Attachement 2

SUNNYVALE MATERIALS RECOVERY AND TRANSFER STATION (SMaRT)

ENVIRONMENTAL IMPACT REPORT

DRAFT

June 18, 1990

SCH# 89022812

Prepared for
City of Sunnyvale
Department of Public Works
Sunnyvale, California

Prepared by
Thomas Reid Associates
Palo Alto, California

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I. SUMMARY

The cities of Sunnyvale, Palo Alto, and Mountain View, are examining a transfer station/resource recovery facility as part of a solution to near and long-term waste disposal needs. The Sunnyvale Materials Recovery and Transfer ("SMaRT") station would be located on city-owned land adjacent to the Water Pollution Control Plant, the Sunnyvale landfill, and San Francisco Bay, in an area formerly used by Raisch Paving Company to recycle asphalt and concrete.

The SMaRT station would include facilities for accepting clean loads of recoverable materials (eg. curbside, buyback, yard waste), as well as a processing area for sorting recoverables out of mixed refuse. Refuse which cannot be recycled would be compacted into bales, loaded into enclosed transfer trailers, and shipped to the Kirby Canyon landfill. The SMaRT station would be operated by Waste Management of North America. Waste Management currently operates the Kirby Canyon landfill.

The cities issued a Request for Proposals for long-term landfill capacity. Based on the responses received, the cities negotiated with Waste Management for 30-40 years of landfill capacity at Kirby Canyon. In order to accommodate the anticipated growth in the service area waste stream over 40 years the SMaRT station would be designed to handle a maximum of about 2200 tons/day of refuse, with recovery. Initially the service area would require only 61 percent of station capacity; it would require 94% of full capacity after 40 years. It is proposed that additional capacity be used to serve an extended service area of limited wastes from Cupertino, Los Altos, Los Altos Hills, Santa Clara, and Stanford. Even with this additional waste stream the SMaRT station would not operate at capacity until about 2020, based on a waste stream growth rate of 1.1 percent.

Conformance with Plans, Ordinances, and Policies. The SMaRT station would be in conformance with all Federal, State, and local plans and policies. Specific requirements on aspects of SMaRT station operation may change due to Assembly Bill 939, effective 1/1/90, and necessary "clean-up" legislation which is in process. These aspects would be required by and enforced by the Local Enforcement Agency for the project. Changes would be required in the Kirby Canyon Landfill permits to allow nighttime operating hours and an increase in the amount of refuse that can be accepted daily. The waste stream from the SMaRT station would not require an expansion of the Kirby Canyon landfill.

Significant Environmental Effects Which Cannot be Mitigated to Non-significance.

Air Quality. Project construction would result in short-term air quality impacts from dust during excavation and filling, engine exhaust from heavy equipment, and the potential release of hazardous landfill gas during excavation of the landfill. An Air Solid Waste Assessment Test performed on the Sunnyvale Landfill indicated that concentrations of volatile organic compounds in the landfill gas collected from the gas recovery system and from ambient air samples exceeded regulatory detection limits. This gas would be released to the atmosphere when the intermediate cover on the landfill was removed and refuse excavated.

Air quality would not be significantly affected by project-generated traffic or the additional amount of activity at Kirby Canyon Landfill.

Visual. The project would not have a significant visual impact on current land uses to the west, south or east of the project site. The SMaRT station would have an unavoidable impact on recreationalists using levees to the north of the project site. Because of the presence of the landfill, the Raisch operation, and the Water Pollution Control Plant, the project site and surrounding area is highly disturbed. Development of the SMaRT station is not considered to be an introduction of a new impact and is allowed by existing zoning imposed by the City of Sunnyvale.

Acceptance of refuse from the SMaRT station at Kirby Canyon landfill would require nighttime operations and night lighting. Flood lights at the working face may have negative visual impacts, but with the implementation of mitigation measures such as orientating the lights away from developed areas, working behind a berm and turning the flood lights off from 5 pm to 12 am, the impact would be mitigated to non-significant.

Environmental Effects Which are Non-Significant or Can be Mitigated to Non-significance.

Traffic. At all intersections studied the service levels would remain virtually identical whether or not the project is built. Although the volume/capacity ratios worsen at intersections near the project site, these intersections have sufficient excess capacity so that service levels would remain at an excellent A or B level. Roadway improvements are recommended on Caribbean Drive at Borregas Avenue to accommodate the project. No additional impacts are anticipated at the Kirby Canyon landfill.

Public Services. The SMaRT station would require electrical service from Pacific Gas and Electric, water service from the City of Sunnyvale and sewage treatment service from the City's Water Pollution Control Plant. All public infrastructure is in place except that Pacific Gas and Electric would have to extend and reinforce an existing underground line under Caribbean Drive. Work on the line would cause short-term traffic congestion along Caribbean Drive. Pretreatment of the station's washdown water to separate solids, oil, and grease could occur prior to discharging the water to the sewer system; additional pretreatment may be implemented if required by the Water Pollution Control Plant.

The SMaRT station project would not require an expansion of public services to Kirby Canyon landfill.

Energy Use and Recycling. The energy used to collect solid waste in the service area cities would remain the same since this aspect of solid waste handling is not affected by the project. Use of the SMaRT station would be more energy efficient than direct haul to a regional landfill, it would allow for about 25% resource recovery, and it would compact the remaining waste so that the least number of transfer truck trips to Kirby Canyon are required. With the proposed project, vehicle miles traveled by transfer trucks from the transfer station to Kirby Canyon would be 3,780 vehicle miles/day, while direct haul by collector trucks to Kirby Canyon would require 16,470 vehicle miles/day. Increased rates of recycling would translate to higher fuel use if transfer vehicles used to take recovered materials to market carry less volume than transfer trucks to the landfill, and more trips are necessary.

The SMaRT station would use approximately 1.6 megawatts of electrical power. While more energy may be required to process the solid waste than at present, the energy use would likely be offset by an increase in the amount of the waste stream that is recycled.

Safety and Seismic Safety. The project would require excavation of in-place refuse and artificial fill. Engineered fill would be imported to raise the site to +4 or +9 feet above NGVD (National Geodetic Vertical Data, or mean high water), depending on the foundation type selected. The engineered earthfill, along with the heavy slab floor building, would create an additional load on the foundation soils which would cause compaction and differential subsidence of soils. Construction processes and foundation design features can reduce these impacts to insignificance.

Possible instability of the earthfill and side slope due to liquefaction during a Maximum Probable Earthquake is considered to be very low, although densification and the resulting ground subsidence could cause structural distress.

Construction of the SMaRT station would require the excavation of 20,000 cubic yards of in-place refuse and the relocation of portions of the landfill gas collection system along the east and south sides of the SMaRT station. Hazards from landfill gas emissions during construction would be reduced by limiting the amount of area excavated at one time, using equipment fitted with spark arresters and providing worker safety devices as may be required by the Occupational Safety and Health Administration.

After construction, methane gas migration to the SMaRT station may present a hazard which could be controlled by gas collection and removal systems around the building and gas detectors in the buildings and utility boxes.

Project construction could require disposal of groundwater from construction dewatering. Groundwater sampling below the site has detected some exceedance of Maximum Contaminant Levels established by the Department of Health Services, but as groundwater below the site is not used for drinking, these standards are not enforceable. The water from dewatering would be tested and disposed of in a manner approved by the Regional Water Quality Control Board. This could include discharge to the storm drainage channel, reinjection into wells, use as dust control, or shipment to a treatment plant.

Due to high metal concentrations in a soil sample taken from the site, the onsite soils require additional testing prior to excavation to determine if they are hazardous according to the Department of Health Services and Title 22, Section 66700. If the soils are determined hazardous then, for disposal purposes, they would be treated as any other hazardous waste, and could not be disposed of in the Sunnyvale or Kirby Canyon Landfill. If non-hazardous, the disposal of these soils would be regulated by the Regional Water Quality Control Board.

To reduce public health risks from a major hazardous gas leak at the WPCP, the SMaRT station would have to develop a notification and evacuation plan which would avoid using Borregas Avenue. Under California Administrative Code Title 23, the SMaRT station would also have to develop a Hazardous Waste Exclusion Program which dictates the procedures for handling toxics that may arrive in the waste stream.

In 1988 it was discovered that leachate from Kirby Canyon landfill was migrating downgradient from the active landfill area into areas of the site which will be filled in the future. Remedial leachate control and monitoring measures have been required by the Regional Water Quality Control Board. Any additional leachate produced by the increased rate of fill as a result of serving the SMaRT station would be collected and controlled by these remedial measures.

Noise. Noise generated by the proposed project would come from refuse handling equipment inside the facility, truck traffic traveling around the site, and project related traffic off site. Because all refuse handling and processing equipment would be mostly enclosed, activity inside the station would not create significant impacts. Engine noise from trucks on site would not exceed noise standards at the property boundary or those established for parklands. The station would contribute to the cumulative noise impact of the Water Pollution Control Plant, the asphalt/concrete recycling operation, and the Sunnyvale landfill. Off-site project related traffic would not have a significant impact along haul routes or near the station. The largest predicted noise increase from off-site project related traffic would only be 0.5 dB(A) at the intersection of Borregas Avenue and Caribbean Drive.

Nighttime operations at Kirby Canyon landfill would introduce noise into an environment that is currently only affected by nighttime traffic noise on US 101. Because landfill equipment noise would be masked by freeway traffic noise, and there are no sensitive noise receptors in the vicinity of the landfill, no significant noise impacts are expected from SMaRT station use of the Kirby Canyon landfill.

Wildlife. The proposed site for the SMaRT station has been highly disturbed by the landfill and the concrete/asphalt recycling operation and does not support wildlife. However, the site is bordered by wetland, the sludge ponds, and salt evaporations ponds which do support wildlife and may provide habitat for endangered species. SMaRT station operations may indirectly affect the quality of habitat in these adjacent areas. Indirect effects could include disruption caused by nighttime operations, increased stormwater runoff to the bay, and risk of upset. All of these impacts are considered to be reduced to non-significance with planned operations and recommended mitigation measures.

The SMaRT station would require nighttime operations at the Kirby Canyon Landfill which may affect the quality of local habitat by causing nesting or foraging animals to avoid the landfill area. The refuse from the SMaRT station would not require a change in the permitted footprint of the landfill.

Nuisance. The SMaRT station has the potential to create nuisance problems such as the attraction of vectors, the generation of odor, dust and excessive noise, and impact surrounding land uses with night lighting. The station would be constructed and operated in conformance with State, regional and local laws which are designed to prevent public nuisance problems from arising. Through operational controls such as cleaning the station daily, keeping all refuse related operations in the enclosed building, transferring the waste from the station to the landfill every 24 hours, implementing litter control programs and installing directional night lighting, the station would be able to control potential nuisance problems. The SMaRT station would eventually replace the Sunnyvale landfill operation. Landfill-related nuisance would cease when the landfill is closed.

Acceptance of refuse from the SMaRT station would require the nighttime operation of Kirby Canyon landfill. Nighttime operations require lighting which may create a nuisance and aesthetic impact for motorists on Highway 101 and residents across the valley. The mitigation measures required would reduce visual and nuisance impacts to non-significant.

SUMMARY OF IMPACTS AND MITIGATION

ADVERSE IMPACT	SUGGESTED MITIGATION EFFECT/EFFECTIVENESS	IMPLEMENTATION AND MONITORING
TRAFFIC:		
Left turn into project site from Caribbean Drive may eventually exceed capacity and cause traffic congestion. (Significant impact.)	A 40-foot extension of the left-turn pocket on Caribbean Drive may be necessary to accommodate additional project traffic. This measure would minimize interference with traffic along Caribbean Drive. (Non-significant with mitigation.)	Project traffic should be monitored by the City of Sunnyvale and an extension added if needed.
On-site traffic control would be required to ensure safety. (Significant impact.)	A four-way stop should be place at the first intersection on the site. Appropriate "One-way" and "Do not enter" signs should be installed. Signs will clarify and support the one-way counter-clockwise circulation pattern around the site. (Non-significant with mitigation.)	Signing should be implemented before transfer station operations begin, and could be verified through building inspection by the City of Sunnyvale.
The installation of new underground conduit and cable on Caribbean Drive and the WPCP access road would temporarily disrupt traffic. (Non-significant impact.)	A minimum of one lane in each direction should remain open during construction hours. Although traffic would be temporarily congested, no further impact on traffic would occur after the roads are repaved.	PG&E should phase the installation of conduit and cable from the onset of construction to allow for at least one open lane in each direction at all times.
Cumulative increase in vehicles using surrounding roads and highways. (Non-significant impact.)	Roadway improvements at Mathilda intersections near the Route 237 ramps will be necessary with or without proposed project. Non-project related traffic increases will reduce the existing LOS E intersections to LOS F by 2010.	Responsibility of the City of Sunnyvale.
PUBLIC SERVICES:		
Fire hazard at SMaRT station. (Significant impact.)	Installation of fire hydrants at 400' intervals, full sprinklering, and the provision of sufficient water flow capacity for fire protection would be required. This would provide adequate water for fire suppression on site. (Non-significant with mitigation.)	Implementation through project design. The Sunnyvale Public Safety Department would be responsible for ensuring compliance with fire protection standards.

ADVERSE IMPACT	SUGGESTED MITIGATION EFFECT/EFFECTIVENESS	IMPLEMENTATION AND MONITORING
Washdown water may exceed WPCP standards. (Significant impact.)	The Sunnyvale Water Pollution Control Plant has sufficient capacity for the project. Pretreatment of washdown water may be required to eliminate oil, grease and solids. (Non-significant with mitigation.)	The City of Sunnyvale would determine pretreatment requirements based on the character of the flow stream.
Peak consumption of approximately 22,000 gallons of water per day. (Non-significant impact.)	Sufficient potable water capacity is available for the project, although use of reclaimed water is desirable to reduce potable water use.	Use of reclaimed tertiary-treated water is proposed for irrigation and washdown in project design. Monitoring by WPCP and LEA.
SAFETY AND SEISMIC SAFETY: Structural damage caused by differential subsidence of earthfill. (Significant impact.)	A 6-month slack time in the construction schedule may be recommended for soil consolidation. Spread footing foundations with a depth at least two times the footing width, or pile foundations are recommended. Construction and engineering design recommendations would prevent structural damage. (Non-significant with mitigation.)	Implementation by Applicant according to Engineering recommendations.
Compaction and ground subsidence resulting from liquefaction in an MPE event. (Significant impact.)	Impacts to structures can be minimized through engineering design. (Non-significant with mitigation.)	Implementation by Applicant as recommended by Engineer.
Sunnyvale landfill slope instability during earthquake. (Significant impact.)	Engineer excavated and re-capped landfill slopes to be seismically stable. (Non-significant with mitigation.)	Applicant must engineer landfill slopes affected by the project to be seismically stable. Monitoring would be done by the LEA.
Worker safety hazard created by landfill gas release during excavation. (Significant impact.)	Limit excavation to small area at a time to reduce amount of landfill gas released; use equipment fitted with spark arresters and restrict the use of incendiary devices on site; educate construction workers as to the potential hazards; the Occupational Safety and Health Administration (OSHA) may require the use of worker safety devices. (Non-significant with mitigation.)	Implementation by construction company; monitoring by LEA, Sunnyvale Public Works or Sunnyvale Public Safety Department.

ADVERSE IMPACT	SUGGESTED MITIGATION EFFECT/EFFECTIVENESS	IMPLEMENTATION AND MONITORING
Fire hazard created by methane gas migration to buildings. (Significant impact.)	Revise landfill gas collection system as necessary in excavation areas to control landfill gas; insure good building ventilation; install gas detectors. (Non-significant with mitigation.)	Implementation through station design. Landfill gas collection monitored by Sunnyvale Public Works and LEA; migration into station monitored by operator.
Potential flooding if levees north of the site are breached. (Significant impact.)	Regular maintenance of the levees would reduce the risk of flooding. (Non-significant with mitigation.)	The City of Sunnyvale is responsible for ensuring regular maintenance of the levees.
Handling of soils which contain toxics. (Potentially significant impact.)	File Self-classification Form with DHS; follow State and Federal regulations to prevent significant impact.	City of Sunnyvale Public Works will oversee filing and implementation of Federal and State requirements.
Hazards to SMaRT station persons from accidental spill or leak of hazardous gasses from WPCP. (Significant impact.)	SMaRT station should be notified of any spill or leak. An evacuation plan should be completed to include an escape route other than Borregas Ave. (Non-significant with mitigation.)	The City of Sunnyvale Public Safety Department will require an evacuation plan. This should be coordinated with the WPCP.
Toxics in wastestream going to landfill. (Significant impact.)	A Hazardous Waste Exclusion Program should be developed for the station. (Non-significant with mitigation.)	Under California Administrative Code Title 23 the station operator must have an HWEP prior to opening. The HWEP would be approved by the LEA.
Storage of toxics at the SMaRT station. (Significant impact.)	A storage area and allowable storage time should be established under the HWEP prior to opening. (Non-significant with mitigation.)	The City of Sunnyvale and LEA should determine an allowable storage time.
Increase in the production of landfill leachate at Kirby Canyon due to increased rate of fill. (Significant impact.)	Necessary monitoring, leachate handling methods, and remedial measures are in place. (Non-significant with mitigation.)	Implementation and monitoring are done by WMNA, the landfill operator. Review of monitoring data and requirements for remediation is the responsibility of the Regional Water Quality Control Board.
NOISE: Noise from transfer station and operations. (Non-significant impact.)	Trucks and equipment should be well-maintained to reduce noise from mechanical components. All processing of waste should occur inside the station.	Maintenance of station equipment and transfer trucks would be the responsibility of the station operator. Maintenance of other vehicles is uncertain. Project design calls for all processing to be enclosed.

ADVERSE IMPACT	SUGGESTED MITIGATION EFFECT/EFFECTIVENESS	IMPLEMENTATION AND MONITORING
Project-generated traffic noise. (Significant impact.)	All streets near the project site should be kept in good repair with a smooth surface to reduce vehicle noise.	Maintenance of on-site roads would be the responsibility of the station operator. City streets are maintained by the City of Sunnyvale, and highways are the responsibility of Caltrans.
AIR QUALITY:		
Dust emissions from construction. (Significant impact.)	Regular watering of unpaved roads, graded areas, and stockpiles would reduce dust, but short-term, localized impacts cannot be mitigated to non-significant. (Significant unavoidable short-term impact.)	Dust control is the responsibility of the project applicant and construction firm. Monitoring could be done by Sunnyvale Public Works Department to insure controls are used.
Dust emissions from project operations and traffic. (Significant impact.)	Surfaces to experience heavy traffic should be paved or surfaced with gravel. Dust on unpaved surfaces should be controlled by watering or chemical dust suppressants. (Non-significant with mitigation.)	Implementation by station operator; monitoring by LEA or Sunnyvale Public Works Department.
Landfill gas released during excavation. (Non-significant impact.)	Limit area of excavation to reduce amount of gas released at one time.	Implementation by project engineer/construction company. Monitoring by LEA, Sunnyvale Public Works.
Additional dust emissions at Kirby Canyon landfill. (Non-significant impact.)	Watering and chemical suppressants are currently used to control dust at Kirby Canyon.	Implementation by landfill operator. Monitoring by LEA.
BIOLOGY:		
Disruption of wildlife activity from nighttime noise and light at the station and at Kirby Canyon landfill. (Locally significant impact.)	Noise mitigations are discussed elsewhere. Night lighting at the station and at Kirby Canyon should be designed so that it does not intrude into adjacent open space areas. (Non-significant with mitigation.)	Implemented through lighting design. Monitored through building inspection or possibly LEA.
Accidental disruption of wetland habitats adjacent to SMaRT station site during construction. (Significant impact.)	Fence the north side of the construction site to prevent accidental intrusion into adjacent habitat.	Implemented by Applicant and project engineer. Possibly monitored by Sunnyvale Department of Public Works.

ADVERSE IMPACT	SUGGESTED MITIGATION EFFECT/EFFECTIVENESS	IMPLEMENTATION AND MONITORING
NUISANCE:		
Vectors such as flies, rodents and yellow jackets attracted to refuse. (Significant impact.)	The LEA would require design, operational, and maintenance procedures in compliance with State Minimum Standards for Solid Waste Handling and Disposal to prevent vector impacts. (Non-significant with mitigation.)	The Santa Clara Environmental Health Services Department is responsible for enforcing solid waste handling regulations, and for inspecting the station at least once each month.
Litter from private vehicles with improperly covered loads. (Significant impact.)	Enforcement of California Vehicle Codes addressing the clean transport of materials would deter improper containment of loads. The station could assess a "litter pick-up" fee for improperly covered loads. (Non-significant with mitigation.)	The local police and the California Highway Patrol are responsible for enforcing California Vehicle Codes addressing safe and clean transportation of materials. The station operator would implement the litter pick-up fee.
Odors from the decay of organic materials. (Significant impact.)	Mitigation measures include regular cleaning and deodorizing at the station, processing odòrous materials first, and minimizing waste residence time in the station. These measure would reduce the odor-producing potential of waste. (Non-significant with mitigation.)	The Waste Management Board has established a maximum residence time of 48 hours for waste held in transfer stations. Sunnyvale may require this to be 24 hours. Monitoring by Department of Public Works and LEA.
Dust emissions from station operations. (Significant impact.)	Dust should be controlled by equipment enclosures, exhaust ducting, and dust removal equipment. Dust masks should be used in work areas with high emissions. (Non-significant with mitigation.)	Implemented through project design; monitored by LEA. The station safety officer should designate work areas in which dust masks are needed.
Fire hazard created by combustibles within refuse. (Significant impact.)	Mitigation measures include checking loads for combustibles, controlling litter and debris, properly maintaining equipment. Water lines and flow capacity should meet fire protection requirements. An emergency response plan should be implemented. (Non-significant with mitigation.)	The City of Sunnyvale Public Safety Department is responsible for enforcing fire protection requirements. The City of Sunnyvale is responsible for approving an emergency response plan.
Light and glare created by night operations at Kirby Canyon landfill. (Significant impact.)	Light should be directed eastward toward the working face of the landfill. A berm at the working face would reduce glare in offsite, downhill areas. Lights should be turned off between the hours of 5pm to 12am. (Non-significant with mitigation.)	Implementation by WMNA. Enforcement by City of San Jose or LEA.

ADVERSE IMPACT	SUGGESTED MITIGATION EFFECT/EFFECTIVENESS	IMPLEMENTATION AND MONITORING
Litter escaping from collector and transfer trucks. (Significant impact.)	Trucks should always be closed or covered to provide effective litter control. (Non-significant with mitigation.)	Implementation by franchises and station operator.
Night light and glare in vicinity of the SMaRT station. (Locally significant impact.)	Cast light downward in order to avoid impacts to surrounding land uses. (Non-significant with mitigation.)	Implemented through project design and monitored through building permit.
VISUAL: Visual impacts to recreationalists at levees north of site and future Bayland Park users from excavation and station operation. (Significant impact.)	A screening fence is proposed along the northern boundary of the site to help block views of ground level activities and traffic, however the impacts would remain significant. (Significant unavoidable impact.)	Implementation through project design. One-time monitoring through building permit.
Light and glare created by night operations at Kirby Canyon landfill. (Significant impact.)	Light should be directed eastward toward the working face of the landfill. A berm at the working face would reduce glare in offsite, downhill areas. Lights should be turned off between the hours of 5pm to 12am. (Non-significant with mitigation.)	Implementation by WMNA. Enforcement by City of San Jose or LEA.

II. PROJECT DESCRIPTION

A. PROJECT OBJECTIVE

The cities of Sunnyvale, Palo Alto, and Mountain View are facing imminent closure of their landfills. Consequently these communities are examining a transfer station/resource recovery facility as part of a solution to near and long term solid waste disposal needs. The Sunnyvale Materials Recovery and Transfer (SMaRT) Station would be located next to the Sunnyvale Landfill, and non-processible refuse would be transfered to the Kirby Canyon Landfill in southern San Jose.

The Cities have negotiated with Waste Management of North America for 30-40 years of landfill capacity at the Kirby Canyon Landfill. In order to accommodate the anticipated growth in the Cities' waste stream over 40 years the SMaRT station would be designed to handle 2200 tons/day of refuse. Initially these Cities, called the "primary service area", would require only 61 percent of station capacity; this would gradually increase to 94% of full capacity after 40 years. It is proposed that the additional available capacity be used to serve an "extended service area" of limited wastes from Stanford, Cupertino, Los Altos, Los Altos Hills, and Santa Clara. Even with this additional waste stream the SMaRT station would not operate at capacity until about the year 2021, based on a waste stream growth rate of 1.1 percent.

The SMaRT station would provide for sorting recyclables out of incoming refuse, processing of loads from curbside recycling, a public recyclables buyback area, and an area for processing wood waste. Non-processible waste materials would be compacted and shipped to the Kirby Canyon landfill via transfer trucks. Resource recovery at the station is anticipated to reduce the waste stream to the landfill by approximately 20-25 percent; a 25 percent level is encouraged through financial incentive in the proposed contract between WMNA and the Cities. Processed materials would be shipped to markets primarily in the San Francisco Bay area, as well as elsewhere in northern California, southern California, and Oregon. The materials to be recovered and processed in the station include aluminum, cardboard, ferrous metals, high grade paper, mixed waste paper, newsprint, glass, wood, yard waste, plastic, and white goods (large appliances). The wood waste would be chipped and possibly sold for fuel; the fine materials screened out of the wood chips would be made available as a soil amendment.

The Sunnyvale Public Works Department is the lead agency in preparation of the EIR. The SMaRT Station would be built and operated by Waste Management of North America (WMNA). The Kirby Canyon landfill is also operated by WMNA.

B. LOCATION AND ACCESS

The SMaRT Station is proposed to be located on a city-owned site adjacent to the Sunnyvale Landfill, the Sunnyvale Water Pollution Control Plant (WPCP), and San Francisco Bay (Figures II-1, II-2, II-3, II-4). Nearby land uses also include the Sunnyvale Baylands Park and office/industrial park complexes. The Kirby Canyon landfill is located south of San Jose, California, approximately 27 miles from the transfer station (Figure II-3).

FIGURE II-1
REGIONAL LOCATION

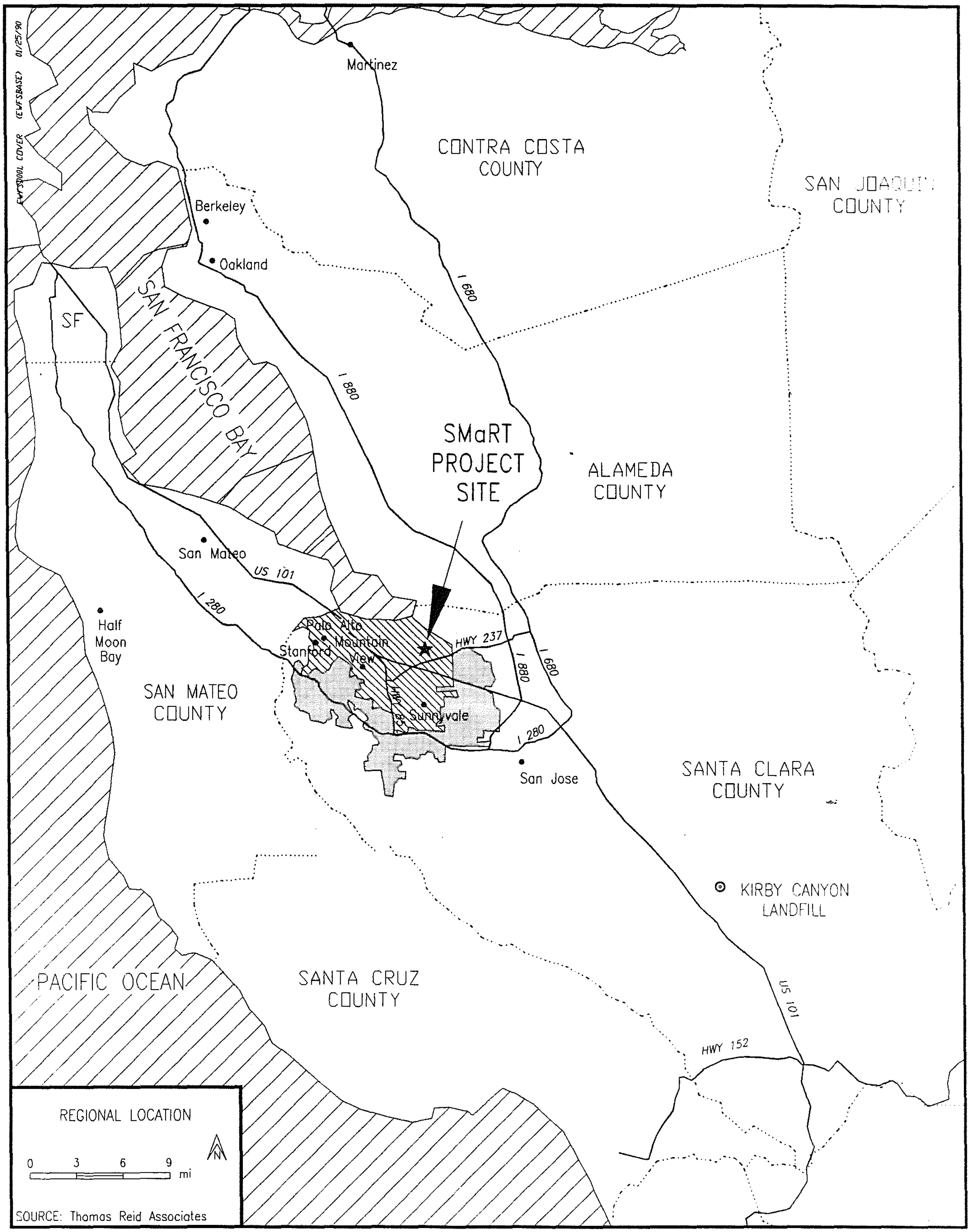


FIGURE II-2
PROJECT VICINITY

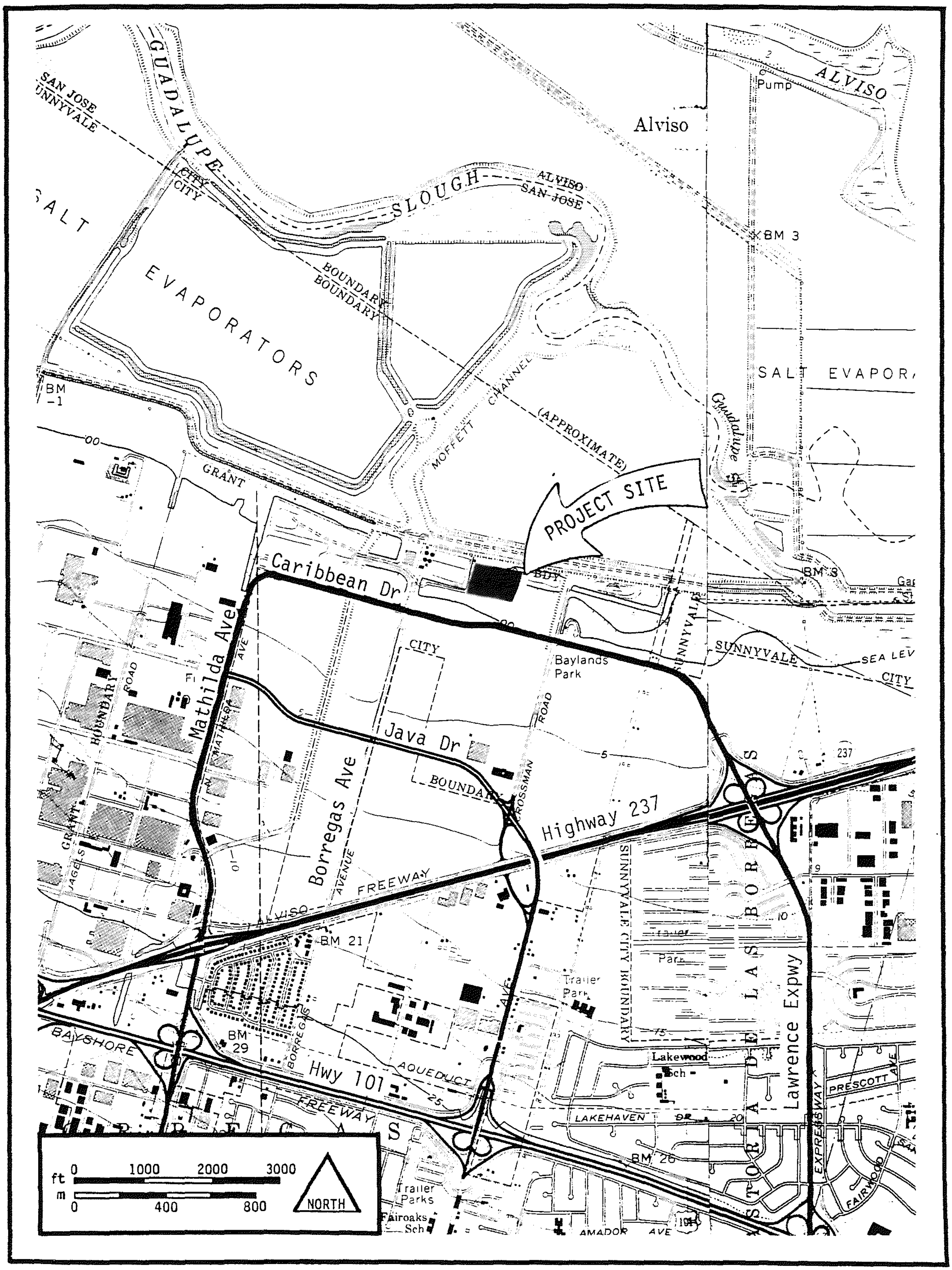


FIGURE II-3
SERVICE AREA AND HAUL ROUTES

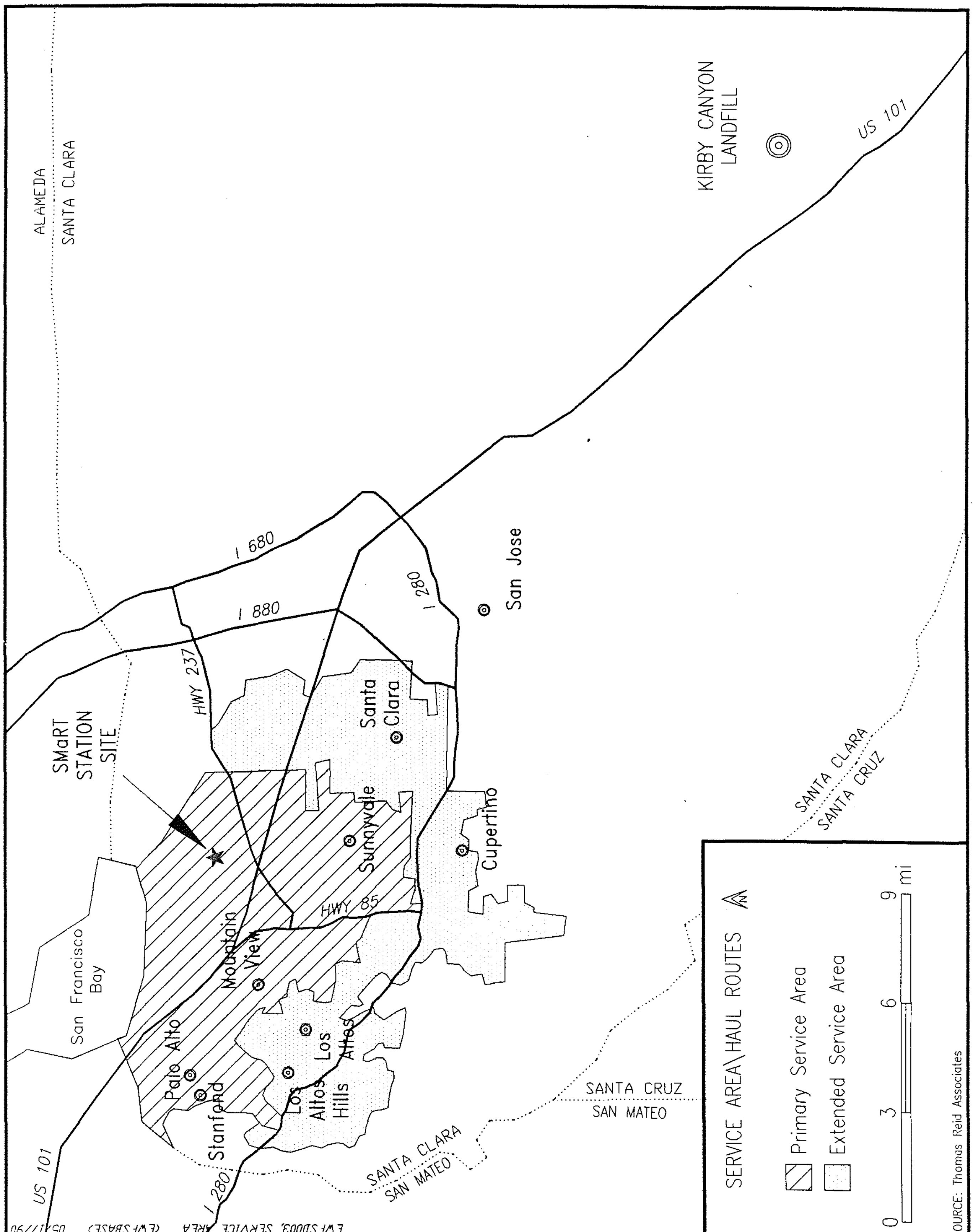
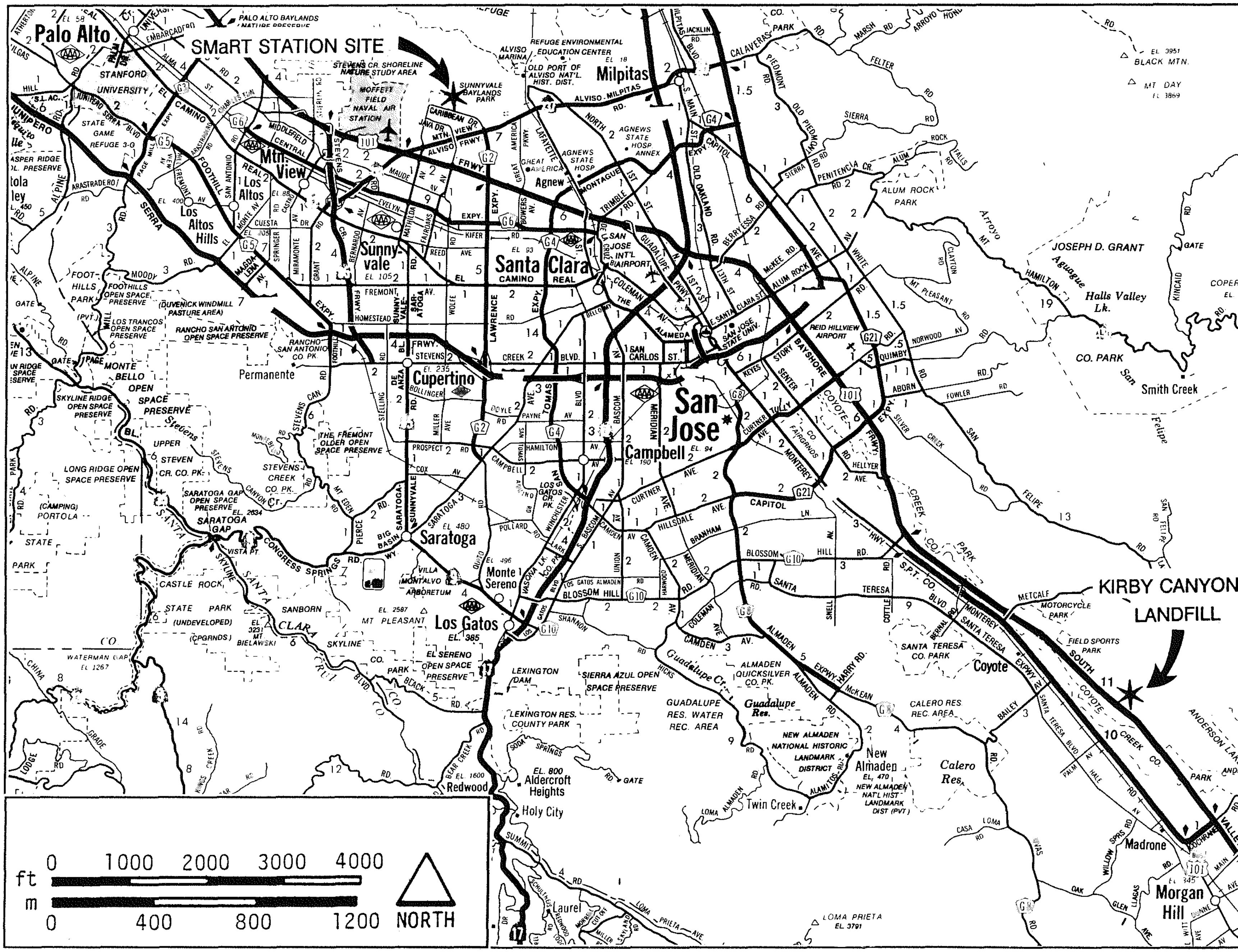


FIGURE II-4
PROJECT AREA ROADS



The station would occupy an area of about 10 acres in an area formerly used by the Raisch Company for asphalt and concrete recycling (Figures II-5 and II-6). The Raisch operation has been moved to the western side of the Sunnyvale Landfill to accommodate the SMaRT Station. All station operations would be enclosed. The station building would be 35-45 feet high, enough to accommodate the processing equipment and a two-story viewing/office area.

Access to the SMaRT Station would be provided via Borregas Avenue from Caribbean Drive (Figure II-2). Caribbean Drive connects to Mathilda Avenue, Highway 237, and Lawrence Expressway, all of which lead to Highway 101. Both Highway 237 and US 101 have interchanges with Mathilda Avenue and Lawrence Expressway within approximately two miles of the project site. Access to the Kirby Canyon landfill is obtained via the Scheller Avenue interchange with US 101. The proposed haul route for transfer trucks between the SMaRT station and the landfill is US 101.

C. HAUL ROUTES

1. Haul Routes to the Transfer Station

a. Primary Service Area

The proposed haul routes between the primary service area cities and the transfer station would include US 101, Central Expressway, Oregon Expressway, El Camino Real, Highway 85, Saratoga-Sunnyvale Road/Mathilda Avenue, Route 237, Fair Oaks Avenue, Wolfe Road, Lawrence Expressway, and San Tomas Expressway (Figures II-3 and II-4).

The trucks would approach the station from Mathilda Avenue, Lawrence Expressway/Caribbean Drive, and Fair Oaks Avenue, converging on Borregas Avenue at the transfer station throughout the day. Both commercial trucks and public vehicles from Mountain View and Palo Alto would use Highway 101 and Highway 237 to Mathilda Avenue or Caribbean Drive. Project traffic from Sunnyvale would likely use the major north/south arterials such as Mathilda, Fair Oaks, and Lawrence Expressway. Refuse truck and public haul traffic from Sunnyvale currently uses these routes to access the Sunnyvale Landfill adjacent to the site.

b. Extended Service Area

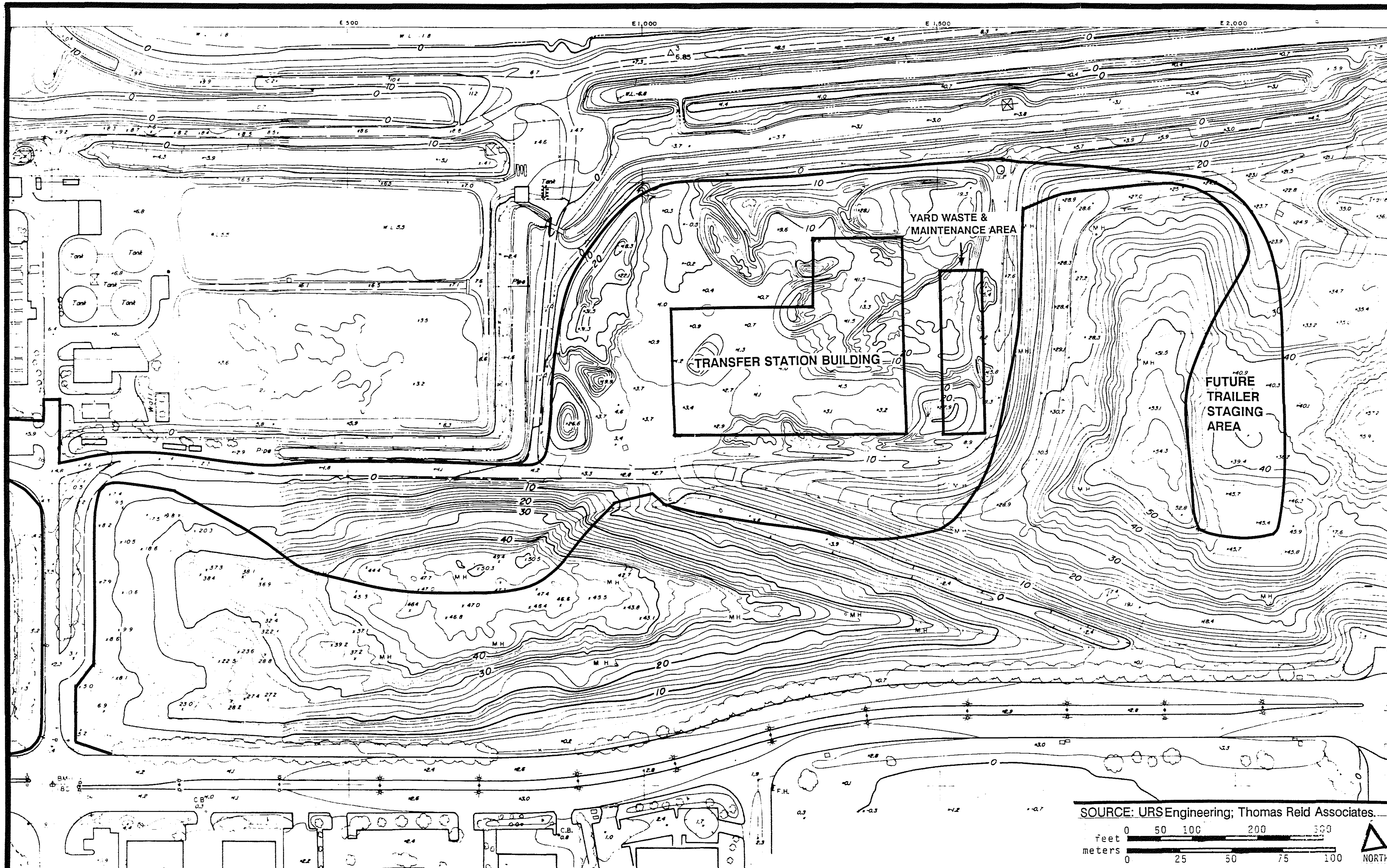
The extended service area would require the use of Foothill Expressway, San Antonio Road, El Monte Avenue, and Springer Road as proposed haul routes in addition to those routes required for the primary service area. These routes are currently in use for refuse disposal for the extended service area, which disposes of its refuse at the Newby Island landfill in northern San Jose.

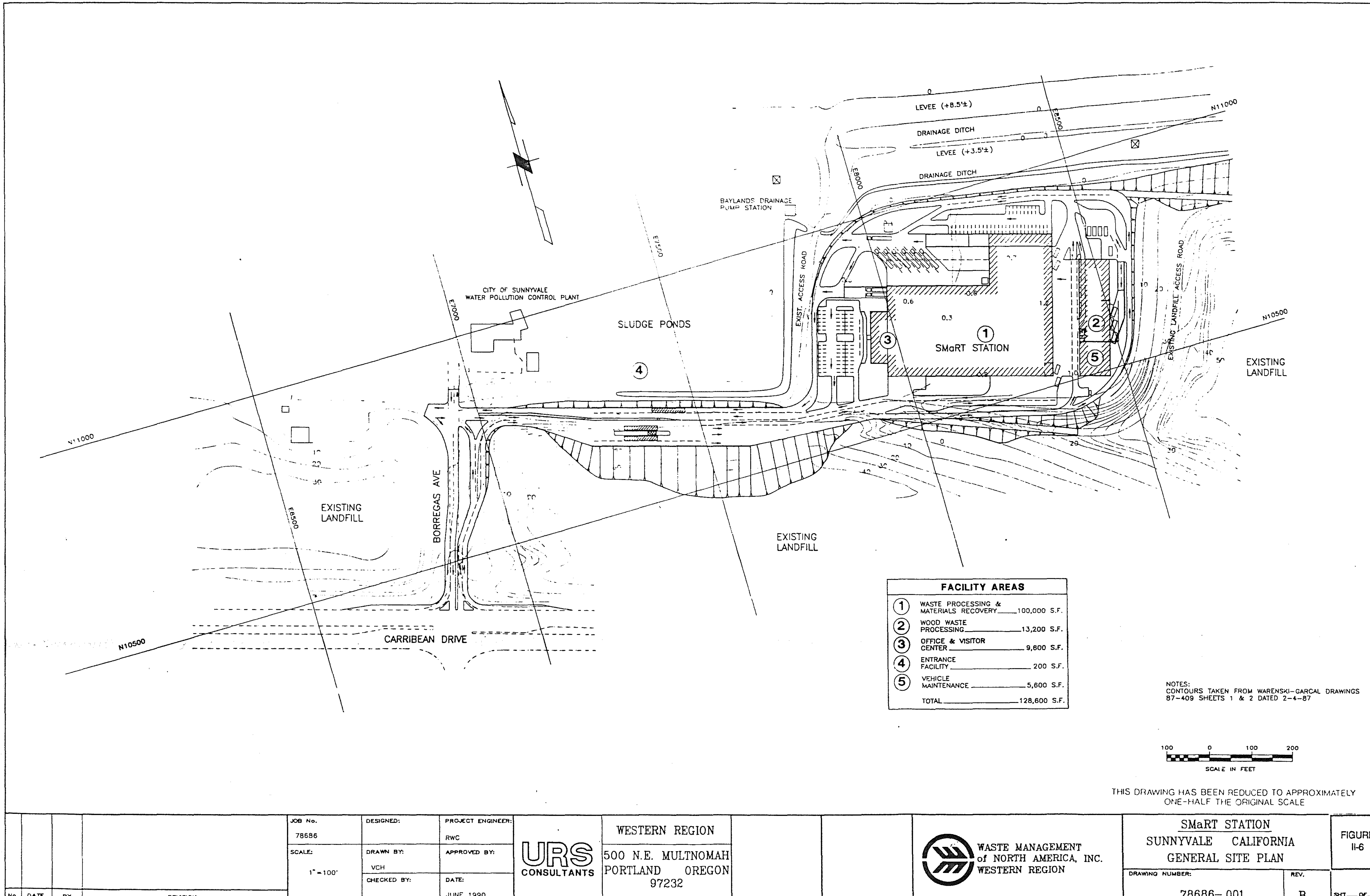
2. Haul Routes Out of the Transfer Station

a. Processed Materials to Market

Processed materials are expected to be shipped primarily to markets in the San Francisco Bay Area, but may also be sent elsewhere in northern California, southern California, and Oregon. Processed materials would be carried via flatbed tractor trailers, tractors and covered vans, or 40-50 yard roll-off boxes. The shippers would be private firms that have contracted with

FIGURE II-5
PROJECT SITE TOPOGRAPHY





FACILITY AREAS

1	WASTE PROCESSING & MATERIALS RECOVERY	100,000 S.F.
2	WOOD WASTE PROCESSING	13,200 S.F.
3	OFFICE & VISITOR CENTER	9,600 S.F.
4	ENTRANCE FACILITY	200 S.F.
5	VEHICLE MAINTENANCE	5,600 S.F.
	TOTAL	128,600 S.F.

WMNA for the materials. The primary haul route for processed materials would be US 101. Processed materials may also be hauled on Highway 237, I-880, and I-680.

b. Non-Processible Materials to Kirby Canyon Landfill

The materials that cannot be recycled would be compacted and placed into transfer vehicles and shipped to the Kirby Canyon landfill. The proposed haul route for transfer vehicles is via Carribean/Lawrence Expressway or Mathilda Avenue to Highway 101 south to the Scheller Avenue interchange which directly serves the landfill. The return route would be the reverse except transfer vehicles would likely exit Highway 101 at Lawrence Expressway north to Caribbean Drive, and would make a righthand turn into the transfer station site.

D. WASTE STREAM AND PROJECT CAPACITY

1. Project Life and Waste Stream

All franchise-collected and self-haul refuse from the primary service area would be delivered to the station for processing before being shipped to the landfill. The proposed contract with WMNA would provide landfill capacity for the primary service area for a minimum of 30 years. Although at present the proposal expresses capacity in years, the final contract would express capacity in tons or cubic yards of refuse. The volume of capacity estimated necessary to serve the proposed and extended service areas under different resource recovery scenarios is discussed below, under 3., and summarized in Table II-3.

The primary service area cities could, at their sole option, extend the contract for one additional five-year increment, for a total of 35 years capacity. The agreement could be extended by mutual consent of Waste Management and the Cities for an additional five-year increment -- for up to 40 years of landfill capacity. If the SMaRT station opened for operations in 1991, the contract would last until 2021 at a minimum, and to 2031 if the additional increments are implemented.

In addition to the primary service area, available additional capacity at the SMaRT Station may be used to serve an extended service area including self-haul, clean-up campaign debris, and city maintenance waste from the cities of Cupertino, Los Altos, Los Altos Hills and Santa Clara; the debris box loads from Cupertino, Los Altos and Los Altos Hills; and waste from the Stanford community. It may also be used by Waste Management for processing some of its franchise-collected refuse from Santa Clara and northern San Jose.

The extended service area cities currently have an agreement for disposal of their municipal solid waste (MSW) at the Newby Island Landfill and Recyclery. The agreement allots certain landfill capacity to these cities for disposal of their MSW. The extended service area cities may, but are not required to, deliver refuse from the waste sources listed above (self-haul, clean-up campaign debris, city maintenance waste, and debris box). This allows flexibility in disposal destination and may conserve the cities' allotted capacity at the Newby Island Landfill.

2. SMaRT Station Design Capacity

The design size of the SMaRT station (2200 tons/day) is intended to accommodate growth in the primary service area cities' waste stream over the 40 year period. It is based on capacity requests by the cities of Mountain View, Palo Alto, and Sunnyvale; an evaluation of waste quantity records; projections of population growth in the service area over the next 30 years; and an estimated 1.1 percent annual growth in the waste stream in the service area.

The SMaRT Station would be built to handle a throughput of 2200 tons per day. Although the station would be open seven days per week, most of the refuse from the cities would typically be delivered Monday-Friday. The design capacity of 2200 tons per day was calculated by compressing an anticipated 7-day waste stream into a 5-day week. The capacity figure is used to define equipment needs in the station for handling an estimated peak volume. The SMaRT Station is not anticipated to actually operate at the 2200 ton/day capacity 7 days per week within the timeframe of the proposed project.

The estimated quantity of waste to the SMaRT Station over the 30, 35, and 40 year period is presented in Table II-1. The station would initially process 1144 TPD average, with potential peak volumes of about 1600 TPD. It would not operate at capacity until the year 2021, including both the primary and extended service area waste streams).

Using the 1.1 percent growth factor the extended service area could deliver all of the specified limited waste stream until the year 2021. From 2021 to 2031 the capacity to serve the extended service area would gradually diminish. It is estimated that after 40 years of operation (in 2031), the primary service area would require 2072 TPD of station capacity, leaving 128 TPD for the extended service area.

Regional planning figures have been used to project growth in the waste stream, which in turn determines the design capacity of the SMaRT Station and the landfill capacity required. According to projections made by the Association of Bay Area Governments, the total population for the primary service area is projected to increase from 256,040 in 1991 to 267,900 in 2005 (EMCON CPD, 12/89). This 4.6 percent population increase over the 14-year period represents a 0.32 percent annual population growth. However, ABAG uses a rate of 1.1 percent annual growth in waste stream for the entire bay region, and this figure is also used in the Santa Clara County Solid Waste Management Plan. The 1.1 percent waste stream growth rate has been used to calculate waste stream quantities. The actual amount of growth in the waste stream is difficult to predict, and would probably not be the same every year. Although the waste stream may not increase as quickly as projected in Table II-1, the more conservative figures have been used for planning.

3. Capacity of Kirby Canyon Landfill

The Kirby Canyon Sanitary Landfill was permitted by the City of San Jose in 1984 and officially opened in 1986. The design volume of the landfill is 37,400,000 cubic yards (24,310,000 tons) (Kirby Canyon Sanitary Landfill Report of Disposal Site Information, 4/90). The facility is currently allowed to receive an annual average of 1500 tons per day (TPD) of wastes, operating on a 6-day week basis; this is also equivalent to 9,000 tons/week or 468,000 tons/year.

TABLE II-1
WASTE QUANTITY ESTIMATES: WASTESTREAM TO THE SMaRT STATION

	1991			2021			2026			2031		
Source	Tons/ Year	Tons/ Day-7	Tons/ Day-5	Tons/ Year	Tons/ Day-5	Tons/ Day-7	Tons/ Year	Tons/ Day-5	Tons/ Day-7	Tons/ Year	Tons/ Day-5	Tons/ Day-7
Mt. View	103,145	283	395	143,214	392	549	151,265	414	580	159,767	438	612
Palo Alto	68,000	186	261	94,416	259	362	99,724	273	382	105,331	289	404
Sunnyvale	178,000	488	683	247,147	677	947	261,043	715	1,000	275,719	755	1,056
Subtotal Primary Service Area	349,145	957	1,339	484,777	1,328	1,858	512,032	1,402	1,962	540,817	1,482	2,072
Extended Service Area[1]	68,282	187	261	89,423	245	343	62,168	170	238	33,383	91	128
TOTAL	417,427	1,144	1,600	574,200	1,573	2,201	574,200	1,572	2,200	574,200	1,573	2,200

NOTES: Growth rate of 1.1% per year in the wastestream based on ABAG and the Santa Clara County Solid Waste Management Plan. Initial refuse amounts (1991) based on Emcon Associates Comprehensive Project Description 11/89, Table 3-3; bowers 12/89; Miller 1988; Pelligrini 1989; Lenz 1989. TPD-7 calculated as 365 days per year; TPD-5 calculated as 261 days per year.

[1] With the 1.1% growth rate in wastestream, the Extended Service Area's limited wastestream would be 62, 684 tons/year by the end of 2021 (172 TPD-7, 241 TPD-5). The amounts shown in Table II-1 reflect that growth in the Primary Service Area begins to reduce the available remaining capacity by 2021. This trend continues through the remaining life of the project, so that by year 40 (2031), limited capacity remains for Extended Service Area use. The SMaRT Station would operate at capacity from 2021 until possible 2031 under this proposal.

TABLE II-2

WASTE QUANTITY ESTIMATES: SMaRT STATION TO LANDFILL

	1991		2021		2026		2031	
	Tons/Year	Tons/6 Day Week	Tons/Year	Tons/6 Day Week	Tons/Year	Tons/6 Day Week	Tons/Year	Tons/6 Day Week
Primary Service Area with 0% Resource Recovery	349,145	6,714	484,773	9,323	512,030	9,847	540,817	10,401
Extended Service Area with 0% Resource Recovery	68,282	1,314	89,427	1,720	62,170	1,196	33,383	642
TOTAL 0% Resource Recovery	417,427	8,028	574,200	11,043	574,200	11,043	574,200	11,043
Primary Service Area with 25% Resource Recovery	261,859	5,036	363,580	6,992	384,022	7,385	405,613	7,800
Extended Service Area with 25% Resource Recovery	51,212	985	67,070	1290	46,628	897	25,037	482
TOTAL 25% Resource Recovery	313,071	6,021	430,650	8,282	430,650	8,282	430,650	8,282

TABLE II-2 IS CONTINUED ON THE FOLLOWING PAGE

TABLE II-2

WASTE QUANTITY ESTIMATES: SMaRT STATION TO LANDFILL

	1991		2021		2026		2031	
	Tons/Year	Tons/6 Day Week	Tons/Year	Tons/6 Day Week	Tons/Year	Tons/6 Day Week	Tons/Year	Tons/6 Day Week
Primary Service Area with 25-50% Resource Recovery	261,859	5,036	242,386	4,661	256,015	4,923	270,408	5,200
Extended Service Area with 25-50% Resource Recovery	51,212	985	44,714	860	31,085	598	16,692	321
TOTAL 25-50% Resource Recovery	313,071	6,021	287,100	5,521	287,100	5,521	287,100	5,521

NOTE: The tons/6-day week figure is used because the Kirby Canyon Landfill operates on a 6-day week, and it is necessary to use the figure to demonstrate the rate of refuse delivery to the landfill. This is not to be confused with the TPD-5 and TPD-7 figures in Table II-1, which demonstrate the amount of refuse to be delivered to the station, and show the need for the stated station capacity.

TABLE II-3

CUMULATIVE MILLION TONS OF LANDFILL CAPACITY REQUIRED FOR THE SMaRT STATION

	2021			2026			2031		
	0% Resource Recovery	25% Resource Recovery	25-50% Resource Recovery	0% Resource Recovery	25% Resource Recovery	25-50% Resource Recovery	0% Resource Recovery	25% Resource Recovery	25-50% Resource Recovery
Proposed Service Area	12.8	9.6	9.4	15.3	11.5	10.6	18.0	13.5	11.9
Amended Service Area	2.5	1.9	1.8	2.9	2.1	2.0	3.1	2.3	2.1
TOTAL	15.3	11.5	11.2	18.2	13.6	12.6	21.1	15.8	14.0

NOTE: Assumes 1.1% annual growth in the wastestream, based on ABAG and Santa Clara County Solid Waste Management Plan projections. The refuse rates in 1991 projected by the Cities and Emcon Associates are presented in Table II-1. AB 939 requires 50% reduction in the wastestream by the year 2000, however the station is currently expected to achieve 20-25%. The 0% figures are presented to provide a conservative ("worst-case") scenario.

WMNA estimates that the landfill will receive an average of 633 TPD of waste in 1990, well under the allowed 1500 TPD (Report of Disposal Site Information 4/90). According to the RDSI, the landfill had accepted 476,923 cubic yards (310,000 tons) of material as of 12/1/89. Thus about 24 million tons of capacity presently remain after three years of operation. The capacity at Kirby Canyon has not been committed to any entity through contract, however WMNA is currently seeking approval to accept refuse from SMaRT, Contra Costa County for a period of two years, and possibly San Mateo County in the future. WMNA presently uses the landfill for some of its franchise waste from San Jose and Santa Clara, however the majority of the waste from those cities is delivered to the Newby Island landfill per contracts with that landfill operator.

WMNA has proposed modification of the Kirby Canyon landfill permit in an application to the City of San Jose, the Local Enforcement Agency (LEA), and the California Waste Management Board, in order to accommodate SMaRT, Contra Costa County, and San Mateo County waste streams (See Appendix D). The requested increase is to 2870 tons per day, on the average, with an allowance for 4200 tons per day under peak conditions. The application notes that 850 tons/day would be delivered from Contra Costa County for two years and that the allowance remaining after SMaRT and Contra Costa County may be used for refuse from San Mateo County. This proposed increase is undergoing separate environmental review through the City of San Jose. If the increase in TPD to Kirby is not granted, and the landfill cannot accept all of the SMaRT refuse, then another destination would have to be selected. In that case, additional environmental review would be required to address the impacts of using a different disposal site.

There is financial incentive for WMNA to achieve 25% or better resource recovery at SMaRT, and recent legislation (AB939) requires municipalities to reduce their waste stream to the landfill by 25-50%. In order to assess a worst-case scenario, this EIR also examines the impacts if 0% recycling occurs at the station. Hence the landfill capacity needed to serve the SMaRT station, both overall capacity and a tons/day limit, has been calculated for three scenarios: 0% recycling, 25% resource recovery from 1991-2000 and 50% from 2000-2031; and 25% reduction in waste stream throughout the life of the project. The estimated waste quantities to the landfill under the 30, 35, and 40 year contract scenarios, with the three resource recovery rates are shown in Tables II-2 and II-3, and discussed below.

<u>SCENARIO: 0% Resource Recovery at SMaRT.</u>

Under this worst-case scenario recyclables would not be recovered from refuse delivered to the SMaRT Station, and all mixed waste would be transferred to the Kirby Canyon Landfill. This is an unlikely scenario for two reasons, but it is given consideration here in order to explain the full range of potential impacts. The reasons it is unlikely are 1) the proposed contract between WMNA and the Cities includes a financial commitment which encourages WMNA to recover 25% of the waste stream; and 2) the station is designed to operate as a materials recovery facility.

Without recycling, the waste stream from SMaRT to the landfill would start at 1338 tons/day-6 in 1991 (1119 TPD-6 for the proposed service area; 219 TPD-6 for the extended service area), and grow to 1840 TPD-6 when operating at capacity from the year 2021 on (1840 TPD-6 is equivalent to 2200 TPD-5). Including the estimated 1990 waste stream of 633 TPD, this would immediately raise the average daily tons above the 1500 TPD currently allowed, and would require modification of the existing permit to allow an increase in average daily throughput, which would shorten the life of the landfill.

With regard to remaining capacity at the Kirby Canyon Landfill, 0% recycling at SMaRT would require 21 million tons of landfill capacity for both the proposed and extended service areas over the 40 year contract period. The proposed service area alone would require about 18 million tons of capacity, while the extended service area would require 3 million tons. This is just within the 24 million ton remaining capacity at the landfill, not accounting for the existing waste stream or WMNA's proposal to add refuse from Contra Costa or San Mateo Counties. Over 35 years the proposed and extended service areas would require 18.2 million tons of capacity (15.3 million tons for the proposed service area, 2.9 million tons for the extended service area).

Under the 0% recycling scenario, limits in permitted landfill capacity may limit the number of years Kirby Canyon can serve SMaRT to 35 rather than 40. Pressures to expand the landfill may be exerted by the acceptance of more refuse sources in addition to SMaRT. Such an expansion would be required to undergo separate environmental review once a specific proposal was made to local and state agencies. SMaRT by itself would not require expansion of the landfill, even under the 0% recycling scenario.

The inclusion of resource recovery activities at SMaRT would alleviate potential capacity limitations at Kirby Canyon landfill, as noted below.

<u>SCENARIO: 25 % Resource Recovery Throughout the 40-year Contract.</u>

Under this scenario mixed refuse delivered to SMaRT would be sorted in order to recover recyclable materials such as corrugated cardboard, glass, aluminum and ferrous metals. Sorting would hopefully achieve a 25% reduction in the waste stream sent to the landfill. With a consistent rate of 25% recycling, the waste stream to Kirby Canyon Landfill would be 1003 TPD-6 in 1991 and would increase to 1380 TPD-6 when the station operates at capacity. This is equivalent to 6018 tons/week in 1991 and 9900 tons/week from 2021 on. When the existing waste stream of 633 TPD is considered, this scenario would require a change in the existing permit to allow more than 1500 TPD or 9000 tons/week, and would shorten the life of the landfill by causing it to be filled at a faster rate.

Under this scenario SMaRT would require 15.8 million tons of capacity over 40 years, including both the proposed service area (13.5 million tons) and the extended service area (2.3 million tons). These figures are well within the 24 million tons of capacity remaining at Kirby Canyon, and the landfill could be expected to serve SMaRT for 40 years without need for expansion.

<u>SCENARIO: 25% Resource Recovery from 1991-2000; 50% Resource Recovery from 2001-2031.</u>

Under this scenario the SMaRT Station would operate with 25% resource recovery from opening to the year 2000, and with 50% resource recovery thereafter. This scenario reflects the requirement of recent legislation (AB 939) that municipalities reduce their waste stream to the landfill by 25% by 1995 and 50% by the year 2000. While this is the responsibility of the municipalities and not the SMaRT station operator (WMNA), and may need to be accomplished with source reduction in addition to increased recycling, the Cities may look to SMaRT for assistance.

Under this scenario SMaRT would contribute 1003 TPD-6 to Kirby Canyon in 1991, and 920 TPD-6 from 2021 forward. Combined with the existing 633 TPD waste stream, this scenario would also require an increase in the existing 1500 TPD limit at the landfill.

Capacity required at the landfill under this scenario would be 14.0 million tons for both the proposed service area (11.9 million tons) and the extended service area (2.1 million tons) over the 40 year period. These figures are well within the remaining capacity of Kirby Canyon and expansion of the landfill would not be required.

E. SMaRT STATION DESIGN AND OPERATIONS

1. Project Components

Principal features to be provided in the SMaRT station include:

- processible commercial waste tipping area
- non-processible commercial waste tipping area
- processible public waste tipping area and recyclables buyback center
- non-processible public waste tipping area
- waste processing/material recovery area
- consolidation and storage area for recovered materials
- wood and yard waste processing and storage area
- curbside recycling operations unloading and processing area
- office and visitor center
- hazardous waste exclusion program storage area

Ancillary features include:

- entrance facility including gatehouse, pay booths, and scales
- trailer storage and staging area
- parking for employees, visitors, and tour buses

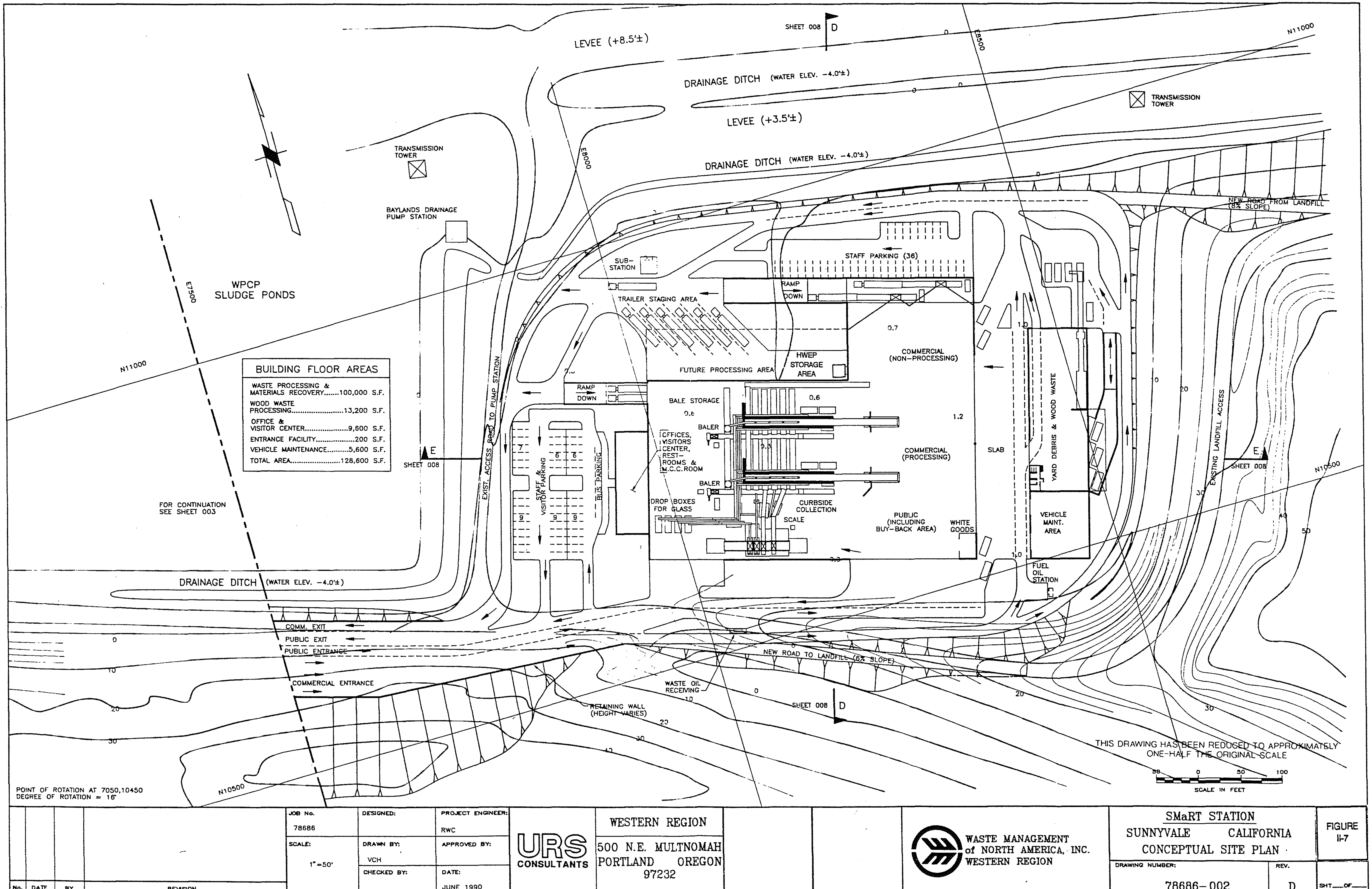
2. Site Plan

As shown in Figures II-6, II-7, and II-8, the SMaRT station includes one main building for waste processing and materials recovery, an entrance facility, a perimeter roadway, and two parking areas. All operations would be housed, and the total floor space for the facility would be about 128,600 square feet, broken down as follows:

waste processing and materials recovery area	100,000 sf
wood waste processing area	13,200 sf
office and visitor center	9,600 sf
entrance facility	200 sf
vehicle maintenance area	5,600 sf

	128,600 sf

The parking areas include one containing approximately 60 stalls next to the office and visitor center for employees and visitors, and one north of the SMaRT building with about 40 spaces for employees. Hence, parking for about


SHEET 008 D
LEVEE (+8.5'±)
DRAINAGE DITCH (WATER ELEV. -4.0'±)
LEVEE (+3.5'±)
DRAINAGE DITCH (WATER ELEV. -4.0'±)
TRANSMISSION TOWER
TRANSMISSION TOWER
BAYLANDS DRAINAGE PUMP STATION
WPCP SLUDGE PONDS
E7500
E8000
E8500
N11000
N10500
NEW ROAD FROM LANDFILL (8% SLOPE)
STAFF PARKING (36)
SUB-STATION
TRAILER STAGING AREA
RAMP DOWN
HWEP STORAGE AREA
FUTURE PROCESSING AREA
COMMERCIAL (NON-PROCESSING)
BALE STORAGE
BALER
OFFICES, VISITORS CENTER, REST-ROOMS & M.C.C. ROOM
COMMERCIAL (PROCESSING)
SLAB
YARD DEBRIS & WOOD WASTE
EXISTING LANDFILL ACCESS
DROP BOXES FOR GLASS
CURBSIDE COLLECTION
SCALE
PUBLIC (INCLUDING BUY-BACK AREA)
WHITE GOODS
VEHICLE MAINT. AREA
FUEL OIL STATION
STAFF & VISITOR PARKING
BUS PARKING
EXIST. ACCESS ROAD TO PUMP STATION
SHEET 008 E
BUILDING FLOOR AREAS
WASTE PROCESSING & MATERIALS RECOVERY.......100,000 S.F.
WOOD WASTE PROCESSING.......13,200 S.F.
OFFICE & VISITOR CENTER.......9,600 S.F.
ENTRANCE FACILITY.......200 S.F.
VEHICLE MAINTENANCE.......5,600 S.F.
TOTAL AREA.......128,600 S.F.
FOR CONTINUATION SEE SHEET 003
DRAINAGE DITCH (WATER ELEV. -4.0'±)
COMM. EXIT
PUBLIC EXIT
PUBLIC ENTRANCE
COMMERCIAL ENTRANCE
NEW ROAD TO LANDFILL (6% SLOPE)
WASTE OIL RECEIVING
RETAINING WALL (HEIGHT VARIES)
SHEET 008 D
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SCALE IN FEET
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DEGREE OF ROTATION = 16°
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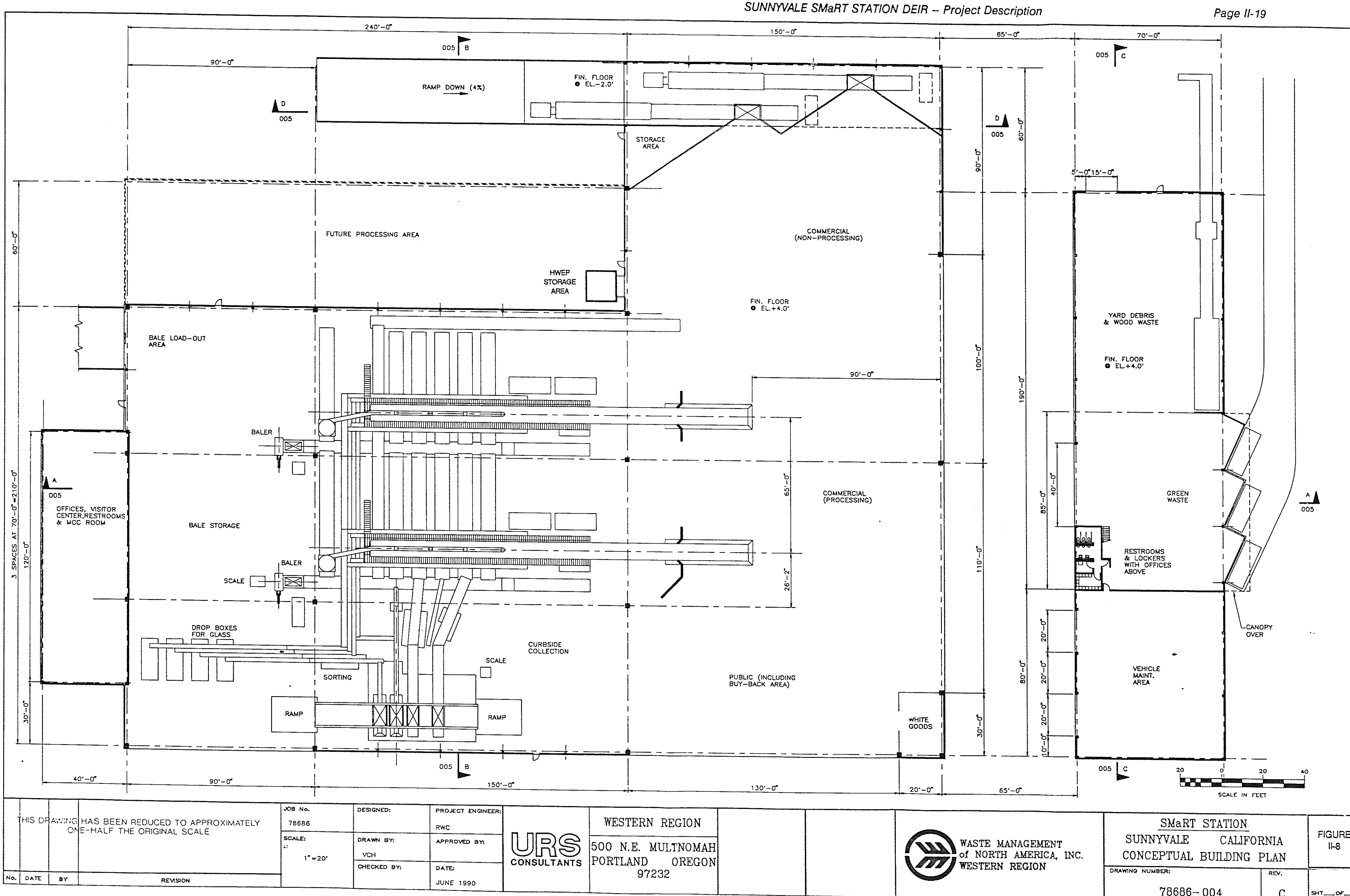
JOB No. 78686
SCALE: 1"=50'
DESIGNED:
DRAWN BY: VCH
CHECKED BY:
PROJECT ENGINEER: RWC
APPROVED BY:
DATE: JUNE 1990
URS CONSULTANTS
WESTERN REGION
500 N.E. MULTNOMAH
PORTLAND OREGON 97232
WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION
SMaRT STATION
SUNNYVALE CALIFORNIA
CONCEPTUAL SITE PLAN
DRAWING NUMBER: 78686-002
REV. D
FIGURE II-7


RAMP DOWN (4%)
FIN. FLOOR EL.-2.0'
STORAGE AREA
FUTURE PROCESSING AREA
HWEP STORAGE AREA
COMMERCIAL (NON-PROCESSING)
FIN. FLOOR EL.+4.0'
BALE LOAD-OUT AREA
BALER
OFFICES, VISITOR CENTER, RESTROOMS & MCC ROOM
BALE STORAGE
SCALE
DROP BOXES FOR GLASS
SORTING
RAMP
CURBSIDE COLLECTION
COMMERCIAL (PROCESSING)
PUBLIC (INCLUDING BUY-BACK AREA)
WHITE GOODS
YARD DEBRIS & WOOD WASTE
GREEN WASTE
RESTROOMS & LOCKERS WITH OFFICES ABOVE
VEHICLE MAINT. AREA
CANOPY OVER
SCALE IN FEET
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JOB No. 78686
SCALE: 1"=20'
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DRAWN BY: VCH
CHECKED BY:
PROJECT ENGINEER: RWC
APPROVED BY:
DATE: JUNE 1990
No. DATE BY REVISION
URS CONSULTANTS
WESTERN REGION
500 N.E. MULTNOMAH
PORTLAND OREGON 97232
WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION
SMaRT STATION
SUNNYVALE CALIFORNIA
CONCEPTUAL BUILDING PLAN
FIGURE II-8
DRAWING NUMBER: 78686-004
REV. C
SHT___OF___

100 employees and visitors is provided. Designated handicapped spaces would be provided in the office parking lot.

A transfer truck staging area (parking) along the northern side of the main building near the waste compactors provides space for 6 transfer trucks. An additional transfer trailer staging area would be sited on top of the landfill east of the SMaRT building in order to stage transfer truck trips when the station begins to operate near capacity. Such staging would allow timing of truck trips to the landfill to avoid peak traffic.

The building area on site is about 3 acres; paving and landscaping would cover another 7 acres.

The anticipated finished floor elevation of the SMaRT building is +4 or +9 feet NGVD, depending on the results of soils investigations and the determination of the type of foundation needed. With the +4 foot elevation a pile foundation would be used. The +9 foot elevation would be necessary if a spread-footing foundation is used. Localized portions of the facility such as the compactor area and curbside recycling scale would be lower to facilitate operation, and would be at approximately 0 feet NGVD under the +4 foot NGVD scenario. Roadways and facilities outside of the SMaRT station building would vary between 0-8 feet NGVD to suit drainage needs and existing grades.

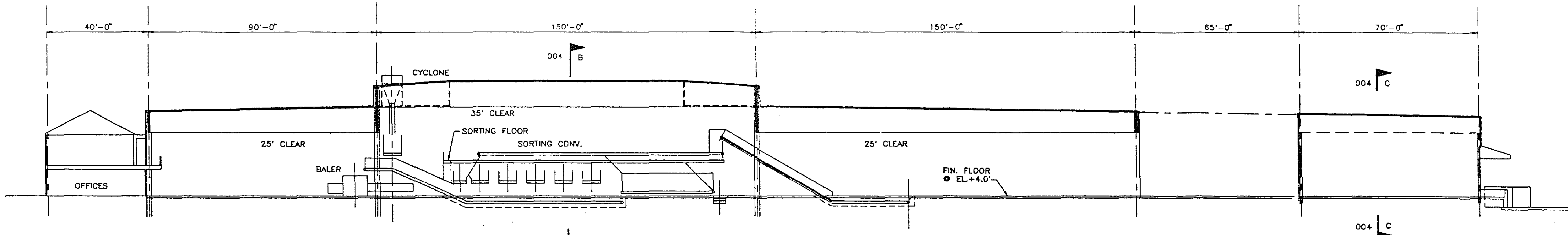
The building housing the entire station would be 35-45 feet high, which is tall enough to allow for overhead conveyors and a two-story office/visitor center within the station (Figure II-9, Conceptual Building Cross Sections). All buildings at the site would be steel-framed structures with concrete or masonry walls.

a. Commercial Tipping Area. Two areas at the east end of the main SMaRT station building have been designated for unloading of franchise collection vehicles, one for processible loads and one for non-processible loads. Five tipping stalls would be provided for unloading non-processible loads (mainly residential packer trucks); eleven would be provided for processible loads (mainly front-loaders and debris boxes).

b. Public Tipping Area. The public would be directed to discharge both processible and non-processible loads in an area separate from that used by the commercial vehicles. Ten discharge stalls would be provided at the southeast end of the SMaRT station building. As the character and number of incoming public loads vary, any number of the ten stalls can be assigned for tipping of processible or non-processible wastes. Visual indicators, such as traffic cones, would be used to mark the processible and non-processible areas.

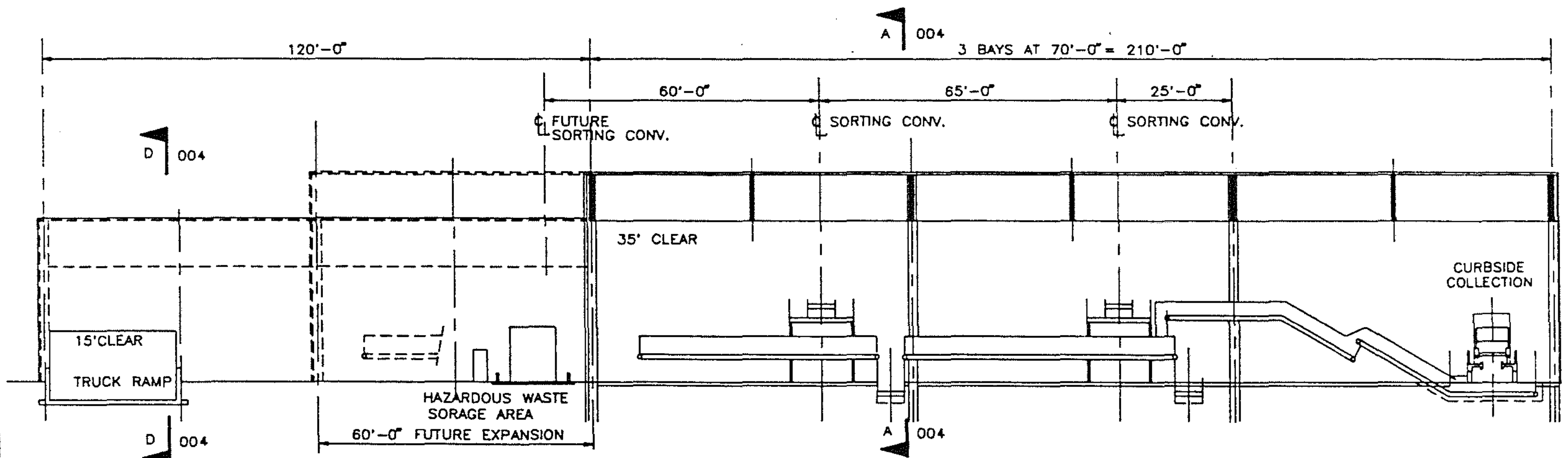
During the weekend public vehicles may also be directed to the commercial tipping areas because there would be virtually no commercial traffic at that time. This could be used to alleviate traffic back-ups during peak periods of public drop-off on weekends.

A buyback area would be incorporated into the public unloading area. Source-separated recyclables such as corrugated cardboard, aluminum, white paper, clean glass containers, plastics, and other acceptable recyclables may be redeemed by the public in this area. White goods, such as kitchen appliances, would also be stored near the public tipping area.



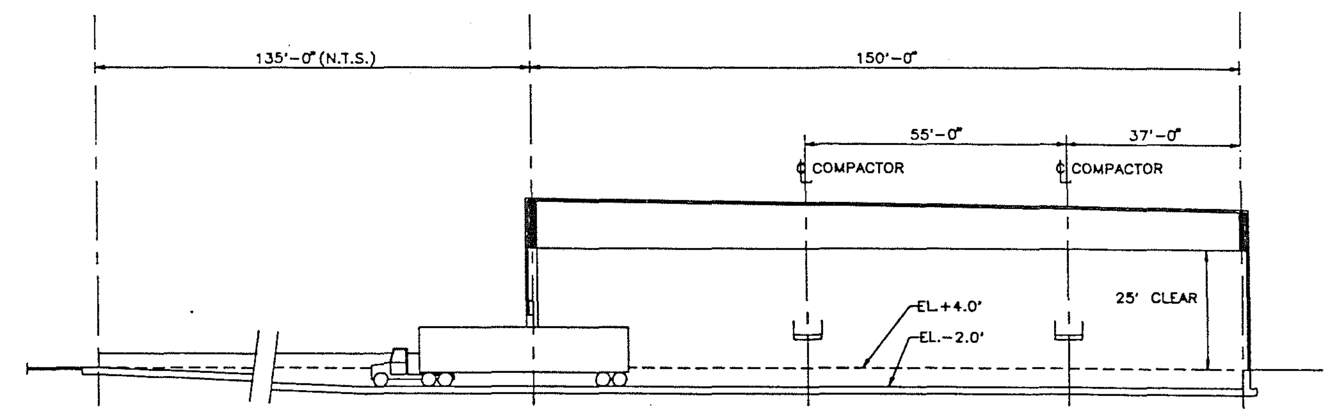
SECTION A – A

CROSS SECTION THRU BUILDING LOOKING NORTH



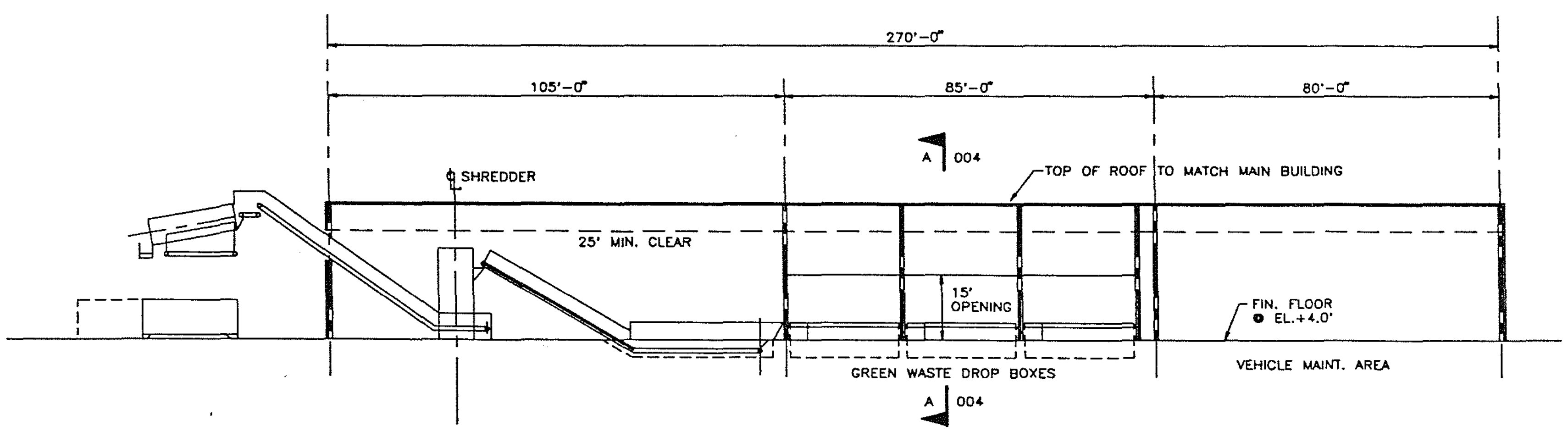
SECTION B – B

(CROSS SECTION LOOKING EAST)



SECTION D – D

CROSS SECTION LOOKING NORTH AT COMPACTORS



SECTION C – C

CROSS SECTION LOOKING EAST AT YARD DEBRIS AREA AND MAINT. AREA

THIS DRAWING HAS BEEN REDUCED TO APPROXIMATELY ONE-HALF THE ORIGINAL SCALE

No.	DATE	BY	REVISION

JOB No.	DESIGNED:	PROJECT ENGINEER:
78686		RWC
SCALE: 1" = 20'	DRAWN BY: VCH	APPROVED BY:
	CHECKED BY:	DATE: JUNE 1990

URS CONSULTANTS

WESTERN REGION
500 N.E. MULTNOMAH
PORTLAND OREGON
97232

WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION

SMaRT STATION
SUNNYVALE CALIFORNIA
CONCEPTUAL BLDG. CROSS SECTS.

DRAWING NUMBER: 78686-005 REV. B

FIGURE II-9

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c. **Waste Processing Area.** Waste processing would occur in an area of about 40,000 square feet near the tipping floor. Hand-sorting techniques would be used on several sorting lines to recover various recyclable materials. Reclaimed materials would be stored on conveyors, in bins, or on the floor until sufficient material accumulates to warrant baling.

d. **Material Consolidation and Storage Area.** On the preliminary floor plan an area of 13,000 square feet on the northwest side of the building is designated for storage of baled materials (Figures II-7, Conceptual Site Plan, and II-8, Conceptual Building Plan). Material from this area and the curbside collection area would be loaded onto semi-trailers for transport to market. A loading dock with two stalls for the semi-trailers would be located on the west side of the building.

e. **Residual and Non-Processible Loadout Area.** At design capacity, with 25% recycling, approximately 1,650 tons per day of residual material from the processing lines and non-processible material from the tipping area could be consolidated for transport to the Kirby Canyon landfill (See Tables II-1, II-2, and II-3 under II.D, above). Two large capacity solid waste pre-load compactors would be installed on the north side of the station to consolidate the waste before it is pushed into transfer vehicles. The pre-load system compacts refuse into a large reinforced steel chamber. Once full, a hydraulic ram is used to push the bale of compacted refuse into the transfer trailer. Throughput capacity with this system ranges from 70 to 100 tons per hour. With a two-shift (16 hour) operation, daily throughput from a single pre-load compactor would be 1,100 to 1,600 tons per day. A second unit is included in order to handle peak loads and provide redundancy in case one unit is shut down for maintenance or repair.

f. **Wood Waste and Yard Waste Area.** The wood and yard waste processing area would be included in a separate structure east of the main SMaRT station building. It would be 13,200 square feet in area, and would include a tipping area, and a processing conveyor. The wood waste would be fed onto the conveyor and moved through a shredder. Shredded material would be stored according to size (chips vs. fines) in drop boxes located outside of the building on the northwest corner of the project site. Trucks used to ship the material offsite would pick up these drop boxes and exit the site. Green yard waste which is not chipped would be placed in drop boxes on the east side of this building for removal by separate contractors for composting in various off site areas.

g. **Curbside Processing Area.** An area of about 9,000 square feet would be allocated in the main building for unloading and processing material delivered by the curbside recycling vehicles from the service area cities. The curbside processing area would be located in the southwest corner of the building. The area would include a truck scale for recording the net weight of collected materials delivered to the facility, and in-floor hoppers, conveyers, and sorting stations for segregating materials such as glass, cans and plastic.

h. **Entrance Facility.** The entrance facility for the SMaRT station is designed to reduce queuing of traffic and limit the waiting time for inbound vehicles to four minutes. To accomplish this the design includes two inbound lanes with truck scales for franchise collection vehicles and commercial truck traffic. One additional inbound lane is included for weekday public traffic. All three lanes would serve the larger number of public vehicles anticipated on weekends. A fourth inbound lane is included for transfer vehicles, SMaRT station employee traffic, and landfill traffic, so that this traffic may by pass the entrance facility.

The entrance facility would include a 200-square-foot gatehouse for controlling operations and ticketing inbound and outbound commercial vehicles. A 50-square-foot paybooth would also be provided at the inbound public lane.

A single outbound scale would be provided for determining the tare weight of non-account commercial vehicles. A second outbound lane would be provided to allow account vehicles with recorded tare weights as well as the public to bypass the outbound scale. Landfill traffic would also use the bypass lane.

i. Office and Visitor Center. An approximately 9,600 square foot, two-story office/visitor center is proposed on the west side of the building. The center would provide administration, employee, and visitor facilities, including a reception area for visitors, employee restrooms with showers and lockers, an employee lunchroom, administrative offices, and a viewing area of the operating floor.

j. Parking and Staging Area. Project operations would require storage of semi-trailers onsite for loading of non-processibles to go to Kirby Canyon and recovered materials bound for market. An estimated 60 truck trips daily would be needed to remove materials from the SMaRT station when it is operating at capacity. A staging area would be used to keep the loading operation running smoothly. Full trailers may be moved to the staging area prior to being shipped to the landfill or to market, while empty trailers are moved from the staging area to the loadout bay. Initially, six trailers would be staged adjacent to the SMaRT station building on the north side. As volumes to Kirby Canyon from the station increase, an additional gravel-paved area on top of the landfill east of the station would be used to stage more trailers.

3. Circulation

Traffic at the SMaRT station would travel in a counter-clockwise direction throughout. The perimeter road is one to two lanes wide. The interior lane is for vehicles decelerating or accelerating as they enter or exit the main process building, while the exterior lane allows other vehicles to circle the building and exit the site with fewer interruptions.

The interior of the station is laid out so that vehicles driven by the public are directed to an area separate from those used by franchise collection, recovered materials shippers, and transfer vehicles. There is some overlap between the public tipping area and the curbside collection vehicle traffic.

As vehicles exit the SMaRT station site they would be directed into a one lane approach to the intersection of Carl Road (the entrance road) and Borregas Avenue. Once on Borregas, two lanes would be available up to the intersection with Caribbean Drive. At that intersection vehicles returning to Mountain View and Palo Alto would turn left (east) to access Highways 237 and 101, or right (west) to access Mathilda Avenue and Highway 101. Vehicles returning to other portions of Sunnyvale and vehicles with recovered materials being shipped to market would turn either left or right to access Highway 101 from Caribbean Drive/Lawrence Expressway or Mathilda Avenue, depending on their destination. The transfer vehicles headed for the Kirby Canyon landfill would turn left and access Highway 101 southbound via Caribbean Drive/Lawrence Expressway (see Figures II-2, II-3 and II-4).

Circulation is discussed in further detail in Chapter IV.A.

4. Employment and Hours of Operation

The SMaRT station would be open to the public 7 days per week from 8 am to 5 pm and to franchise haulers 16 hours per day, from 5 am to 9 pm. Although the station would operate 24 hours/day, most of the activity at the station would occur over a two-shift (16-hour) period between 5 am and 9 pm. Operations to support curbside collection would be conducted weekdays from 8:00 am to 6:00 pm.

When the station is operating at capacity a staff of about 70 persons would be required during the first shift (5 am - 1 pm), 60 on the second shift (1 pm - 9 pm), and ten on the night shift (9 pm - 5 am).

5. Tipping Operations

a. Franchise Tipping. Franchise and commercial haulers would be directed by traffic control signs along the access road to one of the two inbound scale facilities. The scale is used to measure gross vehicle weights in order to determine disposal fees. From the gatehouse the commercial vehicles would proceed to either the processible or non-processible tipping area. The determination of the processibility of a load would be made at the gatehouse or by pre-arrangement with the hauler.

Once inside the main processing building, the vehicles would be directed to an available discharge stall by a person (a "spotter"). Once in position, the vehicle tips its load onto the floor. The load is typically released by moving forward, so that the refuse is deposited in a short trail along the tipping floor. A "rubber-tired loader" (versus tractor treads) then moves the refuse into a storage pile (for completely processible loads), or into the processing or transfer area.

b. Public Tipping. During the week the public would be directed by traffic signs on the access road to the paybooth at the entrance facility. Public customers are charged at the paybooth according to the volume of material being delivered. Public vehicles would then be directed to the public tipping area or wood/yard waste unloading area, according to the materials in the load.

Once inside the main process building, public customers would be directed by a spotter to an open discharge stall, where they deposit the refuse onto the floor. The refuse is then pushed by wheeled loader to the appropriate section of the main tipping floor where it is mixed with the franchise-collected refuse and eventually sent to the compactor, through mixed waste processing, or source-separated (curbside) processing.

During the week public tipping is kept from the franchise tipping and main operations floor. On weekends public traffic volumes would require that the public use some of the franchise tipping area. Franchise tipping would be at a minimum on the weekend since franchise routes are primarily completed

Monday-Friday. Also, the volume of yard waste increases on the weekend and more public vehicles would be directed to the separate wood/yard waste processing building.

6. Materials Recovery Operations

Materials recovery operations would be conducted in four separate areas of the SMaRT facility. Mixed waste processing and curbside processing would be conducted within the main building, while wood waste processing would occur in a separate building.

a. Mixed Waste Processing. The mixed waste processing area, proposed to be 40,000 square feet in size, is where the incoming refuse containing recoverable materials is processed to remove the recoverables. The equipment required for the operation includes conveyors, manual picking stations, and material collection bins.

After visual inspection for hazardous materials the processible loads that are delivered by franchise vehicles and public self-haul to this area would be moved by front-loader onto a pit conveyer located in the tipping floor. The pit conveyer would feed refuse via an incline conveyer to elevated picking belts where manual sorting would be used to recover paper, metals, wood, glass, and plastic. After manual sorting, the remaining refuse is directed to the compactor loading area for landfill-bound waste.

Material delivered to the station in highly concentrated recyclable loads could be directly loaded onto a conveyor and sent to baling, or may be specially loaded on a conveyor for quick hand-sorting prior to baling.

b. Curbside Processing. The primary service area cities currently operate curbside recycling programs. While the City of Palo Alto may continue to use its own facility for recycling, Mountain View and Sunnyvale would deliver curbside-collected recycling to the SMaRT Station for processing. Curbside collection includes glass, corrugated material, cans, newsprint, plastic, and waste oil.

Waste oil from curbside collection and the public would be received in a separate pull-out area on the south side of the building (Figure II-7). Waste oil from station operations would be kept near the maintenance shop, separate from public waste oil.

Upon entering the curbside processing area the vehicles would be directed to a scale to record gross vehicle weight. The materials would then be discharged into subfloor hoppers according to type (eg. glass into the glass hopper). The vehicle is reweighed after each discharge so that the net weight for each product can be calculated (Figures II-7 and II-8).

Delivered glass, cans and plastic are then processed within the curbside area to further separate them into constituent products. The materials would be stored until enough material has accumulated to be baled or containerized and delivered to market. Newsprint and corrugated material could be directly loaded from the curbside vehicle onto baler feed conveyors to be baled or put through the high grade sorting line to remove contaminants before being baled.

c. Wood Waste Processing. Materials which would be directed to the wood waste processing area include tree trimmings, wood roof shingles, lumber, pallets, and similar timber products. The wood waste processing area would also be used to collect compostable materials such as green garden and landscaping waste with a lower wood content. Compostables would be removed by a separate contractor for composting in an offsite facility.

Incoming loads containing high concentrations of wood or yard waste would be directed by gate personnel to the wood waste processing area (Figures II-7 and II-8). At the wood waste processing area the vehicles are directed by a station employee to available tipping stalls for discharge. Wood waste is inspected on the floor for non-wood contaminants, then pushed onto a floor conveyor which feeds a hammermill shredder. Prior to entering the hammermill shredder feed hopper the material would pass through a magnetic detector to be double-checked for ferrous items which could damage the shredder.

The wood waste would be shredded and the fine materials separated from the larger pieces. The two wood waste streams would be directed into drop boxes for storage at the north end of the wood processing area (Figures II-7 and II-8). The larger material would be sent to market as a fuel product; the fines would be available as a soil amendment. The shredder would be enclosed to reduce noise and would be fitted with dust control equipment.

d. Loadout of Recovered Materials. When operating at capacity, or 2200 tons/day, it is estimated that 550 tons of material would be recovered from the waste stream each day on a 5-day week basis under the 25% recycling scenario, and 1100 tons/day under the 50% recycling scenario. The recovered wood waste materials would be loaded out of the facility from the drop boxes on the north side of the building. Other green materials would be loaded out of the facility from a loading dock on the east side of the building (Figures II-7 and II-8). It is estimated that an average of 30 loads of recovered materials would be generated per day on a 5-day week basis at capacity at 25% recycling, and 60 loads at 50% recycling. If more material is recovered than the market can bear, the recovered materials may be directed to the compactors for disposal at the Kirby Canyon landfill.

7. Hazardous Waste Exclusion Program

Although regular handling of toxic substances or household hazardous waste is not proposed as part of the SMaRT station project, the station operator is required to perform periodic load-checking and operate under a Hazardous Waste Exclusion Program (HWEP) which dictates the procedure for handling toxics which may arrive in the waste stream. The HWEP is intended to prevent disposal of these wastes in the Kirby Canyon landfill.

An example of an HWEP similar to that which would be proposed for the SMaRT station is included in Appendix A. In summary, the HWEP includes personnel training programs in load-checking procedure and identification of undesirable wastes, methods of operation for load inspection, procedures for handling and storage of undesirable wastes, instructions on record-keeping, recommended signage and noticing, and reporting procedures. Unacceptable wastes would be removed from the facility according to the Hazardous Waste Exclusion Program and arrangements made for their proper disposal.

At present the SMaRT station does not have its own HWEP. Under California Administrative Code Title 23 the station is required to have an

HWEP, and one must be developed prior to opening the station. A storage area for materials collected under the HWEP is shown on the Conceptual Site Plan (Figures II-7 and II-8).

Load-checking which would be implemented at SMaRT would be similar to that used at WMNA's Davis Street Station in San Leandro, California (Appendix A). Under this program 2 loads each of general public, larger vehicle general public, roll-off boxes, and route trucks would be selected at random each week for inspection. All suspicious loads would also be inspected.

Loads which are chosen for inspection would be directed to a specific place in the tipping area and discharged so that the waste can be spread thinly for inspection. The area would be cordoned off so that no other waste would interfere. The load-check team would use rakes or other hand tools to inspect the load for hazardous or designated wastes. If no such wastes are found, the load would be pushed to the working area for ordinary processing. If hazardous or designated wastes are found the load-check team would follow the specified procedure for isolating and returning the unacceptable waste to the generator or packing and moving the materials to the hazardous waste exclusion program storage area.

8. Handling of Special Wastes

Special wastes are defined as nonresidential solid, liquid or sludge wastes that the transfer station may be asked to process. These wastes are

- o contained in a drum, barrel, box, pail, portable tank, or other container;
- o transported in a bulk tanker;
- o produced by an industrial process; or
- o produced by a pollution control process.

Examples of special wastes are industrial washwater or sludge, instruments, chemicals, animal products, and grease.

Handling procedures for special wastes at the SMaRT station would include the following:

o Generators are required to inform the SMaRT station operator of the need to dispose of special wastes. These may be new customers or established customers with a new waste stream.

o The generator must write a description of the contents of the special waste(s).

o The operator determines whether analysis of the special waste is required. If so, a sample of the waste is sent to an independent testing laboratory for analysis before it can be delivered to the station.

o Managers of the hauling company, landfill, laboratory and transfer station review the issued involved in handling the special waste. This group determines whether the waste is acceptable.

o Once special wastes are approved for acceptance, formal documentation is prepared. These documents are circulated to personnel involved with the hauling company, the transfer station, and the landfill.

o Each generator of special waste that has an acceptable waste must sign a contract with the operator that specifies waste handling and disposal requirements.

9. Ventilation

Ventilation of the SMaRT station would be achieved by either passive or forced-air systems or a combination of both. Passive ventilation would result from air passing through openings in the station's exterior walls and by differential temperatures existing between the building air and ambient air. The building would have several large roll-up doors that would be open in normal operation, and a large portion of the south and east sides of the building would remain permanently open. Vent (open) areas may also be designed into the building walls under the soffit line. Mechanical forced air ventilation system could use fans to draw air through the building. Exhaust fans may be located in the ceiling or on the building walls.

Potential air emissions at materials recovery and transfer stations include particulates generated by shredding and other processing activities and dust produced by transfer operations. Particulate emissions would be controlled by equipment such as cyclone separators and baghouses that entrain emissions from the shredder. Moreover, shredding would take place in an enclosed building, thereby reducing the potential for releasing particulate emissions to the atmosphere. Dust generated by the unloading of vehicles and the movement of waste would be confined since unloading and handling activities at the SMaRT station would occur inside the station building.

10. Dust Control

Dust generation is inherent in solid waste handling operations. In the case of a transfer station operation the dust is mainly limited to the interior of the building. Dust would be handled through normal building ventilation, localized dust control, and dust protection for affected workers. Localized dust control would be implemented at the wood waste shredder, which is a major source of dust generation. Dust control systems may include equipment enclosures, exhaust ducting, and dust removal equipment such as a baghouse. A safety officer would designate work areas in which dust masks are required.

11. Vector Control

Vectors are animals which may contact the refuse and carry disease. They include birds, rodents, and flies. While typically of concern at a landfill, vectors are not expected to pose a problem at the SMaRT station. The operations are enclosed, and the wastes are compacted and removed within 24-48 hours, so that there is no refuge or breeding area for vectors. In addition, the proposed operation calls for daily sweeping of transfer building floors and access ramps. Reclaimed materials would be baled or binned to reduce the likelihood of attracting vectors.

12. Transfer Operations

Non-processible and residual refuse from the processing system would be compacted and transported to the Kirby Canyon Sanitary landfill for final disposal. Two preload compactor units, each capable of handling approximately 1,100 to 1,600 tons per 16-hour day would be used to compact non-processible refuse for loading into transfer vehicles. A 16-hour day is proposed in order to allow flexibility in timing of transfer vehicle trips to avoid peak hour traffic. A staging area for transfer trailers may in the future be located on top of the landfill adjacent to the east side of the building (Figure II-5, Project Site Topography).

The non-processible and residual refuse would be pushed by a rubber-tired loader to the loading area at the north side of the building (Figures II-7 and II-8). The refuse would then be fed into compactor hoppers. Each compactor takes about twenty minutes to load a trailer with an average payload of 24 tons of refuse.

Assuming an average inflow of 2,200 tons of municipal solid waste per day at capacity, a recycling rate of 25 percent, and a payload of 24 tons, 70 round trip transfer vehicle trips would be required daily (140 one way trips). With 0% recycling, approximately 92 round trips (184 one way trips) to the landfill would be necessary.

F. SMaRT STATION SITE PREPARATION

The project site would require improvements to accommodate the SMaRT station. These improvements include utility extensions and modifications, mass earthwork excavations, engineered fills and embankment construction. Site preparation would include excavating portions of the Sunnyvale landfill.

