

# ES&H manual

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## Environment, Safety, and Health

### Volume III

### Part 32: Discharge to Water

## Document 32.4 Discharges to the Sanitary-Sewer System

Recommended for approval by the ES&H Working Group

Approved by: Glenn L. Mara  
Deputy Director for Operations

**New document or new requirements**

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**32.4**

**Discharges to the Sanitary-Sewer System\***

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\* Editorial Revision

## 32.4

### Discharges to the Sanitary-Sewer System

#### 1.0 Introduction

Lawrence Livermore National Laboratory (LLNL) tightly controls its discharges to the sanitary sewer. Violations of regulations (often referred to as incidents) could potentially lead to added requirements in LLNL's sewer permit and can be costly to responsible authorizing organizations.

##### 1.1 Regulatory Background

Document 32.1, "Management and Maintenance of Water Quality," in the *Environment, Safety, and Health (ES&H) Manual* generally discusses regulatory requirements related to water quality. LLNL operates under two wastewater discharge permits issued by the Livermore Water Reclamation Plant (LWRP). They are the general site-wide permit, and the ground water discharge permit, as discussed in Document 32.1 in the *ES&H Manual*. The general site-wide permit is the most comprehensive, covering all discharges except ground water.

A more detailed discussion of regulatory requirements focusing on discharges to the sanitary-sewer system is contained in Appendix A of this document.

##### 1.2 Scope

This document describes:

- The primary responsibility of employees generating regulated wastes to ensure discharges to the sanitary-sewer system meet all regulations.
- Common types of LLNL sanitary-sewer discharges (except domestic sewage) and related hazards of concern.
- Sanitary-sewer controls, including pollution prevention, discharge limits that apply to LLNL, discharge control, and reporting criteria.
- Specific roles and responsibilities for waste stream management meeting sanitary-sewer discharge requirements.
- Regulations pertaining to sanitary-sewer discharges, which can be summarized into three categories: general prohibitions, local limits, and federal standards.

This document does not describe requirements for operating sanitary sewer system facilities.

## 2.0 Hazards

The Laboratory's sanitary-sewer concerns in the past have involved radioactive waste, organic compounds, metals, and pH. Radioactive waste containing tritium is especially tightly controlled because it cannot be treated; pH is the most common and ongoing problem. The cautionary principle to keep in mind at all times is that any discharge to the sewer can be a potential problem. Even seemingly insignificant amounts of chemicals and metals in wastewater can:

- Pose a hazard to unsuspecting LLNL and LWRP employees working on the sewer system or at the treatment plant.
- Cause direct harm to the environment.
- Upset the City of Livermore's treatment plant operations.
- Cause a violation of the discharge limits that LLNL is required to meet.

Always contact an ES&H Team environmental analyst or Water Guidance and Monitoring Group (WGMG) environmental analyst for assistance in determining whether new waste streams can be safely discharged to the sanitary sewer.

## 3.0 Controls

Reducing the likelihood of prohibited discharges requires that the Laboratory's waste stream be tightly managed. All Laboratory employees working in operations that produce wastes with regulated constituents shall manage their discharges to the sanitary-sewer system.

Each employee who uses a process that involves the discharge of regulated wastes can contribute to effective waste stream management by considering in advance:

- Pollution prevention.
- Site-discharge limits and points where compliance determinations are made.
- Treatment, control, and maintenance options.

### 3.1 Administrative Controls

#### 3.1.1 Pollution Prevention

Effective source reduction, reuse, and recycling are the three mechanisms that drive the pollution prevention efforts at LLNL. The optimal approach is that pollution prevention efforts should be focused on material substitutions so the wastewater generated is no longer regulated, or processes should be changed so less or no wastewater is generated.

Employees and organizations that generate any pollutant regulated under the sanitary-sewer discharge permit and that are interested in pollution prevention should contact their program or facility pollution prevention representative, or their ES&H Team environmental analyst. These individuals will provide assistance in determining whether waste stream minimization or segregation techniques would be helpful for a particular process. Pollution prevention remedies can include using less-hazardous chemicals, minimizing rinse water, installing filtration units, converting to alternative processes, and many other approaches.

