Section 1.0 – PLANT or SEED MIX REPORT

Table of Contents

Section	Title	Page
1.1	Introduction to PLANT or SEED MIX REPORT	1
1.2	Map Sub-Module	2
1.21	Map Display Options	2
1.22	Climate and Soil Profile Data Display	6
1.3	Search Criteria Sub-Module	10
1.4	Using the Search Criteria Sub-Module	16
1.5	Select Plants vs. Select a Mix	20
1.51	Select Plants	20
1.52	Revising the Plant and Environmental Constraint Parameters	25
1.53	Species Percent Composition Data Entry	29
1.54	Final Report Generation (for 'Select Plants' Mode)	33
1.55	Select a Mix	39
1.56	Interaction and Interchangeability of 'Select Plants' vs. 'Select a Mix'	44
1.57	Final Report Generation (for 'Select a Mix')	44

Section 1.0 – PLANT or SEED MIX REPORT

List of Figures

Number	Caption	Page
1	eVegGuide introductory window, indicating the REPORT tab, and the 'Map' and 'Search Criteria' options within the PLANT OR SEED MIX REPORT module.	1
2	Example of 'Satellite' mode on the 'Map' sub-module, with 'Labels' toggled ON.	2
3	Display of Background Layers available for selection in the 'Map' sub-module of the eVegGuide. Click on 'BACKGROUND' to display all options.	4
4	Display of Background Layer name and sub-level description.	5
5	Display of Climate and Soil Profile Data in the 'Map' sub-module of the eVegGuide.	6
6	Display of Soil Map Unit data for the example map unit no. 461777 (Figure 5), accessed from the Map Unit link at the bottom of the Climate and Soil Profile summary window in the eVegGuide.	7
7	Excerpt of display of further Soil Map Unit data for the example map unit no. 461777 (Figure 5), accessed from the Map Unit link at the bottom of the Climate and Soil Profile summary window in the eVegGuide.	8
8	eVegGuide introductory window, indicating the 'Search Criteria' option within the PLANT OR SEED MIX REPORT module.	10
9	Introductory 'Search Criteria' window, indicating the parameters available for constraining or filtering the plant search, as applicable to the pinpointed revegetation site.	11

Number	Caption	Page
10	Accessing a Calflora taxon record for a species (in this example, for *Nassella pulchra*) using the 'Calflora' link in the Plant Record window of the PLANT SEARCH module.	13
11	Display of the Taxon Report from the Calflora database for the example, purple needlegrass (*Nassella pulchra*) (see Figure 10), showing documented occurrence observations.	13
12	Reduced-scale example of the Level IV Ecoregion map for California.	15
13a	Example of initial results obtained from a plant search using conservation practice 327 – Conservation Cover and practice purpose 2 – Upland Wildland in MLRA 17 (near Corcoran, CA).	17
13b	List of applicable, species-specific Footnotes accompanying initial results obtained from a plant search using conservation practice 327 – Conservation Cover and practice purpose 2 – Upland Wildland in MLRA 17.	18
14	Results of 'Plant-Practice Search' as accessed from the link in the 'Search Criteria' window (see Figure 13a) for MLRA 17, conservation practice 327, and practice purpose 2.	19
15	Display of 'Select Plants' and 'Select a Mix' options in the 'Search Criteria' sub-module window, from which the planner can review and select 1) a subset of individual species (i.e., 'Select Plants'), or 2) review and select a pre-set guideline mixture (i.e., 'Select a Mix').	20
16	Display of the condensed Calflora Taxon Report summary for a species (in this example, common yarrow, *Achillea millefolium*), as accessed by clicking on the species' Scientific Name link in the 'Search Criteria' results table.	22
17	Display of the full Calflora Taxon Report for a species (in this example, *Achillea millefolium*), as accessed by clicking on 'Calflora Taxon Report' in the condensed Taxon Report summary window shown in Figure 16.	23
18	Display of the 'eVegGuide Plant Search' link within the condensed Calflora Taxon Report summary for a species (in this example, common yarrow, *Achillea millefolium*), which then accesses the species' eVegGuide Plant Record displaying the base 100% PLS seeding rate for that species.	26

Number	Caption	Page
19	Display of the revised plant search initiated from the 'Search Criteria' sub-module, with Plant Type 'Grass or Grass-like' selected, and the 'Soil' and '4ETa Zone' environmental constraints enabled (Example 1).	28
20	Display of the revised plant search initiated from the 'Search Criteria' sub-module, with Plant Type 'Forb' and 'Grass or Grass-like' selected, and the 'Pollinator Habitat', 'Soil', and '40-mile' environmental constraints enabled (Example 2).	29
21a	Display of the revised plant search with conservation practice '550 – Range Planting' selected for a grazed rangeland application, and no environmental constraints enabled (Example 3).	30
21b	Display of the revised plant search with conservation practice '550 – Range Planting' selected for a grazed rangeland application, and the 'Ecoregion 4' environmental constraints enabled (Example 3).	30
22	Display of composition % values entered for MLRA 17 (Corcoran, CA area), practice '327 – Conservation Cover', and with no environmental constraints enabled.	31
23	Location of the example revegetation site and corresponding 'Climate & Soil Profile' data from the 'Map' sub-module – for final species selection and composition percentage assignment (see Figure 22).	32
24	Location of FINAL REPORT button, which starts the process for generating the electronic file and preparing the written final revegetation recommendation report.	33
25	Digital screen version of the final mixture formulation, based on species selections and corresponding composition percentage assignment from Figure 22.	34
26	Printing and file save options in the digital screen summary version of the final mixture formulation.	35
27	Microsoft Excel spreadsheet version of the final mixture, produced by clicking on GENERATE CSV DOCUMENT in the digital screen summary version of the final mixture formulation.	36

Number	Caption	Page
28a	Microsoft Word document version (Page 1) of the final mixture, produced by clicking on GENERATE RTF DOCUMENT in the digital screen summary version of the final mixture formulation.	37
28b	Microsoft Word document version (Page 2) of the final mixture, produced by clicking on GENERATE RTF DOCUMENT in the digital screen summary version. Remainder of Footnotes (Page 3) truncated for abbreviation.	38
29	Display of pre-set guideline mixtures available for the example using MLRA 17, conservation practice '327 – Conservation Cover', and practice purpose '2 – Upland Wildland'.2	41
30	Display of the individual component species and their respective composition percentages within the mixture for the first example – 'Pollinator MLRA 15, 17, 18 Annual & Perennial Mix'.	42
31	Display of the individual component species and their respective composition percentages within the mixture for the second example – 'MLRA 20 Mixed Shrub / Forb / Grass Mixture 1 (DRAFT)'.	43

1.0 PLANT or SEED MIX REPORT

1.1 Introduction to PLANT or SEED MIX REPORT

The **PLANT or SEED MIX REPORT** module, accessed under the **REPORT** tab at the top of the introductory **eVegGuide** window (Figure 1), is the module that facilitates 1) selection of the specific revegetation site in the '**Map**' sub-module; and 2) initiates the process for species or pre-set guideline mixture selection in the '**Search Criteria**' sub-module. Each of these two sub-modules provides for detailed specification and display of revegetation site parameters by which the species or mixture search can be constrained. The '**Search Criteria**' sub-module allows the planner to access a form-driven site parameter selection tool that facilitates delineation of all applicable environmental variables (biotic and abiotic) to which preferred species or mixtures should be adapted.

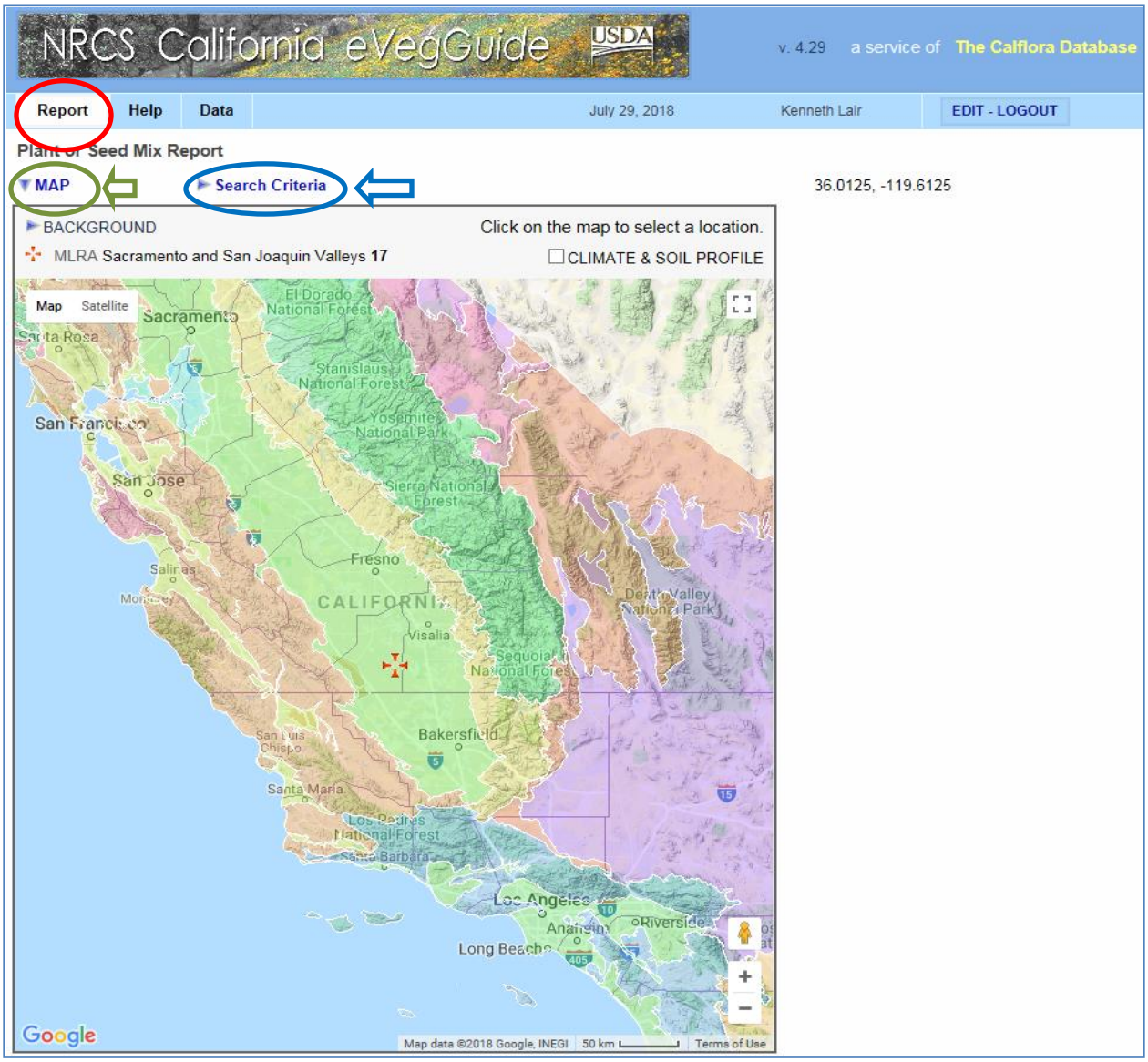


Figure 1. eVegGuide introductory window, indicating the REPORT tab, and the 'Map' and 'Search Criteria' options within the PLANT or SEED MIX REPORT module.

A planner can shift between the '**Map**' (**green circle**) and '**Search Criteria**' (**blue circle**) sub-modules interactively (Figure 1). Revegetation site selection will remain as originally specified until changed in the '**Map**' sub-module.

1.2 Map Sub-Module

1.21 Map Display Options

The map display is driven by, and shares features (physical displays, icons, links, etc.) with Google Maps™. Google Maps™ documentation is shown at the bottom-right of the map. Click on '**Map**' at the top-left of the map to open this sub-module (Figure 1).

Map View vs. Satellite View

The **eVegGuide** map can be toggled between '**Map**' and '**Satellite**' views, each of which displays different colors and general topographic relief in relation to the **Background Layer** (see below) that has been selected (Figure 2). Click on either '**Map**' or '**Satellite**' to compare the different displays.

Additionally, within the '**Map**' mode, '**Terrain**' or '**Non-Terrain**' selections can be made. After clicking on '**Map**' in the top-left corner of the color-coded map, toggle (check the box) for '**Terrain**' mode to reveal general topographic relief features to help distinguish between general land forms (e.g., valleys vs. mountains vs. desert flats) within '**Map**' mode. Toggling the '**Terrain**' feature to OFF reverts the map to displaying only the color coding assigned to the **Background Layer** selected.

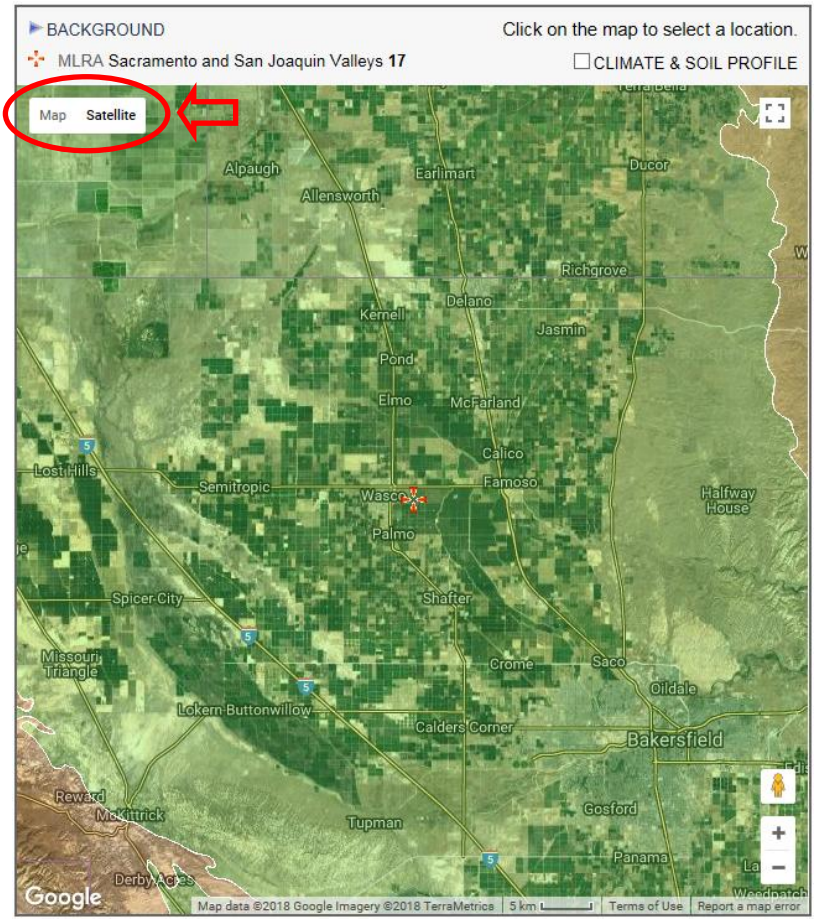


Figure 2. Example of 'Satellite' mode on the 'Map' sub-module, with 'Labels' toggled ON.

Within the '**Satellite**' mode, the planner can also toggle (check the box) for '**Labels**', which displays names and locations of numerous physical features, including cities, towns, roads and highways, public lands and/or protected areas, and other man-made features. The number of physical features displayed increases in proportion to the scale of the map – i.e., zooming in (see below) will reveal increasingly more features in this mode.

Map Movement

As with Google Maps™, the map can moved in any direction to display any part of California. Simply use the **"hand" cursor** ( ) by pressing and holding the left button on your mouse, and then shifting the map to your desired location. Zooming out on the map (see below) will facilitate views of larger geographic areas, thereby allowing faster movement and positioning of the map for your region or specific location of interest.

Map Scale (Zoom In / Zoom Out)

The map scale can be increased ("zoomed in") or decreased ("zoomed out") by using either the **Plus / Minus Icon** ( ) at the extreme bottom-right of the map (Figure 2), or by using the mouse scroll wheel (if available). The utility of using the mouse scroll wheel may be dependent upon the operating system and other software on your computer. If this feature is not available or does not work, use the **Plus / Minus Icon**. Zooming in (to the extent needed) on the general location of interest (e.g., the specific revegetation site) will display physical features of the site (e.g., field boundaries, roads, water bodies, other recognizable features) in increasing detail and clarity.

Full Screen View Toggle

The map can be increased to full-screen view by clicking on the **Full Screen View Icon** ( ) located at the extreme top-right of the map (Figure 2). Click on the icon again to revert back to normal window view.

Site Photographic View

Also as with Google Maps™, a photographic view (image) of a pinpointed site location can be enabled and viewed as a small sub-window nested within the map by clicking on the **Site Photographic View Icon** ( ) (Figure 2) at the bottom-right of the map, just above the **Plus / Minus Icon** ( ).

Revegetation Site Location

Zoom in (to the extent needed) on the general location of the revegetation site in order to display sufficient physical features of the site (e.g., roads, water bodies, other recognizable features) to specifically identify and pinpoint the exact location of the revegetation site. Place the "hand" cursor ( ) on the specific site, and then click. The pinpointed site location will then be displayed as a red crosshair icon ( ). As noted above, zooming in (to the extent needed) on the location of interest (e.g., the specific revegetation site) will display physical features of the site (e.g., field boundaries, roads, water bodies, other recognizable features) in increasing detail and clarity – enhancing ability to accurately pinpoint the revegetation site. Notice that the default UTM coordinates at the top-right of the map will change when the revegetation site is finally pinpointed by clicking on the cursor.

Latitude / Longitude Coordinates Display

Decimal-format latitude and longitude coordinates are always displayed above and to the right of the map, corresponding to the specific revegetation site location indicated by the red crosshair icon ( ). Note that the coordinates will change when the revegetation site is changed.

Background Layer Display Options

The **eVegGuide** map is capable of displaying numerous color-coded '**Background Layers**' which depict various physical features, ecological regions, climate and soil parameters, and display options for all of California, as well as for the selected specific revegetation site and immediate surrounding area. The range of selections, displayed by clicking on '**BACKGROUND**', is shown in Figure 3.

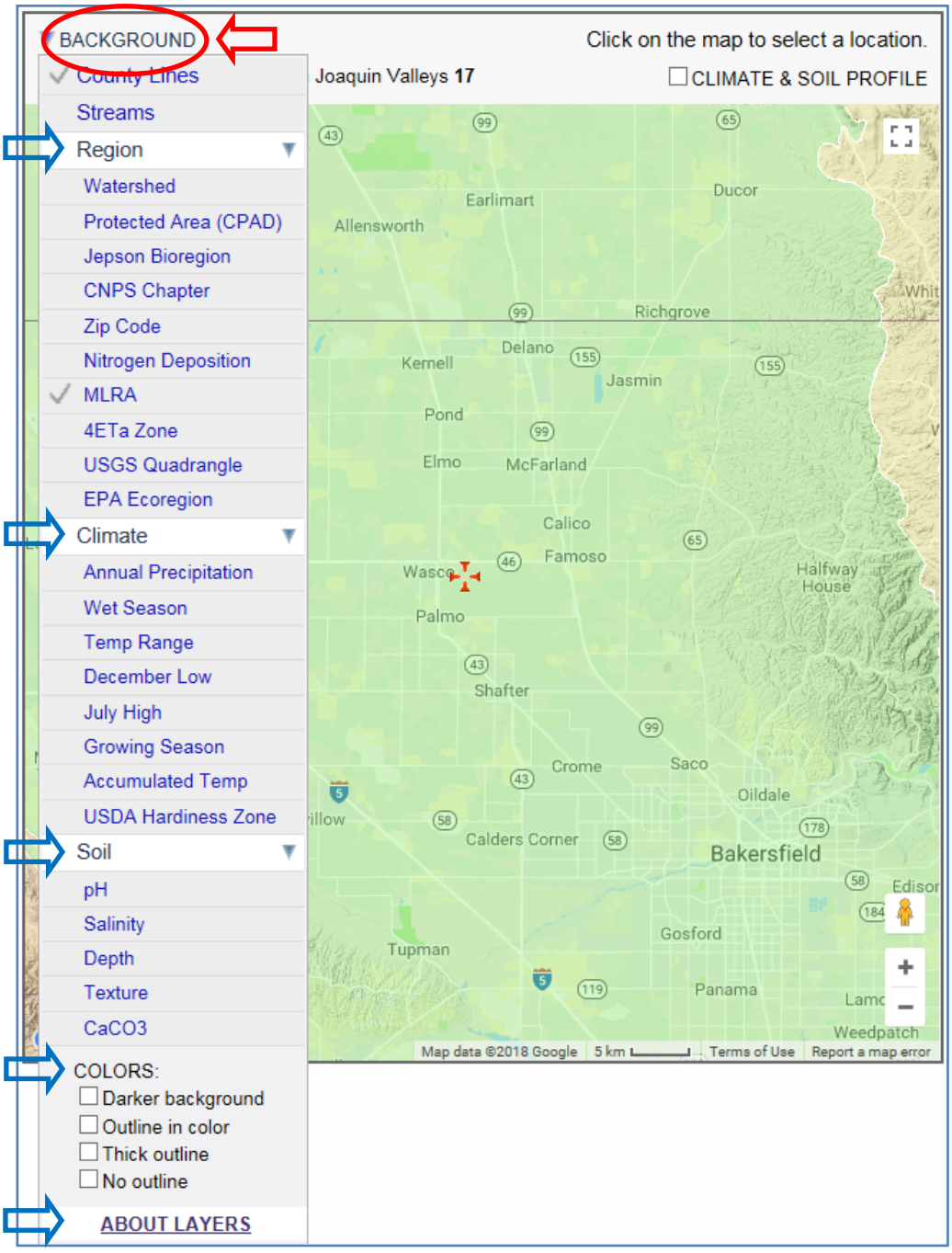


Figure 3. Display of Background Layers available for selection in the 'Map' sub-module of the eVegGuide. Click on 'BACKGROUND' to display all options.

The **Background Layer** selections are categorized by Regional, Climate, and Soil subsections (Figure 3). Each of these subsections can be expanded to list all component options, or contracted to hide the component options, by toggling the blue arrow ( ) to the right of each subsection heading.

At the top of the selection list, the options for '**County Lines**' and '**Streams**' are always in expanded display, and can be selected or de-selected independent from the other options below. If selected (as indicated by a √**-mark**), these will remain displayed regardless of the layer selections made below.

Expand the Regional, Climate, and/or Soil category headings (Figure 3), and then examine the options under each by clicking on the preferred **Background Layer** that you wish to display. Each layer has its own color-coding format that differs in color range and distribution across the landscape. Zooming out in scale better reveals the juxtaposition of the varying levels or designations within each layer. The colored polygons of a selected layer are superimposed on top of the Google Map™. Not all layers are available at all zoom levels.

For each displayed **Background Layer**, the specific description or name of the level or designation associated with the pinpointed revegetation site (indicated by the red crosshair icon) is displayed at the top-left of the map (Figure 4). Click again on '**BACKGROUND**', which removes the selection list from view, and reveals the selected layer name and its sub-level description.

