TRENCH SPOILS MANAGEMENT PLAN
2007 UPDATE

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April 24, 2007

TRENCH SPOILS MANAGEMENT PLAN

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TRENCH SPOILS MANAGEMENT PLAN

EXECUTIVE SUMMARY

Background

The District generates between 35,000 and 65,000 cubic yards of trench spoils a year during the course of its pipeline construction and maintenance activities. The challenge that faces the District is how to dispose of it. The traditional approach is to haul construction spoils to a local landfill; but this would be a prohibitively expensive and inefficient practice for the District. Instead, the District's solution has been to temporarily stockpile the trench spoils at designated locations until more cost-effective arrangements can be made for its eventual disposal. This document summarizes the District's responsibilities and actions concerning the maintenance of these trench spoils disposal sites and the District's long-term plans regarding trench spoils management.

Conclusions and Recommendations

The District's management strategies for trench spoils have been, and continue to be, environmentally responsible and financially sound. With regard to California's evolving stormwater regulations, the District must continue to refine its practices and assume additional duties to ensure continued compliance with increasingly stringent monitoring requirements, and erosion and sediment control requirements. This document includes discussions leading to the following recommended actions, to be undertaken by the District:

- Adopt the modified workgroup responsibilities, as defined in this update (new)
- Use aerial survey technology to track site storage capacities (new)
- Continue recycling asphalt & concrete
- Continue refining trenchless techniques for pipeline installation and repair work
- Continue marketing efforts to supply trench spoils material as fill material
- Continue evaluating the feasibility of construction slurry disposal at District-Owned Disposal Sites (DODS)
- Continue monitoring and implementing site best management practices, as needed
- Administer Storm Water Pollution Prevention Plans and recommended actions

PURPOSE / OBJECTIVES

The purpose of this report is to update the Trench Spoils Management Plan (TSMP) by identifying strategies and goals that are achieving objectives and do not require change, and modifying those strategies and goals that are not meeting objectives.

The District generates approximately 35,000 to 65,000 cubic yards of trench spoils a year. The spoils consist of excavated soil, rock, and pavement material generated by pipeline construction and repair work, which is temporarily stockpiled for future disposal at three District-owned

disposal sites. See Figure 1, EBMUD Trench Spoils Disposal Sites. This TSMP updates the current activities, fill trend histories, and the future outlook for the DODS at:

- Briones Reservoir,
- Miller Road near Upper San Leandro Reservoir, and
- Amador Reservoir in San Ramon.

This updated report also identifies the common management practices and measures for assuring that the sites are in compliance with applicable environmental regulations. In addition, this report discusses future site options and the Capital Improvement Program budget for TSMP contracts and developments.

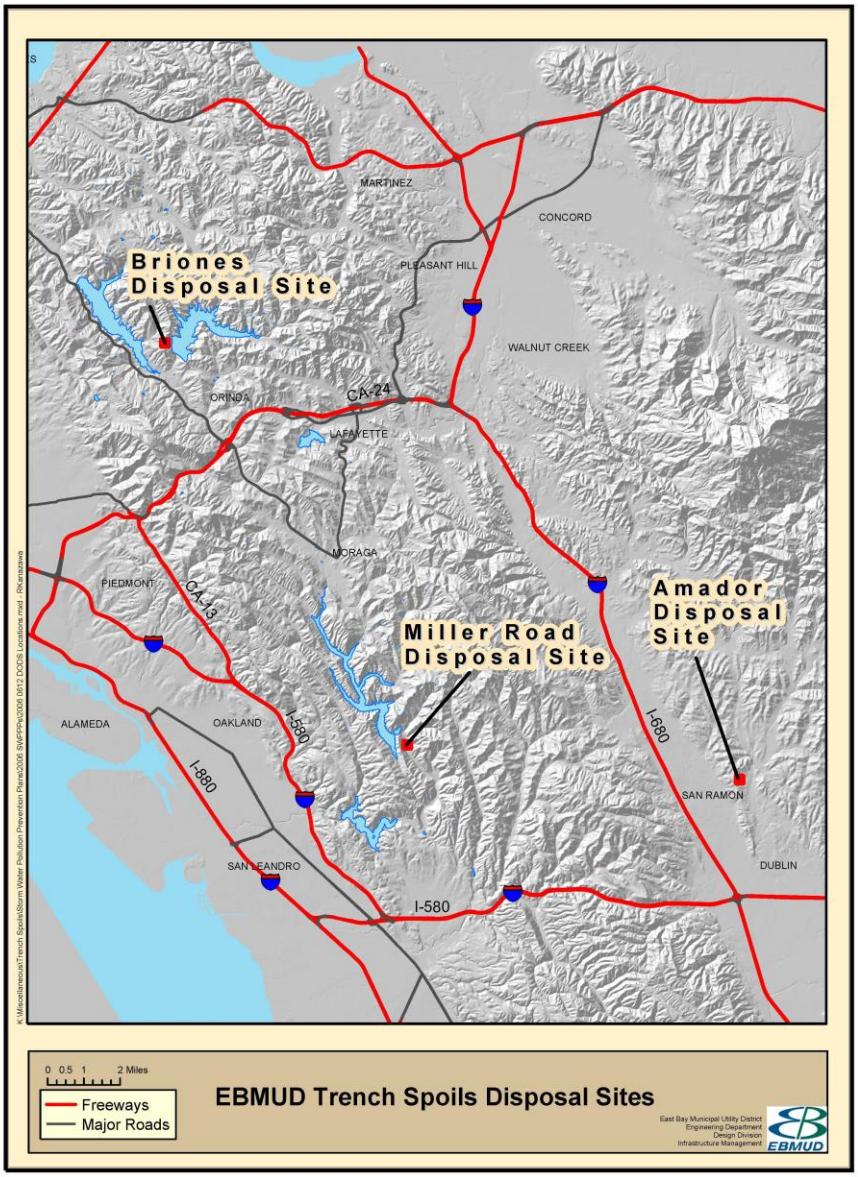


Figure 1. EBMUD Trench Spoils Disposal Sites

DISTRICT WORKGROUP ROLES

The District's trench spoils disposal sites are operated in compliance with stormwater control regulations, the success of which relies primarily upon the combined efforts of staff from the Environmental Compliance, Pipeline Management, and Equipment Support workgroups. This section identifies the roles and responsibilities borne by these key District workgroups.

Workgroup	**Environmental Compliance** (Regulatory Compliance Div)	**Pipeline Infrastructure Division**	**Equipment Support** (Pipeline Constr & Equip Div)
TSMP Role	Lead	Engineering support	Field support (site operator)
TSMP Responsibilities	• Coordinate regulatory agency interaction • Coordinate modifications to District practices in response to regulatory changes • Ensure compliance with SWPPP requirements (stormwater management) • Administer permit fees and annual certifications of compliance • Oversee implementation of stormwater Best Management Practices • Update & maintain SWPPP documents • Initiate Engineering Service Requests, as needed • Initiate annual site surveys • Authorize disposal procedures for construction slurries • Update the Trench Spoils FMP manual as disposal practices change	• Coordinate engineering support • Prepare and administer professional services contracts • Manage Project Authorizations • Prepare TSMP document updates • Prepare and administer Trench Spoils CIP budget	• Perform regular site grading • Manage site access and site security issues • Conduct site monitoring • Conduct pre-, 24-hour, and post-storm inspections • Report stormwater issues and/or discharge events to Environmental Compliance

Environmental Compliance Section - TSMP Responsibilities

The Environmental Compliance Section is responsible for ensuring that the District complies with the regulatory requirements that are identified and addressed in the District's Storm Water

Pollution Prevention Plans. With this responsibility, Environmental Compliance has the lead role in overseeing the stormwater management of the trench spoils disposal sites. Examples of specific responsibilities are listed in the above table.

