City of San José

San José/Santa Clara Water Pollution
Control Plant Master Plan

TASK NO. 5
PROJECT MEMORANDUM NO. 6
TECHNICAL IMPACTS ON LAND USE PLANNING

FINAL DRAFT
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CITY OF SAN JOSÉ

SAN JOSÉ/SANTA CLARA WATER POLLUTION CONTROL PLANT MASTER PLAN

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TECHNICAL IMPACTS ON LAND USE PLANNING

1.0 INTRODUCTION

The purpose of this project memorandum (PM) is to provide a summary of the specific technical evaluations performed as part of the 30-year Plant Master Plan (PMP) effort which could impact the surrounding land use planning considerations and describe those potential impacts. The PMP includes a number of project memoranda specific to the Water Pollution Control Plant (WPCP) which were categorized as follows: PM 5.1 Liquids Treatment Alternatives, PM 5.2 Biosolids Treatment Alternatives, PM 5.3 Energy Evaluation, PM 5.4 Assessment of Impacts and Improvements to Address Sea Level Rise, and PM 5.5 Odor Treatment Alternatives.

The original purpose for much of the surrounding land uses, including the bufferlands along Highway 237 and Pond A18, was to keep people away from odors and chemicals that are part of the wastewater treatment process. The recommendations included in the project memoranda referenced above, capture and treat odors and eliminate the use of hazardous chemicals. These recommendations allow for the consideration of new land uses that would bring people closer to the WPCP operations area.

As more fully described in PM 1.1 Master Planning Goals, Objectives, Guiding Principles and Alternative Evaluation Process, the technical alternatives were developed in parallel with the land use alternatives. The integration of the technical with the land use alternatives involved continuous coordination between the two parallel planning efforts (see Figure 1).

The key planning consideration for the technical evaluation included a determination of the footprint size that had to be reserved for future treatment processes (note the early identification of the reserved “space footprint” in Figure 1). In addition, WPCP aesthetic features (noise, visual, and odors) were identified along with the recycle and “waste” byproduct streams that could potentially be incorporated into the planned adjacent land uses. These byproduct streams include recycled water and dried biosolids, electricity produced from digester gas, and excess waste heat streams.

2.0 TREATMENT PLANT TECHNICAL CONSIDERATIONS

2.1 Layout

Figure 2 shows where the WPCP itself is situated on the nearly 2,600 acre site. The main Operational Area covers approximately 180 acres. The biosolids lagoons and drying beds (Residual Sludge Management [RSM] area), which covers another 785 acres, are located northeast and east from the Operational Area, respectively.

