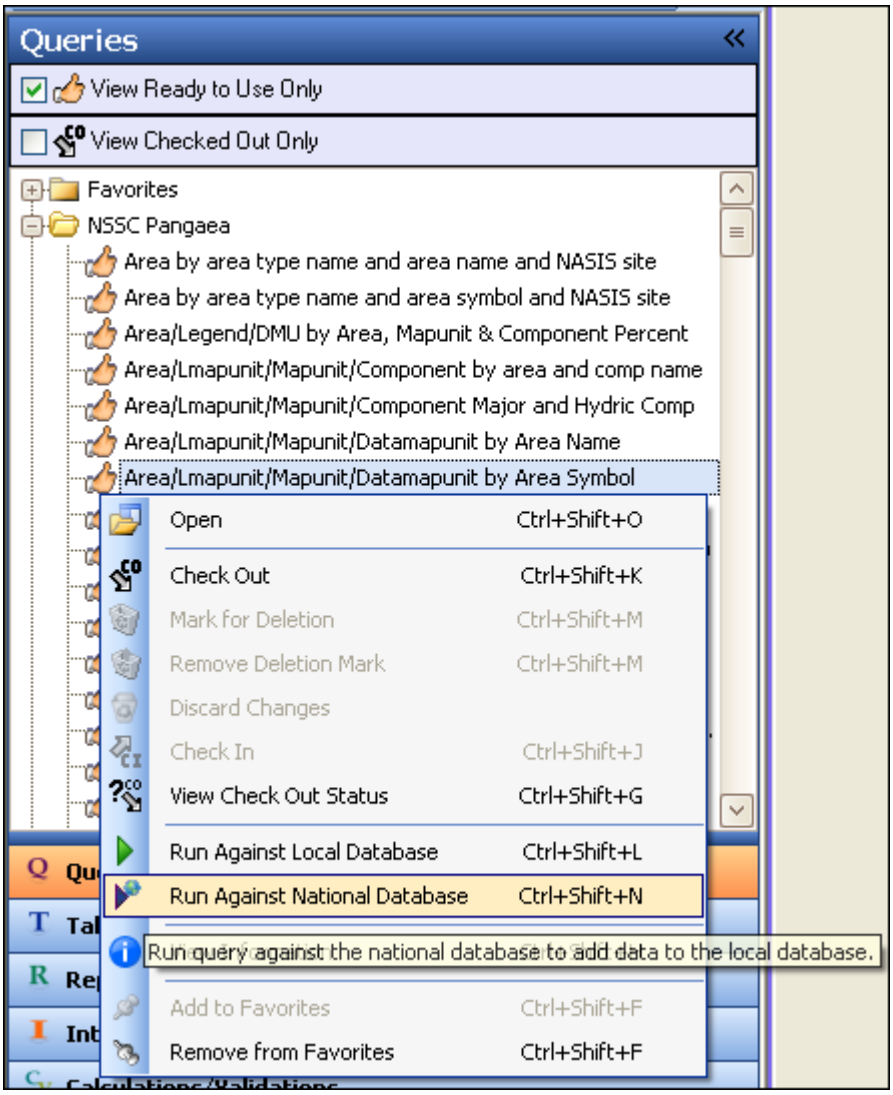
Querying the National Database

NASIS has prewritten queries (as well as the capability of writing custom queries). This section is designed to explain how to use a prewritten query to load data from the “national database” into the local database, and then into the selected set. Queries are grouped by NASIS Site. Any Query can be added to the personal “Favorites” query list simply by highlighting the query, right clicking and choosing “Add to Favorites” or from the Query toolbar choose the pushpin icon.

1. In the **Queries Explorer** panel, open the “NSSC Pangaea” NASIS Site (or the “Favorites” folder if previously added) by clicking on the “+” plus sign on the left (the red arrow).



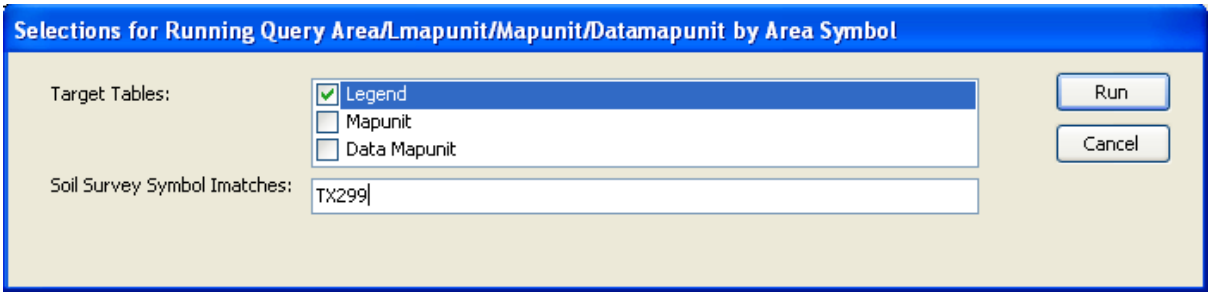
2. In the **Queries Explorer** panel, select and highlight the query named "**Area/Lmapunit/Mapunit/Datamapunit by Area Symbol**". This scenario is designed to retrieve and build the Local Database with all the data associated with a specific Soil Survey Area Symbol.



3. Using the right click menu, choose the "**Run Against National Database**". (Chapter 2 explains the various menus and toolbars.)

4. The query parameter box will appear. In the "**Target Tables**" field, highlight the **Legend** table by clicking in the small box to the left.

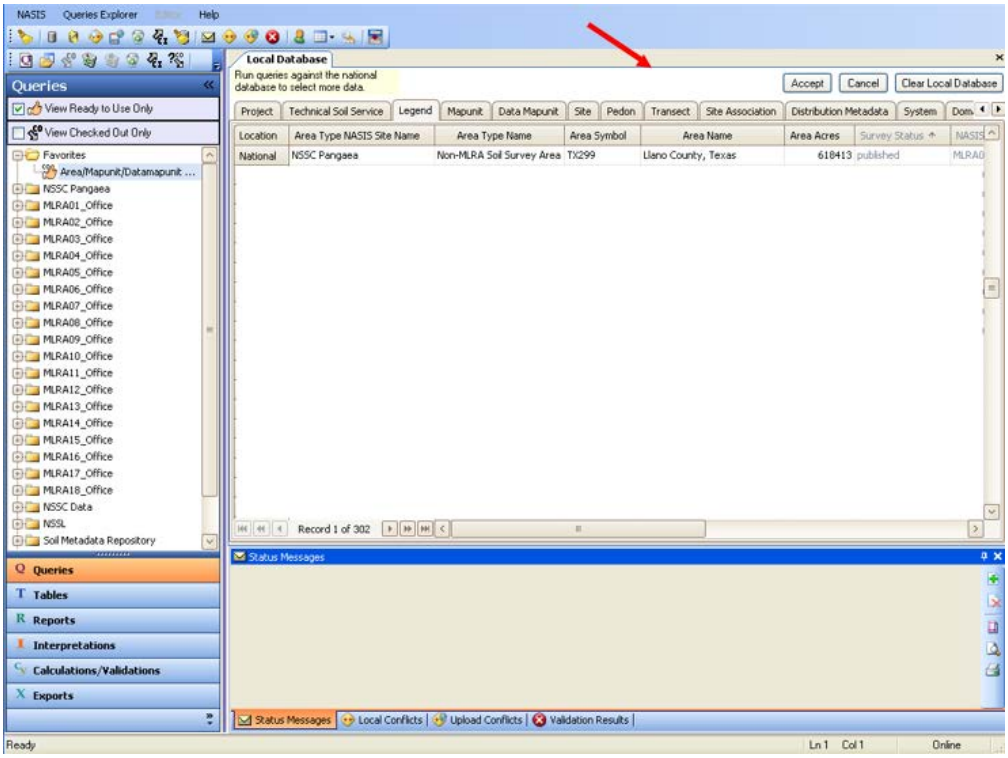
   Only one Target Table is allowed when querying the national database. In most instances it will be necessary to use the highest level object as the Target Table. Target Tables were explained in Chapter 1. Running a query against the national database will retrieve the requested Target Table along with all linked data (e.g. map units, data mapunits, pedons, sites, etc.)



5. For this example, the Area Symbol "**TX299**" is being used.

6. Execute the query by clicking on the **Run** button.
   a. The NASIS Query Parameters dialog box appears. It allows the user to fill in a value for each parameter when the query is run.
   b. The NASIS Query Parameters dialog box is the means by which the user can specify values when the query is run. The parameter allows the user to use a wildcard, (* or ?).

