Santa Ana Watershed Project Authority

Sacramento Update

June 18, 2024

Michael Boccadoro &
Beth Olhasso

West Coast Advisors
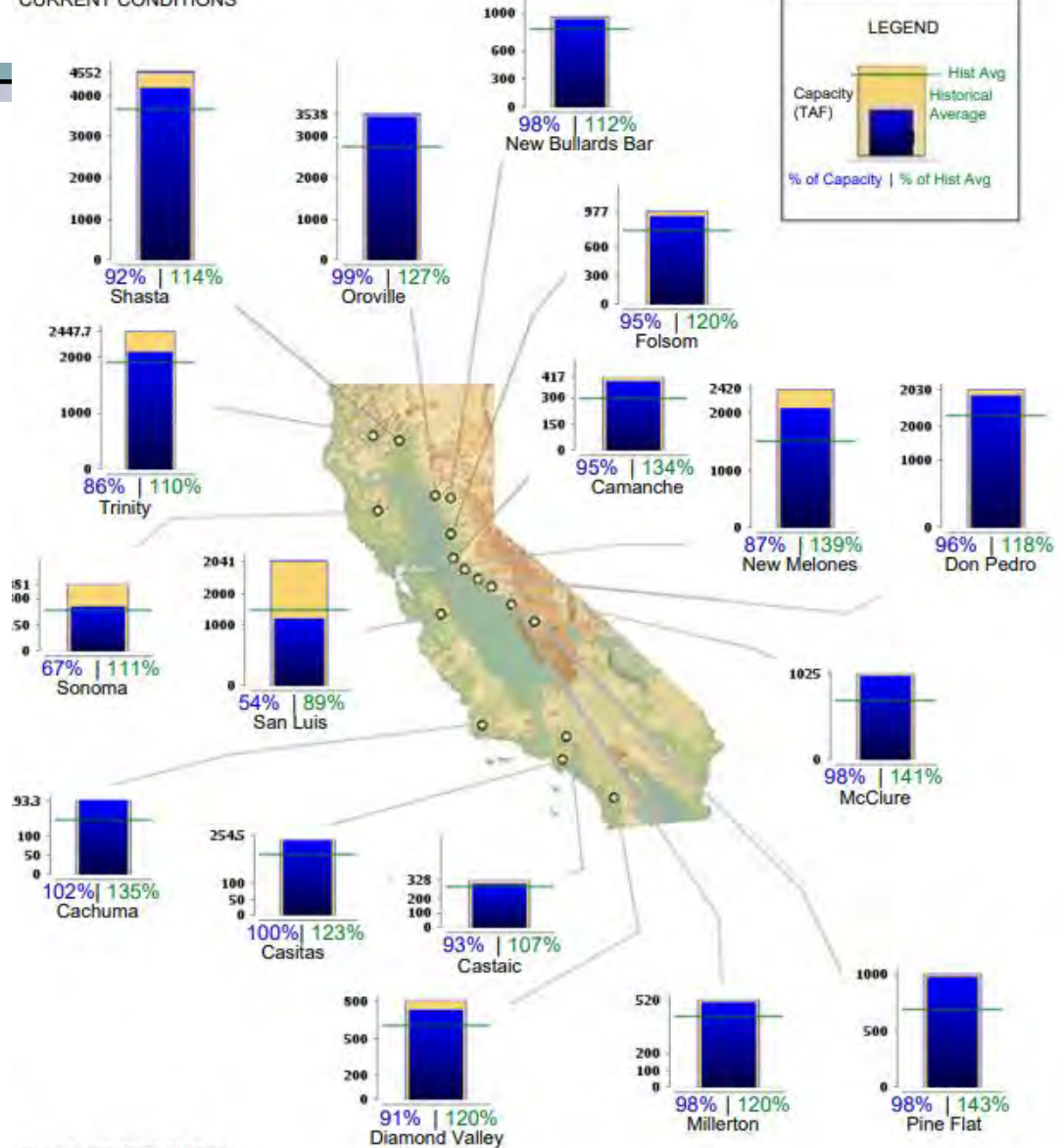*Strategic Public Affairs*

Drought/Water Supply Update

SWP allocations increased to 40%

CALIFORNIA MAJOR WATER SUPPLY RESERVOIRS
CURRENT CONDITIONS

Midnight - June 16, 2024

LEGEND
Capacity (TAF)
Hist Avg
Historical Average
% of Capacity | % of Hist Avg

Shasta 92% | 114%
Oroville 99% | 127%
New Bullards Bar 98% | 112%
Folsom 95% | 120%
Trinity 86% | 110%
Camanche 95% | 134%
New Melones 87% | 139%
Don Pedro 96% | 118%
Sonoma 67% | 111%
San Luis 54% | 89%
McClure 98% | 141%
Cachuma 102% | 135%
Casitas 100% | 123%
Castaic 93% | 107%
Diamond Valley 91% | 120%
Millerton 98% | 120%
Pine Flat 98% | 143%

Updated 06/17/2024 11:18 AM

Legislative Update- Bills

- **Second Year of Two-Year Session**
  - ➜ Second house policy committee deadline– July 3
- **Climate Bond Update**
- **Priority Bills**
  - ➜ SB 366 (Caballero) CA Water Plan: long-term supply targets
  - ➜ AB 460 (Bauer-Kahan) Water Rights
  - ➜ AB 2079 (Bennett) Groundwater
  - ➜ SB 1255 (Durazo) Low-Income Rate Assistance
  - ➜ SB 903 (Skinner) PFAS
  - ➜ Connection & Capacity Fees Updates:
    - SB 1210 (Skinner)
    - SB 937 (Weiner)
    - AB 1820 (Schiavo)

Legislative Update- Cont.

- POTW Effluent Testing
  - → AB 3073 (Haney): illicit substances
  - → SB 1147 (Portantino): microplastics

- Water Use Efficiency
  - → SB 1110 (Ashby)
  - → SB 1330 (Archuleta)

Legislative Update- Budget

Specifics for SAWPA

- Watershed Climate Resilience Programs, PFAS and Recycled Water funding all cut- but still under negotiation with Legislature & Governor.

