



ANNEX F6

INVESTIGATION REPORTS OF
ENVIRONMENTAL QUALITY LIMIT
EXCEEDANCE

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	10 April 2024
Time	16:10
Monitoring Location	MWX-6
Parameter	Chemical Oxygen Demand (COD)
Limit Level	>46 mg/L
Measured Level	47 mg/L
Possible reason	<p>Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-6 (4.86 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-6 (MWX-5: 28 mg/L and MWX-7: 15 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-6 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination.</p> <p>In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 3 May 2024 to confirm findings. COD concentration of 47 mg/L was measured at MWX-6 during the sampling event. MWX-6 showed consecutive exceedance of groundwater quality limit.</p> <p>According to the findings of the desktop review commissioned by GVL and EPD (the Employer) in May 2021 to investigate the potential sources of the elevated methane levels at the perimeter landfill gas monitoring wells at SENTX, pockets of organic matters are identified in the fill materials of the SENTX site upon review of the historical site investigation borehole logs at the Project Site area. It is possible that the elevated COD concentration measured at MWX-6 on 10 April 2024 could be due to localised organic matters within or around the monitoring well and background fluctuation.</p> <p>Due to the presence of influencing factor from non-project source, there is no adequate evidence showing that the COD level exceedance measured at MWX-6 on 10 April 2024 was deemed to Project-related activities.</p> <p>It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland</p>

	and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-6 on 10 April 2024 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	<p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.</p>
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 27 May 2024

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	3 May 2024
Time	MWX-5: 11:24 MWX-6: 11:10
Monitoring Location	MWX-5, MWX-6
Parameter	MWX-5: Ammoniacal-nitrogen and Chemical Oxygen Demand (COD) MWX-6: COD
Limit Level	Ammoniacal-nitrogen: MWX-5: >5 mg /L COD: MWX-5: >30 mg /L MWX-6: >46 mg /L
Measured Level	Ammoniacal-nitrogen: MWX-5: 6.59 mg /L COD: MWX-5: 42 mg /L MWX-6: 47 mg /L
Possible reason	<p>Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring well MWX-6 (3.92 mg/L) and at groundwater monitoring wells adjacent to MWX-5 (MWX-4: 0.09 mg/L) are well within the respective limit levels. The COD monitoring results of the groundwater monitoring wells adjacent to MWX-5 and MWX-6 (MWX-4: 15 mg/L, MWX-7: 12 mg/L) are well within the respective limit levels. Hence, there are a low possibility of the elevation of ammoniacal-nitrogen level at MWX-5 and the elevation of COD level at MWX-5 and MWX-6 are due to leachate contamination from SENTX operation or at least they are not conclusive to base on these results to demonstrate exceedances were due to leachate contamination.</p> <p>In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 12 June 2024 to confirm findings. Ammoniacal-nitrogen concentration of 0.19 mg/L (below the Limit Level) was measured at MWX-5 and COD concentration of 13 mg/L and 45 mg/L (below the Limit Level) were measured at MWX-5 and MWX-6, respectively, during the sampling event, which demonstrate no consecutive groundwater quality impact at the monitoring locations.</p> <p>According to the findings of the desktop review commissioned by GVL and EPD (the Employer) in May 2021 to investigate the potential sources of the elevated methane levels at the perimeter landfill gas monitoring wells at SENTX, pockets of organic matters are identified in the fill materials of the SENTX site upon review of the historical site investigation borehole logs at the Project Site area. It is possible that the elevated ammoniacal-nitrogen and COD concentration measured at MWX-5 and elevated COD concentration measured at MWX-6 on 3</p>

	<p>May 2024 could be due to localised organic matters within or around the monitoring wells and background fluctuation.</p> <p>Due to the presence of influencing factor from non-project source, there is no adequate evidence showing that the ammoniacal-nitrogen and COD level exceedances measured at MWX-5 and COD level exceedance measured at MWX-6 on 3 May 2024 were deemed to Project-related activities.</p> <p>It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (80 mg/L). The slight exceedance of ammoniacal-nitrogen and COD at MWX-5 and COD at MWX-6 on 3 May 2024 will not cause adverse water quality impact to the Junk Bay Water Control Zone.</p>
Action Taken / Action to be Taken	<p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.</p>
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 5 July 2024