Pipeline Infrastructure Division - TSMP Responsibilities

The Pipeline Infrastructure Division is responsible for providing engineering support to address technical issues (e.g., updating storage capacity estimates, re-design of site grading plans, and providing design support during construction). Requests for technical support are to be submitted by Environmental Compliance following the established Engineering Support Request process. Additional responsibilities include the preparation and administration of contracts, Project Authorization documents, and the Trench Spoils Capital Improvement Program budget.

Equipment Support Section - TSMP Responsibilities

The Equipment Support Section is responsible for managing field operations at the trench spoils disposal sites. These duties include performing regular site grading, managing site security and ingress/egress issues, monitoring the sites and notifying Environmental Compliance should the equipment operator encounter any problems or stormwater runoff concerns. Equipment Support is also responsible, in particular, for inspecting the sites prior to a forecasted storm, at 24-hour intervals during extended rain events, and after rain events that result in runoff from the site.

STATUS OF TRENCH SPOILS DISPOSAL SITES

Site evaluations conducted during 2006 indicate that the disposal sites each have at least several years of storage capacity before removal measures are needed. At the current annual fill rates (if no action is taken to remove spoils material), the design capacity for the Amador site will be reached in 2014, the Miller Road site in 2015, and the Briones site in 2020. Trench spoils management strategies and fill removal contracts undertaken since 1995 have effectively reduced stored volumes and prolonged the available capacities of the sites. The current DODS site capacities, fill rates, and year of capacity attainment are summarized in the table below and the cumulative storage graphic in Figure 2.

Site	Site Capacity			Avg Annual Fill Rate	Year Capacity is Reached w/o Emptying
	Maximum (cy)	Current Volume* (cy)	Percent Filled* (cy)	(cy/yr)	
Amador	62,000	20,000	32%	5,000	2014
Briones	518,000	108,000	20%	30,000	2020
Miller Road	156,000	49,000	30%	12,000	2015
Total	736,000	177,000	24%	47,000	

* Site storage volumes will be re-assessed via orthophotography in 2007

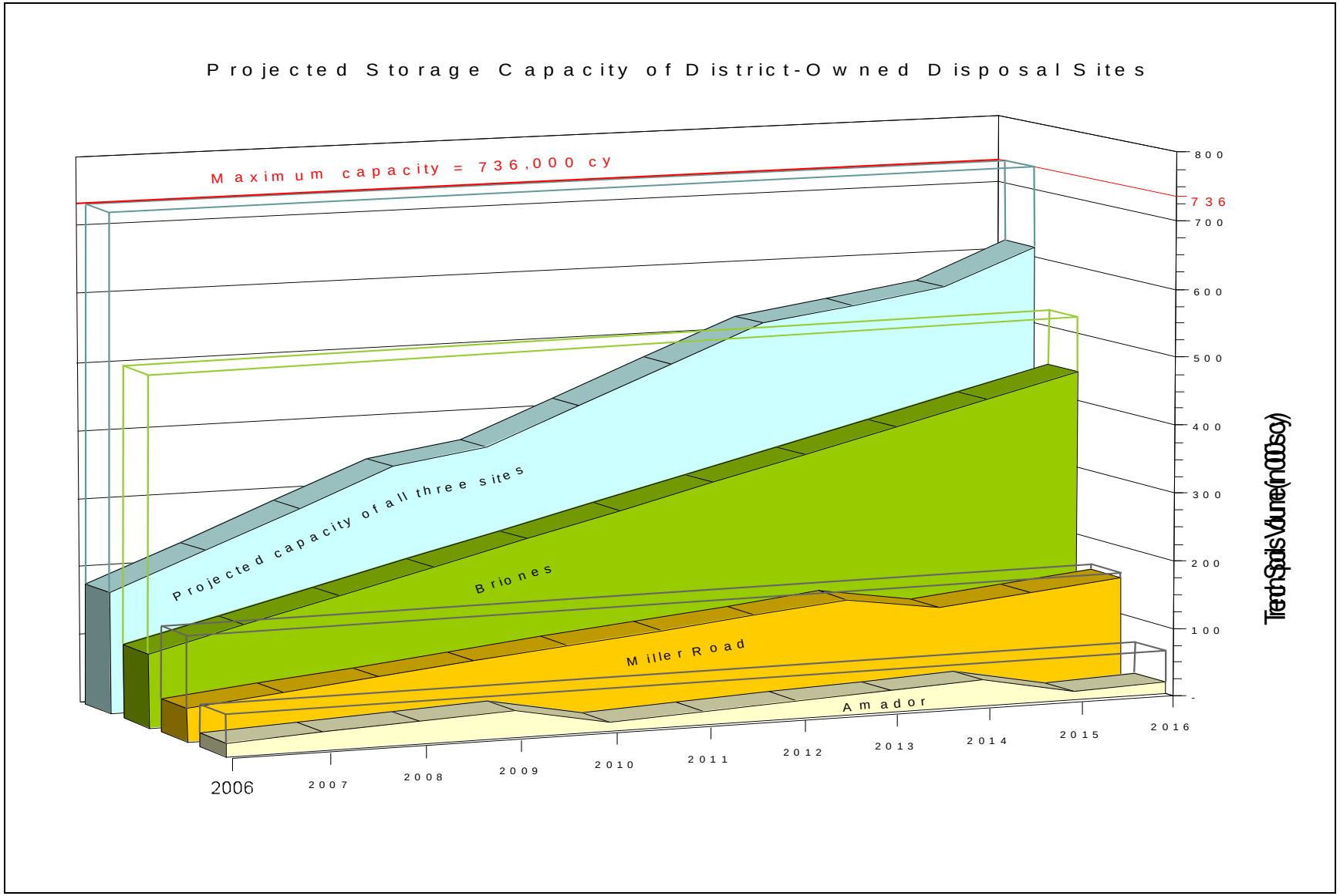


Figure 2. Projected Capacity of District-Owned Disposal Sites

HISTORY & METHODOLOGY

History

In 1995 the Trench Spoils Management Plan was completed and adopted by the District. The TSMP developed, assessed and presented trench spoils management strategies which would:

- Minimize District spoils management costs over the planning horizon (to 2020);
- Achieve regulatory/community acceptance; and
- Preserve and protect the environment for future generations by promoting environmental responsibility.

To achieve the objectives, the TSMP developed broad goals to:

1) Project trench spoils generation and future capacity needs;
2) Evaluate the environmental and physical characteristics of the District-owned disposal sites;
3) Identify long-term, cost effective and environmentally acceptable trench spoils management alternatives; and
4) Assess the District's need to comply with California Environmental Quality Act requirements (CEQA).

Spoils Forecasting Methodology

The original (1995) TSMP developed guidance for forecasting how quickly the District's trench spoils sites would fill to capacity. Studies were conducted of the fill volumes that were generated by new pipeline installations, extensions, repairs, renewals, transfers, and other pipe work. A forecasting equation was developed to predict the spoils volumes being generated District-wide for disposal at the DODS. The analyses suggested that the sites would be completely filled by 1998 unless other measures were undertaken to reduce or recycle the fill volumes.

As the program evolved, District staff added a new forecasting component for estimating the volume of trench spoils generated by emergency polybutylene lateral replacements. The revised approach focused on predicting spoils volumes generated by the following four types of District construction as a further refinement of the forecasting model:

- Distribution pipe maintenance work,
- New pipeline construction,
- Other pipeline construction, and
- Emergency polybutylene lateral replacement work.

A recent analysis in 2006 revealed that the mix of new construction, maintenance and emergency work has varied significantly from year to year. The model does not account for contributions from non-pipeline construction projects, such as the DRSRD/EBMUD Recycled Water Authority (DERWA) reservoir tank construction project which temporarily filled the Amador spoils site to near capacity during 2004-05 before the construction material was removed.

