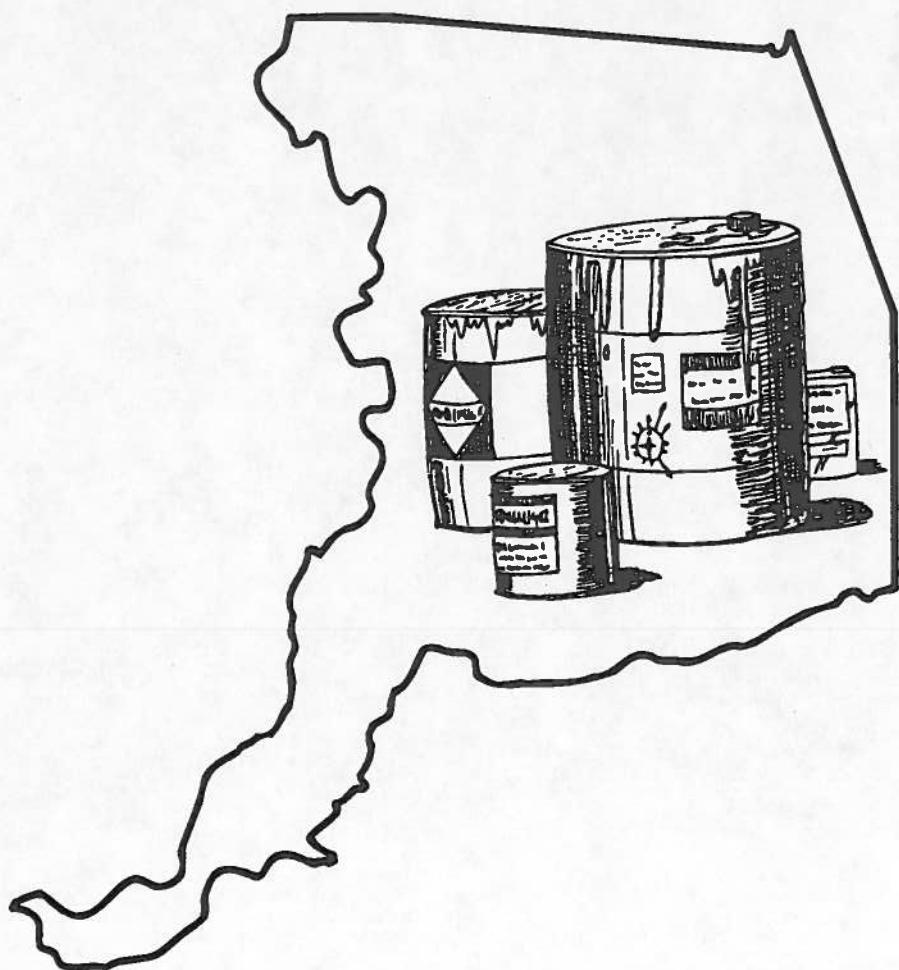


FINAL  
SACRAMENTO COUNTY  
HAZARDOUS WASTE  
MANAGEMENT PLAN



MAY 13, 1992

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**SACRAMENTO COUNTY**  
**HAZARDOUS WASTE MANAGEMENT PLAN**

**ADOPTED**  
**JANUARY 24, 1989**

**INCORPORATED INTO THE SACRAMENTO COUNTY GENERAL PLAN**  
**BY RESOLUTION NUMBER 92-0708**  
**MAY 13, 1992**

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**intro**

THE SACRAMENTO COUNTY HAZARDOUS WASTE MANAGEMENT PLAN

WAS JOINTLY PREPARED BY THE

SACRAMENTO COUNTY ENVIRONMENTAL MANAGEMENT DEPARTMENT,  
HAZARDOUS MATERIALS DIVISION

AND THE

SACRAMENTO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

FUNDING WAS PROVIDED BY THE CALIFORNIA LEGISLATURE  
THROUGH THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES

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## SACRAMENTO COUNTY HAZARDOUS WASTE MANAGEMENT PLAN

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SACRAMENTO COUNTY  
HAZARDOUS WASTE MANAGEMENT PLAN  
EXECUTIVE SUMMARY

INTRODUCTION

This Plan was prepared to fulfill the requirements of Assembly Bill 2948 (AB 2948), also known as the Tanner Bill. This legislation provided funding and an opportunity for each county in California to prepare a County Hazardous Waste Management Plan (CHWMP, or Plan).

The California Land Disposal Restriction Program served as the driving force to explore alternative methods of handling hazardous wastes. The Land Disposal Restriction Program was initiated in December, 1986 when the State adopted regulations and a timeline that would phase out the disposal of untreated hazardous wastes in California by May 1990.

The purpose of the Plan is to:

1. Identify current hazardous waste streams, to estimate future waste streams, and then to determine future needs for facilities to manage hazardous waste generated in the County.
2. Develop and implement a process, including siting criteria, for local review of proposed off-site hazardous waste facilities.
3. Create a consistent hazardous waste management system which applies to Sacramento County and the cities of Folsom, Galt, Isleton, and Sacramento.
4. Require efforts to reduce the amount and toxicity of hazardous waste to the maximum extent technically and economically feasible.
5. Provide the public, industry, and local government with the information needed to take steps to minimize hazardous waste generation; and recycle, treat, and otherwise manage hazardous waste generated in Sacramento County.
6. Set waste reduction goals that can be used to monitor the success of this Plan.

While the Plan identifies general geographic locations where facilities are unsuitable, the Plan does not provide specific facility sites. Facility siting proposals will be subject to the following assessments.

1. Consistency with the Plan.
2. Site specific analysis.
3. Preparation of a site specific environmental document.

**TABLE i-1**  
**HIERARCHY OF HAZARDOUS WASTE**  
**MANAGEMENT APPROACHES**  
**FOR SACRAMENTO COUNTY**

**1. SOURCE REDUCTION**

Measures that reduce the generation of hazardous waste before it is produced.

**2. ON-SITE RECYCLING/RESOURCE RECOVERY**

Measures that reuse hazardous waste products. Recycling or resource recovery occurs at the same location where the hazardous waste was generated. In some cases, a residual may remain after recycling.

**3. OFF-SITE RECYCLING/RESOURCE RECOVERY**

Measures that reuse hazardous waste products. Hazardous waste must be transported to another location for recycling or resource recovery. In some cases, a residual may remain after recycling.

**4. ON-SITE TREATMENT**

Processes that change the composition of waste from hazardous to nonhazardous. Treatment occurs at the same location where the hazardous waste was generated. Some hazardous waste residual may remain after treatment.

**5. OFF-SITE TREATMENT**

Processes that change the composition of waste from hazardous to nonhazardous. Hazardous waste must be transported to another location for treatment. Some hazardous waste residual may remain after treatment.

**6. DISPOSAL**

To abandon, deposit, inter, or otherwise discard waste as a final action after its use has been achieved or a use is no longer intended.

**NOTE:** Only on-site activities (approaches 1, 2, and 4) are considered "waste reduction," since only these activities will reduce the need for additional off-site facilities. Only source reduction and recycling/resource recovery (approaches 1, 2, and 3) are considered waste "minimization", since only these activities conserve resources and minimize treatment and disposal needs.

#### HAZARDOUS WASTE DEFINITION

Hazardous waste is a waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either:

1. Cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness.
2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Unless expressly provided otherwise, the term "hazardous waste" shall be understood to also include extremely hazardous waste. (Section 25117, Health and Safety Code).

#### HAZARDOUS WASTE MANAGEMENT HIERARCHY

A hierarchy of hazardous waste management approaches is spelled out in the Guidelines for this Plan. That hierarchy, in order of preference, is contained in Table i-1, and discussed in detail in Section 7. The hierarchy represented in Table i-1 is of waste management techniques and does not represent siting preferences.

Waste reduction is distinct from waste minimization. Waste minimization describes the County, State, and private industry effort to eliminate waste generation to the extent possible, and to conserve resources through recycling. This includes source reduction, on-site recycling/resource recovery, and off-site recycling/resource recovery (items 1,2, and 3 in the hazardous waste management hierarchy). Since waste minimization includes management by off-site recycling facilities, the benefits of waste minimization efforts can not all be claimed to reduce the need for off-site facilities. Therefore, the goals outlined in this section relate only to waste reduction. This is defined as on-site activities that reduce the need for off-site hazardous waste facilities. This includes source reduction, on-site recycling/resource recovery, and on-site treatment (items 1, 2, and 4 in the hazardous waste management hierarchy).

#### FACILITY DEFINITIONS

The detailed legal definitions which will apply during the review and siting process are in the Glossary at the end of Section 1. The terms used in this Plan do not apply to solid waste facilities.

The following are simplified definitions of the different types of hazardous waste facilities that are discussed in this Plan:

1. Disposal facility: Also known as residuals repository, this type of facility provides for final interment of approved treated hazardous waste or treatment residuals.

2. Facility: This term applies to all types of hazardous waste management facilities, both on-site and off-site. It includes mobile facilities. A facility may include one or more regulated hazardous waste units.
3. Off-site facility: This term applies to commercial, multi-user hazardous waste treatment or disposal facilities that accept waste from generators in other locations.
4. On-site facility: This term applies to hazardous waste treatment or disposal facilities that are located within the boundaries of a hazardous waste generator's operation and under the sole control of that generator.
5. Transfer station: This term applies to facilities where hazardous waste is repackaged, stored, transferred, or consolidated before shipment to treatment or disposal facilities.
6. Treatment facility: This term applies to hazardous waste recycling, treatment, solidification, stabilization, and incineration facilities. Note that recycling facilities are included in this facility category, but that recycling as a management approach is distinct from treatment. Also note that incineration facilities will require a larger buffer than other types of treatment facilities (see Section 13).

POLICIES FOR SACRAMENTO COUNTY'S  
HAZARDOUS WASTE MANAGEMENT PLAN

August 30, 1988

GUIDING POLICY

The cities of Folsom, Galt, Isleton, and Sacramento and the County of Sacramento intend to protect residents, workers, industry, and the environment by assuring proper management of hazardous materials, including hazardous waste.

FAIR SHARE POLICY

New off-site hazardous waste management facilities shall be primarily limited to a scale necessary to meet the hazardous waste management needs of this county; larger facilities may be permitted in accordance with agreements reached between this County and other jurisdictions or upon determination of the local governing body that the project meets local planning criteria and serves public needs.

The County and its cities recognize their collective responsibility to cooperate with other governments in the region and the state in planning for the effective management of hazardous wastes generated in the region and the state in accordance with the hazardous waste management hierarchy. Sound hazardous waste management planning, waste reduction efforts, and appropriate

facility siting are the mutual responsibility of all governments. To this end, the County and its cities encourage multi-county and regional efforts to plan and implement alternatives to land disposal of untreated hazardous wastes and to limit the risks posed by the transportation of hazardous wastes around the state. Agreements for new facilities to provide the off-site capacity needed for hazardous waste treatment and residuals disposal should be reached among jurisdictions according to their fair share of the hazardous waste stream, each jurisdiction's environmental suitability for different types of facilities, their economic interests, and the economic viability of different types and sizes of facilities. Such facilities must not undercut incentives for industry to maximize source reduction strategies in Sacramento County. Any privately-owned facility located in this county shall be available to serve generators from inside and outside the county.

"Fair share" denotes that each county is responsible for the disposition of its own waste; that is, responsible for its fair share of waste management. No county should be expected to establish a hazardous waste facility with a capacity exceeding the amount of waste they generate. A county cannot be required to accept a facility with a capacity that exceeds the county's own needs, except as provided by an inter-jurisdictional agreement. It is recognized that the waste streams in each county will probably not support an economically efficient hazardous waste facility of each type needed to handle a county's waste. Therefore, counties are encouraged to enter into inter-jurisdictional agreements to balance economic efficiency in the size of facilities and to responsibly handle their fair share of the wastes generated.

#### SPECIFIC POLICIES

1. Public participation will be stressed at all times during the preparation and implementation of this Plan.
2. This Plan will be reviewed at least every four years to monitor success and account for changes in waste generation, technology, management practices, and legislation. To facilitate this effort, Sacramento County will share information pertaining to inter-county movement of hazardous wastes with other counties.
3. The entire community must fairly share the responsibility to properly manage hazardous waste.
4. Sacramento County will assume the responsibility for enforcing the State's hazardous waste control regulations (Title 22) governing hazardous waste generators, including inspections and enforcement, with coordination through a Memorandum of Understanding with the California Department of Health Services.
5. Sacramento County will create local programs to provide generators with technical assistance on the proper management of hazardous waste.

6. Local programs will stress waste reduction at the source (source reduction). Producing less hazardous waste means less requiring recycling, treatment, or disposal.
7. Local programs will work to minimize the risks of hazardous waste by prioritizing management strategies. The preferred priority is: source reduction, on-site recycling, off-site recycling, on-site treatment, off-site treatment, and disposal.
8. Hazardous waste management facilities will be sited considering the needs of public health, the community, the environment, and industry.
9. Siting decisions regarding hazardous waste management facilities must not undercut incentives for industry to maximize source reduction strategies in Sacramento County.
10. Land use controls or other local permits will be used as appropriate to separate both on-site and off-site hazardous waste management facilities from incompatible land uses.
11. Sacramento County recognizes that different types of hazardous waste management facilities are appropriate in different areas, and will site facilities accordingly.
12. Transportation of hazardous waste will be minimized, and regulated where possible, to avoid environmentally sensitive areas and populated, congested, and dangerous routes.
13. The regulations governing the discharge of hazardous waste into sewer systems will be strictly enforced. The County's sewer use ordinance will be amended as required to support the County's waste reduction program.
14. The Air Pollution Control District or its successor will continue to examine the problem of toxic air contaminants, and regulate these emissions as necessary.
15. Sacramento County will work to protect groundwater resources, which supply much of the drinking water in the County.
16. Sacramento County will continue to provide means for household hazardous waste collection, while developing a program to reduce the volume of this waste.
17. Where technical assistance and cooperation do not result in compliance with hazardous waste regulations, Sacramento County will rely on strict enforcement and prosecution.

#### HAZARDOUS WASTE VOLUMES

This Plan identifies the current year and year 2000 needs for additional hazardous waste treatment facilities in Sacramento County. The following table (i-2) summarizes current waste volumes.

Table i-3 projects the current waste volumes summarized in Table i-2 through the timeframe of this Plan, assuming no new waste reduction measures are implemented. Volumes grow significantly to the year 2000.

Table i-4 presents the projected hazardous waste volumes for the years 1992 and 2000, assuming waste reduction measures are implemented. Projected waste volumes decline substantially from the current total, due to the waste reduction goals set in this Plan. The waste volume estimates shown are the basis for facility siting needs outlined in this Plan.

#### FACILITY NEEDS

Tables i-5, i-6, and i-7 summarize the treatment facility needs for the year 2000. The first table in this series calculates waste volumes assuming that existing commercial facilities in other counties do not continue to receive waste from Sacramento County, but that currently proposed facilities in Sacramento County are available. Table i-6 translates these volumes into treatment processes, and calculates the expected volume of post-treatment residuals. The final table (i-7) in this series estimates the total volume of hazardous waste that will require additional treatment or disposal facilities.

**TABLE i-2**  
**CURRENT OFF-SITE WASTE MANAGEMENT**  
**IN SACRAMENTO COUNTY**

Waste Group	Waste Sources				
	'85-'86 Average Manifested Wastes (Tons) (1)	Contaminated Sites & Drilling Muds (Tons)	Small Quantity Generators (Tons)	House-Hold Wastes (Tons)	Total Estimated Volume (Tons)
1. Waste Oil	16,190		3,070	690	19,950 (2)
2. Halogenated Solvents	240		610		850
3. Non-Halogenated Solvents	1,720		580	5,940	8,240
4. Organic Liquids	5,030		330	160	5,520
5. Pesticides	1,960		400	610	2,970
6. PCBs and Dioxins	970		50	80	1,100
7. Oily Sludges	1,560		250		1,810
8. Halogenated Organic Sludges & Solids	30		90		120
9. Non-Halogenated Organic Sludges & Solids	440		100		540
10. Dye & Paint Sludges and Resins	230		140		370
11. Metal-Containing Liquids	410		90	1,070	1,570
12. Cyanide & Metal Liquids	20		10		30
13. Non-Metallic Inorganic Liquids	6,280		230	370	6,880
14. Metal Containing Sludges	20		100		120
15. Non-Metallic Inorganic Sludges	680	1,880	180		2,740 (3)
16. Contaminated Soil	7,610				7,610
17. Miscellaneous Wastes	3,200		2,760	650	6,610
<b>TOTAL</b>	<b>46,590</b>	<b>1,880</b>	<b>8,990</b>	<b>9,570</b>	<b>67,030</b>

1. Wastes exported by transfer stations in Sacramento County (American Environmental Management Corp. and Safety Kleen) were subtracted from manifested wastes. Values from Appendix E, Table 13.
2. Includes 11,540 tons of waste oil from route service haulers.
3. Actual average manifested volume of contaminated soils for 1985 and 1986 is 6,420 tons. In this table that value is replaced with 7,610 tons, the volume of soil estimated based on total contaminated sites cleanups over the planning period. See Table 5-9 for a detailed discussion.

**TABLE i-3**  
**PROJECTED OFF-SITE WASTE MANAGEMENT**  
**IN SACRAMENTO COUNTY WITHOUT WASTE REDUCTION (1)**

Waste Group	Year of Volume Estimate		
	Current (Tons)	1992 (Tons)	2000 (Tons)
1. Waste Oil	19,950	22,030	25,810
2. Halogenated Solvents	850	940	1,100
3. Non-Halogenated Solvents	8,240	9,100	10,660
4. Organic Liquids	5,520	6,090	7,140
5. Pesticides	2,970	3,280	3,840
6. PCBs and Dioxins	1,100	1,210	1,420
7. Oily Sludges	1,810	2,000	2,340
8. Halogenated Organic Sludges & Solids	120	130	160
9. Non-Halogenated Organic Sludges & Solids	540	600	700
10. Dye & Paint Sludges and Resins	370	410	480
11. Metal-Containing Liquids	1,570	1,730	2,030
12. Cyanide & Metal Liquids	30	30	40
13. Non-Metallic Inorganic Liquids	6,880	7,600	8,900
14. Metal Containing Sludges	120	130	160
15. Non-Metallic Inorganic Sludges	2,740	3,030	3,540
16. Contaminated Soil	7,610	7,610	7,610 (3)
17. Miscellaneous Wastes	<u>6,610</u>	<u>7,300</u>	<u>8,550</u>
<b>TOTAL</b>	<b>67,030</b>	<b>73,220</b>	<b>84,480</b>

1. Calculated at 2% population growth per year, except for contaminated soil.
2. From Table 5-23.
3. Contaminated soil volume transported off-site is projected to remain constant throughout the study period.

**TABLE i-4**  
**PROJECTED OFF-SITE WASTE MANAGEMENT**  
**IN SACRAMENTO COUNTY WITH WASTE REDUCTION (1)**

Waste Group	Year of Volume Estimate		
	Current (2) Tons	1992 Tons	2000 Tons
1. Waste Oil	19,950	18,280	15,740
2. Halogenated Solvents	850	780	670
3. Non-Halogenated Solvents	8,240	7,550	6,500
4. Organic Liquids	5,520	5,060	4,360
5. Pesticides	2,970	2,720	2,340
6. PCBs and Dioxins	1,100	1,010	870
7. Oily Sludges	1,810	1,660	1,430
8. Halogenated Organic Sludges & Solids	120	110	90
9. Non-Halogenated Organic Sludges & Solids	540	490	430
10. Dye & Paint Sludges and Resins	370	340	290
11. Metal-Containing Liquids	1,570	1,440	1,240
12. Cyanide & Metal Liquids	30	30	20
13. Non-Metallic Inorganic Liquids	6,880	6,300	5,430
14. Metal Containing Sludges	120	110	90
15. Non-Metallic Inorganic Sludges	2,740	2,510	2,160
16. Contaminated Soil	7,610	7,610	7,610 (3)
17. Miscellaneous Wastes	<u>6,610</u>	<u>6,060</u>	<u>5,220</u>
<b>TOTAL</b>	<b>67,030</b>	<b>62,060</b>	<b>54,490</b>

1. Calculated at 2% growth per year (except for contaminated soil) minus 17% waste reduction by 1992 and 39% waste reduction by 2000.
2. From Table 5-23.
3. Contaminated soil volume transported off-site is projected to remain constant throughout the study period. Contaminated soil is not subject to waste reduction.

**TABLE i-5**  
**SCENARIO II**  
**YEAR 2000 WASTE VOLUMES**

**Assuming 39% Waste Reduction and Availability of Currently Proposed Facilities**

<u>Waste Group</u>	<u>Year 2000 Generation (Tons) (1)</u>	<u>Treatment Process (2)</u>
1. Waste Oil	15,740	5
2. Halogenated Solvents	670	4
3. Non-Halogenated Solvents	6,500	4
4. Organic Liquids	4,360	6
5. Pesticides	2,340	1
6. PCBs & Dioxins	870	3
7. Oily Sludges	1,430	5
8. Halogenated Organic Sludges & Solids	90	3
9. Non-Halogenated Organic Sludges & Solids	430	3
10. Dye & Paint Sludges & Resins	290	3
11. Metal-Containing Liquids	1,240	2
12. Cyanide & Metal Liquids	20	2
13. Non-Metallic Inorganic Liquids	5,430	2
14. Metal-Containing Sludges	90	7
15. Non-Metallic	2,160	7
16. Contaminated Soil	7,610	6
17. Miscellaneous Wastes	<u>5,220</u>	<u>7 &amp; 6</u>
<b>TOTAL</b>	<b>54,490</b>	

1. From Table 8-1. Excludes waste that is generated and treated on-site.
2. See Table 10-5B for number references. Treatment processes as suggested by Guidelines Table E-1. All are "Primary Treatment Method" except contaminated soil, which is assigned to the "alternative treatment method" since bioremediation (other recycling) is preferable to incineration in a non-attainment air area.

TABLE i-6  
SCENARIO II

YEAR 2000 RESIDUALS REMAINING AFTER TREATMENT (1)

Assuming 39% Waste Reduction and Availability of Currently Proposed Facilities

<u>Treatment Method</u>	Year 2000 Total Volumes Requiring In-County Treatment (Tons) (2)	Treatment Residual Factor (3)	Residual Volumes (Tons)
1. Aqueous Treatment-Organic	2,340	10%	230
2. Aqueous Treatment-Metals/Neutralization	6,690	50%	3,350
3. Incineration	1,680	10%	170
4. Solvent Recovery	7,170	20%	1,430
5. Oil Recovery	17,170	20%	3,430
6. Other Recycling	14,580 (4)	20% (5)	2,920
7. Stabilization	<u>4,860 (4)</u>	120%	<u>5,830</u>
<b>TOTAL</b>	<b>54,490</b>		<b>17,360</b>

1. Assumes all hazardous waste streams are processed (treated recycled, etc.).
2. From Table 10-5A.
3. DOHS 1987.
4. Assumes 50% of miscellaneous waste is recycled and 50% is stabilized.
5. No percentage estimate was provided by DOHS for "Other Recycling". 20% is assumed based on percentage estimates of solvent recovery and oil recovery.

TABLE i-7

## SCENARIO II

## YEAR 2000 WASTE VOLUMES REQUIRING IN-COUNTY COMMERCIAL FACILITIES

Assuming 39% Waste Reduction and Availability of Currently Proposed Facilities

Treatment Method	Year 2000		
	Total Volumes Requiring In-County Treatment (Tons) (1)	Capacity of Proposed Facilities (Tons)	Residual Volume (Tons) (2)
1. Aqueous Treatment-Organic	2,340	41,000	0
2. Aqueous Treatment-Metals/Neutralization	6,690	41,000	0
3. Incineration	1,680	0	1,680
4. Solvent Recovery	7,170	0	7,170
5. Oil Recovery	17,170	0	17,170
6. Other Recycling	14,580	33,000	0 (3)
7. Stabilization	4,860	0	4,860 (3)
<b>TREATMENT TOTAL</b>	<b>54,490</b>	<b>115,000</b>	<b>30,880</b>
8. Residual After Off-Site Treatment			17,360 (4)

1. From Table 10-5A.

2. Totaled by process type from Table 10-5B.

3. Assumes 50% of miscellaneous wastes are recycled and 50% are stabilized.

4. From Table 10-5B.

THIS ILLUSTRATION  
IS FOR GENERAL  
INFORMATION ONLY.  
For specific  
siting criteria  
see Section 13.

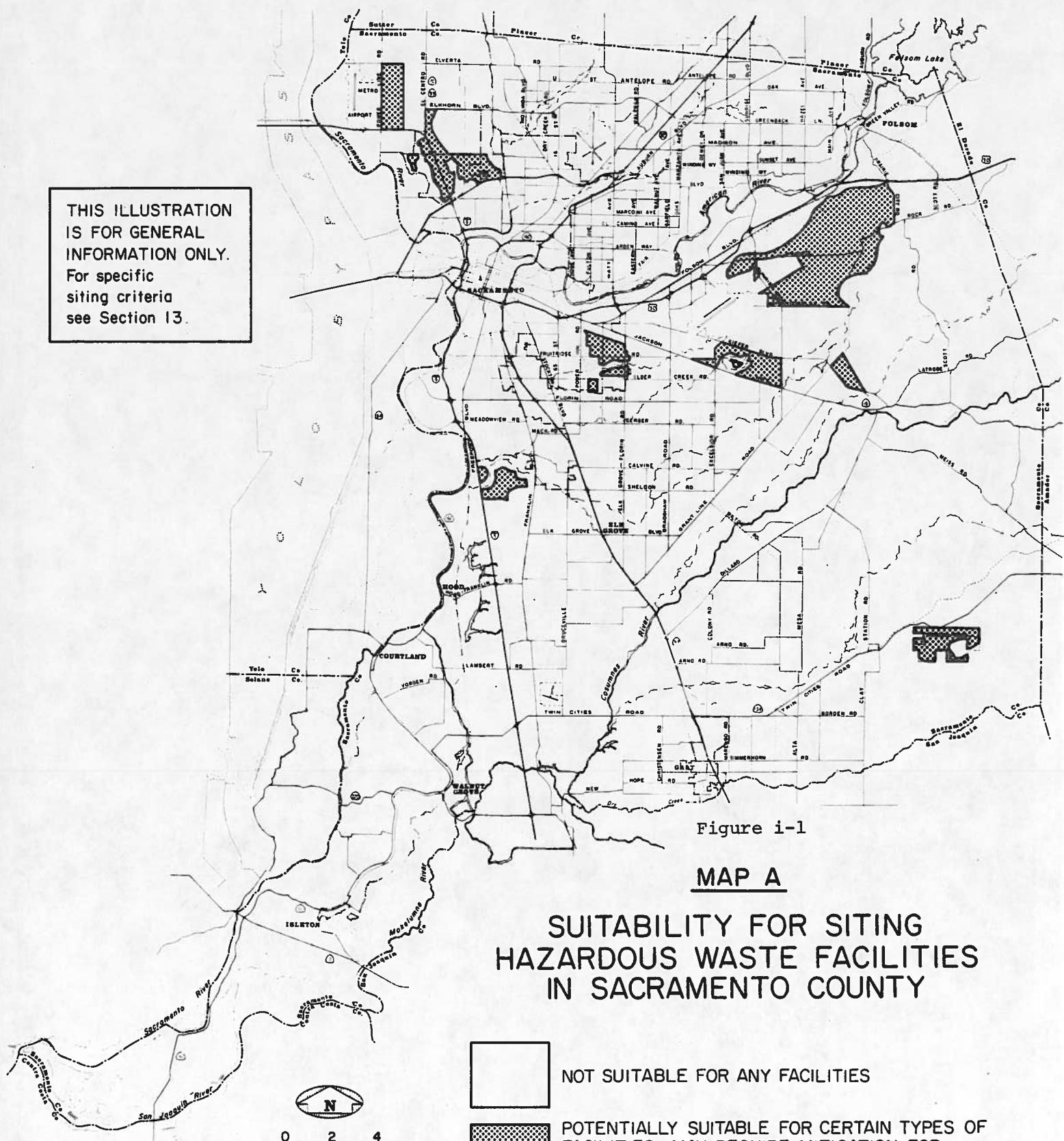


Figure i-1

## MAP A

# SUITABILITY FOR SITING HAZARDOUS WASTE FACILITIES IN SACRAMENTO COUNTY



NOT SUITABLE FOR ANY FACILITIES



POTENTIALLY SUITABLE FOR CERTAIN TYPES OF FACILITIES. MAY REQUIRE MITIGATION FOR IDENTIFIED CONSTRAINTS. SEE MAP A INSIDE BACK COVER FOR DETAIL.

### FACILITY SITING CONSTRAINTS

General areas in the County that are most suitable for a hazardous waste facility are shown on Figure i-1 (Map A). This map shows over 25,000 acres within Sacramento County that are potentially suitable for different types of hazardous waste facilities. One-third of this area has no identified constraints, while the remainder would require mitigation for constraints or is unavailable for disposal facility construction (See large-scale Map A inside back cover for details). This acreage is scattered throughout the county, except for the Delta. It is well-located near existing and planned industrial tracts. (In fact, the majority of the land that is potentially suitable for hazardous waste facilities is already designated for industrial uses). The conclusion of this constraints analysis is that sufficient land is available in Sacramento County to meet our hazardous waste disposal needs well into the future.

### IMPLEMENTATION

Implementation of this Plan will occur in two phases. First, within 180 days of the final approval of this Plan by the Department of Health Services, local General Plans and land use controls must be brought into consistency with this Plan. Second, implementation will continue with ongoing programs that will be conducted throughout the period this Plan is in effect.

### LOCAL REVIEW PROCESS

After pre-application conferences have taken place and 90 days after the Notice of Intent (NOI) has been filed, the project proponent may apply for a local Conditional Use Permit (Use Permit). All off-site hazardous waste management facilities and on-site facilities deemed to pose a significant risk within Sacramento County (including cities) will require the following:

1. Environmental review. Almost every proposal that requires governmental review of a physical development in California will also require the completion of a rigorous environmental review. The California Environmental Quality Act of 1970 (CEQA) enables public agencies and the general public to determine whether an activity or project may have the potential to irreparably harm the environment, to examine and implement methods of reducing adverse environmental impacts, to consider alternatives to a project as it has been proposed, and to disclose to the public the reasons why a governmental agency approved a project in the manner the agency chose if significant environmental effects are involved. The Cities of Sacramento, Folsom, Galt, and Isleton conduct initial studies and prepare Negative Declarations, but contract with consultants for the preparation of EIRs. When the County of Sacramento is the lead agency, the Environmental Impact Section of the Planning and Community Development Department prepares all environmental documents for projects including EIRs. Hazardous waste facilities requiring rezones or Use Permits will be subject to review under CEQA.

2. The appropriate General Plan designation. All off-site transfer stations and treatment facilities, and all disposal facilities, must be located in areas with industrial designations. On-site treatment facilities may be located in either industrial or commercial areas. Currently, the Sacramento County General Plan uses overlay symbols to specify the location of various types of solid waste facilities (transfer stations, landfills, and closed landfills). This system will also serve to designate the location of hazardous waste facilities, by providing a symbol for such facilities. The four cities will need to adopt a similar overlay symbol.
3. Appropriate zoning for the project site. All off-site transfer stations, and treatment facilities, and all disposal facilities must be located in industrial zones. On-site treatment facilities may be located in either industrial or commercial zones.
4. A Use Permit. Use Permits will serve as the local review mechanism for all types of off-site and some on-site hazardous waste management facilities (transfer stations, treatment facilities, and incinerators and residuals repositories), including mobile facilities. This review process will allow the local decision makers to make sure a facility is consistent with this Plan and conforms to the siting criteria discussed below.

On-site facilities deemed to pose no significant risk will require an administrative permit to operate from the Sacramento County Environmental Management Department. The process which will be developed to screen on-site facilities is described in Section 13 under New Programs

#### ACTIONS REQUIRED WITHIN 180 DAYS OF PLAN APPROVAL

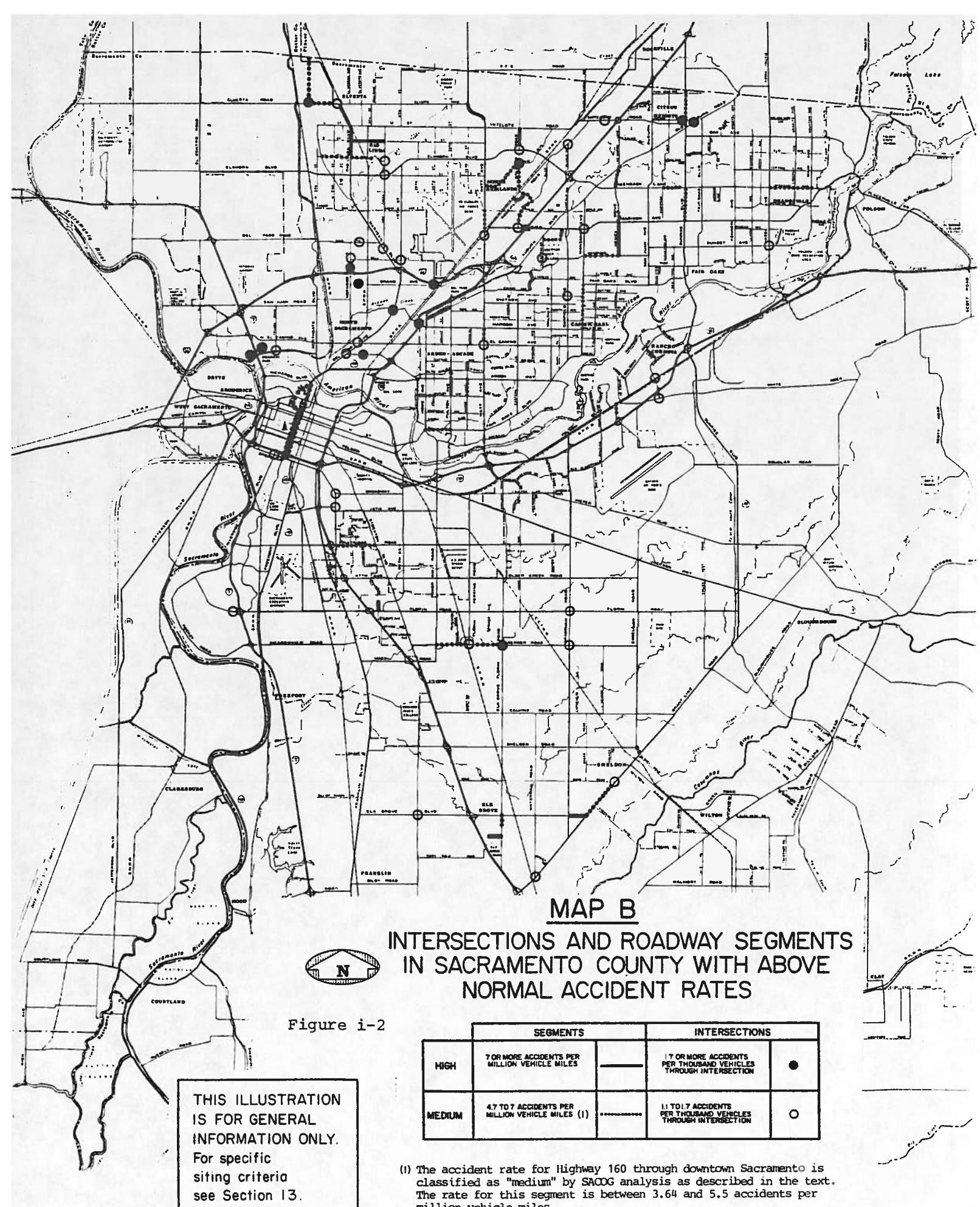
Sections 25135.7(c) and (d) of the Health and Safety Code (added by SB 477) require that local General Plans and zoning controls be brought into conformance with an approved county hazardous waste management plan within 180 days of DOHS approval of the final Plan. This section outlines the steps that Sacramento County and each of the four cities within the County must take to achieve this conformance.

1. Incorporate SCHWMP into General Plans: Sacramento County and each of the cities must perform each of the following functions to bring their local general plans into conformance with this Plan:
  - A. Incorporate this Plan either entirely or by reference into the local General Plan. The cities may chose to impose more stringent siting criteria.
  - B. Modify any policies in the existing General Plan that are in conflict with this Plan.

- C. Amend the policies contained in Section 2 of this Plan directly into the local General Plan text where appropriate (Policies 2, 4, 5, 14, and 16 are directed at County, rather than City programs).
- D. Provide for a symbol on the General Plan Land Use Map to mark the location of hazardous waste facilities which have been granted Use Permits. The local jurisdiction is responsible for placing symbols on the Map.

2. Modify Zoning Codes to Regulate Hazardous Waste Facilities: Hazardous waste facilities are currently regulated differently in each jurisdiction in Sacramento County. Now that a countywide hazardous waste management system is being developed, it is necessary to develop uniform regulations. Within 180 days of DOHS approval of this Plan, each jurisdiction in the County must be sure its zoning code contains the following provisions:

- A. All off-site hazardous waste facilities require a Use Permit. On-site facilities require either an administrative permit from EMD, or a Use Permit from the local land use authority. The local permitting process is intended to assure adequate protection for public health and environmental safeguards, without imposing undue restrictions on projects. The proposed local permitting of on-site facilities is described under Program Recommendations in Section 13.
- B. All off-site hazardous waste facilities and on-site facilities requiring a use permit must meet the criteria listed in this Section.
- C. Appropriate zoning designations which allow for the following types of off-site facilities:
  - Transfer Stations in Industrial Zones only;
  - Treatment Facilities in Industrial Zones only; and
  - Disposal Facilities in Industrial Zones only.
- D. Appropriate zoning designations which allow for the following types of on-site facilities:
  - Treatment Facilities in either Industrial or Commercial Zones only.
- E. The minimum distance (from actual use) for off-site multi-user facilities from individual residences or residential zones shall be:
  - Transfer Stations and Treatment Facilities: 500 feet; a greater setback may be required based on a risk analysis;
  - Disposal Facilities and Incinerators: 2,000 feet; greater setback may be required based on a risk analysis.



Applying these uniform land use controls in every jurisdiction in Sacramento County will benefit both industry and residents. Firms wishing to locate facilities in the County will not be confronted with differing or conflicting requirements. Also, residents will be assured that no facility will be located improperly due to less stringent standards being applied by a particular jurisdiction.

#### PROGRAM RECOMMENDATIONS

Section 3 of this Plan outlines existing programs which deal directly or indirectly with hazardous waste. Several of these programs could be modified to better serve residents of the County by:

1. Providing for the collection of household motor oil throughout the County.
2. Improving screening to reduce improper disposal of hazardous waste through solid waste collection programs.
3. Examining alternatives to the current household hazardous waste programs.

#### NEW PROGRAMS

Two major new programs should be developed by the new Sacramento County Environmental Management Department.

1. Sacramento County will assume the responsibility for enforcing the State's hazardous waste control regulations (Title 22).
2. Sacramento County will develop a technical assistance and waste minimization program.

Both the Title 22 program and the technical assistance program could be operated jointly. These programs can be funded through a combination of sources, including:

- Title 22 generator inspection fees;
- Solid waste collection fees; and,
- Taxes on gross revenues at hazardous waste treatment facilities.

In addition, a minor new program will be developed by the Environmental Management Department. This program will provide a preliminary screening process to separate on-site facilities with potentially significant risks from those with no significant risk. Routine, small-scale on-site facilities in the latter category will receive administrative permits to operate. On-site facilities which pose potentially significant risks will be subject to the Use Permit review process in the appropriate local jurisdiction. The program to develop this screening process is described in Section 13.

#### FURTHER STUDIES

This Plan has been developed with the best information available at this time. To improve this Plan in the future, and provide for better regulation of hazardous waste, several additional studies should be performed. These include:

1. Study the intersections and routes highlighted on Figure 13-2 (Map B), and impose restrictions on hazardous waste transport as appropriate.
2. Study alternatives to the household hazardous waste collection days.
3. Study methods to provide hazardous waste collection for small businesses.
4. Study methods to improve waste oil collection.

#### PLAN UPDATE

A reassessment of the information and recommendations included in this Plan will be necessary. Unless it becomes necessary earlier, this review should take place in 1992. This will provide sufficient time for new County programs to be developed.

The review of this Plan need not be as costly as the original preparation. New programs that will be in place at that time will provide data that was unavailable in 1987. This will greatly facilitate revision. The funding necessary for whatever remaining work must be done can come from Title 22 fees or surcharges on facility Use Permits.

## Section 1

### INTRODUCTION

Hazardous waste is an unwelcome by-product of our way of life. Industry, small businesses, and households all contribute to the volume of hazardous waste produced in Sacramento County. This Plan is an important first step towards understanding the problem, and identifying goals and solutions that will work to protect our environment. Government, industry, businesses, and individuals all have a role in this effort.

This Plan was prepared to fulfill the requirements of Assembly Bill 2948 (AB 2948), also known as the Tanner Bill. This legislation provided funding and an opportunity for each county in California to prepare a County Hazardous Waste Management Plan (CHWMP, or Plan). While the Tanner Bill promotes waste reduction measures, its primary focus is to facilitate the siting of hazardous waste disposal and treatment facilities.

The California Land Disposal Restriction Program served as the driving force to explore alternative methods of handling hazardous wastes. The Land Disposal Restriction Program was initiated in December, 1986 when the State adopted regulations and a timeline that would phase out the disposal of untreated hazardous wastes in California by May, 1990.

The Plan prioritizes siting needs to handle the waste generated within the County. Although Sacramento County generates a wide variety of wastes, the volumes generated of certain types are minimal. Intercounty agreements to share certain types of facilities can reduce overall siting needs.

The purpose of the Plan is to:

1. Identify current hazardous waste streams, estimate future waste streams, and determine future needs for facilities to manage hazardous waste generated in the County.
2. Develop and implement a process, including siting criteria, for local review of proposed off-site hazardous waste facilities.
3. Create a consistent hazardous waste management system which applies to Sacramento County and the cities of Folsom, Galt, Isleton, and Sacramento.
4. Require efforts to reduce the amount and toxicity of hazardous waste to the maximum extent technically and economically feasible.
5. Provide the public, industry, and local government with the information needed to take steps to minimize hazardous waste generation; and recycle, treat, and otherwise manage hazardous waste generated in Sacramento County.
6. Set waste reduction goals that can be used to monitor the success of this Plan.

TABLE 1-1  
HIERARCHY OF HAZARDOUS WASTE  
MANAGEMENT APPROACHES  
FOR SACRAMENTO COUNTY

1. SOURCE REDUCTION

Measures that reduce the generation of hazardous waste before it is produced.

2. ON-SITE RECYCLING/RESOURCE RECOVERY

Measures that reuse hazardous waste products. Recycling or resource recovery occurs at the same location where the hazardous waste was generated. In some cases, a residual may remain after recycling.

3. OFF-SITE RECYCLING/RESOURCE RECOVERY

Measures that reuse hazardous waste products. Hazardous waste must be transported to another location for recycling or resource recovery. In some cases, a residual may remain after recycling.

4. ON-SITE TREATMENT

Processes that change the composition of waste from hazardous to nonhazardous. Treatment occurs at the same location where the hazardous waste was generated. Some hazardous waste residual may remain after treatment.

5. OFF-SITE TREATMENT

Processes that change the composition of waste from hazardous to nonhazardous. Hazardous waste must be transported to another location for treatment. Some hazardous waste residual may remain after treatment.

6. DISPOSAL

To abandon, deposit, inter, or otherwise discard waste as a final action after its use has been achieved or a use is no longer intended.

NOTE: Only on-site activities (Approaches 1, 2, and 4) are considered "waste reduction", since only these activities will reduce the need for additional off-site facilities. Only source reduction and recycling/resource recovery (Approaches 1, 2, and 3) are considered "waste minimization", since only these activities conserve resources and minimize treatment and disposal needs.

While the Plan identifies general geographic locations where facilities are unsuitable, the Plan does not provide specific facility sites. Facility siting proposals will be subject to the following assessments:

1. Consistency with the Plan.
2. Site specific analysis, including risk assessments where appropriate.
3. Preparation of a site specific environmental document.

#### HAZARDOUS WASTE DEFINITION

Hazardous waste is a waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either:

1. Cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness.
2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Unless expressly provided otherwise, the term "hazardous waste" shall be understood to also include extremely hazardous waste. (Section 25117, Health and Safety Code.)

#### HAZARDOUS WASTE MANAGEMENT HIERARCHY

A hierarchy of hazardous waste management approaches is spelled out in the Guidelines for this Plan. That hierarchy is contained in Table 1-1, and discussed in detail in Section 7. The hierarchy represented in Table 1-1 is of waste management techniques and does not represent siting preferences.

Waste reduction is distinct from waste minimization. Waste minimization describes the County, State, and private industry effort to eliminate waste generation to the extent possible, and to conserve resources through recycling. This includes source reduction, on-site recycling/resource recovery, and off-site recycling/resource recovery (items 1, 2, and 3 in the hazardous waste management hierarchy). Since waste minimization includes off-site recycling facilities, the benefits of waste minimization efforts cannot all be claimed to reduce the need for off-site facilities. Waste Reduction is defined as on-site activities that reduce the need for off-site hazardous waste facilities. This includes source reduction, on-site recycling/resource recovery, and on-site treatment (items 1, 2, and 4 in the hazardous waste management hierarchy).

#### FACILITY DEFINITIONS

The detailed legal definitions which will apply during the review and siting process are in the Glossary at the end of Section 1. The terms used in this Plan do not apply to solid waste facilities. The following are simplified definitions of the different types of hazardous waste facilities that are discussed in this Plan.

1. Disposal facility: Also known as residuals repository, this type of facility provides for final internment of approved treated hazardous waste or treatment residuals.
2. Facility: This term applies to all types of hazardous waste management facilities, both on-site and off-site. It includes mobile facilities. A facility may include one or more regulated hazardous waste units.
3. Off-site facility: This term applies to commercial, multi-user hazardous waste treatment or disposal facilities that accept waste from generators in other locations.
4. On-site facility: This term applies to hazardous waste treatment or disposal facilities that are located within the boundaries of a hazardous waste generator's operation and under the sole control of that generator.
5. Transfer station: This term applies to facilities where hazardous waste is repackaged, stored, transferred, or consolidated before shipment to treatment or disposal facilities.
6. Treatment facility: This term applies to hazardous waste recycling, treatment, solidification, stabilization, and incineration facilities. Note that recycling facilities are included in this facility category, but that recycling as a management approach is distinct from treatment. Also note that incineration facilities will require a larger buffer than other types of treatment facilities (see Section 13).

#### ORGANIZATION OF THE PLAN

This Plan is arranged to provide general problem statements, detailed information, and solutions. The major sections provide information in the following areas:

- Introduction: Section 1 describes the purpose and organization of the Plan, and includes definitions and major assumptions.
- Policies: Section 2 includes policy statements which have been endorsed by the city councils of Folsom, Galt, Isleton, and Sacramento, and by the Sacramento County Board of Supervisors.
- Background: Section 3 presents a short history of hazardous materials and hazardous waste programs in Sacramento County.
- Statement: Section 4 contains a statement required by DOHS.
- Hazardous Waste Generation: The information on hazardous waste generation in Sacramento County is presented in three parts. Section 5 presents data on current waste generation (1985 through 1987).

- Projections: Section 6 projects waste generation to the year 2000, assuming that most generation trends will follow population growth. Section 8 also projects waste generation to the year 2000, but accounts for the expected benefits of County and industry waste minimization programs.
- Waste Minimization: Section 7 describes and prioritizes the methods of reducing volumes of hazardous waste. The development of an effective hazardous waste minimization program will result in the need for fewer waste management facilities.
- Facility Types: Section 9 describes the various types of hazardous waste management facilities.
- Facility Needs: Section 10 contains information about the current and proposed treatment capacity available at facilities within Sacramento County, and the need for additional capacity or facilities.
- Siting: Section 11 outlines the methodology used to identify locations in the County that are potentially suitable for additional hazardous waste treatment facilities.
- Transportation: Section 12 identifies high-risk transportation routes in the County. This information is necessary to minimize the risk of hazardous waste transportation accidents by studying certain routes, and carefully siting new facilities.
- Implementation: Section 13 includes a discussion of the steps local governments must take to provide for a uniform review of facility proposals, protect the environment, reduce the volume of hazardous waste that is generated, and minimize the need for new facilities. The major conclusions and recommendations of the Plan are also detailed.
- Maps: Large copies of Map A (Siting) and Map B (Transportation) are inside the back cover.
- DOHS Tables: The tables (Table A through Table Q) that are required by DOHS are contained in Appendix A to this report.
- Background data and methodologies: Appendices B through E contain information that is supplemental to the Plan itself.

Each section contains information which has been condensed as appropriate for this Plan. Raw data and background information about hazardous waste generation, generators, treatment facilities, siting, and transportation is on file at the Sacramento County Planning and Community Development Department and available upon request.

### ASSUMPTIONS

Many assumptions were necessary to prepare this Plan, because needed data was often incomplete or unavailable. The year 2000 projections rely on assumptions about waste reduction, technology changes, and local programs. Facility needs and siting requirements depend on assumptions about the nature of the hazardous waste treatment industry in the future.

At the beginning of each section, critical assumptions will be grouped together and given a border like the one surrounding the assumptions below. This will let each reader adjust their confidence in the conclusions of each section, depending on agreement with the assumptions. This technique should also make this Plan more useful throughout the 12-year planning period, since assumptions that prove to be incorrect can be readily identified.

The major assumptions that will affect the data analysis in this Plan are:

1. The data available at this time accurately reflects current hazardous waste generation in Sacramento County.
2. Without any significant waste reduction efforts, hazardous waste generation rates will follow an upward trend consistent with population growth. (See Section 6 for a discussion of projection methodologies.)
3. Volumes of contaminated soil transported off-site from contaminated sites will remain constant through the planning period (to the year 2000).
4. Contaminated ground water will be cleaned up through on-site treatment efforts.
5. Current on-site hazardous waste management capacity will continue to be available.

## TERMS AND DEFINITIONS

### ACRONYMS

APCD: Air Pollution Control District (Sacramento Metropolitan Air Quality Management District, after July 1, 1989)  
CEQA: California Environmental Quality Act  
CHWMP: County Hazardous Waste Management Plan  
DOHS: California Department of Health Services  
EMD: Sacramento County Environmental Management Department  
EPA: United States Environmental Protection Agency  
RCRA: Resource Conservation and Recovery Act

### GLOSSARY

Acid: A large class of substances that form solutions having a low pH. Stronger acids are corrosive to metals and other materials. Acids may be neutralized by being mixed with bases or alkalis to form salts.

Acid Waste: A waste with a pH less than 7. (The pH scale shows increasing acidity as numbers decrease from 7 toward zero. Anything above 7 is alkaline, or "basic".) An acid waste is hazardous when its pH is 2.0 or less. See "pH".

Activated Sludge Treatment: Exposing wastes to microorganisms and air. A portion of the organic matter is oxidized to carbon dioxide and water and the other portion is synthesized into new microbial cells.

Acute: Effects which are manifested soon after exposure to a hazardous material.

Absorption: A process for removing low concentrations of organic materials from gaseous and watery waste streams. The organics are attracted to the surface of a substance, usually carbon.

Aerobic: Occurring in the presence of free oxygen.

Alkaline Waste: A waste with a pH between 7 and 14. An alkaline waste is hazardous when its pH is 12.5 or greater.

Alternative Technology: Defined by the Department of Health Services to mean the application of technology to the reduction of waste generation, promotion of recycling, and alternatives to land disposal of hazardous waste.

Ambient: Existing conditions of air, water and other medium at a particular time.

Ambient Air Quality Standards: Specified maximum average concentrations of pollutants over stated lengths of time, allowed by air quality regulations of local, state or federal agencies.

Type /

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Caustics (bases, alkalis): A large class of substances which form solutions having a high pH. Stronger caustics are corrosive to many materials. Caustics react with acids to form salts.

Cell: A portion of compacted wastes in a landfill that is enclosed by natural soil or cover materials.

Cement Kiln Incineration: Organic wastes are burned as a supplementary fuel at very high temperatures during the production of cement.

"Characteristics" of Hazardous Wastes: A method of identifying which substances are hazardous waste, by their physical/chemical properties. EPA has established four "characteristics" that can be determined by tests:

\*Ignitability - The ability to catch fire.

\*Corrosivity - The ability to wear away or destroy other materials, including human tissue.

\*Reactivity - The ability to enter into a violent chemical reaction, which may involve human tissue.

\*EP (Extraction Procedure) Toxicity - The ability to release certain toxic constituents when leached with a mild acid.

Chemical Oxidation: Adding strongly oxidizing chemicals to a waste stream to effect a reaction which produces less toxic substances and may reduce quantities of such substances. (Cyanide can be detoxified by reaction with hypochlorite or some other oxidizing agent.)

Chemical Reduction: The addition of chemicals to wastes which cause partial or complete decomposition of particular waste components into their basic nontoxic parts.

Chemical Treatment: Treatment processes which alter the chemical structure of hazardous waste constituents to produce an innocuous or less hazardous material. Principle techniques include neutralization, precipitation, ion exchange, chemical dechlorination, and chemical oxidation/reduction.

Chronic: Effects which continue over time.

Compensation: Payments awarded either through the courts or a government administered fund to cover injury or damage caused by exposure to hazardous substances. In the case of hazardous materials, awards usually cover lost income, out-of-pocket medical expenses, and pain and suffering.

Disposal: The discharge, deposit, injection, dumping, spilling, leaking or placing of any hazardous waste into or on any land or water so that such hazardous waste or any constituent thereof may enter the environment or by emitted into the air or discharged into any waters, including ground waters. (Section 66042, Title 22, California Administrative Code.)

Disposal Facility: Also known as residuals repository, this type of facility provides for final internment of approved treated hazardous waste or treatment residuals.

Epidemiology: The study of prevalent diseases in humans.

Evaporation: A process for concentrating nonvolatile solids in solution by vaporizing the liquid portion, usually water. Solar evaporation utilizes uncovered ponds.

Exposure: Contact with a hazardous material, commonly by skin contact, breathing of substances or taking materials by mouth.

Facility or Facilities: This term applies to all types of hazardous waste management facilities, both on-site and off-site. It includes mobile facilities.

Filtration: Separating liquids and solids by passing suspensions through various types of porous materials.

Fixation: A process whereby waste is made unchangeable and/or stationary.

Flammable: Materials which will burn below 140° F, either spontaneously or through handling as a result of coming in contact with already flaming material.

Fluidized-Bed Incineration: Wastes are injected into agitated beds of inert granular material and burned. Suitable for sludges and liquid wastes; solid waste may need grinding.

Generator: The person or facility who, by nature or ownership, management, or control, is responsible for causing or allowing to be caused, the creation of hazardous waste.

Geology: (1) The composition and structure of the earth's crust. (2) The study of the earth's crust.

Guidelines: Guidelines for the preparation of hazardous waste management plans.

Halogenated: Substances having a chlorine, bromine, fluorine, or iodine atom in their structure.

Hazardous Substances Account: A state fund derived from fees paid by persons who submit more than 500 pounds per year of hazardous or extremely hazardous waste to on- or off-site hazardous waste disposal facilities. This is the primary funding source for the state Superfund program.

Hazardous Waste: A waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either: (a) Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness, (b) Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Unless expressly provided otherwise, the term "hazardous waste" shall be understood to also include extremely hazardous waste. (Section 25117, Health and Safety Code.)

Hazardous Waste Control Account: An on-going state fund, derived from fees paid by operators of on- and off-site hazardous waste disposal facilities, which is the basic funding source for the Department of Health Services' hazardous waste management program.

Hazardous Waste Control Act: A California law, enacted in 1972, which was the first comprehensive hazardous waste control law in the United States. It established the state's hazardous waste management program within the Department of Health Services.

Hazardous Waste Facility: Any structure, other appurtenances, and improvements on the land, and all contiguous land, used for the treatment, transfer, storage, resource recovery, disposal and recycling of hazardous waste. (Section 25117.1, Health and Safety Code.) A hazardous waste facility may include one or more regulated hazardous waste units.

Leachate: The liquid that leaks out of a landfill. Leachate frequently contains contaminates dissolved from the waste in the landfill.

Leachate Collection System: A system that gathers leachate and pumps it to the surface for treatment.

Lead Agency: The public agency which has the principal responsibility for carrying out or approving a project. The lead agency will decide whether an EIR or Negative Declaration will be required for the project and will cause the document to be prepared.

Liner: A relatively impermeable barrier designed to prevent leachate from leaking from a landfill. Liner materials include plastic sheets and dense clay.

Listed Waste: Wastes "listed" by EPA as hazardous by definition, even in instances where the "characteristics" may not apply.

Local Assessment Committee: Review group created by a host or abutting community to analyze a proposed hazardous waste management facility. In some states such Committees have the authority to negotiate with the facility proponent (on behalf of the community) regarding the conditions under which the hazardous waste management facility may be built.

Local Veto Authority: Within the context of hazardous waste management facility siting, refers to the ability of cities and counties to unilaterally reject proposed facilities by denying local land use approval.

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Management: The systematic control of the storage, transportation, processing treatment, collection, source separation, recovery and disposal of hazardous wastes. It includes administrative, financial, legal, and planning activities as well as operational aspects of hazardous waste handling, disposal, and resource recovery systems.

Mediation: A voluntary negotiation process in which a neutral mediator assists the parties in a dispute to reach a mutual agreement.

Memorandum of Agreement (MOU): A written record between administrative agencies which clarifies or establishes joint procedures or authorities necessary to administer a program.

Microorganism: In the context of biological treatment of wastes, microscopic bacteria, protozoa, fungi, and other living matter which degrade organic wastes.

Ministerial Project or Permit: Involves governmental decision involving little or no personal judgment by the public official as to the wisdom or manner of carrying out the project. The public official merely applies the law to the facts as presented, but uses no special discretion or judgment in reaching a decision. A ministerial decision involves only the use of fixed standards or objective measurements, and the public official cannot use personal, subjective judgment in deciding whether or how the project should be carried out. Common examples of ministerial permits include automobile registrations, dog licenses, and marriage licenses.

Monitoring Well: A well, drilled near a hazardous waste management facility to allow ground water to be sampled and analyzed for contamination.

Mutagenic: Causing alterations in the structure of genetic material of living things.

Neutralization: A treatment technology whereby acids and alkalis are reacted to form salts and water with a pH approaching neutral.

New Source: Within the context of air pollution control, this refers to a new facility or a modification of an existing facility which is a source of air pollution. (May cause restrictions on the development of some hazardous waste facilities.)

Nonattainment Area: Area whose ambient air levels of pollutants exceeds federal or state standards. (May be difficult to approve certain kinds of hazardous waste facilities, such as incinerators, in nonattainment areas.)

Nonhalogenated: Substances which do not contain halogens (chlorine, bromine, fluorine, or iodine) and evaporate at relatively low temperatures.

Offset: Emissions reductions required to be made at another facility or on other equipment of the same owner in order to mitigate the increased emissions caused by a new source (hazardous waste facility). The offset is intended to maintain or improve the quality of the air.

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Off-Site Hazardous Waste Facility: An operation involving handling, treatment, storage, or disposal of a hazardous waste in one or more of the following situations:

- (1) The hazardous waste is transported via a commercial railroad, a public road, or public waters, where adjacent land is not owned by, or leased to, the producer of waste.
- (2) The hazardous waste is at a site which is not owned by, or leased to, the producer of waste.
- (3) The hazardous waste is at a site which receives hazardous waste from more than one producer. (Section 66136, Title 22, California Administrative Code).

On-Site Hazardous Waste Facility: An operation involving handling, treatment, storage, or disposal of hazardous waste on land owned by, or leased to, a waste producer, and which receives hazardous waste produced only by him. An operation that occurs after waste is transported by a commercial railroad, or on a public road shall be considered an on-site operation only if the producer of the waste owns at least 90 percent of the linear frontage of the route traveled by the waste, or if the disposal site and the area where the hazardous wastes are generated are on the same continuous property. (Section 66140, Title 22, California Administrative Code; the Department of Health Services is proposing to revise this definition.)

Operator: A person, government unit, or company that conducts treatment, storage or disposal. The operator may or may not be the developer.

Organic: Chemical substances of animal or vegetable origin, of basically carbon structure, including hydrocarbons and their derivatives.

Organometallic Compounds: Organic molecules (ingredients) which incorporate metal atom(s) into their molecular structure.

Permit Streamlining Act (AB 884): A California act, enacted in 1977, which imposes timeframes and requirements on governmental agencies permitting processes for development project.

Permit to Operate: An authorization, issued by Air Pollution Control Districts and Air Quality Management Districts, which is required before operation of a facility and is contingent upon a demonstration that the facility can comply with applicable rules and regulations and with conditions imposed in the Authority to Construct.

Pesticide: A chemical used to kill destructive insects or other small animals, such as fleas and lice.

pH: A measure of the acidity or alkalinity of a liquid. The scale indicates neutrality at 7; acidity is indicated by numbers below 7, down to zero. Alkalinity is indicated by numbers above 7, up to 14.

Physical Treatment: Treatment processes which separate components of a waste stream or change the physical form of the waste without altering the chemical structure of the constituent materials.

Pickling Liquors: Corrosive liquids used for removing scale and oxides from metals.

Ponding: The tendency of land to hold water in ponds, encouraging water to pass downward through the soil.

Post-Closure: The time period following the closure (shutdown) of a facility.

Precipitation: The changing of a substance held in solution by adding a chemical to cause change into a solid form, thus allowing the solids to be gathered and removed from the liquids.

Pre-Treatment Sludges: Residue remaining after treatment of hazardous waste prior to discharging into a sewer system. These hazardous sludges may contain recoverable resources.

Prevention: Measures taken to minimize the release of wastes to the environment.

Pyrolysis: Heating toxic materials in an enclosed space, in an oxygen deficient condition, resulting in a residual material of lowered toxicity.

Recycling: Measures that reuse or reclaim hazardous waste products. In some cases, a residual sludge remains after recycling.

Refractory Organics: Organic compounds which are resistant to decomposition through burning or high temperature treatment.

Refuse-Derived Fuel (RDF): The combustible, or organic, fraction of municipal, solid waste which has been prepared for use as a fuel by any of several mechanical processing methods.

Residuals Repository: See "Disposal Facility".

Resource Recovery: See "Recycling".

Risk: A measure of the likelihood and the severity of injury.

Rodenticide: A class of pesticide which kills, repels or controls rodents (rats, mice, rabbits, squirrels, gophers).

Rotary Kiln Incineration: Liquid or solid wastes are burned in large inclined cylinders lined with fire-brick and rotated to improve movement of solids through the incinerator. Virtually any type of waste in any form can be incinerated.

Sensitizers: Substances which produce allergic reactions.

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Sludge: Waste materials in the form of a concentrated suspension of waste solids. One type of sludge is produced from the treatment of sewage.

Solidification: A treatment process for limiting the solubility of or detoxifying hazardous wastes by producing blocks of treated waste with high structural integrity.

Solid Waste: All solid and semisolid wastes, such as garbage, rubbish, paper, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid wastes, and other discharged solid and semisolid wastes; also liquid wastes disposed of in conjunction with solid wastes at solid waste transfer/processing stations or disposal sites, but excluding (a) sewage collected and treated in a municipal or regional sewerage system; or (b) material or substances having commercial value, which have been salvaged for reuse, recycling, or resale.

Solvent: A substance used for dissolving another substance.

Solvent Extraction: Treating a solid or liquid waste to extract hazardous so that with the bulk of the waste stream may be discarded as nonhazardous.

Source Reduction: Measures that reduce the generation of hazardous waste before it is produced.

Stabilization: A treatment process for limiting the solubility of or detoxifying hazardous wastes by adding materials which ensure that hazardous constituents are maintained in their least soluble and/or toxic form.

State Preemption Override: In the context of hazardous waste management facility siting, state preemption refers to the State preempting local decision-making authority over hazardous waste management facility siting such that no local decision is required to site such facilities.

Suggested Control Measures: Control strategies necessary to attain federal and state ambient air quality standards.

Surface Impoundment: A hazardous waste facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, usually in order to treat the wastes.

Synergistic: The action of two materials together which is greater in effect than the sum of their individual actions.

Thermal Treatment: Hazardous waste is put into a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character of the waste. (The most common type of thermal treatment is incineration.)

Toxic: Capable of producing injury, illness, or damage to humans, domestic livestock or wildlife through ingestion, inhalation, or absorption through any body surface.

Toxic Air Contaminant: An air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.

Toxicology: The science of toxics, their effects, antidotes, etc.

Transfer Stations: Any hazardous waste facility where hazardous wastes are loaded, unloaded, pumped or packaged. (Section 66212, Title 22, California Administrative Code)

Treatment: Processes that reduce the hazardous nature of hazardous waste. Some hazardous residual may remain after treatment.

Treatment Facilities: This term applies to hazardous waste recycling treatment, solidification, stabilization, and incineration facilities. Any facility at which hazardous waste is subjected to treatment or where a resource is recovered from a hazardous waste. (Section 66220, Title 22, California Administrative Code.)

Waste Exchange: Clearinghouse approach to transferring treated and untreated hazardous wastes to an industrial user for use as raw material. (One method of waste reduction.)

Waste Minimization: The reduction, to the extent feasible, of hazardous waste that is generated or subsequently treated, stored, or disposed of. It includes any source reduction or recycling activity that results in the reduction of total volume, quantity and/or toxicity of hazardous waste so long as such reduction is consistent with the goal of minimizing present and future threats to human health or the environment (environment and the economy).

Waste Reduction: On-site practices (including source reduction, recycling, and treatment) which reduce the need for off-site hazardous waste facilities.

Waste Stabilization Ponds: Holding ponds used to stabilize the composition of wastes.



## Section 2

### POLICIES FOR SACRAMENTO COUNTY'S HAZARDOUS WASTE MANAGEMENT PLAN

August 30, 1988

#### GUIDING POLICY

The cities of Folsom, Galt, Isleton, and Sacramento and the County of Sacramento intend to protect residents, workers, industry, and the environment by assuring proper management of hazardous materials, including hazardous waste.

#### FAIR SHARE POLICY

New off-site hazardous waste management facilities shall be primarily limited to a scale necessary to meet the hazardous waste management needs of this county; larger facilities may be permitted in accordance with agreements reached between this County and other jurisdictions or upon determination of the local governing body that the project meets local planning criteria and serves public needs.

The County and its cities recognize their collective responsibility to cooperate with other governments in the region and the state in planning for the effective management of hazardous wastes generated in the region and the state in accordance with the hazardous waste management hierarchy. Sound hazardous waste management planning, waste reduction efforts, and appropriate facility siting are the mutual responsibility of all governments. To this end, the County and its cities encourage multi-county and regional efforts to plan and implement alternatives to land disposal of untreated hazardous wastes and to limit the risks posed by the transportation of hazardous wastes around the state. Agreements for new facilities to provide the off-site capacity needed for hazardous waste treatment and residuals disposal should be reached among jurisdictions according to their fair share of the hazardous waste stream, each jurisdiction's environmental suitability for different types of facilities, their economic interests, and the economic viability of different types and sizes of facilities. Such facilities must not undercut incentives for industry to maximize source reduction strategies in Sacramento County. Any privately-owned facility located in this county shall be available to serve generators from inside and outside the county.

"Fair share" denotes that each county is responsible for the disposition of its own waste; that is, responsible for its fair share of waste management. No county should be expected to establish a hazardous waste facility with a capacity exceeding the amount of waste they generate. A county cannot be required to accept a facility with a capacity that exceeds the county's own needs, except as provided by an inter-jurisdictional agreement. It is recognized that the waste streams in each county will probably not support an

economically efficient hazardous waste facility of each type needed to handle a county's waste. Therefore, counties are encouraged to enter into inter-jurisdictional agreements to balance economic efficiency in the size of facilities and to responsibly handle their fair share of the wastes generated.

