

Research Division
Contractor: UC Berkeley
Contract # 07-341

FUNDING FISCAL YEAR	FY 07/08	FY 08/09		
TERM	06/20/08-12/19/09	06/20/08-12/19/09		
PCA	72370	72370		
LINE ITEM/OBJECT	398.00	398.00		TOTAL
DESCRIPTION				
Contract \$	\$ 45,000.00	\$ 5,000.00	\$	50,000.00
			\$	-
			\$	-
Total, Contract	\$ 45,000.00	\$ 5,000.00	\$ -	\$ 50,000.00

Payments to Contractor:

Inv. #	Inv. Date	Ser Per			C/S
77788-77659	3/26/2009	10/28/08 - 3/28/09	5,620.39	5,620.39	C080750 ✓
77788-85506	6/10/2009		9,281.71	9,281.71	C080900 ✓
97469	9/14/2009	6/1 - 8/31/09	14,775.63	14,775.63	C090240 ✓

Total, Payments	\$ 29,677.73	\$ -	\$ -	\$ 29,677.73
Balance Available to Pay Contractor	\$ 15,322.27	\$ 5,000.00	\$ -	\$ 20,322.27
<i>Balance Must Be Spent By:</i>	<i>6/30/2010</i>	<i>6/30/2011</i>	<i>6/30/2012</i>	

Notes:
Contract Manager: Aivaro Alvarado

18 and 43 same

DUPLICATE

Research Division
Contractor: UC Berkeley
Contract # 07-341

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TERM	06/20/08-12/19/09	06/20/08-12/19/09		
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LINE ITEM/OBJECT	398.00	398.00		TOTAL
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Contract \$	\$ 45,000.00	\$ 5,000.00	\$	50,000.00
			\$	-
			\$	-
Total, Contract	\$ 45,000.00	\$ 5,000.00	\$ -	\$ 50,000.00

Payments to Contractor:

Inv. #	Inv. Date	Ser Per			C/S
77788-77659	3/26/2009	10/28/08 - 3/28/09	5,620.39	5,620.39	C080750
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<i>Balance Must Be Spent By:</i>	<i>6/30/2010</i>	<i>6/30/2011</i>	<i>6/30/2012</i>	

Notes:
Contract Manager: Alvaro Alvarado

43 am ↓ 43 Same
WB



University of California Berkeley

Accounting Services
Extramural Funds Accounting

Invoice To:

Emma Plasencia
Cal EPA Air Resources Board
RESEARCH DIVISION
P.O. BOX 2815
SACRAMENTO, CA 95812

Date: 3/26/2009

INVOICE NO. 77788 - 77659

Contract/Grant/Agreement/Purchase Order

PI/Director: Morello-Frosch, Rachel

RCVD MAR 26 '09

Number ~~07-341-01~~

Reference:

Project Title: 2008 Environmental Justice and Climate Change Report

Period Billed

~~10/28/2008 - 2/28/2009~~

	Cumulative	Current
Salaries & Wages	3,487.30	3,487.30
Employee Benefits	1,752.47	1,752.47
Equipment & Facilities	0.00	0.00
Supplies, Materials, & Services	24.42	24.42
Travel	0.00	0.00
Subcontract	0.00	0.00
Indirect Cost	356.20	356.20
TOTAL	\$5,620.39	5,620.39

Amount Now Due

~~5,620.39~~

Refer to invoice # 77788 - 77659

and make check payable to:

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Extramural Funds Accounting
2195 Hearst Ave RM 130 MC 1103
Berkeley, California 94720-1103

TIN # 94-6002123

It is hereby certified that all expenditures reported (or payment requested) are for appropriate purposes and in accordance with the agreements set forth in the application and award documents.

Barbara Westphall

Questions regarding this invoice should be directed to:

Barbara Westphall, Award Analyst
Phone: (510) 642-2449 FAX: 510-643-8997
Email: bwestphall@berkeley.edu

PAYMENT APPROVED:

Bre
Janda Tambo Smit
BART E. CROES, P.E.
CHIEF, RESEARCH DIVISION
DATE 5/08/09

RCVD MAR 26 '09



University of California Berkeley

Accounting Services
Extramural Funds Accounting

RCVD JUN 16 '09

Invoice To:

Emma Plasencia
Cal EPA Air Resources Board
RESEARCH DIVISION
P.O. BOX 2815
SACRAMENTO, CA 95812

Date: 6/10/2009

INVOICE NO. 77788 - 85506

Contract/Grant/Agreement/Purchase Order		PI/Director: Morello-Frosch, Rachel
Number: 07-341		Reference:
Project Title 2008 Environmental Justice and Climate Change Report		
	Period Billed 3/1/2009 - 5/31/2009	
	Cumulative	Current
Salaries & Wages	8,718.25	5,230.95
Employee Benefits	5,232.30	3,479.83
Equipment & Facilities	0.00	0.00
Supplies, Materials, & Services	61.05	36.63
Travel	0.00	0.00
Subcontract	0.00	0.00
Indirect Cost	890.50	534.30
TOTAL	\$14,902.10	9,281.71

Amount Now Due 9,281.71

Refer to invoice # 77788 - 85506
and make check payable to:
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Extramural Funds Accounting
2195 Hearst Ave RM 130 MC 1103
Berkeley, California 94720-1103

TIN # 94-6002123

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Barbara Westphall

Questions regarding this invoice should be directed to: Barbara Westphall, Award Analyst
Phone: (510) 642-2449 FAX: 510-643-8997
Email: bwestphall@berkeley.edu

PAYMENT APPROVED:

Bart E. Croes
BART E. CROES, P.E.
CHIEF, RESEARCH DIVISION
DATE: 6/23/09



University of California Berkeley

Accounting Services
Extramural Funds Accounting

RCVD SEP 21 09

Invoice To:

Emma Plasencia
Cal EPA Air Resources Board
RESEARCH DIVISION
P.O. BOX 2815
SACRAMENTO, CA 95812

Date: 9/14/2009

INVOICE NO. 77788 - 97469

Contract/Grant/Agreement/Purchase Order

PI/Director: Morello-Frosch, Rachel

Number: ~~07-341 - 01~~

Reference:

Project Title 2008 Environmental Justice and Climate Change Report

Period Billed

~~6/1/2009 - 8/31/2009~~

Salaries & Wages

Cumulative 20,593.15

Current 11,874.90

Employee Benefits

6,706.67

1,474.37

Equipment & Facilities

0.00

0.00

Supplies, Materials, & Services

144.17

83.12

Travel

0.00

0.00

Subcontract

0.00

0.00

Indirect Cost

2,233.74

1,343.24

TOTAL

\$29,677.73

14,775.63

Amount Now Due

14,775.63

Refer to invoice # 77788 - 97469

and make check payable to:

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Extramural Funds Accounting
2195 Hearst Ave RM 130 MC 1103
Berkeley, California 94720-1103

TIN # 94-6002123

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Questions regarding this invoice should be directed to:

Barbara Westphall, Award Analyst

Phone: (510) 642-2449 FAX: 510-643-8997

Email: bwestphall@berkeley.edu

PAYMENT APPROVED:

Janita Tambo Smitz

for BART E. CROES, P.E.
CHIEF, RESEARCH DIVISION

DATE 10/1/09

RCVD SEP 21 09

STATE OF CALIFORNIA
STANDARD AGREEMENT
 STD 213 (Rev 06/03)

AGREEMENT NUMBER
07-341

REGISTRATION NUMBER
3900090833/267

1. This Agreement is entered into between the State Agency and the Contractor named below:

STATE AGENCY'S NAME

Air Resources Board (ARB)

CONTRACTOR'S NAME

The Regents of the University of California, Berkeley (UCB or Contractor)

2. The term of this Agreement is: June 20, 2008 through December 19, 2009

3. The maximum of this Agreement is: **\$50,000.00**
 (Fifty thousand dollars and no cents)

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement.

Exhibit A – Scope of Work	1 Page
Exhibit A, Attachment 1	50 Pages
Exhibit A, Attachment 1-A	1 Page
Exhibit B – Budget Detail and Payment Provisions	2 Pages
Exhibit B Attachment 1	20 Pages
Exhibit C* – General Terms and Conditions	GIA 101
Check mark one item below as Exhibit D:	
<input checked="" type="checkbox"/> Exhibit - D Special Terms and Conditions (Attached hereto as part	1 Page
<input type="checkbox"/> Exhibit - D* Special Terms and Conditions	
Exhibit E – Additional Provisions	4 Pages
Exhibit F – Final Report Format	7 Pages

Items shown with an Asterisk (*), are hereby incorporated by reference and made part of this agreement as if attached hereto. These documents can be viewed at www.ols.dgs.ca.gov/Standard+Language

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

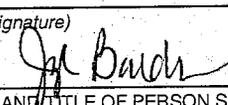
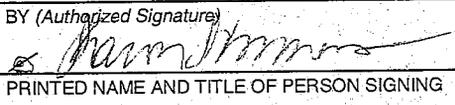
CONTRACTOR		California Department of General Services Use Only
CONTRACTOR'S NAME (if other than an individual, state whether a corporation, partnership, etc.)		
The Regents of the University of California, Berkeley		
BY (Authorized Signature)	DATE SIGNED (Do not type)	
	7/30/08	
PRINTED NAME AND TITLE OF PERSON SIGNING		
Jyl Baldwin, Assistant Director COMPLIANCE & SPECIAL PROJECTS		
ADDRESS		
2150 Shattuck Avenue, Suite 313 Berkeley, CA 94704-5940 (Attn: Jyl Baldwin)		
STATE OF CALIFORNIA		
AGENCY NAME		
Air Resources Board		
BY (Authorized Signature)	DATE SIGNED (Do not type)	
	08/01/08	
PRINTED NAME AND TITLE OF PERSON SIGNING		
Shawn Simmons, Manager, Contract Services Section		
ADDRESS		
P.O. Box 2815, Sacramento, CA 95812		
		<input checked="" type="checkbox"/> Exempt per: SCM 4.04.5.5

EXHIBIT A

SCOPE OF WORK

1. The Regents of the University of California, Berkeley (UCB, University, or Contractor) agrees to provide the following services for the project entitled "2008 Environmental Justice and Climate Change Report," which is attached hereto as Exhibit A, Attachment 1 and made a part of this Agreement.
2. The project representatives during the term of this agreement will be:

Requesting Agency: ARB	Providing Agency: UCB
Name: Alvaro Alvarado	Name: Rachel Morello-Frosch
Division/Office: Research Division	Department:: Department of Environmental Science, Policy and Management & School of Public Health
Phone: 916-445-4843	Phone: 510-643-5358
Fax: 916-322-4357	Fax: 510-643-5438
Email: aalvarad@arb.ca.gov	Email: rmf@nature.berkeley.edu

The ARB Contract Administrator is:

The University's Contract Administrator

Requesting Agency: ARB	Providing Agency: UCB
Name: Sally Jorgensen	Name: Jyl Baldwin
Division/Office: Research Division	Division/Office: Sponsored Projects Office
Address: 1001 "I" Street, 5 th Floor Sacramento, CA 95814	Address: 2150 Shattuck Avenue, #313 Berkeley, CA 94704-5940
Phone: 916-327-1500	Phone: 510-643-7430
Fax: 916-322-4357	Fax: 510-643-5438
E-mail: sjorgens@arb.ca.gov	E-Mail: n/a jbalwin@Berkeley.edu

2008 Environmental Justice and Climate Change Report

Submitted to the California Air Resources Board
By

Rachel Morello-Frosch
University of California, Berkeley
Department of Environmental Science, Policy and Management & School of Public
Health

Manuel Pastor
Center for Justice, Tolerance and Community, University of California, Santa Cruz and
Department of Geography, University of Southern California

James Sadd
Department of Environmental Science
Occidental College

Official Authorized to Bind This Proposal:

Name _____

Signature _____

Prepared for:

State of California Air Resources Board
Research Division
PO Box 2815
Sacramento, CA 95812

Prepared by:

Department of Environmental Science, Policy and Management
University of California, Berkeley
137 Mulford Hall
Berkeley, CA 94720-3114
510-643-6358

December 20th 2007

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1. TECHNICAL PROPOSAL

Statement of Significance

Hurricane Katrina opened windows on social realities that the media, policymakers, and the public had persistently ignored: Facing enhanced environmental vulnerability and stranded by a lack of public transit and resources, the residents of the poorest and blackest neighborhoods of New Orleans quickly demonstrated that disasters are not equal-opportunity affairs (see Pastor, et al. 2006).

It is a lesson also illustrated in California where a heat wave during the summer of 2006 was responsible for the deaths of an estimated 140 people, many of whom were poor elderly residents from the Central Valley who did not have the resources to protect themselves from the intense triple-digit temperatures. Low-income urban communities and rural communities in the Central Valley, many of which contain a significant proportion of residents of color, are particularly at risk from the adverse effects of increased temperatures and heat waves, as many households lack the means to afford air-conditioning, the capacity to travel from impacted areas during hot spells, and access to community-level programs.

Lack of adequate health care and a higher probability of pre-existing respiratory illnesses such as asthma also make poor communities of color potentially more vulnerable to climate-induced increases in air pollution (Schwartz et al., 1990). Heat-wave mortality projections by race/ethnicity for Los Angeles have predicted that African Americans would suffer the highest burden of heat related mortality compared to other racial and ethnic groups (Cordova, Gelobter et al. 2006). And the growing body of scientific evidence suggests that these types of extreme weather events will become more frequent and powerful in California as climate change continues over the next century (Climate Change Center, 2006).

Fortunately, California is taking the lead on reducing greenhouse gas emissions and is likely to be a model for the nation in terms of how to achieve reductions in a ways that can have positive impacts on the economy. One of the challenges for CARB, and for California, will be to engage diverse stakeholders to reduce greenhouse gas emissions in ways that are not only environmentally just and sustainable but also ensure that the economic and health burdens of climate change, climate change remedies, and adaptations do not fall disproportionately on communities of color and the poor. This pilot project will examine some of the environmental justice implications of climate change in California in order to provide critical inputs to CARB as it develops and implements future climate change reduction and adaptation strategies in the state. Other local and state agencies may also find this analysis useful for informing their own efforts to reduce greenhouse gas emissions, and to conduct effective outreach to help diverse communities plan for and adapt to the impacts of climate change.

Abstract

Rationale: Recent climate events, potentially linked to climate change, such as Hurricane Katrina and a series of deadly heat waves in California and elsewhere in the Southwestern U.S. have raised concern among public health officials, regulators, and the public about the disparate impact of climate change on communities of color and the poor. Understanding the environmental justice impacts of climate change will be critical for the development of policies and regulatory strategies to reduce greenhouse gas emissions.

Previous Work: Research on the impacts of climate change on communities of color and the poor in the United States is in its infancy. However, evidence suggests that the health and economic effects of climate change will fall most heavily on these populations. Analysis of the equity impacts of climate change in California can better inform regulatory strategies to reduce greenhouse gas emissions, address the disparate impact of climate change on vulnerable populations, and inform strategies to help diverse communities better plan for and adapt to its long-term impacts.

Objectives: The objective of this pilot project is to conduct a review and systematization of the pertinent literature on the environmental justice impacts of climate change, with an emphasis on communities of color and low income groups. The implications for California will be highlighted. This project may also conduct preliminary quantitative analyses to illustrate possible analytical approaches and methods for future climate equity research, particularly initiatives that could encourage interdisciplinary collaboration between climate change experts and environmental justice researchers. This work would help CARB identify and prioritize research questions regarding environmental justice that could be integrated into the Agency's future research programs on climate change.

Methods: The 2008 Environmental Justice and Climate Change Report will build upon previous reports, and, where feasible, will work within the matrix of climate change scenarios and time windows under consideration by the Climate Action Team Scenarios Project. This will entail updating a literature review on climate change and equity impacts in California. If appropriate data become available, we may also include quantitative analyses illustrating geospatial or statistical approaches to estimating disproportionate impacts on specific regions.

Potential Benefits: The study will provide ARB staff with a more comprehensive view of environmental justice issues associated with climate change impacts as the Agency develops and implements greenhouse gas reduction strategies. It will also suggest how the Agency can encourage the development of interdisciplinary research projects that would better elucidate the environmental justice impacts of climate change and the policies aimed at reducing greenhouse gas emissions.

Project Objectives

This pilot project has the following aims:

- 1) To update and systematize the literature examining the disparate impacts of climate change on communities of color and the poor;
- 2) Where feasible, to use quantitative analyses to estimate disproportionate impacts on specific regions;
- 3) Review the 2006 Scenarios Analysis results for each sector and research plans for 2008 in order to outline a prioritized research agenda, including identifying needed datasets for future study of the disproportionate impacts of climate change, and of environmental justice issues related to climate change mitigation and adaptation strategies for the State of California.

Deliverables

- The primary deliverable of this project will be a 30-50 page report, exclusive of references and bibliography. A progress report with results and policy implications will be delivered to CARB staff no later than September 5, 2008. The draft final version of the report will be delivered to CARB staff for review within 10 months after the initiation of this contract. The Final report will be delivered to CARB no later than twelve months after the initiation of this contract. Draft and Final versions of the report will be provided both in hardcopy (10 copies) and as an electronic Microsoft Word (2003 or backwards compatible) document file. The dates listed are based on the assumption that the contract for this work is approved promptly.
- Key presentations to policy makers and regulatory officials as requested.
- Continuing meetings with ARB staff to consult on project progress and maximize utility of work to staff.

Technical Plan

Background/Rationale

From the ravages of Hurricane Katrina in 2005, to the heat wave in California's Central Valley in 2006, the disproportionate impact of disasters potentially linked to climate change on communities of color and the poor is of mounting concern to regulators, policy-makers, researchers and environmental justice advocates. However, research on the environmental justice implications of climate change – ranging from health effects to economic impacts – is in its infancy. This new line of work requires interdisciplinary approaches – spanning the fields of climate change science, epidemiology, environmental health, sociology, economics, spatial analysis and statistics – in order to understand the socioeconomic, cultural, and health effects of complex ecological, meteorological, air pollution phenomena.

California is taking the lead in forging new and aggressive strategies to reduce greenhouse gas emissions, and it is likely to be a model for the nation in terms of how to achieve reductions in a way that moves our economy toward a positive, stronger, and more sustainable direction. However, as the lead Agency for implementing climate change policy, CARB faces the significant challenge of engaging diverse stakeholders to reduce greenhouse gas emissions in ways that are environmentally just and at the same time ensure that the economic and health burdens of climate change, climate change remedies, and adaptations do not fall disproportionately on communities of color and the poor. Continued study of environmental justice communities in California will provide critical inputs to help the Agency forge future climate change reduction and adaptation strategies in the state. Specifically, this pilot project will conduct a review and systematization of the pertinent literature on the environmental justice impacts of climate change, with an emphasis on communities of color and low income groups. The implications for California will be highlighted. If appropriate data become available, this project may also conduct preliminary quantitative analyses to illustrate possible analytical approaches and methods that would be appropriate for future climate equity research, particularly initiatives that could encourage interdisciplinary collaboration between climate change experts and environmental justice researchers.

