# AB 617 Community Air Protection Program

## Steering Committee Meeting Agenda Packet Overview

This document provides an overview of the attachments included in the community steering committee (CSC) meeting agenda packet for **June 12, 2019**. The document provides some guidance on the purpose for the document review and guiding questions (when relevant) are provided for the following attachments:

- June 12, 2019 CSC Meeting Agenda
- May 8, 2019 CSC Meeting Minutes (English and Spanish)
- 2-Page Example: Low Cost Air Quality Sensors for Community Monitoring
- Journal Article: *Combining Community Engagement & Scientific Approaches in Next-Generation Monitor Siting*
- AB617 Mapping Activity Results

### June 12, 2019 Steering Committee Meeting Agenda

Please review the agenda for the Steering Committee meeting taking place Wednesday, June 12, 2019. The attachments provided in this packet will allow CSC members to critically review information in **advance** of the meeting. Please plan to arrive to the meeting ready to contribute to the decision making process.

### May 8, 2019 Meeting Minutes (English and Spanish)

Please review the notes from the May 8th CSC meeting and let us know if you have any questions or recommend any edits. *Note:* meeting minutes for the May 22nd CSC meeting will be provided at a future meeting. CSC members will have an opportunity to amend or approve the meeting minutes attached. The meeting minutes are included in both English and Spanish.

### 2-Page Example: Low Cost Air Quality Sensors for Community Monitoring

Please review the attached document that will be referenced during Ramboll's presentation regarding the status of the Community Air Monitoring Plan (see Agenda Item #4). This document includes examples of different low-cost air quality monitors considered by other communities, estimated costs, data portals, and pollutants measured. CSC members are encouraged to email APCD any questions about this handout in **advance** of the CSC meeting. CSC members will also have an opportunity to ask questions and provide input during the June 12 CSC meeting.

### Journal Article: *Combining Community Engagement & Scientific Approaches in Next-Generation Monitor Siting*

Please review the attached journal article that provides supporting evidence for the recommendations included in the Community Air Monitoring Plan draft. This article provides information on the origins and benefits of the IVAN Air (existing community monitor network). The approach presented supports a community air-monitoring network that is better able to inform community residents, support research in this community, guide public policy, and improve community health. As you are reading the article please answer the following questions:

- Is this article useful?
- Was the information presented in the article unclear?
- Are there any gaps in the content presented in the article?
- What stands out to you when reviewing details about the approach and findings?
- What are things you would like the CSC to consider after reading this article?

### AB617 Mapping Activity Results – Collected Proposed Monitor Location List

Please review the attached document that includes a list of almost 70 sites **recommended by CSC members** as priority locations for air monitors during the May 22 CSC meeting. CSC members will vote on their top choices for monitor locations based on this list at the June 12 CSC meeting. Ramboll will present geographic or GIS maps that will display proposed locations as CSC members make their final selections. CSC members are encouraged to email APCD any questions about this attachment in **advance** of the CSC meeting.

**Please note: if you would like to print any of these documents but do not have access to a printer, we are happy to mail them to you. Just respond to this email to let us know!

Our next meeting will be held **on June 12, 2019 from 5:30pm-7:30pm at ECRMC Community Education Center (3451 Dogwood Road, El Centro, CA 92243).**

As always, please let us know if you have any questions (ThomasBrinkerhoff@co.imperial.ca.us). We would like to encourage CSC members to schedule separate meetings with our team to answer any questions or discuss specific topics more in depth.

# AB 617 Community Air Protection Program
# Steering Committee Meeting Agenda
# ECRMC Community Education Center
# 3451 Dogwood Rd.
# El Centro, CA 92243

## MEETING AGENDA

**Wednesday, June 12, 2019**

**5:30 p.m. – 7:30 p.m.**

**Facilitator: Amy Ramos of Harder Co.**

**Chair of Meeting: Matt Dessert (Alternate: Reyes Romero)**

## WELCOME

1. Roll Call/Opening Remarks by CSC Members **Co-Chairs**

2. **PUBLIC COMMENT PERIOD**

3. **APPROVAL OF MINUTES:** **Co-Chairs**
   May 8, 2019 Community Steering Committee Meeting and May 22, 2019 Community Steering Committee Meeting
   (Attachments: *May 8, 2019 Minutes; May 22, 2019 Minutes*)

4. **PRESENTATIONS**
   - Community Air Monitoring Plan Update **Ramboll**
     (Attachments: *Presentation: Community Air Monitoring Plan Status Update; Example Low Cost Air Quality Sensors; Combining Community Engagement & Scientific Approaches in Next-Generation Monitor Siting Journal Article)*

5. **ACTION ITEM(S):** **Co-Chairs/CCV**
   - CSC to take action on location of community monitors
     Committee to vote and finalize locations of air quality sensor monitors.
     (Attachments: *Maps of Proposed Monitoring Sites; Collected Proposed Monitor Locations List;*)

6. **AGENCY UPDATES** **ICAPCD & CCV**

7. **AGENDA TOPICS FOR NEXT MEETING** **Co-Chairs**

8. **CLOSING REMARKS/ADJOURNMENT**

# ATTACHMENT:

# May 8, 2019 Minutes

AB 617 Community Air Protection Program
Minutes of the Steering Committee Meeting
ECRM Community Education Center
El Centro, California
May 8th, 2019

Co-chairs: Luis Olmedo; Matt Dessert

Facilitators: Amy Ramos; Daniela Flores

I. Attendance

Matt Dessert, Air Pollution Control District; Luis Olmedo, Comite Civico del Valle; Aide Fulton, El Centro corridor; Mark Baza, community corridor; Blake Plourd, El Centro/Heber corridor; Mireya Diaz, El Centro corridor; Bob Fischer, alternate member and Diahna Garcia Ruiz; Michael Moore, Heber corridor; Sergio Cabañas, El Centro/Heber corridor; Rosa Guerrero, alternate for Mersedes Martinez, community corridor; John Hernandez, community corridor; Mary Salazar, Calexico corridor; Sandra Mendivil, Calexico corridor and alternate for Mireya Diaz;

Alternates: Reyes Romero, Sandra Mendivil;

II. Welcome and Opening Remarks

Matt Desert welcomed everyone and said they had a full agenda; he acknowledged their new facilitator, Amy Ramos and indicated they would continue with the agenda items for this meeting after opening remarks by Luis Olmedo.

Luis Olmedo also welcomed everyone in attendance as well as the new facilitator, Amy Ramos. He mentioned he had been to Sacramento and that had noticed there is a lot of momentum around binational work in terms of the economy and investment as well as to how the Free Trade Agreement is benefitting their communities.

Amy Ramos introduced herself and Daniela Flores as facilitators for these meetings and gave some instructions as to how they were going to conduct the meeting.

III. Public Comment Period

Aide Fulton mentioned that World Asthma Day would be celebrated through the month of May, and asked everyone to mention the efforts of AB 617 if approached by the media asking about air quality issues.

Blake Plourd made a couple comments on the emissions inventory and source attributions from the prior meeting. He said he believed there was some bias on the presented data.

Mary Salazar said she agreed with Blake Plourd. She also commented that there had been news about people dying due to respiratory issues caused by pollution in Mexico. She said this was a concern for her since Mexico and the US share the same air shed. She added she wondered why these kinds of news are not heard in the US.

Follow Up Discussion on Emissions Inventory and Source Attribution; Tom Olson and Victoria from CARB

Tom Olson made some remarks regarding Blake Plourd's concerns about the sensor data compared to what is in the inventory. He explained that the PM data that they were presenting was from the 2012 PM State Implementation Plan and that initially, there is a temporal difference between the inventory, which is based on more resent data vs. the

data that was collected from 2012 and the years prior. However, he said there is continuing monitoring effort at the location of concern. He added that it is difficult to take very specific locations of PM data and then map it out the impacting source for that particular location, but you can generally see transportation.

Victoria added that they are in the process of checking the data, ensuring that the numbers are accurate. She also said they would like to come back and present a final inventory because what they had presented were draft numbers. She concluded saying they would have an update at a later date.

Matt Dessert commented that presentations intended to be presented at these meetings need to be sent with more time to the co-chairs so they can review them in order to make sure that they are presented in a way that is understood as well as accurate.

Victoria was asked how they have gotten their numbers for their inventory, and she explained that their inventory numbers come from different sources. If it is a stationary source, she explained they work with the district to get the permits; they then look at activity levels for 2017 and factor that in. For area wide sources, she said they had worked with their modeling personnel and had been able to project emissions for 2017. For on road and off road data, they took vehicle miles traveled and then they were able to allocate those onto the roads and provide final numbers. She pointed out that all of their work is still under draft mode and that they were in the process of checking their data and said they would be able to provide final numbers at the next meeting.

Tom Olson was asked if any IVAN monitors would be collocated with the APCD or CARB particulate monitors. He said he did not know at that time, and that it would have to be discussed with the district.

Matt Dessert added that collocation subject is under discussion between Comite Civico del Valle and the Air Pollution Control District not only on these monitors, but also on some additional activity with the state of California.

Tom Olson was asked if the IVAN network samples on the same 6 day schedule as the CARB or APCD equipment. He explained that the IVAN is a real time PM network, which means that as the sensor collects it, they report that data out. The CARB and APCD equipment is on a 6 day schedule to allow time to collect the sample, take the sample to the lab, have it analyzed, and process results. He added that it is collecting a lot more information than just PM 2.5 or PM 10 count that can be done in real time.

John Sample asked when they were going to start talking about solutions and planting trees in order to create oxygen. He mentioned that the president of Mexico had agreed to plant a million trees in his term, and he said he would like to see a hundred thousand of them planted along the border to stop their smog from coming into the US environment.

Ray Askins mentioned there are organizations that have the wealth and the manpower to grow trees and develop programs for people to participate and plant trees systematically. He also mentioned he grows trees in his backyard and gives out a thousand trees a year.

Aide Fulton mentioned that the Department of Parks and Recreation are planting over 500 hundred trees in Imperial County so there are some efforts being done. She also mentioned they should look into what trees are being planted because some kinds of trees may cause allergies to people.

Amy Ramos asked what the process is for engaging and putting together the technical advisory group discussed at the prior meeting.

Matt Dessert said that Mr. Olmedo and himself had discussed contacting 4 committee members of the 15 primaries to form this advisory committee, and their alternates would also then serve as alternates for this advisory committee.

Luis Olmedo mentioned that through this committee they would cover the need for more meetings in order to meet the deadlines ahead of them as well as helping them workshop a lot of the technical aspects that need to be addressed.

## IV. Approval of Minutes from Prior Meeting

Sergio Cabañas made a motion to approve the minutes; the motion was seconded by Mike Baza. After some amendments to the minutes were requested and noted, the committee members were called to a vote to the approval of the minutes as amended, and the minutes for April 10th were approved unanimously.

## V. Informational Items

### CSC Stipend for Primary and Alternate Members

Matt Dessert informed that they had been successful in passing their bylaws approved by the Board of Supervisors and that with it, there is a stipend approved for each primary and alternate member to be paid for participating in the meetings. He said they have some housekeeping to take care of primarily filling out some tax forms such as the w-9 form as well as some other forms.

Thomas Brinkerhoff from the Air Pollution Control District informed that for those members that will be accepting this stipend, they need to have their W-9 form filled out and submitted to them as soon as possible. He asked those members who would not be accepting this stipend to please let them know so they can have that information on their records.

### Framework and Locations of Community Air Monitors; Comite Civico del Valle

A map with the framework and location of community air monitors was presented by a member of Comite Civico del Valle.

Ray Askins asked what kind of monitors they were using.

The CCV member said they were using Dylos monitors just as the one installed in his house. He explained that this monitors allow for technology updates to be done later on.

Amy Ramos said that if anyone had any questions, comments or suggestions as to where to locate those monitors, they could write them on the post its provided to them for that purpose, and that someone would pass around and collect them to be taken into consideration.

Matt Dessert mentioned that they plan on embedding these monitors along the border to improve their data base. He explained that even though these monitors are not regulatory monitors, they do fill in the gaps in order to better define what is happening in the outlined areas away from the regulatory monitors.

Blake Plourd asked what the proposed funding source was for putting in these additional monitors.

Matt Dessert said that funding source for those monitors would be the AB 617 funds.

Blake Plourd asked how that funding would be administered, who would be responsible for installing the meters, and if this was something this group would vote on in order to allocate the funds.

Matt Dessert said that this committee will be participating in the design, the budget and the layout of everything. He added that the Air District has the autonomy to make these decisions; but that they were committed to their partnership with the environmental justice group Comite Civico del Valle and that the funding to pay for these additional monitors

is all coming from the state of California and at this time, from the AB 617 area, and from the budget process through this steering committee.

Luis Olmedo said with regards to the budget that the Air District had originally submitted a 4 million dollars budget, but that the Air Resources Board requested more detail on that. He added that nobody really knows what the true cost of succeeding in this program is going to be; he said they were all actually learning in this process, and they were now looking at real numbers for the development and implementation of this program and that they were seeing that they are already under budget. He also said that is why it is important to continue to communicate with the Air Resources Board. He also mentioned that all of them know that they have a daytime population and it is important to bring light to that daytime population and elevating to Sacramento so they become aware of the reality they are facing in their communities.

Mark Baza said that he knows that everybody is a supporter of having monitors along the border, but that he wanted to highlight that anything within 60 feet buffer of the border is under the jurisdiction of the International Boundary and Water Commission, which represents a challenge.

Matt Dessert said they are well aware of that and it has been taken into consideration.

Community Air Monitoring Plan Update

Matt Dessert presented a two year budget cycle for the 2 million to the Community Steering Committee. He explained this was a draft for them to review, and that they would address it again at the next meeting after everyone had had the chance to review it.

John Hernandez asked if they had an estimate as to how much it would cost to install and maintain a community monitor for two years.

Matt Dessert said that breakdown in detail would be there as they get into the monitoring section. He added that the Air District, Comite Civico del Valle and the California Air Resources Board are working together in order to design the best additional mobile monitors and will bring that information back to the committee.

Community Emissions Reduction Program Update

Matt Dessert explained that this committee is in charge of administering this 2 million dollar budget to do projects. He also mentioned that they had tentatively been awarded an additional 8 million dollars for projects once they are done with the current 2 year cycle of organizing themselves. He added that they are trying to smartly get ahead on these projects in order to have in a cue and order a strategy for the state of California and others that are watching this process to see they can handle these funds in a smart accurate way. Having said this, he presented the community benefit projects:

Agricultural Burn Policy #234 & CUSD Parking Lot Paving Project – Estimated Emission Reductions

Matt Dessert described the projects to the committee and mentioned they already have some money to do these kinds of projects. He also informed that after having it discussed with Luis Olmedo, they had agreed to come to the committee and start asking to leverage the Air Pollution Control District's moneys and the 617 future 8 million dollar money in doing these projects. He explained this is a grant type of an activity and oversight, and that the more they could partner with other agencies, and the more they could leverage their money, the better performance and results they would get. He said that what they are talking about is paying for this project if they are successful at getting approved by the board of supervisors by the Air Pollution Control District and have the AB 617 committee reimburse half of that when the 8 million dollar fund comes in. He explained that what they were being presented with was a draft and that they would have the opportunity to address both projects in more detail at the next meeting.

## VI. Action Items

Designate number of AB 617 public workshops for June 19, 2019.

Thomas Brinkerhoff asked for input as to whether they should have one or two public workshops sessions on June 19th and what time frame should be. He informed they had the ECRMC Community Education Center available all day on that date. As part of this workshop, he explained they would have different discussion tables on topics that they had covered on past meetings and up to the present with the presence of representatives from Comite Civco del Valle, the Air Resources Board, and the Air Pollution Control District.

Mark Baza suggested having one of the meetings at their usual schedule from 5:30 to 7:30 in the evening, and having an early afternoon meeting as well.

Blake Plourd suggested having just one meeting in order to limit expenses and make a better use of the funds they count with.

Bob Fischer said to be in agreement with Blake Plourd, and suggested doing more community outreach activities through local media in order to raise awareness and have more participation in this public process. He added that they should consider ways to reach older people that are not too savvy at using technology and surfing the web.

Gil Rebollar mentioned they had a good relationship with the local newspapers and that they do inform them of the work and efforts being done through the AB 617 Community Air Protection Program by this committee. He also mentioned having contacts with the local agency on aging and the senior population through which he conveys information. However he said he was always open to suggestions on how to improve their messaging.

Mireya Diaz asked if the two meetings would be focusing on exactly the same topics on two different schedules and if so, she said it would be nice to have an earlier one in order to reach younger people such as students as well as the stay at home moms.

Matt Dessert said he agreed with her, and suggested having one meeting from 3:30 PM to 5:30 PM, and another one at the conventional time from 5:30 PM to 7:30 PM.

Amy Ramos called for a vote on this subject. Majority voted for two meetings on June 19th, and she indicated that logistics, times and locations would be informed once they have decided on them.

## VII. Presentations / Questions and Answers

DPR Pesticide Presentation

An Attendee mentioned that according to the presentation, once a pesticide was proven to be a health risk, DPR was given 2 years to implement measures to reduce the risks, and she asked why it would take 2 years.

The Speaker explained this was due to the fact that it has to follow a formal regulatory process. He mentioned there are several procedures that are set by the office of administrative law that have to be followed. However, he also mentioned that it does not necessarily have to take that long. Depending on the type of action to be taken, it can be done within a few weeks, but it could also take up to 2 years.

John Hernandez asked if the California Tracking website gets their information on pesticide use from DPR.

The Speaker said it does. He also mentioned there are a few other websites that give information on pesticide use such as the Department of Public Health, but even though they provide information obtained from DPR, they use information that is some years behind.

John Hernandez asked if there are any known pesticides banned in the US that are currently being used in Mexico in a close proximity with the US border, which could drift to the US.

The Speaker explained that there is no way to actually know what is currently being used in Mexico since they do not have access to their information.

John Hernandez asked if they hire additional staff when they do seasonal monitoring.

The Speaker said it all depends on the study. He explained that the study he mentioned on his presentation was under the California Budget Act of 2016. He added that for studies conducted by their department they usually contract with the county or they hire their own staff.

Amy Ramos asked the group to write any questions or comments down in order to follow up on them.

Imperial County Agricultural Commissioner Pesticide Presentation

Ray Askins asked if they have any information of the use and impact of chlorpyrifus in the Imperial County.

The Speaker said that chlorpyrifus is currently a hot topic in the news. She also said that on that date, CALEPA had a press release saying their taking action to ban this product in California. She said as far as the impacts to the county that the pesticide should be used according to the label and the site conditions that apply as well as following the special permit conditions for the use of it.

VIII. Agenda Topics for Next Meeting / Time and Location of Meeting

Thomas Brinkerhoff said they would address the community air monitoring plan. He said they hoped to have an updated draft of the plan to review during the next meeting. He also mentioned they will have an interactive map exercise to determine the locations for additional community air monitors, and that they would also have a more detailed budget for the community air monitoring plan to be presented at the next meeting to be held on May 22nd.

IX. Closing Remarks / Adjournment

An Attendee suggested having an open forum type of workshop for the next 2 meetings to be held on June 19th.

Matt Dessert thanked everyone for attending this meeting, and said he will see everybody again on May 22nd at the same venue at 5:30 PM for their next meeting.

