

## **Appendix F: NPDES Noncompliances**

Table F.1. Summary of Y-12 Plant NPDES excursions, 1996

Date	Location	Excursion	Explanation	Corrective action
1/22/96	Tributary 8 Lift Station	Unauthorized discharge to Bear Creek	The Tributary 8 lift station collects flow and groundwater seepage from closed waste disposal areas in Bear Creek Burial Grounds C-West/Walk-In Pits. A pump at the Liquid Storage Facility (LSF) oil/water separator failed and allowed an overflow condition.	Valves from the 3 underground seep lines were immediately closed, shutting off flow to the lift station. Investigation revealed that a pump at the LSF oil waste separator had failed. The water level point in this unit is interlocked with the Tributary 8 lift station, thus a signal had been relayed to cut off the lift station pumps. The failed LSF separator pump was replaced, and the system returned to normal.
1/27/96	Tributary 8 Lift Station	Unauthorized discharge to Bear Creek	High incoming seep water flow due to heavy rainfall and snow melt exceeded the pumping capacity of the Tributary 8 lift station. Approximately 500 gallons were discharged to the Tributary 8 downstream of the original point of seep collection.	An examination of the Tributary 8 lift station pumps determined that they were operating below expected design capacity. The pumps were replaced or repaired, and the lift station is currently operating near design capacity.
2/25/96	Outfall 200	Oil sheen	During routine annual maintenance, a gear box in Cooling Tower 9409-34 was overfilled with gear oil. Less than one quart of excess oil spilled onto exposed surface of the water in the cooling tower basin. Later, the float on the cooling tower line stuck in the open position causing the tower basin to overflow. This water with an oil sheen flowed over the ground a short distance to a storm drain and through Outfall 200. The amount of oil estimated to have reached EFPC was less than a cup.	Cooling Tower 9409-34 was shut off. The oil sheen remaining on the water in the basin was removed, the oil cleaned off the surfaces, and the make-up feed was valved off. The oil skimmer on EFPC near Lake Reality caught all of the sheen and none was released off-site. The oil sheen was removed from the oil/water separator surface.
2/28/96	Outfall 200	Oil sheen	Local rains occurring after the initial oil sheen transpired (2/25/96) resulted in the flushing of a miniscule amount of oil through Outfall 200.	The oil skimmer on EFPC caught all the oil sheen and none was released off-site.

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**Table F.1 (continued)**

Date	Location	Excursion	Explanation	Corrective action
3/5/96	Outfall 512	Permit limit exceedence (iron – 1.6 mg/L)	The permit limit at Groundwater Treatment Facility (Outfall 512) is 1.0 mg/L. Investigation revealed the source to be leachate and groundwater collected from the Tributary 8 seeps. Groundwater chemistry in this area remains variable.	Discharge was discontinued. Iron removal using hydrogen peroxide as an oxidizer was added back to the treatment process, and the filter replacement frequency was increased to facilitate iron removal.
3/29/96	Outfall 201	Permit limit exceedence (pH – 9.3); unauthorized discharge.	The cause of the elevated pH is believed to be an accidental release of resin regeneration wastewater from the demineralizer facility in Building 9409-18. The resin beds are rinsed with caustic and acid with the resulting wastewater drained to the sump of a pumping station for transmission to the Steam Plant Waste Water Treatment Facility. On this day, the pumping system failed to operate correctly. An unknown quantity of wastewater in the sump seeped through opens in the sump wall, into the stormdrain system and into EFPC.	An inoperable pump was replaced with a new pump. The sump was repaired, and a coating system has been installed in the sump to seal leaks. The sump leak was tested and passed. A surveillance schedule has also been established to frequently review sump conditions.
7/24/96	Outfall 201	Permit limit exceedence (pH – 8.8); unauthorized discharge	The cause of the elevated pH is believed to have resulted from the demineralizer facility in Building 9409-18. At the time of this incident, the facility was regenerating the south ion bed and discharging to the west sump. A leak is believed to have been the cause of this event.	Operations utilizing the west sump at 9404-18 were suspended. A leak check/inspection was performed on the sump and connected piping. The piping was found to be leaking. The joint was sealed and the piping left uncovered for a period of time, allowing the material to cure and further observation of any additional leakage. The work joint and adjacent piping have been covered, and no additional problems have been observed.

