Pacific Gas and Electric Company

Power Generation

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Mailing Address
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August 21, 2003

Honorable Magalie Roman Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Upper North Fork Feather River Project (FERC No. 2105)
Additional Information Request

Dear Secretary Salas:

This letter responds to Item 13 of the FERC's June 23, 2003 Additional Information Request (AIR). The Pacific Gas and Electric Company's July 21, 2003 letter responded to all other items in the AIR.

The attached information includes a hard copy of various material and a CD. The hard copy package contains the written response to the questions contained in AIR Item 13, plus hard copies of the summary supporting information for the MITEMP and SNTEMP models, supplemental figures for Appendix E2-F, Appendix E2-G, Appendix E2-H, Appendix E2-J, Appendix E2-K, and Appendix ER2-N of the Application for New License (FAL), revised tables for Section E of the FAL, and a Butt Valley Reservoir Study. The CD contains additional supporting data plus everything also provided in hard copy form. Recipients of this letter will all receive a copy of the CD.

If you have any questions, please call me at (415) 973-9320.

Sincerely,

Tom Jereb
Relicensing Project Manager

Original and eight copies to FERC

Attachments
1) Hard copy of AIR 13 written response
2) CD with all supporting information

Cc: Attached Distribution List

Upper North Fork Feather River Project Distribution List:

Advisory Council on Historic Pres.
Western Office of Project Review
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Lakewood, CO 80228

American Whitewater
Mr. John T Gangemi
482 Electric Ave.
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Baiocchi Family
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Friends of the River
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Trout Unlimited
Chuck Bonham
828 San Pablo Ave., Suite 208
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USDA Forest Service, Region 5
Mr. Brad Powell
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Susanville Indian Rancheria
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LICENSEE'S REPLYS TO:

SCHEDULE A

ADDITIONAL INFORMATION REQUESTS

13. Water Temperature Modeling - Expected time to respond: 60 days.

In Exhibit E, Section E2.5.1.4, you describe the objectives and methods used for modeling water temperatures in reaches directly affected by the project. Based on this description, you used a modified version of MITEMP3 (a lake temperature model developed by Massachusetts Institute of Technology) to model temperatures in Lake Almanor and Butt Valley Reservoir; and used SNTEMP (a steady-state stream temperature model developed by the U.S. Fish and Wildlife Service) to model temperatures in the Seneca (North Fork Feather River from Canyon Dam to Caribou No. 1 powerhouse), Belden (North Fork Feather River from Belden Dam to Yellow Creek), and Butt (Butt Creek from Butt Valley Dam to the confluence with the North Fork Feather) reaches. However, you do not provide any results of using the SNTEMP model to predict water temperatures for the Butt Creek bypassed reach, since "any release from Butt Creek Reservoir would negatively impact the existing temperature regime of lower Butt Creek (page E2-434)." This claim assumes that maintaining cool water temperatures is of highest importance and that other issues such as the potential to enhance the quantity and/or quality (other than temperature) of aquatic habitat in lower Butt Creek is irrelevant.

LICENSEE RESPONSE:

Licensee acknowledges that maintaining cool water temperatures is not the only issue in developing potential flow releases for lower Butt Creek. Section E2.6.4.6 only discusses existing water temperatures in this reach and how they would be affected by simulated releases from Butt Valley Reservoir (with temperatures that typically are greater than lower Butt Creek by about 1 to 11°C, depending on time of year). Additional items Licensee considered in its flow proposal are discussed in section E3.1.1.15 **Anticipated Impacts of Continued Operation** (page E3.1-508), and included: 1) this reach had the highest number of native molluscs in the project area; 2) it had the highest number of rainbow trout redds in the project area per mile (171/mile); and 3) the results of the PHABSIM analysis (section E3.1.10.3 **Results,** Figure E3.1.10-11, page E3.1-329) indicates that the maximum weighted useable area (WUA) for juvenile rainbow trout is achieved at approximately 16 cfs (flow measured in the 2000-2001 summer period ranged from 13 to 17 cfs) and the existing flows results in 96% of the maximum WUA for adult rainbow trout and 89% of maximum WUA for macroinvertebrate diversity.

Additionally, Licensee is currently in collaborative discussions with the resource agencies and NGOs (the collaborative) to establish a Settlement Agreement. Based upon the information presented above, a subgroup of the collaborative also has concluded the benefits of providing releases from Butt Valley Reservoir to lower Butt Creek may impose as much risk in decreasing the overall quality of aquatic habitat for all species with only a minimal potential for increasing adult rainbow trout habitat (an additional 4%). To help protect the existing resources and to ensure that conditions do not degrade over the course of a new project license, the subgroup has discussed the following issues: 1) not to conduct any activities to either the powerhouse tunnel or dam that might reduce the existing flow regime (current monitoring at the dam shows a 1-2 cfs leakage rate compared to 13-17 cfs at the reaches mouth); 2) provide winter pulse flows, if necessary, to maintain aquatic habitat in the lower reaches of lower Butt Creek; and 3) maintain existing flow monitoring below dam and develop a monitoring program to access the need for pulse flows. Pulse flows will be supplied via use of the Butt Valley Reservoir spillway or an acceptable alternative. The magnitude and duration of the flow needs to be adequate to move desired particle sizes to the confluence with the Seneca Reach, to address woody debris and live vegetation concerns, and the timing should be coordinated with pulse flows in the Seneca reach.

In Section E2.6.4, you summarize modeled water temperatures in tables in a way that facilitates assessment of potential measures that could be taken to reduce temperatures at several locations in the project area; however, you do not provide a comprehensive set of tables that show the results of all of the scenarios modeled. Without a complete set of the temperature modeling results, we can not conduct a complete evaluation of the various scenarios that were modeled.

LICENSEE RESPONSE:

A complete set of the temperature modeling results in a comprehensive set of tables is attached. The tables and the complete set of electronic data (provided on the Model CD) show the results of all the scenarios modeled.

In your presentation of the reservoir model results, you indicate that you assumed that increased releases from the Canyon Dam would not be compensated for by reducing flows used to generate power at the Butt Valley powerhouse. Figures E2.6-4 and E2.6-6 display the water surface elevations that were modeled for Canyon Dam releases of 35 and 600 cfs, respectively. Although these figures and others in Appendix E2-F provide insight into Lake Almanor water surface elevations that would result under different operational scenarios, they are not adequate for us to fully assess project impacts and the effects of potential enhancement measures.

LICENSEE RESPONSE:

For clarification, all model runs provided in the Final Application for License (FAL) assumed that increased releases from the Canyon Dam **would be** compensated for by reducing 'power' water at the Butt Valley Powerhouse (see Page E2-408, top paragraph) for as long as there is enough 'power' water to be reduced from, i.e., 100% generation losses. However, there are times when Butt Valley Powerhouse generation water is less than the increased releases from the Canyon Dam especially for higher Canyon Dam release scenarios. Under this circumstance, the increased release in excess of 'power' water is assumed to derive from the lake storage.

For the above stated reasons, please provide the MITEMP3 and SNTEMP output for all reliable model runs made in electronic format along with a description of the modeled scenario. We request that you provide this information in an organized fashion that is consistent for each model set. For each model set, you should provide (1) a description of the assumptions applied, (2) predicted water surface elevations for Lake Almanor and Butt Valley Reservoir, (3) predicted water temperatures for vertical profiles in Lake Almanor and Butt Valley Reservoir, (4) predicted water temperatures for each of the project powerhouses and for all sites in stream reaches modeled, and (5) flows at each location modeled.

LICENSEE RESPONSE:

A complete set of electronic data for all output files for MITEMP3 and SNTEMP runs is attached in the accompanied CD. Raw output data have been imported to Excel spreadsheets for graphic and tabulation purpose. The complete set of Excel spreadsheets is stored in the accompanied CD and is categorized by each of the running scenarios defined in the naming convention established in Table E2.6-4 of FAL (Note: This table is later extended to include additional model runs that were requested by the various resource agencies. The extended tables and additional model runs are provided in the attached document and on the CD [see the folder named 'Agency requested info after FAL' for additional tables and figures that were prepared and presented to the agencies after the FAL was sent to FERC]). A 'readme' text file has been provided along with all the data documenting the modeled scenarios.

The following information has also been provided:

(1) the general description of the assumptions was discussed in the FAL in Section E2.6.4.2, the specific modeled condition applied is provided in the naming convention tables for MITEMP ('MITEMP Model Naming Scenario runs.xls') and SNTEMP ('Naming Convention SNTEMP Model.xls') simulations, respectively;

(2) the predicted water surface elevations for Lake Almanor and Butt Valley are provided on the CD in the MITEMP folder in the respective folders for Almanor and Butt Valley project models. The prediction data are stored in column F of the tab named "Processed_OT" under the file with the 'RunID.xls' name;

(3) similarily, each midmonth water temperature for vertical profiles in Lake Almanor and Butt Valley are provided on the CD in the MITEMP folder in the respective folders for Almanor and Butt Valley project models, in the tab named "Processed_OP." The complete daily profiles (from March 1 through September 30) are provided in the tab named "Raw_OP";

(4) the predicted water temperature time series for the powerhouses are provided in the CD in the MITEMP folder in the files named 'RunID.xls' in the tab named

"Processed_OT" in columns B and D. The predicted water temperatures in the stream reaches are provided in the CD in the SNTEMP folder under the respective folders for Belden, Butt Creek, and Seneca. The simulation results are stored with the following file names B6-9RunID.xls (for the Belden Reach), B4XRESULTS.xls (for Butt Creek), and S6-9RunID.xls (for the Seneca Reach), respectively;

(5) flows at each location are provided in the CD in the MITEMP folder in the 'RunID.xls' file in the tab named "Processed_OT," in columns C and E, and in the SNTEMP folder in the Belden, Butt Creek, and Seneca folders with the following file names: 'README belflows.xls', 'README Dry and Normal Hydrology.doc', and 'READ MEsenflows.xls', respectively.

The predicted outflow temperatures for lake simulation (five statistically ranked values) and stream reach predictions (at the end of the reach or at selected locations) are provided in various summary tables on the CD in both the MITEMP ('Lake Almanor Summary Table Results.xls', 'Butt Valley 12CASE Summary Results.xls', and 'Butt Valley 21CASE Summary Results.xls') and SNTEMP folders ('Belden Summary 2003.xls' and 'Seneca Summary 2003.xls').

Modeled scenarios should include all of the reliable model runs conducted to date and the following:

- *Baseline condition (project operations that are consistent with current operations). Based on our understanding of your operations, this model run should include using the Canyon Dam low-level outlet to release 35 cfs into the Upper North Fork Feather River, preferentially operating the Caribou No. 2 development over the No. 1 development, providing a minimum instream flow release into the Belden reach of 140 cfs from late April through Labor Day and 60 cfs for the remainder of the year.*

LICENSEE RESPONSE:

The baseline operational condition has been simulated under four combinations of environmental scenarios, i.e., Average or Dry hydrology combined with Normal or Warm meteorology. These runs are designated as ANEA21a, AWEA21a, DNEA21a and

DWEA21a. Table E2.6-4 of FAL defines the naming convention. Naming convention tables are also provided on the CD (MITEMP Model Naming Scenario runs.xls and Naming Convention SNTEMP Model.xls).

- *All possible combinations of:*
  Proposed minimum instream flow releases for Canyon Dam and Belden Dam (i.e., releasing 75 cfs into the UNFFR through the Canyon Dam low-level outlet during November 1 - September 14 and using the upper-level outlet during September 15-October 31, and releasing 140 cfs year-round into the Belden reach)

LICENSEE RESPONSE:

The Licensee modeled and predicted the daily average temperature profiles for a period of seven months, starting from March 1 when the lake is close to isothermal condition, to September 30 when lake starts turning over. The simulations focused in this period for two reasons: 1) the water temperature is of concern only during summer period, and 2) no data were collected in the winter time when the lake is partially covered with ice covers, hence, the calibrated model may not work well under this particular condition.

The Licensee proposes the instream flow release through the Canyon Dam low-level outlet all year round, except in the period of September 15 through early November during which time the lower-level gate be closed and the upper-level outlet be used to provide the instream flow release. The gate switching during this period minimizes the hypolimnion deoxygenated water quality impact (odor issue) to Seneca Reach when the surface water temperatures cool down. Note that all model runs provided herein assume that the Canyon Dam instream flow release is from the low-level outlet at all times.

Existing generation at Butt Valley and combination of Caribou powerhouses
Generation at Butt Valley and combination of Caribou powerhouses reduced by amount of increase in Canyon Dam instream flow release (i.e., typically 40 cfs)
Existing Prattville intake
Modified Prattville intake

Preferential operation of Caribou No. 1 over Caribou No. 2 **(the 1-2 case)**
Existing Caribou No. 2 intake **(the 2-1 case)**
Modified Caribou No. 2 intake

LICENSEE RESPONSE:

Model simulation of all possible combinations of the above conditions was conducted, with few exceptions to Caribou operation gaming scenarios. Because of the higher efficiency of Caribou No. 2 unit, the Licensee prefers to operate Caribou No. 2 more frequently than Caribou No. 1 (the preferential 2-1 Case). The 1-2 Case is not the preferred operation; instead this case was considered as an alternative case in the FAL. The 1-2 Case was to study the temperature difference, if any and by how much, would be between the two Caribou operations. A total of forty (40) model runs was made for the 1-2 Case (Table E2.6-10 in FAL), including five (5) Seneca instream flow releases, two (2) Prattville Intake configurations, and four (4) environmental conditions. Comparison to the 2-1 Case was tabulated in Table E2.6-11 to E2.6-13 and displayed in Figure E2.6-24. There was little temperature difference in the NFFR downstream at the Belden Dam release point as a result of the alternative Caribou operation (the 1-2 case) when compared to the preferred Caribou operation (the 2-1 case). Given the fact that only little temperature difference would be realized in the NFFR downstream and that a large number of model runs (in this case, two hundred runs) would have been necessary, the Licensee chose to focus on the 2-1 Case for the downstream temperature simulation, the SNTEMP stream temperature simulation.

In 1985, Licensee retained Woodward-Clyde Consultant (WCC) to investigate the effect of modified Caribou No. 2 intake associated with the selectively withdrawal in Lake Almanor (Pacific Gas and Electric Company, 1986b in FAL). The study suggested that a submerged extension 16-foot pipe hooked to Caribou No. 2 intake might have the potential of selective withdrawal. In 1999, FERC retained Bechtel to independently review the WCC study result (Bechtel, February 2000). The review specifically indicated that the modified Caribou No. 2 intake, as conceptualized by WCC, will not withdraw selectively (Section 3.2.2 in Page 7 of Bechtel report) due to a lack of adequate submergence. Model simulation for the modified Caribou No. 2 intake was not conducted nor included in the FAL at the present time.

In 2003, as part of the on-going study associated with the physical model study at University of Iowa at Iowa City (FERC 1962 License Condition), the Licensee retained Bechtel to explore options to the modification of Caribou units. Preliminary information suggested (Bechtel, 2003) that two curtains (or similar structures) are required in order to minimize the warming in Butt Valley Reservoir. The upper curtain (located in the up area of Butt Valley Reservoir) acts to induce the incoming cold water plunged into the bottom of the reservoir as a density current underflow. The lower curtain (near intakes) is then designed to withdraw selectively the cold underflow. The primary increase in temperature of the underflow will be due to the mixing at the plunge point. The range of inflow mixing is estimated to be in the 20% to 50% range. At this point, the study merely showed that a cold underflow through Butt Valley reservoir is possible. The reduction in the temperature increase through Butt Valley in mid-to-late summer and the effects of inflow mixing must still be assessed by MITEMP model, which will include a modification to the program. The modification will include using the state-of-the-art inflow mixing approach, plus adding a skimmer wall selective withdrawal algorithm to the model. The study is still on going.

In addition, please clarify whether water temperature was modeled for lower Butt Creek (Butt Valley Dam to the confluence with the NFFR). If it was modeled, please provide model results along with other model results as requested above. Otherwise, please provide the calibrated model input decks along with any pre-processors used to prepare input decks for varied operating regimes and post-processors used for organization of output from the model.

LICENSEE RESPONSE:

Water temperature for the lower Butt Creek was modeled, but only for the existing operation (no instream flow release) under four different environmental conditions. These model simulation results provided input data for SNTEMP model simulation in the Seneca Reach. Model results and the calibrated model input decks are included in the attached CD. There is no pre- or post-processors associated with the SNTEMP model used for the present project. All raw data were manually imported to Excel spreadsheet.

Finally, during the seismic remediation of Canyon Dam there was concern expressed about the ability of the Canyon Dam outlet tower to pass it's designed flow of 2,100 cfs and that a study was conducted to evaluate the matter. We are also aware that the outlet did pass up to approximately 1,800 cfs for a month or so during 1997.

LICENSEE RESPONSE:

There are 3 gates, which the Licensee normally operates and each gate can pass about 700 cfs. Pacific Gas and Electric Company's recent testing of the gates with the gates fully open reported the capacity of about 600 cfs for each gate.

Please provide a discussion of the ability of the Canyon Dam outlet tower to pass its full range of design flows.

LICENSEE RESPONSE:

The attached drawing contains the theoretical capacity curves for the Canyon Dam outlet. The outlet tower has five gates that are operational, of which 3 are normally used. Gates 1, 3, and 5 are located at 4,423 ft., U.S. Geological Survey (USGS) datum (4,413 Pacific Gas and Electric Company datum) and gates 6 and 7 are located at elevation 4,477, USGS datum (4,467 Pacific Gas and Electric Company datum). Gates 2 and 4 are located at elevation 4,410, USGS datum and were intentionally plugged when the dam was modified and the reservoir elevation increased. Gates 6 and 7 are normally operated when the reservoir elevation is above 4,485 ft, USGS datum and gates 1,3 and 5 are intended for operation when the reservoir is below elevation 4,485 ft, USGS datum. Gates 1,3 and 5, which access the colder water in Lake Almanor, have been used to facilitate the minimum instream flow release since 1980s.

Operation of the gates is very infrequent and occurs only during gate testing and periods when the additional outlet capacity from Lake Almanor is needed to best meet operational needs downstream or when water conditions indicate that the operation is prudent to be able to maintain reservoir elevations within the current operating limit of elevation 4,504 ft, USGS datum. During the 1997 dam remediation work at Butt Valley Dam, the gates were operated for an extended period. With the reservoir at elevation 4,497 ft, USGS datum, with one of the upper level gates open full the release was 786 cfs. For a period of approximately 1 ½ months the outlet discharge was increased to approximately 2,000 cfs. The peak flow achieved was 2,120 cfs with a combination of gates 6 and 7 full open and gate 3 partially open. The configuration of the outlet tunnel is such that air can become captured at the crown of the tunnel under some flow rates (700-1,400 cfs, depending upon gate openings and lake level) resulting in some vibration in the conduit beneath the dam and spouting at the downstream outlet structure. However, this does not impede the operation of the gates over their full range of operation and does not present a concern due to the infrequent operation of the outlet at higher release levels. All the base flow ranges that are being considered for future instream flow releases for support of aquatic life; hydrological processes and temperature considerations are below the rate at which air entrainment is a concern. However, a pulse flow is being considered that may be in the range (700-1,400 cfs) that results in some vibration in the conduit beneath the dam and is dependent upon gate openings and lake level.

References:

Bechtel Corporation, 2003. *PG&E Butt Valley Reservoir Study*, Report No. 24326-009, DRAFT, prepared for Pacific Gas and Electric Company 2003 (Included on Model CD)

LARGE-FORMAT IMAGES

One or more large-format images (over 8 ½" X 11") go here. These images are available in FERRIS at:

For Large-Format(s):
Accession No.: 20030825-0125

Security/Availability:

- [x] PUBLIC
- [ ] NIP
- [ ] CEII
- [ ] NON-PUBLIC/PRIVILEGED

File Date: Aug 22, 03 Docket No.: P2105

Parent Accession No.: 20030825-0124

Set No.: 1 of 1

Number of page(s) in set: 1

TRP-G REV.- 4/2003 (yellow)

Upper North Fork Feather River FERC 2105—Additional Information Request

Hardcopy Contents:

- Licensee Responses to FERC AIR Question 13
- MITEMP data
- SNTEMP data
- Replacement Tables and Figures that were generated and supplied to agencies after the submittal of the FAL to FERC
- Bechtel 2003 DRAFT report

Read me.txt

Each folder represents a different model simulation.
Each model has been designed to estimate water temperatures based on various input data.

There are a total of 184 model simulations developed for this project.
(72 for the Lake Almanor and 112 for the Butt Valley).
The model list is in the Run_list excel file.

Typical model folder contents:

ANEA.xls *(name of excel file is specific to the model run)
----
microsof excel spreadsheet file containing summary output of the model run, including tables and graphs.

Mitinp.dat
----
model input data file

OUTTMP.DAT
----
model daily data containing water surface and outfall water temperature vs. time.

Profile
----
model daily data containing water temperature vs. water elevation of the model: used for developing vertical temperature profiles of the body of water

```
[D:\]  (Dir : 187 ; File : 740)
    [ Project Models ]
        [ Almanor ]
            [ ANEA ]
                ANEA.xls        478208 Bytes
                mitinp.dat      30635 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     131076 Bytes
            [ ANEB ]
                ANEB.xls        474624 Bytes
                mitinp.dat      30598 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     130884 Bytes
            [ ANEC ]
                ANEC.xls        473600 Bytes
                mitinp.dat      30605 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     130244 Bytes
            [ ANED ]
                ANED.xls        472064 Bytes
                mitinp.dat      30598 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     129476 Bytes
            [ ANEE ]
                ANEE.xls        471552 Bytes
                mitinp.dat      30604 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     128452 Bytes
            [ ANEF ]
                ANEF.xls        435712 Bytes
                mitinp.dat      30602 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     130596 Bytes
            [ ANEG ]
                ANEG.xls        444928 Bytes
                mitinp.dat      30602 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     129956 Bytes
            [ ANEH ]
                ANEH.xls        450048 Bytes
                mitinp.dat      30598 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     129540 Bytes
            [ ANEI ]
                ANEI.xls        449536 Bytes
                mitinp.dat      30598 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     128900 Bytes
            [ ANMA ]
                ANMA.xls        476672 Bytes
                mitinp.dat      30798 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     131076 Bytes
            [ ANMB ]
                ANMB.xls        476160 Bytes
                mitinp.dat      30762 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     130884 Bytes
            [ ANMC ]
                ANMC.xls        475136 Bytes
                mitinp.dat      30764 Bytes
                OUTTMP.DAT      15417 Bytes
                PROFILE.DAT     130244 Bytes
```

```
[ ANMD ]
    ANMD.xls          473600 Bytes
    mitinp.dat        30762 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129476 Bytes
[ ANME ]
    ANME.xls          471552 Bytes
    mitinp.dat        30763 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       128452 Bytes
[ ANMF ]
    ANMF.xls          451072 Bytes
    mitinp.dat        30761 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       130596 Bytes
[ ANMG ]
    ANMG.xls          450560 Bytes
    mitinp.dat        30761 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129956 Bytes
[ ANMH ]
    ANMH.xls          450048 Bytes
    mitinp.dat        30761 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129540 Bytes
[ ANMI ]
    ANMI.xls          449536 Bytes
    mitinp.dat        30761 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       128900 Bytes
[ AWEA ]
    AWEA.xls          476672 Bytes
    mitinp.dat        30633 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       131076 Bytes
[ AWEB ]
    AWEB.xls          476160 Bytes
    mitinp.dat        30629 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       130884 Bytes
[ AWEC ]
    AWEC.xls          474624 Bytes
    mitinp.dat        30630 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       130244 Bytes
[ AWED ]
    AWED.xls          475136 Bytes
    mitinp.dat        30624 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129476 Bytes
[ AWEE ]
    AWEE.xls          471552 Bytes
    mitinp.dat        30600 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       128452 Bytes
[ AWEF ]
    AWEF.xls          451072 Bytes
    mitinp.dat        30596 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       130596 Bytes
[ AWEG ]
    AWEG.xls          450560 Bytes
    mitinp.dat        30596 Bytes
```

```
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129956 Bytes
[ AWEH ]
    AWEH.xls          450048 Bytes
    mitinp.dat        30596 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129540 Bytes
[ AWEI ]
    AWEI.xls          449536 Bytes
    mitinp.dat        30596 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       128900 Bytes
[ AWMA ]
    AWMA.xls          476672 Bytes
    mitinp.dat        30797 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       131076 Bytes
[ AWMB ]
    AWMB.xls          476160 Bytes
    mitinp.dat        30793 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       130884 Bytes
[ AWMC ]
    AWMC.xls          474624 Bytes
    mitinp.dat        30794 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       130244 Bytes
[ AWMD ]
    AWMD.xls          473600 Bytes
    mitinp.dat        30788 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129476 Bytes
[ AWME ]
    AWME.xls          471040 Bytes
    mitinp.dat        30764 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       128452 Bytes
[ AWMF ]
    AWMF.xls          451072 Bytes
    mitinp.dat        30760 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       130596 Bytes
[ AWMG ]
    AWMG.xls          450560 Bytes
    mitinp.dat        30760 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129956 Bytes
[ AWMH ]
    AWMH.xls          450048 Bytes
    mitinp.dat        30760 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       129540 Bytes
[ AWMI ]
    AWMI.xls          449536 Bytes
    mitinp.dat        30762 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       128900 Bytes
[ DNEA ]
    DNEA.xls          470016 Bytes
    mitinp.dat        30662 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       123300 Bytes
[ DNEB ]
```

```
    DNEB.xls          460800 Bytes
    mitinp.dat        30630 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       123076 Bytes
[ DNEC ]
    DNEC.xls          459264 Bytes
    mitinp.dat        30626 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       122372 Bytes
[ DNED ]
    DNED.xls          456704 Bytes
    mitinp.dat        30626 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       120996 Bytes
[ DNEE ]
    DNEE.xls          447488 Bytes
    mitinp.dat        30626 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       116452 Bytes
[ DNEF ]
    DNEF.xls          443392 Bytes
    mitinp.dat        30626 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       122852 Bytes
[ DNEG ]
    DNEG.xls          442880 Bytes
    mitinp.dat        30624 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       121988 Bytes
[ DNEH ]
    DNEH.xls          442368 Bytes
    mitinp.dat        30626 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       121636 Bytes
[ DNEI ]
    DNEI.xls          437248 Bytes
    mitinp.dat        30626 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       117028 Bytes
[ DNMA ]
    DNMA.xls          461312 Bytes
    mitinp.dat        30827 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       123300 Bytes
[ DNMB ]
    DNMB.xls          460800 Bytes
    mitinp.dat        30794 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       123076 Bytes
[ DNMC ]
    DNMC.xls          459264 Bytes
    mitinp.dat        30790 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       122372 Bytes
[ DNMD ]
    DNMD.xls          456704 Bytes
    mitinp.dat        30790 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       116452 Bytes
[ DNME ]
    DNME.xls          447488 Bytes
    mitinp.dat        30790 Bytes
    OUTTMP.DAT        15417 Bytes
```

```
    PROFILE.DAT     116452 Bytes
[ DNMF ]
    DNMF.xls        443392 Bytes
    mitinp.dat      30791 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     122852 Bytes
[ DNMG ]
    DNMG.xls        442368 Bytes
    mitinp.dat      30791 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     121988 Bytes
[ DNMH ]
    DNMH.xls        442368 Bytes
    mitinp.dat      30791 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     121636 Bytes
[ DNMI ]
    DNMI.xls        437248 Bytes
    mitinp.dat      30791 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     117028 Bytes
[ DWEA ]
    DWEA.xls        461312 Bytes
    mitinp.dat      30648 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     123300 Bytes
[ DWEB ]
    DWEB.xls        460800 Bytes
    mitinp.dat      30616 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     123076 Bytes
[ DWEC ]
    DWEC.xls        458752 Bytes
    mitinp.dat      30612 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     122372 Bytes
[ DWED ]
    DWED.xls        456704 Bytes
    mitinp.dat      30612 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     120996 Bytes
[ DWEE ]
    DWEE.xls        447488 Bytes
    mitinp.dat      30616 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     116452 Bytes
[ DWEF ]
    DWEF.xls        442368 Bytes
    mitinp.dat      30610 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     122852 Bytes
[ DWEG ]
    DWEG.xls        442368 Bytes
    mitinp.dat      30612 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     121988 Bytes
[ DWEH ]
    DWEH.xls        442368 Bytes
    mitinp.dat      30612 Bytes
    OUTTMP.DAT      15417 Bytes
    PROFILE.DAT     121636 Bytes
[ DWEI ]
    DWEI.xls        437248 Bytes
```

```
        mitinp.dat      30612 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     117028 Bytes
    [ DWMA ]
        DWMA.xls        461312 Bytes
        mitinp.dat      30812 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     123300 Bytes
    [ DWMB ]
        DWMB.xls        458752 Bytes
        mitinp.dat      30780 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     123076 Bytes
    [ DWMC ]
        DWMC.xls        459264 Bytes
        mitinp.dat      30776 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     122372 Bytes
    [ DWMD ]
        DWMD.xls        456192 Bytes
        mitinp.dat      30776 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     120996 Bytes
    [ DWME ]
        DWME.xls        447488 Bytes
        mitinp.dat      30780 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     116452 Bytes
    [ DWMF ]
        DWMF.xls        443392 Bytes
        mitinp.dat      30774 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     122852 Bytes
    [ DWMG ]
        DWMG.xls        442368 Bytes
        mitinp.dat      30774 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     121988 Bytes
    [ DWMH ]
        DWMH.xls        442368 Bytes
        mitinp.dat      30776 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     121636 Bytes
    [ DWMI ]
        DWMI.xls        437248 Bytes
        mitinp.dat      30776 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     117028 Bytes
[ ButtValy ]
    [ ANEA12 ]
        ANEA12.xls      371712 Bytes
        mitinp.dat      22844 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     72388 Bytes
    [ ANEA21 ]
        ANEA21.xls      372736 Bytes
        mitinp.dat      22844 Bytes
        OUTTMP.DAT      15417 Bytes
        PROFILE.DAT     72612 Bytes
    [ ANEB12 ]
        ANEB12.xls      372224 Bytes
        mitinp.dat      22827 Bytes
        OUTTMP.DAT      15417 Bytes
```

```
    PROFILE.DAT       70692 Bytes
[ ANEB21 ]
    ANEB21.xls        370176 Bytes
    mitinp.dat        22827 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       70948 Bytes
[ ANEC12 ]
    ANEC12.xls        368640 Bytes
    mitinp.dat        22826 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       68900 Bytes
[ ANEC21 ]
    ANEC21.xls        366080 Bytes
    mitinp.dat        22826 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       68996 Bytes
[ ANED12 ]
    ANED12.xls        363008 Bytes
    mitinp.dat        22836 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       67332 Bytes
[ ANED21 ]
    ANED21.xls        363520 Bytes
    mitinp.dat        22836 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       67524 Bytes
[ ANEE12 ]
    ANEE12.xls        364544 Bytes
    mitinp.dat        22813 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       66500 Bytes
[ ANEE21 ]
    ANEE21.xls        361984 Bytes
    mitinp.dat        22813 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       66596 Bytes
[ ANEF21 ]
    ANEF21.xls        400896 Bytes
    mitinp.dat        22834 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       70244 Bytes
[ ANEG21 ]
    ANEG21.xls        397824 Bytes
    mitinp.dat        22835 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       68260 Bytes
[ ANEH21 ]
    ANEH21.xls        397824 Bytes
    mitinp.dat        22828 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       67812 Bytes
[ ANEI21 ]
    ANEI21.xls        396800 Bytes
    mitinp.dat        22834 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       66884 Bytes
[ ANMA12 ]
    ANMA12.xls        373248 Bytes
    mitinp.dat        22841 Bytes
    OUTTMP.DAT        15417 Bytes
    PROFILE.DAT       72388 Bytes
[ ANMA21 ]
    ANMA21.xls        372736 Bytes
```

```
      mitinp.dat      22841 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     72612 Bytes
[ ANMB12 ]
      ANMB12.xls      369664 Bytes
      mitinp.dat      22826 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     70692 Bytes
[ ANMB21 ]
      ANMB21.xls      369152 Bytes
      mitinp.dat      22826 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     70948 Bytes
[ ANMC12 ]
      ANMC12.xls      366592 Bytes
      mitinp.dat      22825 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     68900 Bytes
[ ANMC21 ]
      ANMC21.xls      365568 Bytes
      mitinp.dat      22825 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     68996 Bytes
[ ANMD12 ]
      ANMD12.xls      358912 Bytes
      mitinp.dat      22835 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     67332 Bytes
[ ANMD21 ]
      ANMD21.xls      361472 Bytes
      mitinp.dat      22839 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     67524 Bytes
[ ANME12 ]
      ANME12.xls      357888 Bytes
      mitinp.dat      22813 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     66500 Bytes
[ ANME21 ]
      ANME21.xls      357376 Bytes
      mitinp.dat      22813 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     66596 Bytes
[ ANMF21 ]
      ANMF21.xls      400896 Bytes
      mitinp.dat      22832 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     70244 Bytes
[ ANMG21 ]
      ANMG21.xls      397824 Bytes
      mitinp.dat      22831 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     68260 Bytes
[ ANMH21 ]
      ANMH21.xls      397312 Bytes
      mitinp.dat      22830 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     67812 Bytes
[ ANMI21 ]
      ANMI21.xls      396800 Bytes
      mitinp.dat      22829 Bytes
      OUTTMP.DAT      15417 Bytes
      PROFILE.DAT     66884 Bytes
```

```
[ AWEA12 ]
    AWEA12.xls       523776 Bytes
    mitinp.dat       22844 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      72388 Bytes
[ AWEA21 ]
    AWEA21.xls       365056 Bytes
    mitinp.dat       22844 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      72612 Bytes
[ AWEB12 ]
    AWEB12.xls       365568 Bytes
    mitinp.dat       22821 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      70692 Bytes
[ AWEB21 ]
    AWEB21.xls       361472 Bytes
    mitinp.dat       22821 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      70948 Bytes
[ AWEC12 ]
    AWEC12.xls       366080 Bytes
    mitinp.dat       22820 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      68900 Bytes
[ AWEC21 ]
    AWEC21.xls       358400 Bytes
    mitinp.dat       22820 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      68996 Bytes
[ AWED12 ]
    AWED12.xls       357888 Bytes
    mitinp.dat       22823 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      67332 Bytes
[ AWED21 ]
    AWED21.xls       356352 Bytes
    mitinp.dat       22833 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      67524 Bytes
[ AWEE12 ]
    AWEE12.xls       360448 Bytes
    mitinp.dat       22816 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      66500 Bytes
[ AWEE21 ]
    AWEE21.xls       352768 Bytes
    mitinp.dat       22816 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      66596 Bytes
[ AWEF21 ]
    AWEF21.xls       400896 Bytes
    mitinp.dat       22830 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      70244 Bytes
[ AWEG21 ]
    AWEG21.xls       397824 Bytes
    mitinp.dat       22835 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      68260 Bytes
[ AWEH21 ]
    AWEH21.xls       397312 Bytes
    mitinp.dat       22828 Bytes
```

