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I INTRODUCTION

BACKGROUND

On November 24, 2003, Solano County released the Draft Environmental Impact Report for the Potrero Hills Landfill Expansion Project (Draft EIR). The Draft EIR evaluated the environmental impacts associated with the proposed expansion of the Potrero Hills Landfill. The County of Solano Planning Commission held a public meeting on January 29, 2004 to receive comments on the Draft EIR. The Draft EIR public review period ended on January 29, 2004. Following the close of the public review period, the Final EIR was prepared and released on March 7, 2005. The Board of Supervisors held a public hearing on September 13, 2005, at which time the Board certified the Final EIR.

Following certification of the Final EIR, a California Environmental Quality Act (CEQA) challenge was filed in the Solano County Superior Court. On February 26, 2007, the Court issued its decision in the matter Protect the Marsh v. County of Solano, et al., Case No. FCS026839, Solano County Superior Court. The Court found that the Final EIR certified by the County of Solano in September 2005 was deficient with respect to three limited issues: air quality, water supply and alternatives.

For air quality, the Draft EIR found the level of reactive organic gases (ROG) produced by the proposed project to be a significant environmental impact, but one that could be adequately mitigated through certain mitigation measures. The Final EIR corrected a conversion error and reported a significantly higher level of ROGs would be produced by the project. The Court concluded that the Draft EIR under-reported the level of ROG produced by the proposed project. The Court also found that there was a lack of substantial evidence to support the Final EIR’s finding that the corrected ROG levels would be adequately mitigated by the air quality mitigation measures identified in the Draft EIR.

For water supply, the Court stated that the Final EIR included a conclusory statement related to the effect of a new water well proposed in the project on neighboring wells. Specifically, the Final EIR stated that, “the water levels might be lowered about 1 foot in the local area around the well and the long-term pumping of the new well would not affect the other ranch wells in the vicinity”. The Court found that an EIR which concludes that there will be no significant environmental impact from a particular changed environmental condition must indicate the reason(s) for that conclusion with backup for the conclusion in the administrative record.

For alternatives, the Court concluded that just one on-site alternative might be sufficient for most projects. However, in light of the specific protections for the marshland contained in the Suisun Marsh Local Protection Plan, and the fact that the Plan grants limited statutory authorization for a solid waste project only in the absence of a practical, reasonably accessible alternative site, the Court concluded that a range of alternatives for the project must include a meaningful discussion of possible sites outside the marsh area, both within and outside of Solano County.
DRAFT EIR PARTIAL RECIRCULATION

In accordance with Public Resources Code Section 21092.1 and State CEQA Guidelines Section 15088.5, the County of Solano is recirculating portions of the Potrero Hills Landfill Expansion Project Draft Environmental Impact Report (Recirculated Draft EIR) in response to the Court’s February 26, 2007 decision.

CEQA Guidelines section 15088.5 sets forth the legal standards and principles governing the recirculation of Draft EIRs. Subdivision (a) of that provision states that recirculation of an EIR should occur if

...significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification. As used in this section, the term 'information' can include changes in the project or environmental setting as well as additional data or other information. New information added to an EIR is not 'significant' unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project...

The County of Solano is recirculating the document in order to provide the public with a meaningful opportunity to comment on the additional information developed in response to the Court’s decision. The recirculation is “partial” (meaning that only chapters or portions of the prior Draft EIR with new information have been revised and reissued) rather than “full” (meaning that the entire document has been revised and reissued).

Recirculation of an EIR requires notice pursuant to CEQA Guidelines Section 15087, and consultation pursuant to Section 15086 (see State CEQA Guidelines, Section 15088.5, subd.(d)).

RECIRCULATED DRAFT EIR PROCESS

The Recirculated Draft EIR will be subject to review and comment by the public, as well as all responsible agencies and other interested parties, agencies and organizations for a period of 45 days. Comments on the Recirculated Draft EIR should be submitted to:

Ronald Glas, Senior Planner
County of Solano
Department of Resource Management
675 Texas Street
Suite 5500
Fairfield, California 94533
(707) 784-6765

The Recirculated Draft EIR is available for public review at the County’s office identified above between the hours of 8:00 am and 5:00 pm, Monday through Friday.
Subdivision (f)(2) of Section 15088.5 describes the specific procedural and noticing requirements associated with the partial recirculation of the Draft EIR:

When the EIR is revised only in part and the lead agency is recirculating only the revised chapters or portions of the EIR, the lead agency may request that reviewers limit their comments to the revised chapters or portions. The lead agency need only respond to (i) comments received during the initial circulation period that relate to chapters or portions of the document that were not revised and recirculated, and (ii) comments received during the recirculation period that relate to the chapters or portions of the earlier EIR that were revised and recirculated. The lead agency’s request that reviewers limit the scope of their comments shall be included either within the text of the revised EIR or by an attachment to the revised EIR.

Therefore, pursuant to CEQA, commenters are asked to limit their comments to the revised sections of the Draft EIR.

In accordance with Public Resource Code Section 21092.5, the Recirculated Final EIR will be published and made available a minimum of ten days prior to a hearing by the Board of Supervisors to consider its adequacy. After the close of the comment period, the County will consider all comments received on this Recirculated Draft EIR and prepare the Recirculated Final EIR. The Recirculated Final EIR, which will consist of this Recirculated Draft EIR, comments on the Recirculated Draft EIR, responses to comments, and any text changes, will be considered by the Board of Supervisors for certification. Following certification of the Recirculated Final EIR, the Board of Supervisors will consider the proposed project for approval.

**SUMMARY OF REVISIONS TO DRAFT EIR**

The State CEQA Guidelines state that "[w]hen recirculating a revised EIR, either in whole or in part, the lead agency shall, in the revised EIR or by an attachment to the revised EIR, summarize the revisions made to the previously circulated draft EIR" (see CEQA Guidelines, Section 15088.5, subd. (g)). The revisions to the Draft EIR include a detailed analysis of the project’s ROG emissions and the mitigation measures necessary to ensure these emissions are reduced to a less-than-significant level, a discussion of the project’s greenhouse gas impacts, a detailed analysis of the project’s impacts on neighboring water wells, and an analysis of other potential alternatives to the proposed project. These revisions are included in Chapter II of this Recirculated Draft EIR.

In addition, the Recirculated Draft EIR also includes updated information on biological resources made available since the certification of the EIR in September 2005. Specifically, information developed during the Marsh Development Permit process before the Bay Conservation and Development Commission (BCDC) permitting process has been included in this Recirculated Draft EIR. This information includes reports of a biological panel which was assembled to assist BCDC staff with review of the application for a Marsh Development Permit,
together with the applicant's responses to the panel's report. The report and responses are included as Appendix C of this Recirculated Draft EIR.

A summary of the panel's reports and the applicant's responses is provided in Section III of this Recirculated Draft EIR, including a summary of the positions of the various experts who have prepared reports and provided responses to the reports. Disagreements and differences in viewpoints of the experts are also summarized and provided in Section III of this Recirculated Draft EIR.
II  CHANGES TO THE DRAFT EIR

In order to address the Solano County Superior Court’s February 26, 2007 decision in the matter Protect the Marsh v. County of Solano, et al., Case No. FCS026839, changes have been made to the following sections of the Draft EIR:

- Section 4.5 – Utilities and Public Services
- Section 4.9 - Air Quality
- Chapter 5 - Alternatives

For the Utilities and Public Services section, the analysis of the project’s anticipated groundwater impacts has been revised. Therefore, only the portion of the Utilities and Public Services section addressing groundwater effects on neighboring water wells associated with the proposed new water well has been replaced. This includes a more detailed discussion of the existing groundwater conditions in the project area and an analysis of the project’s potential groundwater impacts.

For the Air Quality section, the analysis of the reactive organic gases (ROG) that would be generated with project implementation has been revised. Therefore, the portion of the Air Quality section addressing ROG emission issues has been replaced. In addition, a discussion of the current understanding of greenhouse gas emission conditions and the project’s possible impacts related to greenhouse gases has been incorporated into the Air Quality section.

For the Alternatives chapter, a more detailed discussion of potential alternatives to the proposed project, including discussion of alternative sites located outside of the Suisun marsh and the Secondary Management Area is provided. Therefore, the entire Alternatives chapter of the Draft EIR has been replaced.

The revised portions of the Utilities and Public Services and Air Quality sections, and the entire Alternatives chapter are included in this Chapter. No changes were made to the following chapters and sections of the Draft EIR: Chapter 1, Introduction; Chapter 2, Executive Summary; Chapter 3, Project Description; Chapter 4, Environmental Setting, Environmental Impacts, and Mitigation Measures; Section 4.1, Land Use; Section 4.2, Biological Resources; Section 4.3, Earth Resources; Section 4.4 Hydrology and Water Quality; Section 4.6, Public Safety; Section 4.7, Noise; Section 4.8, Transportation and Circulation; Section 4.10, Visual Resources; Section 4.11, Cultural Resources; Chapter 6, Cumulative and Growth Inducing Impacts; Chapter 7, Report Preparation; and Chapter 8, References. Therefore, these sections have not been reproduced in this Recirculated Draft EIR.
4.5 UTILITIES AND PUBLIC SERVICES

4.5.1 EXISTING SETTING

WATER

The project site is not served by a municipal water supply. Because of the limited groundwater resources in the local area, wells are not a feasible large water supply source. A well with a small production rate has been drilled at the northeast corner of the Public Unloading Area (Draft EIR Exhibit 3-10). A pump and water system at this well supplies water for use in the on site toilets, hand washing facilities, and equipment pressure wash system. The water supplied from this well is considered non-potable because of its poor quality.

The project applicant holds the water rights to the water stored in the relocated stock pond located about 2,000 feet west of the landfill. This pond is available for landfill uses. In 2001, a water pipeline was installed and buried to link an electrical pump located at the stock pond dam with Siltation Control Basin No. 2, which is located at the southwest corner of the landfill. This pump system allows water stored in the relocated stock pond to be pumped to the site for operational uses. Also, during wetter portions of the year, water is available for site uses from the on site siltation control basins.

Other water used on the site for construction activities and site operations is hauled by water tank truck from Suisun and Fairfield. A major source of water is the reclaimed wastewater delivered by tank trailers from the Fairfield-Suisun Wastewater District treatment plant. The project applicant has a dedicated tank at the treatment plant to quickly fill the tank trailers. Water brought in by the trailers is unloaded through a pipe system into storm water ponds that are used to fill the water trucks used on the site. Bottled water is used for drinking water supplies. (Also see the original Draft EIR Section 4.6, Public Safety, for a discussion of sources of water for fire and dust suppression.)

Use of the Griffith-6R Well for Water Supply Purposes

As discussed in the original Draft EIR, a component of the proposed project is to develop and convey a supplemental water supply for use in landfill operations, such as dust suppression on the active landfill face, landfill cell construction, and fire suppression. The Griffith-6R well is intended to provide the supply for this supplemental water source.

Trial Court Decision February 26, 2007

On February 26, 2007 the Honorable Paul L. Beeman issued the Court’s ruling on Protect the Marsh vs. County of Solano, et al., Potrero Hills Landfill, Inc., et al. The court ruled that the Final EIR did not provide sufficient discussion or refer to data that supported the determination that no significant environmental impact would result from expanded use of the Griffith-6R well. The Court’s ruling stated:
“In addition, the FEIR included a conclusory statement that neighboring wells would not be significantly affected by the expanded use of a well on the subject property: ‘the water levels might be lowered about 1 foot in the local area around the well and the long-term pumping of the new well would not affect the other ranch wells in the vicinity.’

“As discussed above, an EIR which concludes that there will be no significant environmental impact from a particular changed environmental condition must contain a statement, with reason(s) for the conclusion, and with backup for this conclusion in the administrative record.” [Decision at p. 4]

**Hydrogeologic Setting**

The Griffith-6R well is screened in the alluvial fan deposits and may extend into the Tehama Formation, which underlies the alluvial fan deposits and is exposed at the surface near the Griffith-6R well. The alluvial fan deposits consist of poorly sorted, moderately to poorly bedded sand, gravel, silt, and clay deposited on gently sloping alluvial fans that make up a veneer of sediments approximately 25 to 100 feet thick overlying the Tehama Formation. The Tehama Formation is composed of alluvial sediments consisting of moderately compacted silt, clay, and silty fine-grained sand enclosing lenses of sandy or silty gravel.

**GROUNDWATER HYDROLOGY**

The alluvial fan deposits and the alluvial sediments of the Tehama Formation were deposited by fluvial (stream) processes. Such processes involve deposition and reworking of sediments as streams meander and adjust to changes in discharge and sediment load. Coarse sediments (e.g., sand and gravel) tend to accumulate within stream channels, while finer sediments (e.g., clay, silt, and fine sand) are suspended and eventually deposited in low-energy environments. Over time, the deposits form a series of alternating layers of finer sediments enclosing lenses of coarser sediments. As a result, sedimentary units formed within alluvial environments tend to be spatially discontinuous over broad areas, and exhibit variable hydraulic characteristics (e.g., grain-size and permeability) laterally and vertically.

Shallow groundwater occurs in two semi-confined sand units in the vicinity of the Griffith-6R well:

- **Upper Sand Unit** – approximately 10 to 15 feet thick extending from approximately 20 to 35 feet below ground surface (ft bgs). It is primarily composed of fine to coarse-grained sand with some silt and gravel; and

- **Lower Sand Unit** – approximately 50 to 55 feet thick extending from approximately 40 to 95 ft bgs. The replacement water supply well, Griffith-6R, is completed in the lower sand unit, which is composed of interlayered units of silty sand, sandy silt, gravelly sand, and silt/clay.
The movement of groundwater in the location of the Griffith-6R well is influenced by the structure of the underlying low-permeability bedrock formations and the slope of the land surface. Groundwater recharge to the aquifer surrounding the Griffith-6R well likely occurs from precipitation and regional subsurface recharge from the Vaca Mountains and the English Hills to the north. Some local shallow groundwater recharge likely occurs in the immediate area of the Griffith-6R well from the northern slopes of Potrero Hills. Water-level elevations measured in the MW-1 and MW-4 monitoring wells at the Tonnesen Pet Cemetery (Exhibit 4.5-1) indicate that groundwater generally flows in a north-northwest direction and discharges toward the Suisun Marsh in the study area (Golder, 2007).

**GROUNDWATER IN THE GRIFFITH-6R WELL VICINITY**

The project site lies within the Suisun-Fairfield Valley Groundwater Basin along the western margin of the Sacramento Valley and is underlain by a thick sequence of low-permeability marine sedimentary rocks. Marine sedimentary units in the Fairfield-Suisun area are classified as non-water-bearing (USGS 1960). Groundwater in the Suisun-Fairfield Basin occurs in upland and lowland areas. The project site lies in the upland area, which is underlain predominantly by claystone and shale bedrock with low permeability, overlain with alluvium and residual soils. Groundwater in the upland areas is influenced by the nature and structure of the bedrock, as well as by the depth and consistency of the alluvium in each valley and swale. Groundwater resources in bedrock units near the site are extremely limited and are characterized by low well yields and poor water quality.

**Aquifer Test for Supplemental Well Griffith-6R**

In May 2007, Golder Associates Inc. conducted a pump test at the Griffith-6R well (located along the northern foothills of the Potrero Hills approximately 0.5 miles northeast of the existing PHLF site; see Exhibit 4.5-1). The purpose of the pump test was to assess potential impacts of pumping activities at the Griffith-6R well on private wells and wetland/slough conditions within 1-mile northwest of the well. The test included groundwater elevation monitoring before the pump test (baseline), during pumping, and after pumping (recovery) at seven observation wells and the Griffith-6R well. The Griffith-6R Hydrogeologic Analyses prepared by Golder Associates Inc. is provided in Appendix A. The use of a pump test is the accepted scientific means to determine if drawdown of a well would have measurable impacts on water levels in the area of the well, and thus affect neighboring users.

This analysis evaluated the effectiveness and feasibility of operating a replacement seasonal water supply well (Griffith-6R) for the PHLF expansion project by conducting a pump test and hydrogeologic evaluation of the area. The seasonal use of the Griffith well would occur between the months of June through November. The investigation included:

1. Drilling and construction of a replacement water supply well (Griffith-6R, which is screened only in the lower sand unit) to replace an existing water supply well (Griffith-6, which was screened in both the upper and lower sand units) and three observation monitoring wells (Griffith-3, -4, and -5);
2. An aquifer test at Griffith-6R comprised of three phases (baseline monitoring, 72-hour constant-rate pumping, and recovery monitoring) spanning a total of approximately ten days to estimate site-specific aquifer characteristics of the lower sand unit targeted for groundwater development;

3. Water-level monitoring at seven nearby wells during each phase of the aquifer test (Solano Landfill Monitoring Well No. G-5, Director’s Guild Well No. DG-1, Tonnesen Pet Cemetery wells MW-1 and MW-4, and Griffith-3, Griffith-4, and Griffith-5);

4. Steady-state and transient analytical groundwater flow simulations to estimate the potential impact to the surrounding area from pumping Griffith-6R; and

5. A water balance assessment to compare the total annual quantity of recharge to the lower sand unit with the total annual yield expected to be developed from Griffith-6R.

The depths, distances from the Griffith-6R well, and the basic characteristics of the seven observation wells are included in Table 4.5-1 below. Exhibit 4.5-1 illustrates the locations of the observation wells and the location of the Griffith-6R well.

<table>
<thead>
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<th>Well</th>
<th>Well Depth</th>
<th>Distance from Griffith-6R</th>
<th>Notes</th>
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<tr>
<td>Griffith-3</td>
<td>90 feet</td>
<td>70 feet west</td>
<td>New observation well screened in lower sand unit from 40-90 ft. below ground surface.</td>
</tr>
<tr>
<td>Griffith-4</td>
<td>31 feet</td>
<td>96 feet west</td>
<td>New observation well screened in upper sand unit from 21-31 ft. below ground surface.</td>
</tr>
<tr>
<td>Griffith-5</td>
<td>80 feet</td>
<td>718 feet northwest</td>
<td>New observation well screened in lower sand unit from 46-80 ft. below ground surface.</td>
</tr>
<tr>
<td>Tonnesen MW-1</td>
<td>37 feet</td>
<td>673 feet west</td>
<td>Existing observation well believed to be in upper sand unit.</td>
</tr>
<tr>
<td>Tonnesen MW-4</td>
<td>39 feet</td>
<td>600 feet northwest</td>
<td>Existing monitoring well believed to be in upper sand unit.</td>
</tr>
<tr>
<td>Director’s Guild</td>
<td>Less than 10 feet</td>
<td>3,376 feet northwest</td>
<td>Existing wetland mitigation observation well.</td>
</tr>
<tr>
<td>Well No. 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solano Landfill</td>
<td>20 feet</td>
<td>4,370 feet northwest</td>
<td>Existing monitoring well screened across silty fine to medium sand 10-15 ft. below ground surface.</td>
</tr>
<tr>
<td>Well No. G-5</td>
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Source: Golder Associates Inc., 2007
Summary of Hydrogeologic Testing and Analyses Performed

The constant-rate aquifer pump test comprised three phases spanning a total of approximately ten days: baseline water-level monitoring, pumping, and recovery water-level monitoring. Baseline monitoring began a week prior to the pumping to assess ambient hydrogeologic conditions and pre-existing water-level trends. Pumping began at 2:10 p.m. on May 17, 2007, and continued until 2:10 p.m. on May 20, 2007. Recovery monitoring began at the termination of the pumping period and continued until 2:15 p.m. on May 23, 2007.

Water levels in each of the eight wells were recorded using pressure transducers. Manual water level measurements were also collected regularly to supplement and validate the high-frequency transducer data. Available information for each of the wells in the observation network is listed in Table 4.5-1. Available boring logs and construction diagrams are included in Appendix A.

Meteorological and barometric pressure data was collected concurrently with the aquifer testing to determine if any meteorological and/or barometric pressure trends affected the test results.

During the pumping phase of the test, instantaneous flow measurements were consistent and indicated that the discharge rate was approximately 20 gallons per minute (gpm) throughout the test. Small flow adjustments were necessary during early portions of the pumping period to maintain a constant pumping rate. A total of approximately 86,400 gallons of water was discharged during the test.

Discharge water traveled up through the pump column to the surface and through a 4-inch diameter discharge pipe. Flow through the discharge pipe was controlled by a gate valve. To avoid re-infiltration to the subsurface during pumping, the discharge water was directed to a 6,900-gallon holding tank on-site. Stored water was regularly pumped through a pipeline from the on-site holding tank to an area located approximately 0.7-mi southwest of the Griffith-6R well using a dedicated pump and generator.

Conclusions from Aquifer Testing

Baseline monitoring for all eight wells indicate a generally stable water level. Hydraulic response to pumping the Griffith-6R well at a constant rate of 20 gpm for a period of three days was observed only in Griffith-3, Griffith-4, and Griffith-5. These three wells are close to the Griffith 6R well as shown on Exhibit 4.5-1 and hydraulic response (drawdown) was expected in these three wells. There was no measurable hydraulic response in the more distant Tonnesen MW-1 and MW-4 wells, the Director’s Guild Well (DG-1), or the Solano Landfill well (G-5). Based on the observed drawdown response and aquifer properties (transmissivity and storativity), the well efficiency of Griffith-6R is estimated to be approximately 60 percent. This indicates that, due to well losses during pumping, the drawdown in the aquifer immediately outside Griffith-6R would be approximately 60 percent of that observed inside the well. However, the drawdown effect at the Tonnesen monitoring...
Site Map

Solano Garbage Co. Landfill Site

LEGEND

Wet Locations

Map Projection: California State Plane, Zone 2, NAD 83, Feet

This line was originally produced in color. Reproduction in black and white may result in some loss of information.

Site Map Exhibit 4.5-1

Source: Golder Associates 2007
wells (MW-1 and MW-4) is between one and two feet as discussed below, which would not adversely affect neighboring well users.

The hydraulic response at Griffith-3 and Griffith-4 indicates a trend generally consistent with the Griffith-6R well: a logarithmic decline at the onset of pumping, then tapering to a steady state decline for the remainder of the pumping (see Figures 4 through 11 in Appendix A for graphic depictions of the aquifer test results). The hydraulic response at Griffith-5 (located approximately 718 feet northwest of well Griffith-6R) was delayed by 37 hours; after that, there was a slowly increasing rate of water level decline resulting in a total drawdown of 0.2 feet. Water levels at Griffith-3, -4, -5, and -6R recovered to near pre-test levels in the three day recovery period of the test, and recovery trends indicate that the water levels continued to rise after monitoring stopped. Griffith-4 is located within the upper sand unit and residual drawdown in Griffith-4 indicates that the upper sand unit is hydraulically connected to the lower sand unit (Griffith-3, -5 and -6R); the well recovered slowly from the discharge seepage to the lower sand unit during pumping. The results in the Tonnesen wells MW-1 and MW-4 show no measurable hydraulic response from the pump test as indicated in Appendix A.

The results of the aquifer test indicate that the lower sand unit exhibits characteristics of a leaky, semi-confined aquifer. Leakage to the lower sand unit occurred from the upper sand unit, based on the observed water level response at Griffith-4, but it is also possible that some leakage occurs from formations below the lower sand unit. Overall, leakage was minor based on the observed pattern in response of the pumping well compared to the non-leaky reference curve (Theis type-curve). No negative (flow limiting) boundary conditions were apparent in the monitoring data collected during the aquifer test. It is possible that the geologic formations comprising the northern limb of the Potrero Hills anticline could act as a negative boundary condition during long-term pumping at Griffith-6R; however, the use of Griffith 6R is to be seasonal with aquifer recharge occurring during the non-pumping interval. The possible structure of the Potrero Hills anticline should not affect the conclusions regarding the proposed seasonal use or operation of the Griffith-6R well.

The results of the aquifer pump test indicate that the Griffith-6R well is capable of sustaining a continuous pumping rate of 15 gpm for the landfill’s water supply needs from June through November, without affecting neighboring well users as shown in the test.

