Table 3-4
LEAPS PROJECT - WEEKLY CYCLE
HYDRAULIC MAXIMUM DRAWDOWN AND ACTIVE STORAGE BALANCE[1]

Mode	**Date** (Time)	**Drawdown** (Acre-Feet)	**Lake Elsinore Elevation** (AMSL)	**Decker Lake Elevation** (AMSL)
Start	Monday (06:00)	Start Week	1240.0	2830.0
Generation	Monday (22:00)	(2,997.5)	1241.0	-
Pumping	Tuesday (06:00)	2,412.6	1240.2	-
Generation	Tuesday (22:00)	(3,012.0)	1241.2	-
Pumping	Wednesday (06:00)	2,436.3	1240.4	-
Generation	Wednesday (22:00)	(3,027.6)	1241.4	-
Pumping	Thursday (06:00)	2,462.7	1240.6	-
Generation	Thursday (22:00)	(3,044.7)	1241.5	-
Pumping	Friday (06:00)	2,941.7	1240.7	-
Generation	Friday (22:00)	(3,061.8)	1241.7	-
Pumping	Saturday (18:00)	5,340.3	1240.0	2830.0
Stop	Sunday	End Week	1240.0	2830.0
Volume Balance	-	0.0	0.0	0.0

Notes:
1. All engineering specifications remain subject to change and refinement.

Source: The Nevada Hydro Company, Inc.

It is assumed that the starting elevation of water in Lake Elsinore is 1240-feet AMSL. As illustrated in Figure 3-31 (Lake Elsinore Area - Elevation Curve) and as indicated in Table 3-5 (Lake Elsinore Area Elevation Data), at an elevation of 1240-feet AMSL, Lake Elsinore contains 38,518 AF of water. At this elevation, the lake will have its maximum level change based on a given water transfer. At elevation 1247-feet AMSL, the capacity of Lake Elsinore is 61,201 AF. The rate of change at this elevation is 37 percent less for the same water transfer.

- **Decker Canyon reservoir (forebay)**. Proposed is the creation of a new approximately 110-acre open reservoir, located in the south fork of Decker Canyon (Sections 21 and 22, T6S, R5W, SBBM USGS 7.5-Minute Alberhill Quadrangle),[54] at the headwaters of San Juan Creek. The proposed upper reservoir (forebay) is located within the TRD, at elevations 2440 to 2850-feet AMSL, on land under Forest Service jurisdiction. The proposed reservoir site is located adjacent to and south of Killen Truck Trail/South Main Divide Truck Trail (Forest Route 6S07) (South Main Divide Truck Trail), an all-weather, County-maintained two-lane road[55] extending eastward from SR-74 (Ortega Highway).

  The proposed upper reservoir is not intended for the storage of potable water (open distribution reservoir) and no water treatment activities, other than as may be associated with vector control, are proposed therein. No public access to the reservoir site and no

[54]/ Latitude: 33.37N; Longitude: 117.2532W.

[55]/ South Main Divide Truck Trail (Killen Trail) links State Route 74 (SR-74 or Ortega Highway) to the residential area of Rancho Capistrano (Morrell Potero) and to the eastern portion of the TRD. At its eastern terminus, South Main Divide Truck Trail becomes Forest Route 7S04 which extends southward to Tenaja Road, near the southeastern border of the TRD.

recreational contact with the water within that reservoir would be authorized. Access to and waters stored within the upper reservoir will, however, be made available for firefighting purposes.

Table 3-5
LAKE ELSINORE AREA ELEVATION DATA

ELEVATION (ft above MSL)	LAKE WATER VOLUME (acre-feet)	SURFACE AREA (acres)	COMMENTS
1,223	0	0	
1,224	1,000	997	
1,225	2,200	1,400	
1,226	3,750	1,680	
1,227	5,400	1,880	
1,228	7,350	2,060	
1,229	9,600	2,150	
1,230	12,000	2,290	
1,231	14,000	2,380	
1,232	16,200	2,498	
1,233	18,700	2,560	
1,234	21,200	2,650	
1,235	24,000	2,740	
1,236	26,935	2,892	
1,237	29,774	2,896	
1,238	32,632	2,958	
1,239	35,545	3,020	
1,240	38,519	3,074	Minimum Operating Level
1,241	41,618	3,124	
1,242	44,767	3,175	
1,243	47,963	3,218	
1,244	51,208	3,271	
1,245	54,504	3,319	Nominal Operating Level
1,246	57,835	3,345	
1,247	61,201	3,386	Normal Maximum Level
1,248	64,596	3,406	
1,249	68,006	3,412	
1,250	71,443	3,463	
1,251	74,909	3,469	
1,252	78,414	3,540	
1,253	81,962	3,557	
1,254	85,526	3,571	
1,255	89,114	3,606	Wasson Sill Crest Elevation
1,256	92,769	3,700	
1,257	96,479	3,722	
1,258	100,233	3,788	
1,259	104,032	3,809	
1,260	107,877	3,882	
1,261	111,769	3,901	
1,262	115,680	3,920	Back Basin Spillway Elevation
1,263	119,608	3,939	
1,263.3	120,800	3,945	100-yr Flood Elevation
1,265.0	127,692	3,990	Maximum Operating Level

Source: David Ruhl, Santa Ana Water Project Authority, 2003

As illustrated in Figure 3-32 (Lake Elsinore Advanced Pumped Storage Project – Conceptual Drawings),[56] the proposed upper reservoir design includes: (1) an approximately 300-foot-high main embankment dam[57] located on the southwest side of

[56]/ All figures and other illustrations presented herein regarding the proposed projects descriptions are intended to be general representations, conceptual, and illustrative in nature. These graphics are not intended to represent construction-level drawings and remain subject to revision and further refinement.

[57]/ Dams are defined according to 33 CFR 222.6(h) as all artificial barriers, together with appurtenant works, which impound or divert water and which: (1) are 25 feet or more in height; or (2) have an impounding capacity of 50 acre-feet or more. Federal regulations define dams for the purpose of ensuring public safety (Source: United States

the reservoir; (2) maximum and minimum pond elevation of approximately 2790-feet and 2660-feet AMSL, respectively; (3) a crest elevation of 2800-feet AMSL; and (4) an inlet at elevation of approximately 2600-feet AMSL feet for the intake structure. The conceptual drawings for the proposed upper reservoir include: (1) project layout, general notes, and GIL transmission line profile; (2) general plan and profile; (3) concrete-faced rockfill (CFRF) dam plan, sections, and details; (4) rockfill earth-core (RFEC) dam plan and sections; (5) roller-compacted concrete (RCC) dam plan, sections, and details; and (6) upper reservoir intake and overflow spillway plan and sections.