Regulatory Updates

- **Urban Water Use Efficiency**
  - ➔ Revised Draft released 6/14
    - Changes still under review
    - Potential SWRCB discussion 7/2
    - Adoption late July

- **Delta Conveyance Cost benefit Analysis**
  - ➔ DWR released Cost Benefit analysis of Delta Conveyance stating that there would be billions of dollars in benefits to communities across CA

- **Advanced Clean Fleets**
  - ➔ High-Priority Fleets Workship June 20 at CA Air Resources Board.

Thank You

Questions?

Aerial Imagery Analysis of *Arundo donax* in the Santa Ana River Watershed
Status Update

Commission Meeting
Item No. 7.A
Rick Whetsel
Senior Watershed Manager
June 18, 2024

Project Goal

Identify and measure the invasive species, *Arundo donax (Arundo)*, from riparian areas within the Santa Ana River Watershed:

- *Arundo* (Giant reed) – an invasive species pervasive in the watershed – is problematic for many entities in the watershed in terms of water supply, habitat, and fire.

- *Arundo* in the watershed consumes up to **12,000-36,000 AFY of water** based on **600-1800 acres of *Arundo*** in the watershed.*
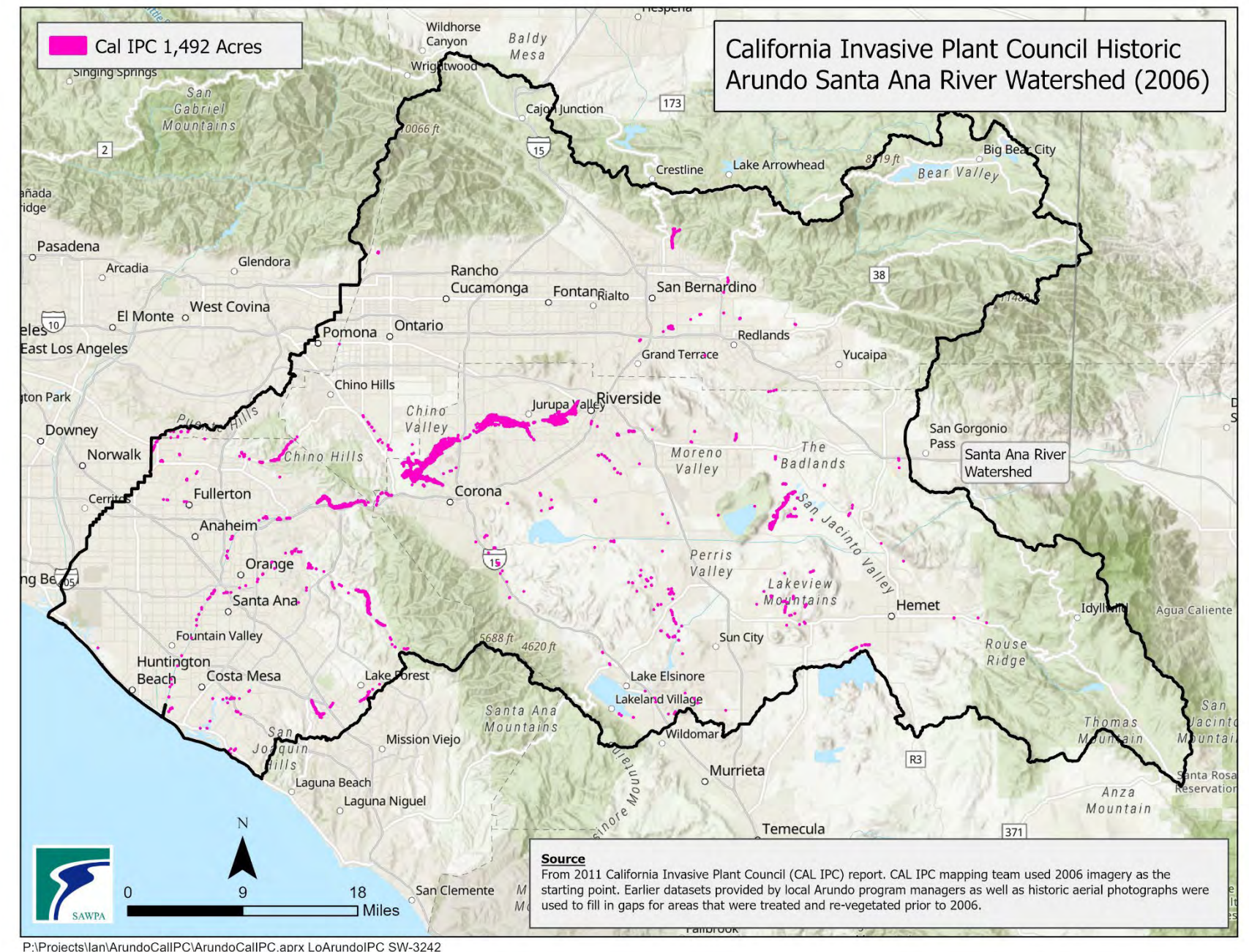
*Based on an acre of Arundo consuming up to 20 AFY of water (California Invasive Plant Council)