The results of the transient analytical groundwater flow simulation indicate that the radius of influence of the Griffith-6R well, while pumping 15 gpm for a six-month duration, would be approximately 2,700 feet. Drawdown in the lower sand unit (the Griffith-6R production zone), would range from approximately one to two feet in the eastern portion of the Tonnesen parcel where MW-1 and MW-4 are located. The transient results also show that drawdown in the lower sand unit near the Tonnesen residence would range between 0.3 and 0.1 feet, and drawdown at the Guidotti property would be less than 0.05 feet (Exhibit 4.5-2). In the vicinity of observation wells DG-1 and G-5 (Director’s Guild site and Solano Landfill site), predicted drawdown is less than 0.05 feet. This drawdown would recover as discussed below.
Griffith Transient Model Solution

Exhibit 4.5-2

Source: Golder Associates 2007
After compensating for evapotranspiration and surface water runoff, water balance calculations indicate that approximately 0.63 inches of recharge to the subsurface occurs on an average annual basis from precipitation. Over the area of the Griffith-6R well radius of influence, average annual recharge to the lower sand unit from precipitation is approximately 21.4 acre-ft per year. Regional subsurface recharge that occurs to the Griffith Ranch area resulting from groundwater flow from the north was estimated using Darcy’s equation. Over the area of the radius of influence and the thickness of the lower sand unit, this was estimated to be approximately 26.1 acre-ft per year. The total annual groundwater consumption from the Griffith-6R well (12.1 acre-ft) is approximately 25 percent of the average annual recharge to the lower sand unit estimated to occur from precipitation and subsurface flow (47.5 acre ft).

4.5.2 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Pursuant to CEQA Guidelines Appendix G, a groundwater supply impact is considered significant if implementation of the proposed project under consideration would do any of the following:

- Violate any water quality standards or waste discharge requirements;
- Create a water supply demand in excess of existing entitlements and resources;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate or pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Otherwise substantially degrade water quality.

**Increased Local Groundwater Usage.** Groundwater consumption from the Griffith-6R well for use as a supplemental water supply in landfill operations has the potential to reduce groundwater supplies for private wells and wetland/slough conditions. However, because this drawdown is predicted to be negligible, this impact would be considered less than significant.

The proposed landfill expansion would include use of groundwater from the Griffith-6R well for use as supplemental water supply for landfill operations.

In May 2007, Golder Associates Inc. conducted a pump test at the Griffith-6R well to assess potential impacts of pumping activities at the Griffith-6R well on private wells and wetland/slough conditions within 1-mile northwest of the well.

Baseline monitoring for the Griffith-6R well and seven additional wells indicate a generally stable water level. Hydraulic response to pumping the Griffith-6R well at a constant rate of 20 gpm for a period of three days was observed only in Griffith-3, Griffith-4, and Griffith-5 wells.
There was no measurable hydraulic response in the more distant Tonnesen MW-1 and MW-4 wells, the Director’s Guild Well (DG-1), or the Solano Landfill well (G-5). The hydraulic response at the Griffith-3 and Griffith-4 wells indicates a trend generally consistent with the Griffith-6R well: a logarithmic decline at the onset of pumping, then tapering to a steady state decline for the remainder of the pumping (see Figures 4 through 11 in Appendix A for graphic depictions of the aquifer test results). The hydraulic response at well Griffith-5 (located approximately 718 feet northwest of well Griffith-6R) was delayed by 37 hours; after that, there was a slowly increasing rate of water level decline to a total drawdown of 0.2 feet. Water levels at the Griffith-3, -4, -5, and -6R wells recovered to near pre-test levels in the three day recovery period of the test and recovery trends indicate that the water levels continued to rise after monitoring stopped. Well Griffith-4 is located within the upper sand unit and residual drawdown in Griffith-4 indicates that the upper sand unit is hydraulically connected to the lower sand unit (Griffith-3, -5 and -6R wells); the well recovered slowly from the discharge to the lower sand unit during pumping. The results in the Tonnesen wells MW-1 and MW-4 show no measurable hydraulic response from the pump test as indicated in the Appendix A.

As discussed above, the transient results from pumping activities at the Griffith-6R well show that drawdown in the lower sand unit near the Tonnesen residence would range between 0.3 and 0.1 feet, and drawdown at the Guidotti property would be less than 0.05 feet. In the vicinity of observation wells DG-1 and G-5 (Director’s Guild and Solano Landfill sites), predicted drawdown is less than 0.05 feet (Exhibit 4.5-2). These results indicate that nearby groundwater users would not be adversely affected by the proposed well operation. Because wetland/slough areas are approximately one mile to the northwest and beyond the predicted radius of influence (2,700 feet), no adverse impacts to the wetlands from proposed pumping of the Griffith-6R well are expected.

Additionally, the test results and the water balance calculations indicate that total annual groundwater consumption from the Griffith-6R well would be approximately 25 percent of the average annual recharge to the lower sand unit. Griffith-3, Griffith -5, and Griffith -6R wells are located within the lower sand unit, while well Griffith-4 is located within the upper sand unit, and the observed residual drawdown in Griffith-4 indicates that the upper sand unit is hydraulically connected to the lower sand unit and it recovers slowly from the discharge to the lower unit during pumping. These data, and available information on groundwater use in the area, indicate that the lower sand unit would be recharged on an annual basis and that the proposed seasonal pumping of the Griffith-6R well would not significantly affect the local water balance.

**Mitigation Measure 4.5-1 Increased Local Groundwater Usage**

No mitigation measures are necessary.

**Level of Significance After Mitigation**

The project’s effects on groundwater would be considered less than significant.
4.9 **AIR QUALITY**

4.9.1 **ENVIRONMENTAL SETTING**

This section of the EIR has been updated in response to the trial Court’s decision of February 26, 2007, and to supplement the discussion of air quality impacts with more recent information pertaining to climate change. This analysis also corrects some air quality modeling calculation discrepancies discovered in the previous EIR, as discussed below. The Trial Court’s decision stated: “. . . the draft EIR (“DEIR”) under-reported the level of ROGs (Reactive Organic Gases) to be produced by the project, and found this to be a significant environmental impact, but one that could be adequately mitigated through certain mitigation measures. The Final EIR (“FEIR”) corrected a conversion (computation) error and reported a significantly higher level of ROGs would be produced by the project. Again, it found this to be a significant environmental impact with the same mitigation measures proposed. However, the FEIR provided no additional analysis specific to the higher numbers to explain how the mitigation measures would adequately address this significantly higher level of ROGs, nor is any provided in the administrative record. [See 5 AR 001143, identifying the conversion error, section 1-2 of the letter response, and 5 AR 001146, admitting the error, and correcting the tables, but failing to go on to call for any other changes in the FEIR, nor to explain why the mitigation measures proposed for the significantly lower ROG levels would adequately address the corrected and significantly higher ROG levels].”

**METEOROLOGY AND CLIMATE**

The southern portion of Solano County, including the project site, is part of the San Francisco Bay Area Air Basin (SFBAAB). Climatic conditions are strongly influenced by local topography and proximity to the Pacific Ocean and nearby bays. The Carquinez Strait is a major gap in the Coast Ranges that channels surface air flows between the SFBAAB and the Central Valley.

The Fairfield area’s climate, as with all California coastal environs, is dominated by the strength and position of the semi-permanent high-pressure center over the Pacific Ocean near Hawaii. This center creates warm summers, mild winters, and infrequent rainfall. It drives the daytime sea breeze and maintains comfortable humidity and ample sunshine. These same atmospheric processes, however, combine periodically to restrict the ability of the atmosphere to disperse air pollution, particularly in heavily developed areas where air pollution reaches levels in excess of established clean air standards.

The nearest official precipitation station is the Fairfield Fire Station (Station No. 4-2934), about 4 miles northeast of the site. Temperatures in Fairfield average 60°F annually, ranging from about 40°F on winter mornings to the mid-80s on summer afternoons. Daily and seasonal oscillations of temperature are small because of the moderating marine influence. The extreme temperatures recorded at the station are 112°F and 18°F. Temperature at the site is similar to the Fairfield-Suisun City area.
The station records report a normal annual rainfall of 21 inches. The estimated 1,000-year, 24-hour precipitation is 7.64 inches; the maximum recorded 24-hour rainfall is 4.35 inches. Rainfall is confined primarily to the rainy season, from early November to mid-April. Much of the area’s rainfall derives from the fringes of mid-latitude storms, however, and a shift in the annual storm track of a few hundred miles can mean the difference between a very wet year and near-drought conditions.

Evaporation data, interpolated from surrounding climatological stations, range between 60 and 85 inches annually.

Winds in the project area are markedly bimodal. During the day, especially in summer, winds are from the southwest through west at 10-15 mph as air is funneled through the Carquinez Strait and accelerates across the project area in a Venturi-like effect. Winds increase during the daytime and reach peak speeds in the early evening hours. At night, especially in winter, the land becomes cooler than the water, and an offshore flow of 24 mph develops from the Central Valley toward the ocean. After sunrise and after sunset, there is usually a period of light and disorganized flow as one flow regime dissipates and the replacing regime has not yet become fully established. The net effect of the prevailing wind distribution is rapid ventilation in the daytime with clean marine air and corresponding good air quality. The air stagnation at night during winter creates a strong potential for elevated air pollution levels. However, air draining from the Central Valley toward San Francisco is relatively unpolluted; therefore, nocturnal air quality is usually good in the project area.

The nearest reporting station with wind data is at Travis AFB, approximately 2 miles northeast of the site. Wind data indicate that prevailing winds from February through November are from the southwest and west-southwest, at a mean wind speed of 14 miles per hour (mph), and the December through January prevailing winds are from the north at a mean wind speed of 11.3 mph. Due to topographic differences between the landfill and the reporting station, localized wind conditions may vary at the site.

In addition to the winds that govern the horizontal rate and trajectory of any air pollutants, the Bay Area experiences two characteristic temperature inversions that control the vertical depth through which pollutants can be mixed. The daytime onshore flow of marine air is capped by a massive dome of warm air that acts as a giant lid over the region. As clean marine air moves inland, pollutants are continually added from below without any dilution from above. As this layer slows down in inland valleys of the air basin and undergoes photochemical transformations under abundant sunlight, unhealthful levels of smog (mainly ozone) develop. A second inversion forms at night as cool air pools in low elevations while the air aloft remains warm. Shallow radiation inversions are formed (especially in winter) that trap pollutants near intensive traffic sources, such as freeways and shopping centers, and form localized areas in violation of clean air standards. These areas are called “hot spots.”

Although inversions are found during all seasons of the year, the summertime regional capping inversion and the localized winter radiation inversions are, by far, the most dominant. The seasonal split in inversion intensity thus contributes significantly to the difference in air
quality and climate occurring in the Bay Area during summer compared to winter. Because Fairfield is located in an area where turbulence associated with moderate summer winds dilutes air pollution levels, and where the winter offshore trajectory is from lightly developed agricultural areas, baseline air quality at the project site rarely exceeds clean air standards either during summer or winter.

**LANDFILL GAS (FUGITIVE EMISSIONS)**

Landfill gas generation is a result of the decomposition of landfill waste. Initially, carbon dioxide ($\text{CO}_2$) is the primary gas produced, the result of waste decomposing under aerobic (i.e., with oxygen) conditions. As oxygen is depleted, anaerobic decomposition (i.e., without oxygen) begins to occur, resulting primarily in methane ($\text{CH}_4$) and $\text{CO}_2$ emissions, and other trace gases, including nitrogen, oxygen, and non-methane organic compounds. Emissions of non-methane organic compounds (NMOC) often contain volatile organic compounds, as well as various organic hazardous pollutants, greenhouse gases, and compounds associated with stratospheric ozone depletion. Landfill gas generation rates, as well as the percentage of each constituent of gas generated, can vary greatly from landfill to landfill, and over time and location within the landfill. Modern landfill regulatory construction requirements (Federal Subtitle D requirements and California Title 27 regulations) include a bottom liner (containment) system consisting of highly impermeable clayey soils and synthetic liner material, as well as a system of daily, intermediate and final cover over the landfilled wastes, to control the potential for fugitive emissions. In short, the design and construction requirements for solid waste landfills create a bottom-to-top containment system to prevent the escape of landfill gas from the waste mass once produced. The gas is collected within the landfill and conveyed to either a destructive facility (i.e., flare) or the gas can be used to fuel landfill gas-to-energy facilities. Landfill gas emissions from the flare facility are discussed below.

**LANDFILL GAS (EMISSIONS FROM CONTROL DEVICES)**

The generation of landfill gas results in secondary emissions associated with burning the gas in an on-site flare, as currently occurs. The flare thermally destructs the landfill gas by subjecting it to temperatures in the range of 1400 degrees Fahrenheit. The combustion emissions associated with operation of the flare include nitrogen oxides ($\text{NO}_x$), carbon dioxide ($\text{CO}_2$), carbon monoxide ($\text{CO}$), combustion particulate matter ($\text{PM}_{10}$) and unburned NMOCs. Emissions of sulfur dioxide may result from the burning of sulfur compounds present in the gas, such as hydrogen sulfide, and mercaptans. Additional emissions of concern, including toxic air contaminants, may also occur associated with the combustion of the trace components found within the landfill gas. Toxic air contaminants are discussed in more detail in Section 4.9.1 of the original EIR.

**LANDFILL ACTIVITIES**

Landfill activities are a source of fugitive dust and mobile source emissions that can have a substantial impact on local air quality. Fugitive dust generated during landfill operations is primarily associated with excavation and grading. Landfill activities are a source of fugitive
activities, waste tipping and compaction activities, vehicle travel on unpaved roads, and wind erosion of exposed graded surfaces and soil storage piles. Also, the construction of facilities, including construction of waste cells, stormwater detention basins, siltation basins, and other landfill facilities generate emissions from employee and truck haul trips to and from the landfill, exhaust emissions from grading equipment, and fugitive dust emissions.

**GREENHOUSE GAS EMISSIONS**

**Overview**

With the enactment of the California Global Warming Solutions Act of 2006 (AB 32), California has set ambitious goals to reduce greenhouse gas (GHG) emissions to 2000 levels by 2010 and to 1990 levels by 2020. It is the first law to comprehensively limit GHG emissions at the state level and was signed into law by Governor Schwarzenegger on September 27, 2006. AB 32 was enacted to support Executive Order S-3-05, which called for the creation of the interagency California Climate Action Team (CAT). Among other things, AB 32 establishes annual mandatory reporting of GHG emissions for significant sources and sets emission limits to cut the state’s GHG emissions to 1990 levels by 2020. Both the legislation and the CAT currently estimate that the solid waste industry, including landfills, contributes to the total net GHG emissions in California and should be considered in the overall effort to effect GHG reductions.

In light of the passage of AB 32, it is acknowledged that the State of California has elevated the importance of discussing climate change and GHG emissions within the scope of land use and planning decision-making. The Attorney General’s office has participated in several land use proceedings urging consideration of GHG emissions within the context of environmental review, even absent the development of regulations as directed by AB 32. It is appropriate to evaluate the GHG emissions and climate change impact as part of the California Environmental Quality (CEQA) process for any new proposed projects in the state.

However, since the AB 32 programs are still in their infancy and there has been no clear direction from the regulatory agencies and/or the courts on the degree to which climate change must be considered in CEQA decisions, there is no regulatory or legal precedent to guide the decision-making process with regard to climate change and GHG. The absence of specific regulation or guidance is most prominent in the evaluation of what constitutes a significant impact with respect to climate change and GHG emissions. At this time, there is no clear threshold of significance for GHG emissions related to the environmental review process under CEQA.

The issue of threshold of significance for climate change, both on a project-specific and cumulative basis, is further complicated by the fact that the inventorying methods for certain sources of GHG emissions and reductions are still being developed. This is especially true for landfills where there is no accurate way to measure landfill GHG emissions related to landfill gas (LFG), which represents the single largest source of potential GHG emissions from a landfill project.
Current methods used for calculating methane and other pollutant emissions from landfills have been the subject of considerable scrutiny. The major area of interest and concern is that the estimates make assumptions, which do not take into account all relevant factors that can have an influence on actual emissions. In particular, factors for methane oxidation in cover soils, collection efficiencies for LFG systems, use of United States Environmental Protection Agency (USEPA) and other models for LFG generation, and carbon sequestration in landfills are often not accurately covered in the emission inventories and are often debated concepts.

Currently, the solid waste industry is researching various methodologies and participating in experiments to attempt a more accurate means of determination, or measurement of LFG emissions (see Appendix B, Attachment A). Due to the high spatial variability of LFG emissions\(^1\), none of the currently understood methods has proven to be practical, and further studies are pending. In response to the discussion of landfill GHG emissions estimates, the California Energy Commission (CEC) is conducting a study on landfill methane emissions and capture efficiencies to improve overall estimation of landfill GHG emissions and reductions. The California Air Resources Board (CARB) is currently updating the statewide GHG inventory, including the 1990 baseline and current years.

**Landfill GHG Emissions**

It is understood that landfills typically emit some carbon dioxide and methane from the creation of LFG. When municipal solid wastes are buried in a landfill, a complex series of biochemical reactions occur in which anaerobic microorganisms decompose a portion of the organic fraction of the wastes to carbon dioxide and methane, while the remainder does not appreciably degrade and is considered to be sequestered or stored. The methane and carbon dioxide produced may be collected and flared or converted to energy, which oxidizes the methane to carbon dioxide emitted in the flare exhaust to the atmosphere (see Appendix B, Attachment B). The methane can also be oxidized to carbon dioxide by methanotrophic bacteria in the landfill cover soil. Therefore, the ultimate fate of carbon placed in the landfill is sequestering or in emissions as methane or carbon dioxide, as shown in Exhibit 4.9-1, which represents a schematic diagram of the carbon flow in landfills.

Management and treatment of waste ultimately leads to management of the method by which the carbon will be released back into the environment: similarly changing the climate impacts on the way waste will need to be stored, treated, and disposed.

The updated Draft California Greenhouse Gas Inventory developed by the California Air Resources Board (CARB, August 2007) indicates that the statewide emissions of carbon dioxide equivalents (CO2E) were 496.95 million metric tons in 2004, the last year for which an inventory has been completed. Solid waste disposal (i.e., landfilling) accounted for 6.88 million metric tons of CO2E in 2004 or about 1.4% of the total. This is a reduction from earlier

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\(^1\) Spatial variations can be attributed to differential landfill settlement, high diversity of landfill contents contributing to landfill emissions, diversity in volunteer vegetation species, meteorological conditions, erosion, surface ponding, and rooting of wild animals (Cooper et al., 1992; Scharff et al., 2000; Scharff et al., 2005).
Landfill Greenhouse Gas Emissions Model (Conceptual)  
Exhibit 4.9-1

Source: SCS Engineers 2007
estimates where landfills were considered to account for as much as 4% of the statewide total.\(^2\) Other sources or industries contributing to this statewide total include: (1) energy industries (170.56 million metric tons or 34.3%); (2) transportation (194.58 million metric tons or 39.2%); (3) manufacturing and industrial processes (46.85 million metric tons or 9.4%); and (4) agriculture, forestry and land use (27.45 million metric tons or 5.5%).

Landfills are one of the few sources which show a reduction in emissions in the California statewide GHG inventory versus the 1990 baseline year. In the updated draft inventory developed by CARB, solid waste disposal emissions were 7.41 million metric tons of CO\(_2\)E in 1990 and 6.88 in 2004. This is due to improved practices in landfill gas collection since that time and despite the fact that refuse disposal in landfills has increased over this same time period. Furthermore, currently and since 1998, if carbon sequestration is considered for landfills, the amount of carbon sequestered each year can offset the net methane emissions from landfills as detailed in the U.S. EPA’s Inventory of Greenhouse Gas Emissions and Sinks, 1990-2005 (USEPA, 2006).

Finally, a noticeable fraction of the carbon in landfilled newspaper, wood materials, yard waste, and other carbon sources is never released, but remains sequestered indefinitely in the landfill. The inclusion of carbon sequestration in GHG emissions accounting and GHG inventories has been a subject of devoted discussion in several published papers since 1990. There is, however, a high degree of uncertainty with respect to methods available for analyzing carbon sequestration in landfills, and there is no universal acceptance regarding whether estimated sequestered carbon should be included as sinks in GHG emissions inventories regardless of the GHG emission accounting method employed. However, a number of international and domestic protocols including the IPCC, the USEPA, the Oregon Climate Trust, and the California Climate Action Registry recognize carbon storage in landfilled material as a sink in calculating carbon emissions inventories. In light of the ongoing discussion and the studies and investigations performed, carbon sequestration in landfills should be considered and included in inventories to the extent it is feasible to do so.

In addition, the amount of LFG collected by an active or passive LFG system (i.e., collection efficiency) and the percent oxidation of the remaining methane in the landfill cover soils are also important parameters that must be accurately accounted for in a landfill GHG inventory. However, the uncertainty and technical disagreement among experts associated with all of these factors makes it extremely difficult to accurately estimate GHG emissions from landfills in a way that will be universally accepted and recognized.

\(^2\) The USEPA (1999) suggests that landfill methane accounts for about 4% of all GHG emissions, measured in terms of global warming potential (GWP). The Intergovernmental Panel on Climate Change (IPCC) estimates that landfill methane accounts for 3% of all GHG emissions.


4.9.2 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

In accordance with CEQA Guidelines Appendix G, air quality impacts are considered significant if implementation of the proposed project under consideration would result in any of the following:

- Potential to violate any air quality standard or contribute substantially to an existing or projected air quality violation.

- Potential to result in cumulatively considerable net increases of any criteria air pollutant for which the County is non-attainment under applicable NAAQS orCAAQA; or

- Potential to create objectionable odors affecting a substantial number of people.

The Bay Area Air Quality Management District (BAAQMD) further defines thresholds of significance as follows:

- **Construction Impacts.** Project emissions would be considered significant if feasible BAAQMD construction control mitigation measures listed in the BAAQMD CEQA Guidelines are not incorporated.

- **Regional Impacts.** Project emissions would be considered significant at a regional level if the resulting emissions of reactive organic gasses (ROG), NOx or PM10 exceed 15 tons per year or 80 pounds per day.

- **Localized CO Impacts on Roadways.** Project CO concentrations would be considered significant if a project contributes to CO concentrations exceeding the State Ambient Air Quality Standard of 9.0 parts per million averaged over 8 hours of 20 parts per million for 1 hour.

- **Toxic Air Contaminants.** Project emissions would be considered significant if sensitive receptors are exposed to substantial pollutant concentrations or elevated levels of toxic air contaminants that would result in a risk of greater than 10 cancers in a million.

Solano County recognizes that due to the infancy of the regulatory effort and the absence of tested, hard science that is generally accepted, it is not realistic to expect that greenhouse gas emissions can be quantified as part of this CEQA analysis for all of the reasons stated above, summarized again below:

- Procedures for estimating such emissions are not yet sufficiently refined as to be considered accurate and are in some degree of dispute amongst scientists;

- Unlike emissions of other compounds such as reactive organic gases, particulates, and toxic air pollutants, no standards currently exist against which to measure the significance of
impacts from GHG. Further, no numeric thresholds of significance have been established against which to compare numeric GHG emissions estimates.

The County recognizes that some incremental level of GHG would be associated with the project, which is discussed below under the Impact 4.9-2 discussion. This is true notwithstanding the fact that LFG collection systems have an efficiency of 85% recognized by the BAAQMD. However, it is not reasonably possible to attempt a quantification that is reliable and based on sound, accepted methodology. As such, this EIR recognizes an incremental effect of increased GHG emissions, however small, associated with the project, as a significant impact.

Air Quality Impacts Associated with Expanded Landfill Operations. The proposed project would increase the fugitive emissions of ROG generated from landfill gas by increasing the landfill’s total capacity over time. The proposed project would also increase ROG emissions generated from composting operations. Operation of the landfill gas control system would increase NOx emissions generated from the site. Because the project-generated ROG and NOx emissions would exceed the applicable BAAQMD significance thresholds, this impact would be considered significant.

