

## **INFORMATION SHEET**

ORDER NO. R5-XXXX-XXX  
NEVADA COUNTY DEPARTMENT OF PUBLIC WORKS  
MCCOURTNEY ROAD LANDFILL  
NEVADA COUNTY

### **Background Information**

The McCourtney Road Landfill is a closed, Class III landfill on Wolf Mountain Road near McCourtney Road about four miles southwest of Grass Valley. The 157-acre facility is on a 244-acre site owned by the County of Nevada Department of Public Works (Discharger). The landfill operated from 1973 to 1992, accepting primarily household wastes. The landfill stopped accepting wastes in November 1992 upon start-up of an onsite transfer station. In 1998, the landfill was closed (i.e., graded and capped) in accordance with Title 27 regulations.

The landfill consists of two closed units referred to as "Landfill 1" and "Landfill 2". Landfill Unit 1 consists of two cells that were operated as separate units when the landfill was active. The largest of these cells, referred to as the "Old Landfill Mass", comprised 24.9 acres and was unlined. The other cell, referred to as the "89-90 Cell", comprised 6.3 acres, of which only 1.9 acres was lined. Landfill Unit 2 consists of a 5.1-acre, compositely (i.e., Subtitle D)-lined landfill unit formerly referred to as the "90-91 Cell". The 90-91 cell was the last constructed and operated unit at the site prior to cessation of landfill operations in 1992.

The facility also includes two Class II surface impoundments under Title 27 regulations, including a 5.2 million gallon (MG) impoundment referred to as Surface Impoundment 1 (SI-1) and a 1.3 MG impoundment referred to as Surface Impoundment 2 (SI-2). SI-1 was used primarily for leachate storage and SI-2 primarily for landfill operations water storage. Other landfill-related facilities at the site include a landfill gas extraction system, leachate collection sumps, dewatering facilities, an above-ground tank farm, liquids conveyance systems (e.g., pumps, pipelines, valves); storm water drainage controls, a materials recovery facility/transfer station; and various monitoring systems (e.g., gas, groundwater). The site also includes various former operations areas that have since been clean-closed, decommissioned, and/or incorporated into other landfill facilities (see Attachment 1).

The Old Landfill Mass operated from 1972 to 1989, the 89-90 Cell from 1989 to 1990, and the 90-91 Cell from 1990 to 1992. Average landfill disposal rates ranged from about 70 to 120 tons per day on an annual basis. The maximum height of the landfill waste column is about 80 feet corresponding to the approximate center of the Old Landfill Mass and deepest portion of an underlying ravine in which the landfill was sited.

### **Site Description**

Surface elevations at the site range from about 2400 feet MSL in the upper reaches of the ravine on the western side of the site to about 2100 feet MSL on the eastern side of the site near the landfill toe embankment. The embankment was constructed across the downstream end of the ravine as part of the landfill containment system.

## INFORMATION SHEET (CON'T)

The site geology is complex, consisting of faulted, folded, fractured, and sheared metamorphic rock. Two primary shear zones have been identified at the site, one trending N20°W and a subordinate conjugate trending N30°E have been identified that likely significantly influence groundwater flow. See Attachment 2. A ravine north of the site may also redirect fracture flow to the northeast along its direction of shear. The uppermost aquifer occurs in weathered/fractured bedrock at depths ranging from about 101 feet bgs at the head of the ravine on the west side of the site to about 12 feet bgs on the east side of the facility near the landfill toe embankment. Shallow perched groundwater and natural springs also exist at the site. The overall direction of groundwater flow is believed to be to the east, but may vary at any given location due to fracturing and other geologic or hydrogeological heterogeneities. For example, a secondary direction of flow may exist to the north or northeast. The average groundwater gradient based on piezometric data is about 0.08 ft/ft to the east.

### Groundwater Impacts

A 1987 Solid Waste Assessment Test (SWAT) investigation found groundwater impacts down gradient of the landfill to the north, northeast, east and southeast, including various volatile organic compounds (VOCs) and elevated general minerals. Follow-up evaluation monitoring under previous WDRs and a 1991 Stipulated Judgment entered into with CalRecycle delineated impacts to the site boundary and in some nearby domestic wells. The work included development of a site conceptual model; leachate characterization; and various other tasks. Maximum concentrations of total VOCs historically detected in groundwater ranged from about 15 µg/L to 60 µg/L during a peak impact period from about 1993 to 1996. During this period, the highest concentrations of total VOCs were detected between the Old Landfill Mass and 90-91 Cell (e.g., cis-1,2-Dichloroethene up to 43 µg/L).