OUTTMP.DAT 15417 Bytes
PROFILE.DAT 67812 Bytes
[AWEI21]
AWEI21.xls 396800 Bytes
mitinp.dat 22840 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 66884 Bytes
[AWMA12]
AWMA12.xls 364544 Bytes
mitinp.dat 22839 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 72388 Bytes
[AWMA21]
AWMA21.xls 366080 Bytes
mitinp.dat 22839 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 72612 Bytes
[AWMB12]
AWMB12.xls 366080 Bytes
mitinp.dat 22821 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 70692 Bytes
[AWMB21]
AWMB21.xls 358912 Bytes
mitinp.dat 22821 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 70948 Bytes
[AWMC12]
AWMC12.xls 358400 Bytes
mitinp.dat 22820 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 68900 Bytes
[AWMC21]
AWMC21.xls 356352 Bytes
mitinp.dat 22820 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 68996 Bytes
[AWMD12]
AWMD12.xls 355328 Bytes
mitinp.dat 22831 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 67332 Bytes
[AWMD21]
AWMD21.xls 354304 Bytes
mitinp.dat 22831 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 67524 Bytes
[AWME12]
AWME12.xls 349184 Bytes
mitinp.dat 22816 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 66500 Bytes
[AWME21]
AWME21.xls 350208 Bytes
mitinp.dat 22816 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 66596 Bytes
[AWMF21]
AWMF21.xls 400896 Bytes
mitinp.dat 22830 Bytes
OUTTMP.DAT 15417 Bytes
PROFILE.DAT 70244 Bytes
[AWMG21]

```
        AWMG21.xls       397824 Bytes
        mitinp.dat       22834 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      68260 Bytes
    [ AWMH21 ]
        AWMH21.xls       397312 Bytes
        mitinp.dat       22823 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      67812 Bytes
    [ AWMI21 ]
        AWMI21.xls       396800 Bytes
        mitinp.dat       22832 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      66884 Bytes
    [ DNEA12 ]
        DNEA12.xls       371200 Bytes
        mitinp.dat       22829 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      74500 Bytes
    [ DNEA21 ]
        DNEA21.xls       369152 Bytes
        mitinp.dat       22829 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      74852 Bytes
    [ DNEB12 ]
        DNEB12.xls       371200 Bytes
        mitinp.dat       22828 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      74660 Bytes
    [ DNEB21 ]
        DNEB21.xls       372224 Bytes
        mitinp.dat       22828 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      75108 Bytes
    [ DNEC12 ]
        DNEC12.xls       370688 Bytes
        mitinp.dat       22825 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      74404 Bytes
    [ DNEC21 ]
        DNEC21.xls       371712 Bytes
        mitinp.dat       22825 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      74948 Bytes
    [ DNED12 ]
        DNED12.xls       369664 Bytes
        mitinp.dat       22828 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      73860 Bytes
    [ DNED21 ]
        DNED21.xls       367616 Bytes
        mitinp.dat       22828 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      74020 Bytes
    [ DNEE12 ]
        DNEE12.xls       366080 Bytes
        mitinp.dat       22830 Bytes
        OUTTMP.DAT       15417 Bytes
        PROFILE.DAT      73156 Bytes
    [ DNEE21 ]
        DNEE21.xls       362496 Bytes
        mitinp.dat       22830 Bytes
        OUTTMP.DAT       15417 Bytes
```

```
    PROFILE.DAT      73572 Bytes
[ DNEF21 ]
    DNEF21.xls       406528 Bytes
    mitinp.dat       22825 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      75300 Bytes
[ DNEG21 ]
    DNEG21.xls       405504 Bytes
    mitinp.dat       22828 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      74500 Bytes
[ DNEH21 ]
    DNEH21.xls       404992 Bytes
    mitinp.dat       22830 Bytes
    OUTTMP.DAT       15417 Bytes
    PROFILE.DAT      74052 Bytes
[ DNEI21 ]
    DNEI21.xls       404992 Bytes
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Directory contents.txt  34979 Bytes
Readme.txt       889 Bytes
MITEMP Model Scenario runs.xls 38 KBytes
Lake Almanor Summary Table Results.xls  304 KB
Butt Valley 12CASE Summary Results.xls  102 KB
Butt Valley 21CASE Summary Restuls.xls  127 KB
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MITEMP Model Scenarios for Lake Almanor

Water Year	Meteorology	Prattville Intake	Canyon Dam Release (cfs)		RUN ID
Average	Normal	Existing	A	35	ANEA
			B	75	ANEB
			C	150	ANEC
			D	300	ANED
			E	600	ANEE
			F	100	ANEF
			G	200	ANEG
			H	250	ANEH
			I	500	ANEI
		Modified	A	35	ANMA
			B	75	ANMB
			C	150	ANMC
			D	300	ANMD
			E	600	ANME
			F	100	ANMF
			G	200	ANMG
			H	250	ANMH
			I	500	ANMI
	Warm	Existing	A	35	AWEA
			B	75	AWEB
			C	150	AWEC
			D	300	AWED
			E	600	AWEE
			F	100	AWEF
			G	200	AWEG
			H	250	AWEH
			I	500	AWEI
		Modified	A	35	AWMA
			B	75	AWMB
			C	150	AWMC
			D	300	AWMD
			E	600	AWME
			F	100	AWMF
			G	200	AWMG
			H	250	AWMH
			I	500	AWMI
Dry	Normal	Existing	A	35	DNEA
			B	75	DNEB
			C	150	DNEC
			D	300	DNED
			E	600	DNEE
			F	100	DNEF
			G	200	DNEG
			H	250	DNEH
			I	500	DNEI
		Modified	A	35	DNMA
			B	75	DNMB
			C	150	DNMC
			D	300	DNMD
			E	600	DNME
			F	100	DNMF
			G	200	DNMG
			H	250	DNMH
			I	500	DNMI
	Warm	Existing	A	35	DWEA
			B	75	DWEB
			C	150	DWEC
			D	300	DWED
			E	600	DWEE
			F	100	DWEF
			G	200	DWEG
			H	250	DWEH
			I	500	DWEI
		Modified	A	35	DWMA
			B	75	DWMB
			C	150	DWMC
			D	300	DWMD
			E	600	DWME
			F	100	DWMF
			G	200	DWMG
			H	250	DWMH
			I	500	DWMI

MITINP.DAT is the input file, and there are two output files (OUTTMP.DAT and PROFILE.DAT). OUTTMP.DAT is imported to the tab Raw_OT in the corresponding RunID.xls spreadsheet, and PROFILE.DAT is imported to the tab Raw_OP in the corresponding RunID.xls spreadsheet.

MITEMP Model Scenarios for Butt Valley with Caribou No. 2 Preferred Operation over Caribou No. 1

					Butt Valley	21
Water Year	**Meteorology**	**Prattville Intake**	**Canyon Dam Release (cfs)**		**RUN ID**	
Average	Normal	Existing	A	35	ANEA	21
			B	75	ANEB	21
			C	150	ANEC	21
			D	300	ANED	21
			E	600	ANEE	21
			F	100	ANEF	21
			G	200	ANEG	21
			H	250	ANEH	21
			I	500	ANEI	21
		Modified	A	35	ANMA	21
			B	75	ANMB	21
			C	150	ANMC	21
			D	300	ANMD	21
			E	600	ANME	21
			F	100	ANMF	21
			G	200	ANMG	21
			H	250	ANMH	21
			I	500	ANMI	21
	Warm	Existing	A	35	AWEA	21
			B	75	AWEB	21
			C	150	AWEC	21
			D	300	AWED	21
			E	600	AWEE	21
			F	100	AWEF	21
			G	200	AWEG	21
			H	250	AWEH	21
			I	500	AWEI	21
		Modified	A	35	AWMA	21
			B	75	AWMB	21
			C	150	AWMC	21
			D	300	AWMD	21
			E	600	AWME	21
			F	100	AWMF	21
			G	200	AWMG	21
			H	250	AWMH	21
			I	500	AWMI	21
Dry	Normal	Existing	A	35	DNEA	21
			B	75	DNEB	21
			C	150	DNEC	21
			D	300	DNED	21
			E	600	DNEE	21
			F	100	DNEF	21
			G	200	DNEG	21
			H	250	DNEH	21
			I	500	DNEI	21
		Modified	A	35	DNMA	21
			B	75	DNMB	21
			C	150	DNMC	21
			D	300	DNMD	21
			E	600	DNME	21
			F	100	DNMF	21
			G	200	DNMG	21
			H	250	DNMH	21
			I	500	DNMI	21
	Warm	Existing	A	35	DWEA	21
			B	75	DWEB	21
			C	150	DWEC	21
			D	300	DWED	21
			E	600	DWEE	21
			F	100	DWEF	21
			G	200	DWEG	21
			H	250	DWEH	21
			I	500	DWEI	21
		Modified	A	35	DWMA	21
			B	75	DWMB	21
			C	150	DWMC	21
			D	300	DWMD	21
			E	600	DWME	21
			F	100	DWMF	21
			G	200	DWMG	21
			H	250	DWMH	21
			I	500	DWMI	21

MITINP.DAT is the input file, and there are two output files (OUTTMP.DAT and PROFILE.DAT), OUTTMP.DAT is imported to the tab Raw_OT in the corresponding RunID.xls

MITEMP Model Scenarios for Butt Valley with Caribou No. 1 Preferred Operation over Caribou No. 2

					Butt Valley	12
Water Year	Meteorology	Prattville Intake	Canyon Dam Release (cfs)		RUN ID	
Average	Normal	Existing	A	35	ANEA	12
			B	75	ANEB	12
			C	150	ANEC	12
			D	300	ANED	12
			E	600	ANEE	12
		Modified	A	35	ANMA	12
			B	75	ANMB	12
			C	150	ANMC	12
			D	300	ANMD	12
			E	600	ANME	12
	Warm	Existing	A	35	AWEA	12
			B	75	AWEB	12
			C	150	AWEC	12
			D	300	AWED	12
			E	600	AWEE	12
		Modified	A	35	AWMA	12
			B	75	AWMB	12
			C	150	AWMC	12
			D	300	AWMD	12
			E	600	AWMD	12
Dry	Normal	Existing	A	35	DNEA	12
			B	75	DNEB	12
			C	150	DNEC	12
			D	300	DNED	12
			E	600	DNEE	12
		Modified	A	35	DNMA	12
			B	75	DNMB	12
			C	150	DNMC	12
			D	300	DNMD	12
			E	600	DNME	12
	Warm	Existing	A	35	DWEA	12
			B	75	DWEB	12
			C	150	DWEC	12
			D	300	DWED	12
			E	600	DWEE	12
		Modified	A	35	DWMA	12
			B	75	DWMB	12
			C	150	DWMC	12
			D	300	DWMD	12
			E	600	DWME	12

MITINP.DAT is the input file, and there are two output files (OUTTMP.DAT and PROFILE.DAT). OUTTMP.DAT is imported to the tab Raw_OT in the corresponding RunID.xls spreadsheet, and PROFILE.DAT is imported to the tab Raw_OP in the corresponding RunID.xls spreadsheet.

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

ANEA21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.8	7.3	7.8	8.0
Apr	7.4	8.7	8.9	9.3	10.3
May	11.1	11.8	12.4	13.5	14.5
Jun	14.8	15.3	16.3	17.4	18.0
Jul	18.5	19.1	19.7	20.1	20.3
Aug	20.5	20.6	21.0	21.3	21.5
Sep	17.4	18.0	18.6	20.0	20.3
Caribou 2					
Mar	7.4	7.5	8.3	9.0	9.2
Apr	7.6	9.4	9.7	10.1	11.4
May	12.2	13.0	13.4	14.7	16.0
Jun	16.1	16.8	17.6	18.8	19.3
Jul	19.6	20.1	20.5	20.9	21.1
Aug	20.7	20.9	21.5	21.7	21.9
Sep	17.5	18.1	19.0	20.1	20.6

ANEB21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.7	7.3	7.8	8.1
Apr	7.4	8.7	9.0	9.2	10.6
May	11.2	11.9	12.5	14.0	14.7
Jun	15.0	15.5	16.5	17.5	18.0
Jul	18.7	19.3	20.1	20.3	20.5
Aug	20.5	20.8	21.0	21.4	21.6
Sep	17.8	18.1	18.9	20.1	20.4
Caribou 2					
Mar	7.3	7.5	8.5	9.1	9.4
Apr	7.7	9.5	9.7	10.1	11.7
May	12.3	13.0	13.7	15.2	16.2
Jun	16.3	16.7	17.6	18.8	19.2
Jul	19.7	20.3	20.8	21.0	21.3
Aug	20.7	20.9	21.3	21.8	22.0
Sep	18.0	18.2	19.1	20.2	20.7

ANEC21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.8	7.4	7.9	8.1
Apr	7.5	8.9	9.1	9.4	10.7
May	11.4	12.1	12.7	14.2	14.9
Jun	15.1	15.6	16.7	17.8	18.3
Jul	18.9	19.4	20.2	20.4	20.6
Aug	20.6	20.9	21.1	21.5	21.7
Sep	17.8	18.1	19.0	20.2	20.6
Caribou 2					
Mar	7.4	7.6	8.5	9.1	9.4
Apr	7.7	9.5	9.8	10.2	11.9
May	12.5	13.2	13.9	15.4	16.4
Jun	16.5	16.9	18.0	19.1	19.4
Jul	19.9	20.4	20.9	21.2	21.4
Aug	20.7	21.1	21.4	22.0	22.2
Sep	17.9	18.2	19.1	20.2	20.8

ANED21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.7	6.9	7.5	7.9	8.2
Apr	7.6	9.0	9.3	9.6	11.0
May	11.7	12.4	13.0	14.5	15.2
Jun	15.5	16.0	17.0	18.1	18.6
Jul	19.1	19.6	20.4	20.6	20.8
Aug	20.9	21.1	21.4	21.8	22.0
Sep	17.9	18.3	19.1	20.5	20.9
Caribou 2					
Mar	7.5	7.7	8.6	9.2	9.5
Apr	7.8	9.6	10.0	10.4	12.4
May	12.7	13.5	14.2	15.7	16.7
Jun	16.7	17.2	18.2	19.5	19.7
Jul	20.2	20.6	21.1	21.4	21.6
Aug	21.0	21.3	21.7	22.2	22.5
Sep	18.1	18.3	19.3	20.6	21.1

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

ANEE21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.9	7.1	7.7	8.1	8.4
Apr	7.8	9.3	9.6	9.8	11.5
May	12.2	12.9	13.6	15.1	15.9
Jun	16.0	16.6	17.5	18.5	19.1
Jul	19.6	20.0	20.8	21.0	21.2
Aug	21.4	21.6	22.0	22.3	22.5
Sep	18.1	18.5	19.3	20.8	21.2
Caribou 2					
Mar	7.7	7.9	8.7	9.2	9.6
Apr	8.0	9.7	10.2	10.6	12.8
May	13.2	13.9	14.8	16.5	17.6
Jun	17.2	17.8	18.8	19.8	20.3
Jul	20.7	21.0	21.5	21.8	22.0
Aug	21.5	21.7	22.2	22.6	22.8
Sep	18.3	18.5	19.5	20.8	21.4

ANEF21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.7	7.4	7.8	8.1
Apr	7.5	8.8	9.0	9.3	10.7
May	11.4	12.1	12.7	14.2	14.9
Jun	15.1	15.6	16.7	17.8	18.3
Jul	18.9	19.4	20.2	20.4	20.5
Aug	20.5	20.9	21.0	21.5	21.7
Sep	17.7	18.1	18.9	20.1	20.4
Caribou 2					
Mar	7.3	7.6	8.5	9.1	9.4
Apr	7.7	9.5	9.7	10.1	11.8
May	12.4	13.2	13.8	15.4	16.4
Jun	16.4	16.8	18.0	19.2	19.4
Jul	19.9	20.3	20.9	21.1	21.3
Aug	20.6	21.1	21.4	22.0	22.2
Sep	17.9	18.1	19.1	20.1	20.6

ANEG21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.8	7.4	7.9	8.2
Apr	7.5	8.9	9.2	9.5	11.0
May	11.8	12.5	13.1	14.7	15.4
Jun	15.5	16.0	17.1	18.3	18.8
Jul	19.2	19.7	20.4	20.6	20.8
Aug	20.6	21.0	21.3	21.8	21.9
Sep	17.6	18.0	18.9	20.2	20.6
Caribou 2					
Mar	7.4	7.6	8.5	9.1	9.5
Apr	7.7	9.5	9.9	10.3	12.1
May	12.7	13.5	14.1	15.9	16.9
Jun	16.7	17.2	18.4	19.6	19.9
Jul	20.3	20.6	21.1	21.4	21.6
Aug	20.8	21.2	21.6	22.2	22.4
Sep	17.9	18.1	19.1	20.3	20.8

ANEH21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.7	6.8	7.4	7.9	8.2
Apr	7.6	9.0	9.3	9.5	11.0
May	11.7	12.4	13.0	14.5	15.3
Jun	15.5	16.0	17.0	18.1	18.6
Jul	19.1	19.6	20.4	20.6	20.8
Aug	20.8	21.1	21.3	21.8	22.0
Sep	17.8	18.1	19.0	20.3	20.7
Caribou 2					
Mar	7.5	7.7	8.5	9.2	9.4
Apr	7.8	9.6	9.9	10.3	12.2
May	12.7	13.5	14.2	15.7	16.8
Jun	16.7	17.1	18.2	19.5	19.8
Jul	20.2	20.6	21.1	21.4	21.6
Aug	20.9	21.2	21.6	22.2	22.4
Sep	18.0	18.2	19.2	20.4	20.9

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

ANEI21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.8	7.0	7.6	8.1	8.3
Apr	7.7	9.2	9.5	9.7	11.4
May	12.2	12.8	13.5	15.0	15.8
Jun	16.0	16.5	17.4	18.5	19.0
Jul	19.5	19.9	20.7	20.9	21.1
Aug	21.2	21.5	21.8	22.2	22.4
Sep	18.0	18.4	19.2	20.7	21.1
Caribou 2					
Mar	7.7	7.8	8.7	9.2	9.6
Apr	8.0	9.6	10.2	10.6	12.8
May	13.1	13.9	14.7	16.3	17.4
Jun	17.1	17.7	18.6	19.9	20.2
Jul	20.6	20.9	21.4	21.7	22.0
Aug	21.3	21.6	22.0	22.5	22.7
Sep	18.1	18.4	19.4	20.7	21.3

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

ANMA21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.8	7.2	7.6	7.8
Apr	7.1	8.3	8.5	8.8	9.5
May	10.1	10.6	10.9	11.1	11.8
Jun	11.8	12.2	12.4	12.8	13.1
Jul	13.3	13.9	14.7	15.2	15.8
Aug	16.9	17.7	18.4	18.8	19.0
Sep	17.4	18.0	18.6	19.3	19.4
Caribou 2					
Mar	7.3	7.5	8.2	9.0	9.2
Apr	7.5	9.3	9.5	9.9	11.0
May	11.6	12.2	12.5	12.8	13.7
Jun	13.5	13.9	14.2	14.4	14.5
Jul	14.6	15.2	15.9	16.4	16.8
Aug	17.6	18.6	19.0	19.3	19.6
Sep	17.7	18.1	18.9	19.5	19.8

ANMB21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.7	7.3	7.7	8.0
Apr	7.1	8.4	8.6	8.9	9.7
May	10.1	10.8	11.0	11.4	11.9
Jun	12.0	12.2	12.5	12.8	13.1
Jul	13.5	14.0	14.9	15.5	16.1
Aug	17.2	18.0	18.7	18.9	19.2
Sep	17.8	18.2	18.8	19.5	19.7
Caribou 2					
Mar	7.3	7.5	8.4	9.0	9.4
Apr	7.5	9.4	9.6	10.0	11.4
May	11.7	12.5	12.8	13.2	13.9
Jun	13.6	14.0	14.3	14.5	14.9
Jul	14.9	15.3	16.1	16.4	17.0
Aug	18.0	18.8	19.0	19.4	19.6
Sep	18.0	18.3	19.0	19.7	20.0

ANMC21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.8	7.3	7.7	8.1
Apr	7.2	8.6	8.8	9.1	9.9
May	10.4	11.0	11.3	11.5	12.1
Jun	12.2	12.4	12.7	13.1	13.3
Jul	13.7	14.2	15.1	15.7	16.3
Aug	17.4	18.2	18.8	19.0	19.3
Sep	17.9	18.2	18.9	19.6	19.8
Caribou 2					
Mar	7.4	7.5	8.5	9.1	9.4
Apr	7.6	9.5	9.7	10.1	11.7
May	12.0	12.8	13.2	13.5	14.2
Jun	14.2	14.4	14.6	14.9	15.3
Jul	15.1	15.6	16.4	16.6	17.2
Aug	18.2	18.9	19.2	19.5	19.7
Sep	18.0	18.4	19.1	19.8	20.2

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

ANMD21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.7	6.9	7.4	7.9	8.2
Apr	7.4	8.8	9.1	9.3	10.3
May	10.8	11.4	11.7	12.0	12.5
Jun	12.7	12.9	13.2	13.5	13.7
Jul	14.1	14.6	15.6	16.2	16.9
Aug	18.0	18.9	19.5	19.7	20.1
Sep	18.1	18.4	19.2	20.1	20.4
Caribou 2					
Mar	7.5	7.7	8.6	9.2	9.5
Apr	7.7	9.5	9.9	10.3	12.3
May	12.4	13.2	13.7	14.1	14.8
Jun	14.7	15.1	15.3	15.6	15.9
Jul	15.6	16.0	16.9	17.1	17.8
Aug	18.9	19.7	19.8	20.3	20.6
Sep	18.3	18.5	19.4	20.3	20.8

ANME21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.9	7.1	7.6	8.1	8.4
Apr	7.7	9.2	9.4	9.6	11.0
May	11.6	12.2	12.7	13.0	13.6
Jun	13.7	13.9	14.2	14.4	14.6
Jul	14.7	15.2	16.2	16.8	17.4
Aug	18.6	19.4	20.0	20.2	20.5
Sep	18.1	18.4	19.2	20.3	20.7
Caribou 2					
Mar	7.7	7.9	8.7	9.2	9.6
Apr	8.0	9.6	10.2	10.6	12.7
May	13.1	13.8	14.7	15.6	16.5
Jun	16.0	16.2	16.6	17.0	17.5
Jul	16.3	16.7	17.6	17.8	18.4
Aug	19.5	20.1	20.5	20.8	21.1
Sep	18.3	18.5	19.4	20.5	21.1

ANMF21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.8	7.3	7.7	8.1
Apr	7.2	8.5	8.7	8.9	9.8
May	10.3	10.9	11.1	11.5	12.0
Jun	12.1	12.3	12.7	13.0	13.3
Jul	13.7	14.2	15.0	15.7	16.3
Aug	17.4	18.2	18.8	19.0	19.3
Sep	17.8	18.2	18.9	19.6	19.8
Caribou 2					
Mar	7.3	7.5	8.5	9.1	9.4
Apr	7.6	9.4	9.7	10.0	11.5
May	11.8	12.6	13.0	13.3	14.0
Jun	14.0	14.2	14.6	14.7	15.1
Jul	15.0	15.5	16.3	16.6	17.2
Aug	18.2	19.0	19.2	19.6	19.8
Sep	18.0	18.3	19.0	19.7	20.1

ANMG21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.8	7.4	7.8	8.0
Apr	7.3	8.7	8.9	9.2	10.0
May	10.5	11.2	11.5	11.7	12.2
Jun	12.4	12.5	12.9	13.3	13.5
Jul	13.9	14.4	15.3	15.9	16.6
Aug	17.7	18.5	19.1	19.3	19.7
Sep	17.9	18.3	19.1	19.8	20.1
Caribou 2					
Mar	7.4	7.6	8.5	9.1	9.4
Apr	7.7	9.5	9.8	10.2	11.8
May	12.2	13.0	13.4	13.7	14.4
Jun	14.4	14.6	14.9	15.2	15.6
Jul	15.3	15.8	16.6	16.8	17.5
Aug	18.5	19.2	19.4	19.8	20.2
Sep	18.1	18.4	19.2	20.0	20.4

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

ANMH21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.7	6.8	7.4	7.8	8.1
Apr	7.3	8.8	9.0	9.3	10.1
May	10.6	11.3	11.6	11.8	12.4
Jun	12.6	12.7	13.1	13.4	13.6
Jul	14.0	14.5	15.4	16.0	16.7
Aug	17.8	18.6	19.2	19.4	19.8
Sep	17.9	18.3	19.1	19.9	20.2
Caribou 2					
Mar	7.5	7.6	8.5	9.2	9.4
Apr	7.7	9.5	9.9	10.3	12.0
May	12.3	13.1	13.6	14.0	14.7
Jun	14.5	14.9	15.1	15.4	15.7
Jul	15.5	15.9	16.8	17.0	17.6
Aug	18.6	19.4	19.5	20.0	20.3
Sep	18.1	18.4	19.2	20.1	20.5

ANMI21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.8	7.0	7.5	8.0	8.3
Apr	7.6	9.1	9.3	9.5	10.8
May	11.4	12.0	12.3	12.6	13.2
Jun	13.3	13.5	13.8	14.1	14.2
Jul	14.5	15.0	16.0	16.6	17.3
Aug	18.4	19.3	19.9	20.1	20.4
Sep	18.0	18.3	19.2	20.3	20.6
Caribou 2					
Mar	7.7	7.8	8.6	9.2	9.6
Apr	7.9	9.6	10.1	10.5	12.7
May	12.9	13.7	14.4	15.1	15.9
Jun	15.6	15.9	16.1	16.4	17.0
Jul	16.0	16.5	17.4	17.6	18.2
Aug	19.3	20.0	20.3	20.6	21.0
Sep	18.2	18.4	19.4	20.4	21.0

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

AWEA21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.8	7.4	8.5	8.8
Apr	9.8	10.1	10.6	10.8	11.1
May	11.7	12.8	14.1	14.5	15.0
Jun	15.3	15.9	16.4	17.1	17.3
Jul	17.8	18.6	19.2	20.2	20.7
Aug	20.8	21.1	21.5	21.7	21.9
Sep	18.3	18.9	19.2	19.9	20.8
Caribou 2					
Mar	7.2	7.7	8.5	9.6	10.0
Apr	10.7	11.3	11.9	12.0	12.2
May	12.6	14.0	15.2	16.0	16.6
Jun	16.5	17.0	17.6	18.0	18.4
Jul	18.7	19.5	20.2	21.3	21.6
Aug	21.0	21.5	22.0	22.3	22.4
Sep	18.3	19.0	19.4	20.1	21.0

AWEB21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.4	6.8	7.4	8.5	8.8
Apr	9.9	10.2	10.7	10.9	11.4
May	11.8	12.9	14.1	14.7	15.2
Jun	15.4	15.9	16.6	17.0	17.4
Jul	18.1	18.7	19.3	20.6	21.0
Aug	20.9	21.0	21.6	21.9	22.1
Sep	18.5	19.0	19.4	20.0	20.9
Caribou 2					
Mar	7.2	7.7	8.6	9.8	10.1
Apr	10.8	11.3	11.9	12.2	12.5
May	12.7	14.2	15.3	16.3	16.7
Jun	16.6	17.0	17.5	17.9	18.4
Jul	19.0	19.7	20.4	21.6	21.9
Aug	21.0	21.3	22.0	22.4	22.7
Sep	18.5	19.1	19.6	20.2	21.2

AWEC21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.8	7.4	8.6	8.9
Apr	10.0	10.3	10.8	11.1	11.5
May	12.0	13.1	14.4	14.9	15.4
Jun	15.5	16.1	16.8	17.2	17.8
Jul	18.2	18.9	19.4	20.8	21.1
Aug	21.0	21.1	21.7	22.0	22.3
Sep	18.5	19.1	19.4	20.1	21.0
Caribou 2					
Mar	7.2	7.7	8.7	9.9	10.2
Apr	10.8	11.5	12.2	12.4	12.7
May	12.8	14.4	15.6	16.6	17.0
Jun	16.7	17.3	17.8	18.2	19.1
Jul	19.2	19.9	20.5	21.7	22.0
Aug	21.0	21.3	22.2	22.5	22.9
Sep	18.5	19.2	19.6	20.2	21.3

AWED21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.9	7.5	8.7	9.0
Apr	10.2	10.5	11.1	11.4	11.8
May	12.2	13.3	14.7	15.1	15.8
Jun	15.9	16.4	17.1	17.4	18.0
Jul	18.4	19.1	19.7	21.0	21.4
Aug	21.2	21.5	22.0	22.3	22.6
Sep	18.8	19.2	19.7	20.4	21.3
Caribou 2					
Mar	7.3	7.9	8.7	10.0	10.2
Apr	10.9	11.7	12.5	12.8	13.1
May	13.2	14.7	15.8	17.1	17.4
Jun	17.2	17.6	18.1	18.5	19.3
Jul	19.4	20.1	20.8	22.0	22.3
Aug	21.3	21.8	22.4	22.8	23.1
Sep	18.8	19.4	19.9	20.5	21.6

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

AWEE21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.8	7.1	7.6	8.8	9.3
Apr	10.5	10.9	11.5	11.7	12.3
May	12.7	13.9	15.3	15.9	16.5
Jun	16.4	16.9	17.5	18.0	18.4
Jul	18.9	19.6	20.2	21.4	21.8
Aug	21.7	22.0	22.4	22.8	23.0
Sep	18.9	19.4	19.8	20.6	21.8
Caribou 2					
Mar	7.6	8.1	8.9	10.1	10.7
Apr	11.0	11.9	12.8	13.2	13.4
May	13.7	15.1	16.4	18.2	18.6
Jun	17.6	18.1	18.4	19.0	19.8
Jul	19.9	20.6	21.3	22.5	22.8
Aug	21.7	22.3	22.9	23.3	23.7
Sep	18.9	19.5	20.1	20.7	22.0

AWEF21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.8	7.4	8.6	8.9
Apr	10.0	10.3	10.8	11.0	11.5
May	12.0	13.0	14.3	14.8	15.4
Jun	15.5	16.0	16.7	17.1	17.7
Jul	18.2	18.9	19.4	20.8	21.1
Aug	20.9	21.1	21.7	21.9	22.2
Sep	18.5	19.0	19.4	20.0	20.9
Caribou 2					
Mar	7.2	7.7	8.6	9.8	10.1
Apr	10.8	11.4	12.1	12.3	12.6
May	12.8	14.3	15.4	16.4	16.9
Jun	16.7	17.1	17.7	18.1	19.0
Jul	19.2	19.9	20.6	21.7	22.0
Aug	21.0	21.3	22.1	22.5	22.8
Sep	18.5	19.1	19.6	20.1	21.2

AWEG21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.9	7.5	8.7	9.0
Apr	10.1	10.5	11.0	11.2	11.6
May	12.1	13.2	14.6	15.0	15.6
Jun	15.6	16.2	17.0	17.3	17.9
Jul	18.3	19.0	19.6	21.0	21.3
Aug	21.1	21.3	21.9	22.2	22.5
Sep	18.6	19.1	19.5	20.1	21.1
Caribou 2					
Mar	7.3	7.8	8.7	9.9	10.2
Apr	10.9	11.6	12.3	12.6	12.9
May	13.0	14.6	15.7	16.8	17.2
Jun	16.7	17.4	17.9	18.3	19.3
Jul	19.4	20.0	20.7	21.9	22.1
Aug	21.2	21.6	22.3	22.7	23.0
Sep	18.6	19.2	19.7	20.3	21.4

AWEH21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.9	7.5	8.7	9.0
Apr	10.2	10.5	11.1	11.3	11.8
May	12.2	13.3	14.7	15.1	15.7
Jun	15.8	16.3	17.0	17.4	18.0
Jul	18.4	19.1	19.7	21.1	21.4
Aug	21.1	21.4	22.0	22.3	22.5
Sep	18.7	19.1	19.6	20.2	21.2
Caribou 2					
Mar	7.3	7.8	8.7	10.0	10.2
Apr	10.9	11.6	12.4	12.7	13.0
May	13.1	14.6	15.7	16.9	17.3
Jun	17.1	17.5	18.0	18.5	19.4
Jul	19.4	20.1	20.8	22.0	22.2
Aug	21.2	21.7	22.4	22.8	23.1
