# INTERACTING WITH RAPTR

Concept Designs

For those of you who are less interested in the general structure of RAPTR, I'd like to present some concept designs of what RAPTR might look like from the perspective of Agency Users. I want to emphasize that these concept designs are not real prototypes for what the RAPTR user interface will look like since we're just beginning the RAPTR development process. We're currently working on the design of these features with our in-house IT development team. What I am showing you today using a combination of Tableau and ArcGIS dashboards are only demonstrations of the kind of functionality that RAPTR could provide Program Staff to assist them with the management of their projects.
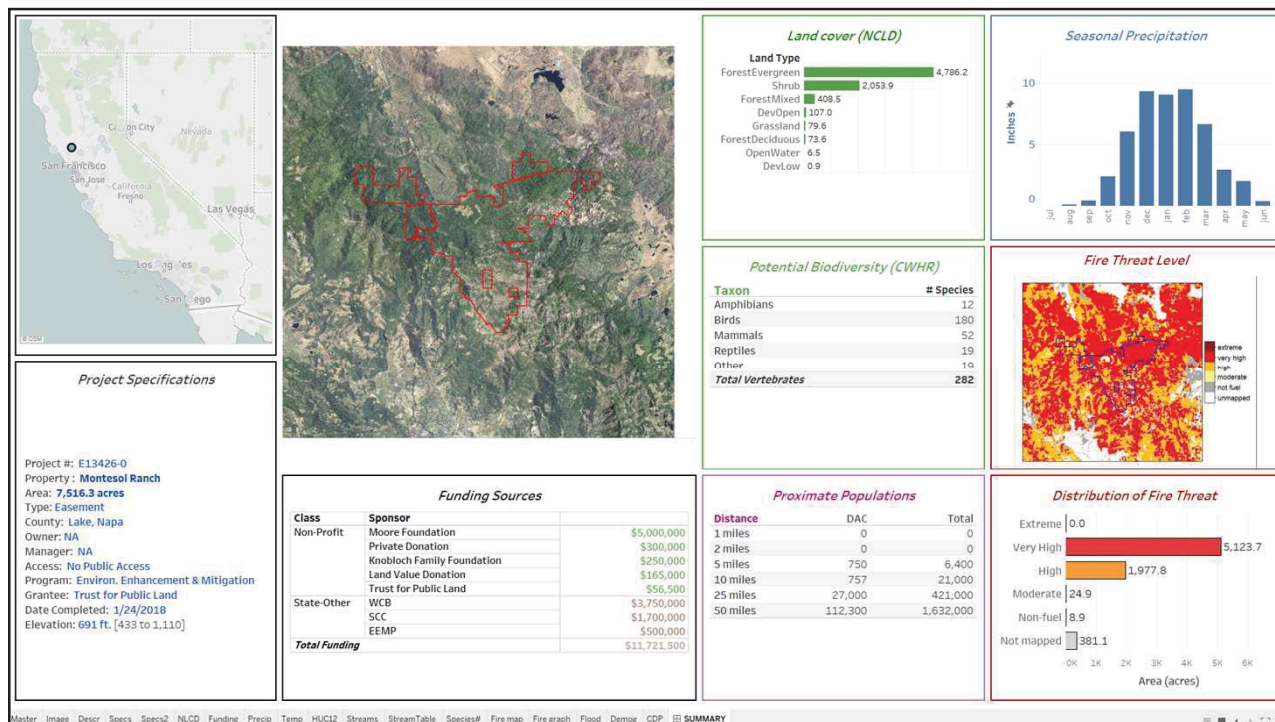
Here is an example of what a project profile dashboard might look like to a RAPTR user based on acquisition projects managed by the CNRA Bond Program – in this case a large conservation easement purchased in Napa and Lake counties. It would show key project details such as...

1. Where in California the project is located.
2. Basic project specifications such as the project #, acreage, grant recipient, amount of funding from the program in question and the current owner.
3. A recent high-resolution aerial image of the property and surrounding landscape.
4. A full breakdown of the cost-sharing needed to fund the project in its entirety and all the organizations involved in its funding.
5. Some basic environmental data to provide the user with some informative context about the project beyond what is reported in project documents such as:
   A. The distribution of landcover within the project area.
   B. The biodiversity present within the project area.
   C. The spatial and scalar distribution of wildfire risk.