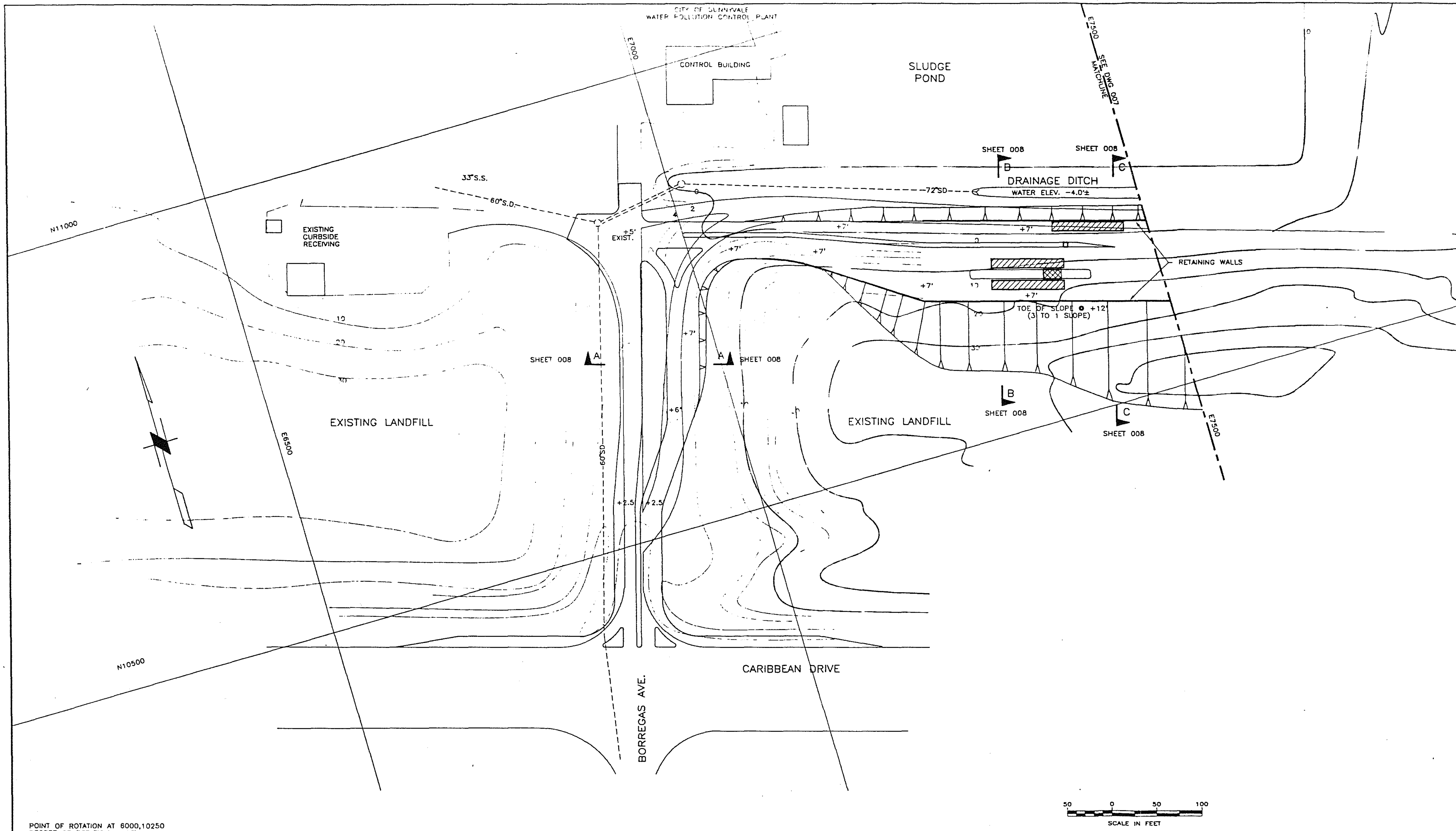
1. Site Topography. The SMaRT station site is located in a developed area adjacent to salt evaporation ponds in San Francisco Bay. The topography is flat and at or near sea level. At present it ranges in elevation from 0 feet to +9 feet above NGVD (National Geodetic Vertical Datum, or mean high water) (Figure II-5, Project Site Topography). The site is protected from flooding by a series of levees and berms between it and the salt ponds. The site is covered by artificial fill materials placed on Pleistocene Bay Mud. Although ponding occurs onsite, the site generally drains to smaller unnamed ditches located between the levees north of the site. Other surface waters in the vicinity of the site include the adjacent sludge lagoons, an unnamed stormwater channel between the site and the sludge lagoons, and the Sunnyvale West Channel, located on the other side of the WPCP from the project site.

2. Excavation and Grading Plan

a. SMaRT Station Site. The anticipated finished floor elevation of the main processing building is +4 feet NGVD with a piling foundation. Native soils at elevation 0 feet NGVD would remain in place with the top 1-2 feet recompacted. An engineered fill about 3 feet in average depth would be placed onsite and compacted above on top of the native soil. Approximately 22-25,000 cubic yards of engineered fill would be required for this site work to achieve the intended building floor elevations.

If a spread-foot foundation is selected rather than a piling foundation, the finished floor elevation would have to be +9 feet rather than +4 feet. This would require approximately 140-150,000 cubic yards of engineered fill to be added to the site.

b. Landfill. Preparation of the SMaRT station site and access road requires excavation of existing landfill in the south and possibly east portions of the project footprint (Figures II-10, II-11, II-12).



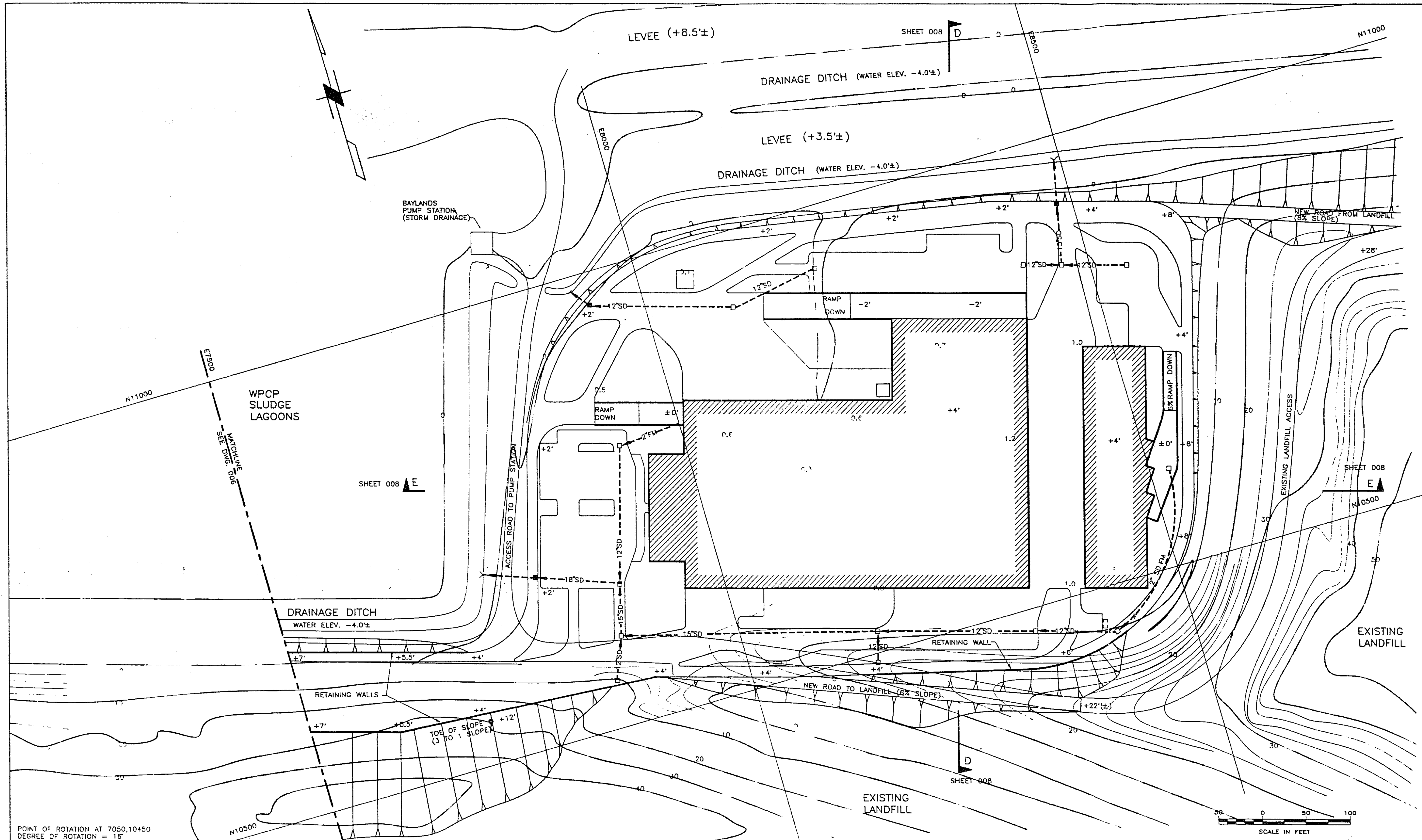
THIS DRAWING HAS BEEN REDUCED TO APPROXIMATELY ONE-HALF THE ORIGINAL SCALE	JOB No. 78686	DESIGNED: GLD	PROJECT ENGINEER: RWC	URS CONSULTANTS	WESTERN REGION 500 N.E. MULTNOMAH PORTLAND OREGON 97232	
	SCALE: 1"=50'	DRAWN BY: H.HOLT	APPROVED BY:			
No. DATE BY REVISION		CHECKED BY:	DATE: JUNE 1990			

WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION

SMaRT STATION
SUNNYVALE CALIFORNIA
CONCEPTUAL GRADING PLAN SH. 1

DRAWING NUMBER: 78686-006 REV. B SHT __ OF __

FIGURE II-10



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	SCALE: 1"=50'	DRAWN BY: H.HOLT	APPROVED BY:			
No. DATE BY REVISION		CHECKED BY:	DATE: JUNE 1990			

WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION

SMaRT STATION
SUNNYVALE CALIFORNIA
CONCEPTUAL GRADING PLAN SH. 2

DRAWING NUMBER: 78686-007 REV. B

FIGURE II-11

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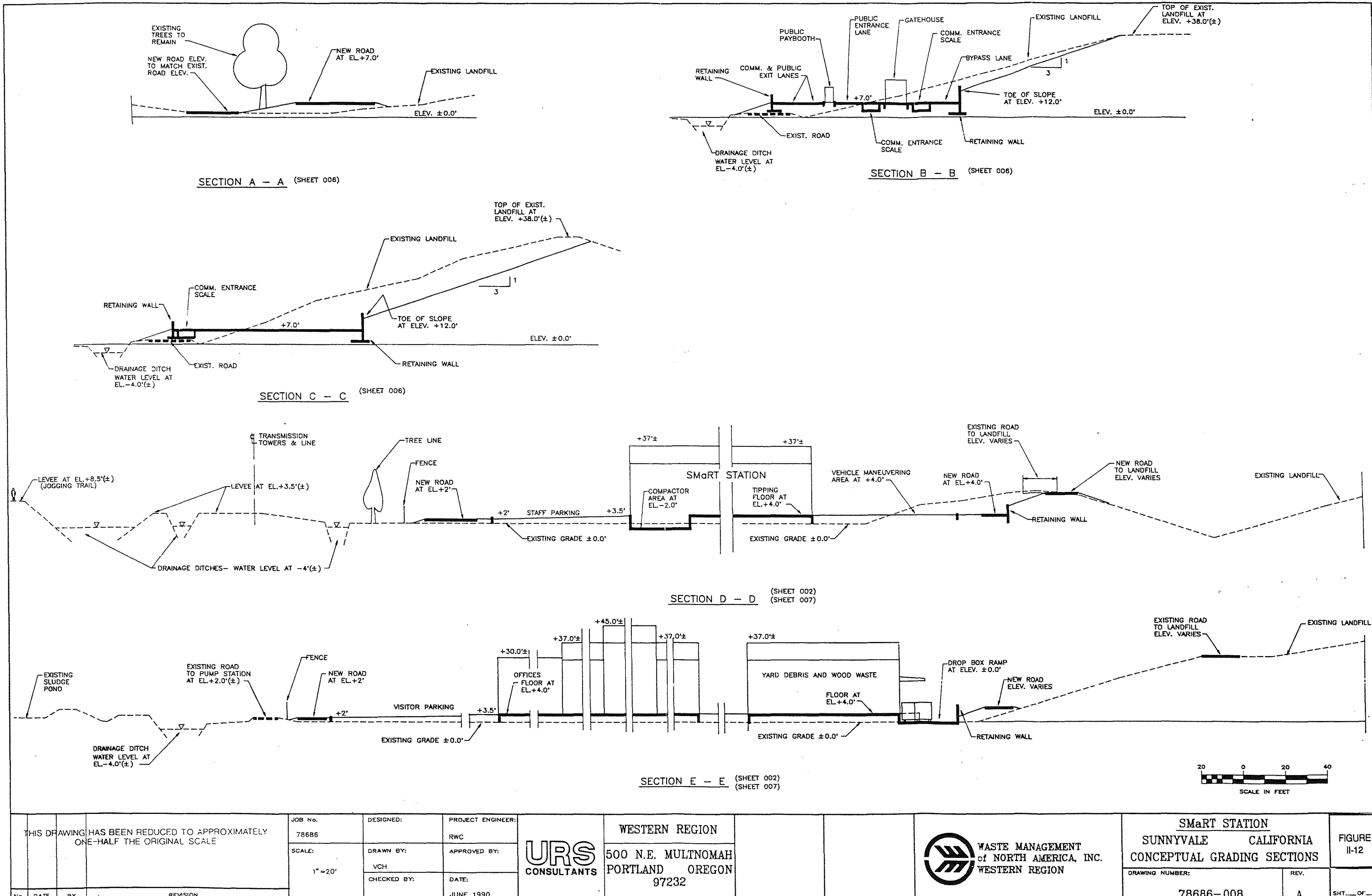

EXISTING TREES TO REMAIN
NEW ROAD ELEV. TO MATCH EXIST. ROAD ELEV.
NEW ROAD AT EL.+7.0'
EXISTING LANDFILL
ELEV. ±0.0'
SECTION A – A (SHEET 006)
PUBLIC PAYBOOTH
PUBLIC ENTRANCE LANE
GATEHOUSE
COMM. ENTRANCE SCALE
EXISTING LANDFILL
TOP OF EXIST. LANDFILL AT ELEV. +38.0'(±)
RETAINING WALL
COMM. & PUBLIC EXIT LANES
BYPASS LANE
+7.0'
TOE OF SLOPE AT ELEV. +12.0'
ELEV. ±0.0'
EXIST. ROAD
COMM. ENTRANCE SCALE
RETAINING WALL
DRAINAGE DITCH WATER LEVEL AT EL.-4.0'(±)
SECTION B – B (SHEET 006)
TOP OF EXIST. LANDFILL AT ELEV. +38.0'(±)
EXISTING LANDFILL
COMM. ENTRANCE SCALE
RETAINING WALL
+7.0'
TOE OF SLOPE AT ELEV. +12.0'
ELEV. ±0.0'
DRAINAGE DITCH WATER LEVEL AT EL.-4.0'(±)
EXIST. ROAD
RETAINING WALL
SECTION C – C (SHEET 006)
TRANSMISSION TOWERS & LINE
TREE LINE
FENCE
LEVEE AT EL.+8.5'(±) (JOGGING TRAIL)
LEVEE AT EL.+3.5'(±)
NEW ROAD AT EL.+2'
+2'
STAFF PARKING
+3.5'
+37'±
+37'±
SMaRT STATION
COMPACTOR AREA AT EL.-2.0'
TIPPING FLOOR AT EL.+4.0'
VEHICLE MANEUVERING AREA AT +4.0'
EXISTING ROAD TO LANDFILL ELEV. VARIES
NEW ROAD AT EL.+4.0'
NEW ROAD TO LANDFILL ELEV. VARIES
EXISTING LANDFILL
RETAINING WALL
EXISTING GRADE ±0.0'
EXISTING GRADE ±0.0'
DRAINAGE DITCHES- WATER LEVEL AT -4'(±)
SECTION D – D (SHEET 002) (SHEET 007)
+45.0'±
+37.0'±
+37.0'±
+30.0'±
+37.0'±
EXISTING ROAD TO LANDFILL ELEV. VARIES
EXISTING LANDFILL
EXISTING SLUDGE POND
EXISTING ROAD TO PUMP STATION AT EL.+2.0'(±)
FENCE
NEW ROAD AT EL.+2'
OFFICES
FLOOR AT EL.+4.0'
YARD DEBRIS AND WOOD WASTE
FLOOR AT EL.+4.0'
DROP BOX RAMP AT ELEV. ±0.0'
NEW ROAD ELEV. VARIES
+2'
VISITOR PARKING
+3.5'
DRAINAGE DITCH WATER LEVEL AT EL.-4.0'(±)
EXISTING GRADE ±0.0'
EXISTING GRADE ±0.0'
RETAINING WALL
SECTION E – E (SHEET 002) (SHEET 007)
20 0 20 40
SCALE IN FEET
THIS DRAWING HAS BEEN REDUCED TO APPROXIMATELY ONE-HALF THE ORIGINAL SCALE
No. DATE BY REVISION
JOB No. 78686
SCALE: 1"=20'
DESIGNED:
DRAWN BY: VCH
CHECKED BY:
PROJECT ENGINEER: RWC
APPROVED BY:
DATE: JUNE 1990
URS CONSULTANTS
WESTERN REGION
500 N.E. MULTNOMAH
PORTLAND OREGON 97232
WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION
SMaRT STATION
SUNNYVALE CALIFORNIA
CONCEPTUAL GRADING SECTIONS
DRAWING NUMBER: 78686-008
REV. A
FIGURE II-12
SHT___OF___

Approximately 20,000 cubic yards of refuse would be excavated and removed from the site to another part of the Sunnyvale landfill. Precautions to control landfill gas would be required prior to and during excavation. Testing of the waste for hazardous components would not be required (T. Pacheco, LEA, pers. comm.). The proposed control of landfill gas is discussed below, under 5.

c. Access Road. Development of the proposed SMaRT station would require construction of a new access road extending east from the existing intersection of Borregas Avenue and Carl Road (Figures II-7, Conceptual Site Plan and II-13, Conceptual Entrance Road). Road construction would require both excavation of existing landfill and earthfill along the edge of the landfill. Borregas Avenue north of Caribbean would be expanded to accommodate the traffic generated by the facility. This would include two additional traffic lanes adjacent to an existing stand of eucalyptus trees. The trees would remain for aesthetic reasons and to provide a safety median strip between opposing traffic lanes entering and exiting the project site.

3. Drainage

Stormwater from the exterior of the SMaRT station would be collected by grate drains and catch basins and conveyed via pipes to the existing stormwater channels located west or north of the site. This stormwater is discharged to Moffett Slough through the existing Baylands pump station at the northwest corner of the project site.

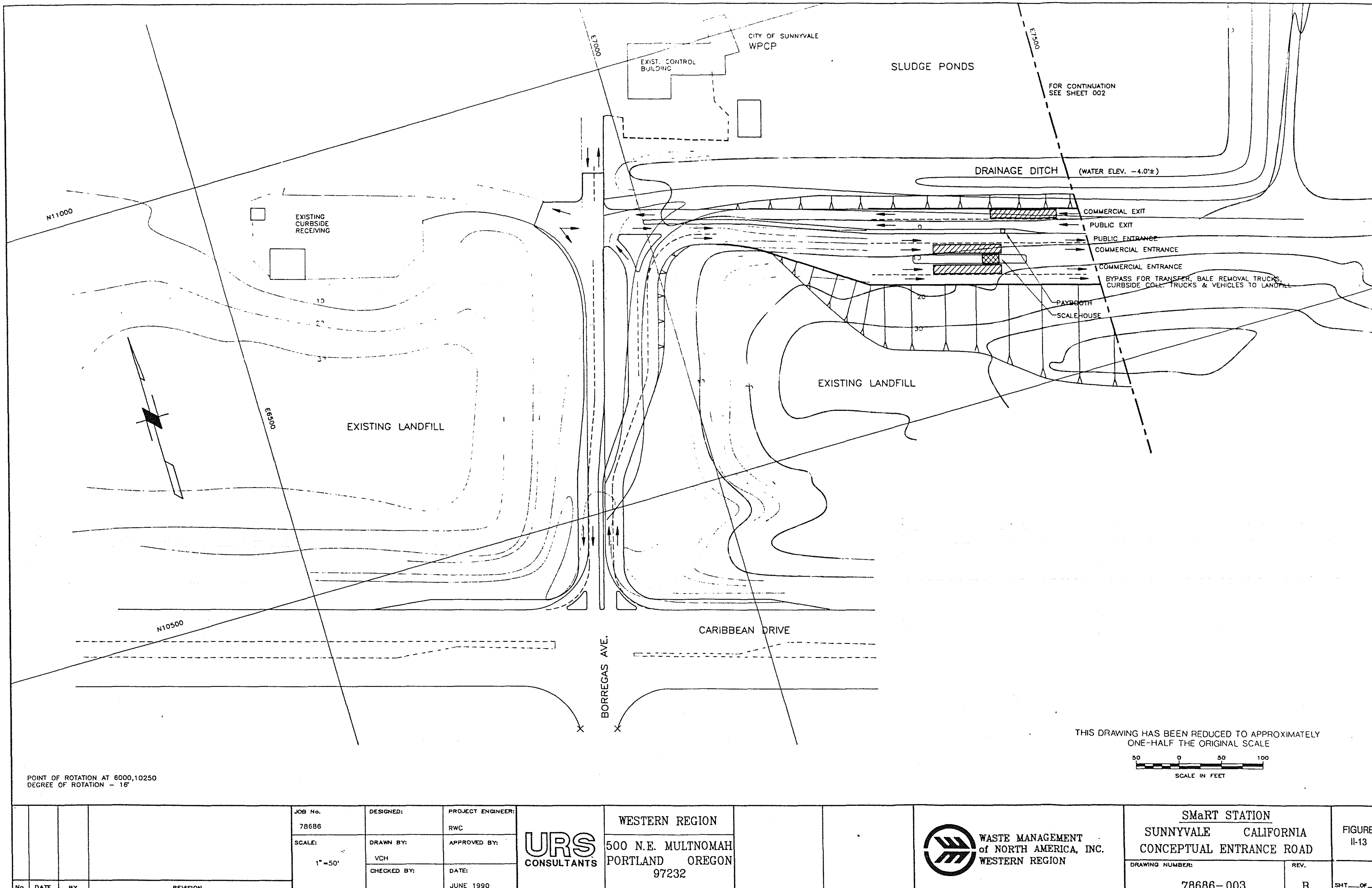
The station operations would be enclosed so that stormwater would not come in contact with refuse. Water which does come in contact with the refuse would be handled as wastewater, not as stormwater.

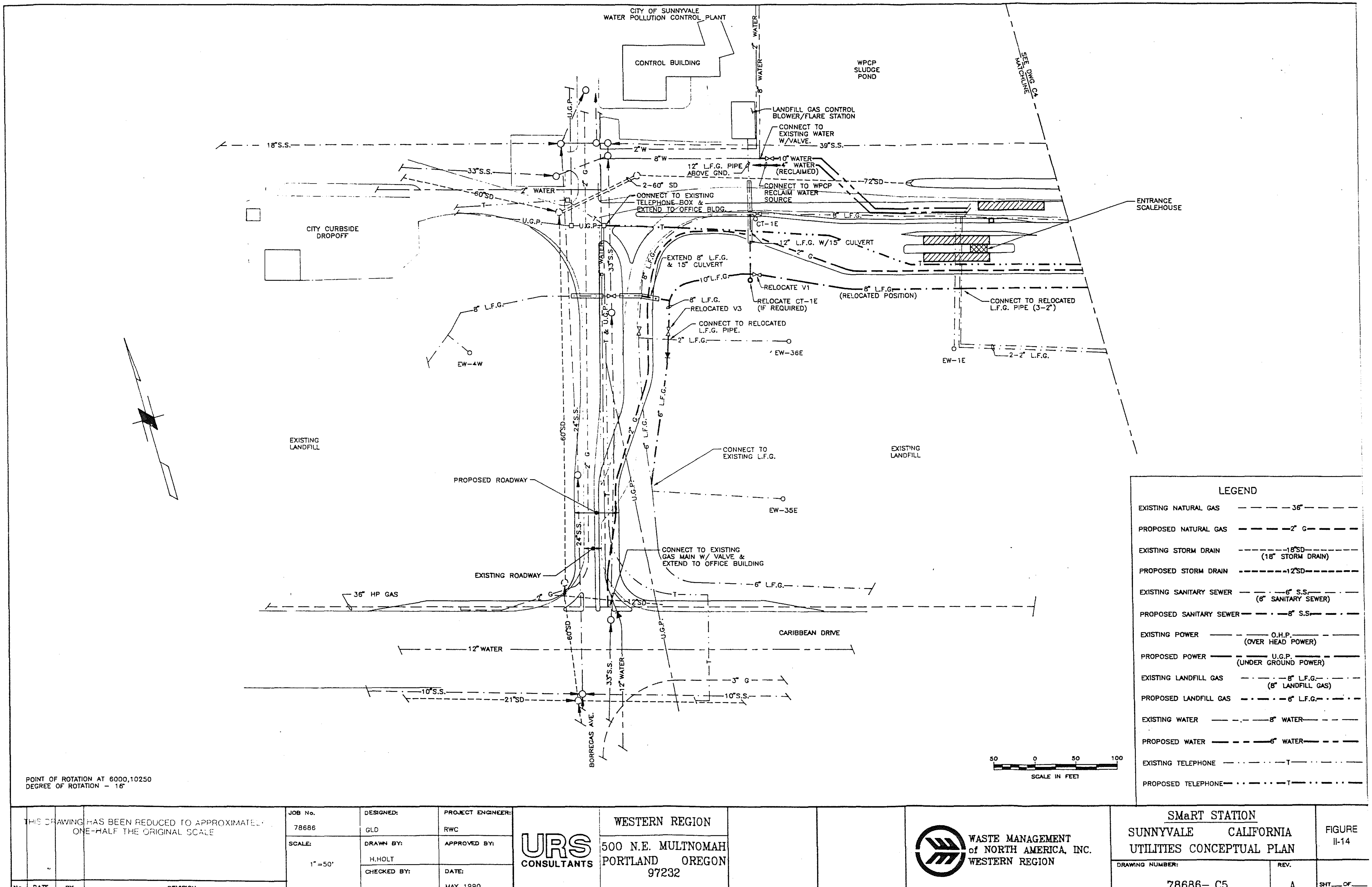
4. Utilities

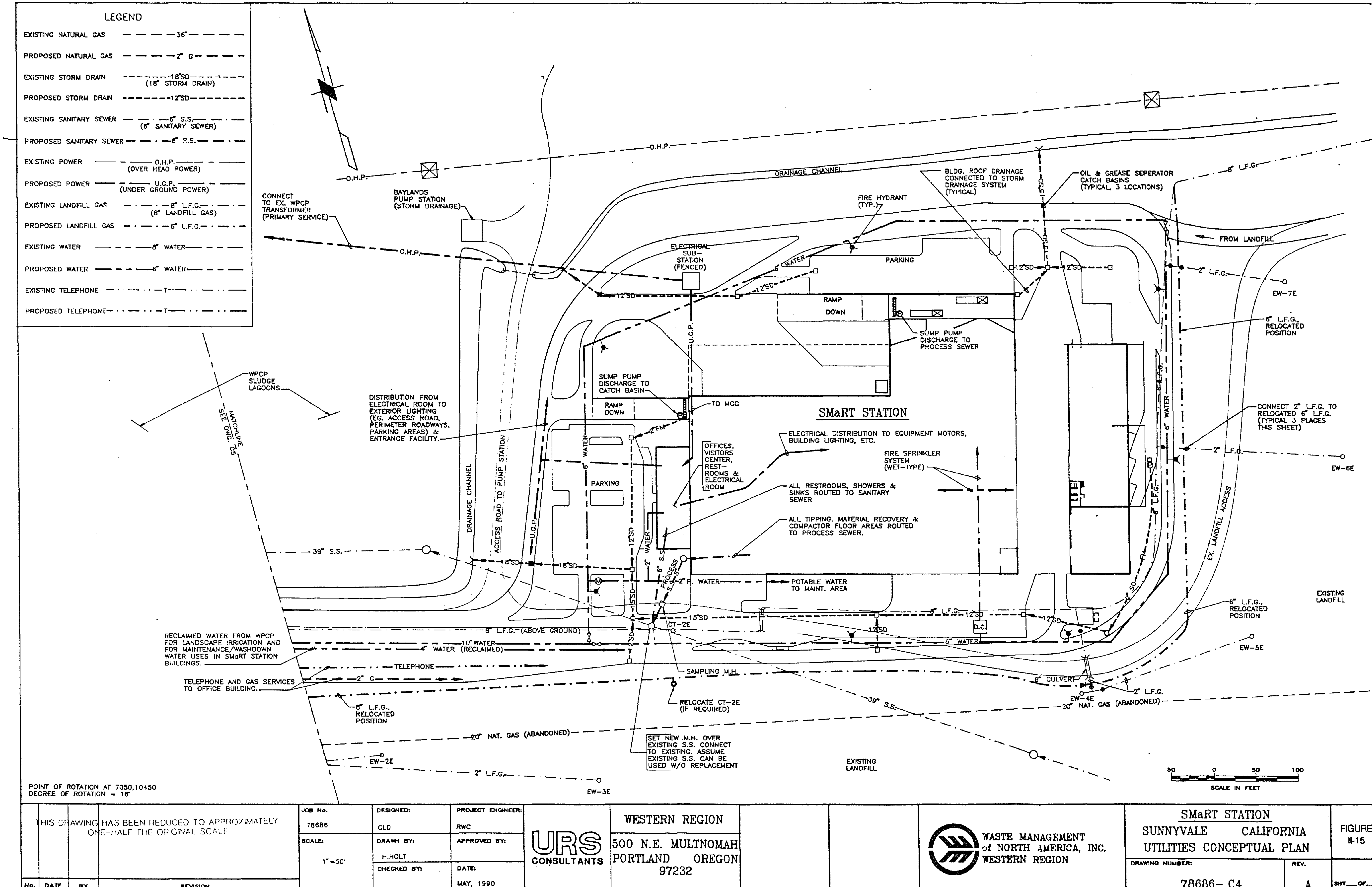
The project site is bounded on three sides by public utilities and improvements, including electric power lines, stormwater drainage channels, a 39-inch sanitary sewer line, and landfill gas collection pipes. The utility improvements required as a part of the project include electric service, telephone service, potable water service, fire protection, and wastewater (sanitary sewer and washdown water) (Figures II-14, II-15).

a. Electric Power. Based on discussions with PG&E, power requirements for the SMaRT station would require the rewiring of an underground service line that currently runs under Borregas Avenue (J. Kruge, pers. comm.). Rewiring would extend from the express feeder line in Caribbean to the north side of the WPCP. The service line must also be extended from the WPCP connection point to the SMaRT station. The improved service line would carry 12 KV; new transformers at the WPCP and SMaRT station would provide 4160 volt and 480 volt service, respectively. Lines extended from the WPCP connection point to the SMaRT station would be overhead, as opposed to underground, and would enter the SMaRT station site at the northwest corner.

b. Telephone. Telephone service would be provided by Pacific Bell from an existing box (#224) on the east side of Borregas Avenue, about seventy feet south of the WPCP entrance gate. Service to this box is provided by two 3.5 inch plastic conduits with 100 cable pairs. The WPCP uses 30 of the 100 pairs, leaving 70 pairs available for the SMaRT station. The unused pairs would require testing and possibly repair, since damage occurred to the telephone lines during earlier construction of the WPCP. The WPCP currently


CITY OF SUNNYVALE
WPCP
EXIST. CONTROL BUILDING
SLUDGE PONDS
E7000
E7500
FOR CONTINUATION SEE SHEET 002
DRAINAGE DITCH
(WATER ELEV. -4.0'±)
N11000
EXISTING CURBSIDE RECEIVING
COMMERCIAL EXIT
PUBLIC EXIT
PUBLIC ENTRANCE
COMMERCIAL ENTRANCE
COMMERCIAL ENTRANCE
BYPASS FOR TRANSFER, BALE REMOVAL TRUCKS, CURBSIDE COLL. TRUCKS & VEHICLES TO LANDFILL
PAYBOOTH
SCALEHOUSE
EXISTING LANDFILL
EXISTING LANDFILL
E6500
N10500
CARIBBEAN DRIVE
BORREGAS AVE.
THIS DRAWING HAS BEEN REDUCED TO APPROXIMATELY ONE-HALF THE ORIGINAL SCALE
50 0 50 100
SCALE IN FEET
POINT OF ROTATION AT 6000,10250
DEGREE OF ROTATION - 16°
No. DATE BY REVISION
JOB No. 78686
SCALE: 1"=50'
DESIGNED:
DRAWN BY: VCH
CHECKED BY:
PROJECT ENGINEER: RWC
APPROVED BY:
DATE: JUNE 1990
URS CONSULTANTS
WESTERN REGION
500 N.E. MULTNOMAH
PORTLAND OREGON
97232
WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION
SMaRT STATION
SUNNYVALE CALIFORNIA
CONCEPTUAL ENTRANCE ROAD
DRAWING NUMBER: 78686-003
REV. B
FIGURE II-13
SHT___OF___


CITY OF SUNNYVALE WATER POLLUTION CONTROL PLANT
CONTROL BUILDING
WPCP SLUDGE POND
SEE DWG C4 MATCHLINE
LANDFILL GAS CONTROL BLOWER/FLARE STATION
CONNECT TO EXISTING WATER W/VALVE.
18"S.S.
39"S.S.
2" W
8" W
10" WATER
4" WATER (RECLAIMED)
12" L.F.G. PIPE ABOVE GND.
33"S.S.
2-60" SD
72"SD
60"SD
2" WATER
CONNECT TO WPCP RECLAIM WATER SOURCE
CONNECT TO EXISTING TELEPHONE BOX & EXTEND TO OFFICE BLDG.
ENTRANCE SCALEHOUSE
CITY CURBSIDE DROPOFF
U.G.P.
CT-1E
12" L.F.G. W/15" CULVERT
2" G
EXTEND 8" L.F.G. & 15" CULVERT
10" L.F.G.
RELOCATE V1
8" L.F.G. (RELOCATED POSITION)
8" L.F.G.
RELOCATED V3
RELOCATE CT-1E (IF REQUIRED)
CONNECT TO RELOCATED L.F.G. PIPE (3-2")
CONNECT TO RELOCATED L.F.G. PIPE.
2" L.F.G.
EW-36E
EW-1E
2-2" L.F.G.
EW-4W
EXISTING LANDFILL
CONNECT TO EXISTING L.F.G.
EXISTING LANDFILL
PROPOSED ROADWAY
24"S.S.
6" L.F.G.
EW-35E
CONNECT TO EXISTING GAS MAIN W/ VALVE & EXTEND TO OFFICE BUILDING
EXISTING ROADWAY
36" HP GAS
12"SD
80"SD
CARIBBEAN DRIVE
12" WATER
33"S.S.
3" G
10"S.S.
21"SD
BORRECAS AVE.
POINT OF ROTATION AT 6000,10250
DEGREE OF ROTATION - 16°
50 0 50 100
SCALE IN FEET
LEGEND
EXISTING NATURAL GAS 36"
PROPOSED NATURAL GAS 2" G
EXISTING STORM DRAIN 18"SD (18" STORM DRAIN)
PROPOSED STORM DRAIN 12"SD
EXISTING SANITARY SEWER 6" S.S. (6" SANITARY SEWER)
PROPOSED SANITARY SEWER 8" S.S.
EXISTING POWER O.H.P. (OVER HEAD POWER)
PROPOSED POWER U.G.P. (UNDER GROUND POWER)
EXISTING LANDFILL GAS 8" L.F.G. (8" LANDFILL GAS)
PROPOSED LANDFILL GAS 6" L.F.G.
EXISTING WATER 8" WATER
PROPOSED WATER 6" WATER
EXISTING TELEPHONE T
PROPOSED TELEPHONE T
THIS DRAWING HAS BEEN REDUCED TO APPROXIMATELY ONE-HALF THE ORIGINAL SCALE
No. DATE BY REVISION
JOB No. 78686
SCALE: 1"=50'
DESIGNED: GLD
DRAWN BY: H.HOLT
CHECKED BY:
PROJECT ENGINEER: RWC
APPROVED BY:
DATE: MAY 1990
URS CONSULTANTS
WESTERN REGION
500 N.E. MULTNOMAH
PORTLAND OREGON 97232
WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION
SMaRT STATION
SUNNYVALE CALIFORNIA
UTILITIES CONCEPTUAL PLAN
DRAWING NUMBER: 78686- C5
REV. A
SHT__ OF__
FIGURE II-14


LEGEND
EXISTING NATURAL GAS 36"
PROPOSED NATURAL GAS 2" G
EXISTING STORM DRAIN 18"SD (18" STORM DRAIN)
PROPOSED STORM DRAIN 12"SD
EXISTING SANITARY SEWER 6" S.S. (6" SANITARY SEWER)
PROPOSED SANITARY SEWER 8" S.S.
EXISTING POWER O.H.P. (OVER HEAD POWER)
PROPOSED POWER U.G.P. (UNDER GROUND POWER)
EXISTING LANDFILL GAS 8" L.F.G. (8" LANDFILL GAS)
PROPOSED LANDFILL GAS 6" L.F.G.
EXISTING WATER 8" WATER
PROPOSED WATER 6" WATER
EXISTING TELEPHONE T
PROPOSED TELEPHONE T
CONNECT TO EX. WPCP TRANSFORMER (PRIMARY SERVICE)
BAYLANDS PUMP STATION (STORM DRAINAGE)
O.H.P.
DRAINAGE CHANNEL
FIRE HYDRANT (TYP.)
BLDG. ROOF DRAINAGE CONNECTED TO STORM DRAINAGE SYSTEM (TYPICAL)
OIL & GREASE SEPERATOR CATCH BASINS (TYPICAL, 3 LOCATIONS)
FROM LANDFILL
ELECTRICAL SUB-STATION (FENCED)
PARKING
RAMP DOWN
SUMP PUMP DISCHARGE TO PROCESS SEWER
EW-7E
6" L.F.G., RELOCATED POSITION
WPCP SLUDGE LAGOONS
MATCHLINE SEE DWG. C5
SUMP PUMP DISCHARGE TO CATCH BASIN
TO MCC
SMaRT STATION
DISTRIBUTION FROM ELECTRICAL ROOM TO EXTERIOR LIGHTING (EG. ACCESS ROAD, PERIMETER ROADWAYS, PARKING AREAS) & ENTRANCE FACILITY.
ELECTRICAL DISTRIBUTION TO EQUIPMENT MOTORS, BUILDING LIGHTING, ETC.
CONNECT 2" L.F.G. TO RELOCATED 6" L.F.G. (TYPICAL 3 PLACES THIS SHEET)
OFFICES, VISITORS CENTER, REST-ROOMS & ELECTRICAL ROOM
FIRE SPRINKLER SYSTEM (WET-TYPE)
EW-6E
ALL RESTROOMS, SHOWERS & SINKS ROUTED TO SANITARY SEWER
ALL TIPPING, MATERIAL RECOVERY & COMPACTOR FLOOR AREAS ROUTED TO PROCESS SEWER.
DRAINAGE CHANNEL
ACCESS ROAD TO PUMP STATION
EX. LANDFILL ACCESS
39" S.S.
POTABLE WATER TO MAINT. AREA
EXISTING LANDFILL
6" L.F.G., RELOCATED POSITION
RECLAIMED WATER FROM WPCP FOR LANDSCAPE IRRIGATION AND FOR MAINTENANCE/WASHDOWN WATER USES IN SMaRT STATION BUILDINGS.
8" L.F.G. (ABOVE GROUND)
10" WATER
4" WATER (RECLAIMED)
CT-2E
EW-5E
TELEPHONE
SAMPLING M.H.
6" CULVERT
TELEPHONE AND GAS SERVICES TO OFFICE BUILDING.
EW-4E
2" L.F.G.
20" NAT. GAS (ABANDONED)
RELOCATE CT-2E (IF REQUIRED)
8" L.F.G., RELOCATED POSITION
SET NEW M.H. OVER EXISTING S.S. CONNECT TO EXISTING. ASSUME EXISTING S.S. CAN BE USED W/O REPLACEMENT
EW-2E
EW-3E
EXISTING LANDFILL
SCALE IN FEET
POINT OF ROTATION AT 7050,10450
DEGREE OF ROTATION = 16°
THIS DRAWING HAS BEEN REDUCED TO APPROXIMATELY ONE-HALF THE ORIGINAL SCALE
No. DATE BY REVISION
JOB No. 78686
SCALE: 1"=50'
DESIGNED: GLD
DRAWN BY: H.HOLT
CHECKED BY:
PROJECT ENGINEER: RWC
APPROVED BY:
DATE: MAY, 1990
URS CONSULTANTS
WESTERN REGION
500 N.E. MULTNOMAH
PORTLAND OREGON 97232
WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION
SMaRT STATION
SUNNYVALE CALIFORNIA
UTILITIES CONCEPTUAL PLAN
DRAWING NUMBER: 78686- C4
REV. A
FIGURE II-15
SHT __ OF __

has problems with the existing telephone service through this conduit.

c. Potable Water. Potable water for domestic, operations, and fire control uses is available from existing twelve-inch City water mains at the intersections of Caribbean and Borregas and Caribbean and Crossman. An eight-inch line serves the WPCP from the main at Caribbean and Borregas.

Water service for the SMaRT station would be connected at the southeast corner of the WPCP. Connection to the existing eight-inch line serving the WPCP would require installation of 750 feet of ductile iron pipe. A 2200-foot ductile iron pipe loop with fire hydrants located at 400-foot intervals would also be required for fire protection. It is estimated that a flow capacity of 2500 gallons per minute would be required to meet fire protection requirements for the SMaRT station. If sufficient capacity is not available through the connection to the line serving the WPCP, the service may need to connect at the main. This would require an additional 1200 feet of ductile iron pipe, and would be accomplished at the same time that the access road is being improved.

Tertiary-treated, reclaimed water from the WPCP may be used for irrigation and washdown water in order to reduce the amount of potable water used.

All water mains, valve boxes and service meter vaults would be adequately sealed to prevent intrusion of landfill gas or corrosion from other elements which may be in the soil.

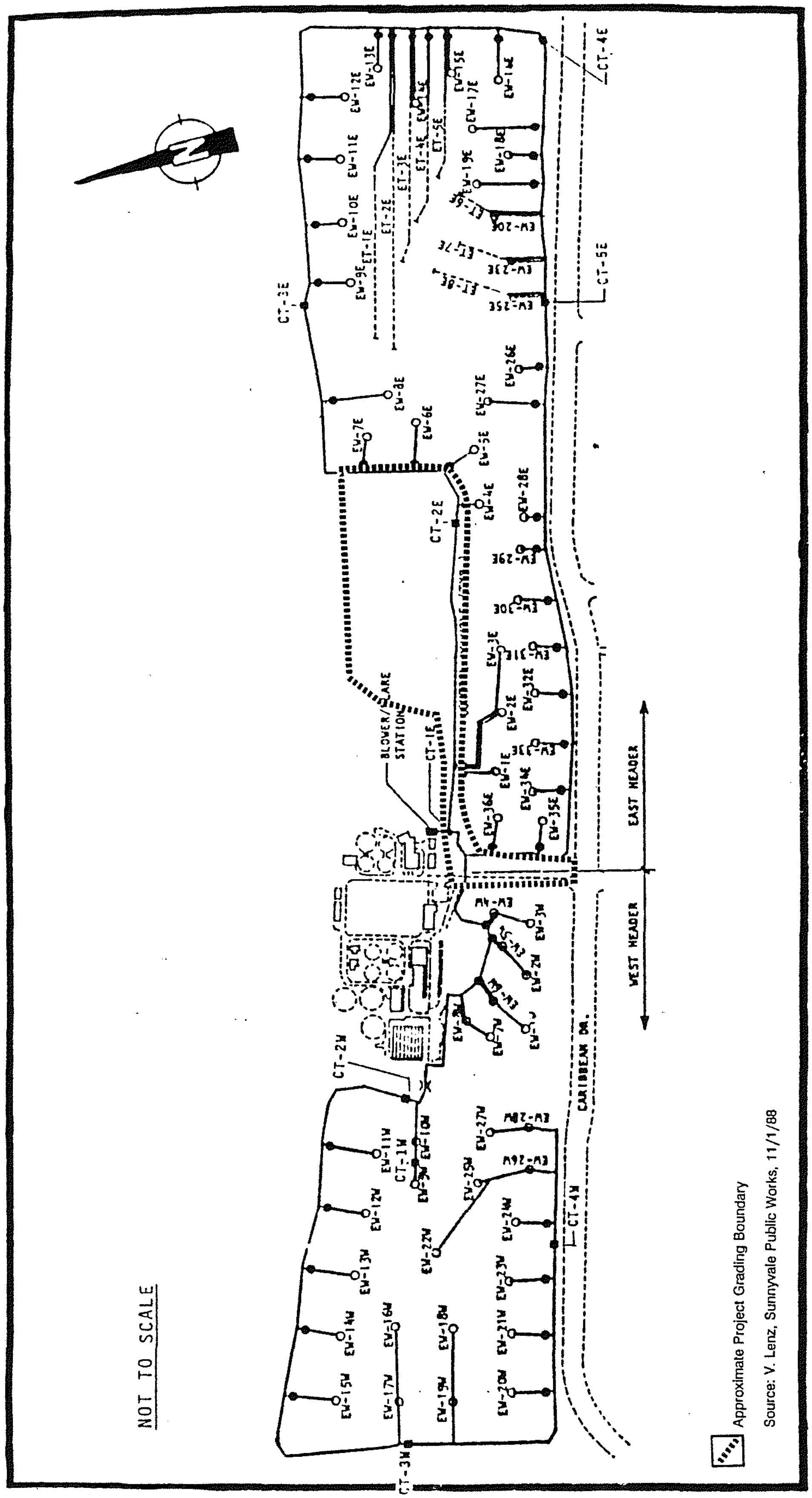
d. Wastewater. An existing 39-inch clay sanitary sewer line runs underground diagonally through the southwest corner of the project site. The wastewater from the project would be discharged into this existing sewer line via a new manhole installed near the southwest corner of the SMaRT building. The sanitary sewer flow from restrooms, showers, etc., can be separated from the washdown/process water sources.

Water used to wash down the SMaRT station floors or equipment would be monitored for flow quantity and composition. If required by the Water Pollution Control Plant, the washdown/process water would be pre-treated before being discharged through the sanitary sewer to the WPCP.

5. Landfill Gas Control System

Portions of the landfill gas system along the access road and along the east and south ends of the project site would have to be relocated to accommodate the SMaRT station (Figure II-16, Landfill Gas Collection System). This relocation project would involve (1) design of a modified piping system, (2) installation of the new pipe and fittings, and (3) removal of the old pipe and fittings. To minimize landfill gas emission problems, the new pipe can be installed first and connected by a valve to the well field. The new piping system can be activated and the old system deactivated through the valve, therefore keeping the system in almost continuous operation. In practice a landfill gas recovery system can often be shut down for several hours to several days before significant gas migration occurs (EMCON Associates, 10/16/89). Existing gas probes around the site would be periodically monitored during the shut down period. If the gas system is shut down for more than 24 hours, a variance must be obtained from the Bay Area Air Quality Management District

FIGURE II-16
LANDFILL GAS COLLECTION SYSTEM



6. Leachate Control System and Dewatering System

Leachate is water which has percolated through landfilled refuse and is usually contaminated with byproducts from the waste. Landfill leachate is typically well controlled and monitored, and reports regarding its production are filed with the Regional Water Quality Control Board. The Sunnyvale Landfill operates under Waste Discharge Requirements. Leachate elevations are monitored quarterly at six leachate sump and riser structures. No leachate collection, treatment, or disposal is currently required at the landfill.

Due to groundwater levels at the project site, dewatering may be required during facility construction. Groundwater is typically encountered at -3 to -7 feet NGVD in the project area. The lowest level of the proposed facility (the transfer trailer loadout area) is approximately -2 feet NGVD.

Construction dewatering, if needed, would be accomplished using conventional dewatering techniques such as interceptor trenches along certain edges of the site or localized sump pumps. Construction may coincide with the dry season and groundwater levels may be lower, reducing the need for dewatering.

An assessment of water quality would have to be made to determine discharge options for the dewatering operation, particularly since it could be contaminated by wastes in the adjacent landfill. Depending on the amount and quality of the water, possible options are to reinject the water into another well, discharge the water to the storm drain, discharge the water directly to the sanitary sewer and the WPCP, use the water for washdown purposes or dust control at the landfill, or export the water. The method of disposal of the dewatering water would be monitored by the Regional Water Quality Control Board (see Chapter III.B).

7. Construction Phase Employment and Traffic

Construction of the facility is expected to take 8-12 months, including 2-3 months for earthwork and 9-10 months for building construction. Assuming no car pooling, parking requirements during construction are estimated to range between 25 and 50 vehicles. Peak construction vehicle activity would be experienced during earthwork/import fill operations, concrete delivery for the SMaRT station foundation and the building assembly. Maximum earthwork traffic is estimated at 32 trucks per day over a period of two months for the +4 foot NGVD scenario (piling foundation), and 188 trucks per day over two months to import the fill needed for the +9 foot NGVD scenario (spread-foot foundation). Removal of 20,000 cubic yards of existing landfill to another portion of the Sunnyvale landfill would require about 25 one-way truck trips per day over the two month period. Concrete trucks would total about 20 per day. Delivery of materials for the building assembly are estimated to be 10-20 trucks per day.

G. CHANGES IN OPERATIONS NECESSARY AT KIRBY CANYON LANDFILL

The SMaRT Station's requirements for landfill capacity are discussed under II.D., above. As noted there, WMNA intends to apply for a change in the landfill permit to allow more than 1500 tons/day of refuse to be accepted in order to accommodate the existing waste stream, the SMaRT Station waste stream, wastes from Contra Costa County, and possibly from San Mateo County.

The permit issued by the City of San Jose for landfill operations limits operating hours to between 7 AM and 5 PM; nighttime operations are not presently permitted. Permit changes would be required to allow disposal at the Kirby Canyon landfill during nighttime hours. The application to change the existing permit includes a request to change the operating hours from 7 am - 5 pm to 12 am - 5 pm, with the landfill being closed during the evening hours of 5 pm to 12 am. This will require new lighting at the landfill, including lighting of the working face and the gatehouse. A berm at the working face is proposed in order to reduce glare in offsite, downhill areas. The landfill would continue to operate six days per week, Monday through Saturday. The transfer station would operate on Sunday as well, and Sunday refuse would be stored at the transfer station until it could be delivered to the landfill on Monday.

The following additional employees and equipment would be required at the landfill to accommodate the SMaRT station when operating at capacity in addition to the existing waste stream:

3 scrapers (eg. Caterpillar 627's) and 3 operators
2 bulldozers (eg. Caterpillar D-9's) and 2 operators
2 compactors (eg. Caterpillar 826-C's) and 2 operators

The Kirby Canyon Landfill project was the subject of an environmental impact report certified by the City of San Jose in 1983. That report assessed the landfill's impacts on geology and soils, seismicity, ground water, surface water, flora, fauna, visibility, land use, public health, traffic, archaeology, flooding, noise, air quality, energy, and public utilities and services. Unavoidable significant environmental effects were found to occur to flora, fauna, and visibility.

The proposal to increase the current tons/day limit from 1500 to 2870 is currently undergoing environmental review by the City of San Jose. An excerpt from "The Kirby Canyon Landfill Report of Disposal Site Information" and answers to the "Environmental Questionnaire" provided to the City of San Jose in support of this application are included in this EIR in Appendix D.

H. INTENDED USES OF THIS EIR

This EIR will be used by the cities of Sunnyvale, Palo Alto and Mountain View, the Santa Clara County Environmental Health Services Department (as LEA), the regional agencies (BAAQMD, RWQCB), and the State agencies (CIWMB, CDFG), in their review of the project. It may also assist in decision-making regarding project design and conditions if the project is approved by the Sunnyvale City Council. It is intended to provide environmental review of the project in fulfillment of requirements of the California Environmental Quality Act (CEQA).

An Initial Study and Notice of Preparation dated 2/13/89 was distributed through the State Clearinghouse to State agencies for their early comment on the project (SCH# 890-22812). The City of Sunnyvale also distributed the Initial Study and Notice of Preparation to local agencies for comment. Responses to the Notice of Preparation were considered in preparing the Draft EIR.

This EIR is also intended to provide the public with an understanding of the project and its environmental effects. The public is invited to comment on the content and adequacy of the EIR in addressing potential impacts prior to its certification as complete. Certification of the EIR is a separate action from project approval and does not guarantee project approval. Project approval is not addressed until the EIR process is finished, at which time comments on the overall desirability of or on specific attributes of the project are invited.

III. CONFORMANCE WITH PLANS, ORDINANCES AND POLICIES

A. FEDERAL

1. U.S. Army Corps of Engineers

The Army Corps of Engineers (ACE) has jurisdiction and permitting authority under Section 10 of the River and Harbor Act of 1899 over the nation's waterways and their associated wetlands. The ACE also has authority under Section 404 of the Clean Water Act to protect the quality of the nation's waters. Once the ACE establishes jurisdiction over a project, the Corps examines potential impacts on wetlands, threatened or endangered species, other valuable fish and wildlife resources, and cultural resources.

The SMaRT station is located adjacent to stormwater drainage channels and wetland associated with San Francisco Bay. These areas would be considered open waters of the U.S. and wetland by the ACE (Figure III-1) and any activities requiring construction in or across or dredging or filling of these waters require ACE permit(s) under Sections 10 and 404.

The design of the SMaRT station does not require interference with the stormwater drainage channels or adjacent wetlands, and is not expected to require ACE involvement under either the River and Harbor Act of 1899 or the Clean Water Act, as amended. It is expected that the ACE will review this EIR, and rrequest detailed project plans to review before determining that a permit is not necessary.

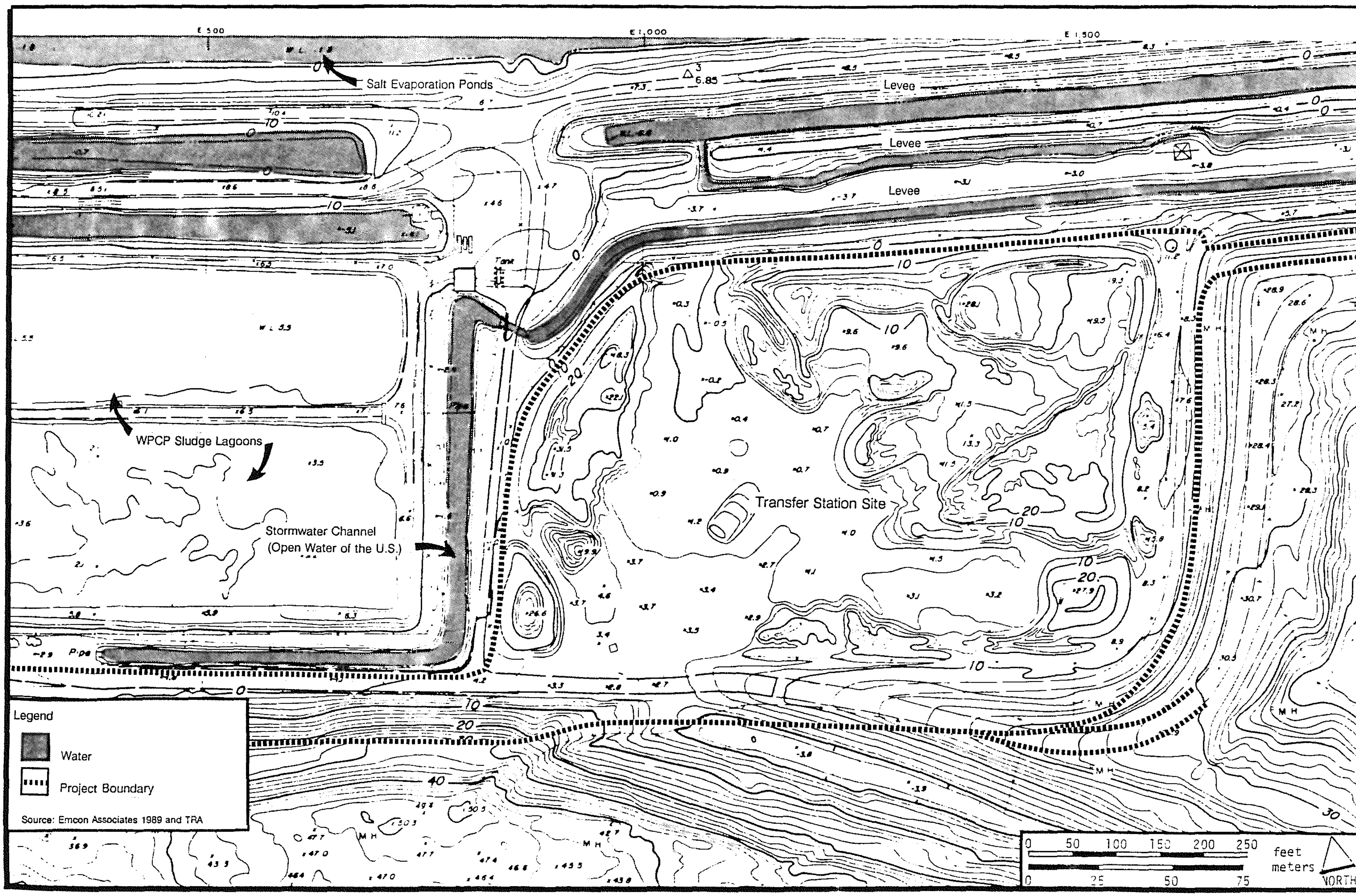
2. U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) is charged with implementing and enforcing the 1973 Endangered Species Act, as amended.

Section 9 of the Endangered Species Act prohibits the take, possession, transport, or interstate or international trafficking in listed animals except by permit for certain conservation purposes. "Take" is defined by the Endangered Species Act as: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a federally listed, endangered species of wildlife, or to attempt to engage in any such conduct." Regulations have broadened the definition of take to include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR Section 17.3).

Section 7 of the Endangered Species Act directs Federal agencies to use their legal authorities to further the purposes of the Act by carrying out conservation programs for listed species. It also requires these agencies to ensure that any actions (development projects) they fund, have permit authority over, or carry out are not likely to jeopardize the survival of a listed species. If an agency finds that one of its activities may affect a listed species, it is required to consult with the USFWS to obtain a biological opinion describing the project's effects on any endangered or threatened species or their critical habitat. For species that are proposed for listing and for which jeopardy is found, Federal agencies are required to

FIGURE III-1
OPEN WATERS AND WETLANDS IN PROJECT VICINITY



confer with the USFWS, although the results of such a conference are not legally binding.

The redesigned SMaRT station is located in an area previously occupied by an asphalt and concrete recycling operation and by the Sunnyvale landfill. Because of the nature of these uses, the site is disturbed to the extent that no native plant or animal life exists there. Because of the absence of biological resources on the project site, the U.S. Fish and Wildlife Service would not be involved in the review or permitting of the project.

The project does have the potential to indirectly affect plant and animal life in adjacent channels and ponds, in the event that excessive runoff degrades the stormwater channel. As described in Chapter II, the station design includes measures to control runoff and prevent channel erosion or increased turbidity.

The Kirby Canyon Landfill is currently operating under a Conservation Plan for the Bay checkerspot butterfly (Euphydryas editha bayensis), a Federally listed Threatened species. Changes in operations required at the Kirby Canyon landfill to accommodate the refuse from the SMaRT station do not include a change in the landfill footprint and are not expected to affect the Bay checkerspot butterfly.

3. Federal Aviation Administration

The proposed SMaRT station would be approximately two miles east of the U.S. Navy Moffett Air Base and associated runway. The Federal Aviation Administration (FAA) regulates development around civil and military airports with Part 77 Regulations, Objects Affecting Navigable Airspace. Part 77 Regulations, among other things, establishes standards for determining obstructions in navigable airspace and establishes requirements for notice to FAA of certain proposed construction which may present an obstruction in navigable airspace. For development projects occurring adjacent to military airports, both the FAA and the appropriate branch of the military would review the development proposal.

FAA Part 77 Regulations apply to equipment, buildings, and vegetation which obstruct airspace. Section 77.28 of the regulations describes the imaginary surfaces extending around military airports in which an object would be considered an obstruction:

"(a) Related to airport reference points.

1. Inner Horizontal Surface - a plane oval in shape at a height of 150 feet above the established airfield elevation. The plane is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of each runway and interconnecting these arcs with tangents.

2. Conical Surface - a surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.

3. Outer Horizontal Surface - a plane, located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.

(b) Related to runways.

1. Primary Surface - a primary surface located on the ground or water longitudinally centered on each runway with the same length as the runway. The width of the primary surface for runways is 2,000 feet. However, at established bases where substantial construction has taken place in accordance with a previous lateral clearance criteria, the 2,000-foot width may be reduced to the former criteria.

2. Clear Zone Surface - a surface located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface.

3. Approach Clearance Surface - an inclined plane, symmetrical about the runway centerline extended, beginning 200 feet beyond each end of the primary surface at the centerline elevation of the runway end and extending for 50,000 feet. The slope of the approach clearance surface is 50 to 1 along the runway centerline extended until it reaches an elevation of 500 feet above the established airport elevation. It then continues horizontally at this elevation to a point 50,00 feet from the point of beginning. The width of this surface at the runway end is the same as the primary surface, it flares uniformly, and the width at 50,000 feet is 16,000 feet.

4. Transitional Surfaces - these surfaces connect the primary surfaces, the first 200 feet of the clear zone surfaces, and the approach clearance surfaces to the inner horizontal surface, conical surface, outer horizontal surface or other transitional surfaces. The slope of the transitional surface is 7 to 1 outward and upward at right angles to the runway centerline."

The proposed SMaRT station would be approximately 2 miles east of the runways at Moffett Field (see Figure II-2, Project Vicinity). At its highest point the SMaRT station building would be approximately 45 feet high and would be screened from the runways by the existing landfill mounds which are approximately 60 feet high. The transfer station building would not intrude into any of the imaginary surfaces described above, and therefore the FAA would not be required to review or comment upon the project (Lt. J. Henderson, U.S. Navy).

Bird Hazard to Aircraft

Landfills are known to attract large numbers of certain types of scavenging birds such as seagulls, blackbirds and starlings. Large numbers of birds can become a hazard to low flying aircraft if a bird is caught in the engine (commonly referred to as a bird strike). On site visits made to the Sunnyvale landfill it was noted that a large number of seagulls were congregated at the active working area. The proposed SMaRT station would not present an attractive foraging area to birds because refuse operations would be enclosed and refuse would be removed from the site daily. Once the Sunnyvale landfill is closed, the large number of scavenging birds should disperse, reducing the bird strike hazard to Navy planes operating out of Moffett Field.

4. U.S. Navy Moffett Air Base

As described above, the U.S. Navy would jointly review any construction project which would affect imaginary surfaces and navigable airspace surrounding Navy airfields.

The proposed project would not affect imaginary surfaces or navigable airspace and would not require review by either the FAA or the U.S. Navy. The Air Traffic Control Facility Officer for Moffett Field has been consulted in regard to any potential impact the project would have on the runways at Moffett Field. A letter has been issued stating that the project would not affect Navy operations (J. Henderson, Lieutenant, U.S. Navy, pers. comm, letter dated November 29, 1989).

B. STATE AND REGIONAL

1. California Integrated Solid Waste Management Act of 1989 (AB 939)

Assembly Bill 939, the "California Integrated Waste Management Act of 1989 (AB 939)", came into effect January 1, 1990. This bill significantly reorganizes existing solid waste legislation, adds new requirements and repeals old ones. However, this bill did not specify policies and procedures to be followed during the transition period and there are many uncertainties regarding the enactment of this legislation. It is likely that "clean-up" legislation will be passed in the near future to clarify uncertain issues. Solid waste regulatory procedures may change in the ensuing months.

Assembly Bill 939, as currently written, repeals Title 7.3 of the Government Code relating to all aspects of solid waste management, recodifies portions of Part 2 of Division 5 of the Health and Safety Code and enacts the California Integrated Waste Management Act of 1989.

An overview of AB 939 is provided below. As "clean-up" legislation is enacted, certain aspects of this analysis may change.

General Provisions

The goal of the California Integrated Waste Management Act is to reduce, recycle and reuse solid waste generated in the state to the maximum extent feasible, to improve regulation of existing solid waste landfills, to ensure that new solid waste landfills are environmentally sound, to streamline permitting procedures for solid waste management facilities, and to specify the responsibilities of local governments to develop and implement integrated waste management programs.

To achieve the above goals, the state is to promote waste management practices in the following order: 1) Source reduction; 2) Recycling and composting; and 3) Environmentally safe transformation and environmentally safe land disposal.

Integrated Waste Management and Recycling Board

The existing California Waste Management Board (CWMB) is to be reorganized into the California Integrated Waste Management Board (CIWMB). The previous responsibilities of the CWMB have been taken away, streamlined or changed altogether under the CIWMB. The role of the CWMB prior to AB 939 is discussed below, under B.4.

The CIWMB may carry on investigations, conduct hearings, and adopt rules and regulations, as necessary to carry out its charge. The board shall hold monthly meetings and submit a biennial report to the Legislature summarizing progress achieved by the board in implementing the programs established pursuant to this division. The board is still, as was the CWMB, the designated State solid waste management agency for all purposes stated in the Federal Resource Conservation and Recovery Act of 1976 and any other federal acts affecting solid waste.

Previously, the CWMB had approval authority over county solid waste management plans and solid waste facility permit applications and modifications. Under AB 939, the CIWMB would review and approve city and county source reduction and recycling elements and the countywide integrated waste management plan. Previously, the CWMB had final approval authority over solid waste facility permits that would be issued by local enforcement agencies (LEAs). Under AB 939, the CIWMB would only review solid waste facility permit applications for conformance with state laws. If the Board determines that the permit is not consistent with state standards, it shall object to provisions of the permit, and shall submit such objections to the LEA for its consideration. The LEA may issue the permit only if it finds that the proposed solid waste facilities permit is consistent with the standards adopted by the Board.

<u>Integrated Waste Management Plans</u>

AB 939 requires the preparation of an Integrated Waste Management Plan (IWMP) by each county, which will replace existing County Solid Waste Management Plans.

The new CoIWMP's are to include source reduction and recycling elements from each city located in the county and for the unincorporated area of the county. These source reduction and recycling elements must include program management of solid waste generated within the city, consistent with the waste management hierarchy. The element must place primary emphasis on implementation of all feasible source reduction, recycling, and composting programs while identifying the amount of landfill and transformation (e.g. waste-to-energy) capacity that will be needed for the solid waste which cannot be reduced at the source, recycled, or composted.

Each source reduction and recycling element must include the following components:

- A waste characterization component
- A source reduction component
- A recycling component
- A composting component
- A solid waste facility capacity component
- An education and public information component
- A funding component
- A special waste component
- A household hazardous waste component
- An integration component

Under Chapter 6, Article 1 each city or county source reduction and recycling element shall include an implementation schedule for diverting 25% of all solid waste from landfill or transformation facilities by January 1, 1995 and 50% by January 1, 2000, through source reduction, recycling and composting activities. Sections 41783, 41784, and 41785 allow for exemptions for meeting the required recycling level.

A countywide siting element must also be prepared by each county which provides a description of the areas to be used for development of facilities with adequate transformation or disposal capacity concurrent and consistent with the development and implementation of the county and city source reduction and recycling elements.

Each county must prepare and submit to the CIWMB in accordance with the schedule set forth in Chapter 6 of the act, a countywide integrated waste management plan, which includes the following:

- o All city source reduction and recycling elements
- o The county's source reduction and recycling elements prepared for the unincorporated area of the county
- o The countywide siting element.
- o A summary of significant waste management problems facing the county
- o Statement of goals and objectives set forth by the countywide task force

The CoIWMP shall be approved by the county and by a majority of the cities within the county which contain a majority of the population of the incorporated area of the county. The CIWMB shall review and approve or disapprove each county and city source reduction and recycling element and each CoIWMP. Any county which has more than eight years of landfill capacity, such as Santa Clara County has, must submit its CoIWMP to the CIWMB on or before January 1, 1994.

Local Enforcement Agencies

On or before August 1, 1991, the CIWMB shall prepare and adopt certification regulations for local enforcement agencies (LEAs). The regulations shall specify requirements that a local agency shall meet before being designated as an LEA. No local agency may exercise the powers and duties of an enforcement agency until the designation is approved by the CIWMB.

The duties of the LEA include:

- o enforce applicable standards pertaining to the minimum standards for solid waste handling and disposal for the protection of air, water, and land from pollution and nuisance, and the protection of the public health.

- o File with the board, upon its request, information the board determines to be necessary.

- o Develop, implement, and maintain inspection, enforcement, and training programs.

- Adopt an enforcement program consisting of regulations necessary to implement AB 939.

Permit and Inspection Program

Under AB 939, the LEA would still process solid waste facility permits. Solid waste facility permit applications must be sent to the CIWMB for a determination of conformance with state standards. If the permit is found by the IWMB not to meet state standards, the LEA may not issue the permit.

The LEA must inspect each solid waste facility within its jurisdiction at least once each month and the CIWMB must conduct at least one inspection each year with the LEA.

Effects of AB 939 on SMaRT Station

Assembly Bill 939 will have several effects on the permitting of the SMaRT station. First, where as previously both the LEA and the CWMB had to approve the solid waste facility permit, now the CIWMB only reviews the permit for consistency with state laws. Secondly, where as a proposed solid waste facility had to be designated as such in both the city's general plan and the CoSWMP, now a new facility can be sited without specific mention in the CoIWMP. Finally, the uncertainties, omissions and subsequent clean-up legislation of AB 939 may affect the permitting process or waste handling standards of the SMaRT station as discussed in this chapter.

As described in Chapter II, Project Description, the level of recycling achieved by the SMaRT station is not guaranteed by Waste Management, although equipment will be installed for resource recovery and the contract would include a financial incentive to recycle. The percentage of input to the station which is recycled would probably fluctuate in response to market conditions and is essentially unpredictable over a 30-year time horizon. An average of 25% recycling would probably be the single most representative figure because the contract with Waste Management would provide a strong economic incentive to achieve this level.

The fluctuation in the amount of waste recycled at the SMaRT station means that the Cities would not be able to rely on the station to meet the 25% recycling goal established by AB 939. The Cities are planning to develop, fund and operate recycling and other waste reduction efforts independant of the SMaRT station to ensure they meet the 25% - 50% requirement.

2. Title 7.3 California Government Code - Solid Waste Management and Resource Recovery

Assembly Bill 939, enacted January 1, 1990, repeals Title 7.3 and establishes a new solid waste management hierarchy. However, AB 939 did not allow for a transition period in which new regulations and procedures could be developed. Thus, Title 7.3 is discussed below as its policies and procedures may guide decision makers during the transition period. The section discussing Assembly Bill 939 is presented above and should be read prior to reading this section.

Title 7.3 of the California Government Code was enacted by the State Legislature in 1972 in response to inadequate methods of planning for and managing of solid wastes. The Legislature declared that it is in the public interest to establish and maintain a comprehensive state solid waste management and resource recovery policy, the objective of which would be to manage solid wastes in the state so as to protect the public health, safety, and well- being, to preserve the environment, and to provide for the maximum reutilization and conversion of wastes to other uses (Section 66702).

Among other things Title 7.3 established the role and responsibilities of the California Waste Management Board, required local agencies to provide adequate solid waste handling services, directed the development of local solid waste management plans and the issues to be addressed in the plans, provided guidelines for resource recovery and recycling programs, and established local enforcement agencies and determined their responsibilities.

Several sections of Title 7.3 specified procedural requirements for the project Applicant in applying for a solid waste facilities permit (Section 66796.30) and the local enforcement agency in processing and issuing the facilities permit.

Section 66796.30 required any person proposing to become an operator of a solid waste facility to file an application for a solid waste facilities permit with the LEA at least 120 days in advance of the date on which it is desired to commence construction. The design and operation of the proposed project had to meet the requirements of the LEA so as to provide for the long-term protection of the environment.

Section 66796.33 declared that when issuing, modifying, or revising any solid waste facilities permit, the LEA had to ensure that primary consideration was given to preventing environmental damage and that the long-term protection of the environment was the guiding criterion. To achieve these purposes, the enforcement agency could prohibit or condition the handling or disposal of solid waste. Any permit could be suspended, modified or revoked by the enforcement agency if there was intentional or negligent violation of any term or condition contained in the permit or there was misrepresentation or failure to disclose fully all relevant facts in obtaining the permit or failure to fulfill terms of compliance.

3. Title 14 California Government Code - State Minimum Standards for Solid Waste Handling and Disposal

Assembly Bill 939, enacted January 1, 1990, establishes new solid waste handling and disposal standards. Assembly Bill 939 may affect the content or the way in which Title 14 is implemented. However, AB 939 did not allow for a transition period in which new regulations and procedures could be developed. Thus, Title 14 is discussed below as its policies and procedures may guide decision makers during the transition period. The section discussing Assembly Bill 939 is presented above and should be read prior to reading this section.

Title 14, Chapter 3, of the California Administrative Code addresses the standards and regulations which pertain to California's solid waste. The purpose of the regulations is "to promote the health, safety and welfare of the people of the State of California, and to protect the environment by establishing minimum standards for the handling and disposal of solid wastes" (Section 17202). These standards range from the establishment of the Solid Waste Management Boards and solid waste management plans to garbage collection, transport and disposal. The standards set forth in Chapter 3 are intended to describe required levels of performance rather than detailed requirements. Whenever possible, operators and designers will be permitted the flexibility in meeting the objectives set by the standards.

The standards and regulations which apply most directly to the SMaRT station cover the storage of wastes, design requirements, operator responsibility and standards for the operation of transfer stations.

For example, Section 17311 states that the owner, operator and/or occupant of any premise or facility is responsible for the safe and sanitary storage of all solid waste accumulated on the property. Section 17341 requires all equipment used for the collection and/or transport of solid waste to be durable, easily cleanable, designed for safe handling, and constructed to prevent loss of wastes from the equipment during collection or transportation. In addition, all equipment is to be maintained in good condition and cleaned in a manner which prevents the propagation or attraction of flies, rodents, or other vectors and the creation of nuisances.

All transfer stations receiving more than 100 cubic yards of wastes per operating day are governed by Sections 17400 through 17413 and Sections 17400 through 17564. These Sections include such regulations as:

Section 17441 In order to obtain a solid waste facilities permit, the operator of a transfer/processing station must file a Report of Station Information with the local enforcement agency. The information contained in the Report shall be used by the enforcement agency to determine whether a permit should be issued. Specific information must be provided in the Report as specified in this Section.

Sections 17451-17453 The design of a new station shall utilize expert advice, as appropriate and shall be based on appropriate data regarding the service area, anticipated nature and quantity of wastes to be received, climatological factors, physical settings, adjacent land use, types and number of vehicles anticipated to enter the station, drainage control, the hours of operation and other pertinent information.

Sections 17461-17463 Each station operator is required to maintain records of weights or volumes handled in a manner and form approved by the local enforcement agency and operators of stations handling an average of 100 cubic yards of waste or more must maintain records of fires, injury, property damage accidents, explosions, incidents regarding hazardous wastes and other unusual occurrences. These records are to be open to inspection by the local enforcement agency and other regulatory and enforcement agencies.

Sections 17471-17474 It is the responsibility of the operator of the station to provide adequate numbers of qualified personnel to staff the station and deal effectively and promptly with matters of operation, maintenance, environmental controls, records and emergencies. The station operator is also required to provide adequate supervision to insure proper operation of the station in compliance with all applicable laws, regulations, permit conditions and other requirements.

Sections 17481-17484 It is the responsibility of the operator to provide adequate station improvements including pertinent signage, security around the perimeter of the station and reasonably smooth road surfaces.

Section 17485 Transfer stations shall have appropriate treatment of areas open to public view to create and maintain an attractive and aesthetically acceptable appearance as approved by the LEA and the local land use authority.

Sections 17491-17497 Adequate sanitary facilities, drinking water, communications facilities, lighting, and fire fighting equipment shall be provided for station personnel to ensure their safety. Also the station shall be designed, constructed and operated so that contact between users and solid wastes is minimized.

Section 17512 Each station handling an average volume of over 100 cubic yards of waste per day shall be cleaned daily of all loose materials and litter, or on a schedule approved by the local enforcement agency. All boxes, bins, pits or other types of containers used shall be cleaned on a schedule approved by the local enforcement agency.

Section 17513 Any station handling an average volume of over 100 cubic yards of waste per day shall have any solid wastes deposited at the site removed every 48 hours or in accordance with an approved operations schedule.

Sections 17516-17517 Recovery of materials from the waste steam and volume reduction operations such as baling and shredding are permitted as long as they are an integral part of the operation of a transfer station, subject to conditions established by the local enforcement agency, the local land use authority, or other approval agencies. Salvage and volume reduction activities shall not interfere with other aspects of station operation and shall be controlled to minimize health, safety or nuisance problems.

Section 17520 Salvaged materials generated on-site or imported shall be placed for storage away from other activity areas and limited to a volume as approved by the local enforcement agency, local land use authority or other approval agencies and which minimizes the harborage or attraction of flies, rodents or other vectors and the creation of nuisances, and minimizes the risk of fire or other hazards.

Section 17531-17538 Each station shall be operated and maintained in such a way as to not create a public nuisance. Efforts shall be made to minimize the creation of dust, to control vectors, birds, noise generation, and odors, and to collect litter and loose materials on a regular basis. Drainage shall be handled as specified in the station design, unless an alternative method which achieves the design objectives is approved by the LEA. Drainage leaving the station shall not contain solids, wash water or leachate emanating from solid wastes. Placement of drainage or cleanup water in a sanitary sewer shall be prohibited unless approved by the local sewerage authorities. Drainage control should be coordinated with the California Regional Water Quality Control Board.

Section 17561-17564 Special wastes such as hazardous, infectious or liquid wastes shall not be accepted by a station unless the station is adequately equipped to handle such wastes as authorized by the local enforcement agency, the local health entity, or other approval agencies.

4. California Waste Management Board/California Integrated Waste Management Board

Effective on or about July 1, 1990, Assembly Bill 939 will reorganize the California Waste Management Board into the California Integrated Waste Management Board (CIWMB). The role and responsibilities of the new Board are addressed in B.2, above. Because the CIWMB will not be appointed until July of 1990, the California Waste Management Board will be retained until then. A discussion of the California Waste Management Board is provided below.

The California Waste Management Board is lead agency for implementation of the Federal Resource Conservation and Recovery Act of 1976 (RCRA) and in that capacity prepared the State Solid Waste Management Plan. This plan takes into account both federal and state laws and functions as the foundation for a statewide management strategy designed to:

1) protect the public health and environment from adverse effects associated with solid waste disposal,

2) encourage resource conservation and recovery,

3) provide adequate disposal capacity, and

4) deal with other issues relevant to solid waste management.

The Board is a lead agency and has the authority to approve county solid waste management plans and coordinate the activities of other agencies but it cannot prescribe their policies or programs. Once the Board approves a local solid waste management plan, that plan is considered to be consistent with the Board's adopted policies.

The responsibility of solid waste management falls mainly to local authorities. An LEA issues the permit for operation of a waste handling facility and enforces its stipulations, with final approval from the State Board and in concurrence with the State Minimum Standards for Solid Waste Handling ("Subchapter 15"). The Santa Clara County Environmental Health Services Department is the LEA for the City of Sunnyvale (see discussion in C.1 below).

5. California Air Resources Board/Bay Area Air Quality Management District

The California Air Resources Board (CARB) establishes air quality and emission standards and rules for Air Quality Management Districts (AQMD's) based on EPA guidelines under the Clean Air Act. AQMDs are responsible for implementing local air quality controls, and issuing permits for modifications for new sources of air pollution. The SMaRT station would fall under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD).

The permits issued by the AQMDs are the Authority to Construct and Permit to Operate. The Authority to Construct Permit must be obtained prior to start of construction. A Permit to Operate is issued approximately 60 days after start of operation and must be renewed annually.

The potential air emissions at the SMaRT station include particulates generated by shredding and other processing activities and dust produced by transfer operations. Particulate emissions would be controlled by cyclone separators and baghouses that entrain emissions from the shredder.

These permits can be applied for as soon as the Applicant can estimate emissions from the project and provide a conceptual layout of the transfer system. If it can be demonstrated that air emissions from the project would be minimal, it is possible that the District may grant an exemption from the Authority to Construct Permit.

The construction of the SMaRT station would require the excavation of landfill material in the Sunnyvale landfill and the redesign of the landfill's gas control system. These activities would affect the landfill's permit with the BAAQMD.

The portions of the landfill gas system which would have to be relocated are along the access road and along the east and south ends of the project site. The relocation process would involve the 1) design of a modified piping system, 2) installation of the new pipe and fittings, and 3) removal of the old pipe and fittings. The project engineers have not yet determined the configuration of the new system or the process by which old pipe would be removed and new pipe installed. It may be possible to install and activate the new pipe before deactivating the old pipe. This would minimize landfill gas emissions. The new design of the gas collection system must also be submitted to BAAQMD for review and approval.

If activating the new system before taking out the old system is not possible, then the landfill's gas recovery system would not operate during the time it would take to install the new system. In practice a landfill gas recovery system can often be shut down for several hours to several days before significant gas migration occurs (EMCON Associates, 10/16/89). However, if the gas system is shut down for more than 24 hours, a variance must be obtained from the BAAQMD.

Because of the proximity of the transfer building to the Sunnyvale landfill, it may be necessary to protect the building from the accumulation of migrating landfill gas. The likelihood that this would be necessary is reduced by the fact that all excavations of the landfill are in the area of the roadways and not under the SMaRT station building. If a collection system for the SMaRT station is required, the system may be connected to the landfill gas collection system and flared with gas collected from the landfill. If this were to occur, the Landfill's permit with the BAAQMD would have to be amended to reflect these changes.

6. California Department of Health Services

a. Regulation of Sludge Disposal

The primary state statutory provisions governing hazardous waste management are contained in Chapter 6.5 of Division 20 of the Health and Safety Code known as the Hazardous Waste Control Act (HWCA). The HWCA directs the State Department of Health Services (DHS) to adopt regulations governing the identification and management of hazardous wastes (California Environmental Law Handbook, February 1989).

Preliminary geotechnical investigations of the site revealed that the portion of the site which was historically used as a sludge lagoon for the

Water Pollution Control Plant (WPCP), still contains pockets of sludge. Sludge from a wastewater treatment process is sometimes considered to be hazardous because of the concentration of certain metals and other contaminants in the sludge. A total site assessment is currently being performed and will determine the engineering quality of on site soil and the approximate location and depth of the sludge.

Under Title 22 of the Health and Safety Code, it is the generator's responsibility to determine if the waste generated is defined as hazardous. As the City of Sunnyvale's WPCP originally generated the waste, the City is considered to be the generator and must be the party which determines the sludge's characteristics. The statutory definition of "hazardous waste" is "a waste, or combination of wastes, which may cause an increase in mortality or certain serious illnesses, or may pose a substantial hazard to human health or the environment when improperly managed, because of its quantity, concentration or physical, chemical or infectious characteristics" (California Environmental Law Handbook, page 71). The regulations state that hazardous wastes are those materials meeting the statutory definition, including: 1) waste that is hazardous under any criterion specified in Article 11 of the regulations, or that consists of or contains a hazardous substance listed in Article 9 of the regulations; 2) a waste that is a mixture of any substance with a hazardous waste.

The Article 11 criteria for identifying hazardous waste are toxicity, ignitability, reactivity, corrosivity or whether the waste appears on specified EPA regulatory lists of hazardous waste. Generally, a waste is toxic under article 11 if it has been shown " to pose a hazard to human health or the environment because of its carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties or persistence in the environment (California Environmental Law Handbook, page 71).

There are three options for handling the sludge on site: 1) leave the sludge undisturbed and place appropriate fill on top of it; 2) gather the sludge in a controlled area on site and encapsulate it; or 3) excavate the sludge and dispose of it off site. As currently proposed the project would entail recompacting the top one to two feet of soil on the site and adding engineered fill on top of that to reach the necessary foundation elevation. This could result in the disturbance and subsequent burial of sludge present at the site. If the sludge is left in place, undisturbed, no regulatory review or action would be necessary. However, if the sludge is determined to be hazardous waste and it is disturbed, collected and encapsulated or disposed of off site, the DHS would regulate handling of the sludge in compliance with State and Federal regulations. If the sludge is not defined as hazardous, its disposal is regulated by the Regional Water Quality Control Board, discussed under 7., below. Title 23, Subchapter 15, Discharges of Waste to Land specifies how the RWQCB is to regulate its disposal.

b. Hazardous Waste Exclusion Program

In consultation with the Regional Water Quality Control Board, the DHS would review and approve the station's Hazardous Waste Exclusion Program (HWEP) which would be implemented to ensure that toxic or hazardous wastes are removed from the waste stream and do not reach the landfill. Trained personnel would be required to randomly check loads for waste materials prohibited from disposal at the transfer station or the landfill. Unacceptable wastes would be removed from the facility according to the HWEP.

A sample HWEP is included as Appendix A to this EIR, and is also discussed in Chapter II.

7. State Water Resources Control Board/Regional Water Quality Control Board

a. National Pollution Discharge Elimination System Permit

The Dickey Act of 1949 established the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCB's). The SWRCB has jurisdiction over disposal operations if they may adversely affect water quality. The SWRCB also manages water rights issues, statewide water quality problems and appeals from the Regional Boards.

A National Pollution Discharge Elimination System permit (NPDES) from the RWQCB for the San Francisco Bay Region would be required if the project were to discharge to waters of the state. As currently planned, the project would not be discharging to the waters of the state and would not require an NPDES permit through the RWQCB.

It is estimated that the project would generate 11,000 gallons of wastewater per day (0.01 million gallons per day). As currently proposed, all domestic wastewater and floor and equipment washdown water would be sent to the Sunnyvale Water Pollution Control Plant (WPCP) for treatment.

If current plans change and the project's wastewater is treated at the site and discharged to a storm drain or to a slough, an NPDES permit would be required.

Although the RWQCB would not be directly involved in the permitting process, the Board has expressed interest in reviewing design plans as early as possible in the planning process. Specifically, the Board is interested in any design or operational features that might pose a threat to surface water or groundwater. The SMaRT station design plans would therefore be submitted to the Bay Area RWQCB for comment.

b. Regulation of Sludge Disposal

Under Subchapter 15 the RWQCB controls the disposal of sludge to land. Article 2, Section 2520 of Subchapter 15 establishes waste classifications that cannot be discharged directly or indirectly to waters of the state and which therefore may be discharged to land for treatment, storage or disposal in accordance with the requirements of this subchapter. The waste classifications described are Hazardous Wastes, Designated Wastes, Nonhazardous Solid Waste and Inert Waste. Discharges of hazardous, designated or nonhazardous solid wastes are permitted only at waste management units which have been approved and classified by the appropriate regional board in accordance with the criteria established in Article 3 of Subchapter 15, and for which waste discharge requirements have been prescribed or waived pursuant to Article 9 of Subchapter 15.

Under Section 2523 of Subchapter 15, water treatment sludge is considered a Nonhazardous Solid Waste and "may be discharge at a Class III landfill under the following conditions, unless the Department of Health Services determines that the waste must be managed as a hazardous waste:

1) The landfill is equipped with a leachate collection and removal system;

2) The sludge contains at least 20 percent solids if primary sludge, or at least 15 percent solids if secondary sludge, mixtures of primary and secondary sludges, or water treatment sludge; and

3) A minimum solids-to-liquid ratio of 5:1 by weight shall be maintained to ensure that the codisposal will not exceed the initial moisture-holding capacity of the nonhazardous solid waste. The actual ratio required by the regional board shall be based on site-specific conditions."

Prior to disposal the sludge must be accurately characterized and determinations made of whether the wastes will be compatible with containment features and other wastes at a waste management unit, and whether or not wastes are required to be managed as hazardous wastes under Section 66300 of Title 22 of the California Government Code (see 6., above).

Sludge existing on the SMaRT station site would be managed according to DHS regulations (see 6., above) or by the RWQCB through its regulation of landfill sites.

8. Bay Conservation Development Commission

Under the 1965 McAteer-Petris Act the Bay Conservation and Development Commission (BCDC) is responsible for maintaining and carrying out the provisions of the San Francisco Bay Plan. The Bay Plan is a comprehensive plan which has as its goal the conservation of the water of San Francisco Bay and regulation of development along its shoreline. The policies of the Plan include prevention and preclusion of fill in the Bay, promotion of public access, and reservation of spots on the Bay for water related pursuits. A permit is required by BCDC for construction within its jurisdiction and for regulation of on-going operations and facilities.

The area over which the Commission has jurisdiction includes:

a) San Francisco Bay, being all areas that are subject to tidal action from the south end of the Bay to the Golden Gate and to the Sacramento River line, including all sloughs, and specifically, the marshlands lying between mean high tide and five feet above mean sea level, tidelands (land lying between mean high tide and mean low tide) and submerged lands (land lying below mean low tide).

b) A shoreline band consisting of all territory located between the shoreline of San Francisco Bay as defined in (a) above, and a line 100 feet landward of and parallel with that line. Specific areas can be excluded from regulation if the Commission declares it is of no regional importance to the Bay.

c) Saltponds consisting of all areas which have been diked off from the Bay and have been used during the three years immediately preceding the effective date of the amendment of this section during the 1969 Regular Session of the Legislature for the solar evaporation of Bay water in the course of salt production.

d) Managed wetlands consisting of all areas which have been diked off from the Bay and have been maintained during the three years immediately preceding the effective date of the amendment of this section during the 1969 Regular session of the Legislature as a duck hunting preserve, game refuge or for agriculture.

e) Certain waterways near the Bay having tidal action.

The proposed site for the SMaRT station is immediately south of the Bay and associated levees and is within the jurisdiction of BCDC. The Applicant is in the process of submitting a permit application. The Commission may deny an application for a permit if impacts to the Bay and shoreline are significant or if the project fails to provide maximum feasible public access to the Bay and shoreline. The SMaRT station would neither prevent access to the Bay and shoreline nor change existing access patterns, nor change the contour of the bay shoreline.

9. California Department of Fish and Game

Under Sections 1601-06 of the California Fish and Game Code, the California Department of Fish and Game (CDFG) has discretionary authority over a project if it requires a Streambed Alteration Agreement. Any project which "substantially diverts or obstructs the natural flow or substantially changes the bed, channel, or bank of any river, stream or lake, or uses any material from a streambed, or drills a well in the 100-year flood plain," may require a Streambed Alteration Agreement from the CDFG before it can begin construction. The Department cannot grant the permit if it would result in the taking of endangered species or their habitat.

As proposed, the SMaRT station would not affect any river, stream or lake and thus would not require a permit from CDFG.

Wildlife biologists from CDFG, Region 3, made two separate visits (6/89 and 8/89) to the project site. Concerns raised by the biologists over the project were related to impacts to adjacent wetland including the storm drainage channel and the sludge lagoons and the impact of night operation and night lighting on local wildlife, particularly nesting birds. These impacts on wildlife are addressed in Chapter IV.G, Wildlife.

In their written response to the Notice of Preparation, CDFG noted concern over the importance of the sludge lagoons as wildlife habitat and the impact to wildlife if the lagoons should be disturbed. The project is located east of the sludge lagoons and storm drainage channel, and will not affect these sensitive areas.

C. Local

1. Santa Clara County Solid Waste Management Plan

Assembly Bill 939, the California Integrated Solid Waste Management Act of 1989, came into effect January 1, 1990. This bill significantly reorganizes existing solid waste legislation, adds new requirements and repeals old ones. Specifically, AB 939 repeals previous legislation which required counties to prepare a county solid waste management plan (CoSWMP).

Under AB 939, counties are required to prepare Integrated Waste Management Plans which are to take the place of the CoSWMP. However, AB 939 did not specify policies and procedures to be followed during the transition period. Under AB 939, counties which have more than eight years of landfill capacity, such as Santa Clara County, have four years (until January 1, 1994) to submit their new county plans for approval. In effect, this leaves Santa Clara County without a guiding solid waste management plan for four years. Faced with this situation, Santa Clara County intends that the existing CoSWMP will be used as a planning guide for the next four years (Margaret Rands, pers. comm.). Thus, the CoSWMP is discussed below.

Section B.1., of this chapter, discussing AB 939 should be read prior to reading this section.

a. Overview

Section 66780 of the California Government Code required each county to prepare a County Solid Waste Management Plan (CoSWMP), and to review and update that Plan every three years. The 1989 Revision of the Santa Clara CoSWMP describes the countywide solid waste management system and sets forth goals, policies and an implementation plan for short, medium and long-term planning horizons. Each city within the County must be included in the CoSWMP and each city must use the Plan to guide its solid waste disposal plans. All existing solid waste facilities in a county must be included in the County Plan. For a proposed project to receive a Solid Waste Facilities Permit, it must be included as a proposed solid waste facility in the CoSWMP. For these permits to be valid, the sites must remain in conformance with the CoSWMP.

The principal objectives of the Santa Clara County CoSWMP are to solve the problem of insufficient long term disposal capacity countywide through expansion of resource recovery, improved operations at existing landfills, development of additional long term capacity, and better interjurisdictional communication and cooperation. Long-term disposal capacity requires cooperation between communities to site new landfills and work out long-term disposal agreements.

The responsibility of solid waste management falls mainly to local authorities. An LEA issues a Solid Waste Facilities Permit and enforces its stipulations, all in concurrence with the State laws. The LEA for the SMaRT station would be the Santa Clara County Environmental Health Services Department (see 2., below).

Section 66780.2f of the California Government Code required that all CoSWMP revisions occurring after January 1, 1989 include a plan by which the county could attain a goal of recycling 20 percent of the solid waste generated in the county. Santa Clara County expects to exceed this goal. The CoSWMP includes a requirement that all jurisdictions in the county report annually to the Intergovernmental Committee on programs and plans to reduce the amount of waste disposed of in landfills by 25% by 1995. This objective is to be achieved by applying an "Integrated Waste Management Hierarchy of Source Reduction, Recycling and Composting, Transformation, and Landfilling" in all areas of waste management countywide.

b. SMaRT Station Conformance with CoSWMP Goals and Policies

Several goals and policies listed in the CoSWMP apply to, and are met by the proposed SMaRT station. Goals and policies relevant to the SMaRT station are listed below with a discussion on how the project would conform.

<u>Countywide Goals</u>

Goal 1: Minimize the effect of solid waste on the environment. Advocate the protection of public health in all aspects of solid waste management.

Conformance: The design, construction and operation of the SMaRT station must meet all federal, state, regional and local laws and ordinances. Review and permitting of the proposed project would ensure the protection of public health.

The operation of the SMaRT station would help to minimize the effect of solid waste on the environment by reducing the amount of material landfilled through recycling. Material recovery features proposed for the facility include a curbside recycling processing area, a public recycling buyback/drop-off area, mixed waste processing areas, and a wood and yard waste processing area. The materials which could be recovered and processed in the station include aluminum, corrugated cardboard, ferrous metals, glass, high-grade paper, mixed paper waste, newsprint, plastic, large appliances, wood and yard wastes.

By implementing a thorough load checking program to eliminate hazardous materials from the waste stream, the SMaRT station would also work to protect public health. In addition, the design of the transfer station and associated buildings would include features which would protect the safety of the public and workers by physically separating the different working areas, establishing safe traffic patterns, reducing the chance of methane gas buildup and controlling air and water emissions to the environment.

Goal 2: Achieve a high level of public awareness of solid waste issues.

Conformance: Through public review during the environmental documentation and permitting process, the SMaRT station would bring solid waste issues before the public and help to educate them on the state of solid waste disposal in Santa Clara County. Also, the extensive access the public would have to the SMaRT station including the visitor's center, and all of the station's recycling opportunities would help to reinforce the importance of source reduction and recycling.

Goal 3: Reduce the quantity of waste disposed of in landfills within the county.

Conformance: The CoSWMP includes a requirement that all jurisdictions in the county report annually to the Intergovernmental Committee on programs and plans to reduce the amount of waste disposed of in landfills by 25% by 1995. This objective is to be achieved by applying an Integrated Waste Management Hierarchy of Source Reduction, Recycling and Composting, Transformation and Landfilling.

While the burden of achieving a 25% rate of recycling falls on the individual cities, the proposed SMaRT station could help the service area cities achieve this goal. It is difficult to forecast the precise percentage of the waste stream entering the station that will be recycled. An average rate of 25% recycling has been selected as the most representative single figure because the Applicant has a strong financial incentive to achieve this level and because the 25% level is a mandated target for municipalities under state law. Whatever level of recycling is done at the SMaRT station, it will be the cities responsibility to fund and manage other recycling and waste reduction programs in order to obtain the 25% recycling required.

Goal 4: Encourage expansion of existing markets and development of new markets for recovered materials within the county and region.

Conformance: The operation of the SMaRT station would help to meet this goal indirectly by providing a consistent supply of recycled material for resale once markets begin to expand or new markets are developed.

<u>Short Term Policies 1990-1994</u>

Policy 1: Seek conformance of storage practices throughout the county to meet federal, state and local regulations and minimum standards.

Conformance: Title 14 of the California Administrative Code establishes standards for storage of waste (now modified by AB 939). As discussed under A.2, above, the SMaRT station would be built and operated in conformance with Title 14 (or other standards established by AB 939) which is enforced by the CWMB and the LEA. Standards established in Title 14 regulate containers in which waste is stored, the frequency of cleaning containers and facilities and the length of time waste can be held in a transfer station. Section 17513 of Title 14 states: "Any station handling an average volume of over 100 cubic yards of waste per day shall have any solid wastes deposited at the site removed every 48 hours or in accordance with an approved operations schedule." The Cities' proposed contract with WMNA requires that wastes be removed within 24 hours.

Section 17521 addresses the storage of materials salvaged from solid wastes and states "Storage of materials salvaged from solid wastes shall be ancillary to the operation of the station unless such storage is planned as an integral part of the operation. The maximum storage time shall be limited to a duration which will not result in health or fire problems." Storage of recycled materials would be an integral part of the SMaRT station. The station's solid waste facilities permit issued by the LEA would specifically state the length of time salvaged materials would be stored on-site.

Policy 2: Maintain adequate litter control programs based on community needs and funding capabilities.

Conformance: The SMaRT station is designed to reduce litter generation by depositing the refuse in a managed area and in an enclosed building. The site would be fenced to contain any windblown litter and on-site areas and Caribbean Drive would be checked and cleaned on a regular basis to ensure that no litter accumulates.

A common source of litter along access roads is debris that is blown or dropped from vehicles with improperly covered loads. To reduce the amount of litter generated in this way, the City of Sunnyvale could enforce tarping requirements for all vehicles by periodic stationing (particularly on weekends) of police along City roads leading to the facility (Officer Lubke, pers. comm.).

Prior to being loaded into trucks for transport to Kirby Canyon Landfill, waste would be compacted into a bale and pushed into a transfer trailer truck that is entirely enclosed. These trucks would not contribute significantly to a litter problem.

Policy 5: The burden of solid waste disposal is to be shared equitably among the communities of Santa Clara County, to the best of local abilities. Siting of solid waste management facilities should be shared, to the extent possible, among the communities of Santa Clara County. Solid waste management facilities include recycling collection centers, processing facilities, and end-use manufacturers; waste-to-energy plants; modular biomass or wood waste facilities; codisposal (sludge and solid waste) facilities; and landfills. Consideration should be given to a community's past contributions and historical circumstances.

Conformance: The siting and construction of the proposed SMaRT station would represent a coordinated effort between the three cities of Sunnyvale, Mountain View and Palo Alto.

The primary Service Area Cities will also consider extending the facility's service area to include (1) public haul, clean-up campaign debris and city maintenance waste from the cities of Cupertino, Los Altos, Los Altos Hills, and Santa Clara, (2) debris box loads from Cupertino, Los Altos, and Los Altos Hills, and (3) refuse from the Stanford Community. WMNA, the transfer station operator, proposes to also use the station for processing some of the refuse it collects in the cities of Santa Clara and San Jose.

Refuse from the SMaRT station would be transported to Kirby Canyon Landfill, which has a PD permit from the City of San Jose.

Policy 7: Santa Clara County recognizes the California Senate Solid Waste Task Force's Integrated Waste Management Hierarchy: Source Reduction; Recycling and Composting; Transformation; and Landfilling. The hierarchy is endorsed as a planning tool and is not intended to preclude or dictate specific projects. Evaluation of specific projects will continue to occur at the local level.

Conformance: As described under Goal 3, operations at the proposed SMaRT station would include recovery of some portion of the waste stream and thus would be implementing the Integrated Waste Management Hierarchy. This waste management hierarchy is incorporated into AB 939 which requires jurisdictions to address solid waste issues using this hierarchy. Santa Clara County has already embraced the hierarchy and incorporated it into their CoSWMP.

Policy 8: The County and cities will maintain 30 years of ongoing disposal capacity and, where possible, will explore means to acquire up to 50 years of disposal capacity. Landfill capacity will be extended through all reasonable efforts, including but not limited to source reduction, recycling, composting, and transformation.

Conformance: The SMaRT station and Kirby Canyon landfill would serve the proposed service area for a minimum of 30 years. The cities, could, at their option, extend the contract for one additional five-year increment. This would give the cities a total of 35 years capacity. The agreement could be extended by mutual consent of Waste Management and the Cities for an additional five-year increment which creates the potential for up to 40 years of capacity. With this contract the primary service area cities would be in conformance with this policy. As stated above, the station would implement resource recovery.

Policy 12: Encourage compliance of all solid waste facilities located within the county with State, Federal and local regulations.

Conformance: The proposed SMaRT station would undergo extensive review and permitting by regulatory agencies such as the California Waste Management Board (or the CIWMB), the Bay Area Air Quality Management District, Regional Water Quality Control Board, the Local Enforcement Agency (Santa Clara County Department of Health Services) and the City of Sunnyvale. If all permitting requirements discussed in this chapter are met, the project would be in compliance with all governing regulations.

Policy 15: The countywide waste stream being disposed of in landfills is to be reduced 25% by 1995.

Policy 21: Support and encourage the expansion of recycling activities throughout the county.

Conformance (15 & 21): When operating at capacity the SMaRT station would receive an average of 2,200 tons per day, some of which would be recycled. The SMaRT station would help meet the goals established in Policies 15 and 21. It is hoped that approximately 25% of the waste stream can be recycled but it is difficult to project the exact recycling level achieved over the 30-40 year life of the project (see Chapter II for a discussion of recycling levels).

Policy 33: Solid waste facility owners should have contingency plans for management of said facilities in emergency situations such as, but not limited to, plant or equipment breakdowns, fuel shortages, and labor disputes.

Conformance: The Applicant is to devise an emergency response plan to meet the satisfaction of the LEA.

The CoSWMP also contains Mid-Term (1994-1998) and Long Term (1999-2008) policies. As these policies are general in nature, they do not specifically apply to this project.

c. Permitting through the CoSWMP

Finding of Conformance. The first step in the regulatory conformance process is to determine whether a proposed facility is in conformance with a city's general plan and zoning ordinance and the CoSWMP (no longer required under AB

939). To be found in conformance with a city's general plan the site must have an appropriate designation as shown on the general plan map. To be found in conformance with the CoSWMP, a waste facility must be listed in the Plan as a proposed facility. The LEA, which in this case is the County Environmental Health Services Department, must prepare a letter expressing a "finding of conformance" with the City's General Plan and the CoSWMP. This letter is to be submitted to the CWMB, the state agency that reviews applications for solid waste facilities permits.

The site is designated as a "Future Solid Waste Transfer Station" in the Sunnyvale General Plan. As described below under 3.a, the City of Sunnyvale's zoning designation for the SMaRT station site is "Public Facilities" (P-F). This classification allows buildings and facilities that are owned, leased or operated by the City.

The SMaRT station is also in conformance with the February 1, 1989 Preliminary Draft of the CoSWMP. A section entitled "Future Plans" (page VI-23) of the Draft CoSWMP refers to the SMaRT station and indicates that it is scheduled for completion by 1991. A description of the proposed SMaRT station is presented in Chapter V of the Draft CoSWMP on page V-38.

The Santa Clara County Environmental Health Services Department would not undertake the finding of conformance process until environmental review of the proposed project is completed (Tony Pacheco, LEA, pers. comm.).

<u>Solid Waste Facilities Permit</u>. Submittal of an application and a Report of Station Information are required to initiate the Solid Waste Facilities Permit process. The Facilities Permit regulates the manner in which the transfer station is to be operated. The permit describes (1) the wastes to be received and those that are prohibited, (2) operational controls, and (3) monitoring provisions. When an application for a Facilities Permit is submitted to the LEA, the LEA prepares a permit and then sends the permit to the CWMB for concurrence. Once the CWMB concurs with the Facilities Permit (following a hearing and public review), the LEA may issue the permit.

<u>Report of Station Information</u>. This report accompanies the Solid Waste Facilities Permit application and includes detailed engineering information on the transfer operation.

Section 17441 of Title 14 of the California Code of Regulations stipulates that a "Report of Station Information" must be submitted to the LEA. This report must describe, at a minimum (1) technical data concerning the design of the facility, (2) environmental control devices, (3) the waste types that the facility will receive, and (4) anticipated station operations.

Major components of this report include:

o Plans and specifications for the transfer station, including a site location map, a site plan, and identification of adjacent land uses and distances to nearby residences or structures. The site plan should permit identification of adjacent land uses within 1,000 feet of the site boundaries. For the purposes of the Report, the term "structures" includes all buildings, easements, water wells, sewage disposal systems, and power or telephone lines.

o An engineering report describing the waste transfer processes, air, water, and soil pollution control devices, and estimated quantities and types of solid wastes to be processed.

o A description of the wastes received by their source of composition (residential or commercial, demolition wastes, hazardous wastes, pesticides, etc.) and by waste classification (Group 1, 2, or 3).

o A descriptive statement of the operations conducted at the station, including loading, unloading, compacting, shredding, salvaging, etc.

o A schematic drawing of buildings and other structures showing layout and general dimensions for unloading, storage, compaction, processing, parking, and loading areas.

o A description of transfer equipment, including type, capacity and number of units.

o An estimate of the design capacity and current or anticipated daily capacity of the station in tons.

o A resume of the management organization that will operate the station.

The project Applicant would not submit a Solid Waste Facilities Permit application or Report of Station Information until environmental review of the proposed project has been completed.

d. Kirby Canyon Landfill Solid Waste Facility Permit

Kirby Canyon landfill's Solid Waste Facility Permit (SWFP) would require revision as a result of accepting refuse from the SMaRT station. A change in tons per day, operating hours and lighting requirements would be necessary. Kirby Canyon Landfill is regulated by two LEAs; the City of San Jose Department of Neighborhood Preservation regulates non-health related issues and the Santa Clara County Department of Environmental Health Services regulates health related issues. The San Jose Department of Neighborhood Preservation is the lead LEA in processing a permit change.

An application for a permit change has been submitted to the LEAs for approval. WMNA wishes to increase the daily permitted tonnage from 1,500 TPD to an average daily rate of 2,870 TPD for the five year life of the permit, with a maximum daily rate of 4,200 TPD, and to change the operating hours from 7 AM to 5 PM Monday thru Saturday to 12 AM to 5 PM Monday thru Saturday. Night lighting at the working face would be required. The environmental impacts of the requested changes are discussed in Chapter IV.A (Traffic) and IV.H (Aesthetics), and the application to the City of San Jose, including a Report of Disposal Site information and the Environmental Questionnaire are included in Appendix E of this EIR.

The LEAs will consult with the City of San Jose Planning Department to determine the environmental significance of the requested changes and to determine the amount of environmental review necessary. If the San Jose Planning Department decides that the requested changes are not significant and an addendum to the original EIR can be done then the LEAs would allow a permit modification. If the Planning Department decides that the requested changes may have significant environmental impacts and a supplemental to the original

EIR is necessary, then the LEAs would require a permit revision (Doug Barlow, Dept. of Neighborhood Preservation, pers. comm.). A permit modification can be approved by staff, whereas a permit revision must be submitted to the Solid Waste Management Board for review and approval (Jim Tokarz, Santa Clara County Dept. of Env. Health, pers. comm.).

2. Santa Clara County Environmental Health Services Department

Title 14 and Title 7.3 of the California Government Code (now repealed or modified by AB 939) set forth minimum standards for handling and disposal of solid wastes as a means of promoting the health, safety, and welfare of citizens (see discussions in sections B.2. and B.3, above). Standards are to be enforced by the Local Enforcement Agencies (LEA) who are appointed by local governing bodies. The LEA for the City of Sunnyvale is the Santa Clara County Environmental Health Services Department which is responsible for enforcing both health related and non-health related standards.

Assembly Bill 939 requires the CIWMB to establish a certification program for LEAs by August 1, 1991. Once the certification program is in place, no agency, including existing LEAs, may exercise the powers and duties of an enforcement agency until the designation is approved by the CIWMB. It is expected that the Santa Clara County Environmental Health Services Department would continue to be the designated LEA. For a description of the LEA's responsibilities under AB 939 see Section B.1. of this chapter; a description of the LEA's previous and interim responsibilities are presented below.

The duties of the LEA include:

o adopting enforcement regulations, as necessary to implement State Codes and Minimum Standards.

o Assuring that statutes and standards relating to solid waste handling and disposal are coordinated between Federal, State, and local agencies and private parties.

o Issuing Solid Waste Facility Permits which govern facility operations within the LEAs jurisdiction.

o Filing with the CWMB, Solid Waste Information System (SWIS) reports outlining results of facility inspections and providing CWMB with other specific information upon request.

o Developing, implementing, and maintaining effective inspection, enforcement and training programs.