The required fill volume of the dam is about 3.0 million cubic yards (CY). Grading operations will be conducted in compliance with applicable National Pollutant Discharge Elimination System (NPDES) permit requirements.[58]

While most of the excavation will come from within the area of the reservoir itself, a additional excavation may come from the powerhouse, shafts, and penstock tunnels. Excavated and/or imported materials will be used to construct the dam and other earth structures required for the impoundment. Materials will be trucked to and from the upper reservoir site along SR-74, via Main Divide Truck Trail.

Embankment material would consist of silty sand and rock materials generated from excavated granitic bedrock and weathered granite. Depending upon the conditions of the bedrock foundation, the dam may be keyed into the foundation rock and the rock foundation may be grouted. All slope inclinations of the dam's slopes will be approximately 3:1 (horizontal to vertical) but may be constructed flatter to accommodate ground motion criteria currently being evaluated. A freeboard of 10 feet was used to estimate the height of the dam. The crest of the dam will have a relatively narrow width (approximately 30 feet).

The new upper reservoir capacity will be approximately 5,750 AF (approximately 5,500 AF live storage and approximately 250 AF dead storage). A 20-foot wide crushed stone, gravel, or asphalt-paved roadway will be provided around the embankment to allow access for maintenance and inspection. Access will be restricted by signage and an approximately 8-foot high chain-link fence located on the outer side of the crest roadway. Surface water channels will be constructed within the perimeter access corridor. The sides and bottom of the upper reservoir will be provided with an impermeable dual liner (i.e., clay and double geomembrane) system to minimize water loss and seepage. The liner system will allow for steepened reservoir side slopes by protecting the side slopes from rapid drawdown damage (e.g., sloughing, erosion, and landsliding) and will protect the reservoir floor from erosion and scour.

In addition to the use of low-permeability soil for the impermeable layer of the floor and sideslopes, the upper reservoir will incorporate a double-liner system. The liner system will include a high-density polyethylene (HDPE) liner, drainage layer under the primary geomembrane to collect and convey leakage, secondary HDPE geomembrane under

Environmental Protection Agency, National Management Measures to Control Nonpoint Source Pollution from Hydromodifications, July 2006, p. I-2).

58/ California Regional Water Quality Control Board, San Diego Region, Order No. R9-2007-0001, NPDES No. CAS0108758, Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority, January 24, 2007, Section D.2.c(1)(a)(vi).

the drainage layer to separate leakage from native groundwater, secondary seepage collection system under the secondary geomembrane to relieve water pressures from under the liner system, and grading preparation as needed to protect the liner system from sharp bedrock protrusions.

Redundant controls will be provided to protect against overpumping. Three independent systems will be installed to monitor and control the water level in the upper reservoir and to ensure that all units operating in the pumping mode will be tripped before the water level exceeds the final design capacity. These monitoring devices will be coordinated and interlocked in operation to preclude the possibility that failure of a device or a combination of devices and/or any human operating error will allow safe operating levels from being exceeded. For this reason, and since the upper reservoir has no contributory drainage area, no reasonable possibility of exceeding maximum water level will exist.

An intake/outlet structure located in the upper reservoir will interconnect the new upper reservoir with the powerhouse through a single 25-foot diameter nominal conveyance channel and tunnel, with a gated inlet structure. Radial gates, slide gates, or an emergency bulkhead will be installed to shut off water flow from the upper reservoir in the event of an emergency or for inspection and repair. The dam would include a concrete-lined emergency spillway and a low-level outlet.

In general, the conveyance alignments will seek to follow the most direct route between the upper reservoir and the powerhouse, taking into consideration the area's topography and subsurface geotechnical features. A headrace tunnel manifold will connect the tunnel flows to individual pumping units in the powerhouse.

The proposed upper reservoir will be designed for and will accommodate access by firefighting helicopters and other firefighting personnel. Helicopters will be able to utilize reservoir waters to fill suspended "bambi buckets" or other devices for fire suppression. A wind sock or similar device will be installed in a clearly visible location adjacent to the reservoir to assist pilots by indicating wind conditions during fire fighting events. In addition, the reservoir's waters can be pumped from the upper reservoir by mobile water pumping equipment for other fire-response purposes.

- **Transmission lines and towers**. The general description of transmission lines and towers associated with the LEAPS project are as generally described for the TE/VS Interconnect project. However, instead of being described as consisting of only the new Northern-Southern (Lake-Pendleton or Case Springs) and the upgraded Talega-Escondido transmission line segments, the LEAPS transmission lines could be represented as consisting of the following four segments.

  ◊ Northern 500-kV transmission line (Northern-Midpoint [Lake-LEAPS] T/L). The Northern transmission line constitutes an approximately 9-mile long 500-kV OHL transmission line segment extending southward from the Applicant's proposed new Northern (Lake) substation to the Applicant's proposed new Northern GIL transition, located in the general vicinity of the Applicant's proposed Decker Canyon reservoir. The Northern GIL transition is connected to the proposed Midpoint (LEAPS) substation using about 1.8 miles of 500-kV GIL underground transmission. The total line length (including both GIL and OHL) between the Northern (Lake) substation and the Midpoint (LEAPS) substation is about 10.8 miles.