### **3.1.2 Discharge Limits**

Specific discharge limits for regulated contaminants are identified in Appendix B. This appendix shows only the most common types of potential discharges from LLNL along with the applicable regulatory limits. The effluents and constituents highlighted in Appendix B include metals, the total toxic organic (TTO) content of discharges, and federal standards for pollutants regulated under the metal finishing and electrical and electronic component categories. The list is not comprehensive but identifies the more common substances that are regulated. Certain other constituents that are of concern to the LWRP, but that are not hazardous in themselves (e.g., biological oxygen demand and total dissolved solids) may be evaluated by the WGMG environmental analyst on a case-by-case basis to determine acceptability for release. Of particular interest may be tanks with residual solvents. Therefore, always contact a WGMG environmental analyst or ES&H Team environmental analyst for detailed information on specific discharges and related questions, to evaluate materials of possible concern that are not listed, and for assistance in determining whether a new or modified potential waste stream can be discharged.

### **3.1.3 Allowable pH Range**

The Laboratory's most common and ongoing problem related to sanitary-sewer discharges is compliance with the allowable pH range. The pH levels of all discharges to the sanitary sewer from individual processes at the Laboratory shall be between values of 5 and 10. Wastewater with a pH of less than 2.0 or greater than 12.5 is a hazardous waste by regulatory definition and shall be treated by the Radioactive and Hazardous Waste Management (RHWM) Division. For waste streams with pH values between 2.1 and 5, or between 10 and 12.4, contact an ES&H Team environmental analyst or a WGMG environmental analyst for details.

To provide more controls on discharge pH management, warning labels with contact information (see Appendix C) are posted on every sink and retention tank onsite to maximize employee awareness.

### **3.1.4 Prohibition Against Dilution to Meet Limits**

Do not add water to a waste stream solely for the purpose of diluting the waste. The City of Livermore's Municipal Code specifies that:

No user shall ever increase the use of process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in the Federal Categorical Pretreatment Standards, or in any other pollutant-specific limitation developed by the city or state. (Section 13.32.130.)

### 3.1.5 Waste Discharge Authorization

Appendix D describes the Retention Tank Analysis List and provides an example Waste Discharge Authorization Record (WDAR). The Retention Tank Analysis List identifies the specific types of analyses that are required for each LLNL retention tank. Each retention tank release has its own WDAR, which authorizes discharges of the tank contents to the sanitary sewer, and this document serves as a tracking mechanism. WGMG originates and retains the WDARs in a database. Tank records and authorization forms not only help demonstrate LLNL compliance with discharge limits but also protect the programs through ongoing record keeping. In the event of a release or spill, for example, the WDAR database helps subsequent investigating personnel to determine responsibility. Given when the release or spill occurred, and the nature of contamination, the WDAR can help to eliminate nonresponsible programs from accountability. Contact WGMG for WDAR-related questions.

## 3.2 Engineering Controls

LLNL is the single largest source of sanitary sewage processed by the LWRP. The Laboratory's collection system handles sewage from both LLNL's Livermore site and from Sandia National Laboratories, Livermore (SNLL). Together, LLNL and SNLL produce an average of 250,000 gallons of sewage each day. After treatment, wastewater is discharged into San Francisco Bay, and sludge is disposed of in local landfills. Because of the many industrial processes performed at LLNL and SNLL, and the wide range of hazardous and radioactive materials handled, the two facilities have the potential to adversely affect operations of the treatment plant. To prevent such occurrences, LLNL has developed comprehensive sewer discharge control and monitoring programs, which are described in more detail in Appendix A.

LLNL operates retention tank systems to collect wastewater that may contain constituents in excess of sanitary-sewer discharge limits, store it temporarily until an appropriate disposal method is determined, and possibly treat the wastewater if it is outside sewer discharge limits or is hazardous waste. Refer to Document 32.2, "Management of Retention Tank Systems," in the *ES&H Manual* for details on the types of LLNL retention tank systems and their design, construction, operation, maintenance, repair, and closure. WGMG assists in obtaining required permits for retention tank systems, interfacing with regulators, reviewing new designs, overseeing proper installation, operating systems properly, testing systems, and preparing required reports.

In general, any rinse water or wastewater that is potentially hazardous should be contained for subsequent characterization and disposition. Release of wastewater from a retention tank or container to the sanitary sewer is strictly controlled. No discharge shall be made until the contents of the retention tank or container have been sampled, analyzed, and approved for discharge by the Operations and Regulatory Affairs Division (ORAD) through the WDAR process described in Section 3.1.5.

To manage wastewater with pH outside the allowable discharge range, LLNL has installed an engineering remedy, the upstream trigger monitoring system, in addition to the labeling controls discussed in Section 3.1.3. The upstream triggers monitoring system was put in place to divert low-pH waste streams before release offsite. LLNL also has put into place local engineering controls, namely, secondary containment and plugs in floor drains, to reduce the likelihood of unacceptable discharges.

