

**PART 373 PERMIT
MODULE VIII - GROUNDWATER PROTECTION**

Background

The CWM Model City Facility groundwater monitoring program has continued to evolve since Permit # 90-87-0476 was issued on July 31, 1989. As required in the Permit, CWM has conducted groundwater investigations in the vicinity of the landfills and surface impoundments and other areas of the site. The Department has used the results of those investigations to develop monitoring programs to detect any future releases from the units that have not released hazardous constituents to the groundwater, and to keep track of the groundwater contamination which has been observed in the vicinity of a number of the landfills and impoundments.

In some locations (Landfills 2,3,4/East West Salts), it is not possible to conclusively attribute the presence of groundwater contamination to waste management activities at the regulated units, nor is it possible to rule out those units as potential sources of the contamination. In other locations (Landfill 7, 10, 11, RMU-1), the observed groundwater contamination has resulted from waste management activities that occurred before the units were constructed and, hence, is not attributable to releases from them. The Department will continue to require CWM to keep track of the magnitude and extent of the contamination and to evaluate remedial programs for the groundwater contamination.

In many areas of the site where substantial groundwater contamination has been found, the Department has required CWM to implement Remedial Measures programs to mitigate the potential threat to the environment posed by the contamination. The details of the Remedial Measures Program are described in Module II and Attachment E.

Module Structure

This Module contains the groundwater Detection Monitoring Programs which are required under 6NYCRR Part 373-2. The programs are designed to provide unit-specific detection capabilities at those active or inactive Landfills and Surface impoundments which have not released hazardous waste constituents to the groundwater. The purpose of the detection monitoring programs is to allow for rapid detection of releases should they occur.

Applicability

- I. The Permittee shall comply with all applicable groundwater monitoring requirements set forth in 6NYCRR 373-2.6.

II. The Permittee shall modify the groundwater monitoring program, as necessary, to maintain compliance with any future changes in 6 NYCRR 373-2.6 within ninety (90) days after the effective date of such changes.

III. **Detection Monitoring Program.** Groundwater quality data collected during the permit application process support the implementation of a Detection Monitoring Program for the following units:

Active:

Residuals Management Unit 1 (RMU-1)
Facultative Ponds 1, 2, 3, and 8

Inactive:

Secure Landfill 1 (SLF 1)
Secure Landfill 2 (SLF 2)
Secure Landfill 3 (SLF 3)
Secure Landfill 4 (SLF 4)
Secure Landfill 5 (SLF 5)
Secure Landfill 6 (SLF 6)
Secure Landfill 7 (SLF 7)
Secure Landfill 10 (SLF 10)
Secure Landfill 11 (SLF 11)
Secure Landfill 12 (SLF 12)
Aggressive Biological Treatment Unit 58 (A.B.T.U.58)

The Permittee is required to maintain and follow the Detection Monitoring Program as described below:

A. Point of Compliance. The Point of Compliance for the applicable units are as follows:

1. **Residuals Management Unit 1:** The Point of Compliance for this landfill is defined as the vertical surface passing through the downgradient monitoring wells R101S, R102SR, R103S, R104S, R105S, R106S, R107S, R1N08S, R109S, R1N10S, R111S, R112S, R113S, R114S, R115S, R116S, R118S, R125D, R126D, R127D, R128D, R129D, R130D, R131D, R132D, R133D, R134D and R135D.
2. **Facultative Ponds 1 & 2:** The Point of Compliance for this surface impoundment is defined as the vertical surface passing through the downgradient monitoring wells F101S, F102S, and F103S.