**Table F.1 (continued)**

Date	Location	Excursion	Explanation	Corrective action
8/1/96	Outfall 058	Oil sheen	The sheen was observed coming from Outfall 058 on the south bank of the creek behind Building 9201-2. The initial sheen measured approximately eight inches by sixteen inches and had a visible tail along the creek bank of three to four feet. The total amount of oil discharged is estimated at less than eight ounces.	Temporary booms and oil absorbent pads were placed at the outfall to contain and collect the sheen. The pads were removed the following day and the temporary boom on August 3 since no additional sheen had been captured. All of the sheen was collected at the outfall or the permanent oil water separator.
8/15/96	Outfall 512	Permit limit exceedence (iron – 2.0 mg/L)	This occurrence occurred at the location at which wastewater from the Groundwater Treatment Facility is monitored prior to discharge to EFPC. A potential source for this occurrence is the scaling of oxidized iron from the interior of the discharge piping.	The section of carbon steel piping located between the final treatment unit and the NPDES monitoring point will be replaced.
11/30/96	Tributary 8 lift station	Unauthorized discharge to Bear Creek	The Tributary 8 lift station collects flow and groundwater seepage from closed waste disposal areas in Bear Creek Burial Grounds C-West/Walk-In Pits. An overflow condition was created when the lift station holding tank level sensor became uncoupled, preventing automatic operation of the pumps.	Upon discovery of the upset condition, the lift station pumps were manually started immediately. Electricians made temporary electrical repairs, and the lift station pumps were returned to normal operation. Permanent repairs were completed 12/2/96.

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**Table F.2. Summary of ORNL NPDES excursions, 1996**

Date	Location	Excursion	Explanation	Corrective action
4/1/96	Outfall 231	Oil sheen	On 4/1/96, an oil sheen was noted at stormwater Outfall 231 on White Oak Creek during rainfall. The sheen was attributed to stormwater runoff conveyance of automotive lubricant (transmission fluid) that had been leaked from a vehicle that had broken down in a parking area. The vehicle had been towed away for maintenance at the time the oil sheen was discovered.	ORNL spill response personnel were contacted and quickly placed oil containment booms on the bank of White Oak Creek below Outfall 231. The booms were effective in skimming fluid from the Outfall 231 stormwater effluent at the entry point to WOC. Spill response personnel also contained and cleaned up the fluid remaining on the surface of the parking area, using absorbent pads.
5/14/96	X02 (Coal Yard Runoff Treatment)	Iron	On 5/14/96, the ORNL Coal Yard Runoff Treatment Facility (CYRTF) experienced an excursion of the iron limit of 1.0 mg/L, daily maximum; the concentration measured on that day was 1.5 mg/L. CYRTF basin sediment removal activity, which consisted of stabilizing the sediment with cement dust and removing the sediment with a mechanical loader may have contributed to the excursion.	No certain cause for the iron excursion has been determined. Therefore, no corrective actions have been developed. Additional sampling in May 1996 has indicated no additional NPDES limit excursions. In addition, the CYRTF is currently undergoing an upgrade project, including effluent sand filtration, which is expected to enhance the NPDES permit compliance capabilities of that facility.
7/31/96	X01 (Sewage Treatment Plant)	Fecal coliform	The measured sewage plant fecal coliform concentration was > 5,000 colonies per 100 ml, compared to an NPDES permit daily-maximum limit of 5,000 colonies per 100 ml. Other pertinent STP effluent parameters, including total suspended solids and chlorine, were within normal ranges and were in compliance with permit limits on and around 7/31/96. ORNL was experiencing rainfall at the time of the excursion; approximately 2.7 inches of rain fell on 7/31.	No certain cause for the fecal coliform excursion has been determined. Therefore, no corrective actions have been developed. Additional sampling in 1996 has indicated no additional NPDES limit excursions. STP personnel indicated that the operating conditions on 7/31 were not such that any problems would have been expected. ORNL is planning to replace the existing STP chlorine disinfection system with an ozone system in 1997, which should enhance the capability to disinfect the STP effluent. In addition, the STP collection system is currently undergoing an upgrade project which will decrease the potential for stormwater inflow and infiltration into the system, which is expected to enhance the NPDES permit compliance capabilities of the STP.