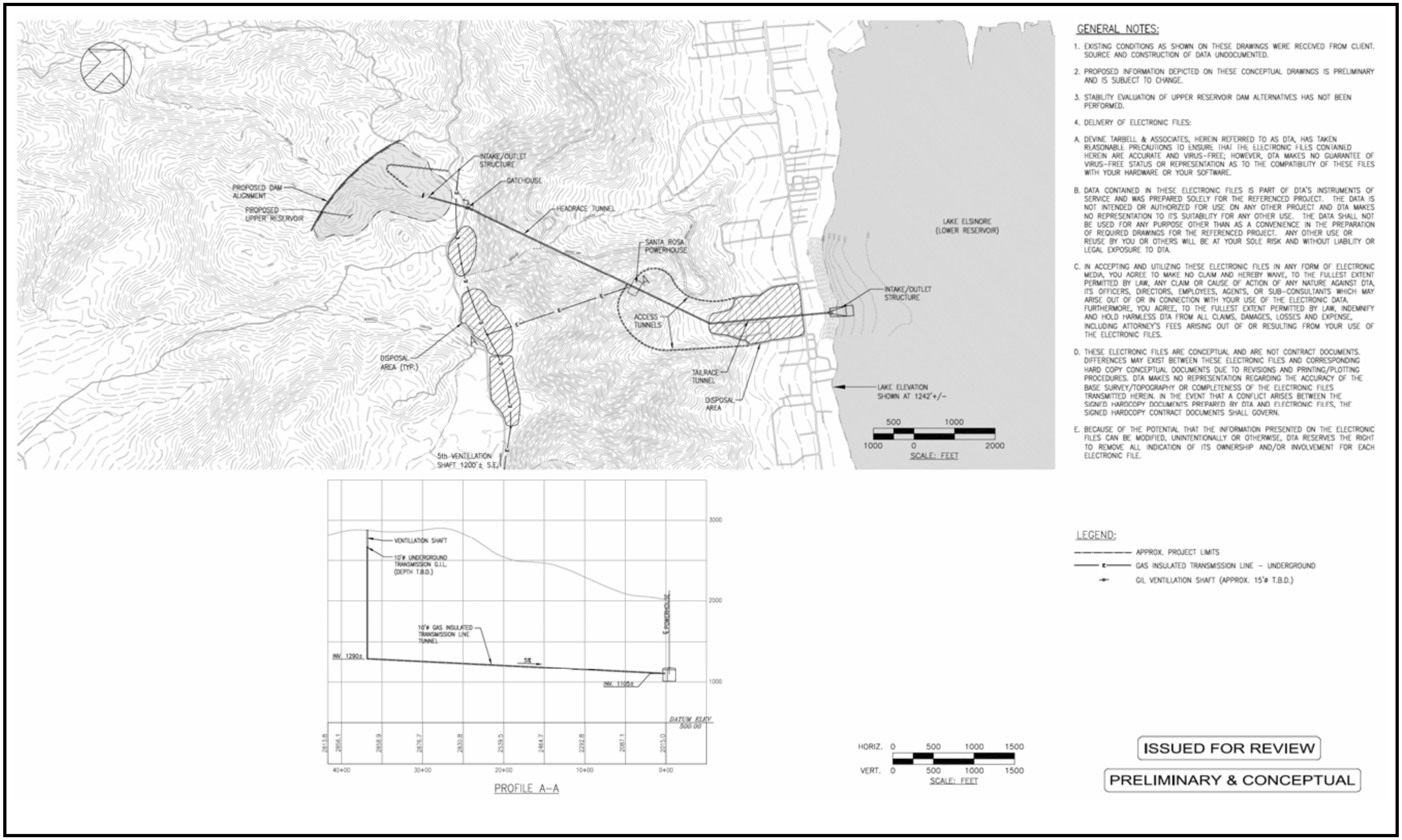

Figure 3-32 (1 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – PROJECT LAYOUT, GENERAL NOTES, AND GAS-INSULATED TRANSMISSION LINE PROFILE
Source: The Nevada Hydro Company

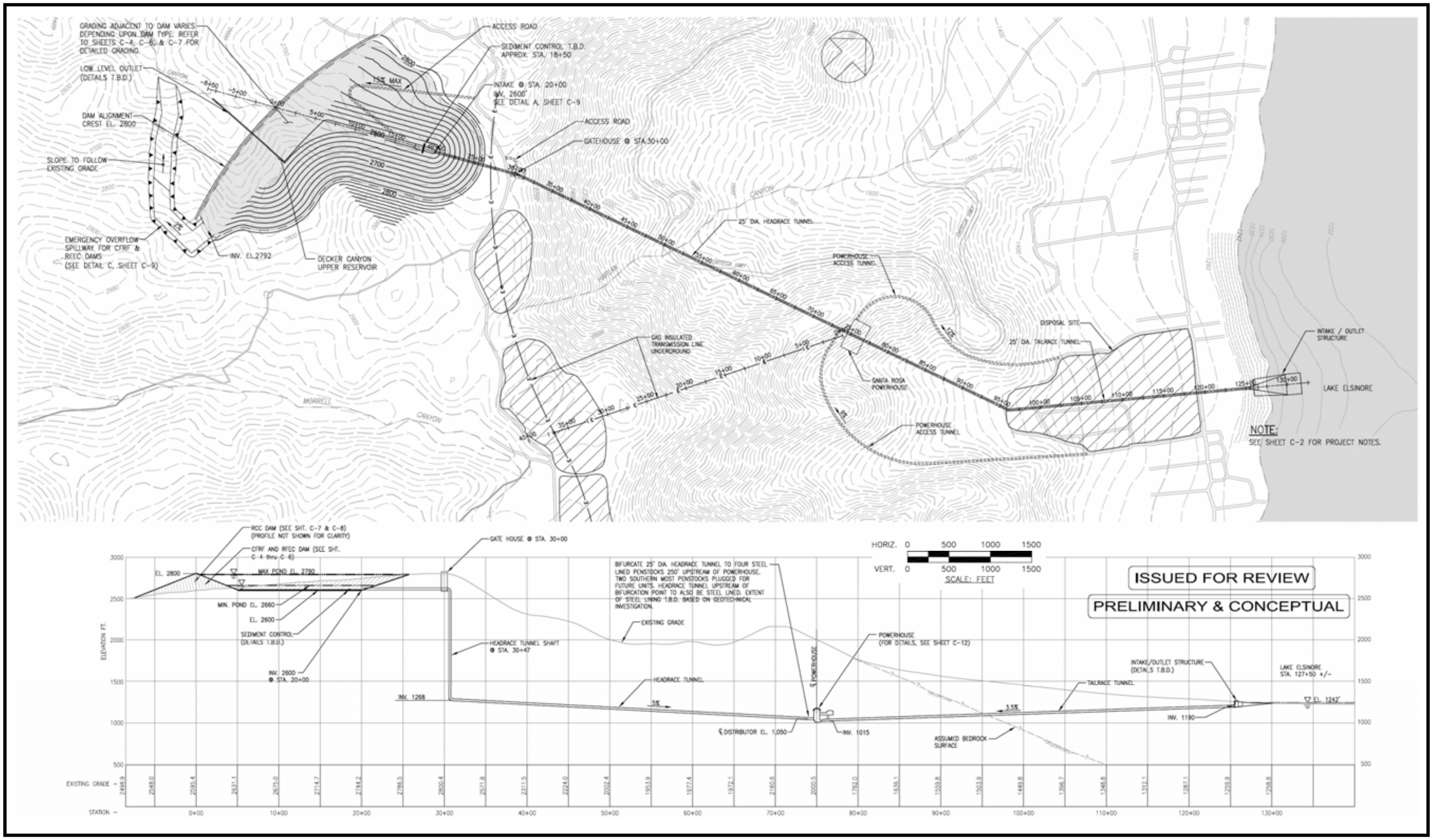

Figure 3-32 (2 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – GENERAL PLAN AND PROFILE
Source: The Nevada Hydro Company