Some other panels of interest [not shown] might be a 3-5 sentence description of the purpose of the project as well as a searchable log documenting communication between Program Staff, the Grantee and other sub-contractors.
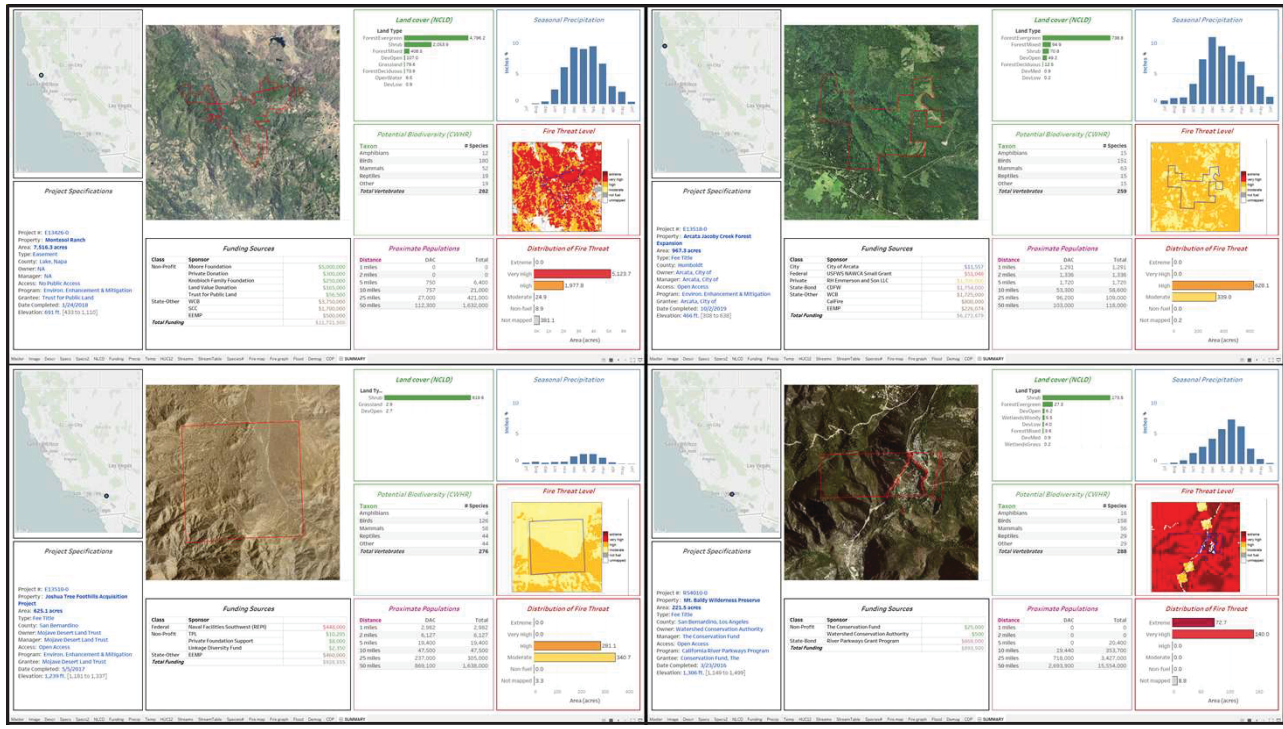
Of course, the development of these dashboards would be supported in part by the scripted automation of data aggregation. That is if it can be done for handful of projects (as shown here in this composite of four different project dashboards), then it can easily be done for 100s or 1000s of projects – all without Program Staff having to manually locate, format and enter this data for each individual project.
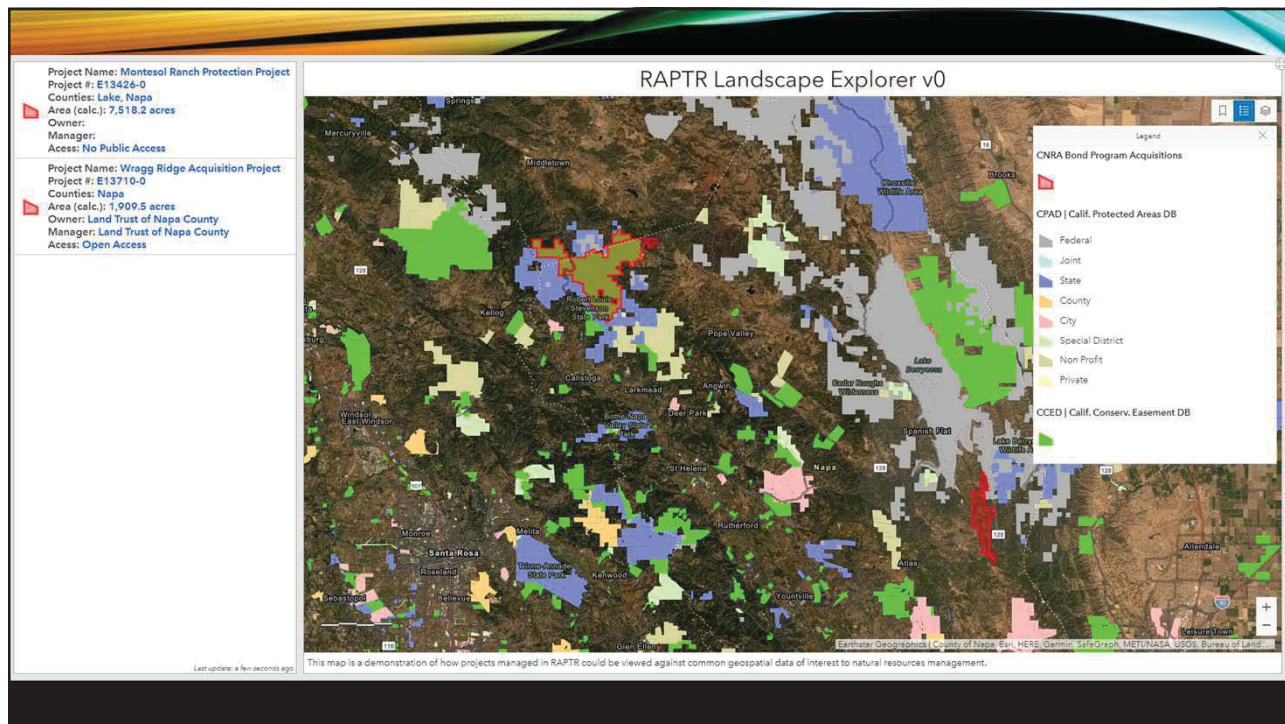
Beyond the information provided in a specific project profile, RAPTR users may want to visually explore the spatial distribution of projects based on a specific set of actions implemented, resource assets involved, and/or benefits achieved. And they may want to explore these projects against a backdrop of relevant, publicly available geospatial information. This could help Program Staff evaluate where their projects fit within the existing landscape of environmental, climatic and resource infrastructure data of interest and, therefore, how much added value they derive from that geospatial context.