Project Objectives

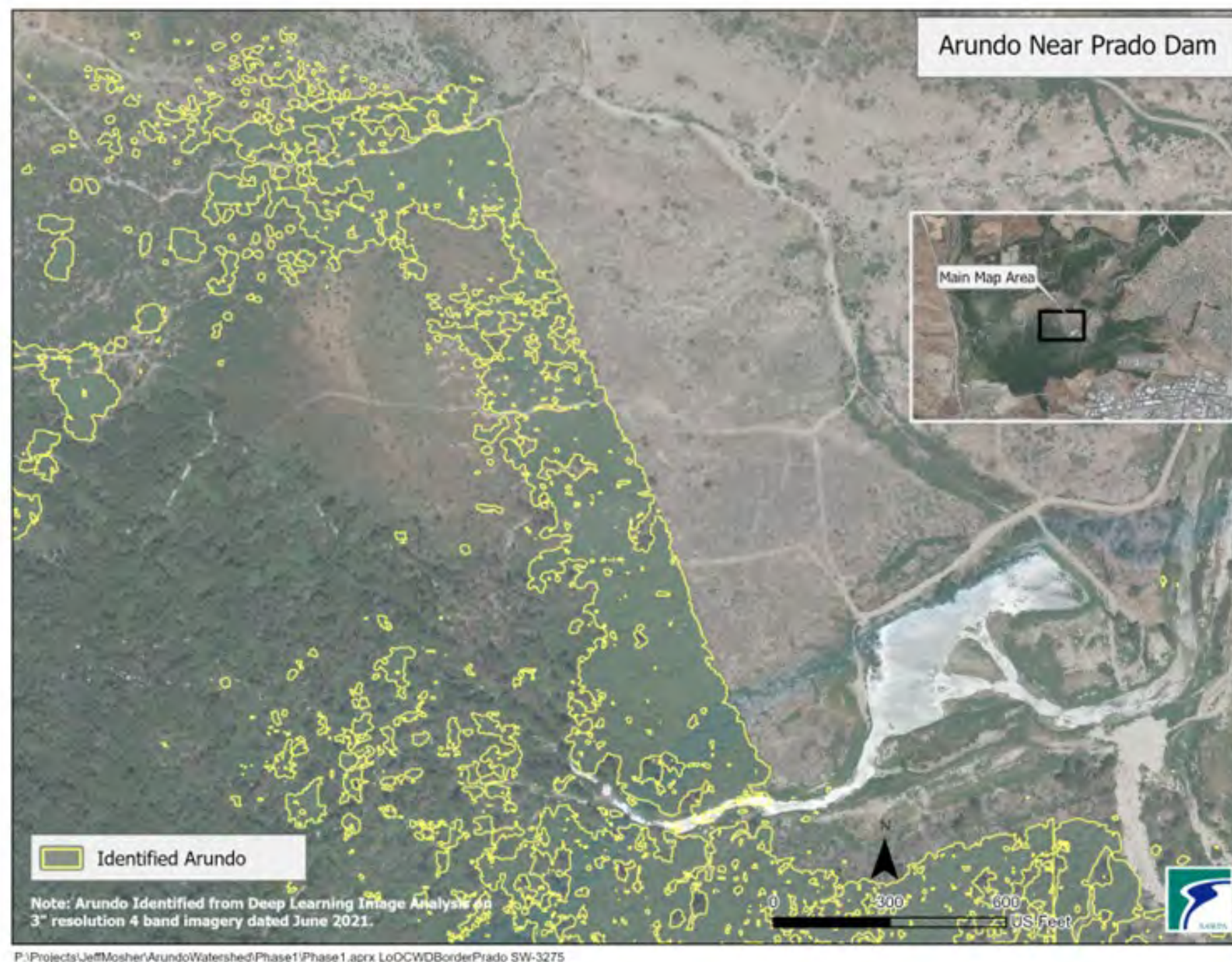**Watershed-wide mapping of *Arundo* within riparian areas:**

- Apply available high resolution 3 inch, 4-band (red, green, blue, and near infrared) aerial imagery for the Santa Ana River Watershed
  - 2021 imagery for the upper Santa Ana River Watershed.
  - 2020 Southern California Association of Governments imagery.
- Identify and measure irrigated *Arundo* within riparian areas within the Watershed.
  - Employ ESRI's ArcGIS Deep Learning Tools
- Develop a process using GIS-Based decision tools for identifying locations, prioritizing projects and tracking progress of removal activities.
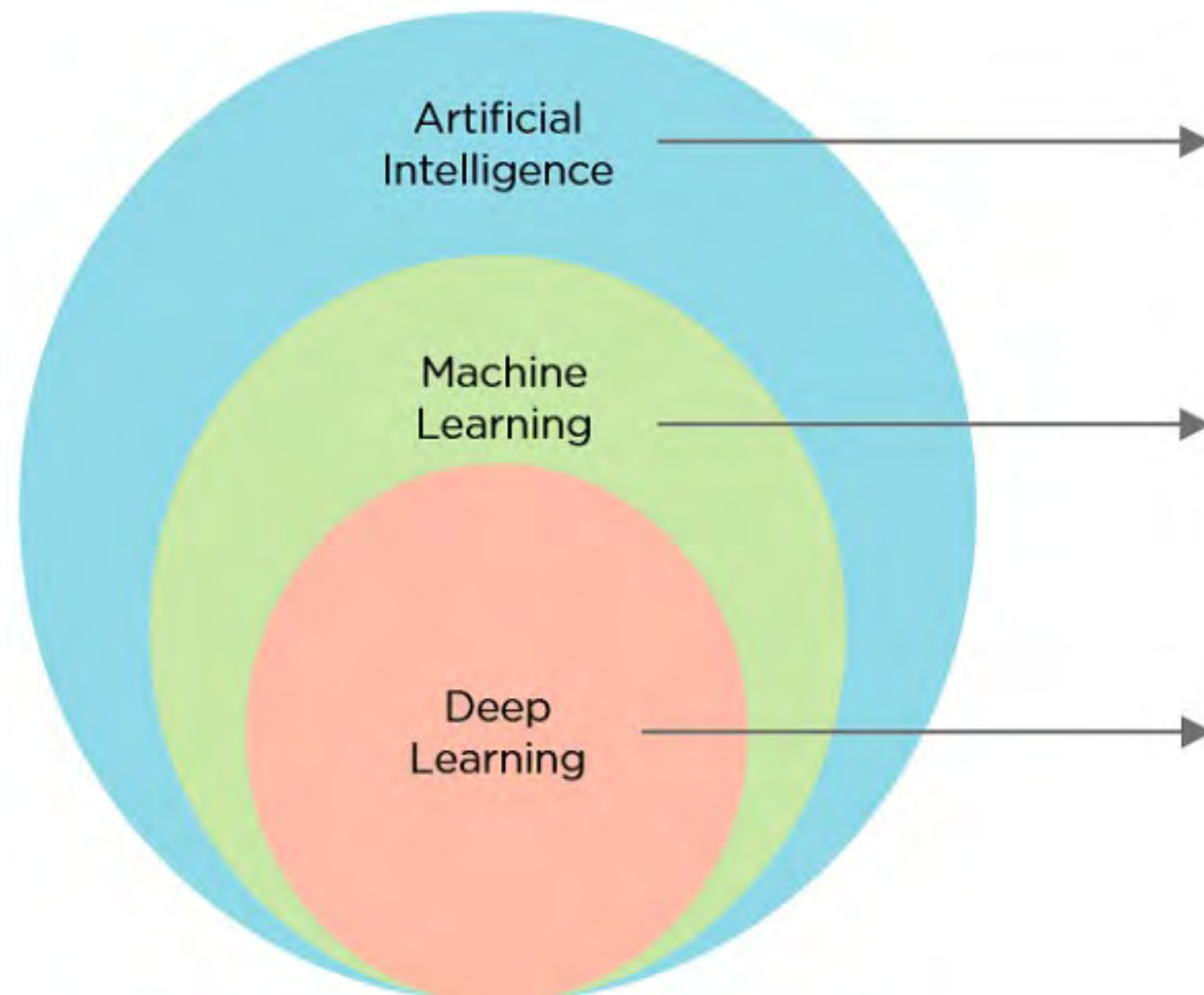