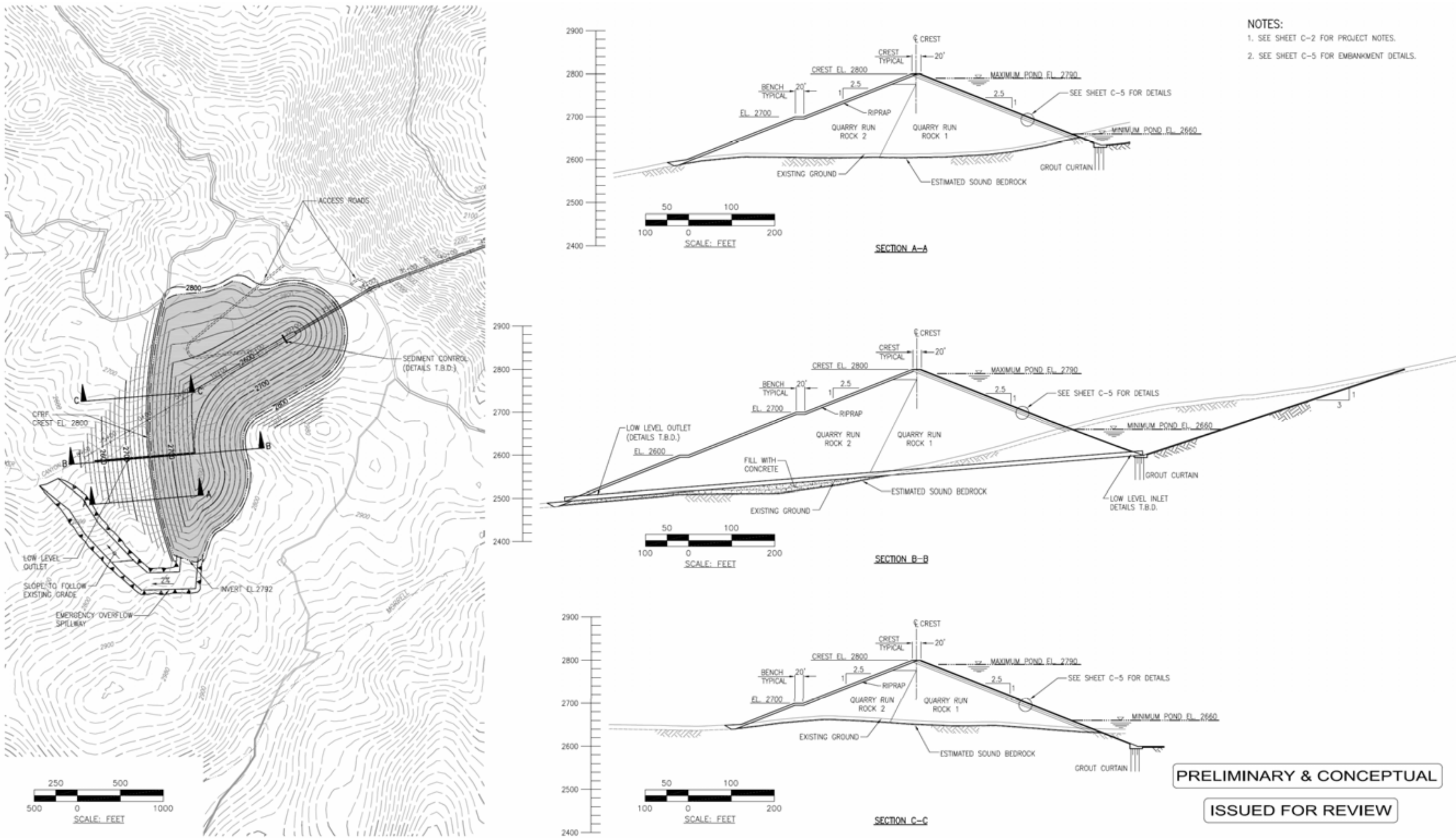

Figure 3-32 (3 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – CONCRETE-FACED ROCKFILL (CFRF) DAM PLAN AND SECTIONS
Source: The Nevada Hydro Company