Meeting adjourned

Programa Comunitario de Protección Atmosférica Bajo el Auspicio del Proyecto de Ley AB 617
Minuta de la Reunión del Comité Directivo
Centro Comunitario de Educación OCR
El Centro, California
8 de mayo de 2019

Co-presidentes: Luis Olmedo; Mata Deserta

Facilitadores: Amy Ramos; Daniela Flores

I. Asistencia

Matt Dessert, Distrito de Control de Contaminación Atmosférica; Luis Olmedo, Comité Cívico del Valle; Aidé Fulton, corredor de El Centro; Mark Baza, corredor comunitario; Blake Plourd, corredor El Centro/Heber; Mireya Diaz, corredor El Centro; Bob Fischer, integrante suplente; Michael Moore, corredor Heber; Sergio Cabañas, corredor El Centro/Heber; Rosa Guerrero, suplente de Mersedes Martinez, corredor comunitario; John Hernández, corredor comunitario; Mary Salazar, corredor Calexico; Sandra Mendivil, corredor Calexico y suplente de Mireya Diaz

Suplentes: Reyes Romero, Sandra Mendivil;

II. Bienvenida y Comentarios Iniciales

Matt Dessert dio la bienvenida a todos y les informó que la agenda de esta reunión estaba muy nutrida. Así mismo, reconoció y agradeció a su nueva facilitadora Amy Ramos e indico que continuarían con los puntos en la agenda después de escuchar los comentarios iniciales de Luis Olmedo.

Luis Olmedo también dio la bienvenida a todos los asistentes así como a la nueva facilitadora Amy Ramos. Mencionó haber estado en Sacramento y haber notado que existe un buen impulse en lo que se refiere a temas fronterizos en términos de economía e inversión. Mencionó que esto también se veía reflejado en la manera en que el Tratado de Libre Comercio beneficiaba a sus comunidades.

Amy Ramos se presentó a sí misma y a su compañera Daniela Flores como facilitadoras para estas reuniones y dio algunas instrucciones en cuanto a cómo se conduciría la reunión.

III. Periodo de Comentario Público

Aidé Fulton mencionó que el Día Internacional del Asma se estaría celebrando a lo largo del mes de mayo y les pidió a todos mencionar los esfuerzos de AB 617 si algún medio de comunicación los abordaba con preguntas sobre temas de calidad del aire.

Blake Plourd hizo un par de comentarios sobre el inventario de emisiones y las atribuciones de las fuentes que se presentaron en la reunión anterior. Dijo que le pareció haber notado cierto sesgo en los datos que se presentaron.

Mary Salazar dijo estar de acuerdo con Blake Plourd. También comento que había habido algunas noticias sobre el fallecimiento de algunas personas debido a problemas respiratorios ocasionados por la contaminación en México. Dijo que esto era preocupante ya que México y EE.UU. comparten la misma cuenca atmosférica; añadió que le parecía extraño que este tipo de noticias no se difundieran en EE.UU.

Seguimiento al Dialogo sobre el Inventario de Emisiones y la Atribución de sus Fuentes; Tom Olson y Victoria de CARB

Tom Olson hizo algunos comentarios sobre lo que comento Blake Plourd con respecto a los datos en el inventario. Explico que los datos de PM que se presentaron correspondían al plan de implementación estatal del 2012 y años previos. Sin embargo, indicó que se lleva a cabo un esfuerzo continuo de monitoreo de la ubicación en cuestión. Añadió que es difícil tomar ubicaciones específicas de datos de PM para después cartografiar la fuente de impacto para esa ubicación en particular ya que generalmente se puede apreciar desplazamiento de las emisiones.

Victoria añadió que se encuentran bajo el proceso de verificar los datos para asegurarse de que las cifras sean precisas. También dijo que les gustaría tener la oportunidad de presentarles el inventario final más adelante ya que lo que les habían presentado eran cifras en borrador. Concluyo diciendo que contarían con una actualización en alguna fecha posterior.

Matt Dessert comento que las presentaciones que se pretenda presentar en estas reuniones deben ser enviadas con mayor antelación para contar con más tiempo para revisarlas y de este modo asegurarse de que sean presentadas de una manera entendible y precisa.

Victoria explicó que las cifras de su inventario se obtenían de diferentes fuentes. Indicó que si se trataba de una fuente fija, colaboraban con el Distrito para obtener los permisos, después observaban los niveles de actividad para el 2017 y hacían los cálculos respectivos. Para fuentes de área, dijo haber trabajado con su equipo de modelación habiendo podido proyectar emisiones para 2017. Para datos de vehículos de carretera y todo terreno se tomaron en cuenta las millas recorridas del vehículo, luego se asignaron a las vialidades para obtener las cifras finales. Señaló que todo su trabajo aún se encuentra en fase de borrador y que se encontraban bajo el proceso de verificar sus datos. Informó que esperaban poder presentarles cifras finales para la siguiente reunión.

Tom Olson explicó que aún no sabían si los monitores de la red de monitoreo IVAN serían colocados con los monitores de APCD o CARB ya que se trataba de un tema para dialogar con el Distrito.

Matt Dessert añadió que este tema se estaba abordando entre el Comité Cívico del Valle y el Distrito de Control de Contaminación Atmosférica no solo en el caso de estos monitores, sino también con respecto a actividades adicionales en colaboración con el estado de California.

Tom Olson explicó que la red de monitoreo IVAN es una red de monitoreo en tiempo real mientras que el equipo de CARB y APCD se encuentra bajo un horario de 6 días para tener tiempo de hacer la recolección del muestreo, trasladarlo al laboratorio para ser analizado y procesar los resultados. Dijo además que estos monitores recolectan mayor información que solo conteo de PM 2.5 o PM 10 que es un conteo que sí se puede realizar en tiempo real.

John Sample preguntó cuándo iban a comenzar a hablar sobre soluciones y sobre plantar árboles para crear oxígeno. Mencionó que el presidente de México había acordado plantar un millón de árboles durante su administración y dijo que le gustaría ver que se plantaran cien mil de ellos a lo largo de la frontera para prevenir el la entrada de su smog a los Estados Unidos.

Ray Askins mencionó que existen organizaciones que cuentan con la riqueza y el poder humano para plantar árboles y crear programas en los que la gente pueda participar sistemáticamente y plante árboles. También mencionó que el crecía árboles en su patio trasero y que regalaba mil árboles al año.

Aidé Fulton mencionó que el Departamento de Parques y Recreación estaba plantando más de 500 árboles en el condado de Imperial por lo que era claro que ya se estaban llevando a cabo algunos esfuerzos. También mencionó

que era importante saber qué clase de árboles se estaban plantando ya que algunos tipos de árboles pueden producir alergias.

Amy Ramos preguntó sobre el proceso para conformar el grupo técnico asesor del que se habló en la reunión anterior.

Matt Dessert dijo que él y Luis Olmedo habían hablado sobre ponerse en contacto con 4 integrantes del comité para este propósito y que a su vez, sus suplentes fungirían como suplentes de este comité asesor.

Luis Olmedo mencionó que a través de este comité cubrirían la necesidad de contar con un mayor número de reuniones para poder cumplir con los plazos establecidos, así como con la de contar con la ayuda para tratar los aspectos técnicos que se tienen que abordar.

IV. Aprobación de la Minuta de la Reunión Anterior

Sergio Cabañas hizo una moción para que se aprobara la minuta y la moción fue secundada por Mike Baza. Después de haberse solicitado algunas correcciones y habiendo tomado nota de ellas, se les solicitó a los integrantes del comité votar para la aprobación de la minuta del 10 de abril con las correcciones antes observadas y la minuta se aprobó de manera unánime.

V. Temas Informativos

Estipendio para los Integrantes Principales y Suplentes del Comité

Matt Dessert informó que habían tenido éxito en que sus estatutos fueran aprobados por la Junta de Supervisores y que con esto, existe también un estipendio autorizado para que cada integrante y su suplente sean remunerados por su participación en estas reuniones. Dijo que aún tenían trabajo administrativo que hacer, principalmente llenar formatos de impuestos tales como el formato W-9 y algunos otros formatos.

Thomas Brinkerhoff del Distrito de Control de Contaminación Atmosférica dijo para aquellos que fueran a aceptar este estipendio, que debían llenar y presentar el formato de impuestos W-9 lo más pronto posible. Así mismo, solicitó a aquellos que no fueran a aceptarlo, que por favor se los hicieran saber para contar con esa información en su registro.

Estructura y Ubicación de los Monitores Atmosféricos Comunitarios; Comité Cívico del Valle

Se presentó un mapa con la estructura y ubicación de los monitores atmosféricos comunitarios por un integrante del Comité Cívico del Valle.

Ray Askins preguntó qué tipo de monitores estaban utilizando

El Integrante de CCV dijo que estaban utilizando monitores Dylos, exactamente como el que él tiene instalado en su casa.

Amy Ramos dijo que si tenían preguntas o comentarios que hacer con respecto a este tema, por favor las anotaran en los post its que se les había entregado para ese propósito y que se recolectarían para darles seguimiento

Matt Dessert mencionó que suplan era ubicar estos monitores a lo largo de la frontera para mejorar su base de datos. Explicó que a pesar de que estos monitores no eran normativos, llenaban las brechas para poder determinar de una mejor manera lo que está sucediendo en las áreas periféricas alejadas de los monitores normativos

Blake Plourd preguntó cuál era la fuente de financiamiento que se proponía para la colocación de estos monitores adicionales.

Matt Dessert indicó que la fuente de financiamiento serían los fondos de AB 617.

Blake Plourd preguntó cómo se administrarían esos fondos, quien estaría a cargo de instalar los medidores y si esto era algo en lo que el comité tendría voto.

Matt Dessert dijo que este comité participaría en el diseño, el presupuesto y en la configuración de todo. Señaló que el Distrito Atmosférico contaba con la autonomía para tomar estas decisiones, pero que estaban comprometidos con su alianza con el grupo de justicia ambiental Comité Cívico del Valle y que los fondos para pagar por estos monitores adicionales proviene del estado de California y en este momento, del área de AB 617 a través del proceso de presupuesto de este comité.

Luis Olmedo dijo en este sentido y en lo que se refiere al presupuesto, que el Distrito Atmosférico había presentado un presupuesto por 4 millones de dólares, pero que la Junta de Recursos Atmosféricos había solicitado más detalle al respecto. Añadió que nadie tiene la certeza de cuál sería el costo para llevar a cabo este proyecto y que todos estaban aprendiendo mediante el proceso. Sin embargo, mencionó que al revisar cifras reales para el desarrollo e implementación de este programa habían observado que ya se encontraban cortos de presupuesto. Mencionó además que esta era el motivo por el cuál debían continuar en comunicación con la Junta de Recursos Atmosféricos.

Mark Baza dijo que sabía que todos apoyaban la idea de contar con monitores a lo largo de la frontera, pero que quería señalar que cualquier área dentro de 60 pies de amortiguamiento de la frontera está bajo la jurisdicción de la Comisión Internacional de Límites de Agua, lo cual representa un reto.

Matt Dessert dijo que estaban perfectamente al tanto de eso y que ya se había considerado ese tema.

Actualización del Plan de Monitoreo Atmosférico Comunitario

Matt Dessert presentó un ciclo presupuestal de 2 años para los 2 millones de dólares ante el Comité Directivo Comunitario. Explicó que se trataba de un borrador para su revisión y que lo abordarían de nuevo en la siguiente reunión, una vez que todos hubieran tenido oportunidad de revisarlo.

John Hernández preguntó si contaban con un estimado del costo de instalación y mantenimiento de un monitor comunitario durante 2 años.

Matt Dessert dijo que contarían con un desglose más detallado en la medida en que se acercaran a la sección de monitoreo

Actualización del Programa Comunitario de Reducción de Emisiones

Matt Dessert explicó que este comité está a cargo de administrar este presupuesto de 2 millones de dólares para llevar a cabo proyectos. También mencionó que ya se les había otorgado tentativamente otros 8 millones de dólares adicionales para proyectos una vez que concluyan el ciclo actual de 2 años para organizarse. Dijo además que estaban intentando adelantarse a estos proyectos como estrategia para que el estado de California, así como otras dependencias que están observando este proceso vea que son capaces de administrar fondos de manera inteligente y precisa. Habiendo dicho esto, presentó los proyectos de beneficio a la comunidad:

Política de Quema Agrícola #234 & Proyecto del Distrito Escolar Unificado de California para Pavimentación de Estacionamiento – Reducción de Emisiones Estimadas

Matt Dessert describió los proyectos y mencionó que ya contaban con el dinero para llevarlos a cabo. También informó que después de haber sostenido un diálogo al respecto con Luis Olmedo, habían estado de acuerdo en solicitar ante el comité el apalancamiento del dinero del Distrito de Control de Contaminación Atmosférica y el futuro fondo de 8 millones de dólares de AB 617 para llevar a cabo estos proyectos. Explicó que se trataba de una actividad de subsidio y de supervisión y que mientras más se puedan aliar con otras dependencias y más puedan apalancar su dinero, mejores resultados de desempeño obtendrán. Dijo que se trataba de que el Distrito de Control de Contaminación Atmosférica se encargara del pago de este proyecto de ser aprobado por la Junta de Supervisores y que el Comité de AB 617 le reembolse la mitad del costo cuando reciba el fondo de los 8 millones de dólares. Dijo que lo que se les estaba presentando en ese momento era un borrador y que tendrían la oportunidad de abordar ambos proyectos con mayor detalle en la siguiente reunión.

VI. Temas por Resolver

Asignar Número de Talleres Públicos AB 617 para el 19 de junio de 2019

Thomas Brinkerhoff solicitó sus opiniones y sugerencias en cuanto a sostener una o dos sesiones de talleres públicos el 19 de junio y sus horarios. Informó que las instalaciones en las que se encontraban estarían disponibles todo el día en esa fecha. Como parte de este taller, explicó que contarían con distintas mesas de diálogo en temas que se han venido abordando a lo largo de estas reuniones hasta el 8 de mayo y que se contaría con la presencia de representantes del Comité Cívico del Valle, la Junta de Recursos Atmosféricos, y el Distrito de Control de Contaminación Atmosférica.

Mark Baza sugirió tener uno de los talleres en el horario habitual de 5:30 a 7:30 PM y otro temprano por la tarde.

Blake Plourd sugirió tener solo una reunión para limitar los gastos y hacer mejor uso de los fondos con los que cuentan.

Bob Fischer dijo estar de acuerdo con Blake Plourd, y sugirió llevar a cabo más difusión comunitaria a través de los medios locales para crear conciencia y contar con mayor participación en este proceso público. Añadió que debían considerar la manera de difundir su mensaje dentro de la comunidad de adultos mayores que no son tan hábiles en el uso de redes sociales e internet.

Gil Rebollar mencionó contar con una buena relación con los periódicos locales y que sí se les informa sobre el trabajo y los esfuerzos realizados a través del Programa de Protección Atmosférica Comunitaria AB 617 y por este comité. También mencionó tener contactos dentro de la dependencia local al servicio de las personas de la tercera edad e indicó que también se les comparte información al respecto. Sin embargo, mencionó que siempre estaba en la mejor disposición de recibir sugerencias en cuanto a mejorar esta difusión.

Mireya Diaz preguntó si ambas reuniones abordarían exactamente los mismos temas en diferentes horarios y de ser así, dijo que sería buena idea sostener una más temprano para tener acercamiento con gente más joven como es el caso de los estudiantes y también amas de casa.

Matt Dessert dijo estar de acuerdo con ella y sugirió tener una reunión de 3:30 a 5:30 PM y otra de 5:30 a 7:30 PM.

Amy Ramos llamó a votación en este tema. La Mayoría votó a favor de tener 2 reuniones el 19 de junio y se les indicó que se les informaría sobre la logística, horario y ubicación específicas una vez que se hubiera tomado una decisión al respecto.

VII. Presentaciones / Preguntas y Respuestas

Presentación sobre Plaguicidas por parte de DPR

Un Asistente mencionó que de acuerdo a la presentación, una vez que un plaguicida se clasifica como de riesgo a la salud, DPR cuenta con 2 años para implementar medidas que reduzcan ese riesgo y preguntó por qué tomaría tanto tiempo.

El Ponente explicó que esto se debía a que debían seguir un proceso normativo formal. Mencionó que existían distintos procedimientos establecidos por la oficina de derecho administrativo que se deben seguir. Sin embargo, también dijo que no tiene que tomar tanto tiempo necesariamente y que dependiendo de la acción que se vaya a tomar, el proceso podía tomar tan solo algunas semanas o demorarse hasta 2 años.

John Hernández preguntó si el portal en internet de California Tracking obtenía su información sobre uso de plaguicidas de DPR.

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El Ponente indicó que así es. También mencionó que existen algunos otros portales de internet que brindan el mismo tipo de información y que también obtienen su información de DPR, pero que es información de algunos años atrás.

John Hernández preguntó si se conocía de algún plaguicida que estuviera prohibido en los Estados Unidos que estuviere siendo utilizado actualmente en México en una proximidad cercana a la frontera con Estados Unidos que pudiera desviarse hacia Estados Unidos.

El Ponente dijo que al no contar con acceso a la información en México, no tenían manera alguna de saberlo.

John Hernández preguntó si contrataban personal adicional cuando llevaban a cabo monitoreo estacional.

El Ponente dijo que dependía del estudio que se llevara a cabo y explicó que el estudio mencionado en su presentación había sido auspiciado por el Decreto de Presupuesto de California de 2016. Añadió que cuando se conducen estudios en su departamento, normalmente hacen contrataciones con el condado o contratan a su propio personal.

Amy Ramos solicitó al grupo anotar sus preguntas o comentarios para que se les diera seguimiento más adelante.

Presentación sobre Plaguicidas por parte del Comisionado de Agricultura del Condado Imperial

Ray Askins preguntó si contaban con alguna información sobre el uso e impacto de clorpirifós en el condado Imperial

La Ponente dijo que el clorpirifós es un tema candente en la actualidad y que CALEPA en esa misma fecha había anunciado en un comunicado de prensa que tomarían las acciones necesarias para prohibir este producto en California. Dijo que en cuanto al impacto en el condado de Imperial que este plaguicida debe ser utilizado exclusivamente de acuerdo a la etiqueta y a las condiciones del sitio que apliquen y deben seguir las condiciones para su uso.

VIII. Temas para la Siguiente Reunión / Ubicación y Horario de la Reunión

Thomas Brinkerhoff dijo que en la siguiente reunión abordarían el plan de monitoreo atmosférico comunitario. Dijo que esperaba poder contar con un borrador actualizado del plan para revisarlo durante la siguiente reunión. También mencionó que llevarían a cabo un ejercicio interactivo de cartografía para determinar la ubicación de los monitores atmosféricos adicionales y que también presentarían un presupuesto más detallado para el plan de monitoreo atmosférico comunitario

IX. Comentarios Finales / Cierre

Un Asistente sugirió contar con un foro abierto para las reuniones a celebrarse el 19 de junio.

Matt Dessert agradeció a todos por su asistencia a la reunión y dijo esperar verlos de nuevo el 22 de mayo en la misma sede a las 5:30 PM para su siguiente reunión.