Cal IPC 1,492 Acres

California Invasive Plant Council Historic Arundo Santa Ana River Watershed (2006)

Santa Ana River Watershed

Source
From 2011 California Invasive Plant Council (CAL IPC) report. CAL IPC mapping team used 2006 imagery as the starting point. Earlier datasets provided by local Arundo program managers as well as historic aerial photographs were used to fill in gaps for areas that were treated and re-vegetated prior to 2006.

P:\Projects\Ian\ArundoCalIPC\ArundoCalIPC.aprx LoArundoIPC SW-3242

Sample Imagery

Imagery:

- 3 inches per pixel
- 4-band color-infrared

Deep Learning

Artificial Intelligence

Machine Learning

Deep Learning

The ability of a digital machine to imitate intelligent human behavior

The application of AI that allows a system to automatically learn and improve from experience.

The utilization of Machine Learning involves leveraging sophisticated algorithms and deep neural networks to effectively train a model.

Deep Learning

Deep learning is a type of machine learning that involves teaching a computer to recognize patterns, like rooftops in images, by showing it examples. The computer model learns from these training samples and scans the image to identify similar features.
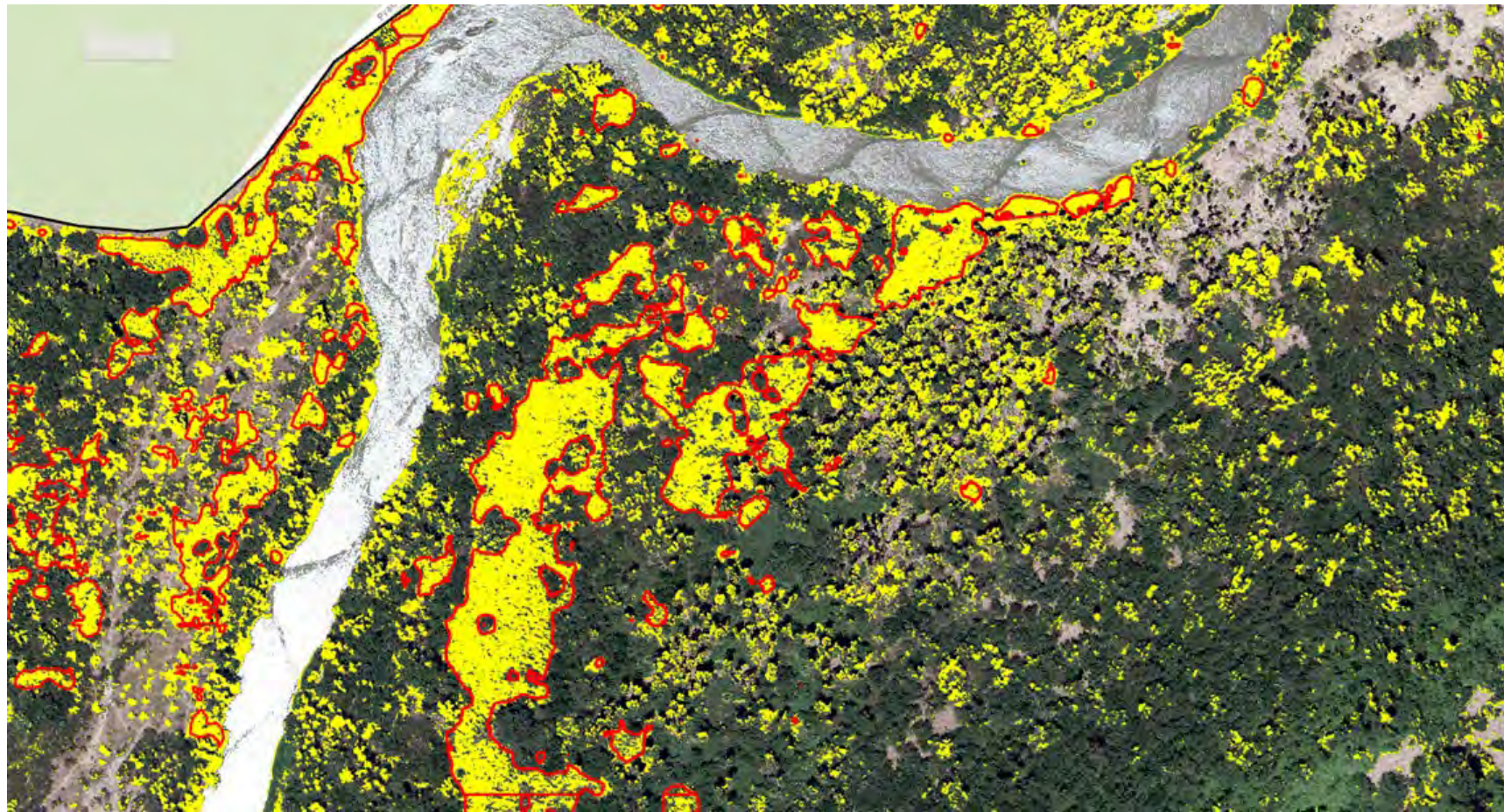
- ESRI, Rami Alouta, Kate Hess

