

VII - WATER CONTROL PLAN

7-01. General Objectives

The objective of Sepulveda Dam is flood control, specifically, the minimization of flood damages on the Los Angeles River downstream from Sepulveda Dam. In this regard, water is temporarily stored behind Sepulveda Dam during periods of high inflows and is released more slowly through the downstream Los Angeles River channel.

There is no objective to operate the dam to reduce inundation damages to its improved reservoir lands. All usage of reservoir land is intended to have a purpose secondary to its role as the bottom of the flood control reservoir. All costs associated with reservoir inundation are intended to be routine maintenance costs. The Los Angeles District should ensure that reservoir lease holders have a clear understanding of risk and subsequent willingness to locate within the flood control reservoir.

7-02. Major Constraints

Constraints that impact the regulation and operation of Sepulveda Dam are as follows:

a. Channel Capacity. The channel capacity downstream of the dam is restricted to 16,900 cfs. The river channel just above the Verdugo Wash confluence is restricted to a maximum 35,500 cfs capacity in order to maintain a 2-foot freeboard, as determined by the Los Angeles County Drainage Area Review (see table 1-01; Draft: Los Angeles County Drainage Area Review: Part I, Hydrology Report).

b. Rubber Dam. The City of Los Angeles Department of Water and Power constructed a rubber dam approximately 10 miles below Sepulveda Dam for diversion of water into adjacent spreading grounds. The dam, which is air-inflated, is 6.9 feet in height and is designed to impound water to maximum depth of 8.3 feet in the channel before automatically deflating. The flow over the dam is 800 cfs at this stage. Approximately 30 minutes is required to completely deflate the dam; the dam is also equipped with manual override capabilities if automatic deflation fails. The maximum channel capacity with the dam full raised is approximately 20,000 cfs. The maximum channel capacity with the dam lowered is 55,000 cfs.

The dam is currently not in operation because the necessary water quality permits to divert the water have not been obtained.

c. Tributary Inflow Downstream from Dam. Major tributary inflow occurs in the river channel downstream from a side drain near Cedros Avenue, and at the Tujunga Wash, Verdugo Wash, Arroyo Seco Wash, and Rio Honda River confluence. The inflows can cause hydraulic instability and possible overbank flow in the river channel at these locations. Releases from Sepulveda Dam

should be reduced accordingly in order to compensate for the effect of these inflows as necessary. Referring back to photo 4-01, an example of this potential instability is shown at Cedros Street during the flood of 16 February 1980.

During a major flood event, channel observers should be sent to the above locations and report on conditions as directed by the Reservoir Operation Center.

7-03. Overall Plan for Water Control

Sepulveda Dam is operated for flood control on the Los Angeles River. Plate 7-01, which depicts the storage allocations for Sepulveda Reservoir, shows that the entire space of the reservoir below elevation 710.0 feet (the spillway crest, with crest gates raised) is devoted to flood control. Between elevation 710.0 and 713.52 feet (the maximum reservoir surface elevation for a Standard Project Flood (SPF)), the space is used jointly for flood control and spillway surcharge. Between 713.52 and 716.66 feet (the maximum reservoir surface elevation for a Probable Maximum Flood (PMF)), the space is allocated to spillway surcharge, with flood control no longer the primary objective in deference to passing as much water out of the reservoir as is required to assure the safety of the dam. The space between elevation 716.66 and 725.0 feet (the top of the dam) is reserved for freeboard.

Sepulveda Dam is operated in coordination with other projects protecting the upper Los Angeles River. These projects include Pacoima, Hansen, Big Tujunga, and Devil's Gate Dams. Because of Sepulveda Dam's ungated outlets (four of eight are ungated) and limited capacity (spillway flow occurs for events with return periods of greater than an estimated 80-years, as determined by the Los Angeles County Drainage Area Review; refer to the report listed in table 1-01, Draft: Los Angeles County Drainage Area Review: Part I, Hydrology Report, (February 1988); in addition see table 4-08 and pl.4-07), it is give an priority over these other projects with respect to releases into the Los Angeles River.

There may, however, be instances where some reduction in releases may be considered necessary from a systems perspective. These conditions are discussed in Section 7-13.

7-01. Standing Operating Instructions to Dam Tenders

In the even that all communication with the District Office, including the Base Yard, should be interrupted, a set of Standing Operating Instructions to Dam Tender have ben compiled for each dam. A copy of these instructions for Sepulveda Dam are included in Exhibit A of this manual.