3. **Facultative Pond 3:** The Point of Compliance for this surface impoundment is defined as the vertical surface passing through the downgradient monitoring wells F301S and F302S.
4. **Facultative Pond 8:** The Point of Compliance for this surface impoundment is defined as the vertical surface passing through the downgradient monitoring wells F801S and F802S.
5. **Secure Landfill 1:** The Point of Compliance for this landfill is defined as a vertical surface passing through the downgradient monitoring wells W102S and W101S.
6. **Secure Landfills 2, 3 & 4:** The Point of Compliance for these landfills is defined as the vertical surface passing through the downgradient monitoring wells W201S, W202S, W301S, W303S, W401S and W402S.
7. **Secure Landfill 5:** The Point of Compliance for this landfill is defined as a vertical surface passing through the downgradient monitoring wells W501S and W502S.
8. **Secure Landfill 6:** The Point of Compliance for this landfill is defined as a vertical surface passing through the downgradient monitoring wells W601S, W602S and W603S.
9. **Secure Landfill 7:** The Point of Compliance for this landfill is defined as a vertical surface passing through the downgradient monitoring wells W701S, W702S, W703S, W704S and W705S.
10. **Secure Landfill 10:** The Point of Compliance for this landfill is defined as a vertical surface passing through the downgradient monitoring wells W1001S, W1002S, W1003S and W1004S.
11. **Secure Landfill 11:** The Point of Compliance for this landfill is defined as the vertical surface passing through the downgradient monitoring wells W1101S, W1102S, W1103S, W1104S, W1105S, W1106S, W1107S, W1108S, and W1109S.
12. **Secure Landfill 12:** The Point of Compliance for this landfill is defined as a vertical surface passing through the downgradient monitoring wells W1201S, W1202S, W1203S, W1204S, W1205S, W1206S, W1207S and W1208S.

13. **A.B.T.U. 58:** The Point of Compliance for this former surface impoundment is defined as the vertical surface passing through the downgradient monitoring wells F5801S and F5802S.

The Points of Compliance are shown in Figure 1 at the end of this Module.

B. Length of Monitoring Requirements. At a minimum, the groundwater monitoring requirements set forth herein shall extend for a period no less than thirty (30) years beyond the closure of the units except for those land disposal units (surface impoundments) where "clean" closure is achieved consistent with the requirements of 373-2.11(f)(1). In the event that a compliance monitoring program is needed at the unit, a compliance period equal to the active life of the unit plus thirty (30) years shall be established.

C. Description of Wells. The Detection Monitoring network shall consist of the following wells:

1. Upgradient. Background monitoring wells BW01S, BW01D, BW03S, BW03D, BW04S, BW04D, BW05S, BW05D.
2. Downgradient. Monitoring wells R101S, R101D, R102SR, R102D, R103S, R103D, R104S, R104D, R105S, R105D, R106S, R106D, R107S, R107D, R1N08S, R108D, R109S, R109D, R1N10S, R110D, R111S, R111D, R112S, R113S, R114S, R114D, R115S, R116S, R116D, R118S, R125D, R126D, R127D, R128D, R129D, R130D, R131D, R132D, R133D, R134D and R135D will be used to monitor **Secure Landfill RMU-1.**

Monitoring wells F101S, F102S, F102D, and F103S will be used to monitor **Facultative Pond 1 & 2.**

Monitoring wells F301S, F302S, and F302D will be used to monitor **Facultative Pond 3.**

Monitoring wells F801S, F802S, F802UD and F802LD will be used to monitor **Facultative Ponds 8.**

Monitoring wells W101S, W101D and W102S will be used to monitor **Secure Landfill 1.**

Monitoring wells W201S, W201D, W202S, W202UD, W202LD, W301S, W301D, W303S, W401S, W401D and W402S will be used to monitor **Secure Landfills 2, 3 & 4.**

Monitoring wells W501S, W501D and W502S will be used to monitor **Secure Landfill 5.**

Monitoring wells W601S, W601D, W602S and W603S will be used to monitor **Secure Landfill 6.**

Monitoring wells W701S, W701D, W702S, W702D, W703S, W703D, W704s, W704D, W705S and W705D will be used to monitor **Secure Landfill 7.**

Monitoring wells W1001S, W1001D, W1002S, W1003S, W1003D, W1004S and W1004D will be used to monitor **Secure Landfill 10.**

Monitoring wells W1101S, W1101D, W1102S, W1102D, W1103S, W1103D, W1104S, W1104D, W1105S, W1105D, W1106S, W1106D, W1107S, W1107D, W1108S, W1108D, W1109S, and W1109D will be used to monitor **Secure Landfill 11.**

Monitoring wells W1201S, W121UD, W121LD, W1202S, W122UD, W122LD, W1203S, W123UD, W123LD, W1204S, W1204D, W1205S, W1205D, W1206S, W1206D, W1207S, W1207D, W1208S, W128UD and W128LD will be used to monitor **Secure Landfill 12.**

Monitoring wells F5801S, F5801D and F5802S will be used to monitor **A.B.T.U. 58.**

D. Additional Monitoring.

1. Each time the active RMU-1 Detection monitoring wells are sampled during the active life of the Landfill:
 - a) Samples of RMU-1 leachate from the primary and secondary leachate collection/detection systems shall be collected and analyzed for the same suite of parameters as the monitoring wells.
 - b) Water level measurements will be taken from all RMU-1 piezometers and all inactive RMU-1 Detection Monitoring Wells.