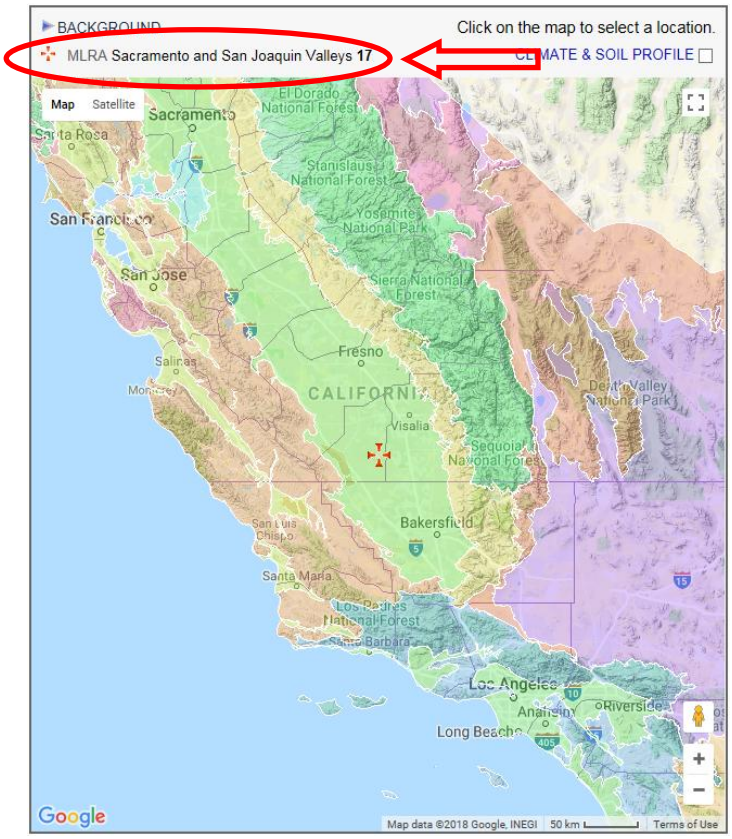


Figure 4. Display of Background Layer name and sub-level description.

To see full legends, keys, and detailed descriptions for all the color-coded **Background Layers**, click on the '**ABOUT LAYERS**' link at the bottom of the selection list (Figure 3). This link accesses the HELP page section on Background Layers (see Section 6.223 under **HELP PAGE REVIEW**).

Toward the bottom of the **Background Layers** selection list are further options under '**COLORS**' for changing the color display of the map (Figure 3). These options include:

- Darker background – displays darker colors for each color polygon.
- Outline in color – displays a colored border around each color polygon to better distinguish it from neighboring polygons.
- Thick outline – thickens the colored border around each color polygon.
- No Outline – removes borders from each color polygon.

1.22 Climate and Soil Profile Data Display

Once a revegetation site has been pinpointed on the map using the crosshair icon ( ), the planner can display a summary of select climate and soils data specifically applicable to the site (Figure 5). This **Climate and Soil Profile** data, displayed to the right of the map, is enabled by checking the box or clicking on '**CLIMATE & SOIL PROFILE**', located at the top-right of the map.

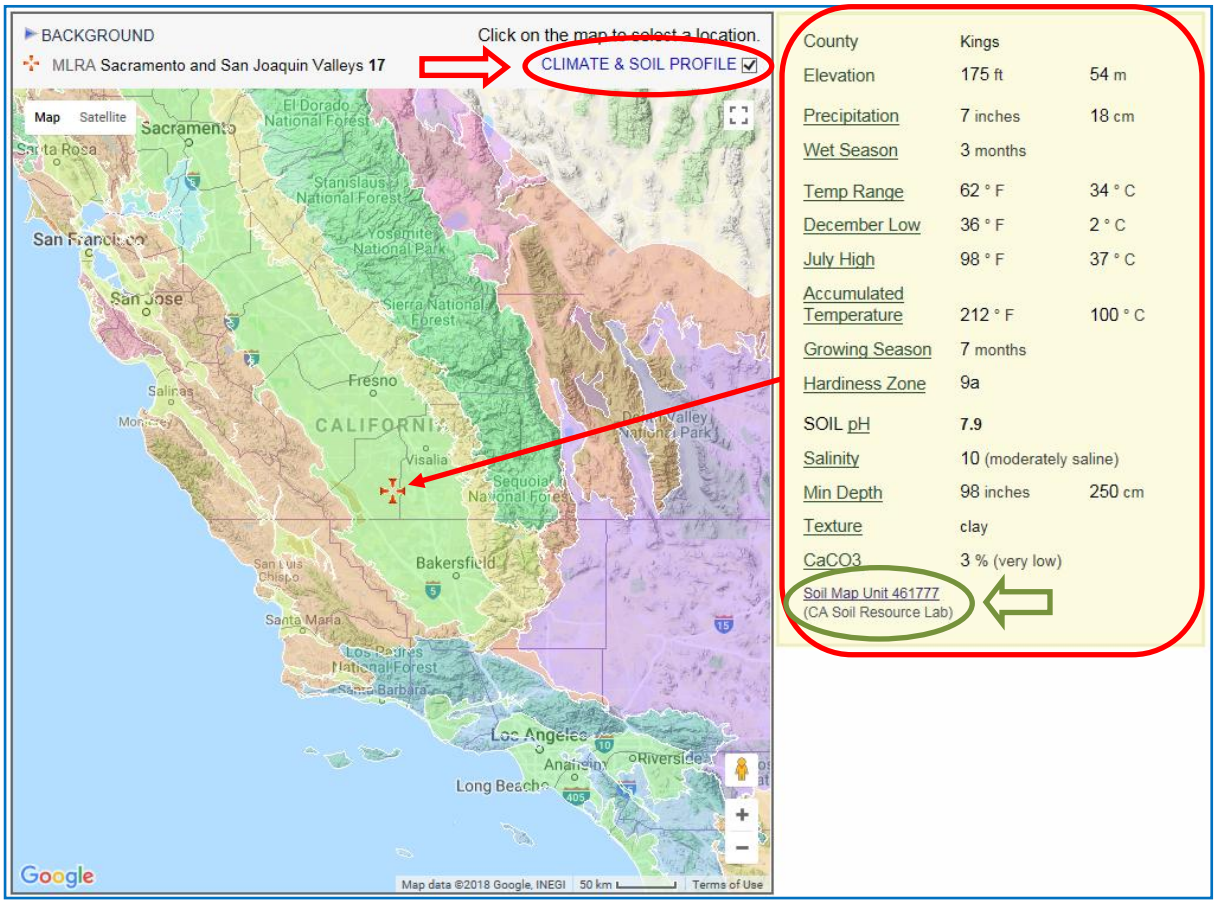


Figure 5. Display of Climate and Soil Profile Data in the 'Map' sub-module of the eVegGuide.

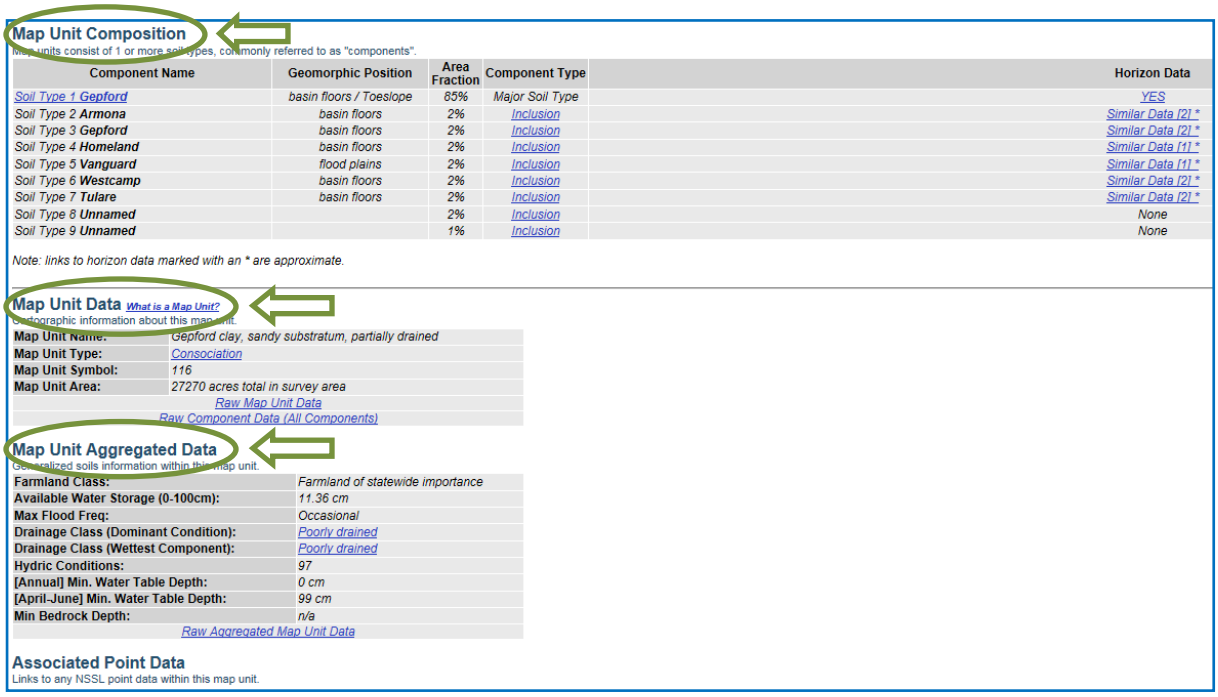
The climate and soils data displayed represent a summary of environmental parameters that are specific to the pinpointed revegetation site on the map. These summary values are derived via direct, automatic links (activated by a site selection on the map) to specific California databases for climate (**PRISM Climate Group databases**) and soils (**NRCS SSURGO Soil Survey data**). These databases and links and their functionality within the **eVegGuide** are fully described and demonstrated in the **HELP** page under Section 6.224 – Plant Characteristics Help, and also under Section 6.223 – Map Background Layers Help. This window can be toggled OFF (removed) by un-checking the box or clicking on '**CLIMATE & SOIL PROFILE**' again.

In addition to the **Climate and Soil Profile** display that is viewed in conjunction with the map, clicking again on the active link '**CLIMATE & SOIL PROFILE**' provides a stand-alone summary window of this same data. This stand-alone window can then be used to print this

summary as a convenient written handout, if desired, for planning or client discussion purposes. To revert to the '**Map**' sub-module, simply click on the 'X' at the top-right of the summary window.

Soil Map Unit (CA Soil Resource Lab) Link

A very valuable feature of this '**Map**' sub-module is the **Soil Map Unit link** that is displayed at the bottom of the **Climate and Soil Profile** summary window (green circle in Figure 5). This link displays the *actual soil map unit* corresponding to the pinpointed revegetation site. By clicking on this link, the planner can access the California Soil Resource Lab database for this particular map unit, revealing a wealth of digital soils data as an integral part of the **eVegGuide** revegetation planning process (Figures 6, 7, and 8). This efficient and ready access for review of pertinent, detailed soils data can augment and enhance other soils data obtained using the NRCS Toolkit program.



Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 **Gepford**	basin floors / Toeslope	85%	Major Soil Type	YES
Soil Type 2 **Armona**	basin floors	2%	Inclusion	Similar Data [2] *
Soil Type 3 **Gepford**	basin floors	2%	Inclusion	Similar Data [2] *
Soil Type 4 **Homeland**	basin floors	2%	Inclusion	Similar Data [1] *
Soil Type 5 **Vanguard**	flood plains	2%	Inclusion	Similar Data [1] *
Soil Type 6 **Westcamp**	basin floors	2%	Inclusion	Similar Data [2] *
Soil Type 7 **Tulare**	basin floors	2%	Inclusion	Similar Data [2] *
Soil Type 8 **Unnamed**		2%	Inclusion	None
Soil Type 9 **Unnamed**		1%	Inclusion	None

Note: links to horizon data marked with an * are approximate.

Map Unit Data What is a Map Unit?

Cartographic information about this map unit.

Map Unit Name:	Gepford clay, sandy substratum, partially drained
Map Unit Type:	Consociation
Map Unit Symbol:	116
Map Unit Area:	27270 acres total in survey area

Raw Map Unit Data

Raw Component Data (All Components)

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	Farmland of statewide importance
Available Water Storage (0-100cm):	11.36 cm
Max Flood Freq:	Occasional
Drainage Class (Dominant Condition):	Poorly drained
Drainage Class (Wettest Component):	Poorly drained
Hydric Conditions:	97
[Annual] Min. Water Table Depth:	0 cm
[April-June] Min. Water Table Depth:	99 cm
Min Bedrock Depth:	n/a

Raw Aggregated Map Unit Data

Associated Point Data

Links to any NSSL point data within this map unit.

Figure 6. Display of Soil Map Unit data for the example map unit no. 461777 (Figure 5), accessed from the Map Unit link at the bottom of the Climate and Soil Profile summary window in the eVegGuide.

The first window accessed via this link provides detailed data and further links for Map Unit Composition, Map Unit Data, and Map Unit Aggregated Data. The user is encouraged to explore this data and associated links to fully examine all that the California Soil Resource Lab provides as a component of **eVegGuide** revegetation planning.

Further details on the Major Soil Types revealed in the Map Unit Composition section (Figure 6) can be accessed by clicking on the '***YES***' link under Horizon Data at the right of the window. For a given map unit, there may be more than one major soil type, with each exhibiting a '***YES***' link for further access and examination. Clicking on the '***YES***' link in this example – map unit 461777 – (see Figure 6) reveals the following further data (Figure 7).

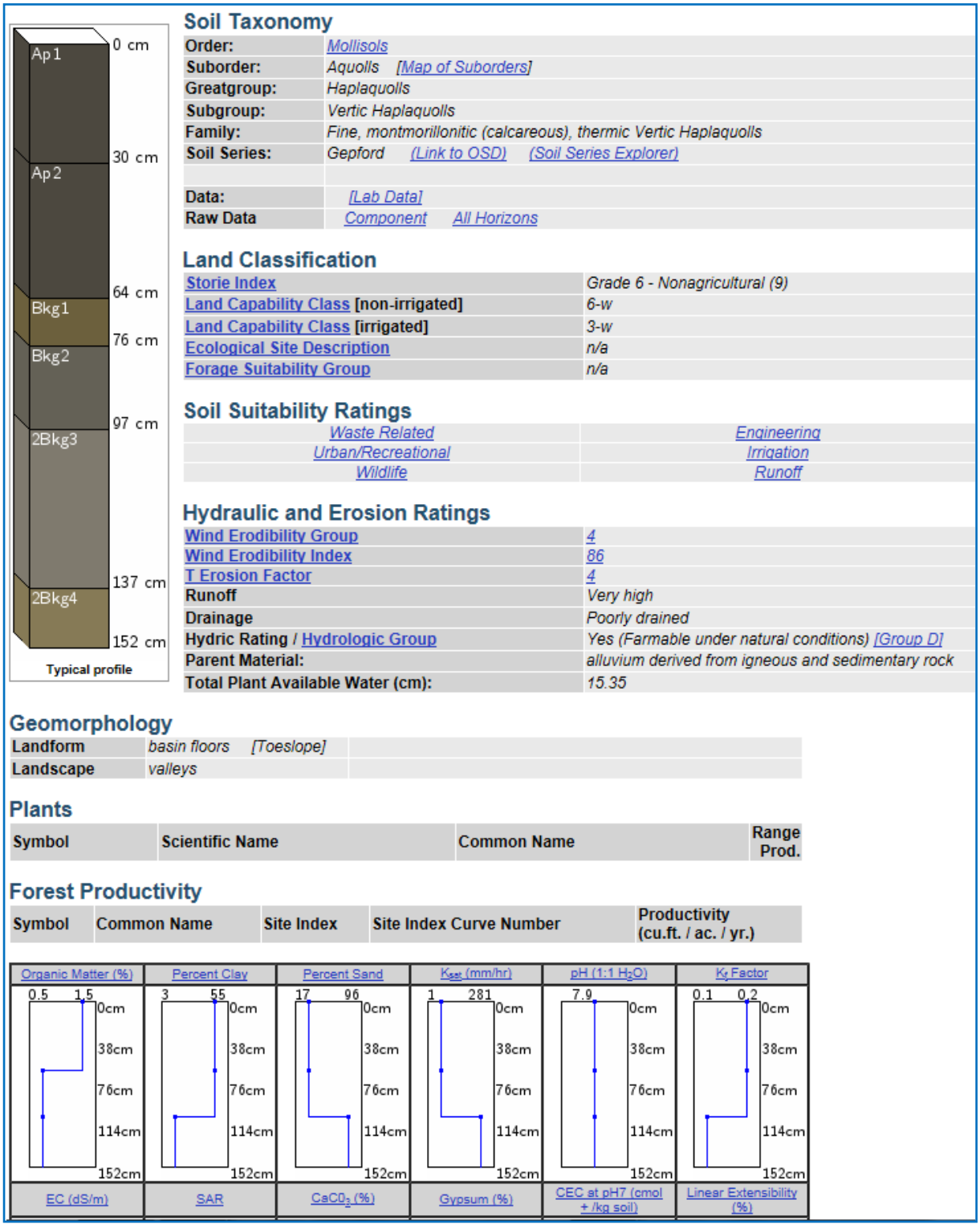


Figure 7. Excerpt of display of further Soil Map Unit data for the example map unit no. 461777 (Figure 5), accessed from the Map Unit link at the bottom of the Climate and Soil Profile summary window in the eVegGuide. This data is accessed via the '*YES*' link under Horizon Data at the right of the window depicted in Figure 6. Scroll down this window to reveal ratings of the map unit for various land use purposes.

Figure 7 depicts further soil map unit data in terms of Soil Taxonomy, Land Classification, Hydrology and Erosion Ratings, Geomorphology, Plant List (if rangeland), Forest Productivity (if forest or woodland), Physical and Chemical Characteristics, and ratings for numerous Land Use applications.

On rangeland sites, provisional or approved **Ecological Site Descriptions (ESD's)** may have been developed and correlated to the map unit. If so, a link to the respective ESD may be available and accessed from the **Ecological Site Description** link in the Land Classification section (Figure 7). The ESD can be identified and accessed through this link, or once identified here, it can be externally accessed through the Ecological Site Information System – ESIS; https://esis.sc.egov.usda.gov/Welcome/pgReportLocation.aspx?type=ESD). Once accessed, all the features and sections of a typical ESD are available to examine. Important among these sections is the Plant Communities section listing of expected "reference state" seral vegetation, as well as "state-and-transition" seral models of plant community composition under various types of disturbance regimes (e.g., overgrazing, fire, drought, woody or weedy species invasion, etc.).

An example ESD (provisional status) – Sandy Plain 3-5" PZ, in MLRA 30; Mojave Basin and Range – can be examined at the following URL:
https://esis.sc.egov.usda.gov/ESDReport/fsReport.aspx?approved=yes&repType=regular&id=R030XB140CA

Similarly, a list of expected, dominant plant species (each typically ≥ 5% of the relative plant composition as listed in the ESD or in older Range Site Descriptions – RSD's) may also be shown under the Plants section for the map unit if located on rangeland (Figure 7). *Presence of this listing, and/or the link access to the ESD Plant Community listing of reference state vegetation, can be* ***significant aids*** *in determining what species may be best or most favorably adapted to site environmental and management conditions, and therefore most utilitarian for use on the revegetation site.*

Likewise, if the revegetation site is (or is intended to be) pasture or forest / woodland, the appropriate **Forage Suitability Group** (FSG) may be shown beside the FSG link under Land Classification, or reference state tree species may be listed under the Forest Productivity section, respectively (Figure 7).

Please confer with your NRCS Area Office or State Office discipline specialist in Range, Agronomy or Forestry for further assistance in interpreting and applying these ESD or Plants section plant listings.

As above, the user is encouraged to explore soils data and associated links to fully examine all that the California Soil Resource Lab provides as a map unit description component of **eVegGuide** revegetation planning.

1.3 Search Criteria Sub-Module

The '**Search Criteria**' sub-module is a companion to the '**Map**' sub-module, and is to be used *after* selecting / pinpointing the specific revegetation site location on the map. It is accessed by clicking on '**Search Criteria**' at the top-left of the map (Figure 8).

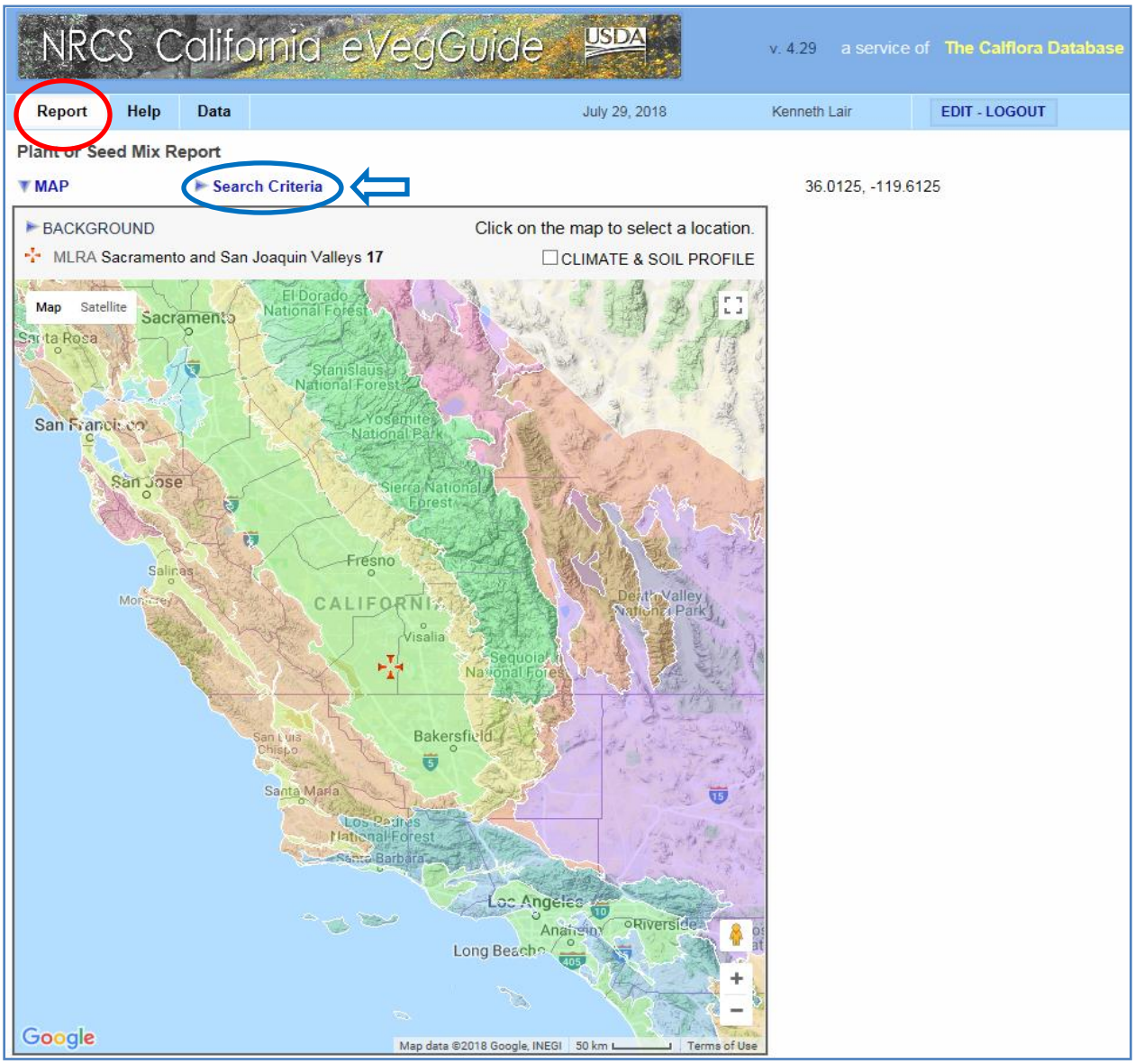


Figure 8. eVegGuide introductory window, indicating the 'Search Criteria' option within the PLANT OR SEED MIX REPORT module.