The landfill expansion anticipated with project implementation would extend the landfill’s operating life and would continue to generate fugitive dust, equipment exhaust, landfill gas, composting emissions, landfill-generated trip emissions, and other mobile source emissions.

In general, emissions from landfills are primarily associated with direct releases of some landfill gas, as well as emissions associated with the onsite and offsite combustion sources. Onsite combustion sources of emissions typically include the use of enclosed (ground) flares for disposal of unwanted flammable gases and vapors, as well as the use of heavy duty vehicles for the onsite handling of waste and soils. Other sources of air emissions typically associated with the operation of landfills include mobile source emissions associated with the delivery of wastes to the landfill, emissions generated from the construction of ancillary facilities at the landfill, and employee vehicles. The primary sources of emissions typically associated with landfills are discussed separately, as follows:

Landfill Gas (Fugitive Emissions)

The increased landfill capacity would, over time, result in an increase in the amount of landfill gas generated at the project site. In compliance with 40 CFR Part 60, Subpart WWW, which establishes standards and guidelines for the monitoring and control of landfill gas emissions, an existing landfill gas collection and control system is operated at the landfill. The system extracts landfill gas to control surface emissions and subsurface migration of landfill gas. Over the life expectancy of the landfill, the landfill gas collection and control system would be modified and expanded, in accordance with 40 CFR Part 60, to accommodate projected increases in gas flow rates. Approximately 80 percent of the landfill gas emissions are captured by the landfill gas collection and control system. The BAAQMD has established a control efficiency of 85% for LFG collection systems.
Table 4.9-1 identifies the fugitive emissions of ROG generated from landfill gas on a daily basis. This table includes a comparison of the revised emission data presented in this Recirculated Draft EIR with the emission data included in the original EIR. A side-by-side comparison of emissions from the original EIR and this revised analysis is presented for both baseline (existing) emissions and proposed project (after-expansion) emissions. Table 4.9-2 identifies the reasons for differences in the emissions values between the original EIR and this revised EIR section. Specifically, various inputs used in the calculations are presented for landfill fugitive emissions, composting operations, and landfill gas (LFG) control devices. Detailed footnotes are included in Table 4.9-2 that document input sources and/or provide additional explanation, as appropriate.

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<td>Flare (A-2)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Flare (A-3)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>220</td>
<td>219</td>
</tr>
<tr>
<td><strong>Increase</strong></td>
<td>-1</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.9-1
Comparison of EIR and Revised Air Pollutant Emission Estimates

<table>
<thead>
<tr>
<th>Source</th>
<th>Estimated Emissions (lbs per day)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EIR Baseline</td>
<td>EIR Expansion</td>
<td>Revised Baseline</td>
<td>Revised Expansion</td>
</tr>
<tr>
<td><strong>Pollutant - NOx</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landfill Equipment Exhaust</td>
<td>213</td>
<td>213</td>
<td>213</td>
<td>213</td>
</tr>
<tr>
<td>Transportation</td>
<td>354</td>
<td>354</td>
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<td>354</td>
</tr>
<tr>
<td>Fugitive Emissions (LFG)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(Other Misc.)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Energy Recovery Emissions</td>
<td>15</td>
<td>63</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Composting</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Flare (A-2)</td>
<td>0</td>
<td>0</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>Flare (A-3)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>104</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>582</td>
<td>630</td>
<td>632</td>
<td>736</td>
</tr>
<tr>
<td><strong>Increase</strong></td>
<td>48</td>
<td></td>
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<td>104</td>
</tr>
</tbody>
</table>

Note: emission figures modified in this revision process are in bold type.

Table 4.9-2
Comparison of EIR and Revised Emission Calculation Inputs

<table>
<thead>
<tr>
<th>ROG Emissions</th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>EIR Baseline</td>
<td>EIR Expansion</td>
<td>Revised Baseline</td>
<td>Revised Expansion</td>
</tr>
<tr>
<td><strong>LFG Fugitive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Landfill Waste-in-Place (tons)</td>
<td>12,456,118</td>
<td>60,296,428</td>
<td>12,007,269</td>
<td>55,204,269</td>
</tr>
<tr>
<td>Peak Year Waste-in-Place</td>
<td>2011</td>
<td>2050</td>
<td>2011</td>
<td>2045</td>
</tr>
<tr>
<td>Peak LFG Generation Rate (scfm)</td>
<td>4,670</td>
<td>13,438</td>
<td>2,572</td>
<td>8,927</td>
</tr>
<tr>
<td>Peak LFG Generation Year</td>
<td>2012</td>
<td>2050</td>
<td>2010</td>
<td>2045</td>
</tr>
<tr>
<td>NMOC concentration (ppmv as hexane)</td>
<td>122</td>
<td>122</td>
<td>545</td>
<td>477</td>
</tr>
<tr>
<td>Methane Content</td>
<td>26.5%</td>
<td>26.5%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Collection Efficiency</td>
<td>80%</td>
<td>80%</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>ROG / NMOC</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Emissions (lbs/day)</strong></td>
<td>123</td>
<td>397</td>
<td>69</td>
<td>192</td>
</tr>
</tbody>
</table>
Table 4.9-2
Comparison of EIR and Revised Emission Calculation Inputs

<table>
<thead>
<tr>
<th></th>
<th>EIR</th>
<th>Revised</th>
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<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Expansion</td>
</tr>
<tr>
<td><strong>ROG Emissions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Throughput (tons per year)(^6)</td>
<td>14</td>
<td>100</td>
</tr>
<tr>
<td>Composting Emission Factor(^7)</td>
<td>1.78</td>
<td>1.78</td>
</tr>
<tr>
<td>Emissions (lbs/day)</td>
<td>25</td>
<td>178</td>
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<tr>
<td><strong>Control Devices</strong></td>
<td></td>
<td></td>
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<tr>
<td>Energy Recovery Turbine(^8)</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Flares(^8)</td>
<td>Not Included</td>
<td>Not Included</td>
</tr>
<tr>
<td>ROG Emissions (lbs/day)</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>PM-10 Emissions (lbs/day)</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>NOx Emissions (lbs/day)</td>
<td>15</td>
<td>63</td>
</tr>
</tbody>
</table>

1. The EIR gas models used a 2004 waste disposal rate of 940,310 tons projected out at a 1% annual increase. The Revised model used an estimated 2007 disposal rate of 1,188,155 tons, then projected this out 35 years using the maximum permitted annual rate of 1,234,200 tons.
2. An error in converting megagrams to tons for determining the maximum landfill capacity in the gas model used for the EIR emission calculations apparently resulted in an increase of approximately 70% in the calculated landfill gas flow rates. This error would typically increase the NMOC and ROG generation output from the model by the same percentage. This increase is in addition to one discussed in footnote 1.
3. The value stated for both the EIR and FEIR was listed in the "Potrero_Baseline_Rev2" document (supporting information to FEIR) on the Peak Methane Gas Generation sheet; however, it does not appear this value was used in the actual EIR or FEIR calculations. This value, 122 ppmv as hexane, was incorrectly identified as an AP-42 value. The NMOC concentration used in the Revised Baseline calculation is the AP-42 default value and was used in the 2004 BAAQMD landfill expansion application. The concentration used in the Expansion calculation is from the September 2006 source test.
4. The value stated for both the EIR and FEIR was listed in the "Potrero_Baseline_Rev2" document (supporting information to FEIR) on the Peak Methane Gas Generation sheet; however, it does not appear those values were used in the actual EIR or FEIR calculations.
5. ROG emissions were originally significantly underestimated in the draft EIR, with ROG emissions of 2.35 and 7.08 pounds per day reported for Baseline and Expansion, respectively. The EIR calculations were subsequently re-done with the results of 123 and 397 pounds per day as indicated in the table. The inputs discussed in footnotes 1 and 2 above, resulted in Revised calculated emissions of approximately one-half of the EIR emission rates.
6. The "Final Air Quality Report" dated November 24, 2003 (supporting information to FEIR) indicates in Section 2.5 that the current composting throughput is 166 tons per day with plans to increase to 266 tons per day with the addition of biosolids; however, neither the Baseline nor Expansion values provided in the EIR match the resulting calculations. Throughput values corresponding to the emission values from the EIR are indicated in this table. Potrero provided the throughput values used in the Revised calculations.
7. SCAQMD test results for co-composting, except for factor for the Revised Baseline which is for greenwaste-only composting (per CIWMB study).
8. Potrero Hills has no energy recovery system in place; therefore emissions from this source that were included in the EIR were removed from the Revised emission totals. The flare emissions which were omitted in the EIR have been added to the Revised emission totals. A new flare was proposed in the 2004 BAAQMD application and is included in the Revised Expansion calculations.

For the ROG emissions component of the estimated landfill fugitive gas, the values included in the original Draft EIR were 2.35 and 7.08 pounds per day for the baseline (existing) conditions and the after-expansion conditions, respectively. These underestimated figures were subsequently revised to the 123 and 397 pounds per day values shown in revised Table 4.9-4 in
Chapter 3 of the Final EIR. SCS Engineers' analysis and calculations concluded that this previous revision overestimated fugitive emissions by a factor of approximately two (Appendix B, Attachment C identifies SCS Engineers’ detailed calculation assumptions). This overestimation was the result of a discrepancy in the 2004 waste disposal rate and a metric conversion error. These issues are discussed further in Table 4.9-2.

Based on these revised emission calculations, the proposed landfill expansion would result in an increase in ROG emissions associated with landfill gas in excess of the BAAQMD significance threshold. Therefore, this impact would be considered significant.

**Landfill Gas (Emissions from Control Devices)**

The generation of landfill gas results in secondary emissions associated with burning the gas in an onsite flare, as currently occurs, or burning the gas in an energy recovery facility. However, direct air quality benefits would result from burning the landfill gas. Specifically, the combustion process converts methane to carbon dioxide, which substantially reduces the potential greenhouse gas emission impacts of the project. This is due to the fact that 1 ton of methane has the same contribution to the greenhouse effect as approximately 23 tons of carbon dioxide. As a result, methane is a much more potent greenhouse gas than carbon dioxide. Also, methane can be substituted for natural gas to generate energy, eliminating the need to burn this fossil fuel to meet energy needs (see Appendix B, Attachment B).

Controlling landfill gas with either flaring or an energy recovery facility would increase NO\textsubscript{x} emissions generated at the project site due to the project's increase in total capacity over time. Table 4.9-1 identifies the NO\textsubscript{x} emissions that would be generated with the installation of an additional flare at the site. Operation of a new flare would result in an increase in NO\textsubscript{x} emissions in excess of the applicable BAAQMD significance thresholds. Therefore, this impact would be considered significant.

ROG emissions from this source would not exceed the applicable significance thresholds. However, this source would contribute to the total ROG emissions generated from the site, which would exceed the significant thresholds. Therefore, this impact would be considered significant.

The emissions generated from energy recovery operations would be expected to be equal to or less than the calculated emissions from the flares identified in Table 4.9-1 when considering the offsetting utility emissions.

**Landfill Activities**

Fugitive dust emissions (PM\textsubscript{10}) associated with material handling and construction activities at the site are a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and vehicle miles traveled onsite. ROG and NO\textsubscript{x} emissions are generated primarily by the operation of gasoline- and diesel-powered motor vehicles used in landfill operations.
These emissions are currently generated at the site by ongoing landfill operations. Table 4.9-1 identifies the current daily emissions generated by ongoing landfill operations and the projected daily emissions associated with the proposed project. Because the permitted daily tonnage of waste accepted at the site would not substantially increase, daily emissions generated from landfill equipment operated at the site, from material handling activities, and from vehicle trips would not differ substantially. It should be noted that the proposed project would extend the active life of the landfill by approximately 35 years. By extending the active life of the landfill, the generation of landfill emissions from the additional wastes in the site would also be extended. Because the proposed project would increase the total emissions generated at the site over the project’s life time, this impact would be considered significant.

Proposed changes in composting operations at the site would result in a substantial increase in ROG emissions. Current composting operations at the site involve greenwaste only at a maximum throughput of 100 tons per day (tpd). Proposed composting operations would involve co-composting of greenwaste, food wastes and biosolids at a maximum throughput of 200 tpd. In addition to a doubling of throughput, the ROG emission factor for co-composting is approximately 50% higher than the emission factor for greenwaste-only composting based upon emission factors used by the BAAQMD (Appendix B, Table 6). The calculated increase in ROG emissions attributable to the proposed changes in composting operations would be 252 pounds per day (Table 4.9-1), which would be in excess of the BAAQMD significance thresholds. Therefore, this impact would be considered significant.

**Mitigation Measure 4.9-1: Air Quality Impacts Associated With Expanded Landfill Operations**

The following mitigation measures shall be implemented to minimize air quality impacts associated with expanded landfill operations:

- The project’s increased ROG and NOx emissions shall be offset consistent with the requirements of BAAQMD Regulation 2, Rule 2-302. BAAQMD Regulation 2, Rule 2-302 requires that the increase in both ROG and NOx emissions attributed to the project be offset before a permit authorizing the proposed landfill expansion, including a new flare, can be issued. The implementation of this rule would effectively reduce the project’s ROG and NOx emissions to well below the identified significance thresholds.

- Enclose, cover, water twice daily or apply (non-toxic) chemical suppressants to exposed stockpiles (dirt, sand, etc.).

- Onsite unpaved roads and offsite unpaved roads shall be effectively stabilized for dust emissions using water or chemical stabilizer/suppressant.

- Land clearing, grubbing, scraping, excavation, land leveling, grading, and cut and fill activities shall be effectively controlled for fugitive dust emissions by utilizing application of water or by pre-soaking.
- Cover all trucks hauling loose materials or require all trucks to maintain at least two feet of freeboard.

- Sweep Potrero Hills Lane and Kildeer Road daily (with water sweeper) if visible loose materials (mud, dirt, etc.) are carried onto these roads.

- Limit traffic speeds on unpaved roads to 15 miles per hour.

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

- Replant vegetation in disturbed areas as quickly as possible.

- Following the addition of materials to, or the removal of materials from, the surface of outdoor soil storage piles, said piles shall be effectively stabilized for fugitive dust emissions by utilizing sufficient water or chemical stabilizer.

- Operation of the excavator shall be used in conjunction with either water or petroleum-based palliatives (approved for use by the BAAQMD) as a dust control measure.

- Limit area of excavation and grading activities associated with site construction operations when sustained wind speeds are in excess of 35 mph.

- Limit area subject to excavation, grading, and other construction activity at any one time.

- When shredding or chipping of wood or concrete/asphalt crushing is practiced at the site, the shredding and crushing units shall be equipped with water sprays or utilize a separate water spraying unit (such as a water truck) to provide dust control. The amount of water used shall be regulated and minimized to avoid runoff, ponding, or leaching of the wood materials.

- Compost piles shall be watered as necessary during the dry weather season to minimize dust generation.

- New sources of waste shall be evaluated for potential dust emissions. The specific waste handling protocols shall identify the type of dust control method that will be used. Examples include moistening the waste at the point of generation or placing the material in plastic bags. The case-specific protocols shall be reviewed with the LEA, RWQCB, and BAAQMD before finalizing. If the evaluation of the waste handling protocol indicates the potential for release of fugitive dust or volatile substances, the BAAQMD shall be contacted. If emission controls are anticipated for a new waste that is of substantial quantity and to be frequently delivered over a long time, an application for amendment of the site Air Permit shall be made, if deemed necessary by the BAAQMD.

- Comply with the requirements of the revised BAAQMD permit for the proposed composting operations, landfill gas surface emissions, and the landfill gas collection and
control system at the site. In addition, the project applicant shall comply with the requirements of a full Composting Facility Permit for the site including managing composting operations to minimize the generation of ROG emissions. This shall include monitoring the water content, pile temperature, and turning frequency in order to ensure that composting operations are effectively managed.

**Level of Significance after Mitigation**

With implementation of the mitigation measures identified above, this impact would be reduced to a less-than-significant level.

**Increased Greenhouse Gas Emissions.** The proposed project would result in a net increase in greenhouse gas emissions. This increase would be considered a **significant and unavoidable impact.**

Over the timeframe of the project, the proposed expansion would result in an increase in both methane and carbon dioxide emissions from landfill gas. Therefore, the proposed project would result in an increase in GHG emissions. These emissions may be offset to some degree by the carbon sequestered in the landfill; however, for purposes of this analysis, it is conservatively assumed that even with carbon sequestration, there would be some amount of increased GHG emissions due to the project.

BAAQMD and the California Air Resources Board have not established a methodology for evaluating GHG emissions in EIRs or determining the significance of GHG emissions, either in general or specifically with respect to landfill emissions of GHG. Similarly, neither the BAAQMD nor the Air Board has issued guidance on the complicated question of determining the baseline for analysis of GHG emissions (so that, for example, it is not certain whether the baseline should be no GHG emissions because there is no landfill expansion, or some other level of GHG emissions because the solid waste will be disposed at another site or by another method) Because it is not possible to accurately quantify the amount of incremental increase in GHG emissions associated with the project and taking into account the BAAQMD's accepted control efficiencies, the debate within the scientific community, and the early stage of discussion and development of AB 32 regulations, the increased GHG emissions associated with the project are assumed to be significant. This conservative approach is used because it acknowledges the likelihood of future significance standards for GHG emissions and the possibility that GHG emissions from landfills will be considered significant in light of the goals of AB 32 for reductions back to 1990 levels.
Mitigation Measure 4.9-2: Greenhouse gas emission impacts.

The following mitigation measures shall be implemented to minimize the GHG emission impacts associated with expanded landfill operations:

- Improve the perimeter probe monitoring system:
  - Decrease the probe spacing from the 1996 approved 2,000 feet level to a maximum of 1,000 feet;
  - Where practical, installation of probes closer to the actual boundary of the waste disposal area rather than the landfill property boundary in order to more quickly identify gas migration before it migrates to a more extensive area. In some cases, the property boundary will be used because of the proximity of the waste to landfill boundary and in some cases, operational barriers may dictate the property boundary as the final probe location.

- Install the gas collection system early in active cells, in advance of the timeframe required by BAAQMD and Title V regulatory requirements:
  - Collect gas from the leachate recovery system in early stages of cell development for the expansion area;
  - Install gas collectors during filling or at the earliest opportunity when an area reaches final or intermediate grade.

- Implement reasonable and applicable best management practices (BMPs) set forth in the upcoming California Integrated Waste Management Board (CIWMB) guidance with respect to administering the AB 32 regulations.

- Implement additional early action measures for landfills imposed by the CARB, including early installation of control measures beyond regulatory deadlines wherever feasible.

Level of Significance after Mitigation

Based on the cautious approach to determining significance as identified above, the GHG emissions associated with the proposed project would be considered significant. The identified mitigation measures would reduce the project’s GHG emissions, and through compliance with AB 32 early action measures and AB 32 regulations that will be promulgated by both CARB and CIWMB, the project may comply with AB 32 and assist in meeting AB 32 goals. At this early stage in the implementation of AB 32 regulations and methodologies for evaluating GHG emissions in EIRs, however, this EIR takes a conservative approach in light of the substantial uncertainty, and concludes that this impact would remain significant and unavoidable following implementation of the identified mitigation measures.
5. **Alternatives**

A. **Introduction and Summary of Alternatives Analysis**

This chapter consists of three main sections. The first section consists of this introduction and the background to the alternatives analysis. The second section consists of the revised alternatives analysis, which considers in detail three alternatives to the proposed project. These alternatives include Alternative 1 (the no project alternative), Alternative 2 (the Higher Phase I Landfill Area Alternative), and Alternative 3 (the Maine Prairie Area Site Alternative). The Maine Prairie Area site is within an undefined location south of Dixon, California, adjacent to State Route 113 (SR 113) and west of Cache Slough (i.e., centered on latitude 38.308° and longitude -121.759°). The Maine Prairie Area has been suggested by the Northern California Recycling Association as a potential location for a new landfill that might reduce the project’s adverse impacts. Therefore, it has been included in this analysis. The third section consists of an extensive discussion of other possible alternative sites that were determined to be unable to feasibly attain most of the project objectives.

Both the second section of this chapter, with the addition of the Maine Prairie Area Site Alternative, and the third section, with its discussion of other potential alternative sites, are intended to respond to the directive from the Solano County Superior Court that “a range of alternatives for this project must include a meaningful discussion of possible sites outside the marsh area, both within and outside Solano County.”

1. **Legal Background**

Section 15126(d) of the California Environmental Quality Act (CEQA) Guidelines requires that an EIR describe a range of reasonable alternatives to the proposed project, or to the location of the project, which could feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant environmental effects of the project. The “rule of reason” governing the range of alternatives specifies that an EIR should only discuss those alternatives necessary to allow a reasoned choice by the decision makers. Alternatives should, if feasible, avoid or substantially lessen the significant effects of the proposed project identified in the EIR. Of those alternatives, an EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project.

As defined by Section 21061.1 of the CEQA Guidelines, “feasible” means an alternative is capable of being accomplished by the project applicant in a successful manner within a reasonable period of time, taking into consideration economic, environmental, social and technological factors. In determining the feasibility of an alternative, the EIR evaluation must consider several factors including site suitability, economic viability, availability of infrastructure, general plan consistency, regulatory limitations, jurisdictional boundaries, and whether the project applicant can reasonably acquire, control, or otherwise have access to an alternative site. In the case of a private applicant, the applicant does not have the power of eminent domain and cannot use that authority to acquire the property of others for its intended use. As such, CEQA does not require that an EIR evaluate and study potential off-site
alternatives not owned or controlled by the applicant. In addition, if an alternative would cause one or more significant effects, over and beyond those associated with the proposed project after mitigation is applied, those significant effects must be discussed but in less detail than the project’s effects.

This alternatives analysis has been developed utilizing the guidance of the CEQA Statute, the CEQA Guidelines, appellate decisional law and the trial court’s ruling in the case Protect the Marsh v. County of Solano et al., discussed below. The primary project objectives of the Potrero Hills Landfill Expansion Project set forth below, together with the trial court’s decision, were considered in selecting the alternatives for evaluation and comparison in this section, in order to determine whether such alternatives can feasibly attain most of the objectives.

The specific objectives of the project are:

- To provide a stable, long-term source of disposal capacity for all current and anticipated landfill users. The California Integrated Waste Management Act of 1989 (CIWMA) requires that all California counties, including Solano County, demonstrate a minimum of 15 years of assured disposal capacity in its integrated waste management plan.

- To promote and encourage recycling activities within Solano County, and provide a suitable location for receiving and processing those materials.

- To increase the efficiency of landfill site operations and to realize an engineered sequence of developing the individual disposal cells.

- To implement advanced waste recovery technologies, including the potential use of landfill gas to fuel fleet vehicles and generate electrical energy.

The CIWMA, as amended, also specifies waste diversion goals for cities and target dates for the accomplishment thereof. CIWMA also directs local jurisdictions to plan and provide for 15 years of permitted disposal capacity for the residual waste stream which is not diverted. The proposed expansion addresses the Solano County and regional need for continued short and long-term disposal capacity, while also emphasizing on-site resource recovery and beneficial re-use elements in the daily site operations.

2. THE COURT’S DECISION AND WRIT OF MANDATE

On February 26, 2007, the trial court issued its decision in the matter Protect the Marsh v. County of Solano, et al., Case No. FCS026839, Solano County Superior Court, finding that the Alternatives Analysis in the Final EIR certified by the County of Solano in September 2005 was deficient in that it did not have a meaningful discussion of possible off-site alternatives, including a landfill location outside of the marsh area. The Court stated as follows:

“Just one on-site alternative may be sufficient for most projects. However, the specific protections of this marshland, and the limited statutory authorization for a solid waste project only in the absence of a practical, reasonably accessible alternative site, suggest that a range of alternatives for this
This analysis responds to the Court’s direction by evaluating a range of on-site and off-site alternatives.

