

## Case Study #4: Austin, Texas: Silicon Hills

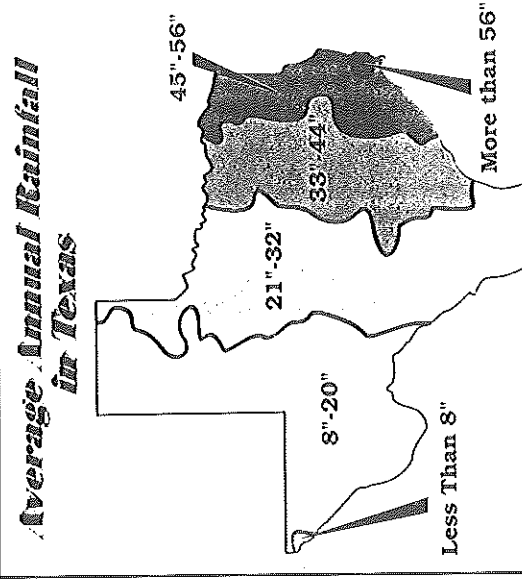
### Horizons of drought

The Austin-based newspaper, the *American-Statesman* reported in 1996 "A huge section of the United States, from North Dakota to Central Texas, may be in store for several years of abnormally dry weather, extending the dry spell that has gripped many Texas counties since last fall". Some weather experts suggest that this drought, which may be severe, will likely continue into at least 1998 or 1999<sup>1</sup>.

In a June 6, 1996 article in the *American Statesman*, Kerry Tate, chairwoman of the Chamber of Commerce notes that population growth in Austin and San Antonio will bring water use and economic growth into the spotlight. "It is a significant issue, looking out to the not-too-distant future," she said. "Water rights in terms of quality and quantity will be the major issue. We should not be comfortable in believing we always will be in good shape."<sup>2</sup>

### The Texas' water story

Texas varies from region to region in the amount of rainfall it receives annually. The dry western third of Texas receives between eight to 20 inches; the middle third receives between 21 to 44



*Average Annual Rainfall in Texas*

inches; and the eastern third receives from 40 to 56 inches annually<sup>3</sup>. Within each region there is great variability, and severe droughts are common. For instance, according to a publication by the Texas Water Development Board entitled "Texas Water Facts" Texas

has experienced at least one serious drought in every decade of the twentieth century. As the population of Texas continues to increase along with the demand for water, droughts of equal magnitude will have greater impacts, especially upon less powerful groups<sup>4</sup>.

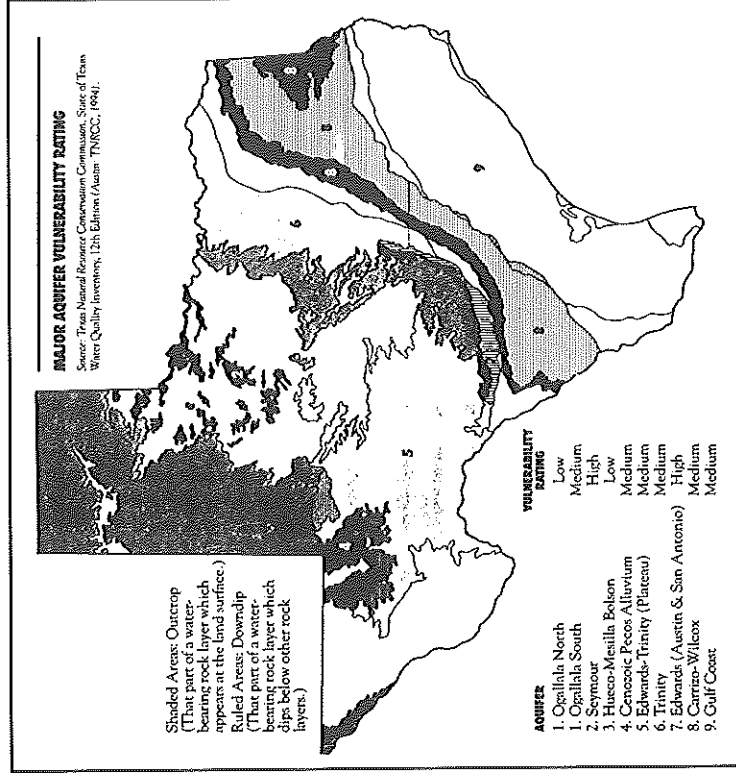
Recently, a new question involving the issue of water and the US populace has surfaced. This question is directed toward the impending realization that the supply of natural water is now at a dangerously low level. The fear is that there is a realistic possibility of serious water shortages in the near future.

### **The water supply:**

Texas receives about 366 million acre feet of rain annually. Of this amount, only 16.3 million acre feet is trapped in reservoirs, creeks, streams, or in the ground as a usable source for humans: 11 million acre feet of surface water and 5.3 million acre feet of rechargeable groundwater. At present, Texas uses 65% of its dependable surface water sources. On the other hand, Texans are depleting their groundwater reserves by 3.6 million acre feet per year of overdraft<sup>5</sup>.

There are 23 major river basins in Texas, and only one natural lake. The other 5,700 lakes have been constructed by humans to trap surface runoff. Of these 5,700 reservoirs, 191 of them contain 97% of the surface water consumed in Texas<sup>6</sup>.

Texas has an estimated four billion acre feet of groundwater stored in nine major aquifers and 20 minor aquifers. Of this amount, only 10%, or 427 million acre feet of this groundwater is recoverable using modern technology. Of this 427 million acre feet, Texans use approximately 8.9 million acre feet per year, while the groundwater recharge rate is 5.3 million acre feet per year, leaving an overdraft of 3.6 million acre feet per year<sup>7</sup>. At this rate, all groundwater reserves which took centuries to accumulate would be mined in just over 100 years, but before it was mined massive problems with extraction costs, water quality, and land subsidence would occur.



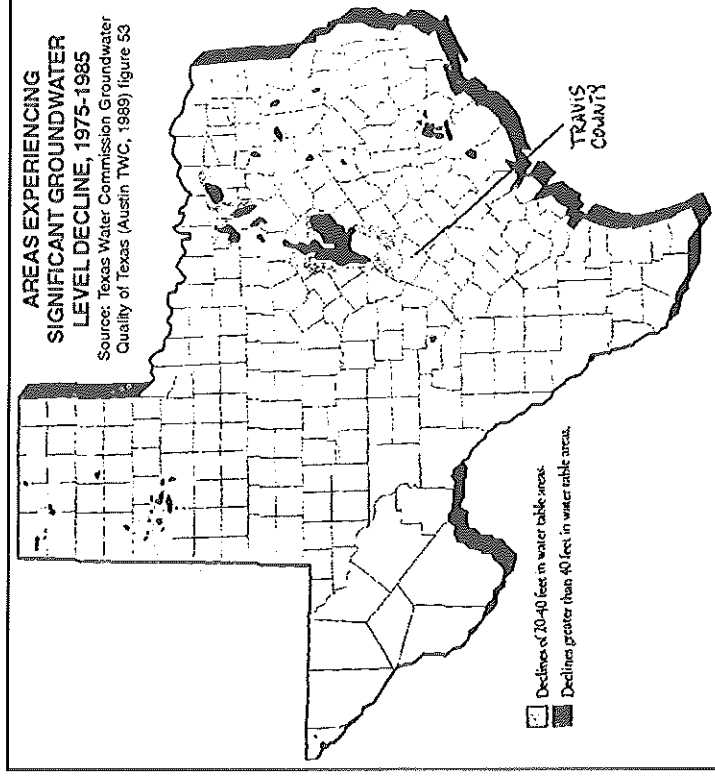
*From Texas Environmental Almanac, Texas Center for Policy*

## Texas Water Use:

In 1990, the entire state of Texas used 15.78 million acre feet of water. Of this 15.78 million acre feet, 65% was used for irrigation, 20% was used for municipal, and 10% was used for manufacturing. By the year 2040, however, municipal water use is expected to match use for irrigation. The largest increase in demand, by about 120%, is expected to occur in the manufacturing (industrial) sector from 1.56 million acre feet to 3.44 million acre feet (or from 10% of the total to about 20% of the total)<sup>8</sup>. Barring a prolonged drought of critical magnitude, overall state-wide supply is expected to meet overall state-wide demand at least until 2040. According to a publication entitled *Texas Environmental Almanac*, however, there are major areas—including San Antonio, Houston, Corpus Christi, El Paso and perhaps even Austin—where this may not be the case<sup>9</sup>.

## A portrait of Silicon Hills water.

Austin, Texas lies in the heart of what is called the central Texas "Hill Country." In this community of approximately half a million people, the battle for clean water is expanding between economically and socially marginalized communities and the increasing presence of the high-tech companies. Among the various high-tech companies in Austin, it is the semiconductor industry, with its large production plants dotting the landscape, that has become the overwhelming economic force in Travis County.



*From Texas Environmental Almanac, Texas Center for Policy Studies, Austin, Texas, 1995*

The population of Travis County in 1990 was 576,407. Austin is the major city containing about 85% of the population. By the year 2040 the population of Travis County is expected to grow by over 200% to well over 1.6 million people. In 1990, 13% of the workforce in this County was employed in the electronics sector<sup>10</sup>. This is expected to grow considerably over the next fifty years as more and more high-tech electronics companies are attracted to the "Silicon Hills" of Austin.

In 1990, Travis County used 131,441 acre feet (or 43 billion gallons) of water. Seven percent of this came from groundwater, primarily from the Edwards Aquifer, and the remaining 93% came from surface water. Of the total water used in Travis County, the sources within the City of Austin used 83% or 35.9 billion gallons (109,000 acre feet)<sup>11</sup>.

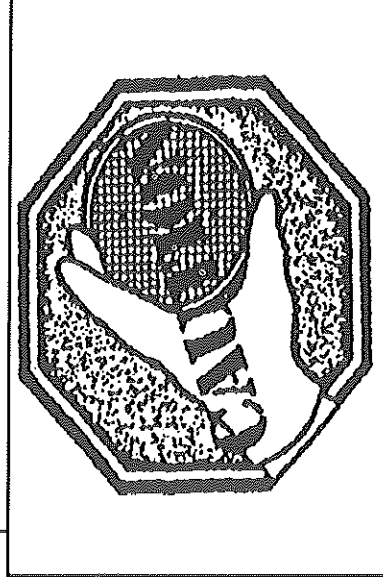
All of the surface water used in Travis County came from the Highland Lakes system which consists of a series of lakes formed by dams placed along the Colorado River (not the same Colorado River which flows through the Grand Canyon). The Highland lakes contain an approximate total of 550 billion gallons or 1.7 million acre feet. Of this amount, the City of Austin is entitled to 27% or approximately 140 billion gallons (or 430,000 acre feet)<sup>12</sup>.

According to an *Austin American Statesman* article "Austin could exhaust its current water allocation by 2030"<sup>13</sup>. According to the Texas Center for Policy Studies publication *Texas Environmental Almanac* (Austin, Tx. 1995), at the current rate of consumption, Austin will face water shortages within fifty years<sup>14</sup>. The Texas Water Development Board has identified 10 areas with critical long-term problems involving the quality or quantity of ground water, including portions of East Texas, the lower Rio Grande Valley and the Hill Country west of Austin<sup>15</sup>. The Hill Country west of Austin is in competition with the City of Austin for access to these limited water resources, including the water Austin gets from the Highland Lakes.

### **High-tech Austin: ambitions for the chip**

The State of Texas, the City of Austin and the University of Texas at Austin have spent a considerable amount of energy and taxpayers' money attempting to transform Austin into a center for high-technology production and manufacturing. "When the City of Austin successfully brought two high-tech 'plums' to town, the Microelectronics and Computer Technology Center (MCC) and Sematech," Theresa Case, a local journalist reported, "the media declared Austin a

'megatrend' city. The Economist declared that 'Austin Discards its Dungearees,' while the New York Times headlined: 'Is Austin the Next Silicon Valley?'



Both Sematech and MCC are consortia of high-tech companies pooling their research to develop new technologies more rapidly. Austin and the State of Texas promised at least \$56.3 million in public funds to Sematech. Of this amount, \$12.3 million came from the University of Texas (UT), which purchased an old industrial site which it then rented to Sematech for \$1 per month. According to "UT, Austin, and High-tech Toxics" by Theresa Case, "UT also pitched in more than \$34 million to the effort to lure MCC to Austin. MCC pays UT \$1 per year in rent for its \$14 million site at the Balcones Research Center."<sup>16</sup>

There are 17 major high-tech electronics companies in the Austin area, including IBM, Samsung, Texas Instruments, Applied Materials, Motorola, Sematech, Apple, Advanced Micro Devices, and 3M. Most of these companies have only started operating in Austin over the last 15 years, after the extensive contamination was discovered in Santa Clara County, California and Phoenix, Arizona. Even though a great deal has been learned since this time on how to prevent contamination of the environment, many of these high-tech companies have nevertheless degraded the environment in Austin.

One reason why high-tech companies continue to move to Austin is the quality of Austin's water. However, Austin's water does not go directly into semiconductor production because it still is not pure enough. The industry turns tap water into "UltraPure" water. This water has much lower amounts of trace elements than is found in tap water. They create this UltraPure water through various methods: reverse osmosis,

deionization, activated carbonation, and Ultraviolet light. In Austin, there is a reliable source of good tap water, so the processing time and cost of turning it into UltraPure water is lowered substantially. Of all the water that manufacturers consume, 60-70% of it goes toward chip production, the remainder being used for irrigation, cooling, and domestic and utility operations<sup>17</sup>.

### **Austin's Plight with high-tech poisons**

According to the EPA's Toxic Release Inventory for 1989, Austin's high-tech industry legally emitted over 730,000 pounds of toxics into the environment, about a ton of toxics per day. Almost 216,000 pounds of waste were disposed of by underground injection, a process that pumps hazardous waste deep into the ground and which can result in extensive and unexpected contamination of groundwater.

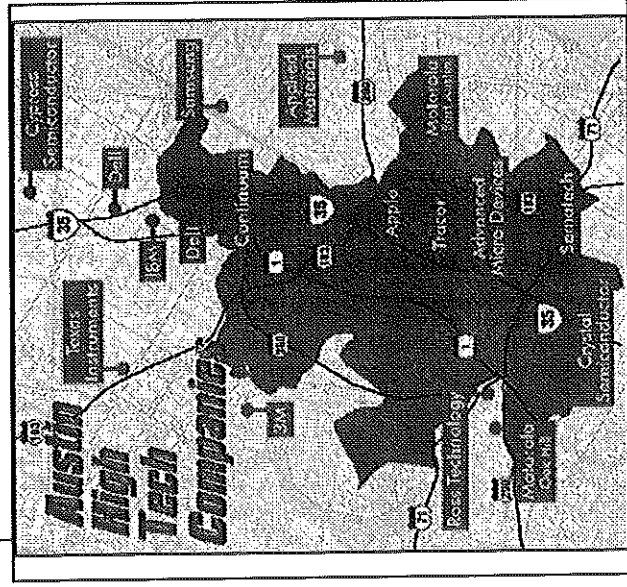
Over five hundred thousand pounds of toxics were disposed of into the air, much of this eventually coming to rest in nearby land and water resources. In addition to this, 900,000 pounds of waste were disposed of by incineration, a system that produces both air emissions and a toxic ash that must be disposed of, potentially leaching into aquifers and surface water. Among the chemicals emitted were 1,1,1-trichloroethane, ammonia, hydrochloric acid, glycol ethers, methyl ethyl ketone, styrene, formaldehyde, methanol, 2-methoxyethanol, ethylene glycol, xylene, and freon<sup>18</sup>.

By 1991, industries in Travis County generated 6.7 million pounds of toxic chemical waste. Eighty-four percent of these were transported off-site via surface transportation to be burned, buried, or recycled. Twelve percent, or 800,000 pounds, were discharged into the air, while 4%, or 270,000 pounds were discharged to the Austin's waste water system. Of the 5.6 million pounds transported off-site, about half were recycled and about 10% were burned. The remainder went to hazardous waste landfills and other depositories<sup>19</sup>.

In 1991, IBM and Motorola together accounted for 75%

of these chemical waste releases and transfers reported by the electronics industry and 59% of the total reported for all

industries. IBM reported 2.2 million pounds of toxic chemical wastes generated in Austin in 1991; Motorola reported 1.8 million pounds; AMD reported 667,000 pounds; Texas Instruments reported 531,000 pounds; and the next four largest high-tech toxic chemical generators reported almost 150,000 pounds<sup>20</sup>.



*High-tech companies of Austin—Hwy. 35 separates West (left) from East (right)*

Enormous gaps exist in the reporting of TRI data so it is difficult to assess exactly how much actual air and water contamination is being released by the high-tech industry in Austin. We can only determine that the above figures represent only a portion of the actual emissions. For example, companies that process fewer than 25,000 pounds or otherwise use fewer than 10,000 pounds of any given toxic chemical are not required to report TRI data.

