Final Technical Memorandum

SMCSD Headworks, Primary and Secondary Treatment Pre-Design

Subject: **TM 2: Siting**

Prepared For: SMCSD

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The purpose of this technical memorandum (TM) is to develop a site plan for the new headworks and primary treatment systems at the Sausalito-Marin City Sanitary District (SMCSD) wastewater treatment plant (WWTP). This memorandum discusses the major goals and constraints in the siting of the new headworks/primary treatment facilities as well as the recommended site plan. This TM is intended to be included as an appendix to the Recommended Project Summary, which includes major recommendations. All drawings referenced in this TM are bound together as a separate attachment. This TM is organized in the following sections:

Additional detail on specific components of the new headworks/primary treatment facility can be found in several other related TMs including Materials Handling, Screening, Grit Removal, Primary Treatment and Secondary Treatment.

1 Summary of Findings

The goal of the siting evaluation was to select a location for the new headworks and primary treatment facility that maximizes the following objectives:

- Minimize the disruptions to the existing treatment process
- Take advantage of the natural drop in ground elevation
- Simplify waste material handling and storage
- Use the existing site as efficiently as practical
- Consider siting for future plant improvements
- District administration needs and existing parking difficulties

Several potential locations were considered for the new headworks, primary, and secondary (polishing) treatment for SMCSD. The preliminary list of potential sites was screened based on discussion with SMCSD staff with consideration for the following site issues:

- Plant and truck loading access
- Space constraints and future site flexibility
- National Park setting and coordination with the National Park Service (NPS)
- Potential landscape/environmental documentation requirements
- Potential aesthetics and odor impacts
- Compatibility with existing plant hydraulics

Based on the objectives of the project and site issues, specifically potential aesthetic and odor impacts, the list of potential site locations for the new headworks and primary facilities was narrowed down to three sites options, all located below the intermediate administration level at the SMCSD site. The secondary treatment process upgrades will be located within existing process area or in the location of the existing sand filters (See TM 7: Secondary Treatment).

The three site plan alternatives were developed based on the dewatering building location (Bayside Option), a new hillside location (Hillside Option) and moving the existing access road to the north (Relocated Road Option). A summary of each alternative is presented below:

- Bayside Option - Involves demolishing the existing dewatering building and constructing a new multi-level process building in its place. This option includes sub-options for a stacked primary treatment facility, primary treatment extended to the east, or primary treatment extended to the west.
- Hillside Option - Involves constructing the new headworks (screens and grit) at a new hillside area north of the access road and adding new primary treatment at the existing dewatering building location.
- Relocated Road Option – Involves moving the existing plant access road north to make space for a new headworks facility and circular primary.

For each option, location and layout alternatives were developed for the evaluation. While all three alternatives have different configurations, they all have the same core process features, components and meet the objectives for the new facility. One of the key differentiators amongst the alternatives is that the Bayside Option would be completely contained within the existing treatment plant footprint. The Hillside Option and Relocated Road Option both would require additional land for implementation. Obtaining additional land would require negotiation with the NPS and additional environmental documentation.

Recommended Site Plan

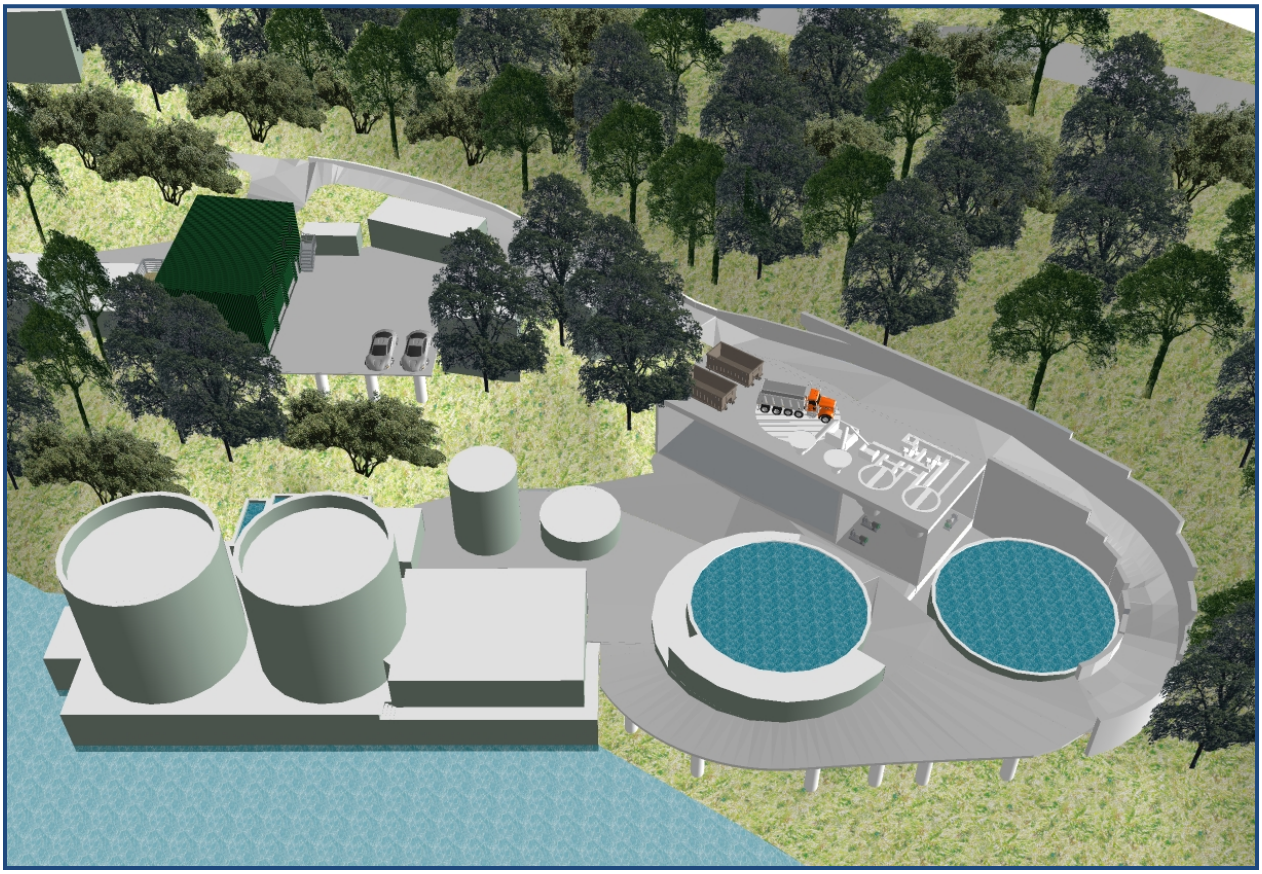
Locations and facility layouts were presented and discussed during workshops with SMCSD staff. Although a new facility could be configured under the Bayside Option, it would require stacking several process units and provide a very compact operating space. The main disadvantage of the Hillside Option is that it would effectively be isolated from the existing treatment plant site by the existing access road.