2. Each time the SLF 11 Detection monitoring wells are sampled:
 - a) Water level measurements will be taken from piezometers P1102S, P1103S, P1104S and P1105S.
 3. Each time the SLF 7 Detection monitoring wells are sampled, water level measurements will be taken from piezometers P701S, P702S and P703S.
 4. Each time the SLF 10 Detection monitoring wells are sampled, water level measurements will be taken from piezometers P1001S and P1002S.
 5. Each time the SLF 12 Detection Monitoring Wells are sampled, water level measurements will be taken from piezometers P1201S, P1202S and monitoring well TW-15S.
- E. Sampling Frequency. All monitoring wells in the Detection Monitoring Program, with the exception of monitoring wells F802LD, W202LD, W121LD, W122LD, W123LD and W128LD must be sampled at least semi-annually. Monitoring wells F802LD, W202LD, W121LD, W122LD, W123LD and W128LD must be sampled at least once every two years.
- F. Indicator Parameters. As set forth in 6 NYCRR 373-2.6(i)(1), the following parameters shall be used as indicator parameters in the Detection Monitoring Program:

Volatile Organics:

| | |
|-----------------------------|----------------------------|
| Benzene | Ethylbenzene |
| Bromoform | Methyl Bromide |
| Carbon Tetrachloride | Methyl Chloride |
| Chlorobenzene | Methylene Chloride |
| Chlorodibromomethane | 1,1,2,2-Tetrachloroethane |
| Chloroethane | Tetrachloroethylene |
| 2-Chloroethylvinylether | Toluene |
| Chloroform | 1,2-Trans-Dichloroethylene |
| Dichlorobromomethane | 1,1,1-Trichloroethane |
| 1,1-Dichloroethane | 1,1,2-Trichloroethane |
| 1,2-Dichloroethane | Trichloroethylene |
| 1,1-Dichloroethene | Vinyl Chloride |
| 1,2-Dichloropropane | cis-1,3-Dichloropropylene |
| trans-1,3-Dichloropropylene | |

The Permittee shall analyze all Detection Monitoring wells for the indicator parameters and shall statistically compare the values obtained during each sampling event with the background values of the parameters.

G. Background Values for Indicator Parameters.

To date no hazardous waste constituents have been detected in groundwater samples obtained from background monitoring wells BW01S, BW01D, BW03S, BW03D, BW04S, BW04D, BW05S and BW05D.

H. Statistical Evaluation. Whenever the Permittee determines groundwater quality at the Point of Compliance, he must determine whether there has been a statistically significant increase in any of the indicator parameters when compared against the established trigger values. That determination must be made for each indicator parameter and for every well.

For the Model City Facility, Poisson Prediction Limits shall be used for statistical comparison of monitoring well data. This method is appropriate for data that exhibit truncated distributions with skewed tails, produced by detection limit problems. The poisson prediction interval includes three data evaluation mechanisms:

- 1) Poisson Prediction Interval (Concentration)
- 2) Multiple Detections
- 3) Persistent Detections

1. **Poisson Prediction Interval (Concentration):** A concentration based t-prediction interval has been developed for the Model City site. Based on data obtained from analysis of background groundwater quality, field and trip blanks, The t-prediction interval has been calculated to be a sum total of indicator parameters in a single scan. The prediction interval for the specific units covered by this Module is as follows:

- a) RMU - 1: For wells, except R105S, R106S and R107S, which comprise the Point of Compliance for the landfill the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.
 - i) For well R105S, data will be evaluated using a modified PI, namely that the summed total concentration of all indicator parameters, excluding Methylene Chloride and 1,1-Dichloroethane (1,1-DCA), shall not exceed 23 ug/l. Furthermore, the concentration of 1,1-DCA will then be compared with a compound specific PI of 23 ug/l, which was derived from the analytical

history of this well. In addition, routine evaluation procedures for Multiple and Persistent Detections will be used, excluding Methylene Chloride and 1,1-DCA.