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	6 May 2024
Time	DP3: 09:48 DP6: 10:13 DP6 (Duplicate): 10:18
Monitoring Location	DP3 and DP6
Parameter	Surface Water (Ammoniacal-nitrogen and Suspended Solids (SS))
Limit Level	DP3: Ammoniacal-nitrogen: >0.5 mg /L DP6: SS: >20 mg /L
Measured Level	DP3: Ammoniacal-nitrogen: 1.38 mg /L DP6: SS: 22.0 mg /L DP6 (Duplicate): SS: 26.3 mg /L
Possible reason	<p>From the on-site rainfall record of May 2024, heavy rainfall events were recorded on 4 May 2024 before the sampling event. Red and amber rainstorm warning signal were also issued by the Hong Kong Observatory on 4 May 2024.</p> <p>No works which may lead to potential increase in ammoniacal-nitrogen level (e.g. potential leakage of leachate) and SS increase (e.g. active stockpiling and excavation works) were conducted in the vicinity of surface water channel leading to DP3 and DP6, respectively, on the sampling day based on on-site observations and construction activities described by the Contractor.</p> <p>During the sampling event, no raining was recorded and no other sources (e.g. other project sites) was identified in the vicinity of surface water channel leading to DP3 and DP6 which might cause the ammoniacal-nitrogen exceedance at DP3 and SS exceedance at DP6. Site surface runoff at DP3 and DP6 channel was treated by the Wetsep prior to discharge. The contaminated runoff from the unpaved areas during the previous rainfall events could be the potential source of ammoniacal-nitrogen and SS contributing to the exceedance. The ammoniacal-nitrogen exceedance at DP3 and SS exceedance at DP6 were therefore deemed to Project-related activities.</p> <p>In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 30 May 2024 to confirm findings. Surface water samples with ammoniacal-nitrogen concentration of 0.18 mg/L and 0.16 mg/L (below the Limit Level) were sampled at DP3, which demonstrate no consecutive surface water quality impact at the monitoring location. SS concentration of 34.3 mg/L was measured at DP6 during the sampling event. DP6 showed consecutive exceedance of surface water quality (SS) limit.</p>

Action Taken / Action to be Taken	<p>In accordance with Table 4.5b of the updated EM&A Manual, the monitoring frequency shall be increased to weekly until no exceedance of Limit Level. It should be noted that the turnaround time for the laboratory analysis of the surface water sample is 5 working days and the preliminary results for the monitoring event conducted on 6 May 2024 were available on 13 May 2024. Repeat measurement was conducted on 16 May (unable to collect water sample due to insufficient flow) and 30 May 2024, and the ammoniacal-nitrogen results at DP3 are well below the Limit Level. Hence, the weekly surface water monitoring at DP3 shall not be triggered. While the surface water monitoring frequency (for SS) at DP6 shall be increased to weekly in accordance with Table 4.5b of the updated EM&A Manual until no exceedance of Limit Level.</p> <p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>In addition, the Contractor shall review the efficiency of the Wetsep at DP3 and DP6 and monitor the Wetsep operation regularly to ensure they are functioning properly at all times.</p>
Remarks	-

Prepared by: Abbey Lau
 Designation: Environmental Team
 Date: 6 June 2024

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	30 May 2024
Time	14:27
Monitoring Location	DP6
Parameter	Suspended Solids (SS))
Limit Level	>20 mg /L
Measured Level	34.3 mg /L
Possible reason	<p>From the on-site rainfall record of May 2024, heavy rainfall event was recorded on 27 May 2024 before the sampling event. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 27 and 28 May 2024.</p> <p>No works which may lead to potential increase in SS increase (e.g. active stockpiling and excavation works) was conducted in the vicinity of surface water channel leading to DP6 on the sampling day based on on-site observations and construction activities described by the Contractor.</p> <p>During the sampling event, no raining was recorded and no other sources (e.g. other project sites) was identified in the vicinity of surface water channel leading to DP6 which might cause the SS exceedance at DP6. Site surface runoff at DP6 channel was treated by the Wetsep prior to discharge. The contaminated runoff from the unpaved areas during the previous rainfall events could be the potential source of SS contributing to the exceedance. The SS exceedance at DP6 was therefore deemed to Project-related activities.</p>
Action Taken / Action to be Taken	<p>Weekly surface water quality monitoring (SS) shall be continued at DP6 until no exceedance of Limit Level in accordance with Table 4.5b of the updated EM&A Manual.</p> <p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>In addition, the Contractor shall review the efficiency of the Wetsep at DP6 and monitor the Wetsep operation regularly to ensure it is functioning properly at all times.</p>
Remarks	-

