



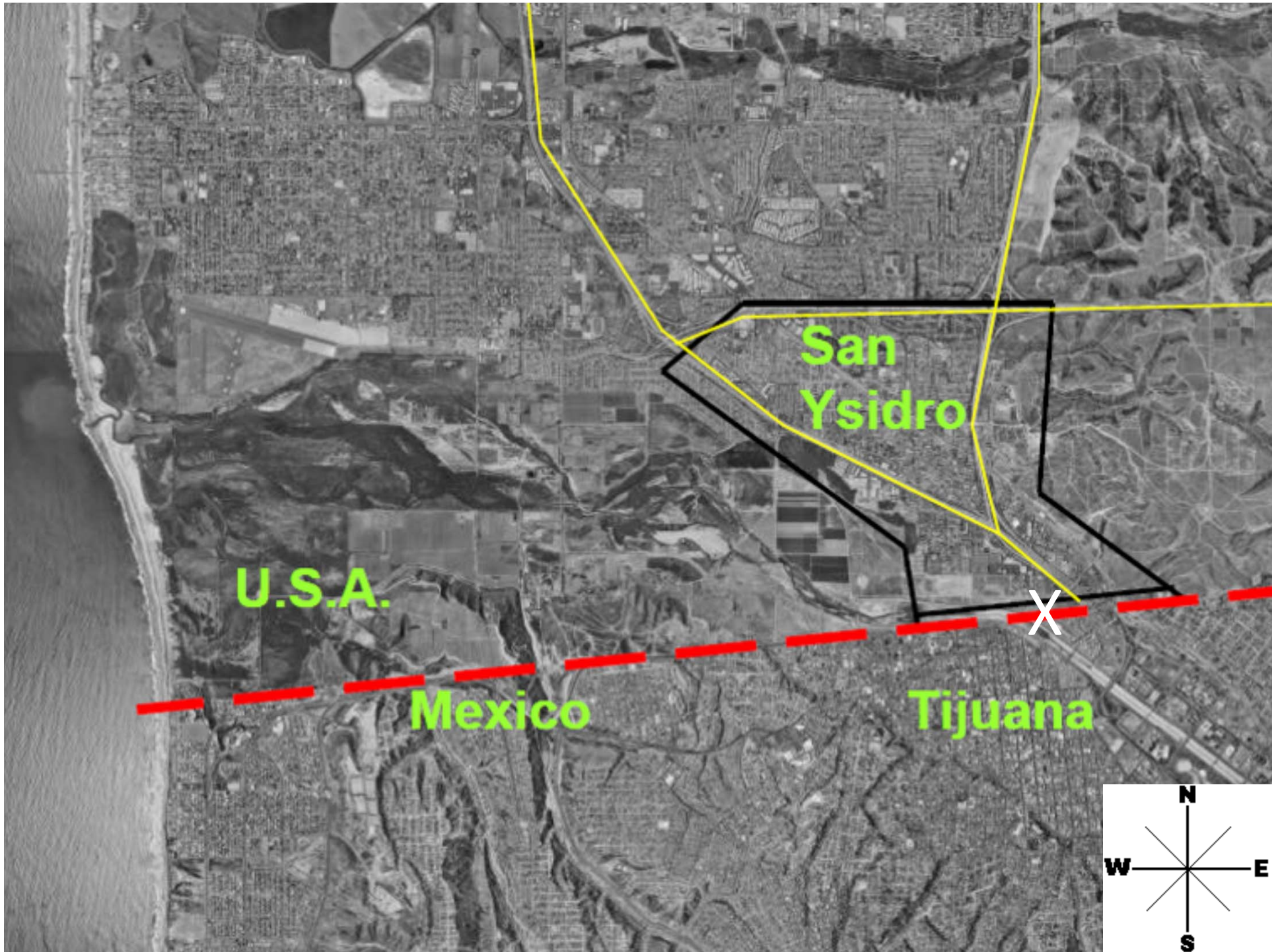
ASIC 2018

Penelope (Jenny) Quintana

San Diego State University School of Public Health

San Ysidro Air Study

*Pictured –
David Flores, Casa Familiar*



San Ysidro Port of Entry



Pollution Concerns



- Freeways
- San Ysidro Port of Entry
- Commercial trucks from Otay Port of Entry
- Freight Trains
- Municipal airport to east (Brown Field)
- Sources in Tijuana
 - Trash burning
 - Industrial
 - Traffic
 - Planned burns
 - Illicit burning
 - Unpaved roads

