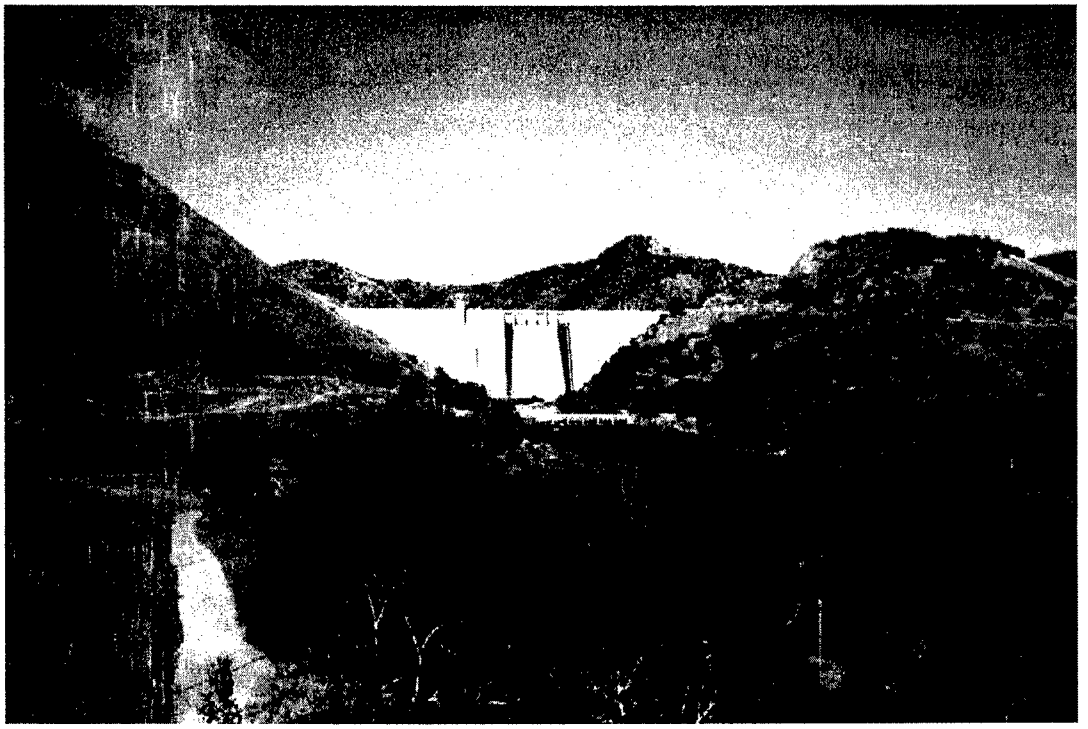
Final Feasibility Report and Environmental Impact Statement/
Environmental Impact Report

PINE FLAT DAM FISH AND WILDLIFE HABITAT RESTORATION, FRESNO, CALIFORNIA

APPENDIX C
BASIS OF DESIGN AND COST ESTIMATE OFFICE REPORT



US Army Corps of Engineers
Sacramento District
South Pacific Division

December 2001

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PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

BASIS OF DESIGN AND COST ESTIMATE

OFFICE REPORT

FEASIBILITY LEVEL

(UPDATED PROJECT COSTS TO FY 2000 PRICE LEVELS)

JULY 1998
Revised: **DECEMBER 2001**

PINE FLAT DAM FISH & WILDLIFE
HABITAT RESTORATION PROJECT, CALIFORNIA

BASIS OF DESIGN
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PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

BASIS OF DESIGN AND COST ESTIMATE OFFICE REPORT

FEASIBILITY LEVEL December 2001

SECTION 1 - GENERAL

1. Purpose and Scope.

The purpose of this Office Report (Basis of Design) is to present a feasibility level design and costs for (1) a proposed multi-level intake structure at the upstream side of Pine Flat Dam, (2) purchase and restoration of a 143.5 acre parcel of land downstream of the dam near the Friant-Kern Canal and the Kings River (at Byrd Slough), and (3) a proposed 10.6 mile stretch of a water transfer pipeline that will carry water from Kings River northwest to the Mendota Pool. The first two design features are being developed by the Corps of Engineers, Sacramento District, while the local sponsor (Kings River Conservation District, (KRCD)) is performing in-kind work by the use of an engineering consultant on a water transfer pipeline.

2. Location.

Pine Flat Dam and Lake are located on the Kings River in the Sierra and Sequoia National Forest about 30 miles northeast of the City of Fresno, California, see plate 1. The closest town near Pine Flat Dam is Centerville that is about 9 to 10 miles downstream (west) of the dam. The proposed 143.5 acre restoration site is located downstream of Pine Flat Dam just south of the Friant-Kern Canal (at Byrd Slough) and within crossing distance of the Kings River. The proposed pipeline will begin east of Hwy 145 (N-S) (Madera Avenue) near the intersection of Howard and Central Avenues and will extend for approximately 11 miles to the west.

3. Existing Project Feature.

Pine Flat Dam is a concrete gravity structure that is 429 feet in height, 1,820 feet long and is capable of impounding 1 million acre-feet of water at a gross pool elevation of 951.5 feet (msl). The top of the dam (roadway) is at elevation 970.0 feet (msl). A parapet wall 2.4 feet in height was constructed along the crest of the dam to increase the freeboard requirement, to elevation 972.4 feet (msl). The spillway is located along the center (mid point) of the dam and has a net width of 252 feet. The spillway crest elevation is at 916.5 feet (msl). Within the existing spillway there are six radial gates that are used to release floodwaters. Each radial (tainter) gate is 42-feet by 38-feet (width x height). The proposed gates for mid and upper levels will open in the downward direction and will allow the weight of the gates to rest on newly constructed steel bar that will serve as a set. The lower three gates will also open in the downward direction and will run on the outer-most vertical channel members. In addition, there are three power penstocks 13.6 feet in diameter that provide water to turbines that generate

hydropower. The discharge capacity of the spillway is 391,000 cfs with a design head of 52.8 feet.

4. General Plan.

a. Multilevel Intake - This is proposed so that colder water(s) can be released to the downstream channel(s) throughout the year - especially in the months of August and September of each year (after the initial construction) to sustain the cold water fishery in the Kings River downstream of the dam. The multilevel intake structure consists of three separate steel (space frame) structures that extend from elevation 953.46 feet (msl) downward to elevation 616.5 feet (msl). Each structure will have 3 - 25-feet x 42-feet (height x width) port openings that will be staggered at different elevations. Cladding will be placed on the space frame to enclose each of the structures. Steel plates will be put on the bottom of each of the space frame structures to prevent water from leaking into each structure. Steel gates 27-feet by 44-feet will be constructed to close off each of the new port openings. The gates will open in the downward direction and will set in a structural channel when completely open. It was designed this way to take the gate loading(s) off the hoist cable. There will be a hoist and cable unit (including a motor) for each of the 9 openings. Each structure will have 3 motors, one motor and cable per gate. A trashrack will be placed on the front face of each of the structures to prevent any large debris from entering the port openings and to protect the structure itself.

b. Restoration Site - An area directly south of the Friant-Kern Canal and Trimmer Springs Road along Byrd Slough (Kings River waterway) will be obtained for a restoration site. The restoration site will consist of a 143.5 acre parcel to establish new riparian and valley oak (SRA) habitats. (The new restoration site is referred as "Byrd Slough Riparian and SRA Habitat Site.)

c. Water Transfer Pipeline - A 78-inch diameter Reinforced Concrete Pipe (RCP) pipeline will start at an existing check structure (Station 0+10) along Dry Creek about 310 feet east of the intersection of Howard and Central Avenues. The pipeline will run parallel to Central Avenue until it crosses Hwy 145 (Madera Avenue) at Station 110+18 where it will take a 45^0 angle to Station 110+62. At this point, the pipeline will again follow the Central Avenue Alignment to Station 348+89 (Intersection with Plumas Avenue Alignment). The pipeline will take a right angle turn at Station 348+89 and will follow the Plumas Avenue Alignment to the intersection of Malaga Avenue Alignment (Station 375+20) where the pipeline will take a right angle turn onto Malaga Avenue Alignment. The pipeline will follow the Malaga Avenue Alignment to Station 540+80 where a 55-foot inverted siphon will be constructed under Ranch Canal and will continue to Station 557+81. The pipeline will terminate at the Fresno Slough Flood Channel near the upper end of the Mendota Pool near El Dorado Avenue.

SECTION II - HYDROLOGY AND HYDRAULICS

5. Hydrology.

Winter rain floods and spring snowmelt floods are two types of flood flows on the Kings River. The winter rain floods, that occur during the period from November through March, are caused by heavy rains and are characterized by sharp, high peaks of short duration and comparatively small volumes. The snowmelt floods occur during the period from March through June. While not producing the high peak flows of winter-type floods, they have a much larger runoff volume.

6. Hydraulic Design.

a. Multilevel Intake - The hydraulic design report for the proposed multilevel intake structure discusses the hydraulic analysis performed on the multilevel intake structure at Pine Flat Dam and is enclosed as Attachment 1. The structure has been analyzed for windwave forces, water-hammer, and three-dimensional analysis of velocities, temperatures and pressures through the structure. The multilevel steel intake structure will be attached to the upstream face of the dam that will provide a new intake structure for the three existing penstocks, which transfer water to the downstream power plant. There are actually three structures, one enclosing each existing penstock intake. There will be seven levels of gates to allow withdrawal of water from a wide range of levels in the reservoir. Each gate will be 44-feet wide by 27-feet high. The gates will be opened by lowering them to ensure that in the event of a hoist/cable failure, the new portals will be in the open position. Trashracks will be provided to prevent debris from entering the multilevel intake. Refer to Attachment 1, A Hydraulic Design Report, for further detail on the hydraulic analysis and the different portal elevations of the multilevel intake.

i.) **Physical Model** - The MAC3D modeling program was used to approximate the hydrodynamics processes expected in and around the intake structure near the upstream face of the dam. The 3-dimensional modeling program was used to evaluate the changes in velocities, temperatures, and turbulence and allowed for the screening out of various alternatives. The program has limitations; such has the inability to fully reproduce all dynamic effects of the proposed structural features. Due to this limitation, a Physical Model was recommended to better identify what dynamic effects may occur on the multilevel intake structure. For further detail on the MAC3D modeling results and the proposed physical modeling refer to Attachment 1, A Hydraulic Design Report.

b. Water Transfer Pipeline - Preliminary hydraulic calculations were performed based on the surveyed stationing and elevations. The elevation differences should provide enough head to convey the 150 cfs flow requirement using a 78-inch diameter RCP. To prevent negative pressure in the pipeline, extended steel pipe extensions will extend above the ground to either allow excess air to be released or will allow air to enter the pipeline to prevent cavitations. These steel pipe extensions will be located every 1750 feet along the alignment of the pipeline. This would require approximately 32 steel pipe extensions. The 78-inch diameter pipe size should work for either upstream or downstream control. Refer to Attachment 5, A Water Transfer Pipeline Report for further detail on the pipeline hydraulics.

7. Temperature Model.

A temperature analysis was performed to partially verify a two dimensional temperature model study that was done by the KRCD. This again was done as in-kind work. KRCD provided the Sacramento District with their temperature analysis along with the desired gate locations of the multilevel intake structure.

SECTION III - SURVEYING AND SOILS

8. Surveying.

In January of 1998, section corners and quarter corners were re-established in the field in the area of the water transfer pipeline. Flight line crosses were set on these corners. Horizontal and vertical control was completely established, to determine the pipeline alignment and to verify general ground slopes. Alignment topography is relatively flat and uniform and for the feasibility design stage extensive topographic work was not required. Aerial photography was needed to effectively identify the proposed alignment features and locations of the pipeline, easily and cost effectively. The aerial photography flight was conducted on January 27, 1998. Aerial images have been digitized, cropped, and rectified to a scale of 1" = 100' using the control survey points. Preliminary double window plan and profile sheets have been prepared superimposed with the aerial photography panels, dated 5/6/98, and are attached. Plan and profile views are shown for the entire length of the proposed water transfer pipeline.

9. Topography.

The topography above the dam is steep mountainous terrain. Below the dam, foothills transition into an alluvial fan, and flatlands slope gently to Tulare Lakebed. Elevations are approximately 10,000 feet in the mountains, 972 feet at the top of Pine Flat Dam, and 175 feet in the Tulare Lakebed region.

In the areas for the restoration site and the water transfer pipeline site the land is on the flat lands. No topography is required for the proposed multilevel intake structure because it will be attached to the upstream face of the existing dam.

10. General Basin Description.

The Kings River watershed is located in the southeast portion of the San Joaquin River Basin. The study area is within Tulare, Kings and Fresno counties.

The Kings River Basin is bounded on the north by the San Joaquin River Basin and on the south by Kaweah River Basin. More than half of the mountain portion of the Basin is within the Sierra and Sequoia National Forests.

The Kings River is formed by three main forks, which flow from the high eastern border of the basin in a southwesterly to westerly direction to their junction near the foothill line. As the Kings River leaves the foothills, it enters the flat expanses of the San Joaquin valley. From the mouth of the canyon below Piedra, Kings River flows southwesterly in a single channel close to Centerville, where it divides into numerous channels, reuniting as a single channel below Centerville bottoms. The capacity of the river system decreases progressively downstream to 11,000 cfs at the head of Army Weir where the flow is divided between the Kings River North and the Kings River South. Water in Kings River South that is not diverted terminates into the Tulare Lakebed, a closed basin with no natural drainage outlet.

11. Seismicity.

Pine Flat Dam is within 55 miles of the Kern Canyon and Sierra Nevada Faults, 65 miles from the Owens Valley Fault, and 90 miles from the San Andreas Fault.

The Corps of Engineers performed an earthquake analysis of Pine Flat dam in 1987 and concluded that the dam is capable of withstanding, under a gross pool condition, a 0.32g, maximum ground acceleration without earthquake - induced cracking of the dam structure.

12. Soils.

Soil information is not required for the proposed multi-level intake or the 143.5 acre restoration site (at Byrd Slough) downstream of the dam near the Friant-Kern Canal and Kings River. However, the proposed water transfer pipeline will require some sub-surface exploration work. To date, soil information has been obtained from the USDA Soil Conservation Service. The information consists of 1) a Soil Survey of the Eastern Fresno Area, California, dated October 1971. Sub-surface soils beginning from Dry Creek are Hesperia sandy loams, Traver sandy loams, Tujunga loamy sand, Traver fine sandy loams, Fresno fine sandy loams, Playas, Cajon coarse sandy loam, Calhi loamy sand, Cajon loamy coarse sands, Hesperia sandy loams, and pond fine sandy loams. Most if not all of the areas identified as Playas are now under agricultural production and surface ponding no longer occurs. The Fresno, Traver and Pond soils are variably saline-alkali affected and are more suited for salt tolerant commodity crops rather than permanent crops.

SECTION IV - STRUCTURAL DESIGN

13. Structural Design.

a. Multilevel Intake Structure - The multilevel intake structure consists of three separate steel (space frame) structures that extend from elevation 953.46 feet (msl) downward to elevation 616.5 feet (msl). Each structure will have 3 - 25-feet x 42-feet (height x width) port openings that will be staggered at different elevations. Cladding will be placed on the space frame to enclose each of the structures. Steel plates will be put on the bottom of each of the space frame structures to prevent water from leaking into each structure. Steel gates will be constructed (27-foot by 44-foot) to close off each of the new port openings. The gates will open in the downward direction and will set in a structural channel when completely open. The gates open in a downward direction so that cable failure would not create negative pressures within the space frame structure, thus potentially causing the structure to collapse. There will be a hoist and cable unit (including a motor) for each of the 9 openings. Each structure will have 3 hoists (one per each gate). A trashrack will be placed on the front face of each of the structures to prevent any large debris from entering the port openings and to protect the structure itself. Large structural members will be used to construct each of the above space frame structures. The structural members were tabulated for each of the space frames. All the connection joints will require gusset plates that will be bolted to the structural members. At this stage a typical gusset plate will be shown in the plans. To handle the cost for the gusset plates, bolts, and miscellaneous steel, a 35% contingency is used in the MCACES cost estimate. The total tonnage of steel members required to construct all three space frames is approximately 5000 tons. Refer to Attachment 2, A Structural Design Report for further detail on the structural analysis of the multilevel intake structure as well as the preliminary plan and profile drawings. Attachment 3, A Mechanical Design Report should be referenced for the 44-feet x 27-feet gate details, size of motors and hoist and cable details, and various loadings.

b. Water Transfer Pipeline - A 78-inch diameter Reinforced Concrete Pipe (RCP) pipeline will start at an existing check structure (Station 0+10) along Dry Creek about 310 feet east of the intersection of Howard and Central Avenues. The pipeline will run parallel to Central Avenue until it crosses Highway 145 (Madera Avenue) at Station 110+18 were it would take a 45-degree angle to Station 110+62. At this point, the pipeline will again follow the Central Avenue alignment to Station 348+89 (Intersection with Plumas Avenue alignment). The pipeline will take a right angle turn at Station 348+89 and will follow the Plumas Avenue alignment to the intersection of Malaga Avenue alignment (Station 375+20) were the pipeline will take another right angle turn on to Malaga Avenue alignment. The pipeline will follow the Malaga Avenue alignment to Station 540+80 were a 55-foot inverted siphon will be constructed under Ranch Canal and will continue to Station 557+81. The pipeline will terminate at the Fresno Slough Flood Channel near the upper end of the Mendota Pool near El Dorado Avenue. Refer to Attachment 5 A Water Transfer Pipeline Report, for more detail of the trench required to install the 78-inch diameter RCP pipeline under ground, along the above alignments.

SECTION V - OTHER FEATURES

14. Road Relocation(s).

No road relocations will be required to construct the multilevel intake structure because it will be attached to the upstream side of Pine Flat Dam. This is the same for the restoration site located at Byrd Slough just south of the Friant-Kern Canal near Trimmer Road. The water transfer pipeline (10.6 miles in length) will cross several Fresno county roads during the installation of the pipeline. The major road crossing will be at Highway 145 (Madera Avenue). Prior to the Madera Avenue crossing, the pipeline will have to cross Howard and Goldenrod Avenues. These are cross streets off of Central Avenue. Once past Highway 145, the pipeline will be constructed in open fields. The pipeline along the Malaga Avenue Alignment will cross Butte Avenue near station 401+20. All the road crossings will have to be replaced with base rock and concrete asphalt to meet either the Caltrans and/or the County road crossing criteria.

15. Utility Relocation(s).

No utility relocations are anticipated at Pine Flat Dam itself or for the restoration site located at Byrd Slough just south of the Friant-Kern Canal. For the pipeline, the utilities were identified by a field review. The existence of overhead power lines and buried power or telephone lines (as posted by signs) were documented by the consultant (Provost & Pritchard Engineering Group). Specific locations and existence of utilities were made with the utility companies for the selected pipeline alternative only. Numerous private wells were identified along the pipeline alignment (during the field review) that will be identified by researching the California Department of Water Resources well data information for the final selected alignment of the pipeline. The consultant will continue his research for the KRCD In-Kind work for the local sponsor. Prior to construction of the pipeline, the entire alignment will have to be checked and verified for any under ground utilities. Along the alignment of the proposed pipeline, an inverted siphon will have to been constructed under the existing Ranch Canal. Refer to the drawings at the end of Attachment 5, A Water Transfer Pipeline Report, for the proposed inverted siphon, sheet 13 of 14.

16. Hazardous, Toxic, and Radioactive Waste.

In February 1997, the Corps of Engineers, Sacramento District contracted out to Geofon, Inc. to have a HTRW study done on (1) the restoration site just south of the Friant-Kern Canal (Byrd Slough) and (2) the Kerman Site that consists of Central Avenue, Central Avenue Alignment, Plumas Avenue Alignment and the Malaga Avenue Alignment. The Byrd Slough Riparian and SRA Habitat Site did not appear to have any hazardous or toxic waste sites. Ponds, pits, and sumps or other solid waste or liquid waste disposal areas were not observed during the field investigation of the site. The Kerman area consists of open grassy fields with some orchards along each of the proposed alignments, Central Avenue Alignment, Plumas Avenue, and Malaga Avenue Alignments. A field investigation was performed on each of the proposed alignments and no hazardous or toxic materials were encountered. Evidence of fill ports (to UST's, clarifiers, or sumps) was not encountered within or adjacent to the Kerman Site. Ponds, pits, and sumps or other solid waste or liquid waste disposal areas were not observed on any

portion along the three alignments. Refer to Attachment 7, A Hazardous, Toxic, and Radioactive Waste Report for any further details on this manner.

17. Operations and Maintenance.

a. Multilevel Intake - The new multilevel intake will require an increase in periodic maintenance of all proposed gates, gate seals around each of the gate openings, operation of the nine (9) hoist and cable assembles, maintenance of nine (9) motors (at the top of the three space frames) and maintenance on the three new trashracks. The motors would be replaced about every 20 years and the structural members would be painted and primed about every 10 years. The MCACES cost estimate will reflect the increase in annual costs as well as O&M costs. Refer to Attachment 8 for the costs. It is recommended that each of the three new space frame structures should always have one submerged gate open which is at the highest gate (on each space frame structure) with at least 4-feet of submergence (distance from the top of the pool to the top of the gate). When the penstock is not in use (for each of the space frames) all gates shall be left fully open.

b. Restoration Site - The new restoration site (Byrd Slough Riparian and SRA Habitat Site) will consist of 143.5 acres located just south of the Friant-Kern Canal may require operation and some periodic maintenance. Fences around the mitigation area will need to be maintained.

c. Water Transfer Pipeline - The pipeline will require that the vertical pipe extensions (18-inches in diameter) be inspected on a semi annual basis or as frequently as required to ensure that the pipe extensions operate as designed. The entrance and exit of the pipeline will also require inspection to ensure that the check structure (at the beginning) and the flood channel (at the end) are kept clean of any debris on an annual basis. Refer to Attachment 5, A Water Transfer Pipeline Report for more detail.

SECTION VI - REAL ESTATE REQUIREMENTS

18. Real Estate Requirements.

a. Multilevel Intake - No land is required for the multilevel intake structure since it will be attached to the upstream face of the dam. The existing roadways will be used for tractor/trailers to allow for ingress and egress. The tractor/trailers will be required to bring in several large steel members that will be used in the construction of each of the three (3) space frame structures. A large parking lot is located on Federal land near the left abutment of Pine Flat Dam. This area is large enough to be used for the proposed staging area for the project (2.07 ac).

b. Restoration Site - A new restoration site (Byrd Slough Riparian and SRA Habitat Site) will require that a 143.5-acre parcel of flat land immediately south of the Friant-Kern Canal be obtained for riparian and shaded riverine aquatic habitat.

c. Water Transfer Pipeline – There are 32 different land ownerships that have been identified along the three selected alignment(s) for the proposed pipeline. The general land ownerships were identified by the Real Estate Division, U.S. Army Corp of Engineers, during the development of a gross appraisal for a feasibility report. This information was initially used to identify the major landowners along Central Avenue, Plumas Avenue, and Malaga Avenue Alignments.

Fresno Irrigation District (FID) has some existing canal and pipeline water delivery facilities throughout the southwestern portion of the district. Use of existing FID right-of-way or easements and canal system for the water transfer to the pipeline is a possibility.

Reclamation District 1606 owns the property that the water transfer pipeline would cross and will finally outlet into the James Bypass or the Fresno Slough Flood Control Channel. For more details on the ownerships refer to Attachments 4, A Real Estate Report, and Attachment 5, A Water Transfer Pipeline Report.

SECTION VII - CONSTRUCTION MATERIALS

19. Construction Materials.

a. Multilevel Intake - The materials used to construct the three (3) space frame structures will consist of several large structural steel members put together using gusset plates and bolts to join the members. High strength steel bolts will be used in all the connections. Cladding material will be placed around the perimeter of each of the structures while large steel plates will be bolted to the bottom(s) of the space frames. This will prevent water from getting inside the proposed structures. A structural steel trashrack will be constructed and placed on the front face of each structure to prevent any debris from entering into the new gate openings. Structural be used to lift and lower the new gates, using a motor for each gate. Steel dowels (studs) will be used to anchor the new structures to the upstream face of the dam. Concrete will be required in anchoring the steel dowels in the upstream face of the dam.

b. Restoration Site - Fencing material will be required to construct a fence around the new restoration site. (Byrd Slough Riparian and SRA Habitat Site.)

c. Water Transfer Pipeline - The pipeline will be a 78-inch diameter reinforced concrete pipeline (RCP). The construction material will consist of several reinforced concrete pipeline sections that will be joined together to cover a 10.6 mile reach. The construction material (at the inlet) consists of an 8-feet x 8.67-feet pre-cast concrete box that will serve as a submerged inlet structure for the proposed pipeline. The inlet structure will have a 6.5-feet wide sluice gate constructed at the entrance to the pipeline. Concrete wing walls will be constructed on either side of the proposed concrete box to divert the canal flow into the submerged inlet box. Waterstop compound will be used to seal off the inside bottom of the concrete inlet structure. Along the alignment of the pipeline, steel pipe extensions will extend above ground to either allow excess air to be released or will allow air to enter the pipeline to prevent cavitations. The pipe extensions will be spaced every 1750 feet along the proposed alignment of the pipeline.

SECTION VIII - CONSTRUCTION SCHEDULE

20. Pre-construction Engineering and Design.

Preconstruction, Engineering and Design (PED) will begin after the approval of the feasibility report. Design of the project will be by preparation of a Design Memorandum (DM) that will cover all of the project features. Detail design for the memorandum will be such that after the completion of the DM, effort can move into the preparation of the plans and specifications for each of the project design features. It is anticipated to take two years to complete the DM and the first set of plans and specifications. It will take an additional year to complete the plans and specifications for the multilevel intake structure and the water transfer pipeline.

Construction of the project will be done in three contracts (1) the multilevel intake structure at the upstream face of the dam, (2) the 143.5 acre restoration site downstream of the dam near the Friant-Kern Canal (at Byrd Slough), and (3) construction of the 10.6 mile water transfer pipeline. It is Corps policy to accomplish any mitigation contracts prior to or during the first construction contract. This will require that the 143.5 acre restoration site (at Byrd Slough) be developed first then the multilevel intake structure and the water transfer pipeline can be let at the same time because the construction sites are located in different areas.

21. Schedule - PED and Construction Contracts.

SCHEDULE

Design: (Initiate PED)

Complete DM . . . . . 26 Months after Initiation of PED
Complete 1st P&S . . . . . 30 Months after Initiation of PED
Complete all P&S . . . . . 36 Months after Initiation of PED

Construction:

Award 1st Contract . . . . . 24 Months after Initiation (1st RTA)
Award 2nd Contract . . . . . .34 Months after Initiation (2nd RTA)
Award 3rd Contract . . . . . 44 Months after Initiation (3rd RTA)

SECTION IX - COST ESTIMATE

22. Basis of First Costs.

The detailed estimate of the first cost is based on 1 October 1998 price levels. The first costs per feature have been updated to 1 October 2000 price level per comment from HQUSACE. The estimated cost of lands was developed by a consultant firm working for the Kings River Conservation District (KRCD) for the pipeline and will be reviewed by Real Estate Division. The 143.5 acre restoration site (the Byrd Slough Riparian and SRA Habitat Site) will be handled by Environmental Planning Branch and coordinated with Real Estate Division. The unit prices used for construction items were based on adjustments of average bid prices received for comparable work in the same general area. Costs for Planning, Engineering and Design are based on estimated man-hours of effort for the preparation of a Design Memorandum that will cover the detailed design of (1) a multilevel intake structure, (2) 143.5 acre restoration site, and (3) 10.6 miles of a water transfer pipeline; and preparation of plans and specifications for three (3) separate contracts. Estimated construction management costs were provided by Construction Division based on a two-year construction period. Recommended plan costs were obtained by adding first costs in Table 2A and Table 2B minus any cultural resources costs. The costs shown in Tables 2A and 2B were updated using the MCACES program to FY 2000 price levels by Cost Engineering Branch. Interest during construction cost (IDC) were updated (using MCACES) by using a new notice to proceed date of July 2004. The Recommended Plan costs were obtained by adding the corresponding items shown in Table 2A (the multilevel intake structure) and in Table 2B (the Byrd Slough Riparian and SRA Habitat Restoration Site). The results are shown in a Table 1.

23. Basis of Annual Costs.

The annual costs are based on 1 October 1998 price levels, 7-1/8 percent interest rate and a 100 year project life, and were determined in accordance with EM 1120-2-104. The annual costs per feature have been updated to 1 October 2000 price level using 6-3/8% discount rate, per comment from HQUSACE. Interest During Construction (IDC) has been computed based on a two year construction period. IDC has been charged to the over all project cost during construction. Expenditure schedules are based on uniform expenditures over the two construction years. Operation and maintenance (O&M) costs were computed from the Sacramento District compilation of historical cost factors. The O&M costs and annual costs will be determined for the multilevel intake structure, the Byrd Slough restoration site, and the 10.6 miles of pipeline. Attachment 8, the MCACES cost estimate contains the base line cost estimate. The following gives a summary of the First Costs and Annual Costs for all three (3) design features of the project. Recommended plan costs were obtained by adding the annual costs in Table 2A and Table 2B plus annual O&M costs minus any cultural resources costs. The annual costs for the recommended plan are shown in Table 1.

TABLE 1
PINE FLAT DAM FISH AND WILDLIFE
RESTORATION PROJECT
RECOMMENDED PLAN
SUMMARY OF FIRST & ANNUAL COST
(October 2000 Price Levels, 6-3/8%, 50-year life)

FIRST COST:		
FEDERAL:		
Total Project First Cost -		$23,190
Less Cultural Resources Preservation -		$- 4
Interest During Construction -		$ 2,946
	Sub Total	**$26,132**
NON-FEDERAL:		
Total Project First Cost -		$12,610
Interest During Construction -		$ 1,351
	Sub Total	**$13,961**
TOTAL PROJECT INVESTMENT		**$40,093**
ANNUAL COSTS:		
FEDERAL:		
Interest & Amortization		$ 1,745
Interest @ 6-3/8% (.0688)		
Amortization @ 0.257%		
Amortization Period (50 years)		
	Sub Total	**$ 1,745**
NON-FEDERAL:		
Interest & Amortization		$ 933
Interest @ 6-3/8% (.0688)		
Amortization @ 0.257%		
Amortization Period (50 years)		
	Sub Total	**$ 933**
Operations & Maintenance		$ 56
	Sub Total	**$ 56**
TOTAL PROJECT ANNUAL COST		**$ 2,734**

Notes:
1. Recommend Plan – Add First Costs and Annual Costs from Tables 2A & 2B
2. Number was rounded off to nearest thousands

TABLE 2A
PINE FLAT DAM FISH AND WILDLIFE
RESTORATION PROJECT
MULTI-LEVEL INTAKE STRUCTURE
SUMMARY OF FIRST & ANNUAL COST
(October 2000 Price Levels, 6-3/8%, 50-year life)

FIRST COST:		
FEDERAL:		
Total Project First Cost -		$22,760
Less Cultural Resources Preservation -		$ 0
Interest During Construction -		$ 2,892
	Sub Total	**$25,652**
NON-FEDERAL:		
Total Project First Cost -		$12,240
Interest During Construction -		$ 1,243
	Sub Total	**$13,483**
	TOTAL FIRST COST	**$35,000**
	TOTAL IDC COST	**$ 4,135**
	TOTAL INVESTMENT COST	**$39,135**
ANNUAL COSTS:		
FEDERAL:		
Interest & Amortization		$ 1,713
Interest @ 6-3/8% (.0688)		
Amortization @ 0.257%		
Amortization Period (50 years)		
	Sub Total	**$ 1,713**
NON-FEDERAL:		
Interest & Amortization		$ 902
Interest @ 6-3/8% (.0688)		
Amortization @ 0.257%		
Amortization Period (50 years)		
	Sub Total	**$ 902**
Operations & Maintenance		$ 55
	Sub Total	**$ 55**
	TOTAL PROJECT ANNUAL COST	**$ 2,670**

TABLE 2B
PINE FLAT DAM FISH AND WILDLIFE
RESTORATION PROJECT
RESTORATION SITE
SUMMARY OF FIRST & ANNUAL COST
(October 2000 Price Levels, 6-3/8%, 50-year life)

FIRST COST:		
FEDERAL:		
Total Project First Cost -		$430
Less Cultural Resources Preservation -		$ -4
Interest During Construction -		$ 54
	Sub Total	**$480**
NON-FEDERAL:		
Total Project First Cost -		$370
Interest During Construction -		$108
	Sub Total	**$478**
	TOTAL FIRST COST	**$800**
	TOTAL IDC COST	**$162**
TOTAL RESTORATION SITE INVESTMENT COST		**$958**
ANNUAL COSTS:		
FEDERAL:		
Interest & Amortization		$ 32
Interest @ 6-3/8% (.0688)		
Amortization @ 0.257%		
Amortization Period (50 years)		
	Sub Total	**$ 32**
NON-FEDERAL:		
Interest & Amortization		$ 31
Interest @ 6-3/8% (.0688)		
Amortization @ 0.257%		
Amortization Period (50 years)		
	Sub Total	**$ 31**
Operations & Maintenance		$ 1
	Sub Total	**$ 1**
TOTAL RESTORATION SITE ANNUAL COST		**$ 64**

TABLE 2C
PINE FLAT DAM FISH AND WILDLIFE
RESTORATION PROJECT
WATER TRANSFER PIPELINE
SUMMARY OF FIRST & ANNUAL COST
(October 2000 Price Levels, 6-3/8%, 50-year life)

FIRST COST:		
FEDERAL:		
Total Project First Cost -		$20,810
Less Cultural Resources Preservation -		$ -208
Interest During Construction -		$ 2,624
	Sub Total	**$23,226**
NON-FEDERAL:		
Total Project First Cost -		$11,090
Interest During Construction -		$ 1,237
	Sub Total	**$12,327**
	TOTAL FIRST COST	**$31,900**
	TOTAL IDC COST	**$ 3,861**
TOTAL WATER PIPELINE INVESTMENT COST		**$35,553**
ANNUAL COSTS:		
FEDERAL:		
Interest & Amortization		$ 1,552
Interest @ 6-3/8% (.0688)		
Amortization @ 0.257%		
Amortization Period (50 years)		
	Sub Total	**$ 1,552**
NON-FEDERAL:		
Interest & Amortization		$ 823
Interest @ 6-3/8% (.0688)		
Amortization @ 0.257%		
Amortization Period (50 years)		
	Sub Total	**$ 823**
Operations & Maintenance		$ 49
	Sub Total	**$ 872**
TOTAL WATER PIPELINE ANNUAL COST		**$ 2,424**

PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

ATTACHMENT 1

HYDRAULIC DESIGN REPORT

HYDRAULICS

1. General

The purpose of this report is to document the hydraulic analysis of the proposed multilevel intake structure at Pine Flat Dam, CA. The structure has been analyzed relative to windwave forces, waterhammer, and a three-dimensional analysis of velocities, temperatures and pressures through the structure. The temperature analysis was done to partially verify a two dimensional temperature model study by the Kings River Conservation District (KRCD).

The multilevel intake is a steel structure attached to the upstream face of the dam, providing a new intake structure for the existing three penstocks which transport water to the downstream powerplant. There are actually three separate structures or bays, one enclosing each penstock intake. Each structure has three gates which permit selective withdrawal of reservoir water. There are seven levels of gates to allow withdrawal from a wide range of levels in the reservoir. Each gate is 42 feet wide by 25 feet high. Gates are opened by lowering to ensure that in the event of a hoist failure, the portals will be in an open position. Trashracks are also provided to prevent debris from entering the multilevel intake.

See Figure 1 on the following page which shows a diagram of the gate locations and elevations. The penstocks are numbered from right to left looking downstream. For the remainder of this report, the gates are numbered from top to bottom (1- EL 857.5, 2- EL 829.5, 3- EL 801.5, 4- EL 773.5, 5- EL 745.5, 6- EL 717.5 and 7- EL 657.5). Therefore, gate 2-5 would be the gate servicing Penstock #2 with centerline elevation 745.5.

2. Criteria for Design

The design of the multilevel intake is based upon certain features of the Temperature Control Device designed and constructed at Shasta Dam by the Bureau of Reclamation. The gates are hung from cables supported by hoists on a platform near the top of the dam. Plate girders are used with a slot for each gate. Gates are sized for a maximum velocity of two to three feet per second.

During turbine operation, the gate providing flow to the turbine is fully open and the water surface elevation in the reservoir is at least 4 feet above the top of the gate opening. Gates are opened by lowering so that in the event of the cables snapping, the gate will not be in a closed but an open position. Each penstock will have its own separate bay with three levels of gates. Blended flows will not occur in a bay, that is, during turbine operation, only one gate will have flow at a time in each bay, except during transition to a different gate. When this occurs, the first gate will remain open until the second gate is fully opened. Then the first gate is closed. A trashrack is provided outside the gates.

MULTI-LEVEL INTAKE STRUCTURE
25' X 42' GATE OPENINGS

28' SPACING BETWEEN PORTS

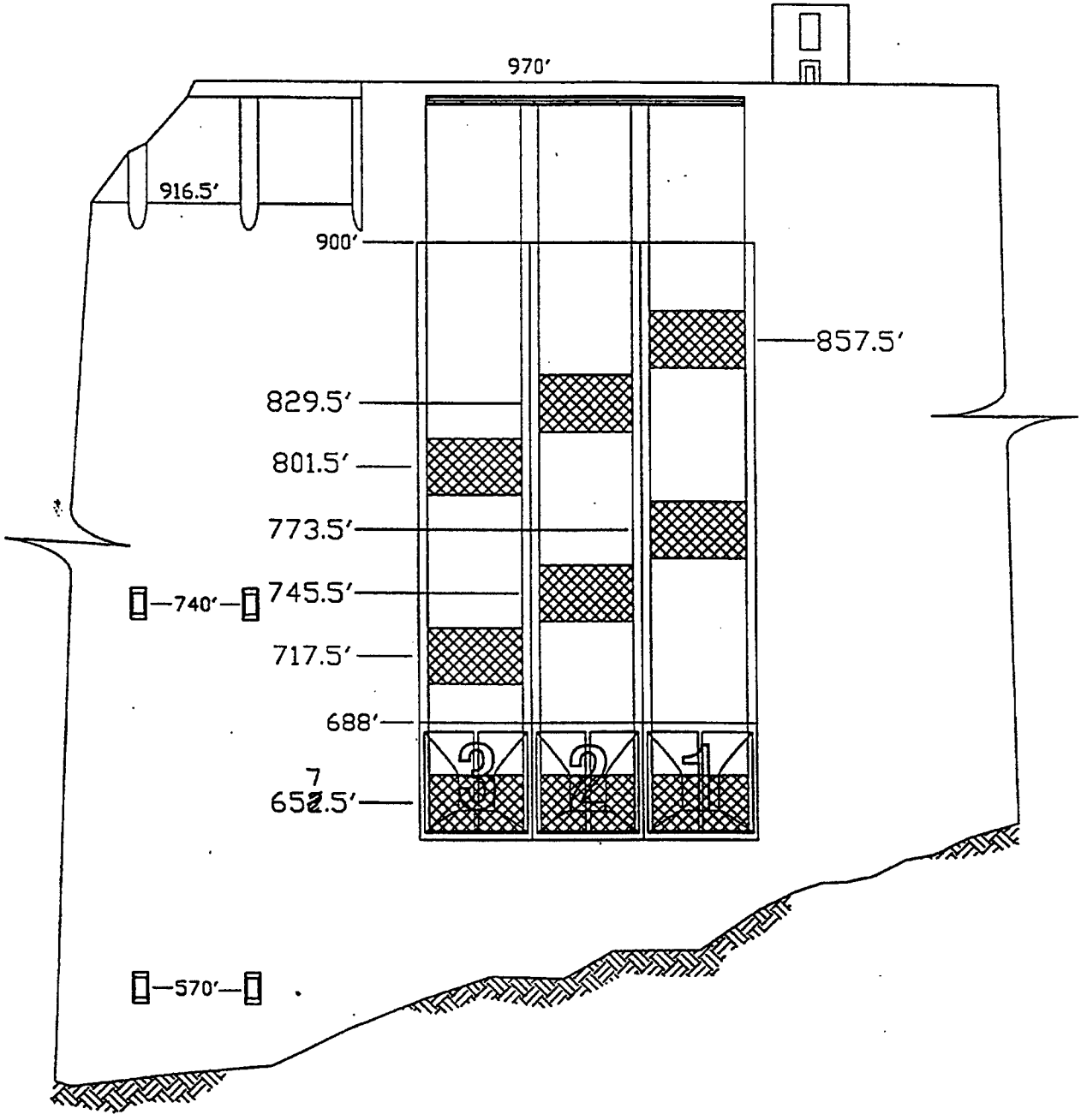


Fig 1

3. Windwave Analysis

This section documents development of the wind generated wave forces for design of the multilevel intake structure.

The 1992 version of the Automated Coastal Engineering System (ACES) developed by the Corps of Engineers was used for calculations of the significant wave height, design wave height and forces on the multilevel intake structure.

The multilevel intake structure will be designed for a wave height equal to the average of the highest 10 percent of all waves (H_{10}), generated by a wind with a 100-year recurrence interval.

a. Significant Wave Height

Wind waves are defined by their height, length, and period. These wave characteristics are a function of the fetch (the horizontal length of the wave-generating area in the direction of the wind), wind velocity, wind duration, and topographic configuration of the reservoir. Current practice in determining the wave pressures acting on a vertical wall requires that the significant wave height be calculated first, and then multiplied by an appropriate factor to establish the selected design wave height. The significant wave height (H_s) is the average height of the highest one-third of the waves in the wave spectrum.

After receiving wind gage data at the reservoir area and comparing this with wind speeds at other reservoirs to the north and south of Pine Flat, the 100-year wind was estimated to be 45 mph. See Figures 2 and 3.

From USGS quad sheets and Pine Flat Dam plans the fetch was determined to be approximately 0.95 mi., water depth at the toe of the structure to be about 400 ft., and the average water depth along the fetch to be 350 ft. (the quad sheet indicated relatively flat contours in the direction of maximum fetch to a point several hundred feet from the dam and then a smooth slope up to the shore of the reservoir).

ACES resulted in a significant wave height (H_s, 33% exceedance) of 1.65 ft. and a wave period of 2.11 seconds. See Table 1 for input parameters and output parameters of the ACES computer run.

b. Design Wave Height

Volume II of the Corps Shore Protection Manual (SPM) states that the selected design wave height depends on whether the structure is defined as rigid, semirigid, or flexible. A rigid structure such as a cantilevered sheet pile wall, where a high wave in the wave spectrum could cause failure of the entire structure, should be designed for a wave height equal to the average of the highest 1 percent of all waves ($H_1 = 1.67H_s$). For a semi-rigid structure such as a steel

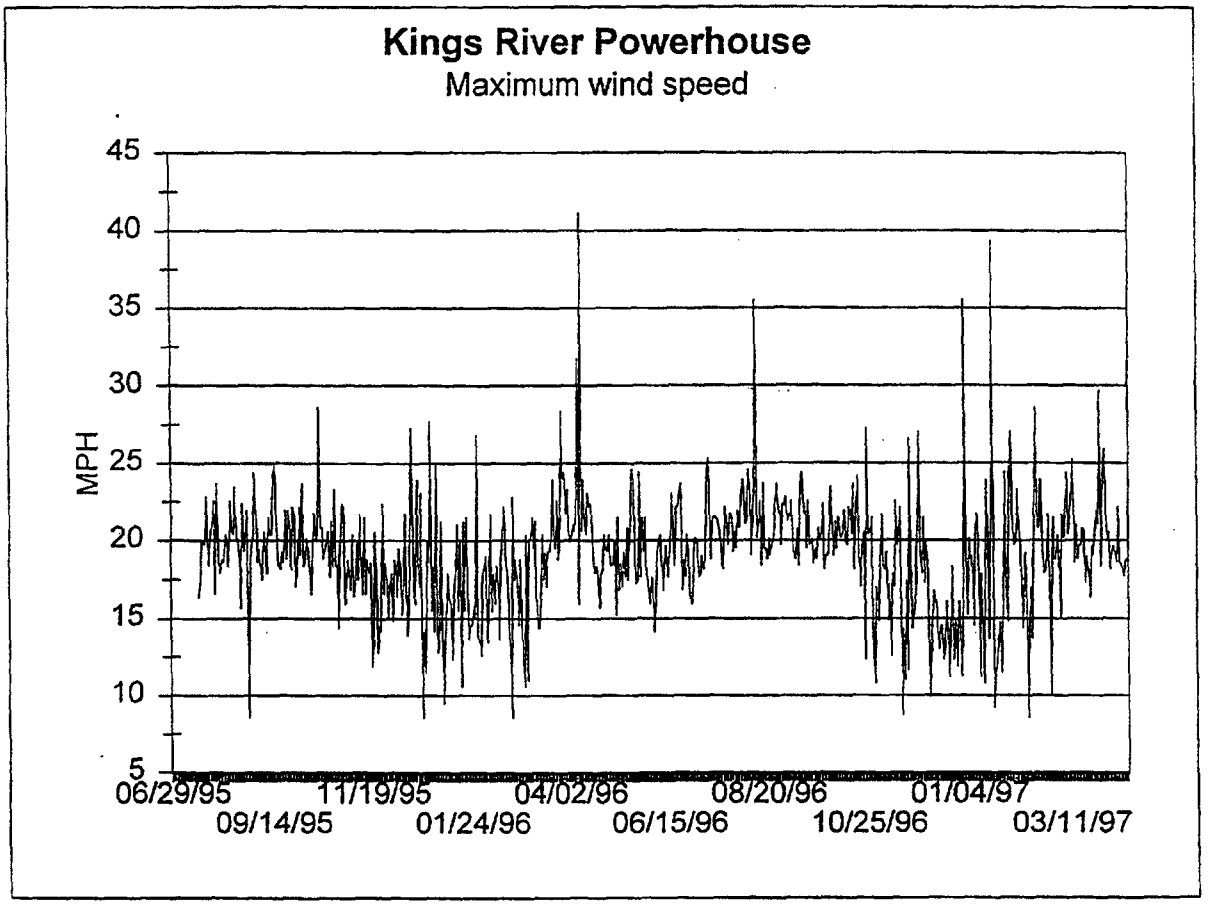

Kings River Powerhouse
Maximum wind speed
MPH
45
40
35
30
25
20
15
10
5
06/29/95
09/14/95
11/19/95
01/24/96
04/02/96
06/15/96
08/20/96
10/25/96
01/04/97
03/11/97

Fig 2

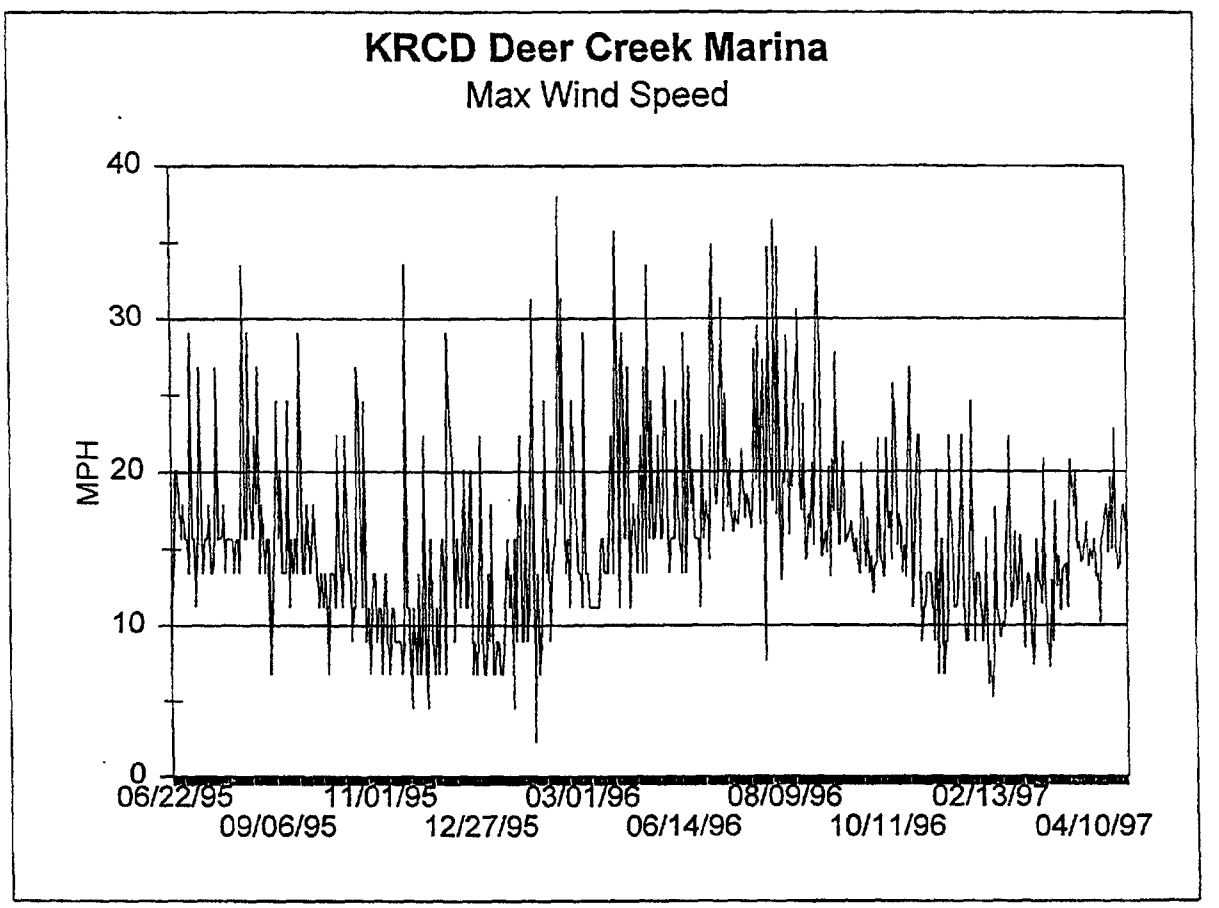

KRCD Deer Creek Marina
Max Wind Speed
MPH
40
30
20
10
0
06/22/95
09/06/95
11/01/95
12/27/95
03/01/96
06/14/96
08/09/96
10/11/96
02/13/97
04/10/97

Fig 3

Table 1

WIND ADJUSTMENT and WAVE GROWTH

Elevation of Observed Wind	Zobs:	33.00	ft	Wind Observation Type
Observed Wind Speed	Uobs:	45.00	mph	----------
Air-Sea Temp. Difference	delT:	0.00	deg C	Inland
Duration of Observed Wind	DurO:	1.00	hr	
Duration of Final Wind	DurF:	1.00	hr	
Latitude of Observation	LAT:	37.00	deg	
Length of Wind Fetch	F:	0.95	mi	Wave Growth Equations
Equiv. Neutral Wind Speed	Ue:	40.28	mph	----------
Adjusted Wind Speed	Ua:	56.35	mph	Open Water Fetch
Wave Height	Hm0:	1.65	ft	Deep-water
Wave Period	Tp:	2.11	sec	Fetch-limited

RAYLEIGH DISTRIBUTION

Energy Based Wave Height	Hmo:	1.65	feet
Peak Spectral Wave Period	Tp:	2.11	sec
Water Depth	Depth:	30.00	feet
	Hrms:	1.17	feet
	Hmed:	0.97	feet
	H(1/3):	1.64	feet
	H(1/10):	2.10	feet
	H(1/100):	2.74	feet

Input Conditions Indicative of Rayleigh Distribution

Nonbreaking Wave Forces on Vertical Walls

Depth from SWL d:	30.00 ft	Wave Reflection Coefficient X:	1.00
Incident Wave Hgt Hi:	2.10 ft	COTAN of Nearshore Slope :	100.00
Wave Period T:	2.11 sec		

Wave Position At Wall	Miche-Rundgren Crest	Miche-Rundgren Trough	Sainflou Crest	Sainflou Trough	Units
Hgt above Bottom	32.71	28.51	32.71	28.51	ft
Integrated Force	27490.59	26648.42	28622.36	27675.17	lb/ft
Integrated Moment about Base	278481.60	256395.30	295473.90	270333.00	lb-ft/ft

NOTE: Miche-Rundgren results are recommended for this case.

sheet-pile cell structure, a wave height equal to the average of the highest 10 percent of all waves ($H_{10} = 1.27H_S$) should be used. Flexible structures such as riprap structures, are usually designed for a wave height between the average of highest 5 percent of all waves ($H_5 = 1.37H_S$) and H_s.

The multilevel intake is a semi-rigid structure and will be designed for an H_{10} wave height. This wave height is equal to $1.27H_s$, or 2.10 feet.

d. Nonbreaking Wave Pressures on the Front of the Structure

ACES was used to determine the wave pressure loading on the multilevel intake structure. The wave pressures were computed following the procedures for non-breaking wave forces at vertical walls.

The pressure distribution on the reservoir side of a vertical wall exposed to wave action is composed of two components, the hydrostatic pressure due to the depth of water at the wall and the wave-induced dynamic pressure caused by acceleration of the fluid particles. Estimates of wave-induced pressure are required to design vertical walls that will resist the applied loads without loss of functionality.

For nonbreaking waves, the pressures are primarily hydrostatic. Nonbreaking waves will generally occur when the water depth at the structure is greater than 1.5 times the maximum expected wave height. The maximum wave height is estimated to be $1.87H_s$ (3.08 feet). Therefore, the multilevel intake will be subject to non-breaking waves.

Design curves presented in the SPM (1984) provide a means of determining nonbreaking wave forces and moments as a function of water depth, water specific weight, incident wave height, and wave period. One set of curves applies to the case of complete reflection ($x = 1.0$) whereas the other set is for a slightly less reflective case ($x = 0.9$). Complete reflection was assumed.

The curves in the SPM represent a composite method using two solution methods for the wave-induced pressure distribution on a vertical wall. ACES uses both solutions and determines the recommended method to use for the data entered. The Miche-Rundgren method provides better fit to laboratory data for steep, nonbreaking waves, but the theory begins to overpredict as the wavelength is increased. On the other hand, the Sainflou method provides better estimates for long, low-steepness waves, but it overpredicts as the waves become steeper. Therefore, the curves in the SPM use the Sainflou method for low-steepness waves and the Miche-Rundgren method for steeper waves. Transition from one method to the other is determined simply by whichever method provides the minimum force or moment for given values of wave steepness and wave height-to-depth ratio. For the multilevel intake, ACES recommended the Miche-Rundgren method.

e. Nonbreaking Wave Pressure on the side of the Structure

It would appear reasonable that wave pressures acting on the side of the multilevel intake structure could be reduced because the dynamic effect of the wave will be parallel to the surface and not acting on it. However, the dam will reflect the incident waves causing the water surface to alternate from crest to trough across the side of the structure. Although the wave height will vary along the side, the dam-reflected wave should be similar in height to the structure-reflected wave, hence the same wave pressures calculated at the front of the structure will be applied to the sides.

f. Conclusions

The still water level (SWL) is the water surface elevation when the pool is still (no wave action). For the purpose of this analysis, the reservoir is full (has the greatest fetch) and the wind is very strong (the 100-year wind acting parallel to the line of the fetch).

The wave pressure was determined for a design wave of height 2.10 ft. and a wave period of 2.11 seconds.

When there is no flow and the crest of this wave acts on the upstream face of the structure, the dynamic wave pressure, positive acting downstream, varies from 0 psf at the crest of the wave to approximately 78 psf at the still water level (SWL) to approximately -38 psf at 30 feet below SWL. With a head loss of approximately 0.5 feet (31.2 psf) across the port intake during maximum release, the total wave plus net hydrostatic pressure, acting downstream, varies from 31.2 psf at the crest of the wave to 109 psf at SWL to -7 psf at 30 feet below SWL.

When there is no flow and the trough of this wave acts on the upstream face of the device, the dynamic wave pressure, positive acting downstream, varies from approximately -93 psf at the trough of the wave, to near 0 psf at 30 feet below SWL. With a head loss of approximately 0.25 feet (15.6 psf) across the port intake during maximum release, the total wave plus net hydrostatic pressure varies from approximately -62 psf at the trough of the wave to about 31 psf at 20 feet below SWL

Deeper than 20 feet below SWL, the wave plus net hydrostatic pressure changes very little and becomes very close to constant at a depth of 27 feet.

Wave pressures acting on the sides of the multilevel intake will be assumed to equal those calculated for the upstream face of the multilevel intake.

See Table 2 and Figure 4 for the output data and a plot of depth versus pressure for the crest of the wave acting on the structure. See Table 3 and Figure 5 for the output data and a plot of depth versus pressure for the trough of the wave acting on the structure.

Table 2

Wavescr.txt

Miche-Rundgren Pressure Distribution
Crest at Wall

Elevation	Wave Pressure	Hydrostatic Pressure	Wave + Hydrostatic Pressure	Net Hydrostatic Pressure	Wave + Net Hydrostatic
(ft)	(lb/ft**2)	(lb/ft**2)	(lb/ft**2)	(lb/ft**2)	(lb/ft**2)
-30.00	-37.86	1872.30	1834.43	31.20	-6.66
-29.67	-37.86	1851.49	1813.62	31.20	-6.66
-29.33	-37.86	1830.68	1792.81	31.20	-6.66
-29.00	-37.86	1809.87	1772.00	31.20	-6.66
-28.67	-37.86	1789.06	1751.20	31.20	-6.66
-28.33	-37.86	1768.25	1730.39	31.20	-6.66
-28.00	-37.85	1747.44	1709.58	31.20	-6.65
-27.67	-37.85	1726.63	1688.78	31.20	-6.65
-27.33	-37.85	1705.81	1667.97	31.20	-6.65
-27.00	-37.84	1685.00	1647.16	31.20	-6.64
-26.67	-37.83	1664.19	1626.36	31.20	-6.63
-26.33	-37.83	1643.38	1605.55	31.20	-6.63
-26.00	-37.82	1622.57	1584.75	31.20	-6.62
-25.67	-37.81	1601.75	1563.94	31.20	-6.61
-25.33	-37.80	1580.94	1543.14	31.20	-6.60
-25.00	-37.79	1560.12	1522.33	31.20	-6.59
-24.66	-37.78	1539.30	1501.53	31.20	-6.58
-24.33	-37.76	1518.49	1480.72	31.20	-6.56
-24.00	-37.75	1497.67	1459.92	31.20	-6.55
-23.66	-37.73	1476.85	1439.11	31.20	-6.53
-23.33	-37.72	1456.02	1418.31	31.20	-6.52
-23.00	-37.70	1435.20	1397.50	31.20	-6.50
-22.66	-37.67	1414.37	1376.70	31.20	-6.47
-22.33	-37.65	1393.55	1355.90	31.20	-6.45
-22.00	-37.62	1372.71	1335.09	31.20	-6.42
-21.66	-37.59	1351.88	1314.29	31.20	-6.39
-21.33	-37.56	1331.05	1293.48	31.20	-6.36
-20.99	-37.53	1310.21	1272.68	31.20	-6.33
-20.66	-37.49	1289.36	1251.88	31.20	-6.29
-20.33	-37.45	1268.52	1231.07	31.20	-6.25
-19.99	-37.40	1247.67	1210.27	31.20	-6.20
-19.66	-37.35	1226.81	1189.47	31.20	-6.15
-19.32	-37.29	1205.95	1168.66	31.20	-6.09
-18.99	-37.23	1185.09	1147.86	31.20	-6.03
-18.65	-37.16	1164.22	1127.05	31.20	-5.96
-18.32	-37.09	1143.34	1106.25	31.20	-5.89
-17.99	-37.01	1122.46	1085.45	31.20	-5.81
-17.65	-36.92	1101.57	1064.65	31.20	-5.72
-17.32	-36.82	1080.66	1043.84	31.20	-5.62
-16.98	-36.72	1059.76	1023.04	31.20	-5.52
-16.65	-36.60	1038.83	1002.24	31.20	-5.40
-16.31	-36.47	1017.90	981.43	31.20	-5.27
-15.97	-36.33	996.96	960.63	31.20	-5.13
-15.64	-36.17	976.00	939.83	31.20	-4.97
-15.30	-36.00	955.03	919.03	31.20	-4.80
-14.97	-35.81	934.04	898.23	31.20	-4.61
-14.63	-35.61	913.03	877.42	31.20	-4.41
-14.29	-35.38	892.01	856.62	31.20	-4.18
-13.96	-35.13	870.96	835.82	31.20	-3.93
-13.62	-34.86	849.88	815.02	31.20	-3.66
-13.28	-34.56	828.78	794.22	31.20	-3.36
-12.94	-34.23	807.66	773.42	31.20	-3.03
-12.60	-33.87	786.50	752.63	31.20	-2.67
-12.26	-33.47	765.30	731.83	31.20	-2.27
-11.92	-33.03	744.07	711.04	31.20	-1.83
-11.58	-32.55	722.79	690.24	31.20	-1.35
-11.24	-32.02	701.47	669.45	31.20	-0.82
-10.90	-31.44	680.10	648.66	31.20	-0.24
-10.55	-30.79	658.67	627.88	31.20	0.41
-10.21	-30.08	637.18	607.10	31.20	1.12
-9.86	-29.30	615.62	586.32	31.20	1.90
-9.52	-28.44	593.98	565.55	31.20	2.76
-9.17	-27.49	572.27	544.78	31.20	3.71
-8.82	-26.43	550.46	524.02	31.20	4.77
-8.47	-25.27	528.54	503.27	31.20	5.93
-8.12	-23.99	506.52	482.53	31.20	7.21
-7.76	-22.56	484.37	461.81	31.20	8.64
-7.40	-20.99	462.08	441.10	31.20	10.21
-7.04	-19.24	439.64	420.41	31.20	11.96
-6.68	-17.30	417.04	399.74	31.20	13.90
-6.32	-15.14	394.24	379.09	31.20	16.06
-5.95	-12.75	371.23	358.49	31.20	18.45
-5.58	-10.08	348.00	337.92	31.20	21.12
-5.20	-7.11	324.50	317.39	31.20	24.09
-4.82	-3.79	300.72	296.93	31.20	27.41
-4.43	-0.08	276.61	276.53	31.20	31.12
-4.04	4.07	252.14	256.21	31.20	35.27
-3.64	8.72	227.27	235.99	31.20	39.92
-3.24	13.95	201.94	215.89	31.20	45.15
-2.82	19.82	176.11	195.93	31.20	51.02
-2.40	26.44	149.70	176.14	31.20	57.64
-1.97	33.91	122.65	156.55	31.20	65.11
-1.52	42.35	94.86	137.21	31.20	73.55
-1.06	51.92	66.25	118.17	31.20	83.12
-0.59	62.77	36.71	99.48	31.20	93.97
-0.10	75.12	6.10	81.22	31.20	106.32

0.41	63.47	0.00	63.47	31.20	94.67
0.94	46.33	0.00	46.33	31.20	77.53
1.50	29.94	0.00	29.94	31.20	61.14
2.09	14.44	0.00	14.44	31.20	45.64
2.71	0.00	0.00	0.00	31.20	31.20

Miche- Rundgren Pressure Distribution

Crest at Wall

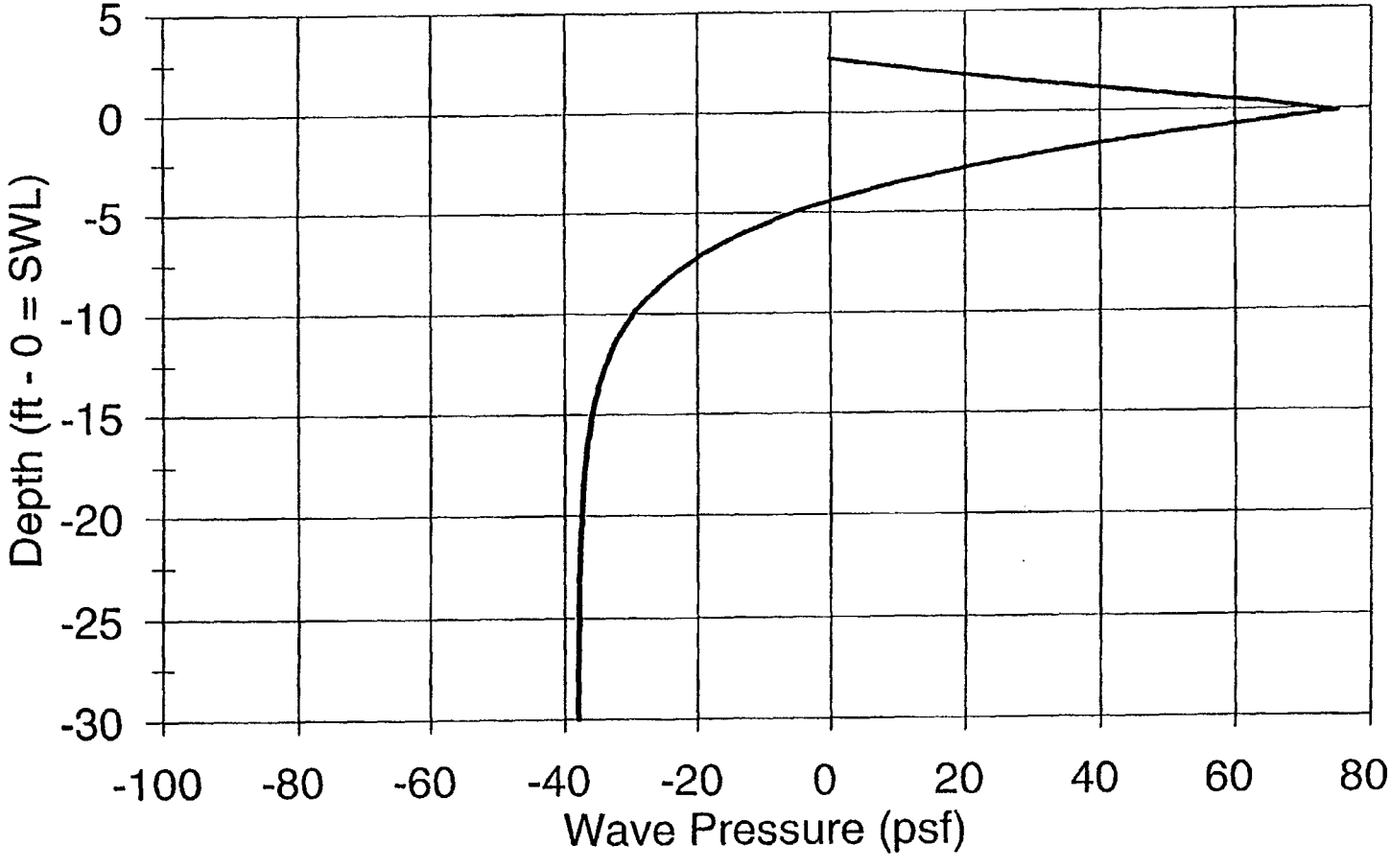


Fig. 4

Table 3

Miche-Rundgren Pressure Distribution
Trough at Wall

Elevation Pressure (ft)	Wave Pressure (lb/ft**2)	Hydrostatic Pressure (lb/ft**2)	Wave + Hydrostatic Pressure (lb/ft**2)	Net Hydrostatic Pressure (lb/ft**2)	Wave + Net Hydrostatic (lb/ft**2)
-30.00	-0.07	1872.30	1872.23	31.20	31.13
-29.67	-0.07	1851.50	1851.43	31.20	31.13
-29.33	-0.07	1830.70	1830.63	31.20	31.13
-29.00	-0.07	1809.90	1809.83	31.20	31.13
-28.67	-0.07	1789.11	1789.04	31.20	31.13
-28.33	-0.07	1768.31	1768.24	31.20	31.13
-28.00	-0.08	1747.51	1747.44	31.20	31.12
-27.67	-0.08	1726.72	1726.64	31.20	31.12
-27.33	-0.09	1705.92	1705.84	31.20	31.11
-27.00	-0.09	1685.13	1685.04	31.20	31.11
-26.67	-0.10	1664.33	1664.24	31.20	31.10
-26.33	-0.10	1643.54	1643.43	31.20	31.10
-26.00	-0.11	1622.75	1622.63	31.20	31.09
-25.67	-0.12	1601.95	1601.83	31.20	31.08
-25.34	-0.13	1581.16	1581.03	31.20	31.07
-25.00	-0.14	1560.37	1560.23	31.20	31.06
-24.67	-0.15	1539.58	1539.43	31.20	31.05
-24.34	-0.17	1518.79	1518.62	31.20	31.03
-24.00	-0.18	1498.00	1497.82	31.20	31.02
-23.67	-0.20	1477.22	1477.02	31.20	31.00
-23.34	-0.22	1456.43	1456.22	31.20	30.98
-23.00	-0.24	1435.65	1435.42	31.20	30.96
-22.67	-0.26	1414.87	1414.61	31.20	30.94
-22.34	-0.28	1394.09	1393.81	31.20	30.92
-22.00	-0.31	1373.32	1373.01	31.20	30.89
-21.67	-0.34	1352.54	1352.21	31.20	30.86
-21.34	-0.37	1331.77	1331.40	31.20	30.83
-21.01	-0.40	1311.00	1310.60	31.20	30.80
-20.67	-0.44	1290.24	1289.80	31.20	30.76
-20.34	-0.48	1269.48	1268.99	31.20	30.72
-20.01	-0.53	1248.72	1248.19	31.20	30.67
-19.68	-0.58	1227.97	1227.39	31.20	30.62
-19.34	-0.64	1207.22	1206.59	31.20	30.56
-19.01	-0.70	1186.48	1185.78	31.20	30.50
-18.68	-0.76	1165.74	1164.98	31.20	30.44
-18.35	-0.84	1145.01	1144.18	31.20	30.36
-18.01	-0.92	1124.29	1123.37	31.20	30.28
-17.68	-1.00	1103.58	1102.57	31.20	30.20
-17.35	-1.10	1082.87	1081.77	31.20	30.10
-17.02	-1.21	1062.17	1060.96	31.20	29.99
-16.69	-1.32	1041.48	1040.16	31.20	29.88
-16.36	-1.45	1020.81	1019.36	31.20	29.75
-16.03	-1.59	1000.14	998.55	31.20	29.61
-15.69	-1.74	979.49	977.75	31.20	29.46
-15.36	-1.91	958.86	956.95	31.20	29.29
-15.03	-2.09	938.23	936.15	31.20	29.11
-14.70	-2.29	917.63	915.34	31.20	28.91
-14.37	-2.51	897.05	894.54	31.20	28.69
-14.04	-2.75	876.48	873.74	31.20	28.45
-13.71	-3.01	855.94	852.93	31.20	28.19
-13.39	-3.30	835.43	832.13	31.20	27.90
-13.06	-3.61	814.94	811.33	31.20	27.59
-12.73	-3.96	794.48	790.52	31.20	27.24
-12.40	-4.33	774.05	769.72	31.20	26.87
-12.08	-4.75	753.66	748.92	31.20	26.45
-11.75	-5.20	733.31	728.11	31.20	26.00
-11.42	-5.69	713.00	707.31	31.20	25.51
-11.10	-6.23	692.74	686.51	31.20	24.97
-10.78	-6.82	672.53	665.70	31.20	24.38
-10.45	-7.47	652.37	644.90	31.20	23.73
-10.13	-8.17	632.27	624.10	31.20	23.03
-9.81	-8.94	612.24	603.29	31.20	22.26
-9.49	-9.78	592.27	582.49	31.20	21.42
-9.17	-10.70	572.39	561.69	31.20	20.50
-8.85	-11.70	552.59	540.88	31.20	19.50
-8.54	-12.80	532.88	520.08	31.20	18.40
-8.22	-13.99	513.27	499.28	31.20	17.21
-7.91	-15.28	493.76	478.48	31.20	15.92
-7.60	-16.70	474.37	457.67	31.20	14.50
-7.29	-18.23	455.10	436.87	31.20	12.97
-6.99	-19.90	435.97	416.07	31.20	11.30
-6.68	-21.72	416.98	395.26	31.20	9.48
-6.38	-23.69	398.14	374.46	31.20	7.51
-6.08	-25.82	379.47	353.66	31.20	5.38
-5.78	-28.13	360.98	332.85	31.20	3.07
-5.49	-30.62	342.67	312.05	31.20	0.58
-5.20	-33.31	324.56	291.25	31.20	-2.11
-4.91	-36.21	306.66	270.44	31.20	-5.01
-4.63	-39.33	288.97	249.64	31.20	-8.13
-4.35	-42.68	271.51	228.84	31.20	-11.48
-4.07	-46.25	254.29	208.03	31.20	-15.05
-3.80	-50.07	237.30	187.23	31.20	-18.87
-3.53	-54.12	220.55	166.43	31.20	-22.92
-3.27	-58.41	204.03	145.62	31.20	-27.21
-3.01	-62.92	187.74	124.82	31.20	-31.72
-2.75	-67.65	171.67	104.02	31.20	-36.45

-2.50	-72.56	155.78	83.21	31.20	-41.36
-2.24	-77.63	140.04	62.41	31.20	-46.43
-1.99	-82.79	124.40	41.61	31.20	-51.59
-1.74	-87.99	108.79	20.80	31.20	-56.79
-1.49	-93.13	93.13	0.00	31.20	-61.93

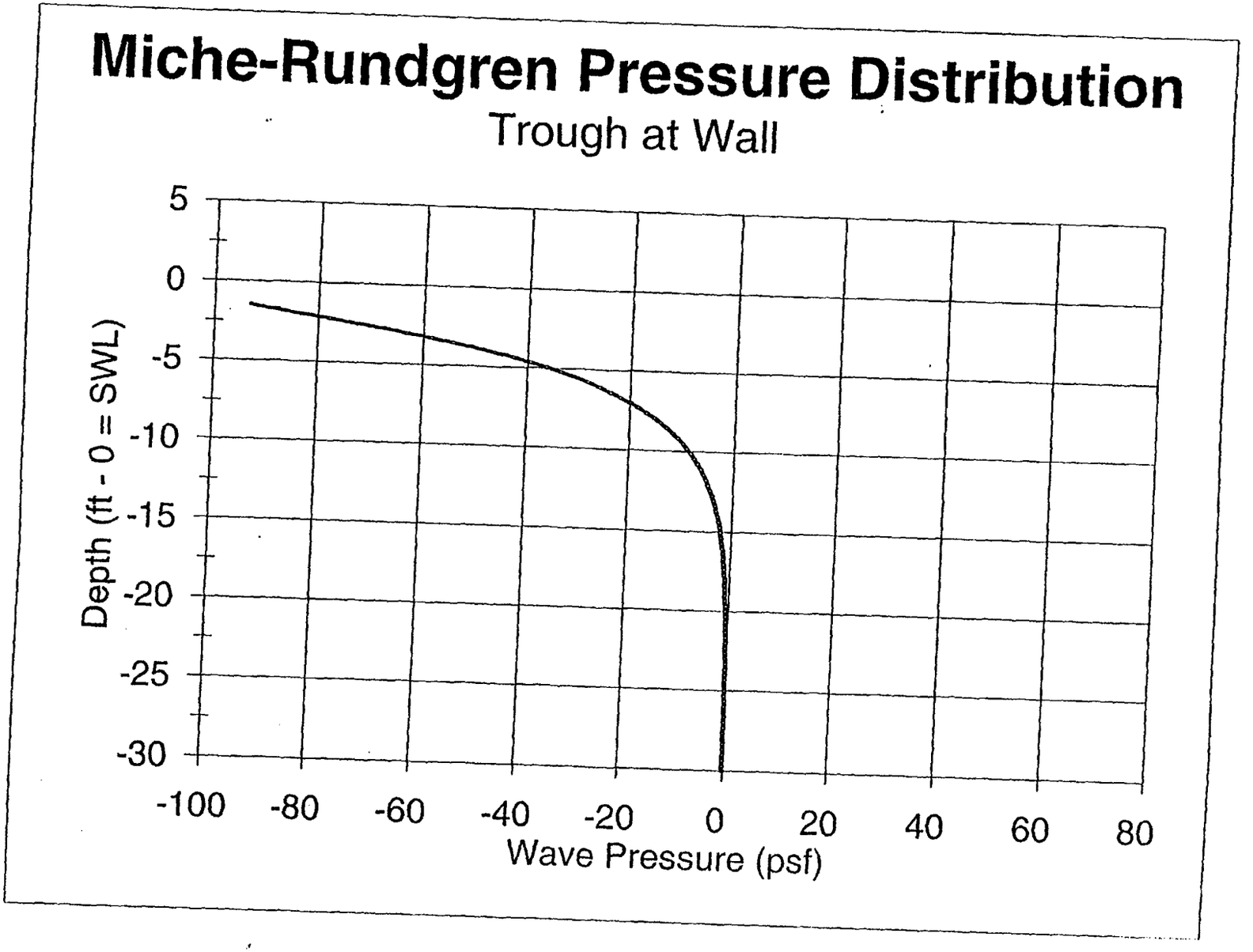

Miche-Rundgren Pressure Distribution
Trough at Wall
Depth (ft - 0 = SWL)
5
0
-5
-10
-15
-20
-25
-30
-100
-80
-60
-40
-20
0
20
40
60
80
Wave Pressure (psf)

Fig 3

4. Water Hammer Analysis

This section documents determination of the water hammer design load to be applied to the multilevel intake structure.

a. General

The computer program WHAMO (Water Hammer and Mass Oscillation), developed by the Massachusetts Institute of Technology and Resource Analysis, Inc. for use by the Corps, was utilized for determining the water hammer loads.

The WHAMO simulation model developed was patterned after a model developed by the Bureau of Reclamation for the recently completed Temperature Control Device (TCD) at Shasta Dam, a somewhat similar multilevel intake structure. The TCD at Shasta Dam has a remotely located low-level intake that is connected to the TCD by a conduit. Operation of that low level intake requires that the intake gates in the TCD be closed. This creates higher waterhammer pressures in the TCD than will occur in the multilevel intake for Pine Flat Dam. The multilevel intake at Pine Flat will always be operated with one intake port open at all times. The intake gates at Shasta Dam are provided with small pressure relief gates that open if the waterhammer pressure in the TCD is too high. To be on the safe side, the lowest level gate in each bay of the multilevel intake at Pine Flat Dam is also provided with pressure relief gates.

The input data for WHAMO simulates the turbine performance, turbine characteristics, the penstocks, and the multilevel intake. The turbine performance curves were provided by KRCD, and were supplemented with data from similar turbines to form complete tables of turbine discharge and efficiency versus head and wicket gate position. KRCD also provided the turbine characteristics.

b. System Connectivity

Refer to Figure 6. DT1 represents the draft tube leading to the downstream tailwater (TW) at elevation 569 feet. T1 represents the downstream turbine with a diameter of 11 feet, a rated head of 345 feet and a synchronous speed of 257 rpm. Conduits C81 to C31 represents the 13.5 foot diameter penstock with a Manning n-value of 0.012. The branching pipeline at node 501 represents the proposed turbine bypass which is expected to be constructed prior to the multilevel intake. This will be a 48-inch diameter pipe leading to a downstream control valve. Conduits from CIN1 to UPR represent the multilevel intake. Note that there is a constriction in the multilevel intake at conduit segment NARR due to the existing geometry of the penstock intake. Note also that the segment LEAK is used to simulate a small amount of leakage. Conduit IN represents the upper-level intake port at elevation 857.5 feet. The reservoir headwater, represented by HW, is set at elevation 955.0 feet. The upper end of the multilevel intake is modeled as a surge tank (S1) of the same size as the multilevel intake in order to allow atmospheric conditions at the top of the multilevel intake structure.

Following Figure 6 is a copy of the WHAMO input file.

```
C  ------------------------------------------------------------------------
C                          SYSTEM CONNECTIVITY
C  ------------------------------------------------------------------------
C
C  *MODEL*
C                                ____                                  EL 965
C                               |
C  EL 955  vvvvvvvvvvvvvvvv     |
C                               |
C                               |
C                               |
C                               |
C                     SURGE TANK (S1)
C                               |
C                               |
C                               |
C                           .140                                      EL 910
C                            |
C                          UPR
C                            |
C                HW .__IN__.150                                       EL 857.5
C                  145       |
C                            |
C                            |
C                            |
C                           LWR
C                            |
C                           .189                                      EL 688
C                          NARR
C                           .190
C                          RTRN
C                           ._CIN1_._C21_.__---> TO T1                EL 662
C                           | 191 201   301
C                           |
C                            \__LEAK___. R2 . HW
C                                      151   51
C
C  ------------------------------------------------------------------------
C
C  FROM CIN1
C   --->
C        \          503 .__V1__.__C52__.__V2__. TW                     EL 595
C       C31           /      504      505     506
C          \         C51
C           \        /
C        501 ._DUM1_.                                                  EL 581.86
C             \      502
C            C71
C              \
C                .___C81__. 701                                       EL 550
C                 601      |
C                          T1
C                          |
C                          . 801                                       EL 544
C                           \
C                            \
C                            DT1
C                              \
C                               \_____________. TW                    EL 527.5
C           EL 520 (low pt)      \__________/ 901
C
C  ------------------------------------------------------------------------
C
```

Fig 6

```
FILENAME MLI.DAT
C   PINE FLAT F&W RESTORATION - MULTI-LEVEL INTAKE DEVICE
C   100.394" DIA. - SIMULATION 60 SEC.
C   RDV  JULY 1998

SYSTEM

EL HW AT 145
EL IN    LINK 145 150
EL UPR   LINK 150 140
EL S1 AT 140
EL  LWR LINK 150 189
JUNCTION AT 150

EL NARR LINK 189 190

EL RTRN LINK 190 191

EL DC1 AT 189
EL DC2 AT 190

EL CIN1  LINK 191 201
JUNCTION AT 191

EL  LEAK LINK 191 151
EL  R2   LINK 151 51
EL HW AT 51

EL C21   LINK 201 301
EL C31   LINK 301 501
JUNCTION AT 501

EL DUM1  LINK 501 502
EL DC3 AT 502
EL C51   LINK 502 503
EL V1    LINK 503 504
EL C52   LINK 504 505
EL V2    LINK 505 506
EL TW AT 506

EL C71   LINK 501 601
EL C81   LINK 601 701
EL T1    LINK 701 801
EL DT1   LINK 801 901
EL TW AT 901

NODE 145 ELEV  857.5

NODE 140 ELEV  910
NODE 150 ELEV  857.5
NODE 189 ELEV  688
NODE 190 ELEV  684
NODE 191 ELEV  662

NODE 151 ELEV  662
NODE  51 ELEV  662

NODE 201 ELEV  662
NODE 301 ELEV  650
NODE 501 ELEV  583.25
NODE 601 ELEV  550
NODE 701 ELEV  550
NODE 801 ELEV  536
NODE 901 ELEV  523

NODE 502 ELEV  595
NODE 503 ELEV  595
NODE 504 ELEV  595
NODE 505 ELEV  595
NODE 506 ELEV  595

FINISH


C   ELEMENT PROPERTIES

RESERVOIR ID HW
  ELEV 955
FINISH
```

```
COND ID IN
  LENGTH  5.  DIAMETER 31.34
  CELE 3465 FRIC .012
  ADDEDLOSS AT 2.5 CPLUS 3.
FINISH

COND ID UPR
  LENGTH  52.5 DIAMETER 44.44
  CELE 3465 FRIC .012
FINISH

SURGETANK ID S1
  ELBOTTOM 910 ELTOP 965
  DIAMETER 44.44 CELE 3465 FRIC .012
FINISH

COND ID LWR
  LENGTH  169.5 DIAMETER 44.44
  CELE 3465 FRIC .012
FINISH

DCHANGE ID DC1
  DUP 44.44 DDOWN 28.57
FINISH

COND ID NARR
  LENGTH  4 DIAMETER 28.57
  CELE 3465 FRIC .012
FINISH

DCHANGE ID DC2
  DUP 28.57 DDOWN 44.44
FINISH

COND ID RTRN
  LENGTH  28 DIAMETER 44.44
  CELE 3465 FRIC .012
FINISH

COND ID CIN1
  DIAMETER 44.44   LENGTH 2
  CELE 3465 FRIC .012
FINISH

C  LEAKAGE
C    AREA = 12-FT^2 PER TURBINE INLET = 3.9088-FT DIAMETER = 2%

COND ID LEAK  DUMMY
  DIAMETER 60
  CELE 3465    FRIC .012
FINISH

C  ----------------------------NOTE----------------------------------------- C
C            LEAKAGE RELIEF VALVE TYPE                                      C
C          ALWAYS 100 % OPEN SO THERE IS NO CHANGE IN LEAKAGE RATE          C
C  ------------------------------------------------------------------------ C

RELIEF ID R2 TYPE 2
  DIAM 3.9088 ELEV 662
    ACTUATION
PRES  0.0     OPEN  100
PRES  95.370  OPEN  100
PRES  200     OPEN  100
ORATE  .5 CRATE  .5
NODE 151  AREA  2827
FINISH

C  --------------PENSTOCK-->TURBINE-->DRAFT TUBE------------------------- C

COND ID C21 VARIABLE
  DISTANCE 0 AREA 1915
  DISTANCE 5.0 AREA 1290
  DISTANCE 16.0 AREA 478
  DISTANCE 31.25 AREA 143.14
  FRICTION 0.012 THICKNESS 1.0 ELAST 35000000
  NUMSEG 3
FINISH
```

```
COND ID C31
  DIAM 13.5  LENGTH 312.5
  CELE 3404 FRIC .012
FINISH

COND ID C71
  DIAM 13.5 LENGTH 110
  CELE 3633 FRIC .012
FINISH

COND ID C81
  DIAM 13.5 LENGTH 36.5
  CELE 3633 FRIC .012
FINISH

TURBINE ID T1 TYPE 1
      SYNCSPD 257.14
      WR2 9500000  DIAMETER 8.366
      FRICTION 298 WINDAGE 298
FINISH

COND ID DT1 VARIABLE
      DISTANCE 0 AREA 314
      DISTANCE 31.25 AREA 450
      DISTANCE 62.5 AREA 600
  FRICTION .012 THICKNESS 1.0 ELAST 35000000
  ENDLOSS AT TW CPLUS 1.0 CMINUS 0.4
  NUMSEG 2
FINISH

RESERVOIR ID TW
  ELEV 569
FINISH


C  ---------------------------BYPASS------------------------------------ C

CONDUIT ID DUM1 DUMMY
  DIAM 13.5
FINISH

DCHANGE ID DC3
  DUP 13.5 DDOWN 3.5
  CPLUS 0.63 CMINUS 0.63
FINISH
C  ---------------------------NOTE------------------------------------ C
C    CPLUS AND CMINUS EQUAL TO BIFURCATION LOSS OF 0.45 AND BEND LOSSES EQUALING
C    0.18 (2 * .09).  (THE SECOND BEND LOSS ACCOUNTS FOR A BEND IN THE 42° PIPE
C    DOWNSTREAM.)
C  ------------------------------------------------------------------- C

CONDUIT ID C51
  LENGTH 125 DIAM 3.5
  THICK 0.5 ELAST 30000000
  FRIC 0.0115 NUMSEG 1
FINISH

VALVE ID V1
  DIAM 3.5 VSCHEDULE 2
FINISH
C  ---------------------------NOTE------------------------------------ C
C    ASSUME BALL VALVE (NO LOSS COEFFICIENT ASSIGNED)
C  ------------------------------------------------------------------- C

CONDUIT ID C52
  LENGTH 125 DIAM 3.5
  THICK 0.5 ELAST 30000000
  FRIC 0.0115 NUMSEG 1
FINISH

VALVE ID V2
  DIAM 3.5 VSCHEDULE 2
FINISH


C    CHARACTERISTICS OF MACHINES AND VALVES

C    TURBINE CHARACTERISTICS
```

```
TCHARACTERISTICS TYPE 1
 GATEPOS
  0.0     7.8     11.0    15.1    22.22   33.33   44.44   55.55   66.67
  77.78   88.89   100.0
 HEAD
  148.28  149.75  151.84  155.03  161.97  173.02  194.67  237.86  315.84
  383.00  429.99  561.59
 Q
  0.0     31.6    51.4    79.5    141.3   261.8   405.9   564.8   738.3
  908.4   1080.4  1225.0
  0.0     33.0    53.7    82.7    144.6   265.9   413.2   573.3   747.5
  920.4   1092.6  1240.1
  0.0     33.9    55.5    84.7    149.9   274.7   423.1   585.5   760.3
  933.7   1111.4  1258.4
  0.0     40.0    62.3    94.6    161.3   289.5   437.4   604.9   784.4
  961.0   1139.1  1284.2
  0.0     47.3    73.0    109.0   182.7   319.6   477.2   652.0   833.3
  1013.1  1195.1  1344.1
  0.0     59.2    88.9    133.4   217.7   371.7   543.5   727.1   913.7
  1096.0  1284.1  1436.7
  0.0     72.2    108.5   161.1   265.6   445.3   648.0   849.9   1056.5
  1255.2  1450.1  1608.0
  0.0     95.6    143.3   213.7   351.7   595.7   837.9   1082.8  1317.1
  1535.0  1752.2  1924.1
  0.0     126.9   187.0   268.4   425.9   685.1   988.6   1270.0  1555.1
  1828.2  2060.5  2239.2
  0.0     156.7   228.9   325.5   505.5   833.3   1111.0  1444.3  1722.1
  2044.2  2277.6  2499.8
  0.0     173.9   254.8   361.8   561.6   896.5   1237.7  1578.9  1989.5
  2263.8  2543.4  2770.4
  0.0     230.8   328.3   460.4   697.5   1083.7  1479.9  1873.6  2276.1
  2666.1  2987.1  3258.6
 EFFICIENCY
  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  0.0     0.0     0.0
  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  0.0     0.0     0.041
  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  0.0     0.052   0.091
  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  0.058   0.122   0.158
  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.110
  0.183   0.249   0.287
  0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.163   0.260
  0.330   0.387   0.428
  0.0     0.0     0.0     0.0     0.0     0.0     0.245   0.375   0.455
  0.512   0.549   0.581
  0.0     0.0     0.0     0.0     0.0     0.443   0.636   0.741   0.813
  0.876   0.893   0.900
  0.0     0.0     0.0     0.0     0.452   0.729   0.814   0.877   0.915
  0.945   0.949   0.931
  0.0     0.0     0.0     0.18    0.54    0.75    0.825   0.88    0.935
  0.947   0.935   0.91
  0.0     0.0     0.0     0.372   0.628   0.782   0.850   0.887   0.910
  0.956   0.944   0.932
  0.0     0.0     0.331   0.526   0.682   0.786   0.841   0.875   0.930
  0.937   0.934   0.916
FINISH

C  VALVE CHARACTERISTICS

VCHAR TYPE 2
   GATE     0        100        100
   DISCOEF  0       .715       .715
FINISH


C  OUTPUT COMMANDS

DISPLAY
  OFF
FINISH

HISTORY
ELEMENT T1  POSITION  Q
NODE 191  PRESSURE
NODE 301  PRESSURE
NODE 501  PRESSURE
NODE 601  PRESSURE
```

```
NODE 701  PRESSURE
ELEMENT S1  ELEV
FINISH

PLOTFILE
ELEMENT T1  POSITION  Q
NODE 191  PRESSURE
NODE 301  PRESSURE
NODE 501  PRESSURE
NODE 601  PRESSURE
NODE 701  PRESSURE
ELEMENT S1  ELEV
FINISH


C    SIMULATION CONTROL COMMANDS

CONTROL
  THETA 0.65
  DTCOMP 0.05 DTOUT 0.2 TMAX 30.0
FINISH

OPTURB   ID T1
  REJECT  TOFF 14
  VSCHEDULE 1
FINISH

SCHEDULE VSCHED 1   (  TURBINE SPEED NO LOAD TO FULL LOAD THEN REJECT )
  T 0   G 0  T  0.25  G 0  T 5.91  G 100  T 14  G 100
TACCEL 0.25
RTCLOSE 6.0
GCUSHION 12
TDECEL 0
RTCUSH 23.0
FINISH

SCHEDULE VSCHED 2
  T 0.   A 90.  T 10.0  A 90.  T 20.  A 90.
FINISH


C NO CHECK


GO
GOODBYE
```

b. Load Cases

Waterhammer surge loads are directly proportional to the velocity of the flow and waterhammer pressures increase as the distance between the turbine and the intake gate (point of relief) increases. Therefore, a maximum waterhammer load will occur when the discharge is at a maximum through the uppermost port and an emergency shutdown or load rejection occurs. Waterhammer surge loads also occur during load acceptance, when startup happens fast and an initial drop in pressure occurs as the wicket gate is opened quickly.

At startup (load acceptance) the turbine was assumed to be operating at no load with the wicket gates closed. Between 0 and 6 seconds the wicket gates would open to 100 % with full load. After 14 seconds of operation a full load rejection would occur. At the start of load rejection there is a 0.25 second delay before start of wicket gate closure. The wicket gates close uniformly from 100 % open to 0 % open in 6 seconds from start of load rejection. However, at a 12 % gate opening there is a cushioning effect such that full closure occurs at 8 seconds following load rejection. Figure 7 shows the opening rate during load acceptance and the closure rate during load rejection.

c. Conclusions

The maximum pressure drop in the multilevel intake during load acceptance was 2.8 feet of pressure below the pressure at startup. The maximum pressure drop in the system occurred in the penstock at the turbine intake. The maximum drop was 69 feet. See Figure 8 which shows the pressure drop in the penstock from the entrance at the base of the multilevel intake to the wicket gates.

The maximum waterhammer pressure increase in the multilevel intake was 3 feet of pressure rise above the pressure at the time load rejection occurred. The maximum waterhammer in the system occurred in the penstock at the turbine intake. The maximum waterhammer rise was 68 feet. The turbine manufacturer, Hitachi, Ltd., estimated a pressure rise of 60.7 feet during design studies, and site commissioning tests in 1984 measured a penstock rise of 67 feet for full load rejection. See Figure 9 which shows the pressure rise in the penstock from the entrance at the base of the multilevel intake to the wicket gates.

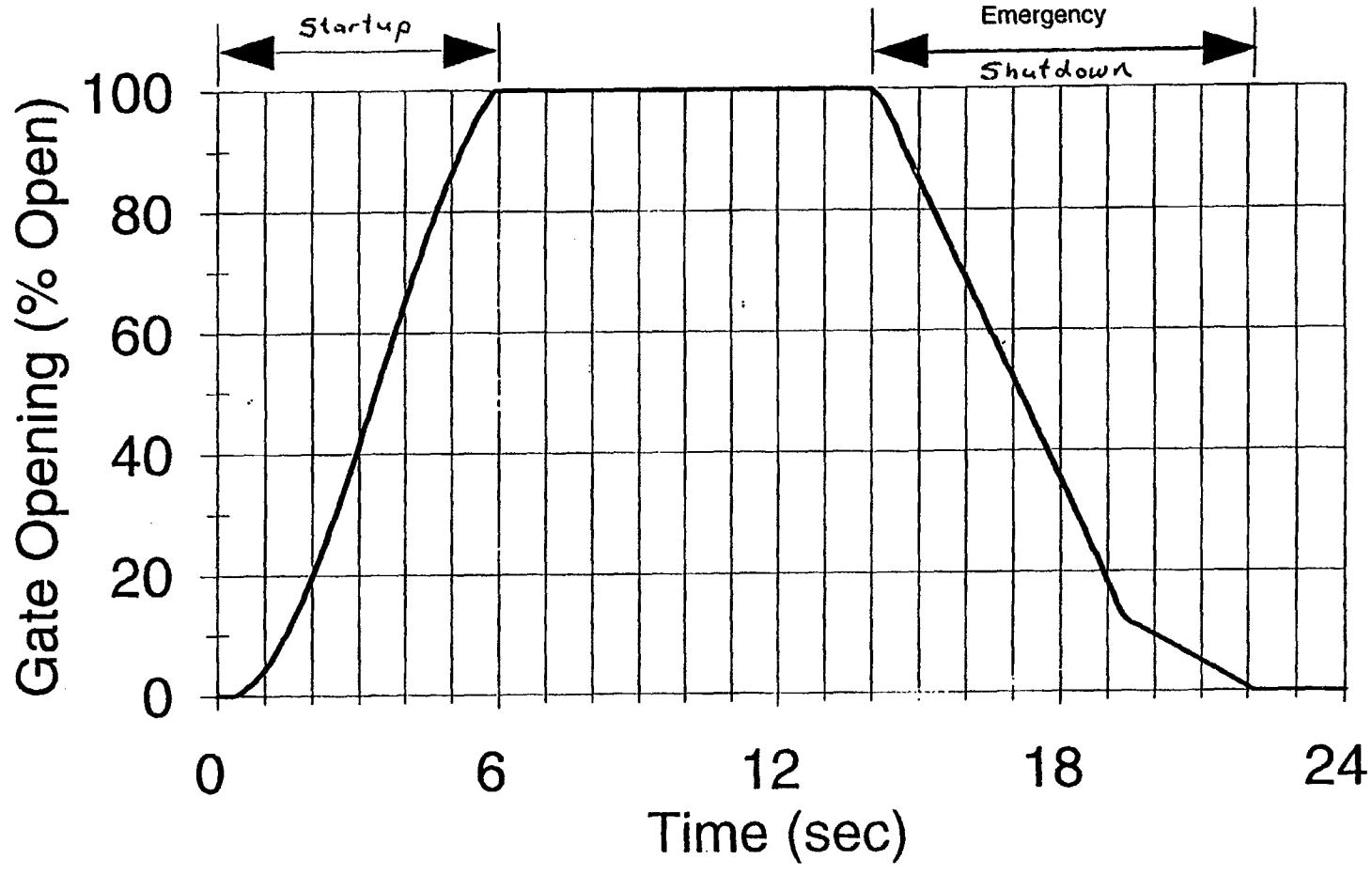
For some additional information see Figure 10, which shows a plot of discharge through the turbine during the first 24 seconds of operation and Figure 11, which shows the water surface elevation in the multilevel intake when load rejection does not occur until 60 seconds after startup. The water surface elevation inside the structure at maximum discharge is about 0.5 feet lower than the reservoir water surface.

The multilevel intake will be designed for the following waterhammer pressures:

Load Acceptance	-2.8 ft (-175 psf)
Load Rejection	3.0 ft (187 psf)

Pine Flat Fish & Wildlife Restoration

Wicket Gate Opening

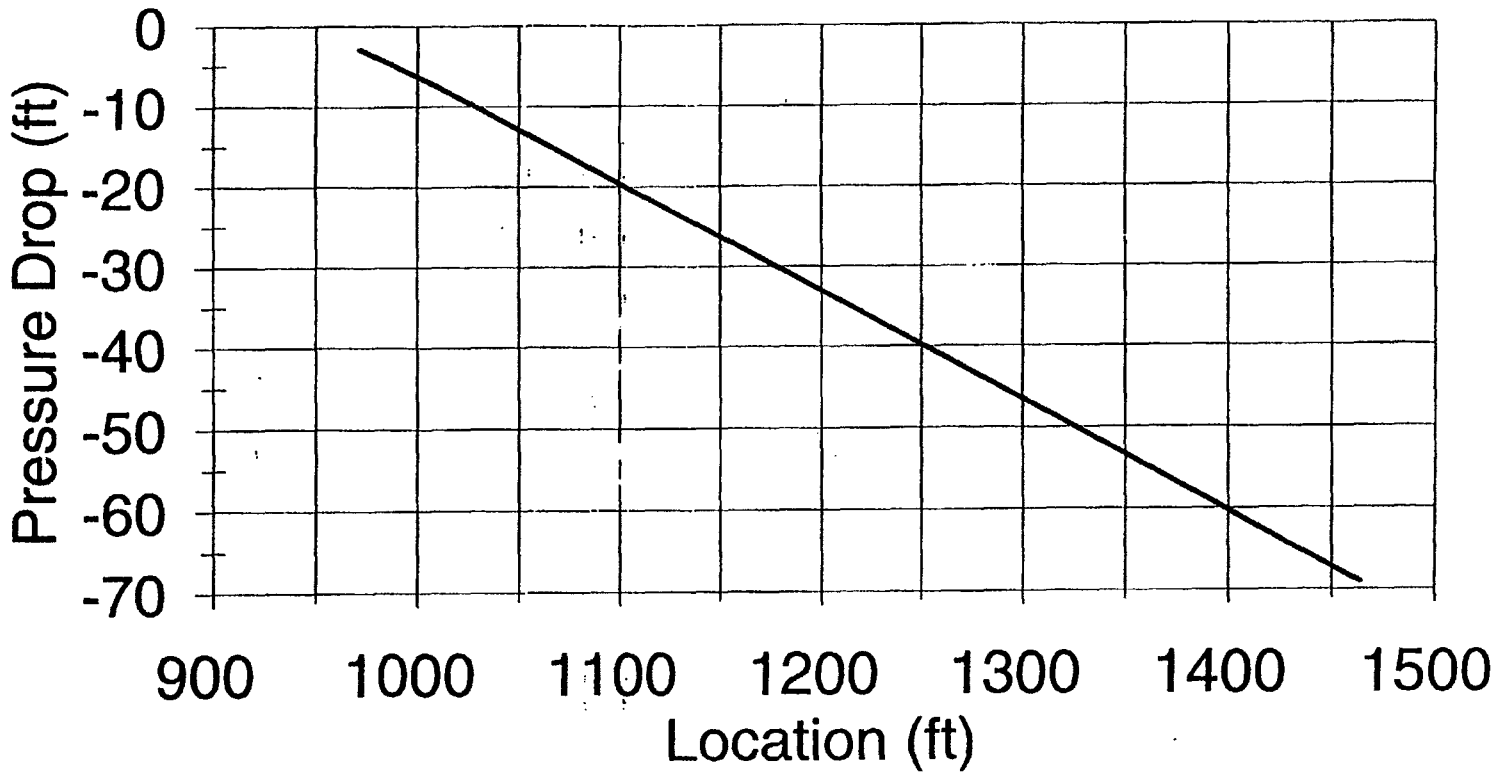


NOTE: Startup = Load Acceptance and Emergency Shutdown = Load Rejection

Fig 7

Pine Flat Fish & Wildlife Restoration

Maximum Pressure Drop Through Penstock During Startup

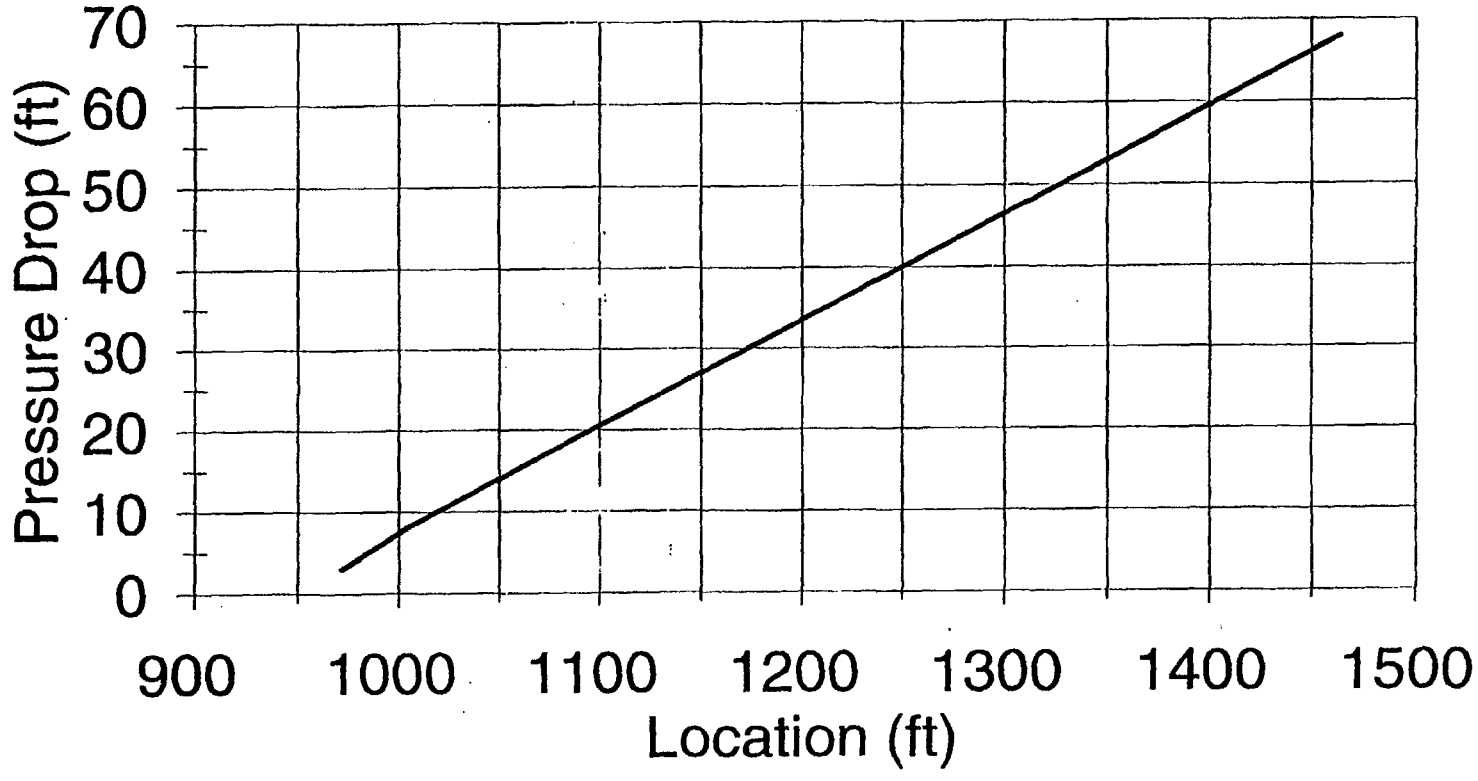


NOTES: Station 972 is just outside Penstock
Station 1000 is within the Penstock at the axis of the dam.
Station 1464 is wiithin the Penstock at the entrance to the turbine.

Fig 8

Pine Flat Fish & Wildlife Restoration

Maximum Pressure Rise Through Penstock During Emergency Shutdown



NOTES: Station 972 is just outside Penstock
Station 1000 is within the Penstock at the axis of the dam.
Station 1464 is wiithin the Penstock at the entrance to the turbine.

Fig 9

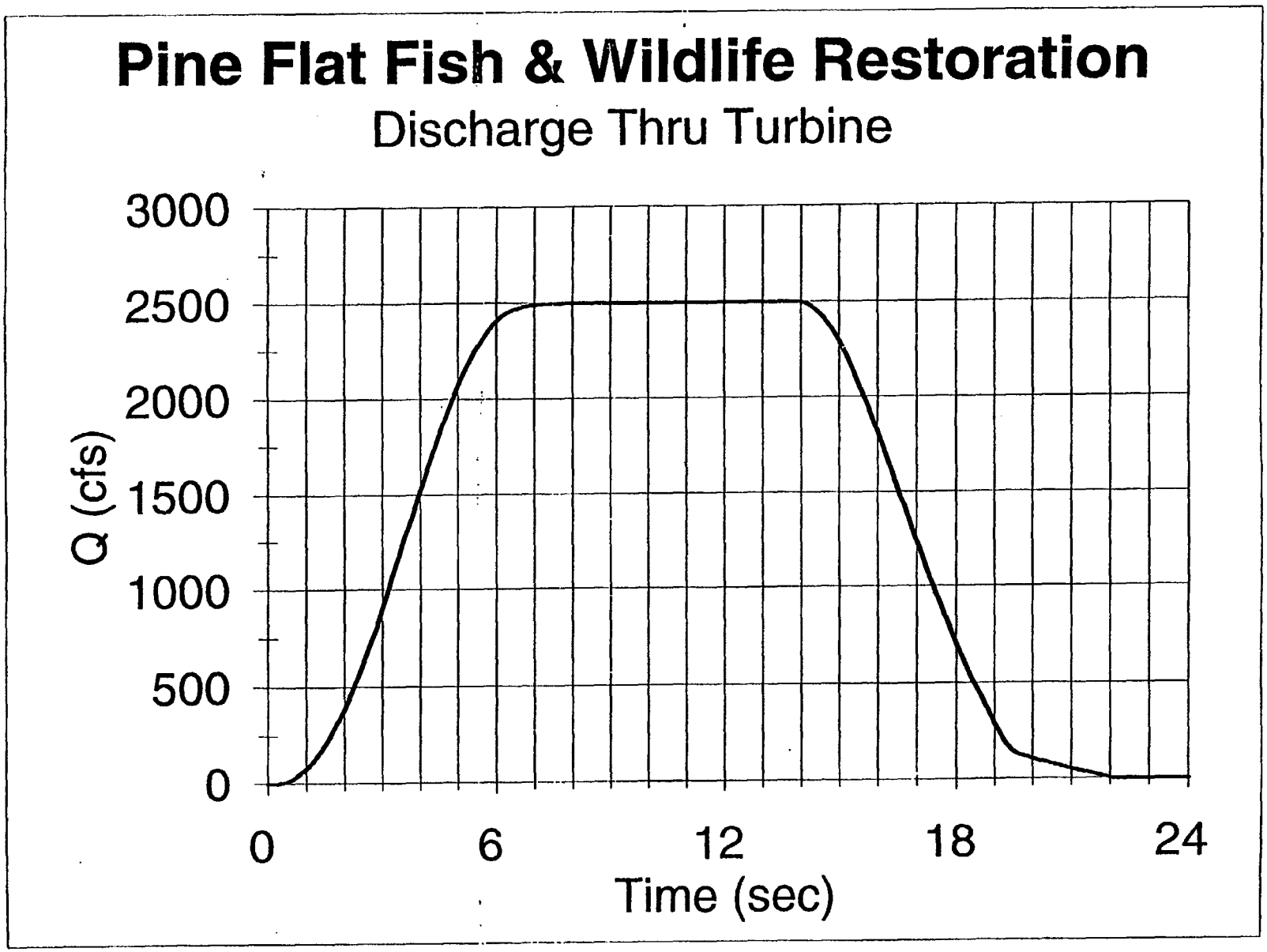
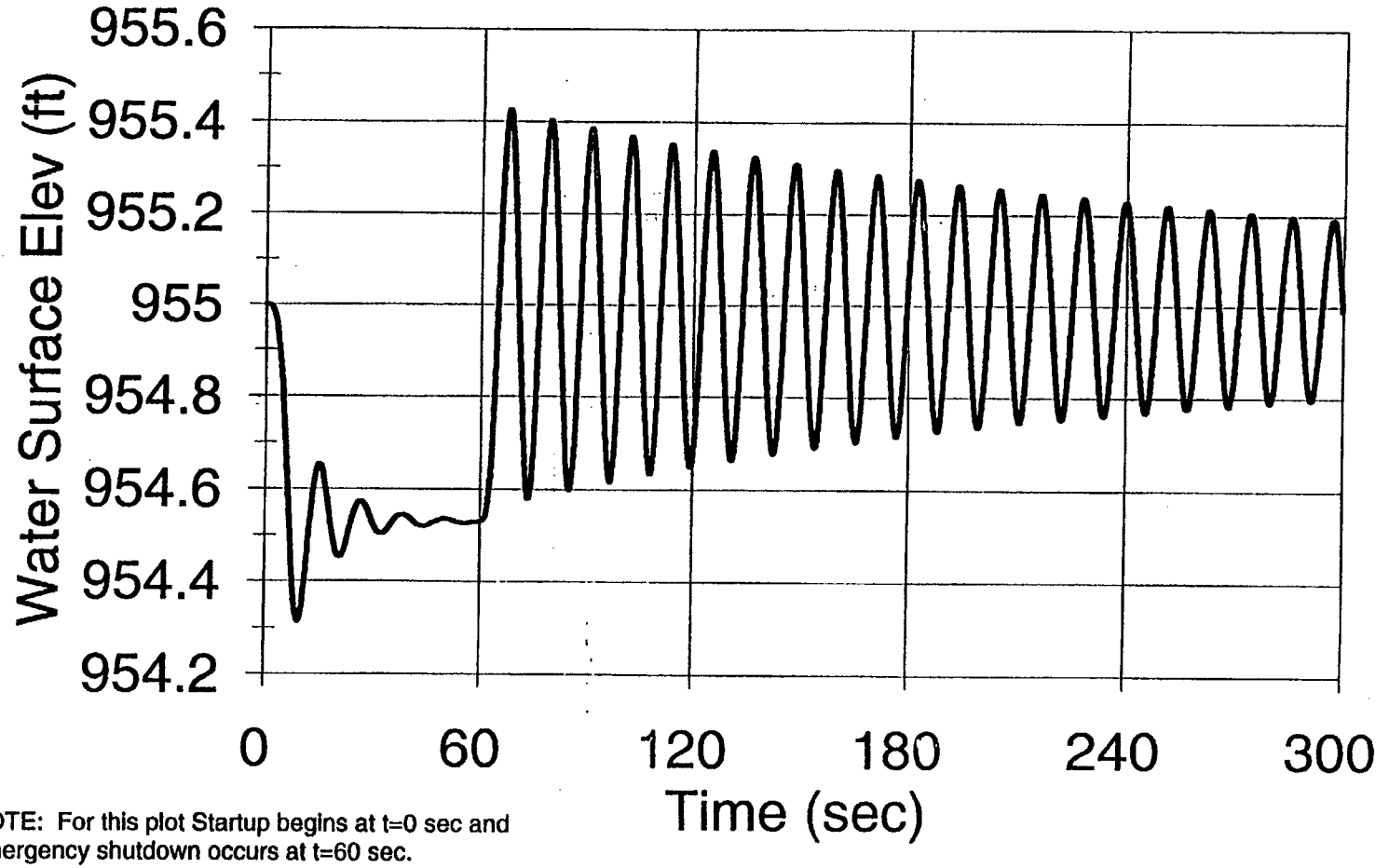

Pine Flat Fish & Wildlife Restoration
Discharge Thru Turbine
Q (cfs)
3000
2500
2000
1500
1000
500
0
0
6
12
18
24
Time (sec)

Fig 10

Pine Flat Fish & Wildlife Restoration

WS Elevation within Multi-Level Intake



NOTE: For this plot Startup begins at t=0 sec and emergency shutdown occurs at t=60 sec.

Fig 11

5. 3D Analysis

In lieu of performing a physical model study at this stage of the study, it was decided to use the MAC3D program to mathematically model the multilevel intake system. The model will investigate the hydrodynamics of flow within the multilevel intake for normal operation with the selected intake gate fully opened and flow control by the downstream turbine. Specifically, the model can determine the velocity and pressure fields approaching the multilevel intake, within the intake, and entering the penstock. Should adverse conditions exist, the geometry of the multilevel intake can be modified in the program to reduce adverse effects. The model was also used to check the temperature results of the two-dimensional CE-QUAL-W2 computer model that was used by KRCD to evaluate intake port location versus temperature output from the reservoir to the downstream river.

The three-dimensional analysis was accomplished using three programs, EAGLEView (a 3-D structured grid generator), MAC3D (the flow solver) and FAST (flow visualization software).

a. EAGLEView

EAGLEView is interactive surface and volumetric grid generation software developed at Mississippi State University. It is a tool for the construction of two- and three-dimensional structured surface geometries, and block-structured volume meshes. It is capable of generating structured grids in PLOT3D format for use in computational fluid dynamics (CFD) programs such as MAC3D.

The user can define his geometry, compute the volume grid, visualize the results, and make changes if necessary. The user can define geometry either by reading in IGES-formatted files, or by using EAGLEView's CAD-like commands. Geometries are constructed in an object-oriented manner: points are used to create curves, which are used to create surfaces, which are used to create grids. Embedded in EAGLEView is a point-and-click interface in which every point, curve, surface, or grid may be accessed and/or queried.

b. MAC3D

MAC3D is a FORTRAN computational program developed by the Corps of Engineers using an iterative process to simulate hydraulics of flow through the structured grid. The input file contains the boundary conditions, numerical representations of various parts of the system, such as roughness coefficients, locations of openings within the structured grid to simulate flow fields, initial flows or velocities through those openings and temperature gradients for the reservoir. From the initial boundary conditions specified in the input file and the grid file, MAC3D performs calculations determining subsequent conditions as time passes. Eventually a calculated steady state condition is reached, where the difference between values at time step n and n+1 become very small.

(1). Background Information (Bernard, 1995)

Computational fluid dynamics (CFD) is now used routinely by researchers and design engineers alike. New CFD codes (numerical flow models) appear every year. Although some of these are applicable for broad classes of flow problems, no single model is likely to gain universal acceptance in the foreseeable future. No one has yet written a general-purpose CFD code that works reliably and efficiently at all Reynolds numbers, Froude numbers, and Mach numbers. In spite of monumental gains in computer power, numerical flow modeling remains a problem-specific art.

MAC3D is a numerical model for buoyant incompressible flow, with emphasis on reservoir hydrodynamics. Buoyant flow in reservoirs falls in a class of problems for which the Mach number is very small. Thus, the density can be assumed to vary only slightly with temperature and not at all with pressure. The resulting density gradients are so small that the governing equations reduce to the incompressible Navier-Stokes equations with a vertical perturbation added for buoyancy. The Froude number is generally small enough in reservoirs to justify neglect of surface waves, and the free surface can be assigned a uniform vertical velocity. In contrast, the Reynolds number may exceed 10^8, and empirical corrections are needed to model the small-scale influence of turbulence.

Some buoyant flow models assume the pressure in a water column to be hydrostatic, i.e., proportional to the weight of the water itself. This eliminates the vertical component of the momentum equation and guarantees that the remaining equations will all be of the same mathematical type, but it is acceptable only when the vertical acceleration is negligible. Deep reservoirs with submerged structures and sharply varying topography generally render the hydrostatic assumption invalid.

In general, MAC3D is intended for hydraulic applications in deep water where vertical motion and vertical acceleration are both important. It uses a variant of MacCormack's method (MacCormack 1969; Bernard 1992) to solve the Reynolds-averaged Navier-Stokes equations for three-dimensional (3-D) incompressible flow, which are discretized with six-sided finite-volume cells. The grid cells can be nonrectangular in cartesian (x,y,z) space, but they are uniformly rectangular in the computational (i,j,k) space where they are indexed by the integer coordinates (i,j,k). This sequential ordering of grid cells in an ijk-array is commonly called a structured grid.

MAC3D uses composite (multiblock) structured grids, i.e., structured grids composed of one or more subdomains (also known as blocks). Composite grids facilitate calculations in which fine grid spacing is needed near a particular structure or boundary feature, but not elsewhere. The individual blocks are rectangular in the computational (i,j,k) space, but they can have any shape and orientation in cartesian (x,y,z) space as long as their grid nodes match along the shared boundaries between the blocks.

For convenience, each grid block has its own local (i,j,k) coordinates. Once the position of a block has been specified in the global (i,j,k) coordinate system, all subsequent input for that block refers to its local (i,j,k) coordinates. Moreover, if a calculation is to be made for a limited portion of a reservoir, then only the grid blocks that encompass the region of interest need to be loaded into the calculation.

MAC3D accounts for turbulence by using a κ-ε turbulence model (Launder and Spalding 1974), which consists of two semiempirical equations for the production and transport of the turbulence energy (κ) and the turbulence dissipation rate (ε). Buoyancy arises from temperature-dependent density variations that add a perturbing force to the vertical momentum equation in the presence of gravity. The transport of heat (temperature) and other passive constituents is governed by advection-diffusion equations, in which the diffusion coefficients are proportional to the eddy viscosity obtained from the turbulence model.

The normal velocity along inflow/outflow boundaries can be imposed either as an unchanging, user-specified distribution or as a time-varying distribution extrapolated from the flow just inside the grid. In the latter case, the extrapolated velocities are obtained from a discrete radiation condition proposed by Orlanski (1976), which transmits internal disturbances out of the grid with negligible reflection. Solid boundaries can be designated as either no-slip (frictional) or slip (frictionless). The shear stress along no-slip boundaries is obtained either from Manning's equation or from an empirical wall function that defines the relation between velocity and distance from the boundary. Free surfaces are idealized as (rigid) slip boundaries.

MAC3D tentatively assumes all solid boundaries and free surfaces to be impermeable and adiabatic (thermally insulated), so that heat and other passive constituents can enter or leave the flow field only through the inflow/outflow boundaries. The actual rate of heat transfer through a free surface depends on external factors such as radiation and wind (which also creates momentum transfer). The model allows the adiabatic constraint to be relaxed in the following manner.

Suppose that a reservoir is initially stratified with cold water at the bottom and warm water at the surface. If all the boundaries are adiabatic (no heat transfer) and impermeable (no inflow or outflow), then diffusion (heat conduction) will gradually eliminate the initial stratification, leaving the reservoir with a single uniform temperature. In some cases, however, one may wish to know only the manner in which a particular flow alters the initial stratification, and not the rate at which the insulated reservoir otherwise comes to equilibrium. Accordingly, if the user so chooses, MAC3D will ignore any change in temperature not produced by the flow itself. In other words, it will ignore background heat conduction. This allows the user to isolate the effect of the flow upon the stratification. Otherwise, the model will allow the temperature to evolve toward an equilibrium state dictated by the imposed flow, the full heat conduction, and the adiabatic boundaries.

(2). Inflow/Outflow Data (Bernard, 1995)

MAC3D accepts user-specified inflow/outflow data along FLUX boundaries and OPEN boundaries. Input velocity distributions may be uniform, linear, or parabolic. Temperature and other passive constituents may be assigned a single value along a particular boundary segment, or otherwise extrapolated from the initial vertical distribution in the reservoir. Uniform values are imposed for turbulence energy and dissipation rate (or eddy viscosity) along all inflow/outflow boundaries. Initial values are held fixed for all time along FLUX boundaries, but they are allowed to change along OPEN boundaries.

(3). Initial Conditions (Bernard, 1995)

MAC3D uses the velocities specified along inflow/outflow boundaries to compute an irrotational, mass-conserving flow (potential flow) inside the grid, and this provides an initial condition for velocity. The net flow rate can be either computed directly from the inflow/outflow velocities or specified independently. In the latter case, MAC3D adjusts the magnitudes (but not the relative distributions) of the inflow/outflow velocities to match the specified flow rate. The initial temperature is a user-specified vertical distribution which can be linear, cubic, or cubic spline.

(4). Flow Development (Bernard, 1995)

Using the initial and boundary conditions, the discrete solution is advanced step by step through time to produce the developing flow. If a steady state is possible for the flow under consideration, the model should converge to that state and hover about it (with small deviations from one time-step to the next).

Because of the alternating directions used in the predictor-corrector scheme, small deviations from the steady state tend to repeat themselves over cycles of eight time-steps. Steady state is usually at hand when the maximum and minimum values of the flow variables remain unchanged for fifty or more of these cycles. In any case, when the real flow has no steady state, the computed flow likewise has no steady state.

If so directed by the input, MAC3D will compute and store the initial flow, and then stop. At this point, the user can examine the printed output, and set the time step to a suitable value. The computation can then be restarted and continued for a specified number of time-steps, after which the time step magnitude can be reset. This procedure can be repeated as many times as necessary.

(5). Flow Visualization (Bernard, 1995)

At the end of each MAC3D run, all the major flow variables are stored in output files that can be used with appropriate flow-visualization software (see the following description of FAST) to create vectors, streamlines, color/contour maps, and other types of plots from the computed results. output from MAC3D is generated in the well-known PLOT3D format, which is accepted by several different visualization packages that are now commercially available. Although the flow calculations themselves can be executed on workstations or even personal computers (PC's), they are much more quickly done on supercomputers (the CRAY at WES in this instance). When a supercomputer is used, the resulting output files have to be transferred back to a workstation or PC for flow visualization.

c. FAST (Flow Analysis Software Toolkit)

FAST was developed by members of the Numerical Aerodynamics Simulation (NAS)

Division at NASA Ames Research Center, Moffett Field, CA. It is a software environment for visualizing and analyzing Computational Fluid Dynamics (CFD) data. FAST consists of a collection of separate programs (modules) that run simultaneously and allow the user to examine the results of numerical simulations by loading data files (the structured grid file from EAGLEView and the output files from MAC3D), performing calculations on the data, visualizing the results of these calculations (flow visualization), and constructing scenes of 3D graphical objects that may be animated and recorded.

d. Analysis

EAGLEView was used to prepare a model of the system based on the structural drawings. This model consists of eleven blocks, one for each penstock, two for each chamber of the multilevel intake structure, one for the reservoir area directly beneath the structure and one for the reservoir outside the structure. The blocks for the structure and beneath the structure are rectangular for the most part, those for the penstocks are a transition from a square opening at the entrance to a circular cross section within the penstock, and those for the reservoir outside the structure radiate outward from the structure in a semicircular manner. The complete geometric model is illustrated in Figure 12.

Different parts of the model can be chosen for each desired grid and the grid resolution can be made relatively coarse or finer. Bare in mind that the more blocks chosen for the grid and the finer the grid resolution, the longer each MAC3D simulation takes, to the order of days, even on a supercomputer. From the EAGLEView model several structured grids were developed to simulate various conditions. Two fairly coarse grids were developed: outside the structure (first grid), and inside the structure (second grid) consisting of one chamber and the penstock intake. A third coarse grid with all eleven blocks was developed to observe flow through the entire system, showing flow from the reservoir through the ports, within the multilevel intake chambers, and well into the penstocks. A fourth grid consisting of a single chamber was constructed to a finer grid resolution to evaluate the effects of the existing trashrack and splitter wall, and simulate flow through the trashrack at the port intake, as well as further identifying potential problem areas.

Figure 13 is an example of a perspective plot (three-dimensional) generated with FAST showing the multi-level intake and approximately 100 feet of penstock with the side cut away. A vertical plane of velocities (shown as smooth colored polygons) is cut through the centerline of the structure. The gate which is being used during the simulation is also shown.

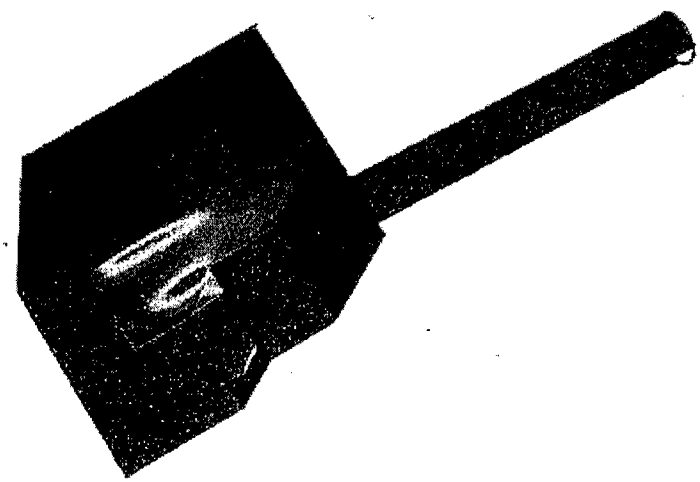
Many different conditions were simulated for the various grids, using a broad spectrum of data from three recent years of observation (1992, 1993 and 1994). These three years were chosen because the available data for this period was complete, compared to other years, and these were the years used in the CEQUALW2 modeling by KRCD. 1992 was classified as a dry year, 1993 as a wet year and 1994 as a normal year.

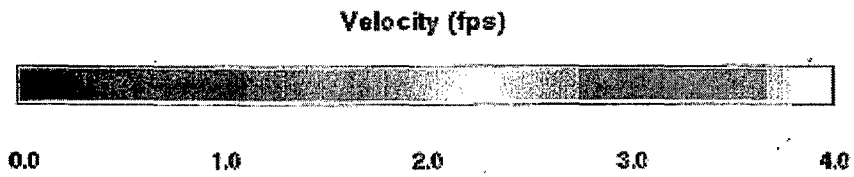
1992 was an extremely dry year in fact, coming at the end of 6 years of drought. The flow conditions and reservoir elevations a few days before the turbines ceased operations in

PINE FLAT F&W RESTORATION

Elev of Gate 745.5 - WSEL 761

NOTE: Perspective Plot of a Vertical Plane Cross-Section Showing Velocities within the Multi-Leve





Fig

PINE FLAT F&W RESTORATION

MAC3D Grid for Multi-Level Intake and Penstocks

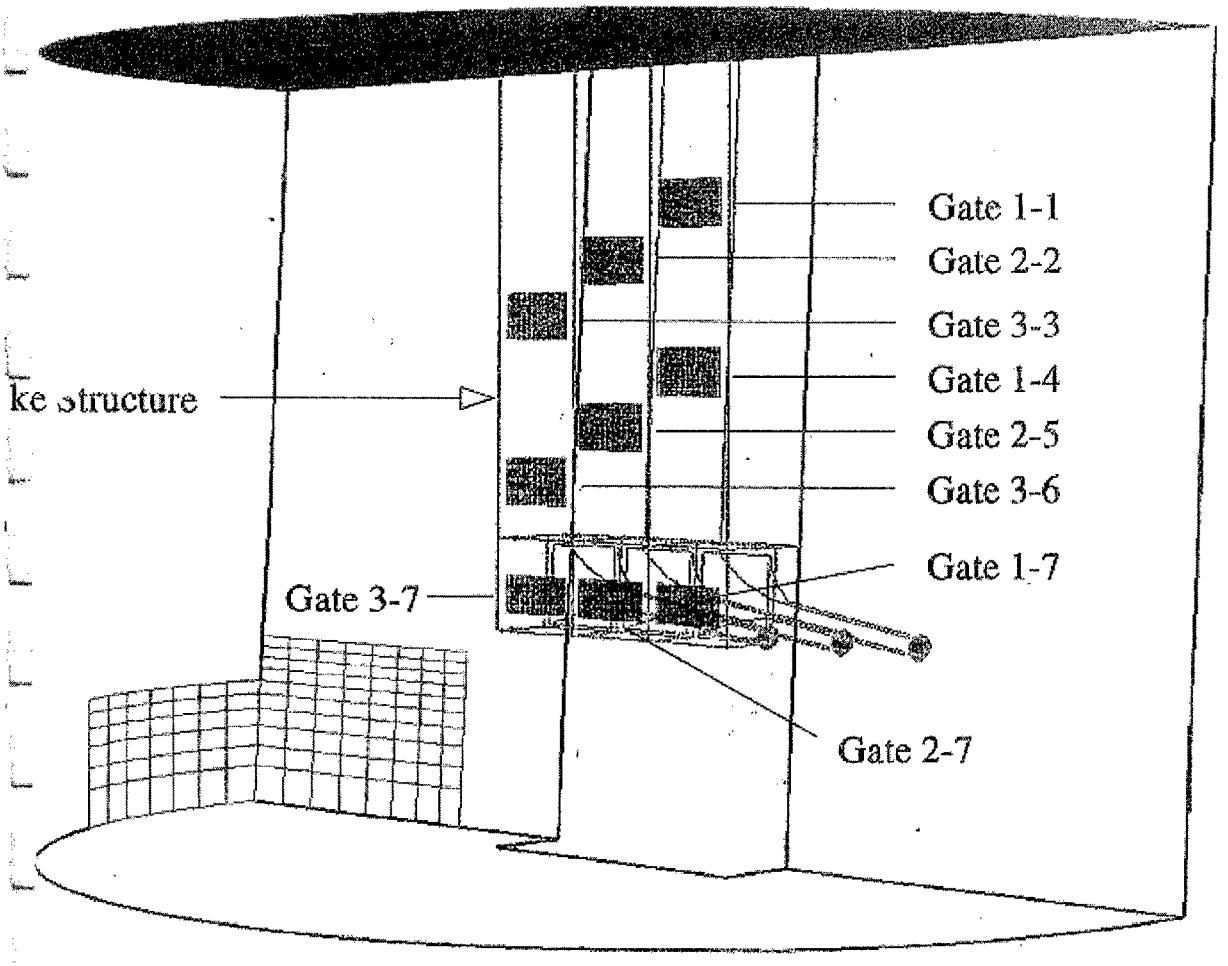


Fig 12

Table 5

Simulation Data for the External Grid

Date	WSEL	Flow Through Each Gate (cfs) 1-1	2-2	3-3	1-4	2-5	3-6	X-7	T - deg C (MAC3D)	T - deg C (CE-QUAL-W2)
1992 (Dry Year)										
04/30/92	806				1722				14.5	12.0
06/30/92	773					796	1044	1700	12.9	15.5
07/09/92	753						2500	1000	15.8	14.0
1993 (Wet Year)										
04/20/93	868		2500	1794					10.4	9.3
06/17/93	931	2500	2500	2500					11.3	11.0
08/26/93	866		2500	1599					17.0	15.3
1994 ('Normal' Year)										
04/21/94	858		1843						14.0	13.3
06/28/94	848		1729	2500	2500				15.4	14.0
07/05/94	829			1876	2500	2500			14.4	13.6
07/12/94	806				1477	2500	1890		14.5	14.0
07/19/94	788					2182	2500	320	14.7	14.0
07/26/94	769						2500	2409	14.1	13.0
09/06/94	707							535	20.0	18.0

Following are plots from the 06/30/92 simulation. The first shows a typical zone of influence outside the multi-level intake. Note that the zones of influence (shown as velocities above 0.1 fps) for adjacent gates overlap.
The second plot shows a grid of velocities at the face of the structure. Note that the grid is shown as from the face of the dam.
The other plots show velocity contours through the centerline of each of the three gates in use that day. Note that the zone of influence extends well in front, to the side and above each gate, even to beyond the centerline of adjacent gates.

