

State of the Border Environment Reports: Toward a Regional and Borderwide Synthesis

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Outline

- Regional issues and features: The California-Baja California case study
- Challenges for quantification and comparison
- A comparative matrix

Purpose

- Review regional reports
- Identify similarities and differences across and along border
- Identify gaps in data and indicators
- Suggest links between environmental conditions [indicators] and human health
- Stimulate discussion about indicators and priorities

CA-BC Population, Driver of Environmental Change

County	2000	2002	2000– 2002 % change	2000-2002 Average growth rate	Number of persons added per year	2020
San Diego, CA	2,813,833	2,906,660	3.3	1.64	46,146	3,397,223
Imperial, CA	142,361	146,248	2.7	1.36	1,936	491,778
CA border	2,958,194	3,052,908	3.2	1.59	47,035	3,889,001
CA total	33,871,648	35,116,033	3.7	1.82	616,464	
Municipalities						
Tijuana, BC	1,210,820	1,380,742	14.0	6.79	82,215	3,822,116
Playas de Rosarito	63,420	77,744	22.6	10.72	6,799	na
Tecate, BC	77,795	89,411	14.9	7.21	5,609	159,547
Mexicali, BC	764,602	813,853	6.4	3.17	24,238	1,362,024
BC border	2,116,637	2,361,750	11.6	5.63	119,167	5,343,687
BC total	2,487,367	2,773,535	11.5	5.60	139,292	

Source: INEGI; U.S. Census; Peach 2000; CONEPO.