Table F.2 (continued)

Date	Location	Excursion	Explanation	Corrective action
8/13/96	X02 (Coal Yard Runoff Treatment)	Iron	No clear cause has been determined for the iron limit excursion that occurred at CYRTF on 8/13/96. ORNL had received rainfall for several days up to and including August 13. CYRTF personnel indicated that operating conditions were normal on and around August 12. Following clarification and filtration, the CYRTF effluent is released to WOC as pond overflow that is discharged through a flume, and algae is typically abundant on the surface of the pond in late summer and early fall. As no unusual circumstances were identified on the date of the excursion, it is believed that algal accumulation of iron may have contributed to the excursion. Experiments have been conducted in the past with iron-bearing CYRTF effluent samples in which algae was filtered out and the iron concentration became negligible.	In 1994, following an iron-limit excursion at CYRTF, the discharge flume was equipped so as to discourage algae from leaving the CYRTF pond with released effluent. ORNL is currently evaluating additional alternatives to further discourage algal conveyance in CYRTF effluent.
12/5/96	Outfall 341	Oil sheen	On 12/5/96, an oil sheen was noted at Outfall 341 on First Creek (FC) during rainfall. Outfall 341 receives stormwater runoff from the west-central portion of the ORNL main plant area. The volume of the substance in the creek was estimated at a few gallons.	ORNL spill response personnel were contacted and quickly placed on containment booms at two locations on First Creek downstream from Outfall 341. Oil absorbent pads were used to clean up oil residue, and pads were placed at the outfall and along both sides of the creekbank to accumulate any remaining residue. Most of the floating material was removed by the booms and pads. A survey of the creek downstream from Outfall 341 revealed no impacted fish or other aquatic species. The release was traced to Building 2010 where waste cooking oil is containerized. Area personnel were counseled in spill prevention and cleanup practices.
4/17/96	Outfall 231	Potable water release	A potable water underground pipe broke, releasing chlorinated drinking water into White Oak Creek.	The broken pipe was secured within 45 minutes, stopping the release. The pipe was repaired the following day. Stream surveys indicated approximately 30 dead minnows, which may have died due to the chlorine in the released water.

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**Table F.2 (continued)**

Date	Location	Excursion	Explanation	Corrective action
Calendar Year 1996	Category I & II Outfalls (stormwater runoff)	Total suspended solids	12 TSS limit excursions were measured at 11 outfalls during storm sampling events.	Seven of the exceedances were corrected with minor improvements in erosion controls. One exceedance will be corrected by physically removing the outfall. Four of the exceedances will be corrected when the outfall pipe is reconfigured so as to improve the representativeness of future samples.

**Table F.3. Summary of ETPP NPDES excursions, 1996**

Date	Location	Excursion	Explanation	Corrective action
1/22/96	Outfall 014 (Central Neutrali- zation Facility)	Total petroleum hydrocarbon	On January 22, 1996, Outfall 014 experienced a Total Petroleum Hydrocarbon (TPH) exceedence.	CNF waste evaluation criteria document revised to include TPH for suspect influent waste streams. Organics treatment added to CNF treatment train.
2/09/96 2/16/96	Outfall 170	Unpermitted discharge	Sewer line and lift station damaged by freeze/thaw cycle, overflowed and discharged sanitary sewage to Outfall 170.	<p>Short term: Storm water catch basins blocked, and wastes removed.</p> <p>Long term: Redesign of area sewer line to provide additional freeze protection.</p> <p>Modification of sanitary sewer cold weather inspection procedures.</p>
2/21/96	Outfall 120	Unpermitted discharge	Bypass pump failure resulted in spill of sanitary sewage to Outfall 120 during sewer system repair project.	Storm water catch basins blocked, and wastes removed. 24-hour surveillance and monitoring of pump operations was added for duration of project.
8/25/96	Outfall 014	Unpermitted discharge	Inappropriate valving configuration resulted in a bypass of CNF organics treatment unit.	<p>Short term: Administrative tag placed on valve switch.</p> <p>Long term: Automatic valving interlock system was installed to prevent bypass.</p>