The '**Search Criteria**' sub-module provides for detailed specification and display of revegetation site parameters by which the species or mixture search can be constrained. The top portion of this sub-module allows the planner to access a form-driven, site parameter selection tool that enables delineation of applicable environmental variables (biotic and abiotic) to which preferred species or mixtures should be adapted (Figure 9).

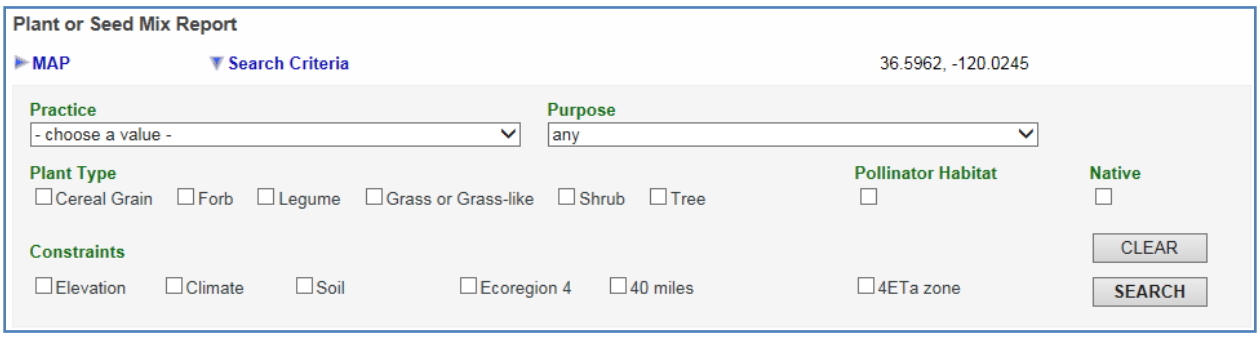


Figure 9. Introductory 'Search Criteria' window, indicating the parameters available for constraining or filtering the plant search, as applicable to the pinpointed revegetation site.

*Consult the **HELP** page for more detailed descriptions, definitions and rationale regarding how these parameters constrain plant searches*. A brief summary of each parameter's use and constraint function (as displayed in Figure 9) follows here:

Practice and Purpose Selection

Select the conservation '**Practice**" and the appropriate practice '**Purpose**' for the intended revegetation application. Drop-down selection lists are available for each, with the '**Purpose**' drop-down list automatically tailored to provide purposes specific to the selected conservation practice.

Irrigation Requirement Selection

This parameter provides a drop-down selection list, allowing the planner to constrain a search to species exhibiting one of the following irrigation requirements:

- No irrigation requirement.
- 1-Year irrigation during initial establishment.
- 3-Years irrigation during initial establishment.
- Continuous irrigation.

Plant Type Selection

Plant searches can be filtered by selecting the growth form (or combination of growth forms) that may be of interest to the planner. These options can be selected (via check-box enabling) either singly, or in any combination.

Pollinator Habitat Selection

The '**Pollinator Habitat**' option restricts searches to only plants that are rated as "pollinator-friendly" (i.e., positive contribution to pollinator habitat development or enhancement). Plant species filtered by enabling this selection are delineated as such in the **eVegGuide** based on technical input and ratings by NRCS, Calflora, and the Xerces Society. Rating as a pollinator plant is also reflected in an individual species' plant record, as accessed in **PLANT SEARCH** and **PLANT-PRACTICE SEARCH** modules.

Native Plant Selection

The '**Native**' option restricts searches to only native plants, delineated as such in the **eVegGuide** based on technical input and ratings by NRCS, Calflora, and the USDA PLANTS database.

Environmental Constraints Selection

Environmental constraints as applied in the **eVegGuide** are based on filtering of species in relation to the range of values (for the respective parameter) within which the species has been observed in the state and reported to Calflora. These observation records are derived from occurrences of documented observations of a species as recorded in the Calflora database. The graphic and supporting metadata records of observation and occurrence for a species – in relation to any environmental parameter constraint – can be examined by accessing a species' Calflora **Taxon Report** link within its Plant Record (Figure 10) in the **PLANT SEARCH** module. An example of such Calflora observation documentation in depicted in Figure 11.

The Calflora database maintains extensive metadata on species observations across the state, including:

- Elevations at which observed / documented species occur.
- Climate regimes (including correlation with 4ETa Zones) in which they occur.
- Soils on which they occur (in relation to the pinpointed revegetation site location, and as correlated to California Soil Resource Lab databases and the SSURGO Soil Survey database).
- EPA Level IV Ecoregions in which they occur (see the **HELP** page for more detailed description).
- Capability to assess observational presence within a given radius of a pinpointed location (i.e., '40-mile' radius parameter in the '**Search Criteria**' window).

The environmental '**Constraints**' parameters are also automatically keyed to the specific revegetation site located and pinpointed in the '**Map**' sub-module. *Typically the minimum number of Calflora observations for a given species must be 20 in order to qualify the species as an indicator for use with the **eVegGuide** environmental constraint process.*

Program defaults are automatically enabled for some of these environmental parameters, including 'Elevation', 'Climate', '40-mile' radius, and '4ETa Zone' – as indicated by the checked (√) boxes next to each. These are checked (enabled) in order to provide a *recommended, initial combined constraint option* that narrows the eligible species to those considered most biologically and ecologically adapted to these specified constraints.

However, these defaults can be un-checked and de-selected subject to the planner's preference. Similarly, any of the '**Plant Type**' and environmental constraints, including selection for '**Pollinator Habitat**' and '**Native**' species only, can be enabled or disabled – *in any combination* – to suit the planner's preferences for constraining plant searches.

*Leaving all parameter constraints un-checked, including leaving practice '**Purpose**' as "Any", yields the largest suite of available species for the selected MLRA and conservation practice, from which to select a subset of species for final mixture formulation.*

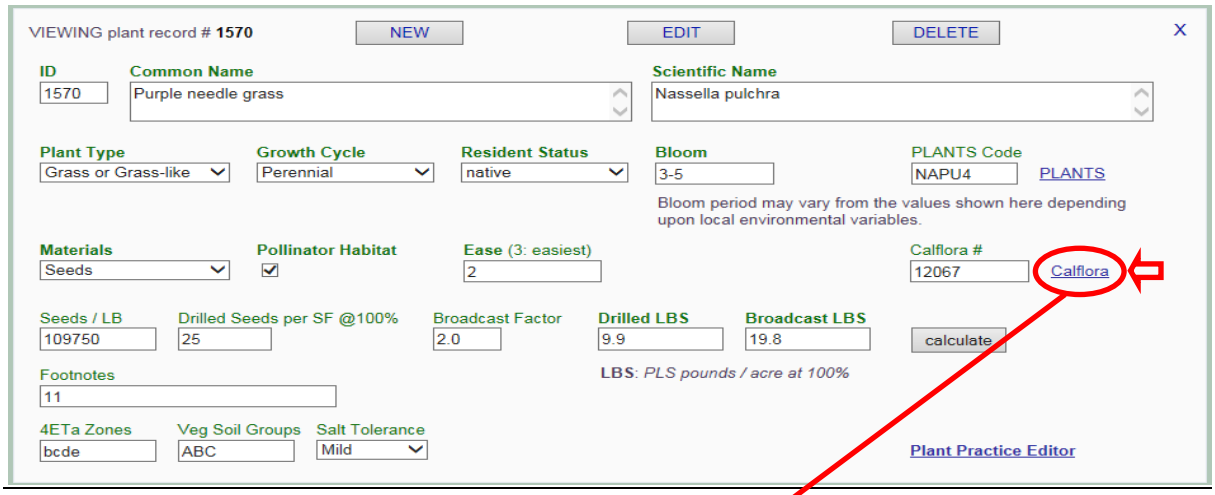


Figure 10. Accessing a Calflora taxon record for a species (in this example, for *Nassella pulchra*) using the 'Calflora' link in the Plant Record window of the PLANT SEARCH module.

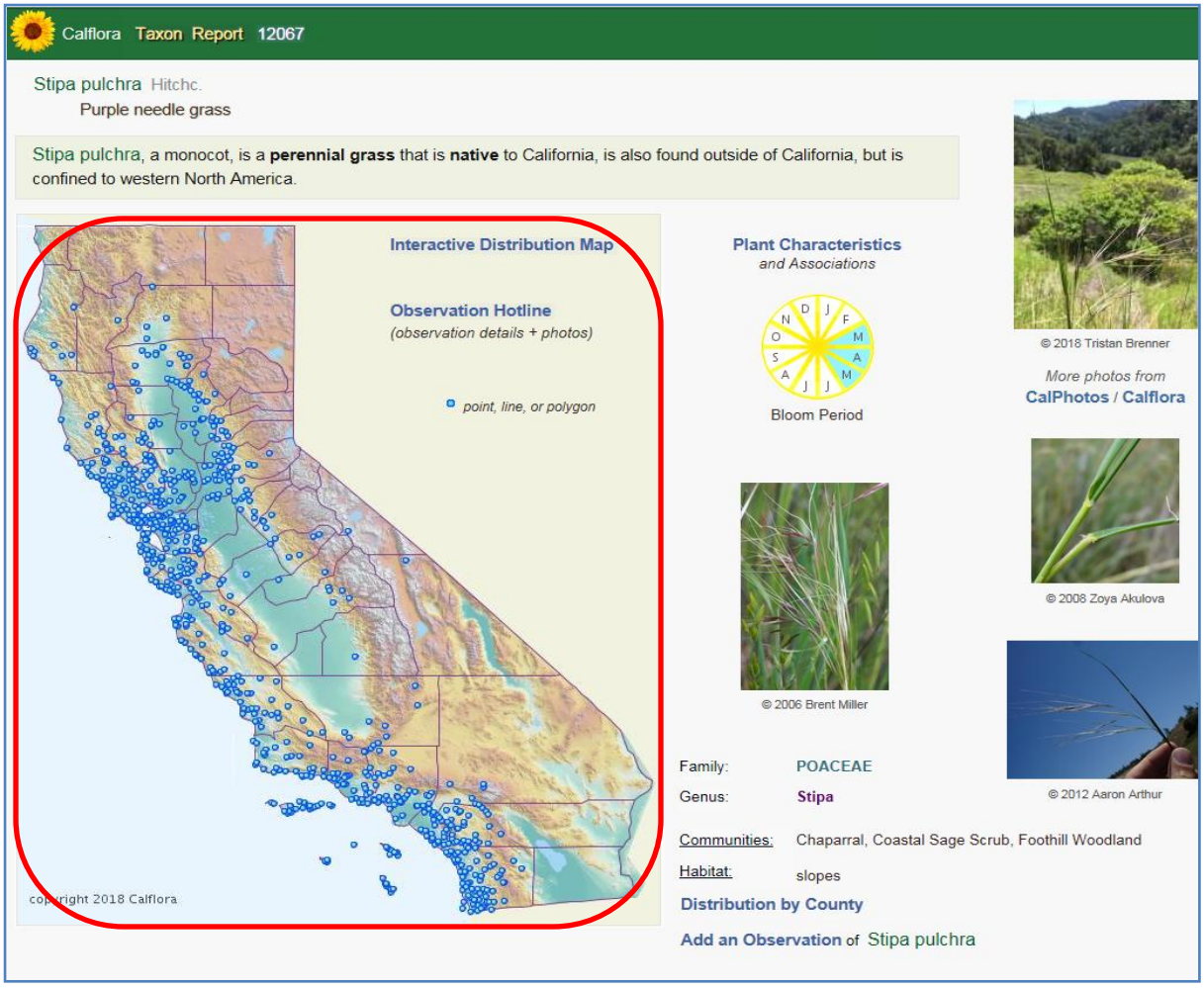


Figure 11. Display of the Taxon Report from the Calflora database for the example, purple needlegrass (*Nassella pulchra*) (see Figure 10), showing documented occurrence observations.

Further descriptions of how these environmental constraints individually work follow.

Elevation

This parameter constrains selection by limiting the species search to those species that have been observed and documented by Calflora to have a range of elevation within California that encompasses (i.e., between observed minimum and maximum range values) the pinpointed revegetation site elevation.

Climate

This parameter constrains selection by limiting the species search to those species that have been observed and documented by Calflora to occur in the precipitation zone(s) and associated 4ETa zone(s) – derived from **PRISM Climate Group databases** -- within which the pinpointed revegetation site occurs.

Soil

This parameter constrains selection by limiting the species search to those species that have been observed and documented by Calflora to occur on the soil map unit – and other map units with similar soil texture and other physical and chemical characteristics – derived from **NRCS SSURGO Soil Survey data and CA Soil Resource Lab data** – on which the pinpointed revegetation site occurs.

Ecoregion 4

This parameter constrains selection by limiting the species search to those species that have been observed and documented by Calflora to occur within the same **Level IV EPA Ecoregion** polygon boundaries – as delineated on the **Level IV EPA Ecoregion map** (Figure 12) – as on which the pinpointed revegetation site occurs. This parameter, if enabled, cannot be simultaneously used with the '**40-mile**' radius parameter.

There are 177 **Level IV Ecoregions** in California. Explanations of the methods used to define these ecoregions, and complete definitions and descriptions of each ecoregion, are provided in the narrative accessed from the links to **Level III** and **Level IV** in the **HELP** page. In addition to the narrative descriptions accessed from the HELP page, a *color-coded Level IV Ecoregion map* with sub-unit designations and condensed descriptions can also be accessed at: https://www.epa.gov/eco-research/ecoregion-download-files-state-region-9#pane-04. This web site provides access to downloadable .docx and .pdf files, shape files, and metadata files that can be incorporated in planning or reference documents, as needed. Figure 12 depicts a reduced-scale example of the full California **Level IV Ecoregion** map.

40-Miles Radius

This parameter constrains selection by limiting the species search to those species that have been observed and documented by Calflora to occur within a 40-mile radius of the pinpointed revegetation site. This parameter, if enabled, cannot be simultaneously used with the '**Ecoregion 4**' parameter.

Figure 12. Reduced-scale example of the Level IV Ecoregion map for California. Full-scale maps, posters, metadata, and narrative descriptions are available at: https://www.epa.gov/eco-research/ecoregion-download-files-state-region-9#pane-04.

4ETa Zone

This parameter constrains selection by limiting the species search to those species that have been observed and documented by Calflora to occur within the same **4ETa Zone** as on which the pinpointed revegetation site occurs.

The **HELP** page provides a comprehensive listing, with associated definitions, rationale for use, and color-coded map, of all applicable **4ETa Zones** within California. Information includes a basic definition of a 4ETa Zones, along with a link that accesses more detailed definitions of individual MLRA's within California. (http://soils.usda.gov/survey/geography/mlra/mlra_definitions.html).

Plant **SEARCH**

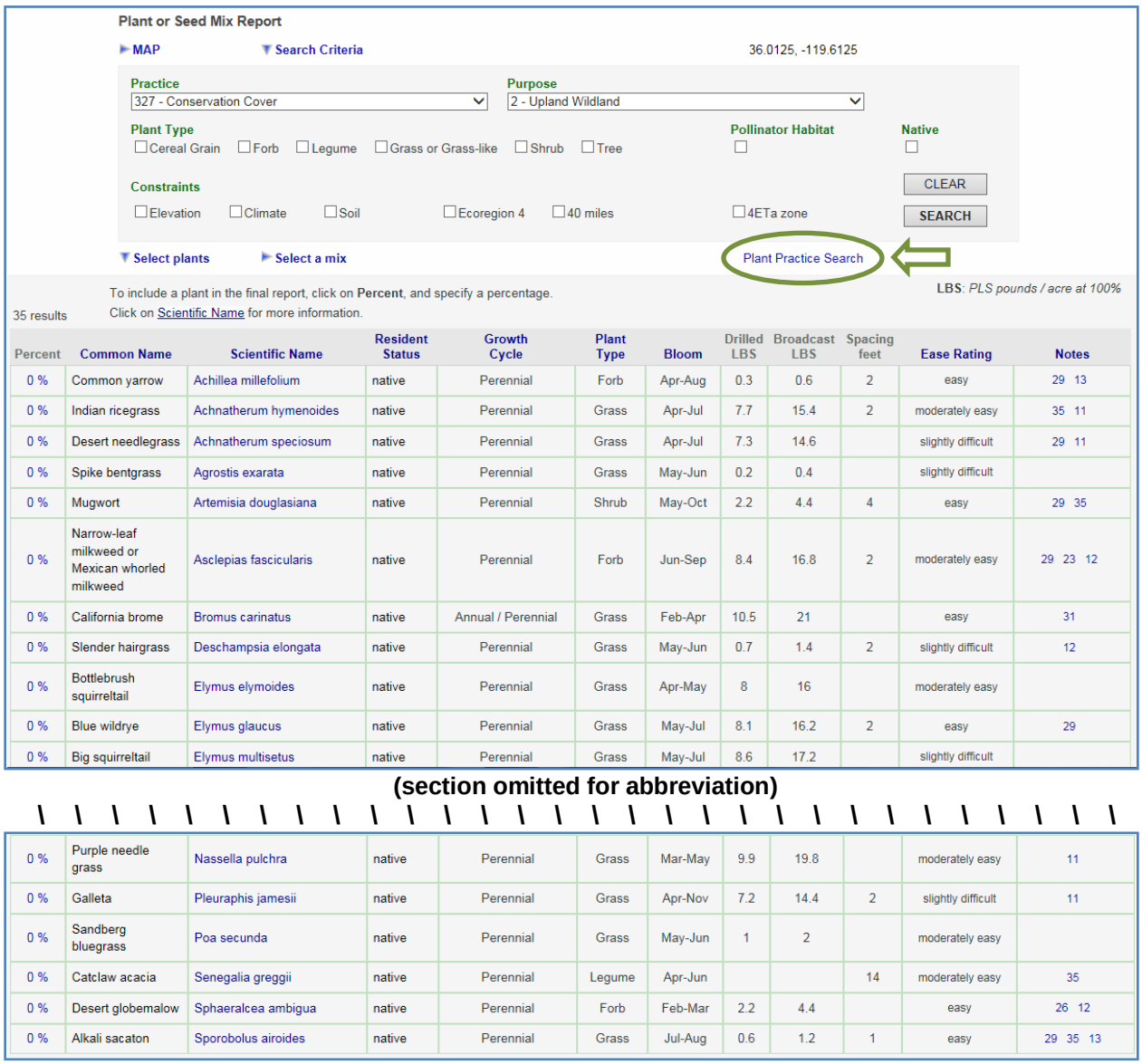
Once all the desired parameters have been selected or enabled to constrain (filter) the species search according to the planner's needs and resource concerns, then click on **SEARCH** at the bottom-right corner of the '**Search Criteria**' window. This starts the process for acquiring and listing all the individual species and pre-set guideline mixtures that meet the combination of parameter constraints that were selected above.

1.4 Using the Search Criteria Sub-Module

Using the location pinpointed in Figure 1 – *southwest of Corcoran, CA, in MLRA 17* – as an example to demonstrate this process, select conservation practice 327 – Conservation Cover and practice purpose 2 – Upland Wildland from the drop-down selection lists for '**Practice**' and '**Purpose**', respectively (Figures 13a and 13b). Additionally, for this initial example, leave all constraint parameters *un-checked* (disabled) in order to yield the largest suite of species available within this MLRA, conservation practice and practice purpose – from which to review and select a subset of species for final mixture formulation.

The '**Search Criteria**' sub-module provides easy options for comprehensive review of adapted species and mixtures across an array of conservation practices, practice purposes, and selection of parameter constraints (singly, or in any combination of multiple parameters). After examining the species and mixture results derived from initial selection of conservation '**Practice**', practice '**Purpose**', and other parameter constraints, the planner may wish to change some or all of these selected values. If so, simply click on **CLEAR** at the right of the upper portion of the '**Search Criteria**' window, which clears all selected values. Then select new values for '**Practice**', practice '**Purpose**', and other parameter constraints, as needed. All these values may be changed (de-selected and other options re-selected) individually if only a few or just one parameter value needs changing. Then click on **SEARCH** again. This will produce a new listing of species and mixtures that correspond to the new practice, purpose, and/or constraint parameters selected.

As previously mentioned, the '**Search Criteria**' sub-module is interactive with the '**Map**' sub-module. The planner may revert back to the map, to confirm or change the specific pinpointed



Plant or Seed Mix Report

MAP Search Criteria 36.0125, -119.6125

Practice: 327 - Conservation Cover Purpose: 2 - Upland Wildland

Plant Type: ☐ Cereal Grain ☐ Forb ☐ Legume ☐ Grass or Grass-like ☐ Shrub ☐ Tree Pollinator Habitat ☐ Native ☐

Constraints: ☐ Elevation ☐ Climate ☐ Soil ☐ Ecoregion 4 ☐ 40 miles ☐ 4ETa zone CLEAR SEARCH

Select plants Select a mix Plant Practice Search

To include a plant in the final report, click on **Percent**, and specify a percentage.
Click on Scientific Name for more information.