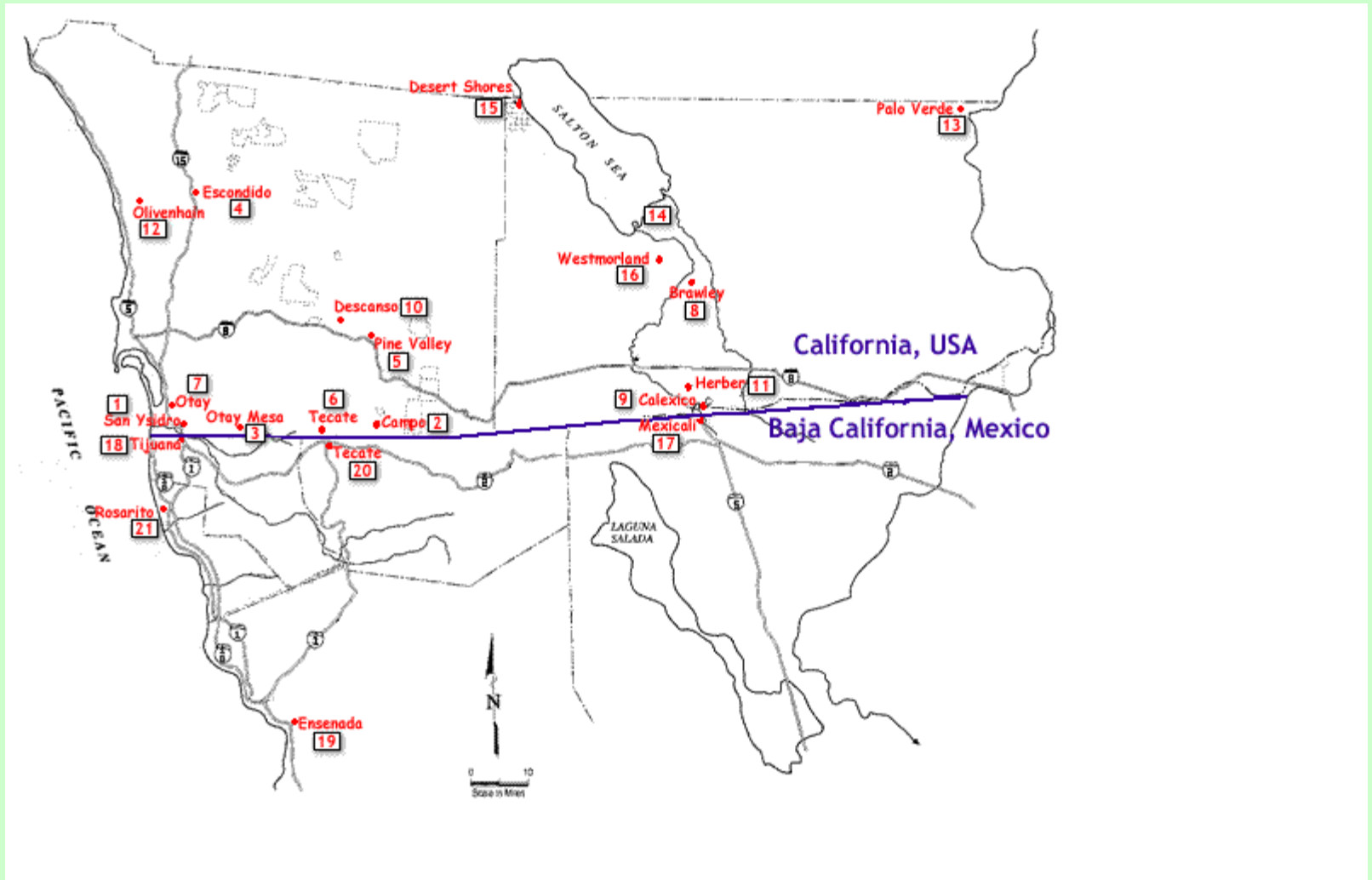
CA-BC Border Population

State	2000 border pop.	% of U.S.- Mexican Border Population
California	2,958,194	24.97
Baja California	2,116,637	17.86
CA-BC total	5,074,831	42.83
U.S.-Mexican border	11,849,293	
U.S. Border Pop.	6,296,497	
Mex. Border Pop.	5,552,796	
Total Border Pop.	11,849,293	

California-Baja California

- Transborder cooperation increasing
 - Government to government
 - State to state
 - Local
 - Tribal
 - NGOS
 - Universities
 - Binational Air Quality Alliance—BAQA
 - Border Energy Forum

California-Baja California Border Region



California-Baja California: Water Supply

- Coastal border region relies on imported water for 90–95% of water
- Imperial-Mexicali region relies on Colorado River
- Declining production and quality of Tecate and Tijuana aquifers
- Future demand will be met by desalination and transfers from agriculture

California-Baja California: Water Supply

- Significant water supply issues remain:
 - Water for nature
 - Colorado Delta
 - Salton Sea
 - Riparian corridors of the coastal region
 - Mexico's portion of the Colorado River waters
 - Infrastructure deficit in water delivery systems in BC and parts of Imperial Valley
 - Delivered water quality and perception issues (use of bottled water / in-home filters)

CA-BC: Water Quality

- Surface water quality problems
 - New River: agricultural, urban, industrial wastes from Mexicali Valley to Salton Sea
 - Colorado River
 - Bacterial, agricultural chemicals contamination
 - Salt and solids content
 - Salton Sea
 - Buildup of natural and anthropogenic contaminants
 - Potential loss of critical fish/bird habitat
 - Coastal creek contamination

CA-BC: Water Quality

- Marine waters contamination
 - Nonpoint source storm water runoff
 - Sewage spills and flows
 - Beach closures/unsafe conditions
- Sewage treatment systems
 - Spills in San Diego
 - Infrastructure deficit in Tijuana, Tecate, Mexicali
 - Inadequate systems in rural areas of CA-BC

CA-BC: Water Quality

- Groundwater
 - Salt water intrusion in coastal aquifers
 - Tijuana and Tecate aquifers
 - Contamination concerns
 - Overdrafting concerns
 - Recharge area is not protected
 - San Diego County
 - Overdrafting problems
 - Recharge, contamination issues

California-Baja California: Air

- San Diego-Tijuana Region
 - Ozone is the main pollution problem in the San Diego-Tijuana region (nonattainment federal and state)
 - Caused by high levels of NO_x and VOC originating primarily from mobile sources
 - Particulate matter is also a problem (nonattainment state)
 - Evidence of transborder transport of pollutants

Source: Sweedler

California-Baja California: Air

- Imperial-Mexicali valleys
 - Significant exceedences of particulates on both sides of the border—increasing
 - Imperial Valley is also nonattainment area for ozone
 - Particulates more of a problem than gaseous pollutants
 - Sulfate and other pollutants from geothermal fields at Cerro Prieto
 - Constitute one air shed
 - Respiratory illnesses increasing

CA-BC Energy

- CA-BC constitute one energy region
- Need to meet growing energy demand
 - In-region generation increase
 - Imports
 - Conservation and efficiency
- Will require new electric generation capacity, gas transmission lines, power lines