Records of the number of truck loads to each DODS were found to be incomplete. The volume in each truck load was observed to be varied with no record to distinguish partial truck loads from full loads, and how many of each was being delivered to the DODS. The highly variable pipeline maintenance and construction activities which generate trench spoils and the difficulty of maintaining accurate records make the reliability of modeling DODS storage capacities to be a questionable exercise.

It is more accurate and will be more efficient to simply inspect the sites periodically, estimate the fill rate for each site based on historical trends, and implement fill reduction measures or contracts to remove excess fill, as necessary. The equipment operator will visually inspect the sites and notify Environmental Compliance if any of the sites appear to be approaching design capacity so that these measures can be implemented in a timely manner. This has been the procedure over the past five years and has proven to be effective in managing fill volumes at the sites, addressing stormwater control and drainage issues, and assuring the continued operational use of the DODS.

District staff will use an annual aerial survey to topographically map the volumetric changes at the sites. This technology will confirm the visual inspections, allow the year to year changes in fill volumes to be more accurately determined using a common topographical base map, quantify how quickly the sites are filling, and provide a ready topographic site plan for the eventual fill removal contracts. The annual aerial survey will aid in the identification of appropriate storm water BMPs to be implemented during the upcoming rainy season, and in the revision of SWPPPs, when and where necessary. The anticipated cost for this effort will be no more than current expenditures to manually survey the sites with District survey crews, but is expected to provide complete coverage of the fill area changes in a more efficient and consistent manner than previously used manual survey methods. The aerial surveys will be procured by a purchase order managed by the Survey Section, which will also be responsible for generating the subsequent updated maps and volumetric calculations.

Recycling, Reduction, and Reuse Strategies

The 1995 TSMP identified cost-effective and environmentally acceptable trench spoils management strategies for recycling, reducing, and reusing spoils materials and extending the life cycle of the DODS before fill removal by contract would be required. The implementation of management strategies have prolonged the useful life of the DODS well beyond the 4 year fill capacity that was originally projected in the 1995 TSMP. These strategies are still in current practice and remain effective.

Staff recommends the continuation of the current strategies which include:

- Minimizing spoils generation by pipe rehabilitation with slip-lining with new structural High Density Polyethylene (HDPE) pipe or fusible polyvinyl chloride (PVC) pipe in the existing pipe, where appropriate and cost effective;
- Minimizing spoils generation by replacing pipe by pipe bursting method, where appropriate and cost effective;
- Recycling of asphalt and concrete paving materials at commercial recyclers; and
- Offering spoils as clean fill materials to contractors and other agencies.

Recycling. Since 1995, the District has been recycling the pavement portion of the trench spoils which has reduced the overall volume of spoils generated by an estimated 20 percent. Whenever it is feasible, EBMUD separates the pavement component from trench spoils and hauls it directly to commercial recyclers rather than haul it to one of the disposal sites. During construction, the crew foreman makes the decision where to have the concrete and asphalt spoils hauled. The disposal costs fluctuate widely, depending on work location, distance and traffic conditions, volume of material, type of material, recycler specifications, and industry supply and demand conditions. District crews keep one another updated continuously on which recycler has the best disposal rate.

When it is not feasible to haul the pavement spoils directly to a commercial recycler (e.g. during non-business hours), the material is temporarily stored at one of the District's transfer stations before transferring it to a commercial recycler. The short-term transfer stations are: Oakport, Castenada, Briones Dam (stockpile yard at the base of the dam), and the trench spoils bins located at Construction and Maintenance Services, North Area Service Center, South Area Service Center, and East Area Service Center. Each service area is responsible for maintaining (monitoring, testing, and emptying) their own bins. The Oakport and Briones Dam facilities are managed by Equipment Support Section.

At present, the District does not recycle the non-pavement portion of trench spoils material as backfill material. In 1996, the District conducted a pilot study which evaluated the feasibility of recycling trench spoils as pipe backfill material. The study identified concerns regarding the reliability of the quality of the end product, and concluded that recycling was not cost effective in comparison to other reuse strategies. Further evaluation was precluded as local jurisdictions began adopting the requirement specifying that only "engineered fill" be used for backfill material as a provision of their encroachment permits. The District continues to be constrained by the "engineered fill" requirement; thereby restricting our recycling options.

Reduction. The District has implemented a variety of spoils-reducing or trenchless technologies during the course of pipeline maintenance and repair work. The construction practice of dragging a new pipe through a replaced pipe in-situ, or "pipe bursting", has been used by the District since the mid-1990's to replace defective polybutylene lateral services. Similarly, spoils generation has also been minimized by rehabilitating pipelines with slip-lining (using structural HDPE pipe or fusible PVC) placed inside existing pipe, where appropriate and cost effective. More recently, the Pipeline Construction and Equipment Division has pioneered the District's practice of linear trenching (directional drilling) for the installation of pipelines. These construction technologies have been effective in reducing the generation of trench spoils.

Reuse. The District has actively sought to sell or supply its trench spoils material as clean fill material to interested parties. Presently, the District engages in two types of reuse strategies:

- *Removal and reuse of material from DODS as clean fill*, which extends the life of the DODS by increasing its storage capacity. An example of this approach was the Briones Soil Reuse Project which involved the removal of approximately 412,000 cubic yards of spoils material between 1997 and 2003. The material was used as landfill cover at the West Contra Costa County Sanitary Landfill and at the Pinole Point Business Park

development, the removal of which extended the available storage capacity for the District at the Briones DODS for several years.

- *Diversion of trench spoils to an alternative location*, providing a one-time alternative to using the DODS. An example of this approach was the Sibley Preserve Restoration Project which diverted approximately 113,000 cubic yards of spoils material between 1997 and 2003 that would have otherwise been transported to the Briones DODS. The material was used to fill in an abandoned quarry owned by the East Bay Regional Park District to address public access and safety concerns.

The feasibility of these projects is dependent upon the prevailing economic conditions and satisfying conditions that the District requires in order to minimize its potential liability (e.g., the receiving party agrees not to mix District-supplied spoils material with material from other sources). Due to concerns involving acceptance-of-liability and transfer-of-ownership issues, the District also does not contract the services of "dirt-brokers" to dispose of the spoils material. In terms of marketability, the economic conditions for fill material in the Bay Area have generally been unfavorable for many years due to low demand. Despite these challenges, the District continues to look for opportunities to reuse the stockpiled spoils material and apply it towards beneficial uses.

2006 Review of Operating Concrete Recycler at Oakport

During June and July of 2006, District staff conducted a review of current concrete and asphalt recycling options to determine whether a recycling operation could be run at the Oakport facility. The intent was to assess whether EBMUD could successfully crush the concrete and asphalt spoils material into usable aggregate material in lieu of continuing the District's practice of hauling the spoils to a recycler (and paying for the disposal fee) and then purchasing fill material to be used for backfill. Vendors were contacted and advice was sought to identify the pros and cons of the latest concrete recycling technology. Possible constraints and limitations were identified.

District staff concluded that <u>operating a concrete and asphalt crusher would not be feasible</u>. Key factors that contributed to this finding included:

- <u>Uncertain usability of final product</u> – The quality of the crushed concrete tends to vary. The material could be suitable as backfill aggregate, but the non-uniformity would lead to construction delays as extra monitoring and attention would be needed to ensure proper trench compaction is achieved. Previous experience by District crews using recycled concrete for backfill was not successful. As a result, District crews are reluctant to use recycled concrete aggregate due to its high monitoring costs and quality control concerns.
- <u>Market use limited</u> – There is no alternative market for the recycled concrete aggregate outside the District. For the reasons cited above, developers and other agencies do not typically purchase recycled concrete when normal aggregate base is available. PG&E runs an operation separating materials and does not charge any fee for the service of providing its recycled dirt and rock material. This operation has not been deemed a commercial success as it operates with a net cost to PG&E. A redundant District recycler would not be economically feasible.