In addition, both the Bayside and Hillside Options would require the use of a compact primary treatment technology. Although it is believed that a compact primary clarifier technology would perform adequately, it would not provide the same level of redundancy or ease of operation that a traditional primary treatment technology would offer.

The Relocated Road Option is the recommended alternative as it will provide enough space to accommodate a conventional circular primary clarifier, while also meeting the objectives for the new

facilities. An overall site plan for the recommended project, including the secondary upgrades, is shown on Drawing C-1 and Figure 1.

Figure 1: Overall Recommend Project Site Plan



2 Goals of the Site Plan

In siting the new treatment facilities the following objectives were considered:

- **Minimize the interruptions to the existing treatment process** - The existing plant has to be kept in operation while the new facilities are constructed. The current plant is the result of several plant expansions and upgrades dating to the 1950's, and as a result, buried utilities and the current flow path will be difficult to 'patch' into without disrupting current operations.
- **Take advantage of the natural drop in ground elevation** - The existing SMCSD site is located on a steep hill-slope, which can allow for more use of hydraulic grade when configuring the layout for the new facility.
- **Simplify waste material handling and storage** - Material handling at the existing facility is difficult and time consuming due to access and site constraints.
- **Use the existing site as efficiently as practical** - Provide as much contiguous area as practical for future plant upgrades (other plant upgrades, improvements, etc). Any construction outside the existing plant footprint could require additional environmental documentation and/or coordination with the NPS, which would extend the timeline for the project.

3 Site Location Options and Screening

Required siting elements and site plan alternatives are presented in this section. The following four major elements need to be located at the site:

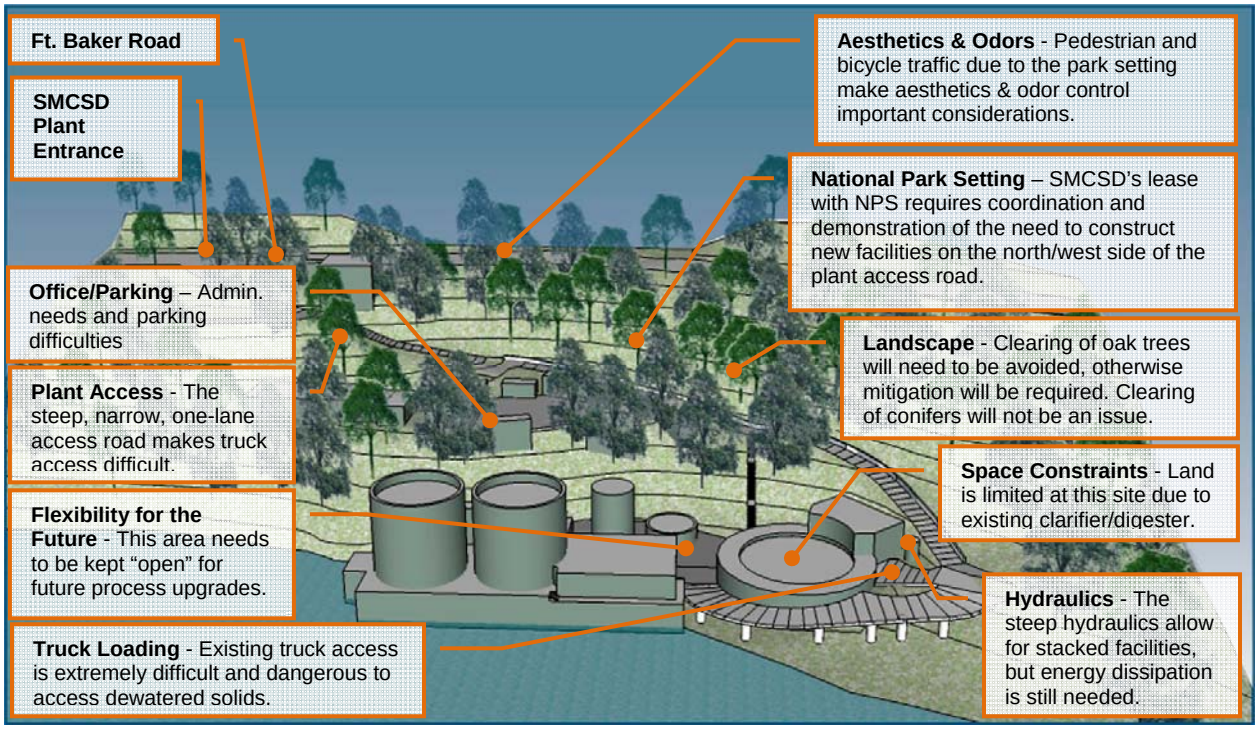
- Headworks – Screening and Grit Removal
- Primary Treatment
- Materials Storage and Handling
- Secondary and Tertiary Treatment Upgrades