CA-BC Energy

- Both California and Baja California have permitted generating plants in border area *without* consideration of transborder pollution effects
 - InterGen and Sempra plants in Mexicali
 - Water cooled; brings additional concerns
- Binational Energy Forum established
 - SANDAG and Mexican partners
 - Goal is to harmonize energy “rules of the game”

CA-BC: Solid Waste

- Solid waste generation
 - 2001 San Diego and Imperial, 2,500 lbs per capita
 - 2001 Tijuana, 535 lbs per capita
- Landfill capacity issues
- Problems in siting new landfills
 - Tecate controversy
 - Campo Indian Tribe proposal
 - Public outreach and education issues

CA-BC: Solid Waste

- Modern landfill construction issues—biogas capture
- Integrated waste management
 - Waste minimization
 - Recovery and reuse
 - Well established in CA; inadequate in BC
- Clandestine dumps
- Trash
- Tires

CA-BC: Hazardous Materials

- Plant-level data unavailable for Mexico
- Import-export hazardous materials data are unavailable
- Hazmat disposal facilities lacking in northern Mexico
- Problems with illegal disposal of hazmats
- Increased pollution prevention and environmental management systems needed for industry

CA-BC: Pesticides and Agricultural Chemicals

- Spray applications can impact humans through drift
- Contamination of surface and ground water
- Imperial and Mexicali valleys most problematic
- Extent of urban and indoor pesticide problems not well known

CA-BC: Soil Contamination

- Several contaminated large industrial sites in Imperial and San Diego counties
- Geothermal plant in Mexicali
- Abandoned industrial sites in Tijuana
 - Metales y Derivados
 - Alco Pacífico
- Unknown number of contaminated sites of small industries in CA-BC border region

CA-BC: Living Resources

- CA-BC bio-region has great ecosystems and species diversity
- Due to intense human activities, one of world's "hot spots" in terms of threatened and endangered species
- Emerging system of protected areas in CA border region
- Only 2 protected areas in BC border area

CA-BC: Living Resources

- No transborder protected corridors
- 2003 first private ecological easement in Tecate, BC, adjacent to USA BLM lands
- Habitat fragmentation is severe problem on both sides of border
- Water to maintain wetlands and riparian corridors is a critical need

CA-BC: Watersheds

- Watershed planning and management efforts in California
 - Control pollution in storm water runoff
 - Support for project in binational Tijuana River Watershed
- Mexico has watershed councils
 - Colorado River council has U.S. observers
- Need to develop binational administrative and management mechanism for binational watersheds