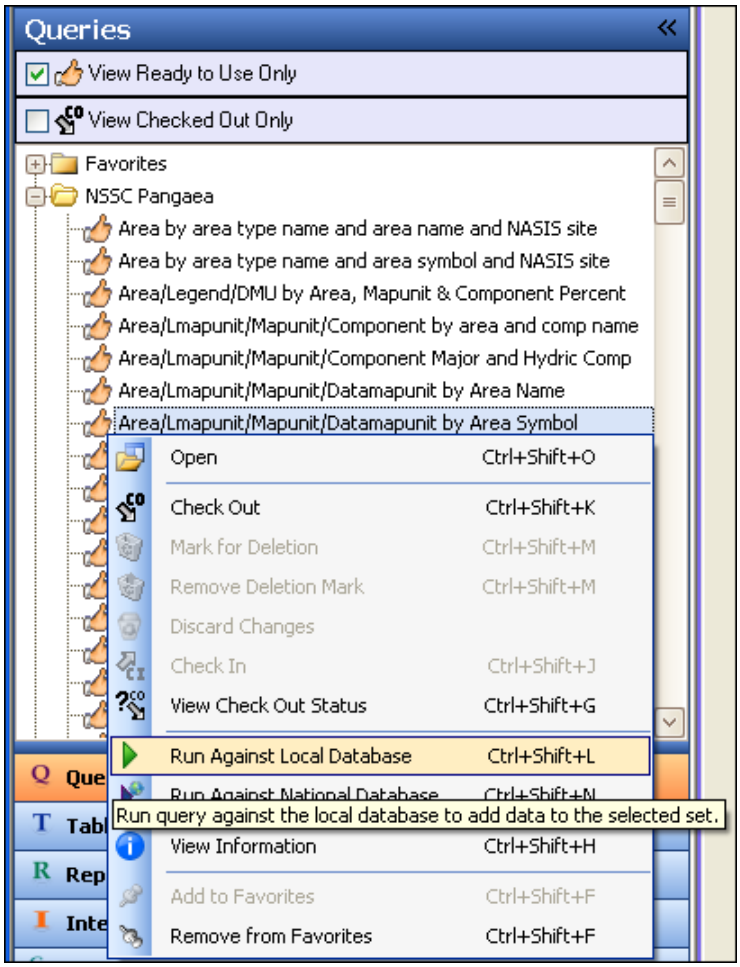
7. The eAuthentication window may appear requesting the user to log in to the NASIS 6 system. Upon completion of the query, the "Local Database Setup" window appears and identifies the data that is available to download from the national server. Note the row is designated as "National" in the **Location** column.

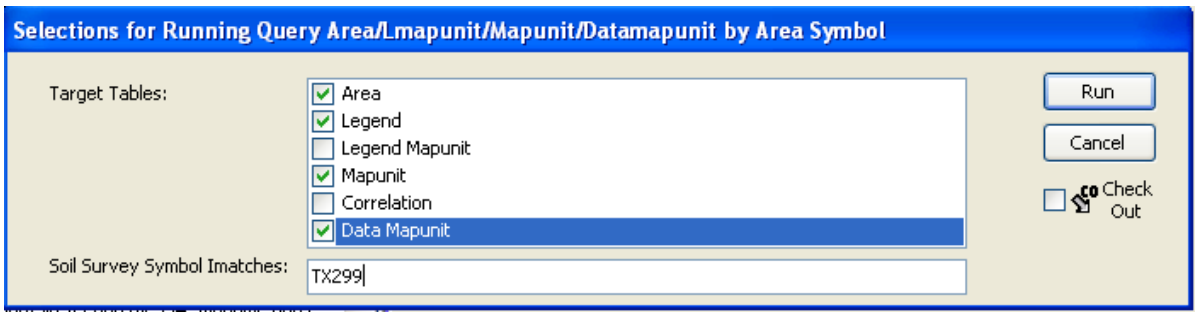


8. Using the left mouse button, click **Accept.** The message panel informs the user that the data were added to the "Local Database". The "Local Database" now contains a copy of the data from the permanent database, not the permanent data itself.

Querying the Local Database

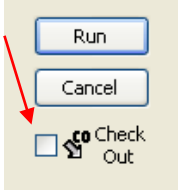
9. To load the data into the “Selected Set”, return to the same query and this time choose to “**Run Against Local Database**”.



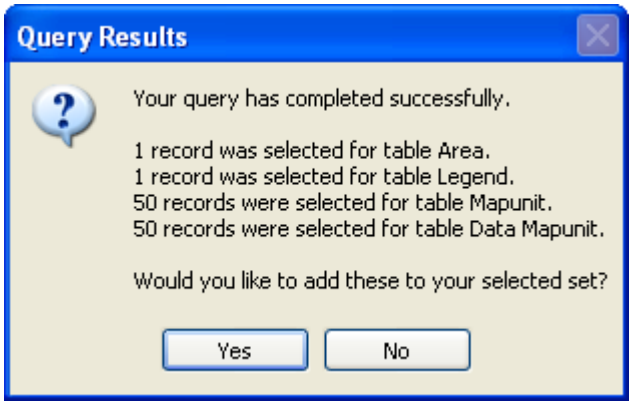


10. The query parameter box will appear, once again. Notice the difference in the Target Table choices between a National run versus a Local run. In the "**Target Tables**" field, highlight the **Area, Legend Mapunit, Mapunit, and Data Mapunit** tables by clicking in the small box to the left. When loading the "Selected Set", the choice of the Target Table is dependent on the user needs. In this instance all the data will be loaded into the selected set.

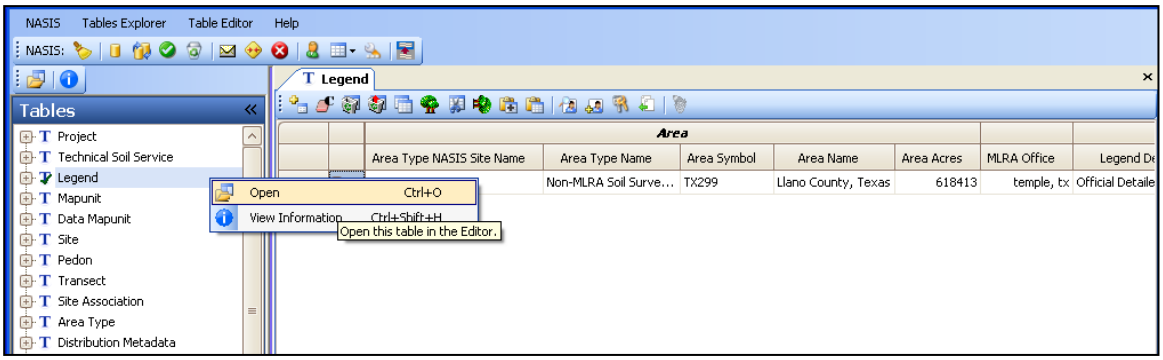
    Note: There is a "Check Out" box below the Cancel button. Data must be "Checked Out" in order to edit. This check box provides the user the ability to load and edit this data once it appears in the selected set. Clicking on this box will "check out" all the requested data. The check out will increase the time to return data. In most cases the use of this button is discouraged. The best method is to filter the selected set and check out specific records.