- Questionable or limited use for final product – Previously, an alternative use for the crushed concrete was as aggregate road base for maintaining District-owned roads, such as Miller Road below Upper San Leandro Dam. However, current water quality runoff issues and environmental concerns linked to the asphalt component in the material now preclude this application.
- Varying quantity of source material – To effectively run a concrete crushing operation, a sustainable supply of source material is needed. Concrete and asphalt spoils from all parts of the District's service area would have to be delivered to a centrally-located crushing operation to feed its supply. This may not be any more efficient than the current practice of delivering it directly to commercial recyclers or temporarily stockpiling it before transferring it to the commercial recyclers.
- Staffing requirements – To make efficient use of a proposed concrete and asphalt recycling operation, District positions would have to be dedicated to running, maintaining, and trouble-shooting the operation. Staff positions would have to be re-allocated or created.
- Space requirements – A large site is needed to provide sufficient space for ingress and unloading of concrete spoils, stockpiling material waiting to be processed, reserving a dedicated area for operating the crushing unit, storing the finished crushed product, and managing a loading/egress area to take the product off-site. Ample space would also be needed to house and move equipment within the site.
- Permit issue – The concrete recycling operation will also require permit coordination. Storm water control, and noise and dust abatement issues will need to be addressed, as well as other environmental issues. Because of its proximity to the Bay and public view, environmental impacts will need to be fully addressed if the District changes its present operations at the Oakport facility.

Construction Slurry Disposal

In May 2006, the question was raised whether bentonite slurry (well drilling spoils) from the Bayside Groundwater Project could be safely disposed at the District's trench spoils sites. Staff from Engineering, Environmental Compliance, and the Bayside project discussed the proposal and approved a trial study to be conducted at the Miller Road DODS.

Under the established constraints, bentonite slurry was disposed at the Miller Road DODS during August 2006. Site drainage and size limitations became a concern and it was decided to move the disposal operations to the Briones DODS, where there was more surface area available to spread the slurry to promote faster evaporation of water. Slurry disposal operations at Briones concluded mid-September 2006. Environmental Compliance incorporated the findings of this trial study into its Trench Spoils Field Management Practices manual[1] to dictate future disposal procedures for bentonite slurry at the DODS.

As the District continues to evaluate alternative pipeline construction technologies, the Environmental Compliance Section will oversee and approve the accepted disposal practices to be followed by the District at the DODS. Environmental Compliance Section will integrate the

[1] The Trench Spoils Field Management Practices manual constitutes Section 9.0 of the District's Environmental Compliance Manual which is managed by the Environmental Compliance Section.

adopted construction slurry disposal procedures into the Trench Spoils Field Management Practices manual.

Alternative Sites

In addition to the above strategies, the District has been investigating alternative disposal sites. The District continues to inquire of any new opportunities to divert trench spoils material for disposal at East Bay Regional Park District's Sibley site in Orinda. The prior disposal area at that location is currently at capacity and closed to further deliveries. Another potential site is the Rifle Range site near the Miller Road DODS. These sites are discussed in more detail in the Future Initiatives section of this document.

CEQA Requirements

The 1995 TSMP document included a discussion that evaluated the DODS with CEQA requirements which concluded that the District's TSMP qualified as a "project" under CEQA. Under this classification, trench spoils management alternatives, such as changing existing construction practices to minimize spoils generation, the trenching itself, and reuse or recycle of materials at the trench would be covered under statutory and categorical exemptions and would not need further CEQA review. As such, these issues are not revisited at this time in this document as the environmental and physical characteristics and the activities at the DODS have not changed, nor does this update of the TSMP propose any changes that affect the 1995 CEQA evaluation.

However, other management alternatives that would potentially involve construction activities on-site (e.g., such as expanding existing stockpile areas at the DODS, permanent spoil recycling and transfer operations at the DODS, and/or off-hauling trench spoils by contractors) would be activities subject to CEQA rules. Should the District decide to pursue any such management alternatives that involve on-site noise, visual, and/or traffic impacts, the District would be required to implement measures that would mitigate the impacts.

ACTIVE SITES

Briones DODS

Current Status. The Briones site is estimated to have a capacity of 518,000 cubic yards, and can accommodate as much as 24 feet of fill on a 13-acre area. The site typically receives between 20,000 and 45,000 cubic yards, or an approximate average of 30,000 cubic yards, of spoils material per year. As of mid-2006, the site is at approximately 20 percent capacity and would not require removal by contract until year 2020, based on current annual deliveries of spoils to the site.

Site Security. Access to the Briones site is protected by an electronically-operated gate located immediately off of Bear Creek Road at the entrance of EBMUD property. District personnel are able to open the gate via key, keypad, and remote-control operator. Because the site is on EBMUD watershed land, by extension it is protected by perimeter fencing at the EBMUD property borders.

History. The Briones site is located just west of Briones Reservoir, near Bear Creek Road in Orinda, California. The trench spoils area is approximately 13 acres and lies within the former soil borrow area used for the construction of Briones Dam in 1960. Briones has been used as a trench spoils disposal site since the mid-1960s. See Figure 3, Briones Disposal Site.

In 1997, the District began removing trench spoils material from the Briones site. Off-haul activities occurred in the spring and summer months of each year between 1997 and 2003. The bulk of the spoils material was used as cover material for the West Contra Costa County Landfill closure project. At the conclusion of the project, over 400,000 cubic yards of material had been removed from the Briones site, which extended the service life of the site by approximately 10 years.

Concurrently, the District entered into an agreement with the East Bay Regional Park District (EBRPD) which ultimately allowed the District to dispose of approximately 113,000 cubic yards of fill material in the Sibley Volcanic Regional Preserve. This material, which would have been transported to the Briones DODS, was diverted instead to fill in a former quarry location at EBRPD's Sibley site.

Presently, trench spoils continue to be delivered to the Briones site from District pipeline projects in cities from Richmond to Oakland and as far as Walnut Creek. The material consists primarily of soil (sand, silt and clay) mixed with rock and gravel; and prior to June 1994 included amounts of asphalt and concrete. Asphalt and concrete have not been disposed at this site since that time.

Figure 3. Briones Disposal Site

Miller Road DODS

Current Status. The site is estimated to have a capacity of 156,000 cubic yards, and can accommodate up to 16 feet of fill on a 5.9 acre area. The Miller Road site typically receives between 10,000 and 15,000 cubic yards, or an approximate average of 12,000 cubic yards, of spoils material per year. As of mid-2006, the Miller Road site is at approximately 30 percent capacity and would not require removal by contract until year 2015, based on current annual deliveries of spoils to the site.

Site Security. Access to the Miller Road site is protected by an electronically-operated gate located at one end of East Bay Regional Park District's Chabot Staging Area (off of Redwood Road) at the entrance of EBMUD property. District personnel are able to open the gate via key, keypad, and remote-control operator. Because the site is on EBMUD watershed land, by extension it is protected by perimeter fencing at the EBMUD property borders.

History. The Miller Road site is located southeast of Upper San Leandro Dam between Miller Road and San Leandro Creek in San Leandro, California. The spoils site is approximately 5.9 acres and is in a small valley along the southeast bank of San Leandro Creek, east of the south end of Upper San Leandro Reservoir. The site has been active since 1975. See Figure 4, Miller Road Disposal Site.

