EJSCREEN Community Summary for the Montrose-Del Amo Superfund Sites

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EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency (EPA) developed an on-line screening and mapping tool, EJSCREEN, to identify environmental justice communities impacted by Superfund Sites. For EPA's communication and outreach strategy around the Del Amo-Montrose Superfund Sites in Los Angeles, California, EJSCREEN was used to summarize demographic and environmental indicators. The areas located over the groundwater contamination from these sites were mapped and identified by census block groups, and demographic and environmental indicators were obtained. The data were compared between census block groups, as well as data from the State of California, to identify the areas with the highest environmental justice profiles as well as to describe the population residing over and near the groundwater contamination plumes.

The region over the groundwater plume was found to be in the top 15th percentile of the State of California with respect to diesel particulate-matter air pollution, and some areas were in the top 20th percentile of the state for minority, low income, and linguistically isolated populations. An average of 30 percent of the community speaks Spanish, while another 15 percent speak either Chinese, Japanese, Korean or Tagalog. The results found that EPA has been targeting the areas with the most environmental justice concerns in their ongoing community outreach, and may want to consider adding Asian-language materials in their campaign. In addition, there are two areas adjacent to the groundwater contamination plume that have high percentages of young children, minorities, and low income households that area also areas of high environmental justice concern.

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PROJECT OBJECTIVES

United States federal agencies must ensure their activities, policies and programs do not place an undue burden on disadvantaged and minority populations—a practice known as environmental justice (Executive Order No. 12898, 1994). Environmental justice legislation requires agencies, among other things, to involve the public and give them a voice when it comes to federal activities in their communities. To identify environmental justice communities for their outreach, The United States Environmental Protection Agency (EPA), has developed an on-line environmental justice screening and mapping tool, EJSCREEN. The purpose of the internship was to learn and use EJSCREEN to determine areas of environmental justice concern related to the Montrose-Del Amo Superfund Sites.

In the greater Los Angeles area in Southern California are the adjoining Montrose and Del Amo Superfund Sites. The Del Amo plant used to make synthetic rubber for the United States Government from 1943-1972, and the neighboring Montrose plan made DDT from 1947-1982. DDT has been found in the soils of neighboring households' yards, along the storm water pathways, and in the ocean where sewer systems deposited DDT-contaminated sediments for years. In addition to the DDT contamination, the activities of both plants contaminated the groundwater below with a variety of chemicals, mainly volatile organic compounds (VOCs) such as benzene, trichloroethylene (TCE) and perchloroethylene (PCE). Some of the chemicals are in the form of a dense non-aqueous phase liquid (DNAPL), which don't dissolve easily in water, stick to the soils, and cause widespread contamination with a very small amount (EPA, 2016). A map of an overview of the sites is presented in appendix A.

PROJECT APPROACH

The EPA's online environmental justice screening tool, EJSCREEN, version 2016, was

used to gather all demographic and environmental exposure data for the areas around the

Montrose-Del Amo Superfund Sites (https://ejscreen.epa.gov/mapper/). All demographic data

was obtained from the 2010-2014 American Community Survey (ACS) (from the EJSCREEN

tool) (EPA 2, 2016). The variables examined were:

1) Demographic indicators:

- minority population
- low income population
- linguistically isolated population
- population with less than high school education
- population over 64 years of age
- population under 5 years of age

2) Environmental indicators:

- particulate matter ($PM_{2.5}$) in $\mu g/m^3$
- ozone (ppb)
- National-Source Air Toxics Assessment (NATA) diesel PM ($\mu g/m^3$)
- NATA cancer risk (lifetime risk per million)
- NATA Respiratory Hazard Index
- traffic proximity and volume (daily traffic count/distance to road)
- lead paint indicator (%pre-1960 housing)
- Superfund proximity (site count/km distance)
- Risk Management Program proximity (facility count/km distance)
- hazardous waste proximity (facility count/km distance)
- water discharger proximity (facility count/km distance)

From EJSCREEN data on the variables above were downloaded and inputted to a

Microsoft Excel spreadsheet for analysis.   Areas studied were within a one-mile and three-mile

radius of the Montrose-Del Amo Superfund Sites, as well as closer examination of the census

block groups over approximate location of the groundwater contamination plume. The census

block groups were assigned numbers, and information gathered on each group from EJSCREEN

(see map in appendix B).