- ii) For well R106S, data will be evaluated using a modified PI, namely that the summed total concentration of all indicator parameters, excluding Methylene Chloride, Vinyl Chloride and 1,1-Dichloroethane (1,1-DCA), shall not exceed 23 ug/l. Furthermore, the concentrations of Vinyl Chloride and 1,1-DCA will each be compared with a compound specific PI of 23 ug/l, which was derived from the analytical history of this well. In addition, routine evaluation procedures for Multiple and Persistent Detections will be used, excluding Methylene Chloride, Vinyl Chloride and 1,1-DCA.
 - iii) For well R107S, data will be evaluated using a modified PI, namely that the summed total concentration of all indicator parameters, excluding Methylene Chloride, Trichloroethene (TCE), 1,2-Dichloroethane (1,2-DCA) and 1,1-Dichloroethane (1,1-DCA), shall not exceed 23 ug/l. Furthermore, the concentrations of TCE, 1,2-DCA and 1,1-DCA will each be compared with a compound specific PI of 23 ug/l, which was derived from the analytical history of this well. In addition, routine evaluation procedures for Multiple and Persistent Detections will be used, excluding Methylene Chloride, TCE, 1,2-DCA and 1,1-DCA.
- b) Facultative Ponds 1, 2, 3 & 8: For wells which comprise the Point of Compliance for the Facultative Ponds the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.
- c) SLF 1: For wells which comprise the Point of Compliance for the landfill the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.
- d) SLFs 2,3 & 4:
- i) Wells W201S, W201D, W202UD, W202LD, W301D, W303S, W401D & W402S: The prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.

ii) Well W202S: Low level (ppb) contamination has been detected in these wells. An investigation of this contamination concluded that SLF 2, SLF 3, SLF 4, the East/West Salts Area and past practices and spills are all potential sources of the VOCs present in the groundwater. Department has recognized that the close proximity of the above units limits the ability to determine a specific source of the contamination. However, since SLF 2, 3 & 4 cannot be eliminated as a source of contamination, its presence requires the use of an alternative statistical approach. The statistical procedure will be to determine the summed total concentration of all indicator parameters (excluding methylene chloride) compared to a modified prediction interval (PI) of 340 ug/l.

iii) Well W301S: Low level (ppb) contamination has been detected in this well. An investigation of this contamination concluded that SLF 2, SLF 3, SLF 4, the East/West Salts Area and past practices and spills are all potential sources of the VOCs present in the groundwater. Department has recognized that the close proximity of the above units limits the ability to determine a specific source of the contamination. However, since SLF 2, 3 & 4 cannot be eliminated as a source of contamination, its presence requires the use of an alternative statistical approach. The statistical procedure will be the summed total concentration of all indicator parameters, with the exception of methylene chloride, trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE) and 1,2-trans-dichloroethene. This value will then be compared to a modified prediction interval (PI) of 23 ug/l. The compound specific prediction intervals for trichloroethene, 1,1-DCE and 1,2-trans-dichloroethene are as follows:

| | |
|--------------------------|-----------|
| trichloroethene | 1200 ug/l |
| 1,2-trans-dichloroethene | 570 ug/l |
| 1,1-dichloroethene | 23 ug/l |

iv) Well W401S: Low level (ppb) contamination has been detected in these wells. An investigation of this contamination concluded that SLF 2, SLF 3, SLF 4, the East/West Salts Area and past practices and spills are all potential sources of the VOCs present in the groundwater. Department has recognized that the close proximity of the above units limits the ability to determine a specific source of the contamination. However, since SLF 2, 3 & 4 cannot be eliminated as a source of the contamination, its presence requires the use of an alternative statistical approach. In addition to the Site

Specific Indicator Parameters specified in Condition F. of this Module, the Permittee shall also monitor for Acetone, 2-Butanone (MEK), 4-Methyl-2-Pentanone (MIBK), 2-Hexanone, Carbon Disulfide, Styrene, Vinyl Acetate and Xylene. The statistical procedure will be to determine the summed total concentration of Acetone, 2-Butanone, 4-Methyl-2-Pentanone and 2-Hexanone. This total value will then be compared to a modified prediction interval (PI) of 23 ug/l. The summed total concentration of all other indicator parameters (excluding methylene chloride and vinyl chloride) will then be determined and compared to a modified prediction interval of 3 mg/l.

e) SLF 5:

- i) Wells W501D & W502S: The prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.
- ii) Well W501S: Low level (ppb) contamination has been detected in this well. After an investigation the Department has determined that the contamination is not associated with a release from SLF 5, however, its presence requires the use of an alternative statistical approach. The statistical procedure will be to compare the summed total concentration of all indicator parameters, excluding Methylene Chloride, to a modified prediction interval (PI) of 340 ug/l.