Finally, LLNL is able to divert discharges with elevated levels of specific, continuously monitored constituents to diversion tanks located at the Sewer Diversion Facility. The diversion tanks are used to prevent unacceptable contamination in LLNL wastewater from reaching the LWRP. Wastewater in the diversion tanks can be treated or transported offsite for disposal.

### **3.3 Monitoring Systems**

LLNL performs two types of monitoring. Compliance monitoring is performed at specified frequencies for those constituents required by permit or law. Compliance monitoring is established to verify LLNL's discharges are consistent with the two types of discharge limits established in the wastewater discharge permit: (1) general prohibitions that are designed to protect the Publicly Owned Treatment Works (POTW) but do not target specific pollutants, and have no numerical limits; and (2) specific prohibitions that target individual pollutants and usually have a numerical limit.

Under its permit, LLNL is required to monitor its sanitary-sewer effluent for flow, pH, radioactivity, and regulated metals. LLNL also collects and analyzes samples for all other regulated constituents, such as organic compounds and biological oxygen demand.

A second type of monitoring, called surveillance monitoring, is performed by LLNL at intervals for a range of contaminants of potential concern in response to DOE orders.

### **3.4 Reporting Requirements**

LLNL is required by its City of Livermore permit to submit to the LWRP a monthly monitoring report. Federal law requires that LLNL submit to the LWRP a semiannual wastewater report that addresses federally regulated processes. WGMG prepares and submits these two routine reports. The City of Livermore reports findings to the state, and the state reports information to the federal EPA.

Nonroutine reports are required in the event of a spill or unauthorized release to the sanitary sewer. WGMG reports an incident to the LWRP on the date the incident occurs. A follow-up report due within five days describes the nature of the spill or release.

LLNL programs or facilities are responsible for reporting to WGMG any spills or releases of nonpermitted contaminants to the sanitary-sewer system as soon as they are aware of an incident. LLNL programs and facilities do not need to report externally themselves. WGMG staff handles the required reporting after consulting with the programs. Program emphasis should center on their facilities and individual compliance with sanitary-sewer discharge regulations.

## **4.0 Responsibilities**

### **4.1 Environmental Protection Department Responsibilities**

The Environmental Protection Department (EPD) provides subject matter expert support and training to LLNL employees on wastewater-control issues through ORAD. In addition, the EPD's RHWM Division provides field support associated with treatment of wastewater that cannot be discharged to the sanitary sewer. Specific responsibilities for EPD support personnel are described below.

#### **4.1.1 ES&H Team Analyst Responsibilities**

The ES&H Team analyst is responsible for providing guidance to work-authorizing organizations regarding requirements for discharges to the sanitary sewer. A referral may be made to the WGMG environmental analyst.

#### **4.1.2 Water Guidance and Monitoring Group Responsibilities**

WGMG is responsible for:

- Identifying wastewater compliance requirements and developing guidance for LLNL to implement processes and programs to maintain compliance with those requirements.
- Authorizing retention-tank releases and assisting in carrying out the liquid-waste control program and other environmental compliance activities.
- Evaluating new facilities and operations for potential contaminants and compliance problems, and working with organizations, as requested, to develop pollution prevention procedures in the early stages of project planning.
- Analyzing existing operations for potential wastewater-disposal problems; assisting organizations in finding effective controls or corrective actions; and inspecting

operations to help ensure that environmental protection controls and procedures are properly implemented.

- Annually preparing and submitting the general site-wide and the ground water discharge permit applications; meeting with federal, state, and local regulators regarding permitting and compliance; guiding regulators through LLNL facilities; and providing assistance for onsite inspections.
- Monitoring LLNL wastewater at federally specified point sources onsite, at the exit point from the site, and at the City of Livermore's treatment plant.
- Maintaining the retention tank analysis list.
- Originating and retaining the WDARs in a database indefinitely.
- Preparing the required routine monitoring reports.
- Responding to sewer-related emergencies.

#### **4.1.3 Radioactive and Hazardous Waste Management Division Responsibilities**

RHWM is responsible for:

- Picking up properly packaged and identified wastewaters that cannot be discharged to the sanitary sewer, and preparing it for proper onsite treatment and discharge to the sanitary sewer when it meets discharge limits, or arranging for its transport, treatment, and disposal at an approved offsite facility.
- Providing field technician assistance in managing wastewater, as stipulated by the authorizing organization.

#### **4.2 Authorizing Organization Responsibilities**

Authorizing organization refers to LLNL entities and support groups that may authorize work that can generate wastewater that is regulated under the sanitary-sewer discharge permit.