Companies with fewer than ten full-time employees also do not report. So the public has no means of assessing what part smaller firms may play in generating pollution. The following table reveals the total emissions reported under the TRI program by the high-tech companies in 1991.



	total releases to air	total to wastewater facilities	sent to off-site recycling	sent off site for burning	sent off site other	total releases/transfers
IBM Corporation	1,40,818	45,955	1,905,566	85,000	19,420	2,196,762
Motorola Inc.-E	109,037	89,020	31,000	226,000	996,500	1,451,557
Bluestein						
Advanced Micro Devices	181,250	101,329	24,700	150,300	209,700	667,279
Texas Instruments	97,155	42,350	252,400	3,000	136,000	530,905
Motorola Inc.-W	11,102	5,400	0	53,390	262,840	332,732
Cannon						
Xetel Corp.	80,000	0	6,300	0	0	86,300
Radian Corp.	29,000	0	0	0	0	29,000
Tracor Inc.	20,900	0	1,200	0	0	22,100
Texas Electric Coop.	13,000	0	0	0	0	13,000
3M Telecom	0	5	0	0	750	755
Summagraphics	5	0	0	0	0	5
Total high tech releases/transfers:	682,267	284,059	2,221,166	517,690	1,625,210	5,330,395

*Table 5. High-tech toxic chemicals in Travis County as reported in 1991 Toxic Chemical Release Inventory, Texas Water Commission. Note: The total releases by Austin high-tech companies represent 80% of the total toxic chemical releases of all Travis County companies: 6,695,882 pounds. (see Reference 19)*

The TRI data for 1993 show a 45% decrease in discharged toxic chemicals to the wastewater treatment plant. However, given this decrease, there was still 155,000 pounds of toxic chemicals discharged to the wastewater treatment plants in 1993<sup>21</sup>. Many of these toxic chemicals are either discharged into the Colorado River and flow downstream or volatilize (mix with the air) and become air borne during the wastewater treatment process.

Nor has Austin escaped the groundwater contamination problems that have plagued Silicon Valley, Silicon Desert, or Silicon Mesa. As the following table reveals, Austin, too, has been forced to confront the dilemma of groundwater contamination. And the extent of high-tech contamination of water may be significantly worse in Austin than is currently thought.

Because the City of Austin and the County of Travis rely almost exclusively on surface water, they have not developed the extensive groundwater monitoring protocols and methods that the other three high-tech areas have developed. During our investigations at the Texas Natural Resources and

Conservation Commission, almost all the information on contaminated groundwater we were able to obtain related to leaking fuel sites (i.e. gas stations, oil refineries, etc.). In fact, the TNRCC does not even test for the kind of chemicals which would be found at a high-tech contamination site. And as the old saying goes: "If you don't look for it, you're not likely to find it." However, based upon the scant information which was available, we were able to determine the following number of contamination sites:

Location	Total # of contamination sites	# which are high-tech
County of Travis	170	20
City of Austin	150	19

*Table 6. Groundwater Pollution Sites, (Texas Groundwater Protection Committee: Joint Groundwater Monitoring and Contamination Report. 1994)*

### **Subsidizing the largest users, those most able to pay**

As in the three other high-tech areas described in this report, Austin residents also face increasing risks of water shortages, in part, because of the extreme thirst of the high-tech industry. In two years, the high-tech industry has increased its share of use of city water over 300%: from 4.4% of all the water in 1992/93 to 13.6% in 1994/95<sup>22</sup>.

The following table reveals that 60% of the largest water users in Austin are high-tech companies. Among these top ten water users, the high-tech companies account for 69% of all the water used.

**TOP TEN COMMERCIAL/INDUSTRIAL WATER CONSUMERS  
FISCAL YEAR 1995-1996**

CUSTOMER	<u>VOLUME#</u>
1. Motorola**	136.72
2. AMID	92.87
3. University of TX-Main Campus	61.54
4. IBM	32.11
5. Abbott Labs	21.30
6. Texas Instruments	9.08
7. Sematech	7.65
8. National Linen Service	7.54
9. Austin Coca Cola	5.73
10. 3M Austin Center	3.74

*Table 7. COA Industrial Waste Control Division*

*\*(in millions of gallons per month) \*\*Total for Wm Carron & Ed Bluestein facilities*

To determine current patterns of water use among the semiconductor companies—the most exorbitant water users of the high-tech companies—we contacted the City of Austin, Industrial Waste Control Division and requested information on the water used by three companies—Motorola, AMD, and Sematech—over the last four years. As the following table reveals, there has been a continuous increase in water use by two of the three semiconductor companies over the last four years, and there is no reason to predict that this pattern will change in the future. The only facility which did not increase its water use over this time period was Sematech. This facility is a research and development consortium of high-tech companies which receives federal funding.

WATER CONSUMED BY SEMICONDUCTOR INDUSTRY FROM OCTOBER '93-SEPTEMBER '96				
	1992	93-94	94-95	95-96
Motorola	94.3	109.04	136.72	157.26
AMD	46.3	49.51	75.40	92.87
Sematech	14.8	19.44	12.84	7.65
Total Flow	155.4	177.99	224.96	257.78

*Table 8. COA Industrial Waste Control Division*

The consumption of water by the high-tech industry has dramatically increased in just three years. As high-tech companies continue to relocate to Austin, the consumption of water will continue to increase. The cost of the water scarcity will subsequently be transferred, as is currently occurring, to the residential users, impacting most significantly, the low-income populations around Austin (the majority of whom are people-of-color) who can least afford it.

### **And the residents shall pay more**

The City of Austin recently raised the water use rates for residential use while reducing the rates for industrial use. City officials accomplished this by stating they were developing a fair water pricing structure based on the idea of “cost-based” pricing: each individual water user should pay for water exactly what the cost was to deliver it to them.

The City claimed that the residential customers were paying far less for their water relative to the cost to the city to provide these water and wastewater services. The study that the city commissioned also stated that industrial customers had been paying rates well above the cost of providing water services<sup>23</sup>. A study commissioned by the city on behalf of the residential community, however, recommended that the city not raise residential rates and leave all other rates stationary<sup>24</sup>. The report cited various methodological flaws in the City's study that led to incorrect revenue figures and other erroneous assumptions. After much opposition by the residents of Austin, the City still implemented the rate changes with the single-family residential bill going up the most. As a result, the residents now pay more for water than does high-tech, the dominant industry in the region.

Water Rates	
Industrial/Large Volume Single-Family	\$2.22/per 1000 gal. \$2.50/per 1000 gal. (if use 7,000-14,900)
Waste Water Rates	
Industrial/Large Volume Single-Family	\$3.08/per 1000 gal. \$3.58/per 1000 gal.

*Table 9.1. Water and Wastewater Rates in Austin, TX—COA*

Inside City/ Single Family	Rate per 1,000 Gallons
0-2,900 gal.	\$1.25
3,000-6,900 gal.	\$2.00
7,000-14,9090 gal.	\$2.50
15,000 + gal.	\$3.50
Multifamily	\$2.25
Commercial	\$2.23
Large Volume/ Industrial	\$2.22

*Table 9.2. Water Use Rates-COA*

The water pricing approach by the city has two fundamental flaws. The first involves the underlying assumption that the water supply is essentially infinite with very little need to pressure high-volume users of water (high-tech industry) to curtail water use and increase water reuse. Often, the easier solution is to try to curtail residential water use. Currently,

there is a stratified rate system for residential users, where the more a person uses, the more they pay. Industrial users pay a flat rate regardless of the volume of water they use or discharge.

A second flaw stems from the value the different water users place on the water. Specifically, the role water plays in the lives of residential users versus industrial manufacturers. For the residential user, especially traditional water users, farmers, and many lower-income users, water is used to sustain life in many basic ways, while for the high-tech industry, water's sole purpose is for manufacturing and profit production. There is a need to be aware of, and consider, the vital link between water and the needs of traditional users, their culture, and their basic sustenance, in juxtaposition to the role water plays in the high-tech plants and the pockets of the stockholders.

The City's attempt to address the water shortage issues revolves largely around water conservation aimed primarily at residential users. This emphasis on residential water conservation and recycling programs and neglect concerning commercial and industrial conservation programs manifests itself in two ways: 1.) the water rate scale for residential users versus the industrial flat rate and 2.) the myriad of conservation programs for residential households versus the lack of commercial or industrial water conservation or recycling programs or guidelines pursued by the City. The high-tech industry has repeatedly professed its intention to put money into researching alternative ways of water reuse, but at present, the progress seems to be very slow.

### **Doing dirty business in communities-of-color**

The water use cycle consists of obtaining water from a source, cleaning it up to drinking water standards at a water treatment plant, using it for whatever purpose, and then sending the used water to a waste water treatment plant before discharging it into a water body that will carry it away.

The process of treating wastewater is much more dangerous

ous and laden with dirty and smelly side-effects than is the process of treating water for drinking. For example, wastewater treatment plants use much greater volumes of chlorine than do water treatment plants. Often, huge containers of chlorine must be stored on site, posing a significant risk to the surrounding community in the case of leaks. Waste water treatment plants often have to incinerate the sludge created during the waste treatment process. This sludge often contains residue metals which when burned may settle in the surrounding community.

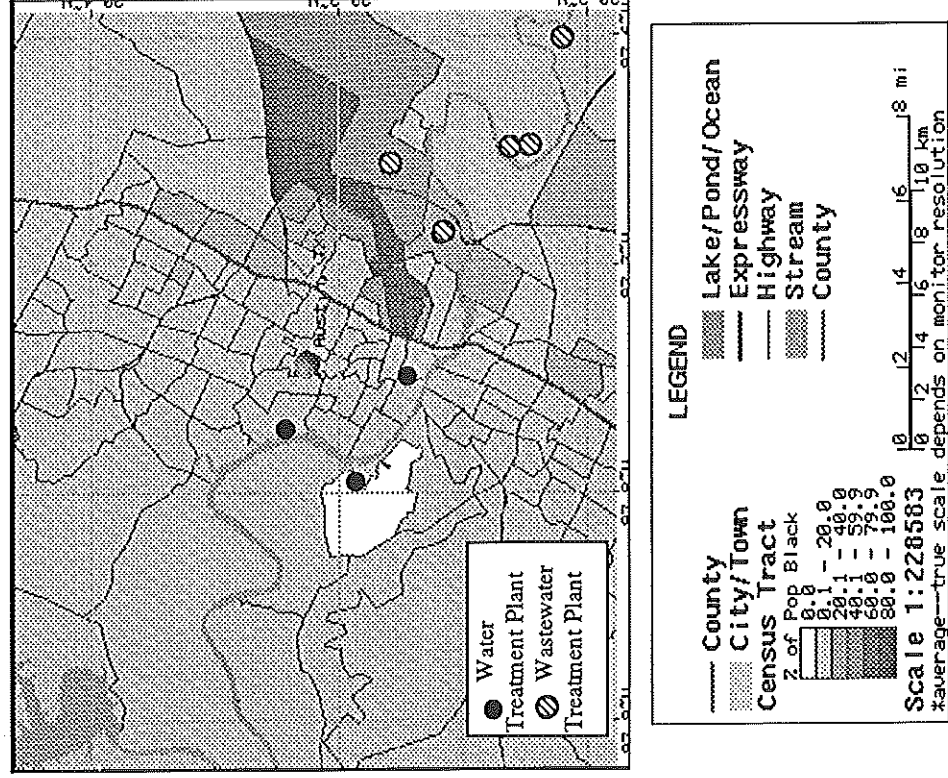
If the waste water treatment plant does not use incineration as a sludge-ridding process, it most often will have sludge drying beds on site to dry out the sludge to prepare it for transport. The drying sludge is perhaps one of the smelliest materials any city can produce, with an odor similar to rotting prunes mixed with stale socks. Finally, wastewater treatment plants will, on rare occasion, accidentally release untreated sewage water into the receiving water body, in this case the Colorado River. This may occur when an industrial discharger accidentally releases toxic chemicals into the sewage without pretreatment on site, killing the bacteria at the wastewater treatment plant that would have otherwise cleaned the wastewater before sending into the nearest receiving water body.

The City of Austin operates four sewage treatment plants: Walnut Creek, Govalle, South Austin Regional, and a sludge composting plant called Hornsby Bend. In addition to this, it operates three water treatment plants: Davis, Ulrich, and Green Water Treatment Plants. As a result of discriminatory facility siting practices, all four sewage treatment plants have ended up in communities-of-color, while the three less hazardous water treatment plants have been sited in primarily white communities.

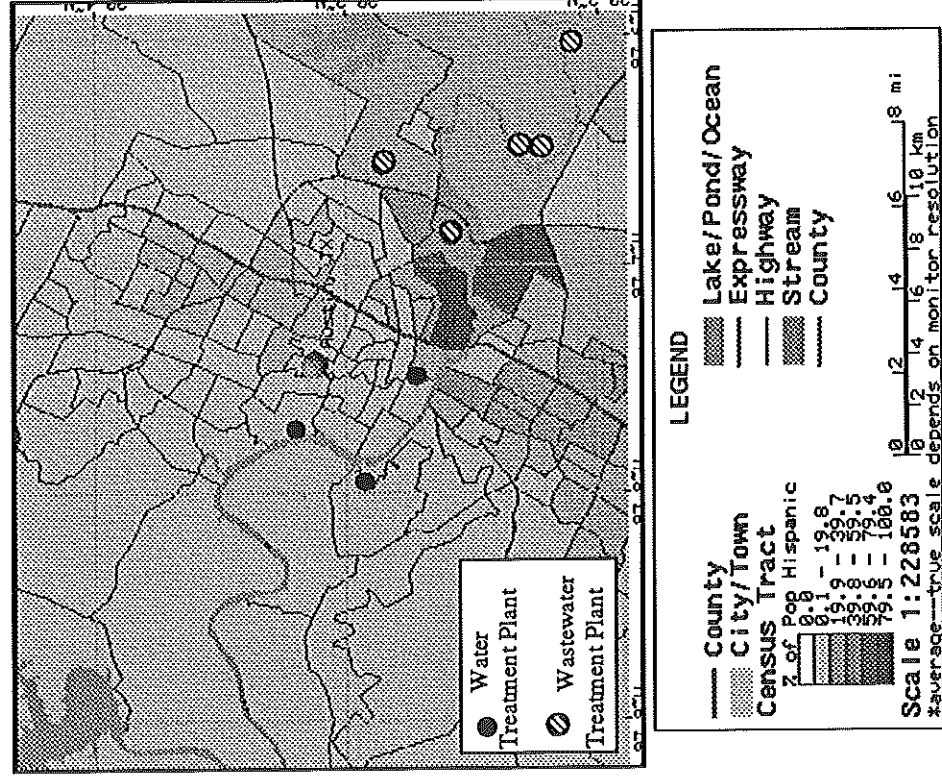
The following two maps show the demographic distribution of both Latinos and African-Americans in Austin as of the 1990 census. It shows that the overwhelming majority of people-of-color live east of IH 35. On the predominantly white and affluent west side of this highway lie the three major water treatment plants for the City of Austin. East of this high-

way, predominantly lower-income people-of-color live near the four major wastewater facilities.

### Demographic Distribution Of Black Residents in Austin, Texas 1990 U.S. Census



**Demographic Distribution Of Latino  
Residents of Austin, Texas  
(1990 U.S. Census)**



**Taxpayers' dollars are high-tech's crutch: Corporate Subsidies**

Capital Improvement Programs (CIP) are comprehensive plans which project the capital improvement needs of the community. In order to finance major portions of capital improvement programs, cities often have to sell bonds. There are two types of bonds that are issued by the City of Austin to finance capital improvement programs. The bond that is commonly used is the General Obligation Bonds (G.O.) which are used



to fund improvements such as streets, police, fire stations, health clinics, parks and libraries, and are repaid from property taxes. Revenue bonds are also used to fund improvements for the City's enterprise activities. Revenue bonds finance capital projects for utilities and for projects such as municipal airports.

The City of Austin has consistently subsidized the high-tech industry through Capital Improvement Projects and tax abatements which are largely paid by the residents of Austin.

After getting more than \$121 million dollars in tax abatements, Samsung decided in 1995 to establish shop in Austin. Coincidentally, in February of 1996, the City of Austin proposed Capital Improvement Project (CIP) money to construct a water transmission line that will be four feet in diameter. It will extend from Southeast Austin, a community-of-color, towards the North-east side of Austin, where a substantial percentage of the high-tech companies are located. The water line will initially provide three million gallons of water per day which will be needed to service Samsung's electronics manufacturing plant.



On August 22, 1996 the City of Austin Council decided to approve the construction of the Springdale water transmission line. The cost of the Springdale Water Transmission Line not only includes construction and maintenance of the water line, but also encompasses the long-term cost of water to the City of Austin.