The contamination detected in monitoring well W501S has been attributed to past waste handling practices in this area. Evaluation of this release will be performed as outlined in Module II and Attachment E (corrective action).

- f) SLF 6: For wells which comprise the Point of Compliance for the landfill the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.

g) SLF 7:

- i) Wells W701S, W701D, W702S, W702D, W703D, W704D and W705D the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.

- ii) Well W703S: Low levels (ppb) of chloroform and carbon tetrachloride have been detected in this well. After investigation, the Department has determined that the contamination is not associated with waste management practices at SLF 7, however, its presence requires the use of an alternative statistical approach. The statistical procedure will be to determine the summed total concentration of all indicator parameters, with the exception of methylene chloride, chloroform, and carbon tetrachloride. This value will then be compared to a modified prediction interval (PI) of 23 ug/l. The concentrations of chloroform and carbon tetrachloride will then be compared to a compound specific prediction interval (PI) for each of these compounds based on the historical data base collected from the well. The prediction intervals for chloroform and carbon tetrachloride are 510 ug/l and 400 ug/l respectively.

The contamination detected in monitoring well W703S has been attributed to past waste handling practices by the Department of Defense. Evaluation of this release will be performed as outlined in Module II and Attachment E (corrective action).

- iii) Well W704S: Low levels of 1,1-dichloroethane (1,1-DCA) have been detected in this well. After investigation, the Department has determined that the contamination is not associated with a release from SLF 7, however, its presence requires the use of an alternative statistical approach. The statistical procedure will be to determine the summed total concentration of all indicator parameters, excluding methylene chloride and 1,1-DCA. This value will then be compared to a modified prediction interval (PI) of 23 ug/l. The concentration of 1,1-DCA will then be compared to a compound specific prediction interval (PI) of 23 ug/l based on the historical data base collected from the well. In addition, routine evaluation procedures for Multiple and Persistent Detections will be used, excluding Methylene Chloride and 1,1-DCA.
- iv) Well W705S: Low levels of 1,1,1-Trichloroethane (1,1,1-TCA) and 1,1-Dichloroethane (1,1-DCA) have been detected in this well. After investigation, the Department has determined that the contamination is not associated with a release from SLF 7, however, its presence requires the use of an alternative statistical approach. The statistical procedure will be to determine the summed total concentration of all indicator parameters, with the exception of methylene chloride, 1,1,1-TCA and 1,1-DCA. This

value will then be compared to a modified prediction interval (PI) of 23 ug/l. The concentrations of 1,1,1-TCA and 1,1-DCA will each be compared to a compound specific prediction interval (PI) of 23 ug/l based on the historical data base collected from the well.

h) SLF 10:

- i) Wells W1001S, W1001D, W1003S, W1003D, W1004S and W1004D: the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.
- ii) Well W1002S: Low level (ppb) contamination has been detected in this well. After an investigation the Department has determined that the contamination is not associated with releases from SLF 10, however, its presence requires the use of an alternative statistical approach. The statistical procedure will be to determine the summed total concentration of 1,1,1-trichloroethane, 1,1-dichloroethane, tetrachloroethane, toluene and vinyl chloride. This value will then be compared to a modified prediction interval (PI) of 23 ug/l. The summed total concentration of all other indicator parameters (excluding methylene chloride) will then be determined and compared to a modified prediction interval (PI) of 3 mg/l.