#### SPECIFIC POLICIES

1. Public participation will be stressed at all times during the preparation and implementation of this Plan.
2. This Plan will be reviewed at least every four years to monitor success and account for changes in waste generation, technology, management practices, and legislation. To facilitate this effort, Sacramento County will share information pertaining to inter-county movement of hazardous wastes with other counties.
3. The entire community must fairly share the responsibility to properly manage hazardous waste.
4. Sacramento County will assume the responsibility for enforcing the State's hazardous waste control regulations (Title 22) governing hazardous waste generators, including inspections and enforcement, with coordination through a Memorandum of Understanding with the California Department of Health Services.
5. Sacramento County will create local programs to provide generators with technical assistance on the proper management of hazardous waste.
6. Local programs will stress waste reduction at the source (source reduction). Producing less hazardous waste means less requiring recycling, treatment, or disposal.
7. Local programs will work to minimize the risks of hazardous waste by prioritizing management strategies. The preferred priority is: source reduction, on-site recycling, off-site recycling, on-site treatment, off-site treatment, and disposal.
8. Hazardous waste management facilities will be sited considering the needs of public health, the community, the environment, and industry.
9. Siting decisions regarding hazardous waste management facilities must not undercut incentives for industry to maximize source reduction strategies in Sacramento County.
10. Land use controls or other local permits will be used as appropriate to separate both on-site and off-site hazardous waste management facilities from incompatible land uses.
11. Sacramento County recognizes that different types of hazardous waste management facilities are appropriate in different areas, and will site facilities accordingly.

12. Transportation of hazardous waste will be minimized, and regulated where possible, to avoid environmentally sensitive areas and populated, congested, and dangerous routes.
13. The regulations governing the discharge of hazardous waste into sewer systems will be strictly enforced. The County's sewer use ordinance will be amended as required to support the County's waste reduction program.
14. The Air Pollution Control District or its successor will continue to examine the problem of toxic air contaminants, and regulate these emissions as necessary.
15. Sacramento County will work to protect groundwater resources, which supply much of the drinking water in the County.
16. Sacramento County will continue to provide means for household hazardous waste collection, while developing a program to reduce the volume of this waste.
17. Where technical assistance and cooperation do not result in compliance with hazardous waste regulations, Sacramento County will rely on strict enforcement and prosecution.



### Section 3

#### HISTORY OF HAZARDOUS MATERIALS PROGRAMS IN SACRAMENTO COUNTY

Sacramento County and the cities within it have been involved in regulating some aspects of hazardous materials since the 1940's. At that time, state legislation gave the County Department of Agriculture responsibility for regulating pesticides in order to protect the bee populations that are vital to pollination.

Outside of the agricultural area, most regulation regarding hazardous materials was at other governmental levels until the early 1970's. At that time, the Sacramento Regional County Sanitation District recognized water pollution control problems. In 1980, the County Board of Supervisors adopted an ordinance which contained provisions for industrial waste water pretreatment to implement Environmental Protection Agency (EPA) and State Water Resources Control Board (SWRCB) requirements.

The Sacramento Air Pollution Control District (APCD) was formed in 1959 and charged with regulating air pollution emissions throughout the County. The agency worked primarily on smog-related issues until 1981. At that time, hazardous materials in the form of toxic air contaminants came to the attention of the APCD when a proposed polychlorinated biphenyl (PCB) incineration program at McClellan Air Force Base was reviewed. In 1982, a permit review process was finalized for toxic air contaminants which sets limits for toxic air emissions.

In late 1981, a Hazardous Materials Task Force was formed in the County to provide advice on hazardous materials regulation, management, and coordination.

In 1982, both the City and County of Sacramento implemented household hazardous waste collection days. The Sacramento City Fire Department operates the City collections. The Sacramento City program has no guaranteed funding source, and must rely on periodic budget appropriations. The County program is funded by a combination of solid waste tipping fees and sewage discharge fees.

In late 1982, the County contracted with the Sacramento City Fire Department to provide a Hazardous Materials Response Team for the unincorporated area for a period of five years. This mutual aid contract has been renegotiated and extended through 1992.

In 1983, the County's Hazardous Material Disclosure Ordinance was adopted. The ordinance required firms using or handling significant amounts of hazardous materials to disclose to the County the nature, quantity, and location of those chemicals. For most of the County, this information was transferred by the Environmental Health Branch of the Health Department to the Fire Dispatch Center which provided it to fire crews responding to emergencies at facilities containing hazardous materials. Within the City of Sacramento, the Sacramento Fire Department administered the disclosure program. These ordinances also provided for public access to this information, subject to trade secret protections. These ordinances were repealed when Chapter 6.96 of the Health

TABLE 3-1 LOCAL HAZARDOUS MATERIALS PROGRAM RESPONSIBILITY

PROGRAM	JURISDICTION AND RESPONSIBLE AGENCY				
	UNINCORPORATED AREA OF SACRAMENTO COUNTY	SACRAMENTO	FOLSOM	CITIES	ISLETON
CURRENT				GALT	
Underground Tanks Disclosure	Hazardous Materials Program, Sacramento County EMD*	Sacramento City Fire Dept.	Hazardous Materials Program, Sacramento County EMD*	Hazardous Materials Program, Sacramento County EMD*	Hazardous Materials Program, Sacramento County EMD*
	Hazardous Materials Program, Sacramento County EMD*	Sacramento City Fire Dept.	Hazardous Materials Program, Sacramento County EMD*	Hazardous Materials Program, Sacramento County EMD*	Hazardous Materials Program, Sacramento County EMD*
	APCD**, Sacramento County EMD*				
Air Pollution	Sacramento County EMD*	Sacramento Regional County Sanitation District	Sacramento Regional County Sanitation District	Sacramento	City of Isleton
	Sacramento County Agricultural Commissioner				
Sewer Treatment	Sacramento County Sanitation District	Sacramento Regional County Sanitation District	Sacramento Regional County Sanitation District	Sacramento	City of Galt
	Sacramento County Agricultural Commissioner				
Agricultural Inspections	PROPOSED				
	Title 22	Hazardous Materials Program, Sacramento County EMD*			
Waste Reduction	Hazardous Materials Program, Sacramento County EMD*				
	Sacramento County Planning Dept.	Sacramento Planning Dept.	Folsom Planning Dept.	Galt Planning Dept.	Isleton Planning Dept.
Hazardous Waste Facility Siting					

and Safety Code was implemented. Under the current legal framework, Sacramento City's Fire Department remains the administering agency within that city, and the Environmental Management Department (EMD) administers the program in the remaining portion of Sacramento County.

In late 1983, an ordinance regulating underground storage tanks was adopted by the Board of Supervisors. This adoption was just prior to the December 31, 1983 deadline for local governments without their own underground storage tank programs to implement the State underground tank program. The City of Sacramento Underground Tank Ordinance was adopted by the City Council in late 1983.

In mid-1984, a second Hazardous Materials Task Force was formed by the County Executive to review relevant state legislation. It reported back in late 1984, and recommended the development of a Hazardous Materials Element to the County General Plan, a Comprehensive Hazardous Materials Management System for the County, and a joint Air and Hazardous Materials Advisory Board. The County Health Department was designated as lead agency for hazardous materials programs.

In July of 1985, the City of Sacramento established a Sacramento Toxic Substances Commission to advise the City Council regarding actions necessary to maintain and enhance the environmental quality of the City of Sacramento as it is affected by the generation, handling, storage treatment, or disposal of toxic substances. This commission was disbanded in June of 1988.

In December of 1986, the Sacramento County Board of Supervisors adopted the Hazardous Materials Element into the County General Plan. The Element provides background information, goals and policies to guide a coordinated County effort.

In the spring of 1986, a Toxics Task Force was formed by the Board of Supervisors. This Commission reviewed County Hazardous Materials programs and reported back to the Board in the summer of 1987. The Board accepted the specific recommendations of the Task Force, including a major restructuring of the County hazardous materials programs through a new Environmental Management Department (EMD). Implementation of these recommendations is now underway, as discussed below.

In conjunction with the formation of the EMD, an Environmental Commission was formed representing the cities and the County. This new commission advises elected officials and the Director of the EMD on environmental policy issues. Additionally, a Toxic Substance Technical Advisory Committee has been established to provide guidance to EMD's Director on Technical issues.

Table 3-1 outlines hazardous materials program responsibilities in Sacramento County.

In July of 1987, the County Health and Planning Departments were authorized to produce this County Hazardous Materials Management Plan. As this effort was underway, the Sacramento County Board of Supervisors approved a reorganization of County hazardous materials efforts. This reorganization is discussed below.

## SACRAMENTO COUNTY ENVIRONMENTAL MANAGEMENT DEPARTMENT

In the past, the Sacramento County Health Department has been responsible for a variety of hazardous waste and hazardous materials programs. These included Underground Tanks, Disclosure, and the development of this Plan. These programs were carried out by the Environmental Health Branch of the Public Health Division of the Department. Some other related programs were carried out in other agencies, most notably the Sacramento County APCD.

In January of 1988, the Board of Supervisors approved a strategy which would elevate critical hazardous materials programs to a higher level within the County's system. This action also consolidates existing programs, and provides better implementation of pending new programs (such as the Title 22 and Technical Assistance programs recommended in this Plan).

This approach combines existing APCD and Environmental Health functions into a new Environmental Management Department. These two existing units have been retained as divisions of the new EMD. A third division is responsible for existing hazardous materials programs (formerly within the Environmental Health Branch) and pending new programs (Title 22, Technical Assistance). The three-division department began functioning in July of 1988. Completion of this Plan and implementation of the recommendations it includes are the responsibility of the Hazardous Materials Division of the EMD (see Table 3-1).

### PUBLIC OUTREACH FOR THIS PLAN

Sacramento County and the cities of Sacramento, Folsom, Galt, and Isleton are firmly committed to public participation in all aspects of local government. To help carry out this commitment, an Advisory Committee was created to assist in the preparation of this Plan. Committee members were chosen to represent the following interests:

<u>Member</u>	<u>Affiliation</u>	<u>Representing</u>
Dr. John A. Hill	I.C.F. Technology	Industry
Mr. Michael B. Picker	Toxics Assessment Group	Environmental Groups
Ms. Gail Brice	McLaren Engineering	Industry
Mr. Noel Lerner	Kennedy/Jenks/Chilton Eng.	General Public
Ms. Janis Heple	Sacramento Toxics Alliance	City of Sacramento
Ms. Luana Pinasco	Disposal Services	Cities of Galt and Isleton
Mr. Dennis Smith	Intel Corporation	City of Folsom

The Advisory Committee met informally in June of 1987, and held publicized monthly meetings beginning in July of 1987. A mailing list of over 150 individuals and organizations was developed. An agenda, letter, and appropriate materials were sent out one week in advance of the meetings. In addition to committee members, attendance ranged from ten to twenty individuals. This number includes several people who have been active participants from the beginning.

Committee meetings served as a forum to discuss issues pertaining to this Plan. The committee advised staff on technical matters, and the development of the siting criteria and policies included in this Plan. With the release of this Draft Plan, the committee will continue to serve as a forum for public input through Plan review and final adoption.

During the implementation of this Plan, public participation will be promoted in two additional ways. First, the new County Environmental Management Department includes a public information office. A priority role for this office is to develop ongoing citizen input on hazardous waste issues. Second, any facility applications will be subject to review by a local assessment committee. This committee will provide an additional opportunity for public discussion beyond current routine hearings.



#### Section 4

#### **NOTIFICATION REQUIRED BY CALIFORNIA DEPARTMENT OF HEALTH SERVICES PER LETTER OF AUGUST 8, 1988**

"Waste groups used in this CHWMP are for planning purposes only, and are therefore not exhaustive. Additional waste groups (out-of-State [SIC] waste, infectious waste), may be included in update amendments to this Plan."

(CHWMP: County Hazardous Waste Management Plan)



## Section 5

### CURRENT WASTE GENERATION

#### INTRODUCTION

This section provides the basis for estimating hazardous waste facility needs in Sacramento County. Current waste generation is estimated as accurately as possible, given the limitations of the data.

Sacramento County's hazardous waste is managed in two ways: waste that is treated or disposed of on-site where it is produced, and waste that is shipped off site to a commercial facility for treatment or disposal. This Plan represents Sacramento County's first effort to develop a comprehensive data analysis of the hazardous waste stream generated within the county. The waste stream was estimated from data accounting for hazardous wastes shipped off-site, managed on-site, wastes from small quantity generators, households, contaminated sites, and one-time generators. Volumes of designated wastes, special wastes and imported and exported wastes are also estimated in this Plan.

The manifested waste stream is classified into 81 California waste categories and grouped into 17 waste groups in accordance with DOHS requirements. The 17 waste groups are used throughout the Plan to classify the hazardous waste data. A listing of the California Waste Categories and 17 waste groups is located in Appendix E, part 12.

Waste volume estimates are provided for all types of hazardous waste, wherever reliable information was available. In terms of siting, this Plan is intended primarily as an off-site facility planning guide. As a result, the facility needs assessment in Section 10, Scenario II, focuses on the volume of waste requiring off-site management.

#### ASSUMPTIONS

The following assumptions apply to this section:

1. Existing data on hazardous waste generation are representative of the magnitude of the current level of generation.
2. The majority of the hazardous wastes that are currently manifested are going to landfills, except waste oil, solvents, and PCB's.
3. Industry currently decreases the volumes of waste streams by using on-site aqueous treatment technology.
4. Manifested waste oils and solvents are recycled. A significant volume of waste oil and solvent not being recycled is subject to improper disposal.
5. The waste groups, and the treatment categories required by DOHS, provide a basic, simplified approach to categorizing and treating hazardous waste that is adequate for this Plan.

**TABLE 5-1**  
**SUMMARY OF CURRENT OFF-SITE WASTE MANAGEMENT**  
**IN SACRAMENTO COUNTY (1985-1986)**

<u>Waste Source</u>	<u>Estimated Volume (in tons)</u>
Manifested Wastes	46,590
Contaminated Sites, Drilling Muds	1,880
Small Quantity Generators	8,990
Household Hazardous Wastes	<u>9,570</u>
<b>TOTAL</b>	<b>67,030</b>

Source: Table 5-23

**TABLE 5-2**  
**MAJOR HAZARDOUS WASTE GENERATORS**  
**AND OFF-SITE FACILITIES IN SACRAMENTO COUNTY**

Major Hazardous Waste Generators

Aerojet General Corporation  
 Campbell Soup Company  
 GE - Medical  
 Mather Air Force Base  
 McClellan Air Force Base  
 Sacramento Army Depot - no current data available  
 Signetics Corporation Yard  
 SMUD Corporation Yard  
 Tap Plastics

Off-Site Facilities

American Environmental Management  
 Refineries Service  
 Retroserve (Now North American Environmental, pending re-permitting)  
 Safety Kleen

Note: Definitions of hazardous waste generator and off-site facility are in the glossary

### SUMMARY

For 1985-86, the average annual total generation of hazardous waste in Sacramento County is estimated at 962,780 tons.

- Ninety-three percent, or 896,940 tons of hazardous wastes (primarily industrial wastewater) were known to be managed by on-site treatment.
- seven percent, or 67,030 tons of hazardous waste were shipped off-site.

Table 5-1 summarizes hazardous wastes volumes that are currently being managed off-site. Wastes that are managed off-site may be shipped for treatment, storage, or disposal. Of the total 67,030 tons of waste managed off-site, it is estimated that 29,040 tons of hazardous wastes (waste oil and solvents) are recycled by commercial facilities. The remaining 37,990 tons of hazardous waste are managed by commercial facilities for treatment or storage, the majority to be deposited in land disposal facilities (refer to Table 5-23).

In 1986, wastes were shipped off-site by the following types of generators:

1. Generators that manifested more than 1,000 tons of hazardous waste per year: Aerojet General Corporation, McClellan Air Force Base, Sacramento Municipal Utility District (SMUD), and the Southern Pacific Railroad, accounted for the majority of Sacramento County's waste generation.
2. Generators that manifested less than 1,000 tons of hazardous waste per year: Hazardous Waste Information System Data (HWIS) identified more than 200 generators in Sacramento County who manifested small quantities of waste.
3. One-time Generators: Generators such as the Jibboom Junkyard and McClellan Air Force Base account for Superfund Cleanup of contaminated soils. Aerojet General Corporation, in 1986, generated a one-time volume of fungicide, thus contributing to the large quantity of manifest waste in the pesticide waste group for that year.

Sacramento County has a strong industry and military economic base. The facilities reporting on-site management of hazardous waste in 1986 are listed on Table 5-2.

### DATA ADEQUACY

The basic problems in estimating the current generation of hazardous waste in Sacramento County are data availability, accuracy, and completeness.

Currently, there are no reliable data to estimate the total amount of hazardous waste generated in Sacramento County. Shipments of hazardous waste are tracked through the Uniform Hazardous Waste Manifest. The manifest data is maintained by DOHS as part of the Hazardous Waste Information System (HWIS). Though the HWIS is currently the most comprehensive system available, the present manifest system does not produce complete, accurate information about hazardous waste from the point of generation to its final destination. Hazardous wastes are

often shipped through one or more transfer stations on route to treatment or disposal. Under the present system, a new manifest is prepared each time the hazardous waste leaves a transfer station. This process results in two errors:

1. Volumes of waste leaving transfer stations are recorded in the HWIS databank, thus duplicating the volume already recorded due to its shipment from the original source of generation to the transfer station.
2. If a firm in the county of initial generation ships the hazardous waste to a transfer station located in a different county prior to shipment to the final disposal site, that county housing the transfer station would also be recorded as the county generating the waste.

Reporting requirements for route service haulers present another problem in the HWIS data. Route service haulers are companies that pick up hazardous wastes, usually waste oil, from companies that generate small amounts of waste (eg. service stations, auto lubrication companies) in a "milk run". The reporting requirements are modified to allow the hauler to report the total volume of hazardous waste picked up on a single manifest of up to one truckload per day. Waste reported under the route hauler exception is labeled "varianced" waste. Under this streamlined reporting method, the route service hauler is recorded as the generator, with that firm's home office address dictating the county of origin for the waste. Since Yolo and San Mateo Counties are known to have route service haulers that pick up waste oil in Sacramento County, adjustments were made to add Sacramento County's generation of waste oil to the 1986 manifest data. Although there are no route service haulers with a home office in Sacramento County, a Stanislaus County route service hauler maintains a transfer station in Sacramento County that is contributing to Sacramento County's inflated volume of manifested waste oil generation. Adjustments were made to subtract other county's waste oil generation from the HWIS manifest data. Adjustments to their waste oil volumes are shown in Table A.

The Technical Reference Manual was followed in establishing the 17 waste groups used in this Plan. The 17 waste groups oversimplify the waste stream. Further, the DOHS conversion table used to convert units (gallons, pounds, etc.) to tons does not consider different chemical densities.

Each subsection of this section identifies data gaps under "data". Although detailed information to cover all waste generation is not currently available, this section provides an understanding of the basic pattern of the current waste generation in Sacramento County.

#### WASTE SHIPPED OFF-SITE

Approximately seven percent of all known wastes generated in Sacramento County is shipped off-site for recycling, treatment, storage or disposal. Shipments of hazardous wastes are tracked through a system known as the Uniform Hazardous Waste Manifest.

Manifest data are maintained by DOHS as part of the Hazardous Waste Information System (HWIS). This system provides the most comprehensive waste data currently available. HWIS data, compiled for the years 1985 and 1986, were used to assess the current level of manifested waste generation in Sacramento County.

#### ASSUMPTIONS

The following assumptions apply to estimates of the volumes of waste shipped off-site:

1. Certain wastes are assumed to be a one-time occurrence.
2. Waste oils and solvents enter the manifest waste stream because they are transported. However, it may be assumed that these volumes do not require additional treatment capacity because waste oils and solvents are already being recycled.

#### DATA

An average of 46,590 tons of hazardous waste are manifested annually in Sacramento County (See Table 5-23). Aerojet General and McClellan Air Force Base are the County's major generators. American Environmental Management, Refineries Service, and Safety Kleen maintain transfer stations within the County. These facilities report waste volumes that were generated both in Sacramento County and in other counties.

Table 5-3 identifies each of the major facilities and an average of the tonnage manifested in 1985 and 1986. These data show that the majority of the manifested waste stream is manifested by a very small group of firms in the county. Sacramento County's current manifested hazardous waste generation is detailed in Table 5-23 and in Appendix A.

**TABLE 5-3**  
**SACRAMENTO COUNTY'S MAJOR GENERATORS OF MANIFESTED WASTE**

<u>Generator</u>	<u>Average Quantity of 1985-86 Manifested Waste Stream (Tons)</u>
Aerojet General	14,340
McClellan Air Force Base (excludes 4,320 tons contaminated soils)	4,310
American Environmental	2,520
Refineries Service	2,230
Safety Kleen	1,210
SMUD	1,620
Southern Pacific	680
<b>TOTAL</b>	<b>26,910</b>

Note: Contaminated soil from McClellan Air Force Base and Jibboom Superfund cleanup sites is excluded from 1986 total.

Source: Data from HWIS, DOHS

#### WASTE MANAGED ON-SITE

Approximately 93 percent of all hazardous waste in Sacramento County is managed on-site. Hazardous wastes that are managed on-site may be treated, stored longer than 90 days, or disposed of on-site.

Generators of hazardous waste that is treated, stored, or disposed of on-site fall within a permitted or non-permitted status. Permitted facilities are regulated under the Resource Conservation and Recovery Act (RCRA).

Non-permitted facilities which may receive an exemption or variance from DOHS include the following:

1. Processes likely to be exempt from the permit requirements include treatment processes that recycle on-site or on-site treatment of hazardous waste prior to its discharge into the sewage treatment system.
2. Processes that are granted a variance by DOHS for simple on-site aqueous treatment facilities.

Permitted on-site facility data contained in this Plan are not complete because data were not available from all major facilities. Non-regulated facilities include facilities that are under permit by the California Regional Water Quality Control Board to discharge waste into surface water under the National Pollutant Discharge Elimination Systems (NPDES). Complete data on permitted facilities and those receiving variances or exemptions should be contained in the Plan update.

This section also identifies hazardous wastes stored on-site longer than 90 days. Wastes may be stored in containers, tanks, waste piles, surface impoundments, or by other means.

#### ASSUMPTIONS

The following assumptions apply to on-site waste management:

1. The intent of the on-site storage section is to identify overall facility capacity. Identification of the specific hazardous waste in storage is not essential, since the waste category will be identified when the waste is manifested. If additional hazardous waste storage is needed, the facility operator may apply to DOHS for additional capacity.
2. A temporary build-up of PCB's and other wastes will occur with the impending landfill ban.
3. Treatment facility needs will increase as additional waste volumes are produced.

DATA

On-site facility capacities were provided by DOHS. Planning Department staff supplemented the data by contacting facilities on the list (identified in Table 5-6) by telephone and by mail. The questionnaire that was sent to facility operators is included in Appendix E, Part 4.

Based on information from known facilities, it is estimated that a total of 896,940 tons of hazardous waste were treated on-site in 1986. These facilities have a total treatment capacity of 2,465,850 tons per year.

Table 5-4 summarizes the volumes of waste treated on-site in 1986 by treatment method. (See Section 9 for descriptions of treatment methods.)

TABLE 5-4

**SUMMARY OF HAZARDOUS WASTE TREATED ON-SITE  
IN 1986**

Generalized Treatment Method	Volume Treated On-Site in 1986 (in tons)
Aqueous Treatment Organic	3,250
Aqueous Treatment Metals/ Neutralization	891,800
Incineration	1,160
Solvent Recovery	0
Oil Recovery	690
Other Recycling	40
Stabilization	0
<b>TOTAL</b>	<b>896,940 tons (1)</b>

(1) Does not include commercial facilities, non-regulated facilities, or the Sacramento Army Depot.

It should be noted that County data and DOHS data were compared. County and DOHS raw data are available in the Planning and Community Development Department for review.

Based on the known facilities, it is estimated that a total of 2,930 tons of hazardous waste were stored for over 90 days. These wastes were stored at facilities having storage capacities totalling 11,320 tons. Table 5-5 summarizes the volumes of waste stored on-site during 1986 by storage method.

**TABLE 5-5**  
**SUMMARY OF HAZARDOUS WASTE  
 STORED ON-SITE LONGER THAN 90 DAYS IN 1986**

<u>Storage Method</u>	<u>Average Monthly Storage (Tons)</u>	<u>Capacity (Tons)</u>
Container	1,250	4,830
Tank	1,680	6,490
Waste Pile	--	--
Surface Impoundment	--	--
Other	--	--
<b>Total</b>	<b>2,930</b>	<b>11,320</b>

A summary of each facility's waste managed on-site by treatment method, storage method and capacity is contained in Table 5-6.

**TABLE 5-6**  
**SUMMARY OF HAZARDOUS WASTE MANAGED ON-SITE IN 1986**

**Aerojet General**

**TREATMENT (On-site)**

<u>Generalized Method</u>	<u>Quantity Treated (Tons/Year)</u>	<u>Capacity of System (Tons/Year)</u>	<u>% of Capacity</u>
Aqueous Treatment Organic	3,250	13,800	24 %
Aqueous Treatment Metals/ Neutralization	0 970	520,400 19,010	0 % 5 %
Incineration (Open Burning)	1,160	44,620	3 %
Other Recycling	40	2,630	2 %
Stabilization to Ponds	0	11,040	0 %
<b>TOTAL</b>	<b>5,420</b>	<b>611,500</b>	

STORAGE (over 90 days)

<u>Method</u>	<u>Monthly Average (Tons)</u>	<u>Capacity (Tons)</u>	<u>% Capacity Used</u>
Container	1,160	3,250	36 %
Tank	<u>1,610</u>	<u>6,300</u>	26 %
<b>TOTAL</b>	<b>2,770</b>	<b>9,550</b>	

Source: State Department of Health Services

**California State Prison - Folsom**

Facility operator states there was no storage exceeding 90 days or on-site treatment activity during the year 1986 (per tel. comm.).

Source: California State Prison, Folsom

**California State University - Sacramento**

Facility operator states they are permitted to store PCB's. Storage capacity was not provided.

Source: California State University, Sacramento

**Campbell Soup Company**

STORAGE (over 90 days)

<u>Method</u>	<u>Monthly Average (Tons)</u>	<u>Capacity (Tons)</u>	<u>% Capacity Used</u>
Container	<u>150</u>	<u>200</u>	75%
<b>Total</b>	<b>150</b>	<b>200</b>	

Source: State Department of Health Services

**General Electric - Medical Systems**

**TREATMENT (On-site)**

<u>Generalized Method</u>	<u>Quantity Treated (Tons/Year)</u>	<u>Capacity of Treatment System (Tons/Year)</u>	<u>% Capacity Used</u>
Aqueous Treatment Organic	1.5	13.5	11%
Aqueous Treatment (1) Metals/Neutralization	<u>1.5</u>	<u>13.5</u>	11%
<b>TOTAL</b>	<b>1.5 tons</b>	<b>27.0 tons</b>	

1. See Table H, Appendix A.

**STORAGE (over 90 days)**

<u>Method</u>	<u>Average Monthly (Tons)</u>	<u>Capacity (Tons)</u>	<u>% Capacity Used</u>
Container	<u>15</u>	<u>30</u>	50%
<b>TOTAL</b>	<b>15 tons</b>	<b>30 tons</b>	

Source: General Electric Medical Systems

**Mather Air Force Base**

**STORAGE (over 90 days)**

<u>Method</u>	<u>Average Monthly (Tons)</u>	<u>Capacity (Tons)</u>	<u>% Capacity Used</u>
Container	12	94	13%
Tank	<u>6</u>	<u>84</u>	7%
<b>TOTAL</b>	<b>18</b>	<b>178</b>	

Source: State Department of Health Services

**McClellan Air Force Base**

**TREATMENT (On-site)**

<u>Generalized Method</u>	<u>Quantity (Tons/Year)</u>	<u>Capacity (Tons/Year)</u>	<u>% Capacity Used</u>
Aqueous Treatment Metals/Neutralization	882,000	1,839,600	48%
Oil Recovery	690	not identified	
Other Recycling	0	not identified	
<b>TOTAL</b>	<b>882,690</b>		

**STORAGE (over 90 days)**

<u>Method</u>	<u>Average Monthly (Tons)</u>	<u>Capacity (Tons)</u>	<u>% Capacity Used</u>
Container	43	525	8 %
Tank	57	105	54 %
<b>TOTAL</b>	<b>100</b>	<b>630</b>	

Source: McClellan Air Force Base

**Sacramento Army Depot**

The Sacramento Area Council of Governments compiled a list of facilities pending permits for on-site storage, treatment, or disposal of wastes in 1981. The Sacramento Army Depot identified no on-site treatment facility and estimated that 124 tons of waste would be stored annually. Until additional information is provided, it will be assumed that the Sacramento Army Depot does not provide on-site treatment of hazardous waste.

Source: Sacramento Area Council of Governments.

### Signetics Corporation Yard

#### TREATMENT (On-site)

<u>Generalized Method</u>	<u>Quantity Treated (Tons/Year)</u>	<u>Capacity of Treatment System (Tons/Year)</u>	<u>% Capacity Used</u>
Aqueous Treatment Metals/ Neutralization	<u>8,830</u>	<u>14,720</u>	60%
<b>TOTAL</b>	<b>8,830</b>	<b>14,720</b>	

#### STORAGE (over 90 days)

<u>Method</u>	<u>Average Monthly (Tons)</u>	<u>Capacity (Tons)</u>	<u>% Capacity Used</u>
Container	<u>0.6</u>	<u>3.7</u>	16 %
<b>TOTAL</b>	<b>0.6 tons</b>	<b>3.7 tons</b>	

Source: State Department of Health Services

### SMUD Corporation Yard

#### STORAGE (over 90 days)

<u>Storage Method</u>	<u>Average Monthly (Tons)</u>	<u>Capacity (Tons)</u>	<u>% Capacity Used</u>
Container	<u>5.0</u>	<u>92.4</u>	5 %
<b>TOTAL</b>	<b>5.0</b>	<b>92.4</b>	

Source: State Department of Health Services

### Tap Plastics

#### STORAGE (over 90 days)

<u>Method</u>	<u>Average Monthly (Tons)</u>	<u>Capacity (Tons)</u>	<u>% Capacity Used</u>
Container	<u>0.21 (PCB's)</u>	<u>2.1</u>	10 %
<b>TOTAL</b>	<b>0.21 tons</b>	<b>2.1 tons</b>	

Source: State Department of Health Services



### SMALL QUANTITY GENERATORS

Small quantity generators (SQGs) are defined by DOHS as firms producing less than 1,000 kilograms (roughly 2,200 pounds) of hazardous waste per month (DOHS, 1987, Guidelines, pages 3 and 4).

### INFORMATION DEFICIENCIES

Good information about generation rates and disposal practices of SQGs is very difficult to obtain. While SQGs constitute the vast majority of the nonresidential generator population, they are responsible for only 10-20 percent of the hazardous waste stream (except waste oil). Until now, government permitting and information gathering efforts have focused on larger generators, where a given staff effort can account for more of the total waste stream.

Inspections of SQG firms are performed by local fire departments and districts, but are focused more around traditional concerns of storage of flammables than compliance with disposal regulations. Until a comprehensive local inspection and permitting program is in place, information about hazardous waste generation and disposal by small firms will be based on limited surveys and assumptions.

### ASSUMPTIONS

Several critical assumptions are necessary before the limited information that is available can be used to characterize the entire SQG population:

1. The population surveyed is representative of the entire population.
2. The volume of waste coming from past problem sites will diminish over time, as these sites are discovered and mitigated. Therefore limiting the analysis to the routine hazardous waste stream is proper for a siting study.
3. The responses received from the surveys are accurate and honest.

### ESTIMATION METHODS

To better fill this information gap on small quantity generators, two independent methods were used for estimating the volume of hazardous waste produced by SQGs. The "survey" method used a mail survey of firms in the County, and the "no-survey" method utilized a mathematical estimation system derived from actual inspections in another study area.

The no-survey methodology proposed in the Guidelines had a number of drawbacks. It was performed in another jurisdiction (North Hollywood), using federal waste definitions and categories (which excluded waste oil), and it was the result of

a single visit to each surveyed firm. This effort produced an exaggerated estimate of the volume of waste in the miscellaneous category, indicating that the nature of the waste stream may have been poorly understood by the firm or the surveyor. To improve on this information, 1,000 businesses in Sacramento County were surveyed by mail. Over 400 responses were received. The volume estimates from both methods were tabulated and converted into the CHWMP waste groups. In two cases the survey estimate was used to fill a gap in the no-survey method. The waste oil volume was estimated by a separate calculation. The results were averaged provide an estimate which more likely represents the true volumes generated by small firms in the county (See Table 5-7). Both estimation methods and the waste oil calculation are discussed in detail in Appendix B.

#### SUMMARY OF SMALL QUANTITY WASTE GENERATOR WASTE VOLUMES

The results of the effort to characterize hazardous waste volumes produced by SQGs in the County are in Table 5-7. Except as noted, the values in the last column are averages taken from the survey and no-survey results.

Of these 17 categories, only miscellaneous waste (a very diverse category) and waste oil have over 1,000 tons. This uneven distribution of waste volumes suggests a focus for SQG waste reduction efforts. While some reduction may be achieved in all waste categories, waste oil recycling has the greatest potential for significantly reducing the total volume of waste generated by small businesses in the County. Approximately 75 percent of the waste oil generated in the County is currently going to recycling. The remaining volume should be a focus of the technical assistance program (See Section 13). The Hazardous Materials Division of EMD is currently providing a list of public and private facilities which accept waste oil at low or no cost.

**TABLE 5-7**  
**SMALL QUANTITY GENERATOR WASTE ESTIMATES**  
**FROM SURVEY AND NO-SURVEY METHODS**

WASTE GROUP	SURVEY ESTIMATE (Tons)	NO-SURVEY ESTIMATE (Tons)	AVERAGE (Tons)
1. Waste Oil	3,070 (1)	3,070 (2)	3,070
2. Halogenated Solvents	360	860	610
3. Non-Halogenated Solvents	310	860	580
4. Organic Liquids	180	480	330
5. Pesticides	250	550	400
6. PCBS & Dioxins	10	80	50
7. Oily Sludges	250	250 (3)	250
8. Halogenated Organic Sludges & Solids	170	10	90
9. Non-Halogenated Organic Sludges & Solids	20	190	100
10. Dye & Paint Sludges & Resins	40	230	140
11. Metal-Containing Liquids	80	110	90
12. Cyanide & Metal Liquids	10	10	10
13. Non-Metallic Inorganic Liquid	20	430	230
14. Metal-Containing Sludges	50	150	100
15. Non-Metallic Inorganic Sludges	180	180 (3)	180
16. Contaminated Soil	0	0	0 (4)
17. Miscellaneous Wastes	<u>680</u>	<u>4,840</u>	<u>2,760</u>
<b>TOTAL</b>	<b>5,680</b>	<b>12,300</b>	<b>8,990</b>

1. The volume of waste oil shown here was derived using the method described in Appendix B (Table B-8).
2. Waste oil was not included in no-survey method. The value shown was derived using the method described in Appendix B (Table B-8).
3. Survey estimate used to fill data gap in no-survey method.
4. No contaminated soil in routine waste stream, see Table I, Appendix A.

## HOUSEHOLD HAZARDOUS WASTE

### INTRODUCTION

Prior studies indicate household hazardous waste entering landfill facilities may range from 0.13 percent to 0.43 percent of the total waste disposed in landfills. Household hazardous wastes are also known to be discarded in sewer systems, backyards, and vacant lots. These methods of disposal have the potential to contaminate surface and ground water, risking public health and environmental quality.

Sacramento County, in 1982, established the first household hazardous waste collection program in California. This collection program was developed to provide a safe, efficient method to dispose of household waste. The data for this subsection were gathered through this program. Based upon the results of the collection program, it is estimated that Sacramento County's 360,163 households generated 9,570 tons of hazardous waste in 1987, or an estimated annual volume of 53.1 pounds per household.

### ASSUMPTIONS

The following assumptions apply to the data analysis:

1. Data from the collection day are representative of countywide household generation rates.
2. Participants delivered hazardous waste generated from a single household.
3. The waste collected during the spring 1987 program represented an annual accumulation by participating households.
4. Waste collected through this program was generated only by households.

### DATA

Sacramento County sponsored two collections during 1987. Data from the spring collection were compiled. Wastes were grouped into the 17 waste categories (Appendix E, Part 13). The volumes of waste in these categories deposited at the spring 1987 collection day by participating households were extrapolated to the remaining households in Sacramento County.

Other studies are being compared with Sacramento County's hazardous household waste collection program. Data will be further evaluated as these studies become available. As studies become more consistent, and more comprehensive data becomes available, the Plan will be updated accordingly.

The total current generation of household waste by Waste Group is identified in Table 5-8:

<u>Waste Group</u>	<u>Estimated Volume (tons) (1)</u>
Waste Oil	690
Non-Halogenated Solvents	5,940
Organic Liquids	160
Pesticides	610
PCBs and Dioxins	80
Metal Containing Liquids	1,070
Non-Metallic Inorganic Liquids	370
Miscellaneous Wastes	650
<b>TOTAL</b>	<b>9,570</b>

1. Estimates are based on the 1987 household hazardous waste collection project of the Sacramento County Health Department. The volumes shown here have been extrapolated to the whole county from a sample of 2,906 households. See Appendix E, part 5 for the calculation methodology and data.

Since little information is available about household hazardous wastes that are discarded into sewer systems, poured into backyards and vacant lots, or evaporated into air, an accurate measurement of household hazardous wastes is difficult to obtain.

## CONTAMINATED SITES

### INTRODUCTION

Contamination of soil and ground water is receiving increased attention from federal and state regulatory agencies. As a result, such contamination has been found to be even more widespread than was believed even a few years ago.

Soil and ground water contamination may result from a variety of sources including: accidental spills; disposal of wastes on the ground surface; leaks in sewers, storage tanks, and pipelines; the application of fertilizers and other agricultural chemicals; shallow excavations, or deep wells. The volume and area contaminated will vary with the amount of waste and its solubility, toxicity, and density characteristics. Properties of the soils and rocks through which the contaminant moves can affect the spread of contamination (Health, 1984).

A chronic problem in studying contaminated sites has been to adequately characterize the magnitude of site contamination. Although there is no reliable estimate of the extent of soils contamination in Sacramento County, data were obtained from DOHS and the Sacramento County Environmental Management Department. This section discusses the following types of sites:

- Bond Expenditure Plan Sites
- Leaking Underground Tanks
- Toxic Pits
- Landfills

### ASSUMPTIONS

The following assumptions apply to the site contamination data analysis:

1. Mitigation of a contaminated site will take place over a ten-year period. (Guidelines, and DOHS letter, 8/28/87).
2. The soil contamination figures are underestimated because data are not currently available for four (4) known Federal Superfund sites. (Aerojet General, McClellan AFB, Sacramento Army Depot, and the Southern Pacific Railway yard).
3. Ground water contamination will be treated on-site.
4. There is a significant trend to cleanup contaminated sites with in situ and other on-site technologies. The volume of hazardous waste to be removed from the site is one-fourth the total volume of contaminated soils.
5. Improved technology in underground storage tank design and leak detection sensors will reduce the number of incidents of site contamination. However, above-ground valve leaks and spills will continue to occur.

## SUMMARY

A summary of the total estimated volume of waste from of contaminated sites located in Sacramento County is in Table 5-9. Thirty-two sites with soils contamination were included in the Hazardous Waste and Substances Site List prepared by the Governor's Office of Planning and Research (OPR) (See Figure 5-1). It should be noted that the map and index do not identify leaking underground storage tanks. The 112 leaking underground tank sites identified on the OPR list are not plotted on Figure 5-1.

TABLE 5-9  
SUMMARY OF CONTAMINATED SOIL FROM  
SITES LOCATED IN SACRAMENTO COUNTY

<u>Quantity</u>	<u>Known Contaminated Sites</u>	<u>Estimated Volume of Contaminated Soils (Tons)</u>
31	Bond expenditure plan sites, abandoned sites	59,930 (1)
780 (est.)	Leaking underground tanks	39,000 (2)
6	Toxic Pits	(No estimates)
13	Landfills (active & inactive)	<u>(No estimates)</u>
	<b>TOTAL</b>	<b>98,930</b>

1. Includes estimates from only 8 studied sites and excludes four Federal Superfund Sites.
2. Soil contamination from leaking underground tanks is estimated by the following calculation:

3,900 (known tanks) X 0.20 (percentage assumed to leak) X 0.25 (percentage treated off-site) X 200 cubic yards (estimated volume per site = 39,000 cubic yards.

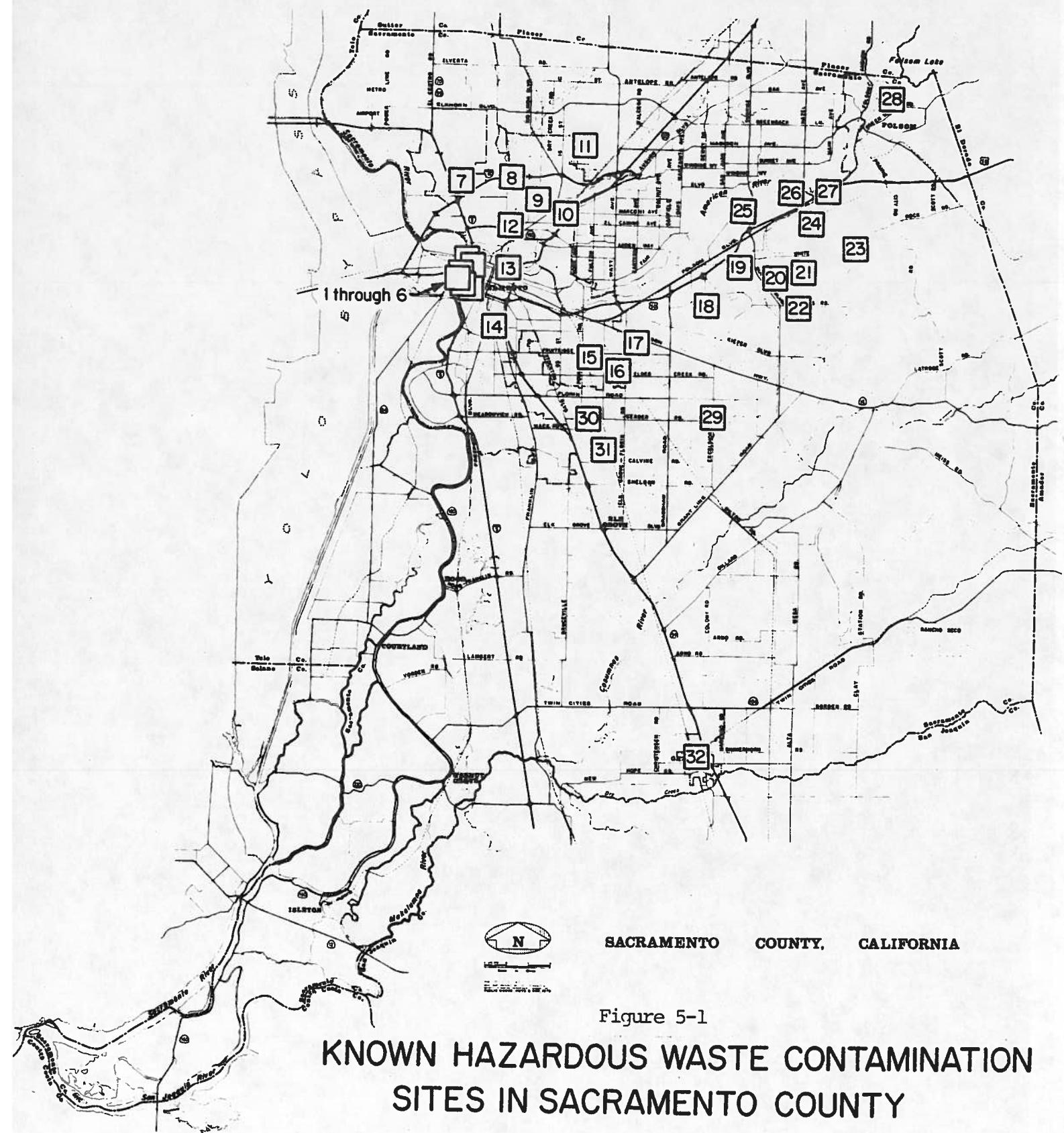
Source: DOHS & Sacramento County Environmental Health Department

**Key to Figure 5-1**

**KNOWN HAZARDOUS WASTE CONTAMINATION SITES IN SACRAMENTO COUNTY**

<u>SITE</u>	<u>COMMUNITY</u>
1. Jibboom Junkyard	Sacramento
2. Richards Boulevard (well contamination)	Sacramento
3. Palm Iron and Bridge Works	South Sacramento
4. Southern Pacific Transportation Company	Sacramento
5. Alta Plating and Chemical Corp.	Sacramento
6. Pacific Gas and Electric	Sacramento
7. Natomas Airport	Sacramento
8. Strawberry Manor/PCB Site, Harris Avenue	Sacramento
9. Strawberry Manor/PCB Site, Olmstead Avenue	Sacramento
10. American Poly-Therm Company	Sacramento
11. McClellan Air Force Base	North Highlands
12. A-1 Plating Company	North Sacramento
13. SMUD North City Substation	Sacramento
14. Union Pacific Railroad	Sacramento
15. Sacramento Army Depot	South Sacramento
16. Orchard Supply Company	Sacramento
17. Sacramento Surplus Sales Company	Vineyard
18. Mather Air Force Base	Rancho Cordova
19. Purity Oil Sales/Delta Gunnite	Rancho Cordova
20. Well 13	Rancho Cordova
21. McDonnell-Douglas	Rancho Cordova
22. E-Z Products Manufacturers	Rancho Cordova
23. White Rock Dump	Rancho Cordova
24. Aerojet General Corporation	Rancho Cordova
25. Well 16	Rancho Cordova
26. Hazel Avenue Ponds	Rancho Cordova
27. Schnitzer Steel	Rancho Cordova
28. Folsom Prison	Folsom
29. Gerber Dump	Sacramento
30. Glideral Door	South Sacramento
31. Chromalloy-American/General Radiator Div.	Sacramento
32. Ace Oil Company	Galt

SOURCE: Office of Planning and Research, Hazardous Waste and Substance Sites-List, March 1988.



## AUTHORITY

The Federal "Superfund" legislation, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 "creates national policy and procedures to identify cleanup sites contaminated by releases of hazardous substances, and to finance these remedial activities....Superfund Amendments and Reauthorization Act (SARA) clarifies the congressional intent that permanent solutions to hazardous waste are preferred, versus redisposal of contaminated materials" (Elliott, Morell, 1987). In other words, CERCLA gives high priority to the exploration of on-site remediation and alternative resource recovery technologies.

## BOND EXPENDITURE SITES

Under the Hazardous Substance Cleanup Bond Act, twelve sites were identified in Sacramento County. These sites include Federal Superfund sites, sites targeted for cleanup by the state, and sites slated for cleanup by private parties. Data are not available for the four Federal EPA Superfund sites: McClellan AFB, Aerojet General, Sacramento Army Depot, and the Southern Pacific Railway yard. Feasibility studies and restoration plans for these sites are not complete. Therefore, volume estimates are not included in this Plan. Table 5-10 below lists the contaminated sites slated for cleanup by bond expenditures (DOHS, Alternative Technology Division).

TABLE 5-10

### BOND EXPENDITURE PLAN AND SUPERFUND SITES IN SACRAMENTO COUNTY

Planned Mitigation Year On-Set	Site	Medium	Waste Group
1987	1. Orchard Supply Company	Soil	Metals Pesticides
	2. Chromalloy - American	Soil	Metal Containing Powder
	3. Jibboom Junkyard	Soil	PCB Metal Containing Liquids
1988	1. A-1 Plating Company	Soil	Cyanide and Metal Liquids
1989	1. Union Pacific Railroad	Soil	Metal Containing Liquids Organic Liquids Asbestos
	2. All Oil	Soil	Non-Halogenated Solvents
	3. Aerojet Corporation	Soil Ground water	Halogenated Solvents Metal Containing Liquids Non-Halogenated Liquids

1990	1. Strawberry Manor	Soil	Dioxins (low levels by product of burning)
	2. Pacific Gas & Electric PNA Site	Soil Ground water	Non-Halogenated Solvents (possible encapsulation on-site)
	3. McClellan Air Force Base	Soil Ground water	Metal Containing Liquids Halogenated Solvents Non-Halogenated Solvents PCB's Pesticides Cyanides Ground water 1991
1992	1. Southern Pacific Transportation Co.	Soil Ground water	Halogenated Solvents Metal Containing Liquids Non-Halogenated Solvents
	2. Hazel Avenue Ponds	Soil	Metal Containing Liquids Halogenated Solvents Pesticides
	1. Palm Iron and Bridge Works	Soil	Metal Containing Liquids
1993	2. Purity Oil Sales	Soil Ground water (extraction wells)	Halogenated Solvents Non-Halogenated Solvents
	3. Sacramento Surplus	Soil Free Product	Paints-Dye Sludges Resins Metal Containing Liquids
	1. White Rock Dump	Soil	Halogenated Solvents
Other No Date	PG&E	Soil	Non-Halogenated Organic Sludges Including Polynucleated aromatic hydrocarbons

### LEAKING UNDERGROUND TANKS

A significant source of environmental contamination is commercial and industrial facilities using underground tanks for storage of fuels and solids. In 1983, the California State Legislature enacted into law provisions that mandated the inventory, testing, and permitting of underground storage tanks. Since 1984, the Sacramento County Health Department has been monitoring the identification and restoration of leaking underground storage tanks. This function was moved to the new Environmental Management Department (EMD) in mid-1988.

The EMD has identified approximately 3,900 underground storage tanks within the County. As of January, 1988, 337 leaking tanks have been identified. The Environmental Health Division of EMD projects that a total of 780 underground tanks, or 20 percent of the 3,900 tanks, are leaking and will be targeted for restoration. The March 1988 OPR Sites-List identifies 112 leaking tank sites in this county.

Table 5-11 below lists Sacramento County's known leaking underground storage tank contamination sites by waste contaminant. Information on leaking underground tank sites is available in the Planning and Community Development Department and the Environmental Health Division.

TABLE 5-11

CONTAMINATION RESULTING FROM LEAKS IN  
UNDERGROUND STORAGE TANKS AND PIPELINES  
IN SACRAMENTO COUNTY

Material	Number of Known Contamination Incidents
Gasoline	129
Diesel Fuel	48
Oil & Waste Oil	30
Solvent	3
Thinner	1
Transmission Fluid	1
Aviation Fuel	1
Unknown	<u>124</u>
<b>TOTAL</b>	<b>337 (1)</b>

1. Total includes multiple spills occurring at individual sites. A total of 328 sites were identified. Source: compiled from the Sacramento County Environmental Health Toxsite Database.

The Environmental Health Division estimates that the average leaking underground tank site contains 200 cubic yards of contaminated soil. This will result in a total of 156,000 tons of contaminated soils from all leaking underground tanks. Seventy-five (75) percent of these sites are expected to be cleaned up with on-site or in situ treatment. Using these assumptions, approximately 39,000 tons of contaminated soil from leaking underground tanks will be shipped off-site, and 117,000 tons of soil will be remediated on site.

#### TOXIC PITS SUBJECT TO CLOSURE

The Toxic Pits Act of 1984 restricts the use of surface impoundments of pits, ponds, and lagoons for the disposal of hazardous waste. Operators of impoundments that either pollute or threaten to pollute state waters may be required to implement remedial action by closure or retrofit. (DOHS, Alternative Technology).

Table 5-12 lists the six known toxic pits in Sacramento County. As noted, four of the six open pits are also Federal Superfund sites. Volume estimates of contamination from Superfund sites are not currently available.

TABLE 5-12

#### TOXIC PITS IN SACRAMENTO COUNTY

Folsom State Prison  
California State Department of Corrections

McClellan Air Force Base (1)  
United States Air Force

Sacramento Army Depot (1)  
United States of Defense

Aerojet General Corp. Sacramento(1)  
GenCorp

Northgate Boulevard Maintenance Station  
California State Department of Transportation

Sacramento Yard (1)  
Southern Pacific Railroad

##### 1. Superfund Sites

Source: State of California, Department of Health Services, Toxic Substances Control Division.

## LANDFILLS

Landfills are known for their potential to contaminate ground water. Landfills in the county are currently under study by the Sacramento County Public Works Department, Solid Waste Management Division. Standards for discharges of Waste to Land (Title 23, Chapter 3, Subchapter 15, CAC) governs hazardous waste disposal to land and establishes a statewide disposal site and waste classification system in response to the Federal Clean Water Act. The waste classification system is based upon the threat that the waste presents to water quality. The disposal site classification system is based upon the geologic and hydrologic features of the disposal area and the ability to protect surface and ground water quality. Although these guidelines are for statewide use, Regional Water Quality Control Boards may impose more stringent requirements.

Wastes are classified as hazardous, designated, nonhazardous, or inert. Disposal sites are divided into three classes. Class I sites are located where natural geologic features provide optimum conditions for isolation of wastes from waters of the state. Geologic and design standards are established for the siting of new Class I facilities. All classes of wastes can be legally disposed of in Class I facilities, although no untreated hazardous waste may be disposed of after 1990.

Class II sites are also located where site characteristics and containment structures isolate waste from the waters of the state. Artificial barriers can be used in Class II sites and the overall standards are less stringent than those for Class I sites. Most hazardous wastes cannot be legally disposed of in Class II sites. All other wastes can be accepted.

Class III sites are located where site characteristics provide adequate separation between nonhazardous waste and the waters of the state. Only nonhazardous and inert waste can be legally disposed in Class III sites. Class III landfills may not be designed to prevent hazardous wastes from seeping into ground water.

## DATA

The Solid Waste Management Division of the Public Works Department provided information on the eight active municipal landfills and five known closed or inactive landfills in the county.

The County landfill is open to the public and may receive some hazardous waste from households and small businesses even though hazardous waste disposal in municipal landfills is illegal.

The Los Angeles County Regional Sanitation District, in a survey of landfills, found that 0.45 percent of all wastes deposited into County landfills were hazardous. In a similar study, Monterey County found 0.4 percent of its landfill wastes to be hazardous. Since the Sacramento County landfill receives waste similar to those studied, it is estimated that 0.45 percent of all wastes deposited into the facility are hazardous. Therefore, 2,500 tons of hazardous waste annually are estimated to be deposited into the County landfill. Because

of the uncertainty of this estimate, this volume is not included in volume summaries in this Plan.

Sacramento County's eight active landfills comprise a total of 965 acres. Table 5-13 lists the active landfill sites. Sacramento County's five known closed or inactive landfills comprise a total of 319 acres. Table 5-14 lists these known closed or inactive landfill operations. Several dozen additional inactive landfill sites have been identified by the APCD. Detailed information about the size or years of operation of these sites is unavailable at this time.

TABLE 5-13

**ACTIVE LANDFILLS IN SACRAMENTO COUNTY (1)**

1. Kiefer Road Disposal Site (Class III)

County of Sacramento	
Commencement Date	1967
Closure Date	2005
Size	650 acres

2. Grand Island Disposal Site (Class III)

U.S. Army Corps of Engineers	
Commencement Date	1970
Closure Date	1979
Size	10 acres

3. City of Folsom Corporation Yard (Class III)

City of Folsom	
Commencement Date	1962
Closure Date	2170 (2)
Size	15 acres

4. L & D Landfill (Class III)

A. Teichert and Son, Inc.	
Commencement Date	1976
Closure Date	1992 (Under expansion)
Size	120 acres

5. Sacramento City Landfill (Class III)

City of Sacramento	
Commencement Date	1950
Closure Date	1990
Size	113 acres

6. Jackson/Florin-Perkins Road Disposal Site (Class III)

Nancy and David Cleavings	
Commencement Date	Unknown
Closure Date	Unknown
Size	1 acre

7. B and C Disposal Site (Class III)

Chet Hulsey	
Commencement Date	Unknown
Closure Date	Unknown
Size	1 acre

8. Aerojet General Corporation Landfill (Class III)

Aerojet General Corporation	
Commencement Date	1964
Closure Date	1992
Size	55 acres

1. Data Source: Solid Waste Management Division.
2. The City of Folsom Corporation Yard Landfill has not been used for the past three years. The City's application to the State for closure of the landfill is pending. (Blazer, pers. comm., 1988)

TABLE 5-14

**KNOWN CLOSED OR INACTIVE LANDFILLS IN SACRAMENTO COUNTY (1)**

1. Elk Grove Disposal (Class II-2)

County of Sacramento	
Commencement Date	1938
Closure Date	1978
Size	37 acres

2. Dixon Pit Landfill (Class II-2)

W.J. Smith	
Commencement Date	Unknown
Closure Date	2002
Size	76 acres

3. McClellan Air Force Base Landfill (Class II-1)

United States Air Force	
Commencement Date	1975
Closure Date	1983
Size	1 acre

4. White Rock Road Dump Site (Class II-2)

Hilltop Developers, Inc.	
Commencement Date	1958
Closure Date	1969
Size	125 acres

5. Gerber Disposal Site (Class II-2)

Sanitary Disposal Co.	
Commencement Date	Unknown
Closure Date	1972
Size	80 acres

1. Data Source: Solid Waste Management Division. Old classification designations are used in this table.

CONCLUSION

Although contaminated soils account for a large portion of the hazardous waste stream, data are currently limited because few contaminated sites have been fully characterized. While an increasing number of sites are being identified, the total number of contaminated sites is still unknown. As site characterization is completed and remediation technologies move forward, more complete data will be available for the Plan update.

## DESIGNATED WASTE

### INTRODUCTION

Designated and non-hazardous wastes are regulated by the Department of Health Services and the Water Quality Control Board.

Hazardous wastes may be "designated" when the risk posed by the waste is "insignificant as a potential health hazard to human health and safety, livestock or wildlife" because of its small quantity, low concentration or physical or chemical characteristics. Designated wastes must be handled, stored, or disposed of in a manner that will not result in hazard to human health or safety, livestock, or wildlife. Hazardous wastes may be managed as "designated" or "special" under a variance granted by the State Department of Health Services. Designated wastes may be disposed of at a landfill disposal facility which is not operated under a hazardous waste facility permit.

The State Water Quality Control Board classifies drilling muds and wastewater as "designated" wastes for the following reasons:

- The chemicals are used in conjunction with the exploration and extraction of natural gas.
- The wastes have the potential to contaminate the ground water supply.

While the State and Regional Water Quality Control Boards are responsible for regulating designated wastes, records relating to the volume and type of waste disposed of in Class II and Class III disposal sites are not maintained by either that agency or the Department of Health Services.

### SLUDGE

Sludge generated by the Regional County Sanitation District Wastewater Treatment Plant is a designated waste and is disposed of at the treatment plant site.

### DRILLING MUDS

Many natural gas operations use lubricants containing toxic substances to help drilling bits penetrate the ground. Currently, drilling muds are disposed of at Class I or Class II landfill sites, or may be used to "plug" non-productive wells.

### DRILLING MUDS DATA

It is estimated that an average of eleven (11) oil or gas wells will be drilled annually in Sacramento County. This will result in an annual generation of 1,880 tons of spent drilling muds. The volume of soil displaced by the

drilling process was calculated by first identifying the number of wells which would be drilled in a representative year. An average well depth was obtained from Division of Oil and Gas records. An estimated average bore hole diameter was determined, based upon geologic variations which occur throughout the Delta and associated floodplains (certain rock formations require a larger bit for maximum efficiency). Volume displacement tables provided by the Division of Oil and Gas indicate an average soil displacement of 40,650 gallons per bore hole.

Table 5-15 identifies well drilling activity and drilling mud production in 1985 and 1986:

TABLE 5-15

DRILLING MUD WASTE GENERATION

No. of Wells Drilled	Average Depth Per Well	Average (1) Diameter of Well	Volume (1) Multiplier	Total Gallons Per Well	Total Gallons Per Year	Amount in Tons (2)
1985	20	(3)	(3)	(3)	39,220	784,440
1986	<u>2</u>	(3)	(3)	(3)	54,930	<u>109,860</u>
Total	22	---	---	---	---	894,300
Average	11	(3)	(3)	(3)	40,650	447,150

1. Department of Conservation, Division of Oil and Gas, State of California

2. Computed as gallons x 0.0042

3. Retained as confidential by the Division of Oil and Gas, State of California

WASTEWATER

The Central Valley Water Quality Control Board has developed two criteria that would preclude reinjection of wastewater from drilling operations:

- If the wastewater contains higher concentrations of brine than the recipient aquifer. Such wastes may be "designated."
- The wastewater is determined to have high levels of the carcinogen benzene from drill bit lubricants.

Alternative methods to disposal in a landfill include on-site treatment followed by reinjection into the ground water aquifers. Remedial methods are currently under review by the Central Valley Water Quality Control Board.

## OTHER WASTES

### INFECTIOUS WASTES

Introduction: Infectious wastes are defined as biological wastes, including material contaminated with biological wastes, that have the potential to transmit disease. Section 25117.5 of the Health and Safety Code lists infectious waste types, including: human tissue and fluids; animal carcasses; materials saturated with infectious wastes; and implements used in handling, treating, or researching infectious agents. In addition, spent cell cultures from universities and commercial entities involved in the genetic alteration of bacteria and viruses could be considered potentially infectious.

Infectious wastes are regulated by DOHS under the authority of the Hazardous Waste Control Law. Local enforcement is by Sacramento County's Environmental Health Division.

Sacramento County's Environmental Health Division currently maintains a roster of 75-80 infectious waste generators, including:

- licensed medical care facilities
- non-licensed facilities that generate more than 100 kilograms of infectious waste per month

Licensed medical care facilities (acute care hospitals and skilled nursing facilities) are regulated by DOHS and are required to develop proper infectious materials handling procedures. Non-licensed facilities (i.e., doctors' offices) that generate more than 100 kilograms of waste per month must handle infectious wastes using a State-approved handling method. The County Environmental Health Division inspects acute care hospitals twice yearly, and inspects other facilities once annually (Sacramento County Environmental Health).

Infectious Waste Management: On-site facilities may manage less than 100 kg. per month of infectious waste as follows: Infectious waste may be managed on-site, transported to an incineration facility, or transported directly to a landfill facility without the requirement of a manifest and with minimal reporting requirements.

Data: Currently, the only reliable information on this type of waste is held by American Environmental Management, a firm that operates an infectious waste incineration facility.

The American Environmental Management Disclosure Inventory reported the incineration of 2,080 tons of infectious waste in 1986. The incinerator is rated at 800 pounds per day and can be operated 24 hours per day. The facility also reported that an additional 7,910 tons of waste were transferred off-site for incineration. The point of origin of these wastes was not identified (Risley pers. comm.).

Total estimates of the volume of infectious waste generated in Sacramento County are not currently available. The Hazardous Waste Information System does not identify any biological waste in the manifested waste stream for Sacramento County.

Issues: Incineration of infectious waste is regulated by the Air Pollution Control District, which raised two issues regarding incineration of infectious waste:

1. Two studies, published in 1968, established that active pathogens contained within the biological waste may escape incinerators prior to being incinerated. As a result, these active pathogens may be introduced into the environment. To date, follow-up studies have not been accomplished (Granullion, Barbaito).
2. A study recently completed by the State Air Resources Board concluded that the single most significant emissions source of dioxins and dibenzofurans resulted from the incineration of plastics associated with infectious and other biological wastes. A task force was recently formed to study and develop control measures that will focus on reducing emission levels of dioxins and dibenzofurans.

#### INCINERATED WASTES

Incinerators were identified as creating two types of waste:

Residual Ash: Volumes of incinerated ash generated are not available, as residual ash does not fall within reporting categories. Most residual ash may be deposited in a Class III landfill facility.

Particulate matter. This waste is generally introduced into the atmosphere. The Air Pollution Control District (APCD) estimates that incinerators generate one-tenth (0.10) of a pound of particulate matter for each day of incinerator operation. The APCD defined a particulate standard as being one-tenth of a grain of particulate per dry standard cubic foot of exhaust.

The APCD permits and regulates all incineration facilities in Sacramento County. There are currently 18 permitted incinerators and six pending permits in Sacramento County. These facilities and locations are identified in Appendix E, Part 10.

## IMPORTS AND EXPORTS

### INTRODUCTION

The specialization of waste treatment facilities necessitates that hazardous wastes generated in Sacramento County be exported to other California counties, or out of state. Likewise, this county imports hazardous wastes from other jurisdictions for treatment, storage, or disposal (TSD). Such an exchange is necessary to avoid the construction of the whole spectrum of TSD facilities within each county. This section details hazardous waste imports and exports, and their counties of origin and destination.

According to state regulations, hazardous wastes which are transported over public roads to destinations in California must be manifested by the collecting facility and reported to the California Department of Health Services (DOHS), Toxic Substances Control Division. This agency incorporates the manifest data into the Hazardous Waste Information System (HWIS), recording waste type and tonnage. Also recorded are company name and EPA number, street address, city and county for both the generator and the receiving TSD facility. DOHS has provided the portion of this database relevant to Sacramento County for the calendar years 1985 and 1986. The data were analyzed to describe the major waste streams of Sacramento County: wastes generated, disposed, imported, or exported.

### ASSUMPTIONS

1. This section depends on the assumption that all "unknown" wastes are from outside the County. "Unknown" indicates records in the manifest system which are lacking information about the waste's origin or destination.

### ROUTE SERVICE HAULERS

Some hazardous wastes collected by route service haulers from small-quantity generators are manifested as if generated by the collecting TSD facility. This method greatly reduces the paperwork involved, yet it still monitors the wastes generated. However, under this procedure some of the wastes collected from outside of Sacramento County are recorded as being generated within the county. Likewise, wastes may be generated here, but manifested as if generated by TSD facilities in other counties. This problem is overcome, in part, through survey data of TSD facilities compiled by the DOHS regarding small-quantity collection of halogenated solvents, non-halogenated solvents, and nonmetallic inorganic liquids (Appendix A, Table A). Furthermore, similar data were collected from a few TSD facilities near Sacramento County which are likely to account for a large percentage of wastes generated within this county, but manifested elsewhere.

## IMPORTS INTO SACRAMENTO COUNTY

Hazardous wastes which are generated in other counties but shipped into Sacramento County for treatment, storage, or disposal are considered to be imports. These wastes constituted about twelve percent of all wastes manifested (generated plus imported) to the county in 1985 and 1986 (Tables 5-16 and 5-17). The increase in imports for this time period was 3,010 tons, but compared to the total manifested wastes for those years, the increase was only 4.1 percent.

Types of Hazardous Wastes Imported. Wastes from all seventeen waste groups were imported during the two-year period. However, in one of those years no wastes were imported from the groups "metal containing sludge", "cyanide and metal liquids", and "nonmetallic inorganic sludges". The predominant imported waste groups were "waste oil" and "Dioxins/PCBs", accounting for an average of 87.8 percent of total imports for both years (Table 5-16).

A large proportion of the increase in waste volume from 1985 to 1986 was derived from the waste oil and dioxins/PCBs groups.