LBS: *PLS pounds / acre at 100%*

35 results

Percent	Common Name	Scientific Name	Resident Status	Growth Cycle	Plant Type	Bloom	Drilled LBS	Broadcast LBS	Spacing feet	Ease Rating	Notes
0 %	Common yarrow	Achillea millefolium	native	Perennial	Forb	Apr-Aug	0.3	0.6	2	easy	29 13
0 %	Indian ricegrass	Achnatherum hymenoides	native	Perennial	Grass	Apr-Jul	7.7	15.4	2	moderately easy	35 11
0 %	Desert needlegrass	Achnatherum speciosum	native	Perennial	Grass	Apr-Jul	7.3	14.6		slightly difficult	29 11
0 %	Spike bentgrass	Agrostis exarata	native	Perennial	Grass	May-Jun	0.2	0.4		slightly difficult	
0 %	Mugwort	Artemisia douglasiana	native	Perennial	Shrub	May-Oct	2.2	4.4	4	easy	29 35
0 %	Narrow-leaf milkweed or Mexican whorled milkweed	Asclepias fascicularis	native	Perennial	Forb	Jun-Sep	8.4	16.8	2	moderately easy	29 23 12
0 %	California brome	Bromus carinatus	native	Annual / Perennial	Grass	Feb-Apr	10.5	21		easy	31
0 %	Slender hairgrass	Deschampsia elongata	native	Perennial	Grass	May-Jun	0.7	1.4	2	slightly difficult	12
0 %	Bottlebrush squirreltail	Elymus elymoides	native	Perennial	Grass	Apr-May	8	16		moderately easy	
0 %	Blue wildrye	Elymus glaucus	native	Perennial	Grass	May-Jul	8.1	16.2	2	easy	29
0 %	Big squirreltail	Elymus multisetus	native	Perennial	Grass	May-Jul	8.6	17.2		slightly difficult	

(section omitted for abbreviation)

0 %	Purple needle grass	Nassella pulchra	native	Perennial	Grass	Mar-May	9.9	19.8		moderately easy	11
0 %	Galleta	Pleuraphis jamesii	native	Perennial	Grass	Apr-Nov	7.2	14.4	2	slightly difficult	11
0 %	Sandberg bluegrass	Poa secunda	native	Perennial	Grass	May-Jun	1	2		moderately easy	
0 %	Catclaw acacia	Senegalia greggii	native	Perennial	Legume	Apr-Jun			14	moderately easy	35
0 %	Desert globemalow	Sphaeralcea ambigua	native	Perennial	Forb	Feb-Mar	2.2	4.4		easy	26 12
0 %	Alkali sacaton	Sporobolus airoides	native	Perennial	Grass	Jul-Aug	0.6	1.2	1	easy	29 35 13

Figure 13a. Example of initial results obtained from a plant search using conservation practice 327 – Conservation Cover and practice purpose 2 – Upland Wildland in MLRA 17 (near Corcoran, CA), showing options for review and species or mixture selection.

location of the revegetation site, by clicking on '**Map**' at the top-left of the upper portion of the '**Search Criteria**' sub-module. After this map review or site change, then click again on '**Search Criteria**' and follow instructions above for reviewing, changing or keeping the conservation '**Practice**', practice '**Purpose**', and other parameter constraints.

Prior to selecting a subset of species and assigning species composition percentages for final mixture formulation, several other features, including options for review or modification of species or mixture results, should be noted, as follows:

NOTES:

2 May be toxic to humans, livestock, and/or wildlife (see Calflora link, and other links below for this species to access literature and documentation).

http://ucanr.edu/sites/poisonous_safe_plants/

http://anrcatalog.ucanr.edu/pdf/8398.pdf

http://wric.ucdavis.edu/PDFs/plants%20reported%20to%20be%20poisonous%20to%20animals.pdf

5 Strong seedling vigor. This species can be aggressive and competitive with other species in a seed mixture (particularly under favorable soil moisture regimes), and thus may need reduction of composition percentage accordingly.

11 Adapted to mildly to moderately saline areas (EC = 4.0 – 8.0 dS / m).

http://www.calflora.org/nrcs/help/SelectedSaltToleranceReferences.pdf

12 Adapted to moderately high saline areas (EC = 8.0 – 12.0 dS / m).

http://www.calflora.org/nrcs/help/SelectedSaltToleranceReferences.pdf

13 Adapted to highly saline areas (EC > 12.0 dS / m).

http://www.calflora.org/nrcs/help/SelectedSaltToleranceReferences.pdf

23 Tolerant of inundation; adapted to hydric soils (moist areas and moist bottom soils).

(section omitted for abbreviation)

37 This legume (Fabaceae) species MAY require inoculation in order to adequately establish and maintain vigor and productivity, particularly if used in existing or former cropland applications (e.g., conservation practices 340 or 327). Inoculation is preferably applied via seed inoculant coatings or similar treatment at the time of delivery to the client. NOTE -- seed coatings may significantly increase seed weight, and thus may require re-computation of seeding rates in order to account for increased seed weight. Consult your Area or State Office Agronomist / Specialist for assistance, and refer to the following links for species-specific inoculant recommendations, inoculation techniques, and related general information.

http://www.dot.ca.gov/design/lap/landscape-design/research/docs/final_seed_innoculation_2006.pdf

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_011189.pdf

https://theurbanfarmers.org/wp/wp-content/uploads/2012/12/Cover-crops-Inoculation.pdf

Figure 13b. List of applicable, species-specific Footnotes accompanying (at the bottom of) initial results obtained from a plant search using conservation practice 327 – Conservation Cover and practice purpose 2 – Upland Wildland in MLRA 17 (near Corcoran, CA).

Plant-Practice Search

The '**Plant-Practice Search**' link (see green circle in Figure 13a above) provides the planner with an automatic query of the **eVegGuide** database that lists all individual species and pre-set guideline mixtures in a comprehensive, continuous, single-table format that are assigned to 1) the MLRA within which the revegetation site has been pinpointed, and 2) the selected conservation practice and practice purpose for the planned revegetation measure. This allows the planner to review all available species and mixtures in a simple format, sortable by column heading, external to mixture formulation formats within the '**Search Criteria**' sub-module.

The results of this "built-in" automatic query are *unaffected* by any other parameter constraints that may be selected. In this current example – MLRA 17, conservation practice 327 – Conservation Cover, and practice purpose 2 – Upland Wildland – the results of this automatic query are displayed in Figure 14, showing over 40 line-item results for available mixtures and individual species for the combination of MLRA 17, conservation practice 327, and practice purpose 2. Results are automatically sorted by scientific name in this table.

After reviewing the results of this automatic data query, the planner can return to the '**Search Criteria**' sub-module window by simply closing this window tab (i.e., "X-out"). However, if the planner would like to search for and further explore a particular species or mixture in the selected MLRA / practice / purpose combination, then click on '**Search**' at the top-left of the '**Plant-Practice Search**' results window. A data form will be displayed by which the planner can conduct a species or mixture search. Please refer to **Section 4.0**, **PLANT-PRACTICE SEARCH**, for further details and instructions on how to use this data query module.

Search Results Detail Add a List of Plants HELP

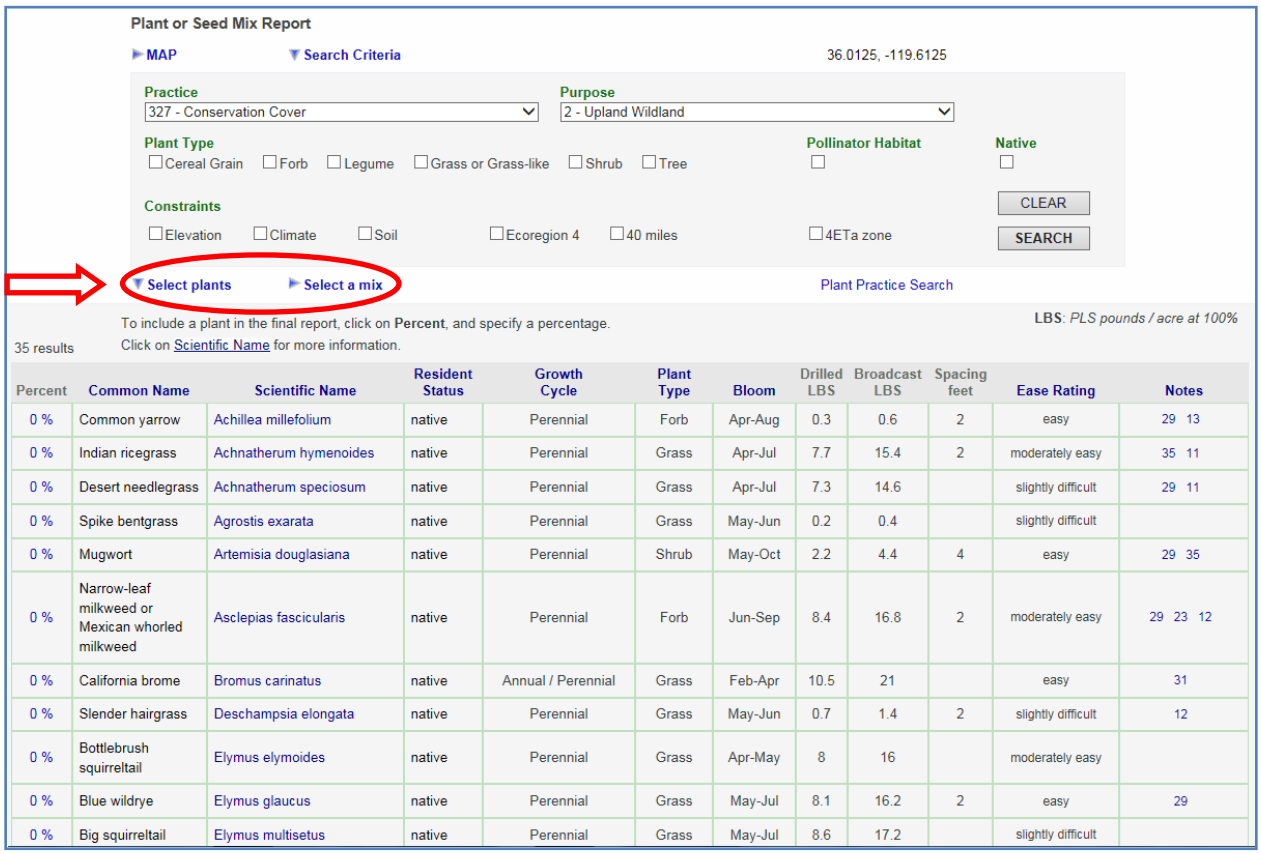
46 results Click on ○ to view a record

Key	MLRA	Practice	Purpose	Irrigated	Type	Scientific Name	Common Name	Ease
t1286	17	327	2 - Upland Wildland		Mix		MLRA 20 -- Mixed Shrub / Forb / Grass Mixture 1 (DRAFT)	2
t1293	17	327	2 - Upland Wildland		Mix		MLRA 17 -- Native Grass Mixture 1 (DRAFT)	3
t1294	17	327	2 - Upland Wildland		Mix		Native Grass / Legume / Shrub Mixture 2	2
t1335	17	327	2 - Upland Wildland		Mix		Native Grasses and Forbs: Dry Site	3
t1336	17	327	2 - Upland Wildland		Mix		Native Grasses, Legumes & Forbs: Wet Site	2
t1337	17	327	2 - Upland Wildland		Mix		Native Forbs and Grasses Seed Mix: Dry Site	2
t1338	17	327	2 - Upland Wildland		Mix		California Native Filter Seed Mix	2
t1472	17	327	2 - Upland Wildland		Mix		MLRA 26 -- Critical Area Planting Mixture 1	2
tr10201	17	327	2 - Upland Wildland		Mix		Valley Dryland Meadows on Good Soil	2
tr10217	17	327	2 - Upland Wildland		Mix		Native Erosion Control Mix	1
tr9805	17	327	2 - Upland Wildland		Mix		Pollinator MLRA 15, 17, 18 Annual & Perennial mix	3
t1202	17	327	2 - Upland Wildland		Forb	Achillea millefolium	Common yarrow	3
t1489	17	327	2 - Upland Wildland		Grass	Achnatherum hymenoides	Indian ricegrass	2

Figure 14. Results of 'Plant-Practice Search' as accessed from the link in the 'Search Criteria' window (see Figure 13a) for MLRA 17, conservation practice 327, and practice purpose 2.

1.5 Select Plants vs. Select a Mix

As seen in the lower portion of the '**Search Criteria**' window, *after* all constraint parameters have been selected and the species search has been executed using **SEARCH**, the results are displayed in tabular format (see Figure 13a above). If pre-set guideline mixtures have been assigned to the selected MLRA / practice / purpose combination, then two selections (active links) will be provided – '**Select Plants**' and '**Select a Mix**' (Figure 15). From these, the planner can review and select 1) a subset of individual species, or 2) a pre-set guideline mixture, respectively. If no pre-set guideline mixtures are assigned, then only '**Select Plants**' will appear.



Percent	Common Name	Scientific Name	Resident Status	Growth Cycle	Plant Type	Bloom	Drilled LBS	Broadcast LBS	Spacing feet	Ease Rating	Notes
0 %	Common yarrow	Achillea millefolium	native	Perennial	Forb	Apr-Aug	0.3	0.6	2	easy	29 13
0 %	Indian ricegrass	Achnatherum hymenoides	native	Perennial	Grass	Apr-Jul	7.7	15.4	2	moderately easy	35 11
0 %	Desert needlegrass	Achnatherum speciosum	native	Perennial	Grass	Apr-Jul	7.3	14.6		slightly difficult	29 11
0 %	Spike bentgrass	Agrostis exarata	native	Perennial	Grass	May-Jun	0.2	0.4		slightly difficult	
0 %	Mugwort	Artemisia douglasiana	native	Perennial	Shrub	May-Oct	2.2	4.4	4	easy	29 35
0 %	Narrow-leaf milkweed or Mexican whorled milkweed	Asclepias fascicularis	native	Perennial	Forb	Jun-Sep	8.4	16.8	2	moderately easy	29 23 12
0 %	California brome	Bromus carinatus	native	Annual / Perennial	Grass	Feb-Apr	10.5	21		easy	31
0 %	Slender hairgrass	Deschampsia elongata	native	Perennial	Grass	May-Jun	0.7	1.4	2	slightly difficult	12
0 %	Bottlebrush squirreltail	Elymus elymoides	native	Perennial	Grass	Apr-May	8	16		moderately easy	
0 %	Blue wildrye	Elymus glaucus	native	Perennial	Grass	May-Jul	8.1	16.2	2	easy	29
0 %	Big squirreltail	Elymus multisetus	native	Perennial	Grass	May-Jul	8.6	17.2		slightly difficult	

Figure 15. Display of 'Select Plants' and 'Select a Mix' options in the 'Search Criteria' sub-module window, from which the planner can review and select 1) a subset of individual species (i.e., 'Select Plants'), or 2) review and select a pre-set guideline mixture (i.e., 'Select a Mix').

1.51 Select Plants

The default initial display, as in Figures 13a and 15, is always a table listing the *individual species* assigned to the selected MLRA / practice / purpose and environmental parameter combination. In this example, over 30 individual species results have been returned for the selected combination of MLRA, conservation practice, practice purpose, and environmental parameters (none of the latter enabled). Several features of this tabular display for individual species are important to note.

Table Format

Numerous biological characteristics are displayed for each line-item species listing, each with a column heading in **bold, blue** font. All of these characteristics derive directly from a species' '**Plant Record**', where all this information is stored in database table format. See **Section 2.0**, **PLANT SEARCH** module, for a full description of Plant Records and the species and mixture data that can be accessed in this module. Definitions and further descriptions of these column headings can also be found by accessing the Glossary link in the **HELP** page (Section 6.0).

When there are multiple species line entries generated for a results window (such as in Figure 13a), all of the columns can be sorted by any **column heading** shown in **bold, blue** font. Simply click on a **column heading** to sort all the data in the results table, in ascending order, by the selected column type. In this initial example using the combination of MLRA 17, practice 327 – Conservation Cover, and purpose 2 – Upland Wildland (Figures 13a and 15), the results have been sorted by Scientific Name.

Scientific Name Link to Calflora and USDA PLANTS data

As indicated at the top-left above the individual species listing in the '**Search Criteria**' search results, a wealth of species-specific information about each species can be accessed by clicking on the individual species' Scientific Name active link (in blue font) for any or all species of interest. The individual species' Scientific Name link directs the planner to biological, ecological, taxonomic, and commercial availability information pertaining to that species – such as is found in direct links to Calflora and USDA-PLANTS databases, CNPLX (commercial availability database), Calscape, CalPhotos, PlantID.net, Jepson eFlora, efloras.org, etc.

This link initially accesses a condensed summary window of Calflora's Taxon Report for the selected species (Figure 16). Within this summary Taxon Report, additional links (left column) access plant information databases developed or hosted by Calflora, including:

- **Calflora Taxon Report** – the full report for the species.
- **Nearby Observations** – i.e., within the 40-mile radius vicinity of the pinpointed revegetation site.
- **Location Suitability** – i.e., provides a comparison of the species' climate and soil tolerances to the revegetation site's climate and soil characteristics (see Section 1.22 and Figure 5).
- **Associations & Pests** – i.e., beneficial associations with insects and pollinators, as well as host associations with plant pests.
- **PLANTS Profile** – the USDA PLANTS Database profile for the species (including further links to Plant Guides, Plant Fact Sheets, and tables of Plant Characteristics (if available).
- **CNPLX** – a database listing commercial sources of seed or plants for the species.
- **Calscape** – provides further information from CNPS on adaptation of species for landscaping and field use, including water use estimates, projected mature canopy heights and widths, establishment and maintenance requirements, etc.).
- **eVegGuide Plant Search** – directs the planner to the species' complete Plant Record within the **eVegGuide**, as if accessed using the **PLANT SEARCH** module – see Section 2.0).

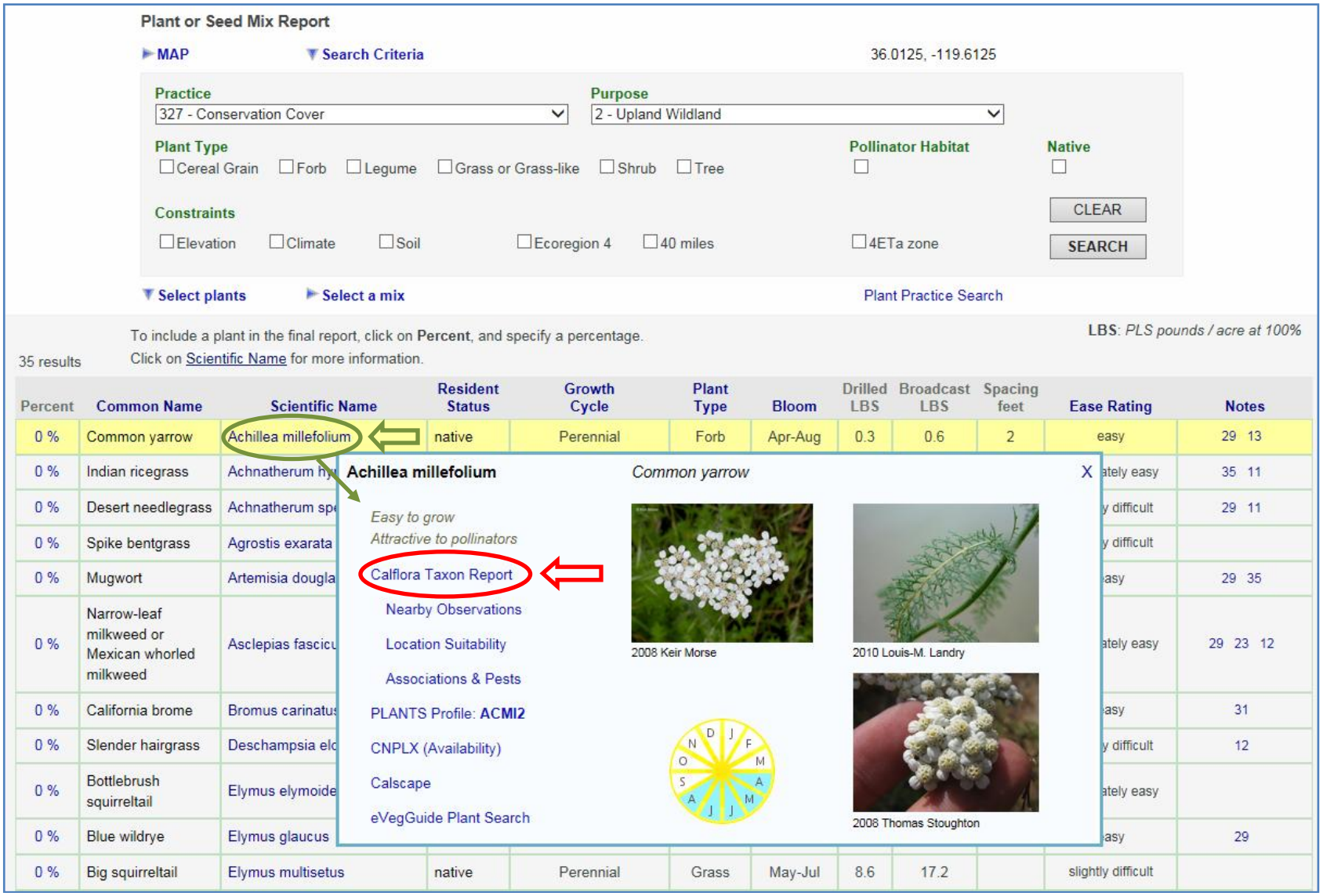


Figure 16. Display of the condensed Calflora Taxon Report summary for a species (in this example, common yarrow, *Achillea millefolium*), as accessed by clicking on the species' Scientific Name link in the 'Search Criteria' results table (Figures 13a, 15).

Additional features of this Calflora condensed Taxon Report summary window include representative photos of the plant (from CalPhotos), and a graphical diagram indicating the range of months for the estimated peak bloom period for the species. In this example, the peak bloom period ranges from the months April (A) through August (A) for ***Achillea millefolium***.

As a further illustration – within this condensed Taxon Report summary window, clicking on '**Calflora Taxon Report**' (see red circle above in Figure 16) yields additional information in the full Calflora Taxon Report for the species (Figure 17).