Se levanta la sesión

# ATTACHMENT:

# May 22, 2019 Minutes

A B 617 Community Air Protection Program
Minutes of the Steering Committee Meeting
ECRM Community Education Center
El Centro, California
May 22nd, 2019

Co-chairs: Matt Dessert; Luis Olmedo

Facilitator: Amy Ramos

I. Attendance:

Matt Dessert, Imperial County Air Pollution Control District; Virginia Mendoza, Imperial County Transportation Commission; Sergio Cabañas, El Centro/Heber Corridor; Michael Moore, El Centro/Heber Corridor; Diahna Garcia Ruiz, Heber Community Corridor; Kristian Salgado, City of Calexico resident; John Hernandez, Community Corridor; Rene Felix, Calexico Corridor; Mary Salazar, Calexico Corridor; Mersedes Martínez, El Centro/Calexico Corridor; Jose Luis Celaya, Heber Corridor; Mireya Diaz, El Centro Corridor

II. Welcome and Opening Remarks

Luis Olmedo said they had the minimum of 8 members to establish a quorum and asked for a motion to commence the meeting.

Sergio Cabañas made a motion to commence the meeting, Kristian Salgado seconded the motion and they proceeded with the meeting.

Luis Olmedo welcomed everyone and reminded the group to use the name tents to indicate they have a comment by standing them to the side, and bringing them down once their question or comment has been addressed.

Amy Ramos welcomed and thanked everyone for taking time from their agendas to attend the meeting. She said this would be a meeting on which they would be discussing many things that are relevant to where to their communities. Therefore, she asked for everyone to attend to the topics at hand and really be present at this meeting. She indicated that they had a packed agenda and said they were trying to get through as much as they can in order to be responsive to what the community needs. She pointed out the materials given in their package for the meeting and gave some references and instructions with regards to it. She also mentioned that the meeting was being streamed live on Face Book by other communities and asked if they were ok with that and to show their consent by showing hands. Since the majority showed hands the life streaming went on.

III. Public Comment Period

Ray Askins said it would be a good idea to also post this meeting at Mexiccalilimpia.org

Luis Olmedo mentioned they did not have minutes to present from the May 8th meeting as they were going to present those minutes as well as today's at the next meeting to be held on June 12th.

IV. Action Items

No action items were presented or addressed at this meeting.

V. Presentations / Questions and Answers

Draft Community Air Monitoring Plan; Emily Weissenberg, Ramboll

Sergio Cabañas asked because of the recommendation of regulatory monitors be used, if this is something that they are going to consider in the first phase of this process or if it is something to be addressed on the second phase.

Emily Weissenberg said that because they are already up and running and they have the data available to them, they can actually incorporate it on the go. She added there is no additional monitory cost involve in that so it really is a matter of pulling the data and looking at it with a critical eye.

An Attendee said she would like to know if they were going to be able to get historical air quality data.

Emily Weissenberg said it would depend on where the data is coming from. She added that for the regulatory monitors, the EPA makes that historical data readily available. As for the community monitors, she said that might not be the case at this time. However, she also mentioned she would be talking about a platform the Air Resources Board is working on, and that might be a feature of it.

Luis Olmedo said they collect and have that data and that it can be made available upon request.

Ray Askins made the observation that the regulatory monitor said to be in Calexico in her presentation is actually in Mexicali at COBACH.

Emily Weissenberg apologized and said she had meant Mexicali.

Ray Askins said there should be more air monitors placed along the Mexican border since the vehicles idling at the line waiting to get across are a major source of air pollution for the Imperial and Mexicali Valleys.

Kristian Salgado said as far as defining monitoring objectives, if they should also consider measuring for other pollutants such as nitrogen oxide (NOx) or volatile organic compounds.

An Attendee asked if they have enough staff to monitor each one of the proposed new monitoring sites. She also asked if these community monitors are actually going to be producing data that is going to benefit the community and if this plan would actually be cost effective.

Luis Olmedo said that this plan in his opinion has been indeed cost effective and that as they move forward they would all be able to see that through the results they get from it.

Matt Dessert said they count with enough budget, manpower and value to move forward with this air monitoring plan.

Amy Ramos reminded the committee members that elements 12, 13 and 14 of this plan due specify developing a process for evaluating effectiveness and that those are going to be things that get defined by the committee.

An Attendee asked if using the Dylos sensors was a decision still to be made.

Emily Weissenberg said Dylos is the model they are proposing for now, but that obviously the steering committee feedback would be important to make a final decision.

Kristian Salgado asked once they receive the information based on the particulate matter, how it is going to be translated in and understandable way to the community as far as the sources as well as the kinds of pollution impacting the community.

Emily Weissenberg said one of the things she was alluding to and has been discussed at these meetings is speciation monitoring or source attribution and so maybe getting more information on that matter might be useful information.

Luis Olmedo stated that what is important is that these 14 elements that form a part of this plan are applicable to any kind of monitoring that is low cost sensor technology.

Interactive Monitoring Mapping Activity; Christian Torres, CCV

An interactive monitoring mapping activity took place in order to follow up on the suggested monitoring sites and the CSC's suggestions.

Virginia Mendoza said with regards to the border area that the configuration and the cues were going to be changed on the Mexicali side soon and they should take that into consideration.

Diahna Garcia asked if all the monitors are going to be the same height.

Christian Torres said they have to comply with siting criteria, that one of the first siting criteria is that they have to be at certain height off the ground, and that their monitors are all different heights. He also mentioned that some of them are located at a first story roof on houses or schools, and some of them are on second or third story roofs, and that the height a monitor is placed at also depends on the siting criteria for each specific site. He added that they also have to make sure the monitors have a safe access to them, and that safety considerations are included in the document given to them to review last week.

Diahna Garcia asked if there is a possibility of having monitors are a ground level in order to obtain more accurate emissions data.

Christian Torres explained that the main factor that would impact the quality of the data is the radius distance from the source of emissions, and not the height.

Thomas Brinkerhoff added that these community monitors have to follow certain parameters and characteristics along with proven standards that work with those low cost community sensors in order to get accurate data. However, he said there are other avenues that they could also explore and that was part of what they were doing at the moment through this exercise, and all feedback from the steering committee, community members and the public was welcome.

Matt Dessert mentioned that mobile monitoring at a ground level is something they are interested in, and that they should fully address that in their siting criteria in the monitoring plan, and those comments should be echoed in the minutes in order to follow up and act out on that. He also mentioned that all comments made at these meetings are taken into consideration. He added that they have to look at toxics in and around the New River for the city of Calexico.

An Attendee said that looking at the consensus of this committee of the concentration of monitors in Calexico, she is depending on the 2 agencies heading this committee to provide that technical data in order to make sure she is making an informed decision.

Christian Torres said it is smart to monitor near the border because everyone has given input that the border is one of their main concerns in the Calexico community and it is a good way to track the change and see what the results of their emissions reduction program are. He also mentioned that if they can show improvement through this program, they will be able to ask for more funding and will become the leaders in the state out of the first 10 communities selected for this program.

Rene Felix said he did not understand why the Calexico East Port of Entry had not been considered within the corridor since it is his understanding that the land around it belongs to the County and its vehicle burden of heavy trucks per day is very high. He added that in his opinion it was very important to be able to monitor that area because there are also wind currents from east to west, which definitely transport vehicle emissions from that port of entry. Thus, he asked for this port of entry to be included as a monitoring site for this project.

Luis Olmedo thanked Rene Felix for his comment and mentioned that this had been an annual process of submitting nominations. He said that what he is asking for could be addressed through a new nomination, which he added is actively open at this time, and that if he is not mistaken, the Air Districts have until June 30th to submit their next nomination to the state. Therefore, he said his comment would be taken into consideration for this purpose.

Amy Ramos asked Christian Torres to present the rest of the slides showing the proposed locations for the monitors, and that in the interest of time, a vote on this matter would be take place at their next meeting, once the members had had the chance to take this information with them and review it at their own time.

Luis Olmedo mentioned that all of the information provided at these meetings can be found at the Air Resources Board website as well as at the website that the Imperial County has put together for this specific program.

Amy Ramos asked everyone to continue submitting their comments and questions using the *post it papers* provided to them for this purpose as they are developing a Frequent Asked Questions document through which answers will be provided at the next meeting.

Mireya Diaz suggested having an interactive map available online as it would be very helpful for her.

John Sample asked if they were going to be able to monitor air quality conditions after natural disasters such as forest fires.

Matt Dessert explained that this expanded network should add more integrity to that type of disaster scenario.

Kristian Salgado mentioned she had come across some information that had led her to believe that the Senate had not made the AB 617 budget a priority and asked if anyone could expand on that matter as well as to point out a way for them to support making this budget a priority.

Luis Olmedo said it was their due diligence to consider how to respond to that. He also explained that those negotiations on the budget were still happening and it would be their best interest that funding will continue to be there.

Matt Dessert added that they could come up with a letter of support and have it signed by this steering committee.

## VI. Agency Updates

Christian Torres informed that as part of their packet for this meeting, they had included a draft table of strategies for emissions reduction in the bay area for them to review and use as reference as the types of strategies that they can start working on through this committee.

Gil Rebollar from Air Pollution Control District asked members who had not done so to turn in their completed survey on mobile and stationary sources given out several meetings ago. He also asked those who needed to submit their W9 Forms to also do so as soon as possible. He said they could give them to Belen, Thomas or Matt.

Ryan Atencio from CARB said that the Air Grants Program guidelines were out at the time of the meeting so he had brought some draft copies in English and Spanish for whoever would be interested on checking them out.

## VII. Agenda Topics for Next Meeting

Matt Dessert mentioned they would address their budget again at the next meeting. He also said they were going to be answering their questions submitted on paper to Amy Ramos.

Amy Ramos reminded the group that as a committee they were going to arrive at a consensus as to where they want to place those monitors.

Luis Olmedo mentioned they were going to have 2 interactive workshop like community meetings on June 19th.

## VIII. Closing Remarks / Adjournment

Luis Olmedo asked for a motion to adjourn the meeting.

Aide Fulton made the motion to adjourn the meeting, and it was seconded by Mary Salazar.

Meeting Adjourned.

Programa Comunitario de Protección Atmosférica Bajo el Auspicio del Proyecto de Ley AB 617
Minuta de la Reunión del Comité Directivo
Centro Comunitario de Educación OCR
El Centro, California
22 de mayo de 2019

Co-presidentes: Matt Dessert; Luis Olmedo

Facilitador: Amy Ramos

I. Asistencia:

Matt Dessert, Distrito de Control de Contaminación Atmosférica del Condado Imperial; Virginia Mendoza, Comisión de Transporte del Condado Imperial; Sergio Cabañas, Corredor El Centro/Heber; Michael Moore, Corredor El Centro/Heber; Diahna Garcia Ruiz, Corredor Heber; Kristian Salgado, residente de Calexico; John Hernández, Corredor Comunitario; Rene Félix, Corredor de Calexico; Mary Salazar, Corredor de Calexico; Mersedes Martínez, Corredor de El Centro/Calexico; José Luis Celaya, Corredor Heber; Mireya Diaz, Corredor de El Centro

II. Bienvenida y Comentarios Iniciales

Luis Olmedo dijo que contaban el mínimo requerido de 8 integrantes para establecer quorum y solicitó se hiciera una moción para comenzar la reunión.

Sergio Cabañas hizo la moción para comenzar la reunión. Kristian Salgado secundó la moción y se procedió con la reunión.

Luis Olmedo dio la bienvenida a todos y les record utilizar el letrero con su nombre para indicar querer hacer una pregunta o comentario poniéndolo de manera vertical y regresarlo a manera horizontal una vez su pregunta o comentario hubiera sido abordado.

Amy Ramos les dio la bienvenida a todos y les agradeció el haber dispuesto tiempo de sus valiosas agendas a acudir a esta reunión. Dijo que durante esta sesión se discutirían temas relevantes para sus comunidades y les solicitó se acotaran a los temas a tratar así como su total atención durante la reunión. Mencionó también contar con una agenda muy llena y que iban a tratar de abordar tanto como pudieran para responder a las necesidades de la comunidad. Señaló el paquete de materiales para esta reunión y dio algunas instrucciones con respecto al mismo. También mencionó que se tenía la intención de transmitir la reunión en vivo a través de Face Book por lo que solicitaba mostraran su consentimiento para hacerlo, levantando sus manos. Una vez hecho esto, se comenzó con la transmisión en vivo.

III. Periodo de Comentario Público

Ray Askins dijo que sería Buena idea publicar la reunión en Mexicalilimpia.org

Luis Olmedo mencionó no contar con la minuta de la reunión anterior para su revisión en este momento ya que la revisión de las minutas de las 2 reuniones del mes de mayo se llevarían cabo durante su siguiente reunión a celebrarse el 12 de junio.

IV. Temas por Resolver

No se presentó ningún tema por resolver durante esta reunión.

V. Presentaciones / Preguntas y Respuestas

Borrador del Plan Comunitario de Monitoreo Atmosférico; Emily Weissenberg, Ramboll

Sergio Cabañas preguntó dada la recomendación de que se utilicen monitores normados, si esto es algo que se vaya a considerar durante la primera fase de este proceso o si se consideraría durante la segunda fase del mismo.

Emily Weissenberg dijo que al ya estar en funcionamiento y tener esos datos disponibles, esto es algo que pueden incorporar de inmediato. Añadió que no representa un costo adicional por lo que solo es cuestión de extraer los datos y revisarlos con ojo crítico.

Una Asistente dijo que le gustaría saber si cabría la posibilidad de contar con datos históricos de calidad del aire.

Emily Weissenberg dijo que eso dependería de la fuente de los datos. Además dijo que en lo que se refiere a los monitores normativos, la EPA ofrece esos datos de manera expedita. En cuanto a los monitores comunitarios, dijo no ser ese el caso en estos momentos. Sin embargo, mencionó que existe una plataforma en la que la Junta de Recursos Atmosféricos está trabajando y que posiblemente esa sea una de sus funciones

Luis Olmedo dijo que ellos recolectaban esos datos y que se les podían proporcionar mediante su solicitud.

Ray Askins hizo la observación de que el monitor normativo que se dijo estaba ubicado en Calexico durante la presentación de hecho, se encuentra ubicado en el COBACH de Mexicali.

Emily Weissenberg se disculpó y dijo que en efecto, había querido decir Mexicali.

Ray Askins sugirió se ubicaran más monitores en la frontera con México ya que los vehículos que esperan en marcha lenta para cruzar son una importante fuente de contaminación atmosférica tanto para el Valle de Mexicali como para el Valle de Imperial.

Kristian Salgado preguntó en lo que se refiere a definir los objetivos del monitoreo, si deberían considerar poder medir otros contaminantes tales como el óxido de nitrógeno (NOx) o compuestos orgánicos volátiles.

Un Asistente preguntó si contaban con suficiente personal para monitorear cada uno de los nuevos sitios de monitoreo sugeridos. También preguntó si estos monitores comunitarios van a producir datos de beneficio para sus comunidades y si este plan sería rentable.

Luis Olmedo dijo que en su opinión, este plan ha sido rentable y que en la medida en que vayan avanzando se podrán dar cuenta de ello a través de los resultados del mismo.

Matt Dessert dijo que contaban con suficiente presupuesto y personal para avanzar con este plan de monitoreo atmosférico.

Amy Ramos le record al comité que los elementos 12, 13 y 14 de este plan especifican el desarrollo de un proceso de evaluación de la eficacia del mismo y que este proceso se definiría a través de este comité.

Un Asistente preguntó si la utilización de sensores *Dylos* era aún una decisión por definir.

Emily Weissenberg dijo que *Dylos* es por el momento, el modelo que están proponiendo, pero que obviamente la retroalimentación por parte de los integrantes del comité es de vital importancia para tomar la decisión final.

Kristian Salgado preguntó una vez que reciban la información en cuanto a material particulado, como se iba a interpretar de una manera entendible para la comunidad en lo que se refiere a las fuentes y al tipo de contaminación de impacto a la comunidad.

Emily Weissenberg dijo que alguno de los temas que se han discutido en estas reuniones ha sido especiación de monitoreo y fuentes de atribución y que probablemente sería de utilidad proporcionar mayor información al respecto.

Luis Olmedo señaló que lo que era realmente importante era que estos 14 elementos que forman parte de este plan son aplicables a cualquier tipo de monitoreo que se lleve a cabo con tecnología de sensores de bajo costo.

Actividad Cartográfica Interactiva Para la Red de Monitoreo; Christian Torres, CCV

Se llevó a cabo una actividad cartográfica interactiva para dar seguimiento a los sitios de monitoreo sugeridos por los integrantes del Comité Directivo Comunitario.

Virginia Mendoza dijo en referencia al área fronteriza, que la configuración de los carriles sería cambiada muy pronto del lado de Mexicali y que esto se debería de tomar en cuenta.

Diahna Garcia preguntó si todos los monitores serían de la misma altura.

Christian Torres dijo que se tenía que cumplir con el criterio de colocación y que uno de los criterios era precisamente que los monitores debían ser colocados a cierta altura del piso y que contaban con monitores a diferentes alturas. Señaló que algunos se encuentran localizados en la azotea de un inmueble de un solo piso, mientras que otros están localizados en azoteas de inmuebles de dos o tres pisos y que la altura a la que se coloca un monitor depende también del criterio de colocación para cada sitio en específico. Añadió que deben cerciorarse también de que el monitor tenga acceso seguro al mismo y que las consideraciones de seguridad a este respecto están incluidas en el documento que se les compartió la semana anterior para que lo revisaran.

Diahna Garcia preguntó si existía la posibilidad de contar con monitores a nivel del piso para contar con datos de emisiones más precisos.

Christian Torres explicó que el principal factor que impacta la precisión de los datos que se obtienen es la distancia radial de la Fuente de emisiones y no la altura.

Thomas Brinkerhoff añadió que estos monitores comunitarios obedecen ciertos parámetros y características junto con estándares que se ha comprobado que funcionan con esos sensores comunitarios de bajo costo para la obtención de datos precisos. Sin embargo, dijo que se podían explorar otras opciones y que precisamente eso era parte de lo que se estaba haciendo a través de este ejercicio y que toda la retroalimentación por parte de los integrantes del comité sería bien recibida.

Matt Dessert mencionó que el monitoreo móvil al nivel del piso es algo que les interesa y que lo abordarán en sus criterios de ubicación dentro del plan de monitoreo y que esos comentarios deberán incluirse en la minuta para darles seguimiento y tomar las medidas pertinentes. Mencionó a su vez que todo comentario hecho en estas reuniones se tomaba en cuenta. Dijo también que tenían que observar sustancias tóxicas dentro y alrededor del Río Nuevo en la ciudad de Calexico.

Una Asistente mencionó que al estar observando el consenso de este comité en cuanto a la concentración de monitores en Calexico, ella dependía de que ambas dependencias a la cabeza de este comité le brindara información técnica para poder tomar una decisión bien informada.

Christian Torres dijo que monitorear la frontera era una decisión inteligente ya que una de sus principales inquietudes es la comunidad de Calexico y además es una buena manera de poder observar el cambio y los resultados obtenidos a través de este programa de reducción de emisiones. También mencionó que si logran demostrar una mejoría a través del mismo, podrían solicitar más fondos y convertirse en líderes en el estado dentro de este grupo de 10 comunidades que se seleccionaron para este programa.

Rene Felix dijo no entender por qué la garita este de Calexico no está considerada en el corredor siendo que hasta donde yo entiendo el terreno a su alrededor pertenece al condado y su carga vehicular de transporte pesado por día es muy alta. Añadió que le parecía muy necesario monitorear esa zona ya que además existen corrientes de viento de este a oeste que definitivamente transportan las emisiones vehiculares de esa garita. Por tal motivo, solicitó que se incluyera como sitio de monitoreo en este proyecto.