The Study Partners

Community



Government



Academia



SAN DIEGO STATE
UNIVERSITY



DEPARTMENT OF ENVIRONMENTAL
& OCCUPATIONAL HEALTH SCIENCES

UNIVERSITY of WASHINGTON
School of Public Health

Funded by the California Office of Environmental Health Hazard Assessment

Goals

San Ysidro Community Air Monitoring

- Assess community needs and concerns
- Collect data using next generation low-cost instruments
- Access spatial and temporal gradients NOT captured by the regulatory monitoring network
- Develop capacity to continue collecting data
- Support ongoing improvement in public health
- Provide data for CalEnviroScreen

<http://deohs.washington.edu/san-ysidro-air-quality-and-border-traffic-study>

C S C

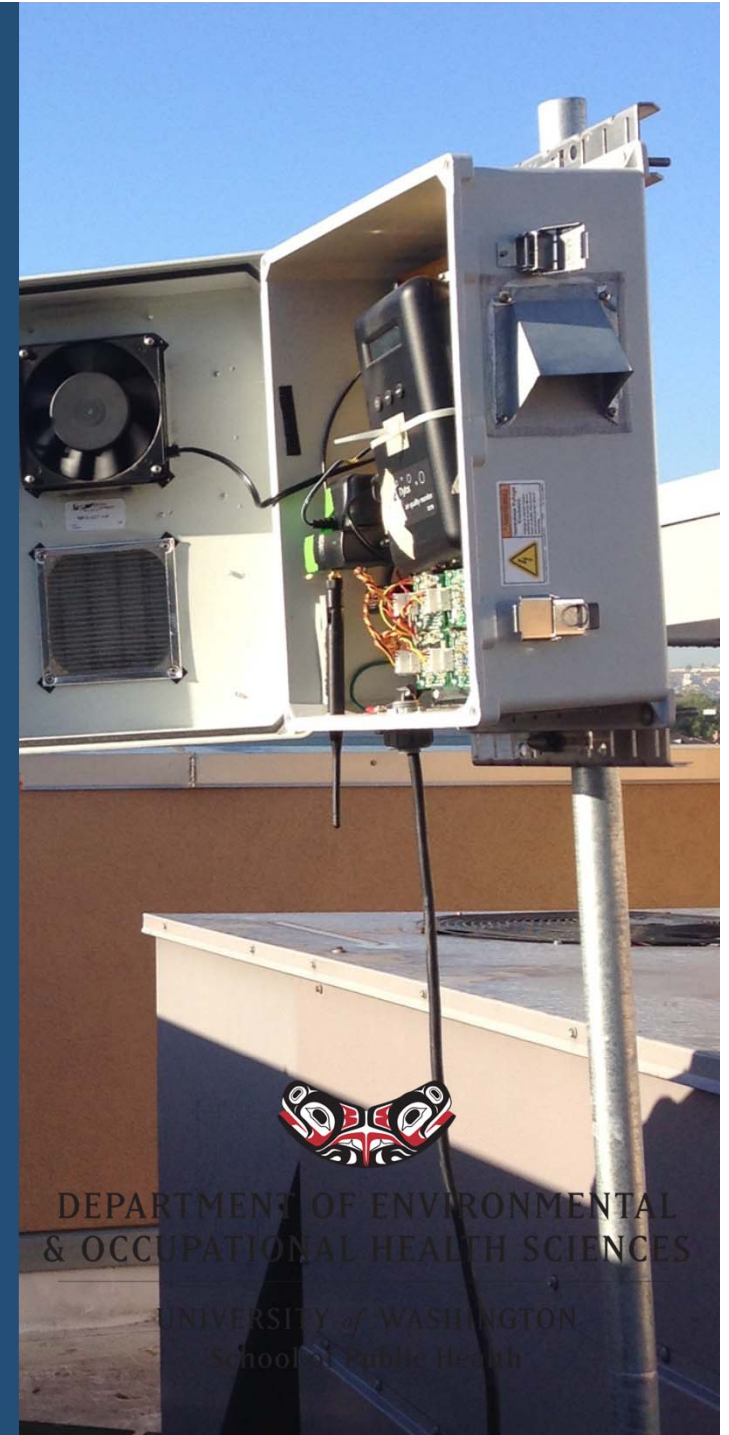


Community Steering Committee (CSC)