Authorizing organization responsibilities listed here are in addition to responsibilities described in Document 2.1, "Laboratory and ES&H Policies, General Worker Responsibilities, and Integrated Safety Management," in the *ES&H Manual*.

The Authorizing Individual is responsible for:

- Ensuring that work controls required to manage sanitary-sewer discharges are in place.

The Responsible Individual is responsible for:

- Working with WGMG personnel in planning responsible sanitary waste disposal procedures and implementing measures that ensure employees comply with all procedures pertaining to correct management of sanitary sewer discharges.
- Reporting immediately to WGMG any accidental spill or release of regulated material, regardless of size, that could pollute discharges to the sanitary-sewer system.
- Contacting WGMG if the characteristics of any facility discharge change beyond that specified in authorizing documents.

Each employee whose work activities generate wastewaters with regulated constituents is responsible for:

- Knowing which wastewaters have been approved for discharge directly to the sanitary-sewer system, which shall go to retention-tank systems, and which shall be contained and removed for disposal.

## 5.0 Work Smart Standards

33 USC § 1251 et seq., Federal Water Pollution Control Act as amended by the Clean Water Act.

40 CFR 401, General Pretreatment Provisions

40 CFR 403, General Pretreatment Regulations.

40 CFR 433, Metal Finishing Point Source Category.

40 CFR 469, Electrical and Electronic Components Point Source Category.

CA Water Code § 13000 et seq., Porter–Cologne Water Quality Control Act.

City of Livermore Public Services Ordinance, Section 13.32, Wastewater Collection and Treatment System.

DOE O 5400.5 Chg. 2, Chapter I, Paragraph 7, Discharges to Sanitary Sewer.

DOE O 5400.5 Chg. 2, Chapter II, Paragraph 3d(2), Controlling Long-term Buildup of Radionuclides in Solids.

10 CFR 20.2003 (a)4, Subpart K, Total quantity of Radioactive Material Releases Into the Sanitary Sewerage in a Year.

## 6.0 Resources for More Information

### 6.1 Contacts

For evaluation of a waste stream and for discharge authorization, please call the LLNL Pretreatment Coordinator at 422-2300. For general information on discharges to the sanitary-sewer system, including regulations and compliance, call your ES&H Team environmental analyst or WGMG environmental analyst.

### 6.2 Other Sources

*Preventing Storm Water Pollution and Oil Spills*, Lawrence Livermore National Laboratory, Livermore, CA, UCRL-MA-133867 (2000).

*Management of Retention Tank Systems*, Lawrence Livermore National Laboratory, Livermore, CA, UCRL-MA-133867 (2000).

40 CFR 437, Centralized Waste Treatment Point Source Category.

40 CFR 438, Metal Products and Manufacturing Point Source Category.

## Appendix A

### Federally Regulated Processes and LLNL's Institutional Engineering Controls

#### Federal Regulations Affecting Discharges to the Sanitary-Sewer System

The Clean Water Act (1977) specifies how discharges to the sanitary-sewer system are to be identified and controlled. It requires that pretreatment standards be developed and makes the standards enforceable by the local control authority. The Clean Water Act addresses surface water but not ground water. The State of California's Porter–Cologne Water Control Quality Act restricts unpermitted releases to the environment that could potentially affect surface and ground water quality. The two acts provide the basis for all the wastewater regulations applicable to LLNL's sanitary-sewer discharge.

Three Clean Water Act prohibitions or limits are germane to LLNL. They are general prohibitions, local limits, and federal regulations or standards. The U.S. Environmental Protection Agency (EPA) enacted specific requirements through the Code of Federal Regulations (CFR) to establish the way provisions and intentions of the Clean Water Act are to be implemented. Chapter 40 of the Code of Federal Regulations, Part 403 (40 CFR 403) establishes general prohibitions and categorical standards that apply to all nondomestic discharges, regardless of their source. Discharges of material are restricted according to factors such as temperature, pH, and flammability.

LLNL's use of the sanitary-sewer system is further guided by restrictions imposed by the local publicly owned treatment works (POTW). The Livermore Water Reclamation Plant (LWRP), operated by the City of Livermore, accepts only certain wastes at specified limits.

Beyond general prohibitions and local limits, Federal Pretreatment Standards apply to particular categories of industry. The discharge limits for federally regulated processes apply directly at the source of the discharge from the process, called the point source, regardless of what standard the LWRP has adopted. In other words, point source discharges from LLNL are regulated by specific numerical limits for each type of regulated pollutant. This appendix addresses point source discharges and the numerical limits on pollutants established for the categories of industry applicable to LLNL. In contrast, nonpoint source discharges—such as storm water or construction water runoff, and low-threat discharges such as landscape runoff—have no numerical limits and are governed through best management practices. The best management practices, which are not options but rather mandated by law, are discussed in more detail in Document 32.3, "Preventing Storm Water Pollution and Oil Spills," in the *ES&H Manual*.