Deep Learning Benefits

- Excels in high-dimensional data (i.e., images, audio, text)
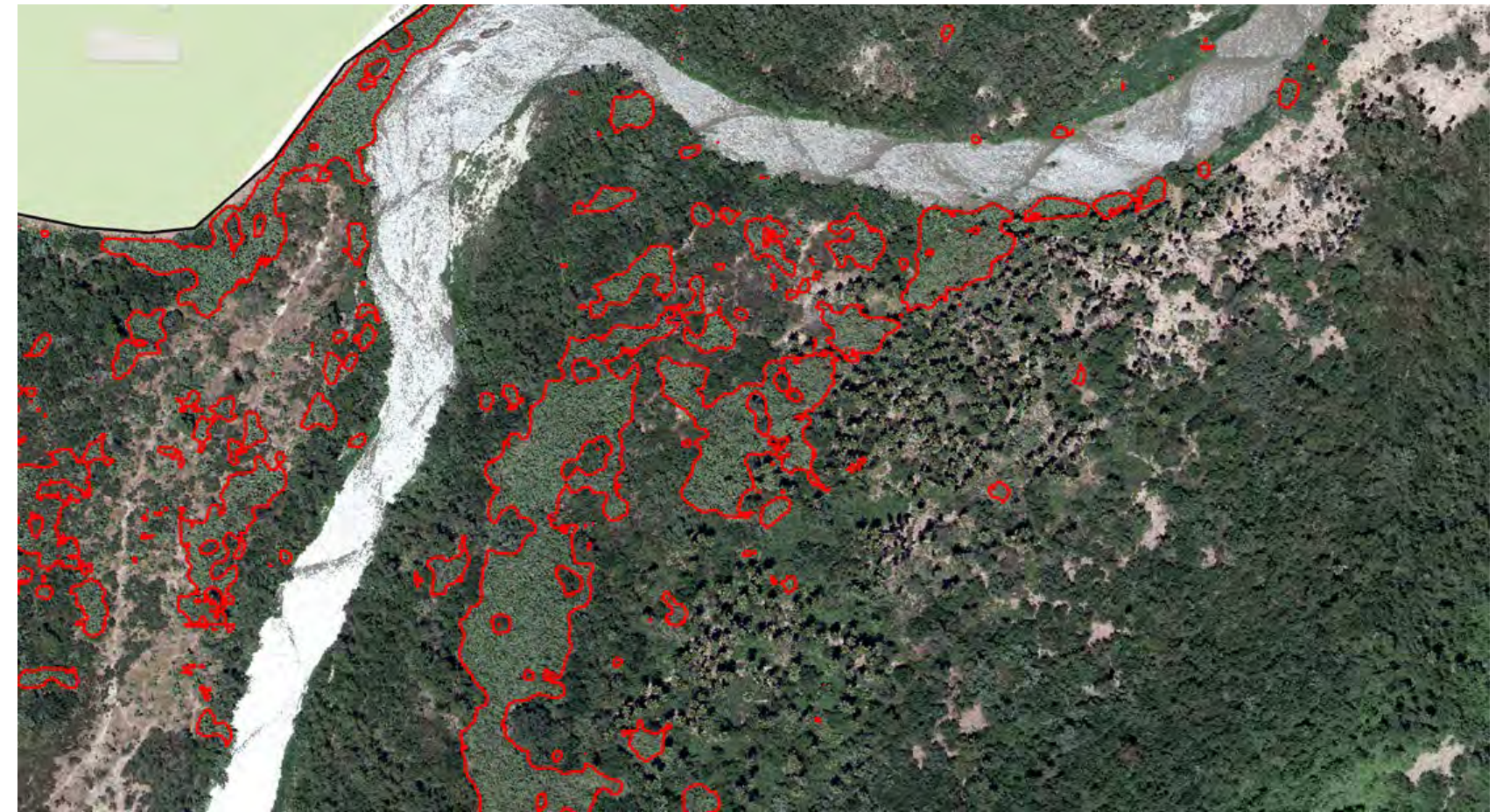- Scalability
- Versatility
- Adaptability