TABLE 5-16

### IMPORTS: MAJOR HAZARDOUS WASTE GROUPS

Waste Group	1985		1986		1985-1986 Average	
	(Tons)	% Of All Imports	(Tons)	% Of all Imports	(Tons)	% of All Imports
Waste Oil	2,660	62.6	3,610	49.8	3,140	54.5
Dioxins/PCBs	890	21.0	2,950	40.1	1,920	33.3
Other	700	16.4	700	10.1	700	12.2
<b>TOTAL</b>	<b>4,250</b>	<b>100.0</b>	<b>7,260</b>	<b>100.0</b>	<b>5,760</b>	<b>100.0</b>

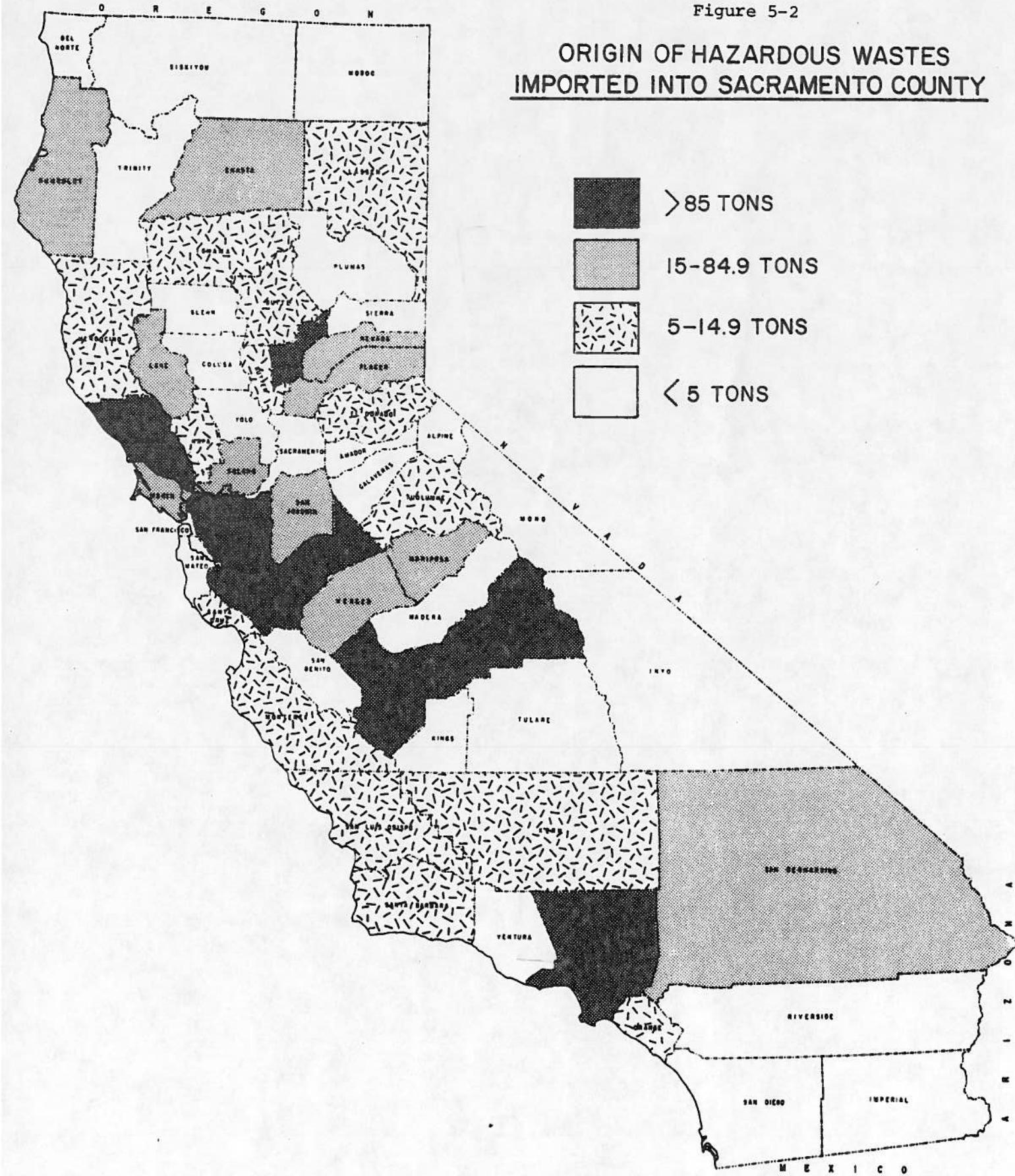
SOURCE: Hazardous Waste Information System, DOHS.

County of Origin. The number of counties sending hazardous wastes into Sacramento County varied from 40 in 1985 to 47 in 1986. However, seven counties plus the "unknown" category accounted for an average of 83.6 percent of all imports in the two-year period (Table 5-17). The two major contributing counties were Stanislaus and Alameda, together averaging 73.2 percent of the imports in 1985 and 1986.

Origin of Import Increase in 1986. The seven additional counties importing only in 1986 accounted for only 6.6 percent of the increase in wastes from 1985 to 1986. Most of the additional waste was derived from the seven major importing counties and the "unknown" origin category. Together, these counties and the unknown category accounted for 91.4 percent of the increase. Alameda and Stanislaus counties comprised almost half of the increase (48.5%).

Figure 5-2

## ORIGIN OF HAZARDOUS WASTES IMPORTED INTO SACRAMENTO COUNTY



**TABLE 5-17**  
**IMPORTS: LEADING COUNTIES OF ORIGIN**

County	1985		1986		1985-1986 Average	
	(Tons)	% of All Imports	(Tons)	% Of All Imports	(Tons)	% Of All Imports
Alameda	550	13.0	1,190	16.4	870	15.1
Fresno	200	4.7	30	0.4	120	2.1
Los Angeles	60	1.4	200	2.7	130	2.3
San Mateo	60	1.4	280	3.9	170	2.9
Sonoma	10	0.2	170	2.3	90	1.6
Stanislaus	2,560	60.2	3,380	46.6	2,970	51.6
Yuba	20	0.5	340	4.7	180	3.1
Unknown	180	4.2	630	8.7	400	6.9
Other	610	14.4	1,040	14.3	830	14.4
<b>TOTALS</b>	<b>4,250</b>	<b>100.0</b>	<b>7,260</b>	<b>100.0</b>	<b>5,760</b>	<b>100.0</b>

**SOURCE:** Hazardous Waste Information System, DOHS.

**Geography of Imports.** Most of the hazardous wastes imported into Sacramento County were from within 100 miles of its borders (Figure 5-2). These wastes represented 76.2 percent of all imports. Counties to the north contributed 4.4 percent and the remaining 12.1 percent came from counties to the south. The San Francisco Bay Area contributed 22.0 percent, and Stanislaus County alone accounted for 51.6 percent of Sacramento County's imports. Other major import volumes originated from Fresno County (120 tons, 2.1%) and Los Angeles County (130 tons, 2.3%) in the south; and Sonoma county (90 tons, 1.6%) to the north (Tables E and F, Appendix A).

**Originating Facilities.** Hazardous waste imports into Sacramento County originated from approximately 370 different facilities in all counties. A majority of these wastes came from only two facilities: Pacific Gas and Electric in Alameda County, and Refineries Services, in Stanislaus County. These facilities contributed a two-year average of 800 and 2,960 tons respectively, constituting 65.3 percent of all imports. The Refineries Service facility, located in Stanislaus County, ships hazardous waste to a transfer station located in Sacramento County.

**Receiving Facilities.** There were only six facilities receiving hazardous wastes imported into Sacramento County (Table 5-18). Two facilities, American Environmental Management Corporation and Refineries Service, accepted 96.2 percent of the wastes imported in both years. Operators of these transfer stations subsequently exported much of the waste out of the county (see below).

TABLE 5-18

## IMPORTS: FACILITIES RECEIVING HAZARDOUS WASTE IN SACRAMENTO COUNTY (1)

Receiving Facility	1985		1986		'85-'86-Average	
	(Tons)	% Of all Imports	(Tons)	% of all Imports	(Tons)	% Of all Imports
American Environ. Mgmt. Corp.	1,530	36.0	3,610	49.8	2,570	44.6
McClellan Air Force Base	0 (2)	0.1	10	0.1	10	0.2
Refineries Service	2,560	60.2	3,370	46.4	2,970	51.6
Retro Service Inc.	120	2.8	180	2.5	150	2.6
Safety Kleen Corp.	40	0.9	90	1.2	60	1.0
<b>TOTALS</b>	<b>4,250</b>	<b>100.0</b>	<b>7,260</b>	<b>100.0</b>	<b>5,760</b>	<b>100.0</b>

1. Source: Hazardous Waste Information System, DOHS.

2. Trace Amount.

Imports From Other States. A minimal amount of hazardous waste was imported from other states. In 1985, 11.7 tons of out-of-state wastes were imported into Sacramento County, mostly oily sludges and non-halogenated organic sludges and solids (84.8%). In 1986, 12.3 tons were imported, Dioxins and PCBs accounted for 68.9 percent of this waste, while non-halogenated organic sludges and solids made up most of the remainder (Tables E-F, Appendix A).

Import Summary. Imports of hazardous wastes into Sacramento County are dominated by waste oil and dioxin/PCBs, originating mostly from seven counties plus the "unknown" origin category. The single largest facility of origin is a Stanislaus County oil recycling facility whose operators ship accumulated wastes to a sister facility in Sacramento County.

The dominant recipients of hazardous waste in this county are transfer stations, accounting for over 50 percent of all imports. These wastes are eventually forwarded to locations out of Sacramento County. Imports from out of state comprise a minimal proportion of the annual import total.

#### EXPORTS OUT OF SACRAMENTO COUNTY

Hazardous wastes which are generated in, or imported into Sacramento County and subsequently shipped to other counties or states are exports. Such wastes account for an average of 83.0 percent of all manifested wastes (in-county plus imported) in the county. In 1985, 31,520 tons of hazardous waste were exported. This volume increased to 40,480 tons in 1986. The increase in

tonnage (8,960 tons) actually constitutes a slight decrease in the proportion of exports compared to all manifested wastes in each year (83.6 to 82.1 percent). (See Tables E-F, Appendix A).

Types of Hazardous Wastes Exported. Wastes from all seventeen hazardous waste groups were exported in 1985 and 1986. However, nine of the groups accounted for 94.1 percent of the exports over the two years (Table 5-19). In 1985, three groups (waste oil, organic liquids, and nonmetallic inorganic liquids) accounted for 60.2 percent of the exports. In 1986, the same three groups, plus the soils group, made up 57.8 percent of the exports.

The contaminated soils group is unusual because it originates primarily from cleanup operations around leaking underground tanks and other contaminated sites. These cleanups address contamination problems accumulated over the past decades. The annual tonnage of contaminated soils is dependent on the number

and size of sites excavated as identified under contaminated soils. For example, most of the tonnage of soils in 1986 was a result of the Environmental Protection Agency's cleanup of the Jibboom Junkyard Superfund site. Eventually only current year spills will have to be excavated, and the annual tonnage of soils should decrease and stabilize.

Receiving Counties. Sacramento County exported hazardous waste to 14 other counties in California in 1985 and 1986, though four of those counties were different from one year to the next. Additional wastes were exported to other states, and some destinations were unrecorded within the "unknown" category. Four counties plus the "unknown" and "out of state" categories accounted for an average of 88.3 percent of all exports (Table 5-20).

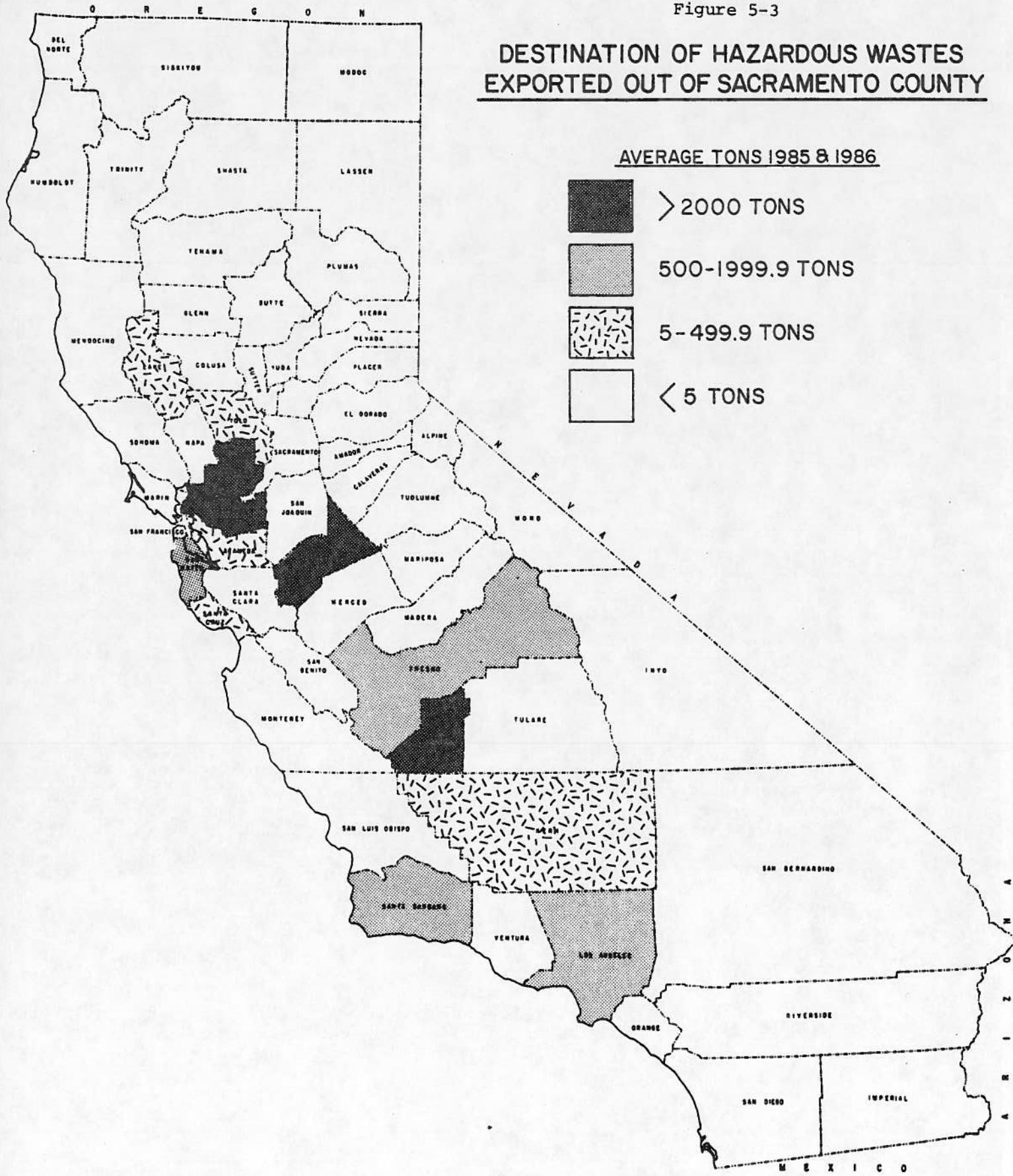
Geography of Exports. Over 40 percent of the exports remained within an approximate 100 mile radius of Sacramento County (Figure 5-3). Contra Costa, Solano, and Stanislaus counties received 43.0 percent of all exports. The San Francisco Bay Area received 3.4 percent, while a substantial proportion (35.4 percent) was shipped to southern counties. A minor amount, 0.1 percent, was sent to counties to the north. Of the remainder, 14.3 percent went to "unknown" destinations and 3.4 percent was shipped outside of California.

Receiving Facilities. The wastes exported from Sacramento County were shipped to 34 known facilities within the state in 1985 and 1986. Four facilities in other states received hazardous wastes directly from this county in 1985, and three in 1986. An indeterminant number of unknown receiving facilities accounted for an average of 14.3 percent of the export tonnage.

Eight major receiving facilities accepted 83.9 percent of the exports in 1985, and 73.9 percent in 1986 (Table 5-21). The difference was largely reflected in the "unknown" category, which increased from 8.6 percent in 1985 to 18.6 percent in 1986. Much of this "unknown" was in 4,663 tons of contaminated soil from the Jibboom Junkyard superfund site. Discounting that portion, the "unknown" represents about the same percentage for each year. The two facilities receiving the greatest volumes were the IT-Vine Hill facility in Contra Costa County (now closed) and the Chemical Waste Management's Kettleman facility in Kings County. Together they accepted about half of Sacramento County's exports for both years.

Figure 5-3

## DESTINATION OF HAZARDOUS WASTES EXPORTED OUT OF SACRAMENTO COUNTY



**TABLE 5-19**  
**EXPORTS: MAJOR HAZARDOUS WASTE GROUPS**

Waste Group	1985		1986		'85-'86 Average	
	(Tons)	% of all Exports	(Tons)	% of all Exports	(Tons)	% of all Exports
1. Waste Oil	5,010	15.9	4,480	11.1	4,750	13.2
3. Non-Halogenated Solvents	1,830	5.8	2,010	5.0	1,920	5.3
4. Organic Liquids	5,920	18.8	4,220	10.4	5,070	14.1
5. Pesticides	940	3.0	2,970	7.3	1,960	5.4
6. Dioxins/PCBs	1,250	3.9	3,540	8.8	2,400	6.6
7. Oily Sludges	840	2.7	2,360	5.8	1,600	4.5
13. Nonmetallic Inorganic Liquids	8,040	25.5	4,510	11.1	6,270	17.4
16. Soils	2,450	7.8	10,200	25.2	6,320	17.6
17. Miscellaneous	2,920	9.2	4,270	10.5	3,590	10.0
Other	2,320	7.4	1,920	4.8	2,120	5.9
<b>TOTAL</b>	<b>31,520</b>	<b>100.0</b>	<b>40,480</b>	<b>100.0</b>	<b>36,000</b>	<b>100.0</b>

SOURCE: Hazardous Waste Information System, DOHS

**TABLE 5-20**  
**EXPORTS: MAJOR RECEIVING COUNTIES**

County	1985		1986		'85-'86 Average	
	(Tons)	% of all Exports	(Tons)	% of all Exports	(Tons)	% of all Exports
Contra Costa	11,420	36.2	9,400	23.2	10,410	28.9
Kings	7,570	24.0	12,260	30.3	9,920	27.6
Solano	4,170	13.2	1,790	4.4	2,980	8.3
Stanislaus	1,920	6.1	2,250	5.6	2,080	5.8
Unknown	2,710	8.6	7,610	18.8	5,160	14.3
Out of State	330	1.1	2,150	5.3	1,240	3.4
Other	3,400	10.8	5,020	12.4	4,210	11.7
<b>TOTAL</b>	<b>31,520</b>	<b>100.0</b>	<b>40,480</b>	<b>100.0</b>	<b>36,000</b>	<b>100.0</b>

SOURCE: Hazardous Waste Information System, DOHS.

TABLE 5-21 EXPORTS: MAJOR RECEIVING FACILITIES

County	Facility Name	1985		1986		'85-'86 Average	
		(Tons)	% of all Exports	(Tons)	% of all Exports	(Tons)	% of all Exports
Contra Costa	IT Corp.- Vine Hill	9,900	31.4	7,810	19.3	8,850	24.6
	Richmond San. Serv.	950	3.0	1,500	3.7	1,230	3.4
Fresno	Safety Kleen Corp.	1,080	3.4	1,270	3.1	1,180	3.3
Kings	Chem Wst Mg Ketl'mn	7,570	24.0	12,260	30.3	9,920	27.5
Santa Barbara	Casmalia Disposal	650	2.1	1,170	2.9	910	2.5
Solano	IT Corp.- Panoche	4,170	13.2	1,790	4.4	2,980	8.3
Stanislaus	Refineries Serv.	1,920	6.1	2,250	5.6	2,080	5.8
Unknown	Unknown	2,710	8.6	7,610	18.6	5,160	14.3
Idaho	Envirosafe Serv.	230	0.7	1,860	4.6	1,040	2.9
Other		2,340	7.5	2,960	7.5	2,650	7.4
<b>TOTAL</b>		<b>31,520</b>	<b>100.0</b>	<b>40,480</b>	<b>100.0</b>	<b>36,000</b>	<b>100.0</b>

SOURCE: Hazardous Waste Information System, DOHS.

TABLE 5-22  
EXPORTS: MAJOR ORIGINATING FACILITIES

Facility Name	1985		1986		'85-'86 Average		
	(Tons)	% of all Exports	(Tons)	% of all Exports	(Tons)	% of all Exports	
Aerojet General Corp., Sac.	15,040	47.7	13,650	33.7	14,350	39.9	
American Env. Mgmt. Corp.	1,210	3.8	3,840	9.5	2,520	7.0	
Jibboom Junkyard Superfund Site	--	--	4,660	11.5	2,330	6.5	
McClellan Air Force Base	4,390	13.9	8,550	21.1	6,470	17.9	
Refineries Service	2,210	7.0	2,250	5.6	2,230	6.2	
Safety Kleen Corp.	1,140	3.6	1,290	3.2	1,220	3.4	
Sac. Munc. Util. Dist. Corp.	1,820	5.7	1,230	3.0	1,520	4.2	
Southern Pacific Trans.	1,090	3.5	260	0.7	680	1.9	
Other	4,620	14.8	4,750	11.7	4,680	13.0	
<b>TOTAL</b>		<b>31,520</b>	<b>100.0</b>	<b>40,480</b>	<b>100.0</b>	<b>36,000</b>	<b>100.0</b>

SOURCE: Hazardous Waste Information System, DOHS.

Originating Facilities. Eight facilities in Sacramento County shipped about 87 percent of the hazardous waste exports (Table 5-22). The largest exporters in 1985 and 1986 were Aerojet General Corporation and McClellan Air Force Base. These two facilities accounted for an average of 57.8 percent of the exports. The three remaining major exporters, American Environmental Management Corporation, Refineries Service, and Safety Kleen Corporation operate transfer stations and were not actually generating hazardous waste. Rather, they were exporting the hazardous wastes generated in, or imported to, Sacramento County. American Environmental and Refineries Service are also the two leading importers into Sacramento County.

Export Summary. The waste groups representing the largest volumes exported out of Sacramento County were waste oil, organic liquids, and nonmetallic inorganic liquids. Contaminated soils may have comprised a large percentage of the exports, but the contribution is variable and is likely to decrease and stabilize in the coming years. The majority of Sacramento County's exports originated from a few facilities. The two largest exporters were Aerojet General Corporation, and McClellan Air Force Base. A substantial proportion of the exports came from transfer stations which were exporting wastes collected from within this county or from other counties. Most of the exported wastes were destined for the IT Corporation's Vine Hill facility in Contra Costa County, or the Chemical Waste Management's Kettleman facility in Kings County.

#### MITIGATION OF WASTE IMPACTS

Hazardous waste exports place a burden on the counties receiving the waste, even if no accidents or environmental damage occurs. The receiving counties must prepare emergency response plans, train and equip personnel, review facility operations, and monitor environmental and health safeguards. Section 25173.5 of the Health and Safety Code allow a county to impose either a user fee or a tax on off-site hazardous waste facilities. This fee or tax may be imposed on all facilities, existing or new, subject to a limitation not to exceed 10% of the gross revenues of the facility. Counties with facilities receiving hazardous waste from other counties will be able to collect increased revenues due to those imports. They may expend those revenues to mitigate the impacts of the waste imports as they see fit.

#### SUMMARY OF IMPORTS AND EXPORTS

Sacramento County imported an average of 5,760 tons of hazardous waste for 1985 and 1986, mostly as dioxins/PCBs and waste oil. While this is a substantial tonnage, far greater amounts of hazardous waste were exported, averaging 36,000 tons over the two-year period. The exports included much of the waste imported to transfer stations in this county, plus a substantial proportion of waste generated in Sacramento County. Remaining in this county was an average balance of 13,100 tons of waste, representing 26.7 percent of the wastes manifested in the county. Most of these wastes were in storage, awaiting either disposal within Sacramento County, or transfer out of the county.

**TABLE 5-23**  
**CURRENT OFF-SITE WASTE MANAGEMENT**  
**IN SACRAMENTO COUNTY**

Waste Group	Waste Sources				
	'85-'86 Average Manifested Wastes (Tons) (1)	Contaminated Sites & Drilling Muds (Tons)	Small Quantity Gener- ators (Tons)	House- Hold Wastes (Tons)	Total Estimated Volume (Tons)
1. Waste Oil	16,190		3,070	690	19,950 (2)
2. Halogenated Solvents	240		610		850
3. Non-Halogenated Solvents	1,720		580	5,940	8,240
4. Organic Liquids	5,030		330	160	5,520
5. Pesticides	1,960		400	610	2,970
6. PCBs and Dioxins	970		50	80	1,100
7. Oily Sludges	1,560		250		1,810
8. Halogenated Organic Sludges & Solids	30		90		120
9. Non-Halogenated Organic Sludges & Solids	440		100		540
10. Dye & Paint Sludges and Resins	230		140		370
11. Metal-Containing Liquids	410		90	1,070	1,570
12. Cyanide & Metal Liquids	20		10		30
13. Non-Metallic Inorganic Liquids	6,280		230	370	6,880
14. Metal Containing Sludges	20		100		120
15. Non-Metallic Inorganic Sludges	680	1,880	180		2,740 (3)
16. Contaminated Soil	7,610				7,610
17. Miscellaneous Wastes	3,200		2,760	650	6,610
<b>TOTAL</b>	<b>46,590</b>	<b>1,880</b>	<b>8,990</b>	<b>9,570</b>	<b>67,030</b>

1. Wastes exported by transfer stations in Sacramento County (American Environmental Management Corp. and Safety Kleen) were subtracted from manifested wastes. Values from Appendix E, Table 13.
2. Includes 11,540 tons of waste oil from route service haulers.
3. Actual average manifested volume of contaminated soils for 1985 and 1986 is 6,420 tons. In this table that value is replaced with 7,610 tons, the volume of soil estimated based on total contaminated sites cleanups over the planning period. See Table 5-9 for a detailed discussion.

Note that the value for waste remaining in county (13,100 tons) is not derived from column 1 of Table 5-23 which has been adjusted for double counting of transfer station exports, and modified with an alternative value of contaminated soil. Neither alteration can be considered in the analysis of exports. Therefore, the calculation of tons of waste remaining in the county is based on the unaltered total from column 1, Table E-13: 49,100 - 36,000 = 13,100 tons.

The quantities of hazardous wastes imported to Sacramento County are relatively small in comparison to the total estimated wastes generated in the county. However, it is evident from the variations between the 1985 and 1986 data, that imports fluctuate from year to year. A comprehensive hazardous waste management plan must consider future increases in imports and a consequent decrease of the capacity to process locally generated wastes by local TSD facilities. Further, the wastes exported from this county represent a large proportion of the total estimated wastes generated here. In this case, the plan must weigh the consequences of out-of-county facility closures which might increase the burden for local TSD operations. Therefore, it is important to share information and establish agreements with other jurisdictions in the Sacramento County region which will allow appropriate exchanges of hazardous wastes. Agreements, such as memoranda of understanding, will give Sacramento County the needed flexibility for disposal of additional hazardous wastes in the future.

#### CONCLUSION

Table 5-23 presents a summary of the current level of off-site waste management for Sacramento County outlined in this section. The total volume generated in 1986 is estimated to be 67,030 tons. Future sections will use this total volume as a base figure to compare year 2000 waste projections that include waste management with and without waste reduction, and will ultimately be used for facility siting based upon local need.



## Section 6

### PROJECTED WASTE GENERATION WITHOUT WASTE REDUCTION

#### INTRODUCTION

Hazardous waste volumes must be projected into the future in order to estimate hazardous waste facility needs for the year 2000. The projection methodology suggested in the guidelines requires that generators first be broken out by Standard Industrial Classification (SIC) codes. Then, each SIC category is individually projected for changes in the hazardous waste streams generated by those industries. Finally, these waste streams must be totalled in the waste groups used in the CHWMP. This projection methodology was not possible because no projections were available for growth either in the individual SIC categories or the industrial sector as a whole.

A variety of alternative projection strategies were examined for use in this Plan. As in other sections, the basic approach is to choose available information over guesswork. Population projections from the sources used in this section have typically been very accurate. Some other projection methods have the potential for great uncertainty, because multiple levels of assumptions would be required. (For example, to estimate waste generation on the basis of industrial revenues requires assumptions about both waste generation per dollar of earnings and future inflation rates.) In this Plan, projections for future hazardous waste generation are based on population growth. Waste reduction potential is not included in the projections in this section.

#### ASSUMPTIONS

These assumptions were made in order to calculate future hazardous waste generation in Sacramento County:

1. Countywide hazardous waste generation will increase at a rate equal to the population growth rate.
2. No outside factors such as economics, landfill bans, or technology changes will affect hazardous waste generation rates (excluding contaminated soil).

#### POPULATION GROWTH RATES

Table 6-1 shows actual and projected population growth rates for Sacramento County. In recent years, the County has experienced a growth rate averaging 2.46 percent per year, with a range from 1.7 to 3.1 percent. The Sacramento County General Plan is now being revised with an assumption that the growth rate will remain around 2.5 percent through 1990.

**TABLE 6-1**  
**POPULATION GROWTH RATES FOR SACRAMENTO COUNTY**

<u>SOURCE</u>	<u>PERIOD</u>	<u>RATE (PERCENT/YEAR)</u>
Calif. Department of Finance	1980-1986	2.46 (average)
Sacramento County	1988-1990	2.5 (preliminary)
Calif. Department of Finance	1987-2000	2.2 (projection)
Sacramento Housing and Redevelopment Agency	1987-2000	1.9 (projection)
U.S. Department of Commerce	1987-2000	1.8 (projection)

The three available year 2000 estimates, from sources that have traditionally been very accurate, indicate lower growth rates. This reflects the fact that high growth rates are seldom sustained. It is relevant that the California Department of Finance projection drops to 1.4 percent after the year 2000. The five projected growth rates average to 2.17 percent annually, but the trend is from rates around 2.5 percent currently to rates a bit less than 2 percent by the year 2000. The three year-2000 projections average to 1.97 percent, so a growth rate of 2 percent per year was selected for use in this Plan.

#### INCREASING WASTE STREAMS

Some waste streams in Sacramento County may actually grow faster than the population growth rate. There is no value, however, to detailed projections that are based primarily on guesswork. The following waste streams have been identified as having the potential to grow faster than the population growth rate, but no quantifiable projections are possible at this time:

- Wastes from the "high-tech" electronics industry;
- Drilling mud waste from oil and gas operations; and
- Pre-treatment sludges.

For the past several years, Sacramento County has been reported to be on the edge of a boom in the electronics industry. A recent report by the City of Sacramento Planning Department concludes that the city recruiting efforts should target electronics manufacturers (Fantus Company, Sacramento City Targeted Industry Study, 1987). However, growth in this industry has been slower than anticipated. This has been attributed to a variety of factors, including competition for facilities among many cities in the country, the trend toward foreign fabrication facilities, and a general slump in the electronics industry. Historical data on the industrial sector as a whole in Sacramento County shows a very slow growth rate. Expansion of "high-tech" industry has been offset by a decline in traditional manufacturing in the County (Woods and Poole Economics, U.S. Department of Commerce, 1987). Also, if Sacramento County becomes the future location for electronics manufacturing, newer plants are likely to incorporate state-of-the-art waste reduction measures in their initial design.

Oil and gas exploration results in drilling muds which must be disposed of as hazardous waste. Between 1974 and 1984, oil and gas exploration was Sacramento County's fastest growing industry. Current projections now predict much slower future growth rates (Sacramento City, 1987). Declining oil prices have contributed to this decline, as exploration is now more limited. In addition, the possible substitution of less hazardous drilling muds in the future may reduce the volume of hazardous waste generated by this industry.

Pretreatment sludges may be produced in increasing volumes in the next decade. This could occur as land disposal restrictions make sewer disposal more attractive. Regulations governing the use of the regional sewer system could require pretreatment operations of many hazardous waste generators taking this option. Currently, waste categories that include pretreatment sludges (metal containing sludges and non-metallic inorganic sludges) comprise only one percent of Sacramento County's total hazardous waste stream, and this volume declined from 1985 to 1986. Since pretreatment sludges are only a fraction of the waste included in these five categories, even a large increase in pretreatment activity would not significantly affect overall facility needs. These waste categories should be carefully monitored, however, as large increases could be a sign of increased pretreatment activity.

#### DECREASING WASTE STREAMS

Some hazardous waste streams in Sacramento County may grow at a rate less than population growth. The difficulty is in predicting how much less the growth rates could be. In this Plan, it is assumed that all waste streams except contaminated soil will grow at the same rate. Economics and the pending landfill ban will provide pressure to reduce all waste volumes. Wastes from the following specific activities have been identified as having the potential to grow at a rate less than the population growth rate:

- Agriculture;
- Military bases;
- Missile manufacturing; and,
- Traditional manufacturing.

U.S. Department of Commerce statistics show both farm earnings and farm employment in Sacramento County have declined since 1970, and are expected to continue to decline (Woods and Poole Economics, U.S. Department of Commerce, 1987). This trend may be due to the conversion of agricultural land in the County to urban uses. It follows that pesticide waste volumes will decline, as will volumes of other hazardous waste derived from agricultural activities. Increasing restrictions on agricultural chemicals and a move towards non-chemical pest management may accelerate this decline.

The three military bases in the County, Sacramento Army Depot, and Mather and McClellan Air Force Bases, are major hazardous waste generators, responsible for over 90 percent of the current total volume. The level of activity at any military base is uncertain at this time, since further Defense Department budget cuts may be necessary in order to meet balanced budget provisions of recent federal legislation. As recently as 1987, Mather Air Force Base was

**TABLE 6 - 2**  
**PROJECTED OFF-SITE WASTE MANAGEMENT**  
**IN SACRAMENTO COUNTY WITHOUT WASTE REDUCTION (1)**

Waste Group	Year of Volume Estimate		
	Current (Tons) (2)	1992 (Tons)	2000 (Tons)
1. Waste Oil	19,950	22,030	25,810
2. Halogenated Solvents	850	940	1,100 (3)
3. Non-Halogenated Solvents	8,240	9,100	10,660
4. Organic Liquids	5,520	6,090	7,140
5. Pesticides	2,970	3,280	3,840
6. PCBs and Dioxins	1,100	1,210	1,420
7. Oily Sludges	1,810	2,000	2,340
8. Halogenated Organic Sludges & Solids	120	130	160
9. Non-Halogenated Organic Sludges & Solids	540	600	700
10. Dye & Paint Sludges and Resins	370	410	480
11. Metal-Containing Liquids	1,570	1,730	2,030
12. Cyanide & Metal Liquids	30	30	40
13. Non-Metallic Inorganic Liquids	6,880	7,600	8,900
14. Metal Containing Sludges	120	130	160
15. Non-Metallic Inorganic Sludges	2,740	3,030	3,540
16. Contaminated Soil	7,610	7,610	7,610 (4)
17. Miscellaneous Wastes	<u>6,610</u>	<u>7,300</u>	<u>8,550</u>
<b>TOTAL</b>	<b>67,030</b>	<b>73,220</b>	<b>84,480</b>

1. Calculated at 2% population growth per year, except for contaminated soil.
2. From Table 5-23.
3. Due to the Montreal Accord on chlorofluorocarbon reduction for the year 2000, this volume is uncertain and will be revised in future revisions of the plan.
4. Contaminated soil volume transported off-site is projected to remain constant throughout the study period.

targeted for closure. That effort was eventually discontinued, but layoffs are occurring at all three military bases at this time.

Similar uncertainty surrounds the aerospace industry in the County. Historically, aerospace operations have been cyclic in nature, and as business fluctuates, the volume and type of waste stream could change. Furthermore, as discussed previously, traditional manufacturing is giving way in Sacramento County to "high-tech" manufacturing. As this continues, the hazardous waste streams coming from traditional manufacturing will decline in volume.

Due to the Montreal Accord on chlorofluorocarbon reduction for the year 2000, the volume of such wastes (included in the halogenated solvents waste group) is uncertain and will be revised in future reviews of the plan.

#### YEAR 2000 PROJECTIONS WITHOUT WASTE REDUCTION

Table 6-2 indicates the annual volumes expected in each hazardous waste group by the year 2000, without any factors operating to reduce volumes. These figures represent a growth of the volumes in Table 5-23 by 2 percent per year, with the single exception of contaminated soils. It should be noted that 50 percent of the total volume is in three waste groups: waste oil, non-halogenated solvents, and contaminated soil. Most waste oil and solvents are already subject to recycling, and contaminated soil is typically either treated on-site (an improving technology) or through bioremediation (see Section 10). Accounting for both the growth in waste volumes, and the current management of waste oil, solvents, and contaminated soil, additional off-site treatment facility needs will remain under 40,000 tons annually.



## SECTION 7

### WASTE MINIMIZATION

#### OVERVIEW

This section discusses waste minimization issues and opportunities in Sacramento County. Portions of this discussion have been adapted from the draft Alameda County Hazardous Waste Management Plan. Hazardous waste minimization is an underlying objective of this Plan. As stated in the Guidelines, "It is the intent of the guidelines to insure that the generation of hazardous waste in California is reduced to the maximum extent feasible statewide." Both the State DOHS and private industry also play significant roles in the success of the overall waste minimization effort.

The inevitable result of industrial and commercial activities utilizing hazardous materials is that a certain amount of hazardous waste is produced. The most effective way to manage hazardous wastes generally is at the source by reducing wastes produced. The treatment and disposal need only be considered for wastes that are actually generated. Furthermore, the very fact that hazardous waste minimization is a relatively new focus of attention means that substantial improvement can be made with little economic or technical dislocation. For an example, consider the state of "energy conservation" in the aftermath of the energy crisis of 1973-74.

Currently, most of the economic and regulatory emphasis is placed on control and/or cleanup of hazardous waste after it has been generated. This is an inefficient approach with high environmental costs. A shift to a hazardous waste minimization approach has the potential to benefit human health, the environment, and industry.

#### DEFINITIONS

- "Hazardous waste reduction" is any on-site activity that "reduces the volume or toxicity of waste from a given production process" (DHS Guidelines). This definition includes on-site source reduction, recycling and treatment that reduces the need for off-site facilities.
- "Source reduction" is limited to "on-site practices which reduce, avoid or eliminate the generation of hazardous waste before it is produced." Source reduction can include process modifications, equipment changes, input substitution, input conservation, improved housekeeping, and in-process recycling, all of which serve to prevent hazardous wastes from ever being generated.
- "Recycling" recovers and reuses hazardous materials that otherwise would have become waste.
- "Treatment" includes the various processes, such as incineration, that can be used to reduce the volume and toxicity of hazardous wastes, thus making disposal easier.

**TABLE 7-1**  
**HIERARCHY OF HAZARDOUS WASTE**  
**MANAGEMENT APPROACHES**  
**FOR SACRAMENTO COUNTY**

**1. SOURCE REDUCTION**

Measures that reduce the generation of hazardous waste before it is produced.

**2. ON-SITE RECYCLING/RESOURCE RECOVERY**

Measures that reuse hazardous waste products. Recycling or resource recovery occurs at the same location where the hazardous waste was generated. In some cases a residual may remain after recycling.

**3. OFF-SITE RECYCLING/RESOURCE RECOVERY**

Measures that reuse hazardous waste products. Hazardous waste must be transported to another location for recycling or resource recovery. In some cases a residual may remain after recycling.

**4. ON-SITE TREATMENT**

Processes that change the composition of waste from hazardous to non-hazardous. Treatment occurs at the same location where the hazardous waste was generated. Some hazardous waste residual may remain after treatment.

**5. OFF-SITE TREATMENT**

Processes that change the composition of waste from hazardous to non-hazardous. Hazardous waste must be transported to another location for treatment. Some hazardous waste residual may remain after treatment.

**6. DISPOSAL**

To abandon, deposit, inter or otherwise discard treated or untreated hazardous waste for which a use is no longer intended.

**NOTE:** Only on-site activities (Approaches 1, 2, and 4) are considered "waste-reduction", since only these activities will reduce the need for additional off-site facilities. Only source reduction and recycling/resource recovery (Approaches 1, 2, and 3) are considered "waste minimization", since only these activities conserve resources and minimize treatment and disposal needs.

## TERMINOLOGY

As stated in Sections 1 and 7, waste reduction is distinct from waste minimization. Waste minimization describes the County, State, and private sector effort to eliminate waste generation to the extent possible, and to conserve resources through recycling. This includes source reduction, on-site recycling/resource recovery, and off-site recycling/resource recovery (items 1, 2, and 3 in the hazardous waste management hierarchy). Since waste minimization includes off-site recycling facilities, the benefits of waste minimization efforts can not all be claimed to reduce the need for off-site facilities.

## EXISTING FEDERAL AND STATE WASTE MINIMIZATION POLICIES

In recent years, federal and state legislation and policies have been established to emphasize the importance of waste minimization.

In 1984, Congress declared the following to be national policy: "Wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored or disposed of so as to minimize the present and future threat to human health, and the environment" (Oldenburg, 1987).

In 1986, the California Legislature enacted a bill (SB1500, Roberti) that prohibits land disposal of untreated hazardous waste after 1990. The bill also established the following priority for waste management practices in California: 1) hazardous waste reduction (source reduction) and 2) recycling.

Later in 1986, Governor Deukmejian issued an executive order directing the State Department of Health Services to "establish the reduction of the volume of hazardous waste as a principal goal."

## BENEFITS OF WASTE MINIMIZATION

A well-planned, effective hazardous waste minimization program would significantly reduce the volume and/or toxicity of hazardous waste that is generated in Sacramento County and which currently requires treatment. The numerous benefits of such a program include the following:

- A cleaner environment that poses fewer public health risks.
- A need for fewer off-site hazardous waste treatment facilities.
- Reduced risk to human health from hazardous waste transport on public roadways.
- Improved, more efficient industrial processes.
- More efficient use of natural resources.

- Potential for short- and long-term cost savings to industry.
- Reduced liability for industry and small quantity generators due to a reduction in the volumes of hazardous waste that require handling and transport.
- Potential for safer working conditions due to a reduction in the amount of hazardous wastes workers are exposed to.

Whatever else one does on this basic issue of waste minimization, it is essential to provide small businesses with information that makes it clear that these investments can be cost effective. That is, in contrast to many environmental controls, money spent on source reduction can actually return a profit to the firm. The issue can be viewed as one of microeconomics, rather than of regulatory compliance or environmental safety. In this instance, economic and environmental impacts can both be positive.

Perceived in this way, the owners and/or operators of small firms will have a positive motivation to proceed rapidly toward achieving appropriate waste minimization objectives. Such motivation, in turn, is essential to achieve substantial source reduction in Sacramento County.

#### REASONS FOR WASTE MINIMIZATION

Many reasons already exist to encourage industry and small quantity generators to implement waste minimization measures. These reasons are listed and described below:

- Increases in costs of hazardous waste management.
- Public opposition to new waste treatment and disposal facilities.
- Permitting complexity for new waste treatment and disposal facilities.
- Financial liability.
- Increases in costs of liability insurance.

#### INCREASES IN COST OF HAZARDOUS WASTE MANAGEMENT

Costs of hazardous waste storage and disposal have increased due to recent regulations implemented by the Environmental Protection Agency and the State of California. By 1990, all untreated hazardous wastes will be banned from land disposal sites. This land disposal restriction will increase the cost of hazardous waste disposition by eliminating the lower cost alternative, land disposal. In addition, stringent restrictions on surface disposal facilities are already closing such facilities. This will result in higher disposal costs at remaining facilities. Recent regulations will also make underground storage more costly (U.S. Environmental Protection Agency, 1986).

#### PUBLIC OPPOSITION TO NEW WASTE FACILITIES

Although hazardous waste land disposal restrictions will increase the demand for new treatment facilities, problems at, and closures of existing disposal facilities have made the public aware of the potential for problems at these types of facilities. Consequently, the public rightfully demands that the reviews of these facilities be thorough, and be open for public comment. This necessary and desirable process is time consuming. The increased review time increases the cost of these projects, thus increasing the cost of waste treatment. This gives industry an added incentive for waste reduction.

#### PERMITTING COMPLEXITY FOR NEW WASTE FACILITIES

Although demand for future treatment and storage facilities will be high, permitting procedures will slow the siting process further and delay the availability of new capacity. Permits for new hazardous waste facilities may take two or more years to obtain. No new facility may be constructed until permits are approved. Lack of available capacity will increase the costs of needed treatment, storage and disposal of hazardous waste (U.S. Environmental Protection Agency, 1986). Again, increased disposal costs will make waste reduction economically more attractive to industry.

#### FINANCIAL LIABILITY OF HAZARDOUS WASTE GENERATION

Hazardous waste generators have continuing financial liability for their wastes even when off-site disposal facilities are used. In general, the more hazardous the waste generated, the greater the likelihood for hazardous waste accidents (U. S. Environmental Protection Agency, 1986), as well as the ever-present liability for wastes in perpetuity.

#### INCREASES IN COSTS OF LIABILITY INSURANCE

In the past, personal financial liability from hazardous waste accidents was reduced by obtaining insurance. Increases in accidents involving hazardous waste have led to insurance cost increases of 50 to 300 percent and at times is not available. Higher insurance costs mean higher overall costs of treatment, storage, and disposal (U. S. Environmental Protection Agency, 1986).

#### BARRIERS TO WASTE MINIMIZATION

Waste minimization is an attractive concept with potential benefits for all. As with any new approach, however, there are a number of barriers that must be broken in order to fully implement waste minimization measures. These barriers are listed and described below.

- Technical Barriers
- Economic Barriers

- Regulatory Barriers
- Informational Barriers

#### TECHNICAL BARRIERS

The waste minimization approach requires a major shift from the traditional pollution control approach and some practical limits exist. Every industry and small quantity generator will have very specific circumstances and individualized processes. These factors may limit the opportunities to implement generic waste reduction measures that significantly reduce the amount of hazardous waste that is generated. This can be particularly true if efficient housekeeping-type waste reduction practices are already in effect. Other general technical limitations are listed below:

- In spite of new waste minimization opportunities, some products cannot be manufactured without producing large quantities of hazardous waste.
- Many input materials cannot be substituted for others that produce smaller volumes or less toxic waste.
- Even companies that produce the same product may have extensive variations in equipment, raw materials, product specifications and output requirements. Because of these variations, different approaches for waste minimization measures may be needed in each plant.
- Technical modifications are more difficult in "batch processes" where the raw materials, end-products, and wastes are constantly changing.
- In some cases, waste minimization opportunities may be minor and achievable only after a major cost expenditure.

#### ECONOMIC BARRIERS

Waste minimization must be economically justifiable to hazardous waste generators since it is currently a voluntary approach to pollution problems. Waste minimization practices often result in cost savings, yet economic factors can also create barriers to waste minimization implementation. Small businesses often face severe cash flow constraints, and do not have access to low-cost loans. Each small firm's source reduction program needs to be based on a sound waste audit, costing perhaps from \$1,000 to \$5,000. Selected analyses of particular waste streams may add to these costs. Decisions must then be made on how to alter existing processes to reduce volumes or toxicity of hazardous waste generation; detailed engineering designs may then be needed. State and local agencies may require permits to carry out certain kinds of operational changes. Finally, there are costs associated with making the desired changes in the manufacturing process itself: eg. replumbing a production system; adding new tanks and pipes to separate waste streams, purchase of recycling equipment or waste minimization systems, etc. Examples include the following:

- Capital may not be available for waste minimization measures within a particular industry or company.
- If capital is available, waste minimization measures may have to compete with other programs for limited funds.
- Waste minimization measures may only provide a long-term return on an investment while other investments offer a short-term return.
- Because waste minimization is a relatively new concept, some firms may not yet recognize it as a worthwhile business investment.
- Some industries or companies may generate hazardous waste that is technically recyclable. If local recycling costs are high, waste generators will tend to find another means to dispose of their waste.
- Industries that have undergone recent modernization may not want to spend additional capital on waste minimization measures.
- In some cases, waste minimization opportunities may be minor and achievable only after a major cost expenditure.

#### REGULATORY BARRIERS

Existing regulations may also discourage hazardous waste generators from implementing waste minimization measures. Two examples of regulatory barriers are listed below:

- Source reduction measures often require the installation of new equipment. The new equipment could change a portion of the industrial process in such a way that it could be considered "treatment." This could require the waste generator to obtain a permit as a treatment, storage and disposal facility. The appropriate permit is costly and generally requires two or more years to obtain (U. S. Environmental Protection Agency, 1986).
- Recent EPA solid waste definition changes have discouraged some industries from using off-site recycling. The new wording suggests that manifested wastes present a greater liability for industry once the hazardous waste has been taken off-site and is outside industry control (U. S. Environmental Protection Agency, 1986).

#### INFORMATIONAL BARRIERS

Waste minimization is still a relatively new approach to hazardous waste problems and, therefore, is not widely understood. Many industries are not aware of waste minimization opportunities. Without adequate information, waste minimization measures may be viewed as too complex or too expensive to consider. Despite all the recent attention given to the topic of waste minimization many data gaps still exist.

### NECESSARY STEPS FOR SUCCESS

By preparing this Plan, Sacramento County has taken an important step toward reducing future generation of hazardous waste. Future waste minimization programs will rely on the participation of industry and other waste generators. The success of these future programs will depend on the following key elements:

1. Information Dissemination. Shared information is the first step toward a successful hazardous waste minimization program. Industry, small quantity generators, government representatives, and the public must be aware of current hazardous waste management practices, applicable laws and regulations, and hazardous waste minimization alternatives. While large generators already have the resources and access to information needed to accomplish much on their own, the special needs of smaller firms must then be addressed directly by local governments following the strategy in this CHWMP.
2. Industry Participation. Industry generates the greatest volumes of hazardous waste in Sacramento County. Industry should, therefore, be a major focus of a future hazardous waste minimization program. Program success will relate directly to the degree of industry involvement that occurs. Ventura County recently conducted a two-year program to promote waste minimization. The program began with the same type of data gathering efforts required for the CHWMP and then followed through with an individual review of each major hazardous waste producer in Ventura County. Industry involvement was entirely voluntary. The program reported a 70 percent reduction in the volume of hazardous waste that requires land disposal.
3. Financial Incentives for Industry and Other Waste Generators. Some industries and businesses have not instituted waste minimization because of a lack of economic incentive. Future programs must, therefore, include financial incentives to make hazardous waste reduction the logical, affordable, efficient choice.
4. Coordination with Other Government Programs. Local, regional and state governments all have a role in solving hazardous waste problems. To avoid overlapping programs and conflicting policies and regulations, all appropriate governments should work together to develop a comprehensive and effective hazardous waste minimization program. State and federal legislators already have adopted a variety of regulatory requirements intended to require waste minimization, but few of these recent adoptions have been fully implemented.

### APPROACHES TO WASTE MINIMIZATION

Hazardous waste minimization measures can be grouped into three main categories: source reduction, recycling or resources recovery, and treatment.

From an environmental and public health perspective, some approaches to hazardous waste minimization are preferable to others. Table 7-1 presents the order of preference of hazardous waste minimization approaches for Sacramento County.

In general, measures which prevent the generation of hazardous waste are preferable to measures designed to manage hazardous waste after it is generated. Recycling and treatment operations that are located with hazardous waste generating facilities (on-site) are generally preferable to shipping hazardous waste to another location (off-site) for recycling, resource recovery, or treatment. This is due to the added environmental and public health risk from accidents and spills that can occur during transport.

A description of the three main approaches to hazardous waste reduction follows.

#### SOURCE REDUCTION

Source reduction measures are limited to "on-site practices that reduce the generation of hazardous waste before it is produced" (California Department of Health Services, 1987). Source reduction is the preferred approach to hazardous waste minimization because preventing waste is preferred to managing it after it has been produced. By comparison, hazardous waste management practices such as recycling, treatment, and disposal are less efficient, more costly, and generally associated with some degree of environmental risk.

Typical source reduction measures are listed as follows and described below:

- Housekeeping/Operational Improvements
- Product Substitution
- Input Materials Substitution
- Process Modification

Housekeeping Improvements: Housekeeping improvements generally involve simple, low cost changes in operation. Improved housekeeping practices can include:

- Spill and leak prevention programs.
- Improved materials handling.
- Waste stream segregation (isolating hazardous waste from nonhazardous waste to reduce the amount of material that must be managed as hazardous waste).
- Inventory controls (to reduce or eliminate unused chemicals that can become outdated and require hazardous waste disposal).

These types of improvements can be achieved through procedure changes, employee training programs, and management directives or incentives.

Product Substitutions: In some cases, it is possible to replace an original product with a substitute that serves the same purpose but reduces the amount of hazardous waste that is generated in the production process. For example, concrete pilings can sometimes replace creosote treated timbers, reducing the volume of hazardous creosote waste (U. S. Environmental Protection Agency, 1986).

Product substitution must be considered on a case-by-case basis according to the particular products and processes involved. The following factors are among those used to evaluate substitution opportunities:

- Suitability of the substitute for a particular use.
- Cost of the substitute.
- Environmental benefits achieved through the substitution.
- Trade-offs (substitutes may require high energy demands or may result in other undesirable by-products).
- Existence or absence of governmental incentives to promote the substitution.

Input Materials Substitution: In some production processes, input materials can be substituted to reduce the hazardous waste end product. Many substitutions involve a switch to input materials with fewer impurities. By using more pure materials in the production process, less contaminant enters the system, so less waste is generated. For example, the use of a higher grade crude oil in petroleum refining reduces the volume of impurities that must be removed during processing. In other cases, the substitution involves replacing highly toxic materials that are used in a process but not converted into a product. For example, water based products can be substituted for oil based products, or biodegradable detergents can be substituted for chlorinated solvents. Comparatively low-toxicity petroleum based solvents can be substituted for high-toxicity solvents such as perchloroethylene or trichloroethylene (U. S. Environmental Protection Agency, 1986).

The following factors are among those used to evaluate materials substitution opportunities:

- Suitability of the substitute for a particular use.
- Cost of the substitute.
- Environmental benefits achieved through the substitution.
- Trade-offs (substitutes may require high energy demands or may result in other undesirable by-products).
- Existence or absence of governmental incentives to promote the substitution.

Process Modification: Modifying the production process can also be an effective means of reducing industrial hazardous waste. Implementation approaches can include:

- Equipment modification
- Technology modification
- Process automation
- Water conservation

Equipment modification can reduce hazardous waste generation by updating existing industrial equipment with new, efficient designs. For example, mechanical wipers can be added to some production processes to scrape the sides of paint tanks. This can reduce the amount of hazardous paint waste that is generated (Department of Health Services, 1986).

Technology modification can be a very effective means of reducing hazardous waste generation in new industrial plants or plant expansions. Modifications can be relatively low in cost if changes occur during the early stages of production planning or design. Technology redesign for plants already in production can be very costly and in some cases impractical (U. S. Environmental Protection Agency, 1986).

Process automation can maximize production efficiency by automatically adjusting the production process to account for necessary changes. This can reduce the occurrence of spills, operator error, and substandard products (which themselves become hazardous waste once discarded) (U. S. Environmental Protection Agency, 1986).

Water conservation can also reduce the production of hazardous waste. Efficient product washing practices require less water, so less hazardous waste is generated.

#### RECYCLING/RESOURCE RECOVERY

As it relates to hazardous waste, recycling and resource recovery are defined by the Guidelines as follows:

- Recycling is the process of redirecting or utilizing a hazardous waste or a substance from a hazardous waste including recovery of resources from a hazardous waste.
- Resource recovery is the reuse or reclamation of any hazardous waste or any recyclable hazardous material (except those that are exempted by Section 25127.5 of the Health and Safety Code).

These definitions wholly include each other. Therefore, for simplicity, we have chosen to use the term recycling in the CHWMP.

Recycling allows the reuse of waste products after they are generated from a particular production process. Products produced through recycling can then be substituted for virgin materials in industrial processes. Net hazardous waste production is, therefore, reduced.

Recycling also has some disadvantages. In practice, recycling is difficult to regulate. Hazardous waste products have occasionally been reused in inappropriate ways. For example, waste oil contaminated with other hazardous wastes have been used on roads to reduce dust. This type of misuse could pose a more serious environmental or human health threat than if the waste oil had been taken to a land disposal site (Inform, 1985). Recycling also leaves a hazardous waste residual that requires land disposal.

Opportunities and incentives for recycling vary significantly by industry. The following factors influence industry participation in recycling programs:

- Suitability of a particular hazardous waste for recycling.
- Volume of hazardous waste generated. (Larger volumes tend to encourage recycling.)
- Cost of virgin raw materials compared with cost of recycling.
- Availability of recycling or resource recovery technology for a particular hazardous waste stream.

Recycling can occur on the premises of the hazardous waste generating industry (on-site) or at a recycling center at another location (off-site). The following factors influence whether recycling occurs on-site or off-site:

- Proximity of hazardous waste generating industry to off-site recycling facilities.
- Cost of on-site recycling compared with off-site.
- Permits and regulations associated with on-site storage of hazardous waste.
- Permits and regulations associated with operation of a multi-user off-site facility.
- Liability associated with storing hazardous waste on-site compared with the transport of hazardous waste to an off-site recycling facility.

Table 7-2 lists hazardous wastes that are considered recyclable by DOHS. Generators of these wastes are required to make an effort to recycle (California Department of Health Services, 1986).

TABLE 7-2

CALIFORNIA DEPARTMENT OF HEALTH SERVICES  
AUTHORIZED RECYCLABLE HAZARDOUS WASTES

1. Unused commercial chemical products.
2. Halogenated solvents.
3. Oxygenated solvents.
4. Hydrocarbon solvents.
5. Petroleum products including oils and hydraulic fluids.
6. Unspent acids.
7. Unspent alkalies.
8. Selected empty containers.

Source: California Department of Health Services, 1986.

In general, solvents, acids, and oil products tend to be recycled more often than other hazardous wastes. This is due to the availability of recycling technology for these substances and the demand for recycled materials of these types.

Economical recycling opportunities also exist for other hazardous waste products including the following:

- Newspaper ink.
- Photographic materials (such as silver and ferricyanide bleach).
- Paint sludge.
- Lead (from automobile batteries).
- Mercury (from mercury vapor light bulbs).

TREATMENT

Treatment is generally designed to accomplish one of the following three things (California Department of Health Services, 1986):

1. Destruction or Detoxification. This process transforms hazardous waste into a material that is safe for disposal.
2. Concentration or Volume Reduction. This process reduces the quantity of hazardous waste so that the minimum amount of material remains for disposal.
3. Immobilization. This process isolates the hazardous waste components of a waste stream from the rest of the waste and from the environment.

Treatment processes are generally divided into the following categories:

- Physical Treatment.
- Thermal Treatment.
- Chemical Treatment.
- Biological Treatment.

Table 7-3 provides examples of each of these treatment processes.

TABLE 7-3

EXAMPLES OF THE FOUR BASIC TREATMENT TYPES

<u>Physical Treatment</u>	<u>Thermal Treatment</u>	<u>Chemical Treatment</u>	<u>Biological Treatment</u>
Filtration	Incineration	Chlorination	Composting
Floatation	Oxidation	Degradation	Activated sludge
Sedimentation		Ion exchange	Aerobic lagoon
Leaching		Neutralization	Trickling filter
Evaporation			
Distillation			
Reverse osmosis			
Solvent recovery			

Source: California Department of Health Services, 1986.

Hazardous waste treatment is defined as "any method, technique or process, including neutralization, designed to change the physical, chemical or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous or less hazardous: safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduce in volume" (California Department of Health Services, 1987). In other words, treatment is partial or total elimination of hazardous characteristics or volumes of a waste stream.

Some treatment practices convert hazardous waste from one form to another. For example, incineration processes can discharge pollutants into the air. Processes that remove metals from wastewater produce a hazardous waste sludge. Treatment that results in a sludge or other hazardous waste residual also requires land disposal to dispose of the remaining hazardous waste product.

In general, treatment is the lowest rated approach to hazardous waste reduction. Hazardous waste treatment does nothing to conserve materials or resources and is preferable only to land disposal.

Treatment can occur on-site or off-site. The following factors influence where treatment occurs:

- Complexity of the treatment process required for a specific hazardous waste
- Proximity of hazardous waste generating industry to off-site treatment facilities.
- Cost of on-site treatment compared with off-site.
- Permits and regulations associated with on-site storage of hazardous waste.
- Permits and regulations associated with operation of a multi-user off-site facility.
- Liability associated with storing hazardous waste on-site compared with the transport of hazardous waste to an off-site treatment facility.

#### MEETING THE SPECIAL WASTE MINIMIZATION NEEDS OF SMALL QUANTITY GENERATORS

Much of the waste minimization program will directly meet the needs of small quantity generators. Additional actions in other arenas will also be helpful. Basic activities important to the needs of small quantity generators in Sacramento County will include: developing technical and financial assistance, increasing the availability of services for small quantity generators, and increasing cooperative problem-solving among members of the small quantity generator community. Many of these programs will require significant investments by the private sector of both funds and people. Public resources may be necessary to motivate certain private efforts, or even to subsidize them, if found to be necessary and appropriate.

#### FUNDING SOURCES TO ASSIST SMALL BUSINESSES

Many small businesses in Sacramento County have significant potential to reduce their generation of hazardous wastes, provided that they can gain access to the financial capacity to do so. With sufficient "front-end" financing, these small quantity generators will find (as many larger firms already have) that source reduction represents a sound investment for them. Facing high (and growing) costs of hazardous waste treatment and disposal, these firms can typically repay their waste minimization investments in two to seven years. This is an excellent return on investment for any firm. Most of these small firms, however, require special kinds of financial and technical assistance to start this process in motion.

Innovative new assistance efforts may be imperative to achieving long-term success in waste minimization here. Four specific kinds of actions are worthy of consideration in designing a comprehensive waste reduction financing program specifically tailored to Sacramento County's unique needs:

- Advise small quantity generators concerning availability of State loans and grants, State loan guarantees, and University of California Interns.
- Encourage cooperatives among similar categories of small quantity generators.
- Have larger firms sponsor loan guarantees and other assistance for smaller firms ("stewardship" or a "big brother" program).
- Help generators qualify for and obtain federal Small Business Administration (SBA) loans.

Grants: In the past three years, the California legislature has initiated legislation designed to provide technical and financial assistance for hazardous waste source reduction, recycling, and treatment. This assistance includes grant support for research, development, and demonstration projects, on-site technical assistance, and direct financial assistance for business investment in these technologies. These new laws establish mechanisms which may provide financial assistance to allow many small businesses in Sacramento County to carry out selected waste minimization activities.

The first bill in this area was AB 685 (Farr, 1985), which established several distinct efforts to support hazardous waste reduction, recycling, and treatment. AB 685 creates a state program of grants to private companies and local governments for innovative source reduction activities. Grants are available to projects at four distinct stages: feasibility study, project design, construction, and project evaluation. Some Sacramento County generators can certainly apply for such Farr grants. The County could help identify potential applicants.

UC Interns: Under a new Farr Bill (AB 1961 of 1987) the University of California is considering whether to establish an internship pilot program to place students with hazardous waste reduction, recycling, and treatment expertise in small- and medium- sized businesses. While this program does not yet exist, interns from UC Davis might play a role in Sacramento County's new program.

State Loan Guarantees: Another new bill passed in 1987 (SB 788 - Garamendi) creates a Hazardous Waste Loan Guarantee Account, to be administered by the State Office of Small Business ("OSB"). OSB is to transfer money from the new account to those local small business development corporations which choose to establish local funds for loans and loan guarantees to small hazardous waste generators for equipment, projects, or facilities to reduce their hazardous waste generation. DHS is to help publicize this new program, and to approve each proposed loan or loan guarantee. This new program, once fully operational, could become the heart of a waste minimization loan guarantee effort in Sacramento County. OSB is presently preparing to write guidelines for the program.

Cooperatives and Waste Minimization: It may be possible to achieve great success in waste minimization by helping groups of firms with similar hazardous waste problems to come together efficiently. Trade associations can play a crucial role in extending information about source reduction potential and use

of new waste reduction technologies. They can hold workshops, place information in their newsletters, or possibly fund joint waste audits.

On another level of interaction, a group of businesses in Sacramento County might agree to pursue jointly a new waste minimization process, using the same equipment. They could acquire professional waste audits at less cost on a joint basis. Overall maintenance costs would be greatly reduced through a central technical staff jointly funded by all the members. If the system requires a centralized recovery facility of some kind, the cooperative could jointly finance such an operation. Such on-site/off-site hybrids may offer great advantages for certain kinds of waste minimization efforts in Sacramento County.

"Large Adopt Small": Another option is for larger firms to sponsor loan guarantees in conjunction with local banks and the community foundation. If 10 to 30 firms were each to contribute \$10,000 per year (or would guarantee \$100,000 in loans, assuming even a pessimistic 10 percent default rate), a sizeable number of loans could be made to Sacramento County's small quantity generators. Some larger firms might, alternatively, provide "in-kind" assistance of various kinds: engineers to conduct waste audits; financial experts to help secure loans or financing.

Small Business Administration (SBA) Loans: The SBA's Pollution Control Financing Guarantee Program (PCFGP) already offers a unique form of financing to selected businesses. To qualify, they must: have 500 employees or less, have been in business for at least five years, and have been profitable for three of the past five years. Hundreds of small firms meet these eligibility criteria. The proposed investment must be certified by an appropriate environmental agency as necessary for environmental compliance; Sacramento County's Hazardous Materials Division could perform this function.

Unfortunately, the minimum SBA loan is \$200,000 (loans range up to a maximum of \$5 million). This size threshold may rule out many small firms in Sacramento County. At the SBA size threshold, these loans apply most readily to large investments in waste reduction equipment. There is the possibility that several small businesses could join together and submit a single SBA loan package.

Also, the SBA loans can include the costs of initial waste audits, technical consulting assistance, and permitting as well as capital equipment purchases and facility modification costs.



## Section 8

### PROJECTED WASTE GENERATION WITH WASTE REDUCTION

#### INTRODUCTION

This section estimates future (projected) waste streams in Sacramento County that will require off-site management. Applying a realistic waste reduction component to the waste volumes in Section 6 provides the basis for facility needs assessments (see Section 10, Scenario II).

Although County waste minimization programs are not currently in place, it is assumed that such programs will be developed in the near future. County Technical Assistance Programs have been implemented in other counties with dramatic results. (Ventura County has reported a 70% reduction in overall waste generation.) Section 7 describes the types of waste minimization measures that could be implemented.

As stated in Sections 1 and 7, waste reduction is distinct from waste minimization. Waste minimization describes the County, State, and private industry effort to eliminate waste generation to the extent possible, and to conserve resources through recycling. This includes source reduction, on-site recycling/resource recovery, and off-site recycling/resource recovery (items 1, 2, and 3 in the hazardous waste management hierarchy). Since waste minimization includes off-site recycling facilities, the benefits of waste minimization efforts cannot all be claimed to reduce the need for off-site facilities. Therefore, the goals outlined in this section relate only to waste reduction. This is defined as on-site activities that reduce the need for off-site hazardous waste facilities. This includes source reduction, on-site recycling/resource recovery, and on-site treatment (items 1, 2, and 4 in the hazardous waste management hierarchy). This section accounts only for the benefits that will be achieved through these on-site activities. The waste minimization program outlined in Section 13 will achieve resource conservation benefits beyond those accounted for in this section, but those benefits are not quantified in this document.

#### REDUCTION POTENTIAL

Waste reduction potential varies significantly according to the types and volumes of waste being generated, the degree to which reduction measures are already in place, and the availability of recycling and treatment services to generators.

Precise estimates of waste reduction potential are not yet available for Sacramento County. Data gathering efforts for this Plan did not include quantitative information from generators on current waste reduction practices. Future efforts to quantify waste reduction potential will involve an in-depth analysis of each major waste generator in the County to determine the the feasibility of site and process changes that could result in waste reduction.

### ASSUMPTIONS

The waste stream projections presented in this section are assumed to be the most realistic available. The following general assumptions apply:

1. County waste minimization programs will be implemented to provide technical assistance to waste generators.
2. A single waste reduction measure in each industrial process can achieve an overall average of 17 percent reduction from the waste volumes shown in Section 6 by the year 1992. (See page 8-2 for discussion.)
3. Three waste reduction measures in each industrial process can achieve an overall average of 39 percent reduction from the waste volumes shown in Section 6 by the year 2000. (See page 8-2 for discussion.)
4. Volumes of contaminated soils from contaminated sites will decline as cleanup efforts are completed. This waste stream is not subject to waste reduction.
5. The large volumes of aqueous waste that are currently treated on-site will not be subject to further waste reduction.

### WASTE REDUCTION IN SACRAMENTO COUNTY

The estimates used to determine future waste reduction in Sacramento County were based on data from studies performed by Jacobs Engineering Group for DOHS. The Jacobs data were derived from 12 common California industrial processes and the waste streams they generate. The methodology provided by Jacobs engineering was designed to be applied to specific industries, using either a "moderate" or "maximum" waste reduction estimate. A "moderate" level of waste reduction assumes that one control methodology is applied to each industrial process. A "maximum" level of waste reduction assumes that three control methodologies are applied to each industrial process. This is based on the finding by Jacobs Engineering that the production processes examined for their study could be modified by applying up to six waste reduction methodologies.

The moderate waste reduction levels identified by Jacobs Engineering for the 12 processes they examined average 17 percent, with a range of 10 to 25 percent. All waste streams are different, but 17 percent will serve in this Plan as an overall measure of reduction potential. The waste volumes projected in Table 8-1 for the year 1992 are calculated by applying this 17 percent reduction to each waste group except contaminated soil. This reduction more than offsets the growth in waste volumes projected to occur if no additional reduction measures are implemented (see Section 6).