Pine Flat - F&W Restoration

Date of Simulation: 6/30/92 WSEL 773

Zones of Influence

Typical Three Gate Operation

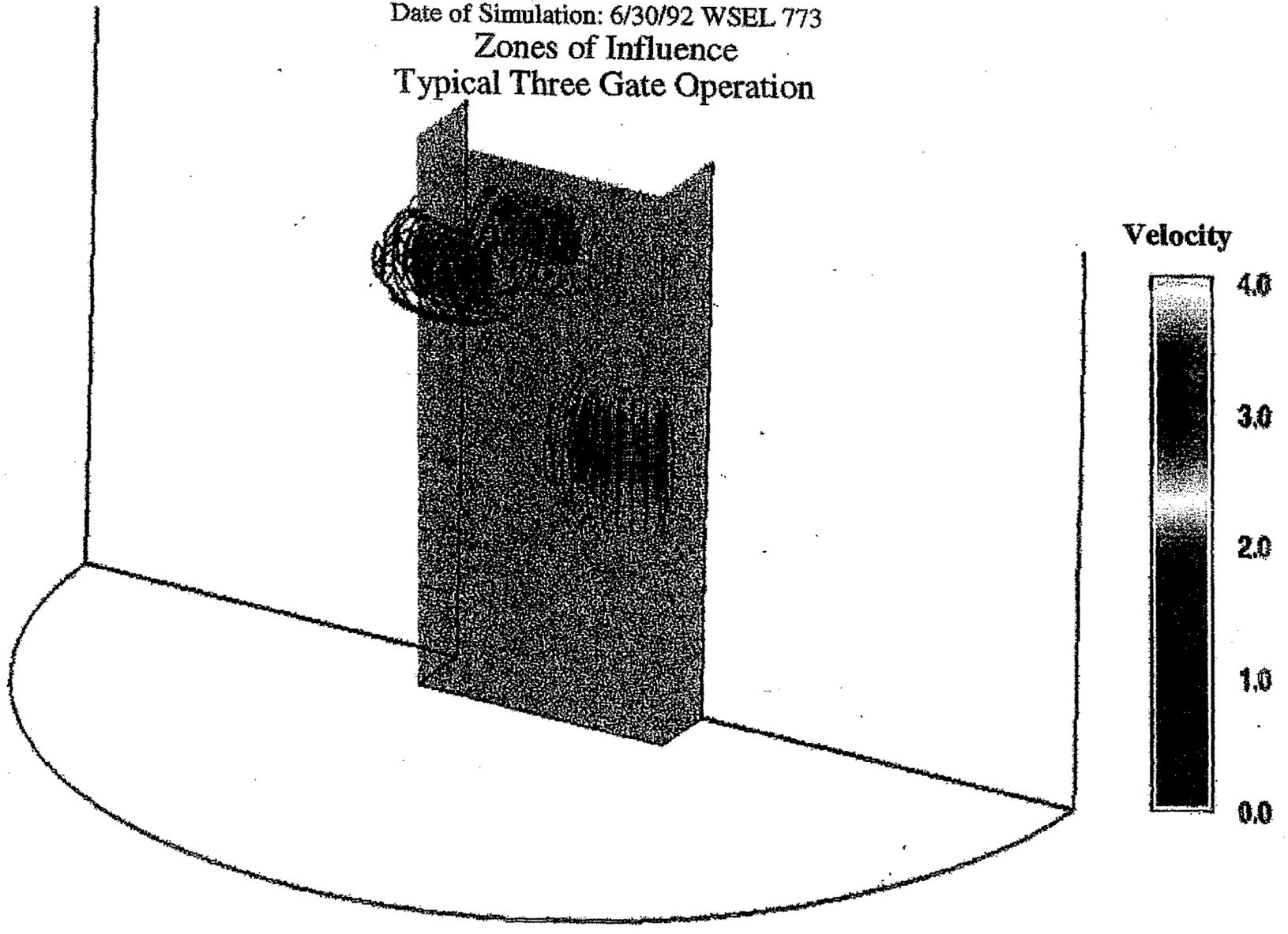


Fig 14

PINE FLAT F&W RESTORATION

VELOCITY FIELDS THROUGH PORTS
(DISCHARGES VARY THROUGH EACH TURBINE)
PORT ELEVATIONS – 657.5, 717.5, 745.5
WATER SURFACE ELEVATION – 773
DATE OF SIMULATION – 6/30/92

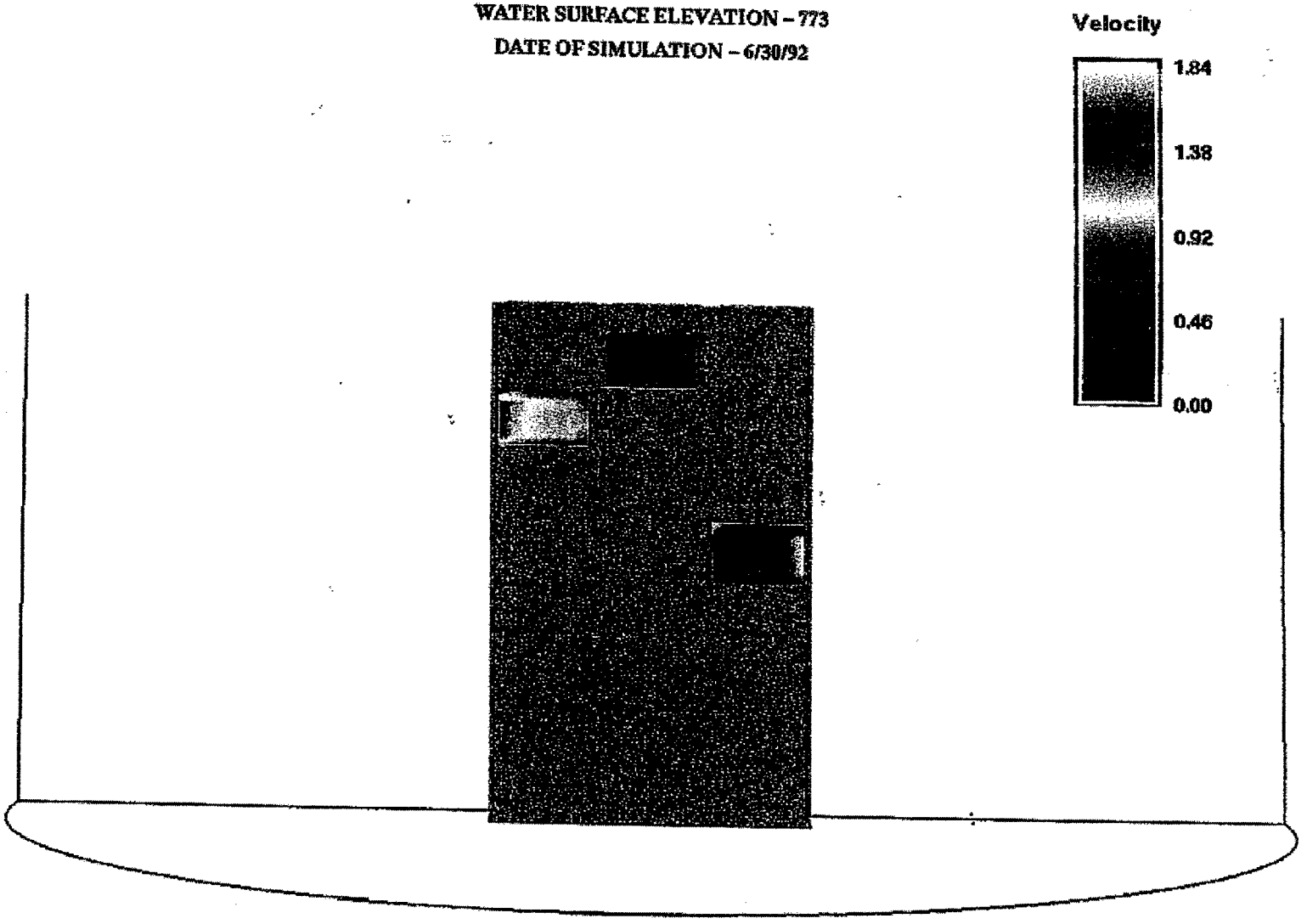


FIGURE 15

PINE FLAT F&W RESTORATION

VELOCITIES THROUGH PORTS

PORT ELEVATIONS – 657.5, 717.5, 745.5

WATER SURFACE ELEV – 773

THROUGH PORT 657.5

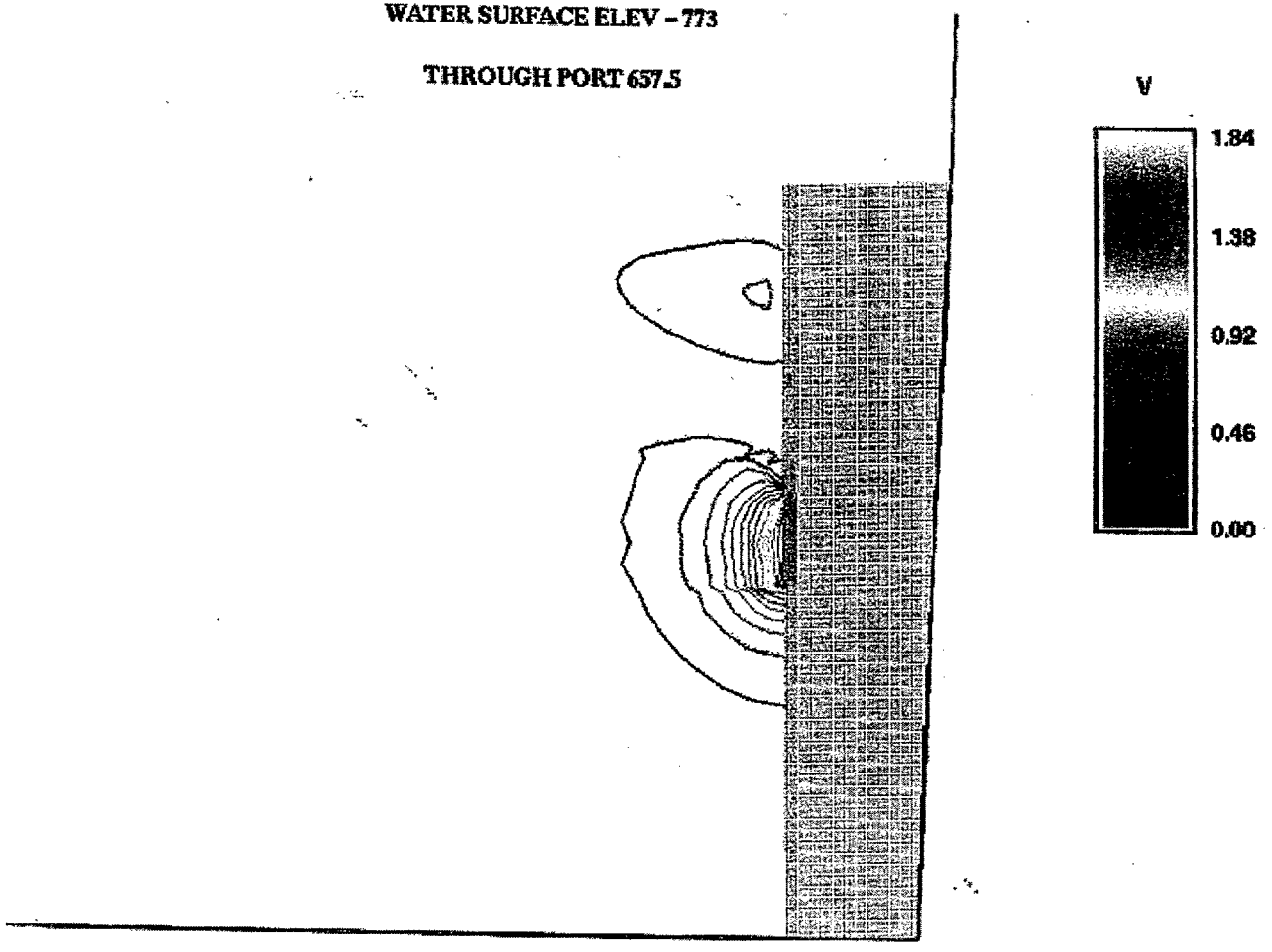


Figure 16

DATE OF SIMULATION: 6/30/92

PINE FLAT F&W RESTORATION

VELOCITIES THROUGH PORTS

PORT ELEVATIONS – 657.5, 717.5, 745.5

WATER SURFACE ELEV – 773

THROUGH PORT 745.5

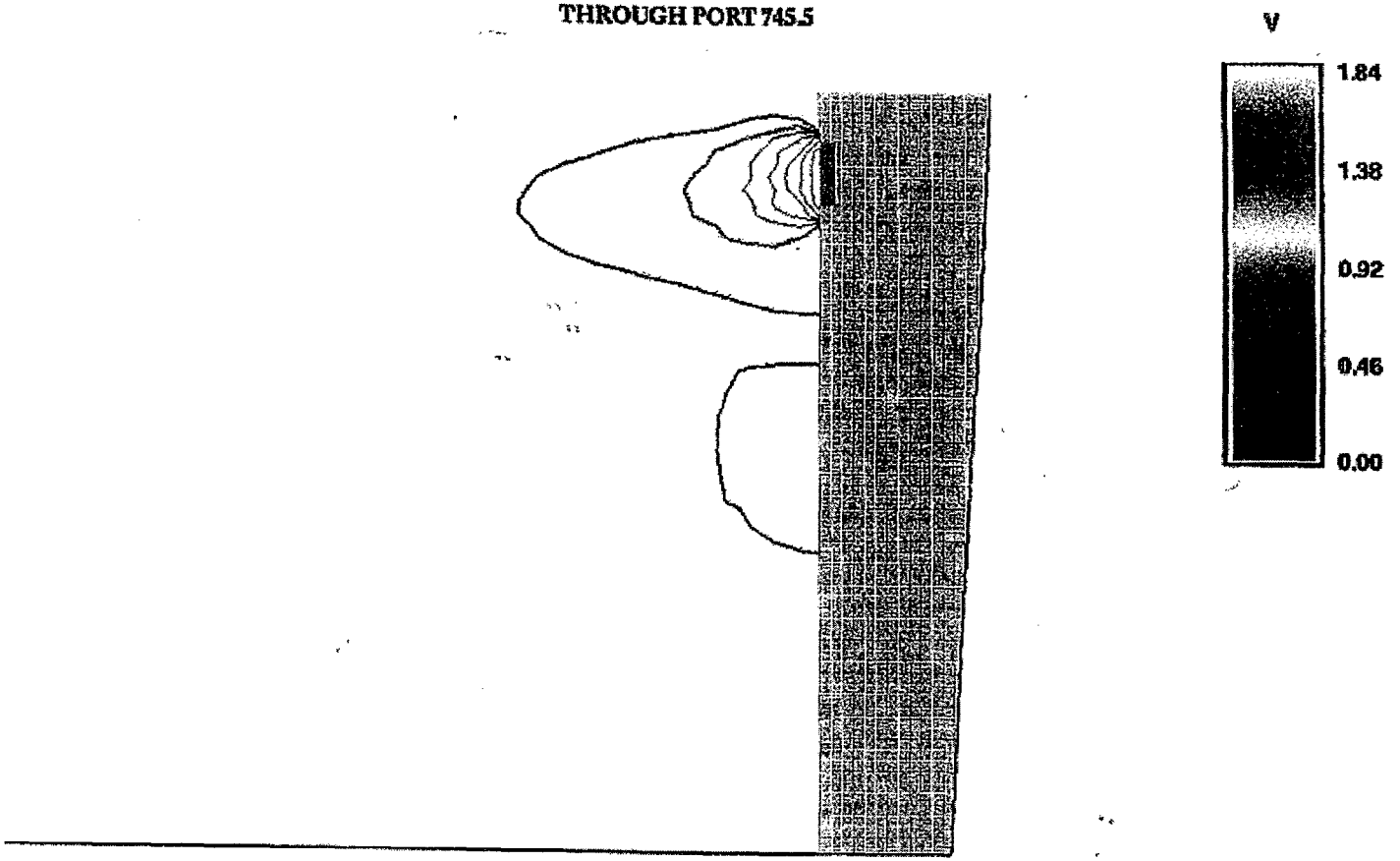


Figure 17

DATE OF SIMULATION: 6/30/92

PINE FLAT F&W RESTORATION

VELOCITIES THROUGH PORTS

PORT ELEVATIONS – 657.5, 717.5, 745.5

WATER SURFACE ELEV – 773

THROUGH PORT 717.5

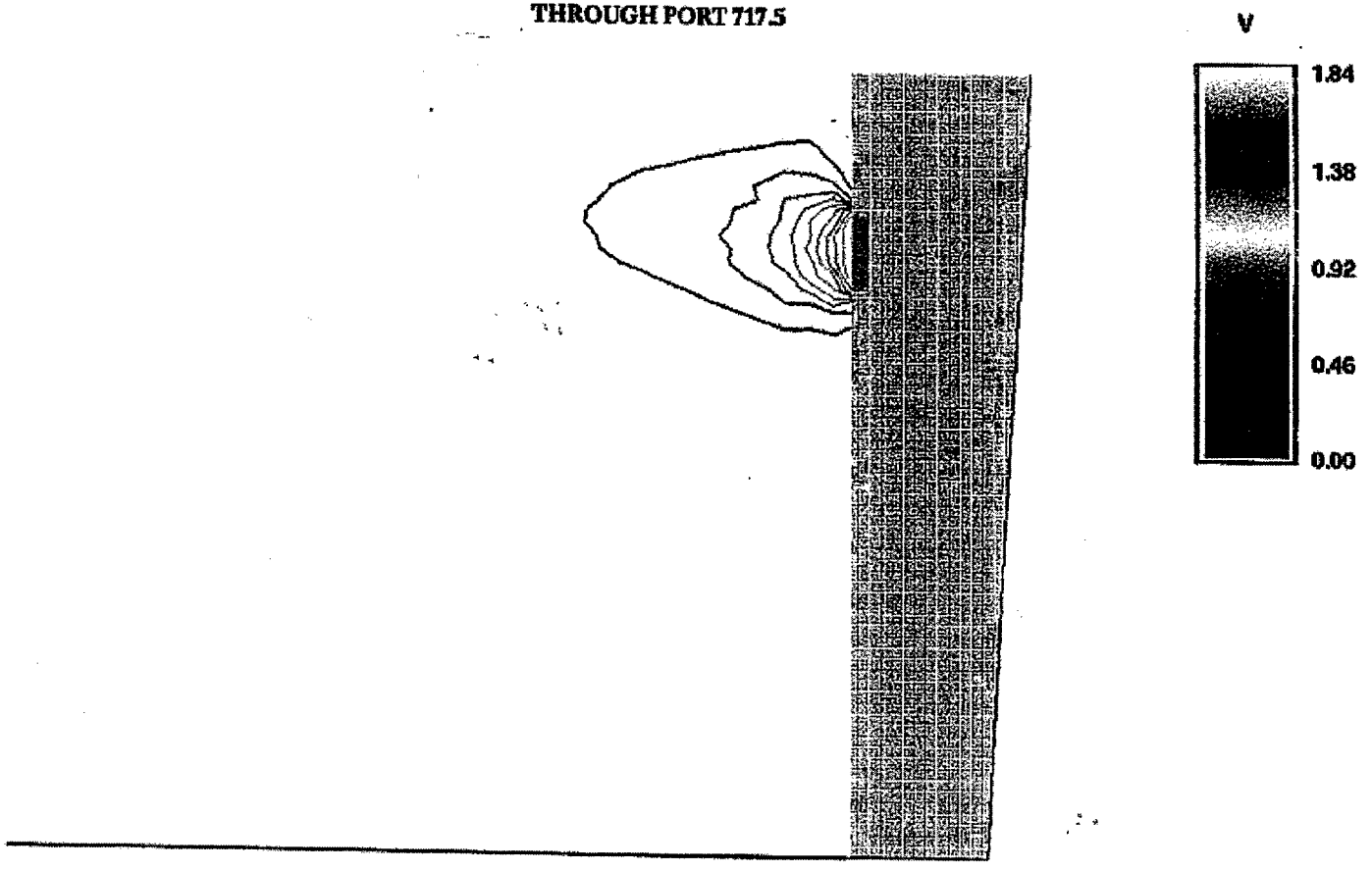


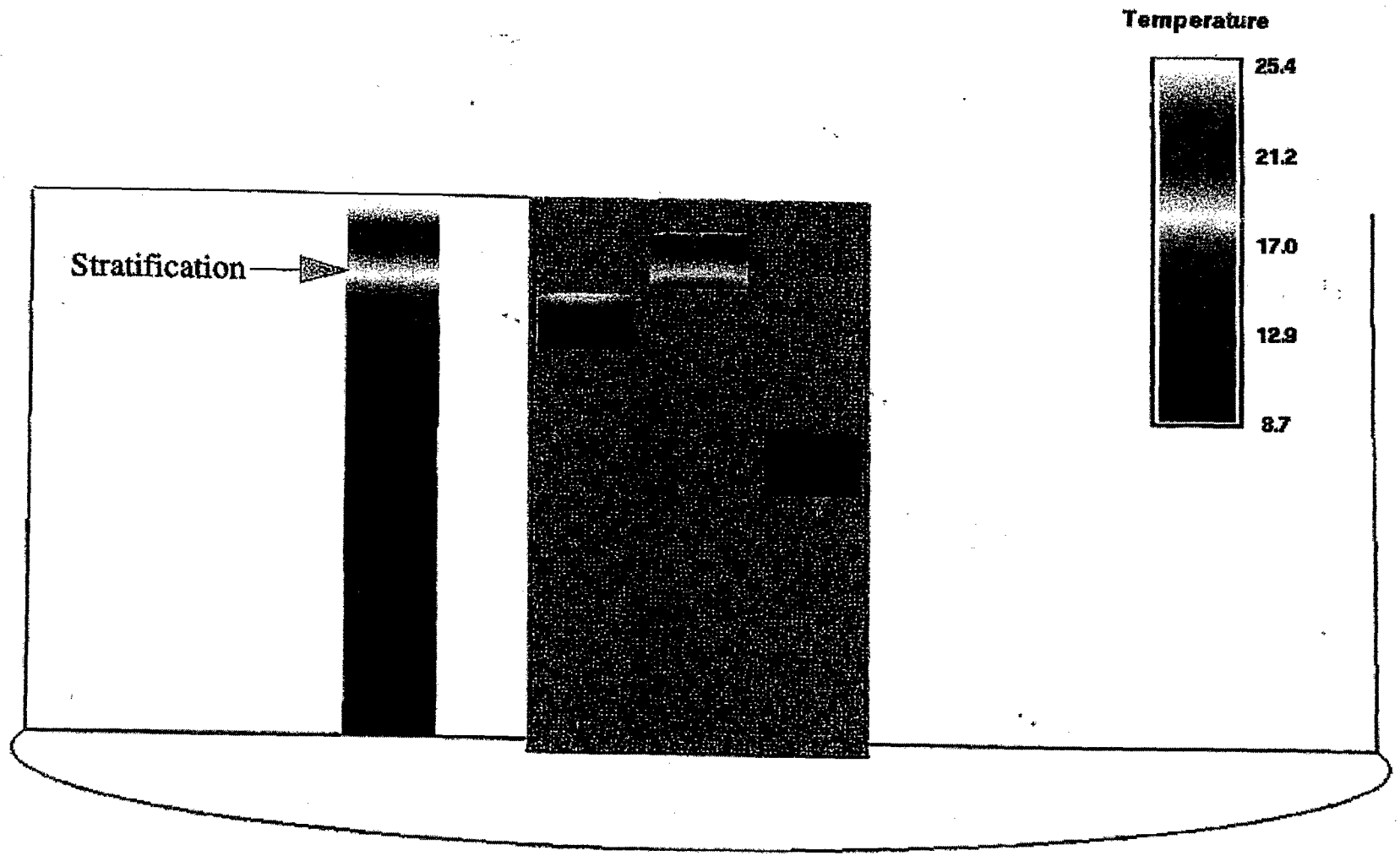
Figure 18

DATE OF SIMULATION: 6/30/92

PINE FLAT F&W RESTORATION

TEMPERATURES THROUGH PORTS
PORT ELEVATIONS 657.5, 717.5, 745.5
WATER SURFACE ELEVATION – 773
DATE OF SIMULATION – 6/30/92

Figure 19



(2). Overall Grid Simulations

Table 5 shows the days simulated with the overall grid, showing flows through each gate, maximum velocities through the port with the largest flow and the downstream water temperatures (both those simulated by MAC3D and those simulated by CE-QUAL-W2). With this grid resultant downstream temperatures are again a weighted average of temperatures and flows through each port in use the day of simulation, however, mixing is occurring within the system so the temperature profile within the penstock is much more uniform.

Figures 20 thru 22 show plots generated using FAST for the date of 7/5/94. They are typical representations of the type of output observed for each day simulated.

Figure 20 shows a typical plot of velocities along the centerline of each bay throughout the system.

Figure 21 shows a typical plot of temperatures along the centerline of each bay throughout the system.

Figure 22 shows a typical plot of temperature contours outside one of the gates. The stratification can be seen within the reservoir with a laver of very warm water at the top of the reservoir, then a transition to much colder water of rather uniform temperature in the lower reaches of the pool. The contours also show the zone of influence as a range of temperature contours converge toward the gate.

Figures 23 thru 25 show dynamic pressures (pressures due to flow) through the centerline of each gate in use on 6/30/92. These pressures are used to indicate possible areas of large pressure drops, where cavitation could occur.

Simulation Data for the Overall Grid

Date	WSEL	Flow Through Each Gate (cfs) 1-1	2-2	3-3	1-4	2-5	3-6	X-7	T - deg C (MAC3D)	T - deg C (CE-QUAL-W2)
1992 (Dry Year)										
06/30/92	773					796	1044	1700	12.8	15.5
1993 (Wet Year)										
06/17/93	931	2500	2500	2500					11.2	11.0
08/26/93	866		2500	1599					16.7	15.3
1994 ('Normal' Year)										
06/28/94	848		1729	2500	2500				15.7	14.0
07/05/94	829			1876	2500	2500			14.5	13.6

Following are plots from the 07/05/94 simulation showing velocities and temperatures through the system and velocity and temperature contours along the centerline of gate 2-5.

Note that the ports are indicated with a local maximum velocity coloration (Vmax of about 3 fps) in order to stand out from velocities and temperatures/mixing through the system.

PINE FLAT F&W RESTORATION

FLOW THROUGH GATES AT ELEVATIONS 773.5, 801.5 & 829.5

DATE OF SIMULATION: 6/28/94 (NORMAL YEAR)

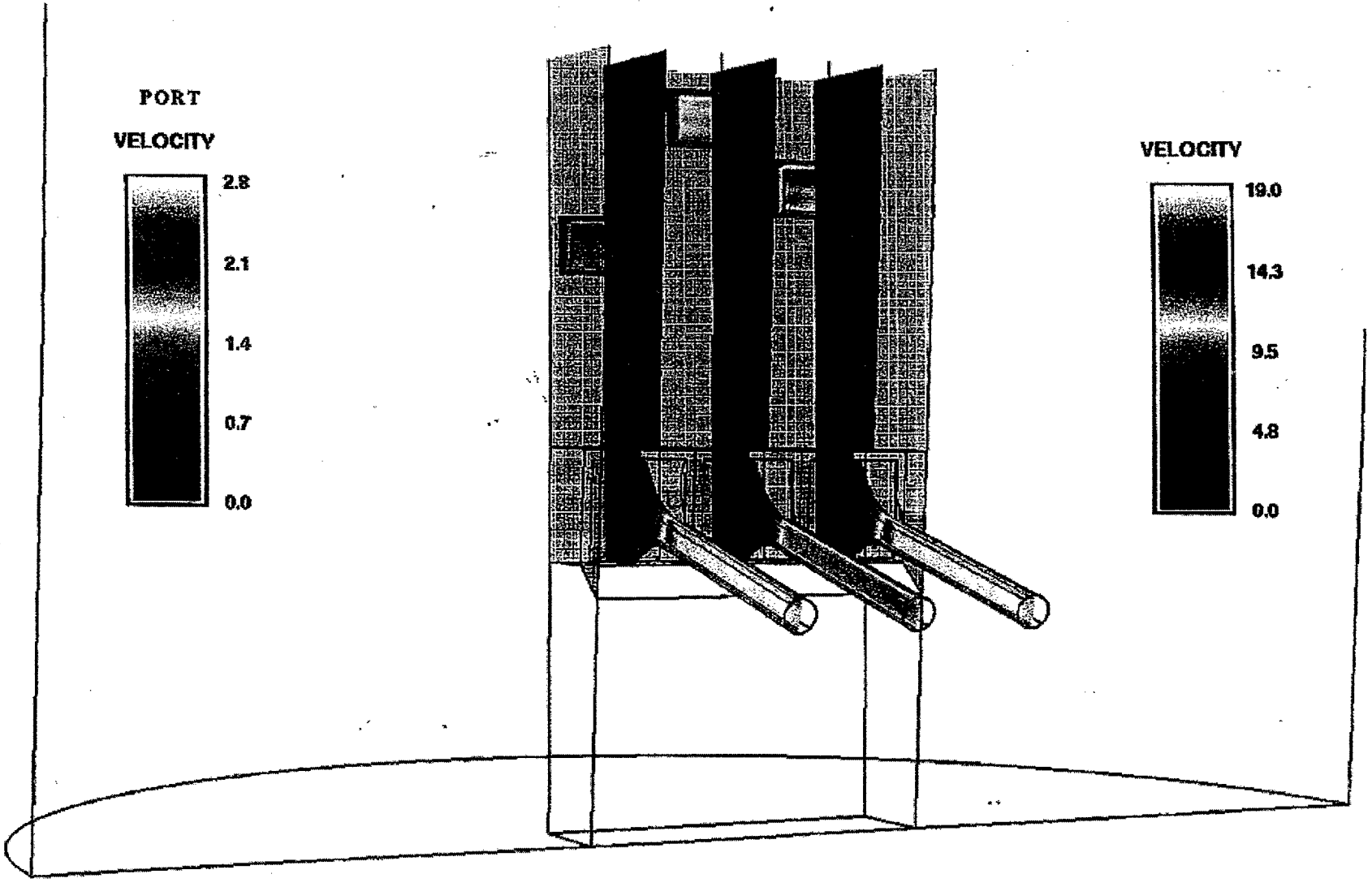


FIGURE 20

PINE FLAT F&W RESTORATION

FLOW THROUGH GATES AT ELEVATIONS 773.5, 801.5 & 829.5

DATE OF SIMULATION: 6/28/94 (NORMAL YEAR)

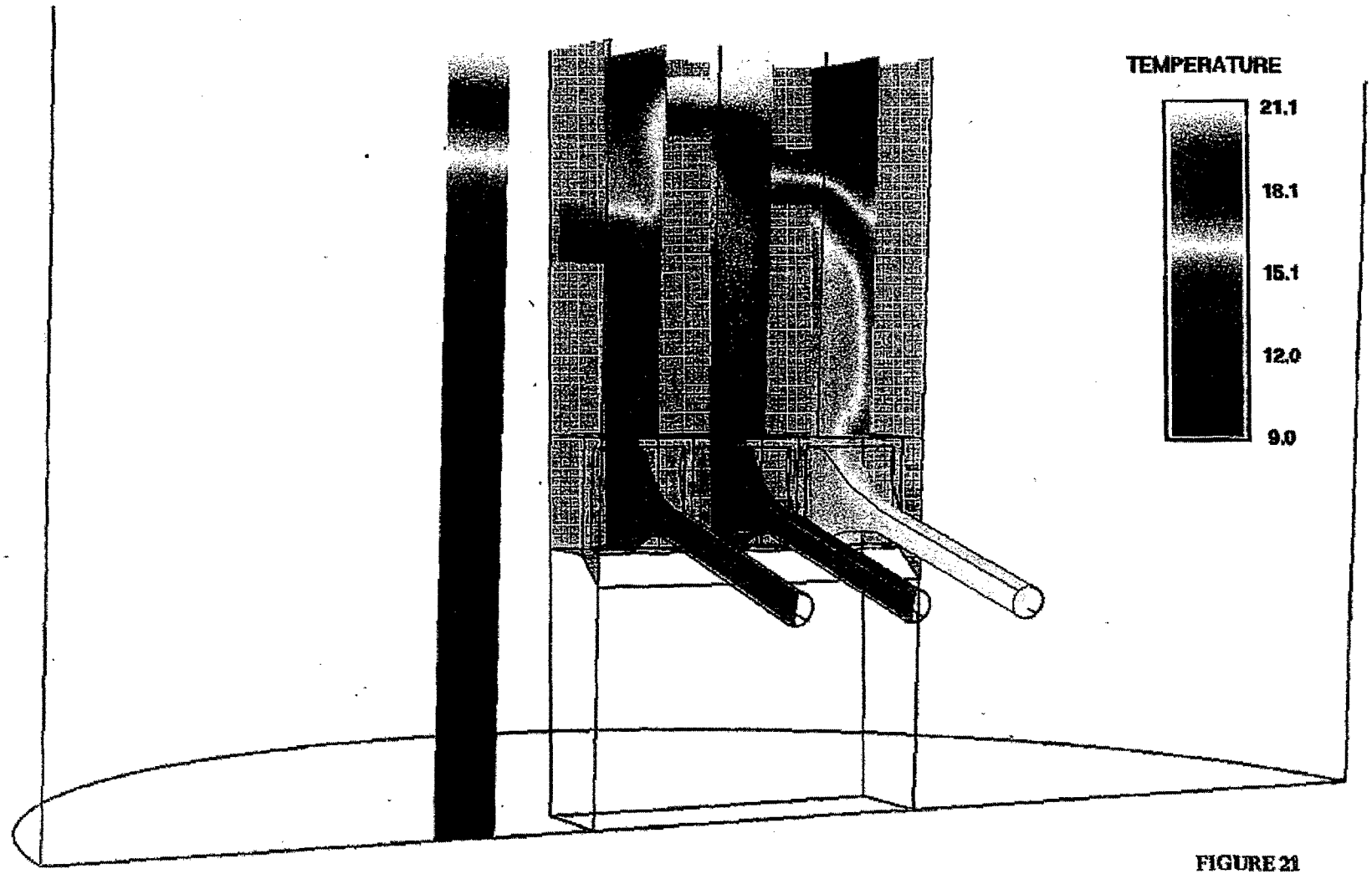


FIGURE 21

PINE FLAT F&W RESTORATION

FLOW THROUGH GATE AT ELEVATION 773.5

DATE OF SIMULATION: 6/28/94 (NORMAL YEAR)

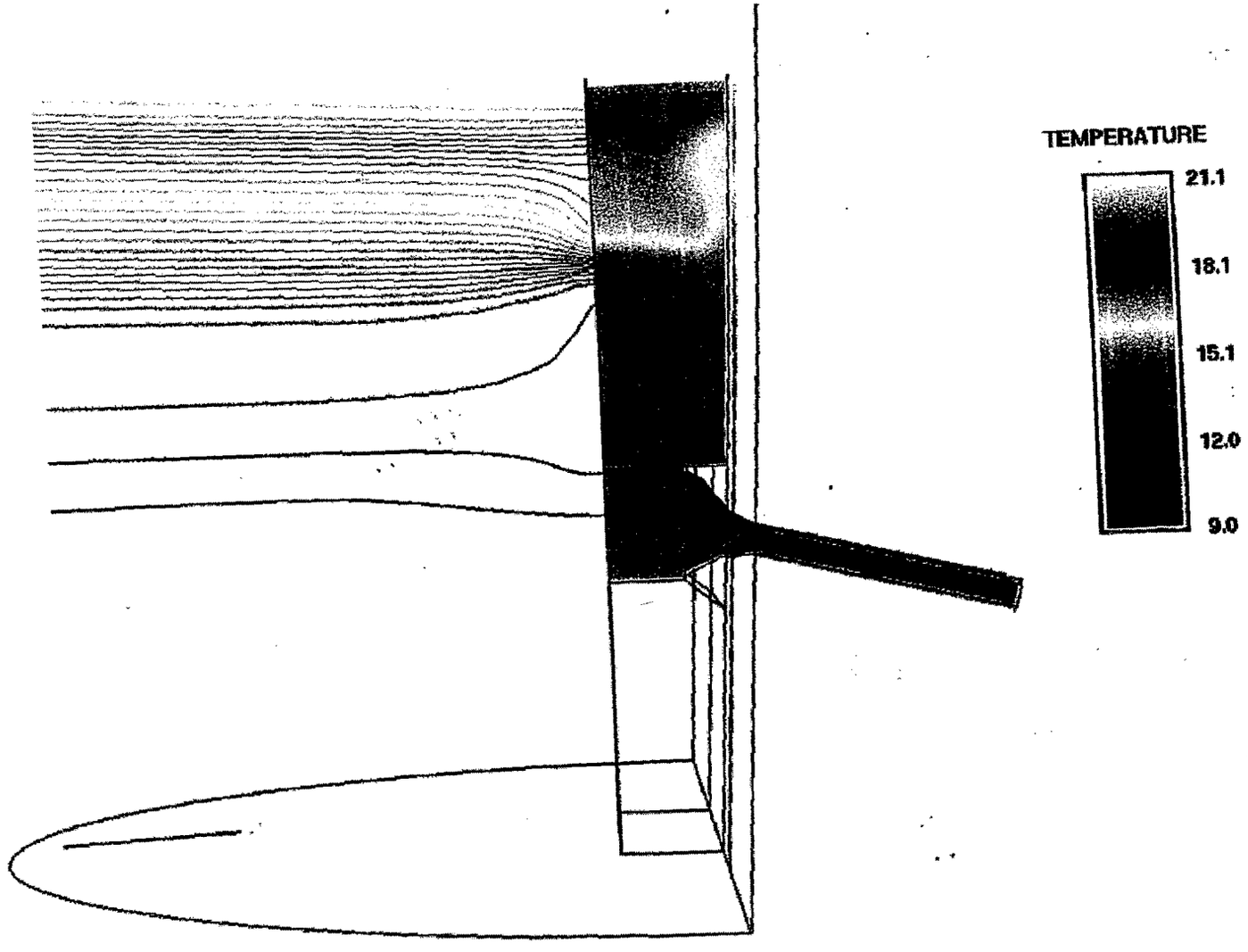


FIGURE 22

PINE FLAT F&W RESTORATION

DYNAMIC PRESSURE THROUGH PENSTOCK 1

6/30/92

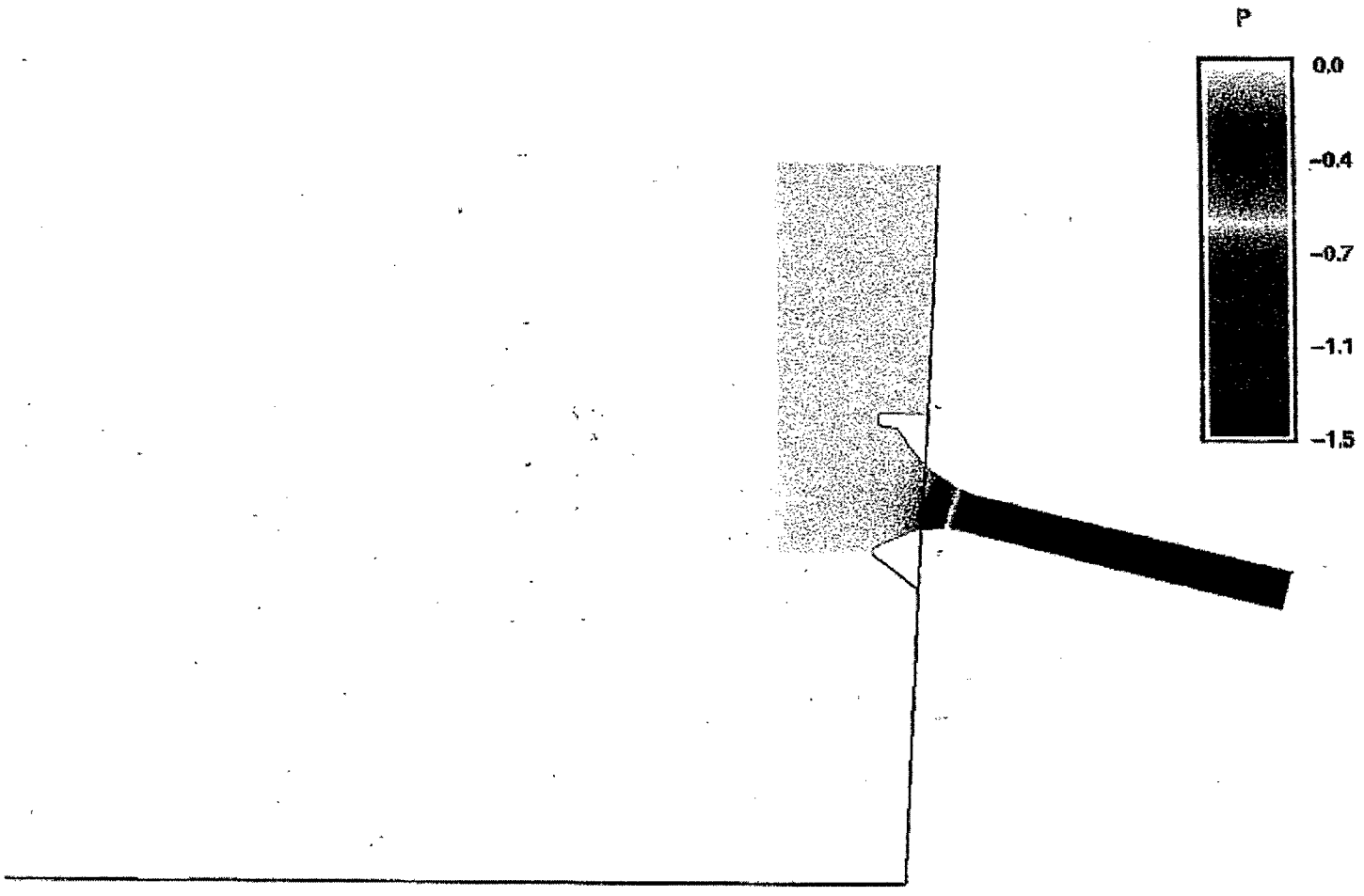


Fig 23

PINE FLAT F&W RESTORATION

DYNAMIC PRESSURE THROUGH PENSTOCK 2

6/30/92

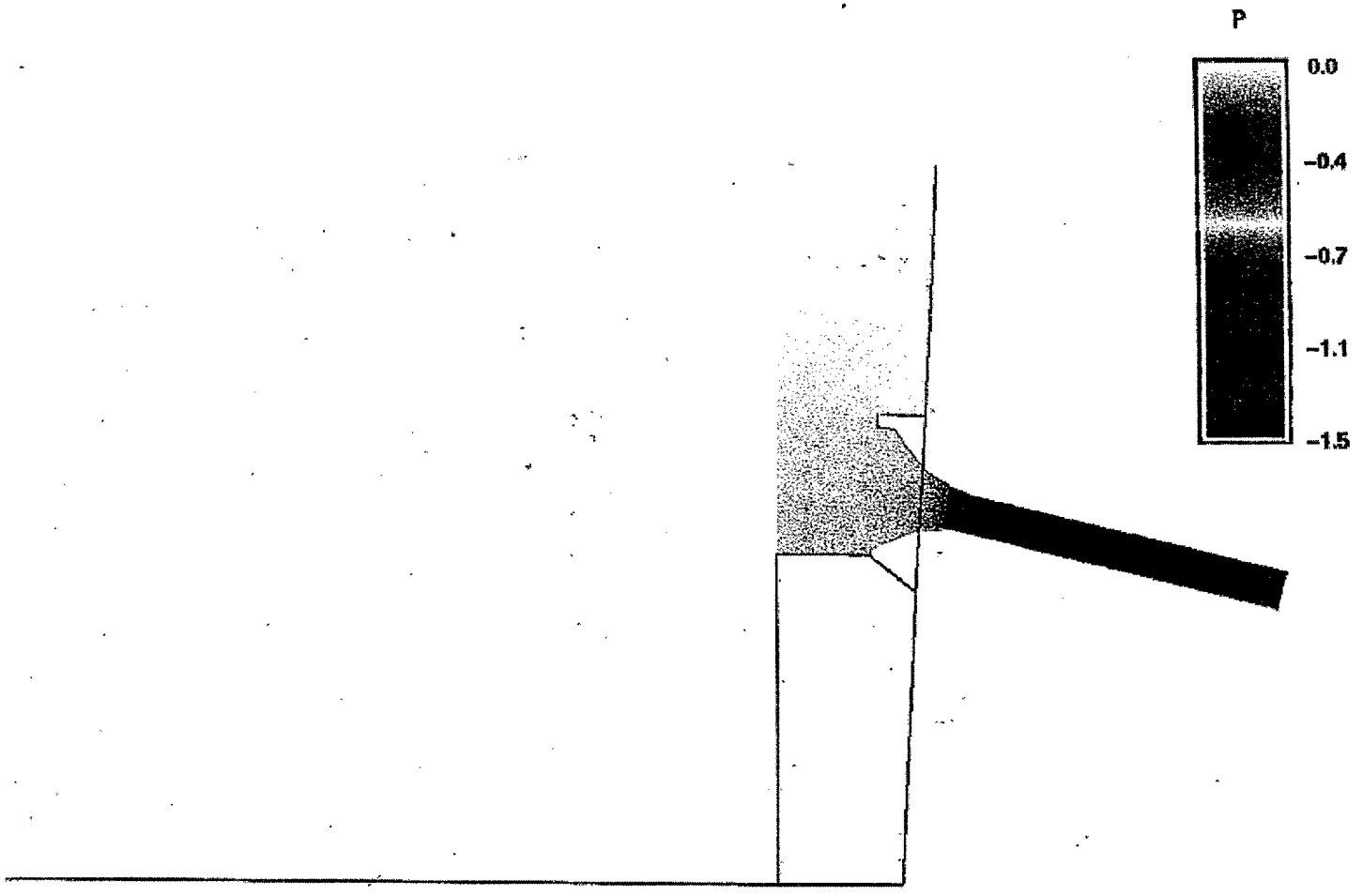
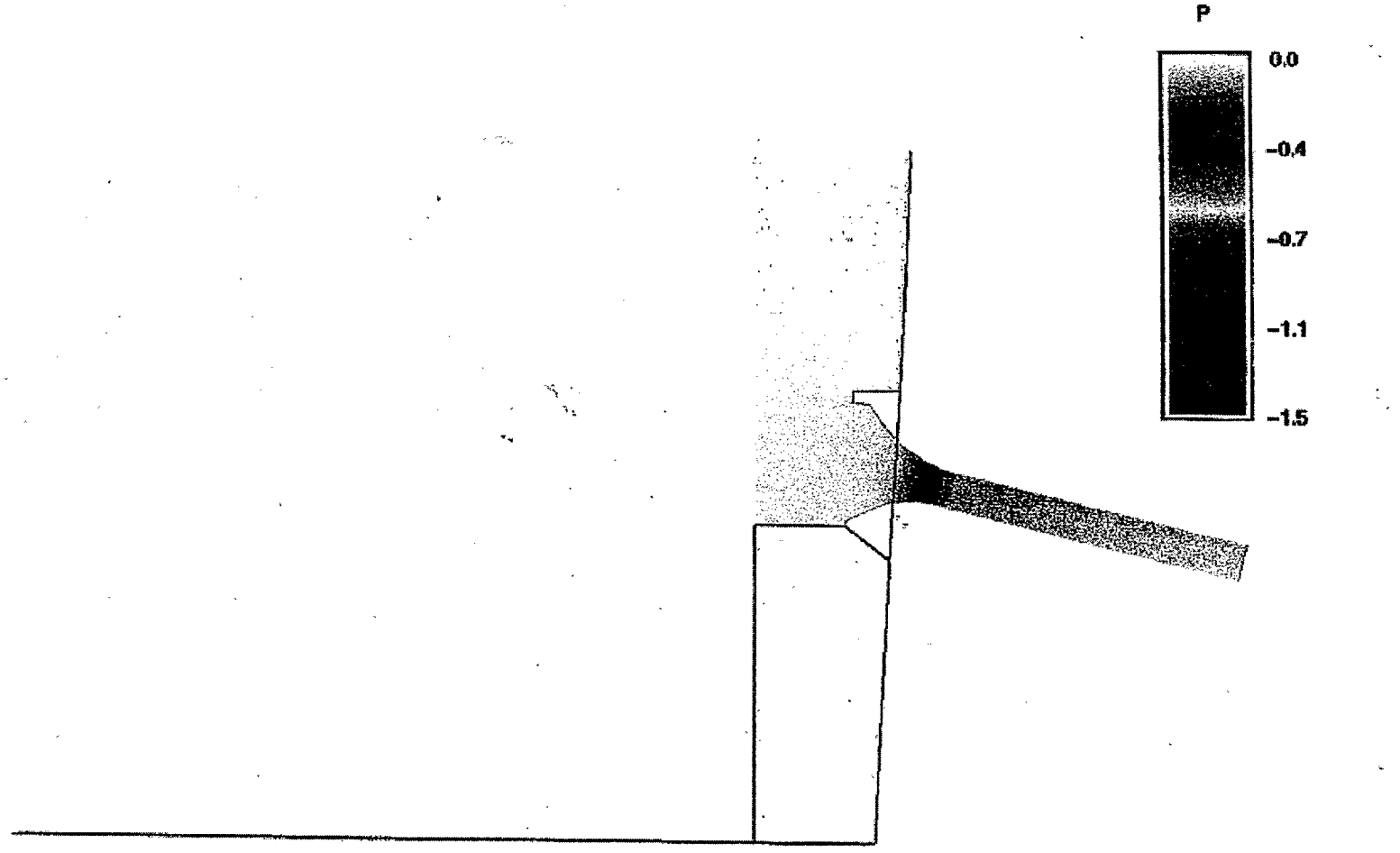


Fig 24

PINE FLAT F&W RESTORATION

DYNAMIC PRESSURE THROUGH PENSTOCK 3

6/30/92



(3). Internal Grid Simulations

Internal grid simulations were done for extremes of flow and head for each gate. Figures 26 thru 29 are plots of flow velocities through the multi-level intake and into the entrance to the penstock. Figures 26 and 27 are for ports at elevations 657.5 and 801.5 with high head. Low head simulations were very similar in all cases except that of port 857.5. Figures 28 and 29 show the low head and high head cases for port 857.5. Figure 28 has a larger area of relatively high velocities along the face of the dam than does Figure 29. This may be because the simulation was not run for as long a time period. The velocities near the penstock entrance are still very similar, however.

(4). High-Resolution Internal Grid Simulations

The fourth grid developed, an internal grid, was given a resolution of four times that used for the coarse internal grid. The input file was then modified to simulate flow around obstacles to try to show flow through and around the existing trashrack for the penstock intakes (which will not be removed) and splitter wall (the pier dividing the penstock intake into two gate passages) as well as through the trashrack at the intake port itself. This could not be completely done, however, as the resolution of the grid was still not fine enough to truly indicate very small or narrow members such as the bars of a trashrack. The simulations were sufficient to indicate the effect of the existing trashrack and the port intake trashracks on the flow.

Figures 30 thru 32 show three plots of gate 2-5 (elevation 745.5) with a minimum pool elevation. Figure 30 uses the internal grid and can be directly compared with the Figure 31, which is of the high-resolution internal grid, to show the influence of the trashrack at the port and the existing trashrack and splitter wall. These serve to break up the jet of water within the structure as it enters through the port and flows towards the penstock intake. Velocities are higher around the lip and entrance to the penstock because including the existing trashrack and splitter wall in the model does result in a slight decrease in flow area and an increase in velocity.

Figure 32 is a perspective closeup of the penstock entrance. Velocities above 4 fps are shown as white to more clearly show the flow pattern.

Figure 33 is the result of a simulation for Gate1-1 with an extremely full reservoir. In this particular case, the existing trashrack support structure was also included. The model was also modeled as though plates were placed upon the existing trash rack structure opposite the port locations of the multi-level intake. There was also a plate modeled at the top of the lip of the penstock intake. The effect of these items is to keep the higher velocities more centered in the structure.

PINE FLAT F&W RESTORATION

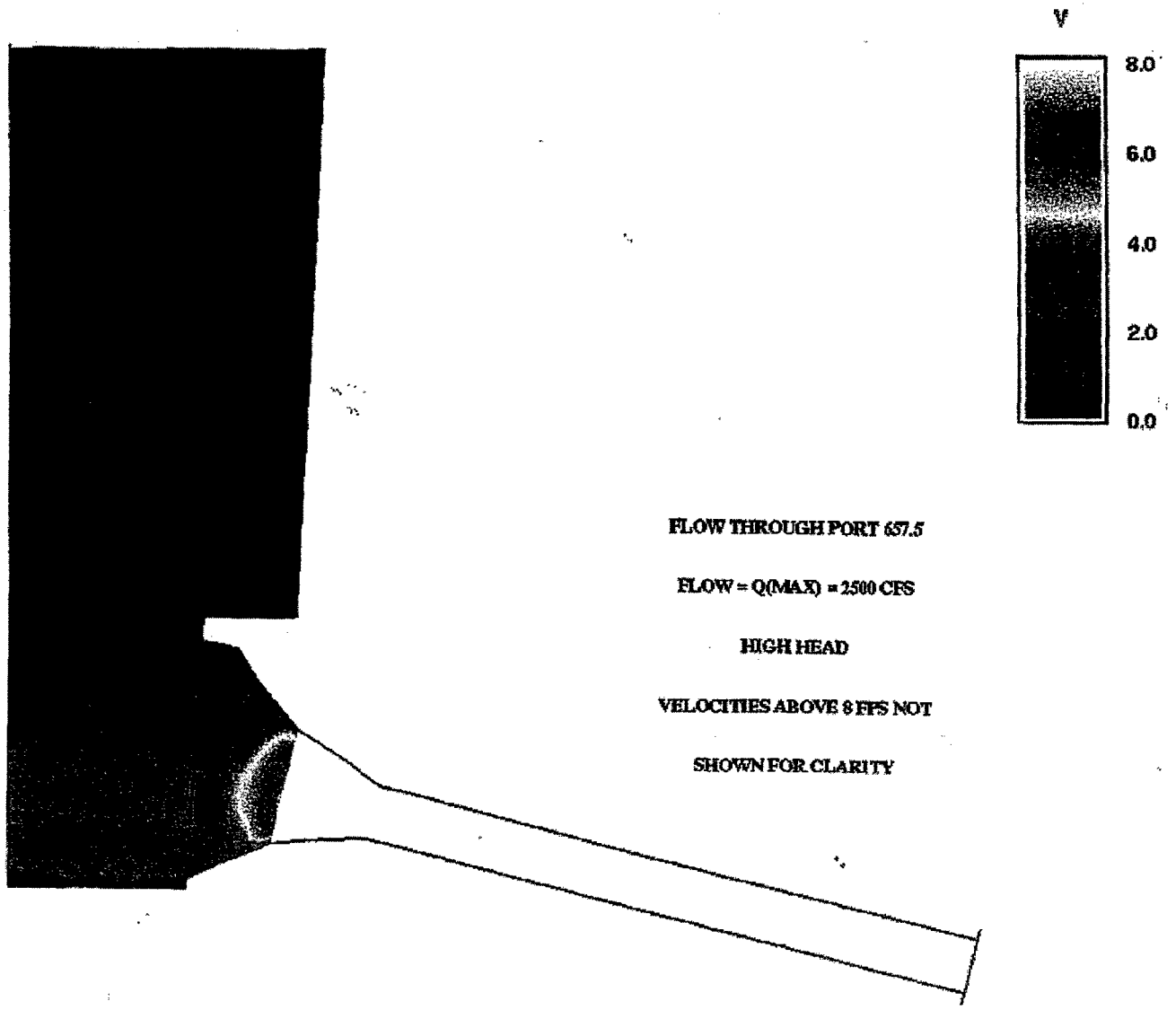
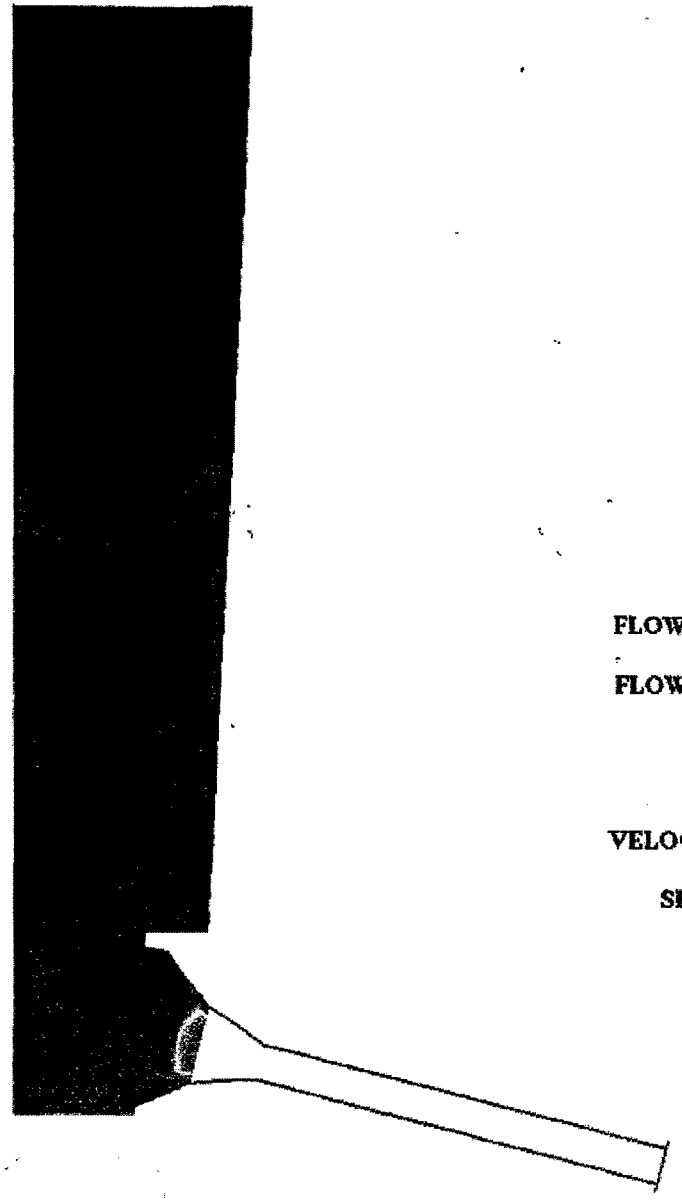
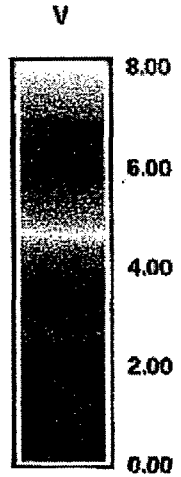


Fig 26

PINE FLAT F&W RESTORATION





FLOW THROUGH PORT 801.5

FLOW = Q(MAX) = 2500 CFS

HIGH HEAD

VELOCITIES ABOVE 8 FPS NOT SHOWN FOR CLARITY

Fig 27

PINE FLAT F&W RESTORATION

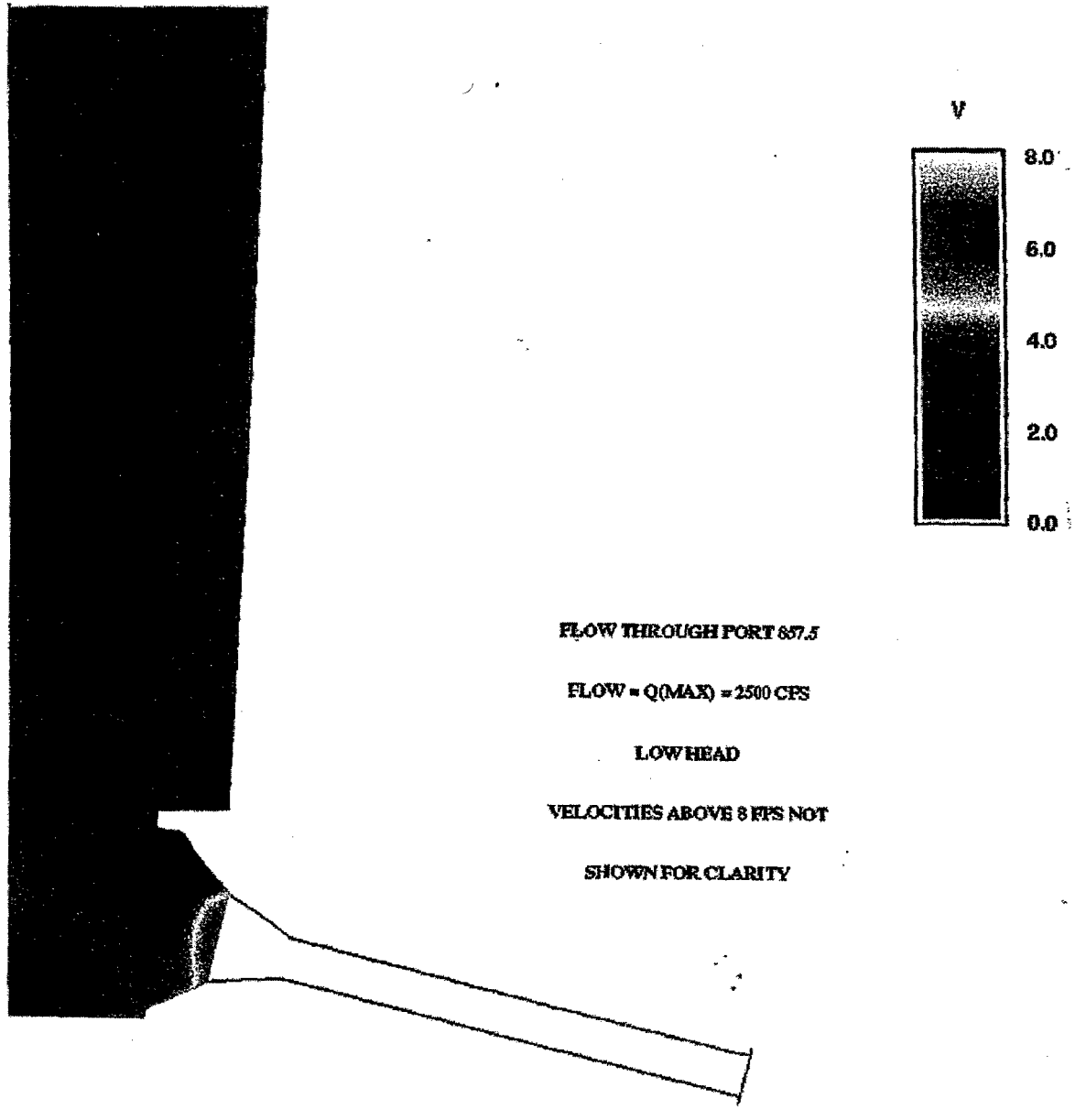
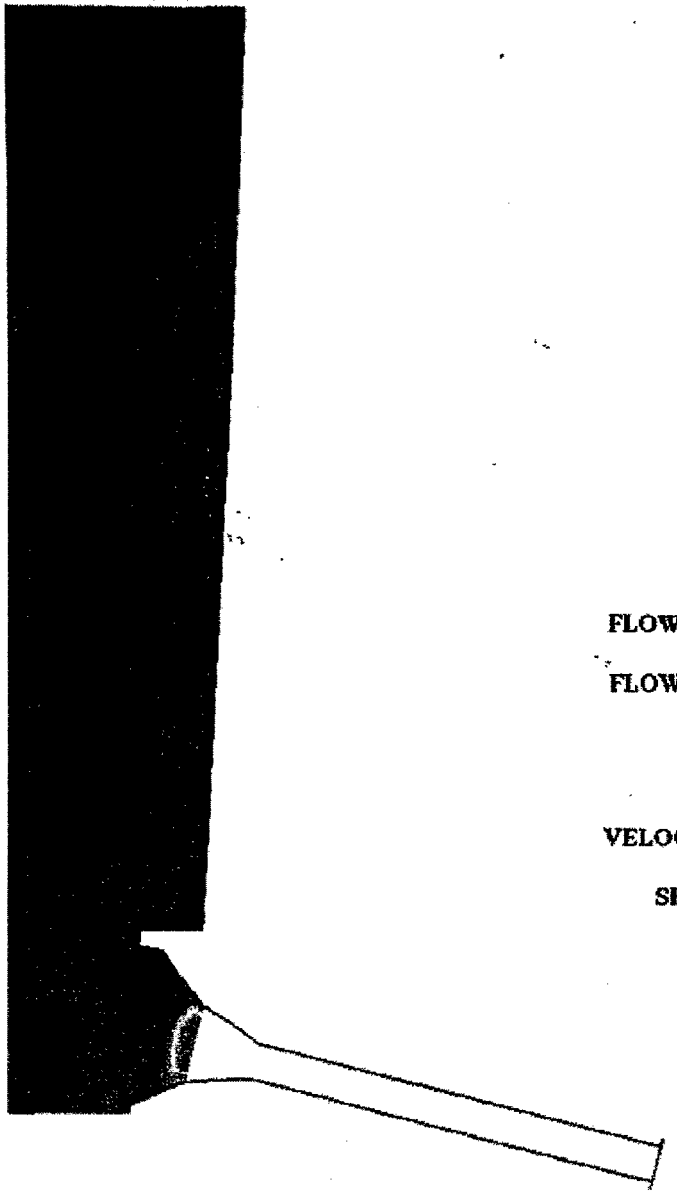


Fig 7 8

PINE FLAT F&W RESTORATION



FLOW THROUGH PORT 857.5

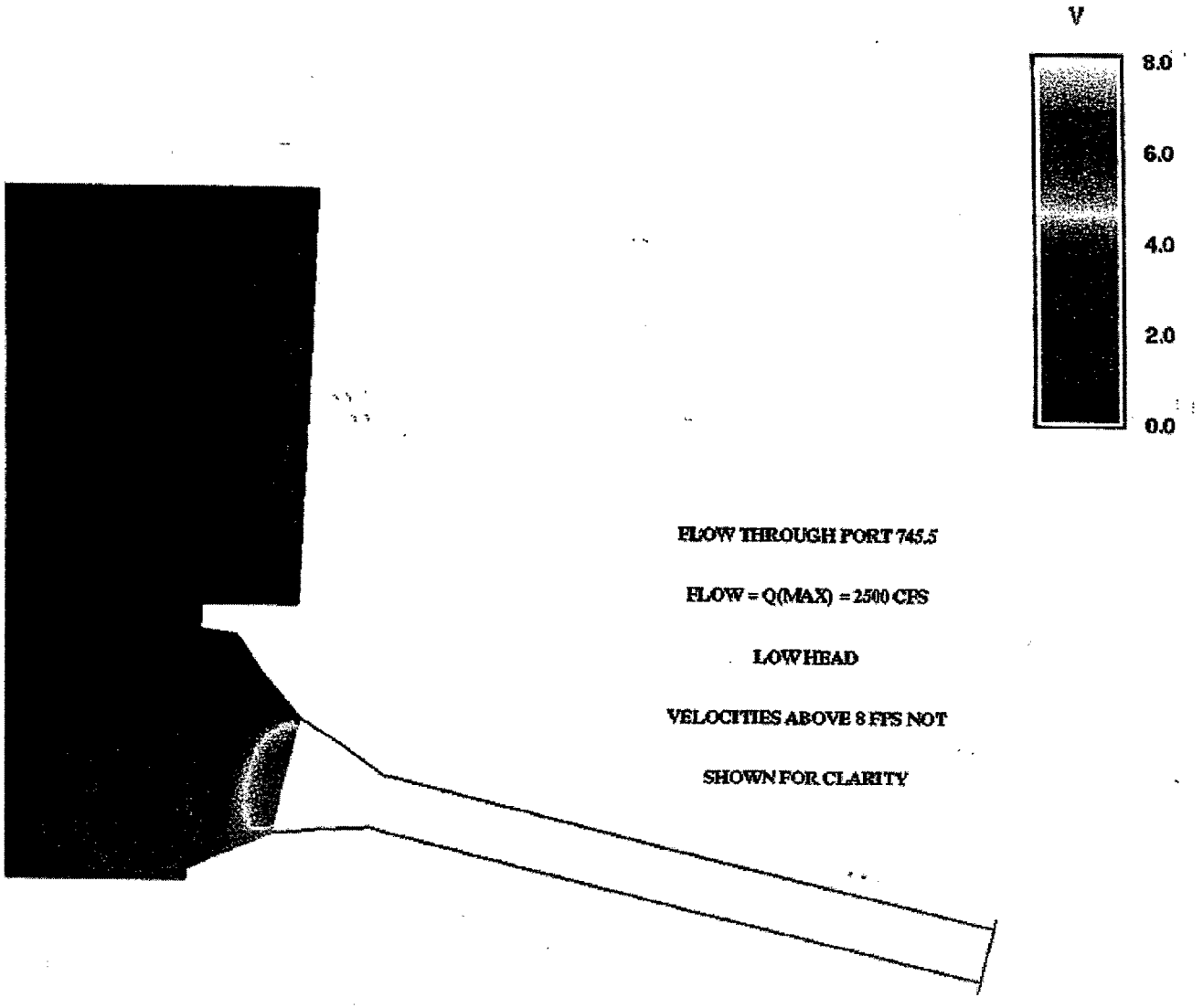
FLOW = Q(MAX) = 2500 CFS

HIGH HEAD

VELOCITIES ABOVE 8 FPS NOT

SHOWN FOR CLARITY

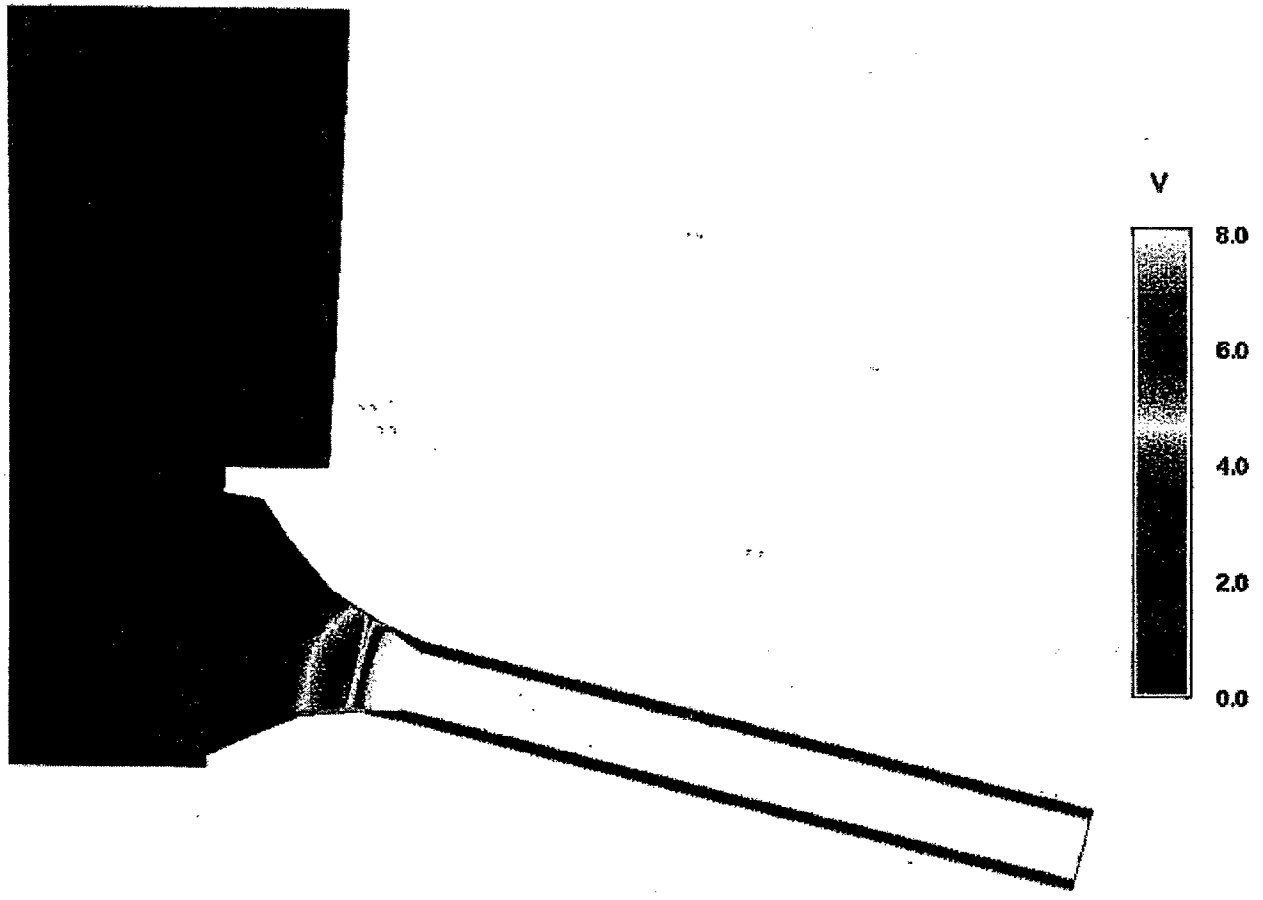
PINE FLAT F&W RESTORATION



E. 30

PINE FLAT F&W RESTORATION

Elev of Gate 745.5 - WSEL 761



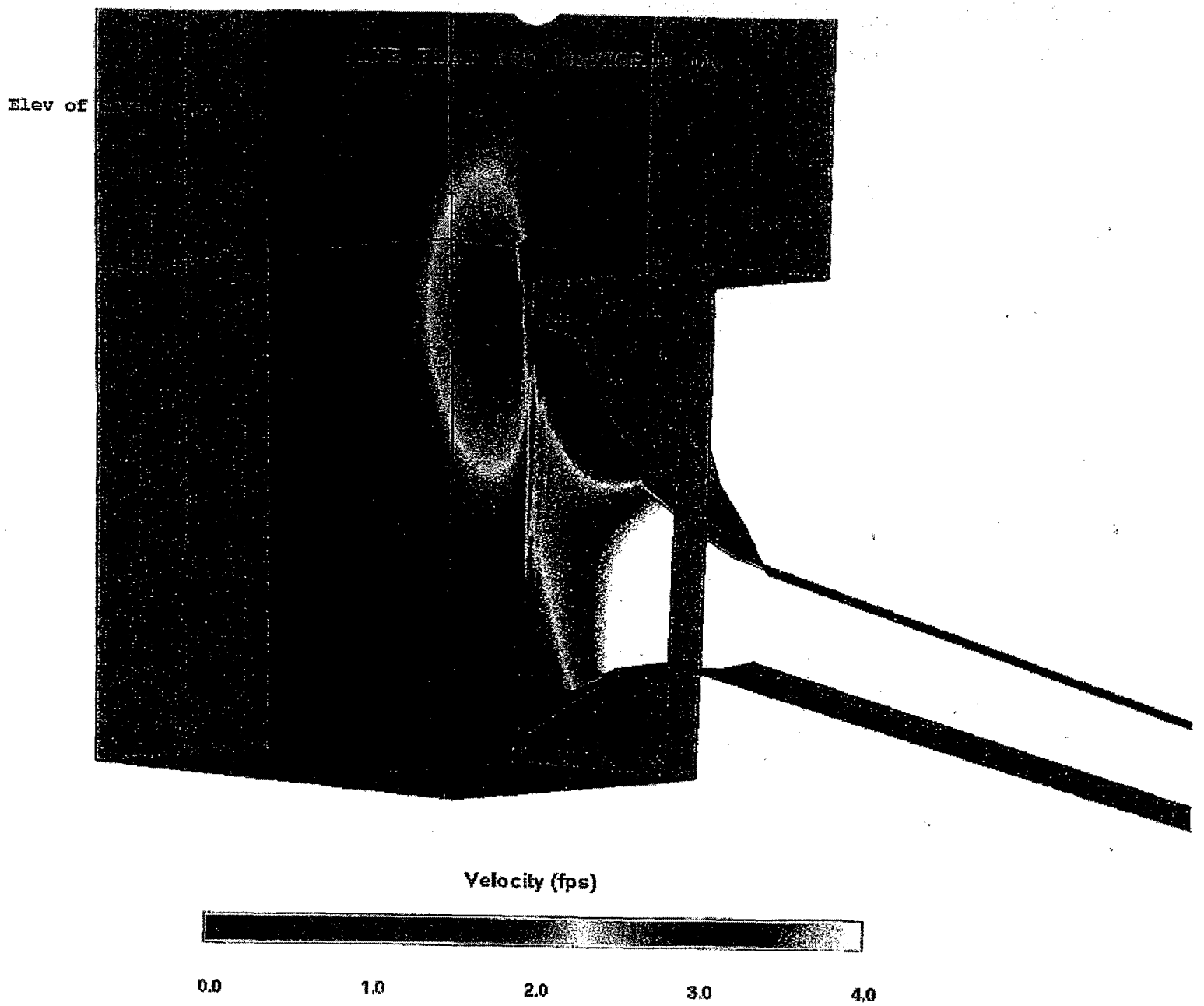
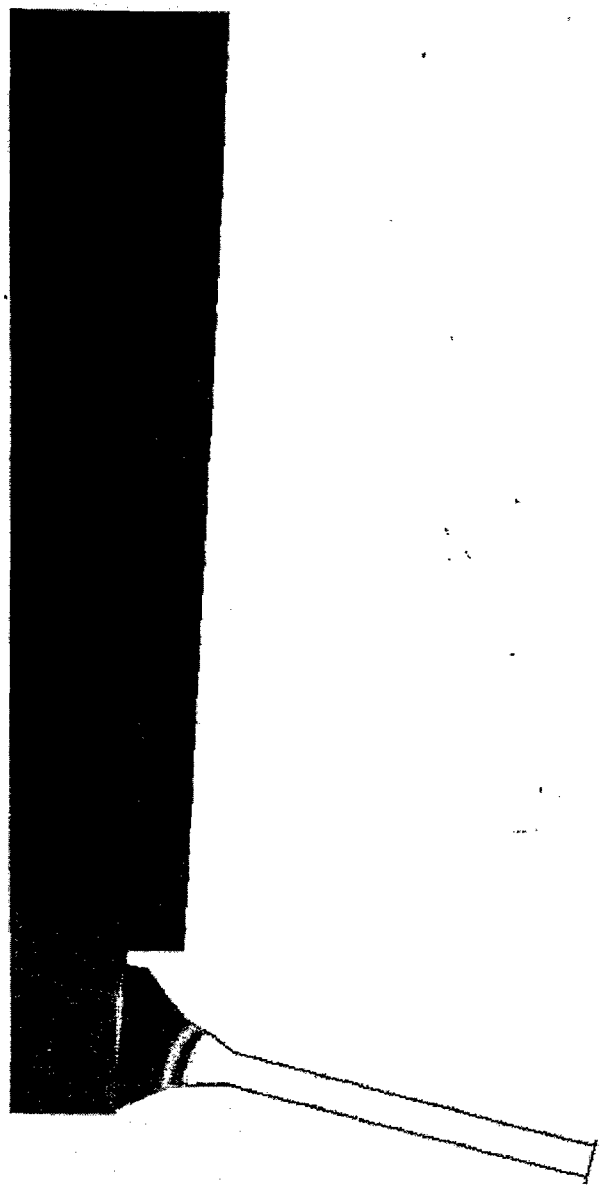


Fig 32

Pine Flat F&W Restoration

Elev of Gate 857.5 - WSEL 955



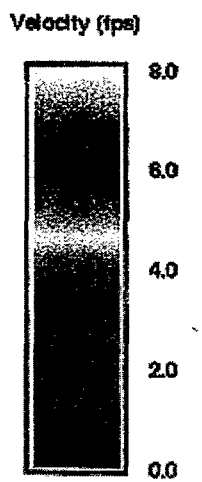


Fig 33

e. Conclusions

The external grid is most useful for showing flows in the reservoir towards the structure and temperatures into the structure. The overall grid is most useful for an overall look at the system and temperatures, velocities and pressures throughout. The internal grid simulations show general flows through the structure at high and low heads. The high resolution grid reveals that the trashracks break up the flow which would hug the face of the dam if they were not present.

(1) Velocities

Simulations using the internal grid show the flow jet through the gate hugging the face of the dam until flowing around the upper lip of the penstock intake. Just below the lip there is a zone of low velocity as the jet makes the turn into the penstock. Velocities within the penstock are uniform however. The high resolution grid, even with the stability problem, does indicate some breakup of the jet as it passes through the port trashrack and the existing trashrack. Further investigation with a very fine resolution grid to more truly model the trashracks and splitter wall is warranted at the next phase of design.

(2) Pressures

The computer simulation show the lowest pressures at the junction of the entrance to the penstock with the circular penstock. The pressures do not appear to be so low as to cause cavitation, however.

(3) Temperatures

In the external and overall grids temperature stratification in the MAC3D model was turned on and so the background head conduction (diffusion) was not included in the computations. Therefore, MAC3D showed only how the stratification changed in the system due to flow and ignored any change in temperature that would lead to temperature equilibrium throughout the grid.

Temperature results indicated that for summer flows where the head above the uppermost port being used is low, outflow temperatures downstream are from 1 to 2 degrees Celsius higher than that indicated from the KRCD study using the computer program CE-QUAL-W2.

KRCD was asked to perform additional CE-QUAL-W2 runs with a slight change to the program code which would narrow the height of the temperature zones from which water is drawn outside a port. When this was done, the temperatures increased approximately 0.5 degrees Celsius during the late summer.

The real question is whether the reservoir will use up its reserve of cold water during the year, particularly during dry years, leaving outflow temperatures higher than tolerable for fish

the previous year is low.

(4) Turbulence

Turbulence does not appear to be a problem. The velocity vectors are uniform within the penstock.

(5) Future Physical Model

A physical model appears to be required. The MAC3D model is an approximation of the hydrodynamic processes expected in and around the outlet tower. The numerical model is useful for looking at velocities, temperatures and turbulence. It can and has been used as both a screening and design tool, however, it also has some limitations such as the inability to fully reproduce all the structural features such as the trash racks, structural members, small scale structural features, the dynamic response of valves and gates, and free surface interaction. The application of a physical model would provide information concerning the capacity of the outlet tower, existence of free surface vortices, and transient flow features which may be associated with changing gate settings or structural features. These can not be determined with MAC3D. A physical model may show some of them.

6. Operation Recommendations

Each cell of the structure should always have one submerged gate open, the highest gate with at least 4 ft of submergence (distance from the top of pool to the top of the gate).

When a penstock is not in use, the lower gate should be left fully open.

7. References

Shore Protection Manual, Coastal Engineering Research Center, Department of the Army, Waterways Experiment Station, U. S. Army Corps of Engineers, 1984.

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Orlanski, I., A Simple Boundary Condition for Unbounded Hyperbolic Flows, Journal of Computational Physics, 21, 251-269, 1976.

PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

ATTACHMENT 2

STRUCTURAL DESIGN REPORT

ATTACHMENT 2

STRUCTURAL DESIGN REPORT

1.Structure Selection.

The structure selected was modeled after the Temperature Control Device (TCD) that was installed at Shasta Dam by the Bureau of Reclamation and modified for use at Pine Flat Dam. It was decided that our structure would be three separate structures, one for each power penstock. The reason for this was that each was a separate dam monolith and they needed to be able to act independently. Also, except for the rigid frame and the equipment platform, the structure would follow the slope of the face of the dam. It was also decided that each structure would have three gates, one gate at the same elevation on all three structures and two gates at different elevations on each of the structures.

2.Design Criteria.

A. Codes. - The structural steel was designed in accordance with AISC - LRFD93 design code as used by the Structural Analysis Program SAP2000.

B. Materials. - All materials are subject to the requirements of applicable American Society for Testing and Materials (ASTM), Federal standards, specifications and testing procedures as required by the specifications paragraphs.

New cast-in-place reinforced concrete design is based on concrete with a compressive strength of 6,000 lb/in^2 and 4,000 lb/in^2 for replacement concrete, and reinforcement with a minimum yield strength of 60,000 lb/in^2.

Design of steel elements was based on the applicable properties of the materials listed below:

(1) Structural steel - ASTM A36 or A572, Grade 50.
(2) Threaded upset rods - ASTM A572, Grade 42.
(3) Bolts - ASTM A325-X or ASTM A325-N, type 1.
(4) Concrete anchor bolts - Mechanical - type anchor assembly with an epoxy coated hollow steel rod designed for grouted installation in concrete.
(5) Steel bridge plank - 6- by 2-Inch by 10 gauge bridge plank conforming to ASTM A570 Grade 36 with minimum section modulus of 1.342 cubic inches per foot.

C. References. -

(1) Structural Steel
AISC "Manual of Steel Construction", Ninth Edition
EM 1110-2-2105 "Design of Hydraulic Steel Structures Change 1" 31 May 94

(2) Bridge Plank

D. Computer Program. - SAP2000 - Integrated Finite Element Analysis and Design of Structures by CSI, Inc. (Computers and Structures, Inc.) Berkeley, CA, USA

3. Structural Support Systems.

Individual steel structures enclose each of the existing power intakes. After these structures are installed, cladding, gates, and trashracks are installed. Each structure behaves as a continuous lateral frame to resist loads in the cross-canyon direction. All gravity loads are supported by rigid frames located above each structure's vertical truss. Steel rods suspend the structures from the rigid frames at four points. The rigid frames also carry the hoist loads directly into the dam. Additional connections between the structures and dam are designed to support the lateral loads in the stream and cross-canyon directions.

A. Gravity load support system. - All gravity loads are supported by rigid frames acting alone. The rigid frames are attached to the dam at elevation 950.07 and elevation 915.92.

B. Stream and Cross-Canyon load support systems. - The vertical trusses transfer the stream loads acting on the TCD to connections between the TCD and dam. The horizontal frames transfer the cross-canyon loads acting on the TCD to the connections between the TCD and dam. Each panel point of the vertical trusses will be attached to the dam to resist tension and compression forces in the stream direction, and shear force in the cross-canyon direction.

4. Structural Analysis and Design Issues.

A. General. - The only assembly alternative considered at this time is assembly-on-dam. This consists of each structure being constructed in segments above the water surface directly above their installed locations, lowered vertically into position, then attached to the dam. The reason for this is that any space available around the reservoir shore is too faraway from the site to construct the structures and float them by barge to their installation locations.

B. Loading Conditions. - Each rigid frame and structure was modeled as one structure in SAP2000. At this time only the dead weight of the structure was used in the analysis and design. All of the additional loads, due to the steel cladding, trashracks, gates, and equipment weights still need to be incorporated into the analysis and design. The equipment weights are assumed to be: Lower gate equipment consists of two motors weighing 9500 lbs. each, two drums of cable weighing 2500 lbs. each and two sheaves weighing 1500 lbs. each, the middle gates have the same equipment with the exception that the drums of cable weighs 2000 lbs. each, and the upper gates have the same equipment as the middle gates with the exception that they do not require any sheaves. Even though the depth of the plate girder is large, it could be modeled in SAP2000. All of the additional forces acting on the structures, such as, wave action, earthquake, hydrostatic and hydrodynamic pressures, and hoist loads (which are still being determined), also need to be incorporated into the analysis and design.

C. Hoist Platform Steel. - The hoist platform steel will be designed to adequately carry the design loads from the hoists, sheaves, and floor gratings to the rigid frames. (These are still being determined.) During construction, actual loads will be provided from the hoist supplier. If these loads are greater than the design loads, then strengthening of the platform will be required at that time. The frames supporting the gate hoists will be designed to be removable so that the trashracks and gates may be removed. The frames will be attached

horizontally in the stream direction to offset sheave and hoist loads and transfer lateral unbalanced hoist loads into the dam.

D. Steel Frame Connections. - The design of the steel frame connections will be based on the maximum loads as determined from the analysis and then increased by 10 percent as an added safety factor and compared to 50 percent of the members allowable tension capacity. The maximum of these two values will then be used for design of the connection.

Bolted connections will be designed assuming connections will be made with ASTM A325-X or ASTM A325-N bolts and tightened with the provisions of the AISC "Specifications for Structural Joints Using ASTM A325 or A490 Bolts." Bolts will be brought to the fully tensioned condition. Bolts will be designed as bearing type (X or N) because the painted faying surfaces will not provide a slip critical (SC) connection. The fully tensioned bolts will be provided to prevent possible loosening of the bolts due to vibration of the structures. Washers shall be provided for all high strength bolts in accordance with the requirements of the AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".

E. Dam Connections. - Dam connections will be broken into two distinct classes: the rigid frame connections and all others. The rigid frame connections support vertical and lateral loads and are to be installed by conventional construction techniques in the dry. The remainder of the structure dam connections will be designed to support stream and cross-canyon loads only and will be detailed for underwater installation.

The requirement that rigid frame connections be constructed in the dry is to ensure quality construction of the critical connection that support the dead load of the structures. Adequate anchorage of the top rigid frame member is critical.

Underwater dam connections need to support large loads, provide for a large amount of adjustment, not restrain vertical movements of the structures, and be diver friendly. Because of the large loads and adjustability requirements, it will not be possible to design one member to transmit the tension, compression and shear loads to the dam. Hence, separate components will be installed to resist each of these loads.

F. Steel Cladding Panels and Bridge Plank. - Bridge plank attached to a steel frame was selected as the most lightweight, economical, and aesthetic cladding material. Panels will be sized to facilitate shipment t the site.

G. Gates. - The gates are to be fabricated from Z-type sheet pile. This design results in lower weight. High strength steel (ASTM A572, Grade 50) will be used to reduce the weight of the gates, thus reducing the load that the hoist and the TCD structure have to handle.

H. Trashracks. - Even though there is an existing debris boom in front of the intakes, trashracks are still required to prevent debris from entering the Temperature Control device. It was also required that the trashracks be sized appropriately for handling with a crane so they can be installed after the TCD has been attached to the dam.

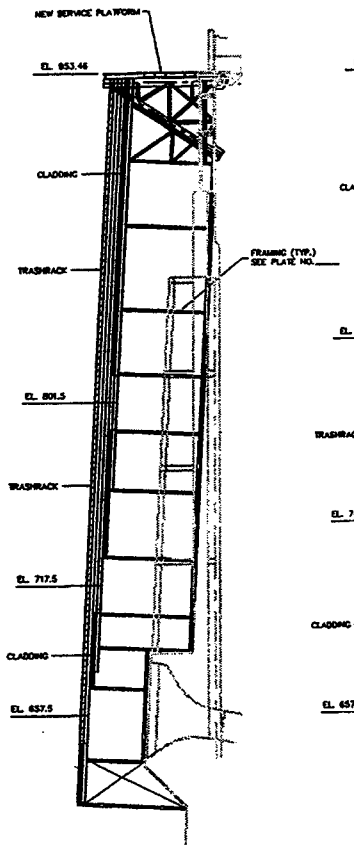
I. Miscellaneous Metalwork. - Miscellaneous metalwork will be designed in accordance with provisions of the American Institute of Steel Construction's "Manual of Steel Construction." Grating placed above the trashrack and gate slots will be designed as removable. Guard rails will be in accordance with the

Uniform Building code.

J. Corrosion Protection. - All metallic surfaces will be coated with a high solids epoxy coating system. A corrosion potential evaluation needs to be accomplished prior to and/or during final design, i.e. water sampling, review of susceptible and recommended materials, review of the condition of any existing submerged steel features at the project. The TCD structures, cladding, gates, and trashracks will be detailed for future provision of a cathodic protection system.

To prevent pooling of water on structural members as the reservoir recedes, drain holes will be provided at the third points of webs of members that are oriented to retain water.

K. Unresolved Design Issues. - At this time, the unresolved design issues are the actual sizes of the gusset plates, the actual connections that will attach the structures to the dam, the final sizes for all of the frames and cross bracing. Also, it hasn't been completely determined whether flap gates or shutters need to be put into the lower gates. Depending on the extent of changes that need to be made because of these, they can effect the cost and schedule of the project.



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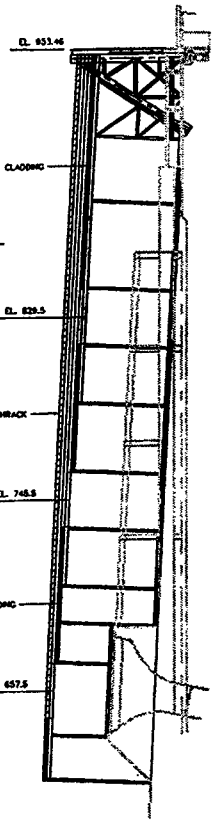

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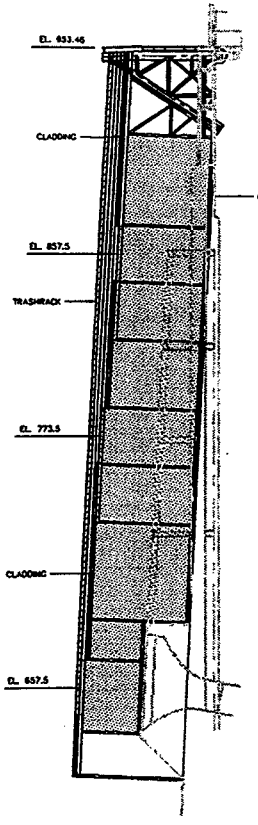

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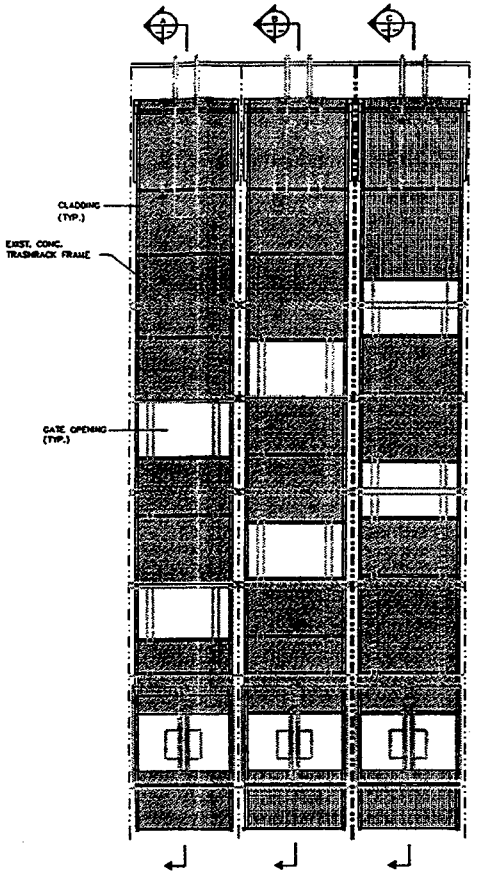

ELEVATION – CLADDING PANELS
SCALE: 1" = 20'

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SACRAMENTO, CALIFORNIA

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PINE FLAT PROJECT
KINGS RIVER

TEMPERATURE CONTROL STRUCTURE ELEVAVTION AND SECTIONS

AS SHOWN

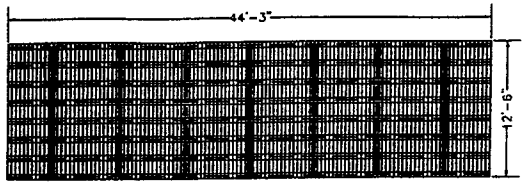
C-1

XXX-XX-XXX

CHIEF, STRUCTURAL DESIGN SECTION

1 2 3 4 5

A B C D



TRASHRACK PANEL
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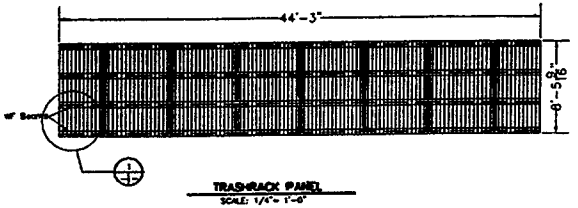
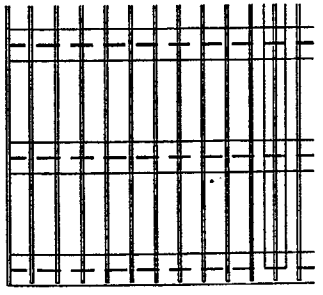
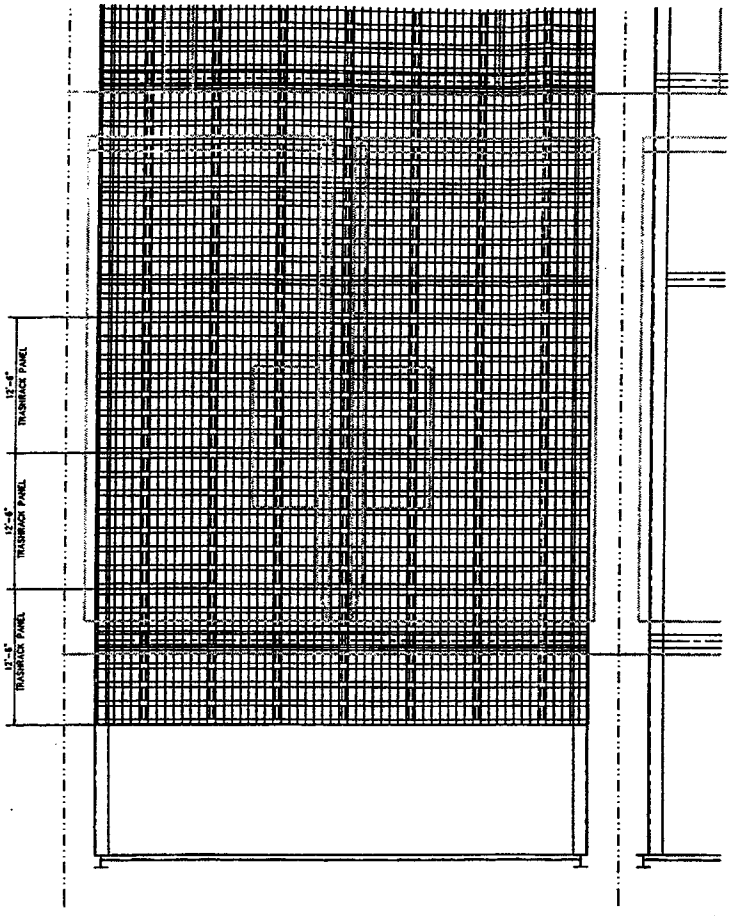


TRASHRACK PANEL
SCALE: 1/4"= 1'-0"



TRASHRACK PANEL DETAIL 1
SCALE: 1-1/2"= 1'-0"



TRASHRACK ELEVATION
SCALE: 1/4"= 1'-0"

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KINGS RIVER

TEMPERATURE CONTROL STRUCTURE
TRASHRACK ELEVATION

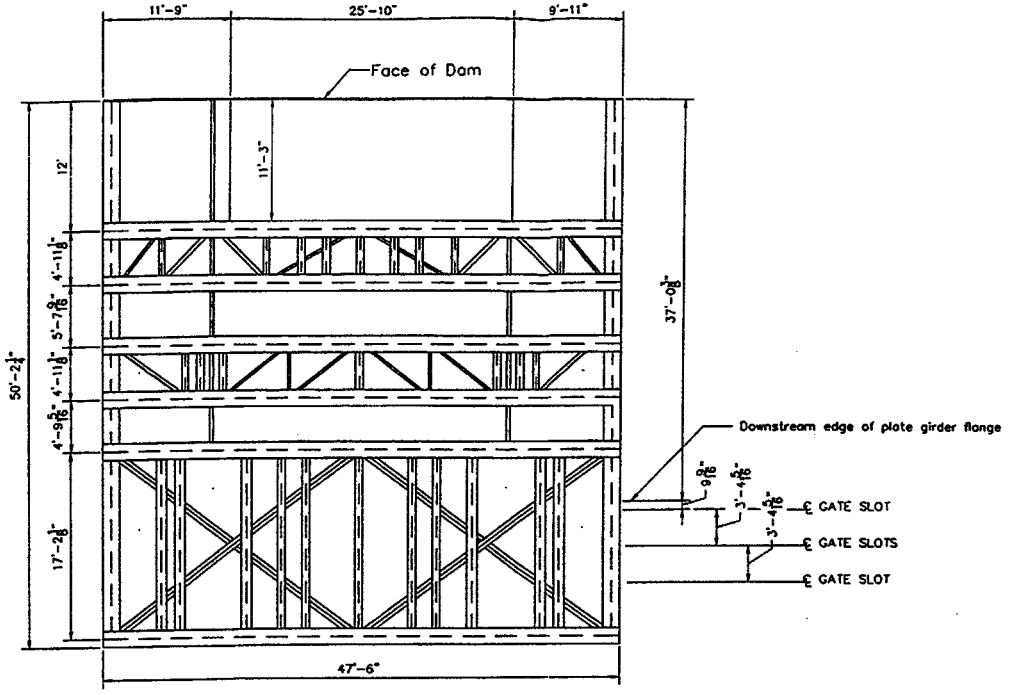
DRAWING NO. C-1

FILE NO. XXX-XX-XXX

CHIEF, STRUCTURAL DESIGN SECTION

1 2 3 4 5

A B C D



PLAN - PLATFORM FRAME
SCALE: 1/4" = 1'-0"

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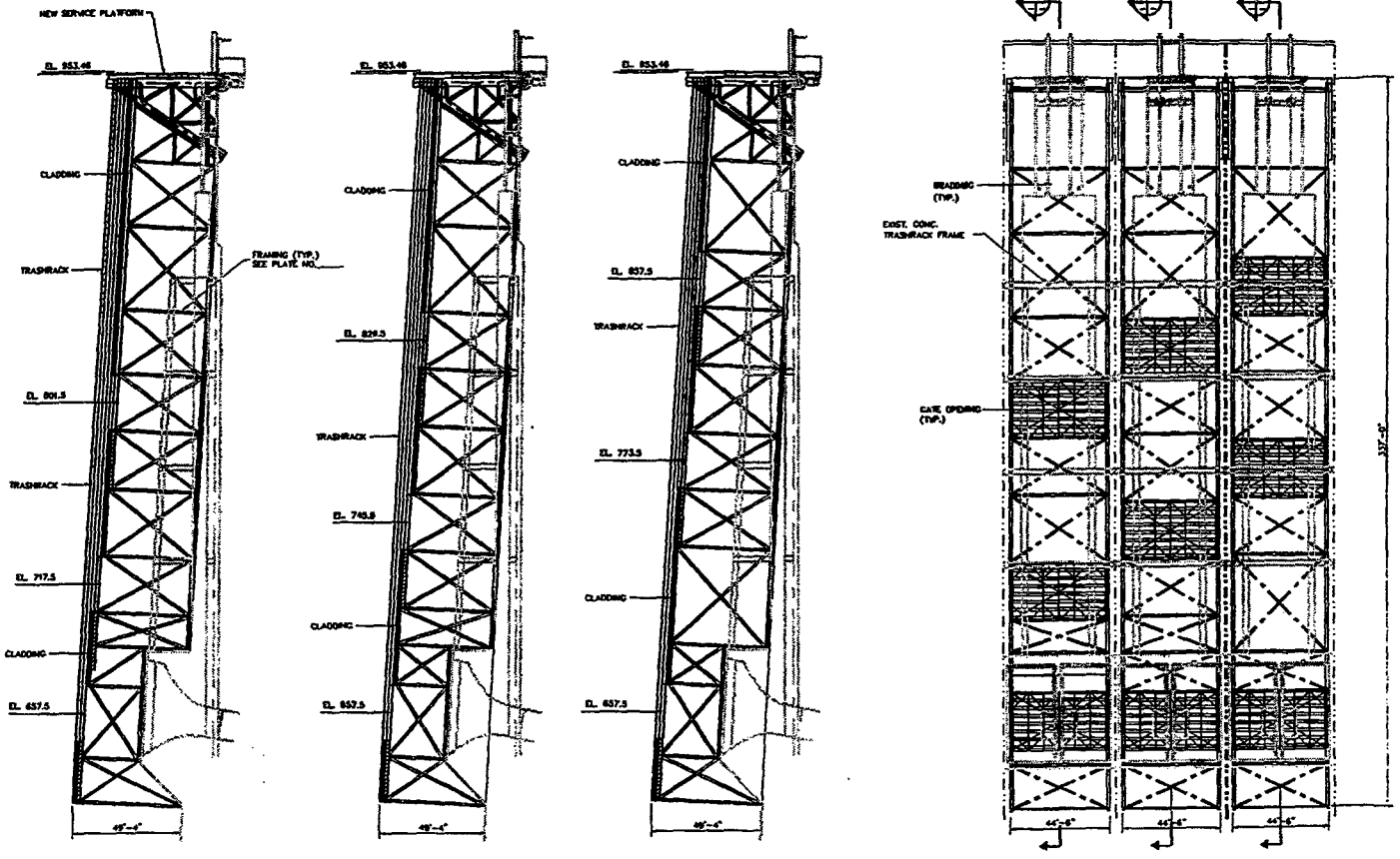
PINE FLAT PROJECT
KINGS RIVER
TEMPERATURE CONTROL STRUCTURE
PLATFORM DETAILS

DESIGNED: RS
DRAWN: CB
CHECKED: JC
SUBMITTED:
DATE:
APPROVED:
CHIEF, STRUCTURAL DESIGN SECTION

AS SHOWN
DATE:
XXX-XX-XXX



SECTION
SCALE: 1" = 20'

SECTION
SCALE: 1" = 20'

SECTION
SCALE: 1" = 20'

ELEVATION - FRAMING AND SUPPORTS
SCALE: 1" = 20'

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PINE FLAT PROJECT
KINGS RIVER

TEMPERATURE CONTROL STRUCTURE FRAMING AND SUPPORT DETAILS

DES. AS SHOWN
DRAWN
CHECKED
DATE
SUBMITTED
DATE
APPROVED
CHIEF, ENGINEERING DESIGN SECTION
DRAWING NO. C-1
SPEC. NO. XXX-XX-XXX

PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

ATTACHMENT 3

MECHANICAL/ELECTRICAL DESIGN REPORT

ATTACHMENT 3

MECHANICAL AND ELECTRICAL DESIGN REPORT

I Mechanical Considerations

A. Gate Hoists

1. Design requirements. - The contractor will be required to furnish, install, and test the gate hoists in accordance with the specifications. A total of nine 50,000-pound capacity hoist assemblies are required for the 44-foot 0-inch wide by 27-foot 0 -inch high water control gates. A total of three hoists will be required for the upper gates, three hoists will be required for the middle gates, and three hoists will be required for the lower gates.

2. Design decisions. -

a.. The basic method of hoisting the water control gates is patterned after the Shasta Temperature Control Device design. The basic hoist assembly for each gate consists of an 1150 rpm electric motor, a 50:1 worm gear speed reducer with dual outputs, two 100:1 parallel shaft gear reducers, two pillow block supported 36 inch diameter grooved drums, four pillow block supported guide sheaves (except for the upper gate hoists), and four wire ropes which attach to the gate by means of two equalizing beams.

b. Other options considered included underwater hydraulic cylinders, and platform mounted hydraulic cylinders mounted both horizontally and vertically. Such cylinders would have to be custom built, and due to the 27 foot stroke requirement, would be very unwieldy. Previous failures on other projects utilizing underwater cylinders has shown them to be unreliable. The chosen method is a proven design which features ease of operation, a reasonable life cycle cost, minimal maintenance, all major components (other than the wire ropes) are located above water, and it allows relatively easy removal of the gates.

c. For aesthetic and maintanence reasons, the hoist layout places all the hoists on one level on top of the structures. It was determined that a stacked configuration was not desirable because it would greatly decrease accessability and thus hamper maintenance. Covers are provided for the hoist drums for the safety of maintenance personnel, and to protect against vandalism and weather.

d. Each hoist is designed for a rope pull on either of the two drums of 60 percent of the rated hoist capacity, since inequalities may exist in the friction or sticking of the gate seals, resulting in unequal loading.

e. The hoists are attached to the gates by gate connection assemblies for equalizing the load on each rope. The wire rope will be constructed of galvanized steel with an independent wire rope core (IWRC). Galvanizing was chosen because of its corrosion resistance.

f. A motor-mounted holding brake is used to eliminate run-on of the motors when the motors are de-energized.. When power to a motor is switched off, the brake will engage to hold the load in place. In the unlikely event that the brake fails, the gate will be held in position by the self-locking characteristic of the 50:1 worm gear speed reducer.

g. The normal travel of all nine gates is 27 feet. However, for inspection purposes, all gates may be raised above the water level, to the top of the structure. The maximum required lifts for inspection are approximately 152, 124, and 96 feet for the upper gates, and 236 , 208, and 180 feet for the middle gates, for bays 1, 2, and 3 respectively. The maximum lift for the all three of the lower gates is 296 feet . The raising speed of the gates is approximately 2 feet per minute.

h. Power provided for the motors is 460 volt, 3 phase, and 60 hertz. The motors for all the hoists are 5 horsepower, 1150 rpm, conforming with National Electrical Manufacturers' Association (NEMA) design D. Motors are sized to accommodate the hoist loads, the raising speeds, and anticipated efficiencies within the hoist drive system. The synchronous speed of 1150 rpm was determined to be the most economical choice, based on the reduction required to attain 2 feet per second hoisting speed and the relative cost of a unit that had a common speed versus a slower, custom made unit.

i. A rotating shaft limit switch is mounted to one of the hoist drums (one per hoist) which will provide upper and lower hoisting limit positions for the gate. A transducer is mounted on each hoist to provide gate position information. A lockout is provided to prevent a gate from being closed unless one other gate is open on the same bay..

j. A gate motion indicator assembly is provided to safeguard against shock loading which could create excessive loads on the hoists and hoist support structures. Shock loading could occur if the gate were to jam in its guides during lowering while the hoist keeps unwinding, thus slackening the ropes. If the gate were to then break loose and fall uncontrolled for a short distance, shock loading would result when the ropes were stretched taut again. The gate motion indicator assembly will shut off the hoist motor (and engage the brake), if the hoist motor is operating and there is no gate motion.

k. A current overload relay is used to shut off the hoist motor (and engage the brake) if the gate were to jam during raising, in order to prevent the locked rotor torque from being applied to the hoist components.

l. Due to power availability, electrical controls permit only two hoists (which cannot be located on the same bay) to operate at once.

3. Design stresses and codes. -

a. The maximum stress in the mechanical parts will not exceed 20 percent of the ultimate strength of the material.

b. The design of welded connections, welding procedures and qualification of welders and welding operators shall be in accordance with AWS "Structural Welding Code - Steel" (AWS D 1. 1).

c. OSHA Part 1910 of Title 29 of the Code of Federal Regulations.

d. Applicable provisions of American Gear Manufacturers Assoc.

e. National Electrical Code and the standards of the National Electrical Manufacturers' Association.

f. AGMA Standard Practice for Gearmotors Using Spur, Helical, Herringbone and Spiral Bevel Gears.

g. The motors furnished shall conform to NEMA Publication No. MG1.

4. Drawings:

Gate Hoists - General Arrangement - Sheet M-1

B. Gates

1. Design Requirements. - The gates are designed to control the elevation from which water is drawn into the penstocks and there-by control the temperature of the water released to the Kings River below the dam. This will allow the plant operators to operate the TCD gates to provide temperatures that will best benefit fish downstream in the Kings River.

2. Design decisions.

a. The gates are designed for 400 pounds per square foot loading. A separate hoist is provided for each gate to allow independent operation and control of the gate.

b. All of the gates function as submerged weirs, ie, they are downward opening. Thus, in the event of a failure of one of the hoist mechanisms or lifting ropes, the affected gate will fail in the open position.

c. All of the nine gates are fabricated from Z-type sheet pile. This design results in lower weight than the standard design with wide flange beams and separate skin plate. The Z-type sheet pile combines the function of the wide flange sections and skin plate. High strength steel (ASTM A572, grade 50) is used to reduce the weight of the gates (approx 40,000 pounds), thus reducing the load that the hoists and the TCD structure have to handle.

3. Design standards and codes. -

a. Structural steel. - ASTM A36 and ASTM A572, Grade 50.

b. Stainless steel bars and shapes. - ASTM A276 type 316L.

c. American Welding Society Structural Welding Code D 1. 1.

d. Applicable provisions of the AISC "Manual of Steel Construction", Eighth Edition

e. Bolts. - ASTM A325.

f. Neoprene seals and bumpers. - ASTM D2000-75e.

II. ELECTRICAL FEATURES

A. General Requirements for Equipment and Materials

Electrical equipment and materials will be specified to conform to applicable Federal Specifications and Standards, the Institute of Electrical and Electronic Engineers (IEEE), the American National Standards Institute, Inc. (ANSI), the ASTM, and Underwriter's Laboratories (UL). To provide for minimum standards of manufacturing and construction, testing, interchangeability and availability, equipment and materials will also be specified to conform to the standards of various manufacturers' organizations including principally NEMA and the Insulated Cable Engineers Association (ICEA). Installation of equipment and materials will be specified to conform with the current edition of the National Electrical Code (NEC), and the National Electrical Safety Code (ANCI C2).

B. Electrical Power

The 480-volt, 3-phase power required for the hoist deck will be obtained from existing distribution board located in the elevator tower. A single circuit feeds a distribution switchboard located on the hoist platform. A separate 480-volt, 3-phase circuit feeds the hoist motor control centers.

A 480/120-volt dry-type transformer will be installed in each hoist motor control center. This transformer will provide 120-volt power for MCC lighting, convenience receptacles, space heaters, RTD transmitters, and auxiliary control power.

C. Motor Control Centers

1. General. -A motor control center will be located on each of the three bays, and will provide the necessary controls for operation of the gate hoists. Each motor control center will have a motor starter for each of the three hoists on that bay. The enclosures for the motor control centers will be NEMA type 3R and suitable for outdoor installation.

2. Electrical controls. - All hoist motors for the temperature control device will normally be controlled from a remote location. Local controls will be provided at each motor control center for maintenance, troubleshooting, and testing purposes.

All electrical controls for the manual operation of the hoist motors can be accessed without operators being exposed to energized parts.

D. Gate-Position Indicating System

The gate-position indicating system will be designed to provide gate position data for each gate. Gate position is displayed locally at the motor control center and gate position signal is sent to the remote terminal unit (RTU).

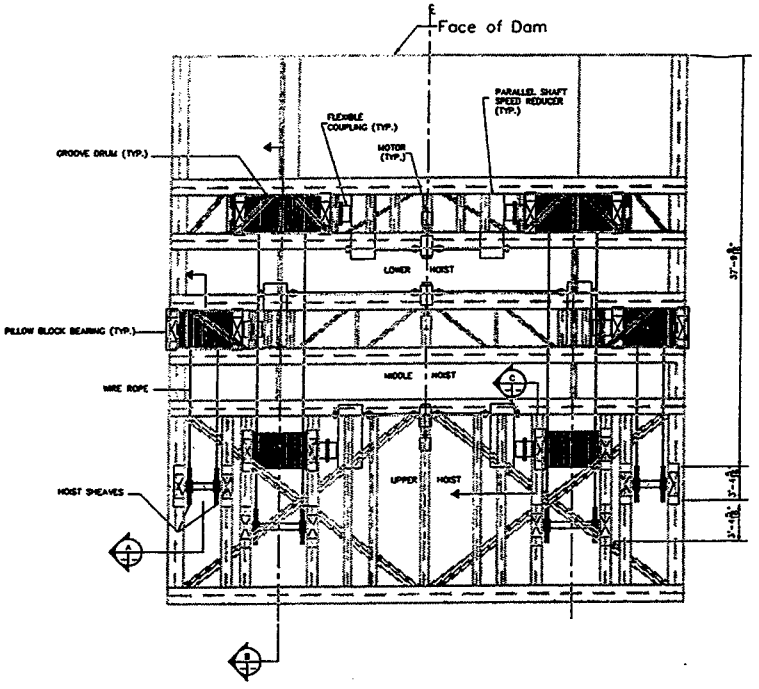
E. Electrical Interlock and Safely Features

1. Each hoist is provided with limit switches to automatically stop the hoist when the gate reaches the fully open or closed position.

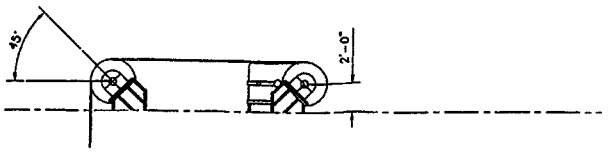
2. Each hoist motor starter has an overload relay which stops the motor if a gate should jam during hoisting. During an overload condition, the remaining hoist motors on the shutter are electrically locked out, a local alarm light is illuminated, and an alarm signal is sent to the RTU.

3. If a gate should jam during lowering, the gate motion limit switch and the gate jam lockout timer are activated, the hoist motor is stopped and mechanically locked out, and a local alarm light is illuminated.

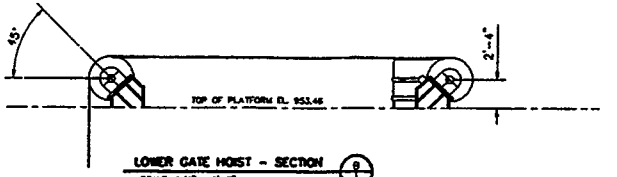
4. Electrical interlocks will allow only one gate at a time to be operated in each bay, and will prevent all three gates in a bay from being in the closed position at the same time .



GATE HOIST PLAN
(TYPICAL OF THREE)
SCALE: 1/4" = 1'-0"

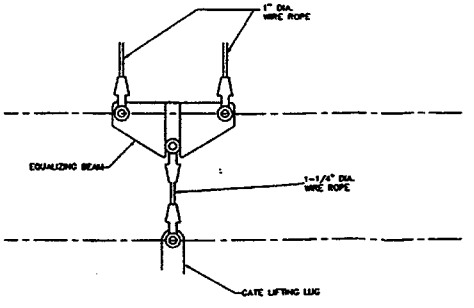


MIDDLE GATE HOIST - SECTION
SCALE: 1/4" = 1'-0"



LOWER GATE HOIST - SECTION
SCALE: 1/4" = 1'-0"

UPPER GATE HOIST - SECTION
SCALE: 1/4" = 1'-0"



TYPICAL EQUALIZING BEAM/GATE LUG ASSEMBLY
(TWO REQUIRED PER GATE)
SCALE: 1/2" = 1'-0"

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT
CORPS OF ENGINEERS
Sacramento, California

WHITE RIVER CALIFORNIA

PINE FLAT DAM

TEMPERATURE CONTROL DEVICE
GATE HOISTS - GEN. ARRANGEMENT

S. Stinson
C.R.
R.P.

AS SHOWN

XXX-XX-XXX

PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

ATTACHMENT 4

REAL ESTATE REPORT

PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

REAL ESTATE REPORT CAN BE FOUND IN APPENDIX E

PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

ATTACHMENT 5

WATER TRANSFER PIPELINE REPORT

PINE FLAT DAM FISH AND WILDLIFE HABITAT
RESTORATION INVESTIGATION

WATER TRANSFER PIPELINE

PRELIMINARY

ENGINEERING FEASIBILITY REPORT

Prepared for

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Sacramento District
Corps of Engineers
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June 1998

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1. INTRODUCTION

In January 1996, the Kings River Conservation District (KRCD) entered into a feasibility cost sharing agreement with the U.S. Army Corps of Engineers (Corps) as the non-Federal local sponsor for the Pine Flat Dam Fish and Wildlife Habitat Restoration Investigation. One of the restoration measures identified to be investigated in the feasibility study involved a water transfer plan that would consist of a water exchange to augment in-stream flows below Pine Flat Dam in late summer and fall to benefit the lower Kings River trout fishery. To accomplish the exchange, approximately 10 miles of new pipeline would have to be constructed.

Under the terms of the cost sharing agreement, the KRCD would perform certain tasks as "in-kind" services for the study. One of the major work tasks to be performed by KRCD involves the design of all project features associated with the water transfer pipeline. To accomplish this task, the KRCD retained the firm of Provost & Pritchard Engineering Group, Inc. to facilitate the design of the water transfer line.

This report summarizes the activities performed to date related to the evaluation of selected alignments and the basis for the design of the water transfer pipeline.

2. INTENT

The water transfer pipeline is envisioned to enhance and restructure the timing of deliveries, shorten the delivery travel time and distance, and reduce conveyance losses due to evaporation and seepage, for the benefit of environmental restoration on the Kings River. Attachment 1 is a schematic showing the entities and potential physical facilities related to the project.

The water transfer measure would involve an exchange of water either between the U.S. Bureau of Reclamation's Central Valley Project (CVP) or the State Water Project (SWP), and Kings River Water Association (KRWA) storage holders at Pine Flat Reservoir.

As stated in the *Pine Flat Dam Fish and Wildlife Habitat Restoration, California Feasibility Phase Feasibility Cost Sharing Agreement and Project Study Plan* prepared by the U.S. Army Corps of Engineers (Army Corps) and the Kings River Conservation District (KRCD) dated January 1996:

> *... Water from the San Luis Unit of the CVP is delivered to state wildlife management areas and national wildlife refuges. If some of this wildlife refuge supply could be made available to meet irrigation demands in the downstream portion of the Kings River service area during June, July, and August, the water remaining in the Pine Flat Reservoir that was scheduled for irrigation, but not used*

for that purpose, could be released later to augment river flows for fish in the lower Kings River in the critical period of September through November. This released water would be transferred through the lower Kings River, into the Fresno Irrigation District (FID) system, and then west to the Mendota Pool where it would be available to meet the requirements of the wildlife areas during the time when wetlands are needed for waterfowl. ...

This allows the diverted water to be beneficially used and not negatively impact the total quantity of water available to the member agencies of the Kings River Water Association.

3. MENDOTA WILDLIFE AREA

The California Department of Fish and Game (F&G) makes the water diversions from the Mendota Pool to serve the Mendota Wildlife Area (Refuge). F&G was contacted and several meetings were held with Bob Huddleston and Steve Brugaman to discuss the potential merits of this program. From these meetings it was learned that deliveries to the Refugee will approximate Level 4 water supplies (firm, reliable, long-term entitlements for optimal wildlife management = 29,650 acre feet). About half the total comes in the months of September through November. The peak delivery and flow month is October. A delivery schedule for the management area is included in Table 1. Note that some deliveries to the refuge are not accounted for in this table.

TABLE 1
F&G Mendota Wildlife Area Water Delivery Schedule - Level 4

MONTH	DELIVERY (acre-feet)	PEAK MONTHLY FLOW (cfs)
MARCH	450	10
APRIL	1,040	25
MAY	2,310	40
JUNE	2,400	50
JULY	2,500	50
AUGUST	2,800	55
SEPTEMBER	4,700	120
OCTOBER	6,500	200
NOVEMBER	3,000	120
DECEMBER	1,800	50
JANUARY	1,042	30
FEBRUARY	1,108	25
TOTAL	**29,650 AF**	

A field review at the Refuge was conducted with Mr. Huddleston and Mr. Brugaman of F&G to receive an overview of the operations. The Fresno Slough divides the Refuge into a western and

eastern side. Approximately 40% of the water accounted for in the table is used on the eastern side of the refuge and 60% is used on the western side. Water supplies are delivered without charge to the Refuge. The Refuge does pay for the power to lift the water into the system.

4. KINGS RIVER WATER ASSOCIATION (KRWA)

KRWA acts as trustee for all member agencies and holds water rights licenses for all the Kings River and storage rights licenses on Kings River reservoirs. The Watermaster for the KRWA administers the diversion of Kings River water granted under the licenses. Prior to the evaluation of alternative pipeline locations, discussions had taken place regarding the conveyance of Kings River water to the pool. It had been agreed that the logical means for movement of the water would be through the system of the Fresno Irrigation District. The FID is one of the 28 members that make up the Kings River Water Association.

5. FRESNO IRRIGATION DISTRICT (FID)

Meetings were initiated with the FID to discuss their system and how the system could most effectively be utilized for conveyance. The two main conveyance canals that provide service to the western edge of the district are the Houghton West Canal and the Dry Creek Canal. Owing to potential increased maintenance costs, seepage losses, and construction of two pipelines it was determined to limit the flows to one canal system rather than split the flows. The Houghton is closer to the Mid Valley Canal and afforded the shortest connection. However, existing piping of the canal West of Highway 145 (Madera Avenue) limits the capacity to about 60 cfs. The Dry Creek canal has not been piped in any of its' downstream reach and the estimated canal capacity is 200 cfs. Understanding that several FID alternatives existed, seven were defined. The alternatives and their respective benefits and associated costs are listed in Table 2 and consist of:

A. Houghton West Canal connection to the Mid Valley Canal (20 cfs)
B. Houghton West Canal connection to the Mendota Pool (20 cfs)
C. Houghton West Canal connection to the Mid Valley Canal (100 cfs)
D. Dry Creek Canal to James Irrigation District to Mendota Pool (100 cfs)
E. Dry Creek Canal to Mendota Pool (50 cfs)
F. Dry Creek Canal to Mendota Pool (100 cfs)
G. Dry Creek Canal to Mendota Pool (150 cfs)

TABLE 2

FID Water Transfer Alternatives

Alternative	New Facilities Description	Unit Cost $/ft	Amount	Modifications	Amount	Total	Est. Deliveries (AF)	$/AF
A	22,000' - 36" pipe	75	1,650,000	Mid Valley Canal	100,000	1,750,000	2,500	700
B	43,000' - 36" pipe	75	3,225,000			3,225,000	3,600	896
C	22,000' - 72" pipe	160	3,520,000	Houghton W. Canal	3,400,000	6,920,000	10,000	692
D	----	---	---	Dry Creek & McMullin Canals	3,000,000	3,000,000	7,000	429*
E	55,000' - 54" pipe	140	7,700,000			7,700,000	6,000	1,283
F	55,000' - 72" pipe	160	8,800,000			8,800,000	10,000	880
G	56,000' - 84" pipe	180	9,900,000			9,900,000	15,000	660

* *Requires use of James Irrigation District main canal past normal operation. Maintenance activities agreement with District may be difficult to obtain.*

From review of analysis it was determined that Alternative G afforded the most benefits and had the most significant chance of being implemented. A water transfer pipeline connecting the western portion of FID's Dry Creek to the Mendota Pool would provide the capacity (150 cfs), location, and cost effectiveness needed for a viable project. A more thorough study was undertaken to identify potential alignments connecting FID's Dry Creek to the Mendota Pool as well as define significant design related impediments.

6. POTENTIAL DRY CREEK TO MENDOTA POOL ALIGNMENTS

To determine the "best" alignment connecting FID's Dry Creek to the Mendota Pool four potential alignments were reviewed and many people were contacted. Issues of land use, property ownership, utilities, location of roads, existing facilities, geographic boundaries, environmental issues, cost, operational constraints, and topography were all evaluated for the potential alignments.

Information was acquired on the above mentioned issues for a swath of land approximately three miles in width from Jensen Avenue to the north to American Avenue to the south, starting along Dry Creek next to Howard Avenue and extending to the Mendota Pool to the west. This information was compiled on a Water Transfer Pipeline - Alternatives base map displaying a graphical representation of the various alignments.

Base Map Preparation

A base map at a 1"=2,000' scale was prepared with the following features: Roadway alignments by name in half mile increments, section numbers with township and range, elevation information from U.S.G.S Topographic maps, location of paved roads, existing FID facilities, water district boundaries for FID, Mid-Valley Irrigation District, James Irrigation District, and Tranquility Irrigation District, Mendota Pool location, and the Mendota Wildlife Area.

Four potential alignments were selected based on the above information and added to the base map. The alignments were restricted to the section lines or quarter section lines to best facilitate property lines and were a half-mile apart.

Field Review

Existing Dry Creek check structures were identified along with other FID facilities. Each of the potential alignments were documented by videotape and photos. Information such as land use, structures, irrigation facilities, utilities, roads, etc. were documented. Several landowners were met in the field and discussions regarding the pipeline occurred. These landowners were supportive of the project and also gave their perspective on where they thought the pipeline should be located.

Land Use

Field plantings were identified by specific crop. Vineyard, Almonds, and field crops were the most common. Row directions for permanent crops were documented. Some fields were open or not cropped. Private residences and structures were identified. Crop rotations and land use changes are inevitable, and will be updated when verified.

Several areas of potentially restrictive crossings were identified. The County of Fresno's American Avenue Landfill is a large area that will not allow pipelines traversing through it. According to County of Fresno staff potential pipelines would have to be diverted around the landfill. The County has also recently acquired additional land for expansion of the landfill, enlarging the restricted area. There are also areas of subdivided land zoned for private residences. Sections 29 and 30 - Township 14s - Range 17e contain many 0.5 to 4 acre parcels zoned for residential and small pasture. A large number of individual landowners may make it more difficult to secure easements and right-of-way. Future expansion or improvements to this area may create operational and maintenance obstacles.

Utility Information

For the investigation of the alternative alignments utilities were identified by field review only. Existence of overhead utility lines, and buried utilities posted by signs were documented. Specific locations and existence of utilities was made with the utility companies for the most favorable alignment only and is described later in this report.

Existing Private Facilities

Numerous private wells were identified along the alignments during the field review. Existence of abandoned wells or wells missed during the field review, will be identified by researching CA Department of Water Resources well data information for the selected alignment.

Existing buried irrigation pipelines were identified by field review but buried pipelines across the alignments were difficult to locate. Other open ditches and canals were also identified. Specific pipeline crossings, canals, and facility restrictions will be identified during the feasibility design stage.

Land Ownership

General land ownership was identified using *Agri-Land Fresno County Property Ownership Maps Plat Book & Guide* by Echoe Map Publishing Company. This information was initially used to identify the major landowners along the alignments. The County of Fresno parcel data was then researched for specific and detailed information and added to the base map.

Public Roads and Facilities

Several County of Fresno roads will need to be crossed by the pipeline. Madera Avenue is a State Highway (HW 145) that must be crossed by all alternatives. County and CalTrans road crossing criteria will need to be followed. Additional costs will be associated with the road crossings.

FID has some existing canal and pipeline water delivery facilities throughout the southwestern portion of the district. Use of existing FID right-of-way or easements for the water transfer pipeline may be a possibility.

Mid Valley Water District will be crossed by the water transfer pipeline. The Mid-Valley Canal and the Ranch Canal will be crossed or paralleled by the pipeline

Reclamation District 1606 owns the property that the water transfer pipeline would cross and finally outlet into at the James Bypass, on 3 of the alternative alignments.

Cost Estimates

Cost estimates were based on estimated prevailing wage construction costs and were intended for comparison of the alternatives only. Actual construction costs are expected to vary from these estimates. (Preliminary cost estimate only).

Other Constraints

A pipeline system versus an open canal system was also evaluated. Though the canal was less costly, the right-of-way requirements, crossings, operational, and maintenance considerations far outweighed the increased costs and therefore an underground pipeline was chosen.

Analysis of Alignments

After all the information was collected on the various alignments they were compared for overall feasibility, benefit, cost, and benefit/cost ratios.

Alternative 1 (Malaga Avenue) was eliminated because of the restrictions associated with the American Avenue Landfill. If the landfill was not an issue, than this alignment would have been the first choice. Alignments further south of this one begin to loose their benefit of shortening the transfer distance, and the Dry Creek turnout structure would be outside of the FID.

Alternative 3 is 14.5 miles in length and would be substantially more costly than the other alternatives. It is the only alignment that outlets directly into the eastern boundary of the Mendota

Wildlife Refuge, but as stated earlier by the F&G representatives that would not be a significant advantage. Not chosen based on the cost was to high.

Alternative 4 was not selected based on 2 miles of the alignment is constrained by existing buried FID pipeline facilities and was never seriously considered as an alternative. Field reconnaissance was not conducted and efforts to pursue this alternative were never completed.

From this evaluation, a combination of Alternative 1 and 2 was the selected alignment, and feasibility design level studies have commenced. Traveling 6.5 miles west along Alternative 2 (Central Avenue), then traveling 0.5 miles south, and continuing 3.5 miles west along Alternative 1. Alternative 2 originally continued traveling west adjacent to the subdivided area of section 29 and 30 T14s-R17e. As stated earlier, this subdivided area is considered too unpredictable in regards to future growth or improvements and was to be avoided. The selected alignment is described in better detail in the following section.

7. SELECTED ALIGNMENT

The "best" alignment was selected as a result of investigating numerous locations and constraints. The alignment provides the most benefits and cost effectiveness compared to the other alignments. Exact pipeline location along the alignment will be adjusted to the north or south side of the road as seen fit. In summary the selected water transfer pipeline alignment consists of:

- Connection of FID's Dry Creek to the Mendota Pool.
- Approximately 10.6 total miles of 78" diameter RCP pipeline.
- Existing Fresno Irrigation District check structure at Central Avenue and Dry Creek to be utilized. Inlet structure to pipeline to be located here.
- Existing FID facilities - Bland Waste (0.8 miles of earthen ditch and 1.25 miles of 36" pipeline).
- Assumes new pipeline would run parallel to the Bland Waste facilities.
- Pipeline runs parallel along 2.1 miles of paved County road (Central Ave.).
- The ground surface elevation steadily falls about 55 feet to the west. Pipe flow is by gravity.
- County of Fresno road crossings at Howard, Goldenrod (Northside only) and Butte Avenues.
- State Highway 145 road crossing at Madera Avenue.

Survey & Aerial Photography

In January of 1998, section corners and quarter corners were re-established in the field. Flight crosses were set on these corners. Horizontal and vertical control was established, to establish the pipeline alignment and to verify general ground slopes. Alignment topography is relatively flat and uniform and for the feasibility design stage extensive topographic work was not needed. Aerial photography was needed to effectively identify alignment features and locations, easily and cost

effectively. The aerial photography flight was conducted on January 27, 1998. Aerial images have been digitized, cropped, and rectified to a scale of 1" = 100' using the control survey points. Preliminary double window plan and profile sheets have been prepared superimposed with the aerial photography panels and are dated 5/6/98.

Property Ownership

Land ownership information has been updated to December 1997 County of Fresno records. The most current ownership information is included as Attachment 2 and is also updated on the base map. This information includes County assessed property values, which will vary from market value, but is a good guide to estimate relative value.

Utility Information

Utilities were identified by field review and utility plat maps provided by PG&E and the Kerman Telephone Company. PG&E electrical lines are all overhead, all phone lines are buried, and there are no natural gas pipelines along the alignment.

Pipe Materials

For preliminary design purposes, the pipe material is assumed to be rubber gasketed reinforced concrete pipe (RCP), with flow control at the inlet end (Dry Creek). After additional analysis it is expected that flow control will be required at the outlet end (Mendota Pool). Difficulties with controlling and metering flow rate at the inlet (Dry Creek) calls for RCP pipe. The option of using flow control at the inlet and operating the pipeline as a free flowing low head system using cast-in-place concrete pipe is very favorable in regards to cost, and will also be investigated thoroughly during the next phase.

Hydraulics

Preliminary hydraulic calculations were based on survey stationing and elevations. See Attachment 3. Elevation differences should provide enough head to convey the 150 cfs flow requirement with a 78" diameter concrete pipeline. A hydraulic gradeline for elevation control on all vent structures and turnouts was calculated. This pipe size should work for both downstream and upstream control. Hazen-William's equation for calculation of pipeline friction loss was used. A "C" value of 120 was used for concrete pipe. The pipeline is assumed to flow full. Velocities were kept under 5.0 feet per second.

Pipeline Layout

A preliminary pipeline cross section, bedding, construction easement, and right-of-way/easement relative to the Fresno County Central Avenue right-of-way have been assumed and is illustrated for a 78" diameter pipe in Attachment 4. Specific layout information will be adjusted to specific site conditions and is addressed in the final design plan and profile sheets.

Soils Information

Soils information was from the USDA Soil Conservation Service - *Soil Survey of the Eastern Fresno Area, California, October 1971.* Soils beginning from Dry Creek are Hesperia sandy loams, Traver sandy loams, Tujunga loamy sand, Traver fine sandy loams, Fresno fine sandy loams, Playas, Cajon coarse sandy loam, Calhi loamy sand, Cajon loamy coarse sands, Hesperia sandy loams, and Pond fine sandy loams. Most if not all of the areas identified as Playas are now under agricultural production and surface ponding no longer occurs. The Fresno, Traver and Pond soils are variably saline-alkali affected and are more suited for salt tolerant commodity crops rather than permanent crops.

Preliminary Plans

Plan views show a control line (section line) and proposed pipeline alignment superimposed over the photo. Other elements of the plan view such as easement and rights-of-way locations, parcel and ownership information, air/vacuum valves, and existing utility information are also shown on the plans.

Profile views show the existing ground surface, air/vacuum valves, slope, and invert.

Details consist of the inlet control structure at Dry Creek, Ranch Canal siphon crossing, vent detail, and the outlet at the James By-Pass. These details are conceptual and show general configurations sufficient to estimate costs. They do not show reinforcement details or specific details related to construction.

Work in Progress

The work in progress on the pipeline includes the following items, and will be further documented in the final engineering feasibility report.

Design development includes outlining and reviewing the design criteria for the project such as refinement of operations and timing of various flows. Reviewing with Army Corps, KRCD, Fresno Irrigation District, Mid-Valley Irrigation District, and Reclamation 1606 personnel

regarding design capacities, operational criteria, and identification of structural requirements and deficiencies.

Field visits will be made with district staff to review alignment, existing structures and turnouts and define problems with constructability. Design will include identification of control structures and operational requirements of the pipeline. Impact of existing agricultural systems and structures on the hydraulic grade line will be identified and recommendations on potential alternatives will be addressed.

Utilities will again be contacted for information regarding special construction activities related to location of the planned pipeline to existing facilities (holding of poles during construction) and the like.

Information regarding facility and utility relocation, identification of mitigation requirements, identification of real estate acquisition requirements, and project operation and maintenance requirements will be submitted to the Corps.

Draft construction technical specifications shall be supplied to KRCD for their review and revision.

A quantity take-off for the water transfer pipeline will be prepared for the Corps to prepare a cost estimate.

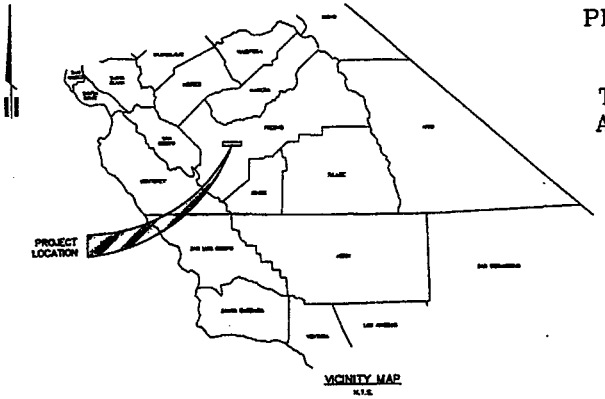
Completed plans and specifications will be submitted to KRCD, Corps, and other interested parties.

8. CONCLUSION

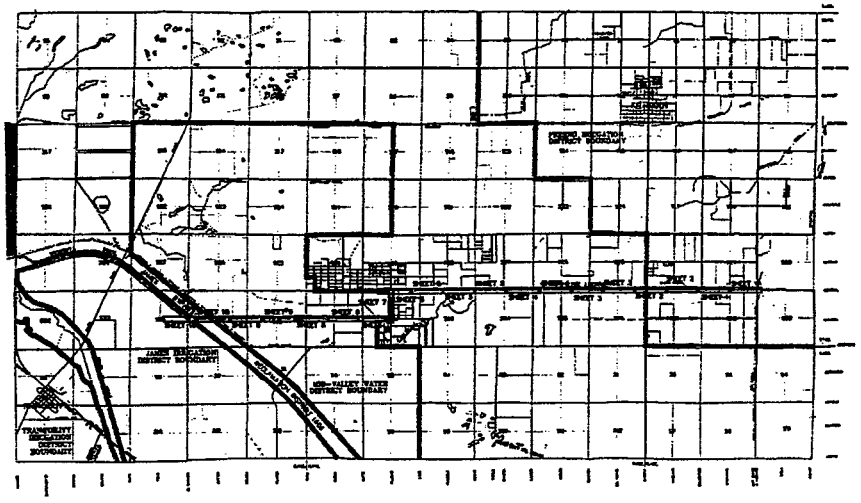
A multitude of research, calculations, and analysis has been performed on the water transfer pipeline. In-depth design work on the pipeline is progressing. Once this work is completed and comments from the Corps are received, the final Engineering Feasibility Report will be prepared to document the water transfer pipeline activities.

PINE FLAT DAM FISH AND WILDLIFE HABITAT RESTORATION INVESTIGATION
FOR
THE KINGS RIVER CONSERVATION DISTRICT AND THE U.S. ARMY CORPS OF ENGINEERS

WATER TRANSFER PIPELINE
PRELIMINARY DESIGN



VICINITY MAP
N.T.S.



LOCATION MAP
SCALE IN FEET
0 2000 4000 8000

GENERAL NOTES

1. THESE PLANS ARE PRELIMINARY AND ARE BASED ON RECONNAISSANCE LEVEL SURVEY, UTILITY, PROPERTY OWNERSHIP, AND DESIGN INFORMATION.
2. EXISTING IMPROVED UTILITIES AND STRUCTURES ARE IN ACCORDANCE WITH AVAILABLE RECORDS. THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION, TYPE, SIZE AND ELEVATION OF ALL EXISTING PIPELINES, VALVES, AND STRUCTURES, WHETHER OR NOT SHOWN ON THE PLANS.
3. MONUMENTS PERMANENTLY SURVEY MARKER MONUMENTS REFERENCE AND LOCATED THROUGHOUT THE PIPELINE ALIGNMENTS. THESE MONUMENTS HAVE NOT BEEN LOCATED FOR THIS PRELIMINARY DESIGN.
4. CONSTRUCTION EASEMENTS, WHERE SHOWN ON THE PLANS, ARE FOR ADDITIONAL WORKING SPACE. THE SPACE SHALL NOT BE USED IN ANY MANNER THAT WILL CAUSE DETRIMENT TO PROPERTY.
5. SECTION LINES ARE BASED ON SURVEYED SECTIONS AND 1/4 SECTION CORNERS LOCATED IN THE FIELD.
6. BASIS FOR ROAD EASEMENTS, RIGHT OF WAYS, AND PROPERTY LINES TRANSFERRED FROM COUNTY OF FRESNO RECORDS.
7. ALL STATIONING SHOWN ON THE PLANS IS BASED ON HORIZONTAL MEASUREMENTS AND DOES NOT REPRESENT THE EXACT PIPELINE LENGTH.
8. CONCRETE PIPE USED IN CONSTRUCTION SHALL BE PRE-CAST REINFORCED CONCRETE PIPE CONFORMING TO ASTM C-76 FOR CLASS 1 LOADING, EXCEPT WHERE NOTED.
9. RUBBER GASKET JOINTS SHALL MEET ASTM C-443 STANDARD SPECIFICATIONS
10. A 3' MINIMUM DEPTH OF COVER OVER THE TOP OF THE PIPE IS REQUIRED.
11. AIR/VACUUM VALVES SHALL BE A MINIMUM OF 3' ABOVE GROUND SURFACE
12. UNDERGROUND STEEL PIPE, VALVES, FLANGES, REDUCERS, AND COUPLINGS SHALL BE DOUBLE WRAPPED WITH 8MIL PE POLYETHYLENE SHEETING AND ADHESIVE TYPE TAPE NOT LESS THAN 10MIL BY 2" WIDE. PIPE WRAP TAPE, TYPICAL ALL DETAIL SHEETS.
13. ALL GENERATORS, VALVES, AND MAJOR FITTINGS SHALL BE RATED TO EQUAL OR GREATER THAN THE LINE PIPE RATING MAXIMUM LOADING CONDITIONS NOTED.
14. THRUST RESTRAINTS TO BE PROVIDED AT ALL BENDS, TEES, AND DEAD ENDS, WHETHER OR NOT SHOWN ON THE PLANS.
15. PIPE DEFLECTION FOR ALIGNMENT CHANGES SHALL NOT EXCEED 75 PERCENT OF MANUFACTURER'S MAXIMUM ALLOWABLE JOINT DEFLECTION AND MUST BE SUBMITTED FOR APPROVAL BY THE OWNERS.
16. PIPELINE ROAD CROSSINGS AT MINARET & GOLDENROD AVENUES (COUNTY OF FRESNO) WOULD REQUIRE ENCROACHMENT PERMITS. OPEN CUT CROSSINGS MIGHT BE ALLOWED BY THE COUNTY.
17. PIPELINE ROAD CROSSING AT MADERA AVENUE (STATE HIGHWAY-CALTRANS) WOULD REQUIRE CALTRANS APPROVAL PRIOR TO CONSTRUCTION. BORING AND JACKING IS REQUIRED.
18. PIPELINE ROAD CROSSING AT SUTTER AVENUE (COUNTY OF FRESNO) WOULD REQUIRE AN ENCROACHMENT PERMIT. BORING AND JACKING WOULD MOST LIKELY BE REQUIRED.
19. ROAD RANCH CALLED OUT AS "ALIGNMENTS" ARE FOR GENERAL LOCATION PURPOSES ONLY, ACTUAL PUBLIC ROADS DO NOT EXIST.

SHEET INDEX

SHEET NUMBER	DESCRIPTION
1.	COVER SHEET
2.	PLAN & PROFILE STATIONS 0+10 TO 80+00
3.	PLAN & PROFILE STATIONS 80+00 TO 120+00
4.	PLAN & PROFILE STATIONS 120+00 TO 160+00
5.	PLAN & PROFILE STATIONS 160+00 TO 240+00
6.	PLAN & PROFILE STATIONS 240+00 TO 320+00
7.	PLAN & PROFILE STATIONS 320+00 TO 348+88
8.	PLAN & PROFILE STATIONS 348+88 TO 404+00
9.	PLAN & PROFILE STATIONS 404+00 TO 464+00
10.	PLAN & PROFILE STATIONS 464+00 TO 524+00
11.	PLAN & PROFILE STATIONS 524+00 TO 567+61
12.	INLET DETAIL
13.	RANCH CANAL & VOIT DETAILS
14.	OUTLET DETAIL

LEGEND—PLAN VIEW

- ASSESSORS PARCEL NUMBER — 559-270-07s / 6.96 ACRES
- LOT ACREAGE
- SURVEYED SECTION LINE
- PROPOSED 65' CONSTRUCTION EASEMENT
- 78" ø RCPCP PIPELINE
- PROPOSED 35' PERMANENT EASEMENT
- EXISTING COUNTY R.O.W.
- EXISTING LOT LINES
- PROPOSED AIR/VACUUM RELEASE VALVE — 7
- EXISTING KERMAN TELEPHONE CONNECTION BOX
- EXISTING BURIED PHONE LINE
- EXISTING PG&E POWER POLE
- EXISTING PG&E OVER HEAD ELECTRICAL LINE
- SECTION CORNER

SPECIAL NOTE

Where underground and surface structures are shown on the plans, the locations, depth and dimensions of structures are believed to be reasonably correct, but are not guaranteed. Such structures are shown for the information of the Contractor, but information so given is not to be construed as a representation that such structures will, in all cases, be found where shown, or that they represent all of the structures which may be encountered.