7-05. Flood Control

a. General. The plan for controlling floods on the Los Angles River below Sepulveda Dam is presented in this section.

The objective of the water control plan is to maximize flood control benefits. Project releases will be regulated to protect downstream communities and to avoid spillway flow.

The most critical reach of the downstream channel extends from the dam to the Tujunga Wash confluence (see Plate 2-04).

The project should be regulated to pass all inflow through the dam as rapidly as possible. This is achieved by keeping the four gated outlets full open until spillway flow occurs, and then by progressively closing the gates outlets such that the combined flow from the spillway and from the gated and ungated outlets does not exceed the downstream channel capacity of 16,900 cfs. Plate 7-02 provides a schedule that is to be used as a guide in achieving this regulation.

It should be noted that as a result of the Los Angeles County Drainage Area review (see table 1-10, Draft: Los Angeles County Drainage Area Review: Part I, Hydrology Report, (February 1988)), the channel capacity immediately downstream of the outlet works was found to be 100 cfs less than previously computed (see pl. 2-04). Because of this change, the water surface elevation at which gate operations were performed on the previous version of the reservoir regulation schedule were modified, though not by more than 0.2 foot (see pl. 7-02). This change was necessary to stay within the channel capacity of 16,900 cfs.

Sepulveda Dam will be regulated as a component of a reservoir system protecting (primarily) the upper and middle Los Angeles River and (to a lesser extent) the lower Los Angeles River, downstream from the Rio Hondo confluence. From a systems perspective, Sepulveda will normally be given priority to make channel capacity releases. However, if system conditions should warrant, Sepulveda releases may be curtailed in order to minimize downstream channel overflow and damages or threat to life, based upon reports from telemetry gauges or channel observers.

b. Reservoir Evacuation. Sepulveda Reservoir should be drained as rapidly as possible, consistent with the achievement of downstream flood control. The objective is to empty the reservoir in preparation for the next flood. When on additional storms are forecast, however, and flood control benefits can be achieved, the four gated outlets may be partially or fully closed.

c. Forecasts. A forecast to make operational decisions may be either a series of computer-generated inflow hydrographs (expected in future years) or a reasonable judgemental assessment of ongoing rainfall and runoff, based upon available information. In either case, the Reservoir Operation Center of the Corps of Engineers, Los Angeles District, would be responsible for developing the forecast and for determining confidence in it toward its application to reservoir water-control decisions. The intent is to consider all appropriate information in implementing the water control plan describe above.

7-06. Recreation

As mentioned previously (Section 2-06.a.), the sole purpose of Sepulveda Dam is flood control. No water is impounded by the dam for the purpose of recreation.

The channel of the Los Angeles River downstream of Sepulveda Dam is strictly a flood control channel, and provides no water-oriented recreational use. Thus no releases are made for recreational purposes.

7-07. Water Quality

Because Sepulveda Dam has four ungated outlets, it cannot be operated to totally contain contaminant spills. Sepulveda Dam is not operated for water quality objectives (refer to Section 2-06.d.).

7-08. Fish and Wildlife

No Sepulveda Dam water control objectives exist for fish and wildlife, either within the reservoir, or within the channel of the Los Angeles River downstream of the reservoir (refer to Section 2-06.b.).

7-09. Drought Contingency Plan

Sepulveda Dam and Reservoir does not contain any storage allocation for water supply or water conservation. The Los Angeles River downstream of the dam is mostly concrete lined. Groundwater recharge facilities approximately 10 miles below Sepulveda Dam can divert 40 cfs, however, because there are four ungated outlets at Sepulveda Dam no water can be impounded. However, in the event of a drought, should a water conservation plan be proposed that would not compromise the flood control purpose of the project, it's implementation would be considered.

7-10. Hydroelectric Power

No facilities for the generation of hydroelectric power at Sepulveda Dam exist, nor are any contemplated.

7-11. Navigation

No navigation of any sort is possible or allowed in Sepulveda Reservoir or in the Los Angeles River, either upstream or downstream of Sepulveda Dam.

7-12. Other

Maintenance and construction on the downstream channel of the Los Angeles River normally occur during the dry season of late spring and summer. During such periods, the four Sepulveda Dam gated outlets may be closed in order to reduce releases in support of such downstream activities.