Data and Methods

Our proposed pilot project will entail the development of a report, tentatively entitled: *The 2008 Environmental Justice and Climate Change Report* (referred to as the *EJ and Climate Change Report*) that will build upon previous work, commissioned by CARB and other institutions (Field, Daily et al. 1999; Climate Change Center 2006; Cordova, Gelobter et al. 2006). Our report, if timing allows and where feasible, will be structured within the matrix of climate change scenarios and time windows under consideration by the Climate Action Team Scenarios Project.

Our report will include an updated literature review on climate change and equity impacts in the state of California, (and elsewhere), integrating, where feasible, the results of both

2006 and 2008 Climate Action Team Scenarios Projects. Drawing on the available literature, we will identify and describe relevant types of disproportionate impacts, discussing why, how, and to whom such impacts are expected to occur.

In addition to the qualitative overview of potential disproportionate impacts of climate change, we may conduct quantitative analyses illustrating geospatial or statistical approaches to estimating disproportionate impacts on specific regions. This information could help high risk communities work together more closely with the state in developing and implementing plans to mitigate and/or adapt to climate change scenarios. One analysis may involve an assessment of extreme heat-related events. Another possible analysis could consider the potential co-benefits of climate change emission reduction measures that could also result in significant reductions of pollutants known to have significant health and mortality impacts, such as criteria air pollutants and air toxics that are ozone precursors or that are known to create "hotspots" in some persistently contaminated communities.

The *EJ and Climate Change Report* seeks to provide a framework for thinking about the equity impacts of climate change, as well as adaptation and emission reduction strategies, on low-income and disadvantaged communities of color in the State of California. The proposed report will summarize what is currently understood in the literature regarding environmental justice impacts of climate change, including health, socioeconomic, displacement, and cultural dimensions of anticipated climate change trends. It will also outline an agenda for future interdisciplinary research needed to conduct a full environmental justice review, and suggest advanced analytical approaches that may be appropriate for application to future research. The conclusion may include preliminary quantitative assessments of proposed mitigation measures and adaptation strategies.

Proposed Work Plan

Our work plan for this report includes the following tasks:

1. Review the published literature, including: the 2006 Scenarios Analysis results for each sector and research plans for 2008, studies addressing the potential environmental impacts of climate change on California; studies of disproportionate impacts of climate change, or related forms of air pollution, on low-income communities and disadvantaged communities of color; studies addressing the potential impacts of climate change mitigation and adaptation strategies on those same communities – particularly in California.
2. Conduct at least 10 in-depth interviews with EJ stakeholders and other stakeholders on anticipated impacts of climate change, as well as climate change mitigation and adaptation strategies. The research team proposes to develop these interview questions in consultation with CARB staff, among others, and will use these interviews to inform our analysis.

3. To illustrate environmental equity approaches to the impacts of climate change, the report may include preliminary quantitative assessments. These assessments may focus on specific populations, regions or metropolitan areas of California. While these quantitative analyses are not expected to be "benchmark" studies, they should, if feasible, demonstrate pioneering approaches to detecting, measuring or evaluating disproportionate impacts on low-income communities or communities of color. One of the quantitative analyses may, depending on data availability, focus on some aspect of extreme heat events. The research team will finalize the selection of quantitative analyses in consultation with CARB staff.
4. Drawing upon both in-depth interviews, (#2), and its review of relevant scientific literature, (#1), the report will articulate a prioritized research agenda, including identifying needed datasets for future study of the disproportionate impacts of climate change, and of environmental justice issues related to climate change mitigation and adaptation strategies for the State of California.
5. The primary deliverable of this project will be a 30-50 page report, exclusive of references and bibliography. The report will synthesize and summarize the results of tasks 1-4 above. A progress report with preliminary results and policy implications will be delivered to CARB staff no later than September 5, 2008. The draft final version of the report will be delivered to CARB staff for review no later than 10 months after the initiation of this contract. The Final report will be delivered to CARB no later than twelve months after the initiation of this contract. Draft Final and Final versions of the report will be provided both in hardcopy (10 copies) and as an electronic Microsoft Word (2003 or backwards compatible) document file. The dates listed are based on the assumption that the contract for this pilot project will be approved promptly at the beginning of 2008..

Data Management

Data generated by all components of this project will be tracked and updated datafiles database housed at the Department of Environmental Science, Policy and Management at UC Berkeley and shared with the University of Southern California, Occidental College, and UC Santa Cruz, CJTC.. The three co-PI's will collaborate on various components of this analysis, with GIS work done primarily in the Environmental Sciences Department at Occidental College and statistical analysis related to the EJ climate change impact assessments done at UC Berkeley's School of Public Health, CJTC, and the University of Southern California. The computers and servers housing the data for this project are password protected with regular backups, and access to all data files will be restricted to researchers working on this project. Geocoding for much of the land use information and demographic information has been completed through an ARB contract titled, "Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-Making" (contract #04-308).

Statistical Analysis

Equity analyses may entail the use of linear models (i.e. GEE, logistic and standard ordinary least squares) to conduct ecological analyses to examine the relationship between various census-level SES variables and outcomes such as impacts from extreme heat events, flooding or other possible scenarios. The specifics of the statistical analyses will be detailed once the final climate change datasets are jointly identified by the researchers and CARB staff.

Strengths and Limitations of the Proposed Study

The proposed research brings together an interdisciplinary team with a significant record of publication in the field of environmental justice in California and a history of presenting results in accessible ways to policy makers and community leaders. This pilot project examining the environmental justice implications of climate change represents an important addition to a large environmental justice research initiative currently being funded by the Agency and led by this research team. As the State prepares to implement the specifics of AB32, policy makers and the public will need to understand the equity impacts of climate change and proposed mitigation measures in order to engage diverse communities and stakeholders in the implementation of effective greenhouse gas reduction strategies. Finally, this pilot project will provide concrete ideas for the Agency's Research Division and the Climate Action Team in developing innovative interdisciplinary research initiatives aimed at better understanding the environmental justice impacts of climate change. This information will be critical for California – a state that is leading the country in addressing climate change and that is a bellwether for demographic change for the rest of the nation.

As expected in any research, this project has certain limitations as well. As a pilot project, the quantitative analyses may not be possible within the timeframe of this project, and if so, would be limited to a narrow aspect of the broad topic climate change equity due to a paucity of appropriate data for this kind of work. . Therefore, the small scale of this project will preclude any large-scale conclusions about the environmental justice implications of climate change in the state. However, by using relevant datasets to demonstrate innovative and interdisciplinary approaches for assessing climate change equity, this report can suggest new paths of inquiry and methodological approaches for larger-scale analyses and help prioritize new research initiatives for CARB to consider on this critical topic.

References

- Climate Change Center (2006). *Managing Greenhouse Gas Emissions in California*. Berkeley, UC Berkeley.
- Climate Change Center (2006). *Our Changing Climate Assessing the Risks to California*, The California Climate Change Center.
- Climate Change Center (2006). *Public Health-Related Impacts of Climate Change in California*, The California Climate Change Center (CEC-500-2005-197-SF).
- Cordova, R., M. Gelobter, et al. (2006). *Climate Change in California: Health, Economic and Equity Impacts* Oakland, CA, Redefining Progress.
- Field, C. B., G. C. Daily, et al. (1999). *Confronting Climate Change in California: Ecological Impacts on the Golden State*, The Union of Concerned Scientists and The Ecological Society of America.
- Pastor, Manuel, Robert D. Bullard, James K. Boyce, Alice Fothergill, Rachel Morello-Frosch, and Beverly Wright. *In the Wake of the Storm: Environment, Disaster, and Race After Katrina*. New York: Russell Sage, 2006.
- Rodriguez, E., C.S. Morris, J.E. Belz, E.C. Chapin, J.M. Martin, W. Daffer, S. Hensley, 2005, *An assessment of the SRTM topographic products*, Technical Report JPL D-31639, Jet Propulsion Laboratory, Pasadena, California, 143 pp.
(http://www2.jpl.nasa.gov/srtm/SRTM_D31639.pdf)
- Schwartz J, Gold D, Dockery DW, Weiss ST, Speizer FE, (1990). Predictors of asthma and persistent wheeze in a national sample of children in the United States, Association with social class, perinatal events, and race. *Am Rev Respir Dis*;142(3):555-62.

2. DETAILED WORK PLAN

Task List

The following is a list of tasks followed by the detailed work plan for various personnel involved in those tasks.

Task 1: Review the published literature

This review will update previous reviews, including the 2006 Scenarios Analysis results for each sector and research plans for 2008, and specifically review studies that have assessed the potential environmental justice impacts of climate change nationally and in California. Study topics will emphasize disparities in health impacts, cultural impacts, disparities in pollution exposures, and the economic disparities of climate change impacts and proposed greenhouse gas reduction strategies. We will also assess whether studies have examined the positive effects of climate reduction strategies on reducing exposures to air pollution in particularly contaminated communities.

Task 2: Conduct at least 10 in-depth interviews

We propose to interview EJ stakeholders and other stakeholders on their perception of anticipated equity impacts of climate change, as well as climate change mitigation and adaptation strategies. The research team proposes to develop these interview questions in consultation with CARB staff. We will begin this process by first identifying and interviewing key members of the Climate Justice Working Group.

Task 3: Conduct quantitative assessments if feasible

To illustrate environmental equity approaches to the impacts of climate change, the report may include preliminary quantitative assessments. These assessments may focus on specific populations, regions or metropolitan areas of California. While these quantitative analyses are not expected to be "benchmark" studies, they should, if feasible, demonstrate pioneering approaches to detecting, measuring or evaluating disproportionate impacts on low-income communities or communities of color. One of the quantitative analyses may, depending on data availability, focus on some aspect of extreme heat events. The research team will finalize the selection of the datasets in consultation with CARB staff. Analyses may be conducted from January 2008 through May 2008.

Task 4: Prioritized Research Agenda

Drawing upon both in-depth interviews, (#2), and its review of relevant scientific literature, (#1), the report will articulate a prioritized research agenda, including identifying needed datasets for future study of the disproportionate impacts of

climate change, and of environmental justice issues related to climate change mitigation and adaptation strategies for the State of California.

Task 5: Develop a 30-50 page report

The primary deliverable of this project will be a 30-50 page report, exclusive of references and bibliography. The report will synthesize and summarize the results of tasks 1-4 above. A progress report with results and policy implications will be delivered to CARB staff no later than September 5, 2008. The draft final version of the report will be delivered to CARB staff for review no later than 10 months after the initiation of this contract. The Final report will be delivered to CARB no later than twelve months after the initiation of this contract. Draft Final and Final versions of the report will be provided both in hardcopy (10 copies) and as an electronic Microsoft Word (2003 or backwards compatible) document file. The dates listed are based on the assumption that the contract for this pilot project will be approved promptly.

3. PROJECT SCHEDULE

The Tasks are specified in the previous section. Briefly, they are:

- Task 1 *Review the published literature*
- Task 2 *Conduct at least 10 in-depth interviews*
- Task 3 *Conduct quantitative assessments if feasible*
- Task 4 *Outline prioritized research agenda*
- Task 5 *Develop a 30-50 page report*

PROJECT SCHEDULE

MONTH	1	2	3	4	5	6	7	8	9	10	11	1
TASK												
1 Review the published literature												
2 Conduct at least 10 in-depth interviews												
3 Conduct quantitative assessments if feasible												
4 Outline prioritized research agenda												
5 Develop a 30-50 page report												

- p = Quarterly progress report
- d = Deliver draft final report
- f = Deliver final report
- m = Meeting with ARB staff

4. PROJECT MANAGEMENT

Organizational Chart

Principal Investigators	Pastor	Sadd	Morello-Frosch
Support Staff	GSR II		

Assigned Responsibilities for Personnel

The primary PI will be Rachel Morello-Frosch of UC Berkeley. Dr. Morello-Frosch will coordinate the project, assist in the literature review, and help conduct the quantitative analysis. James Sadd and Manuel Pastor will also be principal investigators and collaborate in all phases. The team will collectively write up the results.

A graduate student will be charged with taking the lead on conducting the literature review and gathering initial data, and will help to manage the project.

Project Management and Coordination

All three PIs have project management roles. Rachel Morello-Frosch will provide overall coordination including budget, Sadd will coordinate the collection and process of spatial data and Pastor will help coordinate data analyses and the interviews.

The Department of Environmental Science, Policy and Management of UC Berkeley will be the fiscal home. It will also have a subcontract with CJTC which has an annual, mostly grant-based budget, of around \$700,000 on a separate grant. The research team has a proven record of grant getting and project management.

**Resumes of Key Scientific Personnel
(Manuel Pastor, James Sadd, Rachel Morello-Frosch)**

ABBREVIATED CURRICULUM VITAE

MANUEL PASTOR, JR.

WORK:

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HOME:

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TEACHING EXPERIENCE

- 2007-: Beginning in Fall 2007 as Professor of Geography and American Studies and Ethnicity, University of Southern California (USC)
- 1996-07: Professor, Latin American & Latino Studies (LALS), UC Santa Cruz; Chair of LALS, 1996-1999; Director (2000-2003)/ Co-Director (2003-present), Center for Justice, Tolerance, and Community
- 1984-96: Professor (previously Assistant and Associate) of Economics & Director (1993-96), International & Public Affairs Center, Occidental College
- 1993-96: Visiting Associate Professor, Graduate School of International Relations and Pacific Studies, University of California, San Diego
- 1991: Visiting Associate Professor, Graduate School of Architecture and Urban Planning, University of California, Los Angeles

ACADEMIC HONORS AND AWARDS

- Professional:* Bellagio Residency, Rockefeller Foundation, 2001
North-South Center Research Associate, 1996-97
MacArthur Foundation Grant for Research & Writing, 1993
Guggenheim Fellowship, 1989-90
Kellogg National Fellow, 1988-1991
Fulbright Fellow (Research) 1987, 1988, 1990
Haynes Foundation Summer Fellowship, 1986
Fulbright Fellow (Program: *South America Today*, 1985)
- Graduate:* Danforth Fellowship
Honors in History of Thought and Economic History Comprehensive Exams
- Undergraduate honors:* Highest Honors, Economics (B.A.)
Honors, English Literature (B.A.)
College Honors (B.A.)

Crown-Zellerbach Scholarship
Gemco Economics Scholarship

EDUCATION

- 1979-84: Ph.D., M.A., in Economics, University of Massachusetts, Amherst
- 1973-78: B.A. Economics, B.A. English Literature/Creative Writing, University of California, Santa Cruz

GRANTS & RESEARCH CONTRACTS

(unless noted, served or serving as PI or co-PI)

- Ford Foundation, "Data and Analysis for Change: Research Consortium for Environmental Justice," (project to be done in collaboration with James Boyce and Paul Mohai), \$100,000, grant period, 2006-2007.
- Ford Foundation, "Regional Equity Theory, Regional Equity Practice: A Learning Program for Practitioners" (with Rachel Rosner), \$400,000, grant period 2005-2007.
- California Air Resources Board, "Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-Making" (with Jim Sadd, Occidental College and Rachel Morello-Frosch, Brown University), \$691,922, grant period 2005-2008.
- Ford Foundation, "Metropolitan Regional Equity: Lessons for Learning Enhancement," \$50,000 (with Rachel Rosner, UCSC), 2005.
- W.K. Kellogg Foundation, "Building Partnerships to Improve Social, Economic, and Educational Outcomes in Communities across California and the Nation" \$987,125 (with Catherine Cooper, Psychology; CJTC portion is: \$466,077, 2005-2008.
- UC Mexus, "California's Latino Working Poor: Analysis and Policy," \$14,656, 2005-2006.
- San Francisco Foundation, "Bay Area Environmental Health Collaborative: Research Component," \$77,000 (with Jim Sadd and Rachel Morello-Frosch), 2004-2006.
- Hewlett Foundation, "NIIs Employment Strategy: Empowerment Research and Reciprocal Learning," \$75,000 (with Rachel Rosner, CJTC Research Associate, 2004.
- Ford Foundation, "Edging Toward Equity: Transforming the New Regionlism," \$200,000, 2004-2006.
- InterAmerican Forum, Collins Center, "Globalizing Civil Society: Research Making the Global-Local Link," \$78,497, 2004-2005.
- MacArthur Foundation, "Building Successful Regions" (team member; PI is Margaret Weir at UC Berkeley), 2004-2006.

Ford Foundation, "A Center at the Center: New Research Partnerships for Metropolitan Equity and Social Change," \$220,000, 2003-2005.

W.T. Grant Foundation, "Race, Youth, and the Digital Divide," (with Rob Fairlie, UCSC), \$249,449, 2003-2005.

Institute for Labor and Employment, University of California, "The Working Poor in California," \$13,000, 2003-2004.

Tides Foundation, "Bridging the Bay" (PI, collaboration with Urban Habitat), \$49,209, 2003.

California Environmental Protection Agency (California Integrated Waste Management Board) "Environmental Justice Assessment and Analysis," \$100,000 (with Rachel Rosner, CJTC Research Associate), 2003-2004.

Center for the Continuing Study of the California Economy, "Small Area Income Analysis for Southern California" \$94,767, 2002-2003.

Ford Foundation, "Globalizing Civil Society from the Inside Out," (with Tanya Dawkins, Inter-American Forum, Collins Center, Miami), \$185,000, 2002-2003.

California Wellness Foundation, "Social Change Across Borders: Leadership Development for Improving Health and Work Outcomes in California and on the Border," \$90,000, 2002-2004.

California Wellness Foundation, "Schools, Children's Health, and Environmental Justice: A Research and Policy Initiative for California," (co-PIs are Rachel Morello-Frosch and James L.Sadd), \$100,000, 2002-2004.

The California Endowment, "Creating a Community-based Regional Voice for Environmental Justice," with Liberty Hill Foundation and Communities for a Better Environment, \$998,000 (research component, \$199,000. Co-PIs are Rachel Morello-Frosch, Brown University, and James L.Sadd, Occidental College, 2002-2004.

Hewlett Foundation, "Connecting for the Common Good," a research and training program for Neighborhood Improvement Initiatives (\$210,000 for 2001-2003).

Institute for Labor and Employment, Targeted Research Grant on Labor Market Volatility (with Chris Benner), \$35,000, 2001-2002.

