

Appendix D: NPDES Noncompliances

Table D.1. Summary of Y-12 Complex National Pollutant Discharge Elimination System (NPDES) Excursions, 2003

Excursion	Date	Location	Incident
2003-0001	22-Jan-03	Monitoring Point 201	Permit limit exceedance; daily chlorine 0.237 mg/L
2003-0002	31-Jan-03	Monitoring Point 201	Permit limit exceedance; monthly chlorine 0.018 mg/L
2003-0003	17-Feb-03	Outfall 55	Permit limit exceedance; daily Hg 0.00581 mg/L
2003-0004	18-Feb-03	Outfall 55	Permit limit exceedance; daily Hg 0.00691 mg/L
2003-0005	15-Apr-03	Outfall 200	Permit limit exceedance; daily Oil & Grease 24.9 mg/L
2003-0006	18-Nov-03	Outfall 55	Permit limit exceedance; daily chlorine 1.04 mg/L

Description/cause	Corrective action
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Excursions 2003-0001 and 2003-0002

On January 22, 2003, at 1350 hours, a water sample taken at in-stream Monitoring Point 201 revealed an elevated total residual chlorine reading of 0.237 mg/L, which exceeded the permitted daily maximum concentration of 0.019 mg/L (Exceedance 2003-0001). Additional data analysis for the month of January revealed the monthly average concentration for total residual chlorine was 0.018 mg/L. This exceeded the permitted monthly maximum of 0.011 mg/L (Exceedance 2003-0002).

A new sodium bisulfite feed line for the raw water basin, with associated heat trace, was installed.

The cause of these total residual chlorine exceedances was a failure of the dechlorination system for raw water. The thermostat that controls the heat trace on the main sodium bisulfite feed line failed, resulting in freezing and blockage of the main sodium bisulfite feed line. Efforts to thaw the line were unsuccessful. Raw water was turned off at approximately 2145 hours, and total residual chlorine levels at the in-stream monitoring point returned to <0.05 mg/L. Raw water flow resumed on January 25, 2003, and dechlorination was accomplished via a temporary line to the raw water basin.

There were no observed adverse affects on aquatic life attributable to this event.

Excursions 2003-0003 & 2003-0004

On February 17, 2003, at 1010 hours, a water sample taken at Outfall 55 revealed an elevated Mercury (Hg) reading of 0.00581 mg/L, which exceeded the daily permitted limit of 0.004 mg/L (Exceedance 2003-0003). Also, on February 18, 2003, at 0915 hours, a second water sample taken at this same outfall produced a Hg reading of 0.00691 mg/L (Exceedance 2003-0004). This outfall is authorized to discharge sump waters, cooling waters and storm water from Building 9201-2.

No specific corrective actions were undertaken for this event as it was due to excessive rainfall, and the system functioned as designed.

Table D.1. (continued)

Description/cause	Corrective action
<p>Both of these samples were taken soon after the Y-12 Complex experienced extremely heavy rainfall. This rainfall event totaled 7.68 in. over a three-day period (February 14–16, 2003) as measured by the meteorological tower on the East End of the Y-12 Complex. During this event, storm water flows and groundwater flows were significantly increased at Outfall 55. In addition to the increased volume of water from the normal sources that discharge through Outfall 55, the East End Mercury Treatment System was put in by-pass mode to discharge excess water from the Building 9201-2 sump to Outfall 55 because it could not treat the increased volume of water that it received from February 13, 2003, to February 16, 2003. The water that was bypassed (21,800 gal) was filtered but was not carbon treated before being discharged. The bypass is necessary during excess water inflow conditions in order to protect the Building 9101-2 sump pump motors from flooding and being rendered inoperable. Treated sump water from the East End Mercury Treatment System continued to discharge through Outfall 550.</p>	
<p><i>Excursion 2003-0005</i></p>	
<p>On April 15, 2003, at 0850 hours, a water sample taken at Outfall 200 (North/South pipe) on East Fork Poplar Creek revealed an elevated oil and grease reading of 24.9 mg/L which exceeded the permitted daily maximum concentration of 15.0 mg/L.</p>	<p>In the future, the residue from laboratory analysis that produce an elevated reading for oil and grease will be retained. The residue will be further analyzed to determine the type of oil or grease that is present. This may aid in determining the origin of the exceedance.</p>
<p>The specific cause of this exceedance is unknown. There was no observed oil sheen on the creek at the time the sample was taken, and the technician reported no unusual conditions at the creek location. There had been no rain at the Y-12 Complex over the previous three days. A survey of construction and maintenance activities around the complex did not reveal a potential source for this exceedance. Additionally, there is no record of a reported spill that would have accounted for this elevated oil and grease reading. All normal laboratory quality control aspects were well within acceptable limits.</p>	
<p>Oil and grease samples are taken by the “grab” method in two 1-L glass jars. The analysis for one of the jars produced a below detect result. The result was 24.9 mg/L for the other jar. It is suspected but not confirmed that there may have been a globule of oil or grease in the jar that produced the elevated result. All other sample results for 2003 have been below the detection limit. There were no observed adverse affects on aquatic life attributable to this event.</p>	