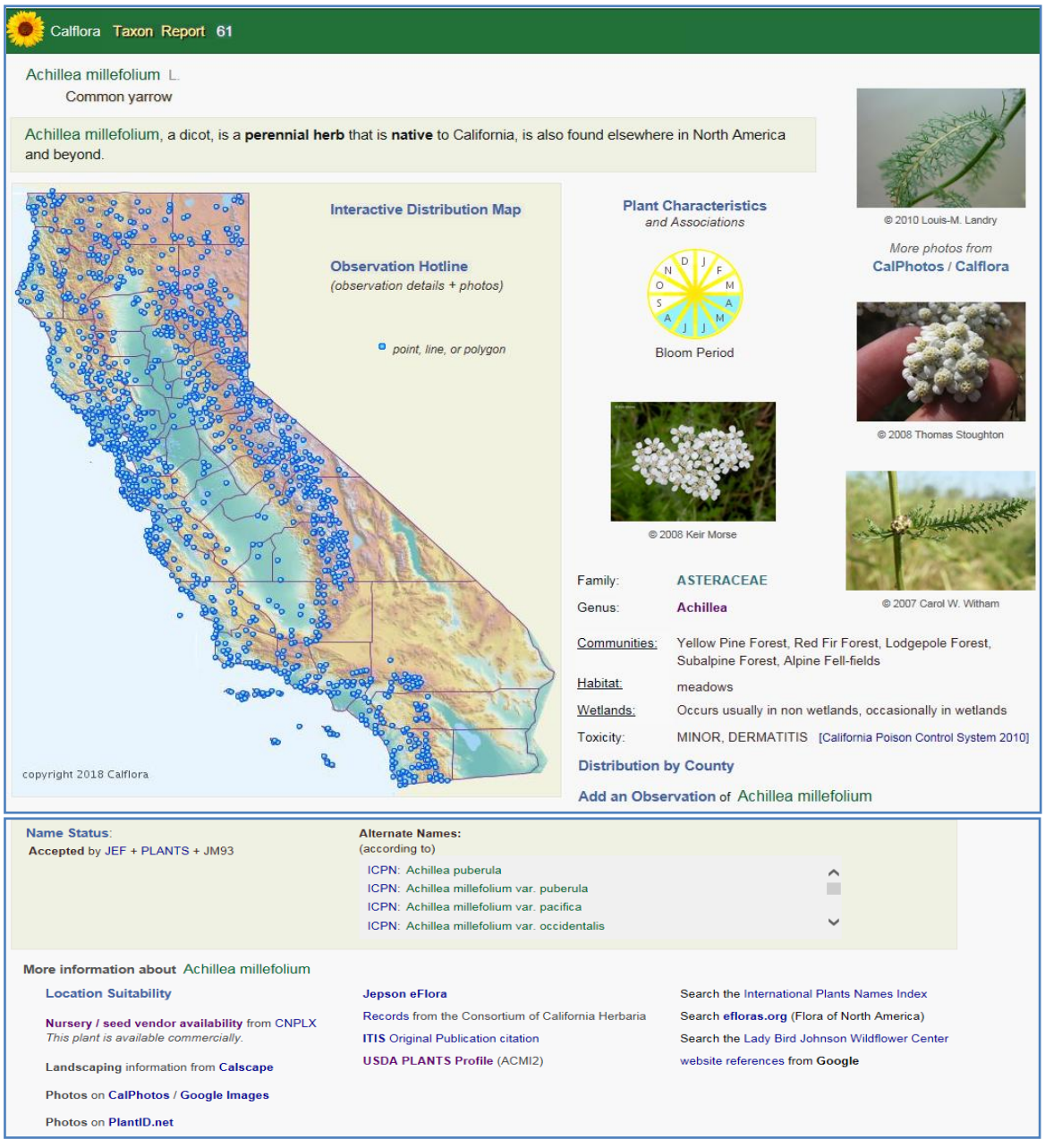


Figure 17. Display of the full Calflora Taxon Report for a species (in this example, *Achillea millefolium*), as accessed by clicking on 'Calflora Taxon Report' in the condensed Taxon Report summary window shown in Figure 16.

In this full Calflora Taxon Report, additional characteristics of this species (or any species you may select) are described or linked, including:

- Calflora Taxon report number (which equates to Calflora ID number in the eVegGuide).
- Distribution maps of species observations across the state and by county.
- Plant characteristics and associations (including ratings for invasiveness, rareness, plant pest host, and benefit to pollinators and insects).
- Accepted taxonomy and nomenclature from Jepson and USDA PLANTS database.
- Associated plant communities and habitat.
- Characteristic photos from CalPhotos, Google images, and PlantID.net.

To exit from either of these Calflora Taxon Report windows (condensed or full), simply "X-out" at the extreme top-right of each window. This will return the planner to the previous '**Search Criteria**' sub-module plant search results.

These Calflora-hosted links provide a wealth of information to augment and expand upon the plant record data for species within the **eVegGuide**, particularly if native or naturalized to California. *The planner is highly encouraged to investigate species further using these links as part of the NRCS revegetation planning process*.

Plant Spacing

This plant characteristic is the recommended guideline spacing for species for conservation practices (e.g., 380, 422, 612, etc.) typically requiring specified within-row, between-row, or systematic grid layout spacing between plants. The recommended plant spacing is based on anticipated mature plant canopy diameter for the species, as synthesized from NRCS, Calflora, and CNPS Calscape data. If the species is commercially or otherwise available as *seed only*, then no spacing value will be displayed.

Ease Rating

These ratings represent a synthesis of ratings and recommendations derived from several California sources, including Calflora, Calscape (California Native Plant Society – CNPS), and NRCS. These ratings are intended to inform the user of the relative ease of establishing and maintaining a given species or pre-set guideline mixture, particularly in relation to a) their common usage in mixtures; b) typical establishment techniques and revegetation equipment; and c) common NRCS revegetation applications across California MLRA's.

Ease of establishment and/or subsequent maintenance is rated as '3' = easy to establish; '2' = moderately easy to establish; and '1' = slightly difficult to establish. Refer to the **HELP** page for basis, definitions and rationale for ratings of **Ease of Establishment** (and Maintenance) for all species and mixtures within the **eVegGuide**.

Footnotes Display and Links

Footnotes that are applicable to individual species (as stand-alone entries, or as component species of pre-set guideline mixtures) within the **eVegGuide** are displayed. Footnotes are comprised of important special notations or recommended use constraints that should be strongly considered when including a given species in revegetation

mixtures (including pre-set guideline mixtures). Not all species have footnotes associated with them, depending upon the nature of the footnote notations or use constraints.

See **Section 5.0**, **FOOTNOTES SEARCH** under the **DATA** tab for descriptions of how these links are accessed, what they reveal, and their active links to supporting literature and/or web sites, as applicable. Footnote active links (indicated by footnote number) are automatically assigned to species when searches are also conducted in other modules such as **MIX COMPONENT SEARCH**.

Seeding Rates

As shown in Figures 13a and 15, both drilled and broadcast seeding rates for the individual species are shown. As noted at the top-right above the species list results in the '**Search Criteria**' sub-module window, these seeding rates are on a **Pure Live Seed (PLS) basis**, and represent **100% seeding rates** for each individual species as documented in each species' Plant Record (see **Section 2.0**, **PLANT SEARCH**). Final formulated mixture seeding rates, which reflect the percent composition of each species in a mixture, are computed and displayed later during the Final Report process (see **Section 1.34** below).

To examine individual species' 100% PLS seeding rates in more detail, click on the species' **Scientific Name**'; then click on '**eVegGuide Plant Search**' within the condensed Calflora Taxon Report summary window (Figure 18). This will direct the planner to the species' complete Plant Record within the **eVegGuide** (as if accessed the species using the **PLANT SEARCH** module – see Section 2.0), within which a species 100% PLS seeding rate will also be displayed.

1.52 Revising the Plant and Environmental Constraint Parameters

As described above in Section 1.3, any of the plant type and environmental constraint parameters can be selected (enabled) to further refine and constrain the plant search by the parameters desired. Please refer to Figure 9 in Section 1.3, and the attending descriptions of how each parameter constrains a plant search. The initial example used above had no plant type or environmental constraints enabled, thereby providing unconstrained results that displayed ALL available species for:

- MLRA 17
- Conservation Practice 327 – Conservation Cover
- Practice purpose 2 – Upland Wildland

NOTE – enabling constraint parameters, singly or in any combination of multiple parameters, allows the **eVegGuide** to constrain (i.e., reduce) the list of species to those that are *recommended* by NRCS as being *best adapted to the specific physiographic features and characteristics* of the pinpointed revegetation site. However, planners are not necessarily required to use these constrained lists of species **IF** field experience and professional judgment indicate otherwise. *The choice of which species to use on a given revegetation site, and in a given revegetation mixture formulation, still resides with the planner, as based on his knowledge, experience, and professional judgment.*

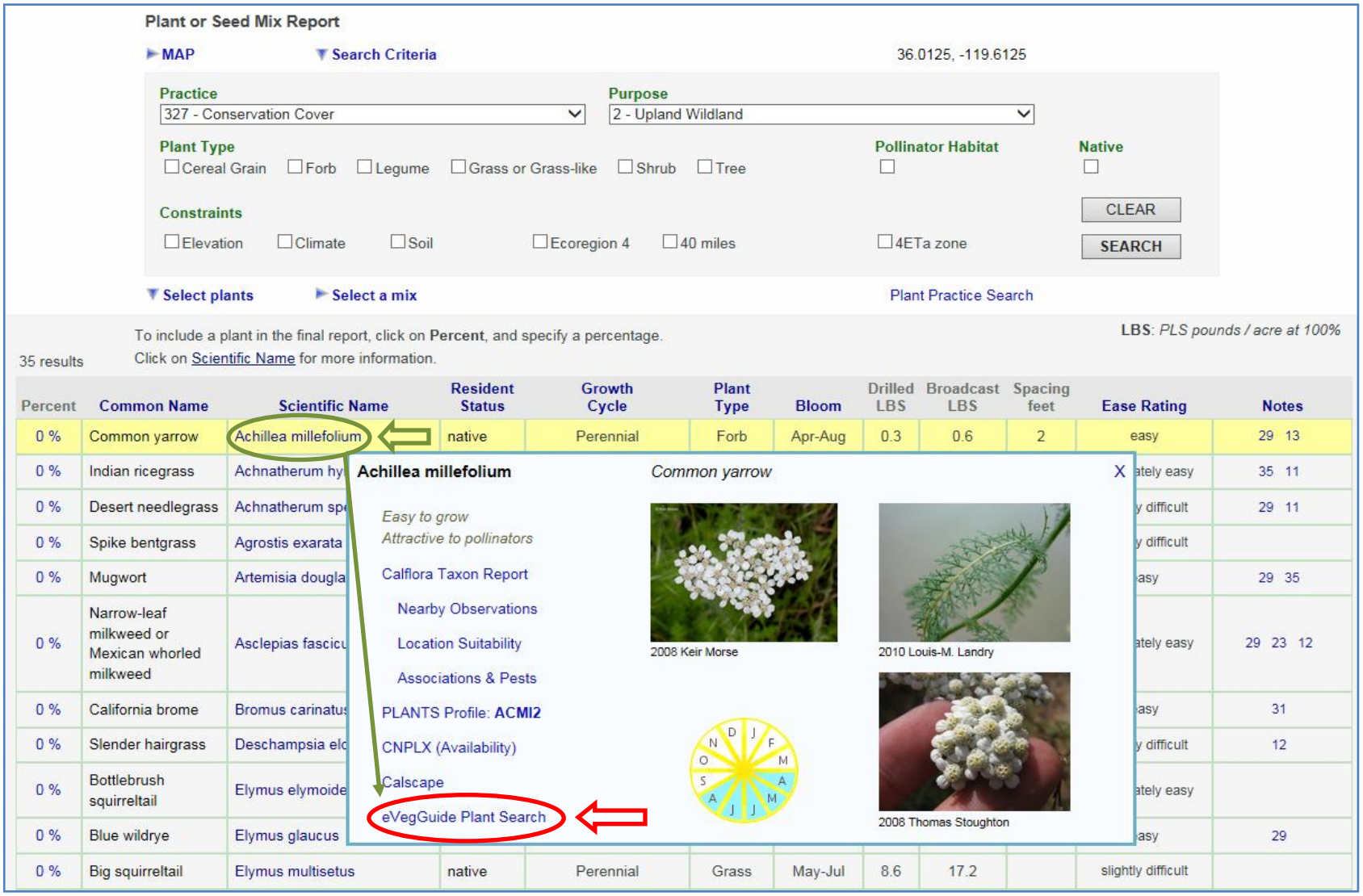


Figure 18. Display of the 'eVegGuide Plant Search' link within the condensed Calflora Taxon Report summary for a species (in this example, common yarrow, *Achillea millefolium*), which then accesses the species' eVegGuide Plant Record displaying the base 100% PLS seeding rate for that species.

In order to better determine and apply appropriate revegetation species and mixtures associated with applicable NRCS conservation practices, species adaptation should be reflected by use on areas of general similarity in true, ground-level ecosystems that are *physiographic sub-units of MLRA's*. The environmental constraint process in the **eVegGuide** attempts to stratify the environment physiographically by its probable response to disturbance and/or management measures and conservation treatments.

Some MLRA's are relatively uniform, with reduced variation in landform, elevation, climate and hydrology compared to other California MLRA's – for example, MLRA's 17, 30, and 31. As such, the species and mixtures recommended and available for use within the **eVegGuide** are generally applicable across the *whole MLRA*. In contrast, many other MLRA's are highly variable within the MLRA boundaries in terms of landform, soils, elevation, micro-climate and hydrology. These latter MLRA's pose a greater need to stratify the MLRA into utilitarian sub-units that are enabled by selecting the appropriate environmental constraints that best reflect ecologically similar sites in their species adaptation and potential for successful establishment.

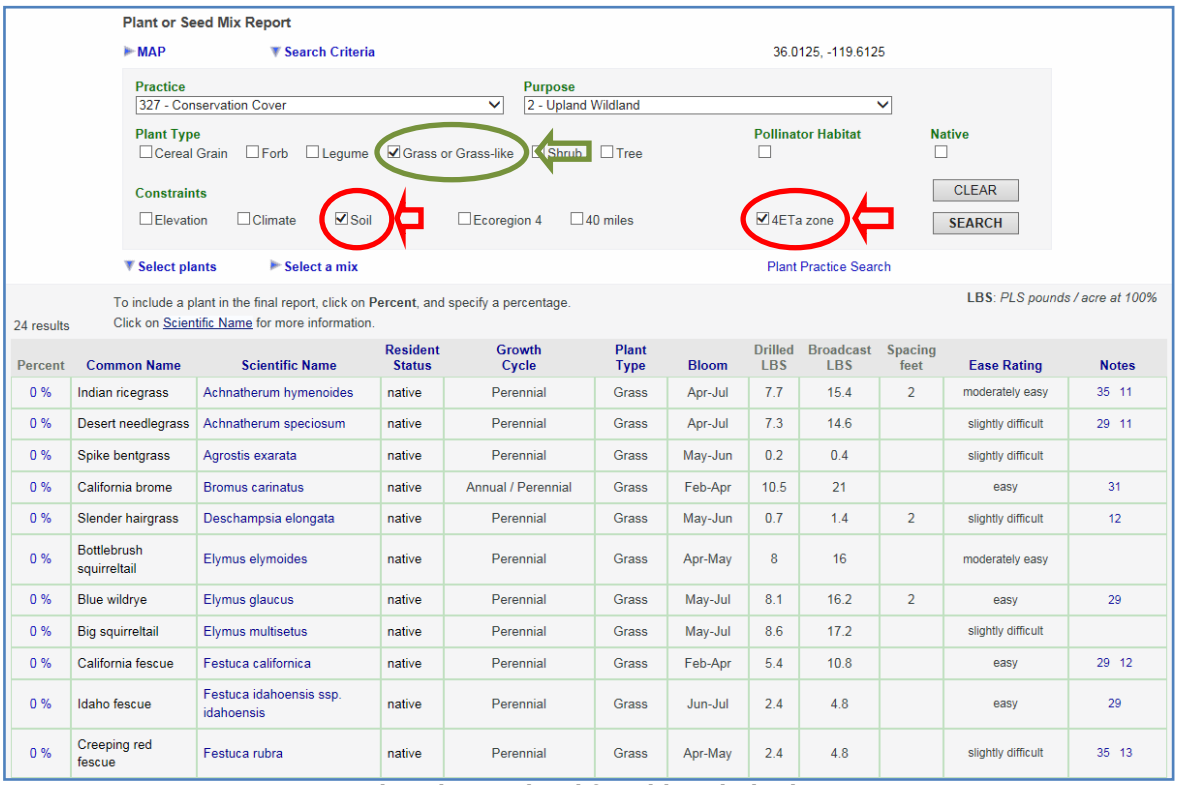
We will now examine a few examples that illustrate how enabling one or more of these parameters will alter the plant search results obtained above. For the following revisions, we will retain the same combination of MLRA (17) and conservation practice (327).

Example 1 – the planner wishes to further constrain the plant search by 1) restricting the plant types to '**grasses or grass-like**' only; 2) enabling the '**Soil**' constraint for soil adaptation; and 3) enabling the '**4ETa Zone**' constraint for climatic adaptation (Figure 19). Note that the species results from this revised search are now limited to 24 entries for these particular enabled constraints (compared to the original 35 entries without any environmental constraints). Results are sorted in alphabetical order by Scientific Name.

Example 2 – the planner now wishes to constrain the plant search to a different subset of plants that exhibit pollinator benefits by 1) restricting the plant types to '**forb**' and '**grass or grass-like**' only; 2) enabling the '**Soil**' constraint for soil adaptation; 3) enabling the '**Pollinator Habitat**' constraint for pollinator benefit; and 4) enabling the '**40-mile**' radius constraint to capture plant species known to occur within the 40-mile vicinity of the pinpointed revegetation site (Figure 20). Note that the species results from this newly revised search are now further limited to only 9 entries meeting the selected criteria above. Results are sorted in alphabetical order by Scientific Name.

Example 3 – for a third example, let's change the revegetation scenario by shifting the revegetation site to *near Highway 180, halfway between Fresno and Kerman, CA*. This is accomplished by clicking on '**Map**' at the top-left of the '**Search Criteria**' sub-module window; pinpointing the new site using the red crosshair target icon; then click on '**Search Criteria**' to return to the plant search window for selecting new constraint parameters. Note that the revegetation site still remains in MLRA 17 – Sacramento and San Joaquin Valleys.

In addition to changing the revegetation site location, the planner wishes to examine species availability for a *grazed rangeland application*, and therefore changes the conservation practice to 550 – Range Planting in the drop-down list under '**Practice**'. Notice that this practice has no purposes assigned to it in the **eVegGuide**, and therefore the '**Purpose**' data element is automatically removed. This occurs for a number of practices that have no assigned practice purposes (i.e., 393, 412, 550, 601, 603, and 650).



Percent	Common Name	Scientific Name	Resident Status	Growth Cycle	Plant Type	Bloom	Drilled LBS	Broadcast LBS	Spacing feet	Ease Rating	Notes
0 %	Indian ricegrass	Achnatherum hymenoides	native	Perennial	Grass	Apr-Jul	7.7	15.4	2	moderately easy	35 11
0 %	Desert needlegrass	Achnatherum speciosum	native	Perennial	Grass	Apr-Jul	7.3	14.6		slightly difficult	29 11
0 %	Spike bentgrass	Agrostis exarata	native	Perennial	Grass	May-Jun	0.2	0.4		slightly difficult	
0 %	California brome	Bromus carinatus	native	Annual / Perennial	Grass	Feb-Apr	10.5	21		easy	31
0 %	Slender hairgrass	Deschampsia elongata	native	Perennial	Grass	May-Jun	0.7	1.4	2	slightly difficult	12
0 %	Bottlebrush squirreltail	Elymus elymoides	native	Perennial	Grass	Apr-May	8	16		moderately easy	
0 %	Blue wildrye	Elymus glaucus	native	Perennial	Grass	May-Jul	8.1	16.2	2	easy	29
0 %	Big squirreltail	Elymus multisetus	native	Perennial	Grass	May-Jul	8.6	17.2		slightly difficult	
0 %	California fescue	Festuca californica	native	Perennial	Grass	Feb-Apr	5.4	10.8		easy	29 12
0 %	Idaho fescue	Festuca idahoensis ssp. idahoensis	native	Perennial	Grass	Jun-Jul	2.4	4.8		easy	29
0 %	Creeping red fescue	Festuca rubra	native	Perennial	Grass	Apr-May	2.4	4.8		slightly difficult	35 13

(section omitted for abbreviation)

0 %	Foothill needlegrass	Nassella lepida	native	Perennial	Grass	Mar-May	3.4	6.8		slightly difficult	11
0 %	Purple needle grass	Nassella pulchra	native	Perennial	Grass	Mar-May	9.9	19.8		moderately easy	11
0 %	Galleta	Pleuraphis jamesii	native	Perennial	Grass	Apr-Nov	7.2	14.4	2	slightly difficult	11
0 %	Sandberg bluegrass	Poa secunda	native	Perennial	Grass	May-Jun	1	2		moderately easy	
0 %	Alkali sacaton	Sporobolus airoides	native	Perennial	Grass	Jul-Aug	0.6	1.2	1	easy	29 35 13

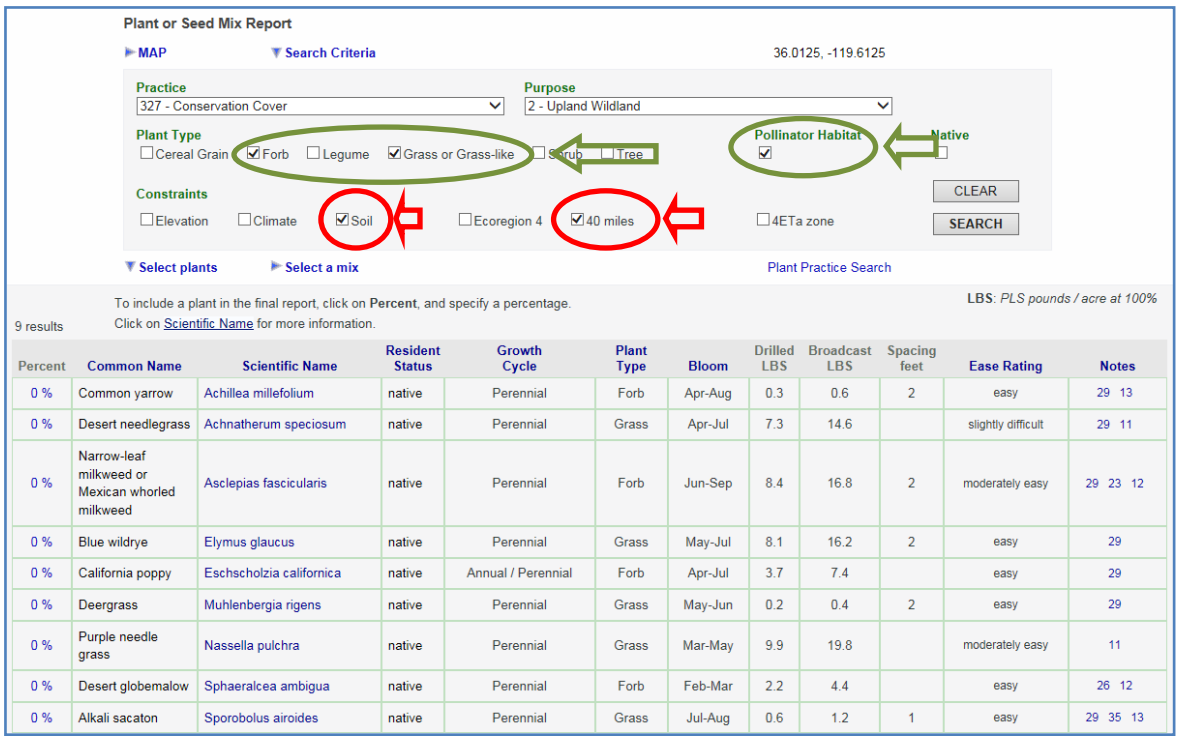
[*Footnote listings and descriptions below this table, but not shown here*]

Figure 19. Display of the revised plant search initiated from the 'Search Criteria' sub-module, with Plant Type 'Grass or Grass-like' selected, and the 'Soil' and '4ETa Zone' environmental constraints enabled (Example 1).

