

# ENGINEERING EVALUATION

for

## APPLICATION # 8677

from

Napa-Vallejo Waste Management Authority; SITE # A9183

### BACKGROUND

Napa-Vallejo Waste Management Authority (NVWMA) owns and operates the American Canyon Sanitary Landfill in southern Napa County. The site includes the following permitted equipment: American Canyon Sanitary Landfill (ACSL) with Gas Collection System (S-1), Water Truck (A-1), and Landfill Gas Flare (A-2).

The ACSL is an inactive Class III Solid Waste Disposal Site. The site began accepting waste for open burning operations in 1942. From 1971 through 1995, the site accepted municipal solid waste and disposed of the waste in the sanitary landfill. Since 1995, the site has only accepted small amounts of green waste and yard debris and has accepted no waste since December 31, 2000. Closure operations are underway. Final closure is expected within a few years. The refuse footprint occupies about 98 acres of the 122-acre site. The refuse depth varies down to about 60 feet maximum. The maximum design capacity of the site is about 7,000,000 yd<sup>3</sup> (total of all materials in the landfill). The site contains 4,693,000 yd<sup>3</sup> (4,230,000 tons) of refuse.

The ACSL is equipped with an active gas collection system. The bulk of the collected gas is sent to an independently owned facility for energy recovery. Gas Recovery Systems, Inc. (Plant # 11671 or Site # B1671) burns the collected landfill gas in two Cooper Superior Rich Burn Internal Combustion Engines (S-2 and S-3). These 1100 hp engines generate electricity for sale to the grid. Any collected landfill gas that exceeds the capacity of the Gas Recovery Systems' (GRS) engines is burned in NVWMA's flare to destroy the methane, organic compounds, and TACs. This 24 MM BTU/hour Flare also acts as a back-up control device that is capable of handling all collected landfill gas in the event of a shut down of the GRS engines.

This application concerns proposed modifications to the landfill gas collection system for the S-1 ACSL. NVWMA has requested to decommission 46 vertical gas extraction wells and 2 leachate/gas extraction wells and to install 20 new vertical gas extraction wells. In accordance with the accelerated permitting process, NVWMA has decommissioned 28 vertical wells and 2 leachate/gas extraction wells. Many of the wells that were decommissioned were damaged, plugged with water, or were otherwise not functioning properly. All of the decommissioned wells were located in refuse areas with nearby, properly functioning gas collection wells. Therefore, all refuse areas will continue to be controlled by an active gas collection system. The landfill gas collection system now consists of 64 vertical wells and 33 leachate/gas extraction wells. NVWMA has requested approval to install 20 new wells and to decommission 18 older wells, during the next two years, if necessary to ensure proper functioning of the gas collection system.

This report will discuss (a) emission changes associated with the proposed collection system modifications, (b) compliance with applicable requirements for permit applications, and (c) all changes to the MFR Permit that are necessary for the issuance of an Authority to Construct for the proposed collection system modifications.

## EMISSIONS

Organic compound emissions from landfills are determined based on the cumulative amount of decomposable refuse that is placed in the landfill, the waste placement history, the resulting methane generation rate, the capture efficiency of the landfill gas collection system, and the removal efficiency of the landfill gas control systems. The maximum expected methane generation rate, the gas collection system capture efficiency, and the control systems removal efficiencies were discussed in detail in Application # 2659. The maximum expected methane generation rate for the American Canyon Sanitary Landfill was determined to be 642 scfm of methane. Based on default non-methane organic compound (NMOC) concentration data from AP-42 (595 ppmv of NMOC as hexane in landfill gas with 55% methane), the maximum NMOC generation rate for this landfill is 40.856 tons/year. Assuming the gas collection system captures 75% of the gas and the control devices destroy 98% of the NMOC in the gas, the maximum permitted NMOC emission rate for this landfill is 10.827 tons/year of NMOC.

Since this application will not increase the maximum permitted amount of decomposable waste or the future waste placement rate, this application will not impact the amount of organic compounds generated by the landfill. The generation rate is declining each year, because the landfill is no longer accepting waste. For 2003, the NMOC generation rate is estimated to be 30.738 tons/year.