The selected site plan must be able to accommodate the elements listed above, while meeting the objectives of the project. The specific site issues that need to be considered as part of the siting evaluation include the following:

- **Plant Access** – The new site needs to be accessible for vehicles and trucks
- **Truck Loading** – Sufficient space needs to be provided to allow for the storage and pick-up of waste materials
- **Space Constraints/Future Site Flexibility** – The new headworks/primary treatment needs to fit within the SMCSD site, while maintaining flexibility for future improvements
- **National Park Setting and Coordination** – Because the SMCSD facility is located within a National Park, improvements will need to be compatible with that setting. Coordination with the NPS will also be required.
- **Landscape/Environmental Documentation** – Modification to areas outside of the existing plant footprint could impact native trees and may result in the need for additional environmental documentation.
- **Aesthetics and Odors** – The existing SMCSD is visible from the bay shore and odors generated could be detected on Fort Baker Road or by neighbors to the north. Therefore, aesthetics and odors should be considered.
- **Plant Hydraulics** – Due to the influent forcemain's steep hydraulic drop from Fort Baker Road to the treatment plant, there is a large degree of hydraulic flexibility in locating the new headworks/primary treatment facility. However, the new facility will need to be installed at sufficient elevation such that primary effluent can flow by gravity to the existing fixed film reactor diversion box.
- **Work Space** –The constricted plant site has limited the amount of workspace available for administrative, operational and laboratory functions. Sufficient work space needs to be provided to allow effective operation of the treatment facility and District.

A summary of the site issues that will need to be considered is presented in Figure 2.

Figure 2: Site Issue Summary



3.1 Site Screening

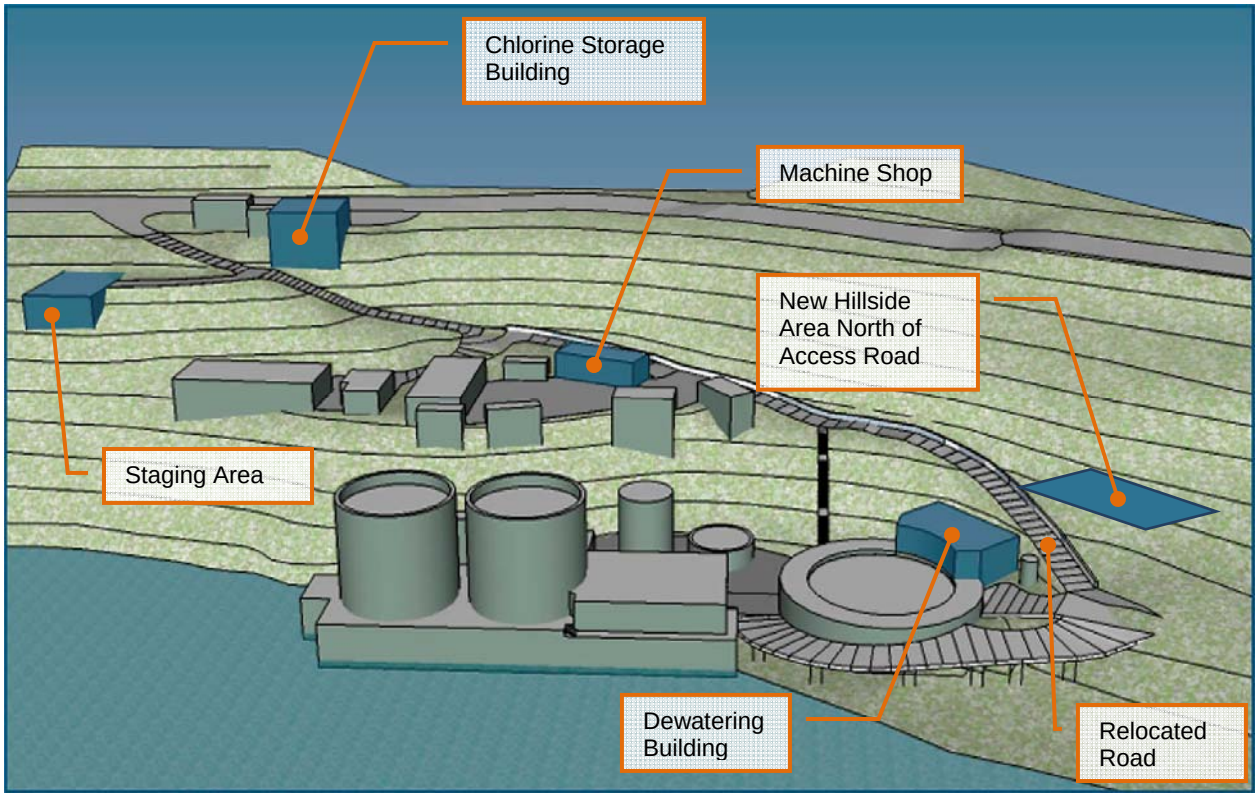
An initial set of potential sites for the new headworks/primary treatment facility was developed and are shown in Figure 3. A summary of each site is listed below:

- **Area North of Chlorine Storage Building** – The existing Chlorine Storage Building is located directly on Fort Baker Road. The area north of of the building was discussed as a potential site because it would be ideal for the loading of waste material for off-haul; the waste hauler vehicles would not have to travel down the steep access road to the lower plant levels. However, because the area is on Fort Baker Road, there would be a higher risk of odor and visual impacts to passersby.
- **Staging Area** – There is an existing staging/storage area just down the hill from Fort Baker Road. The area is fairly small and would likely need to be expanded, requiring a new retaining wall to be constructed. The turn into the staging area is very sharp and would not be accessible by a waste hauler truck. In addition, the staging area is close to Fort Baker Road, which makes it a high risk location for odor and visual impacts.
- **Machine Shop** – There is an existing machine shop located on the intermediate level of the SMCSD facility across from the Administration Building. Because members of the public frequently visit that Administration Building, there could be potential odor and visual impacts from having a headworks/primary treatment facility in front of the Administration Building. In addition, the existing machine shop workspace and equipment would have to be relocated to another area of the plant.
- **New Hillside Area North of Access Road** – An area north of the existing access road (See Figure 3), was previously investigated and was the recommended site in a previous headworks evaluation for SMCSD (Kennedy/Jenks, 1996). Installation of a new headworks at the hillside area would minimize construction impacts to the existing treatment process; however because this would involve disturbing a new area, it is likely that additional environmental documentation and

coordination with the NPS would be required. Also, the amount of level area that can be reasonably created in this area may not allow for the headworks and new primary processes to both be located at this site.

- **Dewatering Building** – The existing dewatering building is not currently used because a new dewatering screw press was installed on an elevated platform between the primary digester and gravity thickener. The existing building is in poor condition and likely cannot be reused. However, the existing location is well suited for a new headworks since it is close to the existing primary clarifier. The dewatering building is also adjacent to the existing access road, which may allow for more convenient material handling.
- **Relocated Road** – Relocating the access road to the north would free up more space adjacent to the existing treatment plant site. Additional space would be required for installation of new access road to the north.

Figure 3: Potential Headwork/Primary Treatment Site Locations



Based on workshop discussions with SMCSD staff, it was determined that the upper and intermediate level site options are not viable due to concerns related to odor and visual impacts. Therefore, it was decided that only the Dewatering Building (Bayside), Hillside and Relocated Road locations be carried forward for further evaluation.

4 Site Plan Alternatives

Several site plan alternatives for the new headworks and primary treatment facility were developed using the dewatering building location or a combination of the dewatering building and hillside locations. Each alternative was developed to meet the project goals to the maximum extent possible and will allow SMCSD to make an informed decision on a preferred location and arrangement. After a preferred site

alternative is selected, the process and facility configuration can be further refined. This progressive development of the site plan will allow for continued improvements to the final site recommendation.

4.1 Dewatering Building Site (Bayside)

The site of the existing solids dewatering building would be a good location for the addition of headworks and primary treatment facilities due to the following:

- Proximity to the influent pipeline, access road and existing primary clarifier
- Minor process disruptions since the dewatering process has already been relocated
- A multi-level building can be accommodated against the existing hillside
- The new headworks and primary process can be elevated to maintain gravity flow to the existing diversion box

The Dewatering Building site plan alternative (Bayside Option), would involve demolishing the existing dewatering building and constructing a new multi-level process building in its place. Three basic arrangements were considered. Three layouts for the Bayside Option, including plan and section views, are shown on Drawing TM2-1. Each of these options has the following common features:

- The new headworks, including screens and grit removal and supporting equipment, would be located on the top level of the new building. The new headworks area could be configured as an open area or could be enclosed (See Screenings and Grit TMs). A new access ramp from the existing causeway would be constructed to provide vehicle access to the lower level
- A new access ramp including truck turntable (see Materials Handling TM) would be constructed to connect the headworks level to the existing access road, which would greatly improve material handling access.
- Due to the steep elevation change at the site, there may be space underneath the elevated process areas. The space created below, would have limited use because it would be difficult to access and would not provide ideal working conditions. However, depending on the process configuration the space below the structure could have a potential use as equalization storage.

The difference in these options is the location of the primary facilities as described below:

- **Dewatering Building stacked**- With this arrangement, the headworks facilities (screening & grit) would be on the top level and the primary facilities would be underneath on the lower level.
- **Dewatering Building with extended east-** The headworks facilities (screening & grit) would be on the top level, and the primary facilities would be at a lower level extending east of the dewatering building near the location of the influent energy dissipation structure.
- **Dewatering Building extended west-** The headworks facilities (screening & grit) would be on the top level and the primary facilities would be at a lower level extending west of the dewatering building to a location between the gravity thickener and the office building.

Extensions from the dewatering building location to the east and west to avoid the stacked arrangement of the headworks and primary facilities were also considered and are discussed in the following sections. The three Dewatering Building configuration options are shown in Drawing TM2-1.

4.1.1 Dewatering Building Stacked

The main disadvantages of the dewatering building location are that it would require a stacked arrangement in which the new headworks would be located directly above the new compact primary treatment process, and there would be limited new space for other operations or administrative uses. This

location would also require cutting into the adjacent hillside and stabilizing the hillside cut to preserve the existing access road.

4.1.2 Dewatering Building Extended East

The area east of the dewatering building, extended to the causeway road, could be developed to include an elevated structure to house the new primary facility or other functions. The main advantage of this site is that it would not require stacking of the new headworks and new primary facilities. This location is shown in Drawing TM2-1 (see view titled, 'Dewatering Bldg- Extended East').

The main disadvantages of this area include conflicts with the existing energy dissipation influent structure and the limited access that could be provided to the primary facilities.

4.1.3 Dewatering Building Extended West

The sloped area west of the dewatering building, adjacent to the access road and extending to an area between the office and the gravity thickener, could be developed to include an elevated structure to house the new primary facility or other functions. The main advantage of this site is that it would not require stacking of the new headworks and new primary facilities. This location is shown in Drawing TM2-1 (see view titled, 'Dewatering Bldg – Extended West').