PROJECT OUTCOMES

Within a three-mile radius of the Montrose-Del Amo Superfund Sites, 205,816 people live. In this three-mile radius, 81 percent belong to a minority group, and the population is in the top third of the state for number of residents over 64 years old. Education levels and low income households are average compared to the rest of the state, but the area ranks in the top twenty percent of the state for air pollution caused by diesel particulate matter, and for traffic volume and proximity. Within a one-mile radius, 14,553 people live, of which 85 percent belong to a minority group. Within the one-mile radius the environmental indicators increase for nearly every variable, as well as the amount of poverty, minority population, linguistic isolation, and people who have less than a high school education.

Within the areas of groundwater contamination, the census block groups have been assigned numbers (see map in appendix B). Areas 1, 2, 5, 12, and 15 have the highest percentage of minorities, low income, and linguistically isolated residents. Areas 10 and 12 have the largest percentages of children under five years of age, ranking in the top ten percent of the state for percent of young children. Conversely, areas 7 and 16 have the highest percentages of people over 64 years of age, also ranking in the top ten percent of the state for percentage of people in this age group.

EPA has targeted their community outreach to areas 1, 2, 9, 10, and 11. Compared to all 16 areas, areas 1 and 2 have the highest percentages of minorities (94-95%), highest percentage of renter-occupied homes (89-91%), highest percentage of households below the poverty level (32%), and highest percentage of low income population (59-62%). Area 2 has the most people

of all 16 areas, as well as the highest percent of Spanish linguistically-isolated households (20%). Areas 1 and 2 have 7-8 percent Asian-Pacific-Islander linguistically-isolated households, while area 9 has 13% and area 11 has 10%. In areas 1 and 2, 42% of the census tract speaks Spanish, while 11% speak either Tagalog, Korean, or Japanese. In areas 9, 10 and 11, a third of the census tract speaks Spanish (32%), while 9% speak Tagalog and 6% speak Korean. All values are shown in the table in appendix C.

CONCLUSION

The data obtained from EJSCREEN on the community surrounding the Montrose-Del Amo Superfund Sites indicated that EPA's outreach campaign is already targeting the most vulnerable areas (1,2, 9, 10 and 11), where percentage of minorities, low income, linguistic isolation, lack of education and vulnerable age groups are the highest. However, the results show that areas 5 and 12 should also be approached, due to high amounts of air pollution, minority population, linguistic isolation, and low income. The findings of this project have the following implications:

1. Public outreach in the poorest areas (1, 2, 5, and 10) should be mindful of the resources it may take for the community to attend meetings, presentations, or similar gatherings. All efforts should be made to bring information to them.

2. Traffic and air pollution already heavily impact the area. Any remedial efforts by EPA should consider the noise and air pollution impacts of their activities.

3. A significant number of the population speaks Tagalog, special efforts to reach out to this community should be made. Brochures in Tagalog, meetings at local Filipino restaurants or churches should be considered.

4. Evidence has shown that community outreach is best accomplished by collaborating with organizations and people already well-established and well-trusted in the community (Rowel et al., 2012). The following organizations should be considered as partners to assist with community outreach:

    o Catholic churches. Filipinos and Hispanics, the two largest ethnicities in the area, are primarily Catholic (Asia Society, 2016; Pew Research Center, 2016). There are two prominent Catholic churches in the area: 1) Nativity Church: 1447

Engracia, Torrance (right outside area 16); and 2) St. Philomena Catholic Church: 21900 S Main St, Carson (inside area 12)

o Korean-language churches. For the Korean population, consider outreach at their ethnic churches: Shalom Church: 20050 S Vermont, Torrance (area 1) or Torrance First Baptist Church: 2118 W Carson, Torrance (right outside area 16)

o Women's Infant's and Children's (WIC). Considering the relatively high number of young children in areas 2, 5, 6, 10, 12, and 15, the local WIC center should be approached for literature distribution, insight on the community, and ideas for partnership: 1640 W. Carson, Torrance (in area 5)

o The Boy's and Girl's Club, 1435 Del Amo, Torrance, could be used to reach out to parents and children in the community.