A similar process is used to calculate the waste volumes in Table 8-1 for the year 2000. The maximum waste reduction levels identified by Jacobs Engineering average 39 percent, with a range of 27 to 58 percent. The 39 percent reduction potential is applied to the year 2000 waste volumes that would occur without

**TABLE 8 - 1**  
**PROJECTED OFF-SITE WASTE MANAGEMENT**  
**IN SACRAMENTO COUNTY WITH WASTE REDUCTION (1)**

Waste Group	Year of Volume Estimate		
	Current (2) Tons	1992 Tons	2000 Tons
1. Waste Oil	19,950	18,280	15,740
2. Halogenated Solvents	850	780	670
3. Non-Halogenated Solvents	8,240	7,550	6,500
4. Organic Liquids	5,520	5,060	4,360
5. Pesticides	2,970	2,720	2,340
6. PCBs and Dioxins	1,100	1,010	870
7. Oily Sludges	1,810	1,660	1,430
8. Halogenated Organic Sludges & Solids	120	110	90
9. Non-Halogenated Organic Sludges & Solids	540	490	430
10. Dye & Paint Sludges and Resins	370	340	290
11. Metal-Containing Liquids	1,570	1,440	1,240
12. Cyanide & Metal Liquids	30	30	20
13. Non-Metallic Inorganic Liquids	6,880	6,300	5,430
14. Metal Containing Sludges	120	110	90
15. Non-Metallic Inorganic Sludges	2,740	2,510	2,160
16. Contaminated Soil	7,610	7,610	7,610 (3)
17. Miscellaneous Wastes	<u>6,610</u>	<u>6,060</u>	<u>5,220</u>
<b>TOTAL</b>	<b>67,030</b>	<b>62,060</b>	<b>54,490</b>

1. Calculated at 2% growth per year (except for contaminated soil) minus 17% waste reduction by 1992 and 39% waste reduction by 2000.
2. From Table 5-23.
3. Contaminated soil volume transported off-site is projected to remain constant throughout the study period. Contaminated soil is not subject to waste reduction.

any reduction effort. For this period also, the reduction effort will more than offset waste growth.

These timeframes and reduction goals were chosen for the following reasons:

1. The State and Sacramento County Hazardous Waste Management Plans will both be updated in 1992.
2. Sacramento County is just now beginning a Technical Assistance Program. Moderate reduction is a reasonable goal for the first few years of a new program. More substantial reduction levels can be achieved as the program matures.
3. These reduction levels are far lower than the 70 percent level reported by a waste reduction program in Ventura County. The "maximum" term used by Jacobs Engineering, then, is viewed as a minimum for this Plan.

#### YEAR 2000 PROJECTIONS WITH WASTE REDUCTION

Table 8-1 presents the projected hazardous waste volumes for 1992 and year 2000. Projected waste volumes shrink substantially from the current total.

The waste volume estimates shown in Table 8-1 are used as the basis for facility needs siting presented in Scenario II of Section 10.

## Section 9

### HAZARDOUS WASTE FACILITIES

#### INTRODUCTION

In the recent past, hazardous waste management centered on the landfilling of untreated waste. This approach required primarily only two types of facilities (transfer stations and disposal facilities), although some types of waste were subject to treatment or recycling.

Despite increasingly stringent regulations for the operation of safe landfills, serious leakage problems have occurred. Past problems have been tied to inappropriate siting, poor design, adverse weather conditions, and improper management. At this time, only two hazardous waste landfills remain open in California, and serious questions remain about the safety of landfills.

Recent legislation will dramatically change future hazardous waste management in California, and will result in a significant reduction in the volume of waste that will be disposed of in landfills. Senate Bill 1500 (Robert) enacted the Hazardous Waste Management Act of 1986 that prohibits the land disposal of untreated hazardous wastes after May, 1990. (See Section 1 for additional information.)

The inefficient and environmentally unsound practices of the past are now giving way to the strategy outlined in the hazardous waste management hierarchy on page 1-2. Although this strategy promotes source reduction above other techniques, it also relies on recycling and treatment. This section describes the various types of hazardous waste management facilities which will fill the void between waste generation and waste disposal.

In order to comply with the upcoming landfill ban, efforts must be redirected toward alternative waste management approaches such as recycling and treatment. On a statewide basis, this redirection will require new facilities to manage hazardous waste.

#### DESCRIPTION OF HAZARDOUS WASTE FACILITY TYPES

The Guidelines and this Plan recognize the following types of hazardous waste management facilities:

1. Transfer stations.
2. Treatment facilities (including recycling/resource recovery, solidification, neutralization, aqueous treatment, and incineration).
3. Residuals repositories (disposal facilities).

NOTE: While incinerators are defined as treatment facilities, they will be reviewed using the same buffering criteria as disposal facilities.

Off-site facilities will be grouped into these three types for this Plan and the siting discussion that follows in Sections 11 and 13.

The following section describes each of the above-mentioned hazardous waste facility types. The information presented in this section was summarized from Part J of the Technical Reference Manual of the Guidelines.

#### TRANSFER AND STORAGE FACILITIES

Hazardous waste transfer and storage facilities (known as "transfer stations") serve primarily as collection stations for small quantities of waste products. Similar waste types are collected until there is enough of one type to be efficiently and economically shipped to a recycling, treatment, or disposal facility.

Transfer and storage facilities are generally located in urban/industrial areas close to hazardous waste generators. A typical facility would occupy from one to ten acres. Annual waste handling would range from 10,000 to 40,000 tons. Incoming hazardous waste shipments would involve 6 to 75 truck loads per week.

When shipments of hazardous waste arrive at a transfer or storage facility, the waste is identified and analyzed to determine its compatibility with other stored wastes. Waste streams are separated by chemical characteristics and by concentrations (liquid, sludge or solid). Once identified, hazardous waste is stored in drums, tanks, or bins.

Transfer and storage facilities are equipped with air pollution control devices to prevent the release of air pollutants.

Water pollution control measures are also used to prevent hazardous waste spills that could lead to ground or surface water contamination. The Regional Water Quality Control Board may also require regular monitoring of ground and surface water resources in the area to provide early warning of hazardous waste leaks.

#### TREATMENT FACILITIES

Treatment facility is defined by the Guidelines as any facility at which hazardous waste is subjected to treatment or where a resource is recovered from a hazardous waste. Treatment facilities vary significantly according to the amount of waste handled and the type of hazardous waste that is treated. A small treatment facility would require approximately three acres and a large facility could require as much as 30 acres. A large treatment facility could treat up to 200,000 tons of waste per year and could receive waste from approximately 185 trucks per week.

Once waste is received at a treatment facility, various processes are used to change the physical, chemical, or biological character or composition of the hazardous waste in order to render the waste nonhazardous (or less hazardous).

Specific processes vary according to the type of waste requiring treatment. Effluent or sludges remaining after treatment are transferred to another facility for incineration, further processing or land disposal. Air and water pollution control devices are used throughout treatment facilities to minimize the quantity of hazardous waste that is released to the surrounding air and water.

Recycling Facilities. Recycling facilities generally recover a resource from a hazardous waste. The type of waste involved determines the number and type of processes required. A typical recycling facility would require approximately one to ten acres. Annual waste volumes would range from 10,000 to 40,000 tons. Incoming hazardous waste shipments would generally involve 6 to 75 truck loads per week.

Air and water pollution control devices are used throughout recycling facilities to minimize the quantity of hazardous waste that is released to surrounding air and water.

Solidification and Stabilization Facilities. Some hazardous wastes that cannot be recycled or treated can be solidified or stabilized to reduce or eliminate hazards. Liquid wastes and sludges can be solidified by using special additives. Inorganic sludges can be fixed by adding lime and fly ash. Other wastes can be encapsulated in asphalt or plastic (polymer) coatings for lengthy storage or ultimate retrieval. A solidification or stabilization facility would occupy from 1 to 10 acres. Annual waste volumes could range from 5,000 to 100,000 tons per year.

Incoming hazardous waste shipments would vary according to the volume of waste processed and the type of waste involved.

Air emissions and water effluents are monitored at solidification and stabilization facilities to ensure compliance with environmental and human health standards.

Incineration Facilities. Organic liquids and solids that cannot be economically reclaimed, may be burned in incinerators. Regulations governing the incineration of liquid hazardous waste require a "fixed-hearth burner with liquid injection." A rotary kiln is used for solid hazardous waste. Many waste streams provide sufficient heat during combustion to reduce the cost of incineration through recovery of heat as process stream or by cogeneration of electricity.

Incinerators typically require 4 to 10 acres of land. A small incinerator could process approximately 5,000 tons of hazardous waste per year and receive waste from approximately 5 truckloads per week. A large incinerator could process up to 100,000 tons of hazardous waste per year and would receive waste from up to 92 trucks per week.

Air pollution control equipment may be needed to prevent toxic air pollutants from entering the atmosphere.

## RESIDUALS REPOSITORIES

A residuals repository is a facility that accepts only solid materials that have been treated, stabilized, solidified, or encapsulated. Repositories for treated residues are intended to be environmentally safer than a traditional Class I landfill. A typical residuals repository could require approximately 200 acres and would receive as much as 160,000 cubic yards (135,000 tons) of residual materials per year for up to 25 years.

## PROTECTIVE MEASURES FOR HAZARDOUS WASTE FACILITIES

Any hazardous waste management facility has some risk of causing adverse environmental impacts. The specific potential for impacts would vary according to the wastes received and the specific characteristics of the repository.

All waste treatment facilities in California must be designed and operated to incorporate environmental control measures which conform to the standards, regulations, and permit conditions of the local air pollution control district (or the local air quality management district) and DOHS. Facilities must also comply with the Uniform Building Code, the Uniform Fire Code, and the National Fire Codes. Standards and regulations of the U.S. Environmental Protection Agency (EPA) concerning hazardous waste facilities are imposed in California by DOHS. Regulatory inspection, monitoring, and enforcement requirements for these facilities are set by DOHS and the local air pollution control district or the local air quality management district. Local land use permits may also be necessary. Use Permit requirements for all hazardous waste facilities in Sacramento County will be developed as this Plan is implemented.

All facilities must sample and analyze incoming waste materials and outgoing effluent discharges. The operations plan upon which the hazardous waste facility's permits are based must identify appropriate measures to separate treatable from untreatable wastes, and to separate incompatible materials.

All hazardous waste treatment facilities in the state must have emergency response equipment available for the control and cleanup of spills. In addition, facilities handling flammable wastes must have fire extinguishers and other fire control equipment on hand. Further, all facilities must protect nearby surface and ground water by incorporating protective measures into the design of storage tanks and other areas where spills could occur.

## Section 10

### FACILITY NEEDS

#### INTRODUCTION

The need for additional hazardous waste facilities in Sacramento County will depend on a variety of factors including: the volume of hazardous waste generated, the effectiveness of waste reduction programs, the availability of in-county and out-of-county facilities, and future multi-county waste sharing arrangements.

Just as the 17 waste groups used for this plan are oversimplified, the treatment methods used in this section do not perfectly reflect waste management practices. Some wastes could be treated using two or more methods, and other wastes routinely go through two or more treatment methods in succession.

This section identifies existing and proposed facilities in Sacramento County and then considers three scenarios for hazardous waste volumes that would require in-county facilities.

#### INVENTORY OF EXISTING COMMERCIAL FACILITIES

Currently, there are two commercial hazardous waste facilities in Sacramento County, both transfer stations.

American Environmental Management Corporation (AEMC) operates a transfer and storage facility in Rancho Cordova. AEMC is fully permitted for transfer and storage of all types of hazardous waste. As a permitted facility, AEMC can accumulate waste before it is transferred to the appropriate recycling treatment or disposal facility. AEMC is also permitted to incinerate biological hazardous waste and to "treat" PCBs (drain and store prior to transport).

In 1986, AEMC received approximately 11,460 tons of hazardous waste. Table 10-1 shows the volume received at AEMC by waste type. As a transfer facility, AEMC receives, processes, and ships hazardous waste on a continuous basis.

The total storage capacity of AEMC is approximately 380 tons. The majority of this capacity (290 tons) is designed for PCB storage and the remainder (90 tons) is for storage of all other hazardous waste types. The biological hazardous waste incinerator can treat up to 3,000 tons per year (Risley pers. comm.).

**TABLE 10-1**  
**VOLUMES OF HAZARDOUS WASTE RECEIVED BY COMMERCIAL FACILITIES IN 1986**  
**American Environmental Management (Transfer)**

<u>Hazardous Waste Group No.</u>	<u>Hazardous Waste Type</u>	Volume of Waste Received in 1986 (Tons) (1)
1	Waste Oil	590
2	Halogenated Solvents	10
3	Non-Halogenated Solvents	420
4	Organic Liquids	200
5	Pesticides	30
6	PCBs	7,170
7	Oily Sludges	160
8	Halogenated Organic Sludges & Solids	10
9	Non-Halogenated Organic	110
10	Dye & Paint Sludges & Resins	60
11	Metal-Containing Liquids	50
12	Cyanide & Metal Liquids	0
13	Non-Metallic Inorganic Liquids	90
14	Metal-Containing Sludges	0
15	Non-Metallic Inorganic Sludges	0
16	Contaminated Soil	80
17	Miscellaneous Waste	<u>2,480</u>
<b>TOTAL WASTE</b>		<b>11,460</b>

1. Source: American Environmental Management Corporation Disclosure Inventory, 1987.

**Safety Kleen Corporation (Transfer)**

<u>Hazardous Waste Group No.</u>	<u>Hazardous Waste Type</u>	Volume of Waste Received in 1986 Tons (2)
2	Halogenated Solvents	30
3	Non-Halogenated Solvents	<u>1,130</u>
<b>TOTAL WASTE</b>		<b>1,160</b>

2. Source: Safety Kleen Corporation, 1988. Approximately 33% of these wastes originated in Sacramento County.

Safety Kleen Corporation operates a transfer and storage facility for various types of solvents. This facility is permitted for halogenated and non-halogenated solvents. These hazardous wastes can be stored up to one year before they must be shipped to a recycling facility. The permitted hazardous wastes are stored no longer than 30 days. Safety Kleen also handles other forms of halogenated solvents that require no permit. These wastes can only be stored up to 144 hours.

The Safety Kleen facility stored and then transferred approximately 1,160 tons of hazardous waste in 1986. Table 10-1 shows this volume by waste type. All hazardous waste solvents passing through this facility are shipped to recycling centers.

The Safety Kleen facility consists of approximately 40,000 square feet, 12,000 square feet of which is used for hazardous waste storage. The permitted facility capacity is approximately 2,000 gallons for halogenated solvents and 10,000 gallons for non-halogenated solvents (Wachsmith pers. comm.).

#### HAZARDOUS WASTE FACILITIES CURRENTLY PROPOSED IN SACRAMENTO COUNTY

Three hazardous waste facilities are currently proposed in Sacramento County, two of which will provide treatment capacity. The third facility will technically provide "treatment", but only through draining and storing PCBs for shipping to actual treatment facilities. For the purposes of the needs assessment in this section, the third facility will be viewed as a transfer station. The capacities of the two remaining facilities are assumed to be available to treat future waste streams generated in the county.

The proposed American Environmental facility would treat aqueous waste (organics and metals). The maximum design capacity is 100,000 gallons per day. Actual operation is expected to range from 50,000 to 100,000 gallons per day. If built, the facility is expected to treat an average of 19.5 million gallons per year (Elston pers. comm.). This is an amount equal to 81,900 tons annually, far in excess of Sacramento County's needs. For the needs assessment in Scenario II in this section, this capacity will be assigned in equal parts to Aqueous Treatment-Organic, and Aqueous Treatment-Metals Neutralization (41,000 tons each).

This proposed facility would require approximately 1.5 acres of land area to be located in the eastern portion of Sacramento County adjacent to the existing American Environmental transfer and storage facility. This is in an area that is potentially suitable but with constraints that would require mitigation for treatment facilities (see Section 11 and Map A).

A second proposal is for a facility to treat contaminated soils through bioremediation. This operation would be carried out at the Kiefer Road landfill on property leased from Sacramento County which is shown on Map A as potentially suitable for all facilities. Its annual capacity would be 33,000 tons of soil, far in excess of Sacramento County's needs. Bioremediation

involves microbial digestion of oil, diesel, and gasoline in contaminated soil usually from beneath leaking underground tanks. The contaminated soil is spread on a bermed impervious surface, laced with microbes, dampened, and turned periodically. After digestion has reduced contamination to approved levels, the soil may be returned to its original location or used in another manner. This technology is especially promising for dealing with soil contamination in a non-attainment air quality area (such as Sacramento County), where other approaches like aeration and incineration are discouraged.

A third proposal now undergoing review is for a PCB treatment facility (treatment limited in this case to draining and storing PCBs for shipment). The proposed facility is located in Rancho Cordova, south of Highway 50 and east of Sunrise Boulevard. This area is shown on Map A (Constraints to Hazardous Waste Facilities) as unsuitable for any type of off-site hazardous waste facility.

Table 10-2, below, shows the annual treatment capacity of the two proposed treatment facilities discussed above. This capacity is assumed to be available in Scenario II, which estimates year 2000 treatment capacity needs.

**TABLE 10-2**  
**ANNUAL CAPACITY OF CURRENTLY PROPOSED  
TREATMENT FACILITIES IN SACRAMENTO COUNTY**

<u>Facility</u>	<u>Treatment Process</u>	<u>Annual Capacity (Tons)</u>
American Environmental Kiefer Road Bioremediation	Aqueous (Organics & Metals) Other Recycling	81,900 33,000

#### HAZARDOUS WASTE VOLUMES REQUIRING COMMERCIAL FACILITIES

The following subsections and corresponding tables present three scenarios for current and future facility needs in Sacramento County. The three scenarios are described below.

- Scenario I estimates current volumes of hazardous waste that would require in-county facilities assuming that existing commercial facilities continue to receive waste from Sacramento County. Waste reduction beyond current levels is not considered in Scenario I.
- Scenario II estimates year 2000 volumes of hazardous waste that would require in-county facilities assuming that existing commercial facilities in other counties do not continue to receive waste from Sacramento County, but that currently proposed facilities in Sacramento County will be available. Projected waste volumes include a 39% waste reduction factor.

Scenario II is considered the most likely view of future hazardous waste volumes and will therefore be used to plan for and site future facilities.

- Scenario III estimates year 2000 volumes of hazardous waste that would require in-county facilities assuming that existing commercial facilities would not be available to receive waste from Sacramento County and all on-site facilities are denied permission to operate. No waste reduction is assumed for this scenario, even though generator and county waste minimization efforts are independent of DOHS permits.

Table 10-3 identifies current waste exports to treatment or recycling facilities. These volumes are subtracted from total off-site management volumes in Scenarios I and II to determine current and projected capacity shortfall.

Tables 10-4 (A-C) through 10-6 (A-D) show the data and information necessary to calculate the hazardous waste volumes requiring in-county commercial facilities for each scenario. Calculations for each scenario require multiple tables to show the steps involved and data used. Although three scenarios are presented in this section, Scenario II provides the most realistic projection of future facility needs in Sacramento County. The final estimate of 41,740 tons (shown in Table 10-5C) will be used as a future goal and as a general guide toward siting commercial waste facilities. Scenario III requires one extra table to calculate on-site volumes that must be accounted for if existing facilities are no longer available.

Total volumes from Scenarios I and II are very similar. This is because the waste reduction component that is included in Scenario II offsets projected growth in waste volumes. High volumes in Scenario III are due to adding in waste streams currently receiving on-site treatment, and eliminating existing commercial facilities and waste reduction.

Scenario III assumes all available off-site and on-site facilities are closed. In the event facility closures actually occur, Sacramento County will provide what help it can to industry. The Hazardous Materials Division of the Environmental Management Department will contact DOHS to obtain and circulate the current list of available facilities. Industry must also respond through increased short-term storage, and by proposing and building facilities. The focus of the County's short-term response will be to review facility proposals according to the process detailed in this Plan.

There is no clear formula for the actual number of facilities that would be needed given a particular waste volume. Many facilities are specialized to manage a particular type of hazardous waste stream. For example, the aqueous treatment process for pesticides would not be the same as the aqueous treatment process for metal containing liquids, so two different processes or facilities would be needed. There is, however, some correlation between volumes of hazardous waste and numbers or sizes of facilities. Table 10-7 gives some indication of the typical waste volumes received by each of the six major types of facilities.

**TABLE 10-3**  
**EXPORTS FOR 1985 & 1986 (1)**

<u>Waste Group</u>	<u>1985 Exports (Tons)</u>	<u>1986 Exports (Tons)</u>	<u>Average Exports (Tons)</u>	<u>'85-'86 Ave. Exports to Now Closed Facilities</u>	<u>Net Exports</u>
1. Waste Oil	14,100	(2)	13,570	13,830	630
2. Halogenated Solvents	260	180	220	20	200
3. Non-Halogenated Solvents	1,830	2,010	1,920	200	1,720
4. Organic Liquids	5,920	4,220	5,070	4,120	950
5. Pesticides	940	2,970	1,950	1,310	640
6. PCBs & Dioxins	1,250	3,540	2,400	0	2,400
7. Oily Sludges	840	2,360	1,600	160	1,440
8. Halogenated Organic- Sludges and Solids	30	40	30	10	20
9. Non-Halogenated- Organic Sludges & Solids	490	490	490	280	210
10. Dye & Paint Sludges- & Resins	200	260	230	40	190
11. Metal-Containing Liquids	540	310	430	290	140
12. Cyanide & Metal Liquids	20	10	20	20	0
13. Non-Metallic Inorganic Liquids	8,040	4,510	6,280	2,100	4,180
14. Metal-Containing Sludges	30	20	20	20	0
15. Non-Metallic Inorganic Sludges	750	610	680	360	320
16. Contaminated Soil	2,450	10,200	6,320	1,320	5,000
17. Miscellaneous Wastes	<u>2,920</u>	<u>4,270</u>	<u>3,600</u>	<u>950</u>	<u>2,650</u>
<b>TOTAL</b>	<b>40,610</b>	<b>49,570</b>	<b>45,090</b>	<b>11,830</b>	<b>33,260</b>

1. Source: HWIS, See Tables E and F, Appendix A.
2. Includes 9,090 tons managed by waste oil haulers in San Mateo and Yolo Counties.

TABLE 10-4A

SCENARIO I  
CURRENT WASTE VOLUMES

Assuming Availability of Out of County Facilities

<u>Waste Group</u>	<u>Current Generation (Tons) (1)</u>	<u>Waste Exports (Tons) (2)</u>	<u>Remaining Waste (Tons)</u>	<u>Treatment Process (3)</u>
1. Waste Oil	19,950	13,200 (4)	6,750	5
2. Halogenated Solvents	850	200	650	4
3. Non-Halogenated Solvents	8,240	1,720	6,520	4
4. Organic Liquids	5,520	950	4,570	6
5. Pesticides	2,970	640	2,330	1
6. PCBs & Dioxins	1,100	2,400	0 (5)	3
7. Oily Sludges	1,810	1,440	370	5
8. Halogenated Organic Sludges & Solids	120	20	100	3
9. Non-Halogenated Organic Sludges & Solids	540	210	330	3
10. Dye & Paint Sludges & Resins	370	190	180	3
11. Metal-Containing Liquids	1,570	140	1,430	2
12. Cyanide & Metal Liquids	30	0	30	2
13. Non-Metallic Inorganic Liquids	6,880	4,180	2,700	2
14. Metal-Containing Sludges	120	0	120	7
15. Non-Metallic	2,740	320	2,420	7
16. Contaminated Soil	7,610	5,000	2,610	6
17. Miscellaneous Wastes	<u>6,610</u>	<u>2,650</u>	<u>3,960</u>	7 & 6
<b>TOTAL</b>	<b>67,030</b>	<b>33,260</b>	<b>35,070 (6)</b>	

1. From Table 5-23 (excludes waste that is generated and treated on site).
2. From Table 10-3. Estimates, averaged for 1985 and 1986 export data, identify wastes shipped to treatment facilities. Export volumes do not account for approximately 2,800 tons of unknown waste.
3. See Table 10-4B for number of references. Treatment processes as suggested by Guidelines Table E-1. All are "primary treatment method" except contaminated soil, which is assigned to the "alternative treatment method" since bioremediation (other recycling) is preferable to incineration in a non-attainment air area.
4. Includes 9,090 tons manifested through varianced waste oil haulers in San Mateo and Yolo Counties.
5. All PCBs are treated. Exports are greater than current generation because of variability in storage at transfer stations from year to year.
6. Total does not subtract across, see footnote 5.

**TABLE 10-4B**  
**SCENARIO I**  
**VOLUME OF RESIDUALS REMAINING AFTER TREATMENT (1)**  
**Assuming Availability of Out of County Facilities**

	<u>Requiring In-County Treatment (Tons) (2)</u>	<u>After Treatment Residuals (3)</u>	<u>Residual Volumes (Tons)</u>
1. Aqueous Treatment-Organic	2,330	10%	230
2. Aqueous Treatment-Metals/Neutralization	4,160	50%	2,080
3. Incineration	610	10%	60
4. Solvent Recovery	7,170	20%	1,430
5. Oil Recovery	7,120	20%	1,420
6. Other Recycling	9,160 (4)	20% (5)	1,830
7. Stabilization	<u>4,520 (4)</u>	120%	<u>5,420</u>
<b>TOTAL</b>	<b>35,070</b>		<b>12,470</b>

1. Assumes all hazardous waste streams are processed (treated recycled, etc.).
2. Calculated with volumes from Table 10-4A.
3. DOHS 1987.
4. Assumes 50% of miscellaneous waste is recycled and 50% is stabilized.
5. No percentage estimate was provided by DOHS for "Other Recycling". 20% is assumed based on percentage estimates of solvent recovery and oil recovery.

**TABLE 10-4C**  
**SCENARIO I**  
**CURRENT WASTE VOLUMES REQUIRING IN-COUNTY COMMERCIAL FACILITIES**  
**Assuming Availability of Out of County Facilities**

<u>Treatment Process</u>	<u>Volume (Tons) (1)</u>
1. Aqueous Treatment-Organic	2,330
2. Aqueous Treatment-Metals/Neutralization	4,160
3. Incineration	610
4. Solvent Recovery	7,170
5. Oil Recovery	7,120
6. Other Recycling	9,160 (2)
7. Stabilization	<u>4,520 (2)</u>
<b>TREATMENT TOTAL</b>	<b>35,070</b>
8. Residuals After Off-Site Treatment (3)	12,470

1. Totaled by process type from Table 10-4B.
2. Assumes 50% of miscellaneous wastes are recycled and 50% are stabilized.
3. From Table 10-4B.

**TABLE 10-5A**  
**SCENARIO II**  
**YEAR 2000 WASTE VOLUMES**

**Assuming 39% Waste Reduction and Availability of Currently Proposed Facilities**

<u>Waste Group</u>	<u>Year 2000 Generation (Tons) (1)</u>	<u>Treatment Process (2)</u>
1. Waste Oil	15,740	5
2. Halogenated Solvents	670	4
3. Non-Halogenated Solvents	6,500	4
4. Organic Liquids	4,360	6
5. Pesticides	2,340	1
6. PCBs & Dioxins	870	3
7. Oily Sludges	1,430	5
8. Halogenated Organic Sludges & Solids	90	3
9. Non-Halogenated Organic Sludges & Solids	430	3
10. Dye & Paint Sludges & Resins	290	3
11. Metal-Containing Liquids	1,240	2
12. Cyanide & Metal Liquids	20	2
13. Non-Metallic Inorganic Liquids	5,430	2
14. Metal-Containing Sludges	90	7
15. Non-Metallic	2,160	7
16. Contaminated Soil	7,610	6
17. Miscellaneous Wastes	<u>5,220</u>	<u>7 &amp; 6</u>
<b>TOTAL</b>	<b>54,490</b>	

1. From Table 8-1. Excludes waste that is generated and treated on-site.
2. See Table 10-5B for number references. Treatment processes as suggested by Guidelines Table E-1. All are "Primary Treatment Method" except contaminated soil, which is assigned to the "alternative treatment method" since bioremediation (other recycling) is preferable to incineration in a non-attainment air area.

**TABLE 10-5B**  
**SCENARIO II**  
**YEAR 2000 RESIDUALS REMAINING AFTER TREATMENT (1)**

**Assuming 39% Waste Reduction and Availability of Currently Proposed Facilities**

<u>Treatment Method</u>	Year 2000 Total Volumes Requiring In-County Treatment (Tons) (2)	Treatment Residual Factor (3)	Residual Volumes (Tons)
1. Aqueous Treatment-Organic	2,340	10%	230
2. Aqueous Treatment-Metals/Neutralization	6,690	50%	3,350
3. Incineration	1,680	10%	170
4. Solvent Recovery	7,170	20%	1,430
5. Oil Recovery	17,170	20%	3,430
6. Other Recycling	14,580	20% (4)	2,920 (5)
7. Stabilization	<u>4,860</u>	120%	<u>5,830 (5)</u>
<b>TOTAL</b>	<b>54,490</b>		<b>17,360</b>

1. Assumes all hazardous waste streams are processed (treated, recycled etc.).
2. From Table 10-5A.
3. DOHS 1987.
4. No percentage estimate was provided by DOHS for "Other Recycling". 20% is assumed based on percentage estimates of solvent recovery and oil recovery.
5. Assumes 50% of miscellaneous waste is recycled and 50% is stabilized.

TABLE 10-5C

## SCENARIO II

## YEAR 2000 WASTE VOLUMES REQUIRING IN-COUNTY COMMERCIAL FACILITIES

Assuming 39% Waste Reduction and Availability of Currently Proposed Facilities

Treatment Method	Year 2000 Total Volumes Requiring In-County Treatment (Tons) (1)	Capacity of Proposed Facilities (Tons)	Remaining After In-County Treatment (Tons)
1. Aqueous Treatment-Organic	2,340	41,000	0
2. Aqueous Treatment-Metals/Neutralization	6,690	41,000	0
3. Incineration	1,680	0	1,680
4. Solvent Recovery	7,170	0	7,170
5. Oil Recovery	17,170	0	17,170
6. Other Recycling	14,580	33,000	0 (2)
7. Stabilization	4,860	0	4,860 (2)
<b>TREATMENT TOTAL</b>	<b>54,490</b>	<b>115,000</b>	<b>30,880</b>
8. Residual After Off-Site Treatment			17,360 (1)

1. From Table 10-5B.

2. Assumes 50% of miscellaneous wastes are recycled and 50% are stabilized.

TABLE 10-6A

SCENARIO III (WORST CASE) (1)  
YEAR 2000 WASTE VOLUMES

Assuming No Existing Facilities Are Available

<u>Waste Group</u>	<u>Year 2000 Generation (in tons) (2)</u>	<u>Treatment Process (3)</u>
1. Waste Oil	25,810	5
2. Halogenated Solvents	1,100	4
3. Non-Halogenated Solvents	10,660	4
4. Organic Liquids	7,140	6
5. Pesticides	3,840	1
6. PCBs & Dioxins	1,420	3
7. Oily Sludges	2,340	5
8. Halogenated Organic Sludges & Solids	160	3
9. Non-Halogenated Organic Sludges & Solids	700	3
10. Dye & Paint Sludges & Resins	480	3
11. Metal-Containing Liquids	2,030	2
12. Cyanide & Metal Liquids	40	2
13. Non-Metallic Inorganic Liquids	8,900	2
14. Metal-Containing Sludges	160	7
15. Non-Metallic	3,540	7
16. Contaminated Soil	7,610	6
17. Miscellaneous Wastes	8,550	7 & 6
<b>TOTAL</b>	<b>84,480</b>	

1. Assumes all existing facilities close.
2. From Table 6-2. Excludes waste that is generated and treated on-site.
3. See Table 10-6B for number references. Treatment processes as suggested by Guidelines Table E-1. All are "Primary Treatment Method" except contaminated soil, which is assigned to the "alternative treatment method" since bioremediation (other recycling) is preferable to incineration in a non-attainment air area.

TABLE 10-6B

SCENARIO III (WORST CASE) (1)  
YEAR 2000 RESIDUALS REMAINING AFTER TREATMENT

Assuming No Existing Facilities Are Available

<u>Treatment Process</u>	<u>Volumes Requiring In-County Treatment (Tons)</u> (2)	<u>After Treatment Residuals (3)</u>	<u>Residual Volumes (Tons)</u>
1. Aqueous Treatment-Organic	3,840	10%	380
2. Aqueous Treatment-Metals/Neutralization	10,970	50%	5,490
3. Incineration	2,760	10%	280
4. Solvent Recovery	11,760	20%	2,350
5. Oil Recovery	28,150	20%	5,630
6. Other Recycling	19,030 (4)	20% (5)	3,810
7. Stabilization	<u>7,970 (4)</u>	120%	<u>9,560</u>
<b>TOTAL</b>	<b>84,480</b>		<b>27,500</b>

1. Assumes all hazardous waste streams are processed (treated, recycled, etc.).
2. From Table 6-2.
3. DOHS 1987.
4. Assumes 50% of miscellaneous waste is recycled and 50% is stabilized.
5. No percentage estimate was provided by DOHS for "Other Recycling". 20% is assumed based on percentage estimates of solvent recovery and oil recovery.

TABLE 10-6C

SCENARIO III (WORST CASE) (1)  
 YEAR 2000 RESIDUALS IF ON-SITE  
 CAPACITY IS NO LONGER AVAILABLE

Assuming No Existing Facilities Are Available

<u>Treatment Process</u>	<u>Volumes From On-Site Treatment (in tons) (2)</u>	<u>After Treatment Residuals (3)</u>	<u>Residual Volumes (in tons)</u>
1. Aqueous Treatment-Organic	3,250	10%	320
2. Aqueous Treatment-Metals/Neutralization	891,800	50%	445,900
3. Incineration	1,160	10%	120
4. Solvent Recovery		20%	
5. Oil Recovery	690	20%	140
6. Other Recycling	40	20% (4)	10
7. Stabilization	0	120%	0
<b>TOTAL</b>	<b>896,940</b>		<b>446,490</b>

1. Assumes all hazardous waste streams are processed (treated, recycled, etc.).
2. From Table 5-7.
3. DOHS 1987.
4. No percentage estimate was provided by DOHS for "Other Recycling". 20% is assumed based on percentage estimates of solvent recovery and oil recovery.

TABLE 10-6D

SCENARIO III (WORST CASE)  
YEAR 2000 WASTE VOLUMES REQUIRING IN-COUNTY COMMERCIAL FACILITIES

Assuming No Existing Facilities Are Available

<u>Treatment Process</u>	Year 2000 Off-Site Treatment (Tons) (1)	Current On-Site Treatment (Tons) (2)	Total Volumes (Tons)
1. Aqueous Treatment-Organic	3,840	3,250	7,090
2. Aqueous Treatment-Metals/Neutralization	10,970	891,800 (3)	902,770
3. Incineration	2,760	1,160	3,920
4. Solvent Recovery	11,760		11,760
5. Oil Recovery	28,150	690	28,840
6. Other Recycling	19,030	40	19,070
7. Stabilization	<u>7,970</u>	<u>          </u>	<u>7,970</u>
<b>TREATMENT TOTAL</b>	<b>84,480</b>	<b>896,940</b>	<b>981,420</b>
8. Residuals After Off-Site Treatment	27,500	446,490	473,990

1. From Table 6-2.
2. 1986 data from Table 5-4 (assumes no increase in volume of waste managed).
3. High number due to the large quantities of water associated with a particular aqueous waste stream.

**TABLE 10-7**  
**OFF-SITE COMMERCIAL FACILITY TREATMENT CAPACITIES**  
**BY TREATMENT PROCESS**

<u>Facility Type</u>	Typical Annual Volume Range (in thousands of tons)
<u>Transfer Station</u>	
Small	10 - 15
Large	30 - 40
<u>Treatment Facility</u> (Processes 1 and 2)	
Small	10 - 12
Large	100 - 200
<u>Recycling Facility</u> (Processes 4, 5, and 6)	
Small	10 - 15
Large	30 - 40
<u>Solidification or</u> <u>Stabilization Facility</u> (Process 7)	
Small	5 - 15
Large	50 - 100
<u>Incineration Facility</u> (Process 3)	
Small	5 - 10
Large	60 - 70
<u>Repository for</u> <u>Treated Residuals</u> (Process 8)	
Small	10 - 20
Large	40 - 60

Source: DOHS 1987A



## Section 11

### HAZARDOUS WASTE FACILITY SITING CONSTRAINTS

#### INTRODUCTION

This section provides elected officials and facility operators with guidance for siting hazardous waste facilities. The information provided here is the result of thorough constraints mapping. The results are not intended to be parcel-specific, however, due to the scale of the maps provided in this Plan, and the limitations of some of the original sources. Any facility review will require more detailed information about siting constraints. For a discussion of siting criteria which must apply to facility approvals, see Section 13.

#### FACILITY SITING CONSTRAINTS

Human, policy and environmental factors must be considered when siting for hazardous waste facilities. Accidents or routine releases occurring on-site can threaten human health and safety as well as the natural environment. This section identifies and locates factors which are constraints to siting. The three types of constraints discussed in this section overlap to some extent, but provide a useful distinction between natural features, factors related to our society's use of the land, and policy restrictions.

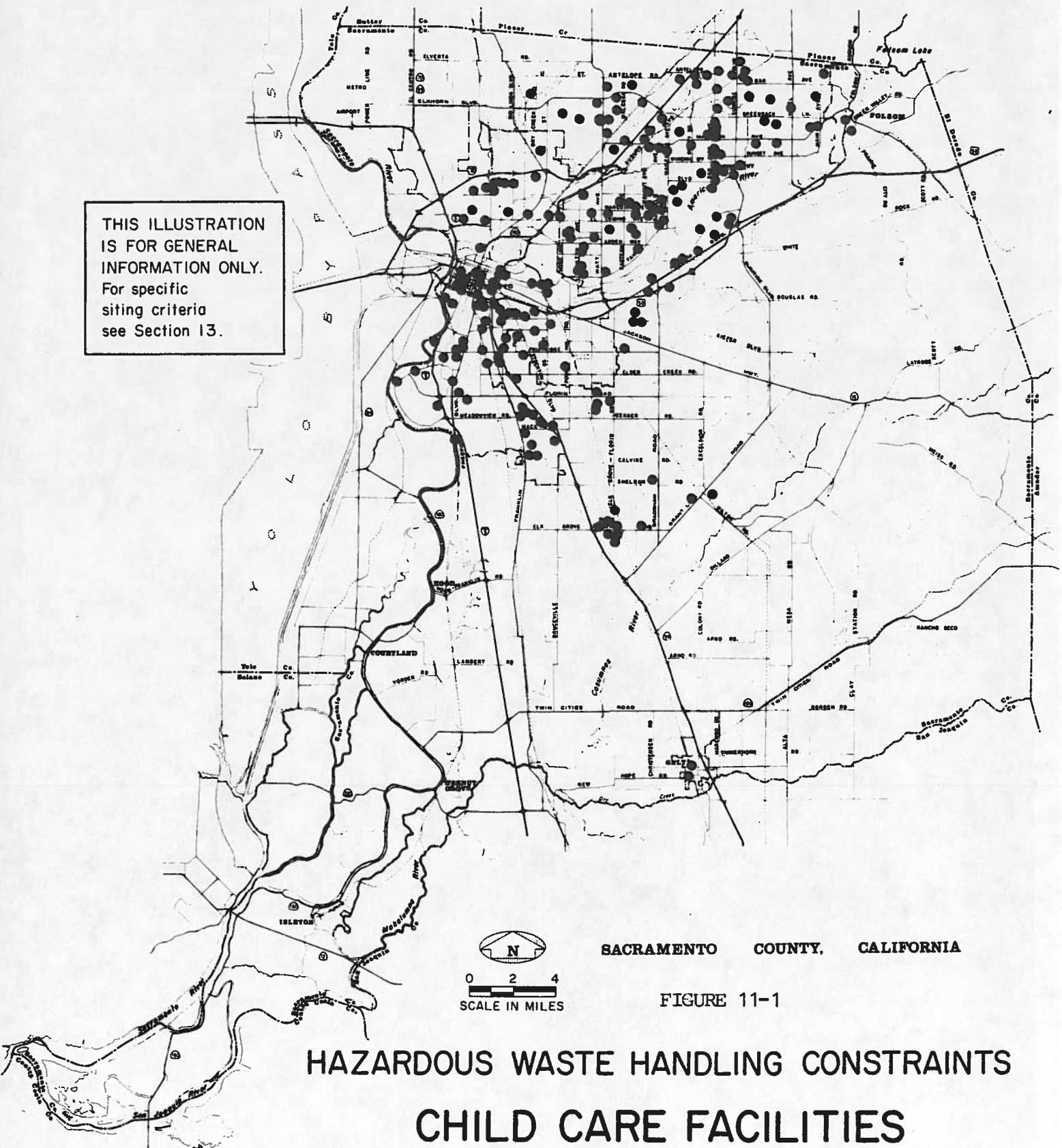
#### HUMAN CONSTRAINTS

Human constraints are defined as residential uses, certain public or private facilities, and immobile populations. All these factors are related to our community's established land use patterns. Since these uses are already in place, hazardous waste facilities must be located in a manner that minimizes the risk to public health.

Immobile Populations. There are various private and public facilities in the county where emergency evacuation is difficult or time-consuming. These include child care centers, schools, convalescent care facilities, hospitals, detention facilities, and colleges. Locations of child care centers in the County licensed for 12 to 185 children are shown in Figure 11-1. Figure 11-2 indicates convalescent care facilities, which includes homes for the physically and mentally handicapped. Hospitals in the County are shown in Figure 11-3. Detention facilities, shown in Figure 11-4, include schools for delinquents, reformatories and prisons. All other private and public schools are located in Figure 11-5, and colleges in the County are shown in Figure 11-6.

Public Facilities. Accidents at hazardous waste facilities can present problems for nearby public service facilities such as fire stations and water treatment plants. The obstructed departure of vehicles from a fire station can hamper rescue operations and prevent an adequate response to a crisis elsewhere. Accidents near water treatment plants can impede access to the facilities or result in contamination. Fire stations in the County are shown

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## HAZARDOUS WASTE HANDLING CONSTRAINTS CHILD CARE FACILITIES

NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

SOURCE: CALIFORNIA DEPARTMENT OF SOCIAL SERVICES; SACRAMENTO, GALT, AND FOLSOM PLANNING DEPARTMENTS  
(COMPLETE REFERENCES ARE LISTED AT THE END OF THIS SECTION)

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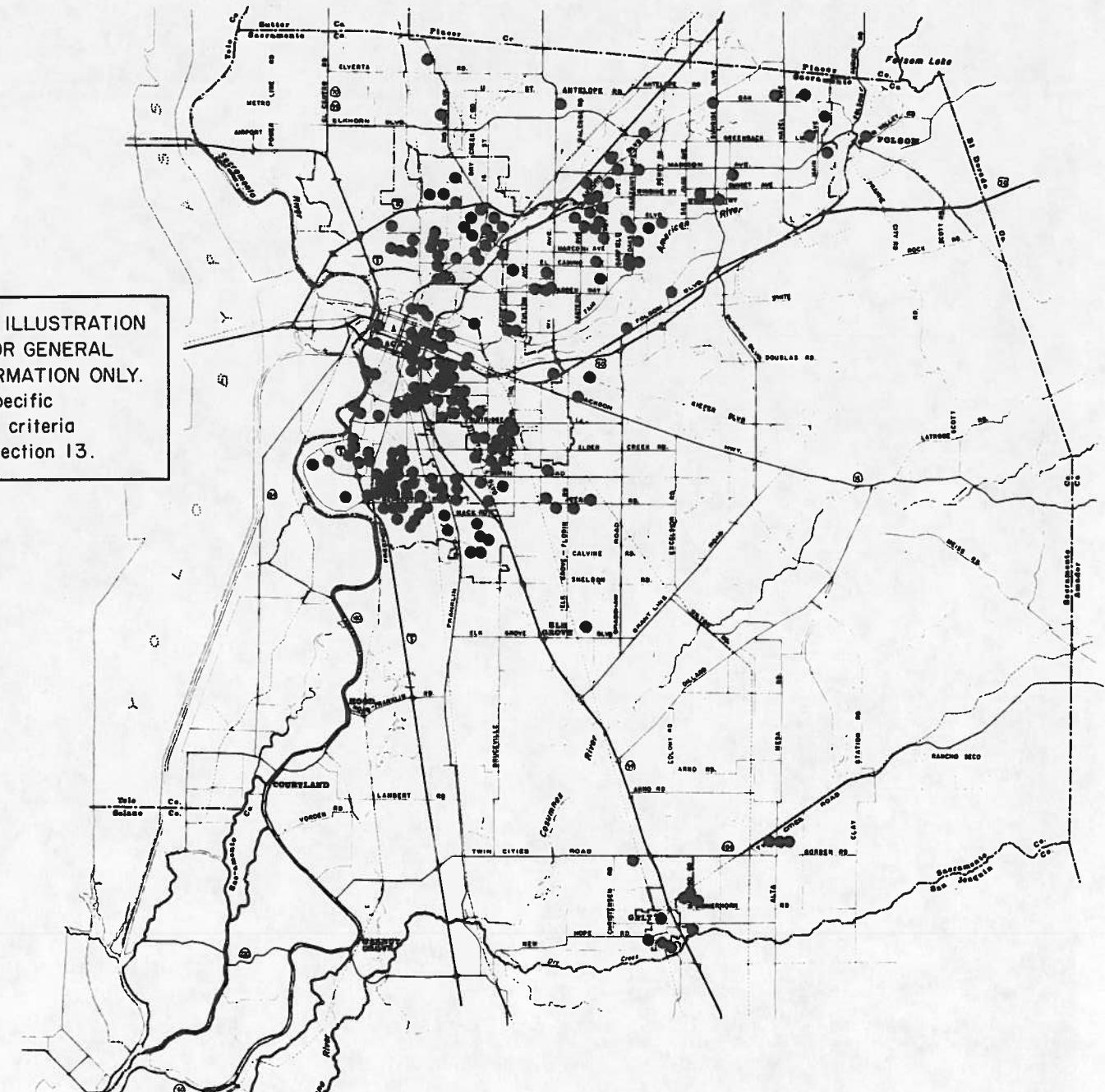


FIGURE 11-2

## HAZARDOUS WASTE HANDLING CONSTRAINTS CONVALESCENT FACILITIES

NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

11-3

SOURCES: SACRAMENTO COUNTY, FOLSOM, GALT, AND SACRAMENTO PLANNING DEPARTMENTS;

FAIR OAKS - FOLSOM TELEPHONE DIRECTORY (COMPLETE REFERENCES ARE LISTED AT THE END OF THIS SECTION)

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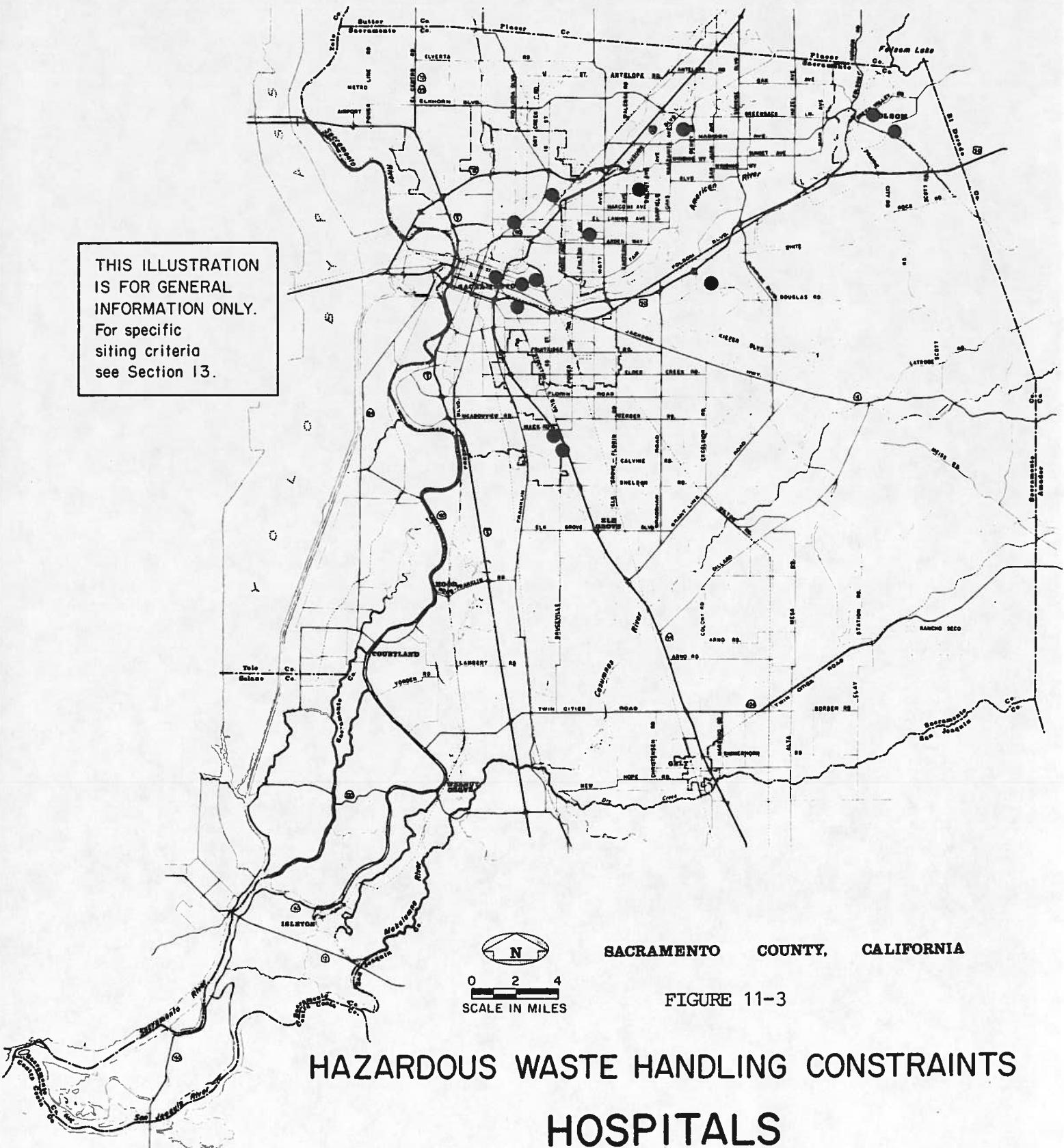
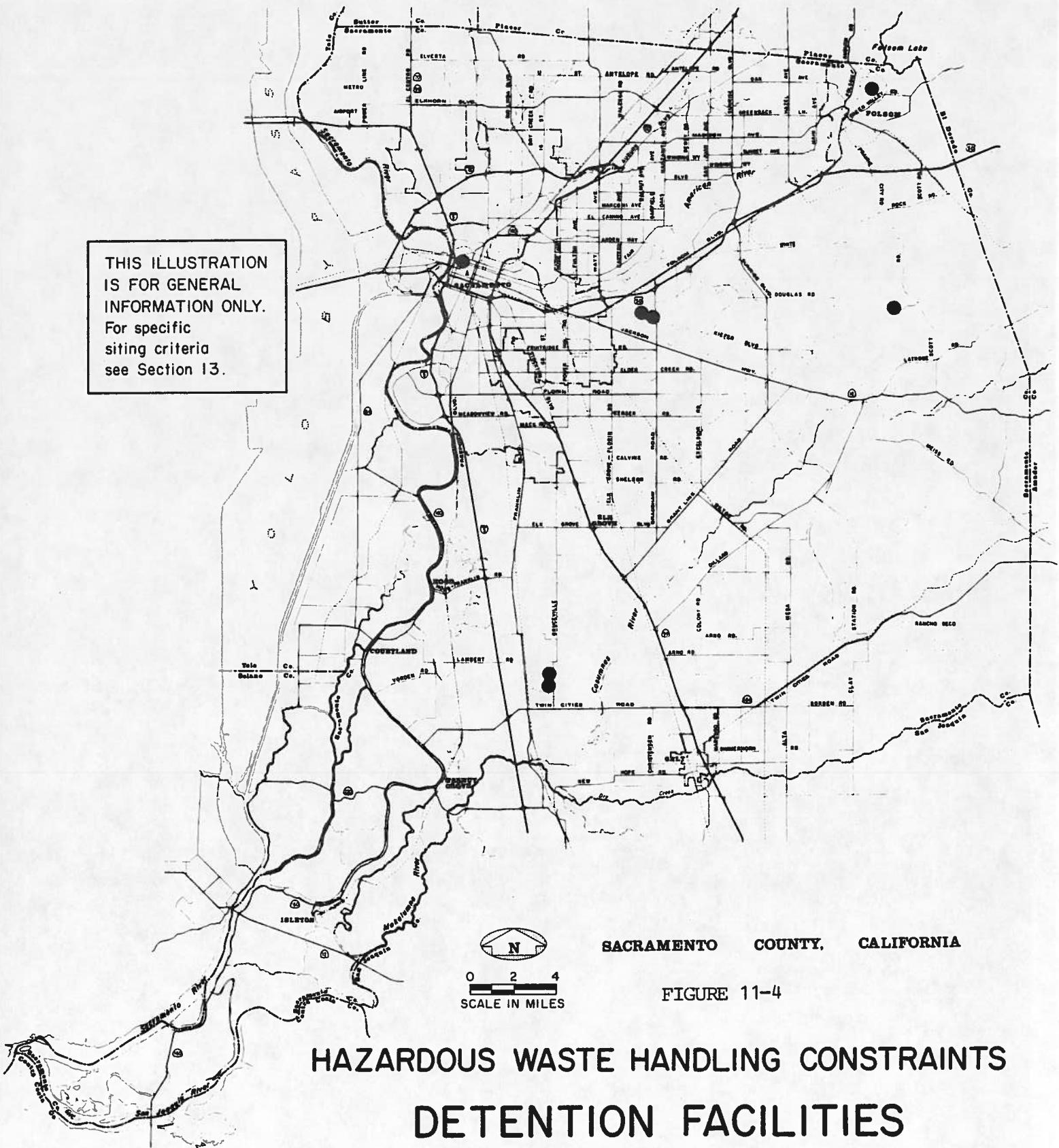


FIGURE 11-3

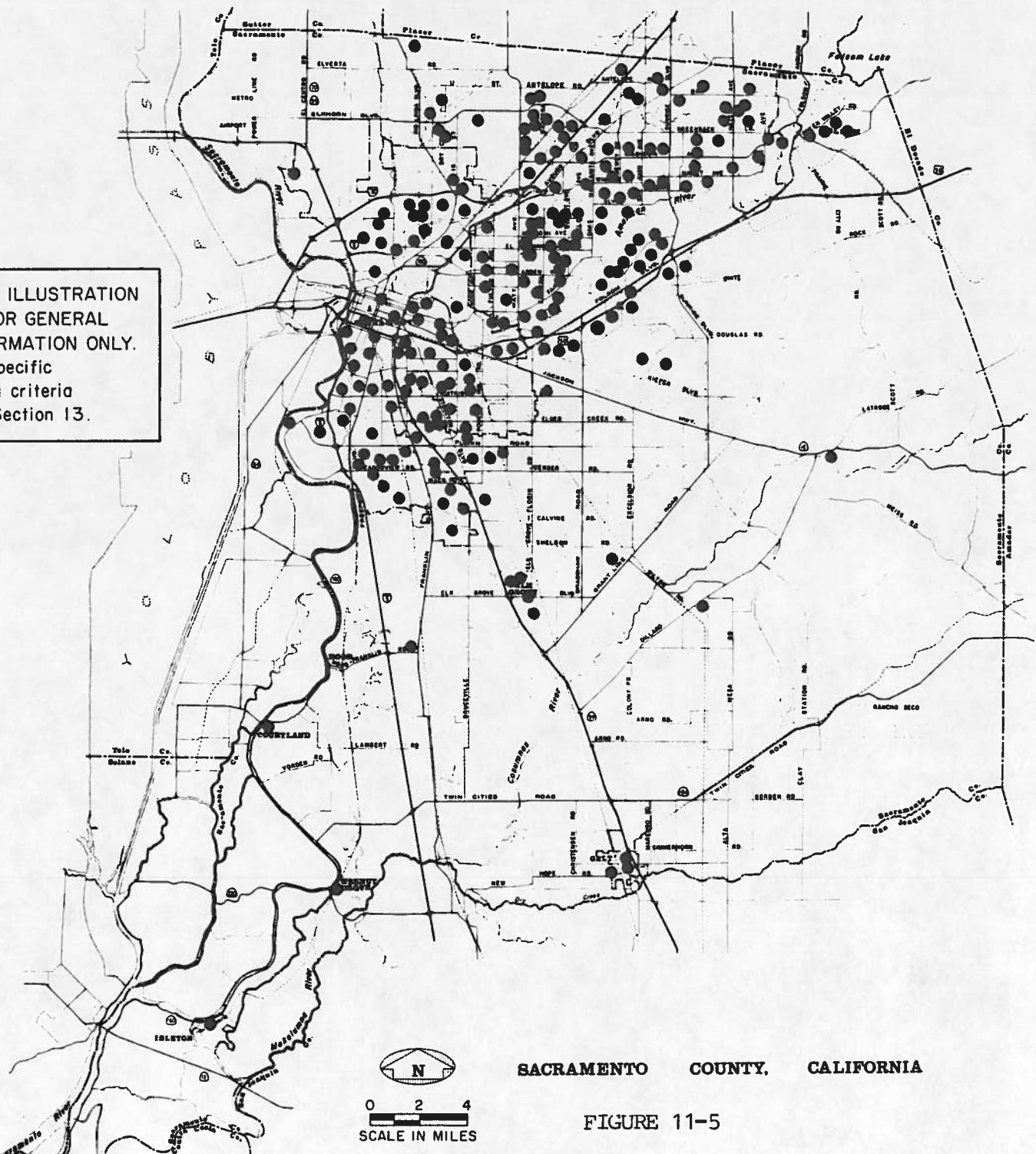
## HAZARDOUS WASTE HANDLING CONSTRAINTS HOSPITALS

NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

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# HAZARDOUS WASTE HANDLING CONSTRAINTS SCHOOLS

## NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

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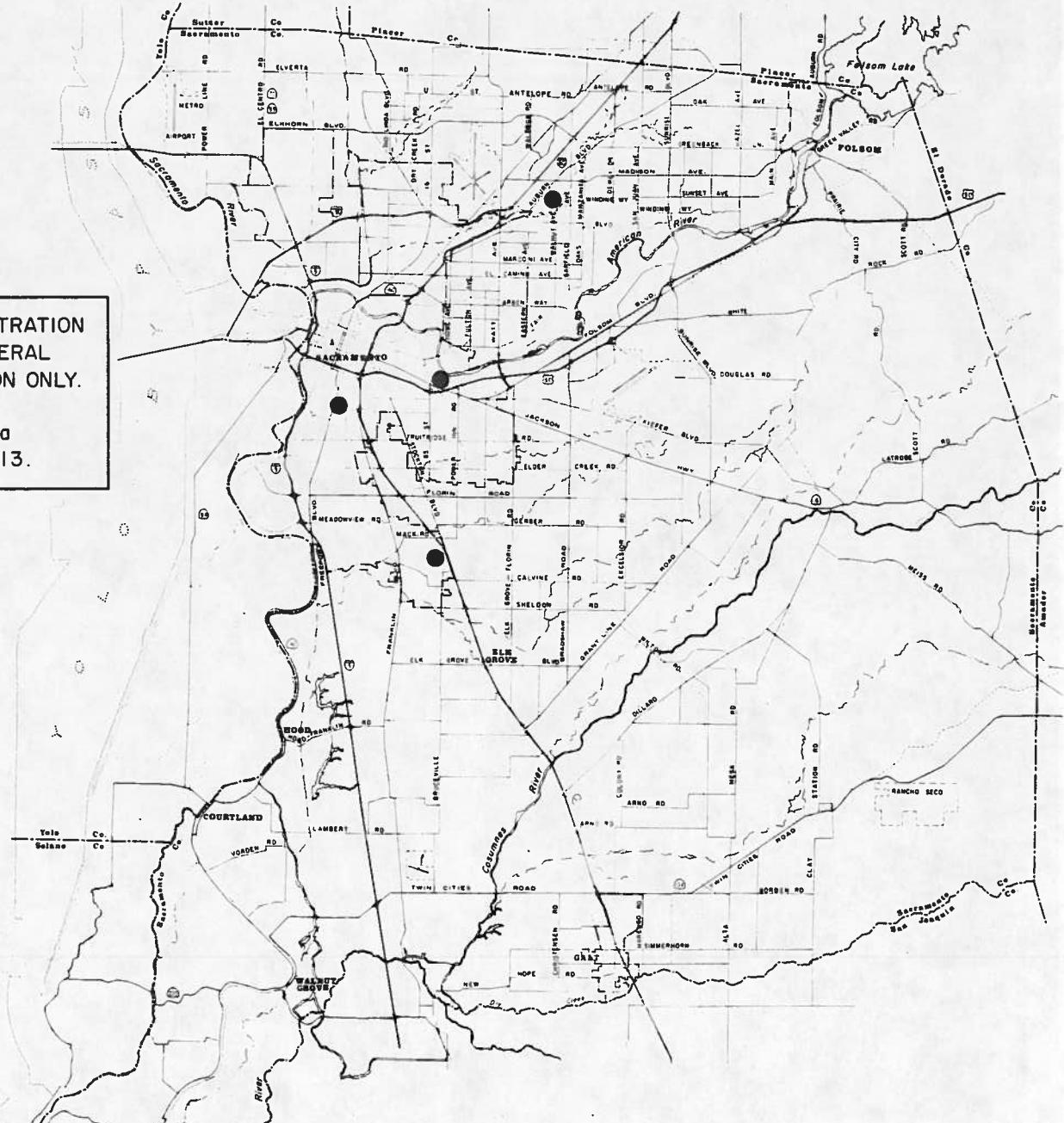


FIGURE 11-6

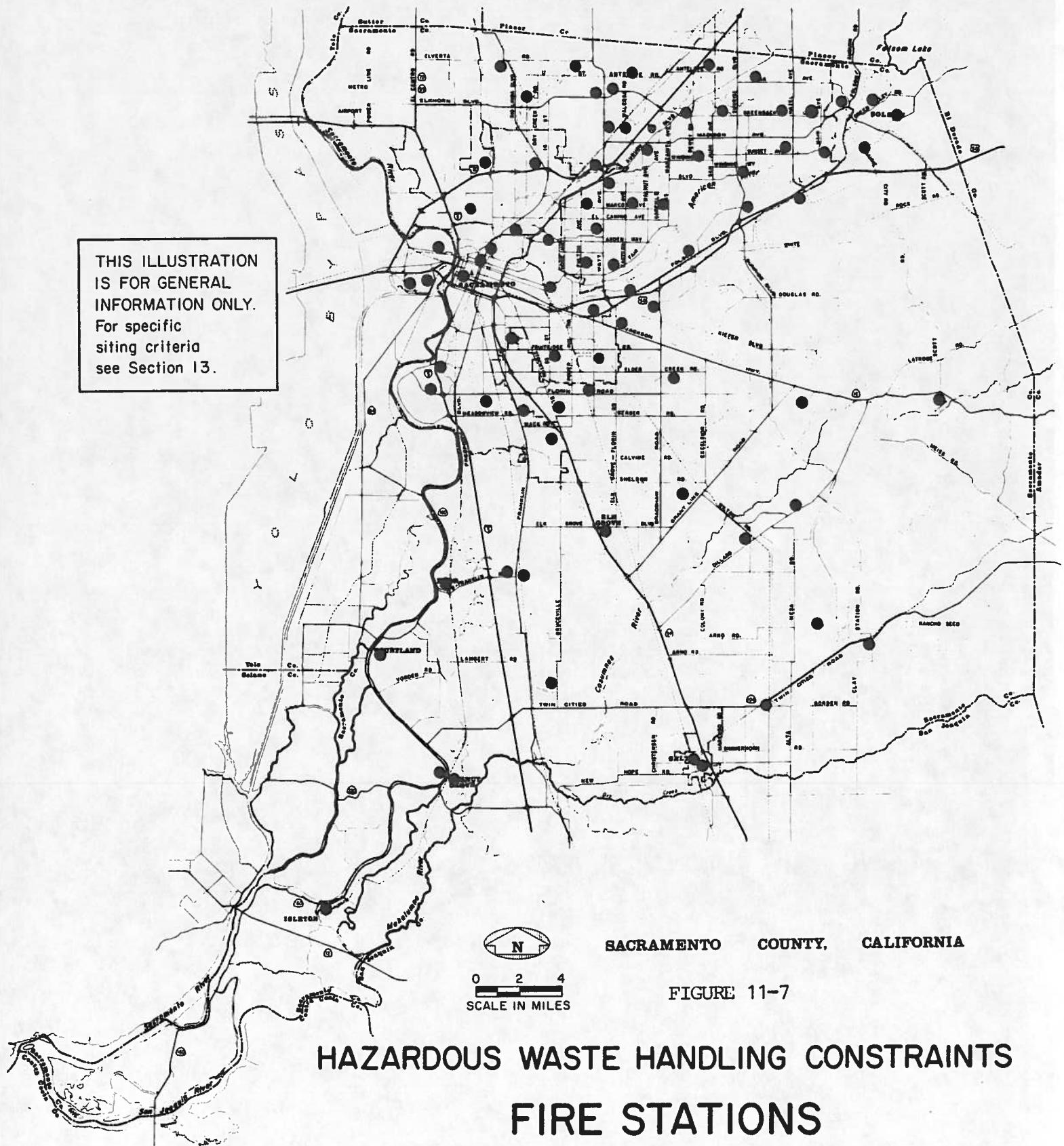
## HAZARDOUS WASTE HANDLING CONSTRAINTS COLLEGES

NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

11-7

SOURCE: THOMAS BROTHERS MAPS OF SACRAMENTO COUNTY  
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NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

in Figure 11-7 but are not viewed as constraints on Map A. Water treatment plants are indicated in Figure 11-8.

Residential Areas. To protect human health and safety, no hazardous waste facilities are allowed within 500 feet of residential areas. This is established local policy. Residuals repositories require a minimum buffer of 2,000 feet. Additional buffering may be required for all types of facilities after risk assessment. All residential areas in the County are mapped, with a 2,000 foot buffer added, in Figure 11-9.

Urban Reserve. Sacramento is a fast-growing county. Many new development projects have been recently approved or are being considered. Furthermore, the cities of Sacramento, Folsom, and Galt have the potential for growth within their entire city limits. The areas shown on Figure 11-10 are designated for future urban uses on the General Plan Land Use Maps of the various jurisdictions in the county. Traditionally, residential uses develop on the large majority of Urban Reserve lands. Until the ultimate land use patterns are established in these areas, they will be viewed as entirely constrained.

Airport Safety Zones. The California Public Utilities Code (Section 21670 et seq.) requires that Comprehensive Land Use Plans (CLUPs) be prepared by local Airport Land Use Commissions (ALUCs) for all public airports in the state. In this county, the Sacramento Area Council of Governments (SACOG) acts as the ALUC. SACOG recognizes the threat that air navigation poses to hazardous waste facilities. Accordingly, the CLUPs which have been prepared for airports in Sacramento County prohibit hazardous waste facilities from being located within the Clear or Approach/Departure zones. The California Government Code (Section 65302.3) requires that local land use regulations be in conformance with CLUP restrictions. The Clear and Approach/Departure zones are shown on Figure 11-11.

Prime Agricultural Land. Prime agricultural land is protected by California law from urban land use "unless an overriding public need is served" by its development. Prime agriculture land, shown in Figure 11-12, is land which qualifies for Class I or Class II ratings in the Soil Conservation Service Land Use Capability Classifications or for ratings 80-100 in the Storie Index rating system of the U.S. Department of Agriculture.

#### POLICY CONSTRAINTS

Policy constraints may not be based on environmental or human factors, but rather on decisions to restrict certain lands from hazardous waste facilities. Two policy determinations affect siting in Sacramento County.

Agricultural Designated Lands. A large portion of Sacramento County has been designated as "Agricultural" in the General Plans of the County and its cities. (Figure 11-13). Such a designation protects these lands from development unless they are redesignated for other uses deemed important. The policy of the Sacramento County Board of Supervisors is that lands designated as Agricultural are eliminating to all types of hazardous waste facilities.

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A scale bar and a north arrow are located in the bottom right corner of the map. The scale bar is a horizontal line with tick marks at 0, 2, and 4 miles. The north arrow is an oval shape with a triangle pointing upwards, containing the letter 'N'.