In 1988 the City of Austin, along with AMD and the Home Saving Lufkin, entered into a partnership to construct an expansion of the Oltorf Road to connect to Montopolis Drive which would directly serve AMD. However, before the partnership solidified, Home Saving Lufkin declared itself insolvent. Blue Bonnet Savings was asked to fill the position of Home Saving Lufkin. In 1992 the City of Austin amended the partnership to include Blue Bonnet Savings and added the adjusted cost for the project. In the original agreement the City decided to spend \$334,750 for this Capital Improvement Project. Yet, the City ended up spending \$663,907 and AMD spent only \$113,593. Consequently, the City of Austin paid 85% of the cost for the CIP project as opposed to 15% paid by AMD. This CIP project was financed by G.O. bonds<sup>25</sup>.

These CIP's are a clear indication of the continuous effort by the City of Austin to subsidize the high-tech industry, using money collected from the residents of Austin. The developmental purpose of Capital Improvement Programs are supposed to be to service the direct needs of the community. As City officials continue to represent the interest of the high-tech industry, at the expense of the community residents, Capital Improvement Projects will continue to fall short of their intended purpose, to serve the needs of the Community.

Recently, the City of Austin enticed Applied Materials, a high-tech company based in Santa Clara, California with \$7.8 million in incentives. The incentive package included a waiver of all building and development fees and a seven year, 80 percent tax abatement on property improvements<sup>26</sup>. Incidentally, the Applied Materials site in Santa Clara was designated a Superfund Site in 1984 after it was found that it had contaminated an area 700 feet long and 50 feet deep with 14,000 parts per billion (ppb) of TCA, 3,400 parts per billion (ppb) of 1,1-DCE, and 1,500 ppb of 1-1 DCA<sup>27</sup>. Clean up at the Santa Clara facility continues today.

Currently, the City of Austin and the County of Travis depend primarily on surface water from lakes and reservoirs to feed the growing population and industrial base. As a re-

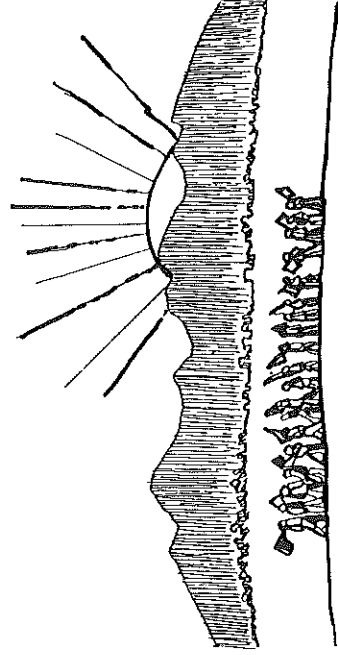
sult of this, only limited testing for groundwater contamination has occurred. Where testing has been done, it has focused primarily on oil and fuel contamination. Because of this, it is currently impossible to determine the extent of the impact which the high-tech industry has had on the groundwater in Austin. Based on the experience of the other three cities outlined in the case studies above, Austin residents may be in for some substantial surprises when testing for high-tech chemicals does occur. At this point, residents and politicians alike may be hard-pressed to maintain the current level of enthusiasm over turning their homeland into a high-tech playground.

### **Conclusion: Is this really the path to a sustainable future?**

What we do know about the high-tech experience in Austin is that as the political power of these economic giants continuously increases, more and more of the taxpayers dollars are redirected toward the benefit of the high-tech companies: to build roads, water treatment infrastructure, assembly and manufacturing facilities, etc. Always, there is the promise of jobs, but as we have seen in Albuquerque, the highest-paying jobs often go to out-of-towners from throughout the US or the world. In fact, the most hazardous jobs often go to people-of-color, mostly women, on the assembly lines and in the chemical intensive manufacturing rooms. The verdict is still out on whether the jobs provided to the local residents actually make up for the enormous costs associated with the establishment of these high-tech facilities in these communities. A growing number of activists, politicians, labor leaders, residents, and scholars are becoming increasingly concerned that with every new high-tech facility a community welcomes into its neighborhoods, their is actually a net loss to that community for all the reasons outlined in the previous pages of this report.

We have seen that many of the costs associated with high-tech development in Austin, as in the other three case studies, are borne by low-income, people-of-color; whether it is in the form of additional wastewater treatment plants in their communities or access only to the lowest paying, most dangerous jobs. In the end, we can all win only if the "costs of doing

business” are borne by the companies themselves, which means that they seek sustainable production processes which phase-out the use of toxics, while protecting the workers from exposure to toxics during the phase-out process. It means these companies must clean up all water contamination to drinking water standards, while paying all the cleanup costs. It means these companies must pay all the costs associated with their development—new roads, water infrastructure, water treatment, etc.—and not play off communities against each other to pressure the public into paying a majority of these costs. It means these companies must respect local cultures and peoples and pay respectable wages. In the end, these companies must understand that it is an honor to hire our people and to do business in our communities. The politicians must find the self-respect and dignity to demand this of the companies. And our brothers and sisters should not have to settle for anything less.



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## **General Recommendations:**

### **To high-tech companies:**

- 1) The companies should significantly reduce water use and increase investment into water saving technologies.
- 2) The companies should develop and implement closed loop re-use of treated industrial waste water. Water from the production process should be cleaned up and then re-used in the production process.
- 3) The companies should develop toxics-use reduction plans to phase out the use of chlorinated solvents and other toxic chemicals.
- 4) The companies should not discharge treated waste water into our aquifers or other drinking water sources.
- 5) The companies should allow unrestricted “transparent” access for regulatory agencies and the public to company records on chemical discharges, chemical inventories, actual chemical usage, and any other information the community finds essential to the protection of its health.

6) The companies should adopt the “**Model Plan for Public Participation**” developed by the Public Participation and Accountability Subcommittee of the National Environmental Justice Advisory Council.

### **To the regulatory agencies (local, state and federal):**

- 1) Regulatory agencies should increase monitoring and oversight of high-tech companies.
- 2) Regulatory agencies should demand unrestricted access for agencies and the public to company records on chemical discharges, chemical inventories, actual chemical usage, emissions monitoring, and any other information that workers and the community find essential to verify company environmental performance and for the protection of their health.

- 3) Regulatory agencies should work in partnership with the community. Agency personnel should work in a spirit of cooperation with the community and not be paternalistic and condescending to residents and workers with questions about their safety.
- 4) Regulatory agencies should implement the “**Model Plan for Public Participation**” developed by the Public Participation and Accountability Subcommittee of the National Environmental Justice Advisory Council.
- 5) Regulatory agencies should assess penalties to polluting companies that are severe enough that polluters find it in their economic interest to use innovation to develop environmentally safe processes and products.
- 6) Regulatory agencies should zealously enforce laws to protect workers—the most “at-risk” population—from chemical exposure.
- 7) Regulatory agencies should improve the training of it’s employees and the public so they can more thoroughly understand the agencies’ programs and policies.

**To local, state, and federal legislators:**

- 1) Legislative bodies at all levels should develop strict laws to protect water resources, especially in the southwestern states. Such legislation should include:
  - a) Water rates for large water users and wasteful industries should be proportionally higher than residential rates.
  - b) Companies should be given strict deadlines to implement closed loop systems to recycle treated waste water from production back into the production process. Those companies which do not meet the deadline should be severely penalized.
- 2) Strong worker protection laws should be developed with the active participation of workers, unions, workers’ compen-

sation attorneys, health care providers, community and union activists, the companies, and regulatory agencies.

3) Legislative bodies at all levels should cease to provide welfare (i.e. tax breaks, reduction in water rates, etc.) to global corporations, and instead invest in local, sustainable businesses. If subsidies are to be provided, the subsidies must be accompanied by a strict set of conditions such as strict limits on water use, chemical use reduction, local employment of all diversities of people, long-term investments to the community, and any other conditions agreed upon by active and significant participation of the interested residents of the community.

4) Negotiations for the siting of a company should be open and transparent and incorporate the public from the beginning, not at legislative hearings after the conditions of the deal have already been worked out.

5) Governments at all levels should adopt the “**Model Plan for Public Participation**” developed by the Public Participation and Accountability Subcommittee of the National Environmental Justice Advisory Council.

#### **To the general public:**

1) We must organize as communities and workers to make our governments and corporations accountable. We must challenge corporate demands to get their products to market in the shortest possible time, especially when those time pressures undermine our community interests. We cannot sacrifice the health and safety of our communities for the profits of huge transnational corporations or for the luxuries of high-technology.

## References

### *Introduction*

1. The Conference Board, December 1991 publication of "Nations v. Corporations"
2. Annual net sales information taken from Annual Reports and 10K reports of the listed companies.

### *References for Case Study #1. Santa Clara County, California: Silicon Valley*

1. Santa Clara Valley Water District, 1993-1994, *Annual Report*
2. *Ibid.*
3. *Ibid.*
4. The Bay-Delta Process: A Roadmap, 1996. *California Environmental Insider*, February 15, 1996, Volume 9, Number 17. pp 6-11.
5. Pat Ferraro, former Board Member, Santa Clara Valley Water District, Personal Communication.
6. *Ibid.*
7. Santa Clara Valley Water District, 1993-1994, *Annual Report*.
8. Santa Clara Valley Water District, *Water Conservation Program Publication*.
9. San José Action Plan, 1994-1995 *Water Conservation Progress Report*, October 1995. Conservation and Resource Management Division Staff, Environmental Services Department, City of San José.
10. Santa Clara Municipal Water System, *Year-End-Report*.
11. San José/Santa Clara Water Pollution Control Plant, Palo Alto Water Pollution Control Plant, and Sunnyvale Water Pollution Control Plant, Top Dischargers Data Reports.
12. From a speech by Graydon Larrabee, Texas Instruments Fellow, at the International Symposium on Semiconductor Manufacturing, September 1993.
13. *Intel Inside New Mexico, A Case Study of Environmental and Economic Injustice*, South West Organizing Project, Albuquerque, New Mexico, 1995.



14. Smith, Ted and Phil Woodward, 1992. *The Legacy of High-tech Development: The toxic lifecycle of computer manufacturing*. A publication of Silicon Valley Toxics Coalition, and Campaign for Responsible Technology.
15. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
16. Smith, Ted. 1984. IBM Spill Spreading Toward Public Wells, in *Silicon Valley Toxics News*, Volume II, No. 1.
17. Smith, Ted. 1984. Fairchild Update, 300 in Health Suit, in *Silicon Valley Toxics News*, Volume II, No. 1.
18. Ibid.
19. Ibid.
20. Ibid.
21. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
22. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
23. *Intel Inside New Mexico, A Case Study of Environmental and Economic Injustice*, SouthWest Organizing Project, Albuquerque, New Mexico, 1995. pp 13-14.
24. Ibid.
25. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
26. Ibid.
27. Ibid.
28. From information contained in the Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
29. Ibid.
30. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
31. Ibid.
32. Dick Hawthorn, Santa Clara Municipal Water System, Personal Communication
33. United States Environmental Protection Agency (USEPA) report on Jasco Superfund Site. July 1988

34. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
35. California Regional Water Quality Control Board, San Francisco Bay Region report on *Van Waters and Rogers Groundwater Cleanup Site, San José, California*, January 1990.
36. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
37. California Regional Water Quality Control Board, San Francisco Bay Region report on *Van Waters and Rogers Groundwater Cleanup Site, San José, California*, January 1990.
38. USEPA summary report on *Van Water and Rogers, Inc. Superfund Site*, June 20, 1988.
39. *Soil and Groundwater Investigation for Solvent Service, Inc. Phase II*, Volume 1-text, September, 1987, published by D.K. Todd, Consulting Engineers, Inc., Berkeley CA. pp 2-5.
40. *San José Mercury News* article "Clean Up Plan for Toxic Site," by Scott Thurm, May 18th, 1993.
41. *Ibid.*
42. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.
43. EPA July 1992 publication "*Lorenz Barrel and Drum Superfund Site, Plume Boundary Map.*"
44. Report released by Romac Environmental Technologies entitled, "*Romic Chemical Corporation, General Information.*" March, 1991.
45. "*A Short View of Romic's Deeds*" in East Palo Alto Alert, a publication by Ujima Security Council. Also Personal Communication with Palo Alto Water Pollution Control Plant Personnel.
46. Personal Communication, Bradley Angel, Greenpeace, San Francisco and Jenny Epstein, Santa Clara Center for Occupational Safety and Health.
47. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.

*References for Case Study #2. Phoenix, Arizona:  
Silicon Desert*

1. 1990 US Census data for the State of Arizona.
2. *Arizona Water Resources Assessment*, Volume 1, Inventory and Analysis, August 1994 by the Arizona Department of Water Resources. pp. Executive Summary.
3. *Arizona Water Resources Assessment*, Volume 1, Inventory and Analysis, August 1994 by the Arizona Department of Water Resources. pg. 55.
4. *Ibid.*
5. *Ibid.*
6. *Arizona Water Resources Assessment*, Volume 1, Inventory and Analysis, August 1994 by the Arizona Department of Water Resources. pp. Executive Summary.
7. From a water summary report published by the Arizona Department of Water Resources.
8. *Arizona Water Resources Assessment*, Volume 1, Inventory and Analysis, August 1994 by the Arizona Department of Water Resources. pp. Executive Summary.
9. *Arizona Water Resources Assessment*, Volume 1, Inventory and Analysis, August 1994 by the Arizona Department of Water Resources. pg. 56.
10. *The Phoenix Gazette*, "Tucson Studies Mixing Water From Cap, Wells" by Gazette staff and wire reports, November 7, 1994.
11. *Arizona Water Resources Assessment*, Volume 1, Inventory and Analysis, August 1994 by the Arizona Department of Water Resources. pp. Executive Summary.
12. *Ibid.*
13. *Ibid.*
14. *Ibid.*
15. *Arizona Water Resources Assessment*, Volume 1, Inventory and Analysis, August 1994 by the Arizona Department of Water Resources. pg. 51.
16. *Ibid.*
17. *The Arizona Republic*, "Groundwater use is Sinking Southern Arizona, US Says" by The Arizona Republic and the Associated Press, July 17, 1994.
18. *Phoenix Water Resources Plan—1990*. City of Phoenix

- Water and Wastewater Department, Water Conservation and Resources Division. pg. 19
19. *Phoenix Water Resources Plan—1990*, City of Phoenix Water and Wastewater Department, Water Conservation and Resources Division. pg. 24
  20. *Phoenix Water Resources Plan—1990*, City of Phoenix Water and Wastewater Department, Water Conservation and Resources Division. pp. 27-30
  21. *Phoenix Water Resources Plan—1990*, City of Phoenix Water and Wastewater Department, Water Conservation and Resources Division. pg. 34
  22. Michelle Robertson, Arizona Department of Environmental Quality (ADEQ), Personal Communication, April 9, 1996.
  23. *Phoenix Water Resources Plan—1990*, City of Phoenix Water and Wastewater Department, Water Conservation and Resources Division. pg. 35
  24. Ibid.
  25. Ibid.
  26. From an Intel press release distributed to community residents assembled at a community meeting with Intel on April 9, 1996.
  27. The estimates of 60%, 77 square miles, and 25% in this paragraph were determined by analyzing a map (to scale), published by the Arizona Department of Environmental Quality in March 1995, which showed the boundaries of contamination plumes in the Phoenix area. This was double-checked by comparing it to summary reports for each individual contamination plume published by the Arizona Department of Environmental Quality.
  28. *Superfund Information Packet*, May 1995, Arizona Department of Environmental Quality. 31pp.
  29. The statistics in this paragraph were determined by matching and comparing the information contained in the March 1995 map published by ADEQ, and the *Superfund Information Packet* also published by ADEQ.
  30. From the March 1995 map and the *Superfund Information Packet* published by ADEQ.
  31. Kulon, Jeffrey P., K. Ross, and R. Olm. 1994. "Stepping Out of the Pump and Treat Rut: Central Phoenix Plume Management Strategy" presented at the Seventh Annual

Symposium of the Arizona Hydrological Society, Scottsdale, Arizona, September 22-23, 1994. 9pp. (All three authors were employees of ADEQ at the time of publication), and the Superfund Information Packet, ADEQ, May 1995.

32. Kulon, Jeffrey P., K. Ross, and R. Olm. 1994. "Stepping Out of the Pump and Treat Rut: Central Phoenix Plume Management Strategy" presented at the Seventh Annual Symposium of the Arizona Hydrological Society, Scottsdale, Arizona, September 22-23, 1994. 9pp

33. *Motorola 52nd Street Project Summary and Management Plan*, ADEQ, Updated March 29, 1996. 6pp. Reference # E-4070.6.4.15.