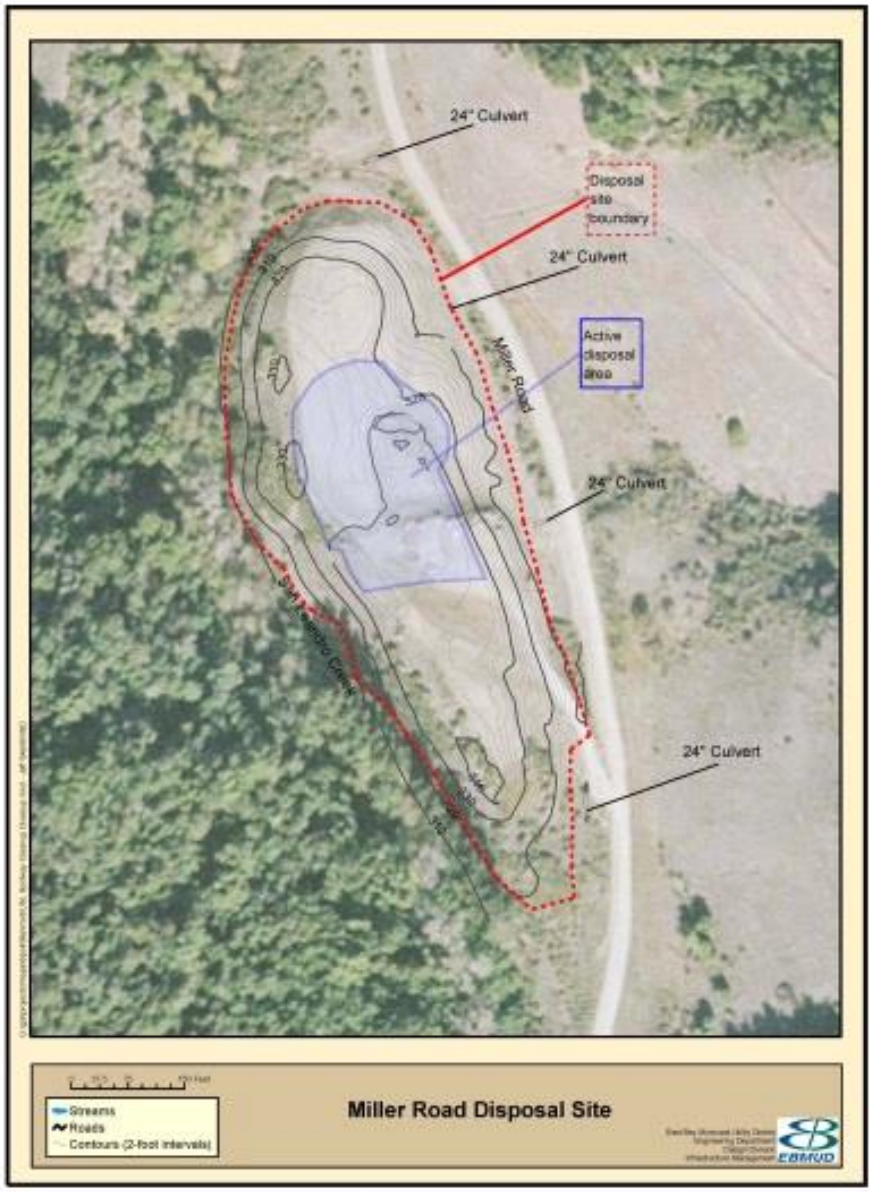


Figure 4. Miller Road Disposal Site

Trench spoils continue to be delivered to this site from District pipeline projects in the southern portion of the District's service area. The spoils material consists primarily of soil (sand, silt and clay) mixed with rock and gravel; and prior to June 1994 included amounts of asphalt and concrete. Asphalt and concrete have not been disposed at this site since that time. In 2003, approximately 22,000 cubic yards of material was removed, followed by a larger project in 2005 which removed approximately 78,000 cubic yards of material.

Amador DODS

Current Status. The Amador site typically receives between 3,000 and 8,000 cubic yards, or an approximate average of 5,000 cubic yards, of spoils material per year. As of mid-2006 the site is at approximately 32 percent capacity and would not require removal by contract until year 2014, based on current annual deliveries of spoils to the site. This estimated capacity is predicated on implementation of the site re-grading discussed below.

Site Security. Access to the Amador site is protected by a swing gate (lock and key), located immediately off of Alcosta Blvd at the entrance of EBMUD property. The gate is typically opened during normal District business hours and closed/locked daily by East Area Service Center personnel. Because the site is on EBMUD watershed land, by extension it is protected by perimeter fencing at the EBMUD property borders.

History. The Amador site is located in the Dougherty Hills at the end of a one mile access road originating from Alcosta Boulevard near the intersection of Estero Drive in San Ramon, California. Disposal at this site is restricted during the rainy season to weather permitted operations due to sloping ground at the site, which results in slippery and muddy conditions for truck access when the ground is wet. See Figure 5, Amador Disposal Site.

Trench spoils continue to be delivered to this site from District pipeline projects from Walnut Creek to San Ramon, and elsewhere within the Danville area and unincorporated areas east of Castro Valley. The spoils material consists primarily of soil (sand, silt and clay) mixed with rock and gravel; and prior to June 1994 included amounts of asphalt and concrete. Asphalt and concrete have not been disposed at this site since that time.

During 2003-04, a portion of the Amador site was used for the construction of the DERWA R100 reservoir tank[2], a partially-buried 4.0 million gallon capacity tank for recycled water storage. The construction and associated excavated materials occupied approximately 6 acres of the site, and temporarily used almost the entire spoils capacity of the site. At the end of construction, the construction fill was removed and backfilled against the DERWA reservoir tank, which allowed the District to resume using the site as a dedicated DODS.

[2] DERWA San Ramon Valley Recycled Water Program – Reservoir R100.

Site Re-grading. In 1988, District staff developed a grading plan for the Amador site. The plan provided up to 4.5 acres, and approximately 65,000 cubic yards capacity for trench spoil fills. However, due to the presence of high power overhead PG&E transmission lines which bisect the site, only a 1-acre portion of the site, south of the lines, has been actively utilized in order to avoid running trucks and equipment under the lines. The 1988 grading plan was not fully implemented. As a result, the volume of trench spoils at the site was limited at approximately 25 percent of capacity, or 16,000 cubic yards.

In summer 2006, District staff met with PG&E and developed protocols which would allow equipment to safely operate, deposit trench spoil fills in proximity to the high power lines, and more fully utilize the site. It was agreed with PG&E that fill deposition can safely occur as long as the fill maintains a minimum 25-foot clearance from the overhead grounding line and 30-foot clearance from the high power transmission lines.

The grading plan was revised accordingly and now provides approximately 50,000 cubic yards of fill capacity on three acres. See Appendix A for the revised Amador grading plan. The Amador site should be re-graded in accordance with the revised grading plan to better utilize the site.