**SACRAMENTO COUNTY, CALIFORNIA**

FIGURE 11-8

# HAZARDOUS WASTE HANDLING CONSTRAINTS WATER TREATMENT PLANTS

## NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

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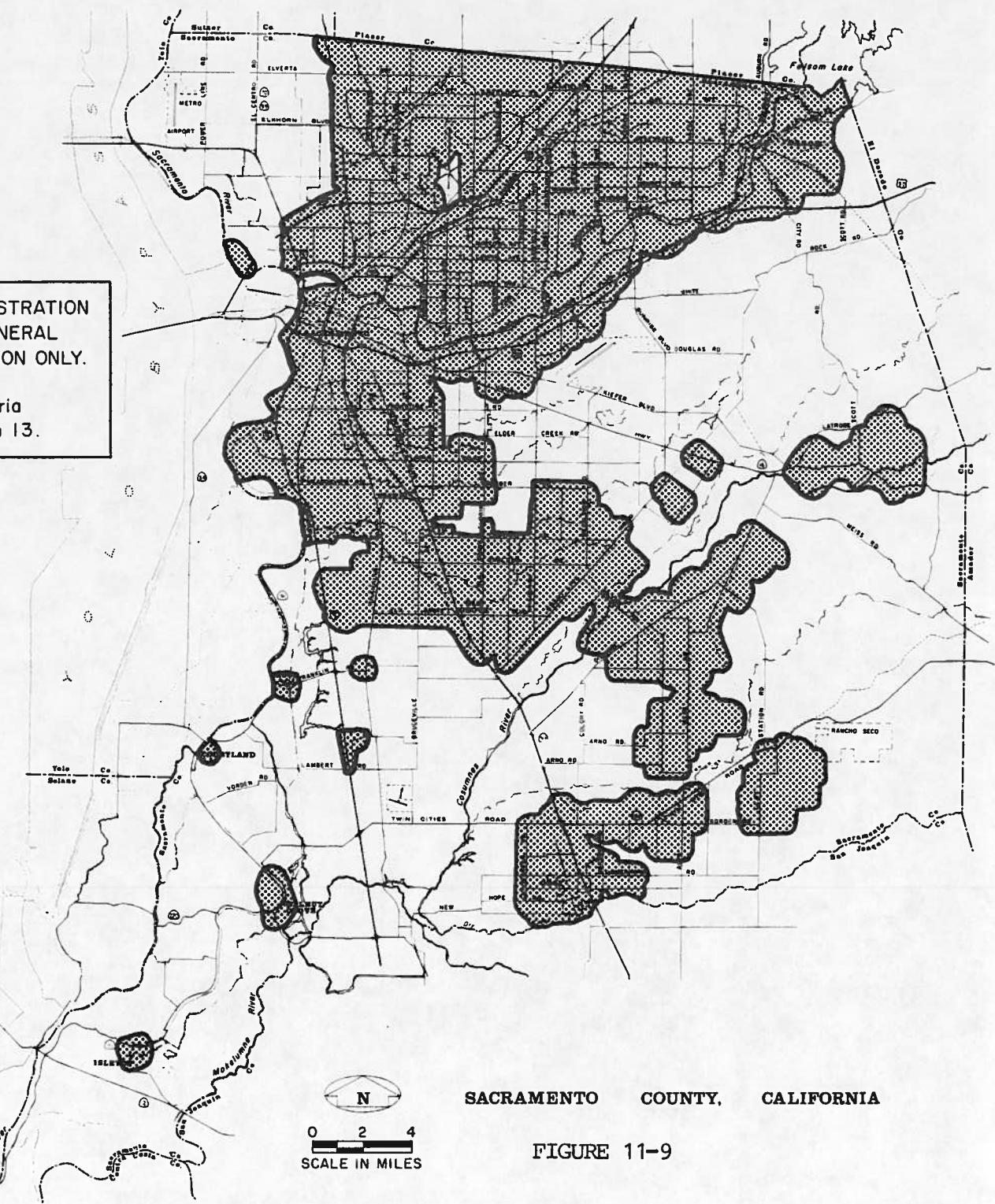


FIGURE 11-9

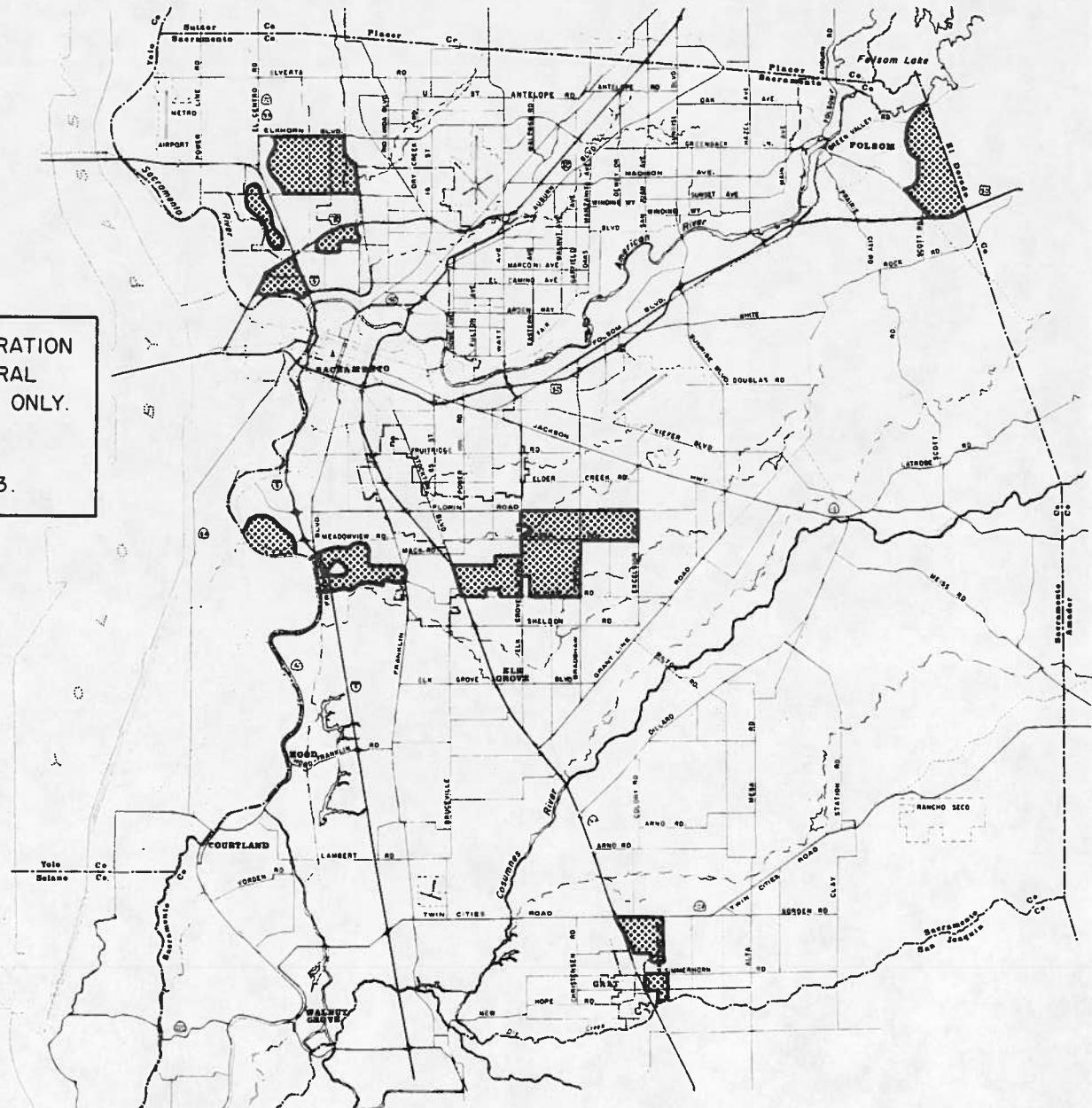
## HAZARDOUS WASTE HANDLING CONSTRAINTS RESIDENTIAL ZONES +2000'

ELIMINATING CONSTRAINT TO ALL FACILITIES.

11-11

SOURCE: SACRAMENTO COUNTY PLANNING DEPARTMENT  
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SACRAMENTO COUNTY, CALIFORNIA

FIGURE 11-10

## HAZARDOUS WASTE HANDLING CONSTRAINTS PLANNED FUTURE URBAN GROWTH

ELIMINATING CONSTRAINT TO ALL FACILITIES.

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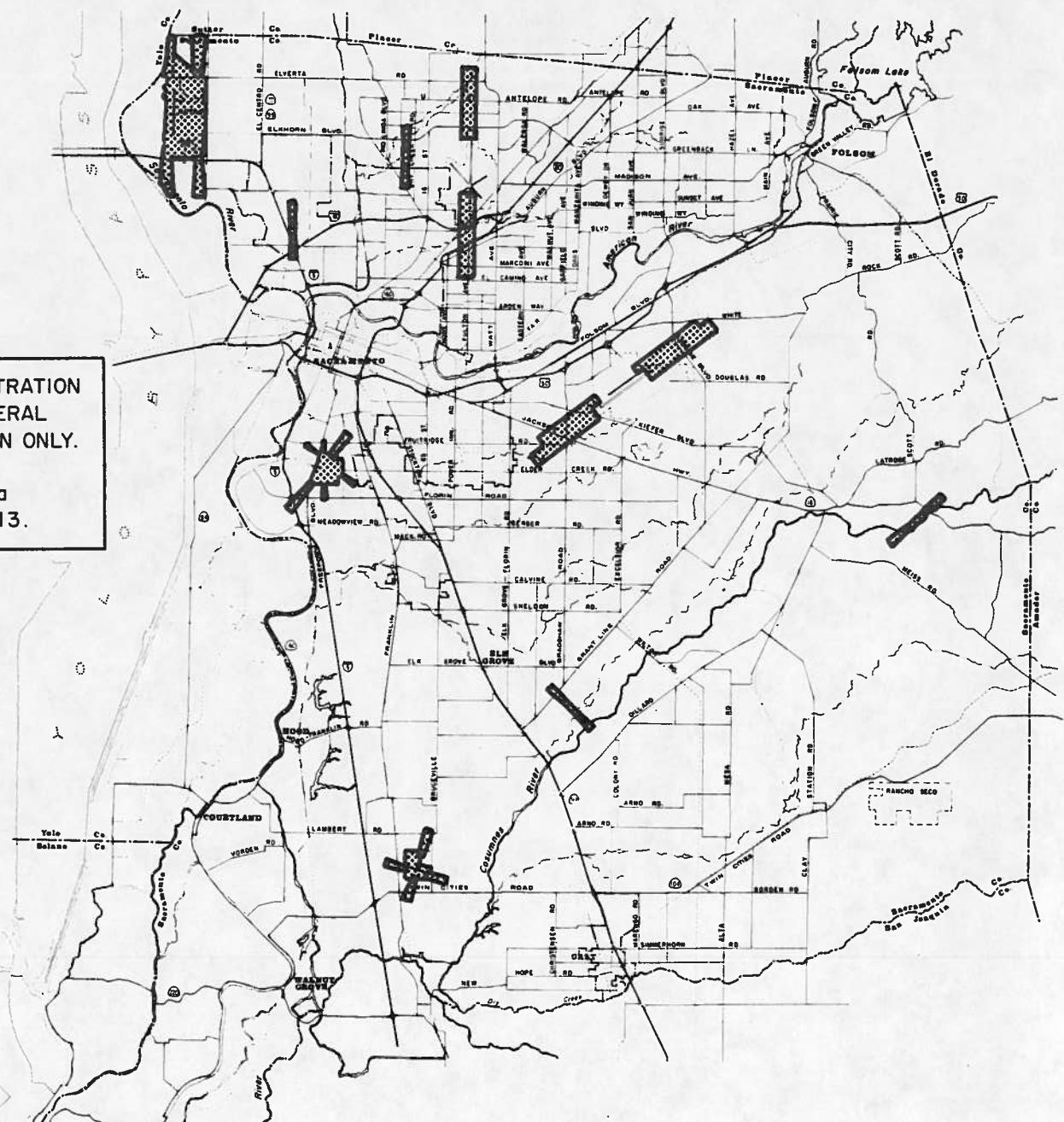


FIGURE 11-11

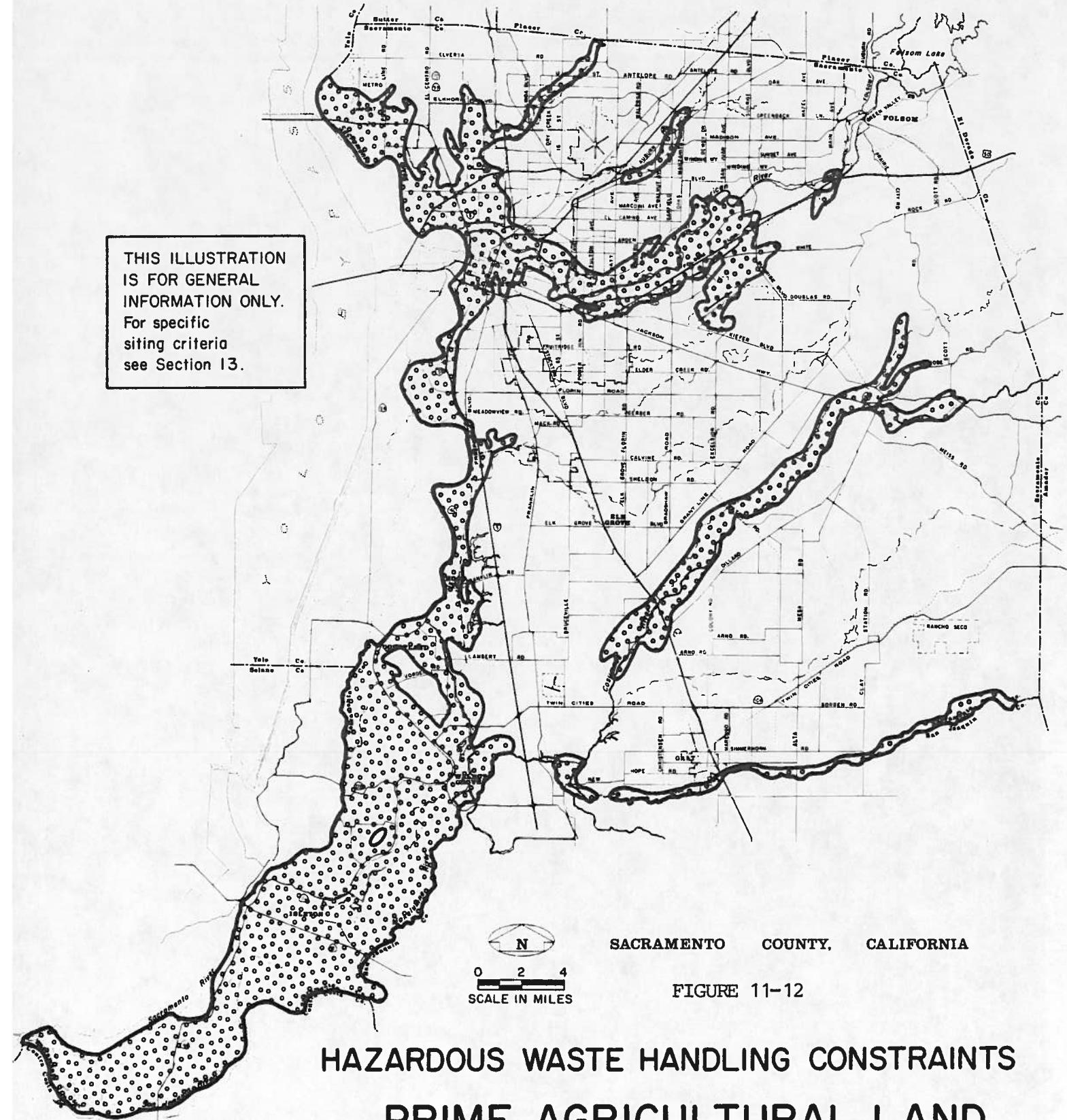
## HAZARDOUS WASTE HANDLING CONSTRAINTS AIRPORT LANDS (Excluding Military Airports) AND AIRPORT SAFETY ZONES

ELIMINATING CONSTRAINT TO ALL FACILITIES.

SOURCE: SACOG AS AIRPORT LAND USE COMMISSION 11-13

(COMPLETE REFERENCES ARE LISTED AT THE END OF THIS SECTION)

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## HAZARDOUS WASTE HANDLING CONSTRAINTS PRIME AGRICULTURAL LAND

NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

11-14

SOURCES: SACRAMENTO COUNTY PLANNING DEPARTMENT; UNITED STATES DEPARTMENT OF AGRICULTURE  
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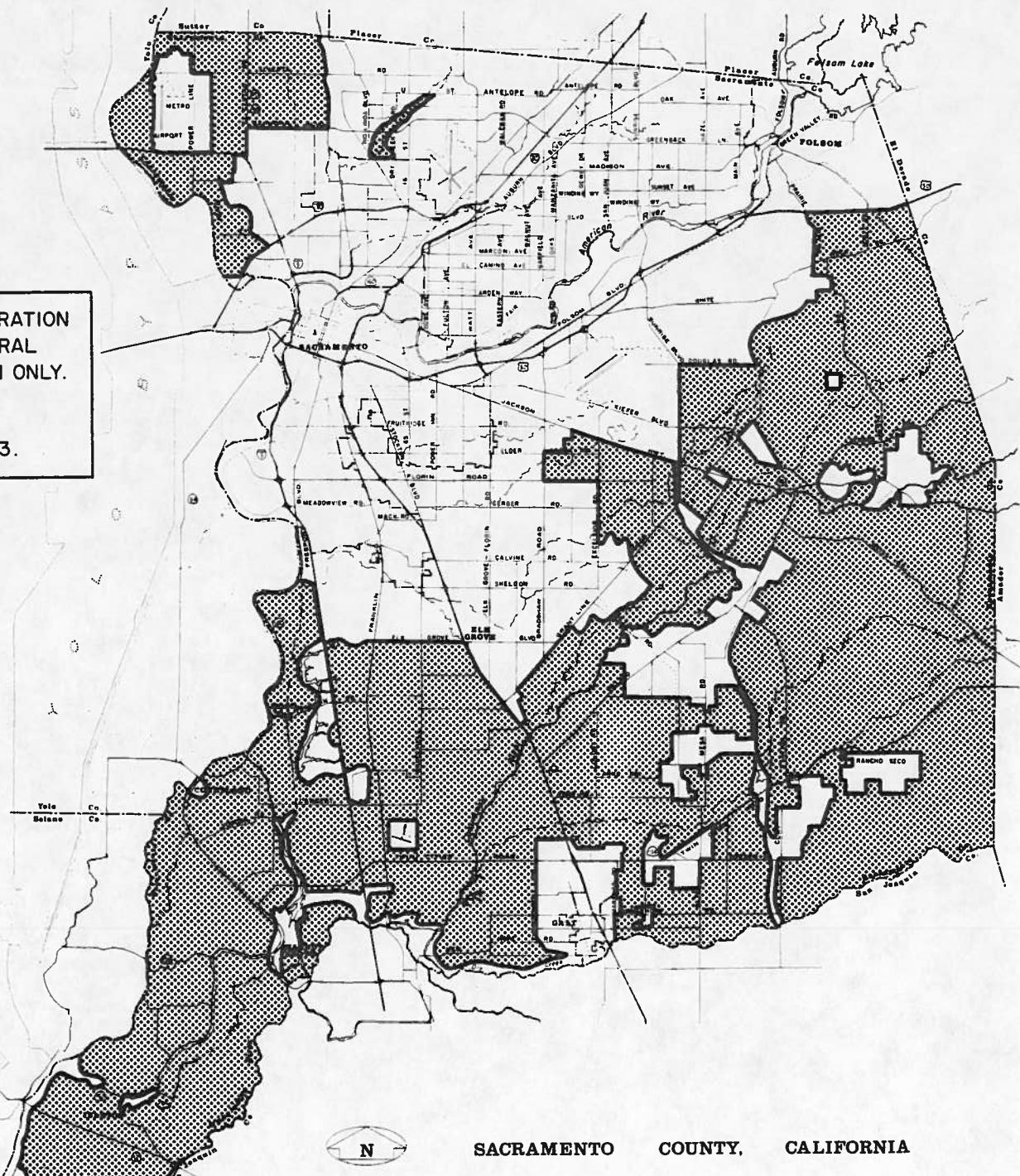


FIGURE 11-13

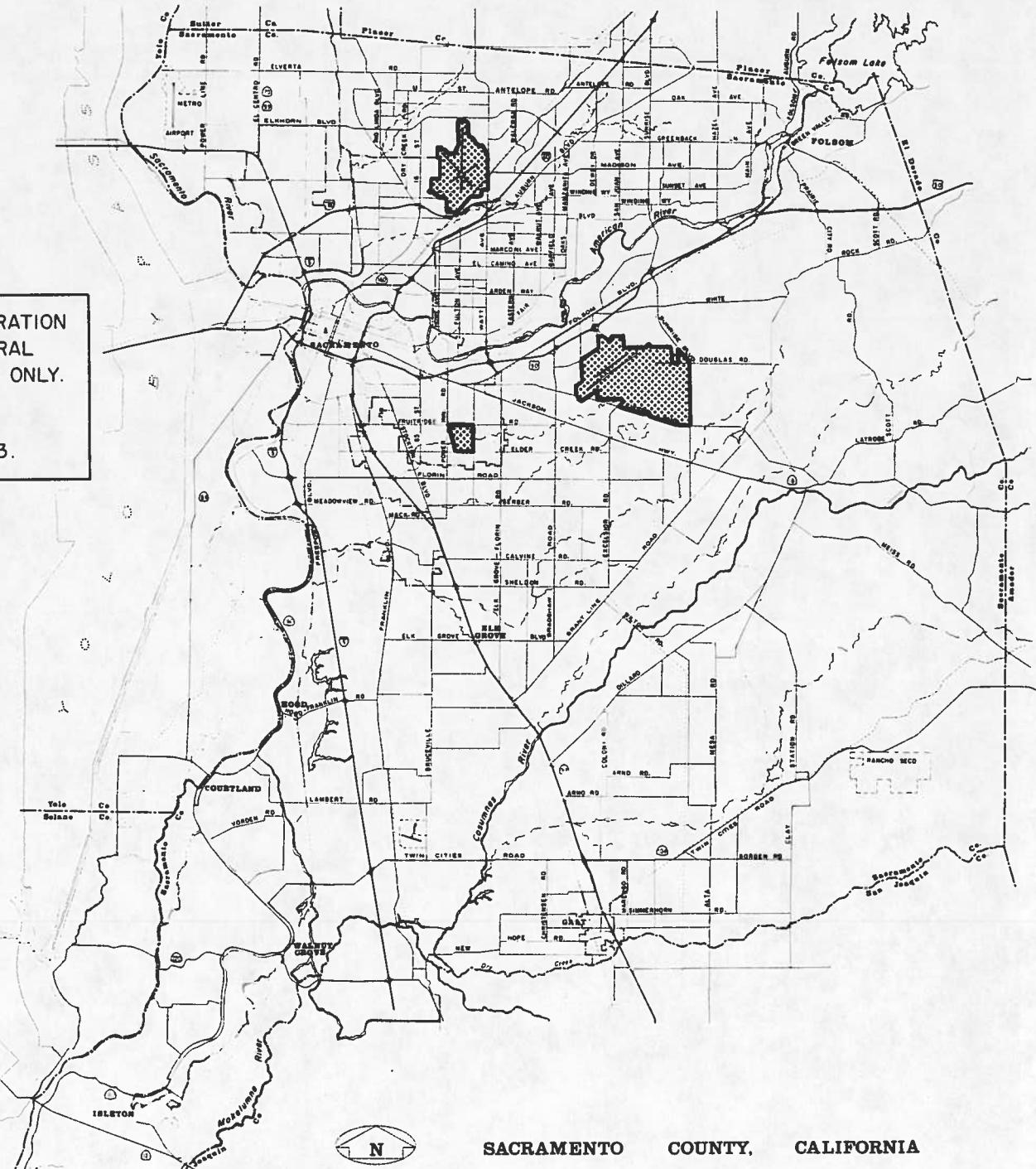
## HAZARDOUS WASTE HANDLING CONSTRAINTS LANDS WITH AGRICULTURAL DESIGNATIONS IN GENERAL PLANS ELIMINATING CONSTRAINT TO ALL FACILITIES.

11-15

SOURCE: SACRAMENTO COUNTY PLANNING DEPARTMENT

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## HAZARDOUS WASTE HANDLING CONSTRAINTS MILITARY LANDS

ELIMINATING CONSTRAINT TO ALL FACILITIES.

Military Lands. A policy of the Department of Defense is that military land shall not be considered for establishment of hazardous waste facilities. This policy is non-negotiable. The three major military facilities in the county are shown in Figure 11-14.

#### ENVIRONMENTAL CONSTRAINTS

Several environmental factors are considered constraints to siting. These include sensitive environmental areas, areas subject to natural hazards, and factors that physically limit the siting of a waste facility.

Sensitive Environmental Areas. Sensitive environmental areas contain wildlife and natural resources which are unique or highly susceptible to damage by hazardous spills. Wildlife and plant habitats are located in woodland, grassland, agricultural, aquatic, and riparian areas throughout Sacramento County. Many of these communities provide habitats for rare and endangered species which are protected by federal law. The habitat and species locations are mapped on Figure 11-15 and listed in Table 11-1. Only the Major areas are shown in Figure 11-15, including known locations of rare and endangered species and critical habitat areas. In addition, numerous riparian communities have been designated as Federal Wetlands. This includes major wetland areas along major rivers and streams, shown in Figure 11-16, and other numerous small pools and tributaries scattered over the landscape. Along with the various wildlife communities there are also two fish hatcheries in the County which produce large populations of fish. They are shown in Figure 11-17. It should be noted that not all wetlands and rare and endangered species habitats have been mapped in this study due to the scale of the maps used. Any proposed hazardous waste facility sites will need to be further studied to guarantee that they are not located in such areas.

TABLE 11-1  
SENSITIVE HABITATS AND RARE AND  
ENDANGERED SPECIES IN SACRAMENTO COUNTY

HABITATS	BIRDS
Coastal Brackish Marsh	Swainson's Hawk
Freshwater Marsh	Yellow Billed Cuckoo
Valley Oak Riparian Forest	
Vernal Pool	
Ione Chaparral	
REPTILES	PLANTS
Giant Garter Snake	Evening Primrose
	Hedge Hyssop
	<u>Legenere Limosa</u>
	Mason's Lily
	Orcutt Grass
	Stebbin's Morning Glory
INSECTS	Irish Hill Buckwheat
Elderberry Longhorn Beetle	

SOURCE: Natural Diversity Database, California Department of Fish and Game.

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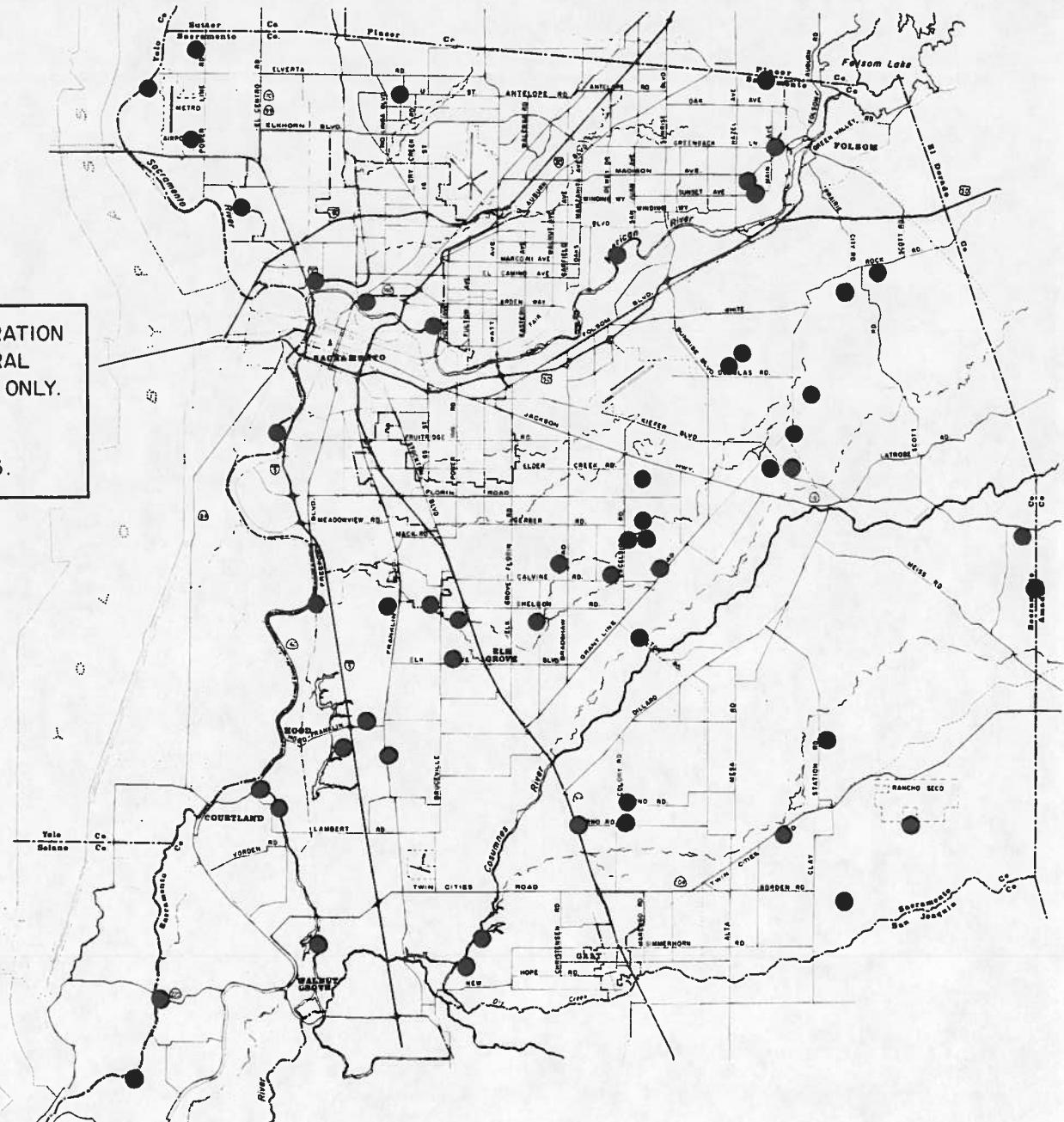
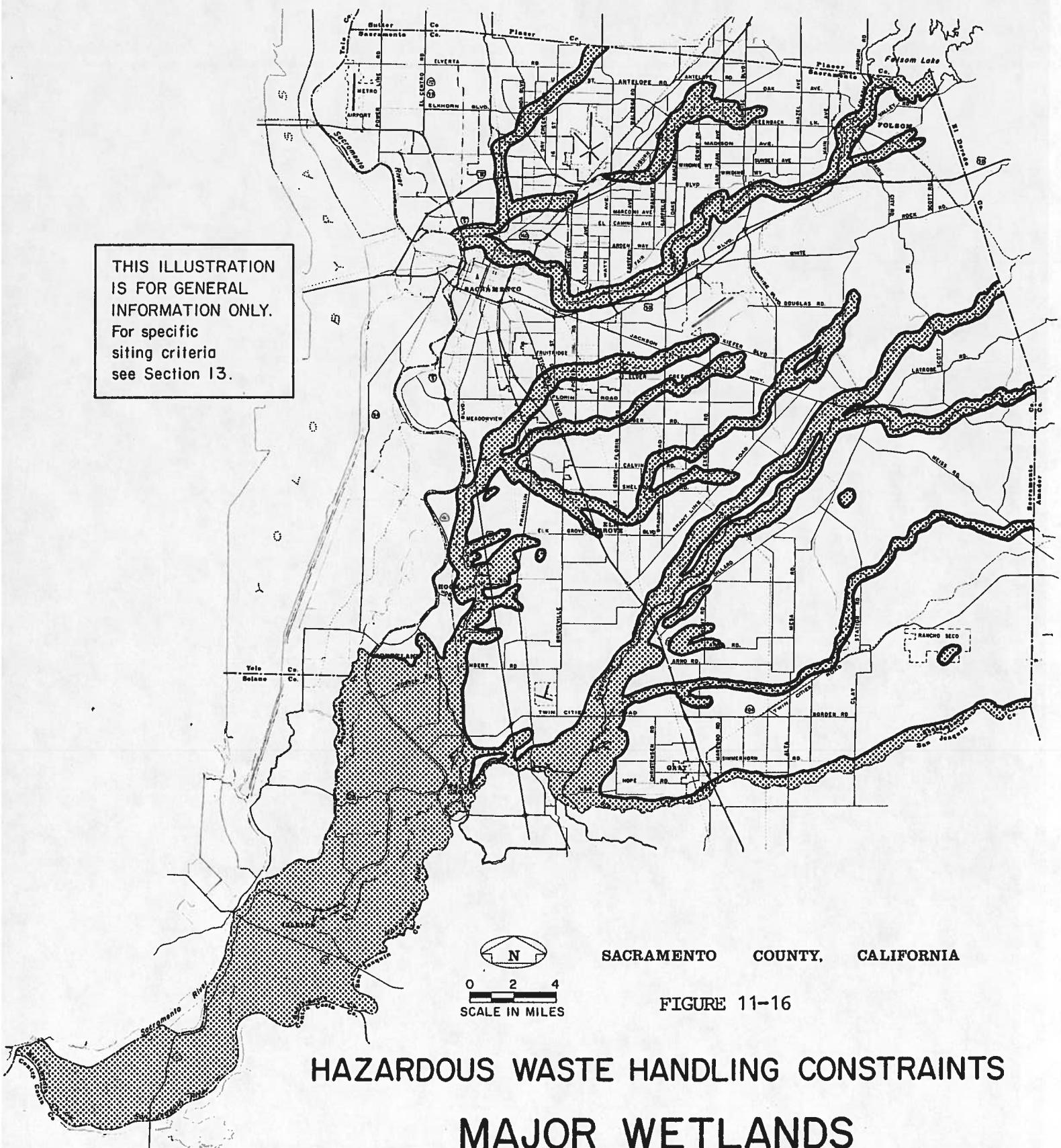


FIGURE 11-15

## HAZARDOUS WASTE HANDLING CONSTRAINTS KNOWN SENSITIVE HABITATS

ELIMINATING CONSTRAINT TO ALL FACILITIES.

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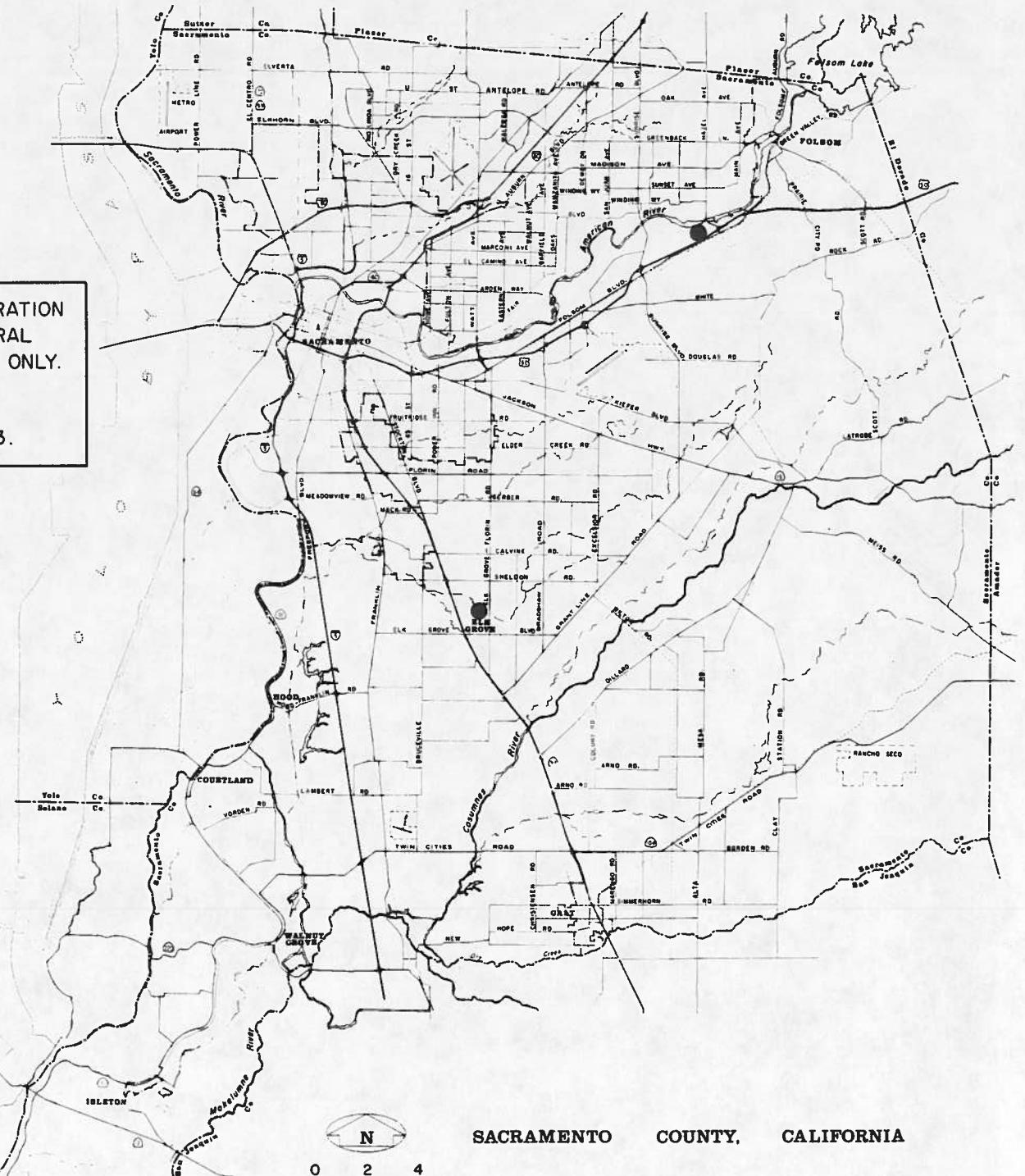


FIGURE 11-17

## HAZARDOUS WASTE HANDLING CONSTRAINTS FISH HATCHERIES

ELIMINATING CONSTRAINT TO ALL FACILITIES.

11-20

SOURCE: THOMAS BROTHERS MAPS OF SACRAMENTO COUNTY  
(COMPLETE REFERENCES ARE LISTED AT THE END OF THIS SECTION)

Parks. The numerous private and public parks, golf courses and beaches in Sacramento County are valuable recreational and aesthetic resources along with being important watersheds. They are shown in Figure 11-18.

Mineral Resource Areas. Sacramento County is well endowed with aggregates (sands and gravels) which serve a critical role in the construction industry. Billions of tons of this resource underlie the county, however much of the overlying land is developed and mining is impossible. The remaining available deposits may be depleted within the next 5 to 15 years (City of Sacramento General Plan, 1986). To delay the expensive and energy-consuming practice of importing aggregates, development is controlled where they are found. In accordance with the Surface Mining and Reclamation Act (1975) the City and County General Plans contain maps of mineral resources in Sacramento County (aggregates) as determined by the State Department of Mines and Geology (Figure 11-19). Much of the area shown on the map is not available for mining because of conflicting land uses. Aggregates are the only important mineral resource in the county which require surface mining. Access to the oil deposits underlying the Delta region would not be affected by hazardous waste facilities.

Floodplains. Hazardous materials stored in floodplains can be distributed over large areas by flooding waters. Much of Sacramento County lies within the 100-year floodplain. Figure 11-20 shows floodplain areas determined by the Federal Emergency Management Agency of the Federal Insurance Administration. Other flood areas are assumed to exist along major creeks in unstudied parts of the County. Recent studies by the Army Corps of Engineers have also identified preliminary boundaries for additional 100-year floodplain areas in the County as shown in Figure 11-21. In addition, much of the County has the potential of being flooded if Folsom Dam should fail. This area is shown on Figure 11-22.

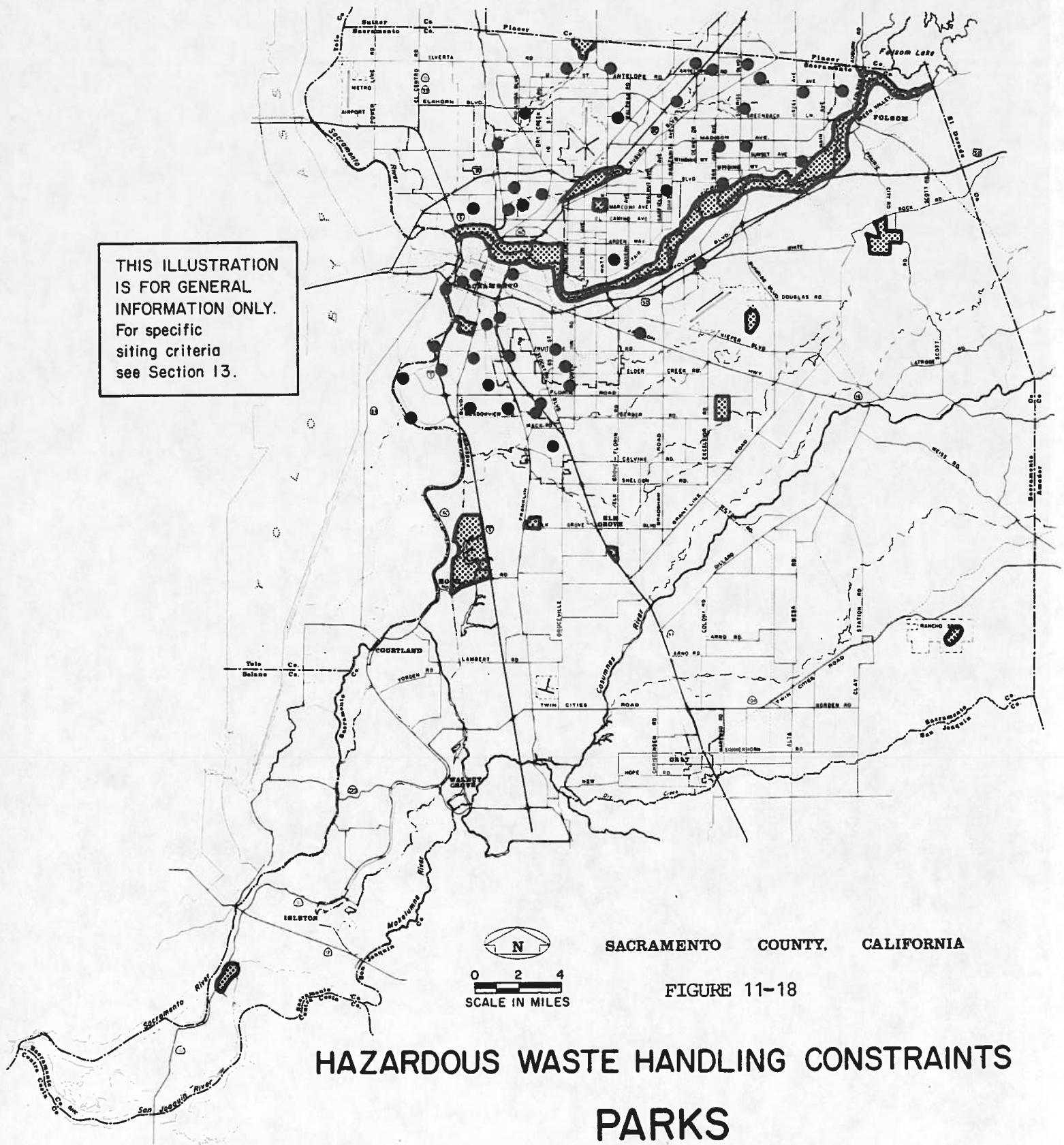
Seismic Hazards. Some seismic conditions which exist in the County can result in damage to hazardous waste facilities. Buildings sited along a fault can collapse in the event of an earthquake or crack due to fault creep. There are no major active faults in the County, but potentially active faults are believed to be located in some areas. These are shown in Figure 11-23.

Unstable Soils. Another danger is soil subsidence, which can also result in damage to buildings. Areas in the County known to be subject to subsidence are shown in Figure 11-24. Steep slopes occur in isolated areas of the eastern portion of the County and are not mapped.

High Soil Permeability. Soil permeability must be considered in evaluating the effects of a hazardous materials spill. Soils with high permeability will be most easily penetrated by liquid wastes, which can result in groundwater contamination. Three such soil types which have been identified in Sacramento County are described below and are shown in Figure 11-25.

Sands. Sandy alluvium soils are found throughout the County, especially along stream channels and floodplain deposits of the Sacramento, American, and Cosumnes Rivers. They consist mainly of sand, along with gravel, silt, and minor amounts of clay. The permeability and surface infiltration of these soils ranges from moderate to high.

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ELIMINATING CONSTRAINT TO ALL FACILITIES.

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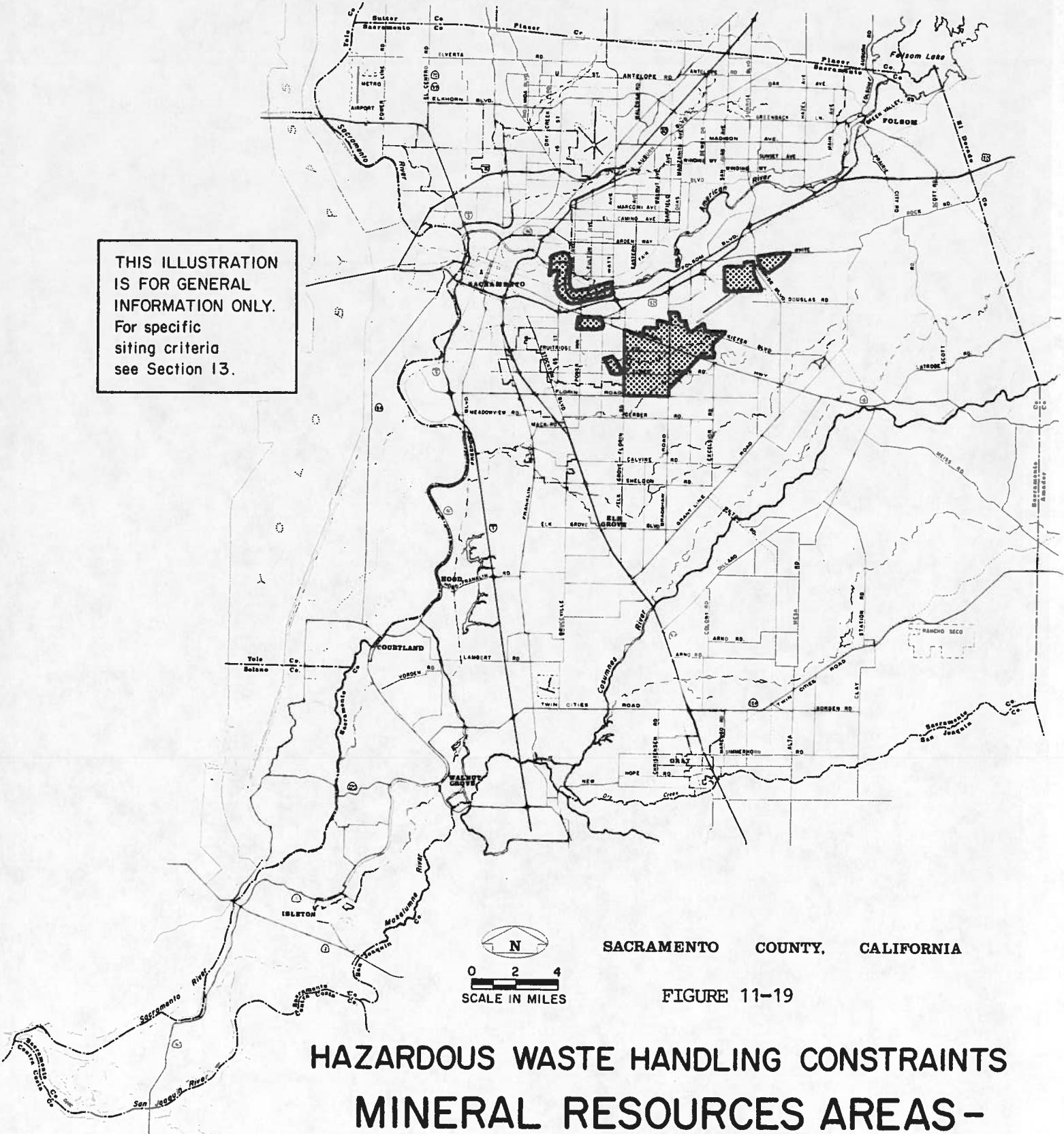
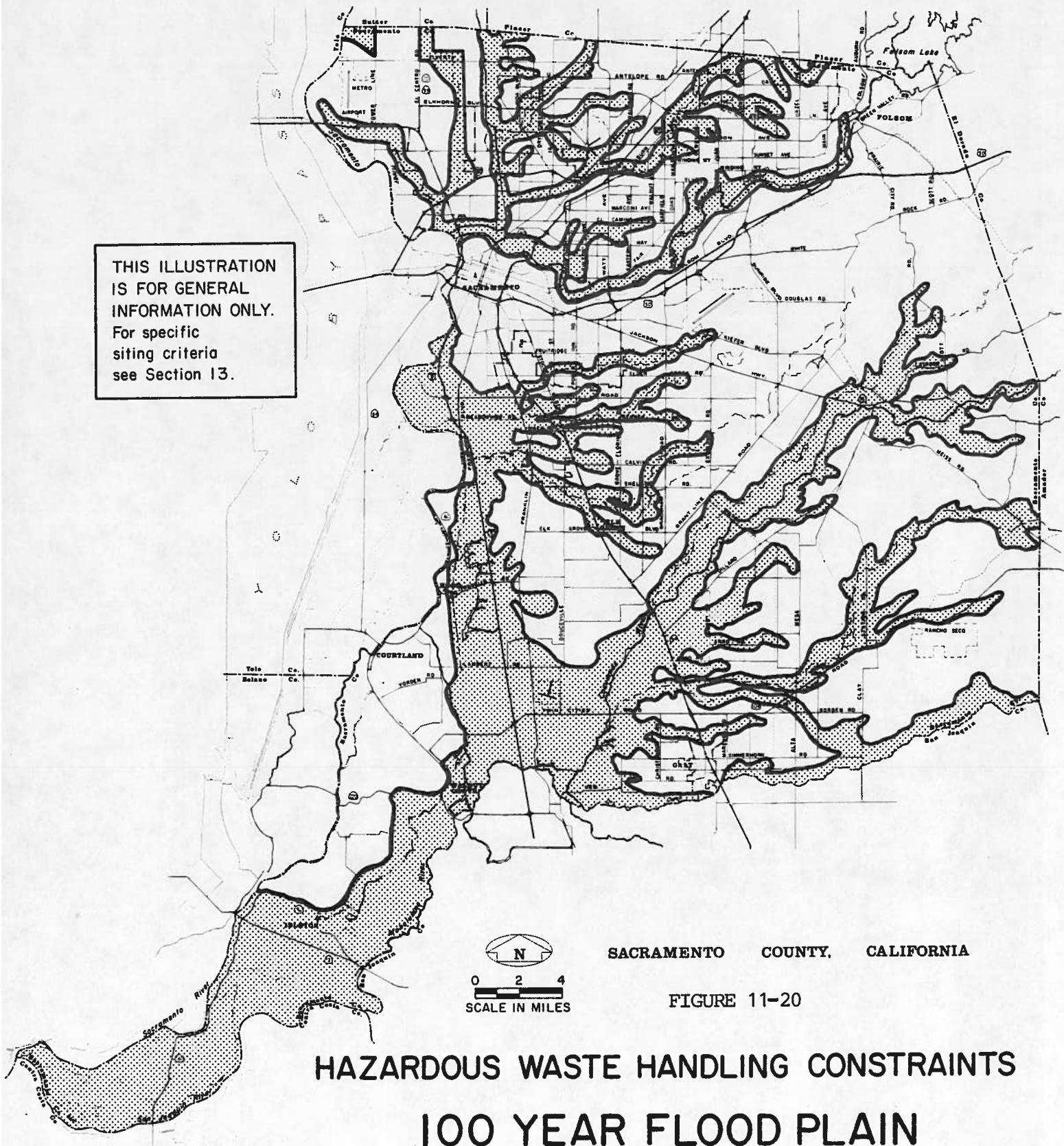


FIGURE 11-19

## HAZARDOUS WASTE HANDLING CONSTRAINTS MINERAL RESOURCES AREAS - AGGREGATES

ELIMINATING CONSTRAINT TO ALL FACILITIES.

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11-24  
ELIMINATING CONSTRAINT TO DISPOSAL FACILITIES,  
NON-ELIMINATING CONSTRAINT TO OTHER FACILITIES.

SOURCES: SACRAMENTO COUNTY, FOLSOM, GALT, AND SACRAMENTO PLANNING DEPARTMENTS  
(COMPLETE REFERENCES ARE LISTED AT THE END OF THIS SECTION)

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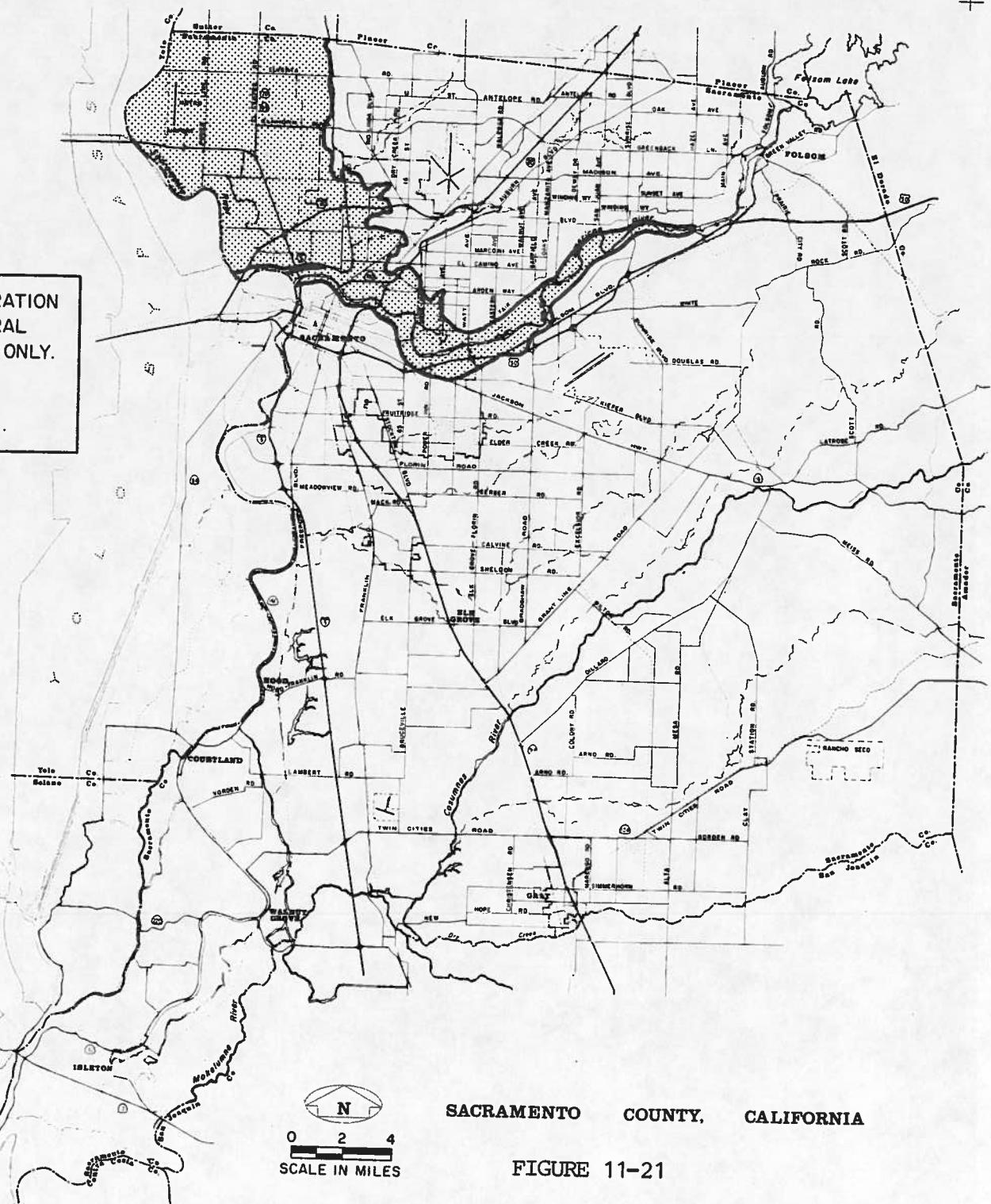


FIGURE 11-21

## HAZARDOUS WASTE HANDLING CONSTRAINTS FLOOD STUDY AREA

11-25

ELIMINATING CONSTRAINT TO DISPOSAL FACILITIES,  
NON-ELIMINATING CONSTRAINT TO OTHER FACILITIES.

SOURCE: U.S. ARMY CORPS OF ENGINEERS, RECONNAISSANCE FLOOD CONTROL STUDIES, NOVEMBER 1987  
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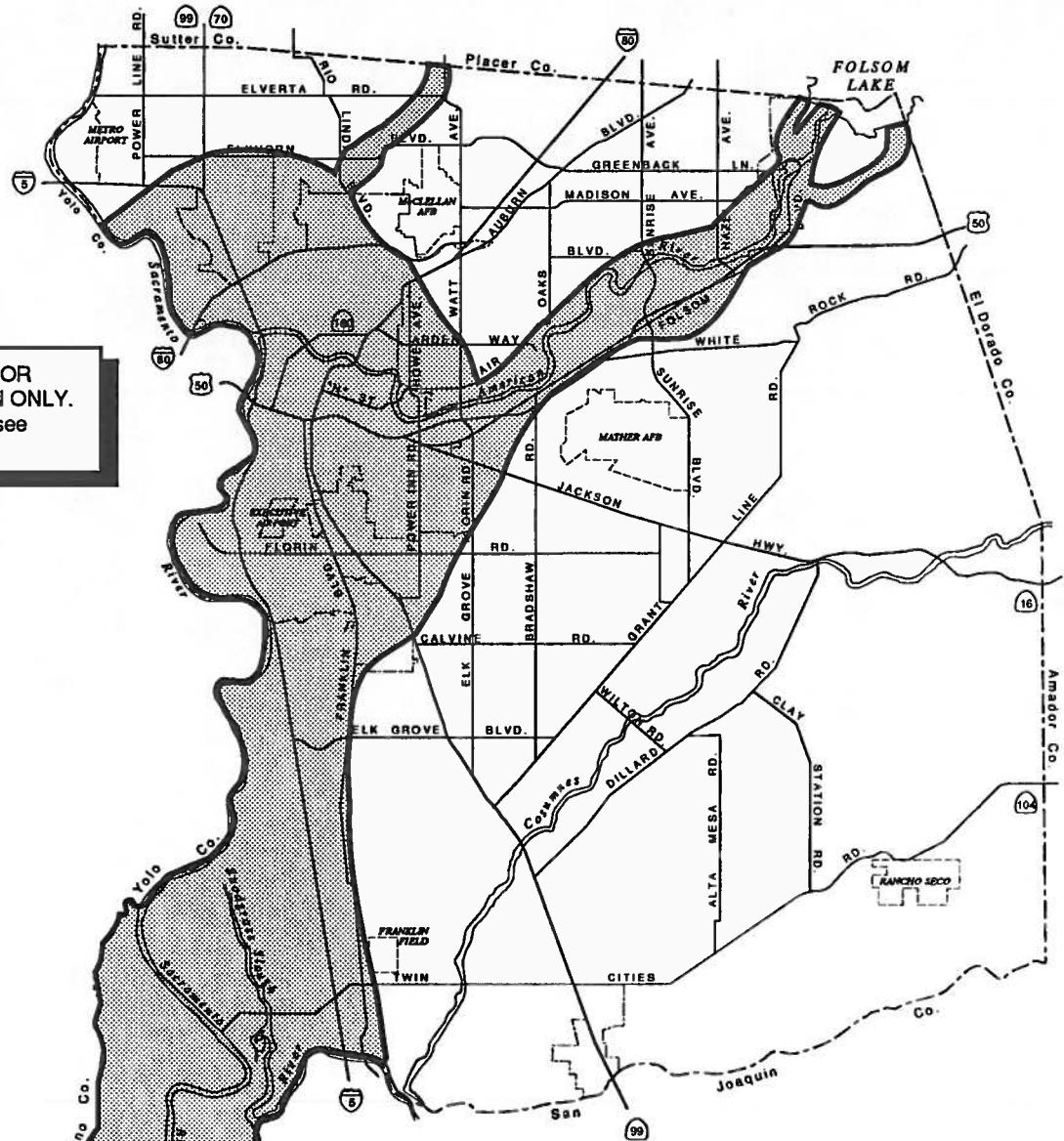
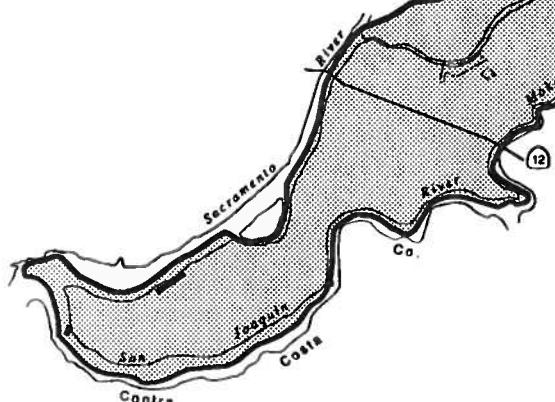


Figure 11-22

SACRAMENTO COUNTY, CALIFORNIA  
HAZARDOUS WASTE HANDLING CONSTRAINTS  
FOLSOM DAM FAILURE FLOOD AREA  
(INCLUDING DIKE FAILURE)

Eliminating Constraint to Disposal Facilities.  
Non-Eliminating Constraint to Other Facilities.



THIS ILLUSTRATION  
IS FOR GENERAL  
INFORMATION ONLY.  
For specific  
siting criteria  
see Section 13.

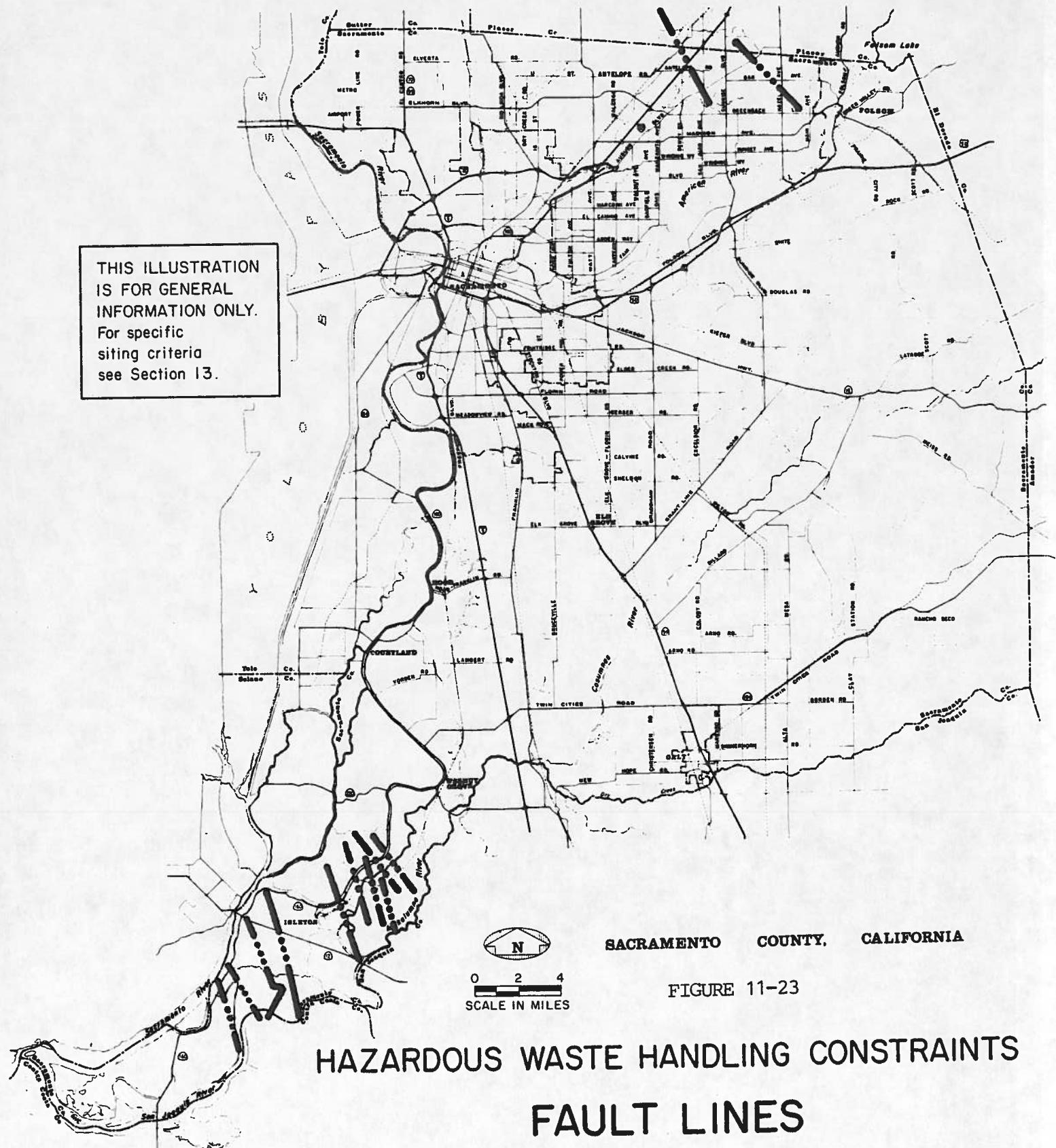


FIGURE 11-23

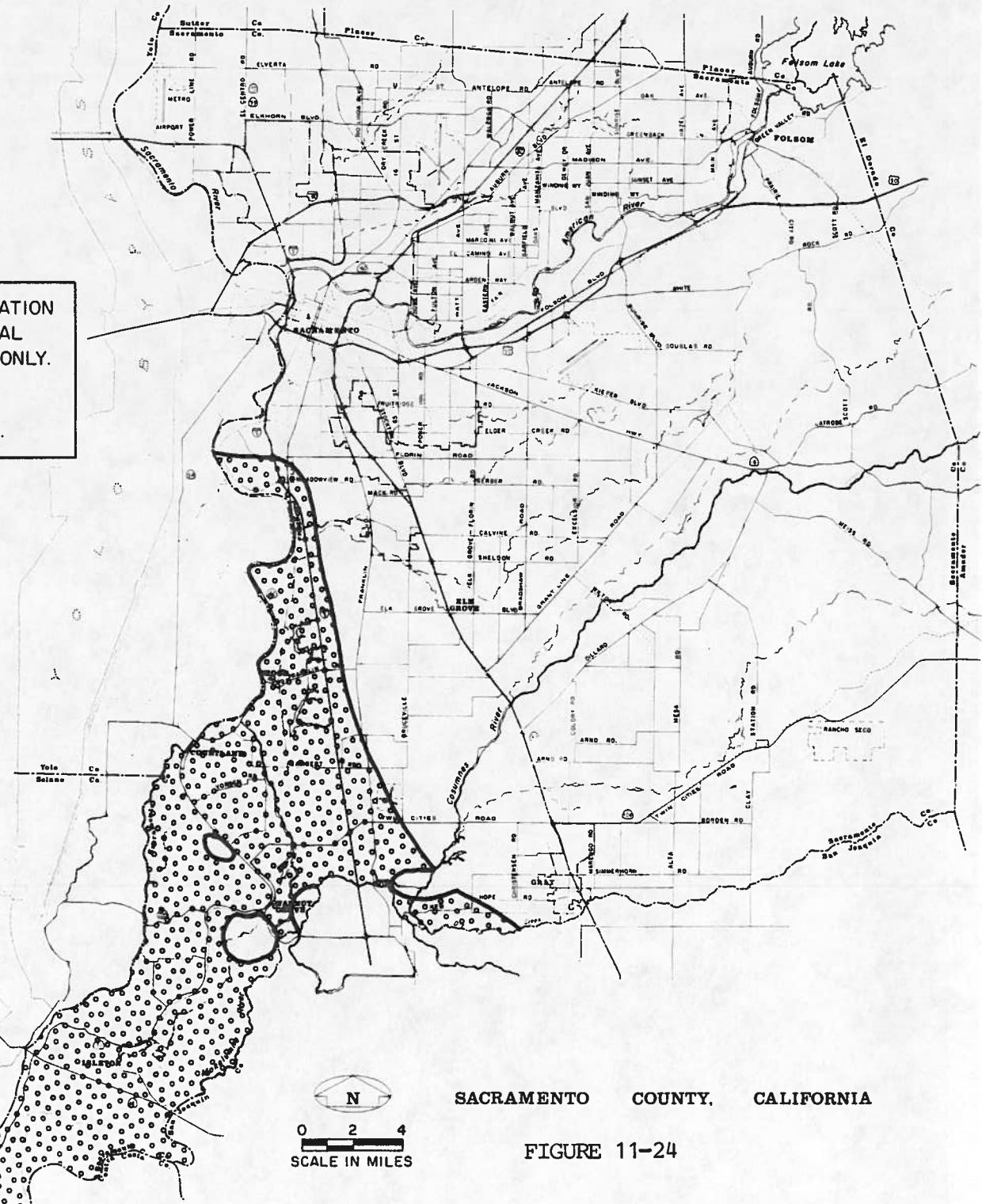
## HAZARDOUS WASTE HANDLING CONSTRAINTS FAULT LINES

ELIMINATING CONSTRAINT TO ALL FACILITIES.