Central Coast Interfaith Sponsors, "A Regional Audit for Economic and Social Justice in the Monterey Bay Region, with Chris Benner and Rachel Rosner, \$25,016, 2000-2001.

Ford Foundation, "Social Change Across Borders II," (\$200,000 for continuation of Summer Institute training program initially launched in 1998; grant period 2001-2003 (supplemental grant of \$70,000 awarded in 2002 for one additional year of activity).

- Ford Foundation, "Hemispheric Dialogues II: Bridging Latin American and Latino/a Studies through Curriculum Development and Action-Research Partnerships," (co-PIs are Sonia Alvarez, Jonathan Fox, Juan Poblete, and Pat Zavella; \$235,000), 2000-2004.
- Russell Sage Foundation/Rockefeller Foundation, Future of Work Program, "Economic Opportunity in a Volatile Economy: Understanding the Role of Labor Market Intermediaries in Two Regions," (co-PIs are Laura Leete, Working Partnerships USA, and Laura Dresser, University of Wisconsin; \$300,000); supplemental funding of \$300,000 from the Ford Foundation, 1999-2003.
- The Pacific Rim Research Program, University of California, "California in the Pacific Rim and the World Economy: Building an Ongoing Capacity for Tracking and Forecasting Economic Integration," (with Raul Hinojosa, UCLA) 1998-2000
- The California Policy Seminar, "Racial Inequality in Environmental Hazard Exposure: Evidence, Remedies, and New Policy Alternatives," (\$30,000), 1998-99
- The California Endowment, "Creating a Community-based Regional Voice for Environmental Justice," with Liberty Hill Foundation and Communities for a Better Environment, \$1.7 million (research component, \$300,000, shared by Jim Sadd, Occidental College, & Manuel Pastor, UC Santa Cruz), 1998-2000
- Rockefeller Foundation and Ford Foundation, "Social Change Across Borders: A Pilot Summer Institute for Latin American and Latino CBO Leaders/Staff," (project director: \$235,000) 1997-99
- World Institute for Development Economics Research (WIDER), "The Coming Cuban Transition: Projects, Problems, and Prospects" (paper as part of larger project on socialist transitions), 1996-97
- World Institute for Development Economics Research (WIDER), "The Economics of Complex Humanitarian Emergencies: The Case of El Salvador," (paper with Jim Boyce as part of larger project on humanitarian emergencies), 1996-97
- University of California, Regent's Diversity Initiative, "Building Community, Building the University: A Collaborative Approach to Graduate Student Development and Curricular Innovation," 1996-97
- Social Science Research Council, Joint Committee on Latin American Studies, "Trade Liberalization, Macroeconomic Reform, and the Winner's Circle: The 'Second Phase' in Argentina and Mexico," (with Carol Wise) 1996-97
- United States Institute of Peace, "Trade, Security, and Conflict in the Americas: Economic Adjustment and Political Survival in Argentina and Mexico," (with Carol Wise) 1996-97
- University of California, Santa Cruz, Divisional Research Grant, "Trade Liberalization and Macroeconomic Sustainability in Argentina and Mexico," 1996-1997

John Randolph Haynes and Dora Haynes Foundation Solutions Research Program for "Linking Regional and Community Development in a Changing Economy," (project director: \$289,000), 1994-96

Leadership Opportunity in Science and Humanities Education (NEH, NSF, FIPSE), "The Border: A Multidisciplinary Approach to Critical Issues," (co-director with Beth Braker and Raul Villa), 1993-95

Irvine Foundation, "Toward Leadership for the 21st Century," (project director: \$1,000,000), 1993-96

Poverty Race and Reseach Action Council, "A Database of Researchers and Activists in Los Angeles," 1993-95

Ford Foundation / Latin American Studies Association, "Cuban-U.S. Economic Relations: The Effects of the Embargo and Possible Futures," task force director, 1993-94

North-South Institute, University of Miami, "The Political Economy of North American Trade" (with Carol Wise), 1992-93

Howard Heinz Endowment, "The Political Economy of North American Trade" (with Carol Wise), 1992-93

Hoover Institute, Stanford University, "Economy Society and Democracy in Developing Countries: The Case of Peru" (team member, paper as part of larger project on democratization), 1991-92

Ford Foundation, "Cuba in the Age of Perestroika", 1990-91 (team member)

California Council for the Humanities for "Encuentro: Mexico in Los Angeles"; (PI & project co-director) 1991

John Randolph Haynes and Dora Haynes Foundation for "Encuentro: Mexico in Los Angeles" (PI & project co-director)

California Council for the Humanities for "The California Dilemma" (co-PI and project co-director) 1989-91

Research Grant from World Institute for Development Economics Research / United Nations University, "Private Investment and Debt Overhang in Latin America," (paper as part of larger project) 1990

Research Grant from the Economic Policy Institute, "Capital Flight From Latin America," 1987

WORKS IN PROGRESS

This Could Be the Start of Something Big: Regional Equity and America's Metropolitan Future with Chris Benner and Martha Matsucka, Book manuscript in process.

"Space – The Final Frontier': Autocorrelation and Small Area Income Forecasting Models" (with Justin Scoggins).

"A State United or a State Divided: Can Multiple Pathways Bring Together Multiple California's?" Paper prepared for "Multiple Pathways' to College and Career: Why is It Important? What Challenges Does It Face? What Do We Know?" project coordinated by Jeannie Oakes and Maris Saunder, Institute for Democracy, Education, & Access, UCLA.

"Elections, Economics, and Coalitional Politics: Investigating California's Future(s)" Working Paper, Building Resilient Regions project, Institute for Urban and Regional Development, UC Berkeley.

"The Role of Community Technology Centers in Youth Skill-Building and Empowerment" (with Rebecca London, Lisa Servon, Rachel Rosner, and Antwuan Wallace, November 2005.

"Picking Up the Pieces: Comparing the Social Impacts of Currency Crises in Mexico and Argentina," with Carol Wise, USC, prepared for the conference, "Regional and International Implications of the Financial Instability in Latin America," Santa Cruz Institute for International Economic.

ACADEMIC PUBLICATIONS

Staircases or Treadmills: Labor Market Intermediaries and Economic Opportunity in a Changing Economy, with Chris Benner and Laura Leete. Russell Sage Press, 2007.

"Poverty, Work, and Public Policy: Latinos in California's New Economy" forthcoming in Patricia Zavella and Ramón Gutiérrez, Eds., with Denise Segura, Dolores Trevizo, and Juan Vicente Palerm. *Mexicanos in California: Transformations and Challenges*, University of Illinois Press, 2007

"LULUs of the Field: Research and Activism for Environmental Justice" (with James L. Sadd and Rachel Morello-Frosch), forthcoming in Andrew Barlow, Editor, *Professional Advocacy for Social Justice* (Lanham, MD: Rowman and Littlefield, forthcoming 2007).

"The Color in Miami: Building Grassroots Leadership in the U.S. Global Justice Movement" (with Tony LoPresti, UCSC), forthcoming, *Critical Sociology*

"Environmental Justice: Reflections from the United States," Forthcoming in James K. Boyce, Sunita Narain, and Elizabeth A. Stanton, Editors, *Reclaiming Nature: Environmental Justice and Ecological Restoration* (London: Anthem Press, forthcoming 2007).

"¿Quién es Más Urbanista? Latinos and 'Smart Growth'" forthcoming in Robert Bullard, Editor, *Growing Smarter: Achieving Livable Communities, Environmental Justice, and Regional Equity*, (Cambridge, MA: MIT Press, 2007).

"Cohesion and Competitiveness: Business Leadership for Regional Growth and Social Equity," chapter in OECD Territorial Reviews, *Competitive Cities in the Global Economy*, Organisation For Economic Co-Operation And Development (OECD), 2006.

"Breathless: Pollution, Schools, and Environmental Justice in California," with Rachel Morello-Frosch, and Jim Sadd, *Policy Studies Journal*, vol. 34, no. 3, 2006.

"The Regional Nexus: The Promise and Risk of Community-based Approaches to Metropolitan Equity," with Chris Benner, Penn State, and Martha Matsuoka, UCLA, in Paul Ong and Anastasia Loukaitou-Sideris, editors, *Jobs and Economic Development in Minority Communities* (Temple University Press, 2006)

"The Summer Institute Project (Cambio Social Cruzando Fronteras): Transnationalisms, Transdisciplinarity, and Transformations in Latino Studies" (with Rachel Rosner), *Latino Studies*, vol. 4, issue 1-2, Spring/Summer 2006, pp. 14-38.

In the Wake of the Storm: Environment, Disaster, and Race After Katrina (with Robert D. Bullard, James K. Boyce, Alice Fothergill, Rachel Morello-Frosch, and Beverly Wright). New York: Russell Sage, 2006.

"The Lost Sexenio: Vicente Fox and the New Politics of Economic Reform in Mexico," with Carol Wise, USC, *Latin American Politics and Society*, vol. 47, no. 4, Winter 2005.

"Understanding Equitable Infrastructure for California," with Debbie Reed, in Ellen Hanak and Mark Baldassare, editors, *California 2025: Taking on the Future*, San Francisco: Public Policy Institute of California, 2005.

"The Air is Always Cleaner on the Other Side: Race, Space, and Air Toxics Exposures in California" with Jim Sadd and Rachel Morello-Frosch, *Journal of Urban Affairs*, vol. 27, no. 2, 2005. [Winner of the "Best of *Journal of Urban Affairs* award for 2005].

"Environmental Inequity in Metropolitan Los Angeles," with Jim Sadd and Rachel Morello-Frosch, in Robert Bullard, editor, *The Quest for Environmental Justice: Human Rights and the Politics of Pollution* (Sierra Club Books, November 2005).

"Citizens, Science, and Data Judo: Leveraging Secondary Data Analysis to Build a Community-Academic Collaborative for Environmental Justice in Southern California," with Rachel Morello-Frosch, James Sadd, Carlos Porras, and Michele Prichard, in Barbara A. Israel, Eugenia Eng, Amy J. Schulz, Edith A. Parker, Editors, *Methods For Conducting Community-Based Participatory Research For Health*, (San Francisco: Jossey-Bass 2005).

"Region by Design: Public Policy and the Making of Southern California," with Jennifer Wolch, Pascale Joassart-Marcelli, and Peter Dreier, in Janet Rothenberg Pack, editor, *Sunbelt/Frostbelt: Public Policies and Market Forces in Metropolitan Development*. Washington, D.C.: Brookings Institution Press, 2005.

"The Fox Administration and the Politics of Economic Transition," in Russell Crandall, Guadalupe Paz, and Riordan Roett, *Mexico's Democracy at Work: Economic and Political Dynamics*, (Boulder, Colorado: Lynne Reiner, 2004).

"Somewhere Over the Rainbow? African American, Immigration, and Coalition-Building" (with Enrico Marcelli), *Review of Black Political Economy*, (31:1-2), and reprinted in Steven Schulman, editor, *The Impact of Immigration on African Americans* (Transactions Press, 2004).

- "Guest Workers and the New Transnationalism: Possibilities and Realities in an Age of Repression," with Susan Alva, *Social Justice*, vol. 31, nos 1-2, 2004.
- "Waiting to Inhale: The Demographics of Toxic Air Releases in 21st Century California," with Jim Sadd and Rachel Morello-Frosch, *Social Science Quarterly*, vol. 85, no 2, 2004.
- Up Against the Sprawl: Public Policy and the Making of Southern California, edited volume, co-editors are Jennifer Wolch and Peter Dreier, University of Minnesota Press, 2004.
- "Reading, Writing, and Toxics: Children's Health, Academic Performance, and Environmental Justice in Los Angeles," (with Jim Sadd and Rachel Morello-Frosch), *Environment and Planning C: Government and Policy*, vol. 22, no. 1, 2004.
- "Labor Market Intermediaries in the Old and New Economies: A Survey of Worker Experiences in Milwaukee and Silicon Valley" with Laura Leete, Chris Benner, and Sarah Zimmerman, in Robert Giloth, editor, *Workforce Intermediaries for the 21st Century* (Temple University Press, 2003).
- "Rising Tides and Sinking Boats: The Economic Challenge for California's Latinos," in David Lopez and Andres Jimenez, editors, *Latinos and Public Policy in California: An Agenda for Opportunity*, Berkeley, CA: Berkeley Public Policy Press, 2003.
- "Building Social Capital to Protect Natural Capital: The Quest for Environmental Justice," in James K. Boyce and Barry Shelley, editors, *Natural Assets: Democratizing Environmental Ownership* (Washington, DC: Island Press, 2003)
- "'An Option for the Poor': A Research Audit for Community-Based Regionalism in California's Central Coast" (with Chris Benner and Rachel Rosner), *Economic Development Quarterly*, vol. 17, no. 2, May, 2003.
- "A Long View of Mexico's Political Economy: What's Changed? What are the Challenges?" (with Carol Wise) in Joseph S. Tulchin and Andrew D. Selee, editors, *Mexico's Politics and Society in Transition* (Boulder, CO: Lynne Rienner Publishers, 2003).
- "Recession and Reaction: The Impact of the Downturn on California Labor" (with Carol Zabin) in Ruth Milkman, editor, *The State of California Labor 2002* (Berkeley: University of California Press, 2002).
- "Integrating Environmental Justice and the Precautionary Principle in Research and Policy-Making: The Case of Ambient Air Toxics Exposures and Health Risks Among School Children in Los Angeles," with Rachel Morello-Frosch and James Sadd, *Annals of the American Academy of Political and Social Science*, vol. 584, November 2002.
- "Environmental Justice and Regional Inequality in Southern California: Implications for Future Research," with Rachel Morello-Frosch, Carlos Porrás, and Jim Sadd, *Environmental Health Perspectives*, volume 110, supplement 2, April 2002.

Searching for the Uncommon Common Ground: New Dimensions on Race in America (with Angela Glover-Blackwell and Stewart Kwoh), New York: W.W. Norton, 2002.

"Who's Minding the Kids? Toxic Air, Public Schools, and Environmental Justice in Los Angeles," with Jim Sadd and Rachel Morello-Frosch, *Social Science Quarterly*, vol. 83, no. 1, March 2002.

Widening the Winner's Circle from Global Trade in Southern California (Los Angeles, CA: Pacific Council on International Policy, 2001).

"From Poster Child to Basket Case," (with Carol Wise), *Foreign Affairs*, vol. 80, no. 6, November/December 2001.

"Moving the Demand Side: Intermediaries in a Changing Labor Market," with Annette Bernhardt, Erin Hatton, and Sarah Zimmerman, in Industrial Relations Research Association, *Proceedings of the Annual Meeting* (2001).

"Looking for Regionalism in All the Wrong Places: Demography, Geography and Community in Los Angeles County," *Urban Affairs Review*, vol. 36, no. 6, July, 2001

Racial/Ethnic Inequality in Environmental Hazard Exposure in Metropolitan Los Angeles. Report for the California Policy Research Center, University of California, 2001.

"Environmental Justice and Southern California's 'Riskscape': The Distribution of Air Toxics Exposures and Health Risks among Diverse Communities," with Rachel Morello-Frosch and Jim Sadd, *Urban Affairs Review*, vol. 36, no 4, March 2001.

"Economics and Ethnicity: Poverty, Race, and Immigration in Los Angeles," in Marta López-Garza and David R. Diaz, Editors, *Asian and Latino Immigrants in a Restructuring Economy: The Metamorphosis of Los Angeles*, Stanford University, 2001

"Common Ground at Ground Zero? The New Economy and the New Organizing in Los Angeles," *Antipode*, vol. 33, no. 2, March 2001.

"Which Came First? Toxic Facilities, Minority Move-in, and Environmental Justice" (with Jim Sadd and John Hipp), *Journal of Urban Affairs*, vol. 23, no. 1, 2001.

"Geography and Opportunity," in Neil Smelser, William Julius Wilson, Faith Mitchell, editors, *America Becoming: Racial Trends and Their Consequences*, Volume 1, National Research Council Commission on Behavioral and Social Sciences and Education (Washington, DC: National Academy Press, 2001).

"Building Social Capital to Protect Natural Capital: The Quest for Environmental Justice," Working Paper No. DPE-01-02, University of Massachusetts, Amherst, Political Economy Research Institute, January 2001.

"Men N The Hood: Spatial, Skill, and Social Mismatch for Male Workers in Los Angeles" (with Enrico Marcelli, UCLA), *Urban Geography*, vol. 21, no. 6, 2000.

Regions That Work: How Cities and Suburbs Can Grow Together (with Peter Dreier, Eugene Grigsby, and Marta López-Garza), University of Minnesota Press, 2000.

"After the Deluge? Cuba's Potential as a Market Economy," in Susan Kaufman Purcell and David Rothkopf, editors, *Cuba: The Contours of Change* (Boulder, CO: Lynne Rienner Publishers, 2000).

Modern Political Economy and Latin America: Theory and Policy (w/ Jeffrey Frieden, Harvard, and Michael Tomz, Stanford). Boulder, Colorado: Westview Press, 2000.

"El Salvador: Economic Disparities, External Intervention, and Civil Conflict," (with Jim Boyce) in E. Wayne Nafziger, Frances Stewart and Raimo Väyrynen, editors, Wayne Nafziger, editor, *Weak States and Vulnerable Economies: Humanitarian Emergencies in Developing Countries*, Vol. 2, Oxford University Press, 2000.

"Can't We All Just Get Along? Interethnic Organizing for Economic Development" (with Rebecca Morales) in John J. Betancur and Douglas C. Gills, editors, *The Collaborative City: Opportunities and Struggles for Blacks and Latinos in U.S. Cities*. (New York: Garland Publishing, 2000).

"Private Investment and Central Bank Independence in the Developing World" (with Sylvia Maxfield), *Economics and Politics*, vol. 11, no. 3, November 1999.

"Estimating the Effects of Informal Economic Activity: Evidence from Los Angeles County" (with Enrico Marcelli and Pascale Joassart-Marcelli), *Journal of Economic Issues*, vol. XXXIII, no. 3, September 1999.

"The Politics of Second-Generation Reform," (with Carol Wise), *Journal of Democracy*, vol. 10, no. 3, July 1999.

"Every Breath You Take . . . : The Demographics of Toxic Air Releases in Southern California" (with Jim Sadd, Tom Boer, and Lori Snyder), *Economic Development Quarterly*, vol. 13, no. 2, May 1999.

"Globalization, Sovereignty, and Policy Choice: Lessons from the Mexican Peso Crisis," in David Smith, Dorothy Solinger, and Steve Topik, *State and Sovereignty in the World Economy* (Routledge Press, 1999).

"Stabilization and Its Discontents: Argentina's Economic Restructuring in the 1990s" (with Carol Wise) *World Development*, vol. 27, no. 3, May 1999; previous version released as part of *The North-South Agenda Papers*, No. 31 (University of Miami, North-South Center, 1998).

