INTRODUCTION

By the mid-sixties it had become national news that Bay Area residents were dissatisfied with the rate of filling San Francisco Bay. Residents protested that only five miles of Bay shoreline were open to the public, that the natural beauty which drew them to the area was decreasing, and that three-quarters of the native marshlands had been filled in or diked off from the Bay. A gradual change in public policy towards preservation and/or reclamation of the Bay shore was a result of this public outcry and the concurrent formation of the Bay Conservation and Development Commission.

In 1971 the East Bay Regional Park District's Master Plan defined a Regional Shoreline category with the guideline that "the primary planning and management objective should be to provide maximum public access to the shoreline recreational opportunities while preserving or, when necessary, restoring near natural shoreline environments" (p. 16). The Master Plan noted that shoreline parks would be beneficial to urban residents because of their proximity to the metropolitan area and the availability of public transportation to reach these parks. This would benefit low-income and elderly people who are often unable to utilize parks because they don't have access to automobiles.

Rising land costs and increasing land scarcity have led the District to select a number of sanitary landfill sites for Regional Shoreline development. However, the high initial development and continuing maintenance costs associated with shoreline sanitary landfill reclamation have reduced the number of shoreline sites being considered. Common problems in the conversion of sanitary landfills into recreational areas include prevention of pollution of ground and surface waters by leachate, management of methane production, control of settlement, design limitations, proper timing of development, the preservation of rebuilding of marshlands, and acquisition of topsoil or a suitable substitute. Effective long-term solutions to the above problems require adequate funding, an organized and well-informed planning effort, efficient and timely implementation, and continuing monitoring and management at the park site. It is hoped that the following reports will assist the District in fulfilling their goal of providing a balanced and equitable distribution of high quality shoreline parklands in the East Bay.

CHAPTER 1

CONSIDERATIONS FOR THE CONVERSION OF SANITARY LANDFILLS TO PARKS

Cary Griffin

Under the constraints of present technology, sanitary landfilling is the most widely used method of solid waste disposal. Research into techniques of composting, recycling on a large scale, and resource extraction from solid waste is under way in the Bay Area, but as of yet no alternative has proven cost effective nor able to handle the quantities of refuse needed to render landfilling unnecessary.

Use of a completed landfill is limited by its engineering characteristics. Since the buried waste material undergoes decomposition and settling for fifteen to twenty years, it is not suitable for bearing the weight of heavy construction projects. Instability during earthquakes makes building upon sanitary landfill additionally undesirable in the Bay Area. Due to these constraints, one of the safest and best uses of a completed landfill is as recreational open space. Such usage is made doubly attractive by the fact that many dump sites occur in or near urban areas, where the need for open space is often substantial.

In the East Bay there are five shoreline landfills which have either closed recently or are scheduled to close within the near future (Figure 1). Proximity of these sites to the bay makes them particularly good for conversion to public recreation areas since they offer the opportunity for water-oriented activities and spectacular views across the water.

The major obstacles to landfill conversion are physical and financial. The physical problems, i.e., methane gas and leachate generation and procurement of topsoil, will be considered in the analysis of Oyster Bay Regional Shoreline (see following report). This paper will focus on the financial and overall planning considerations involved.

The actual conversion of a former garbage dump into a recreation area is a labor-intensive operation, since the resulting park is an almost totally man-made environment. The ordinary completed landfill is a large, flat-topped mound with no inherent aesthetic value. Turning it into something we would think of as a park requires massive regrading and importation of grass, plants, and trees, as well as the construction of recreational facilities.

Topsoil can also be another major conversion cost. California Regional Water Quality Control Board (RWQCB) regulations adopted October 20, 1977, require a final cover of clean fill three feet thick and slopes of at least three percent to promote adequate drainage. At inland disposal sites the problem of securing sufficient quantities of clean fill need not be an expensive one since it can usually be obtained at the site itself. However, at shoreline sites located on bay mud the cost of importing fill can be substantial.

Two important questions that come to mind are: How does one pay the high cost of conversion, and is it ultimately worth it? Examination of the following examples of landfill conversions may shed some light on these issues.