For this latest Example 3, initially disable all constraints, allowing for the largest available suite of species for the full MLRA and selected practice. Then click **SEARCH** to start the revised plant search.

As shown in Figure 21a, this revised search with no environmental parameter constraints enabled and using practice 550 – Range Planting results in nearly 30 line-item species results – again sorted by Scientific Name.

In order to provide a straight-forward example, let's now examine how enabling the '**Ecoregion 4**' environmental constraint affects the number of species recommended for the 550 conservation practice. Check the box for '**Ecoregion 4**' and then click **SEARCH** to start the revised plant search.



Percent	Common Name	Scientific Name	Resident Status	Growth Cycle	Plant Type	Bloom	Drilled LBS	Broadcast LBS	Spacing feet	Ease Rating	Notes
0 %	Common yarrow	Achillea millefolium	native	Perennial	Forb	Apr-Aug	0.3	0.6	2	easy	29 13
0 %	Desert needlegrass	Achnatherum speciosum	native	Perennial	Grass	Apr-Jul	7.3	14.6		slightly difficult	29 11
0 %	Narrow-leaf milkweed or Mexican whorled milkweed	Asclepias fascicularis	native	Perennial	Forb	Jun-Sep	8.4	16.8	2	moderately easy	29 23 12
0 %	Blue wildrye	Elymus glaucus	native	Perennial	Grass	May-Jul	8.1	16.2	2	easy	29
0 %	California poppy	Eschscholzia californica	native	Annual / Perennial	Forb	Apr-Jul	3.7	7.4		easy	29
0 %	Deergrass	Muhlenbergia rigens	native	Perennial	Grass	May-Jun	0.2	0.4	2	easy	29
0 %	Purple needle grass	Nassella pulchra	native	Perennial	Grass	Mar-May	9.9	19.8		moderately easy	11
0 %	Desert globemalow	Sphaeralcea ambigua	native	Perennial	Forb	Feb-Mar	2.2	4.4		easy	26 12
0 %	Alkali sacaton	Sporobolus airoides	native	Perennial	Grass	Jul-Aug	0.6	1.2	1	easy	29 35 13

Figure 20. Display of the revised plant search initiated from the 'Search Criteria' sub-module, with Plant Type 'Forb' and 'Grass or Grass-like' selected, and the 'Pollinator Habitat', 'Soil', and '40-mile' environmental constraints enabled (Example 2).

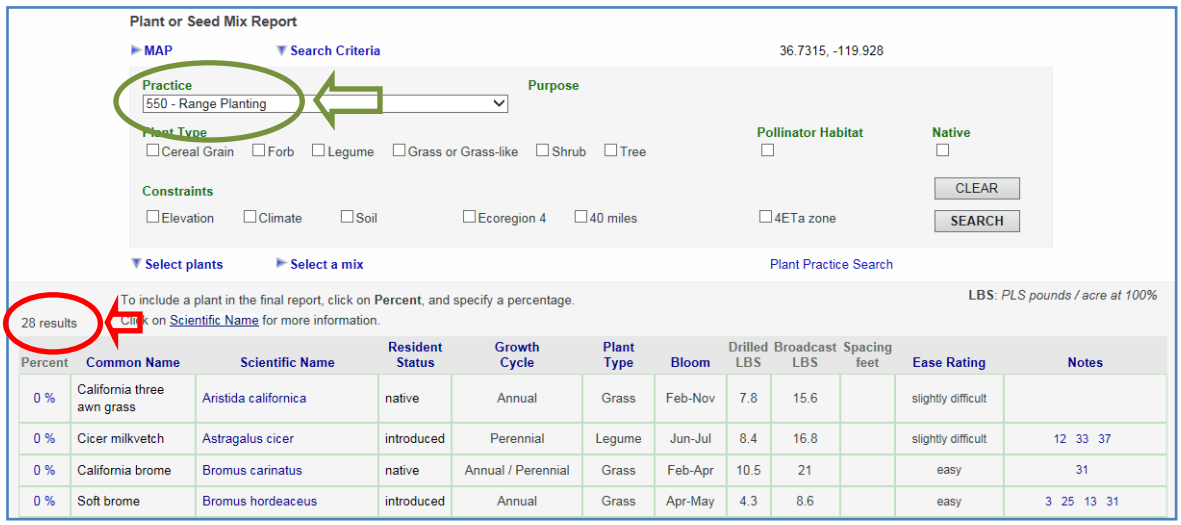
Enabling this constraint starts a spatially complex process of species association with the 'Ecoregion 4' polygons, so allow a few seconds for results to be generated. Figure 21b depicts the change in number of species recommended when the '**Ecoregion 4**' environmental constraint is enabled, reducing the number of species to 15 line-item results.

All these examples illustrate how altering conservation practice, practice purpose, and associated environmental constraints – singly or in combination of multiple parameters – alters the number and selection of species that are recommended for the specific revegetation application. The planner is highly encouraged to explore how the various environmental constraints affect species recommendations in the **eVegGuide**.

As previously discussed, species recommendations and subsequent selection of a subset of species for final mixture formulation should reflect their adaptation to true, ground-level ecosystems that are *physiographic sub-units of MLRA's*. The environmental constraint process in the **eVegGuide** is an attempt to stratify the environment physiographically by its climate, soil, and other environmental constraints; and its probable response to disturbance, revegetation treatments, and applied management.

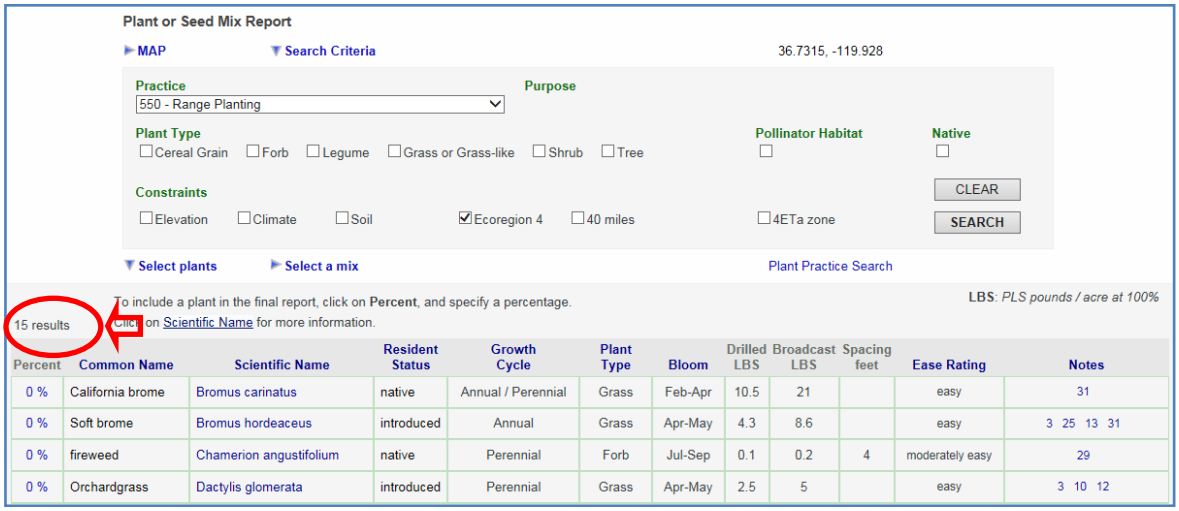
1.53 Species Percent Composition Data Entry

This column, within the plant search results listing derived in the '**Search Criteria**' sub-module, is the final step for species selection and final formulation of the seed mixture.



(results truncated for abbreviation)

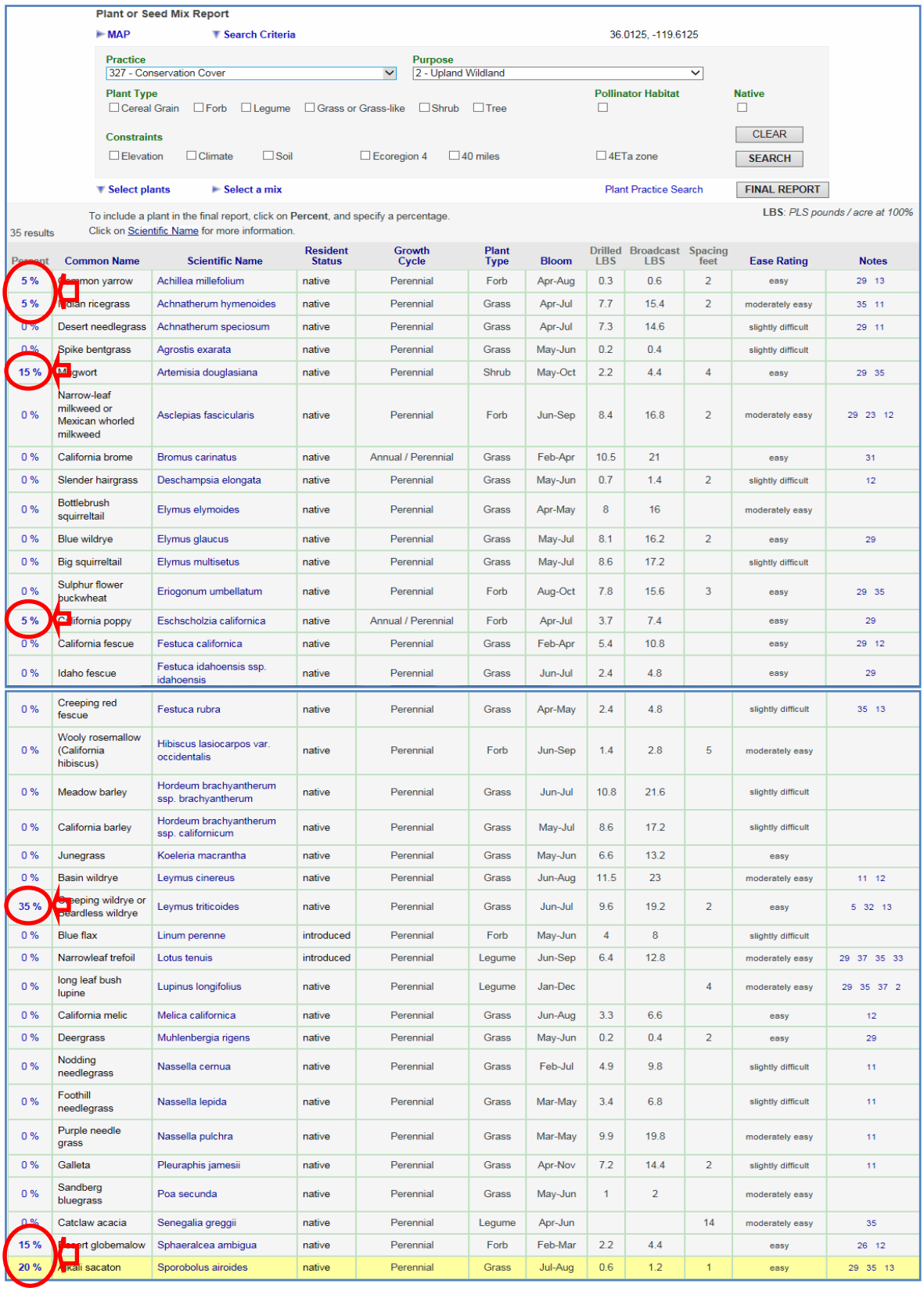
Figure 21a. Display of the revised plant search with conservation practice '550 – Range Planting' selected for a grazed rangeland application, and no <u>environmental constraints</u> enabled (Example 3).



(results truncated for abbreviation)

Figure 21b. Display of the revised plant search with conservation practice '550 – Range Planting' selected for a grazed rangeland application, and the 'Ecoregion 4' <u>environmental constraints</u> enabled (Example 3).

After evaluating and selecting the desired subset of species as final mixture components from the provided search results list, the planner then enters <u>desired percentages</u> in the '**Percent**' column for each species comprising the final mixture. Let's revert back to the original example of selecting a revegetation site location, conservation practice, practice purpose, and environmental constraints similar to that described in ***Section 1.4*** *and* ***Figure 13a*** *above* – i.e., <u>MLRA 17</u> (immediately east of Corcoran, CA); conservation practice '<u>327 – Conservation Cover</u>'; practice purpose '<u>2 – Upland Wildland</u>'; and with <u>no</u> environmental constraints enabled (Figure 22).



Plant or Seed Mix Report

MAP | Search Criteria | 36.0125, -119.6125

Practice: 327 - Conservation Cover | Purpose: 2 - Upland Wildland

Plant Type: ☐ Cereal Grain ☐ Forb ☐ Legume ☐ Grass or Grass-like ☐ Shrub ☐ Tree | Pollinator Habitat ☐ | Native ☐

Constraints: ☐ Elevation ☐ Climate ☐ Soil ☐ Ecoregion 4 ☐ 40 miles ☐ 4ETa zone

CLEAR | SEARCH

Select plants | Select a mix | Plant Practice Search | FINAL REPORT

To include a plant in the final report, click on **Percent**, and specify a percentage.
Click on Scientific Name for more information.

LBS: *PLS pounds / acre at 100%*

35 results

Percent	Common Name	Scientific Name	Resident Status	Growth Cycle	Plant Type	Bloom	Drilled LBS	Broadcast LBS	Spacing feet	Ease Rating	Notes
5 %	Common yarrow	Achillea millefolium	native	Perennial	Forb	Apr-Aug	0.3	0.6	2	easy	29 13
5 %	Indian ricegrass	Achnatherum hymenoides	native	Perennial	Grass	Apr-Jul	7.7	15.4	2	moderately easy	35 11
0 %	Desert needlegrass	Achnatherum speciosum	native	Perennial	Grass	Apr-Jul	7.3	14.6		slightly difficult	29 11
0 %	Spike bentgrass	Agrostis exarata	native	Perennial	Grass	May-Jun	0.2	0.4		slightly difficult	
15 %	Mugwort	Artemisia douglasiana	native	Perennial	Shrub	May-Oct	2.2	4.4	4	easy	29 35
0 %	Narrow-leaf milkweed or Mexican whorled milkweed	Asclepias fascicularis	native	Perennial	Forb	Jun-Sep	8.4	16.8	2	moderately easy	29 23 12
0 %	California brome	Bromus carinatus	native	Annual / Perennial	Grass	Feb-Apr	10.5	21		easy	31
0 %	Slender hairgrass	Deschampsia elongata	native	Perennial	Grass	May-Jun	0.7	1.4	2	slightly difficult	12
0 %	Bottlebrush squirreltail	Elymus elymoides	native	Perennial	Grass	Apr-May	8	16		moderately easy	
0 %	Blue wildrye	Elymus glaucus	native	Perennial	Grass	May-Jul	8.1	16.2	2	easy	29
0 %	Big squirreltail	Elymus multisetus	native	Perennial	Grass	May-Jul	8.6	17.2		slightly difficult	
0 %	Sulphur flower buckwheat	Eriogonum umbellatum	native	Perennial	Forb	Aug-Oct	7.8	15.6	3	easy	29 35
5 %	California poppy	Eschscholzia californica	native	Annual / Perennial	Forb	Apr-Jul	3.7	7.4		easy	29
0 %	California fescue	Festuca californica	native	Perennial	Grass	Feb-Apr	5.4	10.8		easy	29 12
0 %	Idaho fescue	Festuca idahoensis ssp. idahoensis	native	Perennial	Grass	Jun-Jul	2.4	4.8		easy	29
0 %	Creeping red fescue	Festuca rubra	native	Perennial	Grass	Apr-May	2.4	4.8		slightly difficult	35 13
0 %	Wooly rosemallow (California hibiscus)	Hibiscus lasiocarpos var. occidentalis	native	Perennial	Forb	Jun-Sep	1.4	2.8	5	moderately easy	
0 %	Meadow barley	Hordeum brachyantherum ssp. brachyantherum	native	Perennial	Grass	Jun-Jul	10.8	21.6		slightly difficult	
0 %	California barley	Hordeum brachyantherum ssp. californicum	native	Perennial	Grass	May-Jul	8.6	17.2		slightly difficult	
0 %	Junegrass	Koeleria macrantha	native	Perennial	Grass	May-Jun	6.6	13.2		easy	
0 %	Basin wildrye	Leymus cinereus	native	Perennial	Grass	Jun-Aug	11.5	23		moderately easy	11 12
35 %	Creeping wildrye or beardless wildrye	Leymus triticoides	native	Perennial	Grass	Jun-Jul	9.6	19.2	2	easy	5 32 13
0 %	Blue flax	Linum perenne	introduced	Perennial	Forb	May-Jun	4	8		slightly difficult	
0 %	Narrowleaf trefoil	Lotus tenuis	introduced	Perennial	Legume	Jun-Sep	6.4	12.8		moderately easy	29 37 35 33
0 %	long leaf bush lupine	Lupinus longifolius	native	Perennial	Legume	Jan-Dec			4	moderately easy	29 35 37 2
0 %	California melic	Melica californica	native	Perennial	Grass	Jun-Aug	3.3	6.6		easy	12
0 %	Deergrass	Muhlenbergia rigens	native	Perennial	Grass	May-Jun	0.2	0.4	2	easy	29
0 %	Nodding needlegrass	Nassella cernua	native	Perennial	Grass	Feb-Jul	4.9	9.8		slightly difficult	11
0 %	Foothill needlegrass	Nassella lepida	native	Perennial	Grass	Mar-May	3.4	6.8		slightly difficult	11
0 %	Purple needle grass	Nassella pulchra	native	Perennial	Grass	Mar-May	9.9	19.8		moderately easy	11
0 %	Galleta	Pleuraphis jamesii	native	Perennial	Grass	Apr-Nov	7.2	14.4	2	slightly difficult	11
0 %	Sandberg bluegrass	Poa secunda	native	Perennial	Grass	May-Jun	1	2		moderately easy	
0 %	Catclaw acacia	Senegalia greggii	native	Perennial	Legume	Apr-Jun			14	moderately easy	35
15 %	Desert globemalow	Sphaeralcea ambigua	native	Perennial	Forb	Feb-Mar	2.2	4.4		easy	26 12
20 %	Alkali sacaton	Sporobolus airoides	native	Perennial	Grass	Jul-Aug	0.6	1.2	1	easy	29 35 13

Figure 22. Display of composition % values entered for MLRA 17 (Corcoran, CA area), practice '327 – Conservation Cover', and with no environmental constraints enabled.

This option (i.e., no environmental constraints enabled) allows the planner to exercise more of his or her own experience and professional judgment, with the largest array of species available from which to select a subset of species for final mixture formulation (35 species). As derived from the CA Soil Resource Lab data associated with the soil map unit link (467176) in the '**Climate & Soil Profile**' section of the '**Map**' sub-module for the pinpointed revegetation site, Figure 23) – assume further that for this example, the planner is working with a mildly saline, ephemeral terrace site characterized primarily by:

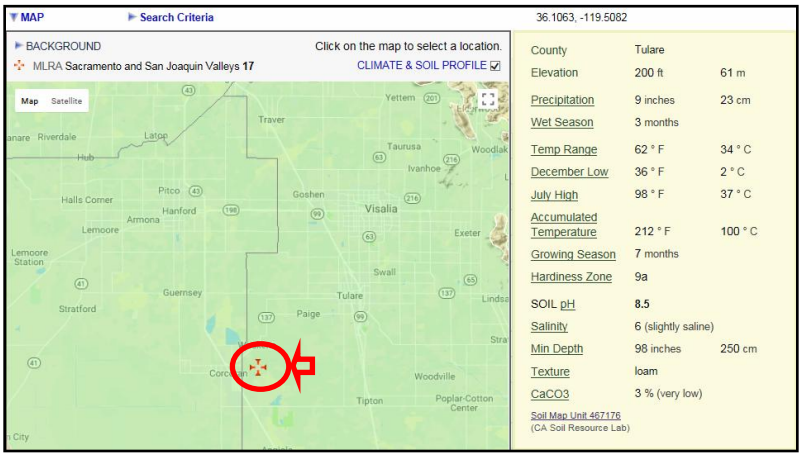


Figure 23. Location of the example revegetation site and corresponding 'Climate & Soil Profile' data from the 'Map' sub-module – for final species selection and composition percentage assignment (see Figure 22).

- "typic loam textures (e.g., "Biggriz loam (typic fallow cropland fields …")
- "typic slope of less than 1 percent …"
- "a typic elevation of 222 feet …"

As illustrated in Figure 22, simply click on each '**Percent**' value for the following selected species (in this example):

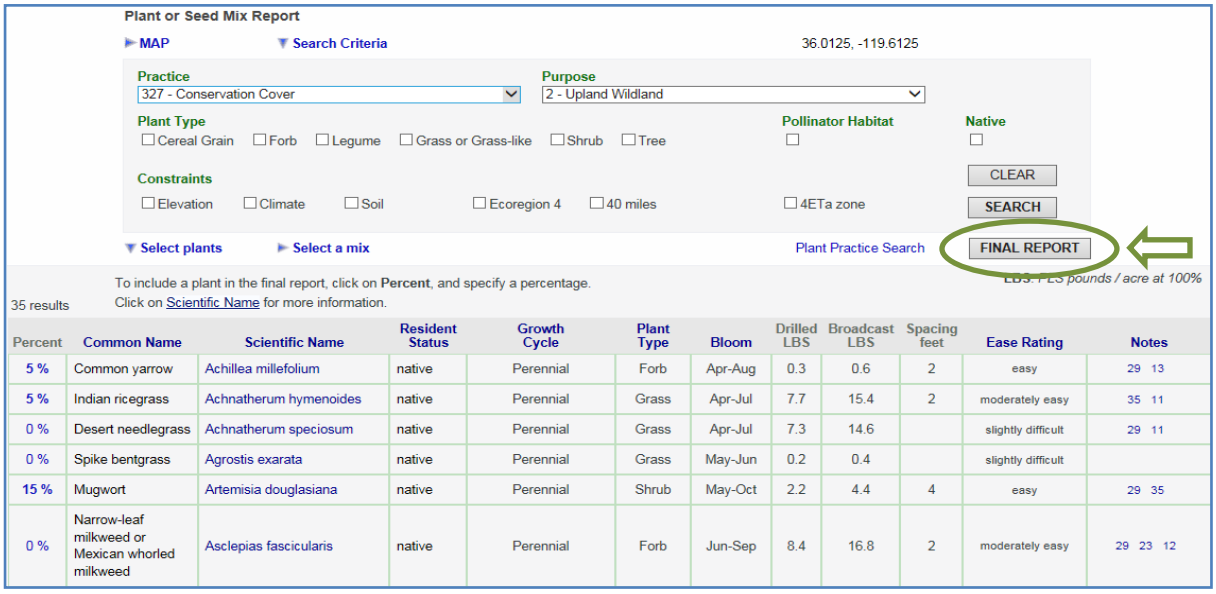
• Common yarrow, Achillea millefolium	5%
• Indian ricegrass, Achnatherum hymenoides	5%
• Mugwort, Artemisia douglasiana	15%
• California poppy, Eschscholzia californica	5%
• Creeping wildrye, Leymus triticoides	35%
• Desert globemallow, Sphaeralcea ambigua	15%
• Alkali sacaton, Sporobolus airoides	20%
	100%

Enter the desired whole (integer) number for the desired percent for each species; and then click on **OK** (or hit '**Enter**') by each value entered. Repeat this process for all species selected for the final mixture. Make sure that the total of the percentage values for all species cumulatively equals 100%.