Shown here is the same conservation easement I referred to earlier as well as another large Fee Title acquisition located in Napa county plotted against a map of known conservation easements and protected areas produced by the GreenInfo Network <https://www.greeninfo.org/>.
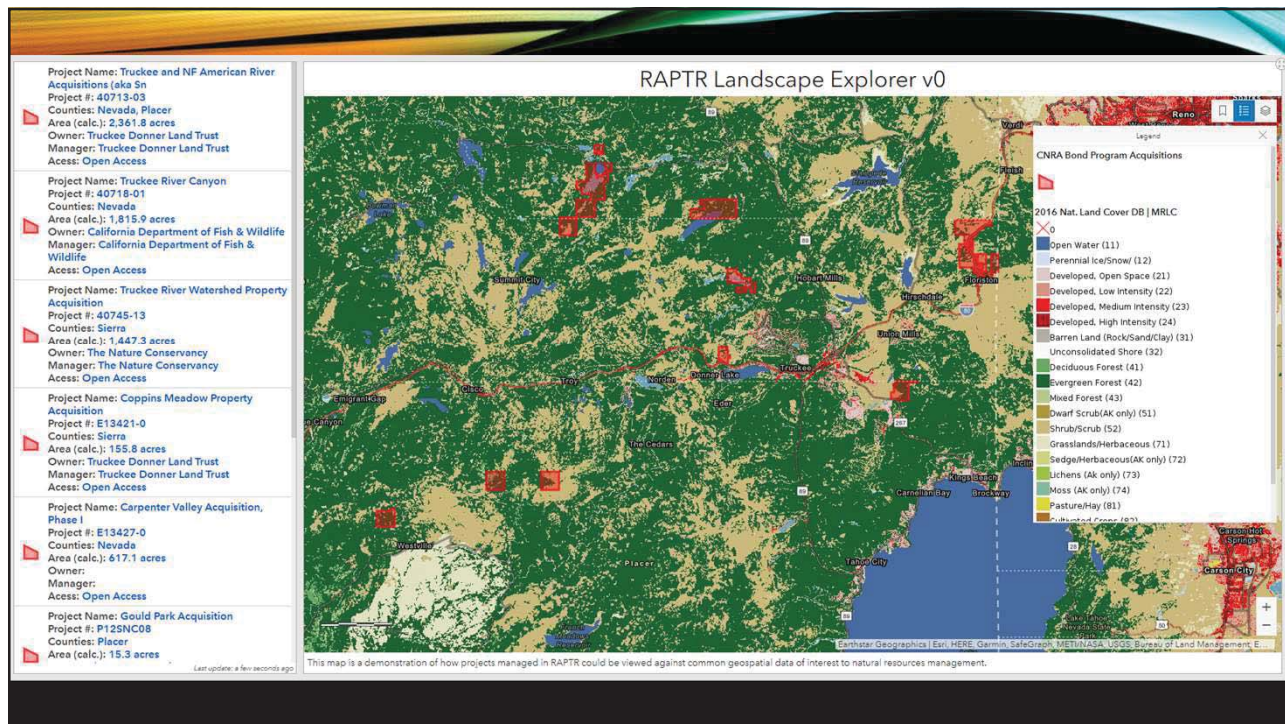
RAPTR could also provide maps on the spatial distribution of land cover in and around the project area to complement the scalar distributions already provided in the project profile dashboard shown earlier. Shown here is the distribution of landcover in the region northwest of Lake Tahoe according to the 2016 National Landcover Database as produced by the Multi-Resolution Land Characteristics Consortium <https://www.mrlc.gov/>.
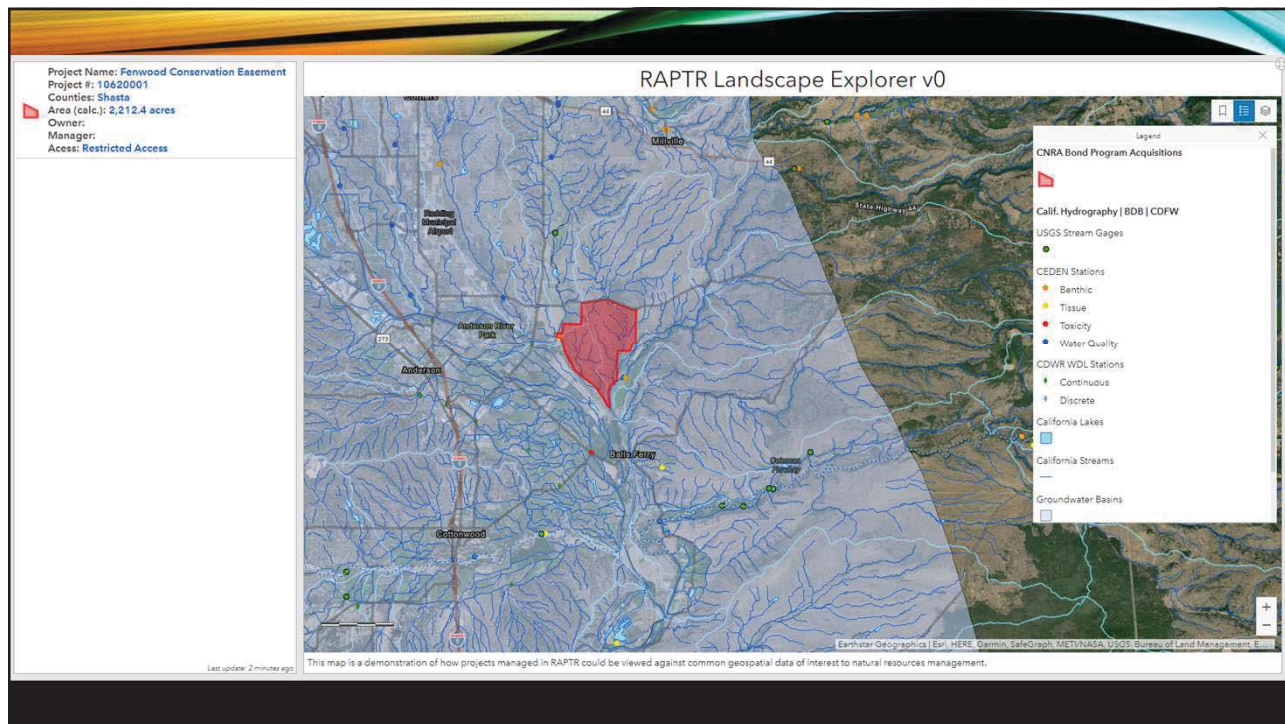