34. *Motorola 56th Street Project Summary and Management Plan*, ADEQ, Updated March 29, 1996. 6pp. Reference # E-4200.7.3.7

35. Ibid.

36. Ibid.

37. *Raymond Street Project Summary*, ADEQ, Issue Date: January 2, 1996. 4 pp. Reference # E-5650.

38. Ibid.

39. Ibid.

40. From "*Tlacapan: The Bleeding Earth, Motorola's Impact on Two Communities: Prevention Strategies*," a report by PODER (Austin, Texas) and Tonatierra (Phoenix, Arizona), to be released in, 1997.

41. *Indian Bend Wash-North Project Summary*, ADEQ, Issue Date: January 2, 1995. 9 pp. Reference # E-4080.

42. Ibid.

43. Ibid.

44. Motorola Mesa Project Summary and Management Plan, ADEQ, Updated: March 15, 1996. 5pp. Reference # E-4060.3.1

45. Ibid.

46. *Arizona Business Gazette*, "Polluted Area in Mid-Phoenix Grows Larger; three firms added to list of sources," by Paul Schneider, July 8, 1993.

47. From the 1980 and 1990 US Census data.

48. Kulon, Jeffrey P., K. Ross, and R. Olm. 1994. "Stepping Out of the Pump and Treat Rut: Central Phoenix Plume Management Strategy" presented at the Seventh Annual

- Symposium of the Arizona Hydrological Society, Scottsdale, Arizona, September 22-23, 1994. 9pp
49. Kulon, Jeffrey P., K. Ross, and R. Olm. 1994. "Stepping Out of the Pump and Treat Rut: Central Phoenix Plume Management Strategy" presented at the Seventh Annual Symposium of the Arizona Hydrological Society, Scottsdale, Arizona, September 22-23, 1994. pg. 304.
50. Ibid. pp.304-305.
51. Ibid. pg. 307.
52. "*Community Profile: Tolleson*," published by the Arizona Department of Commerce, June 1995.
53. Kulon, Jeffrey P., K. Ross, and R. Olm. 1994. "Stepping Out of the Pump and Treat Rut: Central Phoenix Plume Management Strategy" presented at the Seventh Annual Symposium of the Arizona Hydrological Society, Scottsdale, Arizona, September 22-23, 1994. pg. 301.
54. *Arizona Business Gazette*, "Computer Chip Capital High-Tech Giants Choose to Expand at the Established Sites," by Paul Schneider, December 28, 1995.
55. From an Intel press release distributed to community residents assembled at a community meeting with Intel on April 9, 1996
56. *Intel Corporation Site Summary and Management Plan*, ADEQ, Updated: April 1, 1995. 4pp. Reference # E-5510.1.1
57. Ibid.
58. Ibid. pg. 4
59. *Arizona Business Gazette*, "Computer Chip Capital High-Tech Giants Choose to Expand at the Established Sites," by Paul Schneider, December 28, 1995.
60. Ibid.
61. *Arizona Business Gazette*, "Sumitomo Facility to Anchor High-Tech Cluster in Phoenix," by John DeWitt, September 28, 1995.
62. Ibid.
63. *The Phoenix Gazette*, "Landing a Big One," editorial, September 26, 1995.

*References for Case Study #3. Albuquerque, New Mexico:  
Silicon Desert*

1. "Who Owns the Water," in *Voces Unidas* newsletter, Volume 6, Number 1, May 1996, published by the South West Organizing Project, Albuquerque, New Mexico. pp 10-13.
2. Bokum, C., V. Gabin, and P. Morgan. 1995. "*Living Within Our Means: A water management policy for New Mexico in the 21st Century*," published by New Mexico Environmental Law Center. pg. 19.
3. Bokum, C., V. Gabin, and P. Morgan. 1995. "*Living Within Our Means: A water management policy for New Mexico in the 21st Century*," published by New Mexico Environmental Law Center.
4. Ibid.
5. Ibid. pg. 19
6. *Albuquerque Water Resources Management Strategy, San Juan-Chama Diversion Project Options, Summary Report*, Volume 1 of 3, July 1995, by the City of Albuquerque Public Works Department, Water Resources. pg. 2-1.
7. Ibid. pg. 1-2
8. Ibid.
9. Ibid. pg. 1-3 and 1-4
10. Ibid.
11. *Albuquerque Water Resources Management Strategy, San Juan-Chama Diversion Project Options, Summary Report*, Volume 1 of 3, July 1995, by the City of Albuquerque Public Works Department, Water Resources. pp. 1-9 to 1-11
12. Ibid.
13. Ibid.
14. "Coca Cola Quenches Your Thirst...", in *Voces Unidas*, Volume 6, Number 1, South West Organizing Project, May, 1996, Albuquerque, New Mexico. pg. 7.
15. *Albuquerque Water Resources Management Strategy, San Juan-Chama Diversion Project Options, Summary Report*, Volume 1 of 3, July 1995, by the City of Albuquerque Public Works Department, Water Resources. pp. 1-5 to 1-7

16. *Albuquerque Water Resources Management Strategy, San Juan-Chama Diversion Project Options, Summary Report*, Volume 1 of 3, July 1995, by the City of Albuquerque Public Works Department, Water Resources.
17. *Ibid.* pg. 1-14
18. "Industrial water use soared in '95, offsetting private-sector savings," by Tony Davis, *Albuquerque Tribune*, February 10, 1996.
19. *Ibid.*
20. "Intel's Local Hires Top 60%," by Paul Logan, *Albuquerque Journal*, March 16, 1996
21. "Intel's Water Use Soars, But Less Wasted," *Corrales Comment*, March 23, 1996.
22. "Intel's Local Hires Top 60%," by Paul Logan, *Albuquerque Journal*, March 16, 1996.
23. *Intel Inside New Mexico, A Case Study of Environmental and Economic Injustice*, SouthWest Organizing Project, Albuquerque, New Mexico, 1995.
24. From a speech by Graydon Larrabee, Texas Instruments Fellow, at the International Symposium on Semiconductor Manufacturing, September 1993.
25. *Intel Inside New Mexico, A Case Study of Environmental and Economic Injustice*, SouthWest Organizing Project, Albuquerque, New Mexico, 1995.
26. "Intel's Water Use Soars, But Less Wasted," *Corrales Comment*, March 23, 1996.
27. "Study: Putting Waste in Aquifer Feasible," by Michael Hartranit, *Albuquerque Journal*, January 10, 1996.
28. "Intel's Water Use Soars, But Less Wasted," *Corrales Comment*, March 23, 1996.
29. *Ibid.*
30. *Ibid.*
31. *Ibid.*
32. *Intel Inside New Mexico, A Case Study of Environmental and Economic Injustice*, SouthWest Organizing Project, Albuquerque, New Mexico, 1995. pg. 57.
33. *Ibid.*
34. *Ibid.*
35. *Ibid.* pg. 58
36. *Albuquerque Journal* editorial, December 20, 1993
37. "The Acequias of New Mexico and the Public Welfare,"



Final Report by José A. Rivera, Ph.D., School of Public Administration, University of New Mexico, February 1996.

pg. 1.

38. *Ibid.* pg. 5

39. *Ibid.* pg. 6

40. *Ibid.* pg. 7

41. "Industrial water use soared in '95, offsetting private-sector savings," by Tony Davis, *Albuquerque Tribune*, February 10, 1996.

42. From a written testimony prepared by Mr. John Carangelo, La Jolla Acequia Association.

43. From a November 11, 1996 telephone interview with Doug Wolf, New Mexico Environmental Law Center.

44. *Ibid.*

45. "*The Acequias of New Mexico and the Public Welfare*," Final Report by José A. Rivera, Ph.D., School of Public Administration, University of New Mexico, February 1996. pg. 11-15.

46. *The New Mexican*, April 16, 1992 and April 12, 1992.

47. "*The Acequias of New Mexico and the Public Welfare*," Final Report by José A. Rivera, Ph.D., School of Public Administration, University of New Mexico, February 1996. pg. 24-25.

48. First notice, October 21, 1995, *Albuquerque Journal*.

49. De Young, Tim J., 1994. *Water of Enchantment, A Citizen's Guide to New Mexico Water Law*, a project of the Land and Water Fund for the Rockies, Broken Hand Printing, Boulder Co., pg. 5.

50. From a November 11, 1996 telephone interview with Doug Wolf, New Mexico Environmental Law Center.

51. De Young, Tim J., 1994. *Water of Enchantment, A Citizen's Guide to New Mexico Water Law*, a project of the Land and Water Fund for the Rockies, Broken Hand Printing, Boulder Co., pg. 5.

52. "Locals Seek Fed Help in Sparton Cleanup," by Michael Hartranft, *Albuquerque Journal*, February 2, 1996; and "EPA wants to clean up West Side chemical pollution," by Tony Davis, *Albuquerque Tribune*, January 30, 1996.

53. *Ibid.*

54. *Ibid.*

55. *Ibid.*

*References from Case Study #4. Austin, Texas: Silicon Hills*

1. "Drought predicted for Plains, Texas" by Jerry Mahoney, *Austin American-Statesman*, 1996.
2. "Water rights loom as a major factor in economic capability, far into the future" by Jerry Mahoney, *Austin American-Statesman*, June 6, 1996.
3. "Texas Water Facts" published by the Texas Water Development Board, Austin, TX, 1991. pg 3
4. Ibid.
5. *Texas Environmental Almanac*, compiled and written by the Texas Center for Policy Studies, Austin, TX, 1995. pg. 4.
6. Ibid.
7. Ibid.
8. *Texas Environmental Almanac*, compiled and written by the Texas Center for Policy Studies, Austin, TX, 1995. pg. 4 to 17.
9. Ibid. pg. 17
10. *Texas Environmental Almanac*, compiled and written by the Texas Center for Policy Studies, Austin, TX, 1995.
11. Ibid.
12. "By 2011, figure on 2.4 million, and problems, in Austin area," by Chuck Lindell, *Austin American Statesman*, May 5, 1996.
13. Ibid.
14. *Texas Environmental Almanac*, compiled and written by the Texas Center for Policy Studies, Austin, TX, 1995. pg. 24
15. "Central Texas Water Rights Issues," by Ralph K.M. Haurwitz, *Austin American Statesman*, 1994.
16. "UT, Austin, and High-tech Toxics: the dark side of economic development," by Theresa Case, in the *Polemicist*, Volume 2, No. 3, December 1990. pg. 4
17. "Usage of High Volume of Water by High-tech Companies" Water and Wastewater Commission-Regular Meeting-September 1, 1993.
18. "UT, Austin, and High-tech Toxics: the dark side of economic development," by Theresa Case, in the *Polemicist*,

- Volume 2, No. 3, December 1990. pg. 5
19. "High-tech wedded to toxic chemicals" by Kathy Mitchell, *Austin Business Journal*, Volume 13, Number 28, August 30-September 5, 1993.
20. Ibid.
21. TNRCC report entitled, "*All Facilities in Travis County Reporting to TRI for 1993*."
22. From a report by the City of Austin Industrial Waste Control Division
23. "*Cost of Service Rate Study: FY 1993-94 Overview*," City of Austin Water and Wastewater Utility, July, 1993.
24. *Residential and Small Commercial Ratepayers'* Consultant's Report. October 1993.
25. From a report and discussion: City of Austin Public Works Department.
26. "UT, Austin, and High-tech Toxics: the dark side of economic development," by Theresa Case, in the *Polemicist*, Volume 2, No. 3, December 1990. pg. 5
27. Site Management System, *Annual Report*, May 1995, California Regional Water Quality Control Board, San Francisco Bay Region.

## **The Electronics Industry Good Neighbor Campaign**

The Electronics Industry Good Neighbor Campaign (EIGNC) is a collaborative effort between the Southwest Network for Environmental and Economic Justice and the Campaign for Responsible Technology. Participating organizations in the EIGNC include three Southwest Network affiliates, the South West Organizing Project (SWOP) in New Mexico, People Organized in Defense of Earth and her Resources (PODER) in Austin, Texas, and Tonatierra Community Development Institute in Phoenix, Arizona. The other participating group in the EIGNC collaboration is the Silicon Valley Toxics Coalition, based in San José, California.

The EIGNC grew out of the need for a regional, national and ultimately an international community response to the migration of the electronics industry away from the Silicon Valley to low-wage, high public subsidy, low environmental regulation zones in the southwestern United States and abroad. The EIGNC thus brings together local organizations to join efforts in organizing for accountability on the part of the electronics industry towards local communities throughout the region. Each local group identifies its own local programs, and through the EIGNC, works with the others on common or closely related issues. This strengthens the local work of each organization, and makes it possible for the collaboration as a whole to achieve major policy objectives. For example, the EIGNC and its participant organizations played a significant role in obtaining a Department of Defense appropriation for SEMATECH which sets aside \$10 million annually for the research and development of worker and environmentally-safe production technologies.

**Participant organizations in the EIGNC include:**

### **Campaign for Responsible Technology (CRT)**

The Campaign for Responsible Technology was initiated by the Silicon Valley Toxics Coalition in 1991. The CRT brings together labor, occupational health and safety advocates and

technology policy advocates with environmental and community activists. The mission of the CRT is to promote democratic grassroots participation in the formation of industrial policy surrounding the development of the electronics industry.

Campaign for Responsible Technology

760 North First Street, San José, California 95112

phone: 408-287-6707; fax: 408-287-6771

email: [svtc@igc.org](mailto:svtc@igc.org) web page: <http://www.svtc.org/svtc>

**People Organized in Defense of Earth and her Resources (PODER)**

People Organized in Defense of Earth and her Resources has been a leading advocate in Austin, Texas communities for protection of communities of color from groundwater and air pollution associated with industrial activities. PODER has been instrumental in 1993 in leading a successful fight to relocate fuel tank farms out the East Austin area and in monitoring cleanup efforts associated with petrochemical industry storage practices. PODER has also been the leading advocate for safe chemical storage and pollution prevention as the rapidly growing electronics industry expands in Austin. As part of this work, PODER has focused on employment and community development issues related to SEMATECH, the national public-private consortium of semiconductor companies which includes Intel and which has its headquarters in Austin. PODER is a founder and affiliate of the Southwest Network for Environmental and Economic Justice.

People Organized in Defense of Earth and her Resources

55 North IH 35, #205B, Austin, Texas 78702

phone: 512-472-9921; fax: 512-472-9922

**Silicon Valley Toxics Coalition (SVTC)**

The Silicon Valley Toxics Coalition arose in response to the severe pollution and workplace safety problems generated by the microelectronics industries in the Silicon Valley of California. The Valley is the birthplace of "high-tech" industry and has more documented groundwater contamination than anywhere else in the United States. Groundwater cleanup and protection continues to be the principal work of the SVTC. The organization has been awarded two US EPA Technical

Assistance Grants to work on the cleanup of groundwater contamination caused by IBM and the US Navy. In 1992, SVTC launched the Campaign to End the Miscarriage of Justice, an effort which is working to eliminate the use of glycol ethers in the semiconductor industry, and has been active in efforts to eliminate the use of CFCs as well as other chemicals used in semiconductor production.

Silicon Valley Toxics Coalition

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phone: 408-287-6707; fax: 408-287-6771

email: [svtc@igc.org](mailto:svtc@igc.org) web page: <http://www.svtc.org/svtc>

**Southwest Network for Environmental and Economic Justice (SNEEJ)**

The Southwest Network for Environmental and Economic Justice is a regional organization composed of African, Latino, Native and Asian/Pacific Islander Americans and exists to strengthen the work of local organizations and empower communities to impact local, state, regional and national policy on environmental and economic justice issues as these impact people of color. The Network consists of over 80 organizations with affiliates from Texas, New Mexico, Colorado, Arizona, Nevada, California and Mexico, as well as citizen organizations from Native Nations in the region. The Network, founded in 1990, strengthens poor communities and organizations of color under stress from environmental degradation and economic injustice in the Southwest and in Mexico. The Network includes community, youth, student, human rights and labor organizations, and works closely with many organizations throughout the United States working to address issues of environmental and economic justice.

Southwest Network for Environmental & Economic Justice

PO Box 7399, Albuquerque, NM 87194

phone: 505-242-0416; fax: 505-242-5609

**South West Organizing Project (SWOP)**

SWOP, founded in 1981, is a multiracial, multi-issue statewide membership organization in New Mexico whose mission is to empower the disenfranchised in the Southwest to realize racial and gender equality, and social and economic

justice. SWOP's work focuses on increasing citizen participation in communities of people of color in the basic decision making which affects our lives. Current SWOP direct organizing efforts in New Mexico are working to promote accountability among industries, the military, and governments at all levels on a range of environmental and economic justice issues, as well as promote greater community control over industrial, commercial and residential development. This work takes place at both the local and state levels, and includes activities ranging from neighborhood organizing work to statewide campaigns. SWOP is also a founder and affiliate member of the Southwest Network for Environmental and Economic Justice.