All LEAs must develop and implement a Local Enforcement Plan. According to State guidelines published in 1981, enforcement plans must reference State and local regulations, and include program goals and objectives, solid waste facility permitting procedures, inspection compliance procedures, staff training procedures, a time task analysis, an organizational table, and a budget.

Prior to drafting a Solid Waste Facilities Permit, the LEA would need to receive a completed application and a Report of Station Information (described above). The Applicant would not submit these documents to the LEA until environmental review of the project is complete.

3. City of Sunnyvale

a. City of Sunnyvale Zoning Ordinance

The site for the proposed SMaRT station is zoned Public Facilities District (P-F). The proposed project would be an allowable use within this zoning district. The allowable uses are subject to conditions of development specified in the Zoning Ordinance, such as lot coverage, size of front, side and rear yards, and percent of lot to be landscaped.

In addition, the Zoning Ordinance regulates operations so as to reduce the impacts on surrounding land uses. Section 19.24.010, Operations upon land - Nuisance Prohibited states; "Operations upon land in any zoning district shall be conducted in such a manner as to promote and protect the public health, safety, convenience and general welfare of the inhabitants of the city." Activities specifically regulated include noise, types of fuels permitted, night lighting, ground vibration, and open storage of materials.

The SMaRT station design and operation would have to comply with these standards to the satisfaction of the City of Sunnyvale.

b. City of Sunnyvale General Plan

The Sunnyvale General Plan Map designates a transfer station in the northern portion of the City near the WPCP, thus the project is allowable at the proposed site.

The City of Sunnyvale's General Plan is composed of several sub-elements, each addressing a different topic. Some goals and policies presented in the subelements apply to, and are met by the proposed SMaRT station. Goals and policies relevant to the project are listed below with a discussion on how the project would conform.

1. Land Use Sub-Element

The Land Use Sub-Element is part of the Community Development Element of the City's General Plan. This Sub-Element establishes patterns of land use for housing, commercial uses, industry and open space and it sets standards for density of population and intensity of development for each of the land uses.

GOAL 2.1A. Maintain a pattern of land use which provides for a variety and balance of land uses and which respects the capabilities and limitation of natural and man-made features.

POLICY 2.1A.6. Protect and preserve the diked wetland areas in the Baylands which serve as either salt evaporation ponds or holding ponds for the wastewater treatment plant.

CONFORMANCE: The project site is located south of the salt evaporation ponds and east of the wastewater treatment plant's sludge ponds. As proposed, the project would not affect these ponds.

GOAL 2.1D. To maintain a City which is sensitive to special physical or natural environmental features in the community.

POLICY 2.1D.1. Efforts shall be taken to minimize, where possible, the areas affected by the 100 year flood.

CONFORMANCE: The flooding hazard of the project site is discussed in Chapter IV.D. The flooding hazard of the project site is considered remote.

2. Energy Sub-Element

The Energy Sub-Element of the General Plan is the City's short and long term strategy for coping with the impacts of diminishing energy resources. Energy costs and supply impact various areas of municipal government, therefore, this sub-element contains the energy provisions which are also included in other sub-elements of the General Plan.

GOAL G. Conserve energy by maximizing resource recovery and reuse and minimizing energy consumption in the pick-up and transport of solid waste.

POLICY G3: Minimize the consumption of non-renewable fuel required to travel to garbage disposal sites.

Action G.3a. Study actions to extend the life of the current sanitary landfill.

CONFORMANCE: Energy use and recycling is addressed in Chapter IV, Section C. Some of the waste stream received at the SMaRT station would be recycled. The remaining waste would be compacted and transported to Kirby Canyon Landfill. Use of the transfer station would result in fewer vehicle miles traveled than direct haul because the transfer trucks carry more volume than the collection vehicles, and fewer trips would be necessary.

3. Sanitary Sewer Sub-Element

The Sanitary Sewer Sub-Element of the City's General Plan is a long range planning document that will insure the required sewerage facilities are provided consistent with actual growth and constraints. This sub-element is part of the Environmental Management Element of the City of Sunnyvale General Plan.

GOAL 3.3A. Insure that the quantity and quality of wastes generated does not exceed the capabilities of the transportation and disposal facilities.

POLICY 3.3A.1 The City shall provide for limitations on flow generated by new industries and enlargements of existing industries so that the total flow to the Water Pollution Control Plant will not exceed the safe operating capacity of the plant but under no circumstances is it to exceed 29.5 MGD.

CONFORMANCE: The SMaRT station would send all wastewater to the WPCP for treatment. Sources for the wastewater include domestic usage and washdown water for the floor area and equipment. It is estimated that the project would generate approximately 11,000 gallons of wastewater per day (see Chapter IV.B).

POLICY 3.3A.2. Insure that wastes discharged to the transportation (sewer) system can be treated by existing treatment processes of the Water Pollution Control Plant.

CONFORMANCE: The wastewater discharged from the SMaRT station to the WPCP would have to meet the WPCP's acceptance requirements. These requirements are discussed below under C.4. If the wastewater from the station does not meet these requirements, the station would have to pretreat the wastewater prior to discharging it to the sewer system.

4. Seismic Safety/Safety Sub-Element

The purpose of the Seismic Safety/Safety Sub-Element is to establish a balance between the community's need for safety with other needs such as housing, employment and transportation. This can be accomplished by incorporating knowledge of existing safety hazards into the planning and development review process. This sub-element contains an integrated set of goals, policies and actions to guide the community decision making process in a consistent manner.

GOAL A: Ensure that natural and human caused hazards are recognized and considered in decisions affecting the community, and that land uses reflect acceptable levels of risk based on identified hazards and occupancy.

POLICY A.1. Evaluate and consider seismic hazards in developing land use policies.

ACTION STATEMENT A.1.3. Study the possibility of requiring geotechnical reports for new development and redevelopment.

CONFORMANCE: Geotechnical and Seismic Safety are addressed in Chapter IV, Section D. EMCON Associates conducted test borings and CPT soundings to determine subsurface conditions and foundation recommendations. Several studies of the regional fault lines have been done and are discussed in Section D. If engineering construction recommendations are implemented, there would be minimal seismic hazard.

POLICY A.2. Take measures to protect life and property from the effects of a 1% (100 year) flood.

CONFORMANCE: The 100 year flood event is discussed in Chapter IV.D.3. Levees and channels surrounding the project site would be able to contain a 100 year flood event and the flooding hazard to the site is remote.

c. City of Sunnyvale Futures Study

The Futures Study is a comprehensive, city-wide review of the land use alternatives in the City which seeks to address the jobs/housing/ transportation balance. In the Futures Study, the City Council is exploring a wide range of opportunities to guide the future development of the community in a balanced and efficient manner that maintains the quality of life in the neighborhoods and the economic health of the commercial and industrial sectors (Report to Mayor and Council, No. 89-675, October 17, 1989).

Eleven sites throughout the City have been identified as study parcels in which the current zoning could be changed to meet the goals of the City.

These sites have either general business, office, or industrial zoning and if developed to the full limit of the zoning definition, would greatly increase traffic and exacerbate the current jobs to housing imbalance (more jobs than housing) within the City. It is the intent of the City Council to achieve a more balanced growth pattern which can be done by rezoning some or all of the eleven parcels to various combinations and intensities of residential uses. Four additional commercial sites have been identified in which it may be possible to increase the commercial intensity to off-set the rezoning of the eleven other sites (Report to Mayor and Council, No. 90-104, February 27, 1990).

One of the target sites (#9) is located immediately south of Highway 237, between Lawrence Expressway, Tasman Drive and Calabazas Creek and is in the vicinity of the SMaRT station. The SMaRT station would not be visible or audible from this location and operation of the station should not impact this parcel. However, the parcel is adjacent to Highway 237 which carries high volumes of traffic. Truck traffic from the project would travel on Highway 237 and use the Caribbean Drive interchange adjacent to the site (see discussion in Chapter IV.A). Depending on the type of development allowed and its proximity to Highway 237, traffic on Highway 237, including project related truck traffic, may impact site #9.

None of the other ten sites selected for evaluation in the Futures Study are near the project site or transportation routes that would be used by transfer trucks.

d. Permits Required by the City of Sunnyvale

Permits required by the City of Sunnyvale include a building and grading permit and an erosion control permit.

The facility can be located in the PF zone without a use permit as the City of Sunnyvale owns the property. Although a conditional use permit through the Planning Department would not be technically required for the project, one may be issued in order to place conditions of maintenance and operation on the project. If a use permit is not issued the City of Sunnyvale Public Works Department would have a separate agreement with the station operator to impose conditions of maintenance and operation.

Building Permit Design plans for the facility must be reviewed and approved by the Planning Department, Department of Public Works, Building Department and the City's Fire Department prior to issuing a building permit.

Grading and Erosion Control Permits Both the grading and the erosion control permits are administered by the City's Building Department. The grading permit is issued for those projects that require excavation of fill as part of the facility construction. The permit specifies grading parameters designed to ensure the stability of the existing structure and those in the environs of the facility. Similarly, the erosion control permit specifies measures designed to protect soil and prevent erosion.

In addition to the permits described above, the SMaRT station would require permitting by the Sunnyvale Water Pollution Control Plant if wastewater is to be discharged to the sewer system (see e., below) and from the Public Safety Department for storage of fuel on site (see f., below).

e. Sunnyvale Water Pollution Control Plant

As described in Chapter II, Project Description, the SMaRT station would generate both washdown water and domestic wastewater. As currently proposed, both sources of wastewater would be sent to the Sunnyvale Water Pollution Control Plant (WPCP). The domestic wastewater would be sent separately from the washdown waster if required by the WPCP.

Wastewater generation for the station is estimated to be 11,000 gallons per day (0.01 mgd). In order to dispose of water generated by the project to the sanitary sewer system, the water must meet certain standards established by the WPCP. The WPCP's acceptance criteria is presented in Section 12.12.120 of the City of Sunnyvale's Sewer Ordinance. This section states that no person shall discharge wastewater to the sewer system containing concentrations of pollutants in excess of their standards. The standards are shown in Table III-1, Limitations on Wastewater Strength.

In addition to the limitations presented in Table III-1, no person shall discharge any wastewater:

a) having a temperature higher than 140 degrees F.

b) any wastewater containing more than 100 parts per million by weight of oil or grease of petroleum origin; which contains more than 300 parts per million by weight of fat, oil, or grease of animal or vegetable origin; or which contains grease or oil or other substances that will solidify or become discernibly viscous at temperatures between 32 to 140 degrees F.

c) having a pH lower than 6.0 or greater than 10.5.

In order to discharge to the City's sanitary sewer system, a Wastewater Discharge Permit would be required. The permit must be applied for 60 days prior to discharge to the sewer. However, WPCP staff are concerned that the washdown water from the station floor may contain debris as well as contaminants picked-up from material in the waste stream. Prior to submitting an application for a Wastewater Discharge Permit, the Applicant must obtain and analyze samples of washdown water from similar transfer stations. The sampling and analysis must be conducted in coordination with, and under the guidance of WPCP staff. Depending on the results of these tests the WPCP staff may determine that the WPCP is unable to accept the washdown water, that it can accept the water only after it is pretreated, or that no pretreatment is necessary prior to discharge. The type and amount of pretreatment required would depend on the results of the analyses (Christopher de Groot, Industrial Waste Inspector, pers. comm.). Currently the Applicant proposes to treat washdown water through a triple separator sump pump which would collect debris, particulates, oil and grease, but which would not filter out chemical contaminants.

f. City of Sunnyvale Fire Department

Any hazardous material stored on the project site such as waste oil or diesel fuel would require a Hazardous Materials Storage Permit from the Sunnyvale Public Safety Department.

Any fuel tanks, except those serving an emergency generator, must be placed below ground. The design and construction of the tank system must meet

TABLE III-1
LIMITATIONS ON WASTEWATER STRENGTH
(in milligrams per liter)

Toxicant	Maximum Total Concentration Allowable
Antimony	1.0 mg/L
Arsenic	0.3 mg/L
Barium	1.0 mg/L
Beryllium	0.5 mg/L
Cadmium	0.1 mg/L
Chlorinated Hydrocarbons (used for control of plants/insects)	0.02 mg/L
Chromium, total	1.7 mg/L
Cobalt	1.0 mg/L
Copper	2.0 mg/L
Cresols	0.5 mg/L
Cyanides	0.5 mg/L
Lead	0.01 mg/L
Mercury	0.5 mg/L
Nickel	1.0 mg/L
Phenol	2.0 mg/L
Selenium	0.2 mg/L
Silver	1.0 mg/L
Total Toxic Organics[1]	1.0 mg/L
Zinc	1.48 mg/L

[1] Total Toxic Organics, as defined under 40 CFR Part 413.02, but excluding phenol.

Source: Sunnyvale Water Pollution Control Plant, Industrial Pretreatment Program, Handout on Section 12.12.120 of the Sewer Ordinance, Limitations on Wastewater Strength.

specific design requirements. Through the City, the Applicant must also register the tanks with the Regional Water Quality Control Board. Waste oil tanks are allowed above ground and construction must meet the City's requirements (Ron Staricha, City of Sunnyvale, pers. comm.).

The Hazardous Materials Storage Permit is obtained once the tanks and associated facilities are constructed but prior to being filled with fluids (Ron Staricha, City of Sunnyvale, pers. comm.).

Design plans call for a 1,000 gallon, below ground diesel fuel tank and above ground waste oil tanks less than 600 gallons in size. The waste oil would come from both on site equipment, and recycled waste oil from the public. Both tanks would be designed and constructed with containment features and in accordance with City of Sunnyvale regulations. Recycled waste oil from the public would be held separately from station equipment oil.

g. Sunnyvale Landfill

The SMaRT station project would require a change in the landfill gas system, and the landfill's permit from the Bay Area Air Quality Management District would have to be revised. The station design also includes a future truck staging area on top of the landfill east of the site. This would require a change in the closure plan for the landfill. Excavation of existing refuse would require a change in the Solid Waste Facility permit for the Sunnyvale Landfill (M. Leaon, pers. comm.).

4. City of San Jose

The Kirby Canyon Sanitary Landfill received a Planned Development (PD) permit from the City of San Jose in 1984 (PD permit 84-5-55). The facility is currently allowed to receive an annual average of 1500 tons per day (TPD) of wastes, operating on a 6-day week basis. The PD permit issued by the City of San Jose for landfill operations limits operating hours to between 7 AM and 5 PM; nighttime operations are not presently allowed.

Since the landfill is permitted to receive 1500 TPD, and currently receives about 633 TPD, the SMaRT station project would require a revision of the landfill's PD permit to allow more than 1500 TPD of refuse to be delivered there. Although the SMaRT station project alone could eventually require an increase to 2200 TPD, WMNA has applied to the City of San Jose for an increase to 2870 TPD with a maximum daily rate of 4,200 TPD in order to serve the existing waste stream, the SMaRT station, Contra Costa County and possibly San Mateo County. Also, to landfill the waste received from the SMaRT station (which operates 24-hours per day) in a timely manner, Kirby Canyon would have to operate at night and have lighting at the working face during dark hours. WMNA has applied to operate Kirby Canyon from 12 AM to 5 PM, with the landfill being closed from 5 PM to 12 AM. These permit amendments are undergoing separate environmental review through the City of San Jose.

WMNA has submitted an Environmental Questionnaire and Report of Disposal Site Information and additional environmental documentation on the traffic and visual impacts of the requested changes to the City of San Jose Planning Department. Planning staff will compare the proposed amendments to the certified EIR on Kirby Canyon Landfill to determine what environmental impacts would result from the amendment. If the requested changes are considered significant, a supplemental EIR could be required. If the Planning Department determines that there would be no substantial change in environmental impacts as a result of the changes, an addendum to the original EIR would be prepared and the PD permit would be amended (Stan Ketchum, pers. comm.).

The issues in which the City would be particularly concerned about include increased traffic levels and the impacts of night lighting (Stan Ketchum, pers. comm.).

5. Santa Clara Valley Water District

The Santa Clara Valley Water District has control over two drainage channels near the project site. The Sunnyvale West Channel is approximately 1,800 feet west of the project site and the Sunnyvale East Channel is approximately 2,000 feet east of the project site.

If construction occurs within 50 feet of their facilities or right-of-way, a permit from the District is needed. The construction of the SMaRT station would occur 1,800 feet from the nearest District facility or right-of-way and would not require a construction permit.

In a written response to the Notice of Preparation, the District submitted comments reflecting concern over the possible leakage of leachate from Kirby Canyon Landfill as a result of the faster rate of filling due to this project. This concern is addressed in Chapter IV.D.10.

In addition, the District stated that a permit would be required if the drainage channel by the Water Pollution Control Plant would be realigned. The project has been designed such that it would not require the realignment of this channel.

D. SUMMARY OF REQUIRED PERMITS

Provided below is Table III-2 summarizing the permits required for the SMaRT station. Also included in the Table are amendments of permits held by the Sunnyvale Landfill and Kirby Canyon Landfill required as a result of the construction and operation of the SMaRT station.

TABLE III-2
REGULATORY CONFORMANCE AND PERMITTING
REQUIREMENTS FOR THE SMaRT STATION

FINDINGS OF CONFORMANCE, PERMIT, OR REGULATORY REVIEW	REGULATORY AGENCY	ACQUIRED BY	PROCESSING TIME/FILING REQUIREMENTS
STATE			
Authority to Construct Permit (SMaRT)	Bay Area Air Quality Management District	Project Applicant	90 days. Prior to start of construction
Permit to Operate (SMaRT)	Bay Area Air Quality Management District	Project Applicant	Issued 60 days after start-up
Variance to shut down Sunnyvale landfill's gas collection system (Sunnyvale Landfill)	Bay Area Air Quality Management District	Sunnyvale Dept. Public Works	1-3 months. Recommended prior to start of construction
Amendment of Sunnyvale landfill's permit if modification of existing methane gas collection system is required (Sunnyvale Landfill)	Bay Area Air Quality Management District	Sunnyvale Dept. Public Works	1-3 months. Prior to start of construction
Regulation of sludge if sludge is determined to be hazardous according to Title 22 (SMaRT)	State Dept. of Health Services	Sunnyvale Dept. Public Works	Unknown. Prior to disturbance of sludge
Hazardous Waste Exclusion Program (SMaRT)	State Dept. of Health Services	Project Applicant	Unknown. Prior to start of operation

National Pollution Discharge Elimination System permit required if project discharges to waters of the state. Project would not discharge to waters of the state and would not require a permit. (SMaRT)	Regional Water Quality Control Board	Project Applicant	N/A
Regulation of sludge if sludge is not hazardous (SMaRT)	Regional Water Quality Control Board	Sunnyvale Dept. Public Work	Unknown. Prior to start of construction
Permit required as project is within 100 feet of the mean high tide line (SMaRT)	Bay Conservation and Development Commission	Project Applicant	45 days. Prior to start of construction
REGIONAL			
"Finding of Conformance" with the Santa Clara County Solid Waste Management Plan (California Code of Regulations, Title 14, Section 17413) (SMaRT)	Santa Clara County Environmental Health Services Department	Project Applicant	Done as part of processing a Solid Waste Facility Permit
Solid Waste Facility Permit (SMaRT)	Reviewed by CWMB/CIWMB. Issued by Santa Clara County Environmental Health Services Dept.	Project Applicant	3 months. Must be applied for 120 days prior to start of construction
Modification of Sunnyvale landfill's Solid Waste Facility Permit if existing landfill gas collection system is modified and waste is excavated (Sunnyvale Landfill)	Santa Clara County Environmental Health Services Department	Sunnyvale Dept. of Public Works	1-3 months. 120 day prior to modification
Modification of Kirby Canyon landfill's Solid Waste Facility permit to increase permitted tons per day and change hours of operation (Kirby)	Santa Clara County Environmental Health Services and San Jose's Neighborhood Preservation Dept.	Waste Management of North America	Unknown. Currently under environmental review by City of San Jose

LOCAL

Conditional Use Permit issued at request of Applicant (SMaRT)	City of Sunnyvale Planning Dept.	Project Applicant	3 months. Could be done concurrently with EIR
Grading and Erosion Control Permits (SMaRT)	City of Sunnyvale Building Dept.	Project Applicant	4-6 weeks. Prior to start of construction
Building Permit (SMaRT)	Sunnyvale Building Dept. and Fire Dept.	Project Applicant	4-6 weeks. Prior to start of construction
Written approval to discharge dewatered water to sewer (SMaRT)	Sunnyvale Water Pollution Control Plant	Project Applicant	4-6 weeks. During Building Permit review
Wastewater Discharge Permit for any discharge to sewer system (SMaRT)	Sunnyvale Water Pollution Control Plant	Project Applicant	4-6 weeks. 60 days prior to discharge; preferably during Building Permit review
Hazardous Materials Storage Permit for on site storage of fuels, waste oil, etc.. (SMaRT)	Sunnyvale Fire Dept.	Project Applicant	1 week. After Building Permit is issued
Amendment of Kirby Canyon Landfill's Planned Development permit to increase tons per day, extend operating hours and allow night lighting (Kirby)	City of San Jose Planning Department	Waste Management of North America	Unknown. Currently under review

IV. ENVIRONMENTAL IMPACTS AND MITIGATION

A. TRANSPORTATION

1. SETTING

a. Regional Highways

The proposed transfer station is located in Sunnyvale just east of the Moffett Field Naval Air Station and north of State Highway 237. State Highways 82, 85, 101, & 237 are all within five miles of the site. Highway 237, the closest highway to the site, is a grade-separated freeway in the study area. The Highway 237 interchanges at Lawrence Expressway, Mathilda Avenue, and North Fair Oaks Avenue (partial interchange) provide direct access to the site.

Highway 101 is the main regional facility serving the study area. It parallels Highway 237 in the study area and is approximately 1.5 miles south of the proposed project.

b. Local Street System and Traffic Controls

Figure IV-1 shows the street system in the study area. The area to the north of Highway 237 is almost exclusively industrial in nature with streets designed to handle non-residential traffic. The number of driveway-cuts are minimal and speeds are relatively high on most streets (35 MPH or above). The major streets in this area are Java Drive, Caribbean Drive, and Mathilda Avenue.

Caribbean Drive would be the primary access point to the proposed project. Caribbean Drive becomes Lawrence Expressway on its eastern end and Mathilda Avenue on its western end. Both Lawrence and Mathilda provide direct access to both Highway 237 and Highway 101. North Fair Oaks Avenue, which connects into Java Drive, is the only other roadway in the vicinity of the project which crosses Highway 237.

A total of twelve signalized intersections were identified by the City of Sunnyvale to be analyzed as part of this study:

1. Mathilda Avenue/3rd Avenue
2. Mathilda Avenue/Lockheed Way
3. Mathilda Avenue/Moffett Park
4. Mathilda Avenue/Highway 237 Westbound Ramps
5. Mathilda Avenue/Highway 237 Eastbound Ramps
6. Mathilda Avenue/Ross Drive
7. Borregas Avenue/Caribbean Drive
8. Borregas Avenue/Java Drive
9. Crossman Avenue/Java Drive
10. N. Fair Oaks Avenue/Tasman Drive
11. Caribbean Drive/Moffett Park
12. Lawrence Expressway/Tasman Drive

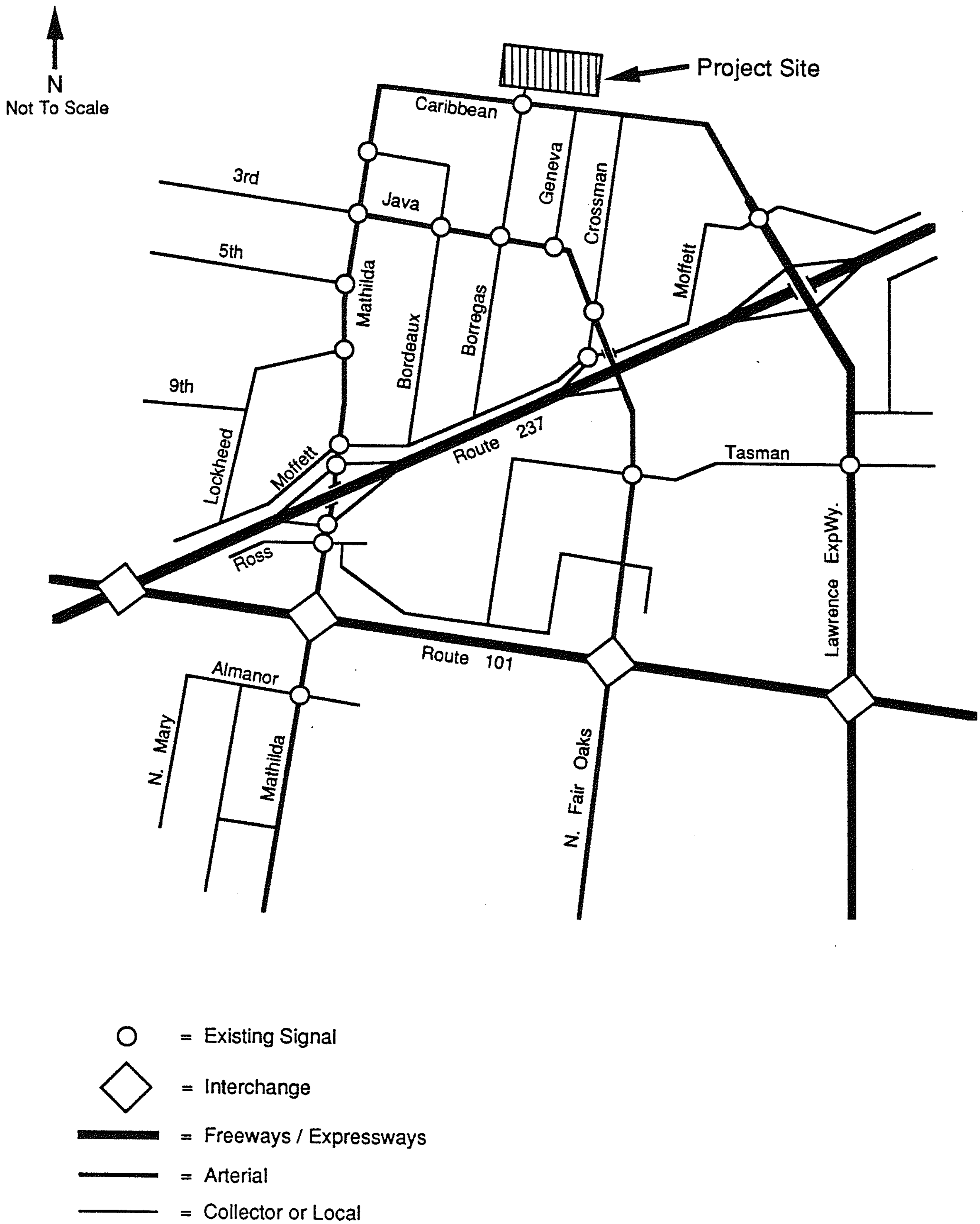


Figure **IV-1**

Study Area and Circulation Network

c. Existing Traffic Volumes on Surface Streets

Originally, turning movement counts for the study intersections were taken from the North/South Corridor Study[1] of 1986. These counts were supplemented by 1988 counts by Fehr & Peers Associates. Due to the age of the 1986 counts and in light of continued increases in traffic volumes, the 1986 count locations were recounted in November 1989. The count locations and dates of the surveys are shown in Figure IV-2. For purposes of air quality and noise assessment, the intersections at Fair Oaks/Duane and Sunnyvale-Saratoga/Alberta were also counted in November 1989.

Table IV-1 shows the current weekday peak hour traffic volumes at the twelve study intersections. The peak period differs for each intersection, but they generally occur between 7:15-8:30 for the a.m. peak hour and 4:30-5:30 for the p.m. peak hour. The intersections of Mathilda Avenue and the Highway 237 ramps have the highest weekday a.m. peak hour traffic volumes (about 4,300) of all the study intersections, and the Lawrence Expressway/Tasman Drive intersection has the highest weekday p.m. peak hour traffic volumes (4,650). The intersections which carry the lowest weekday peak hour traffic volumes, Borregas/Caribbean and Borregas/Java, are also the ones closest to the project site.

The individual turning volumes for each intersection are shown in Figures IV-3 through IV-5.

Of the three major arterials providing access to the study area (Mathilda, Fair Oaks/Java, and Lawrence/Caribbean), Mathilda Avenue carries the highest traffic volumes. Most of the traffic on Mathilda is headed to or from the Lockheed and Moffett Field complexes west of Mathilda Avenue. The Fair Oaks/Java arterial carries the lightest traffic volumes of the three principal north-south corridors. This is because there is not a full interchange at Highway 237 and Fair Oaks. Not surprisingly, traffic volumes decrease throughout the area in proportion to the northerly distance from Highway 237.

In addition to the weekday traffic counts, Fehr & Peers Associates conducted traffic counts at two of the study intersections, Mathilda/3rd and Caribbean/Moffett, on a typical Saturday. In both cases the Saturday peak hour volumes were approximately 20-25% of the typical weekday peak hour. The major weekend traffic generators in the area are the Twin Creeks softball complex on Caribbean Drive and the Lockheed facility west of Mathilda Avenue.

d. Truck Traffic on Local Streets

Truck counts taken in conjunction with the intersection counts in November 1989 indicate that trucks represent between 1.0% and 3.8% of the peak-hour traffic. As Table IV-2 shows, the proportion of trucks is slightly higher (about 2% to 4%) during the a.m. peak hour than during the p.m. peak hour (1% to 3%).

During both periods, trucks constitute a relatively small component of the total traffic on local streets.

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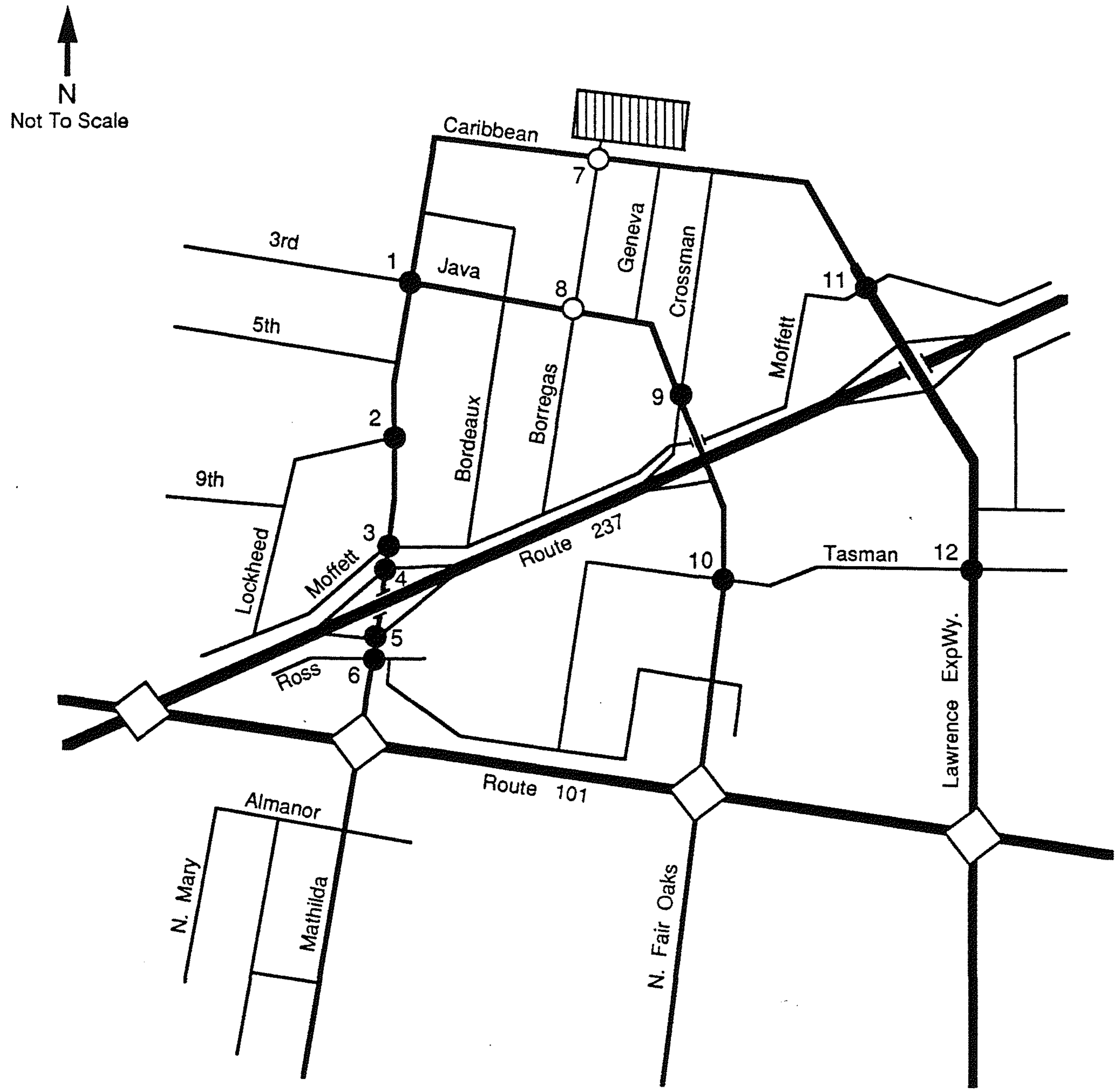
[1] <u>North South Corridor Study,</u> CH2M Hill, 1986.

Fehr & Peers Associates, Inc.
Transportation Consultants



<u>Source of Traffic Counts:</u>

● = Counted by Fehr & Peers Associates (Nov. 1989)

○ = Counted by Fehr & Peers Associates (Dec. 1988)

Not shown but also counted:

Fair Oaks/Duane
Sunnyvale-Saratoga/Alberta

Figure **IV-2**
Key Intersections and Traffic Count Locations

TABLE IV-1
INTERSECTION APPROACH VOLUMES EXISTING WEEKDAY

Intersection	Total Approach Volume AM Peak Hour	Total Approach Volume PM Peak Hour
1. Mathilda/3rd	1,743	1,793
2. Mathilda/Lockheed	2,005	1,782
3. Mathilda/Moffett	3,412	3,229
4. Mathilda/237 WB Ramps	4,288	3,403
5. Mathilda/237 EB Ramps	4,261	3,683
6. Mathilda/Ross	4,024	3,521
7. Borregas/Caribbean	1,780	1,453
8. Borregas/Java	1,519	1,615
9. Crossman/Java	2,084	1,992
10. Fair Oaks/Tasman	2,290	2,617
11. Caribbean/Moffett	2,914	2,847
12. Lawrence/Tasman	3,157	4,649
	33,477	32,584

Fehr & Peers Associates, Inc.
Transportation Consultants

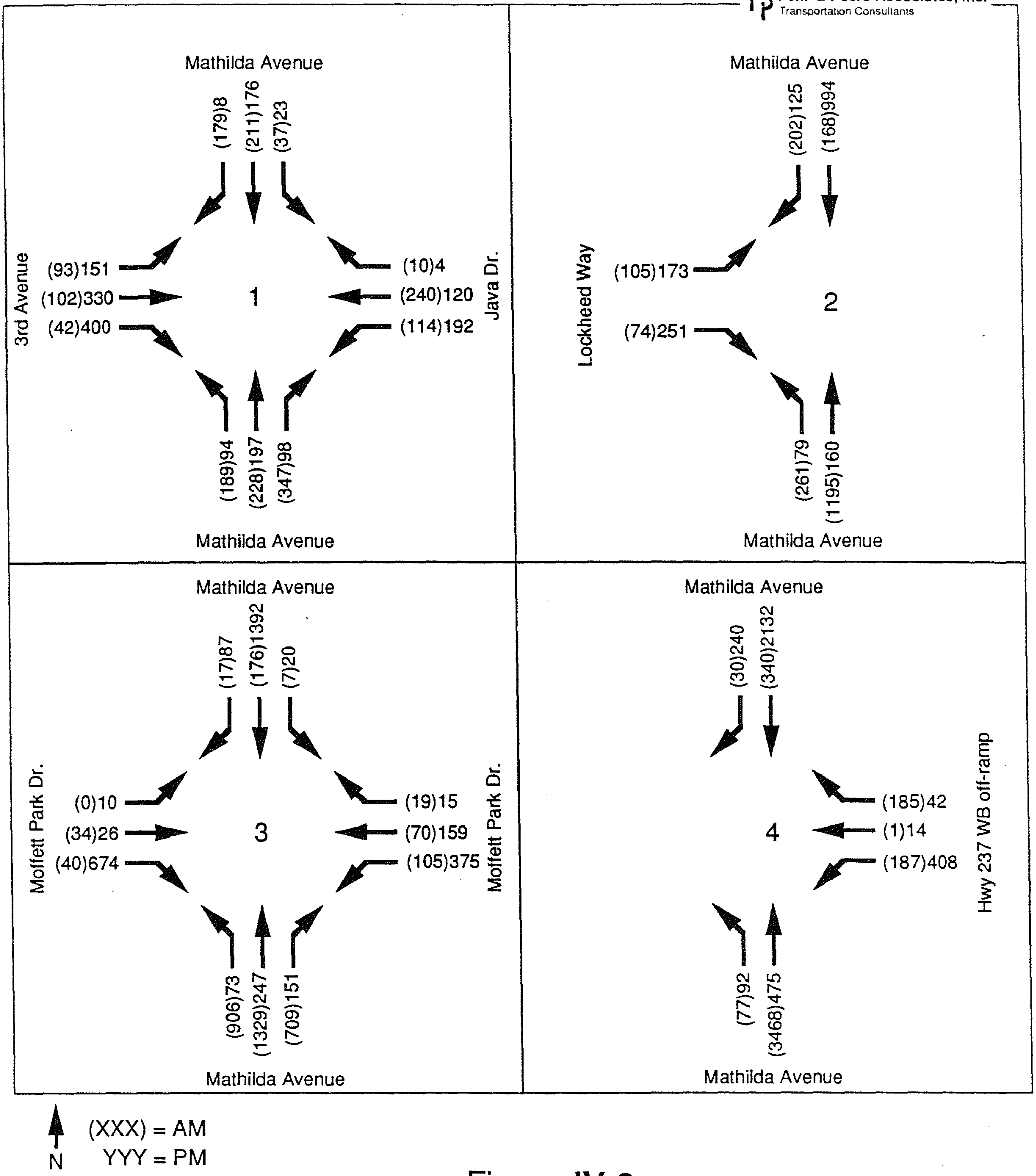


Figure **IV-3**
Existing Peak Hour Turning Volumes
Intersections 1 through 4

Source: Fehr & Peers Associates, counts taken in November 1989

June 18, 1990

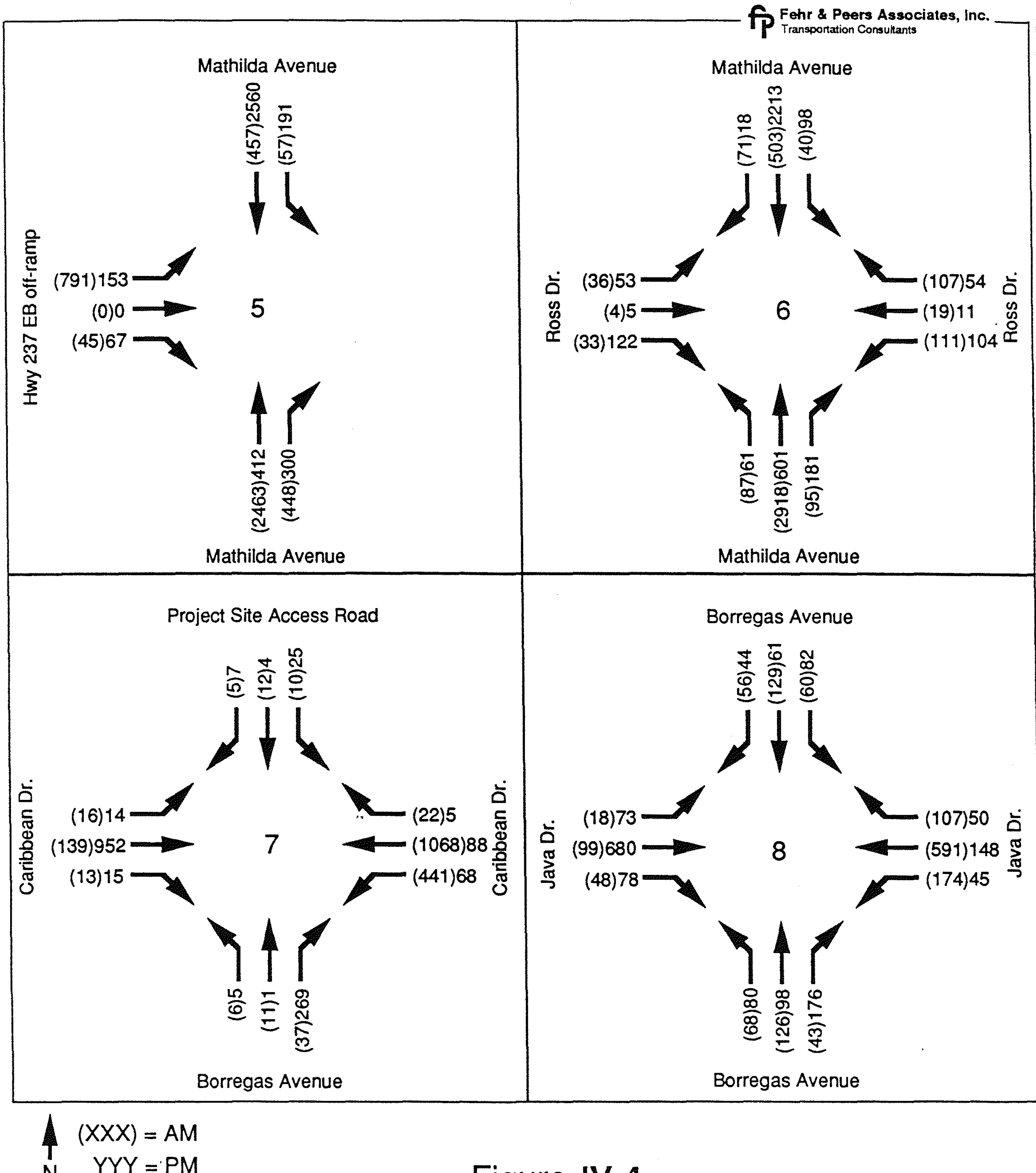


Figure IV-4
Existing Peak Hour Turning Volumes
Intersections 5 through 8

Source: Fehr & Peers Associates, counts taken in November 1989 & December 1988

TABLE IV-2
EXISTING WEEKDAY TRUCK VOLUMES ON LOCAL STREETS

Location	AM Peak Hour			PM Peak Hour		
	Total[1]	Trucks[2]	% Trucks	Total[1]	Trucks[2]	% Trucks
Mathilda south of 3rd	1,082	39	3.6%	1,157	35	3.0%
Mathilda south of Moffett Park	3,265	87	2.7%	2,912	30	1.0%
Lawrence Expressway south of Tasman	1,978	34	1.7%	2,128	27	1.3%
N. Fair Oaks	2,239	85	3.8%	3,069	51	1.7%

Source: Traffic counts by Fehr & Peers Associates, taken November 1989.

1 Two-way volume of all vehicles

2 Two-way volume of trucks

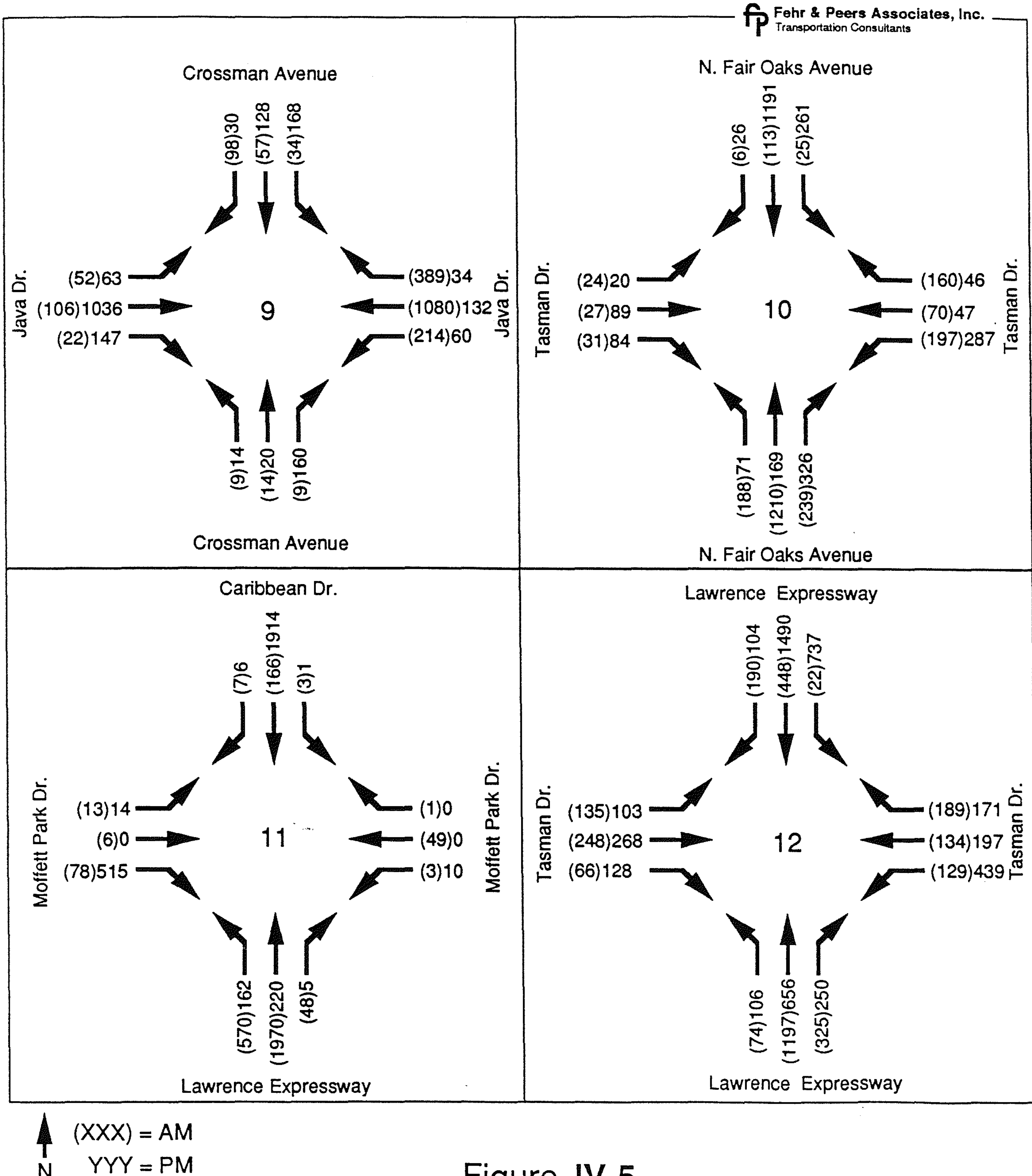


Figure IV-5
Existing Peak Hour Turning Volumes
Intersections 9 through 12

Source: Fehr & Peers Associates, counts taken in November 1989

e. Existing Traffic Volumes-Freeways

Table IV-3 shows the level of existing peak hour traffic on the two freeways in the study area. Highway 101 to the east of the study area carries almost 17,000 vehicles (sum of both directions) during a typical weekday peak hour period. This number drops to around 14,000 vehicles in the vicinity of Mathilda. Truck traffic[2] comprises about 4.8% of the total peak-hour traffic on Highway 101 in the study area.

Highway 237 carries less than half the traffic of Highway 101 in the study area. Peak hour traffic volumes on Highway 237 are approximately 6,100 vehicles to the east of Lawrence Expressway. This number decreases to 4,900 near Mathilda Avenue. Peak-hour truck traffic on Highway 237 is 6.5% of the total traffic stream, compared to 4.8% on Highway 101.

f. Intersection Analysis Methodology

The performance of the study intersections was evaluated during peak hour conditions using standard techniques which determine an intersection's Level of Service (LOS). Level of Service is a qualitative description of an intersection's performance on a scale of A-F, with "A" being the best rating and "F" meaning at or above capacity (see Table IV-4). Most Bay Area jurisdictions consider LOS A through D as "acceptable" during peak hour conditions. Many communities have a policy goal of LOS D or better, but are considering E as acceptable. The City of Sunnyvale has a policy[3] of maintaining peak hour LOS D or better at all intersections.

The methodology used to evaluate signalized intersections is the Transportation Research Board Circular 212 Planning Analysis methodology with adjustments to reflect local conditions. The Circular 212 methodology has been found to be overly conservative when applied to intersections in the Bay Area, especially to those approaching their practical capacity. The actual capacity, when compared to the Transportation Research Board's 1985 Highway Capacity Manual, is approximately 20 percent higher than predicted by the Circular 212 methodology. The degree of over-conservativeness when applying the Circular 212 methodology was found to be less at better Levels of Service. Specifically, the standard Circular 212 thresholds were adjusted as follows:

Level of Service Threshold	Adjustment
E/F	20%
D/E	15%
C/D	5%
B/C	0%
A/B	0%

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[2] Commercial trucks with 3 or more axles (i.e.- not including pick-up trucks)

[3] Transportation Element of Sunnyvale General Plan, 1981, pg. 5

TABLE IV-3
FREEWAY TRAFFIC VOLUMES

Freeway	Location	Total Peak[1] Hour Traffic	% Trucks[2]
Highway 101	e/o Lawrence Exp	17,000	
	Lawrence - Fair Oaks	16,000	4.8%
	Fair Oaks - S. Mathilda	15,500	
	S. Mathilda - Route 237	13,700	
	w/o Route 237	14,200	
Highway 237	e/o Lawrence	6,100	
	Lawrence - Mathilda	5,100	6.5%
	Mathilda - Route 101	4,900	
	w/o Route 101	4,300	

[1] Two-directional peak hour traffic volumes from 1988 Traffic Volumes on State Highways, Caltrans

[2] 1987 Annual Average Daily Truck Traffic on the California State Highway System, Caltrans, August 1988

A more detailed description of the Level of Service and the associated volume/capacity (v/c) ratios is shown in Table IV-4.

g. Existing Intersection Levels of Service

All twelve of the study intersections were evaluated, and the results are shown in Table IV-5. Most of the intersections are operating at excellent to good service levels (LOS C or better) during both peak hours. However, four intersections (Intersections 3 through 6 on Table IV-5) operate at or near their capacity. These intersections comprise what is known as the "monster" interchange. It is comprised of four closely spaced intersections on Mathilda Avenue (two on either side of Highway 237). It is difficult to analyze an area such as this on an equal basis with the other study intersections, which act as isolated intersections. For comparability, these four intersections were analyzed as if they were one intersection with the same critical capacity as any other single intersection. At present, this group of four intersections operates at Level of Service E during both the a.m. peak and p.m. peak hours.

h. Existing Freeways Operations

In the vicinity of the study area, Highway 237 is a grade-separated freeway with two-lanes in each direction. To the east of the study area, Highway 237 is presently an expressway with several major at-grade intersections. The closest grade intersection is at Great America Parkway, which is about one mile east of Lawrence Expressway. Carpool lanes exist in the at-grade section but discontinue to the west of Lawrence Expressway.

The signalized intersection at Great America Parkway operates as a control valve for westbound traffic on Highway 237. Similarly, the western terminus of Highway 237 at El Camino acts as a restriction to eastbound flows. As a result, traffic generally flows fairly well through the section of Highway 237 between Lawrence Expressway and Highway 101, even during peak hours. This section of roadway was <u>not</u> identified as "congested"[4] in Caltrans 1986 report of congested locations on Bay Area Highways. Reported peak hour traffic volumes (Table IV-3) in this section equate to about 1,250 vehicles per lane which is below the theoretical capacity of 2,000 vehicles per lane.

Highway 101 consists of three-lanes per direction plus carpool lanes throughout the study area. Speed surveys taken by Caltrans in 1986 show peak hour speeds to be close to 55 MPH in this section. Recurring delay takes place just outside the study area from the Highway 85 Interchange to the north towards Palo Alto.

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[4] "Congested" is defined in the Caltrans study as speeds less than 35 MPH for more than 15 minutes on an average weekday

TABLE IV-4
DEFINITIONS OF INTERSECTION LEVEL OF SERVICE

Level of Service	Description	Adjusted Volume/Capacity Ratios[2]
A	Conditions are such that no approach phase is fully utilized by traffic and no vehicle waits through more than one red indication. (Very slight or no delay)	0.00 - 0.50
B	An occasional approach phase is fully utilized; vehicle platoons are formed; this is suitable operation for rural design purposes. (Slight delay)	0.51 - 0.58
C	Stable operation; occasionally, drivers may have to wait through more than one indication; this is suitable operation for urban design purposes. (Acceptable delay)	0.59 - 0.70
D	Approaching unstable operation; queues develop, but are quickly cleared. (Tolerable delay)	0.71 - 0.86
E	Unstable operation; the intersection has reached ultimate capacity; this condition is not uncommon in peak hours. (Congestion and intolerable delay)	0.87 - 1.0
F	Forced flow; intersection operates below capacity. (Jammed)	over 1.0

1 For capacities expressed as maximum intersection carrying capacity, at E/F service level threshold.

2 Capacity (E/F threshold) is 20% higher than TRB Circular 212 Methodology. (1,650 vehicles per hour vs. 1,365 vehicles per hour).

Source: Fehr & Peers Associates

TABLE IV-5
INTERSECTION LEVEL OF SERVICE
EXISTING TRAFFIC VOLUMES

<table>
<tr><th rowspan="3">Intersection</th><th colspan="4">Level of Service</th></tr>
<tr><th colspan="2">AM Peak</th><th colspan="2">PM Peak</th></tr>
<tr><th>LOS</th><th>V/C</th><th>LOS</th><th>V/C</th></tr>
<tr><td>1. Mathilda/3rd</td><td>A</td><td>.33</td><td>A</td><td>.45</td></tr>
<tr><td>2. Mathilda/Lockheed</td><td>A</td><td>.34</td><td>A</td><td>.38</td></tr>
<tr><td>3. Mathilda/Moffett</td><td rowspan="4">E</td><td rowspan="4">.98</td><td rowspan="4">E</td><td rowspan="4">.92</td></tr>
<tr><td>4. Mathilda/237 WB Ramps</td></tr>
<tr><td>5. Mathilda/237 EB Ramps</td></tr>
<tr><td>6. Mathilda/Ross</td></tr>
<tr><td>7. Borregas/Caribbean</td><td>A</td><td>.32</td><td>A</td><td>.26</td></tr>
<tr><td>8. Borregas/Java</td><td>A</td><td>.38</td><td>A</td><td>.36</td></tr>
<tr><td>9. Crossman/Java</td><td>A</td><td>.27</td><td>A</td><td>.39</td></tr>
<tr><td>10. Fair Oaks/Tasman</td><td>B</td><td>.53</td><td>B</td><td>.57</td></tr>
<tr><td>11. Caribbean/Moffett</td><td>A</td><td>.44</td><td>A/B</td><td>.50</td></tr>
<tr><td>12. Lawrence/Tasman</td><td>A</td><td>.39</td><td>C</td><td>.59</td></tr>
</table>

Level of Service: A = Excellent
E = At or near capacity

i. Proposed Roadway Improvements[5]

Highway 101 is planned to be expanded to a total of four lanes in each direction (3 regular lanes and 1 carpool lane) from Bernal Road to the San Mateo County Line. The carpool lanes have been completed between the San Mateo County line and Guadalupe Parkway. In the vicinity of the project, Highway 101 has already been expanded to this ultimate width (including the carpool lanes).

As part of the Measure A projects, many of the present at-grade intersections on Highway 237 will be converted to full interchanges. The current schedule calls for grade-separations to be in place between Great America Parkway and Interstate 880 by around 1993-95. The section to the west of Great America Parkway (near the project) is already a grade-separated facility.

The existing carpool lanes on Highway 237 will be expanded to include the section between Lawrence Expressway and Mathilda Avenue[6], and auxiliary freeway lanes will be added between Lawrence Expressway and North First Street.

j. Existing Transit Service

The study area is currently served by eleven bus routes operated by Santa Clara County Transit. Seven of these routes are express buses which operate only on weekdays and during peak commute times (5-7:30 a.m. and 2:30-5:30 p.m.). These express buses operate at about 30 minute headways and provide service to the following locations:

- o Fremont BART Station (#120)
- o Santa Teresa (#122)
- o East San Jose (#123)
- o Eastridge (#124)
- o Campbell (#126)
- o Almaden Valley (#127 & 128)

The Moffett Park area is also served by four local bus routes which run between the following points:

- o Milpitas to Mountain View (#20)
- o Eastridge to Sunnyvale/Lockheed (#26)
- o West Valley College to Sunnyvale/Lockheed (#54)
- o Camden & Branham to Lockheed (#61)

k. Proposed Transit Improvements

A route has been defined for the extension of the Guadalupe Corridor Light Rail Transit (LRT) line which would pass through the project area. This

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5 Discussions with Martin Engelmann, Acting Traffic Engineer for Santa Clara Transit Authority

6 Advertisement for construction will begin in the summer of 1990.

extension would head northwest along Tasman Drive from the existing terminus near Great America and would then turn north along Fair Oaks, cross Highway 237 and continue on Java Drive before turning south onto Mathilda[7]. It would then cross Highway 237 and continue to its terminus in Downtown Sunnyvale with service to the adjacent CALTRAIN Station[8]

This LRT extension has been identified as a priority project by MTC. An Environmental Impact Report is being prepared and should be completed by mid-1990. Construction is expected to begin by 1991, and the project is anticipated to be completed some time around 1995.

2. PROJECT TRAFFIC GENERATION

a. Weekday Traffic Generation

Traffic generated by the proposed project is different in character than the commute traffic from the surrounding Moffett Business Park. The project would generate both large trucks (incoming waste and transfer trucks) and private vehicles (public self-haul and employees), and the project-generated traffic is less peaked.

Incoming refuse would arrive in both residential and commercial "packer" trucks, "roll-off" trucks, and private vehicles from individual residences. The packer and roll-off trucks would be about 35 feet in length and carry up to 15,000 pounds of refuse per trip. Up to 25% of the incoming refuse may be recycled, with the remaining 75% being transported to the Kirby Landfill in South San Jose. The transfer trucks to the Kirby Landfill would be about 65 feet in length with a payload of 50,000 pounds. The recycled materials would be trucked off-site by similar size trucks to various destinations throughout the Bay Area.

The incoming refuse would arrive from three principal locations:

- o Mountain View
- o Palo Alto
- o Sunnyvale

In addition there may be a small amount of incoming refuse from the "extended service area". The extended service area includes public self-haul, clean-up campaign debris, and city maintenance waste from Stanford, Cupertino, Los Altos, and Santa Clara, and debris box loads from Cupertino, Los Altos, and Los Altos Hills. Commercial refuse collected by Waste Management in Santa Clara and northern San Jose may also be processed at the site. Although the expansion of the service area is not yet certain[9], the trips generated from

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[7]An alternative alignment would use Elko Drive to Lawrence Expressway and then cross over Highway 237 and continue along Moffett Park Drive to Java Drive.

[8]An alternative alignment would go to Mountain View (Near CALTRAIN) rather than Sunnyvale.

[9]The decision of whether to allow expanded service area garbage to use the SMaRT Station will be made by the Sunnyvale City Council after reviewing this EIR.

these additional communities have been included in the analysis. The traffic projections, therefore, represent the worst-case forecasts.

Commercial trucks and public vehicles from both Mountain View and Palo Alto would use Highway 101 and Highway 237 to Caribbean Drive or Mathilda Avenue. This traffic analysis assesses the worst-case scenario of all of this traffic using the Mathilda/101 interchange. Project traffic from Sunnyvale would likely use the major north/south arterials such as Mathilda, Fair Oaks, and Lawrence Expressway.

The traffic-generation projections reflect "capacity" operations of the proposed 2,200 tons-per-day facility with a 25% recycling rate. Initially, the transfer station is expected to operate at about 75% of its capacity and then increase at a rate of about 1.1% per year. The jurisdictional composition of the waste stream was determined using counts of incoming vehicles at the Mountain View Landfill[10] as well as the present waste quantities[11] produced by the various jurisdictions within the service area.

The transfer station would be a 24-hour facility, and the operators of the disposal site (Kirby Canyon Landfill) have submitted an application to modify their Solid Waste Facility Permit to allow the landfill to operate between the hours of 5 a.m. and midnight. The present plan calls for no transfer truck trips to occur during the commute rush hours because of inefficient travel during these periods. The transfer station is designed with space for 6 transfer vehicles in the building and storage for an additional 15 transfer truck in a surface lot on the nearby landfill.

The facility is expected to generate about 55 (two-way) transfer truck trips per day over a 19-hour period (5 a.m. to midnight). This corresponds to about 3 two-way trips per hour. With holding space for 21 vehicles, the facility could collect and store about 7 hours worth of garbage before sending it to the landfill. It is unlikely that vehicles would wait more than a couple of hours, but there is sufficient storage capacity to avoid travelling during peak commute hours.

Table IV-6 shows the expected level of project-generated traffic on a typical weekday during times of capacity operations. Peak hour traffic was determined using the daily profiles of public and commercial traffic at existing landfills in the study area. A majority of the peak hour traffic would be composed of the employees travelling to and from the site. Of the

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[10] Barton-Aschman Associates, 1988

[11] <u>Comprehensive Project Description for SMaRT</u>, EMCON, August 1989, updated November 1989.

total weekday traffic, only 13% occurs during the a.m. peak hour and 8% occurs during the p.m. peak hour. These peak hour percentages are conservative in that they assume the transfer station employees have a shift-change during both the morning and evening commute peak hours. For comparison, the surrounding office uses will generate about 15% of their daily traffic during the a.m. peak hour and 14% during the p.m. peak hour.

It should be noted that the projections in Table IV-6 represent the total traffic that would be generated by the site. About one-third of this traffic (about 76 vehicle trips during the a.m. peak and 56 vehicle trips during the p.m. peak) currently uses the site according to the traffic counts[12].

Vehicles carrying incoming refuse comprise the largest portion of the project-generated a.m. peak hour and daily traffic (Table IV-7). However, employee traffic would comprise the majority of the p.m. peak hour traffic. Transportation of the recoverable materials and transfers to Kirby make up only a small portion of the total daily and peak hour traffic stream. The transfer trucks hold about three times as much refuse as the collection trucks and about 35 times as much as a pick-up truck. This larger capacity, combined with a 25% recycling rate, translates to far fewer transfer trips than collection trips.

b. Sensitivity to Kirby Canyon Operating Hours

If operations at the Kirby Canyon Landfill were limited to between 8 a.m. and 5 p.m. then the amount of peak traffic generated from the transfer station would increase by about 14 vehicle trips. This is an increase in project-generated traffic of 6% in the a.m. and 9% in the p.m. peak hour when compared to operations without transfer trips during the peak hours. The amount of daily traffic would be unaffected by the hours of operation at the Kirby Canyon site.

c. Sensitivity to Recovery Rate

The traffic projections in this document assume that 25% of the materials brought to the transfer station are recoverable materials which would be recycled at an off-site location. If the recycling rate increases, then the amount of trips to the Kirby Canyon Landfill would decrease, however the total number of outgoing garbage trips (landfill and recycled) generated at the transfer station would actually increase. Transfer trucks can carry more payload than recycled materials trucks, and therefore an increase in the recycling rate results in more trips.

For example, if the recovery rate was decreased to 0%, then the number of Kirby Canyon trips would increase from 110 to 150 trips, but the total number of outgoing garbage trips would decrease from 170 to 150. If the recovery rate is increased to 50%, then the number of Kirby Canyon trips decreases from 110 to 75, but the total number of outgoing garbage trips increases from 170 to 200.

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[12]According to Fehr & Peers traffic counts of December 1988.

d. Saturday Traffic Generation

The Saturday traffic generation is shown in Table IV-8. For the purposes of analyzing weekend traffic impacts Saturday was chosen as the more active weekend day. Typically, the Saturday activity is about 83% of the average daily weekday activity. During the Saturday peak hour, however, the site generates only about 60% of the traffic that occurs during the weekday a.m. peak hour. Because the street traffic during the Saturday peak is only about 20% to 25% of that observed during the weekday peaks, the Saturday traffic impact of the proposed project is considerably less than for the weekday. The primary impact analysis was, therefore, conducted for weekday peak-hour conditions.

3. PROJECT IMPACTS

a. Future Scenarios and Traffic Assignment Methodology

The following two future scenarios were analyzed:

Future (2010) without Project, consisting of: Existing traffic + 10% background traffic growth[13] (at 0.5% per year) + traffic from known cumulative projects.

Future (2010) with Project, consisting of: Existing traffic + 10% background traffic growth + traffic from known cumulative projects + net increase in Project traffic.

The traffic generation shown in Tables IV-6 and IV-8 include a certain amount of Project traffic already generated by the existing land fill and recycling activities on the site. An appropriate adjustment, therefore, was made prior to assigning the trips to the road network.

Project traffic was assigned to the network by origin-destination category based on the routing information provided by the City, Waste Management of North America, Inc. and the traffic consultant's (Fehr & Peers) judgement. The composite distribution of the Project traffic is shown in Figure IV-6.

b. Assumed Cumulative Projects

The following three development projects, identified by City staff, were included in the analysis:

1. Mixed residential/retail development on Lakeside Drive in the south-east quadrant of US 101/Lawrence Expressway:

    - 1,100 apartment units
    - 15,000 sq. ft. of retail/commercial

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13 Based on the relative changes in housing and employment characteristics identified in Sunnyvale's "Future Study" (1989) and the Route 237 Environmental Impact Report/Statement, 1989.

TABLE IV-6
WEEKDAY PROJECT-GENERATED TRAFFIC
(AT MAXIMUM CAPACITY, 2200 TPD)

			AM Peak Hour[1]		PM Peak Hour[1]		
Trip-Type	Location	Vehicle Type	In	Out	In	Out	Daily (In + Out)
Incoming Refuse	Mtn. View	Residential Packer	1	1	0	0	14
		Commercial Packer	5	5	0	0	58
		Roll-Off	8	8	0	0	84
		Public	10	10	8	8	216
	Palo Alto	Residential Packer	2	2	0	0	24
		Commercial Packer	3	3	0	0	28
		Roll-Off	6	6	0	0	64
		Public	6	6	4	4	124
	Sunnyvale	Residential Packer	5	5	0	0	52
		Commercial Packer	5	5	0	0	58
		Roll-Off	10	10	0	0	116
		Public	10	10	8	8	222
	Extended Service Area	Residential Packer	1	1	0	0	16
		Commercial Packer	3	3	0	0	40
		Roll-Off	5	5	0	0	56
		Public	3	3	2	2	70
	Subtotal[2]	Residential Packer	9	9	0	0	106
		Commercial Packer	16	16	0	0	184
		Roll-Off	29	29	0	0	320
		Public	29	29	22	22	632
Employees[3]	Various		58	8	50	58	420[4]
Transfer[5] to Kirby	Kirby Landfill		0	0	0	0	110
Recoverable[6] Materials	Various		2	2	2	2	60
Total (Gross)		Commercial Trucks	56	56	2	2	780
		Cars/Pick-ups	87	37	72	80	1,052
		Total Vehicles	143	93	74	82	1,832
			236		156		

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1 "Street peak hour", incoming refuse profile from Comprehensive Project Description for SMaRT, EMCON, August, 1989, Table 3-7.

2 Table 3-8 of Comprehensive Project Description for SMaRT, EMCON, August 1989.

3 Employee estimates by EMCON, assuming 1.2 persons/vehicle

4 Assumes half of employees leave site once during shift.

5 75% of incoming refuse to be shipped to Kirby landfill.

6 Comprehensive Project Description for SMaRT, EMCON, August 1989, pg. 5-6.

TABLE IV-7
COMPOSITION OF PROJECT-GENERATED TRAFFIC (WEEKDAY)

Trip-Type	Percentage of Project-Traffic by Trip-Type AM Peak Hour	PM Peak Hour	Daily
Incoming Refuse	70%	28%	67%
Employees	28%	69%	23%
Transfer to Kirby	0%	0%	7%
Recoverable Materials	2%	3%	3%
Total	100%	100%	100%

TABLE IV-8
SATURDAY PROJECT-GENERATED TRAFFIC
(AT MAXIMUM CAPACITY, 2200 TPD)

Trip-Type	Location	Vehicle Type	Mid-day Peak Hour[1] In	Mid-day Peak Hour[1] Out	Daily (In + Out)
Incoming Refuse	Mtn. View	Residential Packer	0	0	0
		Commercial Packer	1	1	6
		Roll-Off	0	0	0
		Public	15	15	238
	Palo Alto	Residential Packer	0	0	0
		Commercial Packer	0	0	0
		Roll-Off	0	0	0
		Public	14	14	214
	Sunnyvale	Residential Packer	0	0	0
		Commercial Packer	1	1	10
		Roll-Off	0	0	0
		Public	23	23	356
	Extended Service Area	Residential Packer	0	0	0
		Commercial Packer	0	0	2
		Roll-Off	0	0	0
		Public	6	6	98
	Subtotal[2]	Residential Packer	0	0	0
		Commercial Packer	2	2	18
		Roll-Off	0	0	0
		Public	58	58	906
Employees[3]	Various		10	10	420[4]
Transfer[5] to Kirby	Kirby Landfill		0	0	110
Recoverable[6] Materials	Various		2	2	60
Total (Gross)		Commercial Trucks	4	4	188
		Cars/Pick-ups	68	68	1,326
		Total Vehicles	72	72	1,514
			144		

1 Peak hour incoming refuse profile from Comprehensive Project Description for SMaRT, EMCON, August 1989, Table 3-7.

2 Table 3-8 of Comprehensive Project Description for SMaRT, EMCON, August 1989.

3 Employee estimates by EMCON, assuming 1.2 persons/vehicle

4 Assumes half of employees leave site once during shift.

5 75% of incoming refuse to be shipped to Kirby landfill.

6 Comprehensive Project Description for SMaRT, EMCON, August 1989, pg. 5-6.

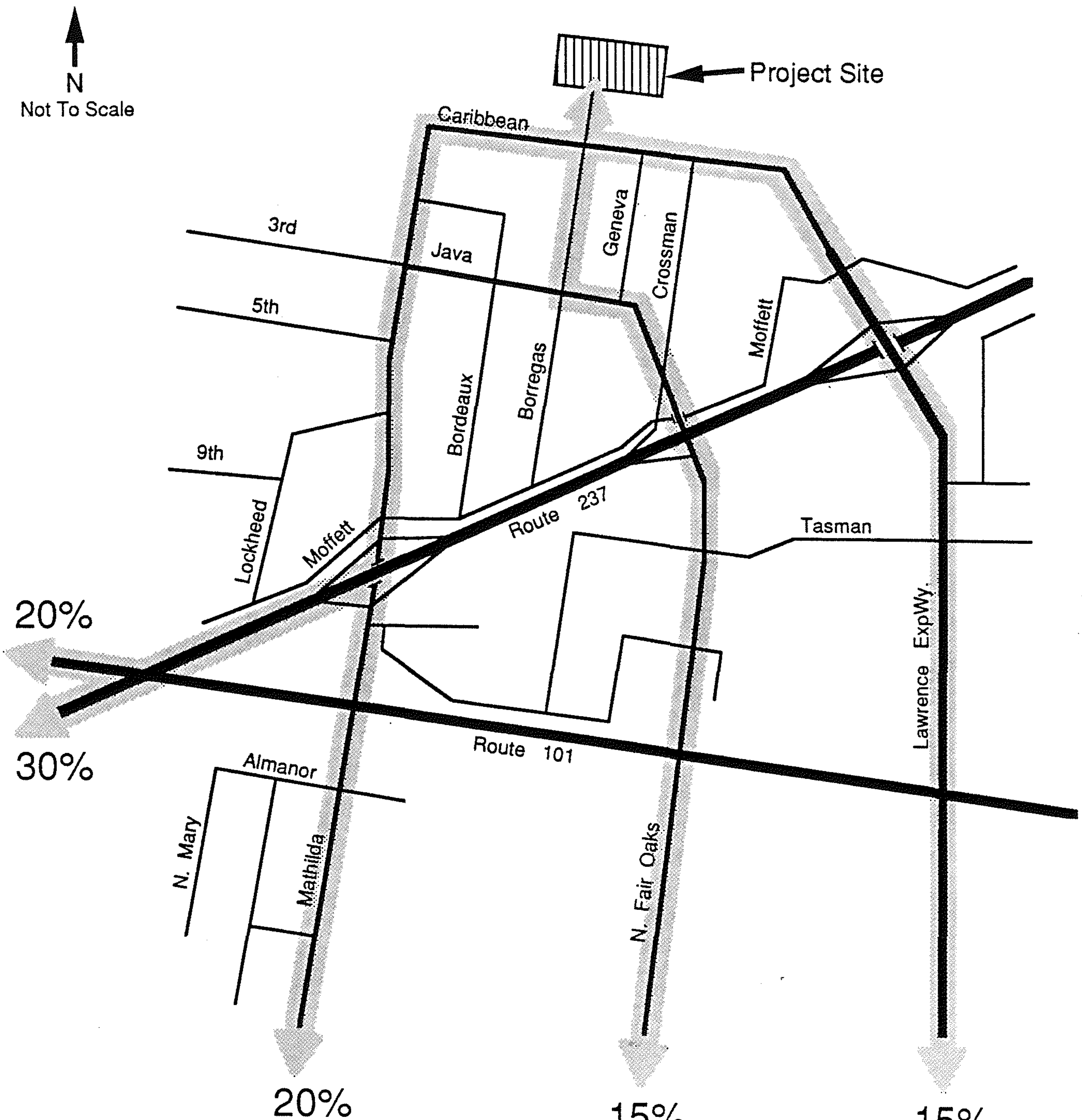

Figure IV-6
Distribution of Project Traffic During Commute Peak Hours

2. Medium-density residential/office development on Morse Avenue near Weddell Drive in the north-west quadrant of US 101/N. Fair Oaks:

   o 940 medium-density dwelling units

3. Residential development at Fair Oaks Way in the south-west quadrant of Route 237/N. Fair Oaks:

   o 166 Condominium units

The traffic generation and distribution estimates for these projects were taken from available traffic impact studies or developed by the Consultant. Although other development within the City has been proposed, these potential projects would either not impact the study area or have only a small impact that was considered to be included in the 10% background traffic growth utilized.

c. Future Intersection Volumes

The projected future volumes for the key intersections are summarized for the Without-Project scenario in Figures IV-7 through IV-9. For the With-Project scenario, this information is contained in Figures IV-10 through IV-12.

Tables IV-9 and IV-10 summarize the intersection approach volumes and projected traffic growth for the a.m. and p.m. peak hours respectively. As can be seen, the average traffic growth for the twelve intersections due to non-project traffic is estimated at 12% for the a.m. peak hour and 13% for the p.m. peak hour. The slight difference is due to the nature of the assumed cumulative project which impacts the p.m. peak hour more than the a.m. peak hour.

The growth impact of the Project itself ranges from less than 1% to a maximum of 11% depending on the intersection and time period. The average traffic contribution to the morning peak hour is 3.6% compared to 2.3% during the afternoon peak hour. This is because more activities at the proposed transfer station occur early in the morning than in the afternoon.

The streets closest to the project site, especially to the west (Caribbean-Mathilda), would receive the greatest increase in traffic, about 200 vehicles per a.m. peak hour and 100 vehicles during the p.m. peak hour. To the east and the south of the Project site, the impact would be about 20 vehicles for each of the peak hours.

d. Intersection Service Levels

Because of the Project's relatively small impact on traffic volumes, the service levels at the study intersections would not be significantly affected by the Project. Most of the Project traffic consists of through traffic at the intersections, as opposed to left-turns, and does not materially affect the service levels at these intersections.

Table IV-11 summarizes the future service levels for the "without" and "with-Project" scenarios.

At all intersections, the service levels remain virtually identical whether or not the Project is implemented. Although the volume/capacity ratios worsen at the close-in intersections (Borregas/Caribbean, Mathilda/3rd, Borregas/Java) these intersections have sufficient excess capacity so that the service levels would remain at an excellent A or B level.

The "monster interchange", that is the Mathilda intersections near the Route 237 ramps, will deteriorate from the existing LOS E to LOS F by 2010, primarily due to non-Project related increase in travel. The Project itself would contribute only to a minor degree (about 2-3% during the peak hours) to the congestion problems that exist and will continue to exist in the "monster interchange" area.

The limited capacity of the "monster interchange" has been recognized by the City and addressed in detail a recent corridor study[14]. That study evaluated several alternative solutions and recommended a combination of widening Mathilda Avenue between US 101 and Lockheed Way and extending Mary Avenue over US 101 and Route 237. The City is evaluating various project proposals in the area, but no conclusions have been reached yet about specific solutions. However, the City is committed to improving the existing conditions. Funds for roadway and intersection improvements in the Mathilda Corridor have been allocated in the City's Ten-Year Plan.

e. Freeway Impacts

The proposed Project would generate peak hour traffic on the surrounding highways as shown in Table IV-12. This project traffic would be on the order of 28 to 84 peak-hour vehicle trips, representing less than 2% of the presently existing volumes.

Most of the Project-generated highway traffic during peak hours would be on Route 237. Transfer truck travel via US 101 between Lawrence Expressway and Kirby Canyon (Scheller Avenue Interchange) would occur outside the commute rush hours.

f. Kirby Canyon Landfill

During the commute peak hours, the proposed Project would generate minimal, if any, additional traffic on the Scheller Avenue interchange which provides access to Kirby Canyon Landfill (see Table IV-6). This is because transfer trucks would be scheduled outside the regular commute peak hours.

The project is expected to generate about 110 transfer truck trips to the Kirby Canyon facility under the base assumption that 25% of the materials at the transfer station would be recycled. If none of the incoming material was recycled, the number of trips to Kirby Canyon would be as high as 150 trips per day.

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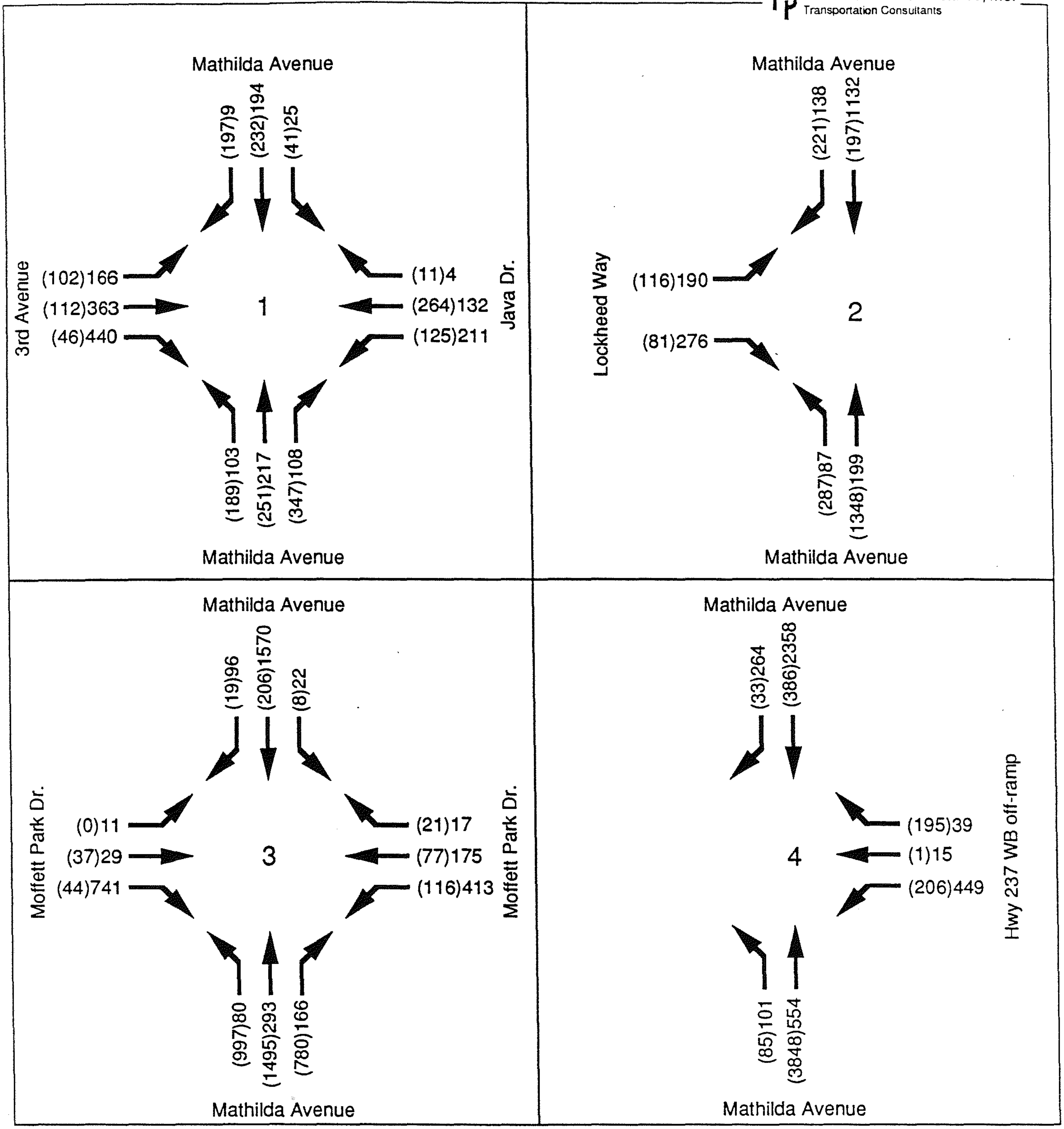
14 North South Corridor Study, by CH2MHill, 1986.

Fehr & Peers Associates, Inc.
Transportation Consultants



N

(XXX) = AM
YYY = PM

Figure IV-7
Future Traffic Without Project
Peak Hour Turning Volumes
Intersections 1 through 4

June 18, 1990

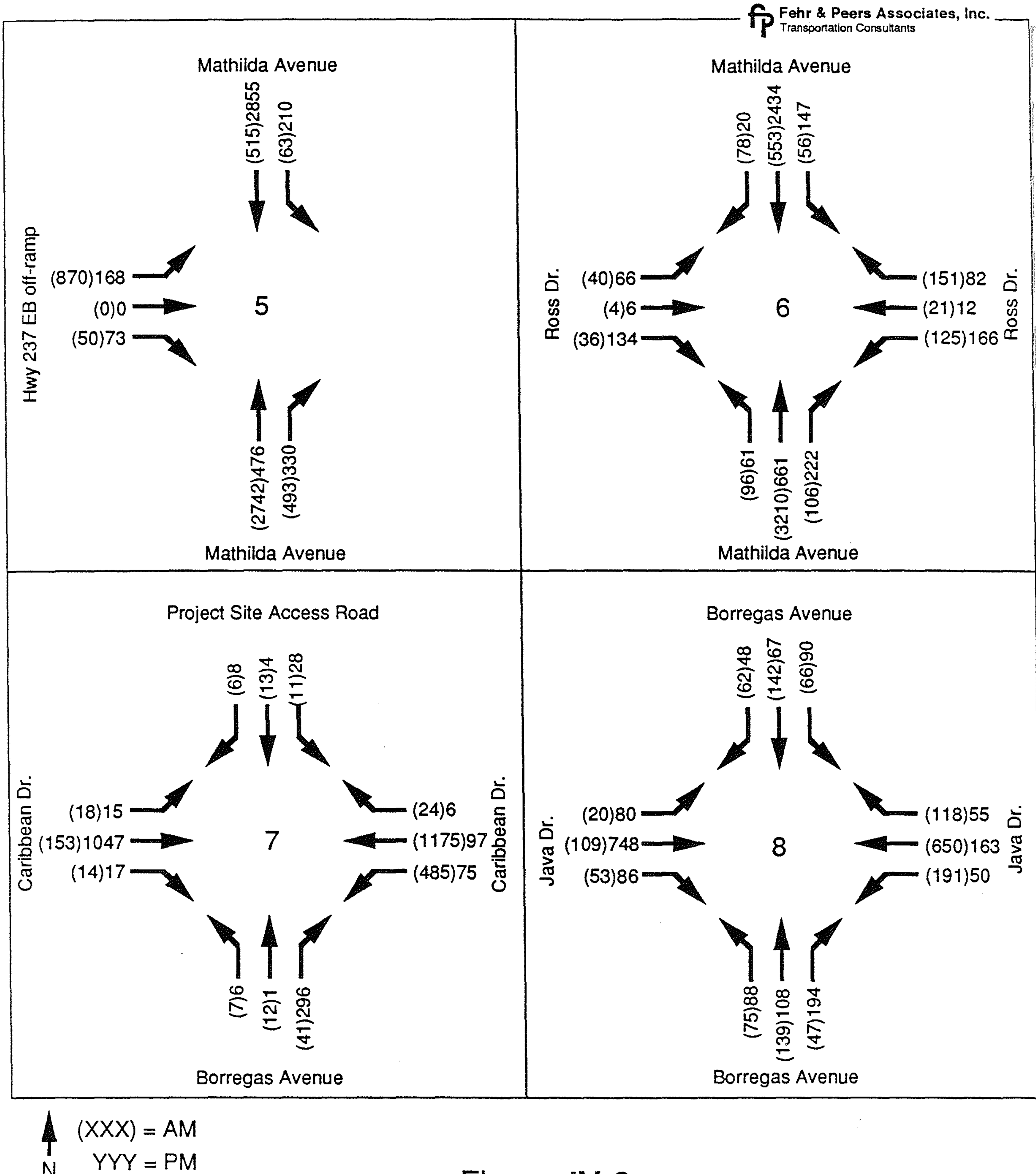


Figure IV-8
Future Traffic Without Project
Peak Hour Turning Volumes
Intersections 5 through 8

Fehr & Peers Associates, Inc.
Transportation Consultants

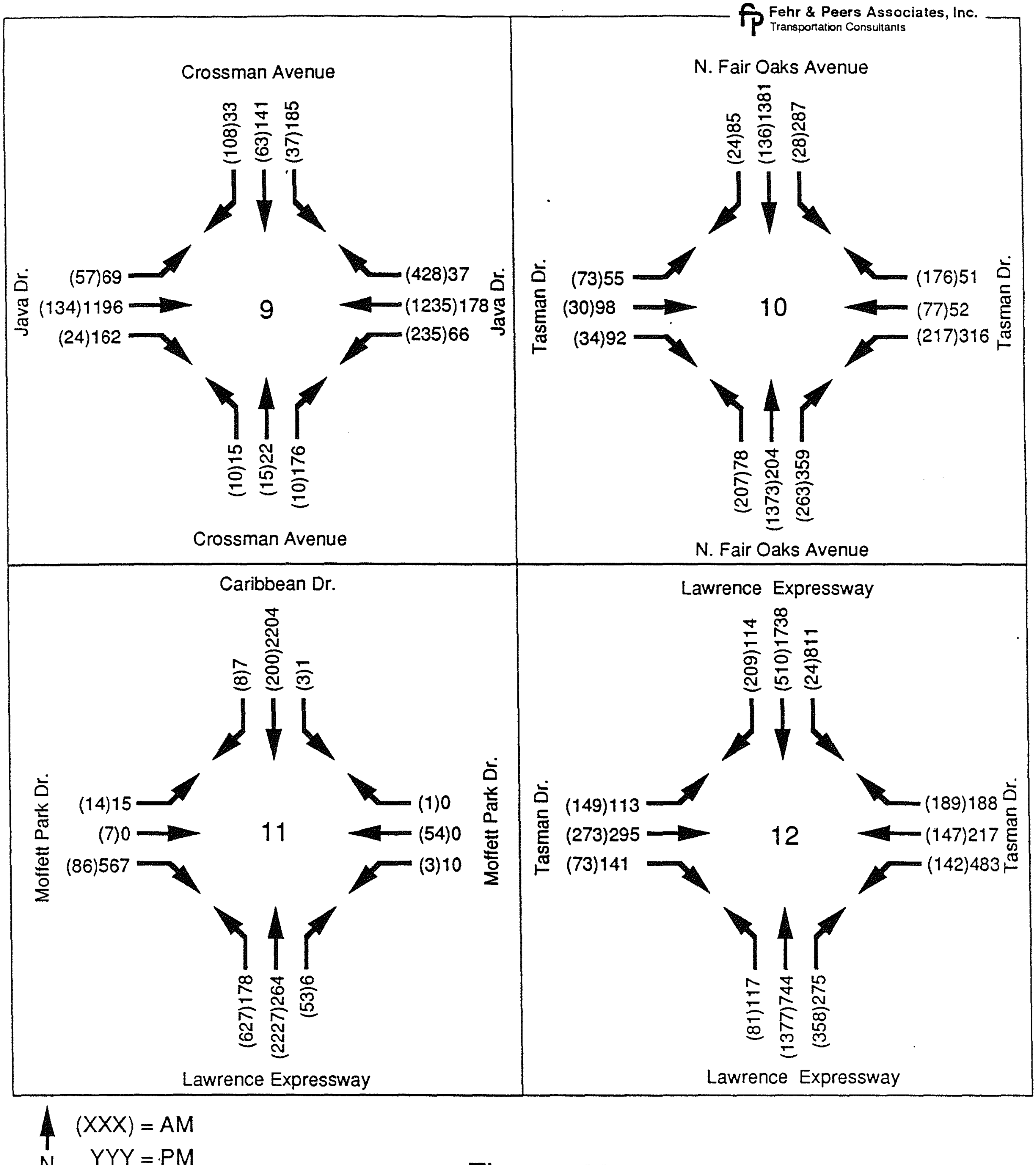
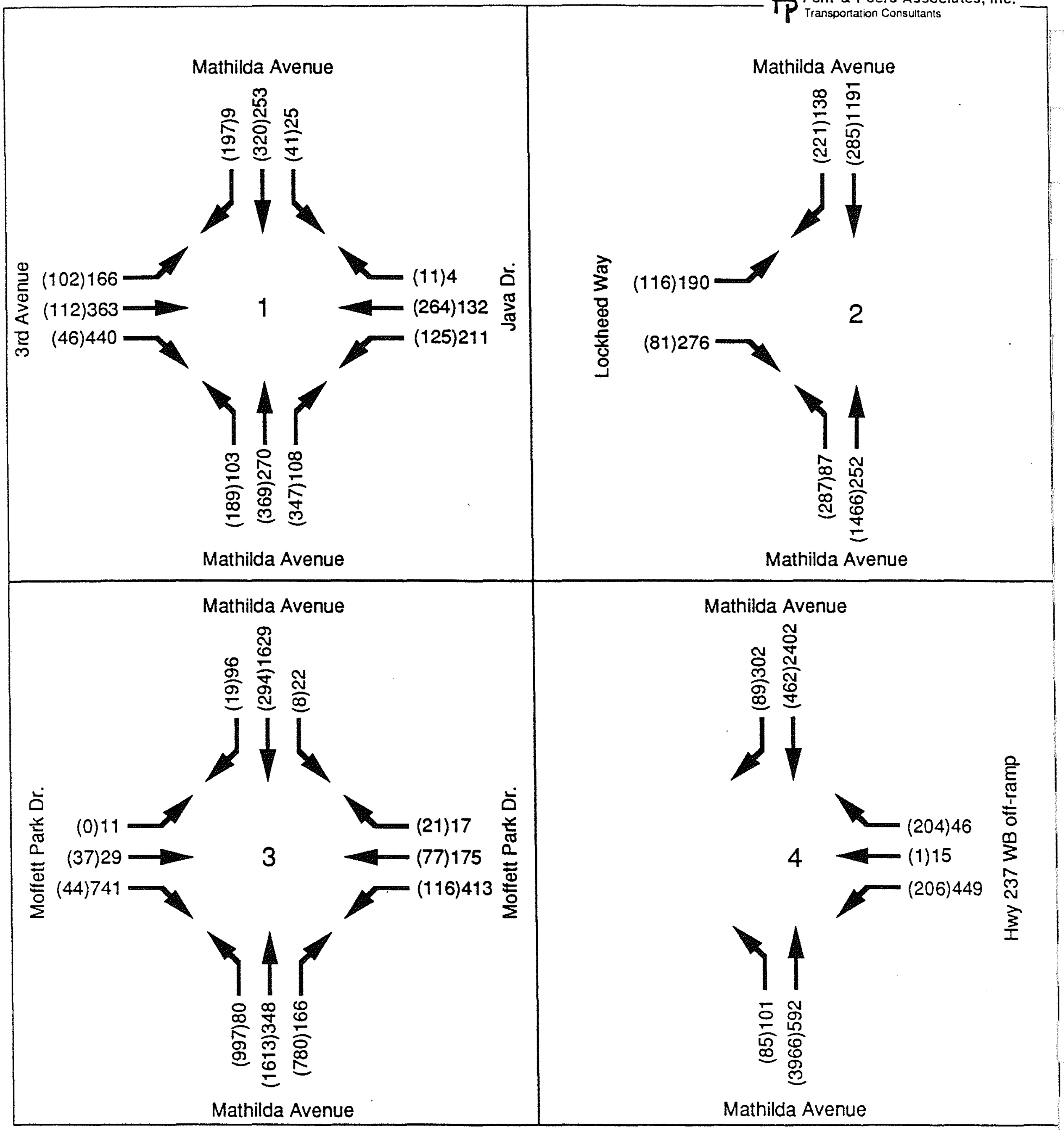


Figure IV-9
Future Traffic Without Project
Peak Hour Turning Volumes
Intersections 9 through 12



N

(XXX) = AM
YYY = PM

Figure **IV-10**
Future Traffic With Project
Peak Hour Turning Volumes
Intersections 1 through 4

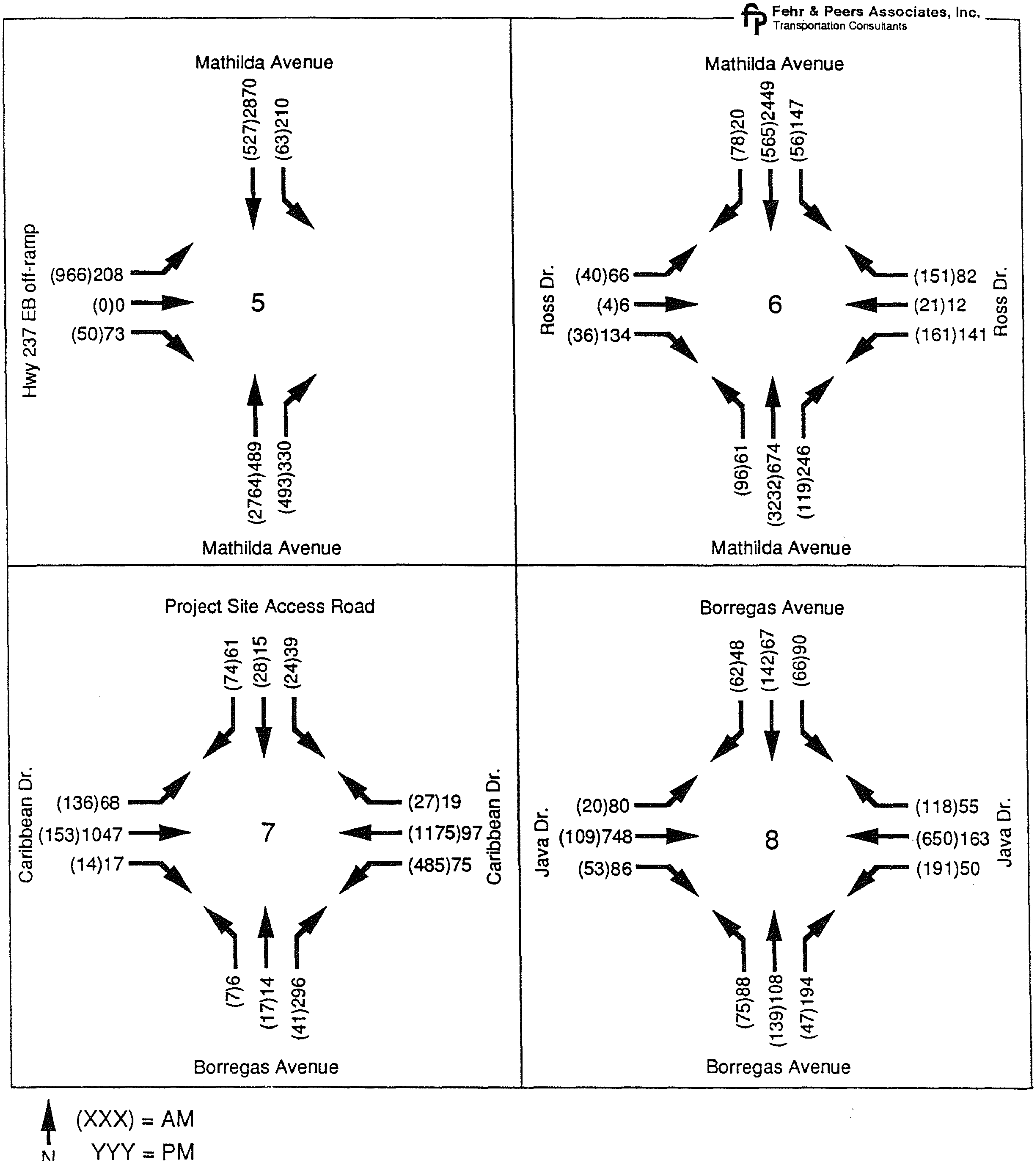
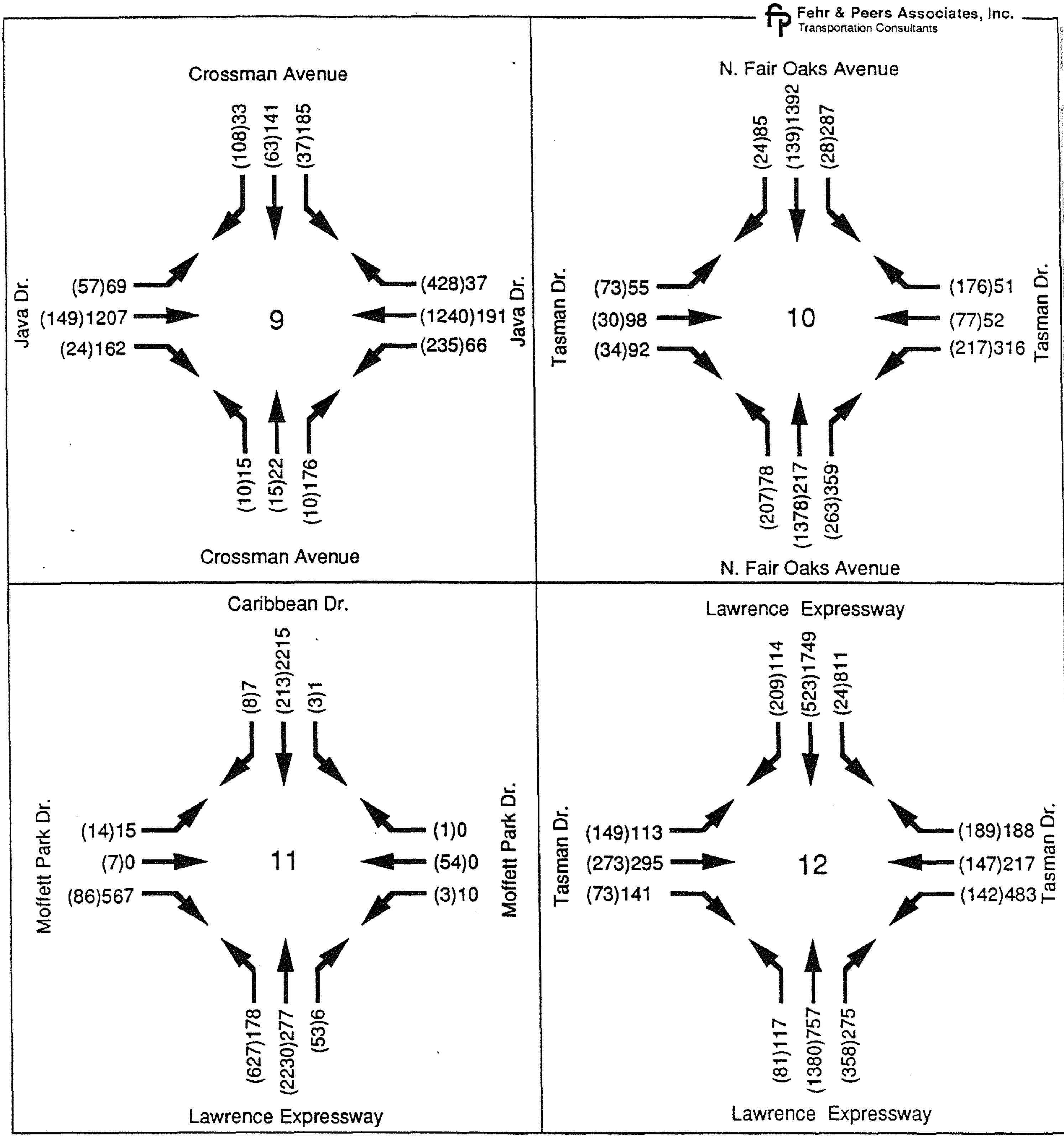


Figure IV-11
Future Traffic With Project Peak
Hour Turning Volumes
Intersections 5 through 8

Fehr & Peers Associates, Inc.
Transportation Consultants



N

(XXX) = AM
YYY = PM

Figure **IV-12**
Future Traffic With Project
Peak Hour Turning Volumes
Intersections 9 through 12

TABLE IV-9
AM PEAK INTERSECTION APPROACH VOLUME GROWTH

Intersection	Existing (1989)	Future (2010) Without Project	% Change[1]	Future (2010) With Project	% Change[2]
1. Mathilda/3rd	1,743	1,917	10.0%	2,123	10.8%
2. Mathilda/Lockheed	2,005	2,250	12.2%	2,456	9.2%
3. Mathilda/Moffett	3,412	3,800	11.4%	4,006	5.4%
4. Mathilda/237 WB Ramps	4,288	4,754	10.9%	5,013	5.5%
5. Mathilda/237 EB Ramps	4,261	4,733	11.1%	4,863	2.8%
6. Mathilda/Ross	4,024	4,476	11.2%	4,510	0.8%
7. Borregas/Caribbean	1,780	1,959	10.1%	2,181	11.3%
8. Borregas/Java	1,519	1,672	10.0%	1,692	1.2%
9. Crossman/Java	2,084	2,356	13.1%	2,381	1.1%
10. Fair Oaks/Tasman	2,290	2,626	14.7%	2,646	0.8%
11. Caribbean/Moffett	2,914	3,283	12.7%	3,299	0.5%
12. Lawrence/Tasman	3,157	3,532	11.9%	3,548	0.5%
Average Total	33,477	37,370	11.6%	38,718	3.6%

[1] Change from Existing Conditions

[2] Change from Future Without Project

TABLE IV-10
PM PEAK INTERSECTION APPROACH VOLUME GROWTH

Intersection	Existing (1989)	Future (2010) Without Project	% Change[1]	Future (2010) With Project	% Change[2]
1. Mathilda/3rd	1,793	1,972	10.0%	2,084	5.7%
2. Mathilda/Lockheed	1,782	2,022	13.5%	2,134	5.5%
3. Mathilda/Moffett	3,229	3,613	11.9%	3,727	3.2%
4. Mathilda/237 WB Ramps	3,403	3,780	11.1%	3,907	3.4%
5. Mathilda/237 EB Ramps	3,683	4,112	11.7%	4,182	1.7%
6. Mathilda/Ross	3,521	4,011	13.9%	4,038	0.7%
7. Borregas/Caribbean	1,453	1,600	10.1%	1,754	9.6%
8. Borregas/Java	1,615	1,777	10.0%	1,801	1.4%
9. Crossman/Java	1,992	2,280	14.5%	2,304	1.1%
10. Fair Oaks/Tasman	2,617	3,068	17.2%	3,092	0.8%
11. Caribbean/Moffett	2,847	3,252	14.2%	3,266	0.4%
12. Lawrence/Tasman	4,649	5,236	12.6%	5,260	0.5%
Average Total	32,584	36,713	12.7%	37,549	2.3%

[1] Change from Existing Conditions

[2] Change from Future Without Project

TABLE IV-11
FUTURE SERVICE LEVELS

	Future (2010) Without Project				Future (2010) With Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Intersection	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C
1. Mathilda/3rd	A	.34	A/B	.50	A	.34	B	.51
2. Mathilda/Lockheed	A	.38	A	.42	A	.38	A	.44
3. Mathilda/Moffett 4. Mathilda/237 WB Ramps 5. Mathilda/237 EB Ramps 6. Mathilda/Ross	F	1.08	F	1.04	F	1.13	F	1.06
7. Borregas/Caribbean	A	.36	A	.29	A	.42	A	.34
8. Borregas/Java	A	.42	A	.41	A	.43	A	.42
9. Crossman/Java	A	.30	A	.45	A	.30	A	.45
10. Fair Oaks/Tasman	C	.60	C	.65	C	.60	C	.65
11. Caribbean/Moffett	A/B	.50	B	.57	A/B	.50	B	.57
12. Lawrence/Tasman	A	.44	C	.66	A	.44	C	.66

The Kirby Canyon site is currently generating about 75 truck trips per day and 115 vehicle trips in total. The original Kirby Canyon EIR[15] estimated that build-out traffic volumes would reach 1,150 vehicle trips per day. The most recent projections[16] are only 800 vehicles per day at build-out. These most recent projections include sources of transferred materials from all over the Bay Area (including SMaRT).

Access to the Kirby Canyon facility is via Highway 101 and the Scheller Avenue Interchange. This interchange serves only the landfill. Even assuming the worst case of 1,150 vehicles per day at build-out of the Kirby site, all of the intersection and ramps at the interchange would operate at Level of Service A[17]

4. ON-SITE CIRCULATION SYSTEM

Figure IV-13 and Figure IV-14 illustrate the on-site traffic circulation. The access road to the project (Borregas Avenue north of Caribbean Drive) is proposed to be two lanes in each direction. A four-lane road can carry as much as 2,400 vehicles in the peak hour. The proposed project would generate a maximum of about 250 vehicles per hour. Therefore, the roadway has more than adequate capacity to serve the expected traffic volumes.

The road would have adequate capacity as a two-lane facility, but the two lanes in each direction help to physically separate the different user groups (passenger vehicles and large trucks) and minimize potential conflicts. In addition, the four lane road provides a larger amount of queuing space in the case of emergencies or unusual peaks.

A total of 600 feet of queuing area (three lanes of 200 feet each) is provided at the commercial and public entrance. The 400 feet dedicated to commercial traffic is sufficient to stack 5 large trucks. During peak periods, incoming truck traffic would average about 2 vehicles per minute. The storage space would be adequate provided that incoming trucks are processed at an average of 1 minute per vehicle (at each gate).

The 200 feet of available queuing area for public users would hold about 8 vehicles. The maximum rate of incoming public vehicles is about 2 per minute. A processing rate of about 45 seconds per vehicle is needed to keep queues within the storage area.

Acceleration and deceleration lanes on Caribbean Drive would facilitate the entering and exiting of the site and minimize interference with traffic along Caribbean Drive.

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[15] Kirby Canyon Sanitary Landfill EIR, prepared for the City of San Jose, 1983

[16] Kirby Canyon Sanitary Landfill Traffic Impact Study, Abrams Associates, May 1990

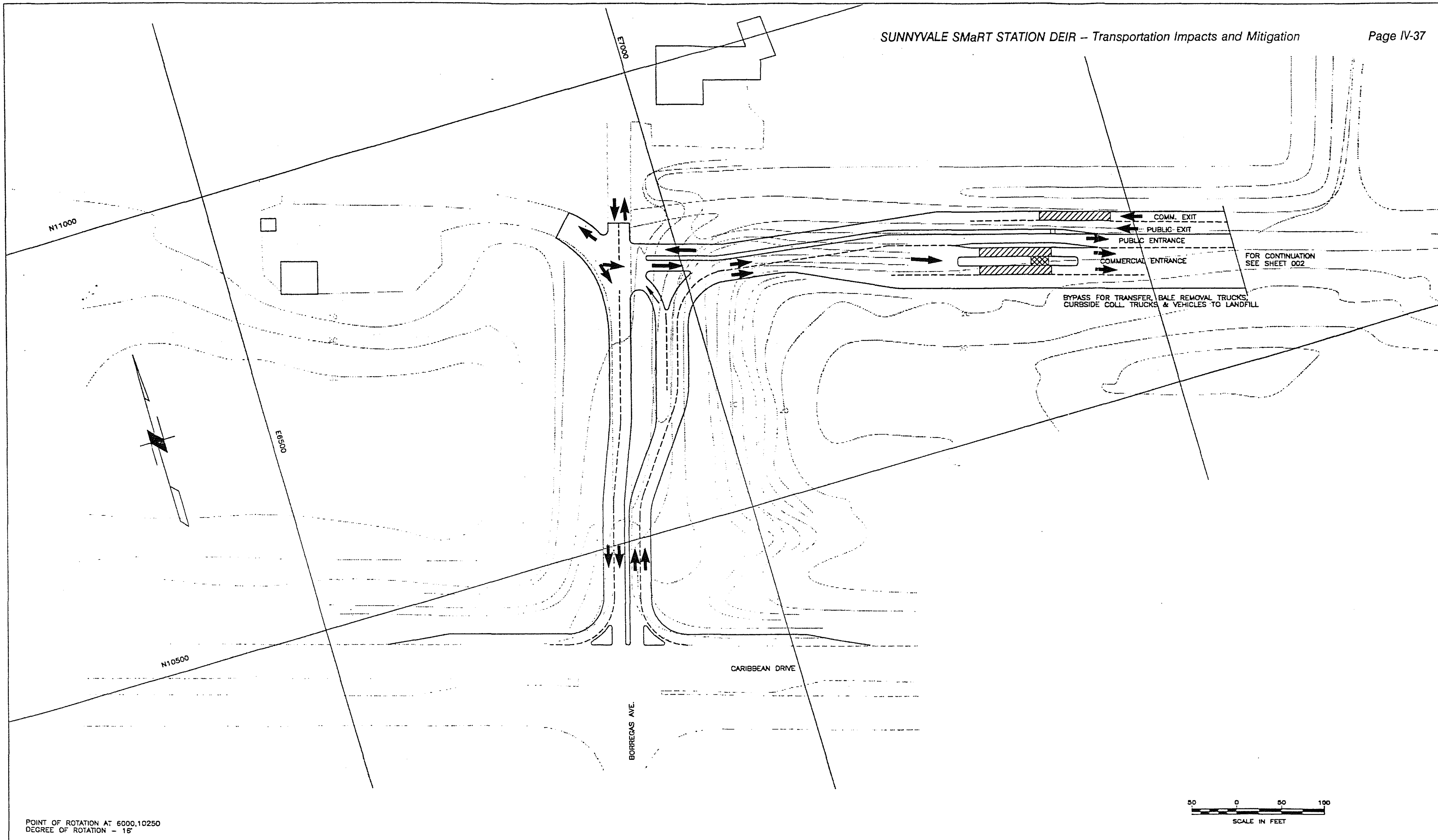
[17] Kirby Canyon Sanitary Landfill Traffic Impact Study, Abrams Associates, May 1990, Table 3.