Sep	18.7	19.3	19.8	20.4	21.5

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

AWEI21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.7	7.1	7.6	8.8	9.2
Apr	10.5	10.8	11.4	11.6	12.1
May	12.6	13.7	15.1	15.6	16.3
Jun	16.3	16.8	17.4	17.8	18.3
Jul	18.8	19.5	20.1	21.4	21.7
Aug	21.6	21.9	22.4	22.7	22.9
Sep	18.8	19.3	19.7	20.4	21.6
Caribou 2					
Mar	7.5	8.0	8.8	10.2	10.6
Apr	11.0	11.9	12.7	13.1	13.4
May	13.5	15.0	16.2	17.5	18.1
Jun	17.5	18.0	18.3	18.9	19.8
Jul	19.8	20.5	21.2	22.4	22.7
Aug	21.6	22.2	22.7	23.2	23.5
Sep	18.8	19.4	19.9	20.6	21.9

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

AWMA21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.8	7.4	8.0	8.2
Apr	9.0	9.4	9.6	9.8	10.0
May	10.1	10.7	11.2	11.8	12.0
Jun	11.7	11.8	12.1	12.3	12.4
Jul	12.8	13.5	14.1	15.2	15.7
Aug	16.8	17.4	18.3	18.6	18.9
Sep	18.2	18.6	18.9	19.3	19.4
Caribou 2					
Mar	7.2	7.7	8.5	9.5	9.9
Apr	10.5	10.9	11.3	11.6	11.8
May	11.6	12.0	13.0	14.1	14.3
Jun	13.0	13.4	13.6	14.0	14.2
Jul	13.9	14.7	15.4	16.5	16.9
Aug	17.7	18.3	18.9	19.3	19.6
Sep	18.3	18.7	19.2	19.6	19.9

AWMB21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.4	6.8	7.4	8.2	8.3
Apr	9.2	9.5	9.9	10.0	10.1
May	10.2	10.7	11.5	12.0	12.1
Jun	11.8	11.9	12.0	12.2	12.5
Jul	13.0	13.6	14.3	15.5	16.0
Aug	17.1	17.6	18.3	18.8	19.2
Sep	18.6	18.8	19.2	19.5	19.7
Caribou 2					
Mar	7.2	7.7	8.6	9.7	10.0
Apr	10.6	11.1	11.7	11.8	12.0
May	11.8	12.2	13.6	14.5	14.8
Jun	12.9	13.5	13.8	14.2	14.4
Jul	14.4	14.8	15.6	16.8	17.1
Aug	18.1	18.5	18.9	19.4	19.6
Sep	18.6	19.0	19.3	19.7	20.1

AWMC21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.8	7.4	8.3	8.4
Apr	9.4	9.7	10.1	10.2	10.3
May	10.4	10.8	11.7	12.3	12.5
Jun	11.9	12.1	12.2	12.6	12.9
Jul	13.2	13.8	14.5	15.8	16.2
Aug	17.3	17.8	18.5	19.0	19.3
Sep	18.7	18.9	19.3	19.6	19.9
Caribou 2					
Mar	7.2	7.7	8.7	9.8	10.1
Apr	10.7	11.3	12.0	12.2	12.3
May	12.0	12.4	13.9	15.1	15.5
Jun	13.1	13.8	14.2	14.7	14.9
Jul	14.6	15.0	15.9	17.0	17.3
Aug	18.4	18.7	19.0	19.6	19.7
Sep	18.7	19.1	19.4	19.8	20.3

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

AWMD21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.9	7.5	8.5	8.7
Apr	9.8	10.1	10.5	10.7	10.7
May	10.9	11.2	12.1	12.8	13.0
Jun	12.3	12.4	12.6	13.0	13.2
Jul	13.5	14.1	14.8	16.1	16.6
Aug	17.7	18.2	18.9	19.5	19.9
Sep	18.9	19.0	19.6	19.8	20.3
Caribou 2					
Mar	7.3	7.9	8.7	10.0	10.2
Apr	10.9	11.6	12.4	12.7	12.8
May	12.5	12.9	14.6	15.8	16.3
Jun	13.5	14.4	14.8	15.2	15.6
Jul	14.9	15.4	16.2	17.4	17.7
Aug	18.8	19.1	19.6	20.2	20.4
Sep	18.9	19.3	19.7	20.1	20.7

AWME21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.8	7.1	7.6	8.7	9.1
Apr	10.2	10.6	11.1	11.3	11.4
May	11.8	12.1	13.1	14.1	14.6
Jun	13.1	13.3	13.6	14.0	14.4
Jul	14.2	14.8	15.6	16.9	17.4
Aug	18.5	19.0	19.7	20.3	20.6
Sep	18.9	19.3	19.7	20.2	20.8
Caribou 2					
Mar	7.6	8.1	8.9	10.1	10.7
Apr	11.0	11.9	12.8	13.2	13.4
May	13.5	14.1	15.4	17.4	18.2
Jun	14.5	15.5	16.2	16.9	17.3
Jul	15.8	16.2	17.1	18.3	18.7
Aug	19.7	20.0	20.4	21.1	21.1
Sep	18.9	19.4	20.0	20.4	21.3

AWMF21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.8	7.4	8.3	8.4
Apr	9.3	9.6	10.0	10.1	10.2
May	10.3	10.7	11.6	12.1	12.2
Jun	11.8	12.0	12.2	12.4	12.8
Jul	13.2	13.8	14.5	15.8	16.2
Aug	17.3	17.8	18.5	19.0	19.3
Sep	18.6	18.9	19.3	19.5	19.9
Caribou 2					
Mar	7.2	7.7	8.6	9.7	10.1
Apr	10.6	11.2	11.8	12.0	12.1
May	11.9	12.2	13.7	14.6	14.9
Jun	13.1	13.6	14.1	14.4	14.7
Jul	14.5	15.0	15.8	17.0	17.3
Aug	18.3	18.7	19.0	19.7	19.7
Sep	18.6	19.1	19.4	19.8	20.2

AWMG21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.5	6.9	7.4	8.4	8.5
Apr	9.6	9.8	10.2	10.4	10.5
May	10.6	11.0	11.9	12.5	12.7
Jun	12.1	12.2	12.4	12.7	13.0
Jul	13.4	14.0	14.7	16.0	16.4
Aug	17.6	18.1	18.8	19.3	19.7
Sep	18.8	19.0	19.5	19.8	20.2
Caribou 2					
Mar	7.3	7.8	8.7	9.9	10.2
Apr	10.8	11.5	12.2	12.4	12.5
May	12.2	12.5	14.0	15.3	15.8
Jun	13.3	14.1	14.4	14.9	15.2
Jul	14.8	15.3	16.1	17.3	17.6
Aug	18.7	19.0	19.4	20.0	20.2
Sep	18.8	19.2	19.6	20.0	20.6

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

AWMH21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.6	6.9	7.5	8.4	8.6
Apr	9.7	10.0	10.4	10.6	10.6
May	10.8	11.1	12.1	12.7	12.9
Jun	12.3	12.4	12.6	12.9	13.1
Jul	13.5	14.1	14.8	16.1	16.6
Aug	17.7	18.2	18.9	19.5	19.9
Sep	18.8	19.0	19.5	19.8	20.3
Caribou 2					
Mar	7.3	7.8	8.7	10.0	10.2
Apr	10.8	11.6	12.3	12.5	12.7
May	12.4	12.7	14.4	15.5	16.0
Jun	13.4	14.2	14.7	15.1	15.4
Jul	14.9	15.4	16.2	17.4	17.7
Aug	18.8	19.1	19.5	20.2	20.3
Sep	18.8	19.2	19.7	20.0	20.7

AWMI21	10%	25%	50%	75%	90%
Caribou 1					
Mar	6.7	7.1	7.6	8.7	9.0
Apr	10.1	10.5	11.0	11.1	11.2
May	11.4	11.8	12.8	13.6	13.9
Jun	12.9	13.0	13.3	13.6	14.0
Jul	14.0	14.7	15.4	16.8	17.3
Aug	18.4	18.9	19.6	20.1	20.4
Sep	18.8	19.2	19.7	20.1	20.7
Caribou 2					
Mar	7.5	8.0	8.8	10.2	10.6
Apr	10.9	11.8	12.7	13.1	13.3
May	13.2	13.7	15.2	16.8	17.5
Jun	14.2	15.2	15.8	16.3	16.7
Jul	15.6	16.1	16.9	18.1	18.5
Aug	19.5	19.8	20.2	20.9	21.0
Sep	18.8	19.4	19.9	20.2	21.2

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DNEA21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.5
May	11.4	12.2	12.9	14.4	15.5
Jun	15.6	15.9	17.2	18.6	19.0
Jul	19.8	20.1	21.0	21.3	21.5
Aug	21.7	22.0	22.4	22.6	22.8
Sep	18.3	18.7	19.9	21.3	21.4
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.2
May	12.5	13.3	14.1	16.0	17.4
Jun	17.3	17.8	19.1	20.7	21.3
Jul	21.6	21.8	22.4	22.8	23.0
Aug	22.1	22.5	22.8	23.2	23.4
Sep	18.3	18.8	19.9	21.3	21.4

DNEB21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.5
May	11.4	12.2	12.9	14.5	15.5
Jun	15.6	16.0	17.2	18.7	19.1
Jul	19.9	20.1	21.1	21.4	21.5
Aug	21.7	22.0	22.4	22.7	22.8
Sep	18.4	18.8	19.9	21.3	21.4
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.2
May	12.5	13.3	14.1	16.1	17.4
Jun	17.3	17.8	19.1	20.7	21.3
Jul	21.7	21.9	22.5	22.9	23.1
Aug	22.1	22.5	22.8	23.2	23.4
Sep	18.4	18.8	19.9	21.3	21.5

DNEC21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.2	12.9	14.5	15.6
Jun	15.7	16.0	17.2	18.8	19.2
Jul	19.9	20.2	21.1	21.5	21.6
Aug	21.7	22.1	22.5	22.7	22.8
Sep	18.4	18.8	20.0	21.4	21.5
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.4	14.1	16.2	17.5
Jun	17.4	17.9	19.2	20.8	21.4
Jul	21.8	22.0	22.6	23.0	23.2
Aug	22.2	22.6	22.9	23.3	23.5
Sep	18.4	18.8	20.0	21.4	21.5

DNED21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.2	12.9	14.6	15.7
Jun	15.8	16.2	17.4	18.9	19.4
Jul	20.2	20.5	21.4	21.7	21.9
Aug	21.9	22.1	22.5	22.9	23.0
Sep	18.3	18.8	20.0	21.4	21.5
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.4	14.1	16.3	17.7
Jun	17.5	18.1	19.4	21.1	21.7
Jul	22.1	22.4	22.9	23.1	23.6
Aug	22.2	22.8	23.0	23.5	23.7
Sep	18.3	18.8	20.0	21.4	21.6

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DNEE21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.3	12.8	14.6	15.9
Jun	15.9	16.3	17.6	19.2	19.6
Jul	20.7	20.9	21.8	22.2	22.3
Aug	22.1	22.3	22.7	23.1	23.2
Sep	18.1	18.6	19.9	21.3	21.5
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.4	14.1	16.4	18.1
Jun	17.7	18.3	19.6	21.4	22.0
Jul	22.6	22.7	23.2	23.4	24.2
Aug	22.2	22.8	23.2	23.6	24.0
Sep	18.1	18.7	19.9	21.4	21.5

DNEF21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.2	12.9	14.5	15.6
Jun	15.7	16.0	17.2	18.7	19.1
Jul	19.9	20.2	21.1	21.4	21.6
Aug	21.7	22.1	22.4	22.7	22.8
Sep	18.3	18.7	19.9	21.3	21.4
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.2
May	12.5	13.4	14.1	16.1	17.5
Jun	17.4	17.9	19.2	20.8	21.4
Jul	21.8	22.0	22.5	23.0	23.2
Aug	22.1	22.6	22.9	23.3	23.5
Sep	18.3	18.7	19.9	21.3	21.5

DNEG21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.3	12.9	14.6	15.6
Jun	15.7	16.1	17.3	18.8	19.2
Jul	20.1	20.3	21.2	21.6	21.7
Aug	21.8	22.1	22.5	22.8	22.9
Sep	18.4	18.8	20.0	21.4	21.5
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.4	14.2	16.2	17.6
Jun	17.5	18.0	19.3	20.9	21.5
Jul	21.9	22.1	22.7	23.1	23.4
Aug	22.2	22.7	23.0	23.4	23.6
Sep	18.4	18.8	20.0	21.4	21.6

DNEH21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.3	12.9	14.6	15.7
Jun	15.8	16.2	17.3	18.9	19.3
Jul	20.1	20.4	21.4	21.7	21.8
Aug	21.9	22.1	22.5	22.8	22.9
Sep	18.4	18.8	20.0	21.4	21.5
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.4	14.2	16.3	17.7
Jun	17.5	18.0	19.3	21.0	21.6
Jul	22.1	22.3	22.9	23.1	23.5
Aug	22.2	22.7	23.0	23.4	23.7
Sep	18.4	18.8	20.0	21.4	21.6

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DNEI21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.5
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.3	12.9	14.7	15.9
Jun	15.9	16.3	17.6	19.2	19.6
Jul	20.7	20.9	21.8	22.1	22.3
Aug	22.1	22.3	22.7	23.1	23.2
Sep	18.0	18.6	19.9	21.3	21.5
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.4	14.1	16.4	18.0
Jun	17.7	18.3	19.6	21.4	22.0
Jul	22.6	22.7	23.1	23.3	24.1
Aug	22.2	22.8	23.2	23.6	23.9
Sep	18.0	18.6	19.9	21.4	21.5

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DNMA21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.3	9.6	10.4
May	11.3	12.0	12.6	13.8	14.6
Jun	14.8	15.1	16.2	17.5	17.8
Jul	17.9	18.0	18.6	18.8	19.1
Aug	19.7	20.3	20.7	20.9	20.9
Sep	18.3	18.6	19.6	20.6	20.7
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.5	9.9	10.2	11.2
May	12.4	13.3	13.9	15.4	16.5
Jun	16.4	16.7	18.1	19.4	19.9
Jul	19.3	19.5	19.8	20.1	20.2
Aug	20.5	20.9	21.4	21.5	21.6
Sep	18.3	18.6	19.7	20.7	20.8

DNMB21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.3	9.6	10.4
May	11.3	12.0	12.6	13.9	14.7
Jun	14.8	15.1	16.3	17.6	17.9
Jul	18.0	18.2	18.8	19.0	19.3
Aug	19.8	20.5	20.9	21.0	21.1
Sep	18.3	18.6	19.7	20.8	20.8
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.6	9.9	10.2	11.2
May	12.5	13.3	14.0	15.5	16.6
Jun	16.5	16.8	18.2	19.5	20.0
Jul	19.5	19.7	20.0	20.3	20.5
Aug	20.7	21.1	21.6	21.7	21.8
Sep	18.3	18.6	19.7	20.8	20.9

DNMC21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.3	9.6	10.5
May	11.4	12.1	12.7	14.0	14.9
Jun	15.0	15.3	16.4	17.8	18.2
Jul	18.4	18.5	19.1	19.4	19.7
Aug	20.2	20.8	21.1	21.3	21.3
Sep	18.4	18.7	19.8	20.9	20.9
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.6	9.9	10.2	11.2
May	12.5	13.3	14.0	15.7	16.8
Jun	16.7	17.0	18.3	19.8	20.3
Jul	19.8	20.0	20.4	20.7	20.8
Aug	21.1	21.3	21.8	22.0	22.2
Sep	18.4	18.7	19.8	21.0	21.1

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DNMD21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.3	9.6	10.5
May	11.4	12.1	12.7	14.2	15.2
Jun	15.3	15.6	16.8	18.3	18.7
Jul	19.0	19.2	19.9	20.2	20.4
Aug	21.0	21.4	21.8	22.0	22.1
Sep	18.3	18.8	19.9	21.2	21.3
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.6	9.9	10.2	11.3
May	12.5	13.3	14.0	16.0	17.2
Jun	17.0	17.4	18.7	20.4	21.0
Jul	20.7	20.8	21.1	21.5	21.7
Aug	21.6	21.8	22.3	22.7	22.8
Sep	18.3	18.8	20.0	21.2	21.4

DNME21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.4	9.6	10.5
May	11.4	12.1	12.7	14.5	15.6
Jun	15.6	16.0	17.2	18.9	19.3
Jul	20.2	20.4	21.3	21.5	21.8
Aug	21.9	22.2	22.6	22.9	23.1
Sep	18.1	18.6	19.9	21.3	21.5
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.3	14.0	16.3	17.8
Jun	17.5	17.9	19.3	21.1	21.6
Jul	22.1	22.2	22.6	22.9	23.3
Aug	22.2	22.7	23.0	23.5	23.8
Sep	18.1	18.7	19.9	21.3	21.5

DNMF21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.3	9.6	10.4
May	11.3	12.1	12.6	14.0	14.8
Jun	14.9	15.2	16.4	17.7	18.0
Jul	18.2	18.3	19.0	19.2	19.5
Aug	20.0	20.7	21.0	21.2	21.2
Sep	18.3	18.6	19.7	20.8	20.9
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.6	9.9	10.2	11.2
May	12.5	13.3	14.0	15.6	16.7
Jun	16.6	16.9	18.2	19.6	20.2
Jul	19.6	19.9	20.2	20.5	20.7
Aug	20.9	21.2	21.7	21.9	22.0
Sep	18.3	18.6	19.7	20.9	21.0

DNMG21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.4	9.6	10.5
May	11.4	12.1	12.7	14.1	15.0
Jun	15.1	15.5	16.6	18.0	18.4
Jul	18.6	18.7	19.4	19.7	19.9
Aug	20.5	21.0	21.4	21.5	21.6
Sep	18.4	18.7	19.8	21.0	21.0
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.3	14.0	15.8	16.9
Jun	16.8	17.2	18.5	20.0	20.6
Jul	20.1	20.4	20.7	21.1	21.2
Aug	21.3	21.6	22.0	22.3	22.5
Sep	18.4	18.7	19.8	21.1	21.2

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DNMH21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.4	9.6	10.5
May	11.4	12.1	12.7	14.2	15.1
Jun	15.2	15.6	16.7	18.2	18.6
Jul	18.8	19.0	19.7	19.9	20.2
Aug	20.7	21.2	21.6	21.8	21.8
Sep	18.4	18.7	19.9	21.1	21.2
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.3	14.0	15.9	17.1
Jun	16.9	17.3	18.6	20.2	20.8
Jul	20.5	20.6	20.9	21.3	21.5
Aug	21.5	21.7	22.2	22.5	22.6
Sep	18.4	18.8	19.9	21.2	21.3

DNMI21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.5	8.1	8.3	8.5
Apr	7.8	9.1	9.4	9.6	10.5
May	11.4	12.1	12.7	14.5	15.6
Jun	15.6	16.0	17.2	18.8	19.3
Jul	20.0	20.2	21.1	21.3	21.5
Aug	21.8	22.1	22.5	22.8	23.0
Sep	18.0	18.6	19.9	21.3	21.4
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.3	14.0	16.3	17.8
Jun	17.4	17.9	19.2	21.0	21.6
Jul	21.8	21.9	22.3	22.6	23.0
Aug	22.1	22.6	22.8	23.3	23.5
Sep	18.0	18.6	19.9	21.3	21.5

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DWEA21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.0	11.4	11.8	11.9
May	12.6	13.7	15.4	15.8	16.0
Jun	16.5	16.9	17.6	18.7	19.0
Jul	19.4	20.0	20.7	21.8	22.0
Aug	21.7	21.9	22.4	22.8	23.1
Sep	19.2	19.7	20.2	20.8	21.1
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	15.0	17.0	17.5	17.8
Jun	18.1	18.6	19.3	20.3	20.8
Jul	20.9	21.5	22.1	23.2	23.6
Aug	21.8	22.2	23.3	23.8	24.1
Sep	19.2	19.7	20.3	20.8	21.1

DWEB21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.0	11.5	11.8	11.9
May	12.6	13.7	15.4	15.9	16.1
Jun	16.5	17.0	17.7	18.7	19.0
Jul	19.4	20.1	20.9	21.9	22.3
Aug	22.4	22.5	22.7	23.2	23.4
Sep	19.3	19.9	20.4	21.3	21.8
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.5	15.0	16.9	17.6	17.9
Jun	18.1	18.7	19.4	20.4	20.8
Jul	20.8	21.6	22.4	23.5	23.9
Aug	22.6	22.9	23.8	24.1	24.2
Sep	19.3	19.9	20.5	21.3	21.8

DWEC21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.7	15.5	15.9	16.1
Jun	16.6	17.0	17.7	18.8	19.1
Jul	19.5	20.2	21.0	22.0	22.4
Aug	22.5	22.6	22.8	23.2	23.4
Sep	19.4	19.9	20.5	21.4	21.9
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.5	15.0	17.0	17.7	18.0
Jun	18.2	18.7	19.4	20.5	20.9
Jul	21.0	21.7	22.5	23.6	24.0
Aug	22.7	22.9	24.0	24.2	24.3
Sep	19.4	19.9	20.6	21.4	21.9

DWED21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.7	15.5	16.0	16.2
Jun	16.6	17.1	17.8	18.9	19.2
Jul	19.7	20.4	21.3	22.3	22.6
Aug	22.6	22.8	23.1	23.5	23.6
Sep	19.3	20.0	20.5	21.4	21.9
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	17.1	17.8	18.1
Jun	18.4	18.9	19.6	20.6	21.2
Jul	21.2	22.0	22.9	23.9	24.3
Aug	22.8	23.0	24.2	24.4	24.6
Sep	19.3	20.0	20.6	21.4	21.9

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DWEE21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.7	15.5	16.0	16.2
Jun	16.7	17.2	17.9	19.0	19.4
Jul	20.1	20.8	21.7	22.8	23.2
Aug	22.6	22.9	23.4	23.8	23.9
Sep	19.2	19.8	20.5	21.3	21.8
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	17.2	17.8	18.3
Jun	18.6	19.1	19.8	20.6	21.4
Jul	21.7	22.6	23.4	24.3	24.8
Aug	22.8	23.1	24.4	24.7	24.9
Sep	19.2	19.8	20.5	21.3	21.8

DWEF21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.7	15.5	15.9	16.1
Jun	16.5	17.0	17.7	18.8	19.1
Jul	19.5	20.1	21.0	22.0	22.3
Aug	22.4	22.6	22.7	23.3	23.4
Sep	19.3	19.8	20.4	21.2	21.8
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.5	15.0	17.0	17.7	18.0
Jun	18.2	18.7	19.4	20.5	20.9
Jul	20.9	21.7	22.5	23.6	24.0
Aug	22.6	22.9	23.9	24.1	24.2
Sep	19.3	19.8	20.5	21.3	21.8

DWEG21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.7	15.5	16.0	16.2
Jun	16.6	17.1	17.8	18.8	19.1
Jul	19.6	20.2	21.1	22.1	22.5
Aug	22.5	22.6	22.8	23.3	23.5
Sep	19.4	19.9	20.5	21.4	21.9
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	17.1	17.8	18.1
Jun	18.3	18.8	19.5	20.5	21.0
Jul	21.0	21.9	22.7	23.7	24.1
Aug	22.7	23.0	24.1	24.3	24.4
Sep	19.4	19.9	20.6	21.4	21.9

DWEH21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.7	15.6	16.0	16.2
Jun	16.6	17.1	17.8	18.9	19.2
Jul	19.6	20.3	21.2	22.2	22.6
Aug	22.5	22.7	23.0	23.4	23.5
Sep	19.3	19.9	20.5	21.4	21.9
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	17.1	17.8	18.1
Jun	18.3	18.9	19.6	20.6	21.1
Jul	21.2	22.0	22.8	23.8	24.2
Aug	22.7	23.0	24.1	24.3	24.5
Sep	19.3	19.9	20.6	21.4	21.9

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DWEI21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.8	15.5	16.0	16.2
Jun	16.7	17.2	17.9	19.0	19.4
Jul	20.0	20.8	21.7	22.7	23.1
Aug	22.6	22.9	23.3	23.7	23.9
Sep	19.0	19.8	20.4	21.3	21.8
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	17.1	17.8	18.3
Jun	18.6	19.1	19.8	20.7	21.4
Jul	21.6	22.5	23.3	24.3	24.7
Aug	22.8	23.1	24.3	24.5	24.8
Sep	19.0	19.8	20.5	21.3	21.8

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DWMA21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.8	11.2	11.5	11.7
May	12.3	13.3	14.4	14.9	15.0
Jun	15.2	15.7	16.3	17.1	17.4
Jul	17.3	17.7	18.1	19.1	19.4
Aug	19.8	20.2	20.6	20.8	20.9
Sep	19.1	19.5	20.0	20.4	20.6
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.6	12.9
May	13.5	14.9	16.1	16.9	17.2
Jun	16.9	17.5	18.0	18.7	19.4
Jul	18.7	19.0	19.4	20.4	20.8
Aug	20.8	21.1	21.3	21.6	21.7
Sep	19.1	19.5	20.1	20.4	20.8

DWMB21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.8	11.2	11.5	11.7
May	12.3	13.3	14.5	14.9	15.1
Jun	15.3	15.8	16.4	17.2	17.6
Jul	17.5	17.8	18.3	19.3	19.6
Aug	20.0	20.4	20.8	21.0	21.1
Sep	19.2	19.6	20.1	20.5	20.7
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	14.9	16.2	16.9	17.3
Jun	17.0	17.6	18.1	18.8	19.5
Jul	18.8	19.2	19.6	20.6	21.0
Aug	21.1	21.3	21.5	21.8	22.0
Sep	19.2	19.6	20.2	20.6	20.9

DWMC21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.2	11.6	11.7
May	12.3	13.4	14.6	15.1	15.3
Jun	15.5	15.9	16.5	17.4	17.8
Jul	17.8	18.2	18.7	19.7	20.0
Aug	20.4	20.7	21.1	21.3	21.4
Sep	19.3	19.8	20.2	20.6	20.9
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	14.9	16.4	17.1	17.4
Jun	17.3	17.8	18.3	19.0	19.7
Jul	19.2	19.6	20.0	21.1	21.5
Aug	21.4	21.6	21.9	22.2	22.4
Sep	19.3	19.8	20.3	20.8	21.1

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DWMD21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.3	11.6	11.7
May	12.4	13.4	14.9	15.3	15.5
Jun	15.8	16.3	16.9	17.9	18.3
Jul	18.5	19.0	19.5	20.6	20.9
Aug	21.3	21.6	21.8	22.1	22.3
Sep	19.3	19.9	20.4	21.0	21.4
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	15.0	16.7	17.3	17.8
Jun	17.7	18.2	18.8	19.5	20.4
Jul	20.0	20.5	20.9	21.9	22.3
Aug	22.0	22.1	22.5	23.0	23.1
Sep	19.3	19.9	20.5	21.1	21.5

DWME21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.3	11.6	11.7
May	12.4	13.4	15.1	15.6	15.8
Jun	16.2	16.7	17.4	18.5	18.9
Jul	19.5	20.2	21.0	22.1	22.5
Aug	22.5	22.7	23.0	23.4	23.6
Sep	19.1	19.8	20.4	21.3	21.7
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	15.0	17.0	17.6	18.0
Jun	18.2	18.7	19.3	20.2	21.0
Jul	21.2	22.0	22.6	23.6	24.1
Aug	22.7	22.9	23.9	24.3	24.4
Sep	19.1	19.8	20.5	21.3	21.8

DWMF21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.2	11.6	11.7
May	12.3	13.3	14.6	15.0	15.2
Jun	15.4	15.9	16.5	17.3	17.7
Jul	17.6	18.0	18.5	19.5	19.8
Aug	20.2	20.6	21.0	21.2	21.3
Sep	19.3	19.7	20.1	20.6	20.8
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	14.9	16.3	17.0	17.3
Jun	17.1	17.7	18.2	19.0	19.6
Jul	19.0	19.4	19.8	20.9	21.3
Aug	21.3	21.5	21.7	22.0	22.2
Sep	19.3	19.7	20.2	20.6	21.0

DWMG21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.3	11.6	11.7
May	12.4	13.4	14.7	15.2	15.4
Jun	15.6	16.1	16.7	17.6	18.0
Jul	18.0	18.5	19.0	20.0	20.4
Aug	20.7	21.1	21.3	21.6	21.7
Sep	19.3	19.8	20.3	20.8	21.1
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	15.0	16.4	17.2	17.5
Jun	17.4	17.9	18.5	19.2	19.9
Jul	19.5	19.9	20.4	21.4	21.8
Aug	21.8	21.9	22.2	22.5	22.7
Sep	19.3	19.8	20.4	20.9	21.3

MITEMP Predicted Temperatures (°C) for Caribou No. 2 Operation Preferred over Caribou No. 1 (2-1 Case)
Percentile Rank of Temperature Distribution by Month

DWMH21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.3	11.6	11.7
May	12.4	13.4	14.9	15.3	15.5
Jun	15.8	16.2	16.8	17.8	18.2
Jul	18.3	18.7	19.3	20.3	20.6
Aug	21.0	21.4	21.6	21.8	22.0
Sep	19.3	19.9	20.4	20.9	21.2
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	15.0	16.5	17.3	17.6
Jun	17.6	18.1	18.6	19.4	20.2
Jul	19.8	20.2	20.7	21.7	22.1
Aug	21.9	22.0	22.4	22.8	23.0
Sep	19.3	19.9	20.5	21.0	21.4

DWMI21	10%	25%	50%	75%	90%
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.3	11.6	11.7
May	12.4	13.4	15.1	15.6	15.8
Jun	16.2	16.7	17.3	18.4	18.8
Jul	19.3	19.9	20.7	21.8	22.1
Aug	22.3	22.4	22.6	23.1	23.3
Sep	19.0	19.8	20.4	21.2	21.7
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.5	15.0	17.0	17.6	18.0
Jun	18.1	18.6	19.3	20.1	20.9
Jul	21.0	21.6	22.2	23.2	23.6
Aug	22.5	22.7	23.4	23.9	24.1
Sep	19.0	19.8	20.5	21.2	21.7

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

ANEA12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.7	7.9	8.6	9.3	9.6
Apr	7.9	9.6	9.8	10.3	11.6
May	12.4	13.3	13.8	14.9	16.2
Jun	16.5	17.2	17.9	19.1	19.5
Jul	19.8	20.3	20.7	21.1	21.3
Aug	20.7	21.0	21.5	21.8	22.0
Sep	17.6	18.1	19.0	20.2	20.6
Caribou 1					
Mar	7.0	7.2	7.8	8.4	8.6
Apr	7.6	8.8	9.2	9.5	10.5
May	11.3	12.1	12.8	13.9	14.9
Jun	15.4	15.8	16.8	17.9	18.5
Jul	18.9	19.6	20.1	20.4	20.6
Aug	20.5	20.7	21.1	21.4	21.5
Sep	17.4	18.1	18.6	20.1	20.4

ANEB12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.6	7.9	8.7	9.4	9.6
Apr	8.0	9.6	9.8	10.3	12.0
May	12.5	13.3	14.0	15.6	16.6
Jun	16.8	17.2	17.9	19.0	19.4
Jul	20.0	20.4	21.0	21.2	21.4
Aug	20.7	21.0	21.4	21.9	22.1
Sep	18.0	18.2	19.1	20.2	20.8
Caribou 1					
