

**Rationale for Water Pollution Control General Permit, GNEV 93001  
authorizing Sewage Treatment Works at the Nevada Test Site**

**Introduction**

On the Nevada Test Site (NTS) ten facilities active at that time were originally permitted for treatment of sewage by lagoons or basins with discharge via evaporation. Incorporating these ten facilities into one general permit had accomplished the following: (1) It reduced the opportunity for error in submitting multiple quarterly reports, and (2) it reduced the time and labor in compiling a single quarterly report for each facility. In addition, the incorporation of a single Operations & Maintenance (O&M) manual covering all the facilities has also reduced the amount of work involved in the revision of a single document instead of multiple manuals for multiple facilities. In recent years, however, the population and effort of work at the NTS has decreased to a level that warranted placing eight of the facilities on a standby status. Nevada Division of Environmental Protection (NDEP) has altered the permit to accommodate National Nuclear Security Agency, Nevada Site Office (NNSA/NSO's) necessity to deactivate or activate these facilities as the workloads changed with the needs of the various government agencies.

The existing terms and conditions currently incorporated into the General Permit ensure the existing regulatory protection of the State's water. The General Permit also emphasizes the mode of disposal, whereas the mode of treatment was the dominant context of previous individual permits. This change did not cause any undue burden of compliance on the NNSA/NSO, and will not change in the new permit.

**Regulatory Authority**

The General Permit was issued pursuant to NRS 445A.475 for the category of discharge which was "more appropriately regulated by a general rather than an individual permit."

This statutory requirement for "appropriately regulated" is understood to mean the convenience of the State, provided (1) that protection of the resources of the State are not diminished; and (2) that the burden on each individual under a General Permit is not greater than each permittee would receive from an individual permit for each discrete point source. This approach enhances the effective use of the NDEP resources, with regard to permit processing and compliance.

It is convenient to the State to re-issue the General Permit to the NNSA/NSO, re-authorizing the continuing operation of the suite of sewage lagoons and basins within the Nevada Test Site. The advantages are listed below:

1. The nineteen-year historical operation has shown the terms and conditions on each point source in the General Permit are as separate and severable as in individual permits; i.e., non-compliance by any component does not affect other components which are in compliance.
2. Additional components in a given category can be added to the General Permit by the process of Notice of Intent, without the necessity of time-intensive processing of individual permits or of major modifications to individual permits.
3. Discrete components have been placed on standby mode without major effort of re-writing a permit; other components have been closed or abandoned without the meticulous process of permit revocation.

4. Single quarterly monitoring reports have proven more efficient for review and evaluation than the multiple separate reports.
5. A single O&M manual also has proven more efficient for review and evaluation than the multiple separate O&M manuals previously required.
6. NNSA/NSO successfully operated multiple facilities in varying degrees of activity in compliance under this single permit and the State regulated these facilities more efficiently than would be possible under individual facility permits.

With the promulgation of the Federal Facilities Act, the facilities are deemed indistinguishable from a Publicly Owned Treatment Works, as defined and regulated by the Clean Water Act and the Solid Waste Act.

### **General Permit Parameters**

The main objectives of the General Permit are *protection of the water of the State, prevention of groundwater degradation, and adherence to the standard of performance for no discharge to the surface*. Any escape of sewage from a built facility (collection system, treatment lagoon, or infiltration basin) onto the surface which is reasonably preventable is contrary to the objectives of the permit. Corollary objectives are operation and maintenance in conformance with the following:

1. The provisions of design and as-built configuration, and
2. The prohibition of receiving wastes with characteristics above the regulatory limit.

The existing sewage treatment facilities are each configured to meet the New Source Performance Standard for Zero Discharge to the Surface. In addition, all replacements or new construction must meet these same standards. The mode of disposal is evaporation from total containment. The mode of treatment is facultative lagoons.

The principle of the permit is to authorize *impoundment of sewage, raw or treated, for biochemical oxidation of its organic load followed by disposal through evaporation*. The as-built configurations, mode of operation, mode of disposal, and maintenance of each facility, must continuously assure sufficient retention time for bio-oxidation of the particulates and for predation of pathogens. The two active facilities have full containment liners in the primaries and secondaries lagoons and have no effluent. Evaporation accommodates the influent flow rate, such that the required freeboard is not compromised. For each of the permitted facilities, the mean annual influent rate has been less than the mean annual evaporation rate.

### **Synopsis of Sewage Characterization**

Influent:

1. BOD<sub>5</sub>: time- or flow-weighted composite, quarterly
2. Total Suspended Solids: time- or flow-weighted composite, quarterly
3. pH: time or flow weighted composite, quarterly
4. Influent flow rate: measured or estimated, to enable calculation of the quarterly mean daily organic loading
5. toxics: analyzed upon sediment removal from the lagoons or when a spill occurs

Effluent:

1. The active sewage lagoons have full containment liners that eliminate any effluent.

Sludge:

1. The permit requires the characterization of the sludge prior to its removal for disposal.

The following sewage treatment works are currently maintained and operated by Bechtel Nevada under contract with the NNSA/NSO. Bechtel Nevada has on-staff professional engineers with the proper training and certification needed to operate and maintain the facilities in compliance with Nevada State and Federal laws and regulations:

Table 1: Discrete Facility Names in the Current General Permit

Facility	Area	Coordinates
Active Facilities		
1. Mercury	23	lat. 36° 39' 17.85620" N long. 116° 00' 43.61707" W
2. Yucca Lake Complex	6	lat. 36° 56' 28.86650" N long. 116° 2' 18.12221" W
Inactive Facilities		
3. Gate 100	23	lat. 36° 38' 42.86426" N long. 116° 00' 19.35953" W
4. RWMS	5	lat. 36° 50' 49.8949" N long. 115° 57' 07.1037" W
5. Device Assembly Facility	6	lat. 36° 53' 39.64485" N long. 116° 2' 18.40174" W
6. LANL/Tweezer Road Camp	6	lat. 36° 58' 36.1003" N long. 116° 1' 58.8113" W
7. Area 12 Camp	12	lat. 37° 11' 58.81942" N long. 116° 9' 3.15391" W
8. Central Support Area (CSA)	25	lat. 36° 46' 32.13788" N long. 116° 17' 44.53057" W
9. Reactor Control Point	25	lat. 36° 47' 53.42899" N long. 116° 16' 14.37693" W
10. Engine Test Stand 1	25	lat. 36° 49' 40.47755" N long. 116° 18' 42.95246" W