TABLE IV-12
PROJECT TRAFFIC IMPACT ON FREEWAYS

Freeway	Location	Existing Peak Hour Traffic[1]	Project-Generated PM Peak Hour Traffic[2]	% Increase
Highway 101	e/o Lawrence Exp	17,000	0	0
	Lawrence - Fair Oaks	16,000	0	0
	Fair Oaks - S. Mathilda	15,500	0	0
	S. Mathilda - Route 237	13,700	0	0
	w/o Route 237	14,200	28	0.2%
Highway 237	e/o Lawrence	6,100	0	0
	Lawrence - Mathilda	5,100	0	0
	Mathilda - Route 101	4,900	84	1.7%
	w/o Route 101	4,300	56	1.3%

[1] Two-directional peak hour traffic volumes from 1988 Traffic Volumes on State Highways, Caltrans

[2] No Kirby Canyon trips anticipated during peak hours.



No.	DATE	BY	REVISION	JOB No. 78686	DESIGNED:	PROJECT ENGINEER: RWC		WESTERN REGION		WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION	SMaRT STATION
				SCALE:	DRAWN BY: VCH	APPROVED BY:	URS CONSULTANTS	500 N.E. MULTNOMAH PORTLAND OREGON 97232			ENTRANCE ROAD CIRCULATION
					CHECKED BY:	DATE: APRIL 1990					DRAWING NUMBER: 78686-003 REV. A

FIGURE IV-13

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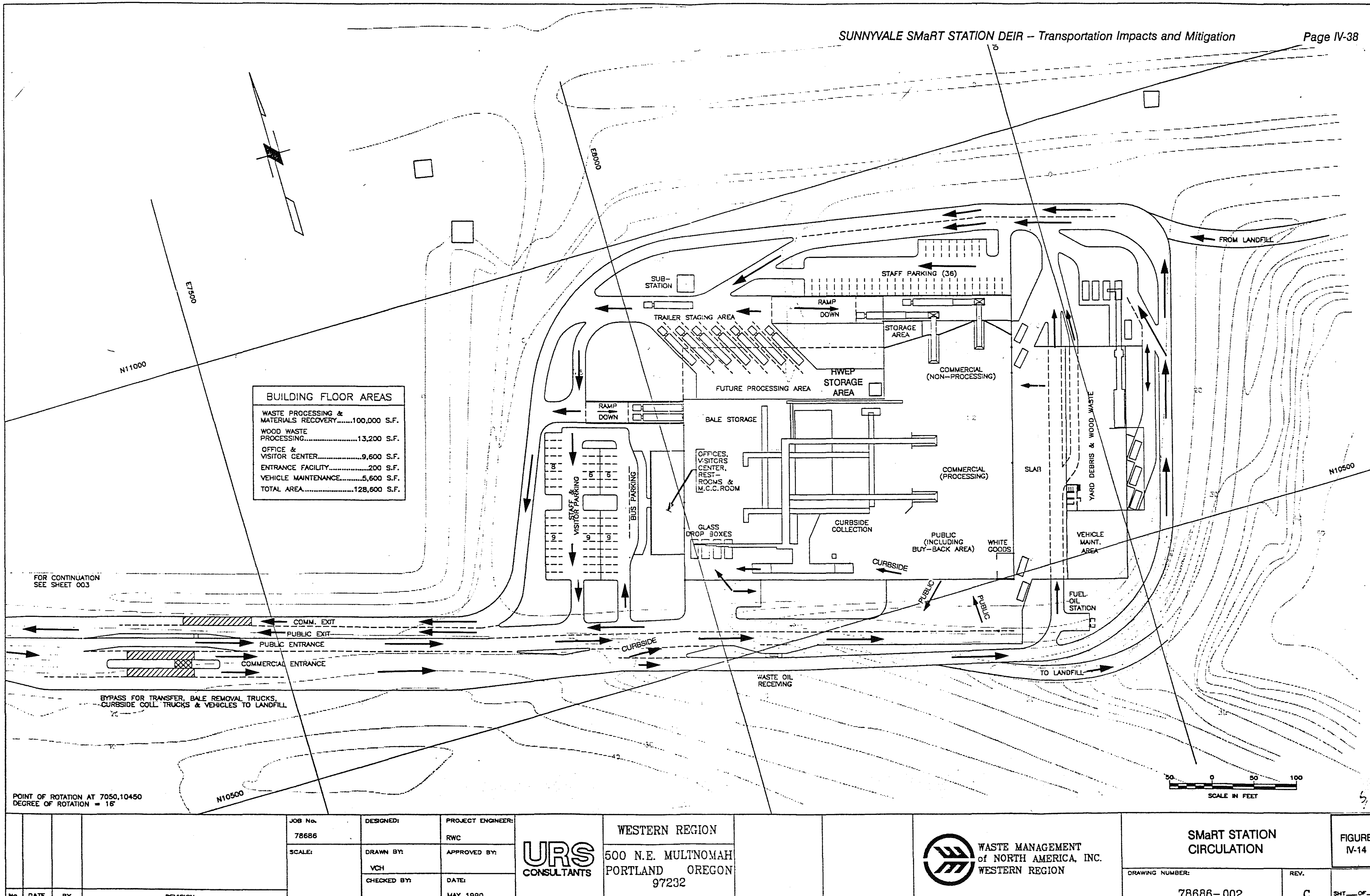
BUILDING FLOOR AREAS
WASTE PROCESSING & MATERIALS RECOVERY.......100,000 S.F.
WOOD WASTE PROCESSING.......13,200 S.F.
OFFICE & VISITOR CENTER.......9,600 S.F.
ENTRANCE FACILITY.......200 S.F.
VEHICLE MAINTENANCE.......5,600 S.F.
TOTAL AREA.......128,600 S.F.
FROM LANDFILL
STAFF PARKING (36)
SUB-STATION
RAMP DOWN
TRAILER STAGING AREA
STORAGE AREA
HWEP STORAGE AREA
FUTURE PROCESSING AREA
COMMERCIAL (NON-PROCESSING)
BALE STORAGE
OFFICES, VISITORS CENTER, REST-ROOMS & M.C.C. ROOM
COMMERCIAL (PROCESSING)
SLAB
YARD DEBRIS & WOOD WASTE
STAFF & VISITOR PARKING
BUS PARKING
GLASS DROP BOXES
CURBSIDE COLLECTION
PUBLIC (INCLUDING BUY-BACK AREA)
WHITE GOODS
VEHICLE MAINT. AREA
CURBSIDE
PUBLIC
FUEL-OIL STATION
FOR CONTINUATION SEE SHEET 003
COMM. EXIT
PUBLIC EXIT
PUBLIC ENTRANCE
COMMERCIAL ENTRANCE
CURBSIDE
TO LANDFILL
WASTE OIL RECEIVING
BYPASS FOR TRANSFER, BALE REMOVAL TRUCKS, CURBSIDE COLL. TRUCKS & VEHICLES TO LANDFILL
POINT OF ROTATION AT 7050,10450
DEGREE OF ROTATION = 16°
N11000
N10500
E7500
E8000
SCALE IN FEET
50 0 50 100
JOB No. 78686
DESIGNED:
PROJECT ENGINEER: RWC
SCALE:
DRAWN BY: VCH
APPROVED BY:
CHECKED BY:
DATE: MAY 1990
No. DATE BY REVISION
URS CONSULTANTS
WESTERN REGION
500 N.E. MULTNOMAH
PORTLAND OREGON 97232
WASTE MANAGEMENT of NORTH AMERICA, INC. WESTERN REGION
SMaRT STATION CIRCULATION
FIGURE IV-14
DRAWING NUMBER: 78686-002
REV. C

To accommodate project traffic, the left-turn pocket on Caribbean Drive west of Borregas Avenue should be lengthened from the existing 120 feet to 180 feet. This would involve median reconstruction, landscaping modifications and pavement reconstruction. A 180 foot pocket can store three trucks and one to two passenger vehicles.

The first on-site intersection opposite the WPCP office parking should be controlled by four-way stop signs except for the northbound to eastbound double right-turn lanes. To clarify and support the one-way counter-clockwise circulation pattern around the Materials Recovery and Waste Disposal Building, appropriate "One-Way" and "Do Not Enter" signs should be placed at strategic locations.

No other circulation improvements are necessary.

5. MITIGATION MEASURES

a. Off-Site Mitigation

The following off-site traffic and roadway improvements would be required to mitigate the impacts of the proposed Project:

- o The eastbound left-turn pocket on Caribbean Drive at the entrance to the project site should be lengthened from 120 feet to about 180 feet.
- o The signal timing and phasing of the traffic signal at Caribbean/Borregas should be optimized every two to three years or when major new phases of the Project are implemented.
- o Potential solutions to the poor traffic conditions at the "monster interchange" (in the vicinity of Mathilda and the Route 237 ramps) should be aggressively pursued. This mitigation is not required by the Project itself but by existing conditions and the projected general growth of traffic. The Project would contribute, albeit in a small way, to the projected worsening of the service levels at these intersections.

b. On-Site Mitigation

The following traffic operations measures are recommended to assure safe and efficient traffic flows on the site:

- o Four-way stop signs should be placed at the first intersection on the site opposite the WPCP office parking. The double right-turn lanes serving northbound to eastbound traffic should be exempted from the stop requirement.
- o Appropriate "One-Way" signs (R6-1 or R6-2) and "Do Not Enter" (R5-1) signs should be installed at key locations on the circulation roadway around the Materials Recovery and Waste Disposal Building.

B. PUBLIC SERVICES

1. SMaRT Station

a. Electric Power

Setting. The transfer station would require 1.5 to 2 megawatts (MW) of power for lighting and operation of mechanical equipment. Service would be provided by Pacific Gas and Electric Company (PG&E) by extending and reinforcing the 12 kilovolt (KV), underground distribution line which now serves the Sunnyvale WPCP. The line runs along Borregas Avenue, crossing Carribbean, with feeder lines along Carribbean serving the business park. To provide a total of 2.8 MW of power to both WPCP and the SMaRT station, PG&E would need to install a larger-diameter cable and to replace the existing 3 to 4-inch conduit holding the underground cable with a 6-inch conduit (J. Kruge, PG&E, pers. comm.). The utility would also transfer some of the load on this line to other lines to provide more capacity for the SMaRT station/WPCP complex.

Impacts. Reinforcement of the electric power line would involve the installation of new underground conduit and cable. The section of conduit that would need to be replaced extends from just south of Carribbean to the transfer station. South of Carribbean and across Carribbean, the new conduit would probably be in the same alignment as the existing conduit. North of Carribbean (on the private road leading to the WPCP and the landfill), the new conduit alignment may or may not correspond to the existing conduit. If the new conduit is placed in a different alignment, the old cable would be pulled from the existing conduit but the conduit would be left in place. If in the same alignment, both the cable and conduit would be removed. Either way, the construction technique is similar.

If the conduit lies under asphalt (as across Carribbean), the construction crew would saw-cut the asphalt, dig a trench down to the existing conduit level (3 feet), remove the conduit (if required), install the new conduit, backfill with earth, pave with temporary asphalt. City crews would do the final repaving with permanent asphalt. If the line lies below earth and not pavement, all the steps would be the same except the asphalt sawing and re-paving. The new cable would be threaded into the new conduit from splice boxes at several points and spliced together.

The impact of the construction schedule would have a short-term effect on traffic along Carribbean Drive and the extension of Borregas Avenue which serves as the access road to the WPCP. PG&E would phase the trenching across Carribbean so has to leave a minimum of one lane in each direction available at all times. They would complete half of the east bound lanes, then half of the west bound lanes, then the remaining portions. Each section would take about two days to complete. The total time from saw- cutting to final repaving of the asphalt across the entire road would be about 5 working days. During non-construction hours, the trench would be covered with metal plates to allow traffic to freely pass. During this brief construction phase, traffic on Carribbean would move more slowly and be more congested than usual.

Traffic on the access road to the WPCP and the landfill could also experience short-term delays, if the normal pavement was narrowed to one lane through which both directions of traffic must pass. Once construction has been completed and the roadways repaved, no further impact on traffic would occur. The underground line would have no visual impacts or land use conflicts. Maintenance access to the line is through the splice boxes, so no further disturbance to the ground would be expected.

b. Potable Water

Setting. The City of Sunnyvale would provide the water service for the site. The City's water sources include City wells, Hetch-Hetchy and local reservoir water bought from the City of San Francisco, and water from the Delta and local reservoirs bought from the Santa Clara Valley Water District. In the vicinity of the project site, the water used is entirely from the San Francisco Water Department.

Impacts. Water connection for the project would be provided via an eight inch existing City water main at the southeast corner of the Water Pollution Control Plant.

Total peak daily water consumption for the SMaRT facility is estimated at 22,000 gallons per day (gpd). Sufficient potable water capacity is available for the project, though the use of reclaimed water for some operations may be desirable. Assuming adequate availability and supply pressure, reclaimed water from the nearby Water Pollution Control Plant could be used to supply the 10,000 gpd for irrigation purposes from April through October. With proper safety precautions, the estimated 7,000 gpd required for facility washdown and 1,000 gpd for dust suppression could also be supplied by this same reclaimed water source. Therefore, peak reclaimed water consumption would vary from about 8,000 gpd from November to March to approximately 18,000 gpd from April to October.

Of the total 22,000 gpd estimated for total usage, daily potable water use would average 4,000 gpd. The project would use less than one half of a percent of the potable water consumed daily in the City of Sunnyvale (A. Sandigo, pers. comm.).

Fire protection standards for the project require installation of fire hydrants every 400 feet and provision of sufficient water capacity for the hydrants to function properly. Estimations indicate that a flow capacity of approximately 2,500 gallons per minute would be needed to meet the fire protection requirements. If the proposed connection to the eight inch line is not sufficient to provide the required flow capacity, then additional piping would be installed to connect to the twelve inch water line at the intersection of Crossman and Caribbean.

All water mains must be polyethylene encased due to the potentially corrosive environment in the soil from refuse contamination. Valve boxes and service meter vaults must be adequately sealed to prevent intrusion of landfill gas.

c. Wastewater

Setting. Sewage from the project would be sent to the Sunnyvale Water Pollution Control Plant (WPCP) for treatment and disposal. The plant has a total capacity of 29.5 mgd dry weather flow and is currently treating 17.5 mgd. The remaining 12.0 mgd of capacity is available for new development.

Impacts. Wastewater generation for the project is estimated at 11,000 gpd (0.01 mgd). This volume includes domestic wastewater generation and washdown water. The Sunnyvale Water Pollution Control Plant has sufficient capacity for the project.

Pretreatment of washdown water may be required to eliminate oil, greases and solids (J. Addio, pers. comm.). The washdown water from the SMaRT station could be pretreated to remove grease, oil and solids prior to discharge to the WPCP. Sunnyvale Municipal Ordinance Title 12 requires dischargers to the sewer system to characterize their flow stream in order to determine pretreatment requirements.

The wastewater from the project would be discharged into an existing 39-inch clay sanitary sewer line via a new manhole near the southwest corner of the SMaRT building. The washdown water flow can be separated from other wastewater flows if required by the WPCP.

d. Stormwater

On-site stormwater would be collected by grate drains and catch basins and conveyed by pipes to the existing stormwater channels west and north of the site. This stormwater is discharged to Moffett Slough through the existing Baylands pump station.

e. Public Safety Services

Setting. The departments of fire and police protection in the City of Sunnyvale have been combined into the department of Public Safety Services, which is concerned with police and fire safety issues as well as with hazards to the public from toxics and air emissions.

Impacts. The closest fire station to the project site is station #5 at Lockheed and Mathilda. The fire stations response time to the project would be less than 3 minutes.

No additional public safety (police or fire) personnel or equipment would be required due to the project (R. Grijalva, pers. comm.).

Fire hydrants and full sprinklering would be required by the Sunnyvale Public Safety Department for the project. These are included in the project design.

Public Safety Services Department concerns regarding the level of toxic contaminants in the site soils, toxic air emissions, and potential fire or explosion hazard are addressed in Chapter IV.D.

2. Extended Service Area

The need for public services listed above is based on the SMaRT station operating at capacity of 2200 tons/day. This rate would include service to the extended service area. Therefore the extended service area would not increase the need for public services.

3. Kirby Canyon Landfill

The landfill currently has electrical, water, and wastewater service for the gatehouse and offices. The additional seven employees required to handle the SMaRT station refuse would not substantially affect current service rates or require additional service. Lighting proposed for the working face of the landfill would be powered by generator and would not require the installation of additional electrical distribution lines. The SMaRT station project would not require a significant expansion of public services to Kirby Canyon landfill.

The landfill operation was the subject of an EIR in 1983, and is currently undergoing subsequent environmental review for a proposed increase in the 1500 tons/day limit to 2870 tons/day (See Appendix D). Public utilities and services were determined to have insignificant environmental effects in the 1983 EIR, and the proposed increase in the TPD limit will not require additional public improvements (Appendix D).

C. ENERGY USE AND RECYCLING

Energy use is an unavoidable component of solid waste disposal. Fuel and electricity are required for solid waste collection, processing, transportation, and disposal. Until now, the primary service area cities of Palo Alto, Mountain View, and Sunnyvale have been able to dispose of municipal solid waste by direct haul to the local city landfill. Now that these disposal sites are closed or nearly closed the refuse must be taken elsewhere. The need to transport refuse out of city boundaries will necessarily result in increased energy use for transportation to a disposal site. The energy used to collect the solid waste would remain the same since this aspect of solid waste handling is not affected by the project. Additional energy requirements due to the project may be required to process the waste, but that energy use would likely be offset by an increase in the amount of waste stream that is recycled and energy saved in combining refuse disposal at one landfill rather than three, reducing heavy equipment operations. There may be a slight increase in energy use required to process and transport recycled materials.

While transport of waste to the SMaRT station may increase energy use, it would present a more energy-efficient solution than direct haul to most regional landfills, and would also provide for recovery of some of the waste stream. The change in transportation-related energy demand due to the project and use of the SMaRT station and Kirby Canyon versus direct haul to Kirby Canyon are described below under Section 1, Transportation Energy Use. The relative merits of alternative transfer station sites and/or landfills are discussed in Chapter V. Alternatives. The energy requirements of the SMaRT station are described under 2., below, and the expected changes in recycling are discussed under 3.

1. Transportation Energy Use

Energy use for transportation increases as the haul distance from the solid waste generator to the landfill site increases. The amount of energy used varies depending on vehicle miles traveled, size and type of vehicle, and tonnage of waste transported. Of these three variables, vehicle miles traveled has the most significant effect on energy consumption through fuel use.

Two possible ways to reduce vehicle miles traveled and thereby increase energy efficiency and reduce consumption are by using a landfill close to the waste source or, if that is not possible, by locating a transfer station close to the waste source with little to no backhaul (retracing of vehicle haul routes) for the transfer trucks traveling to a more distant landfill.

At present the primary service area communities, with the exception of Mountain View, dispose of their refuse in landfills in their own cities. These landfills will be reaching capacity within the next two to three years and a new disposal site will be needed. Mountain View is temporarily transporting its refuse to the Newby Island landfill in northeast San Jose and also is in need of a long-term solution to its waste disposal needs. A transfer station at the proposed project site would increase miles currently traveled by franchise trucks and the public for Palo Alto, decrease the distance traveled for Mountain View, and not affect travel distances for Sunnyvale. Because Mountain View generates more commercial truck trips than Palo Alto, the station would result in a small net decrease in vehicle miles traveled and energy used if Mountain View refuse is shipped to SMaRT rather than Newby Island.

Transfer stations are designed to reduce transportation-related energy use and costs required for a longer haul. The solid waste from collector trucks and private haul is brought to a centralized transfer station close to the waste source and then compacted and transferred to large transfer trucks for the haul to the landfill. The haul efficiency is increased by minimizing the number of vehicle miles traveled to dispose of the waste, through the use of transfer trucks which can carry a much greater tonnage than collector trucks, and by waste compaction which allows the transfer trucks to carry a maximum amount of weight. Transfer trucks can carry up to 25 tons of waste, more than three times as much tonnage as the collection trucks and more than fifteen times as much tonnage as a typical public self-haul vehicle.

Use of a transfer station with the Kirby Canyon landfill would reduce vehicle-miles and energy required for hauling the waste. The proposed transfer station location is central to the communities included in the service area and is 27 miles from Kirby Canyon landfill. If 25% recycling is achieved at the SMaRT station, vehicle miles traveled by the transfer trucks from the station to Kirby Canyon would be 3,780 vehicle miles/day (70 trips/day x 54 miles/trip). Direct haul by collector trucks to Kirby Canyon would be the least energy efficient, requiring 16,470 vehicle miles/day (305 trips/day x 54 vehicle miles/trip).

At a lower rate of recycling there would be more vehicle miles traveled to Kirby, but less vehicle miles traveled to Oakland, San Francisco and other destinations for recycled materials. The amount of recycling achieved at the station would probably not have a significant effect on energy use except by the fact that less recycling is accomplished, and more energy would be used to produce products from raw materials. However, a higher rate of recycling may also result in higher fuel use if the recycling vehicles are smaller than landfill transfer trucks, and more trips to market are necessary.

With regard to fuel use, the proposed project with 25% recycling would not pose any significant adverse impact on energy use and would provide beneficial impacts over direct haul to Kirby Canyon.

2. Transfer Station Energy Use

The transfer station is proposing to use approximately 1.6 megawatts of electrical power for facility lighting and equipment. Waste processing at the transfer station would included material recovery and recycling as well as transferring the waste from collection trucks to transfer trucks. While more energy may be required to process the solid waste than at present, that energy use would likely be offset by an increase in the amount of the waste stream that is recycled.

3. Recycling

Recycling of solid waste requires the separation of the different types of waste to be recycled and a market for the material sufficient to make the recycling cost effective. The material separation can take place at either the waste source (e.g. a residence or business), at a transfer station, or at a waste processing facility at a landfill.

There are several advantages to recycling. Because the reprocessing of recycled materials usually has fewer steps than processing of raw materials it typically requires less energy. The natural resources from which the material is made are also conserved. Landfill capacity is conserved as well, and the life of the landfill lengthened as wastes that would otherwise be disposed of in the landfill are recycled. There are several limitations to recycling which dictate which materials are recycled and the amount of cost and energy expended in recovery of these materials. These limitations include insufficient market for the reclaimed material, recovery not being cost effective, little source separation of materials, and material's size and difficulty of removal from the waste stream.

Materials which may be recovered at the SMaRT station include newsprint, mixed paper, high grade paper, corrugated cardboard, aluminum, wood and yard waste, ferrous metals, tin, glass, plastic, white goods (large appliances), and waste oil. The resource recovery facility would include processing of residential curbside recycling, a buyback center and drop-off recycling area for the public, a wood and yard waste processing area, and a processing area for material recovery from mixed wastes.

The County-wide estimate for percentage of total waste stream recycled is 16% for fiscal year 1987-88 (Solid Waste Management Plan for Santa Clara County, 1989 Revision, Preliminary Draft). This estimate includes city recycling efforts, salvage operations at landfills, and an estimate of recycling by private scavengers and secondary materials processors, brokers and mills. The State-mandated goal for recycling is 20% for fiscal 1991-92 and the countywide recycling goal is 25% for fiscal 1994-95.

The proposed transfer station would increase the amount of wastes now recycled and help the cities meet the State and countywide recycling goals.

4. Changes in Energy for Extended Service Area

The extended service area would include public haul and debris boxes from Los Altos, Los Altos Hills, and Cupertino and public haul from Santa Clara. Of these additional areas, use of the proposed project by Los Altos and Los Altos Hills would be reasonably energy efficient. Use of the proposed project would involve roughly seven miles of backhaul for both Cupertino and Santa Clara. This backhaul would be a significantly shorter distance and would consume less energy than a direct haul to Kirby Canyon landfill.

5. Changes in Energy Use Expected at Kirby Canyon Landfill

The energy use impacts of Kirby Canyon Landfill were assessed in the environmental review of that project and documented in the Kirby Canyon Landfill EIR (FEIR, 9/15/83). That EIR concluded that impacts to energy use would not be significant.

The additional amount of waste that would be disposed of at Kirby Canyon Landfill would create a need for more equipment for compaction and landfilling. Waste Management has estimated that for the expected addition of about 1500 tons of waste the following additional equipment would be needed: 3 scrapers, 2 dozers, and 2 compactors.

A small increase in energy would be required in the form of fuel to run the equipment. This increase would be an insignificant amount of energy when compared to overall energy used for solid waste disposal. In addition, this energy would be required for landfilling at any landfill site.

Waste Management of North America has applied to the City of San Jose to increase the allowable 1500 tons/day to 2870 tons/day of refuse delivered to Kirby Canyon Landfill in order to accept other waste streams in addition to SMaRT (See Appendix D). The Environmental Questionnaire (eg. Initial Study) prepared for that application indicates that the increased tons/day would not result in a substantial increase in the use of fossil fuels.

D. SAFETY AND SEISMIC SAFETY

1. Geotechnical and Seismic Safety

a. Setting

Geotechnical. The proposed project site is located in a flat alluvial plain at the southern tip of the San Francisco Bay. The area is underlain by up to forty feet of semi-consolidated marine silty clays (Bay Mud) (Figure IV-15). Fine-grained sand and silt lenses and elongated sandy deposits occur within the Bay Mud. Underlying the Bay Mud are alluvial soils consisting of alternating layers of medium dense to dense silty sands and stiff to very stiff sandy clays.

The following discussion is based on the results of several investigations of site soils and foundation conditions. EMCON Associates conducted ten borings and four CPT soundings at the project site, and described the subsurface conditions in "Field Investigations Conducted in Support of the Comprehensive Project Description", August 1989. Wahler Associates prepared a follow-up "Geotechnical Investigation Sunnyvale Materials and Recovery Station Sunnyvale, California", in May 1990. Dames and Moore completed the "Landfill Slope Stability Analysis Sunnyvale Landfill", February 29, 1988.

The subsurface conditions at the site consist of 4 to 18 feet of artificial fill underlain by the Bay Mud. The fill is mostly clay and silty clay with variable amounts of refuse, including concrete, bricks, asphalt, glass, rocks, gravel, roots, wood, tires, paper, metal, and plastic. A sand layer of up to 30 feet thick occurs approximately between elevations -25 feet NGVD (National Geodetic Vertical Datum, mean high water) and -50 feet NGVD. Groundwater is encountered at about -7 feet NGVD.

Seismic. The San Francisco Bay area is a seismically active area. The closest fault to the site is the Silver Creek Fault, about 2 miles to the northeast (Figure IV-16). The inferred trace of this fault is not considered active. No fault rupturing is expected at the site. The nearest active faults are the San Andreas Fault, about 10.5 miles southwest of the project site, the Hayward Fault 8.5 miles northeast of the site, and the Calaveras Fault, 10 miles northeast of the site. The Stanford Fault, which is also in the vicinity, is not considered to be active.

The maximum probable earthquake (MPE) for the San Andreas, Hayward, and Calaveras faults has been calculated by geologists. The MPE determination depends on fault parameters, historic earthquake magnitudes, frequency of earthquake occurrences, geologic slip rate and the recurrence interval on individual faults. Within the next 100 years, earthquakes near the historic maximum magnitudes are likely to occur on these faults. The levels of groundshaking resulting from earthquakes may be estimated from widely accepted, published equations that relate ground acceleration to earthquake magnitude and the distance from the source fault or earthquake epicenter, and this estimate is used to design structures to withstand an earthquake.

The maximum probable earthquake (MPE) event for the Hayward and San Andreas faults are 7.25 and 8 on the Richter scale, respectively. The MPE for the Calaveras fault is 7.0 on the Richter scale. The peak ground acceleration (PGA) estimated by Wahler and Associates for the site is 0.41g for earthquakes

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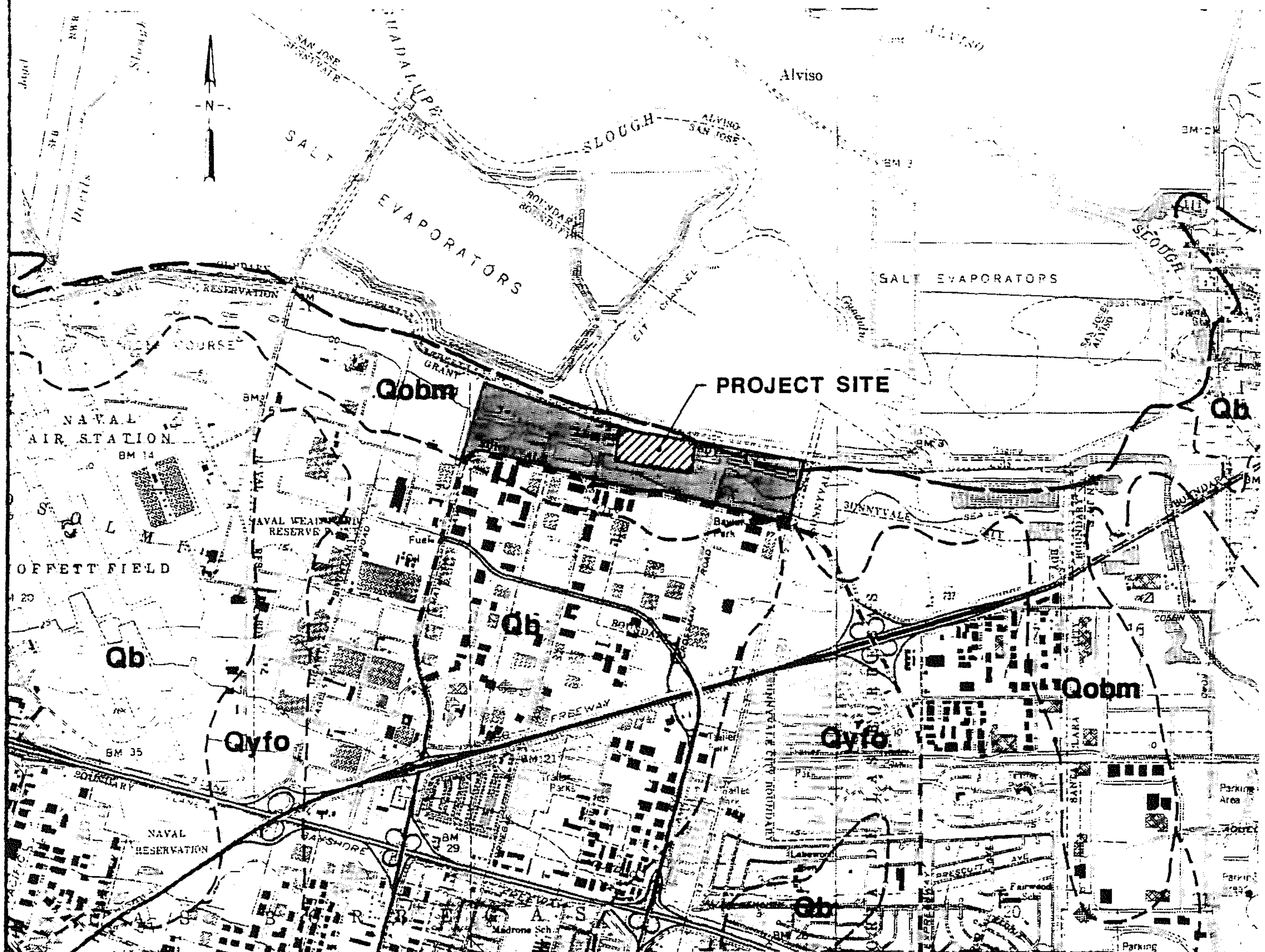


EXPLANATION

HOLOCENE

Qb

Interfluvial basin deposits; mainly organic-rich clay and silty clay that locally contain modern fresh-water gastropods and pelecypods.

Qyfo

Fluvial deposits at the outer edge of young alluvial fans (Qyf); forms levees between basin deposits (Qb) and characterized by variable grain size. Mainly fine sand, silt, and silty clay.

PLEISTOCENE

Qobm

Semi-consolidated, organic-rich clay deposits (older bay mud); overlies older fine-grained, shallow marine and interfluvial basin deposits; extends landward to maximum elevation of 10 feet above mean sea level.

Approximate Contact

Limit of Study Area

Reference: Helley, E. J. and Brabb, E. E., 1971. "Geologic Map of Late Cenozoic Deposits, Santa Clara County, California." U.S. Geological Survey, Basic Data Contribution 27, San Francisco Bay Region Environment and Resources Planning Study.

6/89

THOMAS REID ASSOCIATES

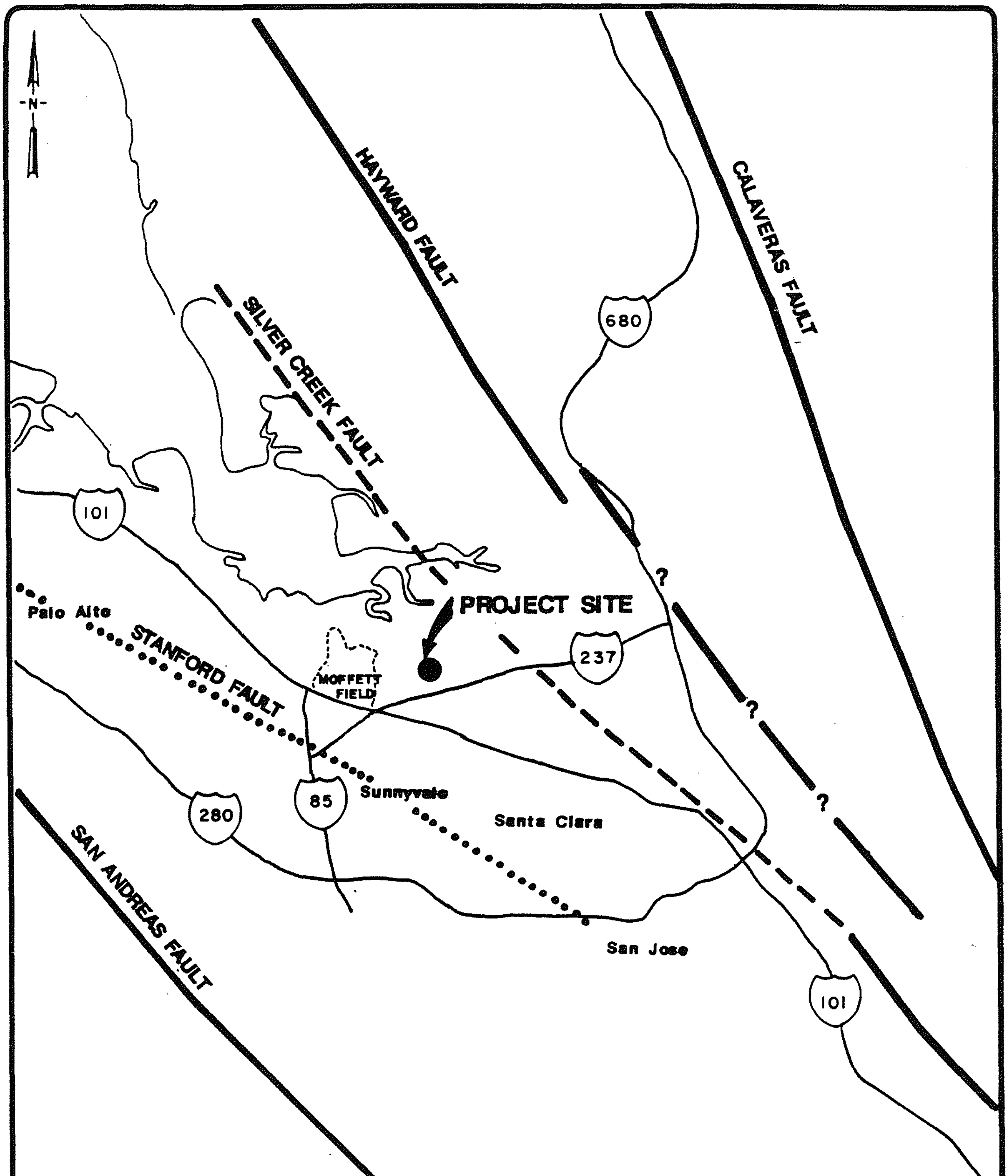
FIGURE PREPARED BY EMCON ASSOCIATES 1989

Scale: 0 2000 4000 FEET

WASTE MANAGEMENT OF NORTH AMERICA, INC.
MATERIALS RECOVERY AND TRANSFER STATION
SUNNYVALE, CALIFORNIA

REGIONAL GEOLOGIC MAP OF THE PROJECT SITE AND VICINITY

FIGURE IV-15



SOURCE: Adapted from Dames & Moore, Feb. 29, 1988 (Plate 4.1)

THOMAS REID ASSOCIATES

FIGURE PREPARED BY EMCON ASSOCIATES 1989

WASTE MANAGEMENT OF NORTH AMERICA, INC.
MATERIALS RECOVERY AND TRANSFER STATION
SUNNYVALE, CALIFORNIA

LOCATION OF FAULTS IN THE VICINITY OF THE PROJECT SITE

FIGURE IV-16

on the San Andreas fault, 0.39g for the Hayward fault, and 0.36g for the Calaveras fault. This level of motion has a fifty percent probability of being exceeded in 100 years.

b. Geotechnical and Seismic Safety Impacts

Foundations/Soil Settlement. Two foundation scenarios for the SMaRT building are under investigation. One scenario is to import 22-25,000 cubic yards of engineered fill to bring the site to elevation +4 feet NGVD and use a piling foundation. The other scenario is to import 150,000 cubic yards of fill and bring the site to +9 feet NGVD so that a spread-foot foundation can be used. In either case the existing fill would be scarified and recompacted, and portions of the site on the south and east sides of the station would be excavated in order to remove 20,000 cubic yards of in-place refuse.

The earthfill required under the +9 feet NGVD/spread footing scenario would induce an estimated 6.5 inches of settlement at the site (Wahler Associates, 5/90). Approximately 15 percent of the settling would occur during construction of the fill. A waiting period of 6 months is recommended to allow another 70 percent of settling to occur prior to building construction. A surcharge of an additional 4 feet of fill would reduce the recommended settlement period to 3 months. This surcharged material would be trucked into the site and when removed may be used for cover at the Sunnyvale landfill.

The spread-foot foundation would also induce settling at the site ranging from 0.2 to 1.2 inches. Approximately 50 percent of the settling would occur during construction. The structure can be designed to accommodate the remaining settlement (Wahler Associates, 5/90).

Site preparation under the +9 feet NGVD/spread footing scenario requires stripping the top 2-3 inches of organic soils, then scarifying and recompacting the next six inches of fill. Engineered fill would be imported and placed on top of the compacted soil.

Site preparation under the +4 feet NGVD/piling scenario requires excavating the site to -3 feet NGVD, recompacting the soils after removing organics, and importing engineered fill to achieve final grade. The excavated material would be removed to the Sunnyvale landfill (also see discussion of contaminated soils below).

The earthfill required under the +4 feet NGVD/piling foundation scenario would result in settling of about 1.75 inches. Similar to the +9 feet NGVD scenario, 15 percent of the settling would occur during construction of the fill. The remaining settlement is time-dependent (Wahler Associates, 5/90), and could be accommodated through engineering design so that a 6-month waiting period would not be necessary.

Under the piling foundation scenario some of the slabs would be structurally independent and would be supported on-grade. The estimated settlement caused by the slabs would be 1.6-2.0 inches (Wahler Associates, 5/90). Approximately 40 percent of the settling would occur during construction.

Liquefaction. Liquefaction occurs when a water-saturated granular soil, such as a sand deposit, transforms from a solid state to a liquefied state due to increased pressure, such as caused by ground shaking during an earthquake. Sand deposits experiencing liquefaction can flow like a liquid, if they are not confined, and may cause ground failure. Even in cases when the saturated soil does not flow, it will tend to decrease in volume when subjected to ground shaking.

The liquefaction potential for the sand layer underlying the site was evaluated by EMCON Associates, Wahler Associates, and for the landfill by Dames and Moore. According to Dames and Moore, the potential for liquefaction of foundation soils under the landfill is sufficiently low to not be of concern. Wahler Associates found the potential for shallow soil liquefaction to be low, and that if sands below 30 feet of the surface were to liquefy that they would be contained within the surrounding clay and would not adversely affect the site.

In contrast, the analysis completed by EMCON indicated a moderate to high potential for liquefaction to occur in the sand layer 25-50 feet below the SMaRT station site during an MPE event. They concluded that this liquefaction of the sand layer could result in ground subsidence which could cause earthfills and structures over the sand layer to sink 6 to 12 inches, resulting in structural distress and damage. Hence, in the worst case, liquefaction during an MPE could result in differential settling of the SMaRT building by 6-12 inches, and building repair may be necessary. Station operations may be temporarily interrupted to allow for inspection by personnel from the Sunnyvale Department of Public Safety, WMNA, and the LEA to assure safety and re-seal cracks as necessary to prevent washdown water or refuse from adversely affecting the environment. The underground fuel storage tanks should be installed with engineering measures to prevent rupture in the event liquefaction causes subsidence. It is expected that station could continue to operate while longer term building repairs were in progress.

Slope Stability. The slope stability for the adjacent Sunnyvale landfill was analyzed by Dames and Moore (1988). The studies concluded that landfill slopes no steeper than 2.75:1 (2.75 feet horizontal to 1 foot vertical or 36% slope) would be stable for both static and seismically induced loading conditions for a landfill height of 130 feet. Portions of the Sunnyvale landfill adjacent to SMaRT must be excavated to accommodate the project and access road. As proposed these slopes would be regraded and closed with 2:1 and 3:1 slopes. The steeper slopes may be acceptable in the area adjacent to SMaRT because the finished landfill height of 110 feet in this area is lower than 130 feet assessed in the analysis. These slopes should be engineered to be seismically stable to prevent slope failure during an MPE event.

Earthfill slope stability for the SMaRT site was analyzed by EMCON (1989) under static long- and short-term conditions and seismic loading conditions, using the STABL computer program (Purdue University). The factor of safety calculated by EMCON for the static and seismic loading conditions ranged from 2.1 to 3.6, which is better than the minimal acceptable value of 1.5. Hence onsite slopes are found to be both statically and seismically stable.

Lateral Spreading or Lurching. Lateral spreading or lurching at the site could occur in the banks of the west and north sides of the site along the water channels during an MPE event. Structures near these banks could be adversely affected by lateral spreading or lurching.

c. Geotechnical and Seismic Safety Mitigation

Slope Stability. Landfill cover and slopes excavated to accommodate SMaRT should be replaced per engineering recommendations to assure stability. Site preparation and settling times recommended by the geotechnical engineer should be followed to reduce the potential for impacts due to settling after construction.

Lateral Spreading or Lurching. Structures should be located at least 50 feet from the edges of the channels on the west and north sides of the site to minimize the potential for structural damage due to lateral spreading or lurching (Wahler, May 1990).

Liquefaction. The underground fuel storage tanks should be installed with engineering measures which would prevent rupture in the event liquefaction under the site causes 6-12 inches of subsidence.

2. Landfill Gas

a. Setting

Landfill gas is the product of the anaerobic decomposition of the organic matter in refuse. The components of the gas are primarily methane and carbon dioxide with lesser concentrations of carbon monoxide, hydrogen, and a number of trace components. Gas production from the refuse continues for some years after closure of the landfill until the organic matter generating the gas has been exhausted. Methane gas is flammable when mixed with air. Landfill gas can migrate away from its source.

Landfill gas at the Sunnyvale landfill is collected from the refuse by a series of collection wells located on the landfill. The gas which is collected is then piped to a central flaring station where it is burned.

b. Impacts

Construction of the SMaRT station would require excavation of 20,000 cubic yards of in-place refuse and relocation of portions of the landfill gas system. Relocation would be required along the access road and along the east and south ends of the SMaRT station where portions of the landfill would be removed. The design of the landfill gas collection system would be reviewed and approved by the Bay Area Air Quality Management District and the Integrated Waste Management Board. Excavation of in-place refuse is not addressed by the BAAQMD, but would require a change in the Sunnyvale Landfill Solid Waste Facilities Permit which would be reviewed by the California Integrated Waste Management Board.

Refuse excavation poses potential hazards due to landfill gas. Excavation could release larger amounts of landfill gas to the air than occurs through flaring, expose workers to a toxic or suffocating atmosphere, and allow an inflow of air to the landfill resulting in flammable conditions. As noted in Chapter IV.F., Air Quality, the impacts to air quality would not be significant.

After construction, methane gas may migrate to the SMaRT station site and possibly into the buildings. The gas can be ignited by a spark and could present a fire hazard at the site.

c. Mitigation Measures

Measures to reduce landfill gas hazards during the construction period include limiting the amount of area excavated during a certain period of time, using equipment fitted with spark arresters and restricting the use of potential sources of spark or fire onsite, educating construction workers as to the potential hazards, and providing worker safety devices as may be required by the Occupational Safety and Health Administration (OSHA). Flaring gas in that portion of the landfill prior to starting construction may also be tried, although the effectiveness of this measure is unclear.

Methane gas control measures would be required to prevent the gas from entering the buildings and creating a fire safety hazard. These measures could include gas collection and removal systems such as a perimeter trench with collector pipe, good building ventilation, and gas detectors in the buildings. The design of the building foundations and floor slab could be affected by the gas control measures used.

With these mitigation measures the potential impacts of landfill gas would be reduced to non-significant.

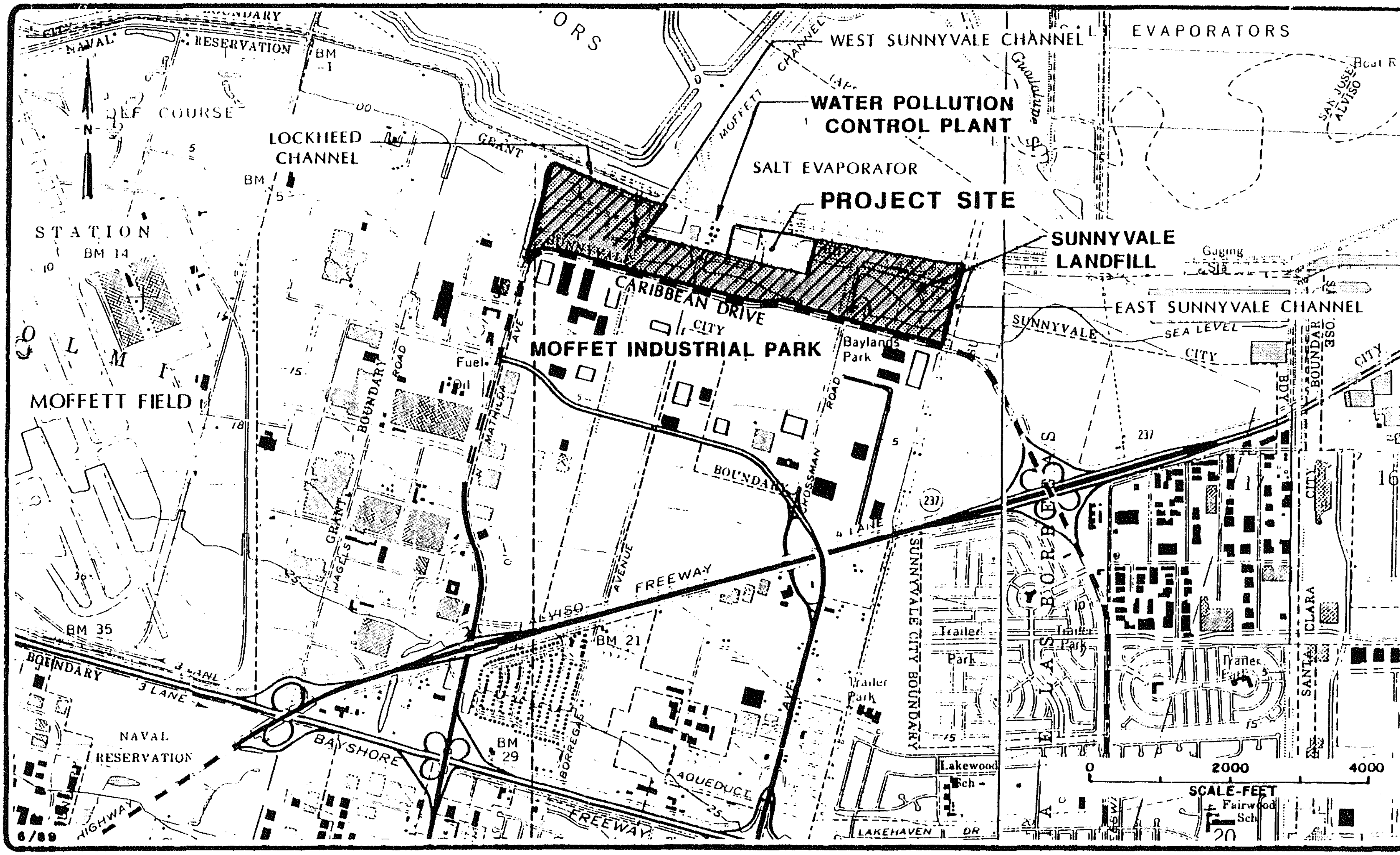
3. Flooding

a. Setting

The project site is located on a flat alluvial plan at the southern tip of San Francisco Bay at elevations between -3 and +10 feet NGVD. The major surface drainages in the vicinity include the East and West Sunnyvale Channels, the Lockheed Channel, and the Moffett Field Channel (Figure IV-17). The project site drains into small unnamed surface ditches which are then pumped into Moffett Channel. Additional surface water bodies in the vicinity are the large salt evaporator and oxidation ponds bordering the northern perimeter of the landfill and the two sludge lagoons to the west of the proposed SMaRT station.

Flood elevations reached during a 100-year storm would have a base elevation of +8 feet at the salt evaporators and west of the West Sunnyvale Channel south of Caribbean Avenue (Flood Insurance Rate Map, 1983) (Figure IV-18). The project site is protected from the flood elevations by the levees between the salt evaporators and the site. The site is in Zone B of the Flood Insurance Rate Map, indicating "areas between limits of 100-year and 500-year flood; or areas of 100-year shallow flooding with depth less than 1 foot."

Nolte and Associates completed an engineering feasibility study for an expansion of the Sunnyvale Landfill and relocation of the West Sunnyvale Channel which analyzed the flood potential of the West Sunnyvale Channel located just west of the Water Pollution Control Plant. The study analyzed the worst-case scenario of a 100-year storm peaking at the same time as a 10-year high tide. The study concluded that the levees containing the channel would be sufficient to contain the waters but that the freeboard would be marginal (G. Wolff, pers. comm.). The flood elevation in the channel was estimated at +8.6 feet NGVD while channel levees averaged about +9.5 feet NGVD. The Federal Emergency Management Agency (FEMA) requires 2 feet of freeboard for dirt channels such as the West Sunnyvale Channel. The East Sunnyvale Channel has been improved to accommodate the 100-year storm and 10-year high tide (EMCON Associates, August 1989).



THOMAS REID ASSOCIATES

FIGURE PREPARED BY EMCON ASSOCIATES 1989

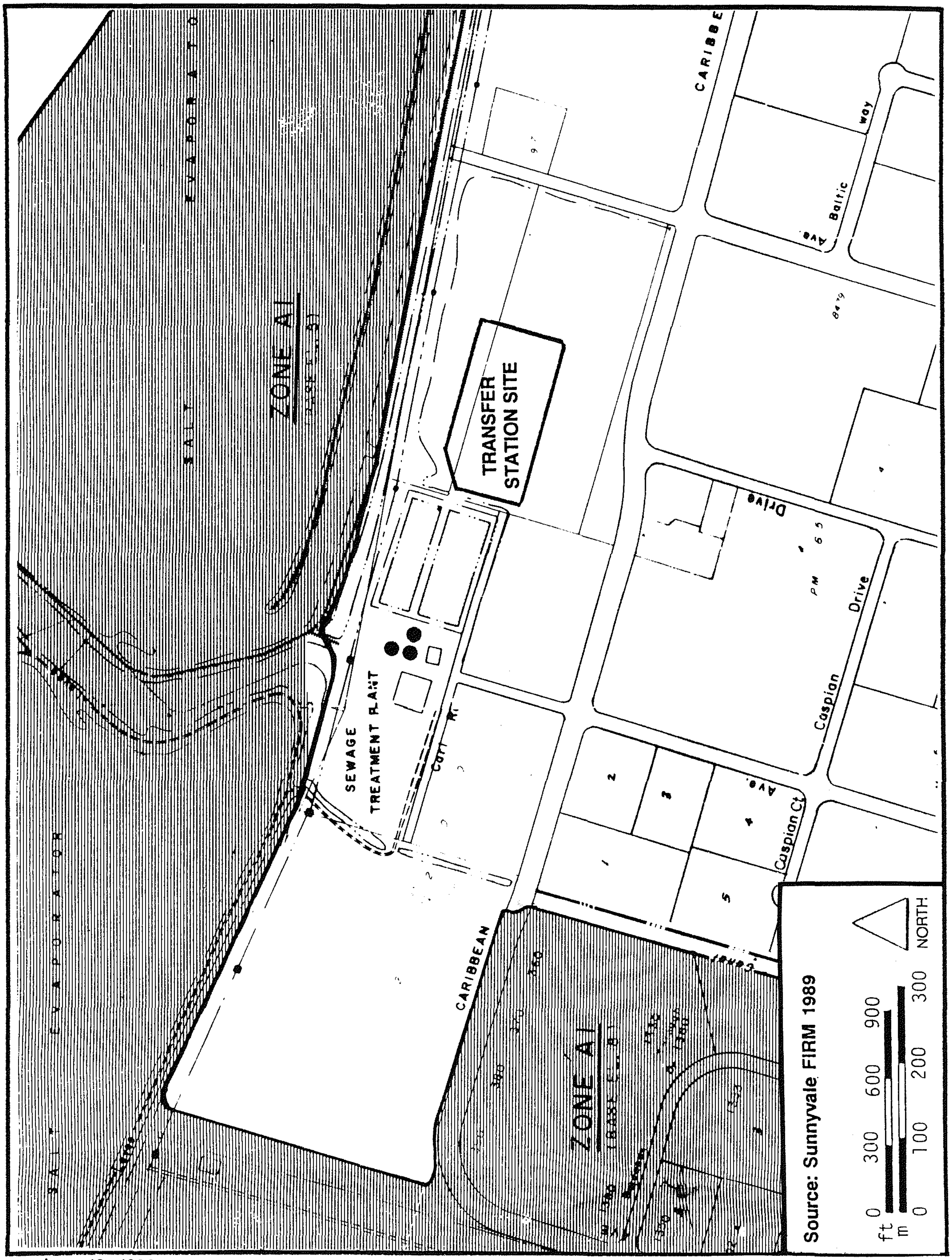
WASTE MANAGEMENT OF NORTH AMERICA, INC.
MATERIALS RECOVERY AND TRANSFER STATION
SUNNYVALE, CALIFORNIA

VICINITY SURFACE WATER

FIGURE

IV-17

FIGURE IV-18
PROJECT VICINITY FLOOD INSURANCE RATE MAP



b. Impacts

The East and West Sunnyvale Channels have sufficient capacity to handle the 100-year storm with the 10-year high tide. These channels are not expected to impact the site.

Flooding could occur if the levees north of the site were overtopped by a tsunami or breached due to groundshaking from an earthquake. A tsunami is an earthquake induced sea wave and may result from local or distant seismic activity. If the 100-year tsunami of 4.3 feet (EIP, 1982) was to coincide with the 100-year high tide of +8 feet in elevation, the 8.5 foot levees would be overtopped. In the south bay area tsunami overtopping of levees is considered very unlikely, and the probability that the site would flood at all is very low.

Finished elevations of the project would range from 0 feet NGVD for the bottom floor truck loading area to +4 or +9 feet NGVD for the main floor elevation, depending on the foundation scenario that is selected. It is unlikely that even the lower portions of the SMaRT station would flood because they are interior to the station and flood waters would have to be over four feet or over nine feet deep to reach the station. As noted above, the site is currently in a flood zone where flood waters could reach one foot or less in depth.

Breaching of the levees due to groundshaking could result from earthquake induced landsliding of the levee sides which would lower the levee sufficiently for high tide to flood the areas behind them.

c. Mitigation

The likelihood of a 100-year tsunami and a 100-year high tide occurring simultaneously and overtopping the levees with enough water to flood the SMaRT station is sufficiently remote not to require mitigation. Flooding risk from both tsunami and breaching of the levees could be reduced through regular maintenance of the levees, which is the responsibility of the City of Sunnyvale.

4. Hazardous Groundwater and Soils

a. Setting

EMCON Associates investigated the chemical character of shallow soil and groundwater on the site, and reported the results in "Field Investigations Conducted in Support of the Comprehensive Project Description" dated August 1989. Wahler Associates conducted additional testing and reported the results in "Special Handling and Regulatory Issues, SMaRT Station Site," May 1990. The results of these investigations are summarized below.

Groundwater. According to EMCON's analysis, groundwater beneath the site can be divided into three units based on depth. The shallow groundwater extends from the ground surface to about -25 feet NGVD[1]. This unit consists of 1 to 4-foot silty sand and clayey sand lenses. The intermediate unit extends from -23 feet NGVD to about -58 feet NGVD with lenses averaging about 5 feet thick. The deep unit extends from -58 feet NGVD to an unknown depth. Borings at this depth encountered 6 to 8-foot thick sand lenses. The groundwater gradient is gentle with groundwater flow generally from the lagoons and fill areas towards the channels and the bay (Figure IV-19). The regional groundwater flow is generally north northwest toward the San Francisco Bay.

Groundwater at the landfill and in the vicinity of the SMaRT station site has been monitored through a groundwater monitoring system installed by Cooper Clark Associates. The monitoring system consists of nine groundwater monitoring wells and a leachate monitoring system. EMCON replaced the leachate monitoring system in 1985 with six new risers and installed six additional groundwater wells in 1987. Four of the groundwater wells are near the SMaRT station site (G-3, G-11, G-12, G-14) and are sampled quarterly (Figure IV-20). In addition, further testing of the groundwater directly beneath the SMaRT station was obtained with three HydroPunch samples.

The Department of Health Services has set regulations limiting the concentration levels of certain substances in water. These regulations are action levels and maximum contaminant levels. State action levels (AL's) are health-based criteria established by the State to limit public exposure to substances not yet regulated by formal standards. These levels are nonenforceable, but DHS may require water purveyors to reduce the concentration levels of these compounds in the water they supply. Maximum contaminant levels (MCL's) apply to primary and secondary drinking water standards for substances which may affect public health if continually ingested (primary standards) or the aesthetic qualities of the water such as taste, odor, or clarity (secondary standards). Since the groundwater at the site is not used for drinking water, these standards are not enforceable but are listed for comparison purposes only.

The three HydroPunch groundwater samples collected at the SMaRT station site were analyzed for volatile organic compounds (VOC's) by EPA Method 8240 and for priority pollutants metals by EPA Method 200 series. Groundwater flow direction in the site was not determined so no background or "upstream" sample site could be selected, and the source of pollution has not been determined. Results of the HydroPunch samples and the regulatory standards are shown in Table IV-14. For VOC's, the only substance exceeding MCL's was benzene collected at HP-3 on the east side of the site, adjacent to the landfill slope. The metals which exceeded primary MCL concentration levels in one or more samples were arsenic, cadmium, chromium lead, mercury and selenium. Copper exceeded secondary MCL's in HP-1, which is located on the south side of the SMaRT station site, near the landfill.

Soil. Under EMCON's investigation, exploratory borings and cone penetrometer testing was used to investigate the stratigraphy of the soils (Figure IV-21). Nine exploratory borings were drilled at the site with an

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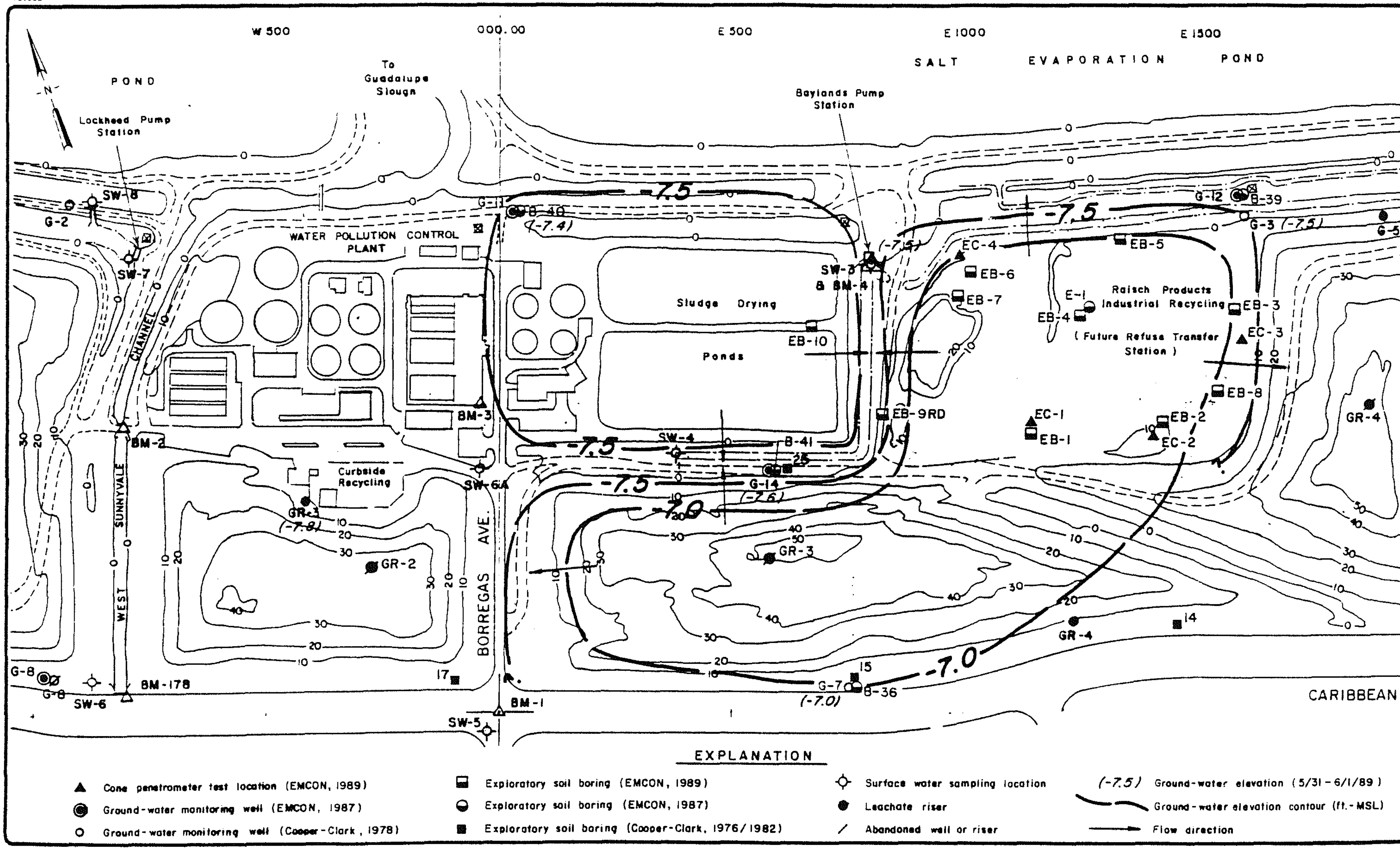
[1] Original data reported by EMCON Associates, 8/89, as feet above mean sea level (MSL). For consistency it is presented in the EIR as NGVD. The NGVD figures were calculated by adding two feet to the MSL numbers. Thus -25 feet MSL becomes -23 feet NGVD at the SMaRT Station site.



THOMAS REID ASSOCIATES

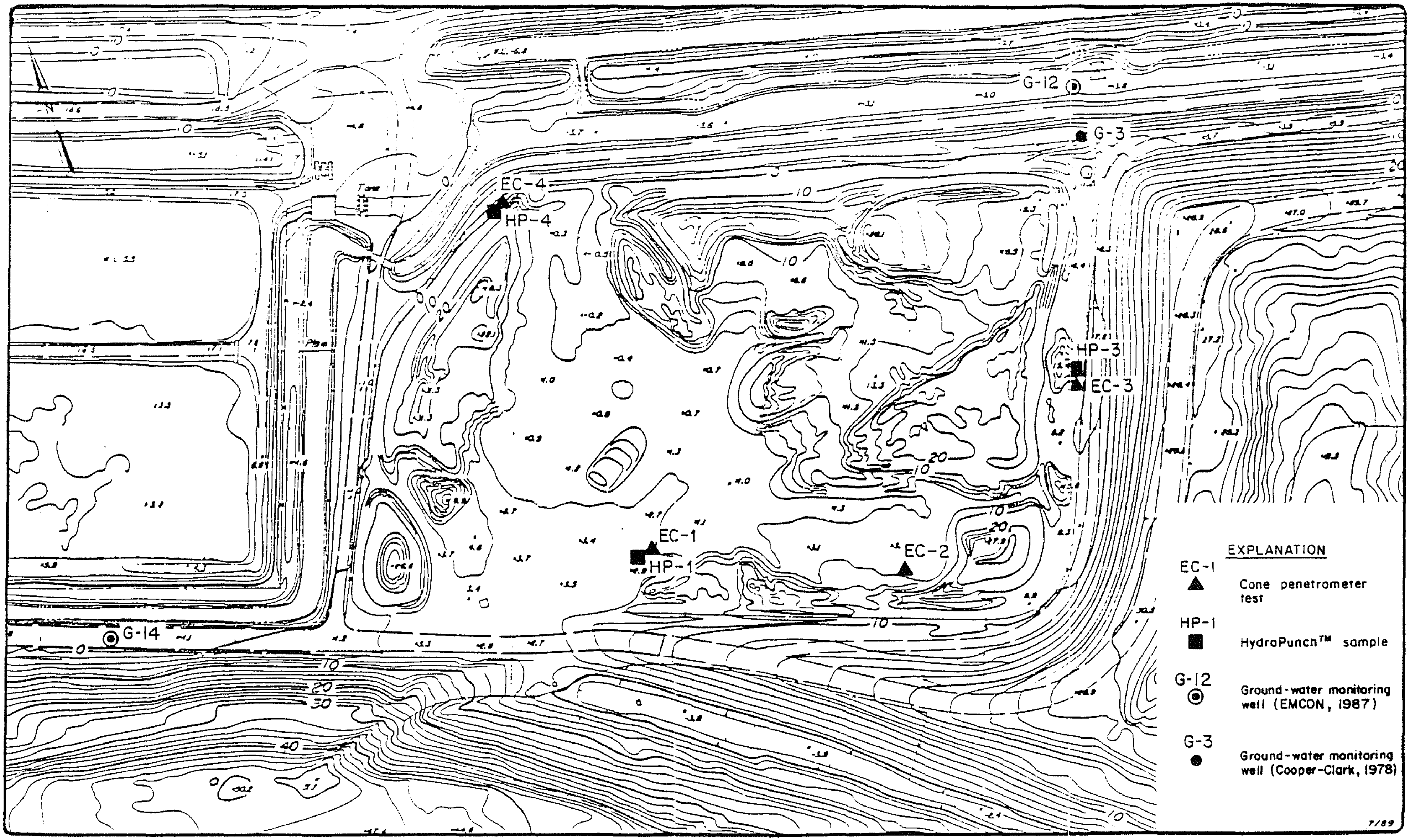
FIGURE PREPARED BY EMCON ASSOCIATES 1989

SCALE: 0 200 400 600 800 FEET

WASTE MANAGEMENT OF NORTH AMERICA
MATERIALS RECOVERY AND TRANSFER STATION
SUNNYVALE, CALIFORNIA

GROUND-WATER CONTOUR MAP
SECOND QUARTER 1989

FIGURE IV-19



THOMAS REID ASSOCIATES

FIGURE PREPARED BY EMCON ASSOCIATES 1989

Scale: 0 100 200 300 400 Feet

WASTE MANAGEMENT OF NORTH AMERICA
MATERIALS RECOVERY AND TRANSFER FACILITY INC.
SUNNYVALE, CALIFORNIA

GROUNDWATER TEST WELLS

FIGURE IV-20

TABLE IV-13
RESULTS OF HYDROPUNCH SAMPLES

Location Depth (feet)	HP-1 20	HP-3 19	HP-4 20	Regulatory MCL[1]	Standards AL[2]
Volatile Organic Compounds (μg/l)					
Acetone	<10	37	<10	NE[3]	NE
Carbon Disulfide	<1	1.3	<1	NE	NE
Methylene Chloride	11	<10	<10	NE	40
Benzene	<1	3.1	<1	1.0	NA[4]
Total Xylenes	<1	2.5	<1	1,750	NA
1,4-Dichlorobenzene	<1	1.0	<1	5.0	NA
Metals (mg/l)					
Antimony	<0.05	<0.05	<0.05	NE	NE
Arsenic	0.017	0.065	0.033	0.05	NE
Beryllium	0.012	<0.005	<0.005	NE	NE
Cadmium	<0.002	0.035	0.028	0.010	NE
Chromium	2.39	0.147	0.149	0.05	NE
Copper	1.57	0.079	0.099	1.0 *	NE
Lead	0.119	0.078	0.008	0.05	NE
Mercury	0.0103	0.0008	0.0009	0.002	NE
Nickel	2.21	0.106	0.120	NE	NE
Selenium	<0.01	<0.01	0.026	0.01	NE
Silver	<0.01	<0.01	<0.01	0.05	NE
Thallium	<0.01	<0.01	<0.01	NE	NE
Zinc	1.62	4.14	0.154	5.0 *	NE

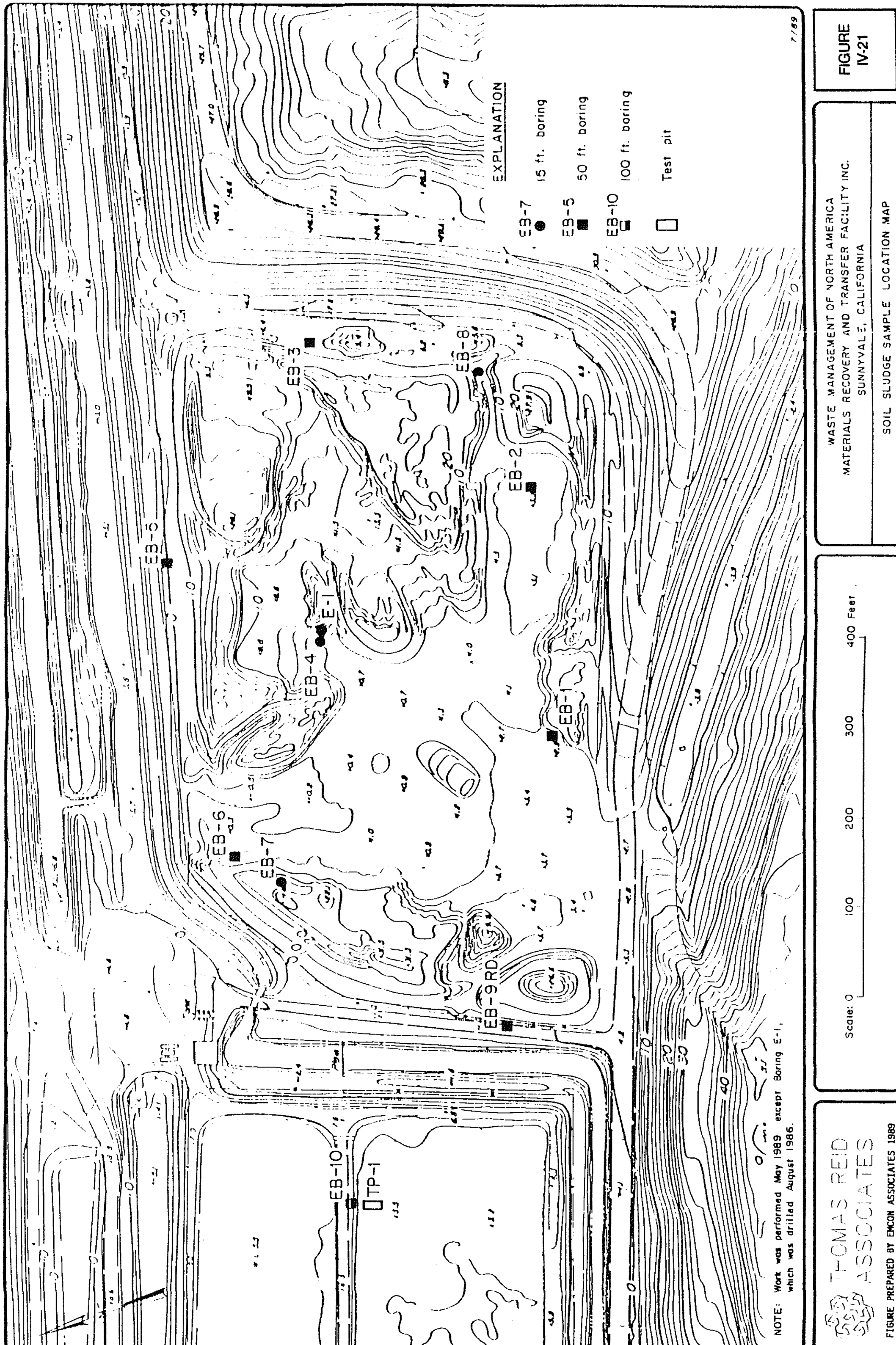
1. MCL = Maximum Contaminant Levels; Title 22, Sections 66635 and 64444.5; * = secondary MCL

2. AL = Action Levels; April 1989

3. NE = None Established

4. NA = Not Applicable; MCL has been established

SOURCE: EMCON ASSOCIATES


EXPLANATION
EB-7 15 ft. boring
EB-5 50 ft. boring
EB-10 100 ft. boring
Test pit
EB-1
EB-2
EB-3
EB-4
E-1
EB-5
EB-6
EB-7
EB-8
EB-9RD
EB-10
TP-1
NOTE: Work was performed May 1989 except Boring E-1, which was drilled August 1986.
Scale: 0 100 200 300 400 Feet
WASTE MANAGEMENT OF NORTH AMERICA
MATERIALS RECOVERY AND TRANSFER FACILITY INC.
SUNNYVALE, CALIFORNIA
SOIL SLUDGE SAMPLE LOCATION MAP
THOMAS REID ASSOCIATES
FIGURE PREPARED BY EMCON ASSOCIATES 1989
FIGURE IV-21

additional boring at the sludge pond just east of the SMaRT station site. The borings varied from 15 feet to 50 feet with EB-10, located at the sludge pond, 100 feet deep. Samples for stratigraphic characterization were taken from drill cuttings and from soil samples taken at 5-foot intervals. Seven soil samples used for chemical characterization were collected from four of the exploratory borings (EB-4, EB-6, EB-7, and EB-8). These samples were collected at depths from 7.5 to 15 feet below the ground surface.

The four cone penetrometer tests (CPT) provided additional geotechnical and hydrogeologic data. The CPT test results can differentiate between sandy or gravelly soils and clayey or silty soils through measuring penetration resistance and slide friction of the soils. Pore pressure of the soils, which relates to the hydrogeology of the soils is also measured by a CPT.

Results of the boring samples and CPT show fill at the site between 6 and 20 feet thick and consisting of silty clay with varying amounts of sand, gravel, and debris (asphalt, concrete, bricks, etc.). Borings EB-3 and EC-3 located on the eastern part of the site contained refuse mixed with soil down to 20 feet below the ground surface (-11 MSL). Borings EB-4, EB-6, and EB-8, located in various places on the SMaRT site, contained thin layers of sludge intermixed with the soil. The site was used for sludge disposal by the Sunnyvale WPCP for a short time in 1985. The natural soils beneath the site were characterized as primarily stiff to very stiff silts and clays interbedded with sand lenses and layers.

Soil samples collected for chemical characterization were analyzed for volatile organic compounds (VOC's) by EPA Method 8240 and for metals by the EPA Method 200 series (Table IV-15). No background samples were taken. The VOC testing detected only chlorobenzene in EB-4 at a depth of 7.5 feet. The concentration level detected, 5.6 ug/kg, did not exceed the Title 22 Total Threshold Limit Criteria (TTLC) which is the hazardous waste criteria.

Metal concentrations were detected in all of the soil samples. Concentrations exceeded 10 times the Soluble Threshold Limit Concentration (STLC) for copper, lead, mercury, and nickel in EB-4 at 7.5 feet below the ground surface. The TTLC was not exceeded.

Wahler Associates' investigation indicates that sludge previously disposed of at the site by the City of Sunnyvale WPCP is mainly encountered in the north half of the site, and varies in thickness from 0.5-4.5 feet. It apparently occurs at a depth of 8 to 10 feet below the ground surface (J. Landazuri, pers. comm.), based on borings and trenches done for the investigation.

Wahler had 30 of 49 samples taken at the site tested for volatile and semi-volatile organic compounds and metals. The results of Wahler Associates' analysis generally correspond to those found by EMCON Associates, except EMCON did not test for semi-volatile organics. Acetone was found in 26 of the samples, and methylethylketone was found in 11 of the samples. Six additional volatile organic compounds were detected in less than four samples; these are toluene, chlorobenzene, 1,3-dichlorobenzene, meta- and para-xylenes, trimethylbenzene, and methyl (methylethyl) benzene. All of these results came from samples containing sludge; only acetone and methylethylketone were found in other soils. No metals were detected at levels greater than the total threshold limit concentration.

TABLE IV-14
RESULTS OF SOIL SAMPLING

PROPOSED SITE SOIL SAMPLES

Well Depth (feet)	EB-4 7.5	EB-4 9	EB-6 6	EB-6 8	EB-7 8	EB-8 10	EB-8 15	Regulatory Standards[1]
Volatile Organic Compounds (µg/kg)								
Chlorobenzene	5.6	<5	<5	<5	<5	<5	<5	NE[2]
Metals (mg/kg)								
Aluminum	12,400	23,000	28,400	18,600	18,300	14,800	14,000	NE
Antimony	<10	<10	<10	<10	<10	<10	<10	500
Arsenic	3.5	2.0	3.6	5.3	4.8	4.6	2.9	500
Barium	326	117	222	99.2	222	124	95.8	10,000
Beryllium	<1	<1	<1	<1	<1	<1	<1	75
Boron	14.4	21	42	19.0	22.0	7.8	11.8	NE
Cadmium	3.2	<1	<1	<1	<1	<1	<1	100
Calcium	24,600	28,600	29,000	46,400	81,400	8,186	44,400	NE
Chromium	126	63.6	68.6	56.6	54.2	83.0	46.4	2,500
Cobalt	12.8	11.6	12.4	11.2	10.8	11.2	10.0	8,000
Copper	576	38.8	37.4	31.2	29.2	30.6	27.6	2,500
Iron	17,600	28,200	28,200	24,400	21,600	21,600	19,100	NE
Lead	199	8	10.2	6.6	<6	14.4	<6	1,000
Magnesium	9,680	17,400	27,800	14,600	19,300	9,120	12,200	NE
Manganese	336	398	486	664	510	350	258	NE
Mercury	2.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	20
Molybdenum	3.4	<4	<4	<4	<4	<4	<4	3,500
Nickel	202	63.2	63.4	58.0	57.0	56.8	48.0	2,000
Potassium	1,330	1,880	1,690	1,600	1,240	1,870	932	NE
Selenium	1.2	<1	<1	<1	<1	<1	<1	100
Silver	35.2	<2	<2	<2	<2	<2	<2	500
Sodium	1,610	2,520	3,480	3,380	2,640	1,730	1,250	NE
Thallium	<1	<1	<1	<1	<1	<1	<1	700
Tin	118	3	<2	<2	<2	<2	2.4	NE
Vanadium	37.2	59.2	66.4	56.8	51.6	45.4	48.6	2,400
Zinc	36.2	60.4	57.8	50.6	44.6	61.0	41.2	5,000

1. Regulatory standards are Total Threshold Limit Concentration (TTLC) values presented in Title 22, Section 66699.
2. NE = None established

SOURCE: EMCON ASSOCIATES

Although organic compounds and metals were found in the soils at the site, Wahler Associates did not find any concentrations which indicate that the soils should be classified as hazardous under State or Federal Guidelines. The report does state that additional testing could be conducted to refine the results, and that the City should file a Self-classification Form with the Department of Health Services. The Department of Health Services would respond to the City if special handling procedures are required.

b. Impacts

Project construction could require disposal of groundwater from construction dewatering and disposal of soils from excavation. The groundwater is not used for drinking and would be disposed of by discharge to the storm drainage channel, the WPCP, or shipped to an appropriate disposal site. Testing of water encountered during construction must be completed to determine the appropriate disposal method. If groundwater containing high levels of hazardous materials is released to the storm channel or the WPCP, the contaminants could reach San Francisco Bay and add to the cumulative impacts of bay pollution or cause the WPCP to exceed its permit standards set by the Regional Water Quality Control Board.

Probably due to the historic disposal of sludge at the site, there are volatile and semi-volatile organic compounds and metals in the soils. Tests thus far do not indicate that these soils should be classified as hazardous waste. The Department of Health Services (DHS) can be notified of the situation through a Self-classification Form. If DHS requires additional testing and the soils are determined hazardous, they would be treated as any other hazardous waste, and could not be disposed of in a sanitary landfill such as the Sunnyvale or Kirby Canyon Landfill. They must be removed, transported, and disposed of according to DHS regulations which are designed to prevent significant environmental impacts.

Non-hazardous soil could be left in place, or it could be stockpiled and encapsulated onsite in the event that removal is required in the future, or it could be removed to a sanitary landfill. Disposal of non-hazardous sludge to a sanitary landfill is regulated by the Regional Water Quality Control Board in order to prevent significant environmental impacts (see discussion in Chapter III, under Regional Water Quality Control Board). This is related primarily to water content. The sludge at the SMaRT Station site was found to be dry.

One of the foundation scenarios is to use pilings to a depth of about 50 feet. These pilings would be placed through existing fill and would reach into the intermediate groundwater level. The intermediate groundwater level is not used for drinking; drinking water occurs 150 feet deep. There is an upward gradient between the intermediate and upper groundwater levels (G. Wolff, pers. comm.). The pilings could become conduits for the migration of landfill gas unless they are engineered to prevent such impacts. Driving the pilings through areas where sludge is located could introduce sludge pollutants into the groundwater.

During operation of the SMaRT station, all refuse would be handled over paved areas and generally in enclosed spaces. There would be no free drainage from the waste handling and there would be no impact on groundwater quality from daily operations.

c. Mitigation

Groundwater which is encountered during construction must be tested for contaminants and disposed of as required by the Regional Water Quality Control Board and Department of Health Services to prevent cumulative impacts to San Francisco Bay.

A Self-classification Form should be filed with the Department of Health Services in order to inform DHS of the situation, and allow comment. Adherence to state regulations regarding sludge handling and disposal of these soils would prevent significant environmental impact.

Sludge should be removed from piling sites to minimize its introduction to groundwater beneath the site.

Pilings should be engineered to prevent migration of landfill gas. This may be accomplished by piling type or by grouting the piling. The depth of the piles could be reduced by increasing the number of pilings (G. Wolff, pers. comm.), so that they do not reach the intermediate groundwater level. As noted above under Landfill Gas, mitigation is also required to prevent landfill gas migration into the station through engineering measures, and to monitor for possible migration by installing gas detectors in the building.

5. Hazardous Materials Used in the Project Vicinity

a. Setting

The Sunnyvale Water Pollution Control Plant (WPCP) is located immediately east of the SMaRT station site. The WPCP uses and stores chlorine and sulfur dioxide gasses which could result in a health hazard if there was an accidental spill or leak. Chlorine is used to disinfect waste water and sulfur dioxide is used to dechlorinate. The gasses are kept in liquid form in 1-ton cylinders with usually 9 to 10 cylinders of sulfur dioxide and 10 to 14 cylinders of chlorine stored at any given time. The cylinders, including the ones currently in use, are stored outdoors on the bay side of the WPCP about 1000 feet west of the SMaRT station site. Evaporation of the chlorine and sulfur dioxide from a liquid to a gas takes place in an enclosed building located about 900 feet from the SMaRT site.

Both the outside chemical storage area and the evaporation building have gas detectors which sound a building alarm and an audible horn. In operations involving chlorine and sulfur dioxide, a two-man crew is used and standard industry procedures are followed. Plant operators are responsible for notifying 911. The operators are trained bimonthly in emergency procedures including stopping leaks. The emergency personnel notified by 911 determine whether an evacuation of the surrounding area is needed.

Both chlorine and sulfur dioxide are dangerous chemicals and if released to the atmosphere in high concentrations, either chemical can cause injury or death. Among the two, chlorine is the more dangerous because it is toxic at lower concentrations.

Concentrations of a gas in air are often measured in parts per million (ppm). The current National OSHA standard for a 15-minute chlorine exposure is 1.0 ppm (NIOSH/OSHA, 1981). NIOSH (National Institute for Occupational Safety and Health) has proposed a standard of 0.5 ppm over the same period.

Above the OSHA level, the risk of injury increases: at 10 ppm, exposures over 30 minutes may result in permanent injury and death in sensitive persons (infants or persons with reduced lung capacity). At 25 ppm, even brief exposures are harmful, and eye irritation and breathing difficulty will be incapacitating.

The WPCP emergency evacuation plan contains two evacuation relocation areas for WPCP personnel, the public parking area on Carl Road south of the WPCP for those in the western parts of the plant and the Bayland Pump Station east of the WPCP for those in the eastern parts of the plant. The Bayland Pump Station is located adjacent to the SMaRT station site on the west side of the ditch.

b. Impacts

While the immediate evacuation area does not extend as far as the SMaRT station site, hazardous gasses could, depending on wind conditions, pose a significant health hazard to personnel and others at the station. In a worst case scenario with a low southeasterly wind, the plume of chlorine from a significant spill or leak may reach hazardous concentration levels at the SMaRT station site. Since chlorine gas is heavier than air, it would stay low to the ground and may be trapped at the SMaRT station by the landfill on two sides of the site. This would reduce dispersion and prolong exposure.

Evacuation from the SMaRT station by car via Borregas Avenue requires driving towards the WPCP and possibly into higher concentrations of chlorine gas. Otherwise evacuation would be by foot over the landfill or along the levees on the Bay side of the landfill. No evacuation plan for the SMaRT station has been completed.

c. Mitigation

In order to reduce the public health risks from a major hazardous gas leak at the WPCP, the SMaRT station should be notified if there is such an accident and should have an evacuation plan. The evacuation plan may need to include an alternative emergency evacuation route to the east via an emergency road either over or around the landfill in order to avoid the risks of using Borregas Avenue.

6. Handling of Toxics at SMaRT Station

Although regular handling of toxic substances or household hazardous waste is not proposed as part of the SMaRT station project, the station operator is required to perform periodic load-checking and operate under a Hazardous Waste Exclusion Program (HWEP) which dictates the procedure for handling toxics which may arrive in the waste stream. The HWEP is intended to prevent disposal of these wastes in the Kirby Canyon landfill.

An example of an HWEP similar to that which would be proposed for the SMaRT station is included in Appendix A. In summary, the HWEP includes personnel training programs in load-checking procedure and identification of undesirable wastes, methods of operation for load inspection, procedures for handling and storage of undesirable wastes, instructions on record-keeping, recommended signage and noticing, and reporting procedures.

At present the SMaRT station does not have its own HWEP, but a hazardous materials storage area is specified on the preliminary floor plan (see Chapter II). Under California Administrative Code Title 23 the station is required to have an HWEP, and one must be developed prior to opening the station. The storage area required in the sample HWEP provided in Appendix A is a 20 x 20 foot bermed concrete pad with a holding capacity sufficient to hold the contents of two 55 gallon drums. The area must be enclosed by an 8-foot high chain link fence which is secured by a lock when an authorized attendant is not present at the facility. Proper warning signs must be posted as required by law.

Limits on storage times have not been determined. The City of Sunnyvale requires the Household Hazardous Waste contractor (SMaRT would not fulfill this role) to remove all waste from the site of the event within 48 hours. WMNA proposes a 96-hour limit. The storage time span allowed in the sample HWEP is 8-10 weeks. The allowable storage time must be determined prior to opening the station, and should be scheduled to prevent accumulation of materials in the storage area.

7. Onsite Storage of Diesel Fuel

Diesel fuel for SMaRT station equipment (eg., loaders), would be stored in a 1000 gallon container, underground, in the equipment maintenance area on the east side of the building. Oil would be stored above ground in containers of 600 gallons or less. Safe storage of these materials is regulated by the Sunnyvale Public Safety Department.

8. Air Safety

Two issues of air safety must be considered with regard to waste disposal facilities: structure height in an airport landing zone and bird hazard to aircraft. As is described in greater detail in Chapter III, sections III.A.3 and III.A.4, the proposed SMaRT station would not pose an air safety problem.

9. Safety and Seismic Safety Issues at Kirby Canyon Landfill

When operating at a maximum station capacity of 2200 tons/day and recovering 25% of the waste stream, 1650 tons/day of refuse would go to the landfill. The increased disposal rate would not affect seismic safety issues at Kirby Canyon, since the landfill is designed to withstand seismic events regardless of the rate of fill. Seismic safety issues for the landfill were addressed in the EIR prepared for that project in 1983, and the appropriate measures have been incorporated into design and operations.

Increased Production of Landfill Leachate. Leachate is any liquid which has come in contact with refuse and may be contaminated with the byproducts of refuse decomposition. The amount of liquid entering the landfill is minimized by diverting surface and spring water away from the refuse, and by limits on the liquid content of incoming refuse. Leachate production at Kirby Canyon landfill is monitored, and test wells down-gradient of the landfill are monitored for potential contamination of groundwater by leachate.

An increased rate of fill has the potential to increase leachate production by adding more refuse and weight to the landfill sooner.

The Kirby Canyon landfill operates under Waste Discharge Requirements Order No. 85-47, set by the California Regional Water Quality Control Board for the San Francisco Bay Region (RWQCB). The third-quarter 1988 self-monitoring report for the Kirby Canyon landfill revealed low levels of two volatile organic compounds (VOC's 1,1-dichloroethane or DCA, and 1,1,1-trichloroethane or TCA), and Freon 12 in the groundwater at monitoring well G-1, downgradient of the existing fill area but in an area of the property which will ultimately be filled. The RWQCB responded to the self-monitoring report in a letter dated February 1, 1989, "Considering that DCA, TCA, and Freon 12 have been detected in samples of leachate from the landfill, and well G-1 monitors groundwater located downgradient of the landfill, it is reasonable to speculate that the landfill is the source for these compounds".

The RWQCB required Waste Management to prepare a report which summarized the hydrogeological information known about the site, addressed the possible need for additional monitoring wells, assessed remedial measures to correct the problem and prevent future problems and how to implement them, and described the current leachate control practices with a proposal to reduce the potential for leachate migration. The report of "Hydrogeological Conditions and Groundwater Action Plan for Kirby Canyon Landfill", and a description of Kirby Canyon Liquids Management is included as Appendix B.

Since submitting the report and proposed action plan, Waste Management has installed additional monitoring wells, but has not been required to build the 60-ft deep interceptor trench. Leachate will now drain to an onsite leachate treatment plant, rather than being disposed of through the sewer system. The new waste cells to be built prior to accepting SMaRT station waste will have plastic membrane liners in an effort to contain leachate within the landfill. The RWQCB is updated monthly regarding leachate management at Kirby Canyon landfill.

In the event that the increased fill rate required to serve the SMaRT station results in the production of more leachate, the necessary monitoring, leachate handling methods, and remedial measures to prevent further migration of leachate would be in place as required by the RWQCB. It is expected that any groundwater contamination problems which may arise in the future due to leachate from the landfill would be detected by monitoring and remediated by Waste Management as required by the RWQCB.

E. NOISE

1. Setting

Noise impacts are usually significant only when sensitive receptors are present and if the noise attributable to a source is in excess of local noise standards. The term sensitive receptor may vary from area to area, but is usually associated with public areas (such as parks), residences, schools, or hospitals in the vicinity of noise sources. These areas will typically have lower limits (i.e., greater noise sensitivity) than commercial or industrial areas. The sensitive receptors which may be affected by project traffic noise are shown in Figure IV-22. These include residential areas, schools and study sites designated in the City of Sunnyvale Futures Study across Highway 237 and US 101 from the project site, users of the Twin Creeks Softball Facility, users of the future Baylands Park, and the levees north of the project. These areas are described in detail in the visual assessment section (Chapter IV.H). Except for the levees north of the project site the land uses immediately adjacent to the project are currently industrial.

Potential impacts from off site traffic noise were assessed at five locations in the project vicinity: Mathilda/Ross; Lawrence/Tasman; Tasman/Lawrence; Borregas/Caribbean; and Caribbean/Borregas. The sensitive receptors at these locations are primarily residences (Figure IV-22).

a. Existing Noise Environment

SMaRT Station Vicinity. The existing noise environment in the project vicinity consists of the Raisch Paving Company asphalt/concrete recycling operation west of the site, the water pollution control plant adjacent to the site, operations at the Sunnyvale landfill, and traffic in the adjacent area. Because project traffic noise is considered to potentially have the most significant impact, Table IV-16 illustrates observed noise readings for five intersections in the project vicinity in addition to the traffic counts, traffic speed, and the distance of the observer from the intersection. The noise readings range from 66.2 dB(A) to 69.6 dB(A).

Kirby Canyon Landfill. The potential noise impacts of the Kirby Canyon Landfill were reported in an EIR prepared for the project in 1983. The analysis was based on the landfill accepting 1500 tons/day of refuse. The impacts were found not to be significant because 1) the landfill is located in an open space area and the nearest sensitive receptor (a golf course) is 2,000 feet away; and 2) landfill traffic and equipment noise would be masked by traffic noise from the re-routed portion of US 101, which is located between the landfill and the sensitive receptors, and the landfill traffic and equipment noise would not add significantly to the freeway traffic noise.

The landfill currently accepts an average of 633 tons/day of refuse, and operates only during daylight hours. The SMaRT Station project would increase current activities at the landfill, requiring an increase in equipment that would still be within the levels examined in the 1983 EIR. The SMaRT Station project would also cause a need for an increase in the allowable tons/day figure (Please see Chapter II.D. for a more complete discussion), and would require an extension of operations into nighttime hours.

FIGURE IV-21
SENSITIVE RECEPTORS TO NOISE

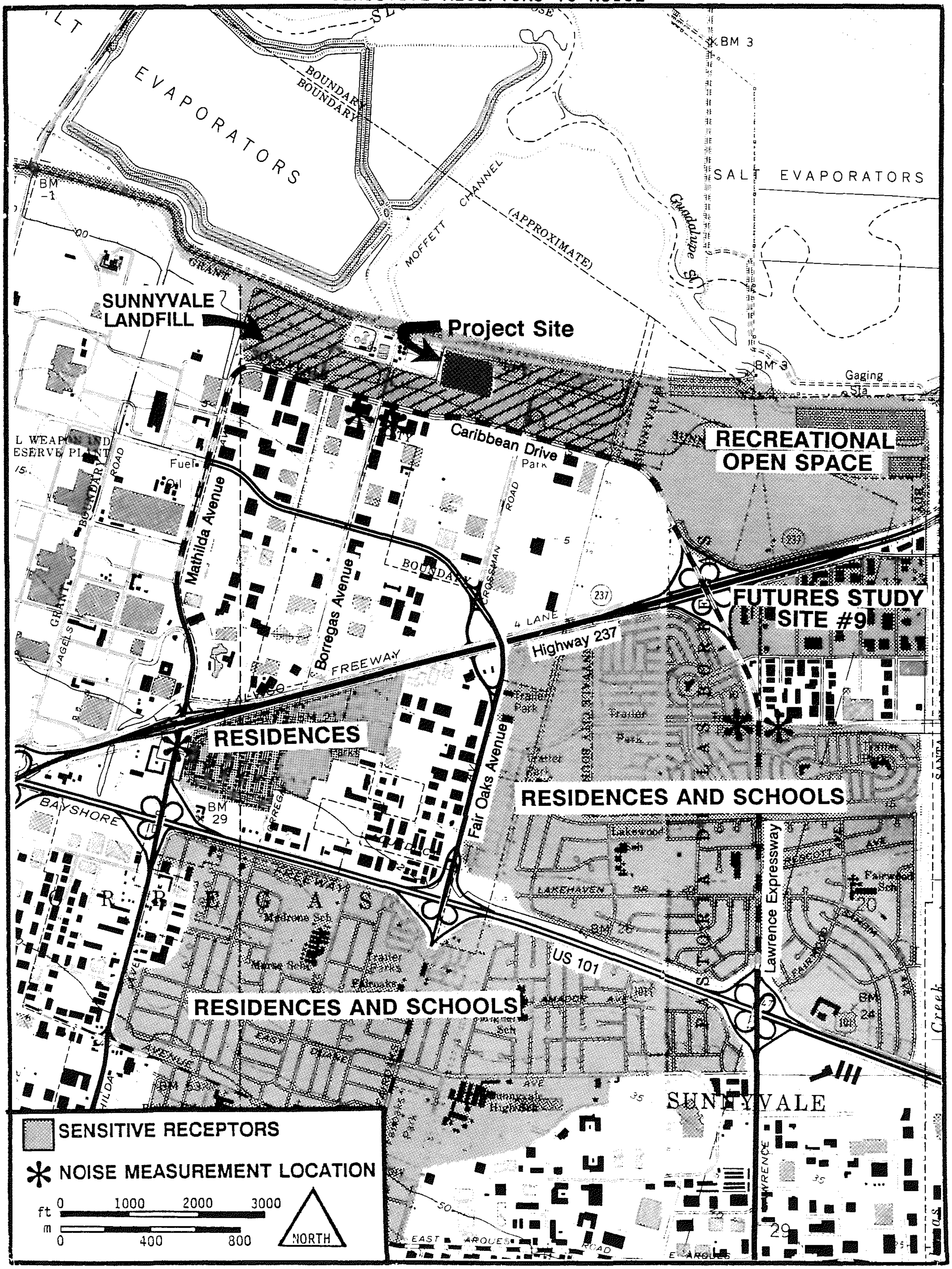


TABLE IV-15
TRAFFIC NOISE -- PRESENT

Traffic Count/Speed (miles/hr)

Site	Distance (Feet)	Auto	Medium Trucks	Heavy Trucks	Observed L_{eq} (dBA)
Mathilda/Ross	85	3440/10	500/6	88/6	69.6
Lawrence/Tasman	35	3400/38	128/29	20/29	68.1
Tasman/Lawrence	35	1085/34	100/24	21/24	67.1
Borregas/Caribbean	40	95/34	3/24	10/24	66.2
Caribbean/Borregas	40	232/34	17/24	21/24	67.8

b. Local Noise Policies

The Noise Element of the City of Sunnyvale contains the State of California's standards for acceptable levels of ambient noise for different types of land uses. The State standards establish a maximum of 80 dB(A) as conditionally acceptable and a maximum of 90 dB(A) as normally unacceptable in industrial/manufacturing areas. In playgrounds and parks 70 dB(A) is considered normally acceptable, 70-75 dB(A) as normally unacceptable and noise levels above 75 dB(A) as clearly unacceptable.

In addition to the standards contained in the Noise Element, the City of Sunnyvale Zoning Ordinance (section 19.24.020) contains operating standards to ensure that surrounding land uses are not impacted by a particular operation. The operating standards for noise identifies a limit of 75 dB at any point on the property line of the premises upon which the noise or sound is generated or produced in a non-residential zoning district.

Kirby Canyon Landfill, located in the City of San Jose is subject to the noise policies of that city. The Noise Element of the City of San Jose General Plan identifies an exterior limit of 60 dB day-night level at outdoor living or recreation areas. For interior living spaces, the standards establish an interior limit of 45 dB day-night level for noise from exterior sources. The noise terminology is defined in Table IV-17.

2. Impacts

a. SMaRT Station

Compliance of the SMaRT station facility with the City of Sunnyvale standards depends on its noise sources as well as its location. Noise generated by the proposed project would come from two sources: 1) refuse handling equipment inside the facility and 2) project related traffic.

The transfer facility building encloses several noise sources. Engine and/or hydraulic noise would be generated by trucks unloading the waste, diesel-powered heavy compacting and loading equipment, and floor equipment such as bulldozers. The trucks also have "back-up" bells which produce noise in the narrow frequency bands that tend to stand out over more commonly encountered broadband noises. The woodchipper would also be enclosed and would contribute to inside noise sources. Noise from the compactors, material sorting equipment, breaking glass, crushing metal, banging of metal collection bins, movement of recycled materials such as glass and aluminum would also occur inside the building.

Peak noise events inside the SMaRT station would be intermittent and the general noise level inside the facility would more typically be around 70 dB(A) -- a level at which it is possible to carry on a conversation with a slightly raised voice.

With the exception of traffic, facility noise sources would be enclosed at SMaRT. Sound would be carried outside however, through open walls on the south and east sides of the facility. At present the adjacent area that would be affected is the Sunnyvale landfill, an industrial use. When the landfill closes these areas will be turned into parkland, and park users would be able to hear a variety of transfer station noises. Because typical transfer station noises are not generally compatible with a park setting, park users

TABLE IV-16
NOISE TERMINOLOGY

Due to the fluctuating character of urban traffic noise, statistical procedures are needed to provide an adequate description of the environment. These descriptors are obtained by direct readout of the Community Noise Analyzer. Some of the statistical levels used to describe community noise are defined as follows:

L_{eq}: The equivalent-energy level is that level of a steady noise having the same energy as a given time-varying noise. The L_{eq} represents the decibel level of the time-averaged value of sound energy or sound pressure squared. The L_{eq} is the noise descriptor used to calculate the L_{dn}.

L_{dn}: The day-night sound level is determined by the cumulative noise exposures occurring over a 24-hour day in terms of A-weighted sound energy. The 24-hour day is divided into two sub-periods for the L_{dn} index (a daytime period and a nighttime period). A 10 dBA weighting factor is added to the noise levels occurring during the nighttime period to account for the greater sensitivity of people to noise during these hours.

L_{10}: A noise level exceeded for 10% of the time, considered to be an "intrusive" level.

L_{50}: The noise level exceeded 50% of the time, representing an "average" sound level.

L_{90}: The noise level exceeded for 90% of the time, designated as a "background" noise level.

may be adversely affected by noise in this localized portion of the park. Noise from the station would also add to the cumulative effects of existing noise from the Water Pollution Control Plant, the asphalt/concrete recycling operation, and the landfill.

b. On Site Traffic Noise

The loudest source of noise from the SMaRT station would be engine noise from heavy trucks and other vehicles traveling around the site. On site traffic noise was calculated using the FHWA Highway Traffic Noise Prediction Model, written by the Federal Highway Administration. To ensure accuracy, the model predictions were then compared to field measurements made at an operating transfer station in San Carlos, California.

The closest noise receptors to the station would be recreationalists using the levees approximately 250 feet north of the property boundary. When the landfill closes and the east and south portions become part of the Sunnyvale Baylands Park, parkland would be immediately adjacent to the property boundary.

The daily and peak period traffic numbers presented in Chapter IV.A, Transportation were used in the noise modeling. These traffic figures reflect the amount of traffic expected when the station is operating at capacity. As noted in the transportation section, the peak period for project traffic activity is not the same as the peak period for commute traffic. Because the site circulation pattern is in a loop and noise from a particular vehicle would only be heard from any one location around the site, the traffic numbers presented in the transportation section were divided in half. An average speed of 25 mph was assumed for on site traffic. Based on the model predictions, the L_{eq} (see Table IV-17, Noise Terminology) during the peak hours of operation would be approximately 76 dB(A) at the property boundary and 59 dB(A) at the levees, 250 feet north of the site. The 24-hour average L_{eq} would be roughly 71 dB(A) at the property boundary and 54 dB(A) at the levees.

Noise levels of 76 dB(A) during peak operating periods at the property boundary would be 1 dB(A) over the 75 dB(A) operating standards established by the City of Sunnyvale. However, the 76 dB(A) generated during the peak periods would be well within the conditionally acceptable range (70 -80 dB(A)) established by the State standards for industrial areas. The 24-hour average L_{eq} of 71 dB(A) at the property boundary would be within the City of Sunnyvale's operational standards.

Noise levels at the levees 250 feet north of the site would be within the City's and the State's standards during peak operational periods (59 dB(A)) and with a 24-hour average (54 dB(A)).

While on site traffic noise would be within established standards for park areas, the traffic noise combined with the noises from the station building may be audible to park users. However, on site truck traffic would be intermittent and would not represent a continual noise source. In addition, the noise from trucks traveling around the project site would be highly localized and would not impact portions of the park removed from the SMaRT station or portions of the levees that were not directly across from the site.

c. Off Site Traffic Noise

Traffic generated by the project would consist of heavy duty diesel collectors, transfer trucks, and private vehicles. Traffic generated would vary depending on the number of tons received by the station. The noise impact analysis is based on the amount of traffic expected when the station is operating at capacity. As noted in section IV.A. Traffic, the peak period for project traffic activity is not the same as the peak period for commute traffic.

Traffic generated noise levels for the year 2010 without the proposed SMaRT station at selected intersections along the proposed haul routes are shown in Table IV-18. These levels are based on the FHWA Highway Traffic Noise Prediction Model. The traffic count was determined by taking the present traffic counts (Table IV-16) and adding the percent change described in the transportation section (Chapter IV.A) for all vehicle types. The speed was based on both the posted speed limit and the predicted service levels. The distance used is the same as in Table IV-16.

In Table IV-19 the traffic generated noise levels for the year 2010 with the proposed SMaRT station at the same intersections are shown. The traffic count was determined by taking the traffic counts from Table IV-18 and adding the percent change described in the transportation section (Chapter IV.A) for all vehicle types. The speed was based on both the posted speed limit and the predicted service levels. The distance used is the same as in Table IV-16.

Reviewing the information in Table IV-18 and Table IV-19 there would be no appreciable increase in traffic noise levels from the proposed SMaRT station. The largest increase predicted would only be 0.5 dB(A) at the Caribbean/Borregas intersection; all other locations would increase by 0.1 dB(A). All levels would remain below the noise ordinance standard of 75 dB(A) for the City of Sunnyvale. Because the predicted increase in traffic noise caused by the project is negligible, significant impacts to sensitive receptors are not expected.

d. Kirby Canyon Landfill

The landfill setting has not changed from that presented in the 1983 EIR. Landfill noise is masked by traffic noise on US 101, and the nearest sensitive receptor (a golf course) is still 2,000 feet away. Nighttime operations required to accommodate refuse from the SMaRT Station would comprise a new source of noise during the hours of 12 AM to dawn, however landfill equipment noise would still be masked by traffic noise on US 101, and the nearest sensitive receptor, the golf course, would be closed. Nighttime noise impacts would not be significant.

If the tons/day limit is changed to accommodate growth in the waste stream to the landfill there would be noise impacts associated with increased traffic and landfill activity. Waste Management has requested an increase in the tons/day allowed at the landfill in order to accommodate SMaRT, the existing waste stream, waste from Contra Costa County, and possibly waste from San Mateo County. The request to increase the tons/day limit is under separate environmental review through the City of San Jose, including the potential noise impacts associated with the allowed increase. The environmental evaluation application is included in Appendix D. It states

TABLE IV-17
TRAFFIC NOISE -- YEAR 2010 WITHOUT PROJECT

Traffic Count/Speed (miles/hr)

Site	Auto	Medium Trucks	Heavy Trucks	Predicted L_{eq} (dBA)
Mathilda/Ross	3825/10	556/6	98/6	70.0
Lawrence/Tasman	3828/38	144/29	23/29	68.6
Tasman/Lawrence	122/34	113/24	24/24	67.6
Borregas/Caribbean	105/34	3/24	11/24	66.6
Caribbean/Borregas	255/34	19/24	23/24	68.2

TABLE IV-18
TRAFFIC NOISE -- YEAR 2010 WITH PROJECT

Traffic Count/Speed (miles/hr)

Site (dBA)	Auto	Medium Trucks	Heavy Trucks	Predicted L_{eq} (dBA)	Difference W/O Project
Mathilda/Ross	3856/10	560/6	99/6	70.1	0.1
Lawrence/Tasman	3847/38	145/29	23/29	68.7	0.1
Tasman/Lawrence	1228/34	114/24	24/24	67.7	0.1
Borregas/Caribbean	117/34	3/24	12/24	67.0	0.4
Caribbean/Borregas	284/34	21/24	26/24	68.7	0.5

that the increase in tonnage and change in operating hours would not have a significant noise impact.

3. Mitigation

The SMaRT station would have some degree of noise impact on surrounding parklands. While some mitigating measures are suggested below, these measures will only help to reduce noise impacts and recreationalists using the park and levees immediately adjacent to the site may still be affected by project noise which is not compatible with the recreational setting.

1. To ensure that project trucks operate as quietly as possible, they should be maintained in good mechanical condition to reduce noise from faulty engine, drive-train, or other mechanical components.