3. SUMMARY OF THE SCREENING PROCESS AND EVALUATION OF OFF-SITE ALTERNATIVES

In accordance with CEQA and the Court’s decision and judgment, the County evaluated a wide range of potential alternatives to determine the specific alternatives suitable for a detailed discussion in this revision of the EIR. The range of alternatives includes waste reduction and alternative technologies, existing landfill sites owned and operated by other entities, potential new sites outside of the primary marsh and secondary management areas, and onsite alternatives.

Within the broad spectrum of potential alternatives evaluated, certain options were found to be infeasible in that they would not meet the project’s basic objectives; would involve lands and projects belonging to business competitors or others; or they could not be feasibly accomplished within a reasonable timeframe. These potential alternatives are discussed in detail in Section D below.

A broader range of potential alternative project locations was examined using the County Integrated Waste Management Plans (CoIWMPs) for nearby counties and counties within the service area of Potrero Hills Landfill, and publicly available sources including the Solid Waste Information System (SWIS) Database maintained on the California Integrated Waste Management Board’s (CIWMB) website. This data base is the largest single compilation of site information available to the County. In addition, the California Integrated Waste Management Act (CIWMA) requires CoIWMPs prepared for each county to provide for planned and potential disposal sites within a planning framework, including identifying designated landfill sites in a county’s General Plan. Each county within the state, and cities and regional agencies, must plan for solid waste disposal facility siting as required by Public Resources Code sections 41700-41704. Section 41710 provides that any area or areas identified for the location of a new solid waste disposal facility shall be located within or adjacent to a land use area authorized for a solid waste disposal facility in the applicable city or county General Plan. With the CIWMA requirement for cities and counties to provide for the development of solid waste disposal sites in their respective General Plans, the County of Solano as lead agency has been able to objectively evaluate whether and to what extent the project’s objectives and needs could be met by alternative sites which might be available outside of the marsh and in other counties, as well as by technological non-disposal alternatives (e.g. source reduction, recycling and energy recovery). Therefore, the County believes that using the SWIS database and CoIWMPs is an appropriate method for identifying potential alternative sites.
4. **SUMMARY OF THE ALTERNATIVES EVALUATED IN DETAIL**

a. **No Project Alternative**

CEQA requires that an EIR consider the “No Project” Alternative. For this Supplemental EIR, the No Project Alternative is defined as no approval of an expansion of the existing Potrero Hills Landfill, the cessation of waste receipts and consequent closure of the existing landfill operations in approximately 2012. The facility is expected to reach its capacity under the current conditional use permit (CUP) on or before January 1, 2012. No horizontal or vertical expansion of the landfill operations would occur, and the existing site composting operations and re-use/recycling activities would cease.

b. **Alternative 2: Higher Phase I Landfill Area Alternative**

Under this alternative, the existing Phase I landfill area would be expanded vertically, rather than laterally, maintaining the current footprint. This design approach would avoid some of the direct impacts to jurisdictional areas. The landfill height would be increased from the currently permitted 220 feet above mean sea level (MSL) to 410 feet MSL, which is the maximum height that can be attained while still maintaining a geotechnically sound landfill shape and drainage pattern. This height would require a steep pyramid shape.

c. **New Landfill Facility in the Maine Prairie Area**

This Alternative consists of the development of a new solid waste landfill in the area of Solano County known as “Maine Prairie.” The Maine Prairie area, although not specifically defined, was suggested by the Northern California Recycler’s Association (NCRA) as an alternative location for a landfill site. The purpose of this alternative would be to provide the County with thirty-five years or more of landfill disposal capacity, and consists of identifying, planning, permitting and constructing the new solid waste landfill facility in this 12,000 acre area of the County, located outside the Suisun Marsh area.

B. **ANALYSIS OF THE ALTERNATIVES**

In accordance with section 15126(d) of the CEQA Guidelines, based on the evaluation of potential alternatives identified by the County and discussed in greater detail below, three alternatives to the proposed project are presented for more detailed consideration in this Recirculated Draft EIR: 1) the no-project alternative; 2) an on-site alternative landfill expansion; 3) a new landfill site proposed by NCRA to be located in an area of Solano County known as “Maine Prairie”.

1. **NO PROJECT ALTERNATIVE**

CEQA requires that an EIR consider the “No Project” Alternative. The No Project Alternative is defined as no approval of an expansion of the existing Potrero Hills Landfill, the cessation of waste receipts and consequent closure of the existing landfill operations approximately in 2012. The facility is expected to reach its capacity under the current conditional use permit.
(CUP) on or before January 1, 2012. No horizontal or vertical expansion of the landfill operations would occur, and the existing site composting operations and re-use/recycling activities would cease.

Potrero Hills Landfill (PHLF) would continue to operate the existing groundwater monitoring network and landfill gas collection system during the closure and post-closure maintenance periods. Under the closure plan requirements, all exterior slopes would be revegetated and operational facilities (e.g., scale house and equipment maintenance building) would be decommissioned.

This No Project Alternative would require all existing wastes destined for Potrero Hills Landfill to be redirected to other landfills in the region or otherwise disposed, diverted, or recycled.

The No Project Alternative would limit the County’s waste disposal options, and would not provide an effective, long-term solution to the County’s waste management needs. It is not known as to whether the regional solid waste landfilling system can absorb the 3,400 tons per day of solid waste currently disposed of at the Potrero Hills facility. Because each facility has unique permit conditions and constraints, including contractual commitments, permit conditions limiting hours of operation and access using major freeway interchanges and routes, it is not possible to summarize each permit accurately to know whether and to what extent solid waste currently disposed of in the Potrero Hills Landfill could be diverted for landfilling elsewhere, or for how long.

The existing car and truck traffic associated with the currently permitted operations (up to 500 vehicles daily) would be redirected to other landfills. The landfill gas collection and disposal system would continue to operate for a minimum of 30 years and the closure plan would require construction of the final cover and periodic maintenance trips to the facility.

Locally collected waste within the County, including the solid waste from Fairfield, Suisun, and unincorporated Solano County would have to be processed at a new transfer facility in order for these wastes to be transported to more remote landfills, assuming capacity is available elsewhere. This is because the 7-ton “packer” truck collection vehicles are not able to travel long distances. Extended travel places a strain on the vehicle power train and requires a much higher degree of maintenance. In addition, because these are daily route vehicles, such collection vehicles cannot be tied up in extended transport operations because they are required for use on multiple daily collection routes.

The need for a local transfer station to serve the PHLF self-haul customers and the local refuse collection vehicles presents land use challenges. Such a facility has to be part of the County’s CoIWMP and sites for transfer stations can be controversial land uses in and of themselves. The siting process for a transfer station would also include a CEQA analysis, and in this process specific sites and their potential impacts would be studied and evaluated. Substantial time, on the order of several years or more, would be required to complete the planning, approvals and the facility construction.
2. **ALTERNATIVE 2: HIGHER PHASE I LANDFILL AREA ALTERNATIVE**

Under this alternative, the existing Phase I landfill area would be expanded vertically, rather than laterally, maintaining the current footprint. This design approach would avoid some of the direct impacts to jurisdictional areas.

The landfill height would be increased from the currently permitted 220 feet MSL to 410 feet MSL, which is the maximum height that can be attained while still maintaining a geotechnically sound landfill shape and drainage pattern. This height would require a steep pyramid shape. The narrow width of the top would require the use of small restricted-sized cells with extra soil cover for capping. The existing Phase I site would not provide sufficient soil cover for this design, requiring the importation of approximately 3.8 million cubic yards of soil from other parcels owned by the applicant (most likely from the Phase II area and up valley areas in the Potrero Hills valley). The soil borrow areas on the other parcels would result in significant land disturbance. Excavating the hillsides in order to avoid disturbing the existing springs and wetland features on these parcels may not generate sufficient cover soil. Excavations in the base of the valley that avoid the wetlands may require digging of large pits that would not drain, and the ponds could have enough evaporation potential that downstream water runoff would be lost instead of flowing westward to the marsh.

The pyramid shape (rather than a flattened top as currently proposed) would not accommodate subsequent resource recovery operations under post-closure conditions. This would require that this element of the project be eliminated or that the resource recovery operations be located elsewhere, such as on the Phase II lands, possibly disturbing wildlife usage patterns due to daily operation activities.

The total additional airspace capacity under this Alternative would be 8.04 million CY which is approximately 81 percent less than the project. The site life of this Alternative would be 6.7 years, rather than the 34.5-year life of the proposed project. Alternative 2 would have a cost of approximately $20.7 million. The costs are more than 70 percent higher than under the proposed project, with only a small amount of airspace created.

3. **ALTERNATIVE 3: NEW LANDFILL FACILITY IN THE MAINE PRAIRIE AREA**

“Maine Prairie” is an area of Solano County located generally east of Interstate 80 below the City of Dixon and on either side of SR 113, extending eastward and southerly to the Rio Vista area. The area is believed to be on the order of 12,000 acres or more. The area appears to include the Maine Prairie Water District, which is shown on Exhibit 5-1. The Maine Prairie area, although not specifically defined, was suggested by the Northern California Recycler’s Association (NCRA) as an alternative location for a landfill site to, in effect, replace the existing PHLF location. The Maine Prairie area has, therefore, been included in this Alternatives Analysis.

This Alternative consists of the development of a new solid waste landfill to provide the County and regional users currently utilizing the Potrero Hills Landfill with thirty-five years or more
of landfill disposal capacity, and consists of identifying, planning, permitting and constructing the new solid waste landfill facility at an unspecified location within the Maine Prairie area. This facility would not be located within the primary or secondary management area of the Suisun Marsh, and as such, this analysis, together with the analysis of sites outside the Suisun Marsh which have been considered but not studied in detail, is responsive to the trial court’s direction to provide a meaningful discussion of potential alternative sites located outside of the Suisun Marsh.

a. Environmental Setting for Maine Prairie.

Available information was reviewed to provide background information concerning the proposed Maine Prairie area.

1. Land Use Setting

The Maine Prairie area, with respect to the lands comprising the Maine Prairie Water District and surrounding acreage, are predominantly rural agricultural lands. Although the County General Plan is currently in the midst of a major update, the lands along the SR 113 corridor which bisects the Maine Prairie area are currently designated as intensive and extensive agricultural in the 2006 Land Use Update for the County's General Plan study, and are zoned for agriculture. Much of the land in this area is maintained under Williamson Act Contracts (Exhibit 5-2).

2. Geology and Site Soils

The Maine Prairie area is part of the “Great Valley Geomorphic Province” of California. This includes most of the Sacramento and San Joaquin valleys, also known as the central valley since it is located between the Coastal Mountain Ranges and Sierra Nevada. The central valley of California is a trough in which sediments have been deposited since the Jurassic period (160 million years ago).

A recent geologic map of the area published by the United States Geological Survey (USGS, 2002) indicates the site is underlain by alluvial fan deposits of Holocene age (less than 11,000 years old), except for a linear segment of artificial fill upon which Interstate 80 was constructed along the northwest corner of the property. Deposits as thick as 100 feet likely formed from ancestral Putah Creek and tributaries washing sediment off nearby Rocky Ridge. Underlying these alluvial fan deposits are likely to be rocks of the Great Valley Sequence, such as nearby Pliocene Age rocks from the Vacaville Assemblage of the Tehama Formation. No rocks outcrop within the area.

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The NCRA suggestion regarding this alternative did not name or identify a specific location within the Maine Prairie area. The letter from Mr. Arthur Feinstein on behalf of SPARAWLDEF described the area as consisting of 12,000 acres.
Soils mapped across the area are derived from the alluvial fan deposits. Over time these deposits have chemically and physically weathered to create the soil assemblages and horizons seen today. According to the Soil Conservation Service Soil Survey for Solano County, there are two soil types mapped on the area. Eighty percent of the area is mapped as Capay Silty Clay Loam (Ca), while about 20 percent of the area adjacent to the southeast corner is mapped as Yolo Silty Clay Loam.

The permeability and texture of these soils is important since it directly influences drainage patterns. Soil permeability is the rate at which water is absorbed under saturated conditions and is related to the hydraulic conductivity (constant determining flow rate through soil or rock) of the soil. A list of soil types and their relevant hydrologic characteristics are shown in Table 5-1. The two soil types are alike since they are both fine-grained soils with slow to very slow runoff and slight erosion hazard. Yet the Capay silty clay loam contains more expansive clay minerals and is more likely to swell and shrink when wetted and dried, an important geotechnical consideration for any proposed foundations.

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Permeability</th>
<th>Runoff</th>
<th>Shrink-Swell Potential</th>
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<tbody>
<tr>
<td>Capay silty clay loam</td>
<td>Ca</td>
<td>Slow</td>
<td>Very Slow</td>
<td>High</td>
</tr>
<tr>
<td>Yolo silty clay loam</td>
<td>Ys</td>
<td>Moderately Slow</td>
<td>Slow</td>
<td>Moderate</td>
</tr>
</tbody>
</table>


3. Regional Hydrology and Topography

The Maine Prairie area is within the Putah Creek watershed known as the City of Dixon Watershed D, Lower Putah Creek. This watershed is cataloged by the USGS as watershed number 511.20, USGS Hydrologic Unit Code (HUC) 18020109. Historical drainage from the area likely flowed into Putah Creek, while existing drainage is channeled through a series of drainage ditches that eventually enter into the Sacramento River through Hass and then Cache Slough. Exhibit 5-2 shows the site location relative to the Sacramento River and Delta to which the region drains. The historic drainage pattern has been altered through agricultural and highway engineering, which has diverted runoff through a series of culverts, ditches and canals. Regional drainage in the area is controlled by the gradual southeasterly slope of alluvial fans and alluvium built from sedimentary deposits eroded from the Mayacmas and Vaca Mountains. Creeks from these mountains flow in a southeasterly direction toward the Sacramento River. The Sacramento River drains most of the California interior north of the Sacramento River delta and flows through Suisun and San Pablo Bays before emptying into San Francisco Bay and eventually the Pacific Ocean.
4. Hydrogeologic Considerations

The Maine Prairie Water District is located in the Solano Groundwater Basin, a sub basin of the larger Sacramento Groundwater Basin that supplies approximately 2.5 million acre feet of water annually to municipal, industrial and agricultural users. The Solano Basin is bounded by Putah Creek to the North, the Sacramento River to the east, the North Mokelumne River to the southeast, the San Joaquin River to the south, and the English and Montezuma Hills to the west (Impact Sciences, Inc. 2006). The Solano sub basin is the largest groundwater basin in the northeastern area of the County (West Yost & Associates 2001).

Prior to the development of surface water supplies identified as the Solano Project (Exhibit 5-3), both municipal and agricultural users pumped groundwater extensively as their water supply. One of the main reasons that the Solano County Water Agency (SCWA) and Reclamation District 2068 developed the Solano Project was to rectify groundwater overdraft in some agricultural areas. Groundwater levels rebounded after the Solano Project started making agricultural water deliveries.

The amount of groundwater use for municipal, agricultural, and rural residential uses within the region has not been accurately quantified. The cities of Rio Vista and Dixon solely use groundwater supplies from basins underlying the cities. Approximately one-third of Vacaville’s municipal water supply is from groundwater underlying the city.

Most of the growers within the Solano Irrigation District (SID) use surface water, but SID has wells to supplement its surface water supply from the Solano Project. Maine Prairie Water District (MPWD) and Reclamation District 2068 provide surface water to their growers and do not currently use groundwater underlying their districts. Growers outside of water supply districts rely entirely on groundwater unless they have an individual right to a surface water supply.

Most rural residential landowners have individual shallow groundwater wells that serve their domestic needs. Some small rural residential water systems also distribute groundwater to their customers.

The Solano sub basin includes two basic aquifers in the groundwater basin. The Putah Fan is a shallower aquifer providing agricultural water and local domestic supplies. The Putah Fan is underlain by the Tehama Formation aquifer. This aquifer is quite deep (over 1,000 feet) under Vacaville, but surfaces in the English Hills area north and west of Vacaville. Vacaville’s wells draw from the Tehama Formation for its groundwater supply.

5. Flood Plain Management

The area comprising the Maine Prairie Water District, within the Dixon Watershed south of Dixon and east of Vacaville, is subject to periodic flooding, both localized and regional. Exhibit 5-1 from the Dixon Watershed Management Plan shows the regional and localized flood conditions in the watershed region including Maine Prairie following 1997 storm events.
Solano Project Facilities and Participating Agencies

Exhibit 5-3

Source: West Yost Associates 2001

Potrero Hills Landfill Recirculated Draft EIR
Solano County

II-43

EDAW
Changes to the Draft EIR
The Supervising Water Resources Engineer of SCWA indicates that at present there is no feasible flood control projects that would address the flooding conditions that occur in Maine Prairie area (Pers. Comm., Thomas L. Pate, PE, SCWA December 14, 2007). The areas to the west (Vacaville watershed) and north (Dixon) have been and will be addressed as priority funded improvements before any expenditure can be made in the Maine Prairie area. The two potential flood control project areas that cover the general Maine Prairie area, Basin B/C and the Eastside Drainage Project, would cost $1.7M - $2.2M and $7.1M - $10.4M (in 2001 dollars) and are considered too expensive to implement for the Maine Prairie area. As such, it is unknown as to whether and to what extent the Maine Prairie area will receive flood control improvements through the SCWA. The various options and alternatives have been studied by the SCWA and can be reviewed in the Dixon Watershed Management Plan (West Yost & Associates 2001).

6. Endangered Species and Habitat.

The Maine Prairie area provides habitat for several species. As shown in Exhibit 5-4 from the Solano County Water Agency Habitat Conservation Plan (HCP), a portion of the Maine Prairie area has been designated as critical habitat for the Delta Smelt. The Maine Prairie Water District (MPWD) zone is within the scope of the HCP adopted by the SCWA. This zone includes all lands within the boundaries of the Solano Irrigation District, MPWD, and Reclamation District No. 2068, as well as other lands in the County.

In addition to the Delta Smelt, a significant portion of the southerly and southeasterly Maine Prairie area, into Jepson Prairie, is Playa Pools and Vernal Pool critical habitat. These areas are shown below in Exhibit 5-5 from the SCWA’s HCP.

A large portion of eastern Solano County, including Maine Prairie, is a habitat conservation area for the Giant Garter Snake, as shown in Exhibit 5-6 from the SCWA’s HCP.

7. Traffic and Transportation Infrastructure

The SR 113 corridor is the primary means of access for any proposed solid waste facility in the Main Prairie area. SR 113, discussed in more detail below, runs in a north-south alignment between SR 12 and the City of Dixon. SR 113 is a predominantly two lane road which does not meet Caltrans requirements for width and shoulder distance. In addition, it has two segments of 90 degree turns in the southern portion of the roadway below Maine Prairie and north of SR 12. Lateral roads off the main SR 113 corridor consist of two lane agricultural roads serving agricultural and residential uses in the area.

Because of the degraded and sub-standard condition of this transportation corridor, the Solano Transportation Authority (STA) has been working for the previous six months on a Major Investment Study (MIS) for the SR 113 corridor. The MIS is being funded by a Partnership Planning Grant awarded by Caltrans. The STA held a kick-off meeting on the study as this document went to print. There is an extensive STA staff report and set of background materials that are available from STA and contained in the Administrative Record of this proceeding.
Designated Critical Habitat Areas

Source: West Yost Associates 2001

Exhibit 5-4
Distribution of Playa Pools and Vernal Pool Critical Habitat

Source: West Yost Associates 2001

Exhibit 5-5
Giant Garter Snake Conservation Areas

Source: West Yost Associates 2001

Exhibit 5-6
Three conceptual designs were presented at the December 10, 2007 kickoff meeting: 1) bypassing the City of Dixon and expanding the Kidwell Road Interchange at I-80 (page 120 of the 145-page staff report); 2) bypassing the City of Dixon and expanding the Midway Road Interchange at I-80 (page 122 of the 145-page staff report); and, 3) development of a toll road that would also bypass the City of Dixon (page 125 of the 145-page staff report). None of the alignments presented were intended to illustrate the ultimate alignments. They were simply presented to show potential alignment concepts.

Estimated costs for each option are provided on page 126 of the 145-page staff report (note that STA advises these numbers are very preliminary and would change as the analysis and design is completed).

- Option 1 (Kidwell Road Interchange): $181 Million
- Option 2 (Midway Road Interchange): $162 Million
- Option 3 (Toll Road): $549 Million

Mr. Paul Wiese of the Solano County Public Works Department indicated during the meeting that an anticipated construction date is not on the horizon. Mr. Wiese explained that the parties involved are doing the background work in the hopes of receiving funding within the next 20 years (Pers. comm., Paul Wiese, December 10, 2007).

There was considerable discussion at the STA meeting about determining the STA’s objective for SR 113: development of an intra-County roadway, an inter-County roadway, etc. County Supervisor James Spering stated that the STA needed to define the objective of the roadway and proceed with the conceptual design based on the objective. The STA advises that it hopes to finalize and complete the MIS and Implementation Plan by July 2008.

The STA’s MIS and Corridor study indicates that additional land use constraints for future development along the SR 113 corridor include Travis Air Force Base (airport land use compatibility) and extensive Williamson Act contract lands in the area (Exhibit 5-2).

b. Requirements for Development of a Landfill Project in the Maine Prairie Area

There are a variety of requirements and permitting decisions required in order to develop a solid waste disposal facility under California laws and regulations governing such facilities. The specific requirements for development of a landfill in the Maine Prairie area include:

- Identifying available lands within Maine Prairie, which are of sufficient size – at least 500 acres – to accommodate a landfill disposal facility, including ancillary functions such as access roads, waste receiving facilities, gatehouse, scales, landfill gas management facilities, soil stockpile areas and potential borrow areas from which to mine soils for operations and closure purposes. A section of land (640 acres) would generally be a reasonably-sized area to consider for a landfill site which could accommodate the PHLF operations. The primary screening level criteria for this element of the Maine Prairie Alternative New Landfill is the application of federal and state municipal solid waste landfill siting criteria, first established in the federal Subtitle D regulations promulgated in 1991 and effective on October 9, 1993.
(40 CFR Part 268). The State of California Environmental Protection Agency (Cal EPA) has an approved state implementation program for administering the Subtitle D requirements within California, found in Title 27, California Code of Regulations (CCR), Chapter 3. The siting criteria include: new or expanded landfills shall be located where site characteristics provide adequate separation between non-hazardous solid wastes and waters of the state; all new landfills must be sited, designed, constructed, and operated to ensure that wastes will be a minimum of five feet (5 ft.) above the highest anticipated elevation of underlying groundwater; new landfills must be located where soil characteristics, distance from waste to ground water, will ensure no impairment of beneficial uses of surface water or of ground water; new landfills and lateral expansions of landfills that are located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft, or within 5,000 feet (1,524 meters) of any airport runway end used by only piston-type aircraft, must demonstrate that the units are designed and operated so that the landfill does not pose a bird hazard to aircraft; new landfills and expansions of existing landfills shall not be located on a known Holocene fault; and new landfills and expansions of existing landfills shall not be located in areas of rapid geologic change.

- Specific sites within Maine Prairie would also be identified based on suitability of access, ability to provide electrical power and other infrastructure needs, including the water supply. The transportation setting identified in the Setting discussion highlights transportation infrastructure considerations and challenges which must be addressed for a site in the Maine Prairie are to be viable.

- Experience indicates that the process of searching for suitable sites, negotiating options or purchase agreements with one or more landowners, and completing due diligence actions required will take a minimum of 24-36 months, under favorable conditions.

- Hydraulic and hydrologic modeling of the proposed landfill site and the adjacent watershed would be required to define a landfill project’s potential to exacerbate existing flooding problems by increasing the extent, depth and duration of surface water inundation. Any such project-related flooding impacts would require the development and operation of flood control facilities to protect onsite and adjacent lands and properties.

- Undertaking detailed site-specific geologic and hydrogeologic investigations on the proposed site once it is identified and placed under option or other ownership interest for purposes of performing due diligence studies on the suitability of the parcel(s) for solid waste landfill purposes. The due diligence would include geologic boring and trenching to determine the suitability of soils, both for construction purposes but also with respect to the overall stability of soils and slopes in and around the parcel(s); establishment of a network of groundwater monitoring wells, monitored for at least 4 to six quarters, to determine water quality and hydrogeologic characteristics of the site, depth and occurrence of groundwater; and the surface water features and hydrology of the site.