Since no changes are proposed to the control devices for this landfill, these devices are expected to continue to achieve 98% destruction efficiency.

The capture efficiency achieved by the gas collection system cannot be directly measured. To evaluate the effectiveness of the gas collection system, the District relies on various collection system design criteria, comparisons of the actual to projected gas collection rates, and measurements of surface leak emissions. These three evaluation parameters are discussed below.

**Design Criteria:** Upon completion of the proposed collection system modifications, all refuse areas will be controlled by an active gas collection system with collection wells that are spaced no further than 300 feet apart. This collection well density falls within the normal range for interior wells.

**Collection Rate Comparison:** The installation of 20 new wells will not affect the minimum permitted capture efficiency achieved by the gas collection system, because all collection systems that are meeting the requirements of Regulation 8, Rule 34 are assumed to achieve the same minimum capture efficiency (75%). The decommissioning of 46 wells is not expected to impair the capture efficiency of this gas collection system, because all wells proposed for shutdown are located in refuse areas that have overlapping influence from other properly functioning landfill gas collection wells. During 2003, NVWMA collected 417,380,000 scfm of landfill gas (794 scfm) with an average of 39.0% methane (310 scfm of methane). For 2003, the methane generation rate was projected to be 483 scfm. The estimated capture efficiency is 64.2%. While this estimated capture efficiency is less than the target capture efficiency of 75%, it is within considered to be acceptable given the accuracy (~ +/-20%) of the landfill gas generation model.

**Surface Leak Emissions:** The collection system at this site has generally prevented surface emission leaks (after the 2002 collection system upgrades were completed and the new flare began operating in 2002). During 2003, a few isolated surface leaks were discovered by the operator and successfully repaired. No widespread or repeated surface leaks have been discovered in the surface areas near the wells that NVWMA is proposing to shut down. The nearby wells have been successfully compensating for the malfunctioning wells (which have now been shut down). Therefore, the gas collection system (after the proposed modifications) is expected to continue to prevent surface emission leaks above the Regulation 8-34-303 surface leak limit.

In summary, the proposed installation of 20 new wells and decommission of 48 wells will not increase the NMOC generation rate, will not decrease the minimum collection system capture efficiency, and will not decrease the minimum control system destruction efficiency. Therefore, this application will not result in any changes in maximum permitted NMOC emissions for this landfill.

## **STATEMENT OF COMPLIANCE**

### Regulation 2, Rule 1

This application meets the requirements of the Accelerated Permitting Program (Regulation 2-1-106). The Permit Holder submitted a complete application, paid all required fees, and certified that this project meets the applicability criteria for Regulation 2-1-106. Specifically, this application is for an alteration of an existing source that does not result in any emission increases and is not subject to public notification requirements. The application was declared complete on December 22, 2003 and a Temporary Permit to Operate for the proposed collection system modifications was authorized.

The Engineering Evaluation for this application uses fixed standards and objective measurements and does not involve any element of discretion. In accordance with District Permit Handbook Chapter 8.1 "Landfills", this application is considered ministerial. No further CEQA review is required.

The project is over 1000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

### Regulation 2, Rule 2 and Toxics NSR

BACT, Offsets, and PSD do not apply to this application, because this project does not result in any emission increases.

Since there are no emission increases expected from this project, a toxic risk screening analysis is not required and TBACT does not apply.

### Regulation 2, Rule 6

This facility is required to have a Major Facility Review (MFR) permit because it is a designated facility as defined in Regulation 2-6-204. The Emission Guidelines for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart Cc) require the owner or operator of a landfill that is subject to this part and that has a design capacity of greater than or equal to 2.5 million mega grams and 2.5 million cubic meters to obtain an operating permit pursuant to Part 70. The initial MFR Permit for this facility was issued on December 19, 2003.

This application requires a revision of the MFR Permit for this facility in order to update the collection system description in Table II-A and to incorporate the condition changes associated with the issuance of an Authority to Construct for collection system modifications. The District is also proposing to delete future effective dates that have passed in Tables IV-A and VII-A. These changes do not meet the definitions of either administrative amendments or significant revisions in Regulations 2-6-201 and 2-6-226. Therefore, this proposed MFR Permit revision is considered to be a minor revision pursuant to Regulation 2-6-215.