RAPTR could provide maps on the distribution of local water resources including streams, lakes, watersheds, groundwater basins and monitoring stations served by the USGS, DWR and State Waterboards. Shown here are those same data layers as compiled by the Biogeographic Data Branch in State Fisheries and Wildlife <https://wildlife.ca.gov/Explore/Organization/BDB>.
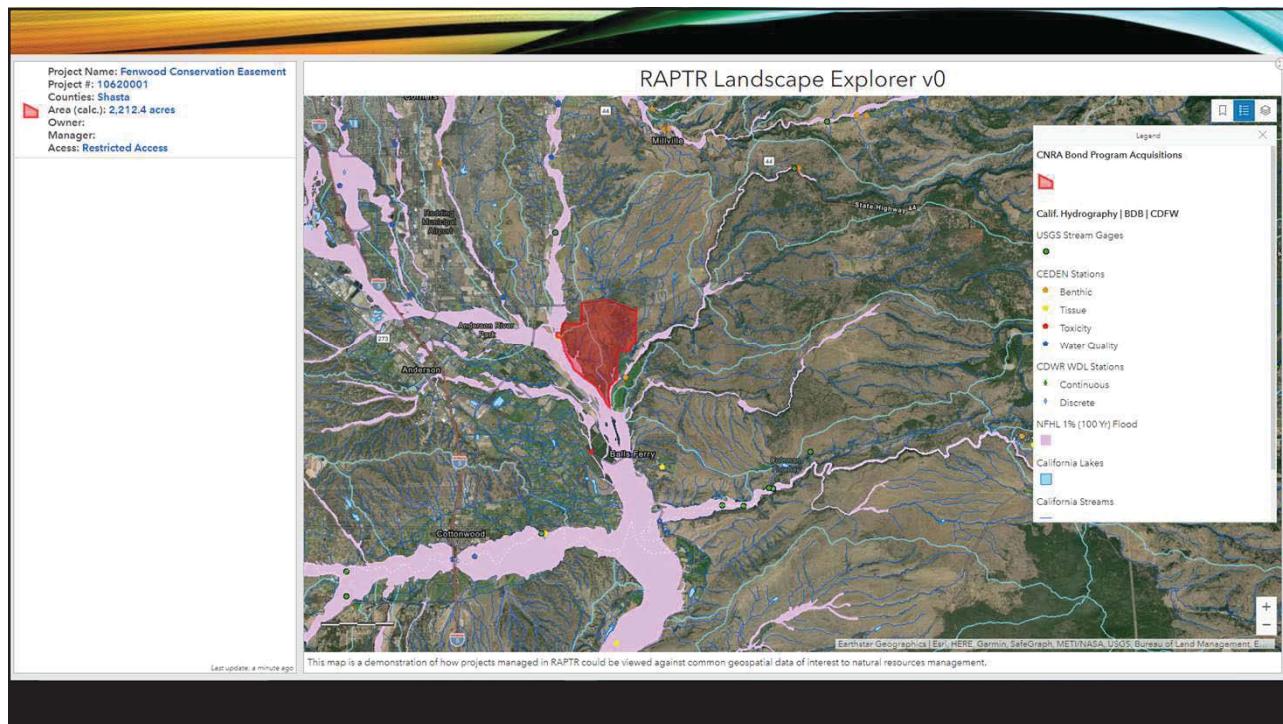
RAPTR could also provide maps of flood risk such as the 1/100-year flood level boundaries produced by FEMA or other maps preferred by the Division of Flood Management. Show here is the same layer as before, but including the 1/100-year flood level boundaries as documented in the National Flood Hazard Layer produced by FEMA <https://www.fema.gov/flood-maps/national-flood-hazard-layer> and compiled for California by the Biogeographic Data Branch.
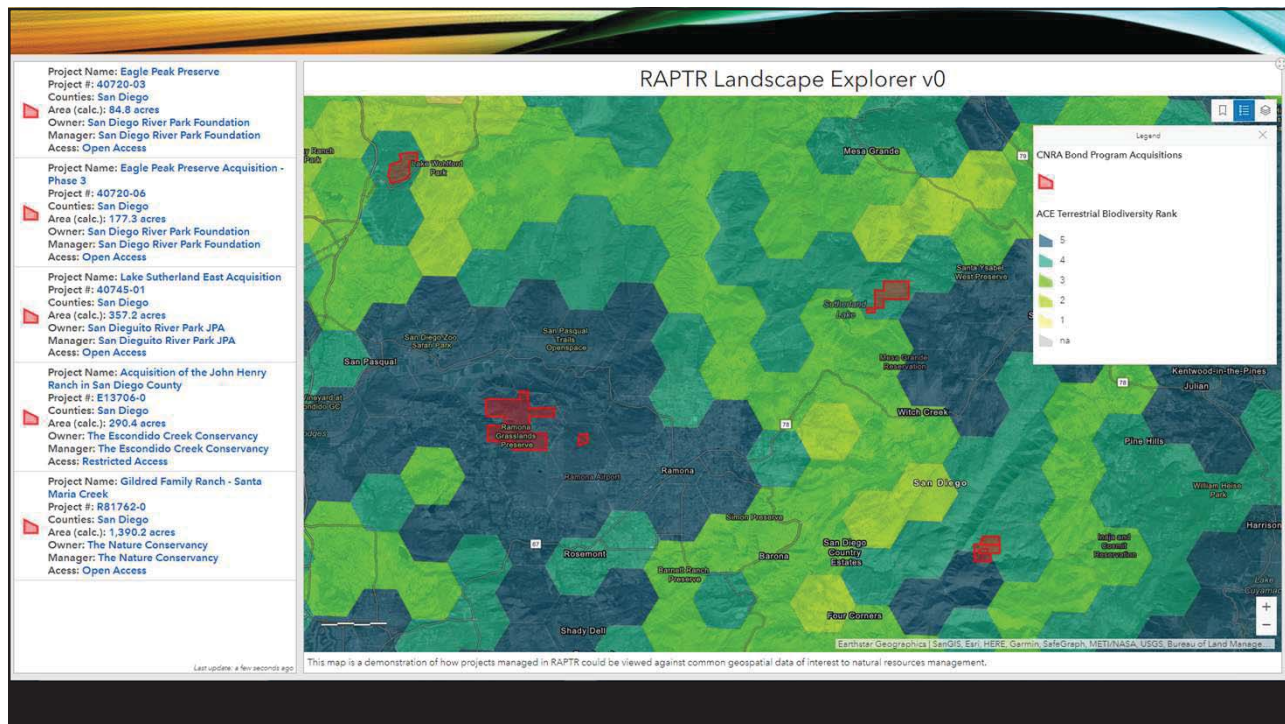