The Los Angeles County Sanitation District currently owns and operates a 295 acre dump site on the Palos Verdes Peninsula. Eighty-seven acres of a completed portion of the site have been made into the South Coast Botanic Gardens, a model project that has received a great deal of publicity. Eventually a total of 225 acres of the site will be reclaimed for a golf course, playing fields, picnic areas, and a cultural center. Development costs are running as high as $30,000 per acre for this project, which is being financed by the County. Since the County owns and operates the landfill it collects between $1.50 and $3.00 per ton (depending on the type of material) for refuse delivered to the site from the refuse hauler (Los Angeles Department of County Engineering, 1975). Approximately 25¢ per ton is set aside for a recreational development fund. At present this results in only $12-15,000 being collected per acre, but a study is currently under way to justify raising the 25¢ "tax" so that construction costs will be covered.[7]

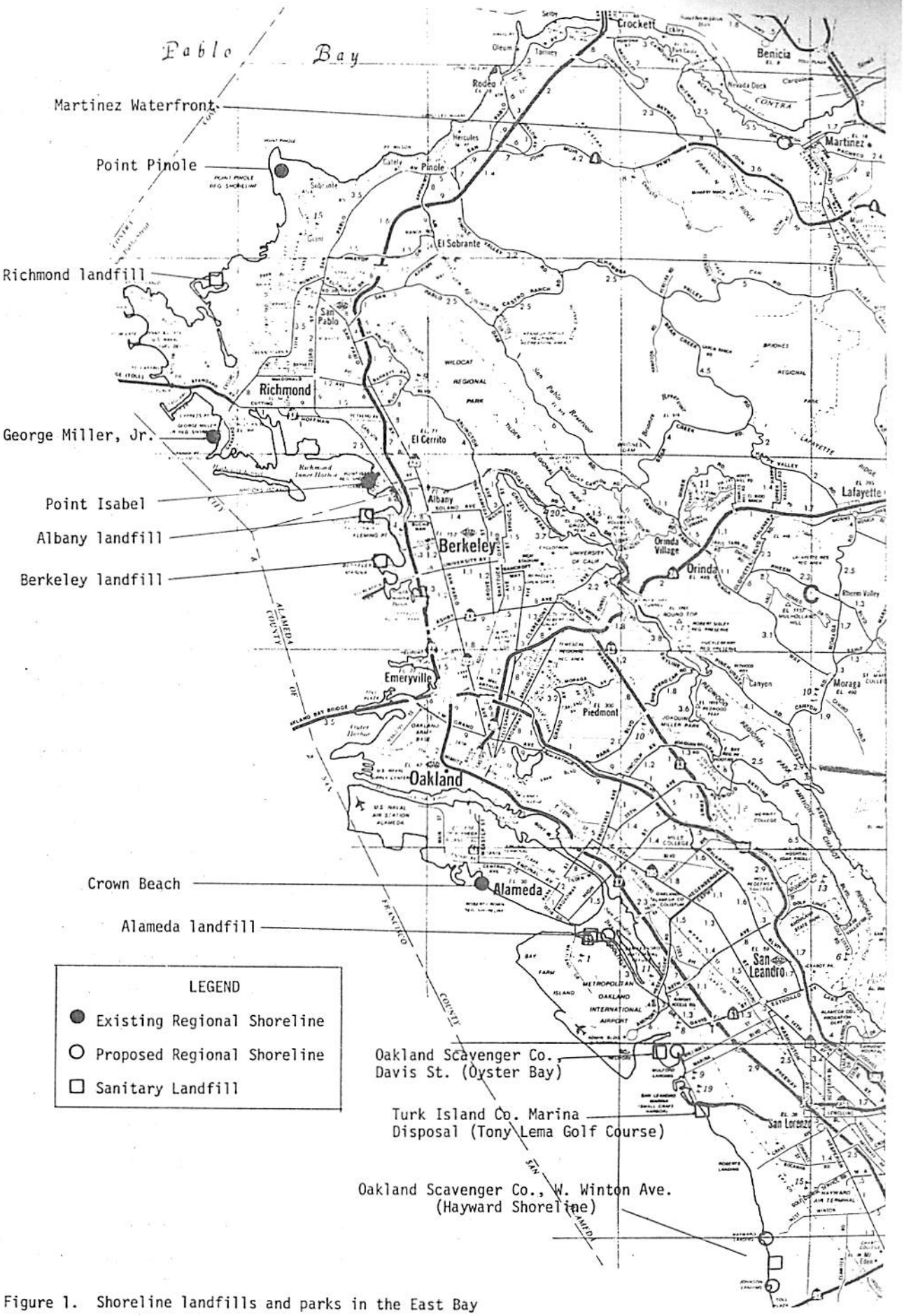

Figure 1. Shoreline landfills and parks in the East Bay
Source: Base map - California State Auto Assn. Used by permission.

In addition to Palos Verdes, Los Angeles County has recreational conversion plans and development funds for four other sanitary landfills totalling 3,320 acres. This program has come about as a response to the lack of urban open space in the Los Angeles area. These landfills are seen as playing an important part in meeting future recreation needs.[7]

The City of Mountain View is presently using refuse from San Francisco and other nearby communities in the construction of the Mountain View Shoreline Regional Park. Development of the 544 acre facility included filling 249 acres of marshes and saltponds with garbage and turning them into a golf course, a meadow, and an equestrian area. Detailed plans of the sanitary fill and water quality monitoring system were reviewed and approved by RWQCB in 1970, and filling began shortly after approval.

Originally Mountain View had planned on receiving fill material from Bay Area Rapid Transit construction. Due to a change in construction technique, however, the fill did not materialize. At that time the City of San Francisco was quickly running out of sanitary landfill space and contracted with Mountain View to deliver its refuse to the shoreline park.