2. Pot holes, ruts, dips, or other defects in a road's surface can greatly increase vehicle noise. For this reason, road surfaces on access roads and streets near the project site should be kept in good repair with a smooth surface. Maintenance of on-site roads would be the responsibility of WMNA, the station operator. City streets would continue to be maintained by the City, and the highways are the responsibility of Caltrans.

3. All processing of waste should take place in the station building. No handling or processing of solid waste, including baling of salvaged materials, should occur outside.

F. AIR QUALITY

1. Existing Conditions

a. Climate

The climate of the San Francisco Bay region is classified as Mediterranean. It is characterized by little or no precipitation during the summer months and moderate precipitation during the winter months. This climate is controlled primarily by the Pacific High. The Pacific High migrates northward during the summer months, holding storm tracks well to the north. During the winter months, the Pacific High migrates southward permitting storm centers to swing into and across California.

Another characteristic of the climate of the San Francisco Bay region is the summertime fog. The fog is often swept inland by the prevailing northwest winds originating from the Pacific High. Characteristically, the fog extends inland further during the night, receding to the vicinity of the coast during the day.

Long-term records of meteorological data are available from the National Weather Service office. The meteorological stations closest to the site are at Santa Clara University and Moffett Field Naval Air Station. Air quality data for San Jose is available from the Bay Area Air Quality Management District (BAAQMD). The following sections describe the environmental conditions of the project vicinity based on the data from these sources.

Wind

Wind speed and direction data from Moffett Field have been analyzed for the period from 1973 to 1982. The data indicate that the prevailing wind direction is from NNW 17% of the time and from N 14.5% of the time. Calms occur 24.3% of the time (Figure IV-23).

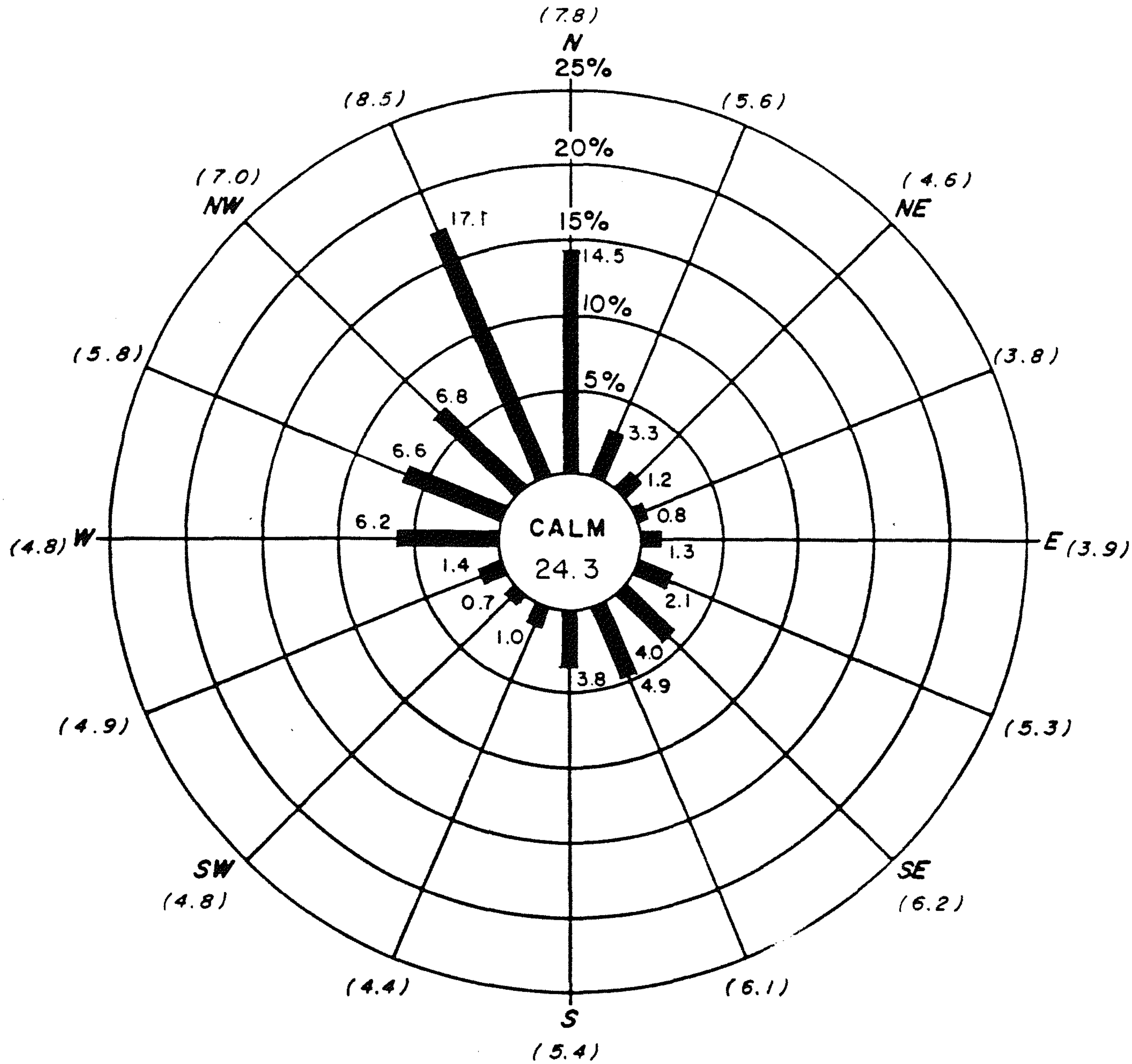
During the Air Quality Solid Waste Assessment Test (ASWAT) completed during the period from September 29 through October 1, 1987 at the Sunnyvale landfill, wind speed and direction were continuously monitored. During these three days average wind speeds ranged from 3.9 mph to 4.5 mph, and the predominant wind directions were WNW and NW.

Temperature

Mean monthly maximum and minimum temperatures in the project vicinity are summarized in Table IV-20. The highest mean monthly maximum temperature is 82.5°F, occurring in August; the lowest mean monthly minimum temperature is 39.5°F, occurring in January.

Precipitation

Mean monthly precipitation in the project vicinity is also shown in Table IV-20. The average rainfall in the project vicinity is 14.51 inches. The highest mean monthly precipitation is 3.08 inches, occurring in January; the lowest mean monthly precipitation is 0.02 inches, occurring in July. The California Department of Water Resources has calculated 24-hour precipitation values for the project vicinity based upon a minimum of 67 years of records.



station: No. 23244

location la: 37°25'N **lo:** 122°03'W

period: January 73 – December 82

no. of observations: 29,187

frequency: Hourly

REFERENCE:

Department of the Navy, Summary of Meteorological Observations, Surface, Job No. 72006, November 1983.

NOTE:

(7.8) Indicates mean wind speed in miles per hour.

THOMAS REID ASSOCIATES

FIGURE PREPARED BY EMCON ASSOCIATES 1989

WASTE MANAGEMENT OF NORTH AMERICA, INC.
SUNNYVALE MATERIALS RECOVERY
AND TRANSFER STATION
SUNNYVALE, CALIFORNIA

WIND ROSE

FIGURE IV-23

TABLE IV-19
MONTHLY MEAN TEMPERATURES AND PRECIPITATION FOR SANTA CLARA
(1960-1974)

Month	Mean Monthly Temperatures Max. (F)	Min. (F)	Average Precipitation (inches)
January	58.4	39.5	3.08
February	63.1	43.0	2.02
March	66.0	44.2	1.95
April	70.0	45.1	1.14
May	74.2	48.9	0.12
June	79.5	53.0	0.05
July	82.1	55.0	0.02
August	82.5	55.6	0.07
September	81.1	54.1	0.10
October	74.8	50.0	0.85
November	64.4	44.9	2.72
December	57.1	40.3	2.39
Annual	71.1	47.8	14.51

It estimates that 3.95 inches of rain would fall in 24 hours during a storm with a return period of 100 years, and 5.16 inches of rain would fall in 24 hours during a storm with a return period of 1000 years.

b. Air Quality

Air quality is determined primarily by the type and amount of contaminants emitted into the atmosphere, the size and topography of the air basin, and the meteorological conditions. In the project vicinity contaminants accumulate as emissions are produced during stable atmospheric conditions, low mixing heights, and light winds common during nighttime and morning hours. Atmospheric dispersion of pollutants generally improves by mid-afternoon.

The effects of the ambient air quality within an air basin depend mainly on the characteristics of the receptors and the type, amount, and duration of exposure. Air quality standards specify the concentration and duration for which pollutants may cause adverse health effects.

National primary ambient air quality standards define levels of air quality, with an adequate margin of safety, to protect the public health. National secondary ambient air quality standards define levels of air quality, with an adequate margin of safety, to protect the public welfare from any known or anticipated adverse effects of a pollutant.

Establishment of ambient air quality standards in Santa Clara County is the responsibility of the U.S. Environmental Protection Agency (EPA), the State of California Air Resources Board (CARB) and the BAAQMD. Air quality is generally considered acceptable if pollutant levels are less than or equal to established standards on a continuous basis. Where differences in local and national standards exist, the more stringent standards apply. The ambient air quality standards for the BAAQMD are shown in Table IV-21.

Ozone

Ozone is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen and reactive hydrocarbons. For this reason, the distribution of ozone is more regional in nature than that of the other contaminants. The State ozone standard was exceeded on 12 days in San Jose during 1988. The National ozone standard was not exceeded during 1988.

Carbon Monoxide

The primary sources of carbon monoxide (CO) in Santa Clara County are motor vehicles. The maximum CO concentrations occur in the morning during rush hour traffic (cold start emissions), and in the fall and winter when night and early morning surface-based inversions are most frequent and when ventilation is stagnant. The State CO standard was exceeded on 2 days in San Jose during 1988.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a product of fuel combustion in industrial sources, motor vehicles, and other mobile sources (such as trains, airplanes, etc.). The annual pattern of NO_2 concentrations show that the highest

TABLE IV-20

AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	National Standards
Ozone	1 Hour	9 pphm	12 pphm
Carbon Monoxide	8 Hour	9 ppm	9 ppm
	1 Hour	20 ppm	35 ppm
Nitrogen Dioxide	Annual Average	--------	5 pphm
	1 Hour	24 pphm	--------
Sulfur Dioxide	Annual Average	--------	30 ppb
	24 Hour	50 ppb	140 ppb
Suspended Part. Matter (PM-10)	Annual Average	30 ug/m	50 ug/m
	24 Hour	50 ug/m	150 ug/m

concentrations tend to occur in the fall and winter when night and early morning surface-based inversions are most frequent and when ventilation is stagnant. The State NO_2 standard was not exceeded during 1988.

Sulfur Dioxide

Fossil fuel combustion at industrial operations is the primary source of sulfur dioxide (SO_2) in the project vicinity. Maximum SO_2 concentrations generally occur near these sources. The State SO_2 standard was not exceeded during 1988.

PM-10

Fine particulate matter (dust) with a particle size less than 10 microns (0.00039 inches) is called PM-10. Because only these particles can be inhaled and affect health, the air quality standards now regulate PM-10 rather than total suspended particulates (TSP). Particulate violations result from local sources (traffic and construction), imposed on a fairly high regional background. The massive downtown redevelopment program in San Jose, with demolition, construction, street repairs, traffic detours, etc. has been targeted as contributing toward the high PM-10 values recorded at the San Jose station. High concentrations of particulates may occur during calm conditions with poor dispersion, or during strong wind conditions in which particulates are advected over large distances. The State PM-10 standard was exceeded on 14 days out of 60 measured in San Jose during 1988.

Sulfates

Suspended particles containing sulfate have both man-made and natural sources. Sulfates can result from the oxidation of SO_2, an industrial effluent. Sulfates are also natural components of soils and ocean-generated aerosols. There are no sulfate data available for San Jose.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic or hazardous air contaminants are also regulated by the EPA, the CARB, and the BAAQMD. These contaminants may be highly injurious, even in small amounts. However, since many different toxic compounds exist and most are relatively uncommon, ambient levels are not measured on a routine basis and no ambient standards have been developed for these compounds. Currently five pollutants are regulated through emission limits: asbestos, beryllium, mercury, vinyl chloride, and benzene. EPA and CARB are also studying other potentially toxic chemicals to develop additional regulations.

c. Existing On-Site Air Emissions

The two main sources of criteria air pollution now located near the proposed SMaRT station site are the Sunnyvale Landfill and the Raisch asphalt/concrete recycling operation on the western portion of the landfill. Sources of emissions from landfill activities are refuse trucks, trucks delivering soil cover, and the equipment used to move, compact and cover the refuse with earth. Emissions associated with the Raisch operation come from trucks hauling construction debris and processed materials and the equipment used to crush the asphalt and concrete.

All of the vehicles are a source of fine particulates due to tire wear and travel on dirt roads, and carbon monoxide, nitrogen dioxide, and sulfur dioxide from the diesel engines. Landfill equipment creates dust onsite during the process of moving, compacting, and covering the waste with earthfill. The asphalt/concrete crushing equipment is also a source of dust. Blowing dust generated during landfill and asphalt/concrete recycling operations does not appear to leave the site.

d. Air Solid Waste Assessment Test (ASWAT) of Sunnyvale Landfill

The SMaRT station project would require excavation of 20,000 cubic yards of in-place refuse at the Sunnyvale Landfill. As required by the Calderon amendments to the California Health and Safety Code, an ASWAT was completed for the landfill in early 1988 to determine if air contaminants from the landfill pose a risk to public health. The ASWAT results are summarized here to indicate which compounds may be released when the refuse is excavated.

According to State law, the results of a complete ASWAT should:

- o characterize the gas stream within the landfill,
- o determine whether specified air contaminants are present in ambient air at the site boundaries, and
- o determine whether subsurface landfill gas is migrating offsite.

To fulfill these requirements an ASWAT conducted by EMCON Associates from December 1987-May 1988 included the following activities:

o Sampling from the existing gas recovery system at a sampling port located upstream of the blower and water knockout system and testing the samples for ten VOC's (vinyl chloride, benzene, ethylene dibromide, 1,2-dichloroethane (ethylene dichloride), methylene chloride, perchloroethylene, carbon tetrachloride, 1,1,1-trichloroethane, trichloroethylene (methyl chloroform), and chloroform), and for major landfill gas components (methane, oxygen, nitrogen, and carbon monoxide);

o an integrated surface walk over a 50,000 square-foot grid to collect surface air samples and testing the samples for total organics measured as methane;

o sampling ambient air at the landfill perimeter upwind and downwind of the site and testing the samples for the ten VOC's listed above; and

o sampling gas probes near the perimeter of the site along Caribbean Drive and Carl Road and testing the samples for total organics measured as methane.

The ASWAT revealed that the landfill gas within the buried refuse contained 44.4 percent by volume methane and 40.2 percent by volume carbon dioxide (Table IV-22). This is not surprising since these gases are by-products of anaerobic degradation and typically exhibit this range of values in landfill gas. A low oxygen level of 1.93 percent and a high nitrogen to oxygen ratio indicated that little, if any, air was infiltrating the gas collection system.

The VOC's measured in the landfill gas within the buried refuse were vinyl chloride (4600 parts per billion or ppb), methylene chloride (38,000

TABLE IV-21
SUMMARY OF AIR SOLID WASTE ASSESSMENT TEST RESULTS

AMBIENT AIR VOLATILE ORGANIC COMPOUND DATA

Sample Number/ Location and Type3	Sample Date	Volatile Organic Compound[1] Concentration (ppb)[2]									
		VC	BENZ	EDB	DCA	MECL	PCE	CCL4	TCA	TCE	CHCL3
AA-4 UP 24 HR	4/25/88	ND	1.1	ND	ND	1.3	0.2	ND	1.0	2.7	ND
AA-5 UP WD	4/25/88	ND	0.7	ND	ND	2.7	ND	ND	0.6	0.7	ND
AA-1 DWN 24 HR	4/25/88	ND	1.2	ND	ND	1.3	0.2	ND	0.9	ND	ND
AA-2 DWN WD	4/25/88	ND	0.9	ND	ND	4.1	0.1	0.1	1.2	0.3	ND
AA-3 DWN 24 HR C	4/25/88	ND	2.1	ND	ND	1.6	0.4	0.08	1.6	0.3	ND
AA-10 UP 24 HR	4/26/88	ND	1.2	ND	ND	ND	0.3	0.09	0.8	0.9	ND
AA-11 UP WD	4/26/88	ND	1.1	ND	ND	1.0	0.2	0.07	0.8	0.5	ND
AA-7 DWN 24 HR	4/26/88	ND	1.4	ND	ND	1.1	0.2	0.1	1.2	0.1	0.1
AA-8 DWN WD	4/26/88	ND	0.9	ND	ND	ND	0.2	0.1	0.9	0.2	ND
AA-9 DWN 24 HR C	4/26/88	ND	1.3	ND	ND	1.1	0.2	0.1	1.2	ND	0.2
AA-16 UP 24 HR	4/27/88	ND	0.9	ND	ND	ND	1.0	0.1	0.9	0.5	ND
AA-17 UP WD	4/27/88	ND	0.8	ND	ND	ND	0.4	ND	2.1	0.3	ND
AA-13 DWN 24 HR	4/27/88	ND	1.2	ND	ND	ND	0.2	0.08	0.7	ND	ND
AA-14 DWN WD	4/27/88	ND	1.5	ND	ND	1.0	2.1	0.1	5.4	0.5	ND
AA-15 DWN 24 HR C	4/27/88	ND	1.2	ND	ND	ND	0.8	0.09	0.8	0.1	ND
Regulatory Detection Limit		2	2	0.5	0.2	1	0.2	0.2	0.5	0.6	0.8
Laboratory Detection Limit		0.2	0.09	0.06	0.1	1.0	0.04	0.07	0.08	0.09	0.09

1. VC = vinyl chloride
   BENZ = benzene
   EDB = ethylene dibromide
   DCA = 1,2 dichloroethane (ethylene dichloride)
   MECL = methylene chloride
   ND = not detected
   PCE = tetrachloroethylene
   CCL4 = carbon tetrachloride
   TCA = 1,1,1-trichloroethane (methyl chloroform)
   TCE = trichloroethylene
   CHCL3 = chloroform
2. ppb = parts per billion
3. 24 HR = 24 hour continuous sample
   WD = wind directionally controlled sample
   UP = upwind
   DWN = downwind
   C = collocated

VOLATILE ORGANIC COMPOUND DATA FOR GAS RECOVERY SYSTEM

Well Number	Sample Date	Volatile Organic Compound[1] Concentration (ppb)[2]									
		VC	BENZ	EDB	DCA	MECL	PCE	CCL4	TCA	TCE	CHCL3
GS-1		4,600	910	ND[3]	ND	38,000**	360***	ND	570	1,700	ND
Regulatory Detection Limit		500	500	1	20	60	10	5	10	10	2
Laboratory Detection Limit		50	50	1	100*	100**	10	5	10	10	2

1. VC = vinyl chloride
   BENZ = benzene
   EDB = ethylene dibromide
   DCA = 1,2-dichloroethane (ethylene dichloride)
   MECL = methylene chloride
   PCE = tetrachloroethylene
   CCL4 = carbon tetrachloride
   TCA = 1,1,1-trichloroethane (methyl chloroform)
   TCE = trichloroethylene
   CHCL3 = chloroform
2. ppb = parts per billion
3. ND = not detected

* High detection limit due to interference from Freon TF (a laboratory contaminant)

** High detection limit due to possible interference from Freon 12, a landfill gas component which coelutes with methylene chloride

*** Minimum value since concentration exceeded range of instrument ppb)[1], 1,1,1-trichloroethane (570 ppb), trichloroethylene (1700 ppb), benzene (910 ppb) and perchloroethylene (360 ppb). Carbon tetrachloride, chloroform, ethylene dibromide, and 1,2-dichloroethane were not detected (Table IV-22). The ASWAT notes that the nondetected levels of 1,2-dichloroethylene in the landfill gas analysis should be "viewed with caution due to the higher detection limits".

The VOC concentrations in ambient air at the Sunnyvale Landfill were relatively similar upwind and downwind of the landfill. Significantly, downwind VOC concentrations did not appear higher than upwind VOC concentrations. As reported in the ASWAT, "some of the samples had concentrations of benzene, methylene chloride, perchloroethylene, 1,1,1-trichloroethane (methyl chloroform), and trichloroethylene above the regulatory detection limits; however, field blank data indicate that this may be caused by these VOC's permeating into the samples from or through the Tedlar bag [used for sampling]. Other VOC's were either not detected or below the regulatory detection limit. The concentrations of vinyl chloride, ethylene dibromide, 1,2-dichloroethylene (ethylene dichloride), carbon tetrachloride, and chloroform fall at or below their respective detection limits".

The air samples from the integrated surface walk indicated methane in concentrations of 10 ppb. Total organic compounds measured as methane were found in concentrations between 0.8 and 18 parts per million (ppm) along Caribbean Drive, indicating low offsite gas migration. The probe on Carl Road, which is the proposed access road to the SMaRT station, could not be sampled due to standing water. There is no indication from the ASWAT whether landfill gas exists under the SMaRT station site.

The ASWAT was completed at the inception of the landfill gas collection program. Landfill gas from the Sunnyvale landfill has been flared for two years since the ASWAT was done.

2. Impacts

The four main sources of criteria air pollutant emissions from the proposed project are SMaRT station site construction, transportation, SMaRT station operations, and expanded Kirby Canyon landfill operations. All sources would emit fine particulates (PM-10), carbon monoxide, nitrogen dioxide, and sulfur dioxide.

a. SMaRT Station Site Construction

Heavy construction is a source of dust emissions that may have a temporary yet substantial impact on local air quality. Emissions during construction would occur due to land clearing, ground excavation, cut and fill operations, road grading, construction equipment traveling over temporary roads, and from the construction of the buildings themselves.

[1]This measurement may be high due to interference from Freon 12. Freon 12 is a gas commonly found in landfills and is not listed as a toxic contaminant. Freon 12 and methylene chloride appear in the same range on the gas chromatograph equipment and the test does not discriminate between the two.

Dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, silt content of the graded soil, soil moisture, and the prevailing weather. The Environmental Protection Agency estimates that construction operations generate 1.2 tons of dust per acre of construction per month of activity. This emission factor applies to construction operations with: 1) medium activity level, 2) moderate silt content, 3) semiarid climate, and 4) applies to particles less than about 30 microns in diameter, which is the effective cut-off size for the capture of construction dust by a standard high-volume filtration sampler (BAAQMD, 1985).

As noted in Project Description (Chapter II), site preparation includes excavating 20,000 cubic yards of in-place refuse, and importing 22,000-150,000 cubic yards of fill (depending on foundation design), over a period of three months of grading. Under the piling foundation scenario 22-25,000 cubic yards of soil would be needed to bring the site to the +4 NGVD elevation. Under the spread-foot foundation scenario, 140-150,000 cubic yards of imported material would be required to bring the site to +9 feet NGVD. Grading operations for the project would affect 10 acres. Based on EPA's emission factor, site construction would generate 36 tons of dust for approximately 3 months. Assuming 22 working days per month, this represents 0.55 tons or 410 kilograms of dust per working day. The BAAQMD considers any generation of particulate matter exceeding 0.075 tons or 68 kilograms per day as significant (BAAQMD, 1985). Watering twice a day can reduce project dust emissions by 50%. With watering, dust emissions would be reduced to 0.28 tons or 209 kilograms per working day. However, this is still considered a significant amount. Depending on local wind conditions, high concentrations of dust could be blown off the site into the surrounding areas.

Construction equipment would also generate emissions by burning diesel fuel. The construction equipment emission rates presented in Table IV-23 are based on the BAAQMD standard of 0.27 gallons of diesel fuel burned for each cubic yard of earth excavated. The impact of construction emissions on air quality would be highly localized to the project vicinity and would be temporary.

Considering that several VOC's were found to exist in the landfill gas, it is likely that excavation of in-place refuse would result in release of these compounds to the air. The Threshold Limit Values and Biological Exposure Indices book for 1989-1990 has identified benzene and methylene chloride as suspected human carcinogens and vinyl chloride as a confirmed human carcinogen. Excavation of the landfill could increase the concentration of these compounds in ambient air around the landfill over the short-term. This would present a worker safety impact but would not significantly affect air quality.

Construction of the SMaRT station would require the following equipment:
- o 20 concrete trucks/day;
- o up to 20 trucks/day for delivery of materials; and
- o maximum earthwork traffic is estimated at 240 trucks/day.

Emission factors for construction equipment vary according to equipment type (wheeled loader, scraper, etc.) and the type of fuel used (gasoline or diesel). Assuming no pooling and one car per person-day, construction worker traffic would consist of 25 to 50 vehicles per day. Table IV-24 illustrates the 1983 annual average emissions for Santa Clara County for construction equipment and motor vehicles.

TABLE IV-22
CONSTRUCTION EQUIPMENT EMISSIONS

Pollutant	Emission Rate (grams/yd^3)	Total Emissions (kilograms) 45,000 cy	Total Emissions (kilograms) 170,000 cy
Total Suspended Particulates	2.6	117	442
Carbon Monoxide	11.2	504	1904
Hydrocarbons	6.1	274.5	1037
Nitrogen Oxides	42.9	1930.5	7293
Sulfur Oxides	4.9	220.5	833

NOTES: The 45,000 cubic yard scenario includes excavation of 20,000 cubic yards of in-place refuse plus import of 25,000 cubic yards of soil to bring the site to +4 feet NGVD to support a piling foundation. The 170,000 cubic yard scenario includes excavation of 20,000 cubic yards of in-place refuse and import of 150,000 cubic yards of soil to bring the site to +9 feet NGVD if a spread-foot foundation is required.
SOURCE: BAAQMD - Air Quality and Urban Development; TRA Calculations

Table IV-23

1983 ANNUAL AVERAGE EMISSIONS FOR SANTA CLARA COUNTY (TONS/DAY)

	PART	NO_x	SO_2	CO
Farm & Construction Equipment	0.2	3.1	0.3	3.9
Cars & Light Duty Trucks	5.4	46.2	1.3	480.0
Medium & Heavy Duty Gasoline Trucks	1.7	18.2	0.7	208.0
Diesel Trucks & Buses	3.0	18.4	3.0	8.0
Motorcycles	---	0.2	---	3.8

b. Transportation

Project traffic includes franchise collection trucks and public vehicles coming to the station, transfer trucks going to Kirby Canyon landfill, and vehicles hauling recovered materials to market. With the exception of the transfer vehicles to Kirby Canyon landfill, these other vehicles are currently operating in the air basin. Mountain View currently hauls its franchise-collected waste to Newby Island Landfill in Fremont. Vehicle miles travelled and emissions from this traffic would be reduced if Mountain View hauled to the SMaRT station rather than to Newby Island. Palo Alto currently hauls to its own landfill, and vehicle miles travelled for those trucks would increase in travelling to SMaRT. Palo Alto and Newby Island are roughly equidistant to SMaRT. Because Mountain View generates more truck trips than Palo Alto, there may be a small net decrease in vehicle air emissions due to SMaRT.

Using information provided in the transportation section (Chapter IV.A) regarding peak hour traffic volumes for the year 2010 with and without the proposed project, a microscale carbon monoxide (CO) analysis was performed to determine if the proposed project would lead to a degradation of air quality.

The microscale CO analysis is composed of two elements, 1) the background CO level and 2) the roadway contribution. The completed worksheets used to perform the air quality analysis are included as Appendix C. The background data is that part of the ambient CO concentration attributed to areawide and local sources not specifically modeled in the microscale analysis (Caltrans, 1989). The roadway contribution is estimated from three components: 1) peak hour traffic volumes, 2) an emission factor (the quantity of CO emitted by the average vehicle as it passes by a given location), and 3) a dispersion factor (how rapidly the CO disperses away from the highway) (Caltrans, 1989).

The intersection of Lawrence Expressway and Tasman Avenue was chosen for the microscale CO analysis. This intersection would have the greatest peak hour traffic volume in the year 2010 with and without the proposed SMaRT project; (see Chapter IV.A) and this location would have the worst potential for localized CO impacts. However, there are few sensitive receptors here or at any of the other heavily travelled intersections listed in Chapter IV.A. A background level of 12 ppm was assumed based on information from Caltrans Air Quality Technical Notes, and a peak hour average speed of 25 mph was used in modeling.

The vehicular addition from the SMaRT project would increase the 1-hour maximum CO concentration by only 0.04 ppm which would still keep the area below the state 1-hour CO standard of 20 ppm. The 8-hour maximum CO concentration would be increased by only 0.03 ppm. SMaRT transportation alone would have a negligible effect on CO concentrations in the area.

Mobile emissions for particulates were calculated for haul trucks using information provided (in Chapter IV.A) regarding vehicle miles traveled to Kirby Canyon landfill during hauling. The assumptions used were as follows:

- o trucks are heavy duty diesel;
- o 3780 vehicle miles travelled (VMT)/day when SMaRT is operating at capacity;
- o 1987 emission factors for exhaust particulates and tire wear; and

- o running exhaust emission rates (since the hot and cold start emissions from heavy duty diesel trucks are undefined).

The equation used to determine total particulates is as follows:

Total particulates = Exhaust particulates + Tire wear
= 9979.2 grams/day + 2494.8 grams/day
= 12474 grams/day
= 27.54 lbs/day **at capacity**

When the transportation impact for total particulates is compared to Santa Clara County's 1983 annual average total particulates emissions for motor vehicles, which is 10.1 tons/day (BAAQMD,1987), the proposed SMaRT station's contribution to local air quality levels is insignificant.

c. SMaRT Station Operations

Daily particulate matter emissions are generated from vehicles driving on paved and unpaved roads, waste sorting/shredding/recycling activities, and waste unloading. Localized dust control would be implemented at major dust generating equipment such as the wood waste shredder. Dust control systems may include equipment enclosures, exhaust ducting, and dust removal equipment such as a baghouse. Shredding will take place in an enclosed building, thereby reducing the potential for releasing particulate emissions to the atmosphere. Dust from unloading vehicles and loading transfer vans would be confined inside the station building.

d. Kirby Canyon Landfill Operations

Daily particulate matter emissions are generated from vehicles driving on paved and unpaved roads, waste recycling activities, and the unloading of waste. The emissions increase from commencement of SMaRT station operations depending on equipment usage and surface conditions at Kirby Canyon landfill. The equipment used at Kirby Canyon landfill consists of the following:

- o Two bulldozers;
- o One compactor;
- o One scraper;
- o One motor grader;
- o One backhoe;
- o One lube truck;
- o One 6000 gallon water-pull vehicle; and
- o One 3000 gallon water truck.

Localized dust control would be implemented at major dust generating equipment (in particular, during the summer) by watering or using chemical dust suppressant.

The working face at Kirby Canyon landfill is around 5000 ft^2 and normal operations consume 250-300 gallons of diesel fuel/day. As was stated in the Kirby Canyon EIR, "Emissions from on-site equipment are considered to be negligible, as they are only a small fraction of those from the hauling vehicles and local highway traffic."

3. Mitigation

Except for the short-term, localized impacts of construction dust, the following mitigation measures will reduce potential air quality impacts to non-significance. It is noted at the end of each measure whether the measure is recommended, planned, or currently in place.

SMaRT Site Preparation

- o Construction equipment inspection and maintenance program (recommended);
- o Surface waterings as necessary during dry weather when sustained wind speeds exceed 10 mph (recommended);
- o Areas to be cleared will be limited to facilities construction areas and necessary equipment and materials stockpile areas (recommended);
- o Watering or covering stockpiles by temporary structure or plastic sheet covering to eliminate windborne fugitive dust (recommended);
- o Upon completion of grading and earth-moving, wet the area down sufficiently to form a compact surface. Repeat wettings as necessary, to maintain this surface and prevent dust from being picked up by the wind (recommended); and
- o Additional flaring of landfill gas prior to construction to reduce landfill gas impacts to air quality and worker safety (recommended).

SMaRT Station Operations

- o Surfaces to experience heavy traffic during site operations will be paved or surfaced with gravel (planned);
- o If watering is not sufficient in mitigating the dust, chemical dust suppressants will be used (planned);
- o Planning of hourly and daily activity equipment use such that peak (corresponding to peak hour traffic volume) emission periods are minimized (recommended).

Kirby Canyon Landfill Operations

- o A 6000 gallon water pull vehicle and a 3000 gallon water truck are used for dust suppressant (in place);
- o During the summer a chemical dust suppressant is used (in place); and
- o At the end of each operating day, the working face is completely covered with a 6" layer of soil such that no refuse is left exposed (in place).

G. WILDLIFE

1. Setting

SMaRT Station. The proposed site of the SMaRT station has been disturbed enough by past landfill and concrete/asphalt recycling operations that it does not support wildlife. The concerns regarding SMaRT station impacts to wildlife center on the potential effects on baylands habitat adjoining the site. The site is next to San Francisco bay, and wetlands and open water habitat occur west and north of the project footprint.

On the west side there is an open freshwater storm drainage channel and the WPCP sludge lagoons. The channel parallels the existing access road to the site and the western border of the site. It leads to a pump station where it is sent to the Moffett Channel, and eventually to the bay. Right before entering the pump station the channel also turns and feeds two channels located between a set of levees north of the station site. These levees were originally built to protect the WPCP and the landfill from inundation. Although the water in the stormwater channel appears to be fresh, based on the plants and invertebrates noted there, the water between the levees is salty, indicating the influence of bay water, possibly through leaks in the levees.

Although dominated by non-native grasses, the vegetation between these levees includes pickleweed and saltgrass, two wetland indicator species. The levee area is used for nesting by birds, rabbits, and reptiles. Mallard duck nests, black-tailed jackrabbit, and an unidentified species of snake were observed during a site visit in May 1989. Endangered species which may occur in the wetland areas near the site include those listed below for salt ponds and the salt marsh harvest mouse (*Reithrodontomys raviventris*). Candidate species which may occur there include the western snowy plover (*Charadrius alexandrinus nivosus*), and the saltmarsh yellowthroat (*Geothlypis trichas sinuousa*).

When full of water the WPCP sludge lagoons also provide open freshwater habitat which is used by several species of birds, including seagulls, killdeer, curlew, tern, and various ducks. The sludge lagoons are located west of the SMaRT station site, and are separated from the site by the stormwater channel. Development of the SMaRT station would not require changes to the channel or the sludge lagoons.

Salt evaporation ponds lie north of the site, past the channels and levees. These salt evaporation ponds provide various saltwater habitats adjacent to the open saltwater habitat of the bay. The salt ponds are diked off from the bay and are not subject to tidal action. They generally provide habitat for a wide variety of migrating and resident waterfowl, and a smaller variety of insects and fish. Species listed as Endangered which may use the salt ponds include the American Peregrine falcon (*Falco peregrinus anatum*), the California brown pelican (*Pelecanus occidentalis californicus*), and the California least tern (*Sterna antillarum browni*). The western snowy plover (*Charadrius alexandrinus nivosus*), a Candidate 2 Endangered species, may also occur in the salt pond habitats adjacent to the SMaRT station.

Kirby Canyon Landfill. The Kirby Canyon landfill is located south of San Jose in a vast area of serpentine grassland. Serpentine grassland supports a unique ecosystem in California, providing a substrate in which a variety of native plant species can outcompete non-native grasses. One listed species, the threatened Bay checkerspot butterfly (*Euphydryas editha bayensis*), depends on this ecosystem for its survival. The landfill operates under the "Kirby Canyon Landfill Bay Checkerspot Butterfly Conservation Plan", which requires numerous monitoring and mitigation measures to prevent significant impact to the butterfly habitat there. It also operates under conditions set in its PD Permit which require specific mitigation of biological impacts reported in the EIR for the project.

2. Impacts

SMaRT Station. Neither the SMaRT station nor its access road require direct development of existing wildlife habitat, however station operations may indirectly affect the quality of habitat in adjacent areas and the bay. Indirect effects could include disruption caused by nighttime operations, increased stormwater runoff to the bay, and risk of upset. All of these impacts are considered to be reduced to non-significant with planned operations and recommended mitigation measures.

The Raisch asphalt/concrete recycling operation previously operated onsite during the day. Nighttime operations proposed for the SMaRT station would result in an increase in nighttime noise and lighting. Operations at the station would occur primarily between 5 am and 9 pm, and noise at the station would be considerably less between 9 pm and 5 am due to the reduced amount of equipment working and the lack of incoming vehicles. The introduction of nighttime activities adjacent to the bayland habitats may reduce the quality of nesting habitat in areas near the SMaRT station. Because bayland nesting habitat is a limited biological resource in the bay area which is consistently affected by neighboring development, the effects of the SMaRT Station, which would be considered small by themselves particularly because this site is already developed under industrial uses, would contribute to the cumulative effects bayside development may have had on wildlife habitats.

Stormwater runoff from the SMaRT station, including runoff from paved areas around the station and from the station roof, would be directed to the stormwater channel adjacent to the site. This runoff would not come in contact with the refuse; all water from the interior of the building would be directed to the WPCP for treatment prior to discharge to the bay. The small amount of stormwater runoff would not significantly affect bay waters.

The SMaRT station would be protected from flood by adjacent levees and its own raised elevation, and station operations described in Chapter II would prevent upset situations such as toxic spills, fire, or explosion. Significant impacts from these events are not expected.

Kirby Canyon. Under current permits the landfill is allowed to accept 26 million tons of refuse. This includes the development of several canyons, all of which were taken into account in the EIR, PD Permit, and Conservation Plan prepared for that project. As long as the SMaRT station refuse from the primary service area cities does not require an increase in permitted capacity, a change in the approved footprint of the landfill would not be required. As noted in Chapter II., Project Description, the landfill has enough permitted, uncommitted capacity to serve the primary service area cities of Sunnyvale, Mountain View, and Palo Alto. Therefore, the SMaRT station operation would not require an expansion of the landfill.

Biological resources at Kirby Canyon may be affected by an extension of hours needed to accommodate the station refuse, which would translate to longer periods of equipment noise, more traffic and nighttime lighting than at present. These operations may indirectly affect local habitat quality by causing nesting or foraging animals to avoid the landfill area.

Extended Service Area. Providing SMaRT station service to the extended service area would not require a change in SMaRT station design or operations, thus it would not incrementally increase impacts to biological resources in the bay and baylands. The extended service area is expected to require an additional 1-2 tons of capacity at Kirby Canyon landfill. This is within the remaining capacity at Kirby Canyon once the primary service area cities are served, and would not require a change in the footprint of the landfill. Since the existing development plan, the effects of which are mitigated through the PD permit and the Conservation Agreement, would not change, no additional impacts on biological resources at Kirby Canyon would be expected from adding the extended service area.

3. Mitigation

In order to assure that construction operations do not impact nearby wetland resources, it is recommended that fencing be installed prior to construction (the fence which currently exists could possibly remain) which will prevent construction activity, including grading, sidecasting, and parking, in this area.

As long as the SMaRT station operates as proposed in Chapter II, including the stated primary operating hours, the only additional mitigation which is recommended to reduce impacts to adjacent biological resources is to design station lighting so that it does not intrude into adjacent open space areas.

Similarly, lighting at Kirby Canyon should be designed and placed to reduce light and glare in adjacent open space.

H. AESTHETICS

1. Setting

a. Vicinity Description

The proposed site for the SMaRT station is on the northern edge of the City of Sunnyvale, adjacent to San Francisco Bay. The area lies in a flat alluvial plain and ranges in elevation from 0 feet to +9 feet NGVD. The project site and the surrounding area is mostly developed and little native habitat remains. The remaining native communities are north of the project site in bay wetland areas.

The area within a one mile radius of the project site contains several land uses, including the Lockheed Corporation complex and Moffett Field Naval Air Station to the west, office/industrial park complexes to the south and the Twin Creeks Softball facility and the area proposed for the Sunnyvale Baylands Park to the east. Land north of the project site consists of bay wetlands and includes Leslie Salt's salt evaporator ponds (Figure IV-24).

Immediately surrounding the site is the Sunnyvale Water Pollution Control Plant (WPCP) to the west, the Sunnyvale landfill to the south and east and the San Francisco Bay and salt evaporation ponds to the north.

Access to the site is provided via Borregas Avenue from Caribbean Drive. The north side of Caribbean Drive is occupied by the Sunnyvale landfill from the point where Mathilda turns into Caribbean on the west to a point opposite Crossman Avenue to the east. East of the landfill is the Twin Creeks Softball facility and an undeveloped area which is to become part of the Sunnyvale Baylands Park.

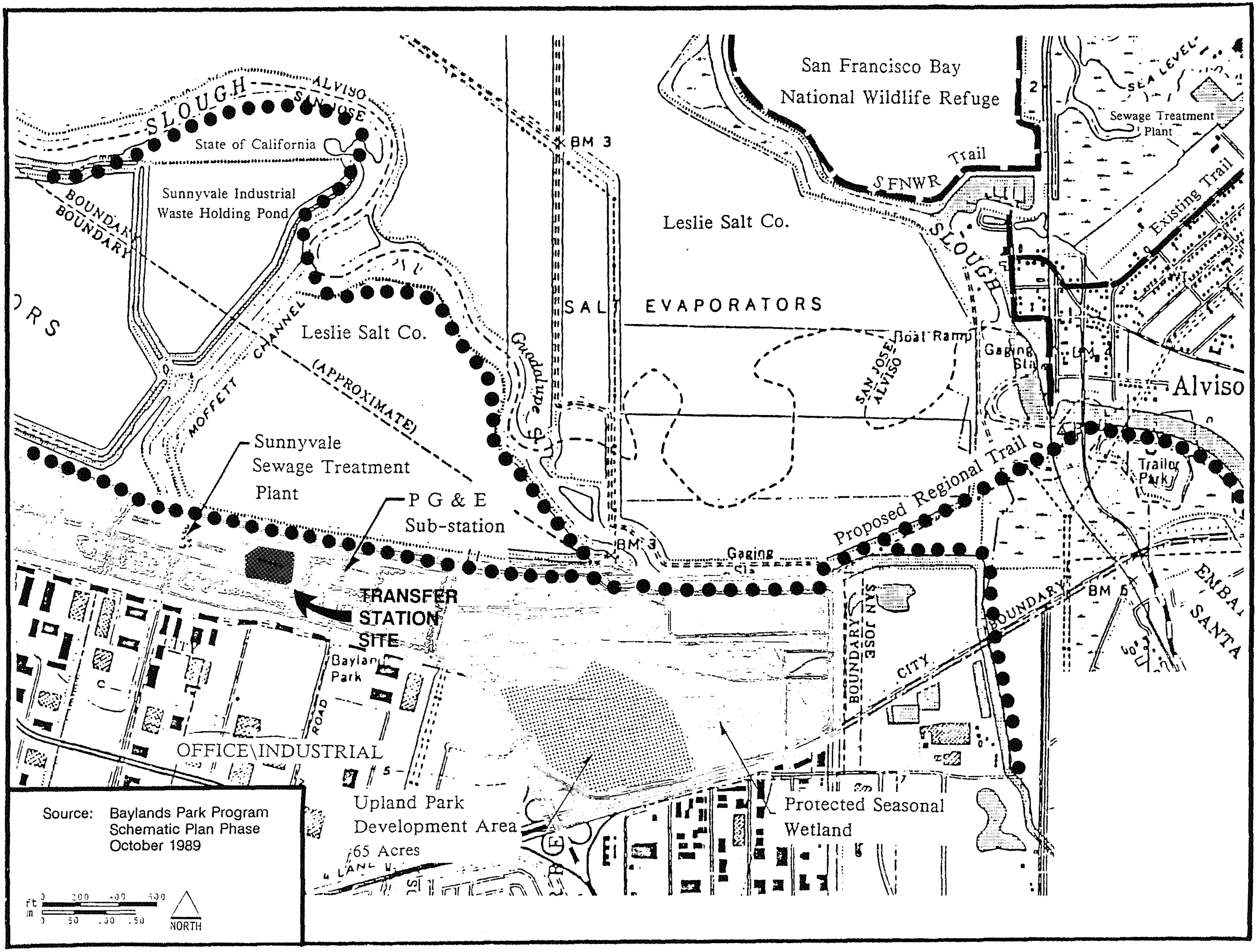
The south side of Caribbean Drive is occupied by an office/industrial park. Most of the buildings in the office park, and all those along Caribbean Drive, are low one and two story buildings with concrete or stucco exteriors and few windows. The visual character of the office park provides a sense of spaciousness with low office buildings, wide streets and large landscaped areas.

Borregas Avenue, south of Caribbean Drive, provides access through the office park and is lined with office and warehouse buildings. Borregas Avenue, north of Caribbean Drive, dead ends at the Sunnyvale Water Pollution Control Plant and intersects with Carl Road. Carl Road serves the active area of the landfill and would also provide access to the SMaRT station.

The Sunnyvale landfill has four separate fill modules ranging in height from +50 to +60 feet NGVD. Three of the four modules are currently inactive. Landfilling activities currently occur in the eastern module of the landfill. The slopes of the landfill have established grass cover except for portions of the eastern module.

Various portions of the landfill are visible from the surrounding area, including northern portions of Moffett Field and the Lockheed industrial complex, Caribbean Drive, the office and warehouse buildings along Caribbean Drive, the Twin Creeks Softball facility and from the levees north of the

FIGURE IV-22
SENSITIVE RECEPTORS: VISUAL



landfill. Mature eucalyptus trees planted along the northern side of Caribbean Drive effectively screen the south facing slopes of the landfill from the view of motorists along Caribbean and from the view of workers in the office park. The landfill is highly visible to recreationalists using the levees north of the landfill.

The WPCP, west of the proposed site, is comprised of a single story office building, several large, round tanks, enclosed treatment facilities and two sludge ponds. The sludge produced by the wastewater treatment process is contained in ponds formed by earthen berms approximately six feet high. The sludge ponds are enclosed in a six-foot chain link fence topped by barbed-wire. Scattered vegetation grows along the water line but there is essentially no vegetation on the pond's berms.

The WPCP is screened from view from the west, south and east by the landfill. The WPCP is highly visible to recreationalists using the levees north of the plant.

The project site is bordered on the west and north by a drainage ditch maintained by the City of Sunnyvale. A buried pipe discharges water into the ditch which begins on the south side of the WPCP sludge ponds. The drainage channel, running east-west, is sandwiched between Carl Road and the southern edge of the sludge ponds. At the eastern end of the ponds, the ditch turns north so that it is between the sludge lagoons and the proposed SMaRT station site. A pump station, enclosed in a small building, is located at the northern end of the drainage ditch. Upon reaching the pump station, the ditch turns east and parallels the northern border of the SMaRT site and the landfill. The drainage channel supports wetland vegetation in this area.

In addition to the drainage channel, there are two barrier ditches north of the project site which extend from the WPCP past the proposed site to the eastern end of the landfill. These barrier ditches are intermittently filled with water. Wetland vegetation occurs here also.

Levees north of the project site are frequently used by recreationalists. During the weekdays, many workers from the office park and Lockheed use the levees for jogging. Other recreational uses of the levees include dog-walking, birdwatching and photography. Access to these levees in the vicinity of the project site is provided along the banks of the Sunnyvale East and West Channels and by a service road along the drainage channel adjacent to the project site.

b. Site Description

The central portion of the proposed SMaRT station site was previously occupied by a concrete and asphalt recycling operation. When the site was topographically mapped, approximately 85,000 cubic yards of asphalt and concrete rubble extended from a base elevation of approximately +3 feet NGVD to about +30 feet NGVD (EMCON Associates). During the past months, this material has been moved off site. Now that the concrete stockpiles are cleared from the site, the surface elevation is approximately +3 feet NGVD.

The concrete recycling operation had the visual character of a heavy industrial use with the large piles of concrete debris and heavy crushing equipment. There is no vegetation in the area previously occupied by the concrete and asphalt recycling operation.

The eastern and southern areas of the project site are currently occupied by portions of the Sunnyvale landfill and Carl Road. Approximately 20,000 cubic yards of in-place fill would have to be excavated in order to provide the space and elevations necessary for the SMaRT station.

The proposed SMaRT station site is screened from view on the west, south and east by the Sunnyvale landfill and the WPCP, but is highly visible from the levees to the north.

c. Sensitive Receptors

A sensitive receptor is a land use or activity which is particularly sensitive to an impact because of the nature of the use or activity. People in residential neighborhoods, schools, hospitals, nursing homes, and recreational areas are generally considered sensitive to activities in the surrounding environment which could disrupt their well-being or ability to carry out a designated activity.

There are several sensitive receptors near the SMaRT station; 1) users of the Twin Creeks Softball Facility; 2) users of the future Baylands Park; 3) recreationalists using levees north of the project and 4) employees in the office/industrial park along the south side of Caribbean Drive and at the WPCP.

1. Twin Creeks Softball Facility

The Twin Creeks Softball facility is immediately east of the Sunnyvale East Channel, approximately 0.4 mile from the project site (Figure IV-25). The softball facility includes a large parking area and multiple softball playing fields organized around a central building. The facility is frequently used evenings and weekends for league play.

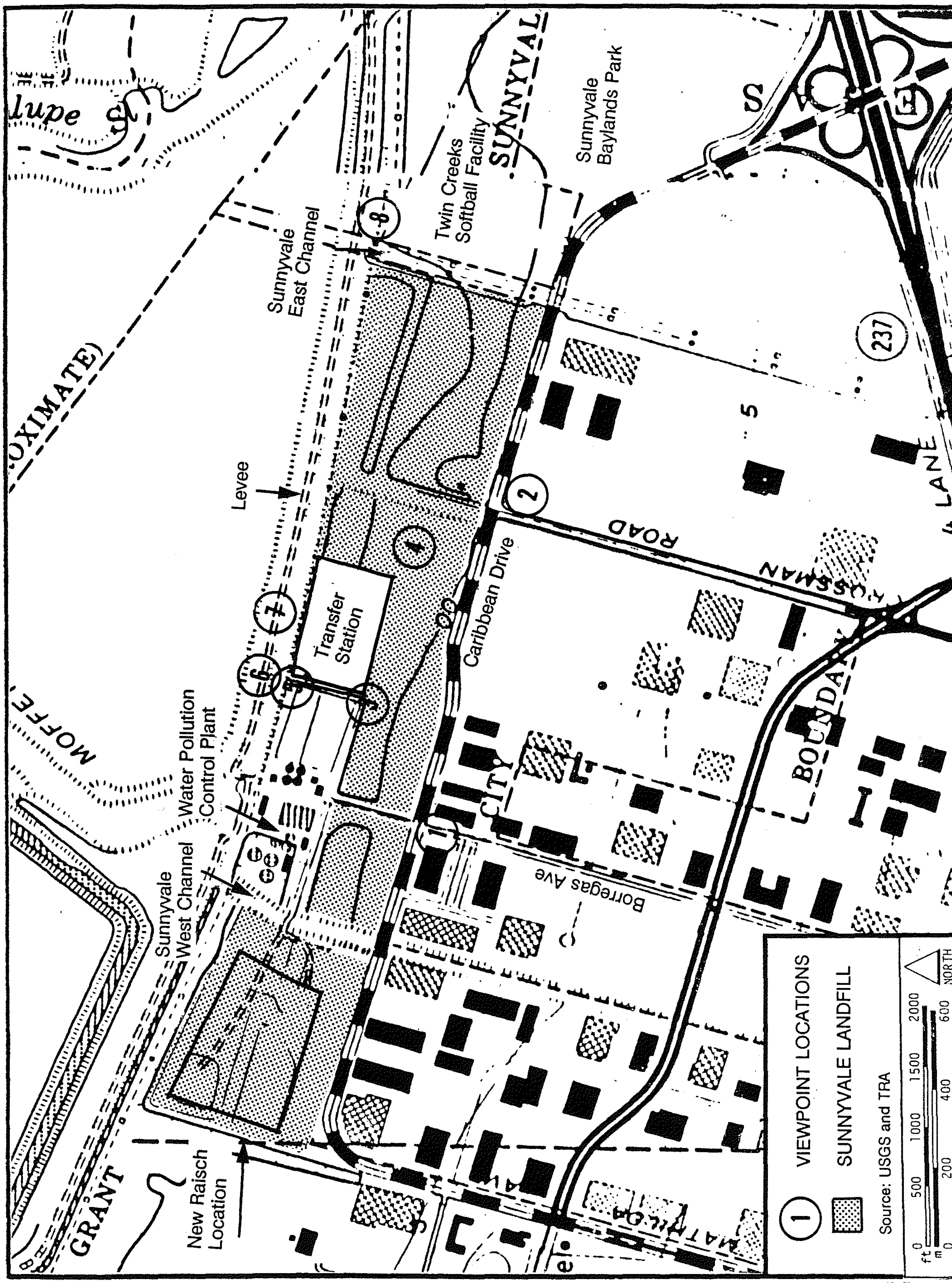
The east module of the landfill predominates the view to the west from all areas of the softball facility. The landfill blocks all view of the proposed SMaRT station site and the WPCP. Other views from the facility include Caribbean Drive, the office park along the south side of Caribbean, Highway 237 and baylands to the north. The land east of the softball facility is currently undeveloped but is the site for the Sunnyvale Baylands Park, discussed below.

2. Sunnyvale Baylands Park

The undeveloped area east of the Twin Creeks Softball facility is the site of the Sunnyvale Baylands Park. This regional park, composed of three separate park facilities, represents a joint effort between Santa Clara County and the City of Sunnyvale to develop recreational resources within the urban area. The three components of the park are the Twin Creeks Softball facility (discussed above), the Sunnyvale Baylands Park and the Sunnyvale landfill. Upon closure of the Sunnyvale landfill, the end use plan for the landfill calls for it to become one of the three park parcels.

The area of the Sunnyvale Baylands Park encompasses 170 acres which would be developed into turf fields, picnic areas and open meadows, a multi-purpose concession and staging area, undeveloped wetland areas, boardwalk trails and a maintenance yard.

FIGURE IV-25
VIEWPOINT LOCATIONS



The City of Sunnyvale is in the process of designing the park. It is estimated that 1990 will be spent in the design stage and that construction would begin in 1991 and would be completed in 1992 (Ernie Yoshizuka, Sunnyvale Public Works Dept., pers. comm.).

Views from the park site include baylands to the north, Highway 237, Caribbean Drive and the office park to the east and south and the Twin Creeks Softball facility and the landfill to the west. The east module of the landfill blocks all view of the proposed SMaRT station and the WPCP.

3. Levees North of Project Site

Levees for salt evaporation ponds, drainage channels and various sloughs create a network of trails near the Bay edge and are used by recreationalists for jogging, dog walking, birdwatching and photography.

In the vicinity of the project site the levees are being considered for inclusion into organized trail systems. One trail network would create a trail completely around the Bay (Bay Trail) and another local network would provide running paths for lunch-time joggers from the office park and Lockheed.

The proposed Bay Trail would travel completely around the bay using levees where possible. In the vicinity of the project site, the proposed trail alignment would be along the levees north of the shoreline (Figure IV-24). From south of the project site, the trail follows levees from Alviso Slough northward past the Baylands park, Twin Creeks facility, the landfill, the project site, the WPCP and on towards Lockheed (Baylands Park, Program/Schematic Plan Phase, City of Sunnyvale, October, 1989). Access to the Bay Trail in the project vicinity would be provided by the Baylands Park and the Sunnyvale East Channel. The levee is 250 feet north of the project boundary.

There is no schedule for development of the Bay Trail within the Sunnyvale city limit and Sunnyvale has not formally adopted the Bay Trail (Marci Somers, Sunnyvale Parks and Recreation Department, pers. comm.). However, development of the Sunnyvale Baylands Park is expected to significantly increase the recreational use of levees in the vicinity of the park.

In addition to the Bay Trail, the City of Sunnyvale has funded a study to investigate the feasibility and potential alignment for a running trail. The study is to investigate an alignment for a jogging trail using the levees by the Sunnyvale East Channel, the landfill, the WPCP and Lockheed (Ernie Yoshizuka, Sunnyvale Public Works Dept., pers. comm.).

Recreationalists using the levees may be adversely affected by visual impacts from a variety of sources. In the vicinity of the project site there are many existing industrial and public facility uses located along the shoreline including the landfill, the WPCP, Lockheed and Moffett Field. In addition, there is a PG&E transmission line north of the project site, pumping stations and piping associated with the various drainages and sloughs, and scattered debris along the levee banks. Prior to its moving, the Raisch asphalt/concrete recycling operation created adverse visual impacts on the proposed project site.

4. Office/Industrial Park

The office/industrial park on the south side of Caribbean Drive would be sensitive to aesthetic impacts such as a direct view of the SMaRT station. Most of the office buildings located along Caribbean Drive are low, one and two story buildings with few windows. The south facing slopes of the landfill would be a prominent portion of the view to the north but a dense planting of eucalyptus trees helps screen the landfill slopes from view. The landfill completely screens the proposed site and WPCP from view in the office/industrial park.

5. Futures Study

As described in Chapter III.C.3, the City of Sunnyvale is conducting a study referred to as the Futures Study which seeks to address the jobs/housing/ transportation balance within the City. Eleven sites throughout the City have been identified as study parcels in which the current zoning could be changed to meet the goals of the City. It is the intent of the City Council to achieve a more balanced growth pattern by rezoning some or all of the eleven parcels from commercial/industrial uses to various combinations and intensities of residential uses.

One of the target sites (#9) is located immediately south of Highway 237, between Lawrence Expressway, Tasman Drive and Calabazas Creek and is in the vicinity of the SMaRT Station (see Figure IV-22 in Chapter IV.E). This parcel is approximately 125 acres and is currently zoned for industrial uses. Existing land uses are industrial (approximately 111 acres) and commercial (approximately 14) (Report to Mayor and Council, No. 89-675, October 17, 1989). In the Futures Study, this parcel will be studied for its suitability for residential uses.

d. Kirby Canyon Landfill

Non-processible and residual refuse from the SMaRT station would be compacted and transported to the Kirby Canyon Sanitary Landfill for final disposal.

The visual impacts of the Kirby Canyon Landfill were addressed in the Draft Environmental Impact Report prepared for the City of San Jose in July, 1983. A photograph montage shows the landfill site before and with conceptual illustrations of the landfill when closed. The following discussion is summarized from that EIR.

Kirby Canyon Landfill is part of the Diablo Range that extends along the easterly side of the South Santa Clara Valley. The area is comprised of rolling hills, canyons, and grasslands interspersed with woody vegetation in or near drainage courses. The topography of the Kirby Canyon Landfill is moderately steep with westerly sloping hills extending from the ridgeline to Highway 101. Elevations of the landfill area range from 375 MSL to nearly 1,300 MSL.

The Landfill is visible from locations in the Valley extending from the northerly section of Morgan Hill on the south to near Bailey Avenue to the north. The Valley area is currently rural with scattered residences. There are three north-south roadways in the Valley: 1) Monterey Road, 2) Highway 101, and 3) Santa Teresa Boulevard.

Monterey Road is located in the center of the Valley and is a major north-south route. Motorists on the roadway have a distant view of the hills and ridgelines to the east, although the views are blocked in some locations by buildings, trees, and orchards adjacent to the roadway. The lower canyon areas are blocked from view by the hills along the westerly boundary of the landfill.

Highway 101 is located along the easterly edge of the Valley contiguous to the hills. The intervening knolls and the lower elevation of the southbound lanes of U.S. Highway 101 limit the motorists' view of the landfill. Except for a view of the most northerly canyon from the area near Scheller Avenue, only intermittent views of the upper portions of the landfill are visible.

Santa Teresa Boulevard is located along the westerly side of the Valley. The landfill is visible on the distant hillside from Bailey Avenue on the north to the City of Morgan Hill on the south. Portions of the view are obscured in a few areas by trees and orchards.

As noted in the 1983 EIR, the visual impact of the Kirby Canyon landfill includes significantly altering site topography by filling the northerly and southerly canyons and the upper portion of the site connecting them and grading for construction of the access haul roads and the sedimentation basins. Excavations of up to 60 feet, with an average cut of 15 feet, are planned for the removal of clayey soils from the license area.

Landfill operations could extend over an estimated 55 year period and will result in long term visual impacts. At any given time, the total area impacted by the daily operations is expected to range from 10 to 20 acres (Kirby Canyon Landfill EIR, 1983).

The visibility of the operational areas depends on the location. Areas at higher elevations will be more visible than operations in the lower areas of the canyons. The upper portions of the access road and water storage tanks will be permanent features and will have long term visual impacts. The maintenance facility is to be located on the lower portion of the site and may be screened from view.

Kirby Canyon's permitted operating hours are from 7 am to 5 pm, six days per week; nighttime operations are not presently permitted. The buildings, scale house and front gate areas currently have night security lighting.

For Kirby Canyon Landfill to be able to accept the waste from the SMaRT station, the landfill's operating permits must be amended to: 1) change the disposal rate to greater than 1,500 tons/day, 2) change the daily hours of operation to 12 am to 5 pm with the landfill being closed from 5 pm to 12 am, and 3) to have night lighting so that disposal activities can be conducted at night. These changes would change the visual impacts of Kirby Canyon Landfill as presented in the 1983 Draft EIR; these changes are discussed below, under 2.c.

For the landfill to operate from 12 am to 5 pm, the active working area of the landfill would have to be lit. Flood lights with a generator mounted on a portable trailer would be used. The lights are mounted on two arms which move as a unit and which are raised by a boom to a height of approximately 15 feet. The lights are metal-halied and emit 440,000 lumens of light. The trailer would be positioned at the edge of the working face and directed back (eastward) toward the work area. Kirby Canyon landfill currently has one trailer with flood lights for emergency purposes. Once nighttime operations begin it is possible that a second light trailer would be needed. No additional lighting would be required along the access road, by the entrance gate, the scale house or the office area.

e. Existing Views of the Project Site

Views of the project site and surrounding area are shown in the photographs in Figure IV-26, Views 1-8. A text description of how the project would affect the existing view is provided. A map of the photograph locations is provided in Figure IV-25.

2. Impacts

a. Change in Visual Character

The project site would require improvements to accommodate the SMaRT station. These improvements include mass earthwork, excavation of fill material from the landfill, engineered fills and embankment construction, widening Borregas Avenue north of Caribbean, and the construction of a new access road.

The new access road would extend east from the existing intersection of Borregas Avenue and Carl Road. Road construction would require both excavation of existing landfill and earthfill along the northern edge of the central part of the landfill. Borregas Avenue north of Caribbean would be expanded to accommodate the traffic generated by the facility. This would include two additional traffic lanes adjacent to an existing stand of eucalyptus trees. The trees would remain for aesthetic reasons and to provide a safety median strip between opposing traffic lanes entering and exiting the project site. Once modified, Borregas Avenue would be four lanes wide, roughly totalling 100 feet.

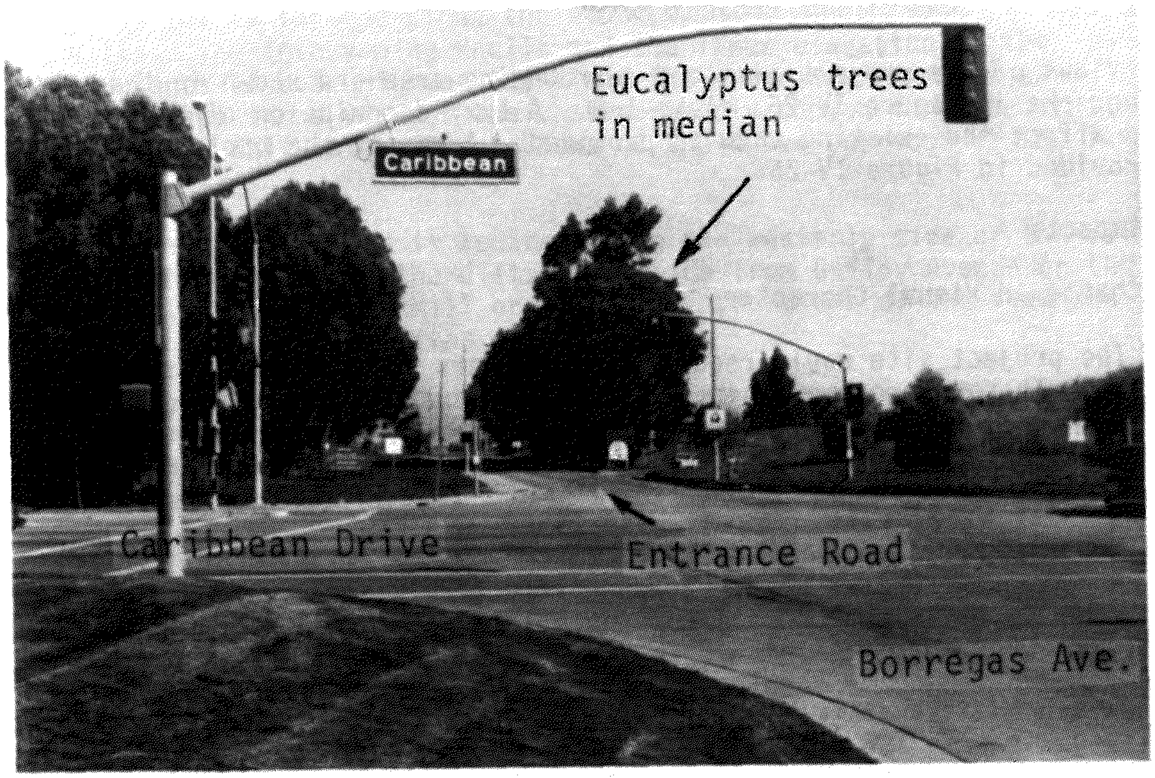
The station building would be 45 feet high at its highest point. The wood/yard waste processing and vehicle maintenance building would be roughly 60 feet apart from the main station and there would be a slab floor connecting the two buildings. Although proposed to be separate, the buildings can be connected with a roof.

All buildings would be steel-framed structures with steel roof panels and siding. Concrete or masonry walls would be used as necessary for support and to provide architectural enhancement of the building exterior.

A parking area for transfer trailers approximately 2 acres in size would be located on top of the east module of the landfill. The lot would be at elevations +40-55 feet NGVD.

The station would operate 24 hours/day, seven days per week. Night lighting would be required throughout the project site, including the entrance gate, the office and station building, the parking areas and the roads. The lighting would be directional so that only on-site areas would be illuminated.

FIGURE IV-26
PROJECT VIEWS: VIEW 1

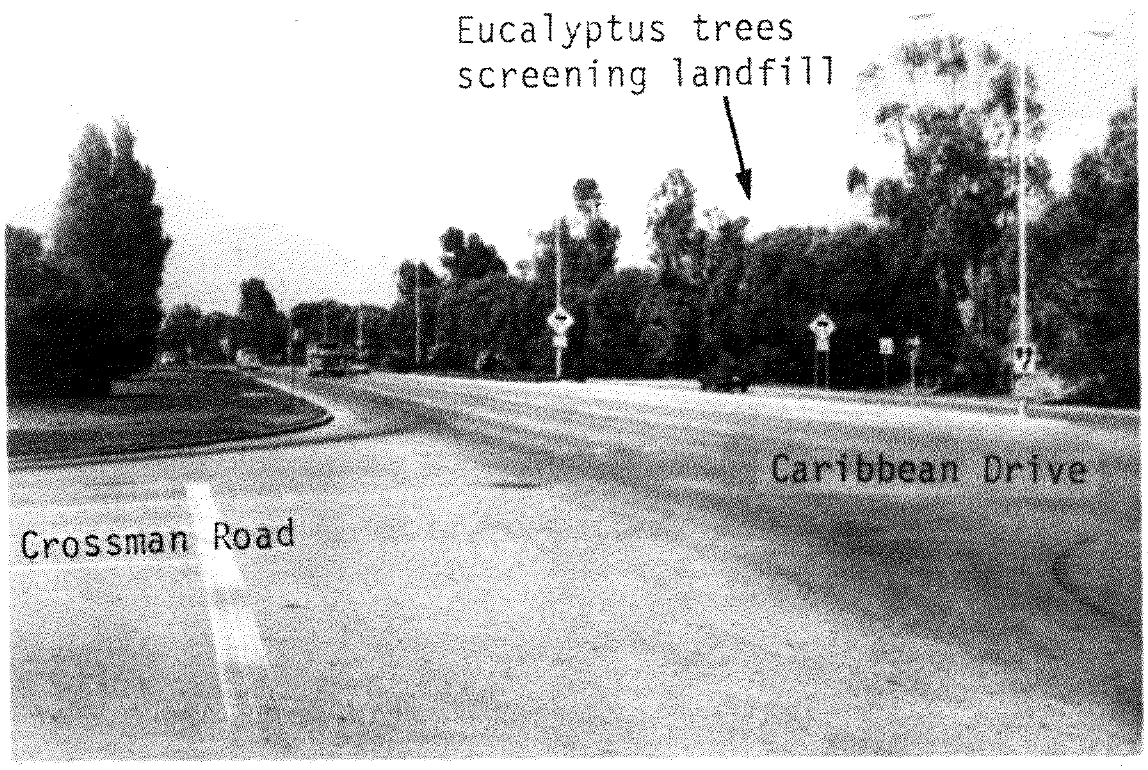


This photograph shows the entrance to the landfill on Caribbean Drive. Caribbean Drive runs east/west and extends off the left and righthand sides of the photograph. Borregas Avenue can be seen in the lower right of the photograph and extends across Caribbean Drive to deadend at the WPCP. Carl Road, the access road to the landfill and the project site, intersects Borregas Avenue just in front of the eucalyptus grove, by the white sign. A portion of the landfill slope can be seen on the right in the photograph. The eucalyptus trees on the left in the photograph are part of a row of trees which screen the landfill from view.

To accommodate project traffic, a new access road would be constructed and this intersection would be widened to four lanes, two inbound and two outbound. The two inbound lanes would be to the right of the eucalyptus trees. These trees would remain for aesthetic reasons and to provide a safety median strip. Road construction would require the excavation of existing landfill and would include the portion of the landfill visible in this photograph. Borregas Avenue is currently approximately 75 feet wide. Once modified, Borregas Avenue would be approximately 100 feet wide. Caribbean Drive and Borregas Avenue south of Caribbean Drive would not be changed.

Although the intersection shown in this photograph would be significantly modified, there would be no visual impact on surrounding land uses.

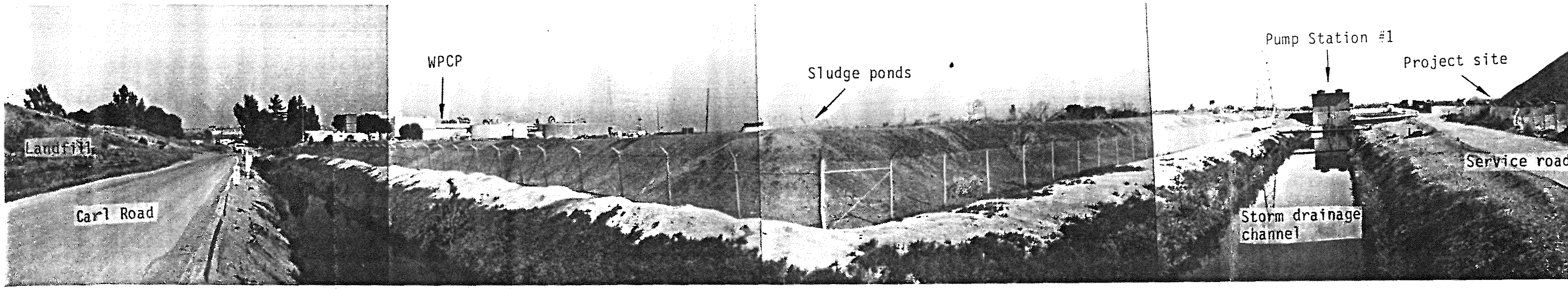
FIGURE IV-26
VIEW 2



This photograph was taken from the southeast corner of Caribbean Drive and Crossman Road and looks west down Caribbean towards the entrance to the landfill.

Landscaping for the office park can be seen on the left in the photograph; the office buildings are just out of the photograph to the left. The screen of eucalyptus trees can be seen along the north side of Caribbean Drive. Behind these trees is the Sunnyvale Landfill.

The project site is west of Crossman Road and north of Caribbean Drive and the landfill. The landfill in this area is approximately +50 feet NGVD; the station building would be 45 feet high at its highest point. Depending on the foundation used, the final elevation of the station building would be 49-53 feet MSL. This would be roughly even with the landfill and because of the angle of view the landfill and eucalyptus trees would screen the project from sight. The view shown in this photograph would not be changed by the proposed project.



This photograph was taken at the southwest corner of the project site and shows the view to the west and north.

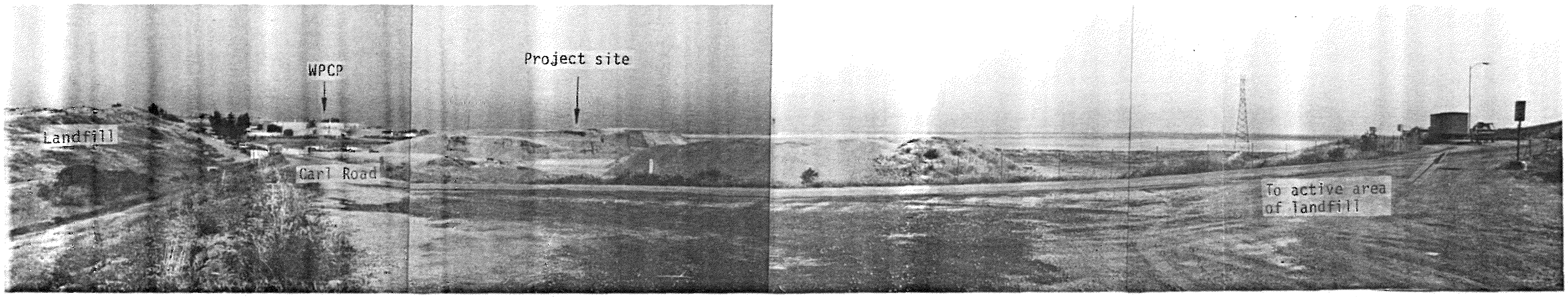
The grove of trees on the far left in the photograph are the eucalyptus trees at the landfill entrance, seen in View 1. The northfacing slope of the middle module of the landfill is also on the far left in the photograph. Carl Road can be seen sandwiched between the landfill and the storm drainage channel. The western module of the landfill can be seen in the distance between the two groves of trees.

The drainage channel which borders the western and northern boundary of the project site is in the central portion of the picture. The photograph was taken at the point where the channel turns to the north and borders the western side of the project site. The WPCP facilities and sludge ponds are in the center of the picture. The berms for the sludge ponds are essentially unvegetated, as can be seen in the photograph. The western boundary of the project site is to the right of the service road and is marked by the chain-link fence. The service road between the drainage channel and site deadends at levees north of the site. A stockpile of recycled asphalt/concrete material approximately 30 feet high is visible on the project site. This material will be removed from the site in the coming months.

Development of the SMaRT station would require the excavation of a portion of landfill shown in the picture and the realignment of Carl Road. The landfill opposite the sludge lagoons would be excavated approximately 60-70 feet southward from the current alignment of Carl Road to provide adequate area for the gatehouse, scales and 6 lanes of traffic.

The drainage channel would not be impacted by the station development.

FIGURE IV-26
VIEW 4



This picture was taken from a bend in Carl Road and shows the road as it climbs up the slope of the landfill to the current working area. The photograph looks northwest. The shore and hills of the East Bay are visible in the distance.

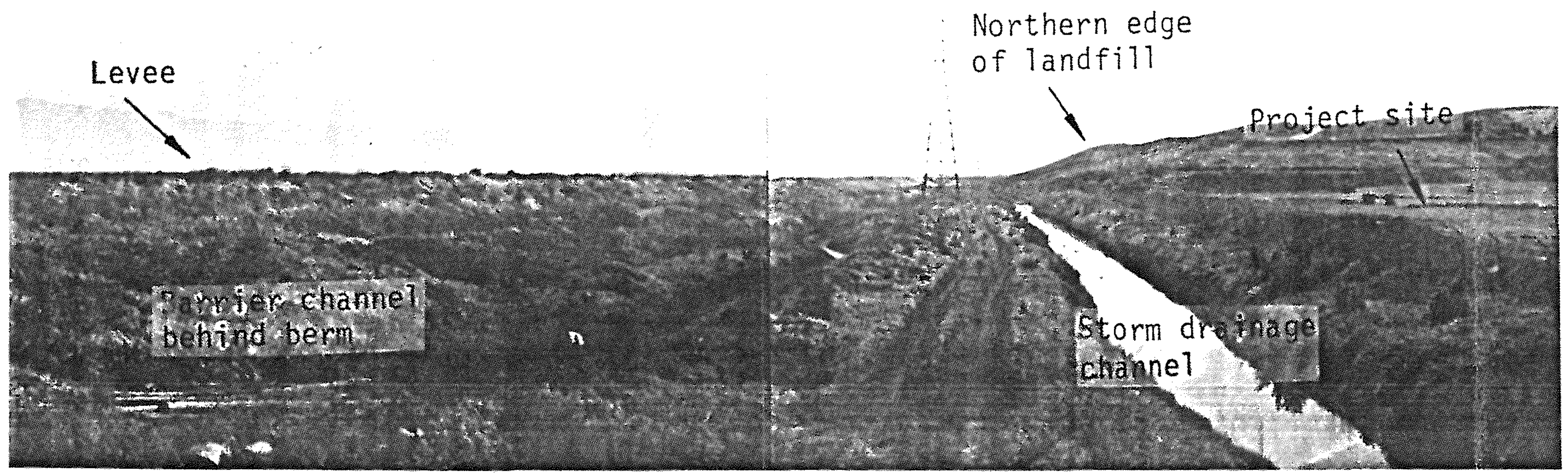
The central module of the landfill is visible on the left in the photograph. The tops of the eucalyptus trees planted along Caribbean Drive can be seen over the top of the landfill in the far left of the photograph. The entire project site is visible in the center of the picture. The piles of recycled concrete material which can be seen on the site will be removed in the near future.

Development of the SMaRT station would require the excavation of approximately 20,000 cubic yards of waste from the central and eastern modules of the landfill and the placement of engineered fill. The engineered fill would raise the elevation of the area from approximately +3 feet NGVD to +4 or +9 feet NGVD depending on the type of foundation selected. Gas collection pipes which are part of the landfill's gas collection system would have to be relocated. The relocation process would involve the installation of new pipe and fittings and the removal of the old pipe.

Excavation of the landfill would require the removal of a good portion of the landfill shown in the photograph. The northfacing slope of the landfill shown on the left would be excavated a maximum of approximately 70 feet back from its present location. This would allow room for the six lanes of traffic, the gatehouse and scales. Excavation of the eastern portion of the landfill would come within 20 feet of where this photograph was taken. Once excavation has finished, the landfill slopes would be regraded, covered and vegetated.

From this view, there would be no adverse visual impact from the SMaRT station until the landfill becomes part of the Baylands Park. Once the landfill becomes parkland, recreationalists in this portion of the park would have a direct view of the entire project site.

FIGURE IV-26
VIEW 5



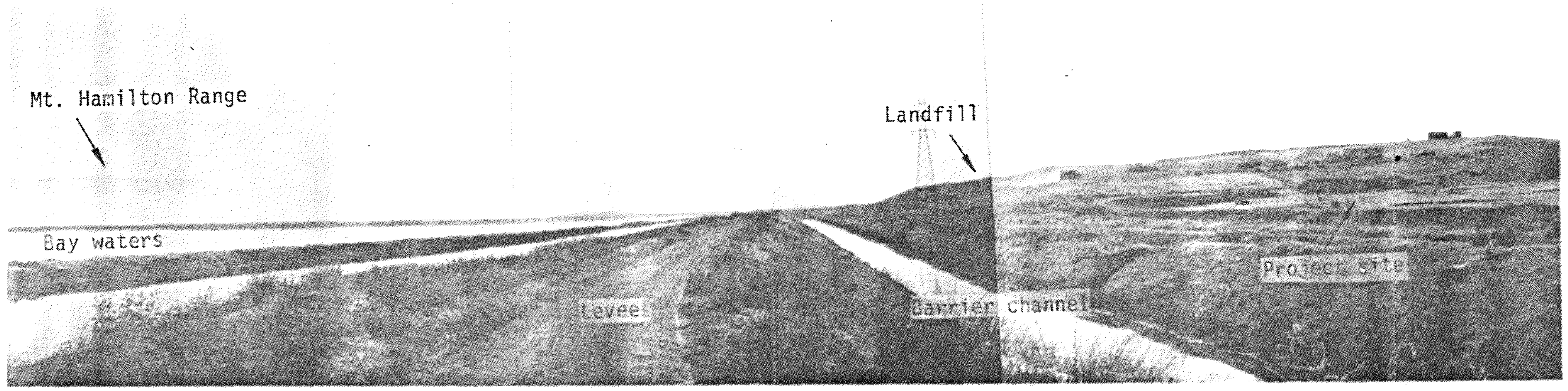
This photograph was taken north of the project site, from the service road shown in View 3. The photograph shows the northern boundary of the project site and the view to the east, towards the southern end of San Francisco Bay.

The northern boundary of the project site is marked by the chain-link fence. Behind the site is the eastern module of the landfill. The drainage channel which runs along the western and northern edges of the project site (also shown in View 3) is clearly visible. To the left of the drainage channel are two barrier channels and to the left of them is a levee. The levee is approximately 250 feet from the site boundary. A PG&E transmission line parallels the northern side of the project site.

The northern boundary of the project is marked by the existing fence; the drainage channel would not be disturbed. Any SMaRT station activities conducted on the northern side of the building would be visible from this location. In particular, traffic movement would be highly visible. The trailer staging area on top of the landfill (elevation +40-50 feet NGVD), may be visible in the distance.

The project would have a significant impact on recreationalists using the levees. A screening fence would be erected and trees would be planted along the northern side of the project to reduce the visibility of project activities.

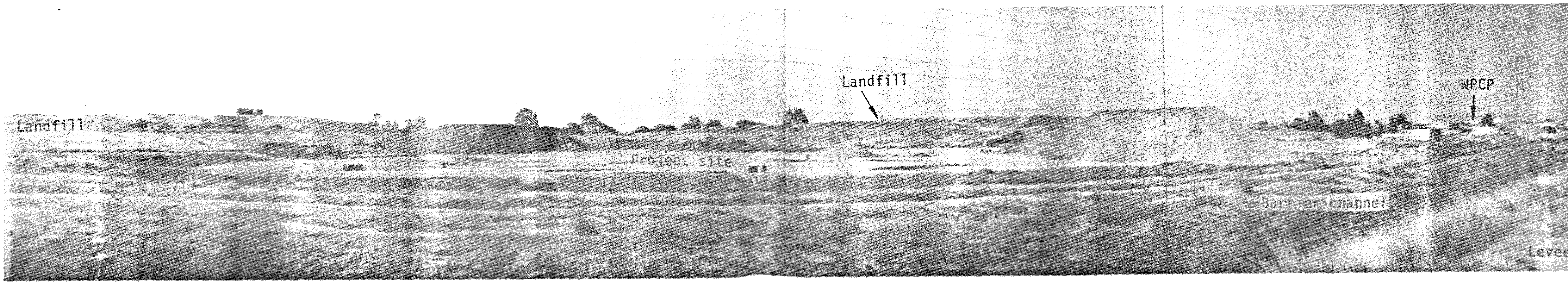
FIGURE IV-26
VIEW 6



This picture was taken from the levee approximately 250 feet north of the project site and looks east towards the southern end of San Francisco Bay. View 6 shows the same features as View 5 but was taken further north.

The same features are visible in View 6 as are visible in View 5 except the drainage channel is hidden behind the berms for the barrier channels. The second barrier channel, which had water in it at the time the photograph was taken, is visible to the right of the levee. This portion of the levee is part of the proposed alignment of the Bay Trail and may also be part of a local running trail. A salt evaporation pond (Bay waters) is to the left of the levee.

The entire construction process and the northern portions of the project would be visible from the levee and would have a significant impact on recreationalists. The access road and trailer staging area located on the top of the landfill may also be visible. To help screen project activities from view, a natural colored screening fence would be erected along the northern boundary of the project site. In addition, trees would be planted north of the fence to provide additional screening



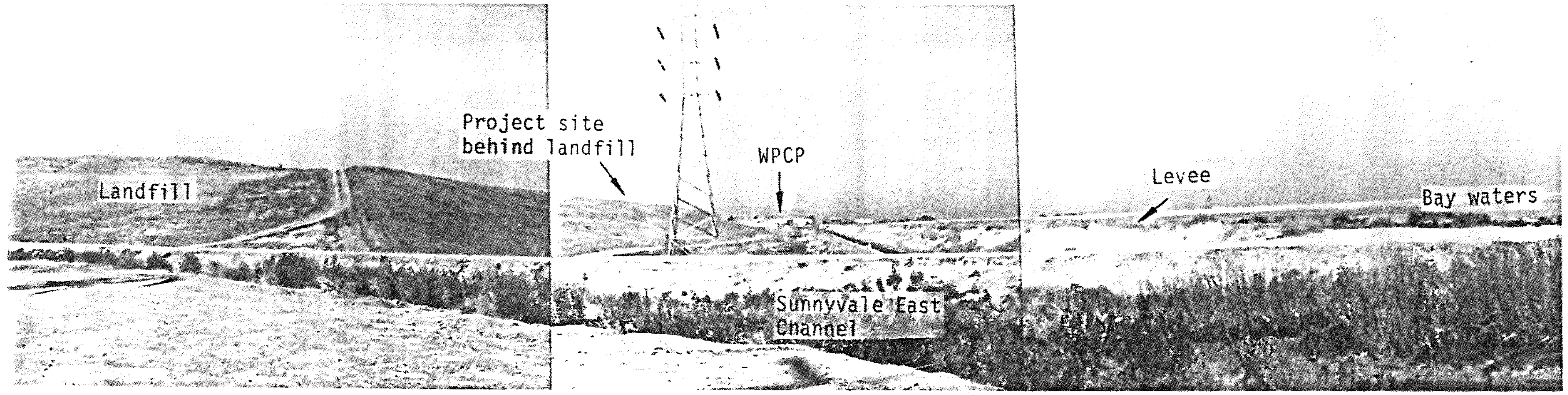
View 7 was taken from the levee approximately 250 feet north of the project site and shows the entire site as seen from the levee.

The active module of the landfill is shown on the left in the photograph and the WPCP is shown on the right. The piles of recycled concrete material seen on the project site will be moved off site in the coming months.

The station building would be 45 feet high, almost 400 feet long and would be metal sided. The portions of the project which would be most visible from the levees are the perimeter roadway, staff parking lot, trailer staging and loading area and the bins for woodchips. The eastern module of the landfill on the left in the photograph would be excavated approximately 50 feet back from its present location. The middle portion of the landfill in the background of the photograph would be excavated approximately 60-70 feet back from its present location. After excavation, the landfill slopes would be regraded, recapped and revegetated.

The project would have a negative impact on recreationalists using the portion of the levee opposite the project site. The station would operate 24 hours per day and would be particularly intrusive in the early morning and dusk hours when ambient conditions are generally quiet. A screening fence would be erected and trees planted to block views of ground level activity on the project site.

FIGURE IV-26
VIEW 8



This photograph was taken from the eastern bank of the Sunnyvale East Channel and looks west. The project site is approximately 0.4 mile west of the photograph location.

The Twin Creeks Softball facility is behind and to the left of the photograph location. Visible in the picture is the eastern module of the landfill, PG&E transmission towers and one of the barrier channels. The levee, shown in Views 5 and 6, enters the picture on the right. Beyond the levee are salt evaporation ponds (bay waters). The project site is behind the landfill and is not visible in the photograph. Tanks associated with the WPCP are clearly visible in the distance.

The station building would be placed approximately 60 feet south of the site boundary (shown in View 5) and may not be visible from this location. If any of the station were visible it would be the northern corner of the station building and traffic on the perimeter roadway.

The parking lot on top of the landfill would be visible from Twin Creeks softball facility. While the parking lot would not have a significant impact on users of the ball field, the visual impacts of the parking lot on are not easily mitigated as fencing would have its own visual impacts and the type of vegetation which could be planted on the landfill may not be tall enough to block trailers from view.

A fence would be erected and trees would be planted along the northern boundary of the project site to provide screening. Additional landscaping would be required in accordance with the station's solid waste facilities permit and in accordance with the City of Sunnyvale's regulations. A landscape plan has not been developed yet.

Figure IV-27 is a computer-generated conceptual presentation of the completed project as seen from the gate house and scale area. Figure IV-28 is a conceptual view of the SMaRT station as seen from the top of the southern portion of the landfill.

b. Impacts on Sensitive Receptors

1. Twin Creeks Softball Facility

The height of the proposed SMaRT station building is 45 feet. The height of the east module of the landfill is currently 54 feet at the highest point and is permitted to reach 127 feet (Sunnyvale Landfill Conceptual Closure Plan). The landfill would completely screen the station from land uses to the east and thus would not be visible from the Twin Creeks softball facility.

The parking area located on top of the landfill would be visible from Twin Creeks but would not have a significant visual impact on the users of the softball facility.

2. Sunnyvale Baylands Park

The primary parcel of the Sunnyvale Baylands Park is approximately 0.58 miles from the project site. The transfer station building would not be visible from the Baylands Park as the east module of the landfill blocks all view of the proposed site. However, parking areas for the SMaRT station include one lot east of the station building, on top of the landfill. The lot would be between elevations +40-55 feet NGVD, and would provide parking for transfer trailers. The parking area would occupy approximately 2 acres and may be visible from various areas of the park.

The end use plan for the landfill calls for the landfill to be incorporated into Sunnyvale Baylands Park upon its closure. Recreationalists using this portion of the park would look directly down upon the entire project site (see Figure IV-28). All outside activities conducted near the eastern and southern portions of the site would be visible. In addition, it may be possible to look between the two buildings and see into the station building from the open east side. The parking area proposed for the top of the landfill would reduce the area available for recreation and would impact recreationalists. The end use plan for the landfill must be changed to reflect the location of this parking lot.

Figure IV-29, illustrates various features of the project as seen from a specific view. Section D-D illustrates a north/south sectional view with the levees north of the project shown on the left and the southern part of the landfill shown on the right. Section E-E illustrates an west/east sectional view with the existing sludge ponds shown on the left and the eastern part of the landfill shown on the right.

Highway 237, immediately east of the park site, is scheduled for expansion. This expansion and upgrade of the highway requires that a noise

FIGURE IV-27
CONCEPTUAL VIEW OF SMaRT STATION FROM ENTRANCE

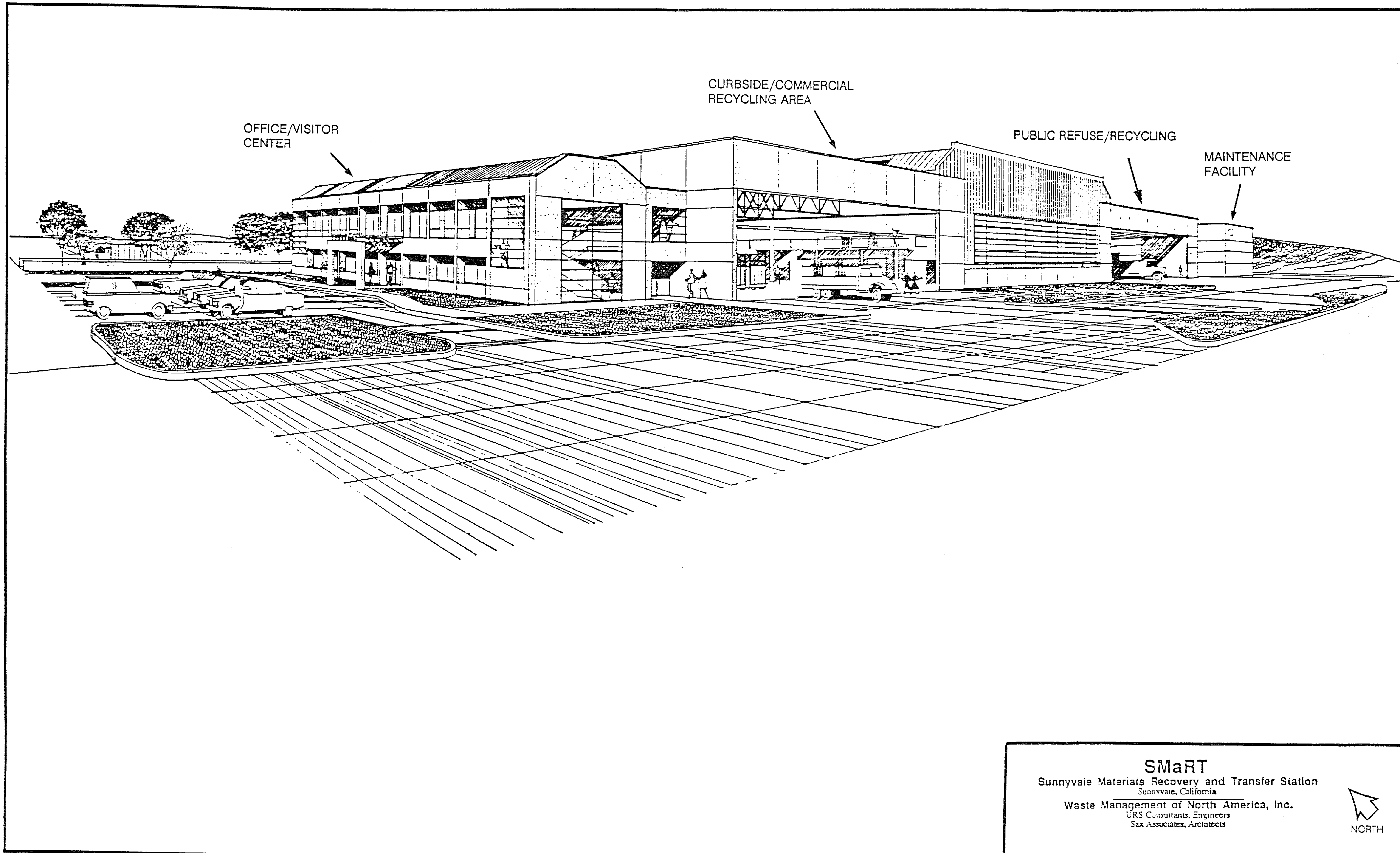


FIGURE IV-28
CONCEPTUAL VIEW OF THE SMaRT STATION FROM THE LANDFILL

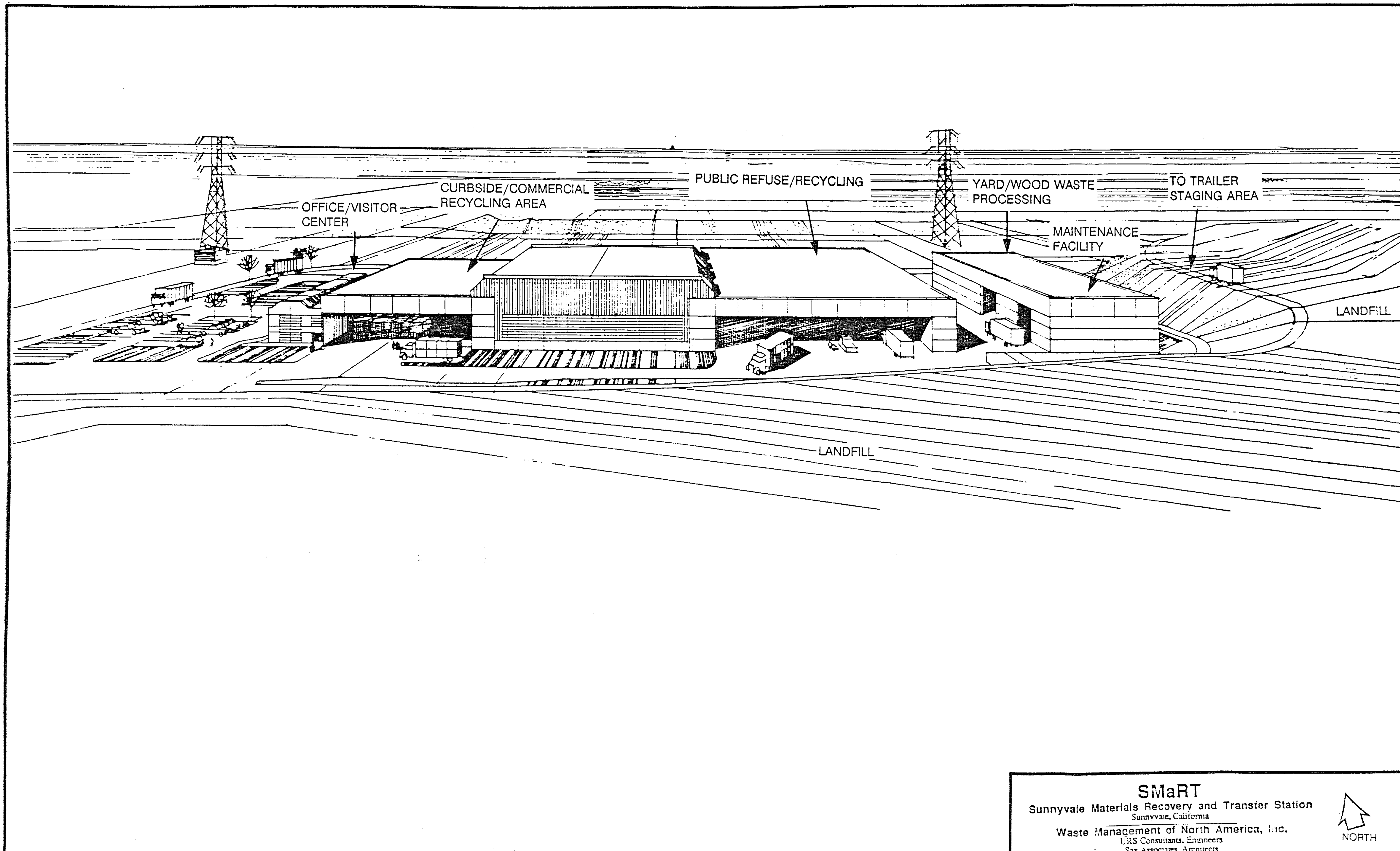
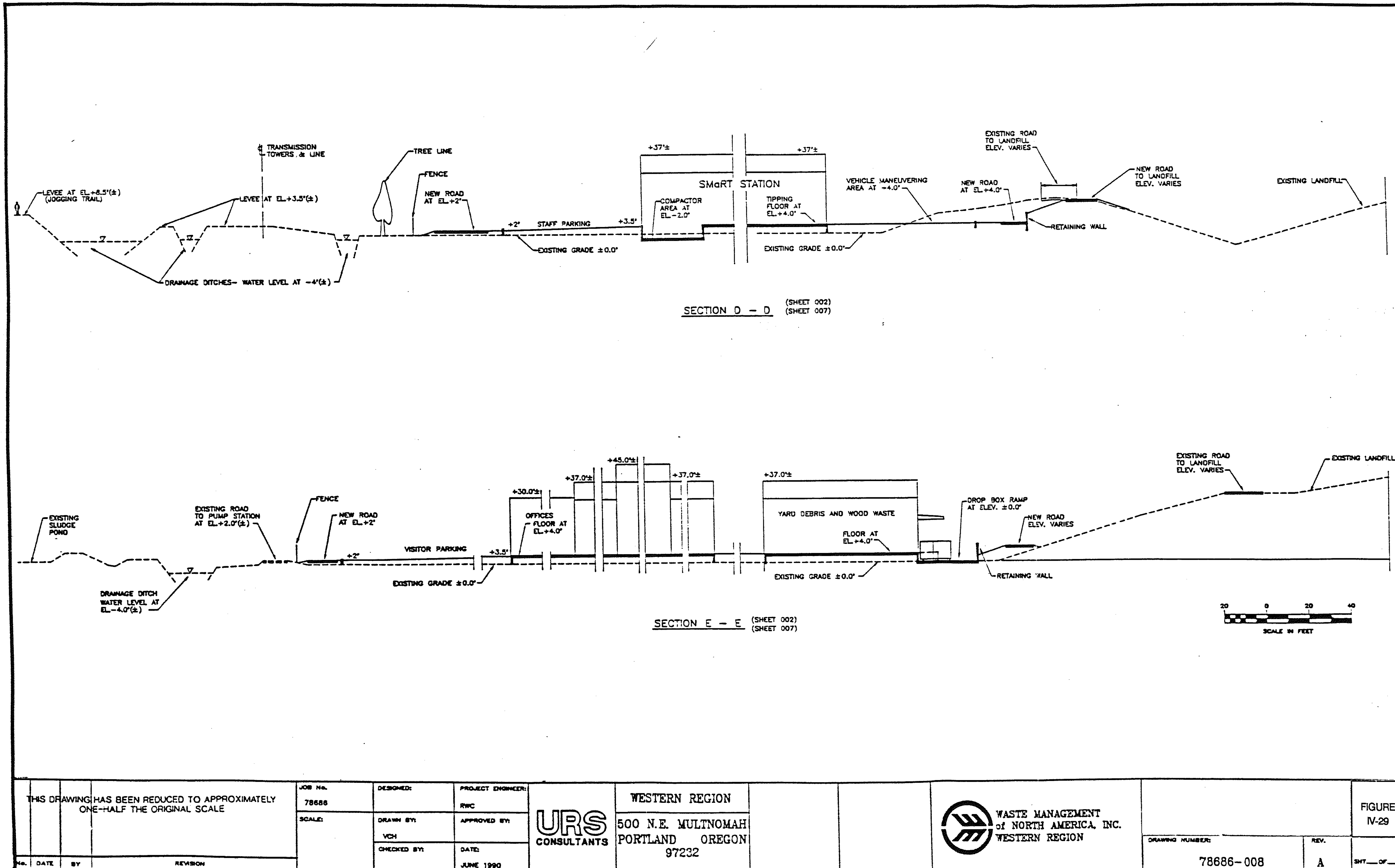


FIGURE IV-29
CROSS SECTIONAL VIEWS OF PROJECT SITE



attenuation feature be provided by CalTrans and the County Traffic Authority to reduce the visual and noise impacts from heavy traffic. As presently conceived, the soundwall would abut the southern and eastern portions of the park. The portion of the wall along the developed part of the park would be 16 feet in height while the portion paralleling the Seasonal Wetland would be 8 feet high (Baylands Park, Program/Schematic Plan Phase, City of Sunnyvale, October 1989). This wall would help screen project related traffic from park visitors.

3. Levees North of Project Site

The project would have a significant impact on recreationalists using the levees north of the project site. Whether the recreationalists were following the Bay Trail, running on a local jogging course or exploring on their own, they would experience significant visual impacts from both the construction and operation of the station. It is expected that the development of the Baylands Park and the Bay Trail will increase the number of users of the levees and thus increase the number of people impacted by the proposed project.

Adverse impacts from construction would be caused by earthwork, the excavation of 20,000 cubic yards of refuse in the landfill, and the construction of the station. The long-term significant impacts from the operation of the station include the physical presence of the station near recreational areas, 24-hour activity at the site and night lighting. The portions of the project which would be most visible from the levees are the perimeter roadway, staff parking lot, trailer staging and loading area and the bins for woodchips. In addition, it may be possible to look in between the two buildings and to look into the station building through the open east side. The parking area on top of the landfill may also be visible from the levees.

The station would operate 24-hours a day, seven days a week. It would not be feasible to reduce the station's operating hours and still maintain the desired throughput. With the station operating 24-hours per day, it would be impossible for recreationalists to avoid activity at the station. In particular, early morning recreationalists using the levees would be significantly impacted as the ambient noise and activity level in the early morning hours is generally considered to be lower than later in the day, and the operation of the facility would be more intrusive.

To help reduce the visual impacts of the SMaRT station a screening fence would be constructed along the northern boundary of the site. The fence should be tall enough to screen ground level activities and trucks from view and should be a natural color. Fencing material could be chainlink with slatted screening. North of the fence, trees would be planted to provide additional screening.

Figure IV-29, Section D-D provides a cross sectional view of what a person standing on the levee in a specific location would see as they looked at the project. The screening trees and fence would be closest, with the upper portions of the station building visible above them. The trees and fence would most likely screen views of the perimeter road and the staff parking lot. The station building would block views of the gate house, scale, roadway system and other project features on the south side of the site.

While the aesthetic impacts of the project are considered significant, the impacts of other permanent, surrounding land uses are also significant. Highway 237, the WPCP, Lockheed and Moffett Naval Air Base are all existing land uses which are concentrated along the Bay's edge and which have adverse aesthetic impacts on recreationalists. The project would create additional aesthetic impacts in an area already impacted.

4. Office/Industrial Park

The SMaRT station building would be 45 feet tall at its highest point and would have a final elevation of +49 or +54 MSL depending on the final grade of the site. The southern part of the landfill is approximately 50 feet high. Because of the distance from the project site and the angle of view, the SMaRT station would not be visible from the office park. It may be possible to glimpse a portion of the project through a break in the landfill modules. The viewer would have to be east of the project site on Caribbean Drive and be looking northwest through a dip in topography created by two separate modules of the landfill.

The parking area located on top of the landfill would be visible from some of the office buildings at the eastern end of Caribbean Drive. Because of the elevation, it is likely that only the tops of the transfer trailers would be visible. The office workers along Caribbean Drive already have views of several parking lots including those associated with their buildings and the large lot for the Twin Creeks Softball facility. Thus, the trailer lot on top of the landfill is not expected to create a significant visual impact.

5. Futures Study

Study parcel #9 is approximately one mile southeast of the project site. The SMaRT station would not be visible from this location and operation of the station should not impact this parcel.

c. Kirby Canyon

If Kirby Canyon receives waste from the proposed SMaRT station, the visual impacts of the landfill would be changed from those discussed in the Draft EIR prepared for the City of San Jose in July, 1983.

Kirby Canyon Landfill has a refuse capacity of approximately 26 million tons (40,000 cubic yards) and an estimated service life of 55 years based upon a disposal rate of 1,500 tons per day. As discussed in Chapter II, the SMaRT station operation would require an amendment to the landfill permits to allow more than 1500 tons per day to be accepted there.

An increase in the fill rate would increase the speed in which the five different Fill Areas reached capacity and would reduce the overall service life of the landfill. With an increase in the rate of fill and a reduction in the service life of the landfill, there would also be a reduction in the time which adverse visual impacts from landfill activities occurred.

The lighting required to operate the landfill at night to handle SMaRT station refuse would be visible from areas of the various fill modules. Currently there is no other light source in the hills in the vicinity of the landfill. Highway 101 does not have lighting, although the interchanges are brightly lit. The working area of the landfill would appear as a bright spot on an otherwise dark hillside. As the working area of the landfill moved from one cell to another over the life of the landfill, the lights would have a varying degree of visibility depending on the elevation and screening topography of that particular cell.

To reduce the visual impacts of night lighting, a berm should be built along the edge of the working face to screen direct light from shining down on Highway 101 and other areas of the Valley. The height of the berm should be determined by landfill staff and would depend on the location and elevation of the working area. If natural features screen the working area from view then working behind a berm would not be necessary. Also, the trailers with the flood lights should be positioned so that lighting is directed east and toward the active working area and away from development to the west.

With the above mitigation, night lighting would not create a significant visual impact. No landfilling activity would occur between 5 pm and 12 am, and the flood lights would be turned off. These hours comprise the heaviest commute time and the period in which people would most likely be outdoors. It is expected that few people would be regularly and significantly impacted by lighting during the hours of 12 am to dawn.

d. Amended Service Area

The aesthetic impacts result from construction and operation of the SMaRT station and an extension of the landfill hours required to process the SMaRT station refuse. Adding the Amended Service Area to the waste stream would not require a change in the SMaRT station design or operations or change in proposed landfill operations.

If the project were to include the Amended Service Area as described in Chapter II, Project Description, there would be no change in the project's aesthetic impacts.

3. Mitigation Measures

a. SMaRT Station

The proposed project would have significant visual impacts on recreationalists using levees to the north of the project site. There is no mitigation which would reduce the visual impact to insignificance. However, the visual impact of the project would be reduced by the construction of a fence and the planting of trees along the northern boundary of the site. The fence would be a natural color so as to blend with the surrounding baylands.

b. Kirby Canyon Landfill

The visual impacts of Kirby Canyon would be increased by night lighting required as a result of accepting the SMaRT station waste. Mitigation measures would reduce the impact of night lighting to insignificance.

1. Landfilling at the working face should be done behind a berm to eliminate direct light from reaching Highway 101 and the Valley beyond. The height of the berm should be determined by landfill staff and would depend on the location and elevation of the working area.

2. During the hours when the landfill is closed, from 5 pm to 12 am, the lights at the working face must be turned off.

3. The flood lights should be directed toward the working area and away from developed areas.

I. NUISANCE

Nuisance issues include factors which impact the aesthetic environment as well as the public health and safety. Whenever refuse is handled, there is a concern for dust generation, litter, odor, fire hazard, and the attraction of birds and vectors (such as flies and rodents). Nuisance issues associated with the SMaRT Station project with use of the Kirby Canyon Landfill also include light and glare, noise and unsightliness. Noise and visual impacts are discussed in sections IV.E. and IV.H.

1. Setting

Current land uses surrounding the proposed project site are industrial and recreational. Immediately adjacent to the site on the west is the Sunnyvale Water Pollution Control Plant. To the east and south is the Sunnyvale landfill, which has been proposed as a future park area. To the north lies the San Francisco Bay and salt evaporation ponds owned by the Leslie Salt Company.

Levees between the project site and the Bay are used by recreationalists on a regular basis. Sunnyvale Baylands Park, including Twin Creeks Softball Park, lies just east of the current landfill area. Industrial/office areas are located to the south and west of the project site. The Sunnyvale Landfill acts as a buffer between the project site and the Sunnyvale Baylands Park and the industrial/office area.

a. Existing Nuisance Environment

The Sunnyvale Landfill presents nuisance issues similar to those that may be a result of SMaRT station operations. Impacts such as litter, odor and vector problems related to refuse disposal at the landfill may be significant if operational controls are not implemented. These factors will be negligible once the Sunnyvale Landfill closes.