Mar	6.9	7.2	8.0	8.5	8.7
Apr	7.6	8.9	9.3	9.5	10.8
May	11.4	12.2	12.9	14.4	15.1
Jun	15.6	16.1	17.0	17.9	18.5
Jul	19.1	19.7	20.4	20.6	20.7
Aug	20.5	20.8	21.0	21.4	21.7
Sep	17.8	18.2	19.0	20.2	20.5

ANEC12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.7	7.9	8.7	9.4	9.7
Apr	8.0	9.7	10.0	10.4	12.2
May	12.7	13.5	14.3	15.8	16.8
Jun	16.9	17.4	18.5	19.6	19.8
Jul	20.2	20.6	21.1	21.4	21.6
Aug	20.7	21.2	21.6	22.1	22.3
Sep	18.1	18.3	19.2	20.3	20.9
Caribou 1					
Mar	7.0	7.3	8.0	8.6	8.8
Apr	7.7	9.1	9.5	9.7	10.9
May	11.6	12.4	13.1	14.6	15.3
Jun	15.7	16.3	17.2	18.4	18.8
Jul	19.3	19.8	20.5	20.7	20.9
Aug	20.6	21.0	21.2	21.6	21.8
Sep	17.9	18.2	19.0	20.2	20.6

ANED12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.8	8.0	8.8	9.4	9.7
Apr	8.1	9.8	10.2	10.6	12.7
May	12.9	13.8	14.7	16.3	17.3
Jun	17.3	17.8	18.8	20.0	20.2
Jul	20.6	20.9	21.4	21.7	21.9
Aug	21.1	21.4	21.9	22.4	22.6
Sep	18.1	18.3	19.3	20.5	21.1
Caribou 1					
Mar	7.1	7.4	8.1	8.7	8.8
Apr	7.9	9.3	9.6	9.9	11.2
May	11.9	12.7	13.5	14.9	15.7
Jun	16.1	16.6	17.5	18.6	19.1
Jul	19.6	20.1	20.8	20.9	21.2
Aug	21.0	21.3	21.5	21.9	22.1
Sep	17.9	18.3	19.1	20.5	20.9

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

ANEE12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.9	8.1	8.8	9.4	9.7
Apr	8.3	9.8	10.3	10.8	12.9
May	13.3	14.1	15.1	17.0	18.1
Jun	17.6	18.3	19.4	20.4	20.8
Jul	21.1	21.4	21.9	22.2	22.4
Aug	21.5	21.9	22.3	22.8	23.0
Sep	18.3	18.6	19.6	20.9	21.4
Caribou 1					
Mar	7.3	7.6	8.3	8.8	9.0
Apr	8.1	9.6	9.8	10.1	11.6
May	12.4	13.2	14.1	15.4	16.2
Jun	16.6	17.1	18.0	19.1	19.6
Jul	20.2	20.6	21.3	21.5	21.7
Aug	21.5	21.8	22.0	22.5	22.7
Sep	18.1	18.5	19.3	20.8	21.3

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

ANMA12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.7	7.8	8.6	9.3	9.6
Apr	7.8	9.5	9.7	10.2	11.3
May	11.9	12.9	13.2	13.6	14.3
Jun	14.3	14.6	14.9	15.1	15.2
Jul	15.0	15.5	16.2	16.6	17.0
Aug	17.7	18.7	19.1	19.4	19.7
Sep	17.7	18.1	18.9	19.6	19.8
Caribou 1					
Mar	7.0	7.2	7.6	8.2	8.6
Apr	7.3	8.5	8.8	9.0	9.7
May	10.3	11.1	11.3	11.5	12.2
Jun	12.3	12.7	12.9	13.2	13.4
Jul	13.6	14.2	15.0	15.4	16.1
Aug	17.0	17.9	18.6	18.9	19.1
Sep	17.6	18.1	18.7	19.4	19.6

ANMB12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.6	7.9	8.7	9.4	9.6
Apr	7.8	9.5	9.8	10.2	11.8
May	12.1	13.0	13.6	14.0	14.6
Jun	14.6	15.0	15.1	15.4	15.7
Jul	15.4	15.8	16.6	16.8	17.3
Aug	18.2	18.9	19.1	19.5	19.7
Sep	18.0	18.3	19.0	19.7	20.1
Caribou 1					
Mar	6.9	7.2	7.9	8.4	8.6
Apr	7.3	8.6	9.0	9.2	10.0
May	10.4	11.3	11.6	11.9	12.4
Jun	12.6	12.8	13.0	13.3	13.5
Jul	13.9	14.4	15.2	15.7	16.3
Aug	17.4	18.1	18.8	18.9	19.3
Sep	17.8	18.2	18.9	19.6	19.8

ANMC12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.7	7.9	8.7	9.4	9.7
Apr	7.9	9.6	9.9	10.3	12.1
May	12.4	13.3	14.0	14.5	15.1
Jun	15.3	15.5	15.6	16.0	16.4
Jul	15.7	16.1	16.9	17.0	17.5
Aug	18.4	19.1	19.3	19.6	19.9
Sep	18.1	18.5	19.3	19.9	20.3
Caribou 1					
Mar	7.0	7.3	8.0	8.5	8.6
Apr	7.4	8.8	9.2	9.4	10.2
May	10.6	11.6	11.9	12.1	12.7
Jun	12.9	13.1	13.5	13.7	13.8
Jul	14.1	14.6	15.5	15.9	16.5
Aug	17.5	18.4	19.0	19.1	19.4
Sep	17.9	18.3	19.1	19.7	20.0

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

ANMD12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.8	8.0	8.8	9.4	9.7
Apr	8.0	9.7	10.1	10.5	12.6
May	12.8	13.7	14.6	15.3	15.9
Jun	16.0	16.3	16.6	16.9	17.3
Jul	16.2	16.6	17.3	17.6	18.0
Aug	18.9	19.6	19.9	20.2	20.5
Sep	18.2	18.5	19.3	20.2	20.6
Caribou 1					
Mar	7.1	7.4	8.1	8.6	8.7
Apr	7.6	9.1	9.4	9.7	10.6
May	11.0	12.0	12.4	12.6	13.2
Jun	13.6	13.8	14.0	14.2	14.3
Jul	14.5	15.0	15.9	16.3	16.9
Aug	18.0	18.8	19.4	19.6	20.0
Sep	18.0	18.4	19.2	20.1	20.4

ANME12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.9	8.1	8.8	9.4	9.7
Apr	8.3	9.8	10.3	10.8	12.9
May	13.2	14.0	15.0	16.5	17.4
Jun	17.2	17.5	17.9	18.6	19.0
Jul	17.5	17.8	18.4	18.6	19.0
Aug	19.9	20.4	20.8	21.0	21.4
Sep	18.3	18.6	19.5	20.6	21.2
Caribou 1					
Mar	7.3	7.5	8.3	8.8	8.9
Apr	8.1	9.5	9.7	10.0	11.2
May	11.8	12.7	13.4	13.6	14.2
Jun	14.7	14.9	15.1	15.3	15.6
Jul	15.5	16.0	16.8	17.3	17.9
Aug	19.0	19.8	20.3	20.6	20.8
Sep	18.1	18.5	19.4	20.5	20.9

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

AWEA12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.5	8.0	8.8	10.1	10.2
Apr	10.9	11.5	12.2	12.3	12.4
May	12.8	14.4	15.5	16.4	17.0
Jun	16.8	17.3	17.9	18.3	18.7
Jul	18.8	19.7	20.3	21.4	21.7
Aug	21.1	21.6	22.1	22.4	22.5
Sep	18.4	19.0	19.4	20.1	21.0
Caribou 1					
Mar	6.9	7.2	8.0	8.9	9.1
Apr	10.0	10.5	10.9	11.1	11.3
May	11.9	13.1	14.6	15.0	15.5
Jun	15.8	16.5	16.8	17.5	17.8
Jul	18.0	19.0	19.6	20.6	21.0
Aug	20.9	21.2	21.6	21.9	22.0
Sep	18.4	18.9	19.3	19.9	20.8

AWEB12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.5	8.0	8.9	10.2	10.6
Apr	11.0	11.6	12.2	12.5	12.8
May	12.9	14.5	15.8	16.8	17.2
Jun	17.0	17.5	17.9	18.2	18.9
Jul	19.2	20.0	20.6	21.8	22.0
Aug	21.0	21.4	22.2	22.5	22.8
Sep	18.5	19.2	19.7	20.2	21.2
Caribou 1					
Mar	6.9	7.2	8.2	9.0	9.2
Apr	10.1	10.6	11.0	11.2	11.6
May	12.0	13.2	14.7	15.2	15.8
Jun	15.9	16.4	17.0	17.3	17.7
Jul	18.3	19.1	19.6	21.0	21.3
Aug	21.0	21.1	21.7	22.0	22.2
Sep	18.5	19.0	19.4	20.1	20.9

AWEC12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.5	8.0	8.9	10.2	10.6
Apr	11.1	11.8	12.5	12.8	13.1
May	13.1	14.8	16.0	17.3	17.7
Jun	17.1	17.7	18.3	18.6	19.6
Jul	19.4	20.1	20.8	21.9	22.1
Aug	21.0	21.3	22.3	22.7	23.0
Sep	18.7	19.2	19.7	20.3	21.3
Caribou 1					
Mar	7.0	7.3	8.2	9.1	9.3
Apr	10.3	10.8	11.2	11.4	11.8
May	12.2	13.4	15.0	15.4	16.1
Jun	16.0	16.6	17.2	17.6	18.2
Jul	18.4	19.2	19.8	21.1	21.4
Aug	21.0	21.1	21.9	22.1	22.4
Sep	18.7	19.1	19.5	20.1	21.0

AWED12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.6	8.1	9.0	10.2	10.6
Apr	11.2	11.9	12.7	13.2	13.4
May	13.4	15.1	16.3	17.8	18.2
Jun	17.6	18.1	18.6	19.1	19.9
Jul	19.7	20.4	21.1	22.2	22.5
Aug	21.4	21.9	22.6	23.0	23.3
Sep	18.8	19.3	19.9	20.4	21.7
Caribou 1					
Mar	7.0	7.4	8.3	9.2	9.4
Apr	10.6	11.0	11.5	11.7	12.1
May	12.5	13.7	15.2	15.8	16.5
Jun	16.4	16.9	17.5	17.9	18.5
Jul	18.7	19.5	20.1	21.4	21.8
Aug	21.3	21.6	22.2	22.5	22.7
Sep	18.8	19.2	19.7	20.3	21.4

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

AWEE12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.7	8.2	9.0	10.2	10.9
Apr	11.3	12.1	12.9	13.4	13.6
May	13.9	15.4	16.9	18.8	19.3
Jun	18.0	18.5	18.9	19.6	20.3
Jul	20.2	21.0	21.7	22.8	23.1
Aug	21.9	22.4	23.2	23.6	23.9
Sep	19.0	19.6	20.1	20.8	22.1
Caribou 1					
Mar	7.2	7.6	8.4	9.3	9.9
Apr	11.0	11.4	12.0	12.2	12.5
May	12.9	14.2	15.8	16.6	17.2
Jun	16.8	17.4	18.0	18.4	18.8
Jul	19.2	20.1	20.7	22.1	22.4
Aug	21.9	22.2	22.8	23.1	23.3
Sep	19.0	19.4	19.9	20.7	21.9

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

AWMA12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.5	8.0	8.8	10.0	10.2
Apr	10.8	11.4	11.7	12.0	12.1
May	12.0	12.7	13.6	14.9	15.2
Jun	13.6	14.1	14.4	14.8	15.2
Jul	14.3	15.0	15.7	16.7	17.1
Aug	17.8	18.5	19.0	19.4	19.7
Sep	18.3	18.8	19.2	19.7	20.0
Caribou 1					
Mar	6.9	7.2	8.0	8.5	8.7
Apr	9.4	9.7	10.0	10.1	10.2
May	10.4	11.1	11.7	12.4	12.5
Jun	12.1	12.3	12.4	12.8	13.0
Jul	13.0	13.8	14.4	15.5	16.0
Aug	17.0	17.6	18.5	18.8	19.1
Sep	18.3	18.7	19.1	19.4	19.6

AWMB12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.5	8.0	8.9	10.1	10.6
Apr	10.9	11.5	12.0	12.3	12.4
May	12.2	12.9	14.2	15.6	16.1
Jun	13.5	14.3	14.7	15.1	15.4
Jul	14.8	15.3	16.0	17.2	17.4
Aug	18.3	18.7	19.0	19.6	19.7
Sep	18.7	19.0	19.3	19.8	20.2
Caribou 1					
Mar	6.9	7.2	8.2	8.6	8.9
Apr	9.5	9.9	10.2	10.4	10.5
May	10.5	11.2	12.0	12.7	13.0
Jun	12.2	12.4	12.6	12.9	13.1
Jul	13.3	13.9	14.6	15.9	16.3
Aug	17.3	17.8	18.4	18.9	19.3
Sep	18.7	18.9	19.3	19.6	19.9

AWMC12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.5	8.0	8.9	10.2	10.6
Apr	11.0	11.7	12.3	12.6	12.8
May	12.6	13.2	14.6	16.4	17.0
Jun	13.9	14.8	15.4	15.8	16.2
Jul	15.1	15.6	16.3	17.4	17.7
Aug	18.6	18.9	19.2	19.7	19.9
Sep	18.8	19.1	19.5	20.0	20.3
Caribou 1					
Mar	7.0	7.3	8.2	8.8	9.0
Apr	9.7	10.2	10.5	10.7	10.7
May	10.8	11.4	12.4	13.3	13.5
Jun	12.5	12.7	12.9	13.3	13.5
Jul	13.5	14.2	14.9	16.1	16.5
Aug	17.5	18.0	18.7	19.1	19.4
Sep	18.8	19.0	19.4	19.8	20.1

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

AWMD12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.6	8.1	9.0	10.2	10.6
Apr	11.2	11.9	12.7	13.1	13.2
May	13.1	13.9	15.2	17.1	17.8
Jun	14.5	15.7	16.4	16.7	17.2
Jul	15.7	16.1	16.8	17.9	18.3
Aug	19.1	19.3	19.8	20.4	20.5
Sep	18.9	19.3	19.8	20.1	20.8
Caribou 1					
Mar	7.0	7.4	8.3	9.0	9.1
Apr	10.2	10.6	11.0	11.1	11.2
May	11.2	11.9	12.9	13.9	14.1
Jun	13.0	13.3	13.6	13.9	14.1
Jul	14.0	14.6	15.3	16.5	17.0
Aug	18.0	18.5	19.1	19.7	20.1
Sep	18.9	19.1	19.7	20.0	20.4

AWME12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.7	8.2	9.0	10.2	10.9
Apr	11.3	12.1	12.9	13.4	13.6
May	13.8	14.9	16.3	18.5	19.3
Jun	15.6	16.9	17.8	18.1	18.7
Jul	16.8	17.2	17.9	19.1	19.4
Aug	20.2	20.3	20.7	21.2	21.5
Sep	19.0	19.5	20.0	20.5	21.4
Caribou 1					
Mar	7.2	7.5	8.4	9.3	9.8
Apr	10.8	11.2	11.7	11.8	11.9
May	12.1	12.8	13.8	15.2	15.6
Jun	13.8	14.2	14.7	15.1	15.4
Jul	14.9	15.5	16.2	17.5	18.0
Aug	19.0	19.5	20.2	20.7	21.0
Sep	19.0	19.4	19.9	20.4	21.2

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

DNEA12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.2
May	12.5	13.4	14.2	16.2	17.5
Jun	17.5	18.0	19.3	21.0	21.6
Jul	22.0	22.2	22.8	23.2	23.4
Aug	22.2	22.7	23.0	23.4	23.5
Sep	18.4	18.8	19.9	21.4	21.5
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.4
Apr	7.9	9.1	9.4	9.7	10.5
May	11.5	12.3	13.0	14.6	15.6
Jun	15.9	16.2	17.6	19.2	19.6
Jul	20.6	21.1	22.3	22.6	22.7
Aug	22.2	22.5	22.8	23.1	23.2
Sep	18.4	18.7	19.9	21.3	21.4

DNEB12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.2
May	12.5	13.4	14.2	16.2	17.5
Jun	17.5	18.0	19.4	21.1	21.6
Jul	22.1	22.2	22.8	23.2	23.5
Aug	22.2	22.7	23.0	23.4	23.6
Sep	18.4	18.8	20.0	21.4	21.5
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.4
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.3	13.0	14.6	15.7
Jun	15.9	16.2	17.6	19.2	19.6
Jul	20.6	21.1	22.3	22.6	22.8
Aug	22.2	22.6	22.8	23.2	23.3
Sep	18.4	18.8	20.0	21.4	21.5

DNEC12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.4	14.3	16.3	17.6
Jun	17.6	18.1	19.4	21.1	21.7
Jul	22.2	22.3	22.9	23.3	23.6
Aug	22.3	22.8	23.1	23.5	23.7
Sep	18.5	18.9	20.0	21.5	21.6
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.4
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.3	13.1	14.7	15.7
Jun	16.0	16.3	17.7	19.2	19.7
Jul	20.7	21.1	22.4	22.7	22.8
Aug	22.3	22.7	23.0	23.3	23.4
Sep	18.5	18.8	20.0	21.4	21.6

DNED12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.5	14.2	16.4	17.8
Jun	17.7	18.3	19.6	21.4	22.0
Jul	22.4	22.6	23.1	23.5	23.9
Aug	22.3	22.9	23.2	23.6	23.8
Sep	18.3	18.8	20.0	21.5	21.6
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.4
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.3	13.0	14.7	15.8
Jun	16.0	16.4	17.8	19.4	19.9
Jul	20.9	21.4	22.6	22.9	23.0
Aug	22.3	22.9	23.2	23.5	23.6
Sep	18.3	18.8	20.0	21.5	21.6

**MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month**

DNEE12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.6	13.5	14.2	16.5	18.2
Jun	18.0	18.5	19.8	21.7	22.2
Jul	22.9	23.0	23.4	23.6	24.4
Aug	22.3	22.9	23.4	23.7	24.1
Sep	18.1	18.7	19.9	21.4	21.6
Caribou 1					
Mar	7.2	7.4	8.1	8.4	8.4
Apr	7.9	9.1	9.4	9.7	10.6
May	11.5	12.3	13.0	14.8	16.0
Jun	16.2	16.6	18.0	19.7	20.2
Jul	21.3	21.6	22.7	23.1	23.2
Aug	22.3	22.9	23.3	23.7	23.9
Sep	18.1	18.6	19.9	21.4	21.6

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

DNMA12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.6	9.9	10.2	11.2
May	12.5	13.4	14.1	15.6	16.7
Jun	16.7	17.0	18.4	19.8	20.3
Jul	19.8	20.0	20.3	20.7	20.9
Aug	20.9	21.1	21.6	21.7	21.8
Sep	18.3	18.6	19.7	20.8	20.9
Caribou 1					
Mar	7.2	7.4	8.1	8.3	8.4
Apr	7.8	9.1	9.3	9.6	10.4
May	11.3	12.1	12.7	14.0	14.8
Jun	15.0	15.3	16.5	17.8	18.2
Jul	18.3	18.4	19.2	19.4	19.7
Aug	20.1	20.7	21.0	21.1	21.2
Sep	18.3	18.6	19.6	20.7	20.8

DNMB12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.6	9.9	10.2	11.2
May	12.5	13.4	14.1	15.7	16.8
Jun	16.8	17.1	18.5	19.9	20.4
Jul	20.0	20.2	20.5	20.9	21.1
Aug	21.1	21.3	21.7	21.9	22.1
Sep	18.4	18.7	19.8	20.9	21.0
Caribou 1					
Mar	7.2	7.4	8.1	8.3	8.4
Apr	7.8	9.1	9.3	9.6	10.4
May	11.3	12.1	12.7	14.0	14.8
Jun	15.1	15.4	16.6	17.9	18.3
Jul	18.4	18.6	19.4	19.6	19.9
Aug	20.3	20.9	21.2	21.3	21.4
Sep	18.4	18.7	19.7	20.9	21.0

DNMC12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.6	9.9	10.2	11.3
May	12.5	13.4	14.2	15.9	17.0
Jun	16.9	17.3	18.6	20.2	20.7
Jul	20.4	20.5	20.9	21.3	21.5
Aug	21.3	21.5	22.0	22.3	22.4
Sep	18.4	18.8	19.9	21.1	21.2
Caribou 1					
Mar	7.2	7.4	8.1	8.3	8.4
Apr	7.8	9.1	9.3	9.6	10.5
May	11.4	12.2	12.8	14.2	15.0
Jun	15.2	15.5	16.7	18.2	18.5
Jul	18.8	18.9	19.7	20.0	20.2
Aug	20.7	21.2	21.5	21.7	21.7
Sep	18.4	18.8	19.9	21.1	21.2

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

DNMD12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	7.9	9.6	9.9	10.2	11.3
May	12.5	13.4	14.2	16.1	17.3
Jun	17.3	17.7	19.1	20.8	21.3
Jul	21.2	21.4	21.7	22.1	22.3
Aug	21.7	22.1	22.4	22.9	23.1
Sep	18.3	18.8	20.0	21.3	21.4
Caribou 1					
Mar	7.2	7.4	8.1	8.3	8.4
Apr	7.8	9.1	9.4	9.6	10.5
May	11.4	12.2	12.8	14.4	15.3
Jun	15.5	15.8	17.1	18.7	19.1
Jul	19.5	19.6	20.5	20.8	21.0
Aug	21.5	21.7	22.3	22.4	22.5
Sep	18.3	18.8	20.0	21.3	21.4

DNME12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.2	7.6	8.3	8.6	8.8
Apr	8.0	9.6	9.9	10.2	11.3
May	12.5	13.4	14.1	16.4	18.0
Jun	17.7	18.2	19.6	21.4	21.9
Jul	22.4	22.5	22.9	23.1	23.7
Aug	22.3	22.9	23.1	23.6	23.9
Sep	18.1	18.7	19.9	21.4	21.6
Caribou 1					
Mar	7.2	7.4	8.1	8.3	8.4
Apr	7.8	9.1	9.4	9.6	10.5
May	11.4	12.2	12.8	14.6	15.8
Jun	15.9	16.3	17.6	19.3	19.8
Jul	20.7	20.9	21.9	22.2	22.4
Aug	22.3	22.7	23.1	23.5	23.6
Sep	18.1	18.6	19.9	21.4	21.5

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

DWEA12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	12.9
May	13.6	15.0	17.1	17.6	18.0
Jun	18.3	18.8	19.6	20.6	21.1
Jul	21.1	21.7	22.4	23.6	24.0
Aug	22.4	22.6	23.7	24.0	24.3
Sep	19.3	19.8	20.4	21.0	21.4
Caribou 1					
Mar	7.1	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.8	15.5	16.0	16.2
Jun	16.8	17.3	18.1	19.2	19.6
Jul	20.1	20.8	21.8	23.0	23.2
Aug	22.3	22.5	23.4	23.7	23.8
Sep	19.3	19.8	20.3	20.9	21.3

DWEB12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	17.1	17.8	18.1
Jun	18.3	18.9	19.6	20.7	21.1
Jul	21.1	21.9	22.7	23.8	24.2
Aug	22.7	23.0	24.1	24.3	24.4
Sep	19.3	19.9	20.5	21.3	21.9
Caribou 1					
Mar	7.1	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.8	15.6	16.1	16.3
Jun	16.8	17.3	18.1	19.2	19.6
Jul	20.0	20.9	22.0	23.1	23.4
Aug	22.7	22.9	23.7	23.9	24.0
Sep	19.3	19.9	20.5	21.3	21.9

DWEC12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.1	17.2	17.9	18.2
Jun	18.4	18.9	19.7	20.8	21.2
Jul	21.2	22.0	22.8	23.9	24.3
Aug	22.8	23.1	24.2	24.4	24.5
Sep	19.4	20.0	20.6	21.5	22.0
Caribou 1					
Mar	7.1	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.8	15.7	16.1	16.3
Jun	16.8	17.3	18.1	19.3	19.6
Jul	20.1	20.9	22.0	23.2	23.5
Aug	22.8	23.1	23.8	24.1	24.2
Sep	19.4	20.0	20.5	21.4	22.0

DWED12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.1	17.3	17.9	18.2
Jun	18.6	19.1	19.8	20.8	21.4
Jul	21.5	22.3	23.2	24.1	24.6
Aug	22.9	23.2	24.4	24.5	24.7
Sep	19.3	20.0	20.7	21.5	22.0
Caribou 1					
Mar	7.1	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.8	15.7	16.1	16.3
Jun	16.9	17.4	18.2	19.3	19.7
Jul	20.3	21.2	22.3	23.4	23.8
Aug	22.9	23.2	24.1	24.3	24.5
Sep	19.3	20.0	20.6	21.5	22.0

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

DWEE12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.1	17.3	17.9	18.4
Jun	18.7	19.3	20.1	20.8	21.6
Jul	21.9	22.7	23.6	24.5	24.9
Aug	22.9	23.3	24.6	24.8	25.0
Sep	19.2	19.9	20.5	21.4	21.9
Caribou 1					
Mar	7.1	7.6	8.2	8.6	9.3
Apr	10.6	11.1	11.5	11.8	11.9
May	12.7	13.8	15.6	16.1	16.4
Jun	17.0	17.5	18.4	19.5	19.9
Jul	20.6	21.4	22.5	23.8	24.1
Aug	22.9	23.3	24.4	24.6	24.7
Sep	19.2	19.9	20.5	21.4	21.9

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

DWMA12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.5	15.0	16.4	17.1	17.5
Jun	17.3	17.8	18.4	19.1	19.8
Jul	19.1	19.6	20.1	21.1	21.4
Aug	21.2	21.3	21.6	21.8	22.0
Sep	19.1	19.6	20.1	20.5	20.9
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.8	11.2	11.5	11.7
May	12.3	13.4	14.6	15.1	15.2
Jun	15.5	15.9	16.6	17.4	17.8
Jul	17.6	18.1	18.7	19.7	20.0
Aug	20.3	20.6	20.9	21.1	21.2
Sep	19.1	19.6	20.1	20.5	20.8

DWMB12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.5	15.0	16.5	17.2	17.5
Jun	17.4	17.9	18.5	19.2	19.9
Jul	19.3	19.8	20.2	21.2	21.6
Aug	21.4	21.5	21.8	22.1	22.2
Sep	19.3	19.7	20.3	20.7	21.1
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.8	11.2	11.5	11.7
May	12.4	13.4	14.6	15.1	15.3
Jun	15.5	16.0	16.7	17.5	17.9
Jul	17.8	18.3	18.9	19.9	20.2
Aug	20.5	20.8	21.2	21.4	21.5
Sep	19.3	19.7	20.2	20.7	21.0

DWMC12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	16.6	17.3	17.6
Jun	17.5	18.1	18.7	19.4	20.1
Jul	19.6	20.1	20.6	21.6	22.0
Aug	21.8	21.8	22.2	22.5	22.6
Sep	19.4	19.8	20.4	20.9	21.3
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.2	11.6	11.7
May	12.4	13.5	14.8	15.2	15.4
Jun	15.7	16.2	16.8	17.7	18.1
Jul	18.1	18.6	19.3	20.3	20.6
Aug	20.9	21.3	21.5	21.7	21.9
Sep	19.4	19.8	20.3	20.9	21.3

MITEMP Predicted Temperatures (°C) for Caribou No. 1 Operation Preferred over Caribou No. 2 (1-2 Case)
Percentile Rank of Temperature Distribution by Month

DWMD12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	16.9	17.5	17.9
Jun	18.0	18.5	19.1	19.9	20.7
Jul	20.4	21.0	21.5	22.6	23.0
Aug	22.2	22.4	22.8	23.3	23.5
Sep	19.3	19.9	20.6	21.2	21.6
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.3	11.6	11.7
May	12.4	13.5	15.0	15.5	15.7
Jun	16.1	16.6	17.2	18.3	18.7
Jul	18.8	19.4	20.1	21.2	21.5
Aug	21.9	22.1	22.3	22.5	22.8
Sep	19.3	19.9	20.5	21.2	21.6

DWME12	10%	25%	50%	75%	90%
Caribou 2					
Mar	7.3	7.7	8.5	9.1	9.9
Apr	11.3	11.8	12.3	12.7	13.0
May	13.6	15.0	17.2	17.7	18.2
Jun	18.5	19.0	19.7	20.5	21.3
Jul	21.5	22.3	23.0	24.0	24.4
Aug	22.8	23.1	24.2	24.5	24.7
Sep	19.2	19.9	20.5	21.4	21.9
Caribou 1					
Mar	7.2	7.6	8.2	8.6	9.2
Apr	10.5	10.9	11.3	11.6	11.7
May	12.5	13.5	15.3	15.7	16.0
Jun	16.5	17.0	17.8	18.9	19.3
Jul	19.9	20.7	21.6	22.8	23.2
Aug	22.8	23.1	23.6	24.1	24.2
Sep	19.2	19.9	20.5	21.4	21.9

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

ANEA	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	6.0	6.6	6.6
Apr	6.7	7.7	8.1	8.3	9.1
May	10.1	10.7	11.3	12.9	14.0
Jun	14.3	14.5	15.5	16.7	17.2
Jul	18.0	18.3	19.4	19.5	19.6
Aug	19.9	20.1	20.5	20.6	20.7
Sep	18.0	18.1	19.1	19.8	19.9
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.7
Apr	5.8	6.0	6.1	6.1	6.3
May	6.6	6.8	7.1	7.4	7.7
Jun	8.0	8.2	8.6	9.0	9.2
Jul	9.6	9.9	10.5	11.0	11.2
Aug	11.5	11.6	11.6	11.7	11.8
Sep	11.9	12.1	12.3	12.5	12.6

ANEB	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	6.0	6.6	6.6
Apr	6.7	7.7	8.1	8.3	9.1
May	10.1	10.8	11.4	12.9	14.0
Jun	14.3	14.5	15.5	16.7	17.3
Jul	18.1	18.4	19.4	19.5	19.7
Aug	20.0	20.1	20.5	20.7	20.8
Sep	18.1	18.2	19.1	19.9	19.9
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.7
Apr	5.8	6.0	6.1	6.2	6.3
May	6.6	6.8	7.1	7.5	7.7
Jun	8.0	8.2	8.6	9.0	9.2
Jul	9.7	10.0	10.6	11.0	11.3
Aug	11.5	11.6	11.7	11.7	11.8
Sep	12.0	12.1	12.3	12.5	12.7

ANEC	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	6.0	6.6	6.7
Apr	6.7	7.7	8.1	8.3	9.1
May	10.1	10.8	11.4	12.9	14.1
Jun	14.4	14.6	15.6	16.8	17.3
Jul	18.2	18.5	19.6	19.7	19.8
Aug	20.1	20.3	20.7	20.8	21.0
Sep	18.2	18.3	19.3	20.1	20.1
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.1	6.2	6.3
May	6.6	6.9	7.2	7.6	7.8
Jun	8.1	8.3	8.7	9.1	9.3
Jul	9.7	10.1	10.7	11.1	11.4
Aug	11.6	11.7	11.9	12.0	12.1
Sep	12.2	12.4	12.6	12.8	12.9

ANED	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	6.0	6.6	6.7
Apr	6.7	7.7	8.1	8.3	9.2
May	10.2	10.8	11.5	13.0	14.2
Jun	14.5	14.8	15.8	17.0	17.6
Jul	18.4	18.7	19.8	19.9	20.1
Aug	20.4	20.6	21.0	21.2	21.3
Sep	18.4	18.5	19.5	20.4	20.4
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.2	6.2	6.4
May	6.8	7.0	7.3	7.7	8.0
Jun	8.3	8.5	8.9	9.3	9.5
Jul	10.0	10.3	10.9	11.4	11.7
Aug	12.0	12.2	12.4	12.5	12.7
Sep	13.0	13.2	13.4	13.7	13.9

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

ANEE	10%	25%	50%	75%	90%
BVPH					
36981	5.0	5.1	6.0	6.6	6.7
37011	6.7	7.7	8.2	8.4	9.2
37042	10.3	11.0	11.6	13.3	14.5
37072	14.8	15.1	16.2	17.5	18.0
37103	18.9	19.3	20.4	20.5	20.7
37134	21.1	21.3	21.7	21.9	22.0
37164	18.6	18.8	20.0	20.9	21.0
Canyon Dam					
36981	5.0	5.1	5.3	5.5	5.7
37011	5.8	6.0	6.3	6.4	6.6
37042	7.0	7.2	7.6	8.0	8.3
37072	8.7	8.9	9.3	9.8	10.1
37103	10.6	11.0	11.7	12.3	12.7
37134	13.1	13.4	13.7	14.1	14.4
37164	14.8	15.2	15.6	16.0	16.4

ANEF	10%	25%	50%	75%	90%
BVPH					
36981	5.0	5.1	6.0	6.6	6.7
37011	6.7	7.7	8.1	8.3	9.1
37042	10.1	10.8	11.4	12.9	14.1
37072	14.3	14.6	15.6	16.8	17.3
37103	18.1	18.4	19.5	19.6	19.7
37134	20.0	20.2	20.6	20.7	20.9
37164	18.1	18.2	19.2	19.9	20.0
Canyon Dam					
36981	5.0	5.1	5.3	5.5	5.7
37011	5.8	6.0	6.1	6.2	6.3
37042	6.6	6.8	7.1	7.5	7.7
37072	8.0	8.3	8.6	9.0	9.2
37103	9.7	10.0	10.6	11.1	11.3
37134	11.5	11.6	11.7	11.8	11.9
37164	12.0	12.1	12.3	12.6	12.7

ANEG	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	6.0	6.6	6.7
Apr	6.7	7.7	8.1	8.3	9.1
May	10.1	10.8	11.4	13.0	14.1
Jun	14.4	14.7	15.7	16.9	17.4
Jul	18.3	18.6	19.7	19.7	19.9
Aug	20.2	20.4	20.8	20.9	21.1