The main disadvantages of this area include conflicts with the plant electrical service, chemical piping and stairway. Each of these facilities would need to be relocated in the development of this location. Additionally, this slope will require relatively expensive structural foundations**.**

4.1.4 New Hillside Site, North of Access Road

The headworks (screening and grit) could be located on the hillside of the plant road as described in the 1996 Headworks Study. The Hillside Option is shown on Drawing TM2-2 and Drawing TM2-3. The main advantages of this site are:

- Would not require stacking the new headworks and new primary facilities
- Can be constructed outside of the main process area, thereby minimizing process interruptions during construction
- Leaves open additional space in the existing process area for other improvements or operational and administrative space

Use of the hillside site would require more environmental documentation and analysis, including coordination and approval from the NPS. The Hillside Option would split the treatment process across the access road, which is less preferred from an operational perspective. In addition, preliminary evaluation indicates the hillside area does not have enough space to accommodate the new primary treatment process. Therefore, the primary treatment process would need to be located at another site on the SMCSD facility and would require the use of a compact primary treatment technology.

The combination of the Dewatering Building and Hillside location (Hillside Option), would involve constructing the new headworks (screens and grit) at the new hillside area north of the access road, and adding new compact primary treatment at the existing dewatering building location.

In-channel screens and grit system, including support equipment, would be installed at grade at the new hillside location. Similar to the Bayside Option, the new headworks area could be configured as an open area or could be enclosed.

A new road would be provided to the new headworks area and would include provisions for material handling access, including a truck turntable and waste bin storage. The new primary treatment area would be located separately from the headworks at the existing dewatering building.

4.2 Relocated Road Site

The plant access road could be relocated to the north to accommodate the headworks (screening and grit) and primary treatment process. The Relocated Road Option is shown on Drawings M-10, M-11 and M-12. The main advantages of this option are:

- Would not require stacking the new headworks and new primary facilities
- Can be constructed outside of the main process area, thereby minimizing process interruptions during construction
- Leaves open additional space in the existing process area for other improvements or operational and administrative space
- Keeps the new treatment processes grouped with the existing treatment facility.
- Would provide enough space to accommodate a conventional circular primary clarifier

Relocation of the road it would require more environmental documentation and analysis, including coordination and approval from the NPS. However, this siting alternative minimizes the area needed to the north of the access road and keeps it integral to the existing facilities. This location would also require cutting into the adjacent hillside and stabilizing the hillside cut to construct a new access road.

4.3 Comparison of Site Plan Alternatives

A comparison of the Bayside, Hillside and Relocated Road options is presented in Table 1.

Table 1: Site Plan Alternative Comparison

Alternative	Construction Difficulty	Truck Access	Process Layout	Primary Treatment Technology	Environmental Documentation Efforts	Additional Space for Ops/Admin
Bayside-Stacked	Moderate	Good to headworks Good to primary	Multi-level/ Stacked	Compact	Low	Minimal
Bayside-Extended East	High	Good to headworks Limited to primary	Multi-level/ Non stacked	Compact	Low	Moderate
Bayside-Extended West	High	Good to headworks Limited to primary	Multi-level/ Non stacked	Compact	Low	Moderate
Hillside	Low	Good headworks Good to primary	Flat	Compact	Significant	Moderate
Relocated Road	High	Good to headworks Good to primary	Multi-level/ Non stacked	Conventional	Significant (but less than Hillside Alt.)	Minimal