SAN DIEGO COUNTY

Alamar-Tecate-Campo Sub-Basins of the Tijuana River Watershed

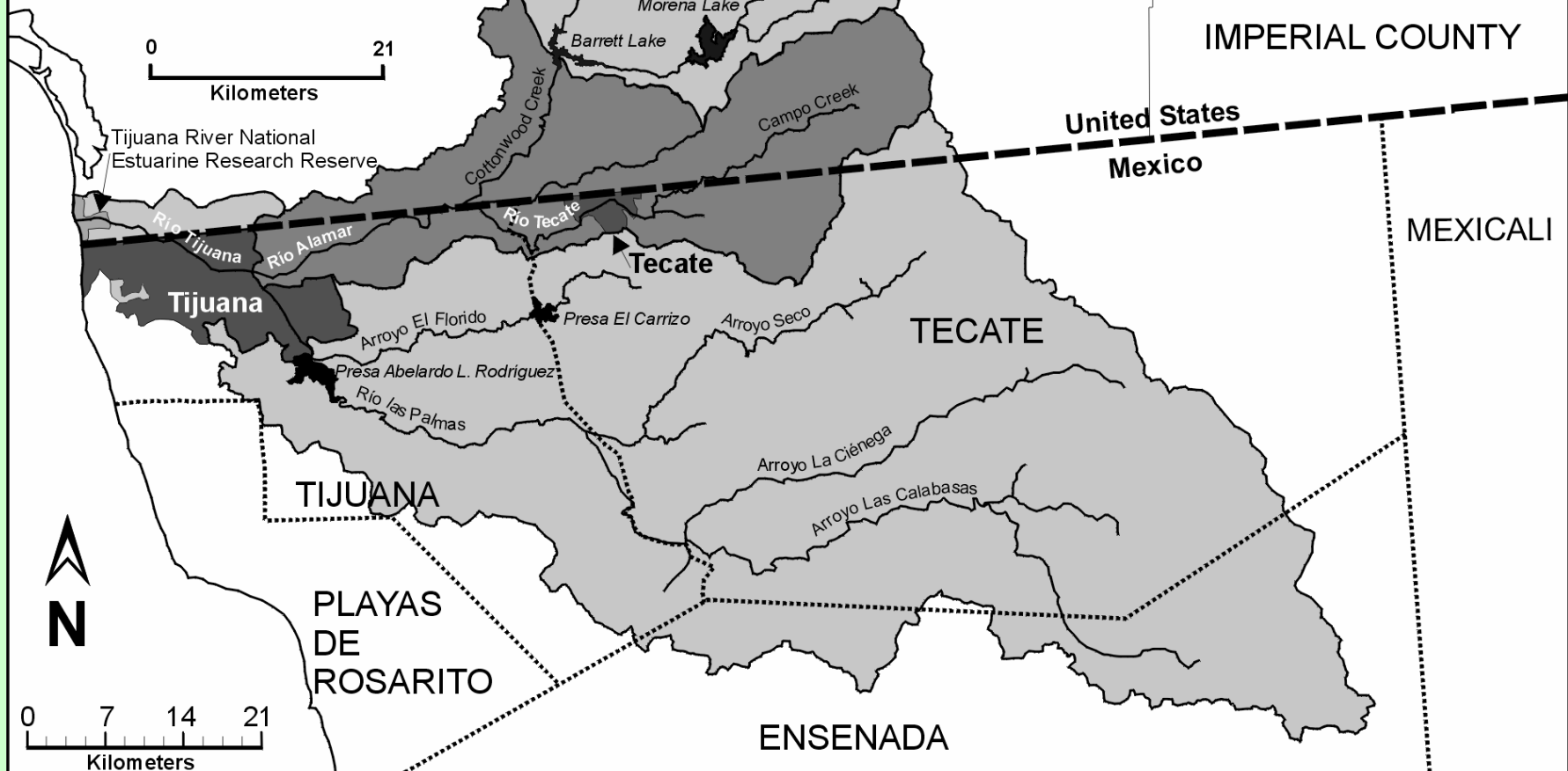
- Municipal Boundaries
- Urban Areas
- Rivers/Creeks/Arroyos

0 21
Kilometers

IMPERIAL COUNTY

United States
Mexico

MEXICALI



TIJUANA

TECATE

PLAYAS DE ROSARITO

ENSENADA

0 7 14 21
Kilometers

Challenges

- How do we quantify border environmental issues in order to move beyond the descriptive and anecdotal?
- How do we more clearly characterize differences in environmental issues along the border and across the border?
- How do we prioritize actions?
- How do we more clearly link environmental problems and human health effects?

One Approach

- Border Environmental Issue Matrix
- Methodology
 - Identify issues discussed essays produced for Border Institute V
 - Characterize issue with simple descriptor

N = Not a Problem P = Problem H = Health Effect I = Infrastructure

Media	CA	BC	AZ	SON	NM-TX	CHIH	TX	COAH-NL-TAMPS	Tribal
Water Supply	I	I	I	I	I	I	I	I	I+
Indicator: Years of supply	P	P+	P++	P++	P+	P++	P	P+	P
Indicator: Coverage	N	P,I	P-	P		P,I	P,I	P	
Indicator: % using bottled not tap	P	P							
Indicator: Tap water quality	N							P	
Indicator: Water use per capita	P						N	P	
Surface Water	H	H	H	H	H	H	H	H	H
Indicator: Climate variation/change	P	P	P	P					
Indicator: Water for nature									
Groundwater	I	I			H	H			I,H
Indicator: Overdraft		P+	P	P	P	P			
Indicator: Binational Management		P	P	P	P	P			
Watershed stewardship								I	
Indicator: Watershed council plan	P	P							
Indicator: Miles of lined channels	P	P							

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Media	CA	BC	AZ	SON	NM-TX	CHIH	TX	COAH-NL-TAMPS	Tribal
<i>Water Quality</i>	I,H	I, H	I,H	I	I,H		I	I,H	I,H
Monitoring and data availability	N	P+			P			P	
<i>Surface water</i>	P+	P+	P	P+					
Indicator: bio/chem. contamination	P	P+			P+		P	P	
<i>Groundwater</i>		H			H				
Indicator: Contamination	P	P+			P+		P		
<i>Sewage treatment</i>	N	I,H	I,H		H		H,I		
Indicator: Coverage	N	P		P		P	P	P	
Indicator: Spills	P	P+		P+					
Indicator: Industrial pretreatment	N	P							
<i>Non-point source pollution</i>	H,I	H,I							
Indicator: Storm water runoff	P	P+							
<i>Marine waters</i>		H							
Indicator: Beach closures	P	P							