48 HOURS
BEFORE EXCAVATING
CALL "U.S.A." TOLL FREE
800 227-2600
UNDERGROUND SERVICE
ALERT

PRELIMINARY DESIGN
FOR REVIEW PURPOSES ONLY

PROVOST & PRITCHARD
CIVIL ENGINEERS AND LAND SURVEYORS OF CALIFORNIA

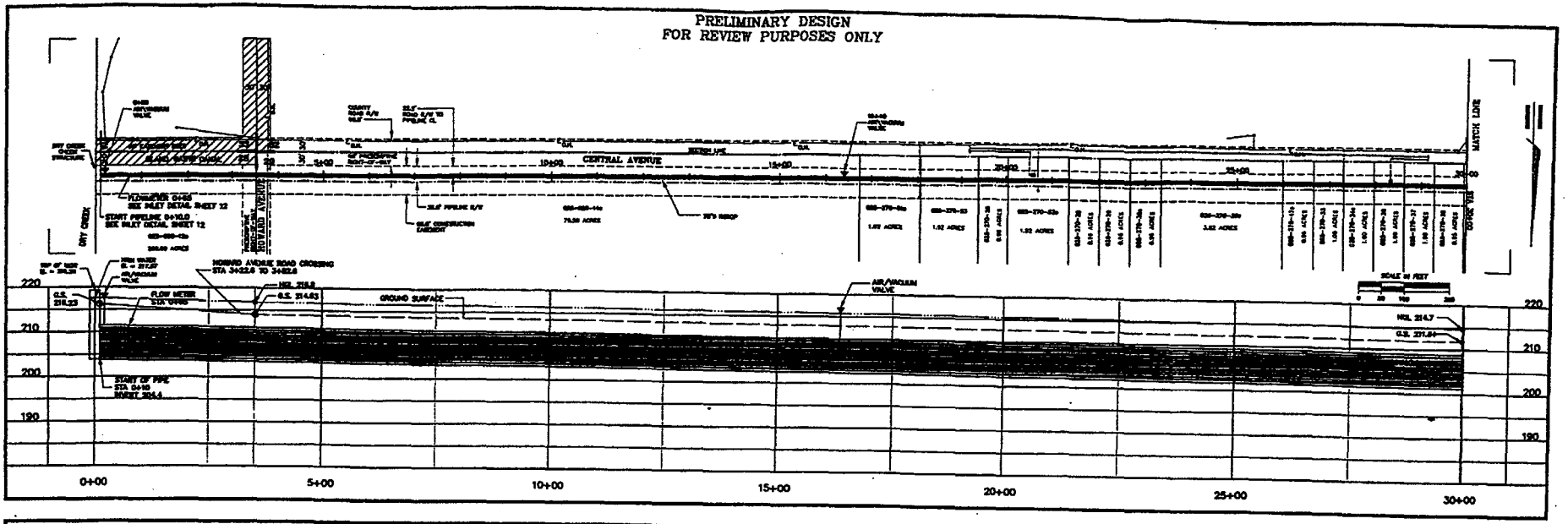
PINE FLAT DAM FISH AND WILDLIFE HABITAT RESTORATION INVESTIGATION for KINGS RIVER CONSERVATION DISTRICT U.S. ARMY CORPS OF ENGINEERS

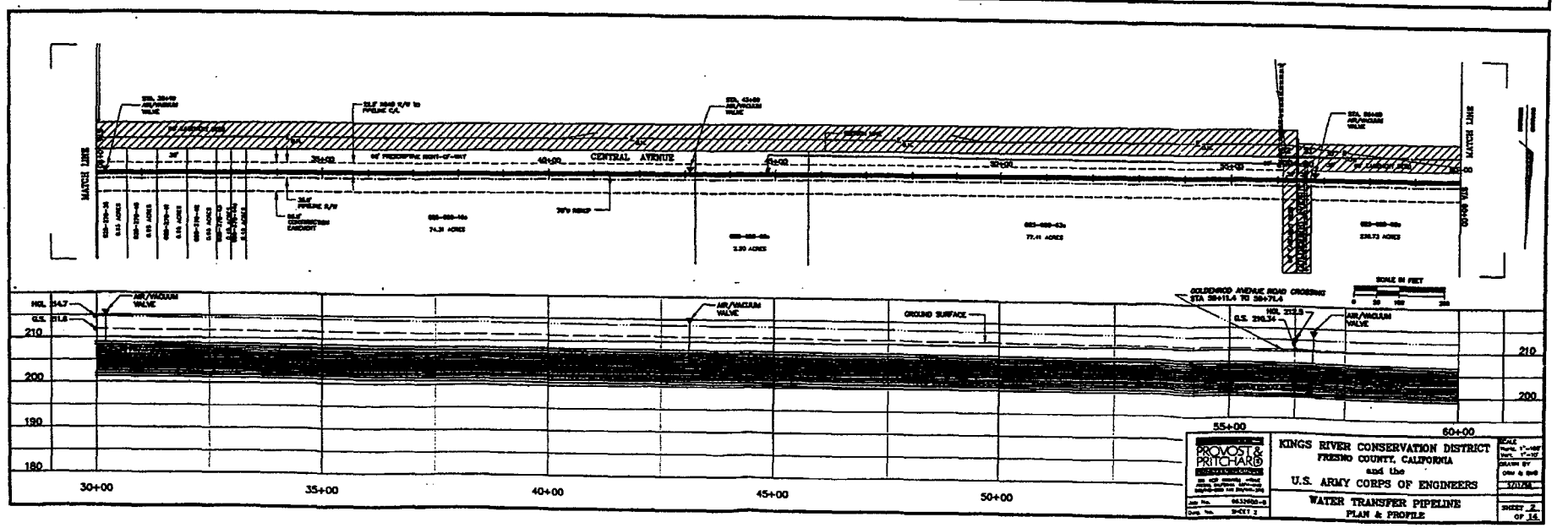
WATER TRANSFER PIPELINE

Job No. 98.32600-0
Dwg. No. SHEET1

SCALE AS SHOWN
DRAWN BY DRN
1/97/98
SHEET 1 OF 14

PRELIMINARY DESIGN
FOR REVIEW PURPOSES ONLY





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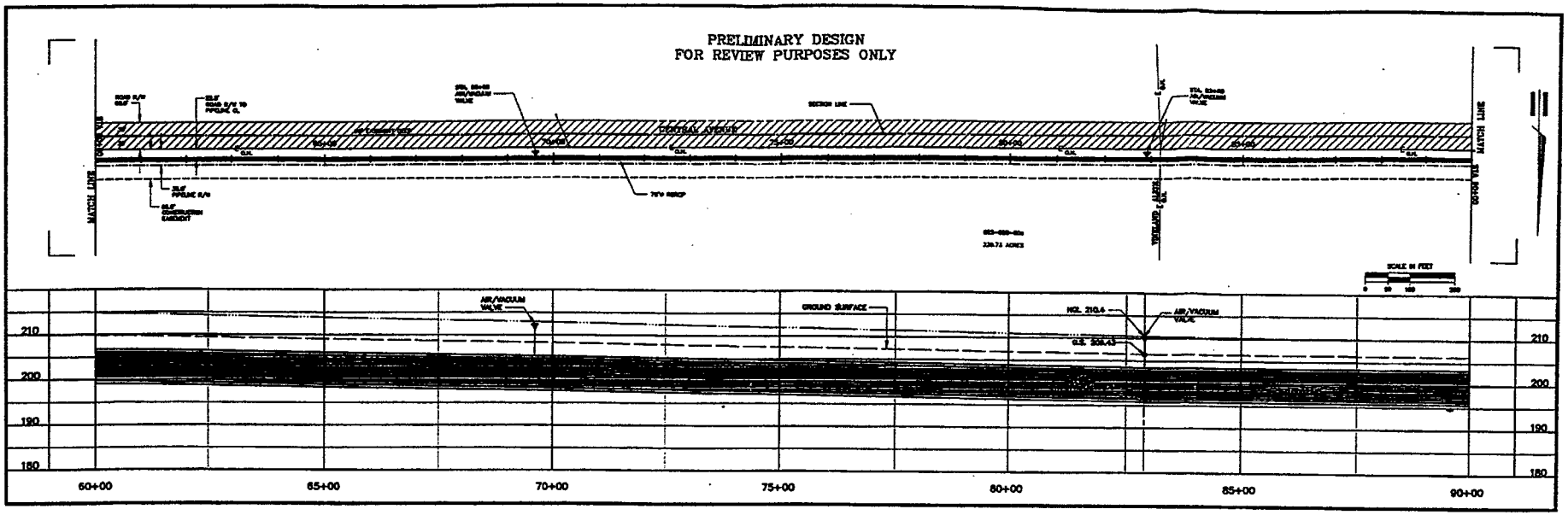
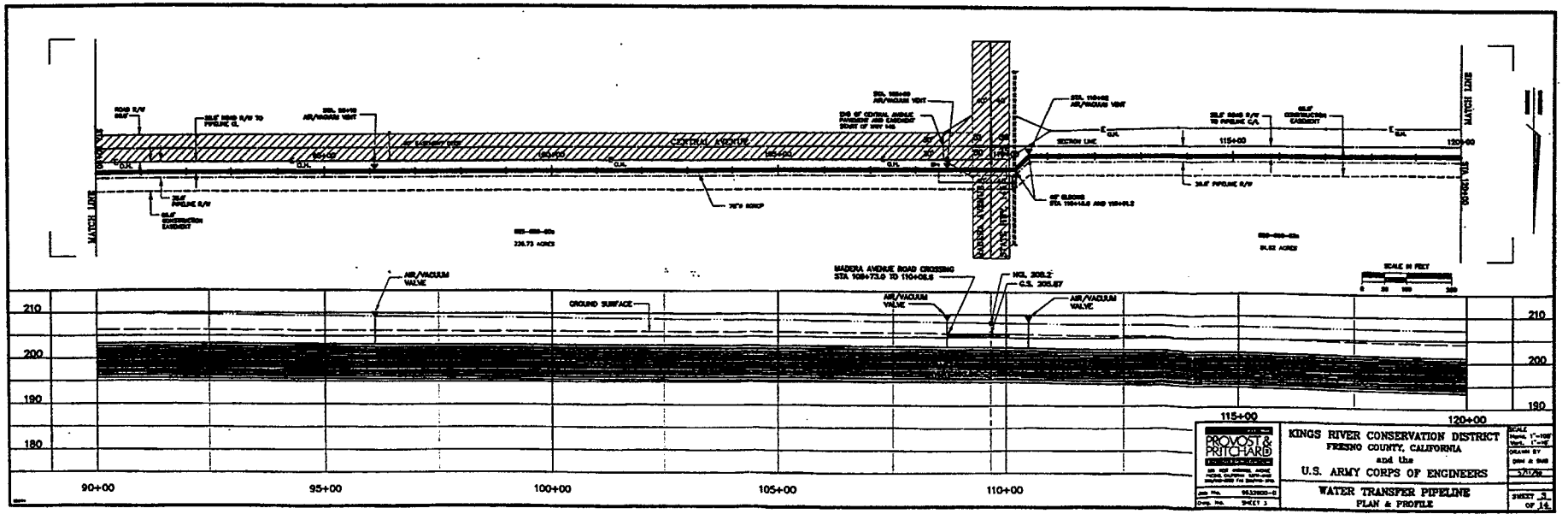
KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
and the
U.S. ARMY CORPS OF ENGINEERS

WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 2 OF 14

PRELIMINARY DESIGN
FOR REVIEW PURPOSES ONLY





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KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 3 OF 14

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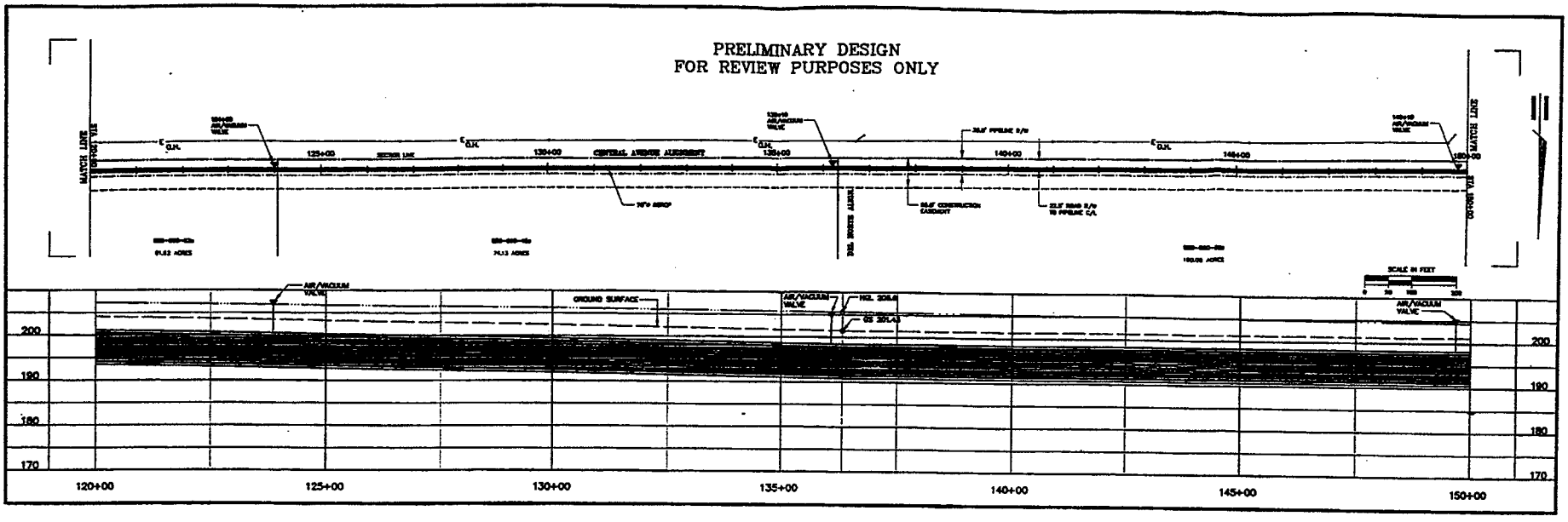

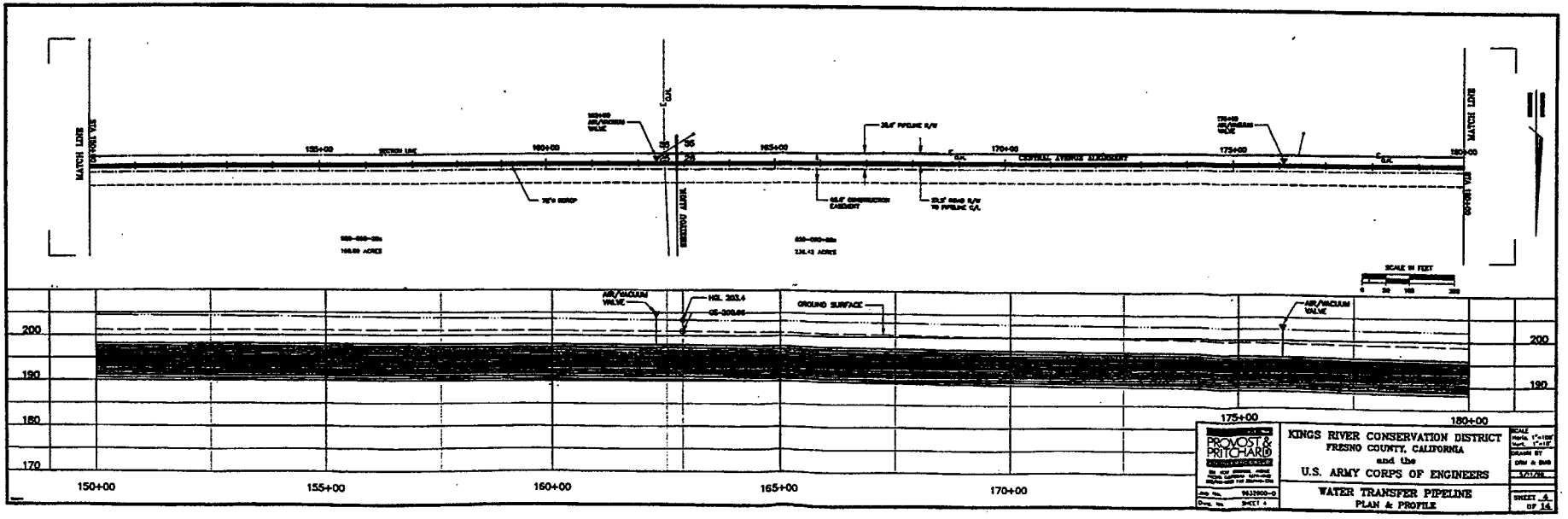

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KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 4 OF 14

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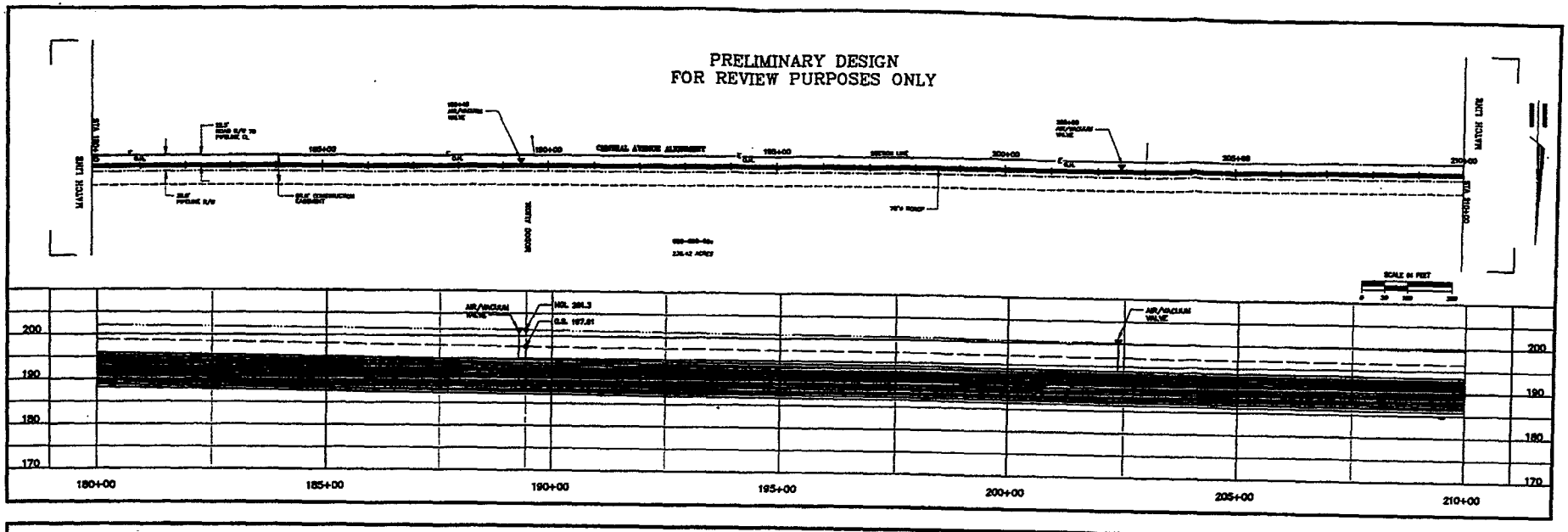

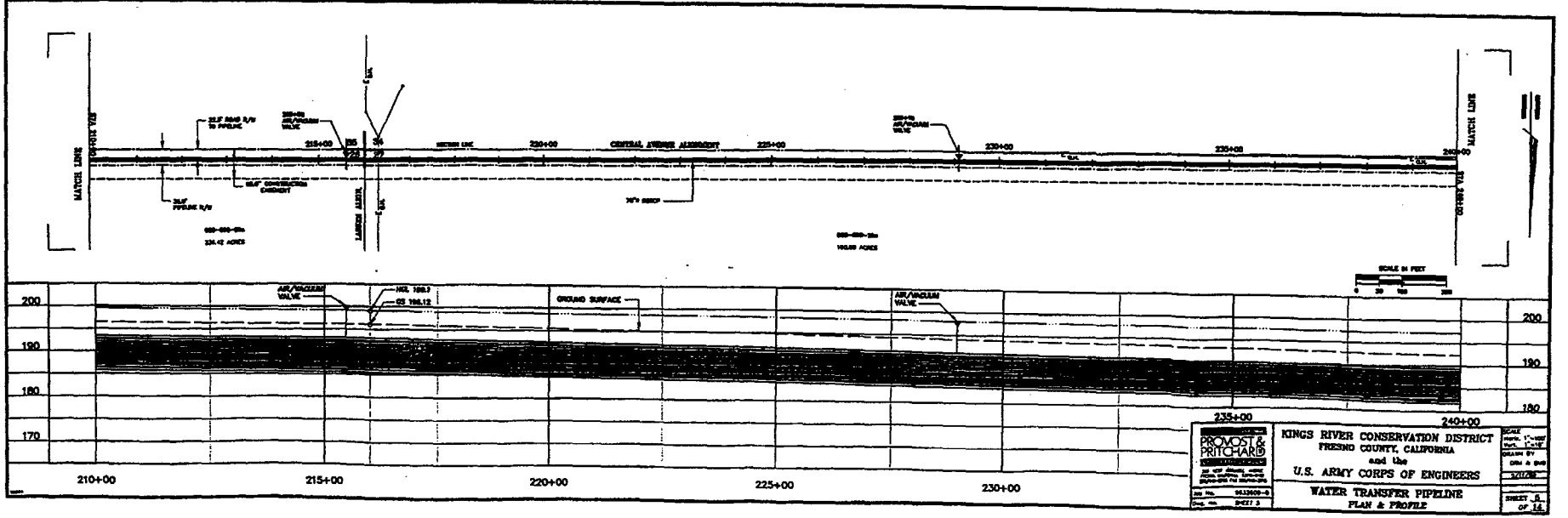

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KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 6 OF 14

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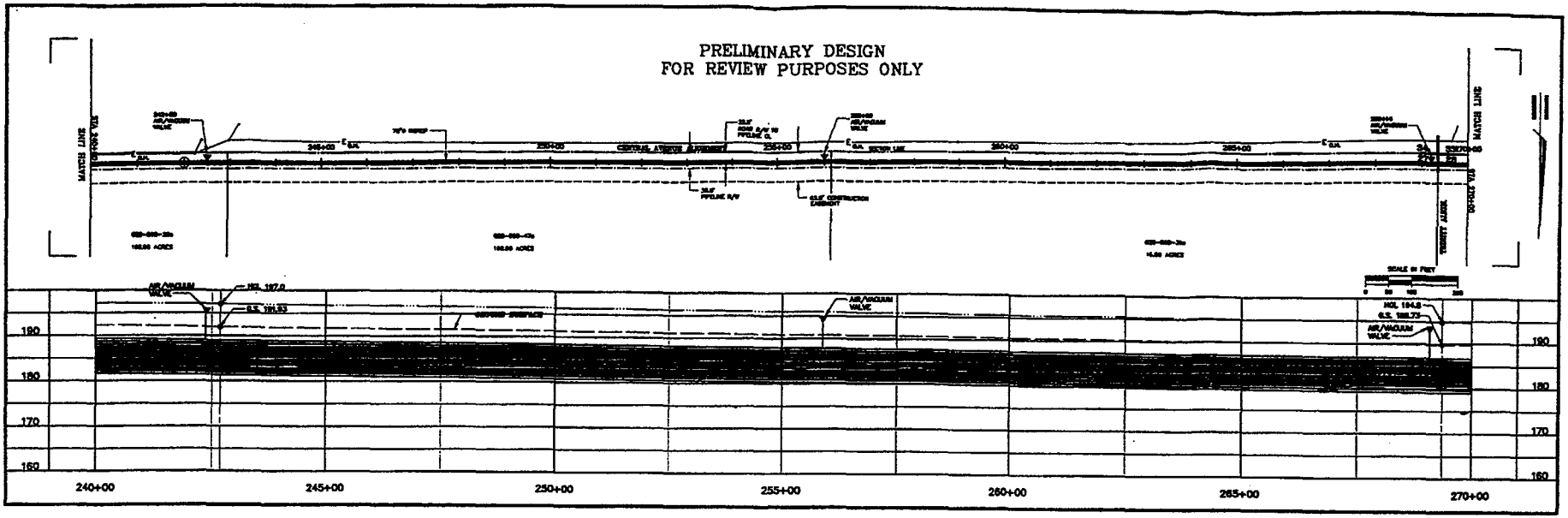

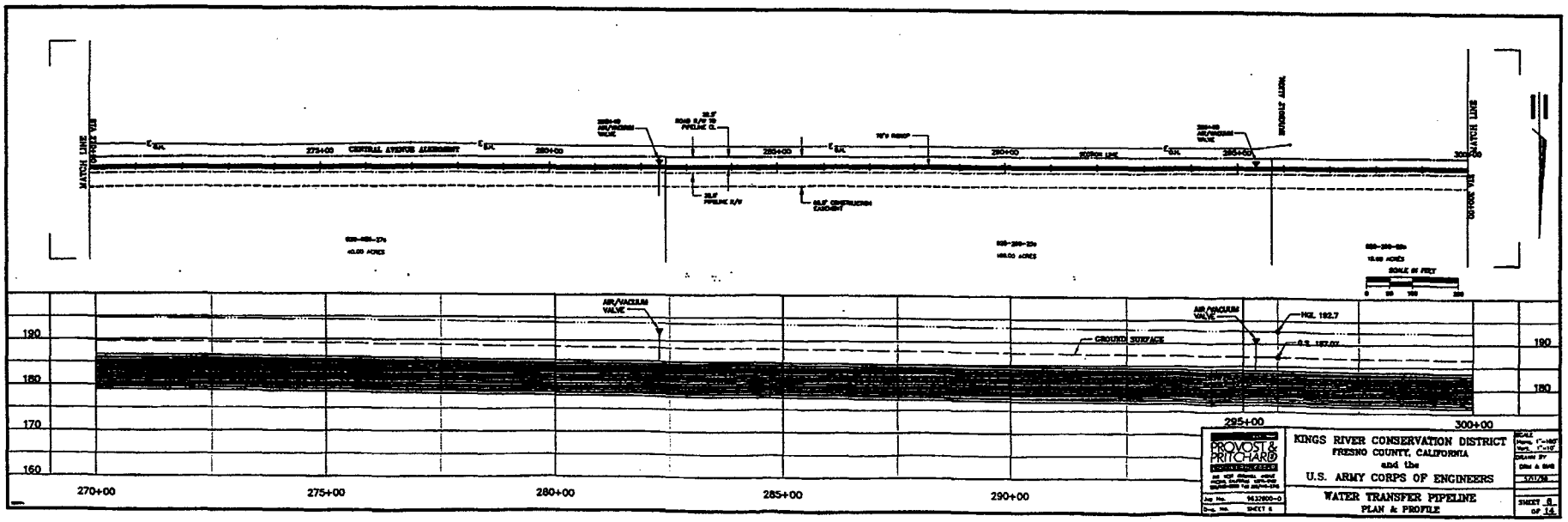

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KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 8 OF 14

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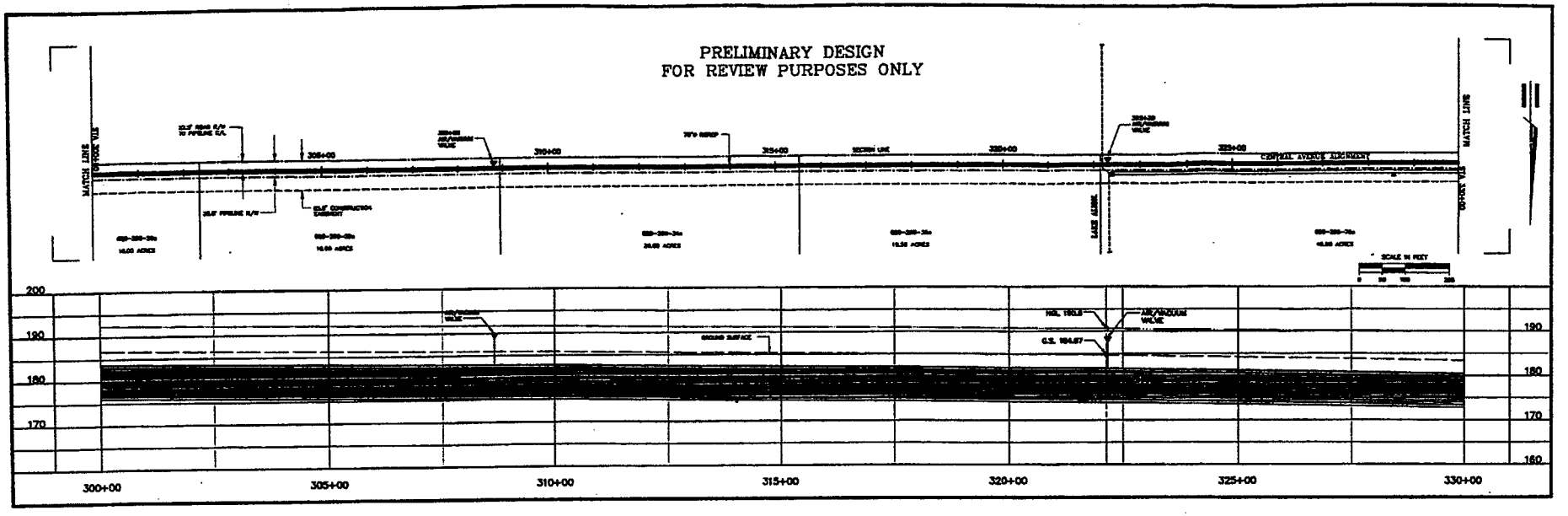

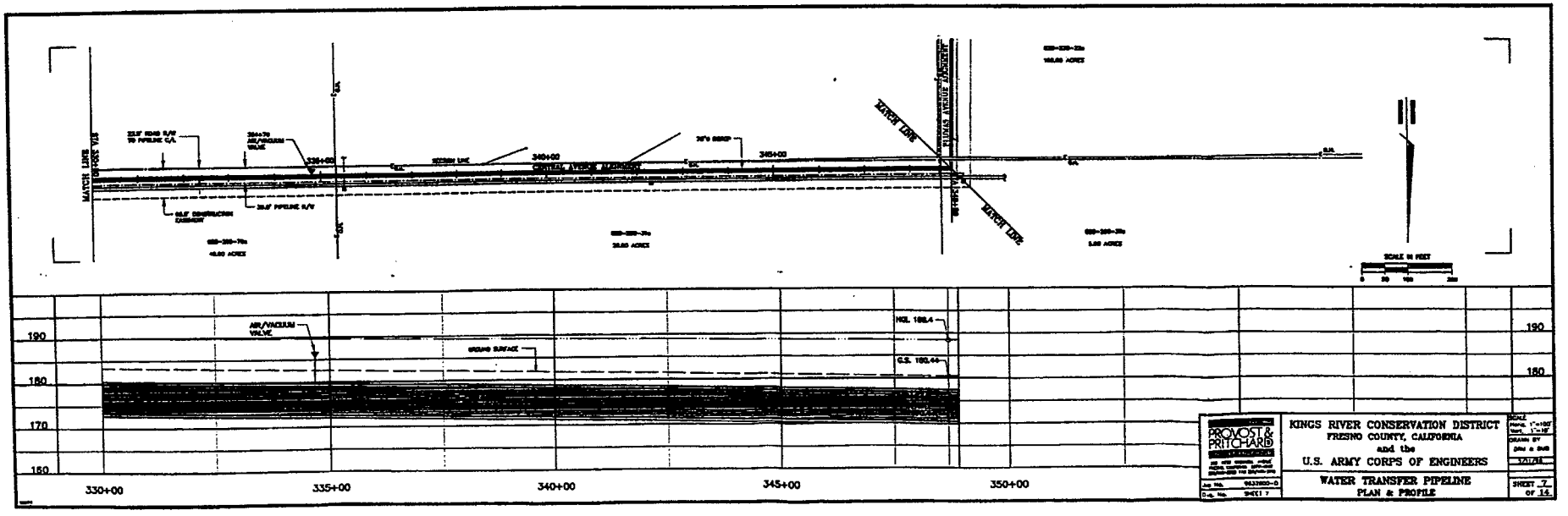

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KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 7 OF 14

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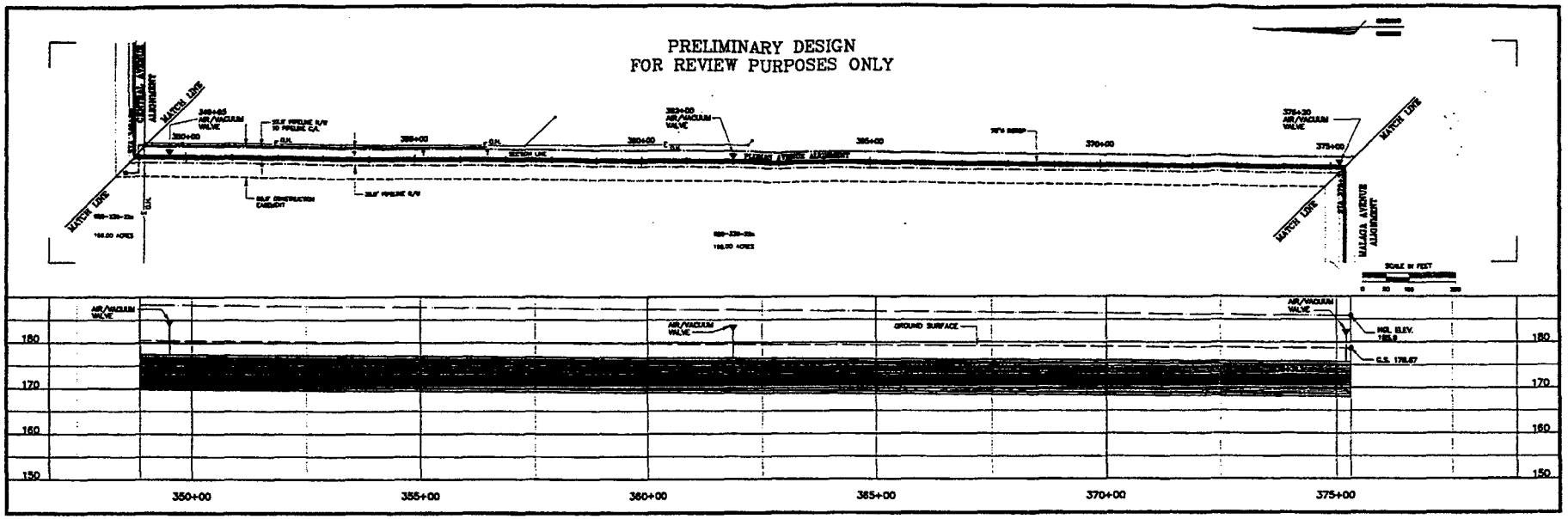

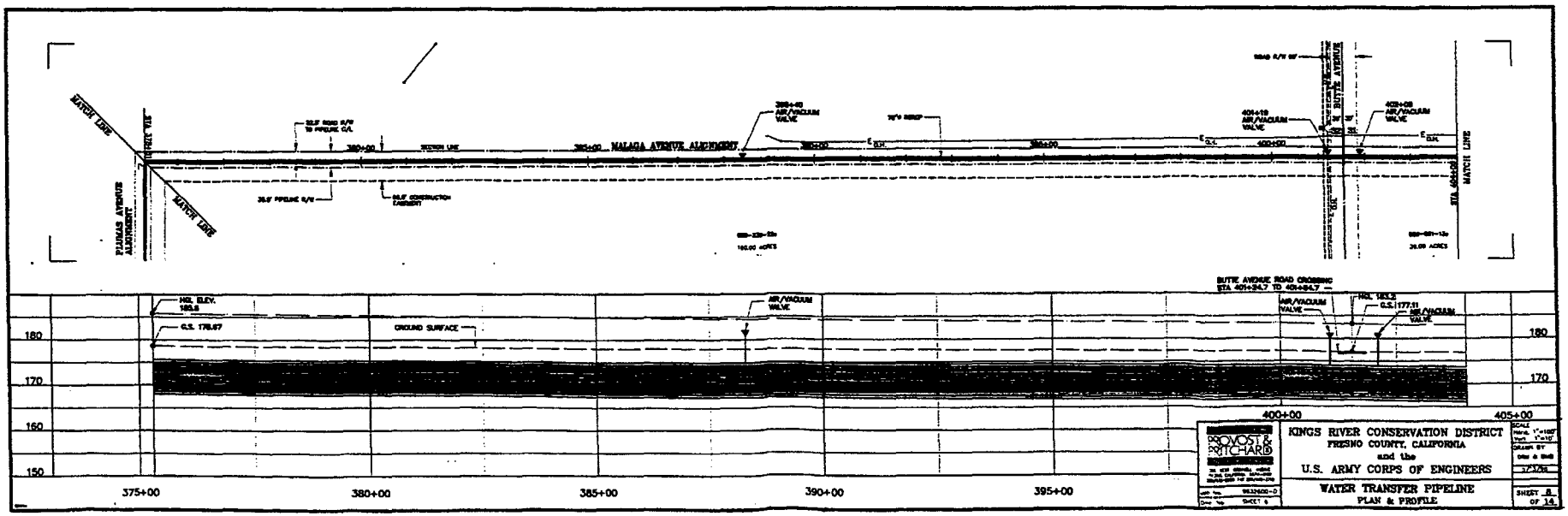

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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 8 OF 14

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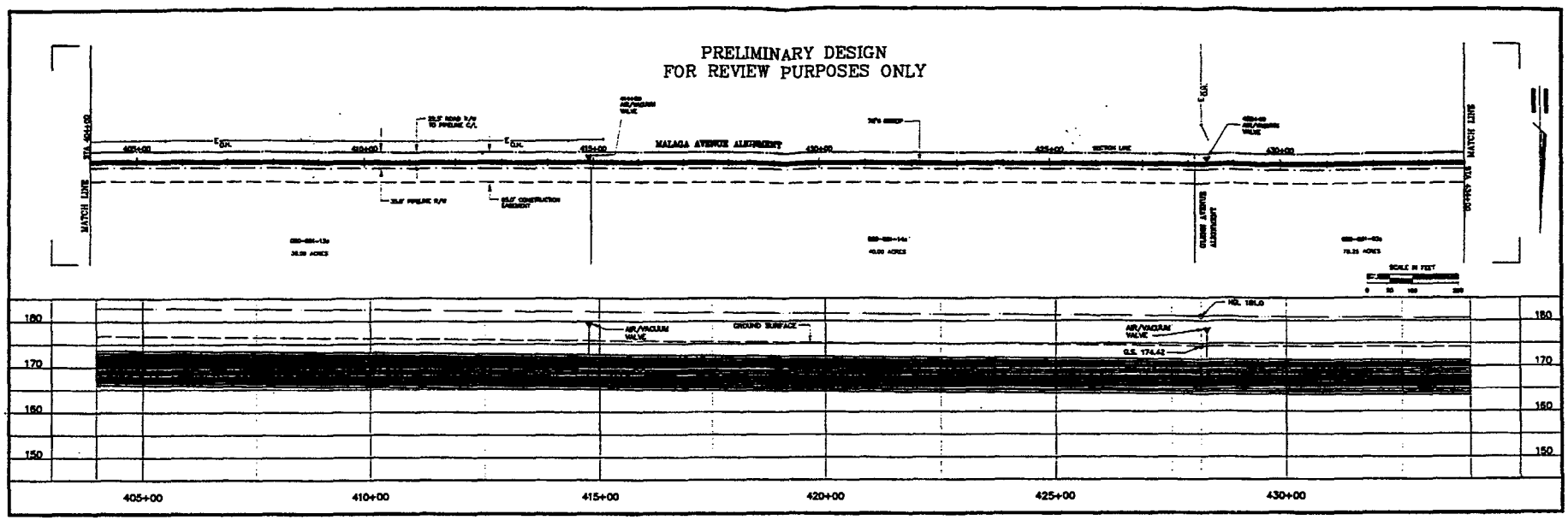

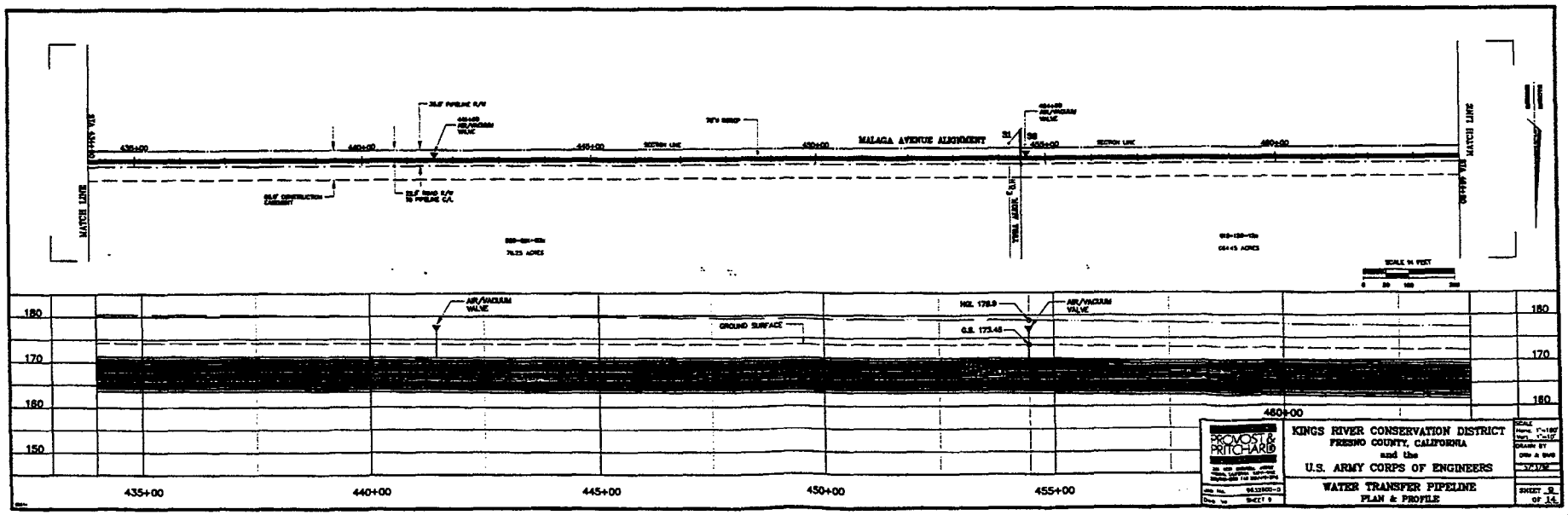

KINGS RIVER CONSERVATION DISTRICT
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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 9 OF 14

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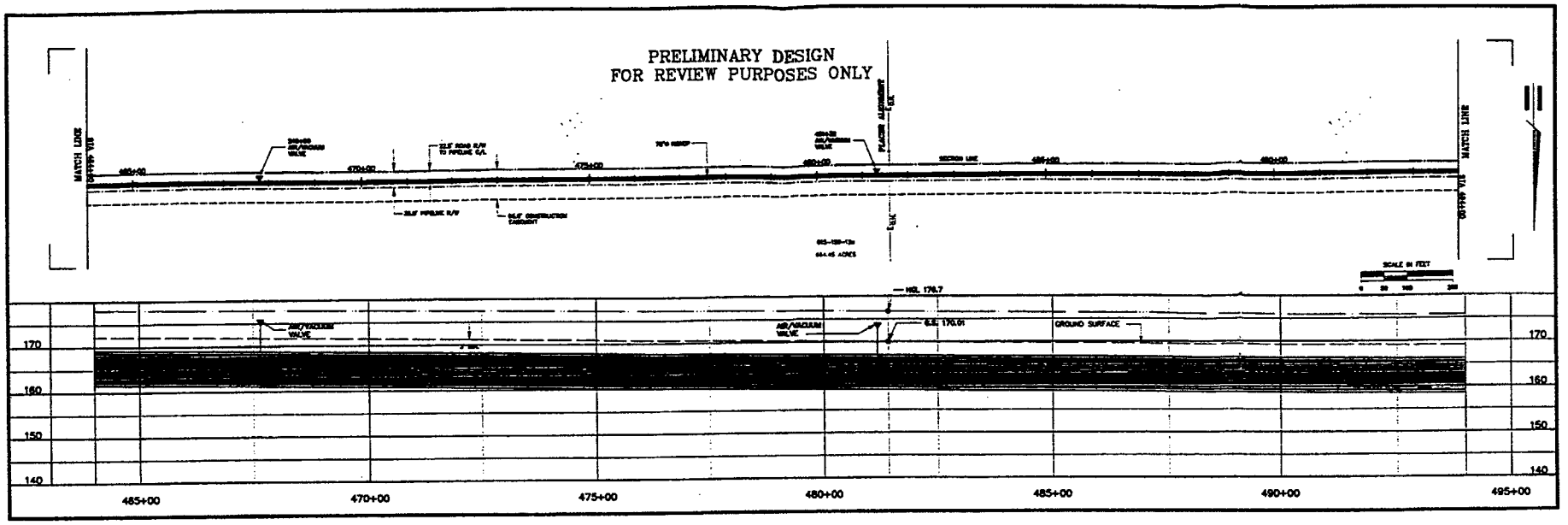

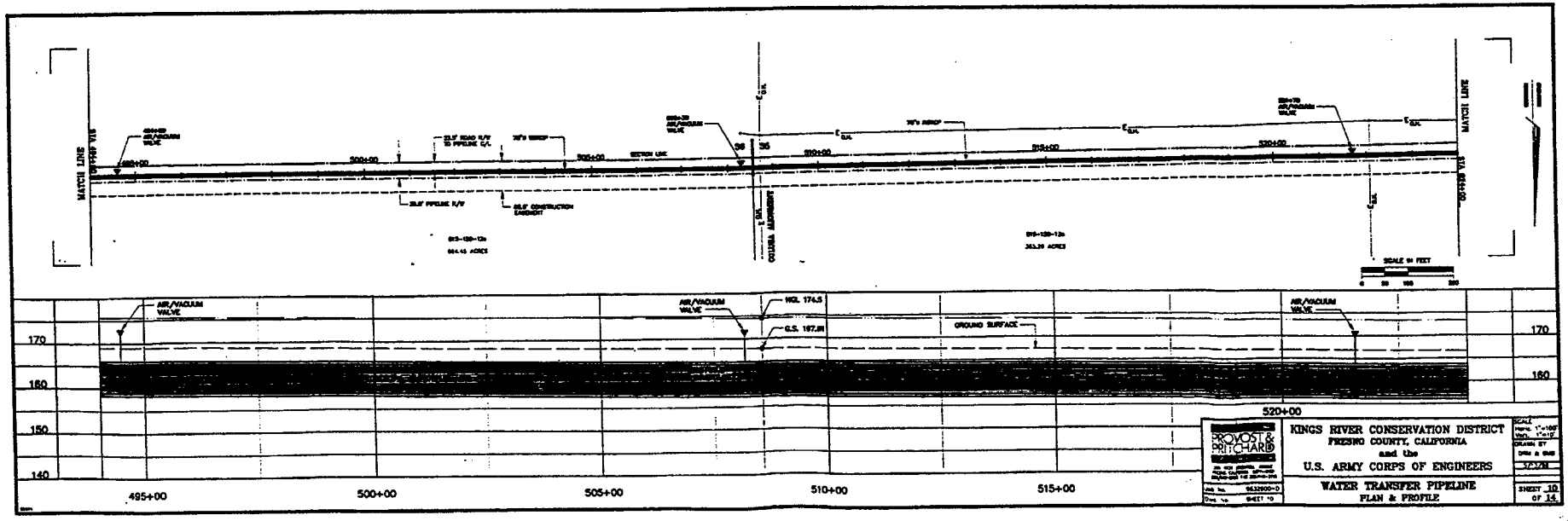

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KINGS RIVER CONSERVATION DISTRICT
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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 10 OF 14

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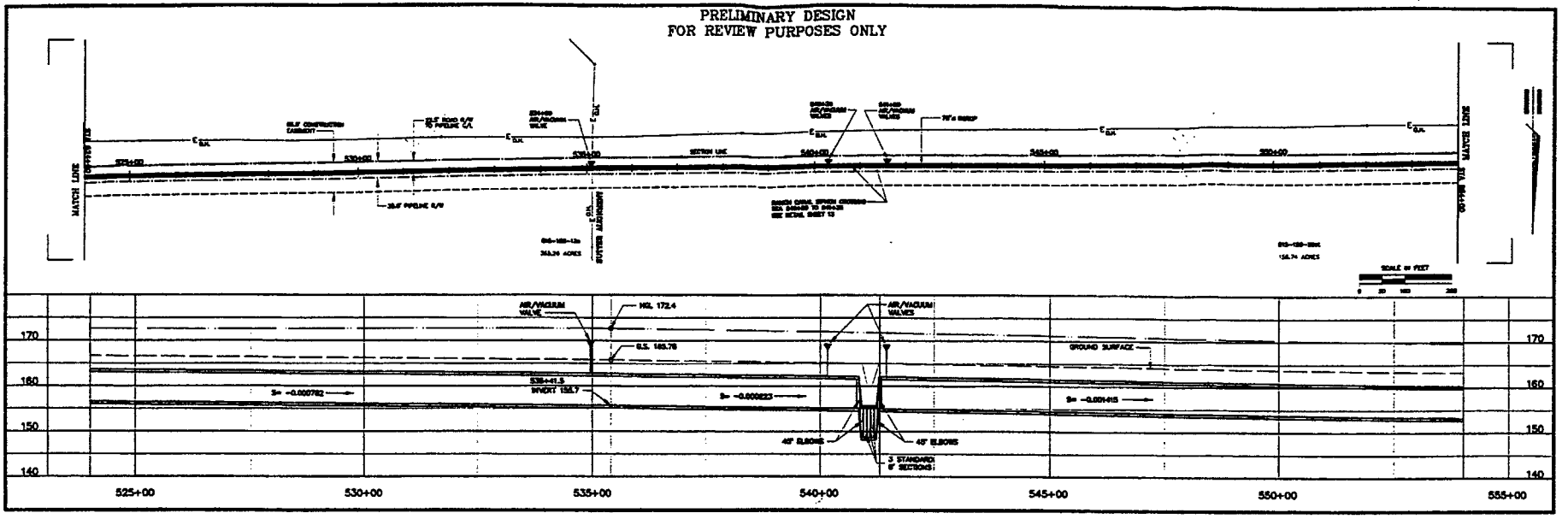

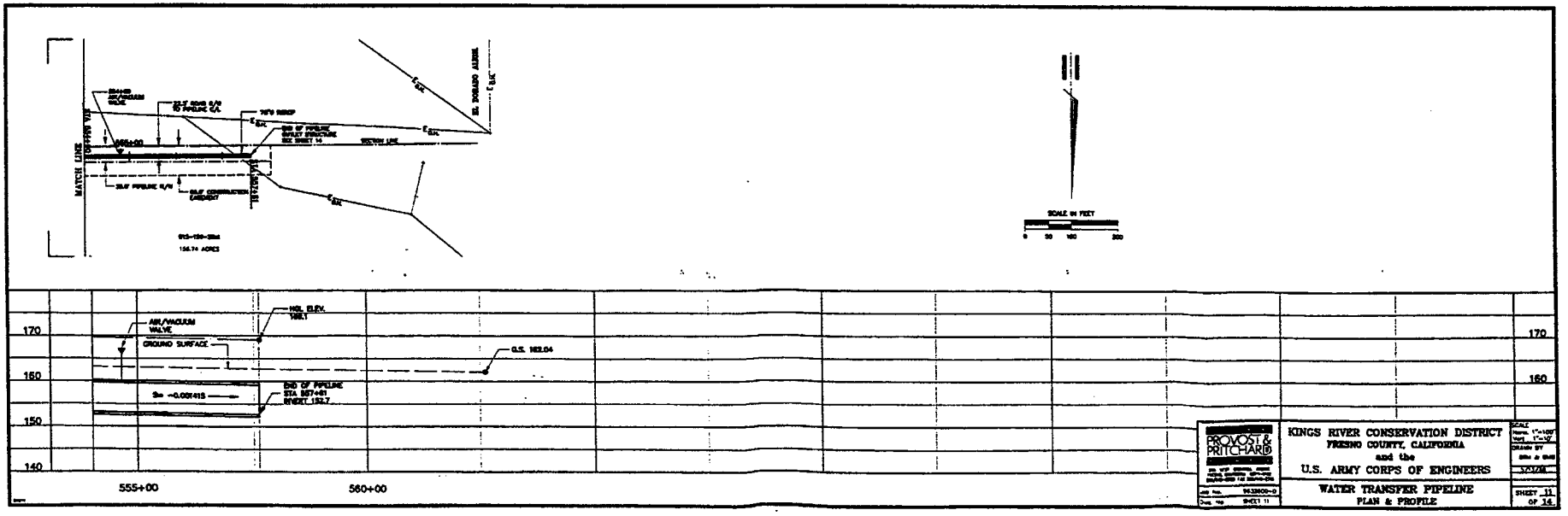

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KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
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WATER TRANSFER PIPELINE
PLAN & PROFILE

SHEET 11 OF 14

PRELIMINARY DESIGN
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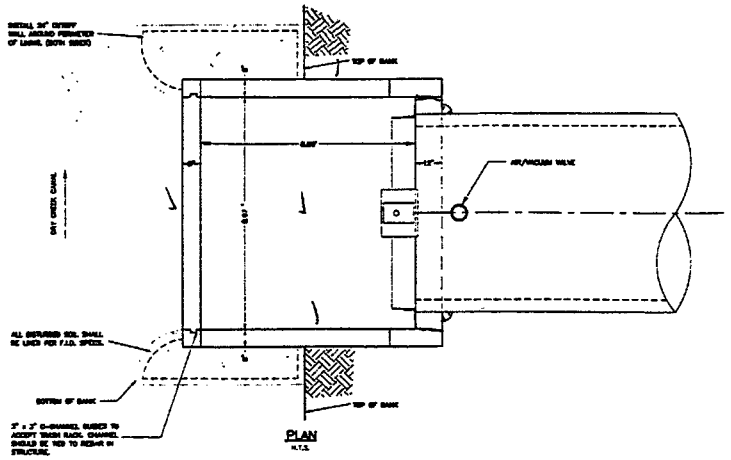
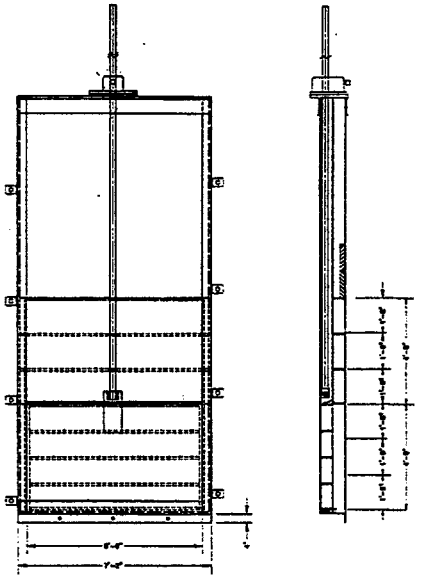
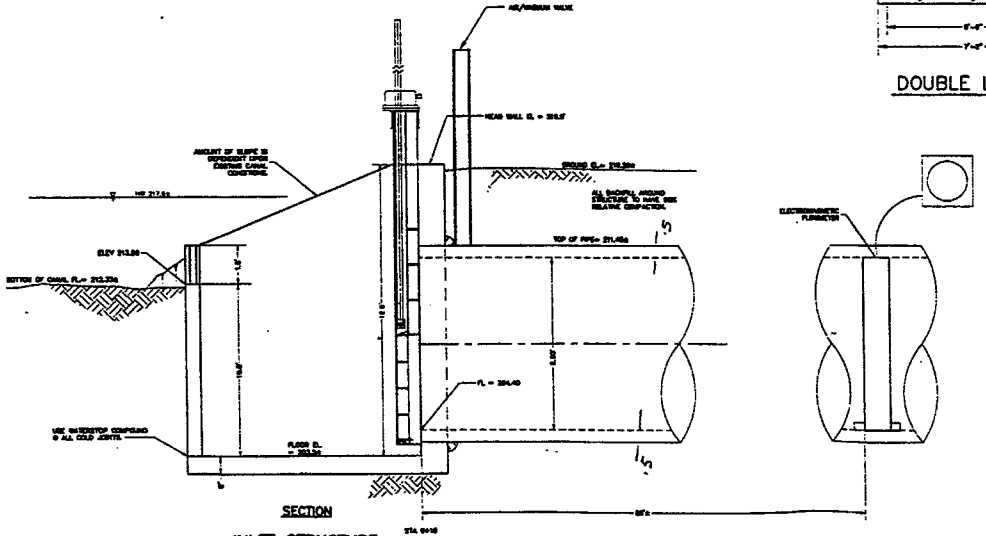




DOUBLE LEAF CANAL GATE DETAIL

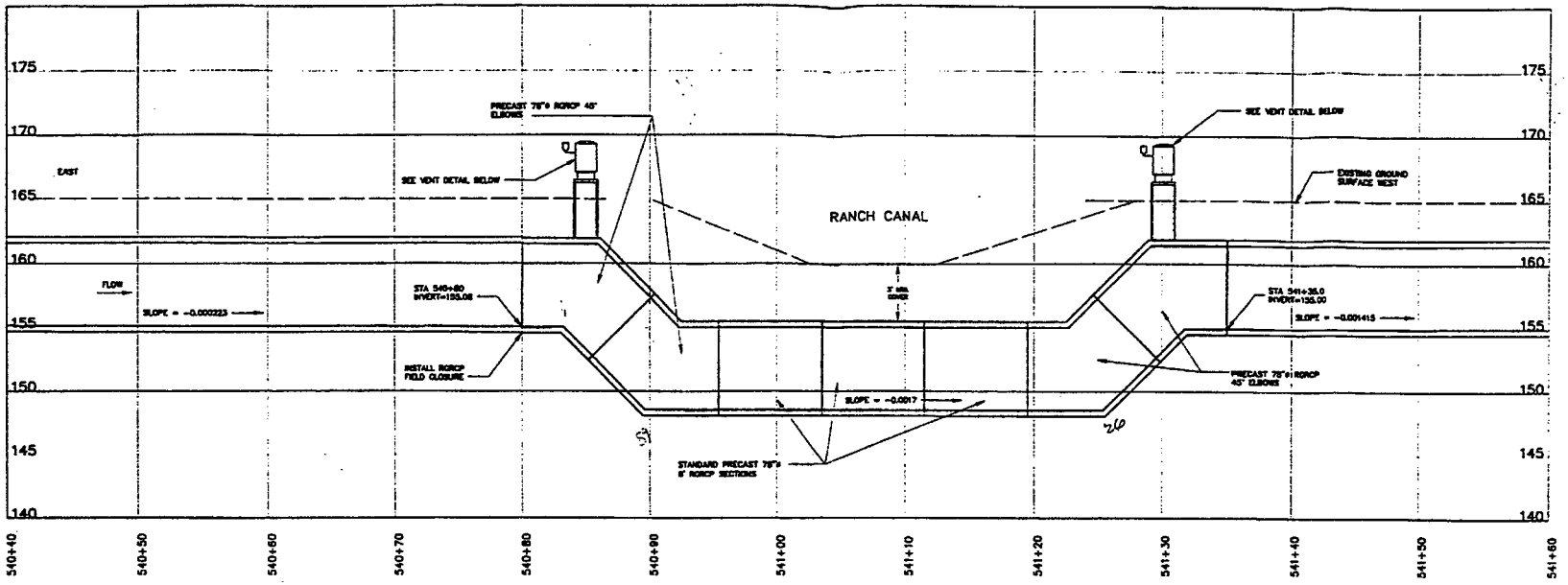


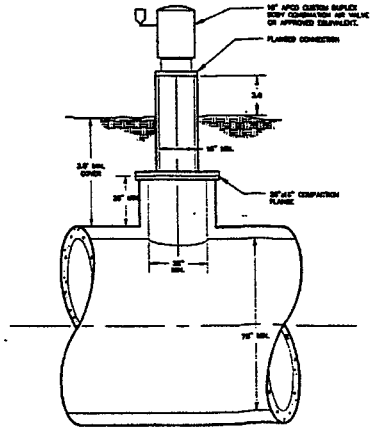
INLET STRUCTURE
(SUBMERGED PIPE INLET)
NOT TO SCALE

NOTES

1. INLET IS SHOWN FOR CONCEPTUAL PURPOSES ONLY. STRUCTURAL REINFORCEMENT AND GATE DETAILS WILL BE COMPLETED LATER.
2. CONCRETE SHALL MATCH HORIZONTAL SURFACES WITH "MASTOP 127" OIL SHEET (SEE DETAIL) AND VERTICAL SURFACES WITH "MASTOP 127" OIL SHEET (SEE DETAIL) RELEASE MANUFACTURERS APPLICATION REQUIREMENTS.
3. NEW CONCRETE WALLS AND PIER WALLS SHALL HAVE CLASS 1 FINISH.
4. PROVIDE 3/4" CHAMFER ALL CORNERS EXCEPT AT GATE CONNECTION, SEE DETAIL.
5. SEAL GATE FRAMES TO CONCRETE WITHOUT MORTAR, SAME THICKNESS. SUBMIT DETAILS OF SEAL FOR REVIEW. SEE DWG. NO. 96-613 FOR ANCHORAGE.
6. GATES AND FRAMES SHALL BE INSTALLED PURSUANT TO THE MANUFACTURER'S RECOMMENDATIONS.

PROVOST & PRITCHARD	KINGS RIVER CONSERVATION DISTRICT FRESNO COUNTY, CALIFORNIA and the U.S. ARMY CORPS OF ENGINEERS	SCALE: NOT TO SCALE DRAWN BY: DRM 5/01/96
Job No. 963600-0 Dwg. No. SHEET 12	WATER TRANSFER PIPELINE INLET DETAILS	SHEET 12 OF 14





VENT DETAIL

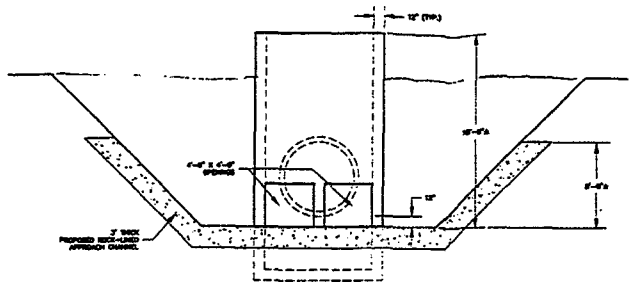
PRELIMINARY DESIGN
FOR REVIEW PURPOSES ONLY

PROVOST & PRITCHARD

KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
and the
U.S. ARMY CORPS OF ENGINEERS

WATER TRANSFER PIPELINE
RANCH CANAL & VENT DETAIL

SCALE: NOT TO SCALE
DRAWN BY: DMA & SMB
JOB NO.: 96.32500-0
DWG. NO.: SHEET 13
SHEET 15 OF 14



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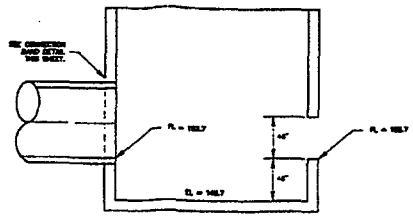

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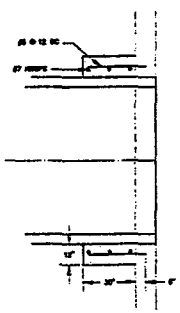

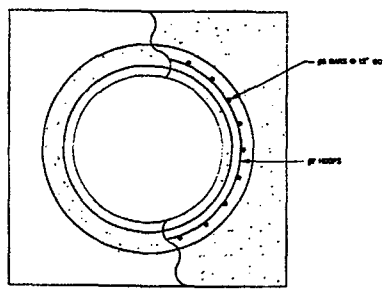

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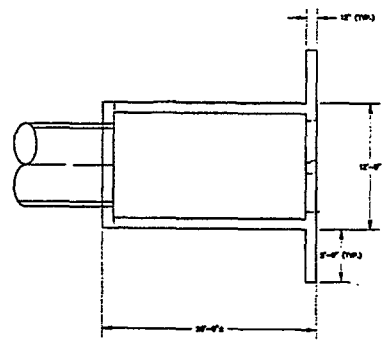

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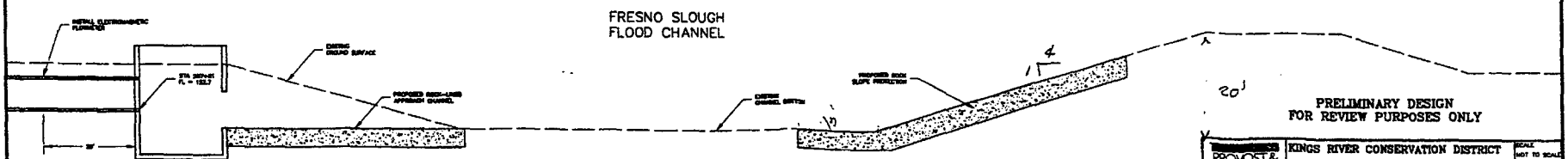

PRELIMINARY DESIGN
FOR REVIEW PURPOSES ONLY

PROVOST & PRITCHARD

KINGS RIVER CONSERVATION DISTRICT
FRESNO COUNTY, CALIFORNIA
and the
U.S. ARMY CORPS OF ENGINEERS
WATER TRANSFER PIPELINE
OUTLET STRUCTURE

SCALE: NOT TO SCALE
DRAWN BY: DRM
SHEET 14 OF 14

PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

ATTACHMENT 6

TEMPERATURE MODEL STUDY

DRAFT REPORT

DRAFT

PINE FLAT DAM FISH AND WILDLIFE HABITAT

RESTORATION INVESTIGATION

WATER TEMPERATURE MODELING STUDY

FOR THE

MULTI-LEVEL INTAKE STRUCTURE

Prepared for

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September 1998

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EXECUTIVE SUMMARY

In January 1996, the Kings River Conservation District (KRCD) entered into a feasibility cost sharing agreement with the U.S. Army Corps of Engineers (Corps) as the non-Federal local sponsor for the Pine Flat Dam Fish and Wildlife Habitat Restoration Investigation. Under the terms of the cost sharing agreement, the KRCD would perform certain tasks as "in-kind" services for the study. One of the major work tasks to be performed by KRCD involves using a calibrated CE-QUAL-W2 computer model developed for Pine Flat Reservoir to evaluate water temperatures in the reservoir and downstream releases through a multi-level intake structure design. This work includes determining the number and elevation of intake gates in order to optimize the structures' release temperature effectiveness. The work performed to date is summarized in this report.

Many multi-level intake port configurations were modeled. Ports were added to increase flexibility, raised to enhance warmer springtime releases and decreased to reduce project costs. The final configuration, and the one modeled and presented in this report, consists of three hydraulically independent structures, each with three ports for a total of nine withdrawal ports. This structure appears flexible in it's ability to maintain cooler late summer and early fall release temperatures and does provide some degree of late spring and early summer warming. Ancillary benefits to the reservoir include increasing the top to bottom temperature differential of the thermocline and extending the duration of the thermocline in the dry water years. The calibrated years modeled for purposes of analyzing the multi-level intake structure were 1992, 1993 and 1994. These years provide for a broad range of reservoir conditions ranging from critically dry (1992) to wet (1993) with 1994 providing for more average reservoir conditions.

The 1992 model year was a critically dry water year with the reservoir being drawn to 32,000 acre-feet. At such low storage levels it is not possible to maintain a cold water hypolimnion in the reservoir and thus releases cannot be kept below 18°C. For critically dry water years, the multi-level intake structure is capable of slightly warming the spring and early summer releases and delaying the onset of releases exceeding 18°C.

For an additional 1992 model run, a minimum pool of 100,000 acre-feet was created by adding 62,000 acre-feet to the initial reservoir storage. Under this minimum pool condition, the multi-level intake structure was capable of conserving the cold water hypolimnion and thus maintain 18°C maximum release temperatures.

The 1993 model year is a wet water year and is the only wet year for which CE-QUAL-W2 is calibrated. Elevated release temperatures are not an issue in the wetter years. Rather, the release temperatures, if slightly warmer, would improve the rainbow trout habitat. The multi-level intake structure was able to provide 2 to 3°C warming of the releases throughout the spring and summer months. The significance of this amount of warming has yet to be determined. It is anticipated that similar improvements in release temperatures in other wet years would be achieved.

The 1994 model year was a 50% water year (critically dry); however, with the high carryover storage from the wet 1993 which provided for a beginning storage of 389,000 acre-feet, the reservoir reached a much higher peak storage than typical for a critically dry year. Maximum storage was over 650,000 acre-feet occurring in early June. While actual release temperatures first exceeded 18°C in early August, maximum release temperatures throughout September were greater than 20°C. Minimum spring release temperatures were just 9°C. With the multi-level intake structure there were no temperatures above 18°C and minimum spring releases were roughly 10.5°C. A maximum warming of 4°C was obtained.

1.0 INTRODUCTION

In January 1996, the Kings River Conservation District (KRCD) entered into a feasibility cost sharing agreement with the U.S. Army Corps of Engineers (Corps) as the non-Federal local sponsor for the Pine Flat Dam Fish and Wildlife Habitat Restoration Investigation. One of the restoration measures identified to be investigated in the feasibility study involved a multi-level intake structure that would be designed to fit over the existing penstock intakes and allow water to be withdrawn from higher reservoir elevations. The purpose of the multi-level intake structure is to improve the temperature of releases from the dam by allowing greater flexibility in the choice of elevation from which water is withdrawn. This flexibility would prolong the period that water released from the dam would be suitable for fish habitat downstream. Early in the summer water could be withdrawn from higher elevations where the water is warmer than the penstock elevation yet still suitable for fish. Later in the season, the cooler water at the lower elevations would be available for release. This measure would also help relieve problems in the reservoir associated with thermal stratification and removal of the cold oxygenated water stratum.

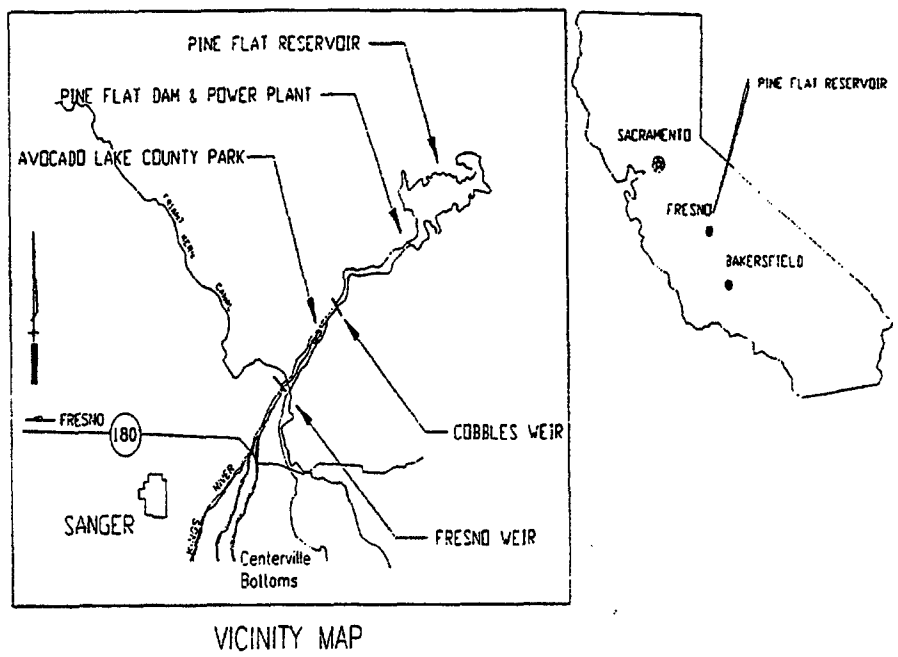
Under the terms of the cost sharing agreement, the KRCD would perform certain tasks as "in-kind" services for the study. One of the major work tasks to be performed by KRCD involves using a calibrated CE-QUAL-W2 computer model developed for Pine Flat Reservoir to evaluate water temperatures in the reservoir and downstream releases through a multi-level intake structure design.

This work includes determining the number and elevation of intake gates in order to optimize the structures' release temperature effectiveness. The work performed to date is summarized in this report.

1.1 Study Location

Pine Flat Reservoir is centrally located in California in the foothills of the western Sierra Nevada mountains along the eastern edge of the San Joaquin Valley roughly 25 miles east of Fresno (see Figure 1 on the following page).

VICINITY MAP



VICINITY MAP

Figure 1

The reservoir is sinuous with a general westerly orientation. It contains 1,000,000 acre feet at full normal capacity reaching an elevation of 951.5 feet. At this size, the reservoir covers about 6,000 acres and continues for roughly 20 miles upstream. Pine Flat Dam is a concrete-gravity structure 1,820 feet long and 429 feet high at its maximum section. The dam was completed in 1954 by the U.S. Army Corps of Engineers. It was constructed with five low-level ports with a centerline elevation of 570 feet, three penstock ports for future power generation at a centerline elevation of 662 feet, five mid-level ports with a centerline elevation of 740 feet and the spillway crest at an elevation of 916.5 feet.

On the following page are two figures of the dam. A view of the upstream face of the dam is presented in Figure 2. Figure 3 presents a profile view of the dam. It wasn't until 1984 when KRCD completed construction of a hydroelectric power generation facility that water was able to be withdrawn from the 662' elevation penstock ports. Prior to this time, releases were made through either the mid or low-level sluices or over the spillway, depending on the storage in the reservoir.

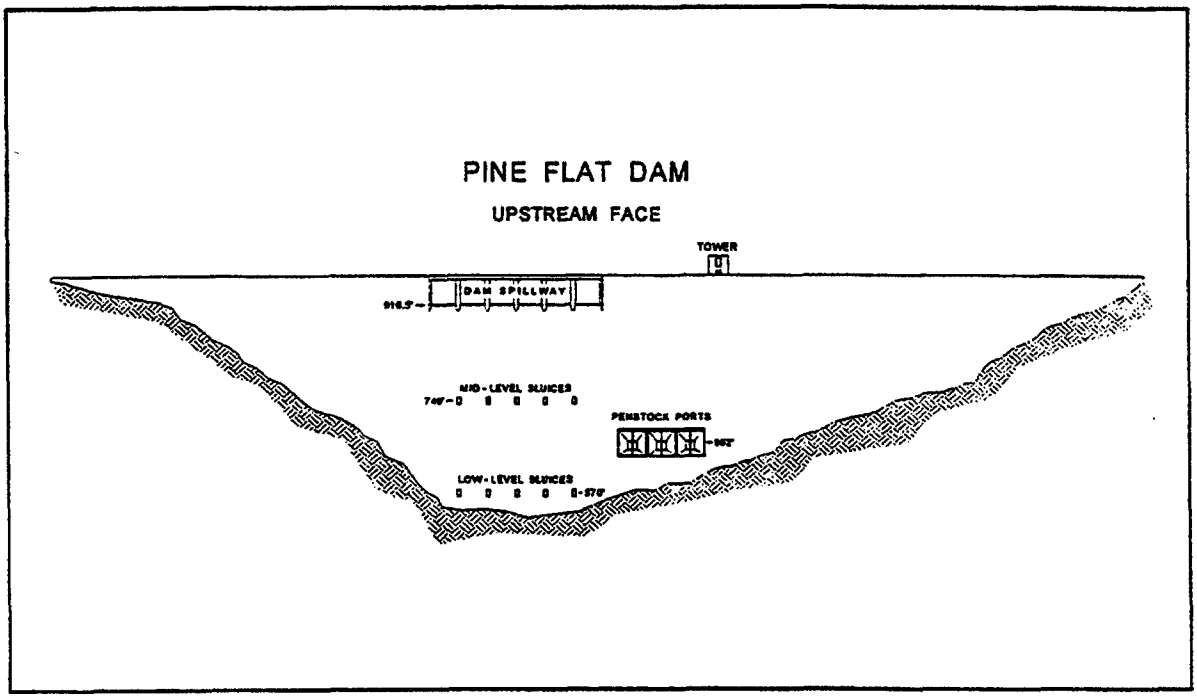


Figure 2

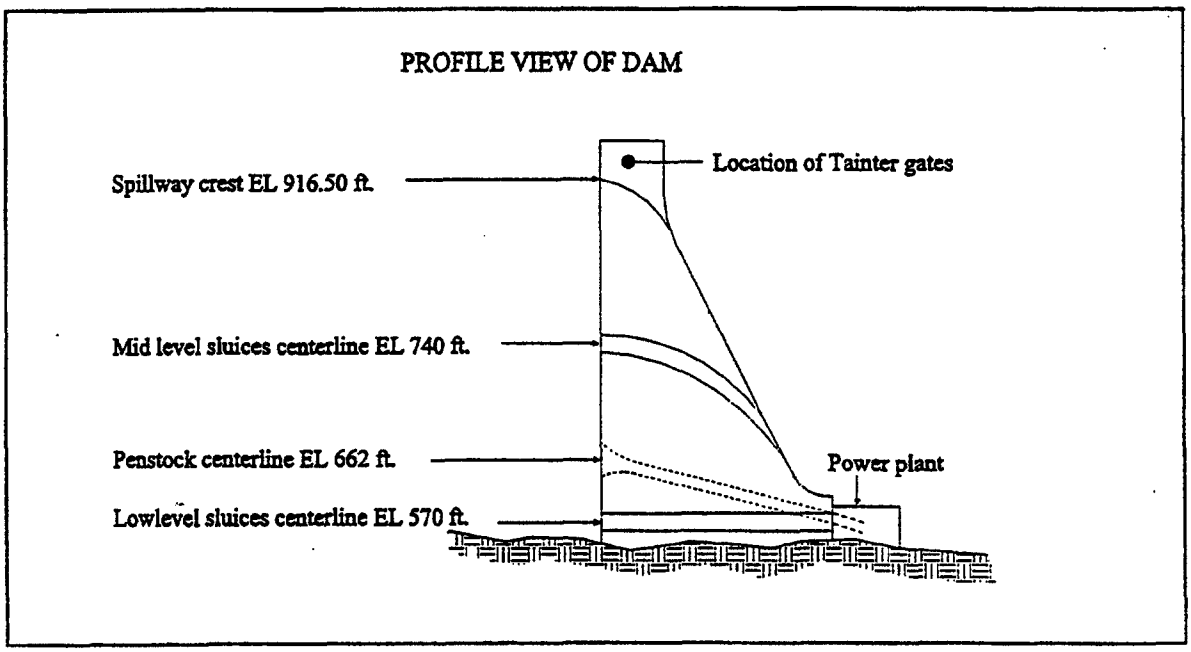


Figure 3

1.2 Kings River Conservation District

The Kings River Conservation District is a political subdivision of the State of California covering an area of 1.2 million acres in Fresno, Kings and Tulare Counties. Within KRCD's boundaries is the entire service area of the Kings River. The District was formed by the California Legislature in 1951 with the passage of the "Kings River Conservation District Act." The Kings River Conservation District boundaries are shown in Figure 4.

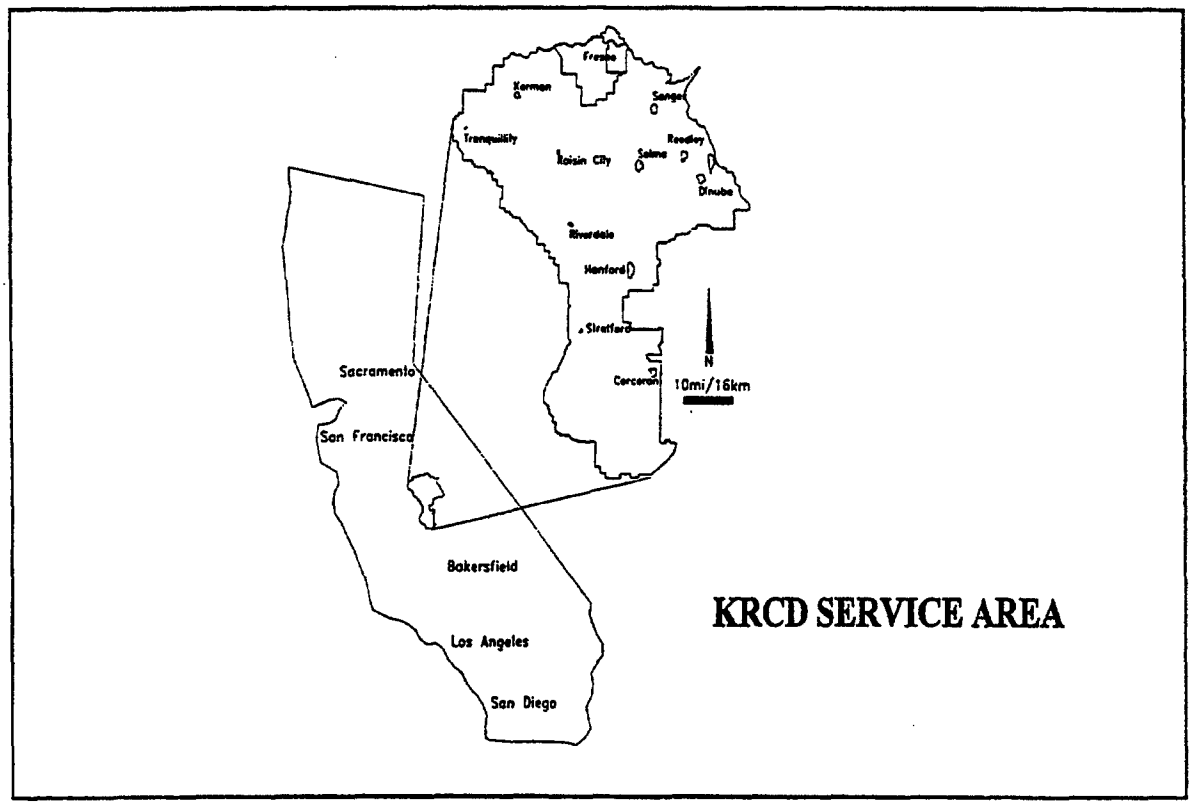


Figure 4

Achieving a balanced water supply in the Kings River service area is the KRCD's primary concern. Even during normal runoff years an overdraft of the aquifer still occurs due to a lack of adequate surface supply. The average annual groundwater overdraft in the area is approximately 450,000 acre-feet. Since urban areas are supplied water entirely from groundwater and agriculture must supplement their water supplies by pumping from the aquifer, groundwater levels are declining rapidly and natural recharge methods are insufficient to replenish the groundwater table. As the level of the groundwater table drops, the guarantee of a reliable water supply lessens. To remedy the situation requires the best possible management of the waters available within the service area. Water conservation is one

avenue to ensure better water use, and it is important on the farm as well as in the city. However, water conservation alone cannot achieve the balanced water supply sought for the Kings River service area. Additional storage facilities are needed on the Kings River to conserve water supplies that are lost from the service area during years of above-normal runoff.

Overall, the KRCD strives to provide a balanced water supply for the service area. A mix of approaches are taken to attain a balanced water supply, and an ongoing effort is needed to meet the changing needs of the area. Some of KRCD's activities to attain these goals are:

- **Maintaining the channels and levees on the lower reaches of the Kings River.** This includes keeping the Kings River designated floodway free of obstructions and keeping levees in top condition to withstand flood releases from Pine Flat Reservoir.

- **Operation and maintenance of the Pine Flat Power Plant.** Completed in 1984, the facility generates hydroelectric power from water released for irrigation and flood control from Pine Flat Reservoir. Power generated is sold to the California Department of Water Resources for use in the operation of the State Water Project.

- **Member agency in the Mid-Valley Water Authority.** A joint powers authority was formed in 1982 by public agencies throughout the southern San Joaquin Valley to contract with the U.S. Bureau of Reclamation for interim water supplies and seek authorization, funding and construction of the Mid-Valley Canal. KRCD provides administrative and support staff to the Authority.

- **Groundwater studies.** The KRCD conducts ongoing evaluations of groundwater conditions including quantification of the groundwater overdraft and feasibility studies for recharge facilities.

- **Kings River Weather Modification Program.** KRCD, in cooperation with other water interests, conducts weather modification activities on the Kings River watershed to enhance snowpack and increase runoff.

- **A full range of ongoing environmental studies and enhancement projects.** The KRCD works to enhance fish and wildlife populations within the service area as well as maintaining the riparian vegetation. Water quality monitoring is conducted to ensure compliance with regulatory requirements and environmental protection.

- **Public information activities.**
  KRCD strives to increase awareness of the importance of water to its constituents through the publication of a quarterly newsletter, exhibits at local events, and participation on committees involved in public awareness of water supply issues in the Valley.

- **Monitoring of legislation on the state and federal level.**
  The KRCD keeps a constant watch on state and federal legislation that might affect water resources planning, development and management.

2.0 PROJECT CHARACTERISTICS

2.1 Pine Flat Reservoir

Pine Flat Reservoir is located in a river valley that is oriented in a westward direction. Elevations range from 550 feet to 3,100 feet at Hog mountain, overlooking the reservoir. The Kings River is the major source of inflow. Two small intermittent tributaries, Big Creek and Sycamore Creek, enter from the north side of the lake. Figure 5 shows a profile of the watershed and the system of dams, reservoirs and lakes.

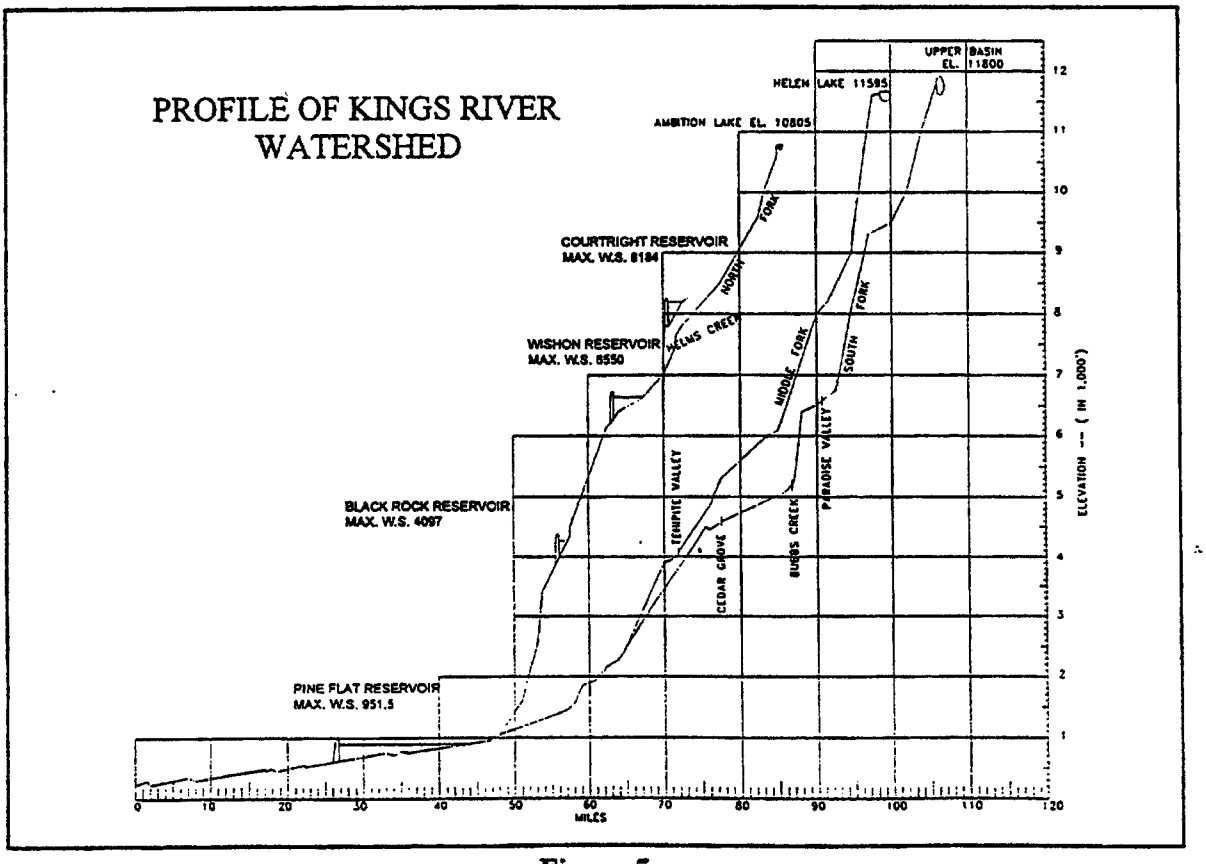


Figure 5

The drainage basin for Pine Flat covers 1,550 square miles ranging in elevation from about 1,000 to >12,000 feet. The reservoir length is about 19.5 miles, but may vary to as short as 6 miles (during drought years), and the depth of the reservoir is about 400 feet when full. The climate of the area experiences precipitation of about 17.5 inches per year, on average 70 inches per year of evaporation, and wind is generally upslope usually at less than 10 miles per hour.

Characteristics of Pine Flat reservoir that make it dissimilar to most other reservoirs include important factors such as water level fluctuations and thermal stratification. Water level fluctuations are large with regular timing. Most water releases occur from May to August. Decreases in reservoir elevation may fluctuate from 1 to 5 feet per day and the reservoir may rise as much as 10 feet per day from storm events and snow melt. Thermal stratification of the reservoir occurs in the Spring (the reservoir is isothermal throughout the late Fall to early Spring period). Variable and irregular transition zones occur within the reservoir especially along the main inlet (Kings River) into the reservoir. A detailed view of the reservoir is shown in Figure 6 below.

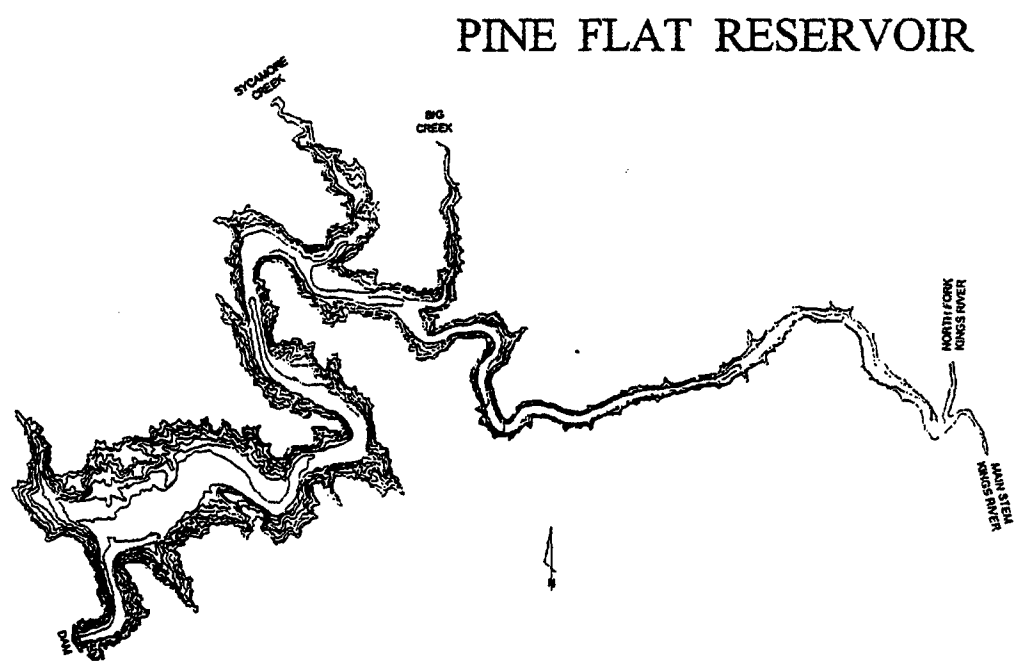


Figure 6

The inflow from the Kings River is the dominant force in establishing the reservoir temperature characteristics. Most of the inflow is from snowmelt runoff. Snowmelt occurs from April through July and has an immediate effect of producing large reservoir inflows. During this time, cold water inflow merges with the colder water at the bottom of the reservoir while atmospheric conditions (including short wave and long wave radiation) heat the surface and subsurface layers of the reservoir causing thermal stratification.

Another factor in determining the dominating forces affecting the reservoir temperature characteristics is what is commonly referred to as "mean residence time". The mean residence time, as used here, is determined by dividing the reservoir storage by the outflow, in acre-feet per day, and results in a value in days. This calculation is done on a daily basis throughout the year and points to what is the driving force in creating the stratification of the reservoir. During periods of high residence times (usually anything greater than 30 days) the meteorological input is the primary factor in establishing the reservoir stratification. During periods of low residence times (less than 30 days), the stratification is driven by inflow, inflow temperatures, outflow and through which port the outflows are conveyed. The mean residence time of the reservoir is shown in Figure 7. Low releases in January through March result in high residence times, high releases in June through August result in low residence times.

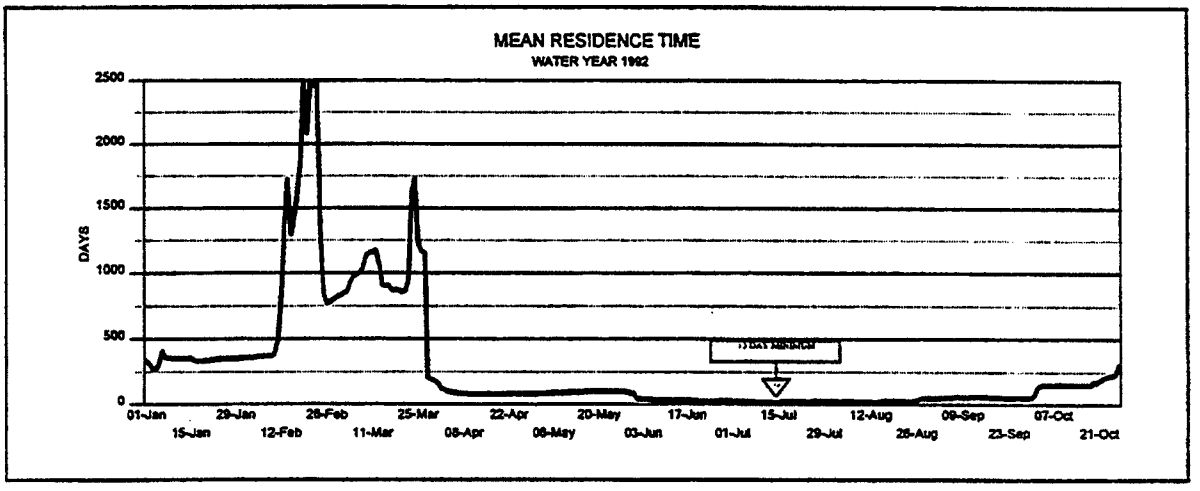


Figure 7

2.2 Kings River Fishery

Early in this century, the fisheries of the Kings River were very different from those present today. Then, as now, the River occupied a broad range in elevation, providing permanent cold-water fish habitats in upstream reaches, but with progressive downstream seasonal warming. In its foothill and valley-floor reaches, the River's temperature varied widely with the season. Although western suckers, Sacramento squawfish, Sacramento perch, and other native "transition-zone" species could be supported throughout the year, occupancy by trout and other cold-water species was necessarily seasonal. Avoiding warm summer temperatures was requisite to survival for these species. Their survival strategies probably included both upstream movement to cooler reaches and anadromous behavior. In any case, the past and present importance of stream temperatures as a physical regulator of the Kings River fish fauna cannot be overstated.

Offsetting fishery benefits and enhancements occurred through the construction of Pine Flat Dam, which provided all-year cool water temperatures, suitable for trout, at lower elevations than historically existed. This enabled management of a high-value public recreational fishery in the downstream reaches of the Kings River. Throughout the year it extends downstream to the Highway 180 crossing 12.9 miles downstream of the dam, and seasonally as far downstream as Reedley. In addition, the stored water behind Pine flat Dam provides abundant recreation, including very substantial and popular warm-water and cold-water reservoir fisheries. The Kings River upstream of Pine Flat reservoir produces a seasonal fishery for trophy-size trout. These grow to large size in the reservoir and then seasonally migrate upstream into about 9 miles of road-accessible stream, within the Kings River Special Management Area. In concert with resident trout, these reservoir migrants provide a quality recreational fishery.

While acknowledging the past alterations or losses of historical fisheries, the present-day fisheries provided by the operation of Pine Flat Dam and reservoir have been sufficient to capture the serious interest of anglers and conservationists. These fisheries commenced immediately upon completion of Pine Flat Dam, and they provided relatively continuous recreation for about 30 years until the mid 1980s. At that time, a critical seven-year drought occurred throughout central California, including the entire Kings River watershed. During the drought, it was necessary to carefully allocate the scant water supply to critical established agriculture, urban uses, and fisheries. All the water allocations were reduced during the drought, except for the instream flow requirements for fisheries, which were reduced only to the levels of the "Dry Year" allowance, as prescribed in an agreement executed between the Kings River Water Association (KRWA) and the California Department of Fish and Game in 1964. Unfortunately, due to the extreme water supply shortages of the drought, maintenance of "Dry Year" instream flows did not, in itself, adequately protect the fishery. The reduced reservoir inflow and extreme drawdown reduced the availability of cool water, thus elevating river discharge temperatures for extended periods. A fishery problem resulted.

The KRCD completed in 1984 installation of a hydroelectric power plant by connecting to pre-existing penstocks located at the base of Pine Flat Dam. The project operation added additional considerations to the already complex problem of managing drought associated water temperatures. The KRCD's Federal Energy Regulatory Commission (FERC) license acknowledged that the operation of the project would not alter existing releases from Pine Flat Reservoir. Releases would still only be made for irrigation or flood control purposes. As such, the KRCD has no control over the scheduling or quantities of withdrawals or the amount of water retained in storage. Further, the power generation project used pre-existing penstocks which were designed and constructed by the Corps, at a time when little consideration was given to a potential enhancement of the downstream trout fishery. Accordingly, the capability to select discharge depth and temperature was not a factor in the penstock design. Today, this design limitation dictates the particular elevation (i.e. depth and temperature) at which reservoir water must be withdrawn whenever the power plant is in operation. Spring and early summer generation therefore typically uses cold water from the reservoir hypolimnion, rather than the warmer epilimnion or metalimnion waters. This

reduces the cool water volume prematurely, thus risking depletion and consequent warm discharge temperatures to the River in late summer or early fall.

3.0 RESERVOIR MODEL: CE-QUAL-W2

The model used for this study is version 2.0 of CE-QUAL-W2, a two-dimensional, longitudinal/vertical, hydrodynamic and water quality model developed by the Corps' Waterways Experiment Station in Vicksburg, Mississippi. Version 2.0 of the model is a result of a complete rewrite of the code to improve the mathematical description of the physical processes and increase computational accuracy and efficiency. The model is best applied to long and narrow water bodies (such as Pine Flat) exhibiting longitudinal and vertical water quality gradients. It does not take into consideration lateral variability. The application of this model has been utilized by staff of KRCD who have acquired knowledge in the following areas:

1. Hydrodynamics
2. Aquatic biology
3. Aquatic chemistry
4. Numerical methods
5. Computers and FORTRAN coding
6. Statistics
7. Data assembly and reconstruction

It is important to understand that W2 is not a "black box" approach to modeling. Rather, the thermodynamic processes that determine the reservoir temperature stratification are mathematically simulated. Therefore, acceptable results are possible only when sufficient, good-quality data are available. Knowledge of the physical processes in the reservoir system must be understood in order to evaluate the data going into the model and to correctly assess the modeling results. The model does have some limitations and these include:

1. Equations are laterally and layer averaged. Lateral averaging assumes lateral variations in velocities, temperatures, and constituents are negligible. This assumption may be inappropriate for large water bodies exhibiting significant lateral variations in water quality. Layer averaging assumes vertical continuity within each layer. Conservative equations (i.e. eddy coefficients) using hydrostatic approximations may give inaccurate results where there is significant vertical acceleration.

2. The solution scheme (QUICKEST) will have numerical diffusion causing overshoots and undershoots in areas of strong gradients which can produce small negative concentrations.

3. The model is limited to having at least 32 bits of accuracy for single precision arithmetic which increases the need for more powerful computers to decrease run-time.

4. Input data is not a limitation itself. However, it is most often the limiting factor in the application or misapplication of the model. The user should always keep in mind the adage "garbage in equals garbage out".

3.1 Bathymetric Data

The bathymetry of a water body is defined as the bottom shape of that water body. For W2, this information is critical because reservoir dynamics, reservoir storage and water budget calculations are determined from the bathymetric data. The segmenting and layering of the reservoir must be given considerable thought because of their influence on the stability and run-time of the model. Areas of strong gradients must have a tightly spaced grid to maintain model stability and produce reliable results. Disadvantages in increasing grid resolution include greater computer run-time and increased memory requirements. Model stability, accuracy, and degree of output detail must be matched to the capabilities of the computer relative to computer run-time. Common segment lengths may range from 100 to 5,000 meters and vertical spacing ranges from 0.2 to 5 meters. Segment lengths for Pine Flat Lake range from 600 to 3,000 meters, and layer heights range from 2 to 4 meters. The reservoir was divided into 36 longitudinal segments and 48 horizontal layers. Segments 1 and 36 were designated as boundary segments having zero length. Layers 1 and 48 were designated as boundary layers having a layer height of zero. The bathymetry data file that is used by the model must have these defined boundary conditions. A plan view of the 3-D digitized and segmented reservoir is shown in Figure 8.

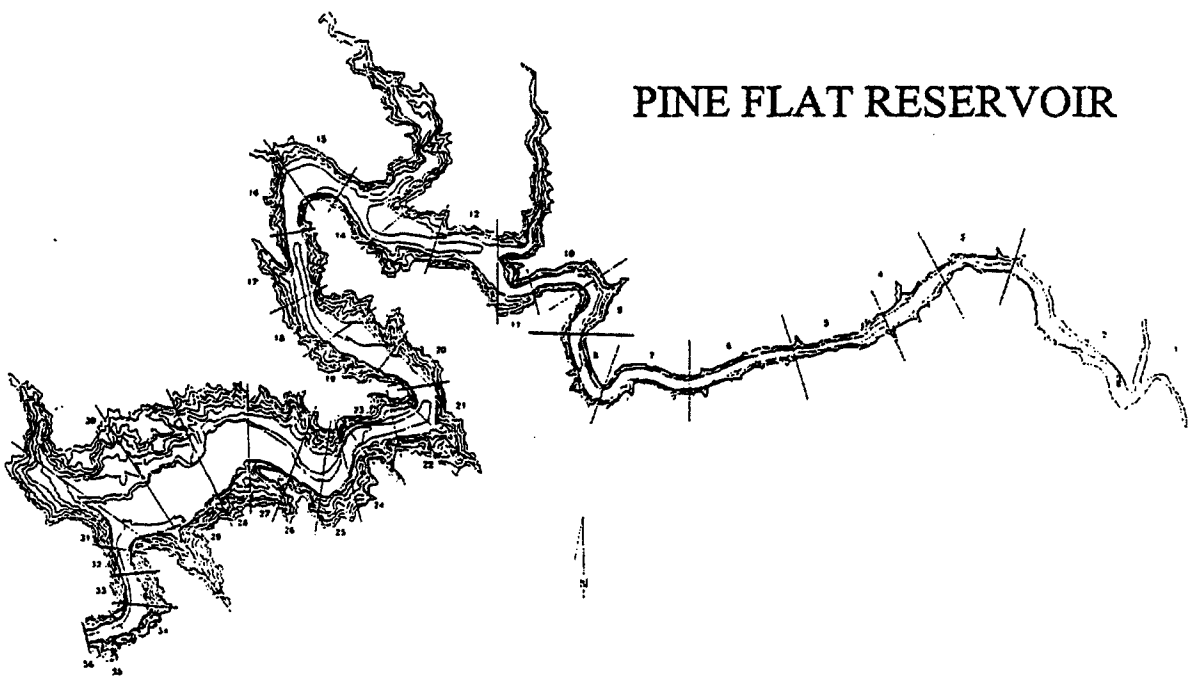


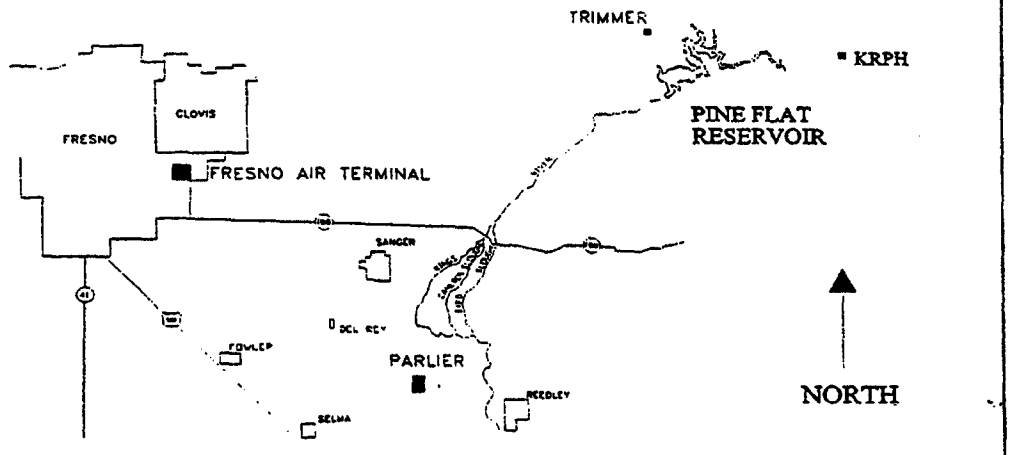
Figure 8

3.2 Meteorological Data

The following meteorologic data are required to run CE-QUAL-W2: air temperature (°C), dew point (°C), wind speed (m/s), wind direction (radians), and cloud cover. This data can be read at any time interval the user chooses depending on what source data is available, and the source reading interval. For this model we chose hourly intervals. With the exception of wind direction and cloud cover, the parameters are self-explanatory as far as measurement is concerned. Wind direction is measured positive clockwise, with due North representing the zero angle. Cloud cover is measured in tenths, with 10.0 representing total cloud cover and 0.0 representing no clouds. The data is arranged by Julian day with 1/24 day increments in a text data file.

Meteorologic data sets were created for 1988, 1989, 1992, 1993, and 1994. Whenever possible, data was used from the KRCD weather station located at the Kings River Powerhouse (KRPH) which is at the most upstream end of the reservoir when full. This station provided data regarding air temperature, dew point, wind speed, and wind direction on an hourly basis. Data for cloud cover was available from the U.S. Forest Service Trimmer Ranger Station located four miles northeast of Pine Flat Reservoir, and the Fresno Air Terminal (FAT) located twenty-two miles west of Pine Flat Reservoir. Data was also obtained from the California Information Management Information System (CIMIS) weather station in Parlier which is located nineteen miles southwest of Pine Flat Reservoir. Uniform data from the KRPH weather station was often available for only a few months at a time, so other strategies were taken, with no two years worth of data developed in the same manner. Station locations respective of Pine Flat Reservoir are shown in Figure 9.

PINE FLAT RESERVOIR WEATHER STATION DIAGRAM



AVAILABLE DATA AT:

FRESNO AIR TERMINAL	TRIMMER	PARLIER	KRPH
T AIR	T AIR	T AIR	T AIR
T DEW	T DEW	T DEW	T DEW
WIND VELOCITY	WIND VELOCITY	WIND VELOCITY	WIND VELOCITY
WIND DIRECTION	WIND DIRECTION	WIND DIRECTION	WIND DIRECTION
CLOUD COVER	CLOUD COVER	CLOUD COVER	

Figure 9

3.3 Inflow And Inflow Temperatures

What appears to be the most critical data (the data that Pine Flat Lake is most sensitive to) are the Kings River inflows and their respective temperatures. Inflows into the reservoir were obtained from the Kings River Water Association's (KRWA)'s Water Master Reports. These calculated values were used because, like the bathymetry, they are also based on the volume-area-elevation curve published by the Corps; therefore insuring the highest degree of continuity in our water budget calculations.

The reservoir storage can fluctuate a great deal during a given year, which results in significant changes in reservoir length and thus varying positions of the inlet. During drought years the reservoir inlet may be more than 12 miles downstream from the KRPH. The locations of the temperature recording stations are shown in Figure 10. It is from this data that all inflow temperature files were created.

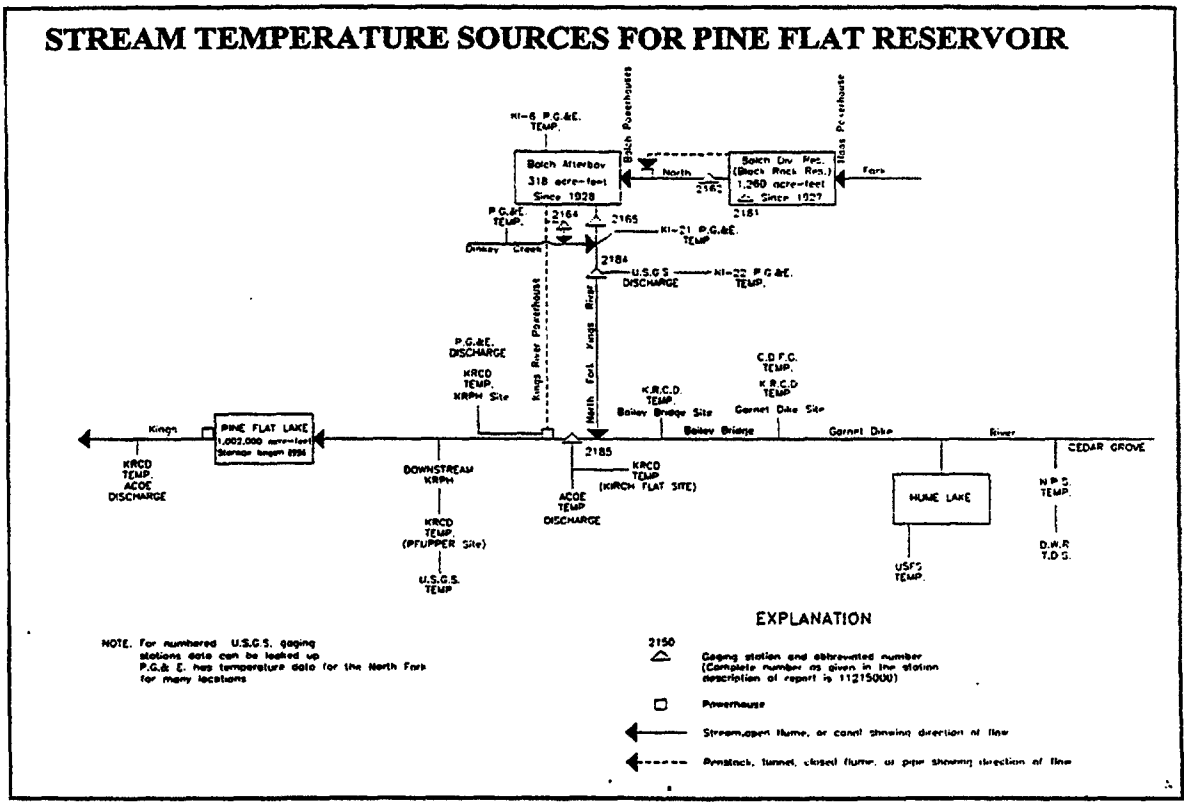


Figure 10

3.4 Outflow And Outflow Temperatures

The model uses daily outflow data arranged into columns which represent the different ports water may flow through. As with inflows, the outflows are also based on the KRWA's Water Master Reports. Elevation is the only defining characteristic of the ports, and any number of ports may be located at a given elevation. The ports may be arranged in any order that is convenient for the user. This is to say, it is not necessary that flow data be arranged into columns ranging from least to greatest elevation or vice versa.

Data required to calibrate the model was compiled from the outflow records of the KRWA. The Corps provided the records indicating which ports were used and when they were used. Records from the KRCD were used to determine when the power plant was operational, through which penstocks, and in what proportion the flow exited Pine Flat Dam.

The guidelines set in place by the Corps operation and maintenance manual of Pine Flat Dam were followed when arranging flow rates. These guidelines are as follows:

- **At water surface elevations above 924 feet, the ports shall be closed and all releases shall be over the spillway.**
- **At water surface elevations between 751 and 924 feet, releases shall be through the mid-level ports.**
- **At water surface elevations below 751 feet, releases shall be through the low-level ports.**

However, when releases are made, and power plant conditions are met, flow can be sent through the power plant in lieu of or in conjunction with releases over the spillway or through the dam ports. The conditions necessary to operate the turbines are a minimum water surface elevation of 715 feet and a release of at least 500 - 600 cubic feet per second, depending on the reservoir surface elevation. As previously stated, outflows and storage are not dependent on meeting the requirements for power generation, but are a function of either flood control or irrigation demand.

3.5 Initial Conditions

Initial conditions specify certain data inputs that define the state of the reservoir at the start of the model run. The initial conditions deal mainly with the temperature profile throughout the reservoir. These are entered for the segment adjacent to the dam face and, if data is available, at any other segment along the reservoir length.

The starting date for each model year coincides with a KRCD profiling date. Each profile had to be altered slightly to fit the constraints of a fixed grid system. For example, if profile readings are taken every three meters, then profile temperatures would have to be interpolated to fit a two meter grid layer system. For the standard calibration runs for each

model year, the profiles were modified as follows. Each layer's top and bottom temperatures were estimated by interpolating between the known depth and temperatures recorded in the profile. Once a cell's top and bottom temperatures were known, they were averaged together to give a single temperature for that cell. Initial profiles generated for the model occurred during the time of year when the reservoir was near isothermal, with a top to bottom temperature difference of at most 1.5 degrees Celsius. Distribution of temperatures along a semi-vertical line allows for a better prediction of what the profile would look like for a reservoir with increased elevation due to an imposed initial storage condition.

3.6 Model Calibration

The CE-QUAL-W2 model has been calibrated for years 1988, 1989, 1992, 1993 and 1994. The first three years were critically dry, 1993 was the tenth wettest year on record and 1994 was considered a below average year. Classification of years as dry, wet or average (for modeling purposes) does not necessarily refer to the amount of rainfall, but more so to the combination of rainfall and storage in the reservoir throughout the year. For this study we used years 1992, 1993 and 1994 to model since they provided a broad range of storage and flow characteristics. Even though 1994 was a critically dry year, the reservoir had significant carryover storage from 1993 and so physically appeared only slightly below average. The following graphs show the calibration results compared to field measurements. They are arranged in two-page sets by year (1992, 1993 and 1994). The first page includes nine reservoir temperature profile graphs for the model year. The second page includes the outflow temperature comparison graph and the water budget elevation-storage graph for the model year.

Calibration of the CE-QUAL-W2 model does not proceed as is typical for most models with initial calibration with one year's data, then verification against data from a different year resulting in re-calibration and verification until the model reflects equally with both the calibration and verification years. With CE-QUAL-W2, each modeling year is calibrated independently. Using adjustments made to the model for one calibrated year and verifying with another year is impractical because the measured data may vary significantly from one year to another. Calibration of the model is complete for each year when the model predicts within a reasonable range (± 1 °C) the measured temperature profiles in the reservoir. The ability of the model to accurately predict the shape and magnitude of the profiles is the important factor. Evidence of model calibration is provided in the following temperature profiles for each year.

Since the models ability to accurately predict reservoir release temperatures is vital to this study, predicted versus measured outflow temperatures for each modeled year are also presented. Because the first location where outflow temperatures are measured is at the Corps bridge, one-quarter mile downstream of the dam, a difference between measured and predicted temperatures exists. It is important to note however, that the model closely follows the trends in outflow temperature. This discrepancy between measured versus modeled temperatures can be further explained by the fact that reservoir releases are not time

dependant. That is, there is no diel fluctuation in outflow temperatures at the dam as exists at the Corps bridge.

Also of importance to the calibration process is the predicted reservoir storage compared to actual values. The following water budget graphs present actual versus predicted storages. The top line on each graph shows the elevation difference between the actual and measured values, which should be no more than 0.5 meters (1.5 ft.). The bottom curves show the actual and predicted reservoir storage curves, and since the elevation difference is less than 0.5 meters, these curves appear to be the same line.

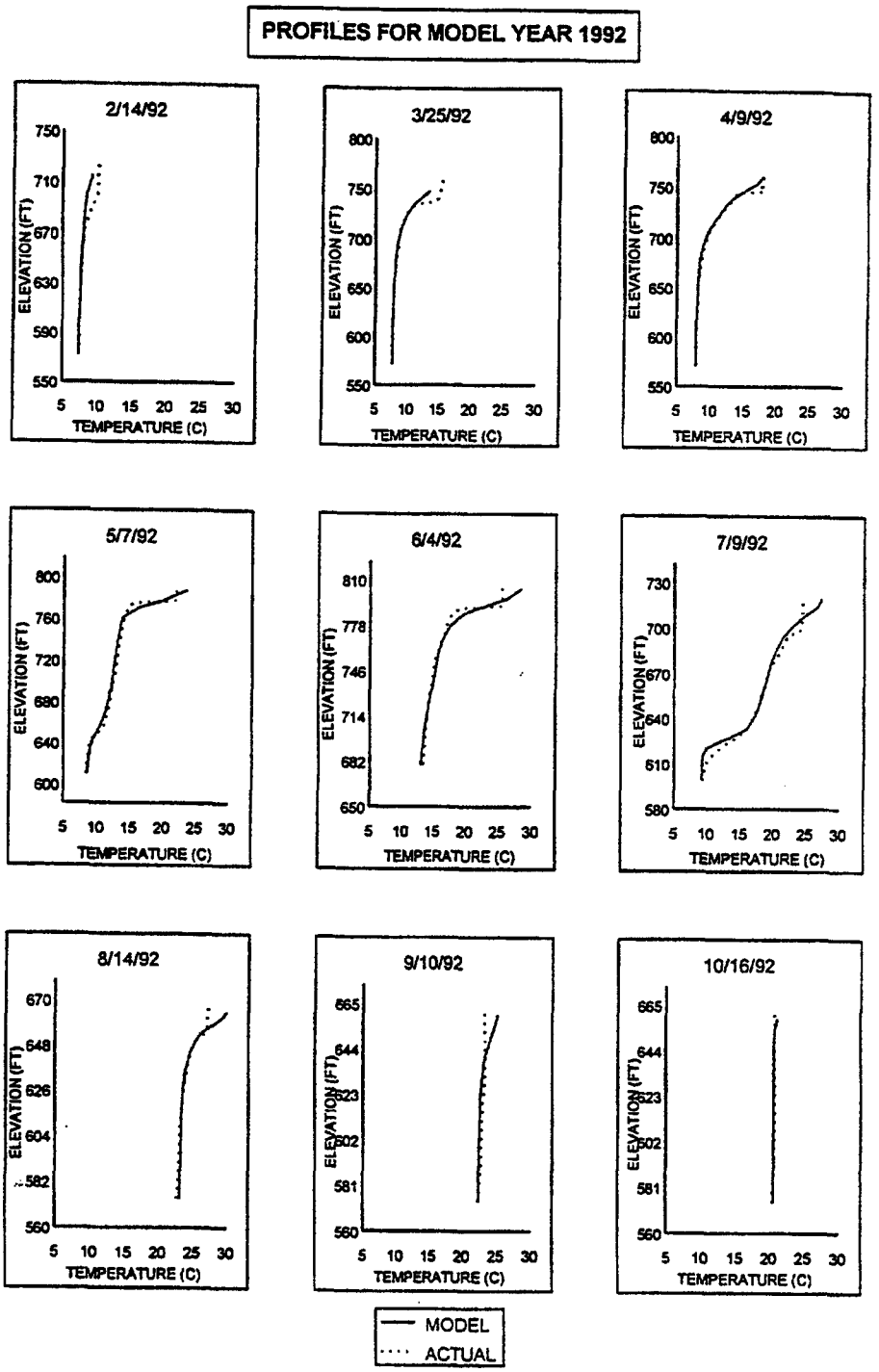

PROFILES FOR MODEL YEAR 1992
2/14/92
3/25/92
4/9/92
5/7/92
6/4/92
7/9/92
8/14/92
9/10/92
10/16/92
ELEVATION (FT)
TEMPERATURE (C)
MODEL
ACTUAL

Figure 11

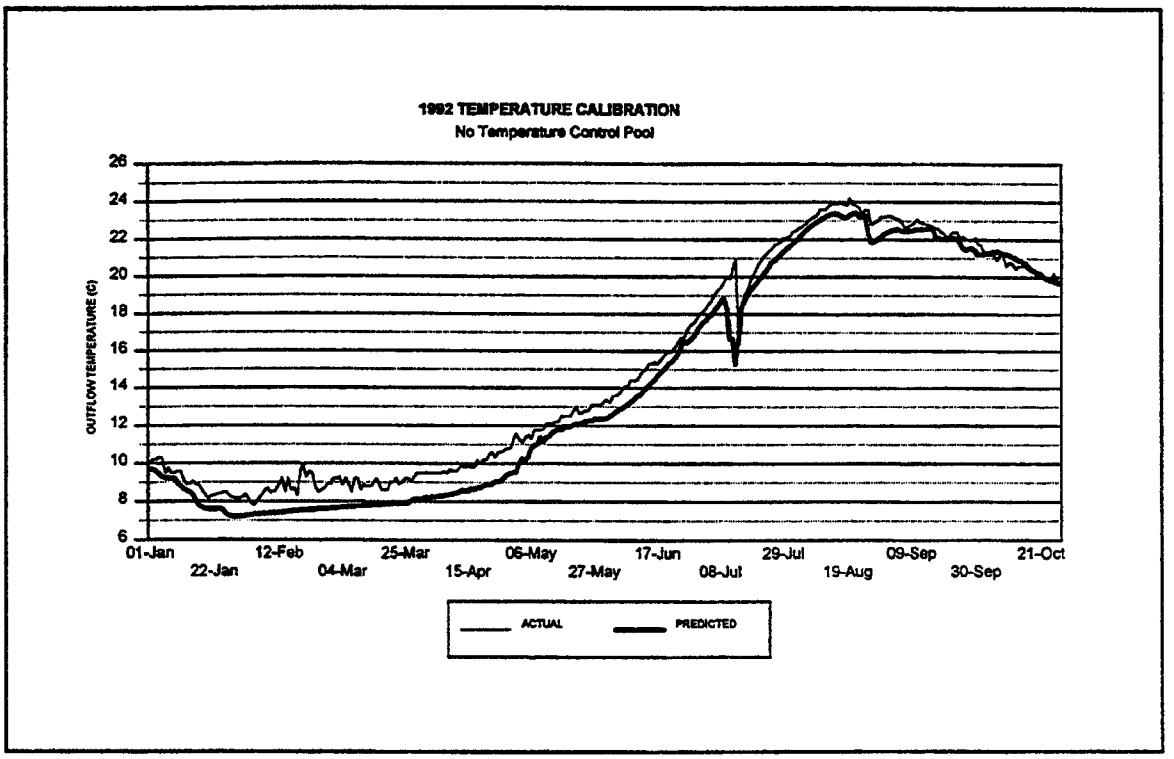


Figure 12

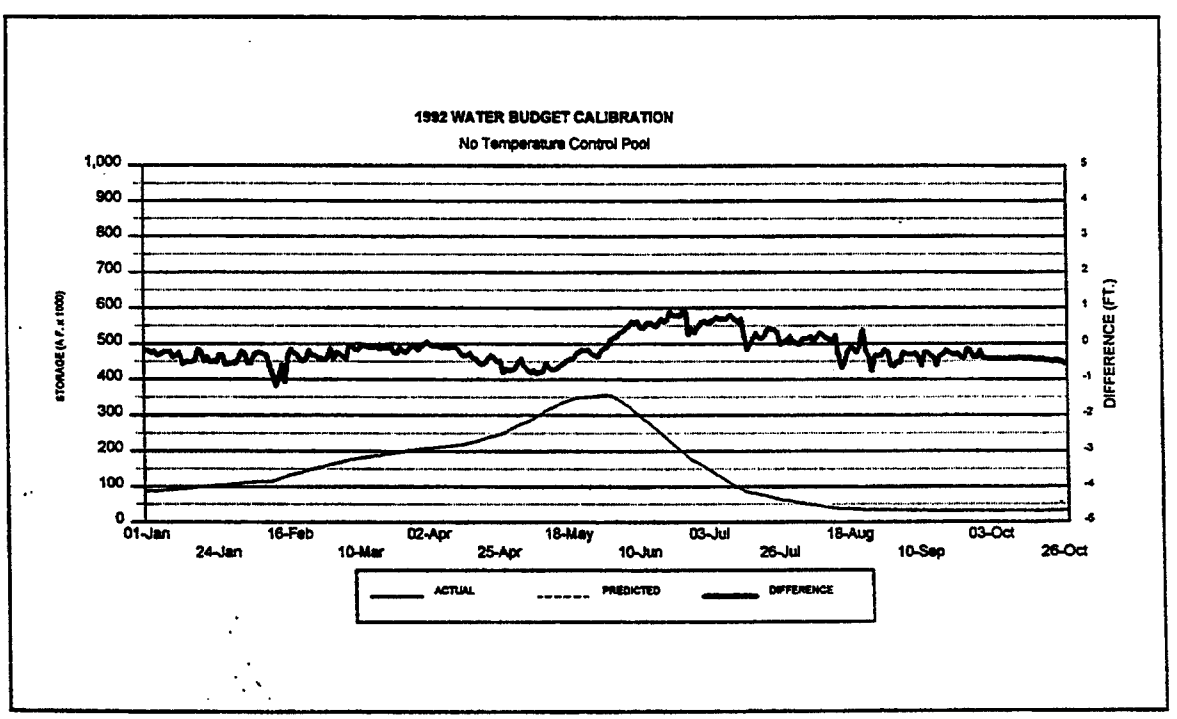


Figure 13

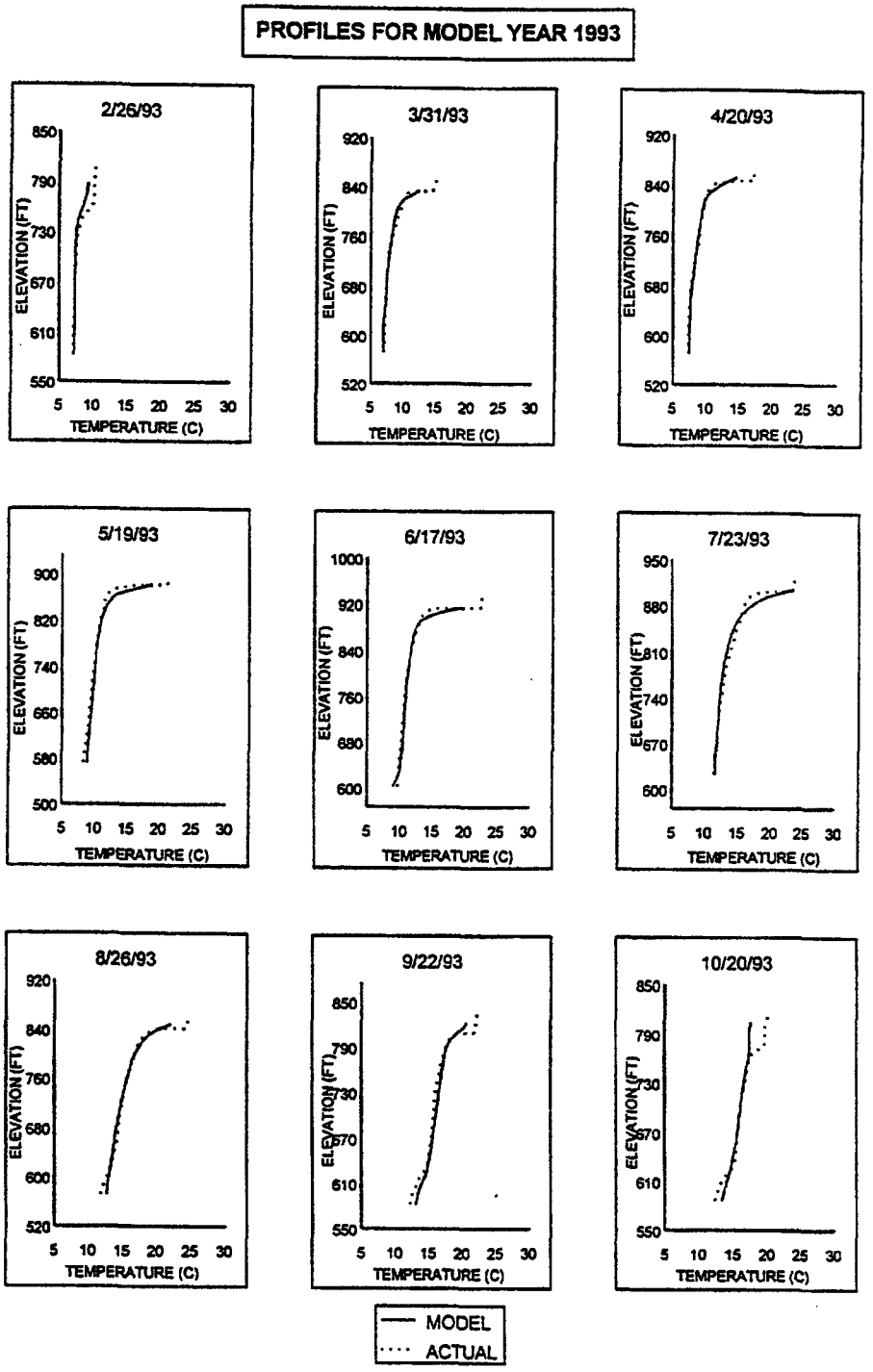

PROFILES FOR MODEL YEAR 1993
2/26/93
3/31/93
4/20/93
5/19/93
6/17/93
7/23/93
8/26/93
9/22/93
10/20/93
ELEVATION (FT)
TEMPERATURE (C)
MODEL
ACTUAL

Figure 14

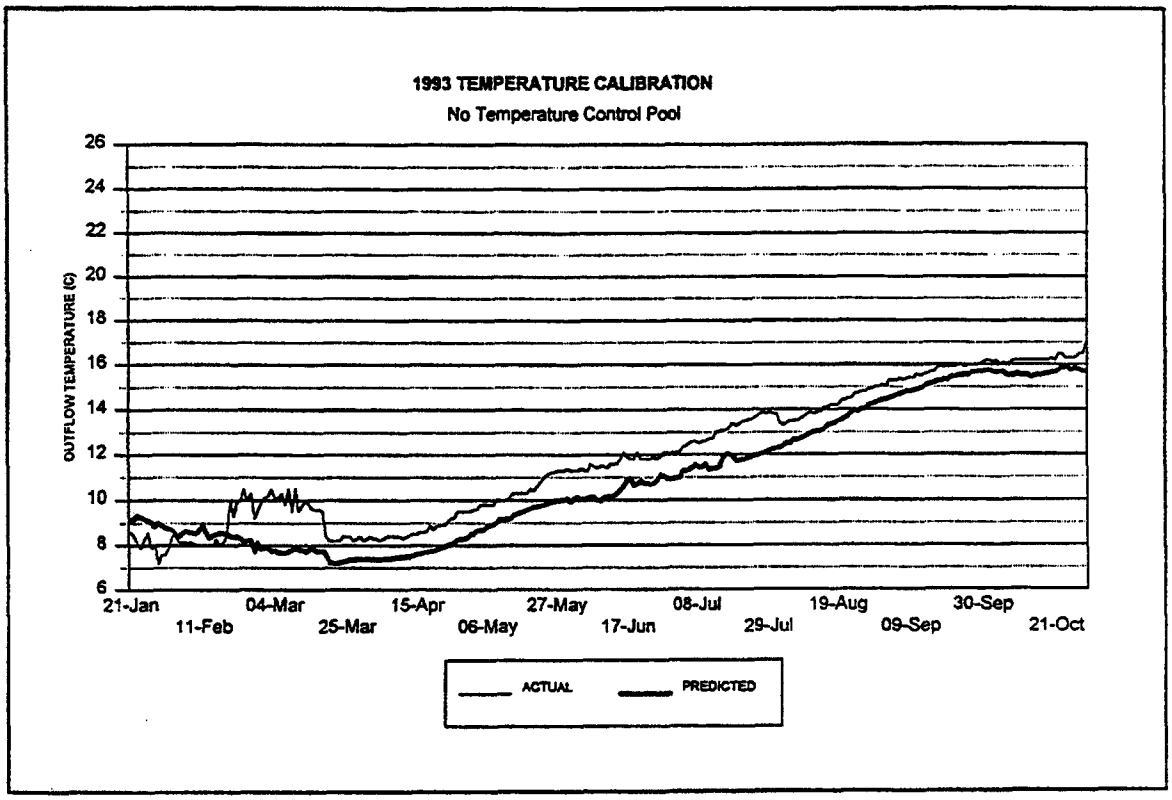


Figure 15

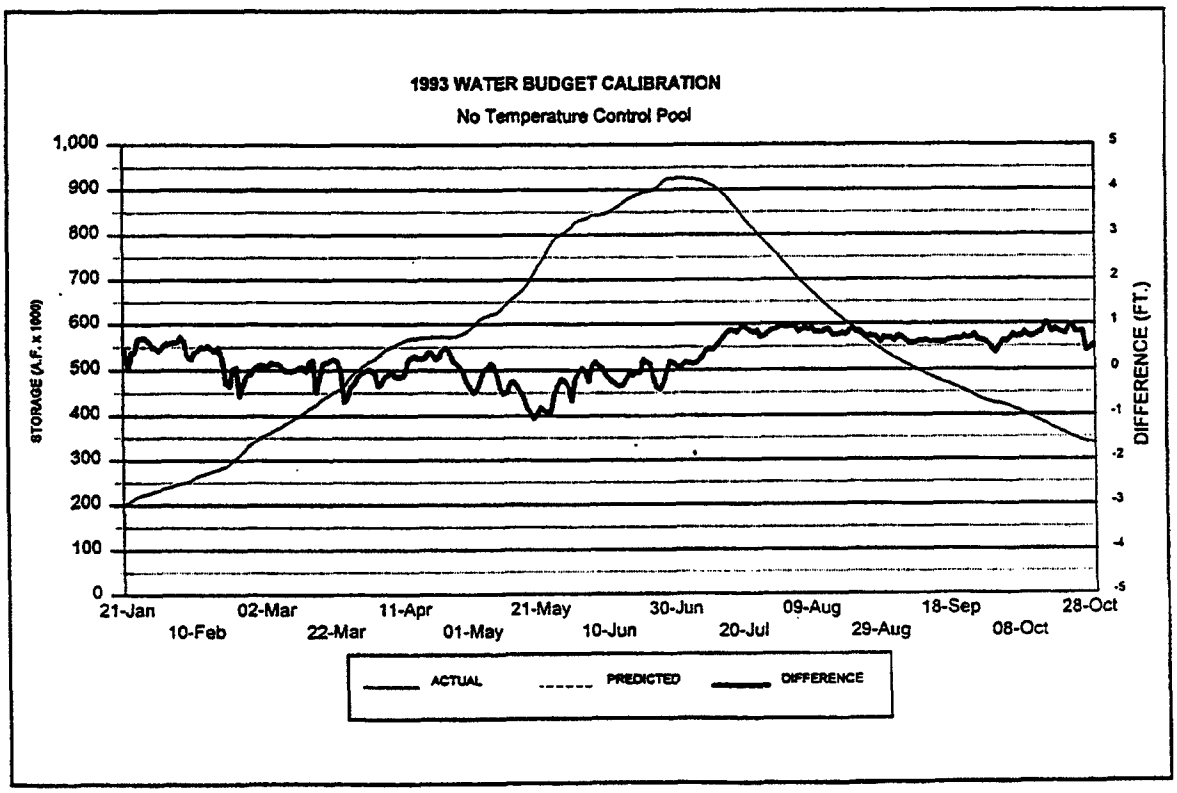


Figure 16

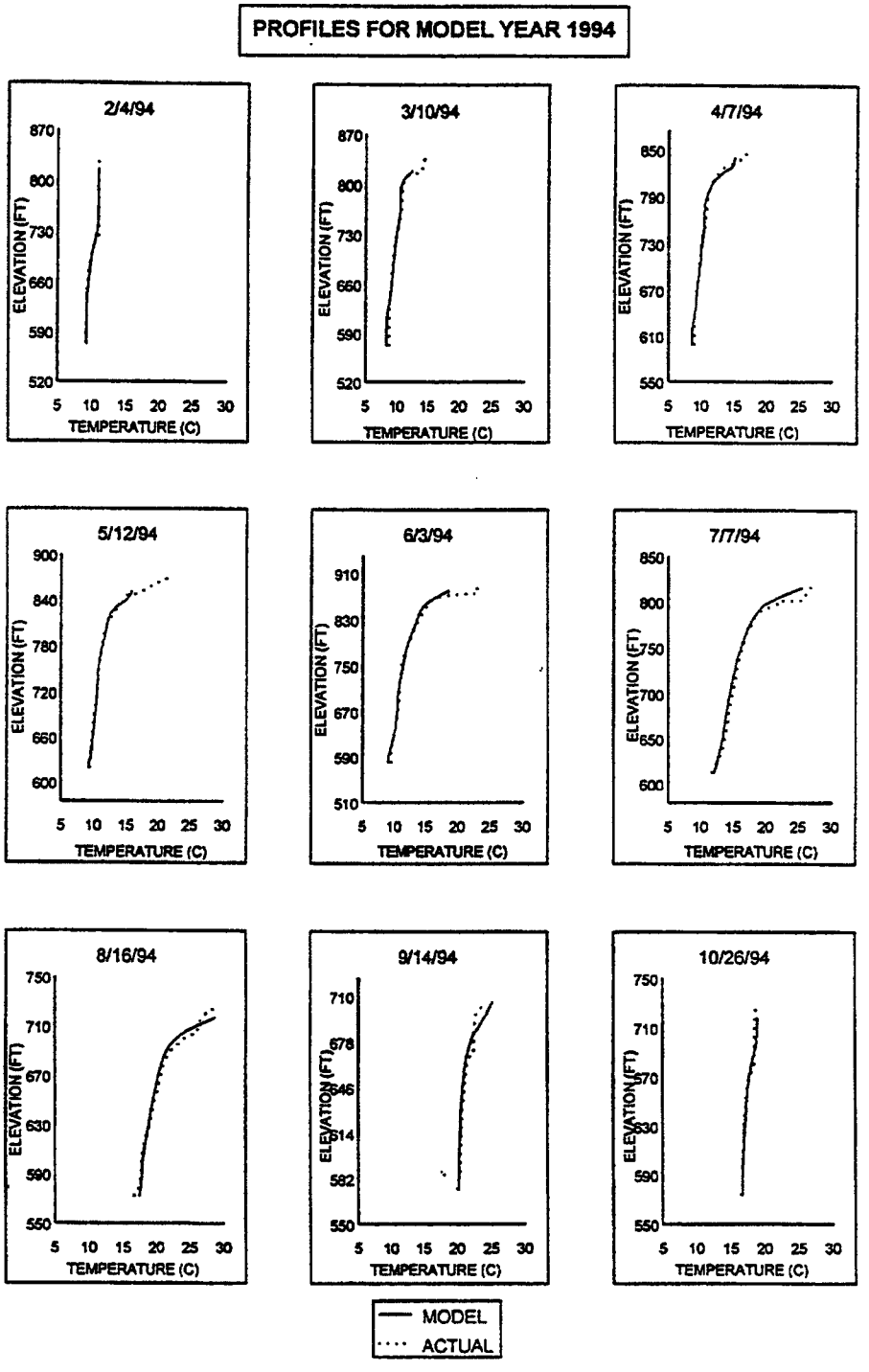

PROFILES FOR MODEL YEAR 1994
2/4/94
3/10/94
4/7/94
5/12/94
6/3/94
7/7/94
8/16/94
9/14/94
10/26/94
ELEVATION (FT)
TEMPERATURE (C)
MODEL
ACTUAL

Figure 17

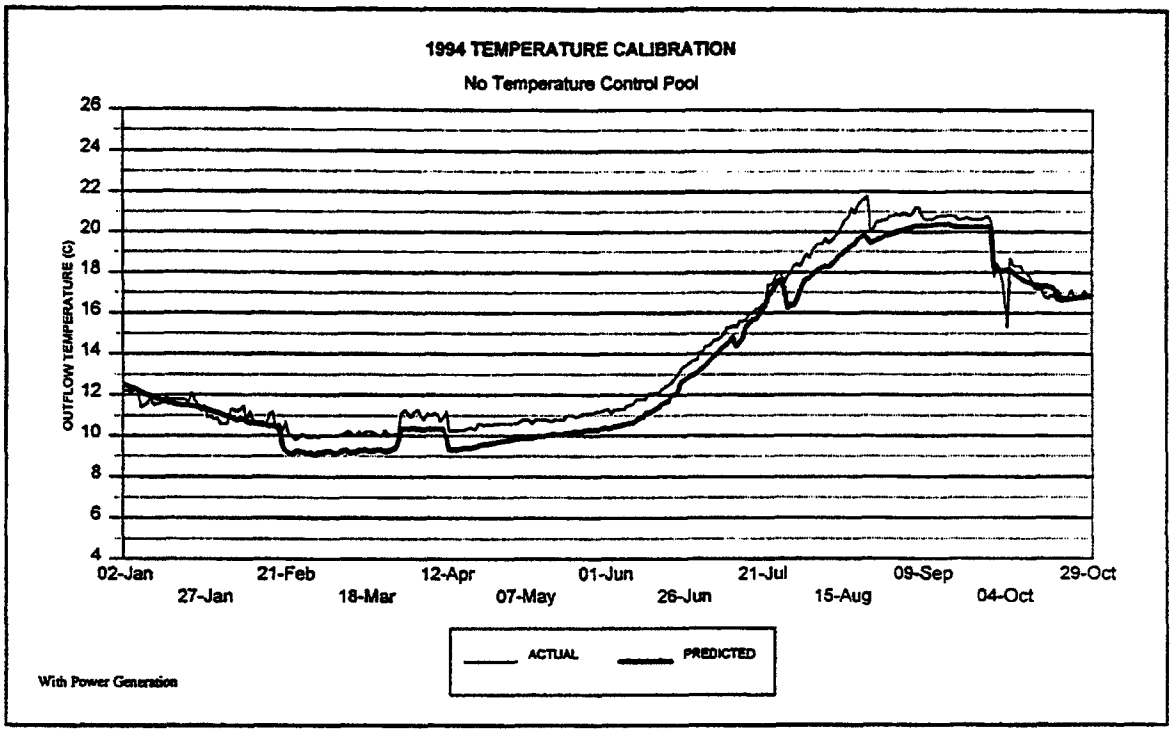


Figure 18

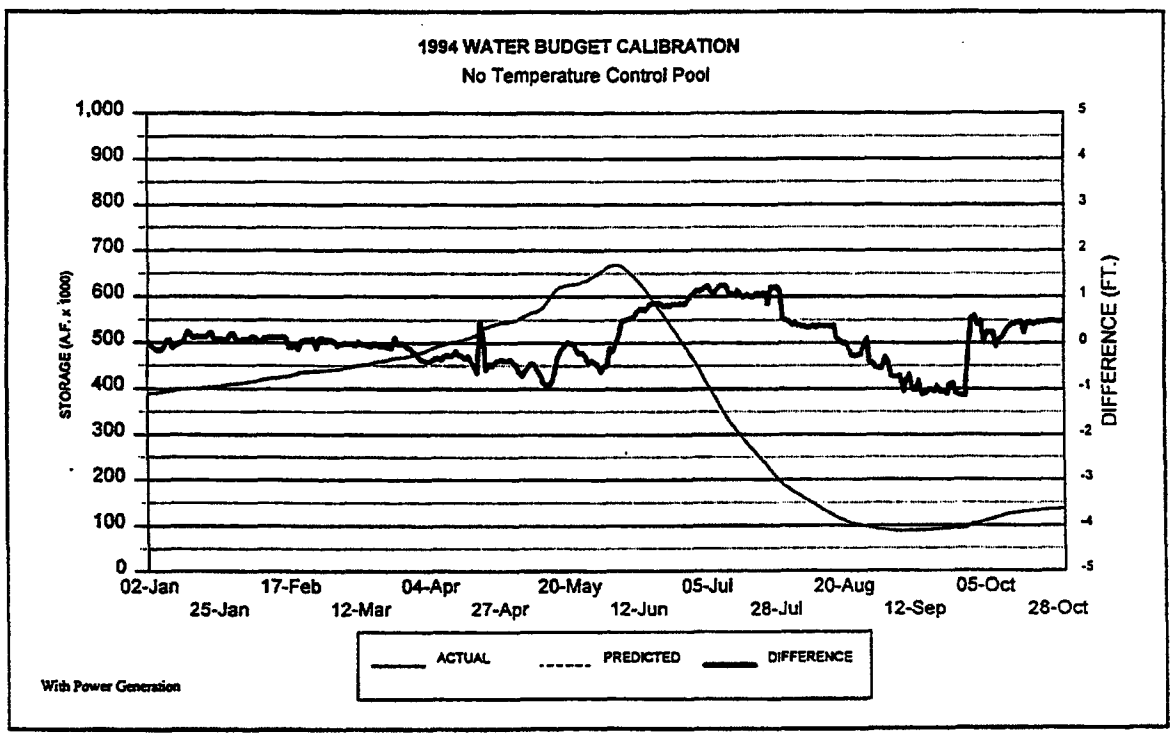


Figure 19

4.0 DESIGN

The KRCD was requested by the Corps to determine an initial preliminary design for the multi-level intake structure since the KRCD had the mathematical model (CE-QUAL-W2) and was able to evaluate the release temperature advantages of various port locations for the structure. This work involved modeling a multitude of structure configurations in order to determine a structure configuration that proved to be beneficial under a broad range of water year types. A structure with outlet ports spaced wide enough vertically to be useful in wet years but yet where the ports are not at such high elevations so as to be unusable in the drier years.

The primary objective of releasing water through the structure is to provide for cooler late summer, early fall flows downstream of the dam. Another advantage would be to provide sightly warmer spring flows. In attempting to obtain warmer spring releases during the majority of years, an evaluation of the historical Pine Flat Reservoir storage was conducted. A bar graph showing the maximum storage for the years 1955 through 1997 was developed and is shown in the figure below.

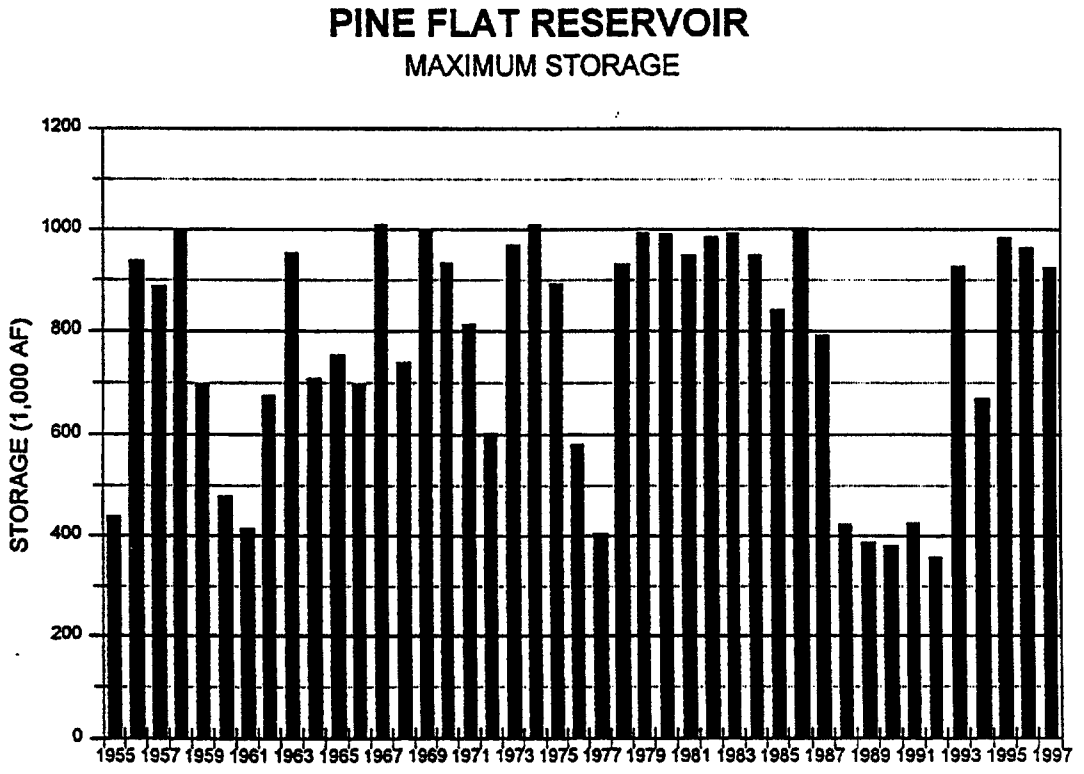


Figure 20

The maximum reservoir storage was looked at to determine the frequency of occurrence of various storage levels. It was decided to place the top port of the multi-level intake structure at an elevation where it could be utilized at storage levels of 600 kAF or more. This would make the top port of the structure usable in nearly 80% of the years since construction of the dam. Other elevations were analyzed but as higher elevations were pursued the years of usage for the top port began to drastically diminish.

The bottom port of the structure was determined by the limitations of the existing features of the dam, which would place the bottom of the lowest port even with the bottom of the existing penstock ports. After much discussion with the Corps regarding hydraulic and structural limitations, the multi-level intake structure evolved into what is shown in Figure 21 on the following page. Consisting of three independent columns, one in front of each of the three penstocks, providing each structure with the ability to pull water from different elevations. There are a total of nine ports, three in each column, at staggered elevations to provide for greater coverage of the water column. Blending efforts to achieve desired temperature objectives would occur between structure columns, not within a single column. In theory, this would eliminate the uncertainty in apportioning flows that could occur if more than one port were to be opened in a single column or when there is a single structure over more than one dam port. The staggered port configuration provides flexibility in withdrawal zone selection while reducing the aforementioned flow uncertainty.