"Cuba: The Blocked Transition," *MOCT-MOST: Economic Policy in Transitional Economies*, vol. 8, 1998, pp 109-129.

"Aid for Peace: Can International Financial Institutions Help Prevent Conflict?" (with Jim Boyce), *World Policy Journal*, vol. XV, No. 2, Summer 1998.

"Pesos, Policies, and Predictions: Why the Crisis? Why the Surprise? Why the Recovery?" in Carol Wise, editor, *The Post-Nafta Political Economy: Mexico and the Western Hemisphere*, Pennsylvania State University Press, 1998.

"Trading Places: U.S. Latinos and Trade Liberalization in the Americas," (with Carol Wise) in Frank Bonilla, Edwin Melendez, Rebecca Morales, and Maria de los Angeles Torres (eds.) *Borderless Borders: US Latinos, Latin Americans, and the Paradox of Interdependence*, (Philadelphia, Temple University Press, 1998).

"Interdependence, Inequality, and Identity: Linking Latino and Latin American Studies," in Frank Bonilla, Edwin Melendez, Rebecca Morales, and Maria de los Angeles Torres (eds.) *Borderless Borders: US Latinos, Latin Americans, and the Paradox of Interdependence*, (Philadelphia, Temple University Press, 1998).

"Has Cuba Turned a Corner---and If So, Which One? Macroeconomic Stabilization and the Implications for Reform in Cuba," (with Andy Zimbalist) *Cuban Studies* 27 (editor: Jorge F. Pérez-López), 1997.

"Is There Environmental Racism? The Demographics of Hazardous Waste in Los Angeles County" (with Jim Sadd, Tom Boer, and Lori Snyder), *Social Science Quarterly*, December 1997.

"Social Policy, Distribution, and Neoliberal Reform in Mexico" (with Carol Wise, Johns Hopkins), *Journal of Latin American Studies*, vol. 29, Part 2, May 1997.

Growing Together: Linking Regional and Community Development in a Changing Economy (with Peter Dreier and Marta López-Garza, Occidental College, and Eugene Grigsby, UCLA), Occidental College: Los Angeles, 1997.

"Keeping Down with the Jones': Neighborhoods, Networks, and Wages," (with Ara Robinson Adams), *Review of Regional Studies*, vol. 26, no. 2, 1996.

"Macroeconomic Policy and Peace-Building in El Salvador," (with Jim Boyce) in Krishna Kumar, editor, *Rebuilding Societies After Civil War: Critical Roles for International Assistance* (Boulder, CO: Lynne Rienner Press, 1996).

"Cuba and Cuban Studies: Crossing Boundaries in a 'Special Period'," (review essay), *Latin American Research Review*, vol. 31, no. 3, 1996.

"The Politics of Free Trade in the Western Hemisphere" (with Carol Wise, Johns Hopkins) *The North-South Agenda Papers*, No. 20 (University of Miami, North-South Center, 1996).

"Distributional Implications of Macroeconomic Policy: Theory, and Applications to El Salvador" (with Mike Conroy), *World Development*, (Vol. 23, No. 12) December 1995 (another version available in James K. Boyce, editor, *Economic Policy for Building Peace: The Lessons of El Salvador*. Boulder, CO: Lynne Rienner Publishers, Inc., 1996).

"Cuba's Economic Conundrum," (with Andrew Zimbalist), *NACLA Report on the Americas*, vol. 29, no. 2, Sept/Oct. 1995; reprinted as *El enigma económico de Cuba*, in Dietmar Dirmoser & Jaime Estay, *Economía y Reforma Económica en Cuba*. Caracas, Venezuela: Editorial Nueva Sociedad, 1997.

"Challenges to Western Hemispheric Integration: Free Trade is Not Enough," (with Carol Wise), *SAIS Review*, vol. 15, no. 2, Summer-Fall 1995.

"Economic Inequality, Latino Poverty and the Civil Unrest in Los Angeles," *Economic Development Quarterly*, Vol. 9, no. 3, August 1995.

"Waiting for Change: Adjustment and Reform in Cuba" (with Andrew Zimbalist), *World Development*, Vol. 23, No. 5, May 1995.

"Private Investment and Democracy in the Developing World" (with Jae Ho Sung), *Journal of Economic Issues*, Vol. 29, No. 1, March 1995.

"Private Investment and Debt Overhang in Latin America," in Epstein, Gerald and Herb Gintis, editors, *Macroeconomic Policy After the Conservative Era: Studies in Investment, Saving and Finance*, Cambridge University Press, 1995.

"The Distributional Effects of Alternative Economic Sequences," in Leslie Elliott Armijo, Editor, *Conversations on Democratization and Economic Reform: Working Papers of the Southern California Seminar*, Los Angeles, CA: Center for International Studies, University of Southern California, 1995.

"Mexican Trade Liberalization and NAFTA" (review essay) *Latin American Research Review*, vol. 29, no. 3, 1994.

"The Origins and Sustainability of Mexico's Free Trade Policy" (with Carol Wise), *International Organization*, vol. 48, no. 3, Summer 1994.

Latinos and the L.A. Uprising: The Economic Context, a report for the Tomás Rivera Center, 1993.

"Private Investment and Democracy in Latin America" (with Eric Hilt) *World Development*, vol. 21, no. 4, April 1993.

"Managing the Latin American Debt Crisis: The International Monetary Fund and Beyond," in Gerald Epstein, Julie Graham, and Jessica Nembhard, editors, *Creating a New World Economy: Forces of Change and Plans of Action* (Temple University Press, 1993).

Inflation, Stabilization, and Debt: Macroeconomic Experiments in Peru and Bolivia, (Boulder, CO: Westview Press, 1992).

"Cuba Faces the Future" (with Barbara Goldoftas) *Dollars & Sense*, No. 178, July/August 1992.

"Peruvian Economic Policy in the 1980s: From Orthodoxy to Heterodoxy and Back" (with Carol Wise), *Latin American Research Review*, vol. 27, No. 1, Spring 1992.

"Inversion Privada y 'Efecto Arrastre' de la Deuda Externa en America Latina," *El Trimestre Economico*, vol. LIX, no. 1, 1992.

- "Bolivia: Hyperinflation, Stabilization and Beyond" *Journal of Development Studies*, vol. 27, no. 2, January 1991.
- "Misleading Signals, Bank Lending, and the Latin American Debt Crisis," (with Gary Dymksi), *International Trade Journal*, Vol. VI., No. 2, Winter 1990.
- "Debt Crisis and Class Conflict in Latin America," (with Gary Dymksi), *Review of Radical Political Economics*, vol. 22, no. 1, 1990.
- Capital Flight and the Latin American Debt Crisis*, Economic Policy Institute Study, 1990.
- "Capital Flight from Latin America," *World Development*, vol. 18, no. 1, January 1990.
- "Orthodox and Heterodox Stabilization Policies in Bolivia and Peru: 1985-88," (with Arthur Mann) *Journal of InterAmerican Studies and World Affairs*, vol. 31, number 4 (Winter 1989)
- "Peru's Failed Experiment," *Dollars & Sense*, no. 148, July/August 1989.
- "Current Account Deficits and Debt Accumulation in Latin America: Debate and Evidence," *Journal of Development Economics*, vol. XXXI, no. 1, July 1989
- "Latin America, the Debt Crisis, and the International Monetary Fund: Beyond the IMF?" *Latin American Perspectives*, vol. 16, No. 1, Winter 1989; extracted in Frieden, Jeffrey A., and David A. Lake, editors, *International Political Economy: Perspectives on Global Power and Wealth* (New York: St. Martin's Press, 2nd edition, 1991).
- "Ascenso y Caída de la Heterodoxia Peruana: Un Modelo Simple del Nuevo Estructuralismo," *Apuntes*, no. 23, Second Semester (Lima, Peru), 1988.
- "Mexico," in Louise Haberman and Paul M. Sacks, *Annual Review of Nations: Year 1988* (New York: Taylor and Francis, 1988).
- Crisis in Central America: Regional Dynamics and U.S. Policy in the 1980s*, editor (with Nora Hamilton, Linda Fuller, and Jeff Frieden), (Boulder, Colorado: Westview Press, 1988).
- "The Nicaraguan Experiment: Characteristics of a New Economic Model," (with Michael Conroy) in Hamilton, Fuller, Frieden, and Pastor, *Crisis in Central America* (Boulder, Colorado: Westview Press, 1988).
- "Hacia Donde Va La Política Económica?" *Cuadernos de Investigación*, Centro de Investigación, Universidad del Pacífico, Lima, Peru., 1988,
- The International Monetary Fund and Latin America: Economic Stabilization and Class Conflict* (Boulder, Colorado: Westview Press, 1987)
- "The Effects of IMF Programs in the Third World: Debate and Evidence from Latin America," *World Development*, vol. 15, no. 2, February 1987
- "The Long Shadow of Global Debt," chapter in Center for Popular Economics, *Economic Report of the People* (Boston, MA: South End Press, 1986).

Teaching Political Economy: An Instructor's Manual for Understanding Capitalism, (textbook by Samuel Bowles and Richard Edwards), Harper & Row, 1985.

SELECTED REPORTS

Still Toxic After All These Years.: Air Quality and Environmental Justice in the San Francisco Bay Area. With James Sadd and Rachel Morello-Frosch. Santa Cruz, CA: Center for Justice, Tolerance and Community, UC Santa Cruz, 2007.

Edging Toward Equity: Creating Shared Opportunity in America's Regions (with Chris Benner, Rachel Rosner, and the Conversation on Regional Equity, UC Santa Cruz, Center for Justice, Tolerance and Community, 2006.

http://cjtc.ucsc.edu/docs/r_CORE_Edging_Toward_Equity_summary.pdf).

Immigrant Workers Empowerment and Community Building: A Review of Issues and Strategies for Increasing Workforce and Economic Opportunity for Immigrant Workers (with Chris Benner, Tony LoPresti, Martha Matsuoka, and Rachel Rosner), prepared for the Mayfair Improvement Initiative and One East Palo Alto, April 2005.

Bridging Bays, Bridging Borders: Global Justice and Community Organizing in the San Francisco Bay Area (with Joshua Abraham, Cheryl Brown, Juliet Ellis, Lili Farhang, Lila Hussain, Tony LoPresti, Bhavna Shamasunder, and Erica Swinney), a joint publication of Urban Habitat and the Center for Justice, Tolerance, and Community, January 2005.

Reading, Writing, and Breathing: Schools, Air Toxics, and Environmental Justice in California (with James Sadd and Rachel Morello-Frosch). Center for Justice, Tolerance, and Community, UC Santa Cruz, 2005.

Environmental Justice: Opportunity Assessment and Analysis, with Rachel Rosner, with contributions from Tony LoPresti, Breana George, Marta Segura, Bahram Fazeli, and Martha Matsuoka, prepared for the California Integrated Waste Management Board, June 2004.

Community Building, Community Bridging: Neighborhood Improvement Initiatives and the New Regionalism in the San Francisco Bay Area, with Chris Benner, Rachel Rosner, Martha Matsuoka, and Julie Jacobs. Center for Justice, Tolerance, and Community, UC Santa Cruz, 2004.

Income Forecasting at the Small Area Level for Southern California: Issues, Methods, and Projections: Final Report to the Southern California Association of Governments, with Justin Scoggins, CJTC, UCSC, March 29, 2004.

Economic Opportunity in a Volatile Economy: Understanding the Role of Labor Market Intermediaries in Two Regions, with Laura Leete, Laura Dresser, Chris Benner, Annette Bernhardt, Bob Brownstein, and Sara Zimmerman, Final Research Report to the Ford, Rockefeller, and Sage Foundations, May 2003.

Equity, Sustainability, and Community: Challenges for a New California, Report prepared for the James Irvine Foundation (with Rachel Rosner), August 2002.

Uncommon Alliances for the Common Good: A Regional Audit for Economic and Social Justice in the Monterey Bay Region, with Chris Benner and Rachel Rosner, prepared for the Central Coast Interfaith Sponsors, June 2001.

Reading the Regions: A Resource Book for Labor Market Interventions by Community-based Organizations in California, prepared for California Works for Better Health, a strategic alliance of The California Endowment and the Rockefeller Foundation, team leader with team members including Steve Levy, Rachel Rosner, Chris Benner, Enrico Marcelli, Martha Matsuoka, Dave Runsten, and Ed Kissam, February, 2001.

Environmental Justice and the Expansion of the Los Angeles International Airport (with Jim Sadd), prepared for Communities for a Better Environment, Los Angeles, November 2000.

Estimating Trade Impacts by Public Use Microdata Area in Los Angeles County, with Fernando De Paolis, and David Runsten, prepared for the North American Integration and Development Center, UCLA, Summer 2000

Latinos in the U.S.: Challenges to Building Communities and Community in Latino America, prepared for PolicyLink and the Kellogg Foundation, with assistance from Josh Kirschenbaum and Rachel Rosner, and research prepared by Eugene Garcia, Belinda Reyes, and David Ayon, 2002.

Growing Together: Linking Regional and Community Development in a Changing Economy (with Peter Dreier and Marta López-Garza, Occidental College, and Eugene Grigsby, UCLA), Occidental College: Los Angeles, 1997.

SELECTED POPULAR PUBLICATIONS

"Together We Can Grow Greener," *Santa Cruz Sentinel*, April 22, 2007.

"Doing Good and Doing Well: Making the Business Case for Regional Equity and Racial Inclusion" *Focus* publication of the Joint Center for Political and Economic Studies, March/April, 2007, p. 12-13.

"Still Toxic After All These Years," with Rachel Morello-Frosch and James Sadd, *San Francisco Chronicle*, February 15, 2007.

"A Taste of Democracy from Live Oak." *Santa Cruz Sentinel*, September 17, 2006.

"Environment, Disaster, and Race After Katrina," with Robert Bullard, James K. Boyce, Alice Fothergill, Rachel Morello-Frosch, and Beverly Wright, *Race, Poverty, and the Environment*, vol. 13, no. 1, Summer 2006.

"Who Wins and Loses in the Sustainable Economy?" *The Futurist*, July-August 2006, p. 29.

"Building a Bridge to Somewhere" (with Rachel Rosner), *Santa Cruz Sentinel*, February 26, 2006.

- "Neighborhood Pollution Data at Risk," (with Rachel Morello-Frosch and Bill Gallegos), *San Jose Mercury News*, January 8, 2006.
- "Books, Budgets, Ballots" *Santa Cruz Sentinel*, October 23, 2005.
- "Tainted 'Justice' at the EPA," (with Bill Gallegos and Michelle Prichard) *Los Angeles Times*, August 18, 2005.
- "Bringing Globalization Home," (with Tony LoPresti) *ColorLines*, Summer 2004.
- "Seeds of Reform Sown in India," (with Tony LoPresti and Eduardo Moncada), *San Jose Mercury News*, February 2, 2004.
- "Mobilizing Miami," (with Tony LoPresti), *The Nation*, December 1, 2003 (web version)
- "The Color of Research," (with Belinda Reyes), *San Jose Mercury News*, September 23, 2002
- "Communities Armed with Bucket Take Charge of Air Quality" (with Rachel Rosner), in *Sustainable Solutions: Building Assets for Empowerment and Sustainable Development* (New York: Ford Foundation, 2002).
- "Buckets to the People" (with Rachel Rosner) *Ford Foundation Report, Summer 2002*.
- "Assumption is Wrong – Latinos Care Deeply About the Environment" (with Rachel Morello-Frosch), *San Jose Mercury News*, July 8, 2002.
- "In Search of Common Ground: Tackling Sprawl in the New California Means Talking Race" (with Angela Glover Blackwell), *San Francisco Chronicle*, May 17, 2002.
- "Argentina's Crisis is Ours, Too," *San Jose Mercury News*, December 23, 2001.
- "All One People," *Santa Cruz Sentinel*, (with Dana Takagi), October 14, 2001.
- "The Good Life Jilts Argentina Once Again" (with Carol Wise), *Los Angeles Times*, July 16, 2001.
- "Who's Minding the Air at Your Child's School?" (with Rachel Morello-Frosch and Carlos Porras), *Los Angeles Times*, June 3, 2001.
- "Good Social Research Needs Data on Race," (with Rachel Morello-Frosch), *San Jose Mercury News*, April 20, 2001.
- "Pollution, Communities, and Schools: A Portrait of Environmental Justice on Southern California's 'Riskscape'" (with Rachel Morello-Frosch, *DifferenTakes* a publication of the Population and Development Program at Hampshire College, no. 12, spring 2001.
- Building Natural Assets: New Strategies for Poverty Reduction and Environmental Protection*, with Jim Boyce, Amherst, MA: Political Economy Research Institute and the Center for Popular Economics, 2001.

"Dr. King's Dream Will Live On If . . ." *Santa Cruz Sentinel*, January 21, 2001.

"Diversity Isn't Just Skin-Deep," (with Angela Glover Blackwell and Stewart Kwoh), *Los Angeles Times*, January 7, 2001.

"Economy Stuck on Bridge Between Rich, Poor," *South Florida Sun-Sentinel*, November 19, 2000.

"Put LAX Expansion in a Holding Pattern Pending Further Research," (with Jim Sadd), *Los Angeles Times*, November 15, 2000.

"Regions That Work: Cities & Suburbs Living in Harmony," (with Peter Dreier) in *The Planning Report*, vol. XIV, no. 1, September 2000.

"Regionalist Risks, Community Opportunities," *Urban Habitat*, vol. 2, no. 1, Spring 2000.

"The Digital Divide and a Different Network," *San Jose Mercury News*, April 6, 2000.

"The Region's Minorities Face Major Risks From Pollution," (with Carlos Porras and Rachel Morello-Frosch), *Los Angeles Times*, March 16, 2000.

"Which Came First, Hazardous Site or Minority Population?," (with Carlos Porras and Jim Sadd), *Los Angeles Times*, October 17, 1999.

"Growing Together: Linking Regional and Community Development in a Changing Economy," *Shelterforce*, January/February 1998.

"Strategies to Expand L.A.'s International Role," *L.A. Times*, January 25, 1998.

"Growing Together: Community Building and the New Regionalism" *The Regionalist*, Winter 1997.

"Environmental Equity Makes Business Sense," *L.A. Times*, November 2, 1997.

"Has Cuba Turned the Corner?" (with Andrew Zimbalist), *Connection to the Americas*, September 1997.

"Unions Could Benefit in the 'New Economy'," *L.A. Times*, August 31, 1997.

"Argentina Feeling Growing Pains and Gains," *L.A. Times*, July 6, 1997.

"Post-Riot Recovery Cannot Happen Overnight," *L.A. Times*, April 27, 1997.