o The Japan Society: 1411 W 190th, Gardena (area 1) that could be partnered with to outreach to the Japanese population.

o Los Angeles County Environmental Health Division (LA EHD). Due to the high number of homes that may have lead paint in areas 3, 4, 13, 14 and 15, the LA EHD will more than likely already have a childhood lead prevention program at work in this area. Part of this same division, LA EHD's "Healthy Homes", also monitors renter-occupied units. Due to the large percentages of renter-occupied homes in some of the areas, this same division may also be at work in the area.

http://publichealth.lacounty.gov/eh/TEA/Lead_Programs/lead_main.htm

1-800-LA-4-LEAD (5323)

5. EPA created an educational brochure on practices at home to improve indoor air quality as part of their outreach campaign (EPA, 2008). Considering that possible build-up of

VOCs inside buildings is of ongoing concern, the education on healthy homes should be continued.

6. Thirty percent, on average, of the areas speak Spanish, and 20 percent of the population is Spanish linguistically isolated in area 2. The EPA has already provided all materials and meetings in both English and Spanish, continuing to provide outreach in Spanish is critical.

7. In areas 2, 6, 10, 11 and 12, around a third of the population or more did not finish high school. For the community to accept information that can be technical and hard to understand, provide materials in plain language, using the principles found on plainlanguage.gov. In fact, the law requires plain language! (Plain Writing Act of 2010, 124 STAT. 2861).

In this project, air pollution was found to be a major exposure of concern. Outdoor air pollution in the study area ranks in the top twenty percent of the State of California (NATA diesel PM). Studies have found that air pollution, especially particulate matter air pollution, is the largest environmental contributor to the burden of disease (Hanninen et al., 2014). Due to the groundwater contamination, indoor air quality in the study area is also a concern if VOCs can build up in indoor air. Future research should explore the incidence and prevalence of air pollution-related health effects such as asthma, heart disease, and lung cancer for populations exposed to both indoor and outdoor air pollution. In addition, due to the large variety of ethnicities in the study area, a look at cultural practices that may contribute to indoor air pollution, such as burning incense or candles, cleaning methods and frequency, or ventilation (opening windows or turning fans on) could be used to determine if some cultural groups are more at risk than others.

Experiential Learning and Career Goals

This opportunity provided through EPA/CSU to work on a Superfund Site project has been of great value to me, both personally and professionally. Through the patience of my internship advisor, Yolanda Sanchez from EPA, I have learned how to phrase demographic information in a way that prevents alienating or offending any one group. The EJSCREEN tool was a hands-on way for me to learn a mapping and screening program. I have vastly improved my Excel and Word proficiency, and learned how to present data in a way that is easier to understand and follow. I attended an open-house community outreach event hosted by EPA, and was able to see how EPA technical and community experts interact with the public.

Career-wise, I have already used the data analysis and presentation skills I learned in this internship at my current position as Supervising Environmental Health Specialist with the County of Orange in the Plan Check Division. Working with Yolanda has polished my writing style, which will help me in any future endeavor. I have gained additional environmental health knowledge about volatile organic chemicals, pesticides, exposures, and risk. This knowledge will help me relate to colleagues in environmental health who deal with hazardous waste, and add to my resume should I consider pursuing another opportunity within this field.

APPENDIX A

Map overview of the Montrose-Del Amo Superfund Sites and approximate location of groundwater contamination.

