SOLANO GARBAGE COMPANY LANDFILL
Revision of Waste Discharge Requirements
Staff Response to Comments Received on the Tentative Order

One set of written comments on the Revised Waste Discharge Requirements (WDR) Tentative Order were received on March 15, 2007 from Ms. June Guidotti and family. These comments pertained to the proposed Discharge Monitoring Program for the landfill.

Ms. Guidotti's comments included several recommended revisions to the monitoring program. Noting the seasonal pattern of groundwater flow at the site, as described in Finding 11 of the Tentative Order (page 4), Ms. Guidotti stated that groundwater sampling schedule proposed in the Tentative Order is skewed towards collection of samples during the winter, the wettest time of the year when samples presumably reflect a more diluted condition. She recommended that we revise the sampling program so that it accomplishes the following objectives:

- "Sampling under both the dry and wet season groundwater flow regimes"
- "Track seasonal variation in tested parameters as concentrations would be expected to vary with seasonal groundwater variations," and
- "Establish consistent sampling months from year to year for the statistical comparison of data."

Ms. Guidotti requested the following specific revisions to the Discharge Monitoring Program:

1) The Corrective Action Monitoring Program should require sampling in the summer and winter, with samples collected specifically during the months of July and November. (The Tentative Order requires that Corrective Action groundwater samples be collected semi-annually during the 2nd and 4th Quarters (i.e., spring and fall).
2) The Detection Monitoring Program should require semi-annual (i.e., twice-per-year) sampling in the summer and winter for volatile organic compounds (VOCs) and general water quality parameters. (The Tentative Order requires annual (i.e., once-per-year) sampling during the 4th Quarter for these monitoring parameters.)
3) The Detection Monitoring Program should require semi-annual sampling for semi-volatile organics (SVOCs), metals, and other constituents of concern (COC) for three years, after which the "COC" sampling program could be reduced if the concentration limits for these parameters (Table 2 in the Tentative Order) are not exceeded. (The Tentative Order requires "COC" sampling once every five years, beginning in the 4th quarter 2007.)
4) We should require the landfill owner to obtain an NPDES permit to monitor surface discharge of leachate and other suspected pollutants into Union Creek in order to determine compliance with the Basin Plan. (The Tentative Order does not require routine surface water monitoring.)

Water Board staff's responses to Ms. Guidotti's comments are as follows:

Staff appreciates these concerns regarding the proposed groundwater sampling frequency and the suggestions to improve the sampling program. The comments are well-reasoned and valid. However, the issues raised in Ms. Guidotti's comments were thoroughly considered when we designed the sampling program as proposed in the Tentative Order. We believe the sampling program is designed to collect precisely the data Ms. Guidotti recommends we collect. This is explained fully below.

Background
For the past 20 years, the Solano Garbage Company Landfill has been one of the most frequently monitored landfills within our Region. Since monitoring began in 1987, groundwater elevations and groundwater quality have been monitored on a *quarterly* basis (i.e., four times per year) in monitoring wells located around the landfill perimeter. From 1994 to the present, groundwater elevations have been measured *monthly*.

This comprehensive monitoring program has yielded a very large database of seasonal groundwater levels and groundwater chemical concentrations. This body of data has allowed Water Board staff to recognize and assess, over a period of twenty years, seasonal variations in groundwater flow directions and chemical concentrations, as well as long-term changes in groundwater quality in and around the site. It is also important to note that the landfill has been closed since 1988; therefore, conditions at the landfill during this lengthy monitoring period have been very stable.

During this twenty-year period of post-closure monitoring, we have observed and paid attention to the seasonal trends that Ms. Guidotti has recommended that we track. The following trends have been confirmed from analysis of site monitoring data:

- Groundwater elevations outside the landfill perimeter show a clear wet-season/dry-season pattern that reflects the Bay Area's climate. Groundwater levels rise in response to winter rainfall, and decline in response to the dry summers. Groundwater levels typically reach their highest elevations during the 2nd quarter (April or May), after several months of winter rainfall, and reach their lowest elevations during the 4th quarter (October, November, or December), after several consecutive months of little to no rainfall. Groundwater levels in the 2nd quarter are typically several feet higher than elevations in the 4th quarter.

- Leachate elevations inside the landfill show a similar seasonal pattern, with higher levels in the 2nd quarter and lower levels in the 4th quarter. However, leachate levels do not vary as much as the groundwater levels outside the landfill. For this reason, the greatest difference between leachate levels inside the landfill and groundwater levels outside the landfill occurs in the fall when groundwater levels are at their lowest. The chance of leakage from the landfill is greatest during this time of the year (4th quarter).