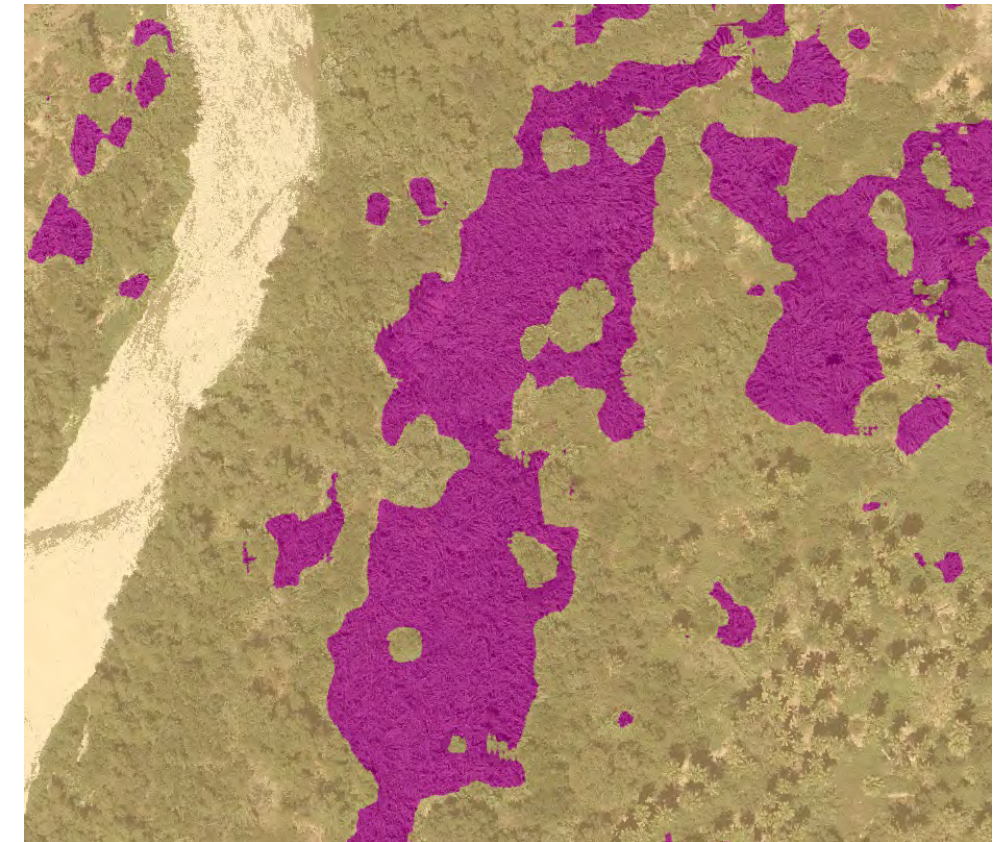# Comparison of Methods

- Machine Learning

- Deep Learning
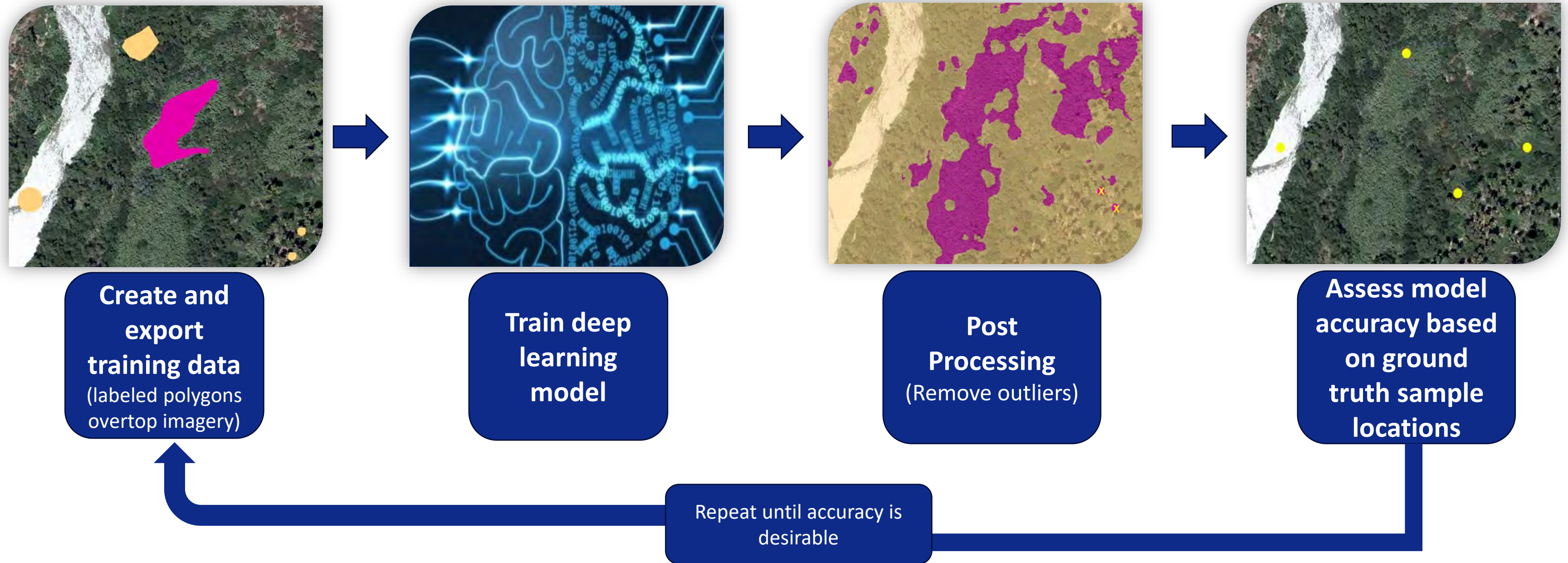
Training Data For Deep Learning Model

Features
(raw aerial imagery)

+

Labels
(polygons with child
class label)

=

Image chips fed
to DL model

Model Development

Create and export training data (labeled polygons overtop imagery)

Train deep learning model

Post Processing (Remove outliers)

Assess model accuracy based on ground truth sample locations

Repeat until accuracy is desirable

Accuracy Assessment

Model Performance Evaluation:

- Assessment Points used for confusion matrix
- Randomly placed across district
- Visual inspection against raw imagery and verified class assignment
- Pull model output value at exact point/polygon location
- Compare verified classifications against model predicted classifications
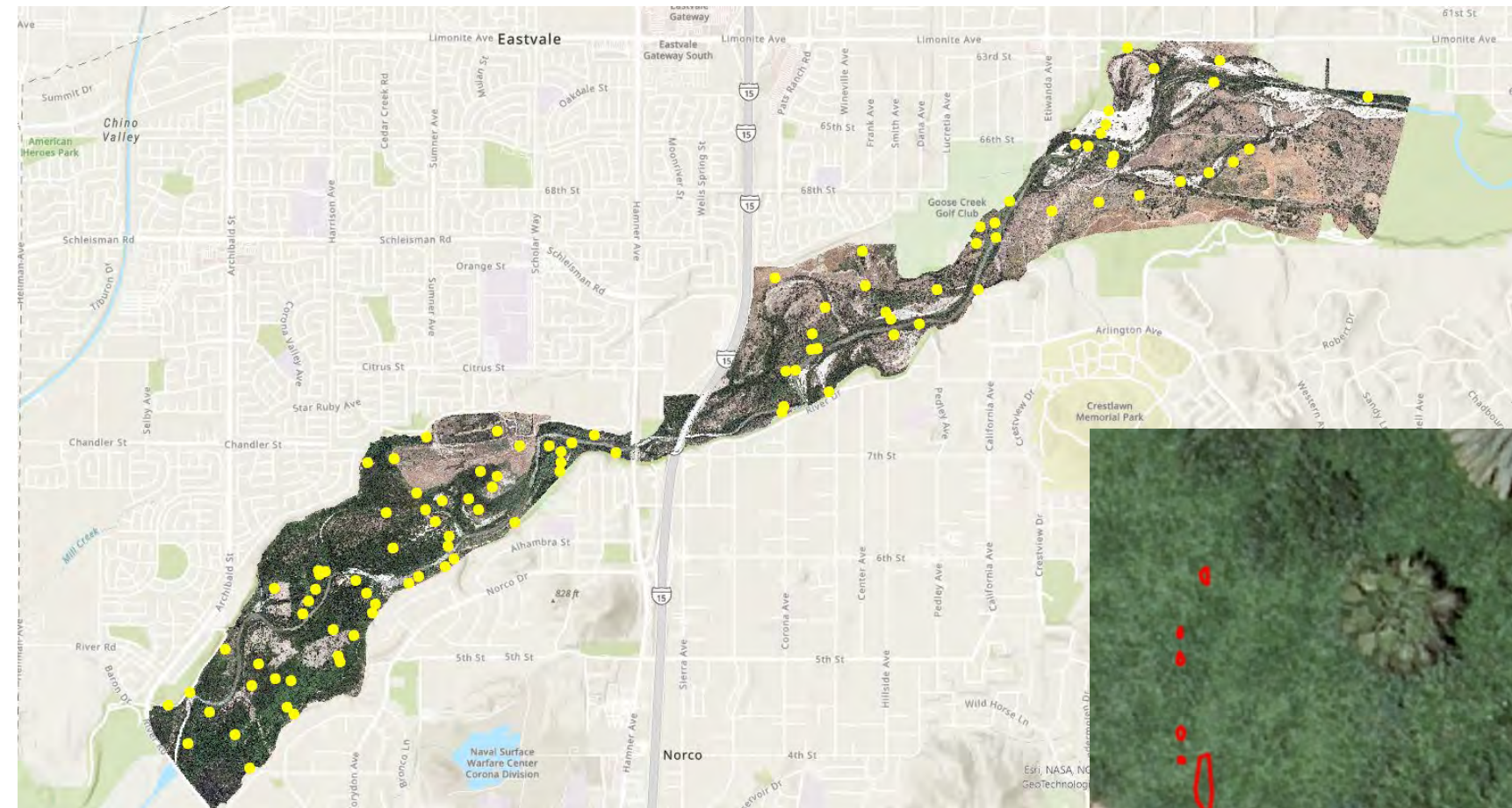
Phase I Project Area

Phase I Project Area Results

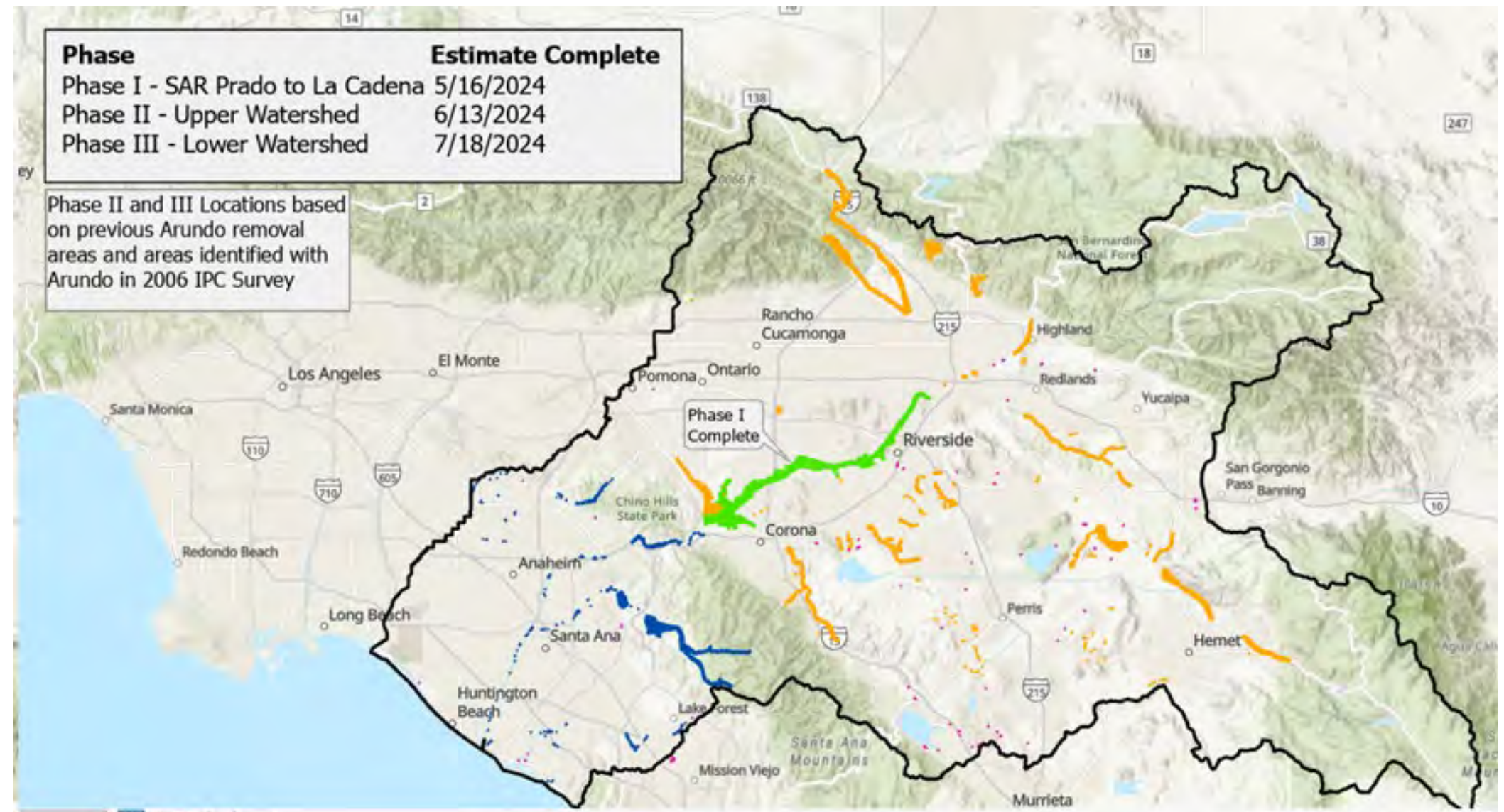| Project	Project Area (acres)	Measured Arundo (acres)	Arundo Coverage (%)	Model Accuracy (%)	Model Runs (#)	Training Samples (#)
AOI-2	2,368	136	6%	92%	4	250
AOI-1	147	34	23%	84%	4	230
AOI-1A	742	8	1%	82%	6	184
AOI-3	3,162	46	3%	82%	6	201
AOI-3a	1,347	17	1%	86%	1	245
Total/Average	6,419	240	3.7%	83%	21	1,110