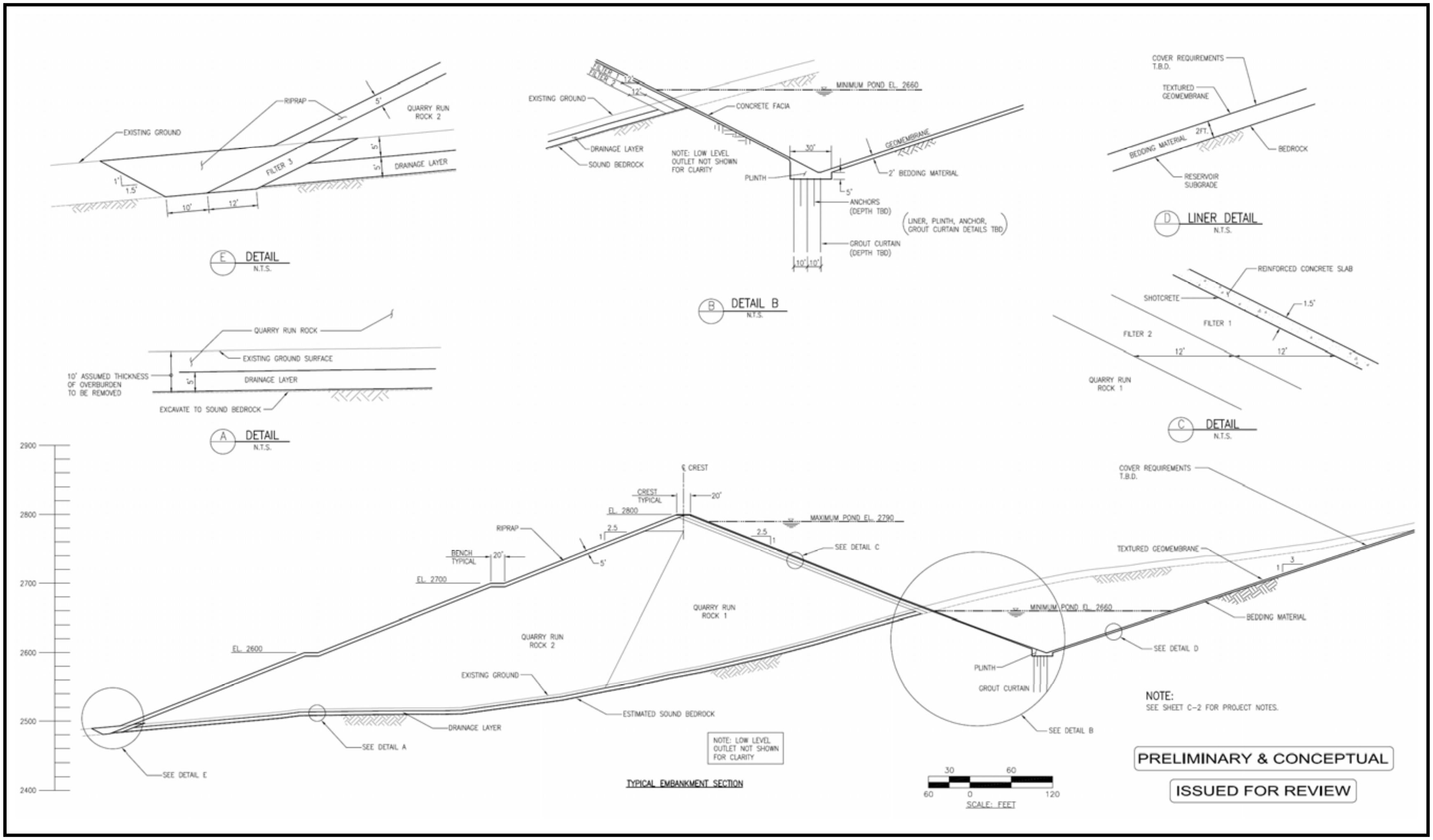

Figure 3-32 (4 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – CONCRETE-FACED ROCKFILL (CFRF) DAM SECTION AND PROFILES
Source: The Nevada Hydro Company

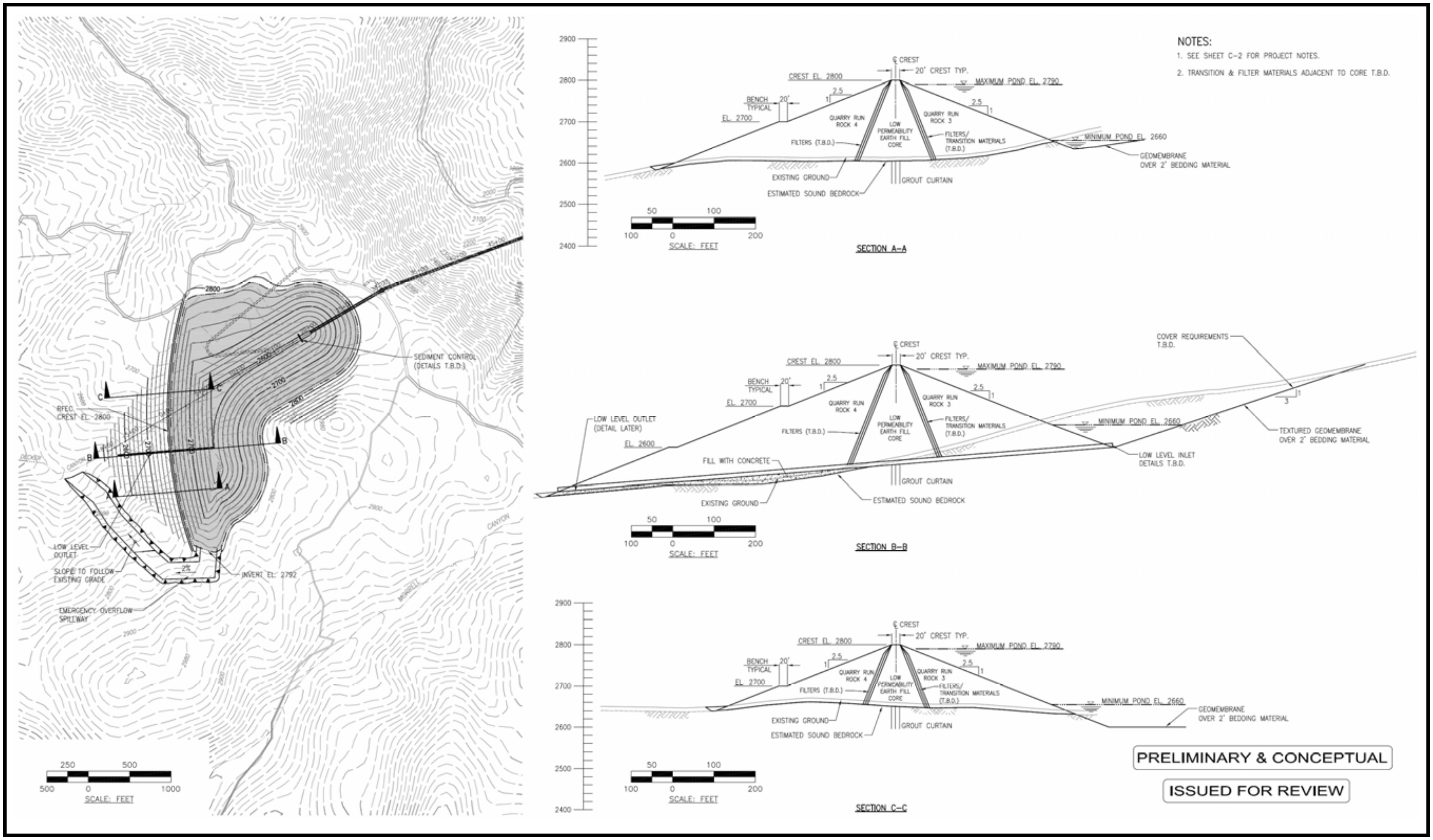

Figure 3-32 (5 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – ROCKFILL EARTH-CORE (RFEC) DAM PLAN AND SECTIONS
Source: The Nevada Hydro Company