RAPTR could provide maps of terrestrial biodiversity as calculated by Fisheries and Wildlife or another biodiversity model of choice. Shown here is a map of terrestrial biodiversity rank across California as produced by the Areas of Conservation Emphasis program <https://wildlife.ca.gov/Data/Analysis/ACE>.
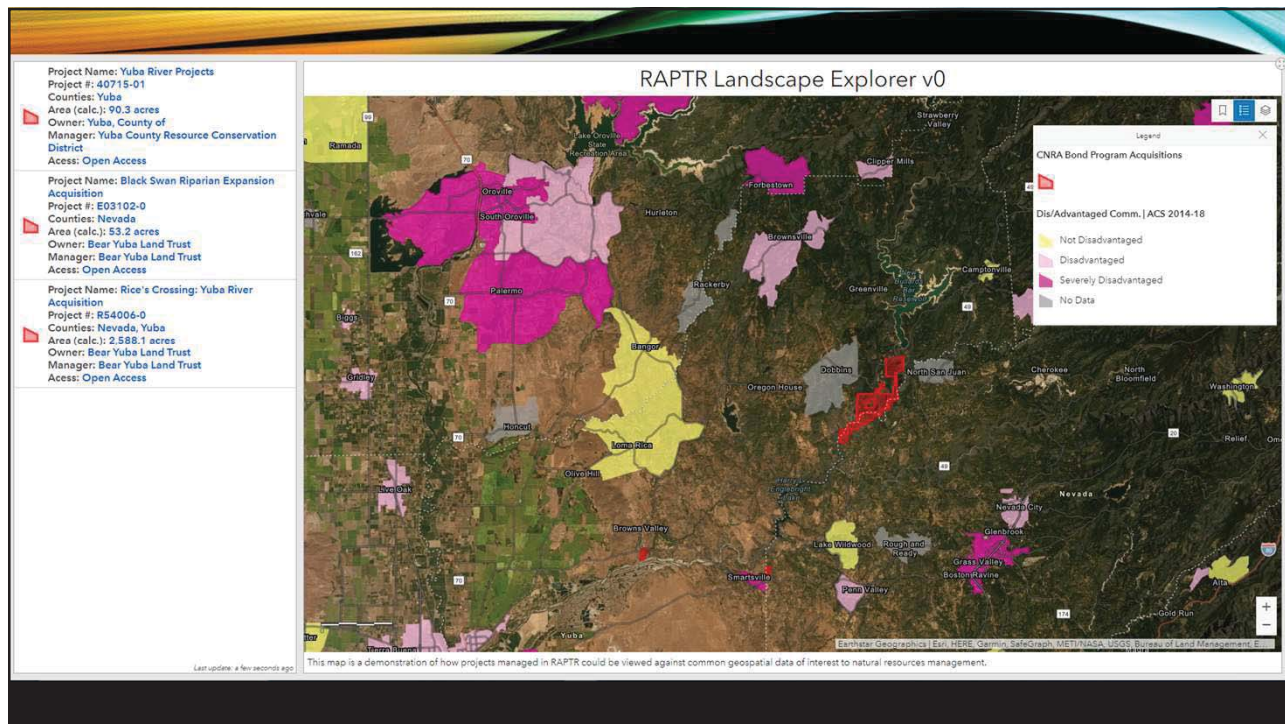
Finally, RAPTR could provide information on the communities most proximate to a given project and, therefore, most likely to benefit from it - as well as the economic status of those communities being served. Shown here are maps of Census Data Places (incorporated and unincorporated) color-coded by economic status (Disadvantaged, Severely Disadvantaged, and Not Disadvantaged) based on Median Household Income levels recorded during the 2014-2018 American Community Survey as obtained from the US Census Bureau <https://www.census.gov/>.