Traffic, noise, odor and night lighting are currently generated by surrounding industrial and recreational areas. The night lighting at Twin Creeks Softball Park to the east of the landfill is extremely bright, and creates a significant impact on the surrounding areas. The Water Pollution Control Plant operates 24 hours per day, generating noise and contributing to night light and glare in the area. In addition, the WPCP wastewater treatment facilities include two sludge ponds which are intermittent sources of unpleasant odor in the immediate vicinity.

b. Sensitive Receptors - Land Uses

As noted above, land uses immediately adjacent to the project are primarily industrial. Nearby land uses which are potentially sensitive to project nuisance are the:

- o Office/industrial park;
- o Sunnyvale Baylands Park;
- o Twin Creeks Softball Facility;
- o Levees north of site; and the
- o Sunnyvale Landfill when it becomes park.

The distances to these receptors from the project site are described in Chapter IV.H., Aesthetics.

2. Impacts

The SMaRT station would operate under a solid waste facility permit issued by the Santa Clara County Environmental Health Services Department as the Local Enforcement Agency (LEA). The solid waste facility permit would specify operating procedures designed to reduce nuisance problems (see Chapter III).

The station would be required to keep all waste handling operations inside the transfer building, implement a regular litter control program, clean the station floor and equipment on a regular basis, and install directional lighting.

The LEA would also be responsible for enforcing State, regional and local regulations regarding solid waste handling, and for regularly inspecting the SMaRT station. Under the new Assembly Bill 939, the LEA is required to inspect each waste handling facility within its jurisdiction at least once each month (see Chapter III.B.1.).

a. Litter

Without controls paper and debris from the project could have a significant aesthetic impact. Sources of litter are vehicles en route to the site, transfer station operations, and transfer and resource recovery vehicles leaving the site.

Both the franchise vehicles which would bring refuse to the station and the transfer trucks which would remove compacted refuse to the Kirby Canyon Landfill are designed to completely enclose refuse. Some paper and debris could drop from these trucks, but because the debris would be covered, the total amount of litter escaping would be negligible.

Most litter would come from private vehicles transporting uncovered or improperly covered loads of refuse. The amount of litter would depend on the number of private autos visiting the SMaRT station. Not every auto trip will produce litter, but some portion of these vehicles can be expected to have uncovered or improperly covered loads. The litter would primarily affect the streets in close proximity to the project, such as Borregas Avenue, Caribbean Drive, and Mathilda Avenue. These streets are currently used by landfill traffic approaching the Sunnyvale landfill.

The California Vehicle Code (Section 23114 and Section 23115) addresses safe and clean transportation of materials and refuse along public highways, with enforcement by the California Highway Patrol. The extent of littering which occurs from improperly covered or contained loads will be a function of enforcement by government authorities outside the direct control of the SMaRT Station.

b. Vectors

A vector is any animal which is capable to transferring pathogenic micro-organisms (disease) from one host to another. Vectors common to refuse facilities and landfills are flies, rats and yellow jackets.

A fly problem could occur at the proposed SMaRT station if pupae arrive in the refuse and hatch in the station. This is unlikely as larvae leave their food material and burrow into loose soil before pupating, hence reducing the chance of pupae arriving in a load of garbage. If pupae do arrive at the transfer station, and survive the refuse handling process unharmed, it is improbable they would hatch while in the station. Since it takes between four to seventeen days for an adult fly to develop from a pupae, and the residence time of refuse in the station is a maximum of 48 hours, it is unlikely that a substantial number of flies would hatch while at the station.

Rats and mice are unlikely to reach the transfer station in the transported waste. The few rodents reaching the transfer station alive would not likely survive the movement of refuse on the station floor. No rodent would survive the compaction process.

It is improbable that yellow jackets would be numerous at the transfer station. The total enclosure of the garbage would be the major deterrent, but the mixing of the waste and the general activity on the station floor would also deter yellow jackets from frequenting the garbage on the station floor.

c. Odor

The odor associated with municipal solid waste is mainly from the decay of organic materials within the refuse. The proposed project would be handling a variety of organic materials which would have the potential to become odorous. The characteristic odor of refuse would be apparent within the transfer building itself and immediately downwind of the door openings outside the building.

The potential for odor buildup is greatest in hot weather which speeds bacterial decomposition of waste high in organic matter. The warm weather effect is somewhat counteracted by the fact that warm weather coincides with the dry season. Bacterial action is favored by moisture as well as heat. As hot weather periods are associated with dry periods, the moisture content of loads would be reduced, reducing the rate of decomposition.

The project site is adjacent to industrial uses and there are currently no sensitive receptors to odor immediately down wind from the project. When the landfill is turned into a park, some park users may be affected by station odor. Under most conditions, odors from the proposed SMaRT station would dissipate before reaching the nearest downwind receptors. On the other hand, odor could present a problem during warm weather if the facility does not have an active odor control program, or if it retains waste for long periods of time. With an efficient odor control program, such as regular cleaning of the station floor and servicing loads with a high concentration of organic material first, odor is not expected to be detectable beyond the facility boundaries. Odors from wastes being transported to and from the station would quickly dissipate and are not expected to have detectable effects.

The California Waste Management Board has established a maximum residence time of 48 hours for waste held in transfer stations. Limiting the time waste spends in the transfer station reduces the amount of decomposition of organic materials which takes place in the station building and thus reduces the amount of odorous gasses emitted by the decomposition process. Adopting a residence time shorter than 48 hours could reduce the odor producing potential of waste even further. The City of Sunnyvale has proposed a 24-hour residence period in the contract with WMNA.

d. Light and Glare

The SMaRT Station would be lit at night as it would be operating 24 hours per day. The areas which would require lighting include the scale and gatehouse, the roadway, and the perimeter of the station building, as well as the interior of the building. The lighting would be cast downward, and would not impact surrounding land uses. This additional lighting would be insignificant with respect to the current light and glare from the Twin Creeks Softball facility and the WPCP.

e. Dust

Particulate emissions (dust) can cause dirt accumulation inside nearby structures, damage agricultural crops by coating the leaves, and aggravate certain medical conditions. Dust generated by load transfers, shredding and other processing activities at the SMaRT station would be mainly limited to the interior of the building. Localized dust control systems in areas of maximum dust generation, such as the wood waste shredder, would include equipment enclosures, exhaust ducting, and use of dust removal equipment such as cyclone separators and baghouses. The station safety officer would designate work areas in which dust masks are required.

Site preparation for the SMaRT Station requires mass earthwork excavations. Dust generated by construction during dry weather would be controlled by regular surface waterings. Water would be supplied by an onsite water truck as proposed in the project plan. As noted in Section IV.F. (Air Quality), the amount of construction dust would be significant even with dust suppression measures.

f. Birds

Landfills are known to attract large numbers of certain types of scavenging birds such as seagulls, blackbirds and starlings. Birds congregating in the vicinity of the SMaRT station could create a nuisance on the grounds, and present a hazard to low flying aircraft from Moffett Naval Air Field located 2 miles east of the project site.

The proposed SMaRT station would not present an attractive foraging area to birds because refuse operations would be completely enclosed and refuse would be removed from the site daily. The SMaRT station would also serve Palo Alto and Mountain View. Once the Sunnyvale and Palo Alto Landfills are closed, the large number of scavenging birds should disperse, reducing the bird strike hazard to Navy planes operating out of Moffett Field.

g. Fire Hazard

Large volumes of combustibles within refuse can create a fire hazard. The chance of a fire igniting can be reduced by checking loads for combustible or explosive materials, controlling litter and debris around the site, and properly maintaining equipment. These measures are included in the proposed station operations.

In the event of a fire, potable water would be available from lines connecting the SMaRT station to existing City water mains. Water lines would have a minimum flow capacity of 2500 gallons per minute in accordance with fire protection requirements. The station would be equipped with a 2200-foot ductile iron pipe loop with fire hydrants located at 400-foot intervals. In addition, hose cabinets would be provided to ensure quick control of a sudden fire. A tested emergency response plan that has been approved by the City of Sunnyvale would be implemented at the facility.

Because refuse contamination in the Sunnyvale Landfill soil may create a corrosive environment, water mains would be polyethylene encased. In addition, all valve boxes and service meter vaults would be adequately sealed to prevent intrusion of landfill gas and reduce fire hazard.

h. Kirby Canyon Landfill

In order to accommodate an increased wastestream to the Kirby Canyon Landfill, WMNA has applied for a change in the landfill permit which would allow operation between the hours of 12am and 5pm. The landfill would be closed during the evening hours of 5pm to 12am. Flood lights mounted on a portable trailer and raised by a boom to a height of approximately 15 feet would be used to light the active working area. The trailer would be positioned at the edge of the working face and directed back (eastward) toward the work area.

A berm at the working face is proposed in order to reduce glare in offsite, downhill areas. Although persons across the valley from the Kirby Canyon Landfill may notice lighting at the landfill, the immediate vicinity of the landfill is undeveloped, so there are no receptors which would be significantly affected by landfill light and glare. If night lighting is controlled by the suggested measures it would not create a significant impact.

3. Mitigation

The mitigation measures suggested below are to ensure that the SMaRT station does not develop significant nuisance problems.

a. Litter

Collector and transfer trucks must always be closed or covered. As these trucks would be transporting the bulk of the station's waste, it is important that they provide effective litter control.

Cooperation should be sought with local police and the California Highway Patrol to increase enforcement of the California Vehicle Code, particularly along access roads leading to the transfer station. As the public becomes aware that they will be held responsible for properly covering loads of rubbish they are transporting, they will be more inclined to do so. As a second means of enforcement, vehicles with uncovered loads could be turned away by the station, although this may in turn encourage illegal dumping. It may be preferable for the station to accept the waste, but to assess a "litter pick-up" fee for improperly covered loads.

To minimize the amount of litter which could be blown outside the transfer building, the station floor should be regularly swept to collect debris which has become separated from the main working area. The site should be fenced to contain any wind-blown litter. Onsite streets and Caribbean Drive should be checked regularly to assure that litter does not accumulate. These measures are planned as part of the project.

b. Vectors

Under California law the LEA would require design, operational, and maintenance procedures to control vectors. The measures would significantly reduce the potential for vector problems to develop. Compliance with the State Minimum Standards for Solid Waste Handling and Disposal and with the LEA's requirements would mitigate potential vector impacts.

Design features may be required by the LEA to rodent proof the transfer building using approved materials. This could prevent rodents from either escaping from the building or from entering the building from the outside. In this way rodents that survive the waste handling process would not be able to escape from the station. These animals would be disposed of by station personnel.

Examples of design features which may be used to control flying vectors are screening on large air vents and an air curtain of sufficient strength. Air curtains are jets of air in door ways which act as barriers to flying insects. Air curtains are frequently used by establishments which handle or process food to ensure that flies are kept out of buildings. This measure would only be necessary if required by the LEA to enforce compliance with the State Minimum Standards for Solid Waste Handling and Disposal.

Operational procedures which would reduce the chance of vector infestation would be similar to those which also control odor. Servicing odorous, organic waste first would reduce the available material for vector breeding and feeding. In addition, totally emptying the station at shut down times would help in the detection of vectors brought in with the waste during the day, and would ensure that no fly pupae would hatch and no rodents would be able to feed in the station.

Maintenance procedures such as daily sweeping of transfer building tunnels and access ramps will help reduce the amount of organic material available to vectors.

c. Odors

To prevent odor from the transfer station from adversely impacting the surrounding land uses, several mitigation measures proven to be effective should be implemented:

- o Process particularly odorous materials first;
- o Minimize amount of time waste is in residence in the station, such as emptying the station daily and during shut down times; and
- o A daily cleaning routine which includes all machinery involved in waste handling, and the station floor. Cleaning should be done in such a way that odorous materials are completely removed from machinery parts and no materials remain stuck on the station floor. The proposed project should use a disinfectant/deodorizer when cleaning, as existing stations have shown that using a cleansing agent when cleaning helps reduce odor.

d. Dust

In addition to regular surface watering during construction, stockpiles should be watered or covered to prevent escape of windborne dust. When grading and earth-moving activities are completed, a compact surface should be maintained by repeated waterings to prevent dust from being carried offsite by the wind. Even with dust control measures, the dust during construction could be a significant nuisance to persons near the site.

f. Fire Hazard

Measures planned as part of Station operations would reduce fire hazard to non-significant. These include load checking for combustibles or explosive materials, litter control around the site, proper maintenance of equipment, installation of appropriate fire-fighting equipment in the station and training of personnel to handle fire, and encasing or sealing all water mains, valve boxes, and service meter vaults. Fire Safety is also discussed in Section IV.D., Safety and Seismic Safety.

e. Kirby Canyon Landfill

To minimize the impact of light and glare at night:

- o Face lights eastward, away from Highway 101 and development in the valley;
- o Work behind berm; and
- o Turn off lights between the hours of 5pm to 12am when the landfill would be closed.

V. ALTERNATIVES TO THE PROPOSED ACTION

The analysis of alternatives in an EIR must present a range of reasonable alternatives to the proposed project, or to its location, that could feasibly attain the project's basic objectives (CEQA Guidelines, Section 15126). The selection and discussion of alternatives is intended to foster informed decision-making and informed public participation. The alternatives which are considered here are No Project, an alternative transfer station site (addressed under B), and an alternative landfill site (C).

A. NO PROJECT/NO ACTION

The objective of the SMaRT station project, with the use of the Kirby Canyon landfill, is to provide for near and longer term disposal of municipal solid waste for the cities of Sunnyvale, Mountain View, Palo Alto, the Stanford community, and portions of unincorporated Santa Clara County. The No Project/No Action Alternative would mean the proposed materials recovery/transfer station at the existing Sunnyvale landfill site would not be built. No Project cannot imply No Action, however. The requirement for disposal of up to about 1950 tons/day for the primary cities and an additional 240 tons/day for the extended service area still exists.

If the proposed project were to be denied, the cities of Mountain View, Palo Alto, Sunnyvale and Stanford University would have to find an alternative means of disposing of their waste. The three cities and Stanford are seriously constrained by the impending need to close their landfills. An alternate system of waste disposal must be in place before each of the landfills closes. The most current projected dates for landfill closures are as shown below:

Mountain View -- as soon as practicable
Palo Alto -- 1994-1999
Sunnyvale -- 1992

Numerous alternatives have already been studied, and are described elsewhere in this section. Even if the transfer station were not built at this proposed location, Kirby Canyon could still be used for the landfill. The three cities and Stanford could independently build transfer stations at other locations, or they could jointly build a transfer station at another location. Recycling would probably be made a part of any new transfer station facility.

1. Direct Haul to Kirby Canyon

The worst case scenario is direct haul to Kirby Canyon by the public and franchise haul vehicles. Direct haul from a north county waste centroid would be extremely inefficient for a landfill in the south County, such as Kirby Canyon. Direct haul would produce about 1,700 weekday trips and 1,400 weekend trips to Kirby Canyon compared to the estimated 140 trips/day for transfer vehicles. This 12-fold difference in trip number would significantly affect traffic on U.S. 101 which is already congested during many hours, and would produce greater impacts to air quality and energy than the use of the proposed transfer station.

2. Other Transfer Station Sites

Depending upon which transfer station site(s) were chosen, the total number and length of haul trips and local impacts could be less or greater than for the proposed project. If an alternate landfill site were used, the total impacts would depend on the combination of transfer station and landfill site selected. The decision to pursue the SMaRT station/Kirby Canyon proposal is the culmination of over 10 years of concerted solid waste planning effort by the involved cities, including the consideration of numerous other transfer station sties, as described under B., below. This effort effectively demonstrated that the proposed combination of the SMaRT station and disposal at Kirby Canyon is a feasible, cost-effective solution which can be implemented in a timely manner. The number of sites now available for a transfer station is extremely limited -- more so than when the various cities investigated alternative sites, since many of the sites then available have since been re-developed as other uses. Because the involved cities have all been nearly built out for a considerable length of time, there is very little appropriately zoned land (ie. public facilities or industrial) with good road access available.

3. Expand Existing Service Area Landfills

The City of Sunnyvale investigated the additional waste disposal capacity that could be gained by using the third sludge lagoon area for landfilling instead of a transfer station. It was determined that use of this lagoon for landfilling would provide about 482,800 tons of additional capacity, or about 7.4 years of additional landfill life at the then current fill rate, not including any solid waste diverted from Mountain View (City of Sunnyvale Staff Report December 3, 1985.) At the projected 1991 fill rate of 178,000 tons/year, this is 2.7 additional years, and with 1991 estimate of 98,950 tons of waste diverted from Mountain View, the use of the sludge lagoon would provide on 1.7 years of additional landfill life. Thus, the extension of the landfill into this area would provide only a very short-term benefit to the affected cities.

In 1984, the City of Mountain View purchased a 70-acre landfill, known as the Ferrari site, adjacent to the existing city landfill on Stierlin Road (now North Shoreline Boulevard). About half of the new site had been used for disposal of demolition waste and municipal solid waste. The Ferrari site, however, lacks a Solid Waste Facility permit. The City is currently working to obtain the necessary permits for the use of the Ferrari site for a period of up to five years. Upon receiving the permits, the City intends to discontinue the use of the existing "150-acre" landfill site, which now receives about 25 to 50 tons/day of publicly-hauled Class III waste.

Both the existing landfill and the Ferrari site have in the past been the subject of complaints (most recently in 1988) regarding odor and land use conflicts from other occupants of the North Bayshore area, primarily business parks. The City hopes that the necessary permits can be obtained to fill and then close the Ferrari site, and that the short-term use of the site as a landfill will not create land use conflicts with neighbors.

The City of Mountain View prepared an Initial Study, and determined that the proposed action could have potentially significant impacts, and that an EIR should be prepared. The City is considering alternative scenarios for interim use of the Ferrari site, which involve at most 3 to 5 years of additional use. Some scenarios include fill with publicly-hauled Class III waste as well as demolition debris and clean fill, and others include clean fill only. Even if the Ferrari landfill is permitted, it would only serve the public (individual haulers), and in any case would not provide a long-term solution to the disposal of Mountain View's municipal waste.

Compared to Sunnyvale and Mountain View, the City of Palo Alto has the longest capacity remaining at its existing refuse disposal area. The latest projected closure date at present is 1999, which would not give Palo Alto more than 10 years of additional landfill capacity without the addition of another site.

B. ALTERNATIVE TRANSFER STATION SITE

The selection of this site for a transfer station is based on several past reviews of potential transfer station sites. The history of the site selection process is included in this discussion. In 1977, the north Santa Clara County cities of Palo Alto, Mountain View, Los Altos, Cupertino, Sunnyvale and the town of Los Altos Hills began a joint program in solid waste management. The purposes of the program were to extend the life of existing landfills through operating procedures and closeout plans, to promote source separation and recycling, and to identify additional landfill sites. The early cooperative effort resulted in a number of studies regarding potential disposal sites, waste characterization, conceptual resource recovery alternatives, regulatory requirements, environmental issues and financial analyses.

In 1982, these cities, with the exception of Mountain View, extended their cooperative effort into a joint powers agreement (JPA), known as the North Santa Clara County Solid Waste Management Authority (SWMA). The city of Mountain View chose at that time to rely on the capacity of its own landfill through 1990.

In addition to the objectives of the 1977 program, the SWMA objectives included waste to energy conversion as an alternative to landfilling, the provision of at least 30 years of disposal capacity for each of the member jurisdictions in a technical, economical, and environmentally feasible manner, and encouragement of public participation in the solid waste planning process.

One of the first tasks undertaken by the SWMA was a screening of a large number of potential landfill and waste-to-energy sites within the north County area. In an analysis of 40 potential sites, Bryan Canyon emerged as the preferred site on the grounds of total capacity and suitability for disposal of both non-hazardous waste and combustion ash residue on the basis of low bedrock permeability and hydrogeologic isolation. When the governing board of the SWMA attempted to amend the CoSWMP to designate the Bryan Canyon site and several transfer stations, intense public opposition developed over the issue of location of an access road and the siting of the project itself. Ultimately, the cities voted to drop the project and to disband the SWMA entirely, in March 1984 (Santa Clara CoSWMP, 1989 Revision, Administrative Draft).

At the same time the SWMA planning process was underway for the northwest area cities, the City of San Jose was involved in a separate solid waste planning process which later came to affect the decisions of the northwest area. The San Jose effort centered on identification of additional landfill sites, and the study of the feasibility and cost of waste-to-energy as a landfilling alternative. Potential sites considered by San Jose included Hellyer Canyon, Tennant Canyon, and San Bruno Canyon, which are all currently designated sites in the City's General Plan. The San Jose site evaluation process resulted in a 1984 CoSWMP amendment, incorporating the Kirby Canyon Landfill into the Plan. In 1983, the City of San Jose had concluded that waste-to-energy was both economically and technically feasible, considering the costs and limitations on both existing and projected landfilling.

1. Transfer Station Alternatives Considered by SWMA

The Project Feasibility Study which selected Bryan Canyon as the preferred site for either a landfill or a waste-to-energy facility also considered several sites for transfer stations (Figure V-1, Table V-1). The following is a brief summary of the site descriptive information and environmental analysis for each location, as contained in the Project Feasibility Report (January, 1984). The transfer station sites were considered to have served either Bryan Canyon, Kirby Canyon, or Pacheco Pass as the landfill site.

Site: Los Altos Sewage Treatment Plant
Location: San Antonio Road, north of U.S. 101, between Palo Alto and Mountain View (see Figure V-1).
Parcel Size: 13 acres
Ownership: City of Los Altos and Palo Alto
Uses at time of Feasibility Study: Abandoned sewage treatment plant, replaced with a pump station. Pest control operation and construction contract also leased parts of site.
Access: San Antonio Road. Direct access to U.S. 101 northbound. Access to U.S. 101 southbound is via Charleston Road. Secondary access from Oregon Expressway, Embarcadero Road, Charleston Road, Middlefield Road.
Surrounding Land Uses: North -- Palo Alto flood basin, northeast and east -- Mountain View Shoreline Park;, east, southeast and southwest -- office and light industrial.
Jurisdictional considerations: The site is within the sphere of influence of Palo Alto, and was designated as public park in the Palo Alto General Plan at the time of the Feasibility Study. The site contains abandoned ponds which could trigger Corps of Engineers jurisdiction over wetlands.
Environmental Constraints: At elevation 0 MSL (flood hazard); only partial direct freeway access; groundwater within 20 feet of the surface; site located on younger Bay mud could experience differential settlement and/or liquefaction.
Current Status: not currently developed; no clear plans as to how it will develop.

Site: Libby Cannery Site
Location: In Sunnyvale, bounded by Central Expressway, Mathilda Avenue California Avenue, and parts of the Libby complex. (Figure V-1).
Parcel Size: 15 acres out of the 37.7-acre total Libby site.
Ownership: private (Lincoln Properties).
Access: Good road and rail access (which aids transportation of recycled materials). Central Expressway and the SP rail line are adjacent on the north, Mathilda Avenue on the east.
Surrounding Land Uses: Medium-density residential

FIGURE V-1
TRANSFER STATIONS AND LANDFILLS IN SANTA CLARA COUNTY

EVFSD004 LANDFILL LOCATIONS (EVFSBASE) 12/11/89

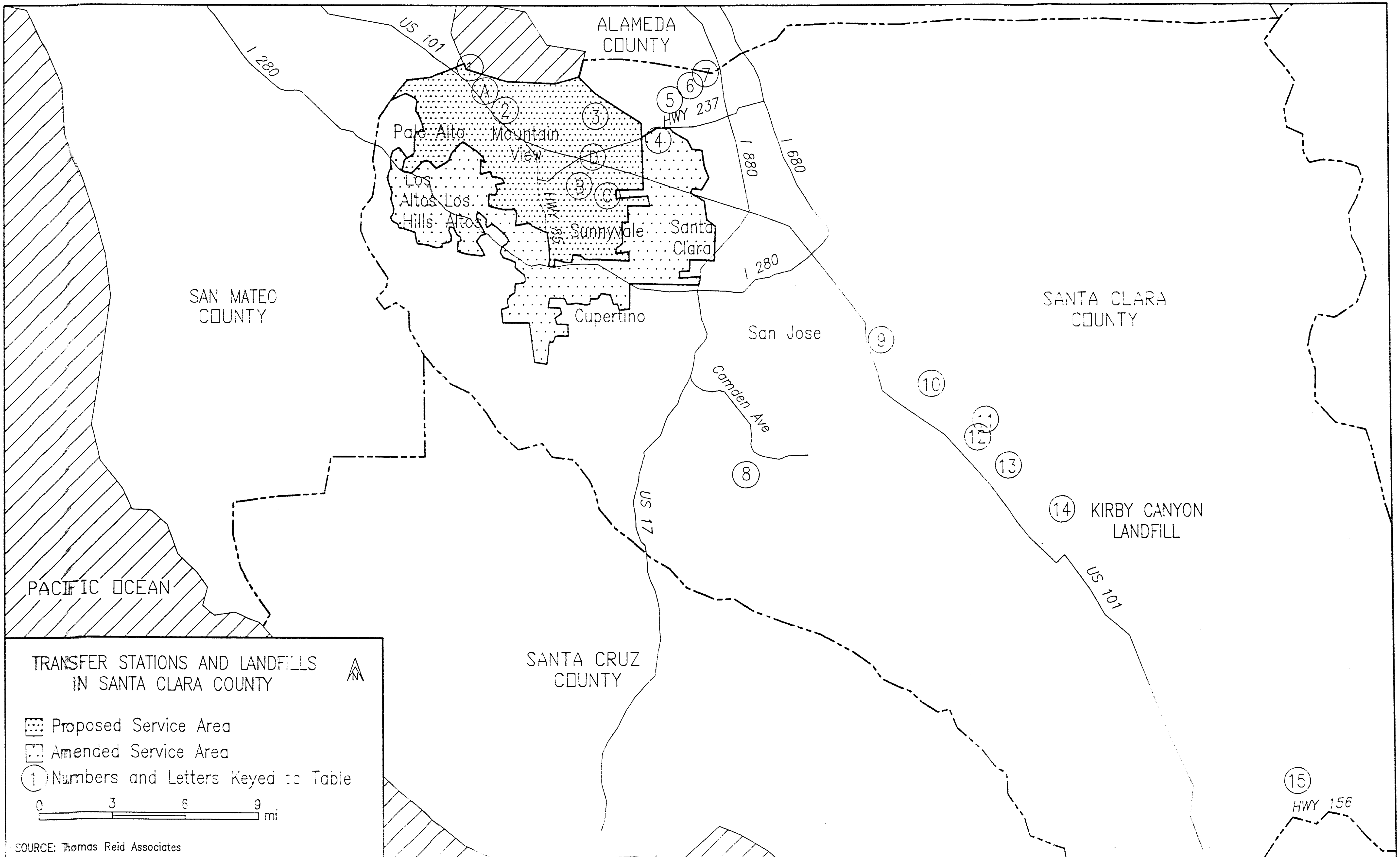


TABLE V-1
KEY TO FIGURE V-1

NUMBER OR LETTER ON FIGURE V-1	SITE NAME	STATUS
1	Palo Alto Landfill	Operating
2	Mt View Landfill	Operating
3	Sunnyvale Landfill	Operating; site of Proposed SMaRT Station
4	All Purpose Landfill	Operating
5	Owens-Corning Landfill	Operating
6	Zanker Road Landfill	Operating
7	Newby Island Landfill	Operating
8	Guadalupe Landfill	Operating
9	Hellyer Canyon	Not Designated; previously proposed
10	Encinal Canyon	Designated Candidate Site
11	Metcalf Canyon North	Not Designated; previously proposed
12	Metcalf Canyon South	Designated Candidate Site
13	Tennant Canyon	Designated Candidate Site
14	Kirby Canyon Landfill	Operating
15	Pacheco Pass Landfill	Operating
A	Los Altos Sewage Plant	Transfer station site previously considered
B	Libby Cannery Site	Transfer station site previously considered; now developed otherwise
C	Kifer Road	Transfer station site previously considered; now developed otherwise
D	Ross Drive	Transfer station site previously considered; now developed otherwise

NOTE: See Table V-2 for more information on landfill sites.

Uses at time of Feasibility Study: Industrial (Libby cannery).
Jurisdictional considerations: The site was designated for industrial use in the Sunnyvale General Plan, but was being considered for re-designation to residential. Designation as a solid waste facility would have required amending both the city's General Plan and the CoSWMP.
Environmental Constraints: The site has reasonably direct access to U.S. 101 via Central and Lawrence Expressways, but would have required using residential streets to reach Central Expressway. Nearby residential developments were sensitive receptors to traffic noise from a transfer station. Public opposition to a transfer station may have been a deterrent to its use.
Environmental Advantages: The site has low visual sensitivity. No elevation or wetland constraint.
Current Status: Now developed by Lincoln Industrial as two projects, one industrial, the other Briarwood Condominiums. The development was approved by the City of Sunnyvale in 1984.

Site: Kifer Road
Location: City of Sunnyvale, between Central Expressway and Kifer Road, east of Wolfe Road (Figure V-1).
Parcel Size: 14.4 acres
Ownership: National Semiconductor
Access: to U.S. 101 via Central Expressway to Lawrence Expressway
Uses at time of Feasibility Study Vacant.
Surrounding Land Uses: Light industrial. Nearest residence at the time of the Feasibility Study was 800 feet away.
Jurisdictional Considerations: The site was designated industrial and zoned for industrial use in the Sunnyvale General Plan. Amendments to the General Plan and CoSWMP would have been required to designate it as a solid waste site.
Environmental Constraints: None.
Environmental Advantages: Site has low visibility and no sensitive viewpoints within its view shed. No elevation or wetland constraint.
Current Status: Now serves as a recreational area for National Semiconductor (approved 1983).

Site: Ross Drive
Location: City of Sunnyvale near Mountain View boundary, between S.R. 237, U.S. 101 and North Mathilda Avenue. (Figure V-1).
Parcel Size: 10 acres.
Uses at time of Feasibility Study: Pump station, recreational vehicle manufacturer and auto parts supply company.
Ownership: Private
Access: U.S. 101, S.R. 237 via Mathilda Avenue
Surrounding Land Uses: East -- office/commercial development, major transportation corridors.
Jurisdictional Considerations: The site is designated for industrial use. Would require an amendment to the City General Plan and CoSWMP to designate for solid waste.
Environmental Constraints: Sole access is off Mathilda Avenue, using the signalized intersection of Ross Drive and Mathilda Avenue, near the Mathilda/State Route 237/Moffett Park interchange. Congestion at the interchange, heavy traffic along Mathilda, and the long-cycle traffic signalization at Ross and Mathilda combine to constrain access to the site.

The Sundowner Inn is a sensitive noise receptor, but noise levels in the area are already high due to the major transportation routes. Groundwater is within 20 feet of the surface.
Current Status: A permit for three industrial buildings was issued in 1984. The Neighborhood Inn (motel) was approved in 1988.

None of these four sites was selected after the proposed site on Borregas Avenue and Caribbean Drive emerged as the most favored alternative. The proposed site first came to be considered as a potential solid waste handling site during a 1985 study of the best long-term use for a largely unused sludge lagoon adjacent to the City's Water Pollution Control Plant (WPCP) and the Sunnyvale sanitary landfill. Three alternatives were initially considered: (1) expansion of the adjacent landfill into the lagoon area, (2) construction of a solid waste transfer facility and (3) construction of a mid-size resource recovery facility. The initial conclusion was that expansion of the landfill would not be cost-effective because only a relatively short extension to the landfill life would be obtained, and that it was more cost-effective to utilize the site for its intended purpose of sludge disposal.

The study also concluded that the 8-acre area would be suitable for construction of either a transfer station or a resource recovery facility which could incinerate sludge as well as garbage. With an additional 2.3 acres north of the sludge lagoons, both a transfer station and a resource recovery plant could be accommodated.

Site: Sunnyvale Landfill (Proposed SMaRT Station project site)
Location: City of Sunnyvale. Caribbean Drive and Borregas Avenue
Parcel Size: 10 acres (Sludge Lagoon #3)
Ownership: City of Sunnyvale.
Access: To U.S. 101 and S.R. 237 via Lawrence Expressway and Mathilda Avenue.
Surrounding Land Uses: east, south and west -- sanitary landfill, west -- industrial (water pollution control plant), southwest -- office/industrial park, southeast -- Baylands park, north -- salt evaporators.
Jurisdictional Considerations: The proposed project is an allowable use within the City's current General Plan designation of the site as "Public Facilities" (CPD, p. 7-1). The project is in conformance with the 2/1/89 revised draft of the CoSWMP. The County Environmental Health Department must find the project in conformance with the City's General Plan and CoSWMP and formally notify the California SWMB of this finding. Required local permits include a Building Permit, Grading and Erosion Control Permit. Other permits include an Authority to Construct from the BAAQMD and a Solid Waste Facilities Permit (SWFP) issued by the County Environmental Health Services Department, but approved by the CWMB.
Environmental Constraints: Removal of unstable subsurface materials, and permanent de-watering of structures penetrating groundwater level. Subsidence and liquefaction a problem correctable by engineering design.
Current Status: under environmental review.

2. Waste-to-Energy vs. Transfer Station

A major feasibility study, completed in 1987, examined the relative merits of constructing a resource recovery facility versus a solid waste transfer station on the sludge lagoon site. The apparent advantages of the site were its adjacency to the landfill which had already established the franchise and public haul routes to the site within Sunnyvale, its prior industrial use, visual screening and downwind location from the adjoining office parks. A pump station already installed for the WPCP could be used to drain the transfer station site. The study found that pile foundations would be required for the waste-to-energy project because of problems with differential settlement and the potential for severe groundshaking during a major earthquake. Substantial quantities of engineered fill would be required for either type of project. The preliminary environmental analysis found no adverse environmental impacts that would have precluded either type of project, although air emissions from the waste-to-energy plant were not investigated.

The ultimate determination made by the Sunnyvale City Council early in 1987 was that waste-to-energy was not cost-effective compared to the transfer station/landfill option, using the 40+ years of capacity at Kirby Canyon landfill. The decision was based primarily on economic uncertainties: the economics of waste-to-energy are very sensitive to fluctuations in projected energy prices. The project cost could also increase significantly if unforeseen costs arose out of construction delays, cost overruns, operational problems, changes in environmental regulations, natural disasters such as earthquakes, and changes in the waste stream (City of Sunnyvale Staff Report 3/17/87). The Council adopted the staff recommendation to develop a transfer station and secure long-term landfill capacity. In making this decision, the Council did not foreclose the option of later building a waste-to-energy plant in the future should the economics become more favorable.

3. Alternatives Considered Independently by City of Palo Alto

Anticipating the closure of its landfill between 1994 and 1999, the City of Palo Alto studied alternative transfer station sites in combination with landfill disposal at another location. The sites considered in a 1985 study by Cal Recovery Systems of Richmond, California were the Palo Alto landfill itself, the Los Altos sewage treatment plant site, and a site at the intersection of Park Boulevard and Page Mill Road. The study assumed that the station would process up to 652 tons of solid waste per day from Palo Alto, Stanford and Los Altos.

Site: Palo Alto Landfill
Location: end of Embarcadero Road, one mile northeast of Bayshore Freeway. The hypothetical transfer station site is the northwest corner of the landfill directly southeast of the Palo Alto Water Quality Control Plant and the Municipal Golf Course.
Parcel Size: 3.5 acres (including a methane recovery plant). Present elevation 7.5 feet MSL.
Ownership: City of Palo Alto
Access: to U.S. 101 (Embarcadero Road interchange) via Embarcadero Road or Oregon Expressway.
Surrounding Land Uses: North and northeast -- Palo Alto Yacht Harbor and Baylands Nature Interpretive Center; southwest -- open space preserve, office/commercial.
Jurisdictional Considerations: City of Palo Alto would have to re-designate the site for a transfer station, because its end use is now dedicated parkland. The site would required an amendment to Palo Alto's Comprehensive Plan, the Baylands Master Plan, the CoSWMP. Location near the Palo Alto airport triggers requirement for Airport Land Use Commission (ALUC) review for compatibility with approach safety zones.

Environmental Constraints: 1) Geotechnical: The site is situated on a 10 to 20-foot layer of Bay muds underlain by several hundred feet of other clay soils interspersed with sand and gravel lenses. The wet clay soils are subject to severe seismic shaking in a strong earthquake; the sand lenses present a liquefaction hazard. The site would also require deep pilings and structural concrete above grade to mitigate differential settlement of the fill, as well as several feet of engineered fill to raise it above flood level. 2) Some increase in local traffic due to transfer truck component (the Cal Recovery Study used 30 trips/day) 3) Use of the site of the transfer station would continue any offsite impacts to adjacent wildlife habitat (noise, traffic) compared to a park use; 4) Groundwater is within 3 to 5 feet of the surface; 5) The transfer station would be visible at some distance (e.g. U.S. 101) because of its elevation above grade. Its visual impact would be greater than parkland but no greater than an active landfill.
Current Status: undeveloped

Site: Los Altos Sewage Treatment Plant. This site was also considered during the SWMA study and is discussed under B.1., above.
Site: Park Boulevard
Location: Near central Palo Alto between Park Boulevard and Alma Street just southeast of Page Mill Road.
Parcel Size: 3.7 acres
Ownership: Private
Uses at time of 12/85 Feasibility Study: eastern third of the site empty, remainder occupied by auto body shop and small factories. **Access:** No direct access from the north; the site must be entered via side streets. Rail access possible.
Surrounding Land Uses: To the northeast is a railroad right- of-way, beyond which lies Alma Street and a residential area. Light industrial uses and offices are located to the southeast and southwest; Oregon Expressway, a cement plant, offices and apartments are located to the northwest.
Jurisdictional Considerations: Land must be purchased from current owners or condemned. CoSWMP Amendment would be required. Although zoned for General Manufacturing (light industrial), City Council has recommended rezoning for high-density residential.
Environmental Constraints: increase of traffic and traffic noise on side streets in mixed-use neighborhoods;
Current Status: developed as office/commercial

4. Alternatives Considered by the City of Santa Clara (extended service area)

In 1988, the City of Santa Clara contracted with Brown, Vence and Associates to prepare a feasibility study for building a transfer station and materials recovery facility within the City of Santa Clara. The City was anticipating the closure of its All Purpose Landfill in the early 1990's. In the summer of 1988, Santa Clara signed a contract with Browning Ferris Industries (BFI) for 30 years of disposal capacity at the Newby Island Landfill and Recyclery. Currently, all municipal solid waste from the cities of Santa Clara, Los Altos, Los Altos Hills and Cupertino is going to Newby Island, as well as commercial (debris box) waste and some publicly hauled waste. The latter two categories could be diverted to the Sunnyvale transfer station, once it is operational.

Santa Clara studied five possible site alternatives for their transfer station. Four of the five were in the area bordered by Bayshore Freeway to the north, Southern Pacific Railroad to the south, San Tomas Expressway to the west and De La Cruz Boulevard to the east. The parcels ranged in size from 6.1 acres to 17.4 acres. The fifth site was a 17-acre parcel bordered by a proposed street (Yerba Buena Way), the All Purpose Landfill to the south, Great America Parkway to the west, and the SP railroad tracks to the east. The feasibility study addressed economics, ownership and operation, but not environmental issues.

The study concluded that all sites smaller than 17 acres were too small for the proposed facility. The study found that direct haul to Newby Island was the most favorable (ie. cost-effective) option for the City. Because of the relatively short haul distance between Santa Clara and Newby Island, and the fact that BFI was planning to build its own recycling facility (the Recyclery) at Newby, it would not have been cost-effective for the City to operate a separate transfer station within the city limits. The City still intends to pursue the planning of a transfer station.

C. OTHER LANDFILLS

There are three classifications of alternative locations within Santa Clara County: an existing Class III facility, as listed in the CoSWMP, an undeveloped site which is designated as a candidate solid waste facility under a City's General Plan, or an undeveloped, undesignated site for which intent has been expressed to develop it as a solid waste facility.

Theoretically, there are any number of potential landfills which could meet the cities' needs for municipal waste disposal capacity over some period of time. The sites are summarized in Table V-2 and shown on Figure V-1.

1. Other Existing Landfills in Santa Clara County

Table V-2 lists the landfills currently operating in Santa Clara County. The three cities -- Palo Alto, Sunnyvale and Mountain View -- are all seeking to close their respective landfills at or about the time the SMaRT station begins operating. Kirby Canyon is part of the proposed project and Newby Island is the principal alternative, discussed below. As shown in the table, the remaining sites -- Guadalupe, Owens-Corning, Pacheco Pass, All-Purpose and Zanker Road are all unsuitable as alternatives to the proposed project for a combination of the following reasons: (1) insufficient capacity for long-term disposal needs; (2) service area already committed, and expansion of service area not practical or politically opposed; and (3) permitting problems or relatively imminent closure.

a. Newby Island and the Recyclery

At present, the only alternative still available to the Cities of Sunnyvale, Mountain View and Palo Alto is the Browning- Ferris

Industries (BFI) proposal to provide 15.5 million tons (29 years) of capacity and 25% guaranteed recycling of the waste stream at Newby Island, with the new Recyclery.

<u>Environmental Background</u>

Newby Island has been used for solid waste disposal since 1930. The Island was reclaimed from tidal marshland and south San Francisco Bay in the

TABLE V-2

DISPOSAL SITES IN SANTA CLARA COUNTY

Landfill/ Operator	Location	Remaining Capacity (7/89) million tons	Fill Rate tons/year (1987-88)	Possible Expansion (million tons)	Miles from SMaRT Station	Expected Closure	Communities Served
Sites in Current CoSWMP							
Guadalupe, Guadalupe Rubbish Disposal Co.	Guadalupe Mines Road San Jose	1.3	227,196	0	19	1994	Campbell Los Gatos Monte Sereno Unincorp. Co. Contractors Public
Kirby Canyon, Waste Management, Inc.	east of Scheller Ave/US101 interchange, south of San Jose	24.0	99,022	13.0	27	2038	San Jose Contractors Public
Mountain View, City of Mountain View and Wastech	north end of Shoreline Blvd. Mountain View	0.15	297,014	0	8	U	Public
Newby Island Browning-Ferris Industries (BFI)	west end of Dixon Landing Road, San Jose	22.5	695,000	U	11	2026	San Jose Cupertino Los Altos Los Altos Hills Milpitas Mountain View Santa Clara Portola Valley Woodside Unincorp. Co. Contractors Public
Owens-Corning, Owens-Corning Fiberglass	east end of Los Esteros Road, San Jose	0.63	3,900	U	6.5	2025	Owens-Corning Fiberglass

TABLE V-2 IS CONTINUED ON THE FOLLOWING PAGE

TABLE V-2

DISPOSAL SITES IN SANTA CLARA COUNTY

Landfill/ Operator	Location	Remaining Capacity (7/89) million tons	Fill Rate tons/year (1987-88)	Possible Expansion (million tons)	Miles from SMaRT Station	Expected Closure	Communities Served
Pacheco Pass, Gilroy Garbage Co. and South Valley Refuse	Pacheco Pass Hwy/ Bloomfield Road East of Gilroy	1.5	78,198	U	40	1998	Gilroy Morgan Hill uninc. Co.
All Purpose, City of Santa Clara; All Purpose Landfill Co.	Lafayette Street, Santa Clara	0.81	199,105	0	3	1992	Santa Clara
Sunnyvale, City of Sunnyvale/ Oakland Scavenger	Caribbean Drive at Borregas Avenue, Sunnyvale	1.36	52,656	0	0	1994	Sunnyvale
Zanker Road, Zanker Road Resource Recovery	west of Zanker Road and Los Esteros Road, San Jose	0.78	71,867	0	6	2003	Contractors Public
<u>Designated, Non-Designated and Out-of-County Sites</u>							
Encinal Canyon	unincorp. Santa Clara Co., east of US101, 2 miles south of Metcalf Rd.	20.0	na	na	25	na	na
Hellyer Canyon	east of US101, 0.25 miles northeast of 101/Hellyer Ave.	34.0	na	na	17	na	na
Metcalf Canyon	east of US101, north and south sides of Metcalf Road	10.0-25.0	na	na	24	na	na

TABLE V-2 IS CONTINUED ON THE FOLLOWING PAGE

TABLE V-2

DISPOSAL SITES IN SANTA CLARA COUNTY

Landfill/ Operator	Location	Remaining Capacity (7/89) million tons	Fill Rate tons/year (1987-88)	Possible Expansion (million tons)	Miles from SMaRT Station	Expected Closure	Communities Served
Tennant Canyon	unincorp. Santa Clara Co., 2 miles east of US101	na	na	na	25	na	na
Altamont Pass	Alameda County	23.5	1.6	48[1]	43	2028[1]	Alameda Co. San Francisco parts of Contra Costa County
Ox Mountain	Hwy 92, Half Moon Bay, San Mateo Co.	1.5	0.7	42.5	30	1992	San Mateo County

KEY

na - not applicable or information not available
U - unknown at this time
[1] - Application will be made to expand Altamont Pass to potentially 247 million tons, extending site life to over 200 years (M. Crossetti, pers. comm.); Application to expand Ox Mountain is process (L. Valbuso, pers. comm.)

late 1800's by construction of a perimeter dike system. The area was in agricultural use as orchard and pasture until its use as an open-burning dump began in 1930. The operation was converted to a modified sanitary landfill in 1956. Because of its historic use as a landfill, the site has operated continuously without environmental review under CEQA. Consequently, there are very few environmental data concerning this site which would enable its impacts to be compared with operating a landfill at Kirby Canyon. A limited amount of information is available in the waste discharge permit.

The Newby Island landfill will eventually occupy a total of 342 acres, and was being filled at the rate of about 1,900 tons/day in 1987-88 (695,000 tons between July 1987 and June, 1988 (CoSWMP, 1989 Administrative Draft). According to the 1987 waste discharge permit issued by the RWQCB, there were 17.2 million cubic yards of refuse already in place with an additional capacity of 26.5 cubic yards of capacity remaining. In 1982, the RWQCB allowed waste to be deposited in Area 2 (the southwest portion), roughly doubling the original landfill area. At that time Area 2 was no longer considered "Waters of the United States" because it been drained of standing water and had wetland vegetation removed according to a site development plan previously approved by the Regional Board.

According to the waste discharge permit, the Newby Island landfill is underlain by thin layers of alluvium composed of predominantly clay, silty clay, and small amounts of sandy clay. Young Bay mud underlies the site to a depth of 20 to 30 feet below mean sea level (MSL). The young Bay mud is underlain by a complex, interbedded sequence of old bay mud and fine-grained alluvium to a depth of about 200 feet below MSL. Both types of Bay mud are relatively impermeable, and the artificial clay liner directly below the landfill is underlain by 50 - 100 feet of well compacted native clay (W. Hurley, RWQCB, pers. comm.). However, the interbedding of clay and sand layers gives the substrate a high susceptibility of severe seismic shaking and liquefaction. The effect of a major seismic event on the integrity of the landfill is unknown.

The site is located about 5 and 10 miles southwest of the Hayward and Calaveras faults respectively, and 15 miles east of the San Andreas Fault. The site is not directly located on any known recently active fault, and thus meets this siting criterion in Subchapter 15. Although the site is in a floodplain, according to the National Flood Insurance Agency (FIA) it is protected from flooding by a 14-foot perimeter levee. The levee allows the site to meet the flood protection criterion for Class III landfills in Subchapter 15.

The site is bordered on the east and north by Coyote Creek, and by Mud Slough on the south and west sides. There is a zone of perched groundwater which is fed by infiltration and recharge from these channels, from just below the natural ground surface down to about 85 feet. This groundwater is brackish and not usable as water supply. A second zone of groundwater exists from about 85 feet below the natural ground surface down to more than 200 feet. This water occurs in the more permeable silty sand, sand and gravel, and is apparently of better quality than the water above (RWQCB, 1987 NPDES permit for Newby Island Landfill).

The RWQCB stated in 1987 that due to the shallow groundwater table beneath the site, the site does not meet the Subchapter 15 requirement that all new landfills be sited where there is a minimum of 5 feet between the wastes and the nearest groundwater. The Board required that Area 2 of the landfill be sited to meet the requirements of Section 2530 (c) of Subchapter 15, and that Area 1 be operated so as to meet those requirements. Water quality standards for demonstrating compliance with Subchapter 15 have not yet been defined because the Subchapter 15 requirements for comparing background levels of contaminants with those of a landfill are being revised. This was necessary because the original statistical method specified in the regulations proved to be invalid.

The landfill was required to drain and collect leachate in both Areas 1 and 2, and to drain the perched shallow groundwater beneath Area 1 to protect both the surrounding surface waters and the useable groundwater. The operator is required to sample from a series of 11 groundwater monitoring wells and to file quarterly self-monitoring reports with the RWQCB. Thus far, these reports do not show that wells down-gradient of the landfill have increased concentrations of salts or inorganic compounds and except for a single reading upgradient of the landfill, no volatile organic compounds have been measured in any of the monitoring or groundwater wells.

The Recyclery was scheduled to open in the fall of 1989, but is not yet operating. BFI offered the Newby Island/Recyclery combination with and without an intermediate transfer station at Sunnyvale. The haul distance from the Sunnyvale landfill to Newby Island is 11 miles. The proposal with the intermediate transfer station was to provide Sunnyvale residents and businesses with a convenient place to dispose of refuse, since this was a continuation of their normal practice of bringing trash to the landfill. BFI proposed to pre-process waste at the transfer station, and to route recycled materials from the City's curbside recycling program to markets from this location, rather than from the Recyclery.

The Recyclery is being designed to process commercial and industrial refuse from the rest of its service area, to remove cardboard, mixed paper, metals, wood and compostable materials. The salvaged wood would be chipped for use as fuel. Yard debris is proposed to be composted and sold as soil amendment. BFI also plans to generate electricity from methane gas collected at the Newby Island landfill to power the heating, cooling, and compost production systems at the Recyclery.

The three cities currently favor the proposed project, using the Kirby Canyon Landfill because of the greater capacity and the fact that it opened only recently (in 1986). It is one of the first landfills to be licensed under the new Subchapter 15 regulations of the RWQCB, and in compliance with the full spectrum of environmental protection requirements of Subchapter 15. In accordance with these regulations, the landfill was constructed using state-of-the-art technologies for waste containment and groundwater monitoring (City of Sunnyvale Staff Report 12/17/85.). The landfill began operation in July 1986, at an initial rate of 65,000 tons/year. The City of Sunnyvale has also been concerned that if contracts are not executed to secure landfill capacity at Kirby Canyon, the City of San Jose or other jurisdiction may reserve a greater proportion of the available capacity for their own use, leaving less for the other Santa Clara County cities (V. Lenz, pers. comm.).

There appears to be greater assurance of long-term capacity for waste disposal with the Kirby Canyon option, compared to Newby Island. The actual remaining capacity at Newby Island is problematical, as BFI has made varying projections at different times, based on different assumptions about degree of compaction of the existing waste. The expansion to the current 342 acres was permitted with very limited environmental review, in that the Solid Waste Management Board was persuaded by the City of San Jose that approval of the expansion was a response to a waste disposal emergency. At the time the expansion was approved, the Corps of Engineers had promulgated interim regulations that defined solid waste disposal as "waste disposal" and not as "fill" of waters of the United States. Thus, Newby Island circumvented environmental review under Section 404 of the Clean Water Act, and mitigation for impacts to wetlands or special aquatic sites.

Although Newby Island has a waste discharge permit from the RWQCB, and has had no difficulties with water quality compliance thus far, environmental problems with the landfill or further expansion would trigger a complete environmental review process by one or more agencies. This makes the long-term future of Newby Island appear less certain than that of Kirby Canyon, which has already been subjected to full environmental review under CEQA.

The efficient use of Kirby Canyon, 27 miles one-way from the Sunnyvale landfill, requires the use of a transfer station close to the overall waste generation centroids. If BFI's proposal for the Newby Island landfill with Recyclery were implemented, an additional transfer station at Sunnyvale would be mainly for the convenience of Sunnyvale and the other participating south Peninsula cities. BFI's own need for this transfer station is less clear, since it would appear to be most efficient to have all of the materials separation and recovery at the single Recyclery location.

Traffic Impacts of Newby Island Alternatives

1. Newby Island Landfill and Recyclery without Additional Transfer Station at Sunnyvale.

Under this alternative, most of the waste material would be transported directly to Newby Island. This would produce about 1,700 additional weekday trips and about 1,400 Saturday vehicle trips on Route 237 and on I-880 between Route 237 and Dixon Landing Road. The weekday peak hour impact would be about 240 vehicles during the a.m. peak and 160 vehicles during the p.m. peak. This reflects the assumption that the waste deposit rate and vehicle composition would remain the same as for the Project alternative.

In terms of vehicle-miles, the weekday impact would be 18,700 vehicle-miles (1,700 one-way trips x 11 one-way miles between the Project Site and Newby Island) and the Saturday impact about 15,400 vehicle-miles. Nearly 50% of the additional weekday peak hour traffic would consist of trucks while on Saturday most of the traffic would consist of cars and pickups.

These traffic impacts would be significantly greater than for the Project alternative.

2. Newby Island Landfill with Additional Transfer Station at Sunnyvale.

This alternative would produce significantly fewer traffic impacts than Alternative 1 above because a transfer station at the Project site would receive all public and local waste material. The impacts would be almost identical to the Project alternative except that transfer trucks would utilize Route 237 and I-880 to Newby Island instead of U.S. 101 to Kirby Canyon. This would result in a saving of about 2,200 vehicle-miles on weekdays and Saturdays (140 transfer truck trips x 16 mile shorter distance) and would benefit primarily freeway traffic. The impact on local streets would remain the same as for the Project alternative.

2. Designated Candidate Solid Waste Disposal Sites

In 1983 the City of San Jose completed an extensive study and review process to identify potential solid waste disposal sites. Five locations were designated as Candidate Solid Waste Disposal Sites, including Kirby Canyon, Tennant Canyon, Metcalf Canyon, Encinal Canyon, and Newby Island expansion (Figure V-1). Since that time the Kirby Canyon and Newby Island sites have been permitted. Tennant Canyon, Metcalf Canyon and Encinal Canyon are all located in canyons in remote and as yet undeveloped areas in the hills east of the South Valley Freeway. All offer mid to long-term disposal capacity and comply with the City's solid waste goals and policies. Tennant Canyon offers 40-60 years capacity, Metcalf Canyon 10 years capacity, and Encinal Canyon 12.5-19 years capacity according to the City's 1983 study.

Each of these sites requires new development, rather than expansion of an existing operation, and requires specific approval after certification of an environmental impact report. Each site requires improved access, which will increase the potential for growth-inducing impacts on the east side of the City of San Jose and Santa Clara County. Each site is also potentially affected by earthquake faults, and would potentially impact ground and surface water quality in the Coyote Valley. Development of Encinal Canyon may have archaeological impacts, and Tennant Canyon has the potential to affect the headwaters of Silver Creek.

While each of these sites have varying degrees of feasibility, the uncertainty that each one will be permitted, or permitted in a time frame commensurate with the disposal needs of Sunnyvale, Palo Alto, and Mountain View make these remote and speculative options, compared to a fully permitted, operating landfill such as Kirby Canyon.

An earlier impediment to the use of Kirby Canyon has been removed -- the 1975 CoSWMP requirement that each subregion independently plan for disposal capacity. The most recent revision of the CoSWMP has consolidated the north and central subregions so that north county wastes, including those of Palo Alto, Mountain View, Los Altos, Los Altos Hills, Cupertino, and Sunnyvale could be disposed of in landfills within the city limits of San Jose. As Table V-2 shows, the haul distance to any of these sites is roughly equivalent to the haul to Kirby, so there is no apparent economic advantage to offset the uncertainties.

a. Tennant Canyon

The Tennant Canyon site is located in unincorporated Santa Clara County northwest of Metcalf Road, and two miles east of US 101 (Figure V-1). The 399-acre site is designated Non-Urban Hillside on the City of San Jose's General Plan and the zoning designation for the County of Santa Clara is A- 20 (Agriculture - 1 dwelling unit per 20 acres). A portion of the site is currently under Williamson Act Contract. The site is about 1.5 miles long and 0.25 miles wide, and has an estimated capacity of 40 to 60 years (City of San Jose, 1983).

Three potential routes could be used to access the Tennant Canyon site: Metcalf Road, Silver Creek Road to San Felipe Road, or a new road extension from the east end of Tennant Road. Metcalf Road is steep, narrow and winding and would require significant improvements to allow for refuse vehicles. Silver Creek Road to San Felipe Road would entail refuse travel through the Silver Creek Residential Planned Community, a sensitive residential use proposed for the area. The third potential access route would be via the Bernal/Tennant interchange with US 101. The road would be private and could be limited to refuse disposal vehicles only in order to reduce growth-inducing impacts which are of concern in this area of the city and county.

Potentially significant impacts associated with the Tennant Canyon site include two earthquake fault zones parallel to the canyon and an electrical transmission line traversing the canyon which would have to be relocated in the course of the operation. As with all disposal sites, measures for water protection would be required. Groundwater protection is a major concern in this portion of the County due to the necessity to protect public drinking water and the resources associated with Coyote Creek. A project in Tennant Canyon may have severe impacts on the headwaters of Silver Creek, a tributary to Anderson Reservoir which feeds Coyote Creek.

Advantages considered to be associated with the Tennant Canyon site are its 40-60 year capacity, its location in a remote and undeveloped area that is screened from view from Santa Clara Valley, and the direct and private access from US 101 which would avoid travel through sensitive residential areas and reduce the potential growth-inducing impacts of a new road.

b. Metcalf Canyon (South Side)

The Metcalf Canyon site that is designated on the City's solid waste overlay is located east of US 101, on the south side of Metcalf Road (Figure V-1). A proposal for a Metcalf Canyon site on the <u>north</u> side of Metcalf Road was recently considered but not formally proposed; this site is discussed under 3.b., below.

The approximately 386-acre Metcalf Canyon (south) site is owned by Santa Clara County. The site has a Public/Quasi-Public and Public Park/Open Space designation on the San Jose General Plan Land Use/ Transportation Diagram, and is zoned A-20 (Agriculture, one unit per 20 acres), by Santa .pa Clara County. The canyon has a potential capacity of 10 million cubic yards and an estimated life of ten years (City of San Jose, 1983).

The Metcalf Canyon site was purchased by Santa Clara County for use as a solid waste disposal site, a quarry for paving materials, or a public park. The site presently serves as a County Park for off-road dirt bike activity.

Access to this site is via Metcalf Road, a steep, narrow and winding road which would require improvements to accommodate refuse vehicles. Channelization and signalization would also likely be required at the intersection of Metcalf Road and the Monterey Highway, since there is not an interchange at US 101 and Metcalf Road.

Potential environmental problems associated with using this site for solid waste disposal include seismic safety due to its location in the Metcalf fault zone, the need to protect ground and surface water sources in the Anderson Reservoir/Coyote Creek watershed, potential growth-inducing impacts of improving access to a relatively undeveloped portion of the County, and land use impacts of displacing current park activities.

c. Encinal Canyon

Encinal Canyon is located in unincorporated Santa Clara County east of US 101, approximately two miles south of Metcalf Road (Figure V-1). The 583-acre site is designated Private Open Space on the San Jose General Plan Land Use Diagram, and zoned Agriculture (A-20, 1 dwelling unit per 20 acres) by Santa Clara County. The site includes two adjacent canyons with a potential capacity of 20 million cubic yards and an estimated life of 12.5- 19 years (City of San Jose, 1983).

Access to Encinal Canyon is currently via a frontage road along the east side of US 101 which extends south from Metcalf Road. Refuse traffic would use the Monterey Highway to Metcalf Road to the frontage road to access the site unless an interchange was built at Bailey Avenue and US 101. Installation of such an interchange could have growth-inducing impacts, although this area is not slated for future development under City or County plans. Encinal Canyon is also traversed by an electric transmission line which may have to be relocated to accommodate a disposal site operation, it may impact archaeological sites known from the vicinity, and it is in the Coyote Creek watershed.

3. Other Sites that have been Proposed but are not Designated on the Candidate Solid Waste Disposal Site Overlay

a. Hellyer Canyon

The Hellyer Canyon site comprises an area of approximately 275 acres located on the southeast side of San Jose in the Silver Creek Planned Residential Community (Figure V-1). The site is east of US 101, 0.25 northeast of the 101/Hellyer Avenue interchange, and access would be via Dove Hill Road. The site is designated Non Urban Hillside within the Silver Creek Planned Community, and is currently used for cattle grazing.

The property owner applied for a General Plan Amendment to designate this site as a solid waste facility in 1982 and again in 1988. The most recent application was denied by the San Jose City Council due to environmental concerns, inconsistency with the General Plan's policy for solid waste, inconsistency with the Santa Clara County Solid Waste Management Plan, and strong neighborhood opposition. Hence, a disposal site in this location does not appear to be legally feasible due to its inconsistency with local policy. Subsequent to denial, the landowner is filed an application for a General Plan Amendment to allow residential development at the site.

The EIR prepared for the General Plan Amendment application identified significant adverse environmental impacts on land use, air quality, cultural resources, public health, geology and hydrology, visual and aesthetics, and vegetation and wildlife as associated with development of a Class III landfill at this site. The impacts to land use, visual and aesthetics and vegetation and wildlife were determined to pose significant unavoidable impacts even with mitigation (Hellyer Canyon EIR, 1988).

The 1989 revision of the CoSWMP (Policy 10) encourages the expansion of existing solid waste facilities before siting of new facilities. Because of the many uncertainties that a landfill at Hellyer will be permitted, it is considered a remote and speculative alternative that is unlikely to be implementable in the time frame that the three cities must divert their wastes.

b. Metcalf Canyon (North Side)

Initiation of an application to Santa Clara County for a solid waste facility east of US 101 and north of Metcalf Road was made early in 1989, but was withdrawn when geologic and hydrogeologic investigations of the site revealed slope stability and groundwater problems (Figure V-1). A geotechnical investigation conducted early in 1989 showed that excavation in the valley portions of the site was infeasible due to a shallow groundwater table. To excavate the sides of the canyon extensive buttressing would have been necessary to protect the hillsides from failure since the soils were unstable. The combination of shallow groundwater, the potential to pollute Anderson Reservoir, and the engineering difficulties of designing the landfill made the cost escalate to the point where the project appeared infeasible (EMCON Associates, pers. comm.).

This proposed site is different from the one designated on the Candidate Solid Waste Site Overlay. The project site had a potential capacity of 25 million cubic yards with an undetermined site life, and was being considered for disposal of commercial (Class III) and designated (Class II) wastes. The potential environmental impacts of developing a disposal operation on this site are the same as for the Metcalf Canyon (south) site, except that the site is not at present designated in either the General Plan or the County Solid Waste Management Plan, and it would not require the displacement of an active park.

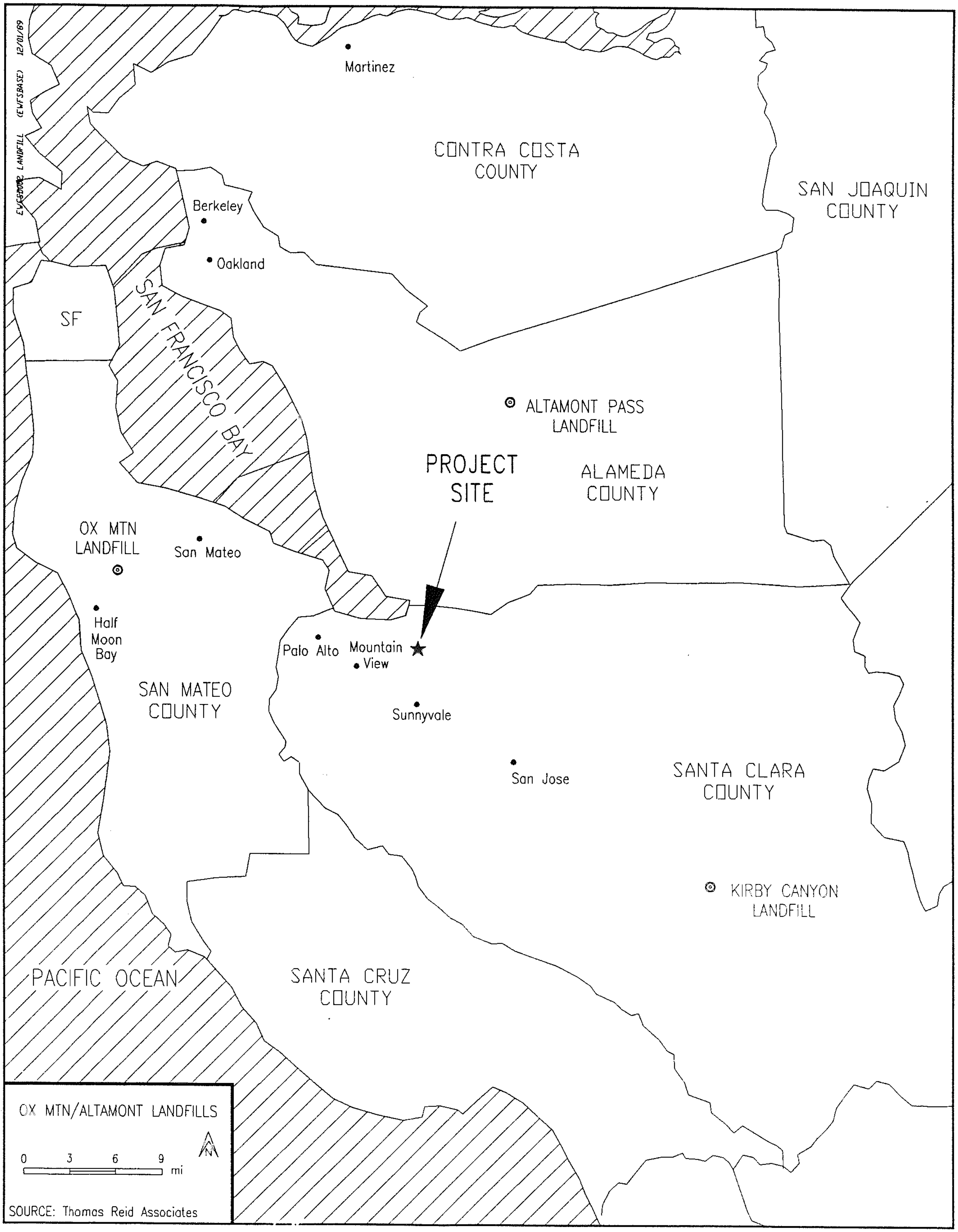
c. Out-of-County

The use of out-of-county landfills is not consistent with the Santa Clara CoSWMP, and would require cooperation of the affected county and amendment to both the Santa Clara and the other county's CoSWMP. Very few out-of-county sites are reasonable alternatives to the within county sites by virtue of: (1) capacity (2) haul distance (3) competition from other county service areas and (4) permitting difficulties.

Two landfills which have been suggested at various times are Ox Mountain in San Mateo County and Altamont in Alameda County (Figure V-2). The expansion of Ox Mountain is currently delayed by regulatory difficulties over impacts to fish and wildlife. In addition, that landfill was intended to serve as a regional disposal site for San Mateo County itself, with the possible addition of garbage from San Francisco. It was never designed to serve Santa Clara County cities. The haul distance from Sunnyvale is 30 miles, and there are additional difficulties in that the only haul routes are State Highways 1 and 92, both narrow, congested and unlikely to be widened because of engineering and land use constraints.

The Altamont landfill is 43 miles one-way haul distance from Sunnyvale. The possible advantages of this site -- ownership by WMI and current design capacity of 48 million tons (2028 closure) with the potential to expand to 247 million tons capacity, are outweighed by the uneconomic haul distance and competition from the urban areas of Alameda, San Francisco and Contra Costa Counties, which are geographically closer.

FIGURE V-2
LOCATION OF OX MOUNTAIN AND ALTAMONT PASS LANDFILLS



VI. CEQA ISSUES

A. Relationship Between Local Short-Term Uses of Man's Environment and Long-Term Productivity/Significant Irreversible Environmental Changes

The overall proposed project, which combines the use of the proposed new SMaRT station and the existing Kirby Canyon landfill, is intended to provide a long-term (30 to 40 year) solution to solid waste processing and disposal for three Santa Clara County cities. With additional capacity at Kirby or an alternative landfill site once Kirby's capacity is reached, the proposed project may serve the respective cities and communities even longer. Thus, the project does not seek short-term goals at the expense of long-term options.

The project is a commitment of a certain amount of energy and resources (e.g. concrete, steel) to the development of the transfer station, and a commitment of energy and equipment to haul recycled materials to markets and waste to the 27-mile distant landfill. The decision to use the landfill and the SMaRT station is a long-term commitment of the transfer station site and the landfill for solid waste handling and disposal. The transfer station site, which was formerly used for asphalt and concrete recycling, would not be available for a different use in the foreseeable future, since it is probable that the Cities' refuse would continue to be handled through transfer facilities. The Raisch operation, which formerly operated at the site, was moved to the western portion of the landfill. If the SMaRT station does not open for operation in time, it may be necessary for the City to reopen the west side of the landfill for disposal operations. Raisch would be forced to move, and the placement of the SMaRT station would foreclose its relocation to the SMaRT Station site.

Although it is probable that transfer facilities would continue here, the use of the site for a transfer station does not preclude another use of the site at a future time, since the foundation engineering, relocation of a portion of the Sunnyvale landfill, and provision of infrastructure to the site would serve other uses. With some modification the buildings of the transfer station could directly serve another warehouse type industrial use, or the site could be re-developed as another industrial type use consistent with the surrounding land uses prevailing at that time. The Kirby Canyon landfill is proposed to have an end use as open space once the landfill is closed. End uses of landfills are restricted by both the topographic configuration of the fill and the presence of the waste under final cover. In the case of Kirby Canyon, the landfill must be restored to habitat supporting a threatened butterfly species.

The three principal cities comprising the primary service area are all facing imminent or relatively short-term closure of their existing landfills and all must seek new means of disposing of their respective solid waste. The proposed project is a feasible and implementable alternative that can meet the needs of these cities and also provide an intermediate term waste disposal option for portions of the waste stream of several other cities. Considering that a need for solid waste processing and disposal exists and will continue to exist for the foreseeable future, the project represents the preferred choice among other options which may be more environmentally damaging, more expensive and/or more remote and speculative. The project has been found to have significant, unavoidable adverse impacts on the aesthetic values of adjacent recreational uses, short-term impacts of construction dust, and short-term impacts to worker safety during excavation of the Sunnyvale landfill. Only the aesthetic impacts would persist into the future.

Although the environmental analysis assesses the impacts of zero percent recycling, resource recovery at the station is anticipated to reduce the wastestream to the landfill by approximately 20 to 25 percent. The encouragement and fostering of greater and greater amounts of recycling and resource recovery is in the interest of long-term productivity, as is reduction of the waste stream at the source.

As described in Chapter II, if the transfer station operated at 0% recycling it would shorten the permitted life of the landfill, and capacity for station refuse would be available for only the 35 year rather than the full 40 year term. Pressures to expand the landfill may be exerted by additional waste streams. Such an expansion would be required to undergo separate environmental review once a specific proposal was made to local and state agencies. Such review would include an assessment of the relationship between short-term benefits and long-term productivity.

B. Growth-Inducing Impact

The project will not have a growth-inducing impact. The purpose of the SMaRT station is to accept waste from a group of cities and part of the unincorporated County as a means to provide efficient haul, consolidation, resource recovery, and disposal of their solid waste. The project, combined with the use of the Kirby Canyon landfill as the disposal site, is intended to provide the means of solid waste disposal for the primary service area for a minimum of 30 years, and possibly 40 years. Over this period of time, a certain amount of growth is built into projections of the waste stream (1.1% per year). This estimate of growth, which is reflected in the design throughput of the station (2200 tpd), may be an overestimate of the actual rate of growth in the waste stream (which in the past has averaged well under 1% per year).

Nevertheless, design of the station to accept a higher level of throughput than may occur for a target year will not directly influence the rate of growth in the waste stream. Growth in the waste stream is related both to the rate of population growth in the service area, and to the solid-waste generating patterns of the population and of industries such as the packaging industry. If the rate of waste generation grows more slowly than projected (or even declines), this will result in a greater service life for the landfill, and may even allow the SMaRT station to expand its service area beyond that now contemplated.

In addition, the percentage of the waste stream to be diverted to recycling is expected to increase steadily in the future, and the rate of such diversion may be mandated in future amendments to California solid waste law.

The proposed project is the re-use of a site which was previously used for a municipal landfill, an abandoned sludge lagoon site, and the Raisch asphalt/concrete recycling plant. The proposed transfer station will require minor extensions of urban services (electric power, water) already serving the area of the nearby industrial park and the WPCP. The project will not cause the extension of urban services to an undeveloped area or facilitate the growth of an area that would not otherwise be developed.

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APPENDIX A

EXAMPLE OF HAZARDOUS WASTE EXCLUSION PROGRAM

HAZARDOUS WASTE EXCLUSION PROGRAM

FOR THE

DAVIS STREET TRANSFER STATION

PREPARED FOR

WASTE MANAGEMENT OF NORTH AMERICA INC.
OAKLAND CALIFORNIA

by Henry R. Ratcliffe-EMD Load-check program co-ordinator

MARCH 1989

DAVIS STREET TRANSFER STATION
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SAN LEANDRO, CALIFORNIA 94557
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1.0 INTRODUCTION

Amendments to the California Administrative Code (CAC) Title 23-Waters, Chapter 3, Subchapter 15, Section 2523.b require a periodic load checking program which has been approved by the Department of Health Services and the Regional Water Quality Control Board to ensure that hazardous materials and wastes are not being discharged to the landfills.

The Environmental Protection Agency published it's proposed Rule for "Solid Waste Disposal Facility Criteria" in the Federal Register on August 30, 1988. In 40 CFR, part 258, subpart C (Operating Criteria), Section 258.20, was listed the "Procedures for excluding the receipt of hazardous waste" as follows:

(a) The owner or operator of a municipal solid waste landfill unit must implement a program at the facility for detecting and preventing the disposal of regulated hazardous wastes as defined in Part 261 of this title and polychlorinated biphenyls (PCB) wastes as defined in part 761 of this title. This program must include at a minimum:

1. Random inspections of incoming loads;
2. Inspection of suspicious loads;
3. Records of any Inspections;
4. Training of facility personnel to recognize regulated hazardous waste;
5. Procedures for notifying the proper authorities if a regulated hazardous waste is discovered at the facility.

Waste Management Inc. has developed this Hazardous Waste Exclusion Program to comply with the State Regulations, Federal Regulations and Waste Management of North America company policies.

The major components of this plan are:

1. WMI's "Company Special Waste Program"
2. Employee training program for Hazardous & Designated waste recognition and exclusion.
3. Random Periodic Load-checking.

The Waste Management Inc. "Special Waste Program" is discussed in section 4.0 on page 5 under the heading of " Hazardous Waste Exclusion Measures"

Details of the Random Load checking may be found in Sections 4.0 and 5.0 of this program.

Procedures have been established for the safe handling, storage and disposal of any hazardous wastes which are discovered as a result of these exclusion practices.

2.0 SITE SPECIFIC INFORMATION

LOCATION OF THE DAVIS STREET TRANSFER STATION

The Davis Street Transfer Station is located at 2615 Davis Street, San Leandro California ,approximately 2 miles west of Interstate 880. It may be reached by taking Interstate 880 to the Davis Street west exit, then west on Davis Street approximately 2 miles to the transfer station.

The Davis Street Transfer Station is owned and operated by Oakland Scavenger Company a Division of Waste Management of North America.

TYPES OF WASTES ACCEPTED AT THE DAVIS STREET TRANSFER STATION.

Approximately 923,400 tons of wastes are accepted annually at the Davis Street Transfer Station for ultimate disposal at the Altamont Landfill. These wastes originate in Alameda county. Areas serviced are Albany, Emeryville, Alameda, Oakland, Piedmont, Castro Valley(Ora Loma Sanitary District), San Leandro and Hayward . The vast majority of this waste is Mixed municipal solid wastes (residential, commercial and industrial). Small amounts of water treatment grit and skimmings are accepted for disposal after mixing with the refuse at the transfer station. Small amounts of non-hazardous sludge from iron oxide pigment production is mixed with the garbage before hauling to the landfill.

TYPES OF WASTES PROHIBITED AT THIS TRANSFER STATION.

No volatile Organic Compounds or materials containing VOC's are accepted at the Davis Street Transfer Station. No paints, thinners, printing inks, chemicals, drugs or medicines are permitted. No designated wastes or potential water pollutants are permitted. No significant quantities of liquids of any kind are accepted. Gas cylinders full or empty are refused. No contaminated soils are accepted. Waste oil is prohibited in the refuse but is accepted in the waste oil recycling tank at the Public Disposal Area.

HOW THE WASTE IS TRANSPORTED TO THE LANDFILL.

The waste accepted for disposal at the Davis Street Transfer Station is transported to the Altamont Landfill. Approximately 57 % of the refuse hauled to the landfill is received and hauled from this site. The waste is hauled in large over-the-road trailers pulled by company owned trucks.

3.0 WASTE VOLUME CONTRIBUTION

DAVIS STREET TRANSFER STATION

As noted in section 2.0, approximately 57 % of the refuse received at the Altamont landfill is hauled by Oakland Scavenger Company "over-the-road" transfer trucks from the Davis Street Transfer Station. Therefore any successful program for hazardous waste exclusion at the Altamont Landfill must also rely on a parallel program at the Davis Street Transfer Station. This program for the Transfer Station will be implemented in conjunction with the Altamont program.

Oakland Scavenger Company has long had an aggressive program for alerting transfer station personnel, route truck personnel and customers, as to wastes which are acceptable or prohibited for landfill disposal. This policy taken in concert with the Waste Management Inc. Special Waste Program and the Davis Street Transfer Station load checking program, will result in the detection and removal of the hazardous and designated wastes from this waste stream.

4.0 HAZARDOUS WASTE EXCLUSION MEASURES.

4.0.1 The exclusion of hazardous and designated wastes from the landfill will be accomplished by 3 principal avenues. (1) The Corporate Special Waste Program, (2) Educational Training programs for employees and (3) Load checking programs at the Davis Street Transfer Station and at the Altamont Landfill.

4.1 CORPORATE SPECIAL WASTE PROGRAM

Recognizing that many wastes produced by our modern industries have the potential to be harmful to our environment if mismanaged, Waste Management Inc. has established the following corporate policy for handling special wastes as follows:

(a) This policy requires a written description of any special wastes from industrial and commercial customers, stating relevant facts about their wastes and any potential hazards.
(b) Before WMI will undertake to manage the waste, a laboratory analysis is required for any questionable waste to establish whether the materials are hazardous or non-hazardous.
(c) Before WMI will manage the waste, it is necessary to have a written internal technical and operational decision approving the proposed management site and management method. (Known as a special waste decision.)

This corporate program establishes a policy for responsible management of wastes which may be hazardous to the environment including those wastes which fall outside the regulatory definition of "Hazardous".

4.2 PERSONNEL TRAINING PROGRAMS.

(a) Load-check team.
Training programs will be conducted for load-check teams. This training will include detection, recognition, identification, and handling of suspected hazardous waste materials. This training will include familiarization with the necessary record keeping associated with the load-check program. The use of protective clothing and equipment will also be emphasized during these training sessions.

(b) Drivers.
The drivers of the "Route trucks" and drivers of the "front end loader trucks" have been, and will continue to be given training on hazardous or designated waste recognition. (Oakland Scavenger Co. has had an on-going program to educate drivers to recognize, report, and refuse hazardous and/or designated wastes if placed in dropboxes or trash bins.)

(c) Transfer Station Personnel.
The Transfer Station personnel will be given training in detection, recognition and handling of hazardous or designated wastes. **Equipment operators will be trained to recognize possible illegal waste containers and push them to an area out of the disposal traffic pattern for examination. Other persons who work in and around the public disposal area will be trained to recognize possible illegal waste containers and notify the load check team so that an inspection can be made. If any of the personnel observe unacceptable waste being unloaded, they will be trained to halt the unloading and summon the load-check team for inspection of the load.**

4.3 LOAD CHECKING PROGRAM

The final element of our program is a load-check program. Loads for inspection will be selected at random from the sources coming to the Davis Street Transfer Station. See section 5.0 for details of the load-check program.

5.0 LOAD CHECKING FACILITIES AND OPERATIONS

5.1 NUMBER OF LOADS TO BE CHECKED.

The following number of loads from each of the sources coming to the Davis Street Transfer Station will be checked on a weekly basis but selected randomly:

Origin of Load	Loads Hauled by	Number to be inspected weekly
General Public Household wastes & Commercial Wastes	Privately & Company owned Autos, Autos with trailers, pickup trucks etc.	2 (A*)
General Public Commercial & Industrial Wastes	Large trucks and trucks pulling large truck trailers	2 (B*)
DropBoxes(roll-offs) Industrial & commercial accounts	Oakland ScavengerCompany trucks	2 (C*)
Route trucks-OSC Divisions mainly household & commercial wastes	Oakland Scavenger Company Hauling company Divisions	2 (D*)
Suspicious Loads	Any Source or Hauler	All Loads (E*)

(A*) 2 loads per week will be randomly selected for the load-check from the smaller vehicles which come to the public disposal area. This material will be predominantly household and light commercial wastes.

(B*) 2 of the larger trucks , which come to the public disposal area, will be selected randomly each week for inspection. It is anticipated that these trucks will carry refuse from commercial and industrial establishments.

(C*) 2 roll-off boxes (dropboxes) will be selected weekly at random for the load-checking program. An effort should be made to select boxes which have been hauled from different areas (different cities) so that a representative sampling is obtained.

(D*) 2 route trucks should be inspected weekly. Company route trucks operate from Alameda, Albany, Emeryville, Oakland, San Leandro, San Lorenzeo, Piedmont, Hayward and Castro Valley (Oro Loma Sanitary District). An effort will be made to select trucks at random from each of these districts during the yearly operation of the load-check inspections. In addition Univ. of California, Berkeley operates it's own trucks which haul to the transfer station. An effort will be made to include these trucks. At least 2 UC Berkeley trucks should be scheduled for inspection per year.

(E*) Suspicious Loads being Delivered to the Transfer Station.

In addition to the above load checking, the new subchapter D regulations require the checking of any "suspicious loads" which might come for disposal. All loads which appear to be unusual or if the drivers appear to be evasive or suspicious should be examined for hazardous materials.

5.2 Methods of Operation for Inspections.

All loads which are chosen for inspection will be hauled to the public area and will be discharged at the Southern tip of the public area pad. The area will be cordoned off and only the loads to be inspected will be allowed to dump near the load-check operation. The load-check inspection team shall cause the loads to be spread onto the inspection pads as thinly as possible so that the maximum amount of refuse is visible. Using rakes or other hand tools, the inspection team will then proceed to examine the loads for any suspect hazardous or designated wastes.

5.2.1 NO HAZARDOUS OR DESIGNATED WASTE DISCOVERED

If no suspected hazardous or designated wastes are discovered, the load may be pushed to the working area and mixed with the regular refuse which is being loaded for transport to the Altamont Landfill.

5.2.2 HAZARDOUS OR DESIGNATED WASTES FOUND.

If suspected hazardous or designated wastes are discovered, then the load-check inspection team shall begin to follow the proper procedure for isolating and returning the unacceptable wastes to a known generator or packing and transporting the materials to the Hazardous Materials Storage Area if a positive identification of the generator cannot be made. (See section 7.0 for more details on handling.)

6.0 KEEPING RECORDS OF INSPECTIONS

6.1 RECORD KEEPING

Upon selecting a random load for inspection, the following information will be recorded:

(1) Date, (2) Time, (3) Name of the hauling firm or vehicle owner, (4) Name of the driver, (5) Telephone number of the hauling firm, (6) License plate number and truck number of the hauling vehicle, (7) The source or sources of the waste as obtained from the vehicle driver.

The information will be recorded on the field data form shown as Exhibit #1 in Appendix A. The form will be signed by the vehicle driver and a member of the load-check team. It will not be necessary for the vehicle driver of WMI trucks to stand-by while the inspections are conducted. The drivers of all other vehicles will be requested to stand-by while their loads are inspected.

As noted in Section 5.0, the load check inspection team will designate the location for discharge of the waste. The wastes will be spread and examined using hand tools to further disperse any remaining stacks and piles. The material will be carefully observed for any hazardous, designated or other unacceptable wastes that may be contained in the load. Any freely flowing liquid seen during the inspection will be sampled. Simple field tests will be conducted at the site. Odor, color and pH will be recorded on the field data form along with any comments about the source of the liquid.

If any suspected hazardous or designated wastes are discovered in the load, Polaroid photos will be taken and samples will be collected for analysis. The Polaroid photos will be maintained with the Transfer Station copy of the Load-Check data sheet. The unacceptable wastes will be handled according to procedures outlined in section 7.0.

6.2 NOTIFICATIONS.

Notification will be sent to the responsible parties. See section 8.0 for proper reporting and notification procedures.

6.3 REPORTS.

Reports will be prepared and maintained at the site. Reports of discovered hazardous materials will be generated for each month of operation. Reports will contain information as noted below:

(1) Source of unacceptable waste if known; (2) Type of waste material; (3) Quantity of waste; (4) Date waste received; (5) Hauling information from the Load-Checking Data Sheet; (6) Waste returned to generator(if known) or stored for disposal.

A copy of the Load Checking Data Sheet will be attached to the monthly Hazardous Materials Report representing each group of wastes listed on the report

A copy of the monthly Hazardous Materials Report will be maintained at the site and a copy will be sent to Mike Crosetti-General Manager or John Sheahan, company chemist.

7.0 HAZARDOUS MATERIAL HANDLING- STORAGE FACILITIES, AND REQUIRED RECORD KEEPING.

7.1 HAZARDOUS MATERIAL HANDLING.

Before being allowed to participate in the handling of any hazardous materials, all personnel shall be thoroughly trained in hazardous material handling and the proper use of protective clothing and protective equipment.

Suspected hazardous materials discovered in the Load-Check program shall be isolated from the acceptable refuse. After all of the suspect material has been removed, the remaining regular refuse may be pushed to the working area and disposed as any regular trash.

7.1.1 DISPOSITION OF THE HAZARDOUS OR UNACCEPTABLE WASTES.

The suspected hazardous wastes will be handled in the following manner:

(a) A polaroid photograph of the waste will be taken for the load-check records.

(b) If the non-WMI driver of the hauling vehicle is standing-by, the hazardous waste material shall be returned to him and he will be asked to remove the unacceptable portion of the waste from the premises. It will be explained to him that we are not permitted to accept hazardous or designated wastes for disposal at a class III landfill. (The driver should be questioned as to the possible identity of the suspect material.)

(c) In the event that the driver of the hauling vehicle has refused to stand-by for the inspection, and unacceptable wastes are found in the load, polaroid photographs will be taken and a well documented record of the inspection shall be made. (2 members of the load check team should sign the record.) The load-check leader shall notify the General Manager who will contact the generator of the illegal waste. See Section 8 of this program.)

(d) In the event that the suspect hazardous material is discovered in a load from a WMNA owned truck, then the load check team will make provisions for isolating, packing and transporting the materials to the Hazardous Materials Storage Facilities.

7.2 CAUTIONS AND WARNING.

All of the load check team and any other personnel who will assist in handling and transporting the suspected hazardous materials for storage will be given the instructions listed below as part of their hazardous materials handling training.

(a) The isolated suspect materials shall be handled in a cautious manner. Do not agitate or shake liquids in bottles or containers.
(b) Try to read the labels on bottles or containers which hold liquids or powders. Do not mix or consolidate any materials discovered even though they may appear to be identical.
(c) If bottles are labeled as PEROXIDE (any variety), be especially cautious about agitation or shaking of the bottles. If bottles containing liquids are without labels but appear to have small quantities of white or grey crystals formed around the outside or inside of the cap, treat these bottles as you would an unknown peroxide. It is recommended that materials identified as peroxides or possible peroxides be transported separately to the storage areas. (This caution also applies to ethers which are over aged. Ether type compounds tend to form peroxides as they degrade because of age resulting in violent explosive decomposition when agitated or subjected to shock of any kind.)
(d) If known explosives are identified in the load, do not attempt to transport the explosives to the storage area. Leave the explosives where they were discovered, cordon off the area and notify the Alameda County Sheriffs Department bomb squad for assistance and advice. (Notify the Transfer Station General manager who in turn should notify the Company chemist and safety manager.) Note that any Picric Acid found in a load should be considered and treated as an explosive.
(e) If materials marked with radioactive labels are identified in the load, do not attempt to transport them to the storage area. Leave them where they were discovered, cordon off the area, and summon the Alameda County Emergency Services Department by dialing 911. The exception to this rule is smoke detectors. Smoke detectors contain minor amounts of radioactive material. One or two smoke detectors may be safely contained in a load of refuse and would not present a problem to the landfill nor a danger to the Transfer Station personnel.

(f) Labels should be placed on bottles and containers identifying them as having been received as noted on "Load-Checking Data Sheet" No. -------. The hazardous materials should then be carefully transported to the storage facilities. As noted above peroxides or suspected peroxides should be transported separately to the storage areas. (It is recommended that bottles of peroxide be placed into individual 5 gallon pails containing sawdust or vermiculite to cushion shocks during transportation and handling.)

(f) Incompatible wastes should be separated and placed into separate storage areas while awaiting disposal. If unsure as to the incompatibilities call John Sheahan, company chemist for advice.

7.3 REQUIRED RECORD KEEPING.

At the time the hazardous materials are placed into the storage facilities, the leader of the "Load-Check Team" should make certain that the date is recorded on each container and an entry for that material should be recorded in a log book kept at the storage facility. As the materials are removed from storage for shipping and disposal an entry should be made in the log book as to the date of disposal. This record is the responsibility of the Load-check team leader or his designee. (To comply with the Hazardous Waste storage requirements, in no case should the hazardous materials be held longer than 90 days.)

Arrangements should be made with Chemical Waste Management for the proper disposal of collected hazardous wastes at the Kettleman Hill class 1 hazardous waste disposal site or disposal at the TWI incinerator. (Chemical analysis and authorization for disposal at Kettleman Hills usually requires 8-10 weeks.) The packing of the material for transportation to Kettleman Hills or to the incinerator should be left to Chemical Waste Management. A Hazardous Waste Manifest will be necessary for the waste shipment. Copies of the Hazardous Waste Manifest should be retained at the Transfer Station and a Xeroxed copy should be sent to the Mike Crosetti's office in Oakland. The designated copy of the manifest should be sent by the site to the State Dept of Health Services within 30 days.

A log shall be kept in which are recorded the results of Daily visual Inspections of the hazardous materials storage area. The inspections should be designed to detect ruptured or leaking containers or drums. Any deterioration of containers should be recorded and the leaking or ruptured container placed in an overpack container, and the residue cleaned up and disposed of as a hazardous waste. The results of these inspections should be thoroughly documented in the above mentioned log.

7.4 STORAGE FACILITIES.

The storage facilities will consist of a 20 foot X 20 foot bermed concrete pad with a holding capacity sufficient to hold the contents of two 55 gallon drums. The area will be enclosed by an 8 foot high chain link fence which will be secured with a lock when an authorized attendant is not present at the facility. Proper warning signs will be posted on the facility as required by law. The segregated suspect hazardous materials will be stored in overpack drums (which will be supplied by Chemical Waste Management) while awaiting pick-up for proper disposal by CWM.

Incompatible materials will be segregated by the maximum distance allowed by the physical limitations of the storage pad.

The size of the storage facililty should be such that the anticipated receipts from 8-10 weeks of load inspections can be stored without stacking the drums or containers. (This is necessitated by long turn-around times on lab analysis and acceptance procedures for the Kettleman Hills Class 1 disposal site or the TWI incinerator.)

8.0 NOTIFICATION OF RESPONSIBLE PARTIES AND INCIDENT REPORTS

If a positive identification of the generator of illegally disposed hazardous waste is possible, the entities or persons responsible for generating and delivering the illegal wastes will be notified that the wastes were illegally disposed of, and that they must come and collect the illegal wastes or they will be charged for additional analysis and disposal costs incurred.

The EPA's published proposed rule for "Solid Waste Disposal Facility Criteria" (40 CFR, part 258, subpart C, Section 258.20 will require that procedures be established for reporting any regulated hazardous wastes discovered during the load-check activities.

Any incidents of illegal disposal which are judged to be significant*1, regardless of whether the generator has been identified or not, will be reported to the California Regional Water Quality Control Board (San Francisco Bay Region), the California Department of Health Services and the Alameda County Solid Waste Coordinator(County Health Officer). The Leading member of the Load-Check team will report the significant illegal disposal to the landfill general manager and the EMD Engineering Manager , who will make the notifications to the proper authorities.

*1 The determination of whether an incident is judged to be significant depends upon the type and quantity of hazardous or designated waste found in the load. Small quantities of material if considered extremely hazardous may qualify a discovery as significant.

9.0 ADDITIONAL HAZARDOUS WASTE EXCLUSION MEASURES.

9.1 SIGNS

Signs will be posted, near the entrance at the Scale House and collection booth, which clearly state the types of waste that are not accepted at the site. Non technical language will be used such as: No flammable liquids, pesticides, acids, caustics, poisons, waste chemicals, drugs, paints or paint thinners. (SEE APPENDIX C for typical sign at the Davis Street Transfer Station.)

9.2 OBSERVATIONS BY SITE PERSONNEL

In additon to observations for hazardous or designated wastes that are conducted in the load-check program, all site personnel will be trained and directed to identify unacceptable wastes that may be delivered to the site.

Equipment operators will be trained to observe wastes as they are dumped from the trucks on the tipping floor, pushed by the bull dozers, crushed and compacted in the refuse pit. Any suspicious wastes or containers will be pushed out of the traffic pattern to be inspected by the load-check inspection team.

Workers and equipment operators in the Public Disposal Area will be trained to observe the unloading of the vehicles. These workers will be instructed to halt the unloading of any suspicious materials until the loads have been checked and approved by the load-check team or the DSTS General Manager or Assistant Manager.

10.0 PERSONNEL TRAINING-HAZARDOUS MATERIALS RECOGNITION AND HANDLING.

Training programs will be conducted for load-check teams and other Transfer Station personnel. The training will include recognition, identification, and handling of suspected hazardous waste materials and the use of protective clothing and equipment.

No personnel will be permitted to work with the load-check teams or to handle any of the suspected hazardous wastes until they have been properly trained in the above mentioned subjects.

Transfer Station personnel such as equipment operators will be trained to recognize possible illegal waste containers and push them to an area out of the working traffic pattern for examination. Other persons who work near the public tipping area will be trained to recognize possible illegal waste containers or illegal waste disposal and to halt the disposal until an examination can be made by the load-check team.

Although much of the sampling of the hazardous wastes will be done by the Chemical Waste Management team, the load-check personnel will be given additional training in sampling of suspected hazardous wastes and submittal of the samples for laboratory analysis.

All such training programs will be well documented, recorded in the site log and placed in the employees record file.

APPENDIX A

RECORD KEEPING FORMS

DAVIS STREET TRANSFER STATION
LOAD CHECKING DATA SHEET

1. DATE: ________________ SHEET No. ________

2. TIME: ________________

3. HAULING FIRM OR VEHICLE OWNER ______________________________
____

4. DRIVER'S NAME: ______________________________

5. TELEPHONE No. HAULER/OWNER ______________________________

6. VEHICLE LICENSE PLATE & TRUCK No. ______________________________
____

7. SOURCE OF WASTE: ______________________________
(Company name or street address)

8. TYPE OF VEHICLE ______________________________
CAPACITY OF VEHICLE(cubic yards) ______________________________

9. NOTES(what was found,type of hazardous material,volumes)
____
____
____
____

****

10. WAS HAZARDOUS WASTE FOUND? YES ( ) NO ( )
IF YES, GIVE DETAILS: ______________________________
____
____
____
____
____

11. FREE LIQUID FOUND: YES ( ) NO ( )

IF YES, OBSERVATIONS AS FOLLOWS:

a. pH__________ b. Odor ________________ c. color ______________
d. Suspected source of liquid & comments: ______________________________
____

****

Signature of member of load check team ______________________________
Signature of truck/vehicle driver ______________________________

SECTION IV - FIGURE 1

APPENDIX B

HYDROGEOLOGICAL CONDITIONS AND GROUNDWATER ACTION PLAN FOR KIRBY CANYON LANDFILL

ENVIRONMENTAL MANAGEMENT DEPARTMENT

HYDROGEOLOGICAL CONDITIONS & GROUND-WATER ACTION PLAN FOR KIRBY CANYON LANDFILL

FEBRUARY 27TH 1989

WASTE MANAGEMENT OF NORTH AMERICA

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FIGURES

HYDROLOGICAL CONDITIONS & ACTION PLAN FOR
KIRBY CANYON LANDFILL

REGIONAL PICTURE

Kirby Canyon landfill is located within a massive band of Serpentine rock. This geologic formation, together with sedimentary deposits of the Santa Clara Formation, underlies much of the western foothills of the Diablo Range. The Santa Clara Formation, a non-water-bearing geologic unit in the site locale, provides a low permeability buffer at least 1,000 feet wide between Serpentine and water-bearing alluvial deposits of the southern Santa Clara Valley. The generally low permeability of the Serpentine and adjacent Santa Clara Formation provides hydraulic separation between Serpentine underlying the proposed landfill areas and the Valley Alluvium. Recharge of Valley Alluvium from the foothills is through shallow alluvium and surface run off from canyons draining to the south.

In the vicinity of Kirby Canyon landfill, no potable water wells are located within the Serpentine underlying the site or in the abutting Santa Clara Formation. The absence of off-site wells reflects the very limited amounts of ground water in these formations. The off-site well nearest to the facility is located in Valley Alluvium approximately 1,500 feet to the south. Since this well is upgradient of the landfill and well outside the site watershed, there is no possibility of contaminant migration to the well.

SITE HYDROGEOLOGY

The hydrogeology of the Kirby Canyon site is characterized by:

- Insufficient ground water to provide a source of potable water, due to low-permeability soils and the absence of subsurface recharge.
- Meager quantities of ground water limited to fractures in the shallow bedrock.
- Isolation of the bedrock system beneath the site from adjacent watersheds.
- Broad Santa Clara Formation that acts as an effective hydraulic buffer between Serpentine and the Santa Clara Valley Alluvium.
- Absence of active faults beneath the site.

REGIONAL HYDROGEOLOGIC SETTING

The Kirby Canyon site is located in the western foothill belt of the Diablo Range. The foothills form the eastern boundary of the southern Santa Clara Valley (Figure 1) and are characterized by massive Serpentine intrusions bounded by a series of northwest trending faults. Over geologic time (millions of years) movement along these faults has resulted in emplacement of sediments of the Santa Clara Formation, both north and south of the Serpentine. The Kirby Canyon landfill is located entirely within areas underlain by Serpentine.

In the south Santa Clara Valley area, ground water occurs almost exclusively in the alluvial valley fill materials. Older rocks, such as Serpentine, are rarely tapped due to low water yields to wells. Groundwater resources in the bedrock units (Serpentine) of the site vicinity are extremely limited. No known potable water wells have been developed in Serpentine in the site vicinity.

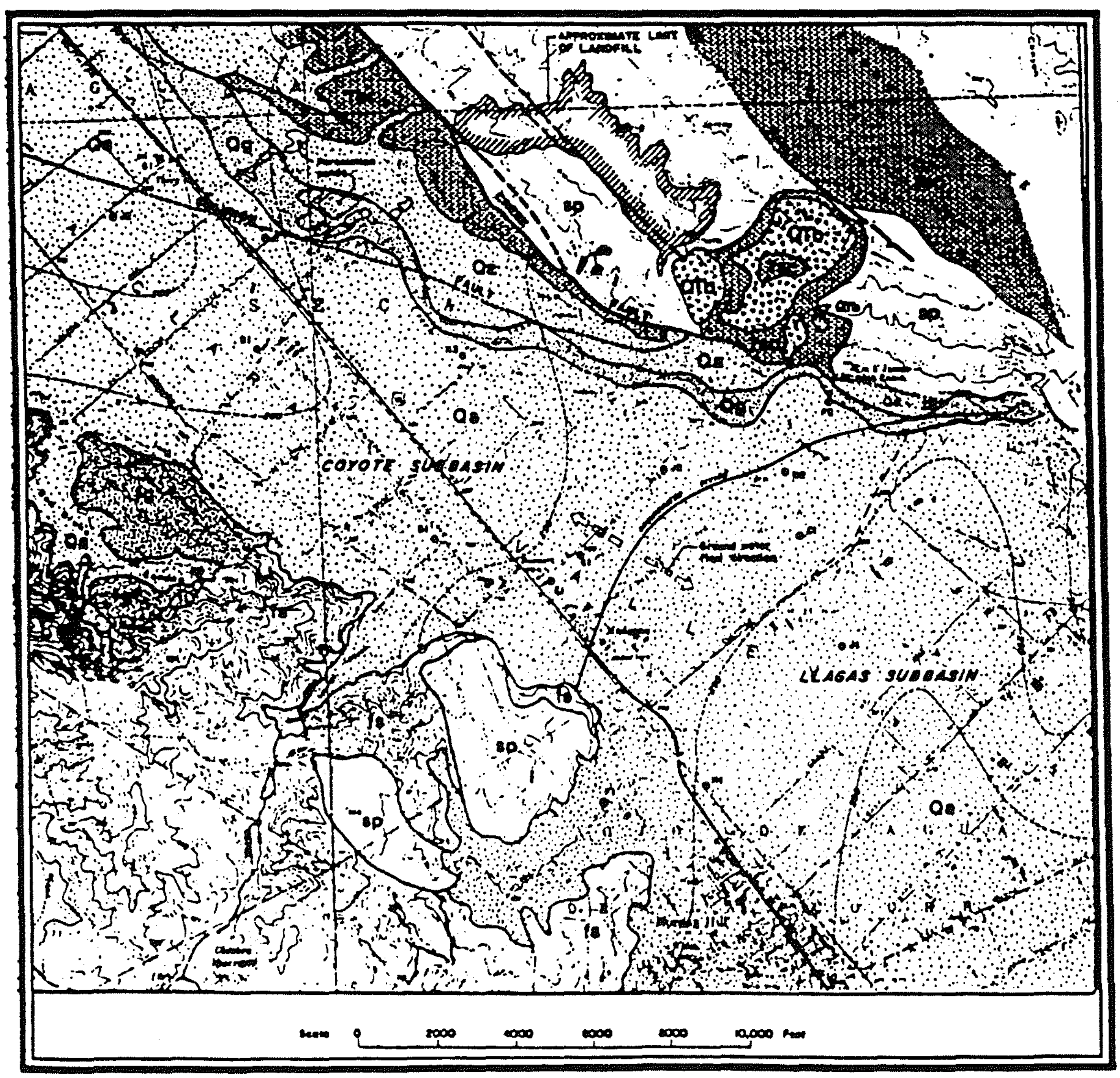


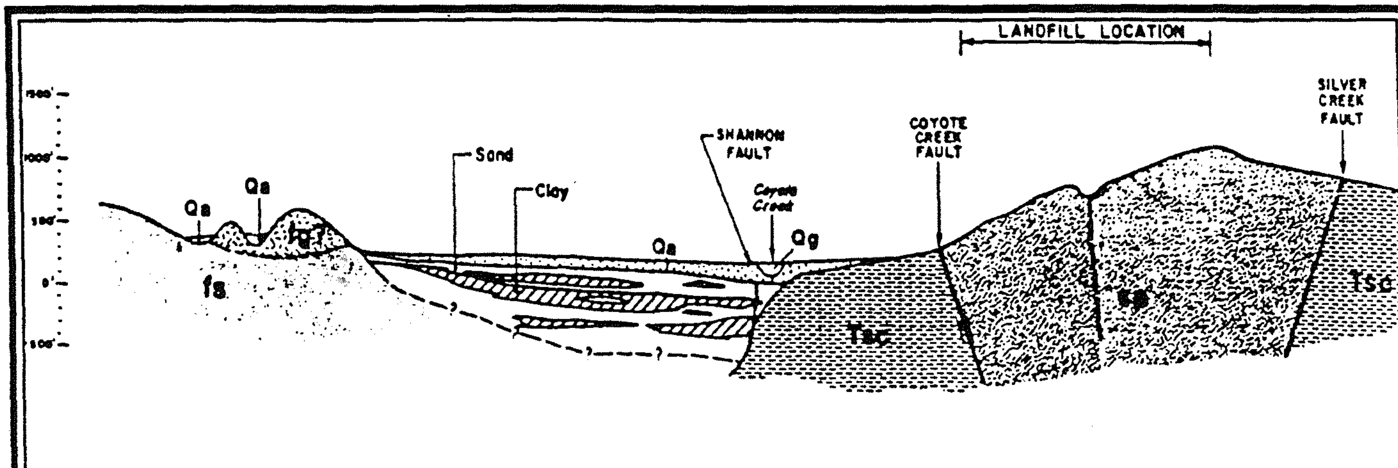
Figure 1

The limited quantities of water within the Serpentine foothill area in which the landfill is developed are hydraulically separated from the alluvium of the Santa Clara Valley by an extensive band of generally fine-grained sediments of the Santa Clara Formation (Figure 1).

Water yields to wells from the Santa Clara Formation are generally low, due to the fine-grained nature and low permeabiiity of most of the sediments. No wells which tap water from the Santa Clara Formation have been identified within 3 miles of the project area.

A review of Santa Clara Valley Water District records indicated that the wells nearest to the site are located on Santa Clara County Park property approximately 1,500 feet south of the landfill. These wells (095/03E-8GI and G2) are inactive. The nearest active wells (09S03E-6N2 and 095/03E-8J5) are located approximately 3,500 feet south and west of Kirby Canyon landfill. The nearest municipal supply wells are those of the City of Morgan Hill. These wells (Figure 1) are located approximately 4,000 feet south of the site. Since these municipal wells are located "upstream" of the mouths of the landfill canyons, there is no possibility that the landfil will impact the quaiity of the municipal water supply.

Ground water in the Coyote subbasin west of the project site is recharged principally by Coyote Creek as shown in Figure 2. Flow in the creek, which is maintained by releases from Anderson Reservoir, infiltrates



GEOLOGIC CROSS SECTION A-A

SCALE: 1" = 2000' horizontal
1" = 1000' vertical

Figure 2

the stream bed to recharge underlying ground water. Percolation and infiltration are enhanced by diversion of surface water into several abandoned gravel quarries along Coyote Creek (Figure 1 & 2). There is little or no subsurface recharge from the foothill areas in which the site is located. Movement of ground water from the Serpentine bedrock of the site area toward the Santa Clara Valley is restricted by a series of inactive northwest-trending faults that disrupt seepage paths within the Serpentine. Ground water beneath much of the valley floor is unconfined and flows in the general direction of surface water drainage. Ground water to the north of Cochran Road moves northward toward the Coyote Narrows (Coyote subbasin), while that to the south moves toward the Pajaro River (Llagas subbasin). Ground-water flow contours in the vicinity of the site are presented on Figure 1.

DESCRIPTION OF SITE INVESTIGATIONS

The hydrogeologic setting of the Kirby Canyon site has been extensively studied. The landfill area was initially examined by previous investigators between 1963 and 1965 in preliminary engineering geologic studies associated with land use evaluations of the area. These studies focused on identifying geologic constraints (e.g., landsliding and faulting) and on developing the area for residential purposes. Since 1965, the site area has been explored in more detail; a list of reports on the site area is presented in references section of the EMCON(1983) report. The reports listed describe details of the geologic conditions in the site area and address the activity of local faults and landslides and their impact on engineering designs for residential development. The major conclusions resulting from these studies are:

- The Coyote and "unnamed" faults crossing the landfill site area are not active.
- Landslides in the site vicinity are generally shallow and do not restrict land development.

In 1982, EMCON began an investigation that focused on generating data needed to understand site hydrogeologic conditions within both a site specific and regional framework. The site investigative program was designed to (1) evaluate the effectiveness of the generally low-permeability Santa Clara Formation to buffer the site from the valley alluvium, (2) determine the containment properties (permeability) of the Serpentine formation and the effect of depth and topography on its properties, (3) ascertain the rippability and usability of Serpentine and Santa Clara Formation materials in the disposal site construction, and (4) determine site design constraints and criteria for development.

The site investigation program utilized the following complementary exploratory techniques:

> Surface Mapping - Geologic features of the site were mapped based on a review of literature, examination of aerial photographs and topographic maps, and on-site examination of outcrops, topographic features and terrain.

Exploritory Test Pits and Subsurface Borings - A total 24 test pits were excavated throughout the site to determine the thickness and character of the soils and surficial weathered bedrock. Twelve borings were drilled to depths ranging from 50 to 205 feet. The borings were positioned to confirm resistivity data and to obtain core samples for detailed examination.

Heavily wooded County parklands, located between public rights-of-way and the mouth of the southernmost canyon of the site, prevented ground access to this critical area (Boring Wells12A and B). A helicopter was therefore used to transport a drill rig into the canyon area. Boring logs and well construction details are contained as Appendix A(EMCON 1983); backhoe test pit logs are in Appendix B in the referenced report.

Electrical ("E") Logs - This process involves measuring the eiectrical properties of soils and geologic formations by lowering an electronic probe into an uncased borehole. The electrical properties measured by the instrument are then correlated with boring logs and surface resistivity data to interpret variations in lithology, the potential of strata to transmit fluids, the occurrence of ground water, and general water quality. The measurements obtained in this investigation correlated well with both surface resistivity and boring log data and provided a means of precisely determining vertical intervals in borings to be monitored and tested. Electrical log data are contained in Appendix A(EMCON 1983).

Electrical Resistivity Survey - An electrical resistivity survey of the site was made to provide general information on ground-water occurrence in both the Serpentine and Santa Clara Formations. The method employs vertical electrical soundings (VES) which transmit electrical currents into the ground. A VES may be considered an electrical "drill hole," the depth of exploration being roughly proportional to the electrode spacing. The thickness of the subsurface strata and/or water-bearing zone is reflected by a difference in resistance to the passage of current between the outer electrodes (Appendix C, EMCON 1983). When correlated and calibrated with physical data from nearby borings, this method enables a rapid evaluation of subsurface conditions to great depth at minimum cost. A total of 10 soundings were made at the Kirby Canyon site to depths of 100 to 300 feet. Interpretive cross-sections are shown on Figure 3. Excellent correlation was found between the resistivity and boring data.