Sep	18.3	18.4	19.4	20.2	20.2
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.1	6.2	6.4
May	6.7	6.9	7.2	7.6	7.8
Jun	8.2	8.4	8.7	9.1	9.4
Jul	9.8	10.1	10.7	11.2	11.5
Aug	11.7	11.9	12.0	12.1	12.3
Sep	12.5	12.6	12.8	13.1	13.2

ANEH	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	6.0	6.6	6.7
Apr	6.7	7.7	8.1	8.3	9.1
May	10.1	10.8	11.4	13.0	14.2
Jun	14.5	14.7	15.7	17.0	17.5
Jul	18.3	18.7	19.7	19.8	20.0
Aug	20.3	20.5	20.9	21.1	21.2
Sep	18.3	18.4	19.5	20.3	20.3
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.2	6.2	6.4
May	6.7	7.0	7.3	7.7	7.9
Jun	8.2	8.4	8.8	9.2	9.4
Jul	9.9	10.2	10.8	11.3	11.6
Aug	11.9	12.0	12.2	12.3	12.5
Sep	12.7	12.9	13.1	13.4	13.6

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

ANEI	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	6.0	6.6	6.7
Apr	6.7	7.7	8.2	8.3	9.2
May	10.2	10.9	11.6	13.2	14.4
Jun	14.7	15.0	16.0	17.3	17.9
Jul	18.8	19.1	20.2	20.3	20.5
Aug	20.8	21.0	21.5	21.6	21.8
Sep	18.6	18.7	19.8	20.7	20.8
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.3	6.3	6.5
May	6.9	7.2	7.5	7.9	8.2
Jun	8.5	8.8	9.2	9.6	9.9
Jul	10.4	10.7	11.4	12.0	12.3
Aug	12.7	12.9	13.2	13.5	13.8
Sep	14.1	14.4	14.8	15.2	15.5

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

ANMA	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.8
Apr	6.0	6.3	6.5	6.7	6.9
May	7.2	7.4	7.7	8.2	8.5
Jun	8.8	9.0	9.5	10.1	10.5
Jul	11.3	11.9	13.0	14.1	14.8
Aug	15.8	16.5	17.7	18.2	18.9
Sep	18.6	18.7	19.3	19.7	19.8
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.7
Apr	5.8	6.0	6.1	6.1	6.3
May	6.6	6.8	7.1	7.5	7.7
Jun	8.0	8.2	8.6	9.0	9.2
Jul	9.7	10.0	10.6	11.1	11.4
Aug	11.7	11.8	11.8	11.9	12.0
Sep	12.2	12.3	12.5	12.8	12.9

ANMB	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.8
Apr	6.0	6.3	6.5	6.7	6.9
May	7.2	7.5	7.8	8.2	8.5
Jun	8.8	9.0	9.5	10.2	10.6
Jul	11.4	11.9	13.0	14.2	14.8
Aug	15.9	16.6	17.8	18.4	19.0
Sep	18.7	18.8	19.5	19.9	20.0
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.7
Apr	5.8	6.0	6.1	6.2	6.3
May	6.6	6.8	7.1	7.5	7.7
Jun	8.0	8.2	8.6	9.0	9.3
Jul	9.7	10.0	10.6	11.1	11.4
Aug	11.7	11.8	11.9	12.0	12.0
Sep	12.2	12.4	12.6	12.8	13.0

ANMC	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.8
Apr	6.0	6.3	6.6	6.7	6.9
May	7.3	7.5	7.8	8.3	8.6
Jun	8.9	9.1	9.6	10.2	10.7
Jul	11.5	12.1	13.2	14.3	15.0
Aug	16.1	16.8	18.0	18.7	19.3
Sep	18.8	19.0	19.7	20.1	20.2
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.1	6.2	6.3
May	6.6	6.9	7.2	7.6	7.8
Jun	8.1	8.3	8.7	9.1	9.3
Jul	9.8	10.1	10.7	11.2	11.5
Aug	11.8	11.9	12.1	12.2	12.3
Sep	12.5	12.7	12.9	13.1	13.2

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

ANMD	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.8
Apr	6.1	6.3	6.6	6.8	7.0
May	7.3	7.6	7.9	8.4	8.7
Jun	9.0	9.3	9.8	10.5	10.9
Jul	11.7	12.3	13.5	14.7	15.4
Aug	16.6	17.3	18.5	19.2	19.8
Sep	18.8	19.0	20.1	20.5	20.6
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.2	6.2	6.4
May	6.8	7.0	7.3	7.7	8.0
Jun	8.3	8.5	8.9	9.3	9.6
Jul	10.1	10.4	11.1	11.6	11.9
Aug	12.4	12.6	12.9	13.2	13.5
Sep	13.9	14.2	14.5	14.9	15.1

ANME	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.9
Apr	6.1	6.4	6.7	6.9	7.2
May	7.5	7.8	8.2	8.8	9.1
Jun	9.4	9.7	10.3	11.0	11.5
Jul	12.4	13.0	14.3	15.6	16.4
Aug	17.6	18.4	19.6	20.4	20.8
Sep	18.9	19.1	20.3	21.1	21.2
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.7
Apr	5.8	6.0	6.3	6.4	6.6
May	7.0	7.2	7.6	8.0	8.3
Jun	8.7	8.9	9.4	9.9	10.2
Jul	10.8	11.2	11.9	12.7	13.1
Aug	13.7	14.1	14.8	15.4	15.8
Sep	16.5	17.0	17.5	17.8	17.8

ANMF	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.8
Apr	6.0	6.3	6.6	6.7	6.9
May	7.3	7.5	7.8	8.3	8.5
Jun	8.8	9.1	9.6	10.2	10.6
Jul	11.4	12.0	13.1	14.2	14.9
Aug	16.0	16.7	17.9	18.5	19.1
Sep	18.8	18.9	19.5	20.0	20.1
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.7
Apr	5.8	6.0	6.1	6.2	6.3
May	6.6	6.8	7.1	7.5	7.7
Jun	8.1	8.3	8.6	9.0	9.3
Jul	9.7	10.1	10.7	11.2	11.4
Aug	11.7	11.8	11.9	12.0	12.1
Sep	12.3	12.4	12.6	12.8	13.0

ANMG	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.8
Apr	6.1	6.3	6.6	6.8	7.0
May	7.3	7.5	7.8	8.3	8.6
Jun	8.9	9.2	9.7	10.3	10.7
Jul	11.5	12.1	13.3	14.5	15.1
Aug	16.3	17.0	18.2	18.8	19.5
Sep	18.8	19.0	19.8	20.3	20.4
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.1	6.2	6.4
May	6.7	6.9	7.2	7.6	7.9
Jun	8.2	8.4	8.8	9.2	9.4
Jul	9.9	10.2	10.8	11.3	11.6
Aug	11.9	12.1	12.3	12.5	12.7
Sep	12.9	13.2	13.4	13.6	13.8

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

ANMH	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.8
Apr	6.1	6.3	6.6	6.8	7.0
May	7.3	7.5	7.9	8.4	8.7
Jun	9.0	9.2	9.7	10.4	10.8
Jul	11.6	12.2	13.4	14.6	15.3
Aug	16.4	17.1	18.4	19.0	19.7
Sep	18.8	19.0	20.0	20.4	20.5
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.2	6.2	6.4
May	6.7	7.0	7.3	7.7	7.9
Jun	8.2	8.5	8.8	9.2	9.5
Jul	10.0	10.3	10.9	11.5	11.8
Aug	12.1	12.3	12.6	12.9	13.1
Sep	13.4	13.7	14.0	14.2	14.5

ANMI	10%	25%	50%	75%	90%
BVPH					
Mar	5.0	5.1	5.4	5.7	5.9
Apr	6.1	6.3	6.7	6.9	7.1
May	7.5	7.7	8.1	8.6	8.9
Jun	9.3	9.6	10.1	10.8	11.3
Jul	12.1	12.8	14.0	15.3	16.0
Aug	17.2	18.0	19.3	20.0	20.5
Sep	18.8	19.0	20.3	20.9	21.0
Canyon Dam					
Mar	5.0	5.1	5.3	5.5	5.6
Apr	5.8	6.0	6.3	6.3	6.5
May	6.9	7.2	7.5	7.9	8.2
Jun	8.6	8.8	9.2	9.7	10.0
Jul	10.5	10.9	11.6	12.3	12.7
Aug	13.2	13.6	14.1	14.7	15.1
Sep	15.7	16.1	16.6	17.0	17.2

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

DNEA	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.0	6.0	6.7	6.8
Apr	6.8	7.9	8.5	8.7	9.6
May	10.8	11.6	12.4	14.2	15.7
Jun	16.0	16.3	17.5	18.9	19.5
Jul	20.5	20.7	21.7	21.8	21.9
Aug	21.7	22.0	22.3	22.5	22.6
Sep	18.8	18.9	20.1	21.1	21.2
Canyon Dam					
Mar	5.1	5.3	5.7	6.0	6.2
Apr	6.5	6.7	7.0	7.2	7.4
May	7.8	8.1	8.6	9.1	9.4
Jun	9.8	10.1	10.6	11.0	11.3
Jul	11.7	12.0	12.5	12.9	13.0
Aug	13.2	13.3	13.4	13.5	13.5
Sep	13.4	13.5	13.5	13.5	13.6

DNEB	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.0	6.0	6.7	6.8
Apr	6.8	8.0	8.5	8.7	9.7
May	10.8	11.7	12.4	14.3	15.7
Jun	16.1	16.4	17.6	19.0	19.6
Jul	20.6	20.8	21.8	21.9	22.0
Aug	21.8	22.1	22.4	22.6	22.8
Sep	18.8	18.9	20.1	21.2	21.3
Canyon Dam					
Mar	5.1	5.3	5.7	6.1	6.2
Apr	6.5	6.8	7.0	7.2	7.4
May	7.8	8.2	8.6	9.2	9.5
Jun	9.9	10.2	10.7	11.2	11.4
Jul	11.8	12.2	12.7	13.1	13.2
Aug	13.4	13.4	13.6	13.6	13.7
Sep	13.6	13.7	13.7	13.7	13.8

DNEC	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.0	6.0	6.7	6.8
Apr	6.8	8.0	8.5	8.7	9.7
May	10.9	11.7	12.4	14.3	15.8
Jun	16.2	16.4	17.7	19.1	19.7
Jul	20.7	21.0	21.9	22.1	22.2
Aug	22.0	22.2	22.6	22.8	23.0
Sep	18.9	19.0	20.3	21.4	21.5
Canyon Dam					
Mar	5.1	5.3	5.7	6.1	6.2
Apr	6.5	6.8	7.1	7.3	7.5
May	8.0	8.3	8.8	9.4	9.8
Jun	10.2	10.6	11.1	11.6	11.9
Jul	12.4	12.7	13.3	13.8	14.0
Aug	14.2	14.4	14.6	14.7	14.8
Sep	14.9	14.9	14.9	15.0	15.0

DNED	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.0	6.0	6.7	6.8
Apr	6.8	8.0	8.5	8.7	9.7
May	10.9	11.8	12.5	14.5	16.0
Jun	16.3	16.6	17.9	19.4	20.0
Jul	21.0	21.3	22.3	22.5	22.6
Aug	22.3	22.7	23.0	23.3	23.4
Sep	18.9	19.0	20.3	21.5	21.7
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.2
Apr	6.5	6.8	7.2	7.4	7.7
May	8.2	8.6	9.1	9.8	10.3
Jun	10.7	11.1	11.8	12.3	12.7
Jul	13.3	13.8	14.5	15.1	15.4
Aug	15.8	16.0	16.3	16.6	16.8
Sep	17.0	17.2	17.3	17.4	17.4

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

DNEE	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.1	6.0	6.8	6.9
Apr	6.8	8.0	8.6	8.8	9.9
May	11.1	12.0	12.8	14.9	16.4
Jun	16.8	17.2	18.5	20.1	20.8
Jul	21.8	22.1	23.1	23.2	23.4
Aug	22.4	23.2	23.3	23.8	23.9
Sep	18.9	19.0	20.4	21.6	21.7
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.3
Apr	6.5	6.9	7.3	7.6	7.9
May	8.5	9.0	9.6	10.5	11.0
Jun	11.6	12.1	12.9	13.7	14.3
Jul	15.1	15.8	16.9	17.8	18.3
Aug	19.0	19.4	20.0	20.6	20.9
Sep	18.5	18.9	20.2	20.7	20.8

DNEF	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.0	6.0	6.7	6.8
Apr	6.8	8.0	8.5	8.7	9.7
May	10.9	11.7	12.4	14.3	15.8
Jun	16.1	16.4	17.6	19.0	19.6
Jul	20.6	20.9	21.8	22.0	22.1
Aug	21.9	22.1	22.5	22.7	22.8
Sep	18.8	19.0	20.2	21.2	21.4
Canyon Dam					
Mar	5.1	5.3	5.7	6.1	6.2
Apr	6.5	6.8	7.1	7.2	7.4
May	7.9	8.2	8.6	9.2	9.6
Jun	10.0	10.3	10.9	11.3	11.6
Jul	12.0	12.4	12.9	13.3	13.5
Aug	13.7	13.8	13.9	14.0	14.0
Sep	14.0	14.0	14.0	14.1	14.1

DNEG	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.0	6.0	6.7	6.8
Apr	6.8	8.0	8.5	8.7	9.7
May	10.9	11.7	12.5	14.4	15.9
Jun	16.2	16.5	17.8	19.2	19.8
Jul	20.8	21.1	22.1	22.2	22.3
Aug	22.1	22.4	22.8	23.0	23.1
Sep	18.9	19.0	20.3	21.5	21.6
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.2
Apr	6.5	6.8	7.1	7.3	7.6
May	8.1	8.4	8.9	9.6	10.0
Jun	10.4	10.8	11.3	11.9	12.2
Jul	12.7	13.1	13.7	14.3	14.5
Aug	14.8	14.9	15.2	15.4	15.5
Sep	15.6	15.7	15.8	15.8	15.9

DNEH	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.0	6.0	6.7	6.8
Apr	6.8	8.0	8.5	8.7	9.7
May	10.9	11.8	12.5	14.4	15.9
Jun	16.3	16.6	17.9	19.3	19.9
Jul	20.9	21.2	22.2	22.3	22.4
Aug	22.2	22.5	22.9	23.1	23.2
Sep	18.9	19.0	20.3	21.5	21.7
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.2
Apr	6.5	6.8	7.2	7.4	7.7
May	8.1	8.5	9.0	9.7	10.1
Jun	10.6	10.9	11.6	12.1	12.4
Jul	13.0	13.4	14.1	14.7	15.0
Aug	15.3	15.5	15.8	16.0	16.2
Sep	16.3	16.5	16.5	16.6	16.7

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

DNEI	10%	25%	50%	75%	90%
BVPH					
Mar	4.7	5.1	6.0	6.8	6.9
Apr	6.8	8.0	8.6	8.8	9.8
May	11.1	11.9	12.7	14.8	16.3
Jun	16.7	17.0	18.3	19.9	20.6
Jul	21.6	21.9	22.9	23.0	23.1
Aug	22.4	23.1	23.3	23.7	23.8
Sep	18.8	19.0	20.3	21.5	21.7
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.3
Apr	6.5	6.9	7.3	7.6	7.9
May	8.4	8.9	9.5	10.3	10.8
Jun	11.3	11.8	12.5	13.2	13.7
Jul	14.5	15.1	16.0	16.9	17.3
Aug	17.8	18.2	18.7	19.2	19.5
Sep	18.4	18.8	19.7	20.0	20.1

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

DNMA	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.2	6.4
Apr	6.6	7.0	7.5	7.8	8.1
May	8.7	9.1	9.7	10.5	11.0
Jun	11.5	11.9	12.7	13.4	13.8
Jul	14.7	15.3	16.4	17.3	17.9
Aug	18.7	19.2	20.0	20.5	20.5
Sep	18.9	19.0	19.9	20.5	20.5
Canyon Dam					
Mar	5.1	5.3	5.7	6.0	6.2
Apr	6.5	6.7	7.0	7.2	7.4
May	7.8	8.1	8.6	9.1	9.4
Jun	9.8	10.1	10.6	11.0	11.3
Jul	11.7	12.0	12.5	12.9	13.0
Aug	13.2	13.3	13.4	13.5	13.5
Sep	13.5	13.5	13.6	13.6	13.6

DNMB	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.2	6.4
Apr	6.6	7.0	7.5	7.8	8.2
May	8.7	9.2	9.8	10.6	11.1
Jun	11.6	12.1	12.8	13.5	14.0
Jul	14.9	15.5	16.7	17.6	18.2
Aug	19.0	19.5	20.3	20.8	20.9
Sep	18.9	19.1	20.1	20.8	20.8
Canyon Dam					
Mar	5.1	5.3	5.7	6.1	6.2
Apr	6.5	6.8	7.0	7.2	7.4
May	7.8	8.2	8.6	9.2	9.5
Jun	9.9	10.2	10.7	11.2	11.4
Jul	11.8	12.2	12.7	13.1	13.2
Aug	13.4	13.5	13.6	13.7	13.7
Sep	13.7	13.7	13.8	13.8	13.8

DNMC	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.2	6.4
Apr	6.6	7.0	7.5	7.9	8.2
May	8.8	9.2	9.9	10.7	11.2
Jun	11.8	12.3	13.1	13.8	14.3
Jul	15.2	15.9	17.1	18.1	18.7
Aug	19.6	20.1	20.8	21.3	21.3
Sep	18.9	19.1	20.4	21.1	21.2
Canyon Dam					
Mar	5.1	5.3	5.7	6.1	6.2
Apr	6.5	6.8	7.1	7.3	7.5
May	8.0	8.3	8.8	9.4	9.8
Jun	10.2	10.6	11.1	11.6	11.9
Jul	12.4	12.8	13.4	13.8	14.0
Aug	14.3	14.4	14.6	14.8	14.9
Sep	15.0	15.0	15.1	15.1	15.2

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

DNMD	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.2	6.5
Apr	6.7	7.0	7.6	8.0	8.3
May	8.9	9.4	10.1	11.0	11.6
Jun	12.2	12.7	13.6	14.4	15.0
Jul	16.0	16.7	18.0	19.1	19.7
Aug	20.6	21.1	21.8	22.1	22.2
Sep	18.9	19.1	20.4	21.6	21.7
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.2
Apr	6.5	6.8	7.2	7.4	7.7
May	8.2	8.6	9.1	9.8	10.3
Jun	10.7	11.1	11.8	12.3	12.7
Jul	13.3	13.8	14.5	15.2	15.5
Aug	15.9	16.1	16.5	16.9	17.1
Sep	17.4	17.5	17.6	17.7	17.7

DNME	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.3	6.5
Apr	6.7	7.1	7.6	8.1	8.5
May	9.2	9.8	10.6	11.7	12.3
Jun	13.1	13.8	14.9	16.0	16.7
Jul	17.9	18.8	20.3	21.6	22.1
Aug	22.4	22.6	23.1	23.4	23.6
Sep	18.9	19.0	20.4	21.6	21.7
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.3
Apr	6.5	6.9	7.3	7.6	7.9
May	8.5	9.0	9.6	10.5	11.0
Jun	11.6	12.1	12.9	13.7	14.3
Jul	15.1	15.8	16.9	17.9	18.4
Aug	19.1	19.5	20.2	20.8	21.1
Sep	18.5	18.9	20.2	20.7	20.9

DNMF	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.2	6.4
Apr	6.6	7.0	7.5	7.9	8.2
May	8.7	9.2	9.8	10.6	11.1
Jun	11.7	12.1	12.9	13.6	14.1
Jul	15.0	15.7	16.8	17.8	18.4
Aug	19.2	19.7	20.5	20.9	21.0
Sep	18.9	19.1	20.2	20.9	20.9
Canyon Dam					
Mar	5.1	5.3	5.7	6.1	6.2
Apr	6.5	6.8	7.1	7.2	7.4
May	7.9	8.2	8.6	9.2	9.6
Jun	10.0	10.3	10.9	11.3	11.6
Jul	12.0	12.4	12.9	13.3	13.5
Aug	13.7	13.8	13.9	14.0	14.1
Sep	14.0	14.1	14.1	14.1	14.2

DNMG	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.2	6.4
Apr	6.7	7.0	7.5	7.9	8.3
May	8.8	9.3	10.0	10.8	11.3
Jun	11.9	12.4	13.2	14.0	14.5
Jul	15.5	16.2	17.4	18.4	19.0
Aug	19.9	20.4	21.2	21.5	21.6
Sep	18.9	19.1	20.4	21.3	21.4
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.2
Apr	6.5	6.8	7.1	7.3	7.6
May	8.1	8.4	8.9	9.6	10.0
Jun	10.4	10.8	11.3	11.9	12.2
Jul	12.7	13.1	13.8	14.3	14.5
Aug	14.8	15.0	15.3	15.5	15.7
Sep	15.8	16.0	16.0	16.1	16.2

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

DNMH	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.2	6.5
Apr	6.7	7.1	7.6	7.9	8.3
May	8.9	9.4	10.1	10.9	11.5
Jun	12.1	12.6	13.4	14.2	14.7
Jul	15.7	16.4	17.7	18.8	19.4
Aug	20.3	20.8	21.5	21.8	21.9
Sep	18.9	19.1	20.4	21.4	21.5
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.2
Apr	6.5	6.8	7.2	7.4	7.7
May	8.1	8.5	9.0	9.7	10.1
Jun	10.6	10.9	11.6	12.1	12.4
Jul	13.0	13.4	14.2	14.8	15.0
Aug	15.4	15.6	15.9	16.2	16.4
Sep	16.6	16.8	16.9	17.0	17.0

DNMI	10%	25%	50%	75%	90%
BVPH					
Mar	5.1	5.4	5.7	6.2	6.5
Apr	6.7	7.1	7.6	8.1	8.5
May	9.1	9.6	10.4	11.4	12.0
Jun	12.8	13.4	14.4	15.4	16.1
Jul	17.2	18.0	19.4	20.7	21.3
Aug	22.1	22.3	22.8	23.1	23.1
Sep	18.9	19.0	20.3	21.6	21.7
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.3
Apr	6.5	6.9	7.3	7.6	7.9
May	8.4	8.9	9.5	10.3	10.8
Jun	11.3	11.8	12.5	13.2	13.7
Jul	14.5	15.1	16.1	16.9	17.4
Aug	17.9	18.3	18.9	19.5	19.8
Sep	18.4	18.8	19.9	20.2	20.2

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

AWEA	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.0
Apr	8.2	9.0	9.3	9.5	9.8
May	10.7	11.6	13.1	13.8	13.9
Jun	14.5	15.0	15.5	16.3	16.6
Jul	17.3	18.0	18.7	19.9	20.2
Aug	20.4	20.4	20.7	20.8	21.1
Sep	18.6	18.9	19.4	19.7	20.0
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.1	6.2
May	6.5	6.7	7.1	7.4	7.6
Jun	7.9	8.2	8.5	8.9	9.1
Jul	9.4	9.7	10.3	10.8	11.0
Aug	11.3	11.4	11.5	11.5	11.6
Sep	11.8	11.9	12.2	12.5	12.6

AWEB	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.0
Apr	8.2	9.0	9.3	9.5	9.9
May	10.7	11.6	13.1	13.8	13.9
Jun	14.6	15.0	15.6	16.4	16.6
Jul	17.3	18.1	18.8	19.9	20.3
Aug	20.4	20.5	20.8	20.9	21.2
Sep	18.7	19.0	19.5	19.8	20.1
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.1	6.2
May	6.5	6.7	7.1	7.4	7.6
Jun	8.0	8.2	8.5	8.9	9.1
Jul	9.5	9.8	10.3	10.8	11.0
Aug	11.3	11.4	11.5	11.6	11.7
Sep	11.8	12.0	12.2	12.5	12.6

AWEC	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.0
Apr	8.2	9.0	9.3	9.5	9.9
May	10.7	11.6	13.2	13.9	14.0
Jun	14.6	15.1	15.7	16.5	16.7
Jul	17.4	18.2	18.9	20.1	20.4
Aug	20.6	20.7	20.9	21.1	21.4
Sep	18.8	19.1	19.6	19.9	20.3
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.1	6.3
May	6.5	6.8	7.1	7.5	7.7
Jun	8.0	8.3	8.6	9.0	9.2
Jul	9.6	9.8	10.4	10.9	11.1
Aug	11.4	11.5	11.7	11.8	11.9
Sep	12.1	12.2	12.5	12.8	12.9

AWED	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.0
Apr	8.2	9.0	9.4	9.6	9.9
May	10.8	11.7	13.3	14.0	14.1
Jun	14.8	15.3	15.9	16.7	17.0
Jul	17.7	18.5	19.2	20.4	20.7
Aug	21.0	21.0	21.3	21.4	21.7
Sep	19.1	19.4	19.9	20.3	20.6
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.2	6.3
May	6.6	6.9	7.3	7.7	7.8
Jun	8.2	8.4	8.8	9.1	9.3
Jul	9.7	10.0	10.6	11.2	11.4
Aug	11.7	11.9	12.1	12.3	12.5
Sep	12.7	12.9	13.3	13.6	13.8

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

AWEE	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.1
Apr	8.3	9.1	9.5	9.7	10.0
May	10.9	11.9	13.5	14.3	14.4
Jun	15.1	15.6	16.3	17.1	17.4
Jul	18.2	19.0	19.8	21.0	21.4
Aug	21.7	21.7	22.0	22.2	22.5
Sep	19.5	19.9	20.4	20.8	21.2
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.2	6.4	6.5
May	6.8	7.1	7.5	7.9	8.1
Jun	8.5	8.8	9.2	9.6	9.8
Jul	10.3	10.6	11.3	12.0	12.3
Aug	12.8	13.0	13.4	13.7	14.0
Sep	14.5	14.8	15.3	15.9	16.2

AWEF	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.0
Apr	8.2	9.0	9.3	9.5	9.9
May	10.7	11.6	13.1	13.8	14.0
Jun	14.6	15.1	15.6	16.4	16.7
Jul	17.4	18.1	18.8	20.0	20.3
Aug	20.5	20.5	20.8	21.0	21.3
Sep	18.8	19.1	19.5	19.8	20.1
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.1	6.2
May	6.5	6.7	7.1	7.5	7.6
Jun	8.0	8.2	8.6	8.9	9.1
Jul	9.5	9.8	10.3	10.8	11.1
Aug	11.3	11.4	11.5	11.6	11.7
Sep	11.9	12.0	12.3	12.6	12.7

AWEG	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.0
Apr	8.2	9.0	9.3	9.5	9.9
May	10.7	11.7	13.2	13.9	14.0
Jun	14.7	15.2	15.7	16.6	16.8
Jul	17.5	18.3	19.0	20.2	20.5
Aug	20.7	20.8	21.0	21.2	21.5
Sep	18.9	19.2	19.7	20.0	20.4
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.2	6.3
May	6.6	6.8	7.2	7.6	7.7
Jun	8.1	8.3	8.6	9.0	9.2
Jul	9.6	9.9	10.4	11.0	11.2
Aug	11.5	11.6	11.8	11.9	12.1
Sep	12.3	12.4	12.7	13.0	13.2

AWEH	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.0
Apr	8.2	9.0	9.3	9.6	9.9
May	10.8	11.7	13.3	14.0	14.1
Jun	14.7	15.2	15.8	16.6	16.9
Jul	17.6	18.4	19.1	20.3	20.6
Aug	20.8	20.9	21.2	21.3	21.6
Sep	19.0	19.3	19.8	20.2	20.5
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.2	6.3
May	6.6	6.9	7.2	7.6	7.8
Jun	8.1	8.3	8.7	9.1	9.3
Jul	9.7	10.0	10.5	11.1	11.3
Aug	11.6	11.7	11.9	12.1	12.2
Sep	12.5	12.7	13.0	13.3	13.5

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

AWEI	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.5	6.4	7.0
Apr	8.3	9.1	9.4	9.6	10.0
May	10.9	11.8	13.5	14.2	14.3
Jun	15.0	15.5	16.1	17.0	17.3
Jul	18.0	18.8	19.6	20.8	21.2
Aug	21.4	21.5	21.8	21.9	22.3
Sep	19.4	19.7	20.3	20.7	21.0
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.2	6.3	6.5
May	6.8	7.0	7.4	7.8	8.0
Jun	8.4	8.6	9.0	9.4	9.7
Jul	10.1	10.4	11.0	11.7	12.0
Aug	12.4	12.6	12.9	13.2	13.4
Sep	13.8	14.1	14.6	15.1	15.3

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

AWMA	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.3	5.5
Apr	5.9	6.1	6.4	6.6	6.8
May	7.1	7.3	7.6	8.1	8.3
Jun	8.6	8.8	9.3	9.9	10.2
Jul	10.9	11.5	12.6	13.7	14.3
Aug	15.4	16.1	17.3	17.9	18.6
Sep	19.2	19.4	19.5	19.7	19.7
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.1	6.2
May	6.5	6.7	7.1	7.4	7.6
Jun	8.0	8.2	8.6	8.9	9.1
Jul	9.5	9.8	10.4	10.9	11.2
Aug	11.5	11.6	11.7	11.8	11.9
Sep	12.1	12.2	12.5	12.8	12.9

AWMB	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.3	5.5
Apr	5.9	6.1	6.5	6.6	6.8
May	7.1	7.3	7.7	8.1	8.3
Jun	8.6	8.9	9.3	9.9	10.3
Jul	11.0	11.5	12.6	13.7	14.4
Aug	15.5	16.2	17.4	18.0	18.8
Sep	19.3	19.5	19.7	19.8	19.9
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.1	6.2
May	6.5	6.7	7.1	7.5	7.6
Jun	8.0	8.2	8.6	8.9	9.1
Jul	9.5	9.8	10.4	10.9	11.2
Aug	11.5	11.6	11.7	11.8	11.9
Sep	12.1	12.2	12.5	12.8	13.0

AWMC	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.3	5.5
Apr	5.9	6.2	6.5	6.6	6.8
May	7.1	7.3	7.7	8.2	8.4
Jun	8.7	8.9	9.4	10.0	10.4
Jul	11.1	11.7	12.7	13.9	14.6
Aug	15.7	16.4	17.7	18.3	19.1
Sep	19.6	19.8	19.9	20.1	20.1
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.1	6.3
May	6.5	6.8	7.2	7.5	7.7
Jun	8.1	8.3	8.6	9.0	9.2
Jul	9.6	9.9	10.5	11.0	11.3
Aug	11.6	11.7	11.9	12.0	12.2
Sep	12.4	12.6	12.8	13.1	13.3

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

AWMD	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.3	5.5
Apr	5.9	6.2	6.5	6.7	6.9
May	7.2	7.4	7.8	8.3	8.5
Jun	8.8	9.1	9.6	10.2	10.6
Jul	11.3	11.9	13.1	14.3	15.0
Aug	16.1	16.8	18.2	18.9	19.6
Sep	19.7	20.1	20.3	20.5	20.5
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.2	6.4
May	6.6	6.9	7.3	7.7	7.9
Jun	8.2	8.4	8.8	9.2	9.4
Jul	9.8	10.1	10.8	11.4	11.7
Aug	12.1	12.3	12.6	13.0	13.3
Sep	13.6	13.9	14.4	14.9	15.1

AWME	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.4	5.6
Apr	6.0	6.3	6.6	6.8	7.0
May	7.4	7.7	8.1	8.6	8.8
Jun	9.2	9.5	10.1	10.8	11.1
Jul	12.0	12.6	13.8	15.2	15.9
Aug	17.1	17.9	19.3	20.1	20.8
Sep	19.7	20.2	20.9	21.2	21.3
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.2	6.4	6.5
May	6.9	7.1	7.5	7.9	8.2
Jun	8.5	8.8	9.2	9.7	9.9
Jul	10.4	10.8	11.6	12.3	12.8
Aug	13.4	13.8	14.4	15.1	15.5
Sep	16.2	16.7	17.4	18.0	18.2

AWMF	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.3	5.5
Apr	5.9	6.1	6.5	6.6	6.8
May	7.1	7.3	7.7	8.1	8.3
Jun	8.6	8.9	9.4	10.0	10.3
Jul	11.0	11.6	12.7	13.8	14.4
Aug	15.5	16.2	17.5	18.1	18.9
Sep	19.4	19.6	19.7	19.9	20.0
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.1	6.2
May	6.5	6.7	7.1	7.5	7.7
Jun	8.0	8.2	8.6	9.0	9.2
Jul	9.6	9.9	10.4	11.0	11.2
Aug	11.5	11.6	11.7	11.8	12.0
Sep	12.1	12.3	12.6	12.9	13.0

AWMG	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.3	5.5
Apr	5.9	6.2	6.5	6.6	6.8
May	7.2	7.4	7.7	8.2	8.4
Jun	8.7	9.0	9.5	10.1	10.4
Jul	11.2	11.7	12.8	14.0	14.7
Aug	15.8	16.5	17.8	18.5	19.2
Sep	19.7	19.9	20.1	20.2	20.3
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.2	6.3
May	6.6	6.8	7.2	7.6	7.8
Jun	8.1	8.3	8.7	9.1	9.3
Jul	9.7	10.0	10.6	11.1	11.4
Aug	11.7	11.9	12.1	12.3	12.5
Sep	12.8	13.0	13.3	13.7	13.8

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

AWMH	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.3	5.5
Apr	5.9	6.2	6.5	6.7	6.9
May	7.2	7.4	7.8	8.2	8.4
Jun	8.8	9.0	9.5	10.1	10.5
Jul	11.2	11.8	12.9	14.1	14.8
Aug	16.0	16.7	18.0	18.7	19.4
Sep	19.7	20.0	20.2	20.4	20.4
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.1	6.2	6.3