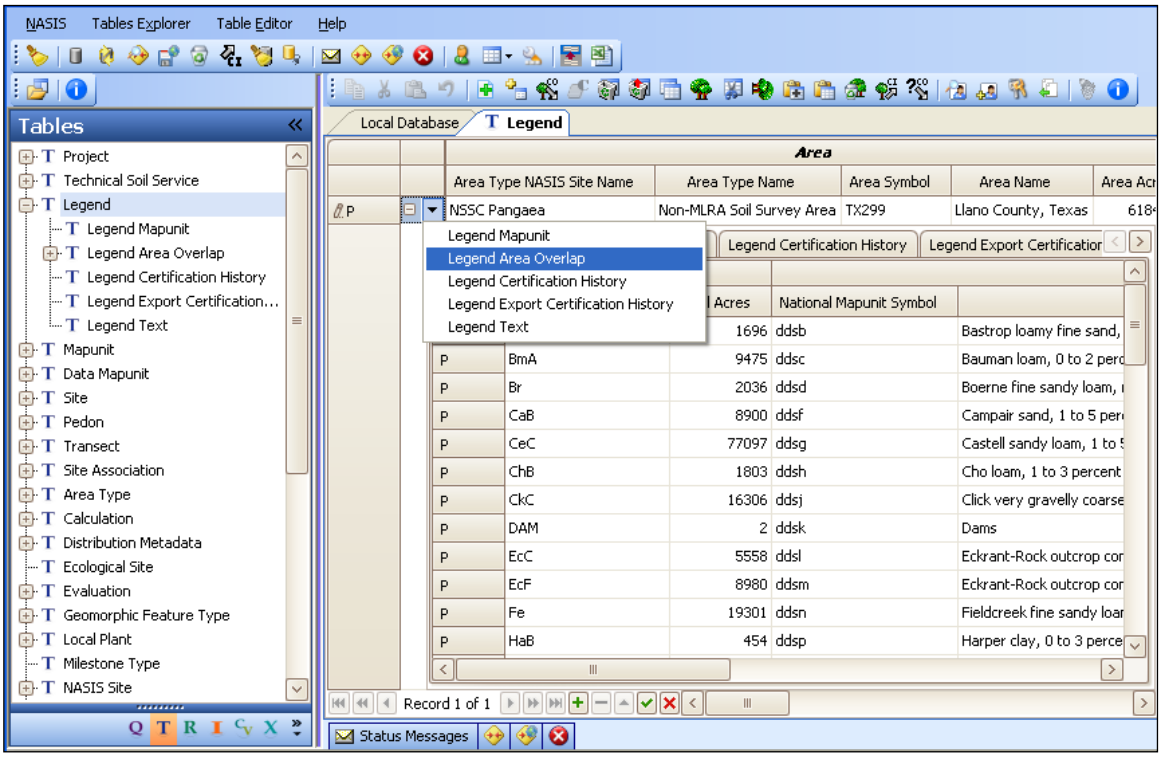
11. The "Query Results" dialog box will appear detailing the data that is loaded into the Selected Set. Select "**Yes**" to add these to the selected set.



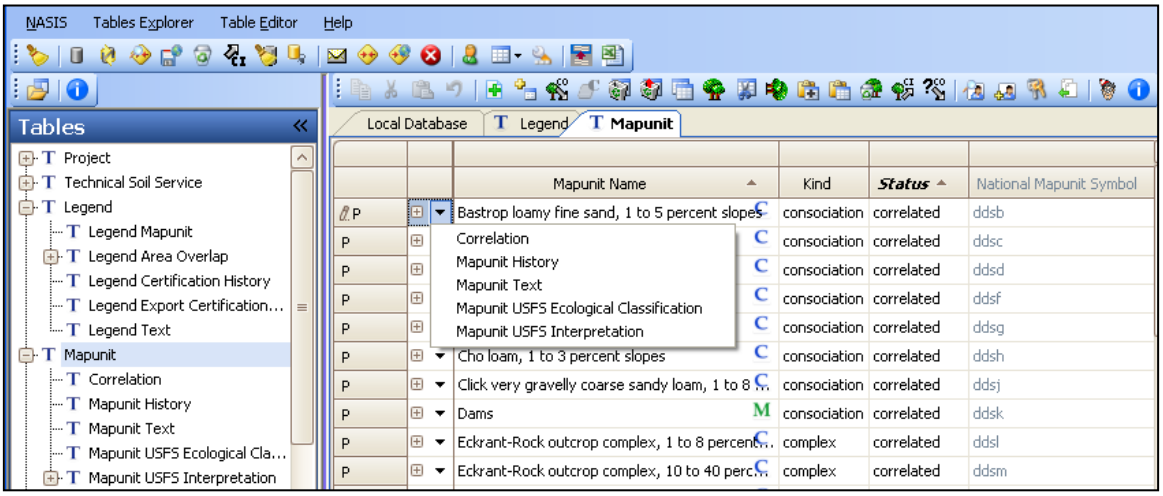
12. In order to view the data, the table must be opened in the "Editor Panel". This is accomplished by choosing the "**Tables Explorer**", locate the table, and then, if necessary, expand the list of tables by clicking on the plus sign (+) next to the parent table. In this example, the **Legend** table will be opened.



13. The Legend object can be expanded by selecting the "+" plus sign to the left of the row or using the child table drop down choice list. This action will open the child tables associated with the Legend object.



14. Other tables such as the Legend Mapunit Table can be opened to view the map units linked to the Legend. Additional tables are added to the Editor Panel using a separate "tab". The map units are viewed independent from their legend in the Mapunit table. Other tables can be opened as appropriate.



The process steps to load a selected set are:

1. Query the National Database to retrieve data to populate the Local Database.
2. Query the Local Database to retrieve data for viewing in the Selected Set.
3. Open the appropriate tables for viewing the data.

Refresh of the Local Database

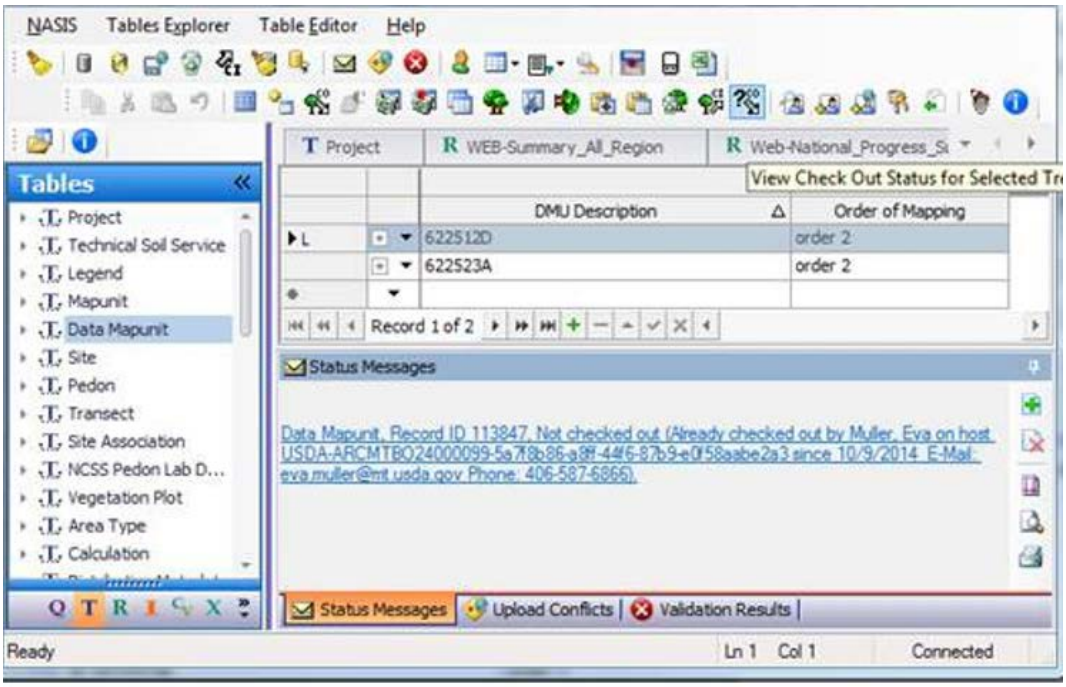
This is an explanation of what happens during a NASIS refresh. It should also explain to you WHY? it is a good idea to clear the local database frequently and re-query the data.

When you choose to refresh the Local Database , each time you open NASIS, there are two sets of data refreshed. Here is an image of the icon and the mouse over specifically lists 'Refresh Local Database'. So, what does that mean?

First, the information in the Explorer panel are refreshed which includes Queries, Reports, Interpretations, Calculations and Validations. If anyone, nationwide, creates a new explorer panel item, and uploads to the national server, then it will be refreshed into your local database. Ever think about the overhead associated with the number of Q/R/I/C/V in your local database, blame whose who write all these things that are never (or no longer) used. Clean up of unused items would help performance greatly. (guilty as charged).

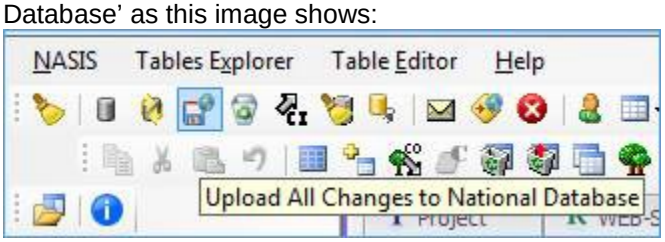
Second, the data in your local database that have been downloaded from the national server are refreshed. The national database has an identifier knowing the record IDs that you have downloaded. So, when you refresh, it compares the dates of the recordIDs in your LD to the recordIDs in the ND to identify newer records to refresh your LD. If another NASIS user has edited a record, that also resides in your local database, then that record ID is updated to reflect the edited (newer) version of that recordID.