Limitations and Management Approach

Limitations:

- Current understanding is limited and incomplete
- Current focus on mainstem of SAR and Prado Wetlands
- Ad hoc management of Arundo in watershed

Management Approach:

- Expand understanding of geographic range
- Location and density
- Systematic approach to management
- Management in upper reaches important to lower reaches

Phase	Estimate Complete
Phase I - SAR Prado to La Cadena	5/16/2024
Phase II - Upper Watershed	6/13/2024
Phase III - Lower Watershed	7/18/2024

Phase II and III Locations based on previous Arundo removal areas and areas identified with Arundo in 2006 IPC Survey

Project Benefits

- Watershed-wide resource (Member Agencies and other watershed stakeholders: resource conservation districts, flood control districts, cities)

- Support regional collaboration and strategies for *Arundo* removal

- Track *Arundo* removal in SARW

- Inform *Arundo* management and investment decisions

- Support future grant opportunities
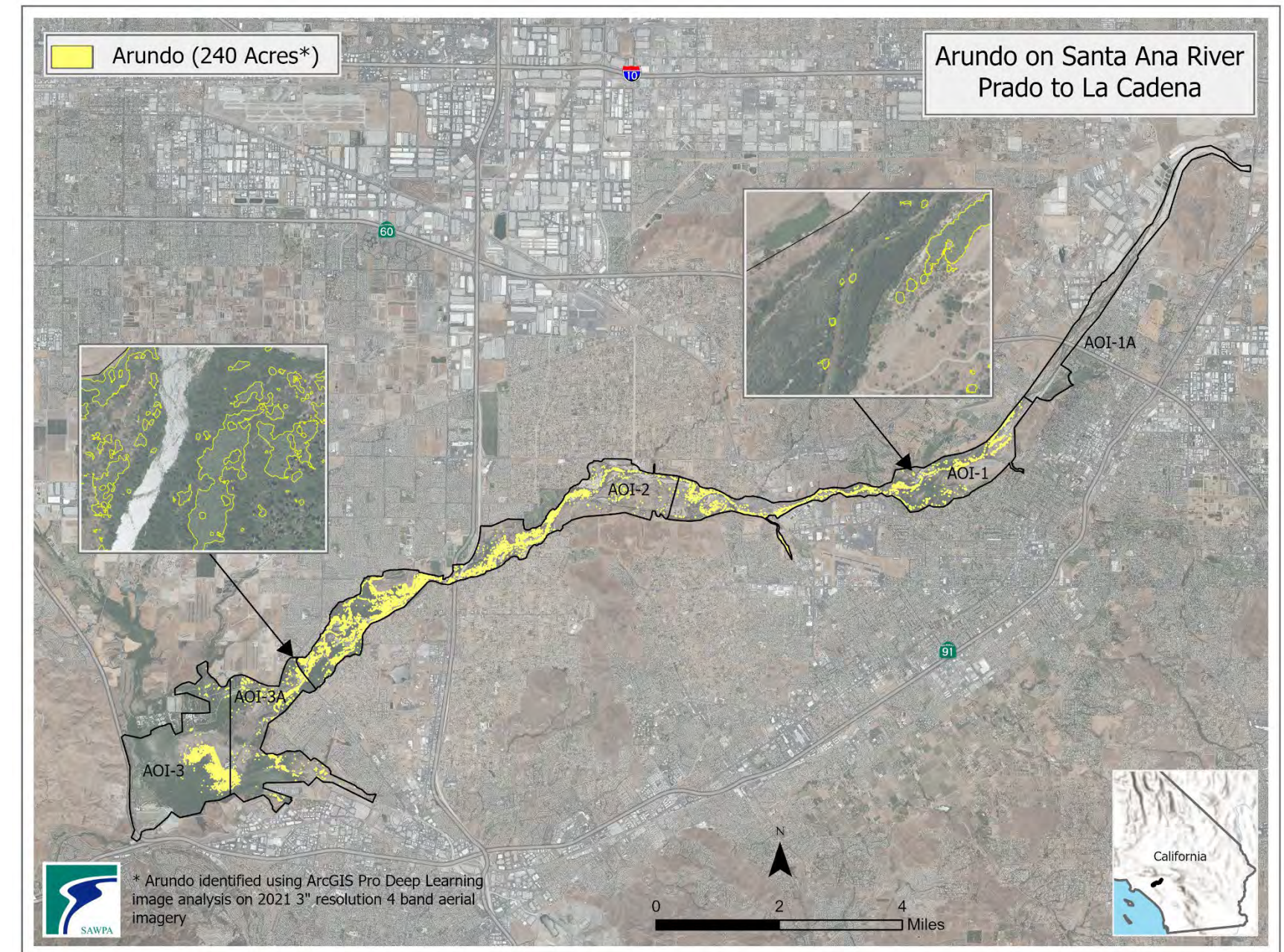
Questions?

Thank You

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