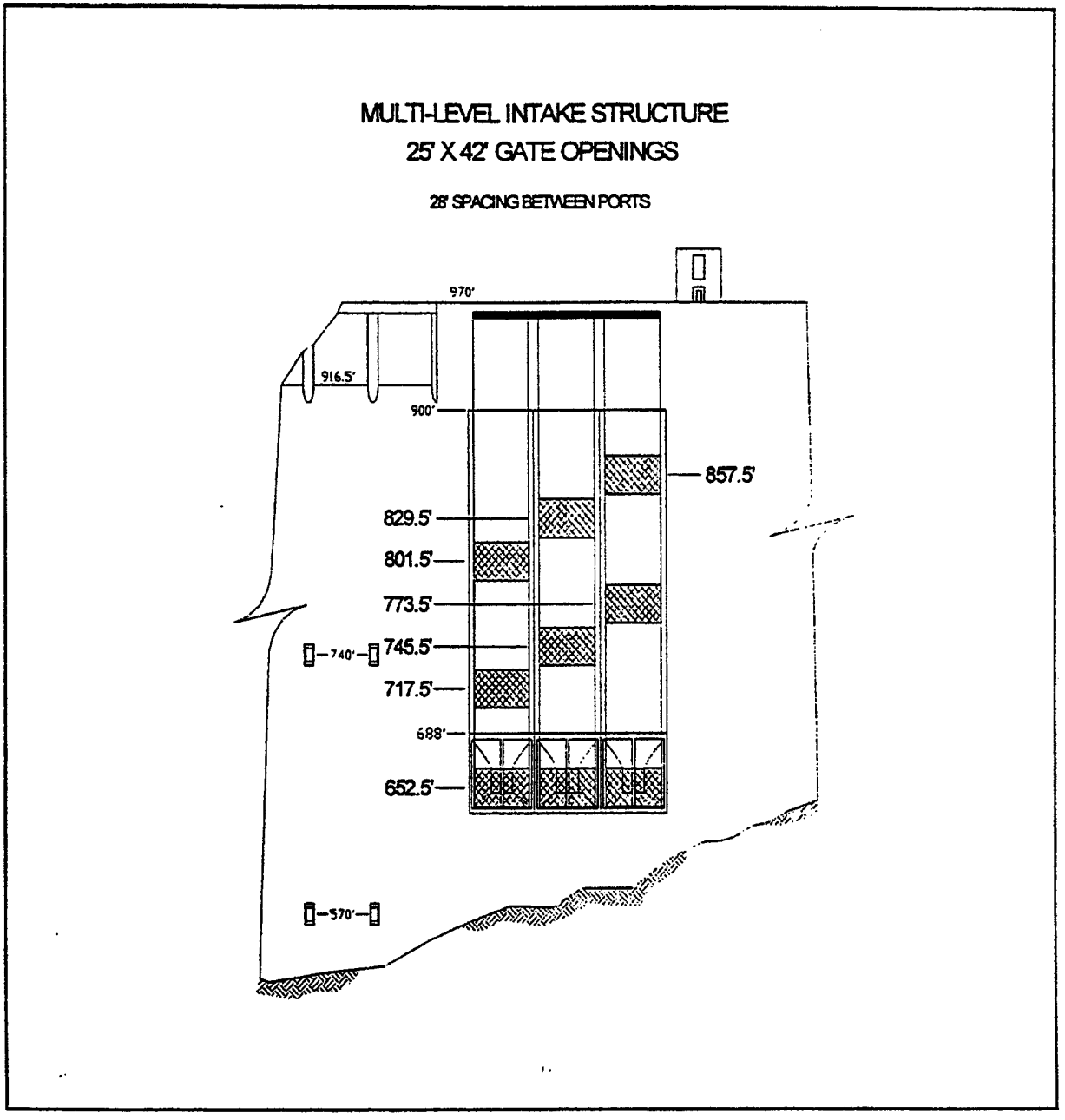

MULTI-LEVEL INTAKE STRUCTURE
25' X 42' GATE OPENINGS
28' SPACING BETWEEN PORTS
970'
916.5'
900'
857.5'
829.5'
801.5'
773.5'
740'
745.5'
717.5'
688'
652.5'
570'

Figure 21

5.0 MODELING ANALYSIS

In order to evaluate the performance of the multi-level intake structure, to determine it if is capable of warming the spring and cooling the fall releases, years 1992 (critically dry), 1993 (wet) and 1994 (below average) were modeled. These years provide for a broad range of conditions to test the operation of the structure. A minimum pool of 100,000 acre-feet was applied to 1992 and also modeled. The modeling results are presented in the appendices of this report. For each modeled year, the results were compared with measured release temperatures and reservoir profiles. A discussion of each model run is presented in the following sections.

5.1 THE 1992 MODEL YEAR

In 1992, the reservoir storage peaked at 357,000 acre-feet on May 31 and rapidly declined to 32,000 acre-feet by mid September. This was the last year of a six-year drought and was a critically dry year. Release temperatures exceeded 18°C in early July. Maximum release temperatures occurred in the latter half of August and exceeded 23°C. Benefits provided by the present design of the multi-level intake structure included a warming of the spring releases by up to 5°C. Late summer releases were cooled slightly (there were an additional 14 days of 18°C or cooler releases as a result of the structure) but since there was so little water in storage, preserving a cooler hypolimnion for later release was not possible. The release temperatures for the model run compared with measured release temperatures and the reservoir storage are presented on the graph in Figure 22.

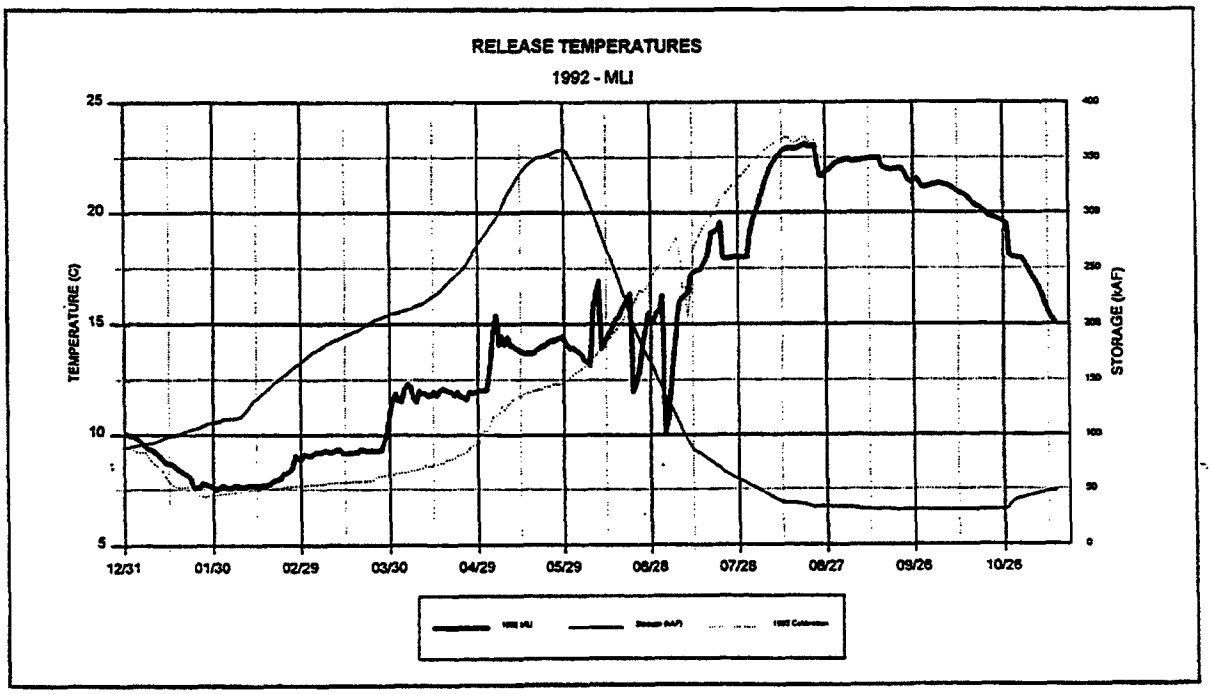


Figure 22

5.2 THE 1992 MODEL YEAR WITH MINIMUM POOL

For this model run an additional 62,000 acre-feet was added to the initial reservoir storage to produce a minimum reservoir pool of 100,000 acre-feet. This scenario was modeled to evaluate the effectiveness of the structure under minimum pool conditions. It can be seen in Figure 23 that with a minimum pool of 100,000 acre-feet the structure is capable of limiting release temperatures to a maximum of 18°C.

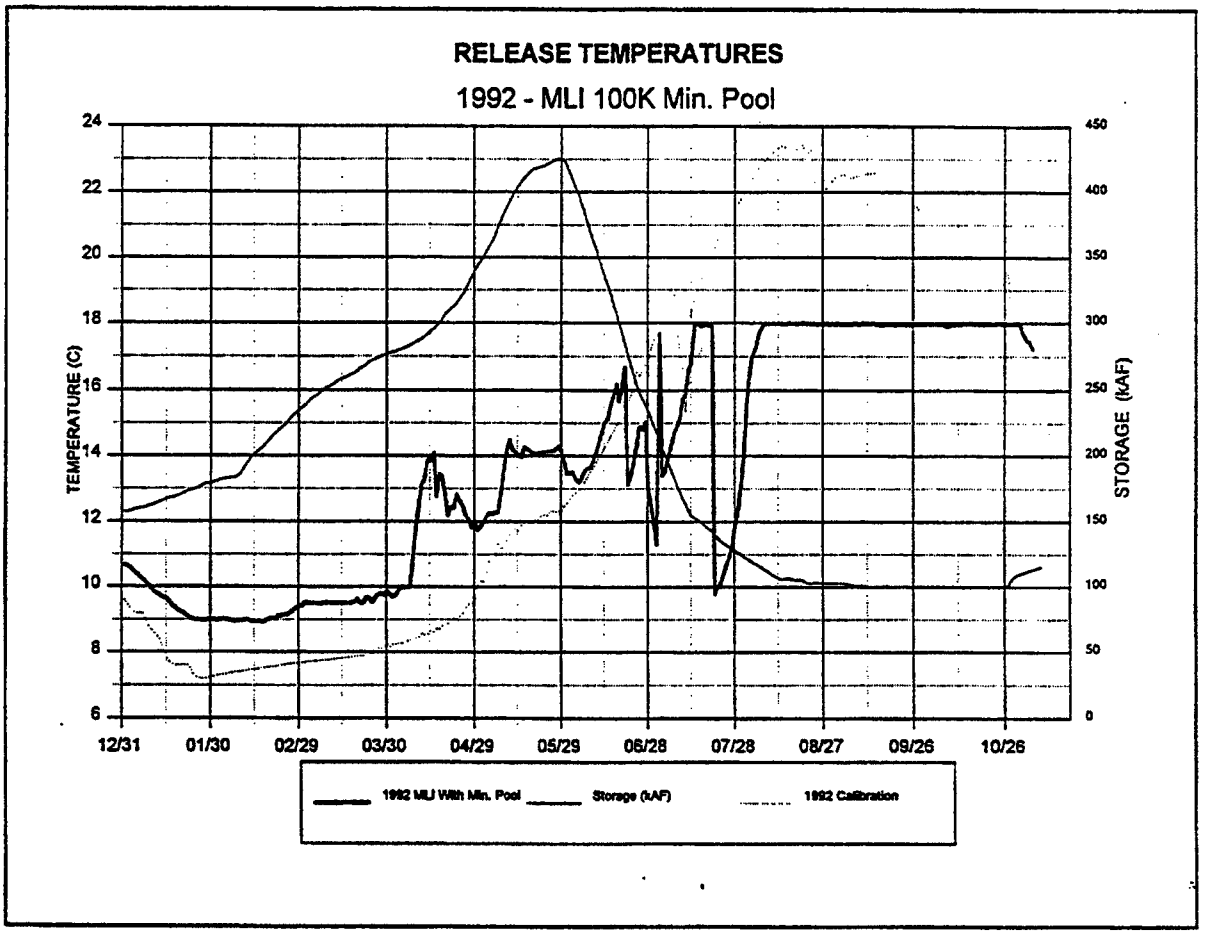


Figure 23

5.3 THE 1993 MODEL YEAR

Presently, 1993 is the only wet year for which CE-QUAL-W2 is calibrated. In the wetter years high release temperatures are not a problem. Rather, cooler than optimum temperatures during the spring and early summer are prevalent. Therefore, the multi-level intake structure was modeled to determine if warmer spring and summer releases could be obtained. The results of the model run are presented in Figure 24. It can be seen from the graph that the spring and summer flows through the structure were slightly warmer. Producing even warmer release temperatures by raising port elevations was not possible. During wetter years, because of the high volumes of very cold snowmelt runoff entering the reservoir there is a shallow warm epilimnetic layer. This layer is too close to the surface, which fluctuates daily, to make it practical for top port withdrawals.

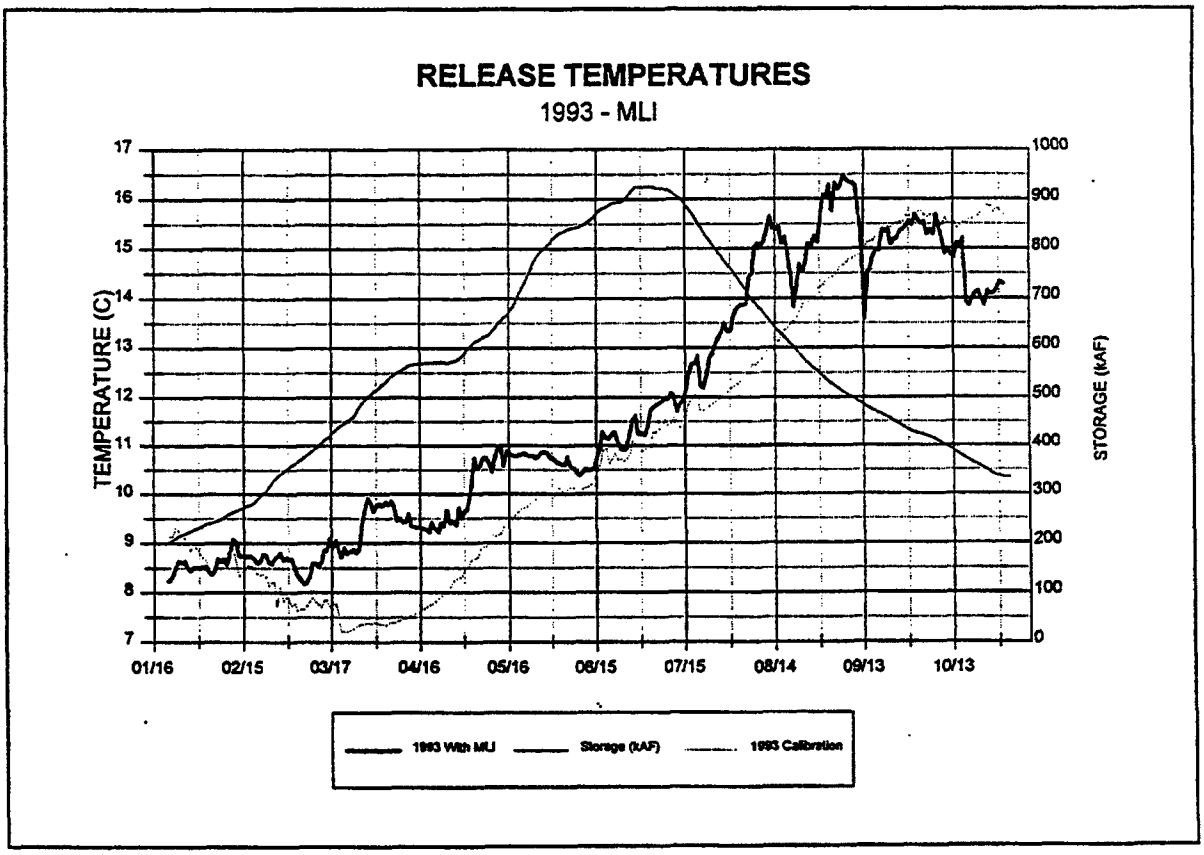


Figure 24

5.4 THE 1994 MODEL YEAR

In 1994, the reservoir began the year with high carryover from the wet 1993 season. Beginning storage was 389,000 acre-feet. However, with only a 50% water year the high initial storage was quickly depleted to a minimum storage of 90,000 acre-feet by September 6. Release temperatures exceeded 18°C by August 7th and reached a maximum 20°C by August 20. Modeling of the multi-level intake structure showed an increase in the spring and early summer release temperatures of up to 4°C while late summer and early fall release temperatures were maintained at no more than 18°C. These results are shown in Figure 25 below.

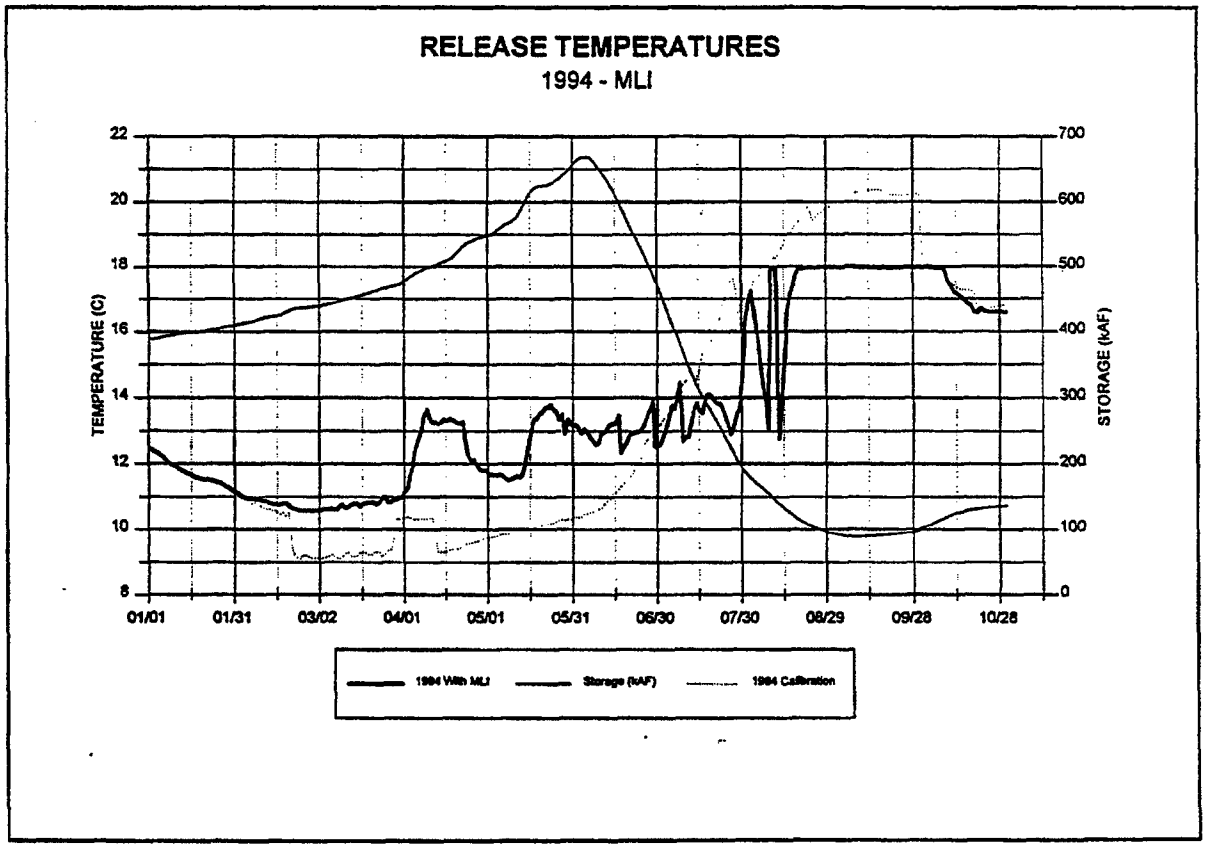


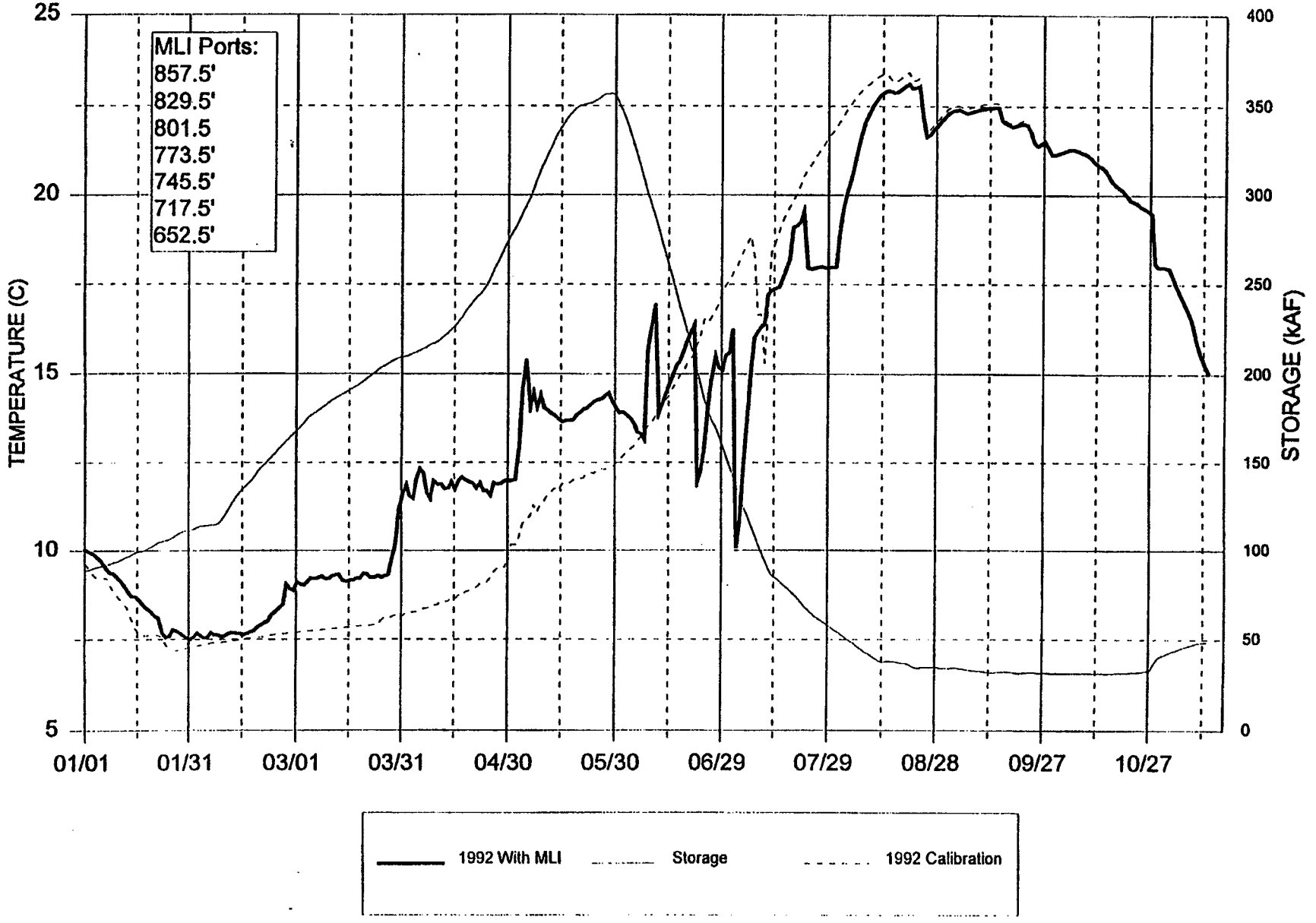
Figure 25

APPENDIX A

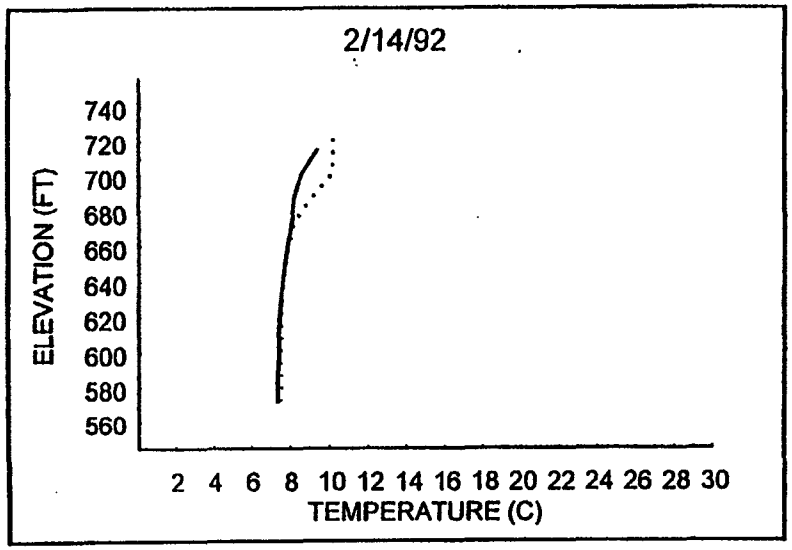
1992 MODEL RUN

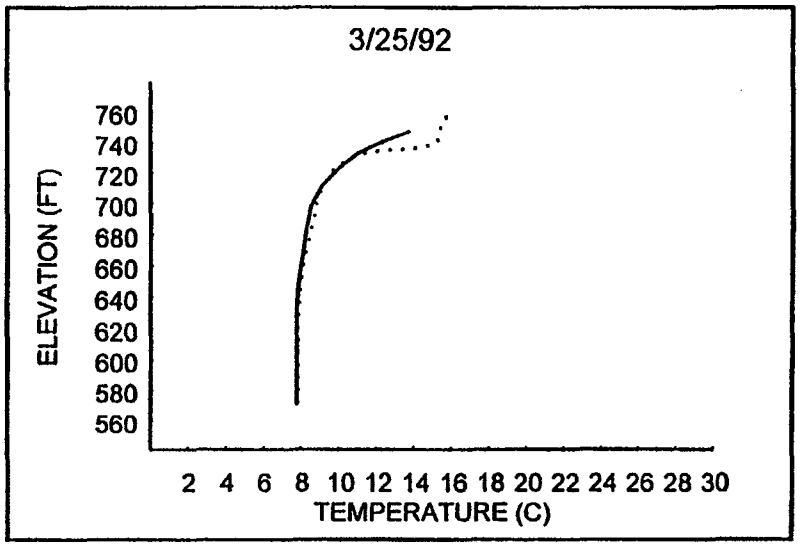
RELEASE TEMPERATURES

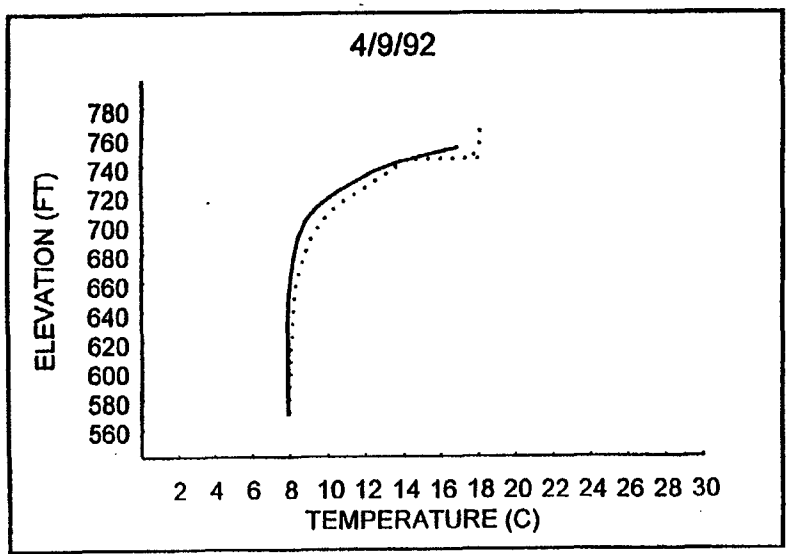
1992 - MLI

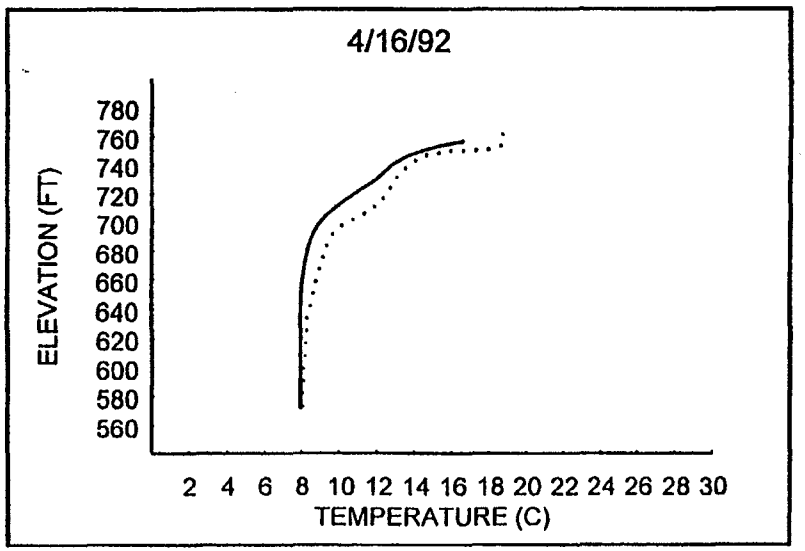


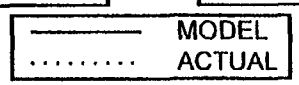
PROFILES FOR MODEL YEAR 1992



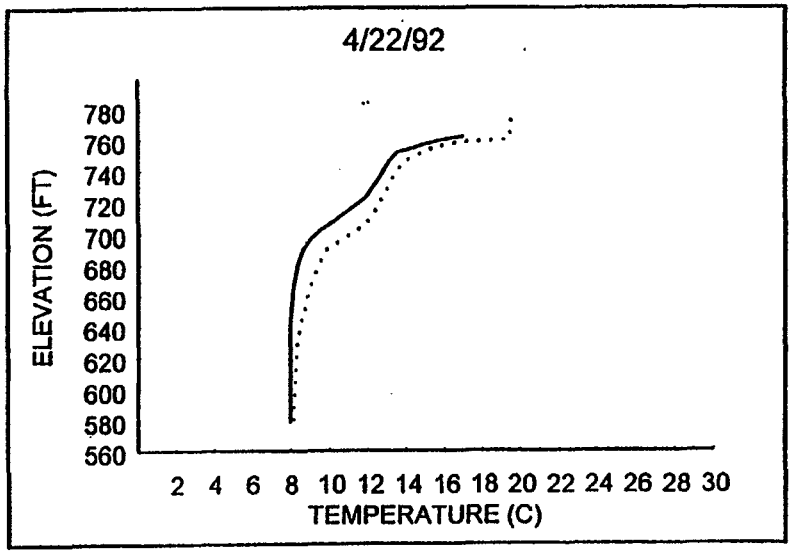


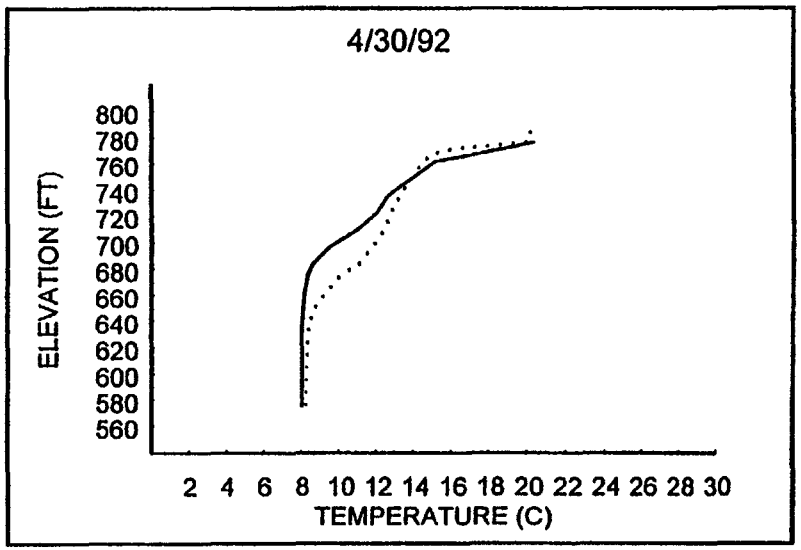


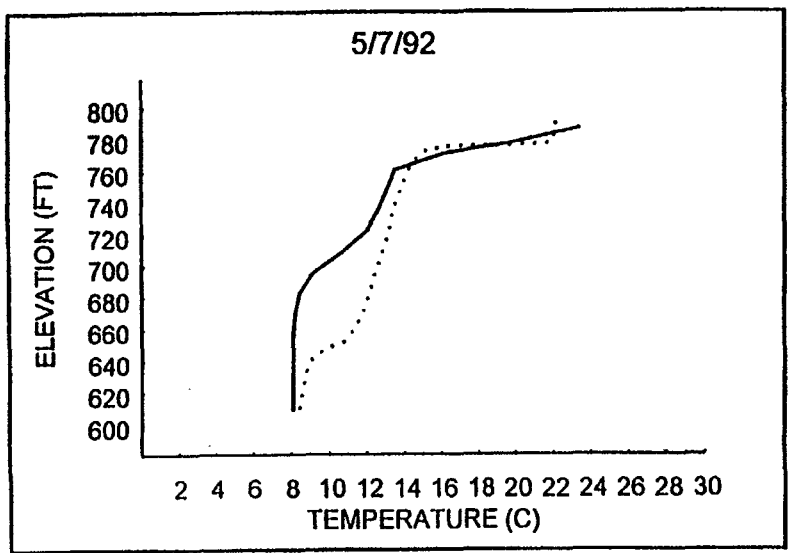


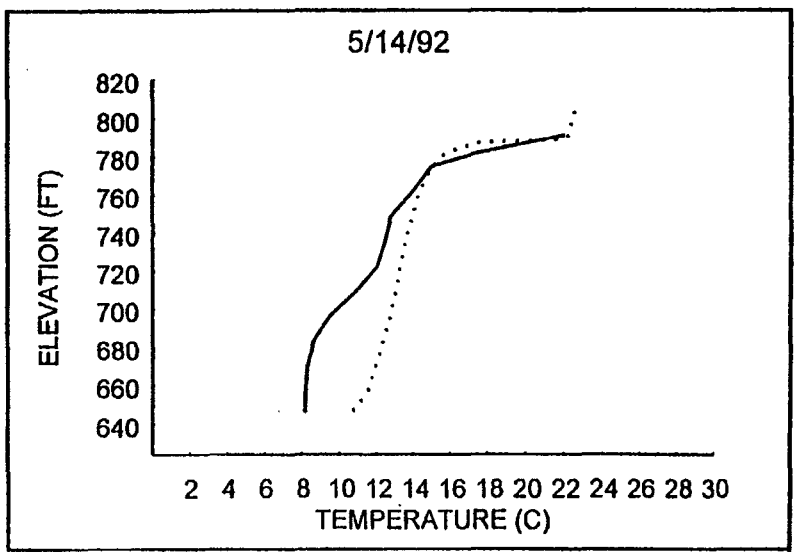


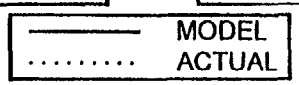
PROFILES FOR MODEL YEAR 1992



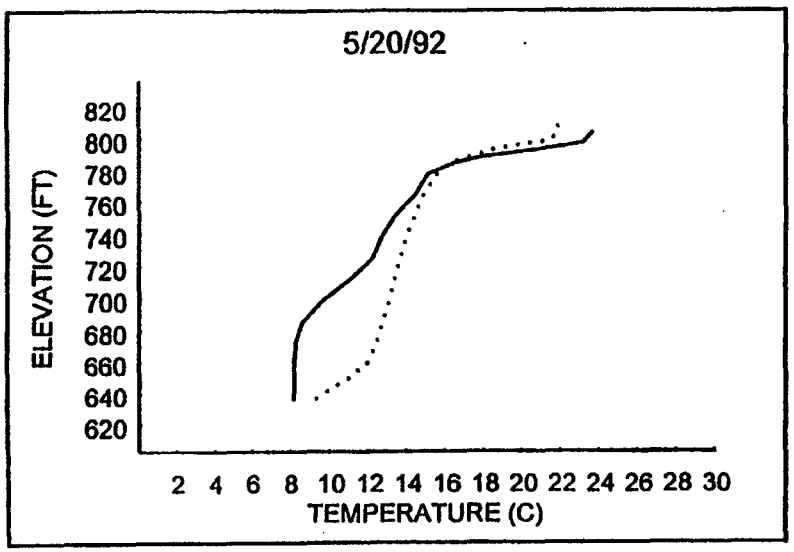


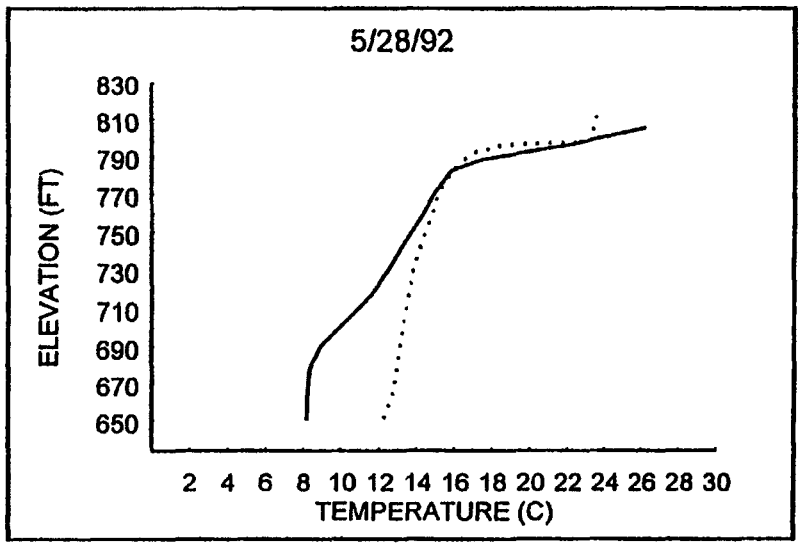


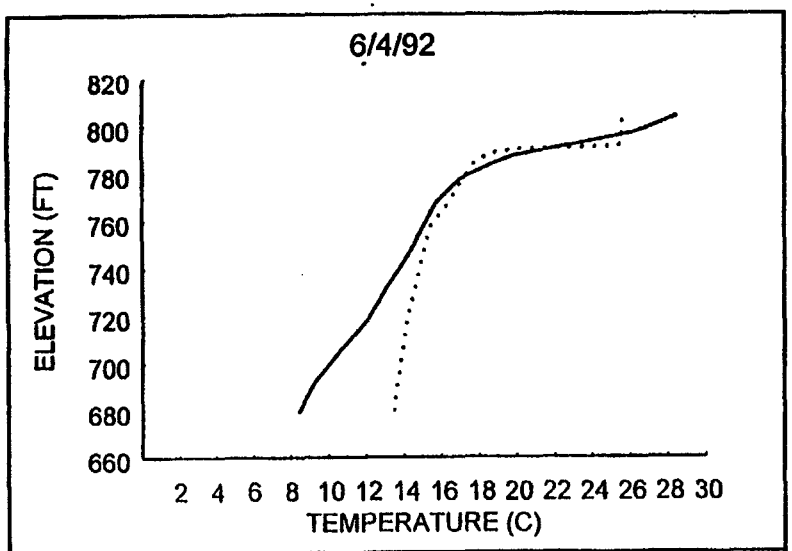


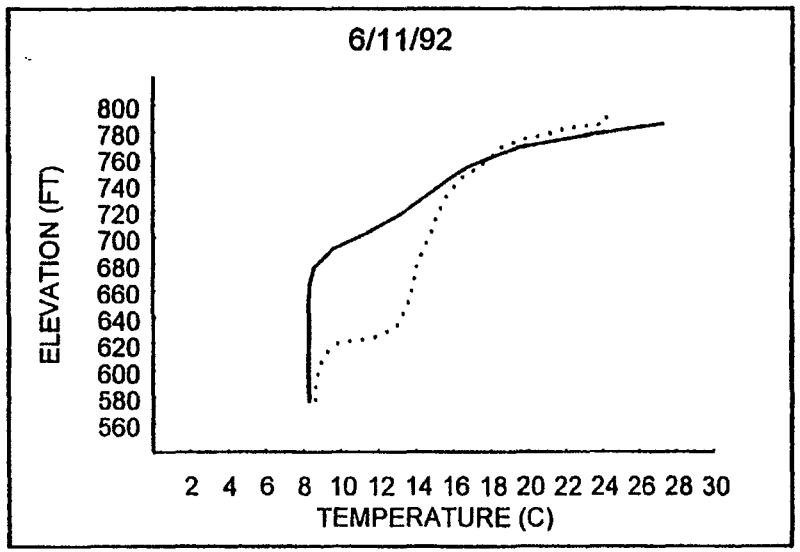


PROFILES FOR MODEL YEAR 1992



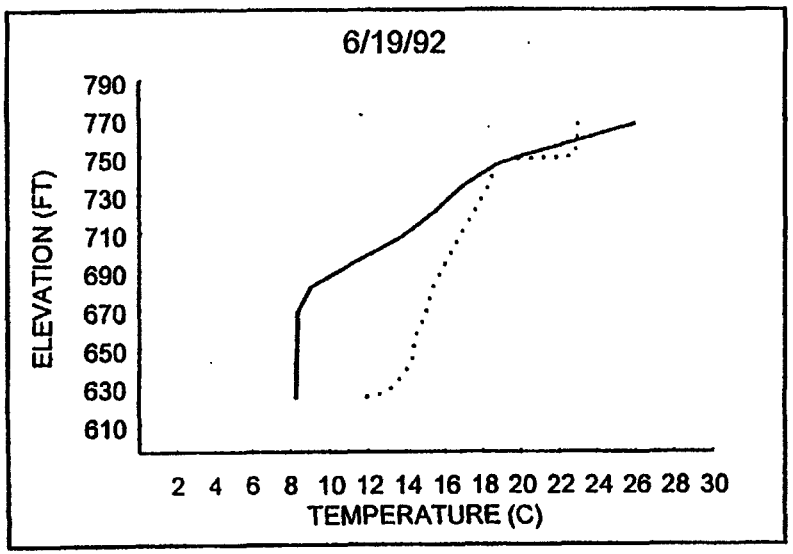


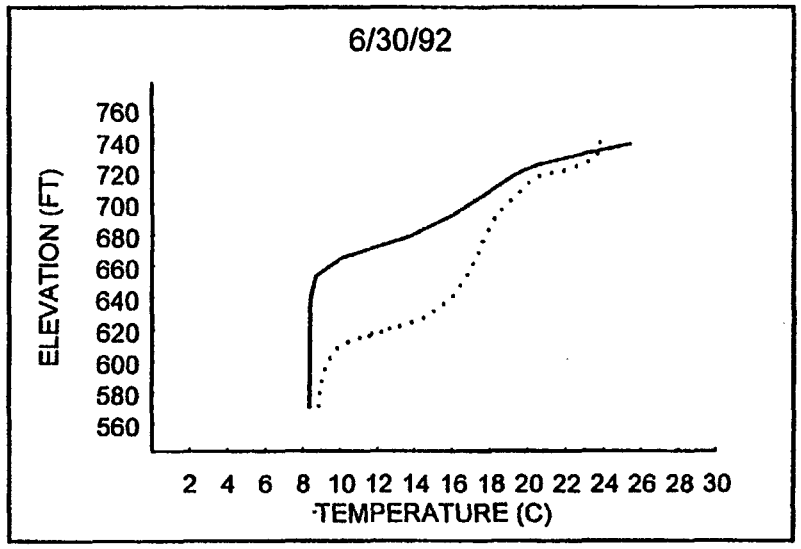


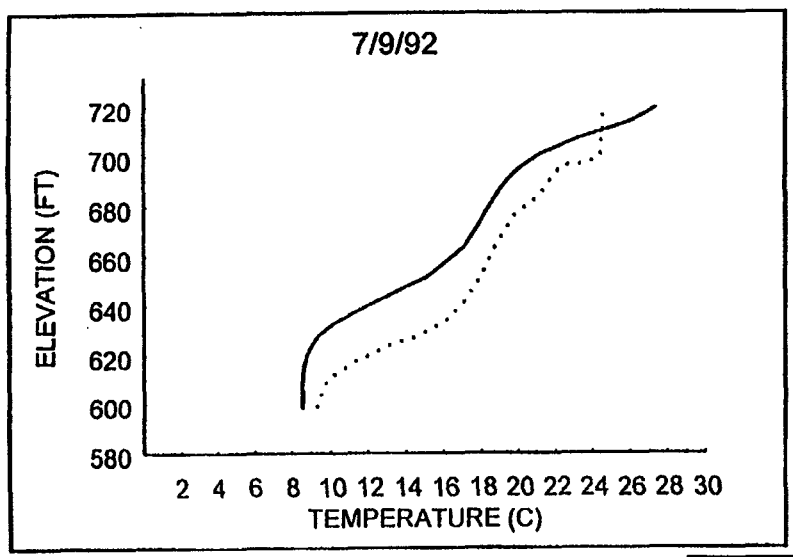


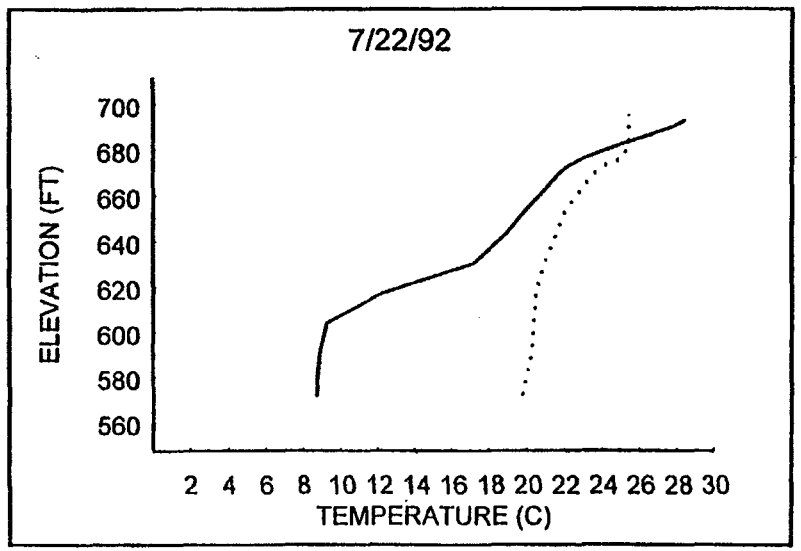
MODEL
ACTUAL

PROFILES FOR MODEL YEAR 1992



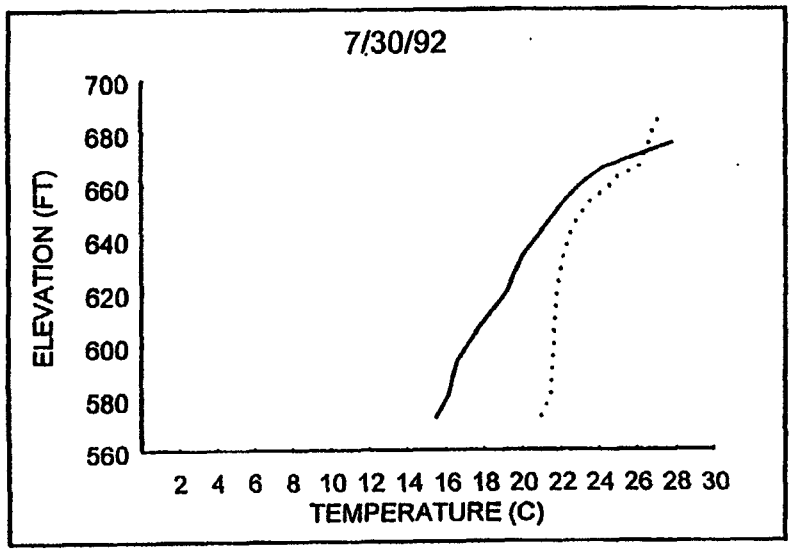


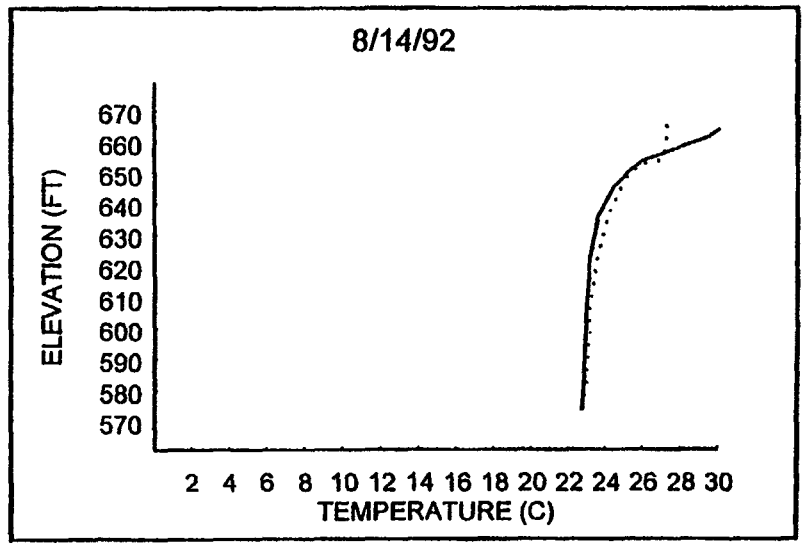


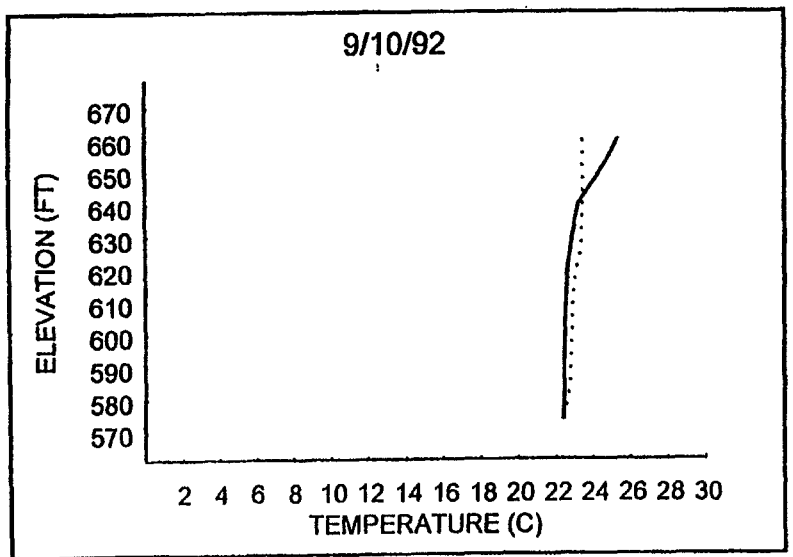


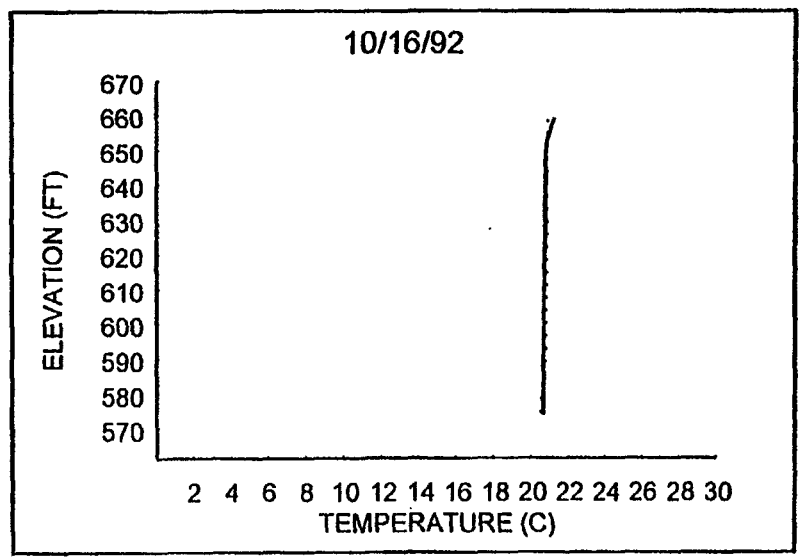
MODEL
ACTUAL

PROFILES FOR MODEL YEAR 1992









MODEL
ACTUAL

PINE FLAT RVOIR

1992 STORAGE / ELEVATION

DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	TORAG
01-Jan	705.4	87,687	05-Mar	748.2	172,323	08-May	794.9	299,600	11-Jul	715.0	104,104	13-Sep	662.4	31,898
02-Jan	705.5	88,014	06-Mar	749.2	174,892	09-May	796.6	304,922	12-Jul	712.2	99,164	14-Sep	662.1	31,706
03-Jan	705.7	88,341	07-Mar	750.0	176,537	10-May	798.4	310,294	13-Jul	709.4	94,519	15-Sep	662.2	31,802
04-Jan	705.9	88,670	08-Mar	750.6	177,954	11-May	799.9	315,396	14-Jul	706.7	89,824	16-Sep	662.4	31,898
05-Jan	706.4	89,328	09-Mar	751.2	179,615	12-May	801.2	319,572	15-Jul	704.4	86,222	17-Sep	662.5	31,994
06-Jan	706.9	90,155	10-Mar	751.9	181,283	13-May	802.6	324,103	16-Jul	703.3	84,290	18-Sep	662.6	32,091
07-Jan	707.2	90,653	11-Mar	752.5	182,480	14-May	804.0	328,666	17-Jul	702.4	82,855	19-Sep	662.6	32,188
08-Jan	707.4	91,153	12-Mar	753.0	183,922	15-May	805.2	332,605	18-Jul	701.3	81,277	20-Sep	662.3	31,898
09-Jan	707.6	91,487	13-Mar	753.5	185,128	16-May	806.4	336,236	19-Jul	700.1	79,248	21-Sep	662.0	31,514
10-Jan	708.0	92,156	14-Mar	754.1	186,338	17-May	807.4	339,889	20-Jul	699.0	77,552	22-Sep	661.9	31,514
11-Jan	708.5	92,828	15-Mar	754.6	187,552	18-May	808.3	342,893	21-Jul	697.8	75,875	23-Sep	662.0	31,610
12-Jan	708.8	93,334	16-Mar	755.1	188,771	19-May	809.1	345,238	22-Jul	696.5	73,917	24-Sep	662.2	31,802
13-Jan	709.3	94,180	17-Mar	755.5	189,994	20-May	809.8	347,592	23-Jul	694.9	71,398	25-Sep	662.5	31,994
14-Jan	709.9	95,371	18-Mar	756.0	191,221	21-May	810.3	349,279	24-Jul	693.3	69,212	26-Sep	662.4	31,994
15-Jan	710.6	96,398	19-Mar	756.5	192,205	22-May	810.6	350,293	25-Jul	691.7	66,778	27-Sep	662.0	31,610
16-Jan	711.3	97,603	20-Mar	756.9	193,192	23-May	810.7	350,631	26-Jul	690.3	64,947	28-Sep	661.8	31,418
17-Jan	711.9	98,643	21-Mar	757.3	194,430	24-May	810.9	351,308	27-Jul	689.1	63,280	29-Sep	662.1	31,706
18-Jan	712.2	99,339	22-Mar	757.9	195,921	25-May	811.1	351,986	28-Jul	688.1	61,772	30-Sep	662.1	31,706
19-Jan	712.4	99,513	23-Mar	758.7	197,668	26-May	811.4	353,004	29-Jul	687.0	60,418	01-Oct	661.9	31,514
20-Jan	712.8	100,213	24-Mar	759.3	199,172	27-May	811.7	354,024	30-Jul	686.0	58,946	02-Oct	661.9	31,418
21-Jan	713.3	101,090	25-Mar	759.9	200,682	28-May	812.1	355,727	31-Jul	685.0	57,624	03-Oct	661.9	31,418
22-Jan	714.0	102,326	26-Mar	760.5	202,451	29-May	812.4	356,751	01-Aug	683.9	56,318	04-Oct	661.9	31,418
23-Jan	714.6	103,391	27-Mar	761.1	203,719	30-May	812.5	356,751	02-Aug	682.8	54,899	05-Oct	661.9	31,514
24-Jan	715.2	104,641	28-Mar	761.5	204,737	31-May	812.5	357,092	03-Aug	681.6	53,247	06-Oct	661.9	31,514
25-Jan	715.6	105,359	29-Mar	761.8	205,758	01-Jun	812.0	355,386	04-Aug	680.4	51,869	07-Oct	661.9	31,514
26-Jan	715.8	105,719	30-Mar	762.3	207,038	02-Jun	810.8	350,970	05-Aug	679.3	50,388	08-Oct	661.9	31,514
27-Jan	716.3	106,440	31-Mar	762.8	208,065	03-Jun	809.3	345,910	06-Aug	678.1	48,929	09-Oct	661.9	31,514
28-Jan	716.9	107,709	01-Apr	763.1	208,836	04-Jun	807.6	340,555	07-Aug	677.0	47,730	10-Oct	661.9	31,514
29-Jan	717.7	108,986	02-Apr	763.2	209,352	05-Jun	805.8	334,583	08-Aug	675.8	46,312	11-Oct	661.9	31,514
30-Jan	718.3	110,087	03-Apr	763.5	209,868	06-Jun	804.0	328,339	09-Aug	674.5	44,801	12-Oct	661.9	31,514
31-Jan	718.7	111,009	04-Apr	763.7	210,643	07-Jun	802.0	321,833	10-Aug	673.3	43,430	13-Oct	661.9	31,514
01-Feb	719.0	111,378	05-Apr	764.0	211,420	08-Jun	799.7	314,756	11-Aug	672.1	42,081	14-Oct	661.9	31,418
02-Feb	719.1	111,563	06-Apr	764.4	212,198	09-Jun	797.5	307,760	12-Aug	670.9	40,754	15-Oct	661.9	31,418
03-Feb	719.5	112,306	07-Apr	764.7	213,239	10-Jun	795.3	300,535	13-Aug	669.8	39,449	16-Oct	661.9	31,418
04-Feb	720.0	113,424	08-Apr	765.1	214,021	11-Jun	793.1	294,018	14-Aug	668.5	38,061	17-Oct	661.9	31,418
05-Feb	720.4	114,172	09-Apr	765.5	215,065	12-Jun	791.0	287,270	15-Aug	667.9	37,430	18-Oct	661.9	31,418
06-Feb	720.5	114,336	10-Apr	765.9	216,375	13-Jun	788.7	280,605	16-Aug	668.1	37,640	19-Oct	661.9	31,514
07-Feb	720.6	114,547	11-Apr	766.3	217,163	14-Jun	786.4	273,428	17-Aug	668.4	37,956	20-Oct	661.9	31,514
08-Feb	720.7	114,735	12-Apr	766.7	218,216	15-Jun	784.1	266,642	18-Aug	668.2	37,850	21-Oct	662.0	31,610
09-Feb	720.9	114,923	13-Apr	767.2	219,536	16-Jun	781.7	259,946	19-Aug	667.7	37,325	22-Oct	662.1	31,706
10-Feb	721.4	116,055	14-Apr	768.0	221,657	17-Jun	779.3	252,770	20-Aug	667.4	36,907	23-Oct	662.2	31,802
11-Feb	722.5	118,144	15-Apr	768.7	223,522	18-Jun	776.7	245,701	21-Aug	667.2	36,700	24-Oct	662.3	31,898
12-Feb	724.1	121,218	16-Apr	769.4	225,395	19-Jun	774.2	238,460	22-Aug	666.8	36,286	25-Oct	662.4	31,898
13-Feb	726.0	124,726	17-Apr	770.1	227,276	20-Jun	771.6	231,335	23-Aug	665.8	35,364	26-Oct	662.5	31,994
14-Feb	727.5	127,688	18-Apr	770.9	229,707	21-Jun	768.6	223,522	24-Aug	664.9	34,354	27-Oct	662.7	32,188
15-Feb	729.1	131,090	19-Apr	771.9	232,151	22-Jun	765.7	215,851	25-Aug	664.7	34,154	28-Oct	662.9	32,382
16-Feb	730.3	133,317	20-Apr	772.9	235,157	23-Jun	762.8	208,065	26-Aug	665.1	34,555	29-Oct	663.5	32,967
17-Feb	731.2	135,358	21-Apr	774.0	238,184	24-Jun	759.9	200,682	27-Aug	665.1	34,555	30-Oct	667.1	36,596
18-Feb	732.1	137,208	22-Apr	775.0	240,676	25-Jun	756.8	193,192	28-Aug	665.0	34,455	31-Oct	669.8	39,557
19-Feb	733.1	139,280	23-Apr	775.7	242,623	26-Jun	753.7	185,370	29-Aug	665.1	34,555	01-Nov	671.0	40,754
20-Feb	734.4	141,788	24-Apr	776.4	244,859	27-Jun	751.2	179,377	30-Aug	665.0	34,455	02-Nov	671.7	41,636
21-Feb	735.6	144,531	25-Apr	777.3	247,106	28-Jun	749.1	174,423	31-Aug	664.6	34,154	03-Nov	672.4	42,416
22-Feb	736.8	147,088	26-Apr	778.3	250,213	29-Jun	747.1	170,005	01-Sep	664.5	34,055	04-Nov	673.1	43,090
23-Feb	737.7	149,021	27-Apr	779.7	254,197	30-Jun	745.1	165,418	02-Sep	664.6	34,154	05-Nov	673.7	43,884
24-Feb	738.6	150,967	28-Apr	781.2	258,503	01-Jul	742.7	159,778	03-Sep	664.7	34,154	06-Nov	674.3	44,571
25-Feb	739.6	153,145	29-Apr	782.8	263,138	02-Jul	740.0	154,021	04-Sep	664.7	34,154	07-Nov	675.0	45,263
26-Feb	740.7	155,339	30-Apr	784.4	267,522	03-Jul	737.4	148,375	05-Sep	664.6	34,055	08-Nov	675.6	45,961
27-Feb	741.8	157,772	01-May	785.9	271,945	04-Jul	734.8	142,840	06-Sep	664.2	33,756	09-Nov	676.1	46,664
28-Feb	742.8	160,225	02-May	787.1	275,511	05-Jul	732.2	137,208	07-Sep	663.9	33,459	10-Nov	676.7	47,255
29-Feb	743.8	162,247	03-May	788.1	278,802	06-Jul	729.4	131,696	08-Sep	663.5	33,065	11-Nov	677.1	47,730
01-Mar	744.6	164,055	04-May	789.3	282,415	07-Jul	726.6	126,104	09-Sep	663.2	32,674	12-Nov	677.4	48,088
02-Mar	745.5	166,102	05-May	790.6	286,356	08-Jul	723.8	120,446	10-Sep	662.9	32,382	13-Nov	677.6	48,447
03-Mar	746.3	168,162	06-May	792.0	290,327	09-Jul	720.9	115,111	11-Sep	662.9	32,382	14-Nov	677.9	48,808
04-Mar	747.2	170,236	07-May	793.4	294,944	10-Jul	717.9	109,536	12-Sep	662.7	32,188			

PINE FLAT RESERVOIR TEMPERATURE PROFILES

1992

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.		ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.		ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.		ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
03/25/92	571.7	7.85	7.77	04/22/92	579.7	8.17	7.97	05/20/92	636.4	9.27	8.17	06/19/92	624.1	11.92	8.32
	579.6	7.85	7.77		587.9	8.17	7.97		642.6	10.02	8.17		625.8	12.62	8.32
	592.7	7.82	7.76		601.3	8.18	7.97		649.2	10.93	8.18		629.1	13.29	8.32
	605.9	7.83	7.76		614.1	8.24	7.97		659.0	11.94	8.20		641.9	14.27	8.32
	619.0	7.85	7.76		627.3	8.33	7.97		672.1	12.41	8.27		655.3	14.41	8.33
	632.1	7.88	7.79		640.4	8.49	8.00		684.9	12.76	8.59		668.1	15.00	8.38
	645.2	7.96	7.84		653.8	8.77	8.06		699.0	13.09	9.67		681.6	15.37	9.06
	658.4	8.07	7.96		666.6	9.02	8.17		711.2	13.35	11.04		694.7	16.05	11.34
	671.5	8.29	8.13		679.8	9.43	8.34		724.6	13.66	12.22		707.8	16.72	13.74
	684.6	8.52	8.27		689.6	9.81	8.63		737.4	13.95	12.68		720.9	17.52	15.47
	697.7	8.75	8.51		696.5	10.69	9.03		750.9	14.39	13.36		734.0	18.26	16.86
	710.9	9.11	9.07		702.7	11.50	9.61		764.0	14.85	14.44		745.5	18.65	18.70
	724.0	9.82	10.05		709.3	12.12	10.41		777.5	15.55	15.11		746.8	18.81	19.04
	730.5	10.66	10.75		722.7	12.74	11.87		785.3	16.33	16.59		747.5	18.87	19.25
	732.2	10.97	10.93		735.9	13.27	12.59		788.6	17.29	18.01		748.5	19.72	19.51
	733.8	11.62	11.18		745.7	13.83	13.06		791.9	18.16	20.02		749.5	21.52	19.80
	735.1	12.70	11.39		751.9	14.83	13.51		793.5	18.57	21.09		749.8	22.37	19.89
	735.8	13.65	11.49		755.2	15.39	14.38		795.2	19.37	22.09		750.5	22.80	20.10
	737.1	14.56	11.72		756.9	16.02	14.84		797.5	20.50	23.13		760.3	22.92	23.67
	740.4	15.23	12.32		758.8	16.75	15.42		798.5	21.40	23.21		763.6	22.92	24.77
	746.9	15.38	13.71		759.5	18.12	15.67		803.4	21.86	23.63		766.9	22.95	25.88
					760.5	19.42	16.14								
					762.1	19.44	16.93								
	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.		ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.		ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.		ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
07/22/92	572.1	19.75	8.71	08/14/92	574.0	22.77	22.76	09/10/92	573.6	22.39	22.38	10/16/92	574.3	20.51	20.68
	572.1	19.76	8.71		582.9	23.02	22.86		577.6	22.56	22.40		576.6	20.53	20.68
	577.6	19.91	8.74		596.0	23.12	22.93		584.1	22.74	22.42		589.7	20.79	20.68
	590.8	20.27	8.88		609.1	23.21	23.03		597.2	22.82	22.46		602.8	20.85	20.70
	603.9	20.36	9.26		622.3	23.58	23.19		610.4	22.91	22.54		615.9	20.87	20.75
	617.0	20.47	12.19		635.4	24.12	23.61		618.6	23.00	22.62		629.1	20.87	20.76
	630.1	20.92	17.13		645.2	24.84	24.44		620.2	23.05	22.64		642.2	20.87	20.77
	643.2	21.54	18.87		650.2	25.40	25.24		620.9	23.18	22.65		652.0	20.87	20.84
	653.1	21.98	19.86		653.1	26.10	25.86		621.8	23.26	22.66		658.6	20.87	21.22
	662.9	22.82	20.97		653.8	26.84	25.99		623.5	23.26	22.70				
	669.5	23.58	21.73		655.1	27.12	26.58		630.1	23.36	22.86				
	672.8	24.03	22.18		661.6	27.25	29.48		639.9	23.42	23.21				
	676.1	25.04	22.95		664.9	27.27	30.23		653.0	23.42	24.72				
	682.6	25.37	25.12						659.6	23.41	25.28				
	689.2	25.37	27.52												
	692.5	25.37	28.36												

PINE FLAT RESERVOIR				
1992 Penstock Flows (CMS)				
				Dam
DATE	Penstock #1	Penstock #2	Penstock #3	Low Leve
12/12/91	11.55	0.00	0.00	0.00
12/13/91	11.80	0.00	0.00	0.00
12/13/91	11.44	0.00	0.00	0.00
12/14/91	11.10	0.00	0.00	0.00
12/14/91	11.10	0.00	0.00	0.00
12/15/91	11.10	0.00	0.00	0.00
12/15/91	11.03	0.00	0.00	0.00
12/16/91	10.96	0.00	0.00	0.00
12/16/91	10.76	0.00	0.00	0.00
12/17/91	10.56	0.00	0.00	0.00
12/17/91	10.36	0.00	0.00	0.00
12/18/91	10.17	0.00	0.00	0.00
12/18/91	10.12	0.00	0.00	0.00
12/19/91	10.08	0.00	0.00	0.00
12/19/91	10.08	0.00	0.00	0.00
12/20/91	10.08	0.00	0.00	0.00
12/20/91	10.08	0.00	0.00	0.00
12/21/91	10.08	0.00	0.00	0.00
12/21/91	10.10	0.00	0.00	0.00
12/22/91	10.09	0.00	0.00	0.00
12/22/91	8.32	0.00	0.00	0.00
12/23/91	6.54	0.00	0.00	0.00
12/23/91	4.49	0.00	0.00	0.00
12/24/91	2.49	0.00	0.00	0.00
12/24/91	2.48	0.00	0.00	0.00
12/25/91	2.46	0.00	0.00	0.00
12/25/91	2.48	0.00	0.00	0.00
12/26/91	2.49	0.00	0.00	0.00
12/26/91	2.54	0.00	0.00	0.00
12/27/91	2.58	0.00	0.00	0.00
12/27/91	2.61	0.00	0.00	0.00
12/28/91	2.63	0.00	0.00	0.00
12/28/91	2.63	0.00	0.00	0.00
12/29/91	2.63	0.00	0.00	0.00
12/29/91	2.60	0.00	0.00	0.00
12/30/91	2.58	0.00	0.00	0.00
12/30/91	2.76	0.00	0.00	0.00
12/31/91	2.95	0.00	0.00	0.00
12/31/91	3.33	0.00	0.00	0.00
01/01/92	3.71	0.00	0.00	0.00
01/01/92	3.91	0.00	0.00	0.00
01/02/92	4.11	0.00	0.00	0.00
01/02/92	4.36	0.00	0.00	0.00
01/03/92	4.62	0.00	0.00	0.00
01/03/92	4.64	0.00	0.00	0.00
01/04/92	4.67	0.00	0.00	0.00
01/04/92	4.40	0.00	0.00	0.00
01/05/92	4.13	0.00	0.00	0.00
01/05/92	3.63	0.00	0.00	0.00
01/06/92	3.15	0.00	0.00	0.00
01/06/92	3.38	0.00	0.00	0.00
01/07/92	3.60	0.00	0.00	0.00
01/07/92	3.63	0.00	0.00	0.00
01/08/92	3.65	0.00	0.00	0.00
01/08/92	3.68	0.00	0.00	0.00
01/09/92	3.71	0.00	0.00	0.00
01/09/92	3.74	0.00	0.00	0.00
01/10/92	3.77	0.00	0.00	0.00
01/10/92	3.78	0.00	0.00	0.00
01/11/92	3.79	0.00	0.00	0.00
01/11/92	3.79	0.00	0.00	0.00
01/12/92	3.79	0.00	0.00	0.00

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

01/12/92	3.81	0.00	0.00	0.00
01/13/92	3.82	0.00	0.00	0.00
01/13/92	3.84	0.00	0.00	0.00
01/14/92	3.85	0.00	0.00	0.00
01/14/92	3.85	0.00	0.00	0.00
01/15/92	3.85	0.00	0.00	0.00
01/15/92	3.95	0.00	0.00	0.00
01/16/92	4.05	0.00	0.00	0.00
01/16/92	4.16	0.00	0.00	0.00
01/17/92	4.28	0.00	0.00	0.00
01/17/92	4.28	0.00	0.00	0.00
01/18/92	4.28	0.00	0.00	0.00
01/18/92	4.29	0.00	0.00	0.00
01/19/92	4.30	0.00	0.00	0.00
01/19/92	4.28	0.00	0.00	0.00
01/20/92	4.25	0.00	0.00	0.00
01/20/92	4.25	0.00	0.00	0.00
01/21/92	4.25	0.00	0.00	0.00
01/21/92	4.25	0.00	0.00	0.00
01/22/92	4.25	0.00	0.00	0.00
01/22/92	4.25	0.00	0.00	0.00
01/23/92	4.25	0.00	0.00	0.00
01/23/92	4.25	0.00	0.00	0.00
01/24/92	4.25	0.00	0.00	0.00
01/24/92	4.26	0.00	0.00	0.00
01/25/92	4.28	0.00	0.00	0.00
01/25/92	4.28	0.00	0.00	0.00
01/26/92	4.28	0.00	0.00	0.00
01/26/92	4.29	0.00	0.00	0.00
01/27/92	4.30	0.00	0.00	0.00
01/27/92	4.33	0.00	0.00	0.00
01/28/92	4.36	0.00	0.00	0.00
01/28/92	4.39	0.00	0.00	0.00
01/29/92	4.42	0.00	0.00	0.00
01/29/92	4.42	0.00	0.00	0.00
01/30/92	4.42	0.00	0.00	0.00
01/30/92	4.42	0.00	0.00	0.00
01/31/92	4.42	0.00	0.00	0.00
01/31/92	4.42	0.00	0.00	0.00
02/01/92	4.42	0.00	0.00	0.00
02/01/92	4.42	0.00	0.00	0.00
02/02/92	4.42	0.00	0.00	0.00
02/02/92	4.43	0.00	0.00	0.00
02/03/92	4.45	0.00	0.00	0.00
02/03/92	4.42	0.00	0.00	0.00
02/04/92	4.39	0.00	0.00	0.00
02/04/92	4.39	0.00	0.00	0.00
02/05/92	4.39	0.00	0.00	0.00
02/05/92	4.39	0.00	0.00	0.00
02/06/92	4.39	0.00	0.00	0.00
02/06/92	4.39	0.00	0.00	0.00
02/07/92	4.39	0.00	0.00	0.00
02/07/92	4.39	0.00	0.00	0.00
02/08/92	4.39	0.00	0.00	0.00
02/08/92	4.39	0.00	0.00	0.00
02/09/92	4.39	0.00	0.00	0.00
02/09/92	4.32	0.00	0.00	0.00
02/10/92	4.23	0.00	0.00	0.00
02/10/92	3.75	0.00	0.00	0.00
02/11/92	3.26	0.00	0.00	0.00
02/11/92	2.69	0.00	0.00	0.00
02/12/92	2.12	0.00	0.00	0.00
02/12/92	1.68	0.00	0.00	0.00
02/13/92	1.24	0.00	0.00	0.00
02/13/92	1.14	0.00	0.00	0.00
02/14/92	1.05	0.00	0.00	0.00
02/14/92	1.23	0.00	0.00	0.00

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

02/15/92	1.42	0.00	0.00	0.00
02/15/92	1.37	0.00	0.00	0.00
02/16/92	1.33	0.00	0.00	0.00
02/16/92	1.26	0.00	0.00	0.00
02/17/92	1.19	0.00	0.00	0.00
02/17/92	1.12	0.00	0.00	0.00
02/18/92	1.05	0.00	0.00	0.00
02/18/92	0.92	0.00	0.00	0.00
02/19/92	0.79	0.00	0.00	0.00
02/19/92	0.88	0.00	0.00	0.00
02/20/92	0.96	0.00	0.00	0.00
02/20/92	0.87	0.00	0.03	0.00
02/21/92	0.77	0.00	0.05	0.00
02/21/92	0.76	0.00	0.07	0.00
02/22/92	0.75	0.00	0.10	0.00
02/22/92	0.73	0.00	0.12	0.00
02/23/92	0.70	0.00	0.15	0.00
02/23/92	1.02	0.00	0.27	0.00
02/24/92	1.31	0.00	0.43	0.00
02/24/92	1.58	0.00	0.62	0.00
02/25/92	1.80	0.00	0.83	0.00
02/25/92	1.79	0.00	0.96	0.00
02/26/92	1.76	0.00	1.10	0.00
02/26/92	1.66	0.00	1.20	0.00
02/27/92	0.00	0.00	2.86	0.00
02/27/92	0.00	0.00	2.85	0.00
02/28/92	0.00	0.00	2.83	0.00
02/28/92	0.00	0.00	2.82	0.00
02/29/92	0.00	0.00	2.80	0.00
02/29/92	0.00	0.00	2.80	0.00
03/01/92	0.00	0.00	2.80	0.00
03/01/92	0.00	0.00	2.79	0.00
03/02/92	0.00	0.00	2.78	0.00
03/02/92	0.00	0.00	2.78	0.00
03/03/92	0.00	0.00	2.77	0.00
03/03/92	0.00	0.00	2.69	0.00
03/04/92	0.00	0.00	2.61	0.00
03/04/92	0.00	0.00	2.55	0.00
03/05/92	0.00	0.00	2.49	0.00
03/05/92	0.00	0.00	2.51	0.00
03/06/92	0.00	0.00	2.52	0.00
03/06/92	0.00	0.00	2.51	0.00
03/07/92	0.00	0.00	2.49	0.00
03/07/92	0.00	0.00	2.46	0.00
03/08/92	0.00	0.00	2.43	0.00
03/08/92	0.00	0.00	2.33	0.00
03/09/92	0.00	0.00	2.24	0.00
03/09/92	0.00	0.00	2.24	0.00
03/10/92	0.00	0.00	2.24	0.00
03/10/92	0.00	0.00	2.24	0.00
03/11/92	0.00	0.00	2.24	0.00
03/11/92	0.00	0.00	2.24	0.00
03/12/92	0.00	0.00	2.24	0.00
03/12/92	0.00	0.00	2.36	0.00
03/13/92	0.00	0.00	2.50	0.00
03/13/92	0.00	0.00	2.71	0.00
03/14/92	0.00	0.00	2.92	0.00
03/14/92	0.00	0.00	2.95	0.00
03/15/92	0.00	0.00	2.97	0.00
03/15/92	0.00	0.00	2.97	0.00
03/16/92	0.00	0.00	2.97	0.00
03/16/92	0.00	0.00	3.04	0.00
03/17/92	0.00	0.00	3.11	0.00
03/17/92	0.00	0.00	3.11	0.00
03/18/92	0.00	0.00	3.12	0.00
03/18/92	0.00	0.00	3.13	0.00
03/19/92	0.00	0.00	3.14	0.00

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

03/19/92	0.00	0.00	3.19	0.00
03/20/92	0.00	0.00	3.23	0.00
03/20/92	0.00	0.00	3.21	0.00
03/21/92	0.00	0.00	3.20	0.00
03/21/92	0.00	0.00	3.07	0.00
03/22/92	0.00	0.00	2.94	0.00
03/22/92	0.00	0.00	2.33	0.00
03/23/92	0.00	0.00	1.73	0.00
03/23/92	0.00	0.00	1.68	0.00
03/24/92	0.00	0.00	1.64	0.00
03/24/92	0.00	0.00	1.98	0.00
03/25/92	0.00	0.00	2.32	0.00
03/25/92	0.00	0.00	2.39	0.00
03/26/92	0.00	0.00	2.46	0.00
03/26/92	0.00	0.00	2.49	0.00
03/27/92	0.00	0.00	2.56	0.00
03/27/92	0.00	0.00	8.40	0.00
03/28/92	0.00	0.00	14.16	0.00
03/28/92	0.00	0.00	14.88	0.00
03/29/92	0.00	0.00	15.60	0.00
03/29/92	0.00	0.00	15.87	0.00
03/30/92	0.00	1.10	15.04	0.00
03/30/92	0.00	2.37	15.08	0.00
03/31/92	0.00	3.81	14.96	0.00
03/31/92	0.00	5.68	15.75	0.00
04/01/92	0.00	7.91	16.20	0.00
04/01/92	0.00	9.99	15.57	0.00
04/02/92	0.00	12.31	14.69	0.00
04/02/92	0.00	14.84	13.69	0.00
04/03/92	0.00	17.67	12.38	0.00
04/03/92	0.00	20.54	10.82	0.00
04/04/92	0.00	23.67	8.98	0.00
04/04/92	0.00	26.51	6.88	0.00
04/05/92	0.00	29.55	4.57	0.00
04/05/92	0.00	32.54	2.26	0.00
04/06/92	0.00	35.49	0.00	0.00
04/06/92	0.00	36.35	0.00	0.00
04/07/92	0.00	37.22	0.00	0.00
04/07/92	0.00	38.17	0.00	0.00
04/08/92	0.00	39.14	0.00	0.00
04/08/92	0.00	39.85	0.00	0.00
04/09/92	0.00	40.55	0.00	0.00
04/09/92	0.00	41.25	0.00	0.00
04/10/92	0.00	41.94	0.00	0.00
04/10/92	0.00	42.09	0.00	0.00
04/11/92	0.00	42.25	0.00	0.00
04/11/92	0.00	42.51	0.00	0.00
04/12/92	0.00	42.76	0.00	0.00
04/12/92	0.00	42.64	0.00	0.00
04/13/92	0.00	42.53	0.00	0.00
04/13/92	0.00	42.35	0.00	0.00
04/14/92	0.00	42.16	0.00	0.00
04/14/92	0.00	42.14	0.00	0.00
04/15/92	0.00	42.11	0.00	0.00
04/15/92	0.00	42.34	0.00	0.00
04/16/92	0.00	42.57	0.00	0.00
04/16/92	0.00	43.20	0.00	0.00
04/17/92	0.00	43.84	0.00	0.00
04/17/92	0.00	43.92	0.00	0.00
04/18/92	0.00	44.01	0.00	0.00
04/18/92	0.00	44.19	0.00	0.00
04/19/92	0.00	44.37	0.00	0.00
04/19/92	0.00	44.36	0.00	0.00
04/20/92	0.00	44.34	0.00	0.00
04/20/92	0.00	44.22	0.00	0.00
04/21/92	0.00	44.09	0.00	0.00
04/21/92	0.00	44.03	0.00	0.00

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

04/22/92	0.00	43.98	0.00	0.00
04/22/92	0.00	44.16	0.00	0.00
04/23/92	0.00	44.35	0.00	0.00
04/23/92	0.00	44.85	0.00	0.00
04/24/92	0.00	45.37	0.00	0.00
04/24/92	0.00	45.89	0.00	0.00
04/25/92	0.00	46.41	0.00	0.00
04/25/92	0.00	46.63	0.00	0.00
04/26/92	0.00	46.84	0.00	0.00
04/26/92	0.00	46.96	0.00	0.00
04/27/92	0.00	47.09	0.00	0.00
04/27/92	0.00	47.35	0.00	0.00
04/28/92	0.00	47.60	0.00	0.00
04/28/92	0.00	47.59	0.00	0.00
04/29/92	0.00	47.57	0.00	0.00
04/29/92	0.00	48.15	0.00	0.00
04/30/92	0.00	48.73	0.00	0.00
04/30/92	0.00	48.80	0.00	0.00
05/01/92	0.00	48.88	0.00	0.00
05/01/92	0.00	48.95	0.00	0.00
05/02/92	0.00	49.02	0.00	0.00
05/02/92	0.00	48.84	0.00	0.00
05/03/92	0.00	48.68	0.00	0.00
05/03/92	0.00	48.14	0.00	0.00
05/04/92	0.00	47.60	0.00	0.00
05/04/92	0.00	47.27	0.00	0.00
05/05/92	2.29	44.66	0.00	0.00
05/05/92	6.60	40.38	0.00	0.00
05/06/92	11.43	35.58	0.00	0.00
05/06/92	16.82	30.50	0.00	0.00
05/07/92	22.15	25.48	0.00	0.00
05/07/92	27.43	20.61	0.00	0.00
05/08/92	32.99	15.46	0.00	0.00
05/08/92	38.36	10.26	0.00	0.00
05/09/92	43.86	4.93	0.00	0.00
05/09/92	48.86	0.00	0.00	0.00
05/10/92	48.93	0.00	0.00	0.00
05/10/92	49.17	0.00	0.00	0.00
05/11/92	49.41	0.00	0.00	0.00
05/11/92	48.87	0.00	0.00	0.00
05/12/92	48.34	0.00	0.00	0.00
05/12/92	48.80	0.00	0.00	0.00
05/13/92	49.28	0.00	0.00	0.00
05/13/92	50.08	0.00	0.00	0.00
05/14/92	50.88	0.00	0.00	0.00
05/14/92	50.40	0.00	0.00	0.00
05/15/92	49.92	0.00	0.00	0.00
05/15/92	49.85	0.00	0.00	0.00
05/16/92	49.78	0.00	0.00	0.00
05/16/92	49.80	0.00	0.00	0.00
05/17/92	49.81	0.00	0.00	0.00
05/17/92	49.74	0.00	0.00	0.00
05/18/92	49.67	0.00	0.00	0.00
05/18/92	49.58	0.00	0.00	0.00
05/19/92	49.50	0.00	0.00	0.00
05/19/92	49.36	0.00	0.00	0.00
05/20/92	49.21	0.00	0.00	0.00
05/20/92	49.09	0.00	0.00	0.00
05/21/92	48.96	0.00	0.00	0.00
05/21/92	49.53	0.00	0.00	0.00
05/22/92	50.09	0.00	0.00	0.00
05/22/92	50.30	0.00	0.00	0.00
05/23/92	50.52	0.00	0.00	0.00
05/23/92	50.69	0.00	0.00	0.00
05/24/92	50.86	0.00	0.00	0.00
05/24/92	50.97	0.00	0.00	0.00
05/25/92	51.08	0.00	0.00	0.00

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

05/25/92	51.17	0.00	0.00	0.00
05/26/92	51.25	0.00	0.00	0.00
05/26/92	51.24	0.00	0.00	0.00
05/27/92	51.23	0.00	0.00	0.00
05/27/92	51.17	0.00	0.00	0.00
05/28/92	51.12	0.00	0.00	0.00
05/28/92	54.42	0.00	0.00	0.00
05/29/92	57.71	0.00	0.00	0.00
05/29/92	59.39	0.00	0.00	0.00
05/30/92	61.05	0.00	0.00	0.00
05/30/92	61.75	0.00	0.00	0.00
05/31/92	62.52	0.00	0.00	0.00
05/31/92	70.75	9.57	0.00	0.00
06/01/92	70.75	27.30	0.00	0.00
06/01/92	70.75	45.01	0.00	0.00
06/02/92	70.75	54.18	0.00	0.00
06/02/92	70.75	58.82	0.00	0.00
06/03/92	70.75	63.49	0.00	0.00
06/03/92	70.75	66.81	0.00	0.00
06/04/92	70.75	70.15	0.00	0.00
06/04/92	70.75	69.97	0.00	0.00
06/05/92	67.04	69.79	3.71	0.00
06/05/92	62.12	70.20	8.63	0.00
06/06/92	57.27	70.61	13.48	0.00
06/06/92	52.46	70.75	21.44	0.00
06/07/92	47.54	70.75	29.63	0.00
06/07/92	42.70	70.75	34.89	0.00
06/08/92	37.71	70.75	40.28	0.00
06/08/92	32.83	70.75	43.51	0.00
06/09/92	27.77	70.75	46.92	0.00
06/09/92	22.85	70.75	50.70	0.00
06/10/92	17.76	70.75	54.66	0.00
06/10/92	13.12	68.83	57.63	0.00
06/11/92	8.42	65.26	62.33	0.00
06/11/92	3.78	63.89	66.97	0.00
06/12/92	70.75	62.54	0.00	0.00
06/12/92	70.75	60.82	0.00	0.00
06/13/92	0.00	70.75	59.11	0.00
06/13/92	0.00	70.75	58.35	0.00
06/14/92	0.00	70.75	57.58	0.00
06/14/92	0.00	70.75	56.51	0.00
06/15/92	0.00	70.75	55.45	0.00
06/15/92	0.00	70.75	54.35	0.00
06/16/92	0.00	70.75	53.25	0.00
06/16/92	0.00	70.75	54.07	0.00
06/17/92	0.00	70.75	54.90	0.00
06/17/92	0.00	70.75	56.17	0.00
06/18/92	0.00	70.75	57.45	0.00
06/18/92	0.00	70.75	59.89	0.00
06/19/92	0.00	70.75	62.31	0.00
06/19/92	0.00	70.75	63.41	0.00
06/20/92	0.00	70.75	64.52	0.00
06/20/92	0.00	70.75	69.09	0.00
06/21/92	2.88	70.75	70.75	0.00
06/21/92	1.07	70.75	70.75	0.00
06/22/92	0.00	70.75	69.99	0.00
06/22/92	0.00	70.75	66.13	0.00
06/23/92	0.00	70.75	62.26	0.00
06/23/92	0.00	70.75	62.88	0.00
06/24/92	63.53	0.00	70.75	0.00
06/24/92	66.87	0.00	70.75	0.00
06/25/92	70.24	0.00	70.75	0.00
06/25/92	70.21	0.00	70.75	0.00
06/26/92	70.09	0.00	70.75	0.00
06/26/92	53.69	0.00	70.75	0.00
06/27/92	37.24	0.00	70.75	0.00
06/27/92	33.08	0.00	70.75	0.00

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

06/28/92	28.96	0.00	70.75	0.00
06/28/92	25.17	0.00	70.75	0.00
06/29/92	21.43	0.00	70.75	0.00
06/29/92	23.49	0.00	70.75	0.00
06/30/92	25.55	0.00	70.75	0.00
06/30/92	29.61	0.00	70.75	0.00
07/01/92	33.65	0.00	70.75	0.00
07/01/92	33.48	0.00	70.75	0.00
07/02/92	33.31	0.00	70.75	0.00
07/02/92	33.50	0.00	70.75	0.00
07/03/92	33.68	0.00	70.75	0.00
07/03/92	33.16	0.00	70.75	0.00
07/04/92	32.63	0.00	70.75	0.00
07/04/92	31.41	0.00	70.75	0.00
07/05/92	70.75	30.20	0.00	0.00
07/05/92	70.75	30.84	0.00	0.00
07/06/92	70.75	31.47	0.00	0.00
07/06/92	70.75	30.86	0.00	0.00
07/07/92	70.75	30.26	0.00	0.00
07/07/92	70.75	29.46	0.00	0.00
07/08/92	70.75	28.67	0.00	0.00
07/08/92	70.75	28.78	0.00	0.00
07/09/92	70.75	28.89	0.00	0.00
07/09/92	70.75	28.33	0.00	0.00
07/10/92	70.75	27.77	0.00	0.00
07/10/92	70.75	27.92	0.00	0.00
07/11/92	70.75	28.08	0.00	0.00
07/11/92	70.75	28.77	0.00	0.00
07/12/92	70.75	29.45	0.00	0.00
07/12/92	70.75	27.92	0.00	0.00
07/13/92	70.75	26.40	0.00	0.00
07/13/92	70.75	26.13	0.00	0.00
07/14/92	70.75	25.85	0.00	0.00
07/14/92	70.75	21.72	0.00	0.00
07/15/92	70.75	17.61	0.00	0.00
07/15/92	70.75	8.32	0.00	0.00
07/16/92	50.61	0.00	0.00	0.00
07/16/92	51.60	0.00	0.00	0.00
07/17/92	52.59	0.00	0.00	0.00
07/17/92	54.24	0.00	0.00	0.00
07/18/92	55.90	0.00	0.00	0.00
07/18/92	56.07	0.00	0.00	0.00
07/19/92	56.23	0.00	0.00	0.00
07/19/92	54.87	0.00	0.00	0.00
07/20/92	52.98	0.00	0.00	0.00
07/20/92	46.97	0.00	0.00	0.54
07/21/92	45.54	0.00	0.00	5.22
07/21/92	44.48	0.00	0.00	5.34
07/22/92	44.94	0.00	0.00	6.07
07/22/92	45.23	0.00	0.00	5.27
07/23/92	45.75	0.00	0.00	5.88
07/23/92	45.55	0.00	0.00	6.24
07/24/92	45.87	0.00	0.00	6.81
07/24/92	44.07	0.00	0.00	6.85
07/25/92	43.82	0.00	0.00	8.40
07/25/92	35.30	0.00	0.00	8.35
07/26/92	29.04	0.00	0.00	9.38
07/26/92	28.53	0.00	0.00	8.19
07/27/92	27.84	0.00	0.00	8.52
07/27/92	27.04	0.00	0.00	9.03
07/28/92	26.22	0.00	0.00	10.26
07/28/92	25.47	0.00	0.00	11.51
07/29/92	23.91	0.00	0.00	12.83
07/29/92	21.05	0.00	0.00	14.97
07/30/92	17.15	0.00	0.00	17.22
07/30/92	13.33	0.00	0.00	20.54
07/31/92	6.73	0.00	0.00	24.22

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

07/31/92	0.00	0.00	0.00	30.67
08/01/92	0.00	0.00	0.00	37.15
08/01/92	0.00	0.00	0.00	36.90
08/02/92	0.00	0.00	0.00	37.18
08/02/92	0.00	0.00	0.00	37.46
08/03/92	0.00	0.00	0.00	36.94
08/03/92	0.00	0.00	0.00	36.41
08/04/92	0.00	0.00	0.00	36.24
08/04/92	0.00	0.00	0.00	36.08
08/05/92	0.00	0.00	0.00	36.30
08/05/92	0.00	0.00	0.00	36.52
08/06/92	0.00	0.00	0.00	35.60
08/06/92	0.00	0.00	0.00	34.69
08/07/92	0.00	0.00	0.00	34.49
08/07/92	0.00	0.00	0.00	34.30
08/08/92	0.00	0.00	0.00	34.95
08/08/92	0.00	0.00	0.00	35.59
08/09/92	0.00	0.00	0.00	35.42
08/09/92	0.00	0.00	0.00	35.25
08/10/92	0.00	0.00	0.00	35.25
08/10/92	0.00	0.00	0.00	35.26
08/11/92	0.00	0.00	0.00	35.87
08/11/92	0.00	0.00	0.00	36.47
08/12/92	0.00	0.00	0.00	36.47
08/12/92	0.00	0.00	0.00	36.47
08/13/92	0.00	0.00	0.00	36.76
08/13/92	0.00	0.00	0.00	37.03
08/14/92	0.00	0.00	0.00	35.63
08/14/92	0.00	0.00	0.00	34.21
08/15/92	0.00	0.00	0.00	32.09
08/15/92	0.00	0.00	0.00	29.95
08/16/92	0.00	0.00	0.00	25.57
08/16/92	0.00	0.00	0.00	21.21
08/17/92	0.00	0.00	0.00	21.15
08/17/92	0.00	0.00	0.00	21.09
08/18/92	0.00	0.00	0.00	20.84
08/18/92	0.00	0.00	0.00	20.59
08/19/92	0.00	0.00	0.00	20.71
08/19/92	0.00	0.00	0.00	20.84
08/20/92	0.00	0.00	0.00	20.91
08/20/92	0.00	0.00	0.00	20.98
08/21/92	0.00	0.00	0.00	21.10
08/21/92	0.00	0.00	0.00	21.21
08/22/92	0.00	0.00	0.00	21.85
08/22/92	0.00	0.00	0.00	22.48
08/23/92	0.00	0.00	0.00	22.74
08/23/92	0.00	0.00	0.00	22.99
08/24/92	0.00	0.00	0.00	22.84
08/24/92	0.00	0.00	0.00	22.67
08/25/92	0.00	0.00	0.00	21.46
08/25/92	0.00	0.00	0.00	20.25
08/26/92	0.00	0.00	0.00	18.15
08/26/92	0.00	0.00	0.00	16.03
08/27/92	0.00	0.00	0.00	14.11
08/27/92	0.00	0.00	0.00	12.16
08/28/92	0.00	0.00	0.00	11.26
08/28/92	0.00	0.00	0.00	10.36
08/29/92	0.00	0.00	0.00	10.38
08/29/92	0.00	0.00	0.00	10.39
08/30/92	0.00	0.00	0.00	10.35
08/30/92	0.00	0.00	0.00	10.31
08/31/92	0.00	0.00	0.00	10.12
08/31/92	0.00	0.00	0.00	9.94
09/01/92	0.00	0.00	0.00	9.95
09/01/92	0.00	0.00	0.00	9.97
09/02/92	0.00	0.00	0.00	9.84
09/02/92	0.00	0.00	0.00	9.71

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

09/03/92	0.00	0.00	0.00	9.43
09/03/92	0.00	0.00	0.00	9.14
09/04/92	0.00	0.00	0.00	8.96
09/04/92	0.00	0.00	0.00	8.78
09/05/92	0.00	0.00	0.00	8.64
09/05/92	0.00	0.00	0.00	8.49
09/06/92	0.00	0.00	0.00	8.42
09/06/92	0.00	0.00	0.00	8.35
09/07/92	0.00	0.00	0.00	8.27
09/07/92	0.00	0.00	0.00	8.18
09/08/92	0.00	0.00	0.00	8.14
09/08/92	0.00	0.00	0.00	8.10
09/09/92	0.00	0.00	0.00	8.23
09/09/92	0.00	0.00	0.00	8.35
09/10/92	0.00	0.00	0.00	8.35
09/10/92	0.00	0.00	0.00	8.35
09/11/92	0.00	0.00	0.00	8.22
09/11/92	0.00	0.00	0.00	8.09
09/12/92	0.00	0.00	0.00	7.87
09/12/92	0.00	0.00	0.00	7.65
09/13/92	0.00	0.00	0.00	7.63
09/13/92	0.00	0.00	0.00	7.62
09/14/92	0.00	0.00	0.00	7.62
09/14/92	0.00	0.00	0.00	7.62
09/15/92	0.00	0.00	0.00	7.62
09/15/92	0.00	0.00	0.00	7.62
09/16/92	0.00	0.00	0.00	7.69
09/16/92	0.00	0.00	0.00	7.76
09/17/92	0.00	0.00	0.00	8.05
09/17/92	0.00	0.00	0.00	8.33
09/18/92	0.00	0.00	0.00	8.41
09/18/92	0.00	0.00	0.00	8.50
09/19/92	0.00	0.00	0.00	8.57
09/19/92	0.00	0.00	0.00	8.64
09/20/92	0.00	0.00	0.00	8.64
09/20/92	0.00	0.00	0.00	8.64
09/21/92	0.00	0.00	0.00	8.64
09/21/92	0.00	0.00	0.00	8.64
09/22/92	0.00	0.00	0.00	8.65
09/22/92	0.00	0.00	0.00	8.67
09/23/92	0.00	0.00	0.00	8.76
09/23/92	0.00	0.00	0.00	8.86
09/24/92	0.00	0.00	0.00	8.92
09/24/92	0.00	0.00	0.00	8.98
09/25/92	0.00	0.00	0.00	8.89
09/25/92	0.00	0.00	0.00	8.81
09/26/92	0.00	0.00	0.00	8.81
09/26/92	0.00	0.00	0.00	8.81
09/27/92	0.00	0.00	0.00	8.81
09/27/92	0.00	0.00	0.00	8.81
09/28/92	0.00	0.00	0.00	8.81
09/28/92	0.00	0.00	0.00	8.81
09/29/92	0.00	0.00	0.00	8.71
09/29/92	0.00	0.00	0.00	8.61
09/30/92	0.00	0.00	0.00	8.52
09/30/92	0.00	0.00	0.00	8.42
10/01/92	0.00	0.00	0.00	6.95
10/01/92	0.00	0.00	0.00	5.47
10/02/92	0.00	0.00	0.00	4.35
10/02/92	0.00	0.00	0.00	3.25
10/03/92	0.00	0.00	0.00	3.13
10/03/92	0.00	0.00	0.00	3.00
10/04/92	0.00	0.00	0.00	3.00
10/04/92	0.00	0.00	0.00	3.00
10/05/92	0.00	0.00	0.00	3.00
10/05/92	0.00	0.00	0.00	3.00
10/06/92	0.00	0.00	0.00	3.02

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

10/06/92	0.00	0.00	0.00	3.03
10/07/92	0.00	0.00	0.00	3.02
10/07/92	0.00	0.00	0.00	3.00
10/08/92	0.00	0.00	0.00	3.00
10/08/92	0.00	0.00	0.00	3.00
10/09/92	0.00	0.00	0.00	2.99
10/09/92	0.00	0.00	0.00	2.97
10/10/92	0.00	0.00	0.00	2.99
10/10/92	0.00	0.00	0.00	3.00
10/11/92	0.00	0.00	0.00	3.00
10/11/92	0.00	0.00	0.00	3.00
10/12/92	0.00	0.00	0.00	3.00
10/12/92	0.00	0.00	0.00	3.00
10/13/92	0.00	0.00	0.00	3.00
10/13/92	0.00	0.00	0.00	3.00
10/14/92	0.00	0.00	0.00	3.00
10/14/92	0.00	0.00	0.00	3.00
10/15/92	0.00	0.00	0.00	3.00
10/15/92	0.00	0.00	0.00	3.00
10/16/92	0.00	0.00	0.00	3.00
10/16/92	0.00	0.00	0.00	3.00
10/17/92	0.00	0.00	0.00	3.00
10/17/92	0.00	0.00	0.00	3.00
10/18/92	0.00	0.00	0.00	3.00
10/18/92	0.00	0.00	0.00	3.00
10/19/92	0.00	0.00	0.00	2.82
10/19/92	0.00	0.00	0.00	2.63
10/20/92	0.00	0.00	0.00	2.63
10/20/92	0.00	0.00	0.00	2.63
10/21/92	0.00	0.00	0.00	2.52
10/21/92	0.00	0.00	0.00	2.41
10/22/92	0.00	0.00	0.00	2.30
10/22/92	0.00	0.00	0.00	2.21
10/23/92	0.00	0.00	0.00	2.17
10/23/92	0.00	0.00	0.00	2.12
10/24/92	0.00	0.00	0.00	2.08
10/24/92	0.00	0.00	0.00	2.04
10/25/92	0.00	0.00	0.00	2.04
10/25/92	0.00	0.00	0.00	2.04
10/26/92	0.00	0.00	0.00	1.97
10/26/92	0.00	0.00	0.00	1.89
10/27/92	0.00	0.00	0.00	1.70
10/27/92	0.00	0.00	0.00	1.50
10/28/92	0.00	0.00	0.00	1.50
10/28/92	0.00	0.00	0.00	1.50
10/29/92	0.00	0.00	0.00	1.52
10/29/92	0.00	0.00	0.00	1.53
10/30/92	0.00	0.00	0.00	1.50
10/30/92	0.00	0.00	0.00	1.47
10/31/92	0.00	0.65	0.00	1.23
10/31/92	0.00	0.85	0.00	0.34
11/01/92	0.00	0.98	0.00	0.28
11/01/92	0.00	1.12	0.00	0.30
11/02/92	0.00	1.30	0.00	0.25
11/02/92	0.00	1.43	0.00	0.17
11/03/92	0.00	1.54	0.00	0.00
11/03/92	0.00	1.54	0.00	0.00
11/04/92	0.00	1.50	0.00	0.00
11/04/92	0.00	1.52	0.00	0.00
11/05/92	0.00	1.53	0.00	0.00
11/05/92	0.00	1.53	0.00	0.00
11/06/92	0.00	1.53	0.00	0.00
11/06/92	0.00	1.53	0.00	0.00
11/07/92	0.00	1.53	0.00	0.00
11/07/92	0.00	1.53	0.00	0.00
11/08/92	0.00	1.53	0.00	0.00
11/08/92	0.00	1.54	0.00	0.00

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

11/09/92	0.00	1.56	0.00	0.00
11/09/92	0.00	1.64	0.00	0.00
11/10/92	0.00	1.74	0.00	0.00
11/10/92	0.00	2.30	0.00	0.00
11/11/92	0.00	2.86	0.00	0.00
11/11/92	0.00	2.89	0.00	0.00
11/12/92	0.00	2.92	0.00	0.00
11/12/92	0.00	2.92	0.00	0.00
11/13/92	0.00	2.92	0.00	0.00
11/13/92	0.00	2.92	0.00	0.00
11/14/92	0.00	2.92	0.00	0.00
11/14/92	0.00	2.92	0.00	0.00

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily

PINE FLAT RESERVOIR

1992 PORT RELEASES

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3	Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5	Flow
12/12/91	0.00	0.00	0.00	11.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.55
12/13/91	0.00	0.00	0.00	11.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.80
12/13/91	0.00	0.00	0.00	11.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.44
12/14/91	0.00	0.00	0.00	11.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.10
12/14/91	0.00	0.00	0.00	11.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.10
12/15/91	0.00	0.00	0.00	11.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.10
12/15/91	0.00	0.00	0.00	11.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.03
12/16/91	0.00	0.00	0.00	10.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.96
12/16/91	0.00	0.00	0.00	10.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.76
12/17/91	0.00	0.00	0.00	10.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.56
12/17/91	0.00	0.00	0.00	10.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.36
12/18/91	0.00	0.00	0.00	10.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.17
12/18/91	0.00	0.00	0.00	10.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.12
12/19/91	0.00	0.00	0.00	10.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.08
12/19/91	0.00	0.00	0.00	10.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.08
12/20/91	0.00	0.00	0.00	10.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.08
12/20/91	0.00	0.00	0.00	10.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.08
12/21/91	0.00	0.00	0.00	10.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.08
12/21/91	0.00	0.00	0.00	10.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.10
12/22/91	0.00	0.00	0.00	10.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.09
12/22/91	0.00	0.00	0.00	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.32
12/23/91	0.00	0.00	0.00	6.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.54
12/23/91	0.00	0.00	0.00	4.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.49
12/24/91	0.00	0.00	0.00	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49
12/24/91	0.00	0.00	0.00	2.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.48
12/25/91	0.00	0.00	0.00	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46
12/25/91	0.00	0.00	0.00	2.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.48
12/26/91	0.00	0.00	0.00	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49
12/26/91	0.00	0.00	0.00	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54
12/27/91	0.00	0.00	0.00	2.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.58
12/27/91	0.00	0.00	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.61
12/28/91	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63
12/28/91	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63
12/29/91	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63
12/29/91	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60
12/30/91	0.00	0.00	0.00	2.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.58
12/30/91	0.00	0.00	0.00	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76
12/31/91	0.00	0.00	0.00	2.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.95
12/31/91	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33
01/01/92	0.00	0.00	0.00	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.71
01/01/92	0.00	0.00	0.00	3.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.91
01/02/92	0.00	0.00	0.00	4.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.11
01/02/92	0.00	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.36
01/03/92	0.00	0.00	0.00	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.62
01/03/92	0.00	0.00	0.00	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.64
01/04/92	0.00	0.00	0.00	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.67
01/04/92	0.00	0.00	0.00	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.40
01/05/92	0.00	0.00	0.00	4.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.13
01/05/92	0.00	0.00	0.00	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.63
01/06/92	0.00	0.00	0.00	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.15
01/06/92	0.00	0.00	0.00	3.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.38
01/07/92	0.00	0.00	0.00	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.60
01/07/92	0.00	0.00	0.00	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.63
01/08/92	0.00	0.00	0.00	3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.65
01/08/92	0.00	0.00	0.00	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.68

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
01/09/92	0.00	0.00	0.00	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.71
01/09/92	0.00	0.00	0.00	3.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.74
01/10/92	0.00	0.00	0.00	3.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.77
01/10/92	0.00	0.00	0.00	3.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.78
01/11/92	0.00	0.00	0.00	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.79
01/11/92	0.00	0.00	0.00	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.79
01/12/92	0.00	0.00	0.00	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.79
01/12/92	0.00	0.00	0.00	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.81
01/13/92	0.00	0.00	0.00	3.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.82
01/13/92	0.00	0.00	0.00	3.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.84
01/14/92	0.00	0.00	0.00	3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.85
01/14/92	0.00	0.00	0.00	3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.85
01/15/92	0.00	0.00	0.00	3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.85
01/15/92	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.95
01/16/92	0.00	0.00	0.00	4.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.05
01/16/92	0.00	0.00	0.00	4.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.16
01/17/92	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.28
01/17/92	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.28
01/18/92	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.28
01/18/92	0.00	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.29
01/19/92	0.00	0.00	0.00	4.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.30
01/19/92	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.28
01/20/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/20/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/21/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/21/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/22/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/22/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/23/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/23/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/24/92	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.25
01/24/92	0.00	0.00	0.00	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.26
01/25/92	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.28
01/25/92	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.28
01/26/92	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.28
01/26/92	0.00	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.29
01/27/92	0.00	0.00	0.00	4.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.30
01/27/92	0.00	0.00	0.00	4.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.33
01/28/92	0.00	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.36
01/28/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
01/29/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
01/29/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
01/30/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
01/30/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
01/31/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
01/31/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
02/01/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
02/01/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
02/02/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
02/02/92	0.00	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.43
02/03/92	0.00	0.00	0.00	4.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.45
02/03/92	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.42
02/04/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/04/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/05/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/05/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/06/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/06/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
02/07/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/07/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/08/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/08/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/09/92	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.39
02/09/92	0.00	0.00	0.00	4.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.32
02/10/92	0.00	0.00	0.00	4.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.23
02/10/92	0.00	0.00	0.00	3.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.75
02/11/92	0.00	0.00	0.00	3.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.26
02/11/92	0.00	0.00	0.00	2.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.69
02/12/92	0.00	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.12
02/12/92	0.00	0.00	0.00	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.68
02/13/92	0.00	0.00	0.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.24
02/13/92	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.14
02/14/92	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.05
02/14/92	0.00	0.00	0.00	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.23
02/15/92	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.42
02/15/92	0.00	0.00	0.00	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.37
02/16/92	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.33
02/16/92	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.26
02/17/92	0.00	0.00	0.00	1.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.19
02/17/92	0.00	0.00	0.00	1.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.12
02/18/92	0.00	0.00	0.00	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.05
02/18/92	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.92
02/19/92	0.00	0.00	0.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.79
02/19/92	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
02/20/92	0.00	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.96
02/20/92	0.00	0.00	0.00	0.87	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.90
02/21/92	0.00	0.00	0.00	0.77	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.82
02/21/92	0.00	0.00	0.00	0.76	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.83
02/22/92	0.00	0.00	0.00	0.75	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/22/92	0.00	0.00	0.00	0.73	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/23/92	0.00	0.00	0.00	0.70	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/23/92	0.00	0.00	0.00	1.02	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.29
02/24/92	0.00	0.00	0.00	1.31	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.74
02/24/92	0.00	0.00	0.00	1.58	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.20
02/25/92	0.00	0.00	0.00	1.80	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.63
02/25/92	0.00	0.00	0.00	1.79	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.75
02/26/92	0.00	0.00	0.00	1.76	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.86
02/26/92	0.00	0.00	0.00	1.66	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.86
02/27/92	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.86
02/27/92	0.00	0.00	0.00	0.00	2.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.85
02/28/92	0.00	0.00	0.00	0.00	2.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.83
02/28/92	0.00	0.00	0.00	0.00	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.82
02/29/92	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.80
02/29/92	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.80
03/01/92	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.80
03/01/92	0.00	0.00	0.00	0.00	2.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.79
03/02/92	0.00	0.00	0.00	0.00	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.78
03/02/92	0.00	0.00	0.00	0.00	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.78
03/03/92	0.00	0.00	0.00	0.00	2.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.77
03/03/92	0.00	0.00	0.00	0.00	2.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.69
03/04/92	0.00	0.00	0.00	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.61
03/04/92	0.00	0.00	0.00	0.00	2.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.55
03/05/92	0.00	0.00	0.00	0.00	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.49
03/05/92	0.00	0.00	0.00	0.00	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.51
03/06/92	0.00	0.00	0.00	0.00	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.52
03/06/92	0.00	0.00	0.00	0.00	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.51

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
03/07/92	0.00	0.00	0.00	0.00	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.49
03/07/92	0.00	0.00	0.00	0.00	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.46
03/08/92	0.00	0.00	0.00	0.00	2.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.43
03/08/92	0.00	0.00	0.00	0.00	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.33
03/09/92	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/09/92	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/10/92	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/10/92	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/11/92	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/11/92	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/12/92	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/12/92	0.00	0.00	0.00	0.00	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.36
03/13/92	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.50
03/13/92	0.00	0.00	0.00	0.00	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.71
03/14/92	0.00	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92
03/14/92	0.00	0.00	0.00	0.00	2.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.95
03/15/92	0.00	0.00	0.00	0.00	2.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.97
03/15/92	0.00	0.00	0.00	0.00	2.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.97
03/16/92	0.00	0.00	0.00	0.00	2.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.97
03/16/92	0.00	0.00	0.00	0.00	3.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.04
03/17/92	0.00	0.00	0.00	0.00	3.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.11
03/17/92	0.00	0.00	0.00	0.00	3.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.11
03/18/92	0.00	0.00	0.00	0.00	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.12
03/18/92	0.00	0.00	0.00	0.00	3.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.13
03/19/92	0.00	0.00	0.00	0.00	3.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.14
03/19/92	0.00	0.00	0.00	0.00	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.19
03/20/92	0.00	0.00	0.00	0.00	3.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.23
03/20/92	0.00	0.00	0.00	0.00	3.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.21
03/21/92	0.00	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.20
03/21/92	0.00	0.00	0.00	0.00	3.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.07
03/22/92	0.00	0.00	0.00	0.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.94
03/22/92	0.00	0.00	0.00	0.00	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.33
03/23/92	0.00	0.00	0.00	0.00	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.73
03/23/92	0.00	0.00	0.00	0.00	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.68
03/24/92	0.00	0.00	0.00	0.00	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.64
03/24/92	0.00	0.00	0.00	0.00	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.98
03/25/92	0.00	0.00	0.00	0.00	2.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.32
03/25/92	0.00	0.00	0.00	0.00	2.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.39
03/26/92	0.00	0.00	0.00	0.00	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.46
03/26/92	0.00	0.00	0.00	0.00	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.49
03/27/92	0.00	0.00	0.00	0.00	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.56
03/27/92	0.00	0.00	0.00	0.00	8.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.40
03/28/92	0.00	0.00	0.00	0.00	14.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		14.16
03/28/92	0.00	0.00	0.00	0.00	14.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		14.88
03/29/92	0.00	0.00	0.00	0.00	15.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		15.60
03/29/92	0.00	0.00	0.00	0.00	15.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		15.87
03/30/92	0.00	0.00	0.00	0.00	15.04	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00		16.14
03/30/92	0.00	0.00	0.00	0.00	15.08	2.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00		17.45
03/31/92	0.00	0.00	0.00	0.00	14.96	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00		18.77
03/31/92	0.00	0.00	0.00	0.00	15.75	5.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.43
04/01/92	0.00	0.00	0.00	0.00	16.20	7.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00		24.11
04/01/92	0.00	0.00	0.00	0.00	15.57	9.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00		25.56
04/02/92	0.00	0.00	0.00	0.00	14.69	12.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00		27.00
04/02/92	0.00	0.00	0.00	0.00	13.69	14.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00		28.53
04/03/92	0.00	0.00	0.00	0.00	12.38	17.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00		30.05
04/03/92	0.00	0.00	0.00	0.00	10.82	20.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00		31.36
04/04/92	0.00	0.00	0.00	0.00	8.98	23.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00		32.65
04/04/92	0.00	0.00	0.00	0.00	6.88	26.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00		33.39

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
04/05/92	0.00	0.00	0.00	0.00	4.57	29.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00		34.12
04/05/92	0.00	0.00	0.00	0.00	2.26	32.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00		34.80
04/06/92	0.00	0.00	0.00	0.00	0.00	35.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.49
04/06/92	0.00	0.00	0.00	0.00	0.00	36.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.35
04/07/92	0.00	0.00	0.00	0.00	0.00	37.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.22
04/07/92	0.00	0.00	0.00	0.00	0.00	38.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00		38.17
04/08/92	0.00	0.00	0.00	0.00	0.00	39.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00		39.14
04/08/92	0.00	0.00	0.00	0.00	0.00	39.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00		39.85
04/09/92	0.00	0.00	0.00	0.00	0.00	40.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00		40.55
04/09/92	0.00	0.00	0.00	0.00	0.00	41.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00		41.25
04/10/92	0.00	0.00	0.00	0.00	0.00	41.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00		41.94
04/10/92	0.00	0.00	0.00	0.00	0.00	42.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.09
04/11/92	0.00	0.00	0.00	0.00	0.00	42.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.25
04/11/92	0.00	0.00	0.00	0.00	0.00	42.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.51
04/12/92	0.00	0.00	0.00	0.00	0.00	42.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.76
04/12/92	0.00	0.00	0.00	0.00	0.00	42.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.64
04/13/92	0.00	0.00	0.00	0.00	0.00	42.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.53
04/13/92	0.00	0.00	0.00	0.00	0.00	42.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.35
04/14/92	0.00	0.00	0.00	0.00	0.00	42.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.16
04/14/92	0.00	0.00	0.00	0.00	0.00	42.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.14
04/15/92	0.00	0.00	0.00	0.00	0.00	42.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.11
04/15/92	0.00	0.00	0.00	0.00	0.00	42.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.34
04/16/92	0.00	0.00	0.00	0.00	0.00	42.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00		42.57
04/16/92	0.00	0.00	0.00	0.00	0.00	43.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00		43.20
04/17/92	0.00	0.00	0.00	0.00	0.00	43.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00		43.84
04/17/92	0.00	0.00	0.00	0.00	0.00	43.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00		43.92
04/18/92	0.00	0.00	0.00	0.00	0.00	44.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.01
04/18/92	0.00	0.00	0.00	0.00	0.00	44.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.19
04/19/92	0.00	0.00	0.00	0.00	0.00	44.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.37
04/19/92	0.00	0.00	0.00	0.00	0.00	44.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.36
04/20/92	0.00	0.00	0.00	0.00	0.00	44.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.34
04/20/92	0.00	0.00	0.00	0.00	0.00	44.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.22
04/21/92	0.00	0.00	0.00	0.00	0.00	44.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.09
04/21/92	0.00	0.00	0.00	0.00	0.00	44.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.03
04/22/92	0.00	0.00	0.00	0.00	0.00	43.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00		43.98
04/22/92	0.00	0.00	0.00	0.00	0.00	44.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.16
04/23/92	0.00	0.00	0.00	0.00	0.00	44.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.35
04/23/92	0.00	0.00	0.00	0.00	0.00	44.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.85
04/24/92	0.00	0.00	0.00	0.00	0.00	45.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00		45.37
04/24/92	0.00	0.00	0.00	0.00	0.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00		45.89
04/25/92	0.00	0.00	0.00	0.00	0.00	46.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00		46.41
04/25/92	0.00	0.00	0.00	0.00	0.00	46.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00		46.63
04/26/92	0.00	0.00	0.00	0.00	0.00	46.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00		46.84
04/26/92	0.00	0.00	0.00	0.00	0.00	46.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00		46.96
04/27/92	0.00	0.00	0.00	0.00	0.00	47.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00		47.09
04/27/92	0.00	0.00	0.00	0.00	0.00	47.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00		47.35
04/28/92	0.00	0.00	0.00	0.00	0.00	47.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00		47.60
04/28/92	0.00	0.00	0.00	0.00	0.00	47.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00		47.59
04/29/92	0.00	0.00	0.00	0.00	0.00	47.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00		47.57
04/29/92	0.00	0.00	0.00	0.00	0.00	48.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.15
04/30/92	0.00	0.00	0.00	0.00	0.00	48.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.73
04/30/92	0.00	0.00	0.00	0.00	0.00	48.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.80
05/01/92	0.00	0.00	0.00	0.00	0.00	48.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.88
05/01/92	0.00	0.00	0.00	0.00	0.00	48.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.95
05/02/92	0.00	0.00	0.00	0.00	0.00	49.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00		49.02
05/02/92	0.00	0.00	0.00	0.00	0.00	48.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.84
05/03/92	0.00	0.00	0.00	0.00	0.00	48.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.68
05/03/92	0.00	0.00	0.00	0.00	0.00	48.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.14

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
05/04/92	0.00	0.00	0.00	0.00	0.00	47.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00		47.60
05/04/92	0.00	0.00	0.00	0.00	0.00	47.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00		47.27
05/05/92	0.00	0.00	0.00	0.00	0.00	44.66	2.29	0.00	0.00	0.00	0.00	0.00	0.00		46.95
05/05/92	0.00	0.00	0.00	0.00	0.00	40.38	6.60	0.00	0.00	0.00	0.00	0.00	0.00		46.98
05/06/92	0.00	0.00	0.00	0.00	0.00	35.58	11.43	0.00	0.00	0.00	0.00	0.00	0.00		47.01
05/06/92	0.00	0.00	0.00	0.00	0.00	30.50	16.82	0.00	0.00	0.00	0.00	0.00	0.00		47.32
05/07/92	0.00	0.00	0.00	0.00	0.00	25.48	22.15	0.00	0.00	0.00	0.00	0.00	0.00		47.63
05/07/92	0.00	0.00	0.00	0.00	0.00	20.61	27.43	0.00	0.00	0.00	0.00	0.00	0.00		48.04
05/08/92	0.00	0.00	0.00	0.00	0.00	15.46	32.99	0.00	0.00	0.00	0.00	0.00	0.00		48.45
05/08/92	0.00	0.00	0.00	0.00	0.00	10.26	38.36	0.00	0.00	0.00	0.00	0.00	0.00		48.62
05/09/92	0.00	0.00	0.00	0.00	0.00	4.93	43.86	0.00	0.00	0.00	0.00	0.00	0.00		48.79
05/09/92	0.00	0.00	0.00	0.00	0.00	0.00	48.86	0.00	0.00	0.00	0.00	0.00	0.00		48.86
05/10/92	0.00	0.00	0.00	0.00	0.00	0.00	48.93	0.00	0.00	0.00	0.00	0.00	0.00		48.93
05/10/92	0.00	0.00	0.00	0.00	0.00	0.00	49.17	0.00	0.00	0.00	0.00	0.00	0.00		49.17
05/11/92	0.00	0.00	0.00	0.00	0.00	0.00	49.41	0.00	0.00	0.00	0.00	0.00	0.00		49.41
05/11/92	0.00	0.00	0.00	0.00	0.00	0.00	48.87	0.00	0.00	0.00	0.00	0.00	0.00		48.87
05/12/92	0.00	0.00	0.00	0.00	0.00	0.00	48.34	0.00	0.00	0.00	0.00	0.00	0.00		48.34
05/12/92	0.00	0.00	0.00	0.00	0.00	0.00	48.80	0.00	0.00	0.00	0.00	0.00	0.00		48.80
05/13/92	0.00	0.00	0.00	0.00	0.00	0.00	49.28	0.00	0.00	0.00	0.00	0.00	0.00		49.28
05/13/92	0.00	0.00	0.00	0.00	0.00	0.00	50.08	0.00	0.00	0.00	0.00	0.00	0.00		50.08
05/14/92	0.00	0.00	0.00	0.00	0.00	0.00	50.88	0.00	0.00	0.00	0.00	0.00	0.00		50.88
05/14/92	0.00	0.00	0.00	0.00	0.00	0.00	50.40	0.00	0.00	0.00	0.00	0.00	0.00		50.40
05/15/92	0.00	0.00	0.00	0.00	0.00	0.00	49.92	0.00	0.00	0.00	0.00	0.00	0.00		49.92
05/15/92	0.00	0.00	0.00	0.00	0.00	0.00	49.85	0.00	0.00	0.00	0.00	0.00	0.00		49.85
05/16/92	0.00	0.00	0.00	0.00	0.00	0.00	49.78	0.00	0.00	0.00	0.00	0.00	0.00		49.78
05/16/92	0.00	0.00	0.00	0.00	0.00	0.00	49.80	0.00	0.00	0.00	0.00	0.00	0.00		49.80
05/17/92	0.00	0.00	0.00	0.00	0.00	0.00	49.81	0.00	0.00	0.00	0.00	0.00	0.00		49.81
05/17/92	0.00	0.00	0.00	0.00	0.00	0.00	49.74	0.00	0.00	0.00	0.00	0.00	0.00		49.74
05/18/92	0.00	0.00	0.00	0.00	0.00	0.00	49.67	0.00	0.00	0.00	0.00	0.00	0.00		49.67
05/18/92	0.00	0.00	0.00	0.00	0.00	0.00	49.58	0.00	0.00	0.00	0.00	0.00	0.00		49.58
05/19/92	0.00	0.00	0.00	0.00	0.00	0.00	49.50	0.00	0.00	0.00	0.00	0.00	0.00		49.50
05/19/92	0.00	0.00	0.00	0.00	0.00	0.00	49.36	0.00	0.00	0.00	0.00	0.00	0.00		49.36
05/20/92	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00		49.21
05/20/92	0.00	0.00	0.00	0.00	0.00	0.00	49.09	0.00	0.00	0.00	0.00	0.00	0.00		49.09
05/21/92	0.00	0.00	0.00	0.00	0.00	0.00	48.96	0.00	0.00	0.00	0.00	0.00	0.00		48.96
05/21/92	0.00	0.00	0.00	0.00	0.00	0.00	49.53	0.00	0.00	0.00	0.00	0.00	0.00		49.53
05/22/92	0.00	0.00	0.00	0.00	0.00	0.00	50.09	0.00	0.00	0.00	0.00	0.00	0.00		50.09
05/22/92	0.00	0.00	0.00	0.00	0.00	0.00	50.30	0.00	0.00	0.00	0.00	0.00	0.00		50.30
05/23/92	0.00	0.00	0.00	0.00	0.00	0.00	50.52	0.00	0.00	0.00	0.00	0.00	0.00		50.52
05/23/92	0.00	0.00	0.00	0.00	0.00	0.00	50.69	0.00	0.00	0.00	0.00	0.00	0.00		50.69
05/24/92	0.00	0.00	0.00	0.00	0.00	0.00	50.86	0.00	0.00	0.00	0.00	0.00	0.00		50.86
05/24/92	0.00	0.00	0.00	0.00	0.00	0.00	50.97	0.00	0.00	0.00	0.00	0.00	0.00		50.97
05/25/92	0.00	0.00	0.00	0.00	0.00	0.00	51.08	0.00	0.00	0.00	0.00	0.00	0.00		51.08
05/25/92	0.00	0.00	0.00	0.00	0.00	0.00	51.17	0.00	0.00	0.00	0.00	0.00	0.00		51.17
05/26/92	0.00	0.00	0.00	0.00	0.00	0.00	51.25	0.00	0.00	0.00	0.00	0.00	0.00		51.25
05/26/92	0.00	0.00	0.00	0.00	0.00	0.00	51.24	0.00	0.00	0.00	0.00	0.00	0.00		51.24
05/27/92	0.00	0.00	0.00	0.00	0.00	0.00	51.23	0.00	0.00	0.00	0.00	0.00	0.00		51.23
05/27/92	0.00	0.00	0.00	0.00	0.00	0.00	51.17	0.00	0.00	0.00	0.00	0.00	0.00		51.17
05/28/92	0.00	0.00	0.00	0.00	0.00	0.00	51.12	0.00	0.00	0.00	0.00	0.00	0.00		51.12
05/28/92	0.00	0.00	0.00	0.00	0.00	0.00	54.42	0.00	0.00	0.00	0.00	0.00	0.00		54.42
05/29/92	0.00	0.00	0.00	0.00	0.00	0.00	57.71	0.00	0.00	0.00	0.00	0.00	0.00		57.71
05/29/92	0.00	0.00	0.00	0.00	0.00	0.00	59.39	0.00	0.00	0.00	0.00	0.00	0.00		59.39
05/30/92	0.00	0.00	0.00	0.00	0.00	0.00	61.05	0.00	0.00	0.00	0.00	0.00	0.00		61.05
05/30/92	0.00	0.00	0.00	0.00	0.00	0.00	61.75	0.00	0.00	0.00	0.00	0.00	0.00		61.75
05/31/92	0.00	0.00	0.00	0.00	0.00	0.00	62.52	0.00	0.00	0.00	0.00	0.00	0.00		62.52
05/31/92	0.00	0.00	0.00	0.00	0.00	9.57	70.75	0.00	0.00	0.00	0.00	0.00	0.00		80.32
06/01/92	0.00	0.00	0.00	0.00	0.00	27.30	70.75	0.00	0.00	0.00	0.00	0.00	0.00		98.05
06/01/92	0.00	0.00	0.00	0.00	0.00	45.01	70.75	0.00	0.00	0.00	0.00	0.00	0.00		115.76

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
06/02/92	0.00	0.00	0.00	0.00	0.00	54.18	70.75	0.00	0.00	0.00	0.00	0.00	0.00		124.93
06/02/92	0.00	0.00	0.00	0.00	0.00	58.82	70.75	0.00	0.00	0.00	0.00	0.00	0.00		129.57
06/03/92	0.00	0.00	0.00	0.00	0.00	63.49	70.75	0.00	0.00	0.00	0.00	0.00	0.00		134.24
06/03/92	0.00	0.00	0.00	0.00	0.00	66.81	70.75	0.00	0.00	0.00	0.00	0.00	0.00		137.56
06/04/92	0.00	0.00	0.00	0.00	0.00	70.15	70.75	0.00	0.00	0.00	0.00	0.00	0.00		140.90
06/04/92	0.00	0.00	0.00	0.00	0.00	69.97	70.75	0.00	0.00	0.00	0.00	0.00	0.00		140.72
06/05/92	0.00	0.00	0.00	0.00	3.71	69.79	67.04	0.00	0.00	0.00	0.00	0.00	0.00		140.54
06/05/92	0.00	0.00	0.00	0.00	8.63	70.20	62.12	0.00	0.00	0.00	0.00	0.00	0.00		140.95
06/06/92	0.00	0.00	0.00	0.00	13.48	70.61	57.27	0.00	0.00	0.00	0.00	0.00	0.00		141.36
06/06/92	0.00	0.00	0.00	0.00	21.44	70.75	52.46	0.00	0.00	0.00	0.00	0.00	0.00		144.65
06/07/92	0.00	0.00	0.00	0.00	29.63	70.75	47.54	0.00	0.00	0.00	0.00	0.00	0.00		147.92
06/07/92	0.00	0.00	0.00	0.00	34.89	70.75	42.70	0.00	0.00	0.00	0.00	0.00	0.00		148.34
06/08/92	0.00	0.00	0.00	0.00	40.28	70.75	37.71	0.00	0.00	0.00	0.00	0.00	0.00		148.74
06/08/92	0.00	0.00	0.00	0.00	43.51	70.75	32.83	0.00	0.00	0.00	0.00	0.00	0.00		147.09
06/09/92	0.00	0.00	0.00	0.00	46.92	70.75	27.77	0.00	0.00	0.00	0.00	0.00	0.00		145.44
06/09/92	0.00	0.00	0.00	0.00	50.70	70.75	22.85	0.00	0.00	0.00	0.00	0.00	0.00		144.30
06/10/92	0.00	0.00	0.00	0.00	54.66	70.75	17.76	0.00	0.00	0.00	0.00	0.00	0.00		143.17
06/10/92	0.00	0.00	0.00	0.00	57.63	68.83	13.12	0.00	0.00	0.00	0.00	0.00	0.00		139.58
06/11/92	0.00	0.00	0.00	0.00	62.33	65.26	8.42	0.00	0.00	0.00	0.00	0.00	0.00		136.01
06/11/92	0.00	0.00	0.00	0.00	66.97	63.89	3.78	0.00	0.00	0.00	0.00	0.00	0.00		134.64
06/12/92	0.00	0.00	0.00	0.00	0.00	62.54	70.75	0.00	0.00	0.00	0.00	0.00	0.00		133.29
06/12/92	0.00	0.00	0.00	0.00	0.00	60.82	70.75	0.00	0.00	0.00	0.00	0.00	0.00		131.57
06/13/92	0.00	0.00	0.00	0.00	59.11	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		129.86
06/13/92	0.00	0.00	0.00	0.00	58.35	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		129.10
06/14/92	0.00	0.00	0.00	0.00	57.58	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		128.33
06/14/92	0.00	0.00	0.00	0.00	56.51	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		127.26
06/15/92	0.00	0.00	0.00	0.00	55.45	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		126.20
06/15/92	0.00	0.00	0.00	0.00	54.35	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		125.10
06/16/92	0.00	0.00	0.00	0.00	53.25	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		124.00
06/16/92	0.00	0.00	0.00	0.00	54.07	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		124.82
06/17/92	0.00	0.00	0.00	0.00	54.90	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		125.65
06/17/92	0.00	0.00	0.00	0.00	56.17	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		126.92
06/18/92	0.00	0.00	0.00	0.00	57.45	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		128.20
06/18/92	0.00	0.00	0.00	0.00	59.89	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		130.64
06/19/92	0.00	0.00	0.00	0.00	62.31	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		133.06
06/19/92	0.00	0.00	0.00	0.00	63.41	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		134.16
06/20/92	0.00	0.00	0.00	0.00	64.52	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		135.27
06/20/92	0.00	0.00	0.00	0.00	69.09	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		139.84
06/21/92	0.00	0.00	0.00	2.88	70.75	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		144.38
06/21/92	0.00	0.00	0.00	1.07	70.75	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		142.57
06/22/92	0.00	0.00	0.00	0.00	69.99	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		140.74
06/22/92	0.00	0.00	0.00	0.00	66.13	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		136.88
06/23/92	0.00	0.00	0.00	0.00	62.26	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		133.01
06/23/92	0.00	0.00	0.00	0.00	62.88	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		133.63
06/24/92	0.00	0.00	0.00	63.53	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		134.28
06/24/92	0.00	0.00	0.00	66.87	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		137.62
06/25/92	0.00	0.00	0.00	70.24	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		140.99
06/25/92	0.00	0.00	0.00	70.21	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		140.96
06/26/92	0.00	0.00	0.00	70.09	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		140.84
06/26/92	0.00	0.00	0.00	53.69	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		124.44
06/27/92	0.00	0.00	0.00	37.24	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		107.99
06/27/92	0.00	0.00	0.00	33.08	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		103.83
06/28/92	0.00	0.00	0.00	28.96	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		99.71
06/28/92	0.00	0.00	0.00	25.17	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		95.92
06/29/92	0.00	0.00	0.00	21.43	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		92.18
06/29/92	0.00	0.00	0.00	23.49	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		94.24
06/30/92	0.00	0.00	0.00	25.55	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		96.30
06/30/92	0.00	0.00	0.00	29.61	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		100.36

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
07/01/92	0.00	0.00	0.00	33.65	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		104.40
07/01/92	0.00	0.00	0.00	33.48	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		104.23
07/02/92	0.00	0.00	0.00	33.31	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		104.06
07/02/92	0.00	0.00	0.00	33.50	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		104.25
07/03/92	0.00	0.00	0.00	33.68	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		104.43
07/03/92	0.00	0.00	0.00	33.16	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		103.91
07/04/92	0.00	0.00	0.00	32.63	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		103.38
07/04/92	0.00	0.00	0.00	31.41	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		102.16
07/05/92	0.00	0.00	30.20	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		100.95
07/05/92	0.00	0.00	30.84	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		101.59
07/06/92	0.00	0.00	31.47	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		102.22
07/06/92	0.00	0.00	30.86	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		101.61
07/07/92	0.00	0.00	30.26	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		101.01
07/07/92	0.00	0.00	29.46	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		100.21
07/08/92	0.00	0.00	28.67	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		99.42
07/08/92	0.00	0.00	28.78	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		99.53
07/09/92	0.00	0.00	28.89	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		99.64
07/09/92	0.00	0.00	28.33	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		99.08
07/10/92	0.00	0.00	27.77	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		98.52
07/10/92	0.00	0.00	27.92	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		98.67
07/11/92	0.00	0.00	28.08	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		98.83
07/11/92	0.00	0.00	28.77	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		99.52
07/12/92	0.00	0.00	29.45	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		100.20
07/12/92	0.00	0.00	27.92	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		98.67
07/13/92	0.00	0.00	26.40	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		97.15
07/13/92	0.00	0.00	26.13	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		96.88
07/14/92	0.00	0.00	25.85	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		96.60
07/14/92	0.00	0.00	21.72	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		92.47
07/15/92	0.00	0.00	17.61	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		88.36
07/15/92	0.00	0.00	8.32	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		79.07
07/16/92	0.00	0.00	0.00	50.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		50.61
07/16/92	0.00	0.00	0.00	51.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		51.60
07/17/92	0.00	0.00	0.00	52.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		52.59
07/17/92	0.00	0.00	0.00	54.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		54.24
07/18/92	0.00	0.00	0.00	55.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		55.90
07/18/92	0.00	0.00	0.00	56.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		56.07
07/19/92	0.00	0.00	0.00	56.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		56.23
07/19/92	0.00	0.00	0.00	54.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		54.87
07/20/92	0.54	0.00	52.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		53.52
07/20/92	5.22	0.00	46.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		52.19
07/21/92	5.34	0.00	45.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		50.88
07/21/92	6.07	0.00	44.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		50.55
07/22/92	5.27	0.00	44.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		50.21
07/22/92	5.88	0.00	45.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		51.11
07/23/92	6.24	0.00	45.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		51.99
07/23/92	6.81	0.00	45.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		52.36
07/24/92	6.85	0.00	45.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		52.72
07/24/92	8.40	0.00	44.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		52.47
07/25/92	8.35	0.00	43.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		52.17
07/25/92	9.38	0.00	35.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		44.68
07/26/92	8.19	0.00	29.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.23
07/26/92	8.52	0.00	28.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.05
07/27/92	9.03	0.00	27.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.87
07/27/92	10.26	0.00	27.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.30
07/28/92	11.51	0.00	26.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.73
07/28/92	12.83	0.00	25.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		38.30
07/29/92	14.97	0.00	23.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		38.88
07/29/92	17.22	0.00	21.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		38.27

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
07/30/92	20.54	0.00	17.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.69
07/30/92	24.22	0.00	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.55
07/31/92	30.67	0.00	6.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.40
07/31/92	37.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.15
08/01/92	36.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.90
08/01/92	37.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.18
08/02/92	37.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.46
08/02/92	36.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.94
08/03/92	36.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.41
08/03/92	36.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.24
08/04/92	36.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.08
08/04/92	36.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.30
08/05/92	36.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.52
08/05/92	35.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.60
08/06/92	34.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		34.69
08/06/92	34.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		34.49
08/07/92	34.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		34.30
08/07/92	34.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		34.95
08/08/92	35.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.59
08/08/92	35.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.42
08/09/92	35.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.25
08/09/92	35.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.25
08/10/92	35.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.26
08/10/92	35.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.87
08/11/92	36.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.47
08/11/92	36.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.47
08/12/92	36.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.47
08/12/92	36.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.76
08/13/92	37.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		37.03
08/13/92	35.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		35.63
08/14/92	34.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		34.21
08/14/92	32.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		32.09
08/15/92	29.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		29.95
08/15/92	25.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		25.57
08/16/92	21.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.21
08/16/92	21.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.15
08/17/92	21.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.09
08/17/92	20.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		20.84
08/18/92	20.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		20.59
08/18/92	20.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		20.71
08/19/92	20.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		20.84
08/19/92	20.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		20.91
08/20/92	20.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		20.98
08/20/92	21.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.10
08/21/92	21.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.21
08/21/92	21.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.85
08/22/92	22.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		22.48
08/22/92	22.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		22.74
08/23/92	22.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		22.99
08/23/92	22.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		22.84
08/24/92	22.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		22.67
08/24/92	21.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.46
08/25/92	20.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		20.25
08/25/92	18.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		18.15
08/26/92	16.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		16.03
08/26/92	14.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		14.11
08/27/92	12.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		12.16
08/27/92	11.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		11.26

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
08/28/92	10.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.36
08/28/92	10.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.38
08/29/92	10.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.39
08/29/92	10.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.35
08/30/92	10.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.31
08/30/92	10.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.12
08/31/92	9.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.94
08/31/92	9.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.95
09/01/92	9.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.97
09/01/92	9.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.84
09/02/92	9.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.71
09/02/92	9.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.43
09/03/92	9.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.14
09/03/92	8.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.96
09/04/92	8.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.78
09/04/92	8.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.64
09/05/92	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.49
09/05/92	8.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.42
09/06/92	8.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.35
09/06/92	8.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.27
09/07/92	8.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.18
09/07/92	8.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.14
09/08/92	8.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.10
09/08/92	8.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.23
09/09/92	8.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.35
09/09/92	8.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.35
09/10/92	8.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.35
09/10/92	8.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.22
09/11/92	8.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.09
09/11/92	7.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.87
09/12/92	7.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.65
09/12/92	7.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.63
09/13/92	7.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.62
09/13/92	7.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.62
09/14/92	7.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.62
09/14/92	7.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.62
09/15/92	7.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.62
09/15/92	7.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.69
09/16/92	7.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.76
09/16/92	8.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.05
09/17/92	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.33
09/17/92	8.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.41
09/18/92	8.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.50
09/18/92	8.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.57
09/19/92	8.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.64
09/19/92	8.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.64
09/20/92	8.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.64
09/20/92	8.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.64
09/21/92	8.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.64
09/21/92	8.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.65
09/22/92	8.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.67
09/22/92	8.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.76
09/23/92	8.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.86
09/23/92	8.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.92
09/24/92	8.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.98
09/24/92	8.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.89
09/25/92	8.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.81
09/25/92	8.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.81

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
09/26/92	8.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.81
09/26/92	8.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.81
09/27/92	8.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.81
09/27/92	8.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.81
09/28/92	8.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.81
09/28/92	8.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.71
09/29/92	8.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.61
09/29/92	8.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.52
09/30/92	8.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.42
09/30/92	6.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.95
10/01/92	5.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5.47
10/01/92	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.35
10/02/92	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.25
10/02/92	3.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.13
10/03/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/03/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/04/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/04/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/05/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/05/92	3.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.02
10/06/92	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.03
10/06/92	3.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.02
10/07/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/07/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/08/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/08/92	2.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.99
10/09/92	2.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.97
10/09/92	2.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.99
10/10/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/10/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/11/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/11/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/12/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/12/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/13/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/13/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/14/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/14/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/15/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/15/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/16/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/16/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/17/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/17/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/18/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/18/92	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.82
10/19/92	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.63
10/19/92	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.63
10/20/92	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.63
10/20/92	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.52
10/21/92	2.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.41
10/21/92	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.30
10/22/92	2.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.21
10/22/92	2.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.17
10/23/92	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.12
10/23/92	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.08
10/24/92	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.04
10/24/92	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.04