- Made up of 10 community residents
- Serve as community experts and guide the study
- Act as liaisons between community residents and study team

Advanced Low-Cost Monitoring Equipment

- Non-regulatory research instruments
Modified Dylos particle counter with 4-size bins measuring between PM 0.5 – 10 μm . Alphasense electrochemical sensors for traffic-related gas pollutants (CO, NO, NO₂, O₃) Temperature and Relative Humidity
- Cellular network for real-time data transmission to UW to website
- Internet server for storing and sharing data
- **Calibration factors applied BEFORE data displayed**



DEPARTMENT OF ENVIRONMENTAL
& OCCUPATIONAL HEALTH SCIENCES

UNIVERSITY OF WASHINGTON
School of Public Health

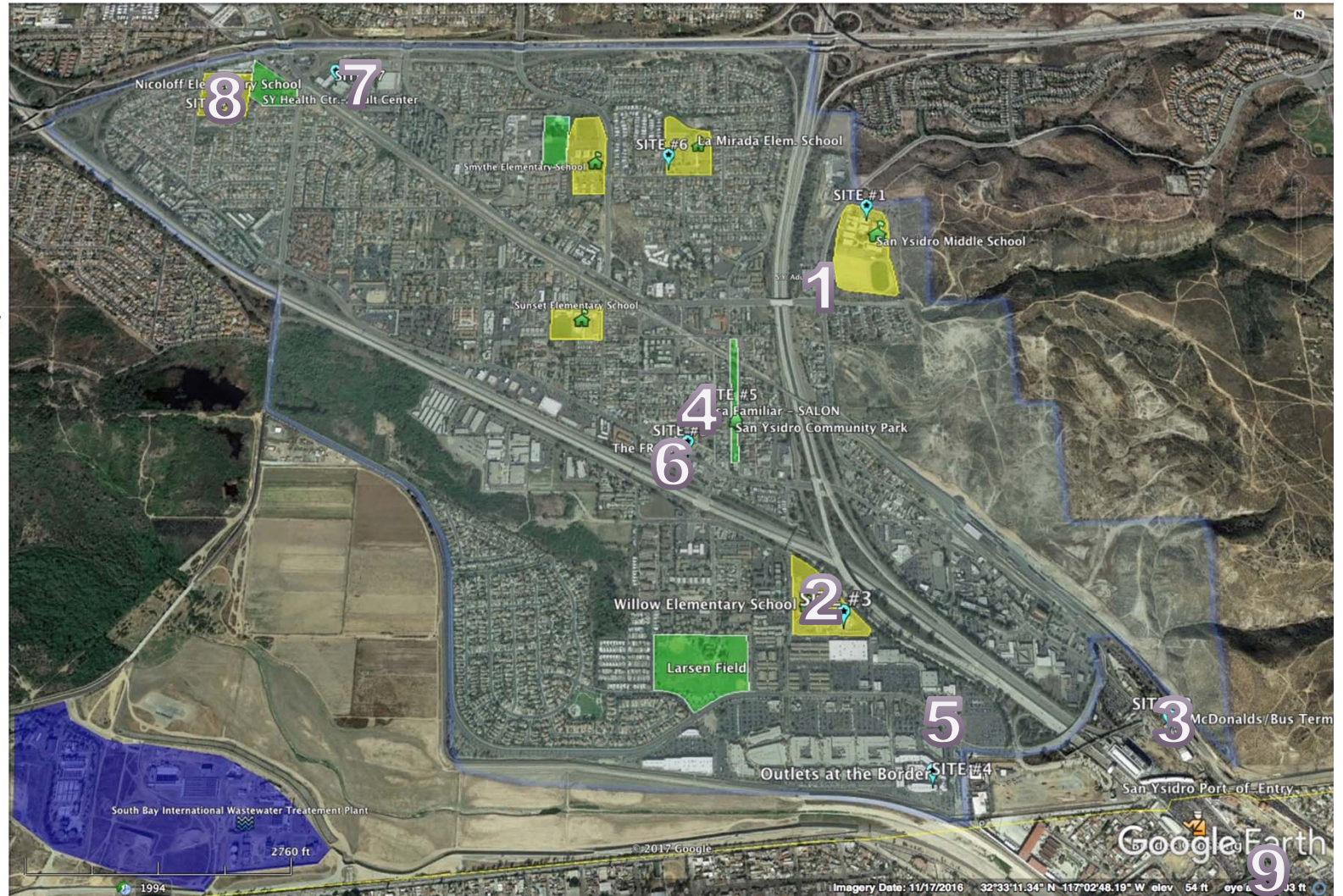
SAN YSIDRO COMMUNITY AIR MONITORING STUDY - AIR MONITORS LOCATIONS MAP - Nov. 2017