The cost of developing the golf course on 195 acres of fill was estimated at $4.7 million or about $24,000 per acre. Mountain View is able to use all of the fees collected from the City of San Francisco for development of the park. San Francisco's investment was projected at a total of $6 million for delivery of approximately 4.68 million tons of solid waste material. Thus, Mountain View will collect $24,000 per acre of land filled. In addition, Mountain View has received $1,275,000 from the Bureau of Outdoor Recreation in Land and Water Conservation Fund grants. Both the City and Santa Clara County contributed $600,000 each to the project.[13]

The existing City of San Leandro Marina golf course is constructed on a base of sanitary landfill. Since it was planned as a golf course from its inception, the fill was graded and compacted during dumping to proper specifications making the conversion relatively straightforward. The Tony Lema golf course is now scheduled for construction adjacent to the existing course on the 140 acre site of the Marina Disposal dump. This dump, which is bay fill like most of San Leandro Marina, was operated by Turk Island Company and was never closed properly when the disposal operation stopped in July 1977. It was merely covered with a minimal amount of clean fill to keep trash from being blown about by wind. Turk Island Company, according to their contract, left $150,000 for site closure, but since that time new RWQCB regulations have taken effect, making proper closure considerably more expensive.[20]

The cost of one foot of compacted earth seal and two additional feet of clean fill is estimated at $1.2 million for 100 acres of the site. Construction of the golf course itself will cost an additional $1.26 million, resulting in a per acre site conversion cost of $24,600. The William Sherman Company, a consulting firm, recommends in a financial feasibility study that funding of the course development be accomplished through the formation of a non-profit corporation.[21] San Leandro did not set aside any portion of the disposal fees collected by Turk Island Company for development.

The East Bay Regional Park District (EBRPD) presently has four shoreline developments under consideration, three of which involve sanitary landfills. The District has 2,725 acres of shoreline parks

open to the public. Eighty-five percent of this land is distributed among three parks located in the Richmond area of Contra Costa County, with the remainder forming Crown Beach on the west shore of Alameda. The non-landfill proposed development is the Martinez Waterfront Regional Shoreline, also located in Contra Costa County.