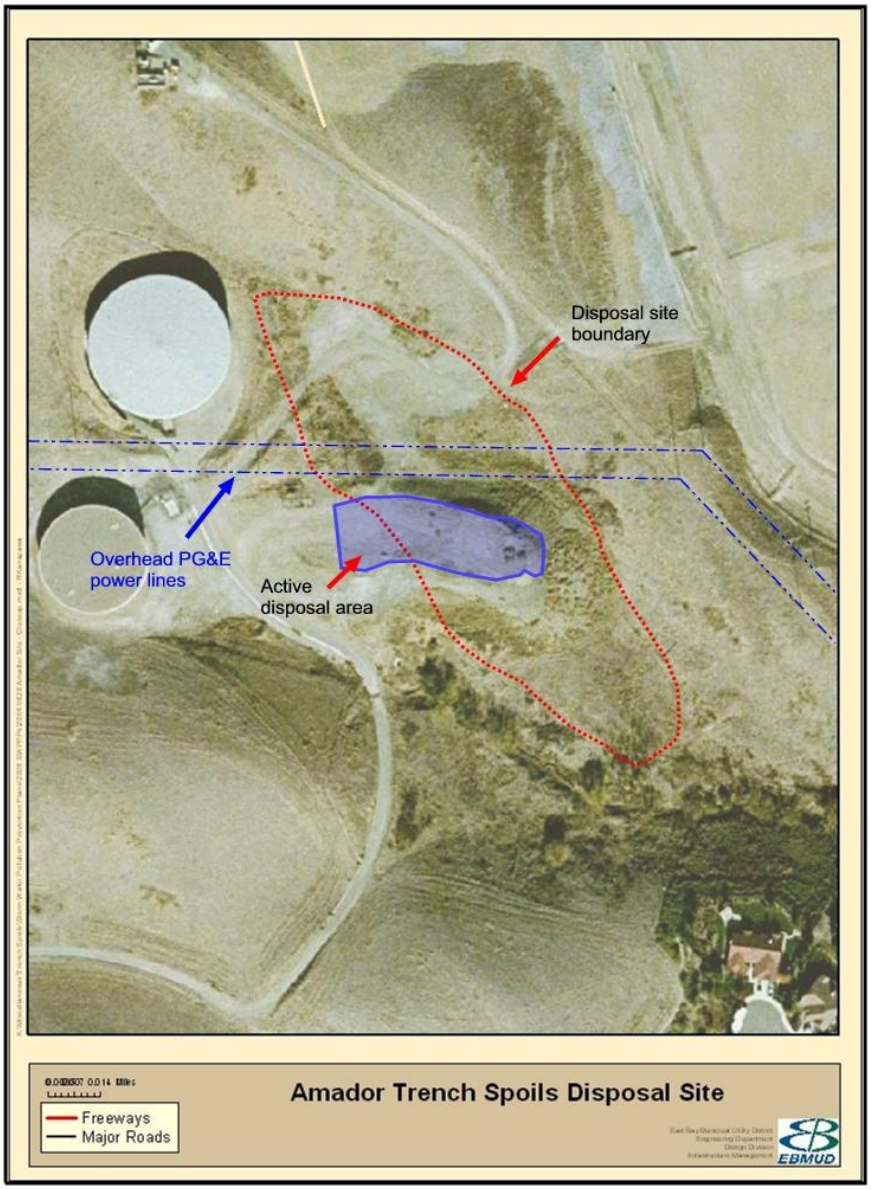


Figure 5. Amador Disposal Site

FUTURE INITIATIVES

Evaluating the Performance of BMPs

The District maintains a suite of Best Management Practices at the trench spoils disposal sites to minimize erosion and sediment transport off-site. To supplement these efforts, Environmental Compliance will develop an assessment program needs to evaluate the effectiveness of the adopted BMPs. The assessments need to be customized to address the operational and environmental issues that face each individual site and should be conducted on a regular basis and/or as site conditions change. The findings will be used to prioritize BMP alternatives and for budgeting purposes.

San Pablo Dam fill material

The Briones DODS had also been proposed as an alternative borrow site to provide fill material for the reconstruction of the dam embankment as part of the District's San Pablo Dam Seismic Modifications Project in 2008-2010. This idea presented a means by which the accumulated trench spoils at the Briones DODS could be put to beneficial use, as well as a way to restore the site back to its full storage capacity. However, another economically-viable borrow site has been identified for the San Pablo Dam Seismic Modifications Project that offers fewer environmental concerns.

Sibley Quarry Site fill material

History. The Sibley Quarry site is owned by East Bay Regional Park District and is located about 1.5 miles west of Orinda at the end of Old Tunnel Road in Contra Costa County. When it was acquired by EBRPD, the abandoned quarry still contained many remnants of its original operations, including steep cut slopes, large pieces of concrete, areas of protruding rebar, and miscellaneous concrete rubble; all of which posed as a public safety concern for EBRPD which had long-term plans to develop the site for public access.

In April 1999, the District and EBRPD entered into an agreement to provide up to 100,000 cubic yards of trench spoils for EBRPD to use as fill to cover exposed quarry remnants, soften slope contours, help control erosion, and restore the Sibley site to a more natural appearance. An addendum in 2003 allowed the disposal of an additional 13,000 cubic yards of material at a second location on-site. By the end of the project in September 2003, the District had diverted approximately 113,000 cubic yards of spoils that would have normally gone to the Briones site.

Future Use. District and EBRPD staffs have discussed the possible implementation of a similar, second agreement to divert additional spoils to the Sibley site. In January 2006, EBRPD adopted a mitigated negative declaration and a land use amendment to develop the Sibley Volcanic Regional Preserve at the Sibley site. Additional fill material may be needed for this development, pending completion of the final site design. EBRPD is currently preparing to open the site for public access in late 2006, which may preclude any trench spoils disposal project with the District. Nonetheless, District staff will continue to regularly meet with EBRPD regarding the opportunity to use this site again for trench spoils disposal.

Rifle Range/Navy Flat Site (Miller Road Disposal Site No. 2)

Future Use. The Rifle Range/Navy Flat site may potentially be the location of a future District trench spoils disposal site or a future expansion of the current Miller Road DODS. It is located along Miller Road about 1 mile south of the Miller Road DODS on the District's Upper San Leandro Reservoir property that was the borrow site to provide fill for the construction of Upper San Leandro Dam. The site was also formerly used as a rifle shooting range and is currently leased to cattle farmers for cattle grazing.

Removal of the top layer of the site soils may be necessary to mitigate surface material containing spent munitions. The site also contains a small area of marsh-type land, which may host a habitat for sensitive species. These issues and those related to any potential construction impacts would have to be addressed in the environmental documentation for a project to develop this site as a DODS. If developed, it could add more than 550,000 cubic yards of capacity[3] to the 156,000 maximum capacity of the Miller Road DODS; potentially providing the equivalent of at least 47 years of spoils storage for the District (based on annual deposits to the Miller Road site).

There is no immediate urgency to develop Rifle Range/Navy Flat as a DODS, as current projections show that the Miller Road DODS has sufficient storage capacity to continue operating through year 2015. Preliminary assessments to evaluate the Rifle Range/Navy Flat site will begin in FY10. This work will involve soil analyses and developing a Needs Assessment to define the scope of mitigation which may be needed to address possible soil contamination. Following this work, a determination will be made on whether to proceed with developing a new DODS at this location.

Potential Remediation by the U.S. Army Corps of Engineers (USACOE). In April 2007, the District began a dialogue with Sacramento District staff of the USACOE concerning possible clean up of the Rifle Range/Navy Flat site under the USACOE's Formerly Used Defense Sites (FUDS) program. The Rifle Range/Navy Flat site is included in the FUDS program as a possible candidate for remediation funding, subject to a series of assessment and prioritization steps. Environmental Compliance is coordinating discussions and the exchange of information for the District.

STORM WATER POLLUTION PREVENTION PLANS

The District's operation and maintenance activities at the DODS are subject to stormwater control regulations as set forth in the State Water Resources Control Board's NPDES General Permit[4] which calls for the development and implementation of Storm Water Pollution Prevention Plans (SWPPPs) for construction projects that disturb one acre or more of land.

The SWPPPs contains site-specific information on potential pollution sources that may affect the quality of storm water discharge, describes practices to be implemented to reduce the identified pollutants, and documents compliance with storm water permit terms and conditions.

[3] Capacity of over 550,000 cubic yards is based on a 1990 site study and drawings 9443-G-1 and 9443-G-2.

[4] State Water Resources Control Board (SWRCB) Order No. 99-08-DWQ, National Pollutant Discharge Elimination System (NPDES) Permit No. CAS000002, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity (General Permit); and its subsequent modifications (SWRCB Resolution Nos. 2001-046 & 2001-155).

Staff is preparing a SWPPP for each DODS. The SWPPP will be a "living document", subject to annual review and updates to keep up with evolving regulatory requirements and adjustments of site management practices, as necessary, for compliance. The plans will be organized as follows:

- Site description.
- Description of best management practices (BMPs) for erosion and sediment controls.
- Implementation of BMPs for erosion and sediment controls.
- Schedule for monitoring and maintenance of BMPs.