Monitoring data through the Second Half 2012 indicates that the concentrations of most VOCs detected in groundwater have declined to low to trace levels since the peak impact period of the mid-1990s. Total VOCs now range from about 1.0 µg/L to 15 µg/L in historically impacted wells. Three VOCs remained above water quality objectives, including Carbon Tetrachloride (0.6 µg/L in MW-20A), cis-1,2-Dichloroethene (10.8 µg/L in PZ-105), and Trichloroethylene (0.8 µg/L in MW-4A). No VOCs have been detected in the historically impacted offsite domestic wells since the First Half 2009 and only a few, low to trace level, hits have been detected in the wells since 2003. The significant decline in the concentrations of VOCs in the groundwater at the site may be attributable to the implementation of the corrective action measures described below.

### Corrective Action

#### Interim Measures

Various "short term" corrective action measures were implemented under the Evaluation Monitoring Program prior to landfill closure, including installation of an LCRS gas recovery system at the OLM (1989); cessation of septage pond operations (1990); de-watering of

## INFORMATION SHEET (CON'T)

the 90-91 Cell (1991); cessation of landfill operations and waste acceptance (1992); cessation of septage transfer operations (1992); testing and decommissioning of the Old Septage Pond Area (1993); and clean closure of the 1976 Cell and White Metal Disposal areas (1995).

### Closure

An August 1996 Engineering Feasibility Study (EFS)/Corrective Action Plan (CAP) recommended landfill closure as the primary corrective action measure to address groundwater impacts at the site, which at the time were believed to have been primarily caused by a leachate release. In 1998, the Discharger completed closure of the three landfill units at the site in accordance with a March 1997-approved Final Closure and Postclosure Maintenance Plan. The OLM and 89-90 Cell were closed as a single unit and the 90-91 Cell as a separate unit. Both closed units received an engineered alternative final cover including geosynthetic clay liner (GCL) in deck areas (slopes  $\leq 5H:1V$ ) and one-foot of compacted clay on the side slopes for the required low hydraulic conductivity layer. Precipitation and drainage controls sized for a 24-hour, 100-year storm event were also installed at the units in accordance with Title 27 standards. A closure certification report for the project was approved in August 1999.

### Landfill Gas Extraction

In 2004, following a sitewide gas investigation, the Discharger completed installation of a landfill gas (LFG) extraction system at the site pursuant to an amended CAP/design report approved by Regional Board staff in May 2003. The system included three extraction wells at the 90-91 Cell (EWs-1 to 3), 21 extraction wells at the OLM (EWs-4 to 24), and three extraction wells at the 89-90 cell (EWs-25 to 27). The system also included headers, condensate lines, two 400 SCFM blowers, a flare station, and associated facilities. The system began operations in 2006. See WDR Attachment E: Gas Controls.

## Liquids Management

Discharges to the Class II surface impoundments at the site historically included leachate from the landfill units and surface impoundments; septage and chemical toilet wastes; LFG condensate; impacted groundwater; contact storm water; monitoring well liquids (e.g., purge water); and washwater from the onsite transfer station. Since 1990, the discharge of septage and chemical toilet wastes has been limited to wastes from onsite sources, and since 1994, the 1.3 MG impoundment has been limited to use as a fire pond.

In March 2013, the Discharger completed installation of a 120,000-gallon above-ground tank farm as the primary storage facility for leachate and other non-inert liquids generated at the site. The tank farm includes eight 15,000-gallon HDPE tanks installed in pairs, a central collection HDPE manhole, HDPE transfer piping, and valves to divert liquid flows to the tank farm instead of the 5.3 MG surface impoundment (SI-1). Concurrent with tank farm start-up in June 2013, SI-1 was taken out of service for cleaning, leak-testing, and

## INFORMATION SHEET (CON'T)

repair. The impoundment has since returned to service as an operations water pond for dust control and fire suppression purposes. The impoundment is still plumbed to the waste management units, and is considered a backup storage facility for the leachate tank farm in the event of an emergency or other contingency. See Attachment B: Facility Map.