More than 50 regulatory standards are identified in 40 CFR 405–471, and several are relevant to LLNL's discharges to the sanitary-sewer system. Three are of particular relevance:

- 40 CFR 433 addresses metal finishing.
- 40 CFR 437 covers all centralized waste treatment (CWT) facilities.
- 40 CFR 469 addresses electrical and electronic components.

Clause 50 of Contract 48 between the University of California and the DOE states that the University agrees to comply with all the requirements of section 308 of the Clean Water Act (33 U.S.C. 1318) relating to inspection, monitoring, entry, reports, and information, and to use its best efforts to comply with clean water standards at the facility in which the contract work is being performed.

Parts 401 and 403 of 40 CFR establish that most major POTWs are required to have a pretreatment program. The LWRP is subject to pretreatment program requirements, as are industries discharging to it. Part 403 establishes general prohibitions that apply to all nondomestic discharges, regardless of source.

### **What Activities are Regulated?**

Beyond the general prohibitions, there are specific prohibitions with additional restrictions that involve different sampling points, different sampling frequencies, and different reporting criteria to the regulatory authority. The discharges from more than 50 manufacturing industry segments are so regulated by the EPA. Of those industry segments, Table A-1 lists 10 regulated categories (these regulated industry segments are called point source categories by the EPA) that have a realistic possibility of being found either now or at some time in the future at LLNL. Along with each of the 10 categories, Table A-1 identifies specific subcategories (which are processes or functions) whose discharges are covered by federal regulations.

The list of point source categories and subcategories in Table A-1 is not comprehensive. Furthermore, it is essential that Laboratory personnel who perform any of the tasks or functions listed in Table A-1 contact a WGMG environmental analyst or an ES&H Team environmental analyst for detailed information on specific discharges and the numerical limits that apply.

**Table A-1. Federally regulated point source categories and subcategories that are potentially found at LLNL.**

Federal regulation	Point source category	Processes or subcategories within the category that are federally regulated
40 CFR Part 433	Metal finishing	Electroplating Electroless plating Anodizing Conversion coating Etching (chemical milling) Printed circuit board mfg Cleaning Machining Grinding Polishing Barrel finishing (tumbling) Burnishing Impact deformation Pressure deformation Shearing Heat treating Thermal cutting Welding Braising Soldering Flame spraying Sand blasting Other abrasive jet machining Electronic discharge machining Electrochemical machining Electron beam machining Laser beam machining Plasma arc machining Ultrasonic machining Sintering Laminating Hot dip coating Sputtering Vapor plating Thermal infusion Salt bath descaling Solvent degreasing Paint stripping Painting Electrostatic painting Electropainting Vacuum metallizing Assembly Calibration Testing Mechanical plating
40 CFR Part 437	Centralized waste treatment	Metal-bearing waste treatment and recovery Oily waste treatment and recovery Organic waste treatment and recovery
40 CFR Part 438	Metal products and machinery	Metal products and machinery
40 CFR Part 457	Explosives manufacturing	Manufacture of explosives subcategory Explosives loading assembly and pack plants subcategory
40 CFR Part 459	Photography	Photographic processing subcategory
40 CFR Part 463	Plastics molding and forming	Contact cooling and heating water Cleaning water Finishing water
40 CFR Part 465	Coil coating	Steel basis material Galvanized basis material Aluminum basis material Can making