RAPTR SCOPE & CONTENT

RAPTR = Agency Supported Project Data

RAPTR ≠ All Relevant Resource Data

Most of you are probably aware of a number of different environmental databases being hosted by a variety of organizations that cover a wide range of regions and data types. Some of the Program Staff we've been speaking with have noted the overlap between the functionality we're proposing for RAPTR and the functionality of some of the third-party databases they've been using to assist with their work. Not surprisingly, they've wondered how RAPTR differs from the services offered by those databases. That being the case, I'd like to reiterate that RAPTR is focused on capturing data on State projects managed by or funded through Agency offices. It is not designed to be a repository for all environmental, climate and resource data relevant to the implementation and assessment of these projects. In other words…

RAPTR will capture all Agency-supported land acquisitions, but it will not track all fee title purchases made within the State the same way that the California Protected Areas Database currently does.
RAPTR will track all Agency-supported projects aimed at the conservation and restoration of wetland habitats, but it will not track all such restorations made within the State the same way that EcoAtlas currently does.
RAPTR will track all Agency-supported projects that result in a major restoration or conversion of the California landscape, but it will not track all such transformations the way that efforts by, say, the Multi-Resolution Land Characteristics Consortium does.

Additionally, I'd like to further clarify that while RAPTR is being specifically designed to manage Agency-supported project data, it will nonetheless provide State programs with the ability to share this project data with other important external data commons as they currently do now (commons like EcoAtlas or the CPAD) – just as RAPTR will leverage other publicly available data sets to assist Program Staff with the management of State projects.
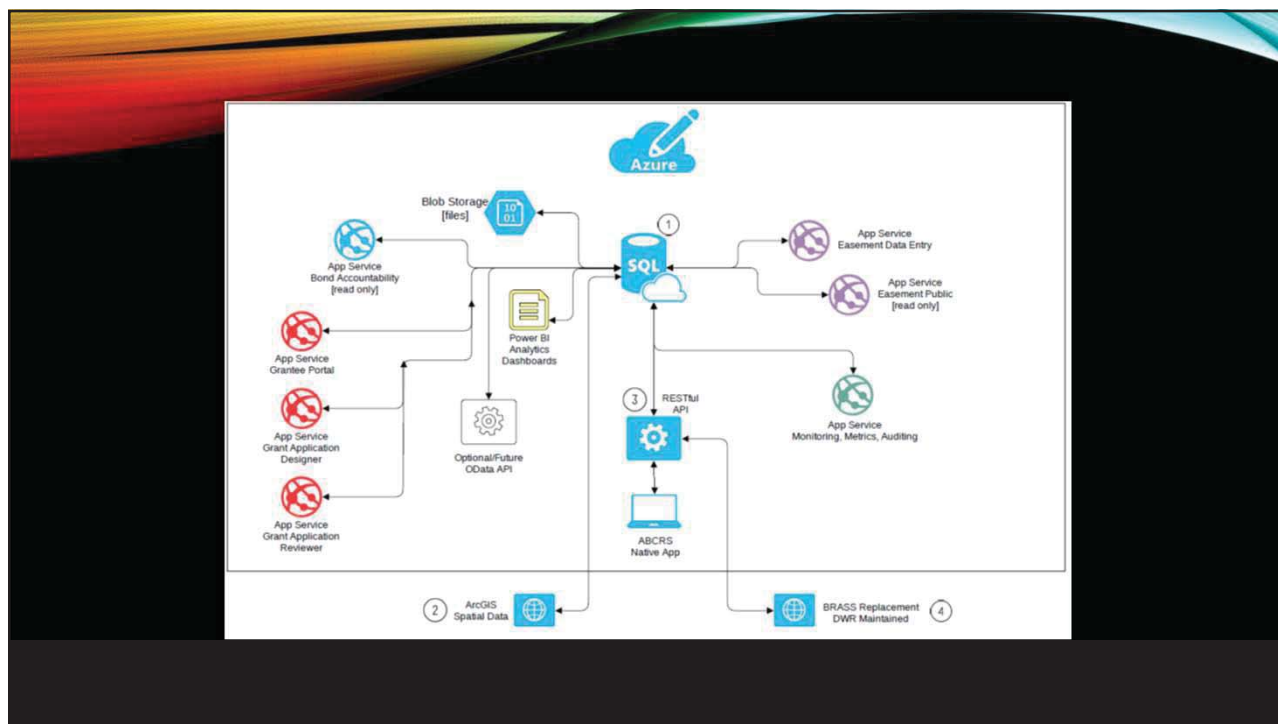
As Gina mentioned earlier in here talk on the RAPTR Development process, the main purpose of RAPTR is to centralize knowledge of the natural resource investments that the Agency is making through its soon-to-be 27 offices and, equally important, fully capture all of the benefits these projects are achieving given their increasingly cross-disciplinary nature (at least from a multi-benefit perspective). However, our motivation for centralizing this information is not just to make project data that much easier to access (and therefore support more transparent data governance), but also make it easier to manage.

So we end up with a tractable database like the one I presented earlier [shown here]…
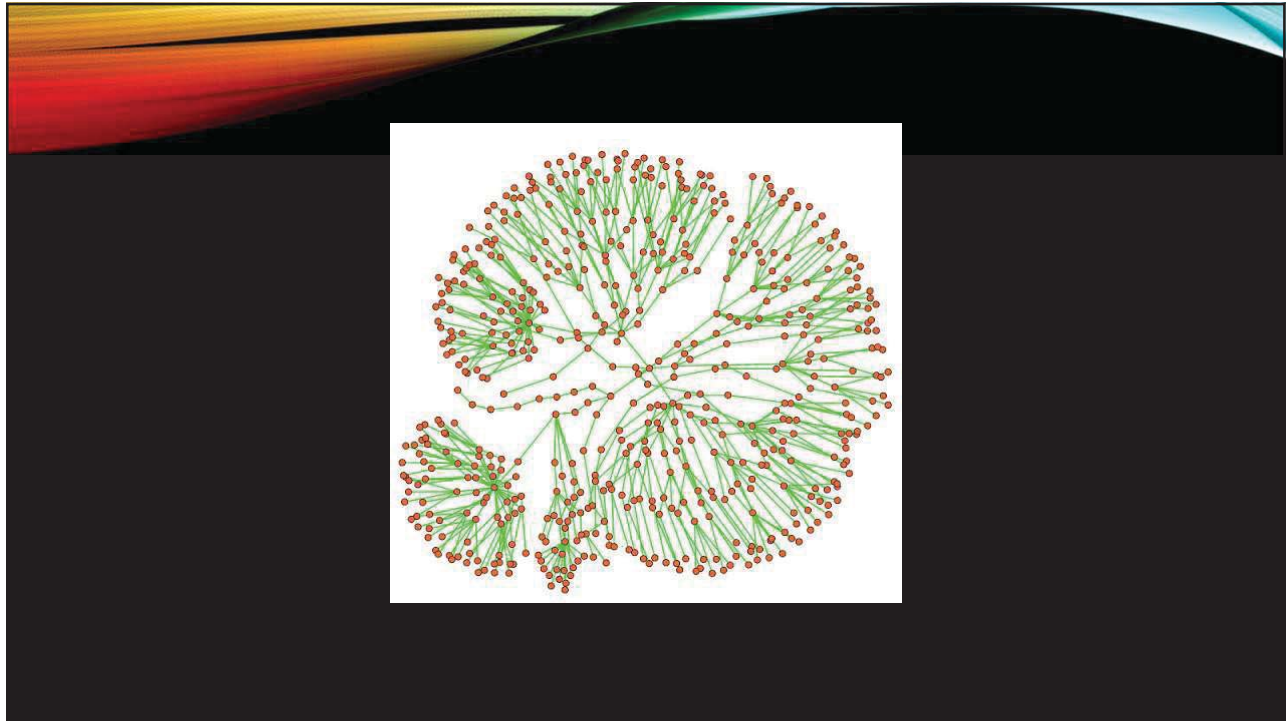
…rather than this – a complex data network where different suites of data corresponding to different combinations of project types, resource assets and benefit themes are exported to a multitude of external third-party databases on a voluntary basis. And where each external party requires their own data formatting and QA/QC protocols as well as a non-trivial contract to manage the data. This kind of 'free-form' distributed data network poses significant logistic and financial challenges that point to one other motivation for developing RAPTR: the ability to take full advantage of the economies of scale associated with aggregating project data at the Agency level.