11-27

SOURCE: SACRAMENTO COUNTY PLANNING DEPARTMENT  
(COMPLETE REFERENCES ARE LISTED AT THE END OF THIS SECTION)

THIS ILLUSTRATION  
IS FOR GENERAL  
INFORMATION ONLY.  
For specific  
siting criteria  
see Section 13.



## HAZARDOUS WASTE HANDLING CONSTRAINTS UNSTABLE SOILS- SUBSIDENCE

NON-ELIMINATING CONSTRAINT TO ALL FACILITIES.

THIS ILLUSTRATION  
IS FOR GENERAL  
INFORMATION ONLY.  
For specific  
siting criteria  
see Section 13.

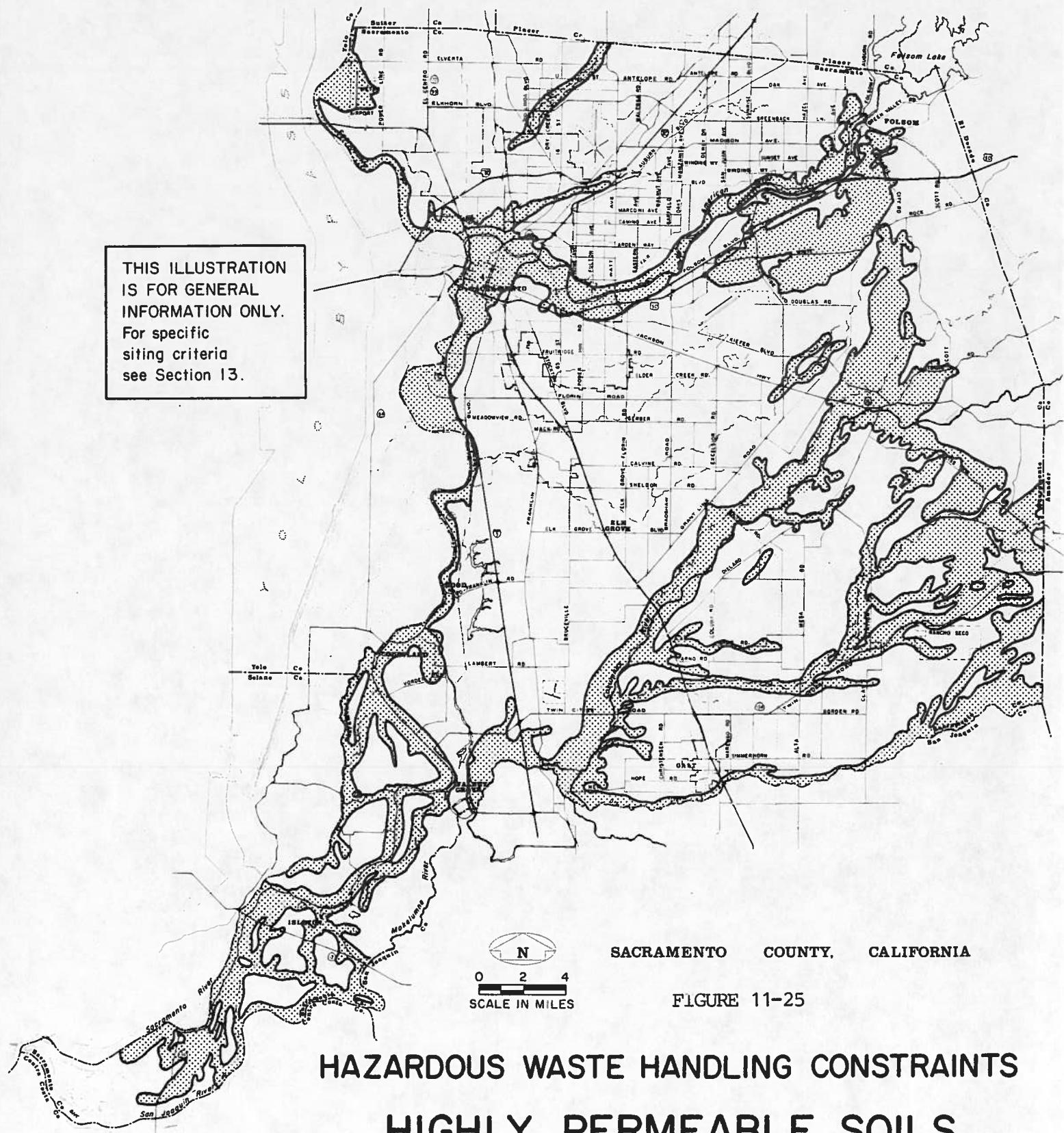


FIGURE 11-25

## HAZARDOUS WASTE HANDLING CONSTRAINTS HIGHLY PERMEABLE SOILS

ELIMINATING CONSTRAINT TO DISPOSAL FACILITIES,  
NON-ELIMINATING CONSTRAINT TO OTHER FACILITIES.

11-29

SOURCE: CALIFORNIA DEPARTMENT OF WATER RESOURCES

(COMPLETE REFERENCES ARE LISTED AT THE END OF THIS SECTION)

Volcanic Sands. Soils derived from Pliocene Volcanic Rock are found in the eastern portion of Sacramento County. This soil contains large amounts of highly permeable volcanic sand.

Dredger Tailings. Dredger tailings were created in Sacramento County between 1870 and 1950 as a result of mining activities. Topsoil was washed away leaving behind piles of stone and gravel. Permeability of these soils is known to be high.

Depth to Ground Water. Repositories must meet the siting criterion of the State Water Resources Control Board. Other facilities are allowable, even in areas of high ground water, if approved risk mitigation measures are taken.

The variations in the depth to the ground water underlying Sacramento County reflect the topography, surface water, and ground water withdrawal. The surface elevations in the county range from a few feet above sea level in the southwest (delta) region up to about 400 feet in the northeast. Overall there is a gentle gradient from west to east, with steeper slopes in the eastern quarter approaching the foothills. Predictably the water table is only a few feet from the surface in the delta, yet it is over 100 feet deep in the eastern regions of the county (James Montgomery Consulting Engineers, 1987). Furthermore, because most of the ground water in this county is recharged from the major rivers the water table is also high near stream channels. Finally, ground water withdrawal has resulted in three major cones of depression centered beneath the regions of McClellan Air Force Base, the community of Elk Grove, and northeast of Galt (junction of Twin Cities Road and Cherokee Lane). The largest, under Elk Grove, is about 10 by 17 miles across while the other two have diameters of about 10 miles. In all cases the water table at the centers of the cones of depression is over 100 feet from the surface, yet within a few miles the ground water may be as close as 15 feet to the surface.

As a facility siting constraint, depth to ground water requires a careful analysis since it is susceptible to relatively rapid variations through time. First, the water table fluctuates seasonally, and over the long-term, as precipitation varies. Further, the effects of pumping tend to lower the water table locally. In the latter case the ideal circumstance for facility siting (ie. deep water tables) may conflict with the aims of water management agencies (ie. avoiding cones of depression). As a result local water tables may fall because of withdrawal, or rise as mitigation measures are taken to restore the ground water. One restoration project proposed in Sacramento County would pipe surface water from the American River to the Elk Grove area (James Montgomery Consulting Engineers, 1987).

Unlike other environmental constraints the suitability of a site for a hazardous waste facility may be altered in a relatively short time when considering depth to ground water. Therefore, the projected and potential fluctuations, both natural and artificial, must be studied in detail on a site-by-site basis. Such a study must assess the risk to ground water by analyzing the surface elevation, ground water elevation, and permeability of the interlying materials. Because of its variable character, the depth to ground water has not been mapped for Sacramento County.

Air Quality. Air pollution over Sacramento County originates both inside and outside of the County boundary. These pollutants are subsequently dispersed throughout the atmosphere. Therefore, when air quality standards are exceeded the result is a county-wide violation, and a county-wide constraint to siting of hazardous waste facilities. Mapping such a widespread constraint is not useful and is not done here.

All hazardous waste facilities must be in compliance with the applicable rules and regulations of the Sacramento County Air Pollution Control District (APCD). Depending on the quantity and type of air emissions from a proposed treatment facility or treatment process, there are two area of existing regulation:

1. New Source Review/Prevention of Significant Deterioration (PSD). Sacramento County has been designated a non-attainment area because it violates the national ambient air quality standards for ozone and carbon monoxide. Under federal law the County is required to take all possible steps to reduce emission levels so that it will no longer violate federal standards. The Sacramento County APCD developed New Source Review regulations in order to meet this requirement. Under this regulation, new emission sources that emit more than specified trigger levels of criteria pollutants will be required to utilize the best available technology to minimize air emissions, and may be required to obtain emission offsets. This existing regulation may make siting of certain types of hazardous waste treatment facilities, such as incinerators, extremely difficult.
2. Toxic Air Contaminants. Any source of a toxic air contaminant must be subjected to a risk analysis on its emissions. If that source, such as a hazardous waste treatment facility, can be shown to pose no significant risk to the impacted population, and the source meets all other requirements, it may be sited.

#### IMPERMEABLE SOILS

When siting for hazardous waste facilities, it is useful to consider positive site attributes in addition to the constraints. One such attribute is impermeable soil. Hazardous waste released on such soils would have slow rates of infiltration to groundwater, minimizing the pre-cleanup spread of contaminants. Three such soil types have been identified in the County:

Flood Basin Deposits (Clays). Flood basin deposits of clay are found throughout the western part of the County. These deposits usually occur in low-lying areas adjacent to major streams. Permeability is usually very low.

Cemented Gravels. Isolated deposits of pleistocene gravels can be found in the central and eastern parts of the County. These deposits are composed of iron-cemented matrices of pebbles and clay. In some instances, hardpan may be present. Such gravels have low permeability.

Sandstone and Claystone. Patches of the Ione Formation are located in the eastern part of the County. This formation is composed of sandstone, claystone, and clay, with very low permeability.

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IS FOR GENERAL  
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For specific  
siting criteria  
see Section 13.

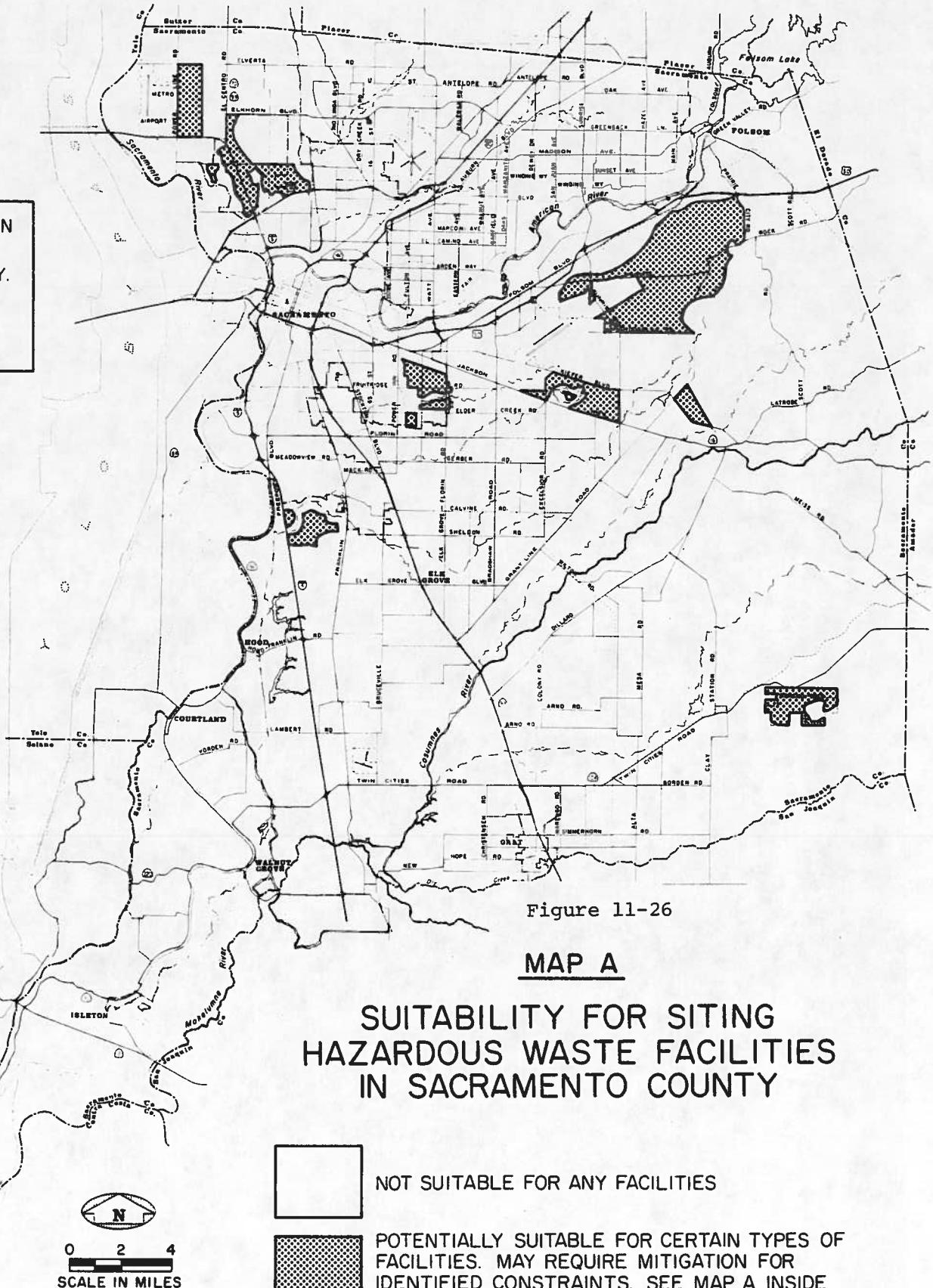


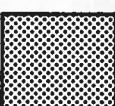
Figure 11-26

MAP A

**SUITABILITY FOR SITING  
HAZARDOUS WASTE FACILITIES  
IN SACRAMENTO COUNTY**



NOT SUITABLE FOR ANY FACILITIES



POTENTIALLY SUITABLE FOR CERTAIN TYPES OF  
FACILITIES. MAY REQUIRE MITIGATION FOR  
IDENTIFIED CONSTRAINTS. SEE MAP A INSIDE  
BACK COVER FOR DETAIL.

## COMBINED CONSTRAINTS MAP

### MAP ORGANIZATION

All of the individual constraints to facility siting are combined into categories and shown on Map A, "Suitability for Siting Hazardous Waste Facilities in Sacramento County" (in back folder). They are grouped according to whether they are eliminating or non-eliminating ("Application"), and by the type of facility ("Type") that they constrain. Eliminating constraints are those which restrict an area from hazardous waste facilities. Non-eliminating constraints do not preclude siting in an area, but may require engineering solutions. The constraint type and application categories are summarized below in Table 11-2.

TABLE 11-2  
CONSTRAINT TYPE AND APPLICATION

CONSTRAINT	TYPE	APPLICATION CATEGORY
Future Urban Growth	Human	
Residential Areas + Buffer	Human	
Airport Safety Zones	Human	
Agricultural Designations	Policy	
Military Lands	Policy	
Seismic Areas	Environ.	ELIMINATING TO ALL FACILITIES
Sensitive Habitats	Environ.	
Parks (Recreation, etc.)	Environ.	
Mineral Resources	Environ.	
Wetlands	Environ.	
Floodplains	Environ.	ELIMINATING TO DISPOSAL FACILITIES
Permeable Soils (1)	Environ.	NON-ELIMINATING TO OTHER FACILITIES
Aquifer Recharge Areas. (2)	Environ.	
Unstable Soils	Environ.	
Prime Agricultural Land	Environ.	
Air Quality		NON-ELIMINATING TO ALL FACILITIES
Non-Attainment Areas (2)	Environ.	
Public Facilities	Human	
Immobile Populations	Human	
Depth To Ground water (2)	Environ.	

1. Eliminating to disposal unless State Regional Quality Control Board has approved of facility design.
2. Constraint is not mapped.

## MAP ANALYSIS

An analysis of siting constraints identifies over 25,000 acres within Sacramento County as potentially suitable for hazardous waste facilities. This acreage is spread throughout the county, absent only in the Delta region and the residential portions of the county. Note also that a buffer is required around single residences, just as for neighborhoods, but that it may not be reflected in maps of the scale used here. Discrete areas are discussed below according to application category:

Not Suitable for Any Facilities. The great majority (96 %) of the land within the county falls into this category. Sensitive habitats, lands with agricultural designations, and residential areas account for most of the acreage eliminated from siting.

Not Suitable for Disposal Facilities but Potentially Suitable for Other Facilities with Mitigation for Identified Constraints. Most of the area available for siting falls into this category. These are sizable regions away from residential areas, they are in floodplains or have permeable soils.

1. Just south of Highway 50, near Rancho Cordova and Folsom, lies the largest area (8,330 acres) of land in this category. This area is proximate to Highway 50, and is designated industrial.
2. South of Highway 50 and east of the Folsom South Canal are three smaller tracts of land in this category, totalling about 600 acres. The Sacramento County Refuse Disposal Site includes 400 acres which appear compatible with hazardous waste treatment facilities, with mitigation. The disadvantages are distance from generators and its relative poor access. Another 200 acres are located to the south in the grounds of the Rancho Seco Nuclear Power Plant. This tract is surrounded by land in the most suitable siting category (discussed below).
3. South of Highway 50 and east of Elk Grove-Florin Road, lie 1,510 acres of land in this category having good access and industrial zoning. In addition, this area is centrally located with regard to other industrial tract within the county.
4. An additional 1,200 acres are located south of Meadowview Road, between Freeport and Franklin Boulevards. The land is designated as public, holding the Sacramento Regional Wastewater Treatment Plant. It offers good access via Interstate 5 and has a current land use compatible with hazardous waste facilities.
5. Straddling Interstate 5 in North Natomas is an additional 3,180 acres in this category. Highway access is good and the area is designated as industrial. The actual acreage available for siting may be overrepresented for three reasons. First, a sports complex is being developed in the center of the area. Second, much of the area will have up to 50 % office space mixed in with the manufacturing. Finally, the planned residential development will require a buffer, not represented on this map. In all cases the acreage may be reduced significantly. The eastern third of this

area, with industrial designation, impermeable soils, and good separation from residential development, is the most likely siting in the North Natomas area.

5. Approximately 1,960 acres to the east of Metro Airport have direct access to Interstate 5 and are designated industrial. Although this land is restricted to airport related uses, a hazardous waste facility could be justified to service airport maintenance operations.

Potentially Suitable for All Facilities with Mitigation for Identified Constraints. Only one tract in this category exists in Sacramento County.

1. A 240 acre plot is located south of Highway 50, near Hazel Avenue. It has good access and is zoned industrial.

Potentially Suitable for All Facilities. Four major areas which have no identified constraints appear on Map A.

1. South of Highway 50, near Sunrise Boulevard, Douglas Road and White Rock Road, lies 3,690 acres in this category. The land is designated industrial, is not far from Highway 50, and is well away from existing or planned residential land uses. A second, smaller area lies to the north near Hazel Avenue (350 acres).

2. West of Sunrise Boulevard between Kiefer and Jackson Roads are 2,120 acres suitable for all types of hazardous waste facilities. Although relatively distant from major highways, this tract is designated industrial, and it is centrally located between the two largest areas of industrial zoning in the County. There is currently no residential or urban reserve land near the tract. It also has the positive attribute of impermeable soils.

3. East of Grant Line Road near Kiefer Road lies 280 acres with similar characteristics. This tract is currently the Sacramento County Refuse Disposal Site, a land use compatible with hazardous waste facilities.

4. In the southeast corner of the County there are 1,790 acres of land suitable for all hazardous waste facilities within the boundaries of the Rancho Seco Nuclear Power Plant Site. Although distant from the major generators in the County, this area is underlain in part by impermeable soils and it currently has a compatible land use. (Note the small inclusions of land suitable for some facilities with mitigation.)

### CONCLUSIONS

This analysis of constraints to hazardous waste facilities in Sacramento County identifies over 25,000 acres in widespread locations potentially suitable for facility siting (Table 11-3). The analysis is designed to give a general view of the county's siting potential for managing its current and future hazardous wastes. Prior to siting any such facility a detailed, site-specific analysis will be necessary.

**TABLE 11-3**  
**SUMMARY OF ACREAGE FOR SITING OF HAZARDOUS WASTE FACILITIES**  
**IN SACRAMENTO COUNTY**

<u>Application Category</u>	<u>Size (Acres)</u>	<u>Number of Major Locations</u>
NOT SUITABLE FOR DISPOSAL FACILITIES		
BUT POTENTIALLY SUITABLE FOR OTHER FACILITIES WITH MITIGATION FOR IDENTIFIED CONSTRAINTS	16,780	6
POTENTIALLY SUITABLE FOR ALL FACILITIES WITH MITIGATION FOR IDENTIFIED CONSTRAINTS	240	1
POTENTIALLY SUITABLE FOR ALL FACILITIES	<u>8,280</u>	<u>5</u>
<b>TOTAL</b>	<b>25,300</b>	<b>12</b>
NOT SUITABLE FOR ANY FACILITIES	610,000	--

SOURCES FOR FACILITY SITING CONSTRAINTS MAPPING

<u>FACILITY SITING CONSTRAINTS</u>	<u>COUNTY</u>	<u>CITIES</u>
<u>Immobile Populations</u>		
detention facilities	<u>Group Quarters and Mobile Home Park Data, Sacramento County Planning Department</u>	same as county
convalescent homes	<u>Group Quarters and Mobile Home Park Data, Sacramento County Planning Department</u>	S*,F*,I*,G* planning departments
child care facilities	<u>Community Care Facilities Information System-Directory, Department of Social Services</u>	S*,F*,I*,G* planning departments
colleges	Thomas Brothers Maps, 1987	Same as county
schools	Thomas Brothers Maps, 1987	Same as county
hospitals	Thomas Brothers Maps, 1987	Same as county
<u>Public Facilities</u>		
fire stations	Thomas Brothers Maps, 1987	Same as county
water treatment plants	Thomas Brothers Maps, 1987	Same as county
<u>Residential Areas</u>	<u>General Plan Land Use Map, Sacramento County General Plan</u>	same as county
<u>Military Lands</u>	<u>General Plan Land Use Map, Sacramento County General Plan</u>	same as county
<u>Future Urban Growth</u>	South Areas Projects Map, Sacramento County	S,F*,I*,G* planning departments

\*-Sacramento, F\*-Folsom, G\*-Galt, I\*-Isleton

<u>FACILITY SITING CONSTRAINTS</u>	<u>COUNTY</u>	<u>CITIES</u>
<u>Airport Safety Zones</u>	Airport Land Use Commission Comprehensive Land Use Plans for Sacramento Executive, Sacramento Metropolitan, Rancho Murieta, Natomas, Skyranch, Franklin Field and Airports Mather and McClellan Air Force Bases	same as county
<u>Prime Agricultural Areas</u>	Sacramento County's Physical Environment, Sacramento County Environmental Management Task Force; <u>Soils of Sacramento County, Ca.</u> , Soil Survey USDA	same as county
<u>Sensitive Environmental Areas</u>		
sensitive habitats	<u>California Natural Diversity Data Base</u> , California Department of Fish and Game	same as county
wetlands	<u>National Wetland Inventory</u> , U.S. Fish and Wildlife Department	same as county
fish hatcheries	Thomas Brothers Maps, 1987	same as county
<u>Parks</u>	AAA Maps of Sacramento County; Sacramento County Parks and Recreation Department	same as county
<u>Mineral Resource Areas</u>	Sacramento County General Plan Land Use Map, <u>Sacramento County General Plan</u>	same as county
<u>Floodplains</u>		
100-Year Floodplain	Sacramento County Zoning Maps, Sacramento County Planning Department	I*- same as county, F*,G*- Federal Emergency Management Administration, S*- S* planning dept.

S\*-Sacramento, F\*-Folsom, G\*-Galt, I\*-Isleton

<u>FACILITY SITING CONSTRAINTS</u>	<u>COUNTY</u>	<u>CITIES</u>
preliminary 100-Year Floodplain boundary	"Information Paper, American River Watershed California", U.S. Dept. of Army Corps of Engineers	same as county
area flooded if Folsom Dam/Dikes break	U.S. Bureau of Reclamation Central Valley Project, 1. Inundation Map of Folsom and Nimbus Dams. 2. Innundation Map of Folsom Dikes.	same as county
<u>Seismic Areas</u>		
faults	"Seismic Safety Element", <u>Sacramento County General Plan</u>	same as county
subsidence areas	"Seismic Safety Element, <u>Sacramento County General Plan</u>	same as county
<u>Wind Patterns</u>		
	Sacramento County Air Pollution Control District	same as county
<u>Permeable Soils</u>		
	Bulletin 118-6 and Bulletin 118-3, California Department of Water Resources	same as county

S\*-Sacramento, F\*-Folsom, G\*-Galt, I\*-Isleton



## Section 12

### HAZARDOUS WASTE TRANSPORTATION

#### INTRODUCTION

An important part of siting hazardous waste facilities is to weigh the risks involved in transportation. In 1985 and 1986, thousands of tons of hazardous wastes were hauled over the highways in Sacramento County. Although accidents involving vehicles carrying these wastes are rare, the potential consequences are severe in terms of the environment, economics, and human health. Therefore, it is necessary to identify and correct unsafe access as part of the siting procedure.

This section briefly describes state legislation concerned with the transportation of hazardous wastes, and contains an analysis of the accident rates for major roadway segments and intersections in Sacramento County. An analysis of State and interstate highways, performed by the Sacramento Area Council of Governments (SACOG), is incorporated into this section.

The analysis that follows locates roadway segments and intersections in Sacramento County where the accident rates were "above normal" (defined below). The information is for general use only and prior to facility approval a detailed, site-specific routing analysis must be completed. Such an analysis must include a risk assessment which combines the likelihood of an accident (ie. accident rate) with the consequences (ie. adverse effects on population or property)

#### ASSUMPTIONS

The analysis of accident rates requires certain assumptions:

1. Although truck traffic is the focus of this study, the accident rate data are for all traffic, including automobiles. Truck accident rates are assumed to be proportional to the overall accident rate.
2. Only the major roadway segments and intersections are included in this analysis. Routes not likely to be used by hazardous waste haulers such as those in residential areas are not included.

#### AUTHORITY

Transport of hazardous wastes in California is addressed in Assembly Bill 1861 (Campbell). This legislation specifies that vehicles carrying hazardous waste must minimize travel time by using the most direct route to their destination along state and interstate highways. Exceptions are allowed when the direct routes enter congested areas as in cities or residential districts, or when smaller roadways are necessary for the collection of wastes. Additional

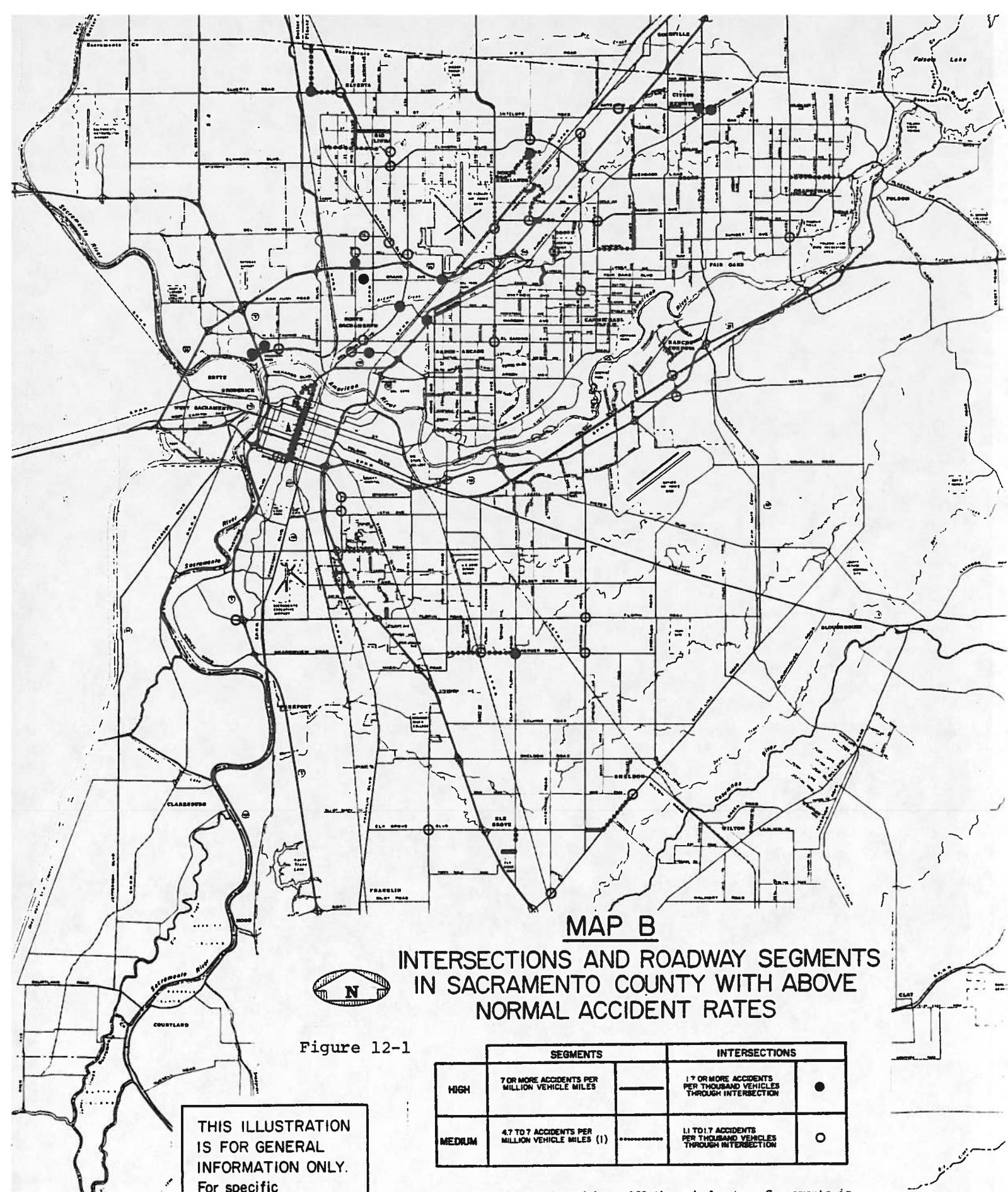


Figure 12-1

restrictions may apply when a route is determined to be "appreciably less safe" than alternative routes, as described in the Federal Highway Administration's publication, Guidelines for Applying Criteria to Designate Routes for Transporting Hazardous Materials (1980). This publication outlines procedures for assessing the risk of using a given route versus alternative routes. The risk calculation incorporates the probability of an accident occurring and its consequence.

The transport of hazardous waste may be regulated by local governments if the regulation:

1. Is not preempted by Federal laws;
2. Does not limit access to businesses requiring hazardous waste transporter services;
3. Allows access to service facilities within 1/2 miles of state or interstate highways;
4. Does not severely impact neighboring jurisdictions;
5. Requires that regulated roads be posted; and,
6. Requires that the California highway patrol be notified of the regulation;

#### METHODOLOGY

Accident rates were determined for major roadway segments and intersections in Sacramento City and in the unincorporated county, for 1986. Data were not available for the cities of Folsom, Galt and Isleton.

A five step procedure, detailed in Appendix C, was used to calculate accident rates. Only major routes, likely to carry truck traffic, which also had accident data available were used. Segment length was measured using large scale maps while accident data and flow rates were collected from city and county agencies. Accident rate is expressed as accidents per million vehicle miles for segments, and as accidents per thousand vehicles for intersections.

The segments and intersections were analyzed separately. Accident rates were categorized into "high", "medium" and "low" rates based on the means and standard deviations of each set of data. High rates are those greater than two standard deviations above the mean, medium rates are between one and two standard deviations above the mean, and low rates are those less than one standard deviation above the mean.

The State and Interstate Highway network in the region was evaluated by SACOG. Accident rates differed, but the same technique (standard deviations) was used to identify categories. State Route 160 through downtown Sacramento is the only segment in the county that was found by SACOG's analysis to have an above-normal accident rate.

## ANALYSIS

Roadway segments and intersections with "high" and "medium" accident rates, defined here as "above normal", are shown on Figure 12-1. Those with "low" rates are not plotted; nor are segments and intersections where data were unavailable.

The transportation map (Figure 12-1) is analyzed in light of the composite constraints map (Map A). Segments and intersections which have "above normal" accident rates which are in the vicinity of potential siting area, are highlighted below.

In the south-central part of the County, Grant Line Road and Elk Grove Boulevard contain segments with "medium" accident rates. This area is important because it offers a route to the largest, potential siting area in the County for hazardous waste facilities (Map A). State Routes 99 and 50 are the most likely primary routes to this area, but they pass through congested and densely populated portions of the City and County. Alternative routing may be desirable. The suitability of Grant Line Road or Elk Grove Boulevard is likely to be dependent on mitigation of the traffic hazards found there.

The access to the potential siting area around Perkins Road and Fruitridge Road is along Gerber Road and Fruitridge Road, east of Highway 99. These routes have above normal accident rates. Alternative routing may be possible via Highway 50.

The potential siting in the Natomas area has several high or medium accident rate intersections to the south and east, though there are no problems posed by segments. The traffic pattern in this area will change as the planned growth occurs, thus emphasizing the need for updated, specific site studies.

Numerous other segments and intersections with above normal accident rates are found in the communities north of the American River. Many of these are not likely routes for hazardous waste haulers except as collection runs. Route 160, through downtown Sacramento, is one example. The segments and intersections east of McClellan Air Force Base also have above normal accident rates. The Sacramento County Board of Supervisors is already considering ordinances regarding traffic problems in this area. Lowered speed limits and the installation of turning lanes may affect the accident rates on some of these routes. Again, updated, site specific studies are a necessity prior to siting approval.

## CONCLUSION

The information presented here is only intended to highlight roadways in Sacramento County with above normal accident rates; it is not to be used as a basis for restricting siting of hazardous waste facilities. The major conclusion of this analysis is that a detailed, and current routing study is necessary prior to siting a hazardous waste facility in Sacramento County.

Site-specific investigations are necessary for the following reasons:

1. Hazardous waste facilities must not be sited in areas that will require transportation of hazardous waste over routes identified as having excessive accident risk.
2. The data used here will soon be outdated as the local traffic engineers locate and mitigate problems. New problems will arise as traffic flows shift in response to commercial, industrial, and demographic changes.
3. The data presented here reflect gross accident rates. Detail of the vehicle types involved or time of day of most accidents was not available. Vehicle type is important because trucks may have a higher or lower accident rate than represented in the gross data. Furthermore, the time of day when most accidents occur is necessary for accurately calculating the likelihood of an accident involving a hazardous waste hauler. This information may be used in establishing temporal restrictions to travel.
4. A detailed study should anticipate problems which might result directly from an increase in truck traffic to and from the new facility. For example, increased truck traffic may accelerate road deterioration on the chosen route. In addition, if trucks from the proposed facility constitute a major increase in traffic flow on a given route, the suitability of that route might change unless prior improvements are made.
5. Whenever possible, routing should consider the basic constraints to siting (see Section 11). While population density is built into the accident risk formula, other factors such as soil permeability and drainage into critical watersheds are not addressed.
6. Site-specific risk assessment of routes within the cities of Sacramento County should be performed by the local jurisdictions. A detailed analysis is best accomplished by a local agency with access to detailed data and firm grasp of local problems.
7. The State and Interstate Highways through Sacramento County are a first priority for routing of hazardous waste haulers. Data for segments and interchanges along these routes is especially important and should be collected by appropriate state agencies. These routes may then be properly compared to the alternative routes.



## Section 13

### **IMPLEMENTATION**

#### INTRODUCTION

Implementation of this Plan will occur in two phases. First, within 180 days of the final approval of this Plan by the Department of Health Services, local governments in the County must:

1. Bring General Plans and land use controls into consistency with this Plan.
2. Develop a process for local review of hazardous waste facility proposals.

Second, implementation will continue with ongoing programs that will be conducted throughout the period this Plan is in effect.

This section begins with a description of the responsibilities of city and county governments. Local land use controls must be brought into conformance with this Plan within 180 days of final approval by DOHS. This section continues with a description of the process that must be developed by local entities to review Use Permit applications for hazardous waste facilities. Siting criteria which must be met by all facilities requiring Use Permits are included. These criteria must be incorporated either directly or by reference into each local zoning code. The next portion of this section outlines recommended changes or additions to local hazardous waste programs. This section concludes with a description of the Plan review and update which will occur no later than 1992.

#### LOCAL REVIEW PROCESS FOR FACILITY APPLICATIONS

Figure 13-1, provided by the Office of Planning and Research, outlines the CEQA process for the review of hazardous waste facility applications. Applications for Use Permits for hazardous waste facilities will be subject to normal processes, requirements, hearings, and timelines. The single exception to this rule, is that normal time limits for local review may be extended for a reasonable length of time to account for pre-application and post-application conferences. The purpose of these conferences is to review a proposed facility for consistency with this Plan, including the siting criteria.

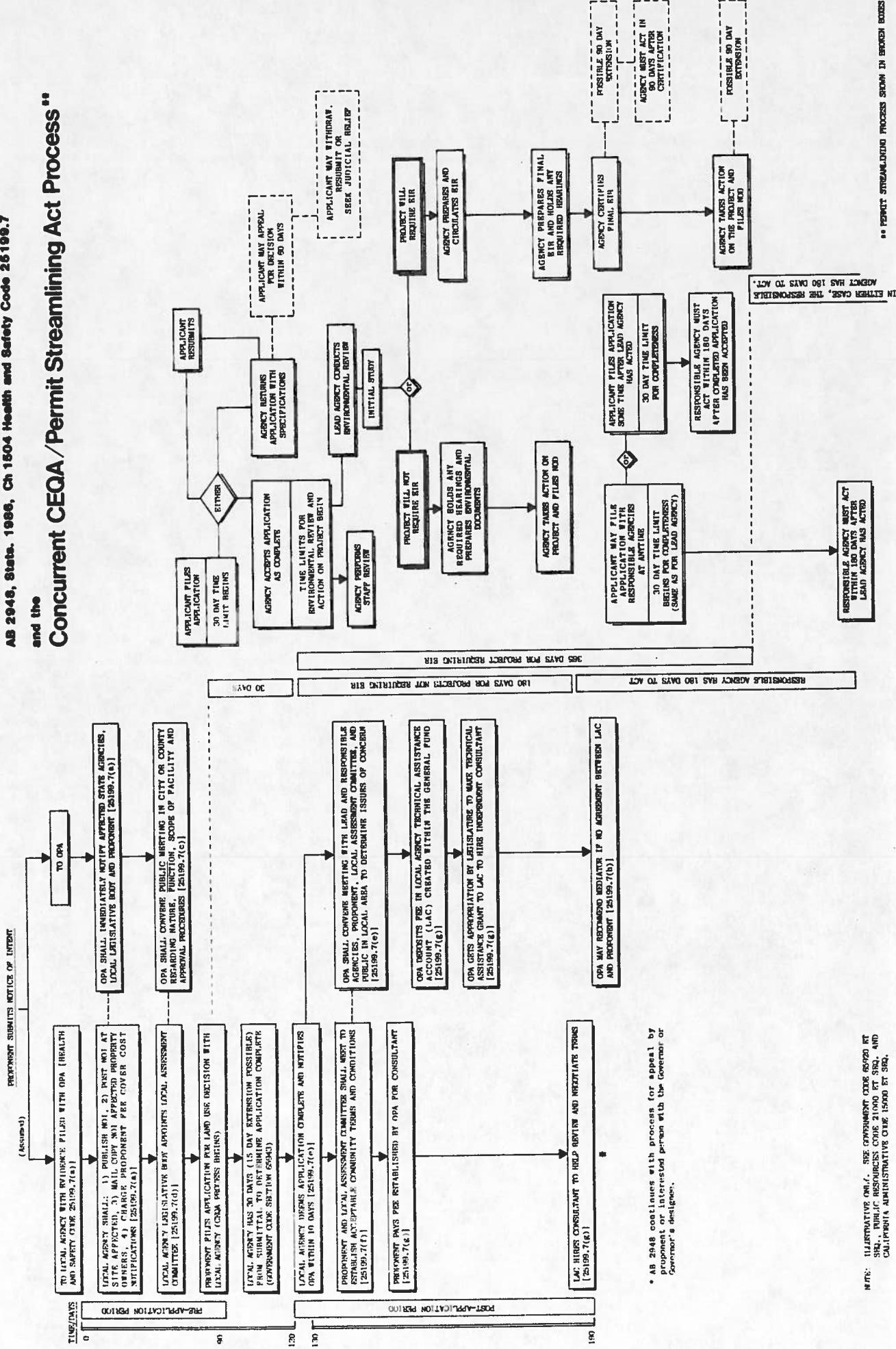
Use Permits will serve as the local review mechanism for all types of hazardous waste management facilities (transfer stations, treatment facilities, and residuals repositories), including mobile facilities and on-site facilities requiring a Use Permit. This review process will allow the local decision makers to make sure a facility is consistent with this Plan, is desirable, and conforms to the siting criteria below.

Figure 13-1

**SPECIFIED HAZARDOUS WASTE FACILITY  
LAND USE DECISION FLOW CHART**

AB 2948, Stats. 1988, Ch 150-4 Health and Safety Code 25199.7

**Concurrent CEQA/Permit Streamlining Act Process\*\***



#### CRITERIA FOR USE PERMIT REVIEW

The intent of the Plan is to rationally direct the siting of hazardous waste facilities in Sacramento County, while recognizing environmental, and developmental limitations. In order to evaluate proposed facilities for consistency with the policies and siting criteria outlined in the Plan, the County and Cities shall amend their local ordinances either by incorporation or by reference to include the following Countywide requirements within 180 days of DOHS final Plan approval. In the event that differences exists between any requirements and the County or Cities adopted regulation, the more restrictive requirement shall be enforced. Under AB477, cities have the right to impose more stringent siting standards than those contained in this plan.

Where possible, references to the most appropriate constraints maps in Section 11 are provided (Ex. Figure 11-3). These references are for general information only, and are not meant to imply that a site conforming to the constraints maps meets these siting criteria. Detailed siting studies will be necessary for all facilities requiring Use Permits.

These criteria apply to all off-site facilities and to on-site facilities that require a Use Permit.

#### Areas Of Future Urban Growth: (Figure 11-10)

All Facilities: Hazardous waste facilities shall not be constructed in areas designated for future urban growth (Urban Reserve, etc.) until ultimate land use patterns are established.

#### Airport Clear and Approach/Departure Zones: (Figure 11-11)

All Facilities: Facilities shall be prohibited in all Approach/Departure or Clear Zones of any airport.

#### Seismic Safety: (Figure 11-23)

All Facilities: No facilities shall be placed within 200 feet of an active or recently active fault.

Floodplains, including areas subject to flooding by dam or levee failure, and natural causes such as river flooding, rainfall, or snowmelt: (Figures 11-20, 11-21, and 11-22)

Disposal Facilities: Facilities shall be prohibited in areas subject to 100 year flooding or inundation by dam failure.

**All Other Facilities:**

Facilities may be considered for development in these areas, subject to approval of engineering solutions such as berms, raising above flood levels, etc..

Wetlands, including saltwater, freshwater, and brackish marshes, swamps, and bogs inundated by surface or groundwater with a frequency to support, under normal circumstances, a prevalence of vegetative or aquatic life which requires saturated soil conditions for growth and reproduction: (Figure 11-16)

**All Facilities:**

Facilities shall not be located in any wetland areas.

Habitat Of Rare and Endangered Species: (Figure 11-15)

**All Facilities:**

Facilities shall not be located within critical habitat areas, including general habitat areas.

Unstable Soils, including steep slopes, and areas subject to liquification and subsidence due to natural causes: (Figure 11-24)

**All Facilities:**

Facilities located in areas of unstable soils shall have engineered design features to assure structural stability.

Major Recharge Areas For Aquifers- areas known or suspected to be supplying principal recharge to a regional aquifer, as defined in adopted general, regional, or state plans: (Not mapped)

**Disposal Facilities:**

Facilities shall be prohibited within these areas.

**All Other Facilities:**

Other facilities should be discouraged from being located in such areas. If located in these areas, facilities shall provide properly engineered spill containment features, inspection measures, and other environmental protection controls.

Distance From Residences: (Figure 11-9)

**Disposal Facilities and Incinerators:**

Operation shall be located a minimum of 2,000 feet from residential zones and isolated residences.

All Other Facilities: Operation shall be located a minimum of 500 feet from residential zones and isolated residences.

Note: All facilities may require larger buffers as a result of risk assessment.

Permeable Strata and Soils: (Figure 11-25)

Disposal Facilities: Shall conform to the requirements of the State Water Resources Control Board.

All Other Facilities: All aboveground facilities shall have engineered structural design features, common to other types of industrial facilities. These features shall include spill containment and monitoring devices.

Prime Agricultural Land: (Figure 11-12)

All Facilities: Facilities shall not be located on prime agricultural land (including land qualifying for Soil Conservation Service Land Use Capability Classes I and II, or a Storie Index rating of 80 to 100), unless an overriding public need is served.

Military Lands: (Figure 11-14)

All Facilities: Commercial facilities shall be prohibited from military lands due to Department of Defense Policy.

Recreation, Cultural, or Aesthetic Areas: (Figure 11-18)

All Facilities: Facilities shall be prohibited in areas of recreation, cultural, or aesthetic viability.

Mineral Resources Areas: (Figure 11-19)

All Facilities: No facilities shall be sited so as to preclude extraction of needed minerals, including aggregate resources.

Waste Reduction: (Not mapped)

All Facilities: Treatment and disposal facility approval shall not significantly undercut incentives for waste minimization by hazardous waste

generators. (The intent of this criterion is to promote the waste management hierarchy and discourage inefficient waste generation practices.)

Local Need: (Not mapped)

All Facilities:

1. Justification for facilities shall be based upon the need to manage a portion of the hazardous waste stream generated in Sacramento County identified in Scenario II in Section 10 of this Plan; or
2. The need for facilities shall be as described in an agreement or understanding between Sacramento County and one or more other counties.

Distance From Immobile Populations, including schools, hospitals, convalescent homes, prisons, facilities for the mentally ill, etc.: (Figure 11-1, 11-2, 11-3, 11-4, 11-5, and 11-6)

All Facilities:

Risk assessments, performed at time of permitting, shall be used to determine the need for buffer zones between the facility and immobile populations. This risk assessment will consider the physical and chemical characteristics of the specific types of wastes which will be handled and the design features of the facility and proximity to immobile populations.

Proximity To Major Transportation Routes: (Not mapped)

Disposal Facilities:

Disposal facilities shall have adequate access to major transportation routes as determined by the Use Permit process, but may have to be more distant from waste generation sites than other types of facilities because of their need for larger land areas.

All Other Facilities:

All other facilities shall be located so that road networks leading to major transportation routes should not pass through residential neighborhoods, minimize residential frontages in other areas, and are demonstrated to be safe with regard to road design and construction, accident rates, excessive traffic, etc..

Transportation - Route Segments or Intersections: (Figure 12-1)

All Facilities:

Facilities shall not be sited in areas requiring hazardous waste transportation on routes having above average accident rates unless mitigation measures have been employed that reduce risk to acceptable levels.

Proximity To Waste Generation Stream: (Not mapped)

Disposal Facilities:

Facilities may be located more distant from waste generation sources than other facilities because of their need for larger land areas.

All Other Facilities:

All other facilities shall be located close to waste generation sources to minimize the risks of transportation.

Public Facilities: (Figures 11-7, 11-8, and 11-17)

All Facilities:

All facilities shall be located and operated in a manner such that the facility imposes no significant adverse impacts on public facilities. With the exception of residuals repositories, all facilities should have public sewer service.

Consistency With General Plan And Zoning Designations: (Not mapped)

All Facilities:

Facilities shall be located on sites having appropriate General Plan and zoning designations.

Agriculturally-Designated Lands: (Figure 11-13)

All Facilities:

No facility shall be sited on land designated for agricultural uses on any local General Plan Land Use Map (local policy).

Major Aquifer Recharge Areas: (Not mapped)

Disposal Facilities:

No disposal facility shall be located in an known or suspected major aquifer recharge area, as determined by hydrological analysis of the proposed facility site.

### All Other Facilities

Other facilities should be discouraged from siting in major aquifer recharge areas, and must have engineering and design features to protect ground water if so located.

Depth to Ground water: (Not mapped)

## Disposal Facilities

Facility design shall ensure that a minimum of 5 feet will be maintained above the highest anticipated ground water level.

### All Other Facilities

Facility design shall ensure that a minimum of 5 feet will be maintained above the highest anticipated ground water level, and that the containment structure is capable of withstanding failure because of geologic or soil conditions which may arise.

**Air Quality (Non-Attainment Air Areas):** (Countywide, not mapped)

### All Facilities

Facilities shall not be sited if:

1. Criteria pollutant emissions do not conform to existing APCD regulations; or
2. Risk assessments on toxic air contaminants considering the physical and chemical characteristics of the specific types of waste handled and design features of the facility show an adverse health impact.

**ACTIONS REQUIRED WITHIN 180 DAYS OF FINAL DOHS PLAN APPROVAL**

## COUNTY AND CITY RESPONSIBILITIES

Sections 25135.7(c) and (d) of the Health and Safety Code (added by SB 477) require that local General Plans and zoning controls be brought into conformance with an approved county hazardous waste management plan within 180 days of DOHS approval of the final Plan. This section outlines the steps that Sacramento County and each of the four cities within the county must take to achieve this conformance.

1. Incorporate SCHWMP into General Plans: Sacramento County and each of the cities must perform each of the following functions to bring their local general plans into conformance with this Plan:
  - A. Incorporate this Plan either directly or by reference into the local General Plan. The cities may chose to impose more stringent siting criteria.

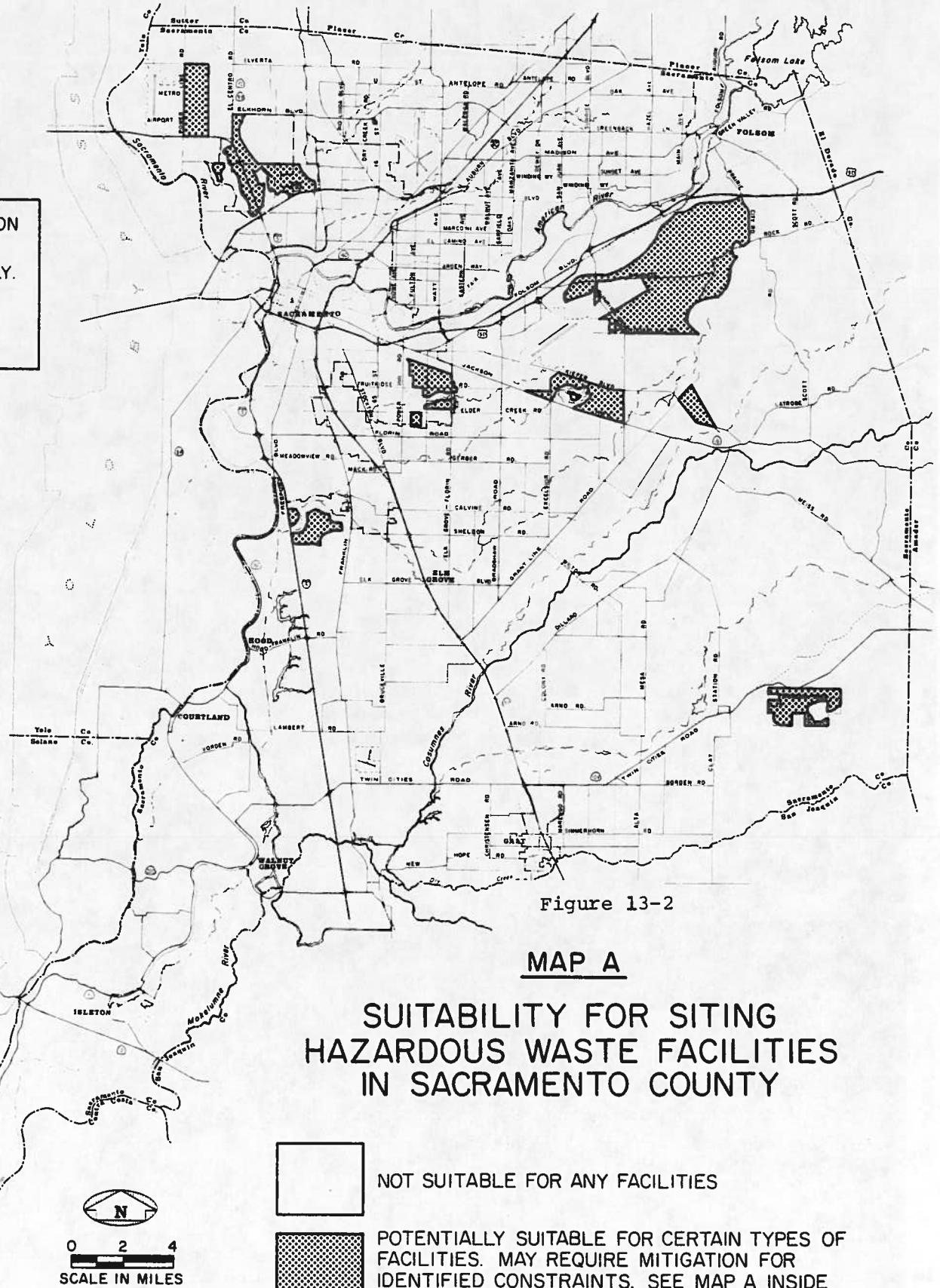
- B. Modify any policies in the existing General Plan that are in conflict with this Plan.
- C. Amend the policies contained in Section 2 of this Plan directly into the local General Plan text where appropriate (Policies 2, 4, 5, 14, and 16 are directed at County, rather than City programs).
- D. Provide for schematic symbol on the General Plan Land Use Map to mark the location of hazardous waste facilities which have been granted use permits. The facility operator need not apply for this informational symbol.

**Note:** The constraints mapping exercise in Section 11 and Map A is designed to identify areas that are potentially appropriate for facilities. The areas shown on Map A do not need to be rezoned, redesignated, or otherwise highlighted in local land use regulations.

- 2. **Modify Zoning Codes to Regulate Hazardous Waste Facilities:** Hazardous waste facilities are regulated differently in each jurisdiction in Sacramento County. Now that a countywide hazardous waste management system is being developed, it is necessary to develop uniform regulations. Within 180 days of DOHS approval of this Plan, each jurisdiction in the County must be sure its zoning code contains the following provisions:

- A. All off-site hazardous waste facilities require a Use Permit. On-site facilities require either an administrative permit from EMD or a Use Permit from the local land use authority. The local permitting process is intended to assure adequate protection for public health and environmental safeguards, without imposing undue restrictions on projects. The proposed local permitting of on-site facilities is described under Program Recommendations in this section.
- B. All off-site hazardous waste facilities and on-site facilities requiring a Use Permit must meet the criteria listed in this Section, unless the local decision-making body determines that one or more criteria should be relaxed to meet an overriding public need.
- C. Appropriate zoning designations that allow for the following types of off-site facilities:
  - Transfer Stations in Industrial Zones only;
  - Treatment Facilities in Industrial Zones only; and
  - Disposal Facilities in Industrial Zones only.
- D. Appropriate zoning designations that allow for the following types of on-site facilities:
  - Treatment Facilities in Industrial or Commercial Zones only.

THIS ILLUSTRATION  
IS FOR GENERAL  
INFORMATION ONLY.  
For specific  
siting criteria  
see Section 13.



E. The minimum distance (from actual use) for off-site multi user facilities from individual residences or residential zones shall be:

- Transfer Stations and Treatment Facilities: 500 feet; a greater setback may be required as a Use Permit condition based on a risk analysis;
- Disposal Facilities and Incinerators: 2,000 feet; greater setback may be required as a Use Permit condition based on a risk analysis.

Applying these uniform land use controls and permitting procedures in every jurisdiction in Sacramento County will benefit both industry and residents. Firms wishing to locate facilities in the County will not be confronted with differing or conflicting requirements. Also, residents will be assured that no facility will be located improperly due to less stringent standards being applied by a particular jurisdiction.

#### RECOMMENDATIONS FOR MODIFICATIONS TO EXISTING PROGRAMS

Section 3 of this Plan outlines existing programs which deal directly or indirectly with hazardous waste. Several of these programs could be modified to better serve residents of the County.

1. Provide for the collection of household motor oil throughout the County.

As noted in Section 5, approximately 25 percent of the waste oil assumed to be generated in the County cannot be accounted for in the manifest system and is not recycled. Behind paint, the second largest volume of hazardous waste produced by households in the County is in the waste oil category. In the past, service stations and auto repair shops commonly accepted household motor oil from customers. This oil could be sold for recycling. Currently, motor oil is regulated as a hazardous waste, and the repair shops must pay to have it removed for recycling. The incentive for these shops to accept household motor oil is gone. The Sacramento County Public Works Department currently operates a pilot program in one area of the County to collect household motor oil. This service should be provided wherever it is practicable. The Hazardous Materials Division of the Environmental Management Department will continue to update and provide a list of public and private facilities which accept waste oil at low or no cost.

2. Improve screening to reduce improper disposal of hazardous waste through solid waste collection programs.

The Sacramento County Public Works Department, Solid Waste Division, is currently developing a program for improved screening of hazardous waste. This program will train employees to detect hazardous waste at solid waste collection points, transfer stations, and the Kiefer Road landfill. This effort should continue, and similar screening should occur in all jurisdictions in the County.

3. Examine alternatives to the current household hazardous waste programs.

Diverting household waste from the routine solid waste collection system is an important function. Current collection day programs are expensive (over \$40 per participating household) and reach only a small fraction of households in the County. A greater benefit may be achievable through efforts to reduce the volume of household hazardous waste, rather than collect it. Education programs to inform residents about hazards and substitutes of common products should be developed. However, until a better alternative is available, the current household hazardous waste program should be continued.

RECOMMENDATIONS FOR MAJOR NEW PROGRAMS

Two major new programs should be developed by the Sacramento County Environmental Management Department.

1. TITLE 22

Sacramento County will assume the responsibility for enforcing the State's hazardous waste control regulations (Title 22).

The California Health and Safety Code allows counties to enforce Title 22. Sacramento County is currently negotiating a Memorandum of Understanding (MOU) with DOHS similar to those already in place in most metropolitan areas with generator inspection programs. All but three of the largest fifteen counties have MOUs. The Hazardous Materials Division of the Environmental Management Department is currently performing a feasibility study on this issue. Title 22 enforcement would include permitting for hazardous waste generators, inspections and enforcement (through administrative, civil and criminal actions, some involving the Sacramento County District Attorney). Permit conditions shall include waste audits by generators. Such a program might require up to 18 field, management, and support personnel. Funding is available from several sources, including permit fees.

2. WASTE MINIMIZATION AND TECHNICAL ASSISTANCE

Sacramento County will develop a technical assistance and waste minimization program.

Many firms, especially small quantity generators, lack the resources to investigate and implement waste minimization measures (see Section 7). County personnel who are trained in this field can provide information to waste generators about hazards, regulations, compliance, minimization measures, and waste management contractors. One and a half positions to develop this program is in the 1988/89 County budget. Such a program is critical to reducing the volume of hazardous waste generated in the County, thereby reducing the need for facilities. This program will have a minimum goal of 17 percent waste reduction by the year 1992, and 39 percent reduction by 2000 (as outlined in Section 8).

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To meet the goals outlined, Sacramento County should plan on waste minimization activities through the entire CHWMP planning period. A carefully structured program is needed to accomplish significant gains in reducing generation of the county's hazardous wastes across the range of thousands of firms. The following program, divided into three phases, establishes a series of options. Phase I covers the first three years of implementation. Phases 2 and 3 cover the remaining nine years to 2000. The success of this program is dependent not only on the efforts of Sacramento County, but the state DOHS and private industry as well.

Phase I: 1989 - 1992: The program's initial focus should be on the county's smaller waste generators. Some larger generators already have waste minimization programs in place. Throughout this program, the emphasis will be on achieving the most effective return for the use of the program's resources.

Develop Information Center: One option, which has already been budgeted and planned for in Sacramento County, is to develop a Sacramento County Hazardous Materials and Waste Resource Library and a Toxic Information Center. Funds for these activities are also available under AB 2490. This library might contain:

- Locations of information clearinghouses that offer information about waste minimization technologies, programs, case studies, consultants, reference articles, and applicable texts. These resources are available from organizations such as the Government Refuse and Disposal Association. As DOHS develops its own Hazardous Waste Resource and Research Coordination Program (under AB 2948), waste minimization should become more readily available.
- Hotline numbers providing emergency response and general information for hazardous waste handling, regulatory compliance information, referral services, and technical assistance.
- Lists of individuals to contact in Sacramento County and other counties who are involved in waste minimization activities.
- Lists of available DOHS and EPA information on waste minimization, and of contact people in state and federal agencies (for example, in the DOHS Alternative Technology Section).
- Lists of on-line data bases containing information on waste minimization.
- Newsletters related to waste minimization, brochures and other information sources on toxic issues.
- Documentation of waste minimization pilot programs and case studies.
- Directories of available source reduction consultants and equipment vendors.

Depending upon the degree of resource library development, these packages can explain waste minimization approaches for various industries, point firms to recycling and waste exchange programs, and identify hazardous waste regulatory requirements.

The Toxic Information Center could produce a video or slide show on waste minimization and distribute it to local trade associations, chambers of commerce, public interest groups and other groups. It could also sponsor radio, television, and newspaper outreach on waste minimization. Thirdly, in conjunction with various regulatory agencies, the Center could sponsor local industry exhibitions where companies could showcase innovative waste minimization technologies and programs.

Data Base: In addition to the library and Toxic Information Center, Sacramento County has also budgeted and planned to develop a comprehensive information system containing data on hazardous waste generation in Sacramento County from all reporting sources, including DOHS manifests and AB2185 data. Both programs would require knowledge about the types and quantities of wastes being generated, who is generating them, and what management practices they are employing.

By sharing information and improving information gathering and processing abilities, the County can begin to establish an accurate baseline to monitor the progress of waste minimization programs. Thus, it would be helpful for city and county staff to compare their respective disclosure ordinances and see if a common approach can be developed. Inspection procedures for city and county programs also need to be coordinated. The inspection results can be used to update the disclosure information. Additionally, Sacramento County and the four cities within it could act in concert to require all generators to submit waste minimization plans mandated by the Federal RCRA and by California's Farr Bill (AB 685). Required information could include specific detailed data such as mass balance, or percentages of inputs recycled. Waste minimization target goals and compliance dates could be established by agencies to provide a regulatory framework to guide generators. All of this information should be placed on the data system, accessible to government agencies, including the cities of Folsom, Isleton, Galt, and Sacramento. The Hazardous Materials Division should be responsible for the maintenance of this computer data base. Relevant inspection results from local fire or toxic regulatory agencies should be incorporated into the data base to maintain accuracy. Any information from state agencies regarding inspections of large hazardous waste generators, manifests, etc., should also be verified with the local data base. The data base system should be "on line" so that updates are immediately available to inspectors and emergency personnel. Such a data system will track hazardous waste types, quantities, and locations produced; and hazardous waste handling facility capacity, types, quantities of waste handled, and location. The data system can also tie into the State annual updates.

Identify and Target Key Firms with Reducible Hazardous Waste Streams: For the largest short-term impact, hazardous waste generators could be targeted in the following order: waste oils, metal-containing liquids, solvents, and nonmetallic inorganic liquids. Information can be assembled from materials from the Resource Library or Toxic Information Center, and disseminated in fact sheets, brochures, and handbooks to these firms.

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In addition, the County could require all industrial applicants for new land use permits to include aggressive measures to promote the hazardous waste management hierarchy. Existing firms could be required to include in their waste minimization plans changes in purchasing to favor nonhazardous materials in their waste minimization plans.

Develop Consultation Services Programs: Trade organizations could be encouraged and have information supplied to them by the County that would enable the organizations to conduct waste minimization audits. Industry could be encouraged to loan staff to the waste minimization group for consultation to smaller firms.

Using existing local staff in the Hazardous Materials Division, possibly in conjunction with routine hazardous waste generator inspections, preliminary waste minimization consultations could be provided to selected firms. These initial visits would cover waste minimization potential, insurance risk minimization, and referrals for more in-depth audits and plan development.

As set out by a piece of new legislation (AB 1961, Farr), Sacramento County may be able to draw on qualified students from UC Davis to conduct low-cost technical consultations. The source reduction group can also seek grant funding to sponsor waste minimization technical assistance demonstration projects in the county.

Household Hazardous Waste Program: Sacramento County has been a leader throughout California in Household Hazardous Wastes Programs since 1981. Initially, the program has consisted of scheduled household hazardous waste collection dates and locations. County residents are encouraged to bring recyclable hazardous wastes, such as waste oil, car batteries, paint, pesticides, etc., to a central location at certain times throughout the year free of charge. Public response to the existing program in Sacramento County has been very good. Eventually, a permanent, permitted site may be established to accept household hazardous waste on a year-round basis at little or no cost to the public.

Phase II: 1993 - 1996: By this time, Sacramento County will be in a position to expand this program to cover whole industry types. The group could now begin high visibility institutional educational programs. Using data and resources developed from Phase I, the program could:

- Disseminate information to industries and small businesses which are not yet developing waste minimization plans;
- Develop pilot projects; and
- Fully develop off-site recycling ("milk run") programs for waste oils, solvents, and aqueous solutions.

Passive education efforts might include:

- Circulating program progress letters to industry, newspapers, and trade journals and newsletters; and
- Publicizing the availability of financing and technical assistance resources.

Active education efforts might include:

- Producing an annual hazardous waste report;
- Preparing a waste minimization column and a household hazardous waste information column for local newspapers; and
- Developing or providing product substitution and household hazardous waste educational packages for primary and secondary schools (AB 1809 or AB 2448 funding may be available).

Phase III: 1997 - 2000: Further efforts through the rest of this century could build on these early efforts. Long-term program elements could be designed to reach remaining waste generators. The program could possibly target small businesses that generate the major proportion of the county's remaining waste stream requiring off-site management by:

- Developing specific resource materials addressed to those particular processes and waste streams;
- Continuing to conduct workshops and seminars to discuss specific waste minimization methodologies for individual industries;
- Implementing funding mechanisms developed during the previous years;
- Collecting further technical information and making it available to small quantity generators;
- Implementing new data collection instruments;
- Conducting on-site consultations at "sponsor" locations within the specific industry (this could be a trade group or industry sponsored program);
- Collecting any new information about available funding sources;
- Working with community colleges and professional groups;
- Disseminating information about possible loans and loan guarantees;
- Promoting incentives to haulers and disposers to provide services appropriate for and affordable by small quantity generators; and
- Sponsoring forums for discussing cooperative waste management practices such as milk runs, cooperatively-owned treatment equipment.