The contamination detected in monitoring well W1002S has been attributed to past waste handling practices and drum storage along McArthur Street. Evaluation of this release will be performed as outlined in Module II and Attachment E (corrective action).

i) SLF 11:

- i) Monitoring Wells W1101S, W1101D, W1102S, W1102D, W1103D, W1104D, W1105D, W1106D, W1107S, W1107D, W1108S, W1108D and W1109D: For these wells the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.
- ii) Monitoring Wells W1103S, W1104S, W1105S, W1106S: Low levels (ppb) of trichloroethylene (TCE), 1,2-trans-dichloroethylene (t-DCE), 1,1-Dichloroethene (1,1-DCE) and Vinyl Chloride have been detected in these wells. After investigation, the Department has determined that the contamination is not associated with a

release from SLF 11, however, its presence requires the use of an alternative statistical approach. The statistical procedure will be to determine the summed total concentration of all indicator parameters, with the exception of methylene chloride, TCE, t-DCE, 1,1-DCE and VC1. This value will then be compared to a modified prediction interval (PI) of 23 ug/l. The concentrations of TCE and t-DCE will then be compared to a prediction interval (PI) for each of these compounds based on the historical data base collected from these four (4) wells. The prediction intervals for TCE and t-DCE in these wells are 260 ug/l and 85 ug/l, respectively.

The concentrations of 1,1-DCA and VC1 will each be compared to a prediction interval (PI) of 23 ug/l based on the historical data base collected from these wells. In addition, routine evaluation procedures for Multiple and Persistent Detections will be used, excluding Methylene Chloride, TCE, t-DCE and VC1.

The contamination detected in Monitoring wells W1103S, W1104S, W1105S, and W1106S has been attributed to past drum storage along "H" Street. Evaluation of this release will be performed as outlined in Module II and Attachment E (corrective action).

- iii) Well W1109S: Low levels of 1,1-dichloroethane (1,1-DCA) have been detected in this well. After an investigation the Department has determined that the contamination is not associated with a release from SLF 11, however, its presence requires the use of an alternative statistical approach. The statistical procedure will be to determine the summed total concentration of all indicator parameters excluding methylene chloride and 1,1-DCA. This value will then be compared to a modified prediction interval (PI) of 23 ug/l. The concentration of 1,1-DCA will be compared to a compound specific prediction interval (PI) of 23 ug/l based on the historical data base collected from the well. In addition, routine evaluation procedures for Multiple and Persistent Detections will be used, excluding Methylene Chloride and 1,1-DCA.

- j) SLF 12: For wells which comprise the Point of Compliance for the landfill the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.

k) A.B.T.U. 58 :

- i) Wells F5801D & F5802S the prediction interval (PI) has been calculated to be 23 ug/l as a summed total concentration of all indicator parameters, excluding Methylene Chloride.
- ii) Well F5801S: Low levels (ppb) of chlorobenzene have been detected in this well. After investigation the Department has determined that the contamination is not associated with a release from A.B.T.U. 58, however, its presence requires the use of an alternative statistical approach. The statistical procedure will be to determine the summed total concentration of all indicator parameters, excluding Methylene Chloride and Chlorobenzene. This value will then be compared to a modified prediction interval (PI) of 23 ug/l. The concentration of Chlorobenzene will then be compared to a compound specific prediction interval (PI) of 23 ug/l for this compound based on the historical data base collected from the well.

The contamination detected in Monitoring well F5801S has been attributed to past waste handling in the Process Area. Evaluation of this release will be performed as outlined in Module II and Attachment E (corrective action).

2. **Multiple Detections:** A Prediction Interval, based on the number of compounds detected in a single scan, has been calculated for the Model City site. The number shall be more than 3 indicator parameters detected in any well in a single scan, independent of summed total concentration and excluding methylene chloride. Persistent compounds detected in wells evaluated using an "alternative statistical approach" shall not be counted when determining the number of detections in a single scan.
3. **Persistent Detections:** An alternative "trigger" will be if any one indicator parameter is detected in any well in a series of three (3) consecutive scans (independent of concentration) and excluding methylene chloride. Persistent compounds detected in wells evaluated using an "alternative statistical approach" shall not be counted when determining persistent detections.

Statistical Based Trigger mechanisms are outlined in Figure 2 at the end of this Module.

I. Reporting Requirements.

1. **Routine Monitoring Reporting:** The Permittee shall report the results of all groundwater analyses which are obtained from the Detection Monitoring Network.

The results of all routine environmental monitoring that occurs during a month must be submitted to the Department within ten (10) weeks from the end of that month. The sampling data must be submitted as a hard (paper) copy. In addition, sampling/analytical data will be submitted on magnetic/computer media suitable for use with commercially available data base management software.