on Map

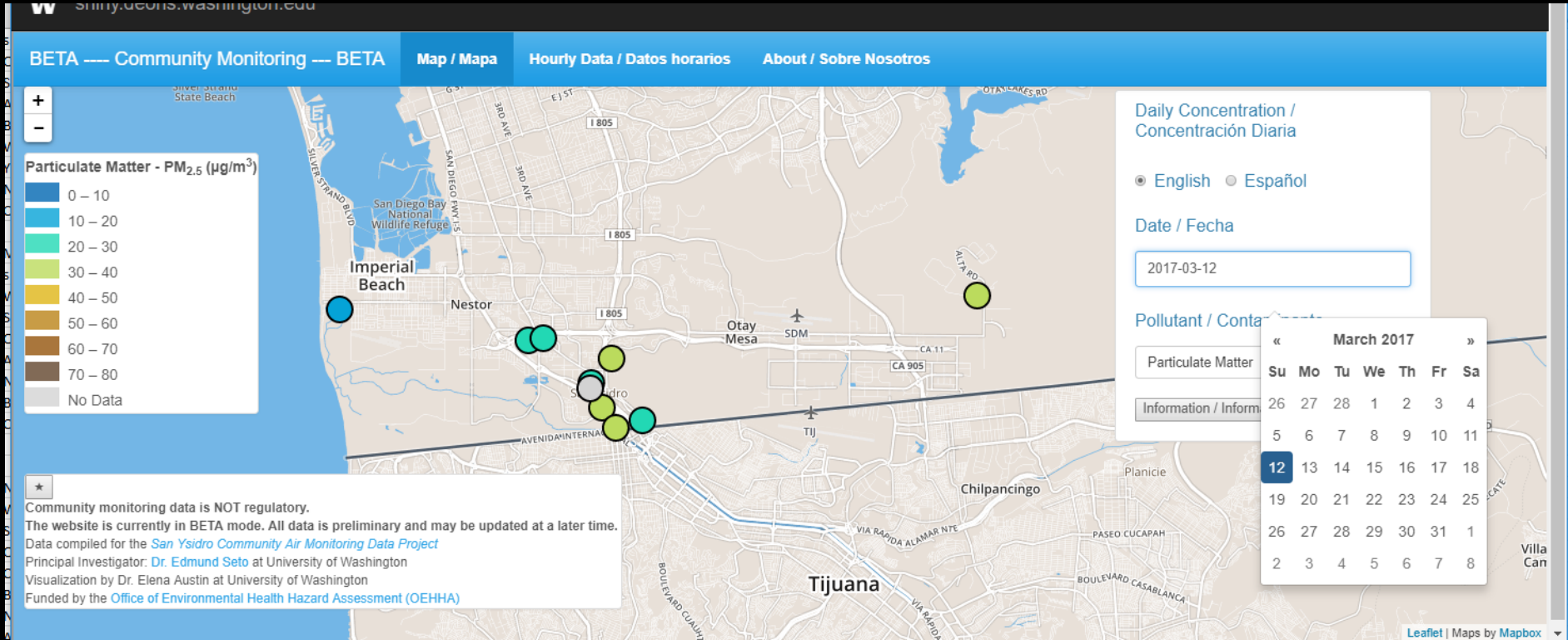
- 1-San Ysidro Middle School
- 2-Willow Elementary School
- 3-SY McDonalds/Bus Terminal
- 4-Casa Familiar - El Salon
- 5-Outlets at the Border
- 6-The FRONT Gallery - SY Blvd.
- 7-SY Health Ctr. - Adult Ctr.
- 8-Nicoloff Elementary School
- 9-Tijuana Border

- 10-Tijuana River Valley Estuary/
Imperial Beach (Off Map)
- 11-Donovan/Otay Colocation
(Off Map)