- Undertaking field-level reconnaissance and surveys for threatened, listed and endangered plant and animal species under the state and federal endangered species acts. As noted above, there is a potential for several species and habitat areas to be located in the Maine Prairie.
Prairie area. Detailed site-specific investigations for species and habitat would be necessary. In addition, the reconnaissance and surveys would also include evaluation of critical and other protected habitat for threatened and endangered species.

- Filing of an application for a designation in the County’s Integrated Waste Management Plan and General Plan, together with any related zoning requirements, and preparation of at least a Program Level EIR for purposes of complying with CEQA for these discretionary decisions by the County of Solano. The designation in the CoIWMP requires a submission of the known details of the proposed facility to the local integrated waste management task force for review and comment (see Public Resources Code section 50001). An applicant may wish to proceed with a CoIWMP designation and General Plan Amendment to ensure that the identified site, after the due diligence period of over a year, is acceptable as a designated site in the County’s CoIWMP and the General Plan. The County’s General Plan is currently undergoing revision, and as noted above, the lands along the SR 113 corridor are designated as intensive and extensive agriculture in the General Plan. These actions by the County are legislative actions and as such are reachable by the referendum power. The public may also posit initiatives under the initiative power to either designate or preclude sites from being considered in the CoIWMP and the General Plan. In Solano County, the referendum process was successful in preventing a new landfill project proposed for Vallejo and Napa in the Lynch Canyon area in the 1980s. The Solano Land Trust purchased the proposed landfill property in two parcels, completing the transfer in 1996. The General Plan and rezoning matters may be complicated due to Williamson Act considerations, or other land use restrictions within various zones that might preclude or limit the ability to site a landfill. The process of securing the site within the CoIWMP and the General Plan, together with the required CEQA review at a program EIR level, can take between 18-36 months under favorable conditions, without litigation and re-do of an EIR or portions of the process.

- Application for a conditional use permit from the County to establish a solid waste landfill facility. The County would be the lead agency under CEQA, and as such must prepare a project-level EIR to evaluate the proposed action. The conditional use permit and EIR process can take from 3-5 years, or longer, as has been the case with the current application regarding the Phase II Expansion Project. The Redwood Landfill project’s website indicates that the applicant Waste Management spent the previous nine years seeking an expansion of the existing landfill facility in Marin County without success. There is no hard and fast rule on the amount of time required, every site and circumstance is unique, but for planning and discussion purposes a 3-5 year timeframe is likely highly optimistic although reasonable. The EIR may be challenged in court once certified as adequate and in compliance with CEQA, by other permitting agencies, as discussed below. Experience in California permitting and environmental review indicates that the 3-5 year period may be considerably longer if there is litigation activity challenging the EIR and the lead agency approvals.

- Preparation of a Joint Technical Document (JTD), which is a multi-disciplinary technical document which serves as a permit application and background technical document for
several agency permits. The JTD describes the waste disposal plan, the access routes, and monitoring plans, together with descriptions of the characteristics of the site in all technical aspects including geology, hydrogeology, hydrology, air quality, water quality, and site suitability. The JTD also demonstrates that the landfill site meets all of the siting and design/construction/operational standards, prescriptive and performance, embodied in the applicable regulations of the local air quality management district, the Regional Water Quality Control Board, the Local Enforcement Agency (LEA), and the California Integrated Waste Management Board (CIWMB).

- Apply for and obtain a Waste Discharge Requirements permit from the Regional Water Quality Control Board.

- Apply for and obtain a Solid Waste Facilities Permit from the LEA, to also be concurred with by the CIWMB.

- Apply for and obtain an Authority to Construct and Permit to Operate from the applicable air quality management district, in this case the Yolo-Solano Air District with regulatory authority over the facility.

- Apply for and obtain other permits which may be required, including without limitation, a Corps of Engineers section 404 permit; federal Endangered Species Act permit; Clean Water Act section 401 certification; and streambed alteration agreement from the Cal-EPA Department of Fish & Game.

The time for completing the JTD and obtaining all required environmental agency permits to construct and operate a new landfill would likely take as long as 1-3 additional year(s) after the project-level EIR is certified by the lead agency and a land use/conditional use permit is obtained, assuming no litigation delays the certification of the EIR or delays the obtaining of the permits from various agencies. History involving landfill land use applications throughout the state demonstrates that litigation is a realistic obstacle and occurs in most landfill permitting proceedings. Each of the agencies has an independent statutory and regulatory basis for issuance of the permits involved.

The California statutory and regulatory requirements for development of new landfills embodies a process which results in the planning and permitting for a new landfill taking up to 10-12 years or more to complete. The history of permitting landfills in California in the last 20 years demonstrates that few are actually approved, let alone built and operated. Since 1985, there have been 5 new landfills permitted in California on non-tribal lands (Potrero Hills Landfill in Solano County [1986]; Frank R. Bowerman Landfill in Orange County [1991]; Keller Canyon Landfill in Contra Costa County [1992], Mesquite Regional Landfill in Imperial County [1999], and Eagle Mountain Landfill in Riverside County [1999]. Of those five, three have been built (Potrero, Bowerman and Keller Canyon), one is to be constructed by 2013 (Mesquite), and the 5th is still in litigation (Eagle Mountain Landfill). The Los Angeles County Sanitation Districts own both Mesquite and Eagle Mountain; both are in southeastern California desert areas. Bowerman Landfill is in Orange County. Potrero Hills and Keller Canyon are the only new northern California sites approved and constructed in the last 20
The Eagle Mountain Landfill project was started in 1988. Keller Canyon was started in 1985 as a proposed “Central Landfill” in Contra Costa County, southwest of the City of Pittsburg. The Keller Canyon Project took 7 years to complete and open, and was actually “fast-tracked” due to the State CIWMB having issued a compliance order to Contra Costa County requiring the development of new landfill to replace the Acme Landfill near Martinez. In fact, for a period of time, solid waste from Central Contra Costa County was exported to Potrero Hills Landfill under an export agreement negotiated between Contra Costa and Solano Counties because of the solid waste disposal capacity crisis in central Contra Costa County. The Phase II expansion application for Potrero Hills Landfill was filed in March 2002, over 5 ½ years ago.

Experience locally and throughout the state demonstrates that siting and permitting a solid waste landfill is a time consuming, expensive, proposition that can easily take between 10-12 years or more, without guarantee of a successful or even partially successful result.

The applicant does not own or control properties in the Maine Prairie area suitable for landfill development within a reasonable timeframe to meet the basic objectives of the Project. In fact, the applicant does not own any property in the general vicinity of the Potrero Hills Landfill facility outside of the secondary management area of the Suisun Marsh. The Maine Prairie Alternative Landfill would have to begin at the very first step in the process, identifying potential candidate sites using screening criteria to begin a focused search for a suitable site to begin the formal environmental review process. The entire process of site development, from initial identification/land acquisition to ultimate design and construction, would require 10 or more years, and would not be available before 2012 when the current available capacity of the Phase I landfill is exhausted.

C. COMPARISON OF PROJECT ALTERNATIVES

None of the identified project alternatives would meet the project objectives and avoid, or substantially lessen, the significant effects of the project as required by Section 15126(d) of the CEQA Guidelines. From a comparison of the environmental impacts, it can be concluded that only the No Project Alternative would avoid the landform alteration effects of the proposed project. However, the No Project Alternative shifts daily operational impacts of landfilling operations to other sites and recognizes that additional capacity has to be created in the system to handle of the waste handled by the Potrero Hills Landfill. All of the alternatives, including the No Project Alternative, defeat the most important objective of the project, the development of substantial additional disposal capacity to serve the County and regional users’ long-term disposal capacity needs. The Waste Reduction and Alternative Technologies Alternative provides several worthwhile and important elements of source reduction and diversion to try and reduce the overall contribution to the waste stream, as well as providing alternative methods of disposal. While the concepts are valued, not all have been demonstrated to be feasible for a variety of reasons noted in the text.

CEQA requires that the EIR identify the “environmentally superior alternative” from amongst the alternatives evaluated. The original EIR identified the No Project Alternative as being the environmentally superior alternative and stated that other than the No Project Alternative, the
Phase I Expansion would be the environmentally superior alternative. Based on the analysis herein, the No Project Alternative remains the environmentally superior alternative. A comparison of the alternatives is discussed below.

1. **NO PROJECT ALTERNATIVE**

   a. **Description of the No Project Alternative**

      The No Project Alternative consists of the continued operation of the existing landfill without expanding onto the Phase II area to the east. The proposed Phase II expansion area would remain undeveloped as agricultural land. Based on current waste disposal rates at PHLF, the existing landfill would reach its permitted capacity in approximately 4-5 years, in 2012. The earliest date for exhaustion of capacity has been estimated to be January 1, 2012. No horizontal or vertical expansion of the landfill operations would occur, and the existing site composting operations and re-use/recycling activities would cease.

   b. **Impacts of the No Project Alternative**

      PHLF would continue to operate the existing ground-water monitoring network and landfill gas collection system during the closure and post-closure maintenance periods. Under the closure plan requirements, all exterior slopes would be revegetated and operational facilities (e.g., scale house and equipment maintenance building) would be decommissioned.

      The No Project Alternative would require all existing wastes destined for Potrero Hills Landfill to be redirected to other landfills in the region or otherwise disposed, diverted, or recycled.

      The No Project Alternative would limit the County's waste disposal options, and would not provide an effective, long-term solution to the County and regional waste management needs. It is not known whether the existing regional solid waste landfilling system can absorb the average 3,400 tons per day of solid waste currently disposed of at the Potrero Hills facility. Each landfill facility (discussed above in this section) has unique permit conditions and constraints, including contractual commitments; permit conditions limiting a variety of operating conditions including hours of operation and access to major freeway interchanges and routes. It is not possible to meaningfully summarize each permit accurately to know whether and to what extent solid waste currently disposed of in the Potrero Hills Landfill could be diverted for landfilling elsewhere, or for how long.

      The existing car and truck traffic associated with the currently permitted operations (up to 500 vehicles daily) would be redirected to other landfills. Air quality emissions associated with daily operations (such as truck trips, active face activity, and daily cover application using heavy equipment) would be substantially reduced in the vicinity of the Potrero Hills Landfill with this alternative, but such effects would be transferred to other landfill locations. Air emissions and potential impacts are not eliminated, however, since the landfill gas collection and disposal system would continue to operate for a minimum of 30 years and the closure plan would require construction of the final cover and periodic maintenance trips to the facility. Transport
of solid waste to other operating landfills would relocate many of those daily operational emissions to other locations within the same air basin.

Locally collected waste within the County, including the solid waste from Fairfield, Suisun, and unincorporated Solano County would have to be processed at a new transfer facility in the Fairfield-Suisun area in order for these wastes to be transported to more remote landfills, assuming capacity is available elsewhere. This is because the 7 ton “packer” truck collection vehicles are not able to travel long distances. Extended travel places a strain on the vehicle power train and require a much higher degree of maintenance. In addition, because these are daily route vehicles, such collection vehicles cannot be tied up in extended transport operations because they are required for use on multiple daily collection routes.

The development of a Fairfield-Suisun transfer station facility will itself create land use challenges not unlike those for siting a landfill. This type of facility will have to undergo detailed environmental review pursuant to CEQA in order to be permitted.

c. Conclusion

The No Project Alternative would be considered the environmentally superior alternative because it would minimize the direct environmental impacts anticipated at the project site. However, new impacts similar in nature would be anticipated at the destination landfill that would receive diverted waste once the existing landfill's capacity is reached. Impacts are thus shifted from the PHLF site to another site or sites. In addition, a transfer station located in the Fairfield-Suisun area would be necessary for the transport of area wastes to other landfill facilities dependent upon availability. The County will need this facility to address its landfill capacity shortfall as a result of the Potrero facility closing. The severity of the impacts of transfer and the shift of impacts from relocating disposal operations to other sites would depend upon the operational changes at the destination landfill that would be necessary to accommodate the diverted waste. It cannot be determine at this time whether those impacts would be greater or less than those identified for the proposed project. It is clear, however, that with implementation of the No Project Alternative, the objectives of the proposed project would not be met.

2. HIGHER PHASE I AREA ALTERNATIVE

a. Description of the Higher Phase I Area Alternative

This alternative assumes the extension of the height of the landfill within the existing Phase I landfill footprint (Exhibit 5-7). In place of expanding the landfill footprint, this alternative would increase the permitted height of the Phase I area to 410 feet, which would increase the landfill's capacity to 48 million cubic yards. The total additional airspace capacity under this Alternative would be 8.04 million CY which is approximately 81 percent less than the project. The site life of this Alternative would be 6.7 years, rather than the 34.5-35 year life of the proposed project.
The landfill height would be increased from the currently permitted 220 feet MSL to 410 feet MSL, which is the maximum height that can be attained while still maintaining a geotechnically sound landfill shape and drainage pattern. This height would require a steep pyramid shape. The narrow width of the top would require the use of small restricted-sized cells with extra soil cover for capping. The existing Phase I site would not provide sufficient soil cover for this design, requiring the importation of approximately 3.8 million cubic yards of soil from other parcels owned by the applicant (most likely from the Phase II area and up valley areas in the Potrero Hills valley). The soil borrow areas on the other parcels would result in significant land disturbance. Excavating the hillsides in order to avoid disturbing the existing springs and wetland features on these parcels may not generate sufficient cover soil. Excavations in the base of the valley that avoid the wetlands may require digging of large pits that would not drain, and the ponds could have enough evaporation potential that downstream water runoff would be lost instead of flowing westward to the marsh. These excavations would result in loss of grassland resources.

The pyramid shape (rather than a flattened top as currently proposed) would not accommodate subsequent resource recovery operations under post-closure conditions. This would require that this element of the project be eliminated or that the resource recovery operations be located elsewhere, such as on the Phase II lands, possibly disturbing wildlife usage patterns due to daily operation activities.

Implementation of this alternative would require drainage to be diverted along the north edge of the site rather than along its southern edge. This alternative would include the placement of benches at every 50 feet of landfill slope elevation and would require a slope setback for placement of the landfill access road. This alternative would create a steep peak-shaped landfill with a narrow top width, which would make landfill operations difficult during its final stages due to a lack of operating space. This shape would also limit the ability to operate the composting operations on the landfill mound once the facility reaches capacity. In addition, without the soil excavated in the Phase II area, insufficient soil would be available for the daily and final cover requirements of this alternative. This alternative would require approximately 3.8 million cubic yards of soil to meet the operational requirements. This soil would have to either be imported to the site or excavated from the adjacent Phase II area. In order to import this volume of soil, approximately 190,000 truck loads of soil, assuming 20 cubic yards per truck, would need to be transported to the site. Assuming the delivery of 100 trucks per day, it would take over 5 years to deliver all of this soil to the site. Because of the substantial volume and costs associated with importing this volume of soil, this alternative assumes that soil would be provided through excavation of the Phase II area. Based on the available in-place soil within the Phase II area, the average excavation depth would be approximately 10 feet across the site.

1. Land Use

This alternative is consistent with the land use and zoning designations of the Solano County General Plan (1995). Because this alternative does not involve horizontal expansion of the landfill, the changes in land use anticipated with the proposed project would not be
anticipated. However, extensive soil excavation would be necessary in the Phase II area to provide adequate daily and final cover soil for the Phase I landfill expansion. Due to the distance to the nearest residences and the location of the northern ridgeline of the Potrero Hills between the Phase II area and these residences, adverse land use compatibility impacts would not be anticipated. The land use compatibility impacts of this alternative would not differ substantially from those anticipated with the proposed project.

2. Biological Resources

The loss of biological resources with this alternative would be similar to the proposed project. However, this loss would generally occur for a shorter duration. Soil excavation of the Phase II area would likely occur in phases as soil is required for the Phase I landfill expansion. As an area is excavated, it could be more quickly restored to preexisting conditions. With the proposed project, revegetation of the landfill mound would not occur until waste capacities are reached. Therefore, the biological resource impacts associated with this alternative would be somewhat reduced when compared with the proposed project.

3. Public Health and Safety

The public health and safety impacts of this alternative would generally be similar to the proposed project, although this alternative would make landfill operations more difficult as the facility approached its final capacity due to a limited area for waste disposal operations. This could adversely affect worker safety by limiting the maneuverability of waste-hauling vehicles. Also, because of the greater exposure of the working face as it reaches peak elevations, the exposure to the elements (i.e., high winds) would increase, potentially causing increased litter generation. The total volume of landfill gas generated from this alternative would be less than with the proposed project due to its smaller total size. However, landfill gas emissions would be similar on a daily basis.

4. Hydrology and Water Quality

This alternative would reduce the hydrology and water quality impacts associated with the proposed project by not including landfill development on the Phase II area. However, the excavation of the Phase II area to meet the operational soil requirements of the Phase I expansion would alter existing drainage patterns and increase erosion potential from the site. Similar to the proposed project, the implementation of detailed erosion control measures would be required to minimize potential adverse water quality impacts associated with this alternative. The hydrology and water quality impacts of this alternative would be less than with the proposed project.

5. Earth Resources

Although this alternative would require the excavation of the Phase II area, this excavation would occur for short periods of time as soil is needed, thus minimizing the potential for soil erosion and sedimentation. Also, this alternative would not include the development of landfill uses on the Phase II area, therefore minimizing the earth resource impacts anticipated with the
proposed project in this area. Therefore, the earth resource impacts of this alternative would be less than with the proposed project.

6. Public Services

This alternative would not contribute significantly to the demand for public services. The site is not served by a municipal water supply, public wastewater infrastructure, or the PG&E power grid. The site's demand for police and fire protection services is negligible. Therefore, the demand for public services and utilities would be similar to the proposed project with this alternative.

7. Noise

This alternative would slightly reduce the noise levels associated with the proposed project in the Phase II area. However, similar noise levels would be generated at the Phase I site as assumed with the proposed project. Also, with the higher elevation of the proposed landfill operations, no noise screening would be provided by the surrounding ridgelines as the Phase I area reached its upper elevations. Noise generated from the site would be more likely to be noticeable from the residences located to the north. Consequently, the noise levels generated from the Phase I area associated with this alternative could be higher than anticipated with the proposed project.

8. Traffic

This alternative would have traffic impacts similar to the proposed project, although they would occur for a shorter duration.

9. Air Quality

The air quality impacts of this alternative would be reduced when compared to the proposed project due to its shorter lifespan. However, once the capacity of the Phase I area is reached, waste would need to be transported to another facility with the associated air quality impacts associated with that transportation. The matters identified in the No Project Alternative discussion regarding the need for a transfer station and the shifting of impacts from one area to another apply here once the Phase I capacity is reached and the site closes.

10. Visual Resources

The visual impacts of this alternative would be substantially greater than anticipated with the proposed project. By increasing the Phase I area's peak elevation to 410 feet, the landfill mound would protrude approximately 160 feet above the highest point of the Potrero Hills ridgeline to the north. Due to the generally pyramid shape of the final landfill mound, it would be clearly noticeable as a manmade feature within the local view shed. The landfill mound anticipated with this alternative would not be expected to visually blend with the surrounding hills.
11. Cultural Resources

The potential impacts on cultural resources anticipated with this alternative would be the same as expected with the proposed project due to the need to excavate the Phase II area to provide cover soil. However, adverse impacts on cultural resources would not be anticipated with either alternative.

12. Conclusion

The potential impacts of this alternative would generally be reduced when compared to the proposed project. Therefore, other than the No Project Alternative, this alternative would be considered the environmentally superior alternative. However, this alternative would not substantially reduce the significant biological resource and hydrology impacts anticipated with the proposed project because it would require the excavation within the Phase II area. Also, this alternative would result in significant visual resource impacts on the local community that could not be mitigated. Furthermore, this alternative would not be as effective as the proposed project in meeting the project objectives, which includes the development of long term disposal capacity.

3. Maine Prairie Area Alternative Site

a. Description of the Maine Prairie Area Alternative Site

This Alternative consists of the development of a new solid waste landfill in the area of Solano County known as "Maine Prairie." The Maine Prairie area, although not specifically defined, was suggested by the Northern California Recycler's Association (NCRA) as an alternative location for a landfill site. The purpose of this alternative would be to provide the County with thirty-five years or more of landfill disposal capacity, and consists of identifying, planning, permitting and constructing a new solid waste landfill facility in this 12,000 acre area of the County, located outside the Suisun Marsh.

1. Land Use

The Maine Prairie area is predominantly rural agricultural lands. Although the County General Plan is currently in the midst of a major update, the lands along the SR 113 corridor (which bisects the Maine Prairie area) are currently designated as intensive and extensive agricultural in the 2006 Land Use Update for the County's General Plan study, and are zoned for agriculture. Much of the land in this area is maintained under Williamson Act Contracts. It should be anticipated that a landfill project in this area would generate potentially significant land use impacts deriving from the conversion of the affected lands away from agricultural use. In addition, General Plan and zoning considerations would have to be analyzed to determine if a large mounded structure in this relatively flat area would be consistent with the General Plan's agricultural designation.
2. **Biological Resources**

The loss of biological resources with this alternative would be similar to the proposed project, and potentially involve different habitat and species based on the presence of Delta Smelt habitat and Giant Garter Snake habitat in this area. There is extensive vernal pool habitat identified in the vicinity of the Hay Road Landfill facility. Detailed site specific studies would be necessary to determine the extent of any species or habitat present on the selected location.

3. **Public Health and Safety**

The public health and safety impacts of this alternative would generally be similar to the proposed project, except for potentially changed and increased risk conditions on the existing transportation infrastructure along the SR 113 corridor. The total volume of landfill gas generated from this alternative would be similar to the proposed project, and thus the impacts would be similar or the same. In addition, because selection of the Maine Prairie Alternative would entail a long term development process, likely 10 years or more, the County would incur a loss/substantial shortfall of landfill disposal capacity during the period after the Phase I Potrero Hills Landfill closes in 2012 or 2013, and the date that a landfill facility could actually be developed in this area. Under such circumstances, the observations of the No Project Alternative consequences would also apply to the Maine Prairie Alternative.

4. **Hydrology and Water Quality**

The area comprising the Maine Prairie Water District, within the Dixon Watershed south of Dixon and east of Vacaville, is subject to periodic flooding, both localized and regional. As discussed above regarding this alternative, it is unknown as to whether and to what extent the Maine Prairie area will receive flood control improvements through the SCWA. The potential for flooding creates a potentially significant impact for control of surface waters and integrity of landfill structures for a facility in this area. It is possible that mitigation measures to reduce flooding damage potential may be effective, but such measures would have to be developed and studied in detail in connection with a site proposal.

Most rural residential landowners have individual shallow groundwater wells that serve their domestic needs. Some small rural residential water systems also distribute groundwater to their customers. Thus, water use (demand), and potential impacts to water quality from the site’s development, would have to be examined. It is not anticipated that water demand would result in a potentially significant impact.

5. **Earth Resources**

Development of a Maine Prairie landfill would involve extensive earthwork for site preparation and construction, but this would be similar to the proposed project, so additional effects beyond those identified for the project would not be expected.
6. **Public Services**

This alternative would not contribute significantly to the demand for public services. The demand for public services and utilities would be similar to the proposed project with this alternative.

7. **Noise**

Noise from the landfill operations would likely be no more or less significant than noise effects associated with the proposed Project.

8. **Traffic**

This alternative would have potentially significant traffic impacts associated with the additional truck traffic using SR 113 given the background conditions evident on the SR 113 corridor. The lack of a roadway system capable of handling the truckloads necessary to serve the facility would be a significant impact. The Maine Prairie facility, were it to receive the same tonnage (3,400 TPD) as the existing and proposed Project, would be accepting more than 3 times the tonnage currently traveling to Hay Road Landfill. With both facilities operating, the truck traffic which would be associated with landfill operations in this Maine Prairie area (over 4,000 TPD) would have to be carefully analyzed as a potentially significant cumulative impact given the current and foreseeable conditions on SR 113.