CheckOut information - Records can only be edited after the record has been checked out. The check-out places a lock at the national level on that specific record and identifies that you have it checked out. Anyone with that same record who attempts to edit a 'checked out' record is notified that it is already checked out and the 'check out' user is identified, as shown in the image below:

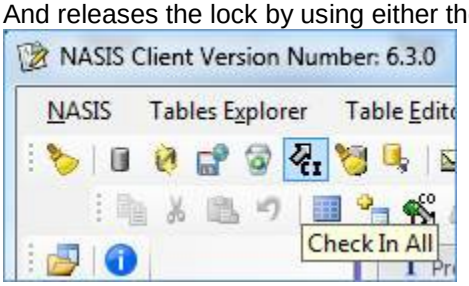


.

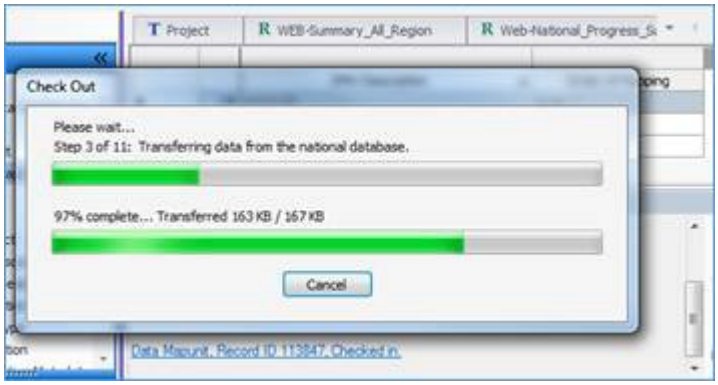
This record cannot be edited until the user completes the edits, and 'Uploads All changes to National Database' as this image shows:



And releases the lock by using either the Check in All, or Check in Selected Trees as these images show:



That data is then updated on the national server and available for others to view. If another NASIS user chooses to check out and edit the same record, notice that the data will be refreshed to your local database and then the record is checked out.



HOWEVER BE AWARE of how the refresh actually works on the Selected set

The Refresh WILL refresh the selected set for the same recordID – the refresh picked up and populated the L and H values in the slope length for the Enbar component record – focus on slope lengths:

Pre-refresh

Data Mapunit Crop Yield | Data Mapunit Text

						Slope Gradient			Slope Length USLE		
High	Component Name	SIR #... Δ	Local Phase	Taxon Kind	*Major Comp...*	Low	RV	High	Low	RV	High
	Enbar	MT0357		series	☑	0.0	2.0	4.0		91	

Post refresh

ertification History | Data Mapunit Crop Yield | Data Mapunit Text

Comp %								Slope Gradient			Slope Length USLE		
Low	RV	High	Component Name	SIR #... Δ	Local Phase	Taxon Kind	*Major Comp...*	Low	RV	High	Low	RV	High
	55		Enbar	MT0357		series	☑	4.0	6.0	8.0	40	46	55
							☐						

HOWEVER, THE REFRESH DOES NOT BRING IN NEW RECORDS INTO THE SELECTED SET, ONLY REFRESHES WHAT IS THERE.

If new data is added by another NASIS user, uploaded and checked into national database then perform these steps to get the new data into your selected set:

1. Query national database for new data.
2. ACCEPT data into your local database.
3. Query local database for new data.

Selected set record from the original editor showing the new Horizon record

T Mapunit | T Data Mapunit | T Component ×

Lineage			Comp %						
DMU Descript... ▽	DMU Rec ID	Seq	Low	RV	High	Component Name	Local Phase	Taxon Kind	*Major Comp..*
637501B FSA	107994			5		Enbar		series	☐
622523A	113858			70		Enbar		series	☑

Horizon | Component Canopy Cover | Component Crop Yield | Component Diagnostic Features | Component Ecological Site | Component Erosion Accelerated | C

		Top Depth			Bottom Depth			Thickness			
	Seq	Low	RV Δ	High	Low	RV	High	Low	RV	High	Designation
			0			56					A
			56			74					Bw
			74			127					Bg
			127			150					2Cg

My selected set AFTER refresh showing the new record MUST BE QUERIED for it to appear in the selected set.

T Project | R WEB-Summary_All_Region | R Web-National_Progress_Summary | R Copy of Web-National_Progress_... * | T NASIS Site | T Area Type | Local Dat

	DMU Description Δ	Order of Mapping
E	622512D	order 2
	622523A	order 2

Component | Data Mapunit Certification History | Data Mapunit Crop Yield | Data Mapunit Text

	Comp %								Slope Gradient			Slope Length	
Rec ID	Low	RV	High	Component Name	SIR #... Δ	Local Phase	Taxon Kind	*Major Comp...*	Low	RV	High	Low	RV
226707		70		Enbar	MT0357		series	☑	0.0	2.0	4.0		91

Horizon | Component Canopy Cover | Component Crop Yield | Component Diagnostic Features | Component Ecological Site | Component Erosion Accelerated | Component Exist

		Top Depth			Bottom Depth								OM		
Rec ID	Low	RV Δ	High	Low	RV Δ	High	Designation	Disc	Master	Prime	Sub	SIR La...	Low	RV	High
5715460		0			56		A		A			11	3.00	4.00	5.00
5715461		56			124		Cg		C			3	0.50	0.75	1.00
5715462		124			150		2C	2	C			4	0.00	0.00	0.00

This is the reason why it is not advisable to maintain a constant Local Database or a constant Selected Set. Users should be in the habit of clearing the selected set and clearing the local database at least on a weekly basis. Then re-query the needed data. The larger the local database, the slower the NASIS performance.

Refresh each morning. Check in all each night
Clear the local database and re-query data as a habit.
Be aware that new records are not refreshed into the selected set, they must be re-queried.

Pangaea queries

There are several queries owned by the NSSC Pangaea site designed to meet the needs of all users for “Run Against National Database” and for “Run Against Local Database”. The majority of these queries are named to inform the user of the appropriate Target Tables for running against the Local Database to build a Selected Set. When “Run Against National Database” the queries are limited to the use of one Target Table. The highest level target table is the most appropriate to use to download data to the local database.

Target Tables

Understanding the concept of target tables—what they are and how to use them—is fundamental to selecting and editing records.

What is a target table?

Simply put, the target table focuses the outcome of a particular query. The user can control the query so that it loads only the specific data the user wants to work on during an edit session. The target table can greatly restrict or expand the number of records returned by a particular query. To understand target tables, the user must understand the relationship between objects in the NASIS database (see “Objects, Ownership, and Record Locking,” page 1.7, as well as the *NASIS Technical Data Model Diagrams* and the *NASIS Database Structure* diagrams available through the NASIS home page or online help).

How target tables restrict the records returned by a query

In an edit session, the user wants to limit work to only those components that are ’series’. The user chooses a query that loads components by *kind* and specifies *series* as the kind. Because a component is a child table of the data mapunit object, the user could select either Component or Data Mapunit as the target table. *Whether or not the query restricts the selected set to only the series depends on the choice of target table*.

- If the Component is selected as the target table, then only components that are series are loaded.
- If the Data Mapunit is selected as the target table, then all data mapunits that have at least one component that is a series is loaded; in addition, all other components in each of those data mapunits is loaded.

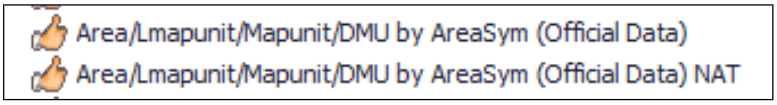
The target table must contain the data element being used to distinguish one record from another. In this case ‘compkind’ is a data element in the Component table and thus targeting the Component table will net the desired results. Targeting the Datamapunit table will fail to return the desired result because the ‘compkind’ data element is not present in the datamapunit table for the distinction to take place.

Only one table within an object is selected as a Target Table. NASIS does not allow the selection of more than one table in a single object.