Magnetometer Survey - Twelve magnetometer and, gamma ray spectrometer traverses were made across portions of the site to identify lithologic contacts, shear zones, and fault contacts. Data generated by the traverses were used to refine contact locations established by surface geologic mapping.

Field Permeability Testing - The permeability of the formations, as well as variation in permeability with depth and topographic changes, was measured in boreholes using down-hole packer tests. In packer tests, selected borehole intervals are sealed by an inflatable packer (bladder) and a pressurized water flow is applied to the interval. The quantity of water migrating into the borehole wall is measured and the permeability calculated.

Seismic Refraction Survey - Seismic refraction surveys employ sonic waves created by detonation of small explosive charges to map apparent variations in bedrock hardness. When calibrated against boring cores and "E" logs, the velocity of sound waves in the bedrock can be used to interpret the competency of bedrock, degree of weathering and fracturing, and the potential permeability, as well as the change in these properties with depth. A total of 15,000 feet of seismic lines were run to examine these properties at canyon mouths, floors and ridges, as well as in areas where changes in topography represented potential engineering design constraints.

SITE HYDROGEOLOGIC CONDITIONS

Geologic and hydrologic conditions at the site were investigated by the combination of methods described in the preceding sections, including surface mapping, exploratory borings, backhoe test pits, an extensive seismic refraction survey, vertical electrical soundings and magnetic profiles.

The site investigation identified a transitional hydrogeologic system beneath the proposed landfill consisting of: (1) a surficial system of permeable residual soil and alluvial deposits, (2) a shallow bedrock system composed of weathered and fractured Serpentine of moderate to low permeability, and (3) an essentially impermeable body of unweathered Serpentine bedrock underlying the entire site at depth. The Serpentine body is separated from the permeable alluvial sediments of the Santa Clara Valley by the generally fine-grained sediments of the Santa Clara Formation.

ADDITIONAL HYDROGEOLOGICAL DATA

Additional hydrogeological data has been gathered since the 1984 EMCON efforts to interpret the effectiveness of the grout curtain and establish the geologic conditions down gradient of the landfill. Monitoring Well G-1 was installed downgradient of the grout curtain at the toe of cell 1. The well was drilled in weathered serpentinite from the ground surface to a depth of 50 feet. Unweathered serpentinite was observed in the

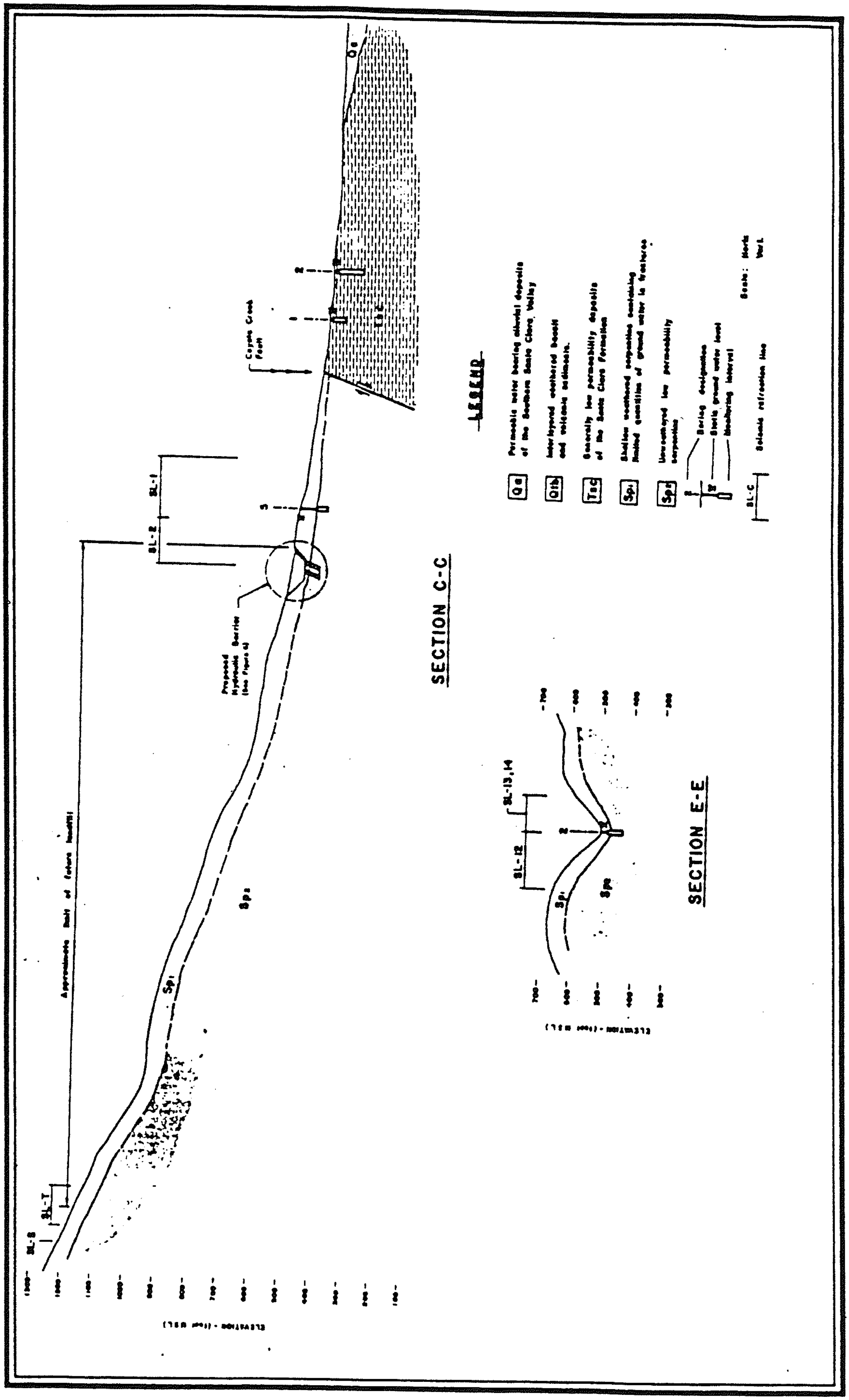

SECTION C-C
SECTION E-E
LEGEND
Qa
Qtb
Tsc
Sp1
Sp2
SL-1
SL-2
SL-12
SL-13,14

Figure 3

borehole down to the final depth of 60 feet. Ground water was observed in the well at a depth of 20 feet below ground surface (elevation of 459.6 feet above mean sea level).

The second downgradient well (G-2) was installed at the mouth of the main site canyon. The well was drilled in sandy clay from the ground surface to a depth of 4 feet, and in weathered serpentinite to the final hole depth of 52.5 feet. Ground-water was observed at a depth of 17 feet below ground surface at an elevation of 459.6 feet above mean sea level.

The Third downgradient well (G-3) was installed between G-1 and G-2. The well was drilled in sandy clay from the ground surface to a depth of 40 feet . Weathered serpentinite was found to a depth of 40 feet in the borehole. Ground water was observed at a depth of 16.6 feet during drilling or an elevation of 504.6 feet above mean sea level.

Wells G-1, and G-2 were constructed , as shown on the enclosed wll construction details , by the installation of 2-inch diameter, schedule 40 PVC casing and were screened in the 10-50 foot depth interval, well G-3 was constructed in a similar manner with a screened zone from 20 to40 feet below ground surface. The location of the wells are shown on figure 4.

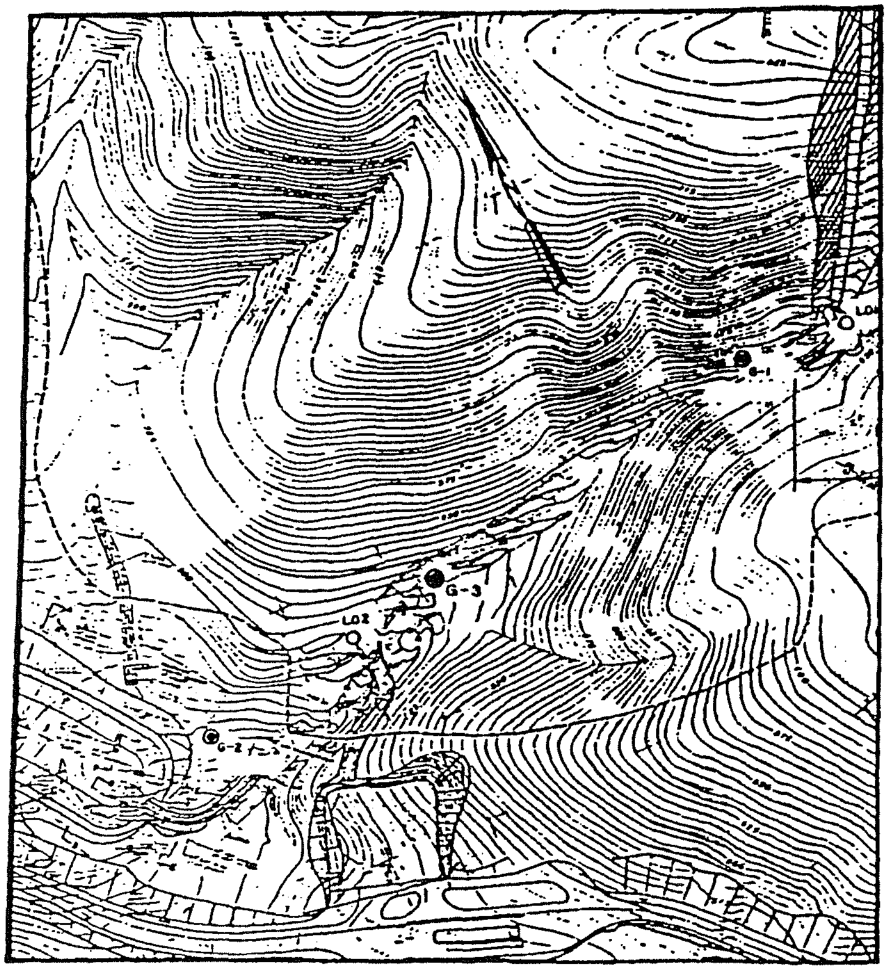
INTERPRETATION OF THE ADDITIONAL HYDROGEOLOGIC INFORMATION

The importance of the additional borings/monitoring wells is that a consistent conceptual picture has been developed on Kirby Canyon. Figure 3 illustrated a conceptual model of the site lithology as a geological column. The additional hydrogeologic information confirms that alluvial/residual soils overlie weathered bedrock. The weathered bedrock extends to a depth of approximately 50-70 feet deep where unweathered bedrock is found. The water table is contacted 15 to 20 feet below ground surface in the stream channels and ground-water flow is along the channel toward downgradient monitoring wells. The following section describes the conceptual hydrogeology at Kirby Canyon.

SOIL AND ALLUVIAL SYSTEM

Unconsolidated surficial deposits occur across the site as (i) residual soils on hillside slopes, and (2) alluvial sediments concentrated in canyon floors and lower hillside slopes in the southern portion of the site.

<u>Residual soils</u> were explored across the site by excavating 24 backhoe test pits to depths ranging from 2 to 14 feet. Two types of soil were encountered in the excavation -- a bouldery clay soil overlying Serpentine, and



Locations on Figure are approximate

MONITOR WELL LOCATIONS

G-1	251676.99N	1657935.88E
G-2	251333.45N	1656813.63E
G-3	251439.94N	1657293.85E

NOTE: Survey data relative to monument located on site

Survey completed by MH Engineering, Morgan Hill, California

EXPLANATION

● G-1 Ground-water monitoring well location and designation

○ L-1 Leachate collection point location and designation

0 50 100 200 300 400 500

SCALE: 1" = 200'

APPROXIMATE LOCATION OF MONITORING WELL G-3

Kirby Canyon Landfill

PROJECT 109E08041	REVISIONS
DATE 1/88	

Hydro-Search, Inc.
HYDROLOGISTS-GEOLOGISTS-ENGINEERS
MILWAUKEE • DENVER • RENO

FIGURE 1

Figure 4

sandy clays to clayey sands overlying and derived from the Santa Clara Formation.

Soil overlaying Serpentine consists of a thin (average 6-inch) surficial layer of expansive dark brown sandy clay with an underlying several-foot-thick layer of rock fragments in a light brown sandy silt to clay matrix. The rock fragments, which range from several inches to several feet in diameter, comprise approximately 50 percent of the soil volume. Fragments smaller than 1 foot in diameter are typically weathered and fractured.

During periods of precipitation, the low permeability of surficial clays results in low infiltration rates and rapid runoff on most hillside slopes. However, where clays have been eroded or not developed, exposing underlying rocky material, infiltration and storage is relatively rapid. After rainfall, stored moisture in the rocky surficial soils discharges as small seeps from steep excavations and exposures. Conductivity and pH measurements of these seeps showed a low mineral content, reflective of shallow infiltration and limited retention and travel times.

Conceptual Geologic Column Kirby Cyn.

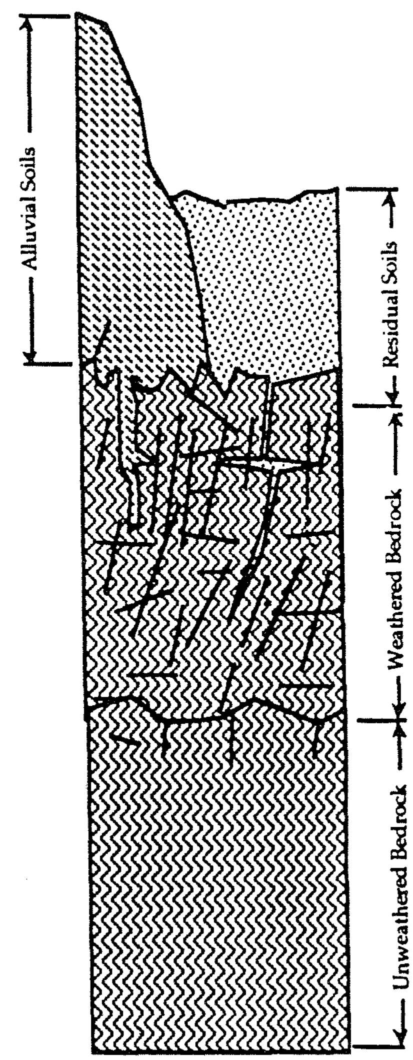


Figure 5

Soils developed over the Santa Clara Formation are heterogeneous, reflecting the alluvial nature of the underlying sediments. The soil thickness is typically 2 to 3 feet, but is difficult to define at any given point due to a transitional contact with the semiconsolidated Santa Clara deposits. The predominant soil type is a brown sandy clay with disseminated fine gravel. Representative soil in the 0- to 3-foot depth interval is classified in laboratory tests as CH (clay of high plasticity) by the Unified Soil Classification System. Infiltration into these soils is low due to their high clay content.

Alluvial Soils are concentrated in canyon floors and outflow depositional aprons at canyon mouths. The canyon floors are characterized by extremely rocky soils containing angular rock fragments several feet in greatest dimension. Ground water is transmitted fairly rapidly within the coarse-grained material of the canyon floors. As it flows southward to the canyon mouths, however, ground-water retention times increase due to the increased clay and silt content of the alluvial deposits.

SHALLOW BEDROCK SYSTEM

The entire area under landfill development is underlain by Serpentine. Within the shallow bedrock system, two transitional subsurface zones were identified by seismic refraction survey and confirmed from boring core samples: (1) a shallow, highly weathered zone to depths of approximately 50 feet, and (2) a zone of moderately fractured rock from approximately 50 to 70 feet. The upper zone of the Serpentine mass (0 to 50 feet) has been reduced by weathering to scattered hard blocks within a highly weathered, sheared matrix. Core samples from this zone contained fractures closely spaced at 2 inches or less. Veining and mineral infilling of fractures by chrysotile (magnesium silicate) is extensive. Much of the material is easily excavated from outcrops by rock pick, and portions of core samples can be easily broken apart by hand. Seismic velocities in this zone characteristically range from 4,500 to 6,500 feet/second.

In the average depth interval of 50 to 70 feet, weathering decreases and the rock takes on a hard, competent appearance. Examination of core samples showed that fractures are well defined and widely spaced at 5 to

Cross-sectional view of Conceptual Hydrogeology-Kirby Cyn

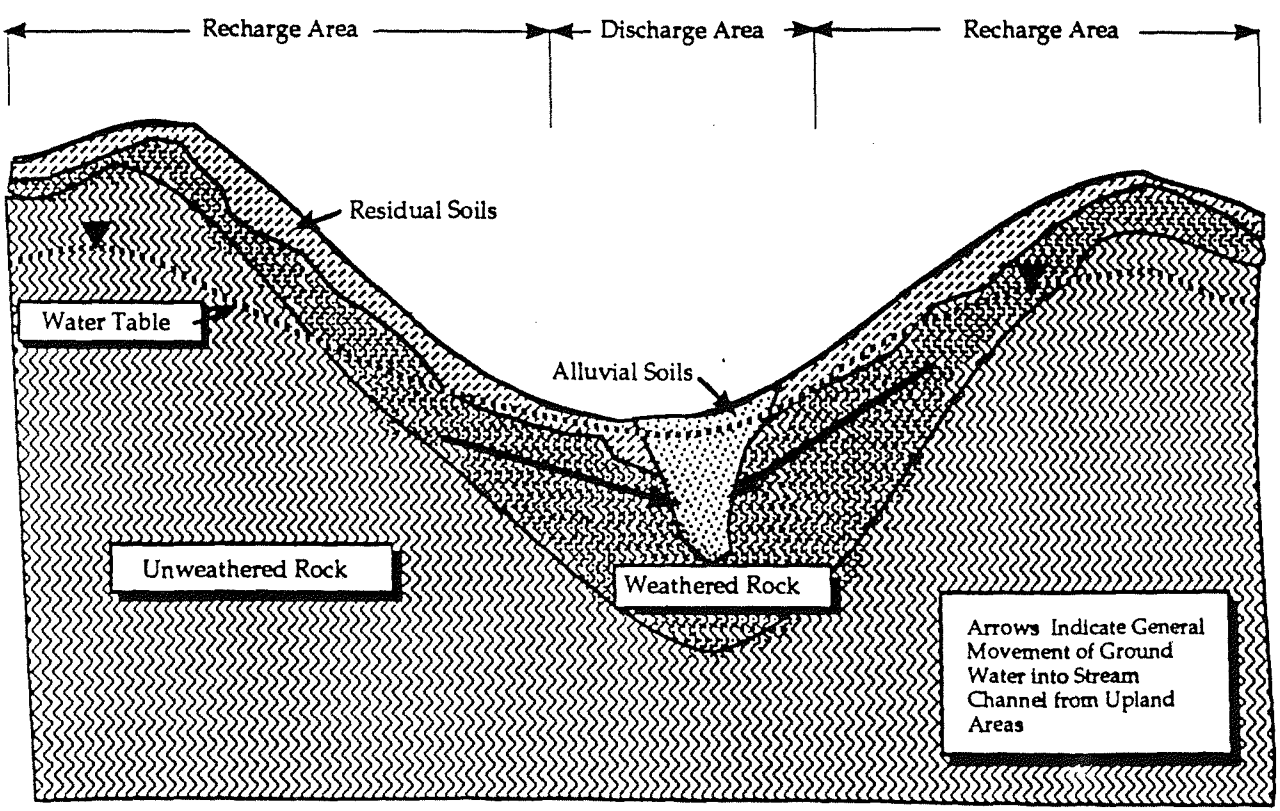


Figure 6

12-inch intervals. The rock breaks preferentially along fractures or wide veins. Seismic velocities in this zone range from 6,500 to 8,000 feet/second.

The weathered nature of the shallow bedrock results in the accumulation and storage of limited quantities of ground water in fractures. Both resistivity soundings and "E" logs of boreholes in the Serpentine indicate that zones containing water abruptly terminate at the contact with underlying competent (relatively impermeable) rock. Ground-water movement within the shallow bedrock system is constrained by (1) the moderately low permeability of the formation, and (2) the subsurface configuration of the contact with underlying impermeable unweathered rock.

Twelve packer tests in the weathered bedrock measured permeabilities ranging from 10^{-4} to 10^{-6} cm/sec (100 to 1 foot/year). By comparison, sands have permeabilities typically exceeding 10^{-3} cm/sec (Greater than 1,000 feet/year), clays less than 10^{-6} cm/sec (1 foot/year). The relatively higher permeabilities measured in the weathered zone in some borings are not significant, due to the small quantities of water moving through this zone and the fact that much of this weathered zone will be removed in site excavation. Permeability of the bedrock decreased significantly with increased depth (Appendix D, EMCON 1983). Figure 6 illustrates a cross-section through Kirby canyon and the conceptual hydrogeology of the site.

Ground-water quality decreased with depth, reflecting longer storage and travel times and greater mineral interaction in the less fractured/weathered rock. Chemical analysis (Appendix D, EMCON 1983) found the ground water to be of variable but generally good quality for most uses. However, the high total dissolved solids content (TDS) in 3 of 4 samples exceed drinking water standards, making the ground water unacceptable as a source of drinking water. The extensive seismic refraction data (over 15,000 feet of profile, Appendix E, EMCON 1983) confirm that Serpentine weathering profile closely reflects surface topography. Ridgelines correspond to high elevations of competent rock, and canyons to depressions in competent rock (Figure 6). Seismic profile lines were run both parallel and perpendicular to ridge lines and across canyons to clearly define the configuration of the base of the shallow bedrock system. Movement of the limited amounts of ground water within the Serpentine mirrors surface runoff. Infiltrating waters move downward through fractures in the surficial highly weathered Serpentine until more competent impermeable rock is encountered. The ground water is then deflected and moves along the interface with impermeable bedrock toward lows in the weathering profile, i.e., from ridgeline areas toward the canyon floors and then southward down the canyon in the same general direction as surface runoff.

UNWEATHERED BEDROCK

At depths typically of 60 to 70 feet, rock fractures become rare, being replaced by intricate veining. Rock from core samples taken from this depth is difficult to break apart, and seismic velocities are in the range of 8,000 to over 10,000 feet/second. A significant increase in drilling resistance was encountered in borings penetrating into this lower bedrock.

The contact with unweathered bedrock, indicated by the seismic profiles and borings, was confirmed by the "E" logs, surface resistivity soundings (VES), and borehole packer data. A decrease in rock permeability was closely correlated with shifts in resistivity, as recorded in the "E" logs. Abrupt increases in resistivity, recorded in surface soundings, were also noted. Most significantly, packer tests in unweathered bedrock consistently found decreasing permeability with depth.

CURRENT GROUND-WATER CONTROL FEATURES

As a contingency measure, leachate control facilities were installed at the mouths of the canyons. These control facilities, consisting of a toe berm and grout curtain hydraulic barrier, as well as a collection sump and riser pipe for monitoring and removal of leachate, are shown in Figure 3. It is now apparent that the grout curtain must be supplemented by construction of a cutoff trench to intercept ground water that may be moving through the grout curtain area. This cutoff trench will be designed to intercept and remove ground water moving through the alluvial and weathered bedrock systems.

It is believed that a number of factors can effect the rate of ground water flow at Kirby Canyon. The equation for ground water velocity is as follows:

$$V = \frac{ki}{n}$$

Where k is hydraulic conductivity (or permeability), i is gradient, and n is the porosity of the material. The previous estimates of velocity were based on a hydraulic conductivity of 1×10^{-4} cm/sec, a porosity of 20% (0.20), and a gradient of 0.10. Well G3 has a water level of 504.65 and is located 650 feet away from Well G1. The gradient between the two wells is 0.111, which agrees with the earlier values for the gradient between Wells G1 and G2 (of 0.10).

The remaining two elements in the equation, k and n, are likely the variables that could be incorrectly measured in previous investigations. These two parameters can, however, be more accurately measured by a pump test where water levels in observation piezometers are measured during the pump test. Both transmissivity and storage coefficients can derive the remaining two unknown in the equation for velocity.

PROPOSED ACTION PLAN

To address the observed ground-water movements at Kirby Canyon an action plan has been developed to actively collect flows moving through the down canyon areas below the grout curtain. The action plan is based on a phased approach so that the program can be adjusted based on the data gathered during implementation of the program. Figure 7 shows a flow chart of the action plan with individual Task work segments. Further details are provided in the text description of the plan.

PHASE I - REVIEW DATA

The first task (1) of the action plan is to review the available data gathered by previous investigators at Kirby Canyon. The pertinent information will include the geotechnical and hydrological basis for the design of the grout curtain as well as the geophysical data gathered for the landfill design. These data will be organized to define the conceptual flow paths for ground water movements in and around Kirby Canyon. The data review activities will be used to design and plan a field data collection program directed at defining the following:

- The mass hydraulic conductivity of the alluvial soils in the stream channel ;
- The mass hydraulic conductivity of the weathered bedrock in the stream channel;
- The potential ground-water moving past the grout curtain;
- Define the optimum location for a ground-water collection trench; and
- Calculate the projected volumes of ground-water required to be collected by the cutoff system.

The above points are important for the long term control of ground water at the site.

PHASE II - FIELD PROGRAM

The phase II program consists of three tasks associated with establishment of the ground water flow into and down canyon and the selection of an optimum location for the installation of a cutoff trench. Task 3 consists of performance of surface geophysics across and down canyon. We believe seismic refraction profiles will show the best position for installation of a cutoff trench to collect ground-water flowing down the stream channel. This cutoff trench will have two major effects on ground-water movement in the Kirby canyon stream channel:

- Provide a collection point for ground water moving down gradient to the cutoff;
- Establish a lower base level to reverse ground-water movements in the canyon so that a ground-water hydraulic barrier will be formed.

WELL DETAILS

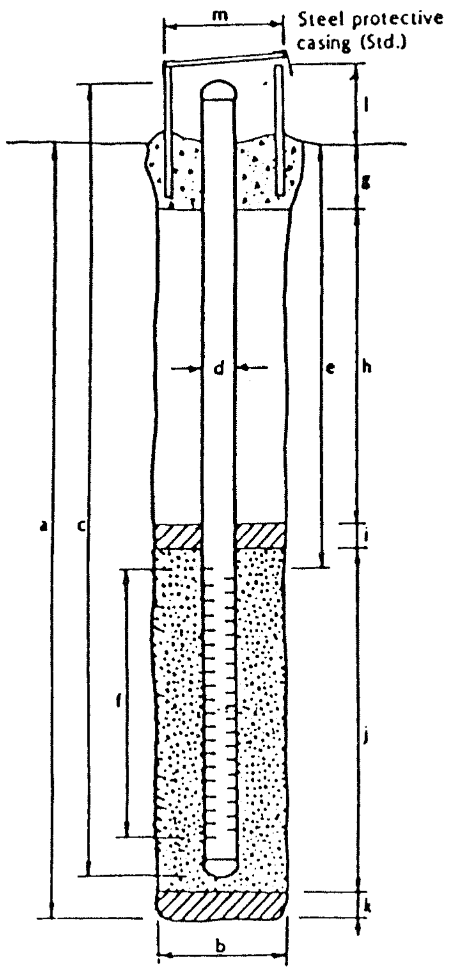
EMCON

PROJECT NUMBER 231-21.00 BORING / WELL NO. G-1

PROJECT NAME Kirby Canyon TOP OF CASING ELEV. 583.97'

COUNTY San Jose GROUND SURFACE ELEV. 583.32'

WELL PERMIT NO. 86W0135 DATUM M.S.L.



EXPLORATORY BORING

a. Total depth 60 ft.

b. Diameter 8¾ in.

Drilling method Air-Rotary

WELL CONSTRUCTION

c. Casing length 50.65 ft.

Material Schedule 40 PVC

d. Diameter 2 in.

e. Depth to top perforations 10 ft.

f. Perforated length 40 ft.

Perforated interval from 10 to 50 ft.

Perforation type Machine Slotted

Perforation size 0.020-inch

g. Surface seal 6 ft.

Seal material Bentonite - Type I,II Cement Mix

h. Backfill N/A ft.

Backfill material

i. Seal 2 ft.

Seal material Bentonite

j. Gravel pack 46 ft.

Pack material 12/20 Monterey Sand

k. Bottom seal 6 ft.

Seal material Native Formation

l. Casing height 0.65 ft.

m. Protective casing diameter 10 in.

WELL DETAILS

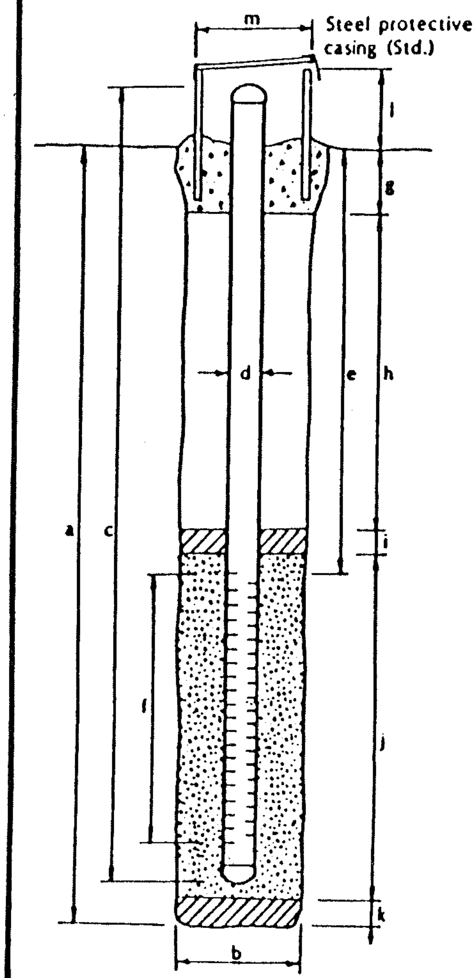
EMCON

PROJECT NUMBER 231-21.00 BORING / WELL NO. G-2

PROJECT NAME Kirby Canyon TOP OF CASING ELEV. 477.85'

COUNTY San Jose GROUND SURFACE ELEV. 476.58'

WELL PERMIT NO. 86W0134 DATUM M.S.L.



EXPLORATORY BORING

a. Total depth 52.5 ft.

b. Diameter 7 7/8 in.

Drilling method Air-Rotary

WELL CONSTRUCTION

c. Casing length 50 ft.

Material Schedule 40 PVC

d. Diameter 2 in.

e. Depth to top perforations 10 ft.

f. Perforated length 40 ft.

Perforated interval from 10 to 50 ft.

Perforation type Machine Slotted

Perforation size 0.020-inch

g. Surface seal 6 ft.

Seal material Bentonite - Type I,II Cement Mix

h. Backfill N/A ft.

Backfill material

i. Seal 2 ft.

Seal material Bentonite

j. Gravel pack 44.5 ft.

Pack material 12/20 Monterey Sand

k. Bottom seal N/A ft.

Seal material

l. Casing height 1.27 ft.

m. Protective casing diameter 10 in.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 231-21.00 BORING NO. G-2
PROJECT NAME Kirby Canyon PAGE 1 OF 2
BY LSV DATE 4/14/86 SURFACE ELEV. 476.58' M.S.L.

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0	B	CL	SANDY CLAY moderate brown (5YR, 3/4), 15-25% fine-to medium-grained, subangular to subrounded sand; abundant fine subangular to subrounded gravel; occasional subangular to subrounded cobbles; abundant damp rootlets. @1': 30-40% brownish black (5YR, 2/1) serpentinite pebbles; physical properties: deeply weathered; limonitic staining; mineral-filled fractures; moderate to hard.
				5		SERP	SERPENTINITE; brownish black (5YR, 2/1); 10-15% moderate brown (5YR, 4/4) sandy clay, deeply weathered; abundant limonitic staining; abundant paper-thin, mineral-filled fractures; crushed; moderate to hard; dry.
				10	B		@10': no sandy clay.
			▼				
				15			@15': moderate yellowish brown (10YR, 5/4) limonitic staining.
			▽				@17': wet.
				20	B		@20': olive-black (5YR, 2/1).
				25			
				30	B		@30': olive-black (5Y, 2/1); 33% limonitic staining; 33% mineral-filled fractures; 33% fresh; intensely fractured to crushed.
				35	B		@35': 50% limonitic staining; 25% mineral-filled fractures; 25% fresh; greenish gray (5G, 6/1) mineral-filled fractures.
				40			

REMARKS Well G-1 was drilled using air-rotary drilling equipment to a total depth of 52.5 feet. The boring was converted to a permanent ground-water monitoring well (see WELL DETAILS).
(B) denotes bag sample.

EMCON

LOG OF EXPLORATORY BORING

PROJECT NUMBER 231-21.00 BORING NO. G-2
PROJECT NAME Kirby Canyon PAGE 2 OF 2
BY LSV DATE 4/14/86 SURFACE ELEV. 476.58' M.S.L.

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				40	B	SERP	SERPENTINITE (Continued). @40': 25% limonitic staining; 50% mineral-filled fractures; 25% fresh; crushed.
				45			@45': grayish black (N2); intensely fractured to crushed.
				50	B		BOTTOM OF BORING AT 52.6 FEET.
				55			

REMARKS

EMCON

ROCK BOREHOLE LOG

SITE NAME AND LOCATION: Kirby Canyon Sanitary Landfill, San Jose, California

DRILLING METHOD: Air-rotary, 6 5/8" Diameter

SAMPLING METHOD: Bagged.

BORING NO.: G-3

SHEET: 1 OF 2

WATER LEVEL	16.6			
TIME	11:30			
DATE	12/20/88			
CASING DEPTH				

DRILLING	
START	FINISH
TIME	TIME
1215	1300
DATE	DATE
12/19	12/19/88

DATUM: Ground level ELEVATION: 517.68

DRILL RIG: Simco 5000

SURFACE CONDITIONS: Road cut

ANGLE: Vertical BEARING:

SAMPLE HAMMER TORQUE: FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/FT (ON SAMPLER) (RECOVERY)	CORES: RUN NO.	NO. AND SIZE OF CORE PIECES	% RECOVERY	RQD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	ROCK STRUCTURE	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	TEST RESULTS DEPTH IN FEET FROM	TO	PERMEABILITY CM./SEC.
						SERPENTINITE: Dark reddish brown (5 YR, 3/3), mod. weathered	SP							
5														
10														
						Moist @ 13'								
15						Wet @ 15' @15': Deeply weathered to dark gray (5YR,4/1) clay								
20						@ 20': Firm, sl. weathered, v. dark gray (7.5 YR, 3/0) to gray green								
25														
30														
35														

DRILLING CONTR. Water Development Corp. Woodland, Ca.

RL 00952

LOGGED BY DEW CHK'D BY DJH

DATE 12/19/88

Printed on recycled paper

ROCK BOREHOLE LOG

SITE NAME AND LOCATION: Kirby Canyon Sanitary Landfill, San Jose. Ca.

DRILLING METHOD: Air-rotary

SAMPLING METHOD: Bagged

BORING NO.: G-3

SHEET: 2 OF 2

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING	
START	FINISH
TIME	TIME
1215	1300
DATE	DATE
12/19	12/19

DATUM: Ground level ELEVATION: 517.68

DRILL RIG: Simco 5000

SURFACE CONDITIONS: Road cut

ANGLE: BEARING:

SAMPLE HAMMER TORQUE: FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/FT (ON SAMPLER) (RECOVERY)	CORES: RUN NO.	NO. AND SIZE OF CORE PIECES	% RECOVERY	RQD	SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	ROCK STRUCTURE	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	TEST RESULTS DEPTH IN FEET FROM	TO	PERMEABILITY CM./SEC.
35														
						@38:								
40						Dark gray (7.5YR, 3/0), strongly weathered to clay TD=40.								

DRILLING CONTR. Water Development Corp. Woodland, Ca.

RL 00953

LOGGED BY DEW CHK'D BY DJH

DATE 12/19/88

Printed on recycled paper

WELL G-3

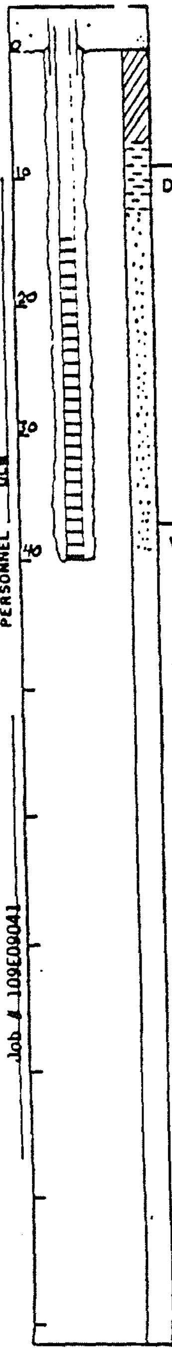
WELL CONSTRUCTION SUMMARY

LOCATION Kirby Canyon San. Landfill

PERSONNEL DEM

PROJECT WMNA - Kirby Canyon

Job # 109E09041



LOCATION or COORDS: Sec. 36, T. 9 S., R. 3 E.

ELEVATION: GROUND LEVEL 517.83 (Cement)

TOP OF CASING 519.68 (PVC)
520.30 (Aluminum)

DRILLING SUMMARY:

TOTAL DEPTH 40 feet

BOREHOLE DIAMETER 6-5/8 inches

DRILLER The Water Development Corp.
Woodland, Ca.

RIG Simco 5000

BIT(S) Tricone

DRILLING FLUID Air

SURFACE CASING 4-inch aluminum

WELL DESIGN:

BASIS: GEOLOGIC LOG X GEOPHYSICAL LOG ___

CASING STRING(S): C=CASING S=SCREEN

+2 - 15	C1	
15 - 40	S1	

CASING: C1 2-inch, sch. 40 PVC

C2

C3

C4

SCREEN: S1 2-in., sch. 40 PVC, .02 in. slot

S2

S3

S4

CENTRALIZERS Stainless steel, placed at 40 and 15 feet

FILTER MATERIAL #3 Monterey Sand from 40 feet to 12 feet below ground level

CEMENT Neat cement from 7 feet to ground level

OTHER Threaded cap placed on bottom of casing string.
Bentonite seal from 12 feet to 7 feet

CONSTRUCTION TIME LOG:

TASK	START DATE	START TIME	FINISH DATE	FINISH TIME
DRILLING:				
6-5/8	12/19	1215	12/19	1300
GEOPHYS. LOGGING:	N/A			
CASING:				
PVC	12/19	1520	12/19	1550
FILTER PLACEMENT:	12/19	1550	12/19	1615
CEMENTING:	12/19	1630	12/19	1645
DEVELOPMENT:	12/20	1130	12/20	1530
OTHER:				
Bentonite	12/19	1615	12/19	1630

WELL DEVELOPMENT

Pumped with a development pump from various depths for four hours. Removed 240 gallons.

COMMENTS:

First water at 15 feet below original ground level, 17 feet below top of PVC.

Static water level on 12/21/88 16.6 feet below top of PVC, elevation 503.08 feet msl.

HYDRO-SEARCH RENO•DENVER · CONSULTING HYDROLOGISTS-GEOLOGISTS

Kirby Canyon Liquids Management

Current liquids management at Kirby Canyon Landfill consists of: 1) diverting spring and surface water to a sedimentation basin and 2) recycling leachate in accordance with California Administrative Code Title 23 Subchapter 15 Section 2543 (g). Even though the practice of recycling leachate to the waste management unit from which it is produced complies with all regulatory requirements, it does not comply with Waste Management of North America, Inc. (WMNA) policy. Therefore WMNA Environmental Management Staff and Kirby Canyon site management have explored a variety of options for managing leachate. Emcon Associates was commissioned to study types of liquids management and to propose a management method for Kirby Canyon. After reviewing Emcon's report and discussing pertinent permit and legal issues, the following plan has been developed for leachate management:

Proposed Kirby Canyon Leachate Management Plan

The preferable solution for managing Kirby Canyon's leachate is a sewer connection with the leachate ultimately being treated by a POTW. As the first aspect of its Leachate Management Plan, WMNA has been pursuing and will continue to try to obtain authorization to dispose of Kirby Canyon's leachate to a POTW. If successful, WMNA will construct a sewer line, and as an interim measure, will truck leachate to the POTW.

While pursuing the POTW disposal rights, WMNA will also explore the feasibility of treating and recycling Kirby Canyon's leachate in case they do not obtain POTW disposal rights. The low level of contaminants and acceptable TDS of the leachate would allow a treatment method such as carbon filtration. After the low level contaminants were removed, the treated water could be used for dust control purposes, site landscape irrigation, or even as supply water for the proposed truckwash facility. A sewer connection would be required for the truckwash facility and might also eventually be required, if the leachate degrades beyond the carbon filtration system's treatment capabilities. The treatment and reuse of Kirby Canyon's leachate could resolve the leachate disposal issue while providing a recycled water source.

The following is a proposed timeline for implementing both aspects of the Kirby Canyon Leachate Management Plan. This timeline is contingent upon receipt of applicable permits.

Second Quarter 1989:	Investigate feasibility of using treatment plant and reclaimed water.
	Pursue authority to discharge to POTW.
Third and Fourth Quarter 1989:	Obtain easements for sewer line.
	Construct treatment facility if needed.
First Quarter 1990:	Construct sewer line.

These concepts are illustrated in Figure 8 to show the conceptual installation of the cutoff trench into the bedrock. Since the ground-water cutoff trench will provide for reversing gradients in the stream channel both collection and hydraulic barrier effects are employed in the design.

The fourth task in this program will be to locate and install stratigraphic borings and piezometers to confirm the geophysical data gathered in the third task. It is estimated that 10 borings/piezometers will be implemented during this task. These piezometers will be in 5 sets of 2 to confirm local horizontal and verti-

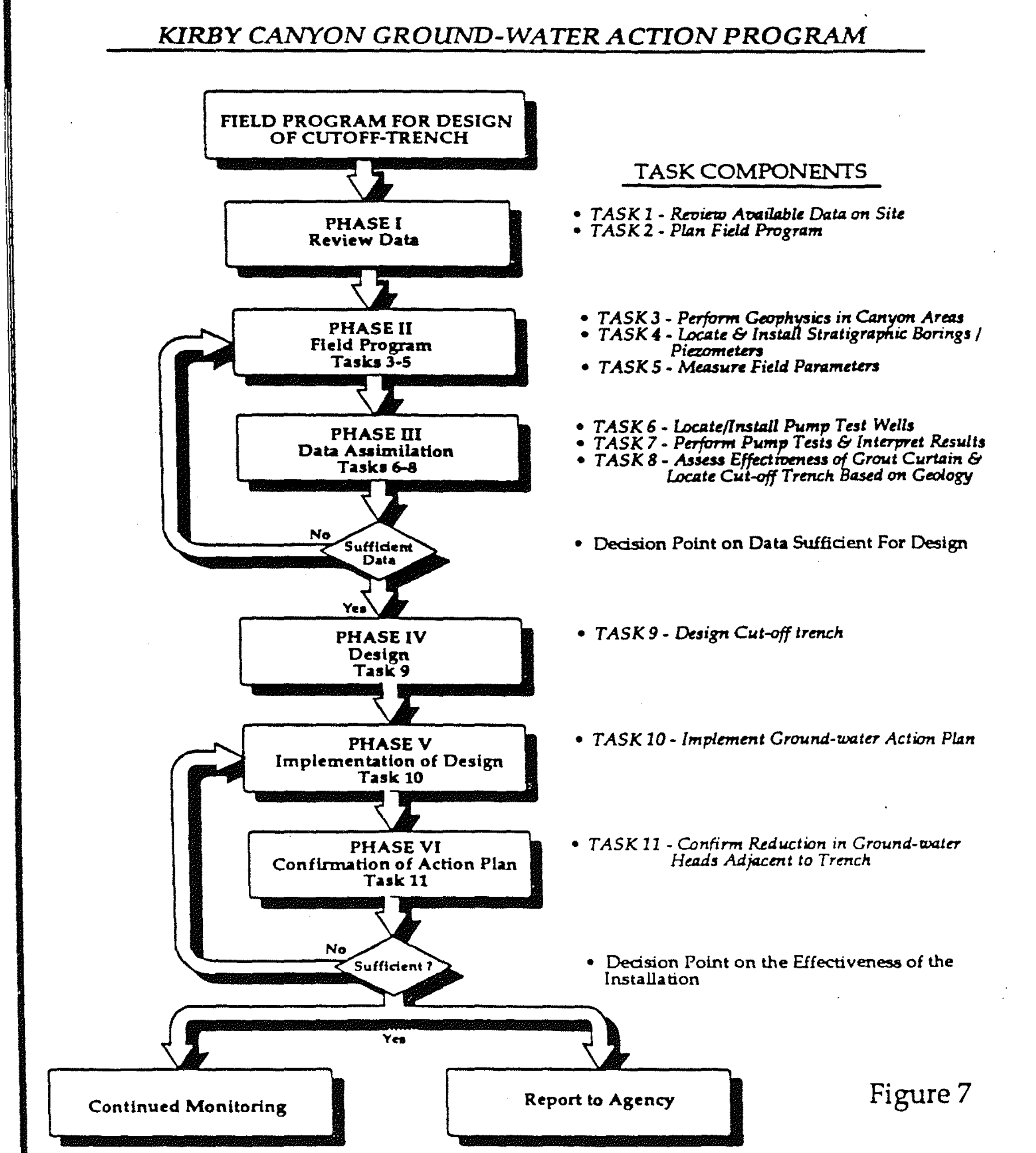


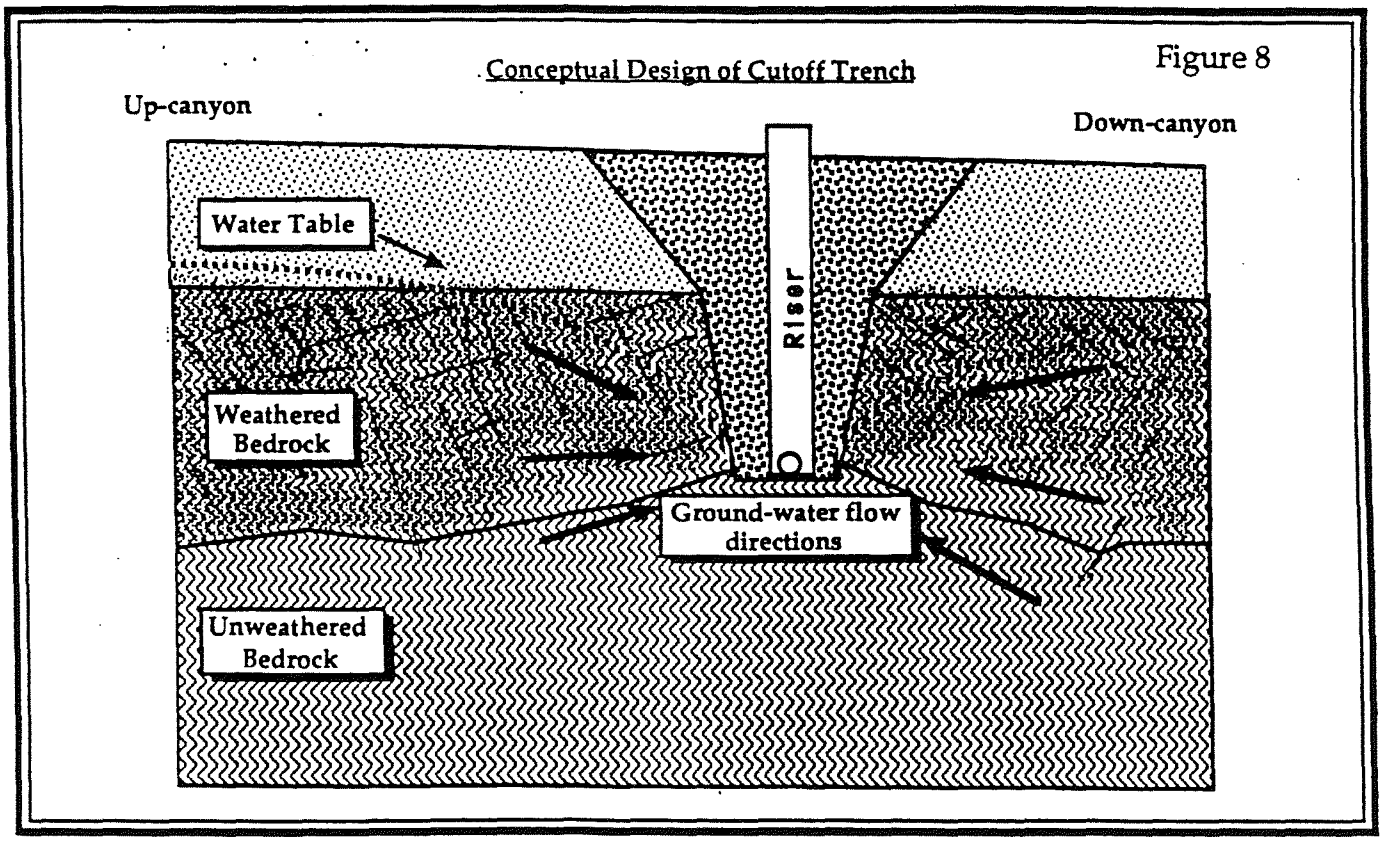
Figure 7

cal gradient in the canyon and to establish measuring points for later pump tests. The fifth task is to measure both heads and field water quality parameters in the piezometers for plotting flow nets in later project phases. The actual locations of the piezometers will be submitted to the state for review after the Phase I planning work.

PHASE III – DATA ASSIMILATION

Tasks 6 through 8 take the site investigation through a series of pump tests of two areas:

- Across the grout curtain to test effectiveness of the installation.



- Assess the transmissivity and storage coefficient of the weathered bedrock and alluvial soils in the canyon bottom.

The tests would be performed using observation piezometers for measurement of water levels during the pump tests. Task 6 would consist of location and installation of a 4 inch pumping well in the area of the proposed cutoff trench. A number of the piezometer sets will be installed in Phase II to define vertical gradient in the canyon bottom. The two pump tests in Task 7 (one near the cutoff trench and one across the grout curtain) will cause water level changes in the observation piezometers that will allow calculation of the hydraulic conductivity and storage coefficient. These values can then be used in velocity measurements, calculate the effectiveness of the grout curtain, and provide design parameters for the cutoff trench. These data would be developed in the Task 8 interpretation work component.

PHASE IV – DESIGN

The design phase of the project consists of interpreting the data gathered in the previous phases and developing the design of the ground water cutoff trench. This Phase IV Task 9 work will generate the design drawings to complete the action plan.

PHASE V – IMPLEMENTATION OF DESIGN

This Task 10 field investigation consists of construction of the ground water cutoff trench. The schedule for construction will be set on the basis of the volumes of material required for removal to construct the design.

PHASE VI – CONFIRMATION OF ACTION PLAN

The final phase is the confirmation of the effectiveness of the design. The basis for this confirmation will be decided on reversal of gradients and lowering of ground water heads adjacent to the design. Once the effectiveness of the design is confirmed, the site will return to traditional detection monitoring and report on the action plan to the state.

References

1) EMCON and ASSOCIATES, 1983, "Hydrogeologic Investigation and Conceptual Design Study Kirby Canyon Class II-2 Disposal Site San Jose, California", Dated March 18, 1983

APPENDIX C

AIR QUALITY ANALYSIS CALCULATION SHEETS

MICROSCALE CO SCREENING PROCEDURE

Worksheet

Step 1. BACKGROUND CO
See Section 6120

Measured, Appendix 2A or Assumed Value:
3 ppm Rural 5 ppm Small Towns
10 ppm Small Cities

1 Hour Background

Background: BG

Step 2. EMISSION FACTOR
See Section 6130

[Hot-Stab + (Cold-Start-Factor X %-Cold-Starts / 100)] X IM = EF

Year: ______ Temperature (See Appendix 1): ______ °F Speed: ______ mph

Hot Stabilized Run. Emissions (Table 6130.1) ______ + [Cold Start Factor (Table 6130.2) ______ X % Cold Starts (Fig. 6130.1) ______ % ÷ 100] X Inspection & Maintenence Credit (0.9 or 1.0) ______ =

Emission Factor: EF

Step 3. ROADWAY CONTRIBUTION
See Section 6140

$$\frac{VPH \times EF}{DF \times 1000} = RC$$

Project Location	Use Figure
Central Valley or don't know	6140.2A
Coastal or Coastal Valley	6140.2B
Mountain	6140.2C

3a. Single calculations or Near Lane Group

(Fig. 6140.1)

RD_1 ______ ft ÷ HW_1 ______ = DF_1

$$\frac{VPH_1 \times EF}{DF_1 \times 1000} = RC_1$$

Roadway Contribution: RC_1

3b. Far Lane Group

RD_2 ______ ft ÷ HW_2 ______ ft = DF_2

$$\frac{VPH_2 \times EF}{DF_2 \times 1000} = RC_2$$

Roadway Contribution: RC_2

Step 4. RESULTS
See Section 6150

4a. Max. 1-Hour
$RC_1 + RC_2 + BG = CO_1$

RC_1 ______ + RC_2 ______ + BG ______ = CO_1

1-Hour Max. CO: CO_1

4b. Max. 8-hour
CO_1 X Persistence Factor = CO_8

CO_1 ______ X Persistence Factor ______ (Usually 0.7) = CO_8

8-Hour Max. CO: CO_8

MICROSCALE CO SCREENING PROCEDURE

Worksheet

Lawrence / Tasman - Year 2010 with project

Step 1. BACKGROUND CO
See Section 6120

Measured, Appendix 2A or Assumed Value:
3 ppm Rural   5 ppm Small Towns
10 ppm Small Cities

1 Hour Background

Background: BG 12 ppm

Step 2. EMISSION FACTOR
See Section 6130

[Hot-Stab + (Cold-Start-Factor X %-Cold-Starts / 100)] X IM = EF

Year	Temperature (See Appendix 1)	Speed
2010	45 °F	25 mph

[Hot Stabilized Run. Emissions (Table 6130.1) 9.0 + [Cold Start Factor (Table 6130.2) 45 x % Cold Starts (Fig. 6130.1) 15 % ÷ 100]] x Inspection & Maintenence Credit (0.9 or 1.0) 0.9 =

Emission Factor: EF 14.18

Step 3. ROADWAY CONTRIBUTION
See Section 6140

$$\frac{VPH \times EF}{DF \times 1000} = RC$$

Project Location	Use Figure
Central Valley or don't know..	6140.2A
Coastal or Coastal Valley.....	6140.2B
Mountain......................	6140.2C

3a. Single calculations or Near Lane Group

(Fig. 6140.1)

VPH_1 5260 x EF 14.18
—————————————————— =
RD_1 20 ft, HW_1 94 = DF_1 10 x 1000

Roadway Contribution: RC_1 7.46 ppm

3b. Far Lane Group

VPH_2 x EF
—————————————————— =
RD_2 ft, HW_2 ft = DF_2 x 1000

Roadway Contribution: RC_2

Step 4. RESULTS
See Section 6150

4a. Max. 1-Hour
$RC_1 + RC_2 + BG = CO_1$

RC_1 7.46 + RC_2 + BG 12 =

1-Hour Max. CO: CO_1 19.46 ppm

4b. Max. 3-hour
CO_1 X Persistence Factor = CO_3

CO_1 19.46 x Persistence Factor 0.7 (Usually 0.7) =

3-Hour Max. CO: CO_3 13.62 ppm

Air Quality Technical Analysis Notes

State of California - Department of Transportation - Office of Transportation Laboratory

MICROSCALE CO SCREENING PROCEDURE

Worksheet

Lawrence / Tasman - Year 2010 without project

Step 1. BACKGROUND CO
See Section 6120

Measured, Appendix 2A or Assumed Value:
3 ppm Rural 6 ppm Small Towns
10 ppm Small Cities

1 Hour Background

Background: BG 12 ppm

Step 2. EMISSION FACTOR
See Section 6130

[Hot-Stab + (Cold-Start-Factor X %-Cold-Starts / 100)] X IM = EF

Year	Temperature (See Appendix 1)	Speed
2010	45 °F	25 mph

Hot Stabilized Run. Emissions (Table 6130.1)		Cold Start Factor (Table 6130.2)		% Cold Starts (Fig. 6130.1)			Inspection & Maintenence Credit (0.9 or 1.0)		Emission Factor
9.0	+	45	x	15 %	÷ 100	x	0.9	=	EF 14.18

Step 3. ROADWAY CONTRIBUTION
See Section 6140

$$\frac{VPH \times EF}{DF \times 1000} = RC$$

Project Location	Use Figure
Central Valley or don't know	6140.2A
Coastal or Coastal Valley	6140.2B
Mountain	6140.2C

3a. Single calculations or Near Lane Group

(Fig. 6140.1)

RD_1 20 ft, HW_1 94 = DF_1 10

$$\frac{VPH_1\ 5236 \times EF\ 14.18}{DF_1\ 10 \times 1000} = RC_1\ 7.42\ ppm$$

Roadway Contribution: RC_1 7.42 ppm

3b. Far Lane Group

RD_2 ft, HW_2 ft = DF_2

$$\frac{VPH_2 \times EF}{DF_2 \times 1000} = RC_2$$

Roadway Contribution: RC_2

Step 4. RESULTS
See Section 6150

4a. Max. 1-Hour
$RC_1 + RC_2 + BG = CO_1$

RC_1 7.42 + RC_2 + BG 12 = CO_1 19.42 ppm

1-Hour Max. CO: CO_1 19.42 ppm

4b. Max. 3-hour
CO_1 X Persistence Factor = CO_3

CO_1 19.42 x Persistence Factor 0.7 (Usually 0.7) = CO_3 13.59 ppm

3-Hour Max. CO: CO_3 13.59 ppm

June-88

MICROSCALE CO SCREENING PROCEDURE

Worksheet

Lawrence / Tasman currently

Step 1. BACKGROUND CO
See Section 6120

Measured, Appendix 2A or Assumed Value:
3 ppm Rural   6 ppm Small Towns
10 ppm Small Cities

1 Hour Background — Background: BG 12 ppm

Step 2. EMISSION FACTOR
See Section 6130

[Hot-Stab + (Cold-Start-Factor X %-Cold-Starts / 100)] X IM = EF

Year	Temperature (See Appendix 1)	Speed
1990	45 °F	25 mph

[Hot Stabilized Run. Emissions (Table 6130.1): 13.3 + [Cold Start Factor (Table 6130.2): 59 X % Cold Starts (Fig. 6130.1): 17 % ÷ 100]] X Inspection & Maintenence Credit (0.9 or 1.0): 0.9 = Emission Factor: EF 21

Step 3. ROADWAY CONTRIBUTION
See Section 6140

$$\frac{VPH \times EF}{DF \times 1000} = RC$$

Project Location	Use Figure
Central Valley or don't know	6140.2A
Coastal or Coastal Valley	6140.2B
Mountain	6140.2C

3a. Single calculations or Near Lane Group

(Fig. 6140.1)

RD_1 20 ft, HW_1 94 = DF_1 10

VPH_1 4649 X EF 21 / (DF_1 10 X 1000) = Roadway Contribution: RC_1 9.76 ppm

3b. Far Lane Group

RD_2 ___ ft, HW_2 ___ ft = DF_2 ___

VPH_2 ___ X EF ___ / (DF_2 ___ X 1000) = Roadway Contribution: RC_2 ___

Step 4. RESULTS
See Section 6150

4a. Max. 1-Hour
$RC_1 + RC_2 + BG = CO_1$

RC_1 9.76 + RC_2 ___ + BG 12 = 1-Hour Max. CO: CO_1 21.76 ppm

4b. Max. 3-Hour
CO_1 X Persistence Factor = CO_3

CO_1 21.76 X Persistence Factor 0.7 (Usually 0.7) = 3-Hour Max. CO: CO_3 15.23 ppm

APPENDIX D

KIRBY CANYON LANDFILL ENVIRONMENTAL QUESTIONNAIRE AND REPORT OF DISPOSAL SITE INFORMATION

ENVIRONMENTAL QUESTIONNAIRE FOR KIRBY CANYON SANITARY LANDFILL

Submitted to:

The City of San Jose

By:

Waste Management of North America, Inc.
2099 Gateway Place
Suite 200
San Jose, CA 95110

April 1990

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LIST OF FIGURES

APPENDICES

INTRODUCTION

This environmental questionnaire is submitted to the City of San Jose by Waste Management of California (WMC) for requested modifications in the operating permits for the Kirby Canyon Sanitary Landfill. WMC is requesting a modification of the permits for the landfill (1) to increase the daily tonnage of solid waste received at the landfill from 1,500 tons per day (tpd) to a average daily rate of 2,870 tpd as calculated over the five year life of the permit, with a maximum daily rate of 4,200 tpd; and (2) to change the daily operating hours from 7:00 am - 5:00 pm (one 10-hour shift), Monday through Saturday to 12:00 am (midnight) - 5:00 pm (two 8 1/2-hour shifts or 17 hours), Monday through Saturday.

SECTION 1: DESCRIPTION OF THE PROJECT

A. General Information

1. Name of Applicant, Address and Phone Number:

   Waste Management of California
   Kirby Canyon Sanitary Landfill
   P.O. Box 1870
   Morgan Hill, California 95038

2. Name of Project

   Kirby Canyon Sanitary Landfill (KCSL)

3. Location of Project

   East side of U.S. Highway 101 between Scheller & Burnett Ave; Santa Clara County

4. Detailed Description of Project

   a. KCSL was permitted for operation on 8/30/84.

   b. WMC is applying to the City of San Jose for two permit modifications. These are (1) to increase the daily tonnage of solid waste received at the landfill from 1,500 tpd to an average daily throughput of 2,870 tpd as calculated over the five year life of the permit, with a maximum daily rate of 4,200 tpd; and (2) to change the daily operating hours from 7:00 am - 5:00 pm, Monday through Saturday to 12:00 am (midnight) - 5:00 pm, Monday through Saturday.

   c. All other provisions of the original permit remain unchanged, except where new laws and regulations have required modification of operational procedures.

5. County Assessor's Parcel Number

   The Santa Clara County Assessor's Parcel Number (APN) for KCSL are listed below:

Book	Page	Parcel
727	29	35

B. Legal Description, Maps, and List of Contiguous Property Owners

1. Legal Description

   A copy of the legal description of the KCSL is contained in Appendix A.

2. Vicinity Map

   Figure 1 is a copy of a major thoroughfare/zoning map that illustrates the relationship of the site to the surrounding properties.

3. Figure 2 is a 1" = 400' scale 1989 aerial photo of KCSL and the adjacent land.

4. A list of contiguous property owners with addresses and Assessor's Parcel Numbers is contained in Appendix B. Stamped addressed envelopes to be used for the mailing of notices to contiguous property owners and owners of property located across U.S. Highway 101 are contained in an envelope also contained in Appendix B.

C. Project Information

1. Site or Project Size

   The Kirby Canyon Sanitary Landfill comprises an area of approximately 827 acres which includes a 760-acre lease area, a 50-acre license area, and 17 acres of easement. The actual sanitary landfill footprint consists of 326 acres within the project lease boundary. The modifications requested to extend the hours of operation to 12:00 am to 5:00 pm and increase the daily average throughput to 2,870 tpd with a daily maximum of 4,200 tpd, will not change the project size.

2. Number of Floors of Buildings

   No new structures will be required to support operations as a result of the requested modifications.

3. Amount of Off-Street Parking Provided

   Additional off-street parking will not be required to support operations as a result of the requested modifications.

4. Percentage of Site to be Occupied by Buildings, Landscaping, Parking Areas and Streets

   No new buildings, landscaping, parking areas or streets will be required to support operations as a result of the requested modifications.

5. Attach Plans

   Figure 1 illustrates the location of the landfill. The requested modifications will not effect the originally permitted landfill design.

6. General Description

   The KCSL is operated as a Class III disposal site using the area fill methodology for waste disposal. The requested modifications will not alter the original objectives or use of the site.

7. Engineering Aspects of the Project

   The requested modifications will not result in any changes to the engineering aspects of the project as defined in the original permit application.

8. Availability of Utilities

   No additional utilities will be required to accommodate the changes requested by the applicant.

9. Public Improvements Necessary

   No additional public improvements will be necessary to accommodate the changes requested by the applicant.

10. Reservations of Land for Public Facilities

    Not Applicable.

11. Project Objectives

    The applicant is submitting its requests to the Local Enforcement Agency (LEA) at this time in anticipation of receipt of additional solid wastes from the Cities of Sunnyvale, Palo Alto, Mountain View, Stanford University, Los Altos, Los Altos Hills and Cupertino, and from Contra Costa and San Mateo Counties. Between the initial date of operation and the present, the wastes received by the applicant could be handled during the operating hours established in the initial permit. In anticipation of an increase in the daily throughput from 1,500 tpd to an average of 2,870 tpd (with a potential daily maximum of 4,200 tpd) due to receipt of waste from Contra Costa County starting sometime between mid-1990 and early 1991, and the aforementioned northern Santa Clara County cities starting in 1991, WMC is requesting modifications to the permit that would allow support of this increased waste stream.

SECTION II: DESCRIPTION OF ENVIRONMENTAL SETTING

A. Project Site Data

1. Topography

The topography of the existing site is shown on Figure 22. The topography will be unchanged as a result of the applicant's requested permit modifications.

2. Geological Characteristics

The site is located along the western flank of the Diablo Range and consists of three large, west- to southwest-trending V-shaped canyons separated by grass covered, rounded hills and ridges. Hillsides are characterized by limited outcrops and virtually no trees. Elevations vary from approximately 400 feet at the site's western boundary to approximately 1,200 feet near the eastern boundary.[1]

Surface drainage occurs within the canyons which merge into a single canyon in the western portion of the site. Surface drainage eventually flows into Coyote Canal. The area receives approximately 19.5 inches of rainfall annually, the majority of which occurs from November to April. Mean annual evaporation from 1966 to 1978 was approximately 29 inches.[1]

The landfill is underlain by a massive extrusion of serpentine bedrock which extends approximately 1,500 feet to the east and 600 feet to the west of the fill area. Approximately 300 to 1,300 feet of sedimentary Santa Clara Formation material occurs to the west of the site between the site serpentine and between Quaternary alluvium of the Santa Clara Valley.[1]

A thin layer of residual soils and colluvium overlies serpentine bedrock and consists primarily of highly weathered rock fragments in a clayey matrix. This material is generally up to several feet in thickness and can be as much as six feet thick in the canyon bottoms. Using the Unified Soil Classification system, this material is generally classified as a CH soil and is generally characterized by low permeability, low infiltration and rapid runoff.[1]

Geological mapping and site explorations have shown the entire area proposed for landfill development to be underlain by serpentine. Previous site hydrogeological reports have identified three distinct zones: (1) a shallow zone of highly fractured and weathered material from the ground surface to approximately 50 feet below ground surface; (2) a zone of moderately fractured and weathered material from approximately 50 to 70 feet; and (3) an unweathered zone of fractured and sheared serpentine below 70 feet.[1]

Ground water occurs in each of the geologic units described above and is generally found within 20 feet of the ground surface along valley floors. Along ridges and valley slopes, the depth to ground water may be greater. The predominant direction of ground-water flow at the site is interpreted to be to the southwest. Ground water is unconfined and in general the flow is a subdued reflection of topography.[1]

3. Natural Waterways and Areas Subject to Flooding

The site drainage area is approximately 760 acres. The northern, eastern and southern boundaries follow ridgelines that act as drainage divides. There are several canyons and drainage courses on the project site, all draining westerly towards Coyote Canal. Due to the steep slopes and low permeability of the soils, most of the rainfall that falls on the site drains to the lower canyon area as surface runoff. There are no areas within the site boundary which are subject to flooding.

4. Flora and Fauna

The flora and fauna of the site have been previously described in the Final Environmental Impact Report (FEIR) for the site.[2] Night lighting at the facility will be limited to the working face, an area which will not exceed 2-acres at any given time. Since this area will have been cleared, excavated, and graded prior to fill activities, there will be no wildlife habitat available in the area. Additionally, night lights will be directed at the working face to minimize glare impacts outside of the area immediately surrounding the working face.

It is generally expected that wildlife will avoid the lighted area of the working face due to the noise and activites occurring in the area. Noise and lighting at the working face would not otherwise be expected to adversely affect wildlife in the area.

5. Historical, Archaeological or Cultural Resources

The historical, archaeological and cultural resources for the Kirby Canyon Sanitary Landfill have been previously described in the FEIR for the site.[1] The requested modifications will not effect or alter any historical, archaeological or cultural resources present on or near the site.

6. Similar Developments

No other landfills are in operation nor are planned within the near proximity of the KCSL.

7. Development within 300 Feet of the Site

   A review of a December 1989 aerial photograph of the site and surrounding areas (Figure 3) indicates that there are no other structures, including residential, commercial, industrial or institutional, within 300 feet of the site.

8. Land Use

   Land use was previously described in the FEIR for the site. The changes requested by the applicant will not affect the previous findings related to land use, nor will the modifications alter the use of the landfill site.

9. Aerial Photographs of Site

   Figure 2 is a 1"=400' scale aerial photograph of the landfill and adjacent properties within 1000 feet of the property boundary.

10. Photographs of the Site

    Figures 4 through 8 are photographs of the landfill site and operations taken in December 1989. These photos show the major structures and operational features of KCSL.

B. Annexations

The KCSL is presently within the San Jose city limits and does not require annexation. The requested modifications will not alter this situation.

C. Hazardous Materials Storage Site Information

The requested modifications will not result in any changes relating to the handling or storage of hazardous materials at the KCSL facility.

D. Hazardous Materials Storage Facility Information

The requested modifications will not result in any changes relating to the handling or storage of hazardous materials at the KCSL facility.

SECTION III: POTENTIAL ENVIRONMENTAL IMPACTS

A. Impacts

Yes	No	
	x	1. Substantial change to existing general contours, water courses, tidelands.
	x	2. Site on filled land or on slope of 10 percent or more.
	x	3. Change in bay, stream, or ground water quality or quantity or alterations of existing drainage patterns.
	x	4. Will effect flora and/or fauna on the property, including any mature trees.
	x*	5. Change in scenic view or vistas from existing residential areas or public lands or roads.
	x	6. Subject property contains known or potential historical and/or archaeological resources.
	x	7. Change in pattern, scale or character of general area of project.
x		8. Significant amounts of solid waste or litter.
x		9. Change in dust, ash, smoke, fumes or odors in vicinity.
	x*	10. Substantial increases in traffic related congestion, air pollution, noise in the vicinity.
	x*	11. Substantial change in existing glare, noise or vibration levels in the vicinity.
	x	12. Use, storage, or disposal or potentially hazardous materials such as toxic substances, flammables or explosives.
	x	13. Substantially increased fossil fuel consumption (electricity, oil, natural gas, etc.)
	x	14. Substantial change in demand for municipal or other public services (police, fire, water, sewage, schools, etc.).
	x	15. Relationship to a larger project or series of projects.
	x	16. Expose people or structures to geologic hazards.

* Even though the requested modifications will not result in any substantial changes relating to this item, additional details are supplied in Section III.B for informational purposes.

B. Mitigation or Avoidance of Impacts

Item 5 Change in Scenic View

The requested modifications will not result in any significant change in any scenic views or vistas from existing residential or public lands or roads. To facilitate longer operating hours, two portable lighting units will be utilized as part of the operations. As discussed in detail however under Item 11, the impacts are expected to be very minor.

Item 8 Significant amounts of solid waste or litter

KCSL is currently permitted to accept 1,500 tpd of solid waste for disposal. As a result of the requested modifications, the average daily throughput would be increased to 2,870 tpd while receiving waste from Contra Costa County, with an increased daily maximum throughput of 4,200 tpd. The new average daily and maximum daily throughput values are based on a review of KCSL daily receipts since the facility began operations in July 1986 (Appendix C), projected waste stream volumes as supplied by the cities of Sunnyvale, Palo Alto, Mountain View, Stanford University, Los Altos, Los Altos Hills, and Cupertino (North County Cities); cities that would be transporting part or all of their waste streams to the Sunnyvale Material and Resource Transfer (SMaRT) station for eventual disposal at KCSL (Appendix D), and a request by Contra Costa County to receive up to 850 tpd of their waste. The throughput rate of 2,870 tpd as determined over the five-year permit period assumes that the SMaRT station is fully operational and that a minimum of 25% resource recovery is taking place. When waste is no longer received from Contra Costa County, average daily receipts may decrease to 2,020 tpd unless waste is received from San Mateo County. The maximum daily throughput value of 4,200 tpd is based on a worst case scenario such as 0% resource recovery due to SMaRT station operational difficulties, or receipt of additional waste from San Mateo County.

The increases in daily throughput will have a slight impact on the overall life expectancy of the landfill. The life expectancy is arrived at by taking the currently available landfill volume and dividing it by the daily throughput to arrive at the total number of days that would be required to fill the available volume. This total days figure is then divided by the number of operating days in a year (312). Using the revised average daily throughputs of 2,870 and 2,020 tpd as explained above, the life expectancy of the landfill will be 32 years (2022). This change in the life expectancy however, will not adversely effect the city of San Jose's ability to dispose of their waste. First, San Jose has a contract with the Newby Island Landfill to receive all of the city's waste through the year 2016. KCSL serves only as a backup facility to Newby Island. Second, the city of San Jose will be annexing the Guadalupe Landfill in mid 1990 to serve as an auxiliary landfill. Third, Newby Island has stated to the northern Santa Clara County cities of Sunnyvale, Palo Alto, and Mountain View, and Stanford

University that they (Newby Island) have a 10,000,000 ton capacity above and beyond what they require to meet current contractual commitments to San Jose available for disposal of these municipalities' wastes. These northern Santa Clara County cities' waste however will be going to KCSL. This will in effect leave Newby Island with excess uncommitted capacity. Finally, Assembly Bill (AB) 939 calls for municipalities to progressively increase their rate of recycling. By the year 2000, cities must recycle 50 percent of their total waste stream. The effect of this level of recycling will be that the overall amount of refuse requiring disposal should either hold steady, decrease, or only marginally increase.

While the amount of waste received on a daily basis would be increased, the nature of the waste received would not change. The procedures currently practiced in placing, compacting and covering the waste, and in controlling litter should continue to be sufficient under an increase daily throughput. Waste will continue to be placed in lifts up to 20 feet thick, compacted in 2-foot-thick maximum horizontal layers. Compaction equipment will traverse the entire length of the working face and make several passes over the 2-foot-thick layers to ensure that adequate compaction of all wastes is achieved. At the end of each working day, the advancing face will be covered with a minimum 6-inch thickness of daily soil cover or equivalent as approved by the LEA. Litter control will consist of placing temporary fencing or portable litter fences downwind from the working face.

Item 9 Change in dust, ash, smoke, fumes or odors in vicinity

KCSL is a Class III facility that presently does not and will not as a result of the requested modifications generate ash or smoke. Additionally, it is not anticipated that there will be any change from current operations in the generation of odor or dust. As is currently practiced, odors will be managed by maintaining a 6-inch soil cover or alternative as approved by the LEA. Dust will be controlled by: watering and proper maintenance of haul roads, and/or the application of chemical dust suppressant; watering of soil cover areas when conditions warrant; placement of temporary vegetation on intermediate soil cover; and, planting and maintaining a vegetative cover on completed fill and excavation slopes.

A minimal amount of fumes are generated as a result of operation of mechanical equipment needed to place and cover the waste. As a result of the requested modifications, additional equipment will be required to support operations. Fumes from all on-site equipment involved in placing and covering the waste will be minimized by proper engine and exhaust system maintenance.

Item 10 Substantial increase in traffic related congestion, air pollution, noise in the vicinity.

The requested modifications will not result in a substantial increase in traffic related congestion, air pollution or noise. The FEIR as accepted by the City of San Jose in 1984 evaluated the KCSL facility for a maximum of 250 packer/transfer type vehicles on a daily basis and up to 30 private vehicles on an hourly basis. These values were also utilized by the City of San Jose in issuing their August 1984 Planned Development Permit. Presently the site receives an average of 50 refuse trucks per day, and no private vehicles.

A large percentage of the refuse will be coming from both the Sunnyvale Materials and Resources Transfer Station (SMaRTS), Contra Costa County and possibly San Mateo County. It is anticipated that the vast majority of this refuse will be transported in transfer trucks only during off-peak hours. This scheduling will be accomplished by holding all vehicles originating from the SMaRT station such that few, if any, will be in transit between the hours of 6am and 9am, and 4pm and 7pm. The use of the transfer trucks will also help minimize the total number of vehicles that will be required to deliver refuse from both SMaRTS, and Contra Costa and San Mateo Counties to the KCSL. Specific information regarding the haul routes that will be used between Contra Costa County and KCSL will become available after finalization of agreements between Santa Clara County, the City of San Jose, and KCSL. It is expected however, that the waste will be transported along south along Interstate 680 to California Highway 101, and then south to the KCSL. Potential routings from San Mateo County could be south either along Interstate 280 to Highway 101, or Highway 101 south through San Mateo County, directly to the KCSL. Timing of trips from either Contra Costa or San Mateo are unknown at this time, but again it is anticipated that scheduling will be arranged such that refuse vehicles will not be in transit during peak traffic hours. A traffic study currently in progress, will look at the mix of vehicle types anticipated to be arriving at KCSL as a result of the requested modifications, versus that originally evaluated in the FEIR. The results of this study are expected by May 15, 1990, a copy of which will be forwarded to the LEA.

Item 11 Substantial change in existing glare, noise or vibration levels in the vicinity.

The requested modifications will not result in any substantial change in existing glare, noise or vibration levels in the vicinity. This increase in operating hours from 10 to 17 hours, six days per week is required to:

1) Support increased daily throughput resulting from the acceptance of waste from both SMaRTS and Contra Costa and San Mateo Counties,

2) Allow commercial vehicles to travel during non-peak traffic hours, and

3) Minimize the use of night lighting during traditional evening hours when outdoor activities may be occurring.

Presently, KCSL has one mobile floodlighting unit that generates 440,000 lumens. The floodlight unit consists of a galvanized steel, winch operated mast, that can be extended to a maximum height of 30 feet and rotated 360 degrees. The mast and control console are mounted on a heavy duty welded steel trailer, along with the engine/generator, battery and fuel tank. The system itself consists of four 1000 watt metal halide floodlights, each with individual circuits and breakers, and can be towed by pickup truck.

Because there will be an increased level of activity associated with increased daily throughput, and because a large amount of the waste will be received during hours of darkness, KCSL will require a second mobile floodlighting unit of the same specifications discussed above. The total output from both units will be approximately 880,000 lumens. Glare from this lighting will be minimized by several methods. First, all lighting will be directed towards the work area and away from any residential areas. Second, a berm whose height will vary between 1 and 10 feet as required, will be constructed around the active work area, to reduce the amount of reflected light visible off-site. This beam will be reconstructed as the working face progresses. Third, the active fill area where the lights will be located is naturally shielded on the northern, eastern and southern sides by hills. A visual impact study is currently in progress to evaluate the use of night lighting. The results of this study are expected by mid-May. A copy of the results will be forwarded to the LEA.

Additionally, the potential impact of night lighting on the Bay Checkerspot butterfly was also evaluated by Dr. Dennis Murphy, Director of the Center for Conservation Biology, Stanford University. In Dr. Murphy's opinion, night lighting as currently planned at the KCSL facility is not likely to have any impact on the butterfly (Appendix E).

Night lighting is also not considered to be a problem to other wild life in the area. Since this area will have been cleared, excavated, and graded prior to fill activities, there will be no wildlife habitat available in the area. Additionally, night lights will be directed at the working face to minimize glare impacts outside of the area immediately surrounding the working face.

The requested modifications will result in only a slight increase in noise/vibration levels in the vicinity of the site. These increases would be due to additional mechanical equipment required to handle the increased daily throughput and the longer hours of operation. Mechanical noise and vibrations will continue to be minimized through the use of a preventative maintenance program on all mechanical equipment. It is generally expected that wildlife will avoid the lighted area of the working face due to the noise and activities occurring in the area.. Noise and lighting at the working face would not otherwise be expected to adversely affect wildlife in the area. There have been no noise or vibration complaints from near-by residences or businesses to date.

SECTION IV: CERTIFICATION AND DISCLOSURE STATEMENT

The following page is a copy of WMC's "Certification and Disclosure Statement for Application for Environmental Clearance," signed by Messers Kerry Jones and Douglas Strauch on April 9, 1990.

SECTION IV: CERTIFICATION AND DISCLOSURE STATEMENT FOR APPLICATION FOR ENVIRONMENTAL CLEARANCE OR PROPOSED DRAFT E.I.R.

Applicant's Statement:

The attached application for Environmental Clearance or proposed draft E.I.R.

File No. ________________, has been prepared by Waste Management of California, Inc.

________________________________ doing business as (indicate the legal name appropriate for dba designation, such as "individual", "a partnership", "a corporation", etc.).

a corporation

The above-named, now has or will have the following direct or indirect economic interest or interests in the development of, or, after its completion, the operation of the project for which the attached application for Environmental Clearance or proposed draft E.I.R. has been submitted. ________________

Lessee/Operator

I/We declare, under penalty of perjury, that the statements furnished above pertaining to the environmental effects of a proposed project and to my/our economic interest or interests in that project are complete, true and correct to the best of my/our knowledge and belief.

Executed on April 9, 1990 at Alameda, California

Kerry D. Jones

~~Kerry~~ Jones

Douglas Strauch

Douglas Strauch

Applicant's Signature(s)

In order to achieve maximum objectivity in the Environmental review process, the City requires persons, including individuals, firms, associations, partnerships, trusts, corporations, or companies, who submit to the City applications for Environmental Clearance, or who submit to the City a proposed draft E.I.R., to disclose any economic interest in the project which they have derived or will or might derive from the development of, or, after its completion, the operation of the project. This application shall apply to consultants and subcontracted consultants who prepare all, or portions of, the Environmental Clearance document or the proposed draft E.I.R. Each proponent, consultant, and subcontracted consultant shall prepare a disclosure statement as presented in this application.

You have an indirect economic interest in the project if your spouse or dependent child or agent acting on behalf owns or otherwise has an economic interest in the site upon which the project is to be developed or if your spouse or dependent child or agent acting on your behalf has a present or future economic interest in the development of, or, after its completion, operation of the project. Briefly but specifically describe each of your direct and indirect economic interests in the project. You need but disclose the nature of your economic interest in the project, not the amount of said interest. If you have no such interest, simply write "none" in the space provided.

REFERENCES

1. Golder Associates Inc.; Results of Evaluation of Leachate Control Alternatives - Kirby Canyon Landfill, Fill Area 1, October 1989.

2. City of San Jose; Final Environmental Impact Report for Kirby Canyon Sanitary Landfill, September 1983.

REPORT OF DISPOSAL SITE INFORMATION

Submitted to:

The City of San Jose

By:

Waste Management of North America, Inc.
2099 Gateway Place
Suite 200
San Jose, CA 95110

April 1990

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APPENDICES

REPORT OF DISPOSAL SITE INFORMATION

A) **Descriptive statement of the manner of operation to be conducted at the site.**

1. **Type of operation:** The Kirby Canyon Sanitary Landfill (KCSL) is a Class III disposal facility, that receives waste from both private vehicles, and commercial packer and transfer trucks. Private vehicles are directed towards a staged unloading area located outside the perimeter of the actual landfill itself. The container into which privately delivered refuse is received is emptied daily. After checking in at the gatehouse, commercial refuse vehicles are directed immediately towards the working face of the landfill where their loads are dumped.

   Presently there are no provisions for recycling available at KCSL. However, plans call for Recycle America, a service of Waste Management Inc. (WMI), to place 30 to 40 cubic yard bins in the public drop-off area for collection of recyclable wastes. Bins will be available by mid-1990, for the collection of paper, glass, aluminum, plastics and white goods.

   KCSL operates using an area fill methodology. Wastes are placed and compacted in 2-foot-thick layers on a working face approximately 200 feet wide with a slope of 3H:1V or 4H:1V. At the end of each working day, all exposed waste is covered with a minimum of 6-inches of daily soil cover or equivalent alternative as approved by the Local Enforcement Agency (LEA). When additional wastes will not be placed in a particular section of the landfill within a 180 day period, the top and side slopes of the advancing lift will also be covered with a 12-inch-thick intermediate soil cover or equivalent alternative as approved by the LEA.[1]

2. **Site classification**: KCSL is a Class III landfill.

3. a. **Maximum daily load capacity that the facility could handle on a sustained basis, and the average daily throughput expected:** Operational systems currently in place at KCSL can handle a sustained maximum of 5,500 tons per operating day. To determine the size of the waste streams that KCSL has to be prepared to support, a review was made of past KCSL daily receipts, data supplied by northern Santa Clara County cities that will be sending their waste to KCSL by way of the Sunnyvale Materials and Resource Transfer (SMaRT) Station, and recent requests made by Contra Costa County to accept some of their Class III waste. This review indicates

that while receiving waste from Contra Costa County at the rate of 850 tons per day (tpd) (Appendix A), KCSL can expect to receive a daily maximum throughput of 4,200 tpd, and to receive an average daily throughput of 2,870 tpd as calculated over the five year permit period. Beginning in 1994 when waste from Contra Costa County may no longer be received, the average daily figure my decrease to 2,020 tpd. This decrease however, my may made up by the receipt of waste from San Mateo County. The maximum figure represents the projected daily receipt if resource recovery operations taking place at the SMaRT Station were temporarily suspended due to mechanical difficulties, and KCSL had to receive the gross or unrecycled SMaRT Station waste in addition to that being received from other sources. The average daily figure assume 25% resource recovery at the SMaRT Station. Supporting documentation is contained in Appendix A.

b. **Average load capacity the facility will receive on a yearly basis over the next five years:** The average annual load capacity projected over the next five years on the basis of a daily average throughput of 2,870 tpd for three years and 2,020 tpd for two years, is 772,512 tons. The 2,020 tpd figure assumes no receipt of waste from either Contra Costa or San Mateo Counties after 1993.

4. **Typical operation cycle:** Refuse received from private vehicles and collected in a large container located outside the perimeter of the working landfill is emptied into the landfill on a daily basis. Wastes received from commercial packer/transfer trucks are disposed of directly into the landfill.

   Refuse fill is typically placed in lifts up to 20-feet thick with perimeter slopes of 2H:1V or flatter. Refuse is spread and compacted in 2-foot-thick maximum horizontal layers on a working face approximately 200 feet wide and sloped 3H:1V or 4H:1V. The compaction equipment traverses the entire length of the working face and makes several passes over each 2-foot-thick layer of refuse to ensure that adequate compaction of all wastes is achieved. Large or bulky wastes are separated to prevent bridging of the surrounding refuse, placed in the lower portion of the advancing lift, and thoroughly crushed by compaction equipment. At the end of each working day, the advancing face are covered with a minimum 6-inch thickness of daily soil cover or equivalent as approved by the LEA. When additional waste materials will not be placed over the surface within a 180-day period, the top, side slopes and working face of the advancing lift are covered with a 12-inch thickness of intermediate soil cover or equivalent as approved by the LEA.[1]

5. **If cover material must be imported, identify the daily quantity needed, the source and the hauling distance:** All soil cover is available either on site or from soil

borrow areas within the adjacent 50-acre license area. The average daily quantity of cover needed to support an average daily throughput of 2,870 tons, is approximately 1,104 cubic yards. This assumes a 4 to 1 waste to soil cover ratio.

6. **Hours of site operation**: The site will operate in two 8 1/2-hour shifts, from 12 am (midnight) to 5 pm six days per week. Normal working days will be Monday through Saturday with the exception of New Years Day, Memorial Day, 4th of July, Labor Day, Thanksgiving Day and Christmas Day. When any one of these holidays falls on a normal working day (Monday through Saturday), operations may be conducted on the following Sunday.

7. **Plans for waste handling and separation:** KCSL operates both a random load check program that occurs at the gatehouse and a spot check program that occurs while waste is being placed. The random check program involves randomly picking refuse vehicles, regardless of their point of origin, at the gatehouse for inspection of their loads. Vehicles identified as carrying unsuitable loads (i.e. hazardous materials, liquid wastes, and other non-class III items) will be rejected. The spot check program involves having both the drivers of commercial refuse vehicles and KCSL employees visually check the waste while it is being placed to identify potentially unsuitable wastes. Copies of these programs are contained in Appendix B. In addition to the random load check program, KCSL also segregates large or bulky wastes at the time of compaction to prevent bridging of the surrounding wastes. These large and bulky wastes are placed in the lower portions of the advancing lift and thoroughly crushed by compaction equipment to minimize bridging.

8. **Equipment used for waste handling and disposal:** The following equipment is available for preparation and operation of the site:

Description	Quantity
Crawler Tractor	3
Landfill Compactor	3
Earthmover (scraper)	3
Water Truck	2
Motor Grader	1

9. **Plans for standby equipment availability:** Standby equipment will be provided through a reciprocal agreement with other Waste Management of North America (WMNA) landfill operations on an as-needed basis.

10. **Sanitary facilities for employees:** Showers, toilets and bottled drinking water are available to all employees on the site.

11. a. **Hazardous waste screening program:** KCSL will eventually have three separate hazardous waste screening programs in place. The first, currently in use, is the random load/spot check program discussed in Section A-7. This program involves randomly selecting refuse vehicles entering the site for inspection of their loads and visually inspecting the waste as it is being dumped. The second program which will begin with the startup of the SMaRT station in 1991, will be associated with the SMaRT station. Refuse received at KCSL from the SMaRT station will have been previously screened as defined in the SMaRT station's Hazardous Waste Screening Program. A copy of that program is contained in Appendix B. The third program is connected with the transfer station(s) associated with processing the waste from Contra Costa County. A copy of this program will be obtained once a final agreement with Contra Costa County has been reached.

    b. **Storage and handling of hazardous waste identified in the screening program:** Procedures for storage and handling of hazardous wastes identified during screening are discussed in the Hazardous Waste Screening Program contained in Appendix B.

12. **Site climatic conditions:** The south Santa Clara Valley, in which the Kirby Canyon Sanitary Landfill site is located, has a mild climate characterized by warm, dry summers and mild, wet winters. The average annual temperature is approximately 60 degrees Fahrenheit (F). Winter temperatures rarely drop below freezing, and summer temperatures range between 70 to 90 degrees. The wet season extends from November to April, the wettest month being January. Rainfall data was obtained from the Anderson Dam observation station located approximately three miles southeast of the site (California Department of Water Resources, 1976, Rainfall Analysis for Drainage Design, Volume II: Long Duration Precipitation Frequency Data, Bulletin No. 195, p. 195). The mean annual precipitation is approximately 19.50 inches[2].

Prevailing winds in the area of the landfill site are from the northwest and typically range in velocity from eight to twelve miles per hour.[2] Evaporation data also obtained from the Anderson Dam observation station (California Department of Water Resources, November 1979, Evaporation from Water Surfaces in California, Bulletin 73-75, p.75), indicates that the mean annual evaporation between 1966 and 1978 was 28.83 inches (Pan A type). The maximum evaporation occurs between May 1 and September 1[2].

13. **Measures to overcome severe climatic conditions:** The region in which the landfill is located does not experience significant frost or snow conditions. To overcome wet weather conditions, a wet-weather disposal area will be prepared prior to the beginning of the rainy season; haul roads will be constructed with a rock surface for wet-weather access, and all-weather access aprons will be placed at intervals along the haul roads. Surface water ditches will also assist in diverting rainwater around the active disposal areas. To provide a stable surface for disposal vehicle traffic during wet weather, the aprons are constructed of demolition fill overlain by graded base rock (or equivalent construction). In addition to the preparation of road surfaces and construction of work aprons, rain water is also controlled through the use of concrete lined perimeter ditches that capture and divert surface flow around the active fill area. Soil that is required for operations during wet weather will be stockpiled prior to the on-set of the rainy season[1].

14. **Control measures for each of the following: noise, odors, litter, dust, insects, rodents, fire.**

<u>Noise</u> - Noise levels of on-site equipment are controlled by installation and proper maintenance of mufflers on all motorized vehicles,[1] and the maintenance of a 1,000 foot buffer zone between operations areas and the property boundary in areas where off-site development may occur.

<u>Odors</u> - To minimize odors from waste operations, the active working face is confined to a small area, refuse is covered daily with a 6-inch soil cover or equivalent alternative as approved by the LEA, and final cover is applied as soon as feasible.[1] When 1,000,000 tons of refuse have been placed, a gas collection system will be installed to control possible emissions.

Litter - Litter is controlled by placement of temporary fencing or portable litter fences downwind from the working face. The fencing, operational area, and site in general are inspected regularly and any litter is promptly removed[1].

Dust - Dust is controlled by:

1) Watering and proper maintenance of haul roads, and/or application of chemical dust suppressant as approved by LEA,

2) Water spraying of soil cover areas when conditions might result in formation of fugitive dust,

3) Applying water or planting temporary vegetation on intermediate soil cover,

4) Planting and maintaining a vegetative cover on completed fill and excavation slopes.

Insects and Rodents - Refuse compaction and daily cover effectively prevent the propagation of vectors on site[1].

Fire - The gatehouse, maintenance facility, and landfill vehicles are equipped with suitable, portable fire extinguishers for suppression of minor fires. Any fires occurring on the landfill will be extinguished using stockpiled cover soil and/or a water truck[1]. Water is available in a 44,000 gallon, above ground, storage tank located on site.

15. **List the conditions to be imposed on each type of operation if salvaging, volume reduction or recycling is permitted:** Containers will be available at the SMaRT station for collection of recyclable materials. Plans also call for Recycle America, a service of Waste Management Inc., to place 30 to 40 cubic yard bins in the public drop-off area at KCSL for the collection of recyclable wastes by mid-1990. Bins will be available for the collection of paper, glass, aluminum, plastics and white goods.

16. **Noise from site operations and potential health hazards:** Site operations are conducted in compliance with CalOSHA regulations. Noise resulting from site

operations will not create health hazards to persons using the site and/or to nearby residents. There are no complaints from nearby residents regarding excessive noise from site operations.

17. **Compliance with state and local fire protection agency landfill perimeter clearance requirements:** In accordance with the Public Resource Code, Section 4347, WMNA maintains at least a 150-foot buffer zone around the perimeter of the active fill area. This buffer zone satisfies the landfill perimeter clearance requirements of the local fire agency, the San Jose Fire Department.

18. **Compatibility with adjacent zoning and surrounding land use:** The City of San Jose General Plan designates the lands surrounding the site as Non-urban Hillside, Public Park/Open Space, and Private Open Space. Adjacent lands are primarily used for agricultural grazing or open space uses, uses to which the Kirby Canyon site is expected to revert upon closure. All of the above uses are compatible with the landfill disposal activities[1].

19. **Consistency with the CoSWMP and city or county general plan:** KCSL was incorporated into the City of San Jose General Plan in June 1984, and incorporated into the March 1989 Administrative Draft of the Santa Clara County Solid Waste Management Plan (CoSWMP).

B) **Types and relative quantities of wastes to be received, particularly the receipt of liquid or hazardous waste.**

1. **Types or nature of wastes:** The KCSL will receive a waste stream consisting of residential, commercial, and industrial wastes. No hazardous wastes, pesticides or other toxic wastes will be accepted by the facility for disposal. The KCSL site is permitted to receive several non-hazardous/non-toxic waste streams classified as "special waste." These wastes are described further in Section B-2.

2. **Special wastes received:** The KCSL is currently allowed to receive the following non-hazardous/non-toxic special wastes:

   a) Limited quantities of water treatment sludge, if requested by the Santa Clara Valley Water District (SCVWD) per their letter to the City of San Jose, dated August 29, 1983[1];

b) Dead animals or portions thereof;

c) Infectious materials and hospital or laboratory wastes authorized for disposal at landfills by agencies responsible for such tasks;

d) Sewerage treatment residue such as solids from screens and grit chambers, dewatered sludge and septic tank pumpings;

e) Ashes from household burning;

f) Manure;

g) Adequately cleansed pesticide containers.

3. **Handling procedures for each type of special waste received:** All special wastes will be identified at the gatehouse prior to disposal in the landfill. With the exception of water treatment sludge and infectious waste, all other non-hazardous special wastes listed in Section B-2 will be immediately placed into the working face of the landfill upon receipt.

   Appendix C contains a copy of KCSL's "Infectious Waste Landfill Procedures." This outlines the procedures to be followed when receiving, placing, and covering infectious wastes. When the SCWD requests KCSL to received water treatment sludge, WMNA will develop the necessary handling procedures which will include information regarding expected days of receipt, typical peak loadings, and the extent of fluctuation during the year. To date, KCSL has not received either infectious waste or water treatment sludge.

4. **Disposal location for each type of special waste received:** All wastes listed in section B-2 as Special will be co-disposed of immediately with other Class III wastes. Only the locations of any infectious/laboratory wastes or water treatment residue will be documented by plotting on a 3-dimensional grid system. Location coordinates of other wastes will not be tracked.

5. **Moisture content as a percentage of weight for liquids, sludges, and slurries:** Any sludges received will be at least 50% solids by weight. Presently, KCSL is not receiving any sludges.

6. **Hazardous wastes are received at the site:** No hazardous wastes will be received or disposed of at the site.

C) **Approximate total acreage contained in the site; the sites' total estimated capacity in tons or cubic yards; a projection of the life expectancy of the site based on current and/or anticipated loadings.**

1. **Total site acreage, actual acreage used for land filling, and acres remaining to be filled:** KCSL comprises an area of approximately 827 acres which includes a 760-acre lease area, a 50-acre license area for potential use as a source of clean soil, and 17 acres of easement. The actual sanitary landfill footprint consists of 326 acres within the project lease boundary. As of November, 1989, filling has commenced on approximately 10 acres.

2. **Final estimated volume site will occupy:** The final estimated design volume is 37,400,000 cubic yards. As of December 1, 1989, approximately 476,923 cubic yards (310,000 tons) had been filled.

3. **Life expectancy calculations:** The life expectancy of the landfill has been calculated based on an average daily throughput of 633 tpd for 1990, 2,870 tpd for the years 1991 through the end of 1993 and 2,020 tpd for the remainder of its life. As shown in Appendix A, the 633 tpd figure represents a projected daily throughput; 2,870 tpd the projected daily receipts during the period when Contra Costa County is sending waste to KCSL; and 2,020 tpd the projected daily receipts after Contra Costa County stops sending waste to KCSL. These figures may vary should San Mateo County request disposal privileges at KCSL.

   Also accounted for in the life expectancy calculations is the amount of available volume that will be taken by both daily and final cover. There is not expected to be any net change in available volume resulting from the placement of daily cover. This is because the amount of soil excavated during landfill construction is projected to be adequate for or exceed the amount required for daily cover use. The volume of final cover was calculated assuming a final cover thickness of four feet spread over an area of approximately 327 acres as shown on Figure 7. The supporting life expectancy calculations are shown on the following page.

Life Expectancy Calculations Based on Average Daily Throughput
(as of 12/1/89)

Parameter	Value
1990 Volume:	
[(312 days/yr)x(622 tpd)= tons]	197,496
[(197,496 tons)x(2,000#/ton)x(1/1,300#/yd^3)=yd^3]	303,840
1991-1993 Volume:	
[(312 days/yr)x(2,870 tpd)x(3 yrs)=tons]	2,686,320
[(2,686,320tons)x(2,000#/ton)x(1/1,300#/yd^3)=yd^3]	4,132,800
Total Design Volume (yd^3)	37,400,000
Volume Filled (7/86 - 12/89) (yd^3)	476,923
Volume Filled (1/90 - 12/90) (yd^3)	303,840
Volume Filled (1/91 - 12/93) (yd^3)	4,132,800
Volume of Final Cover (yd^3)	1,462,325
Remaining Volume (yd^3)	31,024,112
[yd^3 x 1,300 lbs/yd^3 = lbs]	4.0 x 10^{10}
[(lbs)x(1 ton/2,000 lbs)x(1/2,020 tpd)=days]	9,983
[days/312 operating days per year=years]	32

D) **General location of the proposed disposal site.**

1. **Access conditions:** Figure 1 shows the general location of KCSL. Access to the project area is via U.S. Highway 101, a four-lane freeway. From Highway 101, the landfill site itself can be reached by taking the Scheller Avenue interchange and proceeding south approximately 2-1/2 miles along a two-lane private road to the project lease boundary. The access road is paved with an all-weather asphaltic concrete surface. Entry onto the site is controlled by a manned gatehouse and a lockable gate.

Unauthorized access to the site is controlled by a chainlink fence along the westerly boundary of the site near the freeway. On the northerly and southerly boundaries, the barbed-wire fence and the steep hillside slopes discourage unauthorized entry onto the site, as does the rapid change in elevation between the base and crest of the hills on the easterly boundary.

2. **Estimated traffic volume and types of vehicles using the site:** The FEIR evaluated the feasibility of the facility receiving up to 250 refuse vehicles per day plus up to 30 private vehicles (auto, pickups, etc.) per hour[4]. Both the number of refuse vehicles required to transport the daily average throughput of 2,870 tpd, and the number of vehicles required to transport the daily maximum of 4,200 tpd are below the FEIR evaluated figure of 250 vehicles.

E) **Delineation of the legal boundaries for which clear title is held by the applicant and/or parcels which are leased.**

1. **A plot plan drawn to scale, showing and identifying all parcels on site, and including all parcels and land uses within 1,000 feet of the site boundaries:** Figure 2 is a plot plan of the site showing all parcels and land uses within 1,000 feet of the site boundaries. KCSL is an existing facility.

F) **Identification on the plot plan of the specific limits of the existing and planned disposal area(s) showing relationships to the property boundary lines and adjacent land uses surrounding the site. Distances to the nearest structures shall be identified.**

1. **Setback areas and areas not to be used for disposal area:** Figure 3 shows the location of the disposal area as well as the setback areas and areas not earmarked for disposal.

2. **Identify and show distances to all structures (both on- and off- site), easements, land uses, etc., within 1,000 feet of the site boundaries:** Figures 3 and 4 show all structures, easements, monitoring wells, utility lines, and land uses within 1,000 feet of the site boundaries.

G) **Sequence of development stages of the disposal site operations.**

1. **An overall site development plan, covering identification and timing of individual phases of site development:** KCSL began receiving and placing refuse on July 21, 1986. Placement began in Module 1-A of Fill Area 1. A total of 310,000 tons of refuse have been placed in Module 1-A through the end of November 1989. The module's capacity is 910,000 tons (1.4 million cubic yards). During 1987 operations, 113,000 tons of refuse were placed at the rate of 432 tons per day over 261 operation days. Refuse placement for 1988 totaled 81,200 tons at a rate of 312 tons per day over 260 operation days, and for 1989 (January through November) totaled 82,000 tons at a rate of 346 tons per day over 237 operation days.

   As shown on Figures 5 and 5a, as of the end of November 1989, operations have reached the Stage IV level in the planned sequence of fill operations for Module 1-A. Presently the fill rises from the toe berm base, elevation approximately 600 feet Mean Sea Level (MSL), at an interim slope of 2H:1V up to about elevation 760 feet MSL in the central canyon area, and extends up to about elevation 820 feet MSL into both the north and south head canyons.

   The landfill area has been divided into 13 cells. The sequence, depth of excavation, and excavation area limits shown on Figure 6 have been developed with the fill area plans shown on Figures 7 and 8 to maximize operational efficiency. Detailed site excavation and fill plans are contained in Appendix D.

2. **Site grading plan:** Figure 6 is the fill sequence plan. A final grading plan is currently being developed by WMNA. This plan will also show the area used to obtain cover material.

H) **Map of the existing topographical contours of the property and proposed final elevations of the completed disposal site.**

1. **Map showing pre-excavation topography and as-built depths and locations of cuts, trenches, ponds, etc. The final elevations should represent the ultimate grading or closure plan.**

   Figure 6 shows the preconstruction topographical contours of the property, and the locations of ponds. Figure 7 shows the proposed final elevations.

I) **Underlying soils, geology and ground water occurrence based on test boring conducted on the property.**

1. **Surface and cover soil description:** Surface soils are composed of a thin layer of relatively permeable, residual soils and alluvial deposits consisting primarily of rock fragments in a clay matrix (GC,MH,CH), and ranging in thickness from 6 inches to several feet.[1]

   Within the landfill are sufficient quantities of Serpentine-derived soil and weathered rock suitable for the daily and intermediate cover, and for the vegetative layer of the landfill's final cover. Soils of the Santa Clara Formation of permeability $\leq 1 \times 10^{-6}$ cm/sec are present in the southern portion of the site. These clayey soils are suitable for use as the 1-foot layer of clayey soil required within the final cover profile.[1]

2. **Locations of test boring:** Locations of test boring are shown on Figure 9. Boring logs are contained in Appendix E. The depths of the borings ranged between 50 and 205 feet below grade. These depths are more than five feet below the bottom of the disposal area.

3. **Depth to ground water, ground-water elevation, gradient and direction of ground-water flow:** The water surface elevations in monitoring wells G-1 through G-3 are summarized below.

Summary of Ground-Water Elevations
(6/19/89)

Well	Casing El. (Ft-MSL)	Depth to Water (Ft)	Water El. (Ft-MSL)
G-1	583.97	8.18	575.79
G-2	477.85	23.27	454.58
G-3	519.68	17.52	502.16

The above water level data indicates a northeasterly to southwesterly flow. The calculated ground-water velocity between G-1 and G-2 during the second quarter of 1989 was approximately 55.1 feet per year. Supporting calculations as well as a summary of all water level data collected as of June 1989, are contained in Appendix F.

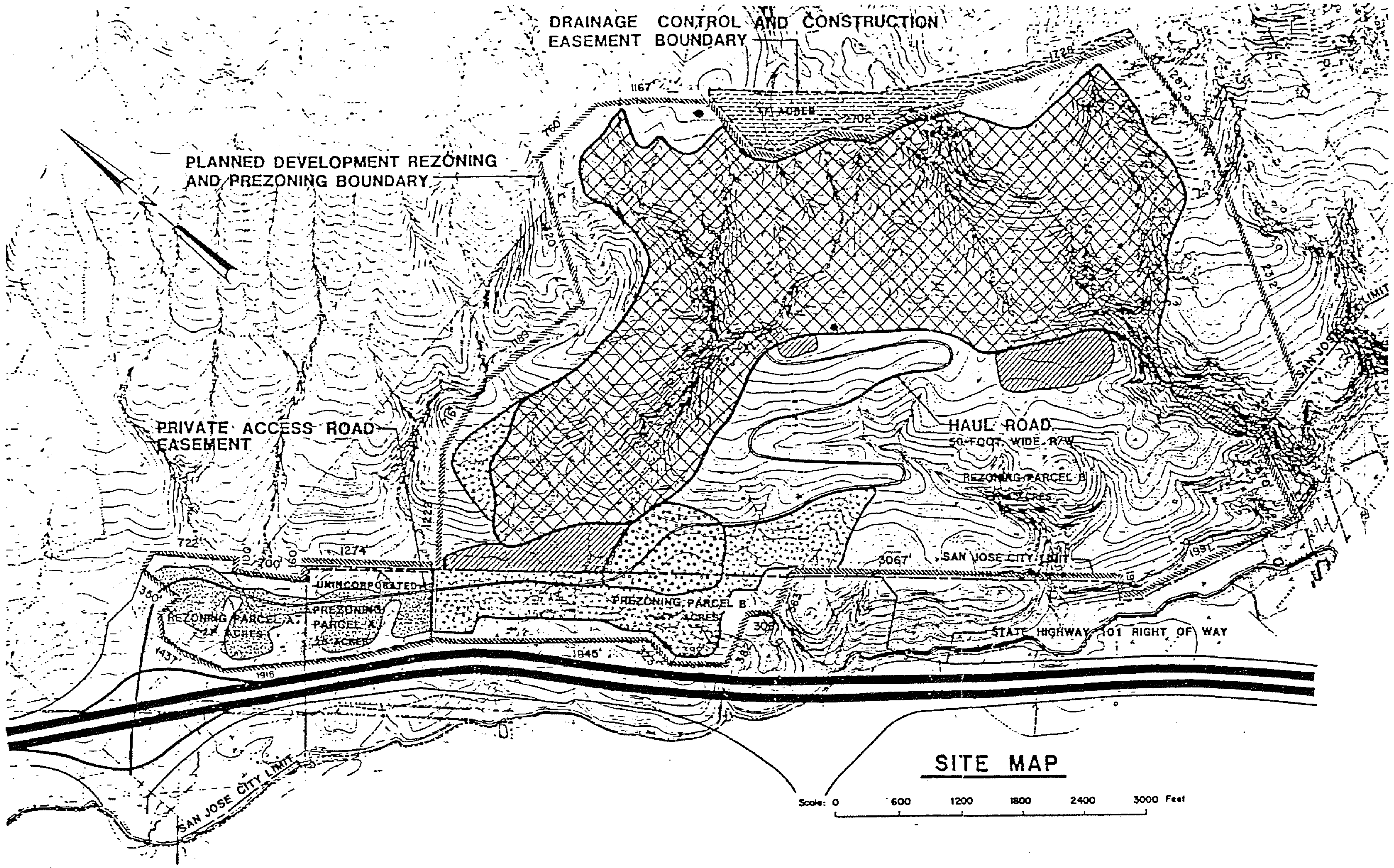
J) **Surface and subsurface drains to be used to control water from areas on or adjacent to the disposal site.**

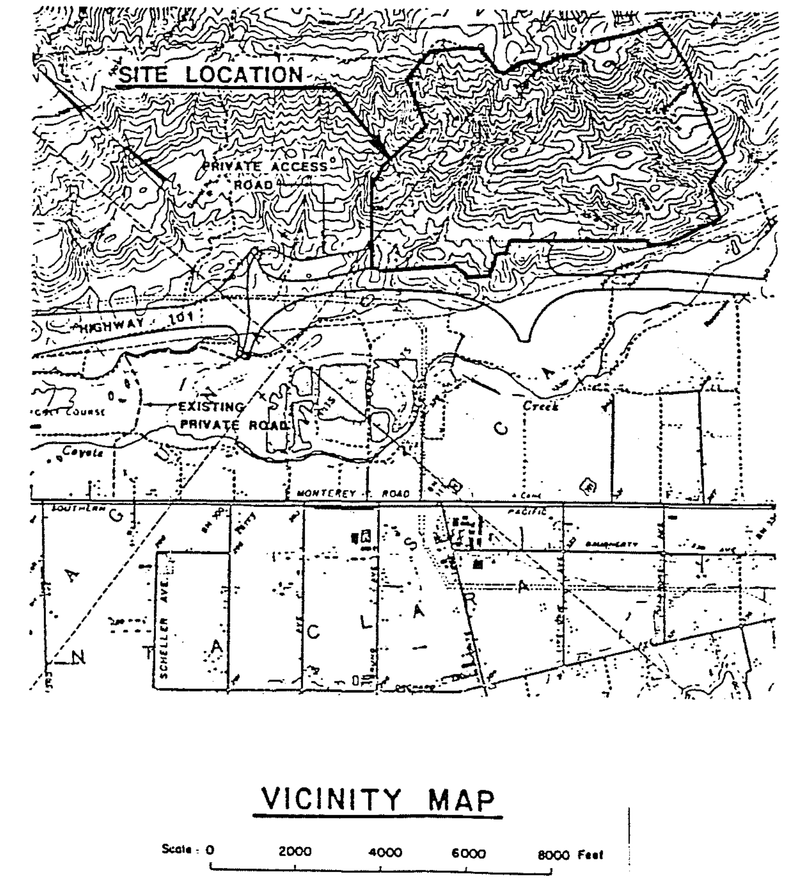
1. **Locations of primary drains, berms, etc.:** Figure 5 shows the locations of all primary drains and berms.