May	6.6	6.9	7.2	7.6	7.8
Jun	8.1	8.4	8.8	9.1	9.3
Jul	9.7	10.1	10.7	11.3	11.5
Aug	11.9	12.1	12.4	12.6	12.9
Sep	13.2	13.5	13.9	14.3	14.4

AWMI	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	4.9	5.0	5.3	5.6
Apr	6.0	6.2	6.6	6.8	7.0
May	7.3	7.6	8.0	8.5	8.7
Jun	9.1	9.4	9.9	10.6	10.9
Jul	11.7	12.4	13.6	14.8	15.6
Aug	16.8	17.5	18.9	19.7	20.4
Sep	19.7	20.1	20.8	21.0	21.0
Canyon Dam					
Mar	4.8	4.9	5.0	5.2	5.4
Apr	5.7	5.9	6.2	6.3	6.5
May	6.8	7.1	7.4	7.8	8.1
Jun	8.4	8.7	9.1	9.5	9.7
Jul	10.2	10.6	11.3	12.0	12.4
Aug	12.9	13.3	13.8	14.4	14.8
Sep	15.4	15.8	16.5	17.1	17.3

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

DWEA	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.9	6.9	7.6
Apr	9.0	9.8	10.2	10.4	10.8
May	11.8	12.9	14.8	15.6	15.8
Jun	16.6	17.1	17.8	18.7	19.0
Jul	19.7	20.5	21.2	22.4	22.7
Aug	22.2	22.4	22.9	23.1	23.2
Sep	19.6	19.9	20.5	21.0	21.5
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.3
Apr	6.7	7.0	7.3	7.4	7.5
May	7.9	8.2	8.7	9.2	9.3
Jun	9.7	10.0	10.5	10.9	11.0
Jul	11.4	11.7	12.2	12.5	12.7
Aug	12.8	12.9	13.1	13.2	13.3
Sep	13.3	13.3	13.3	13.4	13.4

DWEB	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.9	6.9	7.6
Apr	9.0	9.8	10.2	10.5	10.9
May	11.8	12.9	14.8	15.7	15.9
Jun	16.6	17.2	17.8	18.7	19.1
Jul	19.8	20.6	21.3	22.5	22.8
Aug	22.2	22.5	23.0	23.2	23.4
Sep	19.6	20.0	20.6	21.1	21.6
Canyon Dam					
Mar	5.1	5.2	5.6	6.0	6.3
Apr	6.8	7.0	7.3	7.4	7.6
May	7.9	8.2	8.8	9.2	9.4
Jun	9.8	10.1	10.6	11.0	11.1
Jul	11.5	11.8	12.3	12.7	12.8
Aug	13.0	13.1	13.3	13.4	13.5
Sep	13.5	13.5	13.5	13.6	13.6

DWEC	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.9	6.9	7.6
Apr	9.0	9.9	10.2	10.5	10.9
May	11.9	13.0	14.9	15.8	16.0
Jun	16.8	17.3	18.0	18.9	19.2
Jul	19.9	20.8	21.5	22.8	23.0
Aug	22.5	22.7	23.2	23.4	23.6
Sep	19.7	20.2	20.8	21.3	21.9
Canyon Dam					
Mar	5.1	5.2	5.5	6.0	6.3
Apr	6.8	7.1	7.4	7.5	7.7
May	8.1	8.4	9.0	9.5	9.7
Jun	10.1	10.5	11.0	11.4	11.6
Jul	12.0	12.3	12.9	13.4	13.6
Aug	13.9	14.0	14.2	14.4	14.5
Sep	14.6	14.7	14.7	14.8	14.8

DWED	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	6.0	7.0	7.7
Apr	9.1	9.9	10.3	10.6	11.0
May	12.0	13.1	15.1	16.0	16.2
Jun	17.0	17.5	18.2	19.2	19.5
Jul	20.2	21.1	21.8	23.1	23.4
Aug	22.9	23.2	23.7	23.9	24.1
Sep	19.7	20.2	20.9	21.6	22.2
Canyon Dam					
Mar	5.1	5.2	5.5	6.0	6.3
Apr	6.8	7.1	7.5	7.6	7.9
May	8.3	8.7	9.4	9.9	10.2
Jun	10.7	11.1	11.7	12.2	12.4
Jul	12.9	13.4	14.1	14.7	15.0
Aug	15.4	15.6	16.0	16.3	16.5
Sep	16.7	16.9	17.1	17.3	17.4

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

DWEE	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	6.0	7.0	7.7
Apr	9.1	10.1	10.4	10.7	11.1
May	12.2	13.4	15.5	16.4	16.6
Jun	17.5	18.1	18.8	19.9	20.2
Jul	21.0	21.9	22.7	24.1	24.4
Aug	23.1	23.5	24.4	24.6	24.8
Sep	19.8	20.3	21.0	21.6	22.3
Canyon Dam					
Mar	5.1	5.2	5.4	5.9	6.2
Apr	6.8	7.1	7.6	7.8	8.1
May	8.7	9.2	10.0	10.7	11.0
Jun	11.7	12.2	12.9	13.7	14.0
Jul	14.8	15.4	16.5	17.5	17.9
Aug	18.6	19.0	19.7	20.3	20.7
Sep	19.4	19.7	20.3	20.9	21.0

DWEF	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.9	6.9	7.6
Apr	9.0	9.8	10.2	10.5	10.9
May	11.9	13.0	14.8	15.7	15.9
Jun	16.7	17.2	17.9	18.8	19.1
Jul	19.8	20.7	21.4	22.6	22.9
Aug	22.3	22.5	23.1	23.3	23.4
Sep	19.6	20.1	20.7	21.2	21.7
Canyon Dam					
Mar	5.1	5.2	5.6	6.0	6.3
Apr	6.8	7.0	7.3	7.4	7.6
May	8.0	8.3	8.8	9.3	9.5
Jun	9.9	10.2	10.7	11.2	11.3
Jul	11.6	12.0	12.5	12.9	13.1
Aug	13.3	13.4	13.6	13.7	13.8
Sep	13.8	13.9	13.9	13.9	13.9

DWEG	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	5.9	7.0	7.6
Apr	9.0	9.9	10.2	10.5	10.9
May	11.9	13.0	15.0	15.9	16.0
Jun	16.8	17.4	18.1	19.0	19.3
Jul	20.0	20.9	21.6	22.9	23.2
Aug	22.6	22.9	23.4	23.6	23.7
Sep	19.7	20.2	20.9	21.5	22.0
Canyon Dam					
Mar	5.1	5.2	5.5	6.0	6.3
Apr	6.8	7.1	7.4	7.5	7.7
May	8.2	8.5	9.1	9.6	9.9
Jun	10.3	10.7	11.2	11.7	11.9
Jul	12.3	12.7	13.3	13.9	14.1
Aug	14.4	14.5	14.8	15.0	15.2
Sep	15.3	15.4	15.5	15.6	15.7

DWEH	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	6.0	7.0	7.7
Apr	9.1	9.9	10.3	10.5	10.9
May	12.0	13.1	15.0	15.9	16.1
Jun	16.9	17.4	18.1	19.1	19.4
Jul	20.1	21.0	21.7	23.0	23.3
Aug	22.8	23.0	23.5	23.7	23.9
Sep	19.7	20.2	20.9	21.5	22.1
Canyon Dam					
Mar	5.1	5.2	5.5	6.0	6.3
Apr	6.8	7.1	7.5	7.6	7.8
May	8.2	8.6	9.2	9.8	10.0
Jun	10.5	10.9	11.5	12.0	12.1
Jul	12.6	13.0	13.7	14.3	14.5
Aug	14.9	15.1	15.4	15.7	15.8
Sep	16.0	16.1	16.3	16.5	16.6

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam
Percentile Rank of Temperature Distribution by Month

DWEI	10%	25%	50%	75%	90%
BVPH					
Mar	4.8	5.0	6.0	7.0	7.7
Apr	9.1	10.0	10.4	10.7	11.1
May	12.1	13.3	15.3	16.3	16.5
Jun	17.3	17.9	18.7	19.7	20.0
Jul	20.8	21.7	22.4	23.8	24.1
Aug	23.1	23.5	24.3	24.5	24.6
Sep	19.7	20.2	20.9	21.6	22.2
Canyon Dam					
Mar	5.1	5.2	5.4	5.9	6.2
Apr	6.7	7.1	7.5	7.8	8.0
May	8.6	9.0	9.7	10.4	10.7
Jun	11.3	11.8	12.5	13.2	13.4
Jul	14.1	14.7	15.6	16.5	16.8
Aug	17.4	17.7	18.3	18.9	19.2
Sep	19.1	19.4	19.6	19.8	19.9

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

DWMA	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.6	6.1	6.5
Apr	7.1	7.5	8.0	8.2	8.5
May	9.1	9.5	10.1	10.8	11.1
Jun	11.6	12.0	12.7	13.3	13.6
Jul	14.3	14.9	16.0	16.9	17.4
Aug	18.2	18.8	19.6	20.3	20.5
Sep	19.5	19.8	20.2	20.4	20.5
Canyon Dam					
Mar	5.1	5.3	5.6	6.0	6.3
Apr	6.7	7.0	7.3	7.4	7.5
May	7.9	8.2	8.7	9.2	9.3
Jun	9.7	10.0	10.5	10.9	11.0
Jul	11.4	11.7	12.2	12.5	12.7
Aug	12.9	13.0	13.1	13.2	13.3
Sep	13.4	13.4	13.4	13.4	13.4

DWMB	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.6	6.1	6.5
Apr	7.1	7.5	8.0	8.3	8.6
May	9.1	9.5	10.2	10.8	11.2
Jun	11.7	12.1	12.8	13.5	13.8
Jul	14.5	15.1	16.3	17.2	17.7
Aug	18.6	19.1	20.0	20.6	20.8
Sep	19.7	20.0	20.4	20.7	20.8
Canyon Dam					
Mar	5.1	5.2	5.6	6.0	6.3
Apr	6.8	7.0	7.3	7.4	7.6
May	7.9	8.2	8.8	9.2	9.4
Jun	9.8	10.1	10.6	11.0	11.1
Jul	11.5	11.8	12.3	12.7	12.8
Aug	13.0	13.1	13.3	13.4	13.5
Sep	13.6	13.6	13.6	13.6	13.7

DWMC	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.6	6.2	6.5
Apr	7.1	7.5	8.0	8.3	8.6
May	9.2	9.6	10.3	11.0	11.4
Jun	11.9	12.4	13.1	13.8	14.1
Jul	14.9	15.5	16.7	17.7	18.2
Aug	19.1	19.7	20.6	21.2	21.3
Sep	19.8	20.3	20.8	21.1	21.4
Canyon Dam					
Mar	5.1	5.2	5.5	6.0	6.3
Apr	6.8	7.1	7.4	7.5	7.7
May	8.1	8.4	9.0	9.5	9.7
Jun	10.1	10.5	11.0	11.4	11.6
Jul	12.0	12.3	12.9	13.4	13.6
Aug	13.9	14.0	14.3	14.5	14.6
Sep	14.7	14.8	14.9	15.0	15.1

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

DWMD	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.6	6.2	6.6
Apr	7.2	7.6	8.1	8.5	8.8
May	9.4	9.9	10.6	11.4	11.7
Jun	12.4	12.9	13.7	14.5	14.8
Jul	15.7	16.4	17.6	18.7	19.2
Aug	20.2	20.8	21.7	22.1	22.2
Sep	19.8	20.3	21.0	21.6	22.0
Canyon Dam					
Mar	5.1	5.2	5.5	6.0	6.3
Apr	6.8	7.1	7.5	7.6	7.9
May	8.3	8.7	9.4	9.9	10.2
Jun	10.7	11.1	11.7	12.2	12.4
Jul	12.9	13.4	14.1	14.8	15.1
Aug	15.5	15.7	16.2	16.5	16.8
Sep	17.1	17.3	17.5	17.7	17.8

DWME	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.5	6.1	6.5
Apr	7.2	7.7	8.3	8.7	9.1
May	9.8	10.4	11.3	12.2	12.7
Jun	13.5	14.1	15.1	16.2	16.7
Jul	17.7	18.5	20.0	21.3	21.9
Aug	22.9	23.1	23.5	23.8	24.0
Sep	19.8	20.3	21.0	21.7	22.3
Canyon Dam					
Mar	5.1	5.2	5.4	5.9	6.2
Apr	6.8	7.1	7.6	7.8	8.1
May	8.7	9.2	10.0	10.7	11.0
Jun	11.7	12.2	12.9	13.7	14.1
Jul	14.8	15.5	16.5	17.5	18.0
Aug	18.7	19.1	19.9	20.6	21.0
Sep	19.4	19.7	20.3	21.0	21.2

DWMF	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.6	6.2	6.5
Apr	7.1	7.5	8.0	8.3	8.6
May	9.2	9.6	10.2	10.9	11.3
Jun	11.8	12.2	12.9	13.6	13.9
Jul	14.6	15.3	16.4	17.3	17.9
Aug	18.8	19.3	20.2	20.9	21.0
Sep	19.8	20.1	20.6	20.9	21.0
Canyon Dam					
Mar	5.1	5.2	5.6	6.0	6.3
Apr	6.8	7.0	7.3	7.4	7.6
May	8.0	8.3	8.8	9.3	9.5
Jun	9.9	10.2	10.7	11.2	11.3
Jul	11.7	12.0	12.5	13.0	13.1
Aug	13.3	13.4	13.6	13.7	13.8
Sep	13.9	13.9	14.0	14.0	14.0

DWMG	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.6	6.2	6.5
Apr	7.1	7.5	8.1	8.4	8.7
May	9.3	9.7	10.4	11.1	11.5
Jun	12.1	12.5	13.3	14.0	14.3
Jul	15.1	15.8	17.0	18.0	18.5
Aug	19.5	20.0	20.9	21.5	21.6
Sep	19.8	20.3	20.9	21.3	21.6
Canyon Dam					
Mar	5.1	5.2	5.5	6.0	6.3
Apr	6.8	7.1	7.4	7.5	7.7
May	8.2	8.5	9.1	9.6	9.9
Jun	10.3	10.7	11.2	11.7	11.9
Jul	12.3	12.7	13.4	13.9	14.1
Aug	14.4	14.6	14.9	15.2	15.4
Sep	15.5	15.7	15.8	16.0	16.1

MITEMP Predicted Outflow Temperatures (°C) at Butt Valley Powerhouse (BVPH) and Canyon Dam Percentile Rank of Temperature Distribution by Month

DWMH	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.6	6.2	6.5
Apr	7.2	7.6	8.1	8.4	8.7
May	9.3	9.8	10.5	11.2	11.6
Jun	12.2	12.7	13.5	14.2	14.5
Jul	15.4	16.1	17.3	18.3	18.9
Aug	19.8	20.4	21.3	21.8	21.9
Sep	19.8	20.3	21.0	21.4	21.8
Canyon Dam					
Mar	5.1	5.2	5.5	6.0	6.3
Apr	6.8	7.1	7.5	7.6	7.8
May	8.2	8.6	9.2	9.8	10.0
Jun	10.5	10.9	11.5	12.0	12.1
Jul	12.6	13.0	13.7	14.3	14.6
Aug	15.0	15.2	15.6	15.9	16.1
Sep	16.3	16.5	16.7	16.9	17.0

DWMI	10%	25%	50%	75%	90%
BVPH					
Mar	5.2	5.3	5.5	6.1	6.5
Apr	7.2	7.6	8.2	8.6	9.0
May	9.7	10.2	11.0	11.9	12.3
Jun	13.1	13.6	14.6	15.5	16.0
Jul	16.9	17.7	19.1	20.3	20.9
Aug	22.0	22.6	23.0	23.2	23.4
Sep	19.7	20.2	20.9	21.6	22.3
Canyon Dam					
Mar	5.1	5.2	5.4	5.9	6.2
Apr	6.7	7.1	7.5	7.8	8.0
May	8.6	9.0	9.7	10.4	10.7
Jun	11.3	11.8	12.5	13.2	13.4
Jul	14.1	14.7	15.7	16.5	16.9
Aug	17.5	17.9	18.6	19.2	19.5
Sep	19.2	19.5	19.9	20.1	20.2

Naming Protocol – SNTEMP – Seneca, Belden and Lower Butt Creek Study Reaches

The following table identifies the system of naming of the results of the individual SNTEMP model simulation runs for the Seneca and Belden study reaches for PG&E's UNNFR project.

All individual Seneca reach simulation results start with a prefix of "S6-9", this symbolizes "Seneca for the months of June through September". Similarly, for the Belden reach simulation, all results files begin with a "B6-9" prefix.

Following the prefix, for both Seneca and Belden simulations, a four-letter code identifies:

1 – **A**verage or **D**ry water year simulation,
2 – **N**ormal or **W**arm meteorology,
3 – **E**xisting or **M**odified Prattville Intake, and
4 – Canyon Dam releases of **A** for 35 cfs
B for 75 cfs
F for 100 cfs
C for 150 cfs
G for 200 cfs
H for 250 cfs
D for 350 cfs
I for 500 cfs
E for 600 cfs.

(The above flow releases may appear out of order. This is because originally simulated flow releases A through E were later augmented with simulations F through I for better definition of results.)

For the Belden reach simulations, additional numbers and letters follow the above mentioned codes. A two digit number of "21" identifies the preferred operation of Caribou Powerhouse No. 2 over Caribou Powerhouse No. 1. (Note – No simulations of Caribou Powerhouse No. 1 preferred over Caribou Powerhouse No. 2 were ever run, so result files containing "12" in the filename do not exist.)

Following the two-digit number, a lowercase letter reflects the flow release in the UNNFR below Belden Dam. These are as follows: **a** for 140 cfs
b for 200 cfs
c for 300 cfs
d for 500 cfs
e for 900 cfs.

Naming Table

Naming Convention Matrix for Modeled Scenarios - Seneca, Belden, and Lower Butt Creek

SNTEMP Modeling Scenario Seneca Reach

Water Year	Meteorology	Prattvlle Intake	Canyon Dam Release (cfs)		Run ID
Average	Normal	Existing	A	35	ANEA
			B	75	ANEB
			C	150	ANEC
			D	300	ANED
			E	600	ANEE
			F	100	ANEF
			G	200	ANEG
			H	250	ANEH
			I	500	ANEI
		Modified	A	35	ANMA
			B	75	ANMB
			C	150	ANMC
			D	300	ANMD
			E	600	ANME
			F	100	ANMF
			G	200	ANMG
			H	250	ANMH
			I	500	ANMI
	Warm	Existing	A	35	AWEA
			B	75	AWEB
			C	150	AWEC
			D	300	AWED
			E	600	AWEE
			F	100	AWEF
			G	200	AWEG
			H	250	AWEH
			I	500	AWEI
		Modified	A	35	AWMA
			B	75	AWMB
			C	150	AWMC
			D	300	AWMD
			E	600	AWME
			F	100	AWMF
			G	200	AWMG
			H	250	AWMH
			I	500	AWMI

Naming Table

Naming Convention Matrix for Modeled Scenarios - Seneca, Belden, and Lower Butt Creek

SNTEMP Modeling Scenario Seneca Reach (continued)

Water Year	Meteorology	Prattvile Intake	Canyon Dam Release (cfs)		Run ID
Dry	Normal	Existing	A	35	DNEA
			B	75	DNEB
			C	150	DNEC
			D	300	DNED
			E	600	DNEE
			F	100	DNEF
			G	200	DNEG
			H	250	DNEH
			I	500	DNEI
		Modified	A	35	DNMA
			B	75	DNMB
			C	150	DNMC
			D	300	DNMD
			E	600	DNME
			F	100	DNMF
			G	200	DNMG
			H	250	DNMH
			I	500	DNMI
	Warm	Existing	A	35	DWEA
			B	75	DWEB
			C	150	DWEC
			D	300	DWED
			E	600	DWEE
			F	100	DWEF
			G	200	DWEG
			H	250	DWEH
			I	500	DWEI
		Modified	A	35	DWMA
			B	75	DWMB
			C	150	DWMC
			D	300	DWMD
			E	600	DWME
			F	100	DWMF
			G	200	DWMG
			H	250	DWMH
			I	500	DWMI

Naming Table

Naming Convention Matrix for Modeled Scenarios - Seneca, Belden, and Lower Butt Creek

SNTEMP Modeling Scenario Belden Reach

Operational Scenario	Description of Nomenclature	Belden Release	Scenario ID
Flow release below Belden Dam *	XXXX21 (the XXXX denotes the same RUN ID from the Senceca Scenario)	a (140 cfs)	XXXX21 a
		b (200 cfs)	XXXX21 b
		c (300 cfs)	XXXX21 c
		d (500 cfs)	XXXX21 d
		e (900 cfs)	XXXX21 e

* = applies to the 2-1 case only, the 1-2 case was not run, see the explanation in the written response

SNTEMP Modeling Scenario Lower Butt Creek

Operational Scenario	Description of Nomenclature	Release	Scenario ID
SNTEMP model for lower Butt Creek	average WY, normal MET *	no release	ANE
	dry WY, normal MET *	no release	DNE
	average WY, warm MET *	no release	AWE
	dry WY, warm MET *	no release	DWE

* all scenarios are for existing condition, i.e, no additional release is considered
WY = water year
MET = meteorology

Normal and Extreme Meteorology – SNTEMP – Seneca, Butt, and Belden Study Reaches

The following table identifies the normal (50%) and extreme (90%) meteorological conditions used in the SNTEMP modeling of the Seneca, Butt, and Belden study reaches. These data were derived from the period of record of the PG&E Meteorological Station at Prattville and used in modeling all three study reaches.

Normal Condition (50%)

Site Number	Month	Wind Speed (mps)	Air Temp (Deg C)	Relative Humidity (%)	Solar Radiation (Watts/m²)
404	June	1.13	14.64	67.85	301.54
404	July	1.22	18.74	55.67	312.56
404	August	1.32	17.79	33.46	315.70
404	September	1.24	14.35	72.71	117.70

Extreme Condition (90%)

Site Number	Date	Wind Speed (mps)	Air Temp (Deg C)	Relative Humidity (%)	Solar Radiation (Watts/m²)
404	June	1.44	18.69	30.77	326.81
404	July	2.25	21.90	30.04	304.84
404	August	1.20	21.08	36.72	277.40
404	September	1.29	17.81	41.48	261.48

BELDEN REACH FLOWS FOR GAMING
Flow releases: 140, 200, 300, 500, 900

AVERAGE
50% exceedance

140 cfs	normal cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	3.96	0.13	4.09	16.25	20.34
july	3.96	0.08	4.04	3.79	7.83
august	3.96	0.08	4.04	2.53	6.57
september	3.96	0.09	4.05	2.94	6.99

These are the flow nodes within the Belden Reach model. Hydrology derived from period of record from gauges. Note - there is no overland accretion in this study reach.

200 cfs	cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	5.66	0.13	5.79	16.25	22.04
july	5.66	0.08	5.74	3.79	9.53
august	5.66	0.08	5.74	2.53	8.27
september	5.66	0.09	5.75	2.94	8.69

300 cfs	cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	8.50	0.13	8.63	16.25	24.88
july	8.50	0.08	8.58	3.79	12.37
august	8.50	0.08	8.58	2.53	11.11
september	8.50	0.09	8.59	2.94	11.53

500 cfs	cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	14.16	0.13	14.29	16.25	30.54
july	14.16	0.08	14.24	3.79	18.03
august	14.16	0.08	14.24	2.53	16.77
september	14.16	0.09	14.25	2.94	17.19

900 cfs	cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	25.49	0.13	25.62	16.25	41.87
july	25.49	0.08	25.57	3.79	29.36
august	25.49	0.08	25.57	2.53	28.10
september	25.49	0.09	25.58	2.94	28.52

BELDEN REACH FLOWS FOR GAMING
Flow releases: 140, 200, 300, 500, 900

DRY
10% exceedance

140 cfs	dry cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	3.96	0.09	4.05	3.19	7.24
july	3.96	0.08	4.04	3.19	7.22
august	3.96	0.08	4.04	4.35	8.39
september	3.96	0.08	4.04	4.68	8.72

200 cfs	cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	5.66	0.09	5.75	3.19	8.94
july	5.66	0.08	5.74	3.19	8.92
august	5.66	0.08	5.74	4.35	10.09
september	5.66	0.08	5.74	4.68	10.42

300 cfs	cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	8.50	0.09	8.59	3.19	11.78
july	8.50	0.08	8.58	3.19	11.76
august	8.50	0.08	8.58	4.35	12.93
september	8.50	0.08	8.58	4.68	13.26

500 cfs	cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	14.16	0.09	14.25	3.19	17.44
july	14.16	0.08	14.24	3.19	17.42
august	14.16	0.08	14.24	4.35	18.59
september	14.16	0.08	14.24	4.68	18.92

900 cfs	cms at dam	cms MosquitoCk	cms Queen Lily	cms E. Branch	cms Ending Q
june	25.49	0.09	25.58	3.19	28.77
july	25.49	0.08	25.57	3.19	28.75
august	25.49	0.08	25.57	4.35	29.92
september	25.49	0.08	25.57	4.68	30.25

Summary of Temperatures in Belden Reach under Average WY and Normal Meteorology

NFFR above the Confluence with East Branch of NFFR

	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	17.7	20.3	20.4	18.1	17.6	20.5	20.2	18.1	17.8	20.4	20.1	18.0	17.6	20.3	20.0	17.9	17.6	20.3	20.0	17.8	17.3	20.1	19.9	17.7	17.1	20.0	19.8	17.7	16.5	19.6	19.4	17.7	16.1	19.3	19.4	17.6
200	17.7	20.3	20.7	18.3	17.5	20.5	20.4	18.3	17.7	20.5	20.4	18.2	17.5	20.3	20.3	18.1	17.5	20.3	20.2	18.0	17.2	20.1	20.1	18.0	17.0	19.9	20.0	18.0	16.3	19.5	19.6	17.9	15.9	19.3	19.5	18.0
300	17.6	20.4	20.9	18.5	17.5	20.5	20.6	18.5	17.6	20.5	20.6	18.4	17.4	20.3	20.5	18.3	17.5	20.3	20.4	18.2	17.1	20.1	20.3	18.2	16.9	19.9	20.2	18.1	16.1	19.5	19.8	18.1	15.7	19.2	19.7	18.2
500	17.5	20.4	21.1	18.7	17.4	20.5	20.8	18.7	17.6	20.5	20.8	18.6	17.4	20.3	20.8	18.5	17.4	20.3	20.6	18.3	17.1	20.1	20.5	18.3	16.8	19.9	20.3	18.3	16.0	19.4	19.9	18.2	15.5	19.2	19.8	18.3
900	17.5	20.4	21.2	18.8	17.4	20.5	21.0	18.9	17.5	20.5	20.9	18.7	17.3	20.3	20.8	18.6	17.4	20.3	20.7	18.4	17.0	20.1	20.6	18.4	16.7	19.9	20.4	18.4	15.9	19.4	20.0	18.3	15.4	19.1	19.9	18.4
Modified Prattville Intake																																				
140	15.2	16.8	18.5	18.0	15.2	16.9	18.5	18.0	15.4	17.0	18.6	18.0	15.3	17.0	18.5	17.9	15.4	17.2	18.6	17.9	15.4	17.2	18.5	17.8	15.4	17.2	18.6	17.9	15.3	17.3	18.6	18.0	15.2	17.4	18.7	18.2
200	14.9	16.5	18.7	18.3	14.9	16.7	18.6	18.3	15.1	16.8	18.7	18.2	15.0	16.8	18.6	18.2	15.2	16.9	18.7	18.2	15.2	16.9	18.7	18.1	15.2	17.0	18.7	18.2	15.0	17.1	18.8	18.3	14.9	17.1	18.9	18.5
300	14.7	16.3	18.7	18.5	14.7	16.4	18.7	18.5	14.9	16.6	18.8	18.4	14.8	16.6	18.7	18.4	15.0	16.7	18.8	18.4	15.0	16.7	18.8	18.3	15.0	16.8	18.9	18.4	14.8	16.9	18.9	18.5	14.7	16.9	19.0	18.7
500	14.5	16.1	18.8	18.6	14.5	16.3	18.8	18.6	14.7	16.4	18.9	18.6	14.6	16.4	18.8	18.5	14.8	16.5	18.8	18.5	14.8	16.6	18.8	18.5	14.8	16.6	18.9	18.6	14.6	16.7	19.0	18.7	14.5	16.8	19.1	18.8
900	14.3	16.0	18.9	18.8	14.4	16.1	18.9	18.8	14.6	16.3	19.0	18.7	14.5	16.3	18.8	18.6	14.7	16.4	18.9	18.6	14.7	16.4	18.9	18.6	14.7	16.5	19.0	18.7	14.5	16.6	19.0	18.8	14.4	16.7	19.1	19.0

NFFR above Belden Powhouse

	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	20.2	21.4	20.8	17.8	20.2	21.4	20.7	17.9	20.2	21.4	20.7	17.8	20.2	21.3	20.6	17.8	20.2	21.3	20.6	17.7	20.2	21.2	20.5	17.7	20.1	21.2	20.5	17.7	20.0	21.0	20.3	17.6	19.9	20.9	20.2	17.7
200	20.0	21.2	21.0	18.1	20.0	21.3	20.8	18.1	20.0	21.3	20.8	18.0	20.0	21.2	20.7	17.9	20.0	21.2	20.7	17.8	19.9	21.1	20.6	17.8	19.9	21.0	20.5	17.8	19.7	20.7	20.3	17.8	19.6	20.6	20.2	17.8
300	19.8	21.0	21.1	18.3	19.7	21.1	20.9	18.3	19.8	21.1	20.9	18.2	19.7	21.0	20.7	18.2	19.7	21.0	20.7	18.0	19.6	20.9	20.6	18.0	19.5	20.7	20.5	18.0	19.3	20.4	20.3	18.0	19.1	20.3	20.2	18.0
500	19.3	20.9	21.2	18.5	19.3	21.0	21.0	18.6	19.4	21.0	21.0	18.5	19.3	20.8	20.8	18.4	19.3	20.8	20.8	18.2	19.1	20.8	20.7	18.2	19.0	20.5	20.6	18.2	18.6	20.1	20.2	18.2	18.4	19.9	20.2	18.2
900	18.9	20.7	21.3	18.8	18.8	20.9	21.1	18.8	18.9	20.8	21.0	18.7	18.8	20.7	20.9	18.6	18.8	20.6	20.9	18.4	18.6	20.5	20.7	18.4	18.4	20.3	20.6	18.4	17.9	19.9	20.2	18.3	17.6	19.6	20.1	18.4
Modified Prattville Intake																																				
140	19.7	19.6	19.8	17.8	19.7	19.7	18.8	17.8	19.8	19.7	19.8	17.8	19.8	19.7	19.7	17.8	19.8	19.8	19.8	17.8	19.8	19.8	19.8	17.7	19.8	19.8	19.8	17.8	19.8	19.9	19.8	17.8	19.7	19.9	19.9	17.9
200	19.3	19.0	19.6	18.0	19.3	19.1	19.6	18.0	19.4	19.1	19.7	18.0	19.4	19.1	19.6	18.0	19.4	19.2	19.6	18.0	19.4	19.2	19.6	17.9	19.4	19.3	19.7	18.0	19.4	19.3	19.7	18.0	19.3	19.3	19.8	18.2
300	18.8	18.3	19.5	18.2	18.8	18.4	19.5	18.2	18.8	18.5	19.5	18.2	18.8	18.5	19.4	18.2	18.9	18.6	19.5	18.2	18.9	18.6	19.5	18.1	18.9	18.6	19.6	18.2	18.8	18.7	19.6	18.3	18.8	18.7	19.6	18.4
500	17.9	17.8	19.3	18.5	17.9	17.7	19.3	18.5	18.0	17.8	19.4	18.5	18.0	17.8	19.3	18.4	18.1	17.9	19.3	18.4	18.1	17.9	19.3	18.4	18.1	18.0	19.4	18.4	18.0	18.1	19.4	18.5	17.9	18.1	19.5	18.7
900	16.9	16.9	19.2	18.7	17.0	17.1	19.2	18.7	17.1	17.2	19.3	18.7	17.0	17.2	19.2	18.6	17.1	17.3	19.2	18.6	17.1	17.3	19.2	18.5	17.1	17.4	19.3	18.6	17.0	17.5	19.3	18.7	17.0	17.6	19.4	18.9

Summary of Temperatures in Belden Reach under Average WY and Warm Meteorology

NFFR above the Confluence with East Branch of NFFR

	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	18.3	20.7	21.6	19.6	18.1	20.8	21.6	19.8	18.4	20.8	21.8	18.7	18.3	20.6	21.5	19.6	18.2	20.8	21.4	19.6	18.0	20.5	21.3	19.5	17.7	20.4	21.2	19.4	17.1	20.0	20.8	19.3	16.6	19.8	20.7	19.3