Luis Olmedo agradeció a Rene Félix por su comentario y mencionó que este había sido un proceso anual de presentación de nominaciones y que lo que él solicita se podía abordar a través de una nueva nominación y dijo que el periodo de nominaciones estaba precisamente en efecto en estos momentos y que los Distritos Atmosféricos tienen hasta el 30 de junio para presentar sus propuestas para nominaciones al estado. Por lo tanto, dijo que su comentario sería tomado en cuenta para este propósito.

Amy Ramos solicitó a Christian Torres presentara el resto de sus diapositivas mostrando las ubicaciones sugeridas para los monitores y que por cuestiones de tiempo, la votación sobre esto se llevaría a cabo en la siguiente reunión una vez que los integrantes del comité hubieran tenido la oportunidad de llevarse esta información consigo y revisarla

Luis Olmedo mencionó que toda la información que se brinda en estas reuniones se encuentra disponible en el portal de la Junta de Recursos Atmosféricos, así como también en el portal que el Condado de Imperial ha creado para este programa en particular.

Amy Ramos les solicitó a todos que siguieran entregando sus preguntas y comentarios en los papelitos que s habían dispuesto para ese propósito ya que estaban elaborando una hoja de preguntas hechas con frecuencia a través de la cuál sus comentarios y preguntas serían abordadas para la siguiente reunión.

Mireya Diaz sugirió contar con un mapa interactivo en línea ya que para ella sería una herramienta de mucha utilidad.

John Sample preguntó si a través de esta red de monitoreo podrían medir la calidad del aire durante desastres naturales tales como incendios forestales.

Matt Dessert explicó que esta red de expansión debía agregar más integridad en el caso de un escenario de esa naturaleza.

Kristian Salgado mencionó haber encontrado cierta información que le había hecho creer que el Senado no estaba dándole prioridad al presupuesto para el programa AB 617 y preguntó si había manera de brindar apoyo para lograr que este presupuesto se convirtiera en prioridad.

Luis Olmedo dijo que era su debida diligencia considerar la manera de responder en ese sentido. También explicó que las negociaciones en cuanto a ese presupuesto continúan y que resultaría muy benéfico seguir contando con esos fondos.

Matt Dessert añadió que podrían elaborar una carta de apoyo firmada por este comité para ese propósito.

VI. Actualizaciones de las Dependencias

Christian Torres informó que como parte del paquete de información para esta reunión, habían incluido el borrador de una tabla de estrategias para reducción de emisiones en el área de la Bahía para que las utilicen como referencia en cuanto al tipo de estrategias con las que se podría comenzar a trabajar a través de este comité.

Gil Rebollar del Distrito de Control de Contaminación Atmosférica solicitó a los integrantes del comité que aún no entregaban su encuesta sobre fuentes móviles y fijas que la entregaran a la mayor brevedad posible. Así mismo, solicitó que aquellos que debían presentar el formato W-9 también lo hicieran a la mayor brevedad y dijo que podían entregárselos a Belen, Thomas o Matt.

Ryan Atencio de CARB dijo que las directrices para el programa denominado *Air Grants Program* (Programa de Subvenciones Atmosféricas) ya habían sido publicadas y que había traído copias impresas de ellas para aquellos que tuvieran interés de revisarlas.

VII. Temas para la Agenda de la Siguiente Reunión

Matt Dessert mencionó que abordarían el presupuesto de nueva cuenta en la siguiente reunión y también mencionó que estarían respondiendo a las preguntas que le habían entregado en papel a Amy Ramos a lo largo de esta reunión.

Amy Ramos les recordó que tendrían que contar con un consenso en cuanto a la ubicación de los nuevos monitores.

Luis Olmedo mencionó que se llevarían a cabo 2 talleres interactivos comunitarios el día 19 de junio.

VIII. Comentarios Finales / Cierre

Luis Olmedo solicitó una moción para concluir la reunión.

Aidé Fulton hizo la moción para concluir la reunión y esta fue secundada por Mary Salazar.

Se levanta la sesión.

# ATTACHMENT:

# Community Air Monitoring Plan Status Update Presentation

# IMPERIAL COUNTY AB 617
## COMMUNITY AIR MONITORING PLAN
## STATUS UPDATE

Imperial County AB 617 Community Steering Committee Meeting

June 12, 2019

RAMBOLL Bright ideas. Sustainable change.

# COMMUNITY AIR MONITORING PLAN HISTORY AND NEEDS

- Draft of Elements 1-5 presented and discussed at CSC meeting on 2/13/19
- Received comments from CARB on 3/13/19 and incorporated feedback into draft
- Full draft of Community Air Monitoring Plan was shared at CSC meeting on 5/22/19
- There are some outstanding items to be addressed. We will review these items during this meeting.

# COMMUNITY AIR MONITORING PLAN RECAP

- The Community Air Monitoring Plan presents objectives and methodologies for community air monitoring in the El Centro-Heber-Calexico Corridor
- The objectives of the plan are to:
  - Determine the reason for conducting community air monitoring
  - Describe how the community air monitoring will be conducted
  - Identify how data will support action to reduce air pollution within the Community
- The objectives are proposed to be achieved by:
  - Utilizing existing regulatory monitors to track the progress of the Community Emission Reduction Program
  - Expanding the existing community monitoring network

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# COMMUNITY AIR MONITORING PLAN ADDITIONAL ITEMS TO DISCUSS

## Make / Model of Community Monitor to Use

- At 5/22/19 meeting, CSC members indicated that they would be interested in learning more about other types of low-cost sensors.
- Many types of low-cost sensors are being used for community monitoring and air studies (see distributed flyer)
  - Sensors vary in price range from $200 - $3,000
  - Some sensors have the ability to measure gaseous compounds and meteorological conditions, as well as particulate matter in varying size ranges.
- Additional information available at: http://www.aqmd.gov/aq-spec

### Examples


Dylos DC1700

Clarity Node

Purple Air PA-II

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# COMMUNITY AIR MONITORING PLAN
# ADDITIONAL ITEMS TO DISCUSS

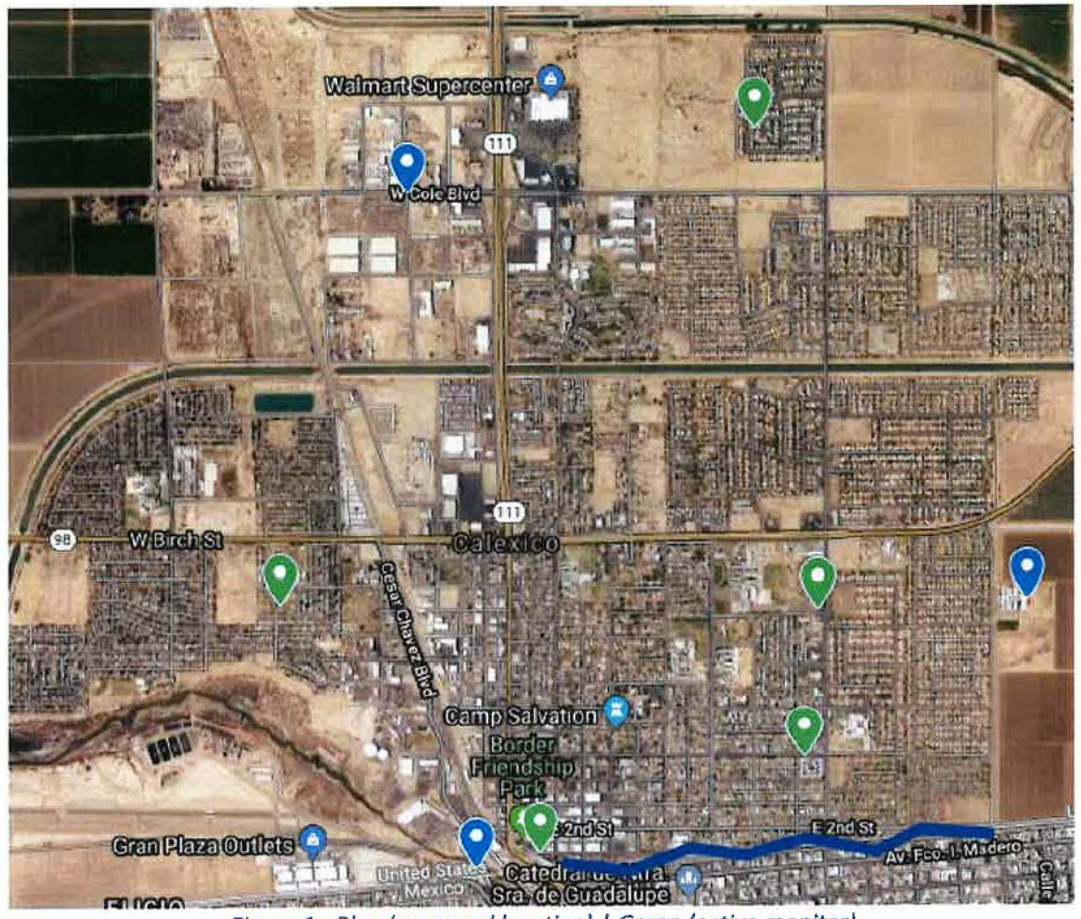


*Figure 1 - Blue (proposed location) | Green (active monitor)*

## Locations of Community Monitors

- Maps with possible locations for new community monitors were provided in 5/8/19 and 5/22/19 agenda packets.
- CSC members provided their feedback at 5/22/19 meeting.
- CCV compiled that information (see distributed maps and table) and will be doing an exercise later to assist the committee in further narrowing down monitoring locations.

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# COMMUNITY AIR MONITORING PLAN ADDITIONAL ITEMS TO DISCUSS

## Complementary Monitoring Options

- Are there addition monitoring methods that the CSC wants to consider?
  - For example, mobile monitoring on a trailer platform could provide regulatory-grade and research-grade data on many different pollutants (VOCs, toxics, etc.). It could be relocated to high-priority areas within the Corridor.
- Additional monitoring could be added to the draft Community Air Monitoring Plan as a broad goal, pending further consideration by the CSC.
- Once the details are worked out, the Community Air Monitoring Plan could be revised.

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# COMMUNITY AIR MONITORING PLAN
# ADDITIONAL ITEMS TO DISCUSS

## Evaluating Effectiveness of Community Monitors

- During the 5/22/19 meeting we discussed the various ways we might go about evaluating the effectiveness of our community monitoring network.
- Does the CSC have input on the following metrics?
  - Within how many months after completion of the monitoring plan should monitors be installed and transmitting data?
    *Current draft says 3 months*
  - After what period of time should the placement of monitors be re-evaluated?
    *Current draft says 1 year*
  - What is the desired monitor up-time rate?
    *60%? 80%?*
  - What is the desired data completeness rate?
    *Regulatory monitors are required to meet a 75% completeness rate; is that what we want?*

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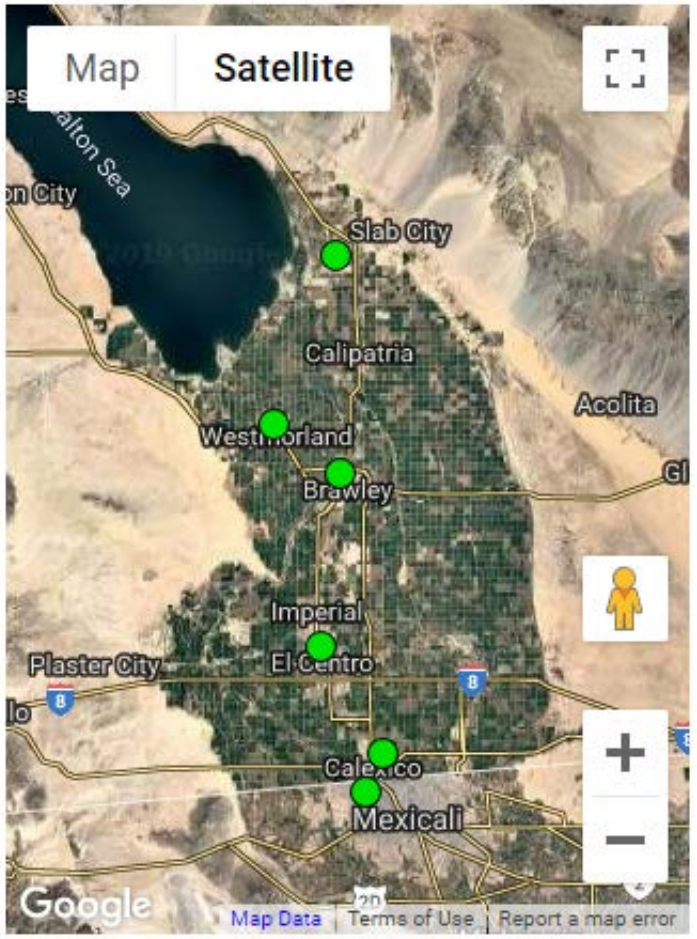
# COMMUNITY AIR MONITORING PLAN ADDITIONAL ITEMS TO DISCUSS

## Communicating Results

- During the 5/22/19 meeting, Ramboll shared various existing data platforms:
  - www.imperialvalleyair.org
  - https://ivan-imperial.org/
  - CARB AQ View (in development)
- Does the CSC have feedback on elements of these platforms that they considered particularly helpful?
- Any elements on the platforms that were not liked?
- Does the CSC have any ideas for a new data sharing platform?

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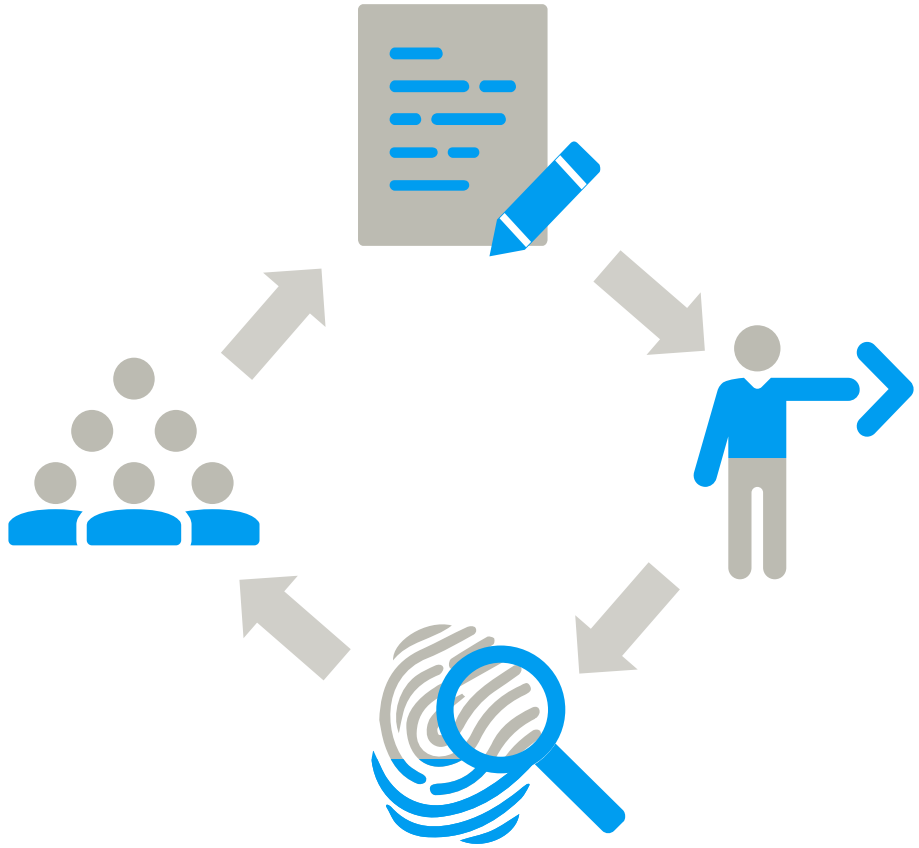
# COMMUNITY AIR MONITORING PLAN WRAP-UP

- The Community Air Monitoring Plan is a continually evolving document, which the CSC can revise at any time.
- We are anticipating additional feedback from CARB, which could lead to further revisions.



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# QUESTIONS?

# ATTACHMENT:

# Example Low-Cost Air Quality Sensors Handout

**Example Low-Cost Air Quality Sensors for Community Monitoring**

| Sensor Image | Make, Model [a] | Est. Cost [a] | Parameters Measured [a] | Field $R^2$ [a],[b] | Lab $R^2$ [a],[b] | Where it is being used or considered | Manufacturer-Sponsored Data Sharing Portal |
|---|---|---|---|---|---|---|---|
|  | Aeroqual AQY | $3,000 | $PM_{2.5}$<br>$NO_2$<br>$O_3$<br>Temperature<br>RH<br>Dewpoint | $PM_{2.5}$: 0.84-0.87 | $PM_{2.5}$: 0.99 | Los Angeles Community Air Monitoring Network Case Study[c] | Not Available |
|  | Alphasense OPC-N2 | $310 | $PM_{1.0}$<br>$PM_{2.5}$<br>$PM_{10}$ | $PM_{1.0}$: 0.63-0.82<br>$PM_{2.5}$: 0.65-0.80<br>$PM_{10}$: 0.45-0.57 | $PM_{1.0}$: 0.99<br>$PM_{2.5}$: 0.99<br>$PM_{10}$: 0.99 | Santa Barbara County APCD Cuyama Valley High School Study[d]<br><br>Arvin Air Quality Study[e] | Not Available |
|  | Clarity Node | $1,300 | $PM_{2.5}$<br>$CO_2$<br>$NO_2$<br>Total VOC<br>Temperature<br>RH | $PM_{2.5}$: 0.73-0.76 | $PM_{2.5}$: 0.99 | Richmond, CA | https://openmap.clarity.io/ |
|  | Dylos DC1700-PM | $300-$475 | $PM_{2.5}$<br>$PM_{10}$ | $PM_{2.5}$: 0.79 [f]<br>$PM_{10}$: 0.78 [f]<br>$PM_{2.5}$: 0.58-0.68 [a]<br>$PM_{10}$: 0.15-0.18 [a] | Not Available | Imperial County, CA (IVAN)<br><br>San Ysidro, CA (IVAN)<br><br>Shafter, CA (IVAN)<br><br>Avenal, CA (IVAN)<br><br>Wilmington, CA (IVAN) | https://ivan-imperial.org/air [g] |

Notes:

[a] Data on cost, pollutants measured, Field $R^2$, and Lab $R^2$ obtained from SCAQMD AQSPEC. Available at: http://www.aqmd.gov/aq-spec/evaluations/summary-pm. Accessed: June 2019

[b] The coefficient of determination ($R^2$) is a statistical parameter measuring the degree of relation between two variables. Here, it measures the linear relationship between the sensor and the Federal Reference Method (FRM), or Federal Equivalent Method (FEM), or Best Available Technology (BAT) reference instrument. An $R^2$ approaching the value of 1 reflects a near perfect correlation, whereas a value of 0 indicates a complete lack of correlation. All $R^2$ values reported are based either on 5-min or 1-hr average data. The Lab $R^2$ values are based on experiments conducted in a chamber, under average ambient conditions (20 degrees C and 40% RH). If a sensor has not demonstrated a good performance in the field, it may not advance to the laboratory chamber test.

[c] Aeroqual. Los Angeles Community Air Monitoring Network Case Study. Available at: https://www.aeroqual.com/case-studies/los-angeles-community-air-monitoring-network. Accessed: June 2019.