Yellow - School Grounds
Green - Parks



http://syairstudy.org/



Visualization Functionality Based on CSC Input

- Tabbed display for ease and organization
- Map with visual indicator of pollution level (color grading)
- Indication of absolute concentration
- Additional information on each pollutant
- Time series display of hourly concentrations
- Indicator of whether hourly concentrations exceed CAAQS values
- Link to current AQI values provided by SDAPCD
- Data request form

Sustainability

Project performance

- Network fully operational since January 1st, 2017
- 11 Sites have been monitored in this period
- Data completeness: > 80 % for most sites
- **Factors critical to project success**
- COMMUNITY PARTNER
 - EXISTING MECHANISMS to engage community (Casa Familiar, David Flores, lead)
 - Connections to PLANNING for ACTION
- COMMUNITY STEERING COMMITTEE
- STRONG SUPPORT FROM LOCAL AIR AGENCIES (San Diego Air Pollution Control District allowed access for calibration side by side with regulatory monitors)
- ACCURACY and CALBRATION – post-processing E.Seto, UW
- Existing partnerships between university, community partners
- FUNDING – OEHHA, State of CA

Sustainability - barriers

Barriers: siting, operating and sustaining monitoring

- **TIME** and **PERSON POWER**
 - On part of community, partners
- **POWER**
 - Power loss, need to visit to plug and unplug
- **ACCESS**
 - both initially and ongoing (schools, Nature Center)
- **SAFETY** - ladders, electrical, liability
- **CALIBRATION** – accuracy important for community credibility
- **SENSORS** - need replacement
- **WEATHER** and elements (wind storms, sea spray)
- **EXPERTISE** - programming, calibration
- **FUNDING**

Sustainability – going forward

1. Build and grow partnerships:

Initial project:

Community organization + Local air district + State of California (OEHHA) + Academia



+community members, community schools and organizations



+ international partners with EPA Border 2020 funding to extend project in to Tijuana

AB 617 leads to state-wide partnerships

Sustainability – going forward

2. Build Local Capacity

Local expertise and local opportunities

3. Leverage Resources

Human

Financial

Air monitoring project is an anchor for synergistic activities.....

Acknowledgements

AIR MONITOR SITE PARTNERS:

1.

San Diego County Air Pollution Control District

- Downtown Site Co-Location & Donovan/Otay Site Co-Location

2. Mr. Antonio Martinez

3. San Ysidro Transit Ctr. McDonalds, Mr. Miguel Aguirre

4. San Ysidro Health – Adult Center

5. Tijuana Estuary Visitor Center

6. Imperial Beach Mayor Serge Dedina

7. San Ysidro School District - 1.) La Mirada Elementary, 2.) Willow Elementary, 3.) San Ysidro Middle School

8. South Bay Union School District - Nicoloff Elementary School

9. SD Outlets at the Border

10. Casa Familiar - 1.) The FRONT art gallery, 2.) El Salon, old Mt. Carmel Church

11. Tijuana - Private business/UABC Prof. Emmanuel Castillo Quiñones

Acknowledgements

Community Steering Committee

Research Team

David Flores - **Casa Familiar 501(c)(3)**

Edmund Seto & Elena Austin - **University of Washington**

Penelope (Jenny) Quintana & Zohir Chowdhury - **San Diego State University**

Graduate Research Assistants

Technical Advisory Committee

Comite Civico Del Valle

California Environmental Health Tracking Program

Questions?

Edmund Seto eseto@uw.edu

David Flores davidf@casafamiliar.org

Penelope JE Quintana jquintan@sdsu.edu

Footer Text
Vanessa Galaviz vanessa.galaviz@oehha.ca.gov

EXTRA SLIDES

Sustainability – solutions?