The shoreline developments involving sanitary landfill are located in Alameda County; they are San Leandro Bay, Oyster Bay, and Hayward Regional Shorelines. All three of the sites would serve the 30-minute planning zone shown in the San Leandro Bay development plan (Figure 2), and would even out the distribution of shoreline parks between the two counties served by the District.

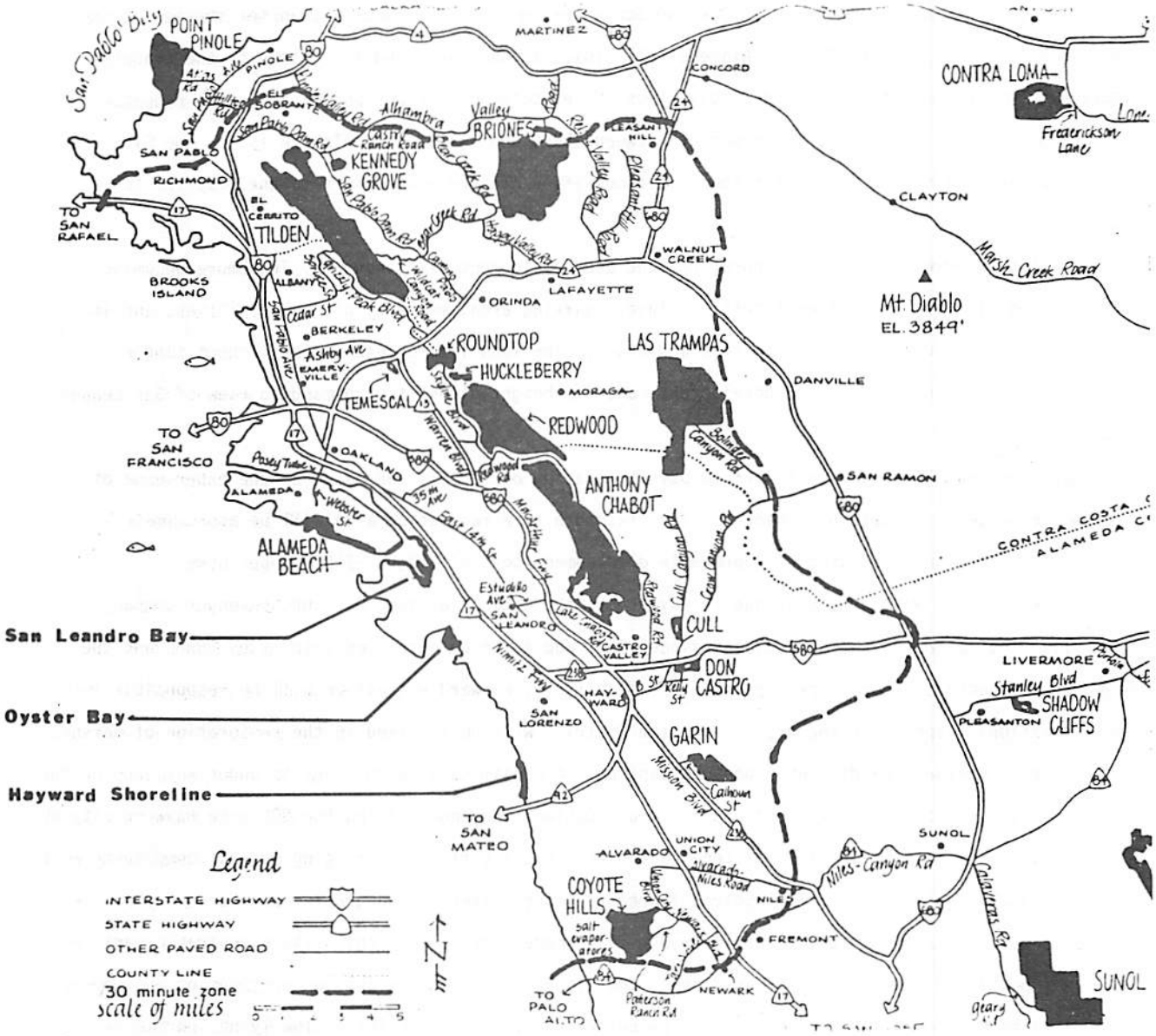

Figure 2. San Leandro Bay 30 Minute Planning Zone
Source: EBRPD San Leandro Bay Development Plan - Base Map

Oyster Bay Regional Shoreline is the name given to the proposed conversion of Oakland Scavenger Company's 194 acre Davis Street dump site (see p. 79). If EBRPD takes over the site, it may have to cover the projected $3 million cost of providing topsoil for the site.