Approximate Location of Groundwater Contamination and DNAPL

Legend

Groundwater contamination plume	
Dense non-aqueous phase liquid (DNAPL)	
Location of former Montrose plant	
Location of former Del Amo plant	
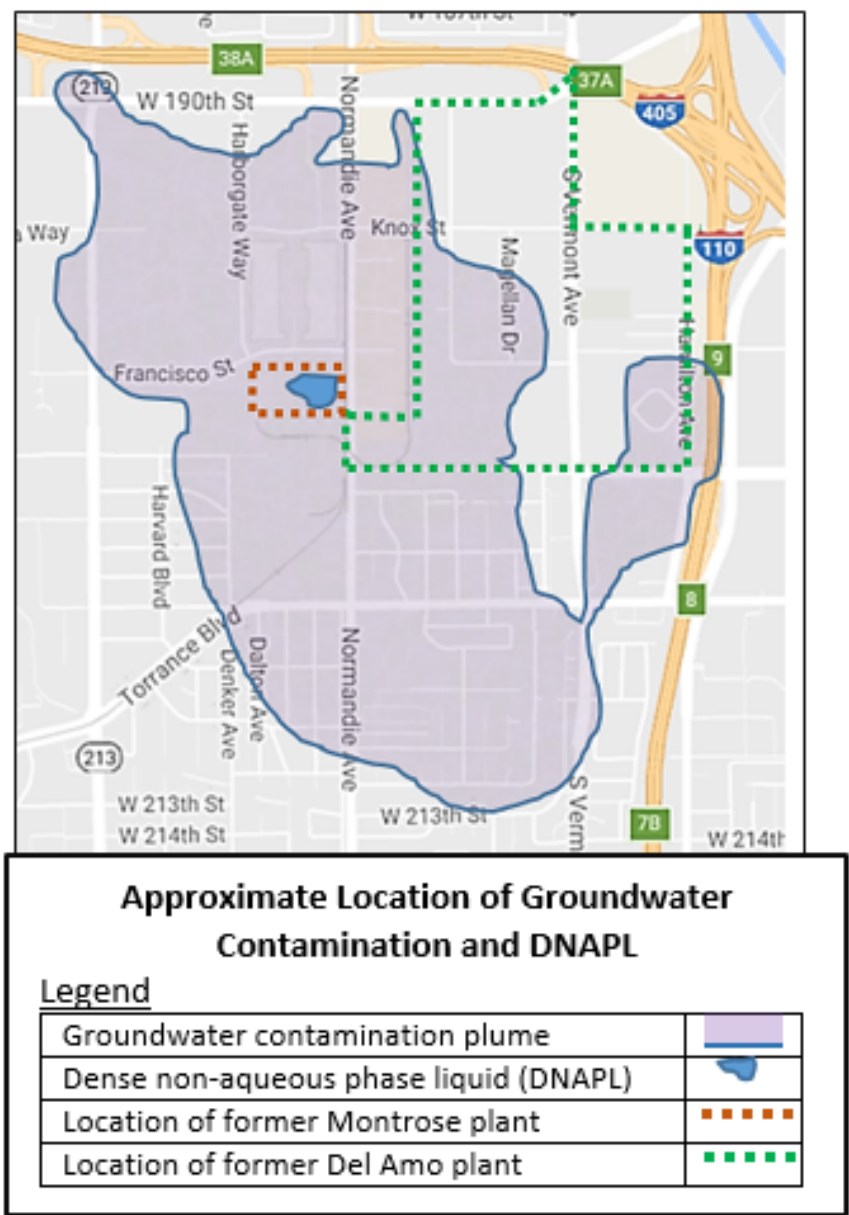
APPENDIX B