**Table A-1. Federally regulated point source categories and subcategories that are potentially found at LLNL. (cont.)**

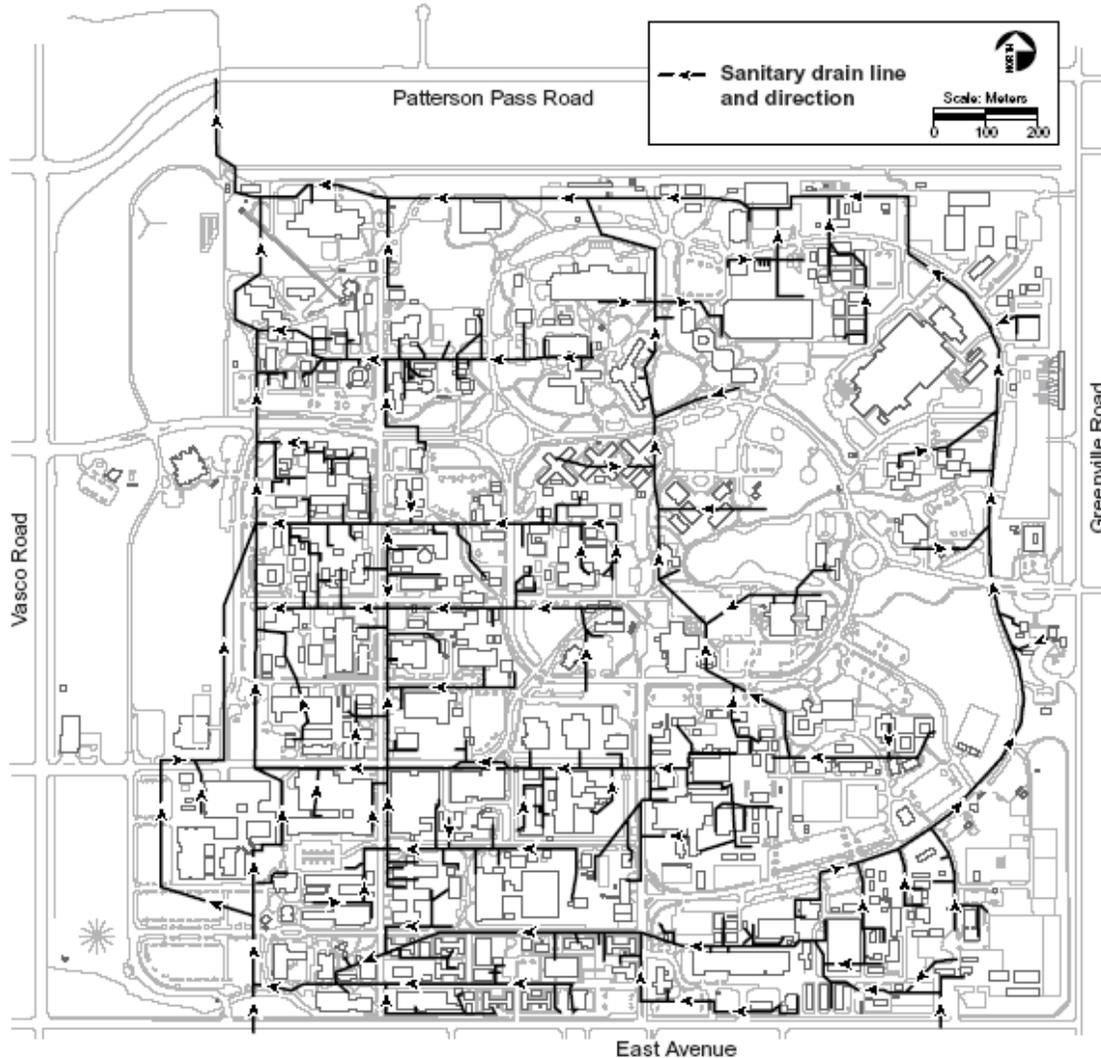
Federal regulation	Point source category	Processes or subcategories within the category that are federally regulated
40 CFR Part 467	Aluminum forming	Rolling with neat oils Rolling with emulsions Extrusion Forging Drawing with neat oils Drawing with emulsions
40 CFR Part 468	Copper forming	Copper forming Beryllium copper forming
40 CFR Part 469	Electrical and electronic components	Semiconductor Electronic crystals Cathode ray tube Luminescent materials

### Engineering Controls: The LLNL Collection and Monitoring System

LLNL's sanitary-sewer system consists of two, main, parallel systems (one running east to west and another south to north). Figure A-1 shows the direction of sewage flow through the two systems. Sewage from the two systems combines in a flow-measuring flume near Bldg. 196 at the northwest corner of LLNL's Livermore site. LLNL's headquarters for compliance monitoring is the Sewer Monitoring Station located in Bldg. 196. This farthest-downstream location, with respect to the collection system, is LLNL's point of discharge to the City of Livermore collection system, and LLNL's point of compliance where permit limits apply. (For specifically regulated processes, regulatory limits apply at the point of discharge of the process.)

To allow mitigating action to be taken before arrival at the LWRP of a potentially disruptive release, B196 contains equipment that continuously monitors LLNL effluent for regulated metals, radioactivity, and corrosive materials. The automated system annunciates alarms that initiate diversion of potentially contaminated sewage to the Sewer Diversion Facility (SDF), and alerts spill investigation teams to respond to incidents.

The major components of the monitoring system include a flow meter, pH meter, pressure sensors, x-ray fluorescence metals analyzers, and a gamma spectrometer. A microVAX computer running spectrometry software acquires the data. Software developed at LLNL tracks the system performance, analyzes and trends sensor data, initiates alarm-response activities, and allows users to update the operating parameters of the system.