Table D.1 (continued)

Description/cause	Corrective action
<i>Excursion 2003-0006</i>	
<p>On November 18, 2003, three water samples were taken at Outfall 55 on East Fork Poplar Creek. The three samples revealed chlorine levels of 1.92 mg/L (taken at 13:25), 1.2 mg/L (taken at 13:35) and <0.05 mg/L (taken at 16:00). These sample results produced an average daily maximum concentration of 1.04 mg/L, exceeding the limit of 0.5 mg/L.</p>	<p>The malfunctioning dechlorination unit has been replaced. The new dechlorination unit is of a larger capacity (more tubes) and reduces the potential for failure of the dechlorination unit.</p>
<p>The discharge from Outfall 55 consists of roof drains, cooling water, and sump water from Building 9201-2. The cooling water from the building passes through one of five tablet dechlorination units prior to discharge through the outfall. This is a low-flow outfall and the discharge rate at the time the first sample was taken was 11.1 gal/min.</p>	<p>The known chlorine sources were rerouted, as previously discussed.</p>
<p>An investigation was initiated to locate the source of the chlorine. On November 19, 2003, it was discovered that one of the tablet dechlorination units was malfunctioning, as indicated by a chlorine sample result of 1.99 mg/L from the outlet side of the dechlorination unit. Closer investigation revealed that although the tubes of the dechlorination unit appeared to be full of tablets, the dechlorination tablets had hung inside one of the feeder tubes and thus the water was not making contact with the dechlorination tablets. The tablets were reseated inside the tube, and subsequent chlorine readings demonstrated that the dechlorination unit was then functioning properly.</p>	<p>A new administrative control was instituted for the occupants of the building that requires the building manager to review and approve all new water discharges. The building manager is responsible for ensuring that any new discharges are properly dechlorinated or are routed to the sanitary sewer system.</p>
<p>Further investigation revealed additional sources of chlorinated discharges through Outfall 55:</p>	
<ul style="list-style-type: none"> • The building fire sprinkler header was leaking a small amount (~0.1 gal/min) of chlorinated water into a drain that that was routed to Outfall 55. This drain line was promptly rerouted to the sanitary sewer system. • The drain line on an icemaker was found to be connected to the downstream side of one of the dechlorination units. This drain line has since been rerouted to pass through the dechlorination unit prior to discharge. • The discharge from two air-conditioning units that operated off once-through cooling water was entering Outfall 55 without first passing through one of the dechlorination units. These air conditioners were taken out of service on December 5, 2003, and the drain lines are no longer physically connected to Outfall 55. 	

Oak Ridge Reservation

Table D.2. Summary of East Tennessee Technology Park (ETTP) National Pollutant Discharge Elimination System (NPDES) excursions, 2003

Date	Location	Excursion	Explanation	Corrective action
01/21/03	Outfall 100	Unpermitted discharge	Diesel fuel leaked from a vendor's vehicle at ETTP during storm conditions, and the spilled fuel entered the storm drain system, resulting in an oil sheen in one area of the K-1007-P1 Pond	Containment and cleanup efforts prevented spilled fuel from entering Poplar Creek; the vehicle was repaired and hauled off the ETTP site on a flatbed truck
07/29/03	Outfall 200	Unpermitted discharge	Sanitary sewer line clean-out port outside the K-1423 building break room overflowed due to blockage in the sanitary sewer line; the grayish water entered a nearby storm drain catch basin and discharged into Mitchell Branch	The blocked section of sanitary sewer line was isolated; the waste was pumped through a hose to a nearby sanitary sewer lift station, and the line was excavated and replaced

Table D.3. Summary of Oak Ridge National Laboratory National Pollutant Discharge Elimination System (NPDES) excursions, 2003

Date	Location	Excursion	Explanation	Corrective action
01/14/03	302	pH	A leaking underground pipe containing sodium hydroxide used in Building 3544 is believed to have contributed to the pH excursion.	The leaking portion of the pipe has been bypassed.
12/16/03	X01	Total suspended solids	During low effluent flow conditions, the water/foam level drops within the chamber and the level drops to the level of the compositor intake tube causing foam to be taken into compositor. A combination of low flow and foam accumulation is believed to be the cause of the accumulated residue in the compositor and the total suspended solids excursion.	The intake tube has been relocated such that foam will not be taken into the compositor during low-flow conditions.