Map of the Montrose-Del Amo community census group number assignments.
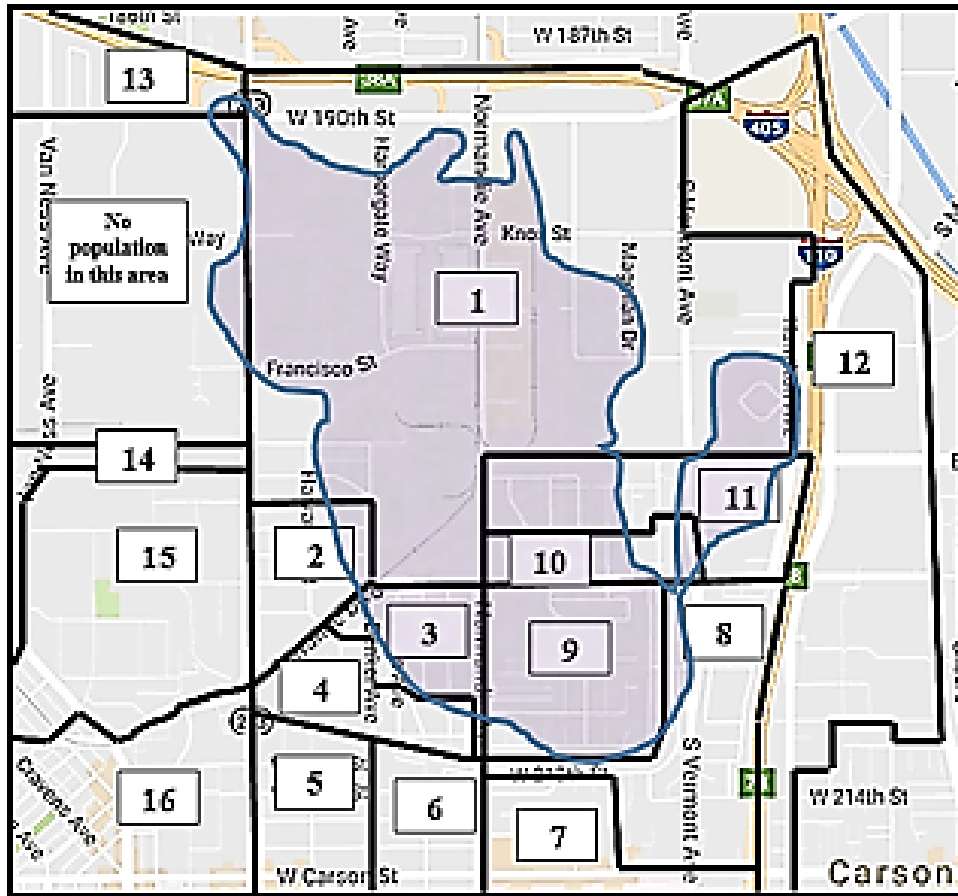
APPENDIX C

Table of values obtained from EJSCREEN.