"LA Should Take a Cue From the Silicon Valley," *L.A. Times*, February 16, 1997.

"Growth Strategies Must Include the Poor," *L.A. Times*, December 6, 1996.

"It's Business As Usual for 'Living Wage' Opponents," *L.A. Times*, December 6, 1996.

"Policymakers Need to Consider Working Poor," *L.A. Times*, October 13, 1996.

"Argentina's 'Stellar' Performance," (with Carol Wise), *Christian Science Monitor*, August 21, 1996.

"Es Justo Repatriar a Balseros Cubanos?" *Nuestro Tiempo*, May 24, 1995.

"Perspective on Mexico: Miracle Workers' Comeuppance," *Los Angeles Times*, December 29, 1994.

"More Than Trade to Talk About at Latin Summit," (with Carol Wise) *Christian Science Monitor*, December 8, 1994.

Economic Development and Social Equity, for the L.A. Community Redevelopment Agency's *Perspectives* series, 1992.

"Rebuild With the Working Poor," *Los Angeles Times*, March 5, 1993.

Encuentro: Mexico in Los Angeles (with David Ayon), 1992.

The California Dilemma (with Dennis Zane), 1991.

"Outlook for Mexico: 1991-92," *Latin Finance*, no. 23, December 1990.

Economic Development: The New Majority in Los Angeles (with Crystal Hayling), 1990.

"What Every Banker Should Know," (with Cris Canavan), *Latin Finance*, no. 21, October 1990.

"On a Wing and a Passbook," *Hemisfile*, vol. 1, no. 4, July 1990.

"The 'New Majority' Wants Its Share," (with Mark Ridley-Thomas and Stewart Kwoh) *Los Angeles Times*, October 12, 1989.

"'Privatization' Is a Blunt Weapon Against Minorities," (with Henry W. McGee, Jr.), *Los Angeles Times*, September 21, 1989.

CONSULTING AND OTHER WORK EXPERIENCE (selected)

2006-08: Consultant, The California Endowment, Analysis of California Works for Better Health

2005-06: Consultant, California Reinvestment Coalition, Strategic Planning Retreat

2005-06: Consultant, Rockefeller, North American Transnational Communities Initiative

2004-06: Consultant, Rockefeller Foundation and San Francisco Foundation, Project on Budget Education for California

2004-05: Consultant, Public Policy Institute of California, Equity and Infrastructure project

2003: Consultant, Radio Bilingue, Facilitator for Advisory Panel for the Public Health

Campaign for California Farmworkers

- 2002: Consultant, Irvine Foundation, Social Equity Roundtable for the Sustainable Communities Program
- 2002: Consultant, Old Pasadena Management District, Meeting facilitation
- 2001: Consultant, Mayfair Neighborhood Improvement Initiative / Community Development Institute, Strategic Planning
- 1999-2001: Consultant, Rockefeller Foundation/The California Endowment, Assessing California's Regions for the California Works for Better Health program.
- 2000: Consultant, San Diego Magazine, Race Relations in San Diego
- 2000: Consultant, Citistates Group, Miami report
- 2000: Consultant, The Arroyo Group, Pasadena, Civic Center/Mid-Town Project Area
- 1999-2000: Consultant, PolicyLink, Advisor on community-based regionalism
- 1999: Consultant, Collaborative Economics, Community Indicators Project, Mayfair Improvement Initiative
- 1996-97: Consultant, Community Outreach/Facilitation, West Gateway Specific Plan, Vista del Arroyo Bungalows Sub-area, Pasadena
- 1994-98: Consultant, Community Outreach/Facilitation & Strategic Planning, Foundation for Community Design, San Luis Obispo
- 1996-97: Consultant, Westat, Inc./HUD, "Moving to Opportunity (MTO) Demonstration for Fair Housing Program, Los Angeles Demonstration Site"
- 1995: Consultant, Community Outreach/Facilitation, Pasadena Playhouse District Streetscapes and Walkways Plan
- 1994: Consultant, Urban Institute, Evaluation of HUD Section 8 Earthquake Relief
- 1993-94: Consultant, Urban Institute, Evaluation of Community Development Block Grant Program for HUD
- 1994: Organizer, Arroyo-Verdugo Economic Cooperation Summit
- 1992-93: Research Associate, Tomás Rivera Center, "Latinos and the L.A. Uprising"
- 1993: Consultant on Community Outreach, East Pasadena Specific Plan
- 1991-92: Consultant on Community Outreach, Revision of Pasadena's General Plan
- 1988-91: Consultant on Mexican Economy, Multinational Strategies, Inc.

1989-90: Consultant, The Planning Group, Nehemiah West Housing Development

ACADEMIC AND COMMUNITY SERVICE

- 2006-on: Board of Directors, Center for Community Change
- 2004-on: Affirmative Action Committee, UCSC Academic Senate
Chair, Labor and Employment Research Fund, University of California
- 2002-2005: Board Member, Alliance for Regional Stewardship
- 2002: Member, Board of Directors, National Community Development Institute, Oakland, California
Civic Entrepreneur of the Year Award, 2002, from the California Center for Regional Leadership
- 2001-on: Advisory Board, Public Policy Institute of California
- 2001-2005: Member, National Advisory Committee, Urban Health Initiative, Robert Wood Johnson Foundation
- 2001-2003: Chair, UC-wide Steering Committee, Institute on Global Conflict and Cooperation
Chair, Advisory Board, Institute of Labor and Employment (UC systemwide research unit)
- 2000-2001: Chair, UC-wide Steering Committee, Institute on Global Conflict and Cooperation
Member, Santa Cruz City Schools District Strategic Planning Committee
Member, review committee for UCSC Social Science Division Research Grants
Member, Speaker's Commission on Regions (appointed by Robert Hertzberg, speaker of the California State Assembly)
- 1999-2001: Board Member, Silicon Valley Civic Action Committee
- 1998-2000: Member, UC-wide Steering Committee, Institute on Global Conflict and Cooperation
- 1998-99: Co-Chair, Santa Clara County Initiative (UC Santa Cruz)
Co-Facilitator, Committee for a Center on Justice and Tolerance (UC Santa Cruz)
- 1996-99: Latino Strategic Planning Collaborative, Santa Cruz County (co-chair from June 1997-December 1998)
Board Member, Chrysalis (homeless services)
Board Member, Santa Cruz Community Counseling Center
Millenium Committee (university planning), UCSC (1997-98)
- 1995-97: Board Member, Aspen Institute Non-profit Sector Research Fund, California
- 1995-96: Board Member, Tourism Industry Development Council

Member, Regional Advisory Council, Southern California Association of Governments.

- 1994-96: Advisory Council, Occident College (tenure & promotion)
Director, Irvine Fellows Program, Occidental College
Director, Multicultural Summer Institute, Occidental College (1994-95)
- 1992-95: Co-chair, New Majority Task Force
Mega-Cities Project, Board Member
- 1987-91: Consultant for South Central Organizing Committee and United Neighborhood
Organization on local development issues
Organizer of conference at Occidental College, "Economic Development and the New
Majority in Los Angeles"
Member, Eastside Development Council, Los Angeles
Member, Commission on the Central American Peace Accord. Latin American Studies
Association (LASA)
Member, Advisory Committee for the "Our Urban Environment" exhibit of the California
Museum of Science and Industry
Co-Founder, New Majority Task Force
- 1985-94: Occidental Tomorrow (a strategic planning group)
Faculty Council
Admissions Committee
Ad-hoc Planning Subcommittee for the Multicultural Summer Institute
- 1982-84: Treasurer, Casa Latina (Latino advocacy agency), Northampton, MA

PROFESSIONAL MEMBERSHIPS

Economic Development Quarterly (formerly on editorial board)
Urban Affairs Review (formerly on editorial board)
Journal of Latin American Studies (formerly on editorial board)
Latin American Research Review (formerly on editorial board)
American Economics Association
Latin American Studies Association (formerly on executive committee)
Latin American and Caribbean Economics Association (formerly)

LANGUAGES:

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PERSONAL BRIEF: born

REFERENCES: --- available upon request

ABBREVIATED CURRICULUM VITA

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3) Education

University of California, Berkeley

Ph.D. Environmental Health Sciences, School of Public Health, 1998

Dissertation Topic: *Race and Class Determinants of Exposures to Environmental Hazards*

M.P.H. Epidemiology/Biostatistics, School of Public Health, 1993

B.A. Development Studies (Phi Beta Kappa), 1988

A. Positions and Honors

Positions & Employment

As of July 1, 2007 Associate Professor, University of California Berkeley, Department of
Environmental Science, Policy and Management & School of Public Health,
Berkeley CA

February 2007-Present Associate Professor, Department of Community Health, School of
Medicine & Center for Environmental Studies, Brown University, Providence,
RI

2004-2007 Robert and Nancy Carney Assistant Professor, Department of Community
Health, School of Medicine & Center for Environmental Studies, Brown
University, Providence, RI

2002-2004 Assistant Professor, Department of Community Health, School of Medicine &
Center for Environmental Studies, Brown University, Providence, RI

2000-2002 Assistant Professor, College of Health and Human Services, Department of
Health Education, San Francisco State University, CA

1999-2000 National Science Foundation Post-doctoral Research Fellow, Energy and
Resources Group University of California, Berkeley, CA

1999-2000 Lecturer, University of California, Berkeley School of Public Health

1998-1999 University of California, President's Post-doctoral Research Fellow,
Departments of Sociology and Environmental Studies, University of
California, Santa Cruz, CA

Other Experience & Professional Memberships

California Air Resources Board, Research Screening Committee, May 2003- Present

Professional Memberships:

American Public Health Association
Society for Risk Analysis
International Society for Environmental Epidemiology

Honors

- 2006 William G. McLoughlin Award for Teaching Excellence in the Social Sciences, Brown University
- 2004 Richard and Nancy Carney Endowed Chair, Brown University
- 2001 USEPA's Science and Technology Achievement (STAR) Award for the Cumulative Exposure Project (with Tracey Woodruff, Daniel Axelrad, Jane Caldwell & Arlene Rosenbaum)
- 1999 California Public Health Association – Award for Outstanding Doctoral Student Contribution to Community-based Research
- 1997 Switzer Environmental Leadership Award, The San Francisco Foundation, CA
- 1997 Phi Beta Kappa Fellowship
- 1996 Switzer Environmental Fellowship, The San Francisco Foundation

B. Selected peer-reviewed publications

CHAPTERS IN BOOKS (REFEREED)

Morello-Frosch R, Pastor M, Sadd J, Porras C, Prichard M. "Citizens, Science, and Data Judo: Leveraging Community-based Participatory Research to Build a Regional Collaborative for Environmental Justice in Southern California." In Methods for Conducting Community-Based Participatory Research in Public Health. Barbara Israel, Eugenia Eng, Amy Shultz, Edith Parker, eds. University of Michigan, Jossey-Bass Press (2005).

SELECTED REFEREED JOURNAL ARTICLES

Brody JG, **Morello-Frosch R**, Brown P, Rudel R, Altman R, Frye M, Osimo CC, Pérez C, Seryak L: "Is It Safe? -- New Ethics for Reporting Personal Exposures to Environmental Chemicals." *American Journal of Public Health*, Forthcoming 2007

Morello-Frosch R and Lopez, R: "The Riskscape and the Colorline: Examining the Role of Segregation in Environmental Health Disparities," *Environmental Research*, 2006 102(2): 181-196.

DeFur PL, Evans GW, Hubal EA, Kyle AD, **Morello-Frosch RA**, Williams DA: "Vulnerability as a Function of Individual and Group Resources in Cumulative Risk Assessment." Forthcoming in *Environmental Health Perspectives*, 2007. Manuscript available at: <http://www.ehponline.org/members/2007/9332/9332.pdf>.

- Morello-Frosch R** and Shenassa, E: "The Environmental 'Riskscape' and Social Inequality: Implications for Explaining Maternal and Child Health Disparities." *Environmental Health Perspectives*, 2006, 114 (8):1150-1153.
- Morello-Frosch R** and Jesdale, B: "Separate and Unequal: Residential Segregation and Air Quality in the Metropolitan U.S." *Environmental Health Perspectives* 2006, 113: 386-393.
- Pastor M, **Morello-Frosch, R**, Sadd J: "Breathless: Air Quality, Schools, and Environmental Justice in California." *Policy Studies Journal*, 2006, 34 (3): 337-362.
- Greene A, **Morello-Frosch R**, Shenassa E: "Inadequate Prenatal Care and Elevated Blood Lead Levels Among Children Born in Providence, Rhode Island: A Population-Based Study." *Public Health Reports*, 2006, 121: 729-736.
- Payne-Sturges D, Gee GC, Crowder K, Hurley BJ, Lee C, **Morello-Frosch R**, Rosenbaum A, Schultz A, Wells C, Woodruff T, Zenick H. Connecting Social and Environmental Factors to Measure and Track Environmental Health Disparities, *Environmental Research*, 2006 102(2): 146-153.
- Brown P, McCormick S, Mayer B, Zavestoski S, **Morello-Frosch R**, Gasior Altman R, Senior L: "A Lab of Our Own: Environmental Causation of Breast Cancer and Challenges to the Dominant Epidemiological Paradigm." *Science, Technology and Human Values*, 2006 31(5): 499-536.
- Pastor M, **Morello-Frosch RA**, Sadd J: "The Air is Always Cleaner on the Other Side: Race, Space, and Air Toxics Exposures in California." *Journal of Urban Affairs*, 2005 27/2, p. 127-148. [Awarded "Best Paper" by the *Journal of Urban Affairs* for 2005.]
- Pastor M, Sadd J, **Morello-Frosch RA**: "Reading, Writing and Toxics: Children's Health, Academic Performance, and Environmental Justice in Los Angeles." *Environment and Planning C*, 2004, 2: 271-290.
- Pastor M, Sadd J, **Morello-Frosch RA**: "Waiting to Inhale: The Demographics of Toxic Air Releases in 21st Century California." *Social Science Quarterly*, 2004, 85(2): 420-440.
- Brown P, Zavestoski S, McCormick S, Mayer B, **Morello-Frosch, RA** and Gasior, R. "Embodied Health Movements: Uncharted Territory In Social Movement Research" *Sociology of Health and Illness* 2004 26:1-31.
- Zavestoski S, **Morello-Frosch R**, Brown P, Mayer B, McCormick S, Gasior, R. "Health Social Movements and Contested Illnesses" Research in Social Movements, Conflict and Change 2004, Vol. 25, in press.
- Morello-Frosch RA**, Pastor M, Sadd J: "Integrating Environmental Justice and the Precautionary Principle in Research and Policy-Making: The Case of Ambient Air Toxics Exposures and Health Risks among School Children in Los Angeles." *Annals of the American Academy of Political and Social Science*, 2002, 584: 47-68.
- Morello-Frosch RA**: "The Political Economy of Environmental Discrimination." *Environment and Planning C, Government and Policy*, 2002, 20:477-496.

Morello-Frosch RA, Pastor M, Porras C, Sadd J: "Environmental Justice and Regional Inequality in Southern California: Implications for Future Research." *Environmental Health Perspectives*, 2002, 110 (Supplement 2): 149-154.

Pastor M, Sadd J, **Morello-Frosch RA**: "Who's Minding the Kids? Toxic Air, Public Schools, and Environmental Justice in Los Angeles." *Social Science Quarterly*, 2002, 83(1): 263-280.

Morello-Frosch RA, Pastor M, Sadd J: "Environmental Justice and Southern California's 'Riskscape': The Distribution of Air Toxics Exposures and Health Risks among Diverse Communities." *Urban Affairs Review*, 2001 36(4): 551-578.

Morello-Frosch RA, Woodruff TJ, Axelrad DA, Caldwell JC: "Air Toxics and Health Risks in California: The Public Health Implications of Outdoor Concentrations." *Risk Analysis*, 2000 (20) 273-291.

Axelrad DA, **Morello-Frosch RA**, Woodruff TJ, Caldwell, JC: "Assessment of Estimated 1990 Air Toxics Concentrations in Urban Areas in the United States." *Environmental Science and Policy*, 1999 (2) 397-411.

Woodruff, TJ, Axelrad, DA, Caldwell, JC, **Morello-Frosch, RA**, Rosenbaum, A: "Air Toxics Concentrations: Response." *Environmental Health Perspectives*, 1999 107(11) A547-A548.

Woodruff TJ, Axelrad DA, Caldwell J, **Morello-Frosch RA**, Rosenbaum, A: "Public Health Implications of Air Toxics Concentrations in the US." *Environmental Health Perspectives*, 1998 106(5) 245-251.

Caldwell J, Woodruff TJ, **Morello-Frosch RA**, Axelrad DA: "Use of Toxicity Data for Assessing the Environmental Health Risks of Air Toxics." *Toxicology and Industrial Health*, 1998 14(3), 429-454.

Morello-Frosch RA: "The Politics of Reproductive Hazards in the Workplace: Class, Gender, and the History of Occupational Lead Exposure." *International Journal of Health Services*, 1997, 27(3) 501-521.

C. Research Support

CURRENT GRANTS AND CONTRACTS

National Institute of Environmental Health Sciences (NIEHS):

RFA #: ES-03-007: R25 Environmental Justice: Partnerships for Communication

Role: Co-Principal Investigator September 2004-August 2008

Merging Breast Cancer and Environmental Justice, To link breast cancer and environmental justice issues through a household exposure study of endocrine disrupting chemicals.

Collaborators include Julia Brody, Silent Spring Institute (Principal Investigator), Carla Pérez (co-Investigator) Communities for a Better Environment and Phil Brown, Brown University (co-Principal Investigator).

National Science Foundation

The "Research Right-to-Know": Ethics and Values in Communicating Environmental Health Study Results to Individuals and Communities

Role: Co-Principal Investigator

March 2005-December 2008

To examine values and ethical issues in reporting environmental health study results to individual study participants, and whole communities. Collaborators: Julia Brody, Executive Director of the Silent Spring Institute and Phil Brown, Department of Sociology, Brown University (co-Principal Investigator).

California Air Resources Board Research Program

Air Pollution and Environmental Justice: Integrating Exposure, Demographics, and Land Use into Regulatory Decision-making and Preventive Screening

Role: Co-Principal Investigator September 2005-February 2008

To: 1) refine methods of environmental equity analysis by assessing spatial auto-correlation and examining the impacts of industrial, commercial and transportation land use; 2) develop indicators of neighborhood-scale cumulative impact, community vulnerability, and environmental inequity that can be integrated into regulatory decision-making and enforcement activities. Collaborators: Manuel Pastor, Latin American/Latino Studies (UC Santa Cruz) and James Sadd, Environmental Sciences and Studies (Occidental College).