9. **Air Quality**

The air quality impacts of this alternative would likely be the same as with the Proposed Project. In addition, there is a potential for significant cumulative air quality impacts from the development of a Maine Prairie Area landfill facility and the operation of the Hay Road Landfill.

10. **Visual Resources**

The visual impacts of this alternative would be substantially greater than anticipated with the proposed project. By constructing a landfill mound on the order of approximately 200-300 feet above mean sea level, visual effects are relatively certain. It would be clearly noticeable as a manmade feature within the local view shed. The landfill mound anticipated with this alternative would not be expected to visually blend with the surrounding topography.

11. **Cultural Resources**

The potential impacts on cultural resources anticipated with this alternative would be the same as expected with the proposed project due to the need to excavate for construction soil and cover purposes. However, adverse impacts on cultural resources would not be anticipated with either alternative.
12. Cumulative Impacts

With an additional landfill facility located within a short distance from the existing Hay Road Landfill and on the SR 113 corridor, there would be potentially significant cumulative effects from the presence of both sites in the same micro area of the County. Cumulative impacts would likely occur and be significant with respect to traffic conditions on SR 113 and the increased damage to the local roadway system; air quality impacts, including climate change effects; noise and glare associated with the facility operations; and a visual impact the Maine Prairie area is relatively flat and any landfill developed in the area will necessarily be a mound built up over this flat area that would be visible from many areas.

13. Conclusion

The Maine Prairie Area Alternative Site would have impacts similar to the proposed project in that it would include the construction and operation of a new landfill facility with all of the environmental impacts associated with such a facility. The environmental impacts that would occur with the development of a landfill in the Maine Prairie area are directly dependent upon the specific site selected. Much of the land within the Maine Prairie area is maintained under Williamson Act contracts. Therefore, development would likely require the removal of parcels from Williamson Act contracts and the conversion of productive agricultural lands to landfill purposes. Site development would also substantially alter the local hydrology and drainage characteristics. Due to the flooding characteristics of the area and the high water tables, this site may experience substantially more adverse impacts relating to flooding and groundwater quality than the proposed project. Sensitive biological resources associated with wetland features within the Maine Prairie area could be adversely affected by landfill development depending upon the particular resources within the facility footprint. However, because this site is located outside of the Marsh, it would not adversely affect biological resources within the Marsh’s secondary management area. Due to the relatively flat character of the area, the visual impacts of a 200- to 300-foot mound would be clearly more adverse than anticipated with the proposed project due to its visibility throughout the area. Also, traffic impacts would likely be more severe than with the propose project due to the limited roadway infrastructure in the area and the cumulative effects associated with operation of the Hay Road Landfill within the SR 113 corridor.

Based on the analysis provided above, it can be concluded that the development of a new landfill within the Maine Prairie area would result in substantial adverse environmental impacts. However, it cannot be precisely determined whether these impacts would necessarily be more or less severe than those anticipated with the proposed project. Some impacts associated with the proposed project may be more severe than anticipated within the Maine Prairie area (e.g., removal of biological habitat within the Marsh’s secondary management area) while others may be less severe (e.g., flooding, visual resources). This analysis does not assign values to individual resources in order to weigh the relative merits of the proposed project and alternatives but rather discloses their relative impacts in order to provide decision makers with the information necessary to make an informed decision on the proposed project and the feasible alternatives to the project. It is clear, however, that with implementation of
this alternative, it would be difficult to achieve the objectives of the proposed project due to the substantial time required to identify, plan, permit and construct a new solid waste landfill within the Maine Prairie area.

D. OTHER POTENTIAL ALTERNATIVES AND SITES CONSIDERED

In accordance with the Court’s decision and judgment, the County evaluated a wide range of potential alternatives to determine the specific alternatives suitable for a detailed discussion in this revision of the EIR. The range of alternatives includes waste reduction and alternative technologies, existing landfill sites owned and operated by other entities, potential new sites outside of the primary marsh and secondary management areas, and onsite alternatives.

Within the broad spectrum of potential alternatives evaluated, certain options were found to be infeasible in that they would not meet the project’s basic objectives; would involve lands and projects belonging to business competitors or others; or they could not be feasibly accomplished within a reasonable timeframe. These potential alternatives are discussed in detail below.

As the basis for a principled search, this broader range of potential alternatives to the project was examined using the County Integrated Waste Management Plans (CoIWMPs) for nearby counties and counties within the service area of Potrero Hills Landfill The CIWMA requires CoIWMPs prepared for each county to provide for planned and potential disposal sites within a planning framework, including identifying designated landfill sites in a county’s General Plan. Each county within the state, and cities and regional agencies, must plan for solid waste disposal facility siting as required by Public Resources Code sections 41700-41704. Section 41710 provides that any area or areas identified for the location of a new solid waste disposal facility shall be located within or adjacent to a land use area authorized for a solid waste disposal facility in the applicable city or county General Plan. With the CIWMA requirement for cities and counties to provide for the development of solid waste disposal sites in their respective General Plans, the County of Solano as lead agency has been able to objectively evaluate whether and to what extent the project’s objectives and needs could be met by alternative sites which might be available outside of the marsh and in other counties, as well as by technological non-disposal alternatives (e.g. source reduction, recycling and energy recovery). Therefore, the County believes that using the CoIWMPs is an appropriate method for identifying potential alternative sites.

1. WASTE REDUCTION AND ALTERNATE TECHNOLOGIES

The CIWMA (also referred to herein as “AB 939”) discussion of issues related to waste reduction or diversion requires that a waste diversion level of 25 percent have been achieved by cities and counties by 1995, with a waste diversion level of 50 percent to have been achieved by the year 2000.4 Solano County is subject to this requirement. Although source reduction and recycling are not complete alternatives to the use of solid waste disposal sites, a successful waste reduction and recycling program can reduce the amount of wastes entering the landfills

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4 The Act requires that this diversion mandate must be met in each county in the state.
and thereby extend the service life of existing landfills. Solano County is in compliance with the requirements of AB 939, and currently has a diversion rate in excess of 50%. Several cities within the County, including Benicia, Fairfield, Rio Vista and Dixon have rates above 60%.\textsuperscript{5} The State of California recently reported a statewide diversion rate of 54%.

This potential project alternative describes and evaluates waste reduction techniques and certain waste disposal technologies that could potentially be applied to waste management in Solano County and the other counties that are tributary to the Potrero Hills Landfill (PHLF) waste stream. Solano County cannot, of course, determine the programs and policies for other counties in the state.

\textbf{a. Source Reduction}

Source reduction generally involves measures to reduce or minimize the amount of waste that is generated by a change in consumer, commercial enterprise and institutional purchasing and the alteration of manufacturing packaging techniques. In the United States, a significant reduction in unnecessary disposable items could result in a substantial reduction of the overall waste stream. Specific source reduction techniques that city and county jurisdictions are evaluating to find additional methods by which to meet the landfill diversion requirements mandated by AB 939 include:

\begin{itemize}
  \item increasing the use of recycled materials
  \item reducing packaging and increasing the use of reusable containers
  \item reducing the generation of yard wastes and encouraging composting or other similar measures
  \item purchasing repairable items
  \item providing economic incentives to reduce waste generation and to recycle materials
  \item providing convenient recycling programs such as curbside pick-up or neighborhood recycling centers
  \item promoting the efficient use of raw and manufactured materials
\end{itemize}

Several of these measures would require legislation at either the local or state level (or both) in order to utilize enforcement power to attempt waste quantity reduction measures within the necessary PHLF project time frame of 5 years. For instance, forced changes to packaging of retail and wholesale goods would require a comprehensive legislative approach to seek a mandated materials standard for packaging of retail goods. Whether and to what extent such measures involve legal issues of federal or state pre-emption is unknown at this time. Consideration of this alternative must also respect the evolving timeframe of actions that will be involved, interlinked with changing long-established attitudes, opinions and consumer habits.

\textsuperscript{5} Waste Diversion Reporting, California Integrated Waste Management Board.
It is unknown what, if any, enhanced level of waste quantity reduction can be achieved, and it is also unknown what time frame any reduction might require. There is no evidence available to the County to suggest that waste reduction methods in whole or in part would eliminate the need for landfill disposal capacity. Therefore, the County has determined that this is not a feasible alternative for further consideration and is not included in the detailed evaluation sections.

b. Mechanical Volume Reduction

Generally speaking, mechanical volume reduction involves physically diminishing waste volumes through compaction, baling, shredding, or other similar measures. Mechanical reduction can take place prior to disposal at the landfill or at the landfill site itself.

1. Compaction

The compaction of wastes can occur one or more times starting from the point of residential, commercial, or industrial generation to final disposal. Typical compaction methods include:

- compaction units at the waste source such as under-the-counter garbage compactors in homes, and larger units capable of servicing large business or industrial users
- compaction of wastes by collection vehicle, which can also maximize load capacities and collection efficiency
- compaction of refuse at a transfer station
- compaction at the landfill site during filling operations

Potrero Hills Landfill currently uses heavy, special purpose compactor tractors to accomplish compaction as part of conventional landfill operations. The landfill facility currently employs the feasible equipment methods to operationally maximize waste compaction to preserve landfill disposal capacity and thus extend the life of the landfill.

2. Bale Fill

The balefill landfill method is a special type of compaction whereby waste material is bound into uniform size, highly compacted, dense bales prior to being placed in a landfill cell. Baling can result in reduction in volume consumed in the landfill as compared with conventional practices. Because loose waste is reduced by baling, the balefill method can also result in a significant reduction in stray litter, rodents, and birds (Mosley 1990). If baling occurs offsite of the landfill, economic advantages could include reduced transportation costs owing to the high density and uniform bales that increase the efficiency of transport vehicle space. Balefills wrapped in plastic-wrapped bales are designed to not require any daily cover soil, and hence some volume savings result from less soil use.

The balefill method is not without its own drawbacks. Refuse density governs the degree to which the service life of a landfill can be extended. Common densities achieved by
conventional landfilling range from 1,100 to 1,300 pounds per cubic yard for in-place refuse. In some instances, these densities can be slightly higher depending on the quality of compaction efforts. Depending on the baling equipment, the balefill method can achieve a refuse density that could exceed 2,000 pounds per cubic yard. Even though the waste is highly compacted (dense), the bales do not resemble perfect blocks. When stacked in the landfill, air space or voids between the bales reduce the effective refuse density by approximately 5 percent. Economically, the balefill has not been shown to be competitive with the standard sanitary landfill operation: as a result, no solid waste balefill facility currently exists in the state of California and only a few are successfully operating in the entire U.S.

c. Resource Recovery

Resource recovery includes the salvaging of recyclable or valuable materials from the waste stream prior to disposal. Resources that can be recovered include reusable materials, energy recovery in the form of landfill gas or through other waste conversion technologies (i.e., thermal destruction), and organic matter through composting. The County Source Reduction and Recycling Element (SRRE) discusses alternative programs for achieving waste reduction and diversion goals established by AB 939 (County of Solano, 1996). In terms of targeted sources, waste stream projections indicate that the residential sector produces the largest quantity of materials targeted through near-term recycling programs. The near-term programs were implemented in the 1995-2000 period, consisting of expanded curbside recycling including green materials pickup. Diversion of greater quantities in the commercial and industrial waste sectors is also needed to achieve medium-term goals. In both cases, waste paper and yard (green) waste comprise the major quantity of materials targeted for recovery in the future. Materials recovery facilities combined with curbside recycling programs have been identified as the primary methods available for collecting and processing the quantities of recyclable wastes expected by County diversion programs.

PHLF currently includes resource recovery operations, including beneficial re-use of construction and demolition debris for on-site operations, use of alternative daily cover materials, and the site’s composting operation. The proposed project evaluated in the EIR would expand the composting operations and thus increase diversion activities.

1. Recycling

Recyclable material includes paper, glass, aluminum, copper, iron and other ferrous metals, cardboard, some plastics, construction debris, and green garden debris. Recycling programs include curbside source-separated programs that capture recyclables in various bins separated from refuse, as well as “single-stream” recycling whereby recyclables are mixed together at a curbside location (i.e., bottles, cans, glass are in the same container) and separated at a materials recovery facility. The waste volume reduction is affected by the degree of participation of the residents and commercial enterprise and institution managers. For example, in the residential curbside source-separated recyclables pickup program provided by Solano Garbage Co. for the communities of Fairfield, Suisun and the nearby unincorporated area, the current participation level based on 2005 and 2006 levels is over 70%.
2. Composting

The Solano County CoIWMP previously estimated that the composting of all green garden debris (a process where organic wastes decompose biologically into a stable nutrient rich soil-like material) might theoretically reduce the residential waste stream by up to 40 percent and the commercial waste stream by 24 percent. Compost can be used as a soil amendment and may potentially be used as a daily soil cover in landfills. Since it is reasonable to assume most citizens would not like to have an active compost pile in their backyard, an organized collection system is needed to achieve a high diversion rate. Organized and centralized operations at the facility also allows for economies of scale to be achieved. This requires that residents separate their recyclables and garden debris from their other household wastes. This program is now available in the Solano County area served by Potrero Hills Landfill. Similar yard debris programs are offered in the other communities in the region served by the Landfill. The existing PHLF resource recovery operation includes a composting operation that receives up to 100 tons per day of yard debris for composting. The proposed project enlarges that operation to handle an additional 100 tons per day.

3. Energy Recovery

One method of converting wastes to energy involves the combustion of waste to fuel turbines to produce energy, otherwise known as waste conversion technologies. Waste conversion technologies can reduce waste volume by 80 to 95 percent and is the most effective method known for reducing refuse volumes.

Unfortunately, waste conversion technologies are controversial due to a lack of understanding regarding the science related to air emissions and residual ash. Ash can be recycled into numerous filler products, however, if disposed of, does require a special landfill for proper disposal. Permitting agency approvals, including an approval required by the Bay Area Air Quality Management District, in addition to local land use approvals and public buy in have typically been unfavorable in California with the current public opposition to waste-to-energy projects. Only 3 waste-to-energy facilities are in operation in California and no waste-to-energy facilities have been developed in the past 15 years. No new facilities are in the final planning stages in the entire state.

Additionally, not unlike a landfill, substantial lead time on the order of many years would be required in order to implement any waste conversion technology project that would be a potentially feasible alternative to the PHLF. Although no accurate estimate can be made, a time line in excess of 5-7 years could be necessary to develop such a project, based on the need to identify a suitable location, undertake due diligence on the site, acquisition of the site, permitting, environmental review and final development. This project development timeframe is beyond the time limit for the proposed project startup.

d. Waste Reduction and Alternate Technologies Summary

The alternative waste reduction technologies described above are not considered feasible alternatives to the proposed project in and of themselves. That is, none of these techniques,
alone or in combination, can completely offset the need for additional landfill capacity. The Solano County CoIWMP identified its required 15 years of disposal capacity in 1995, and did not identify alternatives to landfill disposal as suitable means by which to meet its AB 939 legal mandates. These alternative waste reduction technologies could, however, extend the operational capacity of the project landfill. However, their implementation, including the composting and beneficial re-use of recyclable materials as provided for in the project does not offset the need for this project. Technologies such as waste conversion are not feasible at this time because of the public acceptance constraints.

2. **EXISTING LANDFILL SITES OWNED AND OPERATED BY OTHER ENTITIES**

In accordance with Court’s decision, the County undertook to evaluate potentially practicable off-site alternative sites outside of the marsh area and/or outside of the county, all within the PHLF existing service area. Approximately 90 percent of waste materials received at the landfill are generated within Solano, Sonoma, Contra Costa and Santa Clara counties. In accordance with CEQA’s rule of reason, the County has undertaken a review of this service area to identify potential off-site alternatives. In addition, the County also considered nearby Yolo County and Napa County, and also included Alameda County’s Vasco Road Landfill, which is owned by a subsidiary of Republic Services, Inc., the parent company of PHLF.

All landfill sites, identified in the Countywide Siting Element of a CoIWMP and the CIWMB’s database were reviewed to determine if the overall proposed project purpose could be practicably achieved. Using CoIWMP information from these seven counties, a total of 19 off-site landfills were identified in the landfill’s service area (Exhibit 5-8).

a. **Existing Off-Site Alternative Landfill Sites**

Provided below is specific information relating to each of these existing sites obtained from publicly available sources. Data was obtained from reliable sources such as the Integrated Waste Management Board Solid Waste Information System (SWIS) database and CoIWMP. The age of the data varies somewhat from site to site, but reflects the status of each site in the publicly accessible databases.

1. **Solano County: Hay Road Landfill**

   - **Facility Owner /Operator:** Norcal Waste Systems, Inc. (NWS) Hay Road Landfill, Inc. (previously known as “B&J Dropbox”)

   - **Capacity/Remaining Site Life:** 20.8 million cubic yards (12.4 million tons)/At current maximum permitted rate of disposal, remaining site life is 123 years, or 98 years at the maximum allowed under a stipulated agreement modifying the current Solid Waste Facilities Permit (SWFP).
Source: ESP 2007

Existing Offsite Landfills in Service Area

Exhibit 5-8
- **Permitted Types of Waste:** Municipal solid waste including: garbage, rubbish, tires, street refuse, C&D materials, municipal waste water treatment solids, agricultural wastes, asbestos-containing wastes, dead animals, dried sewage sludges.

The Hay Road Landfill is located in the northern unincorporated area of Solano County, east of Vacaville, at the intersection of SR 113 and Hay Road. The environmental impact report for an expansion has been certified and the County has issued a land use permit. The additional capacity of the expansion area is included in the site life projections in this document, although the expansion has not received its final permits. The Hay Road Landfill is currently applying for an amendment to their permits to convert from a Class III to a Class II landfill, which will allow it to accept specific designated wastes.

This site is currently operating and owned by a competitor of PHLF and Republic Services, Inc. It is therefore not available for development for the proposed project by PHLF.

2. **Solano County: Aqua Clear Farms**
   - **Facility Owner /Operator:** Aqua Clear Farms Corporation
   - **Capacity/Remaining Site Life:** Unknown
   - **Permitted Types of Waste:** Drilling mud and drill cuttings only. This is a special waste handling facility and not a municipal solid waste landfill facility.

Aqua Clear Farms is a Class II landfill located in the unincorporated area of southeastern Solano County that is permitted to receive only drilling mud from oil and gas exploration and development operations. An estimated 30,000 tons of drilling mud are generated per year in Solano County (EDAW 2003). This site is a currently operating special waste treatment unit facility; therefore, it is not available for development of the proposed project.

3. **Solano County: Rio Vista Landfill (Closed)**
   - **Facility Owner /Operator:** City of Rio Vista
   - **Capacity/Remaining Site Life:** Closed and is no longer accepting waste.
   - **Permitted Types of Waste:** None, closed site.

Rio Vista Landfill is a closed (1992) waste disposal site that formerly accepted waste from the City of Rio Vista and surrounding unincorporated areas of Solano County. Wastes from the area previously served by this landfill are now delivered to the Potrero Hills Landfill.

The Rio Vista landfill no longer accepts wastes; therefore, it is not available for development of the proposed project.
4. **Napa County: American Canyon Landfill (Closed)**
   - Facility Owner /Operator: South Napa Waste Management Authority
   - Capacity/Remaining Site Life: Closed, no remaining capacity
   - Permitted Types of Waste: None, closed site.

In Napa County, adjacent to the west of Solano County, the American Canyon Landfill received municipal solid wastes from Napa and Vallejo and surrounding unincorporated areas of southern Solano County up to 1995. The local wastes are now handled by the South Napa Waste Management Authority through a transfer station located in the unincorporated area north of the landfill. The wastes from the transfer station are exported to the Keller Canyon Landfill in Contra Costa County.

Since the landfill is closed and the landfill no longer accepts waste; it is not available for development of the proposed project.

5. **Contra Costa County; Keller Canyon Landfill**
   - Facility Owner /Operator: Keller Canyon Landfill Company (Subsidiary of Allied Waste)
   - Capacity/Remaining Site Life: 68.3 million cubic yards (44.4 million tons)
   - Permitted Types of Waste: Municipal solid waste, non-liquid industrial waste, contaminated soils, ash, grit and sludges.

Keller Canyon is a Class II operating landfill located in unincorporated Contra Costa County southwest of the City of Pittsburg. Keller Canyon Landfill opened in March 1992 with a total design capacity of 60-70 million cubic yards and a projected site life of over 35 years. The site currently handles approximately 2,500 tons of waste per day, although the land use permit allows up to 3,500 tons of waste per day to be managed at the facility. The facility’s ability to receive waste is constrained by use permit traffic conditions and operating conditions in its air permits from the BAAQMD. Solid waste from the City of Benicia in southern Solano County is taken to the STAR transfer station in Pacheco, Contra Costa County, and from there is hauled to the Keller Canyon Landfill. That transfer station and the landfill also receive wastes from central and eastern Contra Costa County. Vallejo and Napa wastes from the South Napa County transfer station are currently hauled to this landfill. This Keller Canyon Landfill site is owned by Allied Waste Systems, a competitor of PHLF and Republic Services, Inc. It is therefore not available for development of the proposed project by PHLF.

6. **Contra Costa County: Contra Costa Sanitary Landfill (aka GBF Landfill) (Closed)**
   - Facility Owner /Operator: GBF Holdings, LLC c/o TRC Companies, Inc.
   - Capacity/Remaining Site Life: Closed in 1992. No longer accepting waste
   - Permitted Types of Waste: None; closed site.
The Contra Costa Sanitary Landfill was located northeast of Somersville Road in the City of Antioch. This 88-acre landfill consists of two contiguous but separate landfills, a 62-acre Class II GFB Disposal Site and a 26-acre Pittsburg Disposal Site. This facility ceased accepting waste under Court supervised closure order on March 31, 1992 and is a closed site. It is also a closed state Superfund site due to previous industrial and hazardous waste disposal at the facility in the 1960s and 70s. It is not available for development of the proposed project.

7. Contra Costa County: Acme Landfill

› Facility Owner /Operator: Acme Fill Corporation

› Capacity/Remaining Site Life: Limited

› Permitted Types of Waste: Municipal solid waste, non-hazardous and inert wastes.

Acme Landfill is located east of the City of Martinez in unincorporated Contra Costa County. This 516-acre facility consists of three separate disposal units: 125-acres in the north, 97-acres to the east and 23-acres in the south. The north parcel was opened in the 1950s to accept municipal solid waste and limited hazardous waste. This unit was a regulated hazardous waste co-disposal unit and has been closed. The south parcel opened in 1982 as a Class III disposal site for non-hazardous and inert waste. The south parcel has been closed for many years, and is no longer accepting wastes. The east parcel opened in 1984 as a Class III disposal site for non-hazardous and inert waste. The purpose of the east parcel landfill was to provide central Contra Costa County with a short term solution for its waste disposal needs pending the County then siting a new landfill. The east parcel landfill facility served central Contra Costa County for approximately 4 ½ years, after which time an interim transfer station and later a full scale transfer station were constructed on the Acme site to export central Contra Costa County’s waste pending the permitting and opening of Keller Canyon Landfill in 1992. The full scale transfer station is now the STAR transfer station, which is located on a separate portion of the Acme facility near Martinez. The east parcel landfill is still technically open, but the remaining capacity of the east parcel is severely limited. The site is used as a composting facility, and also handles inert wastes for disposal. It is estimated that less than 100 tons per day of inert wastes are handled at the Acme facility. The site is privately owned by Acme Fill Corp. It is not available for development of the proposed project by PHLF.

8. Contra Costa County: West Contra Costa Sanitary Landfill (Closed)

› Facility Owner /Operator: West County Landfill, Inc. (subsidiary of Republic Services, Inc.)

› Capacity/Remaining Site Life: Closed. Accepted waste until September 2006. Wastes now transferred from WCCSL Golden Bear Transfer Station to Potrero Hills Landfill.