[d] Santa Barbara County Air Pollution Control District. Cuyama Field Study. Available at: https://www.ourair.org/wp-content/uploads/2017-01bd-sensors.pdf. Accessed: June 2019

[e] Arvin Air Quality Project. Available at: http://arvinairquality.com/project. Accessed: June 2019

[f] Carvlin GN, Lugo H, Olmedo L, et al. Development and field validation of a community-engaged particulate matter air quality monitoring network in Imperial, California, USA. J Air Waste Manag Assoc. 2017;67(12):1342–1352. doi:10.1080/10962247.2017.1369471.

[g] While not manufacturer-sponsored, the IVAN data platform would be available for new Dylos monitors in the El Centro-Heber-Calexico Corridor.

Acronyms:

APCD – Air Pollution Control District

$CO_2$ – carbon dioxide

IVAN – Identifying Violations Affecting Neighborhoods

$NO_2$ – nitrogen dioxide

$O_3$ - ozone

$PM_{1.0}$ - particulate matter smaller than 1 micron in diameter

$PM_{2.5}$ - particulate matter smaller than 2.5 microns in diameter

$PM_{10}$ - particulate matter smaller than 10 microns in diameter

$R^2$ – coefficient of determination

RH – relative humidity

VOC – volatile organic compounds

# ATTACHMENT:

## Article - Combining Community Engagement & Scientific Approaches in Next-Generation Monitor Siting

International Journal of
*Environmental Research and Public Health*

MDPI

*Article*

# Combining Community Engagement and Scientific Approaches in Next-Generation Monitor Siting: The Case of the Imperial County Community Air Network

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**Abstract:** Air pollution continues to be a global public health threat, and the expanding availability of small, low-cost air sensors has led to increased interest in both personal and crowd-sourced air monitoring. However, to date, few low-cost air monitoring networks have been developed with the scientific rigor or continuity needed to conduct public health surveillance and inform policy. In Imperial County, California, near the U.S./Mexico border, we used a collaborative, community-engaged process to develop a community air monitoring network that attains the scientific rigor required for research, while also achieving community priorities. By engaging community residents in the project design, monitor siting processes, data dissemination, and other key activities, the resulting air monitoring network data are relevant, trusted, understandable, and used by community residents. Integration of spatial analysis and air monitoring best practices into the network development process ensures that the data are reliable and appropriate for use in research activities. This combined approach results in a community air monitoring network that is better able to inform community residents, support research activities, guide public policy, and improve public health. Here we detail the monitor siting process and outline the advantages and challenges of this approach.

**Keywords:** air monitors; community air monitoring; sensors; community-engaged research; air quality; particulate matter; citizen science

## 1. Introduction

More than 3 million people worldwide die prematurely every year as a result of outdoor air pollution [1]. In particular, exposure to particulate matter (PM) has been found to be associated with an increased risk of mortality and excess hospitalization even at levels below regulatory limits [2,3]. While governmental regulatory air monitoring plays an essential role in achieving air quality goals, the monitors used are expensive and require a high degree of training to operate and maintain. The resulting data typically have low geospatial resolution due to the sparseness of monitors, thus limiting their utility for understanding real-time, local-level air quality conditions. While the application of spatial interpolation techniques to regulatory monitoring data has been used to estimate air quality in locations without monitors [4,5], a greater number of air monitors distributed throughout an area of concern will improve a model's utility for identifying air pollution hot spots and characterizing local community exposures. Finally, despite being generated by high-quality monitors using federally-approved methods, regulatory air monitoring data may not be relevant, trusted, or understood by residents.

With the increasing availability and quality of small, low-cost air sensors, many public health and research projects are now employing next-generation air monitoring technology to conduct personal and local-level air monitoring [6–8]. While not approved in the United States for use in regulatory monitoring, this new technology holds great potential for addressing gaps in regulatory air monitoring data to better characterize air quality at the community level. Yet, few projects have attempted to establish a permanent community air monitoring network that produces data that will address community information needs and support scientific research.

By involving residents in decision-making, conducting transparent and inclusive activities, demystifying scientific processes, integrating community knowledge, and facilitating relationship-building, a community-engaged approach to research and other data collection activities can increase community trust, understanding, and use of the resulting data [9]. As applied to air quality monitoring, a community-engaged approach may involve communities in determining research topics and study design, collecting data, conducting analysis, and interpreting and disseminating results to improve environmental and health outcomes. Early examples of community engagement in air monitoring involved grab sampling—taking a single sample within a short period of time—and were not intended for sustainable and continuous public health surveillance. There are also many examples of communities participating in the initiation, design, and/or implementation of efforts to monitor air pollution near specific sources, also known as fenceline monitoring [10–12].

However, apart from a few case studies, communities have not traditionally been engaged in the design of community air monitoring networks, defined here as the distributed installation of monitors to measure ambient air quality levels within geographic communities. Instead, community air monitoring networks are often developed by siting monitors at locations of convenience or in locations selected without community consultation, resulting in monitoring data that are of limited utility for researchers or residents, respectively [13].

The siting of monitors in a network has important implications for the utility of the resulting data. Broadly speaking, data from monitors placed where people live and are most concerned about air quality are most useful for community needs, while data from monitors that are spread out and placed in a variety of land uses are most useful for modeling the spatial pattern of air quality using land use regression methods [14]. Arguably important for both uses, data quality can be assured by incorporating air monitoring best practices, such as validation, quality assurance, and quality control procedures. However, to the authors' knowledge, there has not been a community air monitoring network implemented at a large geographic scale that successfully addresses these diverse priorities, until now.

*The Imperial County Community Air Monitoring Project*

Imperial County is home to a primarily Latino population (84%) and has some of the highest rates of unemployment (47%) and poverty (24%) in the nation [15]. The county is primarily a desert ecosystem, much of which has been converted to agricultural land. The county has a range of air pollution sources that contribute to regular and sustained exceedances of the California PM standards [16,17], including nearly 8 million vehicles annually crossing the U.S.-Mexico border in Calexico [18], an average of about 28,000 acres of agricultural field burned annually [19], and the drying Salton Sea [20].

Exposure to PM is related to increased respiratory disease, decreased lung function, and increased asthma attacks in susceptible individuals [21]. Short-term exposure to high levels of PM is related to increased heart attacks, while long-term exposure to PM is related to increased heart disease and premature mortality [22,23]. Imperial County has the highest rate of both emergency visits and hospitalizations for asthma among school-age children in California [24]. Additionally, Imperial County ranks among the top three counties in the state for hospitalizations from heart attacks [25].

Imperial County has only five regulatory PM monitors to cover its 175,000 residents and over 4400 square miles (an area nearly the size of Connecticut). This regulatory network does not allow many residents to understand their local air quality, and its data are of limited use in identifying air pollution hotspots or examining other local trends. Furthermore, there has been historical mistrust of government air quality data by the community, primarily driven by observed disconnects between the reported air quality and what residents experience, compounded by a perceived lack of access to the data. Examples shared by community members include the standard practice of removing data for high pollution "exceptional events" (such as fires) from regulatory datasets, as well as reported instances when regulatory monitors were offline or did not report very high PM levels when the air quality at those monitoring locations was poor enough to obscure visibility.

To meet community needs for relevant, trusted, community-level air quality data, the California Environmental Health Tracking Program (CEHTP) and its main project partners—the Imperial County community-based organization Comite Civico del Valle (CCV) and the University of Washington (UW)—initiated the Imperial County Community Air Monitoring Project [26]. Funded by the National Institute of Environmental Health Sciences (NIEHS) Research to Action program, the project utilized community engagement and participation approaches and air monitoring best practices to establish a community air monitoring network (CAMN) of 40 PM monitors in Imperial County, California. The goal of the network was to provide residents with accurate, real-time data on air quality in their communities that could also be used in scientific analysis to identify local trends and hotspots. This article focuses on the project's innovative monitor siting methodology, which utilized a phased approach that integrated a community process to identify and select monitor sites, a monitor calibration and validation process, and spatial analysis as mechanisms to integrate community and scientific priorities into the design of the network.

## 2. Materials and Methods

### *2.1. Community Engagement Structure*

In order to ensure meaningful community participation, the first step was to design a community engagement structure to guide the project. CCV's co-investigator role and active participation in project initiation provided a strong community foundation. Next, the project's Community Steering Committee (CSC)—consisting of 19 community members that included local advocates, concerned residents, and youth—contributed additional guidance, participation, and decision-making in key activities throughout the project. Finally, a broader group of residents was convened to contribute their community-specific knowledge and perspectives to the project, including the site selection process. Other stakeholders were engaged through a technical advisory group comprised of air monitoring experts from the local air district, the California Air Resources Board (CARB), the US EPA, and other

agencies. More in-depth technical guidance was provided by academic consultants from the University of California at Los Angeles and George Washington University.

### 2.2. Deployment of Monitors in Stages

The project team used a staged approach to deploy the monitors (see Figure 1). In Phase 1, the first set of 20 monitors was deployed at sites selected through a community process. In Phase 2, a second set of 20 monitors was then deployed based on the results of preliminary monitoring data from Phase 1. This staged approach ensured that community priorities for monitoring locations could be met in Phase 1, and that Phase 2 could be used to fill in any geographic gaps in data collection to ensure scientific integrity of subsequent spatial modeling conducted with the data.

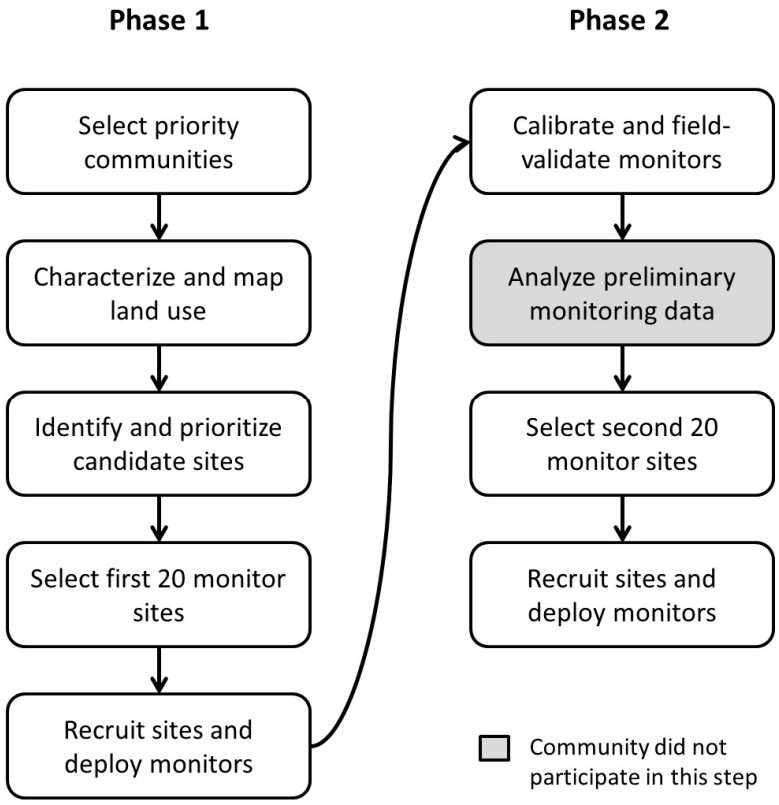


**Figure 1.** Diagram of the participatory process to site monitors.

### 2.3. Phase 1: Community Process to Select the First Set of Monitoring Sites

Selection of priority communities. In May 2014, to begin the monitor siting process, the CSC identified communities (i.e., towns and cities) in which monitor placement would be a priority due to the vulnerability of the residents to air pollution. First, the CSC reviewed county-specific maps and tables of various environmental, health, and social indicators, and considered factors that impact personal and community vulnerability to air pollution. The CSC then used ranked voting to select the final 11 communities.

Land use characterization. To ensure that data from the Phase 1 monitors sites could be used to model PM concentrations (to inform Phase 2), it was important that the first set of sites represent diverse land uses and potential air pollution sources. Environmental priorities related to air pollution were identified and ranked by the CSC. Based on this prioritization, researchers compiled spatial data on agricultural land uses, agricultural burning, stationary air emissions, slaughterhouses, feedlots, crematoriums, roadway proximity, Salton Sea proximity, railroads, solar plants, vehicle emissions, vehicle-related dust (e.g., off-roading), and wind turbines. The CSC also provided input on community

vulnerability factors, and spatial data on demographic variables and health outcomes, such as asthma, were compiled as well.

A principal component analysis (PCA) was then conducted to statistically determine combinations of variables that accounted for the majority of variance in the compiled land use data. From the analysis, 10 principal components were identified, and corresponding regions within Imperial County were mapped. For Phase 1, it was required that at least one monitor be placed in each PCA region so that the network would collect air quality data from the broadest number of land uses.

Identification and prioritization of candidate sites. In January 2015, 45 residents from the 11 priority communities were recruited to participate in a two-day process to identify and prioritize candidate air monitoring sites in their communities. On the first day, participants learned about air monitoring, uses of air quality data, and considerations for monitor siting. Participants were grouped by community to (1) review maps of their community; (2) consider who in their community is most vulnerable to air pollution, where an air monitor would be most useful, and how the monitoring data might be used; and (3) create a list of candidate air monitoring sites based on these considerations. Participants were not limited in the number of sites they could identify, and consensus was not required for a site to be considered a candidate. Participants were asked to ensure that at least one candidate site was located in their community's priority PCA region.

The following day, the community participant groups visited their respective candidate sites. With training from the previous day, groups assessed site characteristics (such as building height, security, likelihood of available Wi-Fi and AC power supply, and locations of nearby air pollution sources), took photos or videos of the site using a mobile device, and reported this information on a custom-designed mobile web form (see Figure 2) modified from IVAN Imperial, CCV's existing community environmental reporting website [27]. Smartphones were provided when needed, along with paper forms as back-ups. Each group submitted one mobile web form per site. Once all forms were completed, the participant groups reviewed their reports and selected three priority monitor sites for their community.

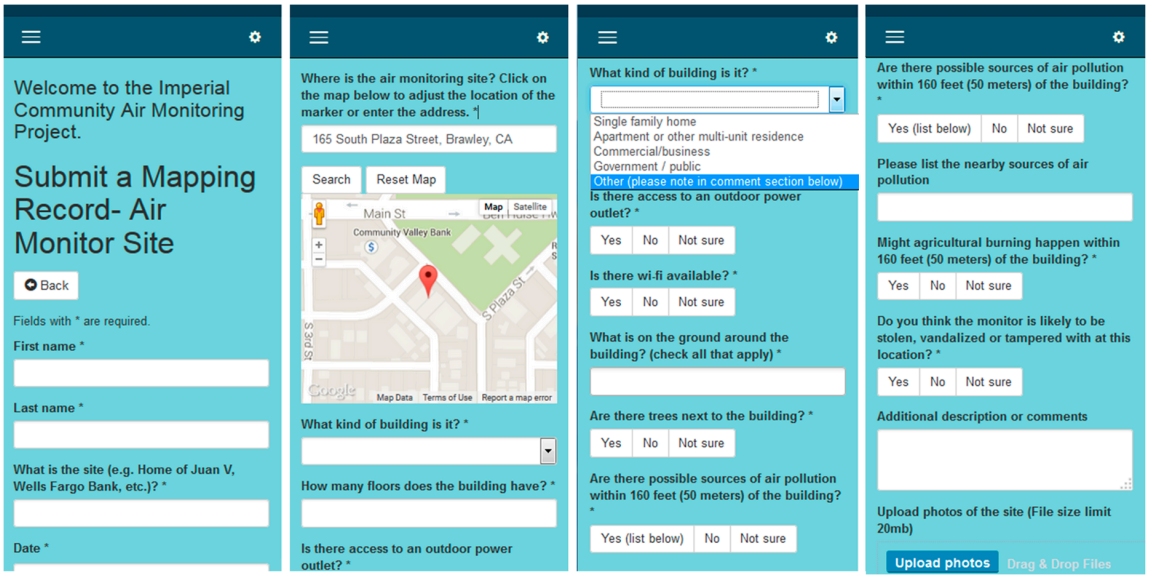


**Figure 2.** Screenshots of mobile web form used for data collection.

Selection of Phase 1 monitoring sites. Of the 20 monitors to be deployed in Phase 1, one was set aside for colocation with a state regulatory monitor (operated by CARB) and another was colocated with a non-regulatory Imperial Irrigation District (IID) monitor to allow researchers to assess data quality of the CAMN instruments. Sites for the remaining 18 monitors were selected by the project team

from the entire list of candidate sites and were guided by two requirements. First, at least one monitor should be placed in each of the 11 priority communities, with the larger communities of Brawley, Calexico, El Centro, and Imperial receiving at least two monitors. This was to ensure that each priority community would have community-specific data. Second, each of the 10 PCA region types should be represented at least once in the final set of 20 monitors. This was to ensure that monitoring data could be used to conduct a land use regression in Phase 2. Using these criteria and a process of elimination that favored installing monitors in at least one priority site per community, 18 sites were identified, each with two alternatives. UW and UCLA provided suggestions about the spatial distribution of the monitors, while CCV provided insights into the feasibility of obtaining agreements to install monitors at the various sites.

Site recruitment. Recruitment of air monitoring sites began in March 2015. Site-specific contact methods were used, such as formal letters, introduction through a trusted intermediary, or a cold visit. Multiple meetings, often with different individuals (e.g., school principal and maintenance staff), were required for each site. A factsheet was provided to each site describing the project, the air monitors, and the requirements and benefits of hosting a monitor. CCV then co-signed a form with each site representative that confirmed permission for CCV staff to install a monitor at the location and, with reasonable notice, gain access to the monitor to perform maintenance and repairs. If a site declined participation, an alternate site was contacted.

Deployment of Phase 1 monitors. A Dylos 1700 (Dylos Corporation, Riverside, CA, USA) laser particle counter was used for the project, and modified to include four size bins (>0.5 μm, >1 μm, >2.5 μm, >10 μm). In addition to the Dylos sensor, the monitors were customized with additional equipment to enable wireless Internet connectivity and measurements of temperature and humidity. The monitors included a protective shelter that does not inhibit measurements, along with a cooling fan that turns on when the external temperature reaches 120 °F [28]. At the sites, monitors were installed on rooftops or the unobstructed sides of buildings, higher than 1 meter and lower than 14 m above the ground. Monitors were connected to AC power and to the Internet via that site's own internet service or, in Phase 2, with mobile internet hotspots. Data were delivered via the Internet to UW servers.

### 2.4. Phase 2: Selection of Monitoring Sites Based on Data Analysis

Monitor calibration and field validation. To ensure data quality, each of the monitors was calibrated and field validated against both $PM_{2.5}$ and $PM_{10}$ federal equivalent method (FEM) beta-attenuation monitors (BAMs) and federal reference method (FRM) gravimetric filters at a colocation site in the study area. A conversion equation was developed to estimate particle mass concentrations from the native Dylos particle counts taking into account relative humidity [28].

Spatial analysis of preliminary air quality data. To determine where Phase 2 monitors should be placed, a preliminary map of air pollution concentrations across the valley was developed by a spatial interpolation Kriging model using the concentrations measured at 19 sites over a 52-day period ending in February 2016 (Figure 3).