The 28 acre City of Alameda dump, located on the northeast corner of Bay Farm Island and known as "Mt. Trashmore," is scheduled to be included in the proposed San Leandro Bay Regional Shoreline. The park will consist of 671 acres of tidelands, marshes, and shoreline properties encircling San Leandro Bay. One of the District's main activities at this park will be salt water marsh preservation and restoration (see p. 90).

The primary obstacle to immediate development of Mt. Trashmore is the fact that the dump is still in operation. Presumably if and when Oakland Scavenger Company constructs a transfer station at the Davis Street site, then the City of Alameda will close its dump and send its refuse to the transfer station. Before the site is closed, repairs must be effected on the peripheral dike at a probable cost of $500,000.[5] The tentative agreement between EBRPD and the City of Alameda is for the City to grade the landfill to the District's specifications after closure and sell it to the District for a nominal fee.

The San Leandro Bay Regional Shoreline land use development plan shows Mt. Trashmore becoming a recreation cluster. Improvements will include a parking area, meadows, picnic facilities, and importation of substantial amounts of trees and brush. The landfill represents the largest single piece of dry land in the proposed development, and its height gives it a commanding view of San Leandro Bay.

Assuming that EBRPD does not have to pay for grading or topsoil and based on the experience of previous examples, the cost of converting Mt. Trashmore to a recreation area will be approximately $400,000. This figure is based on a probable development cost of $13,000-$15,000 per acre.

At the foot of West Winton Avenue in Hayward is the site of another Oakland Scavenger Company landfill. The operation has been closed since 1974, and is to be developed jointly by EBRPD and the Hayward Area Recreation and Park Department. Tentatively, Hayward Recreation will be responsible for the recreational aspects of the project and the District will be involved in the restoration of marshes in the area of Hayward Landing and Johnsons Landing. A preliminary marsh study is under way, but neither agency has yet written a development plan. Though Oakland Scavenger closed the 700 acre Hayward site in 1974, it is still responsible for maintenance and has recently finished bringing it into compliance with the 1977 RWQCB regulations. This involved increasing cover material and grading portions of the site.[22]

Extensive regrading of the landfill area will be necessary to make this site a desirable park, as well as importation of trees and other flora. The District plans to break down portions of the riprap dike along the western side of the site, allowing the bay to flow back into a low-lying, partially drained area. The amount of labor and materials involved in such conversion would suggest high development costs, perhaps as high as the $30,000 per acre experienced at Palos Verdes. Since the site is removed from residential areas, the agencies may also have to provide some type of public transportation on Winton Avenue west of Hesperian Boulevard.

The 1973 EBRPD Master Plan shows the Berkeley waterfront as a site recommended for acquisition. However, the City of Berkeley has developed its own draft land use plan which includes the 90 acre city sanitary landfill. Pending approval of the plan and procurement of funds, the site will become an unstructured recreation area with an emphasis on nature-oriented activities. Funding of the project will be attempted through non-local sources of money, such as the Land and Water Conservation Fund, a Fish and Wildlife Grant, and a Health, Education, and Welfare Grant.[2] The landfill is in its final stages, with park construction to begin in mid-1979.

The Albany landfill, which consists mainly of construction debris and clean fill, is slated to become a marina and commercial/recreational area. The Albany site now accepts only clean fill for final cover and will be closed when the cover is complete.

The three remaining major Alameda County sanitary landfills are all inland and none are expected to close for at least 15 years. The County Solid Waste Management Facilities Plan relies on the approval of more dumping sites at the Vasco Road facility and the opening of a large Altamont landfill. These sites will accept refuse from the northwestern portion of the County. Construction of the previously mentioned Davis Street transfer station and a Gilman Street station in Berkeley are an integral part of this plan.