Prepared by: Abbey Lau
 Designation: Environmental Team
 Date: 18 June 2024

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	12 June 2024
Time	10:55
Monitoring Location	MWX-7
Parameter	Chemical Oxygen Demand (COD)
Limit Level	>36 mg/L
Measured Level	47 mg/L
Possible reason	<p>Groundwater contaminated with leachate is commonly characterized by high COD and ammoniacal-nitrogen levels as a result of degradation of organic matters in the waste. The ammoniacal-nitrogen monitoring result at groundwater monitoring wells MWX-7 (5.59 mg/L) and the COD monitoring results of the groundwater monitoring wells adjacent to MWX-7 (MWX-6: 45 mg/L and MWX-8: 35 mg/L) are well within the respective limit levels. Hence, there is a low possibility of the elevation of COD level at MWX-7 is due to leachate contamination from SENTX operation or at least it is not conclusive to base on these results to demonstrate exceedance was due to leachate contamination.</p> <p>In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 5 July 2024 to confirm findings. COD concentration of 49 mg/L was measured at MWX-7 during the sampling event. MWX-7 showed consecutive exceedance of groundwater quality limit.</p> <p>According to the findings of the desktop review commissioned by GVL and EPD (the Employer) in May 2021 to investigate the potential sources of the elevated methane levels at the perimeter landfill gas monitoring wells at SENTX, pockets of organic matters are identified in the fill materials of the SENTX site upon review of the historical site investigation borehole logs at the Project Site area. It is possible that the elevated COD concentration measured at MWX-7 on 12 June 2024 could be due to localised organic matters within or around the monitoring well and background fluctuation.</p> <p>Due to the presence of influencing factor from non-project source, there is no adequate evidence showing that the COD level exceedance measured at MWX-7 on 12 June 2024 was deemed to Project-related activities.</p> <p>It should also be noted that although the COD level exceeded the limit level of the EM&A programme, it is still well within the WPCO effluent discharge limit of COD (80 mg/L) and the standard for effluents discharged into the inshore waters of the Junk Bay Water Control Zone as stipulated under Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland</p>

	and Coastal Waters (80 mg/L). The slight exceedance of COD at MWX-7 on 12 June 2024 will not cause adverse water quality impact to the Junk Bay Water Control Zone.
Action Taken / Action to be Taken	<p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>ET will continue to closely monitor the groundwater quality monitoring results and collect additional data for investigation and further review, if necessary.</p>
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 25 July 2024

Investigation Report of Environmental Quality Limit Exceedance

Project	South East New Territories (SENT) Landfill Extension
Date	12 June 2024
Time	10:08
Monitoring Location	DP4
Parameter	Suspended Solids (SS)
Limit Level	>20 mg/L
Measured Level	395 mg /L
Possible reason	<p>From the on-site rainfall record of June 2024, heavy rainfall events was recorded on 9 June 2024 before the sampling event. Amber rainstorm warning signal was also issued by the Hong Kong Observatory on 9 June 2024.</p> <p>No works which may lead to potential SS increase (e.g. active stockpiling and excavation works) was conducted in the vicinity of surface water channel leading to DP4 on the sampling day based on on-site observations and construction activities described by the Contractor.</p> <p>Site surface runoff at DP4 channel was treated by the Wetsep prior to discharge. Yet during the sampling event, it was observed that the Wetsep was not functioning properly with reference to the on-site checking of the treated water at the outlet of the processing chamber of the Wetsep.</p> <p>During the sampling event, no raining was recorded and no other sources (e.g. other project sites) was identified in the vicinity of surface water channel leading to DP4 which might cause the SS exceedance at DP4. The contaminated runoff from the unpaved areas during the previous rainfall events could also be the potential source of SS contributing to the exceedance. The SS exceedance at DP4 was therefore deemed to Project-related activities.</p> <p>In accordance with Table 4.5b of the updated EM&A Manual, repeat measurement was conducted on 18 July 2024 to confirm findings. Surface water samples with SS concentration of 11.8 mg/L (below the Limit Level) was sampled at DP4, which demonstrate no consecutive surface water quality impact at the monitoring location.</p>
Action Taken / Action to be Taken	<p>In accordance with Table 4.5b of the updated EM&A Manual, the monitoring frequency shall be increased to weekly until no exceedance of Limit Level. It should be noted that the turnaround time for the laboratory analysis of the surface water sample is 5 working days and the preliminary result for the monitoring event conducted on 12 June 2024 was available on 20 June 2024. Repeat measurement was scheduled on 24 June 2024, 5 July 2024 and 9</p>

	<p>July 2024 (unable to collect water sample due to insufficient flow) and 18 July 2024, and the SS result at DP4 is well below the Limit Level. Hence, the weekly surface water monitoring at DP4 shall not be triggered.</p> <p>Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Levels.</p> <p>In addition, the Contractor shall review the efficiency of the Wetsep near sediment trap and monitor the Wetsep operation regularly to ensure it is functioning properly at all times.</p>
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 5 August 2024