South West Organizing Project

211 10th St. SW, Albuquerque, New Mexico 87102-2919  
phone: 505-247-8832; fax: 505-247-9972  
email: [swop@igc.org](mailto:swop@igc.org)

### **Tonatierra Community Development Institute**

Tonatierra is a community-based organization in Phoenix, Arizona which grew out of the farmworker justice movement and which focuses on a range of development, educational and cultural issues of importance to indigenous communities. Tonatierra has been building coalition with community-based and environmental groups concerned about the cleanup and protection of aquifers polluted by Motorola Corporation, which is presently the largest employer in the state. Tonatierra has produced a video entitled Silent Waters which the organization is using for educational purposes, and most recently participated in air permit hearings and other activities related to the siting in April of Intel's new P6 chip FAB. Tonatierra is a founder and affiliate member of the Southwest Network for Environmental and Economic Justice.

Tonatierra

PO Box 24009, Phoenix AZ 85006  
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Principles of Environmental Justice

**The First National People of Color Environmental Leadership Summit Adopted October 27, 1991**

**PREAMBLE**

**WE, THE PEOPLE OF COLOR**, gathered together at this multinational People of Color Environmental Leadership Summit, to begin to build a national and international movement of all peoples of color to fight the taking of our lands and communities, do hereby reestablish our spiritual interdependence to the sacredness of our Mother Earth; to respect and celebrate each of our cultures, languages and beliefs about the natural world and our roles in healing ourselves; to insure environmental justice; to promote economic alternatives which would contribute to the development of environmentally safe livelihoods; and, to secure our political, economic and cultural liberation that has been denied for over 500 years of colonization and oppression, resulting in the poisoning of our communities and land and the genocide of our peoples, do affirm and adopt these Principles of Environmental Justice:

1. Environmental justice affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction.
2. Environmental justice demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias.
3. Environmental justice mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.
4. Environmental justice calls for universal protection from



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nuclear testing and the extraction, production and disposal of toxic/hazardous wastes and poisons that threaten the fundamental right to clean air, land, water, and food.

5. Environmental justice affirms the fundamental right to political economic, cultural and environmental self-determination of all peoples.
6. Environmental justice demands the cessation of the production of all toxins, hazardous wastes, and radioactive materials, and that all past and current producers be held strictly accountable to the people for detoxification and the containment at the point of production.
7. Environmental justice demands the right to participate as equal partners at every level of decision-making including needs assessment, planning, implementation, enforcement and evaluation.
8. Environmental justice affirms the right of all workers to a safe and healthy work environment, without being forced to choose between an unsafe livelihood and unemployment. It also affirms the right of those who work at home to be free from environmental hazards.
9. Environmental justice protects the right of victims of environmental injustice to receive full compensation and reparations for damages as well as quality health care.
10. Environmental justice considers governmental acts of environmental injustice a violation of international law, the Universal Declaration On Human Rights, and the United Nations Convention on Genocide.
11. Environmental justice must recognize a special legal and natural relationship of Native peoples to the U.S. government through treaties, agreements, compacts, and covenants affirming sovereignty and self-determination.
12. Environmental justice affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural

areas in balance with nature, honoring the cultural integrity of all our communities, and providing fair access for all to the full range of resources.

13. Environmental justice calls for the strict enforcement of principles of informed consent, and a halt to the testing of experimental reproductive and medical procedures and vaccinations on people of color.

14. Environmental justice opposes the destructive operations of multinational corporations.

15. Environmental justice opposes military occupation, repression and exploitation of lands, peoples and cultures, and other life forms.

16. Environmental justice calls for the education of present and future generations which emphasizes social and environmental issues, based on our experience and an appreciation of our diverse cultural perspectives.

17. Environmental justice requires that we, as individuals, make personal and consumer choices to consume as little of Mother Earth's resources and to produce as little waste as possible; and make the conscious decision to challenge and re-prioritize our life-styles to insure the health of the natural world for present and future generations.

## *Appendix C*

### **South West Organizing Project Community Environmental Bill Of Rights**

**Right to Clean Industry:** We have the right to clean industry; industry that will contribute to the economic development of our communities and that will enhance the environment and beauty of our landscape. We have the right to say “NO” to industries that we feel will be polluters and disrupt our life-styles and traditions. We have the right to choose which industries we feel will benefit our communities most, and have the right to public notice and public hearings to allow us to make these decisions.

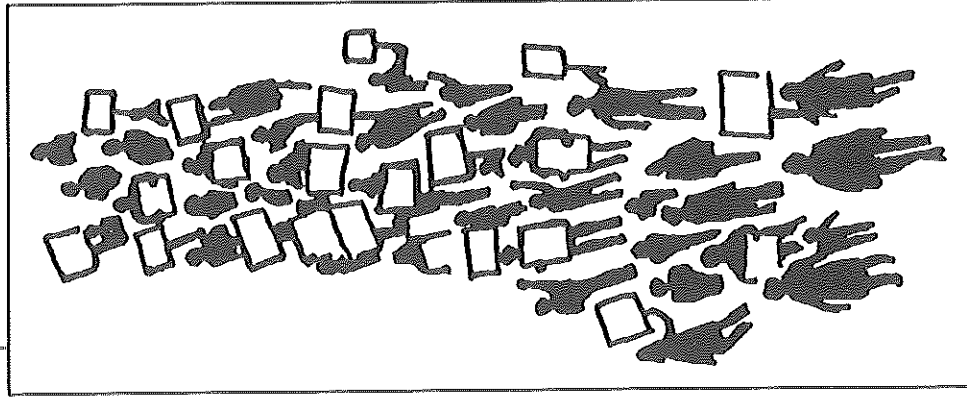
**Right to Be Safe From Harmful Exposure:** We have the right to be safe from harmful exposures imposed on us against our will that would affect our health or disrupt our life-styles. It is our right to have a comfortable life-style, safe from toxic chemicals, other hazardous waste and nuisance. This means having safe water, clean air, and being free of excessive and constant noise from industry.

**Right to Prevention:** We have the right to participate in the formulation of public policy that prevents toxic pollution from entering our communities. We support technologies that will provide jobs, business opportunities, and conservation of valuable resources. As residents and workers, we have the right to safe equipment and safety measures to prevent our exposure in the community and the workplace.

**Right to Know:** We have the right to know what toxic chemicals industry, corporate polluters, and government have brought or intend to bring into our communities and workplaces, and how these chemicals will be used. We have the right to know exactly what the methods of prevention and disposal of these chemicals will be.

**Right to Participate:** We have the right to participate as equals in all negotiations and decisions affecting our lives, children, homes and jobs on the matter of exposure to hazardous chemicals.

cals and wastes. We will not allow backroom negotiations and “sweetheart deals.” We have the right of access without cost to information and assistance that will make our participation meaningful, and to have our needs and concerns be the major factor in all policy decisions. Government agencies at all levels should be responsive to our needs, provide us with necessary data, and include us in all negotiations with polluters. We have the right to sit at the negotiation table with representatives of the responsible polluters and choose our own representatives. All information should be bilingual because of the multi-ethnic nature of our communities.



**Right to Protection and Enforcement:** We have the right to participate in the formulation of strong laws controlling toxic wastes and vigorous enforcement of those laws. Government enforcement agencies must enforce all laws and regulations. We also have the right to criminal prosecution of polluters. If a person dies from exposure to chemical poisons in the environment, the responsible party must be prosecuted.

**Right to Compensation:** We have the right to be compensated for damages to our health, our homes, and our livelihoods. The responsible parties must compensate us for medical costs, effects imposed on our children and our elderly, the loss of our land, jobs, livestock, and the destruction of our homes and environment.

**Right to Clean Up:** The polluters shall bear the financial burden of clean up. The community shall participate and be an

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equal partner in developing clean up plans and in monitoring the clean up process. Clean up should take place quickly and the technology chosen will be based on speed and effectiveness and not on low cost. Remedial investigations and feasibility studies will be done in the shortest possible time. We have the right to be insured that our problem is not transferred to other communities. Our homes and our environment shall be restored to the way they were before the polluters chose to pollute them.

### Silicon Principles

*Prepared by Silicon Valley Toxics Coalition and  
Campaign for Responsible Technology  
(June 1996)*

1. Establish a comprehensive toxics use reduction program
  - Phase out the use of CFCs and other chlorinated solvents
  - Phase out all carcinogens, reproductive toxins and neuro-toxins
  - Phase out the use of acutely toxic gases
  - Implement in-process acid recycling
  - Develop Toxics Use Reduction plans, materials and waste audits, and mass balance materials accounting
2. Develop health and safety education programs and health monitoring
  - Health and safety training must be sensitive to diversity of workforce
  - Health monitoring must be comprehensive and available for public inspection
  - Establish nondiscriminatory transfers for pregnant production workers
  - earmark at least 5% of all R&D money for environmental, health and safety programs
3. Work with local communities to establish "Good Neighbor Agreements"
  - Include emergency planning and worst case scenario planning, including transportation planning
  - Provide full disclosure to local communities and regular monitoring, including inspections
  - Establish corporate commitment to hiring, training, and promoting local residents
4. Implement a Worker Improvement Program and Economic Impact Statements

- Assure that workers are involved in process design and workplace governance
- Assess environmental, social, and economic impacts of new technologies and new facilities

5. Support national R&D policy directed by civilian (not Military) needs

- Support a change in federal R&D funding from Defense Department to Department of Commerce

6. Establish corporate policies requiring equal standards for subcontractors & suppliers

- Establish technical assistance and technology transfer to encourage pollution prevention at all stages of production, rather than shift the pollution down the production chain to smaller contractors
- Hire contractors who adhere to good labor and environmental policies, and in particular, hire union contractors where they exist.

7. Establish corporate standards that are enforced equally, domestically, and internationally

- Establish corporate policies that assure full compliance worldwide that meet the strictest standards
- Require all facilities worldwide to make full disclosure of toxics reporting

8. Establish a life-cycle approach to all manufacturing, from R&D to final disposal

- Design new products from life-cycle perspective
- Internalize costs of disposal and guarantee return and safe disposal of all used products

9. Work closely with local communities and workers to ensure full oversight & participation

- Commit to open partnership with workers and community to assure comprehensive participation

## *Appendix E*

### Executive Order on Environmental Justice

THE WHITE HOUSE  
WASHINGTON, D.C.

February 11, 1994

#### MEMORANDUM FOR THE HEADS OF ALL DEPARTMENTS AND AGENCIES

**SUBJECT:** Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Today I have issued an Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

That order is designed to focus Federal attention on the environmental and human health conditions in minority communities and low-income communities with the goal of achieving environmental justice. That order is also intended to promote nondiscrimination in Federal programs substantially affecting human health and the environment, and to provide minority communities and low-income communities access to public information on, and an opportunity for public participation in, matters relating to human health or the environment.

The purpose of this separate memorandum is to underscore certain provisions of existing law that can help ensure that all communities and persons across this Nation live in a safe and healthful environment. Environmental and civil rights statutes provide many opportunities to address environmental hazards in minority communities and low-income communities. Application of these existing statutory provisions is an important part of this Administration's efforts to prevent those minority communities and low-income communities from being subject to disproportionately high and adverse environmental effects. I am therefore today directing that all department and agency heads take appropriate and necessary steps to ensure that the following specific directives are implemented immediately:



In accordance with Title VI of the Civil Rights Act of 1964, each Federal agency shall ensure that all programs or activities receiving Federal financial assistance that affect human health or the environment do not directly, or through contractual or other arrangements, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin. Each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. section #321 et seq. Mitigation measures outlined or analyzed in an environmental assessment, environmental impact statement, or record of decision, whenever feasible, should address significant and adverse environmental effects of proposed Federal actions on minority communities and low-income communities.

Each Federal agency shall provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of meetings, crucial documents, and notices.

The Environmental Protection Agency, when reviewing environmental effects of proposed action of other Federal agencies under section 309 of the Clean Air Act, 42 U.S.C. section 760, shall ensure that the involved agency has fully analyzed environmental effects on minority communities and low-income communities, including human health, social, and economic effects.

Each Federal agency shall ensure that the public, including minority communities and low-income communities, has adequate access to public information relating to human health or environmental planning, regulations, and enforcement when required under the Freedom of Information Act, 5 U.S.C. section 552, the Sunshine Act, 5 U.S.C. section 552h, and the Emergency-Planning and Community Right-to-Know Act, 42 U.S.C. section 11044.

This memorandum is intended only to improve the internal management of the Executive Branch and is not intended to, nor does it create, any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person.

## National Environmental Justice Advisory Council Criteria for Community Participation

### BACKGROUND

The National Environmental Justice Advisory Council (NEJAC) is a federal advisory committee that was established by charter on September 30, 1993, to provide independent advice, consultation, and recommendations to the Administrator of the U. S. Environmental Protection Agency (EPA) on matters related to environmental justice. The NEJAC is made up of 25 members, and one designated federal official (DFO), who serve on a parent council that has six subcommittees - Enforcement, Health and Research, Indigenous Peoples, International, Public Participation and Accountability, and Waste and Facility Siting. Along with the NEJAC members who fill subcommittee posts, an additional 34 individuals serve on the various subcommittees. The NEJAC has held meetings in locations across the United States, including Washington, D. C.; Albuquerque, New Mexico; Herndon, Virginia; Atlanta, Georgia; Arlington, Virginia; and Detroit, Michigan.

As a federal advisory committee, the NEJAC is bound by all requirements of the Federal Advisory Committee Act (FACA) of October 6, 1972. Those requirements include:

- Members must be selected an appointed by EPA
- Members must attend and participate fully in meetings of the NEJAC
- Meetings must be open to the public, except as specified by the Administrator
- All meetings must be announced in the Federal Register
- Public participation must be allowed at all public meetings
- The public must be provided access to materials distributed during the meeting

- Meeting minutes must be kept and made available to the public
- NEJAC must provide independent judgment that is not influenced by special interest groups

## *GUIDING PRINCIPLES*

### **A. PUBLIC PARTICIPATION**

I. Encourage public participation in all aspects of environmental decision making.

Communities, including all types of stakeholders, and agencies should be seen as equal partners in dialogue on environmental justice issues. In order to build successful partnerships, interactions must:

- Encourage active community participation
- Institutionalize public participation
- Recognize community knowledge
- Utilize cross-cultural formats and exchanges

II. Maintain honesty and integrity in the process and articulate goals, expectations, and limitations.

## **CRITICAL ELEMENTS**

### **A. PREPARATION**

I. Developing cosponsoring and co-planning relationships with community organizations is essential to successful community meetings. To ensure a successful meeting, agencies should provide cosponsor the resources they need and should share all planning roles. These roles include:

- Decision making
- Development of the agenda
- Establishment of clear goals
- Leadership
- Outreach

II. Educating the community to allow equal participation and provide a means to influence decision making.

III. Regionalizing materials to ensure cultural sensitivity and relevance.

IV. Providing a facilitator who is sensitive and trained in environmental justice issues.

## **B. PARTICIPANTS**

I. As the NEJAC model demonstrates, the following communities should be involved in environmental justice issues.

- Community and neighborhood groups
- Community service organizations (health, welfare, and others)
- Educational institutions and academia
- Environmental organizations
- Government agencies (federal, state, county, local, and tribal)
- Industry and business
- Medical community
- Non government organizations
- Religious communities
- Spiritual communities

II. Identify key stakeholders, including:

- Educational institutions
- Affected communities
- Policy and decision makers (for example, representatives of agencies accountable for environmental justice issues, such as health officials, regulatory and enforcement officials, and social agency staff).

## **C. LOGISTICS**

I. Where:

- The meetings should be accessible to tall who wish to attend (public transportation, child care, and access for the disabled should be considered).
- The meeting must be held in adequate facility (size and conditions must be considered).
- Technologies should be used to allow more effective communication (teleconferences, adequate translation, equipment, and other factors).

## II. When:

- The time of day and year of the meeting should accommodate the needs of affected communities (evening and weekend meetings accommodate working people, and careful scheduling can avoid conflicts with other community or cultural events).

## III. How:

- An atmosphere of equal participation must be created (avoid using a "panel" or "head table").
- A two-day meeting, at a minimum, is suggested. The first day should be reserved for community planning and education.
- The community and the government should share leadership and presentation assignments.

## D. MECHANICS

- Maintain clear goals by referring to the agenda; however, do not be bound by it.
- Incorporate cross-cultural exchanges in the presentation of information and the meeting agenda.
- Provide a professional facilitator who is sensitive to, and trained in, environmental justice issues.
- Provide a timeline that describes how the meeting fits into the overall agenda of the issues at hand.
- Coordinate follow-up by developing an action plan and determining who is the contact person who will expedite the work products from the meeting.

Distribute minutes and a list of action items to facilitate follow-up.