### Regulation 8, Rule 34

The S-1 American Canyon Sanitary Landfill's Gas Collection System is expected to comply with Regulation 8 Rule 34 Section 301 by:

- (a) continuously operating the gas collection system (now consisting of 64 vertical wells and 33 leachate/gas extraction wells) and
- (b) having no leaks (exceeding 1000 ppmv) from the gas collection system.

The Permit Holder will continue to monitor the gas collection system for leaks on a quarterly basis in accordance with Regulation 8-34-503. The landfill gas flow meter required by 8-34-508 continuously monitors the landfill gas flow rate from the entire collection system.

At the current gas collection rate, the landfill has generally been meeting the landfill surface leak limit of Regulation 8-34-303. The proposed revisions to the gas collection system are intended to optimize and properly balance the gas collection system. The overall impact of these changes is that the gas collection system is expected to collect landfill gas, as a minimum, at the same rate as it was prior to the implementation of these collection system modifications. Such collection system revisions often improve the gas collection rate due to the reduction in the excess air intake. Therefore, these collection system modifications are not expected to have any adverse impact on this landfill's compliance with the Regulation 8-34-303 surface leak limit and may potentially reduce surface emissions. The Permit Holder will continue to monitor the landfill surface for leaks on a quarterly basis pursuant to Regulation 8-34-506 and for cover integrity on a monthly basis pursuant to Regulation 8-34-510.

With the proposed revisions to the gas collection system in place, the gas collection system is expected to comply with the Regulation 8-34-305 wellhead limits. The decommissioning of redundant or malfunctioning wells is expected to eliminate the high oxygen levels and low flow rate situations that have occurred at some of these wells. The Permit Holder will continue to monitor the wells on a monthly basis in accordance with Regulation 8-34-505.

### Federal Requirements

This application does not trigger any new NSPS or NESHAPS requirements.

## **MFR PERMIT REVISIONS**

The proposed revisions to the MFR Permit are identified below in strikeout and underline format.

### Section I Standard Conditions

No changes to Section I will be necessary.

### Section II Equipment

The changes to the gas collection system that have been completed to date are identified in Table II-A below.

**Table II A - Permitted Sources**

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-301.

S-#	Description	Make or Type	Model	Capacity
S-1	American Canyon Sanitary Landfill	Inactive Class III Solid Waste Disposal Site		Max. Design Capacity = 7 E6 yd <sup>3</sup> (5.35 E6 m <sup>3</sup> ) Max. Waste Acceptance Rate = 0 tons/day Max. Cumulative Waste In Place = 4.23 E6 tons
	Gas Collection System	Active		<del>92-64</del> vertical gas extraction wells and <del>3533</del> gas/leachate extraction wells

Section III Generally Applicable Requirements

No changes to Section III will be necessary.

Section IV Source-Specific Applicable Requirements

As discussed in more detail in the initial Title V permit for this site (Application # 2631), the landfill and flare at this site are subject to the Emission Guidelines for MSW Landfills and Regulation 8, Rule 34. These operations are also subject to several other District regulations and permit conditions as identified in Table IV-A of the MFR Permit. The site history and applicable requirements were thoroughly reviewed and described in the Statement of Basis and the MFR Permit that were prepared for Application # 2631.

The proposed installation of 20 new wells and decommission of 48 wells will be described in permit condition revisions, specifically revisions to Condition # 12418, Part 3. As discussed in Condition # 12418, Parts 3 and 4, the wells that are listed in Part 3a are subject to the continuous operating requirement (Regulation 8-34-301.1) and the wellhead limits (Regulation 8-34-305). Wells that have been permanently decommissioned and removed from Part 3a are no longer subject to Regulations 8-34-301.1 or 8-34-305. Newly installed wells will be added to Part 3a after the District receives a start-up notification for these wells. A new well becomes subject to Regulations 8-34-301.1 and 8-34-305 upon start-up. Since Part 3 is described in a general fashion in Table IV-A, no changes to Table IV-A are necessary to include the condition revisions discussed below in Section VI.