- Chemical contaminant concentrations in the impacted wells are typically at their lowest levels of the year during the 2nd quarter. This condition reflects greater dilution in response to the higher groundwater elevations at the conclusion of (rather than during) the winter rainy season.

Based on these seasonal trends, staff has designed a Discharge Monitoring Program that will facilitate collection of the data we need to provide regulatory oversight. As summarized in Table 1 of the Discharge Monitoring Program (Page 31), the Tentative Order prescribes two sampling programs:

- A Corrective Action Monitoring Program for wells on the landfill perimeter that have shown chemical impacts to groundwater. This portion of the monitoring program requires semi-annual sampling during the 2nd and 4th quarters of the year, and
- A Detection Monitoring Program for wells that have not shown chemical impacts from the landfill. This portion of the monitoring program requires annual sampling during the 4th quarter.

Responses to Specific Recommendations

1) Staff disagrees with the recommendation to collect samples in the summer and winter. The best times to collect samples that reflect the seasonal trends are during the spring and fall (i.e., 2nd and 4th quarters), when groundwater elevations reach their highest and lowest levels, respectively. We do not recommend sample collection during July, because during this month groundwater elevations are falling from their peak spring elevations but have not reached their lowest elevations of the year.

   Staff agrees with the comment that the semi-annual samples should be collected during the same months of each year to provide consistency in the data from year to year. We have revised the Tentative Order to specify that the Corrective Action Monitoring samples should be collected in May and November of each year (see Part B, 1. A. "Groundwater and Leachate Monitoring" on page 29 of the Tentative Order).

2) Staff disagrees with the recommendation that the Detection Monitoring Program should require semi-annual sampling. As noted above, the Detection Monitoring Program applies only to monitoring perimeter wells that, during 20 years of quarterly monitoring, have never shown chemical impacts from the landfill. Since no wastes have been added to the landfill for 20 years, and VOC concentrations in leachate inside the landfill have dropped by 98% during this time (see Finding 16 of the Tentative Order), staff considers it unlikely that the Detection Monitoring Wells will begin to show impacts in the future. Also, because there are no seasonal variations in chemical concentrations in these wells, there is no compelling reason to require seasonal sampling. Staff is confident that once-per-year sampling of the Detection Monitoring wells during the 4th quarter is adequate, as this is the time of the year when the chance of leakage from the landfill is greatest. Please note that minor revisions were made to the wording of Part B, 1. A. of the Discharge Monitoring Program (page 29 of the Tentative Order) to clarify the groundwater monitoring requirements.

3) Staff disagrees with the comment that the "COC" sampling program for SVOCs, metals, and other constituents of concern should be extended for another three years on a semi-annual schedule. Sampling for SVOC, metals, and the other COC parameters has already been conducted quarterly for 20 years, and the concentration limits have not been exceeded during this time. Extending this portion of the sampling program another three years would not likely yield different or useful results. Water Board staff does not need an additional three years of seasonal data "to obtain sufficient analytical results for statistical analysis." We are confident that the schedule proposed in the Tentative Order is adequate.

4) Staff disagrees with the comment that surface runoff from the landfill should be monitored under an NPDES permit. We do not believe that routine surface water sampling is needed at this landfill, for several reasons. First, the landfill is under final cover. Wastes are not exposed at the surface of this landfill, and any precipitation that falls on this covered landfill will run off the elevated landfill mound without contacting wastes. It is highly unlikely that surface runoff from this landfill will pick up pollutants emanating from the landfill. Second, the revised WDR (Page 29) already requires quarterly monitoring for seepage around the landfill perimeter. If any seepage is noted, Water Board staff will require that seepage to be sampled. We can initiate surface water sampling at any time should we determine that it is needed.

   Finally, any leakage of "leachate and other suspected pollutants" from this landfill would almost certainly occur from the bottom of the landfill into groundwater, and not via surface runoff. Migration of contaminated groundwater from the landfill towards Union Creek has never been detected. As noted in Finding 16 of the Tentative Order, sampling of sentry wells located between the landfill and Union Creek over a period of nine years never showed any chemical impacts. Also, Union Creek has been sampled several times in the past, when VOC concentrations in landfill leachate were much higher than today, and no chemicals were detected in those creek samples. For these reasons, we have seen no evidence that Union Creek has ever been impacted by the landfill and we have determined that routine surface water sampling of Union Creek should not be required.

Summary

Water Board staff does not plan to revise the proposed monitoring program for this landfill in response to the comments submitted by Ms. Guidotti and Family, other than to revise the Tentative Order to specify that the semi-annual Corrective Action Monitoring sampling is to be performed during the months of May and November. The other issues that were raised, while valid, are issues that Board staff thoroughly considered prior to developing the Discharge Monitoring Program for the Solano Garbage Company Landfill.