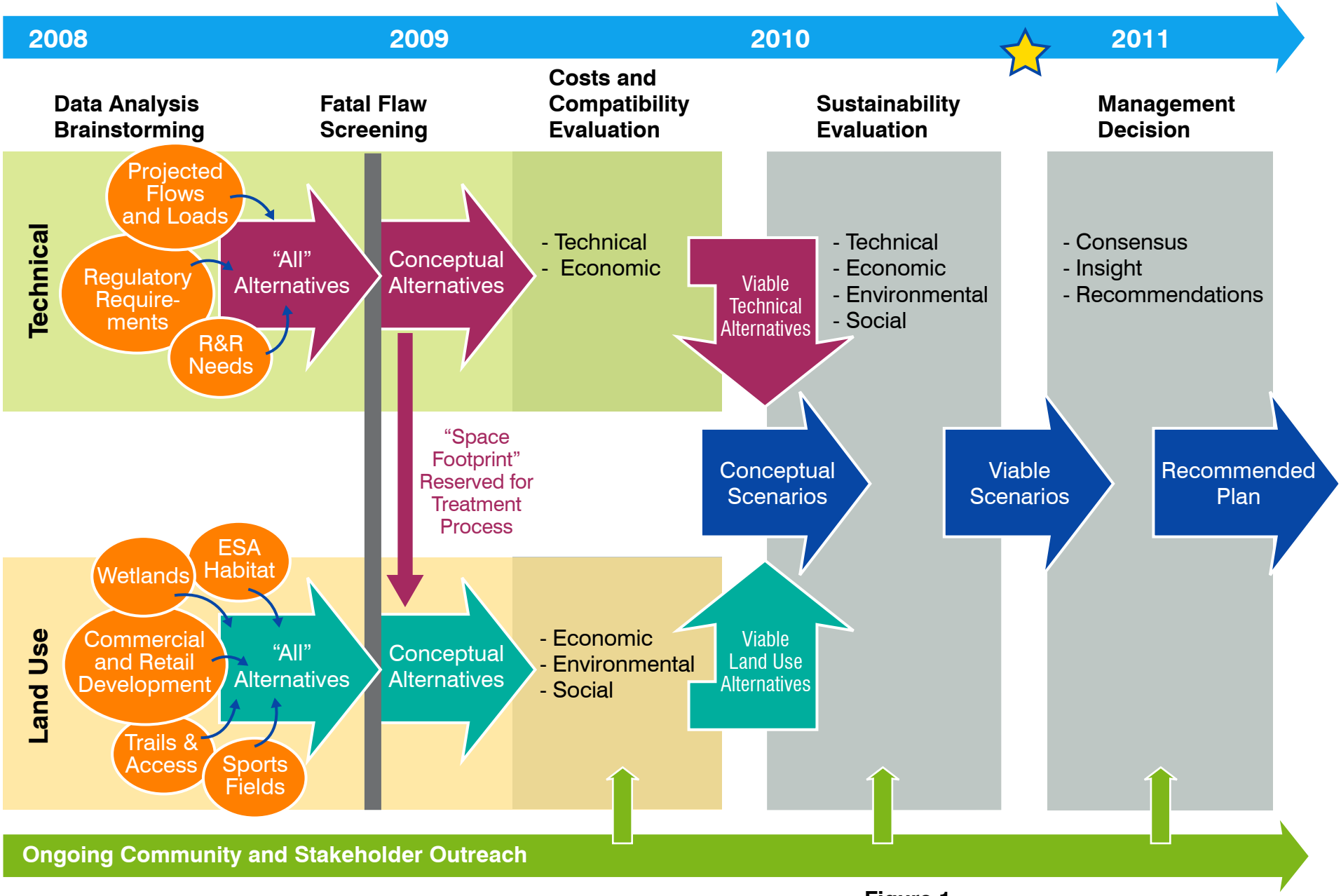

Figure 1
PROCESS FOR DEVELOPING ALTERNATIVES/RECOMMENDED PLAN
SAN JOSÉ/SANTA CLARA WPCP MASTER PLAN
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Figure 2
WPCP LAND AREAS
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A detailed description of the liquid and biosolids processes can be found in PM 2.1 Description of Existing Facilities, while a detailed description of the various facilities which provide support functions for the WPCP process components can found in PM 5.11 Future Support Facilities.

2.2 Technical Impacts Summary

As noted earlier, the technical alternatives evaluated as part of the PMP were categorized by areas of interest. Therefore, the following discussion of technical impacts is presented by major category.

2.2.1 PM 5.1 – Liquids

For the liquids treatment alternatives, the following impacts were identified:

- The need to construct a second primary effluent equalization basin south of the existing basin would require additional operational area.
- The secondary treatment process area may need to be expanded to meet potential future regulatory requirements for reduced effluent nitrogen loadings into San Francisco Bay. This would necessitate construction of additional process tankage and support facilities to the east of Zanker Road (estimated area of 40 acres). However, since these future requirements are unknown, only the area requirements for these potential process improvements are included in the PMP (specific projects are not identified in the 30-year projections).
- Several large raw sewage and recycled water pipelines are located in the Zanker Road corridor that would have to be accommodated for a part of any future land development in the area between the WPCP and Route 237.
- The City of San José and the Santa Clara Valley Water District are jointly working on upgrades to the South Bay Water Recycling system. One major element includes the construction of an Advanced Water Treatment Facility at the southeast boundary of the WPCP, which will require additional acreage to construct.
- Based on projected effluent quality produced at the WPCP, future considerations for using the effluent to benefit surrounding creeks or supplement water features could be incorporated into future land use plans.

2.2.2 PM 5.2 – Biosolids

For the biosolids treatment alternatives, the following impacts were identified:

- As noted earlier, at 785 acres the biosolids area represents the largest process footprint at the WPCP. Following anaerobic digestion on the main process operational

site, the biosolids are pumped to this area into storage lagoons and then to solar drying beds before eventual reuse at the adjacent landfill. The active storage and drying area encompasses 530 acres of the total biosolids site (240 acres of lagoons and 290 acres of drying beds). During certain months of the year, this operation can produce off-site odor issues. For that reason, the recommended plan is to transition to a covered storage lagoon system and mechanical dewatering facilities. This will reduce the biosolids operating footprint to approximately 220 acres.

- This reduced footprint assumes use of the biosolids acreage which is currently inactive and may need some level of remediation.

2.2.3 PM 5.3 – Energy

For the energy management alternatives, the following impacts were identified:

- As part of the overall energy management plan, a power and heat balance was developed based on the proposed process improvements at the WPCP. Based on the projections, it was determined that there would be a potential power shortfall of approximately six megawatts (MW) and a potential heat surplus of 17 million BTUs per hour at the WPCP in 2040.

- One of the alternatives investigated to help make-up the power shortfall was the use of solar PV facilities, which is consistent with the City's green energy goals. Based upon the need for approximately five acres of space per MW of power generated, the adjacent land use plan would need to set aside approximately 30 acres of land to provide generation capabilities for the six MW shortfall identified.

2.2.4 PM 5.4 – Sea Level Rise

For the projected sea level rise evaluation, the following impacts were identified:

- Based on the analysis completed for the projected sea level rise in the year 2050 and 2100 (estimated at somewhere between 7 and 59 inches), the majority of the existing WPCP site would be inundated. Potential considerations for future land use planning would include the construction of improved levees accompanied by terraced habitat. See PM 5.10 for details.

2.2.5 PM 5.5 – Odors

For the odor treatment alternatives, the following impacts were identified:

- Mitigation of odors at the WPCP was initiated for two reasons; (1) to control on-site odors to improve conditions for WPCP staff,and (2) to control off-site odors that would result in fewer community complaints. As a result, it was recommended that all potential off-site odor sources be addressed. This would involve a combination of chemical addition and/or containment, ventilation,and treatment for selected facilities

throughout the site. For the current biosolids storage/drying operation, it will require the transition to a covered storage lagoon and from a solar to a mechanical drying operation (that would also be covered). A smaller buffer zone would also be needed to the south of the WPCP's operational areas, downwind of the prevailing wind direction.

2.2.6 PM 5.11 – Support Facilities

For the support facilities alternatives, the following impacts were identified:

- An area south of the existing plant area, estimated at approximately fifteen acres, was identified as a site for an improved access road, new warehouse facilities, and future treatment pilot facilities
- Projected changes in traffic patterns were identified resulting from modifications to the main WPCP access and increased truck traffic from the proposed biosolids operation. These traffic changes would need to be addressed in any future land use planning considerations.

3.0 SUMMARY

Figure 3 presents a summary of the operational footprint that must be preserved for the projected 30-year WPCP process area. This area is estimated at approximately 550 acres, a reduction of 415 acres from the current operation.

Figure 3
FUTURE WPCP LAND AREAS
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