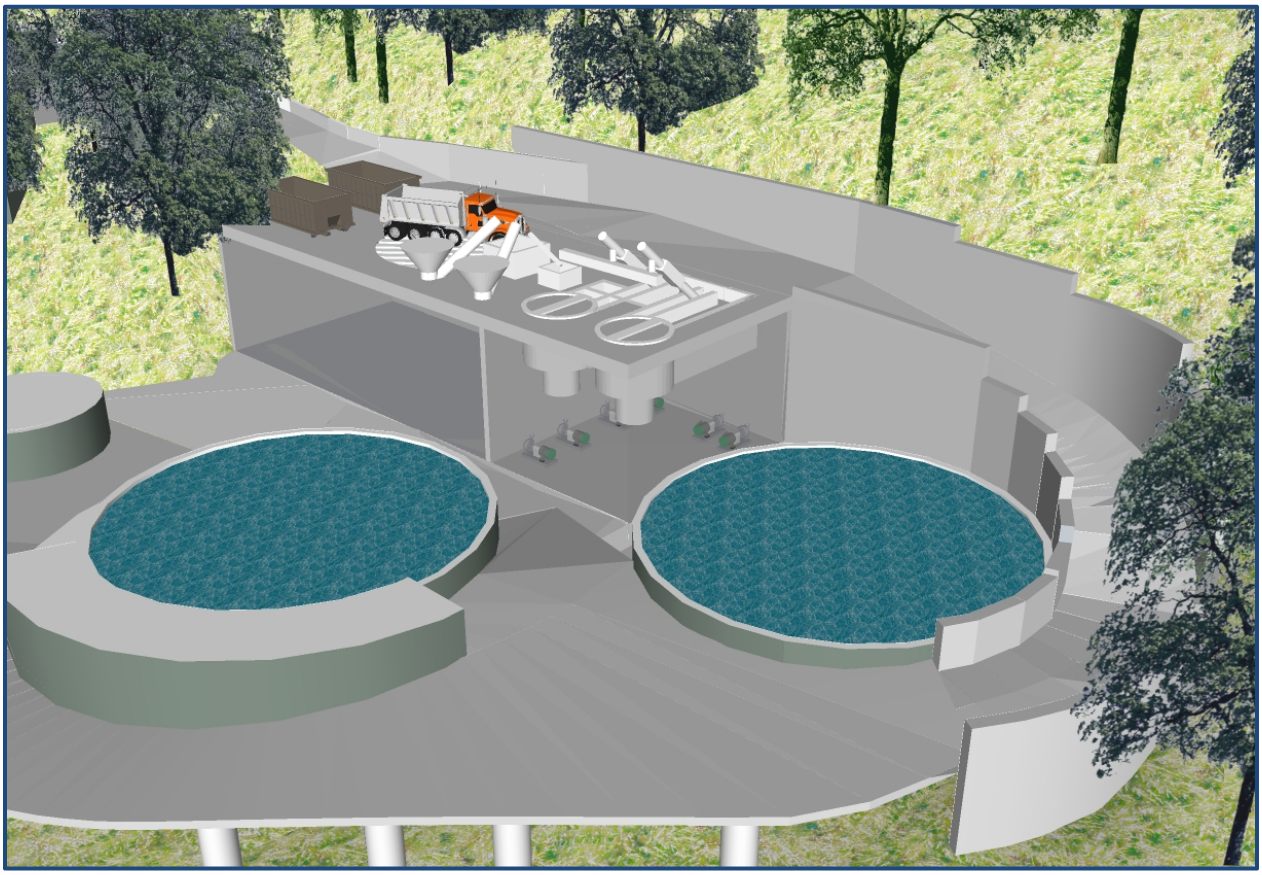
5 Recommended Site Plan

Based on the evaluation in the preceding sections and workshop discussion with SMCSD staff, the Relocated Road Site Option is the recommended site location for the new headworks and primary treatment processes at the SMCSD WWTP facility. The Relocated Road Option allows for a relatively 'unstacked' arrangement and provides space for a conventional primary clarifier. As a contrast, the Bayside Options, could be constructed within the existing plant footprint, however they would require at

least some stacking of processes and the use of a unique compact primary treatment. The estimated capital cost of the Relocated Road and Bayside Options would be similar. The Hillside Option would have a capital cost of approximately $1.5M less than the Bayside and Relocated Road Options.

For the Relocated Road Option, space will also be provided for material hauling (via a truck turntable), as well as, sludge storage bins. As mentioned in Section 4.2, the Relocated Road Site would require more environmental documentation and analysis, including coordination and approval from the NPS. This location would also require cutting into the adjacent hillside, stabilizing the hillside cut and construction of a new access road. The Relocated Road Option is shown on Drawings M-10, M-11 and M-12, as well as on Figure 4. Individual project components are discussed in more detail in their respective TMs. An overall site plan for the recommended project, including the secondary upgrades is shown on Drawing C-1 and on Figure 1.

Figure 4: Relocated Road Option



6 Additional Site Issues

The issues discussed in the following sections will be incorporated into the recommended site plan. These additional issues relate to yard piping arrangements and connections, access, lighting and office space.

6.1 Yard Piping

The project will include the following additions and improvements to the piping system for the plant:

- Consolidation of the Fort Baker gravity sewer into the WWTP influent sewer. Connection of existing WWTP influent sewer to the new headworks
- Connection of new headworks to the new and existing primary treatment processes
- Connection of new primary facilities to the existing diversion box for the fixed film reactors

The development of these piping facilities is presented in the sections below.

6.1.1 Consolidation of the Fort Baker Gravity Sewer into the WWTP Influent Sewer

The existing Fort Baker gravity sewer has a separate connection to the existing primary clarifier. Therefore, SMCSD cannot collect combined raw influent samples. One of the goals of this project is to consolidate the Fort Baker gravity sewer into the WWTP influent sewer so that all flows go through the new headworks. At Fort Baker Road, just above the SMCSD facility, the Fort Baker forcemain transitions to a gravity sewer, which prevents the possibility of connecting to the WWTP influent line at Fort Baker Road.

It is recommended that the Fort Baker gravity sewer be extended on Fort Baker Road, then down the hillside and connected near the top of the hill to the WWTP influent sewer. Another alternative would be to connect the Fort Baker gravity sewer to a new influent junction box upstream of the new headworks. A final decision will be made during detailed design.

6.1.2 Connection of existing WWTP Influent Sewer to the New Headworks

The new headworks will need to be connected to the existing influent sewer. The existing influent sewer was recently replaced and comes down the hill from Fort Baker Road and connects to an energy dissipation structure, which is connected to the existing primary clarifier centerwell. The exact location of the connection to the new headworks will be dependent on the location alternative discussed above. The new influent sewer connection should have the following features to address the challenges of the new connection:

- Provide a continuous slope to the headworks so that heavy solids are not trapped in the pipeline
- Control the hydraulic jump due to the high pipe velocity coming down the steep hill
- Avoid and mitigate conflicts with existing plant utilities in the plant access road
- Provide a method for cleaning and/or a bypass (see District's comments from Workshop #2)

There are three alternative piping connections for connection the new headwork to the existing influent line are as follows.

An elevated pipe crossing over the access road.

This alternative has the potential advantage of being the shortest and most direct pipe alignment leading to the new headworks influent box, and would minimize sharp turns in the influent piping. Sharp turns are generally avoided in sewer designs and could be more prone to solids deposition during low flows. The disadvantage of an elevated pipe crossing the access road is increased vulnerability to damage by traffic on the road and increased difficulty in conducting maintenance and repair activities.

A buried pipeline underneath the access road with continuous slope.

This alternative includes an influent pipe with a constant downward slope into the new headworks influent box. The advantage of a constant downward slope is that there would be no low spots that could be prone to solids deposition. The disadvantage of this sub-option is that, due to the specific site layout conditions of the headworks facilities, a longer pipe run with potentially two sharp turns is required to achieve an alignment with a constant downward slope.

A buried pipeline underneath the access road with an inverted siphon.

This option involves a shorter, more direct alignment with less sharp turns. However, due to the site elevations, the pipe elevation would need to go lower under the road and increase again in elevation to flow into the headworks influent box, essentially creating an inverted siphon type arrangement. This would create a low spot in the pipe with limited maintenance access that could potentially be prone to solids deposition during low flow periods.

It is recommended the connection to the new headworks be a buried pipe with a continuous slope, which will avoid any overhead clearance issues and any low spots in the pipeline.