#### NEW PROGRAM FUNDING

Both the Title 22 program and the technical assistance program could be operated jointly. These programs can be funded through a combination of sources, including:

- Title 22 generator inspection fees;
- Solid waste collection fees; and,
- Taxes on gross revenues at hazardous waste treatment facilities.

These two programs are to be the most important element in the ongoing implementation of this Plan. Combining technical assistance and inspections will be efficient, assure that regulations are met, and provide assistance to all generators requiring it. These programs will also result in improved data about hazardous waste generation in the County. This improved data will facilitate the update of this Plan which is required in four years.

#### RECOMMENDATION FOR MINOR NEW PROGRAM

The local on-site facility permitting process is envisioned as a two-step process. The first step will be a ministerial process to determine if there was a potential significant health, safety, or environmental impact. If it is determined a facility poses no significant risk, and meets all other requirements, then a permit would be granted at this point. If it is determined that there was a potential for significant impact, then the project would need to go through the Conditional Use Permit process.

The ministerial screening process is currently being developed. To develop this process, the Environmental Management Department will create a Task Force to review applicable screening methodologies and make recommendations to the Sacramento County Environmental Commission. Once recommendations are accepted by the Environmental Commission, the recommended procedure will be converted to regulations and undergo public hearings. The adopted regulations will be enforced by the Environmental Management Department.

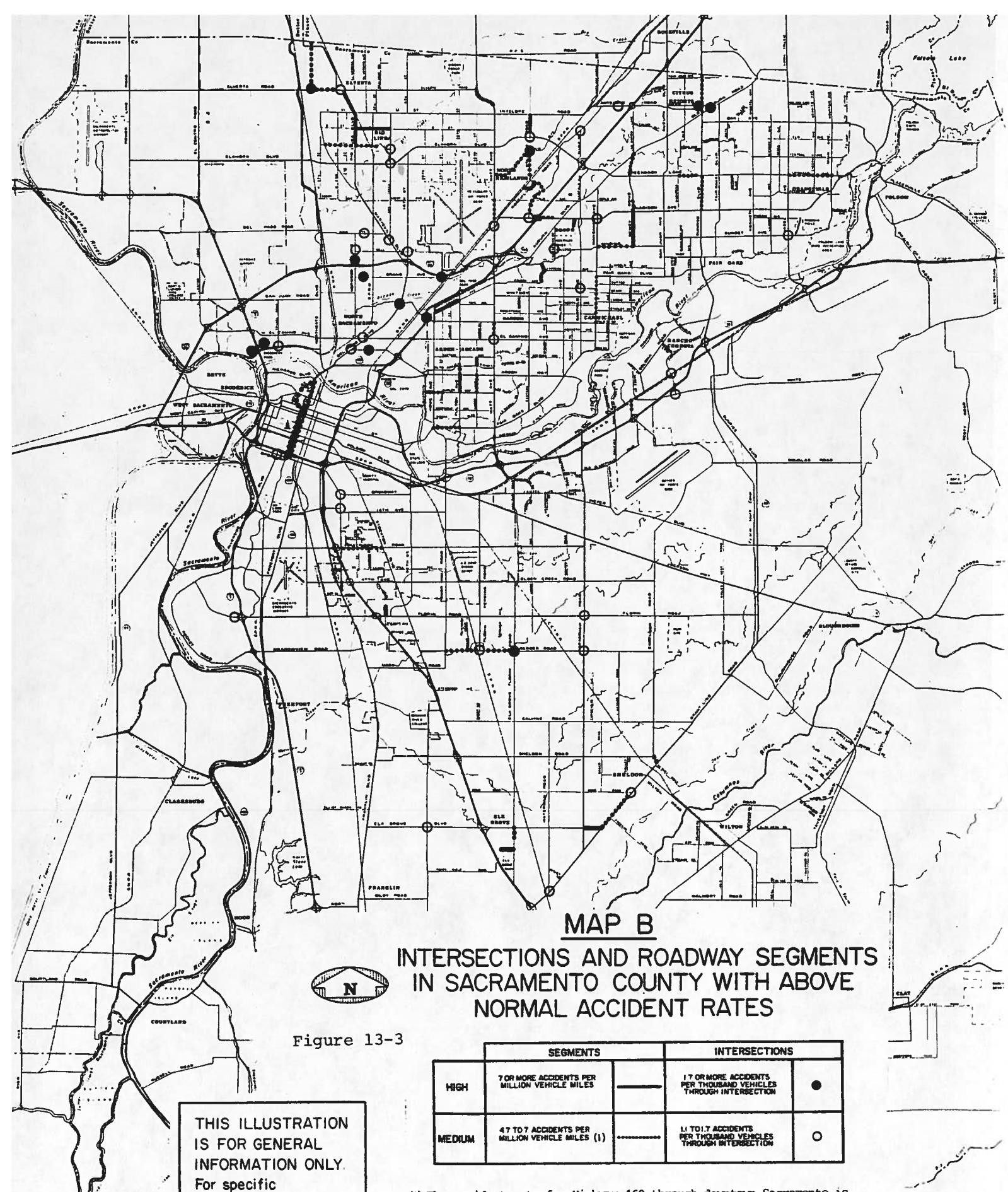
#### RECOMMENDATIONS FOR FURTHER STUDY

This Plan has been developed with the best information available at this time. To improve this Plan in the future, and provide for better regulation of hazardous waste, several additional studies should be performed. These include:

1. Study the intersections and routes highlighted on Figure 13-3 (Map B), and impose restrictions on hazardous waste transport as appropriate.

Accident data from throughout the County was analyzed as this Plan was developed. The intersections and road segments shown on Figure 13-3 (Map B) have above-normal accident rates. Further study should determine

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(1) The accident rate for Highway 160 through downtown Sacramento is classified as "medium" by SACOG analysis as described in the text. The rate for this segment is between 3.64 and 5.5 accidents per million vehicle miles.

if there is a particular program in these areas that is relevant to hazardous waste transportation. If such a problem is found, appropriate solutions should be implemented.

2. Study alternatives to the household hazardous waste collection days.

As discussed above, the current household hazardous waste collection day program is expensive, yet limited in scope. The County should examine alternatives, and stress education so residents are aware of the hazards and substitutes of commonly used products.

3. Study methods to provide hazardous waste collection for small businesses.

Many small businesses which are not industrial in nature still produce hazardous waste. Such waste can include cleaning solutions, copier fluid, ink, oil, and many products commonly associated with households. This waste may be disposed of improperly through the routine solid waste stream due to a lack of understanding about its hazardous, or regulations governing its disposal. The County should examine methods to provide for the disposal of hazardous waste produced by small businesses, and promote education of such firms through the technical assistance/waste reduction program.

4. Study methods to provide incentives for waste oil recycling by households and small businesses.

Over 3,000 tons of the waste oil that is generated each year in Sacramento County is not being properly recycled. With waste oil now regulated as a hazardous waste, service stations are no longer accepting waste household oil free of charge. Methods to simply and cheaply collect this material for recycling should be examined.

PLAN UPDATE IN 1992

NEED FOR REVIEW

This Plan is intended to serve as a guide to hazardous waste management until the year 2000. It is not possible at this time, however, to accurately predict conditions in this field through the next decade. Several events that are expected in the near future will certainly bring about changes that should be reflected in this Plan. These include:

- The pending ban on land disposal of untreated hazardous waste;
- The publication of other counties hazardous waste management plans;
- The preparation of the State hazardous waste management plan; and,
- The development of new hazardous waste programs in Sacramento County.

A reassessment of the information and recommendations included in this Plan will be necessary. Unless it becomes necessary earlier, this review should take place in 1992. This will provide sufficient time for new County programs to be developed. The updated CHWMP is subject to DOHS review.  
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This review will also be after the landfill ban goes into effect, and should be able to utilize improved information provided by the state and other counties. Local inspection programs should have produced a much better understanding of generation rates and disposal practices in Sacramento County by that time.

#### CONTENT OF REVIEW

This review should cover the following components:

1. Data on hazardous waste generation in the County;
2. Changes in disposal practices, treatment technology, or facility availability;
3. Plan policies;
4. Plan text;
5. Local approval processes; and,
6. Plan recommendations.

All information in the Plan should be updated as necessary with full participation of the four cities, public groups, and the advisory committee. Policies and recommendations should be carefully reviewed. Accomplished tasks should be noted, and new recommendations made as necessary. Particular attention should be given to the development and success of the Title 22 and Technical Assistance programs.

#### WASTE REDUCTION GOALS

Scenario II in Section 10 is the situation most likely to occur, given the information and assumptions in this Plan. Facilities will be sited based upon the waste volumes indicated in Scenario II. Those volumes were calculated assuming overall waste reduction could bring about a 17 percent reduction in waste volumes by 1992, and a 39 percent reduction by 2000 (from the volumes expected if no waste reduction measures are introduced). The volumes indicated in Table 10-5A reflect this 30 percent reduction. Actual generation in each waste group should be checked in 1992. Volumes should be reduced at least to roughly the indicated levels. The volume of residuals resulting from treatment should be up, as more waste is treated prior to disposal. If overall reduction efforts fall short of expectations, the review process shall study the problem and recommend corrective actions.

### REVIEW FUNDING

The Review of this Plan need not be as costly as the original preparation of the Draft Plan. New programs that will be in place at that time will provide data that was unavailable in 1987. This will greatly facilitate revision. The funding necessary for whatever remaining work must be done can come from three sources.

1. Title 22 Fees: Proper hazardous waste management depends in part on proper planning. When the County assumes regulation of Title 22, a portion of the permit fees received from generators should be dedicated to revising the Plan which governs local hazardous waste management programs.
2. Use Permit Surcharges: The operators of any hazardous waste facilities receiving a Use Permit will be relying in part on consistency with this Plan to justify the need for the facility. Therefore, it is appropriate that a small surcharge be added to Use Permit fees to help fund the revision of this Plan.
3. Taxes on Hazardous Waste Facilities: Off-site hazardous waste facilities sited pursuant to this Plan may be taxed an amount up to 10 percent of the facilities gross revenues to support related activities.

### CONCLUSION

The review process outlined above will provide for a timely update of this Plan, properly funded, so that it can continue to guide hazardous waste management programs in Sacramento County through the end of this century.



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APPENDICES TO  
FINAL DRAFT SACRAMENTO COUNTY  
HAZARDOUS WASTE MANAGEMENT PLAN

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## APPENDIX A

### REQUIRED DOHS TABLES A-Q

Table A - Quantities of Hazardous Waste Manifested in Sacramento County

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Table J - Major Industry Groups of Waste Generated On-Site in 1986

Table K - Projected Quantities of Hazardous Waste Generated and Shipped Off-Site

Table K - Projected Quantities of Hazardous Waste Generated On-Site

Table L - Projected Annual Quantities of Clean-Up Wastes

Table L - (Map) Identifying Contaminated Sites in Sacramento County

Table M - Projected Quantities of New Hazardous Waste Streams

Table N - Total Projected Quantities of Hazardous Waste Generation

Table O - Projected Commercial Hazardous Waste Treatment/Disposal Capacity in Sacramento County

Table P - Projected Sacramento County Needs Assessment for Commercial Hazardous Waste Treatment Facilities

Table Q - Projected Quantities of Residuals Generation

**TABLE A**  
**QUANTITIES OF HAZARDOUS WASTE MANIFESTED**  
**IN SACRAMENTO COUNTY**

Waste Group	1985 (tons) (1)	1986 (tons) (1)	Average (tons/yr) (2)
1. Waste Oil	16,570 (3)	16,050 (3)	16,310
2. Halogenated Solvents	330	240 (4)	290
3. Non-Halogenated Solvents	3,290	2,680 (4)	2,990
4. Organic Liquids	5,930	4,220	5,070
5. Pesticides	940	2,970	1,960
6. PCBs and Dioxins	1,260	3,750	2,510
7. Oily Sludges	840	2,400	1,620
8. Halogenated Organic Sludges & Solids	20	40	30
9. Non-Halogenated Organic Sludges & Solids	510	520	510
10. Dye & Paint Sludges and Resins	220	280	250
11. Metal-Containing Liquids	540	320	430
12. Cyanide & Metal Liquids	20	10	20
13. Non-Metallic Inorganic Liquids	8,050	4,520 (4)	6,290
14. Metal Containing Sludges	30	10	20
15. Non-Metallic Inorganic Sludges	750	610	680
16. Contaminated Soil	2,630	10,210	6,420
17. Miscellaneous Wastes			
141 Off Spec. Aged, or Surplus Inorganics	30	10	20
151 Asbestos Containing Wastes	1,160	2,220	1,690
162 Other Spent Catalyst	310	490	400
172 Metal Dust	90	100	90
181 Other Inorganic Solid Waste	340	420	380
311 Pharmaceutical Waste	0	0	0
331 Off Spec. Aged or Surplus Organics	40	20	30
511 Empty Pesticide Containers 30 Gal.	0	20	10
512 Other Empty Containers 30 Gal.	330	430	380

(continued)

TABLE A (Cont.)

Waste Group	1985 (tons) (1)	1986 (tons) (1)	Average (tons/yr) (2)
513 Empty Containers 30 Gal.	290	290	290
541 Photo Chemicals/ Photo Processing Wastes	240	40	140
551 Laboratory Waste Chemicals	120	40	80
561 Detergent & Soap	0	70	30
581 Gas Scrubber Waste	0	0	0
591 Baghouse Wastes	40	220	130
612 Household Wastes	<u>50</u>	<u>20</u>	<u>30</u>
Total Miscellaneous	3,040	4,390	3,700
<b>TOTAL HAZARDOUS WASTE</b>	<b>44,970</b>	<b>53,220</b>	<b>49,100</b>

(1) Source: DOHS, HWIS data.

(2) Average = tons in 86 + tons in 85. Data applied to Table B, Column 1.  
2

(3) Source: 11,540 tons of waste oil from Yolo County, Refineries Service, California Oil Recyclers were added to: 5,030 tons of waste oil, 1985 DOHS, HWIS data. 4,510 tons of waste oil, 1986.

(4) Source: Appendix E, Part 1. DOHS, based on its survey of Sacramento County's route service haulers, estimates that 750 tons of solvents were shipped to Sacramento County. It is also estimated that 10 tons of non-metallic inorganic liquids generated in Sacramento County were included in Santa Clara County's waste stream. DOHS distributed information on quantities of solvents generated in Sacramento and transported by route service haulers. The county of origin must add the amount exported under a manifest variance to the total volume of that particular waste. The manifesting county must subtract the volume imported to its county under a modified manifest procedure. Although this procedure adjusts the volume of waste to the appropriate county of generation, the same waste may be entered into the HWIS system again each time the waste enters a transfer station.

The following calculation is used to adjust waste volumes to the appropriate county.

Total volume of waste shipped	+	Total volume exported to other counties	-	Total volume imported from other counties by route service	=	Revised Table A
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**TABLE B**  
**1985-1986 AVERAGE QUANTITIES OF**  
**HAZARDOUS WASTE MANIFESTED**  
**IN SACRAMENTO COUNTY, BY TREATMENT METHOD**

Waste Group	Average by Group (1) (tons/yr)	Treatment Method	Average by Treatment Method (2) (tons/yr)	Residual Generation Multiplier (3)	Average of Residuals (tons/yr)
Waste Oil Oily Sludges	16,310 1,620	Oil Recovery	17,930	0.20	3,590
Halogenated Solvents	290	Solvent Recovery	3,280	0.20	660
Non-Halogenated Solvents	2,990				
Pesticides	1,960	Aqueous Treatment	1,960	0.10	200
322 Biological Wastes: other	0	(Organic)			
PCBs and Dioxins	2,510	Incineration	9,720	0.10	970
Halogenated Organic Sludges and Solids	30				
Non-Halogenated Organic Sludges and Solids	510				
Dye and Paint Sludges and Resins	250				
Contaminated Soil	6,420				
Metal Containing Liquids	430	Aqueous treatment	6,740	0.50	3,370
Cyanide and Metal Liquids	20	(Metals/Neutralization)			
Non-Metallic Inorganic Liquids	6,290				
581 Gas Scrubber Wastes	0				
Metal Containing Sludges	20	Stabilization	2,940	1.20	3,530
Non-Metallic Inorganic Sludges	680				
141 Off Spec, Aged, or Surplus Inorganic	20				
151 Asbestos Wastes	1,690				
162 Other Spent Catalysts	400				
311 Pharmaceutical Wastes	0				
591 Baghouse Waste	130				

TABLE B (Cont.)

Waste Group	(2) Average by Group (1) (tons/yr)	Treatment Method	Average by Treatment Method (2) (tons/yr)	Residual Genera- tion Multi- plier (3)	Average of Residuals (tons/yr)
Organic Liquid	5,070	Other Recycling	6,530	0.20	1,310
511 Empty pesticide containers 30 gal.	10				
512 Other Empty containers 30 gal.	380				
513 Empty con- tainers 30 gal.	290				
172 Metal Dust	90				
181 Other Inorganic Solid Wastes	380				
331 Off Spec, Aged, or Surplus Organics	30				
541 Photochemicals/Photo- processing Waste	140				
551 Laboratory Waste Chemicals	80				
561 Detergent and Soap	30				
612 Household Wastes	30				
<b>TOTAL</b>	<b>49,100</b>		<b>49,100</b>		<b>13,630</b>

## Footnote:

- (1) Source: Table A.
- (2) Value equals the total component waste groups from Column 1.
- (3) Residual generation multipliers provided by DOHS. No percentage estimate was provided by DOHS "Other Recycling." Twenty percent was assumed based on percentage estimates of solvent recovery and oil recovery.

**TABLE C**  
**COMMERCIAL HAZARDOUS WASTE TREATMENT/DISPOSAL FACILITIES AND**  
**THEIR CAPACITIES AND QUANTITIES OF WASTE TREATED OR DISPOSED**

Generalized Treatment Method	Quantity of Waste Treated or Disposed (tons)	Capacity for Waste Treated or Disposed (tons)	Excess for Waste Treated or Disposed (tons)
AQUEOUS TREATMENT ORGANIC	0	0	0
AQUEOUS TREATMENT METALS/ NEUTRALIZATION	0	0	0
INCINERATION	0	0	0
SOLVENT RECOVERY	0	0	0
OIL RECOVERY	0	0	0
OTHER RECYCLING	0	0	0
STABILIZATION	0	0	0
RESIDUALS DISPOSAL	<u>0</u>	<u>0</u>	<u>0</u>
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>

**TABLE D**  
**CURRENT SACRAMENTO COUNTY NEEDS ASSESSMENT FOR**  
**COMMERCIAL HAZARDOUS WASTE TREATMENT/DISPOSAL CAPACITY**

Generalized Treatment Method	Required Treatment Capacity (tons/yr)	Existing Treatment Capacity	Capacity Excess (+) or Deficiency (-) (tons/yr)
AQUEOUS TREATMENT ORGANIC	1,960	0	- 1,960
AQUEOUS TREATMENT METALS/ NEUTRALIZATION	6,740	0	- 6,740
INCINERATION	9,720	0	- 9,720
SOLVENT RECOVERY	3,280	0	- 3,280
OIL RECOVERY	17,930	0	-17,930
OTHER RECYCLING	6,530	0	- 6,530
STABILIZATION	<u>2,940</u>	0	<u>- 2,940</u>
<b>TOTAL</b>	<b>49,100</b>		<b>-49,100</b>
RESIDUALS DISPOSAL(1)	<u>12,320</u>	0	<u>-12,320</u>
<b>TOTAL</b>	<b>61,420 tons</b>		<b>-61,420 tons</b>

Footnote:

Source: Table B, Column = total tons by treatment method, DOHS data.

(1) Residuals were calculated by multiplying waste volumes with Ratio of Residuals provided by DOHS.

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1985 (IN TONS)

WASTE GROUP	COUNTY					CALA-VERAS	COLUSA
	ALAMEDA	ALPINE	AMADOR	BUTTE			
1. WASTE OIL (W.O.)							
IMPORT	0.6	-	0.4	3.8	-	-	-
EXPORT	40.0	-	-	-	-	-	-
2. HALOGENATED SOLV. (H.S.)							
IMPORT	-	-	-	3.2	-	-	-
EXPORT	-	-	-	-	-	-	-
3. NON-HALOGEN. SOLV. (N.S.)							
IMPORT	0.9	-	0.2	4.3	1.9	-	-
EXPORT	3.2	-	-	-	-	-	-
4. ORGANIC LIQUIDS (O.L.)							
IMPORT	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
5. PESTICIDES (P.E.)							
IMPORT	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
6. DIOXINS/PCBs (D.I.)							
IMPORT	503.4	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
7. OILY SLUDGES (O.S.)							
IMPORT	1.6	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
8. HALOGENATED ORG. SLDG. & SOLID (H.O.)							
IMPORT	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
9. NON-HALOGENATED ORG. SLDG. & SOLID (N.O.)							
IMPORT	21.0	-	-	-	-	-	1.2
EXPORT	-	-	-	-	-	-	-
10. DYE & PAINT SLDG. & SOLID (D.P.)							
IMPORT	1.6	-	0.8	3.2	-	-	-
EXPORT	-	-	-	-	-	-	-
11. METAL CONTAINING LIQUIDS (M.L.)							
IMPORT	0.6	-	-	0.7	-	-	-
EXPORT	-	-	-	-	-	-	-
12. CYANIDE & METAL LIQUIDS (C.M.)							
IMPORT	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
13. NON-METALLIC INORG. LIQ. (N.M.)							
IMPORT	1.4	-	-	1.8	-	-	-
EXPORT	-	-	-	-	-	-	-
14. METAL CONTAINING SLUDGE (M.S.)							
IMPORT	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
15. NON-METALLIC INORG. SLUD. (N.I.)							
IMPORT	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
16. CONTAMINATED SOIL (S.O.)							
IMPORT	3.2	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-
17. MISCELLANEOUS WASTES (M.W.)							
IMPORT	21.0	-	3.8	0.7	0.6	-	-
EXPORT	0.5	-	-	-	-	-	-
<b>TOTAL</b>							
IMPORT	555.3	-	5.2	17.7	2.5	1.2	
EXPORT	43.7	-	-	-	-	-	

TABLES E-F: HAZARDOUS WASTE IMPORTS &amp; EXPORTS FOR SACRAMENTO COUNTY, 1985 (IN TONS)

WASTE GROUP	COUNTY								
	CONTRA COSTA	DEL NORTE	EL DORADO	FRESNO	GLENN	HUM-BOLDT	IMPERIAL	INYO	KERN
1. W.O.									
IMPORT	16.8	-	1.1	9.6	-	-	-	-	2.0
EXPORT	986.0	-	-	-	-	-	-	-	262.1
2. H.S.									
IMPORT	3.2	-	-	-	-	1.0	-	-	-
EXPORT	36.6	-	-	36.8	-	-	-	-	-
3. N.S.									
IMPORT	0.2	-	0.7	0.4	-	-	-	-	0.4
EXPORT	55.0	-	-	1,044.4	-	-	-	-	-
4. O.L.									
IMPORT	-	-	0.9	0.1	-	25.0	-	-	-
EXPORT	4,373.6	-	-	-	-	-	-	-	-
5. P.E									
IMPORT	-	-	0.2	-	-	-	-	-	0.0
EXPORT	454.0	-	-	-	-	-	-	-	-
6. D.I.									
IMPORT	32.4	-	-	111.4	-	1.6	-	-	0.2
EXPORT	-	-	-	-	-	-	-	-	-
7. O.S.									
IMPORT	15.7	-	-	5.0	-	9.3	-	-	1.0
EXPORT	64.0	-	-	-	-	-	-	-	63.2
8. H.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	22.8	-	-	-	-	-	-	-	-
9. N.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	347.0	-	-	-	-	-	-	-	10.4
10. D.P.									
IMPORT	-	-	-	2.0	-	-	-	-	-
EXPORT	21.3	-	-	-	-	-	-	-	-
11. M.L.									
IMPORT	1.8	-	-	-	-	-	-	-	-
EXPORT	393.4	-	-	-	-	-	-	-	-
12. C.M.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	21.0	-	-	-	-	-	-	-	-
13. N.M.									
IMPORT	2.8	-	4.6	-	-	-	-	-	-
EXPORT	3,441.3	-	-	-	-	-	-	-	-
14. M.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
15. N.I.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	11.4	-	-	-	-	-	-	-	-
16. S.O.									
IMPORT	1.9	-	-	1.0	-	-	-	-	1.4
EXPORT	-	-	-	-	-	-	-	-	11.0
17. M.W.									
IMPORT	14.8	-	8.4	71.0	0.3	0.2	-	-	11.4
EXPORT	1,193.6	-	-	-	-	-	-	-	-
<b>TOTAL</b>									
IMPORT	89.6	-	15.9	200.5	0.4	37.1	-	-	16.4
EXPORT	11,421.0	-	-	1,081.1	-	-	-	-	346.7

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1985 (IN TONS)

WASTE GROUP	COUNTY								
	KINGS	LAKE	LASSEN	LOS ANGELES	MADERA	MARIN	MARI-POSA	MEND-OCINO	MERCED
1. W.O.									
IMPORT	-	-	-	8.3	-	-	-	-	2.1
EXPORT	82.1	-	-	216.3	-	-	-	-	-
2. H.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	102.2	-	-	-	-	-	-	-	-
3. N.S.									
IMPORT	-	-	-	7.2	-	0.1	-	-	-
EXPORT	69.8	-	-	2.8	-	-	-	-	-
4. O.L.									
IMPORT	-	-	-	-	-	-	-	0.1	0.9
EXPORT	1,446.8	-	-	0.8	-	-	-	-	-
5. P.E.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	465.0	-	-	-	-	-	-	-	-
6. D.I.									
IMPORT	-	-	-	29.7	-	17.9	-	-	1.0
EXPORT	434.8	-	-	12.7	-	-	-	-	-
7. O.S.									
IMPORT	-	-	-	1.0	0.5	-	-	7.9	0.2
EXPORT	154.2	-	-	-	-	-	-	-	-
8. H.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	1.6	-	-	-	-	-	-	-	-
9. N.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	106.2	-	-	2.8	-	-	-	-	-
10. D.P.									
IMPORT	-	-	-	-	-	-	-	-	1.2
EXPORT	41.0	-	-	0.4	-	-	-	-	-
11. M.L.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	43.9	-	-	27.5	-	-	-	-	-
12. C.M.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	3.6	-	-	-	-	-	-	-	-
13. N.M.									
IMPORT	-	-	-	-	-	-	-	-	7.8
EXPORT	3,985.5	-	-	10.0	-	-	-	-	-
14. M.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
15. N.I.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	97.0	-	-	-	-	-	-	-
16. S.O.									
IMPORT	-	-	-	0.2	-	-	-	-	-
EXPORT	343.9	-	-	-	-	-	-	-	-
17. M.W.									
IMPORT	-	-	-	10.2	0.3	-	-	0.2	15.2
EXPORT	290.9	-	-	25.0	-	-	-	-	-
<b>TOTAL</b>									
IMPORT	-	-	-	56.6	0.8	18.0	-	8.2	21.4
EXPORT	7,571.4	-	-	298.3	-	-	-	-	-

**TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1985 (IN TONS)**

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1985 (IN TONS)

WASTE GROUP	COUNTY									
	SACRA-MENTO	SAN BENITO	SAN BERNADI	SAN DIEGO	SAN FRANCIS	SAN JOAQUIN	SAN LUIS OB	SAN MATEO	SANTA BARBARA	
1. W.O.										
IMPORT	-	-	-	-	40.7	0.1	-	2.2	-	
EXPORT	-	-	-	-	-	-	-	331.8	132.8	
2. H.S.										
IMPORT	-	-	-	-	-	-	-	0.7	-	
EXPORT	-	-	-	-	3.2	-	-	72.1	1.7	
3. N.S.										
IMPORT	-	-	-	-	0.6	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	285.2	22.4	
4. O.L.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	0.2	15.8	
5. P.E.										
IMPORT	-	-	-	-	-	0.3	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	17.7	
6. D.I.										
IMPORT	-	-	-	-	3.6	2.5	-	42.4	0.5	
EXPORT	-	-	-	-	-	-	-	115.1	1.0	
7. O.S.										
IMPORT	-	-	30.5	-	0.6	8.9	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	129.9	
8. H.O.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	0.3	
9. N.O.										
IMPORT	-	-	-	-	-	-	-	0.4	-	
EXPORT	-	-	-	-	-	-	-	2.0	12.1	
10. D.P.										
IMPORT	-	-	-	-	6.6	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	1.1	53.4	
11. M.L.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	0.1	-	-	-	36.9	
12. C.M.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	
13. N.M.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	4.3	
14. M.S.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	
15. N.I.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	5.4	
16. S.O.										
IMPORT	-	-	-	-	-	-	-	0.5	5.9	
EXPORT	-	-	-	-	-	-	-	-	22.2	
17. M.W.										
IMPORT	-	-	-	-	1.8	3.5	-	10.8	8.0	
EXPORT	-	-	-	-	-	-	-	4.1	198.0	
<b>TOTAL</b>										
IMPORT	-	-	30.5	-	53.9	15.3	-	57.0	14.5	
EXPORT	-	-	-	-	3.3	-	-	811.5	653.9	

TABLES E-F: HAZARDOUS WASTE IMPORTS &amp; EXPORTS FOR SACRAMENTO COUNTY, 1985 (IN TONS)

WASTE GROUP	COUNTY								
	SANTA CLARA	SANTA CRUZ	SHASTA	SIERRA	SIS-KIYOU	SOLANO	SONOMA	STAN-ISLAUS	SUTTER
1. W.O.									
IMPORT	-	-	7.6	-	-	-	-	2,552.0	-
EXPORT	1.1	-	-	-	-	72.7	-	1,921.1	-
2. H.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	3.6	-	-	-	-	-	-	-	-
3. N.S.									
IMPORT	0.3	-	-	-	-	-	-	7.6	1.5
EXPORT	10.4	-	-	-	-	154.2	-	-	-
4. O.L.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	21.0	-	-	-
5. P.E.									
IMPORT	-	-	-	-	-	0.1	-	0.4	0.8
EXPORT	1.1	-	-	-	-	-	-	-	-
6. D.I.									
IMPORT	37.8	-	-	-	-	1.6	8.1	-	-
EXPORT	-	-	-	-	-	-	-	-	-
7. O.S.									
IMPORT	-	-	0.6	-	-	-	-	1.8	-
EXPORT	3.1	-	-	-	-	17.7	-	-	-
8. H.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
9. N.O.									
IMPORT	0.7	-	-	-	-	-	-	-	0.2
EXPORT	-	-	-	-	-	1.9	-	-	-
10. D.P.									
IMPORT	-	-	-	-	-	-	-	0.6	-
EXPORT	0.4	-	-	-	-	60.7	-	-	-
11. M.L.									
IMPORT	1.4	-	-	-	-	-	-	-	-
EXPORT	32.2	-	-	-	-	-	-	-	-
12. C.M.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
13. N.M.									
IMPORT	3.4	-	-	-	-	-	-	-	-
EXPORT	0.6	-	-	-	-	595.5	-	-	-
14. M.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	31.2	-	-	-
15. N.I.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	349.6	-	-	-
16. S.O.									
IMPORT	-	-	-	-	-	0.8	-	-	-
EXPORT	-	-	-	-	-	2,022.4	-	-	-
17. M.W.									
IMPORT	35.9	-	0.6	-	-	0.3	0.1	0.5	0.9
EXPORT	11.8	-	-	-	-	841.3	-	-	-
<b>TOTAL</b>									
IMPORT	79.5	-	8.8	-	-	2.8	8.2	2,562.9	3.4
EXPORT	64.3	-	-	-	-	4,168.2	-	1,921.1	-

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1985 (IN TONS)

WASTE GROUP	COUNTY								OUT OF STATE
	TEHAMA	TRINITY	TULARE	TOLUMNE	VENTURA	YOL	YUBA	UNKNOWN	
1. W.O.									
IMPORT	-	-	-	0.6	0.1	1.4	-	10.8	-
EXPORT	-	-	-	-	-	12.7	-	941.0	14.8
2. H.S.	-						0.2	2.4	-
IMPORT	-	-	-	-	-	-	-	8.5	-
EXPORT	-	-	-	-	-	-	-	-	-
3. N.S.									
IMPORT	-	-	-	13.3	-	4.8	0.7	49.8	-
EXPORT	-	-	-	-	-	-	-	179.8	-
4. O.L.									
IMPORT	-	-	-	-	0.3	-	-	1.9	-
EXPORT	-	-	-	-	-	-	-	64.8	-
5. P.E.									
IMPORT	-	-	-	-	-	4.4	-	0.3	-
EXPORT	-	-	-	-	-	-	-	0.1	-
6. D.I.									
IMPORT	-	-	0.1	-	-	35.2	-	28.5	-
EXPORT	-	-	-	-	-	-	-	369.8	312.8
7. O.S.									
IMPORT	-	-	-	-	0.6	-	1.1	36.4	4.1
EXPORT	-	-	-	-	-	-	-	403.8	-
8. H.O.									
IMPORT	-	-	-	-	-	-	0.8	0.1	-
EXPORT	-	-	-	-	-	-	-	0.4	-
9. N.O.									
IMPORT	-	-	-	-	-	2.1	0.1	3.8	5.8
EXPORT	-	-	-	-	-	-	-	11.5	-
10. D.P.									
IMPORT	-	-	-	-	-	0.5	0.3	2.8	-
EXPORT	-	-	-	-	-	-	-	25.8	-
11. M.L.									
IMPORT	-	-	-	-	-	3.4	-	3.0	-
EXPORT	-	-	-	-	-	-	-	5.0	-
12. C.M.									
IMPORT	-	-	-	-	-	-	-	0.4	-
EXPORT	-	-	-	-	-	-	-	0.3	-
13. N.M.									
IMPORT	-	-	-	0.1	-	2.8	0.2	0.8	-
EXPORT	-	-	-	-	-	-	-	1.2	-
14. M.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
15. N.I.									
IMPORT	-	-	-	-	-	-	-	1.2	-
EXPORT	-	-	-	-	-	-	-	289.7	-
16. S.O.									
IMPORT	4.2	6.7	-	-	-	2.3	1.8	10.4	1.4
EXPORT	-	-	-	-	-	-	-	55.3	-
17. M.W.									
IMPORT	-	-	0.1	0.2	0.3	3.2	11.2	26.8	0.4
EXPORT	-	-	-	-	-	-	-	351.9	-
<b>TOTAL</b>									
IMPORT	4.2	6.7	0.2	14.2	1.3	60.1	16.4	179.4	11.7
EXPORT	-	-	-	-	-	12.7	-	2,708.9	327.6

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1985 (IN TONS)

WASTE GROUP	TOTALS
1. WASTE OIL (W.O.)	
IMPORT	2,660.4
EXPORT	5,014.5
2. HALOGENATED SOLV. (H.S.)	
IMPORT	13.8
EXPORT	264.6
3. NON-HALOGEN. SOLV. (N.S.)	
IMPORT	99.0
EXPORT	1,827.2
4. ORGANIC LIQUIDS (O.L.)	
IMPORT	29.2
EXPORT	5,923.0
5. PESTICIDES (P.E.)	
IMPORT	9.6
EXPORT	937.9
6. DIOXINS/PCBs (D.I.)	
IMPORT	890.8
EXPORT	1,246.2
7. OILY SLUDGES (O.S.)	
IMPORT	96.6
EXPORT	835.8
8. HALOG. ORG. SLDG. & SOLID (H.O.)	
IMPORT	0.9
EXPORT	25.1
9. NON-HALO. ORG. SLDG. & SOLID (N.O.)	
IMPORT	62.3
EXPORT	493.9
10. DYE & PAINT SLDG. & SOLID (D.P.)	
IMPORT	20.5
EXPORT	204.1
11. METAL CONTAIN. LIQUIDS (M.L.)	
IMPORT	13.4
EXPORT	539.0
12. CYANIDE & METAL LIQUIDS (C.M.)	
IMPORT	0.4
EXPORT	24.9
13. NON-METALLIC INORG. LIQ. (N.M.)	
IMPORT	19.5
EXPORT	8,038.4
14. METAL CONTAINING SLUDGE (M.S.)	
IMPORT	-
EXPORT	31.2
15. NON-METALLIC INORG. SLUD. (N.I.)	
IMPORT	1.2
EXPORT	753.1
16. CONTAMINATED SOIL (S.O.)	
IMPORT	41.7
EXPORT	2,454.8
17. MISCELLANEOUS WASTES (M.W.)	
IMPORT	290.0
EXPORT	2,917.1
<b>TOTAL</b>	
IMPORT	4,249.5
EXPORT	31,433.7

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1986 (IN TONS)

WASTE GROUP	COUNTY					
	ALAMEDA	ALPINE	AMADOR	BUTTE	CALA-VERAS	COLUSA
1. WASTE OIL (W.O.)						
IMPORT	9.6	-	-	1.5	-	0.6
EXPORT	114.0	-	-	-	-	-
2. HALOGENATED SOLV. (H.S.)						
IMPORT	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-
3. NON-HALOGEN. SOLV. (N.S.)						
IMPORT	0.1	-	-	4.3	-	-
EXPORT	-	-	-	-	-	-
4. ORGANIC LIQUIDS (O.L.)						
IMPORT	1.3	-	-	0.4	-	-
EXPORT	-	-	-	-	-	-
5. PESTICIDES (P.E.)						
IMPORT	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-
6. DIOXINS/PCBs (D.I.)						
IMPORT	1,169.2	-	-	3.1	4.0	-
EXPORT	-	-	-	-	-	-
7. OILY SLUDGES (O.S.)						
IMPORT	0.1	-	-	-	-	-
EXPORT	-	-	-	-	-	-
8. HALOG. ORG. SLDG. & SOLID (H.O.)						
IMPORT	-	-	-	-	-	-
EXPORT	0.8	-	-	-	-	-
9. NON-HALO. ORG. SLDG. & SOLID (N.O.)						
IMPORT	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-
10. DYE & PAINT SLDG. & SOLID (D.P.)						
IMPORT	-	-	-	0.9	-	-
EXPORT	-	-	-	-	-	-
11. METAL CONTAIN. LIQUIDS (M.L.)						
IMPORT	0.6	-	-	-	-	-
EXPORT	-	-	-	-	-	-
12. CYANIDE & METAL LIQUIDS (C.M.)						
IMPORT	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-
13. NON-METALLIC INORG. LIQ. (N.M.)						
IMPORT	0.2	-	-	-	-	-
EXPORT	40.0	-	-	-	-	-
14. METAL CONTAINING SLUDGE (M.S.)						
IMPORT	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-
15. NON-METALLIC INORG. SLUD. (N.I.)						
IMPORT	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-
16. CONTAMINATED SOIL (S.O.)						
IMPORT	0.2	-	-	-	-	-
EXPORT	-	-	-	-	-	-
17. MISCELLANEOUS WASTES (M.W.)						
IMPORT	11.0	-	-	1.6	-	-
EXPORT	26.1	-	-	-	-	-
<b>TOTAL</b>						
IMPORT	1,192.3	-	-	11.8	4.0	0.6
EXPORT	180.9	-	-	-	-	-

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1986 (IN TONS)

WASTE GROUP	COUNTY								
	CONTRA COSTA	DEL NORTE	EL DORADO	FRESNO	GLENN	HUMBOLDT	IMPERIAL	INYO	KERN
1. W.O.									
IMPORT	20.7	-	4.5	18.9	0.9	27.3	-	-	2.7
EXPORT	845.0	-	-	-	-	-	-	-	-
2. H.S.									
IMPORT	0.2	-	0.3	-	-	-	-	-	-
EXPORT	4.6	-	-	38.4	-	-	-	-	-
3. N.S.									
IMPORT	-	-	0.3	0.4	-	1.3	-	-	-
EXPORT	54.4	-	-	1,230.8	-	-	-	-	-
4. O.L.									
IMPORT	0.5	-	-	1.3	0.2	0.6	-	-	.10
EXPORT	3,847.6	-	-	-	-	-	-	-	-
5. P.E.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	2,164.4	-	-	-	-	-	-	-	-
6. D.I.									
IMPORT	81.7	-	0.4	0.7	-	29.8	-	-	0.5
EXPORT	-	-	-	-	-	-	-	-	-
7. O.S.									
IMPORT	-	-	-	0.8	-	-	-	-	3.6
EXPORT	167.9	-	-	-	-	-	-	-	-
8. H.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
9. N.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	214.7	-	-	-	-	-	-	-	-
10. D.P.									
IMPORT	0.1	-	-	-	-	1.2	-	-	-
EXPORT	12.0	-	-	-	-	-	-	-	-
11. M.L.									
IMPORT	4.4	-	-	0.1	1.8	-	-	-	-
EXPORT	184.7	-	-	-	-	-	-	-	-
12. C.M.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	9.2	-	-	-	-	-	-	-	-
13. N.M.									
IMPORT	-	-	0.5	3.0	-	-	-	-	0.5
EXPORT	111.3	-	-	-	-	-	-	-	-
14. M.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
15. N.I.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	275.4	-	-	-	-	-	-	-	-
16. S.O.									
IMPORT	8.4	-	-	4.0	-	4.0	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
17. M.W.									
IMPORT	2.0	-	1.3	2.4	0.2	4.2	-	-	3.0
EXPORT	1,512.9	-	-	-	-	-	-	-	-
<b>TOTAL</b>									
IMPORT	118.0	-	7.3	31.6	3.1	68.4	-	-	10.9
EXPORT	9,404.1	-	-	1,269.2	-	-	-	-	-

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1986 (IN TONS)

WASTE GROUP	COUNTY								
	KINGS	LAKE	LASSEN	LOS ANGELES	MADERA	MARIN	MARI-POSA	MEND-OCINO	MERCED
1. W.O.									
IMPORT	-	5.4	-	0.2	1.2	7.0	17.5	7.7	8.0
EXPORT	32.9	-	-	302.8	-	-	-	-	-
2. H.S.									
IMPORT	-	2.3	-	-	-	0.2	-	-	-
EXPORT	43.8	-	-	2.2	-	-	-	-	-
3. N.S.									
IMPORT	-	6.1	-	-	-	2.8	-	0.3	0.2
EXPORT	14.2	-	-	135.0	-	-	-	-	-
4. O.L.									
IMPORT	-	4.6	-	8.1	0.6	0.3	-	0.1	-
EXPORT	149.6	-	-	-	-	-	-	-	-
5. P.E.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	786.3	-	-	-	-	-	-	-	-
6. D.I.									
IMPORT	4.1	0.2	-	177.1	-	1.4	-	7.3	0.8
EXPORT	216.1	-	-	6.7	-	-	-	-	-
7. O.S.									
IMPORT	-	1.8	-	-	-	0.2	-	-	-
EXPORT	1,118.7	-	-	14.6	-	-	-	-	-
8. H.O.									
IMPORT	-	1.0	-	-	-	-	-	-	-
EXPORT	4.3	-	-	-	-	-	-	-	-
9. N.O.									
IMPORT	0.0	-	-	-	-	-	22.1	-	-
EXPORT	194.1	-	-	3.2	-	-	-	-	-
10. D.P.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	67.3	-	-	0.2	-	-	-	-	-
11. M.L.									
IMPORT	-	8.5	-	-	0.3	0.8	-	3.4	0.1
EXPORT	19.7	-	-	6.2	-	-	-	-	-
12. C.M.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	3.7	-	-	-	-	-	-	-	-
13. N.M.									
IMPORT	0.2	3.9	-	0.1	-	0.3	-	-	-
EXPORT	4,201.8	-	-	13 0	-	-	-	-	-
14. M.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	1.8	-	-	-	-	-	-	-	-
15. N.I.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	246.8	-	-	-	-	-	-	-	-
16. S.O.									
IMPORT	-	-	-	8.7	-	-	-	-	-
EXPORT	4,453.5	-	-	-	-	-	-	-	-
17. M.W.									
IMPORT	0.2	2.8	17.4	2.5	-	0.8	28.4	0.2	0.9
EXPORT	707.9	-	-	362.2	-	7.0	-	-	-
<b>TOTAL</b>									
IMPORT	4.5	36.6	17.4	196.7	2.1	13.8	68.0	19.0	10.0
EXPORT	12,262.5	-	-	846.1	-	7.0	-	-	-

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1986 (IN TONS)

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1986 (IN TONS)

WASTE GROUP	COUNTY									
	SACRAMENTO	SAN BENITO	SAN BERNADI	SAN DIEGO	SAN FRANCIS	SAN JOAQUIN	SAN LUIS OB	SAN MATEO	SANTA BARBARA	
1. W.O.										
IMPORT	-	-	0.5	-	1.0	5.2	-	2.1	-	
EXPORT	-	-	-	-	-	-	-	447.3	101.5	
2. H.S.										
IMPORT	-	-	-	-	-	-	0.5	-	-	
EXPORT	-	-	-	-	-	-	-	67.7	0.2	
3. N.S.										
IMPORT	-	-	-	-	1.5	7.4	2.9	0.1	-	
EXPORT	-	-	-	-	-	-	-	346.2	60.8	
4. O.L.										
IMPORT	-	-	1.2	3.8	0.2	-	0.9	0.1	0.6	
EXPORT	-	-	-	-	-	-	-	10.8	25.1	
5. P.E.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	12.4
6. D.I.										
IMPORT	-	-	30.8	-	15.0	22.6	4.9	275.6	3.0	
EXPORT	-	-	-	-	-	-	-	525.3	4.6	
7. O.S.										
IMPORT	-	-	-	0.1	0.1	10.1	-	-	-	
EXPORT	-	-	-	0.3	-	-	-	-	-	138.1
8. H.O.										
IMPORT	-	-	-	-	-	0.9	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	33.4
9. N.O.										
IMPORT	-	-	-	0.4	-	1.5	-	0.1	-	
EXPORT	-	-	-	-	-	-	-	11.9	44.9	
10. D.P.										
IMPORT	-	-	-	-	0.2	0.2	-	-	-	
EXPORT	-	-	-	-	-	-	-	3.7	103.1	
11. M.L.										
IMPORT	-	-	-	-	-	0.0	1.4	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	2.7
12. C.M.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	
13. N.M.										
IMPORT	-	-	0.6	3.2	-	0.4	-	0.5	0.5	
EXPORT	-	-	-	-	-	-	-	1.0	4.8	
14. M.S.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	
15. N.I.										
IMPORT	-	-	-	-	-	-	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	
16. S.O.										
IMPORT	-	-	0.4	2.0	1.2	3.0	-	-	-	
EXPORT	-	-	-	-	-	-	-	-	-	214.0
17. M.W.										
IMPORT	-	-	0.8	0.4	3.4	5.9	0.2	0.3	0.1	
EXPORT	-	-	-	-	-	-	0.8	56.4	426.4	
<b>TOTAL</b>										
IMPORT	-	-	34.3	9.9	22.6	57.2	10.8	278.9	4.1	
EXPORT	-	-	-	0.3	-	-	-	0.8	1,470.5	1,172.0

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1986 (IN TONS)

WASTE GROUP	COUNTY								
	SANTA CLARA	SANTA CRUZ	SHASTA	SIERRA	SIS-KIYOU	SOLANO	SONOMA	STAN-ISLAUS	SUTTER
1. W.O.									
IMPORT	0.6	-	17.1	-	-	8.7	5.0	3,371.2	-
EXPORT	-	-	-	-	-	-	-	- 2,251.1	-
2. H.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	6.1	-	-	-	-	4.2	-	-	-
3. N.S.									
IMPORT	-	-	-	-	-	1.4	1.2	0.5	0.7
EXPORT	5.9	-	-	-	-	134.8	-	-	-
4. O.L.									
IMPORT	-	-	-	-	-	1.1	-	-	-
EXPORT	4.9	-	-	-	-	-	-	-	-
5. P.E.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
6. D.I.									
IMPORT	93.2	22.6	34.0	-	4.2	25.1	150.2	3.5	18.6
EXPORT	-	-	-	-	-	-	-	-	-
7. O.S.									
IMPORT	-	-	-	-	-	0.5	-	-	-
EXPORT	2.3	-	-	-	-	74.5	-	-	-
8. H.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
9. N.O.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
10. D.P.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	21.1	-	-	-	-	4.2	-	-	-
11. M.L.									
IMPORT	-	-	0.8	-	-	4.3	5.5	-	-
EXPORT	7.2	-	-	-	-	-	-	-	-
12. C.M.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	-	-	-	-
13. N.M.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	5.5	-	-	-	-	63.3	-	-	-
14. M.S.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	15.2	-	-	-
15. N.I.									
IMPORT	-	-	-	-	-	-	-	-	-
EXPORT	-	-	-	-	-	75.8	-	-	-
16. S.O.									
IMPORT	-	-	-	-	-	4.6	0.9	-	0.9
EXPORT	-	-	-	-	-	625.2	-	-	-
17. M.W.									
IMPORT	3.8	-	1.7	-	4.3	2.2	3.8	1.3	0.4
EXPORT	19.7	-	0.9	-	-	792.4	-	-	-
<b>TOTAL</b>	<b>97.6</b>	<b>22.6</b>	<b>53.6</b>	<b>-</b>	<b>8.5</b>	<b>47.9</b>	<b>166.6</b>	<b>3,376.5</b>	<b>20.6</b>
<b>IMPORT</b>	<b>72.7</b>	<b>-</b>	<b>0.9</b>	<b>-</b>	<b>-</b>	<b>1789.6</b>	<b>-</b>	<b>- 2,251.1</b>	<b>-</b>

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1986 (IN TONS)

WASTE GROUP	COUNTY								OUT OF STATE	
	TEHAMA	TRINITY	TULARE	TOLUMNE	VENTURA	YOL	YUBA	UNKNOWN		
1. W.O.										
IMPORT	3.7	0.1	-	1.1	-	5.6	3.0	43.0		-
EXPORT	-	-	-	-	-	-	-	387.9		-
2. H.S.										
IMPORT	-	-	-	0.4	-	-	0.2	2.9		-
EXPORT	-	-	-	-	-	-	-	20.4		-
3. N.S.										
IMPORT	-	-	-	-	-	6.6	0.2	101.0		-
EXPORT	-	-	-	-	-	-	-	28.0		-
4. O.L.										
IMPORT	0.6	-	-	-	0.8	0.9	0.4	10.4		-
EXPORT	-	-	-	-	-	-	-	178.2		-
5. P.E.										
IMPORT	0.0	-	-	-	-	1.6	-	1.8		-
EXPORT	-	-	-	-	-	-	-	5.2		-
6. D.I.										
IMPORT	2.2	1.8	-	-	0.2	7.3	304.7	384.4	8.5	
EXPORT	-	-	-	-	-	-	-	656.4	2,126.7	
7. O.S.										
IMPORT	-	0.2	-	-	-	0.2	1.6	13.2		-
EXPORT	-	-	-	-	-	-	-	826.1	19.2	
8. H.O.										
IMPORT	-	-	-	-	-	-	-	0.6		-
EXPORT	-	-	-	-	-	-	-	3.3		-
9. N.O.										
IMPORT	-	-	-	-	-	1.9	-	5.5	3.6	
EXPORT	-	-	-	-	-	-	-	27.9		-
10. D.P.										
IMPORT	-	-	-	-	-	-	0.2	1.2		-
EXPORT	-	-	-	-	-	-	-	44.4		-
11. M.L.										
IMPORT	3.0	-	-	-	-	0.2	0.9	12.5		-
EXPORT	-	-	-	-	-	-	-	92.4		-
12. C.M.										
IMPORT	-	-	-	-	-	-	-	-		-
EXPORT	-	-	-	-	-	-	-	-		-
13. N.M.										
IMPORT	0.3	-	-	-	-	0.4	7.6	7.2		-
EXPORT	-	-	-	-	-	-	-	67.7		-
14. M.S.										
IMPORT	-	-	-	-	-	-	-	-	0.2	
EXPORT	-	-	-	-	-	-	-	-		-
15. N.I.										
IMPORT	-	-	-	-	-	-	-	-		-
EXPORT	-	-	-	-	-	-	-	10.4		-
16. S.O.										
IMPORT	-	-	-	-	-	6.3	9.1	8.0		-
EXPORT	-	-	-	-	-	-	-	4,907.9		-
17. M.W.										
IMPORT	1.5	-	-	0.2	0.0	7.7	13.0	35.7		-
EXPORT	-	-	-	-	-	-	-	353.1		-
<b>TOTAL</b>										
IMPORT	11.3	2.0	-	1.7	1.0	38.7	341.1	627.4	12.3	
EXPORT	-	-	-	-	-	-	-	7,609.3	2,145.9	

TABLES E-F: HAZARDOUS WASTE IMPORTS & EXPORTS FOR SACRAMENTO COUNTY, 1986 (IN TONS)

WASTE GROUP		<u>TOTAL</u>
1. WASTE OIL (W.O.)		
IMPORT	3,612.8	
EXPORT	<b>4,482.5</b>	
2. HALOGENATED SOLV. (H.S.)		
IMPORT	7.0	
EXPORT	<b>187.6</b>	
3. NON-HALOGEN. SOLV. (N.S.)		
IMPORT	144.0	
EXPORT	<b>2,010.1</b>	
4. ORGANIC LIQUIDS (O.L.)		
IMPORT	43.2	
EXPORT	<b>4,216.2</b>	
5. PESTICIDES (P.E.)		
IMPORT	3.5	
EXPORT	<b>2,968.3</b>	
6. DIOXINS (D.I.)		
IMPORT	2,946.2	
EXPORT	<b>3,535.8</b>	
7. OILY SLUDGES (O.S.)		
IMPORT	35.6	
EXPORT	<b>2,361.7</b>	
8. HALOG. ORG. SLDG. & SOLID (H.O.)		
IMPORT	2.7	
EXPORT	<b>41.8</b>	
9. NON-HALO. ORG. SLDG. & SOLID (N.O.)		
IMPORT	74.9	
EXPORT	<b>496.7</b>	
10. DYE & PAINT SLDG. & SOLID (D.P.)		
IMPORT	9.2	
EXPORT	<b>256.0</b>	
11. METAL CONTAIN. LIQUIDS (M.L.)		
IMPORT	51.3	
EXPORT	<b>312.9</b>	
12. CYANIDE & METAL LIQUIDS (C.M.)		
IMPORT	-	
EXPORT	<b>13.0</b>	
13. NON-METALLIC INORG. LIQ. (N.M.)		
IMPORT	38.9	
EXPORT	<b>4,508.5</b>	
14. METAL CONTAINING SLUDGE (M.S.)		
IMPORT	0.2	
EXPORT	<b>17.0</b>	
15. NON-METALLIC INORG. SLUDGE (N.I.)		
IMPORT	-	
EXPORT	<b>608.4</b>	
16. CONTAMINATED SOIL (S.O.)		
IMPORT	61.7	
EXPORT	<b>10,200.6</b>	
17. MISCELLANEOUS WASTES (M.W.)		
IMPORT	226.3	
EXPORT	<b>4,265.8</b>	
<b>TOTAL</b>		
IMPORT	7,257.7	
EXPORT	<b>40,482.9</b>	

**TABLE G**  
**COMMERCIAL HAZARDOUS WASTE STORAGE CAPACITY**  
**ACTIVITY IN 1986 FOR AMERICAN ENVIRONMENTAL MANAGEMENT CORPORATION**

<u>Storage Method</u>	<u>Average Monthly Quantity of Wastes in Storage for Over 90 Days (tons)</u>	<u>Storage Capacity (tons)</u>	<u>Storage Capacity used (%)</u>
Container	130	140	93%
Tank	80	210	38%
Waste Pile	10	30	33%
Surface Impoundment	0	0	0%
Other	<u>20</u>	<u>400</u>	5%
<b>TOTAL</b>	<b>240</b>	<b>780</b>	

Source: State Department of Health Services.

**TABLE G**  
**COMMERCIAL HAZARDOUS WASTE STORAGE CAPACITY**  
**ACTIVITY IN 1986 FOR RETRO SERVICE, INC.**

<u>Storage Method</u>	<u>Average Monthly Quantity of Wastes in Storage for Over 90 Days (tons)</u>	<u>Storage Capacity (tons)</u>	<u>Storage Capacity used (%)</u>
Container	5	14	36%
Tank	0	0	
Waste Pile	0	0	
Surface Impoundment	0	0	
Other	<u>0</u>	<u>0</u>	
<b>TOTAL</b>	<b>5</b>	<b>14</b>	

Source: California Department of Health Services.

**TABLE G**  
**COMMERCIAL HAZARDOUS WASTE STORAGE CAPACITY**  
**ACTIVITY IN 1986 FOR SAFETY KLEEN**

<u>Storage Method</u>	<u>Average Monthly Quantity of Wastes in Storage for Over 90 Days (tons)</u>	<u>Storage Capacity (tons)</u>	<u>Storage Capacity used (%)</u>
Container	0	0	
Tank	27	50	54%
Waste Pile	0	0	
Surface Impoundment	0	0	
Other	<u>0</u>	<u>0</u>	
<b>TOTAL</b>	<b>27</b>	<b>50</b>	

Source: Safety Kleen Corporation, 1988.

**TABLE H**  
**ON-SITE TREATMENT/DISPOSAL OF HAZARDOUS WASTE**  
**IN 1986**

Facility Name: Aerojet General (1)

Generalized Treatment Method	Quantity Treated/ Disposed On-Site (tons)	Capacity of Treatment Method (tons)	Percent of Capacity Used
AQUEOUS TREATMENT ORGANIC	3,250	13,800	24%
AQUEOUS TREATMENT (2) METALS/ NEUTRALIZATION	0	520,400	0%
INCINERATION	970	19,010	5%
SOLVENT RECOVERY	1,160	44,620	3%
OIL RECOVERY	0	0	0%
OTHER RECYCLING	0	2,630	2%
STABILIZATION	40	11,040	---
RESIDUALS DISPOSAL	1	0	0%
<b>TOTAL</b>	<b>5,421</b>	<b>611,500</b>	

Footnote:

(1) Source: State Department of Health Services.

(2) Neutralization Unit was not used in 1986.

**TABLE H**  
**ON-SITE TREATMENT/DISPOSAL OF HAZARDOUS WASTE**  
**IN 1986**

Facility Name: General Electric Medical Systems(1)

Generalized Treatment Method	Quantity Treated/ Disposed On-Site (tons)	Capacity of Treatment Method (tons)	Percent of Capacity Used
AQUEOUS TREATMENT ORGANIC	1.5(2)	13.5	11%
AQUEOUS TREATMENT METALS/ NEUTRALIZATION	1.5	13.5	11%
INCINERATION	0	0	0%
SOLVENT RECOVERY	0	0	0%
OIL RECOVERY	0	0	0%
OTHER RECYCLING	0	0	0%
STABILIZATION	0	0	0%
RESIDUALS DISPOSAL	<u>0</u>	<u>0</u>	0%
<b>TOTAL</b>	<b>3.0</b>	<b>27</b>	

Footnote:

- (1) Current generation data are provided for information purposes. The facility has transferred to Wisconsin. The waste treatment system was decommissioned and closure is anticipated by the end of 1988. The 1.5 tons are not transferred to Table J.
- (2) The 1.5 tons of rinse water from the plating operation enters two treatment systems. Solvents are run through carbon filter. Metals are run through the ion exchange.

Source: General Electric Medical Systems.

**TABLE H**  
**ON-SITE TREATMENT/DISPOSAL OF HAZARDOUS WASTE**  
**IN CURRENT YEAR**

Facility Name: McClellan Air Force Base(1) (1986)

Generalized Treatment Method	Quantity Treated/ Disposed On-Site (tons)	Capacity of Treatment Method (tons)	Percent of Capacity Used
AQUEOUS TREATMENT ORGANIC	0	0	0%
AQUEOUS TREATMENT* METALS/ NEUTRALIZATION	882,000	1,839,600	48%
INCINERATION	0	0	0%
SOLVENT RECOVERY	0	0	0%
OIL RECOVERY	690	Not available	
OTHER RECYCLING	---	Not available	
STABILIZATION	0	0	0%
RESIDUALS DISPOSAL	0	0	0
<b>TOTAL</b>	<b>882,690</b>	<b>1,839,600</b>	

(1) Source: McClellan Air Force Base, 1987.

**TABLE H**  
**ON-SITE TREATMENT/DISPOSAL OF HAZARDOUS WASTE**  
**IN CURRENT YEAR**

Facility Name: Signetics Corporation (1986)

Generalized Treatment Method	Quantity Treated/ Disposed On-Site (tons)	Capacity of Treatment Method (tons)	Percent of Capacity Used
AQUEOUS TREATMENT ORGANIC	0	0	0%
AQUEOUS TREATMENT METALS/ NEUTRALIZATION	8,830	14,720	60%
INCINERATION	0	0	0%
SOLVENT RECOVERY	0	0	0%
OIL RECOVERY	0	0	0%
OTHER RECYCLING	0	0	0%
STABILIZATION	0	0	0%
RESIDUALS DISPOSAL	<u>0</u>	<u>0</u>	0%
<b>TOTAL</b>	<b>8,830</b>	<b>14,720</b>	

Source: State Department of Health Services.

TABLE I

## AVERAGE ANNUAL PLANNING ESTIMATE OF QUANTITIES OF HAZARDOUS WASTE SHIPPED OFF SITE BY GENERATORS IN SACRAMENTO COUNTY

Waste Group	(1) Manif. Wastes (tons/year)	(2) Site Cleanups (tons/year)	(3) Transfer Stations (tons/year)	(4) Net Manif. Wastes (tons/year)
1. Waste Oil	16,310	70	120	16,120
2. Halogenated Solvents	290	0	50	240
3. Non-Halogenated Solvents	2,990	10	1,270	1,710
4. Organic Liquids	5,070	10	40	5,020
5. Pesticides	1,960	4	0	1,956
6. PCBS & Dioxins	2,510	5	1,540	965
7. Oily Sludges	1,620	80	60	1,480
8. Halogenated Organic Sludges & Solids	30	0	0	30
9. Non-Halogenated Organic Sludges & Solids	510	30	70	410
10. Dye & Paint Sludges & Resins	250	2	20	228
11. Metal-Containing Liquids	430	0	20	410
12. Cyanide & Metal Liquids	20	1	0	19
13. Non-Metallic Inorganic Liquids	6,290	10	10	6,270
14. Metal-Containing Sludges	20	0	0	20
15. Non-Metallic Inorganic Sludges	680	0	0	680
16. Contaminated Soil	6,420	6,420	--(3)	0
17. Miscellaneous Wastes	<u>3,700</u>	<u>1,710</u>	<u>500</u>	<u>1,490</u>
<b>Total</b>	<b>49,100</b>	<b>8,352</b>	<b>3,700</b>	<b>37,048</b>

## Footnote

(1) Source: Table A.

(2) Source: State Department of Health Services, Hazardous Waste Information System, average of 1985 and 1986 data. Soil contaminated sites asbestos and one-time generators will be subtracted from the routine waste stream.

(3) Source: State Department of Health Services, Hazardous Waste Information System, average of 1985-1986 exports. Since the transfer stations are not generators, all shipped wastes are subtracted. Twenty tons of contaminated soils, shipped from American Environmental, are assumed to be subtracted from Site Cleanups.

(4) Manifested wastes - manif. waste, Net  
contaminated sites, - transfer = manifested  
asbestos, and one- stations wastes  
time generators.

TABLE I (continued)

AVERAGE ANNUAL PLANNING ESTIMATE OF QUANTITIES OF HAZARDOUS  
WASTE SHIPPED OFF SITE BY GENERATORS IN SACRAMENTO COUNTY

Waste Group	(4) Carryover From Page 1 Column 4 (tons/year)	(5) Desig. Wastes (tons/year)	(6) Small Quantity Generators (tons/year)	(7) Total (tons/year)	(8) Household Wastes (tons/year)
1. Waste Oil	16,120	0	3,070	19,190	690
2. Halogenated Solvents	240	0	610	850	0
3. Non-Halogenated Solvents	1,710	0	580	2,290	5,940
4. Organic Liquids	5,020	0	330	5,350	160
5. Pesticides	1,956	0	400	2,360	610
6. PCBS & Dioxins	965	0	50	1,020	80
7. Oily Sludges	1,480	0	250	1,730	0
8. Halogenated Organic Sludges & Solids	30	0	90	120	0
9. Non-Halogenated Organic Sludges & Solids	410	0	100	510	0
10. Dye & Paint Sludges & Resins	228	0	140	370	0
11. Metal-Containing Liquids	410	0	90	500	1,070
12. Cyanide & Metal Liquids	19	0	10	30	0
13. Non-Metallic Inorganic Liquids	6,270	0	230	6,500	370
14. Metal-Containing Sludges	20	0	100	120	0
15. Non-Metallic Inorganic Sludges	680	1,880	180	2,740	0
16. Contaminated Soil	0	0	0	0	0
17. Miscellaneous Wastes	1,490	0	2,760	4,250	650
<b>Total</b>	<b>37,048</b>	<b>1,880</b>	<b>8,990</b>	<b>47,930 (9)</b>	<b>9,570</b>

## Footnote

(5) Source: Table 5-15, Section 5.

(6) Source: Table 5-7, Section 5.

(7) Values are rounded to the nearest ten tons.

(8) Source: Table 5-8.

(9) Table may not balance due to rounding.

TABLE J

MAJOR INDUSTRY GROUPS OF WASTE  
GENERATED AND SHIPPED OFF-SITE IN 1986

The major industry groups generating and shipping wastes off-site are not disaggregated by SIC code for this document (see Justification, Section 6).

Sacramento County intends to establish this data in its data base system (see Implementation, Section 13) for inclusion in the SCHWMP update.

**TABLE J**  
**MAJOR INDUSTRY GROUPS OF**  
**WASTE GENERATED ON-SITE IN 1986 (1)**

<u>Waste Group</u>	<u>SIC 3699 (tons)</u>	<u>SIC 3764 (tons)</u>	<u>SIC 3900 (tons)</u>	<u>Total (tons)</u>
1. Waste Oil	0	0	690	690
2. Halogenated Solvents	0	0	0	0
3. Non-Halogenated Solvents	0	0	20	20
4. Organic Liquids	0	3,725	0	3,725
5. Pesticides	0	0	0	0
6. PCBs and Dioxins	0	0	0	0
7. Oily Sludges	0	0	0	0
8. Halogenated Organic Sludges & Solids	0	0	0	0
9. Non-Halogenated Organic Sludges & Solids	0	0	0	0
10. Dye & Paint Sludges and Resins	0	0	0	0
11. Metal-Containing Liquids	0	0	0	0
12. Cyanide & Metal Liquids	0	0	0	0
13. Non-Metallic Inorganic Liquids	8,830	1,245		10,075
14. Metal Containing Sludges	0	0	0	0
15. Non-Metallic Inorganic Sludges	0	0	0	0
16. Contaminated Soil	0	0	0	0
17. Miscellaneous Wastes	—	1,200	—	1,200
<b>TOTAL</b>	<b>8,830</b>	<b>6,170</b>	<b>710</b>	<b>15,710</b>

(1) Source: State Department of Health Services, Appendix E, Part 4.

**TABLE K**  
**PROJECTED QUANTITIES OF HAZARDOUS WASTE  
 GENERATED AND SHIPPED OFF-SITE (3)**

<u>Waste Group</u>	<u>Sum of Current Generation (1) (tons)</u>	<u>Year 2000 Generation Shipped Off-Site (2) (tons)</u>
1. Waste Oil	19,190	24,820
2. Halogenated Solvents	850	1,100
3. Non-Halogenated Solvents	2,290	2,960
4. Organic Liquids	5,350	6,920
5. Pesticides	2,360	3,050
6. PCBs and Dioxins	1,020	1,320
7. Oily Sludges	1,730	2,240
8. Halogenated Organic Sludges & Solids	120	160
9. Non-Halogenated Organic Sludges & Solids	510	660
10. Dye & Paint Sludges and Resins	370	480
11. Metal-Containing Liquids	500	650
12. Cyanide & Metal Liquids	30	40
13. Non-Metallic Inorganic Liquids	6,500	8,410
14. Metal Containing Sludges	120	160
15. Non-Metallic Inorganic Sludges	2,740	3,540
16. Contaminated Soil	--	--
17. Miscellaneous Wastes	<u>4,250</u>	<u>5,500</u>
<b>TOTAL</b>	<b>47,920 tons</b>	<b>62,010 tons</b>

Footnote:

- (1) Source: Table I.
- (2) Projected quantities are calculated by multiplying the totals in Table I by Sacramento County's population projection multiplier of 2 percent per year to the year 2000.
- (3) The major industry groups generating and shipping hazardous wastes off-site are not disaggregated by SIC Code for this document (see Section 6). Sacramento County plans to disaggregate waste groups by SIC Codes (see Implementation, Section 13) for inclusion in the SCHWMP update.