Selecting records from different objects

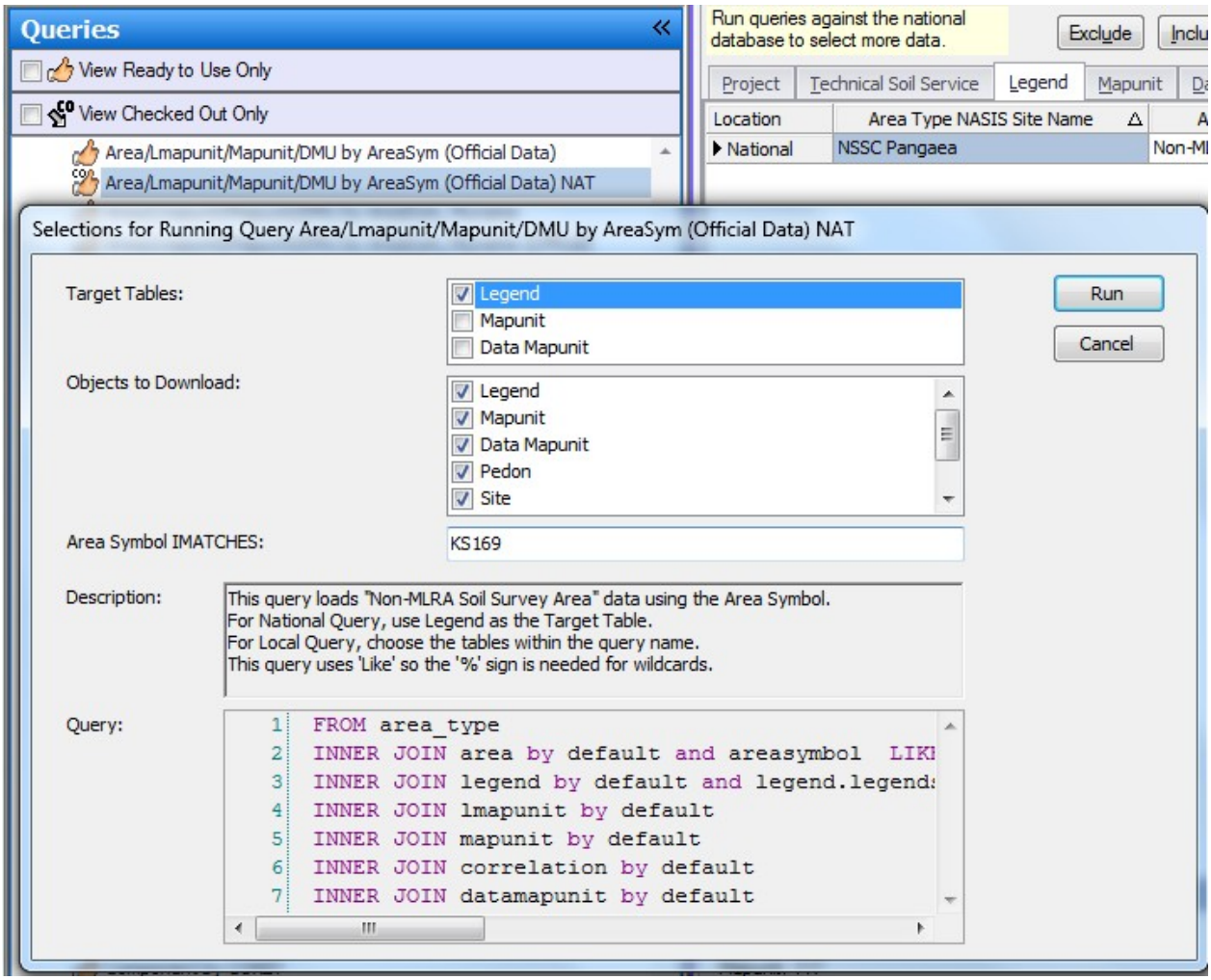
Some queries are designed to select records from different database objects, for example, from the mapunit object and from the data mapunit object. In these cases, the query is run with multiple target tables specified.

Area/Lmapunit/Mapunit/DMU by AreaSym

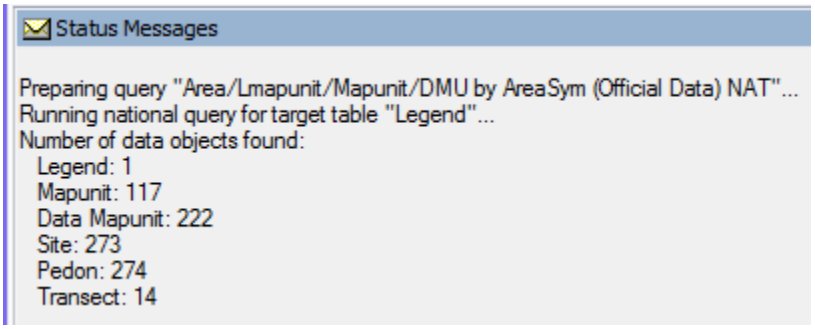


There are two queries by this name, one for use against the National database, the second against the Local database. These queries allow a user to load all data for a survey area or an entire state.

This example is run against the national database, allowing the user to select only one of three target tables. The query allows the user to select the objects in which to download data.

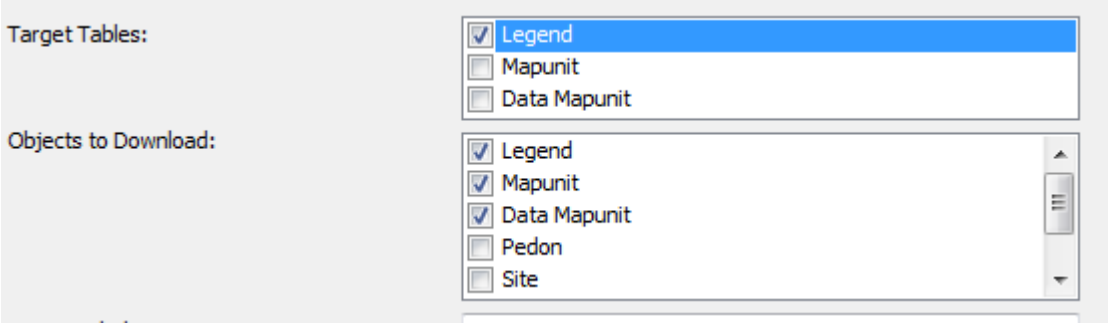


This NAT query has one parameter to query the survey area. Wildcards can be used (e.g. KS%) for multiple survey areas. This query is designed to load only those legends that are posted to the Soil Data Mart (official legends). All queries run Against the National Database is designed to downlaod all objects associated with the queried data, so you will receive all records associated with KS169. The Status Message box will provide the Results:

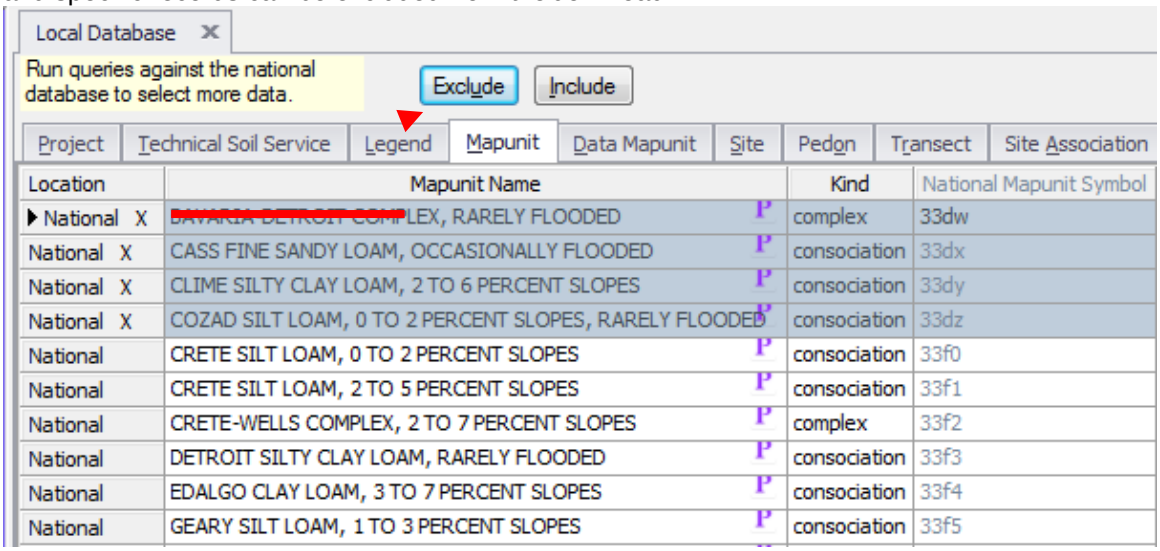


Notice the national query will load all the data associated with the survey area. There are two methods available for filtering the number of records from the national query:

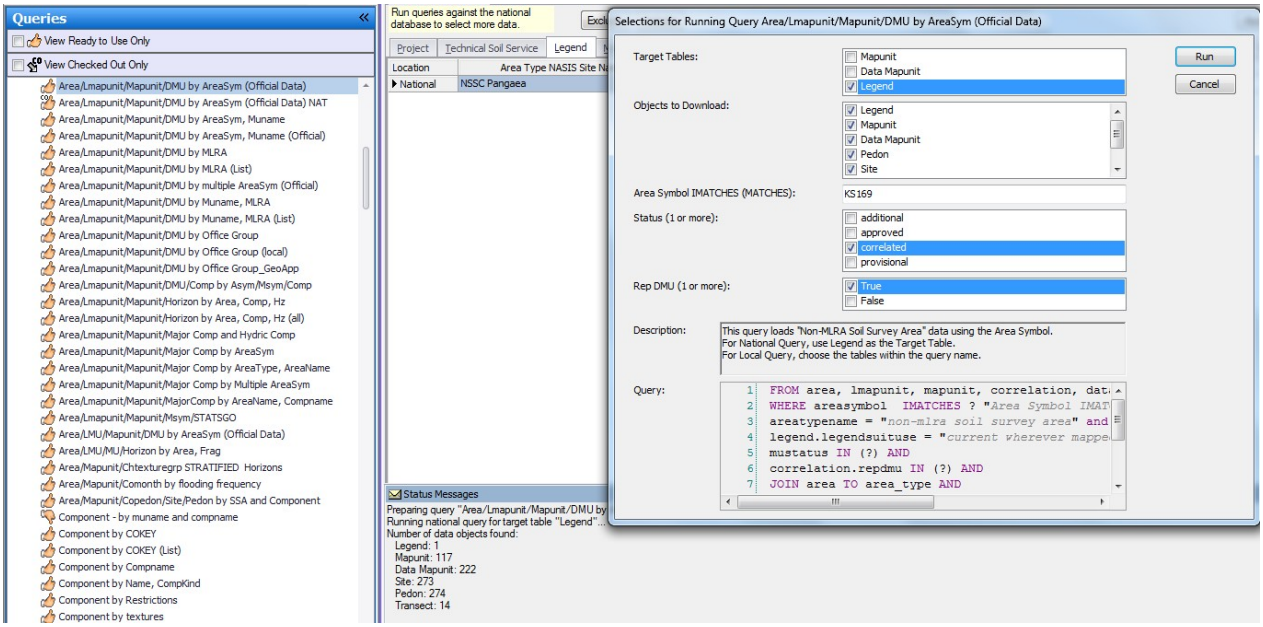
1. By choosing specific tables in the 'Objects to Download'. By removing the check mark in the objects of no interest the user can filter out the Pedon, Site, and Transect objects.



2. By Excluding certain records when the Local Database Setup appears, the user can pick and choose the data to download from the national database. Each of the objects can be selected and specific records can be excluded from the download.

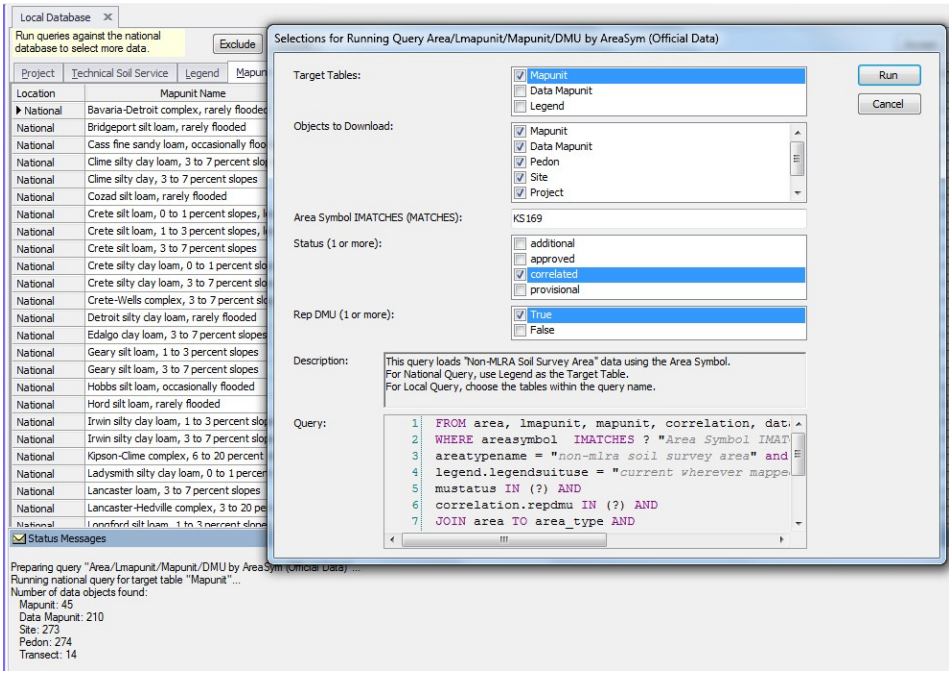


Contrast the use of the NAT query to the Local Database query. Why two queries to load the same survey area data? The simple answer is that running a parameter query against the national negates all parameters. Only one Target table is allowed when run against the national database. Assigning parameter statements in the Datamapunit object when the query selects Target Table = Legend on a national query yields the same results. In the next image, the 'local' query is run against the national database to compare results:

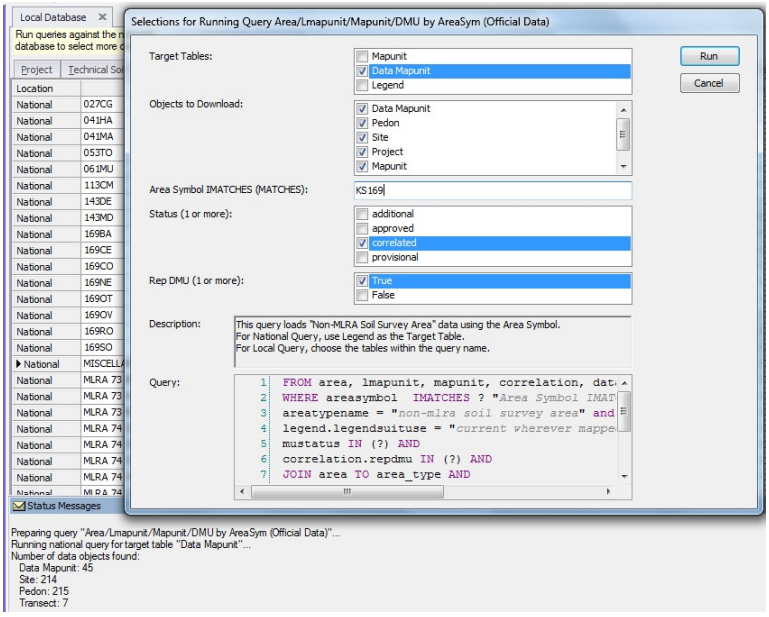


Focus on the Parameters in the query and the results in the Status Message box. Notice that the Target Table is Legend. The same survey area is selected. Yet, this query allows parameters of map unit status and Rep DMU to filter the query results. When run against national, only one Target table is allowed (so the greatest amount of associated data is downloaded). The parameters are of no use in the National run since they appear in the Mapunit and Datamapunit objects. Compare the results to the first query results – they are the same.

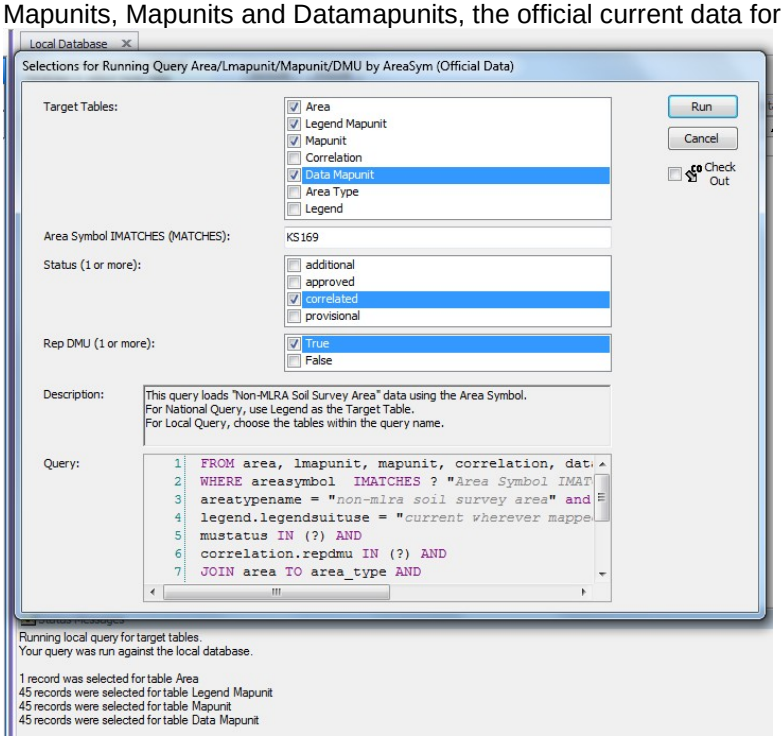
Contrast this result to choosing Mapunit as the Target Table. The loss is that the Legend object is not included in the download (which is required to run manuscript reports). The map unit status parameter is activated and reduces the number of map units to 45, from 117, and a reduction of the DMUs from 222 to 210.