Key: ☐ = value over 80%ile, ☐ = value over 90%ile, ☐ = value over 1-mile

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1-mile	3-mile
Population	1,113	3,810	762	956	2,159	2,215	2,465	3,006	1,911	821	1,199	1,372	2,242	2,167	1,844	1,146	14,553	205,816
EJScreen Demographic Index (Value in %)	77	79	53	44	72	64	47	52	49	53	52	72	35	33	54	35	62	55
EJScreen Demographic Index (National %ile)	92	94	76	68	89	84	71	75	72	75	75	90	57	55	77	57	82	78
EJScreen Demographic Index (State %ile)	86	89	57	45	80	71	49	56	51	57	56	81	32	29	59	31	69	61
Environmental Indicators (Relative to California)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**1-mile**	**3-mile**
State %ile---Particulate Matter (PM 2.5 in µg/m3)	69	69	69	69	65	65	66	66	68	68	68	68	69	65	65	65	68	67
State %ile---Ozone (ppb)	25	25	25	25	25	25	24	24	25	25	25	25	26	25	25	25	25	25
State %ile---NATA* Diesel PM (µg/m3)	85	85	85	85	79	79	95	95	89	89	89	95	91	74	74	74	88	85
State %ile---NATA* Cancer Risk (lifetime risk per million)	60	60	60	60	50	50	65	65	54	54	54	56	61	58	58	58	58	56
State %ile---NATA* Respiratory Hazard Index	71	71	71	71	60	60	77	77	69	69	69	73	77	66	66	66	71	67
State %ile---Traffic Proximity and Volume (daily traffic count/distance to road)	69	70	67	52	69	23	84	94	70	89	83	96	95	74	89	80	80	85
State %ile---Lead Paint Indicator (% Pre-1960 Housing)	59	52	88	90	73	68	63	51	75	59	59	39	96	86	86	74	66	63
State %ile---Superfund Proximity (site count/km distance)	99	98	98	98	97	98	97	98	99	99	99	98	95	96	97	97	99	96
State %ile---RMP Proximity (facility count/km distance)	96	94	93	92	90	88	90	88	89	92	93	93	91	92	91	90	93	92
State %ile---Hazardous Waste Proximity+ (facility count/km distance)	62	63	65	65	66	69	73	71	68	66	66	73	61	59	60	62	66	71
State %ile---Water Discharger Proximity (facility count/km distance)	73	76	79	80	82	84	89	89	81	82	82	92	64	70	73	77	82	88
Demographic Indicators (Relative to California)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**1-mile**	**3-mile**
State %ile---Minority Population	86	88	66	57	81	85	63	74	63	56	74	81	42	44	47	32	74	69
State %ile---Low Income Population	81	83	41	27	74	51	26	25	31	53	26	75	19	9	68	38	57	45
State %ile---Linguistically Isolated Population	50	93	16	28	87	74	47	78	79	49	83	55	52	18	70	75	78	66
State %ile---Population With Less Than High School Education	55	79	65	61	66	78	61	58	46	73	73	75	41	35	64	28	67	52
State %ile---Population Under 5 years of age	70	82	3	36	89	85	30	52	46	92	62	98	17	55	88	25	67	47
State %ile---Population over 64 years of age	1	8	66	59	34	36	90	85	86	56	37	68	62	31	2	91	51	73
Demographic Indicators	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**1-mile**	**3-mile**
% of Area Population that is Minority	94	95	79	70	91	93	76	86	77	70	86	91	56	58	61	45	85	81
% of Area Population that is Low Income	59	62	27	19	53	34	18	18	21	36	18	54	15	9	48	25	38	30
% of Area Population that is Linguistically Isolated	7	31	0	3	23	15	6	17	18	7	20	8	8	1	13	15	17	12
% of Area Population With Less Than High School Education	17	35	23	20	24	34	20	19	13	29	29	31	11	9	23	7	24	16
% of Area Population Under 5 years of age	8	10	0	5	11	11	4	7	6	12	8	16	3	7	11	4	8	6
% of Area Population over 64 years of age	1	4	13	12	8	8	23	20	20	11	8	14	13	7	2	23	10	15
Other Indicators	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**1-mile**	**3-mile**
% of Area Population Unemployed In the Civilian Labor Force	27	20	3	14	16	19	4	13	6	28	11	8	5	10	18	3		
% of Area Homes that are Renter Occupied	89	91	40	16	62	64	29	46	24	54	45	44	20	66	71	50		
% of Area Households Below Poverty Level	32	32	25	12	20	8	5	4	8	27	8	27	6	4	12	7		
% of Area Households that are Asian-Pacific-Islander Linguistically Isolated	7	8	0	3	20	9	5	5	13	4	10	8	2	0	4	15		
% of Area Households that are Spanish Linguistically Isolated	0	20	0	0	3	6	1	2	5	3	6	0	5	0	3	0		
% of Chinese Speakers in the Census Tract the area is part of	1	1	1	1	2	2	4	4	1	1	1	0	1	2	2	2		
% of Japanese Speakers in the Census Tract the area is part of	3	3	3	3	4	4	3	3	2	2	2	0	3	3	3	3		
% of Korean Speakers in the Census Tract the area is part of	2	2	2	2	1	1	1	1	6	6	6	1	2	3	3	3		
% of Tagalog Speakers in the Census Tract the area is part of	6	6	6	6	9	9	12	12	9	9	9	36	3	0	0	0		
% of Spanish Speakers in the Census Tract the area is part of	42	42	42	42	46	46	15	15	32	32	32	24	11	21	21	21		

Note: All values obtained from EJSCREEN in October, 2016. All "other indicators" above were obtained from 2010-2014 American Community Survey (ACS). One and three-mile buffer zones drawn around coordinates 33.846433, -118.299685.

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