2. **Design basis of drainage control devices:** The location of the site in the foothills precludes inundation of the landfill by a 100-year tide or flood; however, various ditches, oversized drains, inlets, earthfill berms, sedimentation basins and crossdrains have been designed to control surface water runoff from a 100-year, 24-hour rain storm event.[1] Supporting calculations are contained in Appendix F.

K) **Method of leachate monitoring, collection, treatment and necessary disposal.**

1. **Proposed or in place leachate control system:** Leachate is generated when water comes in contact with the waste. There are several mechanisms by which the





PROPOSED USES

	USE		AREA (acres)	% of TOTAL ZONING AREA	PARKING SPACES
	SANITARY LANDFILL (FILL AREA)		311	38	N/A
	SUPPORT FACILITIES:				
	Sedimentation basins		27	3	N/A
	Entrance facility(1), equipment maintenance facility(2), public refuse drop-off facility(3)	Incorporated area Unincorporated area	13 4	2	12 - 15(4)
	Soil borrow, stockpile, etc.	Incorporated area Unincorporated area	23 30	7	N/A
	Drainage control and construction easement and open space buffer		17	2	N/A
	Soil borrow & access road easement on license area(5) Incorporated area Unincorporated area		17 11	3	N/A N/A
	OPEN SPACE	Incorporated area Unincorporated area	351 23	45	N/A
	TOTAL ZONING AREA		827	100 %	12 - 15

NOTES :

(1) The entrance facility will consist of a gate house(s), (approximately 600 sq. ft.) with or without scales, to be located near the access road in this area.

(2) The equipment maintenance facility will consist of a building (approximately 5000 sq ft) to be located on 3 ± acres in this area.

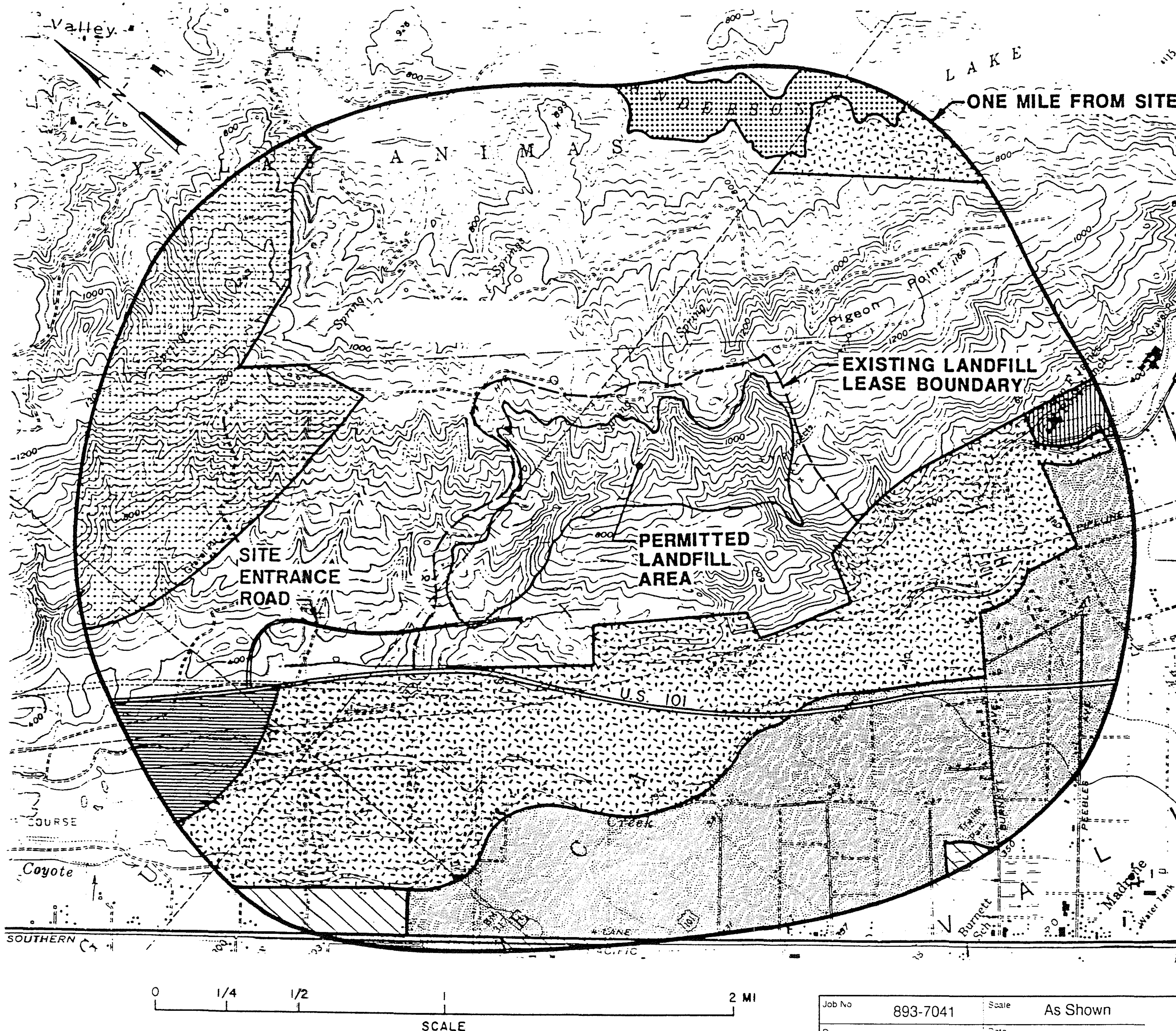
(3) The public refuse drop-off facility will consist of disposal bins to be located on 3± acres in this area.

(4) 12 to 15 parking spaces for site personnel only

(5) License area period of use is significantly less than landfill operating life and will revert to Oceanic California, Inc (Excepting roadway easement)

Source: EMCON Associates, 1983

Job No. 893-7041	Scale As Shown	GENERAL DEVELOPMENT PLAN	
Drawn DVR	Date APRIL 1990		
Checked AAK	Dwg. No.		
Golder Associates Inc.		Kirby Canyon Sanitary Landfill	Figure 3



EXPLANATION

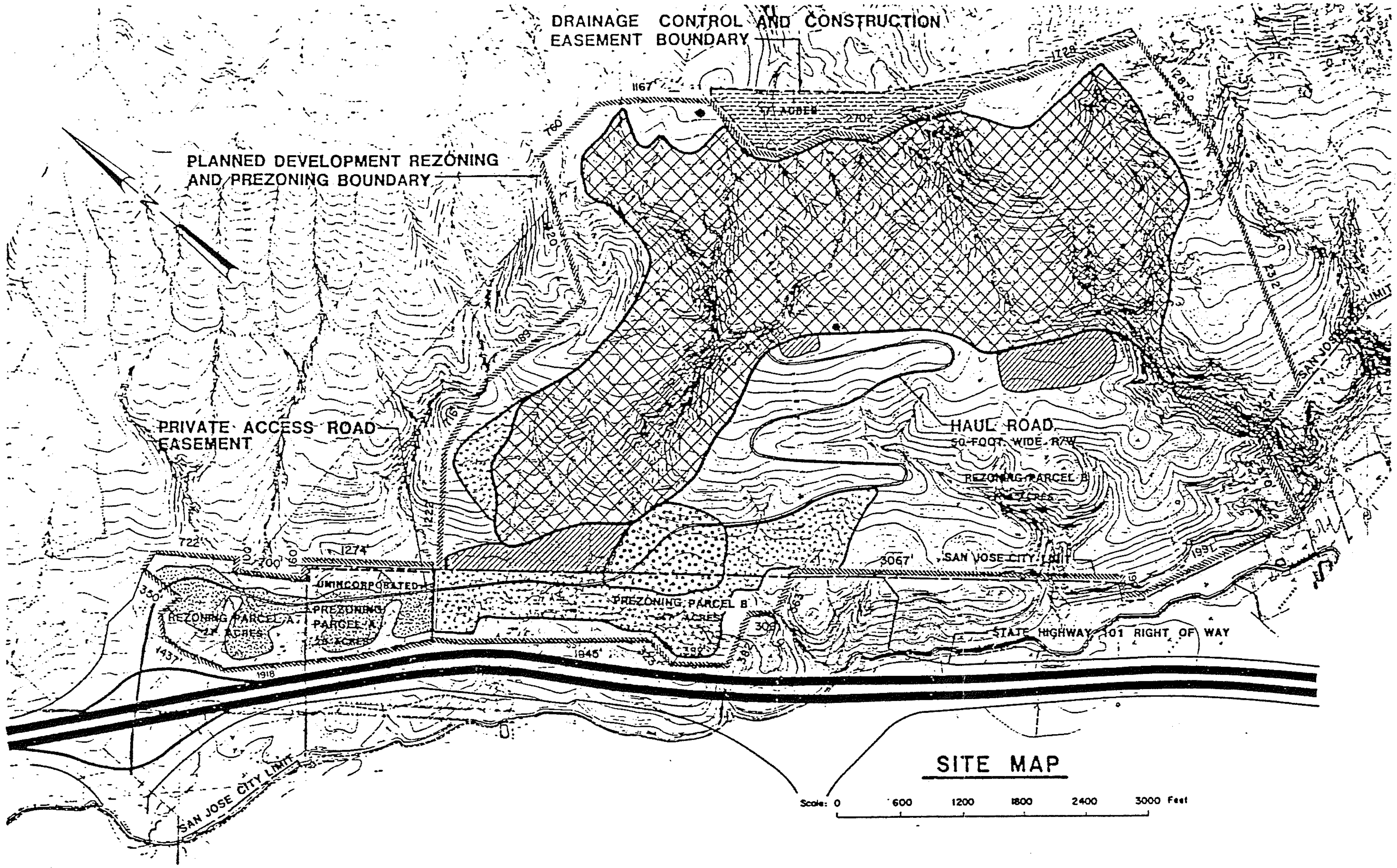
- Non-urban hillside, ranchland grazing
- Public park/open space
- Golf course
- Private open space, ranchland grazing
- Agricultural, scattered residences
- Residential
- Anderson Reservoir
- Boy's Ranch

Base Map from U.S.G.S. 7.5 Min. Quadrangle
Morgan Hill, California. Photorevised 1980

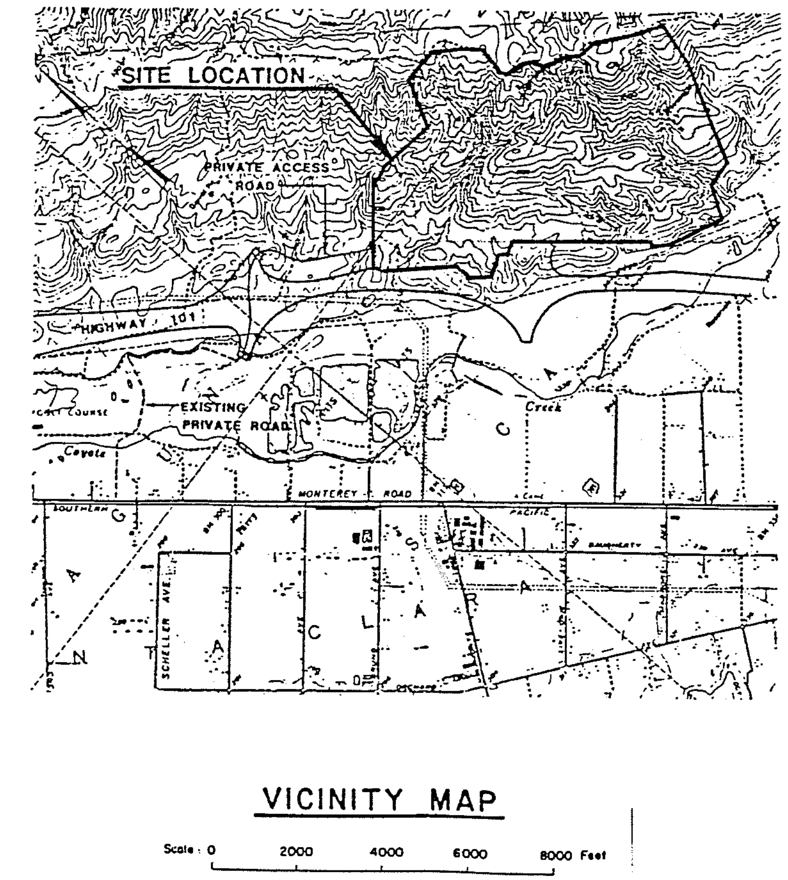
6/89

Source: EMCON Associates, 1983

Job No 893-7041	Scale As Shown	LAND USE MAP		
Drawn DVR	Date APRIL1990			
Checked AAK	Dwg No			
Golder Associates Inc.		Kirby Canyon Sanitary Landfill	Figure	2



SITE MAP



VICINITY MAP

PROPOSED USES

	USE	AREA (acres)	% of TOTAL ZONING AREA	PARKING SPACES
	SANITARY LANDFILL (FILL AREA)	311	38	N/A
	SUPPORT FACILITIES:			
	Sedimentation basins	27	3	N/A
	Entrance facility(1), equipment maintenance facility(2), public refuse drop-off facility(3) — Incorporated area / Unincorporated area	13 / 4	2	12 - 15(4)
	Soil borrow, stockpile, etc. — Incorporated area / Unincorporated area	23 / 30	7	N/A
	Drainage control and construction easement and open space buffer	17	2	N/A
	Soil borrow & access road easement on license area(5) — Incorporated area / Unincorporated area	17 / 11	3	N/A / N/A
	OPEN SPACE — Incorporated area / Unincorporated area	351 / 23	45	N/A
	TOTAL ZONING AREA	827	100 %	12- 15

NOTES:

(1) The entrance facility will consist of a gate house(s), (approximately 600 sq.ft.) with or without scales, to be located near the access road in this area.

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(5) License area period of use is significantly less than landfill operating life and will revert to Oceanic California, Inc (Excepting roadway easement)

Source: EMCON Associates, 1983

Job No. 893-7041	Scale As Shown	GENERAL DEVELOPMENT PLAN		
Drawn DVR	Date APRIL 1990			
Checked AAK	Dwg. No.			
Golder Associates Inc.		Kirby Canyon Sanitary Landfill	Figure	3

SUNNYVALE MATERIALS RECOVERY
AND TRANSFER STATION
(SMaRT)

FINAL ENVIRONMENTAL IMPACT REPORT

September 14, 1990

SCH# 89022812

City of Sunnyvale
Department of Public Works

SUNNYVALE MATERIALS RECOVERY AND TRANSFER STATION (SMaRT)
FINAL ENVIRONMENTAL IMPACT REPORT ADDENDUM
RESPONSE TO COMMENTS; TEXT AMENDMENTS

The Final Environmental Impact Report (FEIR) for the Sunnyvale Materials Recovery and Transfer Station is comprised of this addendum and the "Draft EIR for the Sunnyvale Materials Recovery and Transfer Station" dated June 18, 1990 (SCH #89022812). The Draft EIR is incorporated by reference.

I. COMMENTS ON DRAFT EIR

Comments on the Draft EIR were submitted by the following agencies:

California Integrated Waste Management Board
County of Santa Clara Health Department
San Francisco Bay Conservation and Development Commission (BCDC)
Town of Los Altos Hills

Comments were also submitted on the Administrative Draft EIR by the City of Sunnyvale Planning Department and Department of Traffic Engineering.

The comment letters are attached in Appendix A. The response to comments is provided in section II., below. Text amendments are provided in section III.

The comments received from the California Integrated Waste Management Board and the County of Santa Clara Health Department primarily concern potential impacts caused by excavating the Sunnyvale Landfill, and compliance with certain regulations. The San Francisco Bay Conservation and Development Commission indicated that it would implement advisory policies if the site contains wetland and is within the jurisdiction of the US Army Corps of Engineers. Since no filling of wetland or waters of the US is required for the project neither USACE nor BCDC involvement is expected. The Town of Los Altos Hills stated concerns regarding particular operations of the station. The City of Sunnyvale Planning Department indicated that a change in zoning would be necessary for the project; text of the EIR has been amended to reflect this. The City of Sunnyvale Department of Traffic Engineering indicated concerns regarding conflicts with transportation projects in the vicinity of the site, requested clarification of figures used, and commented on mitigation measures.

II. RESPONSE TO COMMENTS ON DRAFT EIR

A. California Integrated Waste Management Board

Comment 1: "It does not appear that the DEIR evaluates all of the project's potential adverse impacts on the operation of the City of Sunnyvale Landfill. The Final EIR (FEIR) should assess the project's potential adverse environmental impacts as a result of landfill design changes in the areas indicated below.

1. Any changes in landfill access for both private and commercial haulers;

2. Changes in the design or configuration of landfill cells or lifts;

3. Changes in the landfill's proposed final grading plan."

Response 1: With regard to changes in landfill access, the existing access from Carl Road would continue to be used during transfer station construction and operation. At present both private and commercial haulers are directed along the south side of the project site, then turn northeast to climb to the top of the landfill and reach the working face. These vehicles exit the same route. During construction of the SMaRT station, landfill traffic would use the same route but would be temporarily directed around construction activities.

Once the station is built it is proposed that incoming landfill traffic would enter the site the same way, but exit the site from a new route around the north side of the transfer station. At that time the public would be expected to use the transfer station, and only refuse trucks would use the landfill. The proposed circulation plan calls for the incoming access to parallel the exit lanes on the north side of the landfill. This reduces the need for building new access to the landfill, but may create additional traffic hazards along the portion where entering and exiting trucks are traveling adjacent to each other on top of the landfill. For safety reasons it may be preferable to extend the existing access road east onto the landfill where it now turns northeast. This would provide a counter-clockwise circulation and reduce potential conflicts between entering and exiting trucks.

The access route alignments on the landfill will be reflected in the revised closure plan for the landfill, which is currently being prepared for submittal to the Regional Water Quality Control Board. Circulation around the transfer station is shown on Figure IV-14 (p. IV-38) of the EIR.

The excavation of 20,000 cubic yards of in-place refuse, which would be disposed of at the current working face of the Sunnyvale Landfill, will not change the proposed height of the finished fill, or the shape of cells or lifts (T. Raibley, 3E Engineering, pers. comm.). It will reduce remaining capacity by 20,000 cubic yards, which is about two weeks worth of site life. The SMaRT Station would be operating before the landfill is closed. The revised closure plan to be submitted to the Regional Water Quality Control Board will reflect new contours in the excavated area and the new access routes discussed above. In the closure plan all slopes will remain at 2.75:1 or flatter, as recommended in a geotechnical assessment of the site.

Comment 2: "The mitigation measures for protecting worker health and safety when excavating refuse are not specific enough. The occupational safety measures which would be required by Cal-OSHA should be specified in the FEIR."

Response 2: Cal-OSHA does not have specific guidelines for worker safety during excavation of an existing landfill. Additional mitigation is amended to the EIR, as described in section III, below. Measures proposed by the applicant to insure worker and public safety during landfill excavation should be approved by the City of Sunnyvale, the County Health Department as Local Enforcement Agency, and Cal-OSHA. Measures which should be considered include worker education, use of protective clothing (eg., respirator, gloves, boots, long sleeves and pants), a safety plan which includes specific landfill gas monitoring measures, and an emergency response plan.

Comment 3: "Since the project proposes to site the facility on a portion of the City of Sunnyvale Landfill, and since the project requires the excavation of waste and reconfiguration of the landfill gas collection system, the City of Sunnyvale must revise the Solid Waste Facilities Permit for the Sunnyvale Landfill to reflect design and operational changes at that facility."

Response 3: Comment noted. This is stated in the EIR under "Sunnyvale Landfill" on page III-32.

Comment 4: "The handling and disposal methods, and ultimate disposal site, for excavated waste should be identified in the FEIR."

Response 4: As noted on page II-33 of the EIR, "Approximately 20,000 cubic yards of refuse would be excavated and removed from the site to another part of the Sunnyvale landfill." This would be accomplished with earthmoving equipment such as D-9 bulldozers, which would excavate the waste and place it into a truck with a capacity of about 18 yards. The truck would then deliver the refuse to the working face of the landfill. Approximately 25 truckloads per day are expected over a two-month period (45 working days) (page II-39 of the DEIR). Disposal methods at the working face would follow the current requirements for the Sunnyvale landfill under its Solid Waste Facilities Permit, or additional requirements as may be imposed by the LEA, such as daily cover to prevent odor problems. The excavated areas would be covered daily with six inches of soil to prevent odor and vector problems. Additional odor controls would be applied during excavation as necessary.

Comment 5: "Since the project will involve land use on a portion of the landfill which has been previously filled, the project must comply with Board regulations governing postclosure land use (Title 14, California Code of Regulations, section 17796)."

Response 5: Compliance with these regulations Title 14 would be implemented through the LEA's requirement for a Report of Station Information and issuance of a Solid Waste Facilities Permit, as discussed on page III-23 of the EIR. Landfill gas is also addressed in the EIR on pages IV-53 and IV-54.

Comment 6: "Assembly Bill 3180 requires public agencies to adopt monitoring and reporting programs each time they approve a project that contains mitigation measures to reduce or avoid significant environmental impacts (Cal. Pub. Res. Code 21081.6). Consequently, before approving the EIR Board staff recommend that the City establish a monitoring program which includes the following tasks:

1. Designate a monitoring program manager;
2. Assigns an agency or department the responsibility for completing the required monitoring;
3. Provide for periodic monitoring reports that summarize the results of the program and allow feedback to agency staff and decision makers;
4. Establish enforcement procedures and penalties for violations of mitigation requirements, including stop work orders, fines, restitution, and denial of subsequent permits."

Response 6: Recommendation noted. Under CEQA the mitigation monitoring requirements are presented in the Findings and Statement of Overriding Considerations which are made part of project approval. The mitigation monitoring program is not a required part of the EIR and the EIR can be certified as complete without it. The City of Sunnyvale is preparing a mitgation monitoring plan which will be presented to the City Council for approval at the same time the Final EIR is presented for certification.

B. County of Santa Clara Health Department

Comment 1: "The DEIR should address the impacts and mitigation measures associated with the relocation of 20,000 cubic yards of waste currently buried in the existing landfill. Discussion should include but not be limited to:

1. Covering exposed refuse with a minimum of 6" of cover material at the end of each working day.
2. Contingency odor controls.
3. Impacts on existing daily landfill operations.
4. Landfill gas monitoring for worker safety and other controls to be taken during excavation and relocation."

Response 1: Specific controls to be used during excavation of in-place refuse will be required by the City of Sunnyvale, and may also be required by the County Health Department as LEA for the Sunnyvale Landfill. At present it is expected that the excavation, which entails moving 20,000 cubic yards of in-place refuse and is anticipated to take two months to complete, would proceed as follows.

As described under III., below, the EIR is amended to reflect safety measures recommended as mitigation during excavation of the landfill. It will be primarily the responsibility of the City of Sunnyvale to assure that a safety and emergency response plan is proposed and reviewed by the City, the LEA, and Cal-OSHA prior to allowing excavation to begin.

Earthmoving equipment, such as Caterpillar D-9 bulldozers, would excavate the refuse and place it in an 18-yard truck for transfer to the working face of the landfill. It is recommended that the truck be waiting so that no refuse is stockpiled, that the truck remove the refuse to the working face immediately, that the truck be leak-proof if the refuse is wet, and that the load be covered to prevent refuse from blowing out. The excavated areas would be covered with six inches of soil daily to prevent vector and odor problems. During excavation odor can be controlled chemically either with deodorizers which mask the smells, or with a chemical which quickly biodegrades the source of the smells. Additional mitigation regarding worker safety has been amended to the EIR, as noted in section III, below.

In addition, the disposal of excavated refuse at the current working face may require daily cover rather than performance standards. This would result in additional truck trips to the landfill for import of soil cover during this time, and would add to the short term nuisance impacts caused by soil truck traffic to the site during construction of the station.

C. San Francisco Bay Conservation and Development Commission (BCDC)

Comment 1: "Jurisdiction. The DEIR states that '...the proposed site for the SMaRT Station is immediately south of the Bay and associated levees and is within the jurisdiction of BCDC.' Staff review of the DEIR site location maps, however, shows that the proposed site is neither located in tidal areas or within 100 feet of the line of highest tidal action, thus being outside of BCDC jurisdiction. However, the site was found to be within an area designated as a diked historic bayland (No. SC-15). This refers to areas that were once part of the Bay but have since been diked off from tidal action and have been filled. While this site is mapped as a diked historic bayland, at least portions of the site were part of a landfill and a concrete and asphalt recycling operation and, due to filling, now fall outside of the diked historic bayland definition. Nevertheless, review of DEIR site maps reveals areas that appear to have not been filled, and may be considered a diked historic bayland."

Response 1: The development footprint for the SMaRT station is located entirely on landfill, and falls outside of the definition of diked historic bayland. Confusion may lay in the fact that the footprint proposed in the Notice of Preparation of the EIR indicates use of adjacent sludge lagoons and encroachment into adjacent wetland areas north of the project site. The project was redesigned prior to publication of the EIR in order to avoid wetlands and waters of the US, and now requires excavation of portions of the Sunnyvale Landfill instead. One of the mitigation measures required under Vegetation and Wildlife is to place a fence between the site and the wetlands prior to construction to prevent construction activity, including grading, sidecasting, and parking from impacting nearby wetland areas.

Although the BCDC was contacted during preparation of the EIR, the agency did not confirm its jurisdiction over the project to the EIR consultant. However, the agency did indicate that it would have jurisdiction to the Project Applicant, Waste Management of North America, which is reflected in the EIR. Based on the comment letter received from BCDC, it is apparent that the site is not within BCDC jurisdiction because it is not located in tidal areas, within 100 feet of the line of highest tidal action, or in historic diked baylands.

Comment 2: "Identification of Diked Historic Baylands. The DEIR states that there are no wetland or wildlife resources on the site due to its prior use as a landfill and concrete recycling plant. However, because this site has been mapped as a diked historic bayland, the presence of any wetland habitat on the site would trigger the Commission's advisory policies. The DEIR states that the Army Corps of Engineers is expected to make a determination as to whether the site contained either open waters or would be designated a wetland. If this is found to be the case, the Commission's diked historic baylands policies would apply. The Final EIR should contain an adequate discussion of the presence of wetland habitat, including the Corps of Engineers' determination of the site's wetland characteristics. In the case that there are found to be the presence of wetlands on the site, the Final EIR should then address the Commission's diked historic bayland advisory policies stated above."

Response 2: As noted on page III-1 of the EIR, "The design of the SMaRT station does not require interference with the stormwater drainage channels or adjacent wetlands, and is not expected to require ACE involvement under either the River and Harbors Act of 1899 or the Clean Water Act, as amended. It is expected that the ACE will review this EIR, and request detailed project plans to review before determining that a permit is necessary." The EIR was mailed to Rod Chisolm at the US ACE. The ACE did not submit comments on the EIR, and has not requested detailed project plans. Because no impacts to wetlands or waters of the US are anticipated, it is unlikely that the ACE would require a permit or that BCDC would need to implement advisory policies.

D. Town of Los Altos Hills

Comment 1: "Page II-37, item F.4.c Potable Water. Tertiary-treated water is mentioned for potential use. However, no mention is made of reasons for not using this water. A source is readily available and the concept is very much in keeping with the theme of recycling. The improvement plans should reflect the installation of a system that will allow for the use of this water, in addition to the needs for on-site potable water."

Response 1: Comment noted. A direct reclaimed water line can be installed between the WPCP and the station to provide reclaimed water for irrigation and washdown in order to reduce the requirement for potable water. This is further discussed in the EIR on page IV-41:

"Total peak daily water consumption for the SMaRT facility is estimated at 22,000 gallons per day (gpd). Sufficient potable water capacity is available for the project, though the use of reclaimed water for some operations may be desirable. Assuming adequate availability and supply pressure, reclaimed water from the nearby Water Pollution Control Plant could be used to supply the 10,000 gpd for irrigation purposes from April through October. With proper safety precautions, the estimated 7,000 gpd required for facility washdown and 1,000 gpd for dust suppression could also be supplied by this same reclaimed water source. Therefore, peak reclaimed consumption would vary from about 8,000 gpd from November to March to approximately 18,000 gpd from April to October.

Of the total 22,000 gpd estimated for total usage, daily potable water use would average 4,000 gpd. The project would use less than one half of a percent of the potable water consumed daily in the City of Sunnyvale (A. Sandigo, pers. comm.)."

It is anticipated that tertiary treated reclaimed water would be suitable for these applications. Limitations on the use of reclaimed water would potentially be made by the WPCP, which would provide the water and is concerned with the quality of washdown water, or by the County of Santa Clara Health Department, which would serve as the Local Enforcement Agency of State regulations for the project.

Comment 2: "Page II-26, item E.7 Hazardous Waste Exclusion Program. One of the essential needs of Santa Clara County is a regular Household Hazardous Waste drop off site. It was our understanding that this would be a feature of the SMaRT project. The Town of Los Altos Hills requests that further examination of this beneficial use be considered as a portion of the environmental impact of this project. Not including such a program seems to have deleterious effect countywide."

Response 2: The Hazardous Waste Exclusion Program discussed in the EIR is the method to be used at the transfer station to prevent hazardous materials from going to the landfill, and should not be confused with a Household Hazardous Waste drop-off program. The City of Sunnyvale intends to pursue a Household Hazardous Waste drop-off facility separately from the SMaRT station. Such a proposal would undergo separate CEQA review.

Comment 3: "Page I-1, item Summary. Because baling of garbage is not cost-effective, at least based on research conducted by the City of Mountain View in 1988, such a procedure seems to not be the most efficient means of dealing with this issue. A portion of this cost efficiency is related to energy use, both time and material. In the opinion of the Town, this does have some impact on the environment associated with this project. Your analysis of other means of dealing with the non-recyclable portion of the waste stream would be appreciated."

Response 3: The proposed operation of the transfer station calls for compacting the refuse, not baling it. The compacted refuse looks like a 40-foot bale when it is removed from the compactor. Compacting the refuse requires fewer vehicle trips from the transfer station to the landfill than baling or direct haul, hence it is more cost and energy efficient.

Comment 4: "Page II-26, item F.6.d, Loadout of Recovered Materials. No definition is provided for the relation between volume of waste recovered and the ability of the market to bear the purchase of that volume. This market relationship has great impact on the economy and hence the environment. Will there be a policy established by the City of Sunnyvale that relates to the pursuit of either new markets or legislation requiring expanded use of recycled materials?"

Response 4: The market for recycled materials fluctuates greatly, and its ability to bear the volume from SMaRT cannot be predicted accurately. Recent legislation (AB939, or the Integrated Waste Management Act of 1990) requires a reduction in municipal waste streams and encourages the development of markets for recycled materials. The City of Sunnyvale is starting to prepare the required Source Reduction and Recycling Element for its General Plan, which will have a policy regarding use of recycled materials. The EIR assesses the impacts of the worst-case scenario, which is zero percent resource recovery, as well as 25 to 50 percent resource recovery which may be achieved (pages II-9 through II-17).

E. City of Sunnyvale Planning Department

Comment 1: "Both the ADEIR and the June 18th document stated that the transfer station would be an allowed use in the PF District. (Refer to p. III-26 of both documents.) This is true since it is located on City owned land. But as the memo noted, two of the proposed activities which would be part of the transfer station operations, (1) the storage of hazardous materials and (2) the storage of trucks, equipment and other materials on the site, are prohibited in the PF Pubic Facilities District. (See memo for citations.)

It was suggested that number of options could be explored to find the best way to resolve this land use issue. After review of the situation, planning staff feels the best option would be to rezone the land from PF Public Facility to M-S Industrial and Service District or M-3 General Industrial District. Hazardous materials storage facilities are permitted in these districts, as are the (limited) storage of mechanical equipment."

Response 1: Text of the EIR has been amended to reflect this issue. The amended text is provided under section III., below.

Comment 2: "In addition to the land use discussion, the memo notes some questions and concerns about the Kirby landfill which were not addressed in the ADEIR. As the questions raised are significant in terms of the success of the overall project, I assume that they will be addressed in the final EIR."

Response 2: The comments made on the memo are as follows:

"1. Are the Kirby landfill projections based on the assumption that San Jose will grant an increase in the amount of daily tonnage allowed?

2. How will the Sunnyvale Station be impacted if WMNA obtains contracts with Contra Costa, et al for added tonnage and the Kirby landfill increase is not granted? Will this cut into the amount of tonnage needed for the Sunnyvale waste stream?

3. How was it determined that 25% of waste materials could be recyclable?

4. The Kirby landfill is now going through an environmental review process in regard to increasing the tonnage and the hours of operation. What will happen to the Sunnyvale plan if the increases are not approved?"

The response:

The proposed project is construction of the SMaRT station and use of the Kirby Canyon Landfill. As noted in the EIR, the capacity at WMNA's Kirby Canyon Landfill has not been committed to any entity through contract, and is considered available for refuse from the SMaRT station, which would also be operated by WMNA. It is also noted that the existing permit, which allows 1500 tons per day on average to be delivered to the landfill, would need to be modified to allow an increase in average tons per day so that the existing waste stream and SMaRT refuse can be accommodated. This is the case under all three resource recovery scenarios considered in the EIR. As noted in the EIR (page II-15), "if the increase in tons per day to Kirby is not granted by the City of San Jose [and the Local Enforcement Agency], and the landfill cannot accept all of the SMaRT refuse, then another destination would have to be selected. In that case, additional environmental review would be required to address the impacts of using a different disposal site." The potential impacts of using a different site relative to using Kirby Canyon are addressed in the Alternatives Chapter of the EIR, however, additional environmental review specific to a selected site may still be necessary if a different disposal site is needed.

The City of San Jose recently rejected the proposal that refuse from Contra Costa County be imported to the Kirby Canyon Landfill.

The estimate of the amount of material that can be recycled is based on waste characterization studies. The 25% figure also compares with the 25% reduction in waste stream from municipalities to landfills required by the Integrated Waste Management Act of 1990 (AB939). This 25% reduction may be achieved by the City through a combination of recycling assisted by SMaRT and source reduction. The City is in the process of preparing a Source Reduction and Recycling Element of its General Plan to address the requirements of AB939.

F. City of Sunnyvale Traffic Engineering

Comment 1: "In the DEIR there is no mention or recognition of transportation projects going on in the transfer station area. The cumulative effect of area transportation plans and projects should be assessed."

Response 1: Proposed roadway improvements in the vicinity of the SMaRT station are discussed in the EIR on page IV-15, including those to US 101 and Highway 237. Existing transit as well as proposed transit improvements, namely the Light Rail Transit (LRT) project, are discussed in the EIR on Pages IV-15 and IV-16. Because all road crossings for the LRT would be signalized, it is not expected that refuse or transfer trucks would pose any additional hazard to or interfere with the LRT.

Comment 2: "Mitigations that are considered in the transportation section should include TDM measures."

Response 2: The project does not generate any significant traffic impacts, and therefore the EIR is not required to specify mitigation measures. However, the project is subject to any city-wide requirements, such as a Transportation Systems Management ordinance.

Only a fraction of the project is subject to TSM measures. The refuse trucks and public vehicles which deliver refuse to the site could not be measurably affected by traditional TSM measures. Employee traffic represents about 20-50 percent of the daily traffic generated by the site.

Many employees of the facility will naturally commute during non-peak hours because the facility operates 24-hours a day, with both an evening and swing shift. Some TSM measures which may be effective in reducing employee trips from the site are:

1) transit pass subsidies
2) on-site food sources
3) on-site showers and lockers
4) carpool matching services.

Comment 3: "The DEIR states that the station operator will be responsible for maintenance of station equipment and transfer trucks so as to reduce noise. A specific monitoring system should be included or requested during the permit process so as to assure the continuance of such maintenance."

Response 3: Comment noted. This measure will be addressed in the mitigation monitoring program to be included in the Findings and Statement of Overriding Considerations to be made at the project approval stage.

Comment 4: "Since truck traffic will be a deterrent to the ongoing usable condition of the roads near the transfer station, the station operator should contribute to the maintenance of said roads."

Response 4: Comment noted. The station operator will pick up litter along roadways near the site (ie., the entrance road and a portion of Caribbean), and will repair damage incurred during construction, however, the City does not intend to require direct payment for maintenance of the roads leading to the station. The impacts to pavement wear from this project are not considered significant. The City will impose a host fee on other municipalities which contract to use the site. This income may be contributed toward road maintenance.

Comment 5: "The DEIR recommends that the station operator institute a litter pickup fee. The operator should also be held responsible for litter pickup along the roads leading to the transfer station."

Response 5: Comment noted; see also the response to Comment 4. This mitigation measure is planned and can be included as part of the conditions of approval of the project.

Comment 6: "The cumulative effect of more traffic on Highway 101, the area's most heavily traveled highway, has to be addressed through TDM measures for transfer station employees and scheduling of full trucks - not half empty trucks. It is noted that the DEIR addresses some of the concerns by running transfer trucks on off-peak hours."

Response 6: The proposed facility will contain enough storage capacity to allow transfer trucks to run off-peak. It is in the project operator's best interest to run trucks off-peak because the trip takes less time. There is an economic incentive to operate trucks only when they are full to their practical capacity. The operator would not often intentionally send half-full trucks to the landfill. Please see Response #2 regarding TSM measures.

Comment 7: "On page IV-7 of the DEIR, the question arises as to what has happened to 500 cars on Mathilda between Highway 237 off-ramp and the Ross Drive intersection."

Response 7: The amount of traffic counted on Mathilda Avenue leaving the Ross Drive intersection (heading northbound) is 3060 vehicles in the a.m. peak hour and 710 vehicles in the p.m. peak hour. The traffic count approaching (northbound) the Highway 237 westbound off-ramp intersection is 2910 vehicles in the a.m. peak hour and 710 vehicles in the p.m. peak hour.

The amount of traffic counted on Mathilda Avenue leaving the Highway 237 westbound off-ramp intersection (heading southbound) is 500 vehicles in the a.m. peak hour and 2630 vehicles in the p.m. peak hour. The traffic count approaching (southbound) the Ross Drive intersection is 610 vehicles in the a.m. peak hour and 2330 vehicles in the p.m. peak hour.

The agreement in data between intersections is considered acceptable for manual (ie., human) counts, especially considering the high volume of traffic in the area. Small variations in count data for one approach of an intersection will not change the reported service level, and the project's contribution to impacts at these intersections is not dependent upon count data.

Comment 8: "On page IV-15, the second paragraph, the question arises as to how many lanes will be included in the Measure A improvements. Information is needed on this, such as that provided in the preceding paragraph, regarding Highway 101."

Response 8: The grade separation of Highway 237 intersections is included as part of the Measure A project list. However, details are not available regarding the configuration of each interchange and funding shares of lanes at these intersections. The intersections in the vicinity of the project, which will provide access to the facility (Mathilda, Caribbean), are already grade-separated.

Comment 9: "The percentages indicated on the Figure 4-6 should be checked out against the numbers indicated on Figure 4-11."

Response 9: The project volumes in Figure IV-11 (when measured against the "without project" case) where checked against the spatial distribution of project traffic shown in Figure IV-6 and were found to be in agreement.

Comment 10: "On the map drawing on page IV-37, the diagram shows Borregas Avenue coming out of the transfer station to Caribbean with a righthand turn and a straight ahead lane. There is need for a lefthand turn pocket out onto Caribbean at this location. This is not indicated on the drawing."

Response 10: The map on Figure IV-17 shows two lanes heading southbound out of the transfer station at Caribbean Drive. The right-most lane is shown as a right-turn lane and the left lane is shared by both left-turn and through traffic. The traffic volumes exiting the station are not great enough to warrant a separate left-turn lane, and the intersection of Borregas/Caribbean has sufficient capacity to operate the southbound and northbound Borregas approaches as split phases (as would be necessary without a left-turn pocket).

However, if the signal system, or the turning radius at the intersection dictates the need for a separate left-turn lane, then the City may desire a separate left-turn pocket exiting the transfer station. This decision will need to be made when the intersection is actually designed.

III. TEXT AMENDMENTS

Deleted text is indicated by ~~strikeout~~, new text is *italicized.*

Page III-17, second paragraph, regarding the Bay Conservation and Development Commission:

The proposed site for the SMaRT station is immediately south of the Bay and associated levees ~~and is within the jurisdiction of BCDC. The Applicant is in the process of submitting a permit application.~~ , *but lies outside of the jurisdiction of the BCDC. If the project were to impact wetlands or waters of the US and require a permit from the US Army Corps of Engineers, then BCDC would implement advisory policies during that permit process. The project does not require filling of wetland or waters of the US, and mitigation has been recommended to prevent impacts to adjacent wetland and waters of the US. Hence neither an US ACE permit nor BCDC advisory action are expected to be necessary.* ~~The Commission may deny an application for a permit if impacts to the Bay and shoreline are significant or if the project fails to provide maximum feasible public access to the Bay and shoreline.~~ The SMaRT station would neither prevent access to the Bay and shoreline nor change existing access patterns, nor change the contour of the bay shoreline.

Page III-26, under 3.a., City of Sunnyvale Zoning Ordinance:

The site for the proposed SMaRT station is zoned Public Facilities District (P-F). The proposed project would *not* be an allowable use within this zoning district *due to the need to store machinery and temporarily store hazardous materials onsite. The project site must be rezoned to an industrial zoning (M-S or M-3) to accommodate activities proposed at the station.* The allowable uses are subject to *general* conditions of development specified in the Zoning Ordinance, such as lot coverage, size of front, side and rear yards, and percent of lot to be landscaped.

Page IV-54, c. Mitigation Measures:

Measures to reduce landfill gas hazards during the construction period include limiting the amount of area excavated during a certain period of time *; preparing and closely following a safety plan which includes provisions for probing the landfill and monitoring ambient air for landfill gas, and stopping activity and taking remedial action when gas is detected at the lower explosive limit*; using equipment fitted with spark arresters and restricting the use of potential sources of spark or fire onsite; educating construction workers as to the potential hazards; and providing worker safety devices as may be required by the Occupational Safety and Health Administration (OSHA). *Such devices may include respirators, gloves, boots, and long sleeves and pants. It is recommended that, prior to starting excavation, the applicant obtain approval of proposed precautions and an Emergency Response Plan from the City of Sunnyvale Department of Public Works, the County Health Department as LEA, and Cal-OSHA. It is recommended that the Emergency Response Plan include a list of the necessary equipment to have at hand (eg., extinguishers, water), and the procedures to be followed.* Flaring gas in that portion of the landfill prior to starting construction may also be tried, although the effectiveness of this measure is unclear.

APPENDIX A TO FINAL EIR
COMMENT LETTERS

STATE OF CALIFORNIA—OFFICE OF THE GOVERNOR

GEORGE DEUKMEJIAN, Governor

OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

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AUG 6 1990
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August 3, 1990

Marvin Rose
City of Sunnyvale
Public Works Department
456 W. Olive
P.O. Box 3707
Sunnyvale, CA 94088

Subject: Sunnyvale Materials and Transfer Station (SMART)
SCH# 89022812

Dear Mr. Rose:

The State Clearinghouse has submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is now closed and the comments from the responding agency(ies) is(are) enclosed. On the enclosed Notice of Completion form you will note that the Clearinghouse has checked the agencies that have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the comment package is not in order, please notify the State Clearinghouse immediately. Remember to refer to the project's eight-digit State Clearinghouse number so that we may respond promptly.

Please note that Section 21104 of the California Public Resources Code required that:

> "a responsible agency or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency."

Commenting agencies are also required by this section to support their comments with specific documentation. These comments are forwarded for your use in preparing your final EIR. Should you need more information or clarification, we recommend that you contact the commenting agency(ies).

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact Nancy Mitchell at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

David C. Nunenkamp
Deputy Director, Permit Assistance

Enclosures

cc: Resources Agency

A

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State of California Environmental Affairs Agency

Memorandum

AUG 3 1990

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To : Marvin A. Rose, Director
Department of Public Works
City of Sunnyvale
456 West Olive, P.O. Box 3707
Sunnyvale, CA 94088

Nancy Mitchell
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

From : John D. Smith
John D. Smith, Manager
Local Planning Division
CALIFORNIA WASTE MANAGEMENT BOARD

Subject: SCH# 89022812 - Draft Environmental Impact Report for the Proposed City of Sunnyvale Materials Recovery and Transfer Station

California Integrated Waste Management Board (Board) staff have reviewed the Draft Environmental Impact Report (DEIR) for the proposed City of Sunnyvale Materials Recovery and Transfer Station (project) and offer the following comments:

1

- Sunnyvale Landfill Design and Operation Changes - It does not appear that the DEIR evaluates all of the project's potential adverse impacts on the operation of the City of Sunnyvale Landfill. The Final EIR (FEIR) should assess the project's potential adverse environmental impacts as a result of landfill design changes in the areas indicated below:

    1. Any changes in landfill access for both private and commercial haulers;

    2. Changes in the design or configuration of landfill cells or lifts;

    3. Changes in the landfill's proposed final grading plan.

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- (2) Worker Health and Safety - The mitigation measures for protecting worker health and safety when excavating refuse are not specific enough. The occupational safety measures which would be required by Cal-OSHA should be specified in the FEIR.

- (3) Sunnyvale Landfill Solid Waste Facilities Permit - Since the project proposes to site the facility on a portion of the City of Sunnyvale Landfill, and since the project requires the excavation of waste and reconfiguration of the landfill gas collection system, the City of Sunnyvale must revise the Solid Waste Facilities Permit for the Sunnyvale Landfill to reflect design and operational changes at that facility.

- (4) Disposal of Excavated Waste - The handling and disposal methods, and ultimate disposal site, for excavated waste should be identified in the FEIR.

- (5) Post Closure Land Use - Since the project will involve land use on a portion of the landfill which has been previously filled, the project must comply with Board regulations governing postclosure land use (Title 14, California Code of Regulations, section 17796) (see attachment).

- (6) Mitigation Monitoring - Assembly Bill 3180 requires public agencies to adopt monitoring and reporting programs each time they approve a project that contains mitigation measures to reduce or avoid significant environmental impacts (Cal. Pub. Res. Code 21081.6). Consequently, before approving the EIR Board staff recommend that the City establish a monitoring program which includes the following tasks:

    1. Designate a monitoring program manager;

    2. Assigns an agency or department the responsibility for completing the required monitoring;

    3. Provide for periodic monitoring reports that summarize the results of the program and allow feedback to agency staff and decision makers;

    4. Establish enforcement procedures and penalties for violations of mitigation requirements, including stop work orders, fines, restitution, and denial of subsequent permits.

Thank you for the opportunity to comment on this document. If you have any questions on the above comments, please call me at (916) 327-0439, or Michael R. Leaon, of the Board's Local Planning Division, at (916) 327-0457.

cc: Tony Pacheco,
Santa Clara County Environmental Health Division

bcc: Don Dier, Permits
Bill Orr, Standards and Regulations

A

Section 17796. Postclosure Land Use.

(a) The site design shall show one or more proposed uses of the site toward which the operator will direct his efforts or shall show development as open space, graded to harmonize with the setting and landscaped with native shrubbery or low maintenance ground cover.

(b) All proposed construction improvements on completed sites shall be submitted to the local enforcement agency and the Board for review and comment concerning possible construction problems, hazards to health and safety, and factors which might affect the improvements. These comments shall pertain to the effect of the project on public health and safety, and the environment.

(c) The owner of the site shall not allow construction which:
(1) threatens the integrity of the final cover or liner(s); or
(2) threatens the integrity of any components of the containment system(s) or functions of the monitoring system(s), unless the local enforcement agency and the Board determine that the activities will not increase the potential threat to public health and safety and the environment, or that the activities are necessary to reduce the threat to public health and safety, and the environment.

(d) Construction of buildings on top of landfilled areas during the postclosure period shall be allowed only with the following restrictions:
(A) automatic methane gas sensors designed to trigger an audible alarm when methane concentrations are detected, shall be installed in all buildings constructed on closed sites;
(B) buildings shall be above-grade structures. Basement construction is prohibited;
(C) buildings shall be constructed to mitigate the effects of gas accumulation, which may include an active gas collection or vent system;
(D) all utility connections shall be designed with flexible connections and utility collars;
(E) pilings and utilities shall not be installed in or through the barrier layer of final cover.

(e) the local enforcement agency or the Board may require that an additional soil layer or building pad be placed on the final cover prior to construction to protect the integrity and function of the various layers of final cover.

(f) All on-site structures constructed within 1,000 feet of the waste holding area shall be designed and constructed in accordance with the following, or in accordance with an equivalent design which will prevent gas migration into the building:
(1) A geomembrane or equivalent system with high gas impermeability shall be installed between the slab and subgrade.
(2) A permeable layer of open-graded material of clean aggregate with a minimum thickness of 12 inches shall be installed between the geomembrane and the subgrade or slab.
(3) A geotextile filter shall be utilized to prevent the introduction of fines into the permeable layer;
(4) Perforated venting pipes shall be installed within the permeable layer and shall be designed to operate without clogging;
(5) The venting pipe shall be constructed with the ability to be connected to an induced draft exhaust system;
(6) Automatic methane gas sensors shall be installed within the venting pipe/permeable gas layer, and inside the building to trigger an audible alarm when methane gas concentrations are detected.

NOTE: Authority cited: Sections 66790(f) and 66796.22(d), Government Code. Reference: Section 66771, Government Code.

B

County of Santa Clara
Health Department

2220 Moorpark Avenue
San Jose, California 95128

August 2, 1990

Marvin A. Rose
Director of Public Works
City of Sunnyvale
P.O. Box 3707
Sunnyvale, CA 94088-3707

Subject: Draft EIR SCH89022812 (DEIR) For the Sunnyvale Materials Recovery and Transfer (Smart) Station

Dear Mr. Rose:

We have reviewed the DEIR for the Smart Facility and offer the following comments:

1 The DEIR should address the impacts and mitigation measures associated with the relocation of 20,000 cubic yards of waste currently buried in the existing landfill. Discussion should include but not be limited to:

1. Covering exposed refuse with a minimum of 6" of cover material at the end of each working day.
2. Contingency odor controls.
3. Impacts on existing daily landfill operations.
4. Landfill gas monitoring for worker safety and other controls to be taken during excavation and relocation.

Thank you for giving us the opportunity to comment on the subject DEIR.

Sincerely,

Antone Pacheco

ANTONE PACHECO, R.E.H.S.
SOLID WASTE ENFORCEMENT

AP:JT:rh

Jack Miller, CIWMB

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STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, Governor

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
THIRTY VAN NESS AVENUE, SUITE 2011
SAN FRANCISCO, CA 94102-6080
PHONE: (415) 557-3686

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July 13, 1990

Mr. Marvin Rose
City of Sunnyvale
Department of Public Works
456 W. Olive Drive
P.O. Box 3707
Sunnyvale, California 94088

Subject: Draft Environmental Impact Report for the Sunnyvale Materials Recovery and Transfer (SMaRT) Station; BCDC Inquiry File No. SC.SY.8704.1; Diked Historic Baylands Site No. SC-15; SCH #89022812

Dear Mr. Rose,

Thank you for requesting our comments on the DEIR for the proposed Sunnyvale Materials Recovery and Transfer (SMaRT) Station. The proposed project would involve construction and operation of facilities for sorting and processing recyclable and non-recyclable refuse. The facility would be located adjacent to the Sunnyvale landfill and Water Pollution Control Plant on the southern end of San Francisco Bay in Sunnyvale. The Commission itself has not reviewed the DEIR, however the following staff comments are based upon the Commission's law, the McAteer-Petris Act, the San Francisco Bay Plan and the Commission's adopted and advisory policies regarding diked historic baylands.

Jurisdiction

1 The DEIR states that "...the proposed site for the SMaRT Station is immediately south of the Bay and associated levees and is within the jurisdiction of BCDC." Staff review of the DEIR site location maps, however, shows that the proposed site is neither located in tidal areas or within 100 feet of the line of highest tidal action, thus being outside of BCDC jurisdiction. However, the site was found to be within an area designated as a diked historic bayland (No. SC-15). This refers to areas that were once part of the Bay but have since been diked off from tidal action and have not been filled. While this site is mapped as a diked historic bayland, at least portions of the site were part of a landfill and a concrete and asphalt recycling operation and, due to filling, now fall outside of the diked historic bayland definition. Nevertheless, review of DEIR site maps reveals areas that appear to have not been filled, and may be considered a diked historic bayland.

While the Commission does not have jurisdiction over diked historic baylands, the Commission has adopted advisory policies which are used to review and comment on proposed developments in these areas. These policies state, in part:

1. Diked historic baylands should be maintained in their present uses for as long as possible.

2. If some diked historic baylands cannot be retained in their existing uses, any development should meet the following criteria:

   a. To the maximum extent feasible, the development should be restricted to the dry portions of sites containing year-round, weedy (ruderal) vegetation. Fill should be permitted only if there is no practicable alternative and the fill is the minimum necessary. Filling should avoid areas that 1) have, or can feasibly be enhanced to have, high wildlife values; or 2) can be opened to tidal action.

   b. Development should not present a hazard to persons or property due to flooding, potential liquefaction, or strong ground motion during earthquakes.

   c. In all cases, mitigation should be provided whenever there is a significant, unavoidable impact on the environment, such as filling or excavating baylands. Mitigation should fully offset lost or adversely affected wildlife values. Projects should be designed and sited to buffer and protect any adjacent wildlife. Any areas provided as mitigation should be permanently preserved. Once mitigation has been provided for a project, repeated or cyclical losses of recovered vegetation or other values due to maintenance of the project should not require additional mitigation.

   d. Mitigation should consist of the following: (1) acquisition, restoration, preservation and dedication of non-wetlands that can feasibly be restored to provide wetland values; or (2) acquisition, preservation, dedication and, where necessary, restoration, of suitable diked historic baylands or other mudflats or marshes which will result in improved management practices enhancing the wildlife values of the area.

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6. Prior to approving any project for development, improvement or public purchase within any diked bayland, the extent of any public rights in the land should be identified and resolved by the State Lands Commission in consultation with other affected agencies.

7. Maximum public access to and along the perimeter of baylands should be provided in and through every project, except in areas where wildlife values would be adversely affected by human or pet intrusion.

Identification of Diked Historic Baylands

2 The DEIR states that there are no wetland or wildlife resources on the site due to its prior use as a landfill and concrete recycling plant. However, because this site has been mapped as a diked historic bayland, the presence of any wetland habitat on the site would trigger the Commission's advisory policies. The DEIR states that the Army Corps of Engineers is expected to make a determination as to whether the site contained either open waters or would be designated a wetland. If this is found to be the case, the Commission's diked historic baylands policies would apply. The Final EIR should contain an adequate discussion of the presence of wetland habitat, including the Corps of Engineers' determination of the site's wetland characteristics. In the case that there are found to be the presence of wetlands on the site, the Final EIR should then address the Commission's diked historic bayland advisory policies stated above.

Thank you for the opportunity to comment on the SMaRT DEIR. If you have any questions, please call.

Sincerely,

Richard L. Cooper

RICHARD L. COOPER
Permit Analyst

RLC/qjg

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TOWN OF LOS ALTOS HILLS
California
Incorporated • January 27, 1956

26379 FREMONT ROAD. LOS ALTOS HILLS, CALIFORNIA 94022
941-7222

July 27, 1990

Mr. Marvin Rose
Director of Public Works
City of Sunnyvale
P.O. Box 3707
Sunnyvale, CA 94086-3707

re: Draft EIR SMaRT Station

Dear Mr. Rose:

The Town of Los Altos Hills offers the following comments on the Draft EIR for the SMaRT Station and the conceptual project, in general.

1. Page II-37, item F.4.c **Potable Water**:

1 Tertiary-treated water is mentioned for potential use. However, no mention is made of reasons for not using this water. A source is readily available and the concept is very much in keeping with the theme of recycling. The improvement plans should reflect the installation of a system that will allow for the use of this water, in addition to the needs for on-site potable water.

2. Page II-26, item E.7 **Hazardous Waste Exclusion Program**:

2 One of the essential needs of Santa Clara County is a regular Household Hazardous Waste drop off site. It was our understanding that this would be a feature of the SMaRT project. The Town of Los Altos Hills requests that further examination of this beneficial use be considered as a portion of the environmental impact of this project. Not including such a program seems to have deleterious effect countywide.

3. Page I-1, item **Summary**:

3 Because baling of garbage is not cost-effective, at least based on research conducted by the City of Mountain View in 1988, such a procedure

seems to not be the most efficient means of dealing with this issue. A portion of this cost efficiency is related to energy use, both time and material. In the opinion of the Town, this does have some impact on the environment associated with this project. Your analysis of other means of dealing with the non-recyclable portion of the waste stream would be appreciated.

4. Page II-26, item F.6.d, **Loadout of Recovered Materials**:

4 No definition is provided for the relation between volume of waste recovered and the ability of the market to bear the purchase of that volume. This market relationship has great impact on the economy and hence the environment. Will there be a policy established by the City of Sunnyvale that relates to the pursuit of either new markets or legislation requiring expanded use of recycled materials?

Generally, the Town believes the DEIR to be an accurate and well-presented document. The major environmental impacts and issues have been addressed from our perspective. We appreciate the opportunity to comment on the DEIR and look forward to the ultimate completion of the project.

If I can be of any further assistance, please do not hesitate to contact me here at Town Hall.

Sincerely,

Bill Ekern

Bill Ekern
Director of Public Works

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cc: Valerie Lenz
Rich Gurney
Thomas Frutchey
Ann Jamison

CITY OF SUNNYVALE CALIFORNIA

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E

June 27, 1990

Ms. Tay Peterson
Thomas Reid Associates
P. O. Box 880
Palo Alto, CA 94329

Dear Ms. Peterson:

In reviewing the Draft EIR for the Sunnyvale transfer station (SMART), dated June 18, 1990, I noticed that comments I had made on the previous Administrative Draft EIR were not reflected in this document. The comments, dated June 6, 1990, were in the form of a memo. (See attached.)

One significant issue discussed in the memo was land use. Both the ADEIR and the June 18th document stated that the transfer station would be an allowed use in the PF District. (Refer to p. III-26 of both documents.) This is true since it is located on City owned land. But as the memo noted, two of the proposed activities which would be part of the transfer station operations, (1) the storage of hazardous materials and (2) the storage of trucks, equipment and other materials on the site, are prohibited in the PF
1 Public Facilities District. (See memo for citations.)

It was suggested that a number of options could be explored to find the best way to resolve this land use issue. After review of the situation, planning staff feels the best option would be to rezone the land from PF Public Facility to M-S Industrial and Service District or M-3 General Industrial District. Hazardous materials storage facilities are permitted in these districts, as are the (limited) storage of mechanical equipment.

Another option mentioned, obtaining a Use Permit which would contain conditions allowing both of these activities in this facility, is not felt to be a viable option. Staff feels that it would not be appropriate (and possibly would not be legal) for the City to grant permission for the applicant to conduct activities on site which are specifically prohibited under the Zoning Ordinance.

However, a Use Permit should be obtained in order to address other issues regarding site design, etc.

These two actions--a rezoning of the property to either M-S or M-3 and a Use Permit--would be needed in order for the transfer station to conform with the land use requirements of the City of Sunnyvale.

The rezoning and the Use Permit process can occur simultaneously. The entire process would take about six weeks from the closing date by which a completed application has been received.

I have enclosed two application forms, one for the zoning change and one for the Use Permit. I have also enclosed a meeting calendar, a fee schedule list and an application information sheet explaining what materials should be submitted with the applications. I hope these will be helpful.

2 In addition to the land use discussion, the memo notes some questions and concerns about the Kirby landfill which were not addressed in the ADEIR. As the questions raised are significant in terms of the success of the overall project, I assume that they will be addressed in the final EIR.

Please feel free to call me with any questions you may have. I will be happy to assist you in any way I can.

Sincerely,

Jo Ann Rouse

Jo Ann Rouse
Associate Planner

JAR/dz

Enclosures

cc: Marvin Rose
Valerie Lenz

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CITY OF SUNNYVALE
COMMUNITY DEVELOPMENT DEPARTMENT
Planning Division

June 6, 1990

To: Tay Peterson, Thomas Reid Associates

From: Jo Ann Rouse, City of Sunnyvale

Subject: SMaRT Station Administration Draft EIR

Below are comments, questions and concerns raised through a review of the Administrative Review Draft EIR for the Sunnyvale Transfer Station.

Land Use Discussion:

One area of concern relates to the approval process. Page III-26 states that the proposed project would be allowed within the P-F Public Facility zoning district. It seems clear that since the City owns the land, the facility would qualify as a public facility. But one aspect of the project would involve the storage of hazardous materials on site for an unspecified period of time, after they have been culled from the waste stream and before they are shipped to a proper receiving site.

Section 19.32.131 of the Zoning Ordinance allows hazardous materials storage facilities in the M-S and M-3 industrial zones only, providing that certain other site criteria are met. State law defines storage as any materials which are retained for more than one working day without being used. (Regan Williams, Public Safety). It would appear that the Transfer Station will be using some space for storage of hazardous materials, under this definition.

There are a number of approaches which could be considered to resolve this apparent Zoning Ordinance violation.

1. An application for a change in zoning from P-F Public Facility to an M-S or M-3 industrial zone could be made.

2. The City might be able to grant some kind of variance for hazardous materials storage within this facility, siting exceptional circumstances in this case.

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3. An application for a use permit could be made, with one of the conditions of approval specifically allowing the hazardous materials storage facility on this site.

4. The Zoning Ordinance itself could be amended to allow hazardous materials storage facilities in the P-F zone, under certain circumstances.

Further discussion of these approaches is needed to determine the best solution.

Further clarification is needed regarding truck storage on the site. Under the Zoning Ordinance, no storage or parking of commercial or industrial vehicles, except for the purpose of loading and unloading, is allowed in the P-F zones. The same restriction applies to storage of materials, supplies or equipment for commercial or industrial purposes. (See Section 19.32.080 (d) (1) and (2)of the Zoning Ordinance.)

If the trucks are continuously used to transport the wastes, they may not be considered to be stored or parked and this may not be an issue. But we would need to know how long and how often trucks would be parked on the site. More information will also be needed on whether materials, equipment, etc. will be stored on the site.

A final land use comment relates to parking. How were the number of parking spaces to be provided determined? The parking code may require more spaces, depending on how much floor area is given to each of the various uses. This can be determined and adjusted at the site plan stage. City parking requirements should be verified as part of the site planning process.

Kirby Landfill Questions:

The discussion on pages II-15,16 & 17 raises the following questions regarding the Kirby landfill.

1. Are the Kirby landfill projections based on the assumption that San Jose will grant an increase in the amount of daily tonage allowed?

2. How will the Sunnyvale Station be impacted if WMNA obtains contracts with Contra Costa, et al for added tonage and the Kirby landfill increase is not granted? Will this cut into the amount of tonage needed for the Sunnyvale waste stream?

3. How was it determined that 25% of waste materials could be recyclable?

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4. The Kirby landfill is now going through an environmental review process in regard to increasing the tonage and the hours of operation. What will happen to the Sunnyvale plan if the increases are not approved?

Finally, a brief comment about the traffic circulation of the site. The public circulation in the southeast section of the site needs to be clarified.

Comments from Sunnyvale Public Safety staff are attached. Comments from transportation planners will soon be forthcoming.

Thank you for the opportunity to comment on this ADEIR. If you have any questions, please call me at (408) 730-7444.

Jo Ann Rouse
Associate Planner

cc: Valerie Lenz

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WILLIAMS,REGAN / SUNNY/01 - HPDesk print.

Subject: DRAFT EIR
Creator: Regan WILLIAMS / SUNNY/01 Dated: 06/06/90 at 1026.

TO: JOANN ROUSE
FROM: CAPTAIN REGAN WILLIAMS
SUBJECT: SUNNYVALE SMART STATION ADEIR

THE PUBLIC SAFETY DEPARTMENT WOULD REQUIRE APPROVAL OF ALL ON-SITE STORAGE OF HAZARDOUS MATERIALS. WE WOULD REQUIRE SUBMITTAL OF A HAZARDOUS MATERIALS MANAGEMENT PLAN AND ISSUANCE OF A PERMIT FOR SAME. THESE ITEMS CAN BE HANDLED THROUGH OUR HAZARDOUS MATERIALS INSPECTION PROGRAM.

CONCERNING THE PROPOSED LOAD CHECK PROGRAM;
1. I BELIEVE PERSONNEL HANDLING HAZARDOUS WASTE WOULD BE REQUIRED TO COMPLETE A 40 HOUR COURSE APPROVED BY OSHA FOR HAZARDOUS WASTE WORKERS.
2. PUBLIC SAFETY WOULD WANT TO WORK WITH THE PERSONNEL PERFORMING THE LOAD CHECK PROGRAM TO ASSURE THAT ILLEGAL DUMPING INCIDENTS ARE INVESTIGATED PROPERLY. THIS WOULD INVOLVE NOTIFICATION OF PUBLIC SAFETY WITH OUR RESPONSE AND INVESTIGATION OF CERTAIN INCIDENTS FOR SUBMISSION TO THE DISTRICT ATTORNEYS'S OFFICE FOR POSSIBLE PROSECUTION.

ANY QUESTIONS OR CONCERNS CAN BE DIRECTED TO MYSELF AT (408)730-7220 OR TO RON STARICHA AT (408)730-7219.

REGAN WILLIAMS, CAPTAIN
JUNE 6, 1990

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CITY OF SUNNYVALE
CALIFORNIA

June 8, 1990

Memorandum

To: Tay Peterson, Thomas Reid Associates

From: Nan A. Vaughan, Transportation Planner, Traffic Engineering

Subject: Comments on Sunnyvale SMaRT Station ADEIR

1 1. In the DEIR there is no mention or recognition of transportation projects going on in the transfer station area. The cumulative effect of area transportation plans and projects should be assessed.

2 2. Mitigations that are considered in the transportation section should include TDM measures.

3 3. The DEIR states that the station operator will be responsible for maintenance of station equipment and transfer trucks so as to reduce noise. A specific monitoring system should be included or requested during the permit process so as to assure the continuance of such maintenance.

4 4. Since the truck traffic will be a deterrent to the ongoing usable condition of the roads near the transfer station, the station operator should contribute to the maintenance of said roads.

5 5. The DEIR recommends that the station operator institute a litter pickup fee. The operator should also be held responsible for litter pickup along the roads leading to the transfer station. (This has proven to be a big problem for the County on County maintained roads near the Guadalupe Landfill.) It has been suggested that tarping be a requirement for those bringing or taking trash to or from the transfer station.

6 6. The cumulative effect of more traffic on Highway 101, the area's most heavily traveled highway, has to be addressed through TDM measures for transfer station employees and scheduling of full trucks - not half empty trucks. It is noted that the DEIR addresses some of the concerns by running transfer trucks on off-peak hours.

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The questions regarding the following concerns should be addressed to Bob Temmermand in Traffic Engineering:

7 1. On page IV-7 of the DEIR, the question arises as to what has happened to 500 cars on Mathilda between Highway 237 off-ramp and the Ross Drive intersection.

8 2. On page IV-15, the second paragraph, the question arises as to how many lanes will be included in the Measure A improvements. Information is needed on this, such as that provided in the preceding paragraph, regarding Highway 101.

9 3. The percentages indicated on the Figure 4-6 should be checked out against the numbers indicated on Figure 4-11.

10 4. On the map drawing on page IV-37, the diagram shows Borregas Avenue coming out of the transfer station to Caribbean with a righthand turn and a straight ahead lane. There is need for a lefthand turn pocket out onto Caribbean at this location. This is not indicated on the drawing.

Nan A. Vaughan

Nan A. Vaughan
Transportation Planner

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ADDENDUM TO THE SUNNYVALE SMaRT STATION EIR SCH#89022812

I. OVERVIEW

A Draft EIR was prepared for the Sunnyvale Materials Recovery and Transfer (SMaRT) Station in June 1990 and a Final EIR for the project was certified by the City of Sunnyvale in September 1990 (State Clearing House #89022812). Since the Final EIR was certified, the SMaRT Station project has been modified. This document describes the change in environmental impacts expected as a result of the revised project.

This document incorporates the Draft and Final EIRs by reference and only those areas affected by changes in the project are addressed in this document. All information presented in the June 1990 Draft EIR and September 1990 Final EIR is still valid, unless otherwise noted in this document.

A. Summary of Changes

The modifications to the SMaRT Station project include a reduction in the size and design capacity of the station, reconfiguration of the main station building and relocation of the wood waste processing and public buy back areas. Table 1 summarizes the primary modifications to the project and identifies the resulting change in impacts.

The station design capacity has been reduced as a result of more accurate waste volume figures from each city, and re-evaluation of the assumptions made in estimating growth in the waste stream. As described below under II.B.2., the Cities have estimated the waste stream to the SMaRT Station based on waste generation quantities contained in their Source Reduction and Recycling Elements, and in contractual commitments to Kirby Canyon Landfill.

B. Change in Significant Environmental Impacts

Potentially significant impacts identified in the EIR include traffic impacts, fire hazard, washdown water quality, impacts related to safety and seismic safety, dust emissions during project construction and operation, local impacts to biological resources, and nuisance impacts. Mitigation measures were adopted to reduce these potentially significant impacts to non-significant (see Summary Table in Draft EIR). All measures adopted in the certified EIR have been or will be implemented and the impacts will be mitigated to non-significant.

The modifications to the SMaRT Station project would not result in new significant impacts. No new mitigation measures are necessary.

The EIR found two areas of environmental impact to be significant and unavoidable.

Air quality impacts were determined to be significant and unavoidable because of short-term dust impacts during project construction and because of the potential release of hazardous landfill gas during excavation of the landfill. The project's construction-related air quality impacts would be slightly less because the project site has decreased in size from 10 acres to 9 acres. The plan no longer requires excavation on the east side of the site; however, the amount of excavation on the south side of the site is increased in the process of correcting and improving the original design of the roadway. Essentially the same amount of excavation will occur (P. Fisher, pers. comm.).

TABLE 1
SUMMARY OF PROJECT CHANGES

Project Feature	EIR	Current Proposal	Change in Impacts
Recovery Rate	20 - 25% recycling rate	15 - 25% recycling rate	The Cities have established a minimum 15% recycling rate although up to 25% may be achievable.
Design Capacity	2200 Tons/Day	1500 Tons/Day	Reduced traffic, air quality, noise, and nuisance impacts.
Site Size	Approximately 10 acres	Approximately 9 acres	Smaller site would not require excavation of in-place refuse from the Sunnyvale Landfill for building construction, and would have less impacts associated with site preparation such as dust and construction vehicle emissions.
Building Size	Size: 128,000 sq ft	Size: 111,550 sq ft	Smaller building would result in reduction in impacts associated with site preparation and building construction.
Wood Waste Processing	Separate structure east of main building	Attached to processing building	Increased fire hazard would be mitigated by construction of fire walls.
Public Buy Back	Inside main station building.	Outside building; uncovered.	Traffic less congested inside but more congested outside. Potential for recycled materials to get wet.

The EIR also found that the SMaRT Station would have significant unavoidable aesthetic impacts on recreationalists using levees to the north of the project site. A screening fence and landscaping along the north side of the project site were required to help reduce aesthetic impacts. However, even with this mitigation the impact would remain significant and unavoidable. With the new project design, the SMaRT Station would be open on the north side of the building. The screening fence and landscaping would effectively block views of the station floor and aesthetic impact associated with the project would not be substantially different than those described in the EIR.

The modifications to the SMaRT Station project would not result in new significant and unavoidable impacts. No new mitigation technology is available which would reduce air quality or aesthetic impacts to non-significant.

C. Change in Mitigation Measures

The modifications to the SMaRT Station project would not require any change in the mitigation measures adopted to reduce project impacts. Mitigation measures adopted for the project are listed in a table in the Summary of the June 1990 Draft EIR. All adopted mitigation measures have been or will be incorporated into the new project.

The revised project would not result in new impacts which require additional mitigation measures.

II. PROJECT DESCRIPTION

A. Description Of Originally Proposed SMaRT Station

As described in the EIR, the cities of Sunnyvale, Palo Alto, and Mountain View (the Cities) are facing imminent closure of their landfills. As part of a solution to their near and long term solid waste disposal needs, these communities decided to construct a transfer station/resource recovery facility. These cities compose the "primary service area" of the transfer station. Additional available capacity in the transfer station would be used to serve an "extended service area" of limited wastes from Stanford, Cupertino, Los Altos, Los Altos Hills, and Santa Clara.

The SMaRT Station would be located on approximately 10 acres on a site owned by the City of Sunnyvale, next to the Sunnyvale Landfill, the Sunnyvale Water Pollution Control Plant, and San Francisco Bay. The Sunnyvale Public Works Department is the lead agency for the project. The contractor to the Cities, Waste Management of North America, was to have built and operated the SMaRT Station.

The contractor to the cities determined the growth in the waste stream over the 30-40 year life of the project and designed the station to accommodate the expected waste stream. A 1.1% growth in the waste stream was used, based on projections by the Association of Bay Area Governments and the Santa Clara County Solid Waste Management Plan. As a result, the SMaRT Station was designed to handle 2200 tons/day of refuse. Initially, cities in the primary service area would have required only 61 percent of station capacity; this would increase to 94% of full capacity after 40 years. The excess capacity would be available for use by cities in the extended service area. Even with this additional waste stream the SMaRT Station would not have operated at capacity until about the year 2021, based on a waste stream growth rate of 1.1 percent.

Additional capacity at the SMaRT Station would be used to serve the extended service area including self-haul, clean-up campaign debris, and city maintenance waste from the cities of Cupertino, Los Altos, Los Altos Hills, and Santa Clara; debris box loads from Cupertino, Los Altos and Los Altos Hills; and waste from the Stanford Community.

The Cities would have a 30 year contract with Waste Management of North America (WMNA) for disposal of non-processable waste at the Kirby Canyon Landfill. Then, at their sole discretion, the Cities could extend the contract for one additional five-year increment, for a total of 35 years capacity. The agreement could then be extended by mutual consent of WMNA and the Cities for an additional five-year increment -- for up to 40 years of landfill capacity.

The materials recovered and processed in the station include aluminum, cardboard, ferrous metals, high grade paper, mixed waste paper, newsprint, glass, wood, yard waste, plastic, and white goods.

The SMaRT Station facilities would provide for sorting recyclables out of incoming refuse, processing loads from curbside recycling, a public recyclables buyback area, and an area for processing wood waste. The contractor to the Cities estimated that resource recovery at the station would reduce the waste stream to the landfill by approximately 20-25 percent.

After all targeted recyclable materials were extracted from the waste stream, non-processable refuse would be compacted into bales, loaded into enclosed transfer trucks and trucked to the Kirby Canyon Landfill in southern San Jose. Acceptance of refuse from the SMaRT Station would require changes in Kirby Canyon Landfill's permits to allow nighttime operating hours and an increase in the amount of refuse that can be accepted daily.

SMaRT Station design included one main building for waste processing and materials recovery, a separate building for yard and wood waste processing and storage, a vehicle maintenance area, an entrance facility, an office, a perimeter roadway, two parking areas, and a transfer trailer staging area. An additional transfer trailer staging area was sited on top of the landfill east of the SMaRT Station building in order to stage transfer trucks when the station began to operate near capacity. All operations were enclosed, and the total floor space for the facility was about 128,600 square feet. The station building would be 35-45 feet high. Construction of the SMaRT Station would require the excavation of in-place refuse from the Sunnyvale Landfill and the relocation of portions of the landfill gas collection system.

B. Revised Project Description

This revised project description will only address those areas of the original project description which have changed. If not addressed in this section, all other features of the project will remain the same as discussed in the EIR.

The following modifications have been made to the SMaRT Station project:

1. Assumptions regarding growth in the waste stream have been revised resulting in a reduction in the station design capacity from 2200 tons per day to 1500 tons per day.
2. The building design has been changed and become smaller.
3. The site acreage has been reduced from 10 acres to approximately 9 acres.
4. The Cities will subcontract station construction and operation.

1. Service Area and Project Life

The SMaRT Station would primarily serve the communities of Sunnyvale, Palo Alto, and Mountain View. All franchise-collected and self-haul refuse from these cities would be delivered to the station for processing before being shipped to Kirby Canyon Landfill.

As described in the EIR, the SMaRT Station may also serve an extended service area if excess capacity is available at the station. However, with the downsizing of the project, there would be much less surplus capacity available for use by other communities and it is possible that no use from an extended service area would occur at all or that whatever use does occur would be on a much smaller scale than described in the EIR.

The Cities would continue to have a 30 to 40 year contract with Waste Management of North America (WMNA) for disposal of non-processable waste at Kirby Canyon Landfill. Waste would begin to be delivered to Kirby from the SMaRT Station in July 1993 and continue under the 30-year contract until 2021 (28 years are remaining in the contract). With the 10 year extension specified under the contract, waste from the station could be delivered to the Kirby Canyon Landfill for another 10 years or until 2031.

2. SMaRT Station Design Capacity and Rate of Recycling

Originally the SMaRT Station was designed to accommodate 2200 tons/day of refuse and achieve a 20% to 25% recycling rate. This design capacity was based on an annual growth in the waste stream of 1.1% as projected by the Association of Bay Area Governments and the Santa Clara County Solid Waste Management Plan.

The waste stream volumes presented in the EIR were generated prior to implementation of Assembly Bill 939 (AB 939). AB 939 requires cities and counties to reduce their waste stream by 25% by 1995 and by 50% by the year 2000. Cities must also prepare Source Reduction and Recycling Elements (SRRE) which quantify current waste streams and outlines programs and policies to achieve the mandated recycling goals.

Table 2 presents the expected waste volume flows to the transfer station beginning in 1993 and ending in 2021. Table 3 presents allocation quantities for the extended period allowed for the Kirby Canyon contract with WMNA.

The waste volumes presented in Tables 2 and 3 are substantially less than those presented in the EIR. For example, the EIR predicts the waste volume from the primary service area to be 484,777 tons per year in 2021 and 540,817 tons per year in 2031, whereas Table 2 shows predicted waste volumes of 326,639 tons per year in 2020 and 349,542 tons per year in 2031.

TABLE 2
TRANSFER STATION WASTE QUANTITIES

YEAR	SUNNYVALE	MOUNTAIN VIEW	PALO ALTO	TOTAL
1993 *	96,619	52,537	34,682	183,838
1994	187,148	89,276	69,609	$\boxed{346,034}$
1995	180,934	89,959	69,967	340,859
1996	177,163	91,036	67,932	336,132
1997	173,234	92,128	65,848	331,210
1998	169,229	93,234	63,716	326,180
1999	165,151	62,927	61,534	289,613
2000	160,997	63,661	59,304	283,962
2001	159,427	64,094	59,896	$\boxed{283,418}$
2002	160,513	64,529	60,495	285,538
2003	161,606	64,969	61,100	287,675
2004	162,707	65,412	61,712	289,830
2005	163,815	65,859	62,328	292,002
2006	164,930	66,307	62,952	294,189
2007	166,054	66,758	63,581	296,393
2008	167,185	67,212	64,218	298,614
2009	168,323	67,668	64,859	300,850
2010	169,470	68,128	65,508	303,106
2011	170,624	68,592	66,164	305,379
2012	171,786	69,059	66,825	307,669
2013	171,786	69,528	67,493	308,807
2014	174,134	70,001	68,168	312,303
2015	175,320	70,476	68,849	314,646
2016	176,514	70,955	69,538	317,007
2017	177,716	71,439	70,233	319,388
2018	178,926	71,925	70,935	321,786
2019	180,145	72,413	71,645	324,203
2020	181,372	72,906	72,361	326,639
2021 **	136,955	55,051	54,814	246,819
TOTAL	4,849,783	2,058,041	1,866,266	8,774,090

* Assumes deliveries begin July 1, 1993.
** Assumes deliveries end September 30, 2021.

Peak	Flow (1994) =	1,331	tons per day (5)

Low	Flow (2001) =	1,090	tons per day (5)

TABLE 3
WASTE "ALLOCATION QUANTITIES" FOR EXTENDED TERM

YEAR	SUNNYVALE SMaRT	MOUNTAIN VIEW SMaRT	PALO ALTO SMaRT	TOTAL
1	182,605	73,401	72,853	328,859
2	183,847	73,900	73,349	331,096
3	185,097	74,403	73,847	333,347
4	186,356	74,909	74,350	335,614
5	187,623	75,418	74,855	337,896
6	188,899	75,931	75,364	340,194
7	190,183	76,447	75,877	342,507
8	191,477	76,967	76,393	344,836
9	192,779	77,490	76,912	347,181
10	194,089	78,017	77,435	349,542

The numbers presented in Tables 2 and 3 were generated by each city independently and reflect each city's adopted SRRE and waste stream growth assumptions, and are based on a contractual commitment to Kirby Canyon. The Cities have conducted extensive waste audits since the passage of AB 939 and Tables 2 and 3 reflect a more accurate characterization of waste volumes in each of the cities. Also, these numbers are lower because they reflect increased source separation and source reduction as a result of AB 939, and a 7% to 10% drop in overall waste volumes due to the decline in the local economy. Finally, the Cities did not apply the 1.1% growth rate to predict increased waste streams, as each city felt it was already close to buildout and using a 1.1% rate of growth would be greatly overestimating the actual growth rate (Mark Bowers, pers. comm.).

Based on the revised waste volumes, the SMaRT Station would be designed to accommodate 1500 tons per day. This is approximately 68% of the original design volume of 2200 tons per day.

Originally it was predicted that a 20% to 25% recycling rate could be accomplished at the SMaRT Station. The Cities have now established a minimum recycling rate of 15% because much of the easily recyclable, high value material is already being recycled at curbside and would not be included in the waste stream to the station. The 15% rate applies only to the municipal solid waste delivered to the station and does not account for the diversion the Cities are achieving through curbside recycling. A greater than 15% recycling rate is desirable and may be achievable at the SMaRT Station. Thus, the Cities are predicting a recycling rate of 15% to 25%. Table 4 presents the waste stream to Kirby Canyon after SMaRT has achieved a 15% recycling rate.

TABLE 4
WASTE QUANTITY ESTIMATES
DELIVERIES TO SMaRT STATION AND TO KIRBY CANYON LANDFILL
TONS PER YEAR

YEAR	TO SMaRT	TO KIRBY CANYON AFTER 15% RECYCLING	TO KIRBY CANYON AFTER 25% RECYCLING
1994[1]	346,034	294,129	259,526
2020[2]	326,639	277,643	244,979
2031	349,542	297,111	262,156

1: The table shows the waste volumes for 1994 as this is the first full year of station operation.
2: The table shows the waste volumes for 2020 as this is the last full year of operation during the first 30 year contract.

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3. Waste Steam to the Kirby Canyon Landfill

The SMaRT Station would initially send approximately 294,129 tons of waste per day to the Kirby Canyon Landfill with 15% recycling, and 259,526 tons per day with 25% recycling. This waste volume would steadily decrease to 277,643 tons per day with 15% recycling, or 244,979 with 25% recycling by the year 2020 (see Table 3) as a result of recycling mandated by AB 939. Over the 30 year life of the disposal contract, the SMaRT Station would send about 7,457,976 tons of waste to the Kirby Canyon Landfill with 15% recycling (see Table 2).

4. SMaRT Station Design

The design of the SMaRT Station has changed from that originally proposed. The station building has been reduced in size, changed in configuration, and will require less acreage. The principal features of the station have not changed from those described in the EIR. SMaRT Station features which have been modified since the EIR are described below.

a. Site Plan

The SMaRT Station now features one main building for waste processing and materials recovery, wood and yard waste recycling, and a smaller, separate office building (see attached General Site Arrangement figure). A gate house and scale would be constructed at the entrance to the SMaRT Station. All operations except for the public buyback would be housed, and the total floor space would be about 111,550 square feet, broken down as follows:

Main Building Area:	91,875 sq ft
Curbside Area:	5,000 sq ft
Loadout Area:	3,300 sq ft
Woodwaste Area:	9,375 sq ft
Vehicle Maintenance:	2,000 sq ft
TOTAL AREA:	111,550 sq ft

The parking areas include one containing 77 stalls next to the office and visitor center for employees and visitors, and one south of the SMaRT building with about 10 spaces for employees. As originally proposed, a staging area for the transfer trucks would be constructed on top of the Sunnyvale Landfill east of the building in order to stage transfer truck trips when the station begins to operate.

The SMaRT Station site would now occupy approximately 9 acres instead of 10 acres as originally proposed.

The SMaRT Station would have a finished floor elevation of +4 feet NGVD.

The original design of the station building had separate tipping areas for commercial processable and non-processable waste located in the eastern end of the station. The redesigned station has combined the areas into one tipping area for commercial waste located on the north side of the station. Approximately 16 tipping stalls would be provided.

The public tipping area has not changed in configuration or location within the building. A tipping area for franchise collected residential waste has been added next to the self-haul area.

The public buyback area has been moved from inside the building to outside the building by the southwest corner. The buyback area would consist of a staffed drop-off area with containers for the various types of recyclables.

The wood and yard waste processing area was originally located in a separate building east of the main station. This area is now attached to the northwest corner of the station. The wood waste area would encompass approximately 9,375 square feet. The processing method for wood waste and yard waste has not changed. The wood waste would be fed onto a conveyor and moved through a shredder. Shredded material would be stored according to size in drop boxes located outside the building. Green yard waste which is not chipped would be placed in drop boxes for removal by separate contractors for composting in various off site areas.

The curbside processing area and entrance facility have not changed.

As originally described, the building would have a pile foundation and be about 45 feet high and would be steel-framed with concrete or masonry walls (see attached Building Cross Sections).

b. **Site Circulation**

The traffic circulation pattern is essentially unchanged. Traffic would travel in a counter-clockwise direction throughout the site. Some changes in traffic flow patterns would occur because the wood and yard waste area has been moved from a separate building east of the main station to north of the main building, the public buyback has been moved outside the station building, and trucks coming from the top of the landfill would now exit from the top of the landfill on an existing landfill road.

The previous site plans showed a road coming from the top of the east hill of the landfill and intersecting with the station's perimeter road in the northeast corner of the site. Truck traffic coming from the top of the landfill, including transfer trucks coming from the staging area would have used this road to return to the station. It was determined that the ramp necessary for this road would have required the removal of a large amount of in place waste (more than 50,000 cubic yards) and backfilling. This task alone would have eliminated the possibility of having the project completed by July 1, 1993.

As a result, the new site plans eliminate this road. Traffic from the top of the landfill would enter and exit on the same road. Incoming trucks (including trucks associated with Raisch, an asphalt/concrete recycling company now located on top of the landfill east of the station) would enter the station and continue up the existing road to the top of the landfill (see Figure 1). Trucks would also leave the top of the landfill via this road, but because the right-turn angle from the landfill road to the station circulation road is too acute for large trucks to make, trucks bound for the transfer station would come down the landfill road, cross incoming station traffic, turn around, and merge with incoming station traffic. The traffic exiting the landfill road would be controlled by a stop sign.

c. Transfer Operations

Transfer operations would remain unchanged from those described in the EIR. Non-processable waste would be compacted, baled, and pushed into fully enclosed transfer trucks. However, the location of the transfer operation has been moved from the north side of the building to the east side.

The building would have design space for two compactors, although only one would be installed initially. For system redundancy, the conveyor system for the second compactor would be installed so that waste could be loaded out into top-loading transfer trailers in the event the first compactor is not operational for an unacceptable period of time. The second compactor would be installed when waste volumes at the station dictate the need for two compactors.

d. Employment and Hours of Operation

The station's hours of operation would not change from those described in the EIR. The number of employees required to operate the station is slightly less than originally predicted. Rather than employing roughly 140 people, the station would now employ an estimated 105 to 120 people (8 administrators, 82 to 102 operations people, and 15 maintenance people).

5. SMaRT Station Site Preparation

a. Excavation and Grading Plan

Since the EIR was prepared, it has been determined that the station building would be constructed using a pile foundation. The finished floor elevation would be +4 feet. Existing fill will be excavated to approximately -3 feet NGVD and replaced with engineered fill. The site elevation would then be raised by importing approximately 10,000 to 15,000 cubic yards of clean fill material (Robert Carn, pers. comm.).

The original station design required the excavation of existing landfill to make room for the access roads, the gate house and interior roads. This would have entailed excavation of portions of the landfill in the south and east portions of the project footprint.

With the smaller, revised project design, landfill excavation would only occur near the entrance road and gate house. The City of Sunnyvale has already contracted for this work which is scheduled for completion by July 28, 1992. The City has obtained all necessary permits and approvals needed to proceed with this work. The excavated refuse will be relocated on the south hill or disposed of at the working face of the Sunnyvale Landfill (Paul Fisher, pers. comm.).

A health and safety plan has been prepared by the contractor, Granite Construction Company, to address worker exposure to potentially hazardous landfill gasses during excavation. The City of Sunnyvale has approved the plan. The plan will also be reviewed by the Local Enforcement Agency, Santa Clara County Health Department, which will also closely monitor the excavation (Paul Fisher, pers. comm.).

b. Landfill Gas Control System

The excavation of in place refuse requires the relocation of portions of the Sunnyvale Landfill gas collection system. The system has already been relocated in anticipation of the excavation work. The City obtained the necessary approvals from the Bay Area Air Quality Management District (Paul Fisher, pers. comm.).

c. Dewatering During Construction

Dewatering may be required during construction of the SMaRT Station because of the high groundwater table. Any groundwater extracted during construction would be discharged to the sanitary sewer under an Industrial Waste Discharge Permit issued to the project contractor by the Water Pollution Control Plant for disposal of groundwater extracted from under the landfill (Paul Fisher, pers. comm.).

III. CONFORMANCE WITH PLANS, ORDINANCES AND POLICIES

The June 1990 EIR addressed the permitting requirements and project conformance with four Federal agencies, nine State laws and agencies, and five local agencies. Table III-2 in the Draft EIR summarized regulatory conformance and permitting requirements for the SMaRT Station.

This document discusses those laws or agency requirements which would be changed as a result of the changes in the project description or for which new information is available.

A. State and Regional

1. California Integrated Waste Management Act of 1989 (AB 939)

In compliance with the requirements of AB 939, the City of Sunnyvale has adopted a Source Reduction and Recycling Element (SRRE). The SRRE describes the SMaRT Station and identifies it as an essential element of the City's plan for reaching the 25% and 50% recycling goals established by AB 939.

The Local Enforcement Agency (LEA) must issue a Solid Waste Facility Permit for the station. The California Integrated Waste Management Board will review and concur with the station's Solid Waste Facility Permit.

2. Bay Area Air Quality Management District

The 1990 EIR discussed air quality permitting requirements including the possibility of shutting down Sunnyvale Landfill's gas collection system in order to relocate the system as a result of excavation of in-place refuse.

The City of Sunnyvale has obtained the necessary approvals from the Bay Area Air Quality Management District and the landfill gas collection system is being relocated. The excavation of in-place refuse and temporary shutdown of the collection system during construction will occur in July 1992.

The City of Sunnyvale has also obtained an Authority to Construct permit required to start project construction (Paul Fisher, pers. comm.). A Permit to Operate is issued approximately 60 days after start of operation and must be renewed annually.

3. California Department of Health Services

The EIR discusses the Department of Health Services role in regulating hazardous wastes. The EIR stated that preliminary geotechnical investigations of the site showed buried pockets of sewage sludge which could contain hazardous concentrations of certain metals and other contaminants. If construction of the SMaRT Station required the excavation of the sludge, the

City of Sunnyvale would have to determine whether the sludge was considered to be hazardous under Title 22 and therefore under the regulation of the Department of Health Services.

After extensive testing, the City has determined that the sludge is non-hazardous, and has received concurrence from the Department of Health Services. The City of Sunnyvale has also determined that removal of the sludge is not necessary.

B. Local

1. Santa Clara County Solid Waste Management Plan

AB 939 revised the requirements for County Solid Waste Management Plans and now Countywide Integrated Waste Management Plans (IWMP) are required. Santa Clara County has adopted a County Solid Waste Management Plan (CoSWMP) which will be in effect until the IWMP is submitted and approved. The CoSWMP includes a discussion of the SMaRT Station. The station is in conformance with all Countywide CoSWMP policies and is consistent with the waste management hierarchy established by AB 939.

2. Permits Required by the City of Sunnyvale

As outlined in the EIR, the station would have to receive building and grading and erosion control permits from the City, as well as a Wastewater Discharge Permit from the Sunnyvale Water Pollution Control Plant (WPCP) and a Hazardous Materials Storage Permit from the Sunnyvale Department of Public Safety.

The WPCP acceptance criteria are presented in Section 12.12.120 of the City's Sewer Ordinance. WPCP staff have been concerned that the washdown water from the station floor may contain debris as well as contaminants picked-up from material in the waste stream and that the WPCP would be unable to accept the washdown water unless it has been pretreated.

Samples of washdown water from three similar transfer stations have been tested for pollutants. At a minimum, the washdown water would have to pass through a central interceptor to separate out solids, and oil and grease prior to discharge to the sanitary sewer. After further analysis of the washdown water from this station, it will be determined if a pretreatment system will be required to meet WPCP discharge requirements. The station would be designed so that additional treatment facilities could be installed at a later time if further treatment of the washdown water is required. In addition, a regular maintenance program will be instituted, directed at minimizing the amount of washdown water produced and keeping debris out of the drains (Chris de Groot, pers. comm.).

IV. ENVIRONMENTAL IMPACTS

A. TRANSPORTATION

1. Setting

The EIR presented existing traffic and circulation information for roads used by franchise vehicles on the way to the station and for roads used by the transfer trucks traveling to Kirby Canyon. Traffic counts for key roadways presented in the EIR were taken in 1988 and 1989. Figure IV-1 in the Draft EIR shows the study area and circulation network.

Twelve signalized intersections in the vicinity of the project were analyzed. These included intersections on Mathilda Avenue, Borregas Avenue, Crossman Avenue, N. Fair Oaks Avenue, Caribbean Drive, and Lawrence Expressway. All intersections operated with a level of service C or better during peak periods, except for the "monster" interchange of Mathilda Avenue and Highway 237 which operated with a level of service E during peak periods. Subsequent to the Final EIR the "monster" interchange has undergone improvements, which have significantly improved its traffic handling characteristics. Because the project is still undergoing traffic signal timing refinements, no updated level of service measurement has been calculated (Joseph Avila, City of Sunnyvale Public Works, pers. comm.)

None of the conditions in the setting have changed substantially from those described in the EIR.

2. Impacts

The redesigned project would generate less traffic because the waste flows coming into the station are expected to be substantially less (see Project Description). Rather than having a design capacity of 2200 tons/day, the redesigned SMaRT Station would have a capacity of 1500 tons/day. This results in approximately a 32% reduction in the station capacity which would result in approximately a 32% reduction in project related traffic.

Table IV-6 in the Draft EIR estimated traffic volumes to the SMaRT Station to be 1832 round-trips (in and out) per day, including all franchise collection vehicles, public haul, employee trips, and recoverable materials trips. Traffic associated with the extended service area was estimated to be 182 trips per day. A 32% reduction in traffic volumes would result in 1,246 trips per day, including trips associated with an extended service area, when operating at maximum capacity .

The EIR demonstrated traffic volume sensitivity to recovery rate. Traffic projections in the EIR assumed that 25% of the materials brought to the transfer station are recoverable materials which would be recycled at an off-site location. However, if the recycling rate increased, the amount of trips to the Kirby Canyon Landfill would decrease, but the total number of outgoing garbage trips would increase as transfer trucks can carry more payload than recycled materials trucks.

For example, if the recovery rate dropped to 0%, then the number of Kirby Canyon trips would have increased from 110 to 150 trips, but the total number of outgoing trips would have decreased from 170 to 150. If the recovery rate is increased to 50%, then the number of Kirby Canyon trips would have decreased from 110 to 75, but the total number of outgoing garbage trips would have increased from 170 to 200.

The same sensitivity would hold true for the revised project. While overall traffic volumes from the revised project would be lower than the original project, more traffic would be generated if a 25% recycling rate is achieved than if a 15% recycling rate is done.

The EIR concluded that the project would not have significant traffic impacts because of the project's relatively small impact on traffic volumes and the service levels at the study intersections. The reduction in project related traffic would further reduce the project's contribution to existing and future traffic volumes.

Changes in the on-site circulation pattern are described in II.B.4. The proposed changes in the circulation pattern would not create new traffic safety impacts.

3. Mitigation

Although the project did not have significant adverse traffic impacts, the EIR recommended both on and off-site mitigation measures to further reduce non-significant impacts. These measures are still appropriate for the revised project and should be implemented as adopted. No additional mitigation measures are necessary.

B. PUBLIC SERVICES

1. Setting

The public service setting description presented in the EIR remains unchanged. The SMaRT Station would require 1.5 to 2 megawatts of electricity from Pacific Gas & Electric and approximately 22,000 gallons of water per day from the City. The station would generate approximately 11,000 gallons per day of wastewater which would be directed to the Sunnyvale Water Pollution Control Plant (WPCP). Storm water runoff would be directed to existing stormwater channels west and north of the site. The station would receive police and fire protection from the City of Sunnyvale. The station would require 245 to 505 cubic feet per hour of natural gas (R. Carn, URS, pers. comm.).

2. Impacts

The station's impacts on public service providers remains unchanged. An existing underground electric power line along Caribbean and Borregas Avenue would have to be replaced with a larger cable and service would have to be extended from the WPCP to the SMaRT Station. Replacing the existing cable along Caribbean would have short-term effects on traffic along Caribbean Drive and the extension of Borregas Avenue which serves the landfill and the WPCP.

As discussed above under III.B.3., the washdown water generated by the station would pass through a central interceptor to separate out solids, and oil and grease. The station would also be designed so that additional treatment facilities could be installed at a later time if further treatment of the washdown water is required. The project would not adversely impact the City's water supply, the City Police and Fire Departments, or use excessive capacity at the WPCP.

3. Mitigation

The SMaRT Station would not have potentially significant impacts on public service providers and no mitigation measures were required in the EIR. No mitigation measures are necessary at this time.

C. ENERGY AND RECYCLING

The energy and recycling section of the EIR presented a discussion of the energy used by the project, including changes in transportation-related energy demand due to the project, energy used to operate the station and process waste, and energy requirements associated with recycling. The changes to the SMaRT Station would not result in any substantial change in this discussion.

The SMaRT Station would require energy to process waste, which would partially be offset by an increase in the amount of waste stream that is recycled. There may be a slight increase in energy use required to process and transport recycled materials. While transport of waste to the SMaRT Station may increase energy use, it would present a more energy-efficient solution than direct haul by each city to most regional landfills, and would also provide for recovery of a portion of the waste stream.

The SMaRT Station would not have an adverse impact on energy use.

D. SAFETY AND SEISMIC SAFETY

1. Setting

The EIR presented a discussion of the existing geotechnical environment including, project site soils and groundwater conditions, seismic conditions, potential for landfill gas migration, flood hazard, and the potential for hazardous soil and groundwater conditions. There have been no notable changes in the setting discussions presented in the EIR.

2. Impacts

Foundations/Soil Settlement. Since the EIR was written, it has been determined that the SMaRT Station building would be constructed using a pile foundation. This would require the import of approximately 10,000 to 15,000 cubic yards of clean fill to bring the site elevation to +4 feet NGVD. Site preparation would include excavating the existing fill to -3 feet NGVD, replacing it with engineered fill, and importing fill to raise the elevation of the site. The required earthfill would result in soil settlement of about 1.75 inches. About 15% percent of the settling would occur during site preparation. The remaining settlement is time-dependent and could be accommodated through engineering design so that a waiting period is not necessary.

Slope Stability. A slope stability analysis of the Sunnyvale Landfill was conducted by Dames and Moore (1988). The studies concluded that landfill slopes no steeper than 2.75:1 would be stable for both static and seismically induced loading conditions. The previous SMaRT Station design called for the excavation of refuse from the Sunnyvale Landfill and regrading to 2:1 and 3:1 slopes. The revised project is smaller in size, but would require more excavation on the south side of the project site and no excavation on the east side of the site. The regraded landfill slopes would have 2.75:1 slope (Paul Fisher, pers. comm.). Thus, the revised project more closely follows the recommendations of the Dames and Moore report.

3. Mitigation

The mitigation measures recommended in the EIR are appropriate for the revised project and should be implemented as adopted. No additional mitigation is required.

E. NOISE

1. **Setting**

The EIR described the existing noise environment including receptors sensitive to noise and the existing noise sources around the project site. Sensitive receptors include residential areas south of Highway 237, users of the Twin Creeks Softball Facility, and users of the Baylands Park and levees north of the project. The number and location of sensitive receptors has not changed since the EIR was written.

Existing noise sources around the project site include the Raisch Paving Company asphalt/concrete recycling operation, the water pollution control plant adjacent to the site, operations at the Sunnyvale Landfill, and traffic in the adjacent area. The EIR described Raisch asphalt/concrete recycling as being located west of the site. Since the EIR was written, Raisch has moved and is now located east of the site, on a portion of the Sunnyvale Landfill.

Noise measurements taken at five intersections in the project vicinity showed existing traffic noise levels to range from 66.2 dB(A) to 69.6 dB(A) (Table IV-6 in Draft EIR).

2. Impacts

Noise generated by the project would come from two sources: 1) refuse handling equipment inside the facility and 2) project related traffic.

The noise impacts described in the EIR generally remain the same. Since typical transfer station noises are not generally compatible with a recreational setting, the EIR stated that users of the levees north of the site and visitors to the future park created when the Sunnyvale Landfill closes would be adversely affected by noise in the localized area around the station.

Since the modified project is smaller in size and would be receiving substantially less waste than originally estimated, the overall noise impacts associated with the station may be slightly reduced. However, the reduction in noise generated at the station would not significantly reduce the adverse noise impacts to recreationalists.

The station building has been redesigned so that the commercial tipping area is now on the north side of the building, rather than on the east side. The public buy back area has been moved from inside the station building to outside the station. In addition, the wood and yard waste processing area has been moved from being located in a separate building east of the main station to being located in an adjoining area on the north side of the building (see Revised Project Description).

These changes in building design would redirect some of the station noise more towards the north since noise would escape from the station building through open doors in the commercial tipping area and noise from wood and yard waste processing would be moved from the east side of the site to the north side. Recreational users of the levees north of the site would likely hear more noise from the station.

The number and types of noise producing activities and equipment have not changed.

Noise impacts from project related traffic on and off site would be slightly less, and the noise impact at Kirby Canyon would be slightly less because less refuse would be sent to the landfill for disposal.

3. Mitigation

The mitigation measures recommended in the EIR are still appropriate for the revised SMaRT Station project. No additional mitigation measures are necessary.

F. AIR QUALITY

1. Setting

The EIR described the climate and air quality conditions for the region and the results of an Air Solid Waste Assessment Test (ASWAT) conducted for the Sunnyvale Landfill. Air quality conditions in the project vicinity have not changed from those discussed in the EIR.

2. Impacts

The EIR stated that except for short-term, localized impacts of construction dust, the project would not pose any potentially significant air quality impacts. The reduction in the waste volume handled at the station would slightly reduce air emissions associated with the project but would not significantly change air quality impacts from those presented in the EIR.

The four main sources of criteria air pollutant emissions from the proposed project are SMaRT Station site construction, transportation, SMaRT Station operations, and expanded Kirby Canyon Landfill operations. All sources would emit fine particulates (PM_{10}), carbon monoxide, nitrogen dioxide, and sulfur dioxide. The smaller project would result in less air emissions from all aspects of project operations.

3. Mitigation

The mitigation measures recommended in the EIR are still appropriate and no additional mitigation measures are needed.

G. WILDLIFE

1. Setting

The project site is next to San Francisco Bay, and wetlands and open water habitat are north of the project. The EIR addressed concerns regarding SMaRT Station impacts to wildlife in the adjacent baylands habitat and also at the Kirby Canyon Landfill. The setting has not changed significantly.

2. Impacts

The proposed changes to the SMaRT Station project would not alter the potential biological impacts described in the EIR. The EIR stated that station operations may indirectly affect the quality of habitat in adjacent areas but that impacts are considered to be reduced to non-significant with planned operations and mitigation measures.

3. Mitigation

The proposed changes to the SMaRT Station would not require changes to the mitigation measures presented in the EIR. No additional mitigation measures are required.

H. AESTHETICS

1. Setting

The EIR described the surrounding land uses, site conditions, identified nearby sensitive receptors and described the aesthetic conditions at Kirby Canyon Landfill.

Since the EIR was written, the Raisch asphalt/concrete recycling operation has moved from the western module of the Sunnyvale Landfill to the top of the eastern module. A small portion of the operation is visible from Caribbean Drive through gaps in the tall eucalyptus trees lining the road (stockpile of processed material). Trucks traveling on top of the landfill module are visible from the Twin Creeks Softball facility, but no other portion of the operation is visible.

At the time the EIR was written, the City of Sunnyvale was in the process of designing the future Sunnyvale Baylands Park, which was identified as a sensitive receptor. Construction for the park is now under way. Portions of the park have been cleared for development with picnic areas, turf fields, and boardwalk trails.

2. Impacts

Changes in the building design have resulted in:

- a smaller project site (9 acres vs. 10 acres);
- a smaller building (111,550 vs. 128,000 sq ft);
- elimination of the separate wood and yard waste building and movement of that process to the north side of the station building;
- creation of a separate, outside area for public buyback;
- movement of the commercial tipping area from the east side of the building to the north side; and
- movement of the transfer trailer truck loading area from the north side of the building to the east side.

The station building would still be 45 feet at its highest point and have a steel-framed structure with steel roof panels and siding. Concrete or masonry walls would be used as necessary for support and to provide architectural enhancement of the building exterior.

The parking area for transfer trailers would still be located on top of the east module of the landfill.

As a result of the changes in the building design, the commercial tipping area would be on the north side of the building. This portion of the building would be open during operating hours so that trucks could access the tipping floor. The wood and yard waste processing would also be located on the north side of the building. However, access to this enclosed area would be from the east and west sides and not from the north.

Station design and mitigation calls for a screening fence and landscaping trees along the northern side of the site. This fence would be tall enough to screen ground level activities and would block views into the station.

3. Mitigation

The EIR stated that there is no feasible mitigation which would reduce the visual impact to recreationalists to non-significant. However, the EIR recommended the construction of a screening fence and planting of trees along the northern boundary of the site to screen views of the station from recreationalists north of the project. This mitigation continues to be necessary. Implementation of this mitigation means that the aesthetic impacts of the reconfigured station would be no worse than those of the original station design.

I. NUISANCE

1. Setting

The nuisance section described local receptors sensitive to nuisance impacts, including the office/industrial park, Sunnyvale Baylands Park, Twin Creeks Softball facility, levees north of the site, and Sunnyvale Landfill when it becomes a park. The number and location of sensitive receptors has not changed since the EIR.

2. Impacts

The revised project design calls for the wood and yard waste processing to be attached to the north side of the station building. A 2-hour fire rated wall would be constructed between the wood waste processing area and the main station building to reduce the fire hazard due to the proximity of the wood processing area to other portions of the station building.

There would be no change in other nuisance categories such as vectors, odor, light and glare, or dust as described in the EIR.

3. Mitigation

The EIR described mitigation measures to reduce nuisance impacts to non-significant. These mitigation measures are still appropriate and should be implemented as adopted. No additional mitigation is necessary.

V. ALTERNATIVES

The analysis of alternatives described in the EIR presented a range of reasonable alternatives to the proposed project, or to its location, that could feasibly attain the project's objectives. The alternatives which were considered were: 1) No Project; 2) an alternative transfer station site; and 3) an alternative landfill site.

The modifications in the project design would not alter the alternatives analysis presented in the EIR. No additional alternatives need to be considered at this time as no new feasible alternatives have become apparent. There has not been a change in circumstances which would make one of the alternatives previously considered the environmentally preferred alternative. The environmentally preferred alternative is the proposed project primarily because of the reduction in traffic over direct-haul and potential for increased recycling.

VI. CEQA ISSUES

The EIR provided an analysis of the project's relationship between short-term verses long-term use of man's environment, the project's significant irreversible environmental changes, and growth-inducing impacts. The proposed modifications to the SMaRT Station would not substantially alter this analysis.

The EIR determined that the SMaRT Station would not be growth-inducing because it would not affect the rate of population growth or solid-waste generating patterns. However, the EIR noted that the 1.1% growth in waste stream used by the cities' contractor to design the throughput of the station, was probably an overestimate of the actual rate of growth in the waste stream.

As described in II.B.1, Revised Project Description, the Cities have determined that this 1.1% growth rate is an overestimate of actual growth in Sunnyvale, Mountain View, and Palo Alto which in the past has averaged well under 1% per year. The revised station capacity (1500 tons/day vs original 2200 tons/day) reflects a small increase in the waste stream due to growth, but also assumes a decrease in waste generation due to the implementation of the Cities' adopted Source Reduction and Recycling Elements required under AB 939. The original conclusion that the SMaRT Station would not be growth-inducing remains unchanged.

VII. PERSONS CONSULTED

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