A land use regression model was created to predict $PM_{2.5}$ based on land use, meteorological, and temporal variables. PCA was used to reduce the number of land use variables. The first 10 principal components explained 95% of the variance. We used those 10 principal components along with temperature, relative humidity, wind direction, wind speed, distance to the US-Mexico border, and distance to the Salton Sea. These explanatory variables were put into a linear model with hourly $PM_{2.5}$ as the response variable. This model was then used to predict $PM_{2.5}$ on a grid of points placed every 250 m across Imperial County. All of the hourly predictions were averaged across the length of the study. The resulting spatial differences in predicted $PM_{2.5}$ helped inform the site selection process. After identifying locations without monitors where additional monitoring data would help to better characterize air quality (e.g., locations where modeled concentrations appeared to change drastically over a small geographic area), 20 general locations for the Phase 2 monitors were proposed.

Site selection and deployment of Phase 2 monitors. In May 2016, the project team and CSC members examined the proposed Phase 2 monitor locations using satellite imagery on Google Maps to identify potential monitor sites. Due to the limited number of buildings at these rural locations, a formal site selection process was not used. Instead, CCV and interested CSC members visited these locations to identify and recruit monitoring sites, ideally within a two-mile buffer of the proposed location. If sites within the buffered area could not be identified, or declined participation, the monitor was deployed at a site in an alternate location identified by the project team. The deployment of the second set of monitors was completed by April 2017, with data automatically transmitted from the monitors to UW servers via the Internet.

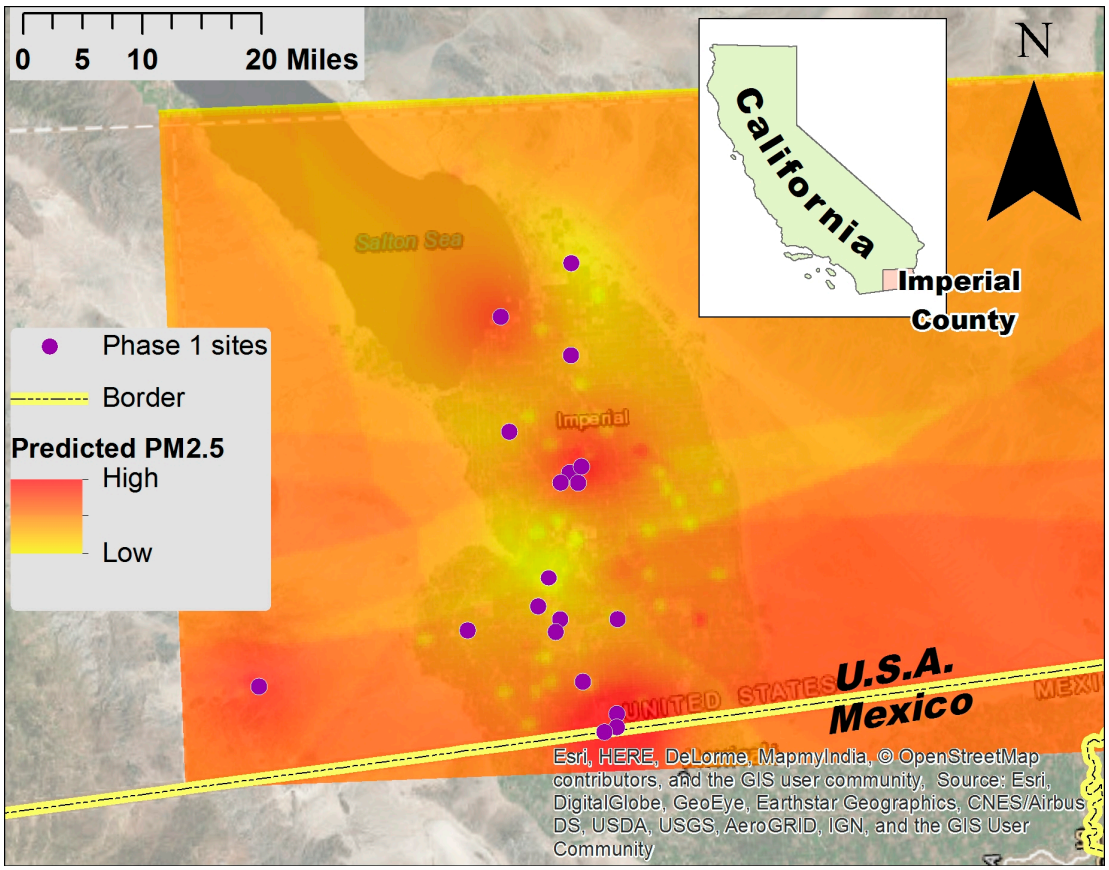


**Figure 3.** Modeled air pollution concentrations. Purple dots indicate locations of Phase 1 monitors.

## 3. Results

### *3.1. Sites Selected through the Phase 1 Community Process*

The aim of the Phase 1 process was to place monitors in locations of relevance to the community, such as places where groups vulnerable to air pollution (e.g., children, elderly) spend time, places where residents are likely to experience poor air quality, or places that are well-known or otherwise meaningful to community members. During the community monitor site selection process, participants identified a total of 85 candidate sites in 11 communities. From these, they selected 33 priority sites (three per community), classified as schools (12), government buildings (7), businesses (7), non-profit organizations (4), residences (2), and a park. Twelve of these were chosen during the site selection process, as described previously, to be included in the group of 20 Phase 1 sites.

Upon recruitment, two schools declined participation due to concern that having an air monitor would cause worry among parents or create stigma that could impact enrollment. Two other selected

sites could not be used because they lacked Internet services, which was still a siting requirement at the time of recruitment. In place of these, four alternate sites were recruited to host a monitor. Due to the widespread preference among the community participants and within CCV toward school sites, the project team chose schools as alternates.

Ultimately, the Phase 1 monitors were deployed at 14 public schools (including one colocated with a state regulatory monitor), two government buildings, a non-profit organization, a residence, a business, and a national wildlife refuge near the Salton Sea (colocated with an IID monitor). Of the 20 monitors, 19 were placed within the priority communities identified by the CSC. Of these, 10 monitors were installed at sites prioritized by community participants, and two monitors were installed at alternate sites that were chosen due to the proximity to their original priority sites.

The monitors were placed in nine out of the 10 PCA regions identified early in Phase 1. The remaining PCA region corresponded entirely to a state prison. Due to the lack of response to initial inquiries and concerns among the project team about the feasibility of getting permission in a timely manner, an exception was made to the requirement to site a monitor in each PCA region. The prison was not included as one of the original 20 selected sites, and this decision was supported by the CSC.

Feedback from community participants during community meetings and through meeting feedback forms indicated satisfaction with the process and final sites selected. The only disappointment expressed was related to the two schools that declined participation.

### 3.2. Calibration and Validation

While the main purpose of Phase 1 was to focus on community-relevant monitor siting, it was also a stated priority among both the project team and CSC to ensure that the CAMN data were considered valid and useful by scientific researchers. By colocating the CAMN monitors with the regulatory monitor, project researchers were able to use data from both to assess, calibrate, and field-validate the CAMN monitors. This was an important step to ensuring data quality, and results indicated that the CAMN monitors generally performed well.

Briefly, we found that the $R^2$ between converted hourly averaged Dylos mass measurements and a $PM_{2.5}$ FEM BAM was 0.79 and $PM_{10}$ FEM BAM was 0.78. The performance of the conversion equation was evaluated at six other sites with colocated $PM_{2.5}$ environmental beta-attenuation monitors (EBAMs) located throughout Imperial County. The agreement of the Dylos with the EBAMs was low to high ($R^2$ = 0.35 to 0.81). More details can be found in the published results [28].

The colocations also allowed project researchers to develop an algorithm to convert the CAMN data from particle count to particle mass concentrations [28], a more commonly-used measurement of PM that would be more relevant for communicating results to the community.

### 3.3. Sites Selected Based on Phase 2 Spatial Analysis

The aim of the Phase 2 process was to deploy monitors in areas to improve the network's ability to provide data useful for identifying trends and hotspots. Spatial interpolation of preliminary data from the Phase 1 monitors was used to develop a preliminary map of modeled $PM_{2.5}$ concentrations in order to assess locations where more monitoring data would be useful. The results indicated a need to better characterize gradients of pollution coming from the eastern and western mountains of the valley, from the Salton Sea, and from the U.S.-Mexico border (Figure 4).

Using the Phase 2 site selection process described previously, six monitors were deployed at the Salton Sea, with three additional monitors placed farther to the south and east. Another seven monitors were placed along the U.S.-Mexico border, including one site in Mexicali, Mexico. Two additional monitors were placed to the east and in the center of the populated region of the county, at the agricultural-desert and agricultural-urban interface, respectively. The final two monitors were installed at the original colocation sites from Phase 1 to facilitate further assessment of monitor performance and data quality.

The new sites were primarily private residences (12), with colocations with IID monitors (5), and a government building. Based on lessons learned from the operation of the Phase 1 monitors, all monitors in Phase 2 were outfitted with a cellular hotspot for internet connectivity if a site lacked reliable Internet services.

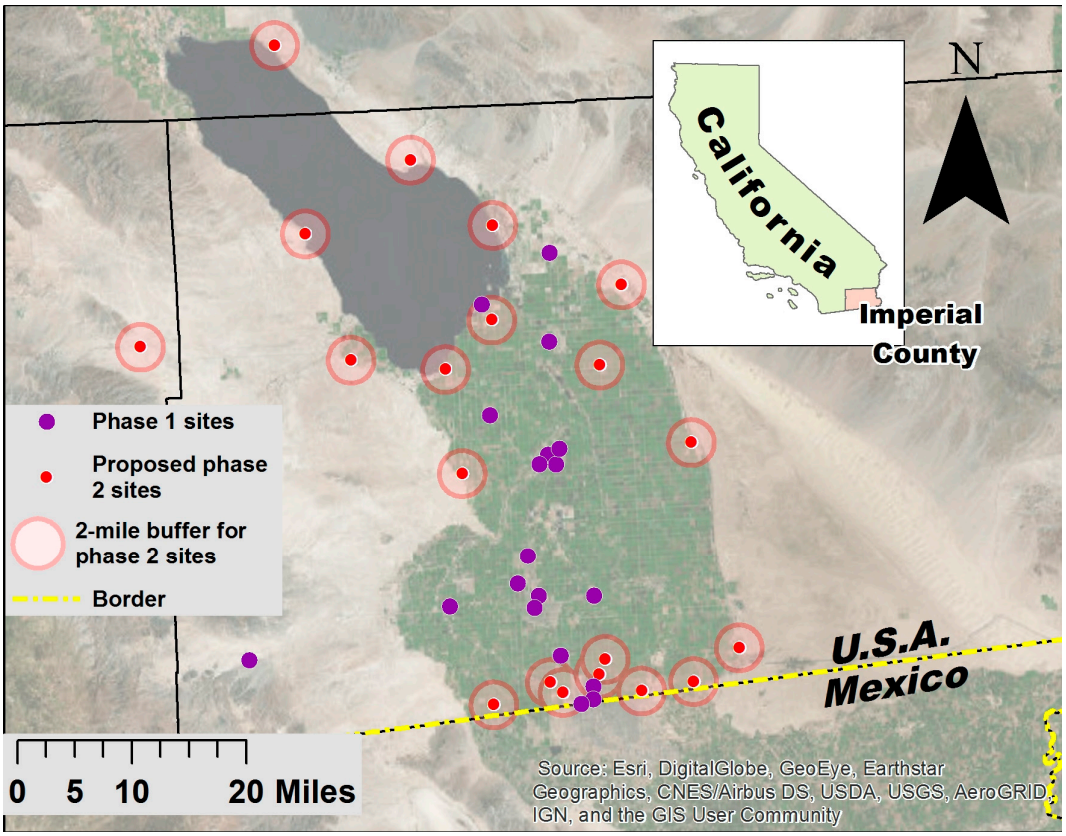


**Figure 4.** Proposed locations for Phase 2 monitors identified based on preliminary spatial analysis.

### *3.4. Completed Network Provides New, Locally-Relevant Information*

The goal of the project was to establish a CAMN that would provide residents with accurate, real-time data on air quality in their communities that could also be used in scientific analyses to identify local trends and hotspots. The process to deploy all 40 monitors of the CAMN took about three years in total, with significant community engagement throughout. Upon completion of Phase 2, the CAMN consisted of 40 monitors, many in communities that previously lacked local air quality data due to their distance from a regulatory air monitor (Figure 5).

Specifically, CAMN monitors are now located within 13 cities and towns in Imperial County (excluding monitors sited in communities located adjacent to the county boundaries in Mexico and Riverside County), compared to the five in which regulatory monitors are located. With eight times the number of monitors as the regulatory network, the CAMN also has a greater monitor density than the regulatory network. These factors result in greater coverage of populated areas by the CAMN, compared to the regulatory monitors.

The real-time CAMN data have been made publicly available through CCV's IVAN Imperial Air Monitoring website [29]. An interactive web map showing real-time data for each site, along with summary data for individual monitors, is available on the website. As demonstrated in Figure 5, the mapped real-time CAMN data provide more insight into the spatial distribution of PM compared to the real-time data from regulatory monitoring alone.

Preliminary results of land use regression modeling (distinct from the analysis described above) conducted by the authors with the CAMN data also showed gradients of exposure, temporal patterns, and hotspots. Comparisons with regulatory monitors also demonstrate that the CAMN captured more episodes of elevated PM levels than regulatory monitors. The results from both analyses are currently being submitted for publication.

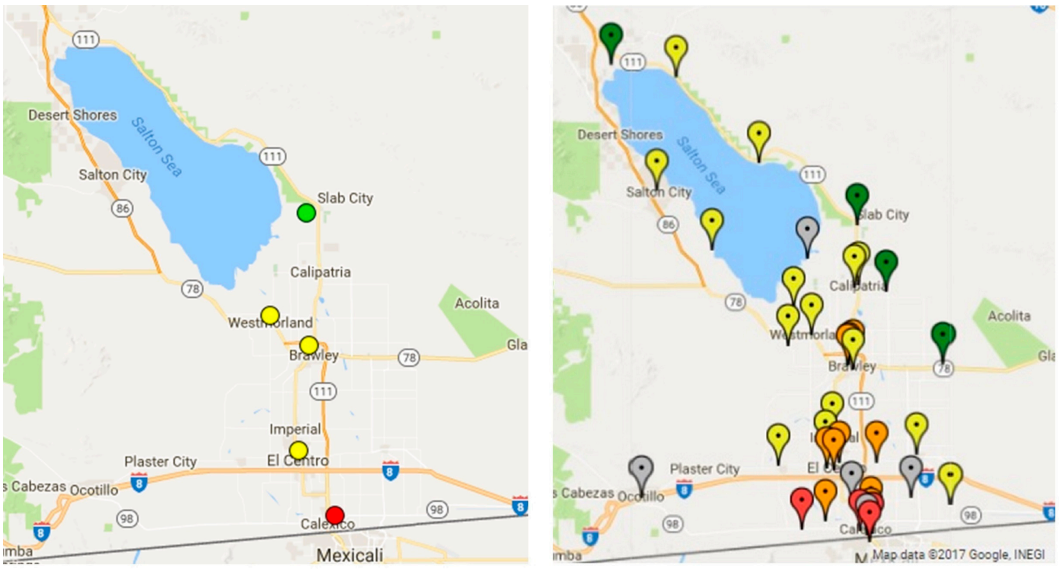


**Figure 5.** Screenshots of online maps showing air monitor locations and real-time air quality readings taken from (**a**) the regulatory network website and (**b**) the Imperial County CAMN website, on 20 December 2017 [29,30]. For both maps, the color of the monitor markers correspond to health risk related to current air quality conditions, where green is lowest risk, yellow is moderate risk, orange is unhealthy for sensitive populations, and red is unhealthy. Gray markers on the CAMN map indicate monitors that are offline.

### *3.5. Initial Response to the Community Air Monitoring Network*

In discussions and meeting evaluations, community participants and partners overwhelmingly expressed satisfaction in the site selection process and the final monitor sites. They also stated an intention to use data from the CAMN and believed the data would be trustworthy. They attributed this to their participation in the project activities, increased understanding about air monitoring, and engagement in project decision-making processes.

While outreach activities are ongoing to inform county residents about the CAMN, these data are already being used on a daily basis by eight of the school sites to alert them when PM levels are high enough to keep asthmatic students indoors or, if higher, implement a rainy day schedule schoolwide. School staff access the CAMN data via the public website and via email alerts. While some of these schools had policies in place regarding air quality and began using the CAMN as an additional source of data, others initiated these policies as a direct result of having a monitor located on their campus.

The CAMN data have also generated interest beyond the community. For example, CAMN data have been requested by the local public health department to inform the development of the county general plan, by CARB to investigate a PM episode, by a journalist investigating air pollution issues along the US-Mexico border, and by university researchers to enhance the methodology for using satellite data to study ground-level PM pollution.

## 4. Discussion

The novel methodology used to site monitors for this study addresses several barriers that regulatory networks face in meeting community needs. Specifically, regulatory monitoring networks are sparse, often do not have monitors in locations of most relevance to communities, and may not be trusted by community members. The increased availability of small, low-cost air sensors now makes it feasible for researchers to establish denser networks. However, without community input and engagement, the resulting data may still be of limited utility and may lack credibility within the community. Community-led monitoring efforts are more likely to be trusted and relevant for communities; yet these efforts are often under-resourced, with limited access to scientific expertise or conventional monitoring equipment for colocations, resulting in monitoring data that may not achieve the level of scientific rigor or research utility that the community desires.

Our siting methodology is distinguished by the deliberate integration of community and scientific priorities. In fact, the conceptual separation of these priorities did not match our experience. Community participants consistently emphasized the importance of scientific quality, while a primary goal among research partners was to ensure that the CAMN met community needs.

Results suggest that a CAMN developed using this study methodology can provide scientifically rigorous, community-relevant air quality data to complement the regulatory networks. The provision of real-time data at community-relevant locations means that individuals can use CAMN data to change behaviors to reduce PM exposures, while the ability to identify temporal and spatial pollution patterns increases the utility of the data for public health planning and policymaking at community and regional levels. As the next generation of small, low-cost air sensors offers new opportunities for establishing CAMNs, it is important to continue developing and evaluating siting approaches with respect to their ability to promote data quality and relevance for communities and researchers alike.

There may be limitations in the utility of the study methodology for other communities, in which residents may be concerned about different air pollutants, specific sources, or other community-specific factors. Furthermore, limited access to the time, resources, or required skillsets may hinder close replication of this process. However, it may be possible to customize or scale this process while retaining key aspects of the methodology. For example, meaningful community engagement can happen in many ways; community residents need not visit nor collect data on candidate sites in order to identify and prioritize them. Comprehensive monitor calibration and validation activities may not be needed if the selected instrument has already been rigorously tested in lab and field settings. The two-part siting approach, which prioritizes monitor placement at community-relevant sites, also provides flexibility by allowing a phased deployment of the CAMN.

While not directly related to monitor siting decisions, any efforts involving the long-term deployment of community monitors must take into consideration potential challenges, costs, and staffing requirements to maintain, repair, and replace monitoring equipment. Similarly, it is also important to acknowledge that effective outreach and communication plays a critical role in the overall utility of the CAMN, and data must be displayed, interpreted, and made accessible in a community-appropriate and scientifically-accurate manner. As part of the broader project, the authors have undertaken efforts to address these two issues [26].