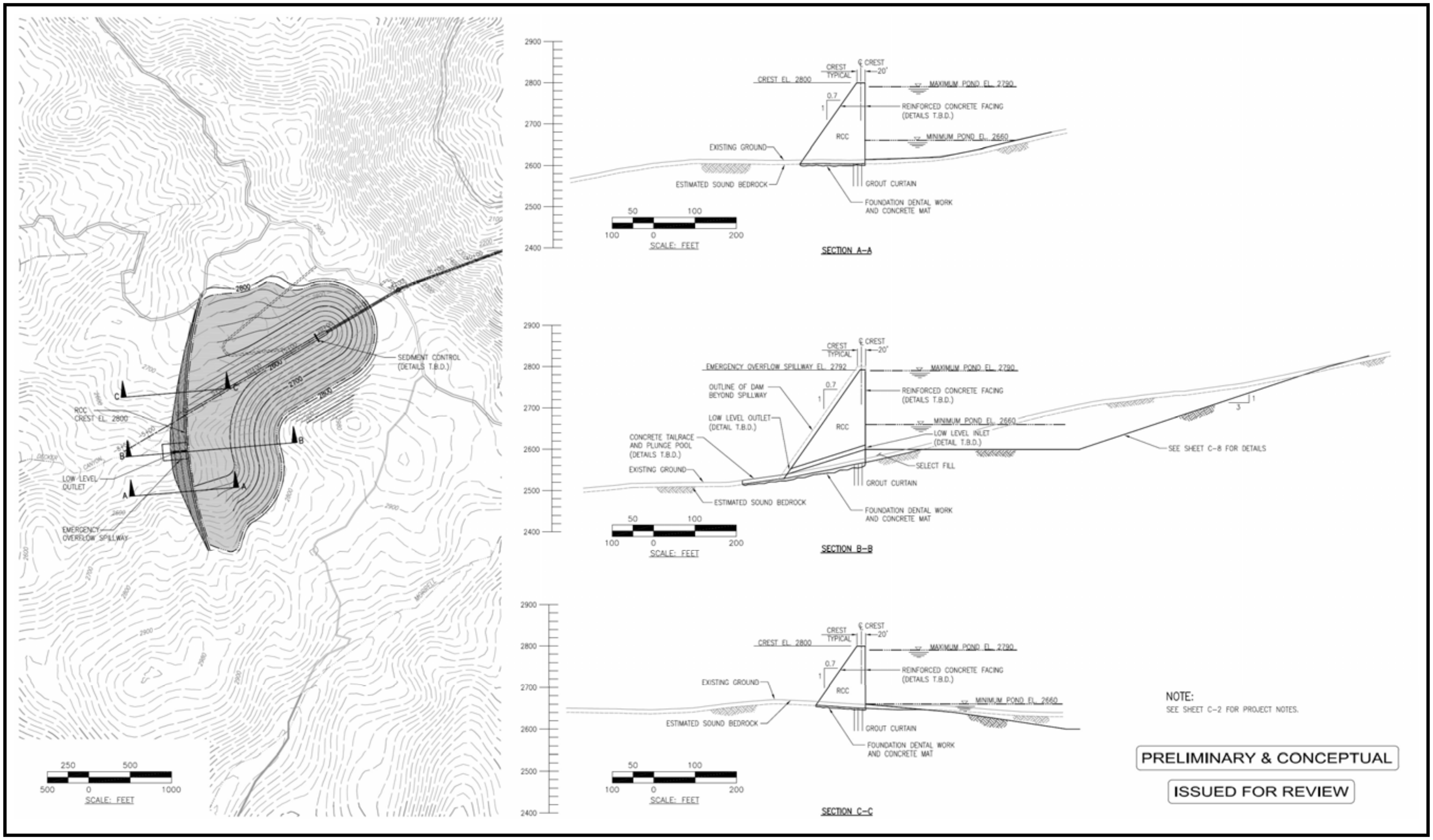

Figure 3-32 (6 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL LAYOUT – ROLLER-COMPACTED CONCRETE (RCC) DAM PLAN AND SECTIONS
Source: The Nevada Hydro Company

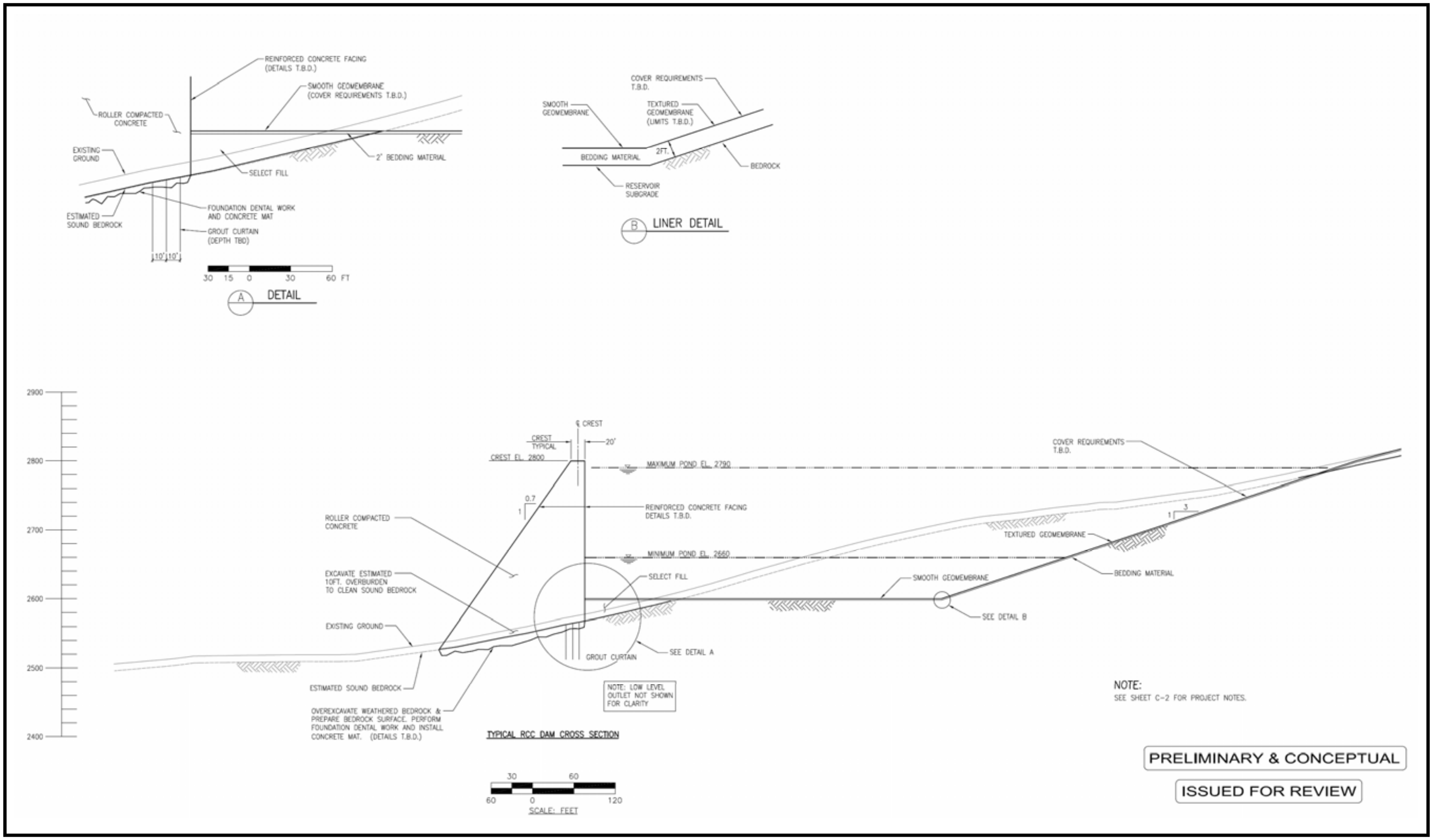

Figure 3-32 (7 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – ROLLER-COMPACTED CONCRETE (RCC) DAM SECTIONS AND DETAILS
Source: The Nevada Hydro Company