RISK OF DATA ATTRITION

EXAMPLE: *CNRA Bond Program Acquisitions*

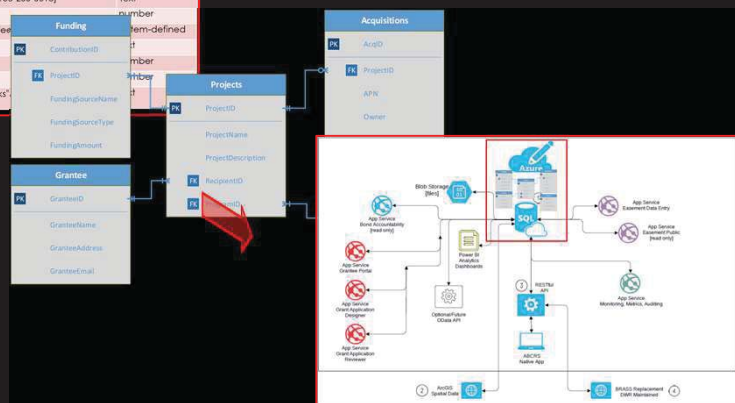|		
Informal spreadsheet		= **116**
Database interrogation	**+55**	= **171**
'*Missing*' information	**-53**	= **118**
Poor/unconfirm. APN	**-24**	= **94**

TOTAL recovered so far = **94/171**

Another motivation for creating RAPTR is to help ensure the completeness and accuracy of Agency-supported project data. When project data is stored as Word or PDF documents on individual computers by individual Program Staff, then individual differences in project management style combined with the vagaries of time can result in a natural attrition of project data; even despite the best efforts of Program Staff.

One example of this phenomena is a pilot exercise I'm currently working on with my colleague Brad Juarros cataloging all the Fee Title and Conservation Easement acquisitions purchased by the CNRA Bond Program over the past 20 years. We plan to use this project data to help with the initial testing of RAPTR. For a number of years, the Bond Program had been informally cataloging these acquisitions in a shared spreadsheet passed on from one colleague to the next that, at last reading, listed 116 acquisitions. A more recent interrogation of ABCRS and the Bond Program databases, however, resulted in the discovery of 55 new acquisitions; some of which appeared in one but not both databases. Unfortunately, we were unable to identify the parcels purchased for 53 of these acquisitions in a subsequent data mining foray. To be fair, more often than not this data is not truly 'missing' but located somewhere that isn't entirely obvious to staff not immediately familiar with the project. Nonetheless, of the remaining 118 projects with easily recoverable parcel data, 24 projects had discordant or otherwise unconfirmable parcel data when compared against existing county parcel GIS data. Thus, at present only 94 out of 171 acquisitions have confirmable acquisition geometries - or roughly half of the Bond Program's total acquisitions to date. We're hoping that Brad, along with the help of his colleagues, can ferret out some of this 'missing' project data. We're also hoping that GreenInfo can help us more precisely define the geometries of these acquisitions until a more formal procedure for submitting geospatial data into RAPTR can be put into place. Given how diligent and attentive to detail CNRA Bond Program Staff are known to be, we suspect that this kind of data attrition is likely occurring elsewhere within the broader Agency.

RAPTR DATA FLOW

One of our primary strategies in developing RAPTR is to ensure the completeness and accuracy of recorded project data is to gather it as early as possible, likely when the grant agreement or contract is finalized and the expectations of the funding recipient in terms of deliverables and performance metric targets are formally defined. In doing so, we hope to avoid the classic 'fire drill' that occurs when there is a request to retroactively aggregate this information years after these agreements have been written and the projects completed. We hope this approach will not only help ensure the accuracy and completeness of project data but, at the same time, help Program Staff better track the short- and long-term benefits of the project as promised by the corresponding grant agreement or contract; thus, fulfilling the major design objectives for RAPTR.