Finally, this work can inform efforts to better integrate CAMNs with government air monitoring activities, particularly as agencies explore the use of small, low-cost air sensors to address data needs that cannot be met by the existing regulatory networks [31–33]. In California, recent legislation (California Assembly Bill 617) requires state and local regulatory agencies to install community air monitoring systems in priority communities [34]. In response, the Imperial County Community Air Monitoring Project and its CAMN (called "IVAN AIR") have been examined by state legislators as "a potential model for future monitoring and air quality work across the state" [35] and by CARB as one of the models that will inform their AB 617 implementation plan [36].

## 5. Conclusions

Community air monitoring networks that utilize small, low-cost air sensors can produce data that complement regulatory networks, which are often insufficient for community needs. However, careful consideration should be made with regard to monitor locations, which fundamentally impact the utility of the resulting data.

To address the need for more air monitoring data within communities of concern throughout Imperial County, we used a unique monitor siting methodology that addressed scientific and community priorities. Key aspects of the approach included the calibration and field-validation of the monitors and the deployment of monitors in community-identified sites, among different land uses, and in locations to better characterize gradients of PM concentration.

Using this community-engaged approach, we deployed a CAMN of 40 PM monitors throughout Imperial County. The resulting data are being used to inform exposure reduction behaviors and to conduct research analyses, and they have a high potential to inform public health actions and policies.

Strong community partnerships and meaningful engagement was critical to the success of this process, which has generated attention from communities and government agencies nationally. As next-generation air monitoring technology garners interest from communities, researchers, and government, this methodology may serve as a model for the collaborative, community-driven development of community air monitoring networks.

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**Author Contributions:** Paul English, Luis Olmedo, Edmund Seto, and Michelle Wong conceived and designed the project; Galatea King, Dan Meltzer, Alexa Wilkie, and Michelle Wong conceived and implemented the community engagement process; Dan Meltzer compiled the land use data; Katie Fellows conducted the principal component analysis; Esther Bejarano, Luis Olmedo, and Humberto Lugo recruited and engaged community participants and air monitor hosts; Graeme Carvlin and Edmund Seto assembled monitors and set up data transfer and storage; Humberto Lugo and Edmund Seto deployed and maintained monitors; Graeme Carvlin, Edmund Seto, Amanda Northcross, and Humberto Lugo conducted monitor testing, validation, and calibration activities; Graeme Carvlin and Edmund Seto conducted the spatial analysis; Paul English, Michael Jerrett, and Amanda Northcross provided technical assistance on site selection, monitor deployment, and spatial modeling; and Michelle Wong wrote the paper.

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## References

1. World Health Organization. Burden of Disease from Ambient Air Pollution for 2012. Available online: http://www.who.int/phe/health_topics/outdoorair/databases/FINAL_HAP_AAP_BoD_24March2014.pdf (accessed on 1 November 2017).
2. Vaduganathan, M.; De Palma, G.; Manerba, A.; Goldoni, M.; Triggiani, M.; Apostoli, P.; Dei Cas, L.; Nodari, S. Risk of Cardiovascular Hospitalizations from Exposure to Coarse Particulate Matter ($PM_{10}$) Below the European Union Safety Threshold. *Am. J. Cardiol.* **2016**, *117*, 1231–1235. [CrossRef] [PubMed]
3. Di, Q.; Wang, Y.; Zanobetti, A.; Wang, Y.; Koutrakis, P.; Choirat, C.; Dominici, F.; Schwartz, J.D. Air Pollution and Mortality in the Medicare Population. *N. Engl. J. Med.* **2017**, *376*, 2513–2522. [CrossRef] [PubMed]
4. Araki, S.; Yamamoto, K.; Kondo, A. Application of Regression Kriging to Air Pollutant Concentrations in Japan with High Spatial Resolution. *Aerosol. Air Qual. Res.* **2015**, *15*, 234–241. [CrossRef]
5. Sicard, P.; Serra, R.; Rossello, P. Spatiotemporal trends in ground-level ozone concentrations and metrics in France over the time period 1999–2012. *Environ. Res.* **2016**, *149*, 122–144. [CrossRef] [PubMed]

6. Snyder, E.G.; Watkins, T.H.; Solomon, P.A.; Thoma, E.D.; Williams, R.W.; Hagler, G.S.; Shelow, D.; Hindin, D.A.; Kilaru, V.J.; Preuss, P.W. The Changing Paradigm of Air Pollution Monitoring. *Environ. Sci. Technol.* **2013**, *47*, 11369–11377. [CrossRef] [PubMed]
7. Cheng, Y.; Li, X.; Li, Z.; Jiang, S.; Li, Y.; Jia, J.; Jiang, X. AirCloud: A cloud-based air-quality monitoring system for everyone. In Proceedings of the 12th ACM Conference on Embedded Network Sensor Systems, Memphis, TN, USA, 3–6 November 2014; pp. 251–265.
8. Sivaraman, V.; Carrapetta, J.; Hu, K.; Luxan, B.G. HazeWatch: A participatory sensor system for monitoring air pollution in Sydney. In Proceedings of the 2013 IEEE 38th Conference on Local Computer Networks Workshops (LCN Workshops), Sydney, Australia, 21–24 October 2013; pp. 56–64.
9. Israel, B.A.; Schulz, A.J.; Parker, E.A.; Becker, A.B. Review of community-based research: Assessing partnership approaches to improve public health. *Annu. Rev. Public Health* **1998**, *190*, 173–202. [CrossRef] [PubMed]
10. O'Rourke, D.; Macey, G.P. Community environmental policing: Assessing new strategies of public participation in environmental regulation. *J. Policy Anal. Manag.* **2003**, *22*, 383–414. [CrossRef]
11. Ottinger, G. Buckets of resistance: Standards and the effectiveness of citizen science. *Sci. Technol. Hum. Values* **2010**, *35*, 244–270. [CrossRef]
12. Minkler, M.; Garcia, A.P.; Williams, J.; LoPresti, T.; Lilly, J. Si se puede: Using participatory research to promote environmental justice in a Latino community in San Diego, California. *J. Urban Health* **2010**, *87*, 796–812. [CrossRef] [PubMed]
13. Conrad, C.C.; Hilchey, K.G. A Review of Citizen Science and Community-Based Environmental Monitoring: Issues and Opportunities. *Environ. Monit. Assess.* **2011**, *176*, 273–291. [CrossRef] [PubMed]
14. Briggs, D.J.; Collins, S.; Elliott, P.; Fischer, P.; Kingham, S.; Lebret, E.; Pryl, K.; van Reeuwijk, H.; Smallbone, K.; Van Der Veen, A. Mapping urban air pollution using GIS: A regression-based approach. *Int. J. Geogr. Inf. Sci.* **1997**, *11*, 699–718. [CrossRef]
15. United States Census Bureau. QuickFacts, Imperial County, California. Available online: https://www.census.gov/quickfacts/fact/table/imperialcountycalifornia/PST045216 (accessed on 24 October 2017).
16. California Air Resources Board. Trends Summary. Available online: http://www.arb.ca.gov/adam/trends/trends1.php (accessed on 13 February 2017).
17. California Air Resources Board. Imperial County 2013 State Implementation Plan for the Federal $PM_{2.5}$ Standard. Available online: https://www.arb.ca.gov/board/books/2014/121814/14-10-2pres.pdf (accessed on 20 June 2017).
18. United States Department of Transportation, Bureau of Transportation Statistics. Border Crossing/Entry Data. Available online: https://transborder.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BCQ.html (accessed on 24 April 2017).
19. Imperial County Air Pollution Control District. Available online: http://www.co.imperial.ca.us/AirPollution (accessed on 24 October 2017).
20. Pacific Institute. Hazard's Toll: The Costs of Inaction at the Salton Sea. Available online: http://pacinst.org/app/uploads/2014/09/PacInst_HazardsToll_low-res.pdf (accessed on 6 July 2017).
21. Anderson, J.O.; Thundiyil, J.G.; Stolbach, A. Clearing the Air: A Review of the Effects of Particulate Matter Air Pollution on Human Health. *J. Med. Toxicol.* **2012**, *8*, 166–175. [CrossRef] [PubMed]
22. Luo, C.; Zhu, X.; Yao, C.; Hou, L.; Zhang, J.; Cao, J.; Wang, A. Short-term exposure to particulate air pollution and risk of myocardial infarction: A systematic review and meta-analysis. *Environ. Sci. Pollut. Res.* **2015**, *22*, 14651–14662. [CrossRef] [PubMed]
23. Martinelli, N.; Olivieri, O.; Girelli, D. Air particulate matter and cardiovascular disease: A narrative review. *Eur. J. Int. Med.* **2013**, *24*, 295–302. [CrossRef] [PubMed]
24. California Environmental Health Tracking Program. Asthma Data Query. Available online: http://cehtp.org/page/asthma/query (accessed on 13 February 2017).
25. California Environmental Health Tracking Program. Heart Attacks Data Query. Available online: http://cehtp.org/page/mi/query (accessed on 13 February 2017).
26. English, P.B.; Olmedo, L.; Bejarano, E.; Lugo, H.; Murillo, E.; Seto, E.; Wong, M.; King, G.; Wilkie, A.; Meltzer, D. The Imperial County Community Air Monitoring Network: A Model for Community-Based Environmental Monitoring for Public Health Action. *Environ. Health Perspect* **2017**, *125*, 074501. [CrossRef] [PubMed]

27. IVAN (Identifying Violations Affecting Neighborhoods) Imperial. Available online: https://ivan-imperial.org (accessed on 18 March 2018).
28. Carvlin, G.N.; Lugo, H.; Olmedo, L.; Bejarano, E.; Wilkie, A.; Meltzer, D.; Wong, M.; King, G.; Northcross, A.; Jerrett, M.; et al. Development and field validation of a community-engaged particulate matter air quality monitoring network in Imperial, California, USA. *J. Air Waste Manag. Assoc.* **2017**, *67*, 1342–1352. [CrossRef] [PubMed]
29. IVAN Imperial AIR. Map of Monitors. Available online: https://ivan-imperial.org/air/map (accessed on 20 December 2017).
30. California Air Resources Board. Imperial Valley Air Quality. Available online: http://www.imperialvalleyair.org (accessed on 20 December 2017).
31. United States Environmental Protection Agency. EPA's Next Generation Air Measuring Research. Available online: https://www.epa.gov/sciencematters/epas-next-generation-air-measuring-research (accessed on 1 November 2017).
32. California Air Resources Board. ARB's Perspective on Next Generation Air Monitoring Technology. Available online: http://www.baaqmd.gov/~/media/files/communications-and-outreach/community-outreach/events/michael-benjamin-capcoa-air-sensors-workshop.pdf (accessed on 1 November 2017).
33. South Coast Air Quality Management District. Air Quality Sensor Performance Evaluation Center. Available online: http://www.aqmd.gov/aq-spec/home (accessed on 1 November 2017).
34. California Legislative Information. AB-617 Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants (2017–2018). Available online: http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB617 (accessed on 1 November 2017).
35. California State Assembly Joint Legislative Committee on Climate Change Policies. Informational Hearing: Air Quality in California's Border Region. Available online: http://climatechangepolicies.legislature.ca.gov/sites/climatechangepolicies.legislature.ca.gov/files/Background%20Sheet%20-%20AQ%2011.3.2017%20-%20REVISED.pdf (accessed on 1 November 2017).
36. California Air Resources Board. Update on AB 617 Community Air Protection Program. Available online: https://www.arb.ca.gov/board/books/2017/102617/17-10-5pres.pdf (accessed on 1 November 2017).


# ATTACHMENT:

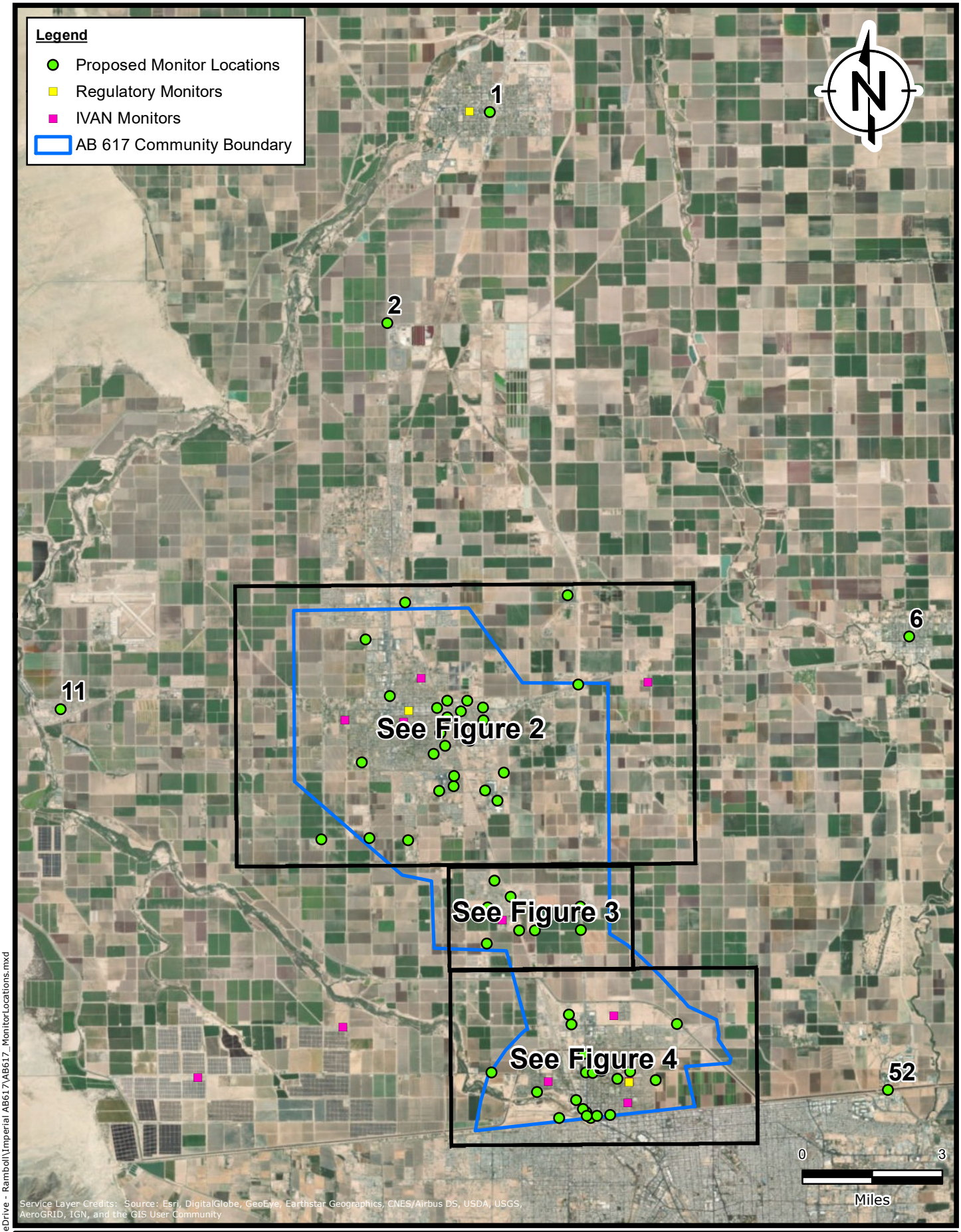
# Maps of Proposed Monitoring Sites

**Table 1. Proposed Monitor Locations**
Imperial County Year 1 AB 617 Community
El Centro-Heber-Calexico Corridor

| Proposed Location ID | Description | Figure Number | Latitude | Longitude |
|---|---|---|---|---|
| 1 | Brawley CA (north of city) | 1 | 32.977968 | -115.531743 |
| 2 | HWY 86 & Keystone | 1 | 32.912573 | -115.570036 |
| 3 | Imperial County Community School | 2 | 32.82755 | -115.504188 |
| 4 | Railroad track area Aten Rd | 2 | 32.825613 | -115.56406 |
| 5 | El Centro Water Plant/Walmart area | 2 | 32.81417 | -115.578729 |
| 6 | Holtville, CA (east of city) | 1 | 32.813817 | -115.378591 |
| 7 | HWY 111 & Evan Hewes Hwy | 2 | 32.799744 | -115.500544 |
| 8 | Adams & Imperial | 2 | 32.796564 | -115.56999 |
| 9 | IID Yard (Commercial & 3rd St) | 2 | 32.795007 | -115.54879 |
| 10 | Imperial County Ag yard (Commercial & Fairfield) | 2 | 32.79491 | -115.541406 |
| 11 | Seeley, CA (west of city) | 1 | 32.793044 | -115.69117 |
| 12 | Main & Dogwood | 2 | 32.792835 | -115.53562 |
| 13 | ECRMC (4th & Main) | 2 | 32.792816 | -115.552537 |
| 14 | Washington Elementary School | 2 | 32.791631 | -115.543888 |
| 15 | CET (Brighton & 3rd) | 2 | 32.789797 | -115.548816 |
| 16 | City of El Centro Yard (Orange Ave) | 2 | 32.788774 | -115.535572 |
| 17 | Stark Field | 2 | 32.784947 | -115.551417 |
| 18 | ARC | 2 | 32.782488 | -115.540598 |
| 19 | Desert Oasis High School | 2 | 32.781015 | -115.54977 |
| 20 | 4th St & Aurora | 2 | 32.778432 | -115.55397 |
| 21 | Southwest High School | 2 | 32.77599 | -115.580457 |
| 22 | Clinicas de Salud (new offices) | 2 | 32.77254 | -115.528143 |
| 23 | Sure Helpine (Crisis Center) | 2 | 32.771532 | -115.5465 |
| 24 | Broken Spoke Country Club (near Home Depot) | 2 | 32.768331 | -115.546633 |
| 25 | Danenberg & HWY 86 | 2 | 32.766965 | -115.552023 |
| 26 | Dannenberg & Dogwood | 2 | 32.766949 | -115.535168 |
| 27 | IV Mall | 2 | 32.763824 | -115.530647 |
| 28 | McCabe & LaBrucherie | 2 | 32.752434 | -115.57776 |
| 29 | near McCabe school | 2 | 32.752094 | -115.595531 |
| 30 | ICOE | 2 | 32.751681 | -115.563605 |
| 31 | Dogwood School | 3 | 32.738991 | -115.531962 |
| 32 | Gibson & Schaefer | 3 | 32.733932 | -115.526021 |
| 33 | Heber (Dogwood Rd) | 3 | 32.730674 | -115.534448 |
| 34 | 111 & E. Heber (Arco) | 3 | 32.730664 | -115.500393 |
| 35 | Heber Emergency Services Facility/Imperial County Fire Department | 3 | 32.728849 | -115.533644 |
| 36 | Heber Feedlot (El Toro Land & Cattle) | 3 | 32.723395 | -115.523008 |
| 37 | Pitzer & Fawcett | 3 | 32.723395 | -115.517244 |
| 38 | Fawcett & HWY 111 | 3 | 32.723354 | -115.500284 |
| 39 | Heber Geothermal | 3 | 32.719337 | -115.534898 |
| 40 | West Cole Blvd (FedEx Freight) | 4 | 32.697114 | -115.504823 |
| 41 | Cole & Portico | 4 | 32.694027 | -115.504002 |
| 42 | Cole Rd & Bowker (Calexico) | 4 | 32.693921 | -115.46523 |
| 43 | Imperial Ave (1600 Block) | 4 | 32.68492 | -115.499521 |
| 44 | El Centro Regional Medical Center Outpatient Center | 4 | 32.679624 | -115.492967 |
| 45 | HWY 98 & Andrade | 4 | 32.67927 | -115.482559 |
| 46 | Dogwood & HWY 98 | 4 | 32.679246 | -115.533483 |
| 47 | Birch St & 111 (near Starbucks) | 4 | 32.679091 | -115.498752 |
| 48 | Central Calexico | 4 | 32.678951 | -115.496264 |
| 49 | Calexico High School | 4 | 32.677025 | -115.487164 |
| 50 | Enrique Camarena School | 4 | 32.676563 | -115.473115 |
| 51 | Residences/Park Near New River | 4 | 32.673162 | -115.516829 |
| 52 | Port of Entry #2 (East) | 1 | 32.673 | -115.387873 |
| 53 | Cesar Chavez Blvd (Legion Park) | 4 | 32.670547 | -115.502393 |