Solid waste in Contra Costa County is presently handled by two small disposal sites near Pittsburg and two large sites, the 449 acre Acme Fill and the 900 acre Richmond Fill. The large dumps have capacities for another 25-30 years of operation. One of the small sites, the 25 acre Pittsburg dump, will close within four years and the refuse will be processed at a transfer station and hauled to the Acme Fill. U.S. Steel in Pittsburg is currently studying the feasibility of constructing a refuse-fired plant, but the outcome of that study is as yet unknown. Post-closure plans for most of these dump sites are uncertain because the closure dates are so far in the future.

Returning to the questions [of cost and overall worth of sanitary landfill conversion] posed earlier in this paper, we wee that now there are some answers to both. Regarding the cost of conversion, three methods have been used: collection of dumping fees, formation of a non-profit corporation, and application for State and Federal grant monies. Collection of dumping fees is perhaps the most apt method of financing construction since it forces those who generate the refuse to pay for the site's later use. However, without owning a site it would be difficult for an agency like EBRPD to collect fees from it. Ownership is also a prerequisite for forming a non-profit corporation. The District is obviously no stranger to grants, receiving $2,753,799 in State and Federal funds for development in 1977.

Early consideration of other landfills by EBRPD would make eventual conversion easier and less costly. Agreements with agencies having jurisdiction over a particular site (as BCDC and RWQCB do over Oyster Bay) could then be worked out well in advance, rather than at the last minute. Advanced planning would also enable a site to be graded and shaped approximately to its completed use form during, instead of after, filling. This has taken place at both the San Leandro Marina and the Mountain View Shoreline Regional Park.

As to the second question of whether landfill conversion is worth the high cost, the evidence suggests that it is. Throughout the country landfills are being converted not only to recreational facilities, but also the sites of shopping centers, light industrial parks, and sports training camps. In the case of San Leandro and Mountain View, the refuse provided a convenient source of fill material for sites that were already planned for completed use. In Los Angeles the pressure on open space exerted by urban sprawl and the increasing demand for recreation areas has put dump conversion in a very favorable light.

The Bay Area has not yet experienced the scarcity of available land which has prodded the Los Angeles County Parks Department to prepare long-range plans for five dump sites. And in the East Bay, EBRPD has done an enviable job of preserving open space, currently owning or administering more than 47,840 acres within its two-county jurisdiction. Yet the District is involved in the three projects involving sanitary landfills, in this case because of the scarcity of shoreline parks and marsh areas in Alameda County.

Landfills can also serve as special purpose recreation areas. Golf courses are perhaps the most popular secondary uses of dump sites. The constant grooming required ensures that the cover over the refuse stays in good condition, and use of the facility is not hampered by the settling that the buried material normally undergoes. Golf courses are also sources of revenue: at the end of ten years operation Mountain View expects to collect $416,600 annually in greens fees, while paying out $160,200 in operating costs.

Off-road vehicles are currently causing damage to a portion of Lake Chabot Regional Park (see p.111). Using a completed landfill as an ORV park would minimize environmental costs, since the site could be specifically designed for vehicle use. The cover over the refuse would need to be thick and sturdy enough to stand up to this type of usage, but hardy weed-type grasses could be used to keep the dirt in place. Noisebreaks, such as stands of trees could be put around the site to limit the amount of disturbance to the surrounding area. Such a site could also generate user fees to cover the costs of maintenance.

The success EBRPD has with its pilot landfill conversion, Oyster Bay Regional Shoreline, will determine its willingness to pursue further such ventures. In each of the three landfill projects now planned, the District is stepping in near or after completion of the dumping operation. There is now considerable lead time available for the consideration and planning of future landfill projects. Completed sanitary landfills are essentially second class lands with high costs of development and maintenance. However, as the price of real estate in the Bay Area skyrockets and pressures of growth continue to mount, the value of these landfills as open space in an urban area will only increase.

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