If the planner, after some reconsideration, wishes to change the percentages for the selected species, or wishes to delete some species and/or add other species, just modify the '**Percent**' values for the revised set of species to reflect the desired new mixture composition. Be sure to return percent composition values to **'0'** for any species deleted from the final mixture. These types of revisions to the composition percentage values for individual species can be made in any quantity, in any order, and at any time prior to proceeding to (and clicking on) **FINAL REPORT**.

1.54 FINAL REPORT Generation (for 'Select Plants' mode)

Once the final subset of species have been selected and composition percentages assigned to each in the '**Search Criteria**' sub-module, a final revegetation report summarizing these species and their associated biological and seeding rate data can then be generated. This latter action, initiated by clicking on **FINAL REPORT** at the top-right of the full species listing (Figure 24), starts the process for generating the electronic file and preparing the written final revegetation recommendation report for use in the client's conservation plan.



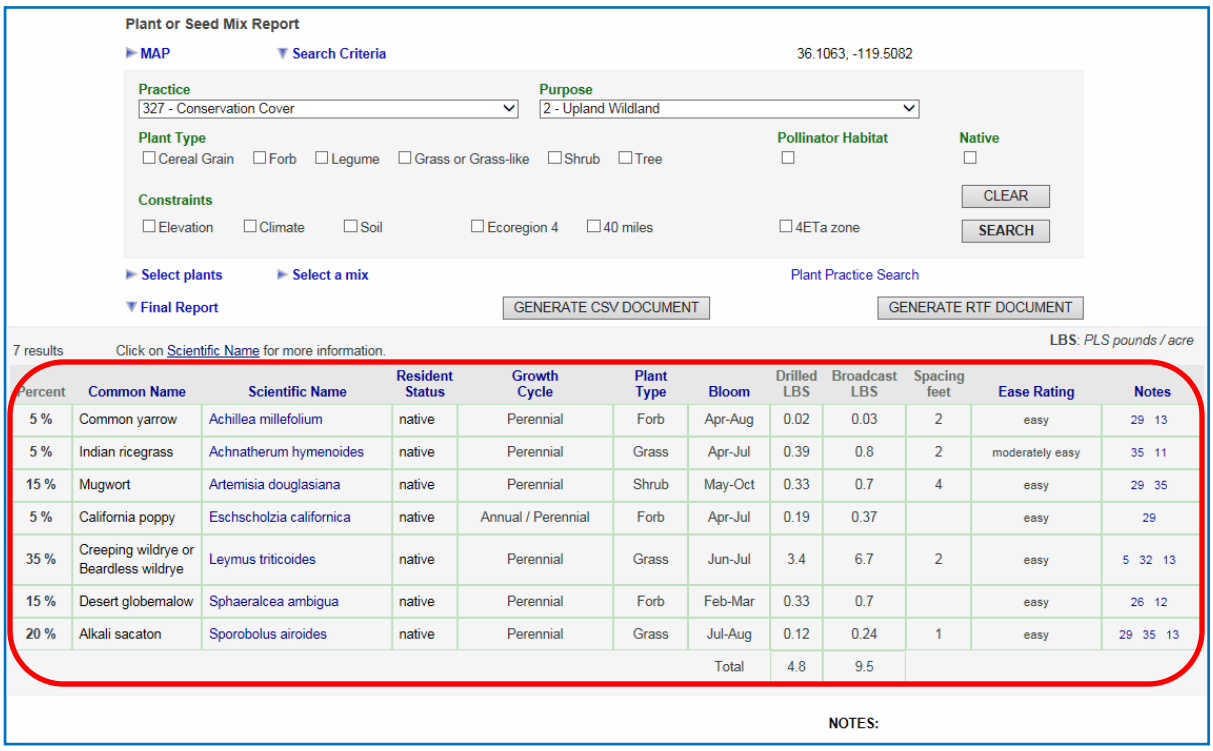
(results truncated for abbreviation)

Figure 24. Location of FINAL REPORT button, which starts the process for generating the electronic file and preparing the written final revegetation recommendation report.

Upon initiating the **FINAL REPORT** process, an error message will be displayed at the top of the next window if the composition percentages just entered for final mixture formulation do not add up to 100%. If this error message occurs, just review the entered composition percentages and make sure that revisions are made such that the cumulative percentage correctly sums to 100%.

Using our example just above in **Section 1.53** (Figure 22), click on **FINAL REPORT** to generate the digital, screen-view version of the final formulated mixture. **Figure 25** displays the results of this process for our '327 – Conservation Cover' example. The **Footnotes** that are typically displayed below the final mixture summary (i.e., footnote text + associated links to supporting documentation, if any) are not shown in Figure 25 for brevity.

As previously described (**Section 1.51**), several features of the generated digital report should be noted, as follows:



Plant or Seed Mix Report

MAP Search Criteria 36.1063, -119.5082

Practice: 327 - Conservation Cover Purpose: 2 - Upland Wildland

Plant Type: ☐ Cereal Grain ☐ Forb ☐ Legume ☐ Grass or Grass-like ☐ Shrub ☐ Tree Pollinator Habitat ☐ Native ☐

Constraints: ☐ Elevation ☐ Climate ☐ Soil ☐ Ecoregion 4 ☐ 40 miles ☐ 4ETa zone CLEAR SEARCH

Select plants Select a mix Plant Practice Search

Final Report GENERATE CSV DOCUMENT GENERATE RTF DOCUMENT

7 results Click on Scientific Name for more information. LBS: *PLS pounds / acre*

Percent	Common Name	Scientific Name	Resident Status	Growth Cycle	Plant Type	Bloom	Drilled LBS	Broadcast LBS	Spacing feet	Ease Rating	Notes
5 %	Common yarrow	Achillea millefolium	native	Perennial	Forb	Apr-Aug	0.02	0.03	2	easy	29 13
5 %	Indian ricegrass	Achnatherum hymenoides	native	Perennial	Grass	Apr-Jul	0.39	0.8	2	moderately easy	35 11
15 %	Mugwort	Artemisia douglasiana	native	Perennial	Shrub	May-Oct	0.33	0.7	4	easy	29 35
5 %	California poppy	Eschscholzia californica	native	Annual / Perennial	Forb	Apr-Jul	0.19	0.37		easy	29
35 %	Creeping wildrye or Beardless wildrye	Leymus triticoides	native	Perennial	Grass	Jun-Jul	3.4	6.7	2	easy	5 32 13
15 %	Desert globemalow	Sphaeralcea ambigua	native	Perennial	Forb	Feb-Mar	0.33	0.7		easy	26 12
20 %	Alkali sacaton	Sporobolus airoides	native	Perennial	Grass	Jul-Aug	0.12	0.24	1	easy	29 35 13
						Total	4.8	9.5			

NOTES:

Figure 25. Digital screen version of the final mixture formulation, based on species selections and corresponding composition percentage assignment from Figure 22.

Table Format

As described in Section 1.51, biological characteristics are displayed for each line-item species listing. All of the columns (*except* for seeding rates and plant spacing, if present) can be sorted by any **column heading** shown in **bold, blue** font.

Scientific Name Link to Calflora and USDA PLANTS data

The individual species' Scientific Name link directs the planner to a condensed summary window of Calflora's Taxon Report (see Figures 16 and 17 above), from which biological, ecological, taxonomic, and commercial availability information can be accessed – such as direct links to Calflora and USDA-PLANTS databases, CNPLX (commercial availability database), Calscape, CalPhotos, Jepson eFlora, etc.

Plant Spacing

This plant characteristic is the recommended guideline spacing for species for conservation practices (e.g., 380, 422, 612, etc.) typically requiring specified within-row, between-row, or systematic grid layout spacing between plants. The recommended plant spacing is based on anticipated mature plant canopy diameter for the species, as synthesized from NRCS, Calflora, and CNPS Calscape data. If the species is commercially or otherwise available as *seed only*, then no spacing value will be displayed.

Ease Rating

These ratings inform the user of the relative ease of establishing and maintaining a given species or pre-set guideline mixture, particularly in relation to a) their common usage in mixtures; b) typical establishment techniques and revegetation equipment; and c) common NRCS revegetation applications across California MLRA's. Ease of establishment and/or subsequent maintenance is rated as '3' = easy to establish; '2' = moderately easy to establish; and '1' = slightly difficult to establish.

Footnotes Display and Links

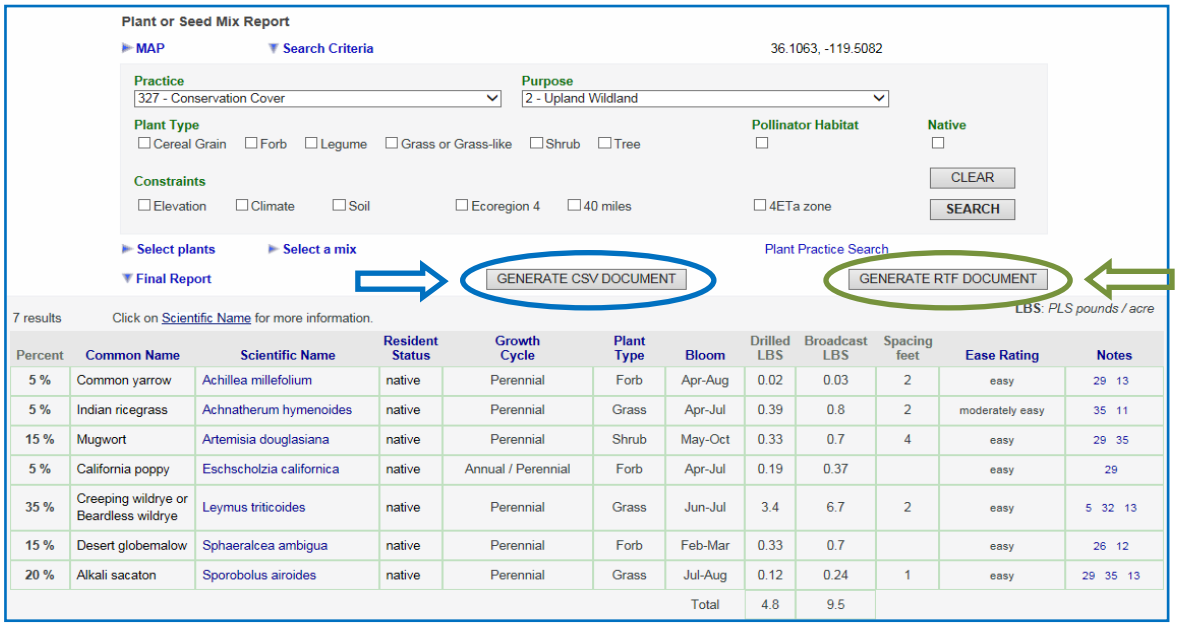
Footnotes that are applicable to individual species are displayed. Not all species have footnotes associated with them, depending upon the nature of the footnote notations or use constraints.

Seeding Rates

As noted at the top-right above the species list results, the displayed seeding rates are on a **Pure Live Seed (PLS) basis**. In contrast to the full species listing in Figure 22, however, these seeding rates now reflect the assigned mixture composition percentages for each individual species. These final seeding rates are therefore the *PLS rates per acre for the mixture as a whole*. Summed total PLS pounds per acre for the mixture are displayed below each 'Drilled' and 'Broadcast' column.

Printing and File Save Options

From the digital screen version of the final seed mixture summary, two options are available for final printing of a written document for the client's conservation plan – 1) **GENERATE CSV DOCUMENT**; and 2) **GENERATE RTF DOCUMENT** (Figure 26).



Percent	Common Name	Scientific Name	Resident Status	Growth Cycle	Plant Type	Bloom	Drilled LBS	Broadcast LBS	Spacing feet	Ease Rating	Notes
5 %	Common yarrow	Achillea millefolium	native	Perennial	Forb	Apr-Aug	0.02	0.03	2	easy	29 13
5 %	Indian ricegrass	Achnatherum hymenoides	native	Perennial	Grass	Apr-Jul	0.39	0.8	2	moderately easy	35 11
15 %	Mugwort	Artemisia douglasiana	native	Perennial	Shrub	May-Oct	0.33	0.7	4	easy	29 35
5 %	California poppy	Eschscholzia californica	native	Annual / Perennial	Forb	Apr-Jul	0.19	0.37		easy	29
35 %	Creeping wildrye or Beardless wildrye	Leymus triticoides	native	Perennial	Grass	Jun-Jul	3.4	6.7	2	easy	5 32 13
15 %	Desert globemalow	Sphaeralcea ambigua	native	Perennial	Forb	Feb-Mar	0.33	0.7		easy	26 12
20 %	Alkali sacaton	Sporobolus airoides	native	Perennial	Grass	Jul-Aug	0.12	0.24	1	easy	29 35 13
						Total	4.8	9.5			

Figure 26. Printing and file save options in the digital screen summary version of the final mixture formulation.

Generate **CSV** Document

Clicking on the **GENERATE CSV DOCUMENT** option produces a condensed Microsoft Excel spreadsheet, in 'Comma Delimited' (.csv) format, of the final mixture formulation, including applicable Footnotes (Figure 27).

NRCS California Final Plant Mix Report

MLRA: 17
Practice: 3 Conservation Cover
Purpose: 2 Upland Wildland

Symbol	Common	Taxon	Percent	Drill	Broadcast	Spacing	Resident	Growth	Type	Bloom	Easy?	Footnotes
LETR5	Creeping w	Leymus tri	35.00%	3.4	6.7	2	native	Perennial	Grass or G	Jun-Jul	easy	5 32 13
ARDO3	Mugwort	Artemisia (	15.00%	0.33	0.7	4	native	Perennial	Shrub	May-Oct	easy	29 35
SPAM2	Desert glol	Sphaeralce	15.00%	0.33	0.7		native	Perennial	Forb	Feb-Mar	easy	26 12
ESCA2	California ¡	Eschscholi	5.00%	0.19	0.37		native	Annual / P	Forb	Apr-Jul	easy	29
SPAI	Alkali sacá	Sporobolus	20.00%	0.12	0.24	1	native	Perennial	Grass or G	Jul-Aug	easy	29 35 13
ACMI2	Common y	Achillea m	5.00%	0.02	0.03	2	native	Perennial	Forb	Apr-Aug	easy	29 13
ACHY	Indian rice	Achnatheri	5.00%	0.38	0.8	2	native	Perennial	Grass or G	Apr-Jul	moderately	35 11

Footnotes:

5: Strong seedling vigor. This species can be aggressive and competitive with other species in a seed mixture (particularly under favorable soil moisture regimes), and thus may need reduction of composition percentage accordingly.
11: Adapted to mildly to moderately saline areas (EC = 4.0 ? 8.0 dS / m).
12: Adapted to moderately high saline areas (EC = 8.0 ? 12.0 dS / m).
13: Adapted to highly saline areas (EC > 12.0 dS / m).
26: Highly preferred plant by native bees.
29: Attracts beneficial insects other than / in addition to bees that provide pollination services and/or protection from plant pests through predation or deterrence.
32: This species requires a favorable moisture regime [>10? mean annual precip; or shallow water table (<5? depth); or irrigation] for successful establishment, maintenance and sustainability.
35: This species benefits from pre-conditioning seed treatment to break or reduce seed dormancy mechanisms. See the following links for specific recommendations and general overview of types of pre-conditioning treatment.

Figure 27. Microsoft Excel spreadsheet version of the final mixture, produced by clicking on GENERATE CSV DOCUMENT in the digital screen summary version of the final mixture formulation.

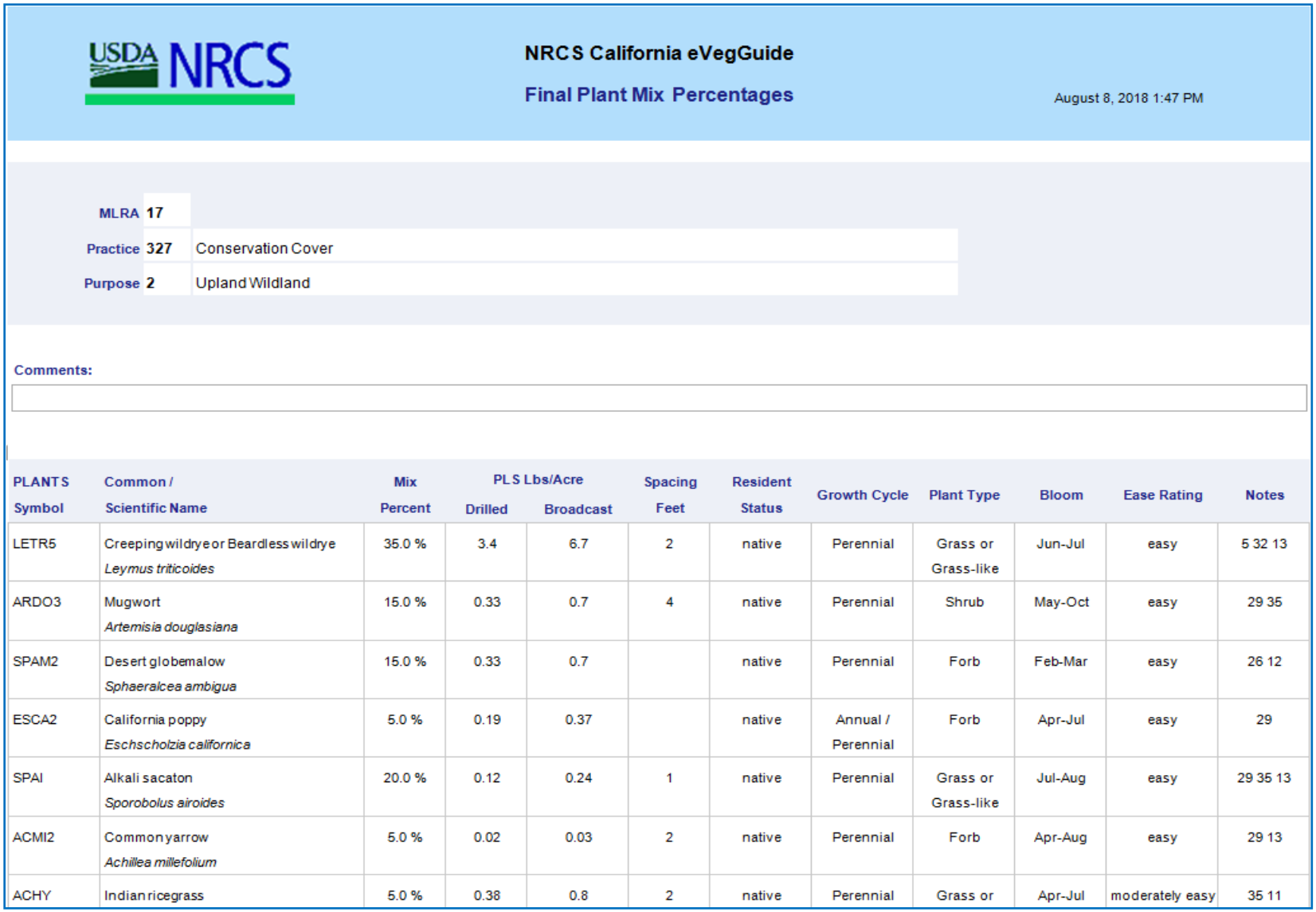
This spreadsheet can then be edited to modify and/or reformat any aspect of the data presentation (e.g., column width, row height, addition of formulas for sums where desired, incorporation of non-base seeding rates for special applications, addition of other comments or technical recommendations, etc.) in order to meet the planner's needs for review with the client.

This spreadsheet version typically lends itself to being a "working copy" for the planner's use only in reviewing and modifying certain aspects of the mixture content. It is not recommended as the final written copy to be placed in the client's conservation plan.

As a spreadsheet file, it can also be saved in any approved Excel format (including .xlsx) to any computer program directory that the planner desires for archiving and digital filing purposes.

Generate **RTF** Document

Clicking on the **GENERATE RTF DOCUMENT** option produces a Microsoft Word document, in 'Rich Text' (.rtf) format, summarizing the final mixture formulation, including applicable Footnotes (Figures 28a and 28b).



USDA NRCS

NRCS California eVegGuide

Final Plant Mix Percentages

August 8, 2018 1:47 PM

MLRA	**17**	
Practice	**327**	Conservation Cover
Purpose	**2**	Upland Wildland

Comments:

PLANTS Symbol	Common / Scientific Name	Mix Percent	PLS Lbs/Acre Drilled	PLS Lbs/Acre Broadcast	Spacing Feet	Resident Status	Growth Cycle	Plant Type	Bloom	Ease Rating	Notes
LETR5	Creeping wildrye or Beardless wildrye *Leymus triticoides*	35.0 %	3.4	6.7	2	native	Perennial	Grass or Grass-like	Jun-Jul	easy	5 32 13
ARDO3	Mugwort *Artemisia douglasiana*	15.0 %	0.33	0.7	4	native	Perennial	Shrub	May-Oct	easy	29 35
SPAM2	Desert globemalow *Sphaeralcea ambigua*	15.0 %	0.33	0.7		native	Perennial	Forb	Feb-Mar	easy	26 12
ESCA2	California poppy *Eschscholzia californica*	5.0 %	0.19	0.37		native	Annual / Perennial	Forb	Apr-Jul	easy	29
SPAI	Alkali sacaton *Sporobolus airoides*	20.0 %	0.12	0.24	1	native	Perennial	Grass or Grass-like	Jul-Aug	easy	29 35 13
ACMI2	Common yarrow *Achillea millefolium*	5.0 %	0.02	0.03	2	native	Perennial	Forb	Apr-Aug	easy	29 13
ACHY	Indian ricegrass	5.0 %	0.38	0.8	2	native	Perennial	Grass or	Apr-Jul	moderately easy	35 11

Figure 28a. Microsoft Word document version (Page 1) of the final mixture, produced by clicking on GENERATE RTF DOCUMENT in the digital screen summary version of the final mixture formulation.

	Achnatherum hymenoides							Grass-like			
		Total	4.7	9.4							

NOTES

5 Strong seedling vigor. This species can be aggressive and competitive with other species in a seed mixture (particularly under favorable soil moisture regimes), and thus may need reduction of composition percentage accordingly.

11 Adapted to mildly to moderately saline areas (EC = 4.0 – 8.0 dS / m).

http://www.calflora.org/nrcs/help/SelectedSaltToleranceReferences.pdf

12 Adapted to moderately high saline areas (EC = 8.0 – 12.0 dS / m).

http://www.calflora.org/nrcs/help/SelectedSaltToleranceReferences.pdf

13 Adapted to highly saline areas (EC > 12.0 dS / m).

http://www.calflora.org/nrcs/help/SelectedSaltToleranceReferences.pdf

26 Highly preferred plant by native bees.

29 Attracts beneficial insects other than / in addition to bees, that provide pollination services and/or protection from plant pests through predation or deterrence.