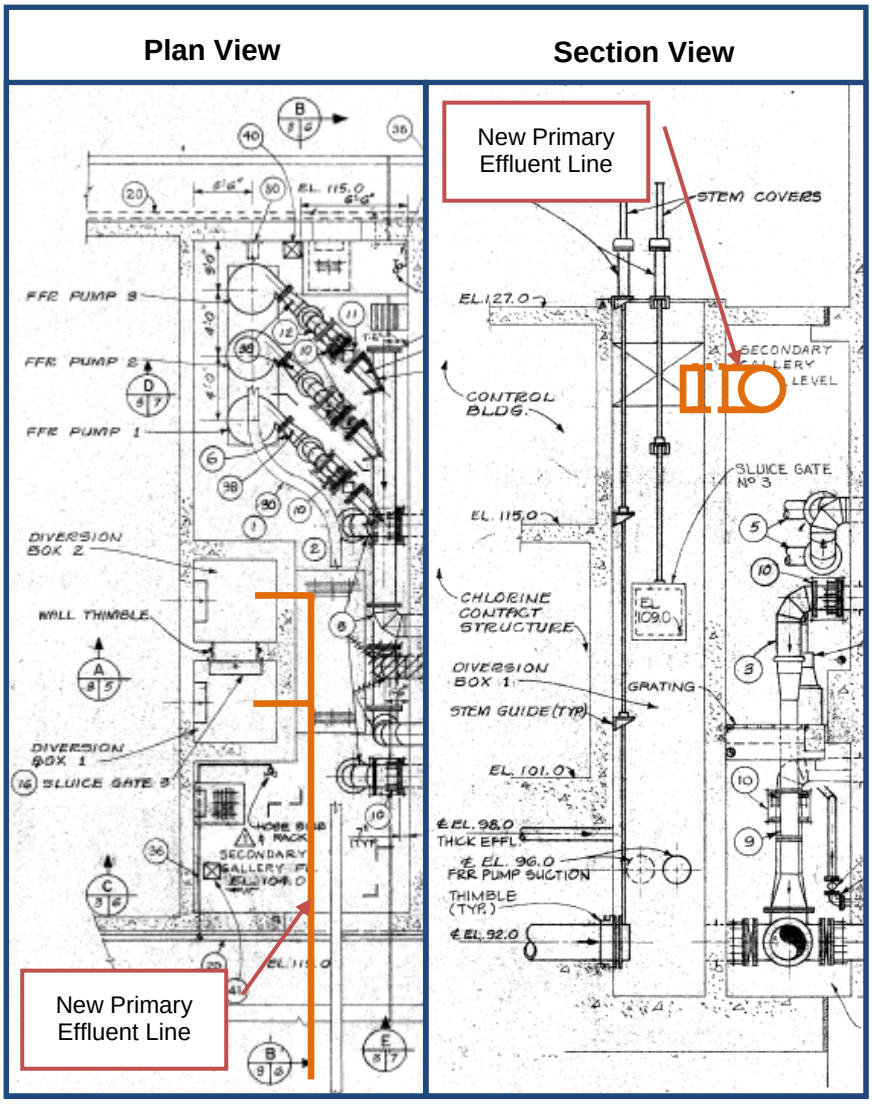
6.1.3 Connection of the New Headworks to the Existing and New Primary Treatment Processes

The new headworks effluent will be connected to the existing primary clarifier as well as the new primary clarifier. A flow distribution box will be used to evenly distribute flow to whichever primary process units are in service at a given time. Influent metering will also be added to the primary effluent pipelines. The primary influent distribution box and piping for the recommended site alternative are shown on Drawing M-10.

6.1.4 Connection of new Primary facilities to the Existing Diversion Box for the Fixed Film Reactors

For flow sent to the existing primary clarifier, the primary effluent flow path will remain unchanged from existing operations. For flow sent to the new primary treatment process, a new primary effluent pipe will be installed that will convey primary effluent directly to the existing diversion box for the fixed film reactors. The connection to the diversion box is shown in Figure 5. The new primary effluent line will provide an additional level of reliability to the existing treatment facility. Due to corrosion and vulnerability concerns, the new primary effluent pipeline will be routed above the main process area along the hillside, and will cross from the hillside to the fixed film reactor pump room. The new primary effluent line will have a free discharge and therefore should not have problems associated with air backing up into the primary effluent line that is occasionally observed with the existing connection. The diversion box will include isolation valves to allow primary effluent flow to be sent to either box.

Figure 5: New Primary Effluent Connection to Diversion Box



6.1.5 Storm Drainage

The proposed Relocated Road Option will interfere with some existing storm drain lines on the site. Storm drains will need to be reconfigured and will be routed to minimize the amount of offsite storm water drainage that is brought onsite.

6.1.6 Plant Recycled Water

The existing recycled water system is currently fed from secondary effluent. The recycled water is used for equipment seal water and washdown. The current water quality is poor and leads to line filter clogging and excessive equipment seal wear. It is recommended that the plant recycled water be re-plumbed using tertiary filtered water.

6.2 Access

The current wastewater treatment site does not receive any significant traffic, however following the improvements, it is anticipated that there will be an increase in site traffic due to collection and hauling of headworks waste and hauling of dewatered solids. It is recommended that the project provide additional parking for SMCSD staff and visitors by removing two existing shipping containers and construction of an elevated parking area adjacent to the new administration building. Truck and hauler access is described in more detail in the TM 6: Materials Handling.

6.3 Site Lighting

Lighting will be provided around the site to allow for work to be performed at the facility at night when required. This occurrence is not anticipated very frequently and therefore site lighting will be kept to a minimum. Minimizing the site lighting will also reduce the visibility of artificial light along the shoreline where the plant is located. The majority of the site lighting will be manually activated only when needed for maintenance operations.