**Figure A-1. Map of LLNL's sanitary-sewer system at the Livermore site.**

The SDF is located immediately upstream from Bldg. 196, and the diversion point is located downstream of the SDF. When online instrumentation detects a pollutant at greater than preset limits, the SDF automatically triggers closure of a gate valve, thereby diverting and containing the unacceptable waste in a series of diversion or holding tanks. The holding tanks are only used when a diversion is necessary to prevent unacceptable contamination from reaching the LWRP. Unacceptable waste in holding tanks can be treated or transported offsite for disposal. WGMG personnel are notified and respond to all such incidents.

Another upstream monitoring location is the upstream triggers monitoring station, which can perform online, real-time monitoring and sampling for pH. This location triggers an alarm when pH levels in sewer water are detected at greater than preset limits. An incident causes valves to close and initiates a diversion of unacceptable waste to the SDF. WGMG personnel are notified and respond to all such incidents.

Further upstream are three satellite monitoring stations that currently monitor pH. The three satellite monitoring stations are located at critical junctions where the likelihood of an incident is greatest, and they help to localize inappropriate discharges.

## Appendix B

### Specific Discharge Limitations

Tables B-1 and B-2 list constituents regulated in LLNL wastewater discharge. Table B-1 is a list of current sanitary-sewer discharge limits applicable to LLNL for nonradioactive constituents. The LLNL internal limits have been established to meet the City of Livermore's requirements at the Bldg. 196 outfall. In contrast, the constituents regulated under the Federal Pretreatment Standards (or "categorical") limits [identified in Table B-1 for discharges regulated under metal finishing standards (40 CFR 433) or under electrical and electronic component standards (40 CFR 469)] are specified by the EPA. By regulation, the EPA or City of Livermore limit is used, whichever is smaller. In cases where no standard is specified by the EPA, the City of Livermore limits apply. Because the list in Table B-1 is not comprehensive, always contact a WGMG environmental analyst or an ES&H Team for detailed information on specific discharges or related questions.

A point of compliance is a specific location at LLNL where discharge limits are required to be met for a specific type of waste stream. LLNL has two types of compliance points, depending on what is being discharged. For the few LLNL waste streams from processes regulated under the federal Pretreatment Standards, the point of compliance is one of the following:

- The point of discharge into the sewer system, before any dilution by a noncategorical waste stream.
- The point of discharge into a retention tank that is not dedicated to categorical processes, before any dilution by a noncategorical waste stream.
- The discharge point from a retention tank that is dedicated to similar categorical processes.

For all other discharges, including domestic wastewater and effluent from nonregulated processes, the point of compliance is the sewer outfall at Bldg. 196. Table B-2 shows LLNL's internal discharge limits for radioisotopes in wastewaters. Note that there is no limit for gross gamma; instead, isotope-specific limits apply. A list of isotopic limits is available from the ES&H Team environmental analyst or the WGMG environmental analyst.

**Table B-1. Discharge limits for nonradioactive constituents in wastewaters from noncategorical processes and categorical processes.**

Constituent	Permit limits (mg/L)	Federal Pretreatment Standards limits (mg/L)	
		Metal finishing	Electrical components
Arsenic (As)	0.06	— <sup>a</sup>	— <sup>a</sup>
Cadmium (Cd)	0.14	0.26	— <sup>a</sup>
Chromium (Cr)	0.62	1.71	— <sup>a</sup>
Copper (Cu)	1.0	2.07	— <sup>a</sup>
Cyanide (CN) <sup>b</sup>	0.04	0.65	— <sup>a</sup>
Lead (Pb)	0.20	0.43	— <sup>a</sup>
Mercury (Hg)	0.01	— <sup>a</sup>	— <sup>a</sup>
Nickel (Ni)	0.61	2.38	— <sup>a</sup>
Silver (Ag)	0.20	0.24	— <sup>a</sup>
Zinc (Zn)	3.0	1.48	— <sup>a</sup>
pH range	5 to10	5 to10	5 to10
TTO <sup>c</sup>	1.0	2.13	1.37

<sup>a</sup> No specific federal limit. Permit limit applies.

<sup>b</sup> Limits apply to CN discharges other than CN salts. CN salts are classified by the State of California as "extremely hazardous waste" and cannot be discharged to the sewer.

<sup>c</sup> Total toxic organics. Accumulated total of listed organic constituents.