› Permitted Types of Waste: None, closed site.
The West Contra Costa Sanitary Landfill (WCCSL) lies partially within the City of Richmond city limits and partially within unincorporated western Contra Costa County. The WCCSL previously provided waste disposal for the cities of Richmond, El Cerrito, San Pablo, Hercules, Pinole and the surrounding unincorporated areas of western Contra Costa County. Currently, the landfill is no longer accepting wastes and is undergoing formal closure. In anticipation of the impending closure of this landfill, a transfer station was permitted and constructed on the WCCSL property, called the Golden Bear Waste Recycling Center. The facility began operations in August 2006, and has an operating capacity of approximately 1,200 tons per day. The Golden Bear facility transfers all of the West Contra Costa County area solid waste (approx. 800 tons per day) to Potrero Hills Landfill under a disposal agreement between West County Resource Recovery, Inc., the West County Integrated Waste Management Authority, and Potrero Hills Landfill Company, Inc. The 800 tons per day of West County wastes conveyed to Potrero Hills Landfill comprises almost one-fourth of the daily inbound tonnage to Potrero Hills Landfill. In addition, the West County Resource Recovery Facility - Bulk Material Processing Facility operates on top of the closed landfill.

The EIR was certified in 2004 and the land use permit has been issued for the transfer station and Bulk Processing Facility, therefore this site is not available for development of the proposed project. The site Waste Discharge Requirements require that the former landfill facility be closed and permanently capped.

9. Santa Clara County: Guadalupe Rubbish Disposal (Closed)
   - **Facility Owner /Operator:** Guadalupe Rubbish Disposal Company
   - **Capacity/Remaining Site Life:** Closed
   - **Permitted Types of Waste:** None, closed site.

The Guadalupe Rubbish Disposal site is located in southwestern San Jose off of Guadalupe Mines Road in a canyon immediately north of Guadalupe Mines. This facility served the cities of Campbell, Monte Sereno, San Jose, Saratoga, Los Gatos, and the adjacent unincorporated areas of Santa Clara County. This site is closed and therefore, it is not available for development of the proposed project.

10. Santa Clara County: Kirby Canyon Recycling and Disposal Facility
    - **Facility Owner /Operator:** Castle & Cooke Development Corporation/Waste Management of California
    - **Capacity/Remaining Site Life:** 36.4 million cubic yards (23.6 million tons) as of 2001 SWIS Information. Site capacity is less now.
    - **Permitted Types of Waste:** Class III municipal solid wastes

The Kirby Canyon Recycling and Disposal Facility is located on a hill face in southern San Jose, east of U. S. 101 near the Scheller Avenue interchange. This facility serves the cities of
Mountain View, Palo Alto, San Jose, Sunnyvale, and the adjacent unincorporated areas of Santa Clara County. The facility permit allows the disposal of 2,600 tons per day.

This site is a currently operating landfill facility operated by Waste Management, a competitor of PHLF and Republic Services, Inc., and uses its permitted capacity to serve its Santa Clara County municipal customers; therefore, it is not available for development of the proposed project by PHLF.

11. Santa Clara County: Newby Island Landfill

- **Facility Owner /Operator:** International Disposal Corporation, a subsidiary of Allied Waste Industries, Inc.

- **Capacity/Remaining Site Life:** 18.3 million cubic yards (11.9 million tons)/2025 as of 9/30/06

- **Permitted Types of Waste:** Non-hazardous solid wastes

The Newby Island Landfill is located at 1601 Dixon Landing Road in northern San Jose, just west of Highway 880 and the City of Milpitas. This facility predominantly serves the counties of Santa Clara and Alameda, and San Benito, as well as the cities of Cupertino, Los Altos, Milpitas, San Jose, Santa Clara and Los Altos Hills. This site is currently operating and owned by Allied Waste Industries, a competitor to PHLF. It is not available for development of the proposed project by PHLF.

12. Santa Clara County: Owens-Corning Disposal Site (Closed)

- **Facility Owner /Operator:** Owens-Corning Fiberglass Corporation/Zanker Road Resource Management Ltd.

- **Capacity/Remaining Site Life:** Closed.

- **Permitted Types of Waste:** None, closed site.

The Owens-Corning Disposal Site is located at the east end of Los Esteros Road in northern San Jose adjacent to the Zanker Road Landfill. The only proposed facility outlined in the Santa Clara Integrated Waste Management Plan Siting Element is the conversion of this facility to the Zanker Material Processing Facility to be run by the current operator, Zanker Road Resource Management Ltd. The permit limits acceptance of materials to 350 tons per day. Permit application have been filed with the County to allow the disposal of inert, non-recyclable solid wastes and to begin resource recovery activities. This site is not available for development of the proposed project by PHLF.
13. **Santa Clara County: Pacheco Pass**

- **Facility Owner /Operator:** Norcal South Valley Disposal and Recycling
- **Capacity/Remaining Site Life:** 3.2 million cubic yards/Unknown/SWIS Data is 2001
- **Permitted Types of Waste:** Municipal solid waste, construction and demolition waste, inert waste

The Pacheco Pass Landfill is located on a hillside east of Gilroy off of Pacheco Pass highway and Bloomfield Road. This facility serves the cities of Gilroy and Morgan Hill. It is permitted to receive 1,000 tons per day. This site is currently operating and owned by Norcal Waste Systems, Inc, a competitor of Republic Services, Inc, therefore it is not available for development of the proposed project by PHLF.

14. **Santa Clara County: Palo Alto Landfill**

- **Facility Owner /Operator:** City of Palo Alto Department of Public Works
- **Capacity/Remaining Site Life:** 789,000 cubic yards (513,000 tons)
- **Permitted Types of Waste:** Mixed municipal solid waste including commercial and residential waste, non-hazardous industrial waste and construction and demolition waste. Permit limit is 200 tons per day.

The Palo Alto Landfill is located at the east end of Embarcadero Road in Palo Alto. This facility is permitted to accept non-hazardous and non-liquid solid waste from the City of Palo Alto. The Palo Alto Landfill also has a recycling drop-off/processing center and a green waste compost operation on the site. The site’s permit allows 200 tons per day of disposal. This site is a currently operating landfill facility, and has no permitted ability to accept wastes from Solano County or elsewhere given its permit limits; therefore, it is not available for development of the proposed project.

15. **Santa Clara County: Zanker Road Landfill**

- **Facility Owner /Operator:** Zanker Road Resource Management, Ltd.
- **Capacity/Remaining Site Life:** 703,500 cubic yards
- **Permitted Types of Waste:** Municipal solid waste

The Zanker Road Landfill is located on Los Esteros Road off of Highway 237 in northern San Jose near the southeastern end of the San Francisco Bay. This facility serves all of Santa Clara County. The site is permitted to accept 1,300 tons per day. This site is currently an operating landfill facility; owned by Zanker Road Resource Management, a competitor of Republic Services, Inc., and therefore, it is not available for development of the proposed project.
16. Alameda County: Vasco Road Landfill

- **Facility Owner /Operator:** Vasco Road Landfill, LLC (subsidiary of Republic Services, Inc.)
- **Capacity/Remaining Site Life:** 124.4 million cubic yards (80.9 million tons), remaining life to approximately 2022.
- **Permitted Types of Waste:** Municipal solid waste

The Vasco Road Landfill is located on North Vasco Road in southern Alameda County, off of Interstate 580. The landfill serves the nearby cities of Livermore and Pleasanton, the City of Berkeley, and San Ramon (southern Contra Costa County). The facility is permitted to accept up to 2,518 tons per day of municipal solid waste, but handles approximately 1,600 tons per day in servicing its contract and daily public users. The facility is located in eastern Alameda County and is subject to several land use constraints, including County voter adopted Measure D which limits expansions of solid waste facilities in this designated agricultural area of the county. Under Measure D, expansions can only be sought when necessary to maintain the County’s required demonstration of disposal capacity for its own (Alameda County) solid waste. In addition, expansion of this facility would require an amendment to the disposal facility siting element of the Alameda County CoIWMP, the conditional use permit, and other entitlements. In addition, Alameda County imposes an import penalty of $4.53 per ton on solid waste imported into the County for disposal, in addition to existing County and Waste Management Authority fees of over $13.50 per ton exclusive of the importation fee. Importation of waste into Alameda County is also subject to a discretionary “waste shed” approval from the Alameda County Waste Management Agency. This site is not practically available for the PHLF proposed project.

17. Alameda County: Altamont Landfill and Resource Recovery Facility

- **Facility Owner /Operator:** Waste Management of Alameda County, Inc. (Subsidiary of Waste Management, Inc.)
- **Capacity/Remaining Site Life:** unknown; permitted capacity is 124,400,000 cubic yards, as of August 2005 data in the SWIS database
- **Permitted Types of Waste:** Municipal solid waste, Class II Designated Wastes

The Altamont Landfill is located on Altamont Pass Road in southern Alameda County, off of Interstate 580. The site is permitted to receive 7,000 tons per day in a 5-day week, with a daily peak allowed of 11,500 tons per peak day. The site predominately serves Albany, Oakland, Emeryville, Castro Valley, Hayward, Dublin and Oro Loma Sanitary District, and the City and County of San Francisco waste under a long-standing export arrangement.
As the result of a settlement agreement entered into by Waste Management of Alameda County, Inc., the County of Alameda and the Sierra Club in 2001, the site is precluded from receiving additional amounts of solid waste from outside of Alameda County. Thus, the site would not be available under any circumstance for meeting the proposed project’s objectives. In addition, as with Vasco Road Landfill, under Measure D, expansions can only be sought when necessary to maintain the County’s required demonstration of disposal capacity for its own (Alameda County) solid waste. In addition, Alameda County imposes an import penalty of $4.53 per ton on solid waste imported into the County for disposal, in addition to existing County and Waste Management Authority fees of over $13.50 per ton exclusive of the importation fee. Importation of waste into Alameda County is also subject to a discretionary “waste shed” approval from the Alameda County Waste Management Authority.

18. Alameda County: Tri-Cities Landfill (Formerly Durham Road Landfill)

- **Facility Owner /Operator:** Waste Management of Alameda County, Inc. (Subsidiary of Waste Management, Inc.)
- **Capacity/Remaining Site Life:** approximately 2008
- **Permitted Types of Waste:** Municipal solid waste, Class III

The Tri-Cities Landfill is located at 7010 Auto Mall Parkway in the City of Fremont in southern Alameda County. The landfill predominantly provides disposal services to the tri-cities of Fremont, Newark and Union City. The site has very little remaining capacity, and is expected to close in 2008 if not sooner. Once closed, the facility’s use permit from the City of Fremont requires that the land be vegetated and managed as open space, to blend in with the surrounding topography of the nearby Coyote Hills. The site is not available for the PHLF project’s needs and objectives.

19. Marin County: Redwood Landfill

- **Facility Owner /Operator:** Waste Management
- **Capacity/Remaining Site Life:** approximately 2039
- **Permitted Types of Waste:** Municipal solid waste, Class III

The Redwood Landfill is located at 8950 Redwood Highway in Novato, in a wetland area of Marin County. The facility is currently seeking an expansion and an updated permit to allow a 400 ton per day recycling facility, and other on-site recycling activities. According to the site owner, Redwood Landfill has been seeking an updated permit for the past nine years. After originally requesting to expand its operations, Redwood Landfill has asked Marin County to adopt an alternate plan that does not expand daily disposal tonnages, does not significantly increase total disposal capacity, and allows more recycling. The “mitigated plan” as it is known would allow continued receipt of 1290 tons per day of municipal solid waste; and 100 tons per day of Class B biosolids (sludge); The site is owned and operated by Waste Management, Inc., and is not available for the PHLF project’s needs and objectives.
b. Discussion of Existing Off-Site Alternative Landfill Sites

With respect to landfill facilities owned and/or operated by other companies and entities in the solid waste management business, it is not practical or commercially feasible for the County to condition an approval requiring the applicant to lose its existing contractual arrangements for its contract customers’ use of PHLF, and be required to attempt to negotiate new arrangements with competitor companies in the solid waste transfer and disposal field. As a practical matter, such a condition could be difficult to enforce or may even face legal obstacles, particularly in light of the applicant’s business objectives in pursuing the project. To the County’s knowledge, CEQA does not require such a result. In addition, from the County’s perspective, the prospect of trying to divert its waste stream to one or more facilities presents logistical and contractual complexities because the County has an obligation to provide for its waste to be properly disposed of and must demonstrate 15 years of disposal capacity or exportation arrangements sufficient to demonstrate the 15 years of capacity. The County has met this obligation as documented in its CoIWMP with the use of the PHLF. In the absence of a permitted solid waste transfer facility for the County’s wastes to be safely consolidated for transport to remote sites, it is unknown whether the County would be able to negotiate arrangements with any facilities identified in the above analysis.

CEQA compliance and permitting for a transfer station facility would be required, as would a CEQA analysis of export of the County’s waste to one or more new sites. The process of identifying a new transfer station location, and proceeding through permitting and CEQA review will likely take several years based on experience for such facilities, without a guaranteed result that a facility would be permitted in the final analysis. The CoIWMP would have to be amended and revised, also subject to CEQA.

3. Off-Site New Landfill Locations in Solano County and Other Counties

There are no potential new landfill sites identified in the Solano County CoIWMP. The County also reviewed the CoIWMPs from Marin, Napa, Yolo, Contra Costa, Alameda, Sonoma and Santa Clara Counties (these counties represent the principal service area of the PHLF facility) to determine if any potential new landfill sites have been designated in the CoIWMP and the County General Plan in accordance with the planning requirements of Public Resources Code sections 41701-41704. There are no unimproved, available landfill sites identified within any of the reviewed CoIWMP plans in the aforementioned counties. The applicant advises that it does not own any lands elsewhere in Solano County, or in any other of the reviewed counties, that could be made available for development of a new solid waste landfill. An affiliate of the applicant, Vasco Road Landfill LLC, does own and operate the Vasco Road Landfill in eastern Alameda County, approximately 60 miles from the Potrero Hills site. However, due to land use constraints within Alameda County, including Measure D applicable to agricultural lands in eastern Alameda County discussed above, development of a new landfill or an expansion of the existing Vasco Road Landfill to capture the elements of the project herein is not feasible.
4. **ON SITE ALTERNATIVES**

The applicant previously considered possible on-site alternatives to ascertain if one or more less-impacting project designs for a Phase II expansion would be practicable. The analysis identified six potential alternative landfill configurations within the project site vicinity on lands owned by the applicant to determine if such alternatives could practically affect less wetlands or other potential environmental impacts than the proposed project. All of the alternative configurations are within the secondary management area of the marsh. Two of these sites were initially rejected, as discussed below, as infeasible for further study because they would be incompatible with the Suisun Marsh Local Protection Plan and the Solano County General Plan.

The first rejected alternative site would entail expansion northward into the 143-acre Griffith Ranch parcel. It would create an entirely new landfill unit that would be physically separated from the existing landfill by the northern hills along the Potrero Hills valley. The Griffith Ranch parcel is relatively flat and has suitable lateral dimensions for accommodating a small landfill expansion. A landfill located in this area would be in full view from State Route 12.

The second rejected alternative siting area would entail expansion southward into the valley of the Southern Hills. This area would move a landfill site closer to the primary marsh area. It also would create an entirely new landfill unit that would be physically separated from the existing landfill by the southern hills above the Potrero Hills valley. The existing potential wetlands in the eastern end of the valley would need to be avoided. The valley in the Southern Hills parcel has a long, narrow shape that makes it only marginally suitable for accommodating landfill expansion in a manner consistent with the overall project purpose. The applicant does not believe the valley has adequate size and depth for the required volume of waste material to be disposed. Also, the amount of soils available within the valley could require importation of cover soil from other areas within the Potrero Hills, thus causing disturbance of those areas. A long haul route across the Phase II area would be entailed in utilizing this alternative. Use of the Southern Hills area as a landfill site would remove this area as a potential mitigation location of the project. The Southern Hills is currently included within the PHLF mitigation plan.

The remaining four alternative siting areas were further evaluated. These alternatives included variations on the height, footprint size and configuration, and location of the landfill expansion area.

The additional on-site alternatives were tested for practicability within the technical and biological constraints of the site to determine if the alternative could meet the proposed project objective to provide sufficient long-term landfill capacity at an early date, within the next 3-4 years. These constraints consist of physiographic features (e.g., soils, topography), that limit where it is technically feasible to expand the landfill. There are also various local, state or federal regulatory requirements (i.e., rules, regulations and published policies) that effectively limit the landfill height as well as the geographic area within which landfill expansion can potentially occur. The regulatory requirements constitute logistical constraints. Alternatives were deemed to be non-practicable if they were found to be incompatible with such regulatory
requirements. For example, local land use policies that protect the scenic view of the Potrero Hills ridgeline from Highway 12 would likely prevent approval of any alternative that would expand the landfill in the area between the ridgeline and the highway.

The many constraints existing for on-site alternatives define the boundaries of a potential landfill expansion "footprint and envelope" within which various alternative project designs may be considered. These alternative designs included smaller landfill footprints, increases in the height of the landfill (in order to reduce footprint area), and adjustments of the footprint layout to avoid specific wetland features.

The following provide examples of the siting aspects that were considered in the on-site alternatives for the CEQA analysis. All parcels owned by the applicant, as well as surrounding adjacent lands, fall within the Suisun Marsh Secondary Management Area designation (Exhibit 5-9). None of the parcels are within the Primary Management Area which occurs about 0.7 miles of the site to the north and about 1.2 miles to the south.

The physical site constraints described below constitute construction constraints to the alternative project's practicability. They cannot be compromised for the purposes of wetland avoidance or for any other reason without causing an alternative to become non-practicable.

a. Topography

The proposed landfill expansion requires land with sufficient area and suitable topography to accommodate properly-constructed cell foundations and liners with adequate drainage and long-term stability. The landfill cannot be placed where existing slopes are too steep to allow attainment of these conditions. Favorable conditions are found in the relatively gentle terrain of Potrero Hills valley within which the proposed project would be located, as well as the eastern portion of the valley. However portions of the lands owned by the applicant are too steep to meet these purposes, and hence those areas have not been included in the on-site alternatives described here.

b. Unstable Slope Zones

The north-facing interior slopes of the Potrero Hills valley meet the topographic constraints described above but are nevertheless too geotechnically unstable, in some locations, to accommodate practical construction of the proposed landfill expansion. These slopes are characterized by alluvial soils, 0.5 to 1.0 feet thick, atop exposed marine sediments that are subject to slides, slumps and earth flows during the rainy season (EDAW 2003). The project's geotechnical consultants determined that, in the absence of extensive remediation, these slope conditions were too unstable to support an overlying landfill cell. Such remediation would entail removal of massive volumes of soil prior to landfill construction and would be so expensive as to render the project economically infeasible. Therefore, the unstable slope zones constitute a technical constraint to landfill expansion.
Suisun Marsh Primary and Secondary Management Areas

Source: ESP 2007

Exhibit 5-9
c. Drainage Control

One alternative landfill concept involved shifting the landfill footprint in a southerly direction in Potrero Hills valley in order to reduce wetland and pond impacts in the northern part of the valley. Stock pond 1, plus an area of seasonal wetlands and a small acreage of intermittent stream habitat would be avoided by contracting the landfill footprint from both the northern and southern property boundaries. This alternative would have a significantly smaller footprint than the proposed project. A fault of this alternative was that by shifting the landfill footprint to the south, it would no longer be possible to route runoff from the upper Potrero Hills valley around the landfill using gravity flow (as would occur under the proposed project). This would require construction of a pumping station and a holding pond from which runoff would need to be perpetually pumped into a pipeline that would discharge back into the remaining segment of Spring Branch Creek on the western side of the Phase I landfill. It is doubtful that this design involving the perpetual operation of mechanical pumps would meet RWQCB landfill siting policies.

Another alternative also would contract the landfill footprint in order to avoid pond and wetland features in the northern portions of Potrero Hills valley. In addition, this alternative would avoid the entire reach of the valley watercourses or drainageways that would be filled under the previous alternative by splitting the landfill into two units. This would allow these drainageways to remain in place, eliminating the need for pumping runoff flow. However, this alternative would have a significantly smaller footprint than the proposed project.

A third alternative would involve locating the entire landfill expansion approximately 3,500 feet from the existing landfill in the 160-acre Hillbourne parcel which encompasses the upper reaches of Potrero Hills valley. Although the alternative might avoid all wetland impacts of the proposed project, it would impact other wetlands and drainageways that occur in the upper valley. These consist of two small ponds, ephemeral tributary watercourses, and seasonal wetlands. This alternative would result in two distinct landfill sites separated by the 211-acre Phase II parcel which would remain undisturbed except where it would be crossed by an extended access road.

A remaining on-site alternative is to expand the existing Phase I area of the landfill. This alternative was studied in the EIR for which the Court’s decision was issued. Under this alternative, the existing Phase I landfill would be expanded vertically, rather than laterally, maintaining the current footprint. The landfill height would be increased from the currently permitted 220 feet MSL to 410 feet MSL, which is the maximum height that can be attained while still maintaining a geotechnically sound landfill shape and drainage pattern. This height would require a steep pyramid shape. The narrow width of the top would require the use of small restricted-sized cells involving extra daily soil cover. The existing Phase I site would not provide sufficient daily cover and final cover soil for this design, requiring the importation of

6 The presumption that such a shape would be geotechnically stable is based on a preliminary analysis by the Project Engineer; however, stability analyses have not been performed. A more in-depth analysis by the engineer could negate this presumption. A more in-depth analysis would also be needed to confirm that the existing in-place liner system would be capable of supporting the additional weight of the higher landfill.
approximately 3.8 million cubic yards of soil from other parcels owned by the applicant (most likely from the Phase II area and up valley areas in the Potrero Hills valley). This additional cover could likely not be excavated without disturbing the existing spring and wetland features on the other parcels. Such soil excavations would cause indirect impacts to these features by partially isolating them from one another and by disturbing wildlife usage patterns due to the daily soil excavation and transportation activities. In summary, to obtain the necessary volume of cover soil from the parcels inside the valley area would result in the quarrying of the soil from an extensive surface area, or otherwise forming an excavated depression in the valley that would not drain.

The pyramid shape (rather than a flattened top as currently proposed) would not accommodate subsequent resource recovery operations under post-closure conditions. This would require that this element of the project be eliminated or that the resource recovery operations be located elsewhere, such as on the Phase II lands.

The total additional airspace capacity under this Alternative would be 8.04 million CY which is approximately 81 percent less than the project. The site life of this Alternative would be 6.7 years, rather than the 34.5-year life of the proposed project.

A summary of the capacity achieved and the years of landfill service life gained for the proposed project and the onsite alternatives described above is set forth in Table 5-2.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Years of Landfill Life</th>
<th>Tons of Waste Landfilled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
<td>34.5</td>
<td>41,426,000</td>
</tr>
<tr>
<td>Higher Phase I</td>
<td>6.7</td>
<td>8,036,000</td>
</tr>
<tr>
<td>Partial Avoidance</td>
<td>8.4</td>
<td>10,081,000</td>
</tr>
<tr>
<td>Full Avoidance</td>
<td>5.7</td>
<td>6,812,000</td>
</tr>
<tr>
<td>Upper Valley Site</td>
<td>8.3</td>
<td>9,905,925</td>
</tr>
</tbody>
</table>

### d. Summary of On-Site Alternatives

None of the on-site alternatives was found to be reasonably practicable due to physical impacts caused to obtain the necessary cover soil or provide the appropriate drainage facilities. The disposal space offered by any of the alternative landfill configurations is insufficient to meet the primary project objective to develop 15 years of assured landfill capacity. Among the on-site alternatives, the higher Phase I landfill area alternative was the best of the alternatives studied. Hence in this revision of the alternatives analysis for the EIR, the Higher Phase I Alternative is evaluated together with the No Project Alternative and the Maine Prairie Area Landfill Alternative. This higher Phase I landfill alternative was also previously studied and considered in the 2005 project EIR certified by the County.
III  BIOLOGICAL RESOURCES UPDATE

OVERVIEW

This update of biological resources information has been provided to supplement and update the biological resources information included in the 2005 Final EIR. The project applicant is requesting a Marsh Development Permit from the Bay Conservation and Development Commission (BCDC) and this supplemental biological resource information has been developed as part of this permitting process. The background regarding the development of this supplemental information is as follows.