The California Endowment:

San Francisco Bay Area Environmental Health Collaborative:

Role: Co-Investigator July 2004-June 2007

Supports academic research, secondary grant-making, community organizing, advocacy, and public education with the aim of impacting public policies and improving health outcomes for environmentally at-risk communities in the San Francisco Bay Area.

The California Endowment

Building a Regional Voice for Environmental Health in Southern California-- Phase II:

Role Co-Principal Investigator May 2005-June 2007

To build on gains and lessons learned and expand the *Building a Regional Voice for Environmental Health Collaborative's* capacity to impact health and wellness of at-risk communities of color in Southern California. Collaborative involves academic/community-based partnership (3 academic collaborators—Brown, University of California, Santa Cruz, and Occidental College, and 5 community collaborators) combining economic and environmental health research, policy advocacy, and public education to improve environmental health in low-income communities of color in Southern California.

**Centers for Disease Control and Prevention
Centers of Excellence for Environmental Public Health Tracking,
University of California, Berkeley**
September 2002-September 2005 & Renewed: September 2005-August 2008
Role: Research Consultant

To design methods that identify and assess disparities in environmental exposures and health status, including developing methods to assess patterns of emissions, exposures, and disease by key population groupings, including race/ethnicity and socio economic status.

COMPLETED GRANTS

National Science Foundation

Hurricane Katrina and the Built Environment:

An Eco-Social Framework for Assessing Spatial and Social Impacts

Role: Co-Investigator

December 2005-November 2006

To study the impacts of Hurricane Katrina, along with the recovery and reconstruction process as it unfolds. Collaborators include: John Logan (Principal Investigator), Phil Brown (Co-Investigator), Department of Sociology, Steve Hamburg (Co-Investigator) Ecology and Evolutionary Biology, John Mustard (Geological Sciences), Brown University.

California Wellness Foundation

Children's Health and Environmental Justice

October 2001-November 2004

Co-Principal Investigator

To examine the distribution of toxics and associated cancer and non-cancer health risks among school children in California. Academic collaborators: Manuel Pastor (University of California, Santa Cruz) and James Sadd (Occidental College).

The Ford Foundation

Regional Equity, Public Health and Environmental Justice

Principal Investigator

July 2003-March 2004

Grant to research and analyze a sample of current advocacy work and academic research initiatives that seek to integrate issues of regional economic equity, environmental health, and social justice.

The California Endowment

Building a Regional Community-Based Voice for Environmental Health and Justice

Co-Principal Investigator

September 2001-March 2004

To support an academic/community partnership combining economic and environmental health research, policy advocacy, and public education to improve environmental health in low-income communities of color in Southern California.

ABBREVIATED CURRICULUM VITAE
JAMES L. SADD, PH.D.

PERSONAL

Associate Professor of Environmental Science
Occidental College
Los Angeles, California 90041
Voice: (213) 259-2518 email: jsadd@oxy.edu

EDUCATION

B.S. in Geology, 1977, University of Southern California, Los Angeles
USC Merit Scholarship, graduated Magna Cum Laude, elected to Phi Beta Kappa.

M.A. in Geology, 1980, University of Texas, Austin
U.S. Dept. of Energy Graduate Fellowship
Thesis: Carbonate Sediment Production and Transport on a Fringing Reef,
St. Croix, U.S. Virgin Islands.

Ph.D. in Geology, 1986, University of South Carolina, Columbia
Dissertation: Petrology and Geochemistry of the Buckhorn Asphalt (Desmoinsian),
Deese Group, Arbuckle Mountains, Oklahoma.

ACADEMIC APPOINTMENTS

- 1998- Associate Professor of Environmental Science, Occidental College.
- 1995-97 Assistant Professor of Environmental Science, and Director of Environmental
Science and Studies Program, Occidental College.
- 1992-94 Assistant Professor Geology Department, Occidental College.
- 1988-92 Adjunct Faculty, Geology Department, Occidental College, Los Angeles, CA.
- 1991 Adjunct Faculty, Geology Department, Pomona College, Claremont, CA.
- 1988-90 Adjunct Faculty, Geology Department., California State Univ., Los Angeles.
- 1987-88 Adjunct Faculty, Dept. of Natural Sciences, University of South Carolina.
- 1986-87 Post Doctoral Research Fellow, Dept. of Geology, University of South Carolina.
- 1984-86 Graduate Geology Instructor, Dept. of Geology, University of South Carolina.
- 1982-84 Research Coordinator, Department of Geology, Georgia State University.

RESEARCH INTERESTS AND EXPERIENCE

Spatial analysis and digital mapping using geographic information systems (GIS) and image analysis software, quantitative analysis of environmental justice issues, regional land use change and its effects on coastal sedimentary geomorphology and trace element geochemistry, carbonate petrology and geochemistry, coastal and marine sedimentary processes, oil spills in coastal environments.

SELECT GRANTS AND CONTRACTS

- 2004 (Co-Principal Investigator) "Bay Area Environmental Health Collaborative" -- a collaborative partnership of Communities for a Better Environment, The San Francisco Foundation, Occidental College, University of California, Santa Cruz, Brown University to combine quantitative GIS and environmental health research, community organizing, public education and technical assistance to improve public health in the San Francisco Bay area. (The California Endowment) \$600,000.
- 2001 (Co-Principal Investigator) "Building a Regional Voice for Environmental Health" -- a collaborative partnership of Communities for a Better Environment, Liberty Hill Foundation, Occidental College University of California, Santa Cruz, Brown University to combine quantitative GIS and environmental health research, community organizing, public education and technical assistance to improve public health in California by identifying and evaluating the health impacts from exposure to urban environmental hazards and developing strategies to reduce community exposure. (\$997,000).
- 1998 (Co-Principal Investigator) "Building a Regional Community-based Voice for Environmental Health" -- a collaborative partnership of Communities for a Better Environment, Liberty Hill Foundation, Occidental College and University of California, Santa Cruz to combine research, community organizing, public education and technical assistance to improve public health in low-income communities of color in Los Angeles County by identifying and evaluating urban environmental hazards and developing strategies to reduce community exposure to toxic substances. (\$1,700,000).
- 1997 (Co-Principal Investigator) Interactive Oceanography: Linking Shipboard and Classroom Learning Activities -- new instrumentation and software for automated data gathering, analysis, and integration into a GIS system and WWW server. (National Science Foundation Instrumentation/Laboratory Improvement) \$42,000.
- 1996 (Co-Principal Investigator) Henry R. Luce Professorship in Urban Environmental Studies -- new faculty position to establish a new Urban Environmental Studies Project, an interdisciplinary group of faculty and students, courses, research and public service programs focused on understanding urban environmental issues, and using metropolitan Southern California as a laboratory. \$780,000.

1996 (Principal Investigator) Sediment Surveys of the Rancho Palos Verdes offshore area (Palos Verdes Peninsula, CA) for US Army Corps of Engineers (USACOE), Contract # DACA09-94-D-0004. This study was conducted to document the current sedimentary conditions and sedimentary toxic contaminant concentrations, and to predict the effects of cessation or curtailment of erosion associated with the Portuguese Bend landslide. \$65,000.

1994 (Principal Investigator) Mellon Resource Reclamation Program -- integrated three-year program of teaching enhancement and College facilities improvement in which students participate in the design of a municipal reclaimed water system on campus. Includes installation of a Geographic Information Systems computer facility, curriculum improvement and paid student internships. (Andrew W. Mellon Foundation) \$300,000.

SELECT PUBLICATIONS

Pastor, Manuel Jr., James Sadd, and Rachel Morello-Frosch, 2004, Waiting to Inhale? The Demographics of Toxic Air Release Facilities in 21st Century California: *Social Science Quarterly*, Volume 85, Number 2, June, 2004.

Pastor, Manuel Jr., James Sadd, and Rachel Morello-Frosch, in press, 'Everyone Knows That': Environmental Inequity in Metropolitan Los Angeles: book chapter in *Wasting Away: Environmental Justice, Human Rights and the Politics of Pollution*: Sierra Club Books, Robert D. Bullard, editor.

Pastor, Manuel Jr., Sadd, James L., and Morello-Frosch, Rachel, 2003, Reading, Writing and Toxics: Children's Health, Academic Performance, and Environmental Justice in Los Angeles: *Environment & Planning C: Government and Policy*, Volume 22, Number 2, p. 271 - 290.

Morello-Frosch, Rachel, Manuel Pastor, Jr., and James Sadd, 2002, Integrating Environmental Justice and the Precautionary in Research and Policy-Making: The Case of Ambient Air Toxics Exposures and Health Risks Among School Children in Los Angeles: *Annals of the American Academy of Political and Social Science*, v. 584, p. 47-68.

Morello-Frosch, Rachel, Pastor, Manuel Jr., Sadd, James L., and Pooras, Carlos, 2002, Environmental Justice in and Regional Equity in Southern California: Implications for Future Research: *Environmental Health Perspectives*, 110/2, 149-154.

Pastor, Manuel Jr., Sadd, James L., and Morello-Frosch, Rachel, 2002, Who's Minding the Kids? Pollution, Public Schools, and Environmental Justice in Los Angeles: *Social Science Quarterly* Special Issue: Social Science and the Environment, 83/1, 263-280

- Sadd, James L. and Ronald Karpilo, 2001, Historic Shoreline Change and Sediment Supply in the Mugu Lagoon/Barrier System, California: in Modern and Ancient Barrier, Lagoonal and Marine Environments, Ventura County, California, Society of Economic Paleontologists and Mineralogists, Pacific Section, Book 90, D. Prothero editor, pp. 29-49.
- Morello-Frosch, Rachel, Pastor, Manuel Jr., and Sadd, James L, 2001, Environmental Justice and Southern California's "Riskscape": The Distribution of Air Toxics Exposures and Health Risks Among Diverse Communities: *Urban Affairs Review*, 36/4, 551-578.
- Pastor, Manuel Jr., Sadd, James L, and Hipp, John, 2001, Which Came First? Toxic Facilities, Minority Move-in, and Environmental Justice: *Journal of Urban Affairs* 23/1, 1-21.
- A. S. Alsharhan and James L. Sadd, 2000, Stylolites in Lower Cretaceous Carbonate Reservoirs. In: A.S. and R.W. Scott, editors, Middle Eastern Models of Jurassic/Cretaceous Carbonate Systems SEPM Special Publication #69, p.179-200.
- Sadd, James L, Manuel Pastor, Jr., J. Thomas Boer, Lori. D. Snyder, 1999, "Every Breath You Take ...": The Demographics of Toxic Air Releases in Southern California: *Economic Development Quarterly*, 13/2, May.
- Boer, J. Thomas, Manuel Pastor, Jr., James L. Sadd, Lori. D. Snyder, 1997, Is There Environmental Racism? The Demographics of Hazardous Waste in Los Angeles County: *Social Science Quarterly*, v. 78/4 793 - 810. December 1997
- Boer, J. Thomas and James L. Sadd, 1996, In Whose Backyard? The Demography of Populations Proximate to Hazardous Waste Facilities in Los Angeles County: *Environmental Law News*, Environmental Law Section of the State Bar of California, v. 5/1, 10-16.

PERSONAL BRIEF:

Born 12/26/53, U.S. Citizen

5. RELATED RESEARCH

The CVs above and the publications listed in the next section will give an idea of the arc of our collective and collaborative research trajectory. Our work in this area has received support from The California Endowment and led to the publication of early work on TSDFs and the TRI inventory, and the subsequent development of work, as well as early work utilizing air toxics data from the U.S. EPA. Recent funding from the California Wellness Foundation has supported work on the relationship between children's health, schools, and environmental disparities. We have also received individual funding from the California Policy Research Center (\$35,000) and the California Integrated Waste Management Board (\$100,000), with the former devoted to an analysis of the temporal dimensions of siting decisions and racial / demographic change, and the latter to devising new methods for community participation in environmental justice decision-making. We have also received individual funding from the National Institute of Environmental Health Sciences (NIEHS), the Ford Foundation, and others.

Finally, as CARB knows, we are working on a multi-year grant entitled "Air Pollution And Environmental Justice: Integrating Indicators Of Cumulative Impact And Socioeconomic Vulnerability Into Regulatory Decision-Making."

We list below only our collective grants; information on the individual grants is available in the CVs.

As several of these were part of a broader collaborative with foundations, community groups, and others, we list below only the portions of the grants that supported the research work.

- Ford Foundation, "Data and Analysis for Change: Research Consortium for Environmental Justice," (project to be done in collaboration with James Boyce and Paul Mohai), \$100,000, grant period, 2006-2007.
- California Air Resources Board, "Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-Making" (Manuel Pastor, UCSC, Jim Sadd, Occidental College and Rachel Morello-Frosch, UC Berkeley), \$691,922, grant period 2005-2008.
- The California Endowment, "Bay Area Environmental Health Collaborative". Research component: \$76,000. PIs: Manuel Pastor, UCSC, Rachel Morello-Frosch, UC Berkeley, and James L.Sadd, Occidental College.
- California Wellness Foundation, "Schools, Children's Health, and Environmental Justice: A Research and Policy Initiative for California" \$100,000. PIs: Manuel Pastor, UCSC, Rachel Morello-Frosch, Brown Univeristy, and James L.Sadd, Occidental College.
- The California Endowment, "Creating a Community-based Regional Voice for Environmental Justice, Phase II," with Liberty Hill Foundation and Communities for a Better Environment. Research component, \$199,000. PIs: Manuel Pastor, UCSC,

Rachel Morello-Frosch, Brown University, and James L.Sadd, Occidental College, 2002-2004.

- The California Endowment, "Creating a Community-based Regional Voice for Environmental Justice," with Liberty Hill Foundation and Communities for a Better Environment. Research component, \$300,000. Original PIs: Jim Sadd, Occidental College, & Manuel Pastor, UC Santa Cruz. Rachel Morello-Frosch added as research associate in 2000. 1998-2001.

PUBLICATION LIST

- Pastor M, Sadd J, Morello-Frosch RA: "LULUs of the Field: Research and Activism for Environmental Justice" forthcoming in Andrew Barlow, Editor, *Professional Advocacy for Social Justice* (Lanham, MD: Rowman and Littlefield, forthcoming 2007).
- Brody JG, Morello-Frosch R, Brown P, Rudel R, Altman R, Frye M, Osimo CC, Pérez C, Seryak L: "Is It Safe? -- New Ethics for Reporting Personal Exposures to Environmental Chemicals." *American Journal of Public Health*, 2007 97:1547-1554.
- DeFur PL, Evaris GW, Hubal EA, Kyle AD, Morello-Frosch RA, Williams DA: "Vulnerability as a Function of Individual and Group Resources in Cumulative Risk Assessment." Forthcoming in *Environmental Health Perspectives*, 2007. Manuscript available at: <http://www.ehponline.org/members/2007/9332/9332.pdf>
- Morello-Frosch R and Lopez, R: "The Riskscape and the Colorline: Examining the Role of Segregation in Environmental Health Disparities," *Environmental Research*, 2006 102(2): 181-196.
- Morello-Frosch R and Shenassa, E: "The Environmental 'Riskscape' and Social Inequality: Implications for Explaining Maternal and Child Health Disparities." *Environmental Health Perspectives*, 2006, 114 (8):1150-1153.
- Morello-Frosch R and Jesdale, B: "Separate and Unequal: Residential Segregation and Air Quality in the Metropolitan U.S." *Environmental Health Perspectives* 2006, 113: 386-393.
- Pastor M, Sadd J, Morello-Frosch RA: "Breathless: Pollution, Schools, and Environmental Justice in California," *Policy Studies Journal*, vol. 34, no. 3, 2006.
- Bullard, Robert D., Manuel Pastor, James K. Boyce, Alice Fothergill, Rachel Morello-Frosch, and Beverly Wright). *In the Wake of the Storm: Environment, Disaster, and Race After Katrina* (New York: Russell Sage, 2006).
- Pastor M, Sadd J, Morello-Frosch RA: "The Air is Always Cleaner on the Other Side: Race, Space, and Air Toxics Exposures in California" *Journal of Urban Affairs*, vol. 27, no. 2, 2005. [Winner of the "Best of *Journal of Urban Affairs* award for 2005].
- Pastor M, Sadd J, Morello-Frosch RA: "Environmental Inequity in Metropolitan Los Angeles," in Robert Bullard, editor, *The Quest for Environmental Justice: Human Rights and the Politics of Pollution* (Sierra Club Books, November 2005).
- Morello-Frosch R, Pastor M, Sadd J, Porras C, Prichard M. "Citizens, Science, and Data Judo: Leveraging Community-based Participatory Research to Build a Regional Collaborative for Environmental Justice in Southern California." In Methods for Conducting Community-Based Participatory Research in Public Health. Barbara Israel, Eugenia Eng, Amy Shultz, Edith Parker, eds. University of Michigan, Jossey-Bass Press (2004).

Pastor M, Sadd J, Morello-Frosch RA: "Reading, Writing and Toxics: Children's Health, Academic Performance, and Environmental Justice in Los Angeles." *Environment and Planning C*, 2004, 2: 271-290.

Pastor M, Sadd J, Morello-Frosch RA: "Waiting to Inhale: The Demographics of Toxic Air Releases in 21st Century California." *Social Science Quarterly*, 2004, 85(2): 420-440.

Pastor, M. "Building Social Capital to Protect Natural Capital: The Quest for Environmental Justice," in James K. Boyce and Barry Shelley, editors, *Natural Assets: Democratizing Environmental Ownership* (Washington, DC: Island Press, 2003)

Morello-Frosch RA, Pastor M, Sadd J: "Integrating Environmental Justice and the Precautionary Principle in Research and Policy-Making: The Case of Ambient Air Toxics Exposures and Health Risks among School Children in Los Angeles." *Annals of the American Academy of Political and Social Science*, 2002, 584: 47-68.

Morello-Frosch RA: "The Political Economy of Environmental Discrimination." *Environment and Planning C, Government and Policy*, 2002, 20:477-496.

Morello-Frosch RA, Pastor M, Porras C, Sadd J: "Environmental Justice and Regional Inequality in Southern California: Implications for Future Research." *Environmental Health Perspectives*, 2002, 110 (Supplement 2): 149-154.

Pastor M, Sadd J, Morello-Frosch RA: "Who's Minding the Kids? Toxic Air, Public Schools, and Environmental Justice in Los Angeles." *Social Science Quarterly*, 2002, 83(1): 263-280.

Pastor, M. *Racial/Ethnic Inequality in Environmental Hazard Exposure in Metropolitan Los Angeles*. Report for the California Policy Research Center, University of California, 2001.

Morello-Frosch RA, Pastor M, Sadd J: "Environmental Justice and Southern California's 'Riskscape': The Distribution of Air Toxics Exposures and Health Risks among Diverse Communities." *Urban Affairs Review*, 2001 36(4): 551-578.