7-13. Deviation from Normal Regulation

As outlined on plat 7-02, and as discussed in Sections 7-05.b. and 7-05.c.(1), the release plan for Sepulveda Dam generally calls for all gated outlets to be fully open for any water surface elevation below 710.2 feet. Thus the rate of release from Sepulveda Dam cannot be increased above that which is prescribed.

It is physically possible, however, and would be desirable, under certain limited circumstances, for the release rate from Sepulveda Dam to be decrease what is called for on plate 7-02.

For water surface elevations above 710.2 feet, it would be physically possible to either increase or decrease the release rate from that which is published on plate 7-02.

In addition to the prevention of downstream damages (discussed in Section 7-05.b. and 7-05.c.), there are other possible reasons for deviation from the normal release plan at Sepulveda Dam:

a. Emergencies. In the event of a potential drowning, toxic spill, or other accident in which high flows on the Los Angeles River downstream of Sepulveda Dam could prevent rescue or could cause further injury, the four gated outlets at Sepulveda Dam could temporarily be partially or totally closed. However, because of the four ungated outlets, this would reduce, but not eliminate, the flow to the downstream channel. (See section 2-03.b.(2) for gate descriptions). Such emergency action should be taken immediately, unless such action would likely result in worse conditions. Notifications to all concerned agencies of emergency actions must be made as soon as possible.

b. Unplanned Minor Deviations. Unplanned events that could create a temporary need for minor deviations from the schedule published in plate 7-02 include emergency bridge repairs, the restoration of utility lines across the Los Angeles River, and certain unplanned necessary maintenance and inspection. Sepulveda Dam may be operated to support these activities, provided that flood protection is not jeopardized, and that no significant threat is made to potentially endangered wildlife species in the reservoir (see Section 8-05), and that the City of Los Angeles Donald C. Tillman Water Reclamation is not unnecessarily subjected to inundation.

c. Planned Deviations. The same arguments apply to planned construction, maintenance, inspections, etc., as under Section 7-13.b. Such planned activities should be scheduled for the dry season, whenever possible. (The dry season is normally May through October, although on a rare occasion, a tropical storm with heavy rain and high runoff potential can occur during the late summer or early fall).

d. No Spillway Flow Forecast. When forecast information clearly indicates that Sepulveda Dam will not experience spillway flow (reservoir

water surface will not exceed elevation 710 feet), all four gated outlets may be partially or fully closed in order to alleviate downstream emergencies (see Section 7-13), to prevent downstream damages, or to add an additional safety factor when the downstream channel is experiencing high flows. Outflow might then be limited to the discharge from the four ungated outlets, which is a maximum of approximately 7000 cfs at reservoir elevation 710 feet.

As discussed in Section 2-03.d.(2)(a), the crest gates are designed to lower automatically during major spillway flow events. This feature was provided in the interest of dam safety in order to increase the hydraulic outflow capacity during extreme inflows.

There may be some instances, however, when the fully automatic lowering of the crest gates, and the consequent major downstream flooding, could be avoided. When real-time data and forecast information indicate that: (a) the inflow peak of a major storm and flood event has occurred, and the inflow is in recession, and (b) all data and forecasts indicate that future rainfall clearly will not produce amounts of runoff that could possibly threaten the overtopping of the dam, then actions to prevent the automatic lowering of the crest gates should be taken.

The semi-automatic operation procedures described in Section 2-03.d.(2)(c) allow for the manual locking of the crest gates in the fully upright position (elevation 710 feet). That section also noted that the implementation of this locking procedure is awkward and time-consuming, with travel of crews to Sepulveda Dam often difficult during stormy conditions. This, under certain conditions, it may not be possible to achieve a rapid change from fully automatic crest gate operation to semi-automatic operation on all seven crest gates. Such action, however, even if only partially achieved, may be able to prevent substantial downstream damages.

It is important, though, that all crest gates be reset to the fully automatic mode immediately after the flood crest has passed, or sooner if updated forecast information indicates the possibility of appreciable additional precipitation and runoff.

7-14. Rate of Release Change

The gated outlets at Sepulveda Dam can generally be adjusted in as rapid a manner as possible without concern over the rate of rise of the downstream channel. This is possible because the ungated outlets will always be releasing large discharges at times when significant changes could be achieved through the gated outlets. Concrete lining of the downstream channel precludes concern over bank erosion or sloughing due to sudden gate changes. During emergencies, or when downstream inflow has filled the channel of the Los Angeles River, gradual increases in gate openings, based on downstream reports, may be desired.