## **CORE VALUES FOR THE PRACTICE OF PUBLIC PARTICIPATION**

1. People should have a say in decisions about actions which affect their lives.
2. Public participation includes the promise that the public's contribution will influence the decision.
3. The public participation process communicates the interest and meets the process needs of all participants.
4. The public participation process seeks out and facilitates the involvement of those potentially affected.
5. The public participation process involves participants in defining how they participate.
6. The public participation process communicates to participants how their input was, or was not, utilized.
7. The public participation process provides participants with the information they need to participate in a meaningful way.

# Appendix G FAB 11 "Ideal" Incentive Matrix

## HUMAN RESOURCES

Deliverable	Savings	Parameter	"Ideal" Incentive	
	\$131,197	Relocation Assistance	A. 10-20% less than corporate rate	A. 10-20% less than corporate rate
	27,485	B. Discounted moving and storage	B. 50-60% less than standard rate	B. 40% A.3 Car Rental
	2,094,000	C. Discounted mortgage and title fees	C. 1-2% off purchase price	C. 1-2% off purchase price
	366,000	D. New home construction purchase discounts	D. 5-8% off purchase price	D. \$1,500 per property C.2 Title fees
	109,800	E. Apartment rent discounts	E. 5-10% off monthly rent and 50% deposits	E. 10-15% discounts; corporate apartments F.1 White deposits
	219,000	F. White all initial deposits and hookup charges	F. White all	F.1 White utility deposits E.1 Corporate apartment discounts
	105,480	G. Relocation incentives	G. Rental assistance; counselors; relocation materials; train passes; bank; tour; welcome booklet; video presentation; road shows	G. Incentive package G.1 Rental assistance G.2 Counselors G.3 Relocation materials
	62,400			G.4 Train passes G.5 Tours G.6 Welcome baskets
	19,800			G.7 Video presentation G.8 Road shows
	49,500			G.9 Staying in program G.10 Discount program
	19,800			G.11 Realtor package G.12 Banking package
	42,670			H.1 Use of relocation center I. Realtor referral at origination site
	40,000			
	86,460			
	42,400			
	19,800			
	25,000			
	5,240			
	262,000			
	146,400			
	52,400			
	\$3,879,832			
				See yield model and calculations, Human Resources section, Recruiting Strategy, Item K.

# HUMAN RESOURCES

Deliverable	Parameter	Recruiting Assistance	Screening Assistance	Training Assistance	Labor
	<p>A. Single point of contact</p> <p>B. Funding</p> <p>C. Recruiters</p> <p>D. Maximum flexibility on use of funds</p>	<p>A. Specific person identified</p> <p>B. \$500K (92-95)</p> <p>C. Recruiters</p> <p>D. Maximum flexibility on use of funds</p>	<p>A. New Haxco Department of Labor, Sandoz County Field Office</p> <p>B. Not permitted by and-donation clause of the state constitution</p> <p>C. Yes, full service local NH Dept. of Labor office being expanded.</p> <p>D. NH Dept. of Labor will work closely with Intel to customize program.</p>	<p>A. \$1.7 million</p> <p>B. Unemployed and specific job classes</p> <p>C. Yes</p> <p>D. Yes, plus TV-Is new training facility on site (value--\$300,000)</p> <p>E. Currently axles</p>	<p>A. Lower labor cost, for contract services (NH first in productivity)</p> <p>B. Lower cost of living. Floor discretionary income per employee. Cost of living - 99.1% of U.S average</p> <p>C. Experienced construction workforce--quickly mobilized, locally available, existing Intel startup team in place</p> <p>D. Proven ability to install equipment ahead of schedule; CDK and Big J workforce on hand and trained for equipment installation</p> <p>E. Proven ability to exceed bidding deadline</p> <p>F. Proven ability to exceed bidding deadline</p>
	<p>A. Single point of contact</p> <p>B. Funding</p> <p>C. Recruiters</p> <p>D. Maximum flexibility on use of funds</p>	<p>A. \$1.5M over 3 years (92-95)</p> <p>B. Restricted only to the project Intel training and retraining</p> <p>C. Included in the above</p> <p>D. Included in the above</p> <p>E. Immediate "in-state" tuition status for employees and dependents</p>	<p>A. Single point of contact</p> <p>B. Funding</p> <p>C. Screeners</p> <p>D. Maximum flexibility</p>	<p>A. Lower labor cost, for contract services (NH first in productivity)</p> <p>B. Lower cost of living. Floor discretionary income per employee. Cost of living - 99.1% of U.S average</p> <p>C. Experienced construction workforce--quickly mobilized, locally available, existing Intel startup team in place</p> <p>D. Proven ability to install equipment ahead of schedule; CDK and Big J workforce on hand and trained for equipment installation</p> <p>E. Proven ability to exceed bidding deadline</p> <p>F. Proven ability to exceed bidding deadline</p>	<p>A. Lower labor cost, for contract services (NH first in productivity)</p> <p>B. Lower cost of living. Floor discretionary income per employee. Cost of living - 99.1% of U.S average</p> <p>C. Experienced construction workforce--quickly mobilized, locally available, existing Intel startup team in place</p> <p>D. Proven ability to install equipment ahead of schedule; CDK and Big J workforce on hand and trained for equipment installation</p> <p>E. Proven ability to exceed bidding deadline</p> <p>F. Proven ability to exceed bidding deadline</p>



# TAX IDEAL

FARINER	IDEAL INCENTIVE	Deliverable
Property Tax	Property tax exemption on all project assets	In place on all existing assets and expansions to existing facility through 2010. Thirty-year exemption on all assets except land expected for new project. Exemption for land through 2010. Value \$210,000,0000
Gross Receipts Tax & Compensating Tax	Exemption for purchase of the following: 1. manufacturing equipment 2. R & D equipment 3. consumables 4. building materials 5. WATTS and 1-800 telephone service	1. Exemption available through IRB 2. Exemption available through IRB 3 Available through TTC 4. Available through TTC 5. Yes
Investment Tax Credit	Investment tax credit applied to all taxes based on value of equipment purchased.	Yes, 5 percent of the value of equipment purchased;

## NOTES:

If the new fab is a new project financed by IRB, state law exempts it from property tax for a maximum of 30 years from the date it is leased to the company. A new project would be one separate from the existing plant, not functionality related or subordinate to it. It can be located on the existing project land. There is no exemption for consumables and building materials, but an investment tax credit is available to apply against gross receipts tax or compensating tax otherwise payable in connection with the purchase of consumables and building materials. Additional employees must be added. Credit applied to future gross receipts, compensating or withholding tax liabilities or taxpayer may claim refund of gross receipts or compensating tax paid.

Parameter	"Ideal" Incentive	Deliverable
Income/franchise Tax	1. Low or zero percent rate 2. Investment tax credit (ITC) on equipment 3. Incremental new investment--specific tax credit 4. Double weighted sales tax 5. Factor relief (payroll & property for manufacturing and R & D 6. R & D tax credit 7. 100 percent dividend exclusion 8. Pollution control facility credit 9. Energy conservation credit 10. Moving expense reimbursement exclusion for employees 11. Education expense reimbursement exclusion for employees (not dependent upon federal expiring provision) 12. Child care credit	1. 7.6% 2. Yes, 5 percent (see below) 3. Yes, same as investment tax credit 4. Planned for introduction in the 1993 legislative session 5. Provision exists within current tax statute 6. No 7. No 8. No 9. No 10. No 11. No 12. 30% of cost not to exceed \$30,000 per year <sup>1</sup>

## NOTES:

<sup>1</sup>Additional employees must be added. Credit applied to future gross receipts, compensating or withholding tax liabilities or taxpayer may claim refund of gross receipts or compensating tax paid. The corporation must pay for care of employees, dependent children, and the child care must occur during the employee's normal work hours.

<sup>2</sup>Lower rates apply for first million dollars of taxable income.

ENVIRONMENTAL

<p><b>Parameter</b></p>	<p><b>"Ideal" Incentive</b></p>	
<p>A. Permit modification submitted at 215 tons additional VOC's and &gt; 100 tons NOx. B. Yes. Exists under current permit.</p>	<p>A. Increase TPY under existing permit by 100 TPY B. Fallback No offset No Bact/Laer unless real reduction No individual facility-wide permit (no individual equipment/process permit) No permit mod. for equipment process add or changes if within facility emission limit</p>	<p>Air Emission</p>
<p>A. Not applicable. Intel NH<sub>3</sub> EHS made decision to apply for notice of intent. B. Not applicable. See Marik, Infrastructure, Sanitary Sewer. C. None required</p>	<p>A. No storm water permits B. No sewer fees for X (10%) years C. Simple general storm water permit with limited monitoring (scope and frequency)</p>	<p>Water Discharge</p>
<p>A. None apply to NH B. None apply to NH C. None apply to NH</p>	<p>A. Limit waste min. law to 313 list and quantity B. Incorporate federal wastewater treatment exemptions C. Clarify general federal law to exclude out-of-state gens.</p>	<p>Hazardous Material/Waste</p>
<p>A. Permit expected to be issued December 1992.</p>	<p>A. Guarantee 3 months for permit to construct B. Three additional months to finish all other permits C. Pay for permit fees and processing costs D. Hire/appoint coordinator (+ staff) with government authority to move process</p>	<p>Permit Timetable</p>
<p>D. Letter of commitment in original RFP. ED assigned Mr. Vacker to assist process.</p>		

Parameter	"Ideal" Incentive	Deliverable
Site	A-1 Size; A-2 Cost; no cost > 100 B. Can the site be designated a foreign trade zone C. Can the existing site be designated an enterprise zone D. Land use and zoning E. Easements and right-of-ways	A. No cost > .80A B. Approval expected Q13 C. No D. Light industrial. In place. Construction Permits: 30-45 days, general contractor takes architect's plans to Santa Fe. Released in stages. E. In place
Roadways	A. Off-site improvements needed and cost to Intel B. On-site improvements needed and cost to Intel	A. All offsite improvement met at no cost to Intel B. None required
Utilities Overview	A. Existing utilities site plan B. Proposed utilities site plan	A. Adequate submittals B. Adequate submittals
Electrical	A. Meet the specification for service B. Reliability of service < 1 outage/yr. > 1 min. C. Quality of service < 3 disturbances/yr > 10% voltage change D. Cost for additional infrastructure E. Schedule for additional infrastructure F. Estimated rate cost. < \$0.06/KWH. G. Incentives affected. < 15% reduction, no fees. H. Quality or reliability improvements > 15% improvement	A. Meets and exceeds 150% of specification B. Meets specifications C. Meets specifications. EPRF study underway to characterize quality of service D. No cost to Intel for infrastructure E. Infrastructure installation will not add to standard construction schedule F. Average rate \$.044; known rate path to year 2000 G. None. Intel has the lowest rate path on PNM's system. H. Quality partnership

## NOTES:

Parameter not requested in original RFP, has been requested in Revision 1 of the RFP.  
System is designed with 100% redundancy. Only one interruption in past five years that exceeded one minute in duration. This interruption occurred during an Intel shutdown.  
PNM's system performance exceeds industry average according to 1992 survey of US utilities. Electric Power Research Institute study presently underway to address power quality concerns for water manufacturing. Results will be pertinent to all Intel manufacturing facilities.  
The applicable tariff for Intel, the Rural Manufacturing Incentive Rate (RMIR) is the lowest tariff on PNM's system. The RMIR provides a known rate path to the year 2000. The rate in 1994 is \$.0427/KWH, escalating to \$.0508 at the end of 1999. PNM is willing to explore with Intel the possibility of a rate design based on marginal cost for service after the expiration of the RMIR.

# INFRASTRUCTURE

Parameter	Water	Sanitary Sewer	Storm Water	
"Ideal" Incentive	<p>A. Meet the specification for service (city water)</p> <p>B. Meet the specification for service (fire water)</p> <p>C. Evaluation of supply system</p> <p>D. Cost for additional infrastructure</p> <p>E. Schedule for additional infrastructure</p> <p>F. Estimated rate cost</p> <p>G. Incentives offered</p> <p>H. Quality or reliability improvements</p>	<p>A. Meet the specification for service</p> <p>B. Evaluation of waste treatment systems</p> <p>C. Cost of additional infrastructure</p> <p>D. Schedule for additional infrastructure</p> <p>E. Estimated rate cost</p> <p>F. Incentives offered</p> <p>G. Quality of reliability improvements</p>	<p>A. Storm water issues</p> <p>B. Treatment or collection requirements</p> <p>C. Define needed expansion</p> <p>D. Cost for additional infrastructure</p> <p>E. Schedule for additional infrastructure</p>	
Deliverable	<p>A. OK. Expansion required to meet 150% peak demand</p> <p>B. OK</p> <p>C. OK</p> <p>D. Paid through rate design per New Mexico state law</p> <p>E. &lt; 6 months</p> <p>F. &lt;\$0.0092/gal</p> <p>G. Declining block rate</p> <p>H. OK</p>	<p>A. OK (2)</p> <p>B. OK (2)</p> <p>C. None, in place</p> <p>D. In place</p> <p>E. .000856</p> <p>F. None</p> <p>G. See Environmental</p>	<p>A. Meets needs</p> <p>B. Meets needs</p> <p>C. Meets needs</p> <p>D. No cost to Intel</p> <p>E. Non-gating (&lt; 8 months)</p> <p>F. &lt;\$0.00048/gal</p> <p>G. &gt; 16% reduction, no fees</p> <p>H. &gt; 16% improvement</p>	<p>A. Meets needs</p> <p>B. Meets needs</p> <p>C. Meets needs</p> <p>D. No cost to Intel</p> <p>E. Non-gating &lt; 6 months</p> <p>A. Filed notice of intent for storm water permit 09/30/92</p>

Pressure variations eliminated with latest project upgrades.

INFRASTRUCTURE

Parameter	"Ideal" Incentive	Deliverable
<p><b>Parameter</b></p> <p><b>Nitrogen</b></p> <p>A. Meet the specification for service                      B. Quality of product gas                      C. Cost for additional infrastructure                      D. Schedule for additional infrastructure                      E. Estimated rate cost                      F. Incentive offered</p>	<p>A. Meets needs                      B. Matches on-site generation quality                      C. No cost to Intel                      D. Non-gating &lt; 8 months                      E. &lt; \$800/MCFM                      F. &gt; 16% reduction, no fees</p>	<p>A. On-site generation required                      B. OK                      C. OK                      D. OK                      E. Not given                      F. -</p>
<p><b>Natural Gas</b></p> <p>A. Meet the specification for service                      B. Cost for additional infrastructure                      C. Schedule for additional infrastructure                      D. Estimated rate cost                      E. Incentives offered</p>	<p>A. Meets needs                      B. No cost to Intel                      C. Non-gating &lt; 6 months                      D. &lt; \$0.33/therm                      E. &gt; 15% reduction, no fees</p>	<p>A. Meets and exceeds 150% of specification                      B. No cost to Intel for infrastructure                      C. Construction can be completed 3 months from notification                      D. Total transportation cost \$0.79/therm                      E. None</p>
<p><b>Communications</b></p> <p>A. Meet specification for service                      B. Cost for additional infrastructure                      C. Schedule for additional infrastructure</p>	<p>A. Meets needs                      B. No cost to Intel                      C. Non-gating &lt; 9 months</p>	<p>A. OK                      B. -                      C. 60 days</p>
<p><b>Zoning and Permitting</b></p> <p>A. Site zoning classification and time to rezone                      B. Current code requirements                      C. Visual or line of sight restrictions                      D. Building height limitations                      E. Additional hookup fees                      F. Process for permitting                      G. Additional fees                      H. Site risk (nature's disasters)</p>	<p>A. Light industrial &lt; 2 months                      B. Current adopted versions                      C. None                      D. &lt; 86 feet                      E. &lt; 4 months                      F. None                      G. Minimal                      H. -</p>	<p>A. OK                      B. OK                      C. -                      D. -                      E. None                      F. 1 month                      G. No fees                      H. OK</p>
<p><b>Environmental</b></p> <p>A. Noise level restrictions                      B. Protection of flora/fauna                      C. Environmental impact reports                      D. Wetland issues</p>	<p>A. &lt; 70 dB                      B. None                      C. None. No cost to Intel                      D. None</p>	<p>A. None required by law                      B. None                      C. None                      D. None</p>

## *Appendix H*

### **Model for a Local Ordinance for Corporate Accountability**

**Adopted by Santa Clara County, California,  
September 1995**

September 7, 1995

Manufacturing Personal Property Tax Rebate  
Santa Clara County Growth and Job Creation Policy

The County of Santa Clara supports efforts to maintain and expand manufacturing and research-and-development employment in Santa Clara County as a tool to improve living standards in our community. The County of Santa Clara, through Assembly Bill 1823 of 1993, is willing to assist manufacturers expand or relocate facilities, create good jobs, and increase property tax revenues.