Pastor, Manuel Jr., Sadd, James L, and Hipp, John: "Which Came First? Toxic Facilities, Minority Move-in, and Environmental Justice" *Journal of Urban Affairs* 2001, 23/1, 1-21.

Morello-Frosch RA, Woodruff TJ, Axelrad DA, Caldwell JC: "Air Toxics and Health Risks in California: The Public Health Implications of Outdoor Concentrations." *Risk Analysis*, 2000 (20) 273-291.

Axelrad DA, Morello-Frosch RA, Woodruff TJ, Caldwell, JC: "Assessment of Estimated 1990 Air Toxics Concentrations in Urban Areas in the United States." *Environmental Science and Policy*, 1999 (2) 397-411.

Woodruff, TJ, Axelrad, DA, Caldwell, JC, Morello-Frosch, RA, Rosenbaum, A: "Air Toxics Concentrations: Response." *Environmental Health Perspectives*, 1999 107(11) A547-A548.

Sadd, James L, Manuel Pastor, Jr., J. Thomas Boer, Lori. D. Snyder, 1999, "Every Breath You Take ...": The Demographics of Toxic Air Releases in Southern California: *Economic Development Quarterly*, 13/2, May.

Woodruff TJ, Axelrad DA, Caldwell J, Morello-Frosch RA, Rosenbaum, A: "Public Health Implications of Air Toxics Concentrations in the US." *Environmental Health Perspectives*, 1998 106(5) 245-251.

Caldwell J, Woodruff TJ, Morello-Frosch RA, Axelrad DA: "Use of Toxicity Data for Assessing the Environmental Health Risks of Air Toxics." *Toxicology and Industrial Health*, 1998 14(3), 429-454.

Boer, J. Thomas, Manuel Pastor, Jr., James L. Sadd, Lori. D. Snyder, 1997, Is There Environmental Racism? The Demographics of Hazardous Waste in Los Angeles County: *Social Science Quarterly*, v. 78/4 793 - 810. December 1997

Boer, J. Thomas and James L. Sadd, 1996, In Whose Backyard? The Demography of Populations Proximate to Hazardous Waste Facilities in Los Angeles County: *Environmental Law News*, Environmental Law Section of the State Bar of California, v. 5/1, 10-16.

Scope of work for UC Santa Cruz partners on CARB Agreement

Supplement to "2008 Environmental Justice (EJ) and Climate Change Report"

Manuel Pastor
University of California, Santa Cruz (UCSC)
Center for Justice, Tolerance and Community (CJTC)

February 23, 2008

Dr. Manuel Pastor and Dr. James Sadd, both research professors associated with UCSC-CJTC will assist in the following tasks:

1. Review the published literature, including: the 2006 Scenarios Analysis results for each sector and research plans for 2008, studies addressing the potential environmental impacts of climate change on California; studies of disproportionate impacts of climate change, or related forms of air pollution, on low-income communities and disadvantaged communities of color; studies addressing the potential impacts of climate change mitigation and adaptation strategies on those same communities – particularly in California.
2. Conduct at least 5 in-depth interviews with EJ stakeholders and other stakeholders on anticipated impacts of climate change, as well as climate change mitigation and adaptation strategies.
3. Work to develop preliminary quantitative assessments of the EJ considerations, illustrating, as possible, pioneering approaches to detecting, measuring or evaluating disproportionate impacts on low-income communities or communities of color.
4. Drawing upon both in-depth interviews, (#2), and its review of relevant scientific literature, (#1), work with UC Berkeley to write a 30-50 page report articulating a prioritized research agenda, including identifying needed datasets for future study of the disproportionate impacts of climate change, and of environmental justice issues related to climate change mitigation and adaptation strategies for the State of California.
5. Assist the UC Berkeley PI in drafting progress reports as necessary.

EXHIBIT B

BUDGET DETAIL AND PAYMENT PROVISIONS

1. Invoicing

- A. For services satisfactorily rendered in accordance with this agreement and upon receipt and approval of the invoices, which properly detail all charges, ARB agrees to compensate UCB for actual expenditures incurred in accordance with the rates specified herein or attached hereto.
- B. Invoices shall include the Agreement Number and shall be submitted in triplicate not more frequently than quarterly in arrears to Ms. Emma Plasencia at the address below:
- Emma Plasencia
Research Division
Air Resources Board
P.O. Box 2815
Sacramento, CA 95812
- C. University may rebudget funds up to a maximum of ten percent between major budget categories with prior approval from ARB.
- D. ARB will give consideration to requests to rebudget funds in excess of ten percent, however, no rebudgeting in excess of ten percent and no rebudgeting of funds into the travel category may be performed without amending this Agreement.

2. Budget Contingency Clause

- A. It is mutually agreed that if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the program, this Agreement shall be of no further force and effect. In this event, the State shall have no liability to pay any funds whatsoever to Contractor or to furnish any other considerations under this Agreement and Contractor shall not be obligated to perform any provisions of this Agreement.
- B. If funding for any fiscal year is reduced or deleted by the Budget Act for purposes of this program, the State shall have the option to either cancel this Agreement with no liability occurring to the State, or offer an agreement amendment to Contractor to reflect the reduced amount.

EXHIBIT B

3. Payment

- A. Costs for this Agreement shall be computed in accordance with State Administrative Manual Sections 8752 and 8752.1.
- B. Nothing herein contained shall preclude advance payments pursuant to Article 1, Chapter 3, Part 1, Division 3, Title 2 of the Government Code of the State of California.
- C. ARB shall withhold payment equal to ten percent of the total Agreement cost until completion of all work and submission to ARB by University of a final report (including computer diskette copy) approved in accordance with Exhibit F, by ARB. It is University's responsibility to submit an invoice in triplicate with the revised final report for ten percent withheld.
- D. University will be paid for the payment period completed upon receipt, by ARB, of an invoice and progress report satisfying the requirements of this Agreement. The invoice and progress report must be deemed by ARB to reflect reasonable work performed in accordance with the Agreement.
- E. The amount to be paid to University under this Agreement includes all sales and use taxes incurred pursuant to this Agreement. University shall not receive additional compensation for reimbursement of such taxes and shall not decrease work to compensate therefore.

Budget Submittal Form

This form is supplied for presenting budget detail to the Air Resources Board.

PLEASE TYPE OR PRINT:

Title of Proposal: 2008 Environmental Justice and Climate Change Report

Total Budget Requested: \$33,360

Period Covered (months): 18 Months

University: University of California, Berkeley

Address: ESPM, 137 Mulford Hall, Berkeley CA 94720-3114

Name of person authorized to bind this bid:

Title:

Phone:

Signature of person authorized to bind this bid: _____

Budget Summary

Budget details must be supplied on pages 3-11 and on additional pages if necessary.
Instructions and definitions of terms are provided in Attachment 1 of the Guidelines for Proposals.

NOTE: Totals in categories in this summary are automatically updated from pages 3-11 when using Excel file.

Direct Costs

1.	Labor & Employee Fringe Benefits	\$1,166
2.	Subcontractor(s)/Consultant(s)	\$26,285
3.	Equipment	\$0
4.	Travel & Subsistence	\$736
5.	Electronic Data Processing	\$1,070
6.	Photocopying & Printing	\$520
7.	Mail, Telephone, and Fax	\$350
8.	Materials & Supplies	\$200
9.	Analyses	\$0
10.	Miscellaneous	\$0
Total Direct Cost		\$30,327

Indirect Costs

11.	Overhead (10%)	\$3,033
Total Indirect Cost		\$3,033

Total Direct and Indirect Cost: \$33,360

Budget Detail I. Direct Costs

1a. Labor Charges for Universities and Other State Agencies

Note: Total Salary Requested cells automatically calculate when using Excel file.

	Individual's Name	Work Title	Mo. Salary	Est. Months	% of Effort or % of Salary	Total Salary Requested
A.	Rachel Morello-Frosch	Associate Prof	\$10,000.00	1.00	85.00%	\$8,500
B.	TBN	GSR IV	\$3,488.00	10.00	19.00%	\$6,627
C.						\$0

Subtotal : \$15,127

Cost justifications. Describe exactly why each individual listed in the Budget Detail is needed in this project (i.e., their role in the project), why this particular person was chosen for this role, and why their proposed level of effort is necessary. Describe, for each position listed, why the specified rate is reasonable or competitive. (Use additional page if necessary).

These individuals are the Pis. Manuel Pastor will provide overall coordination including budget, Sadd will coordinate the collection and process of spatial data, and Morello-Frosch will coordinate data analyses and the interviews. All three have conceived the project and are key participants. The rates are taken from their annual 9-month salaries, divided into summer nineths.

1b. Fringe Benefits

Note: COST cells automatically calculate when using Excel file

	Individual's Name	BASE (\$)	RATE (%)	COST
A.	Rachel Morello-Frosch	\$8,500.00	12.70%	\$1,080
B.	GSR TBN	\$6,627.20	1.30%	\$86
C.				\$0

(use additional page if necessary)

Subtotal: \$1,166

Cost justifications. Provide the Basis for the Fringe Benefit Rates. (Use additional page if necessary).

Rates are those charged by the University for these various staff.

2. Subcontractors & Consultants

List all subcontractors and consultants. Also submit separate Budget Submittal Form for each subcontractor and consultant.

	Subcontractor or consultant	Cost
A.	UC Santa Crus (UCSC)	\$26,285
B.		
C.		

(use additional page if necessary)

Subtotal: \$26,285

Cost justifications. Describe exactly why each subcontractor is needed in this project (i.e., their role in the project). Describe, for each subcontractor, why the specified rate is reasonable or competitive. (Use additional page if necessary).

Subaward is made to UCSC to cover Pastor and Sadd's Salaries and Fringe. This is included in line items above and separate budget is attached.

3. Equipment (Itemize)

Item	Cost
A.	
B.	
C.	

Subtotal: \$0

Cost justifications. Describe exactly why each listed equipment item is needed in this project, and why the cost is reasonable. (Use additional page if necessary). (Refer to Exhibit E, page 19)

N/A

4. Travel and Subsistence (Itemize). Use State Rates (Appendix IV).

NO FOREIGN TRAVEL ALLOWED.

Description	Cost
A. Air transportation	\$240
B. Ground transportation	\$98
C. Per diem or subsistence	\$80
D. Other (Lodging & Parking)	\$319

Subtotal: \$736

Cost justifications. Describe the purpose and duration of each trip and explain why the travel is necessary. (Use additional page if necessary).

		Trips
Morello-Frosch	Research Meetings (L.A.)	1
	To Sacto for Staff and Other Meetings	1
Sadd	To Bay Area for Research Meetings	1
	To Sacto for Staff and Other Meetings	1
Grad Student	To Sacto for Staff and Other Meetings	1
Pastor	To Sacto for Staff and Other Meetings	1
	To Bay Area for Research Meetings	1

5. Electronic Data Processing (Itemize)

	Description	Cost
A.	Data	\$700
B.	Software Licence	\$370
C.		
D.		

Subtotal: \$1,070

*Cost justifications. Explain the need for the expenditure and the basis for the costs.
(Use additional page if necessary).*

Purchase of data as necessary about heat wave effects. Update of ArcGIS on software (partial payment)

6. Photocopying & Printing (Itemize)

	Description of product	Cost
A.	Duplication of research materials	\$200
B.	Design	\$320

Subtotal: \$520

*Cost justifications. Explain the need for the expenditure and the basis for the costs.
(Use additional page if necessary).*

7. Mail, Telephone & Fax (Itemize)

	Item	Cost
A.	Telephone (including conference calls)	\$220
B.	Postage Costs	\$130
C.		

Subtotal: \$350

Cost justifications. Explain the need for the expenditure and the basis for the costs. (Use additional page if necessary).

8. Materials & Supplies (Itemize)

	Item	Cost
A.	Materials/Supplies (paper, etc.)	\$200
B.		
C.		
D.		

Subtotal: \$200

Cost justifications. Describe exactly why each item listed above is needed in this project. Explain why the proposed cost is reasonable. (Use additional page if necessary).

9. Analyses (Itemize)

	Description	Cost
A.		
B.		
C.		
D.		

Subtotal: \$0

Cost justifications: Describe the purpose of each different analysis and explain why it is needed in this project. Explain why the proposed rate is reasonable. (Use additional page if necessary).

N/A

10. Miscellaneous (Itemize)

	Item	Cost
A.		
B.		
C.		
D.		

Subtotal: \$0

Cost justifications. Justify all costs not included in the categories above. Explain the need for the expenditure and the basis for the costs. (Use additional page if necessary).

N/A

Total Direct Costs (add subtotals for categories 1-10) \$30,327

II. Indirect Costs

11. Overhead and Other Indirect Costs

	Base (Salaries, total direct costs, etc.) (\$)	Rate (%)	Cost
A.	\$30,327.02	10.00%	\$3,033
B.			\$0
C.			\$0

Subtotal: \$3,033

Total Indirect Cost: \$3,033

Total Project Cost: \$33,360

Budget Submittal Form

This form is supplied for presenting budget detail to the Air Resources Board.

PLEASE TYPE OR PRINT:

Title of Proposal: 2008 Environmental Justice and Climate Change Report

Total Budget Requested: \$26,285

Period Covered (months): 15 months

University: University of California, Santa Cruz

Address: 1156 High Street, Santa Cruz, CA 95064

Name of person authorized to bind this bid:

Title:

Phone:

Signature of person authorized to bind this bid: _____

Budget Summary

Budget details must be supplied on pages 3-11 and on additional pages if necessary.
Instructions and definitions of terms are provided in Attachment 1 of the Guidelines for Proposals.

NOTE: Totals in categories in this summary are automatically updated from pages 3-11 when using Excel file.

Direct Costs		
1.	Labor & Employee Fringe Benefits	\$21,237
2.	Subcontractor(s)/Consultant(s)	\$0
3.	Equipment	\$0
4.	Travel & Subsistence	\$1,954
5.	Electronic Data Processing	\$300
6.	Photocopying & Printing	\$100
7.	Mail, Telephone, and Fax	\$204
8.	Materials & Supplies	\$100
9.	Analyses	\$0
10.	Miscellaneous	\$0
Total Direct Cost		\$23,896

Indirect Costs		
11.	Overhead	\$2,390
Total Indirect Cost		\$2,390

Total Direct and Indirect Cost:	\$26,285
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Budget Detail

I. Direct Costs

1a. Labor Charges for Universities and Other State Agencies

Note: Total Salary Requested cells automatically calculate when using Excel file.

	Individual's Name	Work Title	Mo. Salary	Est. Months	% of Effort or % of Salary	Total Salary Requested
A.	Mahuel Pastor	Professor	\$17,000.00	1.00	55.00%	\$9,350
B.						
C.	Jim Sadd	Research Prof.	\$10,000.00	1.00	85.00%	\$8,500
D.						\$0
E.						\$0
F.						\$0
G.						\$0
H.						\$0
I.						\$0
(use additional page if necessary)						

Subtotal:	\$17,850
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Cost justifications. Describe exactly why each individual listed in the Budget Detail is needed in this project (i.e., their role in the project), why this particular person was chosen for this role, and why their proposed level of effort is necessary. Describe, for each position listed, why the specified rate is reasonable or competitive. (Use additional page if necessary).

These individuals are co-PIs with Morello-Frosch. Manuel Pastor will provide overall research effort, including literature review and data analysis, Sadd will coordinate the collection and process of spatial data. Along with Morello-Frosch, they have conceived the project and are key participants. The rates are taken from their annual 9-month salaries, divided into summer nineths.

1b. Fringe Benefits

Note: COST cells automatically calculate when using Excel file.

	Individual's Name	BASE (\$)	RATE (%)	COST
A.	Manuel Pastor	\$9,350.00	13.50%	\$1,262
B.				
C.	Jim Sadd	\$8,500.00	25.00%	\$2,125
D.				\$0
E.				\$0
F.				\$0
G.				\$0
H.				\$0
I.				\$0

(use additional page if necessary)

Subtotal:	\$3,387
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Cost justifications. Provide the Basis for the Fringe Benefit Rates. (Use additional page if necessary):

Rates are those charged by the University for these various staff.

2. Subcontractors & Consultants

List all subcontractors and consultants. Also submit separate Budget Submittal Form for each subcontractor and consultant.

	Subcontractor or consultant	Cost
A.		
B.		
C.		
D.		

(use additional page if necessary)

Subtotal:	\$0
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Cost justifications. Describe exactly why each subcontractor is needed in this project (i.e., their role in the project). Describe, for each subcontractor, why the specified rate is reasonable or competitive. (Use additional page if necessary).

3. Equipment (Itemize)

	Item	Cost
A.		
B.		
C.		
D.		

Subtotal:	\$0
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Cost justifications. Describe exactly why each listed equipment item is needed in this project, and why the cost is reasonable. (Use additional page if necessary). (Refer to Exhibit E, page 19)

4. Travel and Subsistence (Itemize). Use State Rates (Appendix IV). NO FOREIGN TRAVEL ALLOWED.

	Description	Cost
A.	Air transportation	\$960
B.	Ground transportation	\$204
C.	Per diem or subsistence	\$240
D.	Other (Lodging & Parking)	\$551

Subtotal: \$1,954

Cost justifications. Describe the purpose and duration of each trip and explain why the travel is necessary. (Use additional page if necessary).

		Trips
Sadd	To Bay Area for Research Meetings	1
	To Sacto for Staff and Other Meetings	1
Pastor	To Sacto for Staff and Other Meetings	1
	To Bay Area for Research Meetings	1

5. Electronic Data Processing (Itemize)

	Description	Cost
A.	Data	\$100
B.	Software Licence	\$200
C.		
D.		

Subtotal: \$300

Cost justifications. Explain the need for the expenditure and the basis for the costs. (Use additional page if necessary).

Purchase of data as necessary about heat wave effects. Update of ArcGIS on software (partial payment).

6. Photocopying & Printing (Itemize)

	Description of product	Cost
A.	Duplication of research materials	\$100
B.		

Subtotal: \$100

*Cost justifications. Explain the need for the expenditure and the basis for the costs.
(Use additional page if necessary).*

7. Mail, Telephone & Fax (Itemize)

	Item	Cost
A.	Telephone (including conference calls)	\$80
B.	Postage Costs	\$124
C.		

Subtotal: \$204

*Cost justifications. Explain the need for the expenditure and the basis for the costs.
(Use additional page if necessary).*

8. Materials & Supplies (Itemize)

	Item	Cost
A.	Materials/Supplies (paper, etc.)	\$100
B.		
C.		
D.		
E.		
F.		
G.		
H.		
I.		

Subtotal:	\$100
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Cost justifications. Describe exactly why each item listed above is needed in this project. Explain why the proposed cost is reasonable. (Use additional page if necessary).