200	18.3	20.9	21.8	20.1	18.1	21.0	21.8	20.1	18.4	21.0	21.8	20.0	18.3	20.8	21.7	19.9	18.1	20.8	21.6	19.8	18.0	20.8	21.5	19.8	17.7	20.5	21.3	19.7	16.9	20.1	21.0	19.5	16.4	19.9	20.9	19.6
300	18.3	21.1	21.9	20.4	18.1	21.2	22.0	20.4	18.4	21.1	22.0	20.3	18.3	21.0	21.9	20.2	18.1	20.9	21.8	20.1	17.9	20.8	21.6	20.0	17.6	20.6	21.5	19.9	16.6	20.2	21.1	19.8	16.3	19.9	21.0	19.8
500	18.3	21.2	22.1	20.6	18.1	21.3	22.2	20.6	18.4	21.3	22.1	20.5	18.3	21.1	22.0	20.4	18.1	21.0	21.9	20.3	17.9	20.9	21.7	20.2	17.6	20.7	21.6	20.1	16.8	20.3	21.2	20.0	16.2	20.0	21.1	20.0
900	18.2	21.3	22.2	20.8	18.1	21.4	22.3	20.8	18.4	21.4	22.2	20.6	18.2	21.2	22.1	20.6	18.1	21.1	22.0	20.5	17.9	21.0	21.8	20.4	17.6	20.8	21.7	20.3	16.7	20.3	21.3	20.1	16.1	20.1	21.1	20.2
Modified Prattville Intake																																				
140	15.1	17.3	19.5	19.0	15.2	17.5	19.5	19.0	15.4	17.5	19.5	19.1	15.5	17.5	19.4	19.0	15.6	17.6	19.6	19.1	15.7	17.6	19.6	19.1	15.7	17.6	19.6	19.0	15.7	17.8	19.7	19.3	15.6	17.9	19.7	19.5
200	14.9	17.2	19.5	19.2	15.0	17.3	19.6	19.3	15.2	17.4	19.5	19.3	15.2	17.4	19.4	19.2	15.4	17.5	19.6	19.3	15.4	17.5	19.6	19.3	15.4	17.4	19.6	19.3	15.4	17.7	19.7	19.6	15.4	17.8	19.8	19.8
300	14.6	17.1	19.5	19.4	14.8	17.2	19.5	19.5	15.0	17.3	19.5	19.5	15.0	17.3	19.4	19.4	15.2	17.4	19.6	19.5	15.2	17.4	19.6	19.5	15.2	17.3	19.6	19.5	15.3	17.6	19.8	19.9	15.2	17.7	19.8	20.1
500	14.5	16.9	19.5	19.6	14.6	17.1	19.5	19.7	14.8	17.2	19.6	19.7	14.9	17.2	19.4	19.6	15.0	17.3	19.7	19.7	15.2	17.4	19.6	19.5	15.1	17.2	19.6	19.7	15.1	17.6	19.8	20.1	15.0	17.6	19.8	20.3
900	14.3	16.9	19.6	19.7	14.5	17.0	19.5	19.8	14.7	17.1	19.6	19.8	14.7	17.1	19.4	19.7	14.9	17.2	19.7	19.8	15.0	17.3	19.7	19.8	15.0	17.2	19.6	19.8	15.0	17.5	19.8	20.2	14.9	17.6	19.8	20.4

NFFR above Belden Powhouse

	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	22.4	22.2	22.2	20.0	22.3	22.2	22.2	20.0	22.4	22.2	22.2	20.0	22.4	22.1	22.2	19.9	22.3	22.1	22.1	19.9	22.3	22.1	22.0	19.9	22.3	22.0	22.0	19.8	22.1	21.8	21.8	19.7	22.0	21.7	21.7	19.8
200	22.1	22.0	22.2	20.2	22.0	22.1	22.3	20.2	22.1	22.1	22.3	20.1	22.1	22.0	22.2	20.1	22.0	22.0	22.1	20.0	22.0	21.9	22.0	20.0	21.9	21.8	21.9	19.9	21.7	21.6	21.7	19.8	21.6	21.5	21.6	19.9
300	21.6	21.8	22.3	20.4	21.6	22.0	22.3	20.4	21.7	22.0	22.3	20.3	21.6	21.9	22.2	20.3	21.6	21.6	22.1	20.2	21.5	21.7	22.0	20.1	21.4	21.6	21.9	20.1	21.2	21.3	21.6	20.0	21.0	21.2	21.5	20.0
500	21.0	21.8	22.3	20.6	21.0	21.9	22.4	20.6	21.1	21.8	22.3	20.5	21.0	21.7	22.2	20.4	21.0	21.7	22.2	20.4	20.9	21.5	22.0	20.3	20.7	21.4	21.9	20.2	20.4	21.1	21.6	20.1	20.1	20.9	21.4	20.1
900	20.3	21.7	22.3	20.8	20.2	21.8	22.4	20.8	20.4	21.7	22.4	20.7	20.3	21.6	22.3	20.8	20.2	21.5	22.2	20.5	20.1	21.4	22.0	20.4	19.9	21.3	21.9	20.3	19.4	20.8	21.5	20.2	19.0	20.6	21.4	20.2
Modified Prattville Intake																																				
140	21.7	20.5	21.0	19.6	21.8	20.6	21.0	19.6	21.8	20.6	21.0	19.6	21.8	20.6	20.9	19.6	21.8	20.7	21.1	19.6	21.9	20.7	21.1	19.6	21.9	20.7	21.0	19.6	21.9	20.8	21.1	19.8	21.8	20.6	21.1	19.9
200	21.2	19.9	20.7	19.6	21.2	20.0	20.7	19.7	21.3	20.1	20.7	19.7	21.3	20.0	20.7	19.6	21.3	20.1	20.8	19.7	21.3	20.1	20.8	19.7	21.3	20.1	20.8	19.7	21.3	20.2	20.8	19.9	21.3	20.3	20.9	20.0
300	20.4	19.2	20.4	19.7	20.4	19.3	20.4	19.7	20.5	19.4	20.5	19.8	20.5	19.4	20.4	19.7	20.6	19.5	20.6	19.8	20.6	19.5	20.5	19.8	20.6	19.4	20.5	19.8	20.6	19.6	20.6	20.0	20.6	19.7	20.7	20.2
500	19.3	18.5	20.2	19.8	19.3	18.6	20.2	19.8	19.4	18.7	20.2	19.9	19.6	18.7	20.1	19.8	19.5	18.8	20.3	19.9	20.6	19.5	20.5	19.8	19.6	18.7	20.3	19.9	19.6	19.0	20.4	20.1	19.5	19.0	20.4	20.3
900	17.9	17.9	20.0	19.6	18.0	18.0	19.9	19.9	18.2	18.1	20.0	19.9	18.2	18.1	19.8	19.8	18.3	18.2	20.1	19.9	18.3	18.2	20.1	19.9	18.3	18.2	20.1	19.9	18.3	18.4	20.2	20.3	18.3	18.5	20.3	20.5

Temperatures in Belden Reach under Dry WY and Normal Meteorology

NFFR above the Confluence with East Branch of NFFR

	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	17.8	21.5	20.7	18.7	16.9	21.0	20.1	18.6	16.6	20.6	19.8	18.4	15.7	19.8	19.2	18.4	14.7	19.6	18.9	18.3	14.7	19.4	18.9	18.3	14.8	19.0	18.9	18.4	15.2	18.0	19.0	19.0	15.4	18.7	19.9	19.3
200	17.7	21.6	21.0	19.0	16.8	21.0	20.4	18.8	16.4	20.6	20.0	18.7	15.5	19.9	19.3	18.6	14.3	19.5	19.1	18.6	14.4	19.3	19.1	18.6	14.5	18.9	19.0	18.6	14.9	17.8	19.1	19.3	15.1	18.6	20.1	19.7
300	17.6	21.7	21.2	19.2	16.7	21.1	20.6	19.0	16.3	20.7	20.2	18.9	15.3	19.8	19.5	18.9	14.1	19.6	19.2	18.8	14.2	19.3	19.2	18.8	14.2	18.8	19.2	18.9	14.6	17.7	19.3	19.6	14.9	18.5	20.3	20.0
500	17.8	21.8	21.5	19.4	16.6	21.1	20.8	19.2	16.2	20.7	20.4	19.1	15.1	19.9	19.6	19.1	13.8	19.4	19.3	19.0	13.9	19.2	19.3	19.0	14.0	18.7	19.3	19.1	14.4	17.6	19.4	19.8	14.7	18.4	20.5	20.2
900	17.5	21.8	21.6	19.6	16.5	21.2	20.9	19.4	16.1	20.7	20.5	19.2	15.0	18.9	19.7	19.2	13.7	19.4	19.4	19.1	13.8	19.2	19.4	19.1	13.8	18.7	19.3	19.2	14.3	17.5	19.4	20.0	14.6	18.3	20.6	20.4
Modified Prattville Intake																																				
140	17.3	19.8	19.8	18.6	16.6	19.5	19.5	18.4	16.3	19.4	19.2	18.3	15.6	19.0	18.7	18.3	14.7	18.6	18.6	18.3	14.7	18.8	18.7	18.3	14.8	18.5	18.7	18.6	15.2	18.1	19.1	19.1	15.4	18.7	20.0	19.3
200	17.2	19.7	20.0	18.8	16.5	19.4	19.6	18.7	16.1	19.3	19.4	18.6	15.3	18.9	18.8	18.5	14.3	18.7	18.7	18.5	14.4	18.7	18.8	18.6	14.5	18.3	18.9	18.7	14.9	17.9	19.3	19.4	15.1	18.6	20.3	19.7
300	17.1	19.7	20.2	19.1	16.3	19.4	19.8	18.9	16.0	19.2	19.5	18.8	15.1	18.8	18.8	18.8	14.1	18.6	18.8	18.7	14.2	18.6	18.9	18.8	14.2	18.2	19.0	19.0	14.6	17.8	19.4	19.7	14.8	18.5	20.5	20.0
500	17.0	19.7	20.4	19.3	16.2	19.3	19.9	19.1	15.8	19.2	18.8	19.0	14.9	18.7	19.0	19.0	13.8	18.5	18.9	18.9	13.9	18.5	19.0	19.0	14.0	18.1	19.1	19.2	14.4	17.7	19.5	19.9	14.7	18.4	20.6	20.2
900	17.0	19.7	20.5	19.4	16.1	19.3	20.0	19.2	15.7	19.1	19.7	19.1	14.8	18.7	19.1	19.1	13.7	18.5	19.0	19.1	13.8	18.4	19.1	19.1	13.8	18.1	19.1	19.3	14.3	17.6	19.8	20.1	14.6	18.3	20.8	20.4

BELDEN RELEASE

NFFR above Belden Powrhouse

	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	19.3	21.9	21.1	18.0	18.9	21.6	20.9	18.0	18.7	21.4	20.7	17.9	18.2	21.1	20.4	17.9	17.7	20.9	20.3	17.9	17.7	20.8	20.3	17.9	17.7	20.6	20.3	17.9	17.9	20.1	20.3	18.2	18.1	20.4	20.7	18.3
200	19.0	21.9	21.2	18.3	18.5	21.6	20.9	18.2	18.2	21.3	20.7	18.2	17.6	20.9	20.3	18.1	16.9	20.5	20.2	18.1	17.0	20.5	20.2	18.1	17.0	20.2	20.2	18.1	17.3	19.6	20.2	18.5	17.4	20.0	20.7	18.7
300	18.7	21.9	21.3	18.6	18.0	21.5	20.8	18.5	17.7	21.2	20.7	18.4	17.0	20.7	20.2	18.4	16.2	20.4	20.0	18.4	16.2	20.2	20.0	18.4	16.2	19.9	20.0	18.4	16.6	19.1	20.1	18.9	16.6	19.6	20.7	19.1
500	18.3	21.9	21.5	19.0	17.5	21.4	21.0	18.8	17.2	21.1	20.7	18.7	16.3	20.4	20.1	18.7	15.3	20.1	19.9	18.7	15.4	19.9	19.9	18.6	15.4	19.5	19.9	18.7	15.8	18.6	19.9	19.3	16.0	19.2	20.8	19.6
900	18.0	22.0	21.6	19.3	17.1	21.4	21.1	19.1	16.7	21.0	20.7	19.0	15.8	20.3	20.0	19.0	14.6	19.8	19.8	18.9	14.7	19.7	19.7	18.9	14.8	19.2	19.7	19.0	15.2	18.2	19.8	19.6	15.4	18.9	20.8	20.0
Modified Prattville Intake																																				
140	19.1	21.0	20.7	18.0	18.7	20.9	20.5	17.9	18.6	20.8	20.4	17.9	18.2	20.6	20.2	17.9	17.7	20.5	20.2	17.8	17.7	20.5	20.2	17.9	17.7	20.3	20.2	17.8	17.9	20.1	20.4	18.2	18.1	20.4	20.8	18.3
200	18.7	20.8	20.7	18.2	18.2	20.6	20.5	18.1	18.0	20.5	20.3	18.1	17.6	20.2	20.0	18.1	16.9	20.1	20.0	18.1	17.0	20.1	20.0	18.1	17.0	19.9	20.1	18.2	17.3	19.7	20.3	18.5	17.4	20.0	20.8	18.7
300	18.3	20.5	20.7	18.5	17.7	20.3	20.4	18.4	17.5	20.2	20.2	18.4	16.9	19.9	19.9	18.3	16.2	19.7	19.6	18.3	16.2	19.7	19.8	18.4	16.2	19.5	19.9	18.5	16.6	19.2	20.2	18.9	16.8	19.6	20.9	19.1
500	17.9	20.3	20.7	18.9	17.2	20.0	20.4	18.7	16.9	19.9	20.1	18.6	16.2	19.5	19.7	18.6	15.3	19.3	19.6	18.6	15.4	19.3	19.7	18.7	15.4	19.0	19.7	18.8	15.8	18.7	20.1	19.3	16.0	19.2	20.9	19.6
900	17.6	20.1	20.7	19.2	16.8	19.8	20.3	19.0	16.4	19.8	20.0	18.9	15.6	19.2	19.5	18.9	14.6	19.0	19.4	18.9	14.7	19.0	19.5	18.9	14.8	18.6	19.6	19.1	15.2	18.2	20.0	19.7	15.4	18.9	20.9	20.0

BELDEN RELEASE

Summary of Temperatures in Belden Reach under Dry WY and Warm Meteorology

NFFR above the Confluence with East Branch of NFFR

Belden Release	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	18.5	21.8	22.2	19.8	17.5	21.3	21.6	20.0	17.1	20.9	21.2	19.9	16.1	20.2	20.4	19.8	14.9	19.8	20.1	19.6	15.0	19.6	20.0	19.6	15.1	19.2	20.1	19.6	15.7	18.2	20.0	19.9	16.1	19.0	21.0	20.4
200	18.5	22.1	22.4	20.1	17.4	21.8	21.8	20.4	17.0	21.2	21.3	20.2	15.9	20.3	20.5	20.1	14.8	19.9	20.2	19.9	14.7	19.7	20.1	19.9	14.8	19.2	20.1	19.8	15.5	18.1	20.1	20.2	15.9	19.0	21.1	20.7
300	18.5	22.3	22.6	20.4	17.3	21.8	22.0	20.7	16.9	21.3	21.5	20.6	15.8	20.4	20.6	20.3	14.4	20.0	20.2	20.2	14.5	19.6	20.2	20.1	14.6	19.2	20.2	20.1	15.3	18.1	20.1	20.5	15.6	19.0	21.2	21.0
600	18.5	22.5	22.8	20.6	17.3	22.0	22.1	20.9	16.8	21.5	21.6	20.7	15.6	20.5	20.7	20.6	14.2	20.1	20.3	20.4	14.3	19.8	20.2	20.3	14.4	19.2	20.2	20.3	15.1	18.0	20.2	20.7	15.6	19.0	21.4	21.3
900	18.5	22.7	22.9	20.7	17.2	22.1	22.2	21.1	16.8	21.6	21.7	20.8	15.6	20.6	20.7	20.7	14.1	20.1	20.3	20.5	14.1	19.9	20.2	20.5	14.3	19.3	20.3	20.5	15.0	18.0	20.2	20.9	15.6	19.0	21.4	21.5
Modified Prattville Intake																																				
140	17.8	20.0	20.6	19.6	17.1	19.7	20.4	19.4	16.8	19.6	20.1	19.4	15.9	19.1	19.7	19.3	14.9	19.0	19.6	19.4	15.0	19.0	19.7	19.4	16.1	18.7	19.8	19.5	15.7	18.3	20.2	20.0	16.2	19.1	21.2	20.5
200	17.6	20.1	20.8	19.9	16.9	19.8	20.4	19.7	16.6	19.6	20.2	19.7	15.7	19.2	19.7	19.6	14.6	19.0	19.6	19.8	14.7	19.0	19.7	19.7	14.8	18.7	19.8	19.7	15.5	18.2	20.3	20.3	16.0	19.1	21.4	20.8
300	17.7	20.2	20.9	20.1	16.8	19.8	20.5	20.0	16.5	19.7	20.3	19.9	15.5	19.2	19.7	19.8	14.4	19.0	19.6	19.9	14.5	19.0	19.7	19.8	14.6	18.7	19.8	20.0	15.3	18.2	20.3	20.6	15.9	19.1	21.5	21.1
500	17.7	20.3	20.9	20.3	16.7	19.9	20.6	20.2	16.4	19.7	20.3	20.1	15.4	19.2	19.7	20.0	14.2	19.0	19.7	20.0	14.3	19.0	19.7	20.1	14.4	18.7	19.9	20.2	15.1	18.1	20.4	20.8	15.7	19.1	21.6	21.4
900	17.7	20.4	21.0	20.5	16.7	19.9	20.6	20.3	16.3	19.8	20.3	20.2	15.3	19.2	19.8	20.1	14.2	19.0	19.7	20.0	14.1	19.0	19.6	20.2	14.3	18.7	19.9	20.3	15.0	18.1	20.4	21.0	15.6	19.1	21.7	21.6

NFFR above Belden Powrhouse

Belden Release	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	20.8	22.6	22.6	20.1	20.2	22.4	22.4	20.2	20.1	22.2	22.2	20.1	19.5	21.8	21.8	20.1	18.9	21.6	21.7	20.0	18.9	21.5	21.7	20.0	19.0	21.3	21.7	20.0	19.3	20.8	21.6	20.2	19.5	21.2	22.1	20.3
200	20.3	22.8	22.7	20.2	19.7	22.3	22.4	20.4	19.5	22.1	22.1	20.3	18.8	21.6	21.7	20.2	18.0	21.3	21.5	20.1	18.0	21.2	21.4	20.1	18.1	20.9	21.5	20.1	18.5	20.3	21.4	20.3	18.8	20.8	22.0	20.8
300	19.9	22.7	22.8	20.4	19.1	22.3	22.4	20.6	18.8	22.0	22.1	20.4	18.0	21.4	21.5	20.4	17.1	21.1	21.3	20.3	17.1	20.9	21.2	20.2	17.2	20.5	21.2	20.2	17.7	19.8	21.2	20.5	18.0	20.4	21.9	20.8
500	19.5	22.8	22.9	20.6	18.5	22.3	22.4	20.8	18.2	21.9	22.0	20.6	17.2	21.2	21.3	20.5	16.1	20.8	21.0	20.4	16.1	20.6	21.0	20.4	16.3	20.2	21.0	20.4	16.8	19.2	20.9	20.7	17.2	20.0	21.8	21.1
900	19.1	22.9	23.0	20.7	18.0	22.3	22.4	21.0	17.7	21.9	21.9	20.8	16.6	21.0	21.1	20.7	15.3	20.6	20.8	20.6	15.3	20.4	20.7	20.5	15.5	19.9	20.8	20.5	16.1	18.8	20.7	20.9	16.6	19.6	21.7	21.3
Modified Prattville Intake																																				
140	20.4	21.7	21.9	20.0	20.0	21.5	21.8	19.9	19.9	21.5	21.7	19.9	19.4	21.2	21.5	19.9	18.9	21.2	21.5	19.9	18.9	21.1	21.5	19.9	19.0	21.0	21.5	19.9	19.3	20.8	21.7	20.2	19.6	21.2	22.2	20.4
200	19.9	21.5	21.8	20.1	19.4	21.3	21.6	20.0	19.2	21.2	21.5	20.0	18.7	20.9	21.2	20.0	18.0	20.8	21.2	20.0	18.0	20.8	21.2	20.0	18.1	20.6	21.3	20.0	18.5	20.3	21.5	20.3	18.9	20.8	22.1	20.6
300	19.4	21.3	21.7	20.2	18.8	21.0	21.4	20.1	18.5	20.9	21.3	20.1	17.9	20.5	20.9	20.0	17.1	20.4	20.9	20.1	17.1	20.4	20.9	20.1	17.2	20.2	21.0	20.1	17.7	19.8	21.3	20.5	18.1	20.5	22.1	20.9
500	18.9	21.0	21.5	20.4	18.1	20.7	21.2	20.2	17.8	20.6	21.0	20.2	17.0	20.1	20.6	20.1	16.1	20.0	20.5	20.2	16.1	19.9	20.6	20.2	16.3	19.7	20.7	20.3	16.8	19.3	21.1	20.6	17.3	20.1	22.0	21.2
900	18.4	20.8	21.4	20.5	17.6	20.5	21.1	20.4	17.2	20.3	20.8	20.3	16.3	19.8	20.3	20.2	16.1	20.0	20.5	20.2	15.3	19.6	20.3	20.3	15.5	19.3	20.4	20.4	16.1	18.8	20.9	21.0	16.6	19.7	22.0	21.4

Dry and Normal Hydrology – SNTEMP –Butt Creek Study Reach

The hydrology representing the normal (50%) and dry (10%) conditions used in the SNTEMP modeling of the Butt Creek study reach were derived from the period of record the stream was gauged. A spring located 0.3 kilometers downstream added stream flow (0.054 cms) to the minimal leakage from the dam (0.003 cms). Within the next 0.3 km, a variable amount of accretion (depending upon flow measured at the gauge located at the mouth) added to the upstream flow. Within the last 2.7 km, overland flow added a fixed 0.144 cms accretion to the upstream flow.

Butt Creek Study Reach Temperature Model

The SNTEMP data files necessary to run the Butt Creek model are included. The Stream Network Temperature Model (SNTEMP) is within the public domain and a usable, executable file can be obtained free from the Internet. Use a search engine with the key word "SNTEMP".

Table xx. Butt Creek gaming results for basic runs as input into Seneca Reach Temperature Model. Modeled under existing conditions (no additional flow release from dam), but with varied hydrological and meteorological conditions.

Butt Creek - Reach Ending Temperature Values

Water Year	Meteorological Year	15-Jun	15-Jul	15-Aug	15-Sep
Average	Warm	11.23	11.91	12.19	12.02
Average	Normal	11.31	12.02	11.74	11.97
Dry	Warm	11.46	12.09	12.37	12.12
Dry	Normal	11.56	12.21	11.85	12.06

Butt Creek - Reach Averaged Temperature Values

Water Year	Meteorological Year	15-Jun	15-Jul	15-Aug	15-Sep
Average	Warm	10.65	11.13	11.40	11.43
Average	Normal	10.69	11.19	11.18	11.41
Dry	Warm	10.79	11.23	11.49	11.46
Dry	Normal	10.84	11.29	11.23	11.44

SENECA REACH FLOWS FOR GAMING
Flow releases: 100, 200, 250, 500 cfs

100 cfs	normal cms at dam	cms at seneca	normal butt cms Butt Ck	cms at Caribou	cms accre 1	cms accre 2
june	2.83	3.19	0.51	3.95	0.36	0.25
july	2.83	3.07	0.48	3.72	0.24	0.17
august	2.83	2.99	0.49	3.62	0.16	0.14
september	2.83	2.98	0.50	3.64	0.15	0.16

200 cfs	cms at dam	cms at seneca	cms Butt Ck	cms at Caribou	cms accre 1	cms accre 2
june	5.66	6.02	0.51	6.78	0.36	0.25
july	5.66	5.90	0.48	6.55	0.24	0.17
august	5.66	5.82	0.49	6.45	0.16	0.14
september	5.66	5.81	0.50	6.47	0.15	0.16

250 cfs	cms at dam	cms at seneca	cms Butt Ck	cms at Caribou	cms accre 1	cms accre 2
june	7.08	7.44	0.51	8.20	0.36	0.25
july	7.08	7.32	0.48	7.97	0.24	0.17
august	7.08	7.24	0.49	7.87	0.16	0.14
september	7.08	7.23	0.50	7.89	0.15	0.16

500 cfs	cms at dam	cms at seneca	cms Butt Ck	cms at Caribou	cms accre 1	cms accre 2
june	14.16	14.52	0.51	15.28	0.36	0.25
july	14.16	14.40	0.48	15.05	0.24	0.17
august	14.16	14.32	0.49	14.95	0.16	0.14
september	14.16	14.31	0.50	14.97	0.15	0.16

Given the hydrological condition modeled, accretion varied.
These spreadsheets illustrate flows and accretion within the Seneca study reach.

SENECA REACH FLOWS FOR GAMING 10.00% exceedance
Flow releases: 100, 200, 250, 500 cfs

	DRY		dry butt			
100 cfs	cms at dam	cms at seneca	cms Butt Ck	cms at Caribou	cms accre 1	cms accre 2
june	2.83	3.12	0.40	3.50	0.29	-0.02
july	2.83	3.02	0.41	3.38	0.19	-0.05
august	2.83	2.97	0.41	3.42	0.14	0.04
september	2.83	2.96	0.40	3.46	0.13	0.12

200 cfs	cms at dam	cms at seneca	cms Butt Ck	cms at Caribou	cms accre 1	cms accre 2
	5.66	5.95	0.40	6.33	0.29	-0.02
july	5.66	5.85	0.41	6.21	0.19	-0.05
august	5.66	5.80	0.41	6.25	0.14	0.04
september	5.66	5.79	0.40	6.31	0.13	0.12

250 cfs	cms at dam	cms at seneca	cms Butt Ck	cms at Caribou	cms accre 1	cms accre 2
june	7.08	7.37	0.40	7.75	0.29	-0.02
july	7.08	7.27	0.41	7.63	0.19	-0.05
august	7.08	7.22	0.41	7.67	0.14	0.04
september	7.08	7.21	0.40	7.73	0.13	0.12

500 cfs	cms at dam	cms at seneca	cms Butt Ck	cms at Caribou	cms accre 1	cms accre 2
june	14.16	14.45	0.40	14.83	0.29	-0.02
july	14.16	14.35	0.41	14.71	0.19	-0.05
august	14.16	14.30	0.41	14.75	0.14	0.04
september	14.16	14.29	0.40	14.81	0.13	0.12

Monthly Median Temperature in the NFFR above Caribou Powerhouse, in Celsius

Can. Dam release (cfs)	Existing Prattville 35	75	100	150	200	250	300	500	600	Modified Prattville 35	75	100	150	200	250	300	500	600
Average WY, Normal Meteorology																		
Scenario ID	ANEA	ANEB	ANEF	ANEC	ANEG	ANEH	ANED	ANEI	ANEE	ANMA	ANMB	ANMF	ANMC	ANMG	ANMH	ANMD	ANMI	ANME
June	13.5	12.5	12.0	11.8	11.2	11.1	11.0	10.9	10.9	13.5	12.5	12.0	11.6	11.3	11.1	11.0	10.9	11.0
July	15.1	14.2	13.8	13.3	13.0	12.9	12.8	13.0	13.2	15.1	14.2	13.8	13.3	13.1	13.0	13.0	13.2	13.4
August	13.8	13.5	13.4	13.4	13.4	13.5	13.6	14.3	14.7	13.9	13.6	13.5	13.5	13.6	13.8	14.0	15.1	15.7
September	13.2	13.3	13.3	13.5	13.7	14.0	14.2	15.5	16.3	13.2	13.4	13.4	13.7	14.1	14.6	15.1	17.1	18.0
Average WY, Warm Meteorology																		
Scenario ID	AWEA	AWEB	AWEF	AWEC	AWEG	AWEH	AWED	AWEI	AWEE	AWMA	AWMB	AWMF	AWMC	AWMG	AWMH	AWMD	AWMI	AWME
June	13.5	12.6	12.3	11.8	11.5	11.4	11.3	11.3	11.4	13.5	12.6	12.3	11.8	11.6	11.4	11.4	11.3	11.4
July	14.8	14.1	13.8	13.5	13.3	13.2	13.2	13.4	13.7	14.9	14.2	13.9	13.6	13.4	13.3	13.4	13.8	14.1
August	15.0	14.4	14.2	14.0	13.9	13.9	14.0	14.7	15.2	15.1	14.5	14.3	14.2	14.2	14.4	14.7	15.9	16.5
September	13.6	13.7	13.7	13.9	14.1	14.4	14.6	16.0	16.9	13.7	13.9	13.9	14.1	14.6	15.1	15.7	17.8	18.7
Dry WY, Normal Meteorology																		
Scenario ID	DNEA	DNEB	DNEF	DNEC	DNEG	DNEH	DNED	DNEI	DNEE	DNMA	DNMB	DNMF	DNMC	DNMG	DNMH	DNMD	DNMI	DNME
June	14.5	13.7	13.5	13.2	13.2	13.3	13.3	13.8	14.1	14.5	13.7	13.5	13.2	13.2	13.3	13.3	13.8	14.1
July	16.1	15.4	15.3	15.2	15.3	15.5	15.8	17.1	17.9	16.1	15.4	15.3	15.3	15.4	15.6	15.8	17.1	17.9
August	14.5	14.6	14.8	15.3	15.8	16.4	16.9	19.2	20.4	14.5	14.6	14.8	15.3	15.9	16.5	17.0	19.3	20.6
September	13.6	14.0	14.3	15.1	16.0	16.7	17.4	19.9	20.5	13.7	14.1	14.4	15.3	16.1	17.0	17.7	20.1	20.5
Dry WY, Warm Meteorology																		
Scenario ID	DWEA	DWEB	DWEF	DWEC	DWEG	DWEH	DWED	DWEI	DWEE	DWMA	DWMB	DWMF	DWMC	DWMG	DWMH	DWMD	DWMI	DWME
June	14.5	13.8	13.6	13.5	13.6	13.6	13.8	14.6	15.1	14.5	13.8	13.6	13.5	13.6	13.6	13.8	14.6	15.2
July	15.7	15.2	15.1	15.2	15.5	15.7	16.1	17.7	18.7	15.7	15.2	15.1	15.2	15.5	15.8	16.2	17.7	18.8
August	15.8	15.5	15.5	15.8	16.3	16.8	17.4	19.8	21.2	15.8	15.5	15.5	15.9	16.4	17.0	17.6	20.1	21.5
September	14.0	14.3	14.5	15.2	16.0	16.8	17.6	20.1	21.2	14.0	14.3	14.6	15.4	16.3	17.2	17.9	20.4	21.4

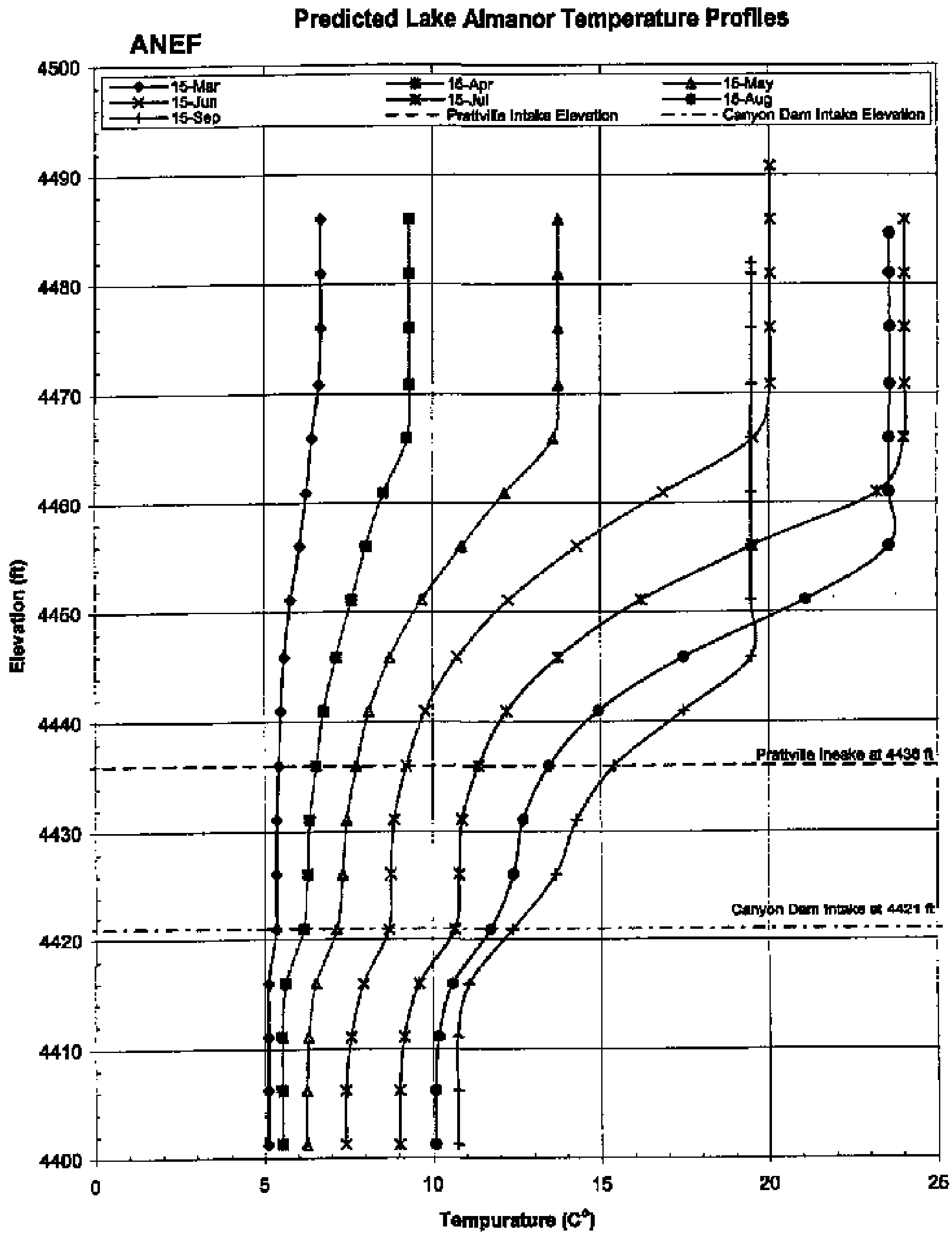
UPPER NORTH FORK FEATHER RIVER PROJECT

FERC No. 2105

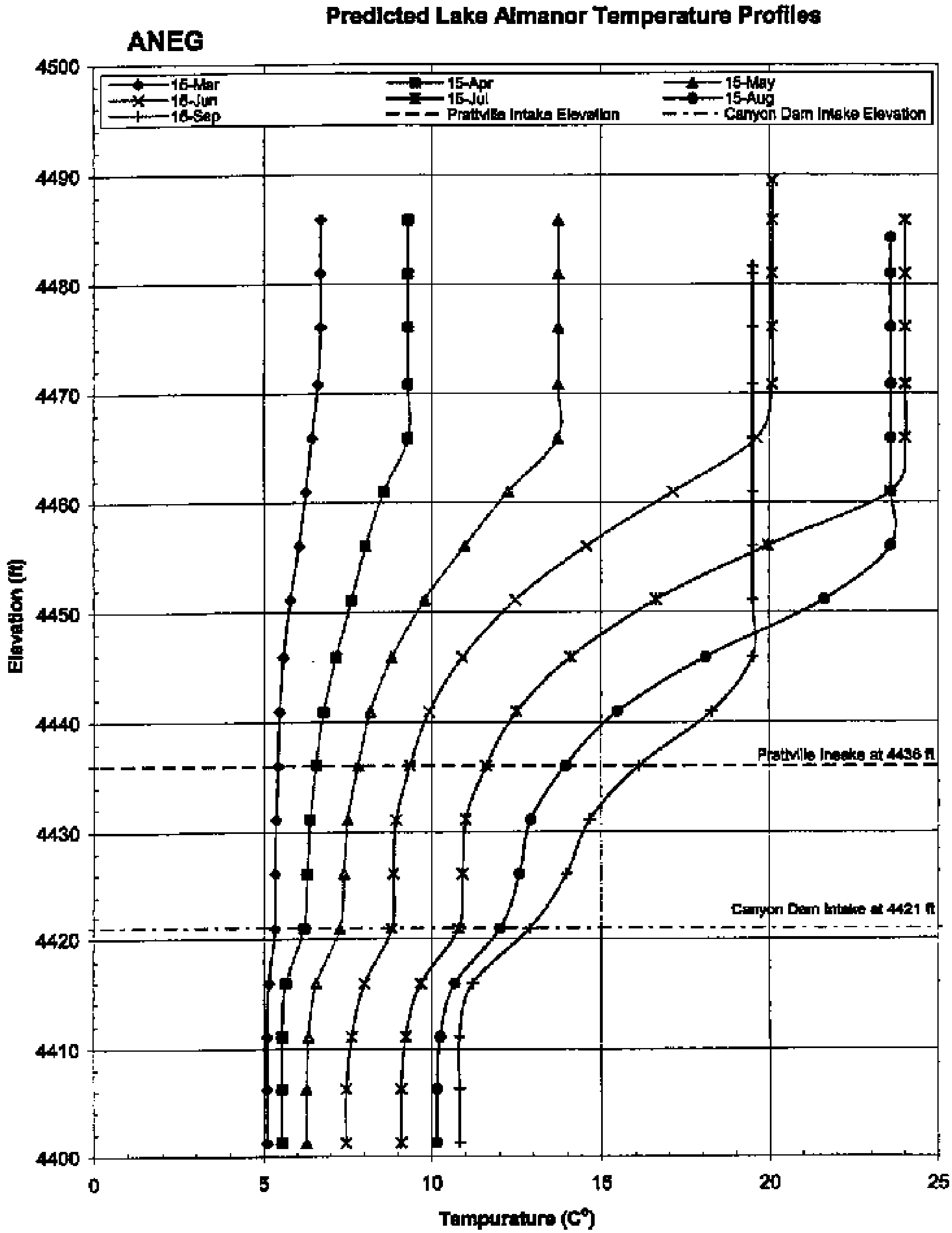
Appendix E2-F

Additional Model Scenario Runs

Lake Almanor Temperature Profiles


Predicted Lake Almanor Temperature Profiles
ANEF
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Ineake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4500
4490
4480
4470
4460
4450
4440
4430
4420
4410
4400
0
5
10
15
20
25

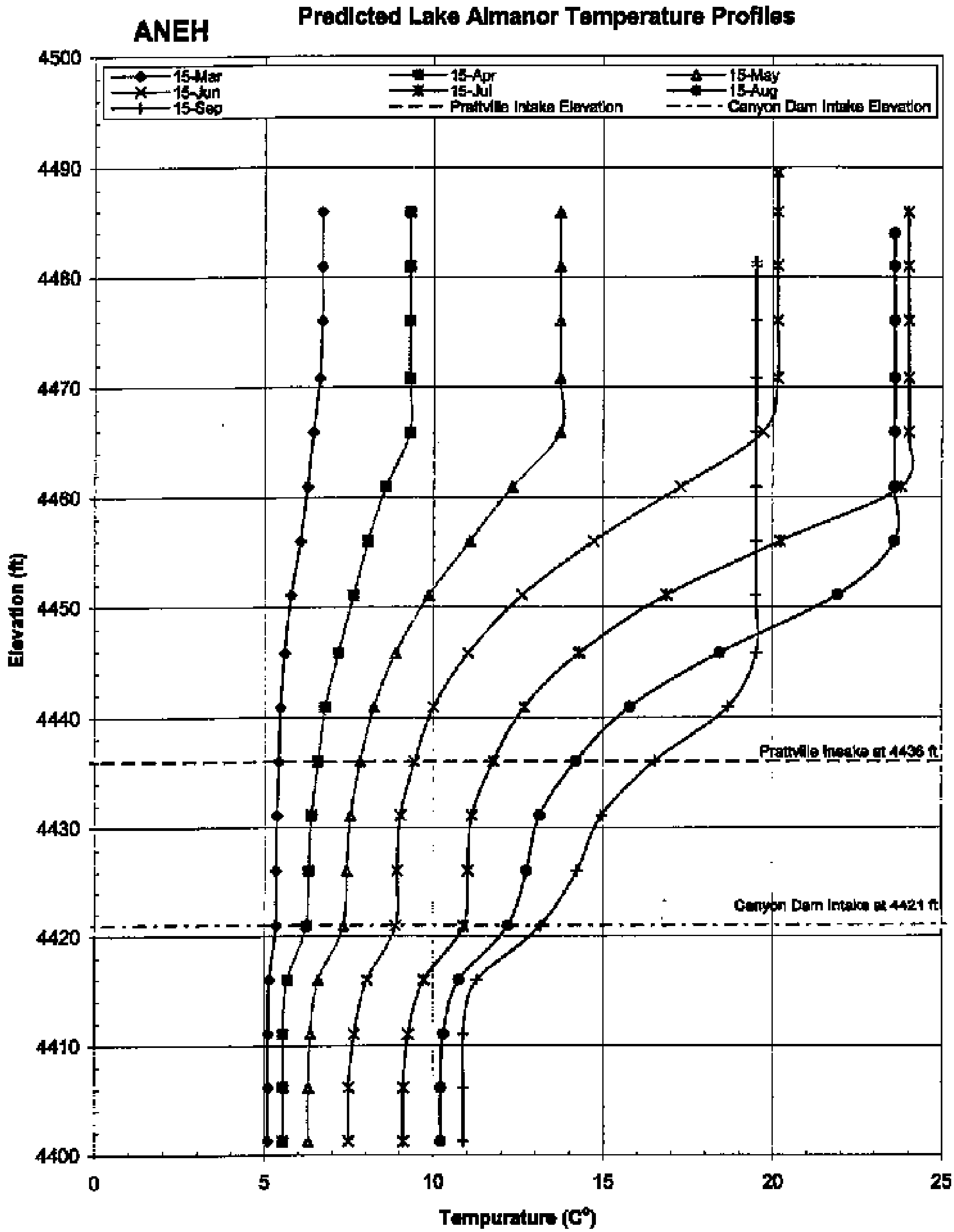
Appendix E2



Predicted Lake Almanor Temperature Profiles
ANEG
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tampurature (C°)
4500
4490
4480
4470
4460
4450
4440
4430
4420
4410
4400
0
5
10
15
20
25

Appendix E2

ANEH



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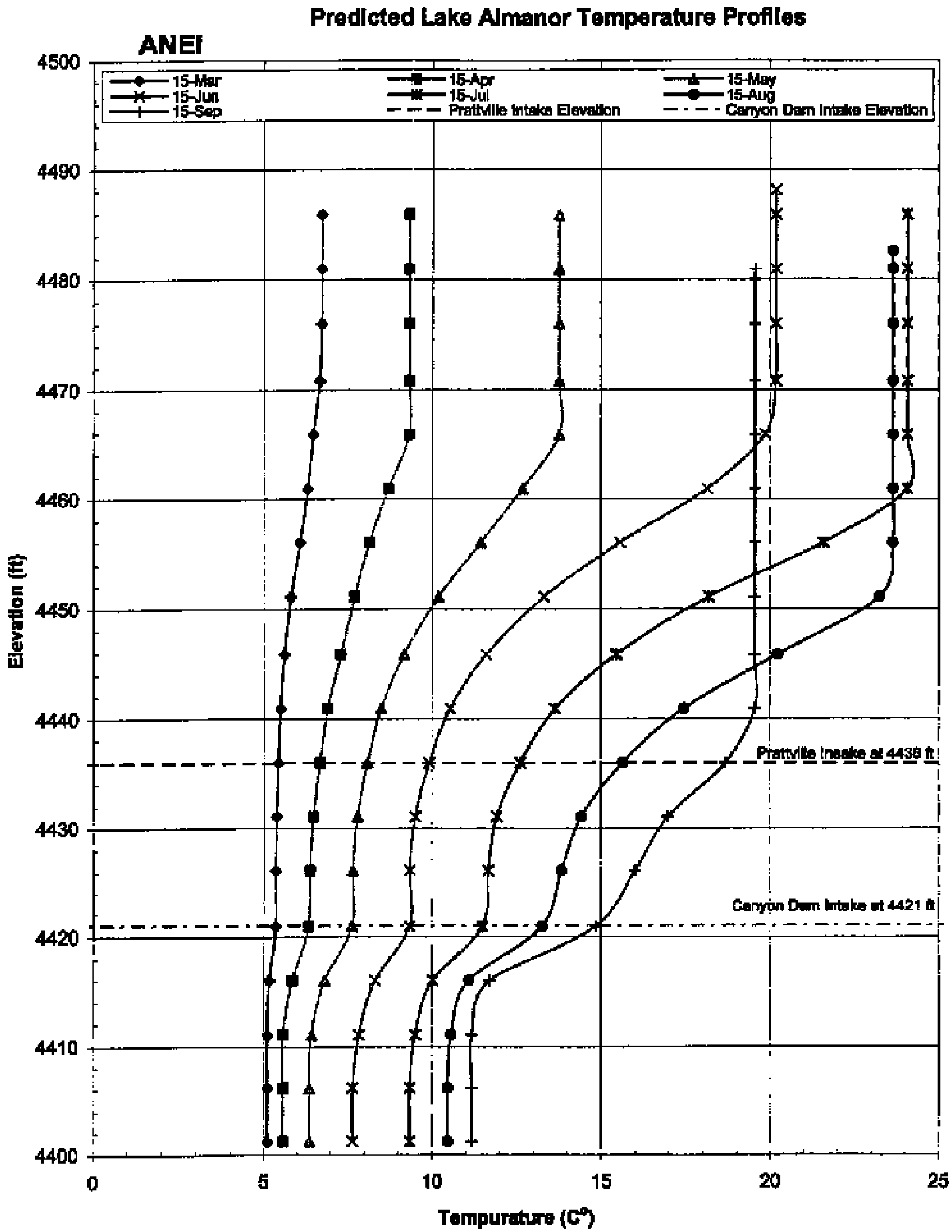

Predicted Lake Almanor Temperature Profiles
ANEI
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4500
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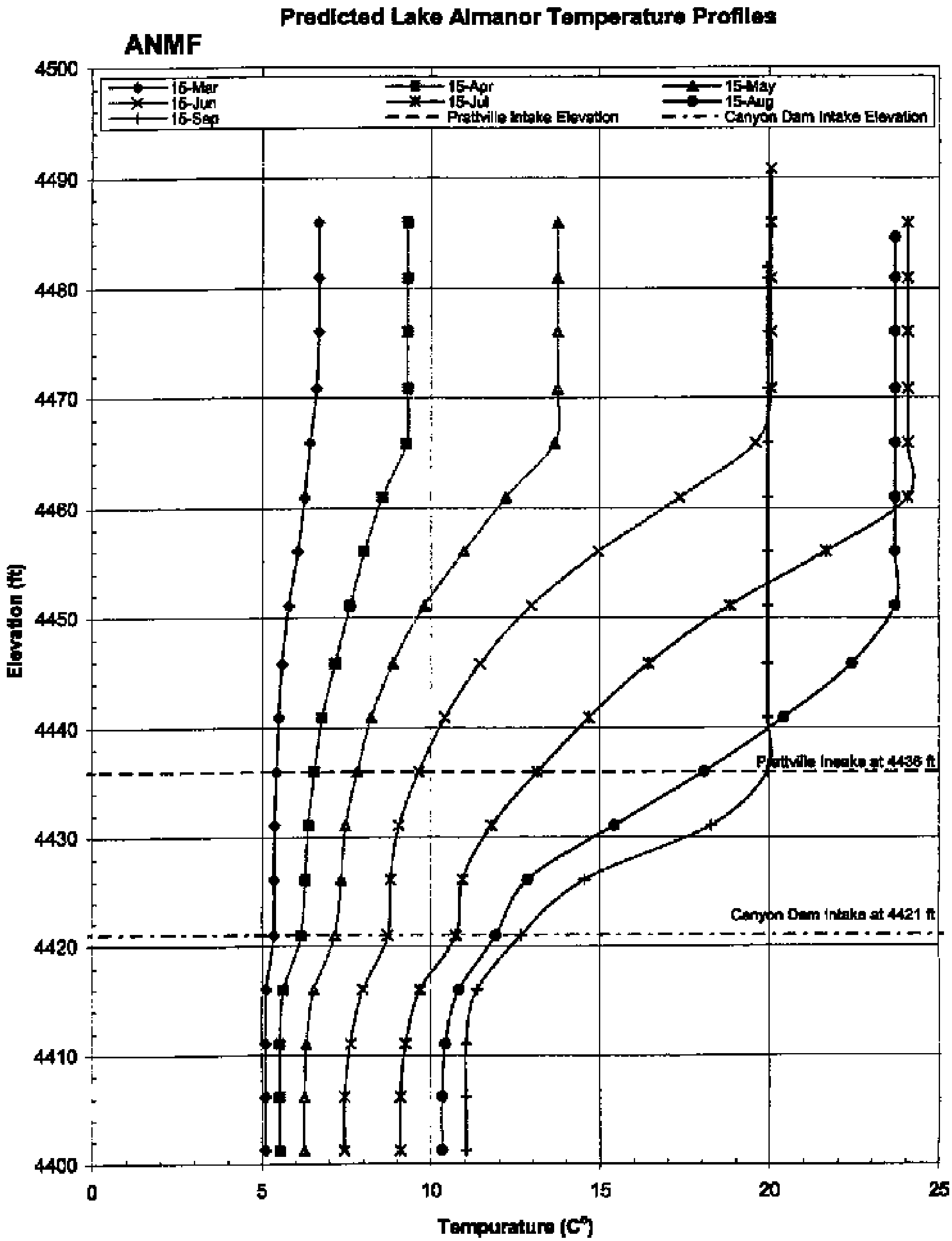
Appendix E2



Predicted Lake Almanor Temperature Profiles
ANMF
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4500
4490
4480
4470
4460
4450
4440
4430
4420
4410
4400
0
5
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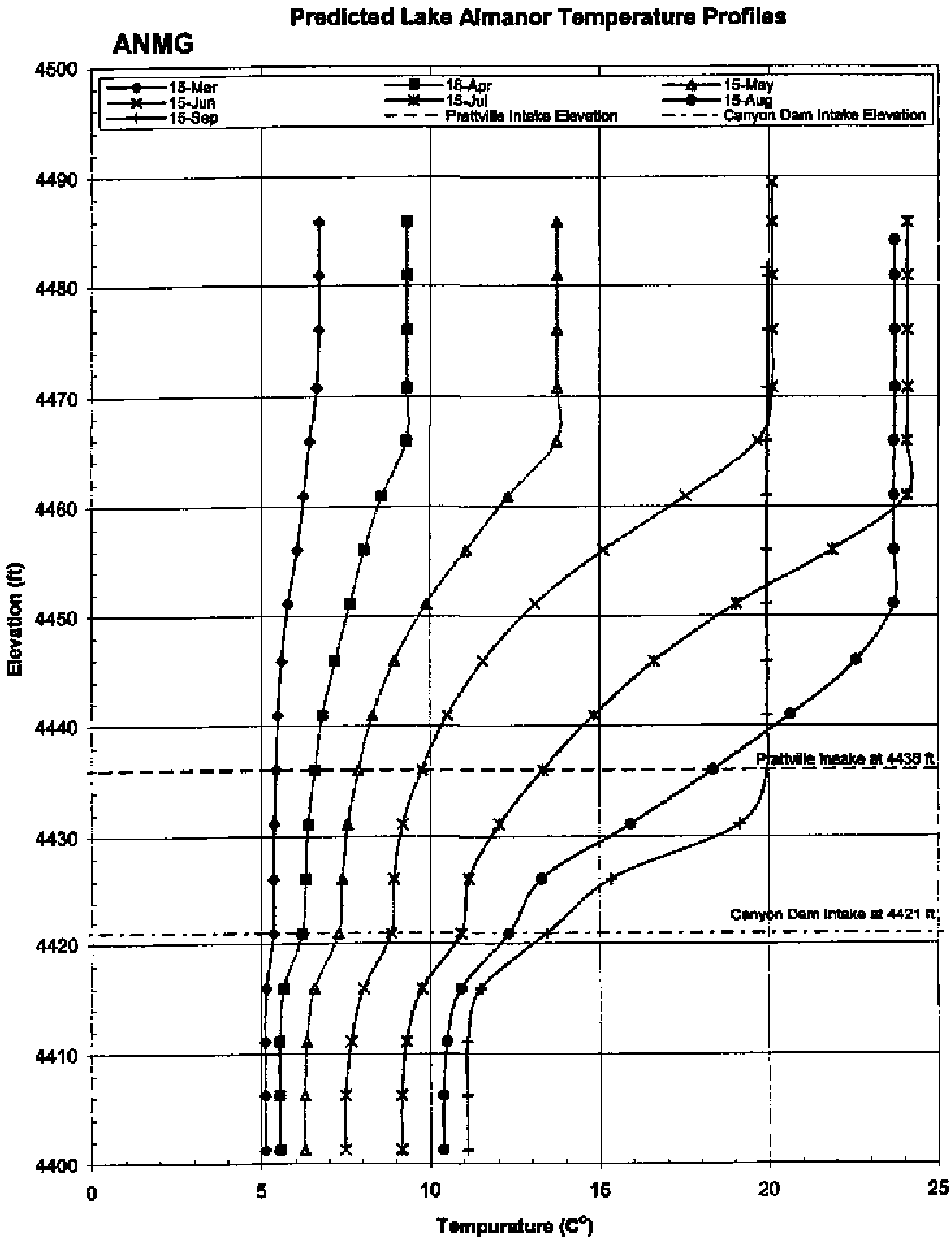
15
20
25



Predicted Lake Almanor Temperature Profiles
ANMG
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft.
Canyon Dam Intake at 4421 ft.
Elevation (ft)
Tempurature (C°)
4500
4490
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4440
4430
4420
4410
4400
0
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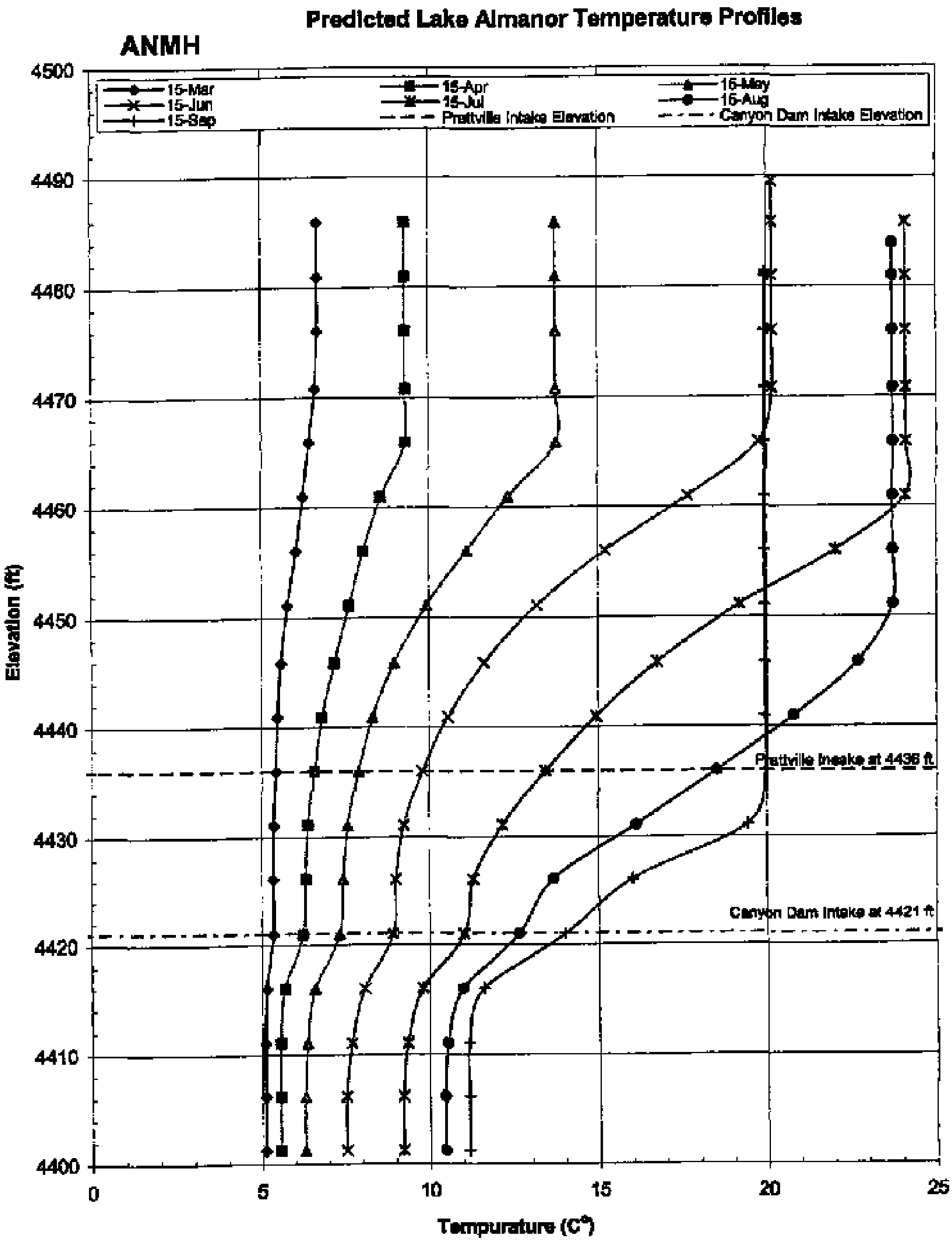
10
15
20
25



Predicted Lake Almanor Temperature Profiles
ANMH
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4500
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4480
4470
4460
4450
4440
4430
4420
4410
4400
0
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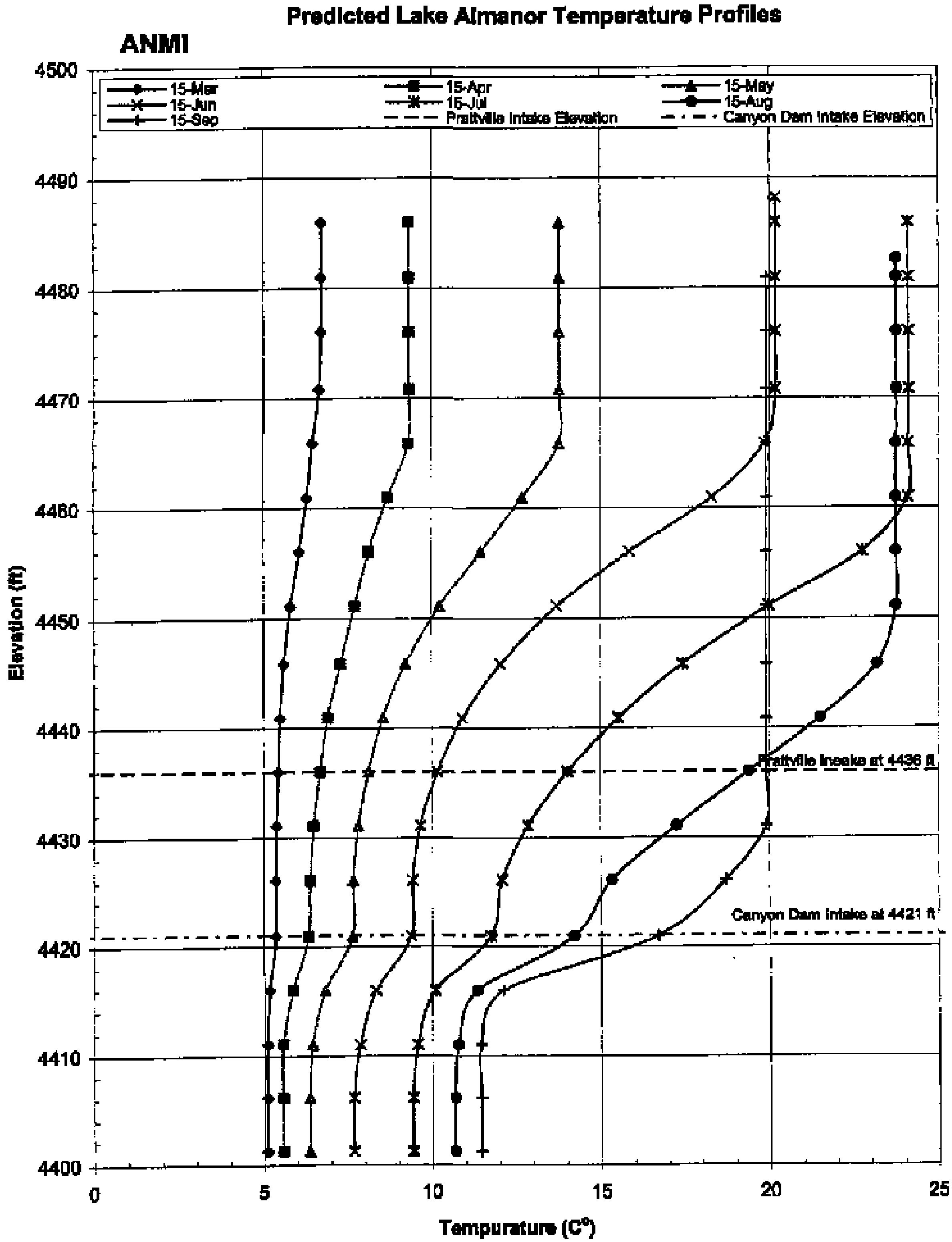
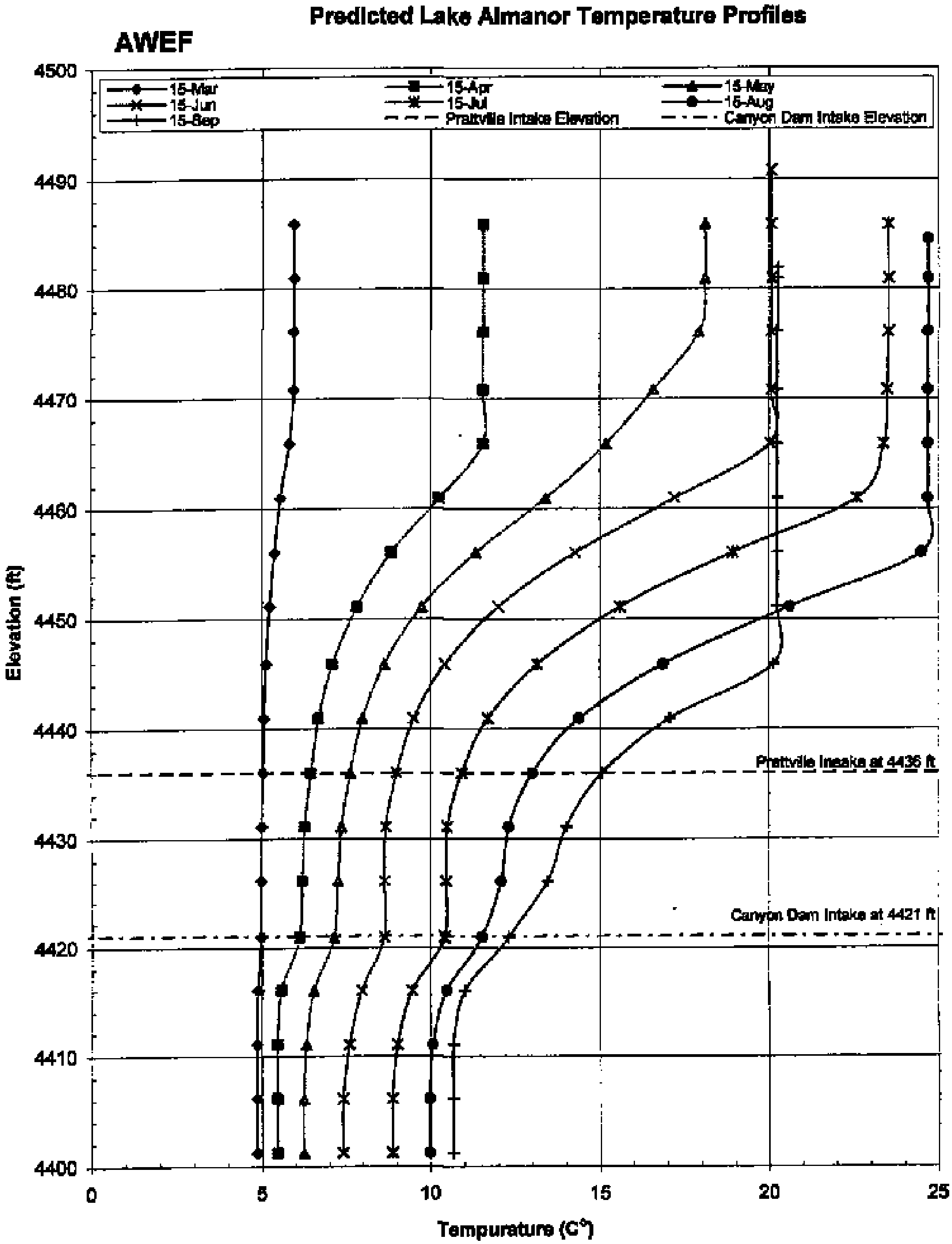
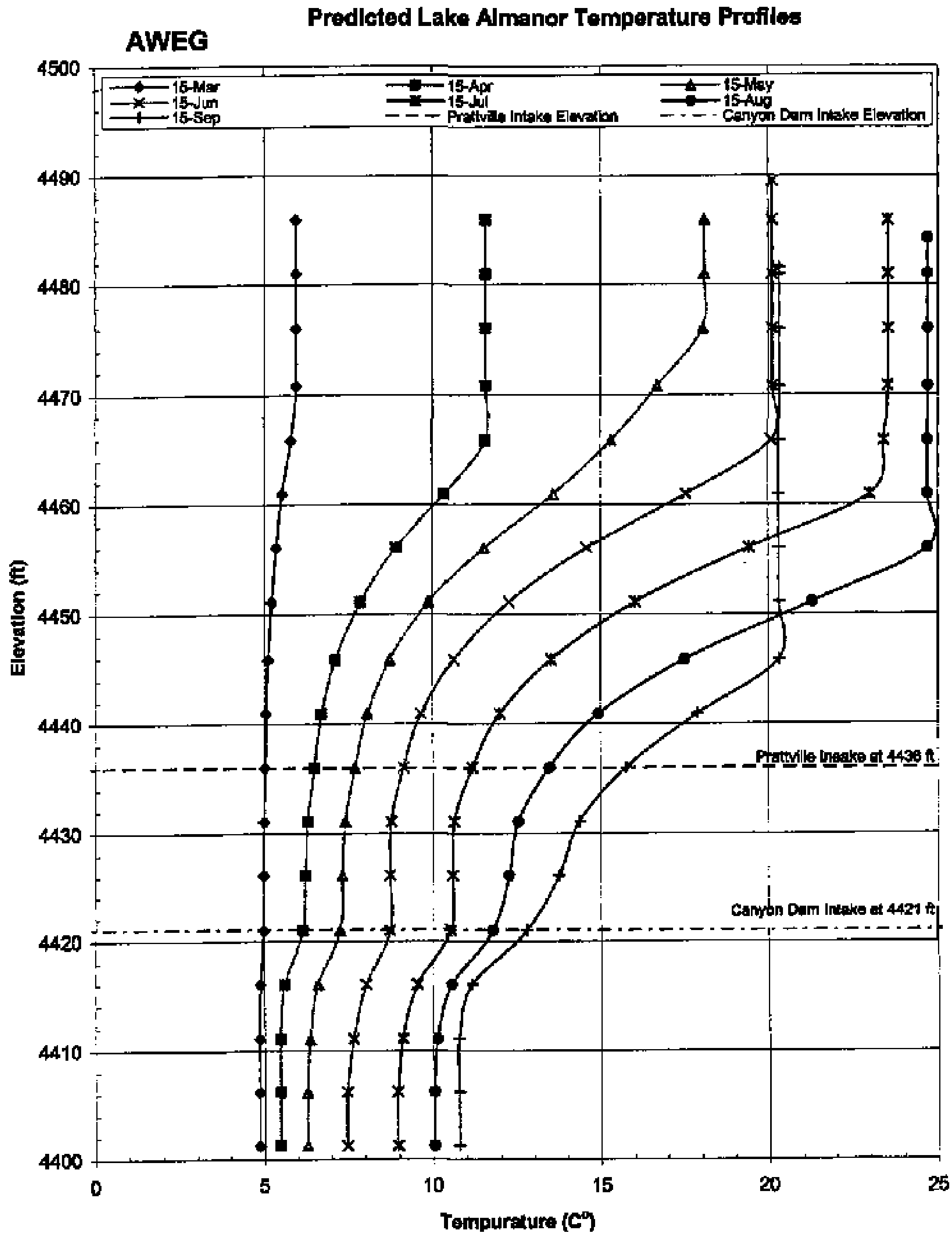
15
20
25



Predicted Lake Almanor Temperature Profiles
ANMI
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4500
4490
4480
4470
4460
4450
4440
4430
4420
4410
4400
0
5
10
15
20
25



Predicted Lake Almanor Temperature Profiles
AWEF
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4500
4490
4480
4470
4460
4450
4440
4430
4420
4410
4400
0
5
10
15
20
25


Predicted Lake Almanor Temperature Profiles
AWEG
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Insake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4500
4490
4480
4470
4460
4450
4440
4430
4420
4410
4400
0
5
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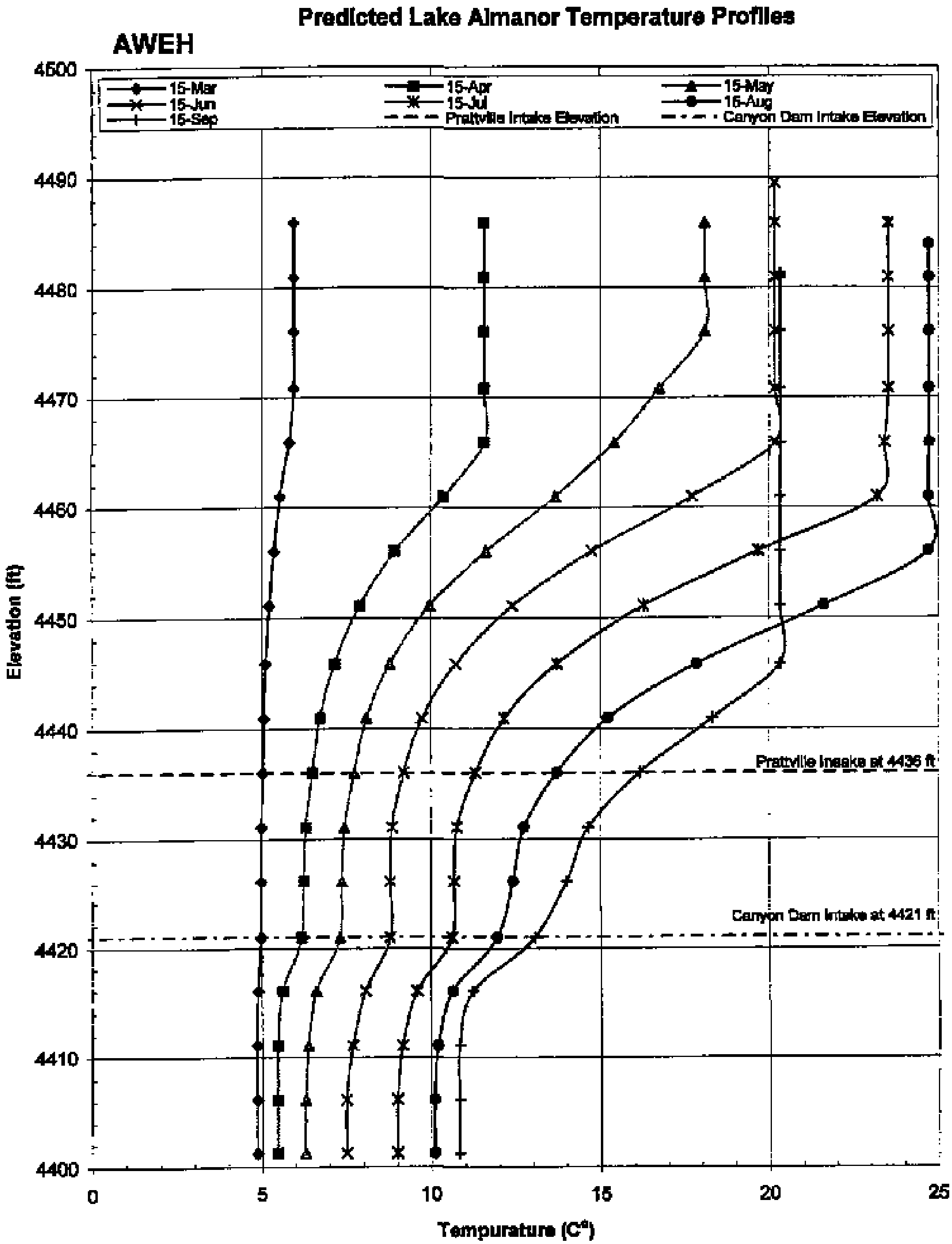
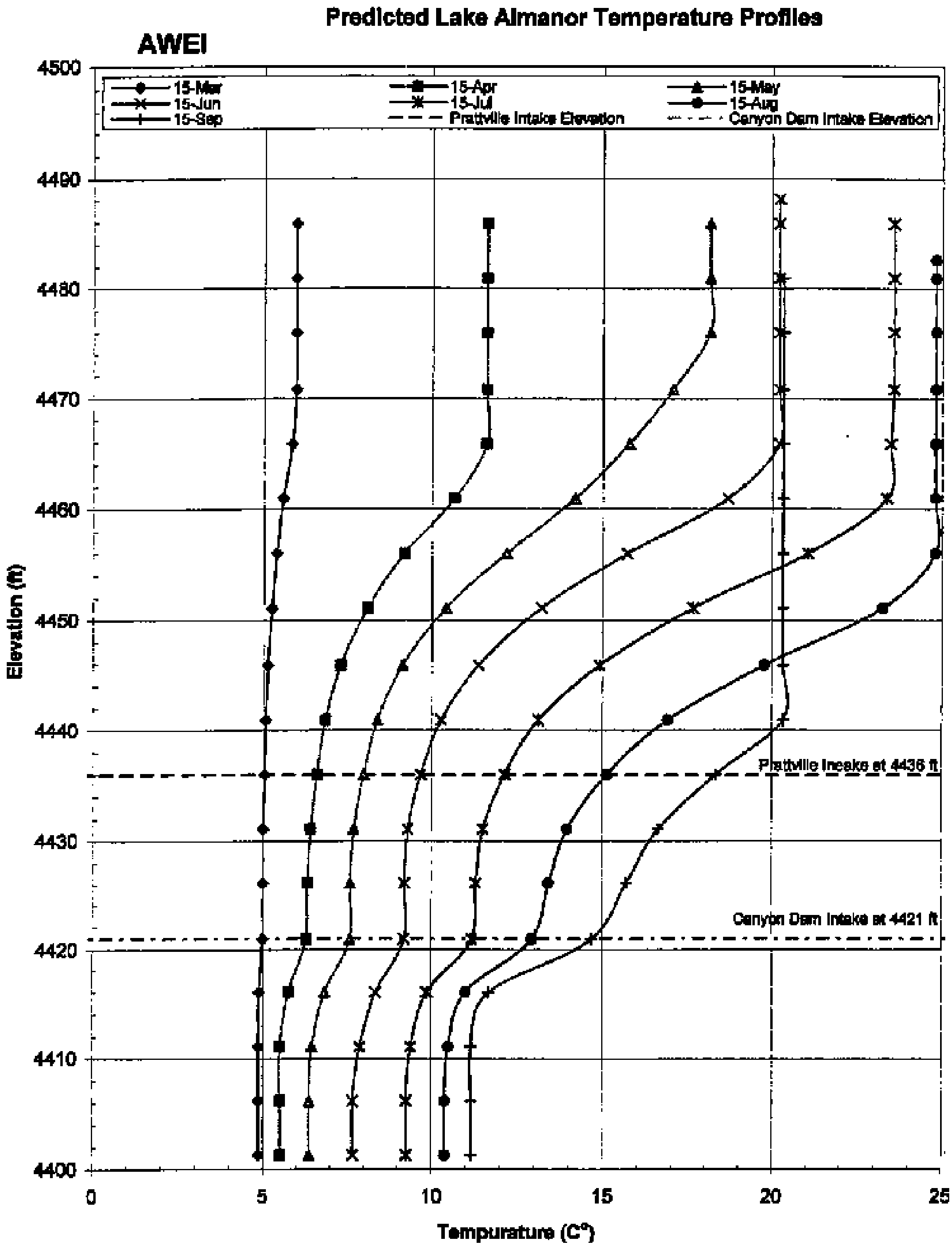
15
20
25

Appendix E2

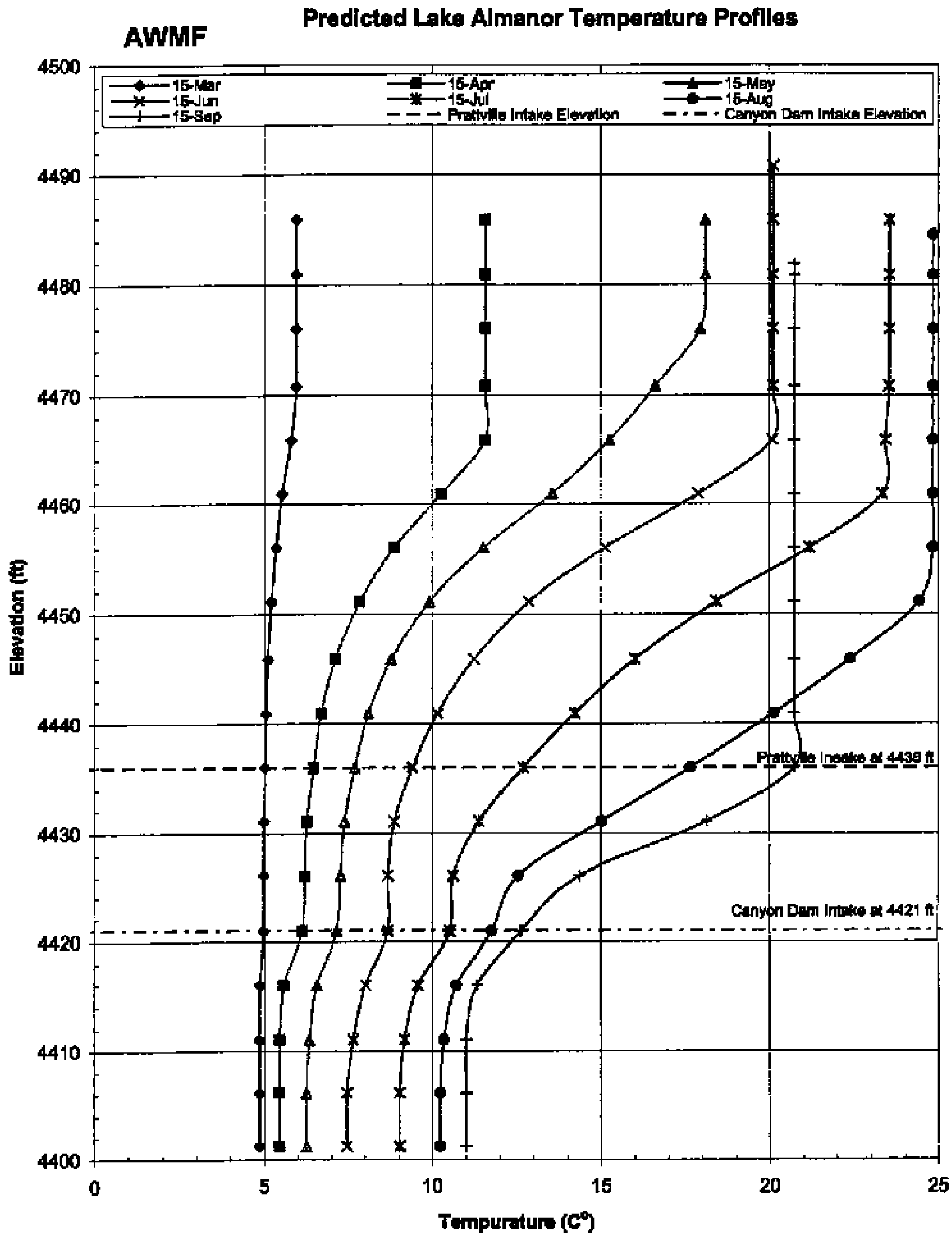


Predicted Lake Almanor Temperature Profiles
AWEH
15-Mar
15-Apr
15-May
15-Jun
15-Jul
16-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4500