The future effective dates for several federal requirements (40 CFR Part 63, Subparts A and AAAA) have passed, and these regulations are now in effect. Table IV-A will be revised by deleting all future effective dates that have passed.

**Table IV – A**  
**Source-Specific Applicable Requirements**  
**S-1 AMERICAN CANYON SANITARY LANDFILL**  
**A-2 LANDFILL GAS FLARE**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
<b>40 CFR Part 63, Subpart A</b>	<b>National Emission Standards for Hazardous Air Pollutants: General Provisions (3/16/94)</b>		
63.4	Prohibited activities and circumvention	Y	<del>1/16/04</del>
63.5(b)	Requirements for existing, newly constructed, and reconstructed sources	Y	<del>1/16/04</del>
63.6(e)	Operation and maintenance requirements and SSM Plan	Y	<del>1/16/04</del>
63.6(f)	Compliance with non-opacity emission standards	Y	<del>1/16/04</del>
63.10(b)(2)(i-v)	Records for startup, shutdown, malfunction, and maintenance	Y	<del>1/16/04</del>
63.10(d)(5)	Startup, Shutdown, and Malfunction (SSM) Reports	Y	<del>1/16/04</del>
<b>40 CFR Part 63, Subpart AAAAA</b>	<b>National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (1/16/03)</b>		
63.1945	When do I have to comply with this subpart?	Y	
63.1945(b)	Compliance date for existing affected landfills	Y	<del>1/16/04</del>
63.1955	What requirements must I meet?	Y	<del>1/16/04</del>
63.1955(a)(2)	Comply with State Plan that implements 40 CFR Part 60, Subpart Cc	Y	<del>1/16/04</del>
63.1955(b)	Comply with 63.1960-63.1985, if a collection and control system is required by 40 CFR Part 60, Subpart WWW or a State Plan implementing 40 CFR Part 60, Subpart Cc	Y	<del>1/16/04</del>
63.1955(c)	Comply with all approved alternatives to standards for collection and control systems plus all SSM requirements and 6 month compliance reporting requirements	Y	<del>1/16/04</del>
63.1960	How is compliance determined?	Y	<del>1/16/04</del>
63.1965	What is a deviation?	Y	<del>1/16/04</del>
63.1975	How do I calculate the 3-hour block average used to demonstrate compliance?	Y	<del>1/16/04</del>
63.1980	What records and reports must I keep and submit?	Y	<del>1/16/04</del>
63.1980(a)	Comply with all record keeping and reporting requirements in 40 CFR Part 60, Subpart WWW or the State Plan implementing 40 CFR Part 60, Subpart Cc, except that the annual report required by 40 CFR 60.757(f) must be submitted every 6 months	Y	<del>1/16/04</del>
63.1980(b)	Comply with all record keeping and reporting requirements in 40 CFR Part 60, Subpart A and 40 CFR Part 63, Subpart A, including SSM Plans and Reports	Y	<del>1/16/04</del>

### Section V Schedule of Compliance

No changes to Section V will be necessary.

### Section VI Permit Conditions

All permit conditions modifications that were necessary to ensure compliance with the applicable requirements of Regulation 8, Rule 34 were discussed in the proposed MFR Permit and Statement of Basis for Application # 2631. The proposed permit condition revisions are now in effect with the issuance of the final MFR Permit on December 19, 2003.

As discussed above, the proposed collection system modifications will require revisions to Condition # 12418, Part 3. The proposed permit condition revisions are shown below.

#### **Condition # 12418**

#### **FOR: S-1 AMERICAN CANYON SANITARY LANDFILL; AND A-2 LANDFILL GAS FLARE**

3. The Permit Holder shall apply for and receive an Authority to Construct before modifying the landfill gas collection system described in Part 3a below. Increasing or decreasing the number of wells or changing the locations of wells are all considered to be modifications that are subject to the Authority to Construct requirement.

- a. The Permit Holder has been issued a Permit to Operate for the landfill gas collection system components listed below. Well and collector locations, depths, and lengths are as described in detail in Permit Applications # ~~3286 and #67408677~~.