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

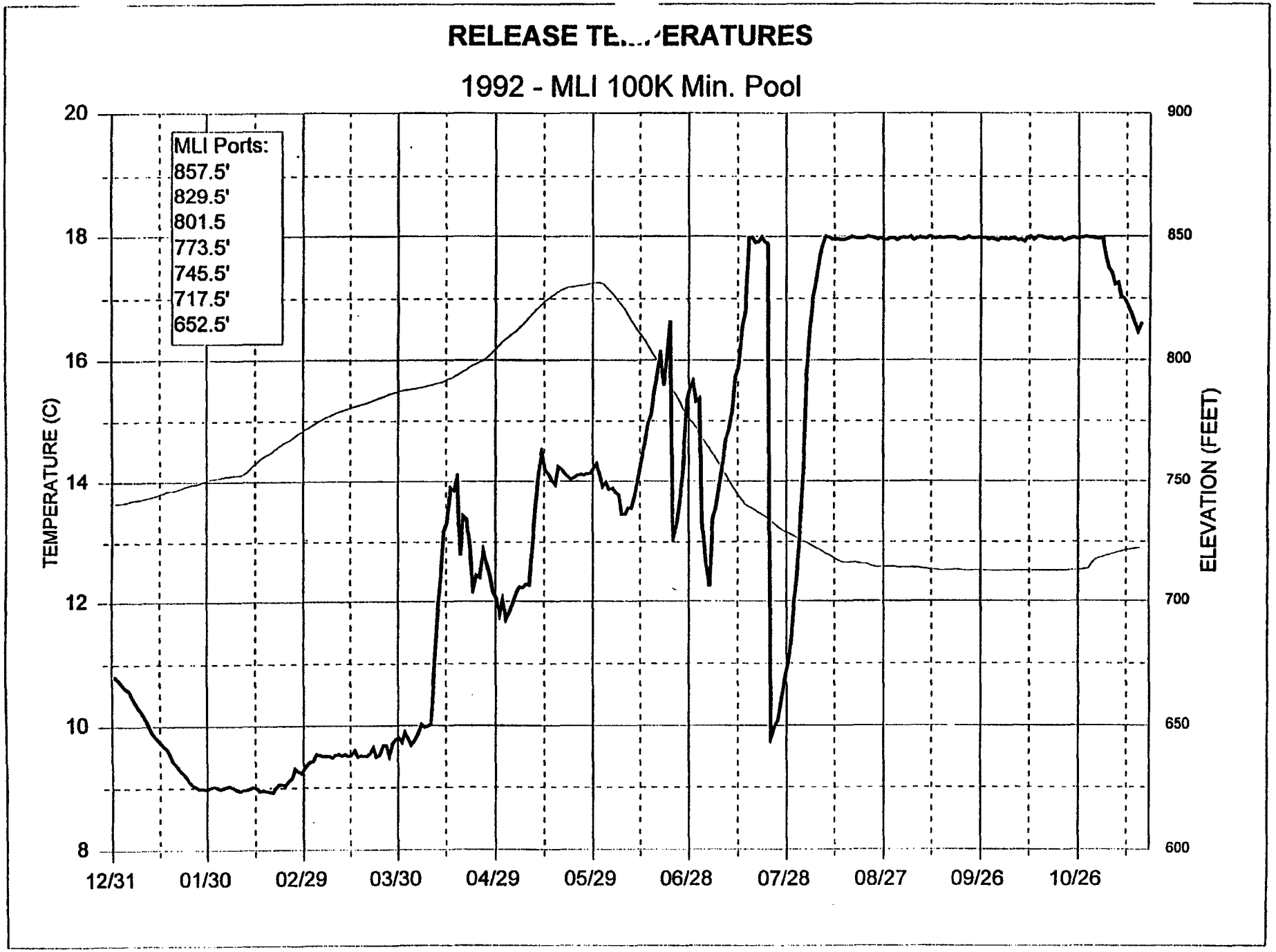
	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
10/25/92	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.04
10/25/92	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.97
10/26/92	1.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.89
10/26/92	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.70
10/27/92	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.50
10/27/92	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.50
10/28/92	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.50
10/28/92	1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52
10/29/92	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
10/29/92	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.50
10/30/92	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.47
10/30/92	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.23
10/31/92	0.34	0.00	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.99
10/31/92	0.28	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.13
11/01/92	0.30	0.00	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.28
11/01/92	0.25	0.00	1.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.37
11/02/92	0.17	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.47
11/02/92	0.10	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/03/92	0.05	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.59
11/03/92	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.54
11/04/92	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.50
11/04/92	0.00	0.00	0.00	1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52
11/05/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/05/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/06/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/06/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/07/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/07/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/08/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/08/92	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.54
11/09/92	0.00	0.00	0.00	1.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.56
11/09/92	0.00	0.00	0.00	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.64
11/10/92	0.00	0.00	0.00	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.74
11/10/92	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.30
11/11/92	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.86
11/11/92	0.00	0.00	0.00	2.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.89
11/12/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92
11/12/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92
11/13/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92
11/13/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92
11/14/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92
11/14/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92

NOTE: Flows Are CMS With Port Adjustments Made Twice Daily
Dam #1, 2 and 3 Refer to Low, Middle, Spillway Dam Ports

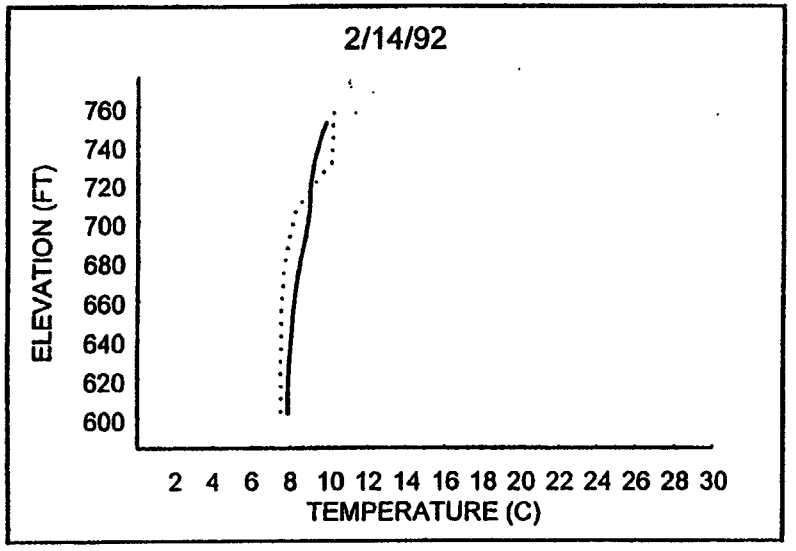
APPENDIX B

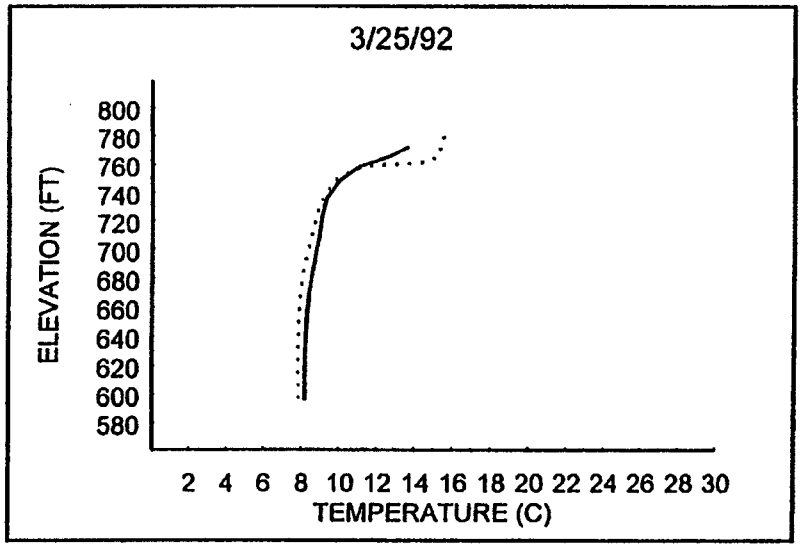
1992 MODEL RUN

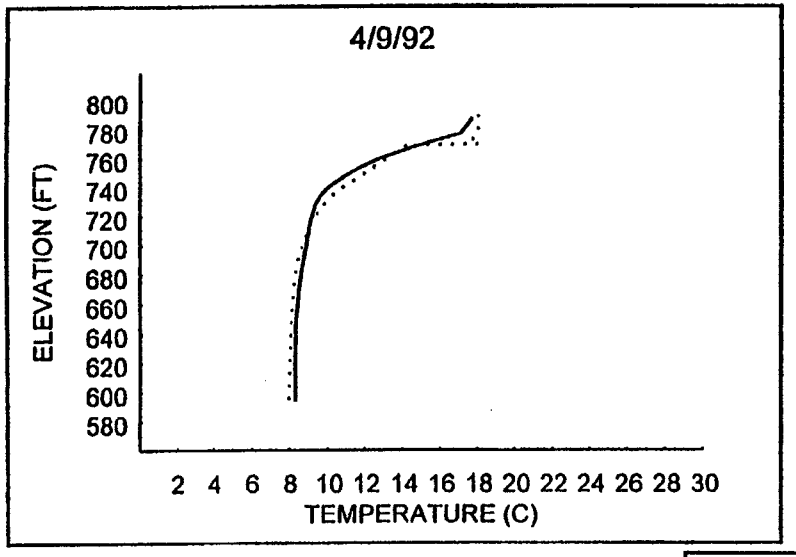
WITH 100,000 ACRE-FEET MINIMUM POOL

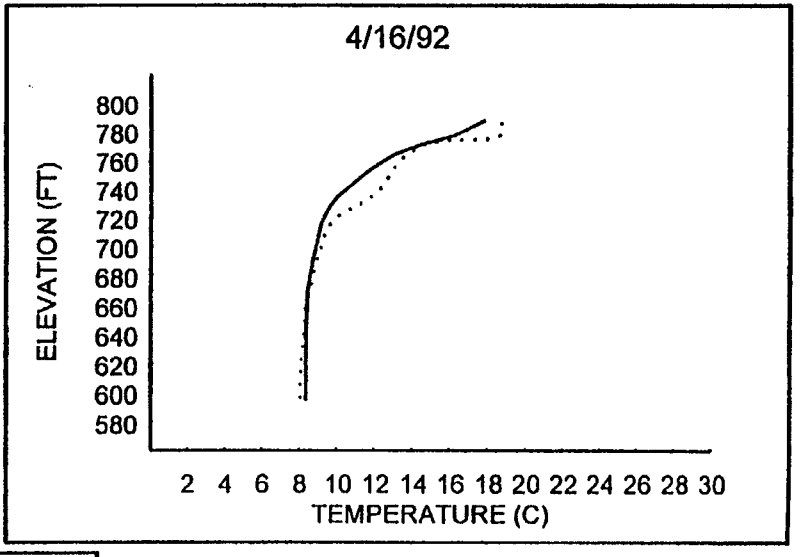

RELEASE TE...ERATURES
1992 - MLI 100K Min. Pool
MLI Ports:
857.5'
829.5'
801.5
773.5'
745.5'
717.5'
652.5'
TEMPERATURE (C)
ELEVATION (FEET)
20
18
16
14
12
10
8
900
850
800
750
700
650
600
12/31
01/30
02/29
03/30
04/29
05/29
06/28
07/28
08/27
09/26
10/26

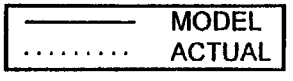
PROFILES FOR M. EL YEAR 1992



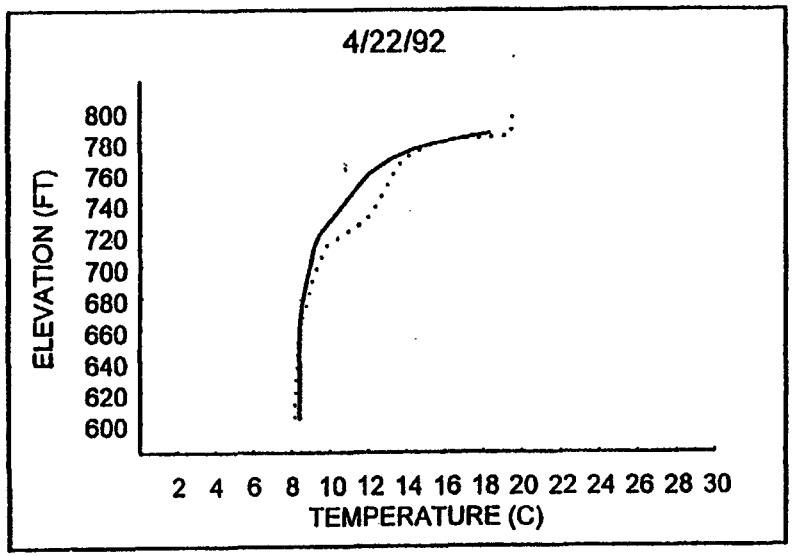


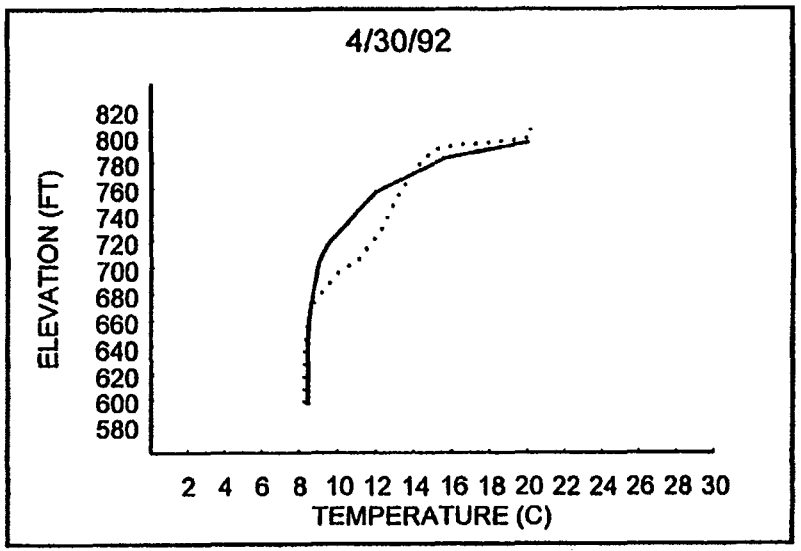


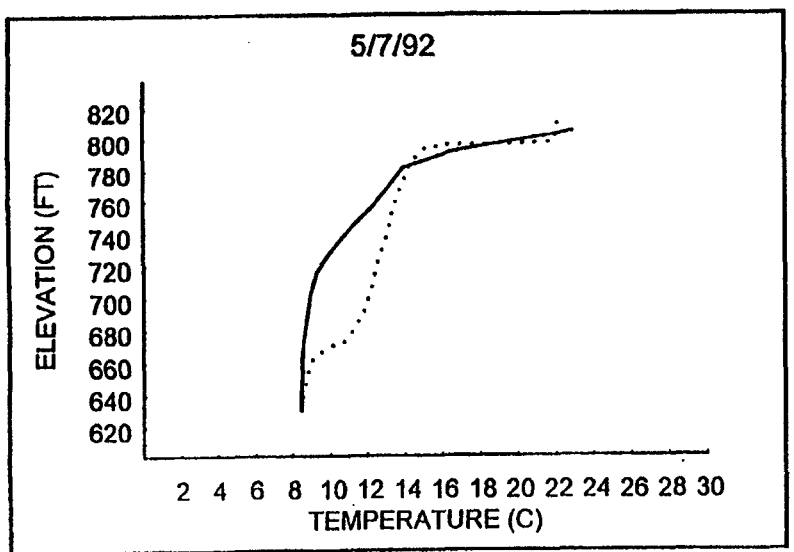


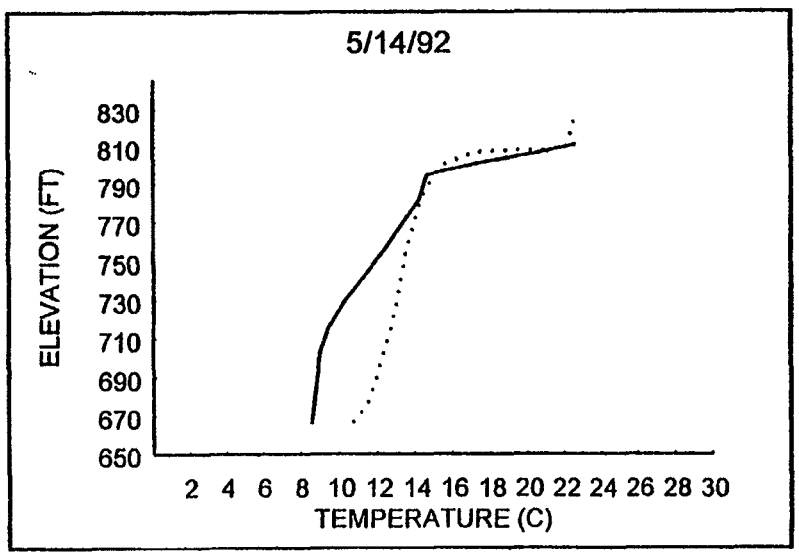


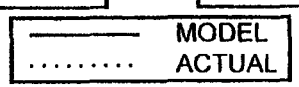
PROFILES FOR M..DEL YEAR 1992



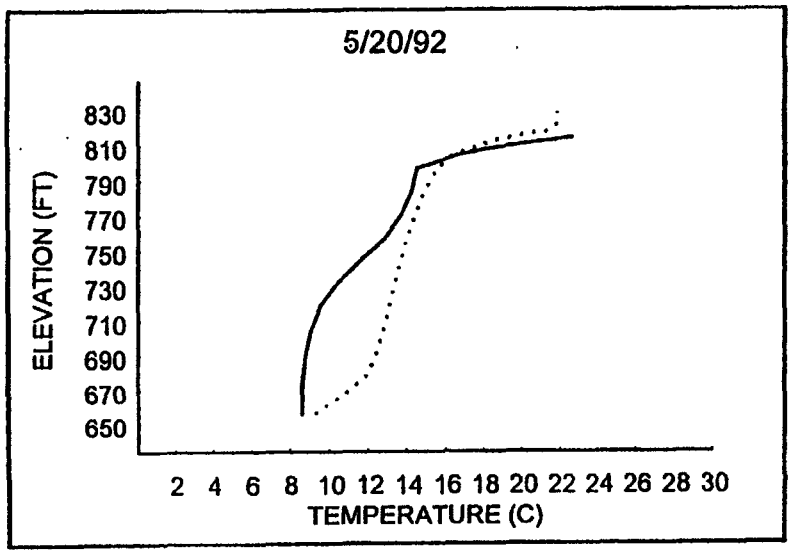


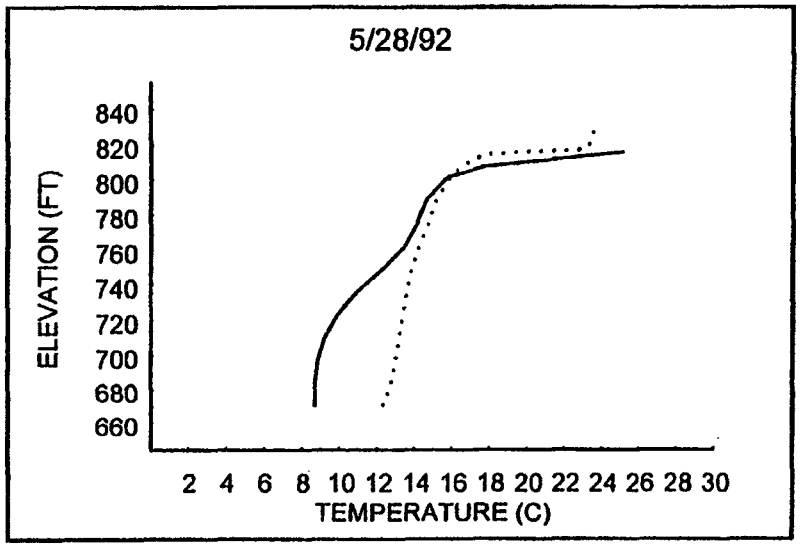


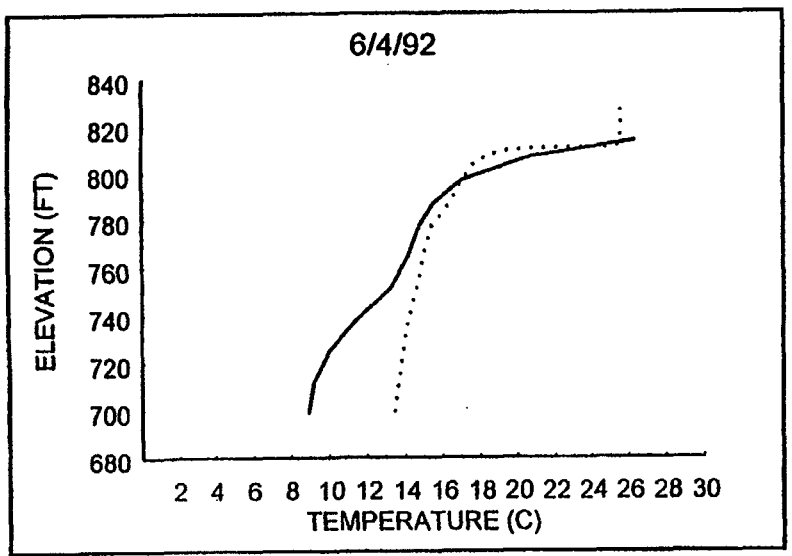


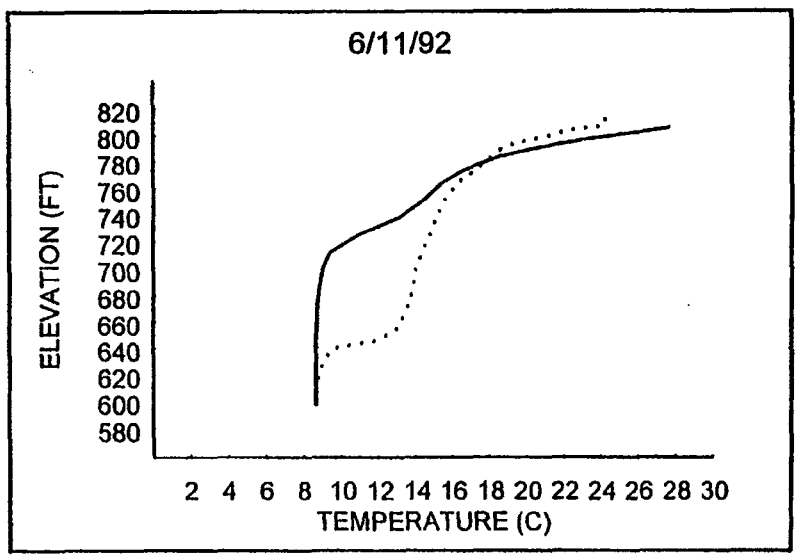


PROFILES FOR MODEL YEAR 1992



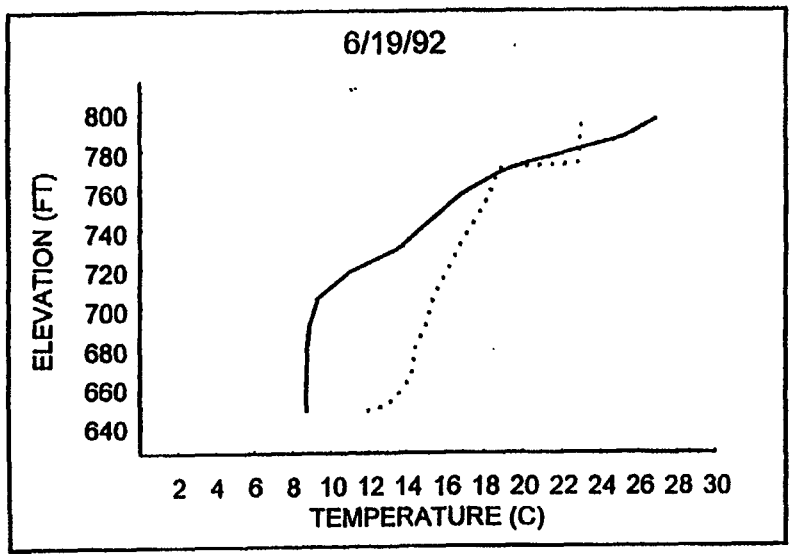


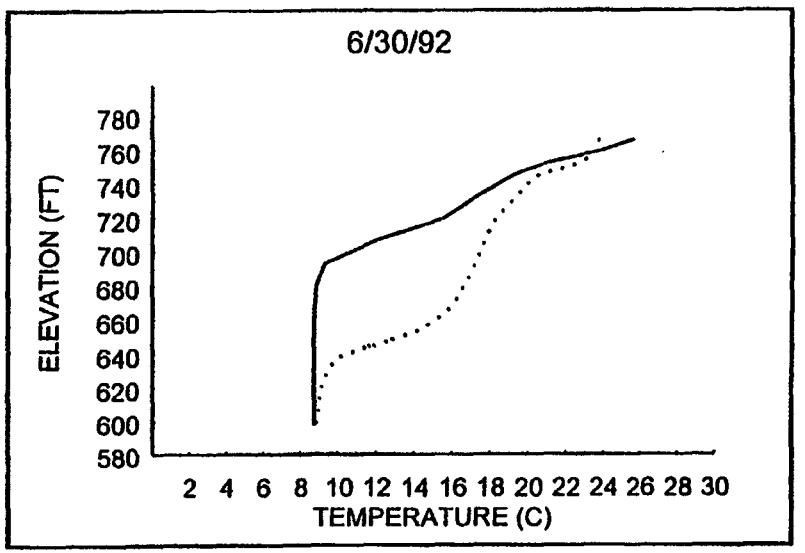


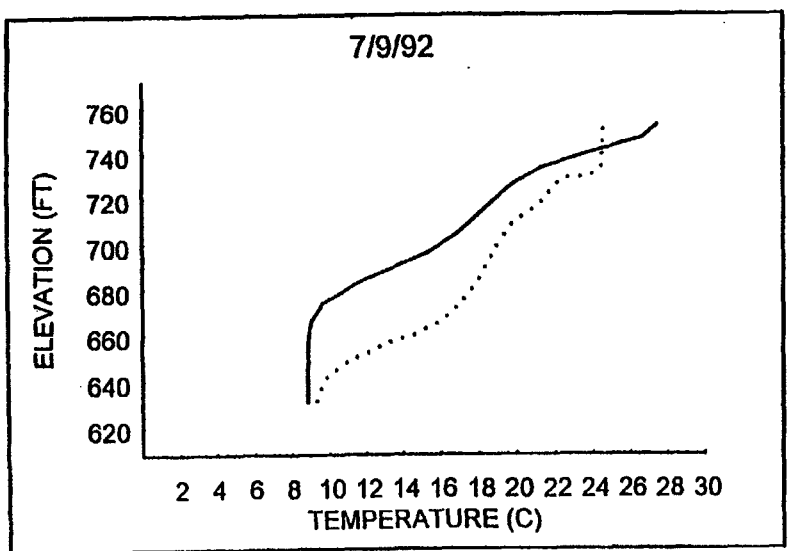


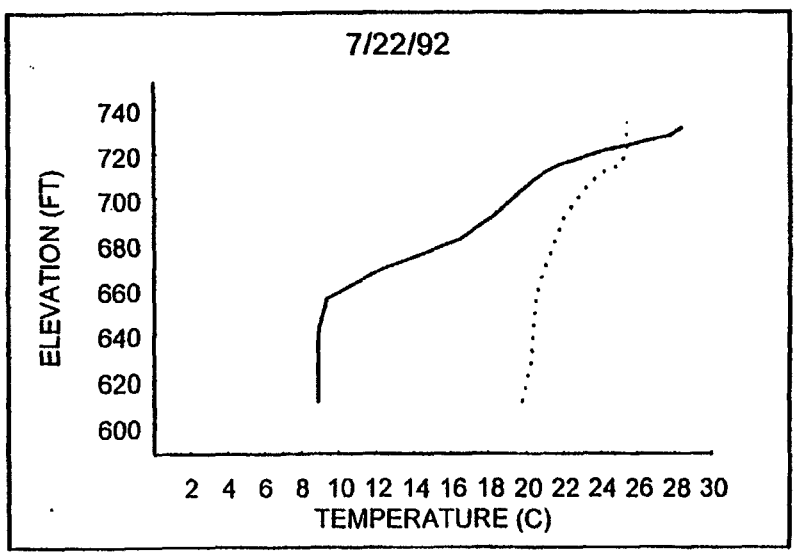
MODEL
ACTUAL

PROFILES FOR MODEL YEAR 1992



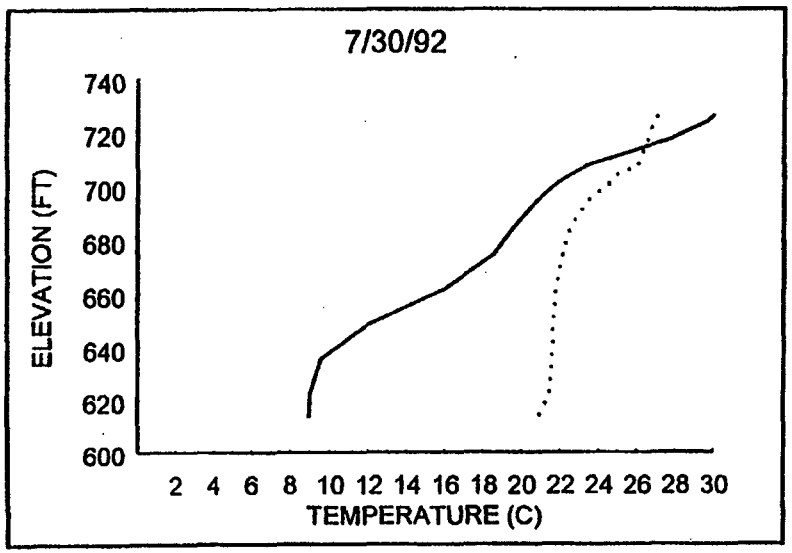


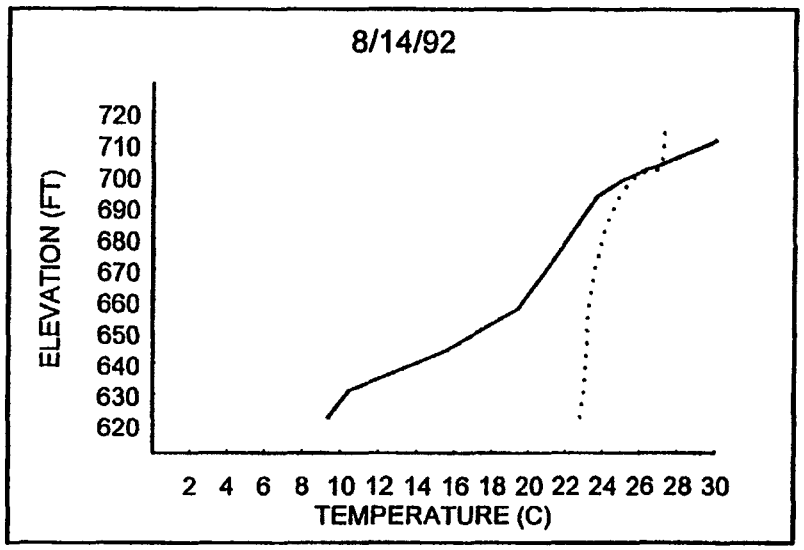


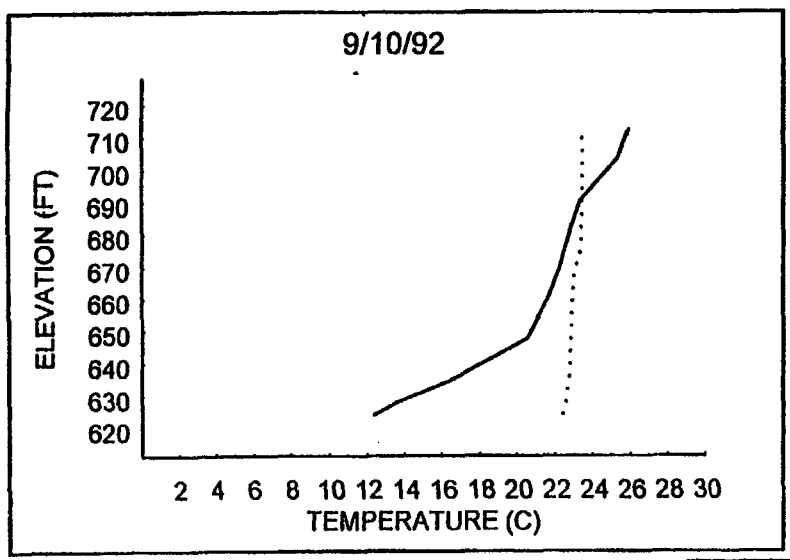


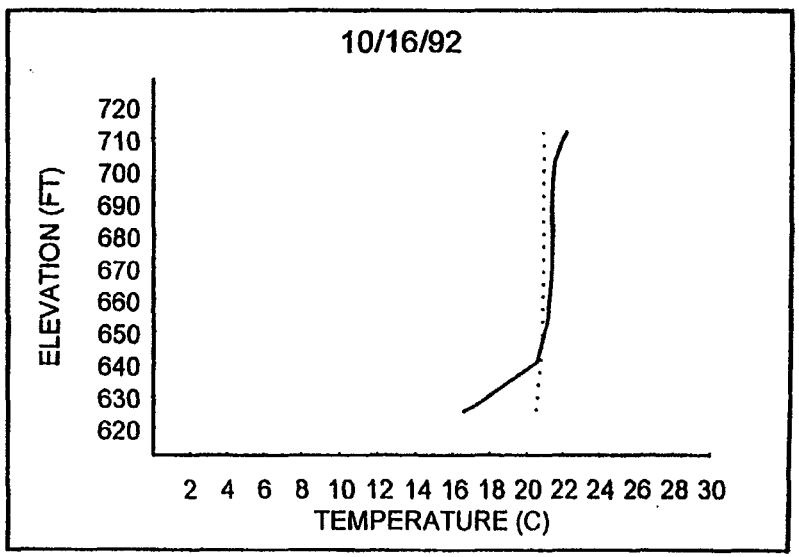
MODEL
ACTUAL

PROFILES FOR M_ _DEL YEAR 1992









MODEL
ACTUAL

PINE FLAT RVOIR

1992 STORAGE AND ELEVATI[illegible]ITH 100K MINIMUM POOL

DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	STORAGE
01-Jan	741.2	156.664	04-Mar	774.3	239.013	06-May	813.1	358.803	08-Jul	755.2	189.015	09-Sep	713.4	101.442
02-Jan	741.3	156.885	05-Mar	775.1	241.232	07-May	814.3	363.27	09-Jul	752.9	183.441	10-Sep	713.3	101.09
03-Jan	741.5	157.107	06-Mar	776.0	243.461	08-May	815.7	368.113	10-Jul	750.6	178.191	11-Sep	713.3	101.09
04-Jan	741.7	157.55	07-Mar	776.6	245.42	09-May	817.3	373.688	11-Jul	748.4	172.789	12-Sep	713.2	100.914
05-Jan	742.0	158.217	08-Mar	777.1	246.543	10-May	818.9	379.308	12-Jul	746.2	167.933	13-Sep	713.0	100.563
06-Jan	742.4	159.108	09-Mar	777.6	248.233	11-May	820.3	384.26	13-Jul	744.2	163.149	14-Sep	712.8	100.388
07-Jan	742.6	159.554	10-Mar	778.2	249.93	12-May	821.5	388.532	14-Jul	742.2	158.662	15-Sep	712.9	100.388
08-Jan	742.8	160.001	11-Mar	778.7	251.348	13-May	822.7	392.828	15-Jul	740.5	154.899	16-Sep	713.0	100.563
09-Jan	742.9	160.449	12-Mar	779.2	252.486	14-May	824.0	397.148	16-Jul	739.6	152.926	17-Sep	713.0	100.739
10-Jan	743.2	161.122	13-Mar	779.6	253.626	15-May	825.1	401.13	17-Jul	738.9	151.618	18-Sep	713.1	100.739
11-Jan	743.5	161.796	14-Mar	780.1	255.055	16-May	826.1	404.768	18-Jul	738.2	149.884	19-Sep	713.1	100.914
12-Jan	743.8	162.247	15-Mar	780.5	256.489	17-May	827.0	408.423	19-Jul	737.3	148.16	20-Sep	713.0	100.563
13-Jan	744.1	163.149	16-Mar	780.9	257.639	18-May	827.8	410.992	20-Jul	736.5	146.446	21-Sep	712.8	100.213
14-Jan	744.6	164.055	17-Mar	781.3	258.503	19-May	828.4	413.568	21-Jul	735.7	144.531	22-Sep	712.7	100.213
15-Jan	745.1	165.19	18-Mar	781.7	259.946	20-May	829.1	415.784	22-Jul	734.8	142.629	23-Sep	712.8	100.213
16-Jan	745.6	166.33	19-Mar	782.1	260.815	21-May	829.5	417.634	23-Jul	733.6	140.113	24-Sep	712.9	100.388
17-Jan	746.1	167.474	20-Mar	782.5	261.975	22-May	829.8	418.376	24-Jul	732.5	138.035	25-Sep	713.0	100.739
18-Jan	746.3	168.162	21-Mar	782.8	263.138	23-May	829.9	419.118	25-Jul	731.4	135.563	26-Sep	713.0	100.563
19-Jan	746.4	168.392	22-Mar	783.4	264.595	24-May	830.1	419.49	26-Jul	730.4	133.52	27-Sep	712.8	100.213
20-Jan	746.7	169.082	23-Mar	784.0	266.349	25-May	830.3	420.233	27-Jul	729.6	131.898	28-Sep	712.7	100.037
21-Jan	747.1	170.005	24-Mar	784.4	267.816	26-May	830.5	421.349	28-Jul	728.9	130.487	29-Sep	712.8	100.388
22-Jan	747.6	171.162	25-Mar	785.0	269.287	27-May	830.8	422.466	29-Jul	728.1	129.084	30-Sep	712.8	100.388
23-Jan	748.1	172.09	26-Mar	785.5	271.058	28-May	831.2	423.959	30-Jul	727.4	127.688	01-Oct	712.7	100.213
24-Jan	748.6	173.255	27-Mar	786.0	272.538	29-May	831.5	424.706	31-Jul	726.7	126.301	02-Oct	712.7	100.037
25-Jan	748.9	173.955	28-Mar	786.3	273.428	30-May	831.6	425.08	01-Aug	726.0	124.922	03-Oct	712.7	100.037
26-Jan	749.1	174.423	29-Mar	786.6	274.32	31-May	831.6	425.08	02-Aug	725.3	123.551	04-Oct	712.7	100.037
27-Jan	749.4	175.127	30-Mar	787.0	275.511	01-Jun	831.1	423.585	03-Aug	724.6	121.993	05-Oct	712.7	100.213
28-Jan	749.9	176.302	31-Mar	787.4	276.705	02-Jun	830.0	419.118	04-Aug	723.9	120.639	06-Oct	712.7	100.213
29-Jan	750.4	177.718	01-Apr	787.7	277.303	03-Jun	828.6	414.306	05-Aug	723.1	119.1	07-Oct	712.7	100.213
30-Jan	750.9	178.902	02-Apr	787.9	277.902	04-Jun	827.2	408.79	06-Aug	722.3	117.763	08-Oct	712.7	100.213
31-Jan	751.3	179.615	03-Apr	788.1	278.502	05-Jun	825.6	402.947	07-Aug	721.7	116.433	09-Oct	712.7	100.213
01-Feb	751.4	180.091	04-Apr	788.3	279.102	06-Jun	823.9	397.148	08-Aug	720.9	114.923	10-Oct	712.7	100.213
02-Feb	751.5	180.329	05-Apr	788.5	280.003	07-Jun	822.1	390.677	09-Aug	720.1	113.61	11-Oct	712.7	100.213
03-Feb	751.8	181.044	06-Apr	788.8	280.906	08-Jun	820.1	383.551	10-Aug	719.4	112.12	12-Oct	712.7	100.213
04-Feb	752.3	182.001	07-Apr	789.2	281.811	09-Jun	818.1	376.493	11-Aug	718.6	110.824	13-Oct	712.7	100.213
05-Feb	752.6	182.72	08-Apr	789.5	283.019	10-Jun	816.1	369.155	12-Aug	717.9	109.352	14-Oct	712.7	100.037
06-Feb	752.7	182.96	09-Apr	789.8	283.927	11-Jun	814.1	362.581	13-Aug	717.2	108.073	15-Oct	712.7	100.037
07-Feb	752.7	183.2	10-Apr	790.2	284.837	12-Jun	812.2	356.068	14-Aug	716.5	106.802	16-Oct	712.7	100.037
08-Feb	752.8	183.441	11-Apr	790.6	286.052	13-Jun	810.2	348.941	15-Aug	716.1	106.26	17-Oct	712.7	100.037
09-Feb	753.0	183.681	12-Apr	790.9	287.27	14-Jun	808.1	341.89	16-Aug	716.2	106.44	18-Oct	712.7	100.037
10-Feb	753.3	184.645	13-Apr	791.3	288.491	15-Jun	806.0	334.913	17-Aug	716.4	106.802	19-Oct	712.7	100.213
11-Feb	754.2	186.581	14-Apr	792.0	290.327	16-Jun	803.9	328.339	18-Aug	716.3	106.621	20-Oct	712.7	100.213
12-Feb	755.5	189.749	15-Apr	792.6	292.169	17-Jun	801.8	321.51	19-Aug	716.1	106.079	21-Oct	712.8	100.213
13-Feb	757.0	193.439	16-Apr	793.1	294.018	18-Jun	799.5	314.116	20-Aug	715.8	105.719	22-Oct	712.8	100.388
14-Feb	758.1	196.419	17-Apr	793.7	295.872	19-Jun	797.3	306.813	21-Aug	715.7	105.539	23-Oct	712.9	100.388
15-Feb	759.4	199.674	18-Apr	794.5	298.044	20-Jun	795.0	299.6	22-Aug	715.5	105.179	24-Oct	712.9	100.563
16-Feb	760.4	201.944	19-Apr	795.2	300.535	21-Jun	792.5	292.169	23-Aug	714.9	104.104	25-Oct	713.0	100.563
17-Feb	761.1	203.974	20-Apr	796.1	303.352	22-Jun	790.0	284.23	24-Aug	714.4	103.035	26-Oct	713.0	100.739
18-Feb	761.9	205.758	21-Apr	797.1	306.497	23-Jun	787.4	276.705	25-Aug	714.2	102.858	27-Oct	713.2	100.914
19-Feb	762.7	207.808	22-Apr	798.0	309.026	24-Jun	784.9	269.287	26-Aug	714.5	103.391	28-Oct	713.3	101.09
20-Feb	763.6	210.385	23-Apr	798.6	311.248	25-Jun	782.4	261.684	27-Aug	714.5	103.391	29-Oct	713.5	101.619
21-Feb	764.7	212.978	24-Apr	799.2	313.158	26-Jun	779.7	253.911	28-Aug	714.4	103.213	30-Oct	715.7	105.359
22-Feb	765.6	215.589	25-Apr	800.0	315.396	27-Jun	777.6	247.951	29-Aug	714.5	103.391	31-Oct	717.2	108.256
23-Feb	766.4	217.689	26-Apr	801.0	318.606	28-Jun	775.8	243.181	30-Aug	714.4	103.213	01-Nov	717.9	109.536
24-Feb	767.2	219.536	27-Apr	802.2	322.481	29-Jun	774.2	238.737	31-Aug	714.2	102.858	02-Nov	718.4	110.271
25-Feb	768.0	221.657	28-Apr	803.5	326.706	30-Jun	772.6	234.335	01-Sep	714.2	102.668	03-Nov	718.8	111.009
26-Feb	768.9	224.056	29-Apr	804.9	331.289	01-Jul	770.5	228.625	02-Sep	714.2	102.858	04-Nov	719.2	111.934
27-Feb	769.8	226.469	30-Apr	806.3	335.905	02-Jul	768.3	222.722	03-Sep	714.2	102.858	05-Nov	719.6	112.678
28-Feb	770.6	228.695	01-May	807.6	340.555	03-Jul	766.1	216.901	04-Sep	714.3	102.858	06-Nov	720.0	113.424
29-Feb	771.5	231.335	02-May	808.7	344.232	04-Jul	764.0	211.42	05-Sep	714.2	102.668	07-Nov	720.4	113.985
01-Mar	772.2	232.969	03-May	809.7	347.256	05-Jul	761.9	206.014	06-Sep	714.0	102.503	08-Nov	720.8	114.735
02-Mar	772.9	235.157	04-May	810.8	350.97	06-Jul	759.6	200.178	07-Sep	713.8	102.149	09-Nov	721.1	115.488
03-Mar	773.6	237.081	05-May	811.9	354.705	07-Jul	757.4	194.678	08-Sep	713.6	101.795	10-Nov	721.5	116.055

PINE FLAT RESERVOIR				
1992 Penstock Flows for 100k Min. Pool (CMS)				
				Dam
DATE	Penstock #1	Penstock #2	Penstock #3	Low Leve
12/12/91	0.00	0.00	11.55	0.00
12/13/91	0.00	0.00	11.44	0.00
12/14/91	0.00	0.00	11.10	0.00
12/15/91	0.00	0.00	11.03	0.00
12/16/91	0.00	0.00	10.76	0.00
12/17/91	0.00	0.00	10.36	0.00
12/18/91	0.00	0.00	10.12	0.00
12/19/91	0.00	0.00	10.08	0.00
12/20/91	0.00	0.00	10.08	0.00
12/21/91	0.00	0.00	10.10	0.00
12/22/91	0.00	0.00	8.32	0.00
12/23/91	0.00	0.00	4.52	0.00
12/24/91	0.00	0.00	2.48	0.00
12/25/91	0.00	0.00	2.48	0.00
12/26/91	0.00	0.00	2.53	0.00
12/27/91	0.00	0.00	2.61	0.00
12/28/91	0.00	0.00	2.63	0.00
12/29/91	0.00	0.00	2.60	0.00
12/30/91	0.00	0.00	2.76	0.00
12/31/91	0.00	0.00	3.33	0.00
01/01/92	0.00	0.00	3.91	0.00
01/02/92	0.00	0.00	4.36	0.00
01/03/92	0.00	0.00	4.64	0.00
01/04/92	0.00	0.00	4.40	0.00
01/05/92	0.00	0.00	3.63	0.00
01/06/92	0.00	0.00	3.37	0.00
01/07/92	0.00	0.00	3.63	0.00
01/08/92	0.00	0.00	3.68	0.00
01/09/92	0.00	0.00	3.74	0.00
01/10/92	0.00	0.00	3.78	0.00
01/11/92	0.00	0.00	3.79	0.00
01/12/92	0.00	0.00	3.81	0.00
01/13/92	0.00	0.00	3.84	0.00
01/14/92	0.00	0.00	3.85	0.00
01/15/92	0.00	0.00	3.95	0.00
01/16/92	0.00	0.00	4.16	0.00
01/17/92	0.00	0.00	4.28	0.00
01/18/92	0.00	0.00	4.29	0.00
01/19/92	0.00	0.00	4.28	0.00
01/20/92	0.00	0.00	4.25	0.00
01/21/92	0.00	0.00	4.25	0.00
01/22/92	0.00	0.00	4.25	0.00
01/23/92	0.00	0.00	4.25	0.00
01/24/92	0.00	0.00	4.26	0.00
01/25/92	0.00	0.00	4.28	0.00
01/26/92	0.00	0.00	4.29	0.00
01/27/92	0.00	0.00	4.33	0.00
01/28/92	0.00	0.00	4.39	0.00
01/29/92	0.00	0.00	4.42	0.00
01/30/92	0.00	0.00	4.42	0.00
01/31/92	0.00	0.00	4.42	0.00
02/01/92	0.00	0.00	4.42	0.00
02/02/92	0.00	0.00	4.43	0.00
02/03/92	0.00	0.00	4.42	0.00
02/04/92	0.00	0.00	4.39	0.00
02/05/92	0.00	0.00	4.39	0.00
02/06/92	0.00	0.00	4.39	0.00
02/07/92	0.00	0.00	4.39	0.00
02/08/92	0.00	0.00	4.39	0.00
02/09/92	0.00	0.00	4.32	0.00
02/10/92	0.00	0.00	3.76	0.00
02/11/92	0.00	0.00	2.68	0.00
02/12/92	0.00	0.00	1.67	0.00
02/13/92	0.00	0.00	1.15	0.00

02/14/92	0.00	0.00	1.23	0.00
02/15/92	0.00	0.00	1.37	0.00
02/16/92	0.00	0.00	1.26	0.00
02/17/92	0.00	0.00	1.12	0.00
02/18/92	0.00	0.00	0.92	0.00
02/19/92	0.00	0.05	0.83	0.00
02/20/92	0.00	0.10	0.79	0.00
02/21/92	0.00	0.15	0.69	0.00
02/22/92	0.00	0.20	0.65	0.00
02/23/92	0.00	0.40	0.89	0.00
02/24/92	0.00	0.83	1.36	0.00
02/25/92	0.00	1.24	1.51	0.00
02/26/92	0.00	1.50	1.36	0.00
02/27/92	0.00	1.71	1.14	0.00
02/28/92	0.00	2.82	0.00	0.00
02/29/92	0.00	2.80	0.00	0.00
03/01/92	0.00	2.79	0.00	0.00
03/02/92	0.00	2.78	0.00	0.00
03/03/92	0.00	2.69	0.00	0.00
03/04/92	0.00	2.55	0.00	0.00
03/05/92	0.00	2.51	0.00	0.00
03/06/92	0.00	2.51	0.00	0.00
03/07/92	0.00	2.46	0.00	0.00
03/08/92	0.00	2.33	0.00	0.00
03/09/92	0.00	2.24	0.00	0.00
03/10/92	0.00	2.24	0.00	0.00
03/11/92	0.00	2.24	0.00	0.00
03/12/92	0.00	2.36	0.00	0.00
03/13/92	0.00	2.71	0.00	0.00
03/14/92	0.00	2.95	0.00	0.00
03/15/92	0.00	2.97	0.00	0.00
03/16/92	0.00	3.04	0.00	0.00
03/17/92	0.00	3.11	0.00	0.00
03/18/92	0.00	3.13	0.00	0.00
03/19/92	0.00	3.19	0.00	0.00
03/20/92	0.00	3.21	0.00	0.00
03/21/92	0.00	3.07	0.00	0.00
03/22/92	0.00	2.33	0.00	0.00
03/23/92	0.00	1.68	0.00	0.00
03/24/92	0.00	1.98	0.00	0.00
03/25/92	0.00	2.39	0.00	0.00
03/26/92	0.00	2.49	0.00	0.00
03/27/92	0.00	8.39	0.00	0.00
03/28/92	0.00	14.89	0.00	0.00
03/29/92	0.00	15.87	0.00	0.00
03/30/92	0.00	17.45	0.00	0.00
03/31/92	0.00	21.46	0.00	0.00
04/01/92	0.00	25.56	0.00	0.00
04/02/92	0.00	28.52	0.00	0.00
04/03/92	0.00	31.36	0.00	0.00
04/04/92	0.00	33.39	0.00	0.00
04/05/92	0.00	34.80	0.00	0.00
04/06/92	0.00	36.35	0.00	0.00
04/07/92	0.00	38.18	0.00	0.00
04/08/92	0.00	39.84	0.00	0.00
04/09/92	0.37	40.88	0.00	0.00
04/10/92	6.82	35.28	0.00	0.00
04/11/92	13.35	29.16	0.00	0.00
04/12/92	20.00	22.64	0.00	0.00
04/13/92	26.68	15.67	0.00	0.00
04/14/92	33.24	8.89	0.00	0.00
04/15/92	40.18	2.16	0.00	0.00
04/16/92	43.20	0.00	0.00	0.00
04/17/92	43.92	0.00	0.00	0.00
04/18/92	44.19	0.00	0.00	0.00
04/19/92	44.36	0.00	0.00	0.00
04/20/92	44.22	0.00	0.00	0.00
04/21/92	44.03	0.00	0.00	0.00
04/22/92	44.16	0.00	0.00	0.00

04/23/92	44.86	0.00	0.00	0.00
04/24/92	45.89	0.00	0.00	0.00
04/25/92	46.63	0.00	0.00	0.00
04/26/92	46.96	0.00	0.00	0.00
04/27/92	47.35	0.00	0.00	0.00
04/28/92	47.59	0.00	0.00	0.00
04/29/92	48.15	0.00	0.00	0.00
04/30/92	48.80	0.00	0.00	0.00
05/01/92	48.95	0.00	0.00	0.00
05/02/92	48.85	0.00	0.00	0.00
05/03/92	48.13	0.00	0.00	0.00
05/04/92	47.27	0.00	0.00	0.00
05/05/92	46.98	0.00	0.00	0.00
05/06/92	47.32	0.00	0.00	0.00
05/07/92	48.04	0.00	0.00	0.00
05/08/92	48.62	0.00	0.00	0.00
05/09/92	48.86	0.00	0.00	0.00
05/10/92	39.49	0.00	9.69	0.00
05/11/92	27.81	0.00	21.06	0.00
05/12/92	16.06	0.00	32.75	0.00
05/13/92	4.16	0.00	45.92	0.00
05/14/92	0.00	0.00	50.40	0.00
05/15/92	0.00	0.00	49.85	0.00
05/16/92	0.00	0.00	49.80	0.00
05/17/92	0.00	0.00	49.74	0.00
05/18/92	0.00	0.00	49.58	0.00
05/19/92	0.00	0.00	49.36	0.00
05/20/92	0.00	0.00	49.09	0.00
05/21/92	0.00	0.00	49.53	0.00
05/22/92	0.00	0.00	50.31	0.00
05/23/92	0.00	0.00	50.69	0.00
05/24/92	0.00	0.00	50.97	0.00
05/25/92	0.00	0.00	51.17	0.00
05/26/92	0.00	0.00	51.24	0.00
05/27/92	0.00	0.00	51.17	0.00
05/28/92	0.00	0.00	54.43	0.00
05/29/92	0.00	0.00	59.38	0.00
05/30/92	0.00	0.00	61.75	0.00
05/31/92	13.76	0.00	66.54	0.00
06/01/92	58.83	0.00	56.95	0.00
06/02/92	58.83	23.49	47.26	0.00
06/03/92	66.84	33.36	37.39	0.00
06/04/92	69.97	43.69	27.06	0.00
06/05/92	70.20	54.20	16.55	0.00
06/06/92	70.75	67.99	5.91	0.00
06/07/92	70.75	70.75	6.84	0.00
06/08/92	70.75	70.75	5.59	0.00
06/09/92	70.75	70.75	2.80	0.00
06/10/92	70.75	68.82	0.00	0.00
06/11/92	70.75	63.90	0.00	0.00
06/12/92	70.75	60.81	0.00	0.00
06/13/92	70.75	58.34	0.00	0.00
06/14/92	70.75	56.51	0.00	0.00
06/15/92	70.75	54.35	0.00	0.00
06/16/92	70.75	54.08	0.00	0.00
06/17/92	70.75	56.17	0.00	0.00
06/18/92	70.75	59.88	0.00	0.00
06/19/92	70.75	63.40	0.00	0.00
06/20/92	70.75	69.07	0.00	0.00
06/21/92	70.75	70.75	1.07	0.00
06/22/92	0.00	70.75	66.12	0.00
06/23/92	0.00	70.75	82.88	0.00
06/24/92	0.00	70.75	66.88	0.00
06/25/92	4.63	66.12	70.21	0.00
06/26/92	0.00	57.24	67.21	0.00
06/27/92	0.00	48.15	55.69	0.00
06/28/92	0.00	39.30	56.65	0.00
06/29/92	0.00	30.92	63.31	0.00
06/30/92	48.18	22.57	29.60	0.00

07/01/92	56.42	14.33	33.48	0.00
07/02/92	64.77	5.98	33.50	0.00
07/03/92	0.00	70.75	33.16	0.00
07/04/92	0.00	70.75	31.42	0.00
07/05/92	30.84	0.00	70.75	0.00
07/06/92	30.86	0.00	70.75	0.00
07/07/92	29.46	0.00	70.75	0.00
07/08/92	28.78	0.00	70.75	0.00
07/09/92	28.33	0.00	70.75	0.00
07/10/92	27.92	0.00	70.75	0.00
07/11/92	28.77	0.00	70.75	0.00
07/12/92	27.93	0.00	70.75	0.00
07/13/92	26.14	0.00	70.75	0.00
07/14/92	21.70	0.00	70.75	0.00
07/15/92	8.17	0.00	70.75	0.00
07/16/92	8.26	0.00	43.34	0.00
07/17/92	10.31	0.00	43.95	0.00
07/18/92	9.53	0.00	46.54	0.00
07/19/92	10.43	0.00	44.45	0.00
07/20/92	11.48	0.00	40.72	0.00
07/21/92	13.65	0.00	36.90	0.00
07/22/92	14.82	0.00	36.28	0.00
07/23/92	52.36	0.00	0.00	0.00
07/24/92	52.47	0.00	0.00	0.00
07/25/92	44.70	0.00	0.00	0.00
07/26/92	37.05	0.00	0.00	0.00
07/27/92	37.29	0.00	0.00	0.00
07/28/92	38.30	0.00	0.00	0.00
07/29/92	38.28	0.00	0.00	0.00
07/30/92	37.55	0.00	0.00	0.00
07/31/92	37.15	0.00	0.00	0.00
08/01/92	37.18	0.00	0.00	0.00
08/02/92	36.94	0.00	0.00	0.00
08/03/92	36.24	0.00	0.00	0.00
08/04/92	36.30	0.00	0.00	0.00
08/05/92	31.34	4.27	0.00	0.00
08/06/92	0.00	33.63	0.00	0.86
08/07/92	0.00	32.33	0.00	2.62
08/08/92	0.00	31.88	0.00	3.54
08/09/92	0.00	30.85	0.00	4.41
08/10/92	0.00	30.49	0.00	5.38
08/11/92	0.00	30.09	0.00	6.38
08/12/92	0.00	29.59	0.00	7.17
08/13/92	0.00	28.32	0.00	7.30
08/14/92	0.00	24.89	0.00	7.23
08/15/92	0.00	19.97	0.00	5.63
08/16/92	0.00	16.39	0.00	4.76
08/17/92	0.00	15.84	0.00	5.00
08/18/92	0.00	15.54	0.00	5.18
08/19/92	0.00	15.58	0.00	5.33
08/20/92	0.00	15.40	0.00	5.70
08/21/92	0.00	15.84	0.00	6.01
08/22/92	0.00	16.26	0.00	6.48
08/23/92	0.00	15.99	0.00	6.85
08/24/92	0.00	14.92	0.00	6.55
08/25/92	0.00	12.44	0.00	5.72
08/26/92	0.00	9.31	0.00	4.79
08/27/92	0.00	7.60	0.00	3.66
08/28/92	0.00	6.95	0.00	3.42
08/29/92	0.00	6.83	0.00	3.52
08/30/92	0.00	6.63	0.00	3.49
08/31/92	0.00	6.47	0.00	3.48
09/01/92	0.00	6.30	0.00	3.54
09/02/92	0.00	5.99	0.00	3.44
09/03/92	0.00	5.60	0.00	3.36
09/04/92	0.00	5.35	0.00	3.28
09/05/92	0.00	5.18	0.00	3.24
09/06/92	0.00	5.00	0.00	3.27
09/07/92	0.00	4.88	0.00	3.26

09/08/92	0.00	4.85	0.00	3.37
09/09/92	0.00	4.89	0.00	3.47
09/10/92	0.00	4.73	0.00	3.50
09/11/92	0.00	4.45	0.00	3.42
09/12/92	0.00	4.24	0.00	3.40
09/13/92	0.00	4.15	0.00	3.47
09/14/92	0.00	4.08	0.00	3.54
09/15/92	0.00	4.04	0.00	3.65
09/16/92	0.00	4.14	0.00	3.90
09/17/92	0.00	4.21	0.00	4.21
09/18/92	0.00	4.20	0.00	4.37
09/19/92	0.00	4.10	0.00	4.53
09/20/92	0.00	3.97	0.00	4.66
09/21/92	0.00	3.81	0.00	4.84
09/22/92	0.00	3.64	0.00	5.13
09/23/92	0.00	3.52	0.00	5.40
09/24/92	0.00	3.29	0.00	5.60
09/25/92	0.00	2.99	0.00	5.81
09/26/92	0.00	2.73	0.00	6.08
09/27/92	0.00	2.42	0.00	6.38
09/28/92	0.00	2.05	0.00	6.66
09/29/92	0.00	1.45	0.00	7.07
09/30/92	0.00	0.91	0.00	6.06
10/01/92	0.00	0.37	0.00	4.00
10/02/92	0.00	0.83	0.00	2.30
10/03/92	0.00	0.74	0.00	2.27
10/04/92	0.00	0.69	0.00	2.31
10/05/92	0.00	0.62	0.00	2.40
10/06/92	0.00	0.56	0.00	2.46
10/07/92	0.00	0.51	0.00	2.49
10/08/92	0.00	0.43	0.00	2.55
10/09/92	0.00	0.36	0.00	2.63
10/10/92	0.00	0.27	0.00	2.73
10/11/92	0.00	0.18	0.00	2.82
10/12/92	0.00	0.06	0.00	2.94
10/13/92	0.00	0.00	0.00	3.00
10/14/92	0.00	0.00	0.00	3.00
10/15/92	0.00	0.00	0.00	3.00
10/16/92	0.00	0.00	0.00	3.00
10/17/92	0.00	0.00	0.00	3.00
10/18/92	0.00	0.00	0.00	2.82
10/19/92	0.00	0.00	0.00	2.63
10/20/92	0.00	0.00	0.00	2.52
10/21/92	0.00	0.00	0.00	2.31
10/22/92	0.00	0.00	0.00	2.17
10/23/92	0.00	0.00	0.00	2.08
10/24/92	0.00	0.00	0.00	2.04
10/25/92	0.00	0.00	0.00	1.97
10/26/92	0.00	0.00	0.00	1.70
10/27/92	0.00	0.00	0.00	1.50
10/28/92	0.00	0.00	0.00	1.52
10/29/92	0.00	0.00	0.00	1.50
10/30/92	0.00	0.00	0.00	1.23
10/31/92	0.00	0.00	0.40	0.73
11/01/92	0.00	0.00	0.68	0.69
11/02/92	0.00	0.00	0.89	0.64
11/03/92	0.00	0.00	1.18	0.36
11/04/92	0.00	0.00	1.30	0.21
11/05/92	0.00	0.00	1.51	0.02
11/06/92	0.00	0.00	1.53	0.00
11/07/92	0.00	0.00	1.53	0.00
11/08/92	0.00	0.00	1.54	0.00
11/09/92	0.00	0.00	1.64	0.00
11/10/92	0.00	0.00	2.30	0.00
11/11/92	0.00	0.00	2.89	0.00
11/12/92	0.00	0.00	2.92	0.00
11/13/92	0.00	0.00	2.92	0.00
11/14/92	0.00	0.00	2.92	0.00

PINE FLAT RESERVOIR

1992 PORT RELEASES (100k Min. Pool)

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3	Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5	Flow
12/12/91	0.00	0.00	0.00	0.00	11.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.55
12/13/91	0.00	0.00	0.00	0.00	11.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.44
12/14/91	0.00	0.00	0.00	0.00	11.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.10
12/15/91	0.00	0.00	0.00	0.00	11.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.03
12/16/91	0.00	0.00	0.00	0.00	10.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.76
12/17/91	0.00	0.00	0.00	0.00	10.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.36
12/18/91	0.00	0.00	0.00	0.00	10.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.12
12/19/91	0.00	0.00	0.00	0.00	10.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.08
12/20/91	0.00	0.00	0.00	0.00	10.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.08
12/21/91	0.00	0.00	0.00	0.00	10.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.10
12/22/91	0.00	0.00	0.00	0.00	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.32
12/23/91	0.00	0.00	0.00	0.00	4.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.52
12/24/91	0.00	0.00	0.00	0.00	2.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.48
12/25/91	0.00	0.00	0.00	0.00	2.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.48
12/26/91	0.00	0.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.53
12/27/91	0.00	0.00	0.00	0.00	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.61
12/28/91	0.00	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63
12/29/91	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60
12/30/91	0.00	0.00	0.00	0.00	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76
12/31/91	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33
01/01/92	0.00	0.00	0.00	0.00	3.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.91
01/02/92	0.00	0.00	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.36
01/03/92	0.00	0.00	0.00	0.00	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.64
01/04/92	0.00	0.00	0.00	0.00	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.40
01/05/92	0.00	0.00	0.00	0.00	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.63
01/06/92	0.00	0.00	0.00	0.00	3.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.37
01/07/92	0.00	0.00	0.00	0.00	3.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.63
01/08/92	0.00	0.00	0.00	0.00	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.68
01/09/92	0.00	0.00	0.00	0.00	3.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.74
01/10/92	0.00	0.00	0.00	0.00	3.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.78
01/11/92	0.00	0.00	0.00	0.00	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.79
01/12/92	0.00	0.00	0.00	0.00	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.81
01/13/92	0.00	0.00	0.00	0.00	3.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.84
01/14/92	0.00	0.00	0.00	0.00	3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85
01/15/92	0.00	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.95
01/16/92	0.00	0.00	0.00	0.00	4.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16
01/17/92	0.00	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.28
01/18/92	0.00	0.00	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.29
01/19/92	0.00	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.28
01/20/92	0.00	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.25
01/21/92	0.00	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.25
01/22/92	0.00	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.25
01/23/92	0.00	0.00	0.00	0.00	4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.25
01/24/92	0.00	0.00	0.00	0.00	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.26
01/25/92	0.00	0.00	0.00	0.00	4.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.28
01/26/92	0.00	0.00	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.29
01/27/92	0.00	0.00	0.00	0.00	4.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.33
01/28/92	0.00	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39
01/29/92	0.00	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.42
01/30/92	0.00	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.42
01/31/92	0.00	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.42
02/01/92	0.00	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.42
02/02/92	0.00	0.00	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.43
02/03/92	0.00	0.00	0.00	0.00	4.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.42
02/04/92	0.00	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39
02/05/92	0.00	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39
02/06/92	0.00	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39
02/07/92	0.00	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39
02/08/92	0.00	0.00	0.00	0.00	4.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39
02/09/92	0.00	0.00	0.00	0.00	4.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.32
02/10/92	0.00	0.00	0.00	0.00	3.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.76
02/11/92	0.00	0.00	0.00	0.00	2.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.68

NOTE: Flows Are CMS With Port Adjustments Made Daily

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
02/12/92	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.67
02/13/92	0.00	0.00	0.00	0.00	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.15
02/14/92	0.00	0.00	0.00	0.00	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.23
02/15/92	0.00	0.00	0.00	0.00	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.37
02/16/92	0.00	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.26
02/17/92	0.00	0.00	0.00	0.00	1.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.12
02/18/92	0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.92
02/19/92	0.00	0.00	0.00	0.00	0.83	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
02/20/92	0.00	0.00	0.00	0.00	0.79	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.89
02/21/92	0.00	0.00	0.00	0.00	0.69	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.84
02/22/92	0.00	0.00	0.00	0.00	0.65	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/23/92	0.00	0.00	0.00	0.00	0.89	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.29
02/24/92	0.00	0.00	0.00	0.00	1.36	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.19
02/25/92	0.00	0.00	0.00	0.00	1.51	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.75
02/26/92	0.00	0.00	0.00	0.00	1.36	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.86
02/27/92	0.00	0.00	0.00	0.00	1.14	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.85
02/28/92	0.00	0.00	0.00	0.00	0.00	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.82
02/29/92	0.00	0.00	0.00	0.00	0.00	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.80
03/01/92	0.00	0.00	0.00	0.00	0.00	2.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.79
03/02/92	0.00	0.00	0.00	0.00	0.00	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.78
03/03/92	0.00	0.00	0.00	0.00	0.00	2.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.69
03/04/92	0.00	0.00	0.00	0.00	0.00	2.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.55
03/05/92	0.00	0.00	0.00	0.00	0.00	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.51
03/06/92	0.00	0.00	0.00	0.00	0.00	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.51
03/07/92	0.00	0.00	0.00	0.00	0.00	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.46
03/08/92	0.00	0.00	0.00	0.00	0.00	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.33
03/09/92	0.00	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/10/92	0.00	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/11/92	0.00	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
03/12/92	0.00	0.00	0.00	0.00	0.00	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.36
03/13/92	0.00	0.00	0.00	0.00	0.00	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.71
03/14/92	0.00	0.00	0.00	0.00	0.00	2.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.95
03/15/92	0.00	0.00	0.00	0.00	0.00	2.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.97
03/16/92	0.00	0.00	0.00	0.00	0.00	3.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.04
03/17/92	0.00	0.00	0.00	0.00	0.00	3.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.11
03/18/92	0.00	0.00	0.00	0.00	0.00	3.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.13
03/19/92	0.00	0.00	0.00	0.00	0.00	3.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.19
03/20/92	0.00	0.00	0.00	0.00	0.00	3.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.21
03/21/92	0.00	0.00	0.00	0.00	0.00	3.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.07
03/22/92	0.00	0.00	0.00	0.00	0.00	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.33
03/23/92	0.00	0.00	0.00	0.00	0.00	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.68
03/24/92	0.00	0.00	0.00	0.00	0.00	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.98
03/25/92	0.00	0.00	0.00	0.00	0.00	2.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.39
03/26/92	0.00	0.00	0.00	0.00	0.00	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.49
03/27/92	0.00	0.00	0.00	0.00	0.00	8.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.39
03/28/92	0.00	0.00	0.00	0.00	0.00	14.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00		14.89
03/29/92	0.00	0.00	0.00	0.00	0.00	15.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00		15.87
03/30/92	0.00	0.00	0.00	0.00	0.00	17.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00		17.45
03/31/92	0.00	0.00	0.00	0.00	0.00	21.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00		21.46
04/01/92	0.00	0.00	0.00	0.00	0.00	25.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00		25.56
04/02/92	0.00	0.00	0.00	0.00	0.00	28.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00		28.52
04/03/92	0.00	0.00	0.00	0.00	0.00	31.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00		31.36
04/04/92	0.00	0.00	0.00	0.00	0.00	33.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00		33.39
04/05/92	0.00	0.00	0.00	0.00	0.00	34.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00		34.80
04/06/92	0.00	0.00	0.00	0.00	0.00	36.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00		36.35
04/07/92	0.00	0.00	0.00	0.00	0.00	38.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00		38.18
04/08/92	0.00	0.00	0.00	0.00	0.00	39.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00		39.84
04/09/92	0.00	0.00	0.00	0.00	0.00	40.88	0.37	0.00	0.00	0.00	0.00	0.00	0.00		41.25
04/10/92	0.00	0.00	0.00	0.00	0.00	35.28	6.82	0.00	0.00	0.00	0.00	0.00	0.00		42.10
04/11/92	0.00	0.00	0.00	0.00	0.00	29.16	13.35	0.00	0.00	0.00	0.00	0.00	0.00		42.51
04/12/92	0.00	0.00	0.00	0.00	0.00	22.64	20.00	0.00	0.00	0.00	0.00	0.00	0.00		42.64
04/13/92	0.00	0.00	0.00	0.00	0.00	15.67	26.68	0.00	0.00	0.00	0.00	0.00	0.00		42.35
04/14/92	0.00	0.00	0.00	0.00	0.00	8.89	33.24	0.00	0.00	0.00	0.00	0.00	0.00		42.13
04/15/92	0.00	0.00	0.00	0.00	0.00	2.16	40.18	0.00	0.00	0.00	0.00	0.00	0.00		42.34
04/16/92	0.00	0.00	0.00	0.00	0.00	0.00	43.20	0.00	0.00	0.00	0.00	0.00	0.00		43.20

NOTE: Flows Are CMS With Port Adjustments Made Daily

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
04/17/92	0.00	0.00	0.00	0.00	0.00	0.00	43.92	0.00	0.00	0.00	0.00	0.00	0.00		43.92
04/18/92	0.00	0.00	0.00	0.00	0.00	0.00	44.19	0.00	0.00	0.00	0.00	0.00	0.00		44.19
04/19/92	0.00	0.00	0.00	0.00	0.00	0.00	44.36	0.00	0.00	0.00	0.00	0.00	0.00		44.36
04/20/92	0.00	0.00	0.00	0.00	0.00	0.00	44.22	0.00	0.00	0.00	0.00	0.00	0.00		44.22
04/21/92	0.00	0.00	0.00	0.00	0.00	0.00	44.03	0.00	0.00	0.00	0.00	0.00	0.00		44.03
04/22/92	0.00	0.00	0.00	0.00	0.00	0.00	44.16	0.00	0.00	0.00	0.00	0.00	0.00		44.16
04/23/92	0.00	0.00	0.00	0.00	0.00	0.00	44.86	0.00	0.00	0.00	0.00	0.00	0.00		44.86
04/24/92	0.00	0.00	0.00	0.00	0.00	0.00	45.89	0.00	0.00	0.00	0.00	0.00	0.00		45.89
04/25/92	0.00	0.00	0.00	0.00	0.00	0.00	46.63	0.00	0.00	0.00	0.00	0.00	0.00		46.63
04/26/92	0.00	0.00	0.00	0.00	0.00	0.00	46.96	0.00	0.00	0.00	0.00	0.00	0.00		46.96
04/27/92	0.00	0.00	0.00	0.00	0.00	0.00	47.35	0.00	0.00	0.00	0.00	0.00	0.00		47.35
04/28/92	0.00	0.00	0.00	0.00	0.00	0.00	47.59	0.00	0.00	0.00	0.00	0.00	0.00		47.59
04/29/92	0.00	0.00	0.00	0.00	0.00	0.00	48.15	0.00	0.00	0.00	0.00	0.00	0.00		48.15
04/30/92	0.00	0.00	0.00	0.00	0.00	0.00	48.80	0.00	0.00	0.00	0.00	0.00	0.00		48.80
05/01/92	0.00	0.00	0.00	0.00	0.00	0.00	48.95	0.00	0.00	0.00	0.00	0.00	0.00		48.95
05/02/92	0.00	0.00	0.00	0.00	0.00	0.00	48.85	0.00	0.00	0.00	0.00	0.00	0.00		48.85
05/03/92	0.00	0.00	0.00	0.00	0.00	0.00	48.13	0.00	0.00	0.00	0.00	0.00	0.00		48.13
05/04/92	0.00	0.00	0.00	0.00	0.00	0.00	47.27	0.00	0.00	0.00	0.00	0.00	0.00		47.27
05/05/92	0.00	0.00	0.00	0.00	0.00	0.00	46.98	0.00	0.00	0.00	0.00	0.00	0.00		46.98
05/06/92	0.00	0.00	0.00	0.00	0.00	0.00	47.32	0.00	0.00	0.00	0.00	0.00	0.00		47.32
05/07/92	0.00	0.00	0.00	0.00	0.00	0.00	48.04	0.00	0.00	0.00	0.00	0.00	0.00		48.04
05/08/92	0.00	0.00	0.00	0.00	0.00	0.00	48.62	0.00	0.00	0.00	0.00	0.00	0.00		48.62
05/09/92	0.00	0.00	0.00	0.00	0.00	0.00	48.86	0.00	0.00	0.00	0.00	0.00	0.00		48.86
05/10/92	0.00	0.00	0.00	0.00	0.00	0.00	39.49	9.69	0.00	0.00	0.00	0.00	0.00		49.18
05/11/92	0.00	0.00	0.00	0.00	0.00	0.00	27.81	21.06	0.00	0.00	0.00	0.00	0.00		48.87
05/12/92	0.00	0.00	0.00	0.00	0.00	0.00	16.06	32.75	0.00	0.00	0.00	0.00	0.00		48.81
05/13/92	0.00	0.00	0.00	0.00	0.00	0.00	4.16	45.92	0.00	0.00	0.00	0.00	0.00		50.08
05/14/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.40	0.00	0.00	0.00	0.00	0.00		50.40
05/15/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.85	0.00	0.00	0.00	0.00	0.00		49.85
05/16/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.80	0.00	0.00	0.00	0.00	0.00		49.80
05/17/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.74	0.00	0.00	0.00	0.00	0.00		49.74
05/18/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.58	0.00	0.00	0.00	0.00	0.00		49.58
05/19/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.36	0.00	0.00	0.00	0.00	0.00		49.36
05/20/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.09	0.00	0.00	0.00	0.00	0.00		49.09
05/21/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.53	0.00	0.00	0.00	0.00	0.00		49.53
05/22/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.31	0.00	0.00	0.00	0.00	0.00		50.31
05/23/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.69	0.00	0.00	0.00	0.00	0.00		50.69
05/24/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.97	0.00	0.00	0.00	0.00	0.00		50.97
05/25/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.17	0.00	0.00	0.00	0.00	0.00		51.17
05/26/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.24	0.00	0.00	0.00	0.00	0.00		51.24
05/27/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.17	0.00	0.00	0.00	0.00	0.00		51.17
05/28/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.43	0.00	0.00	0.00	0.00	0.00		54.43
05/29/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.38	0.00	0.00	0.00	0.00	0.00		59.38
05/30/92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.75	0.00	0.00	0.00	0.00	0.00		61.75
05/31/92	0.00	0.00	0.00	0.00	0.00	0.00	13.76	66.54	0.00	0.00	0.00	0.00	0.00		80.30
06/01/92	0.00	0.00	0.00	0.00	0.00	0.00	58.83	56.95	0.00	0.00	0.00	0.00	0.00		115.78
06/02/92	0.00	0.00	0.00	0.00	0.00	23.49	58.83	47.26	0.00	0.00	0.00	0.00	0.00		129.58
06/03/92	0.00	0.00	0.00	0.00	0.00	33.36	66.84	37.39	0.00	0.00	0.00	0.00	0.00		137.59
06/04/92	0.00	0.00	0.00	0.00	0.00	43.69	69.97	27.06	0.00	0.00	0.00	0.00	0.00		140.72
06/05/92	0.00	0.00	0.00	0.00	0.00	54.20	70.20	16.55	0.00	0.00	0.00	0.00	0.00		140.95
06/06/92	0.00	0.00	0.00	0.00	0.00	67.99	70.75	5.91	0.00	0.00	0.00	0.00	0.00		144.65
06/07/92	0.00	0.00	0.00	0.00	0.00	70.75	70.75	6.84	0.00	0.00	0.00	0.00	0.00		148.34
06/08/92	0.00	0.00	0.00	0.00	0.00	70.75	70.75	5.59	0.00	0.00	0.00	0.00	0.00		147.09
06/09/92	0.00	0.00	0.00	0.00	2.80	70.75	70.75	0.00	0.00	0.00	0.00	0.00	0.00		144.30
06/10/92	0.00	0.00	0.00	0.00	0.00	68.82	70.75	0.00	0.00	0.00	0.00	0.00	0.00		139.57
06/11/92	0.00	0.00	0.00	0.00	0.00	63.90	70.75	0.00	0.00	0.00	0.00	0.00	0.00		134.65
06/12/92	0.00	0.00	0.00	0.00	0.00	60.81	70.75	0.00	0.00	0.00	0.00	0.00	0.00		131.56
06/13/92	0.00	0.00	0.00	0.00	0.00	58.34	70.75	0.00	0.00	0.00	0.00	0.00	0.00		129.09
06/14/92	0.00	0.00	0.00	0.00	0.00	56.51	70.75	0.00	0.00	0.00	0.00	0.00	0.00		127.26
06/15/92	0.00	0.00	0.00	0.00	0.00	54.35	70.75	0.00	0.00	0.00	0.00	0.00	0.00		125.10
06/16/92	0.00	0.00	0.00	0.00	0.00	54.08	70.75	0.00	0.00	0.00	0.00	0.00	0.00		124.83
06/17/92	0.00	0.00	0.00	0.00	0.00	56.17	70.75	0.00	0.00	0.00	0.00	0.00	0.00		126.92
06/18/92	0.00	0.00	0.00	0.00	0.00	59.88	70.75	0.00	0.00	0.00	0.00	0.00	0.00		130.63
06/19/92	0.00	0.00	0.00	0.00	0.00	63.40	70.75	0.00	0.00	0.00	0.00	0.00	0.00		134.15
06/20/92	0.00	0.00	0.00	0.00	0.00	69.07	70.75	0.00	0.00	0.00	0.00	0.00	0.00		139.82

NOTE: Flows Are CMS With Port Adjustments Made Daily

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3	Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5	Flow
06/21/92	0.00	0.00	0.00	0.00	1.07	70.75	70.75	0.00	0.00	0.00	0.00	0.00	0.00	142.57
06/22/92	0.00	0.00	0.00	0.00	66.12	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	136.87
06/23/92	0.00	0.00	0.00	0.00	62.88	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	133.63
06/24/92	0.00	0.00	0.00	0.00	66.88	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	137.63
06/25/92	0.00	0.00	0.00	4.63	70.21	66.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.96
06/26/92	0.00	0.00	0.00	0.00	67.21	57.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	124.45
06/27/92	0.00	0.00	0.00	0.00	55.69	48.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	103.84
06/28/92	0.00	0.00	0.00	0.00	56.65	39.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.95
06/29/92	0.00	0.00	0.00	0.00	63.31	30.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.23
06/30/92	0.00	0.00	0.00	48.18	29.60	22.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.35
07/01/92	0.00	0.00	0.00	56.42	33.48	14.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	104.23
07/02/92	0.00	0.00	0.00	64.77	33.50	5.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	104.25
07/03/92	0.00	0.00	0.00	0.00	33.16	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	103.91
07/04/92	0.00	0.00	0.00	0.00	31.42	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	102.17
07/05/92	0.00	0.00	0.00	30.84	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	101.59
07/06/92	0.00	0.00	0.00	30.86	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	101.61
07/07/92	0.00	0.00	0.00	29.46	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.21
07/08/92	0.00	0.00	0.00	28.78	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.53
07/09/92	0.00	0.00	0.00	28.33	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.08
07/10/92	0.00	0.00	0.00	27.92	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.67
07/11/92	0.00	0.00	0.00	28.77	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.52
07/12/92	0.00	0.00	0.00	27.93	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.68
07/13/92	0.00	0.00	0.00	26.14	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.89
07/14/92	0.00	0.00	0.00	21.70	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.45
07/15/92	0.00	0.00	0.00	8.17	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.92
07/16/92	0.00	0.00	0.00	8.26	43.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.60
07/17/92	0.00	0.00	0.00	10.31	43.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.26
07/18/92	0.00	0.00	0.00	9.53	46.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.07
07/19/92	0.00	0.00	0.00	10.43	44.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.88
07/20/92	0.00	0.00	0.00	11.48	40.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.20
07/21/92	0.00	0.00	0.00	13.65	36.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.55
07/22/92	0.00	0.00	0.00	14.82	36.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.10
07/23/92	0.00	0.00	0.00	52.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.36
07/24/92	0.00	0.00	0.00	52.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.47
07/25/92	0.00	0.00	0.00	44.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.70
07/26/92	0.00	0.00	0.00	37.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.05
07/27/92	0.00	0.00	0.00	37.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.29
07/28/92	0.00	0.00	0.00	38.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.30
07/29/92	0.00	0.00	0.00	38.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.28
07/30/92	0.00	0.00	0.00	37.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.55
07/31/92	0.00	0.00	0.00	37.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.15
08/01/92	0.00	0.00	0.00	37.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.18
08/02/92	0.00	0.00	0.00	36.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.94
08/03/92	0.00	0.00	0.00	36.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.24
08/04/92	0.00	0.00	0.00	36.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.30
08/05/92	0.00	0.00	4.27	31.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.61
08/06/92	0.86	0.00	33.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.49
08/07/92	2.62	0.00	32.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.95
08/08/92	3.54	0.00	31.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.42
08/09/92	4.41	0.00	30.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.26
08/10/92	5.38	0.00	30.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.87
08/11/92	6.38	0.00	30.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.47
08/12/92	7.17	0.00	29.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.76
08/13/92	7.30	0.00	28.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.62
08/14/92	7.23	0.00	24.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.12
08/15/92	5.63	0.00	19.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.60
08/16/92	4.76	0.00	16.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.15
08/17/92	5.00	0.00	15.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.84
08/18/92	5.18	0.00	15.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.72
08/19/92	5.33	0.00	15.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.91
08/20/92	5.70	0.00	15.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.10
08/21/92	6.01	0.00	15.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.85
08/22/92	6.48	0.00	16.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.74
08/23/92	6.85	0.00	15.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.84
08/24/92	6.55	0.00	14.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.47

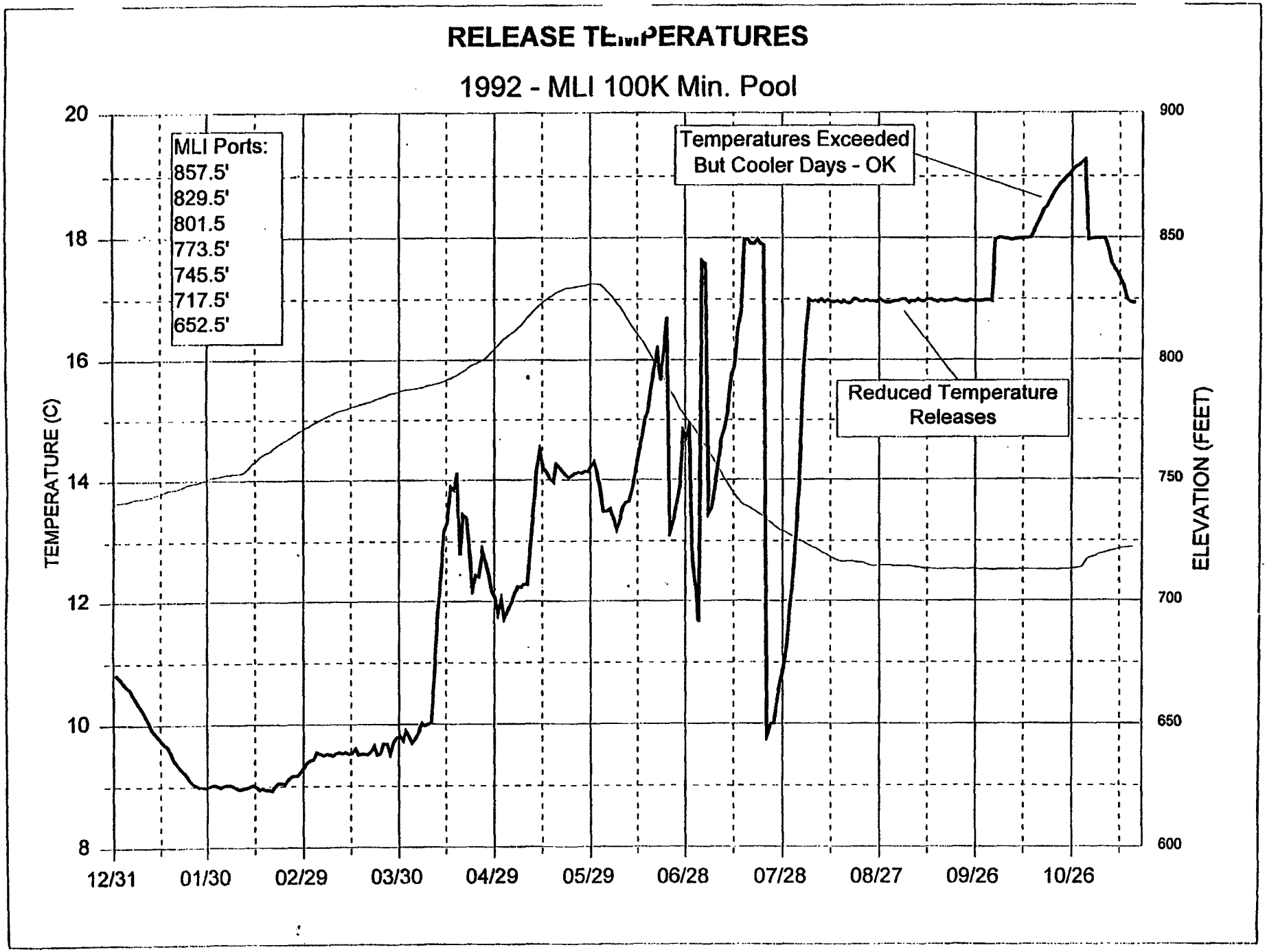
NOTE: Flows Are CMS With Port Adjustments Made Daily

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
08/25/92	5.72	0.00	12.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		18.16
08/26/92	4.79	0.00	9.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		14.10
08/27/92	3.66	0.00	7.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		11.26
08/28/92	3.42	0.00	6.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.37
08/29/92	3.52	0.00	6.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.35
08/30/92	3.49	0.00	6.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		10.12
08/31/92	3.48	0.00	6.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.95
09/01/92	3.54	0.00	6.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.84
09/02/92	3.44	0.00	5.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		9.43
09/03/92	3.36	0.00	5.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.96
09/04/92	3.28	0.00	5.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.63
09/05/92	3.24	0.00	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.42
09/06/92	3.27	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.27
09/07/92	3.26	0.00	4.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.14
09/08/92	3.37	0.00	4.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.22
09/09/92	3.47	0.00	4.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.36
09/10/92	3.50	0.00	4.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.23
09/11/92	3.42	0.00	4.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.87
09/12/92	3.40	0.00	4.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.64
09/13/92	3.47	0.00	4.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.62
09/14/92	3.54	0.00	4.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.62
09/15/92	3.65	0.00	4.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.69
09/16/92	3.90	0.00	4.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.04
09/17/92	4.21	0.00	4.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.42
09/18/92	4.37	0.00	4.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.57
09/19/92	4.53	0.00	4.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.63
09/20/92	4.66	0.00	3.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.63
09/21/92	4.84	0.00	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.65
09/22/92	5.13	0.00	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.77
09/23/92	5.40	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.92
09/24/92	5.60	0.00	3.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.89
09/25/92	5.81	0.00	2.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.80
09/26/92	6.08	0.00	2.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.81
09/27/92	6.38	0.00	2.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.80
09/28/92	6.66	0.00	2.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.71
09/29/92	7.07	0.00	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.52
09/30/92	6.06	0.00	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.97
10/01/92	4.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.37
10/02/92	2.30	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.13
10/03/92	2.27	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.01
10/04/92	2.31	0.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/05/92	2.40	0.00	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.02
10/06/92	2.46	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.02
10/07/92	2.49	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/08/92	2.55	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.98
10/09/92	2.63	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.99
10/10/92	2.73	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/11/92	2.82	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/12/92	2.94	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/13/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/14/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/15/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/16/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/17/92	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.00
10/18/92	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.82
10/19/92	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.63
10/20/92	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.52
10/21/92	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.31
10/22/92	2.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.17
10/23/92	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.08
10/24/92	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.04
10/25/92	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.97
10/26/92	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.70
10/27/92	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.50
10/28/92	1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.52

NOTE: Flows Are CMS With Port Adjustments Made Daily

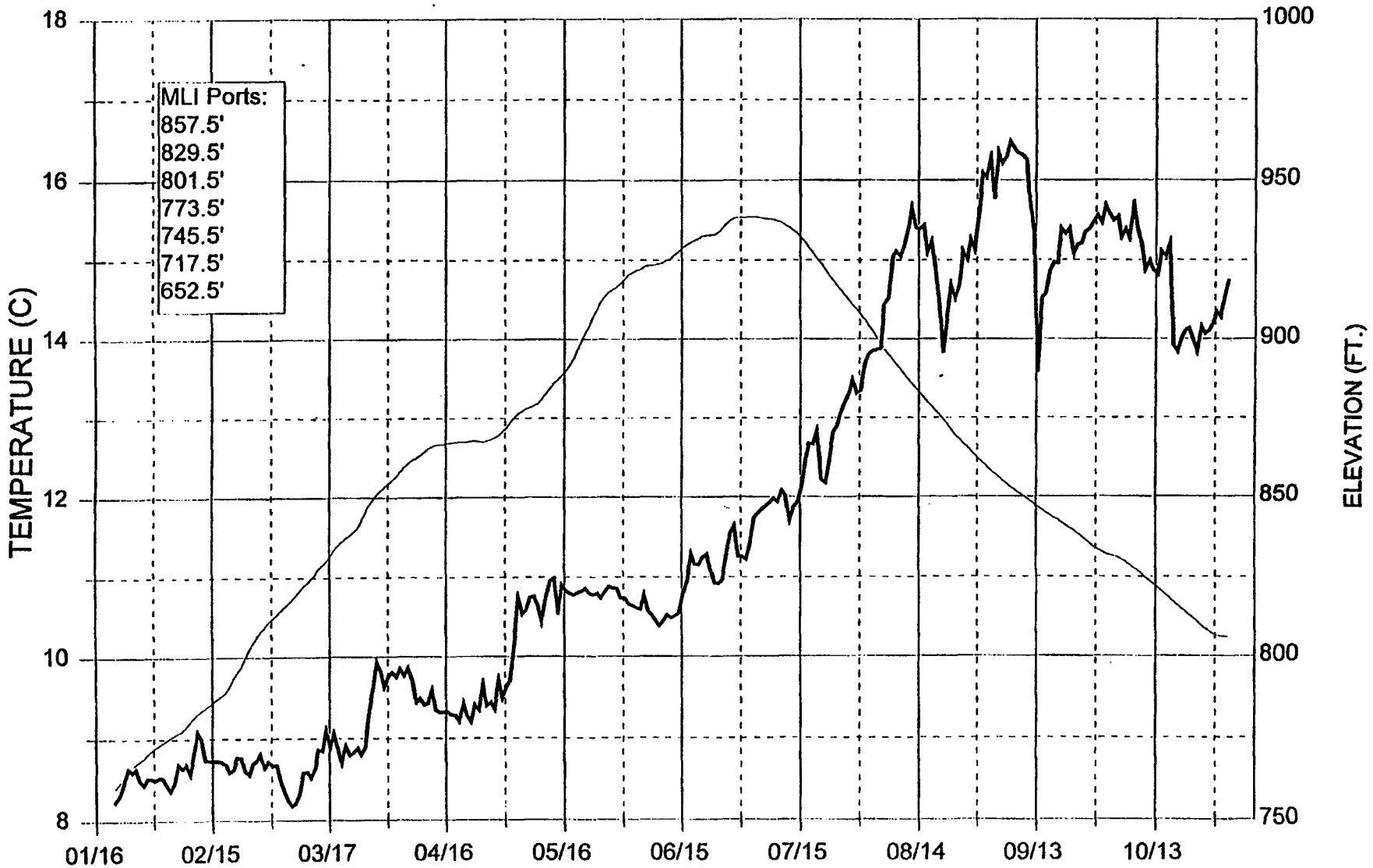
	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
10/29/92	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.50
10/30/92	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.23
10/31/92	0.73	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.13
11/01/92	0.69	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.37
11/02/92	0.64	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/03/92	0.36	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.54
11/04/92	0.21	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.51
11/05/92	0.02	0.00	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/06/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/07/92	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
11/08/92	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.54
11/09/92	0.00	0.00	0.00	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.64
11/10/92	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.30
11/11/92	0.00	0.00	0.00	2.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.89
11/12/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92
11/13/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92
11/14/92	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.92

NOTE: Flows Are CMS With Port Adjustments Made Daily

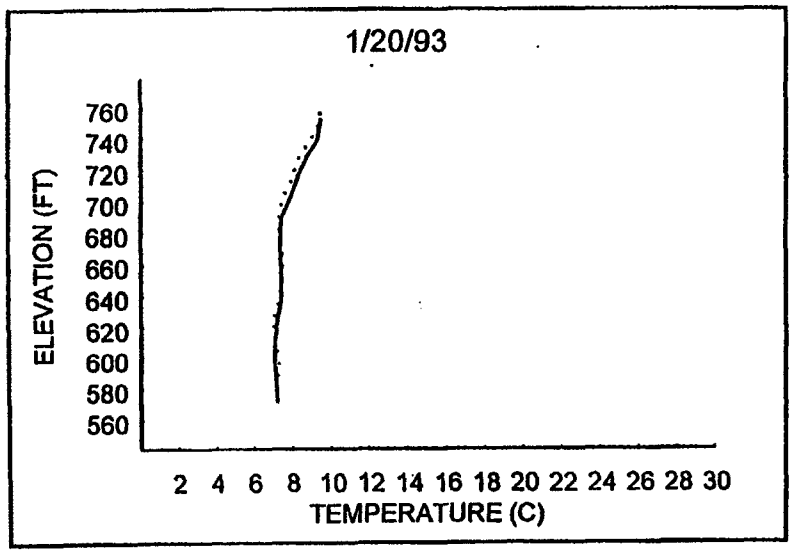

RELEASE TEMPERATURES
1992 - MLI 100K Min. Pool
MLI Ports:
857.5'
829.5'
801.5
773.5'
745.5'
717.5'
652.5'
Temperatures Exceeded
But Cooler Days - OK
Reduced Temperature
Releases
TEMPERATURE (C)
ELEVATION (FEET)
20
18
16
14
12
10
8
900
850
800
750
700
650
600
12/31
01/30
02/29
03/30
04/29
05/29
06/28
07/28
08/27
09/26
10/26

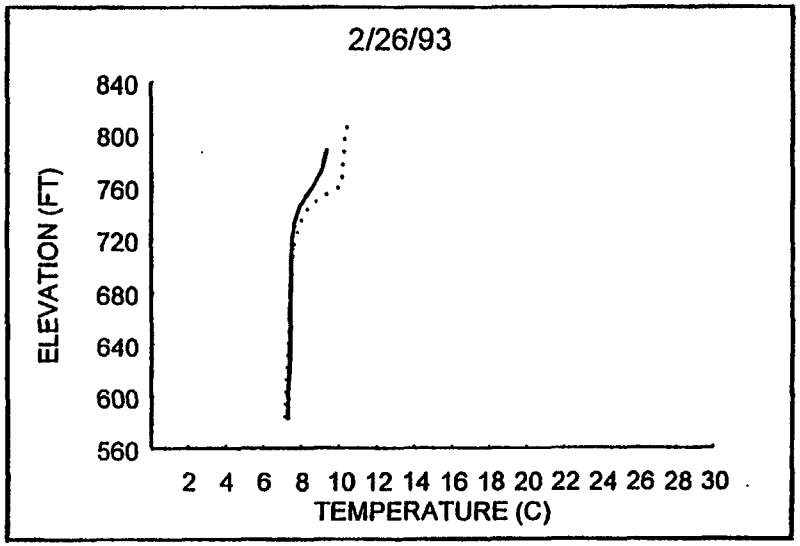
RELEASE TEMPERATURES

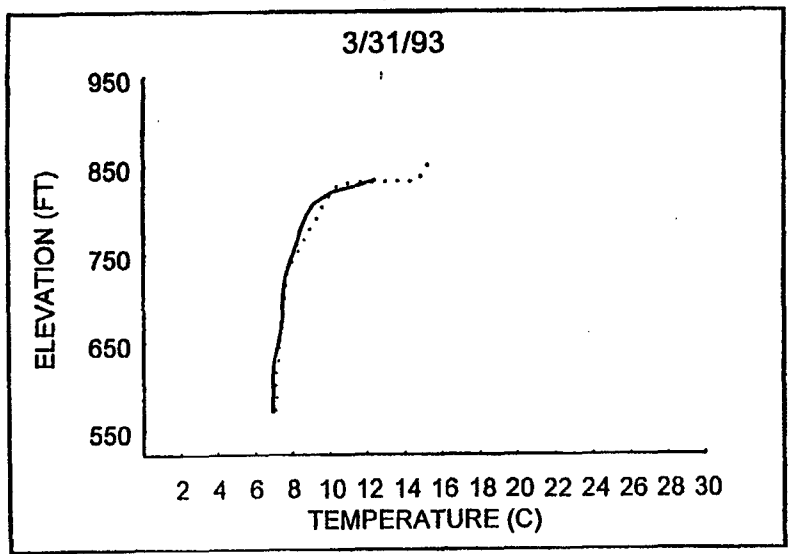
1993 - MLI

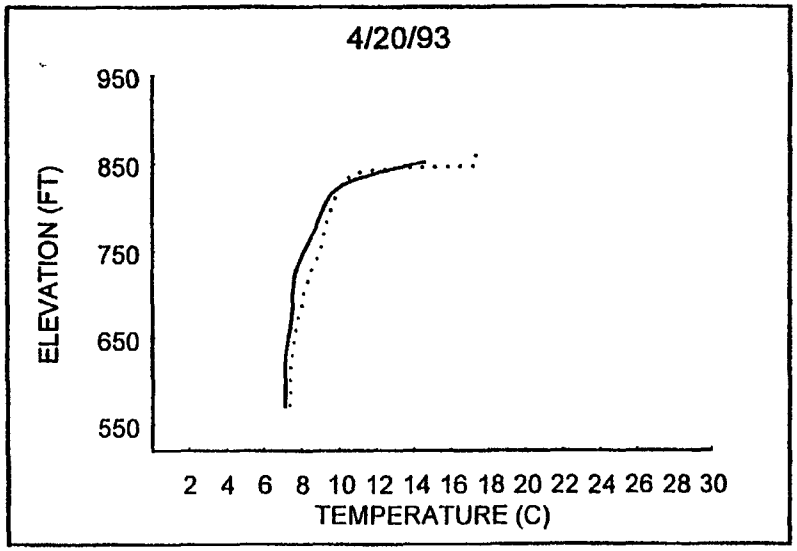


PROFILES FOR MODEL YEAR 1993



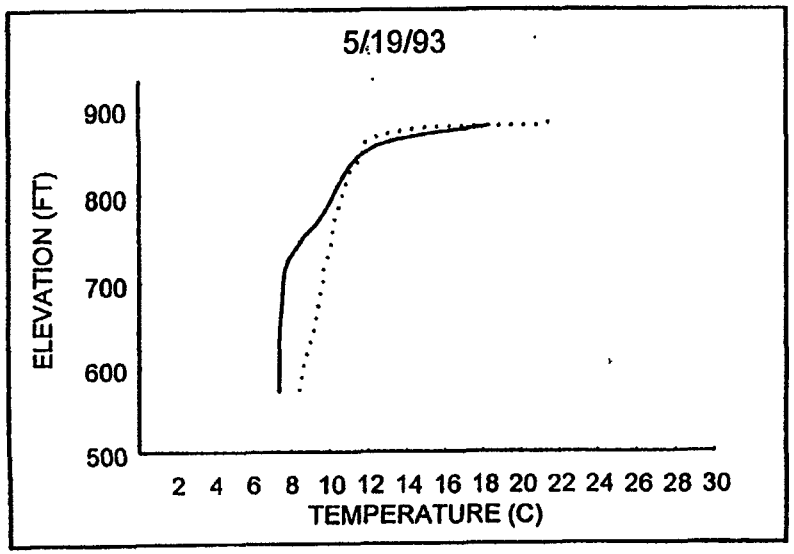


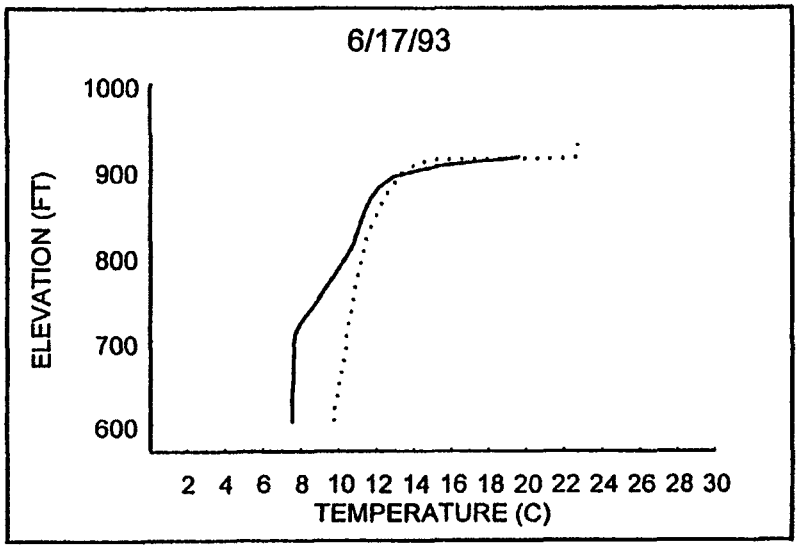


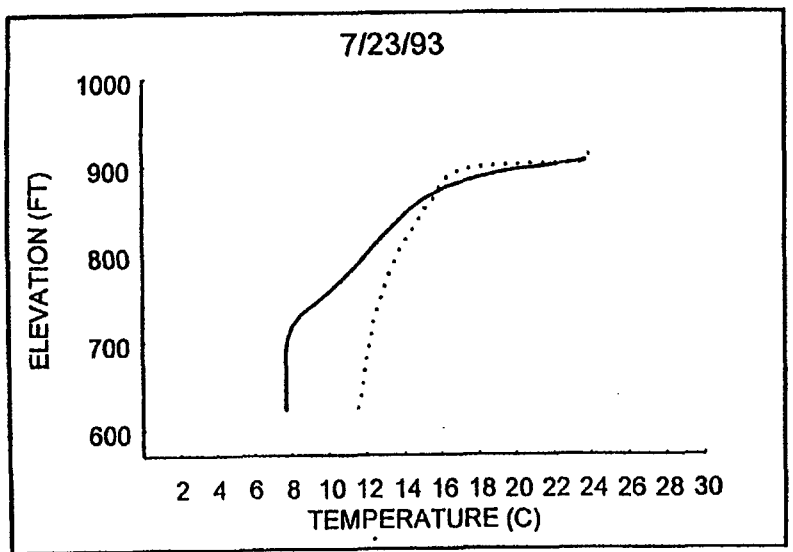


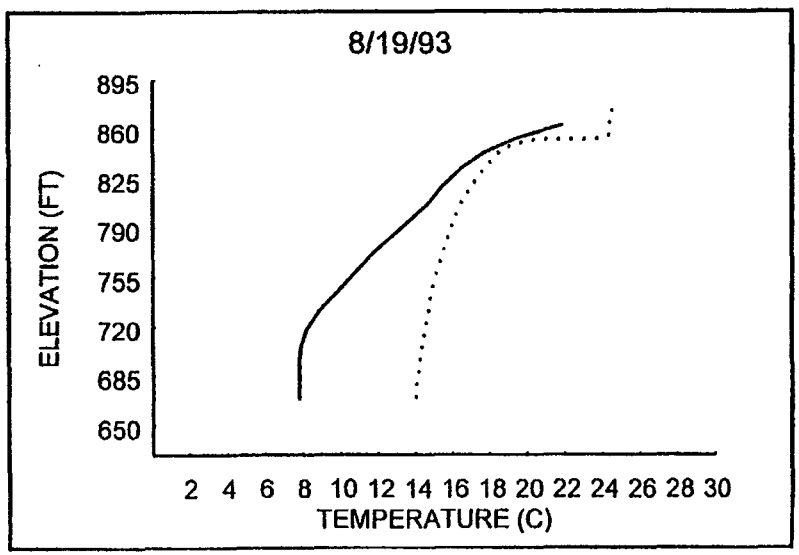
MODEL
ACTUAL

PROFILES FOR MODEL YEAR 1993



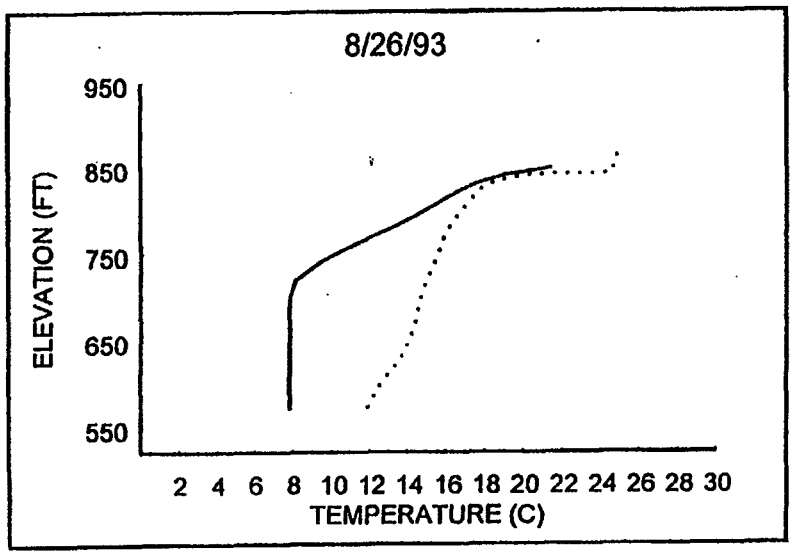


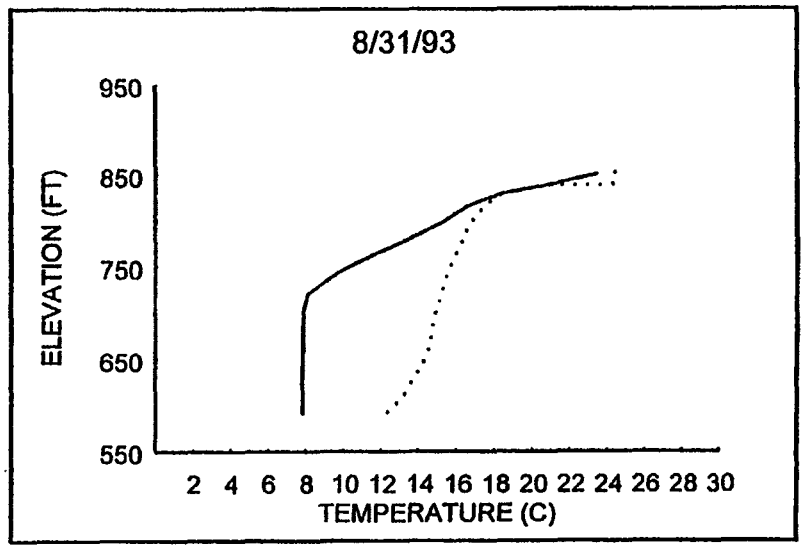


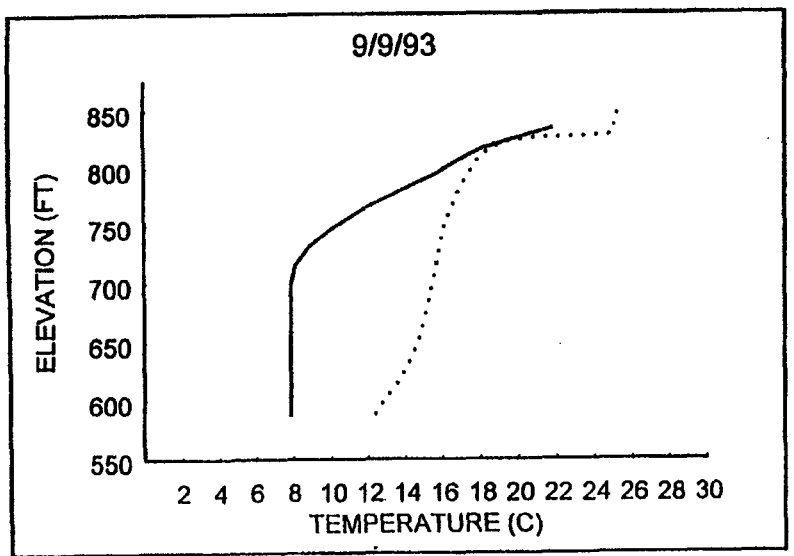


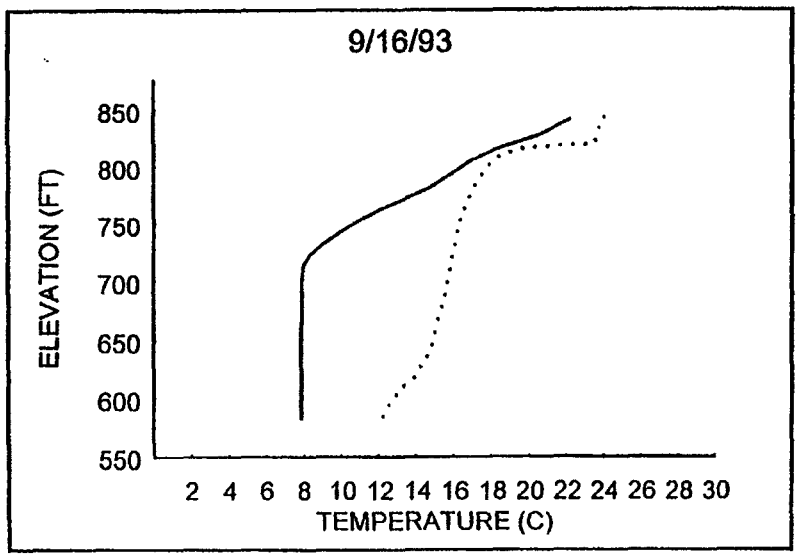
MODEL
ACTUAL

PROFILES FOR MODEL YEAR 1993



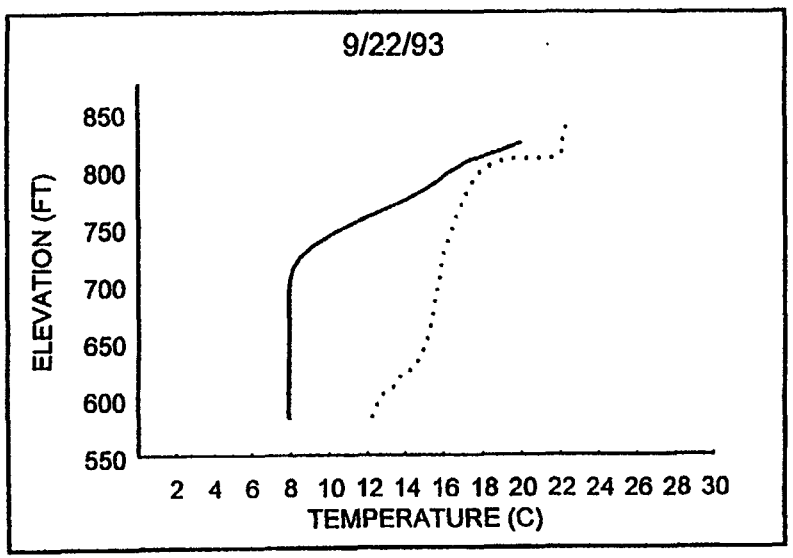


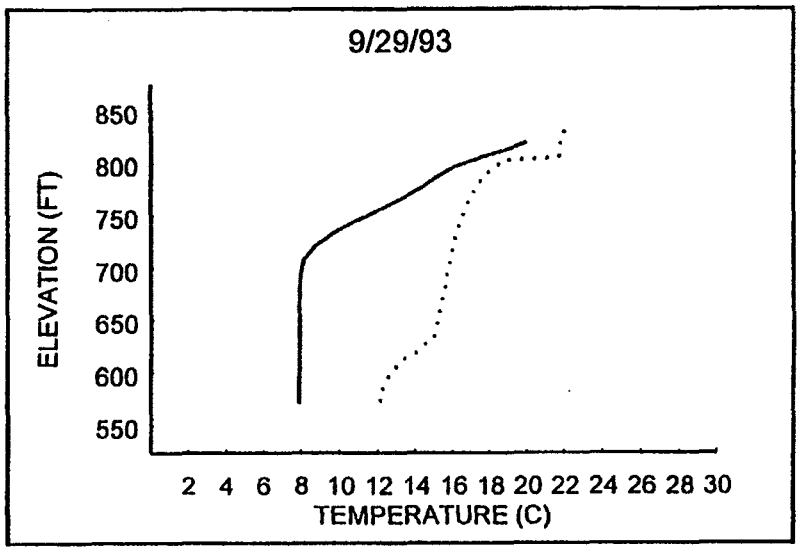


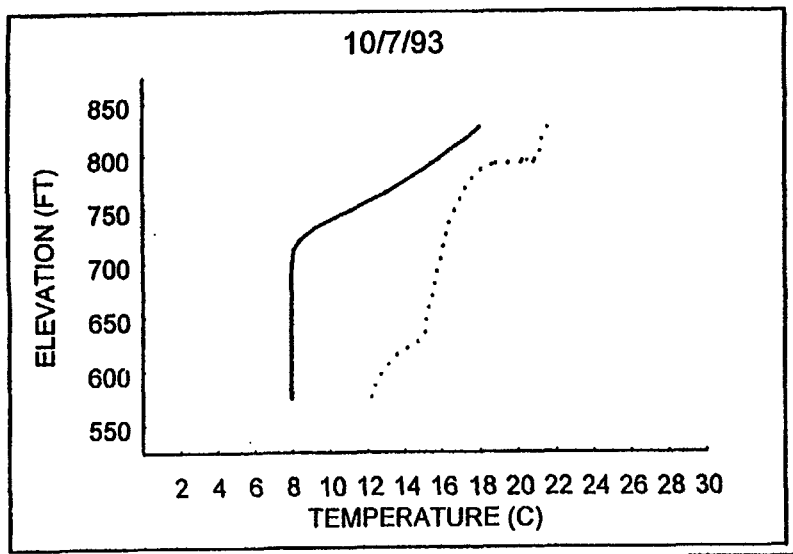


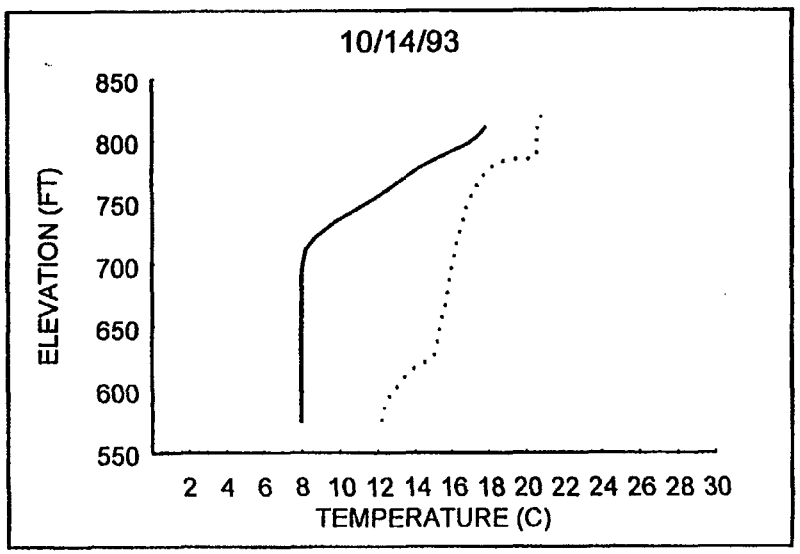
MODEL
ACTUAL

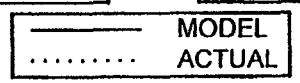
PROFILES FOR MODEL YEAR 1993



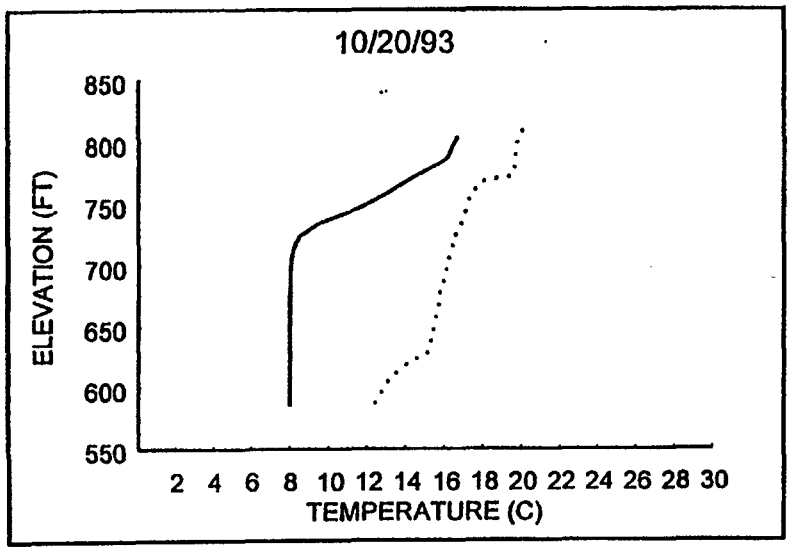


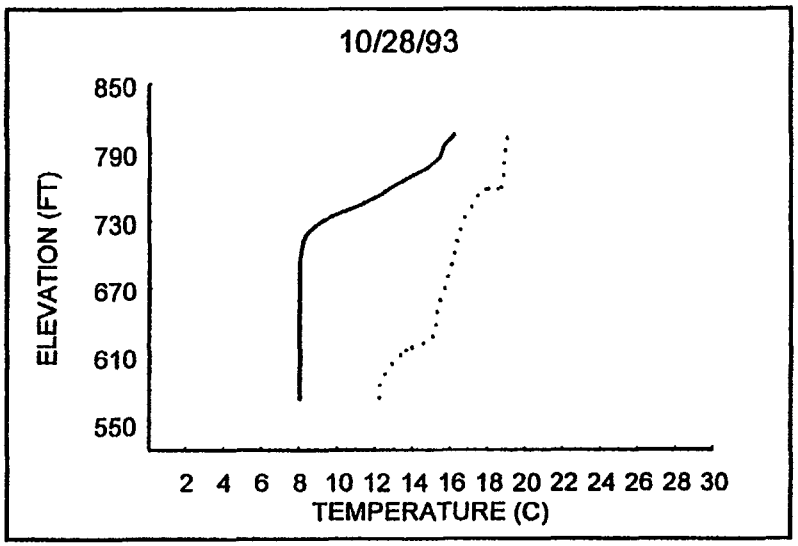






PROFILES FOR MODEL YEAR 1993





PINE FLAT RESE[illegible]R

1993 STORAGE AND ELEVATION

DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	STORAGE	DATE	ELEV	STORAGE
01/21/93	760.1	201.44	03/18/93	833.5	432.59	05/13/93	886.2	654.69	07/08/93	937.7	920.87	09/02/93	857.3	526.80
01/22/93	762.0	206.27	03/19/93	834.9	437.89	05/14/93	887.4	660.31	07/09/93	937.3	918.61	09/03/93	856.3	522.63
01/23/93	763.7	210.64	03/20/93	836.0	441.70	05/15/93	888.6	666.44	07/10/93	936.7	915.22	09/04/93	855.2	518.48
01/24/93	765.4	214.80	03/21/93	837.0	445.91	05/16/93	890.1	673.07	07/11/93	936.0	911.27	09/05/93	854.1	513.93
01/25/93	766.5	217.95	03/22/93	838.1	449.75	05/17/93	891.9	681.64	07/12/93	935.3	906.77	09/06/93	853.1	509.41
01/26/93	767.5	220.33	03/23/93	839.1	453.61	05/18/93	894.1	692.20	07/13/93	934.4	902.29	09/07/93	852.1	505.72
01/27/93	768.3	222.72	03/24/93	840.4	458.65	05/19/93	896.6	704.79	07/14/93	933.4	896.14	09/08/93	851.3	502.45
01/28/93	769.2	225.13	03/25/93	842.4	466.46	05/20/93	899.4	718.00	07/15/93	932.2	889.47	09/09/93	850.5	499.20
01/29/93	770.3	227.82	03/26/93	845.3	478.31	05/21/93	902.0	731.34	07/16/93	930.7	881.72	09/10/93	849.6	495.55
01/30/93	771.3	230.52	03/27/93	847.6	487.49	05/22/93	904.4	742.81	07/17/93	929.1	872.91	09/11/93	848.7	491.51
01/31/93	772.3	233.52	03/28/93	849.4	494.34	05/23/93	906.8	754.88	07/18/93	927.4	863.60	09/12/93	847.7	487.89
02/01/93	773.2	235.71	03/29/93	850.9	500.42	05/24/93	909.3	767.57	07/19/93	925.7	853.82	09/13/93	846.7	483.89
02/02/93	774.0	237.91	03/30/93	852.2	505.72	05/25/93	911.7	780.38	07/20/93	923.9	844.63	09/14/93	845.8	479.90
02/03/93	774.7	240.12	03/31/93	853.3	510.64	05/26/93	913.5	789.68	07/21/93	922.1	834.97	09/15/93	844.9	476.32
02/04/93	775.5	242.07	04/01/93	854.5	515.58	05/27/93	914.8	795.91	07/22/93	920.4	825.37	09/16/93	844.0	473.15
02/05/93	776.3	244.30	04/02/93	855.7	520.55	05/28/93	915.7	801.13	07/23/93	918.7	816.89	09/17/93	843.3	470.00
02/06/93	776.9	246.26	04/03/93	856.9	525.55	05/29/93	916.6	805.84	07/24/93	917.1	808.46	09/18/93	842.6	467.24
02/07/93	777.6	248.23	04/04/93	858.3	531.40	05/30/93	917.7	811.62	07/25/93	915.5	800.08	09/19/93	841.7	463.72
02/08/93	778.8	251.63	04/05/93	859.8	537.29	05/31/93	919.3	819.54	07/26/93	914.0	792.27	09/20/93	840.9	460.59
02/09/93	780.5	256.20	04/06/93	860.9	542.37	06/01/93	920.6	826.43	07/27/93	912.5	784.51	09/21/93	840.1	457.48
02/10/93	781.8	260.24	04/07/93	861.9	546.62	06/02/93	921.4	830.69	07/28/93	911.0	776.27	09/22/93	839.2	454.38
02/11/93	782.9	263.14	04/08/93	862.7	550.03	06/03/93	921.8	833.36	07/29/93	909.3	768.08	09/23/93	838.4	450.90
02/12/93	783.8	265.76	04/09/93	863.5	553.45	06/04/93	922.2	835.50	07/30/93	907.7	759.44	09/24/93	837.4	447.44
02/13/93	784.7	268.70	04/10/93	864.5	557.31	06/05/93	923.0	839.25	07/31/93	906.0	751.35	09/25/93	836.5	443.99
02/14/93	785.5	271.06	04/11/93	865.4	561.19	06/06/93	923.4	841.94	08/01/93	904.3	742.31	09/26/93	835.5	439.79
02/15/93	786.4	273.43	04/12/93	866.2	565.08	06/07/93	923.5	842.48	08/02/93	902.5	733.82	09/27/93	834.4	436.00
02/16/93	787.3	276.41	04/13/93	866.6	566.38	06/08/93	923.7	843.02	08/03/93	900.8	724.90	09/28/93	833.5	432.59
02/17/93	788.2	278.80	04/14/93	866.7	567.25	06/09/93	924.0	844.63	08/04/93	898.9	715.54	09/29/93	832.7	429.58
02/18/93	789.2	281.81	04/15/93	866.8	567.68	06/10/93	924.4	847.33	08/05/93	897.0	706.74	09/30/93	832.2	427.33
02/19/93	790.9	287.27	04/16/93	867.1	568.55	06/11/93	925.1	850.57	08/06/93	895.3	698.48	10/01/93	831.6	425.45
02/20/93	793.3	294.33	04/17/93	867.3	569.42	06/12/93	925.9	854.90	08/07/93	893.8	691.23	10/02/93	831.3	424.33
02/21/93	795.2	300.54	04/18/93	867.5	570.29	06/13/93	926.8	859.79	08/08/93	892.3	683.55	10/03/93	830.9	422.84
02/22/93	797.0	306.18	04/19/93	867.5	570.72	06/14/93	927.8	865.79	08/09/93	890.7	676.39	10/04/93	830.3	420.61
02/23/93	799.5	314.12	04/20/93	867.6	570.72	06/15/93	929.0	871.81	08/10/93	889.1	668.80	10/05/93	829.6	417.63
02/24/93	802.3	323.13	04/21/93	867.7	571.16	06/16/93	930.0	877.31	08/11/93	887.6	661.25	10/06/93	828.8	414.68
02/25/93	804.4	329.98	04/22/93	867.8	572.03	06/17/93	930.7	881.16	08/12/93	886.1	654.22	10/07/93	827.9	411.36
02/26/93	806.2	335.91	04/23/93	867.9	572.46	06/18/93	931.2	884.48	08/13/93	884.5	647.23	10/08/93	826.9	408.06
02/27/93	807.8	341.22	04/24/93	867.7	571.59	06/19/93	931.9	887.80	08/14/93	883.0	640.27	10/09/93	826.0	404.40
02/28/93	809.3	346.25	04/25/93	867.6	570.72	06/20/93	932.5	891.69	08/15/93	881.4	632.90	10/10/93	824.9	400.41
03/01/93	810.7	350.63	04/26/93	867.8	571.59	06/21/93	932.8	893.36	08/16/93	880.0	626.03	10/11/93	823.8	396.79
03/02/93	811.9	355.05	04/27/93	868.2	573.77	06/22/93	933.0	893.92	08/17/93	878.7	620.10	10/12/93	822.8	393.19
03/03/93	813.1	359.15	04/28/93	868.8	575.96	06/23/93	933.2	895.03	08/18/93	877.4	614.21	10/13/93	821.8	389.25
03/04/93	814.3	363.27	04/29/93	869.6	579.90	06/24/93	933.8	898.38	08/19/93	876.0	607.90	10/14/93	820.6	385.33
03/05/93	815.5	367.42	04/30/93	870.8	584.74	06/25/93	934.9	905.09	08/20/93	874.5	601.71	10/15/93	819.6	381.43
03/06/93	816.7	371.59	05/01/93	872.2	590.93	06/26/93	936.3	912.40	08/21/93	873.0	594.48	10/16/93	818.4	377.55
03/07/93	818.0	376.14	05/02/93	873.8	598.04	06/27/93	937.5	919.74	08/22/93	871.3	586.95	10/17/93	817.2	372.99
03/08/93	819.5	381.07	05/03/93	875.3	605.20	06/28/93	938.3	924.28	08/23/93	869.7	579.90	10/18/93	816.1	369.50
03/09/93	820.9	386.04	05/04/93	876.6	611.05	06/29/93	938.5	924.85	08/24/93	868.2	573.77	10/19/93	815.1	365.69
03/10/93	822.1	390.68	05/05/93	877.5	614.66	06/30/93	938.4	924.85	08/25/93	866.9	567.68	10/20/93	814.0	362.24
03/11/93	823.4	394.99	05/06/93	878.1	617.83	07/01/93	938.4	924.28	08/26/93	865.6	562.48	10/21/93	813.1	358.80
03/12/93	824.7	399.68	05/07/93	878.6	620.10	07/02/93	938.5	925.41	08/27/93	864.4	557.31	10/22/93	812.1	355.73
03/13/93	826.0	404.40	05/08/93	879.1	622.38	07/03/93	938.5	925.41	08/28/93	863.2	552.16	10/23/93	811.0	351.99
03/14/93	827.4	409.89	05/09/93	879.9	626.03	07/04/93	938.4	924.28	08/29/93	862.0	546.62	10/24/93	809.8	347.93
03/15/93	828.8	414.68	05/10/93	881.3	631.98	07/05/93	938.2	923.14	08/30/93	860.8	541.94	10/25/93	808.8	344.57
03/16/93	829.9	419.12	05/11/93	883.0	640.27	07/06/93	938.1	922.58	08/31/93	859.6	536.87	10/26/93	807.9	341.22
03/17/93	831.6	425.45	05/12/93	884.7	648.16	07/07/93	938.0	922.01	09/01/93	858.4	531.40	10/27/93	807.0	338.23

PINE FLAT RESERVOIR TEMPERATURE PROFILES

1993

ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
571.5	7.06	6.92
584.7	7.11	6.93
597.8	7.10	6.94
610.9	7.11	6.94
624.0	7.19	6.99
637.2	7.30	7.11
650.3	7.28	7.25
663.4	7.32	7.37
676.5	7.38	7.44
689.7	7.52	7.47
702.8	7.60	7.51
715.9	7.66	7.57
729.0	7.75	7.69
742.2	7.97	7.89
755.3	8.34	8.10
768.4	8.67	8.31
781.5	9.04	8.53
794.6	9.41	8.80
807.8	9.73	9.17
820.9	10.12	10.20
827.5	10.39	11.48
830.7	10.98	11.94
831.7	11.50	12.07
832.7	12.58	12.20
833.0	14.45	12.24
834.0	14.70	12.38

04/20/93	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
	571.3	7.38	7.14
	578.9	7.38	7.14
	592.0	7.40	7.14
	605.1	7.38	7.14
	618.2	7.41	7.13
	631.3	7.49	7.17
	644.5	7.58	7.25
	657.6	7.67	7.37
	670.7	7.76	7.46
	683.8	7.98	7.49
	697.0	8.04	7.52
	710.1	8.30	7.57
	723.2	8.42	7.66
	736.3	8.73	7.87
	749.5	9.00	8.12
	762.6	9.10	8.42
	775.7	9.22	8.73
	788.8	9.42	8.98
	802.0	9.64	9.22
	815.1	9.87	9.57
	824.9	10.11	10.13
	831.5	10.40	10.85
	834.8	10.61	11.35
	838.0	10.91	11.85
	839.7	11.09	12.09
	841.3	11.38	12.38
	843.0	12.23	12.74
	844.6	13.21	13.11
	845.3	13.87	13.24
	845.9	14.46	13.40
	846.6	16.71	13.53
	847.2	17.28	13.69
	847.9	17.29	13.82
	851.2	17.29	14.55

05/19/93	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
	572.3	8.42	7.36
	582.5	8.49	7.36
	595.6	8.58	7.36
	608.7	8.68	7.36
	621.8	8.87	7.37
	635.0	9.09	7.41
	648.1	9.21	7.44
	661.2	9.34	7.47
	674.3	9.41	7.51
	687.5	9.53	7.54
	700.6	9.65	7.58
	713.7	9.67	7.67
	726.8	9.86	7.87
	740.0	10.03	8.27
	753.1	10.16	8.71
	766.2	10.22	9.29
	779.3	10.35	9.69
	792.5	10.59	10.04
	805.6	10.75	10.32
	818.7	10.91	10.61
	831.8	11.10	10.96
	844.9	11.75	11.44
	858.1	11.63	12.40
	864.6	12.01	13.32
	871.2	12.74	15.05
	874.5	13.62	16.21
	877.8	14.57	17.37
	878.7	15.03	17.72
	879.7	15.67	18.07
	880.4	17.84	18.28

06/17/93	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
	603.4	9.74	7.55
	615.9	9.71	7.55
	629.0	9.90	7.55
	642.1	9.96	7.57
	655.3	10.10	7.58
	668.4	10.15	7.59
	681.5	10.31	7.61
	694.6	10.37	7.63
	707.8	10.42	7.72
	720.9	10.53	8.01
	734.0	10.67	8.44
	747.1	10.75	8.86
	760.3	10.81	9.24
	773.4	10.96	9.63
	786.5	11.10	10.04
	799.6	11.22	10.42
	812.7	11.38	10.74
	825.9	11.57	10.98
	839.0	11.80	11.19
	852.1	12.11	11.39
	865.2	12.35	11.67
	878.4	12.75	12.10
	884.9	12.97	12.47
	888.2	13.08	12.67
	891.5	13.13	12.88
	898.1	13.42	14.01
	904.6	14.00	15.45
	909.5	14.57	17.28
	911.8	15.24	18.36
	912.5	15.68	18.64
	913.1	18.22	18.97
	913.8	22.40	19.25
	914.5	22.60	19.58

ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
623.3	11.54	7.70
626.2	11.55	7.70
639.4	11.69	7.70
652.5	11.78	7.70
665.6	11.86	7.70
678.7	12.00	7.70
691.9	12.08	7.72
705.0	12.22	7.82
718.1	12.28	8.05
731.2	12.45	8.51
744.3	12.68	9.29
757.5	12.82	10.06
770.6	13.04	10.75
783.7	13.28	11.38
796.8	13.57	11.96
810.0	13.92	12.49
823.1	14.32	13.04
836.2	14.72	13.61
849.3	15.04	14.24
862.5	15.54	15.04
875.6	15.84	16.26
885.4	16.21	17.76
892.0	16.73	19.02
895.3	17.06	19.99
896.9	17.45	20.62
898.5	18.03	21.21
899.2	18.17	21.47
899.9	18.54	21.69
900.5	19.42	21.95
901.2	19.89	22.17
901.8	20.91	22.43
902.5	22.91	22.65
903.5	23.56	23.03
905.1	23.66	23.66

08/19/93	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
	669.2	14.00	7.80
	678.7	14.03	7.80
	691.8	14.19	7.81
	704.9	14.35	7.88
	718.0	14.51	8.20
	731.2	14.69	8.86
	741.0	14.78	9.54
	754.1	14.99	10.48
	767.3	15.33	11.42
	780.4	15.69	12.50
	793.5	16.00	13.59
	806.6	16.39	14.62
	819.7	17.00	15.45
	832.9	17.73	16.52
	842.7	18.43	17.64
	847.6	19.05	18.50
	850.9	19.93	19.08
	852.2	20.53	19.31
	852.9	24.02	19.42
	853.5	24.22	19.54
	855.8	24.32	20.09
	862.4	24.35	21.83

09/22/93	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
	582.7	12.22	7.91
	596.2	12.56	7.91
	602.7	12.80	7.91
	609.3	13.34	7.91
	619.1	13.79	7.91
	621.8	14.14	7.91
	624.1	14.24	7.90
	635.5	14.79	7.90
	645.4	15.01	7.90
	655.2	15.20	7.90
	661.8	15.30	7.90
	671.6	15.44	7.90
	681.5	15.50	7.90
	694.6	15.65	7.92
	704.4	15.77	7.98
	714.3	15.85	8.14
	724.1	15.93	8.52
	734.0	16.11	9.19
	743.8	16.34	10.17
	753.7	16.54	11.35
	763.5	16.77	12.75
	773.3	17.03	14.09
	783.2	17.29	15.15
	789.7	17.50	15.73
	799.6	18.01	16.51
	806.2	18.80	17.15
	808.8	19.46	17.59
	809.1	19.65	17.66
	809.4	21.14	17.72
	810.1	21.79	17.83
	816.0	22.05	18.90
	822.6	22.08	19.88

10/20/93	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
	586.7	12.38	8.00
	597.2	12.76	8.00
	606.7	13.15	8.00
	616.9	13.85	8.00
	626.7	15.00	7.99
	633.3	15.24	7.99
	647.1	15.43	7.99
	654.0	15.47	7.99
	660.2	15.59	7.99
	669.4	15.71	7.99
	675.9	15.71	8.00
	685.8	15.92	8.00
	695.6	16.06	8.01
	705.5	16.19	8.05
	715.3	16.38	8.19
	725.1	16.55	8.54
	734.7	16.86	9.48
	743.5	17.06	11.02
	748.1	17.17	11.75
	758.0	17.36	12.96
	764.5	17.75	13.59
	769.4	18.11	14.10
	772.1	19.11	14.39
	772.7	19.43	14.47
	780.9	19.62	15.42
	790.8	19.68	16.24
	803.9	19.83	16.65

PINE FLAT RESERVOIR						
1993 Penstock Flows						
DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
01/20/93	0.00	0.00	0.88	0.00	0.00	0.00
01/21/93	0.00	0.00	0.88	0.00	0.00	0.00
01/22/93	0.00	0.02	0.84	0.00	0.00	0.00
01/23/93	0.00	0.07	0.81	0.00	0.00	0.00
01/24/93	0.00	0.13	0.80	0.00	0.00	0.00
01/25/93	0.00	0.18	0.77	0.00	0.00	0.00
01/26/93	0.00	0.23	0.71	0.00	0.00	0.00
01/27/93	0.00	0.27	0.64	0.00	0.00	0.00
01/28/93	0.00	0.32	0.59	0.00	0.00	0.00
01/29/93	0.00	0.37	0.55	0.00	0.00	0.00
01/30/93	0.00	0.43	0.52	0.00	0.00	0.00
01/31/93	0.00	0.46	0.45	0.00	0.00	0.00
02/01/93	0.00	0.45	0.36	0.00	0.00	0.00
02/02/93	0.00	0.47	0.30	0.00	0.00	0.00
02/03/93	0.00	0.53	0.27	0.00	0.00	0.00
02/04/93	0.00	0.58	0.23	0.00	0.00	0.00
02/05/93	0.00	0.63	0.18	0.00	0.00	0.00
02/06/93	0.00	0.84	0.00	0.00	0.00	0.00
02/07/93	0.00	0.85	0.00	0.00	0.00	0.00
02/08/93	0.00	0.85	0.00	0.00	0.00	0.00
02/09/93	0.00	0.85	0.00	0.00	0.00	0.00
02/10/93	0.00	0.85	0.00	0.00	0.00	0.00
02/11/93	0.00	0.85	0.00	0.00	0.00	0.00
02/12/93	0.00	0.88	0.00	0.00	0.00	0.00
02/13/93	0.00	0.87	0.00	0.00	0.00	0.00
02/14/93	0.00	0.88	0.00	0.00	0.00	0.00
02/15/93	0.00	0.89	0.00	0.00	0.00	0.00
02/16/93	0.00	0.88	0.00	0.00	0.00	0.00
02/17/93	0.00	0.88	0.00	0.00	0.00	0.00
02/18/93	0.00	0.88	0.00	0.00	0.00	0.00
02/19/93	0.08	0.83	0.00	0.00	0.00	0.00
02/20/93	0.18	0.73	0.00	0.00	0.00	0.00
02/21/93	0.30	0.80	0.00	0.00	0.00	0.00
02/22/93	0.35	0.68	0.00	0.00	0.00	0.00
02/23/93	0.36	0.51	0.00	0.00	0.00	0.00
02/24/93	0.42	0.42	0.00	0.00	0.00	0.00
02/25/93	0.48	0.34	0.00	0.00	0.00	0.00
02/26/93	0.55	0.27	0.00	0.00	0.00	0.00
02/27/93	0.82	0.00	0.00	0.00	0.00	0.00
02/28/93	0.87	0.00	0.00	0.00	0.00	0.00
03/01/93	0.91	0.00	0.00	0.00	0.00	0.00
03/02/93	0.87	0.00	0.00	0.00	0.00	0.00
03/03/93	0.90	0.00	0.00	0.00	0.00	0.00
03/04/93	1.23	0.00	0.00	0.00	0.00	0.00
03/05/93	1.42	0.00	0.00	0.00	0.00	0.00
03/06/93	1.83	0.00	0.00	0.00	0.00	0.00
03/07/93	1.84	0.00	0.06	0.00	0.00	0.00
03/08/93	2.21	0.00	0.29	0.00	0.00	0.00
03/09/93	2.44	0.00	0.62	0.00	0.00	0.00
03/10/93	1.72	0.00	0.71	0.00	0.00	0.00
03/11/93	1.70	0.00	1.05	0.00	0.00	0.00
03/12/93	1.57	0.00	1.45	0.00	0.00	0.00
03/13/93	1.23	0.00	1.70	0.00	0.00	0.00
03/14/93	0.83	0.00	1.77	0.00	0.00	0.00
03/15/93	0.00	0.00	4.74	0.00	0.00	0.00
03/16/93	0.00	0.00	6.53	0.00	0.00	0.00
03/17/93	0.00	0.00	4.52	0.00	0.00	0.00
03/18/93	0.00	0.00	12.39	0.00	0.00	0.00
03/19/93	0.00	0.00	26.44	0.00	0.00	0.00
03/20/93	0.00	0.00	34.05	0.00	0.00	0.00
03/21/93	0.00	0.00	39.31	0.00	0.00	0.00
03/22/93	0.00	0.00	42.32	0.00	0.00	0.00
03/23/93	0.00	0.00	47.38	0.00	0.00	0.00
03/24/93	0.00	0.00	51.73	0.00	0.00	0.00

DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
03/25/93	0.00		32.28	0.00	0.00	0.00
03/26/93	0.00	0.32	24.10	0.00	0.00	0.00
03/27/93	0.00	3.84	24.40	0.00	0.00	0.00
03/28/93	0.00	7.39	21.36	0.00	0.00	0.00
03/29/93	0.00	10.77	17.80	0.00	0.00	0.00
03/30/93	0.00	14.14	14.42	0.00	0.00	0.00
03/31/93	0.00	19.01	11.90	0.00	0.00	0.00
04/01/93	0.00	26.85	9.63	0.00	0.00	0.00
04/02/93	0.00	35.43	5.72	0.00	0.00	0.00
04/03/93	0.00	40.33	0.61	0.00	0.00	0.00
04/04/93	0.00	39.92	0.00	0.00	0.00	0.00
04/05/93	0.00	41.31	0.00	0.00	0.00	0.00
04/06/93	0.00	41.31	0.00	0.00	0.00	0.00
04/07/93	0.00	51.84	0.00	0.00	0.00	0.00
04/08/93	0.00	57.74	0.00	0.00	0.00	0.00
04/09/93	0.00	53.90	0.00	0.00	0.00	0.00
04/10/93	0.00	53.30	0.00	0.00	0.00	0.00
04/11/93	0.00	55.50	0.00	0.00	0.00	0.00
04/12/93	0.00	70.75	4.04	0.00	0.00	0.00
04/13/93	0.00	70.75	17.73	0.00	0.00	0.00
04/14/93	0.00	70.75	25.10	0.00	0.00	0.00
04/15/93	0.00	70.75	32.38	0.00	0.00	0.00
04/16/93	0.00	70.75	37.41	0.00	0.00	0.00
04/17/93	0.00	70.75	42.12	0.00	0.00	0.00
04/18/93	0.00	70.75	45.97	0.00	0.00	0.00
04/19/93	0.00	70.75	47.59	0.00	0.00	0.00
04/20/93	0.00	70.75	50.83	0.00	0.00	0.00
04/21/93	0.00	70.75	58.96	0.00	0.00	0.00
04/22/93	0.00	70.75	69.95	0.00	0.00	0.00
04/23/93	5.43	70.75	70.75	0.00	0.00	0.00
04/24/93	7.41	70.75	70.75	0.00	0.00	0.00
04/25/93	7.58	70.75	70.75	0.00	0.00	0.00
04/26/93	7.61	70.75	70.75	0.00	0.00	0.00
04/27/93	10.48	70.75	70.75	0.00	0.00	0.00
04/28/93	14.06	70.75	70.75	0.00	0.00	0.00
04/29/93	16.97	70.75	70.75	0.00	0.00	0.00
04/30/93	19.81	70.75	70.75	0.00	0.00	0.00
05/01/93	21.78	70.75	70.75	0.00	0.00	0.00
05/02/93	21.06	70.75	70.75	0.00	0.00	0.00
05/03/93	20.44	70.75	70.75	0.00	0.00	0.00
05/04/93	28.94	70.75	62.74	0.00	0.00	0.00
05/05/93	41.95	70.75	52.69	0.00	0.00	0.00
05/06/93	70.75	70.75	28.10	0.00	0.00	0.00
05/07/93	70.75	70.75	28.92	0.00	0.00	0.00
05/08/93	70.75	70.75	27.07	0.00	0.00	0.00
05/09/93	70.75	70.75	25.28	0.00	0.00	0.00
05/10/93	70.75	70.75	24.67	0.00	0.00	0.00
05/11/93	70.75	70.75	24.63	0.00	0.00	0.00
05/12/93	70.75	70.75	24.73	0.00	0.00	0.00
05/13/93	70.75	70.75	25.21	0.00	0.00	0.00
05/14/93	70.75	70.75	23.67	0.00	0.00	0.00
05/15/93	70.75	70.75	20.88	0.00	0.00	0.00
05/16/93	70.75	70.75	19.68	0.00	0.00	0.00
05/17/93	70.75	70.75	19.49	0.00	0.00	0.00
05/18/93	70.75	70.75	18.69	0.00	0.00	0.00
05/19/93	70.75	70.75	17.85	0.00	0.00	0.00
05/20/93	70.75	70.75	16.90	0.00	0.00	0.00
05/21/93	70.75	70.75	16.97	0.00	0.00	0.00
05/22/93	70.75	70.75	17.98	0.00	0.00	0.00
05/23/93	70.75	70.75	18.68	0.00	0.00	0.00
05/24/93	70.75	70.75	20.16	0.00	0.00	0.00
05/25/93	70.75	70.75	22.42	0.00	0.00	0.00
05/26/93	70.75	70.75	19.52	0.00	0.00	0.00
05/27/93	70.75	70.75	14.76	0.00	0.00	0.00
05/28/93	70.75	70.75	14.54	0.00	0.00	0.00
05/29/93	70.75	70.75	20.81	0.00	0.00	0.00
05/30/93	70.75	70.75	27.83	0.00	0.00	0.00

DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
05/31/93	70.75	70.75	29.43	0.00	0.00	0.00
06/01/93	70.75	70.75	32.15	0.00	0.00	0.00
06/02/93	70.75	70.75	35.39	0.00	0.00	0.00
06/03/93	70.75	70.75	32.80	0.00	0.00	0.00
06/04/93	70.75	70.75	26.24	0.00	0.00	0.00
06/05/93	70.75	70.75	23.41	0.00	0.00	0.00
06/06/93	70.75	70.75	21.50	0.00	0.00	0.00
06/07/93	70.75	70.75	20.93	0.00	0.00	0.00
06/08/93	70.75	70.75	25.22	0.00	0.00	0.00
06/09/93	70.75	70.75	33.52	0.00	0.00	0.00
06/10/93	70.75	70.75	43.14	0.00	0.00	0.00
06/11/93	70.75	70.75	49.50	0.00	0.00	0.00
06/12/93	70.75	70.75	60.11	0.00	0.00	0.00
06/13/93	70.75	70.75	67.77	0.00	0.00	0.00
06/14/93	70.75	70.75	70.75	0.00	0.00	2.79
06/15/93	70.75	70.75	70.75	0.00	0.00	7.95
06/16/93	70.75	70.75	70.75	0.00	0.00	13.32
06/17/93	70.75	70.75	70.75	0.00	0.00	14.07
06/18/93	70.75	70.75	70.75	0.00	0.00	3.21
06/19/93	70.75	70.75	70.75	0.00	0.00	11.03
06/20/93	70.75	70.75	70.75	0.00	0.00	13.13
06/21/93	70.75	70.75	70.75	0.00	0.00	10.13
06/22/93	70.75	70.75	70.75	0.00	0.00	5.68
06/23/93	70.75	70.75	70.75	0.00	0.00	1.79
06/24/93	70.75	70.75	70.75	0.00	0.00	0.72
06/25/93	70.75	70.75	70.75	0.00	0.00	4.48
06/26/93	70.75	70.75	70.75	0.00	0.00	8.91
06/27/93	70.75	70.75	70.75	0.00	0.00	10.98
06/28/93	70.75	70.75	70.75	0.00	0.00	11.06
06/29/93	70.64	70.75	69.54	0.00	0.00	0.00
06/30/93	70.33	70.75	70.75	0.00	0.00	0.00
07/01/93	70.75	70.75	70.61	0.00	0.00	0.00
07/02/93	70.75	70.75	70.75	0.00	0.00	4.49
07/03/93	70.75	70.75	70.75	0.00	0.00	6.43
07/04/93	70.75	70.75	70.75	0.00	0.00	12.11
07/05/93	70.75	70.75	70.75	0.00	0.00	12.55
07/06/93	70.75	70.75	70.75	0.00	0.00	14.62
07/07/93	70.75	70.75	70.75	0.00	0.00	17.17
07/08/93	70.75	70.75	70.75	0.00	0.00	14.52
07/09/93	70.75	70.75	70.75	0.00	0.00	10.82
07/10/93	70.75	70.75	70.75	0.00	0.00	10.11
07/11/93	70.75	70.75	70.75	0.00	0.00	5.93
07/12/93	69.49	70.75	70.75	0.00	0.00	0.00
07/13/93	69.72	70.75	70.75	0.00	0.00	0.00
07/14/93	70.75	70.75	70.75	0.00	0.00	2.20
07/15/93	70.75	70.75	70.75	0.00	0.00	4.26
07/16/93	70.75	70.75	70.75	0.00	0.00	12.68
07/17/93	70.75	70.75	70.75	0.00	0.00	13.13
07/18/93	70.75	70.75	70.75	0.00	0.00	12.49
07/19/93	70.75	70.75	70.75	0.00	11.23	0.00
07/20/93	70.75	70.75	70.75	0.00	11.68	0.00
07/21/93	70.75	70.75	70.75	0.00	8.20	0.00
07/22/93	70.75	70.75	70.75	0.00	1.02	0.00
07/23/93	70.75	70.75	68.59	0.00	0.00	0.00
07/24/93	70.75	70.75	68.51	0.00	0.00	0.00
07/25/93	70.75	70.75	65.88	0.00	0.00	0.00
07/26/93	70.75	70.75	60.51	0.00	0.00	0.00
07/27/93	70.75	70.75	58.81	0.00	0.00	0.00
07/28/93	70.75	70.75	57.00	0.00	0.00	0.00
07/29/93	70.75	70.75	53.49	0.00	0.00	0.00
07/30/93	70.75	70.75	50.62	0.00	0.00	0.00
07/31/93	70.75	70.75	50.39	0.00	0.00	0.00
08/01/93	70.75	70.75	53.30	0.00	0.00	0.00
08/02/93	70.75	70.75	57.26	0.00	0.00	0.00
08/03/93	70.75	70.75	58.84	0.00	0.00	0.00
08/04/93	70.75	70.75	57.39	0.00	0.00	0.00
08/05/93	70.75	70.75	44.70	0.00	0.00	0.00

DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
08/06/93	70.75	70.75	25.82	0.00	0.00	0.00
08/07/93	70.75	70.75	19.68	0.00	0.00	0.00
08/08/93	70.75	70.75	21.33	0.00	0.00	0.00
08/09/93	70.75	70.75	19.59	0.00	0.00	0.00
08/10/93	70.75	70.75	16.19	0.00	0.00	0.00
08/11/93	70.75	70.75	12.48	0.00	0.00	0.00
08/12/93	70.75	70.75	6.58	0.00	0.00	0.00
08/13/93	61.69	70.75	11.63	0.00	0.00	0.00
08/14/93	51.72	70.66	19.03	0.00	0.00	0.00
08/15/93	41.85	65.75	28.90	0.00	0.00	0.00
08/16/93	32.30	62.13	38.45	0.00	0.00	0.00
08/17/93	23.03	61.35	47.72	0.00	0.00	0.00
08/18/93	13.83	63.31	56.92	0.00	0.00	0.00
08/19/93	4.77	66.22	65.98	0.00	0.00	0.00
08/20/93	0.01	67.29	70.74	0.00	0.00	0.00
08/21/93	0.00	70.75	69.00	0.00	0.00	0.00
08/22/93	0.00	70.75	65.45	0.00	0.00	0.00
08/23/93	0.00	70.75	59.70	0.00	0.00	0.00
08/24/93	0.00	70.75	55.31	0.00	0.00	0.00
08/25/93	0.00	70.75	48.44	0.00	0.00	0.00
08/26/93	0.00	70.75	45.32	0.00	0.00	0.00
08/27/93	0.00	70.75	44.13	0.00	0.00	0.00
08/28/93	0.00	70.75	41.70	0.00	0.00	0.00
08/29/93	0.00	70.75	37.01	0.00	0.00	0.00
08/30/93	0.00	70.75	34.93	0.00	0.00	0.00
08/31/93	0.00	70.75	35.33	0.00	0.00	0.00
09/01/93	0.00	70.75	32.20	0.00	0.00	0.00
09/02/93	0.00	70.75	25.10	0.00	0.00	0.00
09/03/93	0.00	70.75	22.02	0.00	0.00	0.00
09/04/93	0.00	70.75	22.47	0.00	0.00	0.00
09/05/93	0.00	70.75	22.35	0.00	0.00	0.00
09/06/93	0.00	64.67	24.55	0.00	0.00	0.00
09/07/93	0.00	56.14	26.98	0.00	0.00	0.00
09/08/93	0.00	47.61	32.83	0.00	0.00	0.00
09/09/93	0.00	39.05	42.92	0.00	0.00	0.00
09/10/93	0.00	30.39	53.40	0.00	0.00	0.00
09/11/93	0.00	21.51	62.22	0.00	0.00	0.00
09/12/93	58.16	12.59	13.58	0.00	0.00	0.00
09/13/93	67.25	3.50	12.75	0.00	0.00	0.00
09/14/93	8.90	0.00	70.75	0.00	0.00	0.00
09/15/93	5.44	0.00	70.75	0.00	0.00	0.00
09/16/93	3.75	0.00	70.75	0.00	0.00	0.00
09/17/93	3.30	0.00	70.75	0.00	0.00	0.00
09/18/93	5.51	0.00	70.75	0.00	0.00	0.00
09/19/93	7.15	0.00	70.75	0.00	0.00	0.00
09/20/93	6.15	0.00	70.75	0.00	0.00	0.00
09/21/93	5.93	0.00	70.75	0.00	0.00	0.00
09/22/93	7.12	0.00	70.75	0.00	0.00	0.00
09/23/93	7.43	0.00	70.75	0.00	0.00	0.00
09/24/93	6.67	0.00	70.75	0.00	0.00	0.00
09/25/93	7.38	0.00	70.75	0.00	0.00	0.00
09/26/93	8.37	0.00	70.75	0.00	0.00	0.00
09/27/93	6.67	0.00	70.75	0.00	0.00	0.00
09/28/93	1.50	0.00	70.75	0.00	0.00	0.00
09/29/93	0.00	0.00	62.31	0.00	0.00	0.00
09/30/93	0.00	0.00	56.20	0.00	0.00	0.00
10/01/93	0.00	0.00	47.60	0.00	0.00	0.00
10/02/93	0.00	0.00	42.99	0.00	0.00	0.00
10/03/93	0.00	0.00	52.69	0.00	0.00	0.00
10/04/93	0.00	0.00	61.54	0.00	0.00	0.00
10/05/93	0.00	0.00	66.44	0.00	0.00	0.00
10/06/93	0.43	0.00	70.75	0.00	0.00	0.00
10/07/93	3.96	0.00	70.75	0.00	0.00	0.00
10/08/93	5.40	0.00	70.75	0.00	0.00	0.00
10/09/93	6.42	0.00	70.75	0.00	0.00	0.00
10/10/93	8.52	0.00	70.75	0.00	0.00	0.00
10/11/93	8.16	0.00	70.75	0.00	0.00	0.00

DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
10/12/93	6.76	0.00	70.75	0.00	0.00	0.00
10/13/93	4.10	0.00	70.75	0.00	0.00	0.00
10/14/93	2.06	0.00	70.75	0.00	0.00	0.00
10/15/93	2.23	0.00	70.75	0.00	0.00	0.00
10/16/93	8.17	0.00	64.91	0.00	0.00	0.00
10/17/93	70.75	1.23	0.00	0.00	0.00	0.00
10/18/93	70.75	0.09	0.00	0.00	0.00	0.00
10/19/93	69.93	0.00	0.00	0.00	0.00	0.00
10/20/93	68.24	0.00	0.00	0.00	0.00	0.00
10/21/93	65.82	0.00	0.00	0.00	0.00	0.00
10/22/93	64.63	0.00	0.00	0.00	0.00	0.00
10/23/93	63.95	0.00	0.00	0.00	0.00	0.00
10/24/93	62.70	0.00	0.00	0.00	0.00	0.00
10/25/93	61.38	0.00	0.00	0.00	0.00	0.00
10/26/93	60.64	0.00	0.00	0.00	0.00	0.00
10/27/93	44.38	0.00	0.00	0.00	0.00	0.00
10/28/93	27.97	0.00	0.00	0.00	0.00	0.00
10/29/93	21.19	0.00	0.00	0.00	0.00	0.00
10/30/93	9.30	0.00	0.00	0.00	0.00	0.00
10/31/93	2.83	0.00	0.00	0.00	0.00	0.00
11/01/93	2.82	0.00	0.00	0.00	0.00	0.00
11/02/93	3.33	0.00	0.00	0.00	0.00	0.00
11/03/93	4.34	0.00	0.00	0.00	0.00	0.00
11/04/93	4.70	0.00	0.00	0.00	0.00	0.00

PINE FLAT RESERVOIR

1993 PORT RELEASES (CMS)

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
01/20/93	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
01/21/93	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
01/22/93	0.00	0.00	0.00	0.00	0.84	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.86
01/23/93	0.00	0.00	0.00	0.00	0.81	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
01/24/93	0.00	0.00	0.00	0.00	0.80	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.93
01/25/93	0.00	0.00	0.00	0.00	0.77	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.95
01/26/93	0.00	0.00	0.00	0.00	0.71	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.94
01/27/93	0.00	0.00	0.00	0.00	0.64	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.91
01/28/93	0.00	0.00	0.00	0.00	0.59	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.91
01/29/93	0.00	0.00	0.00	0.00	0.55	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.92
01/30/93	0.00	0.00	0.00	0.00	0.52	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.95
01/31/93	0.00	0.00	0.00	0.00	0.45	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.91
02/01/93	0.00	0.00	0.00	0.00	0.36	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.81
02/02/93	0.00	0.00	0.00	0.00	0.30	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77
02/03/93	0.00	0.00	0.00	0.00	0.27	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.80
02/04/93	0.00	0.00	0.00	0.00	0.23	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.81
02/05/93	0.00	0.00	0.00	0.00	0.18	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.81
02/06/93	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.84
02/07/93	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/08/93	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/09/93	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/10/93	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/11/93	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85
02/12/93	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
02/13/93	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.87
02/14/93	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
02/15/93	0.00	0.00	0.00	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.89
02/16/93	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
02/17/93	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
02/18/93	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.88
02/19/93	0.00	0.00	0.00	0.00	0.00	0.83	0.08	0.00	0.00	0.00	0.00	0.00	0.00		0.91
02/20/93	0.00	0.00	0.00	0.00	0.00	0.73	0.18	0.00	0.00	0.00	0.00	0.00	0.00		0.91
02/21/93	0.00	0.00	0.00	0.00	0.00	0.80	0.30	0.00	0.00	0.00	0.00	0.00	0.00		1.10
02/22/93	0.00	0.00	0.00	0.00	0.00	0.68	0.35	0.00	0.00	0.00	0.00	0.00	0.00		1.03
02/23/93	0.00	0.00	0.00	0.00	0.00	0.51	0.36	0.00	0.00	0.00	0.00	0.00	0.00		0.87
02/24/93	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.00	0.00	0.00	0.00	0.00	0.00		0.84
02/25/93	0.00	0.00	0.00	0.00	0.00	0.34	0.48	0.00	0.00	0.00	0.00	0.00	0.00		0.82
02/26/93	0.00	0.00	0.00	0.00	0.00	0.27	0.55	0.00	0.00	0.00	0.00	0.00	0.00		0.82
02/27/93	0.00	0.00	0.00	0.00	0.00	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.00		0.82
02/28/93	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00		0.87
03/01/93	0.00	0.00	0.00	0.00	0.00	0.00	0.91	0.00	0.00	0.00	0.00	0.00	0.00		0.91
03/02/93	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00		0.87
03/03/93	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00		0.90
03/04/93	0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.00	0.00	0.00	0.00	0.00		1.23
03/05/93	0.00	0.00	0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.00	0.00	0.00		1.42
03/06/93	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.00	0.00	0.00	0.00	0.00	0.00		1.83
03/07/93	0.00	0.00	0.00	0.00	0.00	0.00	1.84	0.06	0.00	0.00	0.00	0.00	0.00		1.90
03/08/93	0.00	0.00	0.00	0.00	0.00	0.00	2.21	0.29	0.00	0.00	0.00	0.00	0.00		2.50
03/09/93	0.00	0.00	0.00	0.00	0.00	0.00	2.44	0.62	0.00	0.00	0.00	0.00	0.00		3.06
03/10/93	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.71	0.00	0.00	0.00	0.00	0.00		2.43
03/11/93	0.00	0.00	0.00	0.00	0.00	0.00	1.70	1.05	0.00	0.00	0.00	0.00	0.00		2.75
03/12/93	0.00	0.00	0.00	0.00	0.00	0.00	1.57	1.45	0.00	0.00	0.00	0.00	0.00		3.02
03/13/93	0.00	0.00	0.00	0.00	0.00	0.00	1.23	1.70	0.00	0.00	0.00	0.00	0.00		2.93
03/14/93	0.00	0.00	0.00	0.00	0.00	0.00	0.83	1.77	0.00	0.00	0.00	0.00	0.00		2.60
03/15/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.74	0.00	0.00	0.00	0.00	0.00		4.74
03/16/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.53	0.00	0.00	0.00	0.00	0.00		6.53
03/17/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.52	0.00	0.00	0.00	0.00	0.00		4.52
03/18/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.39	0.00	0.00	0.00	0.00	0.00		12.39
03/19/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.44	0.00	0.00	0.00	0.00	0.00		26.44
03/20/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.05	0.00	0.00	0.00	0.00	0.00		34.05
03/21/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.31	0.00	0.00	0.00	0.00	0.00		39.31
03/22/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.32	0.00	0.00	0.00	0.00	0.00		42.32
03/23/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.38	0.00	0.00	0.00	0.00	0.00		47.38
03/24/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.73	0.00	0.00	0.00	0.00	0.00		51.73

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
03/25/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.28	0.00	0.00	0.00	0.00	0.00		32.28
03/26/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.10	0.32	0.00	0.00	0.00	0.00		24.42
03/27/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.40	3.84	0.00	0.00	0.00	0.00		28.24
03/28/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.36	7.39	0.00	0.00	0.00	0.00		28.75
03/29/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.80	10.77	0.00	0.00	0.00	0.00		28.57
03/30/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.42	14.14	0.00	0.00	0.00	0.00		28.56
03/31/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.90	19.01	0.00	0.00	0.00	0.00		30.91
04/01/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.63	26.85	0.00	0.00	0.00	0.00		36.48
04/02/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.72	35.43	0.00	0.00	0.00	0.00		41.15
04/03/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	40.33	0.00	0.00	0.00	0.00		40.94
04/04/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.92	0.00	0.00	0.00	0.00		39.92
04/05/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.31	0.00	0.00	0.00	0.00		41.31
04/06/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.31	0.00	0.00	0.00	0.00		41.31
04/07/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.84	0.00	0.00	0.00	0.00		51.84
04/08/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.74	0.00	0.00	0.00	0.00		57.74
04/09/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.90	0.00	0.00	0.00	0.00		53.90
04/10/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.30	0.00	0.00	0.00	0.00		53.30
04/11/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.50	0.00	0.00	0.00	0.00		55.50
04/12/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.04	70.75	0.00	0.00	0.00	0.00		74.79
04/13/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.73	70.75	0.00	0.00	0.00	0.00		88.48
04/14/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.10	70.75	0.00	0.00	0.00	0.00		95.85
04/15/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.38	70.75	0.00	0.00	0.00	0.00		103.13
04/16/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.41	70.75	0.00	0.00	0.00	0.00		108.16
04/17/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.12	70.75	0.00	0.00	0.00	0.00		112.87
04/18/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.97	70.75	0.00	0.00	0.00	0.00		116.72
04/19/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.59	70.75	0.00	0.00	0.00	0.00		118.34
04/20/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.83	70.75	0.00	0.00	0.00	0.00		121.58
04/21/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.96	70.75	0.00	0.00	0.00	0.00		129.71
04/22/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.95	70.75	0.00	0.00	0.00	0.00		140.70
04/23/93	0.00	0.00	0.00	0.00	0.00	0.00	5.43	70.75	70.75	0.00	0.00	0.00	0.00		146.93
04/24/93	0.00	0.00	0.00	0.00	0.00	0.00	7.41	70.75	70.75	0.00	0.00	0.00	0.00		148.91
04/25/93	0.00	0.00	0.00	0.00	0.00	0.00	7.58	70.75	70.75	0.00	0.00	0.00	0.00		149.08
04/26/93	0.00	0.00	0.00	0.00	0.00	0.00	7.61	70.75	70.75	0.00	0.00	0.00	0.00		149.11
04/27/93	0.00	0.00	0.00	0.00	0.00	0.00	10.48	70.75	70.75	0.00	0.00	0.00	0.00		151.98
04/28/93	0.00	0.00	0.00	0.00	0.00	0.00	14.06	70.75	70.75	0.00	0.00	0.00	0.00		155.56
04/29/93	0.00	0.00	0.00	0.00	0.00	0.00	16.97	70.75	70.75	0.00	0.00	0.00	0.00		158.47
04/30/93	0.00	0.00	0.00	0.00	0.00	0.00	19.81	70.75	70.75	0.00	0.00	0.00	0.00		161.31
05/01/93	0.00	0.00	0.00	0.00	0.00	0.00	21.78	70.75	70.75	0.00	0.00	0.00	0.00		163.28
05/02/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	21.06	0.00	0.00	0.00		162.56
05/03/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	20.44	0.00	0.00	0.00		161.94
05/04/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.74	70.75	28.94	0.00	0.00	0.00		162.43
05/05/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.69	70.75	41.95	0.00	0.00	0.00		165.39
05/06/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.10	70.75	70.75	0.00	0.00	0.00		169.60
05/07/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.92	70.75	70.75	0.00	0.00	0.00		170.42
05/08/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.07	70.75	70.75	0.00	0.00	0.00		168.57
05/09/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.28	70.75	70.75	0.00	0.00	0.00		166.78
05/10/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.67	70.75	70.75	0.00	0.00	0.00		166.17
05/11/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.63	70.75	70.75	0.00	0.00	0.00		166.13
05/12/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.73	70.75	70.75	0.00	0.00	0.00		166.23
05/13/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.21	70.75	70.75	0.00	0.00	0.00		166.71
05/14/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.67	70.75	70.75	0.00	0.00	0.00		165.17
05/15/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.88	70.75	70.75	0.00	0.00	0.00		162.38
05/16/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.68	70.75	70.75	0.00	0.00	0.00		161.18
05/17/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.49	70.75	70.75	0.00	0.00	0.00		160.99
05/18/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.69	70.75	70.75	0.00	0.00	0.00		160.19
05/19/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.85	70.75	70.75	0.00	0.00	0.00		159.35
05/20/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.90	70.75	70.75	0.00	0.00	0.00		158.40
05/21/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.97	70.75	70.75	0.00	0.00	0.00		158.47
05/22/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.98	70.75	70.75	0.00	0.00	0.00		159.48
05/23/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.68	70.75	70.75	0.00	0.00	0.00		160.18
05/24/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.16	70.75	70.75	0.00	0.00	0.00		161.66
05/25/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.42	70.75	70.75	0.00	0.00	0.00		163.92
05/26/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.52	70.75	70.75	0.00	0.00	0.00		161.02
05/27/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.76	70.75	70.75	0.00	0.00	0.00		156.26
05/28/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.54	70.75	70.75	0.00	0.00	0.00		156.04
05/29/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.81	70.75	70.75	0.00	0.00	0.00		162.31
05/30/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83	70.75	70.75	0.00	0.00	0.00		169.33

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3	Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5	Flow
05/31/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.43	70.75	70.75	0.00	0.00	0.00	170.93
06/01/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.15	70.75	70.75	0.00	0.00	0.00	173.65
06/02/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.39	70.75	70.75	0.00	0.00	0.00	176.89
06/03/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.80	70.75	70.75	0.00	0.00	0.00	174.30
06/04/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.24	70.75	70.75	0.00	0.00	0.00	167.74
06/05/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.41	70.75	70.75	0.00	0.00	0.00	164.91
06/06/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.50	70.75	70.75	0.00	0.00	0.00	163.00
06/07/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.93	70.75	70.75	0.00	0.00	0.00	162.43
06/08/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.22	70.75	70.75	0.00	0.00	0.00	166.72
06/09/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.52	70.75	70.75	0.00	0.00	0.00	175.02
06/10/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.14	70.75	70.75	0.00	0.00	0.00	184.64
06/11/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.50	70.75	70.75	0.00	0.00	0.00	191.00
06/12/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.11	70.75	70.75	0.00	0.00	0.00	201.61
06/13/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.77	70.75	70.75	0.00	0.00	0.00	209.27
06/14/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	2.79	215.04
06/15/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	7.95	220.20
06/16/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	13.32	225.57
06/17/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	14.07	226.32
06/18/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	3.21	215.46
06/19/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	11.03	223.28
06/20/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	13.13	225.38
06/21/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	10.13	222.38
06/22/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	5.68	217.93
06/23/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	1.79	214.04
06/24/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	0.72	212.97
06/25/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	4.48	216.73
06/26/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	8.91	221.16
06/27/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	10.98	223.23
06/28/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	11.06	223.31
06/29/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.54	70.75	70.64	0.00	0.00	0.00	210.93
06/30/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.33	0.00	0.00	0.00	211.83
07/01/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.61	70.75	70.75	0.00	0.00	0.00	212.11
07/02/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	4.49	216.74
07/03/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	6.43	218.68
07/04/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	12.11	224.36
07/05/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	12.55	224.80
07/06/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	14.62	226.87
07/07/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	17.17	229.42
07/08/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	14.52	226.77
07/09/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	10.82	223.07
07/10/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	10.11	222.36
07/11/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	5.93	218.18
07/12/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	69.49	0.00	0.00	0.00	210.99
07/13/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	69.72	0.00	0.00	0.00	211.22
07/14/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	2.20	214.45
07/15/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	4.26	216.51
07/16/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	12.68	224.93
07/17/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	13.13	225.38
07/18/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	0.00	12.49	224.74
07/19/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	11.23	0.00	223.48
07/20/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	11.68	0.00	223.93
07/21/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	8.20	0.00	220.45
07/22/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	70.75	0.00	1.02	0.00	213.27
07/23/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.59	70.75	70.75	0.00	0.00	0.00	210.09
07/24/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.51	70.75	70.75	0.00	0.00	0.00	210.01
07/25/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.88	70.75	70.75	0.00	0.00	0.00	207.38
07/26/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.51	70.75	70.75	0.00	0.00	0.00	202.01
07/27/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.81	70.75	70.75	0.00	0.00	0.00	200.31
07/28/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.00	70.75	70.75	0.00	0.00	0.00	198.50
07/29/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.49	70.75	70.75	0.00	0.00	0.00	194.99
07/30/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.62	70.75	70.75	0.00	0.00	0.00	192.12
07/31/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.39	70.75	70.75	0.00	0.00	0.00	191.89
08/01/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.30	70.75	70.75	0.00	0.00	0.00	194.80
08/02/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.26	70.75	70.75	0.00	0.00	0.00	198.76
08/03/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.84	70.75	70.75	0.00	0.00	0.00	200.34
08/04/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.39	70.75	70.75	0.00	0.00	0.00	198.89
08/05/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.70	70.75	70.75	0.00	0.00	0.00	186.20

	Dam #1	Multilevel Intake Structure Ports								Dam #1	Dam #2	Dam#3	Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5	Flow
08/06/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.82	70.75	70.75	0.00	0.00	0.00	167.32
08/07/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.68	70.75	70.75	0.00	0.00	0.00	161.18
08/08/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.33	70.75	70.75	0.00	0.00	0.00	162.83
08/09/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.59	70.75	70.75	0.00	0.00	0.00	161.09
08/10/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.19	70.75	70.75	0.00	0.00	0.00	157.69
08/11/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.48	70.75	70.75	0.00	0.00	0.00	153.98
08/12/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.58	70.75	70.75	0.00	0.00	0.00	148.08
08/13/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.63	70.75	61.69	0.00	0.00	0.00	144.07
08/14/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.03	70.66	51.72	0.00	0.00	0.00	141.41
08/15/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.90	65.75	41.85	0.00	0.00	0.00	136.50
08/16/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.45	62.13	32.30	0.00	0.00	0.00	132.88
08/17/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.72	61.35	23.03	0.00	0.00	0.00	132.10
08/18/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.92	63.31	13.83	0.00	0.00	0.00	134.06
08/19/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.98	66.22	4.77	0.00	0.00	0.00	136.97
08/20/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.74	67.29	0.01	0.00	0.00	0.00	138.04
08/21/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.00	70.75	0.00	0.00	0.00	0.00	139.75
08/22/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.45	70.75	0.00	0.00	0.00	0.00	136.20
08/23/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.70	70.75	0.00	0.00	0.00	0.00	130.45
08/24/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.31	70.75	0.00	0.00	0.00	0.00	126.06
08/25/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.44	70.75	0.00	0.00	0.00	0.00	119.19
08/26/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.32	70.75	0.00	0.00	0.00	0.00	116.07
08/27/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.13	70.75	0.00	0.00	0.00	0.00	114.88
08/28/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.70	70.75	0.00	0.00	0.00	0.00	112.45
08/29/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.01	70.75	0.00	0.00	0.00	0.00	107.76
08/30/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.93	70.75	0.00	0.00	0.00	0.00	105.68
08/31/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.33	70.75	0.00	0.00	0.00	0.00	106.08
09/01/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.20	70.75	0.00	0.00	0.00	0.00	102.95
09/02/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.10	70.75	0.00	0.00	0.00	0.00	95.85
09/03/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.02	70.75	0.00	0.00	0.00	0.00	92.77
09/04/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.47	70.75	0.00	0.00	0.00	0.00	93.22
09/05/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.35	70.75	0.00	0.00	0.00	0.00	93.10
09/06/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.55	64.67	0.00	0.00	0.00	0.00	89.22
09/07/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.98	56.14	0.00	0.00	0.00	0.00	83.12
09/08/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.83	47.61	0.00	0.00	0.00	0.00	80.44
09/09/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.92	39.05	0.00	0.00	0.00	0.00	81.97
09/10/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.40	30.39	0.00	0.00	0.00	0.00	83.79
09/11/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.22	21.51	0.00	0.00	0.00	0.00	83.73
09/12/93	0.00	0.00	0.00	0.00	0.00	0.00	58.16	13.58	12.59	0.00	0.00	0.00	0.00	84.33
09/13/93	0.00	0.00	0.00	0.00	0.00	0.00	67.25	12.75	3.50	0.00	0.00	0.00	0.00	83.50
09/14/93	0.00	0.00	0.00	0.00	0.00	0.00	8.90	70.75	0.00	0.00	0.00	0.00	0.00	79.65
09/15/93	0.00	0.00	0.00	0.00	0.00	0.00	5.44	70.75	0.00	0.00	0.00	0.00	0.00	76.19
09/16/93	0.00	0.00	0.00	0.00	0.00	0.00	3.75	70.75	0.00	0.00	0.00	0.00	0.00	74.50
09/17/93	0.00	0.00	0.00	0.00	0.00	0.00	3.30	70.75	0.00	0.00	0.00	0.00	0.00	74.05
09/18/93	0.00	0.00	0.00	0.00	0.00	0.00	5.51	70.75	0.00	0.00	0.00	0.00	0.00	76.26
09/19/93	0.00	0.00	0.00	0.00	0.00	0.00	7.15	70.75	0.00	0.00	0.00	0.00	0.00	77.90
09/20/93	0.00	0.00	0.00	0.00	0.00	0.00	6.15	70.75	0.00	0.00	0.00	0.00	0.00	76.90
09/21/93	0.00	0.00	0.00	0.00	0.00	0.00	5.93	70.75	0.00	0.00	0.00	0.00	0.00	76.68
09/22/93	0.00	0.00	0.00	0.00	0.00	0.00	7.12	70.75	0.00	0.00	0.00	0.00	0.00	77.87
09/23/93	0.00	0.00	0.00	0.00	0.00	0.00	7.43	70.75	0.00	0.00	0.00	0.00	0.00	78.18
09/24/93	0.00	0.00	0.00	0.00	0.00	0.00	6.67	70.75	0.00	0.00	0.00	0.00	0.00	77.42
09/25/93	0.00	0.00	0.00	0.00	0.00	0.00	7.38	70.75	0.00	0.00	0.00	0.00	0.00	78.13
09/26/93	0.00	0.00	0.00	0.00	0.00	0.00	8.37	70.75	0.00	0.00	0.00	0.00	0.00	79.12
09/27/93	0.00	0.00	0.00	0.00	0.00	0.00	6.67	70.75	0.00	0.00	0.00	0.00	0.00	77.42
09/28/93	0.00	0.00	0.00	0.00	0.00	0.00	1.50	70.75	0.00	0.00	0.00	0.00	0.00	72.25
09/29/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.31	0.00	0.00	0.00	0.00	0.00	62.31
09/30/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.20	0.00	0.00	0.00	0.00	0.00	56.20
10/01/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.60	0.00	0.00	0.00	0.00	0.00	47.60
10/02/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.99	0.00	0.00	0.00	0.00	0.00	42.99
10/03/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.69	0.00	0.00	0.00	0.00	0.00	52.69
10/04/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.54	0.00	0.00	0.00	0.00	0.00	61.54
10/05/93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.44	0.00	0.00	0.00	0.00	0.00	66.44
10/06/93	0.00	0.00	0.00	0.00	0.00	0.00	0.43	70.75	0.00	0.00	0.00	0.00	0.00	71.18
10/07/93	0.00	0.00	0.00	0.00	0.00	0.00	3.96	70.75	0.00	0.00	0.00	0.00	0.00	74.71
10/08/93	0.00	0.00	0.00	0.00	0.00	0.00	5.40	70.75	0.00	0.00	0.00	0.00	0.00	76.15
10/09/93	0.00	0.00	0.00	0.00	0.00	0.00	6.42	70.75	0.00	0.00	0.00	0.00	0.00	77.17
10/10/93	0.00	0.00	0.00	0.00	0.00	0.00	8.52	70.75	0.00	0.00	0.00	0.00	0.00	79.27
10/11/93	0.00	0.00	0.00	0.00	0.00	0.00	8.16	70.75	0.00	0.00	0.00	0.00	0.00	78.91

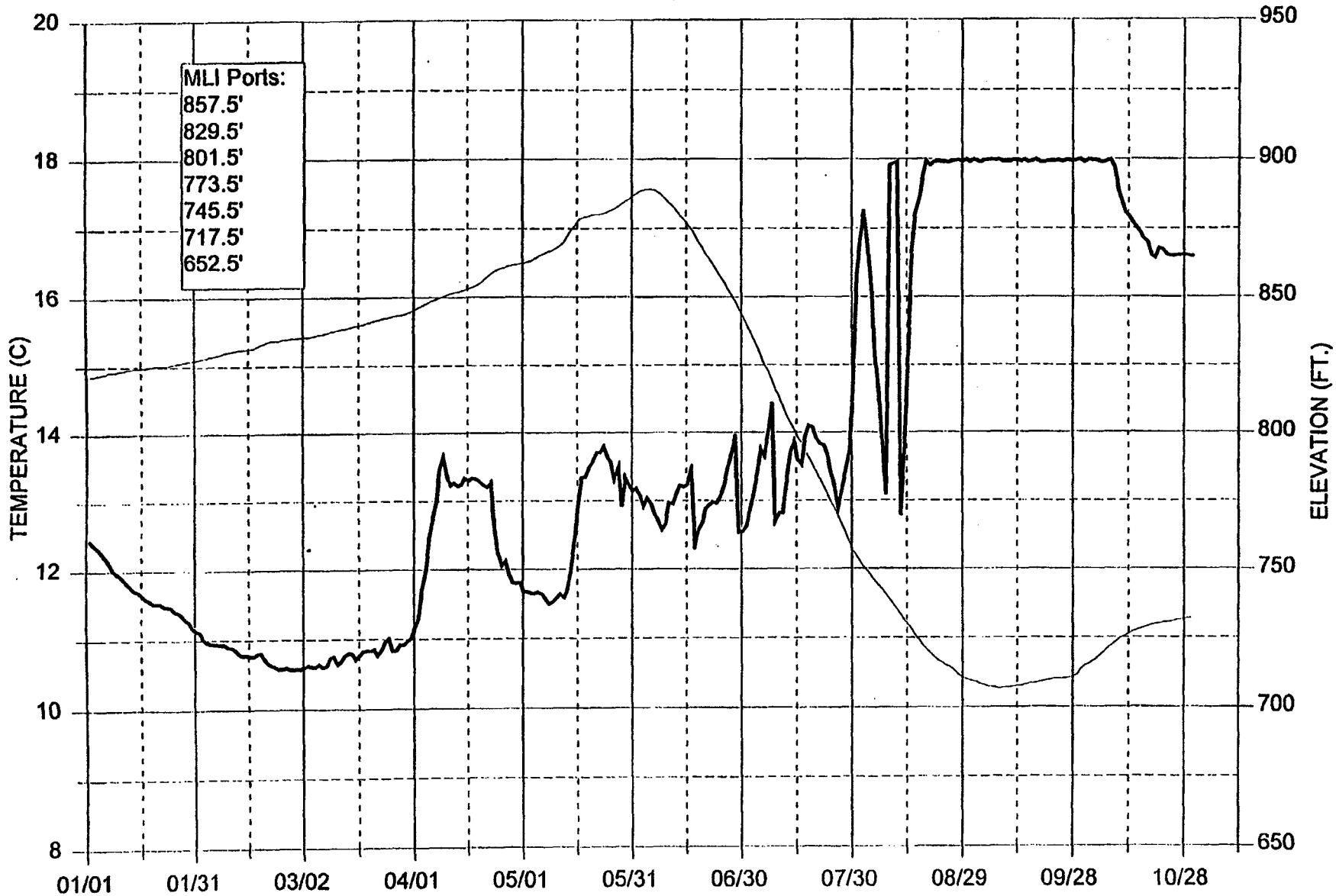
	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
10/12/93	0.00	0.00	0.00	0.00	0.00	0.00	6.76	70.75	0.00	0.00	0.00	0.00	0.00		77.51
10/13/93	0.00	0.00	0.00	0.00	0.00	0.00	4.10	70.75	0.00	0.00	0.00	0.00	0.00		74.85
10/14/93	0.00	0.00	0.00	0.00	0.00	0.00	2.06	70.75	0.00	0.00	0.00	0.00	0.00		72.81
10/15/93	0.00	0.00	0.00	0.00	0.00	0.00	2.23	70.75	0.00	0.00	0.00	0.00	0.00		72.98
10/16/93	0.00	0.00	0.00	0.00	0.00	0.00	8.17	64.91	0.00	0.00	0.00	0.00	0.00		73.08
10/17/93	0.00	0.00	0.00	0.00	0.00	1.23	70.75	0.00	0.00	0.00	0.00	0.00	0.00		71.98
10/18/93	0.00	0.00	0.00	0.00	0.00	0.09	70.75	0.00	0.00	0.00	0.00	0.00	0.00		70.84
10/19/93	0.00	0.00	0.00	0.00	0.00	0.00	69.93	0.00	0.00	0.00	0.00	0.00	0.00		69.93
10/20/93	0.00	0.00	0.00	0.00	0.00	0.00	68.24	0.00	0.00	0.00	0.00	0.00	0.00		68.24
10/21/93	0.00	0.00	0.00	0.00	0.00	0.00	65.82	0.00	0.00	0.00	0.00	0.00	0.00		65.82
10/22/93	0.00	0.00	0.00	0.00	0.00	0.00	64.63	0.00	0.00	0.00	0.00	0.00	0.00		64.63
10/23/93	0.00	0.00	0.00	0.00	0.00	0.00	63.95	0.00	0.00	0.00	0.00	0.00	0.00		63.95
10/24/93	0.00	0.00	0.00	0.00	0.00	0.00	62.70	0.00	0.00	0.00	0.00	0.00	0.00		62.70
10/25/93	0.00	0.00	0.00	0.00	0.00	0.00	61.38	0.00	0.00	0.00	0.00	0.00	0.00		61.38
10/26/93	0.00	0.00	0.00	0.00	0.00	0.00	60.64	0.00	0.00	0.00	0.00	0.00	0.00		60.64
10/27/93	0.00	0.00	0.00	0.00	0.00	0.00	44.38	0.00	0.00	0.00	0.00	0.00	0.00		44.38
10/28/93	0.00	0.00	0.00	0.00	0.00	0.00	27.97	0.00	0.00	0.00	0.00	0.00	0.00		27.97
10/29/93	0.00	0.00	0.00	0.00	0.00	0.00	21.19	0.00	0.00	0.00	0.00	0.00	0.00		21.19
10/30/93	0.00	0.00	0.00	0.00	0.00	0.00	9.30	0.00	0.00	0.00	0.00	0.00	0.00		9.30
10/31/93	0.00	0.00	0.00	0.00	0.00	0.00	2.83	0.00	0.00	0.00	0.00	0.00	0.00		2.83
11/01/93	0.00	0.00	0.00	0.00	0.00	0.00	2.82	0.00	0.00	0.00	0.00	0.00	0.00		2.82
11/02/93	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00		3.33
11/03/93	0.00	0.00	0.00	0.00	0.00	0.00	4.34	0.00	0.00	0.00	0.00	0.00	0.00		4.34
11/04/93	0.00	0.00	0.00	0.00	0.00	0.00	4.70	0.00	0.00	0.00	0.00	0.00	0.00		4.70

APPENDIX D

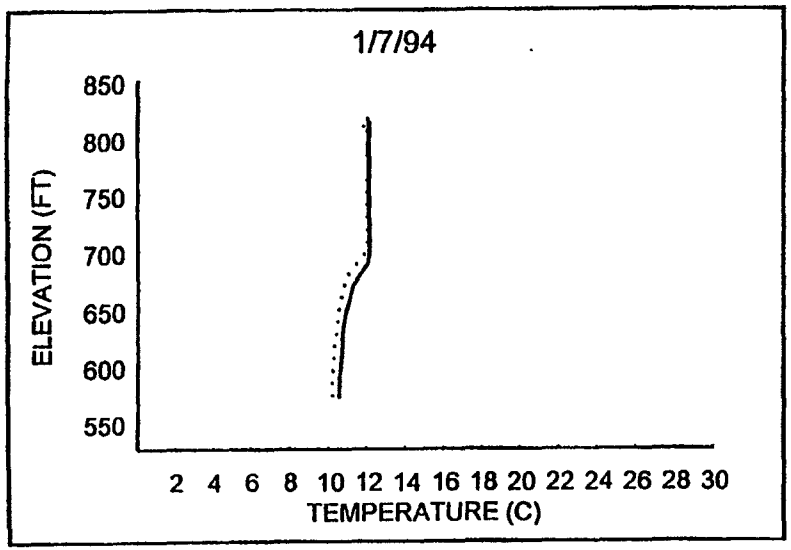
1994 MODEL RUN

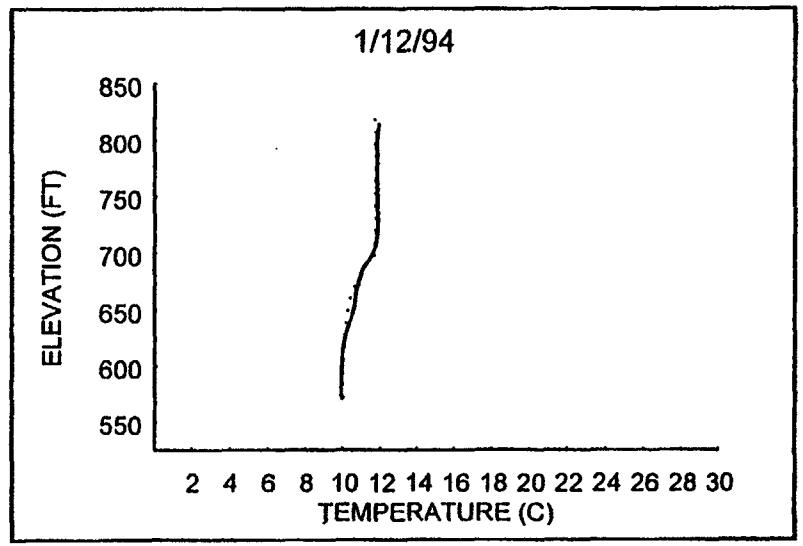
RELEASE TEMPERATURES

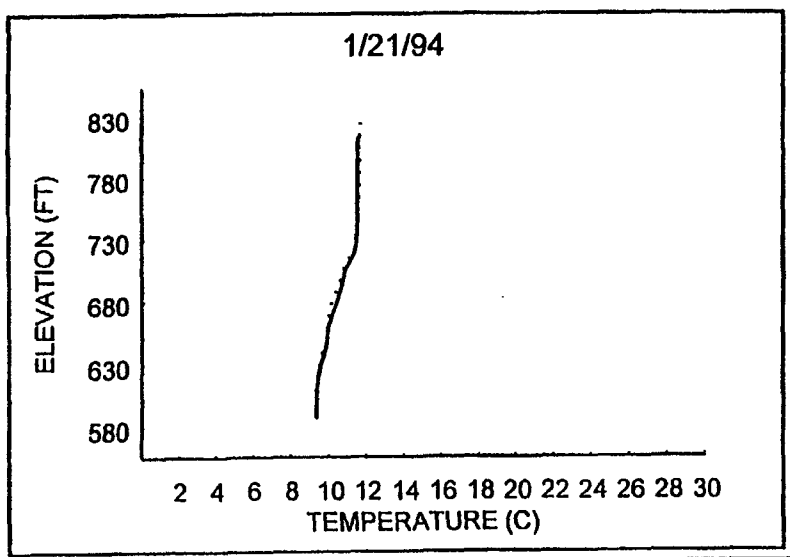
1994 - MLI

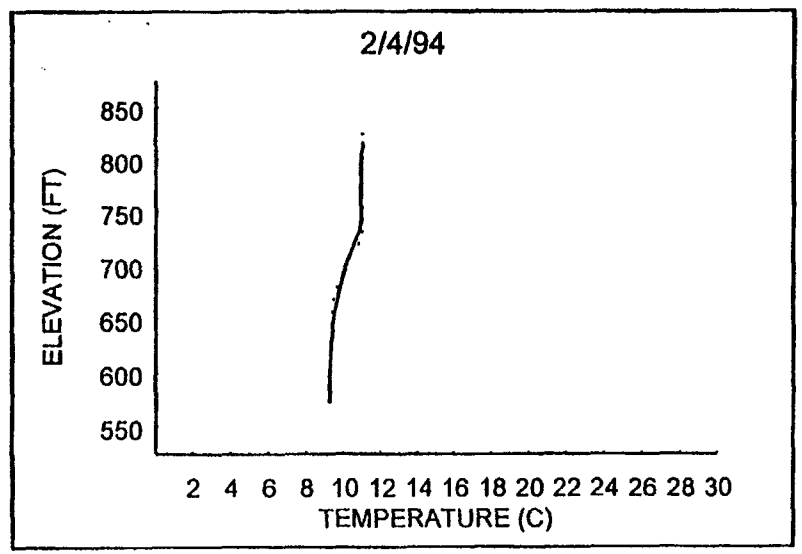


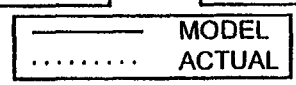
PROFILES FOR MODEL YEAR 1994



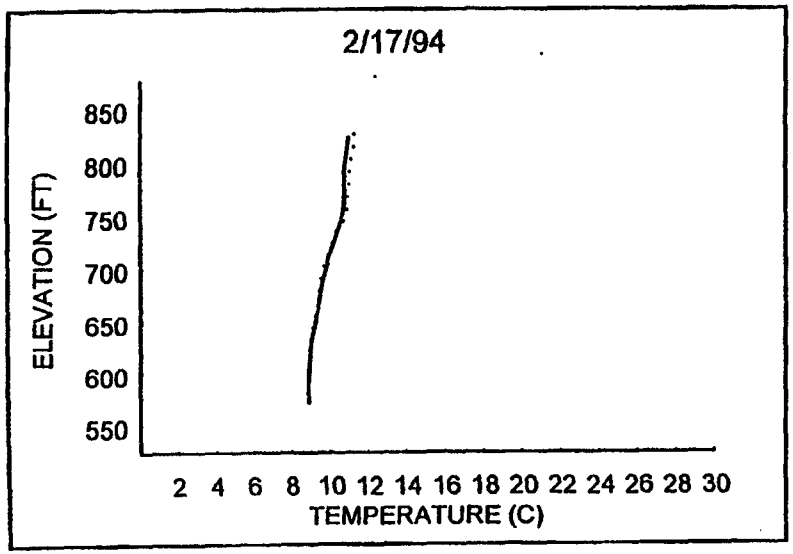


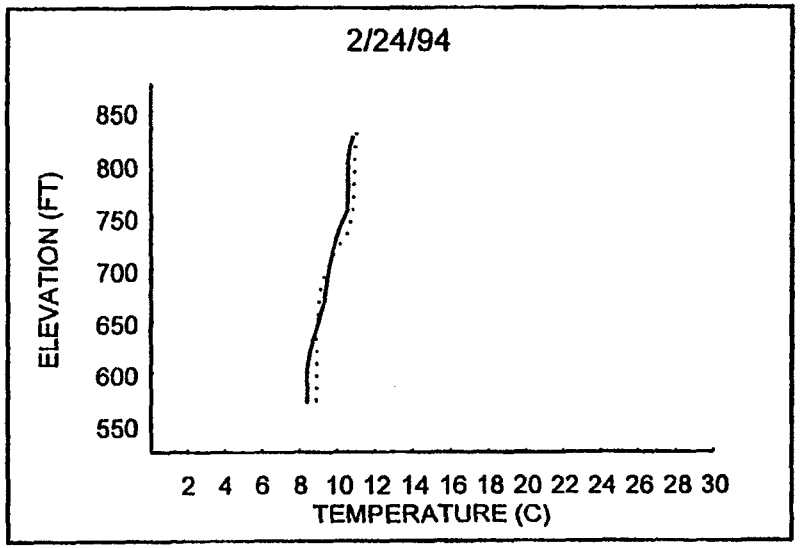


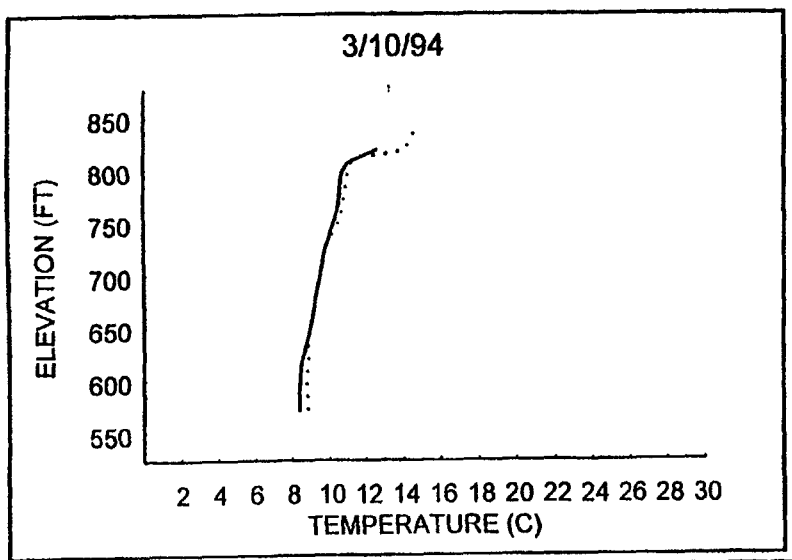


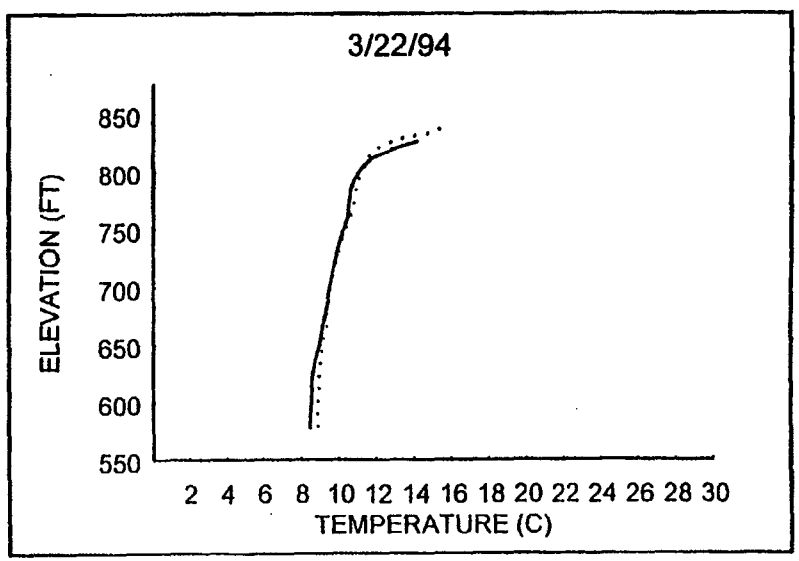


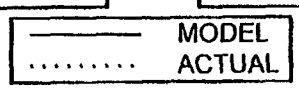
PROFILES FOR MODEL YEAR 1994



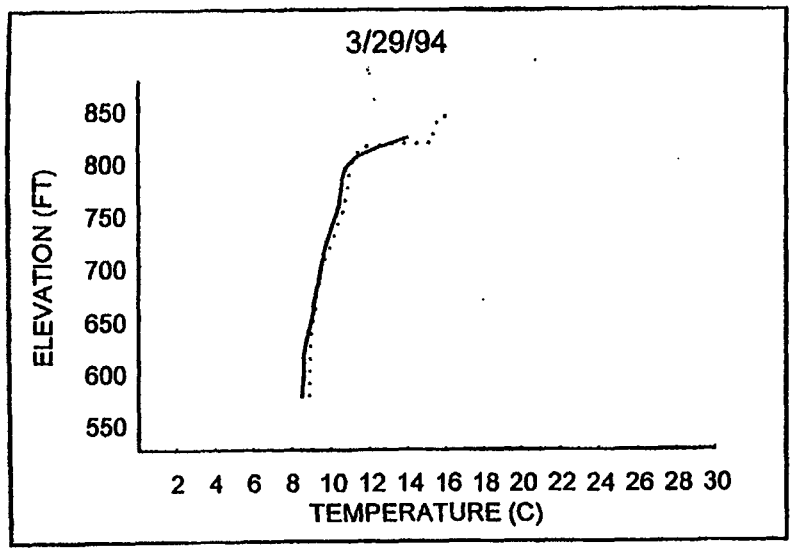


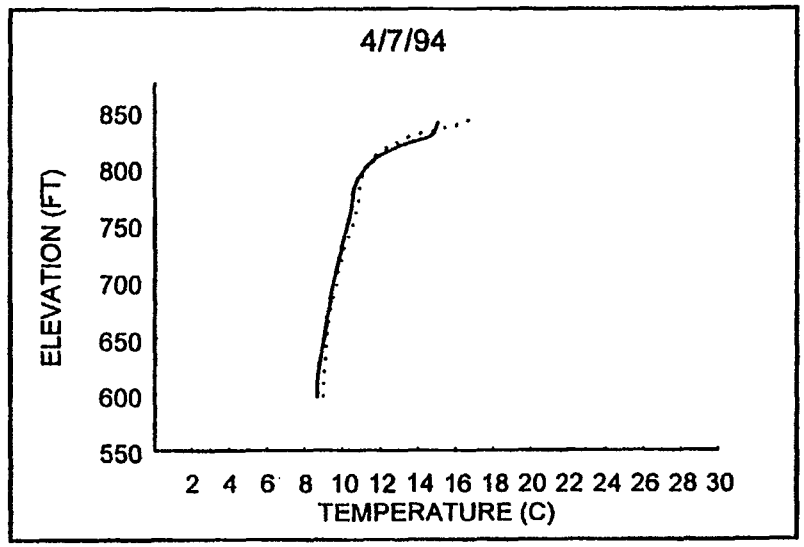


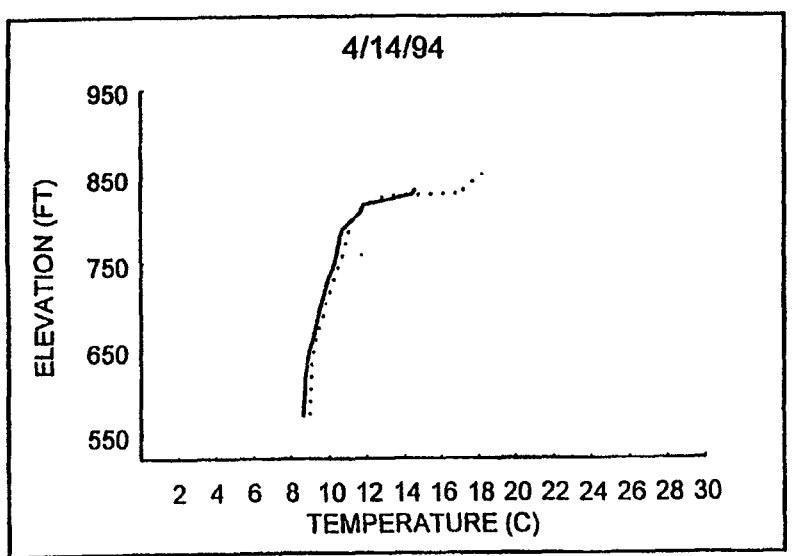


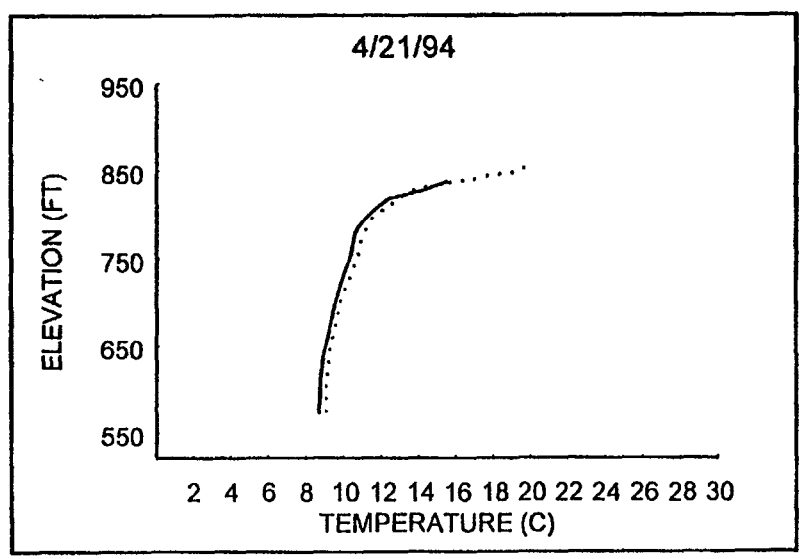


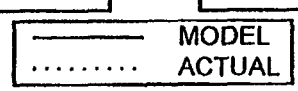
PROFILES FOR MODEL YEAR 1994



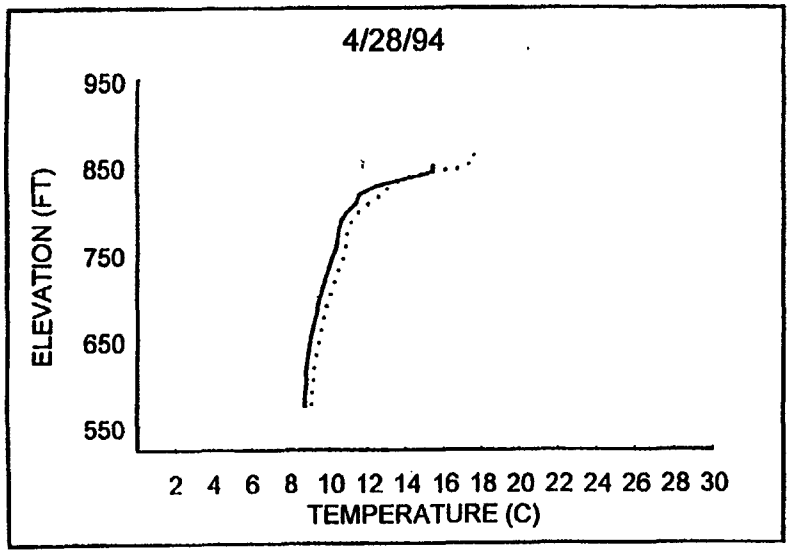


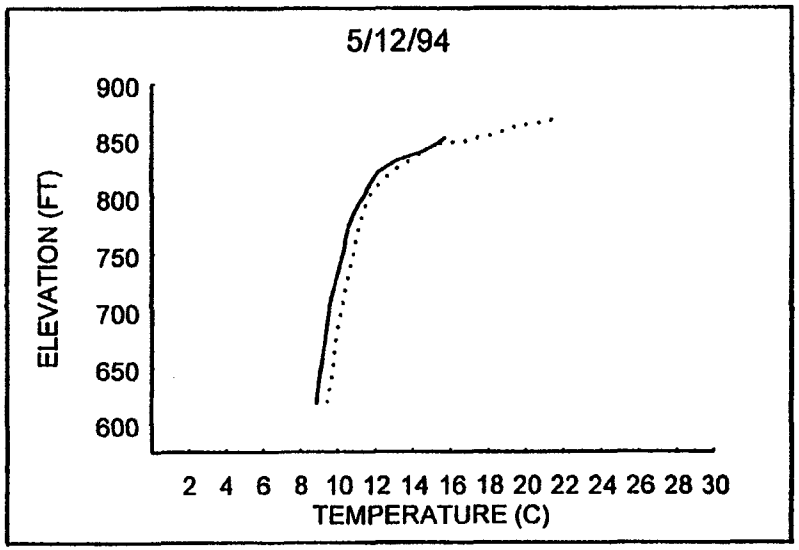


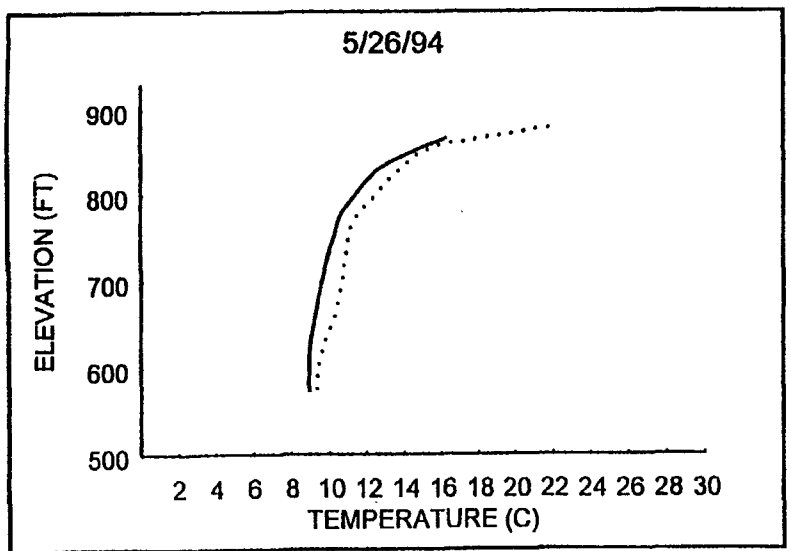


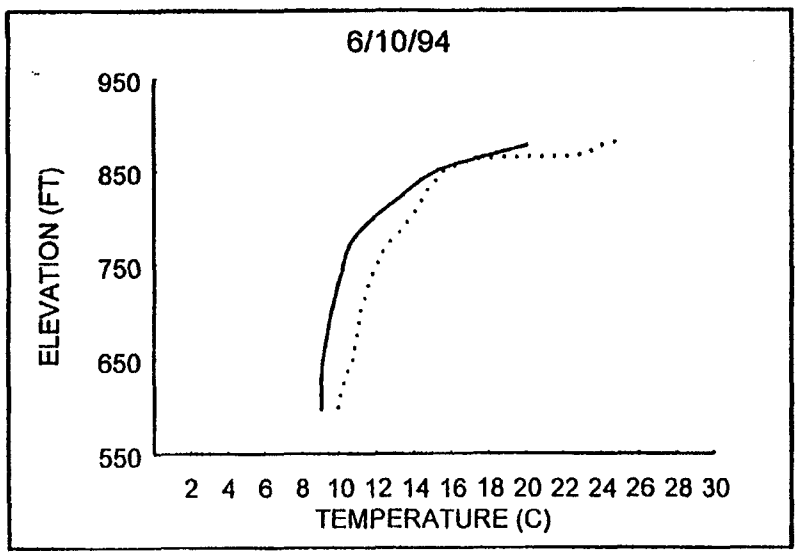


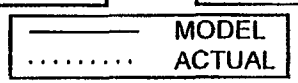
PROFILES FOR MODEL YEAR 1994



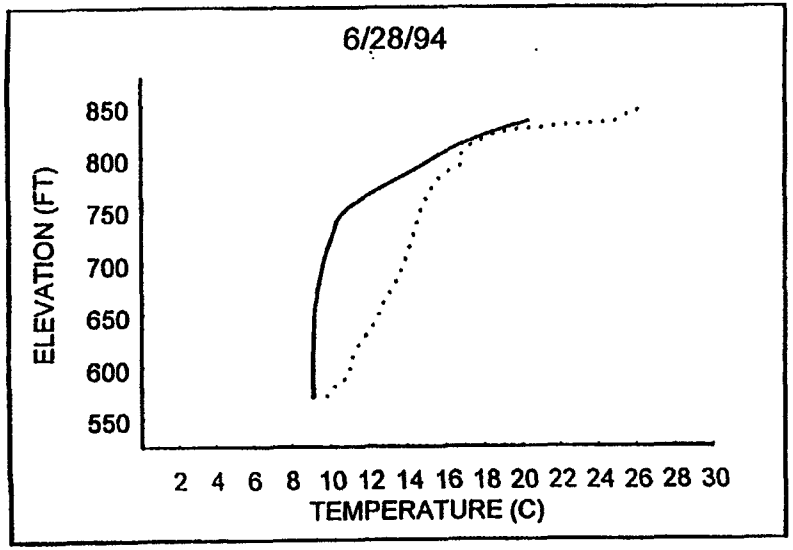


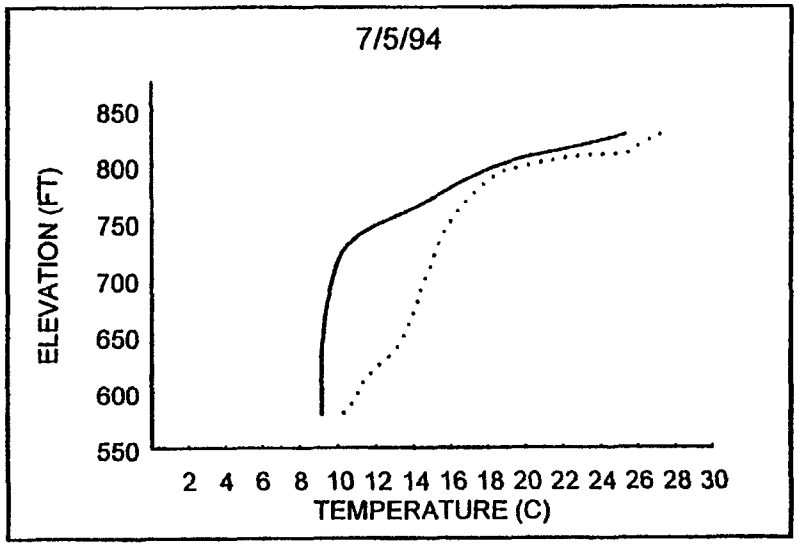


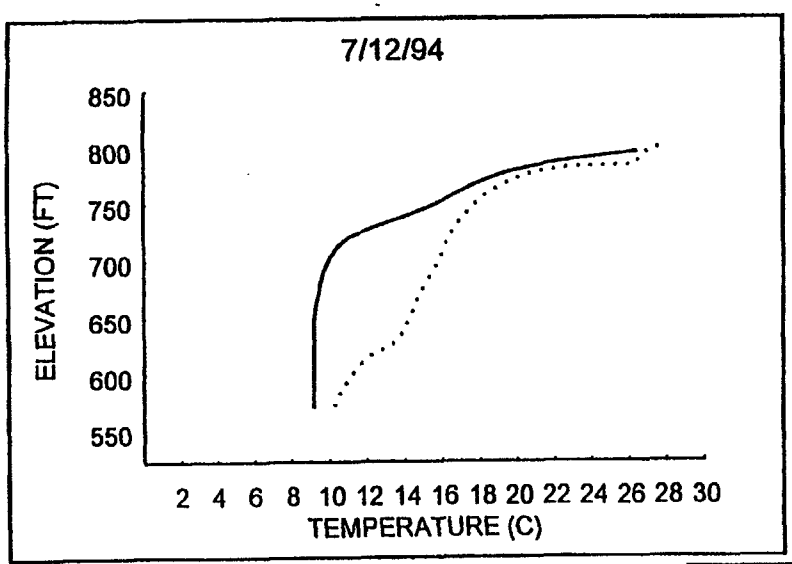


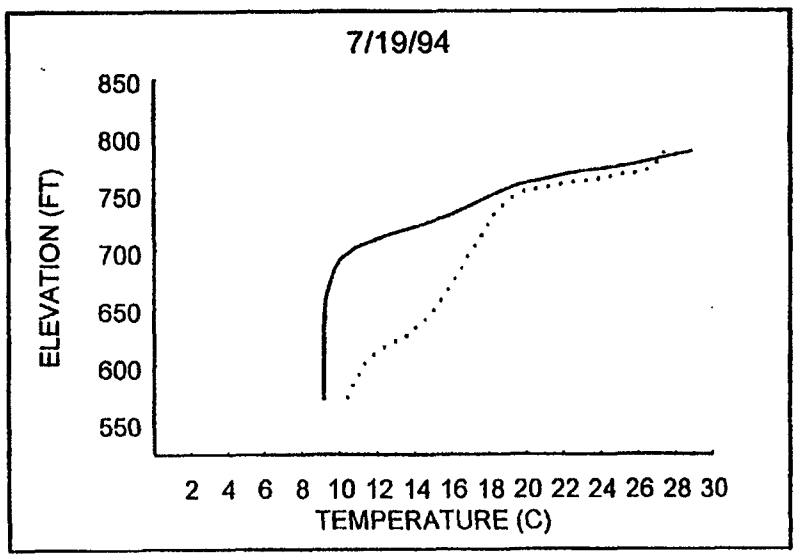


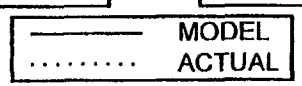
PROFILES FOR MODEL YEAR 1994



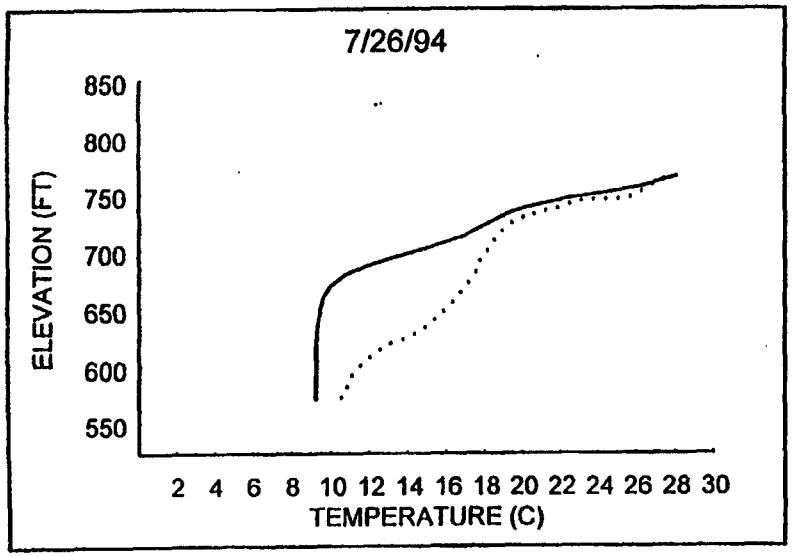


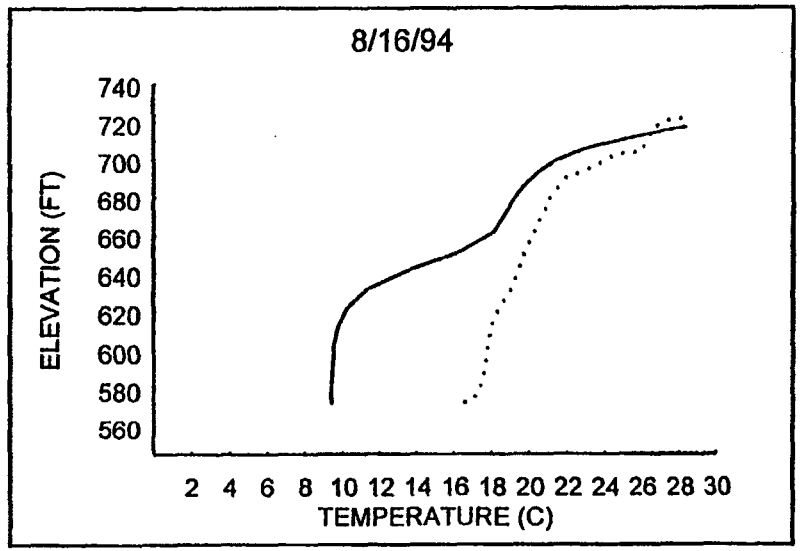


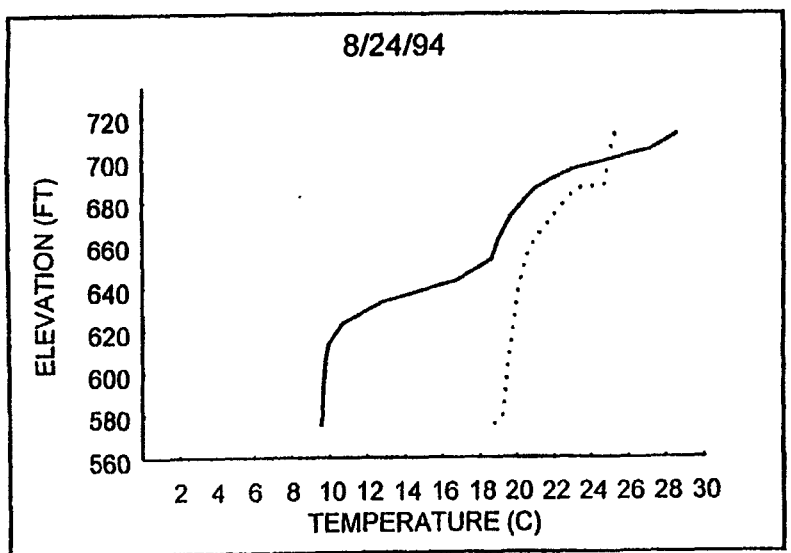


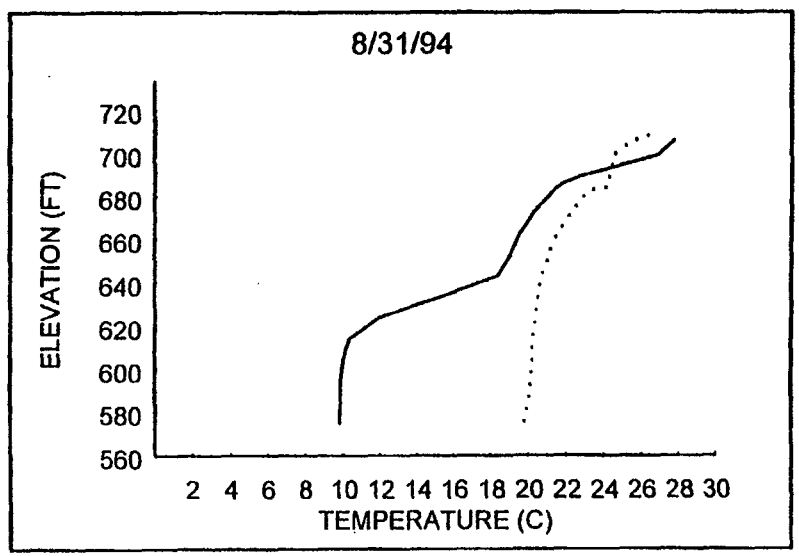


PROFILES FOR MODEL YEAR 1994



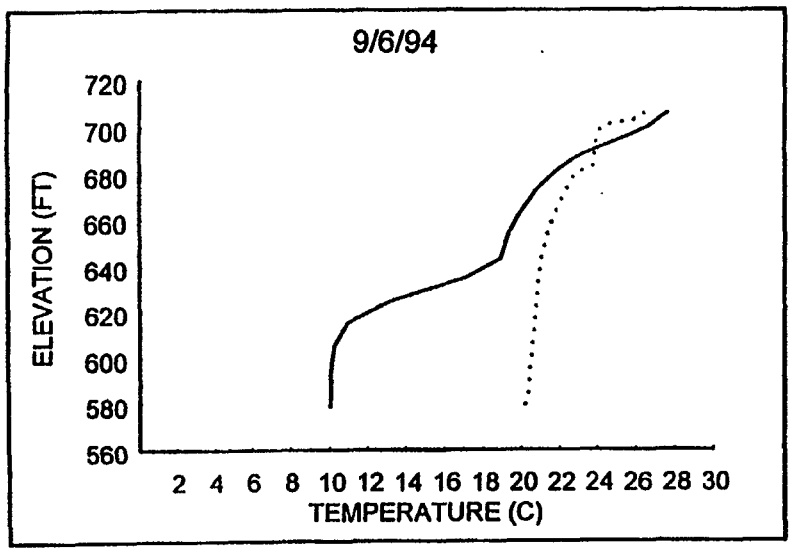


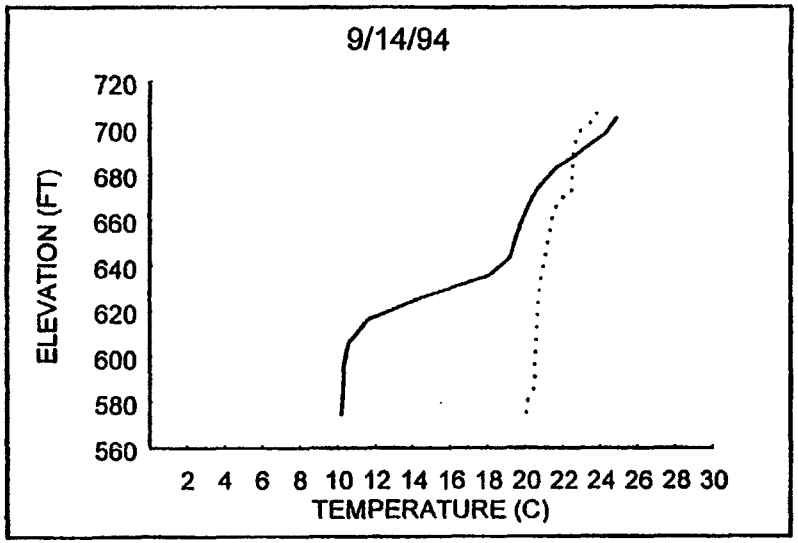


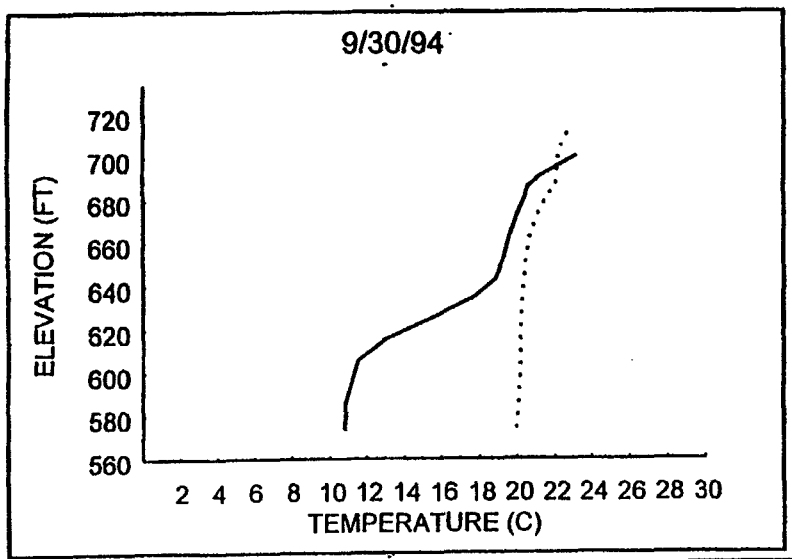


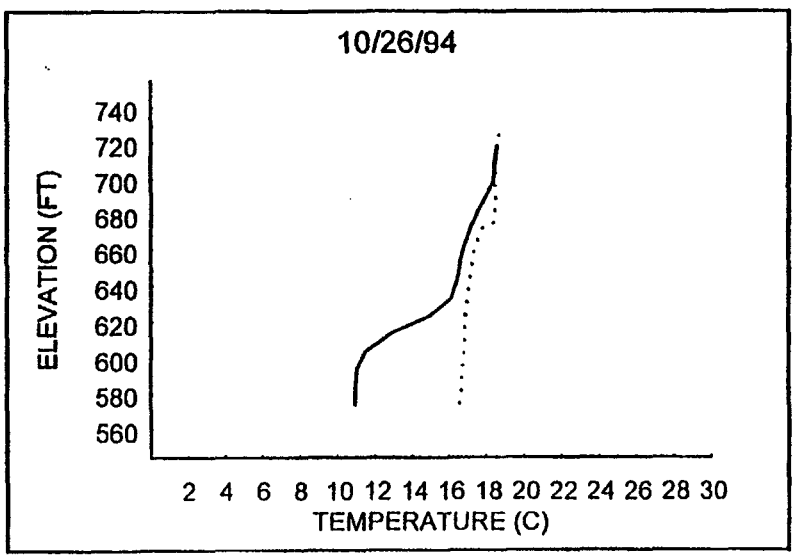
MODEL
ACTUAL

PROFILES FOR MODEL YEAR 1994









MODEL
ACTUAL

PINE FLAT R :VOIR

1994 STORAGE A .LEVATION

DATE	ELEV	STORAGE
01/02/94	821.62	388.89
01/03/94	821.78	389.25
01/04/94	822.05	390.32
01/05/94	822.38	391.39
01/06/94	822.74	392.83
01/07/94	823.03	393.91
01/08/94	823.20	394.27
01/09/94	823.26	394.62
01/10/94	823.52	395.71
01/11/94	823.85	396.79
01/12/94	824.08	397.51
01/13/94	824.28	398.23
01/14/94	824.51	399.32
01/15/94	824.57	399.32
01/16/94	824.61	399.68
01/17/94	824.70	400.04
01/18/94	824.87	400.41
01/19/94	825.03	401.13
01/20/94	825.23	401.86
01/21/94	825.39	402.22
01/22/94	825.46	402.58
01/23/94	825.49	402.58
01/24/94	825.72	403.68
01/25/94	825.98	404.40
01/26/94	826.28	405.50
01/27/94	826.54	406.59
01/28/94	826.80	407.69
01/29/94	827.00	408.42
01/30/94	827.13	408.79
01/31/94	827.36	409.52
02/01/94	827.69	410.62
02/02/94	827.99	411.73
02/03/94	828.28	412.83
02/04/94	828.58	413.94
02/05/94	828.81	415.05
02/06/94	829.00	415.78
02/07/94	829.27	416.52
02/08/94	829.82	418.75
02/09/94	830.22	420.23
02/10/94	830.48	420.98
02/11/94	830.71	422.09
02/12/94	830.94	422.84
02/13/94	831.14	423.59
02/14/94	831.33	424.33
02/15/94	831.50	424.71
02/16/94	831.69	425.45
02/17/94	832.15	427.33
02/18/94	832.81	429.96
02/19/94	833.33	431.84
02/20/94	833.92	434.10
02/21/94	834.28	435.24
02/22/94	834.45	436.00
02/23/94	834.58	436.38
02/24/94	834.71	437.13
02/25/94	834.84	437.51
02/26/94	835.04	438.27
02/27/94	835.17	438.65
02/28/94	835.27	439.03
03/01/94	835.40	439.79
03/02/94	835.53	440.18
03/03/94	835.66	440.56
03/04/94	835.86	441.32
03/05/94	836.15	442.46
03/06/94	836.48	443.61
03/07/94	836.78	444.76
03/08/94	837.07	445.91
03/09/94	837.40	447.44
03/10/94	837.70	448.21
03/11/94	838.06	449.75
03/12/94	838.32	450.90
03/13/94	838.58	451.67
03/14/94	838.88	452.83
03/15/94	839.24	454.38
03/16/94	839.60	455.54
03/17/94	839.93	457.09
03/18/94	840.26	458.26
03/19/94	840.62	459.82
03/20/94	840.98	460.98
03/21/94	841.34	462.55
03/22/94	841.73	464.11
03/23/94	842.13	465.68
03/24/94	842.42	466.85
03/25/94	842.68	467.64
03/26/94	842.91	468.82
03/27/94	843.14	469.60
03/28/94	843.44	470.79
03/29/94	843.80	471.97
03/30/94	844.19	473.55
03/31/94	844.72	475.92
04/01/94	845.37	478.31
04/02/94	846.10	481.09
04/03/94	846.82	484.29
04/04/94	847.54	487.09
04/05/94	848.16	489.50
04/06/94	848.72	491.91
04/07/94	849.25	493.93
04/08/94	849.77	495.95
04/09/94	850.26	497.98
04/10/94	850.72	500.01
04/11/94	851.15	501.64
04/12/94	851.57	503.27
04/13/94	851.84	504.49
04/14/94	852.17	505.72
04/15/94	852.56	507.36
04/16/94	853.05	509.41
04/17/94	853.51	511.46
04/18/94	854.07	513.52
04/19/94	854.92	517.24
04/20/94	856.00	521.80
04/21/94	857.25	526.80
04/22/94	858.40	531.40
04/23/94	859.32	535.61
04/24/94	859.97	538.14
04/25/94	860.50	540.25
04/26/94	860.99	542.37
04/27/94	861.32	544.07
04/28/94	861.61	545.34
04/29/94	861.91	546.62
04/30/94	862.20	547.89
05/01/94	862.43	548.75
05/02/94	862.76	550.03
05/03/94	863.19	551.74
05/04/94	863.81	554.73
05/05/94	864.70	558.17
05/06/94	865.49	561.62
05/07/94	866.14	564.65
05/08/94	866.67	566.81
05/09/94	867.16	568.98
05/10/94	867.78	571.59
05/11/94	868.67	575.52
05/12/94	870.08	581.66
05/13/94	872.05	590.48
05/14/94	874.21	600.27
05/15/94	876.18	608.79
05/16/94	877.69	615.57
05/17/94	878.64	620.10
05/18/94	879.17	622.38
05/19/94	879.53	624.20
05/20/94	879.76	625.11
05/21/94	879.92	626.03
05/22/94	880.09	626.48
05/23/94	880.38	627.86
05/24/94	880.87	630.15
05/25/94	881.46	632.90
05/26/94	882.09	635.66
05/27/94	882.94	639.81
05/28/94	883.83	643.98
05/29/94	884.71	648.16
05/30/94	885.60	651.88
05/31/94	886.61	657.03
06/01/94	887.57	661.25
06/02/94	888.48	665.49
06/03/94	888.91	667.85
06/04/94	889.17	668.80
06/05/94	889.21	669.27
06/06/94	888.94	667.85
06/07/94	888.09	663.61
06/08/94	886.98	658.44
06/09/94	885.70	652.35
06/10/94	884.38	646.30
06/11/94	883.07	640.27
06/12/94	881.63	633.82
06/13/94	880.02	626.48
06/14/94	878.31	618.74
06/15/94	876.57	610.60
06/16/94	874.64	602.06
06/17/94	872.51	592.70
06/18/94	870.31	583.00
06/19/94	868.11	573.34
06/20/94	865.98	563.78
06/21/94	863.94	555.16
06/22/94	861.84	546.19
06/23/94	859.71	537.29
06/24/94	857.55	528.05
06/25/94	855.35	518.89
06/26/94	853.08	509.41
06/27/94	850.75	500.01
06/28/94	848.39	490.30
06/29/94	845.83	480.29
06/30/94	843.18	469.60
07/01/94	840.42	459.04
07/02/94	837.53	447.82
07/03/94	834.68	436.76
07/04/94	831.69	425.45
07/05/94	828.71	414.68
07/06/94	825.66	403.33
07/07/94	822.57	392.11
07/08/94	819.49	381.07
07/09/94	816.27	369.85
07/10/94	812.99	358.46
07/11/94	809.65	347.26
07/12/94	806.33	336.24
07/13/94	803.61	327.36
07/14/94	801.15	319.25
07/15/94	798.62	311.25
07/16/94	796.10	303.04
07/17/94	793.50	295.25
07/18/94	790.88	286.97
07/19/94	788.25	279.10
07/20/94	785.60	271.06
07/21/94	783.07	263.72
07/22/94	780.35	255.92
07/23/94	777.58	247.95
07/24/94	774.80	240.40
07/25/94	772.15	232.97
07/26/94	769.23	225.13
07/27/94	766.21	217.16
07/28/94	763.16	209.09
07/29/94	759.94	200.93
07/30/94	756.79	192.95
07/31/94	754.53	187.55
08/01/94	752.62	182.96
08/02/94	750.82	178.67
08/03/94	749.15	174.66
08/04/94	747.47	170.70
08/05/94	745.83	167.02
08/06/94	744.13	163.15
08/07/94	742.39	159.11
08/08/94	740.65	155.34
08/09/94	738.91	151.62
08/10/94	737.07	147.52
08/11/94	735.17	143.47
08/12/94	733.30	139.70
08/13/94	731.50	135.77
08/14/94	729.66	132.10
08/15/94	727.76	128.29
08/16/94	725.82	124.53
08/17/94	723.85	120.64
08/18/94	722.28	117.57
08/19/94	720.83	114.92
08/20/94	719.49	112.31
08/21/94	718.18	109.90
08/22/94	716.96	107.71
08/23/94	716.04	106.08
08/24/94	715.29	104.64
08/25/94	714.57	103.39
08/26/94	713.78	101.97
08/27/94	712.66	100.04
08/28/94	711.35	97.78
08/29/94	710.47	96.23
08/30/94	709.91	95.37
08/31/94	709.48	94.52
09/01/94	709.06	93.84
09/02/94	708.66	93.17
09/03/94	708.17	92.32
09/04/94	707.55	91.32
09/05/94	707.22	90.82
09/06/94	707.02	90.49
09/07/94	706.79	89.99
09/08/94	706.53	89.66
09/09/94	706.76	89.99
09/10/94	706.92	90.32
09/11/94	706.96	90.32
09/12/94	707.12	90.65
09/13/94	707.41	91.15
09/14/94	707.51	91.32
09/15/94	707.78	91.65
09/16/94	708.14	92.32
09/17/94	708.43	92.83
09/18/94	708.63	93.17
09/19/94	708.92	93.67
09/20/94	709.15	94.01
09/21/94	709.42	94.52
09/22/94	709.68	94.86
09/23/94	709.94	95.37
09/24/94	710.10	95.71
09/25/94	710.07	95.54
09/26/94	710.14	95.71
09/27/94	710.40	96.23
09/28/94	710.70	96.57
09/29/94	711.19	97.43
09/30/94	713.29	101.09
10/01/94	714.63	103.57
10/02/94	715.45	105.00
10/03/94	716.31	106.62
10/04/94	717.03	107.89
10/05/94	718.41	110.46
10/06/94	719.69	112.68
10/07/94	720.83	114.92
10/08/94	721.88	116.81
10/09/94	722.93	118.91
10/10/94	723.98	120.83
10/11/94	724.97	122.77
10/12/94	725.82	124.53
10/13/94	726.54	125.91
10/14/94	727.10	126.90
10/15/94	727.59	127.89
10/16/94	728.05	128.88
10/17/94	728.48	129.88
10/18/94	729.07	130.89
10/19/94	729.46	131.70
10/20/94	729.76	132.30
10/21/94	730.05	132.91
10/22/94	730.31	133.52
10/23/94	730.54	133.93

PINE FLAT RESERVOIR TEMPERATURE PROFILES

1994

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
	578.1	8.88	8.47
	582.7	8.88	8.47
	592.5	8.87	8.50
	602.4	8.89	8.54
	612.2	8.93	8.55
	622.0	8.96	8.59
	631.9	9.00	8.70
	639.4	9.06	8.81
	645.0	9.08	8.89
	654.9	9.16	9.03
	664.7	9.37	9.16
	674.5	9.33	9.26
	684.4	9.41	9.36
	694.2	9.50	9.45
	704.1	9.61	9.56
	713.9	9.75	9.68
	723.7	9.85	9.81
	732.3	10.05	9.95
	740.2	10.16	10.08
	748.4	10.31	10.23
	750.0	10.35	10.27
	759.8	10.59	10.46
	773.0	10.81	10.55
	782.8	10.90	10.62
	792.6	11.04	10.81
	802.5	11.29	11.19
	812.3	11.56	11.82
	822.2	12.24	13.40
	825.5	12.86	14.12

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
04/21/94	574.1	9.05	8.70
	575.4	9.05	8.70
	585.3	9.05	8.73
	595.1	9.06	8.77
	605.0	9.08	8.77
	614.8	9.10	8.78
	624.7	9.16	8.83
	634.5	9.18	8.89
	643.4	9.25	8.97
	653.2	9.30	9.08
	663.0	9.45	9.18
	672.9	9.52	9.27
	682.7	9.62	9.35
	693.6	9.74	9.48
	703.4	9.85	9.62
	713.2	9.99	9.74
	723.1	10.22	9.87
	732.9	10.41	10.01
	741.1	10.50	10.15
	749.0	10.58	10.27
	759.2	10.81	10.42
	769.0	10.89	10.51
	778.9	11.05	10.60
	788.7	11.25	10.82
	798.5	11.57	11.29
	808.4	12.24	11.74
	818.2	12.93	12.38
	828.1	13.68	14.23
	831.4	14.09	14.64
	834.6	14.92	15.05
	837.9	15.87	15.46

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
05/26/94	574.6	9.34	8.94
	578.5	9.32	8.94
	583.8	9.33	8.95
	593.6	9.41	8.96
	603.5	9.45	8.96
	613.3	9.58	8.96
	623.1	9.69	8.98
	633.0	9.80	9.03
	642.8	9.99	9.10
	652.7	10.16	9.19
	662.5	10.32	9.27
	672.4	10.41	9.36
	682.2	10.55	9.44
	695.3	10.64	9.56
	705.2	10.72	9.67
	715.0	10.78	9.77
	724.8	10.82	9.89
	732.4	10.90	9.98
	740.6	10.96	10.10
	748.5	11.01	10.21
	759.3	11.09	10.35
	769.1	11.27	10.48
	779.0	11.57	10.68
	788.8	11.95	10.99
	798.7	12.45	11.35
	808.5	12.80	11.70
	818.4	13.20	12.09
	828.2	13.71	12.53
	838.0	14.17	13.20
	847.9	14.68	14.16
	856.1	15.64	15.07
	859.4	16.00	15.46
	861.0	16.34	15.66
	862.6	17.30	15.85
	865.9	18.07	16.23

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATE TEMP.
06/28/94	570.8	9.79	9.11
	581.9	10.35	9.11
	591.8	10.97	9.11
	601.6	11.04	9.11
	611.4	11.19	9.11
	621.3	11.48	9.12
	631.1	11.90	9.13
	640.6	12.24	9.15
	650.5	12.52	9.17
	660.3	12.72	9.21
	683.6	13.49	9.45
	693.5	13.68	9.58
	703.3	13.88	9.70
	713.2	14.06	9.86
	723.0	14.22	10.06
	730.5	14.36	10.19
	738.4	14.48	10.32
	746.3	14.60	10.58
	752.5	14.73	10.97
	762.4	15.01	11.81
	772.2	15.34	12.77
	782.1	15.72	13.79
	791.9	16.71	14.73
	801.7	16.71	15.62
	811.6	17.25	16.63
	821.4	18.36	17.98
	824.7	18.93	18.49
	827.0	19.80	18.84
	829.6	21.43	19.32
	830.9	22.36	19.58
	831.9	23.35	19.78
	834.5	24.85	20.29

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
07/26/94	571.5	10.54	9.24
	581.3	10.82	9.24
	591.2	11.08	9.24
	601.0	11.54	9.24
	610.8	12.33	9.25
	619.1	13.08	9.26
	623.6	13.91	9.27
	630.5	14.66	9.30
	639.7	15.35	9.36
	649.6	16.03	9.48
	659.4	16.58	9.64
	669.2	17.00	9.99
	679.1	17.43	10.75
	683.0	17.57	11.28
	692.9	17.78	13.05
	702.7	18.32	15.17
	712.6	18.60	16.94
	722.4	19.21	18.02
	729.6	20.19	18.86
	733.2	20.87	19.36
	737.5	21.86	20.15
	742.1	22.69	21.29
	744.4	23.24	21.95
	745.4	24.17	22.23
	745.7	25.62	22.32
	755.2	26.61	26.08
	765.0	27.58	28.04

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
08/24/94	575.0	18.70	9.57
	583.8	19.27	9.63
	593.7	19.37	9.67
	603.5	19.45	9.75
	613.4	19.64	9.95
	623.2	19.77	10.67
	633.0	19.93	12.82
	642.9	20.15	16.69
	652.7	20.43	18.61
	662.6	20.91	18.99
	672.4	21.85	19.59
	682.3	22.74	20.50
	686.5	23.34	20.97
	687.8	24.35	21.22
	695.4	24.79	22.97
	705.2	25.00	27.21
	711.8	25.22	28.49

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATED TEMP.
09/14/94	575.0	20.08	10.24
	579.3	20.04	10.26
	586.2	20.46	10.30
	596.0	20.53	10.37
	605.8	20.58	10.60
	615.7	20.63	11.60
	625.5	20.71	14.43
	635.4	20.85	18.06
	643.6	21.04	19.21
	653.4	21.23	19.54
	663.3	21.47	20.03
	669.8	21.93	20.40
	670.1	22.36	20.41
	671.1	22.41	20.48
	673.1	22.46	20.60
	682.9	22.50	21.66
	687.9	22.51	22.61
	697.7	22.78	24.27
	704.3	23.78	24.85

	ELEVATION (FEET)	ACTUAL TEMP.	CALCULATE TEMP.
10/26/94	573.8	16.53	10.97
	574.8	16.58	10.97
	575.1	16.59	10.97
	578.1	16.64	10.97
	583.6	16.65	10.97
	593.5	16.68	11.03
	603.3	16.77	11.46
	613.2	16.83	12.81
	623.0	16.87	14.92
	632.9	16.97	16.09
	642.4	17.05	16.39
	652.2	17.22	16.57
	662.1	17.40	16.83
	671.9	17.75	17.13
	675.2	18.23	17.25
	675.5	18.38	17.27
	681.7	18.45	17.54
	688.6	18.46	17.89
	698.5	18.47	18.35
	708.3	18.47	18.45
	718.2	18.54	18.53

PINE FLAT RESERVOIR						
1994 Penstock Flows (cms)						
				Dam	Dam	Dam
DATE	Penstock #1	Penstock #2	Penstock #3	Lows	Mids	Tainter
01/01/94	0.00	0.00	3.69	0.00	0.00	0.00
01/02/94	0.00	0.00	3.70	0.00	0.00	0.00
01/03/94	0.00	0.00	3.62	0.00	0.00	0.00
01/04/94	0.00	0.00	3.53	0.00	0.00	0.00
01/05/94	0.00	0.00	3.36	0.00	0.00	0.00
01/06/94	0.00	0.00	3.25	0.00	0.00	0.00
01/07/94	0.00	0.00	3.42	0.00	0.00	0.00
01/08/94	0.00	0.00	3.62	0.00	0.00	0.00
01/09/94	0.00	0.00	3.68	0.00	0.00	0.00
01/10/94	0.00	0.00	4.00	0.00	0.00	0.00
01/11/94	0.00	0.00	6.01	0.00	0.00	0.00
01/12/94	0.00	0.00	7.21	0.00	0.00	0.00
01/13/94	0.00	0.00	7.42	0.00	0.00	0.00
01/14/94	0.00	0.00	7.56	0.00	0.00	0.00
01/15/94	0.00	0.00	7.52	0.00	0.00	0.00
01/16/94	0.00	0.00	7.50	0.00	0.00	0.00
01/17/94	0.00	0.00	7.16	0.00	0.00	0.00
01/18/94	0.00	0.00	6.51	0.00	0.00	0.00
01/19/94	0.00	0.00	6.43	0.00	0.00	0.00
01/20/94	0.00	0.00	6.67	0.00	0.00	0.00
01/21/94	0.00	0.00	6.55	0.00	0.00	0.00
01/22/94	0.00	0.00	6.43	0.00	0.00	0.00
01/23/94	0.00	0.00	6.35	0.00	0.00	0.00
01/24/94	0.00	0.00	4.98	0.00	0.00	0.00
01/25/94	0.00	0.00	3.43	0.00	0.00	0.00
01/26/94	0.00	0.00	3.04	0.00	0.00	0.00
01/27/94	0.00	0.00	3.20	0.00	0.00	0.00
01/28/94	0.00	0.00	3.26	0.00	0.00	0.00
01/29/94	0.00	0.00	3.26	0.00	0.00	0.00
01/30/94	0.00	0.00	2.88	0.00	0.00	0.00
01/31/94	0.00	0.00	2.38	0.00	0.00	0.00
02/01/94	0.00	0.00	2.21	0.00	0.00	0.00
02/02/94	0.00	0.00	2.21	0.00	0.00	0.00
02/03/94	0.00	0.00	2.21	0.00	0.00	0.00
02/04/94	0.00	0.00	2.21	0.00	0.00	0.00
02/05/94	0.00	0.00	2.76	0.00	0.00	0.00
02/06/94	0.00	0.00	3.39	0.00	0.00	0.00
02/07/94	0.00	0.00	2.66	0.00	0.00	0.00
02/08/94	0.00	0.00	1.76	0.00	0.00	0.00
02/09/94	0.00	0.00	2.24	0.00	0.00	0.00
02/10/94	0.00	0.00	2.74	0.00	0.00	0.00
02/11/94	0.00	0.00	2.90	0.00	0.00	0.00
02/12/94	0.00	0.00	3.11	0.00	0.00	0.00
02/13/94	0.00	0.00	3.20	0.00	0.00	0.00
02/14/94	0.00	0.00	3.25	0.00	0.00	0.00
02/15/94	0.00	0.00	3.23	0.00	0.00	0.00
02/16/94	0.00	0.00	2.87	0.00	0.00	0.00
02/17/94	0.00	0.00	1.67	0.00	0.00	0.00
02/18/94	0.00	0.00	0.95	0.00	0.00	0.00
02/19/94	0.00	0.00	0.96	0.00	0.00	0.00
02/20/94	0.00	0.00	6.57	0.00	0.00	0.00
02/21/94	0.00	0.00	11.95	0.00	0.00	0.00
02/22/94	0.00	0.00	13.27	0.00	0.00	0.00
02/23/94	0.00	0.00	13.52	0.00	0.00	0.00
02/24/94	0.00	0.00	12.92	0.00	0.00	0.00
02/25/94	0.00	0.00	13.57	0.00	0.00	0.00
02/26/94	0.00	0.00	15.06	0.00	0.00	0.00
02/27/94	0.00	0.00	15.94	0.00	0.00	0.00
02/28/94	0.00	0.00	17.02	0.00	0.00	0.00
03/01/94	0.00	0.00	17.98	0.00	0.00	0.00
03/02/94	0.00	0.00	17.94	0.00	0.00	0.00
03/03/94	0.00	0.00	17.24	0.00	0.00	0.00
03/04/94	0.00	0.00	16.07	0.00	0.00	0.00
03/05/94	0.00	0.00	14.80	0.00	0.00	0.00

DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
03/06/94	0.00	0.00	13.82	0.00	0.00	0.00
03/07/94	0.00	0.00	12.69	0.00	0.00	0.00
03/08/94	0.00	0.00	11.99	0.00	0.00	0.00
03/09/94	0.00	0.00	11.96	0.00	0.00	0.00
03/10/94	0.00	0.00	12.60	0.00	0.00	0.00
03/11/94	0.00	0.00	13.83	0.00	0.00	0.00
03/12/94	0.00	0.00	13.87	0.00	0.00	0.00
03/13/94	0.00	0.00	12.73	0.00	0.00	0.00
03/14/94	0.00	0.00	13.14	0.00	0.00	0.00
03/15/94	0.00	0.00	14.19	0.00	0.00	0.00
03/16/94	0.00	0.00	14.39	0.00	0.00	0.00
03/17/94	0.00	0.00	12.72	0.00	0.00	0.00
03/18/94	0.00	0.00	11.69	0.00	0.00	0.00
03/19/94	0.00	0.00	11.71	0.00	0.00	0.00
03/20/94	0.00	0.00	12.86	0.00	0.00	0.00
03/21/94	0.00	0.00	13.80	0.00	0.00	0.00
03/22/94	0.00	0.00	13.50	0.00	0.00	0.00
03/23/94	0.00	0.00	13.10	0.00	0.00	0.00
03/24/94	0.00	0.00	13.03	0.00	0.00	0.00
03/25/94	0.00	0.00	12.70	0.00	0.00	0.00
03/26/94	0.00	0.00	12.61	0.00	0.00	0.00
03/27/94	0.00	0.00	11.71	0.00	0.00	0.00
03/28/94	0.00	0.00	10.73	0.00	0.00	0.00
03/29/94	0.00	0.00	9.43	0.00	0.00	0.00
03/30/94	0.00	0.00	8.35	0.00	0.00	0.00
03/31/94	0.00	0.00	6.03	0.00	0.00	0.00
04/01/94	0.00	0.00	4.65	0.00	0.00	0.00
04/02/94	0.00	0.37	4.31	0.00	0.00	0.00
04/03/94	0.00	0.99	3.80	0.00	0.00	0.00
04/04/94	0.00	1.73	3.46	0.00	0.00	0.00
04/05/94	0.00	2.56	2.98	0.00	0.00	0.00
04/06/94	0.00	3.67	2.54	0.00	0.00	0.00
04/07/94	0.00	4.94	1.95	0.00	0.00	0.00
04/08/94	0.00	5.95	1.13	0.00	0.00	0.00
04/09/94	0.00	6.84	0.26	0.00	0.00	0.00
04/10/94	0.00	7.13	0.00	0.00	0.00	0.00
04/11/94	0.00	9.31	0.00	0.00	0.00	0.00
04/12/94	0.00	17.17	0.00	0.00	0.00	0.00
04/13/94	0.00	25.56	0.00	0.00	0.00	0.00
04/14/94	0.00	31.13	0.00	0.00	0.00	0.00
04/15/94	0.00	39.45	0.00	0.00	0.00	0.00
04/16/94	0.00	45.56	0.00	0.00	0.00	0.00
04/17/94	0.00	48.49	0.00	0.00	0.00	0.00
04/18/94	0.00	50.43	0.00	0.00	0.00	0.00
04/19/94	0.00	50.43	0.00	0.00	0.00	0.00
04/20/94	0.00	51.21	0.00	0.00	0.00	0.00
04/21/94	0.00	52.23	0.00	0.00	0.00	0.00
04/22/94	0.00	51.19	0.00	0.00	0.00	0.00
04/23/94	0.00	49.46	0.00	0.00	0.00	0.00
04/24/94	0.00	46.53	0.00	0.00	0.00	0.00
04/25/94	0.00	41.24	0.00	0.00	0.00	0.00
04/26/94	0.00	38.18	0.00	0.00	0.00	0.00
04/27/94	0.00	37.84	0.00	0.00	0.00	0.00
04/28/94	0.00	36.74	0.00	0.00	0.00	0.00
04/29/94	0.00	36.24	0.00	0.00	0.00	0.00
04/30/94	0.00	37.38	0.00	0.00	0.00	0.00
05/01/94	0.00	38.25	0.00	0.00	0.00	0.00
05/02/94	0.00	38.74	0.00	0.00	0.00	0.00
05/03/94	0.00	39.47	0.00	0.00	0.00	0.00
05/04/94	0.00	40.10	0.00	0.00	0.00	0.00
05/05/94	0.00	40.38	0.00	0.00	0.00	0.00
05/06/94	0.00	39.07	0.00	0.00	0.00	0.00
05/07/94	0.00	36.25	0.00	0.00	0.00	0.00
05/08/94	0.00	34.42	0.00	0.00	0.00	0.00
05/09/94	0.00	34.97	0.00	0.00	0.00	0.00
05/10/94	0.00	36.09	0.00	0.00	0.00	0.00
05/11/94	0.00	36.55	0.00	0.00	0.00	0.00

DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
05/12/94	0.00	36.69	0.00	0.00	0.00	0.00
05/13/94	0.00	37.25	0.00	0.00	0.00	0.00
05/14/94	2.47	36.72	0.00	0.00	0.00	0.00
05/15/94	9.05	33.63	0.00	0.00	0.00	0.00
05/16/94	16.58	28.84	0.00	0.00	0.00	0.00
05/17/94	25.11	23.74	0.00	0.00	0.00	0.00
05/18/94	32.62	17.03	0.00	0.00	0.00	0.00
05/19/94	38.68	9.91	0.00	0.00	0.00	0.00
05/20/94	46.22	3.21	0.00	0.00	0.00	0.00
05/21/94	52.34	0.00	0.00	0.00	0.00	0.00
05/22/94	56.46	0.00	0.00	0.00	0.00	0.00
05/23/94	60.31	0.00	0.00	0.00	0.00	0.00
05/24/94	63.32	0.00	0.00	0.00	0.00	0.00
05/25/94	64.66	0.00	0.00	0.00	0.00	0.00
05/26/94	64.67	0.00	0.00	0.00	0.00	0.00
05/27/94	64.60	0.00	0.00	0.00	0.00	0.00
05/28/94	64.91	0.00	0.00	0.00	0.00	0.00
05/29/94	66.20	0.00	0.00	0.00	0.00	0.00
05/30/94	68.78	0.00	0.00	0.00	0.00	0.00
05/31/94	68.18	0.00	0.00	0.00	0.00	0.00
06/01/94	65.35	0.00	0.00	0.00	0.00	0.00
06/02/94	70.75	30.35	0.00	0.00	0.00	0.00
06/03/94	70.75	43.17	0.00	0.00	0.00	0.00
06/04/94	70.75	40.74	0.00	0.00	0.00	0.00
06/05/94	65.62	59.09	0.00	0.00	0.00	0.00
06/06/94	58.65	70.75	17.45	0.00	0.00	0.00
06/07/94	51.44	70.75	39.85	0.00	0.00	0.00
06/08/94	44.18	70.75	57.19	0.00	0.00	0.00
06/09/94	39.96	70.75	70.75	0.00	0.00	0.00
06/10/94	66.72	70.75	50.40	0.00	0.00	0.00
06/11/94	59.08	70.75	66.83	0.00	0.00	0.00
06/12/94	62.63	70.75	70.75	0.00	0.00	0.00
06/13/94	65.42	70.75	70.75	0.00	0.00	0.00
06/14/94	63.78	70.75	70.75	0.00	0.00	0.00
06/15/94	60.68	70.75	70.75	0.00	0.00	0.00
06/16/94	59.13	70.75	70.75	0.00	0.00	0.00
06/17/94	55.86	70.75	70.75	0.00	0.00	0.00
06/18/94	52.18	70.75	70.75	0.00	0.00	0.00
06/19/94	50.24	68.06	70.75	0.00	0.00	0.00
06/20/94	52.69	60.85	70.75	0.00	0.00	0.00
06/21/94	59.18	53.56	70.75	0.00	0.00	0.00
06/22/94	67.90	46.27	70.75	0.00	0.00	0.00
06/23/94	70.75	42.71	70.75	0.00	0.00	0.00
06/24/94	70.75	42.28	70.75	0.00	0.00	0.00
06/25/94	70.75	41.71	70.75	0.00	0.00	0.00
06/26/94	70.75	41.99	70.75	0.00	0.00	0.00
06/27/94	70.75	44.93	70.75	0.00	0.00	0.00
06/28/94	70.75	48.99	70.75	0.00	0.00	0.00
06/29/94	70.75	55.37	68.31	0.00	0.00	0.00
06/30/94	70.75	66.43	60.56	0.00	0.00	0.00
07/01/94	70.75	70.75	57.43	0.00	0.00	0.00
07/02/94	70.75	70.75	56.74	0.00	0.00	0.00
07/03/94	70.75	70.75	54.59	0.00	0.00	0.00
07/04/94	70.75	70.75	53.04	0.00	0.00	0.00
07/05/94	70.75	70.75	53.18	0.00	0.00	0.00
07/06/94	70.75	70.75	53.04	0.00	0.00	0.00
07/07/94	70.75	70.75	50.62	0.00	0.00	0.00
07/08/94	70.75	70.75	47.67	0.00	0.00	0.00
07/09/94	63.07	70.75	55.87	0.00	0.00	0.00
07/10/94	53.91	70.75	64.86	0.00	0.00	0.00
07/11/94	47.66	70.75	70.75	0.00	0.00	0.00
07/12/94	41.85	70.75	53.55	0.00	0.00	0.00
07/13/94	32.58	70.75	44.63	0.00	0.00	0.00
07/14/94	23.03	70.75	50.62	0.00	0.00	0.00
07/15/94	13.34	70.75	59.88	0.00	0.00	0.00
07/16/94	5.30	70.75	70.75	0.00	0.00	0.00
07/17/94	4.49	70.75	70.75	0.00	0.00	0.00

DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
07/18/94	1.55	70.75	70.75	0.00	0.00	0.00
07/19/94	9.05	61.84	70.75	0.00	0.00	0.00
07/20/94	18.18	52.57	70.30	0.00	0.00	0.00
07/21/94	27.27	43.48	70.38	0.00	0.00	0.00
07/22/94	36.40	34.35	69.86	0.00	0.00	0.00
07/23/94	45.60	25.15	67.71	0.00	0.00	0.00
07/24/94	54.58	16.17	64.96	0.00	0.00	0.00
07/25/94	63.53	7.22	65.52	0.00	0.00	0.00
07/26/94	68.28	0.01	70.75	0.00	0.00	0.00
07/27/94	69.84	0.01	70.75	0.00	0.00	0.00
07/28/94	11.46	59.43	70.75	0.00	0.00	0.00
07/29/94	68.17	0.00	70.75	0.00	0.00	0.00
07/30/94	39.52	0.00	70.75	0.00	0.00	0.00
07/31/94	21.31	0.00	70.75	0.00	0.00	0.00
08/01/94	17.20	0.00	70.75	0.00	0.00	0.00
08/02/94	16.86	0.00	66.61	0.00	0.00	0.00
08/03/94	24.07	0.00	58.30	0.00	0.00	0.00
08/04/94	33.51	0.00	47.75	0.00	0.00	0.00
08/05/94	43.39	0.00	38.31	0.00	0.00	0.00
08/06/94	50.65	0.00	31.13	0.00	0.00	0.00
08/07/94	58.24	0.00	21.84	0.00	0.00	0.00
08/08/94	66.58	0.00	12.96	0.00	0.00	0.00
08/09/94	27.20	0.00	54.48	0.00	0.00	0.00
08/10/94	30.63	0.00	51.65	0.00	0.00	0.00
08/11/94	32.38	0.00	47.40	0.00	0.00	0.00
08/12/94	70.75	0.00	7.69	0.00	0.00	0.00
08/13/94	70.75	0.00	7.43	0.00	0.00	0.00
08/14/94	70.75	0.00	7.77	0.00	0.00	0.00
08/15/94	70.75	0.00	8.37	0.00	0.00	0.00
08/16/94	70.75	0.00	9.22	0.00	0.00	0.00
08/17/94	70.64	0.00	0.00	0.00	0.00	0.00
08/18/94	63.54	0.00	0.00	0.00	0.00	0.00
08/19/94	53.47	0.00	7.29	0.00	0.00	0.00
08/20/94	0.00	0.00	56.41	2.35	0.00	0.00
08/21/94	0.00	0.00	54.39	2.56	0.00	0.00
08/22/94	0.00	0.00	47.23	2.75	0.00	0.00
08/23/94	0.00	0.00	36.06	8.19	0.00	0.00
08/24/94	0.00	0.00	34.60	8.38	0.00	0.00
08/25/94	0.00	0.00	33.71	8.43	0.00	0.00
08/26/94	0.00	0.00	32.14	8.29	0.00	0.00
08/27/94	0.00	0.00	31.98	7.75	0.00	0.00
08/28/94	0.00	0.00	29.68	7.89	0.00	0.00
08/29/94	0.00	0.00	26.16	7.38	0.00	0.00
08/30/94	0.00	0.00	23.68	7.07	0.00	0.00
08/31/94	0.00	0.00	21.90	6.73	0.00	0.00
09/01/94	0.00	0.00	19.45	7.01	0.00	0.00
09/02/94	0.00	0.00	17.13	6.02	0.00	0.00
09/03/94	0.00	0.00	14.35	5.31	0.00	0.00
09/04/94	0.00	0.00	13.16	5.25	0.00	0.00
09/05/94	0.00	0.00	13.43	5.62	0.00	0.00
09/06/94	0.00	0.00	15.18	6.66	0.00	0.00
09/07/94	0.00	0.00	15.64	7.53	0.00	0.00
09/08/94	0.00	0.00	9.50	4.78	0.00	0.00
09/09/94	0.00	0.00	5.41	2.79	0.00	0.00
09/10/94	0.00	0.00	5.26	2.77	0.00	0.00
09/11/94	0.00	0.00	5.21	2.93	0.00	0.00
09/12/94	0.00	0.00	5.51	3.10	0.00	0.00
09/13/94	0.00	0.00	5.63	3.31	0.00	0.00
09/14/94	0.00	0.00	5.36	3.43	0.00	0.00
09/15/94	0.00	0.00	5.29	3.38	0.00	0.00
09/16/94	0.00	0.00	5.30	3.39	0.00	0.00
09/17/94	0.00	0.00	5.14	3.57	0.00	0.00
09/18/94	0.00	0.00	5.14	3.58	0.00	0.00
09/19/94	0.00	0.00	4.96	3.74	0.00	0.00
09/20/94	0.00	0.00	4.88	3.83	0.00	0.00
09/21/94	0.00	0.00	4.71	4.01	0.00	0.00
09/22/94	0.00	0.00	4.48	4.05	0.00	0.00

DATE	Penstock #1	Penstock #2	Penstock #3	Dam Lows	Dam Mids	Dam Tainter
09/23/94	0.00	0.00	3.98	4.06	0.00	0.00
09/24/94	0.00	0.00	3.70	4.09	0.00	0.00
09/25/94	0.00	0.00	3.43	4.28	0.00	0.00
09/26/94	0.00	0.00	3.12	4.23	0.00	0.00
09/27/94	0.00	0.00	2.67	4.26	0.00	0.00
09/28/94	0.00	0.00	2.20	4.09	0.00	0.00
09/29/94	0.00	0.00	1.51	3.06	0.00	0.00
09/30/94	0.00	0.00	0.92	1.87	0.00	0.00
10/01/94	0.00	0.00	1.33	0.91	0.00	0.00
10/02/94	0.00	0.00	1.36	0.88	0.00	0.00
10/03/94	0.00	0.00	1.30	0.78	0.00	0.00
10/04/94	0.00	0.00	1.09	0.67	0.00	0.00
10/05/94	0.00	0.00	0.97	0.56	0.00	0.00
10/06/94	0.00	0.00	1.02	0.45	0.00	0.00
10/07/94	0.00	0.00	1.07	0.40	0.00	0.00
10/08/94	0.00	0.00	1.14	0.33	0.00	0.00
10/09/94	0.00	0.00	1.24	0.23	0.00	0.00
10/10/94	0.00	0.00	1.31	0.11	0.00	0.00
10/11/94	0.00	0.00	1.54	0.00	0.00	0.00
10/12/94	0.00	0.00	1.69	0.00	0.00	0.00
10/13/94	0.00	0.00	1.63	0.00	0.00	0.00
10/14/94	0.00	0.00	1.58	0.00	0.00	0.00
10/15/94	0.00	0.00	1.59	0.00	0.00	0.00
10/16/94	0.00	0.00	1.91	0.00	0.00	0.00
10/17/94	0.00	0.00	2.46	0.00	0.00	0.00
10/18/94	0.00	0.00	2.73	0.00	0.00	0.00
10/19/94	0.00	0.00	2.86	0.00	0.00	0.00
10/20/94	0.00	0.00	3.20	0.00	0.00	0.00
10/21/94	0.00	0.00	3.37	0.00	0.00	0.00
10/22/94	0.00	0.00	3.37	0.00	0.00	0.00
10/23/94	0.00	0.00	3.37	0.00	0.00	0.00
10/24/94	0.00	0.00	3.37	0.00	0.00	0.00
10/25/94	0.00	0.00	3.39	0.00	0.00	0.00
10/26/94	0.00	0.00	3.52	0.00	0.00	0.00
10/27/94	0.00	0.00	3.67	0.00	0.00	0.00
10/28/94	0.00	0.00	3.71	0.00	0.00	0.00
10/29/94	0.00	0.00	3.71	0.00	0.00	0.00
10/30/94	0.00	0.00	3.66	0.00	0.00	0.00

PINE FLAT RESERVOIR

1994 PORT RELEASES (CMS)

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3	Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5	Flow
01/01/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.69	0.00	0.00	0.00	0.00	0.00	3.69
01/02/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70	0.00	0.00	0.00	0.00	0.00	3.70
01/03/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.62	0.00	0.00	0.00	0.00	0.00	3.62
01/04/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.53	0.00	0.00	0.00	0.00	0.00	3.53
01/05/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36	0.00	0.00	0.00	0.00	0.00	3.36
01/06/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25	0.00	0.00	0.00	0.00	0.00	3.25
01/07/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.42	0.00	0.00	0.00	0.00	0.00	3.42
01/08/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.62	0.00	0.00	0.00	0.00	0.00	3.62
01/09/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.68	0.00	0.00	0.00	0.00	0.00	3.68
01/10/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	4.00
01/11/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.01	0.00	0.00	0.00	0.00	0.00	6.01
01/12/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.21	0.00	0.00	0.00	0.00	0.00	7.21
01/13/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.42	0.00	0.00	0.00	0.00	0.00	7.42
01/14/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.56	0.00	0.00	0.00	0.00	0.00	7.56
01/15/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.52	0.00	0.00	0.00	0.00	0.00	7.52
01/16/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	0.00	0.00	0.00	0.00	7.50
01/17/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.16	0.00	0.00	0.00	0.00	0.00	7.16
01/18/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.51	0.00	0.00	0.00	0.00	0.00	6.51
01/19/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.43	0.00	0.00	0.00	0.00	0.00	6.43
01/20/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	6.67
01/21/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.55	0.00	0.00	0.00	0.00	0.00	6.55
01/22/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.43	0.00	0.00	0.00	0.00	0.00	6.43
01/23/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.35	0.00	0.00	0.00	0.00	0.00	6.35
01/24/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.98	0.00	0.00	0.00	0.00	0.00	4.98
01/25/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	3.43
01/26/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	0.00	0.00	0.00	0.00	0.00	3.04
01/27/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	3.20
01/28/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.26	0.00	0.00	0.00	0.00	0.00	3.26
01/29/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.26	0.00	0.00	0.00	0.00	0.00	3.26
01/30/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.88	0.00	0.00	0.00	0.00	0.00	2.88
01/31/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.00	0.00	0.00	2.38
02/01/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.21	0.00	0.00	0.00	0.00	0.00	2.21
02/02/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.21	0.00	0.00	0.00	0.00	0.00	2.21
02/03/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.21	0.00	0.00	0.00	0.00	0.00	2.21
02/04/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.21	0.00	0.00	0.00	0.00	0.00	2.21
02/05/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76	0.00	0.00	0.00	0.00	0.00	2.76
02/06/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.39	0.00	0.00	0.00	0.00	0.00	3.39
02/07/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.66	0.00	0.00	0.00	0.00	0.00	2.66
02/08/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	0.00	0.00	0.00	0.00	0.00	1.76
02/09/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.00	0.00	2.24
02/10/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.74	0.00	0.00	0.00	0.00	0.00	2.74
02/11/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.90	0.00	0.00	0.00	0.00	0.00	2.90
02/12/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.11	0.00	0.00	0.00	0.00	0.00	3.11
02/13/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	3.20
02/14/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25	0.00	0.00	0.00	0.00	0.00	3.25
02/15/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.23	0.00	0.00	0.00	0.00	0.00	3.23
02/16/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.87	0.00	0.00	0.00	0.00	0.00	2.87
02/17/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	1.67
02/18/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.95
02/19/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.96
02/20/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.57	0.00	0.00	0.00	0.00	0.00	6.57
02/21/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.95	0.00	0.00	0.00	0.00	0.00	11.95
02/22/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.27	0.00	0.00	0.00	0.00	0.00	13.27
02/23/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.52	0.00	0.00	0.00	0.00	0.00	13.52
02/24/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.92	0.00	0.00	0.00	0.00	0.00	12.92
02/25/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.57	0.00	0.00	0.00	0.00	0.00	13.57
02/26/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.06	0.00	0.00	0.00	0.00	0.00	15.06
02/27/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.94	0.00	0.00	0.00	0.00	0.00	15.94
02/28/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.02	0.00	0.00	0.00	0.00	0.00	17.02
03/01/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.98	0.00	0.00	0.00	0.00	0.00	17.98
03/02/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.94	0.00	0.00	0.00	0.00	0.00	17.94
03/03/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.24	0.00	0.00	0.00	0.00	0.00	17.24
03/04/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.07	0.00	0.00	0.00	0.00	0.00	16.07
03/05/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.80	0.00	0.00	0.00	0.00	0.00	14.80

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3	Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5	Flow
03/06/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.82	0.00	0.00	0.00	0.00	0.00	13.82
03/07/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.69	0.00	0.00	0.00	0.00	0.00	12.69
03/08/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.99	0.00	0.00	0.00	0.00	0.00	11.99
03/09/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.96	0.00	0.00	0.00	0.00	0.00	11.96
03/10/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.60	0.00	0.00	0.00	0.00	0.00	12.60
03/11/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.83	0.00	0.00	0.00	0.00	0.00	13.83
03/12/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.87	0.00	0.00	0.00	0.00	0.00	13.87
03/13/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.73	0.00	0.00	0.00	0.00	0.00	12.73
03/14/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.14	0.00	0.00	0.00	0.00	0.00	13.14
03/15/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.19	0.00	0.00	0.00	0.00	0.00	14.19
03/16/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.39	0.00	0.00	0.00	0.00	0.00	14.39
03/17/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.72	0.00	0.00	0.00	0.00	0.00	12.72
03/18/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.69	0.00	0.00	0.00	0.00	0.00	11.69
03/19/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.71	0.00	0.00	0.00	0.00	0.00	11.71
03/20/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.86	0.00	0.00	0.00	0.00	0.00	12.86
03/21/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80	0.00	0.00	0.00	0.00	0.00	13.80
03/22/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.50	0.00	0.00	0.00	0.00	0.00	13.50
03/23/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.10	0.00	0.00	0.00	0.00	0.00	13.10
03/24/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.03	0.00	0.00	0.00	0.00	0.00	13.03
03/25/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.70	0.00	0.00	0.00	0.00	0.00	12.70
03/26/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.61	0.00	0.00	0.00	0.00	0.00	12.61
03/27/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.71	0.00	0.00	0.00	0.00	0.00	11.71
03/28/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.73	0.00	0.00	0.00	0.00	0.00	10.73
03/29/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.43	0.00	0.00	0.00	0.00	0.00	9.43
03/30/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.35	0.00	0.00	0.00	0.00	0.00	8.35
03/31/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.03	0.00	0.00	0.00	0.00	0.00	6.03
04/01/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.65	0.00	0.00	0.00	0.00	0.00	4.65
04/02/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.31	0.37	0.00	0.00	0.00	0.00	4.68
04/03/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.80	0.99	0.00	0.00	0.00	0.00	4.79
04/04/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.46	1.73	0.00	0.00	0.00	0.00	5.19
04/05/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.98	2.56	0.00	0.00	0.00	0.00	5.54
04/06/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	3.67	0.00	0.00	0.00	0.00	6.21
04/07/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.95	4.94	0.00	0.00	0.00	0.00	6.89
04/08/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	5.95	0.00	0.00	0.00	0.00	7.08
04/09/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	6.84	0.00	0.00	0.00	0.00	7.10
04/10/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.13	0.00	0.00	0.00	0.00	7.13
04/11/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.31	0.00	0.00	0.00	0.00	9.31
04/12/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.17	0.00	0.00	0.00	0.00	17.17
04/13/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56	0.00	0.00	0.00	0.00	25.56
04/14/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.13	0.00	0.00	0.00	0.00	31.13
04/15/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.45	0.00	0.00	0.00	0.00	39.45
04/16/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.56	0.00	0.00	0.00	0.00	45.56
04/17/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.49	0.00	0.00	0.00	0.00	48.49
04/18/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.43	0.00	0.00	0.00	0.00	50.43
04/19/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.43	0.00	0.00	0.00	0.00	50.43
04/20/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.21	0.00	0.00	0.00	0.00	51.21
04/21/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.23	0.00	0.00	0.00	0.00	52.23
04/22/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.19	0.00	0.00	0.00	0.00	51.19
04/23/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.46	0.00	0.00	0.00	0.00	49.46
04/24/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.53	0.00	0.00	0.00	0.00	46.53
04/25/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.24	0.00	0.00	0.00	0.00	41.24
04/26/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.18	0.00	0.00	0.00	0.00	38.18
04/27/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.84	0.00	0.00	0.00	0.00	37.84
04/28/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.74	0.00	0.00	0.00	0.00	36.74
04/29/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.24	0.00	0.00	0.00	0.00	36.24
04/30/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.38	0.00	0.00	0.00	0.00	37.38
05/01/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.25	0.00	0.00	0.00	0.00	38.25
05/02/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.74	0.00	0.00	0.00	0.00	38.74
05/03/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.47	0.00	0.00	0.00	0.00	39.47
05/04/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.10	0.00	0.00	0.00	0.00	40.10
05/05/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.38	0.00	0.00	0.00	0.00	40.38
05/06/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.07	0.00	0.00	0.00	0.00	39.07
05/07/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.25	0.00	0.00	0.00	0.00	36.25
05/08/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.42	0.00	0.00	0.00	0.00	34.42
05/09/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.97	0.00	0.00	0.00	0.00	34.97
05/10/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.09	0.00	0.00	0.00	0.00	36.09
05/11/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.55	0.00	0.00	0.00	0.00	36.55

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
05/12/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.69	0.00	0.00	0.00	0.00		36.69
05/13/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.25	0.00	0.00	0.00	0.00		37.25
05/14/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.72	2.47	0.00	0.00	0.00		39.19
05/15/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.63	9.05	0.00	0.00	0.00		42.68
05/16/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.84	16.58	0.00	0.00	0.00		45.42
05/17/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.74	25.11	0.00	0.00	0.00		48.85
05/18/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.03	32.62	0.00	0.00	0.00		49.65
05/19/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.91	38.68	0.00	0.00	0.00		48.59
05/20/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.21	46.22	0.00	0.00	0.00		49.43
05/21/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.34	0.00	0.00	0.00		52.34
05/22/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.46	0.00	0.00	0.00		56.46
05/23/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.31	0.00	0.00	0.00		60.31
05/24/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.32	0.00	0.00	0.00		63.32
05/25/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.66	0.00	0.00	0.00		64.66
05/26/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.67	0.00	0.00	0.00		64.67
05/27/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.60	0.00	0.00	0.00		64.60
05/28/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.91	0.00	0.00	0.00		64.91
05/29/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.20	0.00	0.00	0.00		66.20
05/30/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.78	0.00	0.00	0.00		68.78
05/31/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.18	0.00	0.00	0.00		68.18
06/01/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.35	0.00	0.00	0.00		65.35
06/02/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.35	70.75	0.00	0.00	0.00		101.10
06/03/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.17	70.75	0.00	0.00	0.00		113.92
06/04/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.74	70.75	0.00	0.00	0.00		111.49
06/05/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.09	65.62	0.00	0.00	0.00		124.71
06/06/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.45	70.75	58.65	0.00	0.00	0.00		146.85
06/07/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.85	70.75	51.44	0.00	0.00	0.00		162.04
06/08/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.19	70.75	44.18	0.00	0.00	0.00		172.12
06/09/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	39.96	0.00	0.00	0.00		181.46
06/10/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.40	70.75	66.72	0.00	0.00	0.00		187.87
06/11/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.83	70.75	59.08	0.00	0.00	0.00		196.66
06/12/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	62.63	0.00	0.00	0.00		204.13
06/13/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	65.42	0.00	0.00	0.00		206.92
06/14/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	63.78	0.00	0.00	0.00		205.28
06/15/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	60.68	0.00	0.00	0.00		202.18
06/16/94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	59.13	0.00	0.00	0.00		200.63
06/17/94	0.00	0.00	0.00	0.00	0.00	0.00	55.86	70.75	70.75	0.00	0.00	0.00	0.00		197.36
06/18/94	0.00	0.00	0.00	0.00	0.00	0.00	52.18	70.75	70.75	0.00	0.00	0.00	0.00		193.68
06/19/94	0.00	0.00	0.00	0.00	0.00	0.00	50.24	70.75	68.06	0.00	0.00	0.00	0.00		189.05
06/20/94	0.00	0.00	0.00	0.00	0.00	0.00	52.69	70.75	60.85	0.00	0.00	0.00	0.00		184.29
06/21/94	0.00	0.00	0.00	0.00	0.00	0.00	59.18	70.75	53.56	0.00	0.00	0.00	0.00		183.49
06/22/94	0.00	0.00	0.00	0.00	0.00	0.00	67.90	70.75	46.27	0.00	0.00	0.00	0.00		184.92
06/23/94	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	42.71	0.00	0.00	0.00	0.00		184.21
06/24/94	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	42.28	0.00	0.00	0.00	0.00		183.78
06/25/94	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	41.71	0.00	0.00	0.00	0.00		183.21
06/26/94	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	41.99	0.00	0.00	0.00	0.00		183.49
06/27/94	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	44.93	0.00	0.00	0.00	0.00		186.43
06/28/94	0.00	0.00	0.00	0.00	0.00	0.00	70.75	70.75	48.99	0.00	0.00	0.00	0.00		190.49
06/29/94	0.00	0.00	0.00	0.00	0.00	55.37	70.75	68.31	0.00	0.00	0.00	0.00	0.00		194.43
06/30/94	0.00	0.00	0.00	0.00	0.00	66.43	70.75	60.56	0.00	0.00	0.00	0.00	0.00		197.74
07/01/94	0.00	0.00	0.00	0.00	0.00	70.75	70.75	57.43	0.00	0.00	0.00	0.00	0.00		198.93
07/02/94	0.00	0.00	0.00	0.00	0.00	70.75	70.75	56.74	0.00	0.00	0.00	0.00	0.00		198.24
07/03/94	0.00	0.00	0.00	0.00	0.00	70.75	70.75	54.59	0.00	0.00	0.00	0.00	0.00		196.09
07/04/94	0.00	0.00	0.00	0.00	0.00	70.75	70.75	53.04	0.00	0.00	0.00	0.00	0.00		194.54
07/05/94	0.00	0.00	0.00	0.00	0.00	70.75	70.75	53.18	0.00	0.00	0.00	0.00	0.00		194.68
07/06/94	0.00	0.00	0.00	0.00	0.00	70.75	70.75	53.04	0.00	0.00	0.00	0.00	0.00		194.54
07/07/94	0.00	0.00	0.00	0.00	0.00	70.75	70.75	50.62	0.00	0.00	0.00	0.00	0.00		192.12
07/08/94	0.00	0.00	0.00	0.00	0.00	70.75	70.75	47.67	0.00	0.00	0.00	0.00	0.00		189.17
07/09/94	0.00	0.00	0.00	0.00	55.87	70.75	63.07	0.00	0.00	0.00	0.00	0.00	0.00		189.69
07/10/94	0.00	0.00	0.00	0.00	64.86	70.75	53.91	0.00	0.00	0.00	0.00	0.00	0.00		189.52
07/11/94	0.00	0.00	0.00	0.00	70.75	70.75	47.66	0.00	0.00	0.00	0.00	0.00	0.00		189.16
07/12/94	0.00	0.00	0.00	0.00	53.55	70.75	41.85	0.00	0.00	0.00	0.00	0.00	0.00		166.15
07/13/94	0.00	0.00	0.00	0.00	44.63	70.75	32.58	0.00	0.00	0.00	0.00	0.00	0.00		147.96
07/14/94	0.00	0.00	0.00	0.00	50.62	70.75	23.03	0.00	0.00	0.00	0.00	0.00	0.00		144.40
07/15/94	0.00	0.00	0.00	0.00	59.88	70.75	13.34	0.00	0.00	0.00	0.00	0.00	0.00		143.97
07/16/94	0.00	0.00	0.00	0.00	70.75	70.75	5.30	0.00	0.00	0.00	0.00	0.00	0.00		146.80
07/17/94	0.00	0.00	0.00	0.00	70.75	70.75	4.49	0.00	0.00	0.00	0.00	0.00	0.00		145.99

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3	Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5	Flow
07/18/94	0.00	0.00	0.00	0.00	70.75	70.75	1.55	0.00	0.00	0.00	0.00	0.00	0.00	143.05
07/19/94	0.00	0.00	0.00	9.05	70.75	61.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	141.64
07/20/94	0.00	0.00	0.00	18.18	70.30	52.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	141.05
07/21/94	0.00	0.00	0.00	27.27	70.38	43.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	141.13
07/22/94	0.00	0.00	0.00	36.40	69.86	34.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.61
07/23/94	0.00	0.00	0.00	45.60	67.71	25.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.46
07/24/94	0.00	0.00	0.00	54.58	64.96	16.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	135.71
07/25/94	0.00	0.00	0.00	63.53	65.52	7.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	136.27
07/26/94	0.00	0.00	0.00	68.28	70.75	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	139.04
07/27/94	0.00	0.00	0.00	69.84	70.75	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.60
07/28/94	0.00	0.00	0.00	11.46	70.75	59.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	141.64
07/29/94	0.00	0.00	0.00	68.17	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.92
07/30/94	0.00	0.00	0.00	39.52	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.27
07/31/94	0.00	0.00	0.00	21.31	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.06
08/01/94	0.00	0.00	0.00	17.20	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.95
08/02/94	0.00	0.00	0.00	16.86	66.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.47
08/03/94	0.00	0.00	0.00	24.07	58.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82.37
08/04/94	0.00	0.00	0.00	33.51	47.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.26
08/05/94	0.00	0.00	0.00	43.39	38.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.70
08/06/94	0.00	0.00	0.00	50.65	31.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.78
08/07/94	0.00	0.00	0.00	58.24	21.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.08
08/08/94	0.00	0.00	0.00	66.58	12.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.54
08/09/94	0.00	0.00	0.00	27.20	54.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.68
08/10/94	0.00	0.00	0.00	30.63	51.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82.28
08/11/94	0.00	0.00	0.00	32.38	47.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.78
08/12/94	0.00	0.00	7.69	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.44
08/13/94	0.00	0.00	7.43	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.18
08/14/94	0.00	0.00	7.77	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.52
08/15/94	0.00	0.00	8.37	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.12
08/16/94	0.00	0.00	9.22	70.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.97
08/17/94	0.00	0.00	0.00	70.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.64
08/18/94	0.00	0.00	0.00	63.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.54
08/19/94	0.00	0.00	7.29	53.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.76
08/20/94	2.35	0.00	56.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.76
08/21/94	2.56	0.00	54.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.95
08/22/94	2.75	0.00	47.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.98
08/23/94	8.19	0.00	36.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.25
08/24/94	8.38	0.00	34.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.98
08/25/94	8.43	0.00	33.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.14
08/26/94	8.29	0.00	32.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.43
08/27/94	7.75	0.00	31.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.73
08/28/94	7.89	0.00	29.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.57
08/29/94	7.38	0.00	26.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.54
08/30/94	7.07	0.00	23.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.75
08/31/94	6.73	0.00	21.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.63
09/01/94	7.01	0.00	19.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.46
09/02/94	6.02	0.00	17.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.15
09/03/94	5.31	0.00	14.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.66
09/04/94	5.25	0.00	13.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.41
09/05/94	5.62	0.00	13.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.05
09/06/94	6.66	0.00	15.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.84
09/07/94	7.53	0.00	15.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.17
09/08/94	4.78	0.00	9.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.28
09/09/94	2.79	0.00	5.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.20
09/10/94	2.77	0.00	5.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.03
09/11/94	2.93	0.00	5.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.14
09/12/94	3.10	0.00	5.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.61
09/13/94	3.31	0.00	5.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.94
09/14/94	3.43	0.00	5.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.79
09/15/94	3.38	0.00	5.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.67
09/16/94	3.39	0.00	5.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.69
09/17/94	3.57	0.00	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.71
09/18/94	3.58	0.00	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.72
09/19/94	3.74	0.00	4.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.70
09/20/94	3.83	0.00	4.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.71
09/21/94	4.01	0.00	4.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.72
09/22/94	4.05	0.00	4.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.53

	Dam #1	Multilevel Intake Structure Ports									Dam #1	Dam #2	Dam#3		Total
DATE	570	652.5	652.5	652.5	717.5	745.5	773.5	801.5	829.5	857.5	570	740	916.5		Flow
09/23/94	4.06	0.00	3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.04
09/24/94	4.09	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.79
09/25/94	4.28	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.71
09/26/94	4.23	0.00	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		7.35
09/27/94	4.26	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.93
09/28/94	4.09	0.00	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.29
09/29/94	3.06	0.00	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		4.57
09/30/94	1.87	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.79
10/01/94	0.91	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
10/02/94	0.88	0.00	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.24
10/03/94	0.78	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.08
10/04/94	0.67	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.76
10/05/94	0.56	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.53
10/06/94	0.45	0.00	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.47
10/07/94	0.40	0.00	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.47
10/08/94	0.33	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.47
10/09/94	0.23	0.00	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.47
10/10/94	0.11	0.00	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.42
10/11/94	0.00	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.54
10/12/94	0.00	0.00	0.00	1.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.69
10/13/94	0.00	0.00	0.00	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.63
10/14/94	0.00	0.00	0.00	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.58
10/15/94	0.00	0.00	0.00	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.59
10/16/94	0.00	0.00	0.00	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.91
10/17/94	0.00	0.00	0.00	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.46
10/18/94	0.00	0.00	0.00	2.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.73
10/19/94	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.86
10/20/94	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.20
10/21/94	0.00	0.00	0.00	3.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.37
10/22/94	0.00	0.00	0.00	3.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.37
10/23/94	0.00	0.00	0.00	3.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.37
10/24/94	0.00	0.00	0.00	3.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.37
10/25/94	0.00	0.00	0.00	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.39
10/26/94	0.00	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.52
10/27/94	0.00	0.00	0.00	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.67
10/28/94	0.00	0.00	0.00	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.71
10/29/94	0.00	0.00	0.00	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.71
10/30/94	0.00	0.00	0.00	3.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.66

PINE FLAT DAM FISH & WILDLIFE HABITAT RESTORATION PROJECT, CALIFORNIA

ATTACHMENT 7

HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE REPORT

DRAFT HTRW PRELIMINARY ASSESSMENT REPORT
FISH & WILDLIFE HABITAT RESTORATION INVESTIGATION
PINE FLAT DAM, CALIFORNIA

CONTRACT NO. DACW05-96-D-0009
DELIVERY ORDER NO. 0002

Prepared for:

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
SACRAMENTO DISTRICT
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Prepared by:

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GEOFON Project No. 95-007.20

14 October 1997

DRAFT

A Draft Report prepared for:

Department of the Army
Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814-2922

HTRW Preliminary Assessment
Fish & Wildlife Restoration Investigation
Pine Flat Dam, California

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DRAFT HTRW PRELIMINARY ASSESSMENT REPORT FISH & WILDLIFE HABITAT RESTORATION INVESTIGATION PINE FLAT DAM, CALIFORNIA

1.0 INTRODUCTION

This Draft Hazardous, Toxic, and Radioactive Waste (HTRW) Preliminary Assessment Report for the Pine Flats Dam Fish & Wildlife Habitat Restoration Investigation has been prepared at the request of the U.S. Army Corps of Engineers, Sacramento District (USACE) under Delivery Order No. 0002 of Contract No. DACW05-96-D-0009. The work described herein was performed in accordance with the USACE Regulation No. 1165-2-132, HTRW Guidance for Civil Works Projects.