The final national example will be to choose Datamapunit as the Target Table. Notice, the Legend, nor any Map units are downloaded, however the Rep DMU parameter is active and the results reduce the number of DMUS from 210 to 45. Once again, no Legend, and no Map units, means no Manuscript reports can be run.



Running the local query against the local database allows for full functionality of selecting multiple target tables allowing the parameter statement to activate. Notice the results in the Selected Set are 45 Legend Mapunits, Mapunits and Datamapunits, the official current data for the survey area.



Summary:
Why two queries? The NAT query provides one Target Table allowing a single parameter for the survey area. This allows the user to download all data associated with the survey area – and the user either

selects the default results or uses the filtering by the selection of ‘Objects to Download’ or selecting records to ‘Exclude’ before downloading. All data is downloaded. Then the local query provides parameters to further filter the data for loading the selected set.

Understand the query being used and its results when run against the national database versus when run against the local database. The national query allows for only one Target Table. The local query allows for multiple target tables.

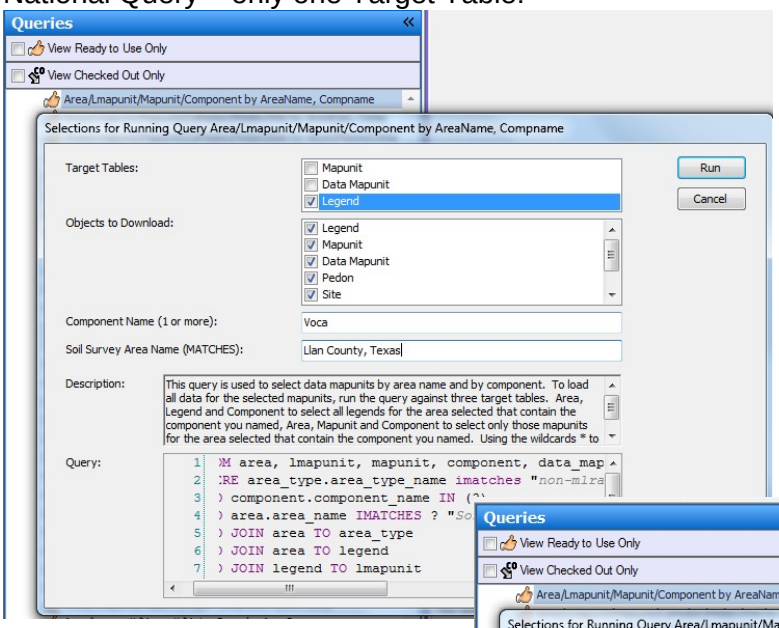
Area/Lmapunit/Mapunit/Component by AreaName, Compname

This query allows the user to load a specific component by name. The Soil Survey Area Name is added to filter the data. This parameter can be used to filter to a specific soil survey area, for instance, “Llano County, Texas”. Or it can be for all of Texas, as written. Or it could be for all surveys by entering an asterisk.

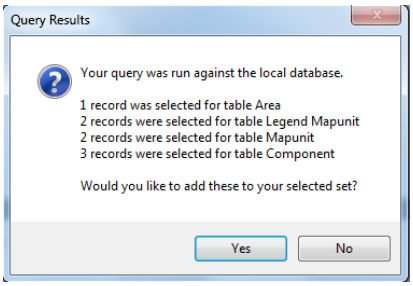
Remember, there is a difference in the National run versus the Local run. Setting the Target table to “Component”, when run against the Local database, will load only the specific components with the name specified in the Component Name parameter. Setting the Target Table to Data Mapunit will load all data mapunits in which the component name appears.

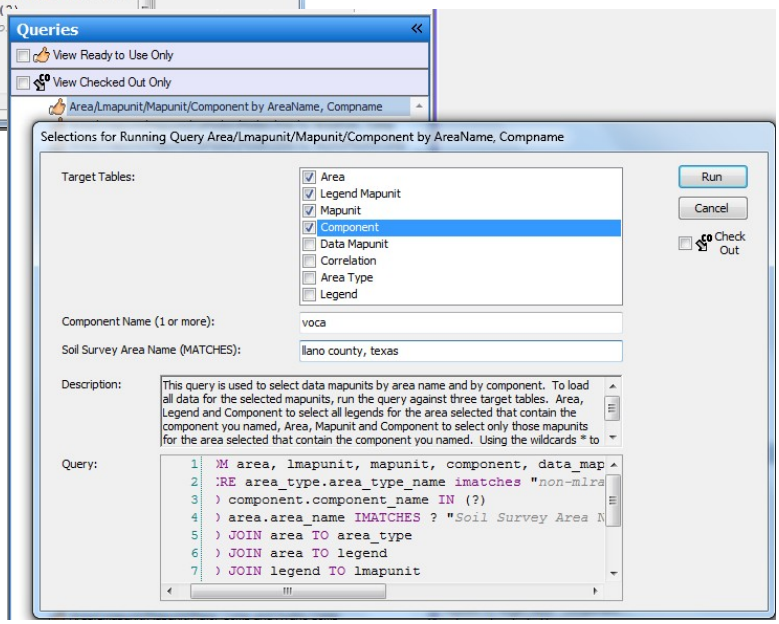
Running the query against the national database, as stated earlier, even though ‘Voca’ is populated in parameter, the query will load all records associated with the Legend ‘Llano County*’. Filtering in a national query is accomplished by deselecting ‘Objects to Download’ or by Excluding records prior to downloading.

National Query – only one Target Table:



Local Query – multiple Target Tables:





Running the same query with different target tables provides different results. Care must be taken to select the proper target tables when running a query to obtain the appropriate results.

When Target Table is set to Component:

Data Mapunit | Component

	Lineage			Comp %					
	DMU Description	DMU Rec ID	Seq	Low	RV	High	Component Name	Local Phase	Taxon Kind
	299VoB	224387			100		Voca		series
	307VsB	224596			90		Voca		series
	MLRA 82A Voca gravelly SL, 0 to 3 % slopes	688641		80	90	97	Voca		series

When Target Table is set to Datamapunit:

Data Mapunit | Component

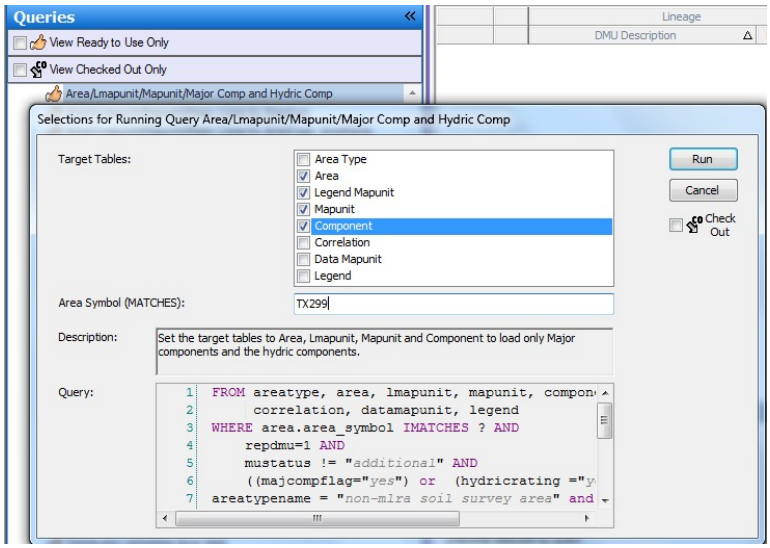
	Lineage			Comp %					
	DMU Description	DMU Rec ID	Seq	Low	RV	High	Component Name	Local Phase	Taxon Kind
	299VoB	224387			100		Voca		series
	307VsB	224596			90		Voca		series
	MLRA 82A Voca gravelly SL, 0 to 3 % slopes	688641		80	90	97	Voca		series
	MLRA 82A Voca gravelly SL, 0 to 3 % slopes	688641		1	4	8	Lou		series
	MLRA 82A Voca gravelly SL, 0 to 3 % slopes	688641		1	3	5	Bauman		series
	MLRA 82A Voca gravelly SL, 0 to 3 % slopes	688641		1	3	8	Click		series

Was the request to load only the Voca component?
Or was it to load all the Datamapunits in which Voca is a member?