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Media	CA	BC	AZ	SON	NM-TX	CHIH	TX	COAH-NL-TAMPS	Tribal
Air Quality	H,I	I,H	H	H	H	H	H		
Ambient air quality	P	P+	P	P	P		P		
Indicator: Monitoring data	N	P	N	P	N		P		
Indicator: Criteria pollutants	N		P		P		P+		
Indicator: Respiratory diseases	P+	P+					P		
Indicator: % paved urban roads	N	P	N	P		P			
Indicator: Agricultural burning	P+								
Indicator: Point source pollution		P+							
Indicator: Fleet pollution control	P	P							
Indicator: Binational cooperation									
Indicator: Port crossing volume/time	P	P++							
Indoor air quality	H	H	H	H	H	H	H	H	H
Indicator:									
Energy	I	I	I	I	I	I	I		
Data availability									
Indicator: Energy conserv. and eff.									
Indicator: Renewable energy									
Solid Waste							I		
Data generation and availability									
Landfill capacity and quality					N		N	N	

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Media	CA	BC	AZ	SON	NM-TX	CHIH	TX	COAH-NL-TAMPS	Tribal
Indicator: Biogas capture and use									
Indicator: Solid waste total					N				
Indicator: Solid waste per capita									
Indicator: Recycling					N				
Indicator: Binational recycling									
Indicator: Trash		P+					P		
Indicator: Improper trash disposal		P					P		
Indicator: Integrated waste mgmt.									
Indicator: Tires		P				P		P	
<i>Hazardous Waste</i>		I,H		I,H				I	
Data and tracking	P	P	P+	P+	N/P				
Indicator: Contaminated indust sites	P	P				P			
Indicator: Contam mining/smelting			P			P			
Indicator: Industrial discharge mon									
Indicator: Compliance with reg/stds								P	
Indicator: Environmental mgmt sys			P	P					
Indicator: Pollution prevention/min									
Indicator: Spills and accidents									
Indicator: Response capacity			N	N					
Indicator: Proper disposal							P	P	
Indicator: Improper disposal							P	P	

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Media	CA	BC	AZ	SON	NM-TX	CHIH	TX	COAH-NL-TAMPS	Tribal
<i>Pesticides/Agricultural Chemicals</i>	H	H	H	H				H	
Indicator: Pesticide residues	P								
Indicator: Groundwater contam.	P								
<i>Natural Systems</i>									
Indicator: Habitat fragmentation	P	P+	P+	P+					
Indicator: Listed species	P+	P+	P+	P+					
Indicator: Protected areas	N	P	N	P					
Indicator: Binational cooperation									
Indicator: Water for nature									
<i>ENVIRONMENTALADMINISTRATION</i>									
Indicator: Staffing and funding									
Indicator: Binational cooperation									
Indicator: Public participation									
<i>Environmental Health</i>									
Indicator: Gastrointestinal diseases		P	P	P					
Indicator: Cases of hepatitis									
Indicator: Cases of Salmonella						P			
Indicator: Respiratory diseases	P					P			

N = Not a Problem P = Problem H = Health Effect I = Infrastructure									
Media	CA	BC	AZ	SON	NM-TX	CHIH	TX	COAH-NL-TAMPS	Tribal
<i>Socioeconomics</i>									
<i>Demographic data</i>									
Indicator: Total population	P	P				P			
Indicator: Annual growth rate	N	P				P		P	
Indicator: Number new inhabitants									
Indicator: Percent under 18									
<i>Economic data</i>									
Indicator: Border econ dev v growth		P				P			
Indicator: Poverty and income dist	P	P	P+	P	P+		P		
Indicator: Health care systems		P							
<i>Public Administration</i>									
Indicator: Planning and zoning		P	P	P	P+	P	P	P	
Indicator: Transborder cooperation			N	N		P			
Indicator: Public participation									

Comments

- This approach supports Border 2012
 - Regional approach
 - Comparison across regions
 - Comparison across border
- Adds
 - Energy
 - Ecosystems
- Significant indicator and data requirement