The BMPs will be coordinated with and folded into the site management practices required by this TSMP for each DODS. Key BMPs common to all the SWPPPs will include, but not be limited to, the following:

- Berms are constructed and maintained to prevent storm water flow from eroding protected areas.
- Vegetated "buffer zones" are maintained on slopes and surrounding areas between the site and drainage ways to promote infiltration and minimize sedimentation transport.
- Where possible, soil stockpiles are maintained at least 50 feet away from concentrated flows of storm water, drainage courses and inlets.
- Sites are continuously graded to facilitate sheet flow to vegetated areas prior to reaching drainage ways.
- Disturbed slopes are compacted with machinery to provide grooves that reduce runoff and minimize erosion from the site.
- Where needed, hydro-seeding and/or fiber rolls are implemented as temporary erosion and sediment control measures to reduce sediment transport off-site.
- Construction roadways entering and exiting the active dumping areas are stabilized to prevent traffic erosion and to control tracking of soil material off-site.
- Only clean "non-hazardous' trench spoils material is allowed to be disposed at the site. Chemical and hazardous substances are not allowed on-site. Solid and hazardous wastes are pre-screened per the District's Field Management Practices protocol and diverted elsewhere for disposal.
- Visual site inspections are conducted routinely to ensure BMPs are effectively maintained. Adjustments are made as necessary.

FUTURE PLANNING FOR THE TSMP

Given the history of the TSMP, the on-going efforts required for managing the DODS, and the measures required for SWPPP compliance, staff recommends the identification and adoption of a recurring TSMP project be included in the District's Capital Improvement Program (CIP). CIP budgeting for the TSMP on a recurring basis assures that resources will be available for the following:

- Trench spoils materials delivered to the DODS are spread and compacted in the proper disposal areas for the most efficient use of limited space;
- Hazardous or deleterious materials inappropriately delivered to the DODS are quickly identified and separated out for transport to recycling or Class III disposal sites;
- BMPs for erosion and sediment controls are adequately implemented;
- SWPPP compliance measures are implemented, particularly prior to each winter season;
- Annual aerial surveys of the DODS to record changes in site fill volumes;
- Proactive efforts to seek opportunities for diversion and reuse of clean materials from the DODS; and
- Staff resources to adequately manage and implement the TSMP and these measures.

Funding should also be anticipated in future years of the CIP for the following:

- Aerial survey contracts;
- Contracts to update SWPPPs and implement BMPs;
- Preparation of contract bid documents for fill removal from the DODS;
- Fill removal contracts;
- Development of future disposal sites;
- Negotiation and preparation of agreements for use of non-District owned sites to use as disposal sites; and
- Staff resources and training to adequately manage and implement these activities.

A bar chart schedule for the on-going TSMP activities and future contracts, and planning level cost estimates, is provided in Figure 6. The information shown can be used as guidance for the District's bi-annual development of the CIP budget.

DISTRICT OWNED DISPOSAL SITES
ESTIMATED ACTIVITY SCHEDULE (Fiscal Years) AND COSTS ($1000's)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Amador																
	$ 22			$1,000					$1,200					$1,400		
Miller Road																
						$ 100		$ 1,200								
Briones																
											$ 5,000	$ 5,000				
Proj. Mgmt./Engrg. Support	$ 8			$ 250				$ 300	$ 300		$ 2,500	$ 2,500		$ 350		
Site Mgmt. base cost	$ 230	$ 238	$ 246	$ 255	$ 264	$ 273	$ 283	$ 293	$ 303	$ 313	$ 324	$ 336	$ 348	$ 360	$ 372	$ 383
DODS Total	**$ 260**	**$ 238**	**$ 246**	**$1,505**	**$ 264**	**$ 373**	**$ 283**	**$1,793**	**$1,803**	**$ 313**	**$ 7,824**	**$ 7,836**	**$ 348**	**$2,110**	**$ 372**	**$ 383**

Legend:

Estimated period of trench spoils disposal to reach capacity. Annual management and maintenance of site performed as a recurring project.

Amador re-grading by District Forces. Project management and engineering support by Design staff.

Evaluation of proposed Navy Flat site. Project management and engineering support by Design staff.

Fill removal contract. Project management by Design staff. Contract management/inspection by Construction Division staff.

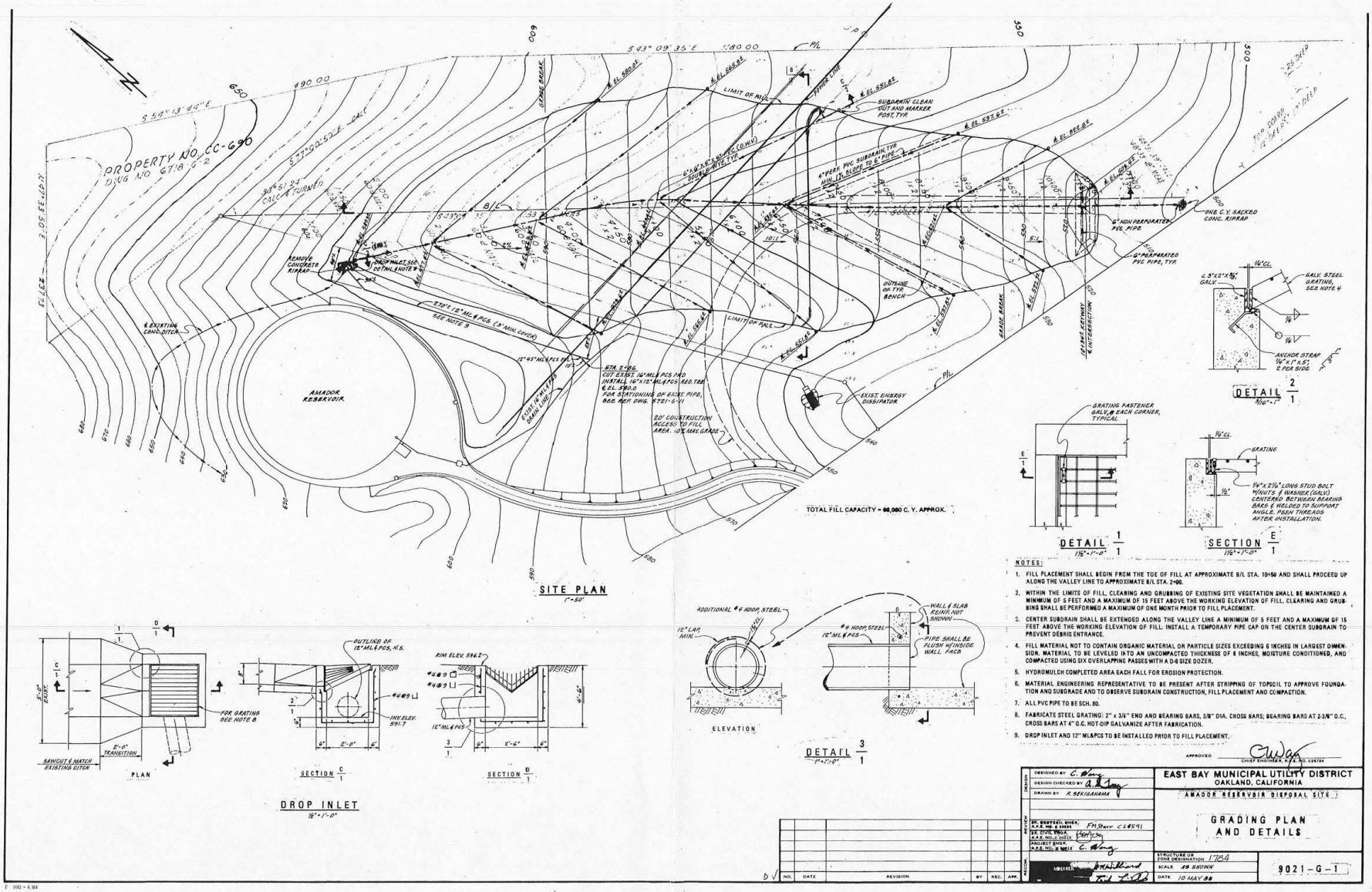
Notes:

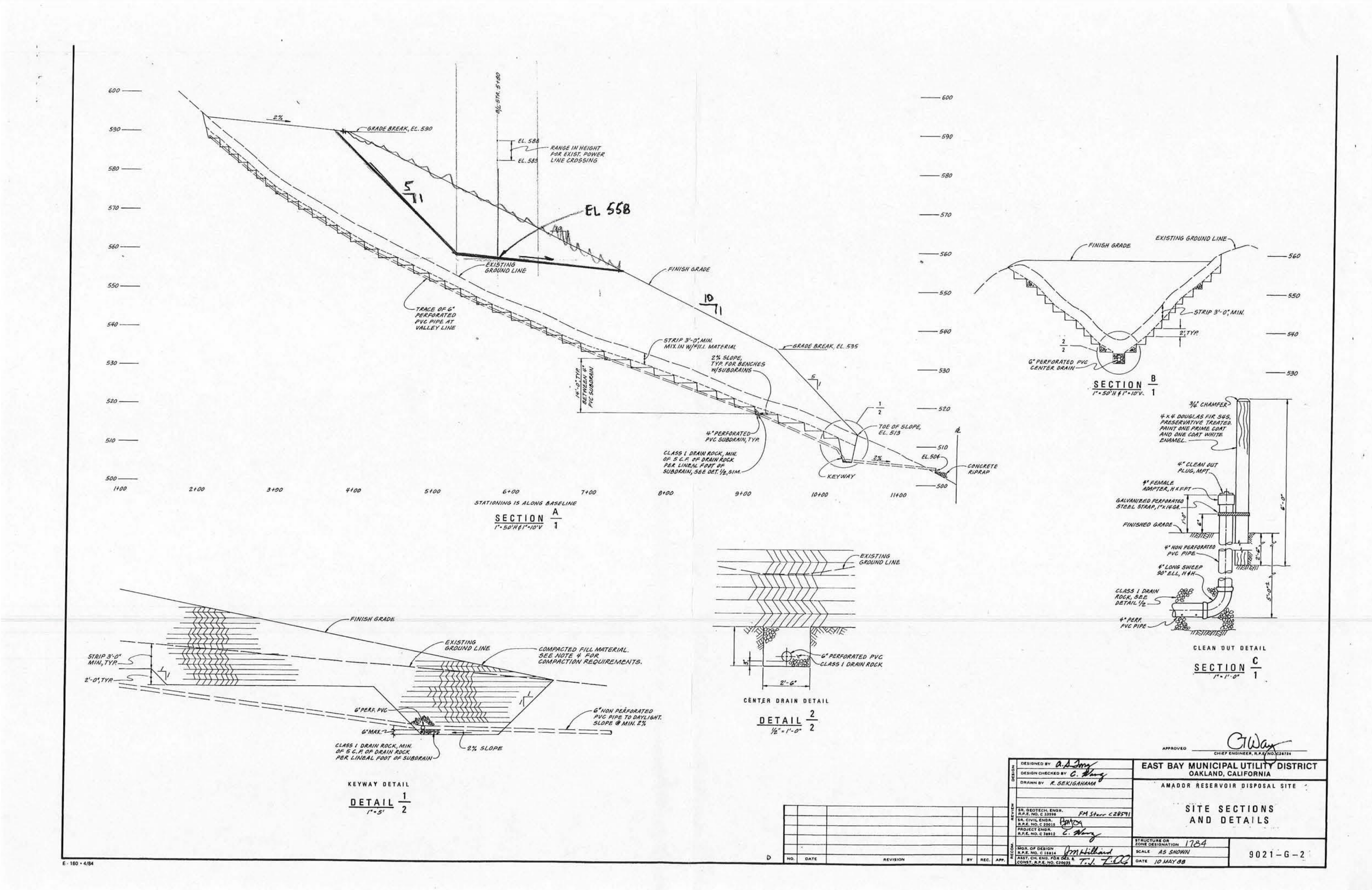
1 Assume $20/cubic yard costs for fill removal contracts.
2 Assume 3.5% annual inflation for costs.
3 Project management and engineering support for removal contracts estimated at 25% of removal contract cost.

Figure 6. Future DODS Planning Schedule

APPENDIX A

AMADOR DISTRICT-OWNED DISPOSAL SITE REVISED GRADING PLAN


PROPERTY NO. CC-690
DWG NO. 6718 G-2
AMADOR RESERVOIR
TOTAL FILL CAPACITY = 66,000 C.Y. APPROX.
SITE PLAN
1"=50'
DETAIL 2
DETAIL 1
SECTION E
DETAIL 3
DROP INLET
PLAN
SECTION C
SECTION D
ELEVATION
NOTES:
1. FILL PLACEMENT SHALL BEGIN FROM THE TOE OF FILL AT APPROXIMATE B/L STA. 10+50 AND SHALL PROCEED UP ALONG THE VALLEY LINE TO APPROXIMATE B/L STA. 2+00.
2. WITHIN THE LIMITS OF FILL, CLEARING AND GRUBBING OF EXISTING SITE VEGETATION SHALL BE MAINTAINED A MINIMUM OF 5 FEET AND A MAXIMUM OF 15 FEET ABOVE THE WORKING ELEVATION OF FILL. CLEARING AND GRUBBING SHALL BE PERFORMED A MAXIMUM OF ONE MONTH PRIOR TO FILL PLACEMENT.
3. CENTER SUBDRAIN SHALL BE EXTENDED ALONG THE VALLEY LINE A MINIMUM OF 5 FEET AND A MAXIMUM OF 15 FEET ABOVE THE WORKING ELEVATION OF FILL. INSTALL A TEMPORARY PIPE CAP ON THE CENTER SUBDRAIN TO PREVENT DEBRIS ENTRANCE.
4. FILL MATERIAL NOT TO CONTAIN ORGANIC MATERIAL OR PARTICLE SIZES EXCEEDING 6 INCHES IN LARGEST DIMENSION. MATERIAL TO BE LEVELED INTO AN UNCOMPACTED THICKNESS OF 8 INCHES, MOISTURE CONDITIONED, AND COMPACTED USING SIX OVERLAPPING PASSES WITH A D-8 SIZE DOZER.
5. HYDROMULCH COMPLETED AREA EACH FALL FOR EROSION PROTECTION.
6. MATERIAL ENGINEERING REPRESENTATIVE TO BE PRESENT AFTER STRIPPING OF TOPSOIL TO APPROVE FOUNDATION AND SUBGRADE AND TO OBSERVE SUBDRAIN CONSTRUCTION, FILL PLACEMENT AND COMPACTION.
7. ALL PVC PIPE TO BE SCH. 80.
8. FABRICATE STEEL GRATING: 2" x 3/4" END AND BEARING BARS, 3/8" DIA. CROSS BARS; BEARING BARS AT 2-3/8" O.C., CROSS BARS AT 4" O.C. HOT-DIP GALVANIZE AFTER FABRICATION.
9. DROP INLET AND 12" ML&PCS TO BE INSTALLED PRIOR TO FILL PLACEMENT.
EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA
AMADOR RESERVOIR DISPOSAL SITE
GRADING PLAN AND DETAILS
9021-G-1



SECTION A/1
STATIONING IS ALONG BASELINE
SECTION B/1
SECTION C/1
CLEAN OUT DETAIL
DETAIL 1/2
KEYWAY DETAIL
DETAIL 2/2
CENTER DRAIN DETAIL
EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA
AMADOR RESERVOIR DISPOSAL SITE
SITE SECTIONS AND DETAILS
9021-G-2