Under provisions of AB 1823, the County of Santa Clara will, for eligible manufacturing facility projects, consider granting a rebate for up to five (5) years of a portion of the County's share of the 1% property tax levy on manufacturing equipment. The amount of the rebate granted, shall not exceed the amount granted by the city within which the project is located.

The Board of Supervisors has established the following policy and application guidelines to ensure a prompt and thorough review of eligible projects.

#### **Eligibility:**

1. Consistent with the intent of AB 1823, the County shall only grant personal property tax rebates to companies that, but for the rebate, would not otherwise have expanded or lo-

cated within Santa Clara County. The County shall not consider an application if, prior to filing for the rebate, any of the following actions have occurred:

- a. A building permit for the subject development for which a deduction is being sought has been issued by a City within the County jurisdiction or construction of the subject development has begun; or
- b. Manufacturing equipment for which a deduction is being sought has been or is being installed.

2. The County shall look more favorably for the purposes of this tax rebate upon companies that: a) provide healthcare for all permanent employees; b) have a history of fair labor practices; c) have workplace health and safety policies in place; d) pay wages at or above the competitive industry wages; e) provide childcare for their workers; f) hire County job training program alumni; g) hire current residents of Santa Clara County; h) locate the project so that workers can make use of mass transit; i) have public giving programs that benefit the local community; j) have commitment to workplace training for all employees; k) have policies in place to reduce the use of toxics and to reduce environmental damage; and l) have a history of mitigating environmental violations.

Please enclose your corporate policy on these items, if applicable.

**Application:**

Any company applying for a Santa Clara County tax rebate shall provide the following information:

1. A copy of the applicant's most recent audited financial statement and shareholder report;
2. A description of the applicant's expansion or relocation plans which include project timeline and estimated total investment, including costs of real property and manufacturing equipment;



3. An estimated tax schedule for payments of real property tax and manufacturing equipment taxes, including an amortization schedule and anticipated rebate schedule;
4. An estimate of the construction jobs created by the proposed development or expansion;
5. An estimate of the total jobs and wage and benefit (or suitable alternative) scales by job category (including full-time, part-time, permanent, temporary, and manufacturing) created by the proposed development or expansion and the anticipated hiring dates;
6. A list of all other local, state and federal public bodies that the applicant has approached or will approach for additional financial incentives, abatements, rebates or subsidies related to the Santa Clara County application.

**Approval:**

Within 30 days of receipt of the completed application, the Director of Finance will present a recommendation to the Board of Supervisors which evaluates the application and relevant information from state and/or city analysis of project.

Within 30 days of receipt of the Director's recommendation, the Board of Supervisors shall schedule the item for discussion and possible action at a regularly scheduled Board meeting.

**Manufacturing Personal Property Tax Rebate Criteria:  
Minimum Standards:**

Companies with expansion projects approved for personal property rebates will:

1. Generate 1% secured and unsecured taxes that equal or exceed 250% of the amount of property tax levy on personal property rebated by the County to the Company during the five year period following project completion;

2. Create and sustain a minimum of ten (10) full-time permanent manufacturing jobs over the life of the rebate period;
3. Demonstrate competitive industry wages, by category and industry at a minimum of \$10 per hour, for both full-time and part-time jobs created by the expansion;
4. Provide health care benefits, or a suitable alternative, for permanent jobs created;
5. Appoint a contact person who will be responsible for working with the County's designated staff for the purposes of hiring and training job applicants when practical through County offices of the State of California Employment Development Department, locally sponsored Job Training Partnership Act Programs, and Santa Clara County's Greater Avenues for Independence, and to jointly submit an annual report regarding their progress.

**Accountability Criteria:**

A company shall annually submit its claim for a tax rebate. The claim shall show proof of the 1% secured and unsecured property taxes paid in the current fiscal year.

The claim shall also list the number of manufacturing and other jobs created because of the project along with a summary of pay rates and health insurance coverage or suitable alternatives afforded its employees for the respective job categories.

Companies failing to meet projected job creation, wage rate, or health insurance coverage requirements shall be subject to a proportional claim reduction as defined in the contract.

The County shall have the right to recover a rebate from a company if it is determined, by way of a final decision of an administrative agency or court of competent jurisdiction, that the company has committed a willful or grossly negligent act with regard to the company's business within Santa Clara County.

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## Glossary

**2-ethoxyethyl acetate:** moderately toxic by ingestion; moderate fire risk. Tolerance, 50 ppm in air.

**acequia:** a dirt ditch used for irrigation, usually part of a larger irrigation network connecting fields to a nearby river; acequias are often communally managed and have been used in New Mexico for over three hundred years.

**acetone:** a volatile, fragrant, flammable liquid used chiefly as a solvent and in organic synthesis; acetone may be inhaled or absorbed through the skin and can irritate the eyes, nose, throat, and mucous membranes; it can also damage the nervous system. Explosive limits in air 2.6 to 12.8%. Tolerance, 750 ppm in air. Narcotic in high concentration. Low to moderate toxicity by ingestion and inhalation.

**acid neutralization:** addition of chemicals to change acidity of liquids; strong chemicals combined with acids to produce salts which dissolve in water.

**acid recycling:** processing acids used in manufacturing so that they can be reused.

**acre foot:** one acre covered to a depth of one foot of water, totalling 326,000 gallons.

**acutely toxic gas:** a gas that is immediately harmful or fatal; one brief exposure can damage health.

**adrenal gland failure:** malfunction of either of a pair of adrenal glands, which are located next to the kidneys; adrenal glands produce adrenaline, hormones which control metabolic functions, and sex hormones; failure results in delayed puberty, sexual dysfunction, etc.

**air emissions:** substances such as chemicals or heavy metals which are released into the air.

**air pollutant:** any airborne contaminant, usually in the form of gas or smoke, which may poison land, surface and groundwater, plants, and living beings.

**air scrubbers:** devices in smokestacks or exhaust systems that remove most, but not all, particles before they are released into the atmosphere.

**ammonia:** a pungent, colorless, gaseous alkaline compound of nitrogen and hydrogen most commonly found in the form of a water solution; contact with ammonia may result in irritation of the respiratory system and mucous membranes, burning and blistering of the skin, headaches, nausea, and vomiting.

**aquifer:** a geologic formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

**arroyo:** a channel cut into the earth by erosion, also called a wash.

**arsenic:** a solid poisonous element that is commonly metallic steel gray, crystalline, and brittle; also a poisonous compound of arsenic and oxygen often used as an insecticide or weed killer; arsenic is stored in the body after exposure and can result in conjunctivitis, visual disturbances, irritation of mucous membranes, skin problems, nerve damage, cancer, kidney and liver disorders, and intestinal malfunctions.

**arsine:** a colorless, flammable, extremely poisonous gas with an odor like garlic; arsine may be produced by action of acids on metals containing arsenic as an impurity, for example, when cleaning metal tanks which have contained acid; it is also used in the manufacture of semiconductors; it is used as a dopant in wafer fabrication. If inhaled, arsine may cause headaches, dizziness, comas, shortness of breath, heart, liver, blood, and kidney damage.

**automation:** in a workplace, the introduction of machines which perform jobs previously held by human workers.

**benzene:** flammable, dangerous fire risk. Explosive limits in air, 1.5 to 8% by volume. Moderately toxic by ingestion, inhalation, and skin absorption. Tolerance, 10 ppm in air. A suspected carcinogen.

**Best Available Control Technology (BACT):** equipment and

methods that remove or eliminate as many pollutants as possible.

**calcium hydroxide:** a white crystalline compound used in making alkalies, bleaching powder, etc.; also known as slaked lime, used to neutralize acids.

**carcinogen:** any substance which causes cancer.

**carpal tunnel syndrome:** swelling of tendons in the wrist which traps and pinches the nerve. This can cause loss of touch in surface areas of the hand, numbness, pain, and tingling in the thumb and fingers, and loss of strength in the fingers. Usually associated with workers that regularly use computer keyboards over a lengthy period of time, it can affect anyone whose job requires the same hand movement over and over.

**cellosolve acetate:** a toxic glycol ether used as a solvent and in making computer chips.

**central nervous system:** the brain and spinal cord, which receive sensory impulses from nerves and which send out motor impulses.

**central processing unit (CPU):** the part of a computer that does the math and logic calculations. Current preferred term is PROCESSOR.

**cervical precancerous tissue:** abnormal cells occurring on the cervix, which connects the vagina to the uterus. Will become cancer cells if untreated.

**chemical vapor deposition chambers:** chamber where thin layers of material are placed on silicon wafers in chip making.

**Chicano/a:** a self-descriptive term used by people of the Southwestern US and other areas, who are of mixed ancestry indicating Native American/Mexican Indian and Spanish heritage.

**chip:** common term for integrated circuits used in computers; a piece of semiconductor material with electronic circuitry etched into it; Processor chips and memory chips are most common, although any electronic circuit can be put on a chip (amplifier, receiver, etc.)

**chlorinated solvents:** compounds of various hydrocarbons and chlorine; used in wafer and circuit board fabrication and cleaning; effects of exposure include cancer of the liver, lungs, skin, and blood, and disorders of the liver, kidney, heart, and central nervous system.

**chlorine:** usually found as a heavy greenish yellow gas of pungent odor and is used especially as a bleach, oxidizing agent, and disinfectant in water purification; it is used in the fabrication of computer chip wafers and is a by-product in the manufacture of light emitting diodes; high levels of chlorine in water has been found to cause bladder cancer, while other types of exposure can cause severe irritation of the skin, eyes, and mucous membranes, severe lung problems, headaches, nausea, and vomiting; chlorine may combine with moisture in a reactive action to form hydrochloric acid.

**chlorobenzene:** flammable, moderate fire risk. Avoid inhalation and skin contact. Tolerance, 75 ppm in air. Explosive limits 1.8 to 9.6% in air.

**chlorofluorocarbons (CFC):** chemical compounds made from chlorine, fluorine, and carbon; used as lubricants, refrigerants, and as propellants in aerosol sprays. When released into the atmosphere, they rise and damage the ozone layer. The chlorine, fluorine, and oxygen can then combine with water in the atmosphere to produce acid rain. Because of the detrimental effects, an international agreement forbids their use as propellants. It will phase out their production and use by 1996.

**chronic organic brain dysfunction:** any damage to the brain that is permanent and irreversible.

**Clean Air Act:** federal law passed in 1970 with later amendments. Regulates pollutants in the air. Recent reauthorization of the Act has expanded the regulation of toxic air emissions.

**Clean Water Act:** common name for the Water Pollution Control Act of 1972 and its amendments. Sets limits and penalties for dumping pollutants into surface and groundwater.

**continuous emissions monitoring:** checking amounts of pollutants and other materials in air and water discharges all of the time instead of random, infrequent testing.

**deionized water:** highly purified water.

**demographics:** relating to the statistical study of human populations, especially in reference to size, density, ethnic makeup of populations, etc.

**detoxification:** the process of removing poisons or toxins.

**diborane:** a potentially lethal chemical used to make silicon wafers; exposure can cause coughing, bleeding in the lungs, headache, dizziness, fatigue, muscle spasms, and nausea.

**dichloroethane (1,1-DCA; DCA):** Toxic by ingestion, inhalation and skin absorption. Use restricted in some states.

**dichloroethylene (1,1-DCE; 1,2-DCE; DCE):** Moderately toxic by ingestion, inhalation, and skin contact; irritant and narcotic in high concentrations. Tolerance, 200 ppm in air. Flammable, dangerous fire hazard. Affects the kidneys and liver.

**dichloropropane:** flammable, dangerous fire risk. Explosive limits in air 3.4 to 14.5 %. Toxic by ingestion and inhalation. Tolerance, 75 ppm in air.

**diesel fuel oil #2:** commonly used as fuel for emergency generators; usually stored in large underground tanks.

**diffusion furnaces:** furnaces which use dangerous gases at high temperature to implant a chemical into semiconductor material (usually silicon) to create electrical circuits on each chip in a wafer.

**dopant:** a deliberate chemical impurity introduced to give chips their useful properties.

**drought:** a prolonged period of dryness or lack of rainfall that has a significant effect on water or water-related uses.

**dynamic random-access memory (DRAM):** a type of memory chip. Stored data is lost when the power is turned off.

**ecological systems:** interdependent relationship between plants, animals, and the environment they live in.

**economic development (strategy):** generally refers to state and local government efforts to stimulate job creation, reduce unemployment and increase incomes and tax revenues. The most generally used tools are a variety of tax incentives and abatements. Such policies often have built-in contradictions—tax incentives can shift tax burdens to other businesses and citizens. Companies often place a higher premium on services, infrastructure and environment, all of which may require increased payments or taxes when looking at a place to relocate or expand.

**economic justice:** a conviction that economic policies must result in benefits which are distributed equally across income and racial lines and that jobs created by state and local tax incentives must go to local citizens and taxpayers and that the health, natural resources, and the culture of the community must be protected.

**Electronics Industry Good Neighbor Campaign (EIGNC):** a joint project between the Southwest Network for Environmental and Economic Justice and the Campaign for Responsible Technology, to promote community accountability of high-tech industries.

**encephalopathy:** a disease of the brain, especially one involving alterations of brain structure.

**environment:** where we live, where we work, where we play.

**Environmental Impact Report:** California equivalent of federal Environmental Assessments or Environmental Impact Statements; evaluation of the effects from development or construction; required for various projects, especially those that receive federal funding.

**environmental justice:** equal and fair access to a healthy environment; equal enforcement of environmental regulations; and a movement to protect communities of color from environmental hazards (see economic justice).

**environmental permitting process:** conducting studies, preparing reports, establishing safeguards, etc. to receive permits prior to activities that have the potential to damage the environment; may occur at the federal, state, and/or local level.



**Environmental Protection Agency (EPA):** an independent federal agency; responsible for setting standards and limits, issuing permits, monitoring and enforcement, supporting research, and assessing the consequences of activities or projects that cause pollution or damage the environment.

**environmental racism:** racial discrimination in environmental policy-making and the enforcement of regulations and laws, the deliberate targeting of people of color communities for toxic waste facilities, the official sanctioning of life-threatening presence of poisons and pollutants in our communities, and the history of excluding people of color from the leadership of the environmental movement.

**environmental safeguard:** equipment or procedures that provide protection from pollution or the misuse and waste of natural resources.

**etchant:** any of a number of corrosive chemicals which strip away a layer on the surface of a wafer, embedding a pattern for electrical circuitry onto its surface.

**ethyl-3-epoxy-propionate (EEP):** airborne pollutant.

**ethylbenzene:** flammable, dangerous fire risk. Moderately toxic by ingestion, inhalation, and skin absorption. Irritant to skin and eyes. Tolerance, 100 ppm in air.

**ethylene glycol:** a solvent used in cleaning, wafer fabrication, and computer assembly; exposure can result in brain damage, respiratory failure leading to heart failure, and abnormalities in bone marrow. Toxic by ingestion and inhalation; lethal dose reported to be 100 cc. Tolerance (vapor), 50 ppm in air; (particulate), 10 mg per cubic meter of air.

**European protectionism:** see Protectionism.

**evaporation:** the process by which water becomes a vapor at a temperature below the boiling point.

**extractive industries:** involve the removal of natural resources; mining, logging, etc.

**FAB (fabrication plant):** any wafer fabrication plant. FAB is

Intel's term for their factories that produce computer chips from silicon wafers.

**FAB 11:** Intel's expansion FAB in Rio Rancho, New Mexico.

**freedom:** something over which one has exclusive rights or exercises control.

**floating point unit (FLP):** specialized circuit for calculations using one or more decimal points. Can be on single chip or part of processor chip. Also called **MATH CO-PROCESSOR**.

**flow:** the rate of water discharged from a source given in volume with respect to time.

**Foreign Trade Zone (FTZ):** specially designated area with few or no tariffs or import restrictions. Raw materials or component parts may be brought in and processed or assembled. Completed products are shipped out for further work or to sell. Taxes are not paid until finished product is sold.

**freons (chlorofluorocarbons, trichlorofluoromethanes):** colorless, nearly odorless, volatile liquid, which is stable, and non-irritant. Has a depleting effect on the stratospheric ozone. A trademark name used for various nonflammable gaseous and liquid fluorinated hydrocarbons used as refrigerants and propellants for aerosols. See **CFC**.

**General Agreement on Tariffs and Trade (GATT):** formed in 1946 to promote expanded trade through reduced tariffs and coordinated trade policies. GATT is a series of agreements negotiated through its own international body. Eight rounds of negotiations have been held since 1948. The Uruguay Round was begun in 1987 and completed in early 1994. It is now being ratified by each member country before it takes effect. Beginning in the 1970s, negotiations have also tried to reduce non tariff trade barriers such as government procurement policies import licensing, and subsidies.