6.4 District Administration and Facility Parking

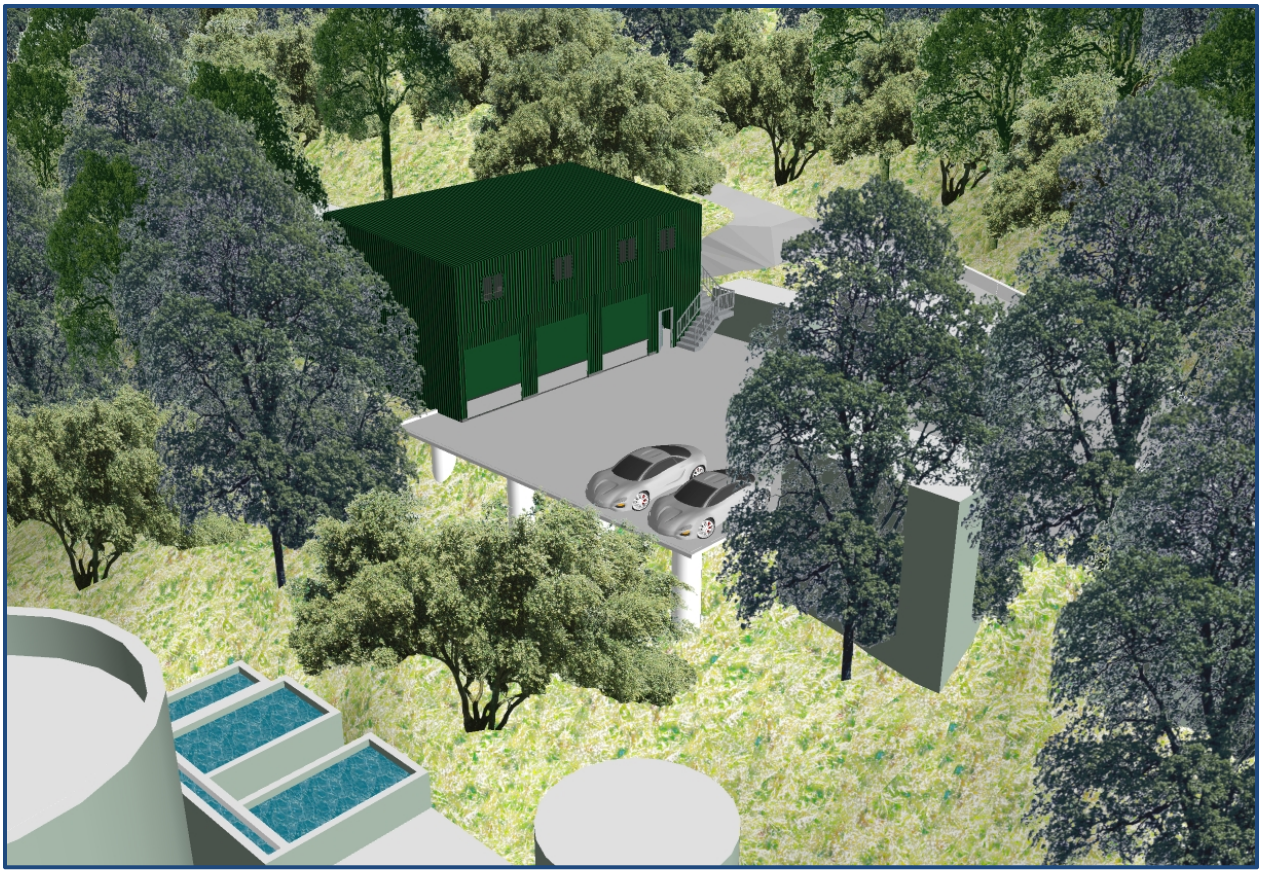
In addition to the treatment plant upgrades, SMCSD is evaluating options to provide approximately 1,500 ft^2 of additional office space at the site. Previously, the District evaluated adding a larger administration building where this existing administration building is located. The District is currently examining the feasibility of adding office space above the existing maintenance/storage building. The current plan would be to add an elevated pre-engineered building while preserving the maintenance and storage space below. In addition, an extended parking area will be installed along the area between the General Manager's Office and the existing maintenance/storage bay. The proposed location for the new office space is shown on Drawing C-3. These improvements will address key District Administration needs and parking difficulties such as:

- ADA compliance
- Space for construction project
- Building seismic compliance
- Space for parking
- Space for formal Board and Committee meetings
- Consolidated space for administration employees
- Facilities for a male/female workforce
- Space for records and storage retention
- Space to conduct required safety and training classes
- Vehicle, equipment and supply storage

To provide a comparison to the above described location, siting of new office space within the process areas of the plant was assessed as part of this Siting TM. The recommended site plan for the process upgrades at the plant provides for a new conventional primary clarifier, and a headworks/solids handling area that use most of the usable footprint within the existing process area of the plant. The recommended site plan includes a realigned access road that extends into the National Park area above the existing access road. Taken together, the recommended site plan has insufficient area below the proposed realigned access road to accommodate an additional 1,500 ft^2 facility. Such a facility could be accommodated above the proposed realigned access road however, this is would increase the amount of land that would have to be leased from the National Park Service.

Therefore, it is recommended that SMCSD pursue siting of the new office space above the existing maintenance/storage building. A new parking area for staff and visitors should also be provided. An illustration of the new administration building and parking area is shown in Figure 6.

Figure 6: Proposed Office and Parking Space



6.5 Cost

The estimated construction cost for site work and yard piping improvements are $0.95 million and $0.50 million, respectively. The estimated construction cost for the administration building and parking improvements is $1.2M. The construction costs for other siting components are covered under their respective process TMs.

Drawings

Drawing C-1

Drawing C-3

Drawing TM2-1

Drawing TM2-2

Drawing TM2-3

Drawing M-10

Drawing M-11

Drawing M-12