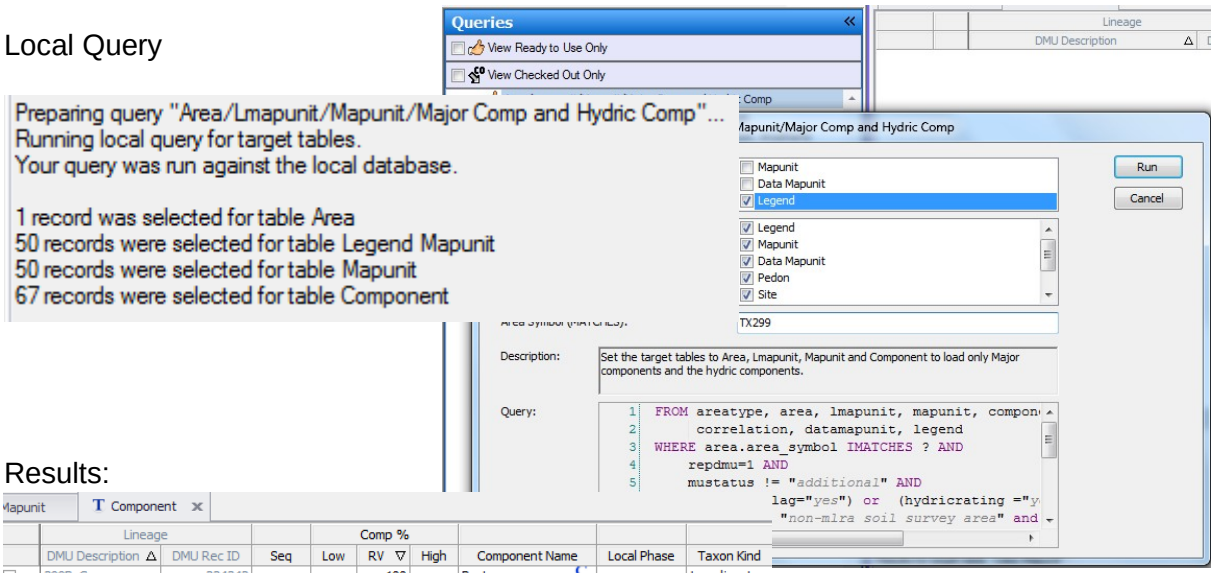
Area/Lmapunit/Mapunit/ Major Comp and Hydric Comp

When exporting data to the staging server, the decision may be to send only major components and hydric components. This query will load the data specific to this requirement. The selected set of major components and hydric components can then be exported to the Soil Data Mart.

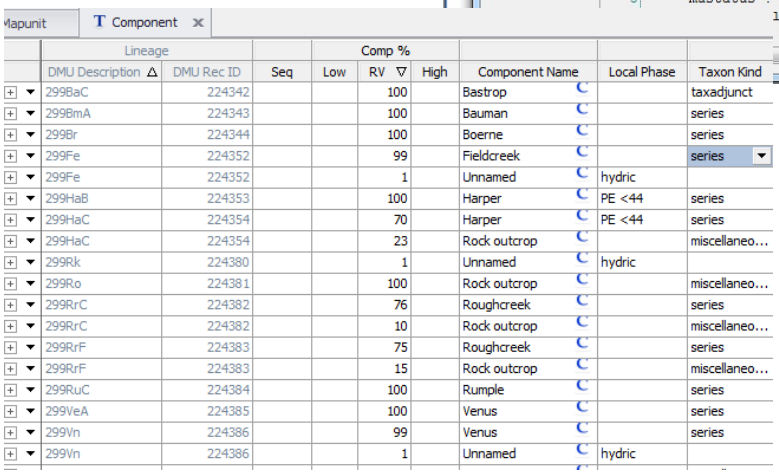
National Query:



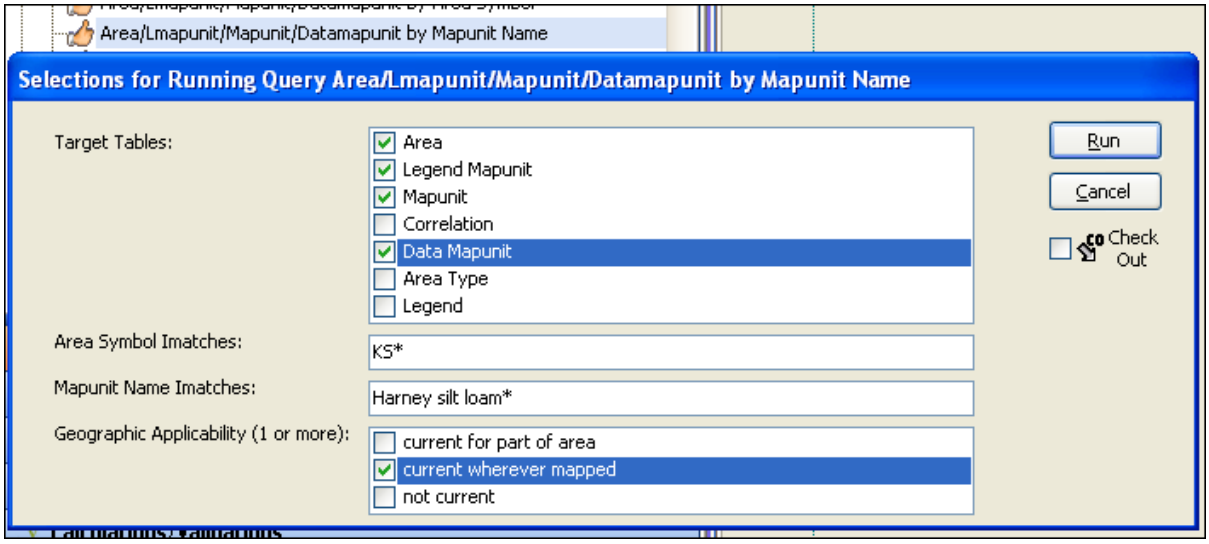
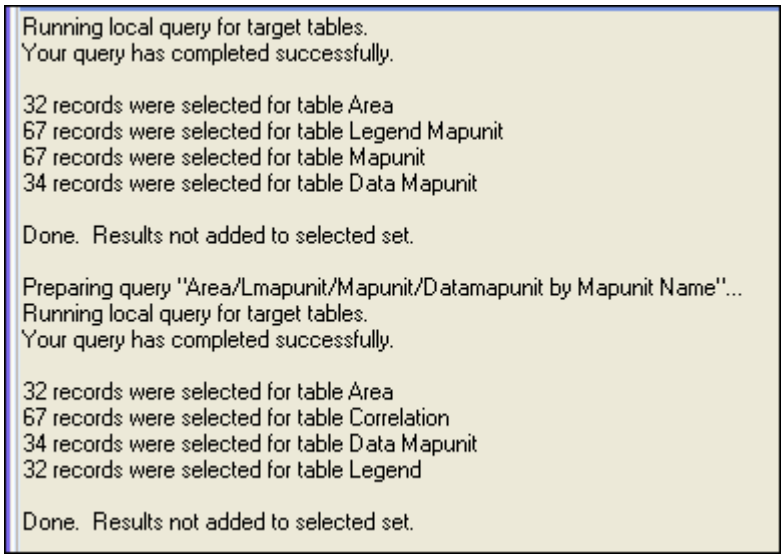
Local Query



Results:



Lineage			Comp %					
DMU Description	DMU Rec ID	Seq	Low	RV	High	Component Name	Local Phase	Taxon Kind
299BaC	224342			100		Bastrop		taxadjunct
299BmA	224343			100		Bauman		series
299Br	224344			100		Boerne		series
299Fe	224352			99		Fieldcreek		series
299Fe	224352			1		Unnamed	hydric	
299HaB	224353			100		Harper	PE <44	series
299HaC	224354			70		Harper	PE <44	series
299HaC	224354			23		Rock outcrop		miscellaneo...
299Rk	224380			1		Unnamed	hydric	
299Ro	224381			100		Rock outcrop		miscellaneo...
299RrC	224382			76		Roughcreek		series
299RrC	224382			10		Rock outcrop		miscellaneo...
299RrF	224383			75		Roughcreek		series
299RrF	224383			15		Rock outcrop		miscellaneo...
299RuC	224384			100		Rumple		series
299VeA	224385			100		Venus		series
299Vn	224386			99		Venus		series
299Vn	224386			1		Unnamed	hydric	

Area/Lmapunit/Mapunit/DMU by Areasym, Mapunit Name

This query can be used to load all occurrences of a given map unit name specific to a survey or with the use of wild cards to increase the extent. Wildcards can also be used in the Mapunit Name to increase the extent of the map units, e.g. “Harney silt loam*” to retrieve all Harney silt loam map units regardless of other phase criteria.