**Table B-2. LLNL's internal discharge limits for radioisotopes in wastewaters.**

Constituent	Individual discharges	Total daily limit for the LLNL site
Gross alpha	300 pCi/L	$5 \times 10^6$ pCi
Gross beta	3000 pCi/L	$50 \times 10^6$ pCi
Gamma	Isotope-specific limits apply per DOE Order 5400.5.	Isotope-specific limits apply per DOE Order 5400.5.
Tritium	10 mCi	20 mCi

## Appendix C

### Signs Available for Posting Above Sinks

Two types of signs are available from the Environmental Protection Department and should be posted above LLNL sinks. Figure C-1 shows the sign for sinks connected to the sanitary sewer. Figure C-2 shows the sign for sinks connected to a waste retention system.



Figure C-1. Caution sign for sinks connected to the sanitary sewer.



Figure C-2. Notice sign for sinks connected to a waste retention system.

## Appendix D

### Retention Tank Analysis List and Waste Discharge Authorization Record (WDAR)

Release of wastewater from LLNL retention tank systems to the sanitary sewer is strictly controlled. No discharge shall be made from any retention tank until the contents of the tank have been sampled, analyzed, and approved for discharge by ORAD.

The Retention Tank Analysis List identifies every retention tank associated with LLNL buildings and facilities. This list shows the capacity of each tank, various codes used within or outside the Laboratory, and the specific regulated constituents in each tank for which analysis is required. Because the Retention Tank Analysis List is updated and revised periodically, it is not included in this document. To determine which type of analyses are required for a given retention tank, always refer to the most recent version of the list, which is available from WGMG. If the correct analyses are not requested, then the wastewater may not be approved for discharge to the sanitary sewer.

Each retention tank release has its own WDAR, which authorizes discharges of the tank contents to the sanitary sewer and serves as a tracking mechanism. An example of a WDAR is provided in Figure D-1. WGMG originates and retains the WDARs in a database indefinitely. Tank records and authorization forms, including the WDARs, help to demonstrate LLNL compliance with discharge limits and protect the programs through ongoing record keeping.

**Wastewater Discharge Authorization Record**

**(I) System Description**

**Building/Area No** \_\_\_\_\_ **Date sampled** \_\_\_\_\_

System Component (*check container and include specific identification as necessary*):

- Retention Tank     Portable Tank     Tanker     Drum     Carboy     Secondary Containment  
 Cooling Tower     ERD Treatment Facility     Other \_\_\_\_\_

**Container ID#** \_\_\_\_\_ **Volume (L)** \_\_\_\_\_

**Lab Name/Sample ID#** \_\_\_\_\_

**COC #** \_\_\_\_\_ **Requisition #** \_\_\_\_\_ **HWM Treat #** \_\_\_\_\_

(II) Authorization Record		
<input type="checkbox"/> Categorical	<input type="checkbox"/> For information only	<input type="checkbox"/> Non-Categorical
<input type="checkbox"/> OK to release to sanitary sewer <input type="checkbox"/> OK to release to sanitary sewer with special conditions as follows: _____ _____		
<input type="checkbox"/> May not be released to sanitary sewer due to: _____		
<b>Authorized by:</b>		
<input type="checkbox"/> Lily Sanchez <input type="checkbox"/> Shari Brigdon <input type="checkbox"/> Allen Grayson <input type="checkbox"/> Other _____ Date _____ <small>(name) (signature)</small>		
<input type="checkbox"/> OK to release to Site 300 impoundment pond.    Reviewed by: _____ Date _____ <small>(initial)</small>		
<input type="checkbox"/> May not be released to Site 300 impoundment pond due to: _____		
<b>Authorized by:</b> _____ Date _____ <small>(name) (signature)</small>		
Comments _____		
Results to: _____		

<b>(III) Disposition</b>		
<input type="checkbox"/> Transferred to _____ on _____ <small>(container # or S-300 impoundment pond)</small>		
<input type="checkbox"/> Retained for treatment		
<input type="checkbox"/> To be shipped off-site for treatment, disposal, or recycling.    Comments _____		
<input type="checkbox"/> Released to sanitary sewer on _____ with pH of _____ <small>Date/Time</small> at (location or sewer Access #) _____		
Comments _____		
<b>Name</b> _____	<b>Signature</b> _____	<b>Date</b> _____

White: Circulating copy, to be returned to WGMG DAM, L-627  
 Goldenrod: Retained by WGMG DAM, matched with returned white copy  
 3/01 (ORAD/WGMG)

Pink: Retained by Tank Operator  
 Canary: Retained by HWM

**Figure D-1. Example Wastewater Discharge Authorization Record (WDAR).**