- **ACCESS**
- **POWER**
- **Data Quality**
- **CALIBRATION -**
- **SENSORS -**
 - Manufacturers could co-locate monitors and sell as a batch
 - Manufacturers could rent them and community could swap out
- **SAFETY** - ladders, electrical
- **WEATHER** and elements (wind storms, sea spray)
- **EXPERTISE** - programming, calibration
- **TIME** and **PERSON POWER**
 - Adequate funding for community members to participate, also build capacity in local organizations, also tap community colleges/ high schools?
- **FUNDING**
 - **AB 617 (CA), provide statewide support/expertise?**

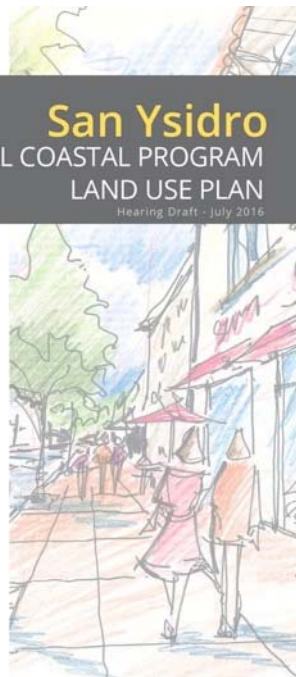


Casa Familiar

Integrating Community Concerns

San Ysidro Community Plan Update – City Council Adopted November 15, 2016

- NEW chapter 8.3 AIR QUALITY under Conservation Element



Policies

8.3.1 Encourage enforcement of air quality regulations by the San Diego County Air Pollution Control District (APCD).

8.3.2 Implement a pattern of land uses that can be served efficiently by a multi-modal transportation system that directly and indirectly minimizes air pollutants.

8.3.3 Support the monitoring of particulate pollution at the Port of Entry, and pursue methods of reducing emission, while accommodating the expansion of the Port of Entry activities.

8.3.4 Educate businesses and residents on the benefits of alternative modes of transportation, including public transit, walking, bicycling, car and van pooling, and teleworking.

8.3.5 Encourage street tree and private tree planting programs throughout the community to increase absorption of carbon dioxide and pollutants.

TAG members

Technical Advisory Group (TAG)

- TAG made up of local and state government agencies
- Through meetings serve as technical experts to guide the study

San Diego Association of Governments (SANDAG)

California Department of Transportation (DOT)

EPA region 9

San Diego Air Pollution Control District (SDAPCD)

California Air Resources Board (CARB)

Time Series Display of Hourly Concentrations

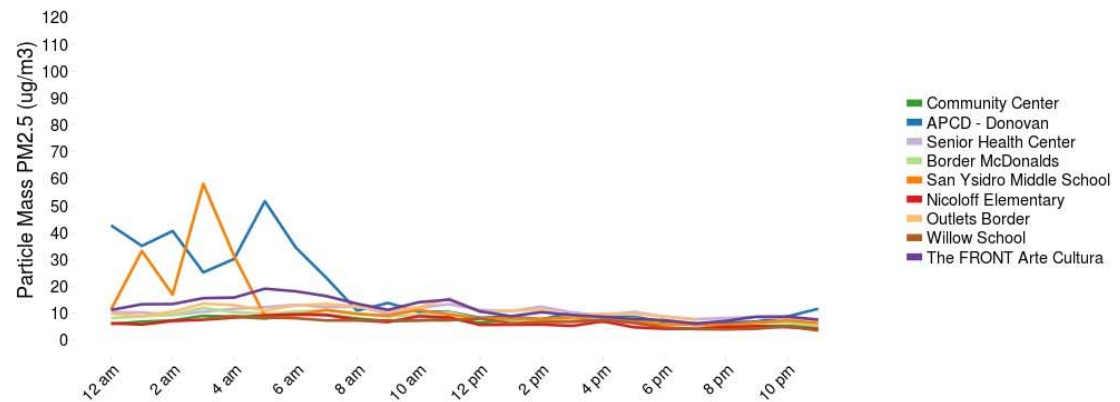
<http://syairstudy.org/>

Hourly Data Plot, Select Sites and Dates

Date input
2017-05-22

Site Selection Options:
 All
 Manual Select

Pollutant:
Particle Matter



Interpreting this data with respect to government health based standards:

For these sites, on this day, there are hours when particle mass (PM_{2.5}) measured by this sensor network exceeds the 24-hour NAAQS standard of 35 ug/m³ set by the EPA.

The data presented here is NOT regulatory data and errors may exist. [Please follow current outdoor conditions and health recommendations from the San Diego County APCD.](#)

Open Access

<http://syairstudy.org/>

- Code for visualization is available at:
https://github.com/elaustin/syvis_docker
- All data accessible for non-commercial use
- Data requests collected through a webform:
<https://goo.gl/forms/W74cc7na3X7jAL7p2>
- Data distribution includes hourly concentrations measured at the monitoring locations as well as a readme file that includes a sharing license and data description.