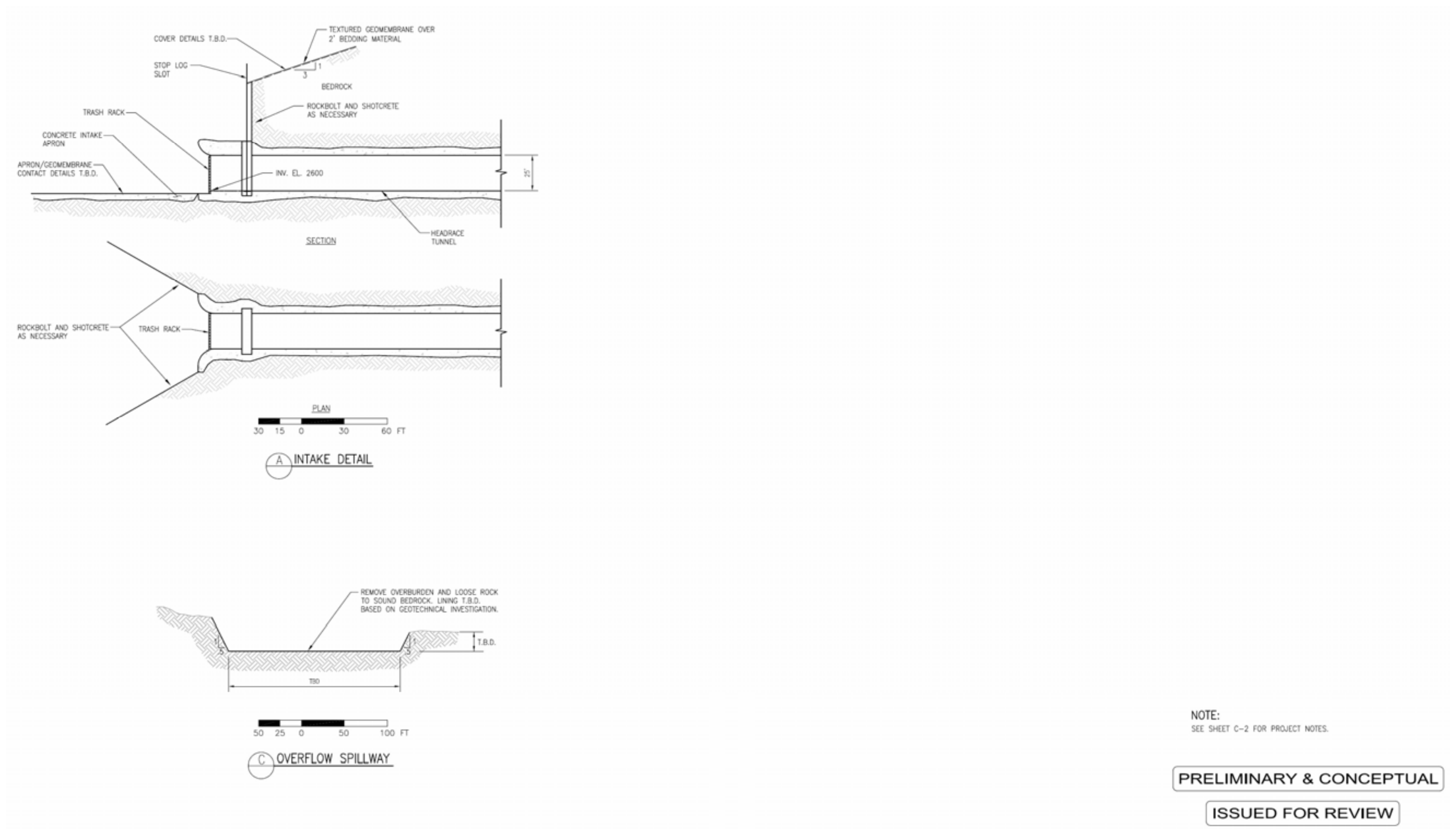

Figure 3-32 (8 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – UPPER RESERVOIR INTAKE AND OVERFLOW SPILLWAY PLAN AND SECTIONS
Source: The Nevada Hydro Company