**gentrification:** the process whereby a neighborhood or commercial district is infiltrated by higher income residents and businesses, usually rendering the neighborhood's rents, property taxes, and cost of living unaffordable for those who have lived or worked in that area previously.

**glycol ether:** a type of solvent including compounds such as cellosolve, methyl cellosolve, and butyl cellosolve; exposure can cause weakness, anemia, headache, tremors, brain disease, and liver and kidney damage.

**Good Neighbor Agreement:** formal agreement between companies and the communities where they are located, promising ethical business practices and allowing co-signers to participate in decisions that will affect them.

**groundwater contamination:** poisoning of water which lies below ground level. Anything that reduces the quality of water in aquifers.

**groundwater level:** the elevation to which water rises in a well by gravitational force only.

**groundwater recharge:** the inflow of water to an underground reservoir or water-bearing formation.

**groundwater:** water obtained from underground surfaces.

**high-tech industry:** usually refers to firms involved with computers, electronics, lasers, advanced technology, or research and development as well as the software industry. Often contrasted with low tech industries such as steel mills, coal mines, and auto manufacturing. The work environment is less dirty and noisy and not as noticeable from the outside. Often claimed to be less dangerous and polluting, this is not true. The dangers are not obvious and damages may not be visible for many years. High-tech manufacturing industries commonly use materials that are highly toxic and the long-term health and environmental effects of many of them are unknown. The majority of jobs created by high-tech industries are low-paid, less-skilled positions that can include regular contact with toxic substances or manual, repetitive assembly-line work.

**hydrochloric acid:** a water solution of hydrogen chloride which is a strong corrosive acid, used in many stages of computer fabrication; exposure can cause skin, nose, and mucous membrane irritation, nasal erosion and ulcers, coughing, laryngitis, and bronchitis.

**hydrofluoric acid:** a water solution of hydrogen fluoride com-

monly used in computer fabrication; even small amounts splashed on skin cause debilitating burns.

**hydrogen fluoride:** airborne pollutant that can combine with moisture in the air to form hydrofluoric acid.

**hydrogen peroxide:** a compound of hydrogen and oxygen used as an oxidizing and bleaching agent, an antiseptic, and a propellant. It breaks down into water and oxygen during use.

**hypothyroidism:** deficient activity of the thyroid gland, resulting in a lower metabolic rate and general loss of energy. In children it causes growth problems.

**in-plant incineration:** burning industrial waste where it was produced.

**indigenous people:** the original residents of an area.

**Industrial Revenue Bonds (IRBs):** used to finance industrial development. City, county, or state governments sell bonds to investors. The money goes to build facilities the government will rent to private firms. The rent revenue is used to repay the investors. If there is not enough revenue, the government may be responsible for repaying the investors. Ideally, tax revenues are not supposed to repay the debt. Since a city or state owns them, the facilities have certain tax exemptions. In New Mexico, Intel and other firms have used IRBs solely for tax avoidance.

**integrated circuit (IC):** a single semiconductor device containing numerous electrical functions combined to form a complete circuit in a very small space. Most ICs are an inch square or smaller and a quarter inch thick.

**Intel "Ideal" Incentive Matrix:** a refined and comprehensive list of the most perfect set of tax incentives, infrastructure, resources, labor concessions, which Intel presents to prospective communities/governments in their effort to maximize their profitability-see jobmail

**irreversible organic mental syndrome:** permanent changes that affect normal brain functions.

**isopropyl alcohol:** flammable, dangerous fire risk. Toxic by ingestion and inhalation. Tolerance, 400 ppm in air. Explosive limits in air 2 to 12%. Ingestion of 100 cc can be fatal, a solvent alcohol used in many stages of building computers.

**jobmail:** explicit attempts by a company to obtain the maximum package of tax incentives and subsidies and infrastructure from state and local governments and the local labor force in order to induce the company to locate a facility or to retain a facility within a community.

**Local Emergency Planning Committees (LEPCs):** groups responsible for preparing for disasters. They are required by Federal law.

**liquid arsenic:** less toxic alternative to arsine gas used in chip manufacturing.

**lupus:** any of several diseases characterized by skin lesions.

**magnetic bubble:** a form of computer memory that was developed but was not commercially successful.

**mainframe:** term for very large computers.

**mass balance materials accounting:** making sure that everything used in manufacturing produces a finished product and the least amount of waste; the inputs should equal the output. The main goal is to reduce waste.

**methylene chloride:** narcotic in high concentrations. Toxic in high concentrations. Tolerance, 50-100 ppm.

**microelectronics:** a branch of electronics that deals with the miniaturization of electronic circuits and components.

**microprocessor:** a computer on a single semiconductor chip, or an integrated circuit capable of functioning as a small computer. The heart of a PC. The first successful chips were the 8086 and the 8088, introduced in the 1970s.

**minicomputer:** computers that are more powerful than PCs but not as large as mainframes. Often used in medium sized companies, they are made by DEC, Burroughs, IBM, and others.

**MRI:** magnetic resonance imaging. A non-invasive, nonradioactive method of taking pictures of the inside of objects, including the human body.

**n-butyl acetate:** flammable; moderate fire risk. Moderately toxic; skin irritant. Tolerance, 150 ppm in air, used in wafer fabrication and computer assembly.

**n-methyl-2-pyrrolidone:** a solvent used in cleaning and wafer fabrication, flammable, dangerous fire risk. Irritant to skin and eyes. Low toxicity.

**National Priorities List:** more than 1200 properties in the US determined by the EPA to pose the greatest threat to human health and the environment.

**neurotoxin:** a poisonous substance that is harmful to nerve and brain cells.

**New Mexico Investment Tax Credit (NMITC):** "unique" economic development tax incentive which allows a company to offset 5% of the value of qualifying equipment from tax obligations to include employee withholding liability.

**New Mexico State Emergency Response Commission (SERC):** state agency responsible for LEPCs; see Local Emergency Planning Committees.

**nitrogen:** a colorless, tasteless, odorless, gaseous element that constitutes 78% of the Earth's atmosphere by volume and occurs as a constituent of all living tissues in combined form, used in pure form in wafer fabrication, inhalation may cause death by asphyxiation.

**nominal ownership of real estate:** land technically owned but actually used and controlled by someone else.

**Non-Precursor Organics (NPOCs):** organic compounds that do not break down after use and disposal, may be hazardous.

**North American Free Trade Agreement (NAFTA):** treaty between Canada, United States, and Mexico that reduces or eliminates tariffs on products shipped between the three countries.

**ombudsman:** a government official or other person appointed to receive and investigate complaints made by individual against abuse or capricious acts by public officials; a neutral third-party chosen to settle disputes.

**oxygen:** most common element in the Earth's crust where it combines with other elements; makes up 12% of Earth's atmosphere. It may combine with many other elements to form various oxides.

**ozone:** a molecule consisting of three oxygen atoms and is a bluish irritating gas with a pungent odor; it is a pollutant in the lower atmosphere and protects the earth from ultraviolet rays in the upper atmosphere . It can be created at ground level by chemical reactions or electric fields.

**Pentium chip:** a processor chip made by Intel. The fifth-generation of chips that began with the 8086, followed by 286,386, and 486 types. Because numbers cannot be copyrighted, Intel chose a name in order to prevent competition that occurred with earlier chips. Intel's Pentium, is thousands of times more powerful than the first chips and has almost made the 386 and 486 versions obsolete.

**people of color:** a term used to refer to nonwhite people, used instead of the term 'minority' which implies inferiority and disenfranchisement (communities of color, etc.). The term emphasizes common historical, economic, social and cultural backgrounds.

**perchloroethane (PCA):** toxic by ingestion and inhalation. Strong irritant. Absorbed by skin. Tolerance, 1 ppm in air.

**perchloroethylene (PCE):** moderately toxic. Irritant to eyes and skin. Tolerance, 100 ppm in air.

**personal computer (PC):** microprocessor based computer system. New models are as powerful as mainframes were 10 years ago.

**Petroglyph National Monument:** national park adjoining Albuquerque city limits on the West Mesa and located just south of Intel in Rio Rancho; under severe threat of encroachment by development; a sacred site for the indigenous people.

**petroglyphs:** ancient drawings done on rock by Native Americans.

**phosphine:** a lethal gas made up from phosphorous and hydrogen. It is used as a dopant in semiconductor wafer production.

**plume:** refers to the spread of a substance in air or groundwater in three dimensions.

**positive photoresist applicators and developers:** chemicals used to etch silicon wafers when making chips.

**Precursor Organic Compounds (POCs):** organic compounds that may become (are precursors to) ozone smog.

**propane:** flammable gas used as fuel or as an aerosol propellant.

**protectionism:** when producers of a country react to foreign competition in their home market to protect their own products by placing restrictions (as high duties) on foreign competitive goods or subsidies to the local firms.

**Pueblo:** Pueblo Indian villages in the Southwest.

**racism:** power plus racial prejudice, a system that leads to oppression or discrimination of specific racial or ethnic groups.

**reactive airway disease:** disease of the lungs, throat, or nose caused by exposure to toxic substances.

**Record of Decision (ROD):** a document spelling out a legally binding administrative decision of a government agency, such as remedy selection by U.S. EPA at an NPL site.

**red blood cells:** part of blood that carries oxygen to other cells in the body.

**reproductive toxicity:** the characteristic of substances that cause problems with animal or human reproduction such as infertility, miscarriages, birth defects, or problems during pregnancy.



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**semiconductor:** material that is used to carry or conduct electricity, used to make integrated circuits or other electronic components. Silicon is the most common semiconductor.

**sewage effluent:** the liquid output of sewage treatment plants, as opposed to sludge, the solid output. It is returned to ground or surface waters by sewage treatment plants.

**silane:** flammable gas made by combining methane and silicon.

**silicon slivers and wafers:** pieces of pure silicon used to make integrated circuits. Wafers are usually thin six inch circles. Many chips can be made from one wafer.

**silicon:** second most common element in the Earth's crust. In nature it is always combined with other elements. Most common combination is silicon dioxide (silica), which forms glass, sand, quartz and other minerals. In pure form it is a semiconductor.

**sodium hydroxide:** strong caustic alkali used to make soap, paper, and to neutralize acids.

**solvent handling:** equipment and procedures used to handle solvents that may be highly flammable or toxic.

**solvent stations:** work locations that handle a large variety of solvents.

**spiritual interdependence:** needs shared by all inhabitants; necessary for a happy and meaningful life.

**spreadsheets:** computer software used mostly for bookkeeping and accounting purposes. Second most frequent use on PCs after word processing software.

**state engineer:** allocates water for the state of New Mexico, is appointed by the governor.

**streamflow:** rate of flow of water that occurs in a natural channel.

**streamlined regulatory permit process:** special treatment

given to some companies that bypasses or ignores normal health, safety, or environmental safeguards.

**sulfuric acid:** strong caustic acid used in making explosives, dyes, and fertilizers. Also known as oil of vitriol.

**Superfund Amendments and Reauthorization Act (SARA Title III):** 1976 amendments to CERCLA that require manufacturers and extractive industries to inform the government about some toxic substances that they use. It also requires them to report on substances released into the environment, giving rates, amounts, and other information.

**Superfund Law (CERCLA):** the Superfund fund only finances cleanup for which the responsible parties cannot be determined or do not have the funds to pay.

**Superfund site:** common term for sites on National Priorities List, they contain much pollution that affects many people and/or is very expensive to cleanup. When possible, the government attempts to have offending companies pay for cleanup, otherwise, cleanup is done with special taxes and ultimately at taxpayer expense. Most Superfund cleanups are paid for by their owners, operators or other responsible parties (polluters).

**surface water:** water obtained from land and water surfaces, such as rivers and lakes.

**sustainable development/sustainable communities:** longterm economic development strategy which is developed by communities, results in long-term job creation, protects the air, land and water, is based in the history and culture of the community (see economic justice & environmental justice).

**systemic intoxication:** results of toxic substances that affect the entire body.

**tax abatements:** lawful subsidies used by companies and individuals that help avoid paying taxes they would normally owe.

**tetrafluoromethane:** colorless gas, solvent, flammable. Moderately toxic by inhalation.

**thermal inversions:** weather condition where air is held in by

a larger air mass, becoming stale and contaminated. Common in valleys and during winter months.

**thermal oxidation:** using heat to break down toxic substances. See In-plant incineration.

**toxic emissions:** harmful gases or particles released into the air, soil, or water. Toxic emissions are usually considered separately from ozone precursors.

**toxic polluters:** companies, government agencies or other entities that create pollution and waste that is hazardous to animals and plants.

**toxic waste:** poisonous by-products of mining or manufacturing.

**toxin:** anything poisonous to living organisms. Technically a product of the metabolic activities of a life form.

**transistors:** one of the earlier, simplest form of semiconductors; an electronic valve; an integrated circuit contains the equivalent of two or more (millions) of transistors.

**trichloroethanes (1,1,1-TCA; 1,1,2-TCA, TCA):** irritating to eyes and tissue. Toxic and irritant. Absorbed by skin. Tolerance, 10 to 350 ppm in air, depending on location of chlorine bonds, it is also a major ozone depleter.

**trichloroethylene (1,1,1-TCE; TCE):** toxic by inhalation, Tolerance, 50 ppm in air. Use as solvent not permitted in some states. FDA has prohibited its use in foods, drugs, and cosmetics. Also called "trike."

**uranium:** radioactive element used in nuclear weapons and power plants.

**vinyl chloride:** highly flammable; severe explosion risk at 30,000 ppm. Tolerance for workroom exposure established by OSHA is 1 ppm. A known carcinogen.

**volatile organic compounds (VOCs):** substances containing carbon atoms that evaporate very quickly, such as chlorinated solvents.

**wafer fabrication:** process of making pure silicon that can be turned into integrated circuits; making chips from silicon wafers.

**water conservation:** those practices, techniques and technologies that will 1) reduce the consumption, loss or waste of water, 2) improve the efficiency in the use of water, or 3) increase the recycling and reuse of water, so that a water supply is available for alternative uses.

**water permit:** a legal document that grants authority to take state water and put it to beneficial use.

**water quality:** fitness of water for use, being affected by physical, chemical, and biological factors.

**water reuse:** using water successively for more than one purpose.

**water right:** a legally protected right, granted by law, to take possession of water, and to deliver the water and put it to beneficial use.

**water table:** the underground level where water is at atmospheric pressure and not free to flow from a well by gravity.

**well:** vertical opening, excavated or drilled, from the ground surface to a water-bearing stratum or aquifer.

**wet chemical stations:** work locations designed to handle and use liquids or wet materials.

**winter inversions:** see thermal inversions.

**Workers Compensation Law:** requires companies to compensate employees injured on the job.

**xylene:** Flammable, moderate fire risk; toxic by ingestion and inhalation. Tolerance, 100 ppm in air.

(some of these definitions came from: Hawley, Gessner. 1981. *The Condensed Chemical Dictionary*, tenth edition. Van Nostrand Reinhold Company, New York, New York)

CRT and SNEEJ have thoroughly researched their study communities for verifiable facts and data. This is a must read for those who care about the depletion of our scarce water resources in the west and southwest and the sustainability of our communities. This study does not argue for holding back technology. It does examine our obligation to advance a moral corporate commitment to equitably meet the needs of today without wasting the resources that future generations must have for a sustainable lifestyle.

*Judith M. Espinosa,  
former Secretary of Environment, State of New Mexico*

It is the spiritual belief by many Native American tribes in the Southwest that water is a gift of the Creator, water is life and must be respected. We are the original keepers of the water in these lands. There is no separation of water from humans, from habitat, from animate and inanimate things—we are all one and the same. If the water is depleted or contaminated with radioactive or toxic compounds, this will affect all humans, especially land-based cultures such as our Native populations.

*Tom Goldtooth (Diné)  
National Coordinator, Indigenous Environmental Network*

The voices of experience ring true throughout these reports, reflecting the wisdom of communities. Policy makers, at all levels, and corporate managers must learn to listen to these voices, and listen carefully to what is being said by the people and communities that are being deprived of their basic right to live, work and play in an environment that nurtures rather than destroys. No number of PhDs working around the clock, could match the quality of analysis found here. Communities can and will be heard. *Sacred Waters* is a fitting successor to *Intel Inside New Mexico*.

*Stephen Viederman,  
President, Jessie Smith Noyes Foundation*

*Sacred Waters* describes the importance of water, environmentally and spiritually to the people of the Southwest. It clearly describes how the electronics industry has affected the water quality and quantity of 4 communities—Austin, TX; Albuquerque, NM; Phoenix, AZ; and Silicon Valley, CA. This book is also important because it is a product of a unique collaboration between two networks, the Campaign for Responsible Technology and Southwest Network for Environmental and Economic Justice. It provides a model for all as we move together into the 21 Century.

*Richard Moore,  
Coordinator, Southwest Network for Environmental and Economic Justice*