9. Analyses (Itemize)

	Description	Cost
A.		
B.		
C.		
D.		
E.		
F.		
G.		
H.		
I.		

Subtotal:	\$0
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Cost justifications. Describe the purpose of each different analysis and explain why it is needed in this project. Explain why the proposed rate is reasonable. (Use additional page if necessary).

10. Miscellaneous (Itemize)

Item	Cost
A.	
B.	
C.	
D.	

Subtotal:	\$0
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Cost justifications. Justify all costs not included in the categories above. Explain the need for the expenditure and the basis for the costs. (Use additional page if necessary).

This will be structured as a payment to a USC graduate student as a fellowship. Paid this way, there is no need for subcontracting.

Total Direct Costs (add subtotals for categories 1-10):	\$23,896
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II. Indirect Costs

11. Overhead and Other Indirect Costs

	Base (Salaries, total direct costs, etc.) (\$)	Rate (%)	Cost
A.	\$23,895.51	10.00%	\$2,390
B.			\$0
C.			\$0

Subtotal: \$2,390

Total Indirect Cost: \$2,390

Total Project Cost: \$26,285

EXHIBIT D

SPECIAL TERMS AND CONDITIONS

1. Termination

- A. This Agreement may be canceled at any time by either party, upon thirty (30) days written notice to the other party.
- B. In the case of early termination, the performing agency will submit an invoice in triplicate and a report in triplicate covering services to termination date, following the invoice and progress report requirements of this Agreement. A copy and description of any data collected up to termination date will also be provided to ARB.
- C. Upon receipt of the invoice, progress report, and data, a final payment will be made to the performing agency. This payment shall be for all ARB-approved, actually-incurred costs in accordance with Exhibits A and B, and shall include labor, and materials purchased or utilized (including all noncancellable commitments) to termination date, and pro rata indirect costs as specified in the proposal budget.

2. Disputes

- A. ARB reserves the right to issue an order to stop work in the event that a dispute should arise, or in the event that the ARB gives the performing agency a notice that this Agreement will be terminated. The stop-work order will be in effect until the dispute has been resolved or this Agreement has been terminated.
- B. Any dispute concerning a question of fact arising under the terms of this Agreement which is not disposed of within a reasonable period of time by agency employees normally responsible for the administration of this agreement, shall be brought to the attention of the Executive Officer or designated representative of each agency for joint resolution.

3. Amendments

ARB reserves the right to amend this agreement for additional time and/or additional funding.

EXHIBIT E

ADDITIONAL PROVISIONS

1. Reports and Data Compilations

- A. With respect to each invoice period, University shall forward to the ARB Contract Administrator, one (1) electronic copy of the progress report and mail one (1) copy of the progress report along with each invoice. (Do not use Express Mail). When emailing the progress report, the "subject line" should state the contract number and the billing period. Each progress report will begin with the following disclaimer:
- The statements and conclusions in this report are those of the University and not necessarily those of the California Air Resources Board. The mention of commercial products, their source, or their use in connection with material reported herein is not to be construed as actual or implied endorsement of such products.*
- B. Each progress report will also include:
1. A brief narrative account of project tasks completed or partially completed since the last progress report;
 2. A brief discussion of problems encountered during the reporting period and how they were or are proposed to be resolved;
 3. A brief discussion of work planned, by project task, before the next progress report; and
 4. A graph showing allocation of the budget and amount used to date.
 5. A graph showing percent of completion for each task.
- C. If the project is behind schedule, the progress report must contain an explanation of reasons and how the University plans to resume the schedule.
- D. Six months prior to Agreement termination date, University will deliver to ARB twenty (20) bound copies of a draft final report. The reports may be stapled or spiral bound, depending on size. The draft final report will conform to Exhibit F.

EXHIBIT E

- E. Within forty-five (45) days of receipt of ARB's comments on the draft Final Report (Exhibit F), University will deliver to ARB's Contract Manager two (2) copies of the Final Report incorporating all reasonable alterations and additions requested by ARB. Upon approval of the amended final report approved by ARB in accordance to Exhibit F, University will within two (2) weeks; deliver to ARB two (2) camera ready UNBOUND originals of a Final Report incorporating all final alterations and additions. The final report will conform to the Contract Final Report Format, Exhibit F.
- F. Together with the final report, University will deliver a copy of the report on diskette/CD, using any common word processing software (please specify the software used) and a set of all data compilations as specified by the ARB Contract Manager.
- G. University's obligation under this Agreement shall be deemed discharged only upon submittal to ARB of an acceptable final report in accordance to Exhibit F, report diskette/CD, and all required data compilations.
- H. Prior to completion of this Agreement, University shall be entitled to release or make available reports, information, or other data prepared or assembled by it pursuant to this Agreement, in scientific journals and other publications and at scientific meetings, provided however, that a copy of the publication be submitted to ARB for review and comment 45 days prior to such publication. Further, University shall place the disclaimer statement in a conspicuous place on all such reports or publications. Nothing in this provision shall be construed to limit the right of State to release information obtained from the University or to publish reports, information, or data in State publications.

2. Copyrightable Materials

In recognition of the policy of ARB and University to promote and safeguard free and open inquiry by faculty, students and the members of the public and in furtherance of such policy, both parties agree to the following with respect to rights in data and copyrights under this Agreement:

- A. The term "Subject Data" shall mean all original and raw research data, notes, computer programs, writings, sound recordings, pictorial reproductions, drawings or other graphical representations, and works of any similar nature, produced by University in performance of this Agreement, but specifically excluding "Reports," as defined in this

EXHIBIT E

Agreement. Subject Data also excludes financial reports, cost analyses, and similar information incidental to contract administration.

- B. The term "Reports" shall have the meaning assigned to it in this Exhibit F of this Agreement.
- C. Ownership of all Subject Data and copyrights arising from Subject Data shall be vested in University while ownership of all Reports and copyrights arising from the Reports delivered under this Agreement shall be vested in ARB. University agrees to make available to the public for public benefit, to the extent the University shall have the legal right to do so, without license or fee, any scholarly articles which are published from the Subject Data.
- D. Nothing in this exhibit or Agreement shall be construed to limit the right of University faculty, students or staff to publish the Subject Data in the form of scholarly articles in academic journals nor to affect, abrogate or limit the right of University faculty, staff or students to make use of the Subject Data.

3. Travel & Per Diem

- A. Any reimbursement for necessary travel and per diem shall be at the University's approved travel rates.
- B. No travel outside the State of California shall be reimbursed unless prior written authorization is obtained from ARB.

4. Meetings

- A. Initial meeting. Before work on the contract begins, the Principal Investigator and key personnel will meet with the ARB Contract Manager and other staff to discuss the overall plan, details of performing the tasks, the project schedule, items related to personnel or changes in personnel, and any issues that may need to be resolved before work can begin.
- B. Progress review meetings. The Principal Investigator and appropriate members of his or her staff will meet with ARB's Contract Manager at quarterly intervals to discuss the progress of the project. This meeting may be conducted by phone, if appropriate.

EXHIBIT E

- C. Technical Seminar. The Contractor will present the results of the project to ARB staff and a possible webcast at a seminar at ARB facilities in Sacramento or El Monte.

5. Confidentiality

- A. It is understood that in the course of carrying out this Agreement, State may wish to provide University with proprietary or confidential information of State (Proprietary Information). University agrees to use its best efforts to hold proprietary information in confidence and shall return it to State upon the completion of the project.
- B. This obligation shall apply only to proprietary information that is designated or identified as such in writing by State prior to the disclosure thereof. All proprietary information shall be sent only to the Principal Investigator. Moreover, this obligation shall not apply to any proprietary information which: a) is or becomes publicly known through no wrongful or negligent act on the part of University; b) is already known to University at the time of disclosure; c) independently developed by University without breach of this agreement; or d) is generally disclosed to third parties by State without similar restrictions on such third parties.

EXHIBIT F

RESEARCH FINAL REPORT FORMAT

The research contract Final Report (Report) is as important to the contract as the research itself. The Report is a record of the project and its results, and is used in several ways. Therefore, the Report must be well organized and contain certain specific information. ARB's Research Screening Committee (RSC) reviews all draft Final Reports, paying special attention to the Abstract and Executive Summary. If the RSC finds that the Report does not fulfill the requirements stated in this Appendix, the document will not be approved for release, and final payment for the work completed may be withheld. This Appendix outlines the requirements that must be met when producing the Report.

Note: In partial fulfillment of the Final Report requirements, the Contractor shall submit a copy of the Report on a CD in PDF format and in a word-processing format, preferably in Word - Version 6.0 or later. This is in addition to the submission of any paper copies required. The diskette shall be clearly labeled with the contract title, ARB contract number, the words "Final Report", and the date the report was submitted.

Legibility. Each page of the approved Final Report must be legible and camera-ready.

Binding. The draft Report, including its appendices, must be either spiral bound or stapled, depending on size. The revised Report and its appendices should be spiral bound, except for two unbound, camera-ready originals.

Cover. Do not supply a cover for the Report. The ARB will provide its standard cover.

One-sided vs. two-sided. To conserve paper, both the draft Report and the revised Report, except for the unbound camera-ready copies, should be printed on both sides of the page. The unbound camera-ready copies must be printed on only one side of the page.

Title. The title of the Report should exactly duplicate the title of the contract unless a change is approved in writing by the contract manager.

Spacing. In order to conserve paper, copying costs, and postage, please use single or one-line (1) spacing.

Page size. All pages should be of standard size (8 1/2" x 11") to allow for photo-reproduction.

EXHIBIT F

Large tables or figures. Foldout or photo-reduced tables or figures are not acceptable because they cannot be readily reproduced. Large tables and figures should be presented on consecutive 8 1/2" x 11" pages, each page containing one portion of the larger chart.

Color. Color presentations are not acceptable; printing shall be black on white only.

Corporate identification. Do not include corporate identification on any page of the Final Report, except the title page.

Unit notation. Measurements in the Reports should be expressed in metric units. However, for the convenience of engineers and other scientists accustomed to using the British system, values may be given in British units as well in parentheses after the value in metric units. The expression of measurements in both systems is especially encouraged for engineering reports.

Section order. The Report should contain the following sections, in the order listed below:

- Title page
- Disclaimer
- Acknowledgment (1)
- Acknowledgement (2)
- Table of Contents
- List of Figures
- List of Tables
- Abstract
- Executive Summary
- Body of Report
- References
- List of inventions reported and copyrighted materials produced
- Glossary of Terms, Abbreviations, and Symbols
- Appendices

Page numbering. Beginning with the body of the Report, pages shall be numbered consecutively beginning with "1", including all appendices and attachments. Pages preceding the body of the Report shall be numbered consecutively, in ascending order, with small Roman numerals.

Title page. The title page should include, at a minimum, the contract number, contract title, name of the principal investigator, contractor organization, date, and this

EXHIBIT F

statement: "Prepared for the California Air Resources Board and the California Environmental Protection Agency"

Disclaimer. A page dedicated to this statement must follow the Title Page:

The statements and conclusions in this Report are those of the contractor and not necessarily those of the California Air Resources Board. The mention of commercial products, their source, or their use in connection with material reported herein is not to be construed as actual or implied endorsement of such products.

Acknowledgment (1). Only this section should contain acknowledgments of key personnel and organizations that were associated with the project. The last paragraph of the acknowledgments must read as follows:

This Report was submitted in fulfillment of [ARB contract number and project title] by [contractor organization] under the [partial] sponsorship of the California Air Resources Board. Work was completed as of [date].

Acknowledgment (2). Health reports should include an acknowledgment to the late Dr. Friedman. Reports should include the following paragraph:

This project is funded under the ARB's Dr. William F. Friedman Health Research Program. During Dr. Friedman's tenure on the Board, he played a major role in guiding ARB's health research program. His commitment to the citizens of California was evident through his personal and professional interest in the Board's health research, especially in studies related to children's health. The Board is sincerely grateful for all of Dr. Friedman's personal and professional contributions to the State of California.

Table of Contents. This should list all the sections, chapters, and appendices, together with their page numbers. Check for completeness and correct reference to pages in the Report.

List of Figures. This list is optional if there are fewer than five illustrations.

List of Tables. This list is optional if there are fewer than five tables.

Abstract. The abstract should tell the reader, in nontechnical terms, the purpose and scope of the work undertaken, describe the work performed, and present the results obtained and conclusions. The purpose of the abstract is to provide the reader with useful information and a means of determining whether the complete document should be obtained for study. The length of the abstract should be no more than about 200

EXHIBIT F

words. Only those concepts that are addressed in the executive summary should be included in the abstract.

Example of an abstract:

A recently developed ground-based instrument, employing light detecting and ranging (lidar) technology, was evaluated and found to accurately measure ozone concentrations at altitudes of up to 3,000 meters. The novel approach used in this study provides true vertical distributions of ozone concentrations aloft and better temporal coverage of these distributions than other, more common methods, such as those using aircraft and ozonesonde (balloon) techniques. The ozone and aerosol measurements from this study, in conjunction with temperature and wind measurements, will provide a better characterization of atmospheric conditions aloft and the processes involved in the formation of unhealthy ozone concentrations than can be achieved with traditional ground-based monitors.

Executive Summary. The function of the executive summary is to inform the reader about the important aspects of the work that was done, permitting the reader to understand the research without reading the entire Report. It should state the objectives of the research and briefly describe the experimental methodology[ies] used, results, conclusions, and recommendations for further study. All of the concepts brought out in the abstract should be expanded upon in the Executive Summary. Conversely, the Executive Summary should not contain concepts that are not expanded upon in the body of the Report.

The Executive Summary will be used in several applications as written; therefore, please observe the style considerations discussed below.

Limit the Executive Summary to two pages, single spaced.

Use narrative form. Use a style and vocabulary level comparable to that in Scientific American or the New York Times.

Do not list contract tasks in lieu of discussing the methodology.

Discuss the results rather than listing them.

Avoid jargon.

Define technical terms.

Use passive voice if active voice is awkward.

EXHIBIT F

Avoid the temptation to lump separate topics together in one sentence to cut down on length.

The Executive Summary should contain four sections: Background, Methods, Results, and Conclusions, described below.

THE BACKGROUND SECTION. For the Background, provide a one-paragraph discussion of the reasons the research was needed. Relate the research to the Board's regulatory functions, such as establishing ambient air quality standards for the protection of human health, crops, and ecosystems; the improvement and updating of emissions inventories; and the development of air pollution control strategies.

THE METHODS SECTION. At the beginning of the Methods section, state what was done in general, in one or two sentences.

The methodology should be described in general, nontechnical terms, unless the purpose of the research was to develop a new methodology or demonstrate a new apparatus or technique. Even in those cases, technical aspects of the methodology should be kept to the minimum necessary for understanding the project. Use terminology with which the reader is likely to be familiar. If it is necessary to use technical terms, define them. Details, such as names of manufacturers and statistical analysis techniques, should be omitted.

Specify when and where the study was performed, if it is important in interpreting the results.

The findings should not be mentioned in the Methods section.

THE RESULTS SECTION. The Results section should be a single paragraph in which the main findings are cited and their significance briefly discussed. The results should be presented as a narrative, not a list. This section must include a discussion of the implications of the work for the Board's relevant regulatory programs.

THE CONCLUSIONS SECTION. The Conclusions section should be a single short paragraph in which the results are related to the background, objectives, and methods. Again, this should be presented as a narrative rather than a list. Include a short discussion of recommendations for further study, adhering to the guidelines for the Recommendations section in the body of the Report.

Body of Report. The body of the Report should contain the details of the research, divided into the following sections:

EXHIBIT F

INTRODUCTION. Clearly identify the scope and purpose of the project. Provide a general background of the project. Explicitly state the assumptions of the study.

Clearly describe the hypothesis or problem the research was designed to address. Discuss previous related work and provide a brief review of the relevant literature on the topic.

MATERIALS AND METHODS. Describe the various phases of the project, the theoretical approach to the solution of the problem being addressed, and limitations to the work. Describe the design and construction phases of the project, materials, equipment, instrumentation, and methodology. Describe quality assurance and quality control procedures used. Describe the experimental or evaluation phase of the project.

RESULTS. Present the results in an orderly and coherent sequence. Describe statistical procedures used and their assumptions. Discuss information presented in tables, figures and graphs. The titles and heading of tables, graphs, and figures, should be understandable without reference to the text. Include all necessary explanatory footnotes. Clearly indicate the measurement units used.

DISCUSSION. Interpret the data in the context of the original hypothesis or problem. Does the data support the hypothesis or provide solutions to the research problem? If appropriate, discuss how the results compare to data from similar or related studies. What are the implications of the findings? Identify innovations or development of new techniques or processes. If appropriate, discuss cost projections and economic analyses.

SUMMARY AND CONCLUSIONS. This is the most important part of the Report because it is the section that will probably be read most frequently. This section should begin with a clear, concise statement of what, why, and how the project was done. Major results and conclusions of the study should then be presented, using clear, concise statements. Make sure the conclusions reached are fully supported by the results of the study. Do not overstate or overinterpret the results. It may be useful to itemize primary results and conclusions. A simple table or graph may be used to illustrate.

RECOMMENDATIONS. Use clear, concise statements to recommend (if appropriate) future research that is a reasonable progression of the study and can be supported by the results and discussion.

References. Use a consistent style to fully cite work referenced throughout the Report and references to closely related work, background material, and publications that offer additional information on aspects of the work. Please list these together in a separate

EXHIBIT F

section, following the body of the Report. If the Report is lengthy, you may list the references at the end of each chapter.

List of inventions reported and publications produced. If any inventions have been reported, or publications or pending publications have been produced as a result of the project, the titles, authors, journals or magazines, and identifying numbers that will assist in locating such information should be included in this section.

Glossary of terms, abbreviations, and symbols. When more than five of these items are used in the text of the Report, prepare a complete listing with explanations and definitions. It is expected that every abbreviation and symbol will be written out at its first appearance in the Report, with the abbreviation or symbol following in parentheses [i.e., carbon dioxide (CO₂)]. Symbols listed in table and figure legends need not be listed in the Glossary.

Appendices. Related or additional material that is too bulky or detailed to include within the discussion portion of the Report shall be placed in appendices. If a Report has only one appendix, it should be entitled "APPENDIX". If a Report has more than one appendix, each should be designated with a capital letter (APPENDIX A, APPENDIX B). If the appendices are too large for inclusion in the Report, they should be collated, following the binding requirements for the Report, as a separate document. The contract manager will determine whether appendices are to be included in the Report or treated separately. Page numbers of appendices included in the Report should continue the page numbering of the Report body. Pages of separated appendices should be numbered consecutively, beginning at "1".