**TABLE K**  
**PROJECTED QUANTITIES OF HAZARDOUS WASTE**  
**GENERATED ON-SITE(1)**

Waste Group	SIC 3699 (tons)	SIC 3764 (tons)	SIC 3900 (tons)	Total (tons)
1. Waste Oil	0	0	890	890
2. Halogenated Solvents	0	0	0	0
3. Non-Halogenated Solvents	0	0	30	30
4. Organic Liquids	0	4,820	0	4,820
5. Pesticides	0	0	0	0
6. PCBs and Dioxins	0	0	0	0
7. Oily Sludges	0	0	0	0
8. Halogenated Organic Sludges & Solids	0	0	0	0
9. Non-Halogenated Organic Sludges & Solids	0	0	0	0
10. Dye & Paint Sludges and Resins	0	0	0	0
11. Metal-Containing Liquids	0	0	0	0
12. Cyanide & Metal Liquids	0	0	0	0
13. Non-Metallic Inorganic Liquids	11,420	1,610		13,030
14. Metal Containing Sludges	0	0	0	0
15. Non-Metallic Inorganic Sludges	0	0	0	0
16. Contaminated Soil	0	0	0	0
17. Miscellaneous Wastes	—	1,550	—	1,550
<b>TOTAL</b>	<b>11,420</b>	<b>7,980</b>	<b>920</b>	<b>20,320</b>

Footnote:

(1) Projected totals are calculated by multiplying the totals in Table J by the Sacramento County population projection multiplier of 2 percent per year to the year 2000.

**TABLE L**  
**PROJECTED ANNUAL QUANTITIES OF CLEAN-UP WASTES**

Waste Group	Under-ground Tanks (1)	Old Disposal (2) Sites (tons)	Closed Toxic Pits	Other Clean-up Wastes	Total
1. Waste Oil	0	0	0	0	0
2. Halogenated Solvents	0	0	0	0	0
3. Non-Halogenated Solvents	0	2,490	0	0	2,490
4. Organic Liquids	0	0	0	0	0
5. Pesticides	0	80	0	0	80
6. PCBs and Dioxins	0	7	0	0	7
7. Oily Sludges	0	630	0	0	630
8. Halogenated Organic Sludges & Solids	0	0	0	0	0
9. Non-Halogenated Organic Sludges & Solids	0	0	0	0	0
10. Dye & Paint Sludges and Resins	0	0	0	0	0
11. Metal-Containing Liquids	0	0	0	0	0
12. Cyanide & Metal Liquids	0	2	0	0	2
13. Non-Metallic Inorganic Liquids	0	0	0	0	0
14. Metal Containing Sludges	0	0	0	0	0
15. Non-Metallic Inorganic Sludges	0	0	0	0	0
16. Contaminated Soil	3,000	1,360	0	0	4,360
17. Miscellaneous Wastes	<u>0</u>	<u>40</u>	<u>0</u>	<u>0</u>	<u>40</u>
<b>TOTAL</b>	<b>3,000</b>	<b>4,610</b>	<b>0</b>	<b>0</b>	<b>7,610(3)</b>

Footnote:

- (1) Source: Sacramento County Environmental Management Department.
- (2) Source: State Department of Health Services.
- (3) Totals are rounded to the nearest ten tons.

## Key to Table L

## KNOWN HAZARDOUS WASTE CONTAMINATION SITES IN SACRAMENTO COUNTY

<u>SITE</u>	<u>COMMUNITY</u>
1. Jibboom Junkyard	Sacramento
2. Richards Boulevard (well contamination)	Sacramento
3. Palm Iron and Bridge Works	South Sacramento
4. Southern Pacific Transportation Company	Sacramento
5. Alta Plating and Chemical Corp.	Sacramento
6. Pacific Gas and Electric	Sacramento
7. Natomas Airport	Sacramento
8. Strawberry Manor/PCB Site, Harris Avenue	Sacramento
9. Strawberry Manor/PCB Site, Olmstead Avenue	Sacramento
10. American Poly-Therm Company	Sacramento
11. McClellan Air Force Base	North Highlands
12. A-1 Plating Company	North Sacramento
13. SMUD North City Substation	Sacramento
14. Union Pacific Railroad	Sacramento
15. Sacramento Army Depot	Sacramento
16. Orchard Supply Company	South Sacramento
17. Sacramento Surplus Sales Company	Sacramento
18. Mather Air Force Base	Vineyard
19. Purity Oil Sales/Delta Gunnite	Rancho Cordova
20. Well 13	Rancho Cordova
21. McDonnell-Douglas	Rancho Cordova
22. E-Z Products Manufacturers	Rancho Cordova
23. White Rock Dump	Rancho Cordova
24. Aerojet General Corporation	Rancho Cordova
25. Well 16	Rancho Cordova
26. Hazel Avenue Ponds	Rancho Cordova
27. Schnitzer Steel	Rancho Cordova
28. Folsom Prison	Folsom
29. Gerber Dump	Sacramento
30. Glideral Door	South Sacramento
31. Chromalloy-American/General Radiator Div.	Sacramento
32. Ace Oil Company	Galt

SOURCE: Office of Planning and Research, Hazardous Waste and Substance Sites-List, March 1988.

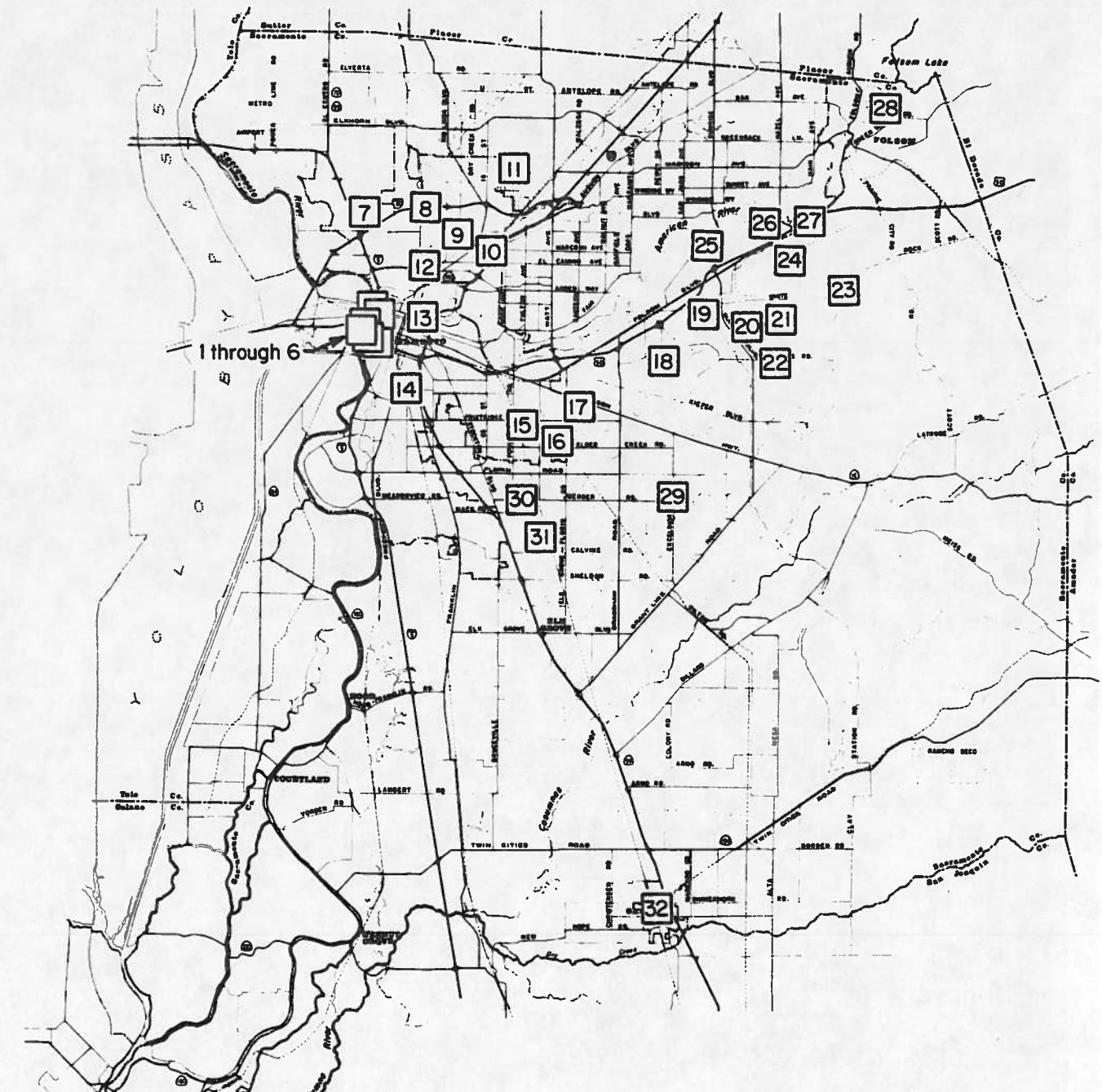


Table L

## KNOWN HAZARDOUS WASTE CONTAMINATION SITES IN SACRAMENTO COUNTY

SOURCE: California Office of Planning and Research,  
Office of Permit Assistance

**TABLE M**  
**PROJECTED QUANTITIES OF NEW HAZARDOUS WASTE STREAMS**

Waste Group	Additional Pretreatment Sludges (tons/year)	Other New Wastes (tons/year)
1. Waste Oil	0	0
2. Halogenated Solvents	0	0
3. Non-Halogenated Solvents	0	0
4. Organic Liquids	0	0
5. Pesticides	0	0
6. PCBs and Dioxins	0	0
7. Oily Sludges	0	0
8. Halogenated Organic Sludges & Solids	0	0
9. Non-Halogenated Organic Sludges & Solids	0	0
10. Dye & Paint Sludges and Resins	0	0
11. Metal-Containing Liquids	0	0
12. Cyanide & Metal Liquids	0	0
13. Non-Metallic Inorganic Liquids	0	0
14. Metal Containing Sludges	0	0
15. Non-Metallic Inorganic Sludges	0	0
16. Contaminated Soil	0	0
17. Miscellaneous Wastes	0	0
<b>TOTAL</b>	<b>0</b>	<b>0</b>

**TABLE N**  
**TOTAL PROJECTED QUANTITIES OF HAZARDOUS WASTE GENERATION**

Waste Group	Projected Industrial Waste (1) (tons)	Projected Annual Quantities of Clean-up Wastes (2) (tons)	Projected New Wastes (3) (tons)	Projected Household Wastes (4) (tons)	Total (5) (tons)
1. Waste Oil	24,820	0	0	890	25,710
2. Halogenated Solvents	1,100	0	0	0	1,100
3. Non-Halogenated Solvents	2,960	2,490	0	7,680	13,130
4. Organic Liquids	6,920	0	0	210	7,130
5. Pesticides	3,050	80	0	790	3,920
6. PCBs and Dioxins	1,320	7	0	100	1,430
7. Oily Sludges	2,220	630	0	0	2,850
8. Halogenated Organic Sludges & Solids	160	0	0	0	160
9. Non-Halogenated Organic Sludges & Solids	660	0	0	0	660
10. Dye & Paint Sludges and Resins	480	0	0	0	480
11. Metal-Containing Liquids	650	0	0	1,380	2,030
12. Cyanide & Metal Liquids	40	2	0	0	40
13. Non-Metallic Inorganic Liquids	8,410	0	0	480	8,890
14. Metal Containing Sludges	160	0	0	0	160
15. Non-Metallic Inorganic Sludges	3,540	0	0	0	3,540
16. Contaminated Soil	--	4,360	0	--	4,360
17. Miscellaneous Wastes	<u>5,500</u>	<u>40</u>	<u>0</u>	<u>840</u>	<u>6,380</u>
<b>TOTAL</b>	<b>61,990</b>	<b>7,610</b>	<b>0</b>	<b>12,370</b>	<b>81,970</b>

**Footnote:**

- (1) Source: Table K.
- (2) Source: Table L.
- (3) Source: Table M.
- (4) Source: Projected quantities are calculated by multiplying the totals in Table 5-8 by Sacramento County's population multiplier of 2 percent per year to the year 2000.
- (5) Totals are rounded to the nearest ten tons.

TABLE O  
PROJECTED COMMERCIAL HAZARDOUS WASTE TREATMENT/  
DISPOSAL CAPACITY IN SACRAMENTO COUNTY

Generalized Treatment Method	Capacity From Existing Facilities	Capacity From Proposed Facilities	Loss of Capacity From Closing Facilities	Total Projected County Capacity
AQUEOUS TREATMENT - ORGANIC	0	0	0	0
AQUEOUS TREATMENT - METALS/ NEUTRALIZATION	0	0	0	0
INCINERATION	0	0	0	0
SOLVENT RECOVERY	0	0	0	0
OIL RECOVERY	0	0	0	0
OTHER RECYCLING	0	0	0	0
STABILIZATION	0	0	0	0
RESIDUALS DISPOSAL	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Sacramento County, at present, proposes no new facilities beyond those described in Chapter 10.

**TABLE P**  
**PROJECTED SACRAMENTO COUNTY NEEDS ASSESSMENT FOR COMMERCIAL  
HAZARDOUS WASTE TREATMENT FACILITIES**

Generalized Treatment Method	Projected County Capacity Requirement (tons) (1)	Projected County Capacity (tons) (2)	Projected Capacity Excess (+) or Deficiency (-) (tons)
AQUEOUS TREATMENT - ORGANIC	3,910	0	- 3,910
AQUEOUS TREATMENT - METALS/ NEUTRALIZATION	10,960	0	-10,960
INCINERATION	5,690	0	- 5,690
SOLVENT RECOVERY	14,230	0	-14,230
OIL RECOVERY	28,560	0	-28,560
OTHER RECYCLING	13,030	0	-13,030
STABILIZATION	<u>5,590</u>	<u>0</u>	<u>- 5,590</u>
<b>TOTAL</b>	<b>81,970</b>	<b>0</b>	<b>- 81,970</b>

**Footnote:**

(1) Source: Table N.

(2) Source: Table O.

**TABLE Q**  
**PROJECTED QUANTITIES OF RESIDUALS GENERATION**

<u>Generalized Treatment Method</u>	<u>Projected Capacity Requirement (tons) (1)</u>	<u>Residual Generation Multiplier</u>	<u>Projected Quantity of Residuals (tons/year)</u>
AQUEOUS TREATMENT - ORGANIC	3,910	0.10	390
AQUEOUS TREATMENT - METALS/ NEUTRALIZATION	10,960	0.50	5,480
INCINERATION	5,690	0.10	570
SOLVENT RECOVERY	14,230	0.20	2,850
OIL RECOVERY	28,560	0.20	5,710
OTHER RECYCLING	13,030	0.20(2)	2,610
STABILIZATION	<u>5,590</u>	1.20	<u>6,710</u>
<b>TOTAL</b>	<b>81,970</b>		<b>24,320(3)</b>

Footnote:

- (1) Source: Table P.
- (2) No percentage estimate was provided by DOHS for "Other Recycling." Twenty percent was assumed, based on percentage estimates of solvent and oil recovery, with DOHS approval.
- (3) Totals are rounded to the nearest ten tons.





**APPENDIX B**

**SMALL QUANTITY GENERATOR SURVEY AND**

**NO-SURVEY ESTIMATION METHODOLOGIES**

SURVEY METHOD

Two problems became apparent as information was sought about the disposal practices of SQGs. First, DOHS did not have extensive data on SQGs in Sacramento County. Second, the non-survey method was developed in another jurisdiction, and might not be transferable to this area. A survey as outlined in the Guidelines was the only way to gather reliable local information. This survey involved identifying the SQG population, categorizing the firms, selecting a sample in each category, developing a survey form, mailing the surveys, and compiling the results.

A number of sources were used to identify the types of businesses that probably generate hazardous waste, including documents produced by the U.S. EPA and DOHS. These documents indicated which Standard Industrial Classification (SIC) these business operations were under. Once the SIC list was established, several sources were used to identify the population of such firms in Sacramento County. They include:

- Sacramento Municipal Utility District non-residential customer lists,
- Sacramento Metropolitan Chamber of Commerce's "Sacramento Regional Major Manufacturers and Processors Guide",
- Pacific Telephone "Yellow Pages",
- Sacramento County Agricultural Commissioner records,
- Sacramento County Disclosure Program records, and
- U.S. Bureau of the Census information in "1984 County Business Patterns," updated to 1986 by adding 5% to each total. (This source provided only the number of firms in each SIC group.)

These different sources were used to crosscheck each other. When they produced reasonably similar numbers, an average was taken. If dissimilar numbers resulted, the source which was determined to be most likely to be correct was used. For example, farm operators may not be listed in the Yellow Pages if they use only a personal telephone, so the Agricultural Commissioner's information on this industry was used. The values arrived at by this method were used for both the survey and no-survey calculations. (See Table B-1)

TABLE B-1 INDUSTRY GROUPS BY STANDARD INDUSTRIAL CLASSIFICATION NUMBERS

## Sources:

C=U.S. Census

D=Data Base from Survey Method (SMUD and Pacific Telephone records)

E=Estimate

F=Other (Chamber of Commerce, Agricultural Commissioner, etc.)

\*=SIC Code added by Sacramento County

<u>INDUSTRY GROUP</u>	<u>SIC CODE</u>	<u>ACTIVITY</u>	<u>NUMBER OF FIRMS</u>	<u>SOURCE</u>	<u>TOTAL IN GROUP</u>
Pesticide End Users	7992	Public Golf Courses	17	D	
	8421	Arboreta, Etc.	10	E	
		Parks	325	F	
	0181	Ornamental Nurseries	4	D	
	0100	Crop Farms (excl. 0181)	110	E	
	5261	Retail Nurseries	40	D	
	7011	Hotels, etc.	159	D	665
Pesticide Application Services	0711	Soil Preparation Services	3	D	
	0721	Crop Planting, Cultivating and Production	20	D	
	0729	General Crop Services	0		
	0782	Lawn and Garden Services	110	D	
	0783	Ornamental Shrub and Tree Services	1	D	
	4959	Sanitorial Services	4	D	
	7342	Disinfecting and Extermination Services	56	D	
	0851	Forestry Services	2	D	196
Chemical Manufacturing	2819	Industrial Inorganic Chemicals	1	D	
	2820	Plastics, Materials and Synthetic Rubber Synthetic and Other Manmade Fibers, except Glass	1	D	
	2861	Gum and Wood Chemicals	1	D	
	2869	Industrial Organic Chemicals	1	D	
	5172	Wholesale Petroleum Products	6	C	
	2900	Petroleum Refining (except 2951, 2952)	9	D	22

<u>INDUSTRY GROUP</u>	<u>SIC CODE</u>	<u>ACTIVITY</u>	<u>NUMBER OF FIRMS</u>	<u>SOURCE</u>	<u>TOTAL IN GROUP</u>
Wood Processing Formulators	2491	Wood Preserving	4	D	
	2843	Pharmaceutical Preparation	2	D	
	2851	Paints, Varnishes, Lacquers, Enamels			
	2879	Allied Products	6	D	
		Pesticide and Agricultural Chemicals, NEC	3	D	
	2893	Printing Ink	6	D	
	2899	Chemicals and Chemical Products not elsewhere classified	1	D	
	2891	Adhesives and Sealants	5	D	27
Laundries	7216	Dry Cleaning Plants except rug cleaning	57	C	
	7217	Carpet and Upholstered Cleaning	101	D	
	7218	Industrial Laundries	6	D	
	7215	Coin Operated Laundries and Dry Cleaning	24	C	188
Other Services	7260	Funeral Services and Crematories	27	D	
	7349	Cleaning and Maintenance Services to Dwellings and Other Buildings not elsewhere Classified	266	D	
	8200	Schools	266	D	
	7011	Hotels	159	D	718
Photography	7332	Blueprinting and Photocopying Services	20	C	
	7333	Commercial Photo-Services	24	C	
	7395	Photofinishing Laboratories	38	D	
	8411	Museum and Art Galleries	6	D	
	7819	Services Allied to Motion Picture Production	17	D	
	7221	Photo Studios	136	D	241

<u>INDUSTRY GROUP</u>	<u>SIC CODE</u>	<u>ACTIVITY</u>	<u>NUMBER OF FIRMS</u>	<u>SOURCE</u>	<u>TOTAL IN GROUP</u>
Textile Manufacturing	2330	Broad Woven Fabric Mills, Wool (Includ- Dyeing and Finishing)	0		
	2250	Knitting Mills	0		
	2260	Dyeing and Finishing Textiles, except Wool Fabrics and Knit Goods	0		
	2270	Floor Covering Mills	4	D	4
Equipment Repair	4610	Pipeline Except Natural Gas	7	D	
	4800	Communication	45	D	
	5962	Merchandising Machine Operators	23	D	
	7620	Electrical Repair Shops	103	D	
	7694	Armature Rewinding Shops	9	D	
	7996	Amusement Parks	3	D	
	7631	Watch, Clock, Jewelry Repair	16	D	
	7394	Equipment Rental	113	C	343
Vehicle Maintenance	0722	Crop Harvesting, Primarily by Machine		E	
	1600	Construction other than Building Construction	110		
	1794	General Contractors Excavating and Fountain Work	98	C	
	4210	Trucking, Local and Long Distance	24	C	
	4459	Water Transportation Services not elsewhere classified	233	D	
	5270	Mobile Home Dealers	0		
	5500	Automotive Dealers and Gasoline Service Stations	17	D	
	7512	Passenger Car Rental and Leasing Without Drivers	750	E	
	7519	Utility Trailers and Recreational Vehicle Rentals	21	D	
	7530	Automotive Repair Shops	10	D	
	7513	Truck Rental and Leasing	1014	D	
	9711	National Security	10	D	
	8200	Educational Services	15	E	
	4582	Airports, Flying Fields	9	E	
	7948	Racing	1	D	

<u>INDUSTRY GROUP</u>	<u>SIC CODE</u>	<u>ACTIVITY</u>	<u>NUMBER OF FIRMS</u>	<u>SOURCE</u>	<u>TOTAL IN GROUP</u>
	2026	Dairy Delivery	4	C	
	2086	Carbonate Delivery	6	C	
	4100	Local, Suburban and Inter-urban Highway Passenger Transportation	28	C	
	4300	U.S. Postal Service	1	E	
	5171	Bulk Petroleum Product Delivery	9	C	
	5980	Fuel and Ice Dealers	3	D	
	7699	Repair Shops and Related Services not elsewhere classified	184	D	
	9221	Police Protection	4	E	
	9224	Fire Protection	20	E	2581
Construction	1711	Plumbing Heating (Except Electrical) and Air Conditioning	294	D	
	1721	Painting, Paper Hanging and Decorating	183	D	
	1743	Terrazzo, Tile, Marble and Mosaic Work	58	D	
	1752	Floor Laying and Other Floorwork not elsewhere classified	35	D	
	1761	Roofing and Sheet Metal Work	185	D	
	1793	Glass and Glazing Work	98	C	
	2451	Mobile Homes	3	C	
	2452	Prefabricated Wood Buildings and Components	5	C	
	4000	Railroad Transportation	5	D	
	1500	Building Construction in General, Contractors and Operative Builders	633	C	
	1731	Electrical Work	177	C	
	1742	Plastering, Drywall, Acoustical and Insulation Works	137	D	
	1771	Paving	3	E	1816
Motor Freight Terminals	4231	Terminal and Joint Terminal Maintenance Facilities for Motor Freight Transportation	16	D	16

<u>INDUSTRY GROUP</u>	<u>SIC CODE</u>	<u>ACTIVITY</u>	<u>NUMBER OF FIRMS</u>	<u>SOURCE</u>	<u>TOTAL IN GROUP</u>
Metal Manufacturing	2514	Metal Household Furniture	3	E	
	2522	Metal Office Furniture	0		
	2542	Metal Partitions, Shelving, Lockers and Office and Store Fixtures	1	D	
	3350	Rolling, Drawing and Extruding of Non-Ferrous Metal	2	D	
	3390	Miscellaneous Primary Metal Products	2	D	
	3360	Non-ferrous foundries	1	D	
	3317	Steel Pipes and tubes	1	D	
	3691	Storage Batteries	0		
	3910	Jewelry, Silverware plated ware, Costume Jewelry	28	E	
	3400	Fabricated Metal Products, Except Machinery and Transportation Equipment (excl. 347, 3482, 3483, 3489)	50	D	
	3470	Coating, Engraving and Allied Services	16	D	
	3500	Machinery, except Electrical	69	C	
	3600	Electrical and Electronic Machinery (excl. 3691, 3692)	43	C	
	3692	Primary Batteries Dry and Wet	0		
	3714	Motor Vehicle Parts and Accessories	16	C	
	3800	Measuring, Analyzing and Controlling Instruments, Photographic, Medical, Optical Goods, Watches and Clocks (excl. 3861)	17	D	
	3964	Needles, Pins, Hook and Eyes and Similar Notions	0		
	3993	Sign and Advertising Display	12	C	
	3995	Burial Caskets	2	D	274
Furniture/Wood Manufacturing	2434	Wood Kitchen Cabinets	23	C	
	2435	Hardwood Veneer, Plywood	0		
	2436	Softwood Veneer, Plywood	0		
	2492	Particleboard	1	D	
	2511	Wood Household Furniture except Upholstered	12	C	

<u>INDUSTRY GROUP</u>	<u>SIC CODE</u>	<u>ACTIVITY</u>	<u>NUMBER OF FIRMS</u>	<u>SOURCE</u>	<u>TOTAL IN GROUP</u>
	2517	Wood Television, Radio, Phonograph, Sewing Machine Cabinets	0		
	2519	Household Furniture not elsewhere classified	7	E	
	2431	Millwork	18	C	
	2440	Wood Container	4	C	
	2439	Structural Wood Members	3	D	
	2521	Wood Office Furniture Lockers, and Office and Store Fixtures	1	D	
	7641	Reupholstery and Furniture Repair	81	D	
	2499	Wood Products not elsewhere classified	10	C	
	2531	Public Building and Related Furniture	0		
	2590	Miscellaneous Furniture and Fixtures	5	C	165
Printing and Ceramics	2640	Converted Paper and Paperboard Products, Except Containers and Boxes	5	D	
	2650	Paperboard Containers and Boxes	3	C	
	2700	Printing, Publishing and Allied Industries	168	C	
	7312	Outdoor Advertising Services	6	D	
	3215	Brick and Structural Clay Tile	0		
	3250	Structural Products	4	D	
	3231	Glass Products made purchased glass	14	D	
	3271	Concrete Block and Brick	3	C	
	3260	Pottery and Related Products	6	C	
	7331	Direct Mail Advertising Services	12	C	221
Cleaning Agents and Cosmetic Manufacturers	2841	Soap and other detergents, except specialty cleaners	2	C	
	2842	Specialty cleaning polishing, sanitizing preparations	29	D	
	2843	Surface Active Agents Finishing Agents, Sulfonated Oils and Assistants	0		

<u>INDUSTRY GROUP</u>	<u>SIC CODE</u>	<u>ACTIVITY</u>	<u>NUMBER OF FIRMS</u>	<u>SOURCE</u>	<u>TOTAL IN GROUP</u>
	2844	Perfumes, Cosmetics and other Toilet Preparations	0		31
Other Manufacturing	0724	Cotton Ginning	0		
	3079	Miscellaneous Plastic Products	21	C	
	3100	Leather and Leather Products	0		
	3211	Flat Glass Manufacturing	0		
	3291	Abrasive Products	0		
	3293	Asbestos Products	3	D	
	3999	Miscellaneous Manufacturing not included elsewhere	21	C	
	3069	Fabricated Rubber Products	1	D	
	3949	Sporting and Athletic Goods	2	D	
	3951	Pens, Mechanical Pencils and Parts	2	D	50
Paper Industry	2611	Pulp Mills	1	D	
	2621	Paper Mills, except Building Paper Mills	1	D	
	2631	Paperboard Mills	3	D	5
	2661	Building Paper and Building Board Mills	0		
Educational and Vocational Shops	8211	Elementary and Secondary Schools	145	E	
	8221	College & Universities	4	D	
	8249	Vocational Schools except Vocational High Schools not elsewhere classified	22	D	
	8331	Job Training and Vocational Rehabilitation Services	36	E	
	9223	Correctional Institutions	5	E	212

<u>INDUSTRY GROUP</u>	<u>SIC CODE</u>	<u>ACTIVITY</u>	<u>NUMBER OF FIRMS</u>	<u>SOURCE</u>	<u>TOTAL IN GROUP</u>
Analytical and Clinical Laboratories	7391	Research, Develop-Labs	22	D	
	7397	Commercial Testing Labs	24	D	
	8050	Nursing Homes Labs	43	C	
	8062	General Medical and Surgical Hospitals	12	D	
	8069	Specialty Hospitals, except Psychiatric	5	D	
	8071	Medical Laboratories	32	D	
	8072	Dental Laboratory	59	D	
	8220	Colleges, Universities, Professional Schools and Junior Colleges	11	C	
	8922	Noncommercial Educational, Scientific and Research Organizations	2	D	
	8081	Outpatient Care Facilities	23	D	
	9641	Regulation of Agriculture, Marketing and Commodities	2	E	235
Wholesale and Retail Sales	5160	Chemicals and Allied Products	23	C	
	5191	Farm Supplies	30	C	
	5198	Paints, Varnishes, Supplies	22	C	
	5230	Paint, Glass and Wallpaper Stores	52	D	
	5310	Department Stores	36	C	
	5399	Miscellaneous General Merchandise Stores	28	C	191
TOTAL					8,246

Figure B-1



**COUNTY OF SACRAMENTO**  
 PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT  
 827 SEVENTH STREET, SACRAMENTO, CALIFORNIA 95814  
 (916) 440-6141  
 SUSAN R. ZIEGLER, DIRECTOR

August 8, 1987

Dear Sacramento County Business Manager,

The Sacramento County Planning and Community Development Department needs your help in compiling a list of all hazardous waste generators in the County. The Department is preparing a Hazardous Waste Management Plan for the County (as is mandated by State Assembly Bill 2948) and requires the information requested below to determine the need for hazardous waste treatment and disposal facilities in the County. The Department recognizes that responsible handling of hazardous waste can be expensive. Your participation in this planning process will help us develop economical local hazardous waste disposal programs which meet the needs of Sacramento's businesses and households.

Thank you for your cooperation. If you have any questions please contact Kendall Diggs or Julie Adelman at 440-6141.

**HAZARDOUS WASTE GENERATOR QUESTIONNAIRE**

(In the first column of number 3 below please indicate your waste types using the categories described on the next page. Alternatively, you may use product names, common names or descriptions to indicate the type of waste.)

1. TYPE OF BUSINESS						
2. NUMBER OF EMPLOYEES						
3. TYPE OF HAZARDOUS WASTE GENERATED	WASTE AMOUNT IN GALLONS or POUNDS or TONS	PER WEEK or MONTH or YEAR				
Example <b>ORGANIC LIQUID</b>	<b>490</b>	<b>X</b>				
A.	_____	_____	_____	_____	_____	_____
B.	_____	_____	_____	_____	_____	_____
C.	_____	_____	_____	_____	_____	_____
D.	_____	_____	_____	_____	_____	_____
4. TYPE OF HAZARDOUS WASTE SHIPPED OFFSITE	WASTE AMOUNT IN GALLONS or POUNDS or TONS	PER WEEK or MONTH or YEAR				
A.	_____	_____	_____	_____	_____	_____
B.	_____	_____	_____	_____	_____	_____
C.	_____	_____	_____	_____	_____	_____
D.	_____	_____	_____	_____	_____	_____
5. TYPE OF HAZARDOUS WASTE ADDED TO ONSITE STORAGE	WASTE AMOUNT IN GALLONS or POUNDS or TONS	PER WEEK or MONTH or YEAR				
A.	_____	_____	_____	_____	_____	_____
B.	_____	_____	_____	_____	_____	_____
C.	_____	_____	_____	_____	_____	_____
D.	_____	_____	_____	_____	_____	_____

If additional space is needed please use the back of this page, or attach additional sheets as needed.

BUSINESS NAME

BUSINESS ADDRESS

BUSINESS CONTACT PERSON AND PHONE

**HAZARDOUS WASTE GROUPS FOR AB 2948 PLAN**

<u>NUMBER</u>	<u>ABBREVIATION</u>	<u>WASTE GROUP</u>
1.	WO	Waste Oil
2.	HS	Halogenated Solvents
3.	NS	Non-Halogenated Solvents
4.	OL	Organic Liquids
5.	PE	Pesticides
6.	DI	Dioxins
7.	OS	Oily Sludges
8.	HO	Halogenated Organic Sludges and Solids
9.	NO	Non-Halogenated Organic Sludges and Resins
10.	DP	Dye and Paint Sludges and Resins
11.	ML	Metal-containing Liquids
12.	MS	Metal-containing Sludges
13.	CM	Cyanide and Metal Liquids
14.	NM	Non-metallic Inorganic Liquids
15.	NI	Non-metallic Inorganic Sludges
16.	SO	Contaminated Soil
17.	MW	Miscellaneous Wastes

apndixB

FINDING YOUR HAZARDOUS WASTE GROUP

If your business uses products which come in cans with "POISON" or "DANGER" labels, you may be generating hazardous waste. In the column on the far right of this page are the waste categories we would like you to use. Look up your business type and the type of products you use in the other two columns. You may use the two-letter abbreviation (i.e., WO = Waste Oil) when indicating on the survey form the waste types you generate.

IF YOUR BUSINESS DOES:	OR IF YOU USE:	YOU MAY GENERATE:
Vehicle service and repair; Petroleum product refining; Manufacturing companies; Repair of industrial, construction, or agricultural equipment; Bus and taxi companies.	Automobile oil; Oil for agricultural equipment; Oil for industrial equipment.	WASTE OIL (WO)
Auto body work; Wood and antique finishing; Upholstering; Print and copy shops; Textile and floor covering mills; Auto repair; Dry cleaning.	Paints and thinners; Varnish removers; upholstery and wood glues; Fabric dyes; Printing and copying fluids; Rust removers; Dry cleaning solvents.	HALOGENATED SOLVENTS (HS)
Car and truck sales; Auto body repair, Vehicle repair; Vending machine maintenance; Pesticide application; Construction work; School metal and woodworking shops; Chemical and analytical laboratories.	Engine cleaners; Degreasers; Paints; Varnishes and removers; Glues; Pesticides; Printing fluids.	NON-HALOGENATED SOLVENTS (NS)
Gas stations; Electronic industries; Building maintenance; Auto repair.	Cleaning agents; Anti-freeze.	ORGANIC LIQUIDS (OL)
Auto body and auto repair Dry cleaning; Dying cloth and household decoration materials; Wood varnishing and preserving; Large equipment repair; Pesticide use; Chemical laboratories; Construction; Printing and copying; Metal working.	Paints, thinners and removers; Degreasers; Engine cleaners; Dry cleaning solvents; Fabric and floorcovering colorants.	NON-METALLIC INORGANIC SLUDGES (NI)
Vehicle maintenance; Taxi companies; Bus companies; Auto sales; Agricultural equipment sales; Construction work; Trucking; Metal shops and foundries; Paper processing; Vocational shops; Laboratories.	Liquids containing heavy metals; Printing or copying ink; Acidic or basic liquids; Cleaning fluids; Degreasers and rust removers.	METAL CONTAINING LIQUIDS (ML)
Transportation companies; Wood preserving; Metal products manufacturing.	Metal polishes; Plating baths; Chrome; Circuit board cleaners.	METAL CONTAINING SLUDGES (MS)
Chemical laboratories; Metal foundries and shops; Manufacture of metal furniture; Printing; ceramics.	Photographic chemicals; Ink; Metal cleaning solutions.	CYANIDE AND METAL LIQUIDS (CM)

IF YOUR BUSINESS DOES:	OR IF YOU USE:	YOU MAY GENERATE:
Golf courses; Amusement park operators; Hotels/ Motels; Apartment complex maintenance; Landscapers; Farmers; Plant seed treatment; Greenhouses, nurseries; Professional pest control operators; Veterinarians; Pet grooming and pet hotels.	Termite and Insect exterminators; Rat and mouse exterminators; Lawn and landscaping sprays; Fertilizers; Tree sprays; Animal flea and pest sprays.	PESTICIDES (PE)
Analytical laboratories; Pesticide users; Wood products manufacture.	Wood preservatives; Pesticides; Laboratory chemicals.	DIOXINS (DI)
Oil refining; Industrial cleaners and dry cleaners; Analytical laboratories; Trucking companies; Auto dismantlers; Construction and engineering firms; Manufacturing companies; Auto repair.	Oil/water separators; Machinery and engine oil.	OILY SLUDGES (OS)
Gasoline service stations; Furniture manufacturing and finishing; Janitorial services, Metal work.	Degreasers; Engine cleaners; Other cleaning agents.	HALOGENATED ORGANIC SLUDGES AND SOLIDS (HO)
Plastics and chemical manufacturing; Textiles manufacturing; Metal work; Wood refinishing; Cosmetics manufacturing; Paper industry.	Photographic chemicals; Printing chemicals; Dyes for fabric and floor covering; Varnishes; Cleaning agents.	NON-HALOGENATED ORGANIC SLUDGES AND SOLVENTS (NO)
Sale of paints, dyes or varnishes; Auto body painting; Building maintenance work; Wood and metal construction; Artwork; Photography; Appliance repair.	House paints; Vehicle paints; Furniture paints; Appliance paints; Artists paints.	DYE AND PAINT SLUDGES AND RESINS (DP)
Plumbers; Electronic circuit production; Iron working; Maintenance work.	Drain cleaners; industrial cleaning agents; Other solvents.	NON-METALLIC INORGANIC LIQUIDS (NM)
Gasoline stations; Farms; Auto repair; Metal working shops; Chemical laboratories; Fertilizer manufacturing; Construction firms; Waste disposal; Auto dismantling.	Gasoline stored in an underground or above ground tank; Agricultural chemicals stored in a tank; Solvent or dipping tanks to clean parts; Holding tanks to hold used solvents, dirty oil.	CONTAMINATED SOIL (SO)
Car washing; Building demolition; Pharmaceutical processing; Chemical toilet supply; Photographic processing.	Asbestos insulation; Pharmaceutical drugs in bulk; Chemical toilet or other sanitation chemicals; Photochemicals; Detergents and soaps.	MISCELLANEOUS WASTES (MW)

**TABLE B-2**  
**CALCULATION OF MULTIPLIER FOR CONVERTING SURVEY TONNAGES**  
**TO ANNUAL ESTIMATES OF HAZARDOUS WASTE**

INDUSTRY GROUP	NUMBER IN COUNTY	SURVEYS MAILED	SURVEYS RETURNED	SURVEYS REPORTING NO WASTE	SURVEY (1) DATA MULTIPLIER
1. Pesticide End Users	665	50	7	0	95.0
2. Pesticide Application Serv.	196	20	10	4	19.6
3. Chemical Manufacturing	22	20	2	1	11.0
4. Wood Processors	4	3	0	0	--
5. Formulators	23	20	9	8	2.6
6. Laundries	188	50	21	4	9.0
7. Other Services	718	125	51	35	14.1
8. Photography	241	40	13	7	18.5
9. Textile Manufacturing	4	4	0	0	--
10. Equipment Repair	343	50	27	20	12.7
11. Vehicle Maintenance	2,581	140	71	29	36.4
12. Construction	1,861	70	14	4	132.9
13. Motor Freight Terminals	16	9	1	1	16.0
14. Metal Manufacturing	274	50	21	10	13.1
15. Furn./Wood Manf./Refin.	165	39	11	3	15.0
16. Printing/Ceramics	221	76	16	7	13.8
17. Clean. Agents/Cosmetic Manf.	31	5	0	0	--
18. Other Manufacturing	50	40	10	7	5.0
19. Paper Industry	5	3	0	0	--
20. Educational/Vocational Shops	212	40	1	1	212.0
21. Analytical/Clinical Labs	235	80	23	8	10.2
22. Wholesale/Retail Sales	191	70	20	16	9.6
<b>TOTALS</b>	<b>8,246</b>	<b>1,004</b>	<b>328(2)</b>	<b>165</b>	

(1) Values = col.1/col.3. Values to Table B-3, col. 1.

(2) 74 large quantity generators were dropped from this data set.

This method yielded a list of over 8,000 firms in the County that may produce hazardous waste. Within each category, a random sample of firms was selected. The average number of firms sampled represented 12% of each category. This percentage was adjusted upwards in the smaller categories to improve statistical reliability, and downwards in the very large categories where reliability could be assured by a sample of less than 12% (see Table B-2).

The survey form was developed to produce reliable information from as many respondents as possible. The survey included a short description of the project, a list of the waste categories being used in this Plan (excluding the "Miscellaneous" category), and a sheet describing many activities and chemicals that result in hazardous waste. The survey itself was only five questions long, and business identification was optional (see Figure B-1, four pages).

On July 16, 1987, 1,000 surveys were mailed to the randomly selected firms. On November 1, 1987, the returns to that date were compiled. Table B-2 indicates the populations, sample sizes, and returns for each business category included in this survey. Total returns (including large quantity generators) exceeded 40%, which is an excellent return for a survey of this type. This response indicates both the success of the straightforward approach, and the willingness of business owners in the County to help such an effort. Any firm that reported hazardous waste generation over 1 ton per month or 10 tons per year was dropped from the data set, since these amounts are applicable to large quantity generators. This process resulted in 74 firms being dropped from this data set.

The waste volumes for each type of waste for all firms in a given category were totalled. These values were multiplied by the amounts indicated in Table B-2, Column 5. This extrapolated the volumes generated by the firms responding to the survey to the volumes that can be expected to come from the whole population of SQGs. These volumes are shown by industry in Table B-3. Table B-4 shows the conversion of these volumes from industry group to the 17 CHMP waste groups. Waste oil is calculated separately, as discussed below.

This method resulted in a total hazardous waste generation estimate of roughly 5,500 tons per year. Over one-half of this tonnage is waste oil.

This information should be used with an understanding of its limitations. First, many small business owners are not aware that the materials they use and dispose of may be classified as hazardous. Second, a mail survey attempting to collect information covering a year's disposal depends on a business owner's records and memory. Third, some relevant SIC numbers may not have been identified. Fourth, all firms in each category doing business in the County may not have been identified. These factors, and a bias towards underreporting (contrary to Assumption 3), may produce a volume estimate that is less than that actually generated by SQGs in the County.

TABLE B-3

CALCULATION OF TOTAL ESTIMATED WASTE FOR SACRAMENTO COUNTY  
USING SMALL QUANTITY GENERATOR SURVEY DATA

INDUSTRY GROUP	TOTAL WASTE REPORTED IN SURVEY (Tons)	MULTIPLIER FOR SURVEY DATA(1)	TOTAL ESTIMATED WASTE (Tons) (2)
1. Pesticide End Users	3.4	95.0	320
2. Pesticide application Serv.	4.6	19.6	90
3. Chemical Manufacturing	6.2	11.0	70
4. Wood Processing	--	--	--
5. Formulators	8.0	2.6	20
6. Laundries	28.6	9.0	260
7. Other Services	22.4	14.1	320
8. Photography	9.4	18.5	170
9. Textile Manufacturing	--	--	--
10. Equipment Repair	6.9	12.7	90
11. Vehicle Maintenance	87.1	36.4	3,170
12. Construction	1.7	132.9	230
13. Motor Freight Terminals	--	16.0	
14. Metal Manufacturing	9.9	13.0	130
15. Furniture/Wood Manf./Refin.	3.0	15.0	40
16. Printing/Ceramics	9.8	13.8	140
17. Cleaning Agents/Cosmetic Manf	--	--	--
18. Other Manufacturing	4.3	5.0	20
19. Paper Industry	--	--	--
20. Educational/Vocational Shops	--	212.0	--
21. Analytical/Clinical Labs	16.4	10.2	170
22. Wholesale/Retail Sales	0.7	9.6	10
<b>TOTAL</b>			<b>5,250</b>

1. Values from Table B-2, column 5.

2. Values equal column 1 x column 2. Applied to Table B-4, column 2.



TABLE B-4

**TOTAL ESTIMATED VOLUMES OF HAZARDOUS WASTE DERIVED FROM  
SMALL QUANTITY GENERATOR SURVEY DATA:  
BY INDUSTRY GROUP AND CHAMP WASTE GROUP**

Industry Group	Tons	Waste Group	Tons
1. Pesticide End Users	320	1. Waste Oil	3,070 (1)
2. Pesticide Appl. Ser.	90	2. Halogenated Solvents	360
3. Chemical Manufacturing	70	3. Non-Halogenated Solvents	310
4. Wood Processing	--	4. Organic Liquids	180
5. Formulators	20	5. Pesticides	250
6. Laundries	260	6. PCBs & Dioxins	10
7. Other Services	320	7. Oily Sludges	250
8. Photography	170	8. Halogenated Organic Sludges & Solids	170
9. Textile Manufacturing	--	9. Non-Halogenated Organic Sludges & Solids	20
10. Equipment Repair	90	10. Dye & Paint Sludges & Solids	40
11. Vehicle Maintenance	3,170	11. Metal-Containing Liquids	80
12. Construction	230	12. Cyanide & Metal Liquids	10
13. Motor Frtg. Terminals	--	13. Non-Metallic Inorganic Liquids	20
14. Metal Manufacturing	130	14. Metal-Containing Sludges	50
15. Furniture & Wood Manufact. & Refinish.	40	15. Non-Metallic Inorganic Sludges	180
16. Printing & Ceramics	140	16. Contaminated Soil	0 (2)
17. Cleaning Agents & Cosmetics Manufact.	--	17. Miscellaneous Wastes	680
18. Other Manufacturing	20		
19. Paper Industry	--		
20. Ed. & Vocational Shops	--		
21. Analy. & Clinical Labs	170		
22. Whsle. & Retail Sales	10		
<b>TOTAL</b>	<b>5,250</b>		<b>5,680</b>

1. The volume of waste oil shown here is used in Table 5-7 and subsequent tables with a volume derived from the calculation described below (Table B-8). The value forwarded is 3,070 tons.
2. No contaminated soil in routine waste stream, see Table I, Appendix A.

TABLE B-5

WASTE TYPE TO WASTE GROUP CONVERSION TABLE  
(PROVIDED BY DOHS, UNLESS OTHERWISE INDICATED)

WASTE TYPE (NON-SURVEY METHOD)	WASTE GROUP (CHWMP)
1. Arsenic Wastes	Metal-Containing Liquids
2. Cyanide Wastes	Cyanide & Metal-Containing Liquids
3. Dry Cleaning Filtration Residues	Non-Halogenated Organic Sludges & Solids
4. Empty Pesticide Containers	Miscellaneous Wastes
5. Heavy Metal Dust	Miscellaneous Wastes
6. Heavy Metal Solutions	Metal-Containing Liquids
7. Heavy Metal Waste Materials	Metal-Containing Sludges
8. Ignitable Paint Wastes	Dyes, Paint Sludges & Resin Wastes
9. Ignitable Wastes	50% of Volume to Waste Oil; 10% each to Halogenated Solvents, Non-Halogenated Solvents, Organic Liquids, Pesticides, & PCB & Dioxins (1)
10. Ink Sludges Containing Chromium or Lead	Metal-Containing Sludges
11. Mercury Wastes	Metal-Containing Liquids
12. Other Reactive Wastes	Non-Metallic Inorganic Liquids
13. Paint Wastes Containing Heavy Metals	Metal-Containing Sludges
14. Pesticide Solutions	Pesticides
15. Photographic Wastes	Miscellaneous Wastes
16. Solvent Still Bottoms	50% to Halogenated Organic Sludges and Solids, and 50% to Non-Halogenated Organic Sludges and Solids (1)
17. Spent Plating Wastes	Metal-Containing Liquids
18. Spent Solvents	50% to Halogenated Solvents, and 50% to Non-Halogenated Solvents (1)
19. Solutions or Sludges Containing Silver	50% to Metal-Containing Liquids, 50% to Metal-Containing Sludges (1)
20. Strong Acids or Alkalies	Non-Metallic Inorganic Liquids
21. Used Lead-Acid Batteries	Miscellaneous Wastes
22. Waste Formaldehyde	Organic Liquids
23. Waste Inks Containing Flammable Solvents or Heavy Metals	Miscellaneous Wastes (1)
24. Waste Pesticides	Pesticides
25. Wastewater Containing Heavy Metals	Metal-Containing Sludges
26. Wastewater Containing Wood Preservatives	PCBs and Dioxins
27. Wastes Containing Ammonia	Non-Metallic Inorganic Liquids (1)
28. Other	Miscellaneous Wastes

1. County determination.

**TABLE B-6**  
**TOTAL ESTIMATED VOLUMES OF HAZARDOUS WASTE DERIVED FROM SMALL QUANTITY**  
**GENERATOR SURVEY DATA: BY NO-SURVEY METHOD WASTE TYPE AND CINMP WASTE GROUP**

Waste Type	Tons	Waste Group	Tons
1. Arsenic Wastes	2	1. Waste Oil	320 (2)
2. Cyanide Wastes	15	2. Halogenated Solvents	860
3. Dry Cleaning Filtration Residues	179	3. Non-Halogenated Solvents	860
4. Empty Pesticide Containers	169	4. Organic Liquids	480
5. Heavy Metal Dust	6	5. Pesticides	550
6. Heavy Metal Solutions	2	6. PCBs & Dioxins	80
7. Heavy Metal Waste Materials	12	7. Oily Sludges	0 (3)
8. Ignitable Paint Wastes	230	8. Halogenated Organic Sludges & Solids	10
9. Ignitable Wastes	640	9. Non-Halogenated Organic Sludges & Solids	190
10. Ink Sludges Containing Chromium or Lead	4	10. Dye & Paint Sludges & Solids	230
11. Mercury Wastes	3	11. Metal-Containing Liquids	110
12. Other Reactive Wastes	47	12. Cyanide & Metal Liquids	10
13. Paint Wastes Containing Heavy Metals	54	13. Non-Metallic Inorganic Liquids	430
14. Pesticide Solutions	441	14. Metal-Containing Sludges	150
15. Photographic Wastes	207	15. Non-Metallic Inorganic Sludges	0 (3)
16. Solvent Still Bottoms	23	16. Contaminated Soil	0 (4)
17. Spent Plating Wastes	43	17. Miscellaneous Wastes	4,840
18. Spent Solvents	1,584		
19. Solutions or Sludges Containing Silver	124		
20. Strong Acids or Alkalies	374		
21. Used Lead-Acid Batteries	4,229		
22. Waste Formaldehyde	417		
23. Waste Inks Containing Flammable Solvents or Heavy Metals	13		
24. Waste Pesticides	40		
25. Wastewater Containing Heavy Metals	17		
26. Wastewater with Wood Preser.	15		
27. Wastes Containing Ammonia	17		
28. Other	213		
<b>TOTAL</b>	<b>9,120 (1)</b>		<b>9,120</b>

1. Total of 9,116 tons is rounded for consistency.
2. The volume of waste oil shown here is used in Table 5-7 and subsequent tables with a volume derived from the calculation described below (Table B-8). The value forwarded is 3,070 tons.
3. Waste group not accounted for in no-survey method. Value from survey method is used in table 5-7 and in subsequent tables.
4. No contaminated soil in routine waste stream, see Table I.

#### NO-SURVEY METHOD

In order to verify the results of the survey, the "no-survey" estimate was also prepared, following the methodology in the Guidelines TRM, Part F. This methodology is very similar to that used for the survey, except that the multipliers used to extrapolate the sample results to the entire population were derived from a field survey conducted in North Hollywood. The steps in this methodology include: reviewing the SIC numbers placed in each industry group (identical to the business categories in the Sacramento County survey), adding or deleting SIC numbers to reflect the county involved, determining the number of firms in each group, multiplying by a tonnage provided, allocating the resulting tonnage to 28 waste types, and collapsing those 28 types into the 17 waste groups used in this Plan.

The SIC numbers in each industry type were examined in detail. A number of changes were necessary to apply this methodology to Sacramento County. For example, the methodology includes "Public Golf Courses" in the "Pesticide End Users" industry group. Private golf courses surely have similar pesticide use, and were also included. It was also noted that the same industry group excluded farms, possibly because none were found in North Hollywood. The County Agricultural Commissioner provided an estimate of the number of farms in the County, which was included in this industry group. Other similar modifications or additions were made to every industry group. Transpositions, double-countings, and other errors in the original workbook were also corrected (see Table B-1).

Once the number of firms in each industry group was determined, simple calculations led to estimates of the total volume of each hazardous waste type produced by SQGs in the County. Table B-5 was provided by DOHS to assist in assigning these volumes to the 17 waste categories used in this Plan. Where this provided insufficient guidance, reasonable assumptions were made as indicated. The results of this conversion are shown in Table B-6.

This method resulted in a total hazardous waste generation estimate of roughly 9,120 tons per year. Over 50% of this tonnage is miscellaneous waste. This value was adjusted upwards for the final SQG estimate (see Section 5, Table 5-7).

This information should be used with an understanding of its limitations. First, the high percentage of miscellaneous waste may indicate that individuals conducting the field surveys were unfamiliar with some specific industry operations, and could not classify the waste produced. Second, a single-pass field survey attempting to collect information covering a year's disposal depends on a business owner's records and memory. Third, some relevant SIC numbers may not have been identified. Fourth, all firms in each category doing business in the County may not have been identified. Finally, this 1984 study was funded by the U.S. EPA, and primarily used federal definitions. Although hazardous wastes regulated in California were also considered, waste oil was not yet a hazardous waste in this state (and still isn't under federal law). Therefore, waste oil volumes are undoubtedly underestimated by this method.

**TABLE B-7**  
**DETERMINATION OF USED OIL VOLUMES**  
**GENERATED BY SELECTED SMALL QUANTITY GENERATORS**

<u>Business Type</u>	<u>Used Oil Factor (Gallons/Year/Firm)</u>	<u>X</u>	<u>Number of Firms</u>	<u>=</u>	<u>Yearly Volume (Gallons/Year)</u>
<u><b>Automotive Related</b></u>					
1. Recycling Centers	3,222	x	3		9,666
2. Service Stations	2,998	x	648		1,942,704
3. Repair Shops	3,032	x	443		1,343,176
4. Auto Dealers	2,962*	x			
5. Auto Centers	3,010*	x			
6. Fleet Shops	3,160	x	25		79,000
7. Airports	2,800	x	4		11,200
				<b>AUTOMOTIVE SUBTOTAL</b>	<b>3,385,746</b>
*Included in Repair Shops					
				<b>(EQUIVALENT IN TONS</b>	<b>14,220)</b>
<u><b>Industrial Related</b></u>					
1. Wood Products	2,676	x	4		10,704
2. Furniture & Fixture	2,365	x	165		390,225
3. Pulp/Paper	*****	x	--		--
4. Newspapers	2,779	x	15		41,685
5. Chemicals	2,799	x	22		61,578
6. Rubber/Plastic	2,407	x	21		50,547
7. Leather	*****	x	--		--
8. Glass	*****	x	--		--
9. Primary Metals	2,969	x	4		11,876
10. Fabricated Metals	2,691	x	70		188,370
11. Machinery	2,592	x	66		171,072
12. Electronics	2,655	x	41		108,855
13. Motor Vehicles	2,501	x	15		37,515
14. Instruments	2,389	x	19		45,391
15. Misc. Manufacturers	2,522	x	20		50,440
16. Electric Utilities	5,319	x	2		10,638
17. Comm. Marine Terminals	*****	x	--		--
18. Railroad Yards	5,319	x	1		5,319
				<b>INDUSTRIAL SUBTOTAL</b>	<b>1,184,215</b>
***** Data Incomplete					
				<b>(EQUIVALENT IN TONS</b>	<b>4,974)</b>
<b>USED OIL TOTAL</b>					
				<b>TOTAL GAL</b>	<b>4,569,961</b>
				<b>EQUIVALENT IN TONS</b>	<b>19,194</b>

### WASTE OIL

Two additional calculations help to estimate annual waste oil generation. The first employs a methodology provided by DOHS (see Table B-7). The number of firms in certain business categories were identified, using the survey and no-survey information. These industries include major industries that are not small quantity generators. Multiplication factors representing the oil generated by a typical firm were employed, and the category totals were added. This method produced an annual estimate of 4.6 million gallons, or 19,190 tons. Three-fourths of this volume (3.4 million gallons) comes from automotive related uses.

Table B-8, below, summarizes total County waste oil generation and provides a small quantity generator estimate by subtracting waste oil manifested by major industries.

<b>SACRAMENTO COUNTY WASTE OIL VOLUMES</b>	
<u>Sector</u>	<u>Volume (Tons/Year)</u>
Automotive Related	14,220
Industrial Related	4,970
Total	<u>19,190</u>
Manifested Volume -	<u>16,120</u>
Volume Remaining from SQG's	3,070

A second calculation provided a rough estimate for the volume of waste oil coming from automobiles. Assuming the County has 500,000 registered automobiles, each holding five quarts (1.25 gallons) of oil, and receiving four oil changes per year, 2.5 million gallons of waste oil would result.

The two estimates for automotive waste oil are close, given the methods used to derive them. For the sake of consistency with the survey, the total waste oil volume in this Plan is estimated by the DOHS method.

### CONCLUSION

The survey and no-survey method results are merged in Table 5-7 in Section 5. The waste group volume estimates are averaged except for oil (calculated as described above) and oily sludges and non-metallic inorganic sludges, where survey data was used to fill gaps in the no-survey information.







## APPENDIX C

### METHODOLOGY FOR TRANSPORTATION ACCIDENT RISK CALCULATION

#### INTRODUCTION

To assess the risks involved in transporting hazardous waste in Sacramento County, accident rates were calculated for routes that trucks might use. The procedure used involved several steps in which accident and traffic data was collected and analyzed. Data for the year of 1986 was selected as a sample for study. Accident rates were only calculated for streets in the unincorporated areas of the County and those in the City of Sacramento. Lack of necessary data prevented calculations for streets in the cities of Folsom, Galt, and Isleton.

#### ACCIDENT RATE CALCULATION PROCEDURE

The accident rate calculation procedure involved several steps. These steps are:

1. Select Routes
2. Choose Segments and Determine Length
3. Gather Accident Data
4. Gather Traffic Volume Data
5. Calculate Accident Rates

1. Select Routes. Major thoroughfares and routes linking them to industrial and commercial areas were identified and selected for accident rate calculation. Those in the unincorporated areas were identified using the Major Streets and Highways Plan Map, produced by the Sacramento County Planning Department, and the Traffic Volume Flow Map of the Sacramento County Highway and Bridges Division of the Public Works Department. Routes in the City of Sacramento were identified using the Transportation Section of the DEIR for the City of Sacramento General Plan 1987 Update. All strictly residential streets were eliminated.

2. Choose Segments and Determine Length. Street segments were selected making divisions where significant changes in traffic volume flow occurred. Divisions were also made at major intersections. Data on traffic volume flows along County streets was obtained from the 1986 Traffic Volume Flow Map, provided by the Sacramento County Highway and Bridges Division of the Public Works Department. Data on streets in the City of Sacramento was obtained from the Transportation Section of the DEIR for the City of Sacramento General Plan 1987 Update. Once segments were selected their lengths in miles were determined.

3. **Gather Accident Data.** Data on streets in the unincorporated area of Sacramento County was collected from mapped information provided by the Sacramento County Highway and Bridges Division of the Public Works Department. It showed the location of all reported accidents which occurred in 1986. Similar data was collected for streets within the City of Sacramento from accident records provided by the Traffic Engineering Division of the City of Sacramento Public Works Department.
4. **Gather Traffic Volume Data.** Traffic volume flows were determined for streets in the unincorporated areas using the 1986 Traffic Volume Flow Map. Volume counts indicated on the map represented the number of vehicles passing a specific point in both directions during a 24-hour period. Some of the data shown on the current map was collected in 1983, 1984, or 1985. To update less recent counts to 1986, estimated percentage increases in volume flows were calculated from annual volume flow growth rates determined by the Sacramento County Highway and Bridges Division of the Public Works Department. These growth rates and calculated compounded growth rates between each year and 1986 are shown below.

TABLE C-1

	<u>Annual Growth Rate</u>	<u>Growth Rate to 1986</u>
1983	4%	12%
1984	6%	8%
1985	2%	2%

Volume flow counts for streets within the City of Sacramento were collected from the Transportation Section of the DEIR for the City of Sacramento 1987 General Plan Update.

Traffic flows on individual segments were determined by selecting the appropriate volume counts. If more than one count value was indicated within segment divisions, the mean value was calculated. This was necessary where minor changes in volume flow occurred. Volume flow counts for each intersection were determined by adding all count values for road segments meeting at the intersection and dividing by two.

5. **Calculate Accident Rates.** Accident rates were calculated for intersections and segments in the unincorporated areas and in the City of Sacramento using the formulas indicated below. Calculations for many of the intersections in the city had been previously determined by the Traffic Engineering Division of the City of Sacramento Public Works Department.

Segment  
accident rate = 
$$\frac{\# \text{of accidents/year}}{\text{length(in miles)}/1,000,000 \times \text{vehicles/day} \times 365 \text{ days/year}}$$
  
= accidents per million vehicle miles driven

Intersection  
accident rate = 
$$\frac{\# \text{ of accident/year}}{1000's \text{ vehicles/day} \times 365 \text{ days/year}}$$
  
= accidents per 1000 vehicles through intersection

### ANALYSIS

The first step in analyzing the data was to assign each segment and intersection to the "high", "medium", or "low" accident rate categories. Subsequently, the segments and intersections are categorized and compiled onto a base map of Sacramento County.

State and Interstate highway accident rate data were analyzed by SACOG in a fashion similar to that described above. Segment categorization is similar, using standard deviation and the mean (Table C-2).

The map provides only a preliminary indication of problem routes. Locations with above normal accident rates are not necessarily excluded from routing since road improvements are possible, and since a detailed analysis may indicate that the accident rate for truck traffic is lower than the overall rate. Furthermore, some areas where truck accident rates are high may not have been identified through this process.

### DATA

Accident rate data were available for the major routes in Sacramento City and County, excluding the state and interstate highway systems. Data for the cities of Galt, Isleton, and Folsom were not available or were insufficient for this analysis. A total of 629 segments and 424 intersections were analyzed, not including an unknown number of highway segments analyzed by SACOG.

### ACCIDENT RATE CATEGORIZATION

The results of the accident rate calculations are summarized in separate frequency curves for segments and for intersections (Figures C-1 and C-2). Two curves are necessary, since the calculation formulae were different, and the absolute rates are not comparable. In both cases, the curves are skewed to the lower values, indicating that relatively few segments or intersections have major traffic problems. This is, in part, to the credit of the City and County traffic engineers.

The task of assigning a category, "low", "medium", or "high", to each rate was accomplished by dividing the frequency curves using standard deviations. This method introduced a degree of consistency between the curves, even though neither curve has a normal distribution. Rates equal to or greater than two standard deviations above the mean were assigned a "high" category. The "medium" rates were between one and two standard deviations above the mean. Those less than one standard deviation above the mean were categorized as "low" accident rates (Table C-2). The high and medium rates are termed "above normal". A similar procedure was used for the State and Interstate highways. In all three analyses 10 to 14 percent of the samples were categorized as "above normal".

TABLE C-2

MEAN AND STANDARD DEVIATION VALUES FOR  
SEGMENTS AND INTERSECTIONS

	<u>Average</u>	<u>+ 1 Standard Deviation</u>	<u>+ 2 Standard Deviations</u>
<b>STREETS</b>			
Segments	-- 2.58 -----LOW-----	4.78 --- MEDIUM --	7.02 --HIGH--
Intersections	-- 0.61 -----LOW-----	1.16 --- MEDIUM --	1.72 --HIGH--
<b>STATE AND INTERSTATE HIGHWAYS (SACOG study)</b>			
Segments	-- 1.76 -----LOW-----	3.62 --- MEDIUM --	5.50 --HIGH--

Roadway segments and intersections with "high" and "medium" accident rates are shown on Figure 12-1. Those with "low" rates are not plotted; and they are not differentiated from segments and intersections where data were unavailable. The SACOG highway study resulted in only one "above normal" segment, running from Broadway to the American River Bridge along route 160.

Figure C-1

## ACCIDENT RATES FOR SEGMENTS IN SACRAMENTO CITY AND COUNTY

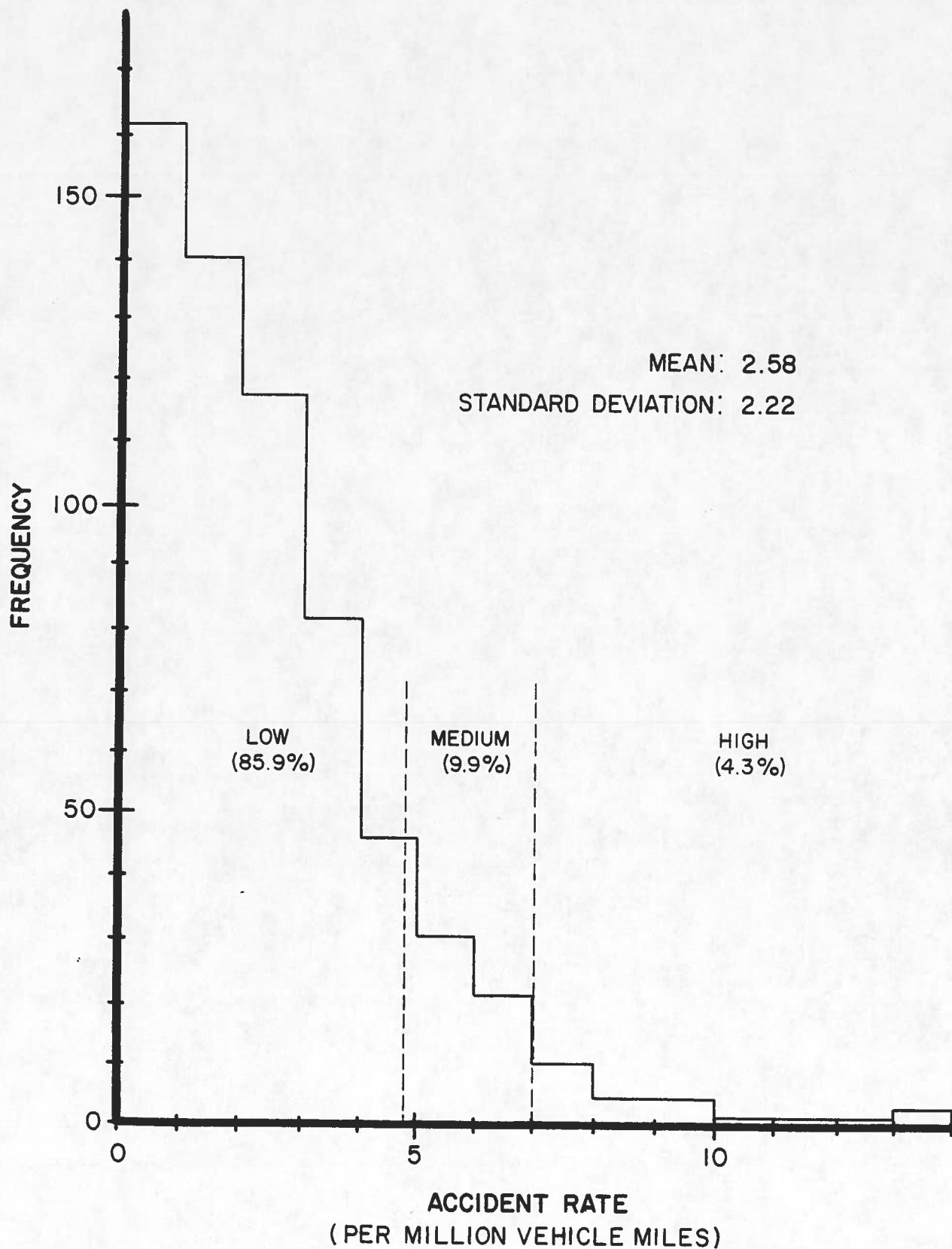


Figure C-2

## ACCIDENT RATES FOR INTERSECTIONS IN SACRAMENTO CITY AND COUNTY