This report summarizes the findings of HTRW Preliminary Assessment of two sites (Friant-Kern Canal Site and Kerman Site) within the Pine Flat Dam study area (see Figures 1 and 2). This draft report further describes the work completed to evaluate past land use, potential sources of contamination, and potential pesticide use at these two sites within the Pine Flats Dam study area. All field work was performed in compliance with the Site Specific Health and Safety Plan.

2.0 OBJECTIVES AND PURPOSE

The objective of this HTRW Preliminary Assessment is to identify any HTRW sites that may be located in the two subject areas. The main purpose of the assessment is to conduct a literature search and regulatory agency review, and to conduct a limited soil sampling and analysis investigation. On the basis of the literature search and laboratory analytical results of soil samples, conclusions will be developed concerning the nature and estimated

extent of potential contamination, and recommendations and costs will be estimated for regulatory compliance and further study, if required. In addition, a qualitative risk assessment of human health will be performed based on the results of the soil sample analyses. The work was performed in compliance with the USACE Regulation No. 1165-2-132, HTRW Guidance for Civil Works Projects.

3.0 SCOPE OF WORK

The scope of work for this project is in accordance with the approved Site Specific Work Plan for HTRW Preliminary Assessment dated 7 February 1997. The HTRW Preliminary Assessment activities were planned to evaluate past land use and potential sources of contamination at the sites, and to collect and analyze representative surface and near surface soil samples. The information developed during this assessment will provide an initial evaluation of the nature and extent of potential contamination, and will be the basis for recommendations regarding further work at the sites, if required.

To accomplish the project objectives, our scope of work for this delivery order was divided into three main work elements. The first work element includes a preliminary assessment of past site usage and potential sources of contamination and includes the following tasks:

- Review of available environmental documents related to the sites;
- Regulatory agency file review and data requests;
- Regulatory database search;
- Aerial photograph review;
- Site inspection; and
- Interviews with site personnel, if available.

The second work element involves the collection of surface and near surface soil samples, and the final work element includes laboratory analyses of soil samples and reporting.

4.0 PROJECT BACKGROUND

The Pine Flat Dam and Lake project was initiated by the Corps of Engineers in 1940 to provide flood control and irrigation for the lower Kings River basin. The project included the construction of the Pine Flat Dam in 1954. The dam is located on the Kings River approximately 25 miles east of Fresno, California, and consists of a concrete-gravity structure 429 feet in height and 1,820 feet in length at the crest. The dam has 1 million acre-feet of storage capacity. The project also included downstream improvements to control flooding and diversion of flows between the Kings River North and the Kings River South. These improvements were completed in 1976.

The project currently provides flood protection to about 80,000 acres of agricultural land along the Kings River. In addition, this project, in conjunction with other projects on the Kaweah, Tule, and Kern Rivers, provides protection to 260,000 acres of agricultural land in the Tulare Lakebed area. About 265,000 acre-feet of irrigation water is also provided by this project annually.

In 1964, the House Committee on Public Works introduced a resolution which requested that the Board of Engineers for Rivers and Harbors review reports concerning Sacramento-San Joaquin Basin Streams. This review was to be performed to determine if any modifications to the recommendations contained within the reports were advisable, with particular reference to

further coordinated development of the water resources in the San Joaquin River Basin.

Specific guidance for a reconnaissance investigation of the Pine Flat Dam Fish and Wildlife Habitat Restoration was provided in the June 11, 1992, report of the House of Representatives Committee on Appropriations, which accompanied the Fiscal Year 1993 Energy and Water Development Appropriations Bill. This report provided the authority to perform a Fish and Wildlife Enhancement study of the Pine Flat Dam to address measures for improvement of the fishery both in the Pine Flat Reservoir and in the Kings River above and below the Pine Flat Dam.

In February 1994, the Corps of Engineers issued a reconnaissance report for the Pine Flat Dam Fish and Wildlife Habitat Restoration Investigation. The purpose, as stated in the report, was to determine the potential for Federal interest in participating in preserving and restoring fish and wildlife habitat affected by the construction of Pine Flat Dam and appurtenant facilities. Based on this study, the Corps of Engineers concluded that significant resources in the Kings River system are threatened by the Pine Flat Lake and Kings River Flood Protection Project and related land development practices. It further concluded that there is a Federal interest in helping to resolve the problem of lost fishery and vegetation degradation. The Corps recommended that, if a non-Federal sponsor was identified to share the cost, detailed studies should be conducted to address the restoration of environmental resources in the area.

As a result of the 1994 reconnaissance report, The Corps of Engineers has initiated a study to address the restoration of fish and wildlife habitat at the Pine Flat Dam. As part of this study, the Corps of Engineers contracted

GEOFON, Incorporated (GEOFON) to perform a HTRW Preliminary Assessment of two separate sites located in the Pine Flats Dam study area. The HTRW Preliminary Assessment report will be included as an appendix to the Pine Flat Fish and Wildlife Restoration Study report.

4.1 SITE LOCATIONS AND DESCRIPTIONS

GEOFON has been contracted by the USACE to perform a HTRW Preliminary Assessment of two sites located in the Pine Flats Dam study area. The location and a brief description of each site is provided in the following sections.

4.1.1 Friant-Kern Canal Site

The Friant-Kern Canal site is an irregularly shaped piece of land that is located approximately 9.5 miles downstream of the Pine Flat Dam and approximately 2.25 miles southwest of Avocado Lake (see Figure 3). The site consists of about 200 acres that is roughly bordered by the Kings River on the northwest and by the Alta Main Canal on the southeast. The Friant-Kern Canal Siphon area, where the canal is siphoned under the Kings River, is located immediately northeast of the site. Byrd Slough, a relatively natural side channel of the Kings River, flows through the approximate center of the site.

Available information indicates that the site is currently undeveloped and leased for cattle grazing. As a result, vegetation at the site is either non-existent, or severely degraded in the areas where cattle have access. It is GEOFON's understanding that the USACE plans to perform fish and wildlife restoration actions at this site.

4.1.2 Kerman Site

The Kerman site consists of approximately 45 square miles of land located immediately south of the Town of Kerman in Fresno County, California (see Figure 4). The site is bordered on the north by a branch of the Southern Pacific Rail Road and on the south by Central Avenue. Fresno Slough is located immediately west of the site, while the eastern boundary is defined by the Dry Creek Canal. The San Joaquin River lies approximately 3.5 miles north of the western portion of the site, and an oil field is reported to be located within 2.5 miles of the southern border of the site. A radio tower is also present just east of Madera Avenue in the eastern portion of the site.

It is GEOFON's understanding that the Kerman site is currently owned by several private parties, and is predominantly used for agricultural purposes and cattle grazing. GEOFON further understands that the USACE plans to perform fish and wildlife restoration actions at this site.

4.2 PHYSICAL CHARACTERISTICS

4.2.1 Topography

The two subject sites lie within the southern portion of an elongated low land known as the Great Valley or the Central Valley. The Great Valley is a large asymmetrical trough between the Sierra Nevada and the Coast Ranges in central California. The valley is unusual for a lowland because it is a relatively undeformed basin surrounded by highly deformed rock units (Norris and Webb, 1990). This province is separated into two segments; the Sacramento Valley in the north, and the San Joaquin Valley in the south.

The Friant-Kern Canal site is located on the eastern edge of the San Joaquin Valley near the western slope of the Sierra Nevada. This site lies along the Kings River approximately 9.5 miles downstream of the Pine Flat Dam. The Kerman site is located in the central portion of the San Joaquin Valley about 15 miles southwest of Fresno.

4.2.2 Soils/Geology

The San Joaquin Valley is an extensive basin containing alluvial soils, consisting predominately of alluvial-fan and lacustrine material, that are reported to be several thousand feet thick in some areas. The soils in the vicinity of the Friant-Kern Canal site generally consist of sandy loam formed from material that has been deposited by the Kings River. A thick layer of gravel and cobbles is present in some areas at a depth ranging from 24 to 48 inches beneath the surface. Outcrops of Mesozoic granitic rock, as well as Mesozoic basic and ultrabasic intrusive rocks, are found to the northeast and south of this site on the western slope of the Sierra Nevada Mountains. Outcrops of Pre-Cretaceous metavolcanic rocks are also present to the north of the site.

Alluvium in the vicinity of the Kerman site is much thicker than the alluvium at the Friant-Kern Canal site. The soils in this area generally consist of well-drained fine sands and silts that have been deposited in the flood plain of the San Joaquin River (U.S. Dept. of Agriculture, 1971).

4.2.3 Surface Water Hydrology

The Friant-Kern Canal site is situated along the Kings River about 9.5 miles downstream from the Pine Flats Dam. The north, middle, and south forks of the Kings River originate east of the site in the Sierra Nevada, and converge

into one main channel east of the Pine Flats Reservoir. The Kings River carries rainwater and snow melt from the Sierra Nevada, southwest toward the Tulare Lake Bed. The majority of the water from the Kings River is diverted for agricultural use before it reaches the lake bed.

The Kerman site lies within the San Joaquin River flood plain. This river also originates in the Sierra Nevada east of the site and carries rainwater and snow melt into the San Joaquin Valley. The river makes an abrupt turn to the north in the middle of the valley and eventually joins with the Sacramento River east of Suisun Bay.

5.0 PRELIMINARY ASSESSMENT

GEOFON performed a preliminary assessment of the two subject sites to identify proposed and existing HTRW sites within the project areas. Specifically, this study was conducted to evaluate the presence or potential presence of sources of contamination which may have adversely impacted the soil and/or groundwater at the two sites. The following activities were performed during this assessment:

5.1 REGULATORY AGENCY FILE REVIEW

Written request letters were issued to applicable state, regional, and local agencies to obtain information regarding the history and environmental condition of the sites. Where possible, GEOFON visited the agencies to review available records, files, and reports relevant to this assessment. Agencies contacted for this assessment included the following:

- California EPA Department of Toxic Substance Control (DTSC)

- ☐ California Department of Water Resources, Central Valley Region
- ☐ California Regional Water Quality Control Board (CRWQCB), Central Valley Region
- ☐ County of Fresno Health Services Agency
- ☐ County and City Fire Departments

California EPA DTSC - According to Ms. Rebecca Mora of DTSC, no current or historical records for toxic releases directly on the property, exists for the Friant-Kern Canal Site and/or Kerman Site.

CRWQCB, Central Valley Region - A list of leaking underground storage tanks (USTs)/ground water contamination sites was obtained from the CRWQCB for review. The Friant-Canal Site and/or Kerman Site were not identified on the list.

County of Fresno Health Services Agency - Records for USTs, hazardous-materials responses, and list of contaminated sites are maintained by the County of Fresno Health Services Agency. According to Ms. Lynn Klinkby, Environmental Health Analyst, no current or historical permits for USTs (active or closed), or records for toxic releases directly on the property, exists for either Friant-Kern Canal Site or Kerman Site.

County and City Fire Departments - No records for emergency responses were identified for the Friant-Kern Canal Site and/or Kerman Site with County and City Fire Departments.

5.2 REGULATORY DATABASE SEARCH

GEOFON retained the services of Environmental Data Resources, Inc. (EDR) of Southport, Connecticut, to perform a database search of the two sites and of properties within 1 mile of the site boundaries. The purpose of the database review was to identify reported listing for the subject sites and properties in the vicinity of the subject sites. Databases reviewed included federal and state list of known or suspected contaminated sites, known handlers or generators of hazardous waste, known waste disposal facilities, and permitted USTs. The following federal, state, and regional databases were reviewed:

- Federal Government Information Sources
  - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
  - Emergency Response Notification System (ERNS)
  - National Priority List (NPL)
  - Resource Conservation and Recovery Information System (RCRIS)
  - Superfund Consent Decrees (CONSENT)
  - Corrective Action Report (CORRACTS)
  - Facility Index System (FINDS)
  - Hazardous Materials Information Reporting Systems (HMIRS)
  - Material Licensing Tracking System (MLTS)
  - Federal Superfund Liens (NPL LIENS)
  - PCB Activity Database System (PADS)
  - RCRA Administrative Action Tracking System (RAATS)
  - Records of Decision (ROD)
  - Toxic Chemical Release Inventory System (TRIS)
  - Toxic Substances Control Act (TSCA)

- ☐ State Government Information Sources
  - Bond Expenditure Plan (BEP)
  - Annual Workplan (Cal-Sites AWP)
  - Calsites (Cal-sites ASPIS)
  - California Hazardous Materials Incident Report System (CHMIRS)
  - Cal EPA/Office of Emergency Planning (CORTESE)
  - Leaking Underground Storage Tank Information System (LUST)
  - Proposition 65 (NOTIFY 65)
  - Solid Waste Information System (SWF/LF [SWIS])
  - Toxic Pits
  - California Underground Storage Tank Databases (CA UST)
  - Waste Management Unit Database (WMUDS/SWAT)
  - Aboveground Petroleum Storage Tank Facilities (AST)
  - Hazardous Waste Information System (HAZNET)
  - South Bay Site Management System (SOUTH BAY)
  - Waste Discharge System (WDS)

- ☐ Regional Government Information Sources
  - County Environmental Health and/or Public Works Departments available

Friant-Kern Canal Site:

The EDR database search report for Friant-Kern Canal Site is included as Appendix A. GEOFON reviewed and evaluated the information obtained from the EDR database search report. The Friant-Kern Canal Site is not listed in the EDR report. No mapped sites that would significantly impact the soil and groundwater quality of the Friant-Kern Canal Site were found in the

EDR radius search of available government records within the ASTM search radius around the Friant-Kern Canal Site.

Kerman Site:

The EDR database search report for Kerman Site is included as Appendix B. GEOFON reviewed and evaluated the information obtained from the EDR database search report. The Kerman Site is not listed in the EDR report. No mapped sites that would significantly impact the soil and groundwater quality of the Kerman Site were found in the EDR radius search of available government records within the ASTM search radius around the Kerman Site.

The EDR database search report summarizes environmentally impacted sites that are within a 1-mile radius from the Kerman Site. The report includes location maps, descriptions of each government list, site names and addresses, and current status with some repetition existing among the different databases. The following is an overview of the information contained in the EDR report. Partial descriptions of the databases provided by EDR are included below. For a comprehensive listing of the databases searched and recorded see the EDR report in Appendix B.

FEDERAL RESOURCES

- ☐ **National Priority List (NPL) - Listed and Delisted:**
  No listings

- ☐ **Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS, CERC-NFRAP, CONSENT, RODS, NPL Liens):**
  No listings

- ☐ **Emergency Response Notification System (ERNS):**
  No listings

- ☐ **Resource Conservation and Recovery Act Treatment, Storage, and Disposal Facilities (RCRIS-TSD):**
  No listings

- ☐ **Resource Conservation and Recovery Act (RCRA-RAATs) Corrective Actions (CORRACTS):**
  No listings

- ☐ **Toxic Chemical Release Inventory System (TRIS):**
  No listings

- ☐ **Resource Conservation and Recovery Act Generators (GNRTR):** *One large quantity generator (RCRA-SQG) and one small quantity generator (RCRA-LQG) were identified within a one-eighth mile radius of the two water transfer pipeline Alternative Alignments. These two properties and their approximate locations include:*
  1. Kerman Tractor Repair (Map ID No. 54), SQG, one-fourth mile north of Alternative Alignment 2 at south Madera Avenue
  2. American Avenue Disposal Site (Map ID No. 60), LQG, one-half mile at W. American Avenue and Butte.

  The EDR report identified the Kerman Tractor Repair facility as low risk/liability site. The American Avenue Disposal Site does not appear to present a concern since it is not listed as an environmental concern on other government published lists searched.

The USEPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to point of disposal. The RCRA Facilities database is a compilation by the USEPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Large Generators are facilities which generate more than 1000 kg/month of non-acutely hazardous waste (or 1 kg/month of acutely hazardous waste). RCRA Small and Very Small Generators are facilities which generate less than 1000 kg/month of non-acutely hazardous waste.

CALIFORNIA STATE SOURCES

- **State of California Department of Toxic Substance Control (AWP):**
  No Listings

  This database is provided by the California Environmental Protection Agency, Department of Toxic Substance Control. Annual Work Plan (AWP) sites and sites where Preliminary Endangerment Assessments are a high priority are included.

- **State of California Department of Toxic Substance Control List (ASPIS):**
  No listings

  This database is provided by the Department of Toxic Substances Control. These are lower priority than the SPL sites.

- **Hazardous Waste Information System (HWIS)**
  No listings

- **California Hazardous Materials Incident Reporting System (CHMIRS):**
  No listings

- **Leaking Underground Storage Tanks - California State [LUST]:**
  No listing within one-mile radius of the two Alternative Alignments.

  The Leaking Underground Storage Tanks Information System (LUSTIS) is maintained by the State Water Resources Control Board pursuant to Section 25295 of the Health and Safety Code.

- **Solid Waste Landfill (SWLF):**
  No listings

- **State of California Office of Planning and Research (CORTESE):**
  No listings

This database is provided by the Office of Environmental Protection, Office of hazardous Materials.

- **Toxic Pits:**
  No listings

- **State of California Water Resources Control Board (UST/AST):**

  Five listings (properties with permitted USTs) (Map ID No. 53, 55, 56, 58, and 59) within 1/8- to 1/4-mile of the two Alternative Alignments. No ASTs were reported within 1-mile of the two Alternative Alignments.

  This database lists the permitted Underground and Aboveground Storage Tanks.

5.3 HISTORICAL AERIAL PHOTOGRAPH REVIEW

Historical aerial photographs were reviewed to obtain information regarding past land use at the two sites, and in the vicinity of the sites, as it relates to potential sources of contamination. Specifically, evidence of potentially hazardous material storage areas, landfills, industrial facilities, service stations, oil fields, and other operations that could adversely impact the condition of the site were evaluated.

Available aerial photographs on file at EDR, Inc., were obtained for review. These photographs represent photo flights conducted in 1965 and 1970 for Friant-Kern Canal Site and 1965 for Kerman Site. The historical aerial photographs for the year 1965 and 1970 are presented in Appendix C. The photographs reviewed and brief descriptions of the observations made are presented below:

SUMMARY OF AERIAL PHOTOGRAPHY REVIEW

Friant-Kern Canal Site

Year	Flyer	Scale
1965	Cartwright	1" = 833'

The 1965 photograph indicates that the Friant-Kern Canal site is vacant, undeveloped and covered generally by open grassy fields, scattered orchards, oak, and eucalyptus trees. Byrd Slough was observed flowing through the approximate center of the Site. No man-made structures were observed on the Site. The Friant-Kern Canal Siphon area was observed immediately northeast of the Site. A paved road (Piedra Road) was observed to the southeast of the Site. The adjacent properties to the north, east, south, and west were vacant and undeveloped.

Year	Flyer	Scale
1970	Cartwright	1" = 833'

The 1970 photograph indicates that the Site remained unchanged and was the same as 1965 photograph.

SUMMARY OF AERIAL PHOTOGRAPHY REVIEW

Kerman Site

Year	Flyer	Scale
1965	Cartwright	1" = 1000'

The 1965 photograph indicates that the Kerman-Site is vacant, undeveloped agricultural land and covered generally by open grassy fields, scattered orchards, and oak trees on either side of the Alternative Alignments 1 and 2. No man-made structures were observed on the Site. Southern Pacific Rail

Road was observed to the north of the Site. The adjacent properties to the north, east, south, and west were vacant and undeveloped agricultural lands.

5.4 HISTORICAL TOPOGRAPHIC MAPS REVIEW

In addition to the historical aerial photograph evaluation, historical topographic maps were reviewed to obtain the history of Friant-Kern Canal and Kerman Site. The historical topographic map report was provided by EDR and is included as Appendix D. These topographic maps represent maps developed in 1942 and 1965 for Friant-Kern Canal Site and maps developed in 1924, 1947, 1963, 1974 for Kerman Site, respectively. A summary of findings from reviewing the topographic maps is presented below:

SUMMARY OF TOPOGRAPHIC MAP REVIEW

Friant-Kern Canal Site

year	Quad	Series	Scale
1942	Watts Valley	15 minutes	1:62,500

The 1942 topographic map indicates that the Friant-Kern Canal Site is vacant, undeveloped. No man-made structures were observed on the Site. Avocado Lake was observed approximately 2.25 miles northeast of the Site. The adjacent properties to the north, east, south, and west were vacant and undeveloped.

year	Quad	Series	Scale
1965	Piedra	7.5 minutes	1:24,000

The 1965 topographic map indicates that the Friant-Kern Canal Site remained vacant and undeveloped. Byrd Slough was observed flowing

through the approximate center of the Site. No man-made structures were observed on the Site. The Friant-Kern Canal Siphon area was observed immediately northeast of the Site. A paved road (Piedra Road) was observed to the southeast of the Site. The adjacent properties to the north, east, south, and west were vacant and undeveloped.

SUMMARY OF TOPOGRAPHIC MAP REVIEW

Kerman Site

year	Quad	Series	Scale
1924	Jamesan	7.5 minutes	1:31,680

The 1924 topographic map indicates that the Kerman-Site is vacant, and undeveloped land. No man-made structures were observed on the Site. Southern Pacific Rail Road was observed to the north of the Site. The adjacent properties to the north, east, south, and west were vacant and undeveloped lands.

year	Quad	Series	Scale
1947	Jamesan	7.5 minutes	1:24,000
1963	Jamesan	7.5 minutes	1:24,000

The 1947 and 1963 topographic maps indicate that the Kerman Site remained unchanged and was the same as 1924 topographic map. Several unpaved roads were observed traversing the site. The adjacent properties to the north, east, south, and west were vacant and undeveloped lands.

year	Quad	Series	Scale
1974	Monterey	7.5 minutes	1:250,000

The 1974 topographic map indicates that the Kerman Site is a vacant and undeveloped agricultural land. Several unpaved roads were observed traversing the site. Southern Pacific Rail Road and Central Avenue were observed to the north of the Site. A radio tower is present just east of Madera Avenue in the eastern portion of the Site. Fresno Slough is present immediately west of the Site and Dry Creek Canal to the eastern boundary.

5.5 SITE INSPECTION

GEOFON personnel visually inspected the project sites for evidence of present or past operations that use or may have used potentially hazardous materials. Special attention was given to any drum storage areas, underground or above ground tanks, surface staining, and distressed vegetation. Other areas showing signs of pesticides and herbicides were also considered during this inspection. Sites not accessible to field personnel, were visually observed from as many offsite vantage points as practicable. Photographs of the two sites and surrounding properties, taken during the site inspection, are provided in Appendix E.

Friant-Kern Canal Site:

The Friant-Kern Canal Site was not accessible to GEOFON field personnel, therefore, the Site was visually observed from as many offsite vantage points as possible. The Friant-Kern Canal Site is an irregularly shaped, vacant, and undeveloped piece of land covered generally by open grassy fields, scattered orchards, oak, poison berry, and eucalyptus trees. Byrd Slough was observed flowing through the approximate center of the Site. No man-made structures were observed on the Site. The south and west side of the Site are fenced with barbed wire. The Friant-Kern Canal Siphon area was observed immediately

northeast of the Site. An hydroelectric station was observed to the north of the Site. Overhead power lines were observed traversing the southeast corner of the Site. A paved road (Piedra Road) was observed to the southeast of the Site. A single-family ranch type home, with cattle grazing land and horses was observed to the west of the Site.

Indication of stressed vegetation, as possible result of hazardous material releases, was not observed during the site inspection. Evidence of fill ports (to USTs, clarifiers, or sumps) was not encountered within or adjacent to the Site. Ponds, pits, and sumps or other solid waste or liquid waste disposal areas were not observed on any portion of the Site. Unusual or noxious odors were not encountered during the site inspection.

Kerman Site

The Kerman Site inspection consisted of drive through inspection in a car east to west along the two water transfer pipe line Alternative Alignments (Alternative 1 - Malaga Avenue Alignment and Alternative 2 - Central Avenue Alignment).

Alternative 1 - Malaga Avenue Alignment: The adjacent lands to the north and south of Malaga Avenue Alignment were agricultural lands, with combination of alfalfa, cotton fields, and vineyards. Overhead power lines with transformers were observed at Malaga and Madera Avenue. Orchard trees were observed to the north and south of the Malaga Avenue at Lassen Street. The County of Fresno landfill was observed south of Malaga Avenue at Lake Avenue. The drive through inspection was stopped at Yuba due to the poor road access (road stopped).

Alternative 2 - Central Avenue Alignment: The inspection of Central Avenue Alignment began at Howard Avenue. An irrigation canal was observed at Central and Howard Avenue; running east to west. The soil along the canal was silty sand and silt. The adjacent land to the north and south of Central Avenue Alignment were agricultural lands with farm houses, combination of alfalfa, cotton fields and vineyards. Overhead power lines with transformers were observed at Goldenrod and Central Avenue.

Indication of stressed vegetation, as possible result of hazardous material releases, was not observed during the site inspection along the two Alignments. Evidence of fill ports (to USTs, clarifiers, or sumps) was not encountered within or adjacent to the Site. Ponds, pits, and sumps or other solid waste or liquid waste disposal areas were not observed on any portion along the two Alignments. Unusual or noxious odors were not encountered during the site inspection.

5.6 INTERVIEWS WITH SITE PERSONNEL

No personnel were available for interview to obtain additional information regarding past land use and potential HTRW problems.

6.0 FIELD SAMPLING

During the preliminary assessment, GEOFON did not identify any potential HTRW areas at the two sites. Therefore, no soil sampling and analyses was performed.

7.0 QUALITATIVE RISK ASSESSMENT

Analytical results of the soil samples are required for performing qualitative risk assessment of human health. GEOFON did not identify any potential HTRW areas for soil sampling and analyses at the two sites during this preliminary assessment. Hence, no qualitative risk assessment of human health was performed during this assessment.

8.0 CONCLUSIONS

Based on the information collected as part of this preliminary assessment and our evaluation of this information we conclude as follows:

- No condition or feature from current or past use was identified to suggest an environmental condition at the two subject sites that may trigger an environmental liability on, restrict use of, or otherwise significantly impact the subject sites.

- Regulatory agency interface and documents review did not reveal any recorded installation or closure of USTs for storage of hazardous materials at the two subject sites. No evidence was observed to suggest that USTs currently exist or ever existed on the subject sites. No electrical transformers were observed on the subject sites.

- Where nearby operations have generated and used hazardous materials and petroleum fuels, the materials may have been released in past incidents that are unreported or unavailable. Such releases, although unlikely, may impact subsurface groundwater conditions at the subject sites.

- The subject sites were not listed in any of the databases in the EDR report. No off-site properties of significant concern were noted in the EDR report.

- No immediate risk to the public health or safety or the environment was identified at the two subject sites.

- No further testing or investigation are deemed necessary at the two subject sites.

9.0 LIMITATIONS

The studies reported herein were limited to information supplied by USACE, visual observation of surface conditions at the subject sites, to the extent described, and a review of readily available relevant data. These data included reports and literature issued by federal, state and local agencies. Sampling and laboratory analyses was not undertaken as part of this effort.

This preliminary assessment addresses the likelihood of HTRW contamination resulting from past and current known uses of the subject sites and immediately adjacent properties. The focus has primarily been to evaluate the presence of petroleum, halogenated and aromatic hydrocarbons. As a result, certain conditions, such as those listed below, may not be revealed:

1) Naturally occurring toxins in the subsurface soils, rocks, water, or the toxicity of on-site flora;

2) Toxicity of substances common in current habitable environments, such as stored household products, center materials, dust, and consumables;

3) Biological pathogens, asbestos, radon;

4) Contamination plume below the surface originating from an off-site source;

5) Geologic or hydrogeologic conditions specific to the subject sites.

6) Contaminants or contaminant concentrations that do not violate present regulatory standards but that may violate future such standards; and

7) Unknown site contamination, such as "midnight dumping" and/or accidental spillage which may occur following the site by GEOFON.

10.0 REFERENCES

California Division of Mines and Geology, **Bouguer Gravity Map of California, Fresno Sheet,** Scale 1:250,000, 1982.

California Division of Mines and Geology, **Bulletin 170, Geology of Southern California,** 1954.

California Division of Mines and Geology, **Geologic Map of California, Santa Cruz Sheet,** Scale 1:250,000, 1959 (Fifth printing, 1992).

Norris, R.M. and Webb, R.W., **Geology of California, Second Edition,** 1990.

United States Army Corps of Engineers, **Regulation No. 1165-2-132, Water Resource Policies and Authorities; Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects,** 26 June 1992

United States Army Corps of Engineers, Sacramento District, South Pacific Division, **Draft Reconnaissance Report, Pine Flat Fish and Wildlife Habitat Restoration Investigation, California,** February 1994.

United States Department of Agriculture, **Soil Survey, Eastern Fresno Area, California**, October 1971.

United States Geological Survey, **Topographic Map, 7.5 Minute Series Topographic Map, Piedra, California Quadrangle,** Scale 1:24,000, 1965.

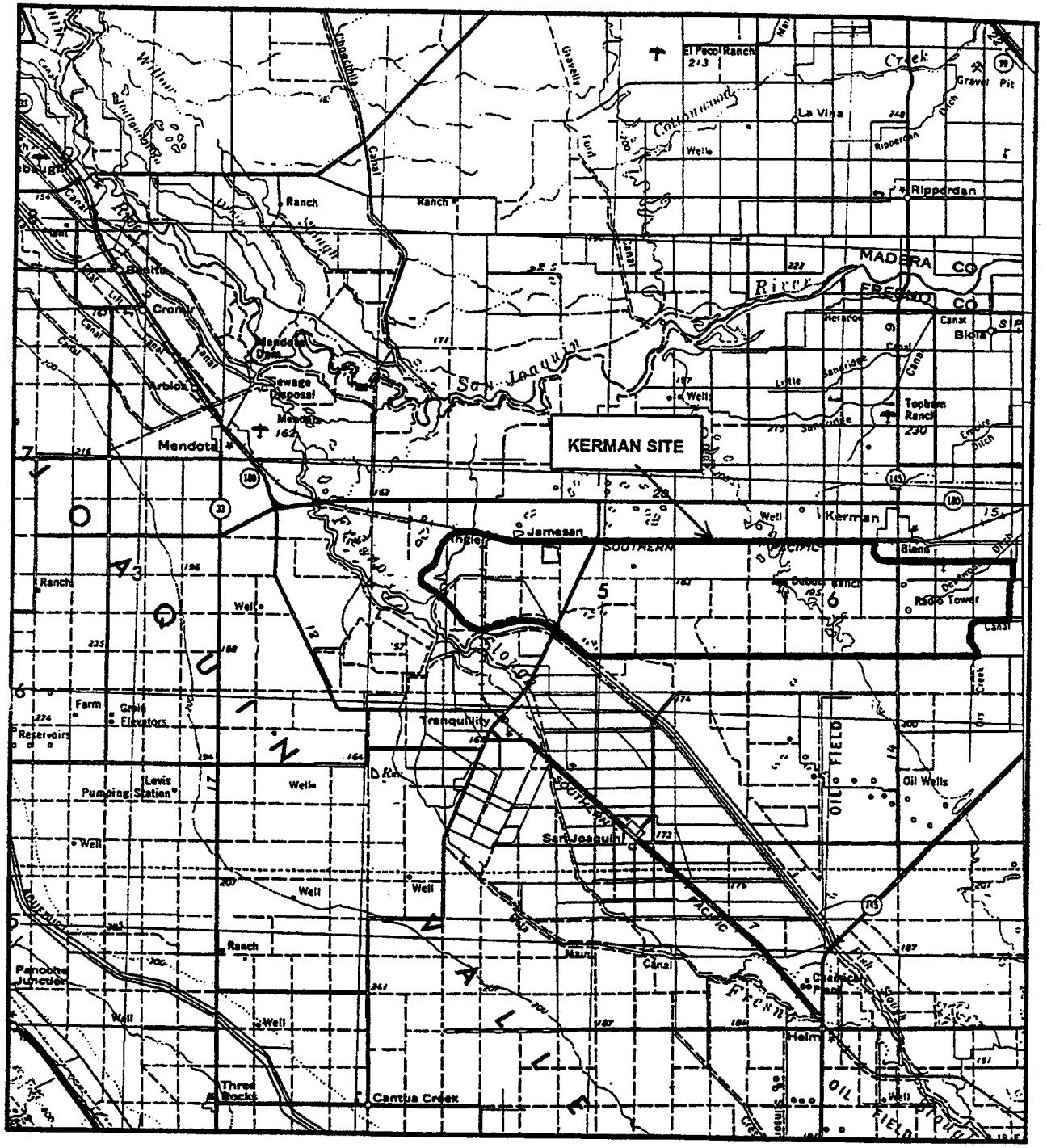
United States Geological Survey, **Topographic Map, Fresno, California,** Scale 1:250,000, 1962 (Revised 1971).

Environmental Data Resources, Inc., **The EDR-Radius Map with GeoChek, HTRW Preliminary Assessment, Piedra, CA 93657,** dated November 22, 1996.

Environmental Data Resources, Inc., **The EDR Area Study Report HTRW Preliminary Assessment Pine Flat Dam Fish + Wildlife Habitat Restoration Investigation, Monterey, California,** dated November 22, 1996.

Environmental Data Resources, Inc., **Historical Aerial Photographs and Historical Topographic Maps,** dated July 3, 1997.

FIGURES



Map Reference: 1974,
United States Geologic Survey, Topographic Map,
Monterey, California. Scale 1:250,000

Approximate Scale in Miles

0 5 10

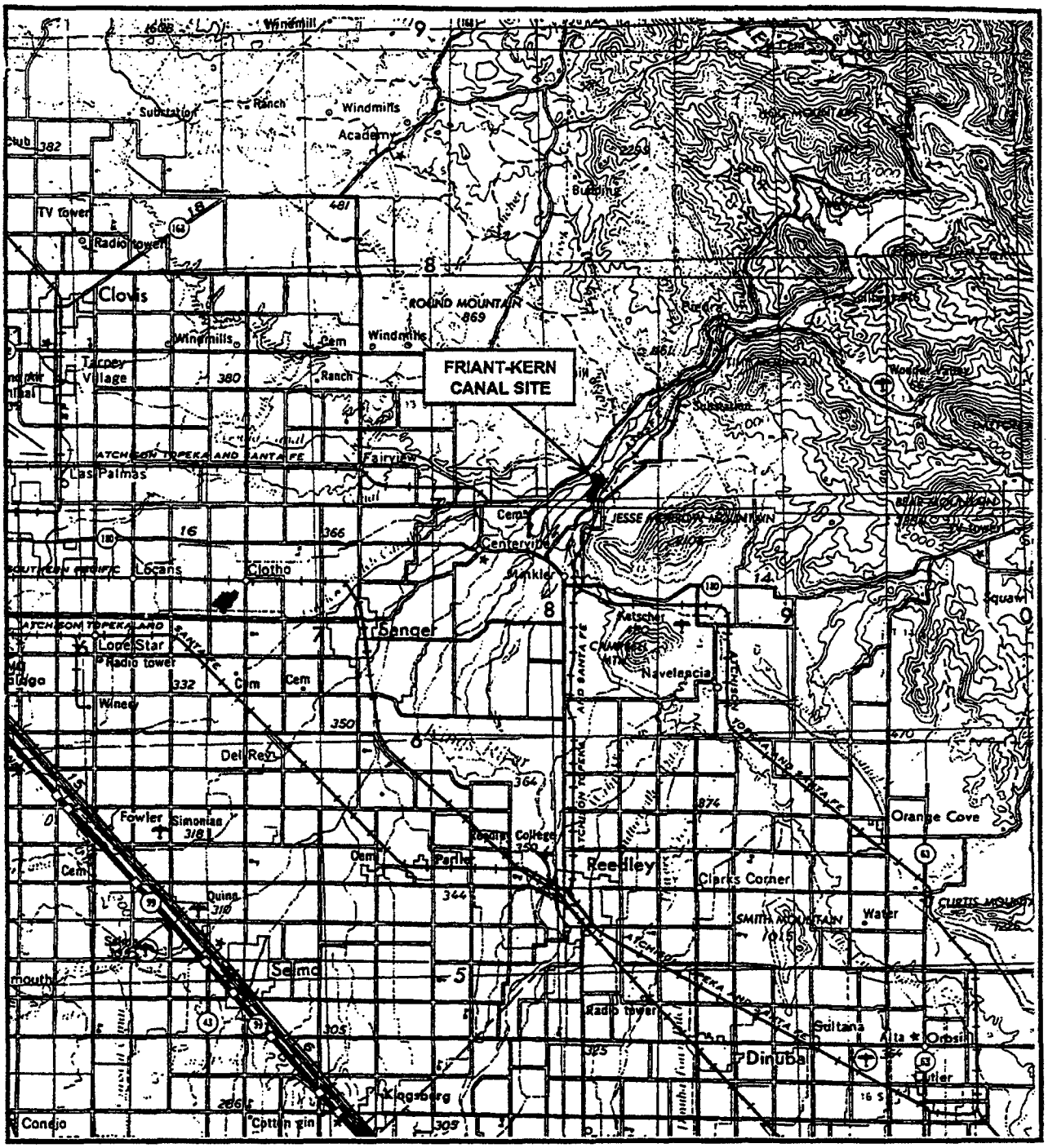
N

GEOFON INCORPURATED

PROJECT NO.: 95-007.02

SITE VICINITY MAP
KERMAN SITE
FRESNO COUNTY, CALIFORNIA

10/97	File No. F:\95-007.02\wplan\fig2.cvs	Figure 2



Map Reference: 1962 (revised 1971),
United States Geologic Survey, Topographic Map,
Fresno, California, Scale 1:250,000

Approximate Scale in Miles

0 5 10

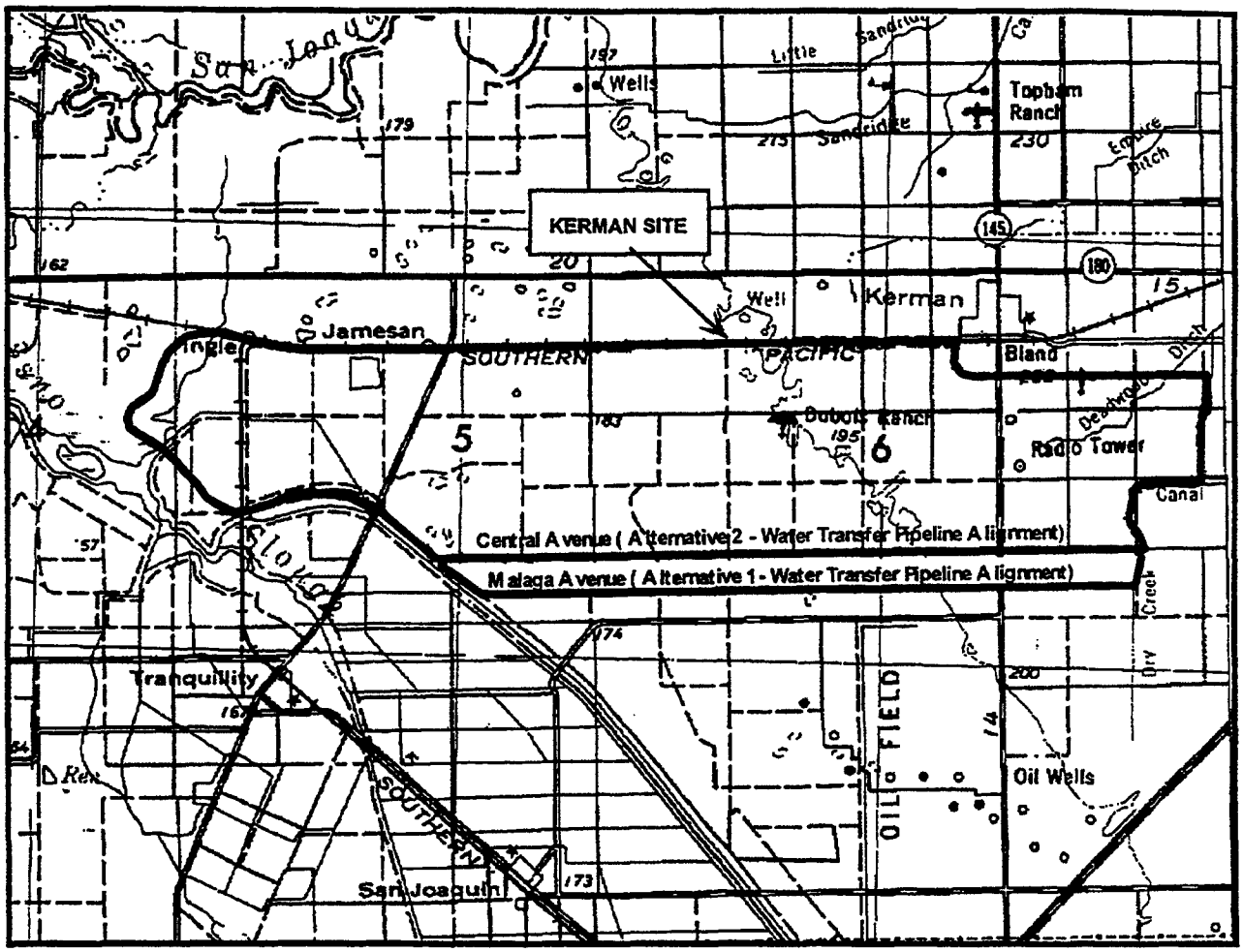
N

GEOFON INCORPORATED

PROJECT NO.: 95-007.02

SITE VICINITY MAP
FRIANT-KERN CANAL SITE
FRESNO COUNTY, CALIFORNIA

10/97	File No. F:\95-007.02\wplan\fig1.cvs	Figure 1



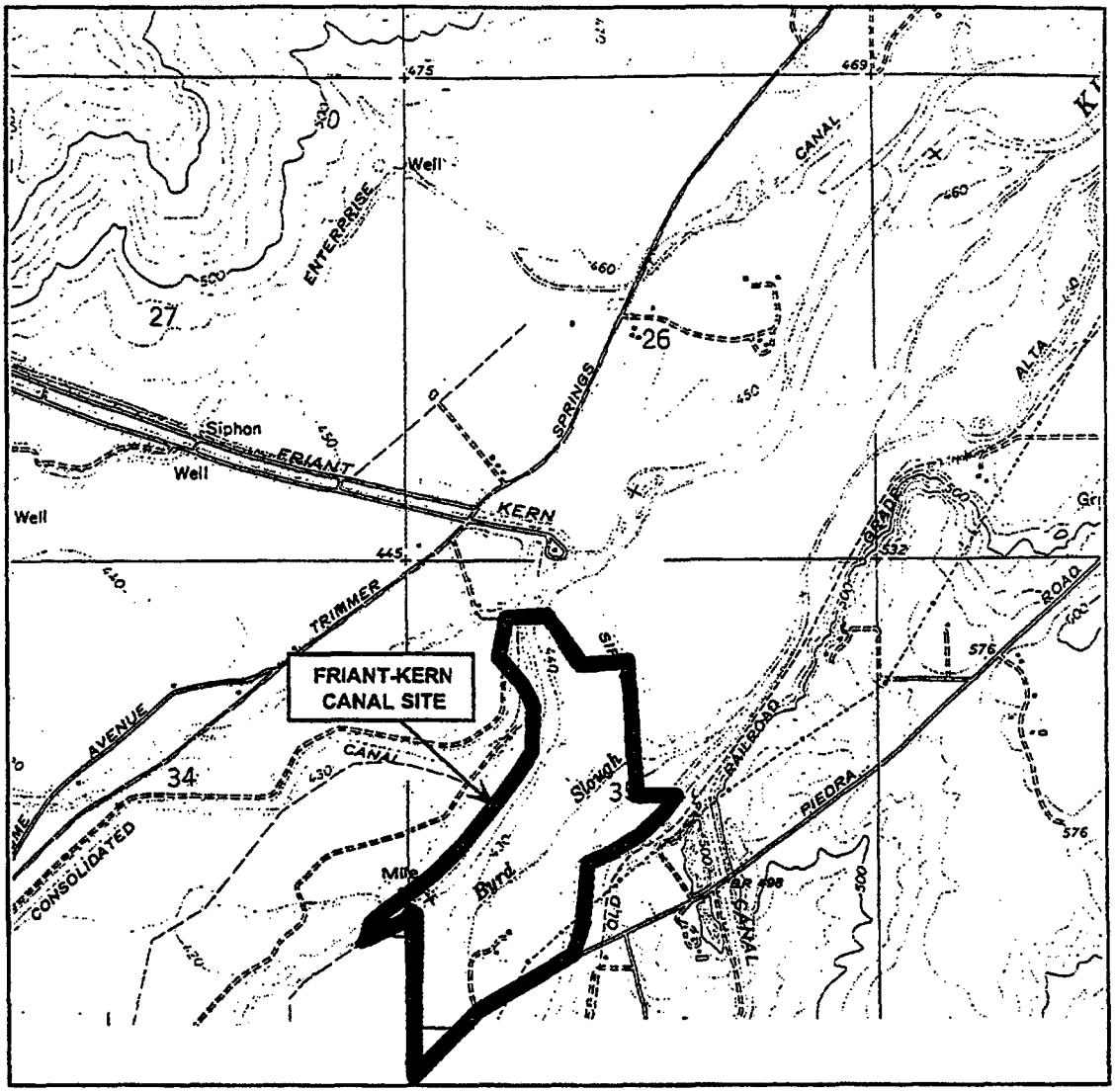
Map Reference: 1974,
United States Geologic Survey, Topographic Map,
Monterey, California. Scale 1:250,000

GEOFON INCORPURATED

PROJECT NO.: 95-007.02

SITE MAP
KERMAN SITE
FRESNO COUNTY, CALIFORNIA

10/97	File No. F:\95-007.02\wplan\fig4.cvs	Figure 4



Map Reference: 1965,
United States Geologic Survey, 7.5 Minute Topographic Map,
Piedra, California, Scale 1:24,000

Approximate Scale in Miles

0 .5 1

N

GEOFON INCORPORATED

PROJECT NO.: 95-007.02

SITE MAP
FRIANT-KERN CANAL SITE
FRESNO COUNTY, CALIFORNIA

10/97	File No. F:\95-007.02\wplan\fig3.cvs	Figure 3

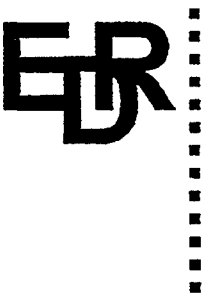
APPENDIX A
EDR - RADIUS MAP
FRIANT-KERN CANAL SITE

The EDR-Radius Map
with GeoCheck™

HTRW Preliminary Assessment
HTRW Preliminary Assessment
Piedra, CA 93657

Inquiry Number: 0147262.1r

November 22, 1996



Environmental
Data
Resources, Inc.

Creators of Toxicheck®

***The* Source**
For Environmental
Risk Management
Data

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802

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APPENDICES

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Government Records Searched / Data Currency Tracking Addendum	A8

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The search met the specific requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-94, or custom distances requested by the user.

The address of the subject property for which the search was intended is:

HTRW PRELIMINARY ASSESSMENT
PIEDRA, CA 93657

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the subject property or within the ASTM E 1527-94 search radius around the subject property for the following Databases:

NPL:	National Priority List
Delisted NPL:	NPL Deletions
RCRIS-TSD:	Resource Conservation and Recovery Information System
AWP:	Annual Workplan
Cal-Sites:	Calsites
Delisted Cal-Sites:	Not reported
Notify 65:	Proposition 65
CHMIRS:	California Hazardous Material Incident Report System
Cortese:	Cortese
Toxic Pits:	Toxic Pits
CERCLIS:	Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP:	Comprehensive Environmental Response, Compensation, and Liability Information System
CORRACTS:	Corrective Action Report
SWF/LF (SWIS):	Solid Waste Information System
UST:	Hazardous Substance Storage Container Database
CA FID:	Facility Inventory Database
AST:	Aboveground Petroleum Storage Tank Facilities
RAATS:	RCRA Administrative Action Tracking System
WMUDS/SWAT:	Waste Management Unit Database
HWIS:	Hazardous Waste Information System
RCRIS-SQG:	Resource Conservation and Recovery Information System
RCRIS-LQG:	Resource Conservation and Recovery Information System
HMIRS:	Hazardous Materials Information Reporting System
PADS:	PCB Activity Database System
ERNS:	Emergency Response Notification System
FINDS:	Facility Index System
TRIS:	Toxic Chemical Release Inventory System
TSCA:	Toxic Substances Control Act
MLTS:	Material Licensing Tracking System
RODS:	Records Of Decision
CONSENT:	Superfund (CERCLA) Consent Decrees
NPL Liens:	Federal Superfund Liens
Site Mitigation:	Not reported
Industrial Sites:	List of Industrial Site Cleanups
HMMD:	Hazardous Materials Management Division Database
DEHS Permit:	Not reported
SLIC Region:	CA SLIC regions.
CA Bond Exp. Plan:	Bond Expenditure Plan
CA BWT:	Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
HMS:	Street Number List

EXECUTIVE SUMMARY

CA SB2:..... South Bay Site Management System
Business Inventory:..... Not reported
Site List:..... Not reported
Waste Discharge System:... Waste Discharge System
Coal Gas:..... Former Manufactured gas (Coal Gas) Sites.

Unmapped (orphan) sites are not considered in the foregoing analysis.

Search Results:

Search results for the subject property and the search radius, are listed below:

Subject Property:

The subject property was not listed in any of the databases searched by EDR.

EXECUTIVE SUMMARY

Surrounding Properties:

Elevations have been determined from the USGS 1 degree Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. EDR's definition of a site with an elevation equal to the subject property includes a tolerance of -10 feet. Sites with an elevation equal to or higher than the subject property have been differentiated below from sites with an elevation lower than the subject property (by more than 10 feet). Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data comes from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

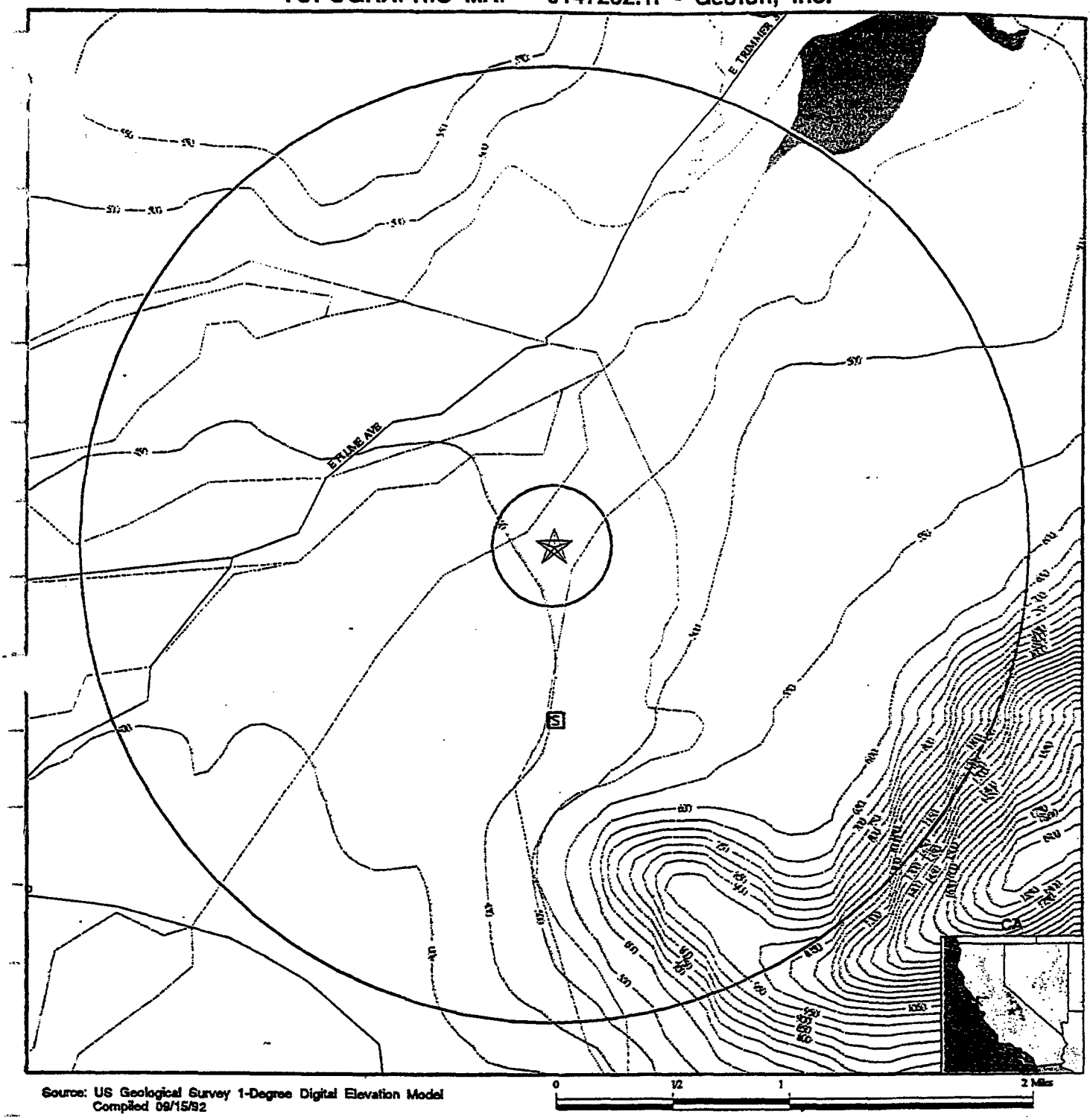
A review of the LUST list, as provided by EDR, and dated 04/01/1996 has revealed that there are 2 LUST sites within approximately 1.5 Miles of the subject property.

Lower Elevation	Address	Map ID	Page
PIEDRA RANCH	1575 VIAU N	A1	10
PIEDRA RANCH	1575 N VIAU AVE	A2	10

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
SANGER CITY DUMPSITE (1)	Cal-Sites
SANGER DISPOSAL SITE	Cal-Sites
MADERA GLASS CO	CERC-NFRAP
SANGER RIVER BOTTOM PROPERTY	FINDS,CERC-NFRAP
WATSON'S NURSERY	UST
MRS. MARY VISSIO	UST
GEORGE SANI	UST
WILLIAM ROY COTNER	UST
W. C. HARRIS	UST
FARM (HOME)	UST
JAMES A. MOGLIA	UST
WYCHE RANCH	UST
TRIMMER RANGER STATION	UST
CALMAT CO SANGER	RCRIS-SQG

TOPOGRAPHIC MAP - 0147262.1r - Geofon, Inc.



Source: US Geological Survey 1-Degree Digital Elevation Model
Compiled 09/15/92

- Major Roads
- Contour lines (25 foot interval unless otherwise shown)
- Waterways
- Earthquake fault lines
- Earthquake epicenter, Richter 5 or greater.
- (F)ederal and (S)tate wells
- Public water supply wells

TARGET PROPERTY:	HTRW Preliminary Assessment	CUSTOMER:	Geofon, Inc.
ADDRESS:	HTRW Preliminary Assessment	CONTACT:	Janaka Jayamaha
CITY/STATE/ZIP:	Piedra CA 93657	INQUIRY #:	0147262.1r
		DATE:	November 22, 1996 12:19 pm

GEOCHECK VERSION 2.1
SUMMARY

GEOLOGIC AGE IDENTIFICATION†

Geologic Code:	Kg1
Era:	Mesozoic
System:	Cretaceous
Series:	Lower Cretaceous granitic rocks

ROCK STRATIGRAPHIC UNIT†

Category:	Plutonic and Intrusive Rocks

GROUNDWATER FLOW INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, including well data collected on nearby properties, regional groundwater flow information (from deep aquifers), or surface topography.‡

General Topographic Gradient: General WSW
General Hydrogeologic Gradient: No hydrogeologic data available.

USGS TOPOGRAPHIC MAP ASSOCIATED WITH THIS SITE

Target Property:	2436119-G4 PIEDRA, CA

FEDERAL DATABASE WELL INFORMATION

WELL DIRECTION	DISTANCE FROM TP	LITHOLOGY	DEPTH TO WATER TABLE
NO WELLS FOUND			

STATE DATABASE WELL INFORMATION

WELL DIRECTION	DISTANCE FROM TP
South	1/2 - 1 Mile

PUBLIC WATER SUPPLY SYSTEM INFORMATION (EPA-FRDS)

Searched by Zip Code.

PWS Name:	HOME CAMP CREEK HUNTINGTON MRS EDNA BRAISCOE W END HUNTINGTON LAKE HUNTINGTON LAKE, CA 93629
Location Relative to TP:	Not Reported
Well currently has or has had major violation(s):	Yes
PWS Name:	CENTERVILLE SCHOOL CENTERVILLE SCHOOL 48 S SMITH SANGER, CA 93657
Location Relative to TP:	Not Reported
Well currently has or has had major violation(s):	No

† Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).
‡ U.S. EPA Ground Water Handbook, Vol I: Ground Water and Contamination, Office of Research and development EPA/625/6-90/016a,Chapter 4, page 76, September 1990.

GEOCHECK VERSION 2.1
SUMMARY

PUBLIC WATER SUPPLY SYSTEM INFORMATION (EPA-FRDS)

Searched by Zip Code.

PWS Name: FAIRMONT UNION SCHOOL
SANGER UNIFIED SCHOOL DISTRICT
3095 N GREENWOOD AV
SANGER, CA 93657
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): No

PWS Name: SYCAMORE FLAT C G
USFS KINGS RIVER RANGER DIST
TRIMMER RD
FRESNO, CA 94234
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: USFS KINGS RIVER RANGER DIST
UNITED STATES FOREST
TRIMMER & WATTS VALLRD
FRESNO, CA 93702
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: WONDER VALLEY RESORT
WONDER VALLEY RESORT
11331 ELWOOD RD
WONDER VALLEY, CA 93657
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: LONE STAR ELEMENTARY SCHOOL
SANGER UNIFIED SCHOOL DISTRICT
2617 S. FOWLER AVE
FRESNO, CA 93725
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: SHERWOOD FOREST
SHERWOOD FOREST
339 N FRANKWOOD
SANGER, CA 93657
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: SHADY TRAILER PARK
SHADY TRAILER PARK
16081 E KINGS CY
SANGER, CA 93657
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: LAKERIDGE TRAILER PARK
LAKERIDGE TRAILER PARK
30547 SUNNYSLOPE
PIEDRA, CA 93649
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

GEOCHECK VERSION 2.1
SUMMARY

PUBLIC WATER SUPPLY SYSTEM INFORMATION (EPA-FRDS)

Searched by Zip Code.

PWS Name: JOHN S WASH SCHOOL
JOHN S WASH SCHOOL
6350 E LN
FRESNO, CA 93727
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: LAKEVIEW RESORT INC
LAKEVIEW RESORT INC
32451 TRIMMER RD
SANGER, CA 93657
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: SANGER SEWAGE TREATMENT PLANT
CITY OF SANGER
NORTH & NEWMARK
SANGER, CA 93657
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): Yes

PWS Name: OAK KNOLLS TRAILER PARK
OAK KNOLLS TRAILER PARK
30367 TRIMMER SPRINGS RD
SANGER, CA 93657
Location Relative to TP: Not Reported
Well currently has or has had major violation(s): No

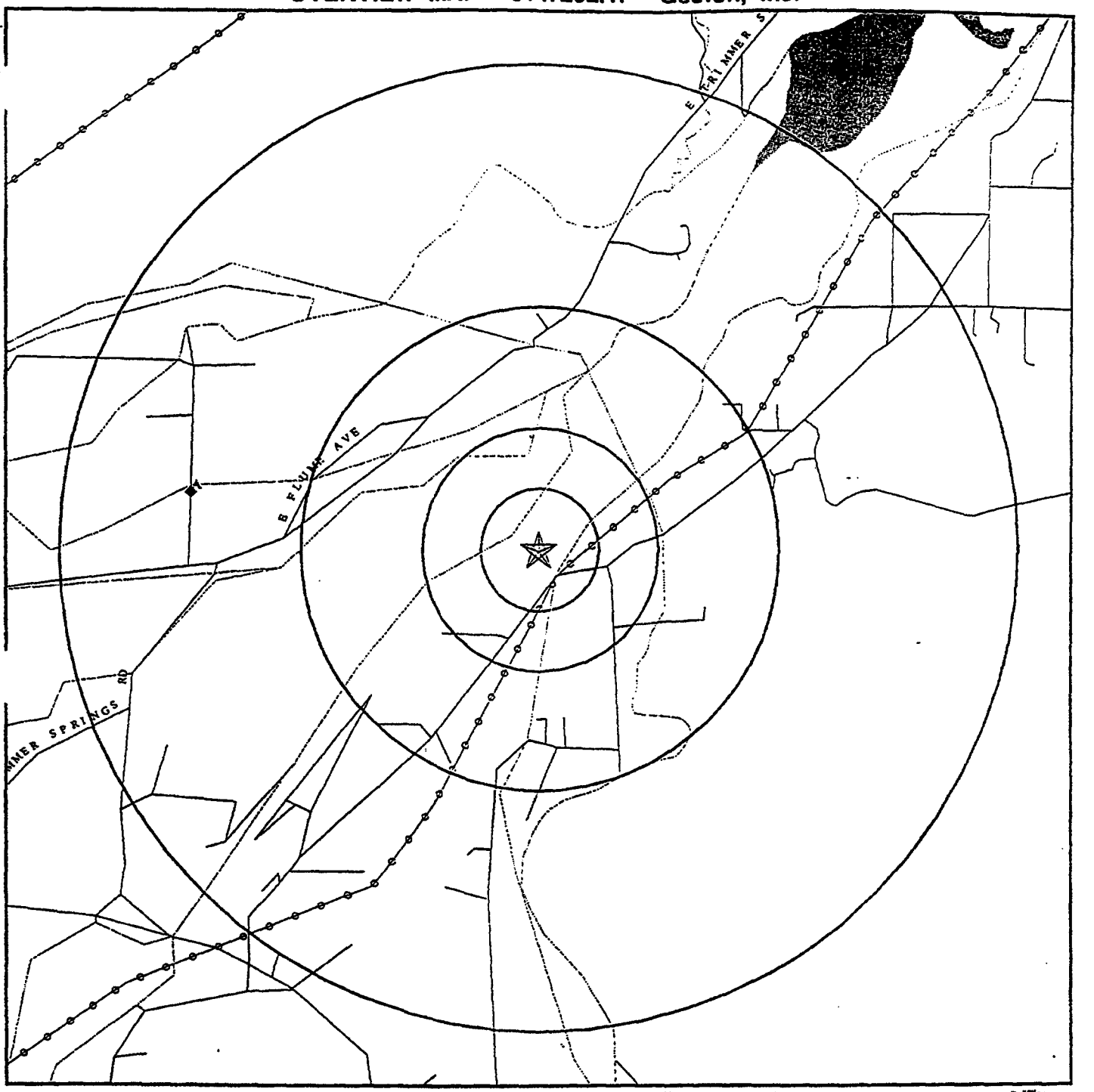
AREA RADON INFORMATION

Zip Code: 93657

Number of sites tested: 4

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.575 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.600 pCi/L	100%	0%	0%

OVERVIEW MAP - 0147262.1r - Geofon, Inc.



★ - Indicates TARGET PROPERTY.

▲ - Indicates sites at elevations higher than or equal to the target property.

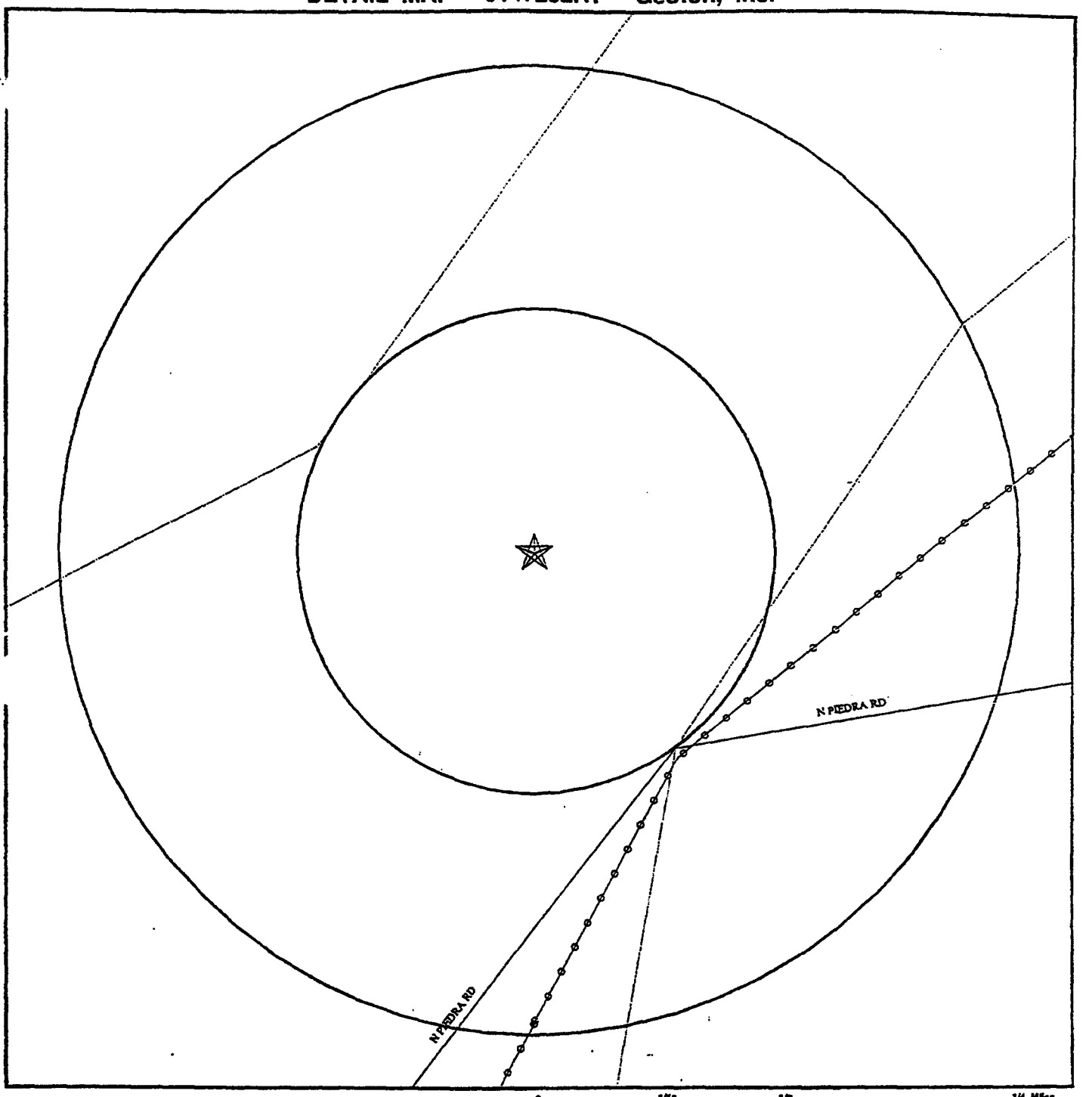
◆ - Indicates sites at elevations lower than the target property.

- Coal Gasification Sites (if requested)
- National Priority List Sites
- Landfill Sites

- Power transmission lines (USGS DLG, 1993)
- Oil & Gas pipelines (USGS DLG, 1993)

TARGET PROPERTY:	HTRW Preliminary Assessment	CUSTOMER:	Geofon, Inc.
ADDRESS:	HTRW Preliminary Assessment	CONTACT:	Janaka Jayamaha
CITY/STATE/ZIP:	Piedra CA 93657	INQUIRY #:	0147262.1r
		DATE:	November 22, 1996 12:17 pm

DETAIL MAP - 0147262.1r - Geofon, Inc.



★ - Indicates TARGET PROPERTY.

▲ - Indicates sites at elevations higher than or equal to the target property.

◆ - Indicates sites at elevations lower than the target property.

- Coal Gasification Sites (if requested)

- Sensitive Receptors

- National Priority List Sites

- Landfill Sites

- Power transmission lines (USGS DLG, 1993)

- Oil & Gas pipelines (USGS DLG, 1993)

TARGET PROPERTY:	HTRW Preliminary Assessment	CUSTOMER:	Geofon, Inc.
ADDRESS:	HTRW Preliminary Assessment	CONTACT:	Janaka Jayamaha
CITY/STATE/ZIP:	Piedra CA 93657	INQUIRY #:	0147262.1r
		DATE:	November 22, 1996 12:18 pm

MAP FINDINGS SUMMARY SHOWING ALL SITES

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NPL		2.000	0	0	0	0	0	0
Delisted NPL		1.000	0	0	0	0	NR	0
RCRIS-TSD		2.000	0	0	0	0	0	0
AWP		2.000	0	0	0	0	0	0
Cal-Sites		2.000	0	0	0	0	0	0
Delisted Cal-Sites		1.000	0	0	0	0	NR	0
Notify 65		2.000	0	0	0	0	0	0
CHMIRS		2.000	0	0	0	0	0	0
Cortese		2.000	0	0	0	0	0	0
Toxic Pits		2.000	0	0	0	0	0	0
CERCLIS		1.500	0	0	0	0	0	0
CERC-NFRAP		1.000	0	0	0	0	NR	0
CORRACTS		2.000	0	0	0	0	0	0
St. Landfill (SWIS)		1.500	0	0	0	0	0	0
LUST		1.500	0	0	0	0	2	2
UST		1.250	0	0	0	0	0	0
CA FID		1.250	0	0	0	0	0	0
AST		0.125	0	NR	NR	NR	NR	0
RAATS		1.000	0	0	0	0	NR	0
WMUDS/SWAT		1.000	0	0	0	0	NR	0
HWIS		1.250	0	0	0	0	0	0
RCRIS Sm. Quan. Gen.		1.250	0	0	0	0	0	0
RCRIS Lg. Quan. Gen.		1.250	0	0	0	0	0	0
HMIRS		1.000	0	0	0	0	NR	0
PADS		1.000	0	0	0	0	NR	0
ERNS		1.000	0	0	0	0	NR	0
FINDS		1.000	0	0	0	0	NR	0
TRIS		1.000	0	0	0	0	NR	0
TSCA		1.000	0	0	0	0	NR	0
MLTS		1.000	0	0	0	0	NR	0
NPL Liens		1.000	0	0	0	0	NR	0
Site Mitigation		1.000	0	0	0	0	NR	0
Industrial Site		1.000	0	0	0	0	NR	0
HMMD		1.000	0	0	0	0	NR	0
DEHS Permit		1.000	0	0	0	0	NR	0
CA SLIC		1.000	0	0	0	0	NR	0
CA Bond Exp. Plan		2.000	0	0	0	0	0	0
ROD		2.000	0	0	0	0	0	0
CONSENT		2.000	0	0	0	0	0	0
CA BWT		1.000	0	0	0	0	NR	0
CA WDS		1.000	0	0	0	0	NR	0
HMS		1.000	0	0	0	0	NR	0
Business Inventory		1.000	0	0	0	0	NR	0
Site List		1.000	0	0	0	0	NR	0
South Bay Region 2		1.000	0	0	0	0	NR	0
Coal Gas		1.000	0	0	0	0	NR	0

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

MAP FINDINGS SUMMARY SHOWING ONLY SITES HIGHER THAN OR THE SAME ELEVATION AS TP

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NPL		2.000	0	0	0	0	0	0
Delisted NPL		1.000	0	0	0	0	NR	0
RCRIS-TSD		2.000	0	0	0	0	0	0
AWP		2.000	0	0	0	0	0	0
Cal-Sites		2.000	0	0	0	0	0	0
Delisted Cal-Sites		1.000	0	0	0	0	NR	0
Notify 65		2.000	0	0	0	0	0	0
CHMIRS		2.000	0	0	0	0	0	0
Cortese		2.000	0	0	0	0	0	0
Toxic Pits		2.000	0	0	0	0	0	0
CERCLIS		1.500	0	0	0	0	0	0
CERC-NFRAP		1.000	0	0	0	0	NR	0
CORRACTS		2.000	0	0	0	0	0	0
St. Landfill (SWIS)		1.500	0	0	0	0	0	0
LUST		1.500	0	0	0	0	0	0
UST		1.250	0	0	0	0	0	0
CA FID		1.250	0	0	0	0	0	0
AST		0.125	0	NR	NR	NR	NR	0
RAATS		1.000	0	0	0	0	NR	0
WMUDS/SWAT		1.000	0	0	0	0	NR	0
HWIS		1.250	0	0	0	0	0	0
RCRIS Sm. Quan. Gen.		1.250	0	0	0	0	0	0
RCRIS Lg. Quan. Gen.		1.250	0	0	0	0	0	0
HMIRS		1.000	0	0	0	0	NR	0
PADS		1.000	0	0	0	0	NR	0
ERNS		1.000	0	0	0	0	NR	0
FINDS		1.000	0	0	0	0	NR	0
TRIS		1.000	0	0	0	0	NR	0
TSCA		1.000	0	0	0	0	NR	0
MLTS		1.000	0	0	0	0	NR	0
NPL Liens		1.000	0	0	0	0	NR	0
Site Mitigation		1.000	0	0	0	0	NR	0
Industrial Site		1.000	0	0	0	0	NR	0
HMMD		1.000	0	0	0	0	NR	0
DEHS Permit		1.000	0	0	0	0	NR	0
CA SLIC		1.000	0	0	0	0	NR	0
CA Bond Exp. Plan		2.000	0	0	0	0	0	0
ROD		2.000	0	0	0	0	0	0
CONSENT		2.000	0	0	0	0	0	0
CA BWT		1.000	0	0	0	0	NR	0
CA WDS		1.000	0	0	0	0	NR	0
HMS		1.000	0	0	0	0	NR	0
Business Inventory		1.000	0	0	0	0	NR	0
Site List		1.000	0	0	0	0	NR	0
South Bay Region 2		1.000	0	0	0	0	NR	0
Coal Gas		1.000	0	0	0	0	NR	0

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

A1
West
> 1
Lower

PIEDRA RANCH
1575 VIAU N
SANGER, CA 93657

LUST

S101330128
N/A

LUST:

Case Number:	5T10000509	Cross Street:	MCKINLEY
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Gasoline		
Lead Agency:	Regional Board		
Case Type:	Aquifer affected		
Status:	Pollution characterization		
Review Date:	08/15/1994	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	Not reported
Pollution Char:	06/01/1994	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	Not reported
Close Date:	Not reported	Release Date:	07/18/1994

A2
West
> 1
Lower

PIEDRA RANCH
1575 N VIAU AVE
SANGER, CA 93657

LUST

S102267172
N/A

LUST Region 5:

Respble Party:	DRESICK FARMS, INC.	Substance:	GASOLINE
Case Type:	Aquifer affected		
Pilot Program:	No		
Staff Initials:	JGW	Case Number:	5T10000509
County:	FRESNO		
Status:	Pollution characterization		

City	EDR ID	Site Name	Site Address	Zip	Database(s)	Facility ID
CENTERVILLE	1001075691	CALMAT CO SANGER	17125 E KING CANYON HWY	93657	RCRIS-SQG	
MADERA	1000212189	MADERA GLASS CO	2441 AVE 12	93657	CERC-NFRAP	
REEDLEY	U001590354	WATSON'S NURSERY	5716 S. FRANKWOOD	93654	UST	00000052883
REEDLEY	U001590250	MRS. MARY VISSIO	1329 S. FRANKWOOD, RT. 2	93654	UST	00000022131
SAME	U001590518	GEORGE SANI	308 W. FRANKWOOD AVE	93657	UST	00000063333
SANGER	S101480248	SANGER CITY DUMPSITE (1)	CHANNEL ROAD NEAR GOODFELLOW AVENUI	93657	Cal-Sites	
SANGER	U001590761	WILLIAM ROY COTNER	18162 FLUME RD.	93657	UST	00000029990
SANGER	S101480245	SANGER DISPOSAL SITE	N OF GOODFELLOW / W OF KINGS RIVER	93657	Cal-Sites	
SANGER	U001590750	W. C. HARRIS	1455 O. PIEDRA	93657	UST	00000022812
SANGER	1000234031	SANGER RIVER BOTTOM PROPERTY	2 MI SOUTHWEST SANGER CITY	93657	FINDS, CERC-NFRAP	
SANGER	U001590498	FARM (HOME)	16962 E. TRIMMER	93657	UST	00000018320
SANGER	U001590561	JAMES A. MOGLIA	17504 E. TRIMMER SPR	93657	UST	00000032975
SANGER	U001590765	WYCHE RANCH	19240 TRIMMER RD.	93657	UST	00000046196
SANGER	U001590738	TRIMMER RANGER STATION	TRIMMER ROUTE	93657	UST	00000060641

GEOCHECK VERSION 2.1 ADDENDUM
STATE DATABASE WELL INFORMATION

Water Wells:

Water System Information:

Prime Station Code:	40	User ID:	10C
FRDS Number Number:	1000247001	County:	Fresno
District Number:	40	User ID:	10C
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	364435.0 1192637.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	71 N FRANKWOOD		
Station Type:	WELL/AMBNT/MUN/INTAKE		
System Number:	1000247	System Name:	SHERWOOD MHP
Owner Type:	Not Reported		
Organization That Operates System:	Not Reported		
Pop Served:	Unknown, Small System	Connections:	Unknown, Small System
Area Served:	Not Reported		

GEOCHECK VERSION 2.1
PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Zip Code.

PWS SUMMARY:

PWS ID: CA1000049 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: HOME CAMP CREEK HUNTINGTON
MRS EDNA BRAISCOE
W END HUNTINGTON LAKE
HUNTINGTON LAKE, CA 93629

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: MRS EDNA BRAISCOE
339 N WILDERNESS DRIVE
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: Under 101 Persons

Well currently has or has had major violation(s): Yes

Violations information not reported.

PWS ID: CA1000104 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: CENTERVILLE SCHOOL
CENTERVILLE SCHOOL
48 S SMITH
SANGER, CA 93657

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: CENTERVILLE SCHOOL
48 S SMITH
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: 101 - 500 Persons

Well currently has or has had major violation(s): No

PWS ID: CA1000112 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: FAIRMONT UNION SCHOOL
SANGER UNIFIED SCHOOL DISTRICT
3095 N GREENWOOD AV
SANGER, CA 93657

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: SANGER UNIFIED SCHOOL DISTRICT
1905 7TH STREET
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: 101 - 500 Persons

Well currently has or has had major violation(s): No

GEOCHECK VERSION 2.1
PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Zip Code.

PWS SUMMARY:

PWS ID: CA1000133 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: SYCAMORE FLAT C G
USFS KINGS RIVER RANGER DIST
TRIMMER RD
FRESNO, CA 94234

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: USFS KINGS RIVER RANGER DIST
TRIMMER ROUTE
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: 101 - 500 Persons

Well currently has or has had major violation(s): Yes

Violations information not reported.

PWS ID: CA1000136 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: USFS KINGS RIVER RANGER DIST
UNITED STATES FOREST
TRIMMER & WATTS VALLRD
FRESNO, CA 93702

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: UNITED STATES FOREST
TRIMMER ROUTE
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: Under 101 Persons

Well currently has or has had major violation(s): Yes

Violations information not reported.

PWS ID: CA1000148 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: WONDER VALLEY RESORT
WONDER VALLEY RESORT
11331 ELWOOD RD
WONDER VALLEY, CA 93657

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: WONDER VALLEY RESORT
O BOX 71 STAR ROUT
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: 101 - 500 Persons

Well currently has or has had major violation(s): Yes

Violations information not reported.

GEOCHECK VERSION 2.1
PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Zip Code.

PWS SUMMARY:

PWS ID: CA1000190 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: LONE STAR ELEMENTARY SCHOOL
SANGER UNIFIED SCHOOL DISTRICT
2617 S. FOWLER AVE
FRESNO, CA 93725

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: SANGER UNIFIED SCHOOL DISTRICT
1905 SEVENTH STREET
SANGER, CA 93657

Facility Latitude: 36 44 52 Facility Longitude: 119 46 17
City Served: Not Reported:
Treatment Class: Untreated Population Served: 101 - 500 Persons

Well currently has or has had major violation(s): Yes

VIOLATIONS INFORMATION:

Violation ID: 94V0001 Source ID: Not Reported PWS Phone: Not Reported
Vio beginning Date: 07/01/93 Vio. end Date: 12/31/93 Vio. Period: 6 Months
Num of required Samples: Not Reported Number of Samples Taken: Not Reported
Analysis Result: Not Reported Maximum Contaminant Level: Not Reported
Analysis Method: Not Reported
Violation Type: Initial Tap Sampling for Pb and Cu
Contaminant: LEAD & COPPER RULE
Vio. Awareness Date: Not Reported

ENFORCEMENT INFORMATION:

Enforcement ID	Enforcement Action Date	Enforcement Follow-up Action
94E0001	08/11/94	Fed Formal NOV Issued

PWS ID: CA1000247 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: SHERWOOD FOREST
SHERWOOD FOREST
339 N FRANKWOOD
SANGER, CA 93657

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: SHERWOOD FOREST
79 N FRANKWOOD
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: Under 101 Persons

Well currently has or has had major violation(s): Yes

Violations information not reported.

GEOCHECK VERSION 2.1
PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Zip Code.

PWS SUMMARY:

PWS ID: CA1000253 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: SHADY TRAILER PARK
SHADY TRAILER PARK
16081 E KINGS CY
SANGER, CA 93657

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: SHADY TRAILER PARK
16081 E KINGS CYN
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: Under 101 Persons

Well currently has or has had major violation(s): Yes

Violations information not reported.

PWS ID: CA1000261 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: LAKERIDGE TRAILER PARK
LAKERIDGE TRAILER PARK
30547 SUNNYSLOPE
PIEDRA, CA 93649

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: LAKERIDGE TRAILER PARK
339 N FRANKWOOD
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: Under 101 Persons

Well currently has or has had major violation(s): Yes

Violations information not reported.

PWS ID: CA1000293 PWS Status: Active Distance from TP: Not Reported
Date Initiated: June / 1977 Date Deactivated: Not Reported
PWS Name: JOHN S WASH SCHOOL
JOHN S WASH SCHOOL
6350 E LN
FRESNO, CA 93727

Addressee / Facility Type: System Owner/Responsible Party
Facility Name: JOHN S WASH SCHOOL
1905 7TH STREET
SANGER, CA 93657

Facility Latitude: 36 42 29 Facility Longitude: 119 33 18
City Served: Not Reported:
Treatment Class: Untreated Population Served: 101 - 500 Persons

Well currently has or has had major violation(s): Yes

GEOCHECK VERSION 2.1
PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Zip Code.

PWS SUMMARY:

VIOLATIONS INFORMATION:

Violation ID:	94V0001	Source ID:	Not Reported	PWS Phone:	Not Reported
Vio. beginning Date:	07/01/93	Vio. end Date:	12/31/93	Vio. Period:	6 Months
Num of required Samples:	Not Reported	Number of Samples Taken:		Not Reported	
Analysis Result:	Not Reported	Maximum Contaminant Level:		Not Reported	
Analysis Method:	Not Reported				
Violation Type:	Initial Tap Sampling for Pb and Cu				
Contaminant:	LEAD & COPPER RULE				
Vio. Awareness Date:	Not Reported				

ENFORCEMENT INFORMATION:

Enforcement ID	Enforcement Action Date	Enforcement Follow-up Action
94E0001	08/11/94	Fed Formal NOV Issued

PWS ID:	CA1000318	PWS Status:	Active	Distance from TP:	Not Reported
Date Initiated:	June / 1977	Date Deactivated:	Not Reported		
PWS Name:	LAKEVIEW RESORT INC LAKEVIEW RESORT INC 32451 TRIMMER RD SANGER, CA 93657				
Addressee / Facility Type:	System Owner/Responsible Party				
Facility Name:	LAKEVIEW RESORT INC 32451 TRIMMER ROAD SANGER, CA 93657				
Facility Latitude:	36 42 29		Facility Longitude:	119 33 18	
City Served:	Not Reported:				
Treatment Class:	Untreated		Population Served:	Under 101 Persons	

Well currently has or has had major violation(s): Yes

Violations information not reported.

PWS ID:	CA1000363	PWS Status:	Active	Distance from TP:	Not Reported
Date Initiated:	June / 1977	Date Deactivated:	Not Reported		
PWS Name:	SANGER SEWAGE TREATMENT PLANT CITY OF SANGER NORTH & NEWMARK SANGER, CA 93657				
Addressee / Facility Type:	System Owner/Responsible Party				
Facility Name:	CITY OF SANGER 1700 SEVENTH STREET SANGER, CA 93657				
Facility Latitude:	36 42 29		Facility Longitude:	119 33 18	
City Served:	Not Reported:				
Treatment Class:	Untreated		Population Served:	Under 101 Persons	

Well currently has or has had major violation(s): Yes

Violations information not reported.

GEOCHECK VERSION 2.1
PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Zip Code.

PWS SUMMARY:

PWS ID:	CA1000435	PWS Status:	Active	Distance from TP: Not Reported
Date Initiated:	Not Reported	Date Deactivated:	Not Reported	
PWS Name:	OAK KNOLLS TRAILER PARK OAK KNOLLS TRAILER PARK 30367 TRIMMER SPRINGS RD SANGER, CA 93657			
Addressee / Facility Type:	System Owner/Responsible Party			
Facility Name:	OAK KNOLLS TRAILER PARK TRIMMER SPRINGS ROAD SANGER, CA 93657			
Facility Latitude:	36 42 29		Facility Longitude: 119 33 18	
City Served:	Not Reported:			
Treatment Class:	Untreated		Population Served: Under 101 Persons	

Well currently has or has had major violation(s): No

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM RECORDS:

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA/NTIS
Telephone: 703-603-8904
CERCLIS: CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 03/31/96
Date Made Active at EDR: 06/03/96
Database Release Frequency: Monthly
Date of Data Arrival at EDR: 04/23/96
Elapsed ASTM days: 41
Date of Last EDR Contact: 10/10/96

ERNS: Emergency Response Notification System
Source: EPA/NTIS
Telephone: 202-260-2342
ERNS: Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/30/96
Date Made Active at EDR: 11/05/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 08/19/96
Elapsed ASTM days: 78
Date of Last EDR Contact: 08/12/96

NPL: National Priority List
Source: EPA
Telephone: 703-603-8852
NPL: National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, it is EDR's policy to plot NPL sites greater than approximately 300 acres in size as areas (polygons). A polygon boundary is based upon EPA's defined Area of Impact (AOI) for the particular NPL site. The AOI may be the boundaries of the property, the boundaries as determined by the extent of plume migration, or other such boundaries as defined by EPA. Sites smaller in size are point-geocoded at the site's address.

Date of Government Version: 06/01/96
Date Made Active at EDR: 07/17/96
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 06/25/96
Elapsed ASTM days: 22
Date of Last EDR Contact: 06/19/96

RCRIS: Resource Conservation and Recovery Information System
Source: EPA/NTIS
Telephone: 703-308-7907
RCRIS: Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Date of Government Version: 07/01/96
Date Made Active at EDR: 10/09/96
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 08/07/96
Elapsed ASTM days: 63
Date of Last EDR Contact: 06/05/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FEDERAL NON-ASTM RECORDS:

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: Varies
Database Release Frequency: Varies
Date of Last EDR Contact: Varies
Date of Next Scheduled EDR Contact: 09/01/95

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 703-308-7907
CORRACTS: CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 04/10/95
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 09/27/96
Date of Next Scheduled EDR Contact: 12/16/96

FINDS: Facility Index System
Source: EPA/NTIS
Telephone: 800-908-2493
FINDS: Facility Index System. FINDS contains both facility information and "pointers" to other sources that contain more detail. These include: RCRIS, PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]), CERCLIS, DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), FRDS (Federal Reporting Data System), SIA (Surface Impoundments), CICIS (TSCA Chemicals in Commerce Information System), PADS, RCRA-J (medical waste transporters/disposers), TRIS and TSCA.

Date of Government Version: 09/30/95
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/07/96
Date of Next Scheduled EDR Contact: 01/06/97

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
HMIRS: Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/95
Database Release Frequency: Annually
Date of Last EDR Contact: 07/29/96
Date of Next Scheduled EDR Contact: 10/28/96

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 02/13/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 205-564-4267
NPL LIENS: Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 09/10/96
Date of Next Scheduled EDR Contact: 11/25/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-260-3992
PADS: PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/14/94
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/21/96
Date of Next Scheduled EDR Contact: 11/18/96

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RAATS: RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA.

Date of Government Version: 04/17/95
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

ROD: Records Of Decision
Source: NTIS
Telephone: 703-416-0703
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 03/31/95
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 06/07/96
Date of Next Scheduled EDR Contact: 12/02/96

TRIS: Toxic Chemical Release Inventory System
Source: EPA/NTIS
Telephone: 202-260-2320
TRIS: Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/92
Database Release Frequency: Annually

Date of Last EDR Contact: 09/11/96
Date of Next Scheduled EDR Contact: 09/30/96

TSCA: Toxic Substances Control Act
Source: EPA/NTIS
Telephone: 202-260-1444
TSCA: Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site. USEPA has no current plan to update and/or re-issue this database.

Date of Government Version: 01/31/95
Database Release Frequency: Annually

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STATE OF CALIFORNIA ASTM RECORDS:

BEP: Bond Expenditure Plan
Source: Department of Health Services
Telephone: 916-255-2118
BEP: Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/89
Date Made Active at EDR: 08/02/94
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 07/27/94
Elapsed ASTM days: 6
Date of Last EDR Contact: 05/31/94

CAL-SITES (AWP): Annual Workplan
Source: California Environmental Protection Agency
Telephone: 916-323-3400
CAL-SITES (AWP): Known Hazardous Waste Sites. California DTSC's Annual Workplan (AWP), formerly BEP, identifies known hazardous substance sites targeted for cleanup.

Date of Government Version: 06/30/95
Date Made Active at EDR: 03/06/96
Database Release Frequency: Annually
Date of Data Arrival at EDR: 02/02/96
Elapsed ASTM days: 33
Date of Last EDR Contact: 07/29/96

CAL-SITES (ASPIS): Calsites
Source: Department of Toxic Substance Control
Telephone: 916-323-3400
CAL-SITES (ASPIS): Known and Potential Hazardous Waste Sites. CAL-SITES, formerly ASPIS, contains both known and potential hazardous substance sites.

Date of Government Version: 04/12/96
Date Made Active at EDR: 06/06/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 05/06/96
Elapsed ASTM days: 31
Date of Last EDR Contact: 10/09/96

CHMIRS: California Hazardous Material Incident Report System
Source: Office of Emergency Services
Telephone: 916-464-3277
CHMIRS: California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/94
Date Made Active at EDR: 04/24/95
Database Release Frequency: Annually
Date of Data Arrival at EDR: 03/13/95
Elapsed ASTM days: 42
Date of Last EDR Contact: 09/03/96

CORTESE: Cortese
Source: CAL EPA/Office of Emergency Information
Telephone: 916-327-1848
CORTESE: Identified Hazardous Waste and Substance Sites. The database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release and all solid waste disposal facilities from which there is known migration.

Date of Government Version: 12/31/94
Date Made Active at EDR: 04/04/95
Database Release Frequency: Annually
Date of Data Arrival at EDR: 01/23/95
Elapsed ASTM days: 71
Date of Last EDR Contact: 08/05/96

LUST: Leaking Underground Storage Tank Information System
Source: State Water Resources Control Board
Telephone: 916-445-6532
LUST: Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 04/01/96
Date Made Active at EDR: 06/26/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 06/04/96
Elapsed ASTM days: 22
Date of Last EDR Contact: 10/18/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NOTIFY 65: Proposition 65
Source: State Water Resources Control Board
Telephone: 916-657 0696
NOTIFY 65: Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/93
Date Made Active at EDR: 11/19/93
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 11/01/93
Elapsed ASTM days: 18
Date of Last EDR Contact: 07/29/96

SWF/LF (SWIS): Solid Waste Information System
Source: Integrated Waste Management Board
Telephone: 916-255-2248
SWF/LF (SWIS): Active, Closed and Inactive Landfills. SWF/LF records typically contain an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 2004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/04/96
Date Made Active at EDR: 10/24/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 09/09/96
Elapsed ASTM days: 45
Date of Last EDR Contact: 08/05/96

TOXIC PITS: Toxic Pits
Source: State Water Resources Control Board
Telephone: 916-227-4364
TOXIC PITS: Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/95
Date Made Active at EDR: 09/26/95
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 08/30/95
Elapsed ASTM days: 27
Date of Last EDR Contact: 08/12/96

CA UST:

UST: Hazardous Substance Storage Container Database
Source: State Water Resources Control Board
Telephone: 916-227-4319
UST: Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 10/15/90
Date Made Active at EDR: 02/12/91
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 01/25/91
Elapsed ASTM days: 18
Date of Last EDR Contact: 07/22/96

FID: Facility Inventory Database
Source: California Environmental Protection Agency
Telephone: 916-445-6532
The Facility Inventory Database (FID) contains active and inactive underground storage tank locations from the State Water Resource Control Board.

Date of Government Version: 10/31/94
Date Made Active at EDR: 09/29/95
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 09/05/95
Elapsed ASTM days: 24
Date of Last EDR Contact: 10/04/96

WMUDS/SWAT: Waste Management Unit Database
Source: State Water Resources Control Board
Telephone: 916-892-0323
WMUDS/SWAT: Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 09/06/96
Date Made Active at EDR: 10/24/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 09/09/96
Elapsed ASTM days: 45
Date of Last EDR Contact: 09/06/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STATE OF CALIFORNIA NON-ASTM RECORDS:

AST: Aboveground Petroleum Storage Tank Facilities
Source: State Water Resources Control Board
Telephone: 916-227-4364
AST: Registered Aboveground Storage Tanks.

Date of Government Version: 08/29/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/12/96
Date of Next Scheduled EDR Contact: 11/11/96

HAZNET: Hazardous Waste Information System
Source: California Environmental Protection Agency
Telephone: 916-324-0659
HAZNET: Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data from non-California manifests and continuation sheets are not included at the present time. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/93
Database Release Frequency: Annually

Date of Last EDR Contact: 10/10/96
Date of Next Scheduled EDR Contact: 11/11/96

SOUTH BAY: South Bay Site Management System
Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-576-2220
SOUTH BAY: Groundwater pollution cases in the Santa Clara Valley where the regulatory lead is the San Francisco Bay Regional Water Quality Control Board.

Date of Government Version: 05/31/95
Database Release Frequency: Annually

Date of Last EDR Contact: 08/28/96
Date of Next Scheduled EDR Contact: 11/25/96

WDS: Waste Discharge System
Source: State Water Resources Control Board
Telephone: 916-657-1701
WDS: Sites which have been issued waste discharge requirements.

Date of Government Version: 08/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CALIFORNIA COUNTY RECORDS

CONTRA COSTA COUNTY:

Site List
Source: Contra Costa Health Services Department
Telephone: 510-646-4333

Date of Government Version: 08/01/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/14/96
Date of Next Scheduled EDR Contact: 11/11/96

KERN COUNTY:

Sites & Tanks Listing
Source: Kern County Environment Health Services Department
Telephone: 805-862-8700
Kern County Sites & Tanks Listing.

Date of Government Version: 06/10/94
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

LOS ANGELES COUNTY:

Street Number List
Source: Department of Public Works
Telephone: 818-458-3517
HMS: Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 06/27/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

List of Solid Waste Facilities
Source: La County Department of Public Works
Telephone: 818-458-5185

Date of Government Version: 06/28/94
Database Release Frequency: Annually

Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

Site Mitigation Complaint Control Log
Source: Community Health Services
Telephone: 213-890-7806
Los Angeles County Site Mitigation Log.

Date of Government Version: 08/21/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

MARIN COUNTY:

UST - Currently Permitted
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Currently permitted USTs in Marin County.

Date of Government Version: 07/01/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/14/96
Date of Next Scheduled EDR Contact: 11/11/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ORANGE COUNTY:

List of Industrial Site Cleanups
Source: Health Care Agency
Telephone: 714-834-3446
Orange County Industrial Site Cleanups.

Date of Government Version: 07/11/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

List of Underground Storage Tank Cleanups
Source: Health Care Agency
Telephone: 714-834-3446
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/29/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

List of Underground Storage Tank Facilities
Source: Health Care Agency
Telephone: 714-834-3446
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/31/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Source: Department of Public Health
Telephone: 909-358-5055
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/10/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

Tank List
Source: Health Services Agency
Telephone: 909-358-5055

Date of Government Version: 07/10/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

SAN BERNARDINO COUNTY:

DEHS Permit System Print-Out By Location
Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/19/96
Database Release Frequency: Monthly

Date of Last EDR Contact: 09/17/96
Date of Next Scheduled EDR Contact: 12/16/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SAN DIEGO COUNTY:

Solid Waste Facilities
Source: Department of Health Services
Telephone: 619-338-2209
San Diego County Solid Waste Facilities.

Date of Government Version: 11/08/95
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 09/04/96
Date of Next Scheduled EDR Contact: 12/02/96

Hazardous Materials Management Division Database
Source: Hazardous Materials Management Division
Telephone: 619-338-2268
The database includes: HE58 - This report contains the business name, site address, business phone number, establishment "H" permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/02/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/19/96
Date of Next Scheduled EDR Contact: 11/18/96

SAN FRANCISCO COUNTY:

Local Oversite Facilities
Source: Department Of Public Health San Francisco County
Telephone: 415-554-3441

Date of Government Version: 07/18/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/14/96
Date of Next Scheduled EDR Contact: 11/18/96

Active Underground Report City and County of San Francisco
Source: Department of Public Health
Telephone: 415-554-3441

Date of Government Version: 09/13/96
Database Release Frequency: N/A

Date of Last EDR Contact: 09/17/96
Date of Next Scheduled EDR Contact: 11/18/96

SAN MATEO COUNTY:

Business Inventory
Source: San Mateo County Environmental Health Services Division
Telephone: 415-363-1921

Date of Government Version: 01/15/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/20/96
Date of Next Scheduled EDR Contact: 11/18/96

Fuel Leak List
Source: San Mateo County Environmental Health Services Division
Telephone: 415-363-1921

Date of Government Version: 07/15/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/20/96
Date of Next Scheduled EDR Contact: 11/18/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SANTA CLARA COUNTY:

Fuel Leak Site Activity Report
Source: Santa Clara Valley Water District
Telephone: 408-927-0710

Date of Government Version: 07/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/07/96
Date of Next Scheduled EDR Contact: 01/06/97

SOLANO COUNTY:

Leaking Undergroung Storage Tanks
Source: Solano County Department of Environmental Management
Telephone: 707-421-6770

Date of Government Version: 09/05/96
Database Release Frequency: N/A

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

Underground Storage Tanks
Source: Solano County Department of Environmental Management
Telephone: 707-421-6770

Date of Government Version: 07/02/96
Database Release Frequency: N/A

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

SONOMA COUNTY:

LUST Sites
Source: Sonoma County Public Health Department
Telephone: 707-525-6565

Date of Government Version: 05/10/96
Database Release Frequency: N/A

Date of Last EDR Contact: 09/26/96
Date of Next Scheduled EDR Contact: 12/23/96

SUTTER COUNTY:

Underground Storage Tanks
Source: Sutter County Department of Agriculture
Telephone: 916-741-7504

Date of Government Version: 08/15/96
Database Release Frequency: N/A

Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
BWT: The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 08/05/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Listing of Underground Tank Cleanup Sites
Source: Environmental Health Division
Telephone: 805-654-2813
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 08/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

List of Operating UGT Sites & Underground Tank Closed Sites List
Source: Environmental Health Division
Telephone: 805-654-2813
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

Inventory of Illegal Abandoned and Inactive Sites
Source: Environmental Health Division
Telephone: 805-654-2813
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 03/31/96
Database Release Frequency: Annually

Date of Last EDR Contact: 09/03/96
Date of Next Scheduled EDR Contact: 12/02/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

California Regional Water Quality Control Board (RWQCB) LUST Records

LUST Region 1: Active Toxic Site Investigation
Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-576-2220

Date of Government Version: 08/01/96
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 09/03/96
Date of Next Scheduled EDR Contact: 12/02/96

LUST Region 2: Fuel Leak List
Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-1269

Date of Government Version: 07/29/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

LUST Region 3: LUSTIS Database
Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147

Date of Government Version: 08/20/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/25/96
Date of Next Scheduled EDR Contact: 11/25/96

LUST Region 4: Underground Storage Tank Leak List
Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-266-7500

Date of Government Version: 07/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/08/96
Date of Next Scheduled EDR Contact: 01/06/97

LUST Region 5: Leaking Underground Storage Tank Database
Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-255-3000

Date of Government Version: 08/04/96,
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

LUST Region 6L: Leaking Underground Storage Tank Case Listing
Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 916-544-3481

Date of Government Version: 04/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

LUST Region 6V: Leaking Underground Storage Tank Case Listing
Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 619-241-6583

Date of Government Version: 07/10/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

LUST Region 7: Leaking Underground Storage Tank Case Listing
Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 619-346-7491

Date of Government Version: 04/08/96
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 09/03/96
Date of Next Scheduled EDR Contact: 12/02/96

LUST Region 8: (LUSTIS) Leaking Underground Storage Tanks
Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4130

Date of Government Version: 07/02/96
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 10/14/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST Region 9: Leaking Underground Storage Tank Report
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 619-467-2952

Date of Government Version: 02/29/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/07/96
Date of Next Scheduled EDR Contact: 12/09/96

APPENDIX B
EDR - RADIUS MAP
KERMAN SITE

The EDR Area Study Report

Study Area
HTRW Preliminary Assessment
Pine Flat Dam Fish + Wildlife
Habitat Restoration Investigation
Monterey, California

November 22, 1996

Inquiry number 147258.2r

Environmental Data Resources, Inc.

Creators of Toxicheck/®

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06490

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM RECORDS:

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA/NTIS
Telephone: 703-603-8904
CERCLIS: CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 03/31/96
Date Made Active at EDR: 06/03/96
Database Release Frequency: Monthly
Date of Data Arrival at EDR: 04/23/96
Elapsed ASTM days: 41
Date of Last EDR Contact: 10/10/96

ERNS: Emergency Response Notification System
Source: EPA/NTIS
Telephone: 202-260-2342
ERNS: Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/30/96
Date Made Active at EDR: 11/05/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 08/19/96
Elapsed ASTM days: 78
Date of Last EDR Contact: 08/12/96

NPL: National Priority List
Source: EPA
Telephone: 703-603-8852
NPL: National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, it is EDR's policy to plot NPL sites greater than approximately 300 acres in size as areas (polygons). A polygon boundary is based upon EPA's defined Area of Impact (AOI) for the particular NPL site. The AOI may be the boundaries of the property, the boundaries as determined by the extent of plume migration, or other such boundaries as defined by EPA. Sites smaller in size are point-geocoded at the site's address.

Date of Government Version: 06/01/96
Date Made Active at EDR: 07/17/96
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 06/25/96
Elapsed ASTM days: 22
Date of Last EDR Contact: 06/19/96

RCRIS: Resource Conservation and Recovery Information System
Source: EPA/NTIS
Telephone: 703-308-7907
RCRIS: Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Date of Government Version: 07/01/96
Date Made Active at EDR: 10/09/96
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 08/07/96
Elapsed ASTM days: 63
Date of Last EDR Contact: 06/05/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FEDERAL NON-ASTM RECORDS:

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: Varies
Database Release Frequency: Varies
Date of Last EDR Contact: Varies
Date of Next Scheduled EDR Contact: 09/01/95

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 703-308-7907
CORRACTS: CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 04/10/95
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 09/27/96
Date of Next Scheduled EDR Contact: 12/16/96

FINDS: Facility Index System
Source: EPA/NTIS
Telephone: 800-908-2493
FINDS: Facility Index System. FINDS contains both facility information and "pointers" to other sources that contain more detail. These include: RCRIS, PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]), CERCLIS, DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), FRDS (Federal Reporting Data System), SIA (Surface Impoundments), CICIS (TSCA Chemicals in Commerce Information System), PADS, RCRA-J (medical waste transporters/disposers), TRIS and TSCA.

Date of Government Version: 09/30/95
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/07/96
Date of Next Scheduled EDR Contact: 01/06/97

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
HMIRS: Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/95
Database Release Frequency: Annually
Date of Last EDR Contact: 07/29/96
Date of Next Scheduled EDR Contact: 10/28/96

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 02/13/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 205-564-4267
NPL LIENS: Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 09/10/96
Date of Next Scheduled EDR Contact: 11/25/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-260-3992
PADS: PCB Activity Database. PADS identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/14/94
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/21/96
Date of Next Scheduled EDR Contact: 11/18/96

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RAATS: RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA.

Date of Government Version: 04/17/95
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

ROD: Records Of Decision
Source: NTIS
Telephone: 703-416-0703
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 03/31/95
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 06/07/96
Date of Next Scheduled EDR Contact: 12/02/96

TRIS: Toxic Chemical Release Inventory System
Source: EPA/NTIS
Telephone: 202-260-2320
TRIS: Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/92
Database Release Frequency: Annually

Date of Last EDR Contact: 09/11/96
Date of Next Scheduled EDR Contact: 09/30/96

TSCA: Toxic Substances Control Act
Source: EPA/NTIS
Telephone: 202-260-1444
TSCA: Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site. USEPA has no current plan to update and/or re-issue this database.

Date of Government Version: 01/31/95
Database Release Frequency: Annually

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STATE OF CALIFORNIA ASTM RECORDS:

BEP: Bond Expenditure Plan
Source: Department of Health Services
Telephone: 916-255-2118
BEP: Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/89
Date Made Active at EDR: 08/02/94
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 07/27/94
Elapsed ASTM days: 6
Date of Last EDR Contact: 05/31/94

CAL-SITES (AWP): Annual Workplan
Source: California Environmental Protection Agency
Telephone: 916-323-3400
CAL-SITES (AWP): Known Hazardous Waste Sites. California DTSC's Annual Workplan (AWP), formerly BEP, identifies known hazardous substance sites targeted for cleanup.

Date of Government Version: 06/30/95
Date Made Active at EDR: 03/06/96
Database Release Frequency: Annually
Date of Data Arrival at EDR: 02/02/96
Elapsed ASTM days: 33
Date of Last EDR Contact: 07/29/96

CAL-SITES (ASPIS): Calsites
Source: Department of Toxic Substance Control
Telephone: 916-323-3400
CAL-SITES (ASPIS): Known and Potential Hazardous Waste Sites. CAL-SITES, formerly ASPIS, contains both known and potential hazardous substance sites.

Date of Government Version: 04/12/96
Date Made Active at EDR: 06/06/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 05/06/96
Elapsed ASTM days: 31
Date of Last EDR Contact: 10/09/96

CHMIRS: California Hazardous Material Incident Report System
Source: Office of Emergency Services
Telephone: 916-464-3277
CHMIRS: California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/94
Date Made Active at EDR: 04/24/95
Database Release Frequency: Annually
Date of Data Arrival at EDR: 03/13/95
Elapsed ASTM days: 42
Date of Last EDR Contact: 09/03/96

CORTESE: Cortese
Source: CAL EPA/Office of Emergency Information
Telephone: 916-327-1848
CORTESE: Identified Hazardous Waste and Substance Sites. The database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release and all solid waste disposal facilities from which there is known migration.

Date of Government Version: 12/31/94
Date Made Active at EDR: 04/04/95
Database Release Frequency: Annually
Date of Data Arrival at EDR: 01/23/95
Elapsed ASTM days: 71
Date of Last EDR Contact: 08/05/96

LUST: Leaking Underground Storage Tank Information System
Source: State Water Resources Control Board
Telephone: 916-445-6532
LUST: Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 04/01/96
Date Made Active at EDR: 06/26/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 06/04/96
Elapsed ASTM days: 22
Date of Last EDR Contact: 10/18/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NOTIFY 65: Proposition 65
Source: State Water Resources Control Board
Telephone: 916-657-0696
NOTIFY 65: Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/93
Date Made Active at EDR: 11/19/93
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 11/01/93
Elapsed ASTM days: 18
Date of Last EDR Contact: 07/29/96

SWF/LF (SWIS): Solid Waste Information System
Source: Integrated Waste Management Board
Telephone: 916-255-2248
SWF/LF (SWIS): Active, Closed and Inactive Landfills. SWF/LF records typically contain an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 2004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/04/96
Date Made Active at EDR: 10/24/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 09/09/96
Elapsed ASTM days: 45
Date of Last EDR Contact: 08/05/96

TOXIC PITS: Toxic Pits
Source: State Water Resources Control Board
Telephone: 916-227-4364
TOXIC PITS: Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/95
Date Made Active at EDR: 09/26/95
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 08/30/95
Elapsed ASTM days: 27
Date of Last EDR Contact: 08/12/96

CA UST:

UST: Hazardous Substance Storage Container Database
Source: State Water Resources Control Board
Telephone: 916-227-4319
UST: Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 10/15/90
Date Made Active at EDR: 02/12/91
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 01/25/91
Elapsed ASTM days: 18
Date of Last EDR Contact: 07/22/96

FID: Facility Inventory Database
Source: California Environmental Protection Agency
Telephone: 916-445-6532
The Facility Inventory Database (FID) contains active and inactive underground storage tank locations from the State Water Resource Control Board.

Date of Government Version: 10/31/94
Date Made Active at EDR: 09/29/95
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 09/05/95
Elapsed ASTM days: 24
Date of Last EDR Contact: 10/04/96

WMUDS/SWAT: Waste Management Unit Database
Source: State Water Resources Control Board
Telephone: 916-892-0323
WMUDS/SWAT: Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 09/06/96
Date Made Active at EDR: 10/24/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 09/09/96
Elapsed ASTM days: 45
Date of Last EDR Contact: 09/06/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STATE OF CALIFORNIA NON-ASTM RECORDS:

AST: Aboveground Petroleum Storage Tank Facilities
Source: State Water Resources Control Board
Telephone: 916-227-4364
AST: Registered Aboveground Storage Tanks.

Date of Government Version: 08/29/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/12/96
Date of Next Scheduled EDR Contact: 11/11/96

HAZNET: Hazardous Waste Information System
Source: California Environmental Protection Agency
Telephone: 916-324-0659
HAZNET: Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data from non-California manifests and continuation sheets are not included at the present time. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/93
Database Release Frequency: Annually

Date of Last EDR Contact: 10/10/96
Date of Next Scheduled EDR Contact: 11/11/96

SOUTH BAY: South Bay Site Management System
Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-576-2220
SOUTH BAY: Groundwater pollution cases in the Santa Clara Valley where the regulatory lead is the San Francisco Bay Regional Water Quality Control Board.

Date of Government Version: 05/31/95
Database Release Frequency: Annually

Date of Last EDR Contact: 08/28/96
Date of Next Scheduled EDR Contact: 11/25/96

WDS: Waste Discharge System
Source: State Water Resources Control Board
Telephone: 916-657-1701
WDS: Sites which have been issued waste discharge requirements.

Date of Government Version: 08/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CALIFORNIA COUNTY RECORDS

CONTRA COSTA COUNTY:

Site List
Source: Contra Costa Health Services Department
Telephone: 510-646-4333

Date of Government Version: 08/01/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/14/96
Date of Next Scheduled EDR Contact: 11/11/96

KERN COUNTY:

Sites & Tanks Listing
Source: Kern County Environment Health Services Department
Telephone: 805-862-8700
Kern County Sites & Tanks Listing.

Date of Government Version: 06/10/94
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

LOS ANGELES COUNTY:

Street Number List
Source: Department of Public Works
Telephone: 818-458-3517
HMS: Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 06/27/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

List of Solid Waste Facilities
Source: La County Department of Public Works
Telephone: 818-458-5185

Date of Government Version: 06/28/94
Database Release Frequency: Annually

Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

Site Mitigation Complaint Control Log
Source: Community Health Services
Telephone: 213-890-7806
Los Angeles County Site Mitigation Log.

Date of Government Version: 08/21/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

MARIN COUNTY:

UST - Currently Permitted
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Currently permitted USTs in Marin County.

Date of Government Version: 07/01/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/14/96
Date of Next Scheduled EDR Contact: 11/11/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ORANGE COUNTY:

List of Industrial Site Cleanups
Source: Health Care Agency
Telephone: 714-834-3446
Orange County Industrial Site Cleanups.

Date of Government Version: 07/11/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

List of Underground Storage Tank Cleanups
Source: Health Care Agency
Telephone: 714-834-3446
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/29/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

List of Underground Storage Tank Facilities
Source: Health Care Agency
Telephone: 714-834-3446
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/31/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Source: Department of Public Health
Telephone: 909-358-5055
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/10/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

Tank List
Source: Health Services Agency
Telephone: 909-358-5055

Date of Government Version: 07/10/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

SAN BERNARDINO COUNTY:

DEHS Permit System Print-Out By Location
Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/19/96
Database Release Frequency: Monthly

Date of Last EDR Contact: 09/17/96
Date of Next Scheduled EDR Contact: 12/16/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SAN DIEGO COUNTY:

Solid Waste Facilities
Source: Department of Health Services
Telephone: 619-338-2209
San Diego County Solid Waste Facilities.

Date of Government Version: 11/08/95
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 09/04/96
Date of Next Scheduled EDR Contact: 12/02/96

Hazardous Materials Management Division Database
Source: Hazardous Materials Management Division
Telephone: 619-338-2268
The database includes: HE58 - This report contains the business name, site address, business phone number, establishment "H" permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/02/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/19/96
Date of Next Scheduled EDR Contact: 11/18/96

SAN FRANCISCO COUNTY:

Local Oversite Facilities
Source: Department Of Public Health San Francisco County
Telephone: 415-554-3441

Date of Government Version: 07/18/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/14/96
Date of Next Scheduled EDR Contact: 11/18/96

Active Underground Report City and County of San Francisco
Source: Department of Public Health
Telephone: 415-554-3441

Date of Government Version: 09/13/96
Database Release Frequency: N/A

Date of Last EDR Contact: 09/17/96
Date of Next Scheduled EDR Contact: 11/18/96

SAN MATEO COUNTY:

Business Inventory
Source: San Mateo County Environmental Health Services Division
Telephone: 415-363-1921

Date of Government Version: 01/15/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/20/96
Date of Next Scheduled EDR Contact: 11/18/96

Fuel Leak List
Source: San Mateo County Environmental Health Services Division
Telephone: 415-363-1921

Date of Government Version: 07/15/96
Database Release Frequency: N/A

Date of Last EDR Contact: 08/20/96
Date of Next Scheduled EDR Contact: 11/18/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SANTA CLARA COUNTY:

Fuel Leak Site Activity Report
Source: Santa Clara Valley Water District
Telephone: 408-927-0710

Date of Government Version: 07/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/07/96
Date of Next Scheduled EDR Contact: 01/06/97

SOLANO COUNTY:

Leaking Undergroung Storage Tanks
Source: Solano County Department of Environmental Management
Telephone: 707-421-6770

Date of Government Version: 09/05/96
Database Release Frequency: N/A

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

Underground Storage Tanks
Source: Solano County Department of Environmental Management
Telephone: 707-421-6770

Date of Government Version: 07/02/96
Database Release Frequency: N/A

Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

SONOMA COUNTY:

LUST Sites
Source: Sonoma County Public Health Department
Telephone: 707-525-6565

Date of Government Version: 05/10/96
Database Release Frequency: N/A

Date of Last EDR Contact: 09/26/96
Date of Next Scheduled EDR Contact: 12/23/96

SUTTER COUNTY:

Underground Storage Tanks
Source: Sutter County Department of Agriculture
Telephone: 916-741-7504

Date of Government Version: 08/15/96
Database Release Frequency: N/A

Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
BWT: The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 08/05/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Listing of Underground Tank Cleanup Sites
Source: Environmental Health Division
Telephone: 805-654-2813
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 08/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

List of Operating UGT Sites & Underground Tank Closed Sites List
Source: Environmental Health Division
Telephone: 805-654-2813
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

Inventory of Illegal Abandoned and Inactive Sites
Source: Environmental Health Division
Telephone: 805-654-2813
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 03/31/96
Database Release Frequency: Annually

Date of Last EDR Contact: 09/03/96
Date of Next Scheduled EDR Contact: 12/02/96

- California Regional Water Quality Control Board (RWQCB) LUST Records

LUST Region 1: Active Toxic Site Investigation
Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-576-2220

Date of Government Version: 08/01/96
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 09/03/96
Date of Next Scheduled EDR Contact: 12/02/96

LUST Region 2: Fuel Leak List
Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-1269

Date of Government Version: 07/29/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

LUST Region 3: LUSTIS Database
Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147

Date of Government Version: 08/20/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 08/25/96
Date of Next Scheduled EDR Contact: 11/25/96

LUST Region 4: Underground Storage Tank Leak List
Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-266-7500

Date of Government Version: 07/01/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/08/96
Date of Next Scheduled EDR Contact: 01/06/97

LUST Region 5: Leaking Underground Storage Tank Database
Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-255-3000

Date of Government Version: 08/04/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

LUST Region 6L: Leaking Underground Storage Tank Case Listing
Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 916-544-3481

Date of Government Version: 04/01/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

LUST Region 6V: Leaking Underground Storage Tank Case Listing
Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 619-241-6583

Date of Government Version: 07/10/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

LUST Region 7: Leaking Underground Storage Tank Case Listing
Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 619-346-7491

Date of Government Version: 04/08/96
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 09/03/96
Date of Next Scheduled EDR Contact: 12/02/96

LUST Region 8: (LUSTIS) Leaking Underground Storage Tanks
Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4130

Date of Government Version: 07/02/96
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 10/14/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST Region 9: "Leaking Underground Storage Tank Report
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 619-467-2952

Date of Government Version: 02/29/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/07/96
Date of Next Scheduled EDR Contact: 12/09/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

- California Regional Water Quality Control Board (RWQCB) SLIC Records

SLIC Region 1: Active Toxic Site Investigations
Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220

Date of Government Version: 08/01/96
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 09/03/96
Date of Next Scheduled EDR Contact: 12/02/96

SLIC Region 2: North and South Bay Slic Report
Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-1255

Date of Government Version: 07/29/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/96
Date of Next Scheduled EDR Contact: 12/23/96

SLIC Region 3: Active Slic Cases
Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147

Date of Government Version: 08/20/96
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/26/96
Date of Next Scheduled EDR Contact: 11/25/96

SLIC Region 4: SLIC Sites
Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-266-7544

Date of Government Version: 07/01/96
Database Release Frequency: Quarterly

Date of Last EDR Contact: 07/09/96
Date of Next Scheduled EDR Contact: 10/07/96

SLIC Region 5: SLIC List
Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-255-3125

Date of Government Version: 08/01/96
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/29/96
Date of Next Scheduled EDR Contact: 11/25/96

SLIC Region 8: SLIC List
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4130

Date of Government Version: 02/28/96
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 10/17/96
Date of Next Scheduled EDR Contact: 01/13/97

SLIC Region 9: Nurds/Nugtank
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 619-467-2980

Date of Government Version: 07/05/95
Database Release Frequency: Annually

Date of Last EDR Contact: 09/10/96
Date of Next Scheduled EDR Contact: 12/09/96

Historical and Other Database(s)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

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The information contained in this report has predominantly been obtained from publicly available sources produced by entities other than Real Property Scan. While reasonable steps have been taken to insure the accuracy of this report, Real Property Scan does not guarantee the accuracy of this report. Any liability on the part of Real Property Scan is strictly limited to a refund of the amount paid. No claim is made for the actual existence of toxins at any site. This report does not constitute a legal opinion.

DELISTED NPL: Delisted NPL Sites
Source: EPA
Telephone: 703-603-8769
DELISTED NPL: The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

NFRAP: No Further Remedial Action Planned
Source: EPA/NTIS
Telephone: 703-416-0702
NFRAP: As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

FRDS: Federal Reporting Data System
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
FRDS provides information regarding public water supplies and their compliance with monitoring requirements, maximum contaminant levels (MCL's), and other requirements of the Safe Drinking Water Act of 1986.

Area Radon Information: The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

Oil/Gas Pipelines/Electrical Transmission Lines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines and electrical transmission lines.

Sensitive Receptors: There are individuals who, due to their fragile immune systems, are deemed to be especially sensitive to environmental discharges. These typically include the elderly, the sick, and children. While the exact location of these sensitive receptors cannot be determined, EDR indicates those facilities, such as schools, hospitals, day care centers, and nursing homes, where sensitive receptors are likely to be located.

USGS Water Wells: In November 1971 the United States Geological Survey (USGS) implemented a national water resource information tracking system. This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on more than 900,000 wells, springs, and other sources of groundwater.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1994 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Water Dams: National Inventory of Dams
Source: Federal Emergency Management Agency
Telephone: 202-646-2801
WATER DAMS: National computer database of more than 74,000 dams maintained by the Federal Emergency Management Agency.

Earthquake Fault Lines in California: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR).

The address of the subject property for which the search was intended is:

HTRW PRELIMINARY ASSESSMENT
MONTEREY, CA 93668

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records within the requested search area for the following Databases:

NPL:	National Priority List
Delisted NPL:	NPL Deletions
RCRIS-TSD:	Resource Conservation and Recovery Information System
AWP:	Annual Workplan
Delisted Cal-Sites:	Not reported
Notify 65:	Proposition 65
Toxic Pits:	Toxic Pits
CERCLIS:	Comprehensive Environmental Response, Compensation, and Liability Information System
CORRACTS:	Corrective Action Report
SWF/LF (SWIS):	Solid Waste Information System
AST:	Aboveground Petroleum Storage Tank Facilities
RAATS:	RCRA Administrative Action Tracking System
HMIRS:	Hazardous Materials Information Reporting System
PADS:	PCB Activity Database System
ERNS:	Emergency Response Notification System
TRIS:	Toxic Chemical Release Inventory System
TSCA:	Toxic Substances Control Act
MLTS:	Material Licensing Tracking System
RODS:	Records Of Decision
CONSENT:	Superfund (CERCLA) Consent Decrees
NPL Liens:	Federal Superfund Liens
Site Mitigation:	Not reported
Industrial Sites:	List of Industrial Site Cleanups
HMMD:	Hazardous Materials Management Division Database
SLIC Region:	CA SLIC regions.
CA Bond Exp. Plan:	Bond Expenditure Plan
CA BWT:	Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
CA SB2:	South Bay Site Management System
Coal Gas:	Former Manufactured gas (Coal Gas) Sites.

Unmapped (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Search Results:

Page numbers refer to the EDR Radius Map report where detailed data on individual sites be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

CAL-SITES: Formerly known as ASPIS, this database contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Control.

A review of the Cal-Sites list, as provided by EDR, and dated 04/12/1996 has revealed that there are 3 Cal-Sites sites within the searched area.

Site	Address	Map ID	Page
BIG VALLEY AG	***11873 W CALIFORNIA***	***15***	***13***
HELENA CHEMICAL COMPANY	***1075 S YINELAND***	***18***	***15***
AIRCRAFT SPRAY INC	1780 S BISHOP AVE	28	25

CHMIRS: The California Hazardous Material Incident Report System contains information on reported hazardous material incidents, i.e., accidental releases or spills. The source is the California Office of Emergency Services.

A review of the CHMIRS list, as provided by EDR, and dated 12/31/1994 has revealed that there is 1 CHMIRS site within the searched area.

Site	Address	Map ID	Page
Not reported	14505 F STREET	8	6

CORTESE: This database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release and all solid waste disposal facilities from which there is known migration. The source is the California Environmental Protection Agency/Office of Emergency Information.

A review of the Cortese list, as provided by EDR, and dated 12/31/1994 has revealed that there are 5 Cortese sites within the searched area.

Site	Address	Map ID	Page
KERMAN UNIFIED SCHOOL DIST.	F ST W. (14655)	7	5
RON GARCIA AUTO	MADERA S. (756)	10	9
VACANT BUILDING	CALIFORNIA W. (15449)	12	10
VOLANTI CONCRETE	CALIFORNIA W. (14761)	13	12
TRANQUILITY HIGH SCHOOL	JUANCHE TRIO S. (6052)	57	39

CERCLIS-NFRAP: As of February 1995. CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

A review of the CERC-NFRAP list, as provided by EDR, and dated 03/31/1996 has revealed that there are

EXECUTIVE SUMMARY

3 CERC-NFRAP sites within the searched area.

Site	Address	Map ID	Page
BIG VALLEY AG	*11873 W CALIFORNIA*	*15*	*13*
HELENA CHEM CO	*1075 S VINELAND*	*18*	*14*
KERMAN CITY DUMP SITE	*16502 JENSEN AVE*	*35*	*27*

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data comes from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the LUST list, as provided by EDR, and dated 04/01/1996 has revealed that there are 11 LUST sites within the searched area.

Site	Address	Map ID	Page
KERMAN UNIFIED SCHOOL DIST.	14655 W D ST	10	8
KERMAN UNIFIED SCHOOL DIST.	14655 D ST W	10	8
RON GARCIA AUTO	756 MADERA S	10	9
RON GARCIA AUTO	756 S MADERA AVE	10	10
VACANT BUILDING	15449 W A ST	12	11
VACANT BUILDING	15449 CALIFORNIA W	12	11
VOLANTI CONCRETE	14761 W A ST	13	11
VOLANTI CONCRETE	14761 CALIFORNIA W	13	12
LA FE MARKET	2144 MADERA AVE S	39	32
LA FE MARKET	2144 S MADERA AVE	39	32
TRANQUILITY HIGH SCHOOL	6052 JUANCHE TRIO S	57	39

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data comes from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 64 UST sites within the searched area.

Site	Address	Map ID	Page
BOB CARDWELL RANCHES, INC.	15100 W. EL MAR LN.	1	2
BOB KELTON	517 S. SHASTA	3	2
RICHARD E. CUNNINGHAM	368 SO. SHASTA	3	2
CIRCLE K STORE #3609	*481 S MADERA AVE*	*4*	*3*
VALLEY FOOD CENTER	415 SO. MADERA AVE.	4	3
JIM WALL FARMING	13210 W. KEARNEY	5	4
JIM SAMARIN	566 S. TRINITY AVE	6	5
KERMAN-FLOYD SCHOOL SITE	14655 WEST F STREET	7	5
BARCELOS FARMS	736 SO. LASSEN	9	6
KERMAN WAREHOUSE	1100 S. MADERA AVE.	10	7
EARL GIACOLINI	15150 W. CALIFORNIA AVE	10	7
KERMAN TELEPHONE COMPANY	15059 W. "C" STREET	10	7
RENO'S HARDWARE	776 SO MADERA AVE	10	8
JOHN E. CHERNEKOFF	909 S. SISKIYOU	11	10
VOLANTI CONCRETE CO., INC.	14761 W. CALIFORNIA	13	11
KERMNA ALFALFA RESEACH STATION	13833 W. CALIFORNIA	14	12
BIG VALLEY AG	11873 W. CALIFORNIA	15	13

EXECUTIVE SUMMARY

Site	Address	Map ID	Page
JACOB AND BELINDA NIEDERQUELL	11300 W. CALIFORNIA	16	13
FARM	12735 W. CALIFORNIA AVE.	17	14
HELENA CHEM CO	***1075 S VINELAND***	***18***	***14***
HELENA CHEMICAL CO.	1075 S. VINELAND	18	15
PRIVATE RANCH	14263 W. CALIFORNIA	18	18
LE ROY AND JEAN HARDY	1171 SO LASSEN	19	19
MANUEL GARCIA	1232 SO. GOLDENROD	20	19
ROGER J OAKS	1221 S GOLDENROD	20	20
FARM	1571 S. FLOYD AVE	22	21
LATIENDA MKT.	1500 S. FLOYD	22	21
ALBERT M. HAUPT	1350 SO FLOYD	22	21
ROSSI-FULLMER FARMS	14133 W. CHURCH	23	22
GEORGESON	1525 S. BISHOP	24	22
RUSSELL BLAND	1530 S. HOWARD	25	23
RANCH	1596 S. GOLDENROD	26	23
ELMER G BIEN	1760 SO JAMESON	27	24
FARM	1760 SO. JAMESON	27	24
HUTER FARM	1660 S. JAMESON AVE	27	25
ARLAN GEORGESON	1799 SO HOWARD	29	25
PERRY FARMS	1928 SO. VINELAND	30	26
BILL BLAIR	12901 W. JENSEN AVE	31	26
JOHN KORNOFF JR	12685 W. JENSEN	32	26
MARGARET OR HERMAN SANDBOTHE	13443 W. JENSEN	33	27
NORMAN FLOYD HELMUTH	12285 W. JENSEN	34	27
GREEN ACRE FARMS INC	2501 SO. MODOC AVE	35	28
BAKER COMMODITIES INC. -KERMAN	16801 W. JENSEN AVENUE	37	29
DUBOIS RANCH	19200 WEST JENSEN AVENUE	38	30
LAKE RANCH	19200 WEST JENSEN	38	31
LA - FE MKT	2130 SO. MADERA	39	33
W.D. SPIKES	2333 SO. VINELAND	40	33
BILL CIAPESSONI	2400 S. JAMESON	41	33
HOWARD HUFFMAN	10600 W. ANNADALE	42	34
GEORGESON FARMS	2503 S. SYCAMORE	43	34
DAVE MARTIN	2515 S. BISHOP	44	35
ALMA FURTADO	2536 S. GOLDENROD	45	35
JACK JONES FARMS	4566 S. JAMES RD.	46	35
BEVERLY MARTIN	2727 SO BISHOP	47	35
SCOTT WEIS	14161 W. NORTH AVE.	48	36
TONY MAZZIOTTI	14321 W. NORTH AVE	49	36
EUGENE NORD RANCH	14545 W NORTH	50	36
OLSON FARMS INC.	16091 WEST NORTH AVE.	51	37
NORLAKE TURKEY FARM	19000 NORTH AVE.	52	37
MAVIN H. GEORGESON	3498 SO. MADERA AVE	53	37
WEIS FARMS	13728 W CENTRAL	55	38
KERMAN RANCH	14011 W. CENTRAL AVE.	56	38
A & H FARMS	5001 S. HOWARD AVE	58	39
ABERCROMBIE FARMS	16110 WEST. AMERICAN AV	59	40

CA FID: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID list, as provided by EDR, and dated 10/31/1994 has revealed that there are 9 CA FID sites within the searched area.

Site	Address	Map ID	Page
JACOB AND BELINDA NIEDERQUELL	11300 W CALIFORNIA AVE	16	14

EXECUTIVE SUMMARY

Site	Address	Map ID	Page
FARM	1571 S FLOYD AVE	22	21
LATIENDA MKT.	1500 S FLOYD AVE	22	21
ALBERT M. HAUPT	1350 S FLOYD AVE	22	22
FARM	1760 S JAMESON AVE	27	24
HUTER FARM	1660 S JAMESON AVE	27	25
BILL CIAPESSONI	2400 S JAMESON AVE	41	33
HOWARD HUFFMAN	10600 W ANNADALE AVE	42	34
JACK JONES FARMS	4566 S JAMES RD	46	35

WMUDS/SWAT: The Waste Management Unit Database System is used for program tracking and inventory of waste management units. The source is the State Water Resources Control Board.

A review of the WMUDS/SWAT list, as provided by EDR, and dated 09/06/1996 has revealed that there are 2 WMUDS/SWAT sites within the searched area.

Site	Address	Map ID	Page
LASSEN AVE SOLID WASTE SITE	LASSEN / JENSEN AVENUE	36	28
AMERICAN AVENUE LANDFILL	***18950 W. AMERICAN AVENUE***	***60***	***41***

HWIS: The Hazardous Waste Information System database identifies hazardous waste generators and hazardous waste treatment, storage, and disposal facilities in the state of California. The source is the California Environmental Protection Agency.

A review of the HWIS list, as provided by EDR, and dated 12/31/1993 has revealed that there are 7 HWIS sites within the searched area.

Site	Address	Map ID	Page
1X VALLEY FOOD CENTER	415 SOUTH MADERA AVE	4	4
KERMAN USD KERMAN FLOYD SCHOOL	14655 WEST F STREET	7	5
RON GARCIA AUTO BODY SALES	756 SO MADERA AVE	10	10
1X PIONEER HIBRED	13833 WEST CALIFORNIA	14	12
HELENA CHEMICAL COMPANY	***1075 S VINELAND***	***18***	***15***
PACIFIC COAST PACKAGING CORP	1401 S MADERA AVE	21	21
1X L. HARDY FARMS	19200 WEST JENSEN AVE	38	31

RCRIS: The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-SQG list, as provided by EDR, and dated 07/01/1996 has revealed that there are 3 RCRIS-SQG sites within the searched area.

Site	Address	Map ID	Page
RON GARCIA AUTO BODY SALES	***756 SO MADERA AVE***	***10***	***9***
THORSON AND HUTCHINGS CO	1401 S MADERA AVE	21	20
KERMAN TRACTOR REPAIR	***3690 S MADERA AVE***	***54***	***38***

EXECUTIVE SUMMARY

RCRIS: The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-LQG list, as provided by EDR, and dated 07/01/1996 has revealed that there are 3 RCRIS-LQG sites within the searched area.

Site	Address	Map ID	Page
CIRCLE K STORE #3609	***481 S MADERA AVE***	***4***	***3***
HELENA CHEM CO	***1075 S VINELAND***	***18***	***14***
AMERICAN AVENUE DISPOSAL SITE	***18950 W AMERICAN AVE***	***60***	***42***

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 09/30/1995 has revealed that there are 12 FINDS sites within the searched area.

Site	Address	Map ID	Page
KERMAN USD NOVA HIGH SCHOOL	15405 SUNSET AVE	2	2
CIRCLE K STORE #3609	***481 S MADERA AVE***	***4***	***3***
KERMAN USD KERMAN FLOYD SCHOOL	14655 WEST F STREET	7	6
KERMAN USD WEST VALLEY SCHOOL	14505 WEST F STREET	8	6
KERMAN USD DISTRICT SVC CTR	14656 W D ST	10	9
RON GARCIA AUTO BODY SALES	***756 SO MADERA AVE***	***10***	***9***
KERMAN USD COMMUNITY EDUCATON	15085 D ST	10	10
BIG VALLEY AG	***11873 W CALIFORNIA***	***15***	***13***
HELENA CHEM CO	***1075 S VINELAND***	***18***	***14***
KERMAN CITY DUMP SITE	***16502 JENSEN AVE***	***35***	***27***
KERMAN TRACTOR REPAIR	***3690 S MADERA AVE***	***54***	***38***
AMERICAN AVENUE DISPOSAL SITE	***18950 W AMERICAN AVE***	***60***	***42***

WDS: California Water Resources Control Board - Waste Discharge System.

A review of the Waste Discharge System list, as provided by EDR, and dated 08/01/1996 has revealed that there are 2 Waste Discharge System sites within the searched area.

Site	Address	Map ID	Page
KERMAN DIVISION	16801 W. JENSEN	37	29
AMERICAN AVENUE LANDFILL	***18950 W. AMERICAN AVENUE***	***60***	***41***

MAP FINDINGS SUMMARY

Database	Total Plotted
NPL	0
Delisted NPL	0
RCRIS-TSD	0
AWP	0
Cal-Sites	3
Delisted Cal-Sites	0
Notify 65	0
CHMIRS	1
Cortese	5
Toxic Pits	0
CERCLIS	0
CERC-NFRAP	3
CORRACTS	0
St. Landfill (SWIS)	0
LUST	11
UST	64
CA FID	9
AST	0
RAATS	0
WMUDS/SWAT	2
HWIS	7
RCRIS Sm. Quan. Gen.	3
RCRIS Lg. Quan. Gen.	3
HMIRS	0
PADS	0
ERNS	0
FINDS	12
TRIS	0
TSCA	0
MLTS	0
NPL Liens	0
Site Mitigation	0
Industrial Site	0
HMMD	0
CA SLIC	0
CA Bond Exp. Plan	0
ROD	0
CONSENT	0
CA BWT	0
CA WDS	2
South Bay Region 2	0
Coal Gas	0

* Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

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1 **BOB CARDWELL RANCHES, INC.** UST U001588447
15100 W. EL MAR LN. N/A
KERMAN, CA 93630

UST:

Facility ID:	30436		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	MARTIN OIL CO. BOB CARDWELL	Telephone:	(209) 846-6561
Total Tanks:	1	Region:	Not reported
Facility Type:	Not reported	Other Type:	FARMING

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2 **KERMAN USD NOVA HIGH SCHOOL** FINDS 1000295542
15405 SUNSET AVE CAD982353674
KERMAN, CA 93630

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3 **BOB KELTON** UST U001588448
517 S. SHASTA N/A
KERMAN, CA 93630

UST:

Facility ID:	24407		
Tank Num:	1	Container Num:	0000000001
Tank Capacity:	300	Year Installed:	1983
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	1/4 inches
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8964
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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3 **RICHARD E. CUNNINGHAM** UST U001588648
368 SO. SHASTA N/A
KERMAN, CA 93630

UST:

Facility ID:	54322		
Tank Num:	1	Container Num:	1
Tank Capacity:	550	Year Installed:	1978
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual, Vapor Sniff Well		
Contact Name:	RICHARD CUNNINGHAM	Telephone:	(209) 846-8145
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

RICHARD E. CUNNINGHAM (Continued) U001588648

Facility ID:	54322		
Tank Num:	2	Container Num:	2
Tank Capacity:	550	Year Installed:	1978
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Visual, Vapor Sniff Well		
Contact Name:	RICHARD CUNNINGHAM	Telephone:	(209) 846-8145
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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4 **CIRCLE K STORE #3609** FINDS 1000174166
481 S MADERA AVE RCRIS-LQG CAD981680887
KERMAN, CA 93630 UST

UST:

Facility ID:	58842		
Tank Num:	1	Container Num:	1
Tank Capacity:	9950	Year Installed:	1975
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	1/4 inches
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-6277
Total Tanks:	3	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	58842		
Tank Num:	2	Container Num:	2
Tank Capacity:	9950	Year Installed:	1975
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	1/4 inches
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-6277
Total Tanks:	3	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	58842		
Tank Num:	3	Container Num:	3
Tank Capacity:	6000	Year Installed:	1975
Tank Used for:	PRODUCT		
Type of Fuel:	PREMIUM	Tank Constrctn:	1/4 inches
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-6277
Total Tanks:	3	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

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4 **VALLEY FOOD CENTER** UST U001588693
415 SO. MADERA AVE. N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
	VALLEY FOOD CENTER (Continued)		U001588693

UST:

Facility ID:	49509		
Tank Num:	1	Container Num:	1
Tank Capacity:	4000	Year Installed:	1979
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor, Pressure Test		
Contact Name:	MARK YEP, MGR	Telephone:	(209) 846-7351
Total Tanks:	4	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	49509		
Tank Num:	2	Container Num:	2
Tank Capacity:	10000	Year Installed:	1979
Tank Used for:	PRODUCT		
Type of Fuel:	PREMIUM	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor, Pressure Test		
Contact Name:	MARK YEP, MGR	Telephone:	(209) 846-7351
Total Tanks:	4	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	49509		
Tank Num:	3	Container Num:	3
Tank Capacity:	8000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	PREMIUM	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor, Pressure Test		
Contact Name:	MARK YEP, MGR	Telephone:	(209) 846-7351
Total Tanks:	4	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	49509		
Tank Num:	4	Container Num:	4
Tank Capacity:	12000	Year Installed:	1979
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor, Pressure Test		
Contact Name:	MARK YEP, MGR	Telephone:	(209) 846-7351
Total Tanks:	4	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

4	**1X VALLEY FOOD CENTER** **415 SOUTH MADERA AVE** **KERMAN, CA 93630**	**HWIS**	**S100928407** **N/A**

5	**JIM WALL FARMING** **13210 W. KEARNEY** **KERMAN, CA 93630**	**UST**	**U001588552** **N/A**

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
	JIM WALL FARMING (Continued)		U001588552

UST:

Facility ID:	33220		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-7827
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

6	**JIM SAMARIN** **566 S. TRINITY AVE** **KERMAN, CA 93630**	UST	U001588551 N/A

UST:

Facility ID:	40457		
Tank Num:	1	Container Num:	1
Tank Capacity:	550	Year Installed:	1982
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-9250
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	PRIVATE

7	**KERMAN USD KERMAN FLOYD SCHOOL** **14655 WEST F STREET** **KERMAN, CA 93630**	HWIS	S100865680 N/A

7	**KERMAN UNIFIED SCHOOL DIST.** **F ST W. (14655)** **KERMAN, CA 93630**	Cortese	S101294611 N/A

CORTESE:
Facility ID: 10-000077 Data Source: LTNKA

7	**KERMAN-FLOYD SCHOOL SITE** **14655 WEST F STREET** **KERMAN, CA 93630**	UST	U001588578 N/A

UST:

Facility ID:	27210		
Tank Num:	1	Container Num:	#1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	TRINIDAD M. RODRIGUEZ	Telephone:	(209) 846-5383
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	SCHOOL BUS FUELING

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
	KERMAN-FLOYD SCHOOL SITE (Continued)		U001588578

Facility ID: 27210
Tank Num: 2 — Container Num: #2
Tank Capacity: 500 — Year Installed: Not reported
Tank Used for: PRODUCT
Type of Fuel: PREMIUM — Tank Constrctn: Not reported
Leak Detection: Visual
Contact Name: TRINIDAD M. RODRIGUEZ — Telephone: (209) 846-5383
Total Tanks: 3 — Region: Not reported
Facility Type: 2 — Other Type: SCHOOL BUS FUELING

Facility ID: 27210
Tank Num: 3 — Container Num: 3
Tank Capacity: 1000 — Year Installed: Not reported
Tank Used for: PRODUCT
Type of Fuel: REGULAR — Tank Constrctn: Not reported
Leak Detection: Visual
Contact Name: TRINIDAD M. RODRIGUEZ — Telephone: (209) 846-5383
Total Tanks: 3 — Region: Not reported
Facility Type: 2 — Other Type: SCHOOL BUS FUELING

7	**KERMAN USD KERMAN FLOYD SCHOOL** **14655 WEST F STREET** **KERMAN, CA 93630**	FINDS	1000295551 CAD982354334

8	**KERMAN USD WEST VALLEY SCHOOL** **14505 WEST F STREET** **KERMAN, CA 93630**	FINDS	1000295544 CAD982353799

8		CHMIRS	S100276132 N/A

14505 F STREET
KERMAN, CA 93630

CHMIRS:
OES Control Number: 9013756 — DOT ID: 1228
DOT Hazard Class: Gases
Chemical Name: TERT-BUTYL MERCAPTAN
Extent of Release: Undetermined
CAS Number: Not reported — Quantity Released: 0
Environmental Contamination: Air — Property Use: Public Assembly
Incident Date: 26-OCT-90 — Date Completed: 26-OCT-90

9	**BARCELOS FARMS** **736 SO. LASSEN** **KERMAN, CA 93630**	UST	U001588440 N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

BARCELOS FARMS (Continued) — U001588440

UST:

Facility ID:	27995		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	DIEGO BARCELOS	Telephone:	(209) 846-8887
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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10 **KERMAN WAREHOUSE** — UST — U001588577
1100 S. MADERA AVE. — N/A
KERMAN, CA 93630

UST:

Facility ID:	40525		
Tank Num:	1	Container Num:	84
Tank Capacity:	400	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-7341
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	BEAN & GRAIN WHSE.