### Revised WDRs

These revised WDRs prescribe updated requirements for postclosure maintenance and corrective action monitoring of the two closed Class III landfill units at the facility and for operation and detection monitoring of the two active Class II surface impoundments at the facility. Specific findings and requirements for each type of unit are generally listed separately in the WDRs. The WDR findings describe various changes at the facility since 2004, including the installation of a landfill gas extraction system; corrective action monitoring results for the past 10 years; updated financial assurances information; construction of a leachate tank farm; changes in surface impoundment operations and liquids management; and other information.

### Closed Landfill Units

Updated requirements for the closed landfill units in the WDRs include, but are not limited to, the following:

- Waste Discharge -- The discharge or return of leachate or landfill gas (LFG) condensate to the closed landfill units is prohibited. Such liquids must be discharged to either SI-1 or the leachate tank farm. Inert liquids such as groundwater or storm water may be beneficially applied to the units consistent with Title 27 regulations as part of postclosure maintenance operations (e.g., dust control, limited irrigation of landfill vegetative cover). See Discharge Prohibition A.1.c and Discharge Specifications B.1.a and B.1.c.
- Corrective Action -- Provision J.5.a requires that the Discharger submit a completion report for installation of the landfill gas extraction system at the site by **1 April 2014**. (A review of the files indicated that the report had not yet been submitted). The WDRs also require that the Discharger operate and maintain the landfill gas extraction system until such time as it can be demonstrated that landfill gas is no longer a threat to water quality, as approved by the Executive Officer. See Facility Specification C.3.
- Monitoring -- The WDRs require submission of a work plan for installation of additional corrective action monitoring wells at Landfill Unit 1, as necessary, to meet Title 27 performance standards. Additional Point of Compliance wells are needed along the north and east sides of the unit. A compliance well is also needed southeast of the unit to monitor corrective action progress in preventing any future offsite migration and returning to compliance with the Water Quality Protection Standard. The plan is due by **15 September 2015**. See Monitoring Specification H.21 and Provision J.5.e.

## INFORMATION SHEET (CON'T)

- Postclosure Maintenance -- The WDRs require that the Discharger complete an aerial topographic survey (or alternative survey meeting Title 27 standards) every **five** years in accordance with Title 27 and the MRP to track differential settlement. See Closure and Postclosure Specification F.1.i. Provision C.5.d requires that the Discharger submit a report documenting previous final cover surveys conducted at the site and the methodology used to track differential settlement by **15 August 2014**, while the MRP requires that the first iso-settlement survey under the WDRs be conducted by **1 June 2016**. The Discharger must also develop and submit an updated Final Postclosure Maintenance Plan (PCMP) to reflect requirements in the revised WDRs and changes at the site since the plan was last approved in 1996. See Closure and Postclosure Specification F.1.i.
- Financial Assurances -- The WDRs require that the Discharger provide financial assurances for landfill post-closure maintenance and corrective action (known or reasonably foreseeable release) in at least the amount of the cost estimates in the currently-approved plans for these items, as annually adjusted for inflation. See Financial Assurance Specifications G.1a and G.1.b. Provision J.5.c requires that the Discharger submit a financial assurances demonstration report for these items by **1 July** each year beginning **2014**.

### Class II Surface Impoundments

Updated requirements in the WDRs for the active Class II surface impoundments at the site include, but are not limited to, the following:

- Waste Discharge -- The WDRs prohibit the use of the impoundments for waste disposal or indefinite storage. The discharge of solid wastes to either impoundment is also prohibited, except for solids settled out from authorized discharges. Discharges to SI-2 are limited to inert liquids to be beneficially reused onsite as operations water, as proposed by the Discharger. Discharges to SI-1 are specifically limited to nonhazardous (inert or non-inert) liquids of the type historically discharged to the impoundment (e.g., leachate, septage) provided such wastes do not contain excessive solids (i.e., wastes must have a moisture content of at least 80% or contain at least 80% free liquids by volume). See Discharge Specifications A.2.a through A.2.c.
- Detection Monitoring -- A Point of Compliance well needs to be installed immediately down gradient of the surface impoundments at the site to allow detection of a release from the units. See Finding 53 and Monitoring Specification H.13. Provision J.6.e requires submission of a work plan for installation of this well by **15 September 2015**. The WDRs also require submission of a revised Water Quality Protection Standard Report for the units at the site by 31 January 2015, including concentration limits based on interwell monitoring.
- Operations & Maintenance -- The WDRs require that the Discharger develop and implement an approved operations and maintenance plan for the surface

## INFORMATION SHEET (CON'T)

impoundments consistent with the revised WDRs, as required under Title 27, section 21760(b). The overall purpose of the plan is to ensure that water quality is not threatened by surface impoundment operations. See Facility Specification C.4. Provision J.6.d requires that the plan be submitted by **15 September 2014**.