BCDC, by agreement with Potrero Hills Landfill, Inc. (PHLF), authorized a panel of biologists to assist BCDC staff in evaluating potential biological effects of and efficacy of biological mitigation measures proposed for the Potrero Hills Phase II Landfill Expansion Project (project). The specific purpose of this review process was to provide BCDC with additional information for its consideration of a Marsh Development Permit for the project. BCDC sought this information because its permitting processes were thought to precede the federally mandated biological opinion consultation process for the U.S. Fish & Wildlife Service

PHLF proposed the creation of the panel review process in January 2006 to facilitate BCDC’s consideration of Solano County Marsh Development Permit No. MD 88-09. BCDC identified and recruited the scientific panel members and PHLF agreed to provide the funding to facilitate this assignment. PHLF also agreed to provide access to the project area and project-related scientific and engineering data and analyses developed by the PHLF team.

PHLF has worked with the Scientific Review Panel and BCDC staff members to identify project design and operational refinements that could minimize potential impacts to the environment and ensure that the project is consistent with the Suisun Marsh LPP.

The following discussion summarizes the measures to be implemented by PHLF to minimize potential impacts to the environment based on consultation with the Scientific Review Panel and BCDC staff members.

REDUCTION OF LANDFILL FOOTPRINT AND PROJECT BOUNDARIES

PHLF has, in response to both informal and formal consultation with BCDC, the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Game (CDFG), the U.S. Army Corps of Engineers (USACE) and the U.S. Fish and Wildlife Services (USFWS), developed a set of impact mitigation measures that reduce project impacts by the consolidation of landfill activities on a smaller landfill footprint area. The consultations have resulted in a recommendation that the project’s power facility be relocated from the Griffith Ranch property in the northern portion of the site to the alternative location identified in the 2005 EIR near the existing landfill flare on the Phase I portion of the site. The resource agencies have also recommended that the rainfall runoff flowing from the landfill not be directed to the properties to the north of the Phase II landfill area. The landfill design evaluated in the original EIR envisioned two drainage pathways leading northward to a small sedimentation control basin located on the Griffith Ranch property. The amount of landfill
area proposed to be drained to this basin was a small fraction of the total landfill area. In response to these recommendations, PHLF is proposing to relocate the power facility to the Phase I area and to eliminate the drainage channels and the north sedimentation basin within the Griffith property from the Phase II project. This consolidation of project features results in a smaller footprint area that reduces the area of project impact from 241.9 acres to 167.63 acres (Exhibit III-1).

To keep all runoff water from the surface of the landfill within the main Potrero Hills valley watershed, the slopes of two northside portions of the proposed landfill configuration were set back to the south approximately 200 to 300 feet to create the contours that would allow the runoff to be directed into channels leading to the west and to the east. The drainage water is directed into the onsite drainage system were it combines with the other landfill runoff and all the runoff is handled collectively.

This reduction in the landfill footprint does not affect the maximum height of the landfill, which remains unchanged. Most of the waste disposal capacity lost with the reduction in the landfill footprint is recovered through an adjustment in the proposed landfill mound’s southern slope grade break, which would extend to a 30 feet higher elevation. This would result in a slightly less inclined top of the south half of the landfill. Because this adjustment in the southern slope grade break elevation would be located on the southern-facing portion of the landfill mound, it would not be visible from populated areas to the west, north and east. Also, this adjustment in the landfill mound topography would not increase the maximum height of the landfill. Therefore, no change in the visual resource impact conclusions of the EIR would occur.
Reduced Project Boundaries

Exhibit III-1
MITIGATION PLAN MODIFICATIONS

Since the preparation of the 2006 PHLF Mitigation and Monitoring Plan (MMP), PHLF has worked with a number of regulatory agency representatives to reduce the size and impacts of the proposed landfill expansion project and to refine the proposed MMP.

The proposed relocation of the power plant and sedimentation basins from the Griffith Ranch site described above (i.e., outside of the Potrero Hills Valley) to within the Phase I (existing landfill) and Phase II (expansion) landfill areas, within the Valley allows areas formerly proposed for landfill facility development to be incorporated into the mitigation lands, namely the southern portion of the Griffith Ranch.

Based on these mitigation plan revisions, the plan components would be as follows:

- Preservation of existing upland habitat totaling 565.29 acres on the Southern Hills parcel, Pond 5 Buffer, Griffith Ranch and Director’s Guild parcels;
- Preservation of 0.79 acre of existing CTS breeding pond and 8.83 acres of potential breeding pond habitat on the Southern Hills parcel, Pond 5 Buffer, and Director’s Guild parcel (9.62 acres total);
- Creation of an additional 1.08 acres of breeding pond on the Southern Hills (1 pond) and Griffith Ranch (2 ponds) parcels, and restoration (by deepening shallow breeding pools that have filled with sediments) of 0.42 acre of potential breeding pond in the playa pool on the Director’s Guild parcel;
- Preservation of 5.52 acres of existing seasonal wetland on the Southern Hills and Griffith Ranch parcels, and 53.10 acres on the Director’s Guild parcel;
- Creation of 4.07 acres of new seasonal wetlands on the Griffith Ranch parcel;
- Preservation of 1.86 acres of existing waters of the U.S. on the Southern Hills and Director’s Guild parcels, and;
- Creation of 1.80 acres of new waters of the U.S. on the Griffith Ranch and Director’s Guild parcels.

GRASSLAND MANAGEMENT PLAN

PHLF has prepared a Grassland Management Plan (GMP) that addresses management of grasslands and grazing within the PHLF mitigation areas. The GMP, as modified in response to comments and suggestions provided by the Scientific Review Panel, describes livestock grazing operations and non-grazing management activities for the long-term conservation of grassland habitats and associated aquatic resources, and special-status species habitats on the property.
**Beneficial Cumulative Effect on Solano County Habitats**

Based on the habitat values presented in the Draft Solano Habitat Conservation Plan (HCP), the Phase II expansion represents approximately 1 percent of the cumulative habitat loss from projected development within the County over the next 30 years. The project compensates for this by contributing to the cumulative preservation and enhancement of valuable habitats in the County within this same period. The proposed mitigation represents a 4.1 to 4.6 percent increase in the total amount of preserved habitat projected to occur under the Draft HCP.

Table III-1 below summarizes the total area of upland and aquatic mitigation acreage by parcel for the revised mitigation plan.

<table>
<thead>
<tr>
<th>Table III-1</th>
<th>Revised Mitigation Acreage and Type by Parcel – Increased Griffith Ranch Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CTS Upland Habitat</td>
</tr>
<tr>
<td></td>
<td>Preserve</td>
</tr>
<tr>
<td>Southern Hills</td>
<td>421.11</td>
</tr>
<tr>
<td>Pond-5 Buffer Area</td>
<td>17.65</td>
</tr>
<tr>
<td>Griffith Ranch</td>
<td>106.06</td>
</tr>
<tr>
<td>Director’s Guild</td>
<td>20.47</td>
</tr>
<tr>
<td>Total</td>
<td><strong>565.29</strong></td>
</tr>
<tr>
<td>Mitigation Ratio*</td>
<td><strong>3.4:1</strong></td>
</tr>
</tbody>
</table>

*preserved/created:impacted

Total Impact Area = 167.63 ac, Wetland Impact area = 2.42 ac, Pond Impact Area = 0.61 ac (Ponds 1 and 4), Upland Impact Area = 164.60 ac

Highlighted cells reflect increased mitigation areas/mitigation ratios.

PHLF is currently working with the U.S. Fish and Wildlife Service in the Endangered Species Act consultation process and will finalize the MMP at the conclusion of that activity.

**BCDC Scientific Panel Review and Project Applicant Responses**

The following discussion summarizes the BCDC Scientific Panel's review by topic area and the project applicant’s response to the Panel’s conclusions and/or recommendations, as presented in the Panel’s August 2007 Final Report. Where applicable, this discussion summarizes the areas of disagreement amongst the Panel and project applicant's experts. The full text of the Panel reports and the project applicant’s responses have been made available on the BCDC website at http://www.bcdc.ca.gov. The Panel reports and the project applicant’s responses have also been included in Appendix C of this Recirculated Draft EIR. For a more detailed and complete understanding of each topic, please review Appendix C or visit the BCDC website and review the documents online.
BOTANICAL RESOURCES

The BCDC Panel review expressed concerns over the loss of special-status plants and non-listed native species on the Phase II expansion parcel. All impacts to special-status plants would be compensated through the PHLF MMP’s proposed preservation of larger existing populations of the impacted species on the mitigation sites. These mitigation sites would be preserved in perpetuity as wildlife and plant habitat. Management of the improved and protected wildlife and plant habitat would be funded through an endowment.

The MMP was developed by PHLF to address impacts considered potentially significant in the EIR. The MMP is not intended to mitigate for every resource present such as non-native grasslands, impacts to which were not determined to be significant by this EIR’s CEQA analysis. The actual cover on most of the Phase II expansion area consists of non-native plant species.

PHLF botanists visually estimated the cover by natives at about one percent in 2007. The BCDC Panel analysis stated that the average cover by natives is 14 percent throughout the expansion area, and by extrapolation, suggested that 25 acres of land covered entirely (100 percent cover) by native plant species would be impacted by the Project. This estimated and extrapolated value does not reflect actual conditions at the PHLF project site and is not useful in the consideration of potential project impact to native plant species.

The parcels proposed for mitigation have similar if not greater native species composition than the Phase II expansion parcel and the in-perpetuity preservation and management of the lands would compensate for losses of the small number of extant native plants.

PHLF incorporated many of the measures recommended by the BCDC reviewers into the project and they would be reflected in the revised MMP. One of the measures to be adopted in the final MMP would be the addition of an exotic species control plan. This plan would focus on methods other than grazing to control noxious weeds on the mitigation parcels. The plan would be implemented as needed and would be funded through the endowment.

VEGETATION RESOURCES AND GRAZING MANAGEMENT

The BCDC report also focused on the analysis of vegetation and grazing issues. This analysis resulted in some overlap between the discussion of vegetation and the botanical resources chapter: both chapters addressed the potential loss of rare special-status plants in different manners.

Many of the recommendations regarding grazing management have been accepted and adopted by PHLF and would be incorporated into the revised Grassland Management Plan that would be completed at the end of PHLF’s consultation with the USFWS. PHLF determined, however, that a number of issues raised by the Panel reviewer were inaccurate or misinterpreted scientific facts.
The author of the BCDC report’s vegetation and grazing review chapter devoted a significant amount of discussion to the condition of the upper drainage area of the drainage feature known as Spring Branch Creek. This discussion of both onsite and offsite aquatic and fisheries resources was not within the scope of BCDC’s assignment or this author’s area of expertise. The BCDC report asserted that there will be changes in the upper watershed of Spring Branch Creek and inaccurately characterized the vegetation along the creek. Although the author of this report section conducted field investigations at the project site, she incorrectly drew conclusions about the conditions of the upper watershed from aerial and satellite photos.

From a botanical viewpoint, the “herbaceous riparian” community identified by the reviewer along Spring Branch Creek is extremely limited and does not represent a highly sensitive habitat area. With the exception of a very few areas, Spring Branch Creek lacks any scour lines, persistent pools, or defined bed and bank and is marginally a waters of the U.S. The small segments of incision are very disconnected, often linear, and have been extremely altered by cattle grazing and possibly through realignment during prior agricultural activities in the valley. This information on the lack of riparian vegetation was included in the 2005 EIR certified by the County.

Mitigation for impacts to Spring Branch Creek has been proposed in the PHLF MMP to occur in adjacent mitigation areas by the creation of additional, higher quality channels. The Panel report questioned the appropriateness of mitigating these impacts in an adjacent area, as it was in a different watershed. Although the mitigation proposed by PHLF would technically be in the Hill Slough watershed, both the Spring Branch Creek drainage area and Hill Slough feed into Suisun Marsh, which is the larger receiving waterbody.

In addition to raising issues about the condition of Spring Branch Creek and future expansion, the BCDC Panel report also raised issues regarding the landfill cap. The PHLF MMP does not address the landfill cap, as this area is not included in the mitigation lands for the proposed project. Revegetation of the landfill cap would be accomplished according to the regulations of the Integrated Waste Management Board and the Regional Water Quality Control Board and, as such, is not part of the MMP.

The BCDC Panel report also expressed concerns over potential future expansion of the landfill. PHLF has responded to this comment by stating that there are no plans for additional expansion beyond Phase II. The current, Phase II project would extend the life of the landfill for approximately 35 years. Any future expansion would be subject to environmental review at the time it is proposed.

Finally, the BCDC Panel report was concerned that habitat fragmentation may result from the proposed landfill expansion. Although the landfill may form a barrier to the movement of plants and animals during its active life, lands to the east and west would continue to allow movements from north to south. The landfill would grow slowly eastward over the years of operation. For about 15 years, 50% of the 150-acre footprint would not be significantly disturbed. Thus, the habitat changes would evolve and not be a wholesale, rapid changing environment. Additionally, the active landfill face (the location of work activity/disturbance) at any given point in time is a relatively small area, approximately 0.2 acres (a 90’ x 90’ x 20’ deep...
area), and not the 75 acres as portrayed by the BCDC Panel report’s assessment of “bare”
ground she obtained from review of Google Earth online satellite images. Preserved lands
surrounding the existing and proposed landfill, as well as current zoning in the hills, ensures
that the lands would remain largely undeveloped and therefore allow movement through the
Potrero Hills.

CALIFORNIA TIGER SALAMANDER MODEL AND MITIGATION RECOMMENDATIONS

The Panel report’s CTS specialists developed a quantitative model to assess upland habitat
value for CTS around breeding ponds. The model is based primarily on trapping data from a
single study site (Jepson Prairie, located approximately ten miles away from the project area)
and its general applicability has not been verified throughout the range of this species in the
variety of terrains and landscapes in which CTS occur. In addition, this nascent model has not
been subject to peer review in the scientific literature nor has it been adopted by the resource
agencies as the sole or primary means to assess habitat value for CTS either for impact analysis
or mitigation development.

In spite of the limitations of the model, it provides a somewhat simplified tool that can be used
to investigate how CTS may use upland habitats in the vicinity of breeding ponds. In applying
the tool, however, the BCDC report made a number of assumptions that do not reflect proven
aspects of CTS biology and mitigation practice. In order to investigate how the BCDC report
authors’ assumptions influenced the results of the model and therefore how mitigation lands
were valued, PHLF’s consultants made a series of model runs modifying the assumptions used
by the review authors based on their own years of experience with this species and developing
mitigation for CTS. The results of these analyses are thoroughly described in the Response to the
Scientific Review Panel Report Potrero Hills Landfill Phase II Expansion in Appendix C.7

The BCDC Panel report gave no credit for CTS mitigation ponds proposed in the MMP.
Construction of breeding ponds for CTS is, despite the report’s contention, not experimental.
The numerous ponds that have been created throughout this species’ range testify to the
ability of the properly designed mitigation pond to provide good breeding sites for CTS. The
strongest evidence that created ponds can be used as breeding sites is found on the Potrero
Hills Landfill properties. All of the ponds currently used by CTS in the Potrero Hills and
Potrero Hills Valley are human-created stock ponds. These ponds provide good quality
breeding sites for CTS. Additional ponds can be created to replace those lost due to the Phase
II expansion. By not giving credit for created ponds, ponds that were included in the MMP,
the Panel’s review authors underestimated the value of mitigation lands to CTS. When the
constructed mitigation ponds as shown in the revised mitigation proposal are included in the
model analysis, almost the entire deficit to CTS habitat value created by Phase II expansion is
erased resulting in near full compensation.

County, California. Submitted to San Francisco Bay Conservation and Development Commission. Prepared for
Second, the BCDC Panel report’s authors limited their assessment of the parcels to onsite ponds. This assumption again underestimates the value of mitigation lands being preserved for CTS. CTS occur throughout the Potrero Hills, not just on PHLF properties. Evaluations of the PHLF properties over the last 9 years shows that CTS attempt to use almost every body of water for breeding from stock ponds to spring boxes. In order to assess the true value of mitigation lands to the CTS population in the Potrero Hills, PHLF ran the model on a landscape basis, including both onsite and offsite ponds in the analysis. The analysis at the landscape level showed that the mitigation in the revised mitigation proposal, which includes the preserved onsite ponds, offsite ponds, and created ponds, more than fully compensates for the habitat value lost from construction of the Phase II expansion and results in a net gain of habitat value for CTS.

Although offsite ponds are not included in the MMP, the BCDC Panel reviewer’s failure to acknowledge the value of these offsite ponds results in an underestimation of the value of the mitigation lands that are being preserved. Failure to give credit to portions of the mitigation parcels that provide upland habitat for CTS that breed in offsite ponds, not only undervalues the mitigation lands, but fails to acknowledge the ecological relationships among ponds and uplands in the Potrero Hills. For example, in the model, the western end of the Southern Hills parcel has reduced value due to its distance from the onsite breeding ponds. However, another stock pond, located on the adjacent property, lies just 550 feet west of the western boundary of the Southern Hills parcel. Although, according to the model as implemented by the BCDC Panel review authors, the western end of the Southern Hills parcel has low value to salamanders that breed in Pond 7, it does provide important upland habitat for the offsite pond. If the impact assessment were to only consider the onsite ponds as a benefit to CTS, then there are areas on the Southern Hills mitigation parcel that have no mitigation value at all. These lands could also be interpreted as being available for development with no mitigation requirements. From a biological standpoint, this would be a mistake and salamanders would likely end up killed under such a scenario.

Third, the BCDC Panel report’s authors have assumed that CTS only move in straight lines as they leave breeding ponds. The straight-line movement assumption is not supported by observations of salamanders on the ground. The major consequence of the straight-line movement assumption is that salamanders are not allowed to move around corners. Any development that blocks salamander movement is assumed to not only make the development area unsuitable as habitat, but the development area also creates a shadow effect that reduces or eliminates the habitat value of mitigation lands in the shadowed areas. Shadowed areas thereby reduce the overall value of lands that may be proposed for mitigation. Negating the value of lands in the shadow of development may make sense in certain circumstances, such as when the shadowed area is isolated from other natural lands that may support CTS (i.e., surrounded by unsuitable habitat or development) or when there is no separation between the development area and the habitat areas (i.e., no barrier separating the development area from the habitat area). However, in cases where the shadowed area is contiguous with other natural

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8 Impacts to offsite ponds from the Phase II expansion were also included the landscape analysis, so the costs and benefits of the proposed project were recognized.
open spaces that provide suitable habitat for CTS and where the development area can be isolated from the natural areas (i.e., installation of a barrier fence), negating the value of the shadowed areas artificially undervalues the mitigation lands. Like the model’s authors, PHLF maintained this assumption in the implementation of the model in order to make the calculations easier; however, our analysis shows that this oversimplification has significant consequences when assessing the value of the mitigation lands.

Fourth, the BCDC Panel report’s authors stated that their calculations are for a 1:1 compensation for lost habitat value (i.e., full compensation), and that the actual mitigation should be multiplied by 2 or 3 times. The rationale for typical mitigation ratios or multipliers used by regulatory agencies (i.e., 2:1 or 3:1) are also founded on the assumption of full compensation – the ability to increase the value of a specified piece of land through preservation and management actions to replace lost habitat values or populations of target species. Therefore, PHLF asserted that the appropriate use of the model is to estimate how well a mitigation proposal compensates for the lost habitat value and then compare that with established mitigation ratios for the gross acreage lost.

On a gross acreage basis, the mitigation proposed by PHLF to compensate for the Phase II expansion is approximately 3.8:1 (preserved: impacted). This ratio is well within the range of mitigation required by the resource agencies for impacts to this species. Considering that the proposed mitigation compensates for lost habitat value and falls within the range of typical mitigation for such projects, no multipliers of the acreage values from the model are required.

Finally, a number of recommendations were made by the BCDC Panel report’s authors that are not strictly based on the model analysis.

- Based on the Applicant’s reviewer’s observation of tiger salamander use of the remnants of a barn near Pond 5, PHLF believes that the remaining structure and the fallen materials should not be removed, as suggested by the review authors, but should be left alone. No mitigation credit is proposed for the structure, but it would be left alone to provide cover for CTS adults and metamorphs as they move to and from the pond.

- The BCDC Panel review authors have proposed relocating the landfill to other less-centrally located parcels owned by the PHLF. This proposal, although arguably lessening the impact to CTS, would result in significant impacts to other resources including other endangered and threatened species. Relocating the landfill to the proposed Director’s Guild mitigation parcel, for example (i.e., the least central of the parcels), would eliminate occupied habitat for vernal pool tadpole shrimp, Conservancy fairy shrimp, Contra Costa goldfields, and numerous other special-status plants and animals. For these reasons as well as consideration of scenic corridors and capacity, the relocation of the proposed project is not advisable.

**BIRDS**

The BCDC Panel report’s author reviewed the EIR, Mitigation and Monitoring Plan, and other pertinent documents to assess how impacts to birds were assessed and how those impacts
were mitigated. The reviewer notes the mitigation plan is “entirely passive” with respect to birds. PHLF indicates it does not disagree with assessment, and the reviewer is correct in interpreting that the majority of enhancement activities and associated monitoring are directed towards CTS and wetlands; this is a function of a regulatory environment that is weighted towards listed species (Endangered Species Act) and wetlands (Clean Water Act). A net loss of habitat for upland birds is an unavoidable impact of the project (approximately 167 acres), but the in-perpetuity preservation and enhancement of 643 acres of grassland habitat is expected to compensate for this impact. No listed species has been observed nesting on the Phase II parcel or using the parcel on a regular and continuous basis. Therefore, management activities funded by the PHLF endowment would be focused on non-listed species and improvements to their habitat.

The primary concerns raised by the BCDC Panel reviewer are the potential impacts of the proposed project to listed and non-listed species that occur in the Suisun Marsh. PHLF has observed that the proposed project is not a new land use. The landfill has been operating in the Potrero Hills Valley for over 20 years (since 1986). The landfill expansion project would not result in a larger active face of the landfill or additional food availability to subsidize predators such as crows and ravens. The conditions at the landfill would remain similar to those conditions under the Phase I landfill operation. Lighting, too, would be similar to the existing conditions with lights being limited to the active face and not projecting skyward or into the marsh.

The BCDC Panel report expressed concerns that the expanded landfill may subsidize the crows, ravens, and cowbirds whose populations could negatively impact special-status bird populations in the region. Because the Phase II expansion is not a new use and would not increase the size of the working face of the landfill, PHLF does not believe that the expansion would increase corvid or cowbird populations compared to current conditions. PHLF has agreed to develop a corvid abatement program to minimize the use of the landfill by corvid predators.

Finally, the BCDC report questioned the appropriateness of mitigating the impacts of the Phase II expansion adjacent to the landfill. The PHLF MMP is designed to mitigate for significant impacts identified in the EIR. These significant impacts primarily deal with impacts to California tiger salamanders, a threatened species, and wetlands. Impacts to these resources are more appropriately mitigated onsite, or adjacent to the impact. Given the amount of habitat surrounding the Phase II expansion area, all of the mitigation necessary to mitigate these significant impacts can be accomplished using the onsite parcels. Use of these parcels acknowledges the long-term benefit of maintaining sensitive plant and animal populations in the Potrero Hills.
IV REFERENCES


County of Solano. 1996. Solano County Source Reduction and Recycling Element (SRRE).


Solano County. 1995. Solano County General Plan.


PERSONAL COMMUNICATIONS

Personal communication between Thomas L. Pate, PE, SCWA and Steve Peterson, Principal, Environmental Stewardship and Planning, December 14, 2007.

Personal communication by Paul Wiese, Solano County Public Works Department during a December 12, 2007 meeting on a Major Investment Study for the SR 113 corridor, as heard by Steve Peterson, Principal, Environmental Stewardship and Planning.