---

10 **EARL GIACOLINI** — UST — U001588476
15150 W. CALIFORNIA AVE — N/A
KERMAN, CA 93630

UST:

Facility ID:	42824		
Tank Num:	1	Container Num:	2
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 268-5597
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

---

10 **KERMAN TELEPHONE COMPANY** — UST — U001588576
15059 W. "C" STREET — N/A
KERMAN, CA 93630

UST:

Facility ID:	6150		
Tank Num:	1	Container Num:	2
Tank Capacity:	300	Year Installed:	1949
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	HARRY E BALL	Telephone:	(209) 846-9319
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	TELEPHONE COMPANY

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
	KERMAN TELEPHONE COMPANY (Continued)		U001588576

Facility ID: 6150
Tank Num: 2 — Container Num: 1
Tank Capacity: 500 — Year Installed: 1963
Tank Used for: PRODUCT
Type of Fuel: UNLEADED — Tank Constrctn: Not reported
Leak Detection: None
Contact Name: HARRY E BALL — Telephone: (209) 846-9319
Total Tanks: 2 — Region: Not reported
Facility Type: 2 — Other Type: TELEPHONE COMPANY

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10 **RENO'S HARDWARE** — UST — U001588646
776 SO MADERA AVE — N/A
KERMAN, CA 93630

UST:

Facility ID: 1549
Tank Num: 1 — Container Num: 1
Tank Capacity: 500 — Year Installed: Not reported
Tank Used for: PRODUCT
Type of Fuel: UNLEADED — Tank Constrctn: Not reported
Leak Detection: None
Contact Name: Not reported — Telephone: (209) 846-9491
Total Tanks: 2 — Region: Not reported
Facility Type: 1 — Other Type: Not reported

Facility ID: 1549
Tank Num: 2 — Container Num: 1
Tank Capacity: 500 — Year Installed: 1959
Tank Used for: PRODUCT
Type of Fuel: UNLEADED — Tank Constrctn: 6 gauge
Leak Detection: None
Contact Name: Not reported — Telephone: (209) 846-9491
Total Tanks: 2 — Region: Not reported
Facility Type: 1 — Other Type: Not reported

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10 **KERMAN UNIFIED SCHOOL DIST.** — LUST — S102267107
14655 W D ST — N/A
KERMAN, CA 93630

LUST Region 5:

Respble Party: KERMAN UNIFIED SCHOOL DIST. — Substance: GASOLINE
Case Type: Undefined
Pilot Program: No
Staff Initials: RWW — Case Number: 5T10000071
County: FRESNO
Status: Pollution characterization

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10 **KERMAN UNIFIED SCHOOL DIST.** — LUST — S101576488
14655 D ST W — N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

KERMAN UNIFIED SCHOOL DIST. (Continued) — S101576488

LUST:

Case Number:	5T10000071	Cross Street:	Not reported
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Gasoline		
Lead Agency:	Local Agency		
Case Type:	Undefined		
Status:	Pollution characterization		
Review Date:	12/22/1987	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	Not reported
Pollution Char:	12/22/1987	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	Not reported
Close Date:	Not reported	Release Date:	02/02/1988

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10 **KERMAN USD DISTRICT SVC CTR** — FINDS — 1000295548
14656 W D ST — CAD982354151
KERMAN, CA 93630

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10 **RON GARCIA AUTO** — LUST — S101329911
756 MADERA S — N/A
KERMAN, CA 93630

LUST:

Case Number:	5T10000286	Cross Street:	Not reported
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Gasoline		
Lead Agency:	Local Agency		
Case Type:	Undefined		
Status:	Preliminary site assessment underway		
Review Date:	06/04/1991	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	01/23/1991
Pollution Char:	Not reported	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	Not reported
Close Date:	Not reported	Release Date:	01/23/1991

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10 **RON GARCIA AUTO** — Cortese — S101294613
MADERA S. (756) — N/A
KERMAN, CA 93630

CORTESE:
Facility ID: 10-000257 Data Source: LTNKA

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10 **RON GARCIA AUTO BODY SALES** — RCRIS-SQG — 1000115074
756 SO MADERA AVE — FINDS — CAD982348815
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

RON GARCIA AUTO BODY SALES (Continued) 1000115074

RCRIS:
Owner: RON E GARCIA
(415) 555-1212

Contact: ENVIRONMENTAL MANAGER
(209) 846-5373

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D000	.00000 (N)	Notification	D001	.00000 (N)	Notification
F003	.00000 (N)	Notification	F005	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

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10 **RON GARCIA AUTO** LUST S102267137
756 S MADERA AVE N/A
KERMAN, CA 93630

LUST Region 5:

Respble Party:	RON GARCIA AUTO	Substance:	GASOLINE
Case Type:	Undefined		
Pilot Program:	No		
Staff Initials:	RWW	Case Number:	5T10000286
County:	FRESNO		
Status:	Preliminary site assessment underway		

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10 **RON GARCIA AUTO BODY SALES** HWIS S100943764
756 SO MADERA AVE N/A
KERMAN, CA 93630

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10 **KERMAN USD COMMUNITY EDUCATON CTR** FINDS 1000295546
15085 D ST CAD982354037
KERMAN, CA 93630

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11 **JOHN E. CHERNEKOFF** UST U001588562
909 S. SISKIYOU N/A
KERMAN, CA 93630

UST:

Facility ID:	30453		
Tank Num:	1	Container Num:	1
Tank Capacity:	350	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	12 gauge
Leak Detection:	None		
Contact Name:	MICHAEL J. CHERNEKOFF	Telephone:	(209) 846-9522
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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12 **VACANT BUILDING** Cortese S101294610
CALIFORNIA W. (15449) N/A
KERMAN, CA 93630

CORTESE:
Facility ID: 10-000278 Data Source: LTNKA

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
12	**VACANT BUILDING** **15449 W A ST** **KERMAN, CA 93630**	LUST	S102267143 N/A

LUST Region 5:

Respble Party:	RENO LANFRANCO	Substance:	GASOLINE
Case Type:	Undefined		
Pilot Program:	No		
Staff Initials:	RWW	Case Number:	5T10000307
County:	FRESNO		
Status:	Preliminary site assessment underway		

12	**VACANT BUILDING** **15449 CALIFORNIA W** **KERMAN, CA 93630**	LUST	S101329932 N/A

LUST:

Case Number:	5T10000307	Cross Street:	DEL NORTE
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Gasoline		
Lead Agency:	Local Agency		
Case Type:	Undefined		
Status:	Preliminary site assessment underway		
Review Date:	04/25/1991	Confirm Leak:	Not reported
Workplan: -	Not reported	Prelim Assess:	04/12/1991
Pollution Char:	Not reported	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	Not reported
Close Date:	Not reported	Release Date:	04/12/1991

13	**VOLANTI CONCRETE CO., INC.** **14761 W. CALIFORNIA** **KERMAN, CA 93630**	UST	U001588699 N/A

UST:

Facility ID:	12850		
Tank Num:	1	Container Num:	1
Tank Capacity:	2500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-9375
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	READY-MIX CONCRETE

13	**VOLANTI CONCRETE** **14761 W A ST** **KERMAN, CA 93630**	LUST	S102267127 N/A

LUST Region 5:

Respble Party:	VOLANTI CONCRETE	Substance:	GASOLINE
Case Type:	Aquifer affected		
Pilot Program:	No		
Staff Initials:	RWW	Case Number:	5T10000208
County:	FRESNO		
Status:	9R		

Map ID / Direction / Distance	Site	Database(s)	EDR ID Number / EPA ID Number
13	VOLANTI CONCRETE 14761 CALIFORNIA W KERMAN, CA 93630	LUST	S101329831 N/A

LUST:

Case Number:	5T10000208	Cross Street:	Not reported
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Gasoline		
Lead Agency:	Regional Board		
Case Type:	Aquifer affected		
Status:	Signed off, remedial action completed or deemed unnecessary		
Abate Method:	Unknown - action taken at site is unknown		
Review Date:	08/15/1995	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	01/09/1990
Pollution Char:	Not reported	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	08/15/1995
Close Date:	08/15/1995	Release Date:	12/18/1989

13	VOLANTI CONCRETE CALIFORNIA W. (14761) KERMAN, CA 93630	Cortese	S101294609 N/A

CORTESE:

Facility ID: 10-000182 Data Source: LTNKA

14	1X PIONEER HIBRED 13833 WEST CALIFORNIA KERMAN, CA 93630	HWIS	S100927667 N/A

14	KERMNA ALFALFA RESEACH STATION 13833 W. CALIFORNIA KERMAN, CA 93630	UST	U001588379 N/A

UST:

Facility ID:	60634		
Tank Num:	1	Container Num:	001
Tank Capacity:	500	Year Installed:	1981
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor, None		
Contact Name:	BOYD HARTMAN	Telephone:	(209) 846-5311
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	RESEARCH
Facility ID:	60634		
Tank Num:	2	Container Num:	002
Tank Capacity:	0	Year Installed:	1981
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	BOYD HARTMAN	Telephone:	(209) 846-5311
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	RESEARCH

Map ID / Direction / Distance	Site	Database(s)	EDR ID Number / EPA ID Number

KERMNA ALFALFA RESEACH STATION (Continued) — U001588579

Facility ID:	60634		
Tank Num:	3	Container Num:	003
Tank Capacity:	0	Year Installed:	1981
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	BOYD HARTMAN	Telephone:	(209) 846-5311
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	RESEARCH

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15 **BIG VALLEY AG** — FINDS 1000135486
11873 W CALIFORNIA — CERC-NFRAP CAD982358624
KERMAN, CA 93630 — Cal-Sites

CERCLIS-NFRAP Classification Data:

Site Incident Category:	Not reported	Federal Facility:	NO
Ownership Status:	PRIVATE	NPL Status:	NOT ON NPL
EPA Notes:	Not reported		

CERCLIS-NFRAP Assessment History:

Assessment:	DISCOVERY	Completed:	12/01/87
Assessment:	PRELIMINARY ASSESSMENT	Completed:	11/10/88

CAL-SITES:

Facility ID	10070069
Status Date:	10/19/95
Status:	REFOA (OTHER AGENCY LEAD)

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15 **BIG VALLEY AG** — UST U001591333
11873 W. CALIFORNIA — N/A
BISHOP, CA 93703

UST:

Facility ID:	42605		
Tank Num:	1	Container Num:	1
Tank Capacity:	8000	Year Installed:	1984
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	3/16 inches
Leak Detection:	Visual, Stock Inventor, Pressure Test		
Contact Name:	Not reported	Telephone:	(209) 846-8840
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	AGRICULTURAL

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16 **JACOB AND BELINDA NIEDERQUELL** — UST U001591687
11300 W. CALIFORNIA — N/A
FRESNO, CA 93706

UST:

Facility ID:	44116		
Tank Num:	1	Container Num:	#1
Tank Capacity:	330	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8815
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

JACOB AND BELINDA NIEDERQUELL (Continued) U001591687

Facility ID:	44116		
Tank Num:	2	Container Num:	#2
Tank Capacity:	330	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8815
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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16 **JACOB AND BELINDA NIEDERQUELL** Ca. FID S101621668
11300 W CALIFORNIA AVE N/A
FRESNO, CA 93706

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17 **FARM** UST U001588494
12735 W. CALIFORNIA AVE. N/A
KERMAN, CA 93630

UST:

Facility ID:	28045		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	BOB CARDWELL	Telephone:	(209) 445-7475
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	28045		
Tank Num:	2	Container Num:	2
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	BOB CARDWELL	Telephone:	(209) 445-7475
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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18 **HELENA CHEM CO** FINDS 1000207165
1075 S VINELAND RCRIS-LQG CAD077385193
KERMAN, CA 93630 CERC-NFRAP
UST

CERCLIS-NFRAP Classification Data:

Site Incident Category:	Not reported	Federal Facility:	NO
Ownership Status:	UNKNOWN	NPL Status:	NOT ON NPL
EPA Notes:	Not reported		

CERCLIS-NFRAP Assessment History:

Assessment:	DISCOVERY	Completed:	08/01/80
Assessment:	PRELIMINARY ASSESSMENT	Completed:	07/01/85

Map ID / Direction / Distance | Site | Database(s) | EDR ID Number / EPA ID Number

HELENA CHEM CO (Continued) 1000207155

RCRIS:
Owner: HELENA CHEMICAL COMPANY MEMPHIS TENN
(415) 555-1212

Contact: ENVIRONMENTAL MANAGER
(209) 846-7383

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D004	.00000 (N)	Notification	P044	.00000 (N)	Notification
P048	.00000 (N)	Notification	P066	.00000 (N)	Notification
P071	.00000 (N)	Notification	P089	.00000 (N)	Notification
U224	.00000 (N)	Notification			

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

Other Pertinent Environmental Activity Identified at Site:
corporation or facility involved with pesticides production.

UST:

Facility ID:	1308		
Tank Num:	1	Container Num:	2
Tank Capacity:	8000	Year Installed:	1975
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8269
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	CHEM. SALES

Facility ID:	1308		
Tank Num:	2	Container Num:	1
Tank Capacity:	7000	Year Installed:	1975
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8269
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	CHEM. SALES

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18 **HELENA CHEMICAL COMPANY** HWIS S100853553
1075 S VINELAND Cal-Sites N/A
KERMAN, CA 93630

CAL-SITES:
Facility ID: 10280018
Status Date: 05/15/95
Status: PEAR (PRELIMINARY ENDANGERMENT ASSESSMENT (PEA) REQUIRED)

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18 **HELENA CHEMICAL CO.** UST U001568531
1075 S. VINELAND N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

HELENA CHEMICAL CO. (Continued) U001588531

UST:

Facility ID:	1795		
Tank Num:	1	Container Num:	5
Tank Capacity:	300	Year Installed:	1975
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	2 inches
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	2	Container Num:	3
Tank Capacity:	200	Year Installed:	1975
Tank Used for:	WASTE		
Type of Fuel:	WASTE OIL	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	3	Container Num:	4
Tank Capacity:	1100	Year Installed:	1983
Tank Used for:	WASTE		
Type of Fuel:	WASTE OIL	Tank Constrctn:	1/2" inches
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	4	Container Num:	1
Tank Capacity:	6000	Year Installed:	1966
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	120 inches
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	5	Container Num:	2
Tank Capacity:	5000	Year Installed:	1966
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

HELENA CHEMICAL CO. (Continued) U001588531

Facility ID:	1795		
Tank Num:	6	Container Num:	4
Tank Capacity:	300	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	7	Container Num:	3
Tank Capacity:	400	Year Installed:	Not reported
Tank Used for:	WASTE		
Type of Fuel:	WASTE OIL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	8	Container Num:	CS2200
Tank Capacity:	200	Year Installed:	Not reported
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	9	Container Num:	CS1200
Tank Capacity:	200	Year Installed:	Not reported
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	10	Container Num:	DST-3-9000
Tank Capacity:	9000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

HELENA CHEMICAL CO. (Continued) U001588531

Facility ID:	1795		
Tank Num:	11	Container Num:	DST-2-4000
Tank Capacity:	4000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	12	Container Num:	DST-4-9000
Tank Capacity:	9000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	1795		
Tank Num:	13	Container Num:	DST-1-4000
Tank Capacity:	4000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7383
Total Tanks:	13	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

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18 **PRIVATE RANCH** UST U001588636
14263 W. CALIFORNIA N/A
KERMAN, CA 93630

UST:

Facility ID:	35878		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	NONE	Telephone:	(209) 846-7208
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	PRIVATE RANCH

Facility ID:	35878		
Tank Num:	2	Container Num:	#2
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	PREMIUM	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	NONE	Telephone:	(209) 846-7208
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	PRIVATE RANCH

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

PRIVATE RANCH (Continued) U001588636

Facility ID:	35878		
Tank Num:	3	Container Num:	3
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	PREMIUM	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	NONE	Telephone:	(209) 846-7208
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	PRIVATE RANCH

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19 **LE ROY AND JEAN HARDY** UST U001588585
1171 SO LASSEN N/A
KERMAN, CA 93630

UST:

Facility ID:	36368		
Tank Num:	1	Container Num:	1
Tank Capacity:	8000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	MARTIN OIL CO	Telephone:	(209) 846-8514
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	36368		
Tank Num:	2	Container Num:	2
Tank Capacity:	4000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	MARTIN OIL CO	Telephone:	(209) 846-8514
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	36368		
Tank Num:	3	Container Num:	3
Tank Capacity:	8000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	MARTIN OIL CO	Telephone:	(209) 846-8514
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

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20 **MANUEL GARCIA** UST U001588598
1232 SO. GOLDENROD N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

MANUEL GARCIA (Continued) U001588598

UST:

Facility ID:	6723		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-9059
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	PRIVATE

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20 **ROGER J OAKS** UST U001588658
1221 S GOLDENROD N/A
KERMAN, CA 93630

UST:

Facility ID:	24263		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-9774
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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21 **THORSON AND HUTCHINGS CO** RCRIS-SQG 1000921633
1401 S MADERA AVE CAD982312191
KERMAN, CA 93630

RCRIS:
Owner: THORSON AND HUTCHINGS CO
(209) 846-6644

Contact: NORMAN PEASE
(209) 846-6644

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D005	.00000 (N)	Notification	D007	.00000 (N)	Notification
D019	.00000 (N)	Notification	D035	.00000 (N)	Notification
F001	.00000 (N)	Notification	F002	.00000 (N)	Notification
F003	.00000 (N)	Notification	F005	.00000 (N)	Notification
P003	.00000 (N)	Notification	P005	.00000 (N)	Notification
P013	.00000 (N)	Notification	P023	.00000 (N)	Notification
P041	.00000 (N)	Notification	P115	.00000 (N)	Notification
P120	.00000 (N)	Notification	U001	.00000 (N)	Notification
U002	.00000 (N)	Notification	U034	.00000 (N)	Notification
U045	.00000 (N)	Notification	U080	.00000 (N)	Notification
U083	.00000 (N)	Notification	U103	.00000 (N)	Notification
U117	.00000 (N)	Notification	U122	.00000 (N)	Notification
U145	.00000 (N)	Notification	U159	.00000 (N)	Notification
U220	.00000 (N)	Notification	U226	.00000 (N)	Notification
U227	.00000 (N)	Notification	U239	.00000 (N)	Notification
U359	.00000 (N)	Notification			

(P) = Pounds, (K) = Kilograms, (M) = Metric Tons, (T) = Tons, (N) = Not Reported

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
21	PACIFIC COAST PACKAGING CORP 1401 S MADERA AVE KERMAN, CA 93630	HWIS	S100869869 N/A
22	FARM 1571 S FLOYD AVE FRESNO, CA 93706	Ca. FID	S101630108 N/A
22	FARM 1571 S. FLOYD AVE FRESNO, CA 93706	UST	U001591601 N/A

UST:

Facility ID:	30189		
Tank Num:	1	Container Num:	#3
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	OWNER	Telephone:	(209) 268-1609
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM VEHICLES/TRACTO

22	LATIENDA MKT. 1500 S FLOYD AVE FRESNO, CA 93706	Ca. FID	S101621709 N/A
22	LATIENDA MKT. 1500 S. FLOYD FRESNO, CA 93706	UST	U001591737 N/A

UST:

Facility ID:	44570		
Tank Num:	1	Container Num:	0001
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	MANUEL MENDOZA	Telephone:	(209) 846-9883
Total Tanks:	2	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	44570		
Tank Num:	2	Container Num:	0002
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	MANUEL MENDOZA	Telephone:	(209) 846-9883
Total Tanks:	2	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

22	ALBERT M. HAUPT 1350 SO FLOYD FRESNO, CA 93706	UST	U001591484 N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

ALBERT M. HAUPT (Continued) — U001591484

UST:

Facility ID:	45256		
Tank Num:	1	Container Num:	1
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-9980
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

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22 **ALBERT M. HAUPT**
1350 S FLOYD AVE
FRESNO, CA 93706

Ca. FID — S101621507, N/A

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23 **ROSSI-FULLMER FARMS**
14133 W. CHURCH
KERMAN, CA 93630

UST — U001588661, N/A

UST:

Facility ID:	24202		
Tank Num:	1	Container Num:	1
Tank Capacity:	550	Year Installed:	1980
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	CARLO ROSSI	Telephone:	(209) 275-0835
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	24202		
Tank Num:	2	Container Num:	2
Tank Capacity:	550	Year Installed:	1980
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	CARLO ROSSI	Telephone:	(209) 275-0835
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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24 **GEORGESON**
1525 S. BISHOP
KERMAN, CA 93630

UST — U001588513, N/A

UST:

Facility ID:	38242		
Tank Num:	1	Container Num:	3
Tank Capacity:	250	Year Installed:	1978
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	3/16" inches
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-9430
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
25	RUSSELL BLAND 1530 S. HOWARD KERMAN, CA 20984	UST	U001560129 N/A

UST:

Facility ID:	32127		
Tank Num:	1	Container Num:	3
Tank Capacity:	200	Year Installed:	1966
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8256
Total Tanks:	4	Region:	Not reported
Facility Type:	2	Other Type:	FARMER

Facility ID:	32127		
Tank Num:	2	Container Num:	4
Tank Capacity:	10000	Year Installed:	1979
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8256
Total Tanks:	4	Region:	Not reported
Facility Type:	2	Other Type:	FARMER

Facility ID:	32127		
Tank Num:	3	Container Num:	2
Tank Capacity:	500	Year Installed:	1970
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8256
Total Tanks:	4	Region:	Not reported
Facility Type:	2	Other Type:	FARMER

Facility ID:	32127		
Tank Num:	4	Container Num:	1
Tank Capacity:	500	Year Installed:	1969
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8256
Total Tanks:	4	Region:	Not reported
Facility Type:	2	Other Type:	FARMER

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
26	RANCH 1596 S. GOLDENROD KERMAN, CA 93630	UST	U001588643 N/A

UST:

Facility ID:	60380		
Tank Num:	1	Container Num:	02
Tank Capacity:	350	Year Installed:	1975
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	12 gauge
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-9676
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	RANCH

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
	RANCH (Continued)		U001588643

Facility ID:	60380		
Tank Num:	2	Container Num:	01
Tank Capacity:	550	Year Installed:	1970
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	12 gauge
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-9676
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	RANCH

27	**ELMER G BIEN** **1760 SO JAMESON** **FRESNO, CA 93706**	UST	U001591589 N/A

UST:

Facility ID:	28151		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	1960
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8059
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	28151		
Tank Num:	2	Container Num:	2
Tank Capacity:	350	Year Installed:	1970
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8059
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

27	**FARM** **1760 SO. JAMESON** **, CA 93706**	UST	U001591604 N/A

UST:

Facility ID:	28152 ,		
Tank Num:	1	Container Num:	3
Tank Capacity:	500	Year Installed:	1970
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(000) 000-0000
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

27	**FARM** **1760 S JAMESON AVE** **FRESNO, CA 93706**	Ca. FID	S101630110 N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
27	**HUTER FARM** **1660 S JAMESON AVE** **FRESNO, CA 93706**	Ca. FID	S101621658 N/A
27	**HUTER FARM** **1660 S. JAMESON AVE** **FRESNO, CA 93706**	UST	U001591676 N/A

UST:

Facility ID:	30187		
Tank Num:	1	Container Num:	#1
Tank Capacity:	320	Year Installed:	1963
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	OWNER	Telephone:	(209) 268-1609
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM VEH/TRACTORS

Facility ID:	30187		
Tank Num:	2	Container Num:	2
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	OWNER	Telephone:	(209) 268-1609
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM VEH/TRACTORS

28	**AIRCRAFT SPRAY INC** **1780 S BISHOP AVE** **KERMAN, CA 93630**	Cal-Sites	S100184419 N/A

CAL-SITES:

Facility ID	10070029
Status Date:	07/24/95
Status:	REFOA (OTHER AGENCY LEAD)

29	**ARLAN GEORGESON** **1799 SO HOWARD** **KERMAN, CA 93630**	UST	U001588434 N/A

UST:

Facility ID:	38243		
Tank Num:	1	Container Num:	#2
Tank Capacity:	250	Year Installed:	1978
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	3/16 inches
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8257
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

ARLAN GEORGESON (Continued) — U001588434

Facility ID:	38243		
Tank Num:	2	Container Num:	1
Tank Capacity:	280	Year Installed:	1948
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	3/16 inches
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-8257
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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30 **PERRY FARMS** — UST — U001588628
1928 SO. VINELAND — N/A
KERMAN, CA 93630

UST:

Facility ID:	49770		
Tank Num:	1	Container Num:	1
Tank Capacity:	1000	Year Installed:	1979
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	JOE PERRY	Telephone:	(209) 846-9635
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Facility ID:	49770		
Tank Num:	2	Container Num:	2
Tank Capacity:	2000	Year Installed:	1979
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	JOE PERRY	Telephone:	(209) 846-9635
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

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31 **BILL BLAIR** — UST — U001588443
12901 W. JENSEN AVE — N/A
KERMAN, CA 93630

UST:

Facility ID:	54683		
Tank Num:	1	Container Num:	01
Tank Capacity:	550	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-9017
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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32 **JOHN KORNOFF JR** — UST — U001588563
12685 W. JENSEN — N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

JOHN KORNOFF JR (Continued) U001588563

UST:

Facility ID:	27970		
Tank Num:	1	Container Num:	1
Tank Capacity:	335	Year Installed:	1970
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	3/16 inches
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8447
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	PRIVATE

---

33 **MARGARET OR HERMAN SANDBOTHE** UST U001588599
13443 W. JENSEN N/A
KERMAN, CA 93630

UST:

Facility ID:	58708		
Tank Num:	1	Container Num:	1
Tank Capacity:	550	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Pressure Test		
Contact Name:	Not reported	Telephone:	(209) 846-8445
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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34 **NORMAN FLOYD HELMUTH** UST U001588622
12285 W. JENSEN N/A
KERMAN, CA 93630

UST:

Facility ID:	48823		
Tank Num:	1	Container Num:	101
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	NORMAN HELMUTH	Telephone:	(209) 846-7422
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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35 **KERMAN CITY DUMP SITE** FINDS 1000295560
16502 JENSEN AVE CERC-NFRAP CAD060143526
KERMAN, CA 93630

CERCLIS-NFRAP Classification Data:

Site Incident Category:	Not reported	Federal Facility:	NO
Ownership Status:	UNKNOWN	NPL Status:	NOT ON NPL
EPA Notes:	Not reported		

CERCLIS-NFRAP Assessment History:

Assessment:	DISCOVERY	Completed:	11/01/79
Assessment:	PRELIMINARY ASSESSMENT	Completed:	04/01/80
Assessment:	PRELIMINARY ASSESSMENT	Completed:	11/04/88

CERCLIS-NFRAP Alias Name(s):
KERMAN CITY OF SEWARAGE

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
35	GREEN ACRE FARMS INC 2501 SO. MODOC AVE KERMAN, CA 93630	UST	U001588522 N/A

UST:

Facility ID:	52561		
Tank Num:	1	Container Num:	4
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	Not Reported	Tank Constrctn:	3/16 inches
Leak Detection:	None		
Contact Name:	JACK CARDWELL	Telephone:	(209) 431-0792
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	PRIVATE

36	LASSEN AVE SOLID WASTE SITE LASSEN / JENSEN AVENUE FRESNO, CA	WMUDS	S101310671 N/A

WMUDS:

Date of Last Facility Edit:	Not reported
Last Facility Editors:	Not reported
Waste Discharge System ID:	5D100315002
Solid Waste Information ID:	Not reported
Waste Discharge System:	Yes
Solid Waste Assessment Test Program:	Yes
Toxic Pits Cleanup Act Program:	No
Resource Conservation Recovery Act Program:	No
Department of Defense:	Not reported
Regional Board Staff Initial:	5F
Open to Public:	Not reported
Number of WMUDS at Facility:	1
Facility Contact:	Not reported
Facility Telephone:	Not reported
Primary Standard Industrial Classification:	4953
Secondary Standard Industrial Classification:	Not reported
Solid Waste Assessment Test Program Name:	SOLID WASTE INDUSTRIES
Self Monitoring Report Frequency:	No Reporting Requirements
Threat to Water Quality:	Moderate Threat to Water Quality

NPID:	Not reported
Tonnage:	Not reported
Facility Type:	Solid Waste Site-Class III - Landfills for non hazardous solid wastes.
Complexity:	Any facility having a physical, chemical, or biological waste treatment system (except forseptic systems with subsurface disposal), or any Class II or III disposal site, orfacilities without treatment systems that are complex, such as marinas with petroleumproducts, solid wastes, and sewage pump out facilities.
Facility Status:	Historical - Any regulated facility for which the Regional Board has rescinded all WDRsor consciously allowed an NPDS permit to expire. Those facilities that are not under Wastedischarge Requirements (NURDs) may set to HISTORY when the Regional Board considersregular enforcement, monitoring or compliance activities unnecessary at the facility anyunregulated discharger with a pending application.
Prime Waste:	Solid Wastes - Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and nonputrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

LASSEN AVE SOLID WASTE SITE (Continued) S101310671

Agency: SOLID WASTE INDUSTRIES
1530 N. WEST AVENUE
FRESNO, CA 93728
Agency Contact: BOB CAIRE
Agency Tele: (209) 266-2510
Agency Type: Private
Landowner: Not reported
Not reported
Landowner Cont: Not reported
Landowner Tele: Not reported

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37 **KERMAN DIVISION** Ca. WDS S102003085
16801 W. JENSEN N/A
KERMAN, CA 93630

WDS:
Facility ID: Tulare Lake 102015001
Facility Telephone (209) 237-4320
Facility Contact BILL WINCHESTER
Regional Board #: Not reported
Agency Name: BAKER COMMODITIES, INC.
P. O. BOX 416
KERMAN, CA 93630
Agency Contact: BILL WINCHESTER
Agency Phone: (209) 237-4320
Design Flow: 0.0220 Million Gal/Day
Baseline Flow: 0.0220 Million Gal/Day
Facility Type: Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and repairing, oil production, storage and disposal operations, water pumping.
Agency Type: Private
Waste Type: Process Waste (Waste produced as part of the industrial/manufacturing process) - Designated/Influent or Solid Wastes that pose a significant threat to water quality because of their high concentrations (E.G., BOD, Hardness, TRF, Chloride). 'Manageable' hazardous wastes (E.G., inorganic salts and heavy metals) are included in this category.
Standard Industrial Classification Code: 2011

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37 **BAKER COMMODITIES INC. -KERMAN** UST U001588439
16801 W. JENSEN AVENUE N/A
KERMAN, CA 93630

UST:
Facility ID: 14492
Tank Num: 1
Container Num: K 1
Tank Capacity: 12000
Year Installed: 1972
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Tank Constrctn: 1/4 inches
Leak Detection: Stock Inventor
Contact Name: B. L. WINCHESTER
Telephone: (209) 846-9393
Total Tanks: 6
Region: Not reported
Facility Type: 2
Other Type: RENDERING

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

BAKER COMMODITIES INC. -KERMAN (Continued) U001588439

Facility ID:	14492		
Tank Num:	2	Container Num:	K 2
Tank Capacity:	12000	Year Installed:	1972
Tank Used for:	PRODUCT		
Type of Fuel:	Not Reported	Tank Constrctn:	1/4 inches
Leak Detection:	Stock Inventor		
Contact Name:	B. L. WINCHESTER	Telephone:	(209) 846-9393
Total Tanks:	6	Region:	Not reported
Facility Type:	2	Other Type:	RENDERING

Facility ID:	14492		
Tank Num:	3	Container Num:	K 3
Tank Capacity:	11310	Year Installed:	Not reported
Tank Used for:	Not Reported		
Type of Fuel:	Not Reported	Tank Constrctn:	6 inches
Leak Detection:	Stock Inventor		
Contact Name:	B. L. WINCHESTER	Telephone:	(209) 846-9393
Total Tanks:	6	Region:	Not reported
Facility Type:	2	Other Type:	RENDERING

Facility ID:	14492		
Tank Num:	4	Container Num:	K 4
Tank Capacity:	10000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	B. L. WINCHESTER	Telephone:	(209) 846-9393
Total Tanks:	6	Region:	Not reported
Facility Type:	2	Other Type:	RENDERING

Facility ID:	14492		
Tank Num:	5	Container Num:	K 5
Tank Capacity:	8000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	B. L. WINCHESTER	Telephone:	(209) 846-9393
Total Tanks:	6	Region:	Not reported
Facility Type:	2	Other Type:	RENDERING

Facility ID:	14492		
Tank Num:	6	Container Num:	K 6
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	B. L. WINCHESTER	Telephone:	(209) 846-9393
Total Tanks:	6	Region:	Not reported
Facility Type:	2	Other Type:	RENDERING

38 **DUBOIS RANCH** UST U001588475
19200 WEST JENSEN AVENUE N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

DUBOIS RANCH (Continued) U001588475

UST:

Facility ID:	68421		
Tank Num:	1	Container Num:	1
Tank Capacity:	10000	Year Installed:	1981
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	/4 2 inches
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-7581
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	68421		
Tank Num:	2	Container Num:	2
Tank Capacity:	550	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-7581
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	68421		
Tank Num:	3	Container Num:	3
Tank Capacity:	10000	Year Installed:	1980
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	1/4 inches
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7581
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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38 **1X L. HARDY FARMS** HWIS S100851403
19200 WEST JENSEN AVE N/A
KERMAN, CA 93630

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38 **LAKE RANCH** UST U001588584
19200 WEST JENSEN N/A
KERMAN, CA 93630

UST:

Facility ID:	68982		
Tank Num:	1	Container Num:	1
Tank Capacity:	10000	Year Installed:	Not reported
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	X centimeters
Leak Detection:	None		
Contact Name:	MIGUEL GASTELUM	Telephone:	(209) 275-1500
Total Tanks:	4	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
	LAKE RANCH (Continued)		U001588584

Facility ID:	68982		
Tank Num:	2	Container Num:	2
Tank Capacity:	10000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	MIGUEL GASTELUM	Telephone:	(209) 275-1500
Total Tanks:	4	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Facility ID:	68982		
Tank Num:	3	Container Num:	3
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	MIGUEL GASTELUM	Telephone:	(209) 275-1500
Total Tanks:	4	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Facility ID:	68982		
Tank Num:	4	Container Num:	4
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	MIGUEL GASTELUM	Telephone:	(209) 275-1500
Total Tanks:	4	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
39	LA FE MARKET 2144 MADERA AVE S KERMAN, CA 93630	LUST	S101330132 N/A

LUST:

Case Number:	5T10000512	Cross Street:	CENTRAL
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Gasoline		
Lead Agency:	Local Agency		
Case Type:	Undefined		
Status:	Pollution characterization		
Review Date:	07/26/1994	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	Not reported
Pollution Char:	07/05/1994	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	Not reported
Close Date:	Not reported	Release Date:	07/05/1994

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
39	LA FE MARKET 2144 S MADERA AVE KERMAN, CA 93630	LUST	S102267173 N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
	LA FE MARKET (Continued)		S102267173
	LUST Region 5: Respble Party: ROXANNA MENDOZA Case Type: Undefined Pilot Program: No Staff Initials: RWW County: FRESNO Status: Pollution characterization Substance: GASOLINE Case Number: 5T10000512		
39	**LA - FE MKT** **2130 SO. MADERA** **KERMAN, CA 93630**	UST	U001588583 N/A
	UST: Facility ID: 54719 Tank Num: 1 Tank Capacity: 550 Tank Used for: PRODUCT Type of Fuel: UNLEADED Leak Detection: None Contact Name: Not reported Total Tanks: 2 Facility Type: 1 Container Num: 1 Year Installed: Not reported Tank Constrctn: Not reported Telephone: (209) 846-9998 Region: Not reported Other Type: Not reported		
	Facility ID: 54719 Tank Num: 2 Tank Capacity: 550 Tank Used for: PRODUCT Type of Fuel: PREMIUM Leak Detection: None Contact Name: Not reported Total Tanks: 2 Facility Type: 1 Container Num: 92 Year Installed: Not reported Tank Constrctn: Not reported Telephone: (209) 846-9998 Region: Not reported Other Type: Not reported		
40	**W.D. SPIKES** **2333 SO. VINELAND** **KERMAN, CA 93630**	UST	U001588700 N/A
	UST: Facility ID: 33250 Tank Num: 1 Tank Capacity: 550 Tank Used for: Not Reported Type of Fuel: Not Reported Leak Detection: None Contact Name: Not reported Total Tanks: 1 Facility Type: 2 Container Num: 1 Year Installed: Not reported Tank Constrctn: Not reported Telephone: (209) 846-8479 Region: Not reported Other Type: Not reported		
41	**BILL CIAPESSONI** **2400 S JAMESON AVE** **FRESNO, CA 93706**	Ca. FID	S101621535 N/A
41	**BILL CIAPESSONI** **2400 S. JAMESON** **FRESNO, CA 93706**	UST	U001591518 N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

BILL CIAPESSONI (Continued) U001591518

UST:

Facility ID:	15638		
Tank Num:	1	Container Num:	2
Tank Capacity:	2000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-9428
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	15638		
Tank Num:	2	Container Num:	#1
Tank Capacity:	550	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-9428
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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42 **HOWARD HUFFMAN** UST U001591675
10600 W. ANNADALE N/A
FRESNO, CA 93706

UST:

Facility ID:	40311		
Tank Num:	1	Container Num:	1
Tank Capacity:	340	Year Installed:	1969
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	12 gauge
Leak Detection:	Visual, Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-7221
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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42 **HOWARD HUFFMAN** Ca. FID S101621657
10600 W ANNADALE AVE N/A
FRESNO, CA 93706

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43 **GEORGESON FARMS** UST U001588514
2503 S. SYCAMORE N/A
KERMAN, CA 93630

UST:

Facility ID:	49043		
Tank Num:	1	Container Num:	1
Tank Capacity:	550	Year Installed:	1952
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	3/16 inches
Leak Detection:	None		
Contact Name:	C.E. GEORGESON	Telephone:	(209) 846-8326
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
44	DAVE MARTIN 2515 S. BISHOP KERMAN, CA 93630	UST	U001588466 N/A

UST:

Facility ID:	34486		
Tank Num:	1	Container Num:	1
Tank Capacity:	3000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor, None		
Contact Name:	Not reported	Telephone:	(209) 846-9433
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

45	ALMA FURTADO 2536 S. GOLDENROD KERMAN, CA 93630	UST	U001588426 N/A

UST:

Facility ID:	43573		
Tank Num:	1	Container Num:	1
Tank Capacity:	0	Year Installed:	1979
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-9636
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	HOME

46	JACK JONES FARMS 4566 S JAMES RD TRANQUILLITY, CA 93668	Ca. FID	S101621354 N/A

46	JACK JONES FARMS 4566 S. JAMES RD. TRANQUILLITY, CA 93668	UST	U001591186 N/A

UST:

Facility ID:	28436		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 698-7871
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

47	BEVERLY MARTIN 2727 SO BISHOP KERMAN, CA 93630	UST	U001588442 N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

MAVIN H. GEORGESON (Continued) U001588606

UST:

Facility ID:	35227		
Tank Num:	1	Container Num:	66
Tank Capacity:	1000	Year Installed:	1977
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-7353
Total Tanks:	1	Region:	Not reported
Facility Type:	Not reported	Other Type:	Not reported

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54 **KERMAN TRACTOR REPAIR** RCRIS-SQG 1000595031
3690 S MADERA AVE FINDS CAD983589219
KERMAN, CA 93630

RCRIS:
Owner: JAMES BROWN
(415) 555-1212
Contact: BROWN JAMES
(209) 846-6534

Waste	Quantity	Info Source
D001	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

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55 **WEIS FARMS** UST U001588703
13728 W CENTRAL N/A
KERMAN, CA 93630

UST:

Facility ID:	38300		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-8632
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	38300		
Tank Num:	2	Container Num:	2
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-8632
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

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56 **KERMAN RANCH** UST U001588575
14011 W. CENTRAL AVE. N/A
KERMAN, CA 93630

Map ID / Direction / Distance	Site	Database(s)	EDR ID Number / EPA ID Number

EUGENE NORD RANCH (Continued) U001588485

Facility ID:	27963		
Tank Num:	2	Container Num:	#2
Tank Capacity:	550	Year Installed:	1964
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	OWNER	Telephone:	(209) 846-9665
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

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51 **OLSON FARMS INC.** UST U001588625
16091 WEST NORTH AVE. N/A
KERMAN, CA 93630

UST:

Facility ID:	64262		
Tank Num:	1	Container Num:	1
Tank Capacity:	550	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	PREMIUM	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7367
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	64262		
Tank Num:	2	Container Num:	2
Tank Capacity:	550	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-7367
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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52 **NORLAKE TURKEY FARM** UST U001591798
19000 NORTH AVE. N/A
KERMAN, CA 93706

UST:

Facility ID:	53147		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	1942
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 268-2711
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	RAISING TURKEYS

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53 **MAVIN H. GEORGESON** UST U001585506
3498 SO. MADERA AVE N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
	MAVIN H. GEORGESON (Continued)		U001588606

UST:

Facility ID:	35227		
Tank Num:	1	Container Num:	66
Tank Capacity:	1000	Year Installed:	1977
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	Not reported	Telephone:	(209) 846-7353
Total Tanks:	1	Region:	Not reported
Facility Type:	Not reported	Other Type:	Not reported

---

54 **KERMAN TRACTOR REPAIR** RCRIS-SQG 1000595031
3690 S MADERA AVE FINDS CAD983589219
KERMAN, CA 93630

RCRIS:
Owner: JAMES BROWN
(415) 555-1212
Contact: BROWN JAMES
(209) 846-6534

Waste	Quantity	Info Source
D001	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

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55 **WEIS FARMS** UST U001588703
13728 W CENTRAL N/A
KERMAN, CA 93630

UST:

Facility ID:	38300		
Tank Num:	1	Container Num:	1
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-8632
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

Facility ID:	38300		
Tank Num:	2	Container Num:	2
Tank Capacity:	500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 846-8632
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	Not reported

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56 **KERMAN RANCH** UST U001588575
14011 W. CENTRAL AVE. N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

KERMAN RANCH (Continued) U001588575

UST:

Facility ID:	40633		
Tank Num:	1	Container Num:	K1
Tank Capacity:	1000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 674-8897
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

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57 **TRANQUILITY HIGH SCHOOL** LUST S101329695
6052 JUANCHE TRIO S N/A
TRANQUILITY, CA 93668

LUST:

Case Number:	5T10000057	Cross Street:	Not reported
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Diesel		
Lead Agency:	Local Agency		
Case Type:	Undefined		
Status:	Pollution characterization		
Abate Method:	Excavate and Treat - remove contaminated soil and treat (includes spreading or land farming)		
Review Date:	12/24/1987	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	Not reported
Pollution Char:	12/24/1987	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	Not reported
Close Date:	Not reported	Release Date:	12/20/1987

LUST Region 5:

Respble Party:	TRANQUILITY SCHOOL DISRICT	Substance:	DIESEL
Case Type:	Undefined		
Pilot Program:	No		
Staff Initials:	RWW	Case Number:	5T10000057
County:	FRESNO		
Status:	Pollution characterization		

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57 **TRANQUILITY HIGH SCHOOL** Cortese S100223934
JUANCHE TRIO S. (6052) N/A
TRANQUILLITY, CA 93668

CORTESE:
Facility ID: 10-000088 Data Source: LTNKA

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58 **A & H FARMS** UST U001588408
5001 S. HOWARD AVE N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

A & H FARMS (Continued) U001588408

UST:

Facility ID:	18608		
Tank Num:	1	Container Num:	1
Tank Capacity:	1000	Year Installed:	1958
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8758
Total Tanks:	5	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Facility ID:	18608		
Tank Num:	2	Container Num:	2
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8758
Total Tanks:	5	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Facility ID:	18608		
Tank Num:	3	Container Num:	3
Tank Capacity:	1000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8758
Total Tanks:	5	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Facility ID:	18608		
Tank Num:	4	Container Num:	4
Tank Capacity:	8000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8758
Total Tanks:	5	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

Facility ID:	18608		
Tank Num:	5	Container Num:	5
Tank Capacity:	1000	Year Installed:	1962
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	None		
Contact Name:	Not reported	Telephone:	(209) 846-8758
Total Tanks:	5	Region:	Not reported
Facility Type:	2	Other Type:	FARMING

---

59 **ABERCROMBIE FARMS** UST U001588412
16110 WEST. AMERICAN AV N/A
KERMAN, CA 93630

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

ABERCROMBIE FARMS (Continued) U001588412

UST:

Facility ID:	31363		
Tank Num:	1	Container Num:	001
Tank Capacity:	2000	Year Installed:	1974
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Visual, Stock Inventor		
Contact Name:	MATT ABERCROMBIE	Telephone:	(209) 846-9633
Total Tanks:	1	Region:	Not reported
Facility Type:	2	Other Type:	FARM

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60 **AMERICAN AVENUE LANDFILL** WMUDS S101310157
18950 W. AMERICAN AVENUE Ca. WDS N/A
SAN JOAQUIN, CA 93660

WMUDS:

Date of Last Facility Edit:	Not reported
Last Facility Editors:	Not reported
Waste Discharge System ID:	5D100307006
Solid Waste Information ID:	10-AA-0009
Waste Discharge System:	Yes
Solid Waste Assessment Test Program:	Yes
Toxic Pits Cleanup Act Program:	No
Resource Conservation Recovery Act Program:	No
Department of Defense:	Not reported
Regional Board Staff Initial:	5F
Open to Public:	Not reported
Number of WMUDS at Facility:	2
Facility Contact:	Not reported
Facility Telephone:	(209) 846-6138
Primary Standard Industrial Classification:	4953
Secondary Standard Industrial Classification:	Not reported
Solid Waste Assessment Test Program Name:	FRESNO COUNTY
Self Monitoring Report Frequency:	Quarterly Submittal
Threat to Water Quality:	Major Threat to Water Quality
NPID:	Not reported
Tonnage:	178
Facility Type:	Solid Waste Site-Class II - A solid waste facility at which designated wastes may be treated or stored.
Complexity:	Any facility having a physical, chemical, or biological waste treatment system (except forseptic systems with subsurface disposal), or any Class II or III disposal site, orfacilities without treatment systems that are complex, such as marinas with petroleumproducts, solid wastes, and sewage pump out facilities.
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under WasteDischarge Requirements. Those facilities that are not under Waste Discharge Requirements(NURDs) are coded as ACTIVE when: 1) there is an active enforcement order for the facility,2) there is a significant violation that has not been resolved to the satisfaction of theRegional Board, 3) after an inspection further action is required to mitigate a problem atthe facility, or 4) there is some problem that the Regional Board considers significantenough to warrant classification as an ACTIVE facility.

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number

AMERICAN AVENUE LANDFILL (Continued) S101310157

Prime Waste: Solid Wastes - Designated/Influent or Solid Wastes that pose a significant threat to water quality because of their high concentrations (E.G., BOD, Hardness, TRF, Chloride). 'Manageable' hazardous wastes (E.G., inorganic salts and heavy metals) are included in this category.
Agency: FRESNO, COUNTY OF
2220 TULARE STREET
FRESNO, CA 93721
Agency Contact: RON FRYE
Agency Tele: (209) 453-5059
Agency Type: County
Landowner: FRESNO COUNTY
4499 E. KINGS CANYON RD
FRESNO 93702
Landowner Cont: MS. ANN GETZ ZIMMERMAN
Landowner Tele: (209) 453-3806

WDS:
Facility ID: Tulare Lake 100307006 Facility Telephone (209) 846-6138
Facility Contact Not reported Regional Board #: Not reported
Agency Name: FRESNO, COUNTY OF
2220 TULARE STREET
FRESNO, CA 93721
Agency Contact: RON FRYE Agency Phone: (209) 453-5059
Design Flow: 0.0000 Million Gal/Day Baseline Flow: 0.0000 Million Gal/Day
Facility Type: Solid Waste Site-Class II - A solid waste facility at which designated wastes may be treated or stored.
Agency Type: County
Waste Type: Solid Wastes - Designated/Influent or Solid Wastes that pose a significant threat to water quality because of their high concentrations (E.G., BOD, Hardness, TRF, Chloride). 'Manageable' hazardous wastes (E.G., inorganic salts and heavy metals) are included in this category.
Standard Industrial Classification Code: 4953

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60 **AMERICAN AVENUE DISPOSAL SITE** FINDS 1000360833
18950 W AMERICAN AVE RCRIS-LQG CAD980887566
KERMAN, CA 93630

ORPHAN ARY

City	EDR ID	Site Name	Site Adu.	Zip	Database(s)	Facility ID
FRESNO	1000251903	PACIFIC AIRMOTIVE	CHANDLER FLD	93706	FINDS, CERC-NFRAP	
FRESNO	S101480249	CHURCH AND FRUIT JUNKYARD	CHURCH / FRUIT AVENUES	93706	Cal-Sites	
FRESNO	U001591833	ROADWAY EXPRESS, INC.	2440 CHURCH AVE.	93706	UST, LUST	00000007355
FRESNO	1000196849	PG&E GAS PLANT FRESNO 325 3	NW COR N THORNE AVE& BUTTON AV	93706	FINDS, CERC-NFRAP	
FRESNO	S101272707	FRESNO SANITARY LANDFILL	SW CORNER OF JENSEN / WEST AVENUES	93706	AWP, Cal-Sites	
FRESNO	S100925901	1X CAREY OIL	30 E DIVISIDARO	93706	HWIS	
FRESNO	S100935418	FLORENZIO POZAS	2615 E DOROTHY	93706	HWIS	
FRESNO	1000288814	SHELL S/S 204-2886-6501	2595 S E AVE	93706	FINDS, RCRIS-LQG	
FRESNO	S101480159	MOHAWK PETROLEUM CORP	2619 S EAST AVE	93706	Cal-Sites	
FRESNO	1000196845	PG&E GAS PLANT FRESNO 325 3A	F/MARIPOSA BET F G FRESNO TULA	93706	CERCLIS, FINDS	
FRESNO	1000708997	PG & E FRESNO 2	FRESNO & TULARE ST	93706	CERCLIS, FINDS	
FRESNO	1000383622	FRESNO FLEET DIV CITY OF	2175 G ST BLDG F	93706	FINDS, RCRIS-LQG	
FRESNO	S100862579	FRESNO CITY OF P/W TRAFFIC ENGR	2135 G ST BUILDING V	93706	HWIS	
FRESNO	S100935677	FRESNO FLEET DIV CITY OF	2175 G ST BLDG F	93706	HWIS	
KERMAN	S100187604	KERMAN CITY DUMPSITE #1	AMERICAN AVENUE	93630	Cal-Sites	
KERMAN	S100942336	PGE/KERMAN SUB STATION	INTERSECTION OF MADERA /	93630	HWIS	
KERMAN	S101480241	KERMAN CITY DUMPSITE #2	NEAR LASSEN / JENSEN	93630	Cal-Sites	
KERMAN	1000144949	TEXACO INC RAISIN CITY FLD KER	8 MI SO OF	93630	FINDS, CERC-NFRAP	
KERMAN	1000589862	BREA AGRI SERV KERMAN	17134 W WHITESBRIDGE RD	93630	FINDS, Del. Cal-Sites	
KERMAN	1000251233	PACIFIC BELL	YUBA & BUTTE AVENUES	93630	FINDS, RCRIS-LQG	
MONTEREY	S102265986	PRESIDIO OF MONTEREY ANNEX (FO	BLDG 4220 PRESIDIO OF MONTEREY ANNEX		LUST	
MONTEREY	S100875180	SUMITOMO BANK	CANYON DEL REY BLVD		HWIS	
MONTEREY	S100933825	DEPT OF TOXIC SUBSTANCES CONTROL	COUNTY OF MONTEREY		HWIS	
MONTEREY	S100943566	RITZ CAMERA CENTERS #346	DEL MONTE SHOPPING CENTER		HWIS	
MONTEREY	S100861713	EXXON COMPANY USA #70227	1042 DEL MONTE		HWIS	
MONTEREY	S100947628	US NAVAL POSTGRADUATE SCHOOL	DEL MONTE AVE		HWIS	
MONTEREY	S100868498	MONTEREY PRINTING	272 E GARVEY AVE		HWIS	
MONTEREY	S100853374	1X US NAVY	9TH / SLOAT-ENG. BLDG.		HWIS	
ORO LOMA	S100833190	EAGLE FIELD AIRPORT	ALTHEA AVENUE WEST OF RUSSEL	93706	Ca. BEP, Cal-Sites	
SAN JOAQUIN	1000165160	WILBUR-ELLIS CO	COLORADO & EL DORADO AVE'S	93660	FINDS, RCRIS-LQG	
SAN JOAQUIN	1000318713	TRANQUILITY MUNI ARPT	COLORADO AVE	93660	FINDS, CERC-NFRAP	
SAN JOAQUIN	S100187641	SAN JOAQUIN DISPOSAL SITE	SE CORNER BET. MANNING / YOLO	93660	Cal-Sites	
TRANQUILITY	S101480230	TRANQUILITY AIRPORT	CONTRA COSTA / COLORADO STREETS	93668	Cal-Sites	
TRANQUILITY	S100714190	TRANQUILITY DUMPSITE	NE CORNER JAMES / MANNING	93668	Cal-Sites	
TRANQUILITY	S101329945	WESTSIDE DISTRIBUTING	5638 JAMES S	93668	LUST	
TRANQUILLITY	U001591182	GILMORE RANCH	JAMES RD	93668	UST	00000063452
TRANQUILLITY	U001591197	WESTSIDE BEACON DISTRIBUTOR	5638 JAMES RD.	93668	UST	00000011247

DETAILED ORPHAN LISTING

Site	Database(s)	EDR ID Number EPA ID Number
PACIFIC AIRMOTIVE **CHANDLER FLD** **FRESNO, CA 93706**	FINDS CERC-NFRAP	1000251903 CAD980636906

CERCLIS-NFRAP Classification Data:

Site Incident Category:	Not reported	Federal Facility:	NO
Ownership Status:	UNKNOWN	NPL Status:	NOT ON NPL
EPA Notes:	Not reported		

CERCLIS-NFRAP Assessment History:

Assessment:	DISCOVERY	Completed:	06/01/81
Assessment:	PRELIMINARY ASSESSMENT	Completed:	08/01/85
Assessment:	PRELIMINARY ASSESSMENT	Completed:	10/01/88

CHURCH AND FRUIT JUNKYARD — Cal-Sites — S101480249
CHURCH / FRUIT AVENUES — N/A
FRESNO, CA 93706

CAL-SITES:

Facility ID	10490090
Status Date:	01/31/94
Status:	COM (CERTIFIED OPERATION AND MAINTENANCE, ALL PLANNED ACTIVITIES IMPLEMENTED, REMEDIATION CONTINUES)

ROADWAY EXPRESS, INC. — UST — U001591833
2440 CHURCH AVE. — LUST — N/A
FRESNO, CA 93706

LUST:

Case Number:	5T10000449	Cross Street:	CHERRY
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Gasoline		
Lead Agency:	Local Agency		
Case Type:	Undefined		
Status:	Pollution characterization		
Review Date:	10/21/1993	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	Not reported
Pollution Char:	Not reported	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	Not reported
Close Date:	Not reported	Release Date:	09/17/1993

LUST Region 5:

Respble Party:	ROADWAY EXPRESS, INC.	Substance:	GASOLINE
Case Type:	Undefined		
Pilot Program:	No		
Staff Initials:	RWW	Case Number:	5T10000449
County:	FRESNO		
Status:	Pollution characterization		

UST:

Facility ID:	7355		
Tank Num:	1	Container Num:	1-D
Tank Capacity:	10068	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	DIESEL	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	J. H. BOGEN	Telephone:	(209) 233-5251
Total Tanks:	2	Region:	Not reported
Facility Type:	2	Other Type:	MOTOR FREIGHT TERMIN

Site	Database(s)	EDR ID Number EPA ID Number
ROADWAY EXPRESS, INC. (Continued)		U001591833

Facility ID: 7355
Tank Num: 2
Tank Capacity: 10068
Tank Used for: PRODUCT
Type of Fuel: REGULAR
Leak Detection: Stock Inventor
Contact Name: J. H. BOGEN
Total Tanks: 2
Facility Type: 2
Container Num: 1-G
Year Installed: Not reported
Tank Con.strctn: Not reported
Telephone: (209) 233-5251
Region: Not reported
Other Type: MOTOR FREIGHT TERMIN

PG&E GAS PLANT FRESNO 325 3
NW COR N THORNE AVE& BUTTON AV
FRESNO, CA 93706

FINDS 1000196849
CERC-NFRAP CAD981415979

CERCLIS-NFRAP Classification Data:
Site Incident Category: Not reported
Ownership Status: UNKNOWN
EPA Notes: Not reported
Federal Facility: NO
NPL Status: NOT ON NPL

CERCLIS-NFRAP Assessment History:
Assessment: DISCOVERY — Completed: 07/01/19
Assessment: PRELIMINARY ASSESSMENT — Completed: 12/01/19
Assessment: SCREENING SITE INSPECTION — Completed: 09/08/19

FRESNO SANITARY LANDFILL
SW CORNER OF JENSEN / WEST AVENUES
FRESNO, CA 93706

AWP S101272707
Cal-Sites N/A

CAL-SITES:
Facility ID 10490097
Status Date: 01/01/89
Status: AWP (ANNUAL WORKPLAN (AWP) - ACTIVE SITE)

AWP Facility ID: 10490097 Facility Type: NPRP

1X CAREY OIL
30 E DIVISIDARO
FRESNO, CA 93706

HWIS S100925901
N/A

FLORENZIO POZAS
2615 E DOROTHY
FRESNO, CA 93706

HWIS S100935418
N/A

SHELL S/S 204-2886-6501
2595 S E AVE
FRESNO, CA 93706

FINDS 1000288814
RCRIS-LQG CAD981465636

Site	Database(s)	EDR ID Number EPA ID Number

SHELL S/S 204-2886-6501 (Continued) 1000288814

RCRIS:
Owner: SHELL OIL CO
(415) 555-1212
Contact: ENVIRONMENTAL MANAGER
(415) 555-1212

Waste	Quantity	Info Source
D008	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

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MOHAWK PETROLEUM CORP Cal-Sites S101480159
2619 S EAST AVE N/A
FRESNO, CA 93706

CAL-SITES:
Facility ID: 10290139
Status Date: 10/03/95
Status: REFOA (OTHER AGENCY LEAD)

PG&E GAS PLANT FRESNO 325 3A CERCLIS 1000196845
F/MARIPOSA BET F G FRESNO TULA FINDS CAD981415912
FRESNO, CA 93706

CERCLIS Classification Data:
Site Incident Category: Not reported
Ownership Status: UNKNOWN
EPA Notes: Not reported
Federal Facility: NO
NPL Status: NOT ON NPL

CERCLIS Assessment History:

Assessment:	DISCOVERY	Completed: 07/01/1986
Assessment:	PRELIMINARY ASSESSMENT	Completed: 12/01/1987
Assessment:	SCREENING SITE INSPECTION	Completed: 09/08/1989

CERCLIS Site Status:
This site is currently under investigation by the government to assess the extent of further action

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PG & E FRESNO 2 CERCLIS 1000708997
FRESNO & TULARE ST FINDS CAD983650102
FRESNO, CA 93706

CERCLIS Classification Data:
Site Incident Category: Not reported
Ownership Status: PRIVATE
EPA Notes: Not reported
Federal Facility: NO
NPL Status: NOT ON NPL

CERCLIS Assessment History:
Assessment: DISCOVERY Completed: 10/19/1992

CERCLIS Site Status:
This site is currently under investigation by the government to assess the extent of further action

DETAILED ORPHAN LISTING

Site	Database(s)	EDR ID Number EPA ID Number
FRESNO FLEET DIV CITY OF **2175 G ST BLDG F** **FRESNO, CA 93706**	FINDS RCRIS-LQG	1000383622 CAD981974132

RCRIS:
Owner: CITY OF FRESNO
(415) 555-1212

Contact: ENVIRONMENTAL MANAGER
(209) 488-1483

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D000	.00000 (N)	Notification	D001	.00000 (N)	Notification
F002	.00000 (N)	Notification	F004	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

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FRESNO CITY OF P/W TRAFFIC ENGR — HWIS — S100862579
2135 G ST BUILDING V — N/A
FRESNO, CA 93706

FRESNO FLEET DIV CITY OF — HWIS — S100935677
2175 G ST BLDG F — N/A
FRESNO, CA 93706

KERMAN CITY DUMPSITE #1 — Cal-Sites — S100187604
AMERICAN AVENUE — N/A
KERMAN, CA 93630

CAL-SITES:
Facility ID: 10490004
Status Date: 11/16/94
Status: REFOA (OTHER AGENCY LEAD)

PGE/KERMAN SUB STATION — HWIS — S100942338
INTERSECTION OF MADERA / — N/A
KERMAN, CA 93630

KERMAN CITY DUMPSITE #2 — Cal-Sites — S101480241
NEAR LASSEN / JENSEN — N/A
KERMAN, CA 93630

CAL-SITES:
Facility ID: 10490054
Status Date: 11/16/94
Status: REFOA (OTHER AGENCY LEAD)

TEXACO INC RAISIN CITY FLD KER — FINDS — 1000144949
8 MI SO OF — CERC-NFRAP — CAD980696157
KERMAN, CA 93630

CERCLIS-NFRAP Classification Data:
Site Incident Category: Not reported
Ownership Status: UNKNOWN
EPA Notes: Not reported
Federal Facility: NO
NPL Status: NOT ON NPL

CERCLIS-NFRAP Assessment History:
Assessment: DISCOVERY
Completed: 12/01/79

DETAILED ORPHAN LISTING

Site	Database(s)	EDR ID Number EPA ID Number

TEXACO INC RAISIN CITY FLD KER (Continued) 1000144949

Assessment: PRELIMINARY ASSESSMENT Completed: 07/01/80
Assessment: PRELIMINARY ASSESSMENT Completed: 01/17/90
CERCLIS-NFRAP Alias Name(s):
RIPPER DAN AND HAMILTON LEASES
SURFLUH LEASE

BREA AGRI SERV KERMAN FINDS 1000589862
17134 W WHITESBRIDGE RD Del. Cal-Sites CAD000625749
KERMAN, CA 93630

Other Pertinent Environmental Activity Identified at Site:
corporation or facility involved with pesticides production.

PACIFIC BELL FINDS 1000251233
YUBA & BUTTE AVENUES RCRIS-LQG CAT080020670
KERMAN, CA 93630

RCRIS:
Owner: THE PACIFIC TELEPHONE AND TELEGRAPH CO
(415) 555-1212
Contact: ENVIRONMENTAL MANAGER
(408) 491-6029

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D002	.00000 (N)	Notification	D004	.00000 (N)	Notification

(P) = Pounds, (K) = Kilograms, (M) = Metric Tons, (T) = Tons, (N) = Not Reported

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PRESIDIO OF MONTEREY ANNEX (FO LUST S102265986
BLDG 4220 PRESIDIO OF MONTEREY ANNEX N/A
MONTEREY, CA

Site	Database(s)	EDR ID Number EPA ID Number

PRESIDIO OF MONTEREY ANNEX (FO (Continued) S102265986

LUST Region 3:

Enter Date:	08/14/96	PROP65 Mail:	0
Emergency:	0	Case Number:	2704
Reported By:	MAMERTO JORVINA 1200 AGUAJITO RD, MONTEREY, CA 93940		
Representing:	Local Agency		
Respble Party:	P.O.M. ANNEX (FORMER FT. ORD) ATTN: ATZP-EP PRESIDIO OF MONTEREY, CA 93944-5006 (408) 393-128		
Operator:	Not reported	Contact:	MELISSA HLEBASKO
Facility Tel:	Not reported	Cross Street:	NORTH SOURTH RD/GIENGLING
Local Agency:	27000	Reg Board:	3
Chemical:	Gasoline	Quantity:	Not reported
Discovered:	05/07/96	Stop Date:	04/23/96
How Found:	Tank Closure	How Stopped:	Close Tank
Source:	Piping		
Cause:	Unknown		
Lead Agency:	Local Agency		
Case Type:	Undefined		
Priority:	3A2	Staff Initials:	JWG
Status:	Preliminary site assessment workplan submitted		
Abate Method:	OT		
Refer Date:	Not reported	Review Date:	Not reported
R.P. Search:	Search Not Completed	Funding:	0
Confirm Leak:	Not reported	Workplan:	Not reported
Prelim Assess:	Not reported	Pollution Char:	Not reported
Remed Plan:	Not reported	Remed Action:	Not reported
Monitoring:	Not reported	Close Date:	Not reported
Enforce Type:	Not reported		
Enforce Date:	Not reported	Pilot Program:	0
First Tracking:	Not reported	Tracking Use:	Not reported
Scnd Tracking:	Not reported	Tracking Use:	Not reported
Third Tracking:	Not reported	Tracking Use:	Not reported
Interim Action:	0	Subst Word:	Not reported
Summary:	SITE ASSESSMENT IN PROCESS: REMEDITION SHOULD BE SVE SYSTEM		

SUMITOMO BANK HWIS S100875180
CANYON-DEL REY BLVD N/A
MONTEREY, CA

DEPT OF TOXIC SUBSTANCES CONTROL HWIS S100933825
COUNTY OF MONTEREY N/A
MONTEREY, CA

RITZ CAMERA CENTERS #346 HWIS S100943566
DEL MONTE SHOPPING CENTER N/A
MONTEREY, CA

DETAILED ORPHAN LISTING

Site	Database(s)	EDR ID Number EPA ID Number
EXXON COMPANY USA #70227 1042 DEL MONTE MONTEREY, CA	HWIS	S100861713 N/A
US NAVAL POSTGRADUATE SCHOOL DEL MONTE AVE MONTEREY, CA	HWIS	S100947628 N/A
MONTEREY PRINTING 272 E GARVEY AVE MONTEREY, CA	HWIS	S100868498 N/A
1X US NAVY 9TH / SLOAT-ENG. BLDG. MONTEREY, CA	HWIS	S100853374 N/A
EAGLE FIELD AIRPORT ALTHEA AVENUE WEST OF RUSSEL ORO LOMA, CA 93706	Ca. BEP Cal-Sites	S100833190 N/A

CAL-SITES:
Facility ID 10450002
Status Date: 05/14/91
Status: PEAR (PRELIMINARY ENDANGERMENT ASSESSMENT (PEA) REQUIRED)

WILBUR-ELLIS CO — FINDS 1000165160
COLORADO & EL DORADO AVE'S — RCRIS-LQG CAD029273851
SAN JOAQUIN, CA 93660

RCRIS:
Owner: WILBUR-ELLIS COMPANY
(415) 555-1212
Contact: ENVIRONMENTAL MANAGER
(209) 226-1811

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D001	.00000 (N)	Notification	D002	.00000 (N)	Notification
D004	.00000 (N)	Notification	P020	.00000 (N)	Notification
P035	.00000 (N)	Notification	P039	.00000 (N)	Notification
P044	.00000 (N)	Notification	P050	.00000 (N)	Notification
P051	.00000 (N)	Notification	P066	.00000 (N)	Notification
P070	.00000 (N)	Notification	P071	.00000 (N)	Notification
P088	.00000 (N)	Notification	P089	.00000 (N)	Notification
P090	.00000 (N)	Notification	P094	.00000 (N)	Notification
U011	.00000 (N)	Notification	U036	.00000 (N)	Notification
U062	.00000 (N)	Notification	U185	.00000 (N)	Notification
U224	.00000 (N)	Notification	U239	.00000 (N)	Notification

(P) = Pounds, (K) = Kilograms, (M) = Metric Tons, (T) = Tons, (N) = Not Reported

Other Pertinent Environmental Activity Identified at Site:
corporation or facility involved with pesticides production.

Site	Database(s)	EDR ID Number EPA ID Number
TRANQUILITY MUNI ARPT **COLORADO AVE** **SAN JOAQUIN, CA 93660**	FINDS CERC-NFRAP	1000318713 CAD980735625

CERCLIS-NFRAP Classification Data:

Site Incident Category:	Not reported	Federal Facility:	NO
Ownership Status:	UNKNOWN	NPL Status:	NOT ON NPL
EPA Notes:	Not reported		

CERCLIS-NFRAP Assessment History:

Assessment:	DISCOVERY	Completed:	10/01/79
Assessment:	PRELIMINARY ASSESSMENT	Completed:	12/01/86
Assessment:	PRELIMINARY ASSESSMENT	Completed:	11/14/88

SAN JOAQUIN DISPOSAL SITE — Cal-Sites — S100187641
SE CORNER BET. MANNING / YOLO — N/A
SAN JOAQUIN, CA 93660

CAL-SITES:

Facility ID	10490073
Status Date:	07/19/82
Status:	REFRW (FORMER ANNUAL WORKPLAN SITE, REFERRED TO RWQCB)

TRANQUILITY AIRPORT — Cal-Sites — S101480230
CONTRA COSTA / COLORADO STREETS — N/A
TRANQUILITY, CA 93668

CAL-SITES:

Facility ID:	10450004
Status Date:	07/24/95
Status:	PEAR (PRELIMINARY ENDANGERMENT ASSESSMENT (PEA) REQUIRED)

TRANQUILITY DUMPSITE — Cal-Sites — S100714190
NE CORNER JAMES / MANNING — N/A
TRANQUILITY, CA 93668

CAL-SITES:

Facility ID	10490080
Status Date:	12/30/95
Status:	REFOA (OTHER AGENCY LEAD)

WESTSIDE DISTRIBUTING — LUST — S101329945
5638 JAMES S — N/A
TRANQUILITY, CA 93668

LUST:

Case Number:	5T10000319	Cross Street:	S PACIFIC RR
Reg Board:	Central Valley Region	Qty Leaked:	Not reported
Chemical:	Not reported		
Lead Agency:	Regional Board		
Case Type:	Aquifer affected		
Status:	Preliminary site assessment underway		
Review Date:	02/22/1996	Confirm Leak:	Not reported
Workplan:	Not reported	Prelim Assess:	06/04/1991
Pollution Char:	Not reported	Remed Plan:	Not reported
Remed Action:	Not reported	Monitoring:	Not reported
Close Date:	Not reported	Release Date:	06/04/1991

Site	Database(s)	EDR ID Number EPA ID Number

WESTSIDE DISTRIBUTING (Continued) S101329945

LUST Region 5:

Respble Party:	WESTSIDE DISTRIBUTING	Substance:	UNKNOWN
Case Type:	Aquifer affected		
Pilot Program:	No		
Staff Initials:	RWW	Case Number:	5T10000319
County:	FRESNO		
Status:	Preliminary site assessment underway		

GILMORE RANCH UST U001591182
JAMES RD N/A
TRANQUILLITY, CA 93668

UST:

Facility ID:	63452		
Tank Num:	1	Container Num:	1
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 372-6144
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	63452		
Tank Num:	2	Container Num:	2
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 372-6144
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	FARM

Facility ID:	63452		
Tank Num:	3	Container Num:	3
Tank Capacity:	0	Year Installed:	Not reported
Tank Used for:	WASTE		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	Visual		
Contact Name:	Not reported	Telephone:	(209) 372-6144
Total Tanks:	3	Region:	Not reported
Facility Type:	2	Other Type:	FARM

WESTSIDE BEACON DISTRIBUTOR UST U001591197
5638 JAMES RD. N/A
TRANQUILLITY, CA 93668

Site	Database(s)	EDR ID Number EPA ID Number
WESTSIDE BEACON DISTRIBUTOR (Continued)		U001591197

UST:

Facility ID:	11247		
Tank Num:	1	Container Num:	#4
Tank Capacity:	4000	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	Not Reported	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	JOHN SILVEIRA	Telephone:	(209) 698-5504
Total Tanks:	4	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	11247		
Tank Num:	2	Container Num:	#1
Tank Capacity:	2500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	JOHN SILVEIRA	Telephone:	(209) 698-5504
Total Tanks:	4	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	11247		
Tank Num:	3	Container Num:	#2
Tank Capacity:	2500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	REGULAR	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	JOHN SILVEIRA	Telephone:	(209) 698-5504
Total Tanks:	4	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

Facility ID:	11247		
Tank Num:	4	Container Num:	#3
Tank Capacity:	2500	Year Installed:	Not reported
Tank Used for:	PRODUCT		
Type of Fuel:	UNLEADED	Tank Constrctn:	Not reported
Leak Detection:	Stock Inventor		
Contact Name:	JOHN SILVEIRA	Telephone:	(209) 698-5504
Total Tanks:	4	Region:	Not reported
Facility Type:	1	Other Type:	Not reported

EPA Waste Codes Addendum

Code	Description
D000	NOT DEFINED
D001	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
D002	A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
D004	ARSENIC
D005	BARIUM
D007	CHROMIUM
D008	LEAD
D019	CARBON TETRACHLORIDE
D035	METHYL ETHYL KETONE
F001	THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLOROETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE, AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
F002	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
F003	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE

EPA Waste Codes Addendum

Code	Description
	ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
F004	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: CRESOLS AND CRESYLIC ACID, AND NITROBENZENE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
F005	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
P003	ACROLEIN
P003	2-PROPENAL
P005	ALLYL ALCOHOL
P005	2-PROPEN-1-OL
P013	BARIUM CYANIDE
P020	DINOSEB
P020	PHENOL, 2-(1-METHYLPROPYL)-4,6-DINITRO-
P023	ACETALDEHYDE, CHLORO-
P023	CHLOROACETALDEHYDE
P035	NOT DEFINED
P039	DISULFOTON
P039	PHOSPHORODITHIOIC ACID, O,O-DIETHYL S-[2-(ETHYLTHIO)ETHYL] ESTER
P041	DIETHYL-P-NITROPHENYL PHOSPHATE
P041	PHOSPHORIC ACID, DIETHYL 4-NITROPHENYL ESTER
P044	DIMETHOATE
P044	PHOSPHORODITHIOIC ACID, O,O-DIMETHYL S-[2-(METHYLAMINO)-2-OXOETHYL] ESTER
P048	2,4-DINITROPHENOL
P048	PHENOL, 2,4-DINITRO-

EPA Waste Codes Addendum

Code	Description
P050	ENDOSULFAN
P050	6,9-METHANO-2,4,3-BENZODIOXATHIEPIN, 6,7,8,9,10,10-HEXACHLORO-1,5,5A,6,9,9A-HEXAHYDRO- , 3-OXIDE
P051	2,7:3,6-DIMETHANONAPHTH [2,3-B]OXIRENE, 3,4,5,6,9,9-HEXACHLORO-1A,2,2A,3,6,6A,7,7A-OCTAHYDRO-, (1AALPHA,2BETA,2ABETA,3ALPHA,6ALPHA,6ABETA,7BETA, 7AALPHA)-, & METABOLITES
P051	ENDRIN
P051	ENDRIN, & METABOLITES
P066	ETHANIMIDOTHIOIC ACID, N-[[(METHYLAMINO)CARBONYL]OXY]-, METHYL ESTER
P066	METHOMYL
P070	ALDICARB
P070	PROPANAL, 2-METHYL-2-(METHYLTHIO)-, O-[(METHYLAMINO)CARBONYL]OXIME
P071	METHYL PARATHION
P071	PHOSPHOROTHIOIC ACID, O,O,DIMETHYL O-(4-NITROPHENYL) ESTER
P088	ENDOTHALL
P088	7-OXABICYCLO[2.2.1]HEPTANE-2,3-DICARBOXYLIC ACID
P089	PARATHION
P089	PHOSPHOROTHIOIC ACID, O,O-DIETHYL O-(4-NITROPHENYL) ESTER
P090	NOT DEFINED
P094	PHORATE
P094	PHOSPHORODITHIOIC ACID, O,O-DIETHYL S-[(ETHYLTHIO)METHYL] ESTER
P115	SULFURIC ACID, DITHALLIUM(1+) SALT
P115	THALLIUM(L) SULFATE
P120	VANADIUM OXIDE V2O5
P120	VANADIUM PENTOXIDE
U001	ACETALDEHYDE (I)
U001	ETHANAL (I)
U002	ACETONE (I)
U002	2-PROPANONE (I)

EPA Waste Codes Addendum

Code	Description
U011	AMITROLE
U011	1H-1,2,4-TRIAZOL-3-AMINE
U034	ACETALDEHYDE, TRICHLORO-
U034	CHLORAL
U036	CHLORDANE, ALPHA & GAMMA ISOMERS
U036	4,7-METHANO-1H-INDENE, 1,2,4,5,6,7,8,8-OCTACHLORO-2,3,3A,4,7,7A-HEXAHYDRO-
U045	METHANE, CHLORO- (I, T)
U045	METHYL CHLORIDE (I,T)
U062	CARBAMOTHIOIC ACID, BIS(1-METHYLETHYL)-, S-(2,3-DICHLORO-2-PROPENYL) ESTER
U062	DIALLATE
U080	METHANE, DICHLORO-
U080	METHYLENE CHLORIDE
U083	PROPANE, 1,2-DICHLORO-
U083	PROPYLENE DICHLORIDE
U103	DIMETHYL SULFATE
U103	SULFURIC ACID, DIMETHYL ESTER
U117	ETHANE, 1,1'-OXYBIS-(I)
U117	ETHYL ETHER (I)
U122	FORMALDEHYDE
U145	LEAD PHOSPHATE
U145	PHOSPHORIC ACID, LEAD(2+) SALT (2:3)
U159	2-BUTANONE (I,T)
U159	METHYL ETHYL KETONE (MEK) (I,T)
U185	BENZENE, PENTACHLORONITRO-
U185	PENTACHLORONITROBENZENE (PCNB)
U220	BENZENE, METHYL-
U220	TOLUENE

EPA Waste Codes Addendum

Code	Description
U224	NOT DEFINED
U226	ETHANE, 1,1,1-TRICHLORO-
U226	METHYL CHLOROFORM
U227	ETHANE, 1,1,2-TRICHLORO-
U227	1,1,2-TRICHLOROETHANE
U239	BENZENE, DIMETHYL- (I,T)
U239	XYLENE (I)
U359	ETHANOL, 2-ETHOXY-
U359	ETHYLENE GLYCOL MONOETHYL ETHER

****** TOTAL PROJECT COST SUMMARY ******

THIS ESTIMATE IS BASED ON THE SCOPE CONTAINED IN THE DRAFT FEASIBILITY REPORT
PROJECT: Pine Flat Dam, Mitigation
LOCATION: CALIFORNIA

U. S. ARMY CORPS OF ENGINEER
SACRAMENTO DISTRICT
P.O.C. FRANK Y.F. FONG, CHIEF, COST ENGINEERING

Current MCACES Estimate Prepared: 1-Oct-98
Effective Price Level (EPL): 1-Oct-98

ACCOUNT NO.	FEATURE DESCRIPTION	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESCALATED COST ESC. PRICING LEVEL 1-Oct-2000 COST ($K)	CNTG ($K)	TOTAL ($K)	FULLY FUNDED ESTIMATE(4 COST ($K)	CNTG ($K)	FULL ($K)
	FEDERAL COSTS										
6	FISH AND WILDLIFE, Mit.	23,237	4,663	20	27,900	24,491	4,892	29,383	29,825	5,956	35,781
18	CULT. RESRC PRESERV. (1	3	1	33	4	3	1	4	4	1	5
	SUBTOTAL FEDERAL & NON-FEDERAL CONSTRUCTION COSTS	23,240	4,664		27,904	24,494	4,893	29,387	29,829	5,957	35,786
1	LANDS AND DAMAGES (2	12	1	8	13	13	1	14	15	1	16
30	PLAN/ENGINEERING/DESIGN	2,647	701	26	3,348	2,859	757	3,616	3,348	887	4,235
31	CONSTRUCTION MANAGE'MT	1,896	373	20	2,269	2,048	402	2,450	2,592	508	3,100
	SUBTOTAL FEDERAL & NON-FEDERAL CONTRIBUTION	27,795	5,739		33,534	29,414	6,053	35,467	35,784	7,353	43,137
	NON-FEDERAL CONTRIBUTION (3	9,631	1,983		11,614	10,194	2,083	12,277	12,408	2,529	14,937
	TOTAL FEDERAL COSTS	$18,164	$3,756		$21,920	$19,220	$3,970	$23,190	$23,376	$4,824	$28,200
	NON-FEDERAL COSTS										
1	LANDS AND DAMAGES	250	56	22	306	264	69	333	288	75	363
	SUBTOTAL NON-FEDERAL	250	56		306	264	69	333	288	75	363
	NON-FEDERAL CONTRIBUTION (3	9,631	1,983		11,614	10,194	2,083	12,277	12,408	2,529	14,937
	TOTAL NON-FEDERAL COSTS	$9,881	$2,039		$11,920	$10,458	$2,152	$12,610	$12,696	$2,604	$15,300
	TOTAL FEDERAL & NON-FEDERAL COSTS	$28,045	$5,795		$33,840	$29,678	$6,122	$35,800	$36,072	$7,428	$43,500

GENERAL NOTES

(1 Cultural Resources Preservation costs associated with mitigation and/or data recovery up to one percent of the total Federal cost are not subject to cost sharing.
(2 Federal administrative costs for non-Federal land acquisition.
(3 Percentage used to Calculate Non-federal cash contribution is min. 35% of Combine Cost.
(4 The Fully Funded cost estimate was prepared in compliance with EC 11-2-179 published in March 2000.

DISTRICT APPROVED:

_____ CHIEF, COST ENGINEERING
_____ CHIEF, CIVIL DESIGN
_____ CHIEF, REAL ESTATE
_____ CHIEF, PLANNING
_____ CHIEF ENGINEERING
_____ CHIEF, CON-OPS
_____ CHIEF, PROGRAMS MANAGEMENT
_____ PROJECT MANAGER
_____ DDE (PM)

DIVISION APPROVED:

_____ CHIEF, COST ENGINEERING
_____ CHIEF, REAL ESTATE
_____ CHIEF, PROGRAMS MANAGEMENT
_____ DIRECTOR OF PPMD

APPROVED DATE: _____

****CONTRACT COST SUMMARY****

Current MCACES Estimate Prepared: 1-Oct-98
Effective Price Level (EPL): 1-Oct-98

ACCOUNT NO.	FEATURE DESCRIPTION	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESCALATED COST ESC. PRICING LEVEL:1-Oct-2000 OMB (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	FULLY FUNDED ESTIMATE FEATURE OMB MID PT (%)	COST ($K)	CNTG ($K)	FULL ($K)
	MULTI-LEVEL INTAKE STRUCTURE												
	FEDERAL COSTS												
6	FISH & WILDLIFE, Mit.	22,953	4,604	20	27,557	5.4	24,192	4,822	29,014	28.3%	29,485	5,876	35,361
	SUBTOTAL FEDERAL & NON-FEDERAL CONSTRUCTION COSTS	22,953	4,604		27,557		24,192	4,822	29,014		29,485	5,876	35,361
30	PLAN/ENGINEERING/DESIGN	2,612	689		3,301	8.0	2,821	744	3,565	26.5%	3,304	872	4,176
31	CONSTRUCTION MANAGE'MT	1,873	369	20	2,242	8.0	2,023	398	2,421	36.6%	2,560	503	3,063
	SUBTOTAL FEDERAL & NON-FEDERAL CONTRIBUTION	27,438	5,662		33,100		29,036	5,964	35,000		35,349	7,251	42,600
	NON-FEDERAL CONTRIBUTION (3	9,603	1,977		11,580		10,163	2,077	12,240		12,372	2,528	14,900
	TOTAL FEDERAL COSTS	$17,835	$3,685		$21,520		$18,873	$3,887	$22,760		$22,977	$4,723	$27,700
	NON-FEDERAL COSTS												
	NON-FEDERAL CONTRIBUTION (3	9,603	1,977		11,580		10,163	2,077	12,240		12,372	2,528	14,900
	TOTAL NON-FEDERAL COSTS	$9,603	$1,977		$11,580		$10,163	$2,077	$12,240		$12,372	$2,528	$14,900
	TOTAL FEDERAL AND NON-FEDERAL COSTS	$27,438	$5,662		$33,100		$29,036	$5,964	$35,000		$35,349	$7,251	$42,600
	RESTORATION SITE												
	FEDERAL COST$												
6	FISH & WILDLIFE, Mit.	284	59	21	343	5.4	299	70	369	22.4%	340	80	420
18	CULT. RESRC PRESERV. (1	3	1	33	4		3	1	4		4	1	5
	SUBTOTAL FEDERAL & NON-FEDERAL CONSTRUCTION COSTS	287	60		347		302	71	373		344	81	425
1	LANDS AND DAMAGES (2	12	1	8	13	8.0	13	1	14	23.1%	15	1	16
30	PLAN/ENGINEERING/DESIGN	35	12		47	8.0	38	13	51	25.5%	44	15	59
31	CONSTRUCTION MANAGE'MT	23	4	17	27	8.0	25	4	29	37.0%	32	5	37
	SUBTOTAL FEDERAL & NON-FEDERAL CONTRIBUTION	357	77		434		378	89	467		435	102	537
	NON-FEDERAL CONTRIBUTION (3	28	6		34		31	6	37		36	1	37
	TOTAL FEDERAL COSTS	$329	$71		$400		$347	$83	$430		$399	$101	$500
	NON-FEDERAL COSTS												
1	LANDS AND DAMAGES	250	56	22	306	5.4	264	69	333	18.6%	288	75	363
	SUBTOTAL NON-FEDERAL	250	56		306		264	69	333		288	75	363
	NON-FEDERAL CONTRIBUTION (3	28	6		34		31	6	37		36	1	37
	TOTAL NON-FEDERAL COSTS	$278	$62		$340		$295	$75	$370		$324	$76	$400
	TOTAL FEDERAL AND NON-FEDERAL COSTS	$607	$133		$740		$642	$158	$800		$723	$177	$900

DETAILED ESTIMATE OF FIRST COST

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
	MULTI-LEVEL INTAKE STRUCTURE							
	FEDERAL							
06	**FISH AND WILDLIFE FACILITIES, Mitigation**							
061----	Fish Facility and Dam.							
06143-	Fish Transportation Facility							
0614315	Mechanical							
	Temperature Control Structure							
	Mob and Demob.	1	JOB	LS	900,000	180,000	20.0	-
	Structure No. 1 Frabracation	3,370,000	LB	1.30	4,381,000	890,115	20.3	-
	Structure No. 2 Frabracation	3,299,730	LB	1.30	4,289,649	857,900	20.0	-
	Structure No. 3 Frabracation	3,255,431	LB	1.30	4,232,060	846,400	20.0	-
	Structures Set-up	1	JOB	1,095,000	1,095,000	219,000	20.0	-
	Gusset Plates	228	EA	142	32,376	6,500	20.1	-
	Bolts, Inc. Drilling for Holes	6,400	EA	125	800,000	160,000	20.0	-
	Attachment/Anchorage Points	66	EA	17,800	1,174,800	235,000	20.0	-
	Remv Existing Concrete Rack	46	CY	36,500	1,679,000	335,800	20.0	-
	Construct New Concrete Rack	41	CY	37,700	1,545,700	309,100	20.0	-
	Motor and ACC.	18	EA	155,000	2,790,000	558,000	20.0	-
0614316	Electrical							
	Wiring	1	JOB	LS	33,000	6,600	20.0	-
	Subtotal, Construction Costs:				$22,952,585			
	Contingencies @ average of 20.1 % +/- *					$4,604,415		A
06	**FISH AND WILDLIFE FACILITIES, Mitigation**			**TOTAL:**		**$27,557,000**		
30	**PLANNING, ENGINEERING & DESIGN**							
3011----	PREPARE PCA							
30110101	Initial Draft PCA				6,690	1,700	25.4	-
30110201	Finial Draft PCA				3,211	800	24.9	-
30110205	Sponsor Financial Plan & Statement				5,619	1,400	24.9	-
30110201	Executed PCA				1,605	500	31.2	-
3012----	PROJECT MANAGEMENT PLAN				2,676	600	22.4	-
3020----	DESIGN MEMORANDUM							
302001--	Engineering Analysis							
30200101	Surveys&Maps except RE				214,083	74,740	34.9	-
30200103	Hydrology and Hydraulic Studies				53,521	13,400	25.0	-
30200104	Engineering and Design Analysis				80,281	20,100	25.0	-
30200105	Gotechnical Studies				42,816	11,000	25.7	-
30200106	Structural Design Analysis				108,521	28,000	25.8	-
30200107	Revise Water Control Manual				71,760	18,000	25.1	-
302004--	Environmental Studies Documents							
30200405	Coord. of Documents w/Other Agencies				80,140	20,000	25.0	-
30200407	Mitigation Analysis Report				111,408	27,900	25.04	-
302005--	HTRW Studies Report							
30200501	HTRW Assessment Report				88,521	22,100	25.0	-
302006--	Cultural Resource Studies Doc.				26,760	9,400	35.1	-
302007--	Cost Estimates							
30200703	Project Cost Estimates				10,704	2,700	25.2	-
302008--	Final Report Documentation							
30200804	Prepare Draft Report				53,521	13,400	25.0	-
30200804	Independent Technical Review, ITR				46,760	16,400	35.1	-
30200804	Revise Draft				18,028	4,500	25.0	-
30200804	HQ Review				8,028	2,800	34.9	-
30200804	Final Report				18,028	4,500	25.0	-
302301--	PLANS AND SPECIFICATIONS (SET 1)							
30230102	Prepare Plans and Specifications				133,801	33,500	25.0	-
30230102	Review and Revise P&S				196,900	49,200	25.0	-
30230104	BCO Review and Certification				40,140	10,000	24.9	-
30230401	Coordinate Environmental Documents				16,056	4,000	24.9	-
30230410	NPDES Permit				7,676	2,000	26.1	-
30230701	Contract Cost Estimate				30,704	7,700	25.1	-
302308--	Other Studies(ECIFP)				10,704	2,700	25.2	-
302309--	Awarded Contract				10,704	3,700	34.6	-
302310--	E&D During Construction				109,521	27,400	25.0	-
302301--	PLANS AND SPECIFICATIONS (SET 2)							
30230102	Prepare Plans and Specifications				146,900	36,700	25.0	-
30230102	Review and Revise P&S				53,521	13,400	25.0	-

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
30230104	BCO Review and Certification				26,760	6,700	25.0	-
30230401	Coordinate Environmental Documents				1,070	300	28.0	-
30230410	NPDES Permit				2,676	1,000	37.4	-
30230701	Contract Cost Estimate				21,422	5,400	25.2	-
302308--	Other Studies(ECIFP)				10,704	2,700	25.2	-
302309--	Awarded Contract				10,704	3,700	34.6	-
302310--	E&D During Construction				98,816	24,700	25.0	-
302301--	PLANS AND SPECIFICATIONS (SET 3)							
30230102	Prepare Plans and Specifications				137,041	34,300	25.0	-
30230102	Review and Revise P&S				66,900	16,700	25.0	-
30230104	BCO Review and Certification				40,140	10,000	24.9	-
30230401	Coordinate Environmental Documents				10,704	2,700	25.2	-
30230410	NPDES Permit				32,281	8,000	24.8	-
30230701	Contract Cost Estimate				16,422	4,100	25.0	-
302308--	Other Studies(ECIFP)				10,704	2,700	25.2	-
302309--	Awarded Contract				8,563	3,000	35.0	-
302310--	E&D During Construction				48,168	12,000	24.9	-
3024----	VALUE ENGINEERING ANALYSIS				82,760	21,000	25.4	-
30250103	Closeout Documentation				16,056	4,000	24.9	-
30250201	Local Sponsor Audit				10,704	3,700	34.6	-
30250202	USACE AUDIT				5,352	1,900	35.5	-
30250302	OMRR&R MANUAL				37,464	9,400	25.1	-
3026----	PROGRAMS & PROJECT MANAGEMENT				107,041	27,000	25.2	-
	Subtotal				$2,611,760			
	Contingencies @ average of	26.4 % +/- *				$689,240		A
30	**PLANNING, ENGINEERING & DESIGN**			**TOTAL:**		**$3,301,000**		
31	**CONSTRUCTION MANAGEMENT (S & I)**							
312311--	Supervision and Administration							
31231101	Prjt Office Supervn and Adminstn				624,248	156,255	25.0	-
31231102	Area Office S&A Documents				195,078	48,800	25.0	-
31231103	District Office S&A Documents				39,016	9,800	25.1	-
31231104	Damages Assesd Contrtor Docmnts				23,409	5,900	25.2	-
3126----	PROGRAMS/PROJECT MANAGMNT DOCMNT							
312601--	Project Coordination Documents				468,186	70,200	15.0	-
312602--	Funds Control Documents				78,031	11,700	15.0	-
312603--	Trip Reports				39,016	5,900	15.1	-
312604--	Upward Reporting Documents				23,409	3,500	15.0	-
312605--	Budgetary Documents				31,212	4,700	15.1	-
312606--	Project Authorization Documents				23,409	3,500	15.0	-
312607--	Annual Notfctn Ltr to Local Spnr				19,508	2,900	14.9	-
312608--	Fact Sheets				11,705	1,800	15.4	-
312609--	Correspondence (Congrsnal/State)				39,016	5,900	15.1	-
312610--	Schedule & Cost Changes (SACCR)				46,819	7,000	15.0	-
312611--	Project Work Directives				23,409	3,500	15.0	-
312612--	Projct Closeout Coordinatn Docts				23,409	3,500	15.0	-
312613--	Qrtly Cost Report to Local Spnsr				39,016	5,900	15.1	-
312614--	All Other Progrms/PM Documnts				23,409	3,500	15.0	-
31901101	Mitigation Construction				101,440	15,000	25.0	-
	Subtotal				$1,872,745			
	Contingencies @ average of	19.7 % +/- *				$369,255		A
31	**CONSTRUCTION MANAGEMENT (S & I)**			**TOTAL:**		**$2,242,000**		
	RESTORATION SITE							
	FEDERAL							
01	**LANDS AND DAMAGES**							
0118----	GENERAL REVALUTATION REPORT(GRR)							
011803--	Real Estate Analysis Documents							
01180301	Real Estate Supplement/Plan				2,240	200	8.9	-
01180302	Gross Appraisal/Report				0	0	0.0	-
01180303	Prelim Real Estate Acquistn Maps				800	100	12.5	-

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
01180305	Prelim Attys Opinion of Comnsbl.				0	0	0.0	-
01180307	All Other Real Estate Analy/Docs				2,080	200	9.6	-
012303--	CONSTRUCTION CONTRACT(S) DOCUMENTS							
01230302	Real Estate Acquisition Documents				1,120	100	8.9	-
01230312	Real Estate Project/Related Admin Doc.				400	0	0.0	-
01230315	Real Estate Payment Documents				4,960	800	16.1	-
	Subtotal, Construction Costs:				$11,600			
	Contingencies @ average of	12.1 % +/- *				$1,400		A
01	**LANDS AND DAMAGES**			**TOTAL:**		**$13,000**		
06	**FISH AND WILDLIFE FACILITIES, Mitigation**							
063---	Wildlife and Sanct.							
060373--	Habitat and Feeding Facilities:							
06037302	Site Work:							
	Mitigation		1 JOB	LS	284,000	59,000	20.8	-
	Subtotal, Construction Costs:				$284,000			
	Contingencies @ average of	20.8 % +/- *				$59,000		A
06	**FISH AND WILDLIFE FACILITIES, Mitigation**			**TOTAL:**		**$343,000**		
18	**CULTURAL RESOURCE PRESERVATION**							
	1% of Federal Obligations				3,000	1,000	33.3	
	Subtotal, Construction Costs:				$3,000			
	Contingencies @ average of	33.3 % +/- *				$1,000		A
18	**CULTURAL RESOURCE PRESERVATION**			**TOTAL:**		$4,000		
30	**PLANNING, ENGINEERING & DESIGN**							
3011---	PREPARE PCA							
30110101	Initial Draft PCA				83	0	0.0	-
30110201	Finial Draft PCA				40	0	0.0	-
30110205	Sponsor Financial Plan & Statement				70	0	0.0	-
30110201	Executed PCA				20	0	0.0	-
3012---	PROJECT MANAGEMENT PLAN				33	0	0.0	-
3020---	DESIGN MEMORANDUM							
302001--	Engineering Analysis							
30200101	Surveys&Maps except RE				2,650	5,228	197.3	-
30200103	Hydrology and Hydraulic Studies				663	200	30.2	-
30200104	Engineering and Design Analysis				994	200	20.1	-
30200105	Gotechnical Studies				530	0	0.0	-
30200106	Structural Design Analysis				663	0	0.0	-
30200107	Revise Water Control Manual				331	0	0.0	-
302004--	Environmental Studies Documents							
30200405	Coord. of Documents w/Other Agencies				497	100	20.1	-
30200407	Mitigation Analysis Report				265	100	37.74	-
302005--	HTRW Studies Report							
30200501	HTRW Assessment Report				663	200	30.2	-
302006--	Cultural Resource Studies Doc.				331	100	30.2	-
302007--	Cost Estimates							
30200703	Project Cost Estimates				133	0	0.0	-
302008--	Final Report Documentation							
30200804	Prepare Draft Report				663	200	30.2	-
30200804	Independent Technical Review, ITR				331	100	30.2	-
30200804	Revise Draft				99	0	0.0	-
30200804	HQ Review				99	0	0.0	-
30200804	Final Report				99	0	0.0	-
302301--	PLANS AND SPECIFICATIONS (SET 1)							
30230102	Prepare Plans and Specifications				5,157	1,300	25.2	-
30230102	Review and Revise P&S				1,328	300	22.6	-
30230104	BCO Review and Certification				497	100	20.1	-
30230401	Coordinate Environmental Documents				199	0	0.0	-
30230410	NPDES Permit				33	0	0.0	-
30230701	Contract Cost Estimate				633	200	31.6	-
302308--	Other Studies(ECIFP)				333	100	30.0	-

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
302309--	Awarded Contract				133	0	0.0	-
302310--	E&D During Construction				663	200	30.2	-
302301--	PLANS AND SPECIFICATIONS (SET 2)							
30230102	Prepare Plans and Specifications				3,828	1,000	26.1	-
30230102	Review and Revise P&S				1,163	300	25.8	-
30230104	BCO Review and Certification				431	100	23.2	-
30230401	Coordinate Environmental Documents				13	0	0.0	-
30230410	NPDES Permit				33	0	0.0	-
30230701	Contract Cost Estimate				580	100	17.2	-
302308--	Other Studies(ECIFP)				333	100	30.0	-
302309--	Awarded Contract				133	0	0.0	-
302310--	E&D During Construction				530	100	18.9	-
302301--	PLANS AND SPECIFICATIONS (SET 3)							
30230102	Prepare Plans and Specifications				3,825	1,000	26.1	-
30230102	Review and Revise P&S				1,328	300	22.6	-
30230104	BCO Review and Certification				497	100	20.1	-
30230401	Coordinate Environmental Documents				133	0	0.0	-
30230410	NPDES Permit				53	0	0.0	-
30230701	Contract Cost Estimate				80	0	0.0	-
302308--	Other Studies(ECIFP)				133	0	0.0	-
302309--	Awarded Contract				106	0	0.0	-
302310--	E&D During Construction				596	100	16.8	-
3024---	VALUE ENGINEERING ANALYSIS				857	0	0.0	-
30250103	Closeout Documentation				199	0	0.0	-
30250201	Local Sponsor Audit				133	0	0.0	-
30250202	USACE AUDIT				66	0	0.0	-
30250302	OMRR&R MANUAL				464	100	21.6	-
3026---	PROGRAMS & PROJECT MANAGEMENT				1,325	0	0.0	-
	Subtotal				$35,072			
	Contingencies @ average of	34.0 % +/- *				$11,928		A
30	**PLANNING, ENGINEERING & DESIGN**			**TOTAL:**		**$47,000**		
31.-.-.-	**CONSTRUCTION MANAGEMENT (S & I)**							
312311--	Supervision and Administration							
31231101	Prjt Office Supervn and Adminstn				7,729	1,513	19.6	-
31231102	Area Office S&A Documents				2,415	600	24.8	-
31231103	District Office S&A Documents				483	100	20.7	-
31231104	Damages Assesd Contrtor Docmnts				290	100	34.5	-
3126---	PROGRAMS/PROJECT MANAGMNT DOCMNT							
312601--	Project Coordination Documents				5,796	900	15.5	-
312602--	Funds Control Documents				966	100	10.4	-
312603--	Trip Reports				483	100	20.7	-
312604--	Upward Reporting Documents				290	0	0.0	-
312605--	Budgetary Documents				386	100	25.9	-
312606--	Project Authorization Documents				290	0	0.0	-
312607--	Annual Notfctn Ltr to Local Spnr				242	0	0.0	-
312608--	Fact Sheets				145	0	0.0	-
312609--	Correspondence (Congrsnal/State)				483	100	20.7	-
312610--	Schedule & Cost Changes (SACCR)				580	100	17.2	-
312611--	Project Work Directives				290	0	0.0	-
312612--	Projct Closeout Coordinatn Docts				290	0	0.0	-
312613--	Qrtly Cost Report to Local Spnsr				483	100	20.7	-
312614--	All Other Progrms/PM Documnts				290	0	0.0	-
31901101	Mitigation Construction				1,256	0	25.0	-
	Subtotal				$23,187			
	Contingencies @ average of	16.4 % +/- *				$3,813		A
31.-.-.-	**CONSTRUCTION MANAGEMENT (S & I)**			**TOTAL:**		**$27,000**		
	NON-FEDERAL							
01	**LANDS AND DAMAGES**							
012303--	CONSTRUCTION CONTRACT(S) DOCUMENTS							

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
		Effective Price Level (EPL) 1-Oct-98						
01230301	Real Estate Planning Documents				2,000	400	20.0	-
01230302	Real Estate Acquisition Documents				5,000	1,000	20.0	-
01230305	Real Estate Appraisal Documents				3,000	600	20.0	-
01230315	Real Estate Payment Documents				239,600	54,400	22.7	-
	Subtotal, Construction Costs:				$249,600			
	Contingencies @ average of	22.6 % +/- *				$56,400		A
01	**LANDS AND DAMAGES**			**TOTAL:**		**$306,000**		

DETAILED ESTIMATE OF FIRST COST

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
	MULTI-LEVEL INTAKE STRUCTURE							
	FEDERAL							
06	**FISH AND WILDLIFE FACILITIES, Mitigation**							
061-----	Fish Facility and Dam.							
06143-	Fish Transportation Facility							
0614315	Mechanical							
	Temperature Control Structure							
	Mob and Demob,	1	JOB	LS	900,000	180,000	20.0	-
	Structure No. 1 Frabracation	3,370,000	LB	1.30	4,381,000	890,115	20.3	-
	Structure No. 2 Frabracation	3,299,730	LB	1.30	4,289,649	857,900	20.0	-
	Structure No. 3 Frabracation	3,255,431	LB	1.30	4,232,060	846,400	20.0	-
	Structures Set-up	1	JOB	1,095,000	1,095,000	219,000	20.0	-
	Gusset Plates	228	EA	142	32,376	6,500	20.1	-
	Bolts, Inc. Drilling for Holes	6,400	EA	125	800,000	160,000	20.0	-
	Attachment/Anchorage Points	66	EA	17,800	1,174,800	235,000	20.0	-
	Remv Existing Concrete Rack	46	CY	36,500	1,679,000	335,800	20.0	-
	Construct New Concrete Rack	41	CY	37,700	1,545,700	309,100	20.0	-
	Motor and ACC.	18	EA	155,000	2,790,000	558,000	20.0	-
0614316	Electrical							
	Wiring	1	JOB	LS	33,000	6,600	20.0	-
	Subtotal, Construction Costs:				$22,952,585			
	Contingencies @ average of 20.1 % +/- *					$4,604,415		A
06	**FISH AND WILDLIFE FACILITIES, Mitigation**			**TOTAL:**		**$27,557,000**		
30	**PLANNING, ENGINEERING & DESIGN**							
3011----	PREPARE PCA							
30110101	Initial Draft PCA				6,690	1,700	25.4	-
30110201	Finial Draft PCA				3,211	800	24.9	-
30110205	Sponsor Financial Plan & Statement				5,619	1,400	24.9	-
30110201	Executed PCA				1,605	500	31.2	-
3012----	PROJECT MANAGEMENT PLAN				2,676	600	22.4	-
3020----	DESIGN MEMORANDUM							
302001--	Engineering Analysis							
30200101	Surveys&Maps except RE				214,083	74,740	34.9	-
30200103	Hydrology and Hydraulic Studies				53,521	13,400	25.0	-
30200104	Engineering and Design Analysis				80,281	20,100	25.0	-
30200105	Gotechnical Studies				42,816	11,000	25.7	-
30200106	Structural Design Analysis				108,521	28,000	25.8	-
30200107	Revise Water Control Manual				71,760	18,000	25.1	-
302004--	Environmental Studies Documents							
30200405	Coord. of Documents w/Other Agencies				80,140	20,000	25.0	-
30200407	Mitigation Analysis Report				111,408	27,900	25.04	-
302005--	HTRW Studies Report							
30200501	HTRW Assessment Report				88,521	22,100	25.0	-
302006--	Cultural Resource Studies Doc.				26,760	9,400	35.1	-
302007--	Cost Estimates							
30200703	Project Cost Estimates				10,704	2,700	25.2	-
302008--	Final Report Documentation							
30200804	Prepare Draft Report				53,521	13,400	25.0	-
30200804	Independent Technical Review, ITR				46,760	16,400	35.1	-
30200804	Revise Draft				18,028	4,500	25.0	-
30200804	HQ Review				8,028	2,800	34.9	-
30200804	Final Report				18,028	4,500	25.0	-
302301--	PLANS AND SPECIFICATIONS (SET 1)							
30230102	Prepare Plans and Specifications				133,801	33,500	25.0	-
30230102	Review and Revise P&S				196,900	49,200	25.0	-
30230104	BCO Review and Certification				40,140	10,000	24.9	-
30230401	Coordinate Environmental Documents				16,056	4,000	24.9	-
30230410	NPDES Permit				7,676	2,000	26.1	-
30230701	Contract Cost Estimate				30,704	7,700	25.1	-
302308--	Other Studies(ECIFP)				10,704	2,700	25.2	-
302309--	Awarded Contract				10,704	3,700	34.6	-
302310--	E&D During Construction				109,521	27,400	25.0	-
302301--	PLANS AND SPECIFICATIONS (SET 2)							
30230102	Prepare Plans and Specifications				146,900	36,700	25.0	-
30230102	Review and Revise P&S				53,521	13,400	25.0	-

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
30230104	BCO Review and Certification				26,760	6,700	25.0	-
30230401	Coordinate Environmental Documents				1,070	300	28.0	-
30230410	NPDES Permit				2,676	1,000	37.4	-
30230701	Contract Cost Estimate				21,422	5,400	25.2	-
302308--	Other Studies(ECIFP)				10,704	2,700	25.2	-
302309--	Awarded Contract				10,704	3,700	34.6	-
302310--	E&D During Construction				98,816	24,700	25.0	-
302301--	PLANS AND SPECIFICATIONS (SET 3)							
30230102	Prepare Plans and Specifications				137,041	34,300	25.0	-
30230102	Review and Revise P&S				66,900	16,700	25.0	-
30230104	BCO Review and Certification				40,140	10,000	24.9	-
30230401	Coordinate Environmental Documents				10,704	2,700	25.2	-
30230410	NPDES Permit				32,281	8,000	24.8	-
30230701	Contract Cost Estimate				16,422	4,100	25.0	-
302308--	Other Studies(ECIFP)				10,704	2,700	25.2	-
302309--	Awarded Contract				8,563	3,000	35.0	-
302310--	E&D During Construction				48,168	12,000	24.9	-
3024----	VALUE ENGINEERING ANALYSIS				82,760	21,000	25.4	-
30250103	Closeout Documentation				16,056	4,000	24.9	-
30250201	Local Sponsor Audit				10,704	3,700	34.6	-
30250202	USACE AUDIT				5,352	1,900	35.5	-
30250302	OMRR&R MANUAL				37,464	9,400	25.1	-
3026----	PROGRAMS & PROJECT MANAGEMENT				107,041	27,000	25.2	-
	Subtotal				$2,611,760			
	Contingencies @ average of	26.4 % +/- *				$689,240		A
30	**PLANNING, ENGINEERING & DESIGN**		**TOTAL:**			**$3,301,000**		
31	**CONSTRUCTION MANAGEMENT (S & I)**							
312311--	Supervision and Administration							
31231101	Prjt Office Supervn and Adminstn				624,248	156,255	25.0	-
31231102	Area Office S&A Documents				195,078	48,800	25.0	-
31231103	District Office S&A Documents				39,016	9,800	25.1	-
31231104	Damages Assesd Contrtor Docmnts				23,409	5,900	25.2	-
3126----	PROGRAMS/PROJECT MANAGMNT DOCMNT							
312601--	Project Coordination Documents				468,186	70,200	15.0	-
312602--	Funds Control Documents				78,031	11,700	15.0	-
312603--	Trip Reports				39,016	5,900	15.1	-
312604--	Upward Reporting Documents				23,409	3,500	15.0	-
312605--	Budgetary Documents				31,212	4,700	15.1	-
312606--	Project Authorization Documents				23,409	3,500	15.0	-
312607--	Annual Notfctn Ltr to Local Spnr				19,508	2,900	14.9	-
312608--	Fact Sheets				11,705	1,800	15.4	-
312609--	Correspondence (Congrsnal/State)				39,016	5,900	15.1	-
312610--	Schedule & Cost Changes (SACCR)				46,819	7,000	15.0	-
312611--	Project Work Directives				23,409	3,500	15.0	-
312612--	Projct Closeout Coordinatn Docts				23,409	3,500	15.0	-
312613--	Qrtly Cost Report to Local Spnsr				39,016	5,900	15.1	-
312614--	All Other Progrms/PM Documnts				23,409	3,500	15.0	-
31901101	Mitigation Construction				101,440	15,000	25.0	-
	Subtotal				$1,872,745			
	Contingencies @ average of	19.7 % +/- *				$369,255		A
31	**CONSTRUCTION MANAGEMENT (S & I)**		**TOTAL:**			**$2,242,000**		
	WATER TRANSFER PIPELINE							
	FEDERAL							
01	**LANDS AND DAMAGES**							
0118----	GENERAL REVALUTATION REPORT(GRR)							
01180307	All Other Real Estate Analy/Docs				9,960	1,000	10.0	-
012303--	CONSTRUCTION CONTRACT(S) DOCUMENTS							
01230302	Real Estate Acquisition Documents				4,120	400	9.7	-

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
01230312	Real Estate Project/Related Admin Doc.				800	100	12.5	-
01230315	Real Estate Payment Documents				32,000	3,040	9.5	-
	Subtotal, Construction Costs:				$58,260			
	Contingencies @ average of	9.9 % +/- *				$5,740		A
01	**LANDS AND DAMAGES**			**TOTAL:**		**$64,000**		
06	**FISH AND WILDLIFE FACILITIES, Mitigation**							
061-----	Fish Facility and Dam.							
06143-	Fish Transportation Facility							
0614315	Mechanical							
	Pipe Installation							
	Mob and Demob,	1	JOB	LS	965,000	193,000	20.0	-
	Coffer Dam	1	JOB	LS	70,000	14,000	20.0	-
	78" Reinforced ConcretePipe	55,761	LF	342	19,070,262	3,824,134	20.1	-
	Elbows	4	EA	3,500	14,000	3,500	25.0	-
	Double Leaf Canal Gate 8'x8.5'	1	EA	34,000	34,000	8,500	25.0	-
	Pipe Ventilation	32	EA	647	20,704	5,200	25.1	-
	Pipe Air Vacuum Valve	1	JOB	LS	2,100	500	23.8	-
	Inlet	1	JOB	LS	18,100	3,600	19.9	-
	Outlet	1	JOB	LS	42,500	8,500	20.0	-
	Stone Protection	700	TON	41	28,700	5,700	19.9	-
	Subtotal, Construction Costs:				$20,265,366			
	Contingencies @ average of	20.1 % +/- *				$4,066,634		A
06	**FISH AND WILDLIFE FACILITIES, Mitigation**			**TOTAL:**		**$24,332,000**		
18	**CULTURAL RESOURCE PRESERVATION**							
	1% of Federal Obligations				170,000	27,000	15.9	
	Subtotal, Construction Costs:				$170,000			
	Contingencies @ average of	15.9 % +/- *				$27,000		A
18	**CULTURAL RESOURCE PRESERVATION**			**TOTAL:**		$197,000		
30	**PLANNING, ENGINEERING & DESIGN**							
3011----	PREPARE PCA							
30110101	Initial Draft PCA				5,907	1,500	25.4	-
30110201	Finial Draft PCA				2,835	700	24.7	-
30110205	Sponsor Financial Plan & Statement				4,962	1,200	24.2	-
30110201	Executed PCA				1,418	500	35.3	-
3012----	PROJECT MANAGEMENT PLAN				2,363	600	25.4	-
3020----	DESIGN MEMORANDUM							
302001--	Engineering Analysis							
30200101	Surveys&Maps except RE				189,039	67,138	35.5	-
30200103	Hydrology and Hydraulic Studies				47,260	11,800	25.0	-
30200104	Engineering and Design Analysis				70,889	17,700	25.0	-
30200105	Gotechnical Studies				37,808	9,000	23.8	-
30200106	Structural Design Analysis				47,260	12,000	25.4	-
30200107	Revise Water Control Manual				23,630	6,000	25.4	-
302004--	Environmental Studies Documents							
30200405	Coord. of Documents w/Other Agencies				35,445	8,900	25.1	-
30200407	Mitigation Analysis Report				18,904	4,700	24.86	-
302005--	HTRW Studies Report							
30200501	HTRW Assessment Report				47,260	11,800	25.0	-
302006--	Cultural Resource Studies Doc.				23,630	8,300	35.1	-
302007--	Cost Estimates							
30200703	Project Cost Estimates				9,452	2,400	25.4	-
302008--	Final Report Documentation							
30200804	Prepare Draft Report				47,260	11,800	25.0	-
30200804	Independent Technical Review, ITR				48,630	17,000	35.0	-
30200804	Revise Draft				10,589	2,600	24.6	-
30200804	HQ Review				10,589	3,700	34.9	-
30200804	Final Report				9,589	2,400	25.0	-
302301--	PLANS AND SPECIFICATIONS (SET 1)							
30230102	Prepare Plans and Specifications				368,149	92,000	25.0	-
30230102	Review and Revise P&S				104,074	26,000	25.0	-

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-96							
30230104	BCO Review and Certification				45,445	11,400	25.1	-
30230401	Coordinate Environmental Documents				14,178	3,500	24.7	-
30230410	NPDES Permit				2,363	1,000	42.3	-
30230701	Contract Cost Estimate				24,452	6,100	24.9	-
302308--	Other Studies(ECIFP)				9,452	2,400	25.4	-
302309--	Awarded Contract				9,452	3,300	34.9	-
302310--	E&D During Construction				47,260	11,800	25.0	-
302301--	PLANS AND SPECIFICATIONS (SET 2)							
30230102	Prepare Plans and Specifications				209,074	52,300	25.0	-
30230102	Review and Revise P&S				82,260	20,600	25.0	-
30230104	BCO Review and Certification				33,630	8,400	25.0	-
30230401	Coordinate Environmental Documents				945	200	21.2	-
30230410	NPDES Permit				2,363	1,000	42.3	-
30230701	Contract Cost Estimate				15,671	3,900	24.9	-
302308--	Other Studies(ECIFP)				9,452	2,400	25.4	-
302309--	Awarded Contract				9,452	3,300	34.9	-
302310--	E&D During Construction				37,808	9,500	25.1	-
302301--	PLANS AND SPECIFICATIONS (SET 3)							
30230102	Prepare Plans and Specifications				194,519	48,600	25.0	-
30230102	Review and Revise P&S				84,074	21,000	25.0	-
30230104	BCO Review and Certification				45,445	11,400	25.1	-
30230401	Coordinate Environmental Documents				9,452	2,400	25.4	-
30230410	NPDES Permit				3,781	1,000	26.4	-
30230701	Contract Cost Estimate				15,671	3,900	24.9	-
302308--	Other Studies(ECIFP)				9,452	2,400	25.4	-
302309--	Awarded Contract				7,561	2,600	34.4	-
302310--	E&D During Construction				42,533	10,600	24.9	-
3024----	VALUE ENGINEERING ANALYSIS				38,630	10,000	25.9	-
30250103	Closeout Documentation				14,178	3,500	24.7	-
30250201	Local Sponsor Audit				9,452	3,300	34.9	-
30250202	USACE AUDIT				5,614	2,000	35.6	-
30250302	OMRR&R MANUAL				33,082	8,300	25.1	-
3026----	PROGRAMS & PROJECT MANAGEMENT				94,519	24,000	25.4	-
	Subtotal				$2,328,162			
	Contingencies @ average of	26.5 % +/- *				$615,838		A
30	**PLANNING, ENGINEERING & DESIGN**			**TOTAL:**		**$2,944,000**		
31	**CONSTRUCTION MANAGEMENT (S & I)**							
312311--	Supervision and Administration							
31231101	Prjt Office Supervn and Adminstn				551,223	137,532	25.0	-
31231102	Area Office S&A Documents				172,257	43,100	25.0	-
31231103	District Office S&A Documents				34,451	8,600	25.0	-
31231104	Damages Assesd Contrtor Docmnts				20,671	5,200	25.2	-
3126----	PROGRAMS/PROJECT MANAGMNT DOCMNT							
312601--	Project Coordination Documents				413,417	62,000	15.0	-
312602--	Funds Control Documents				68,903	10,300	14.9	-
312603--	Trip Reports				34,451	5,200	15.1	-
312604--	Upward Reporting Documents				20,671	3,100	15.0	-
312605--	Budgetary Documents				27,561	4,100	14.9	-
312606--	Project Authorization Documents				20,671	3,100	15.0	-
312607--	Annual Notfctn Ltr to Local Spnr				17,226	2,600	15.1	-
312608--	Fact Sheets				10,335	1,600	15.5	-
312609--	Correspondence (Congrsnal/State)				34,451	5,200	15.1	-
312610--	Schedule & Cost Changes (SACCR)				41,342	6,200	15.0	-
312611--	Project Work Directives				20,671	3,100	15.0	-
312612--	Projct Closeout Coordinatn Docts				20,671	3,100	15.0	-
312613--	Qrtly Cost Report to Local Spnsr				34,451	5,200	15.1	-
312614--	All Other Progrms/PM Documnts				20,671	3,100	15.0	-
31901101	Mitigation Construction				89,574	13,000	25.0	-
	Subtotal				$1,653,668			
	Contingencies @ average of	19.7 % +/- *				$325,332		A
31	**CONSTRUCTION MANAGEMENT (S & I)**			**TOTAL:**		**$1,979,000**		

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
	NON-FEDERAL							
01	**LANDS AND DAMAGES**							
012303--	CONSTRUCTION CONTRACT(S) DOCUMENTS							
01230301	Real Estate Planning Documents				10,000	2,000	20.0	-
01230302	Real Estate Acquisition Documents				50,000	10,000	20.0	-
01230303	Real Estate Condemnation Documents				75,000	15,000	20.0	-
01230305	Real Estate Appraisal Documents				50,000	10,000	20.0	-
01230315	Real Estate Payment Documents				212,700	48,300	22.7	-
	Subtotal, Construction Costs:				$397,700			
	Contingencies @ average of	21.4 % +/- *				$85,300		A
01	**LANDS AND DAMAGES**			**TOTAL:**		**$483,000**		
02	**RELOCATIONS**							
0201	**ROADS, Construction Activities**							
020113--	Traffic Control							
02011302	Site Work							
	Traffic Control		1 JOB	LS	16,500	4,100	24.8	-
020119--	Construct Roadbed to Subgrade							
02011902	Site Work							
	Road Demolition		1 JOB	LS	36,200	9,100	25.1	-
	Road Replacement, AC		1 JOB	LS	50,500	12,600	25.0	-
	Subtotal, Construction Costs:				$103,200			
	Contingencies @ average of	25.0 % +/- *				$25,800		A
02	**RELOCATIONS**			**TOTAL:**		**$129,000**		
30	**PLANNING, ENGINEERING & DESIGN**				15,000	4,000	26.7	-
	Subtotal				$15,000			
	Contingencies @ average of	26.7 % +/- *				$4,000		A
30	**PLANNING, ENGINEERING & DESIGN**			**TOTAL:**		**$19,000**		
31	**CONSTRUCTION MANAGEMENT (S & I)**				10,000	3,000	30.0	-
	Subtotal				$10,000			
	Contingencies @ average of	30.0 % +/- *				$3,000		A
31	**CONSTRUCTION MANAGEMENT (S & I)**			**TOTAL:**		**$13,000**		
	RESTORATION SITE							
	FEDERAL							
01	**LANDS AND DAMAGES**							
0118----	GENERAL REVALUTATION REPORT(GRR)							
011803--	Real Estate Analysis Documents							
01180301	Real Estate Supplement/Plan				2,240	200	8.9	-
01180302	Gross Appraisal/Report				0	0	0.0	-
01180303	Prelim Real Estate Acquistn Maps				800	100	12.5	-
01180305	Prelim Attys Opinion of Comnsbl.				0	0	0.0	-
01180307	All Other Real Estate Analy/Docs				2,080	200	9.6	-
012303--	CONSTRUCTION CONTRACT(S) DOCUMENTS							
01230302	Real Estate Acquisition Documents				1,120	100	8.9	-
01230312	Real Estate Project/Related Admin Doc.				400	0	0.0	-
01230315	Real Estate Payment Documents				4,960	800	16.1	-
	Subtotal, Construction Costs:				$11,600			
	Contingencies @ average of	12.1 % +/- *				$1,400		A
01	**LANDS AND DAMAGES**			**TOTAL:**		**$13,000**		

DETAILED ESTIMATE OF FIRST COST(Cont'd)

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
06	**FISH AND WILDLIFE FACILITIES, Mitigation**							
063----	Wildlife and Sanct.							
060373--	Habitat and Feeding Facilities:							
06037302	Site Work:							
	Mitigation	1	JOB	LS	284,000	59,000	20.8	-
	Subtotal, Construction Costs:				$284,000			
	Contingencies @ average of 20.8 % +/- *					$59,000		A
06	**FISH AND WILDLIFE FACILITIES, Mitigation**			**TOTAL:**		**$343,000**		
18	**CULTURAL RESOURCE PRESERVATION**							
	1% of Federal Obligations				3,000	1,000	33.3	
	Subtotal, Construction Costs:				$3,000			
	Contingencies @ average of 33.3 % +/- *					$1,000		A
18	**CULTURAL RESOURCE PRESERVATION**			**TOTAL:**		**$4,000**		
30	**PLANNING, ENGINEERING & DESIGN**							
3011----	PREPARE PCA							
30110101	Initial Draft PCA				83	0	0.0	-
30110201	Finial Draft PCA				40	0	0.0	-
30110205	Sponsor Financial Plan & Statement				70	0	0.0	-
30110201	Executed PCA				20	0	0.0	-
3012----	PROJECT MANAGEMENT PLAN				33	0	0.0	-
3020----	DESIGN MEMORANDUM							
302001--	Engineering Analysis							
30200101	Surveys&Maps except RE				2,650	5,228	197.3	-
30200103	Hydrology and Hydraulic Studies				663	200	30.2	-
30200104	Engineering and Design Analysis				994	200	20.1	-
30200105	Gotechnical Studies				530	0	0.0	-
30200106	Structural Design Analysis				663	0	0.0	-
30200107	Revise Water Control Manual				331	0	0.0	-
302004--	Environmental Studies Documents							
30200405	Coord. of Documents w/Other Agencies				497	100	20.1	-
30200407	Mitigation Analysis Report				265	100	37.74	-
302005--	HTRW Studies Report							
30200501	HTRW Assessment Report				663	200	30.2	-
302006--	Cultural Resource Studies Doc.				331	100	30.2	-
302007--	Cost Estimates							
30200703	Project Cost Estimates				133	0	0.0	-
302008--	Final Report Documentation							
30200804	Prepare Draft Report				663	200	30.2	-
30200804	Independent Technical Review, ITR				331	100	30.2	-
30200804	Revise Draft				99	0	0.0	-
30200804	HQ Review				99	0	0.0	-
30200804	Final Report				99	0	0.0	-
302301--	PLANS AND SPECIFICATIONS (SET 1)							
30230102	Prepare Plans and Specifications				5,157	1,300	25.2	-
30230102	Review and Revise P&S				1,328	300	22.6	-
30230104	BCO Review and Certification				497	100	20.1	-
30230401	Coordinate Environmental Documents				199	0	0.0	-
30230410	NPDES Permit				33	0	0.0	-
30230701	Contract Cost Estimate				633	200	31.6	-
302308--	Other Studies(ECIFP)				333	100	30.0	-
302309--	Awarded Contract				133	0	0.0	-
302310--	E&D During Construction				663	200	30.2	-
302301--	PLANS AND SPECIFICATIONS (SET 2)							
30230102	Prepare Plans and Specifications				3,828	1,000	26.1	-
30230102	Review and Revise P&S				1,163	300	25.8	-
30230104	BCO Review and Certification				431	100	23.2	-
30230401	Coordinate Environmental Documents				13	0	0.0	-
30230410	NPDES Permit				33	0	0.0	-
30230701	Contract Cost Estimate				580	100	17.2	-
302308--	Other Studies(ECIFP)				333	100	30.0	-
302309--	Awarded Contract				133	0	0.0	-
302310--	E&D During Construction				530	100	18.9	-

DETAILED ESTIMATE OF FIRST COST(Cont'd

ACCOUNT NUMBER	ITEM	QUANTITY	UNIT	UNIT PRICE $	AMOUNT $	CONTINGENCY $ *	% *	REASON
	Effective Price Level (EPL) 1-Oct-98							
302301--	PLANS AND SPECIFICATIONS (SET 3)							
30230102	Prepare Plans and Specifications				3,825	1,000	26.1	-
30230102	Review and Revise P&S				1,328	300	22.6	-
30230104	BCO Review and Certification				497	100	20.1	-
30230401	Coordinate Environmental Documents				133	0	0.0	-
30230410	NPDES Permit				53	0	0.0	-
30230701	Contract Cost Estimate				80	0	0.0	-
302308--	Other Studies(ECIFP)				133	0	0.0	-
302309--	Awarded Contract				106	0	0.0	-
302310--	E&D During Construction				596	100	16.8	-
3024----	VALUE ENGINEERING ANALYSIS				857	0	0.0	-
30250103	Closeout Documentation				199	0	0.0	-
30250201	Local Sponsor Audit				133	0	0.0	-
30250202	USACE AUDIT				66	0	0.0	-
30250302	OMRR&R MANUAL				464	100	21.6	-
3026----	PROGRAMS & PROJECT MANAGEMENT				1,325	0	0.0	-
	Subtotal				$35,072			
	Contingencies @ average of	34.0 % +/- *				$11,928		A
30	**PLANNING, ENGINEERING & DESIGN**			**TOTAL:**		**$47,000**		
31.-.-.-	**CONSTRUCTION MANAGEMENT (S & I)**							
312311--	Supervision and Administration							
31231101	Prjt Office Supervn and Adminstn				7,729	1,513	19.6	-
31231102	Area Office S&A Documents				2,415	600	24.8	-
31231103	District Office S&A Documents				483	100	20.7	-
31231104	Damages Assesd Contrtor Docmnts				290	100	34.5	-
3126----	PROGRAMS/PROJECT MANAGMNT DOCMNT							
312601--	Project Coordination Documents				5,796	900	15.5	-
312602--	Funds Control Documents				966	100	10.4	-
312603--	Trip Reports				483	100	20.7	-
312604--	Upward Reporting Documents				290	0	0.0	-
312605--	Budgetary Documents				386	100	25.9	-
312606--	Project Authorization Documents				290	0	0.0	-
312607--	Annual Notfctn Ltr to Local Spnr				242	0	0.0	-
312608--	Fact Sheets				145	0	0.0	-
312609--	Correspondence (Congrsnal/State)				483	100	20.7	-
312610--	Schedule & Cost Changes (SACCR)				580	100	17.2	-
312611--	Project Work Directives				290	0	0.0	-
312612--	Projct Closeout Coordinatn Docts				290	0	0.0	-
312613--	Qrtly Cost Report to Local Spnsr				483	100	20.7	-
312614--	All Other Progrms/PM Documnts				290	0	0.0	-
31901101	Mitigation Construction				1,256	0	25.0	-
	Subtotal				$23,187			
	Contingencies @ average of	16.4 % +/- *				$3,813		A
31.-.-.-	**CONSTRUCTION MANAGEMENT (S & I)**			**TOTAL:**		**$27,000**		
	NON-FEDERAL							
01	**LANDS AND DAMAGES**							
012303--	CONSTRUCTION CONTRACT(S) DOCUMENTS							
01230301	Real Estate Planning Documents				2,000	400	20.0	-
01230302	Real Estate Acquisition Documents				5,000	1,000	20.0	-
01230305	Real Estate Appraisal Documents				3,000	600	20.0	-
01230315	Real Estate Payment Documents				239,600	54,400	22.7	-
	Subtotal, Construction Costs:				$249,600			
	Contingencies @ average of	22.6 % +/- *				$56,400		A
01	**LANDS AND DAMAGES**			**TOTAL:**		**$306,000**		

SUMMARY OF TOTAL PROJECT ANNUAL COST

PROJECT: Pine Flat Dam, Mitigation	U. S. ARMY CORPS OF ENGINEER
LOCACTION: California	SACRAMENTO DISTRICT
INTEREST RATE: 6.375%	

ITEM	COST $
Effective Price Level (EPL) 1-Oct-98	
A. INVESTMENT COST	
1. FEDERAL TOTAL	49,358,000
2. NON-FEDERAL TOTAL	26,288,000
TOTAL PROJECT INVESTMENT	**$75,646,000**
B. ANNUAL COSTS	
1. FEDERAL TOTAL	3,297,000
2. NON-FEDERAL TOTAL	1,861,000
TOTAL PROJECT ANNUAL COST	**$5,158,000**

SUMMARY OF ANNUAL COSTS

ITEM	COST $
Effective Price Level (EPL) 1-Oct-98	
MULTI-LEVEL INTAKE STRUCTURE	
A. INVESTMENT COST	
1. FEDERAL TOTAL	25,652,000
2. NON-FEDERAL TOTAL	13,483,000
TOTAL PROJECT INVESTMENT	**$39,135,000**
B. ANNUAL COSTS	
1. FEDERAL TOTAL	1,713,000
2. NON-FEDERAL TOTAL	957,000
TOTAL ANNUAL COST	**$2,670,000**
WATER TRANSFER PIPELINE	
A. INVESTMENT COST	
1. FEDERAL TOTAL	23,226,000
2. NON-FEDERAL TOTAL	12,327,000
TOTAL PROJECT INVESTMENT	**$35,553,000**
B. ANNUAL COSTS	
1. FEDERAL TOTAL	1,552,000
2. NON-FEDERAL TOTAL	872,000
TOTAL ANNUAL COST	**$2,424,000**

SUMMARY OF ANNUAL COSTS(CONT'ED)

ITEM	COST $
Effective Price Level (EPL) 1-Oct-98	
RESTORATION SITE	
A. INVESTMENT COST	
1. FEDERAL TOTAL	480,000
2. NON-FEDERAL TOTAL	478,000
TOTAL PROJECT INVESTMENT	**$958,000**
B. ANNUAL COSTS	
1. FEDERAL TOTAL	32,000
2. NON-FEDERAL TOTAL	32,000
TOTAL ANNUAL COST	**$64,000**

DETAILED ESTIMATE OF ANNUAL COST

ITEM		COST $
Effective Price Level (EPL) 1-Oct-98		
MULTI-LEVEL INTAKE STRUCTURE		
A. INVESTMENT COST		
1. FEDERAL		
a. First Cost		22,760,000
b. Interest During Construction		2,892,000
TOTAL		$25,652,000
2. NON-FEDERAL		
a. First Cost		12,240,000
b. Interest During Construction		1,243,000
TOTAL		$13,483,000
TOTAL PROJECT INVESTMENT		**$39,135,000**
B. ANNUAL COSTS		
1. FEDERAL		
a. Interest and Amortization:		
Interest @	6.375%	1,635,000
Amortization @	0.304%	78,000
Amortization Period	50	
TOTAL		$1,713,000
2. NON-FEDERAL		
a. Interest and Amortization:		
Interest @	6.375%	861,000
Amortization @	0.304%	41,000
Amortization Period	50	
c. Maintenance And Operation:		55,000
06--- Fish & Wildlife Facil.	55,000	
TOTAL		$957,000
TOTAL ANNUAL COST		**$2,670,000**

DETAILED ESTIMATE OF ANNUAL COST(CONT'ED)

ITEM		COST $
Effective Price Level (EPL) 1-Oct-98		
WATER TRANSFER PIPELINE		
A. INVESTMENT COST		
1. FEDERAL		
a. First Cost		20,810,000
Less 18. Cultural Resources Preservation		(208,000)
b. Interest During Construction		2,624,000
TOTAL		$23,226,000
2. NON-FEDERAL		
a. First Cost		11,090,000
b. Interest During Construction		1,237,000
TOTAL		$12,327,000
TOTAL PROJECT INVESTMENT		**$35,553,000**
B. ANNUAL COSTS		
1. FEDERAL		
a. Interest and Amortization:		
Interest @	6.375%	1,481,000
Amortization @	0.304%	71,000
Amortization Period	50	
TOTAL		$1,552,000
2. NON-FEDERAL		
a. Interest and Amortization:		
Interest @	6.375%	786,000
Amortization @	0.304%	37,000
Amortization Period	50	
c. Maintenance And Operation:		49,000
06--- Fish & Wildlife Facil.	49,000	
TOTAL		$872,000
TOTAL ANNUAL COST		**$2,424,000**

DETAILED ESTIMATE OF ANNUAL COST(CONT'ED)

ITEM		COST $
Effective Price Level (EPL) 1-Oct-98		
RESTORATION SITE		
A. INVESTMENT COST		
1. FEDERAL		
a. First Cost		430,000
Less 18. Cultural Resources Preservation		(4,000)
b. Interest During Construction		54,000
TOTAL		$480,000
2. NON-FEDERAL		
a. First Cost		370,000
b. Interest During Construction		108,000
TOTAL		$478,000
TOTAL PROJECT INVESTMENT		**$958,000**
B. ANNUAL COSTS		
1. FEDERAL		
a. Interest and Amortization:		
Interest @	6.375%	31,000
Amortization @	0.304%	1,000
Amortization Period	50	
TOTAL		$32,000
2. NON-FEDERAL		
a. Interest and Amortization:		
Interest @	6.375%	30,000
Amortization @	0.304%	1,000
Amortization Period	50	
c. Maintenance And Operation:		1,000
06--- Fish & Wildlife Facil.	1,000	
TOTAL		$32,000
TOTAL ANNUAL COST		**$64,000**

DETAILED ESTIMATE OF INTEREST DURING CONSTRUCTION

ACCOUNT NUMBER	DESCRIPTION	AMOUNT $	CONTRACT START DATE	CONTRACT END DATE	PLANT USAGE DATE	INTEREST DURING CONSTRUCTION	INTEREST RATE %
		Effective Price Level (EPL) 1-Oct-98					
	MULTI-LEVEL INTAKE STRUCTURE						
	FEDERAL COSTS						
06---	FISH & WILDLIFE FACILITIES	29,014,000	Jul-2005	Aug-2008	Aug-2008	2,945,785	6.375
30---	PLANNING, ENGR. & DESIGN	2,674,000	Oct-2002	Jul-2005	Aug-2008	852,288	6.375
		891,000	Jul-2005	Aug-2008	Aug-2008	90,463	6.375
31---	CONSTRUCTION MANAGEMENT	2,421,000	Jul-2005	Aug-2008	Aug-2008	245,804	6.375
CASH CONTRIBUTION		12,240,000	Jul-2005		Aug-2008	1,242,725	
TOTAL FEDERAL COST		**$22,760,000**				**$2,891,615**	
	NON-FEDERAL COSTS						
CASH CONTRIBUTION		12,240,000	Jul-2005		Aug-2008	1,242,725	6.375
TOTAL NON-FEDERAL		**$12,240,000**				**$1,242,725**	
	WATER TRANSFER PIPELINE						
	FEDERAL COSTS						
01---	LANDS AND DAMAGES	69,000	Nov-2003	Jul-2004	Aug-2008	21,660	6.375
06---	FISH & WILDLIFE FACILITIES	25,627,000	Jul-2005	Aug-2008	Aug-2008	2,601,904	6.375
18---	CULTURAL RESOURCE PRES. (NO IDC)	208,000					
30---	PLANNING, ENGR. & DESIGN	2,385,000	Oct-2002	Jul-2005	Aug-2008	760,175	6.375
		795,000	Jul-2005	Aug-2008	Aug-2008	80,716	6.375
31---	CONSTRUCTION MANAGEMENT	2,137,000	Jul-2005	Aug-2008	Aug-2008	216,969	6.375
CASH CONTRIBUTION		10,411,000	Jul-2005		Aug-2008	1,057,027	
TOTAL FEDERAL COST		**$20,810,000**				**$2,624,397**	
	NON-FEDERAL COSTS						
01---	LANDS AND DAMAGES	509,000	Nov-2003	Jul-2004	Aug-2008	159,778	6.375
02---	RELOCATIONS Constr. Activities	136,000	Jul-2005	Aug-2008	Aug-2008	13,808	6.375
30---	PLANNING, ENGR. & DESIGN	20,000	Jul-2004	Jul-2005	Aug-2008	4,961	6.375
31---	CONSTRUCTION MANAGEMENT	14,000	Jul-2005	Aug-2008	Aug-2008	1,421	6.375
CASH CONTRIBUTION		10,411,000	Jul-2005		Aug-2008	1,057,027	6.375
TOTAL NON-FEDERAL		**$11,090,000**				**$1,236,995**	

DETAILED ESTIMATE OF INTEREST DURING CONSTRUCTION(CONT'ED)

ACCOUNT NUMBER	DESCRIPTION	AMOUNT $	CONTRACT START DATE	CONTRACT END DATE	PLANT USAGE DATE	INTEREST DURING CONSTRUCTION	INTEREST RATE %
		Effective Price Level (EPL) 1-Oct-98					
	RESTORATION SITE						
	FEDERAL COSTS						
01---	LANDS AND DAMAGES	14,000	Nov-2003	Jul-2004	Aug-2008	4,395	6.375
06---	FISH & WILDLIFE FACILITIES	369,000	Jul-2005	Aug-2008	Aug-2008	37,464	6.375
18---	CULTURAL RESOURCE PRES. (NO IDC)	4,000					
30---	PLANNING, ENGR. & DESIGN	38,000	Oct-2002	Jul-2005	Aug-2008	12,112	6.375
		13,000	Jul-2005	Aug-2008	Aug-2008	1,320	6.375
31---	CONSTRUCTION MANAGEMENT	29,000	Jul-2005	Aug-2008	Aug-2008	2,944	6.375
CASH CONTRIBUTION		37,000	Jul-2005		Aug-2008	3,757	
TOTAL FEDERAL COST		**$430,000**				**$54,478**	
	NON-FEDERAL COSTS						
01---	LANDS AND DAMAGES	333,000	Nov-2003	Jul-2004	Aug-2008	104,531	6.375
CASH CONTRIBUTION		37,000	Jul-2005		Aug-2008	3,757	6.375
TOTAL NON-FEDERAL		**$370,000**				**$108,288**	

DETAILED ESTIMATE OF M & O COSTS & REPLACEMENT COSTS

ACCOUNT NUMBER	ITEM	ANNUAL COST $	FACTOR %	M&O COST $	PROJECT LIFE YRS	ITEM LIFE YRS	FACTOR %	REPLACEMENT COST
			Effective Price Level (EPL) 1-Oct-98					
	MULTI-LEVEL INTAKE STRUCTURE							
06---	Fish & Wildlife Facil.							
	Fish & Wildlife Facil.	40739	1.4	55446				
	Fish & Wildlife Facil.			55446				0
	SUMMARY							
06---	Fish & Wildlife Facil.			55446				0
	TOTAL			**$55,446**				**$0**
	WATER TRANSFER PIPELINE							
06---	Fish & Wildlife Facil.							
	Fish & Wildlife Facil.	35760	1.4	48670				
	Fish & Wildlife Facil.			48670				0
	SUMMARY							
06---	Fish & Wildlife Facil.			48670				0
	TOTAL			**$48,670**				**$0**
	RESTORATION SITE							
06---	Fish & Wildlife Facil.							
	Fish & Wildlife Facil.	830	1.4	1130				
	Fish & Wildlife Facil.			1130				0
	SUMMARY							
06---	Fish & Wildlife Facil.			1130				0
	TOTAL			**$1,130**				**$0**