Prior to well purging, the depth to the static water surface shall be measured to the nearest 0.01 feet each time a well is sampled. As a check, a duplicate water level measurement must be taken and recorded on every fifth well.

The Permittee must evaluate the data using the procedures set forth in Figure 2 at the end of this Module and submit the results of the statistical comparison of the indicator parameters as part of the Routine Environmental Monitoring Report. If the analyses reveal a statistically significant increase in the concentration of a indicator parameter at any well in the Detection Monitoring Network, the Permittee must:

- a) If the results of analyses fail either of the first two statistical criteria, the data will have a QA/QC review of the analysis. If the results fail the third statistical criteria, the well in question will be resampled within fourteen (14) days.
- b) If the QA/QC data review indicates that the analytical data is erroneous, the evaluation returns to Detection Monitoring with a statement in the annual report that indicates the reasons for the erroneous data. Otherwise, the well in question must be resampled within thirty (30) days of receipt of the original detection monitoring results.
- c) Within seven (7) days of receipt of the results of the resampling, the results shall be subjected to the same statistical evaluation criteria (total concentration and multiple detections).
- d) If the resampling results pass statistical criteria 1 and 2, then the well in question returns to detection monitoring with a statement in the annual report.

- e) If the resampling results fail statistical criteria 1 and 2 then, within 7 days of receiving the results, the Permittee shall provide written notification of the failure of the evaluation criteria to the Department. Within thirty (30) days of receiving results of the resampling, a plan must be submitted to the Department to determine the source of the detected organic compounds. Within ninety (90) days of receiving the results of the resampling, a Permit modification request must be submitted to the Department.
- f) In addition to step “e”, If the resampling results fail statistical criteria 1 or 2 then, within fourteen (14) days of receiving the resampling results (for evaluations under criteria 1 and 2), the affected well and adjacent wells that monitor the regulated unit, and for SLF monitoring wells, the leachate from the Landfill Cell upgradient of the well, must all be sampled for Appendix 23 constituents. Adjacent wells will be those wells immediately next to the well(s) with the detected compounds. For example, for a shallow (upper tills) monitoring well with detected compounds, the corresponding deep (glaciolacustrine silt/sand) well and the two shallow wells on either side will be considered adjacent wells. For a deep monitoring well, the adjacent wells would be the corresponding shallow well and the deep wells on either side. If compounds are detected in a well at which there is not a well or a well pair on one side monitoring the same regulated unit, then the number of adjacent wells will be reduced by one.
- g) For wells that fail statistical criteria 3, within thirty (30) days of receiving the results of the resampling called for in step “a”, the Permittee shall meet with the Department to discuss the results. Based on discussions, the Department will determine if further action is required. If further action is not required, then the consecutive count shall reset to zero, and the well returns to detection monitoring. If further action is required, a source investigation must be submitted to the Department within thirty (30) days (if required).
- h) Upon approval of the source investigation plans, called for in steps “e” and “g”, by the Department; an evaluation must be made to determine the source of the detected compounds.
- i) If the source investigation determines that the regulated unit is not the source of the detected compounds, the Permittee must submit a Permit modification request to continue detection monitoring. In addition, an investigation must be conducted to determine the source, rate and extent of the contamination as well as determine what, if any remedial action is required.

- j) If the source investigation determines that the regulated unit is the source of the detected compounds, the Permittee must submit a Permit modification request to determine maximum contaminant levels in order to determine the need for potential remedial action.

The evaluation procedure is outlined in Figure 2 at the end of this Module.

- 2. **Annual Reporting:** Annually, the Permittee shall submit a summary report of all sampling results obtained during the preceding year.

The Annual Report shall be due by March 1 of each year and shall contain all data and evaluations as required for semi-annual reporting under D.1.a of this Module. Any data previously submitted to the Department may be referenced.

In addition, the following information shall be contained in the Annual Report:

- a) The Permittee shall determine the groundwater flow rate and direction. [6 NYCRR 373-2.6(i)(5)].
- b) Proposal for any changes to the Groundwater Monitoring Plan.