**Table 1. Proposed Monitor Locations**
Imperial County Year 1 AB 617 Community
El Centro-Heber-Calexico Corridor

| Proposed Location ID | Description | Figure Number | Latitude | Longitude |
|---|---|---|---|---|
| 54 | Cesar Chavez & 3rd St (Calexico) | 4 | 32.667756 | -115.499914 |
| 55 | Imperial Ave & 2nd St (Calexico) | 4 | 32.666683 | -115.498685 |
| 56 | Calexico Mission School | 4 | 32.665855 | -115.490029 |
| 57 | Heffernan & 1st St (Calexico) | 4 | 32.665616 | -115.494856 |
| 58 | Border Park | 4 | 32.665598 | -115.498506 |
| 59 | Gran Plaza Outlet | 4 | 32.665069 | -115.508784 |
| 60 | Port of Entry #1 (West) | 4 | 32.664955 | -115.497248 |
| 61 | Desert & Ag West Side | *Not Pictured* | | |
| 62 | Calexico Border | *Not Pictured* | | |
| 63 | Surrounding AG corridor | *Not Pictured* | | |
| 64 | West of Calexico city limits | *Not Pictured* | | |
| 65 | South 4th St | *Not Pictured* | | |

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**Proposed Community Monitoring Locations**
Central Imperial County

FIGURE
**1**

DRAFTED BY: RC | DATE: 6/6/2019 | PROJECT: 1690012535

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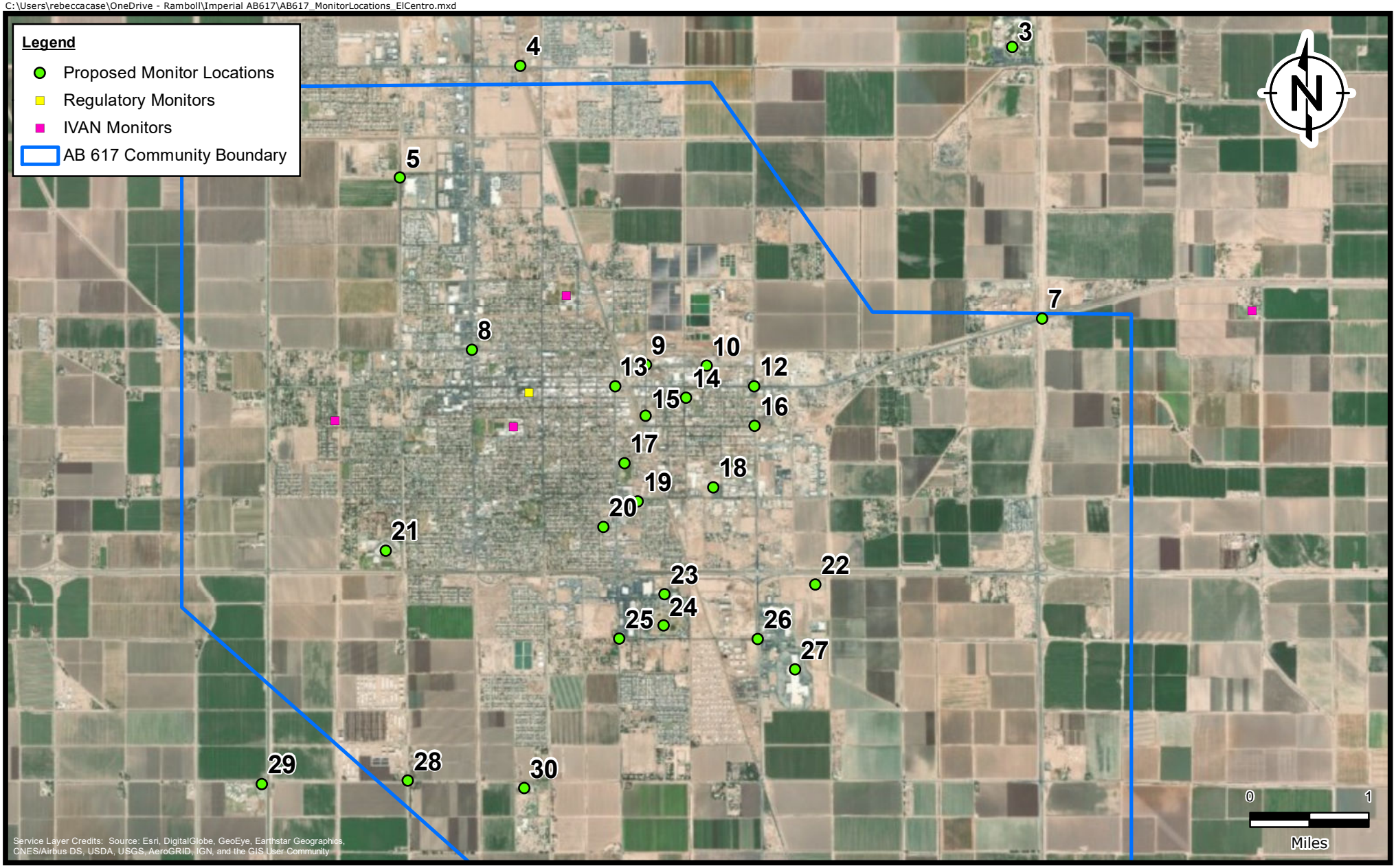



RAMBOLL

**Proposed Community Monitoring Locations**

El Centro Area

FIGURE

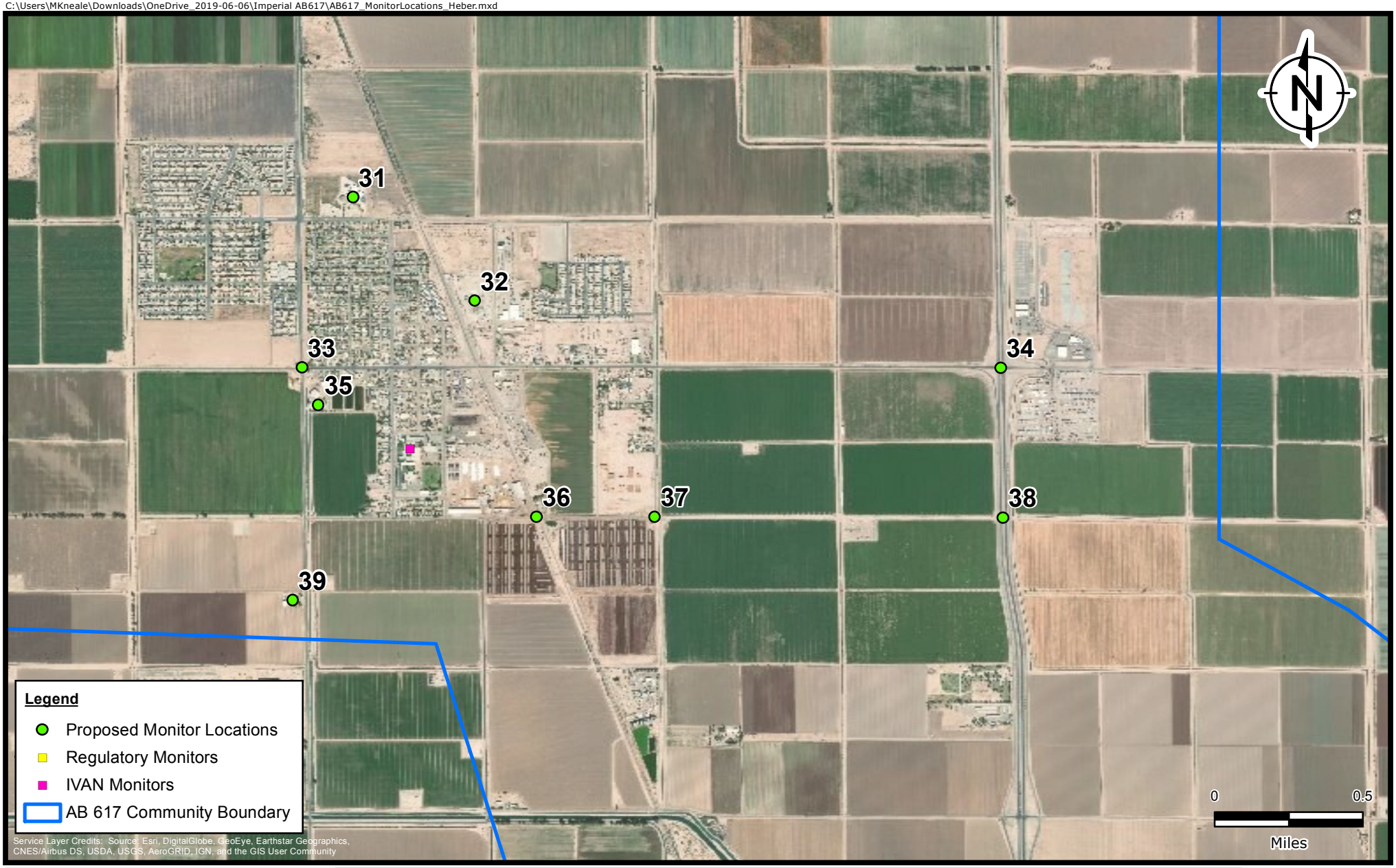
**2**

DRAFTED BY: RC

DATE: 6/6/2019

PROJECT: 1690012535

C:\Users\MKneale\Downloads\OneDrive_2019-06-06\Imperial AB617\AB617_MonitorLocations_Heber.mxd




RAMBOLL

**Proposed Community Monitoring Locations**

Heber Area

FIGURE

**3**

DRAFTED BY: RC | DATE: 6/6/2019 | PROJECT: 1690012535

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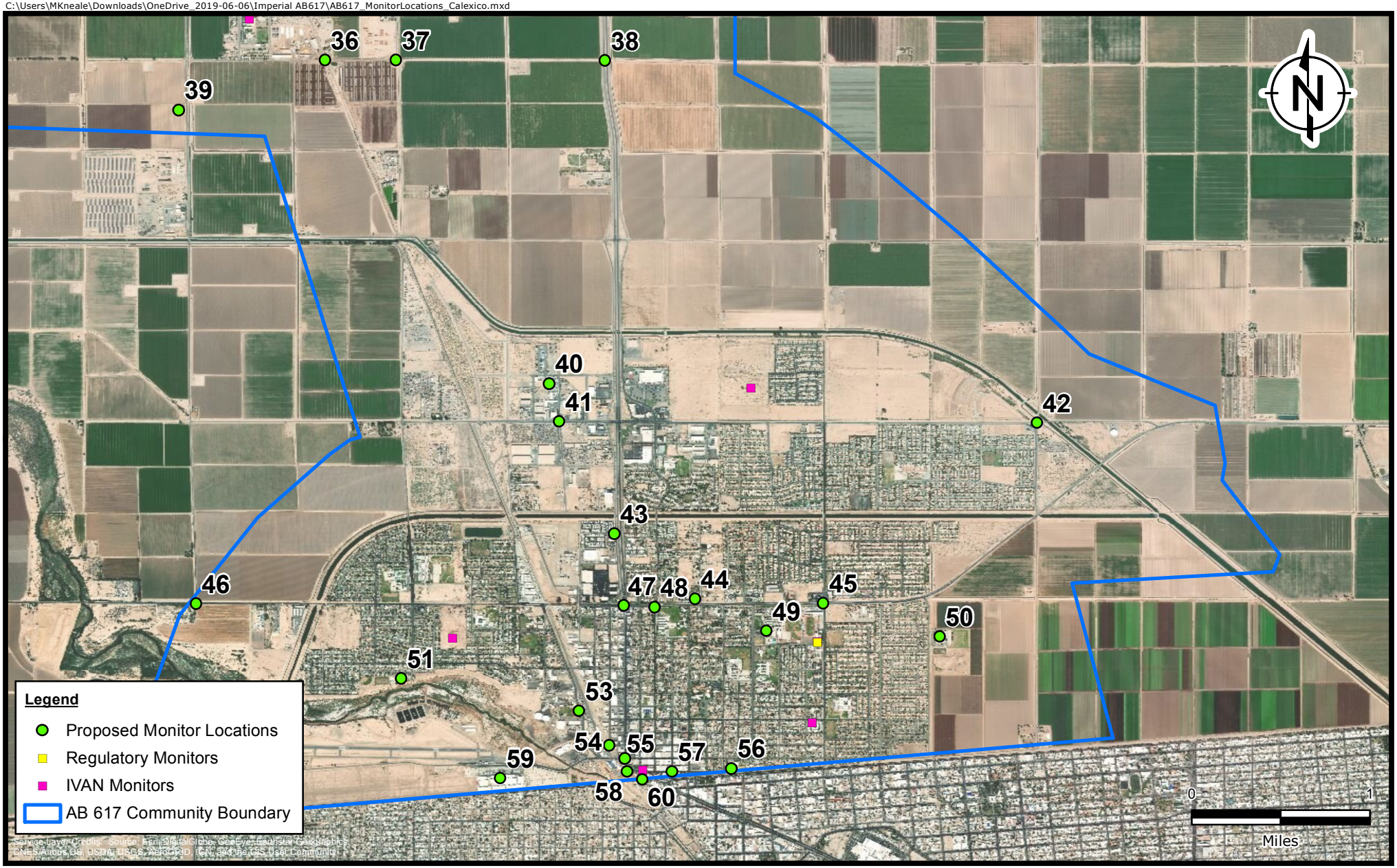


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**Proposed Community Monitoring Locations**

Calexico Area

FIGURE

**4**

DRAFTED BY: RC | DATE: 6/6/2019 | PROJECT: 1690012535

# ATTACHMENT:

# Collected Proposed Monitor Locations List

AB617 CAPP

5-Jun-19

Monitoring Worksheet Collected Responses

| Location of Monitor | Rationale | Latitude & Longitude |
|---|---|---|
| New River | Toxic monitors New River. | |
| Desert & Ag West Side | blowing dust into corridor off desert | |
| Birch St & 111 (near Starbucks) | | 32.679091, -115.498752 |
| Stark Field | | 32.784947, -115.551417 |
| West Cole Blvd (FedEx Freight) | | 32.697114, -115.504823 |
| Broken Spoke Country Club (near Home Depot) | | 32.768331, -115.546633 |
| Cesar Chavez Blvd (Legion Park) | | 32.670547, -115.502393 |
| 111 & E. Heber (Arco) | | 32.730664, -115.500393 |
| Gran Plaza Outlet | | 32.665069, -115.508784 |
| S. La Brucherie Rd & W. McCabe (Southwest High School) | | 32.752435, -115.577775 |
| Heber Feedlot (El Toro Land & Cattle) | industry/vehicles | 32.723395, -115.523008 |
| Calexico Border | Traffic | |
| Heber Geothermal | | |
| Surrounding AG corridor | | |
| Fawcett & HWY 111 | Close to feedlot & HWY 111 traffic | 32.723354, -115.500284 |
| ICOE | Close to office of education | 32.751681, -115.563605 |
| HWY 86 & Keystone | traffic, industry | 32.912573, -115.570036 |
| Port of Entry #1 (West) | High Traffic. emissions from cars/traffic | 32.664955, -115.497248 |
| Port of Entry #2 (East) | High Traffic. emissions from cars/traffic | 32.673000, -115.387873 |
| Schools nearest to Border | | |
| Hospital nearest to the border | | |
| Parks and Recreation areas nearest to the border | | |
| Heffernan & 1st St (Calexico) | | 32.665616, -115.494856 |
| Imperial Ave & 2nd St (Calexico) | | 32.666683, -115.498685 |
| HWY 98 & Andrade | | 32.679270, -115.482559 |
| Cesar Chavez & 3rd St (Calexico) | | |
| Cole Rd & Bowker (Calexico) | | 32.693921, -115.465230 |
| Pitzer & Fawcett | Feed lot & geothermal plant | 32.723395, -115.517244 |
| HWY 111 & Evan Hewes Hwy | high vehicle traffic | 32.799744, -115.500544 |
| Dogwood & HWY 98 | high vehicle traffic | 32.679246, -115.533483 |
| HWY 111 & Heber Rd | high vehicle traffic | 32.730658, -115.500402 |
| Seeley, CA (west of city) | | |
| Holtville, CA (east of city) | | |
| Brawley CA (north of city) | | |
| Central Calexico | | |
| West of Calexico city limits | | |
| Imperial Ave (1600 Block) | high traffic | |
| Railroad track area Aten Rd | high traffic of mixed vehicles | 32.825613, -115.564060 |
| near McCabe school | Increased Ag area | 32.752094, -115.595531 |
| Calexico High School | | 32.677025, -115.487164 |
| El Centro Water Plant/Walmart area | | |
| Heber (Dogwood Rd) | | 32.730674, -115.534448 |
| Cole & Portico | industrial areas/diesel trucks | 32.694027, -115.504002 |
| Gibson & Schaefer | industry/railroad/traffic | 32.733932, -115.526021 |
| IV Mall | traffic | 32.763824, -115.530647 |
| Enrique Camarena School | industry/traffic | 32.676563, -115.473115 |
| IC Fire Department | industry/traffic | |
| Main & Dogwood | industrial area/traffic. Idling traffic | 32.792835, -115.535620 |
| South 4th St | | |
| Danenberg & HWY 86 | trucks off freeway | 32.766965, -115.552023 |
| Dannenberg & Dogwood | idling traffic | 32.766949, -115.535168 |
| 4th St & Aurora | gas stations/traffic/schools | 32.778432, -115.553970 |
| Southwest High School | traffic/school | 32.775990, -115.580457 |
| McCabe & LaBrucherie | traffic/ag equipment | 32.752434, -115.577760 |
| Adams & Imperial | traffic congestion | 32.796564, -115.569990 |
| Washington Elementary School | | 32.791631, -115.543888 |
| Desert Oasis High School | | 32.781015, -115.549770 |
| Imperial County Community School | | |
| Imperial County Ag yard (Commercial & Fairfield) | | 32.794910, -115.541406 |
| City of El Centro Yard (Orange Ave) | | 32.788774, -115.535572 |
| Clinicas de Salud (new offices) | | |

| | | |
|---|---|---|
| IID Yard (Commercial & 3rd St) | | 33.239054, -115.508641 |
| Dogwood School | | 32.738991, -115.531962 |
| Heber Emergency Services facility | | 40.490186, -111.406263 |
| CUHSD/Central/Southwest | | |
| CET (Brighton & 3rd) | | 32.789797, -115.548816 |
| ECRMC (4th & Main) | | 32.792816, -115.552537 |
| ARC | | 32.782488, -115.540598 |
| Sure Helpine (Crisis Center) | | |