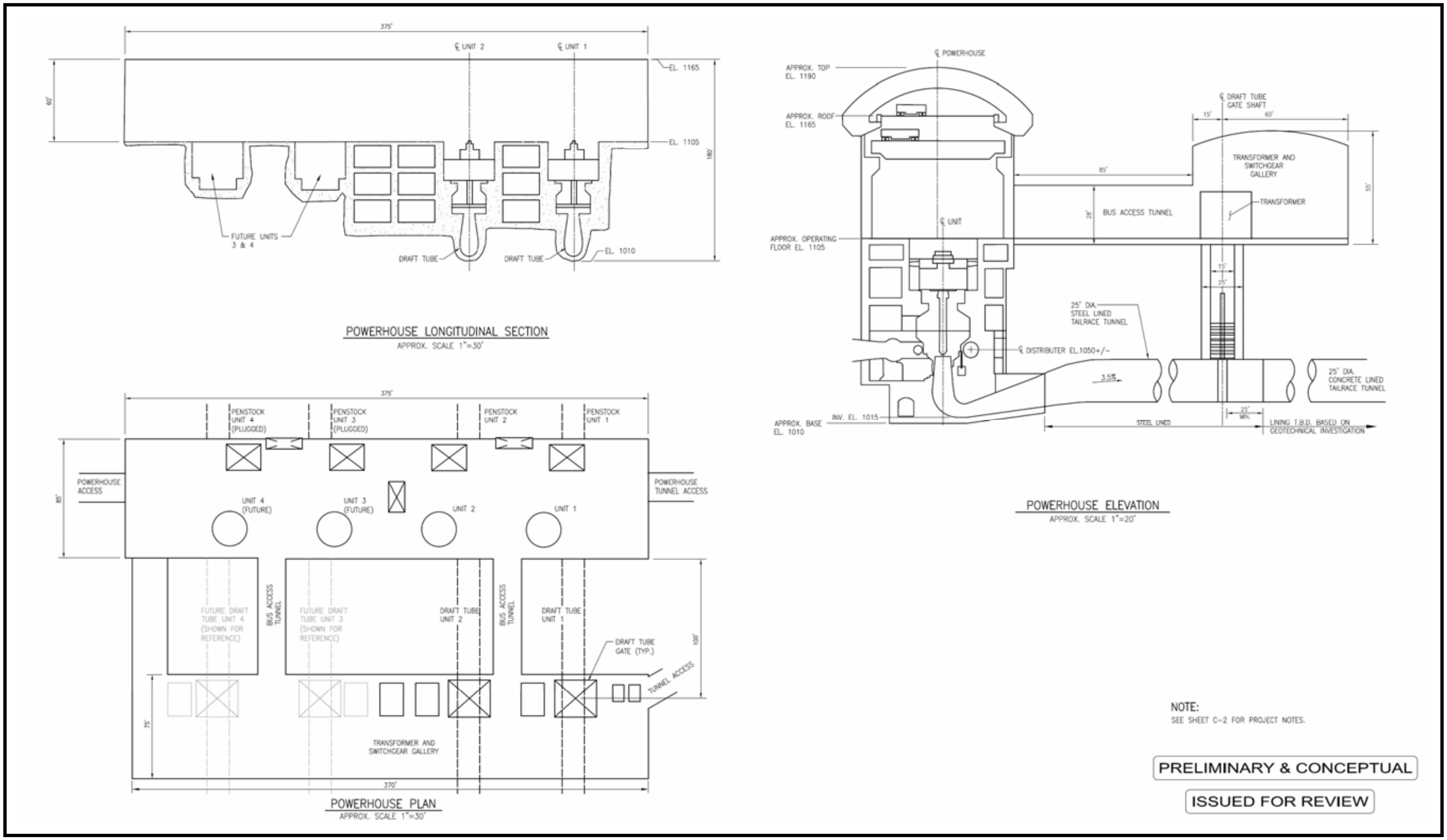

Figure 3-32 (9 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – SANTA ROSA POWERHOUSE PLAN AND ELEVATION
Source: The Nevada Hydro Company

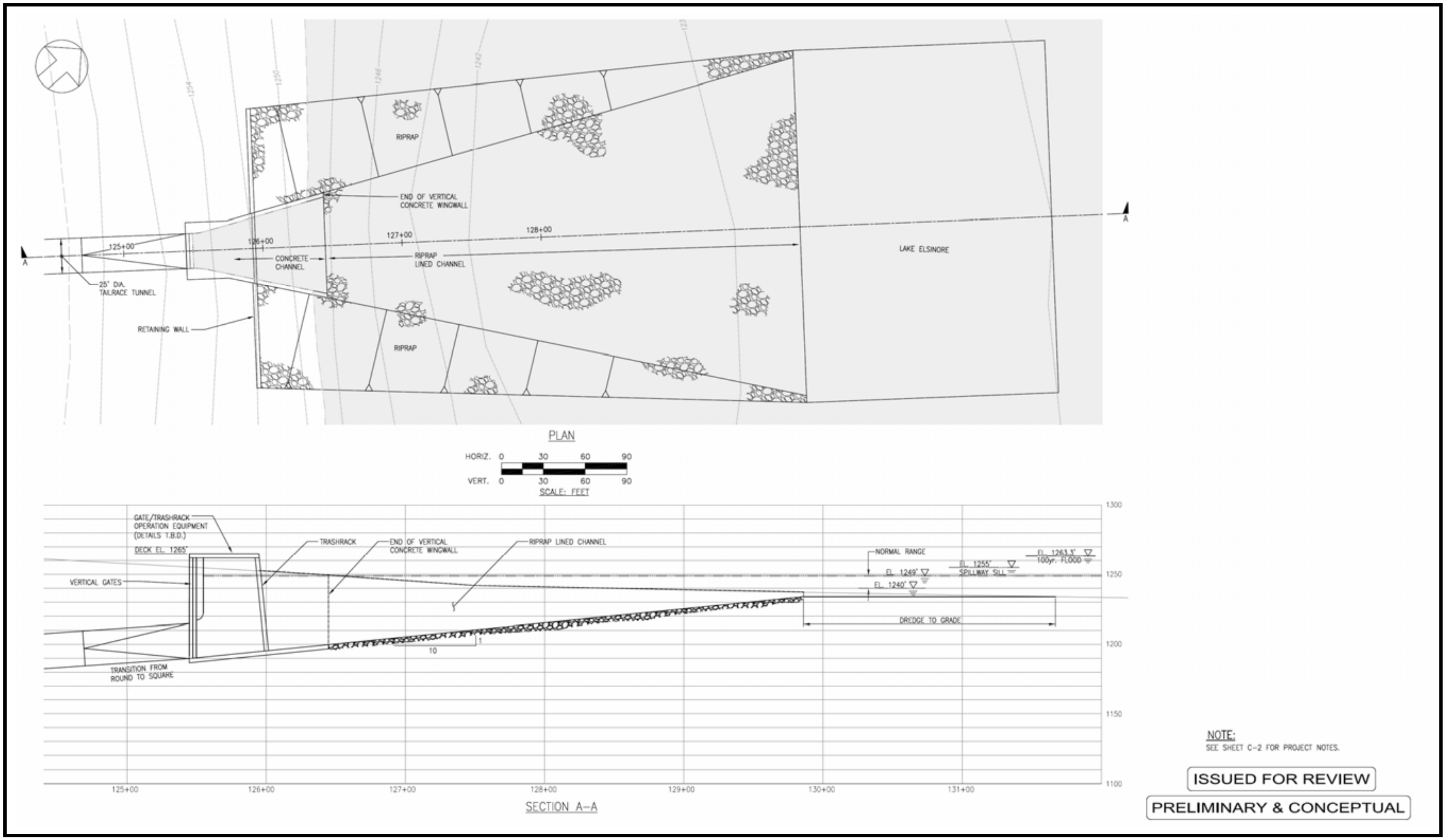

Figure 3-32 (10 of 10)
LAKE ELSINORE ADVANCED PUMPED STORAGE PROJECT - CONCEPTUAL DRAWINGS
CONCEPTUAL STUDY – LOWER RESERVOIR OUTLET PLAN AND PROFILE
Source: The Nevada Hydro Company