32 This species requires a favorable moisture regime [>10" mean annual precip; or shallow water table (<5' depth); or irrigation] for successful establishment, maintenance, and sustainability.

35 This species benefits from pre-conditioning seed treatment to break or reduce seed dormancy mechanisms. See the following links for specific recommendations and general overview of types of pre-conditioning treatment:

Species-Specific:

Native Plant Network Propagation Protocols
https://npn.rngr.net/propagation/protocols

Emery, D.E. 1988. Seed propagation of native California plants. Santa Barbara Botanic Garden, Santa Barbara, CA. 115pp.
The file below is used with permission of Santa Barbara Botanic Garden (SBBG). All distribution rights remain solely with SBBG.
http://www.calflora.org/nrcs/help/restrict/SBBG_Dara_Emery_SeedProp_txt.pdf

Wall, M., and Macdonald, J. 2017. Processing seeds of California native plants for conservation, storage, and restoration. Rancho Santa Ana Botanic Garden, Claremont, CA.

(remainder of Footnotes truncated for abbreviation)

Figure 28b. Microsoft Word document version (Page 2) of the final mixture, produced by clicking on GENERATE RTF DOCUMENT in the digital screen summary version. Remainder of Footnotes (Page 3) truncated for abbreviation.

As with the spreadsheet (.csv) version, the Word document can then be edited to modify and/or reformat any aspect of the data presentation (e.g., addition of other comments such as further technical recommendations and related information, incorporation of non-base seeding rates for special applications, etc.) in order to meet the planner's needs for review with the client. This Word document version is also intended to serve as the final written copy to be placed in the client's conservation plan.

NOTE – *the planner is encouraged to add* ***any additional technical information*** *(e.g., pertaining to planning, design, implementation, monitoring, commercial aspects of seed or plant purchase, seed testing, etc.) that may needed to make the revegetation recommendation more concise and practical. This added information can be added to either the existing 'Comments' section, or elsewhere in the introductory section of the document. This added information does* ***NOT*** *replace (but should be compatible with, and supportive of) any other technical information that may be provided in accompanying Implementation Requirement (IR) worksheets, associated Job Sheets, and the applicable practice Standard and Specification(s).*

As a Word document file, it can also be saved in any approved Word format (including .docx) to any computer program directory that the planner desires for archiving and digital filing purposes.

1.55 Select a Mix

As previously described, the default initial display during a plant search in the '**Search Criteria**' sub-module, as in Figures 13a and 15, is always a table listing the *individual species* assigned to the selected MLRA / practice / purpose and environmental parameter combination. The option for '**Select Plants**' produces this listing of individual species available at the full MLRA level.

The other option from the '**Search Criteria**' sub-module window is '**Select a Mix**'. Selecting this option generates a listing of *pre-set guideline mixtures* within the **eVegGuide** for various MLRA's, and for various conservation practices and practice purposes. These pre-set mixtures provide pre-determined and pre-approved offerings of component species and composition percentages within the mixture that can be used as-is in their existing format. These mixtures can also be considered as approved guideline recommendations for manually formulating mixtures (i.e., using the 'Select Plants' sub-module).

These pre-set guideline mixtures have been previously approved for use by NRCS Area Office and State Office technical discipline specialists for use in the four NRCS Areas. These reflect mixtures typically in common usage and commercially available as seed or plants (as applicable) within an MLRA, as *based on wide-ranging experience at FO and AO levels*. These mixtures contain component species that, for their intended purpose relative to the applied conservation practice and practice purpose, are formulated within each mixture specifically to address:

- a range of climate, soil, and management micro-site environmental factors in relation to the MLRA, and EPA Ecoregion Level IV subunits within an MLRA;
- cost-effectiveness in terms of commercial availability and lower-cost alternatives, when available;

- high probability of successful establishment when applied in the appropriate practice, practice purpose, MLRA, and *pre-determined* Ecoregion Level IV subunit scenarios.

To help achieve, and orient the planner toward, this level of mixture specificity, mixtures are specifically named and described in the **eVegGuide**, in detail sufficient to allow the planner to make an informed judgment about their applicability to a given site or physiographic regional locale. See **Section 3.0, MIXTURE SEARCH** module, for the nomenclature and description protocols employed for the pre-set mixtures available within the **eVegGuide**.

NOTE – when using '**Select a Mix**' – enabling biological parameters such as 'Plant Type', 'Pollinator Habitat', and 'Native', as well as climate and soil environmental parameters **DOES NOT** alter or affect the availability or display of mixtures within the '**Search Criteria**' sub-module. These parameters are intended to be used in refining *individual species searches* only, during manual mixture formulation (i.e., using '**Select Plants**' sub-module). By definition, mixtures may contain a range of adaptations to these biological and environmental parameters across all the component species of a mixture, and therefore these parameters are automatically disabled when '**Select a Mix**' is the option selected. Pre-set guideline mixtures are displayed and respond only to selection of *MLRA, conservation practice, and practice purpose*.

Let's again use the original example for revegetation site location, conservation practice, practice purpose, and environmental constraints – similar to that described in ***Section 1.53*** *and* ***Figure 22*** *above* – i.e.,

- MLRA 17 (immediately east of Corcoran, CA);
- Conservation practice '327 – Conservation Cover';
- Practice purpose '2 – Upland Wildland'; and
- No environmental constraints enabled (Figure 22).

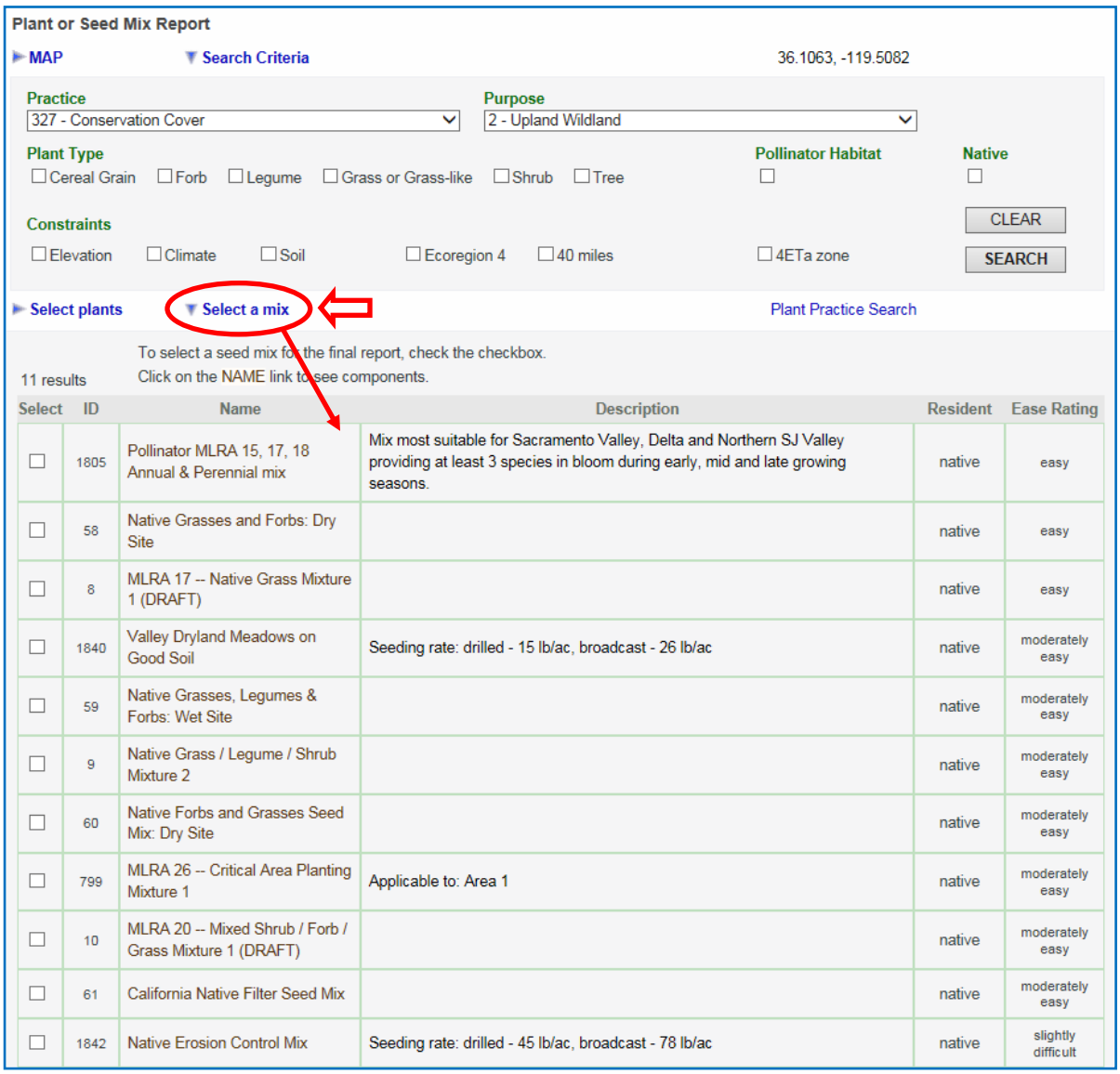
For this current approach, click on '**Select a Mix**' in the '**Search Criteria**' sub-module, which generates and displays a list of available pre-set guideline mixtures for this MLRA / practice / purpose combination (Figure 29).

Several features of this tabular display for individual species are important to note.

Table Format

The format for the tabular listing of pre-set guideline mixtures using the '**Select a Mix**' option is significantly different than that provided for individual species under the '**Select Plants**' option. The parameters for the mixture display table include:

- **Mix ID** – the internal tracking number assigned to the specific mixture when it was originally entered into the eVegGuide database.
- **Name** – name assigned to the mixture to distinguish it from other mixtures, and to provide detail on the applicable MLRA(s), nature of the component species, the revegetation design or purpose, and other detail necessary for mixture identification.
- **Description** – additional information for the intended application of this mixture in terms of (as examples) land use and management, varietal recommendations, special seeding rates, and/or other descriptive information that further identifies and distinguishes this specific mixture.



Plant or Seed Mix Report

MAP Search Criteria 36.1063, -119.5082

Practice: 327 - Conservation Cover Purpose: 2 - Upland Wildland

Plant Type: ☐ Cereal Grain ☐ Forb ☐ Legume ☐ Grass or Grass-like ☐ Shrub ☐ Tree Pollinator Habitat ☐ Native ☐

Constraints: ☐ Elevation ☐ Climate ☐ Soil ☐ Ecoregion 4 ☐ 40 miles ☐ 4ETa zone CLEAR SEARCH

Select plants Select a mix Plant Practice Search

To select a seed mix for the final report, check the checkbox.
Click on the NAME link to see components.

11 results

Select	ID	Name	Description	Resident	Ease Rating
☐	1805	Pollinator MLRA 15, 17, 18 Annual & Perennial mix	Mix most suitable for Sacramento Valley, Delta and Northern SJ Valley providing at least 3 species in bloom during early, mid and late growing seasons.	native	easy
☐	58	Native Grasses and Forbs: Dry Site		native	easy
☐	8	MLRA 17 -- Native Grass Mixture 1 (DRAFT)		native	easy
☐	1840	Valley Dryland Meadows on Good Soil	Seeding rate: drilled - 15 lb/ac, broadcast - 26 lb/ac	native	moderately easy
☐	59	Native Grasses, Legumes & Forbs: Wet Site		native	moderately easy
☐	9	Native Grass / Legume / Shrub Mixture 2		native	moderately easy
☐	60	Native Forbs and Grasses Seed Mix: Dry Site		native	moderately easy
☐	799	MLRA 26 -- Critical Area Planting Mixture 1	Applicable to: Area 1	native	moderately easy
☐	10	MLRA 20 -- Mixed Shrub / Forb / Grass Mixture 1 (DRAFT)		native	moderately easy
☐	61	California Native Filter Seed Mix		native	moderately easy
☐	1842	Native Erosion Control Mix	Seeding rate: drilled - 45 lb/ac, broadcast - 78 lb/ac	native	slightly difficult

Figure 29. Display of pre-set guideline mixtures available for the example using MLRA 17, conservation practice '327 – Conservation Cover', and practice purpose '2 – Upland Wildland'.

- **Resident** – indicates whether the mixture's component species are comprised of native species only ('Native'), introduced species only ('Introduced'), or a combination of native and introduced species ('Native / Introduced').
- **Ease Rating** – composite rating of the mixture as a whole for ease of establishment and subsequent maintenance. This composite rating is a weighted average of each component species comprising the mixture. As with this rating for individual species, ease of establishment and/or subsequent maintenance is rated as '3' = easy to establish; '2' = moderately easy to establish; and '1' = slightly difficult to establish. These ratings are intended to inform the user of the relative ease of establishing and maintaining a given mixture, particularly in relation to a) its common usage in the field; b) typical establishment techniques and revegetation equipment; and c) common NRCS revegetation applications across California MLRA's. Refer to the

HELP page for basis, definitions and rationale for ratings of **Ease of Establishment** (and Maintenance) within the **eVegGuide**.

For a '**Select a Mix**' results table, columns *cannot* be sorted by column heading, primarily because 1) the number of entries are usually limited; and 2) sorting by the first word in a longer text phrase is not utilitarian, providing no logical or intuitive improvement in list results.

Reviewing Mixture Component Species

In this '**Select a Mix**' sub-module mode, the planner can review the individual component species and their respective mixture composition percentages for any of the pre-set guideline mixtures displayed as results from a mixture search. Simply click on the mixture 'Name' of interest (the name becomes highlighted in red font) to display the component species for that mixture (Figure 30).

As an example, click on the first listed mixture displayed in the search results table – i.e., 'Pollinator MLRA 15, 17, 18 Annual & Perennial Mix' (Figure 30) This action accesses a subsequent, nested results window (bordered in yellow) that itemizes the individual component species and their mixture composition percentages for this specific guideline mixture. Additionally note that the mixture **Name** is again shown as the table heading, along with the **Mix ID** and the total number of plants in the mixture (in this example – 9).

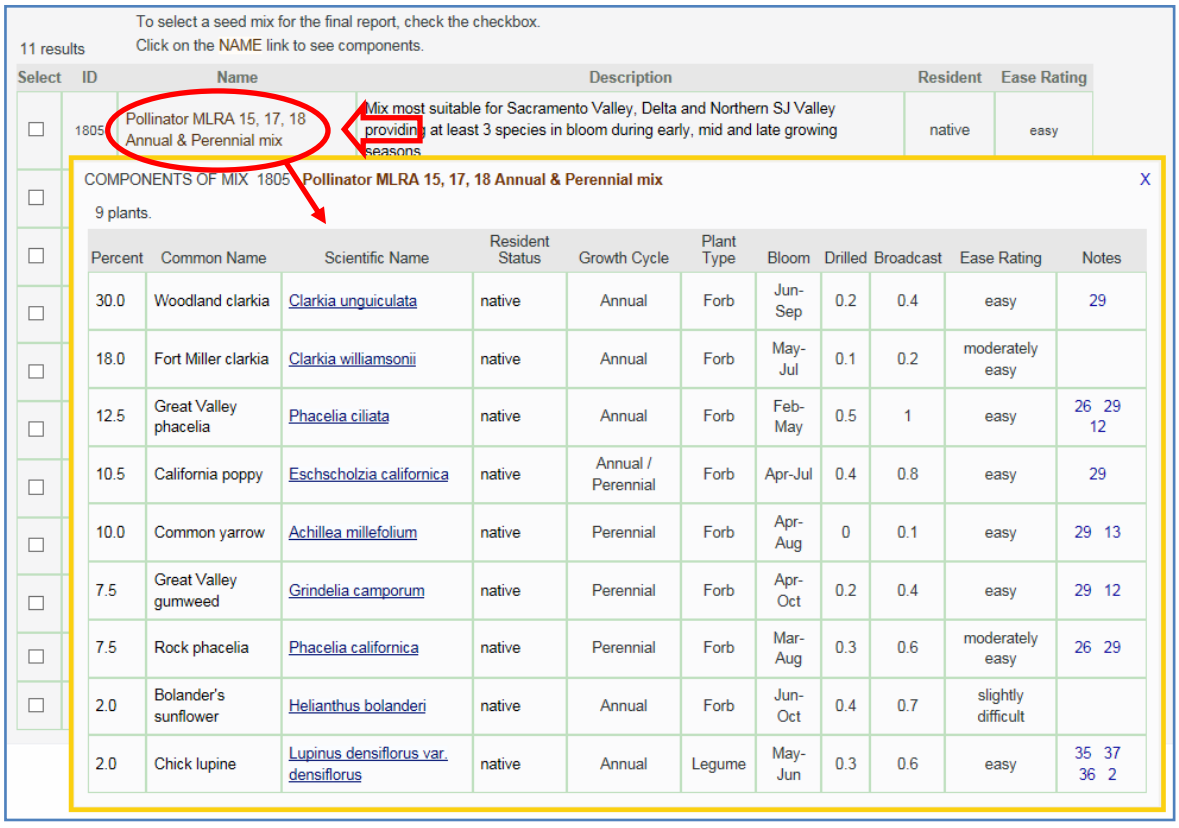


Figure 30. Display of the individual component species and their respective composition percentages within the mixture for the first example – 'Pollinator MLRA 15, 17, 18 Annual & Perennial Mix'.

As mentioned above for any results table in the '**Select a Mix**' mode, columns *cannot* be sorted by column heading. However, individual species biological, ecological and commercial information can be accessed at this time by clicking on the '**Scientific Name**' of the species of interest – as described earlier in **Section 1.51, and Figures 16 and 17**.

Similarly, the planner may access and review the **Footnote** links from this mixture display table at this time, for any individual component species – also as described in **Section 1.51**. Not all species may have footnotes associated with them, depending upon the nature of the footnote notations or use constraints. See **Section 5.0**, **FOOTNOTES SEARCH** under the **DATA** tab for descriptions of how these links are accessed, what they reveal, and their active links to supporting literature and/or web sites, as applicable.

The planner can review and explore any or all of the displayed pre-set guideline mixtures in this manner – by simply clicking on each mixture's '**Name**' (see Figure 29 above). As a second example, after "Xing-out" of the previous mixture's component species display, now click on the 9th listed mixture, named – 'MLRA 20 Mixed Shrub / Forb / Grass Mixture 1 (DRAFT)'. Results for component species for this mixture are displayed in Figure 31.

To select a seed mix for the final report, check the checkbox.
Click on the NAME link to see components.

11 results

Select	ID	Name	Description	Resident	Ease Rating
☐	1805	Pollinator MLRA 15, 17, 18 Annual & Perennial mix	Mix most suitable for Sacramento Valley, Delta and Northern SJ Valley providing at least 3 species in bloom during early, mid and late growing seasons.	native	easy
☐	58	Native Grasses and Forbs: Dry Site		native	easy
☐	8	MLRA 17 -- Native Grass Mixture 1 (DRAFT)		native	easy
☐	1840	Valley Dryland Meadows on Good Soil	Seeding rate: drilled - 15 lb/ac, broadcast - 26 lb/ac	native	moderately easy
☐	59	Native Grasses, Legumes & Forbs: Wet Site		native	moderately easy
☐	9	Native Grass / Legume / Shrub Mixture 2		native	moderately easy
☐	60	Native Forbs and Grasses Seed Mix: Dry Site		native	moderately easy
☐	799	MLRA 26 -- Critical Area Planting Mixture 1	Applicable to: Area 1	native	moderately easy
☐	10	MLRA 20 -- Mixed Shrub / Forb / Grass Mixture 1 (DRAFT)		native	moderately easy

COMPONENTS OF MIX 10 **MLRA 20 -- Mixed Shrub / Forb / Grass Mixture 1 (DRAFT)** X

3 plants.

Percent	Common Name	Scientific Name	Resident Status	Growth Cycle	Plant Type	Bloom	Drilled	Broadcast	Ease Rating	Notes
47.0	Fourwing saltbush	Atriplex canescens	native	Perennial	Shrub	May-Jun	7.7	15.4	easy	29 35 13
33.0	Purple needle grass	Nassella pulchra	native	Perennial	Grass	Mar-May	3.3	6.5	moderately easy	11
20.0	Narrowleaf trefoil	Lotus tenuis	introduced	Perennial	Legume	Jun-Sep	1.3	2.6	moderately easy	29 37 35 33

Figure 31. Display of the individual component species and their respective composition percentages within the mixture for the second example – 'MLRA 20 Mixed Shrub / Forb / Grass Mixture 1 (DRAFT)'.

Seeding Rates

As with mixtures formulated manually from the '**Select Plants**' sub-module process, drilled and broadcast seeding rates for the individual component species are shown for each pre-set guideline mixture. These seeding rates likewise 1) are on a Pure Live Seed (PLS) basis; and 2) reflect the assigned mixture composition percentages for each individual species. These final seeding rates are the *PLS rates per acre for the mixture as a whole*. Summed total PLS pounds per acre for the mixture will be displayed below each 'Drilled' and 'Broadcast' column after a specific mixture is selected and then submitted for editing and printing, or file saving, as described in **Section 1.54** above.

Selecting a Mixture

Once a particular pre-set guideline mixture has been selected for use, simply check (√) the line-item box in the far-left column of the mixture results table that corresponds to your preferred mixture. Upon completion of this selection, note that the **FINAL REPORT** button appears at the top-right of the mixture results table display. Clicking on this button then provides the options for editing, printing and file saving of the final, written revegetation recommendation, as described above in **Section 1.54**.

1.56 Interaction and Interchangeability of 'Select Plants' vs. 'Select a Mix'

The '**Select Plants**' and '**Select a Mix**' sub-modules are interconnected and interchangeable in the **eVegGuide**. This enables the planner to conduct comparative reviews by going back-and-forth between the two sub-modules to review options and decide which approach – selecting a pre-set guideline mixture, or conducting manual mixture formulation from the individual species list – best serves the planner's and client's needs for a particular revegetation mixture recommendation.

1.57 **FINAL REPORT** *Generation (for 'Select a Mix')*

The procedure for generating the **FINAL REPORT**, using the two options available for final printing of a written document for the client's conservation plan – 1) **GENERATE CSV DOCUMENT**; and 2) **GENERATE RTF DOCUMENT** (Figure 26) – is exactly the same as performed for manual mixture formulation, as described in **Section 1.54** above. Please refer to and follow these former instructions for printing and file saving the final revegetation recommendation.

NOTE – *the planner is again encouraged to add **any additional technical information** (e.g., pertaining to planning, design, implementation, monitoring, commercial aspects of seed or plant purchase, seed testing, etc.) that may needed to make the revegetation recommendation more concise and practical. This added information can be added to either the existing 'Comments' section, or elsewhere in the introductory section of the document.*

*This added information does **NOT** replace (but should be compatible with, and supportive of) any other technical information that may be provided in accompanying Implementation Requirement (IR) worksheets, associated Job Sheets, and the applicable practice Standard and Specification(s).*