#### Required Components

Vertical Gas Extraction Wells: 9264

Gas/Leachate Extraction Wells: 3533

- b. The Permit Holder has been issued an Authority to Construct for the landfill gas collection system modifications described below. Well and collector locations, depths, and lengths are as described in detail in Permit Application # 8677.

Install up to 20 new vertical wells

Decommission up to 18 vertical wells

Wells installed or decommissioned pursuant to subpart b shall be added to or removed from subpart a in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415. The Permit Holder shall maintain records of the initial operation date for each new well that is installed and the shut down date for each well that is decommissioned.

(Basis: Regulations 2-1-301, 8-34-301.1, 8-34-303, 8-34-304, and 8-34-305)

### Section VII Applicable Limits and Compliance Monitoring Requirements

The applicable limits and monitoring requirements necessary to demonstrate compliance with these limits were discussed in detail in the Statement of Basis for the initial MFR Permit for this site (see Application # 2631). The proposed changes to Condition # 12418, Part 3 do not affect any of the applicable limits or monitoring requirements identified in Table VII-A of the final MFR Permit. As discussed above, new wells that are installed pursuant to Condition # 12418, Part 3b are subject to Regulations 8-34-301.1 and 8-34-305 and the associated monitoring requirement in Regulation 8-34-505 upon start-up of the new well. Likewise, wells that are permanently decommissioned pursuant to Condition # 12418, Part 3b are no longer subject to Regulations 8-34-301.1, 8-34-305, or 8-34-505 upon shut down of the well.

The Permit Holder will continue to monitor each well that is required to be operated (as described in Condition # 12418, Part 3a) for compliance with the wellhead limits on a monthly basis. The

Permit Holder will continue to monitor the landfill surface and gas collection system components for leaks on a quarterly basis. These monitoring requirements are sufficient to demonstrate compliance with the related applicable requirements.

Any future effective dates that are currently listed in Table VII-A but that have now passed will be deleted as shown below.

**Table VII – A  
Applicable Limits and Compliance Monitoring Requirements  
S-1 AMERICAN CANYON SANITARY LANDFILL  
A-2 LANDFILL GAS FLARE**

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Startup Shutdown or Mal-function Pro-cedures	40 CFR 63.6(e)	Y	<del>1/16/04</del>	Minimize Emissions by Implementing SSM Plan	40 CFR 63.1980(a-b)	P/E	Records (all occurrences, duration of each, corrective actions)

Section VIII Test Methods

No changes to Section VIII will be necessary.

Section IX Permit Shield

No changes to Section IX will be necessary.

Section X Revision History

Section X was added to describe the revision history of the MFR Permit for this site.

**X. REVISION HISTORY**

**Title V Permit Issuance: December 19, 2003**

**Minor Revision: [insert approval date]**

- Corrected the collection system description in Table II-A to reflect the current collection system (after the December 2003 modifications).
- Added text to Condition # 12418, Part 3 that describes the approved collection system modifications that the District is issuing an Authority to Construct for.
- Deleted future effective dates that have passed in Tables IV-A and VII-A.
- Added Section X Revision History and revised subsequent section numbers.



Section XI Glossary and Section XII Applicable State Implementation Plan

The section numbers for the Glossary and Applicable State Implementation Plan were revised as shown below.

**XI. GLOSSARY****XII. APPLICABLE STATE IMPLEMENTATION PLAN****RECOMMENDATION**

Staff recommends approval of an Authority to Construct for the modification described below and approval of a Change of Conditions for Condition # 12418.

- S-1 American Canyon Sanitary Landfill with Gas Collection System; abated by A-2 Landfill Gas Flare and off-site landfill gas combustion equipment at Plant # 11671.**
- **Modification to decommission 28 vertical wells (completed).**
  - **Modification to decommission 2 leachate/gas extraction wells (completed).**
  - **Modification to install 20 new vertical wells.**
  - **Modification to decommission 18 vertical wells.**

Staff also recommends approval of a minor revision of the MFR Permit for Site # A9183 with the revisions described above.

By: Carol S. Allen  
Senior Air Quality Engineer

February 24, 2004  
Date

h:\Pub\_Data\TitleV\Permit\Evals\A9183A-8677.doc