The WDRs continue the requirement in previous WDRs that the Discharger maintain a minimum freeboard of 2.9 feet at each impoundment to accommodate a design (1,000-year, 24-hour) storm event per Title 27 regulations. In addition, the WDRs require that commingling of inert and non-inert liquids be kept to a minimum to help prevent freeboard violations and to minimize hydraulic head on the liner. (Another reason not to commingle is to prevent an unnecessary increase in the amount of wastewater that must be discharged at an authorized offsite facility). See Discharge Specifications B.2.c and B.2.d.

- Closure -- The WDRs require that the Discharger develop and submit a preliminary closure and postclosure maintenance plan (PC/PCMP) for the Class II surface impoundments per Title 27 requirements, including a lump sum estimate of the cost of carrying out all actions necessary to clean close each impoundment. The PC/PCMP shall also include plans and cost estimates for closure and postclosure maintenance of the unit as a landfill if clean closure may not be feasible. The PC/PCMP is required to be submitted for Board staff approval by **15 May 2014**. See Closure and Postclosure Specifications F.2.a and F.2.b and Provision J.6.b.

An amended RWD containing a final closure and postclosure maintenance plan (FC/PCMP) is required to be submitted prior to anticipated closure of the impoundments per Closure and Postclosure Specification F.2.d.

- Financial Assurances -- The WDRs require that the Discharger provide financial assurances for surface impoundment closure, post-closure maintenance, and corrective action (known or reasonably foreseeable release) in at least the amount of the cost estimates in the approved plans for these items, as annually adjusted for inflation. For closure and postclosure maintenance, such plans would be the PC/PCMP submitted above, as approved by Board staff. For corrective action, such plan would be required to be submitted by **15 April 2014** under Financial Assurance Specification G.1d and Provision J.6.a. Provision J.6.c requires that the Discharger submit a financial assurances demonstration report for these items by **1 July** each year beginning **2014**.

### Monitoring and Reporting Program

The monitoring and reporting program (MRP) in the revised WDRs requires corrective action monitoring for the closed landfill units and detection monitoring for the two Class II surface impoundments. The MRP requires monitoring of all Title 27 media at each unit, as applicable, including groundwater, soil-pore water, and surface water. Monitoring frequencies are generally quarterly for field parameters, semiannually for monitoring

## INFORMATION SHEET (CON'T)

parameters, and every five years for Constituents of Concern. The monitoring parameters generally consist of those constituents that have been detected at elevated concentrations in leachate, landfill gas, and/or groundwater at the site, such as volatile organic compounds (VOCs) and general minerals. Other constituents such as dissolved metals have not been included in semiannual monitoring because they have not been confirmed as part of the release at either unit.

Previous WDRs required that the Discharger monitor the nine offsite domestic wells historically impacted by the landfill. As noted in Findings 50 and 51, these wells appear to have cleaned up over the past 10 years. Under this MRP, the Discharger is not required to continue to monitoring these offsite wells, but is required to install an onsite Title 27 compliant monitoring well upstream of the domestic wells to monitor the progress of corrective action and any potential future threat to the offsite supply wells from the landfill,

The MRP also requires monitoring of all major landfill control systems such leachate, landfill gas, soil gas, and precipitation and drainage controls. Monitoring of these systems is also generally semiannually, except for field parameters.

As noted in the WDRs, the landfill was sited in a ravine with an ephemeral stream running through it. Much of the stormwater and spring water that once fed the stream are captured by the landfill's storm water controls and subdrain systems. As a result, surface water monitoring is limited to storm water monitoring. The MRP also requires that the Discharger obtain coverage under the General Industrial Storm Water Permit.

The site is drained by ephemeral streams that flow to French Ravine about one-half mile east of the site. French Ravine is a tributary of Wolf Creek, which flows into the Bear River and thence the Feather and Sacramento Rivers. (JDM)