- J. Inability to Obtain Samples. If the Permittee knows that a well or piezometer may not provide representative samples or accurate piezometric values, may be damaged in some way, or is inaccessible, the Permittee shall, within fourteen (14) days of such knowledge, attempt to remedy the problem and, when appropriate, sample the well or piezometer. Within thirty (30) days of such knowledge, the Permittee shall, through written notification to the Department, provide information which describes the nature of the problem associated with the device, and in the event of a failure to obtain a sample, the reason why a sample was not obtained.

In addition the notification shall contain:

- 1. A description of how the problem was corrected; or
- 2. A schedule for the rehabilitation or replacement of the device.

If a problem with a well prevented obtaining a sample as scheduled, a sample must be obtained within fourteen (14) days after rehabilitation or replacement of the well.

K. Well Rehabilitation. Every five (5) years the Permittee shall inspect the Detection Monitoring Network to determine its integrity. The inspection shall be certified by a professional engineer or qualified geologist. The inspection shall include the following:

1. A survey of all groundwater wells and piezometers in the monitoring network (performed by a New York State licensed surveyor) to the top of well casing elevation and to provide an updated site plan. The survey must be accurate to within 0.01 feet of elevation and the site plan must be presented on a scale of 1 inch equals 200 feet.
2. An establishment of the ability of all wells and piezometers in the monitoring network to yield meaningful groundwater elevations when measured with an instrument accurate to within 0.01 feet. The ability of the wells to yield such information shall be based upon a comparison of the sounding of a well to its historical depth. Wells shall be considered obstructed if 10% or more of the well screen is covered or otherwise inaccessible. At a minimum, these wells will be redeveloped to remove sediments from the bottom of the well.
3. An establishment of the ability of all groundwater wells to yield representative samples for determining the concentration of hazardous waste constituents that may be present in the groundwater. Physical examination of the well shall include removal and inspection of any dedicated sampling device to assure that the device is functioning as designed.

Due to rusting problems noted during the initial inspection, Well W1108D shall be inspected once every three years.

L. Permit Modification. If the Permittee determines that the monitoring programs required under this Permit no longer satisfy the requirements of the regulations, the Permittee shall, within ninety (90) days of such determination, submit an application for a Permit modification which describes the changes that will be necessary to maintain regulatory compliance at the site. The Commissioner may require the Permittee to perform additional sampling and install additional monitoring wells, as necessary, to maintain compliance with 6NYCRR Part 373-2.6 at the site. If at any time it is determined that the groundwater monitoring network is not in compliance, the Department shall require the Permittee to take whatever actions are necessary to bring the monitoring network into compliance.

M. Additions to the Sampling Program. If hazardous waste constituents are consistently present in the Detection Monitoring Wells below the statistical "trigger" levels, the Department may require the Permittee to perform additional sampling and install

additional wells to determine whether the constituents originate from the Regulated Unit.

- N. Leak Detection. In the event that the Detection Monitoring Program for the secondary leachate collection/detection systems that is set forth in this Permit indicates the exceedance of volumetric or water quality "trigger" values in the secondary system of any landfill (as expressed in **Condition V** in **Module I** for SLF 11 & 12 and **Condition G** in **Module VI** for RMU-1), the Permittee must sample the wells in the Detection Monitoring network downgradient of the cell within fourteen (14) days and perform a statistical comparison of the indicator parameters.

For the RMU-1 landfill, if hazardous waste constituents are present in the secondary leachate collection/detection system and the results of the statistical analysis of the indicator parameters in monitoring wells downgradient of the landfill cell indicates that the landfill may be impacting the groundwater, the Permittee shall discontinue the placement of additional wastes in the landfill cell. Thereafter, future landfilling of wastes may only take place with written approval of the Department.

- O. Sampling and Analysis. All Sampling and Analysis shall be performed in accordance with the approved Groundwater Monitoring Sampling and Analysis Plan (GWSAP) which is incorporated by reference into this Permit by **Condition B** in **Module I** of this Permit. Any modification of the approved GWSAP must be approved by the Department prior to its implementation.
- P. Collection of Groundwater Samples by NYSDEC. At the request of the Department, the Permittee shall allow the Department and/or its authorized representatives to collect samples or splits of any samples collected by the Permittee pursuant to the requirements of this Permit. Similarly, at the request of the Permittee, the Department will allow the Permittee or the Permittee's authorized representatives to take splits or duplicates of any samples collected by the Department. The Permittee shall provide for adequate disposal of purge water whenever samples are collected by the Department.