4490
4480
4470
4460
4450
4440
4430
4420
4410
4400
0
5
10
15
20
25

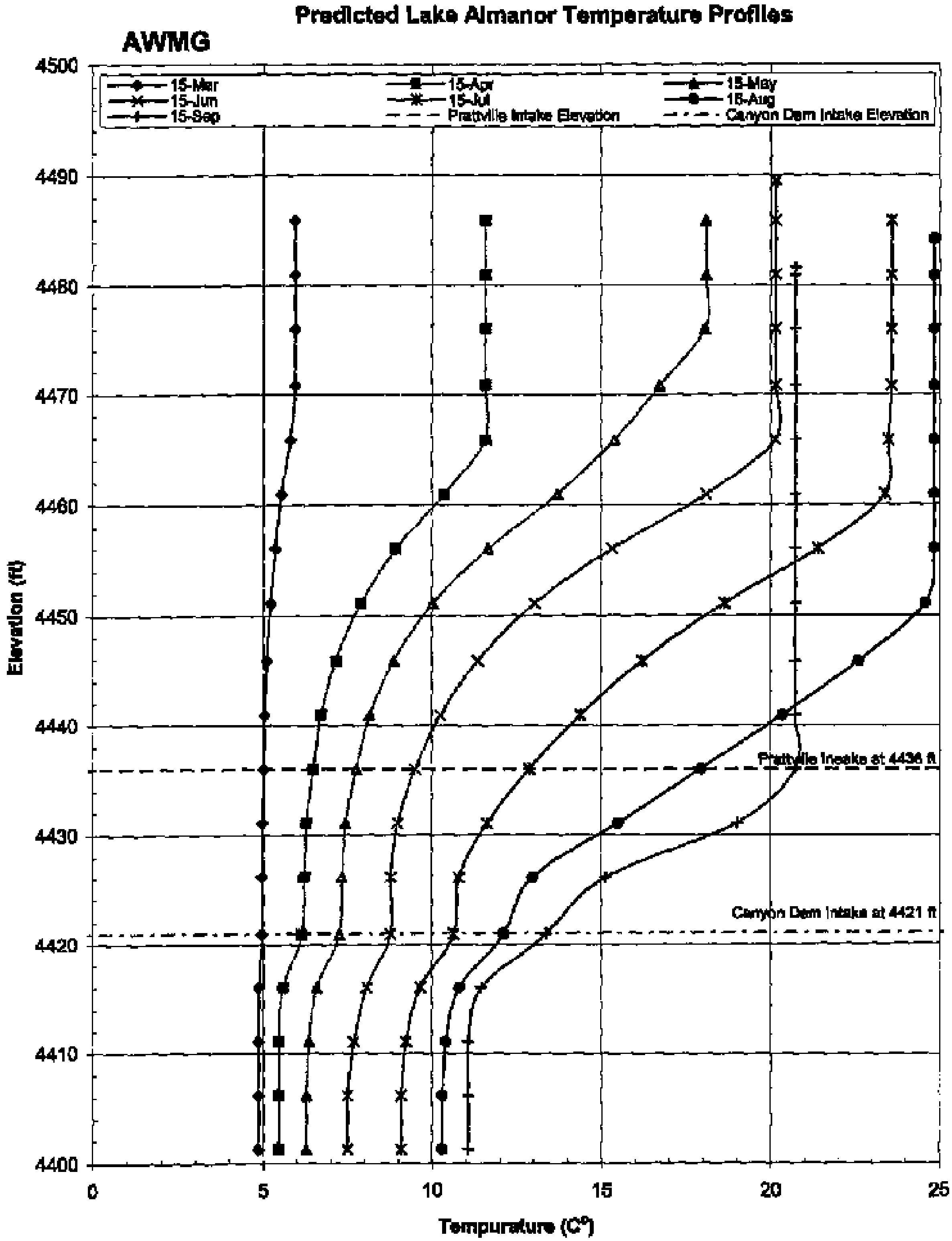


Predicted Lake Almanor Temperature Profiles
AWEI
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
4500
4490
4480
4470
4460
4450
4440
4430
4420
4410
4400
0
5
10
15
20
25
Tempurature (C°)

Appendix E2



Predicted Lake Almanor Temperature Profiles
AWMF
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
0
5
10
15
20
25


Predicted Lake Almanor Temperature Profiles
AWMG
15-Mar
15-Apr
15-May
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15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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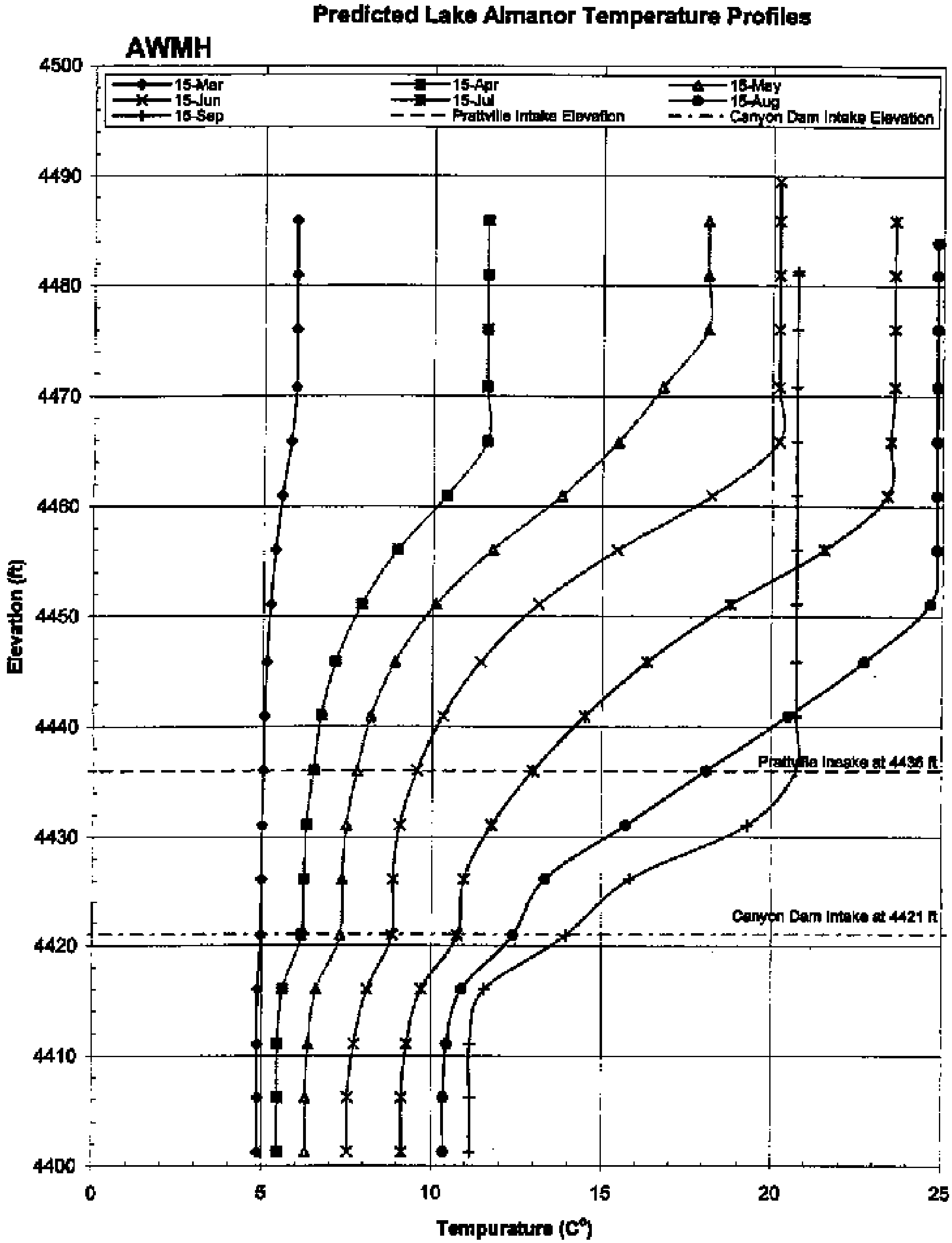
Predicted Lake Almanor Temperature Profiles
AWMH
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15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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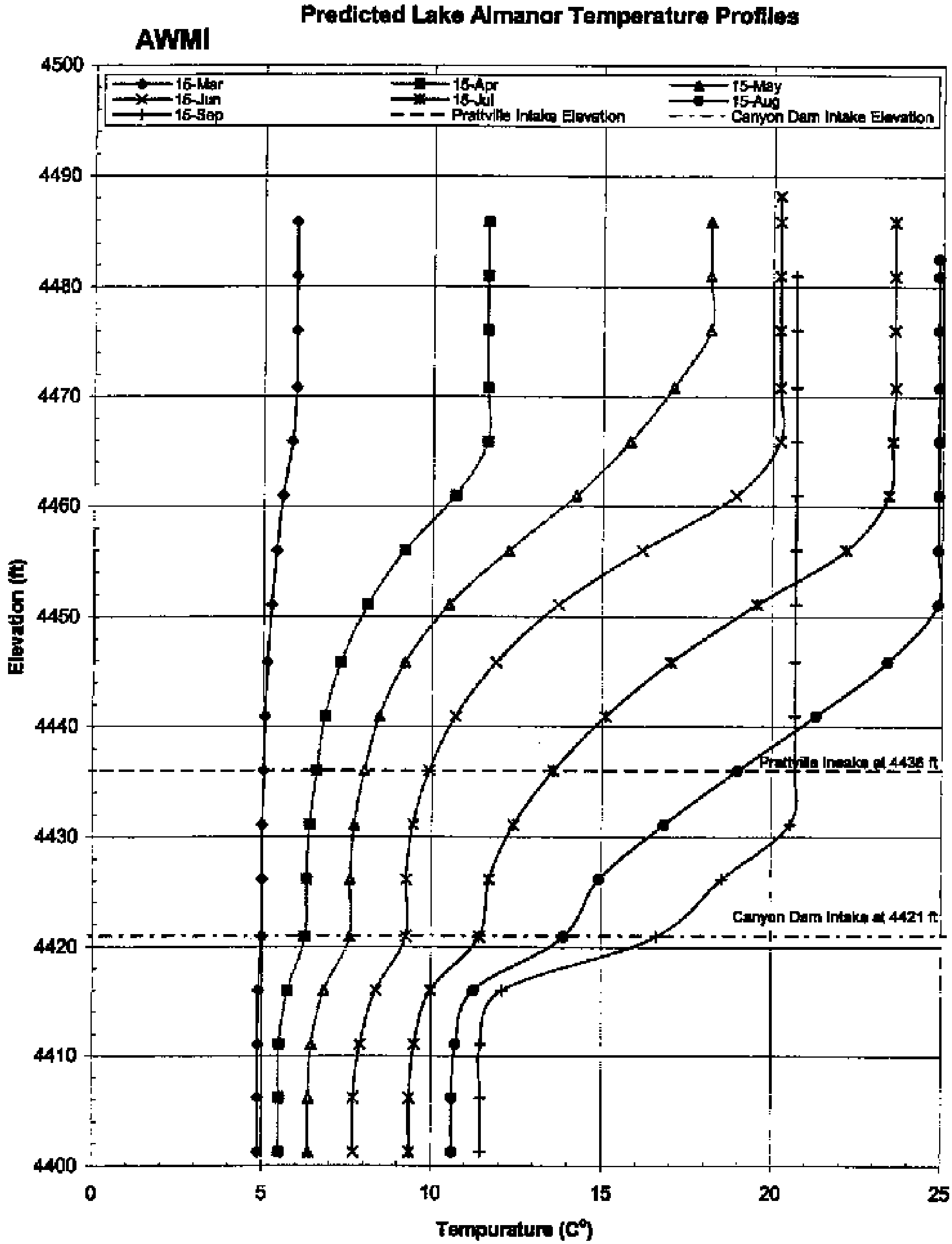
Appendix E2


Predicted Lake Almanor Temperature Profiles
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15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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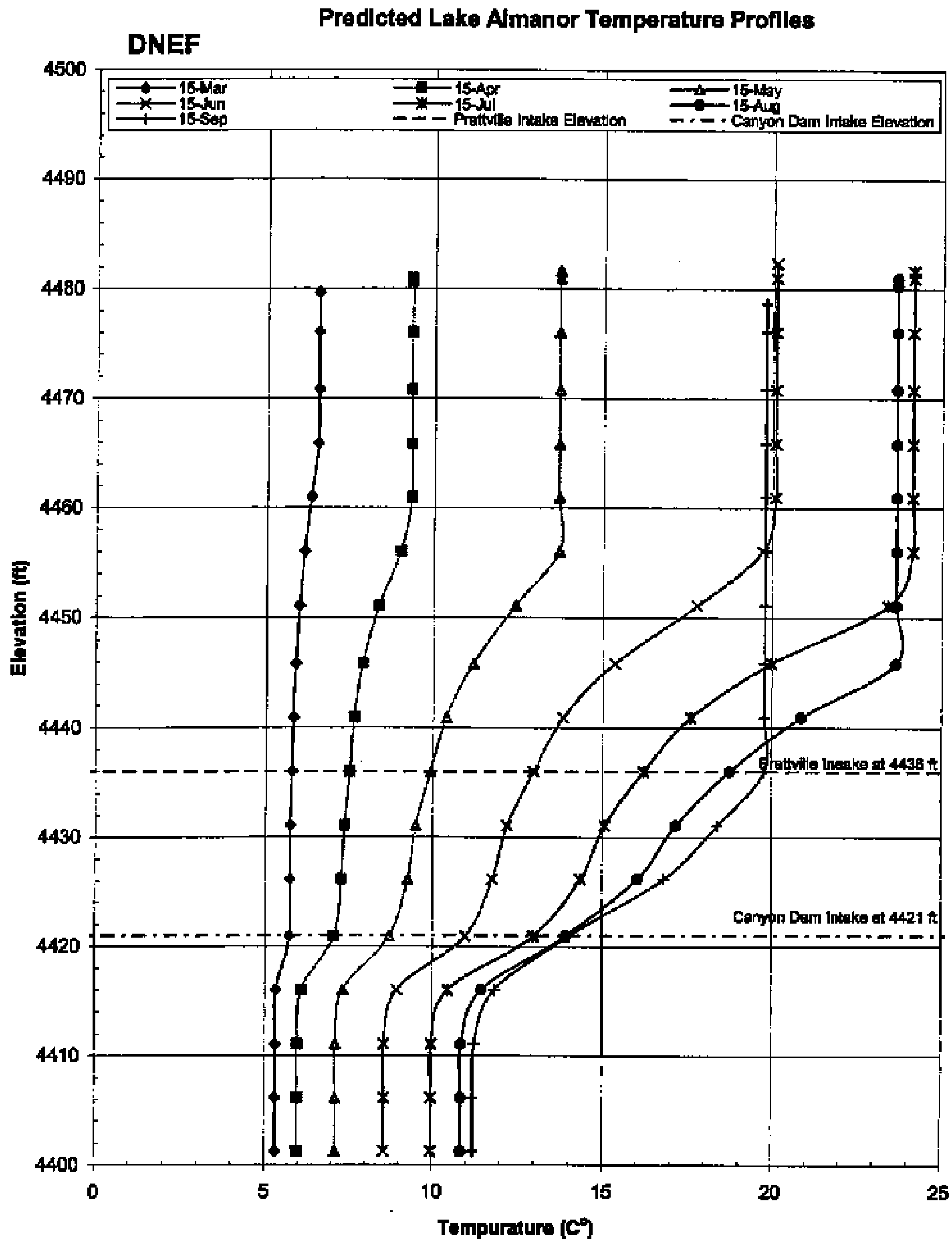
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15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
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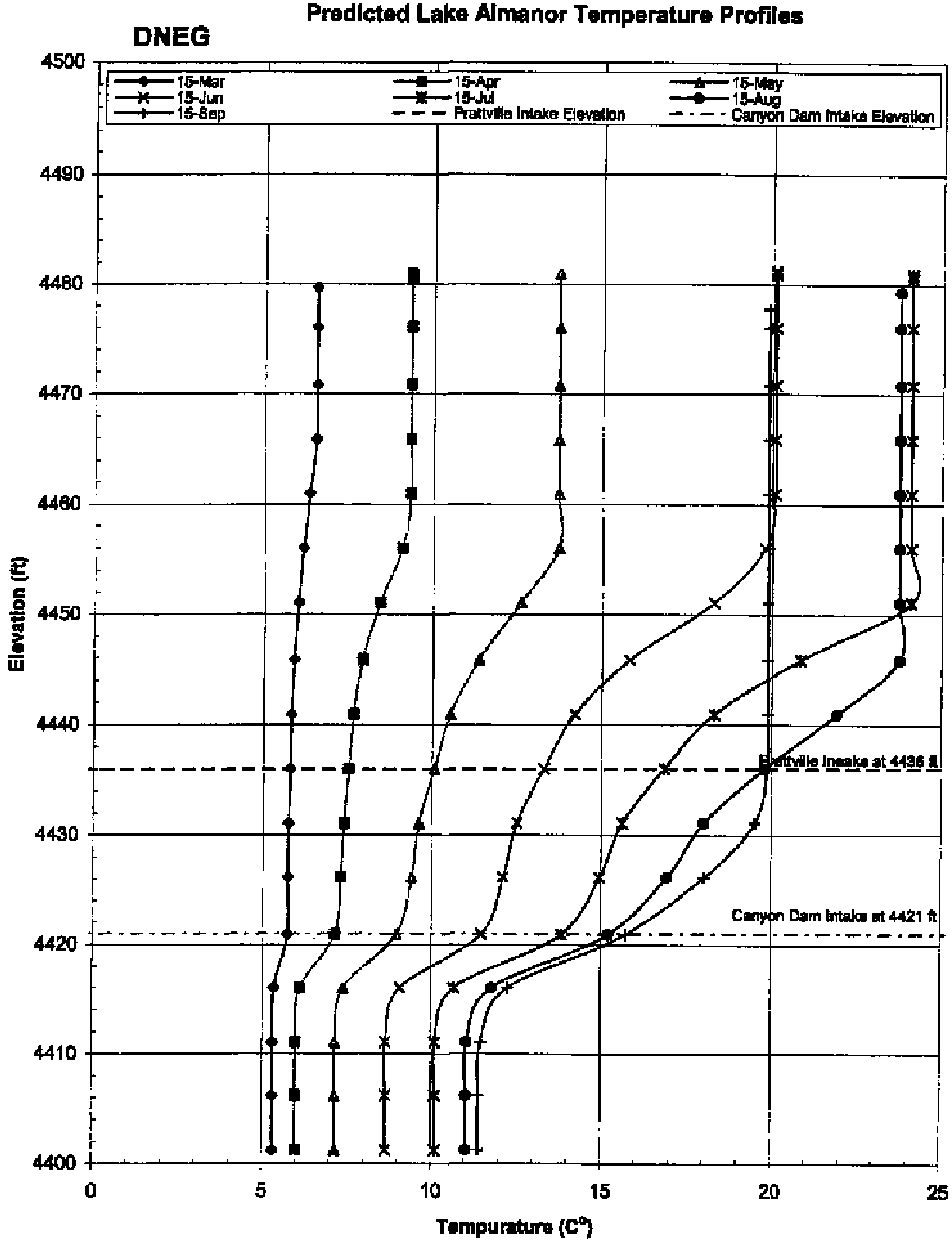
Tempurature (C°)



Predicted Lake Almanor Temperature Profiles
DNEG
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15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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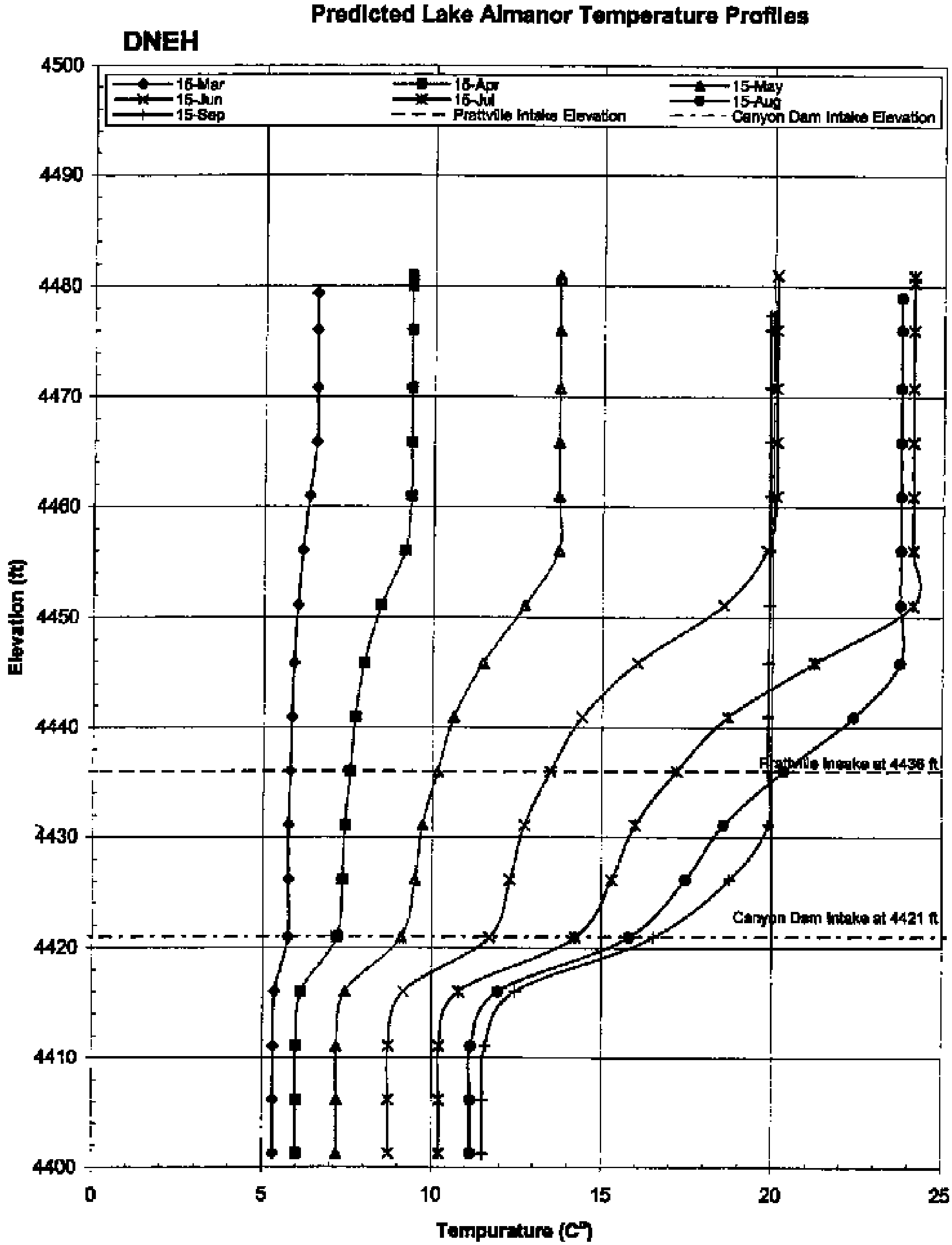
Predicted Lake Almanor Temperature Profiles
DNEH
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15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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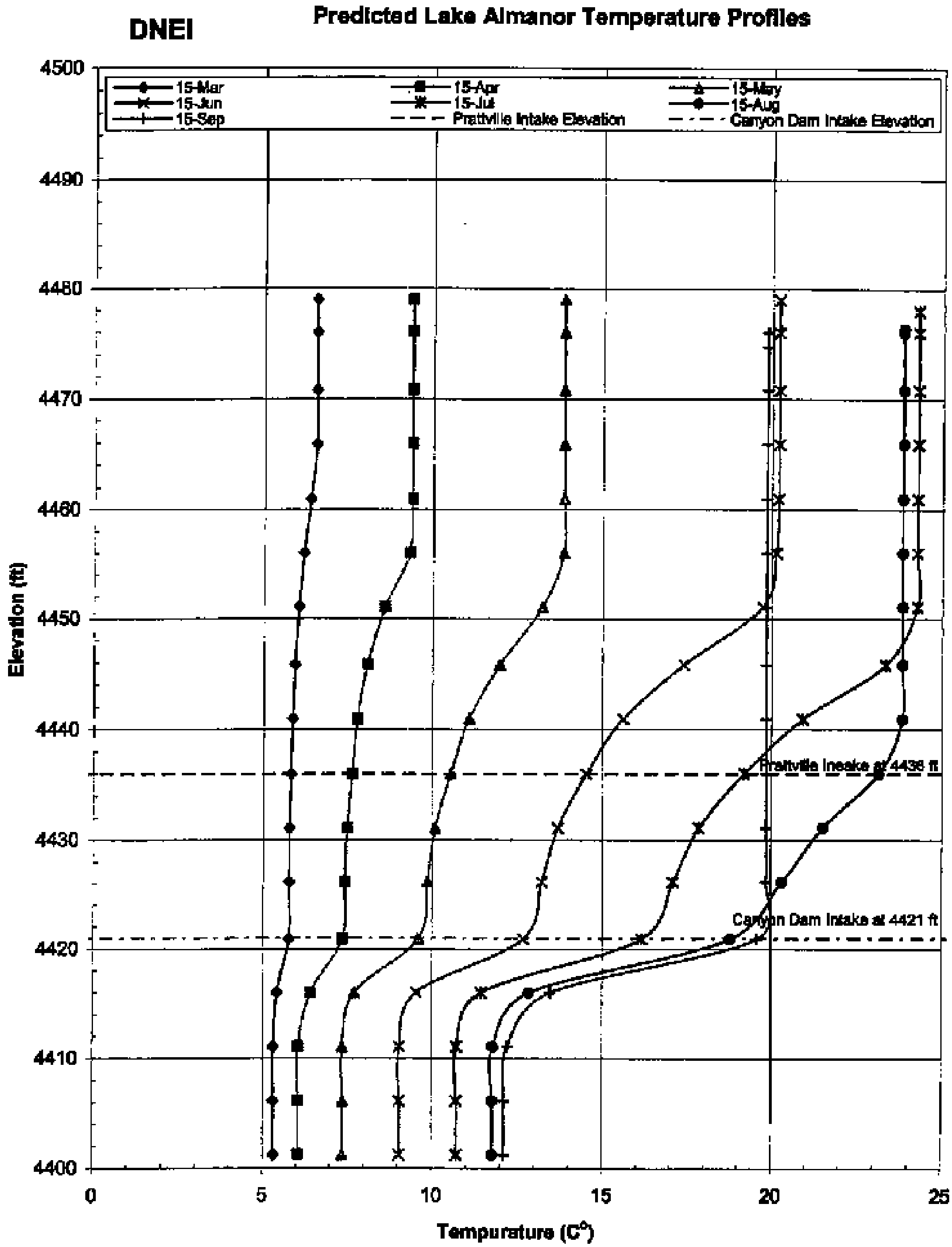
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Predicted Lake Almanor Temperature Profiles
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15-Jul
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15-Sep
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Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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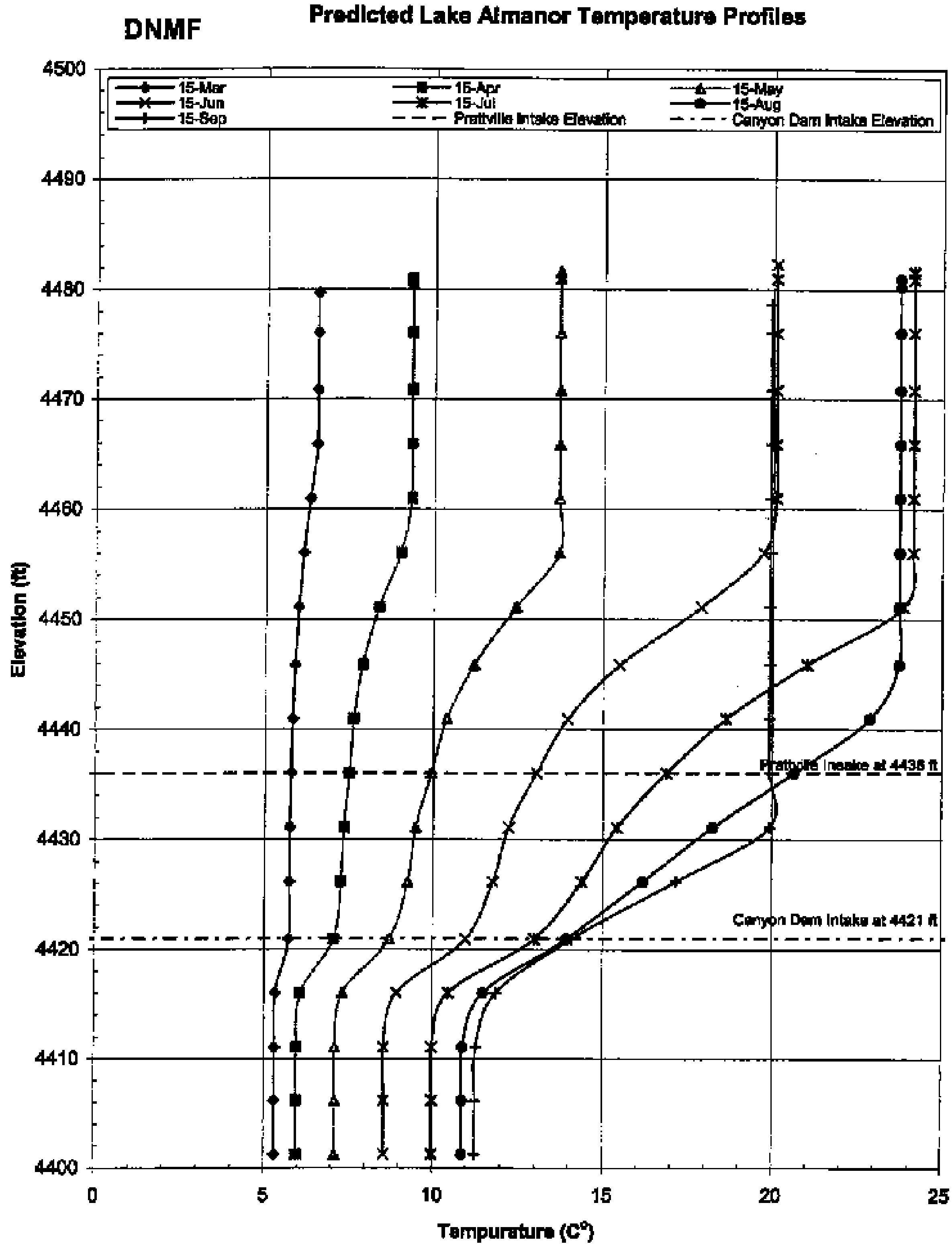
DNMF
Predicted Lake Almanor Temperature Profiles
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15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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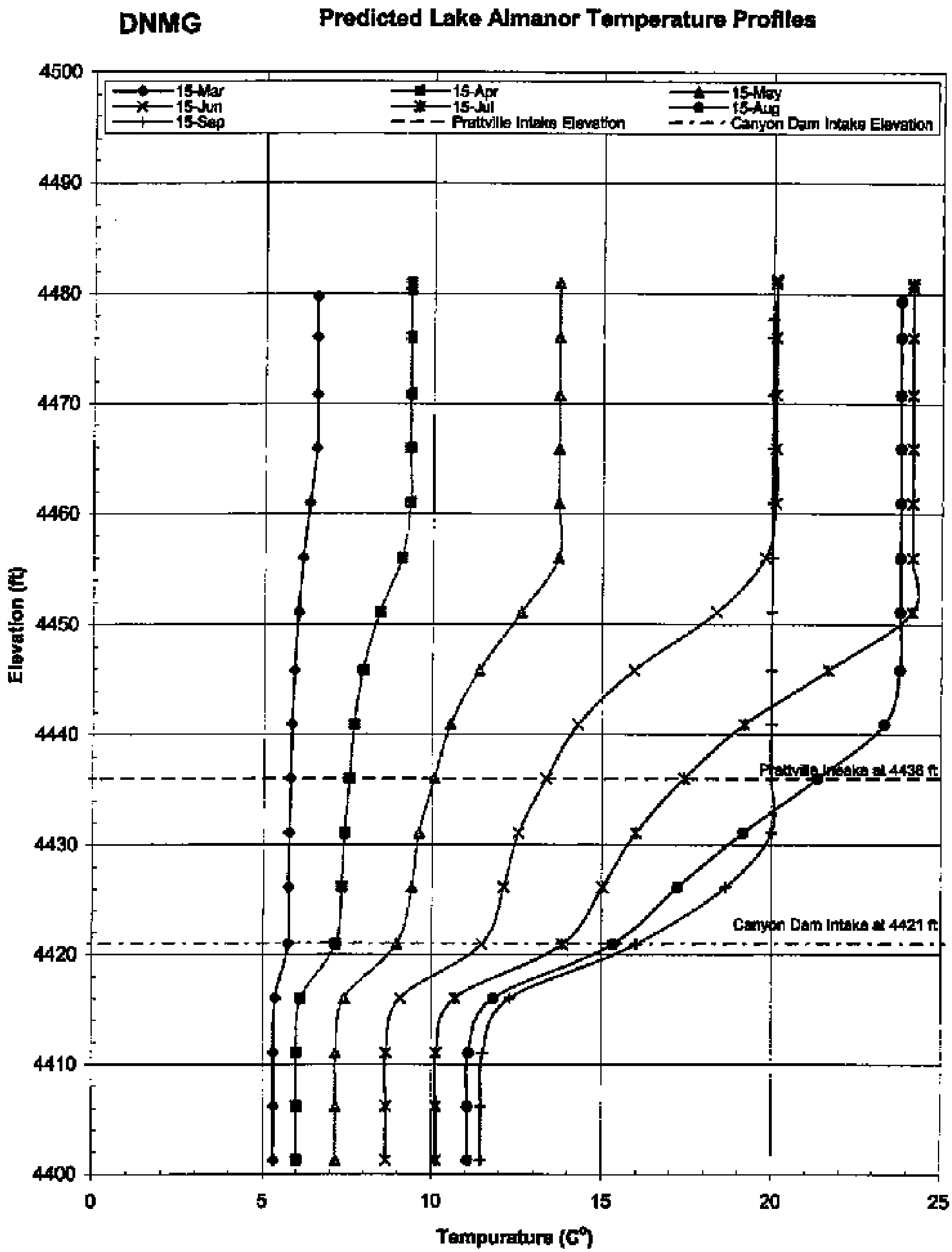
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Predicted Lake Almanor Temperature Profiles
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15-Apr
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15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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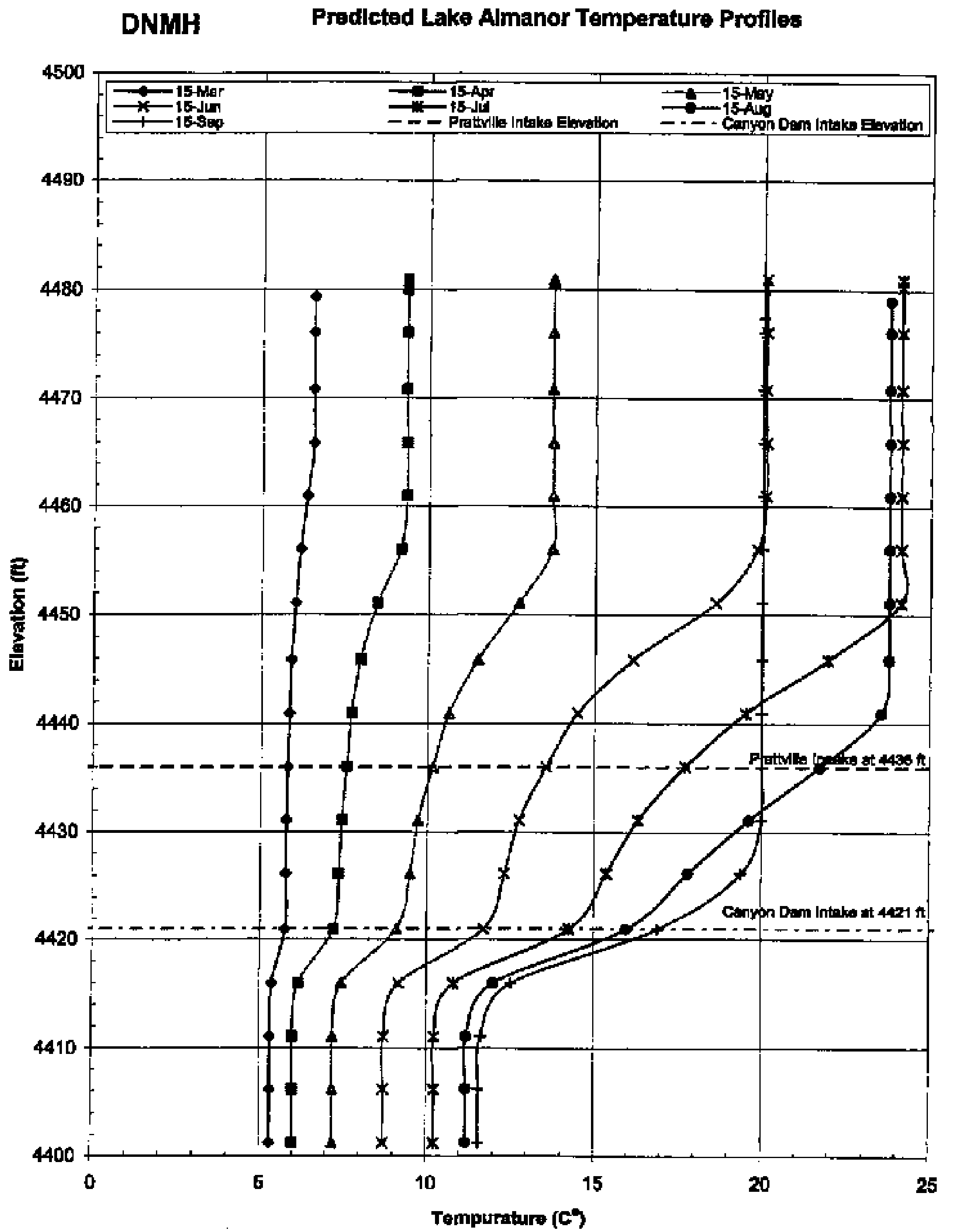
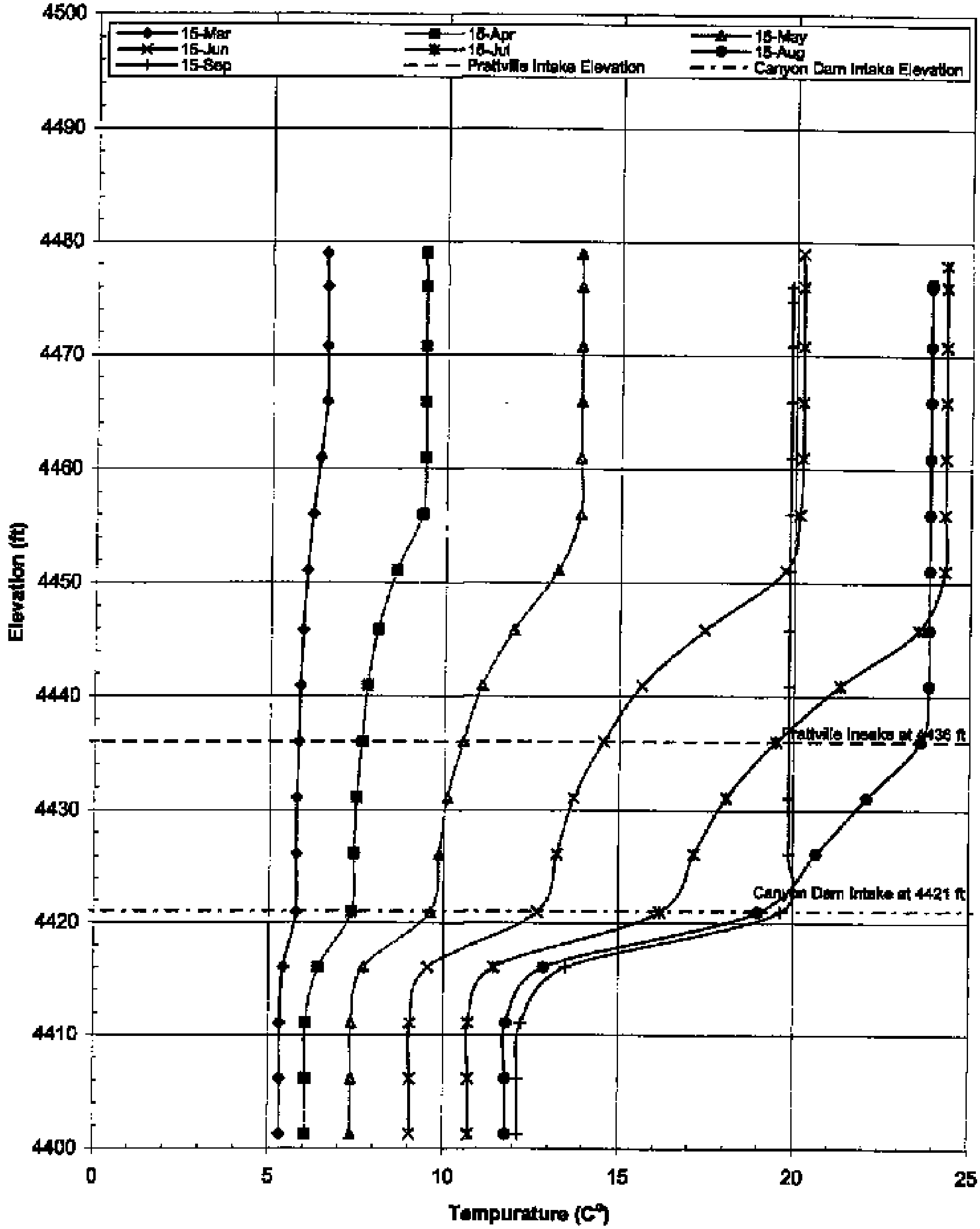
Appendix E2

DNMH



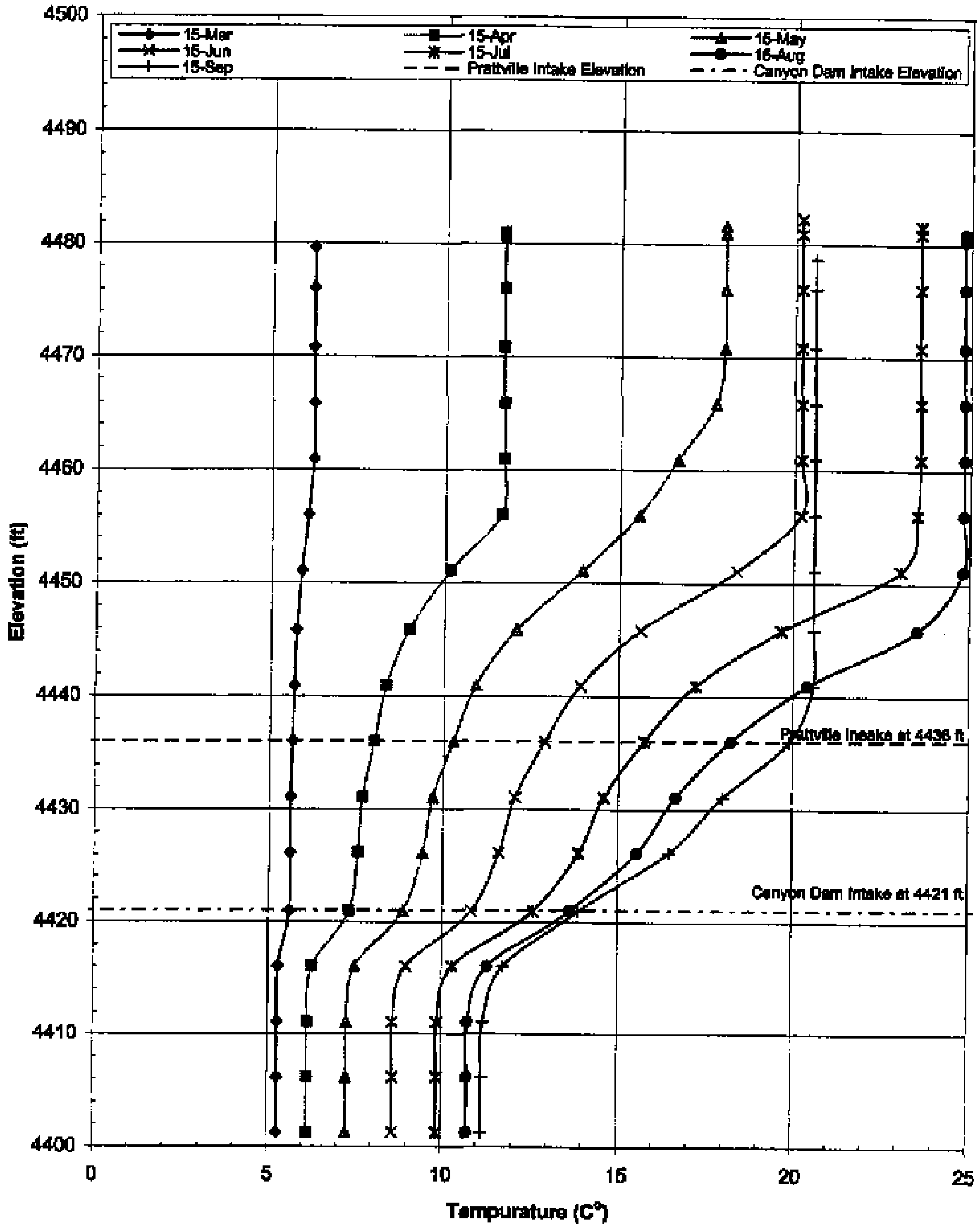
Appendix E2

DNMI Predicted Lake Almanor Temperature Profiles



Appendix E2

DWEF **Predicted Lake Almanor Temperature Profiles**



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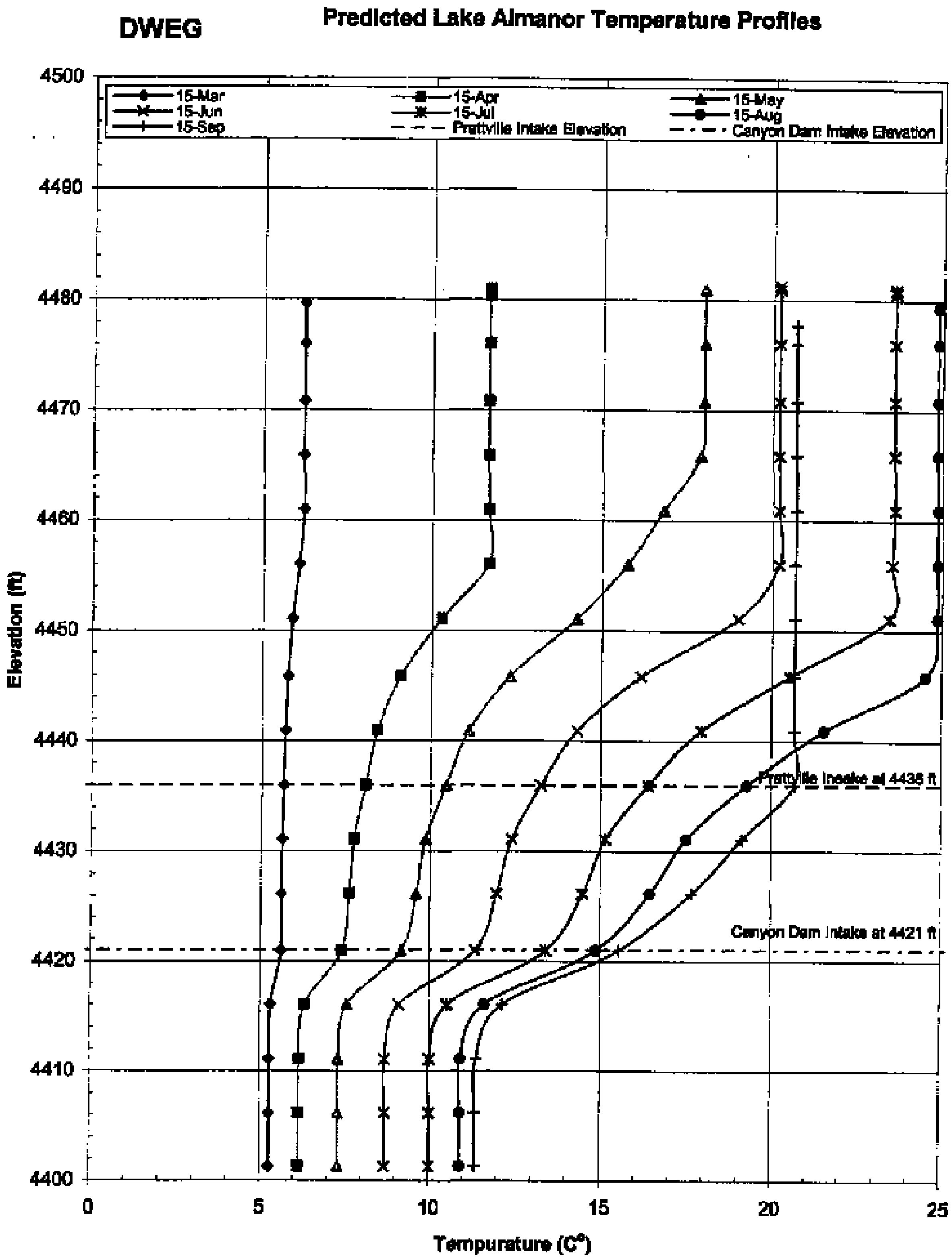

DWEG
Predicted Lake Almanor Temperature Profiles
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15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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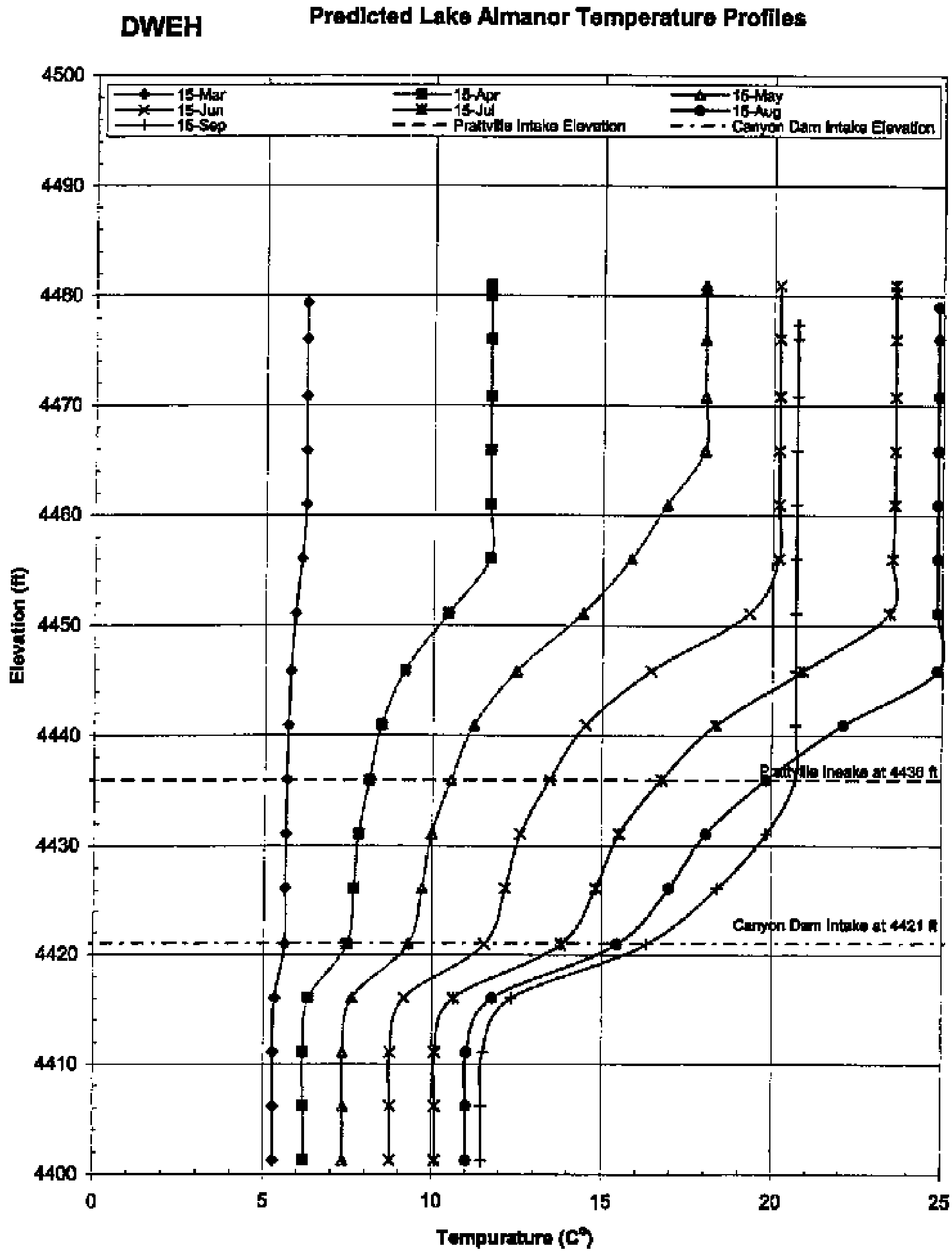
Appendix E2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15-Jun
15-Jul
15-Aug
15-Sep
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Canyon Dam Intake Elevation
Prattville Inaeke at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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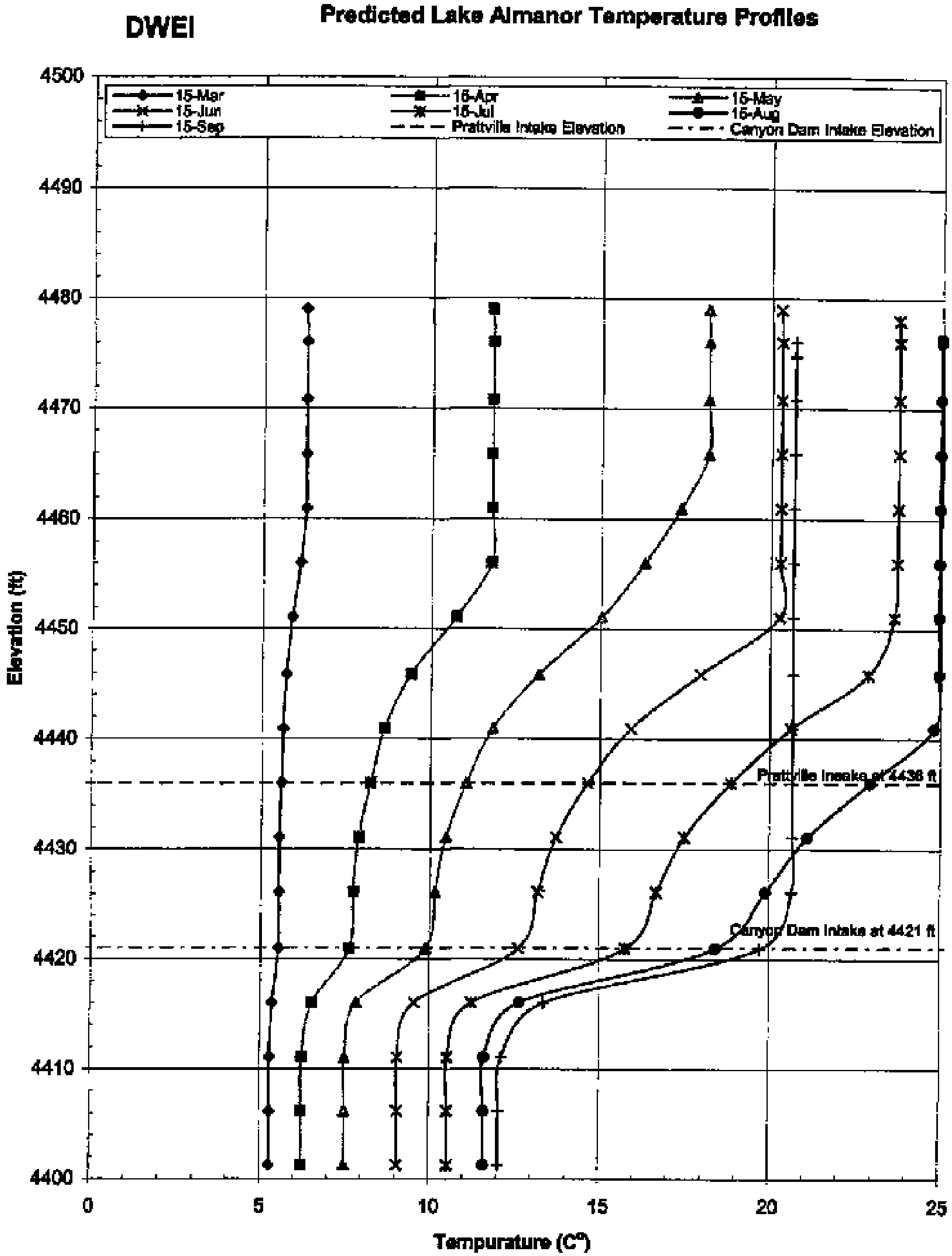
Appendix E2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15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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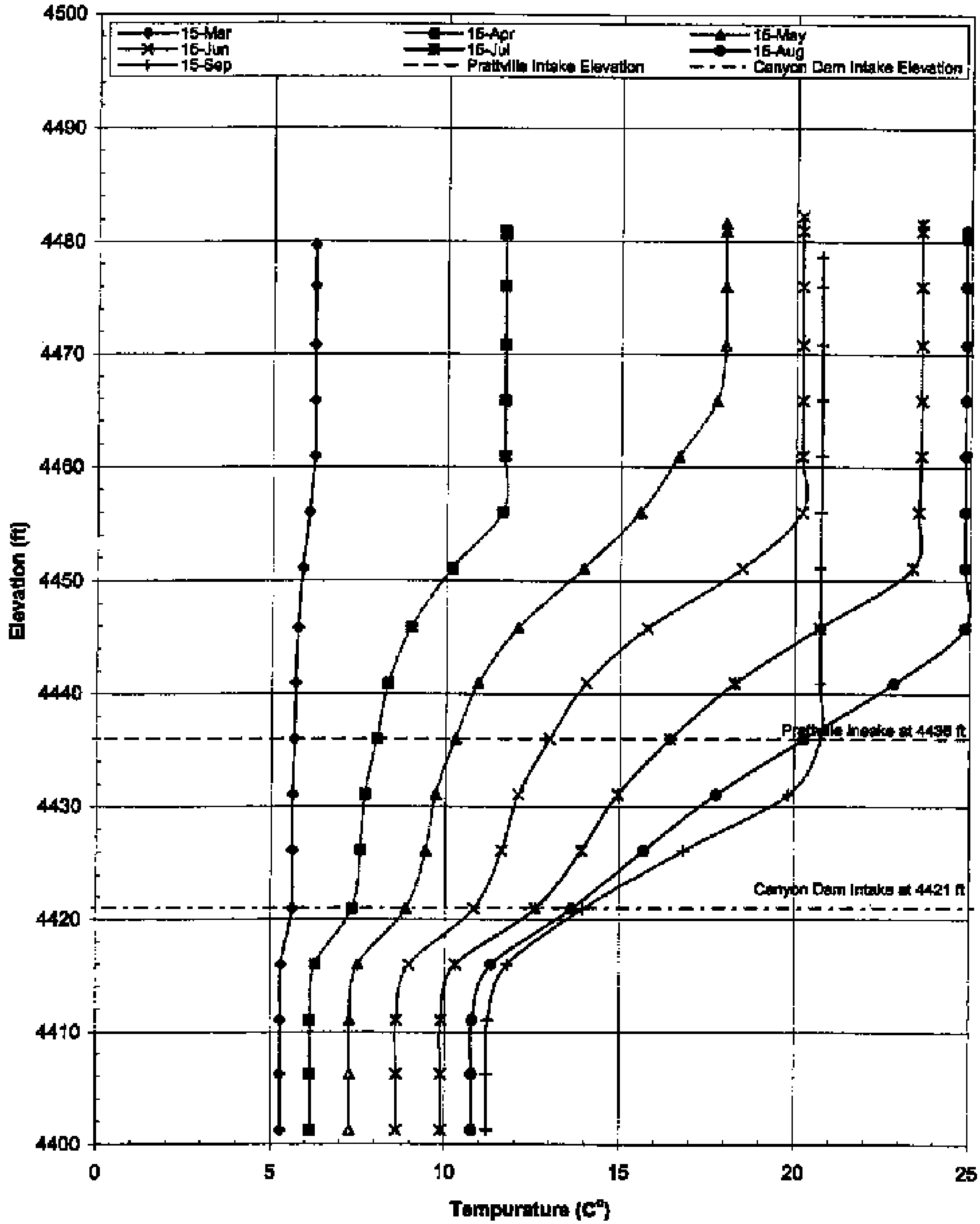
DWMF

Predicted Lake Almanor Temperature Profiles



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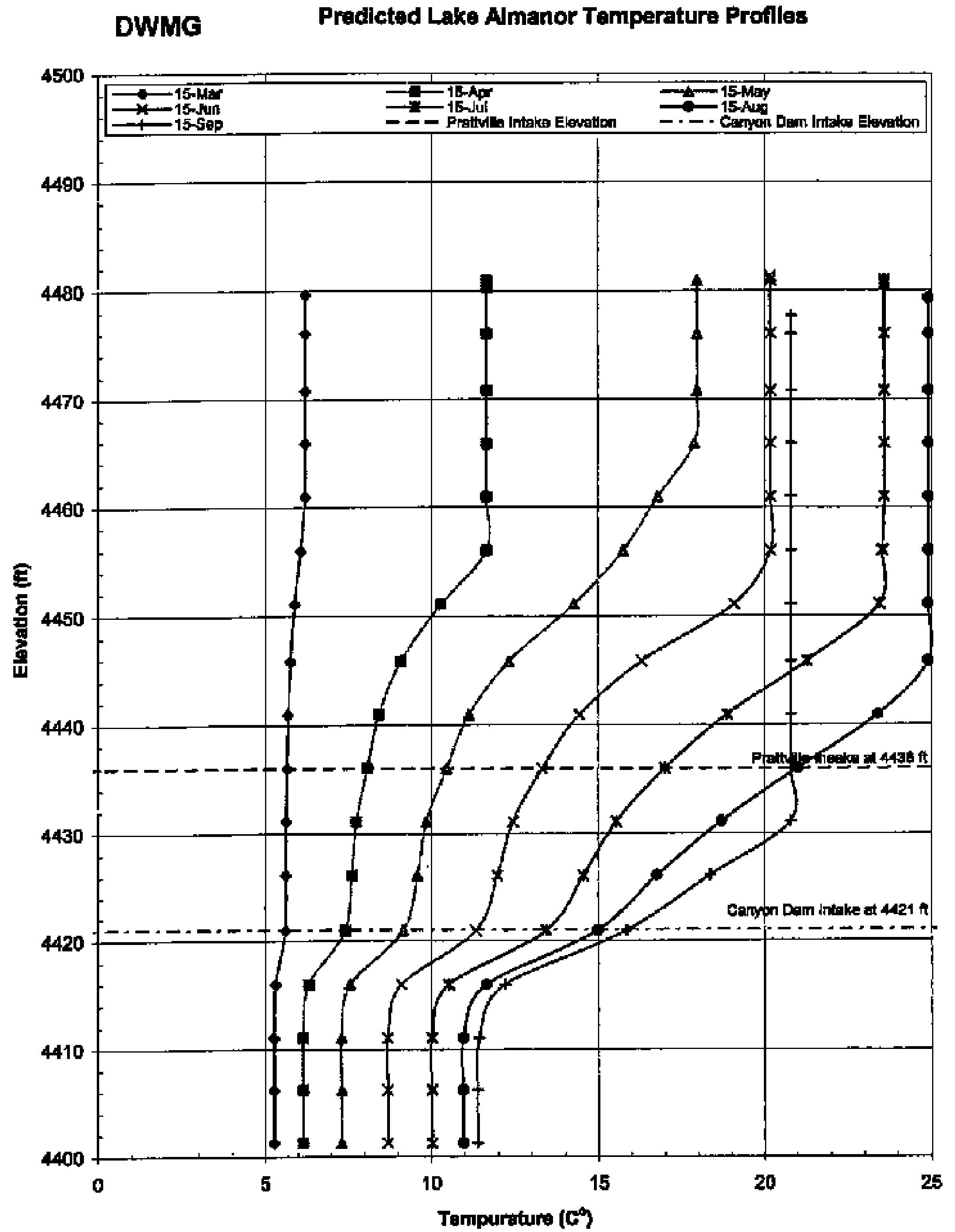

Predicted Lake Almanor Temperature Profiles
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
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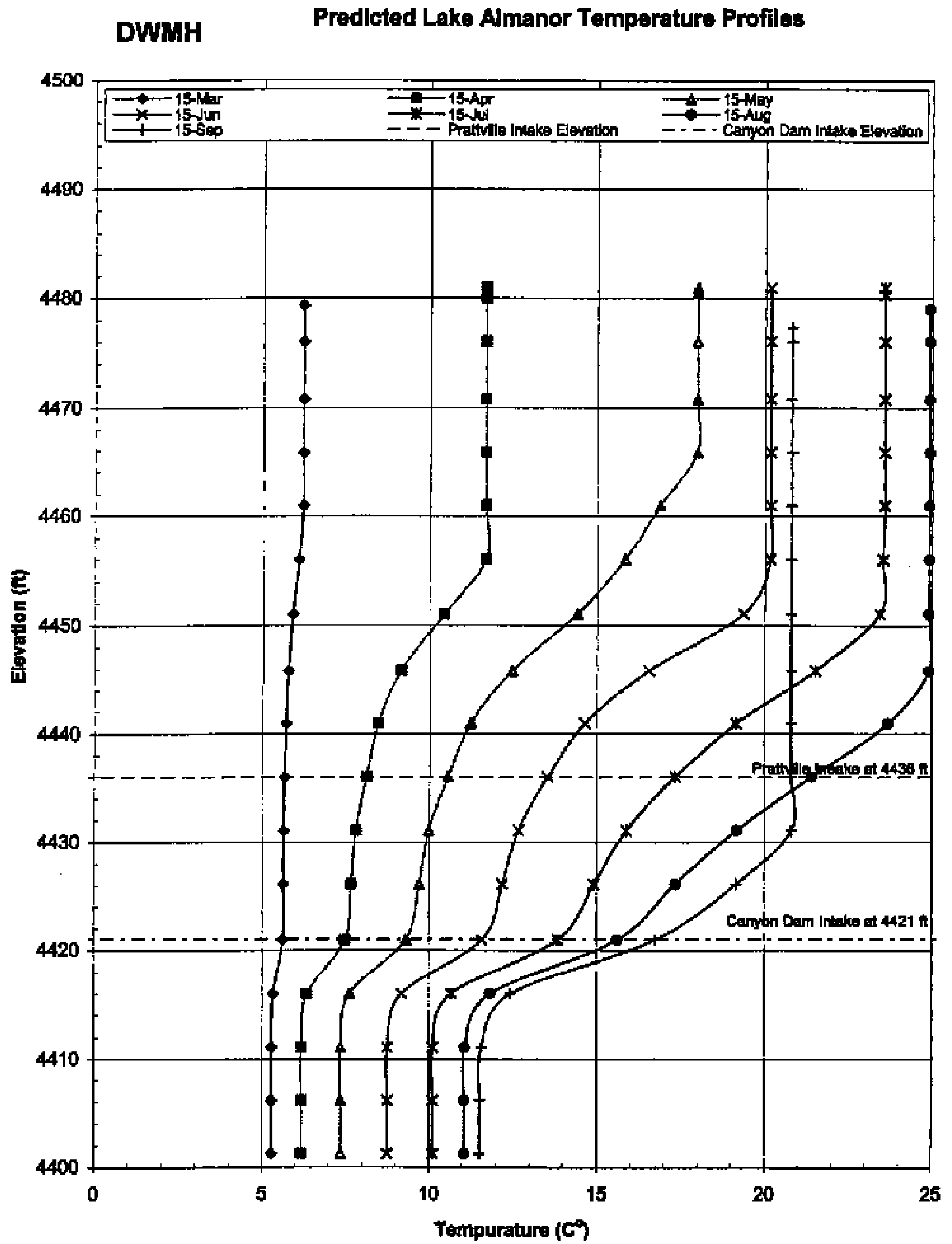
Tempurature (C°)



DWMH
Predicted Lake Almanor Temperature Profiles
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15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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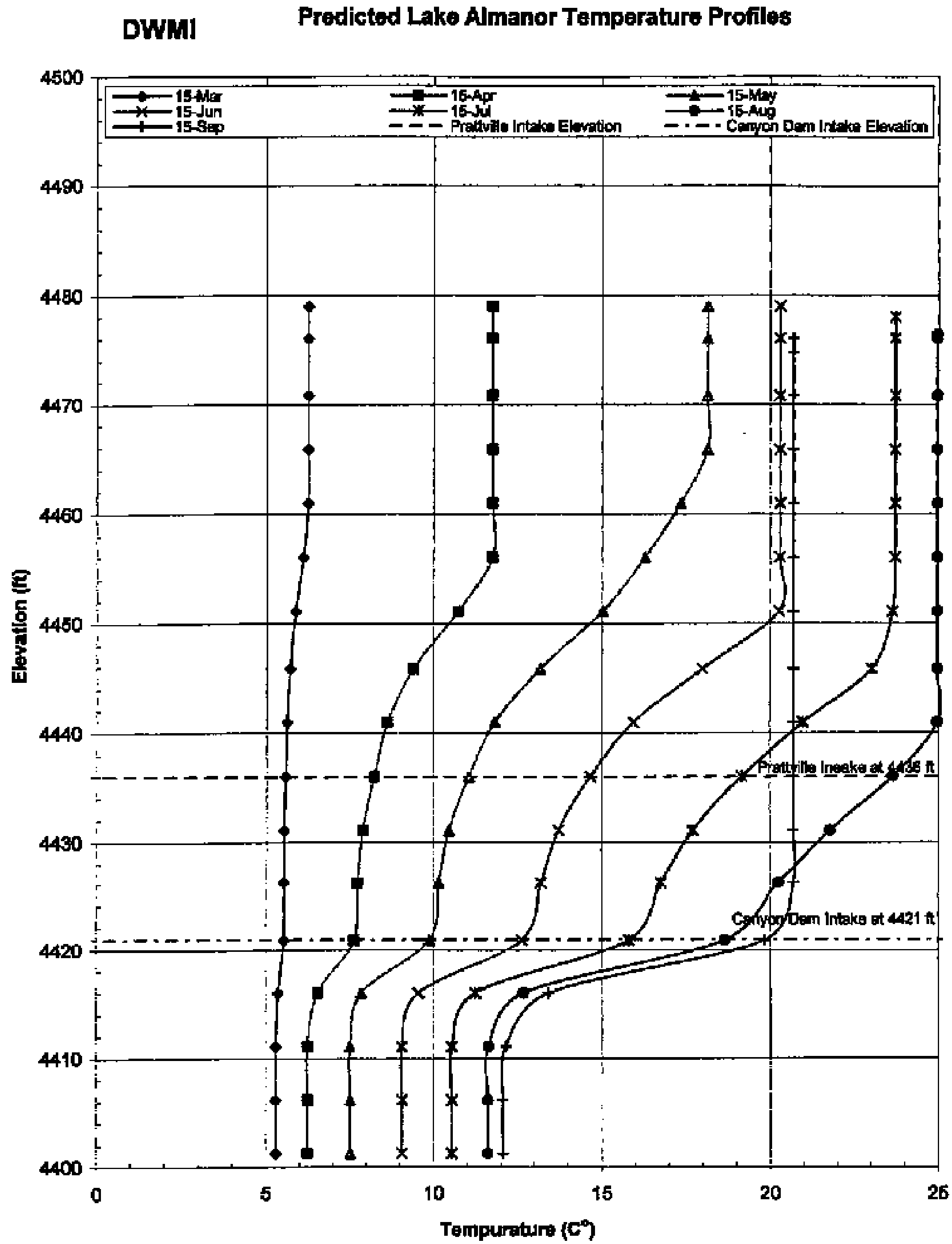
Appendix E2



DWMI
Predicted Lake Almanor Temperature Profiles
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15-Jun
15-Jul
15-Aug
15-Sep
Prattville Intake Elevation
Canyon Dam Intake Elevation
Prattville Intake at 4436 ft
Canyon Dam Intake at 4421 ft
Elevation (ft)
Tempurature (C°)
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Appendix E2

UPPER NORTH FORK FEATHER RIVER PROJECT

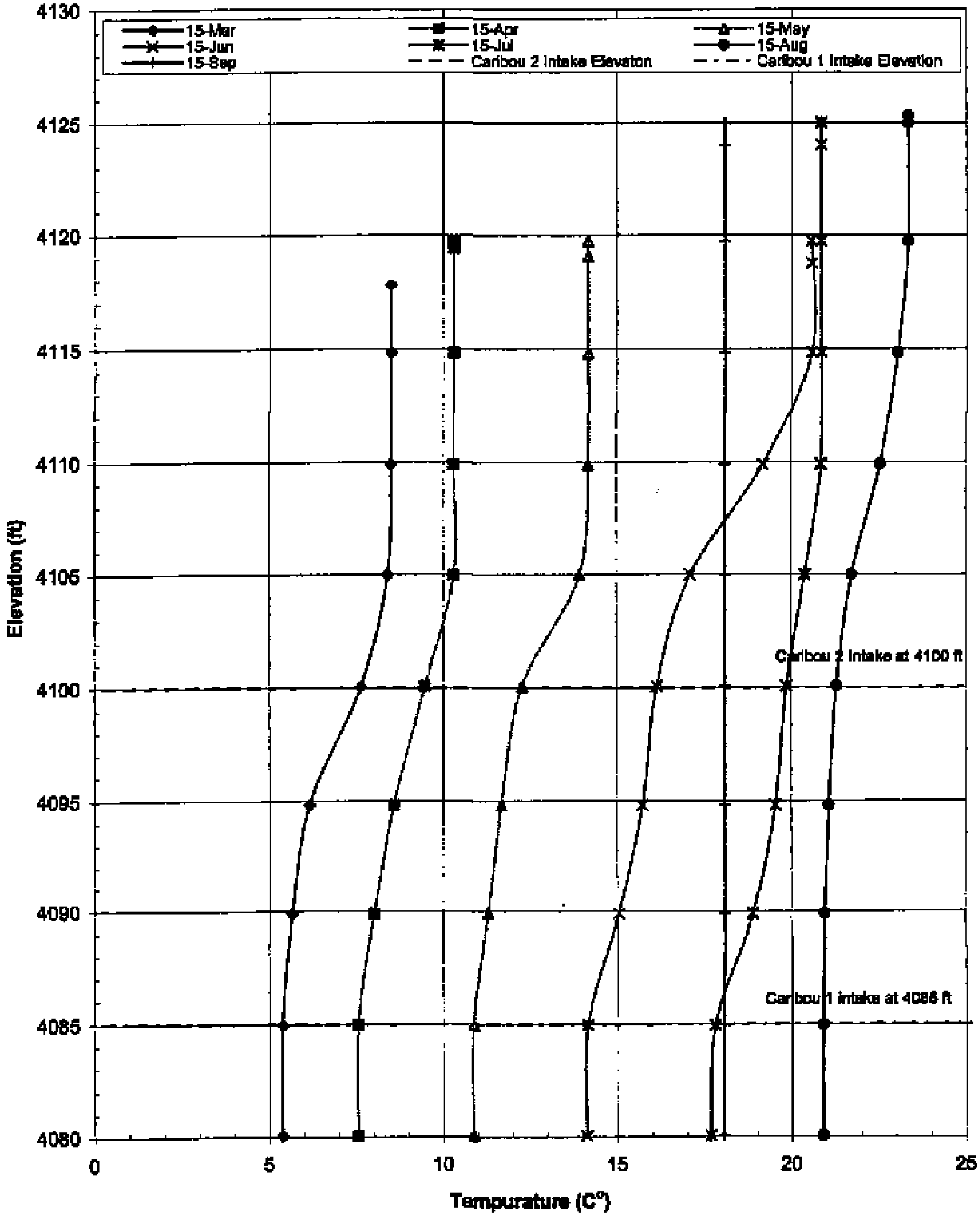
FERC No. 2105

Appendix E2-G

Additional Model Scenario Runs

Butt Valley Reservoir Temperature Profiles

ANEF21 Predicted Butt Valley reservoir Temperature Profiles



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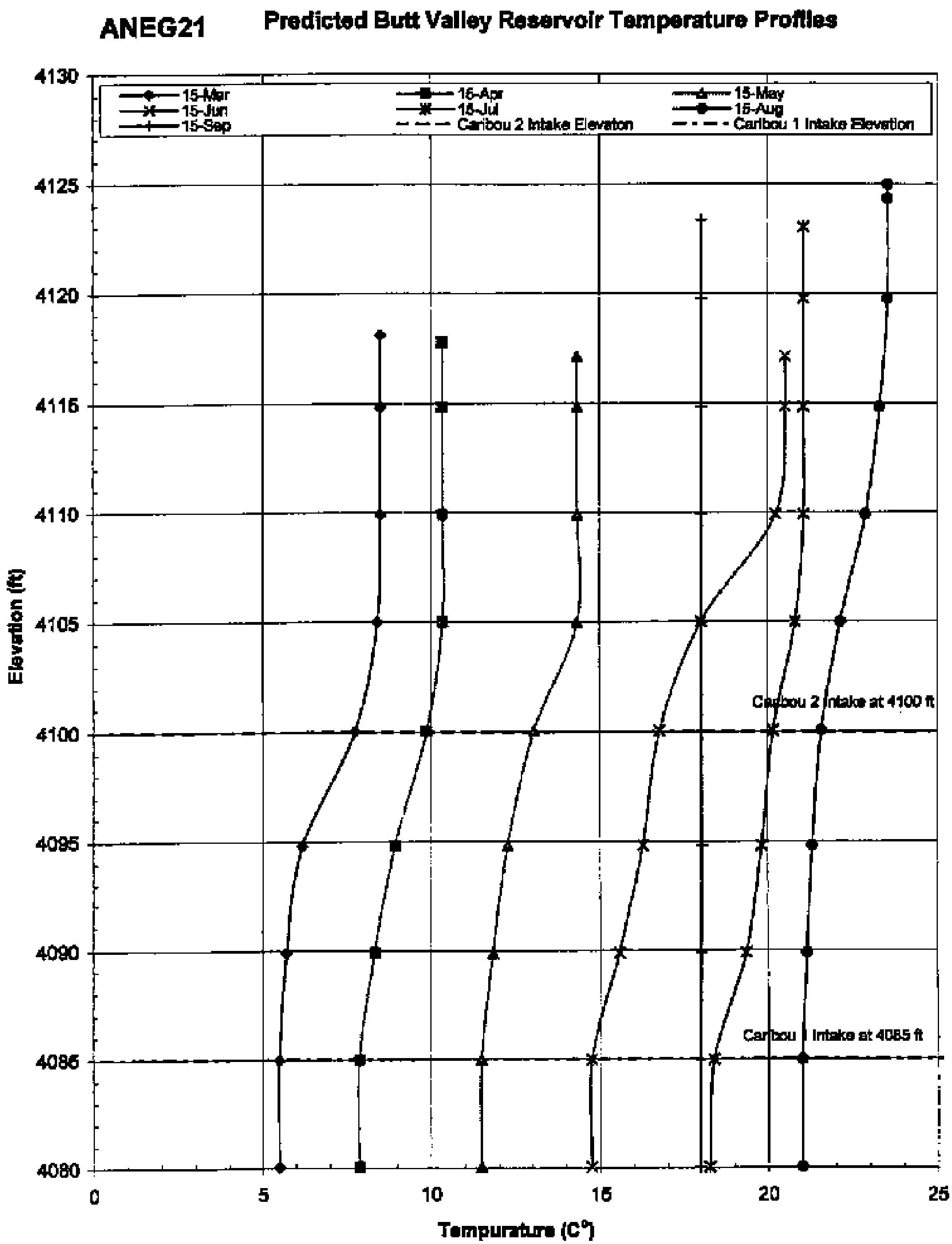
ANEG21
Predicted Butt Valley Reservoir Temperature Profiles
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Caribou 2 Intake Elevaton
Caribou 1 Intake Elevation
Caribou 2 Intake at 4100 ft
Caribou 1 Intake at 4085 ft
Elevation (ft)
Tempurature (C°)
4130
4125
4120
4115
4110
4105
4100
4095
4090
4085
4080
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5
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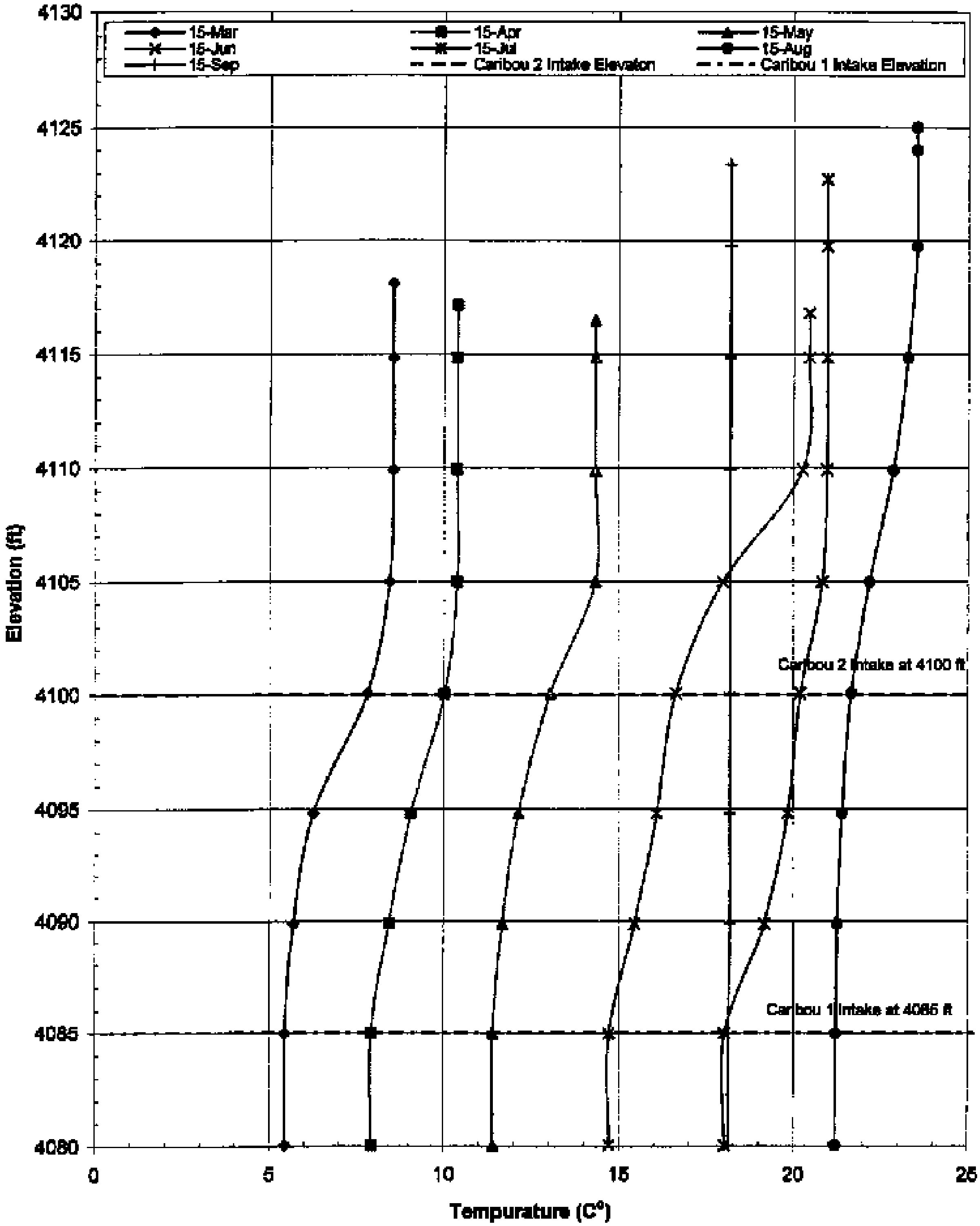
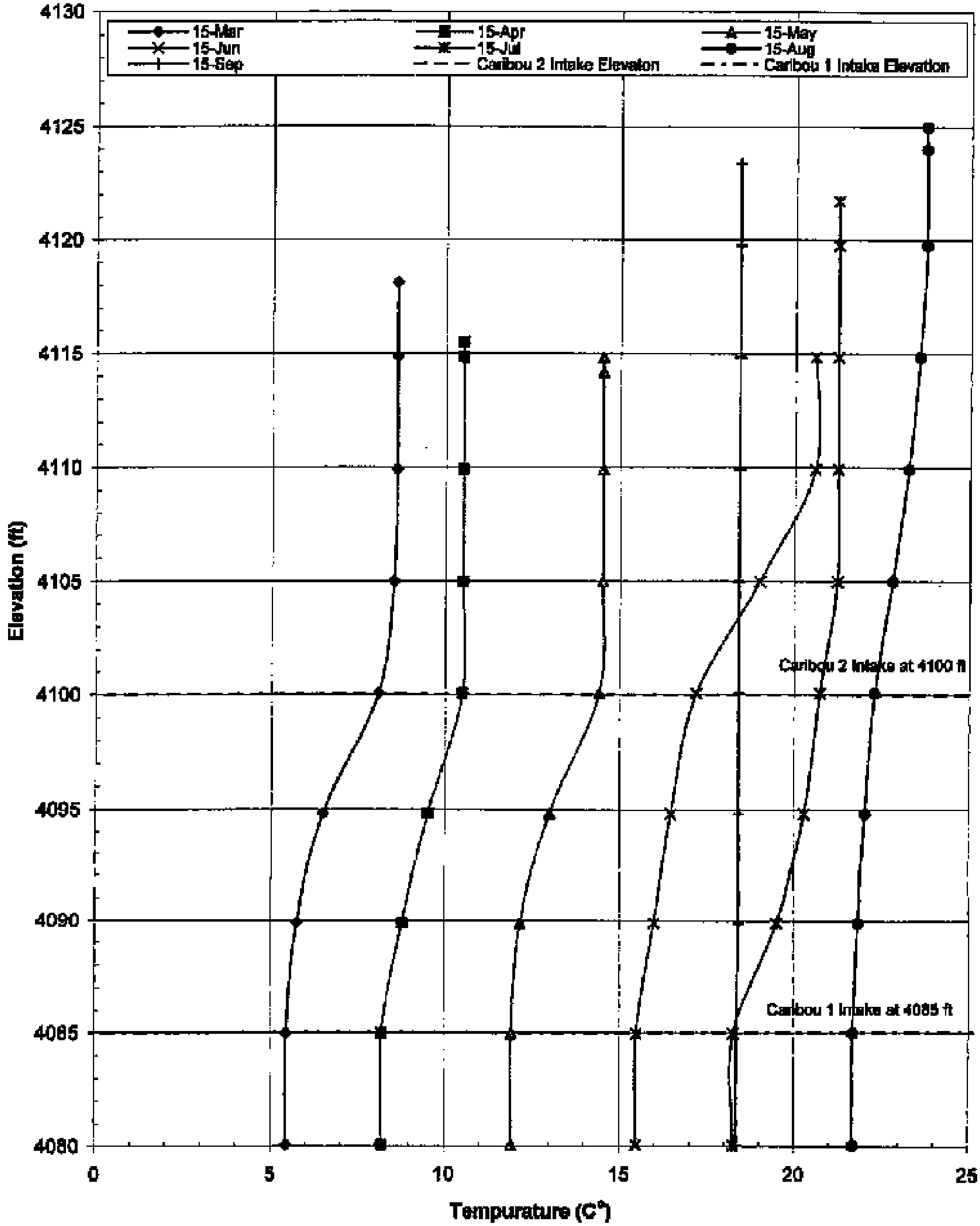
ANEH21 Predicted Butt Valley Reservoir Temperature Profiles



ANEI21 **Predicted Butt Valley Reservoir Temperature Profiles**



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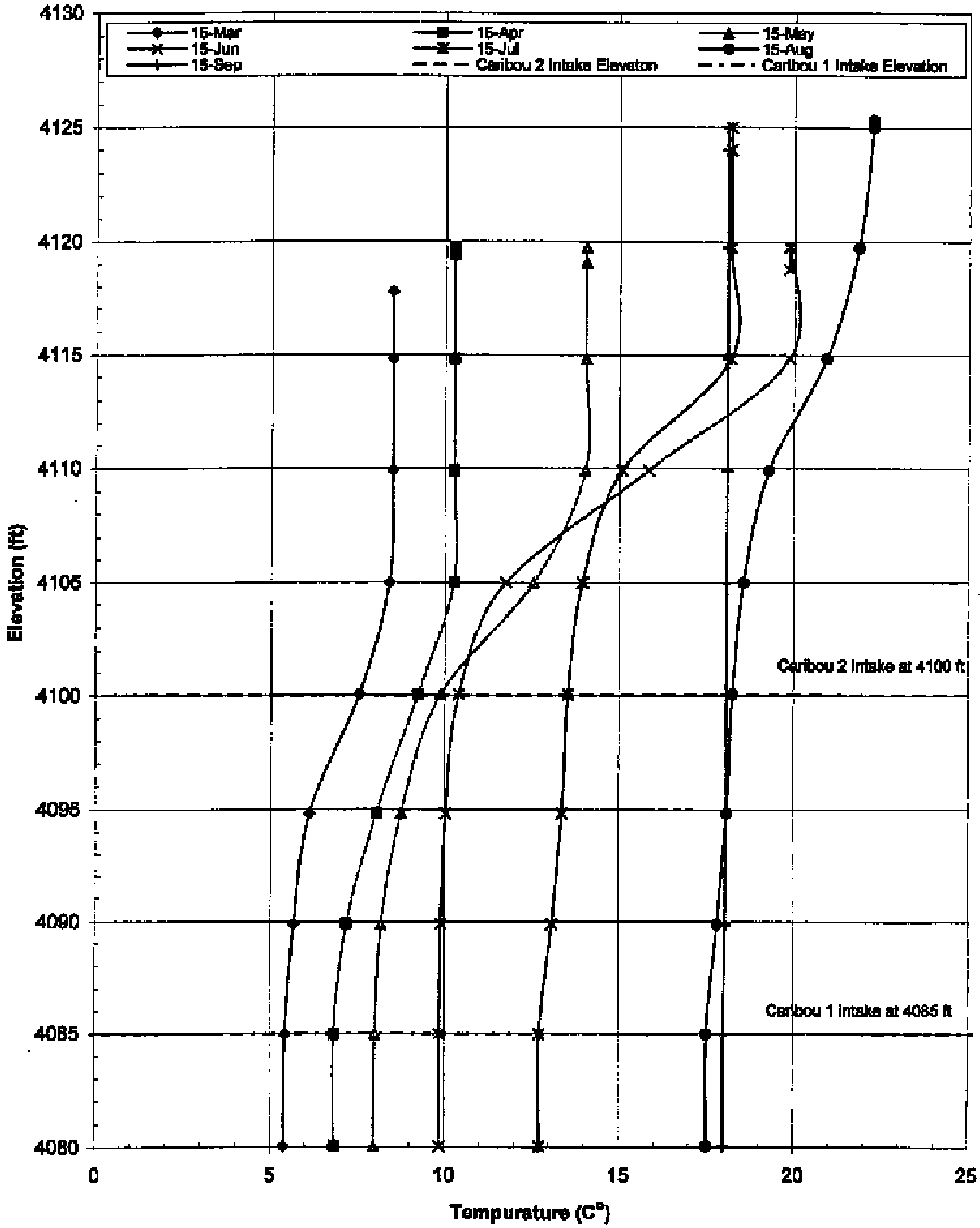

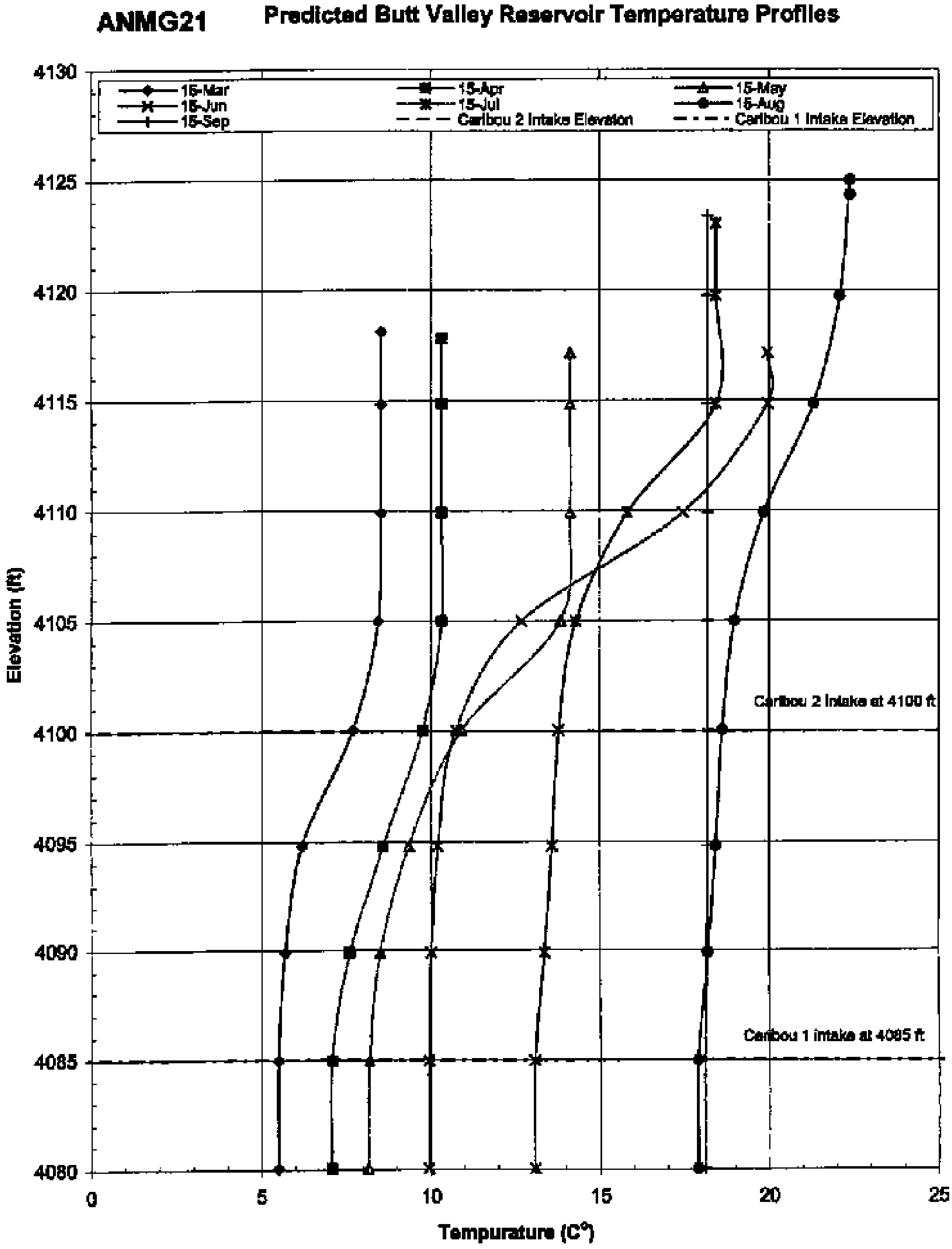
ANMG21
Predicted Butt Valley Reservoir Temperature Profiles
15-Mar
15-Apr
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15-Jul
15-Aug
15-Sep
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Caribou 1 Intake Elevation
Caribou 2 intake at 4100 ft
Caribou 1 intake at 4085 ft
Elevation (ft)
Tempurature (C°)
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4100
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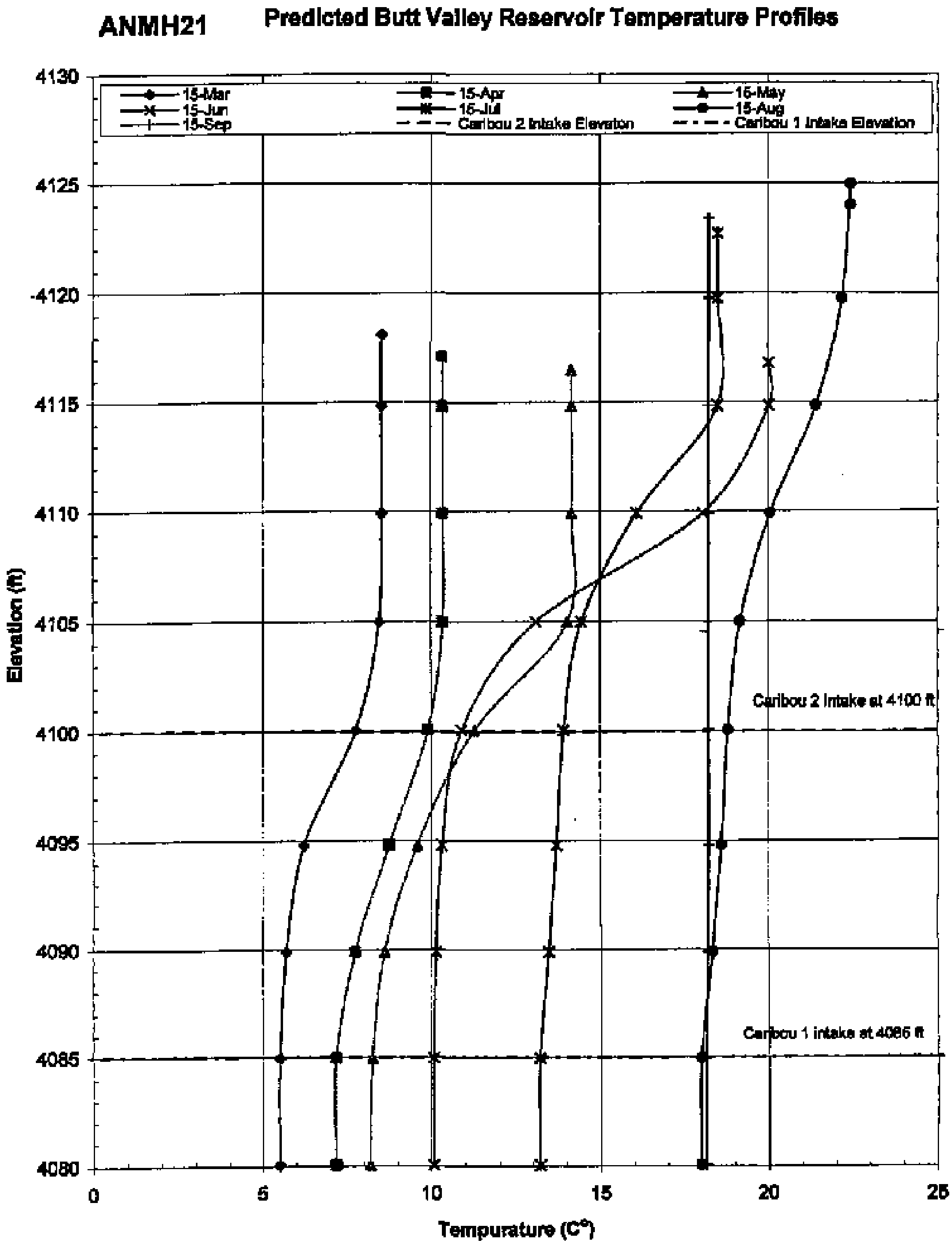
Appendix E2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Predicted Butt Valley Reservoir Temperature Profiles
15-Mar
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15-Sep
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Caribou 1 Intake Elevation
Caribou 2 intake at 4100 ft
Caribou 1 intake at 4085 ft
Elevation (ft)
Tempurature (C°)
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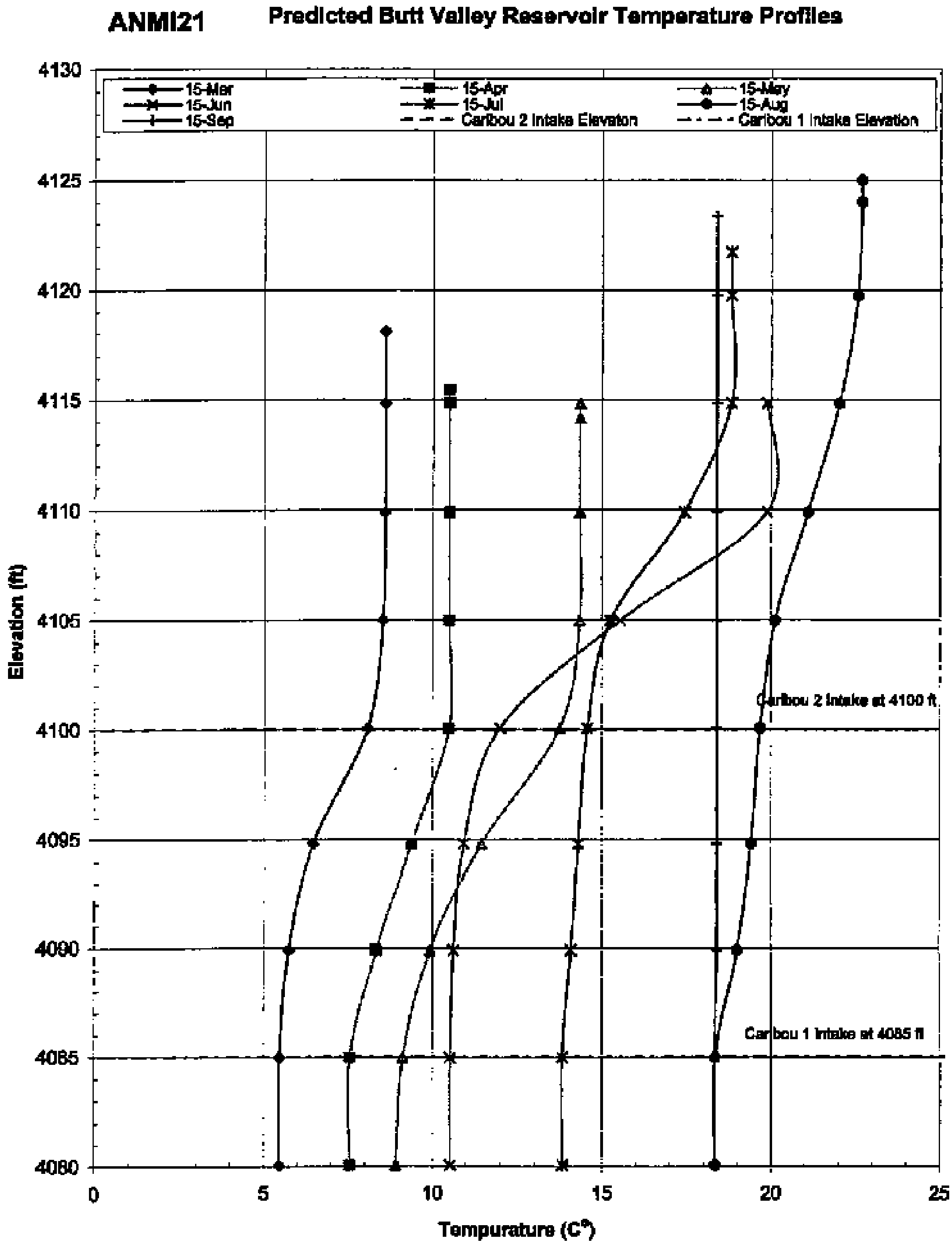
ANMI21
Predicted Butt Valley Reservoir Temperature Profiles
15-Mar
15-Apr
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15-Jul
15-Aug
15-Sep
Caribou 2 Intake Elevaton
Caribou 1 Intake Elevation
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Elevation (ft)
Caribou 2 Intake at 4100 ft
Caribou 1 Intake at 4085 ft
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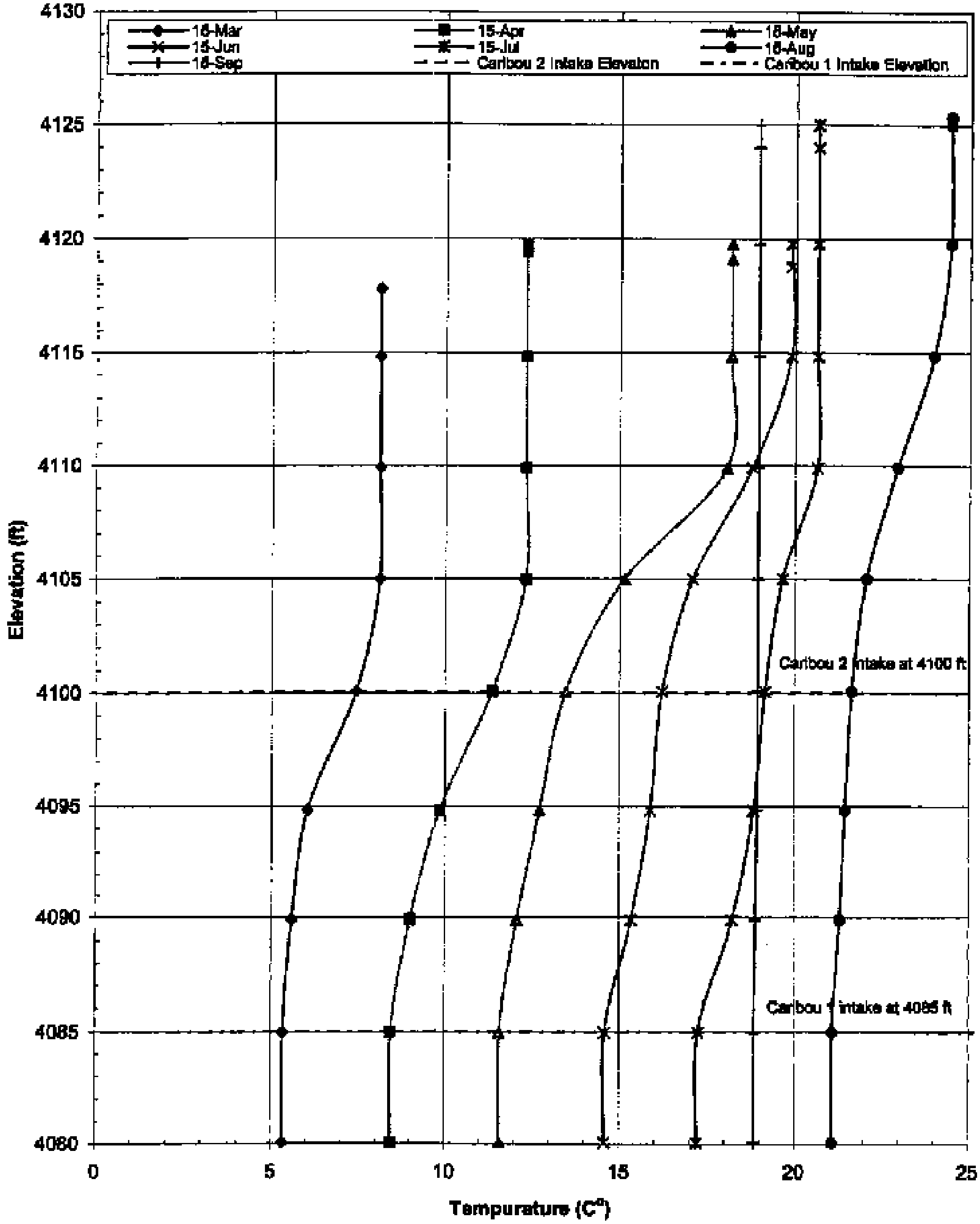
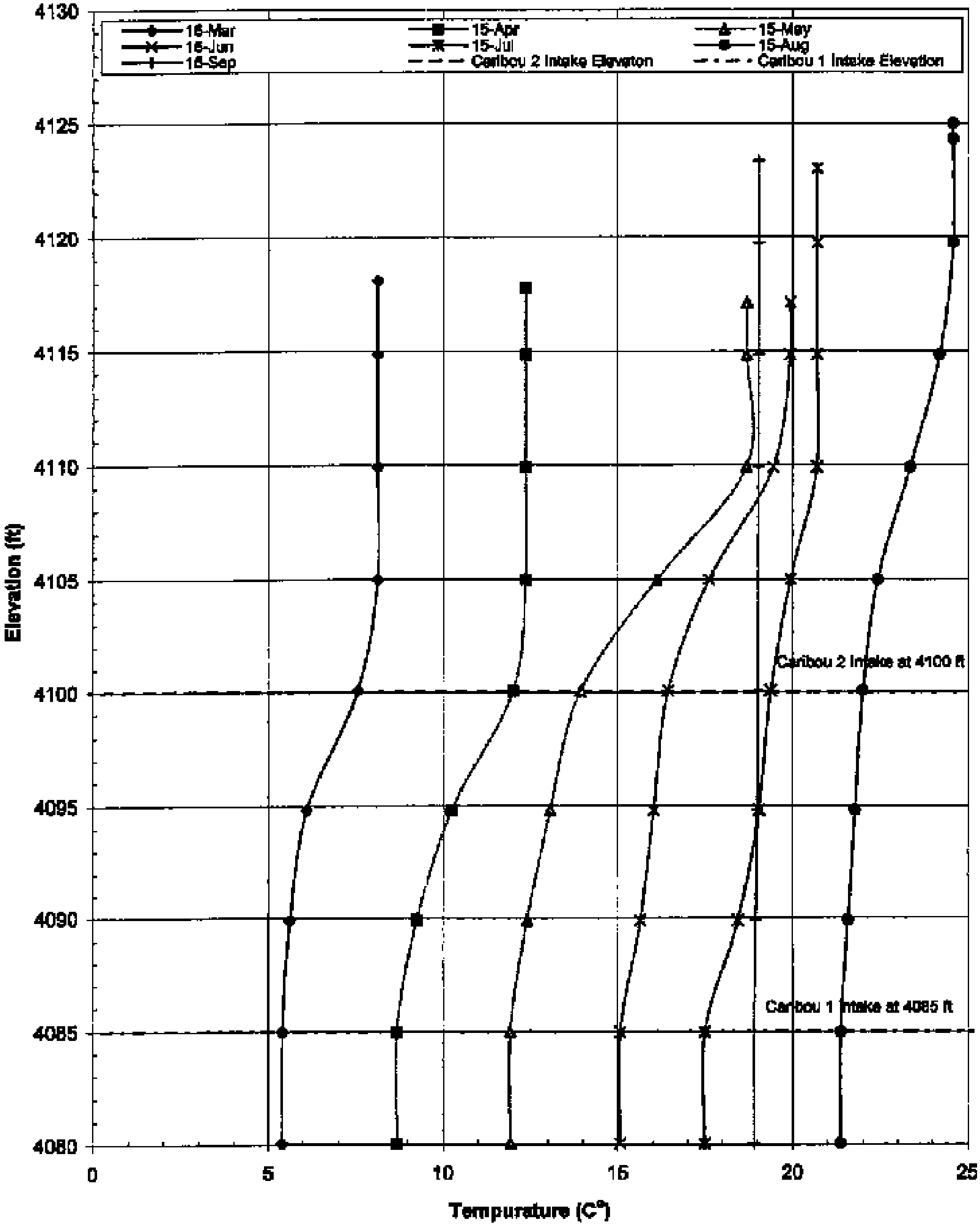
Tempuratura (C°)

AWEF21 Predicted Butt Valley Reservoir Temperature Profiles



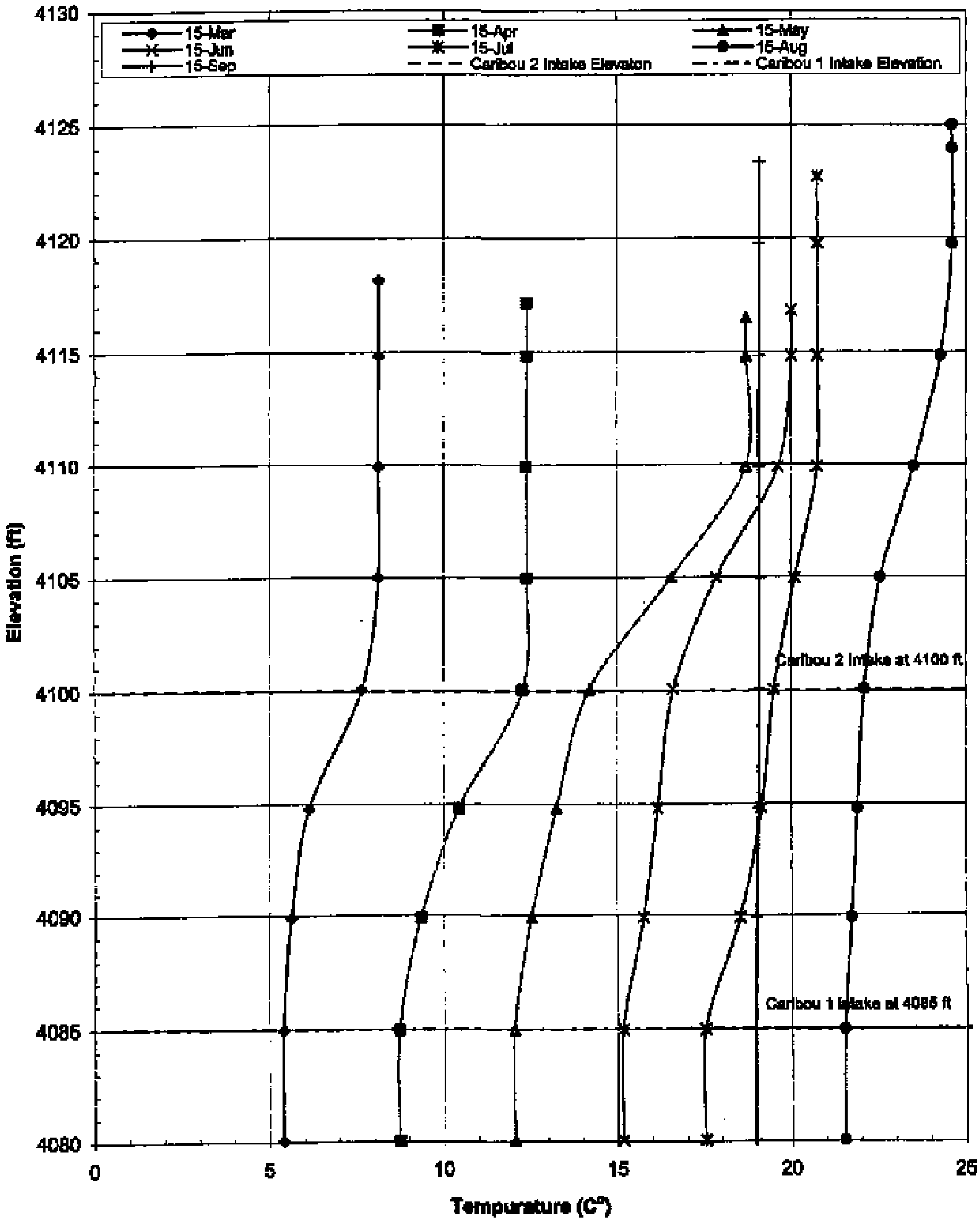
Appendix E2

AWEG21 Predicted Butt Valley Reservoir Temperature Profiles

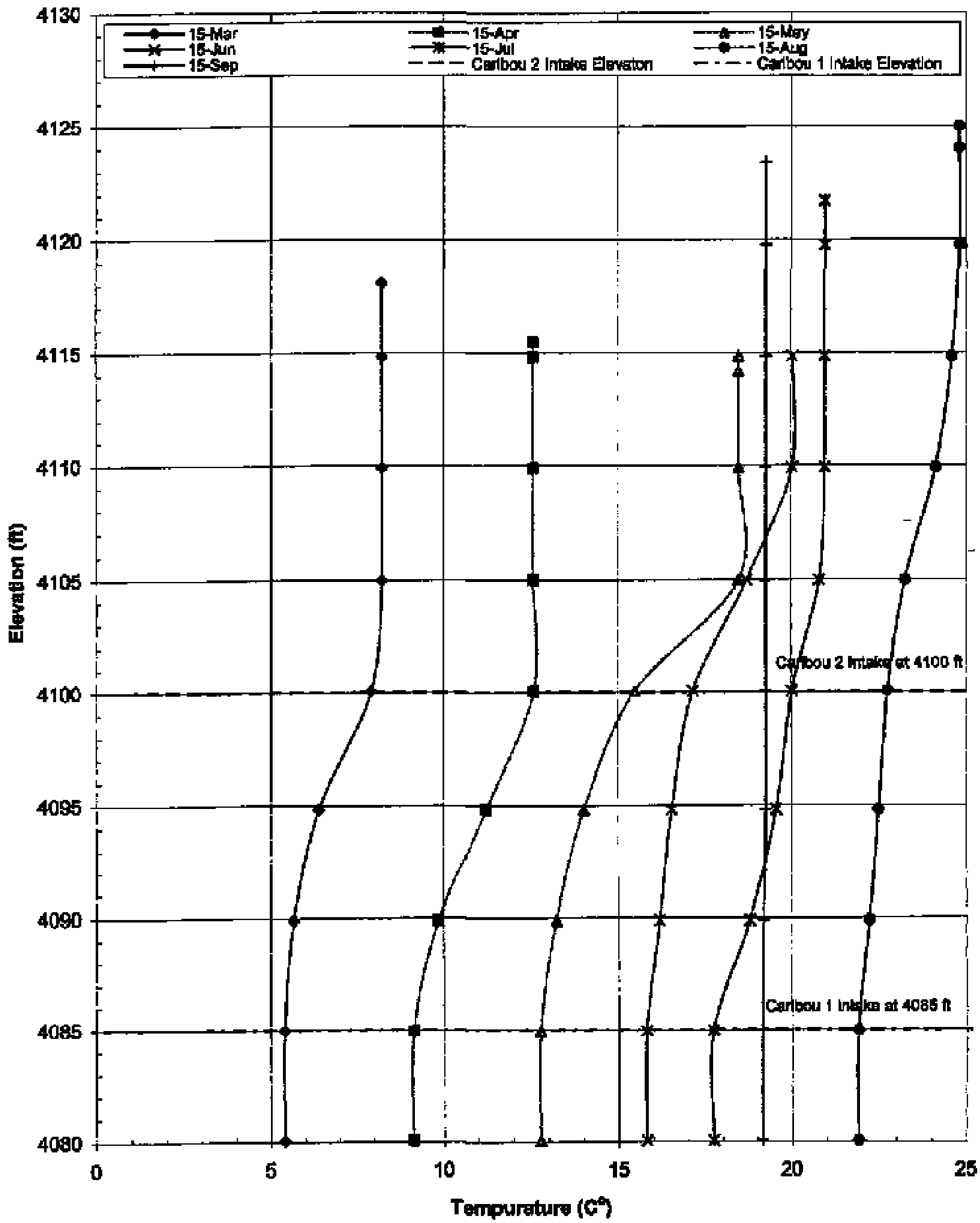


Appendix E2

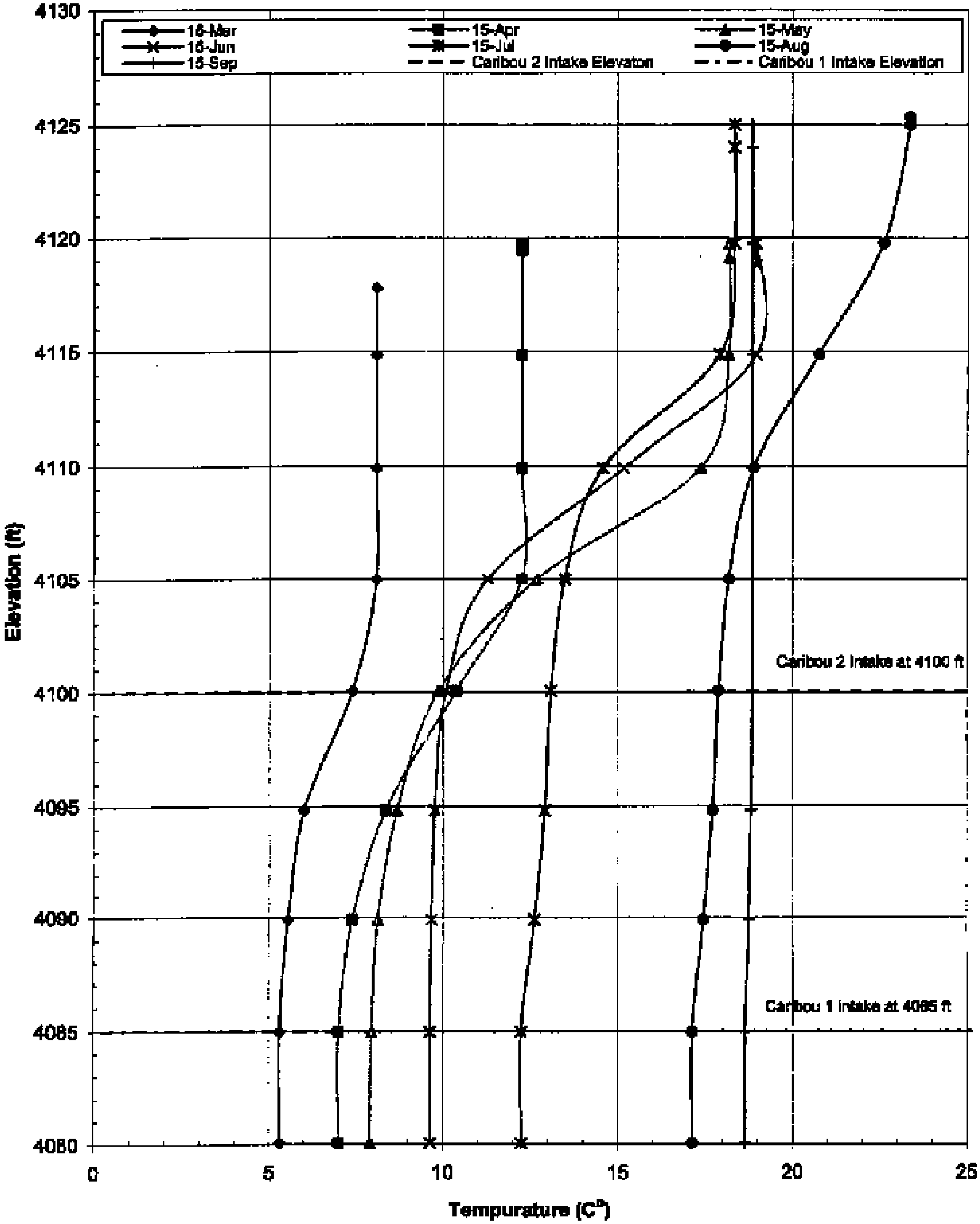
AWEH21 Predicted Butt Valley Reservoir Temperature Profiles



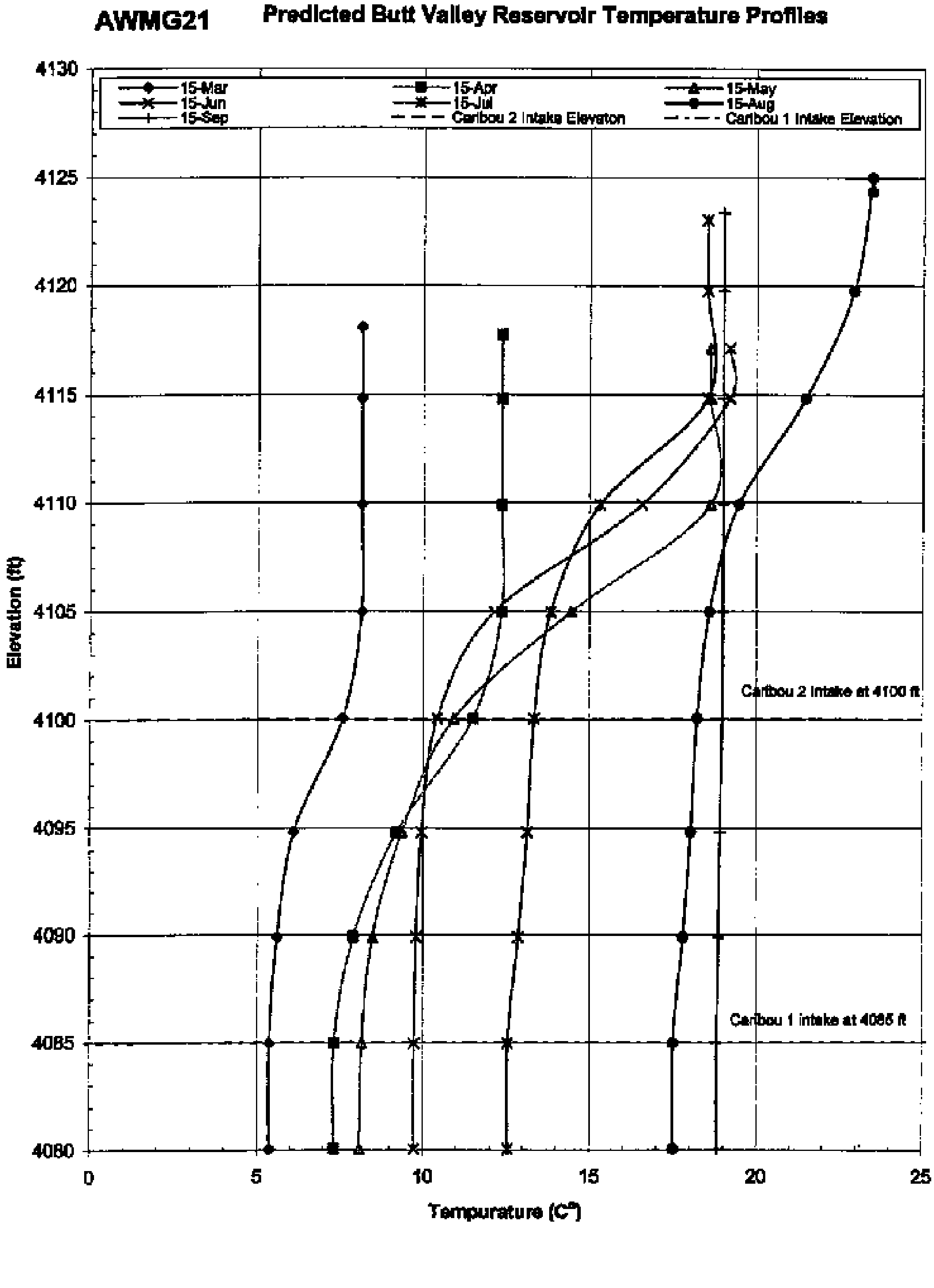
AWEI21 Predicted Butt Valley Reservoir Temperature Profiles



AWMF21 **Predicted Butt Valley Reservoir Temperature Profiles**



Appendix E2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Predicted Butt Valley Reservoir Temperature Profiles
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15-Jun
15-Jul
15-Aug
15-Sep
Caribou 2 Intake Elevaton
Caribou 1 Intake Elevation
Caribou 2 intake at 4100 ft
Caribou 1 intake at 4085 ft
Elevation (ft)
Tempurature (C°)
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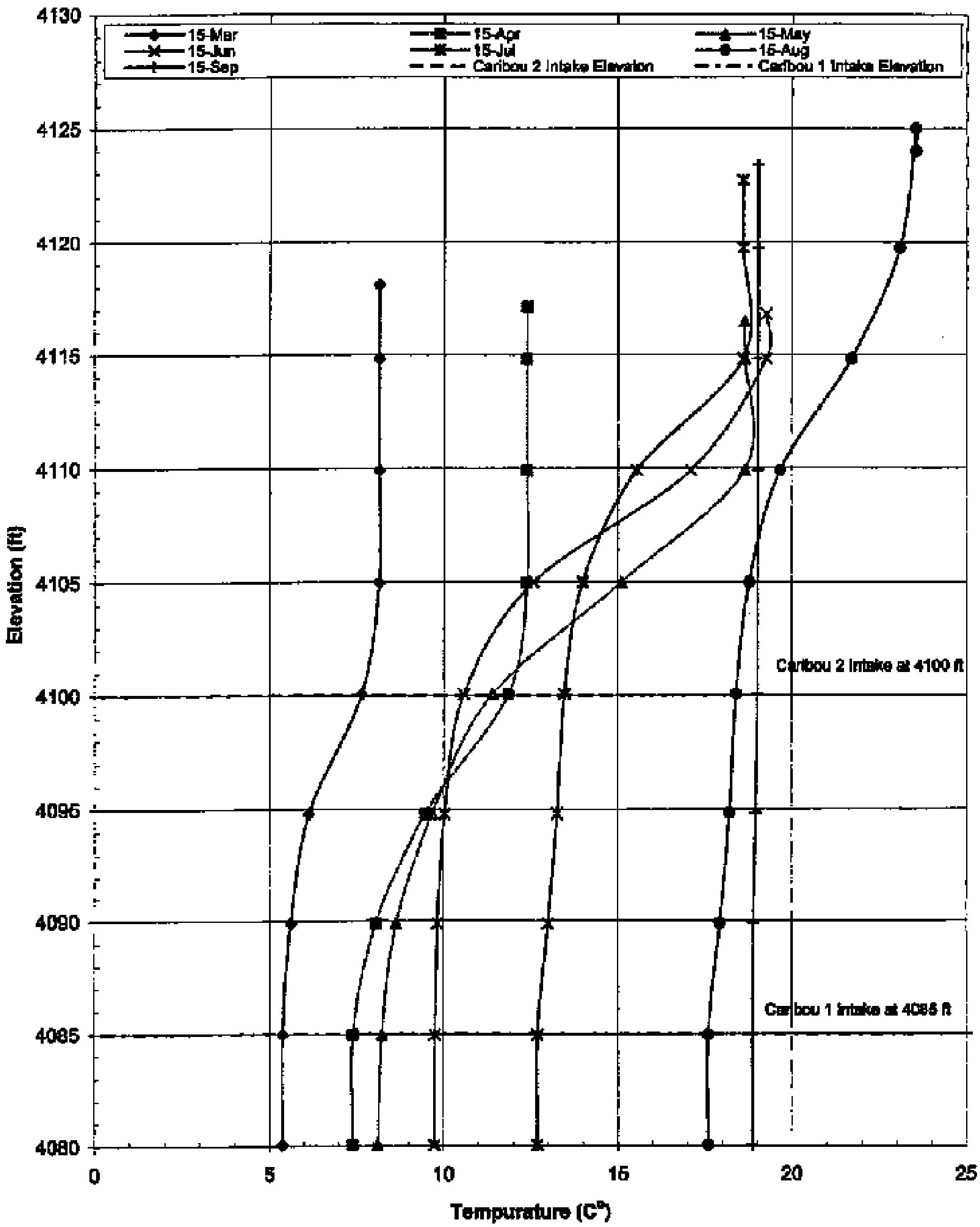
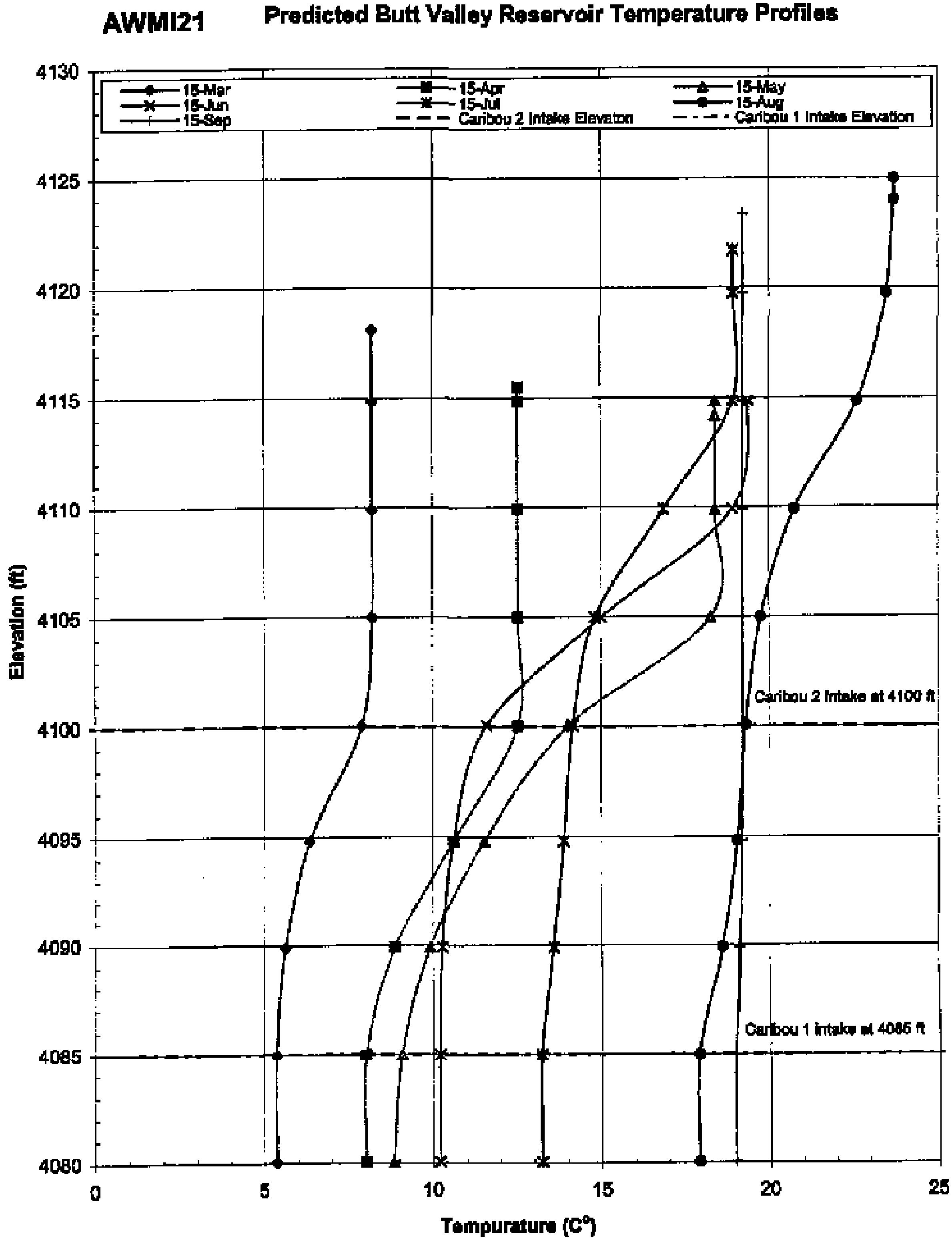
AWMH21 **Predicted Butt Valley Reservoir Temperature Profiles**





AWMI21
Predicted Butt Valley Reservoir Temperature Profiles
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15-Aug
15-Sep
Caribou 2 Intake Elevaton
Caribou 1 Intake Elevation
Caribou 2 Intake at 4100 ft
Caribou 1 Intake at 4085 ft
Elevation (ft)
Tempurature (C°)
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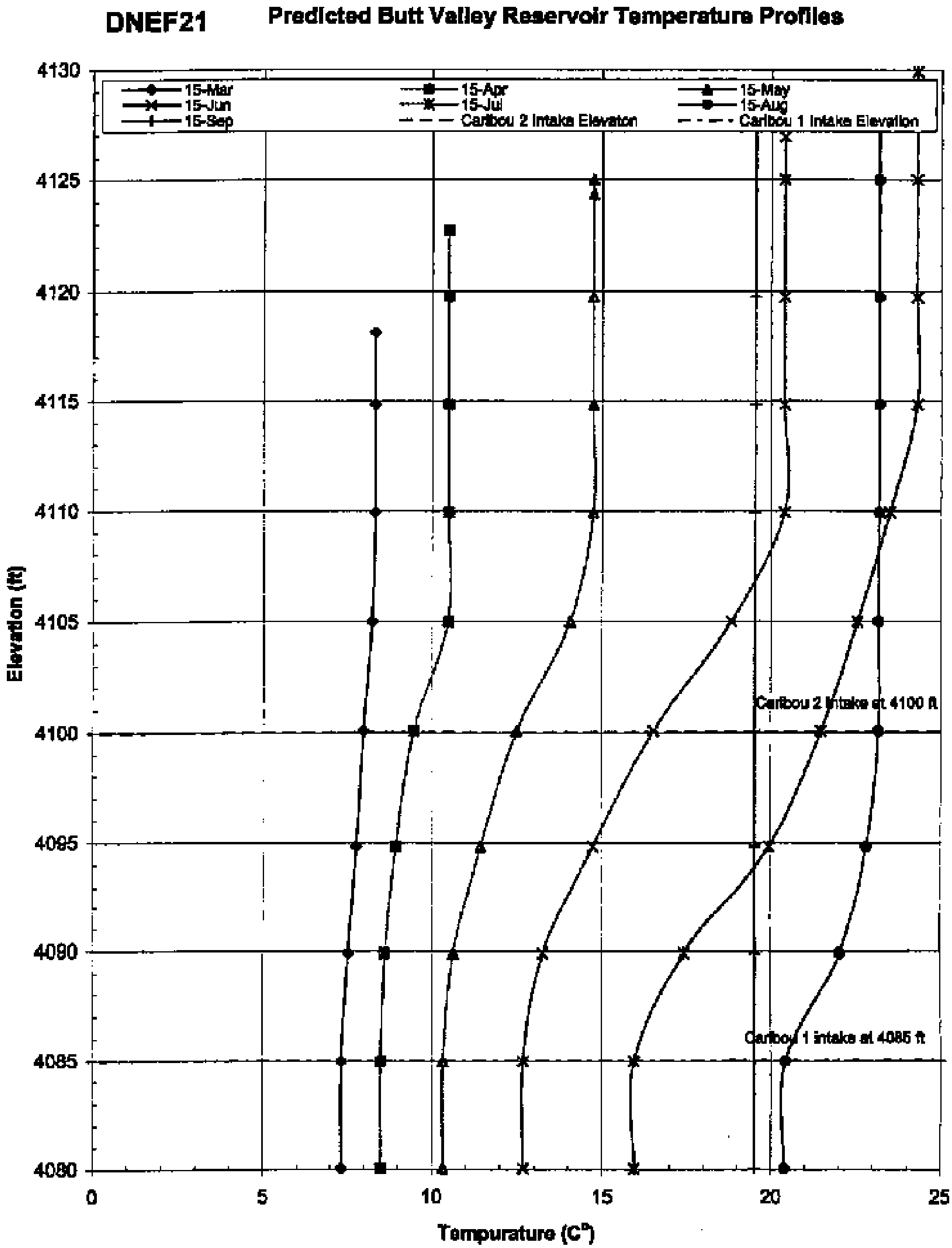

DNEF21
Predicted Butt Valley Reservoir Temperature Profiles
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15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Caribou 2 Intake Elevaton
Caribou 1 Intake Elevation
Caribou 2 Intake at 4100 ft
Caribou 1 intake at 4085 ft
Elevation (ft)
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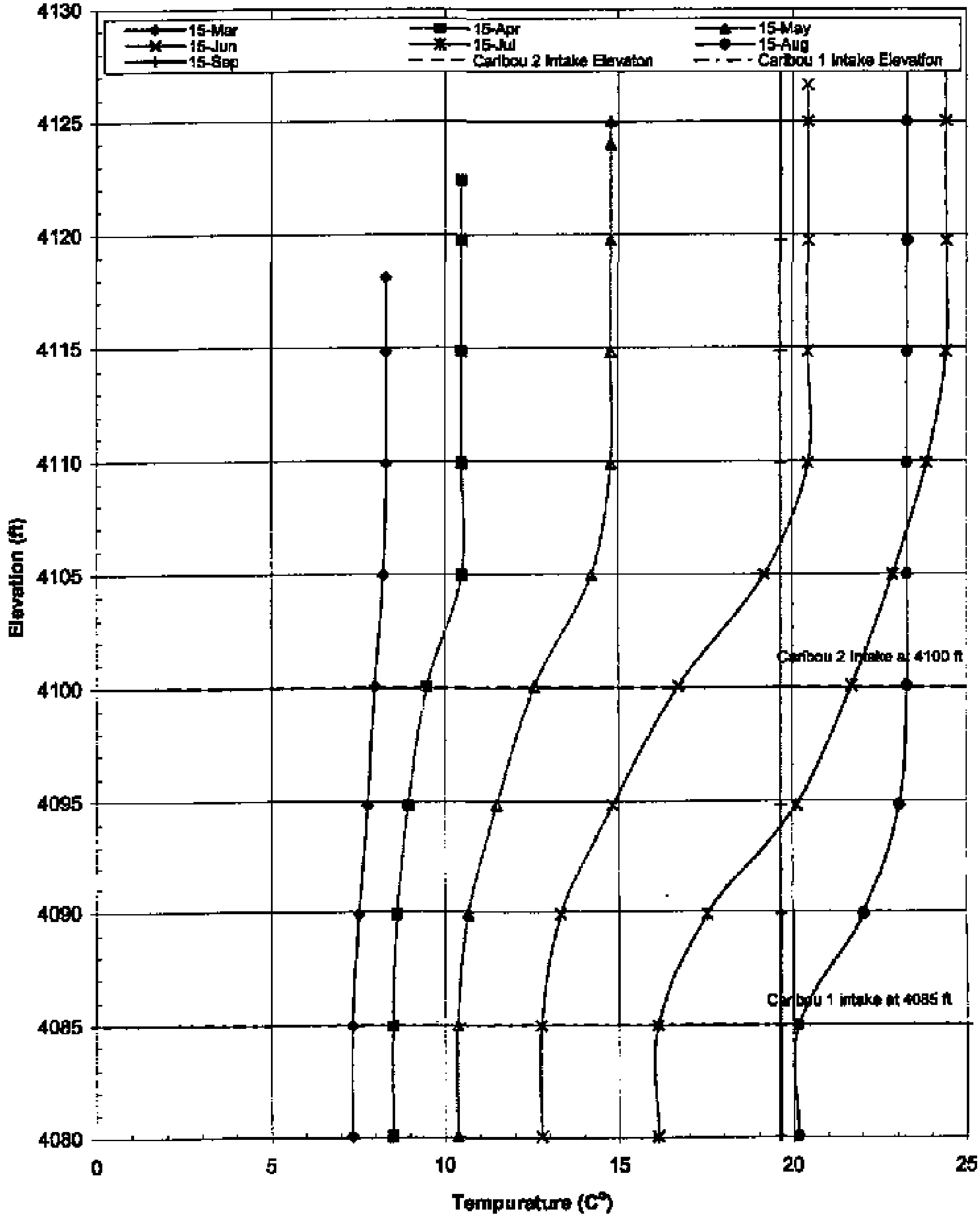
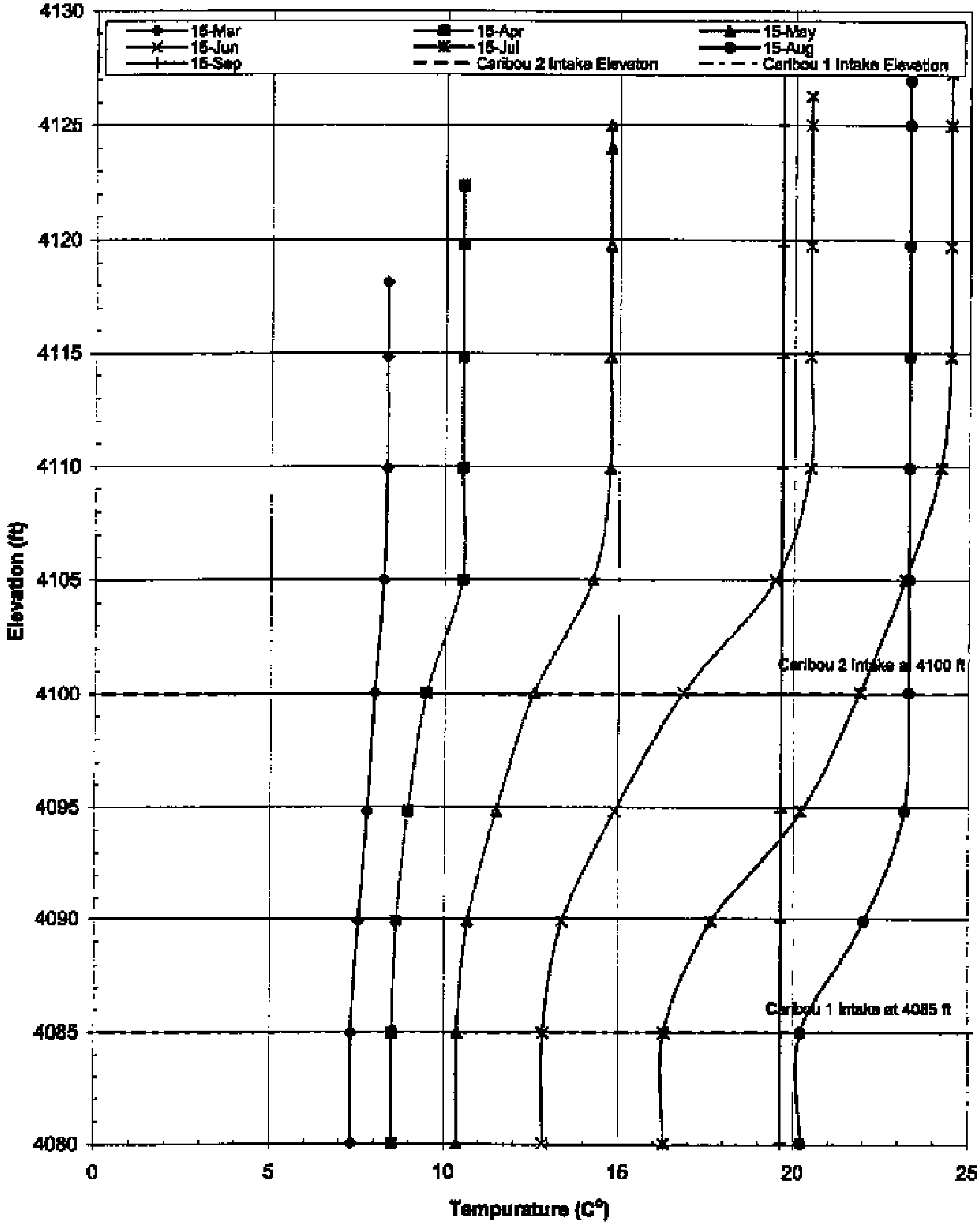
Tempurature (C°)

Appendix E2

DNEG21 **Predicted Butt Valley Reservoir Temperature Profiles**



DNEH21 Predicted Butt Valley Reservoir Temperature Profiles



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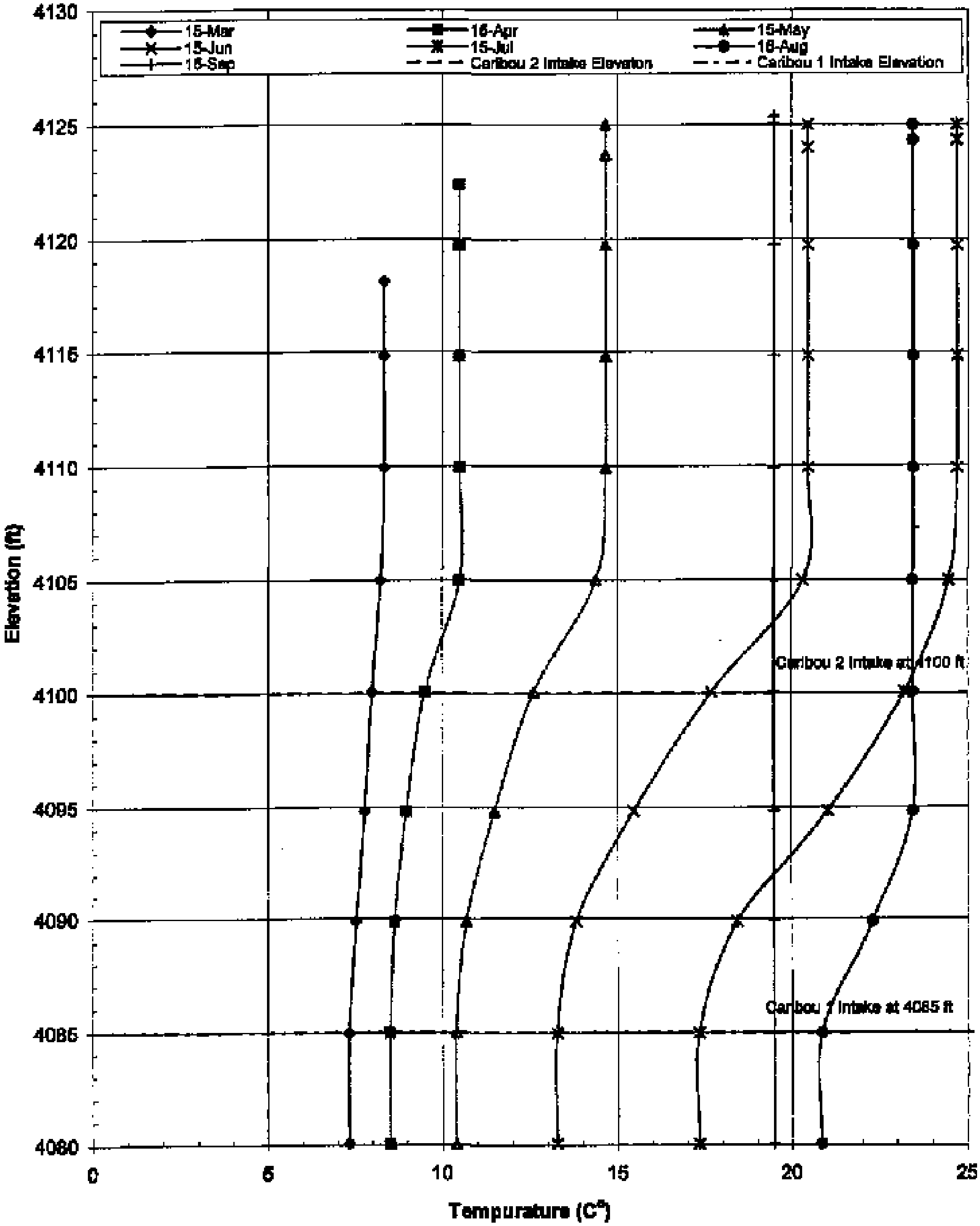
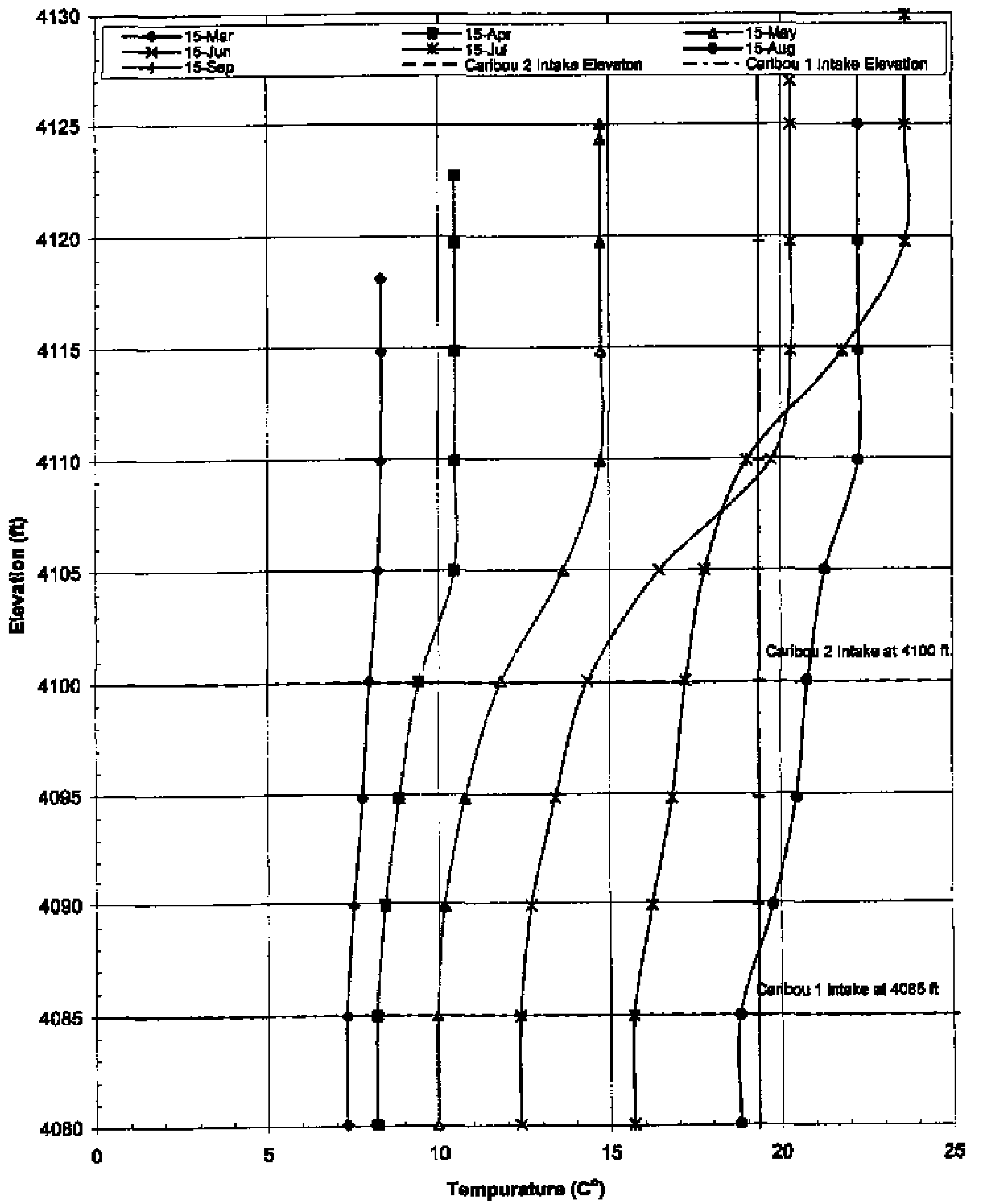
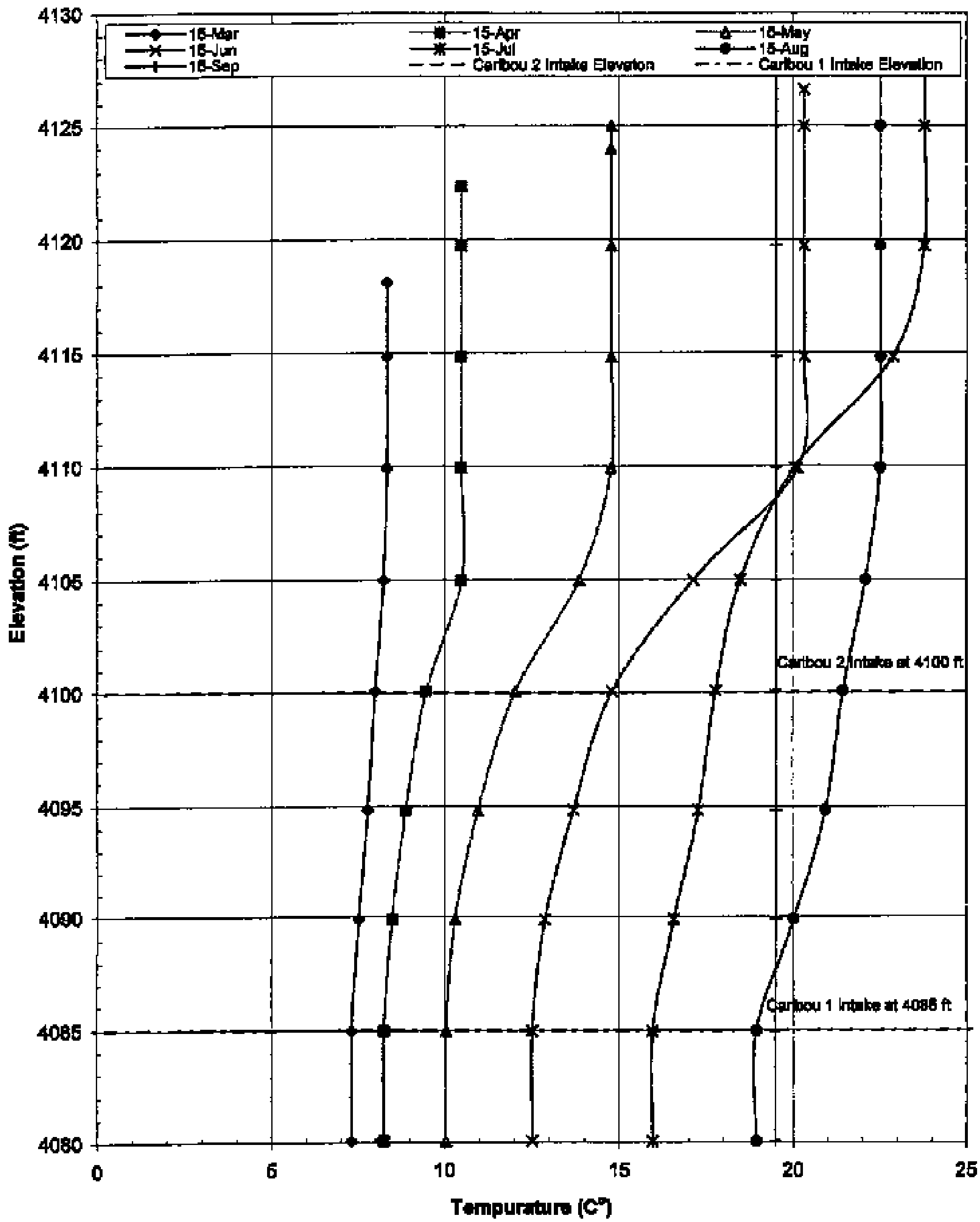


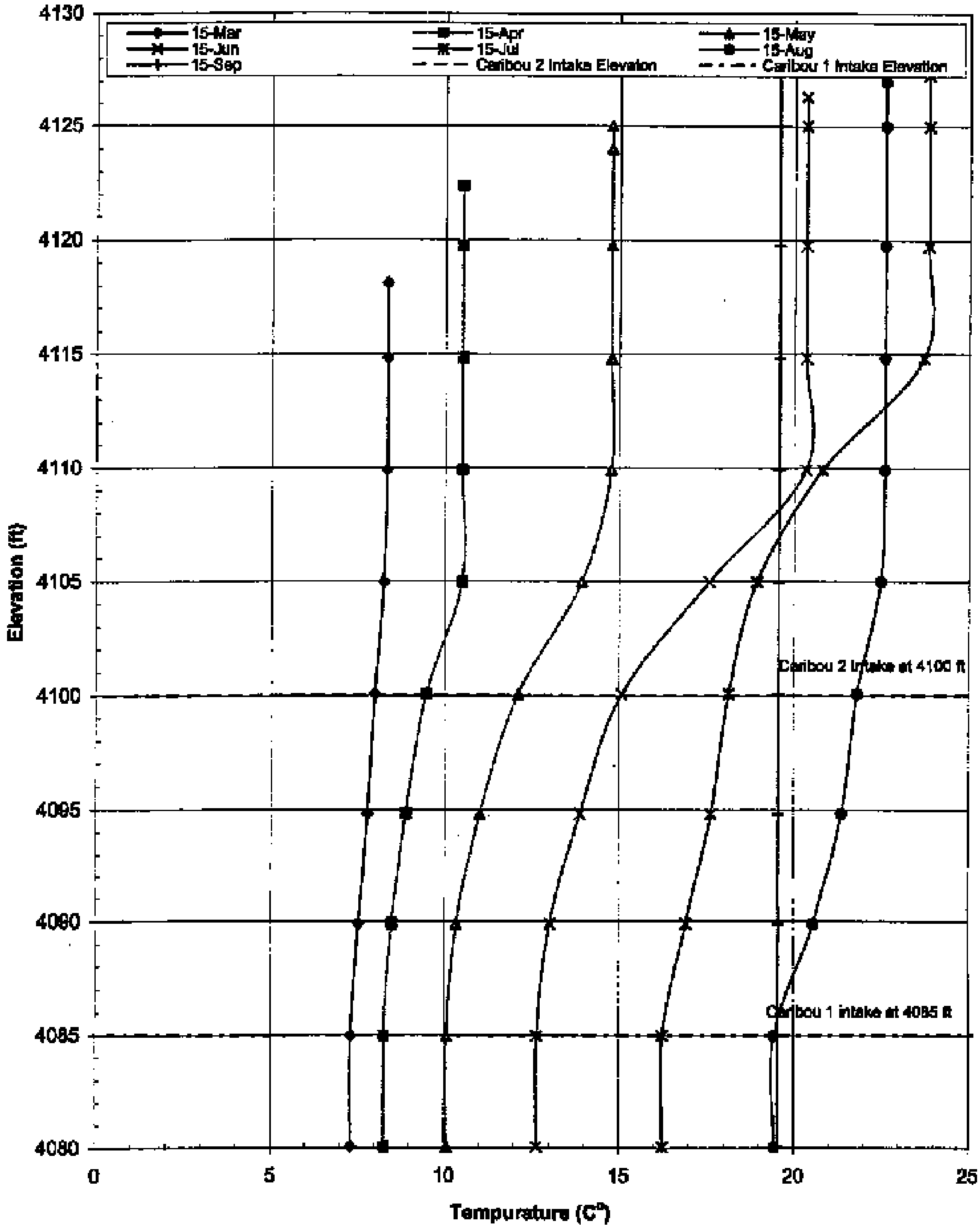
DNMF21 Predicted Butt Valley Reservoir Temperature Profiles

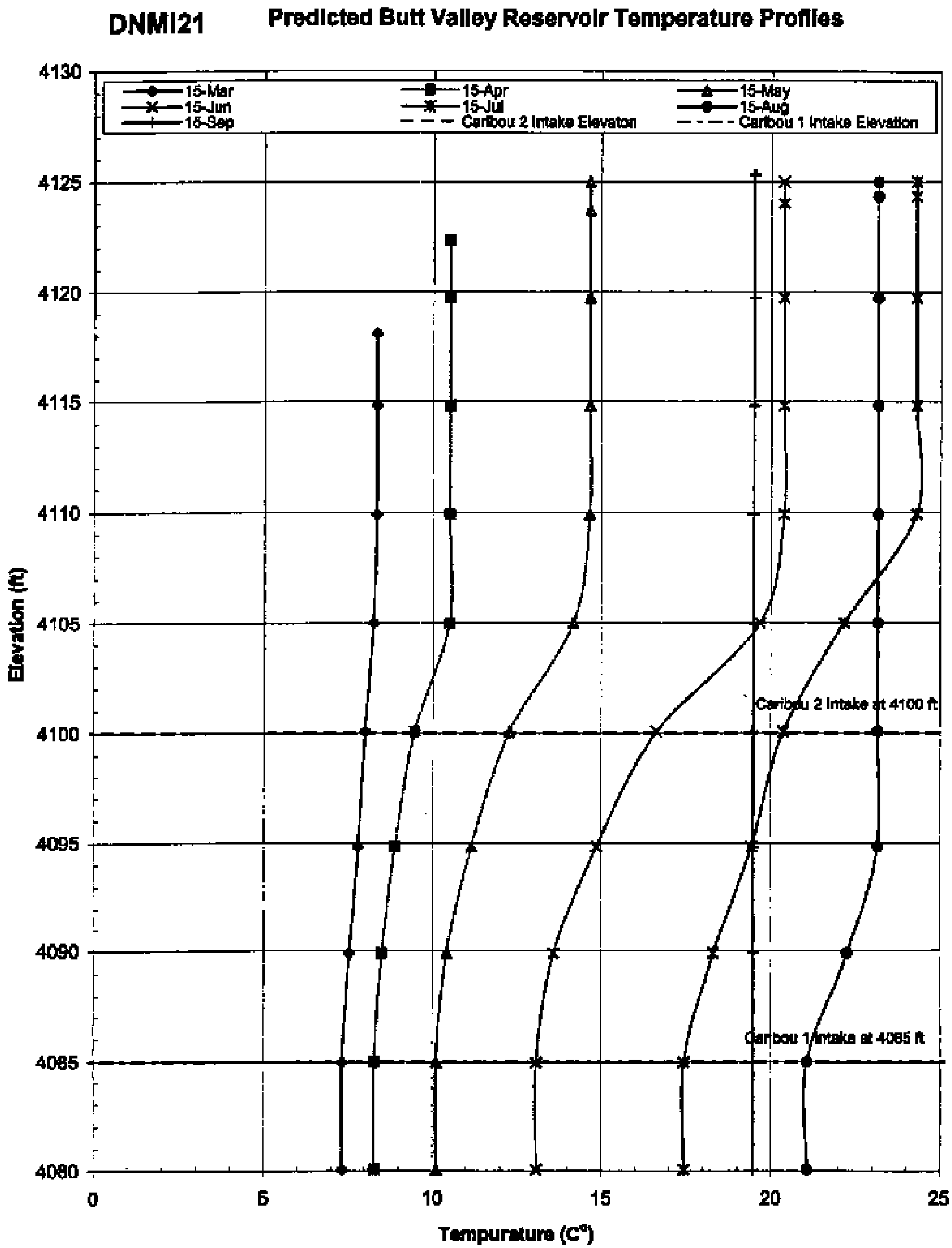


DNMG21 **Predicted Butt Valley Reservoir Temperature Profiles**



DNMH21 **Predicted Butt Valley Reservoir Temperature Profiles**

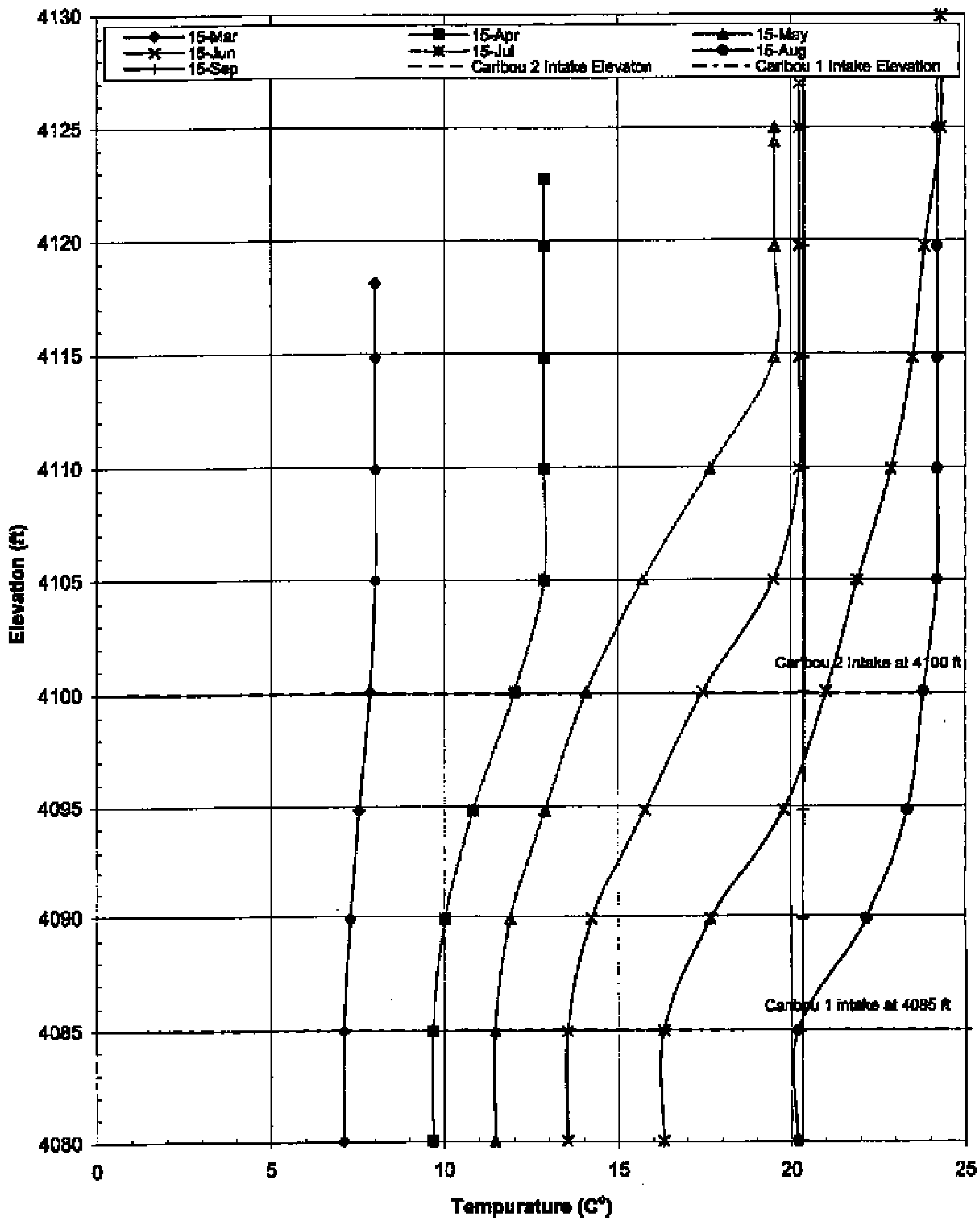




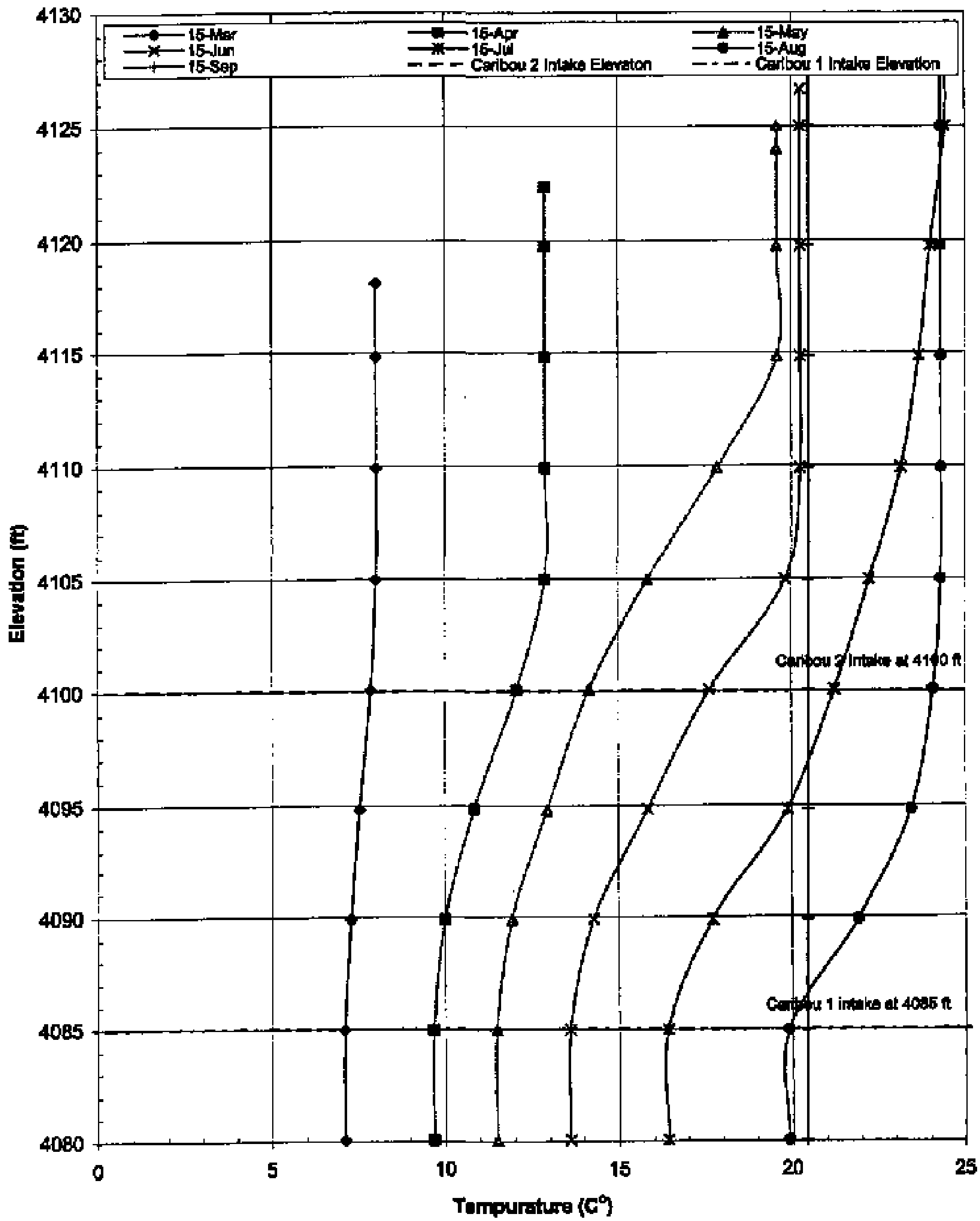
DNMI21
Predicted Butt Valley Reservoir Temperature Profiles
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Caribou 2 Intake Elevaton
Caribou 1 Intake Elevation
Caribou 2 Intake at 4100 ft
Caribou 1 Intake at 4085 ft
Elevation (ft)
Tempurature (C°)
4130
4125
4120
4115
4110
4105
4100
4095
4090
4085
4080
0
5
10
15
20
25

Appendix E2

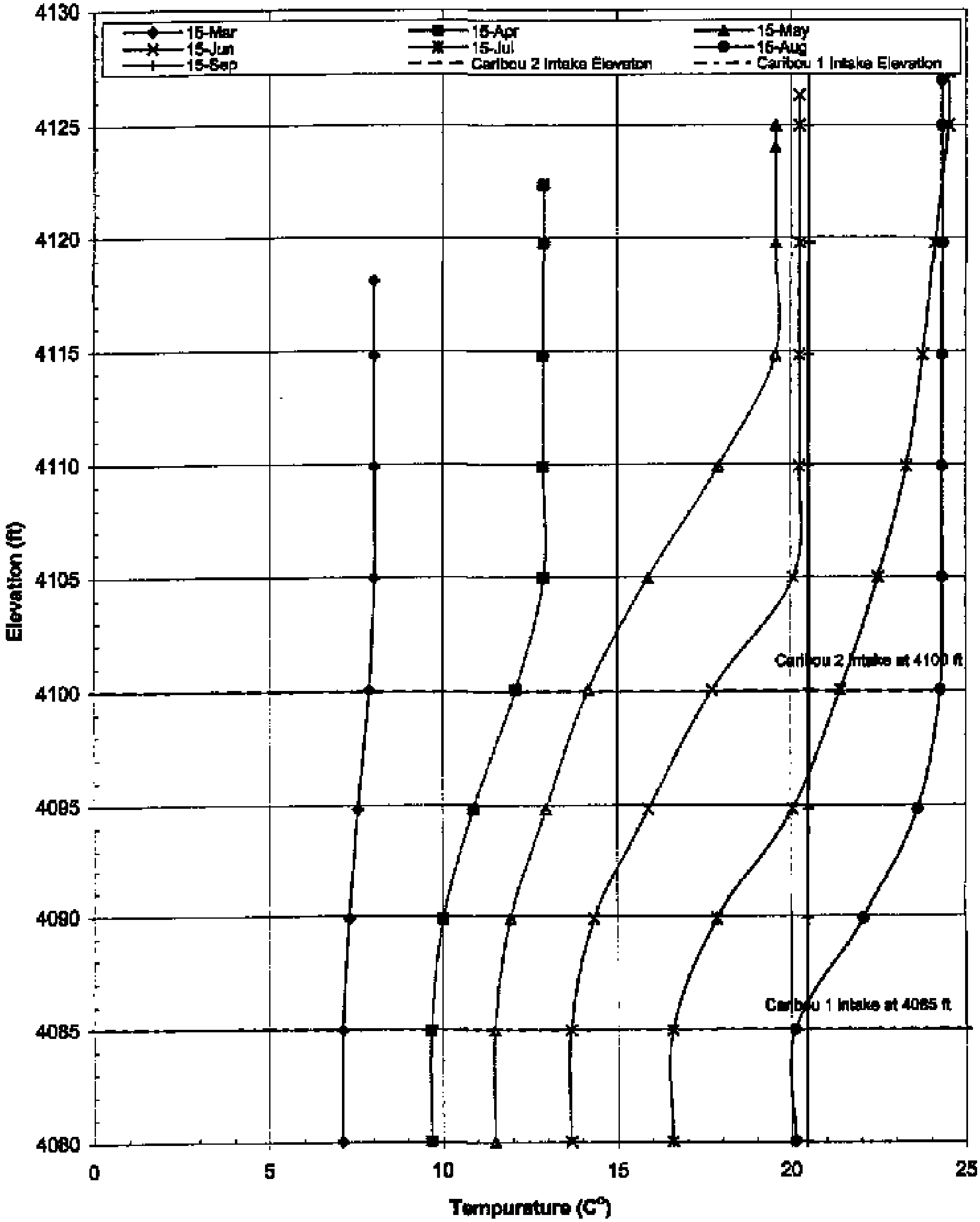
DWEF21 **Predicted Butt Valley Reservoir Temperature Profiles**



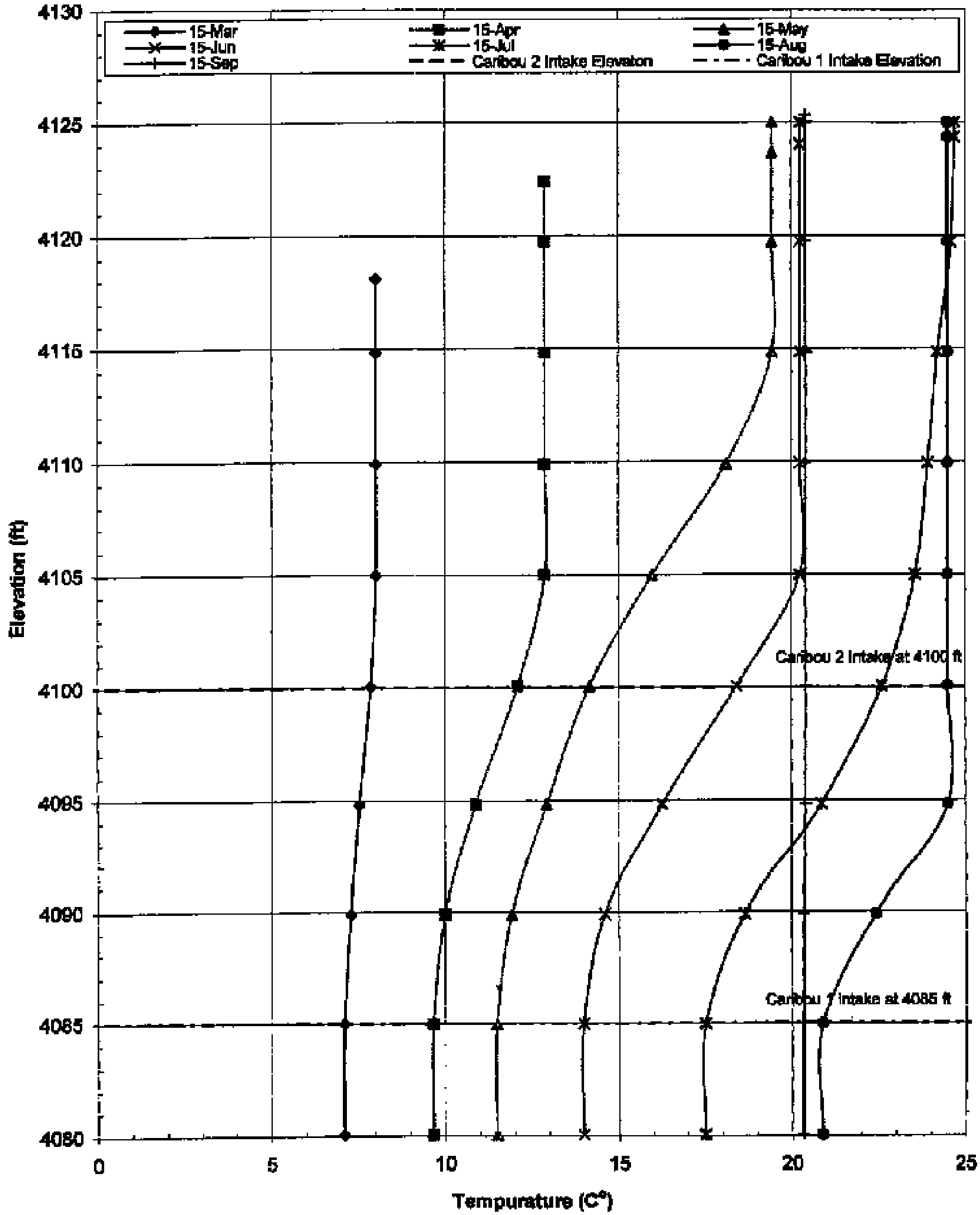
DWEG21 Predicted Butt Valley Reservoir Temperature Profiles



DWEH21 **Predicted Butt Valley Reservoir Temperature Profiles**

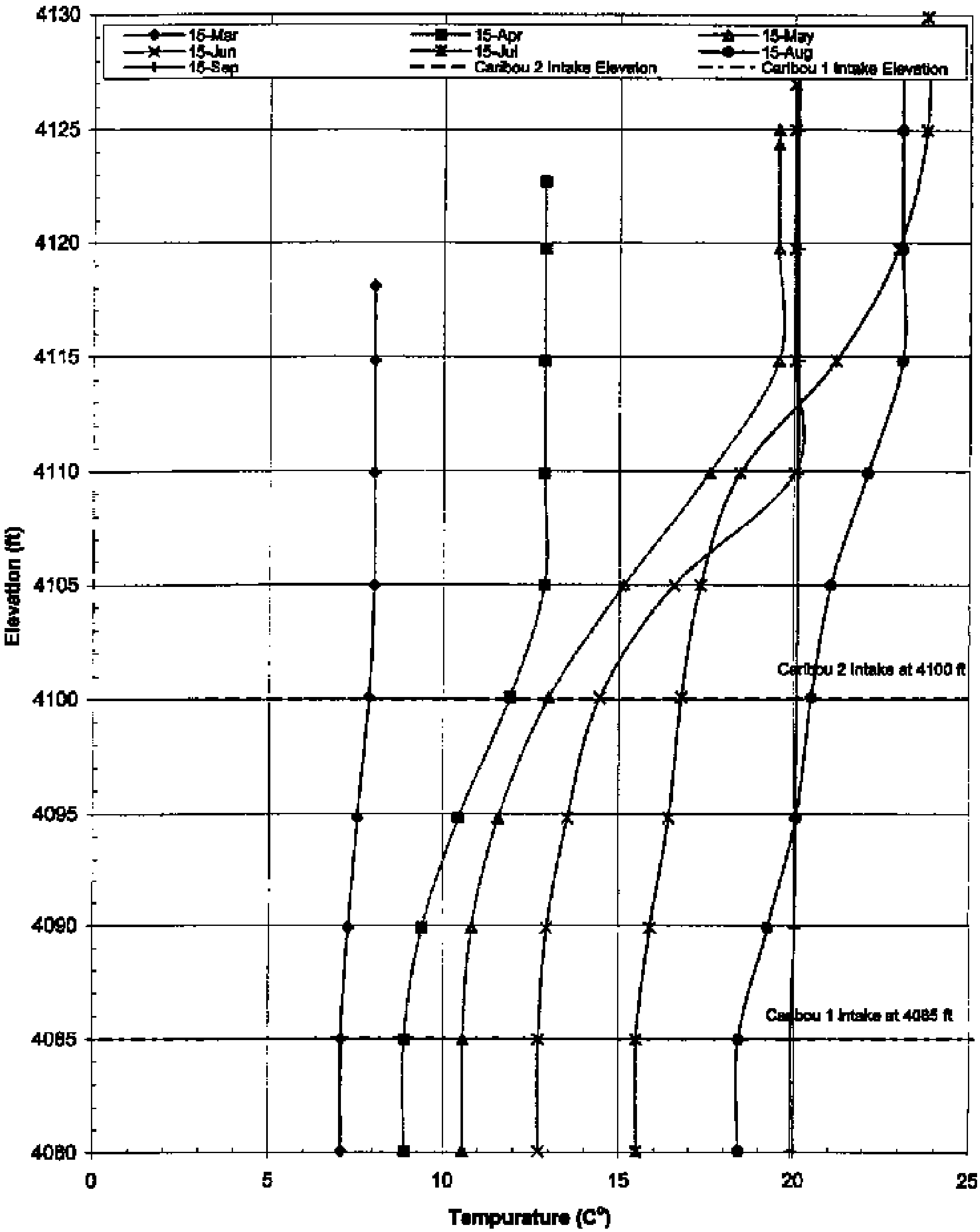


DWEI21 Predicted Butt Valley Reservoir Temperature Profiles

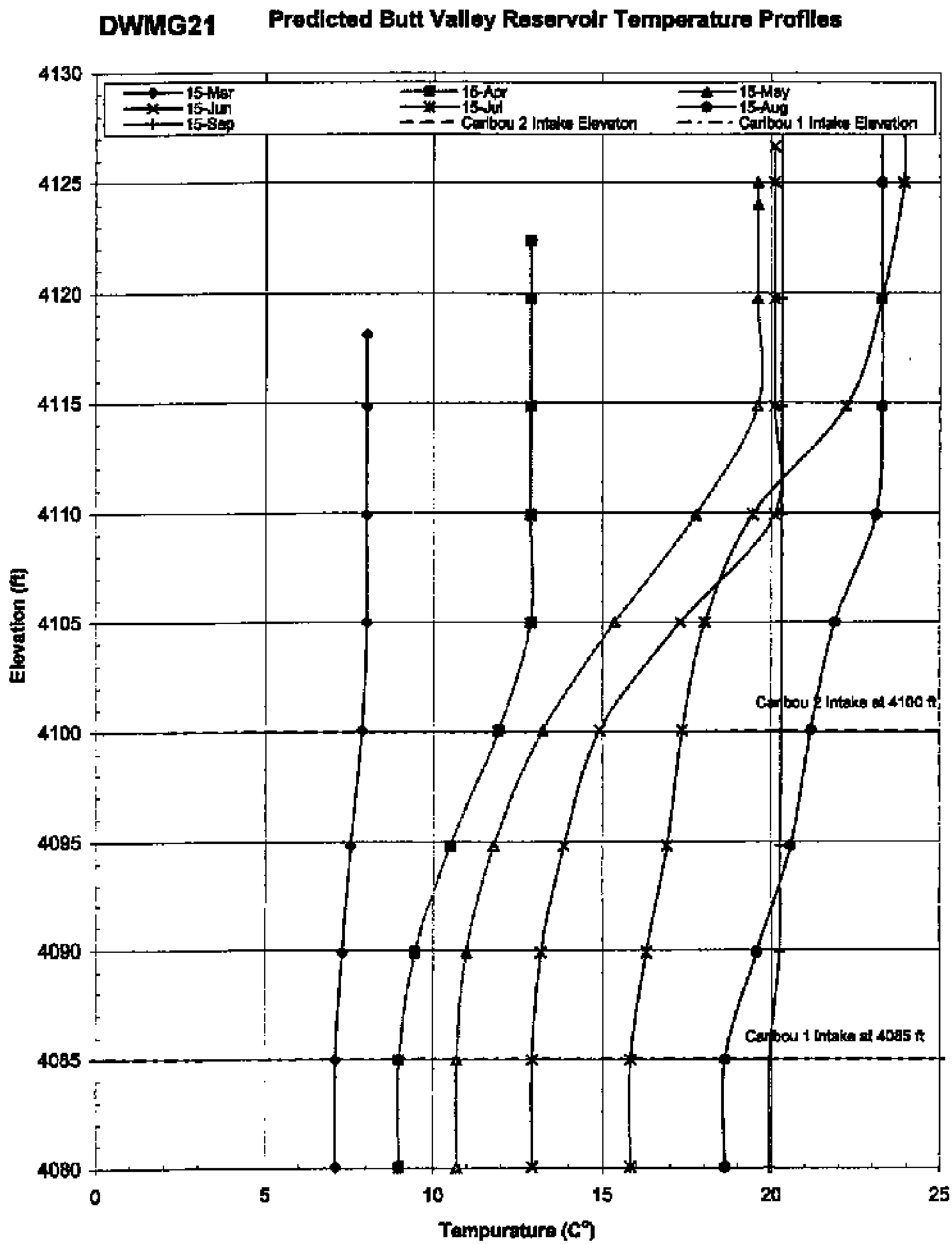


Appendix E2

DWMF21 **Predicted Butt Valley Reservoir Temperature Profiles**

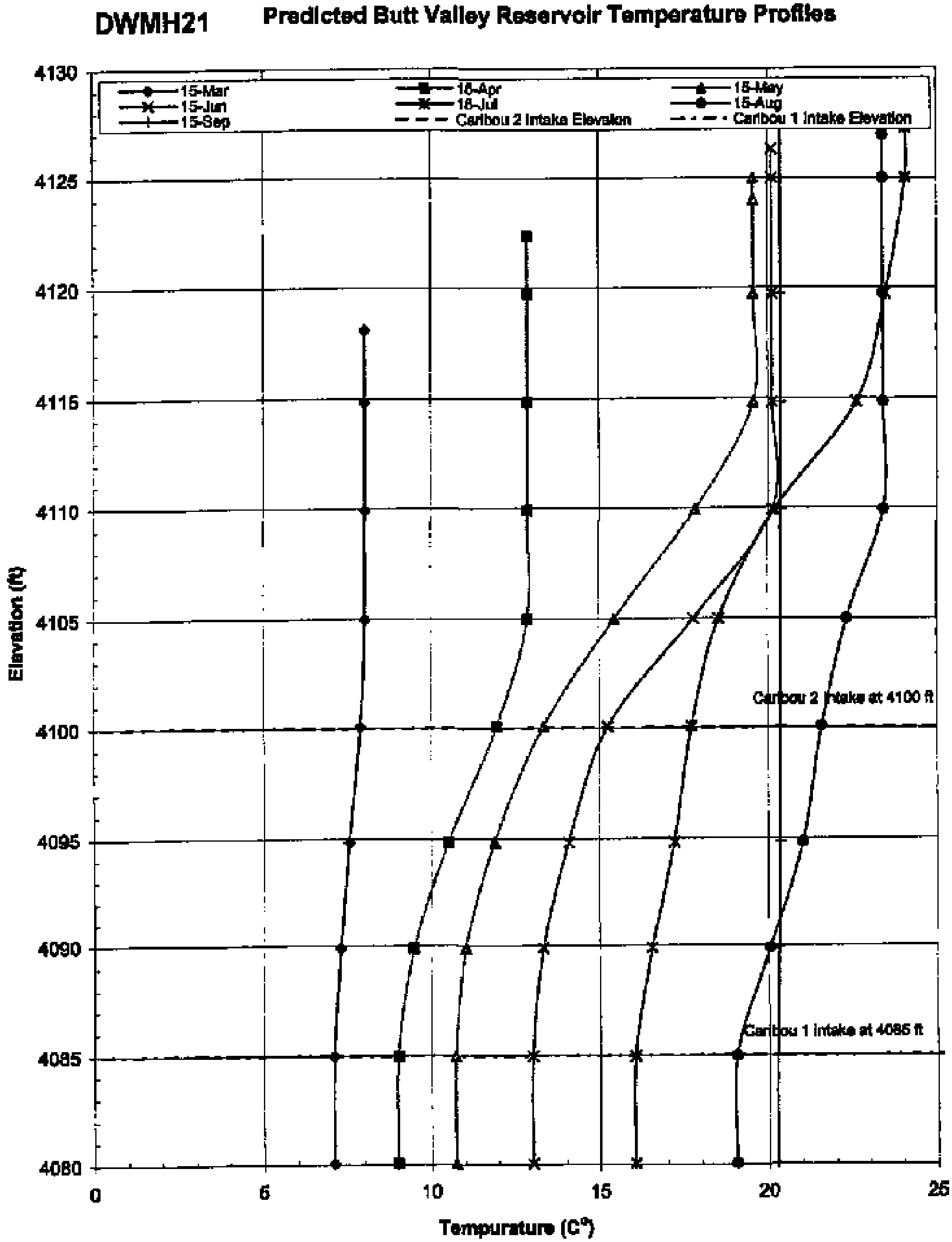


Appendix E2

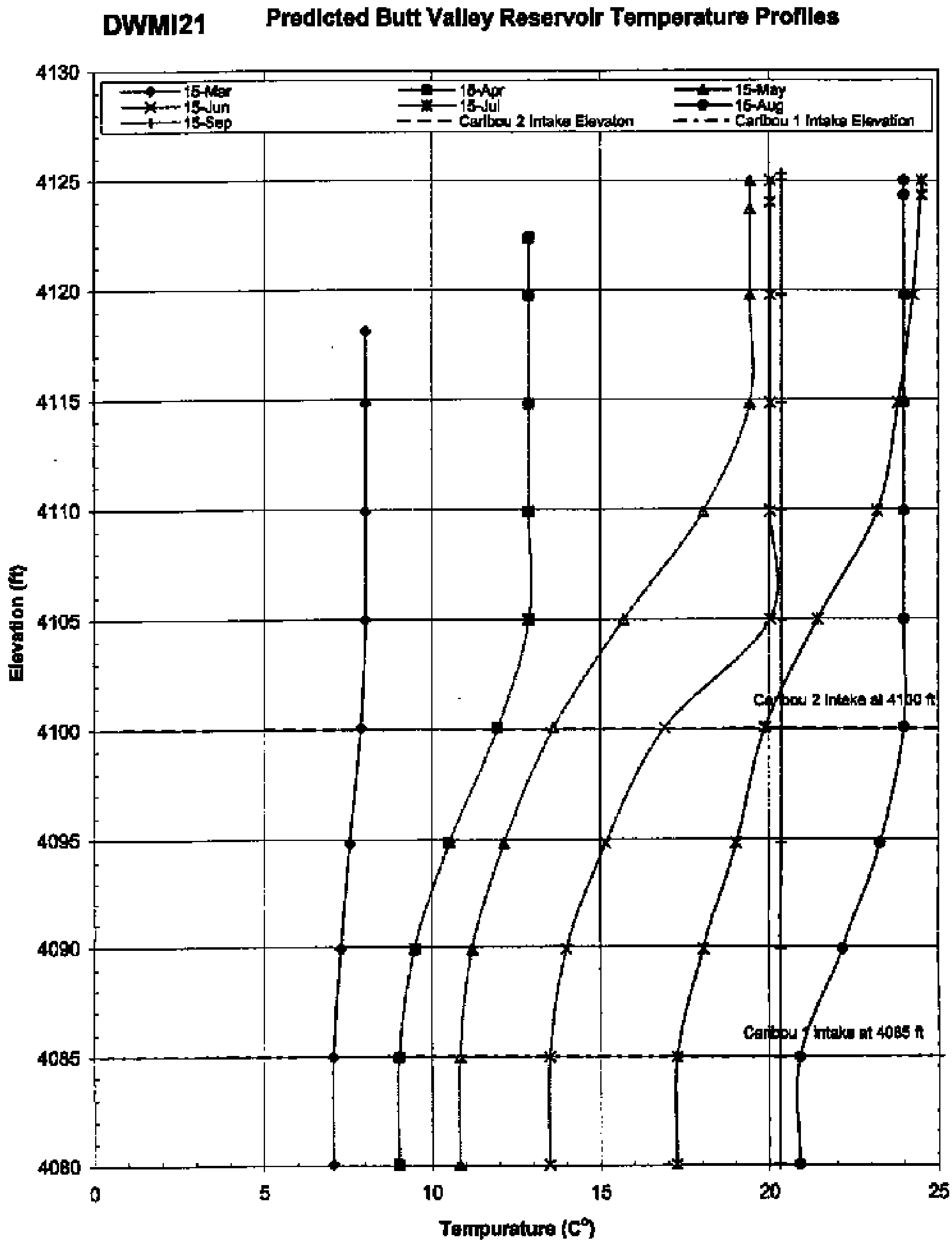


DWMG21
Predicted Butt Valley Reservoir Temperature Profiles
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Caribou 2 Intake Elevaton
Caribou 1 Intake Elevation
Caribou 2 Intake at 4100 ft
Caribou 1 Intake at 4085 ft
Elevation (ft)
4130
4125
4120
4115
4110
4105
4100
4095
4090
4085
4080
0
5
10
15
20
25
Tempurature (C°)

Appendix E2


DWMH21
Predicted Butt Valley Reservoir Temperature Profiles
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Caribou 2 Intake Elevation
Caribou 1 Intake Elevation
Caribou 2 Intake at 4100 ft
Caribou 1 Intake at 4085 ft
Elevation (ft)
Tempurature (C°)
4130
4125
4120
4115
4110
4105
4100
4095
4090
4085
4080
0
5
10
15
20
25

Appendix E2



DWMI21
Predicted Butt Valley Reservoir Temperature Profiles
15-Mar
15-Apr
15-May
15-Jun
15-Jul
15-Aug
15-Sep
Caribou 2 Intake Elevaton
Caribou 1 Intake Elevation
Caribou 2 intake at 4100 ft
Caribou 1 intake at 4085 ft
Elevation (ft)
Tempurature (C°)
4130
4125
4120
4115
4110
4105
4100
4095
4090
4085
4080
0
5
10
15
20
25

Appendix E2

UPPER NORTH FORK FEATHER RIVER PROJECT

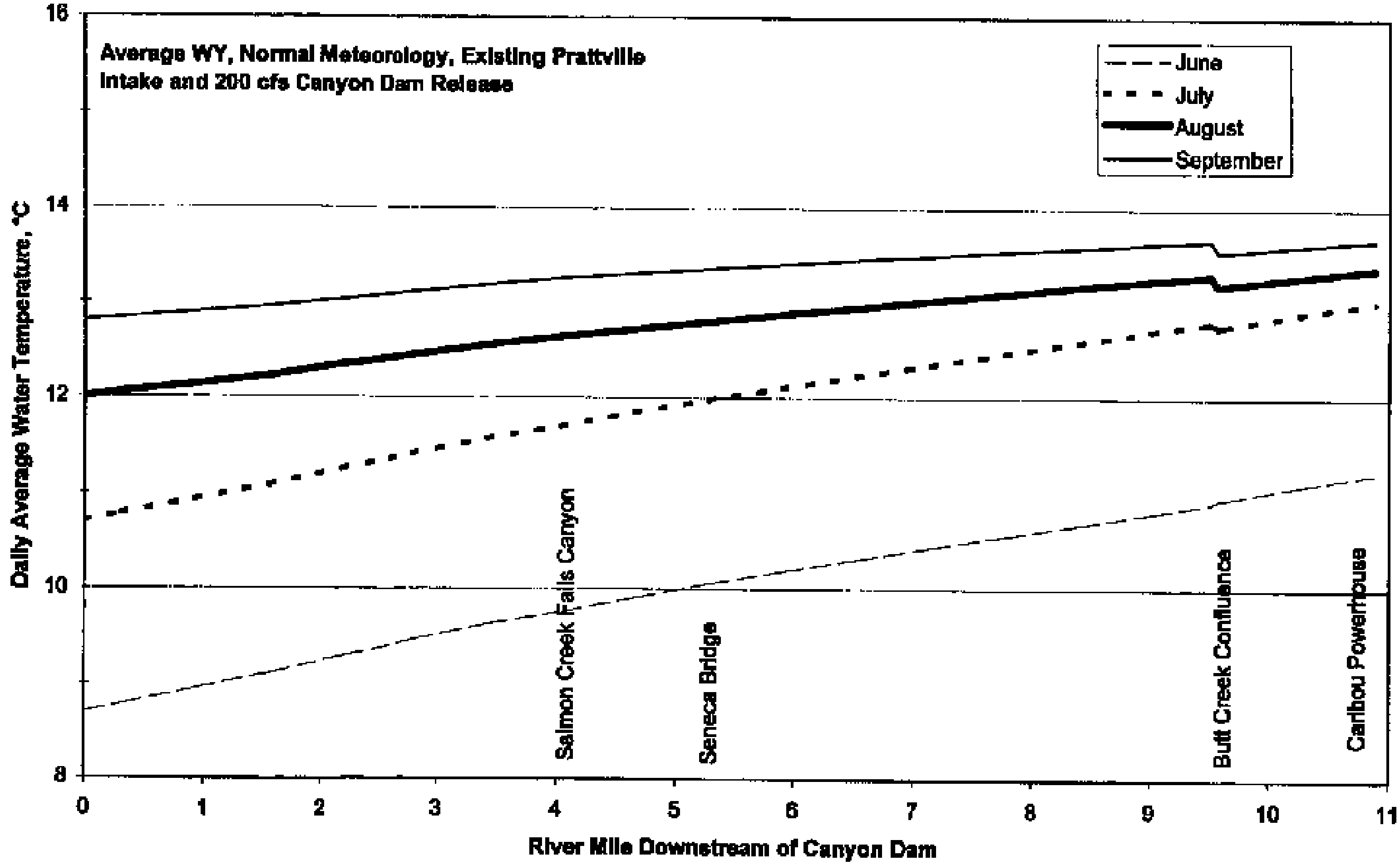
FERC No. 2105

Appendix E2-H

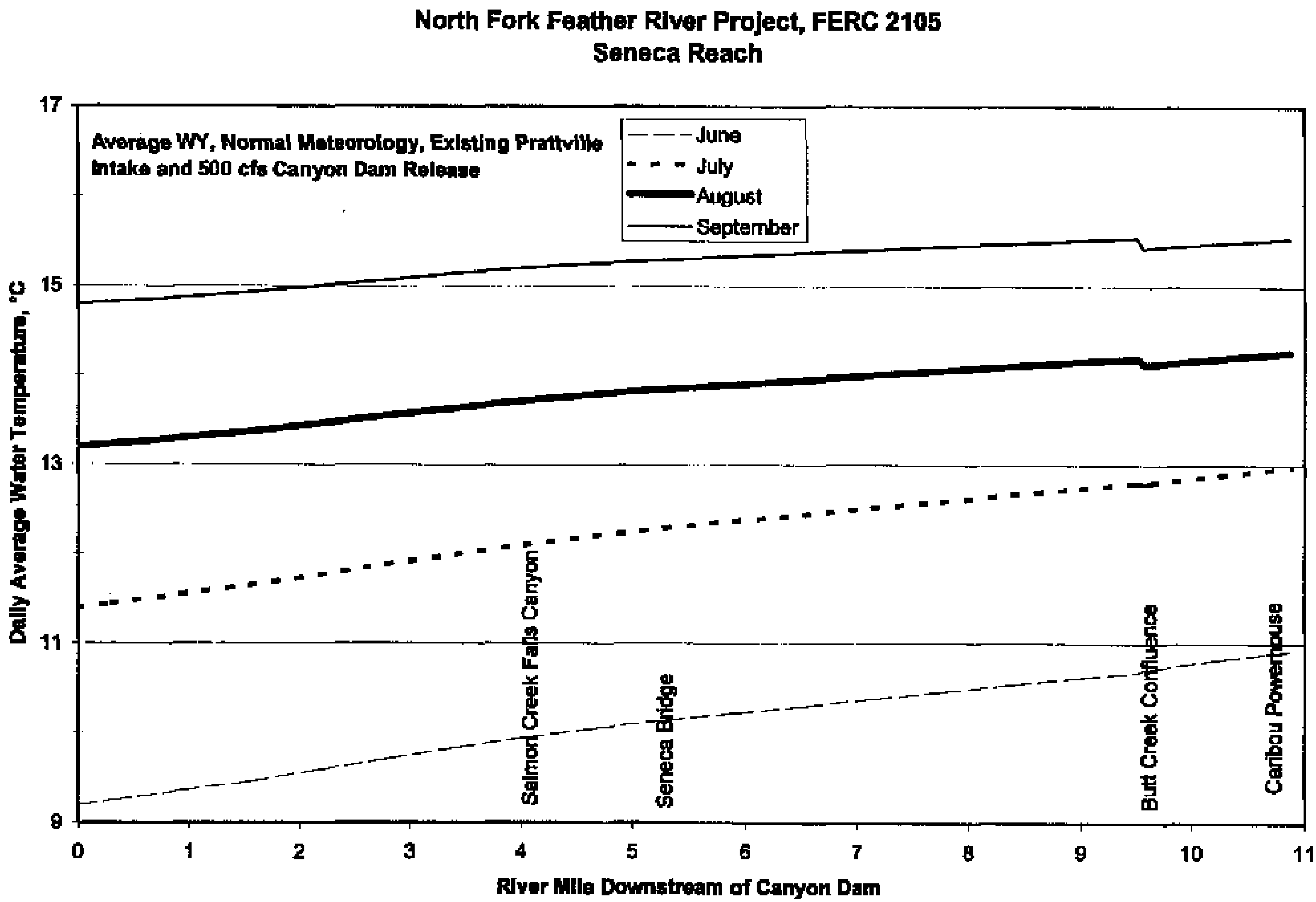
Additional Model Scenario Runs

Longitudinal Temperature Profiles for Seneca Reach

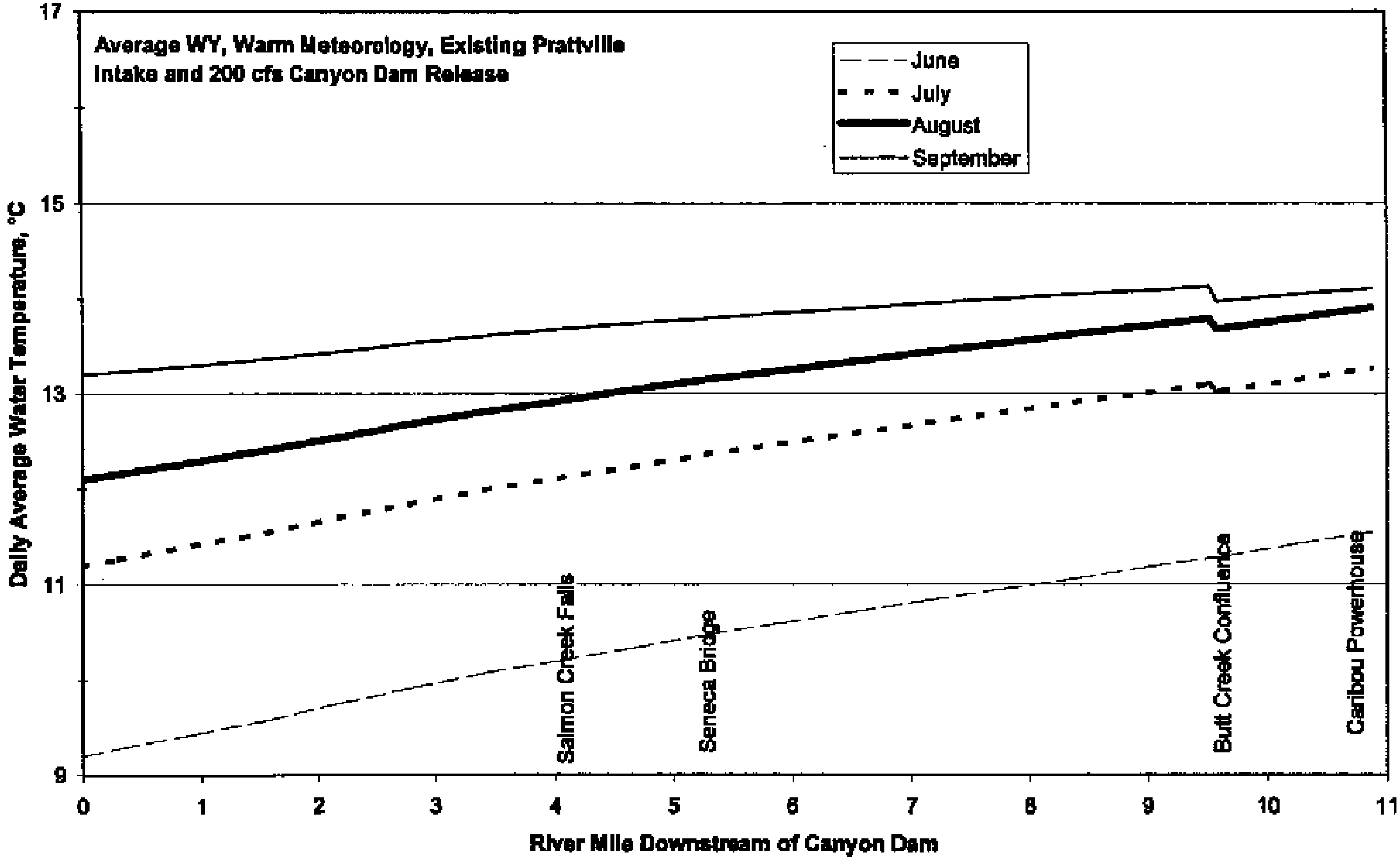
North Fork Feather River Project, FERC 2105
Seneca Reach



ANEG

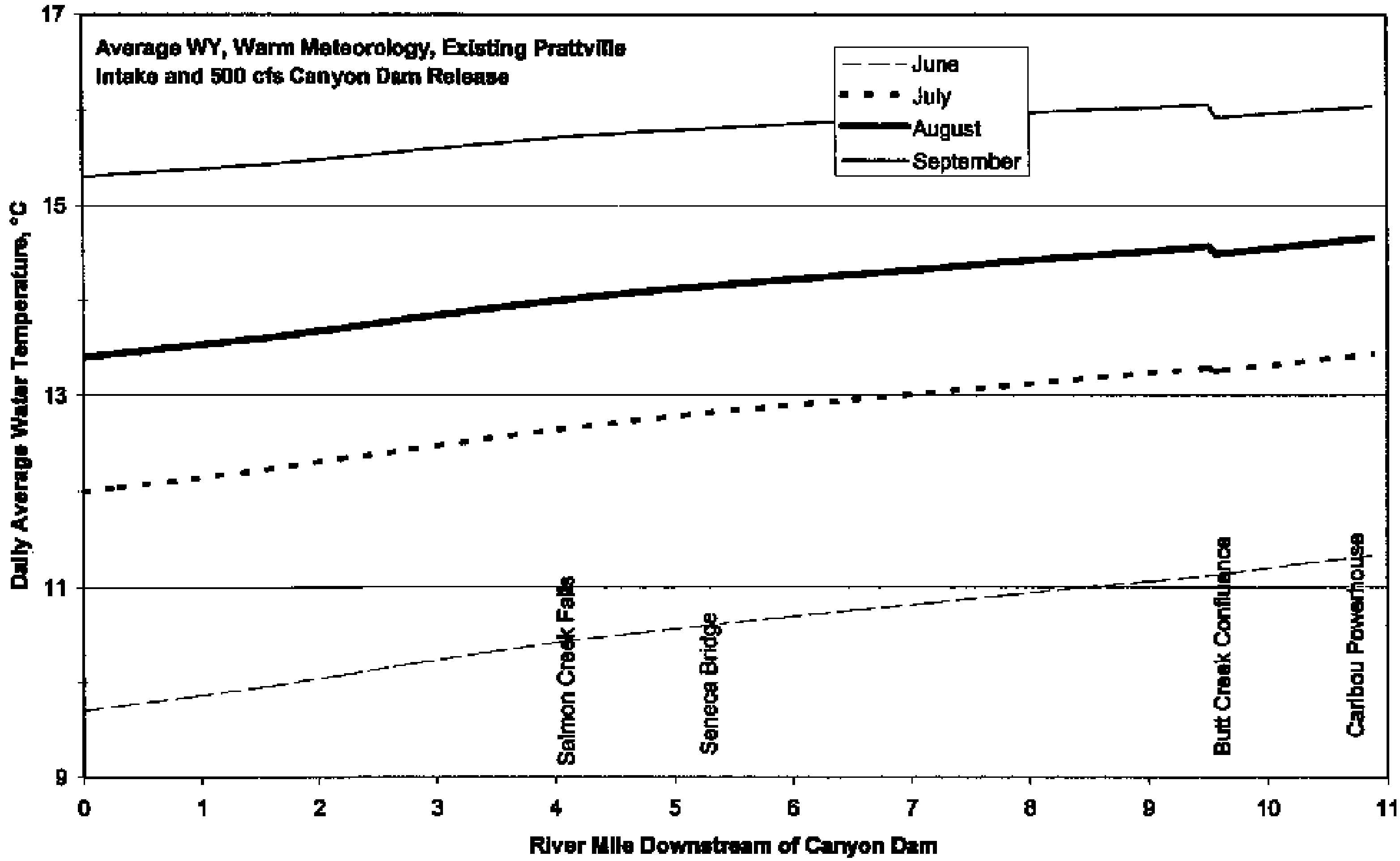

North Fork Feather River Project, FERC 2105
Seneca Reach
Average WY, Normal Meteorology, Existing Prattville Intake and 500 cfs Canyon Dam Release
June
July
August
September
Salmon Creek Falls Canyon
Seneca Bridge
Butt Creek Confluence
Caribou Powerhouse
Daily Average Water Temperature, °C
River Mile Downstream of Canyon Dam
17
15
13
11
9
0
1
2
3
4
5
6
7
8
9
10
11

North Fork Feather River Project, FERC 2105
Seneca Reach



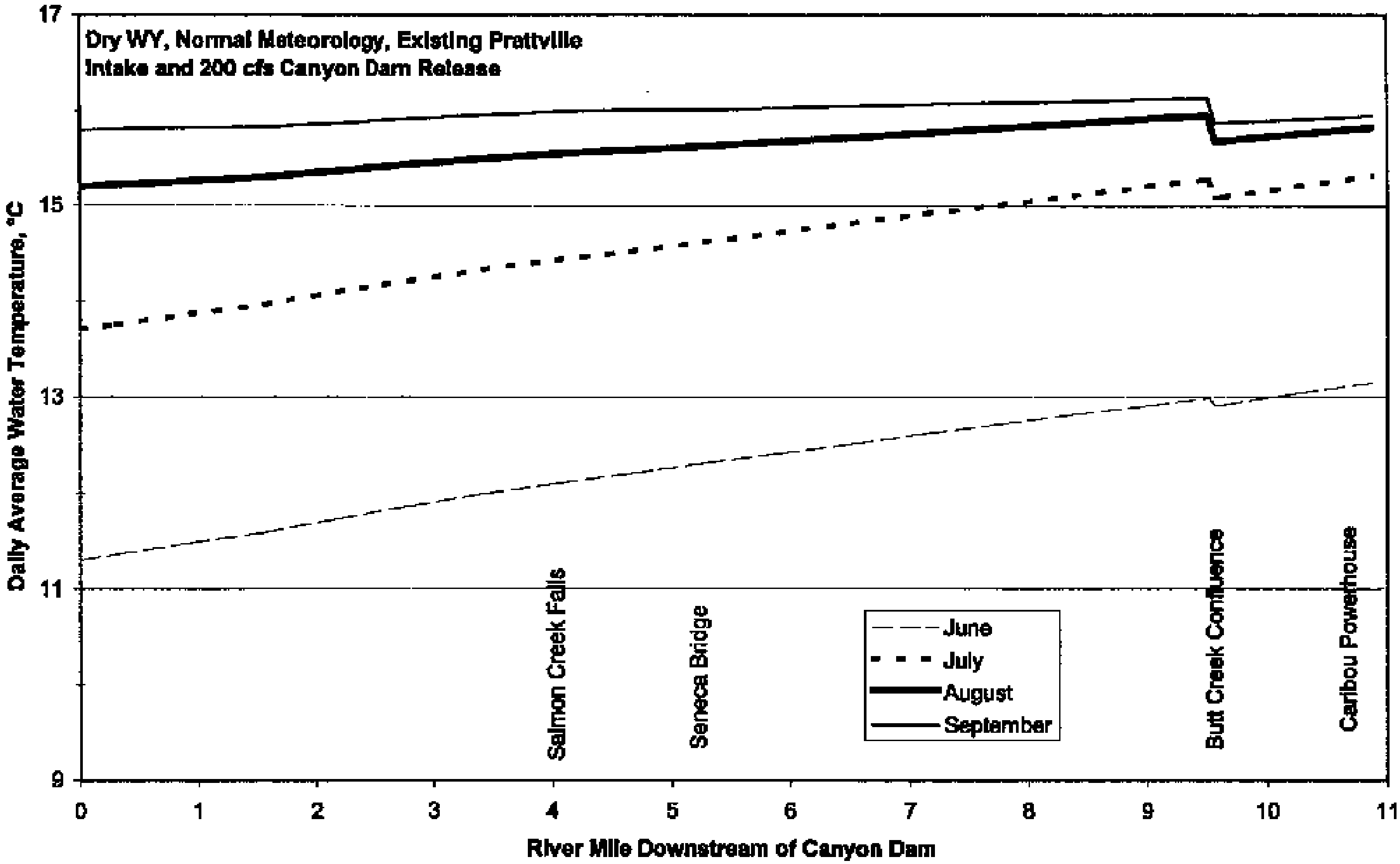
AWEG

North Fork Feather River Project, FERC 2105
Seneca Reach



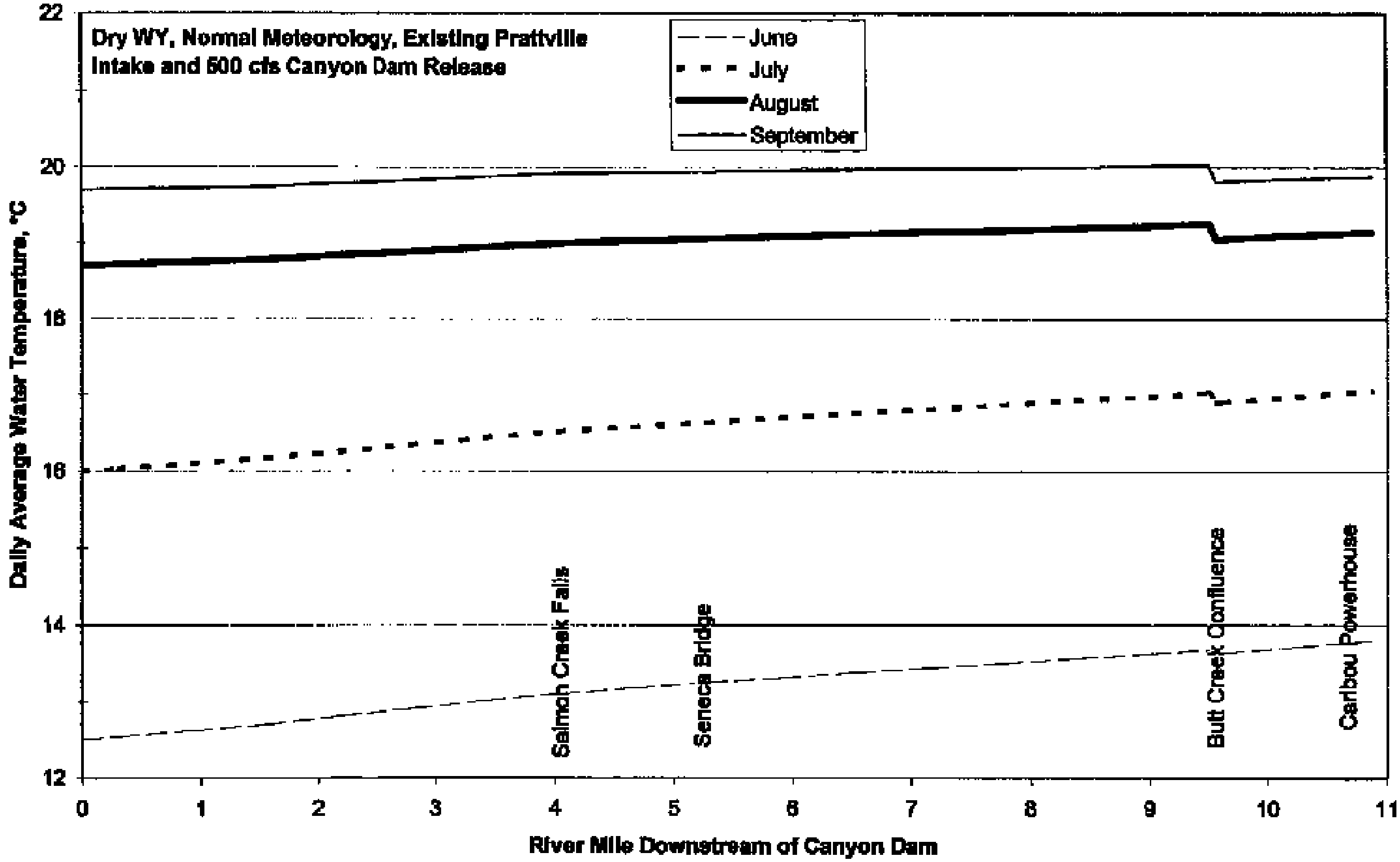
AWEI

North Fork Feather River Project, FERC 2105
Seneca Reach



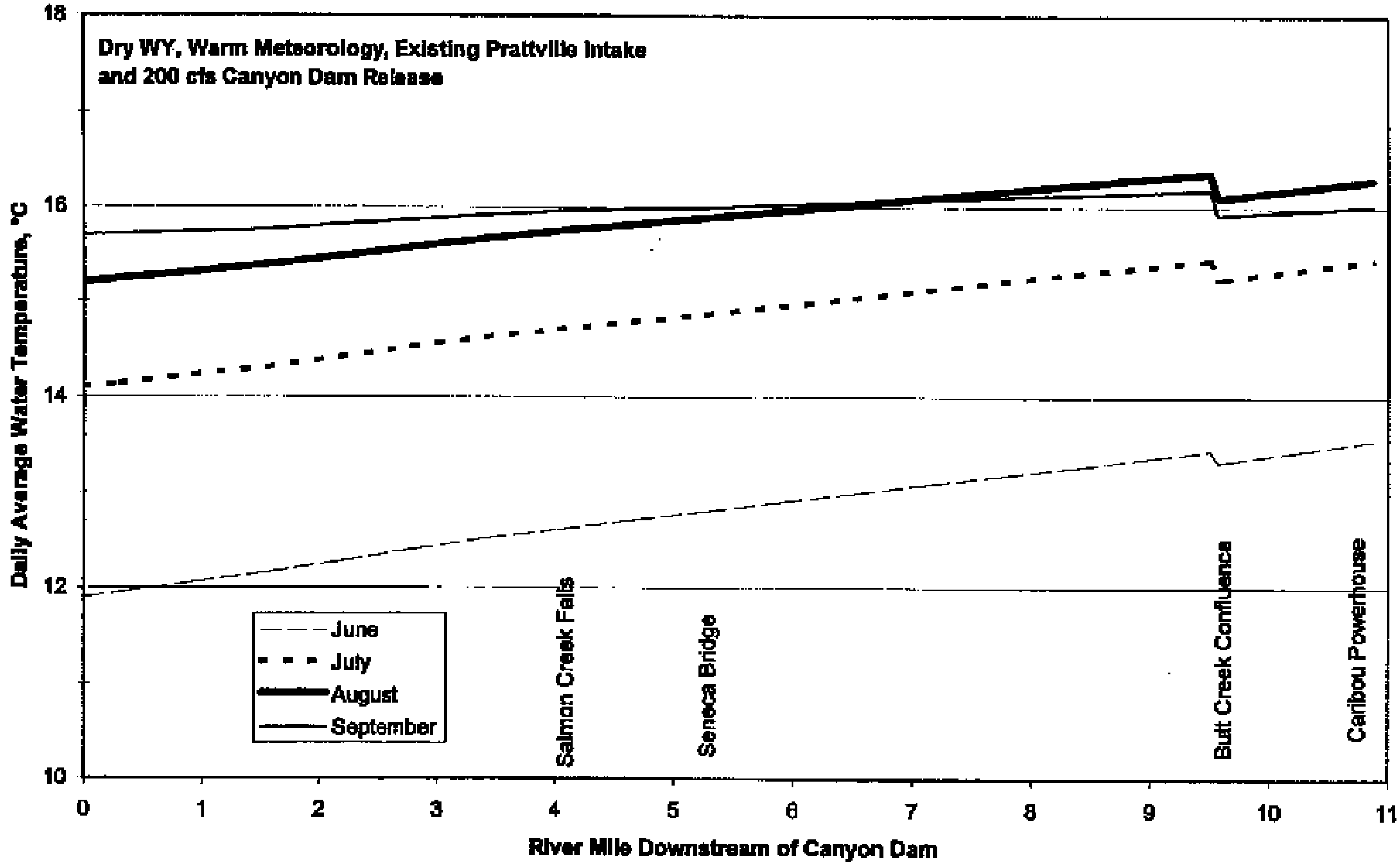
DNEG

North Fork Feather River Project, FERC 2105
Seneca Reach

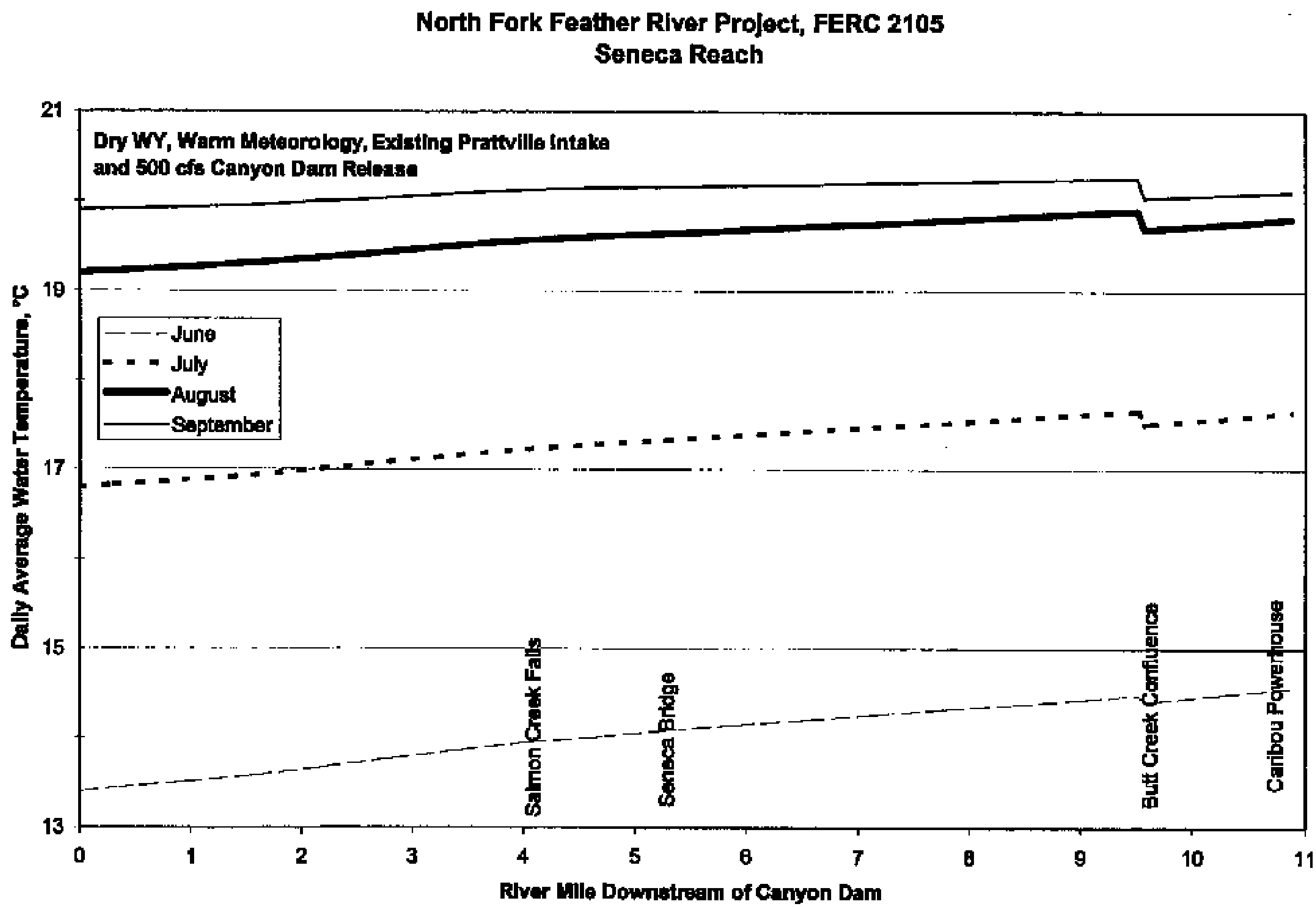


DNEI

North Fork Feather River Project, FERC 2105
Seneca Reach

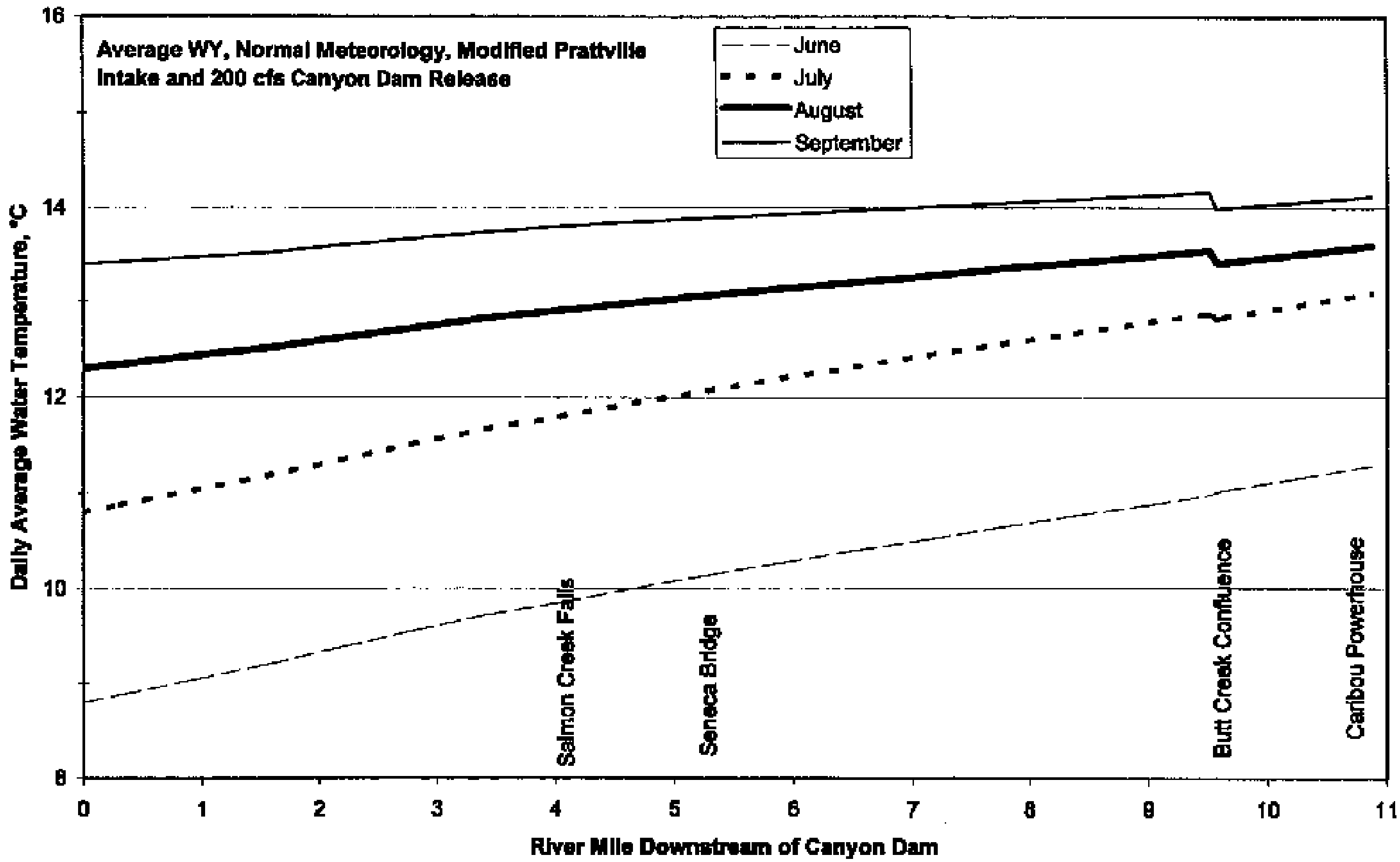


DWEG

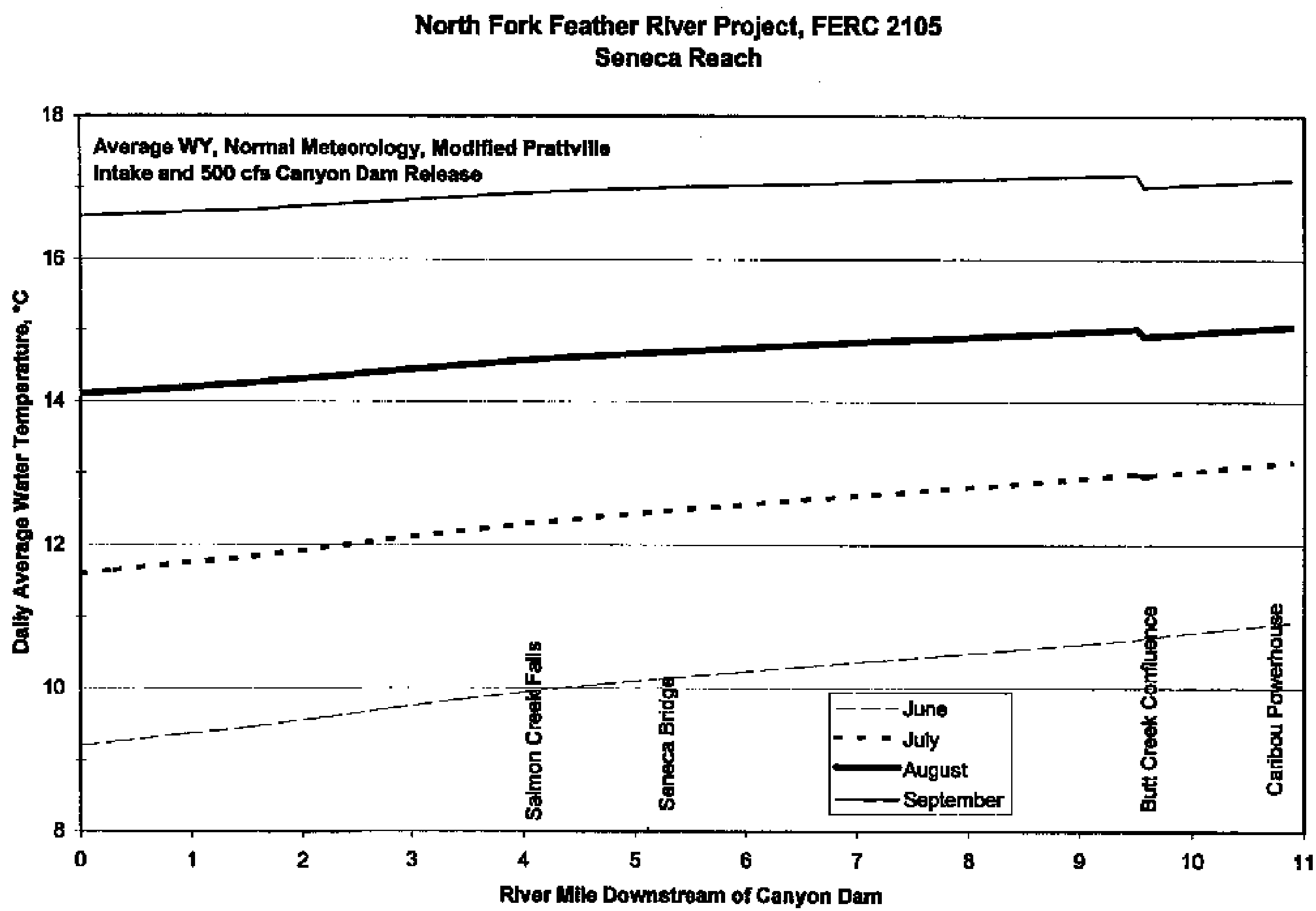

North Fork Feather River Project, FERC 2105
Seneca Reach
Dry WY, Warm Meteorology, Existing Prattville Intake
and 500 cfs Canyon Dam Release
June
July
August
September
Daily Average Water Temperature, °C
21
19
17
15
13
0
1
2
3
4
5
6
7
8
9
10
11
Salmon Creek Falls
Seneca Bridge
Butt Creek Confluence
Caribou Powerhouse
River Mile Downstream of Canyon Dam

DWEI

North Fork Feather River Project, FERC 2105
Seneca Reach

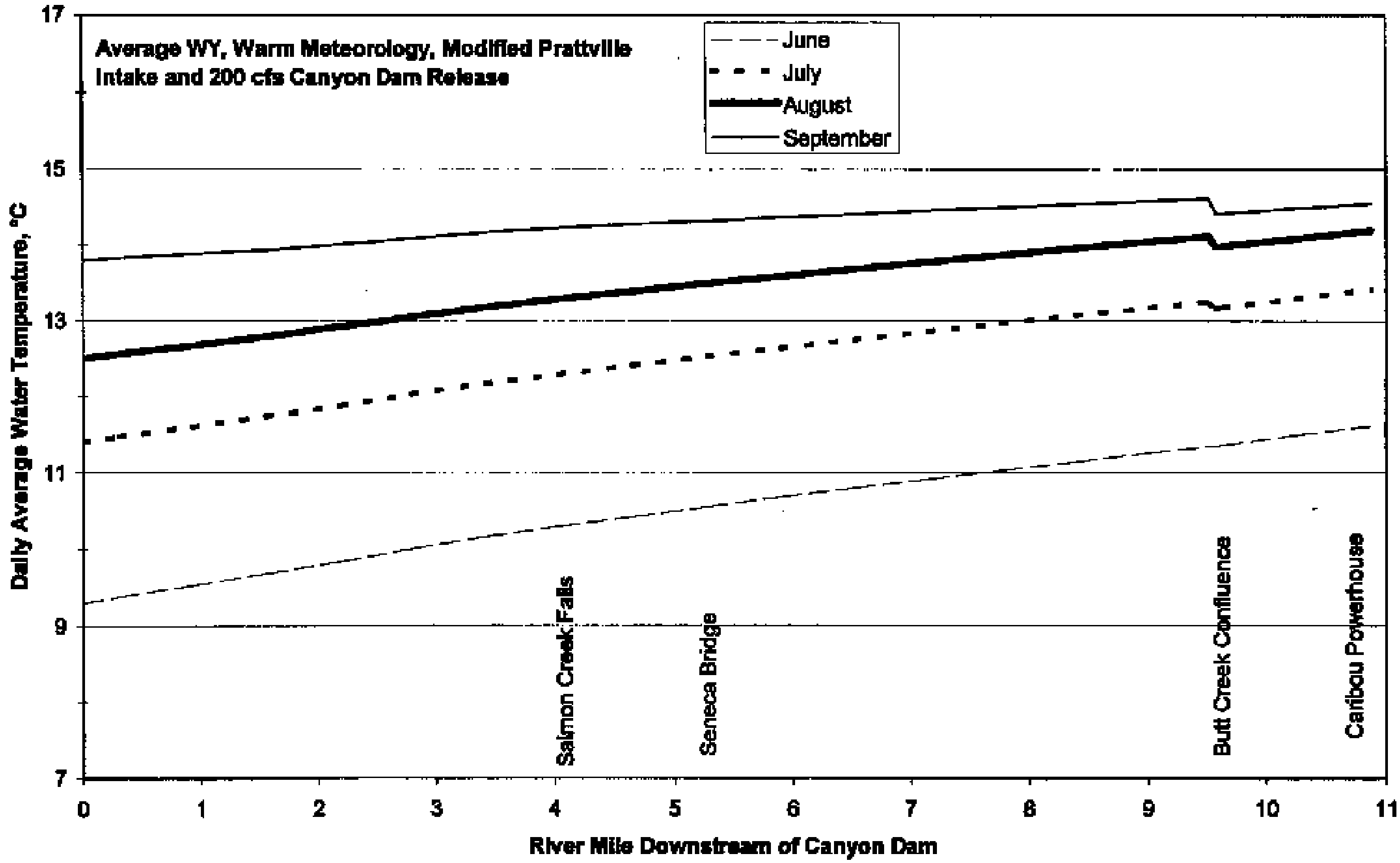


ANMG

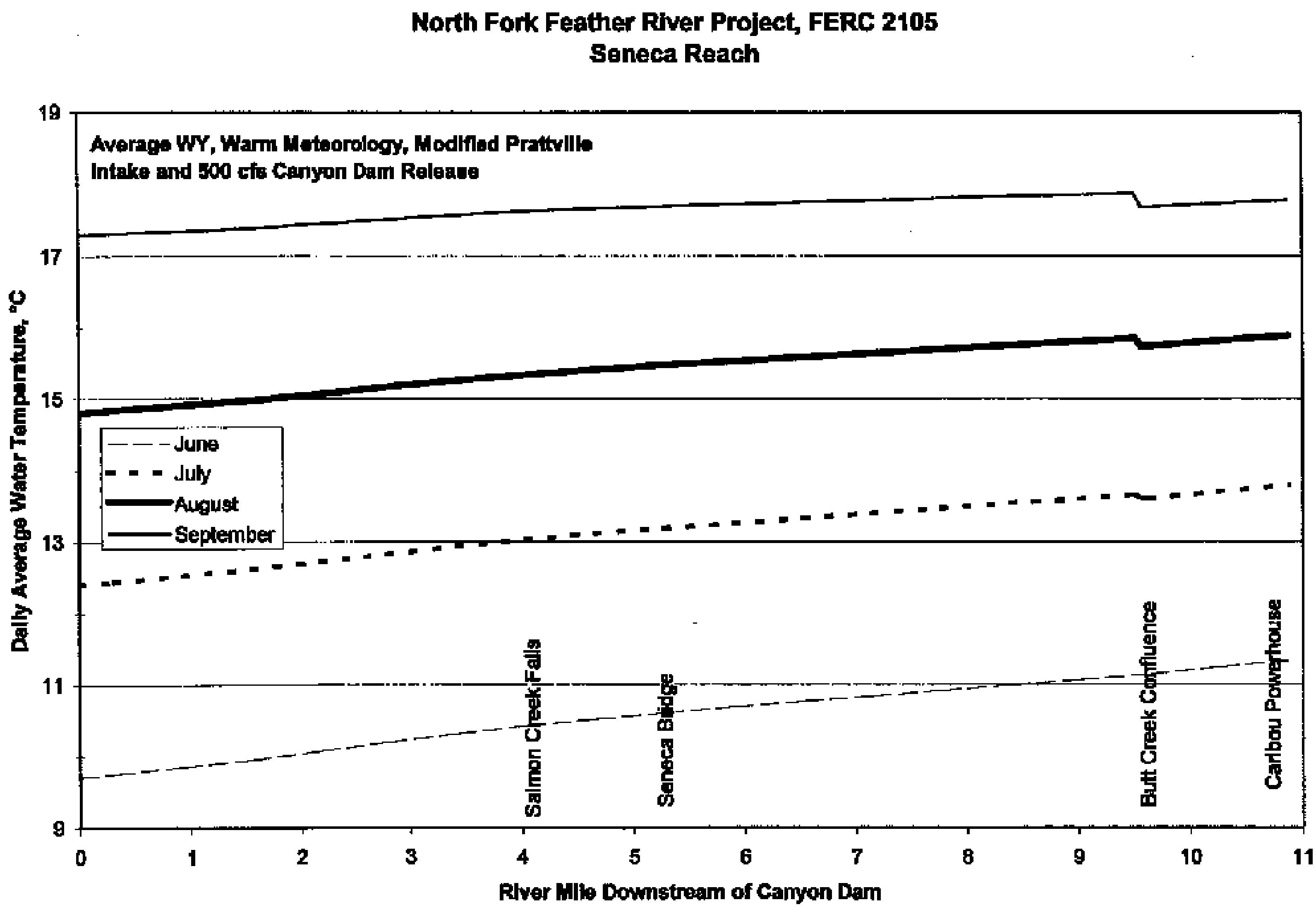

North Fork Feather River Project, FERC 2105
Seneca Reach
Average WY, Normal Meteorology, Modified Prattville
Intake and 500 cfs Canyon Dam Release
Daily Average Water Temperature, °C
18
16
14
12
10
8
0
1
2
3
4
5
6
7
8
9
10
11
River Mile Downstream of Canyon Dam
Salmon Creek Falls
Seneca Bridge
Butt Creek Confluence
Caribou Powerhouse
June
July
August
September

ANMI

North Fork Feather River Project, FERC 2105
Seneca Reach

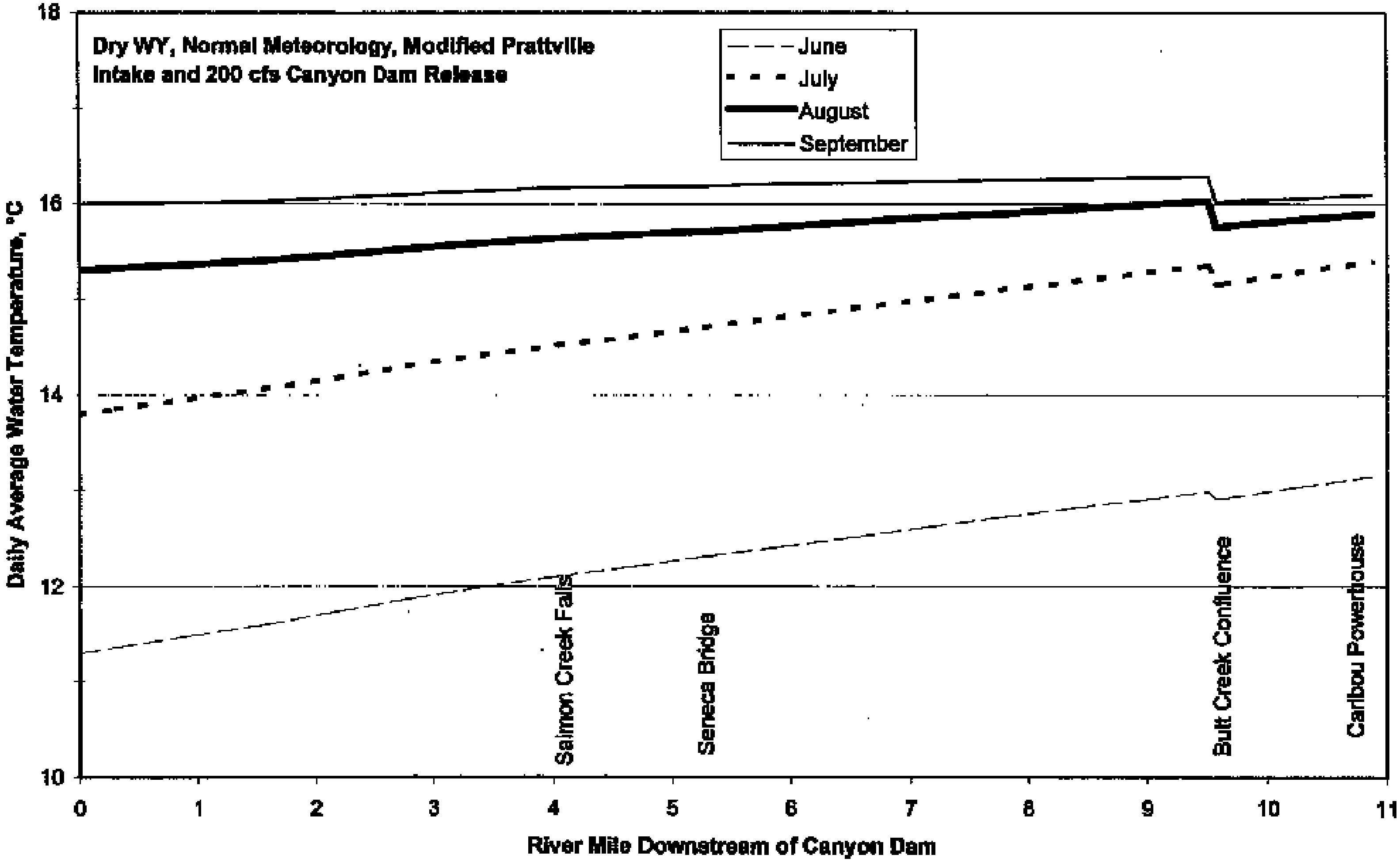


AWMG


North Fork Feather River Project, FERC 2105
Seneca Reach
Average WY, Warm Meteorology, Modified Prattville
Intake and 500 cfs Canyon Dam Release
June
July
August
September
Salmon Creek Falls
Seneca Bridge
Butt Creek Confluence
Caribou Powerhouse
Daily Average Water Temperature, °C
19
17
15
13
11
9
0
1
2
3
4
5
6
7
8
9
10
11
River Mile Downstream of Canyon Dam

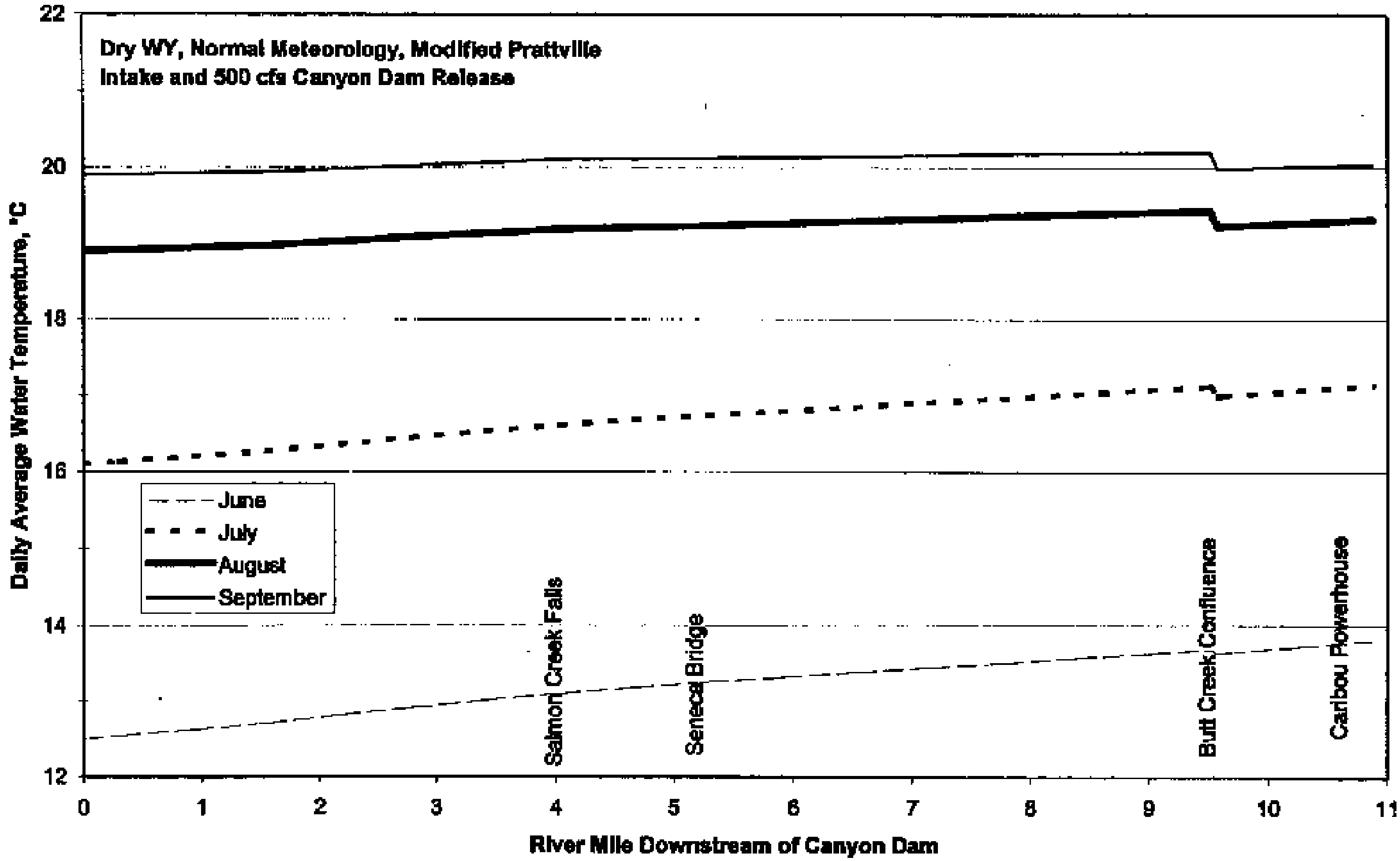
AWMI

North Fork Feather River Project, FERC 2105
Seneca Reach



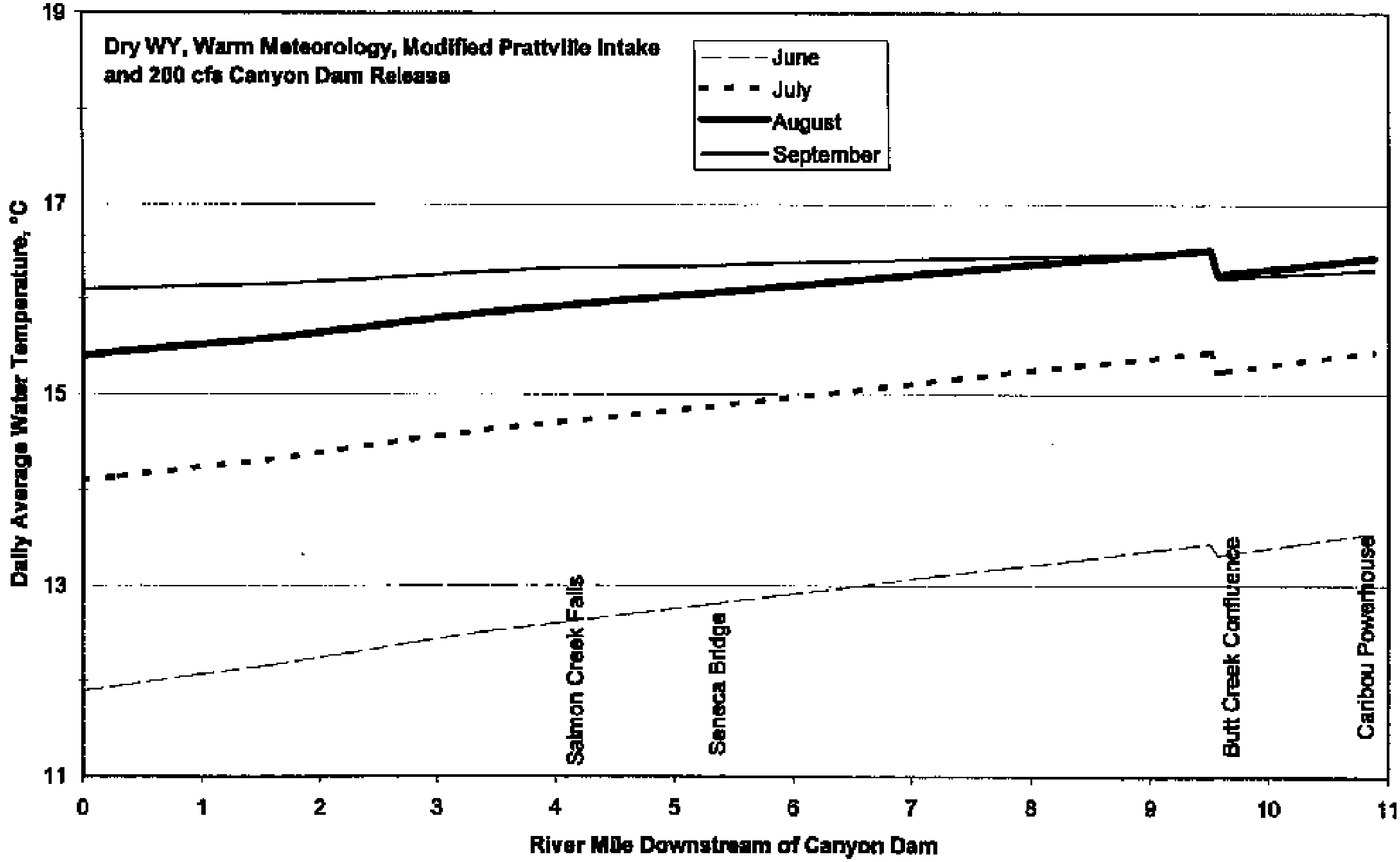
DNMG

North Fork Feather River Project, FERC 2105
Seneca Reach



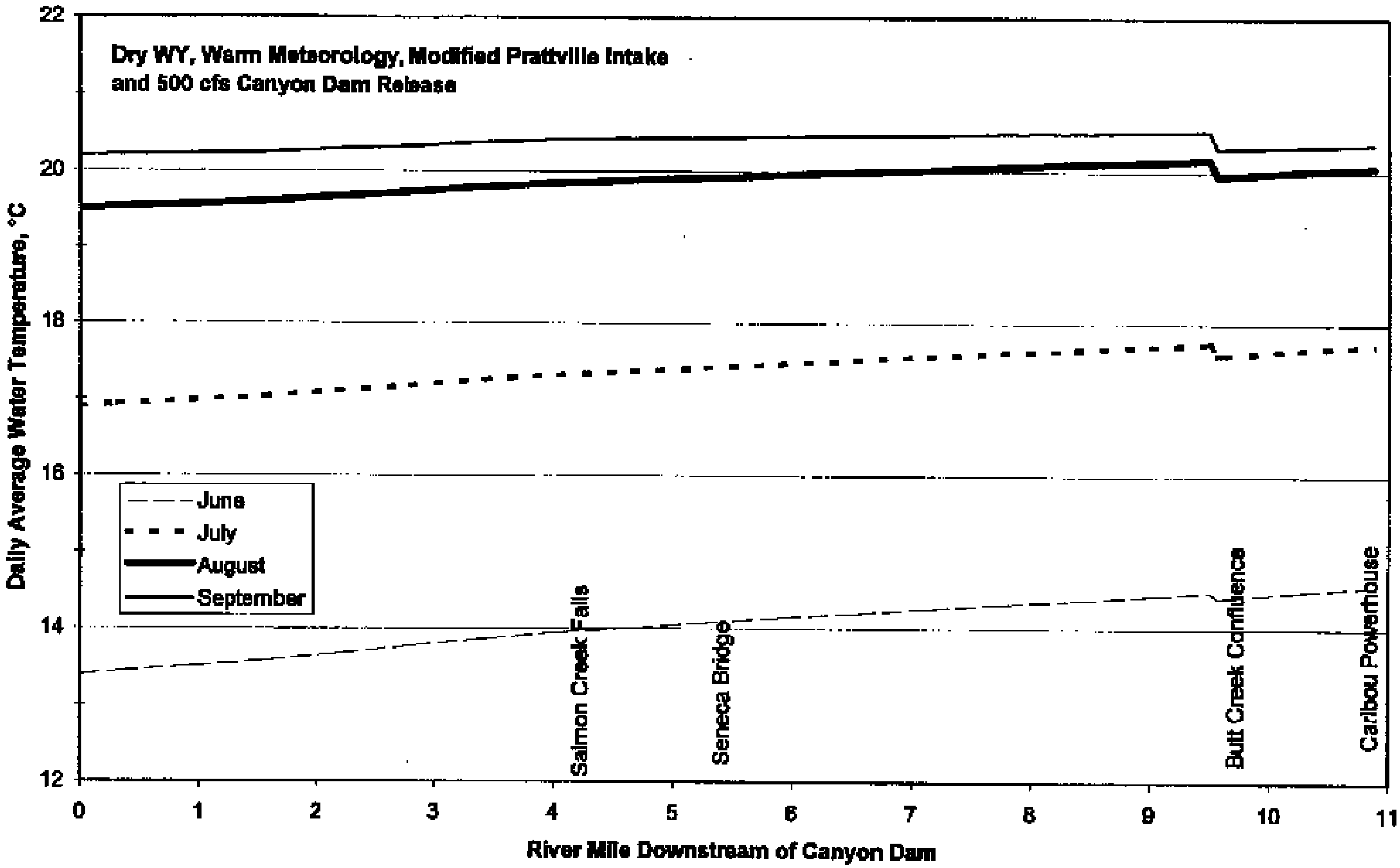
DNMI

North Fork Feather River Project, FERC 2105
Seneca Reach



DWMG

North Fork Feather River Project, FERC 2105
Seneca Reach



DWMI

UPPER NORTH FORK FEATHER RIVER PROJECT

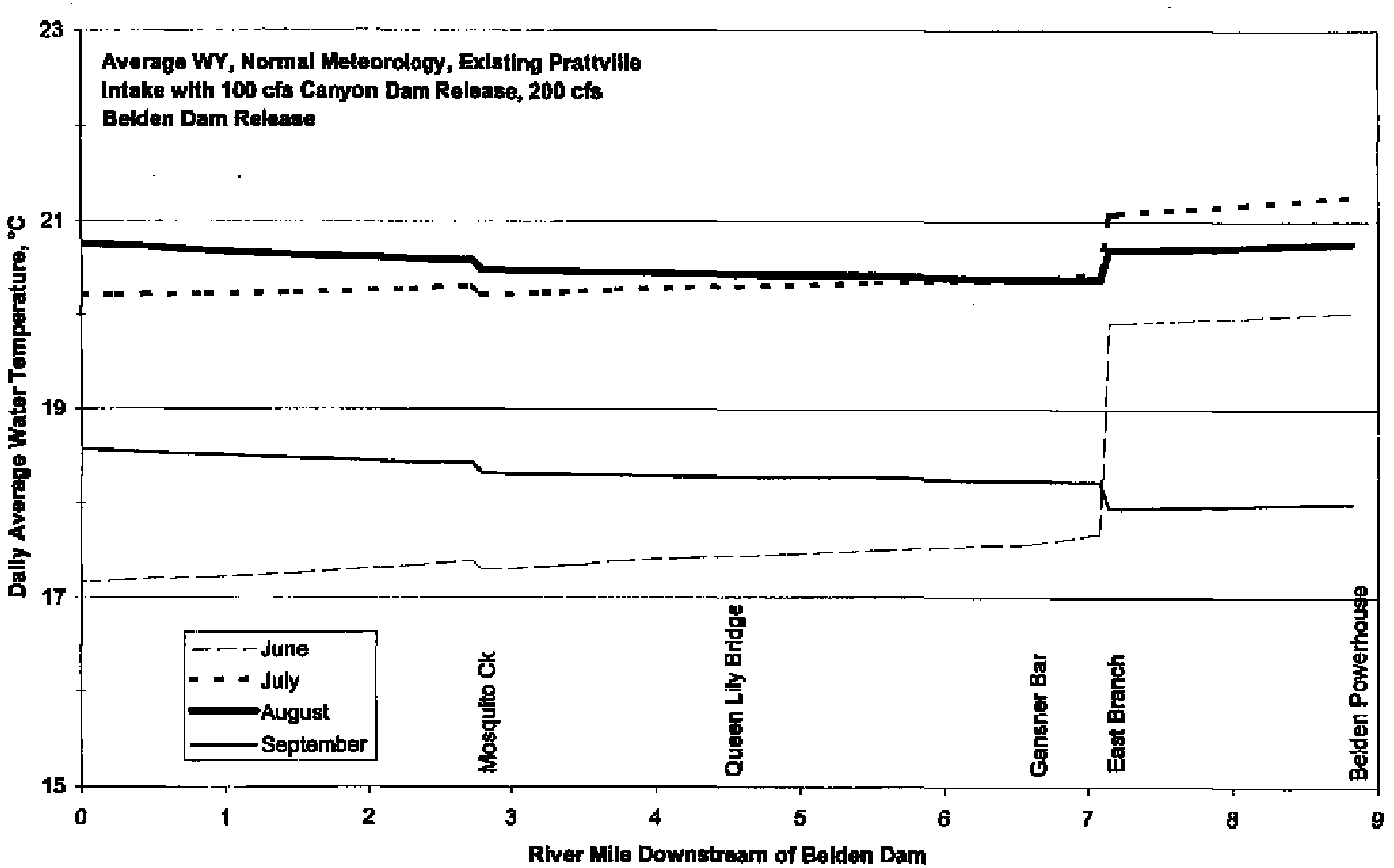
FERC No. 2105

Appendix E2-J

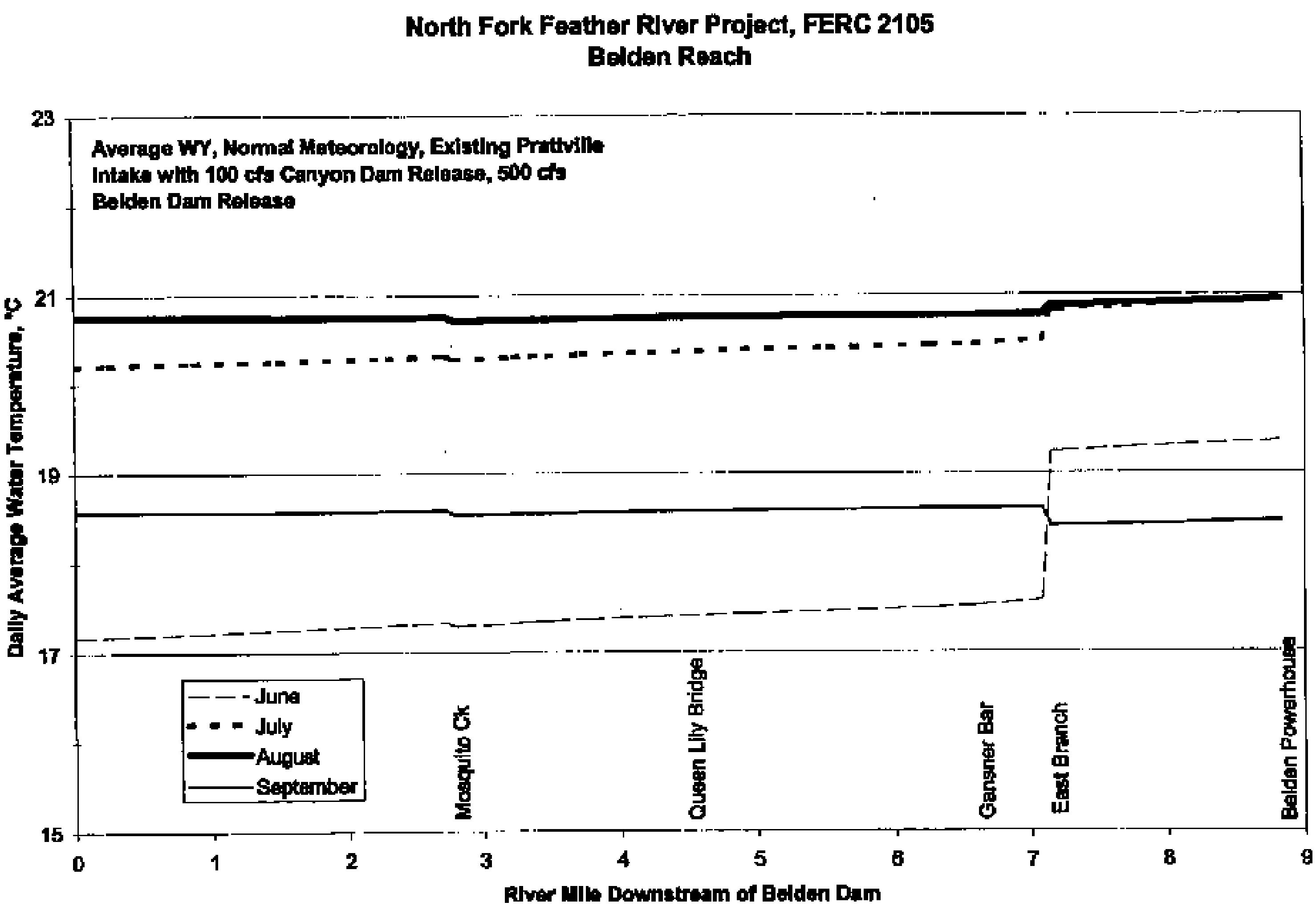
Additional Model Scenario Runs

Longitudinal Temperature Profiles for Belden Reach

North Fork Feather River Project, FERC 2105
Belden Reach

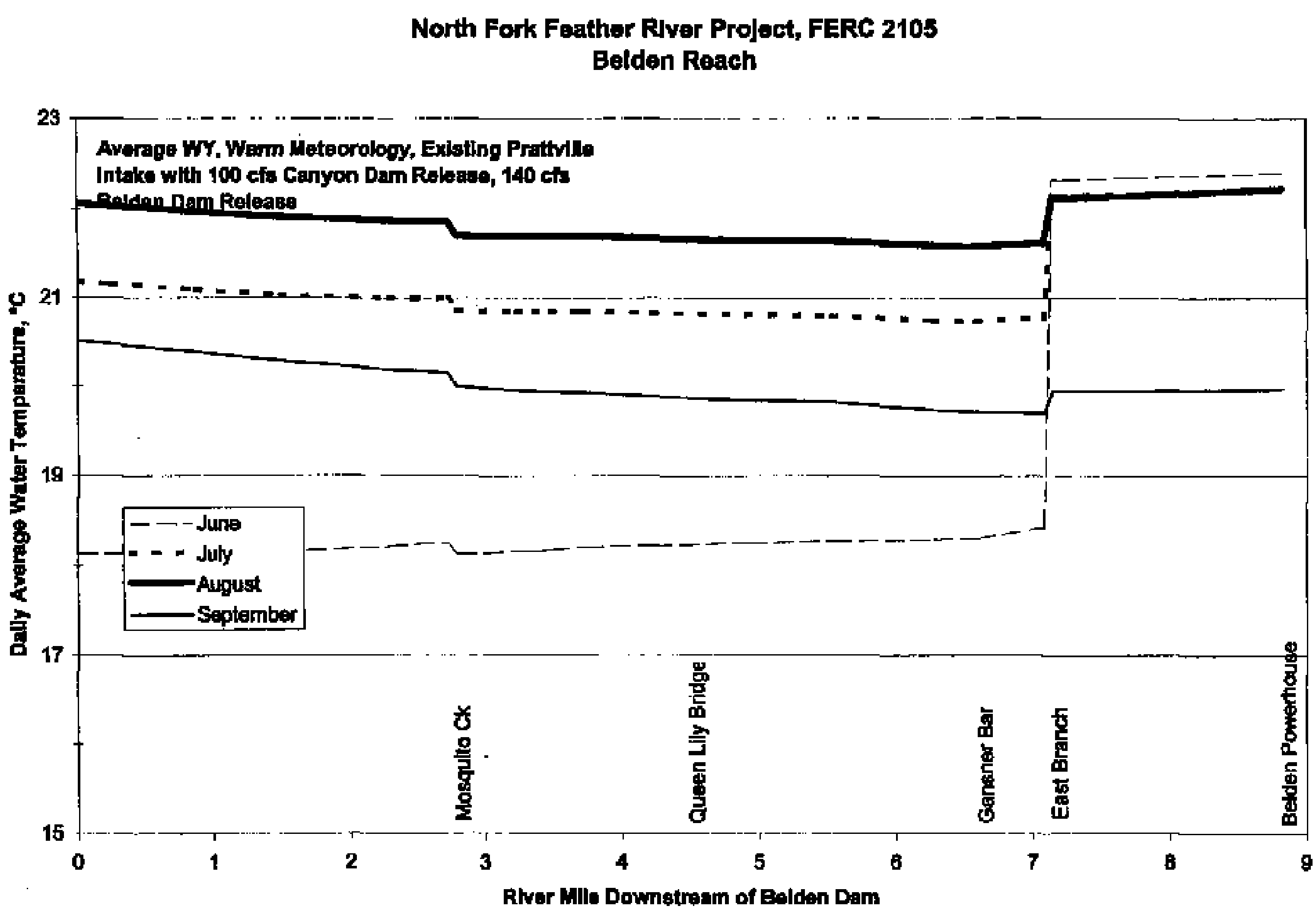


ANEF21B



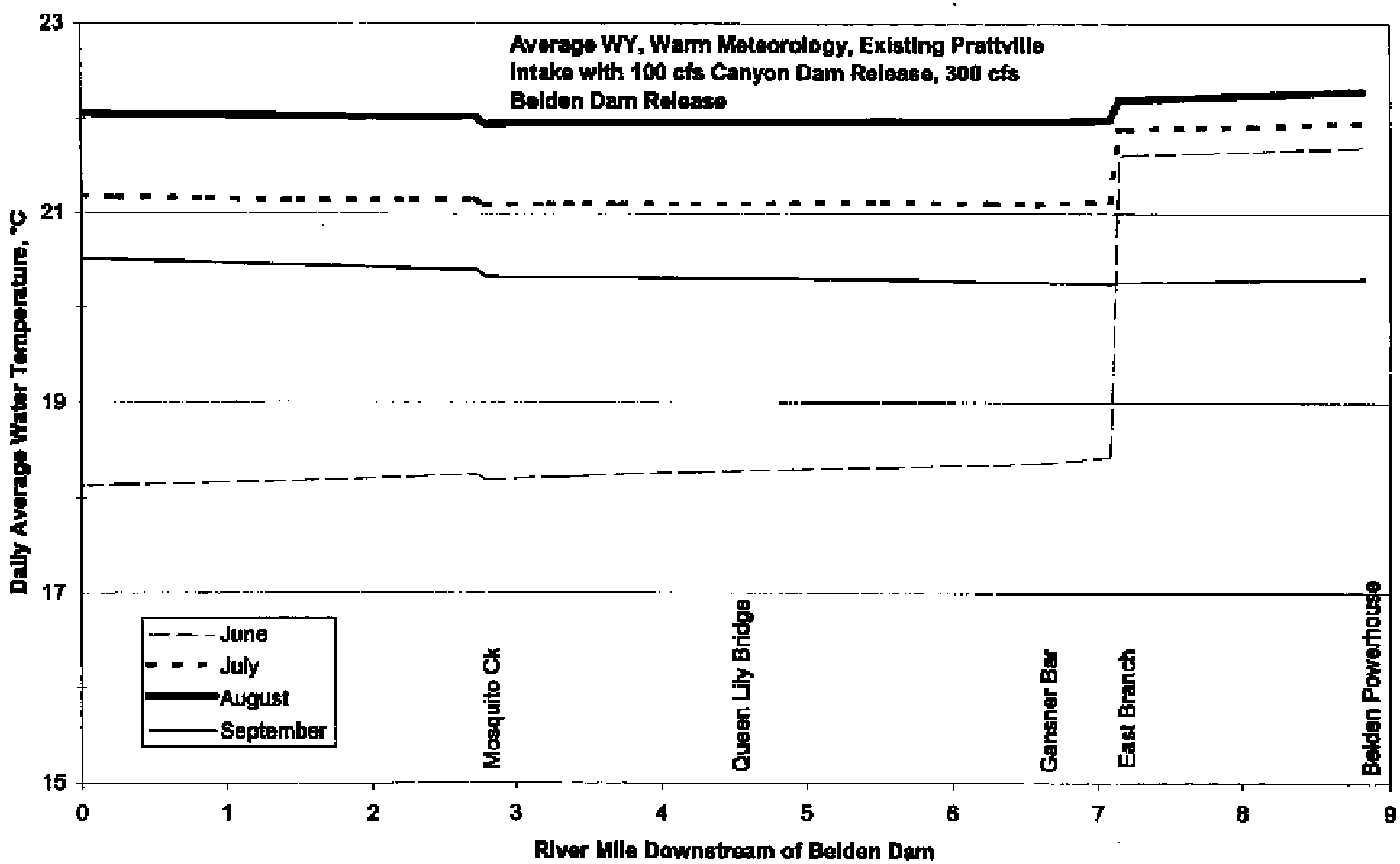
North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Normal Meteorology, Existing Prattville
Intake with 100 cfs Canyon Dam Release, 500 cfs
Belden Dam Release
Daily Average Water Temperature, °C
23
21
19
17
15
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

ANEF21D


North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Warm Meteorology, Existing Prattville Intake with 100 cfs Canyon Dam Release, 140 cfs Belden Dam Release
June
July
August
September
Daily Average Water Temperature, °C
23
21
19
17
15
0
1
2
3
4
5
6
7
8
9
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
River Mile Downstream of Belden Dam

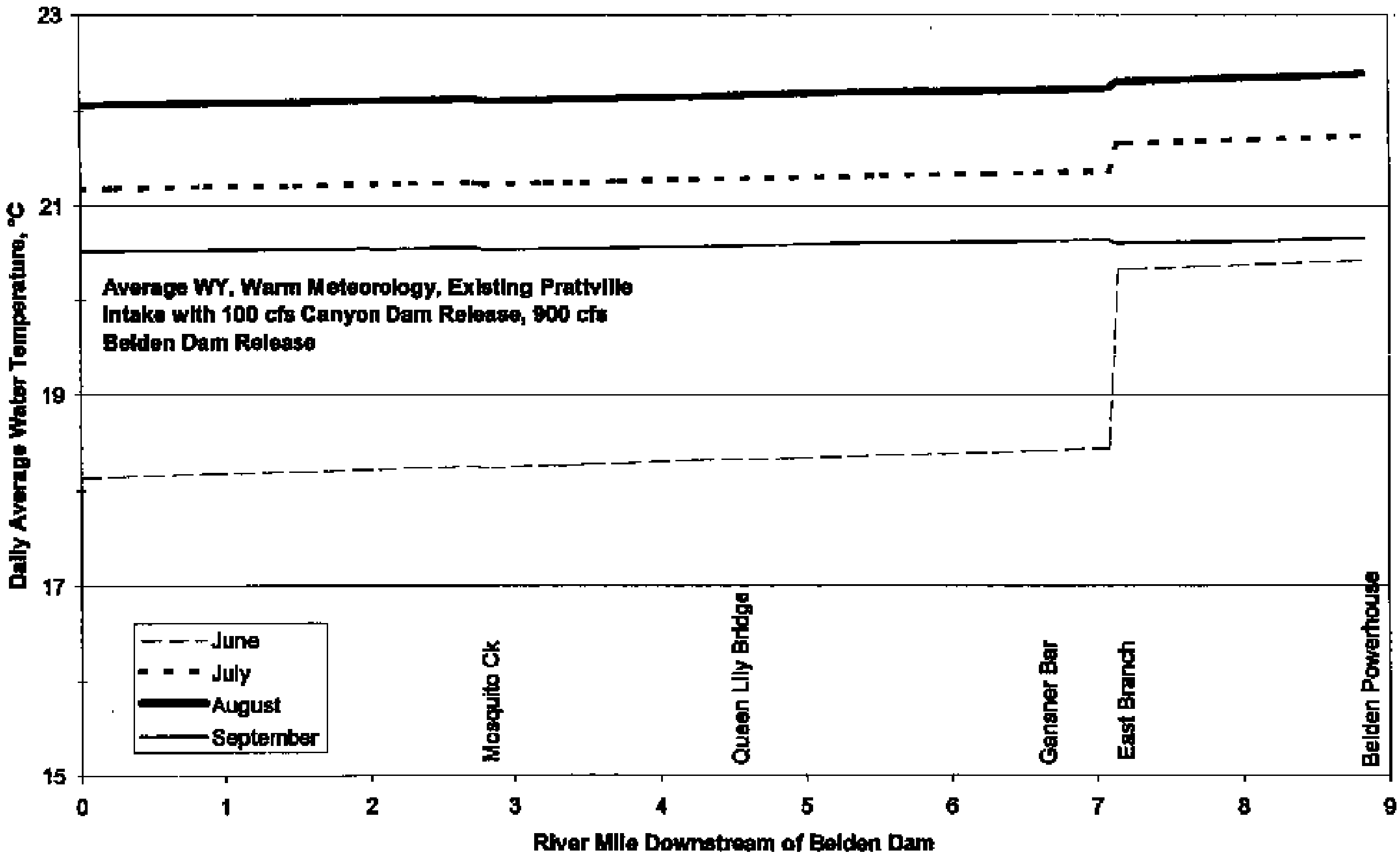
AWEF21A

North Fork Feather River Project, FERC 2105
Belden Reach



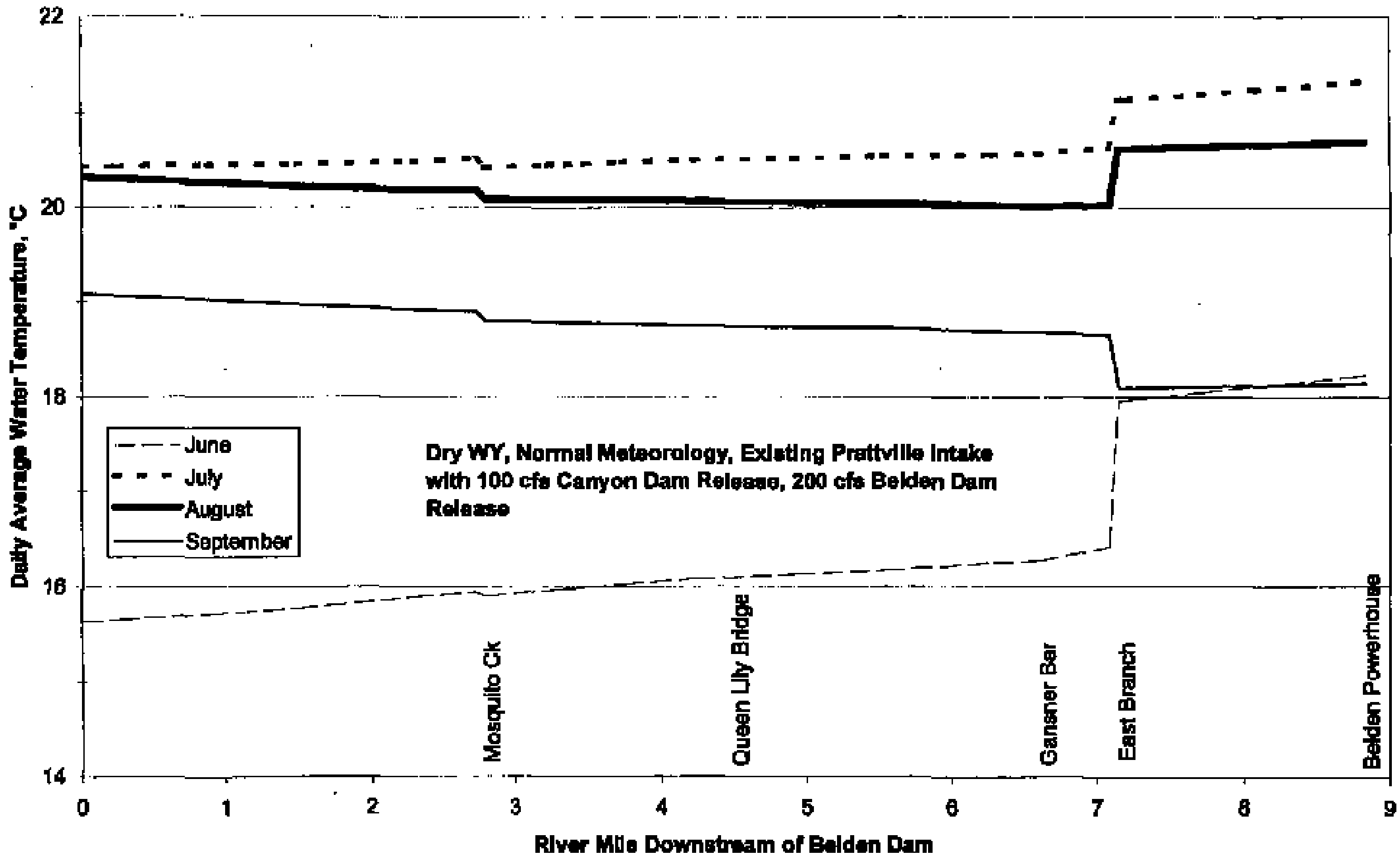
AWEF21C

North Fork Feather River Project, FERC 2105
Belden Reach



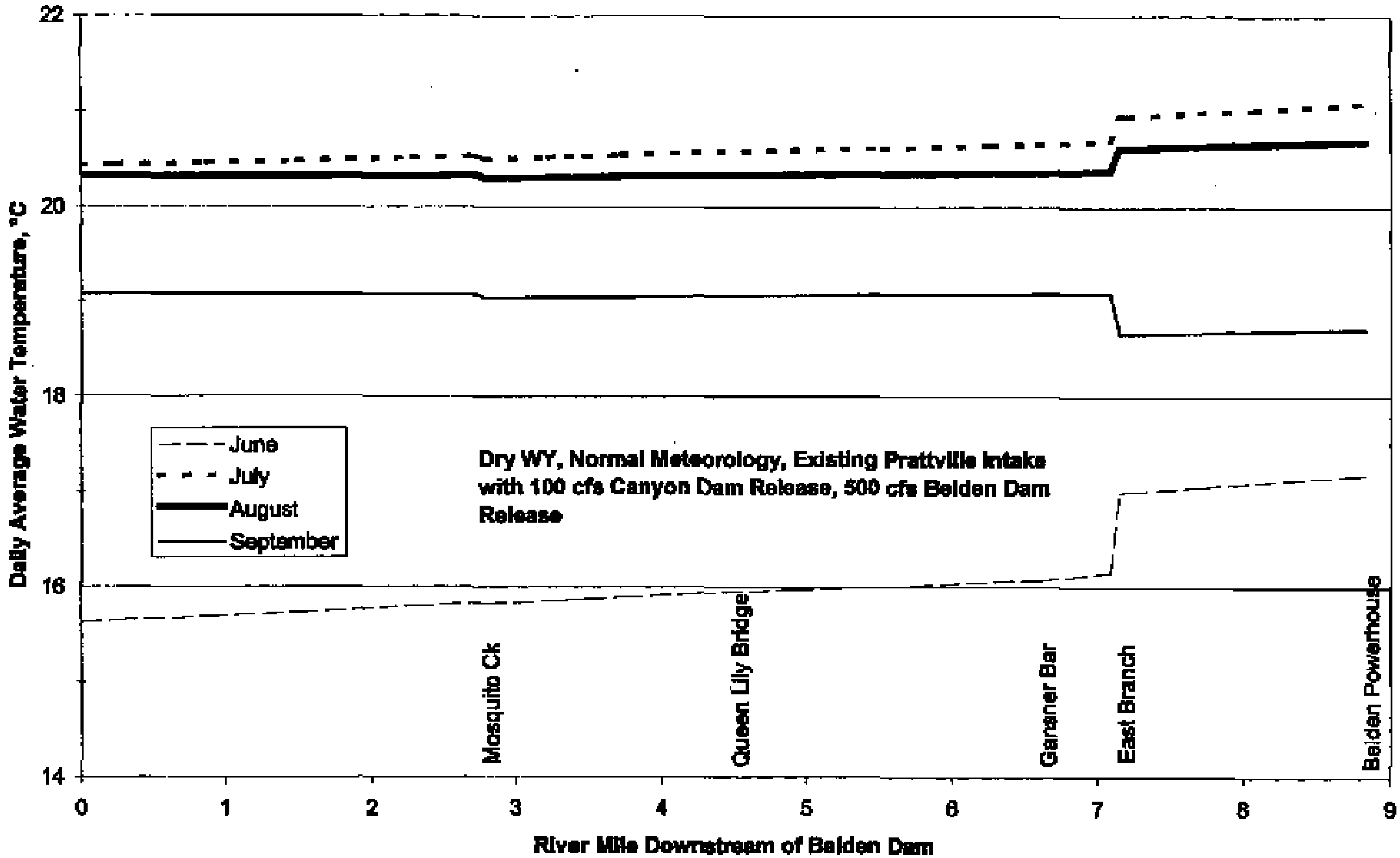
AWEF21E

North Fork Feather River Project, FERC 2105
Belden Reach



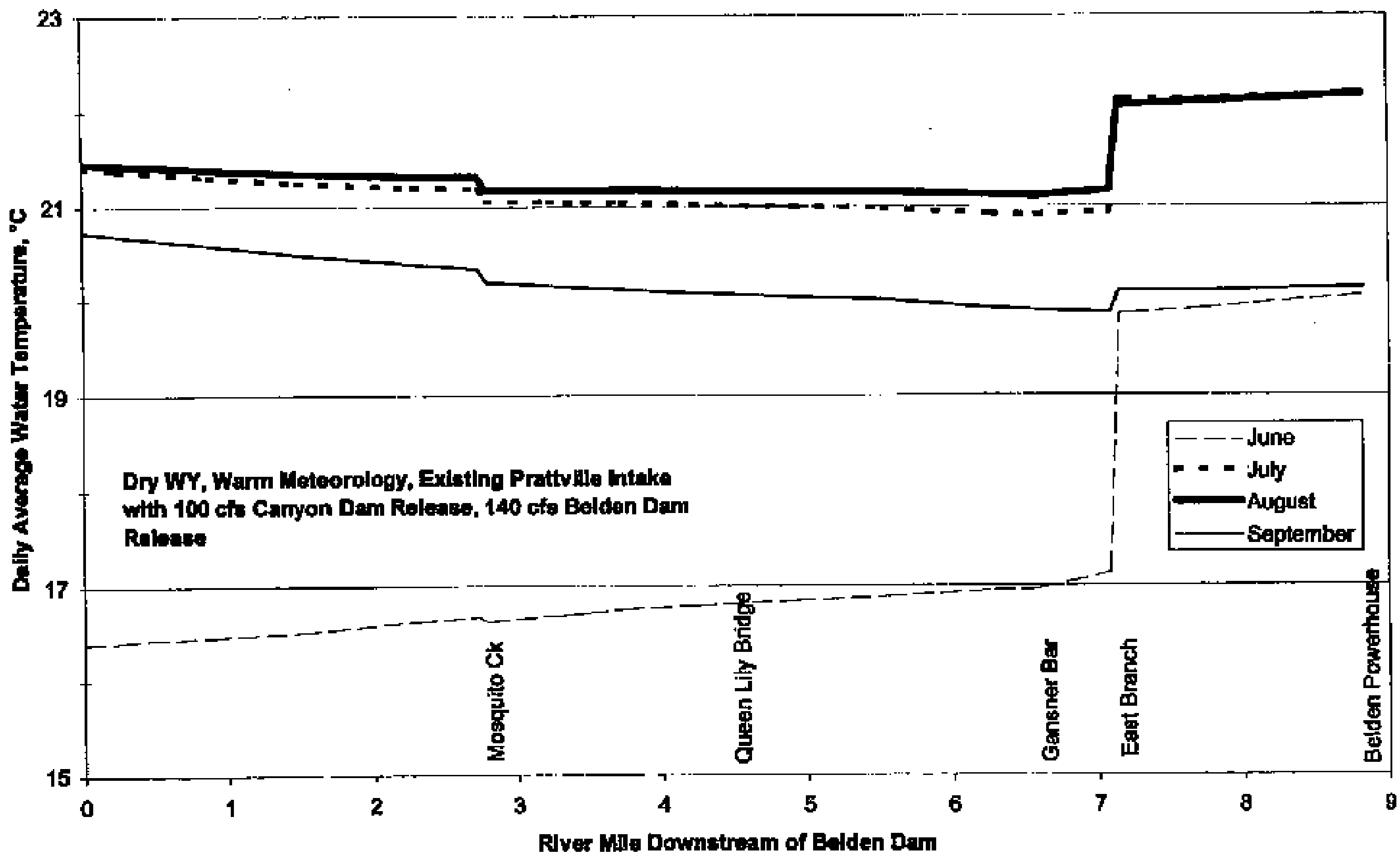
DNEF21B

North Fork Feather River Project, FERC 2105
Belden Reach



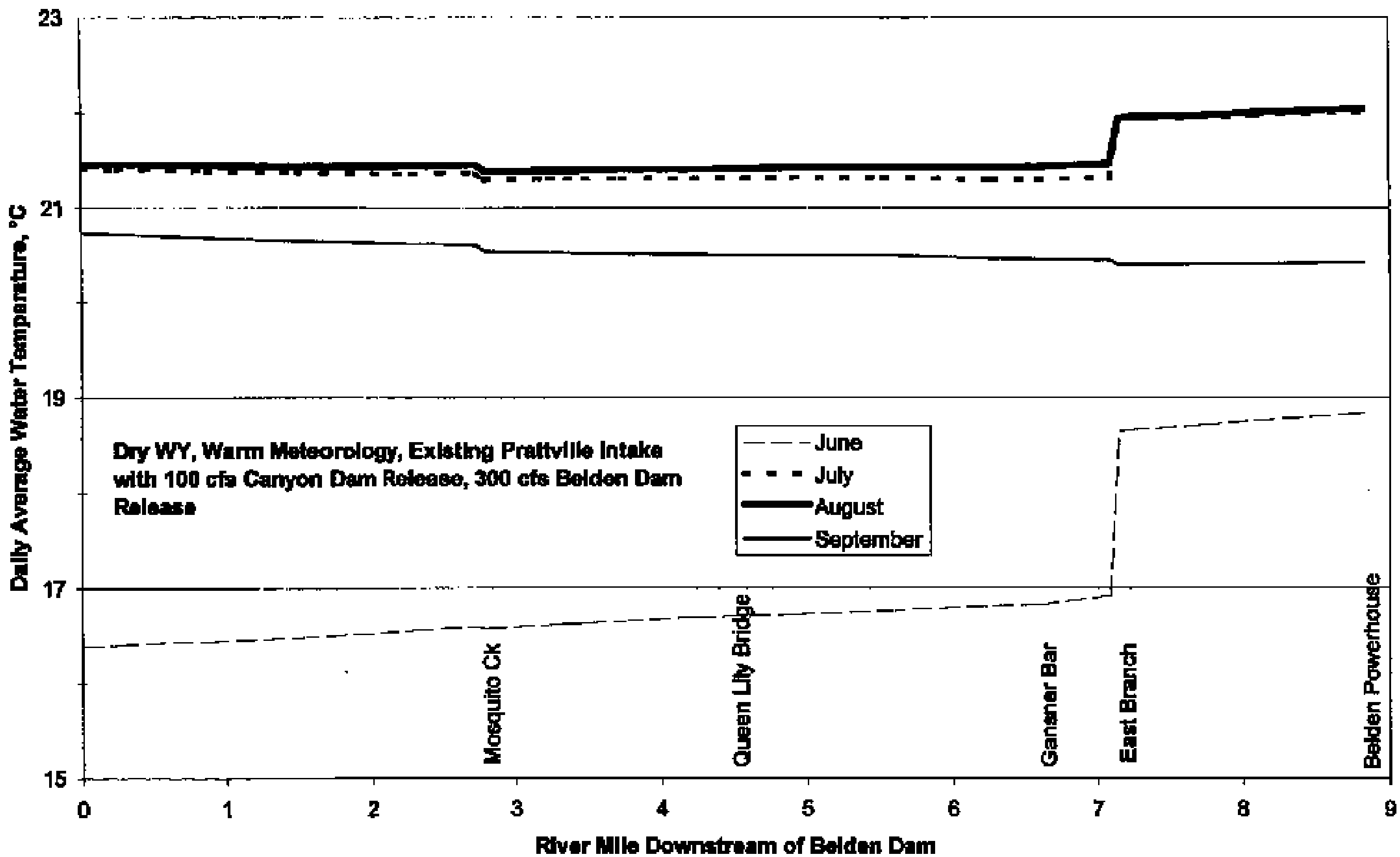
DNEF21D

North Fork Feather River Project, FERC 2105
Belden Reach



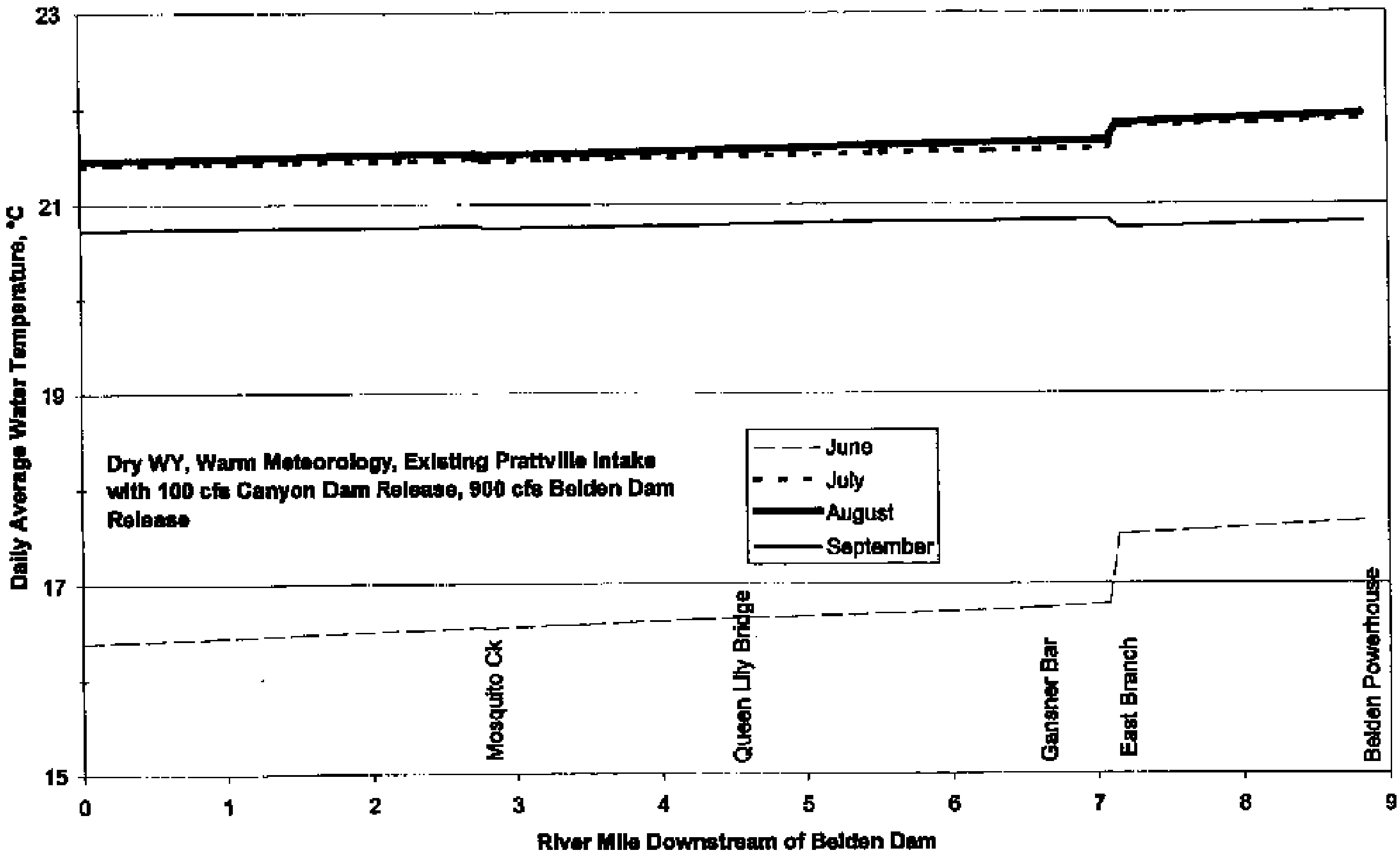
DWEF21A

North Fork Feather River Project, FERC 2105
Belden Reach

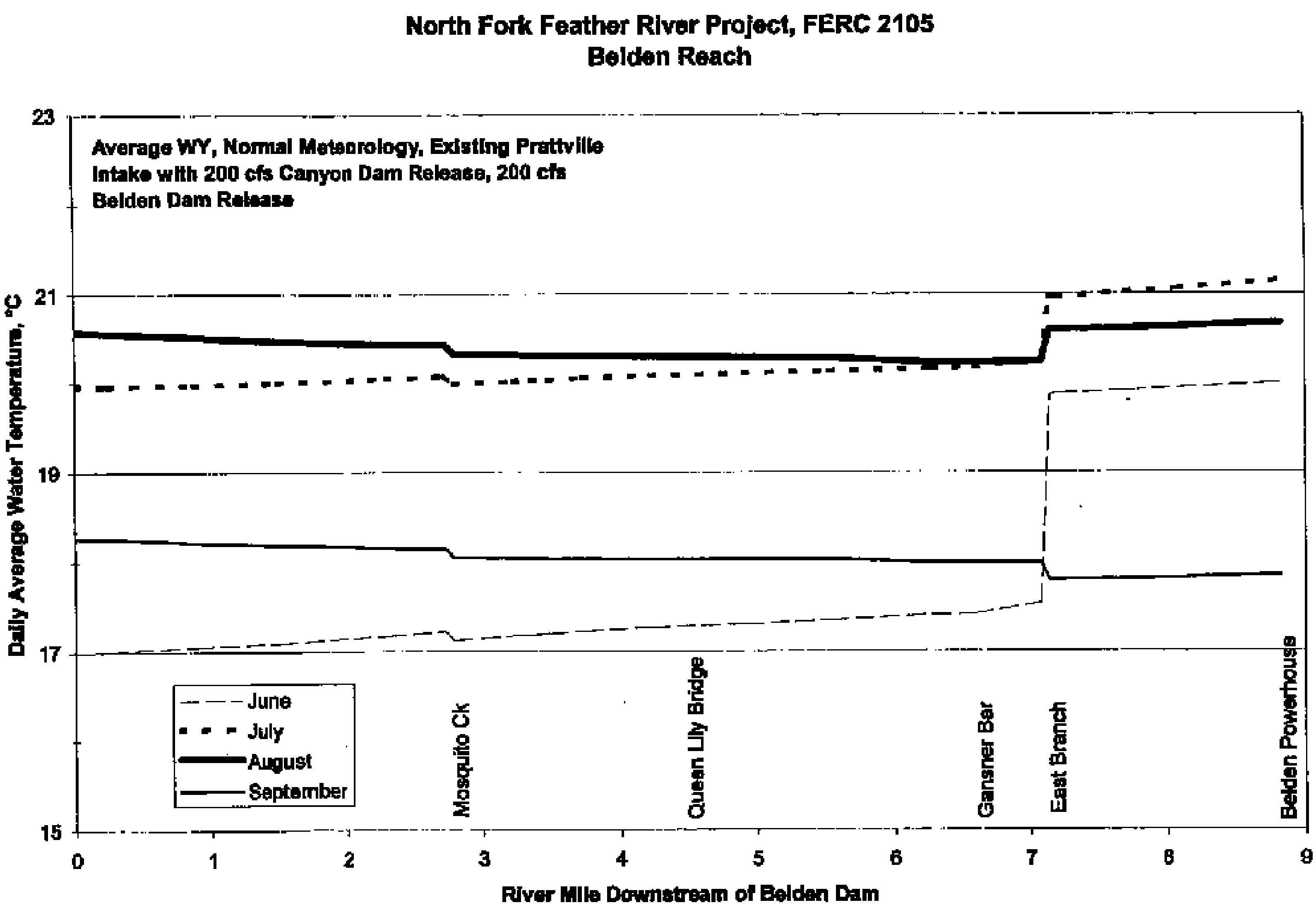


DWEF21C

North Fork Feather River Project, FERC 2105
Belden Reach

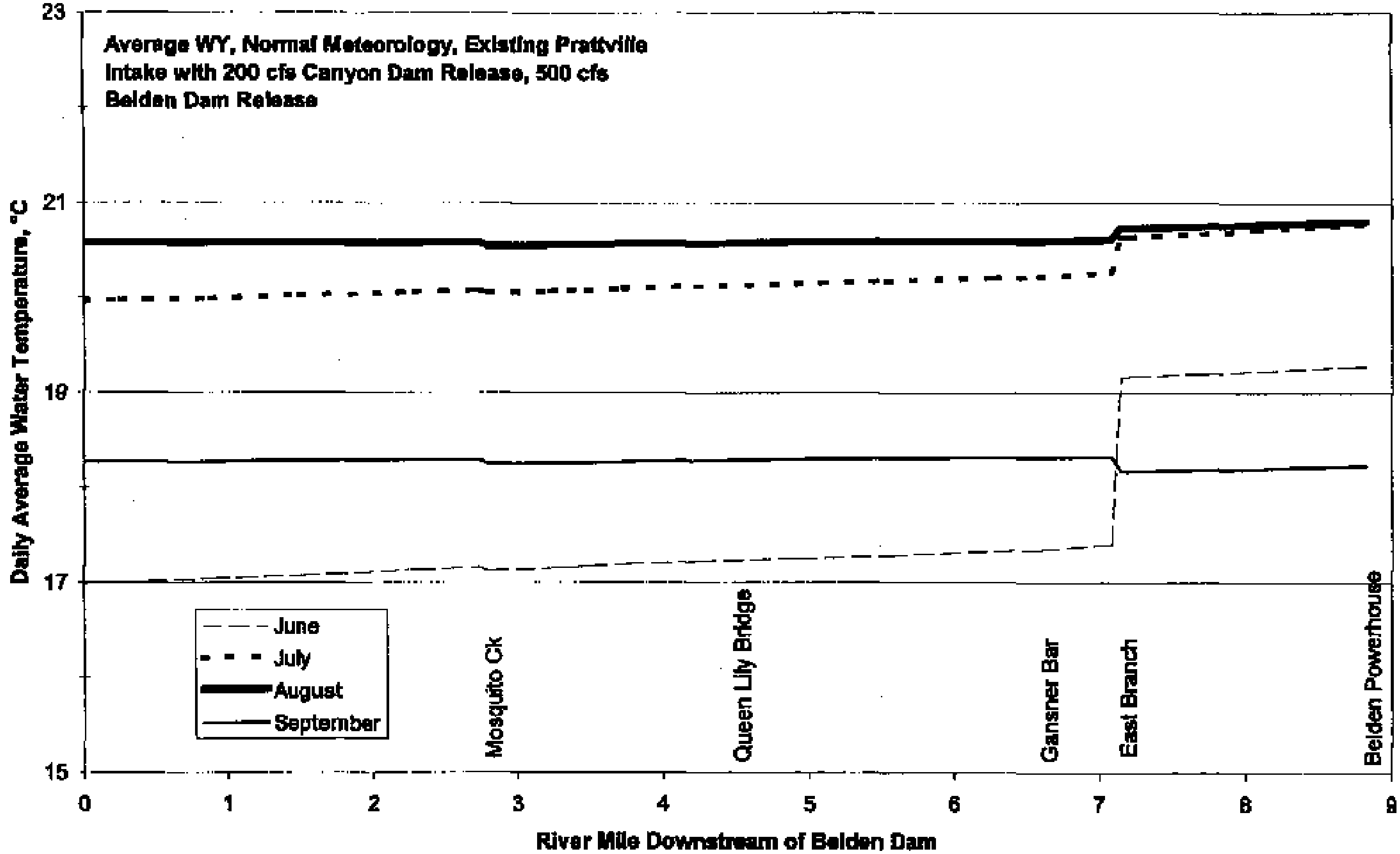


DWEF21E

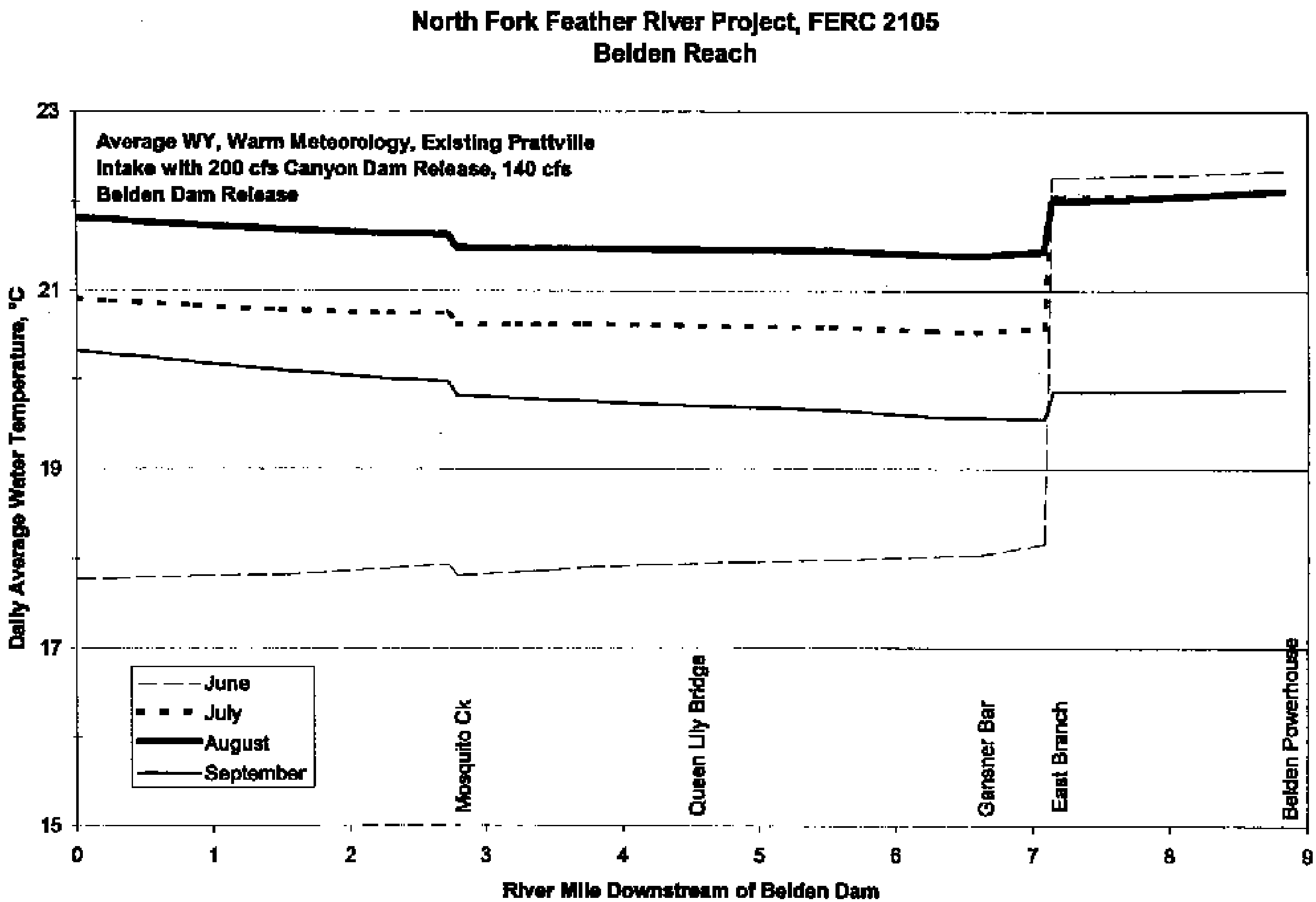

North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Normal Meteorology, Existing Prattville
Intake with 200 cfs Canyon Dam Release, 200 cfs
Belden Dam Release
Daily Average Water Temperature, °C
23
21
19
17
15
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

ANEG21B

North Fork Feather River Project, FERC 2105
Belden Reach

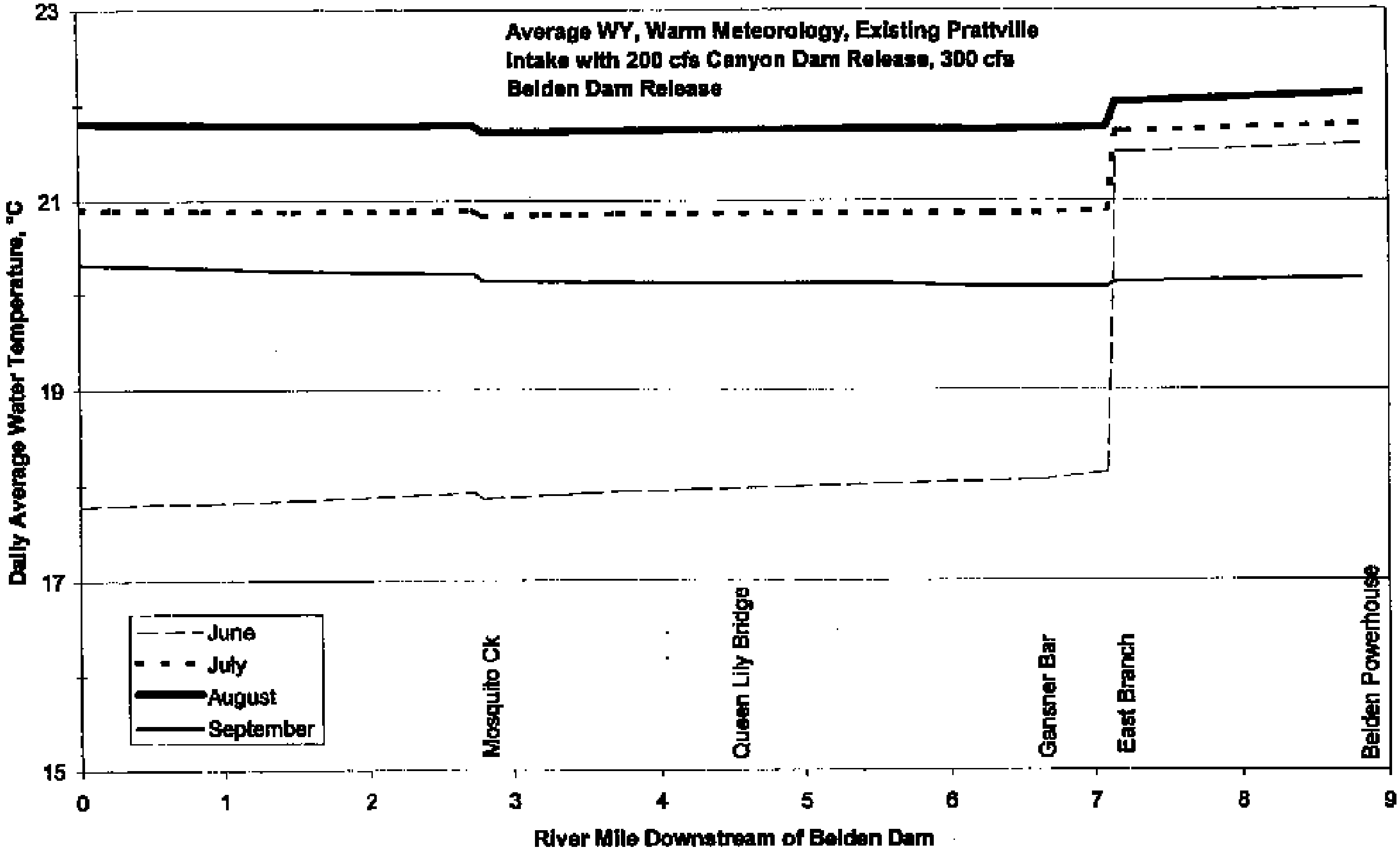


ANEG21D


North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Warm Meteorology, Existing Prattville
Intake with 200 cfs Canyon Dam Release, 140 cfs
Belden Dam Release
Daily Average Water Temperature, °C
23
21
19
17
15
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam

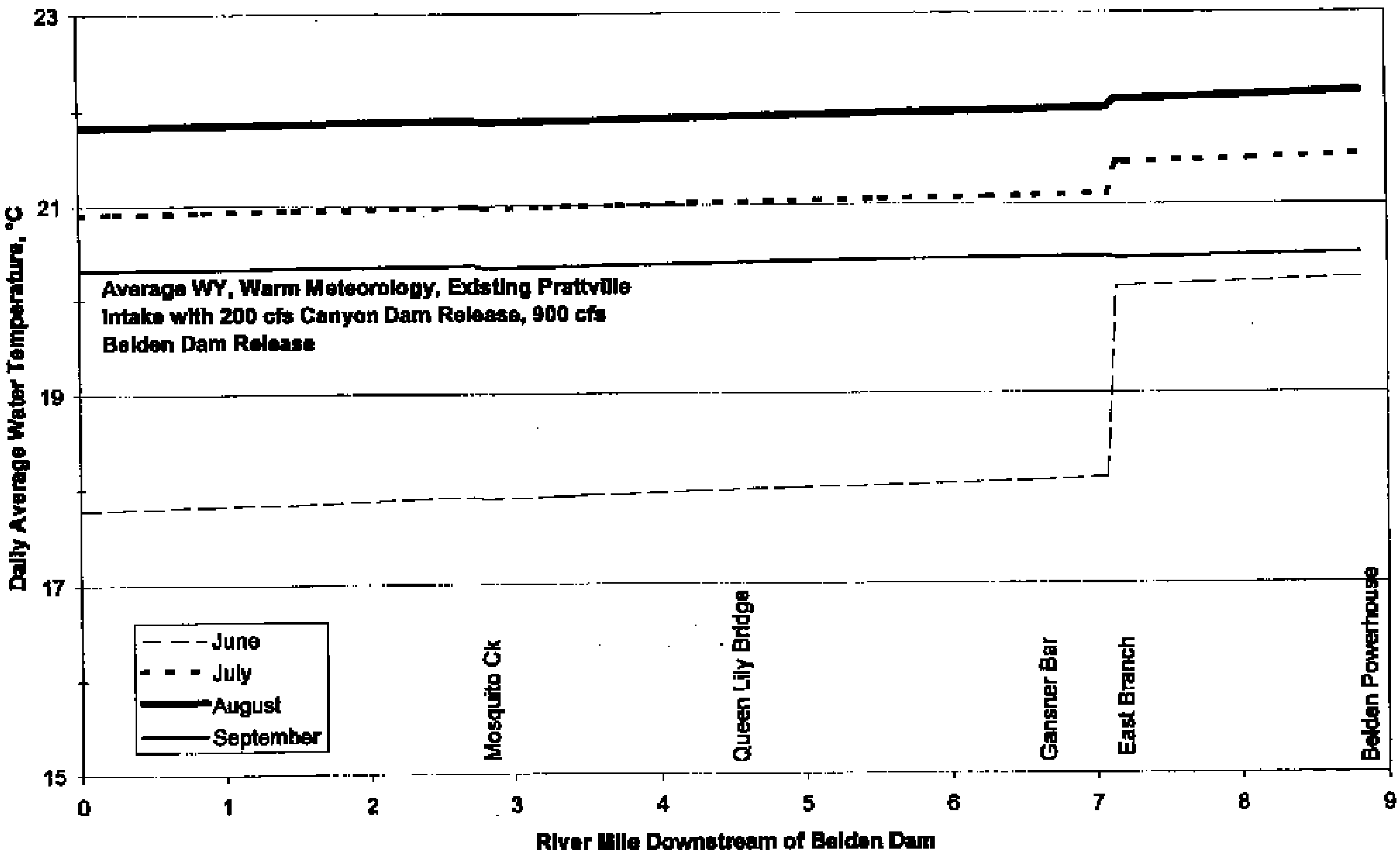
AWEG21A

North Fork Feather River Project, FERC 2105
Belden Reach

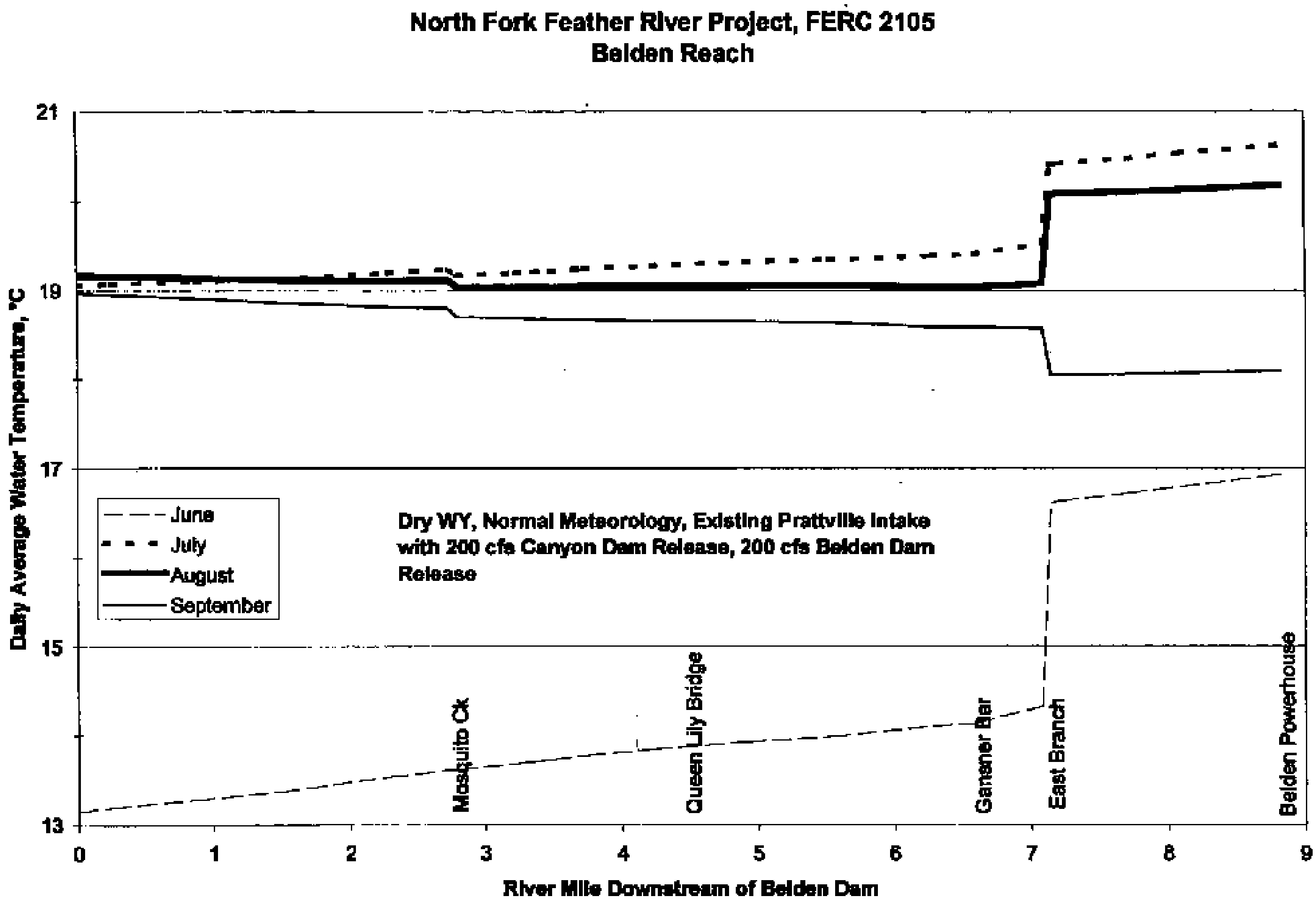


AWEG21C

North Fork Feather River Project, FERC 2105
Belden Reach



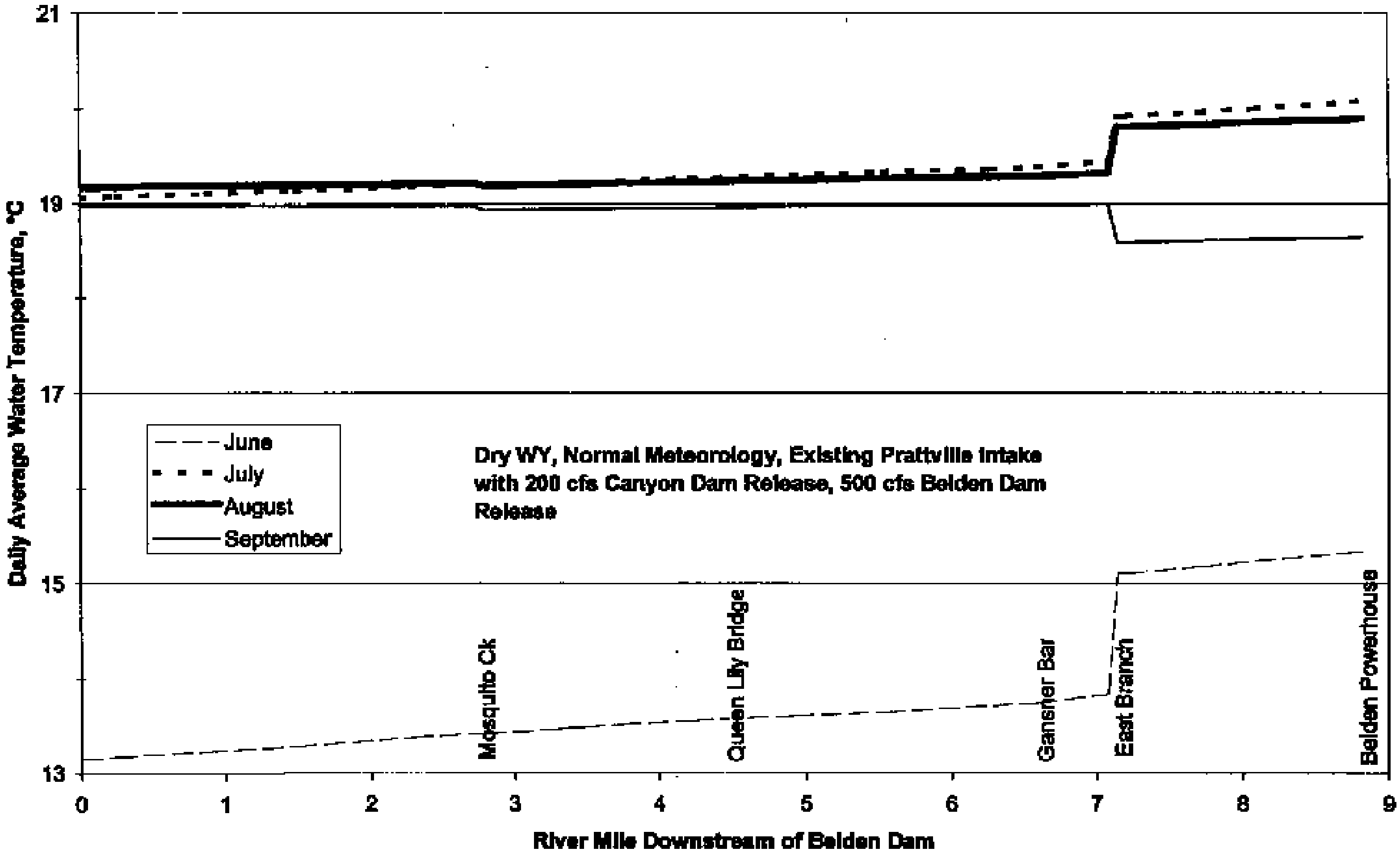
AWEG21E



North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
21
19
17
15
13
June
July
August
September
Dry WY, Normal Meteorology, Existing Prattville Intake with 200 cfs Canyon Dam Release, 200 cfs Belden Dam Release
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam

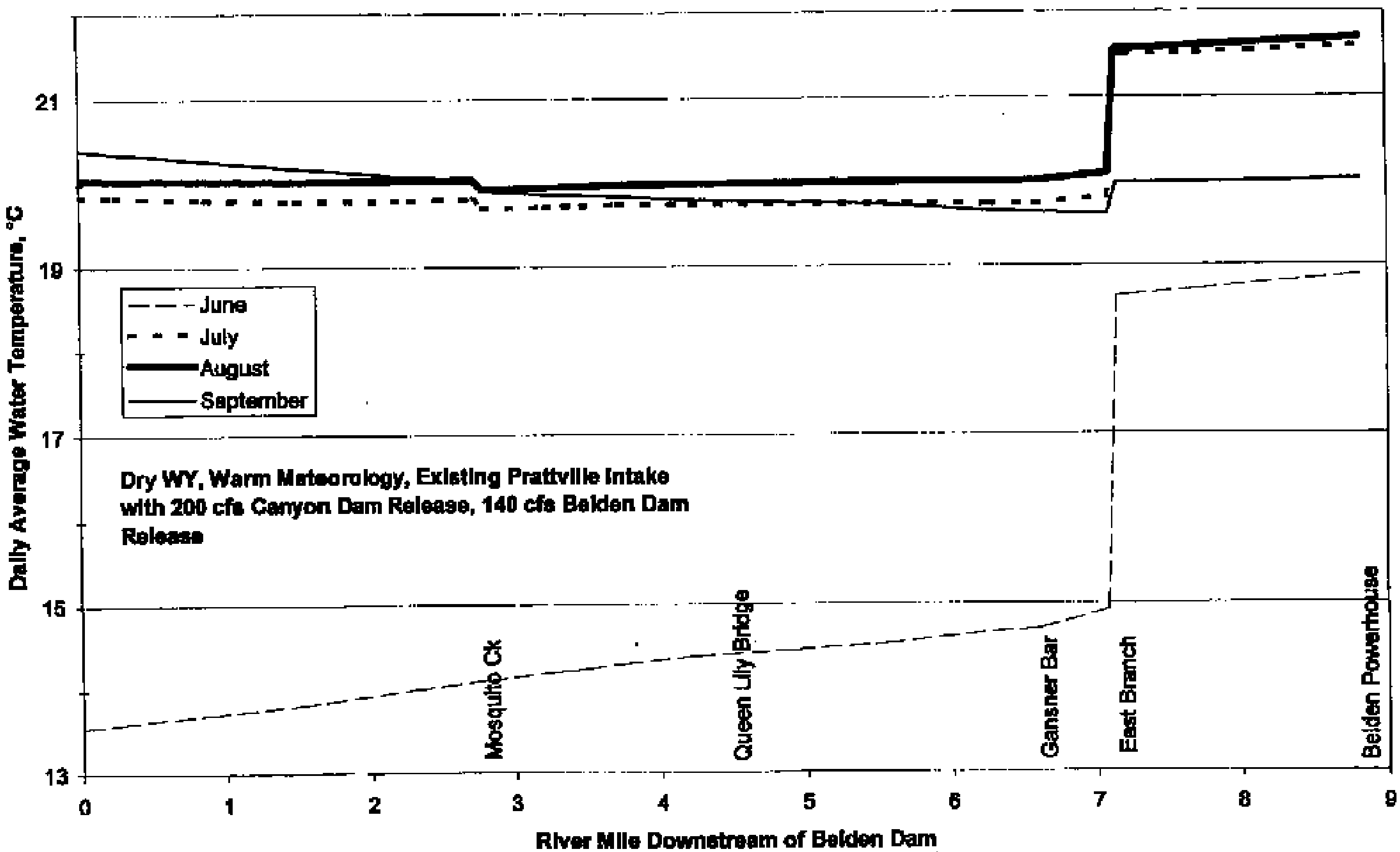
DNEG21B

North Fork Feather River Project, FERC 2105
Belden Reach



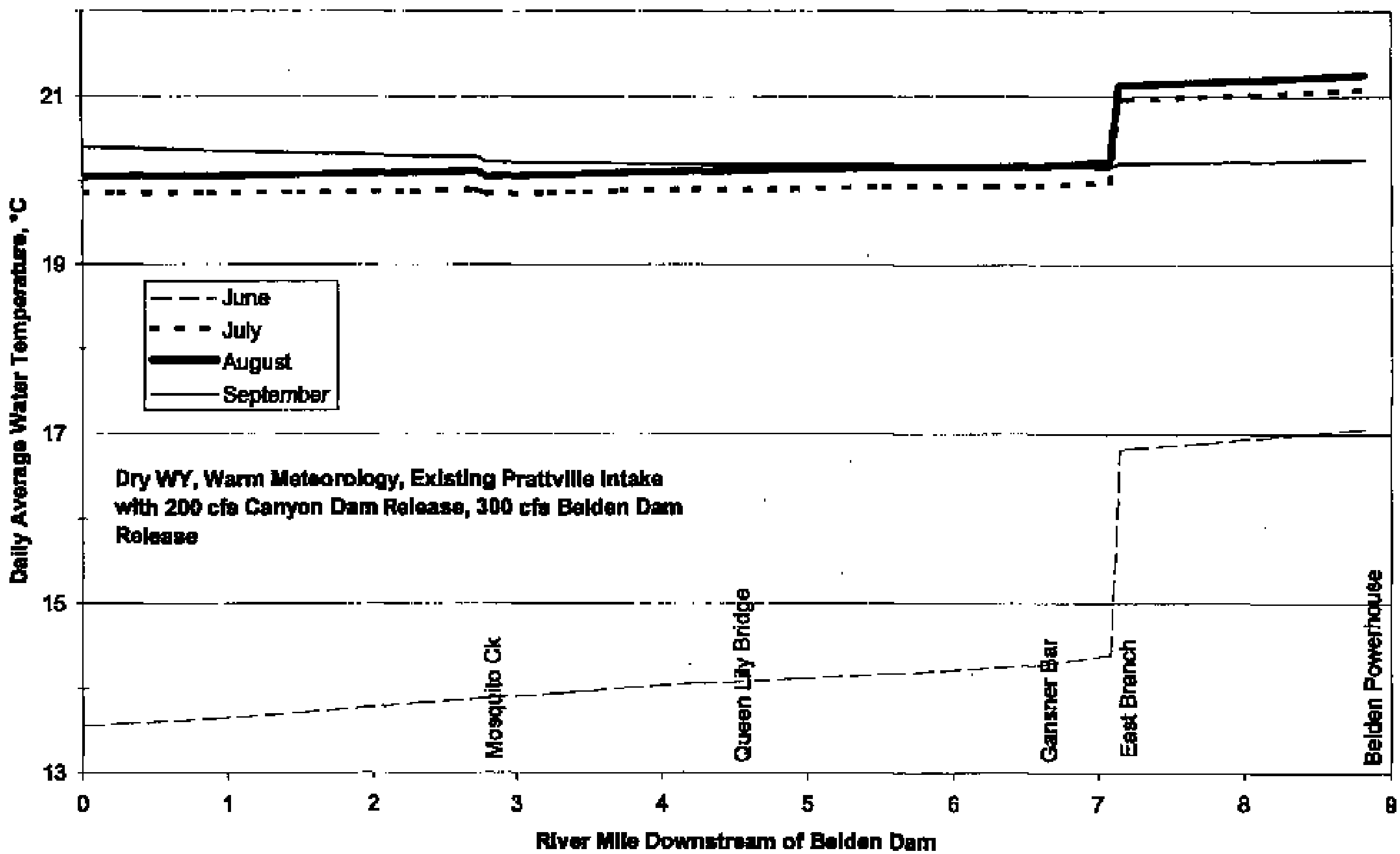
DNEG21D

North Fork Feather River Project, FERC 2105
Belden Reach

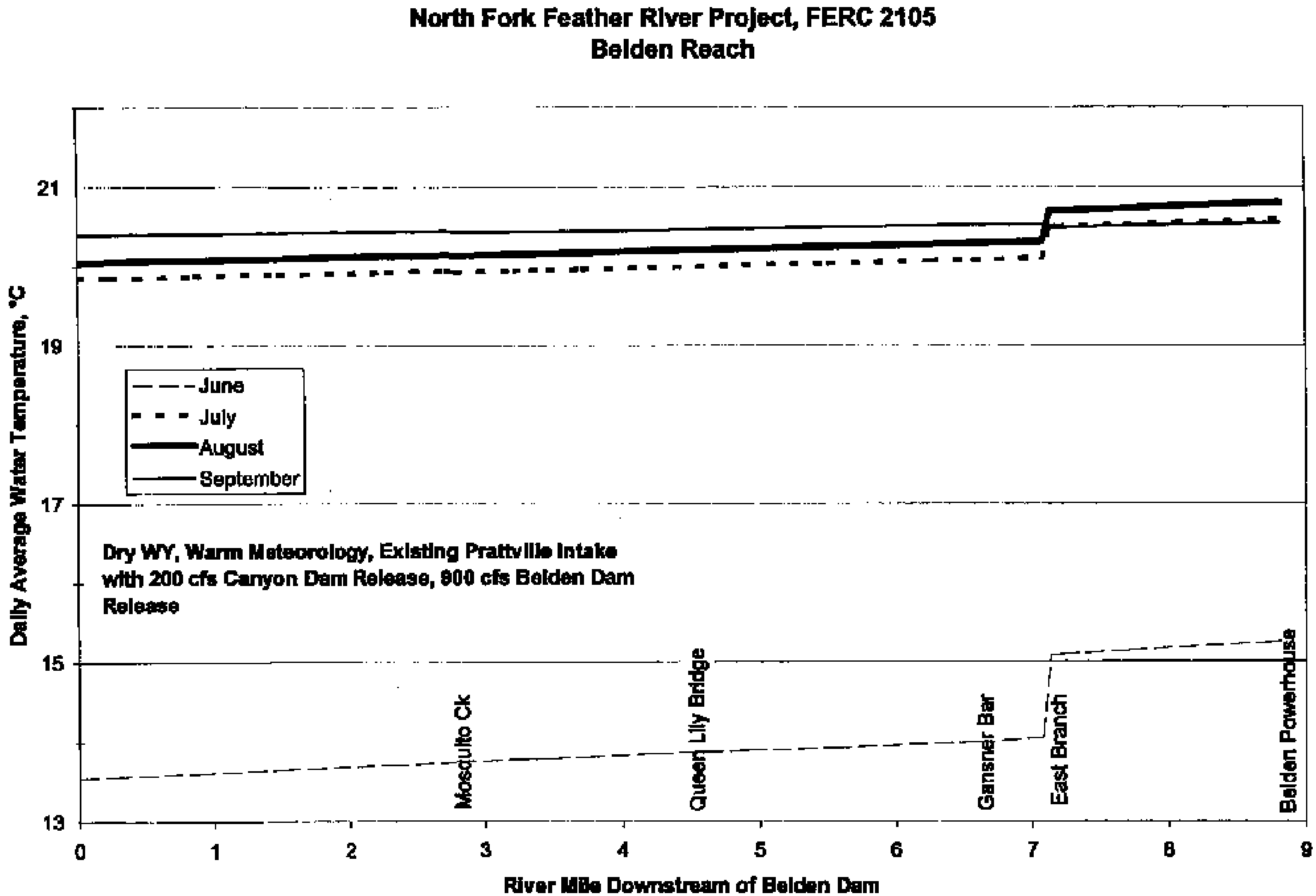


DWEG21A

North Fork Feather River Project, FERC 2105
Belden Reach



DWEG21C


North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
21
19
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June
July
August
September
Dry WY, Warm Meteorology, Existing Prattville Intake with 200 cfs Canyon Dam Release, 900 cfs Belden Dam Release
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
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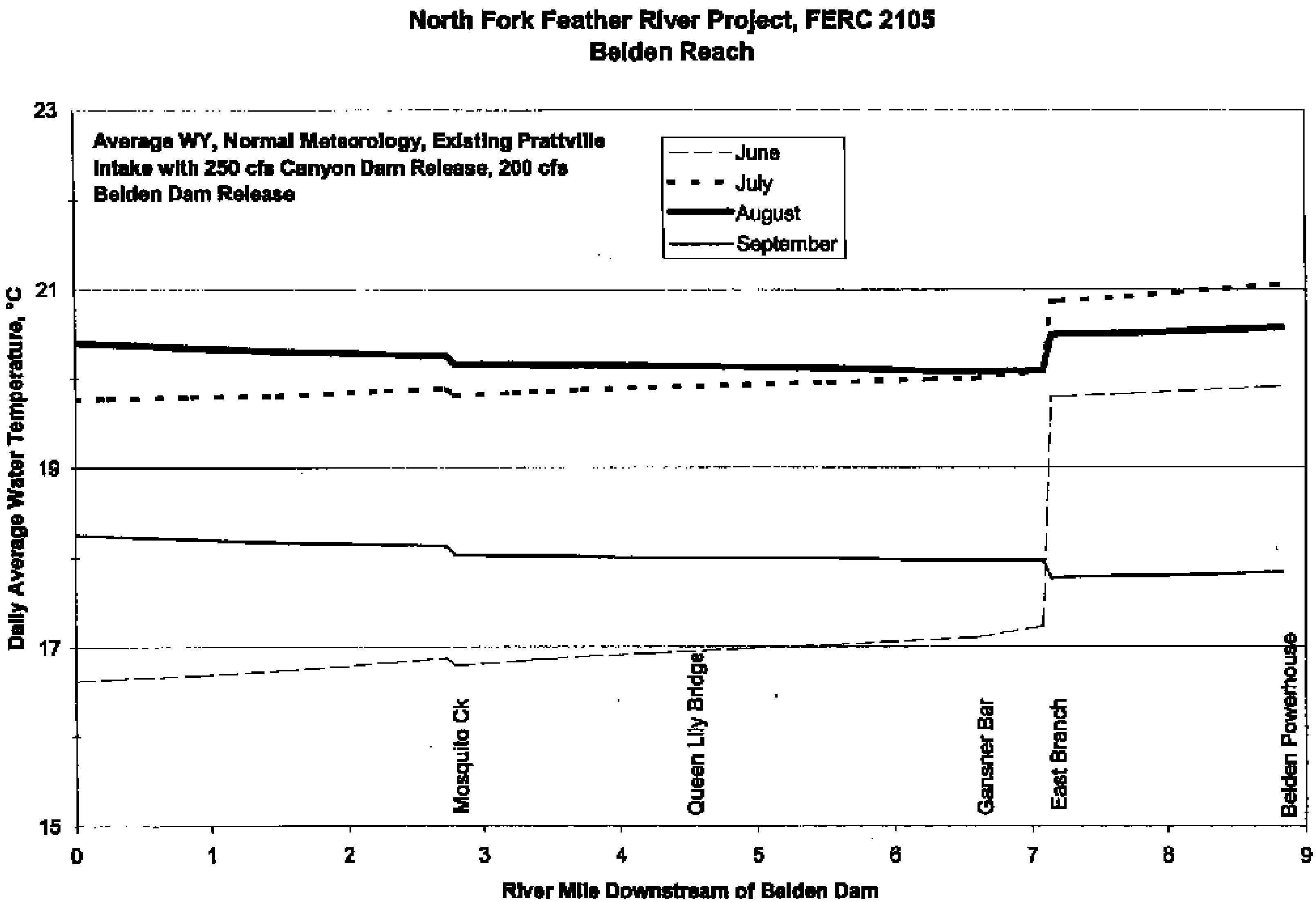
9
River Mile Downstream of Belden Dam

DWEG21E



North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Normal Meteorology, Existing Prattville Intake with 250 cfs Canyon Dam Release, 200 cfs Belden Dam Release
June
July
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September
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Daily Average Water Temperature, °C
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
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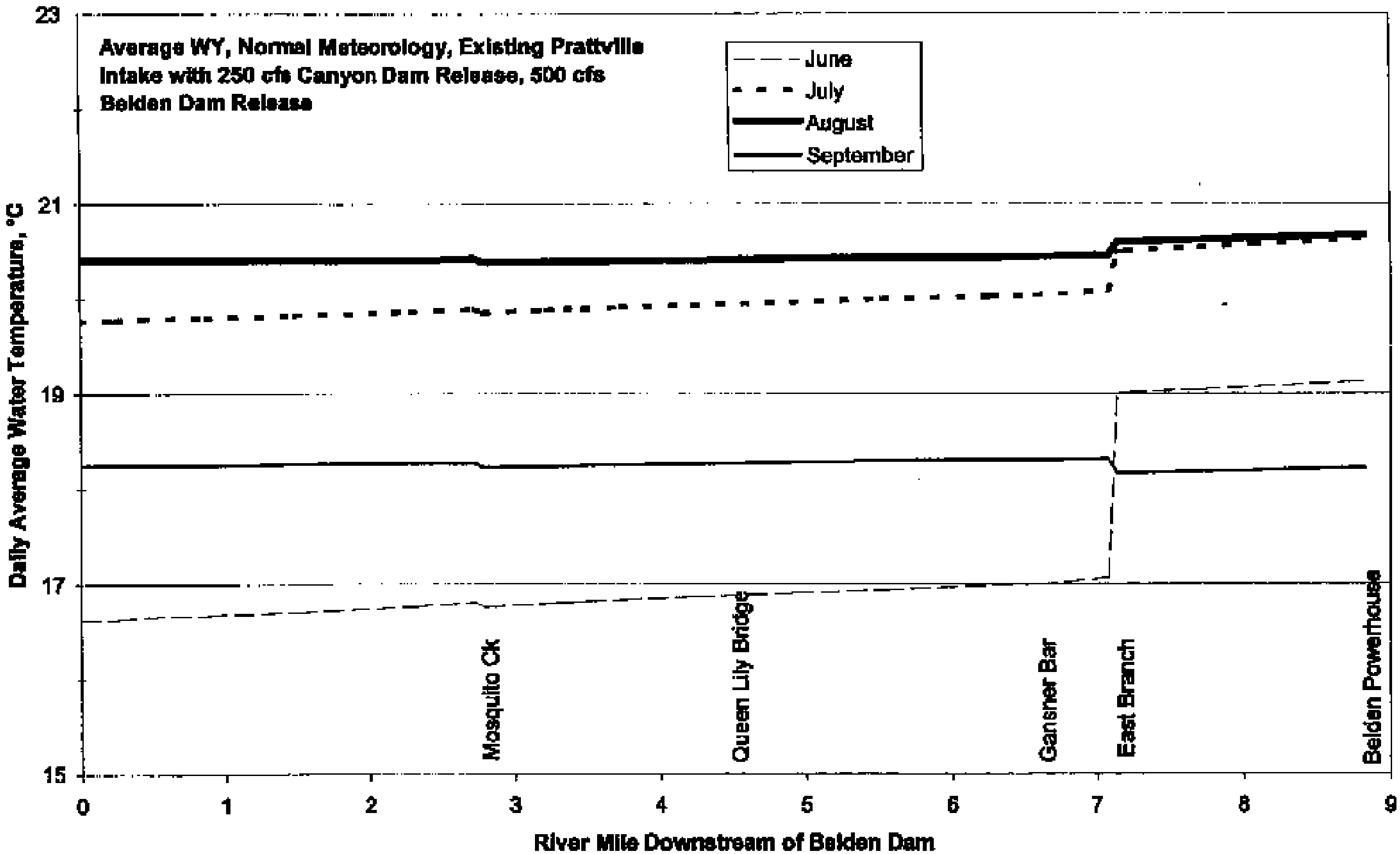
9
River Mile Downstream of Belden Dam

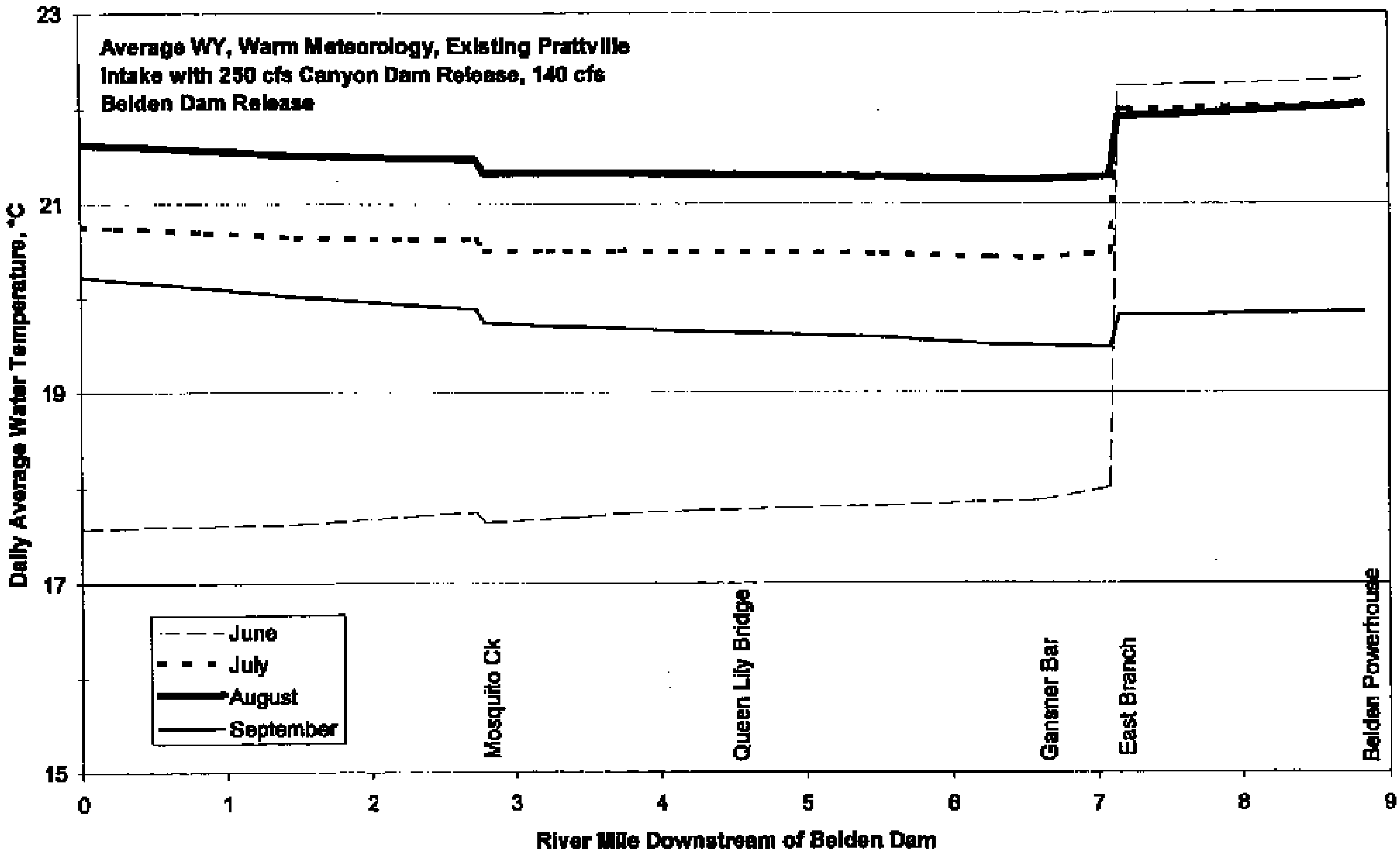
ANEH21B

North Fork Feather River Project, FERC 2105
Belden Reach



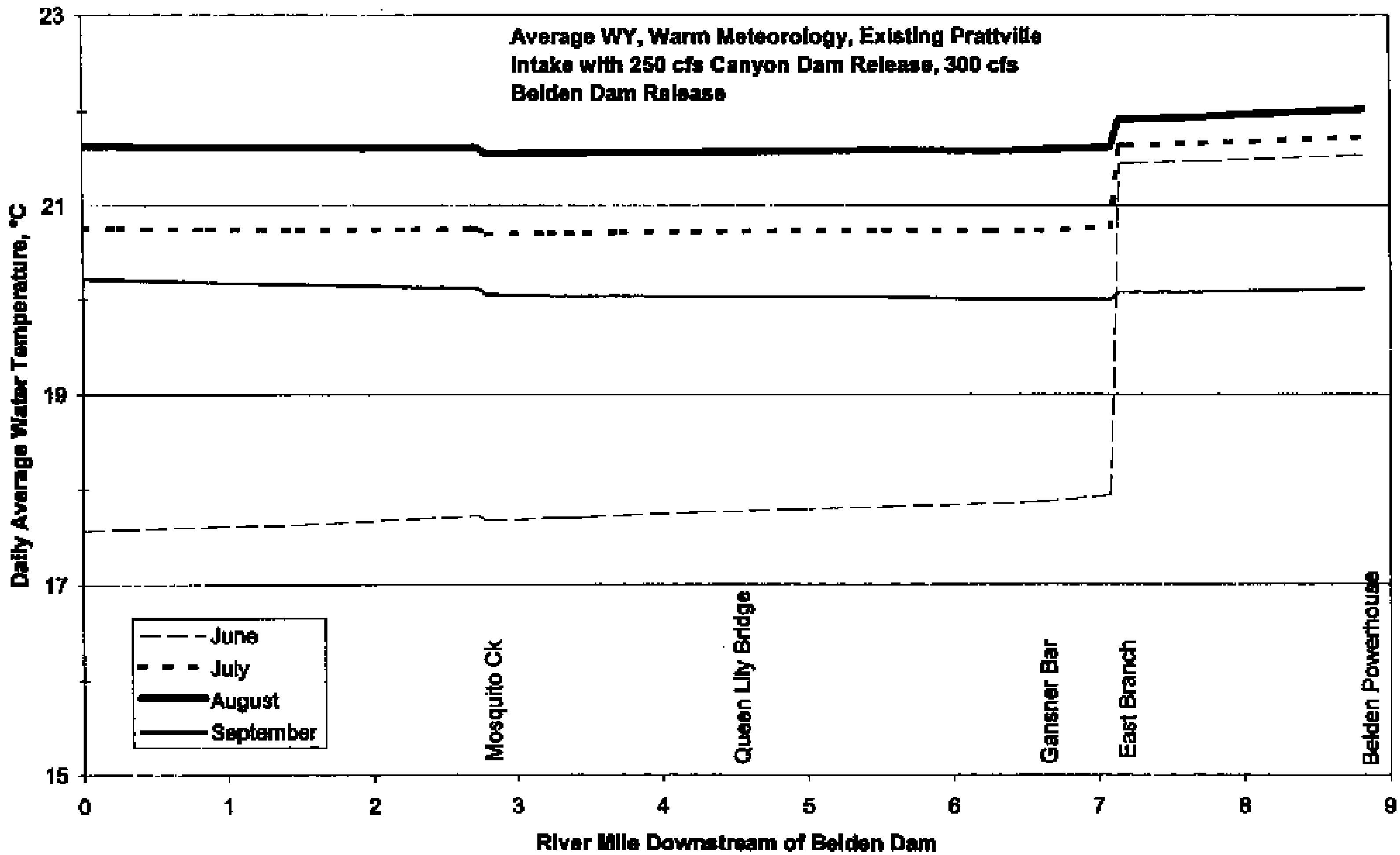
ANEH21D

North Fork Feather River Project, FERC 2105
Belden Reach

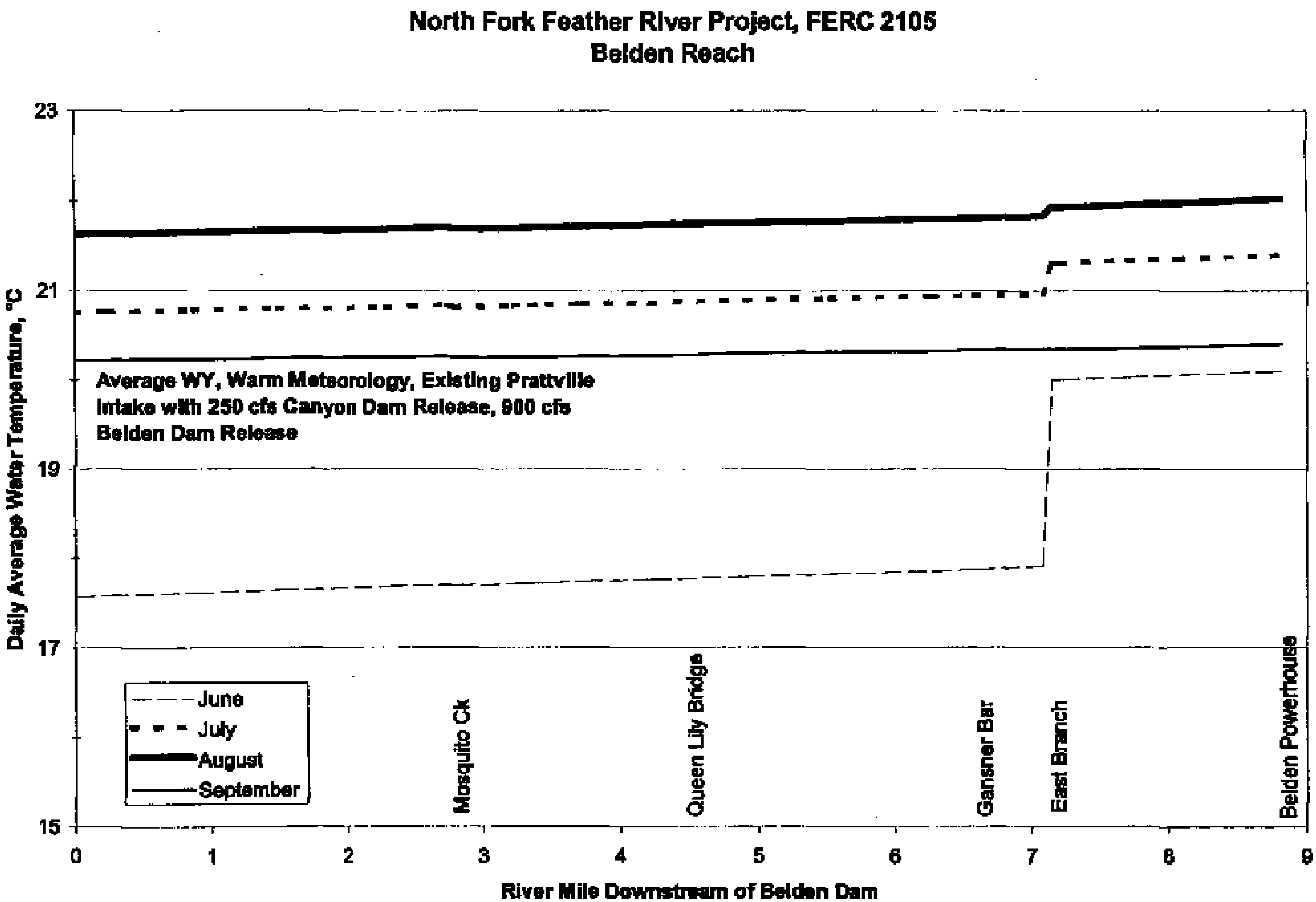


AWEH21A

North Fork Feather River Project, FERC 2105
Belden Reach



AWEH21C


North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
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Average WY, Warm Meteorology, Existing Prattville Intake with 250 cfs Canyon Dam Release, 900 cfs Belden Dam Release
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
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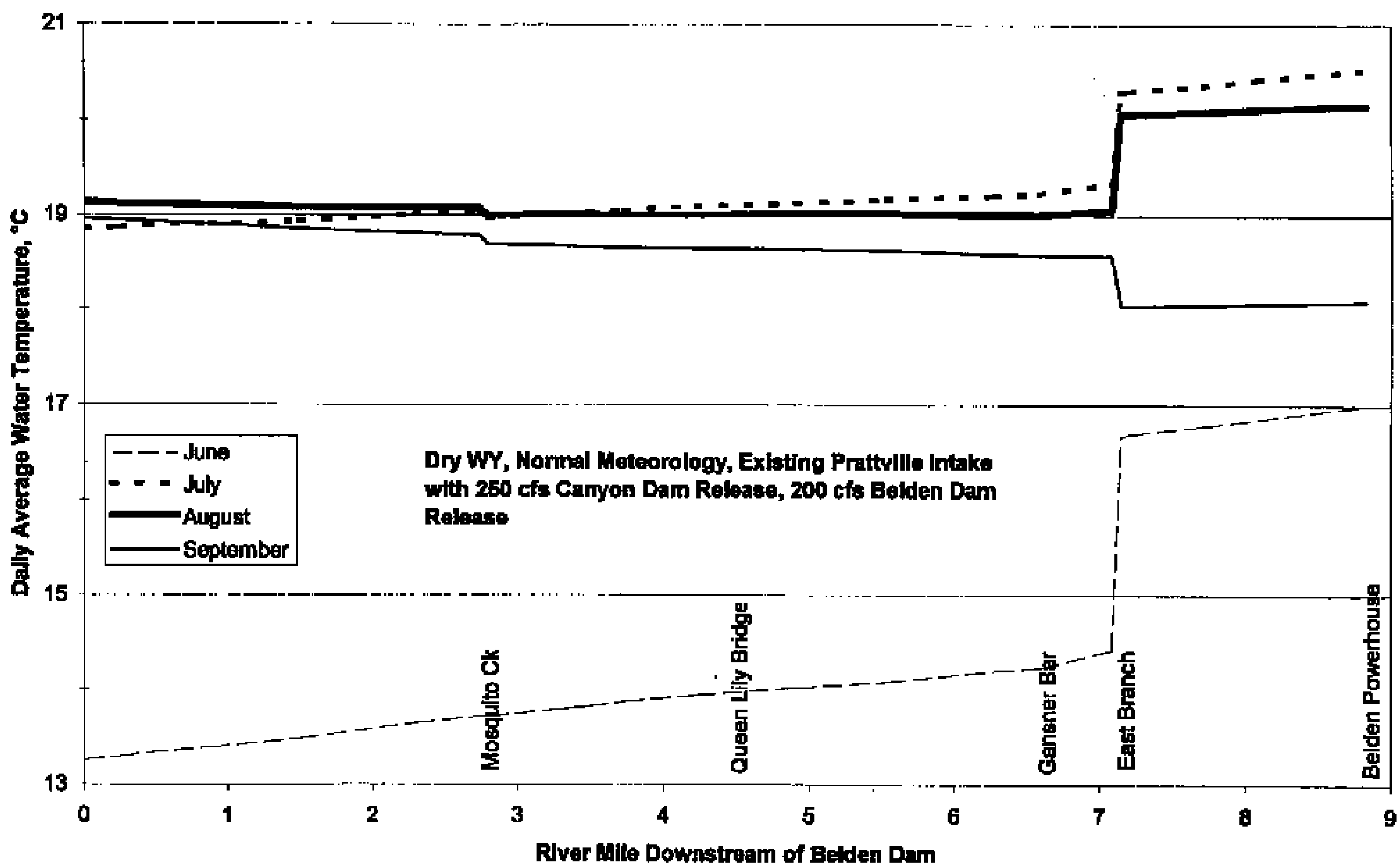
River Mile Downstream of Belden Dam

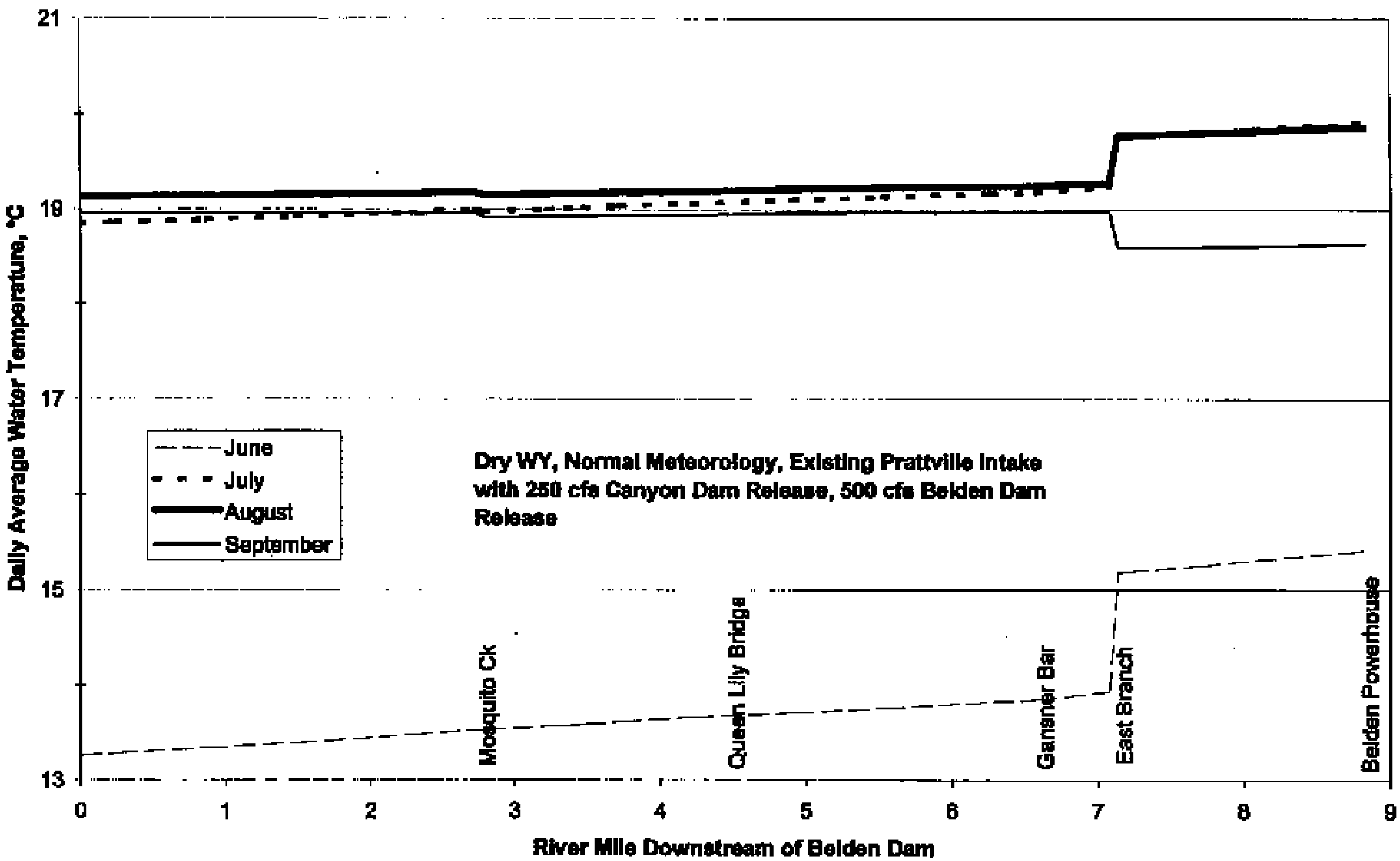
AWEH21E

North Fork Feather River Project, FERC 2105
Belden Reach

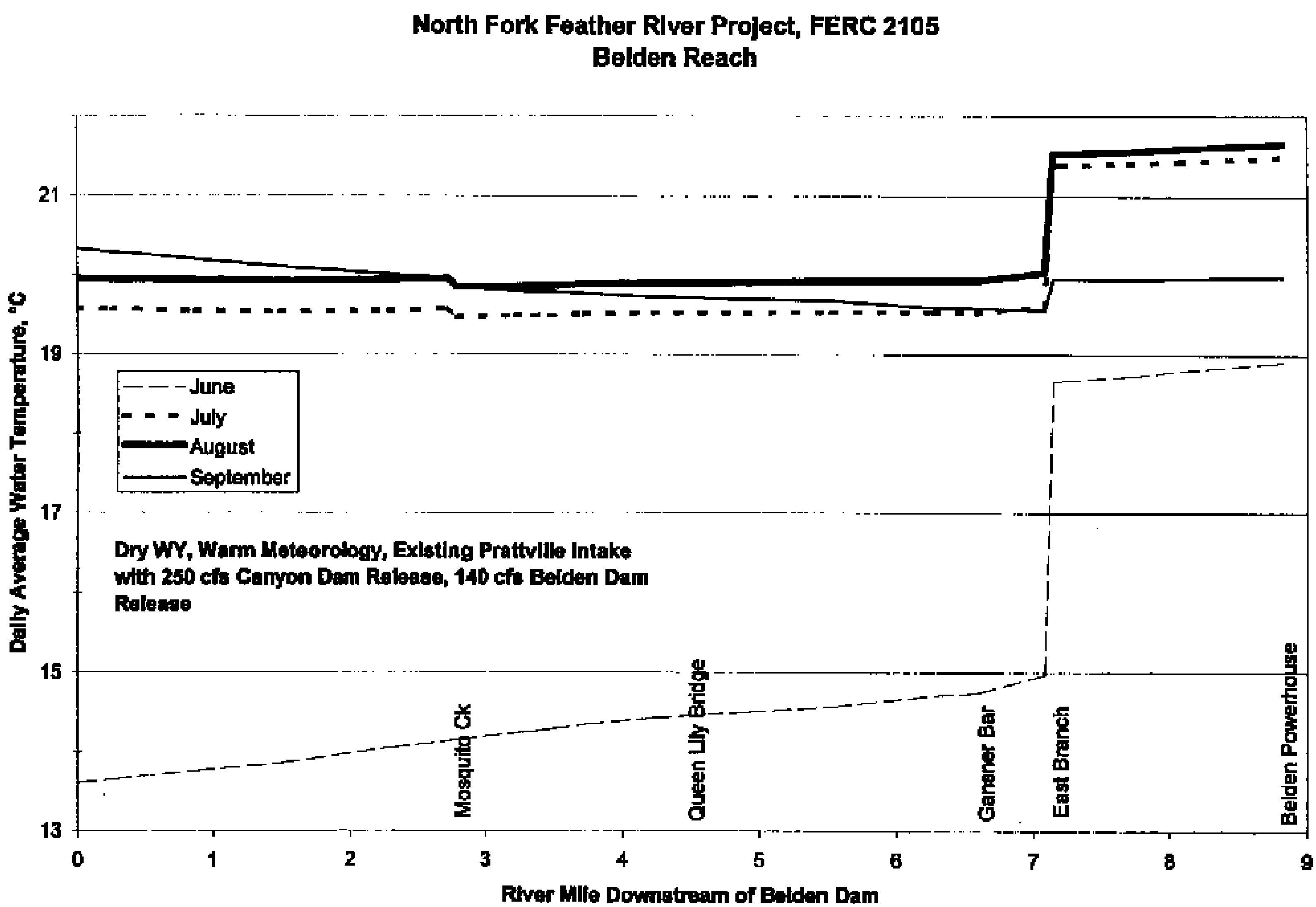


DNEH21B

North Fork Feather River Project, FERC 2105
Belden Reach



DNEH21D


North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
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July
August
September
Dry WY, Warm Meteorology, Existing Prattville Intake with 250 cfs Canyon Dam Release, 140 cfs Belden Dam Release
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East Branch
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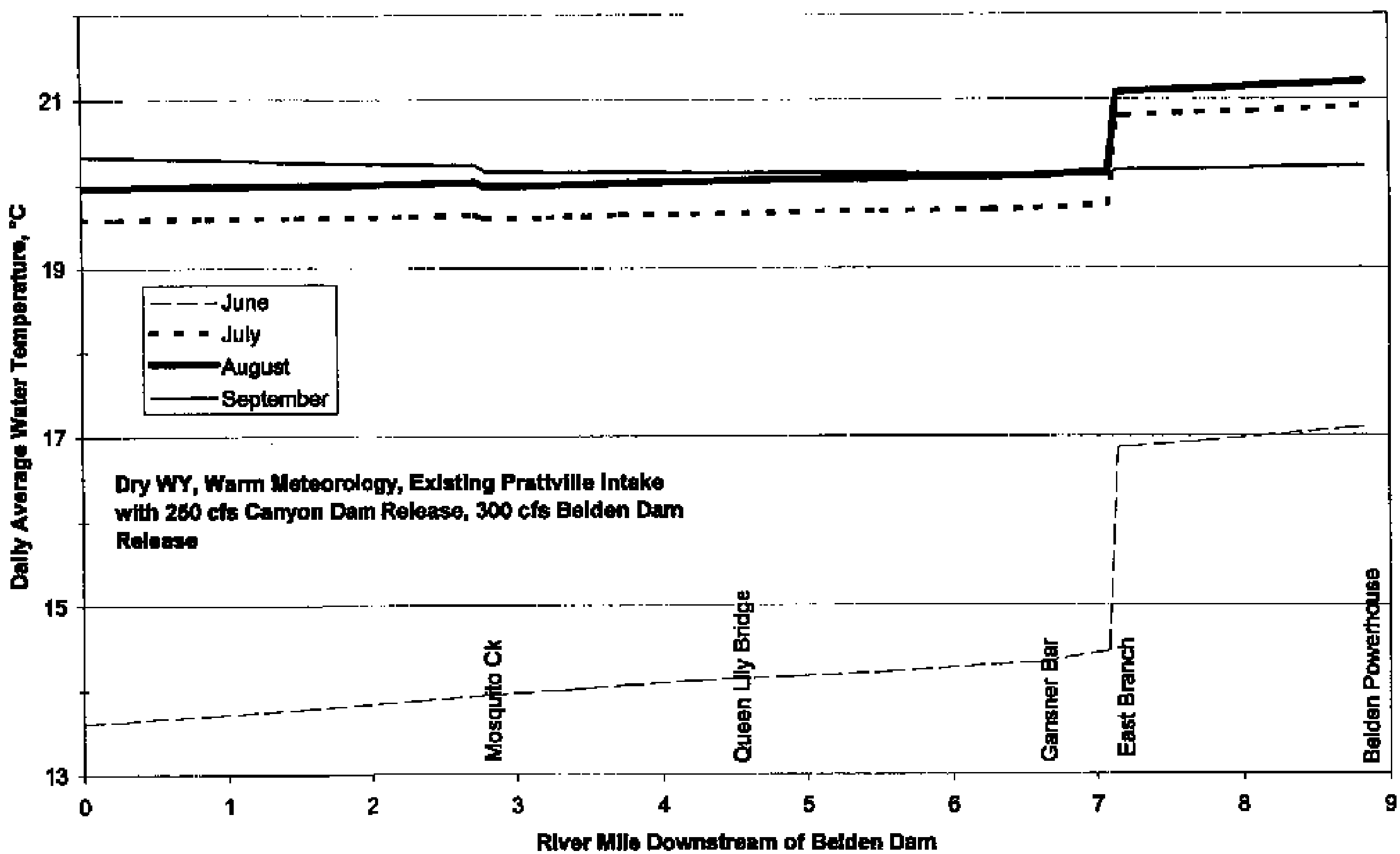
River Mile Downstream of Belden Dam

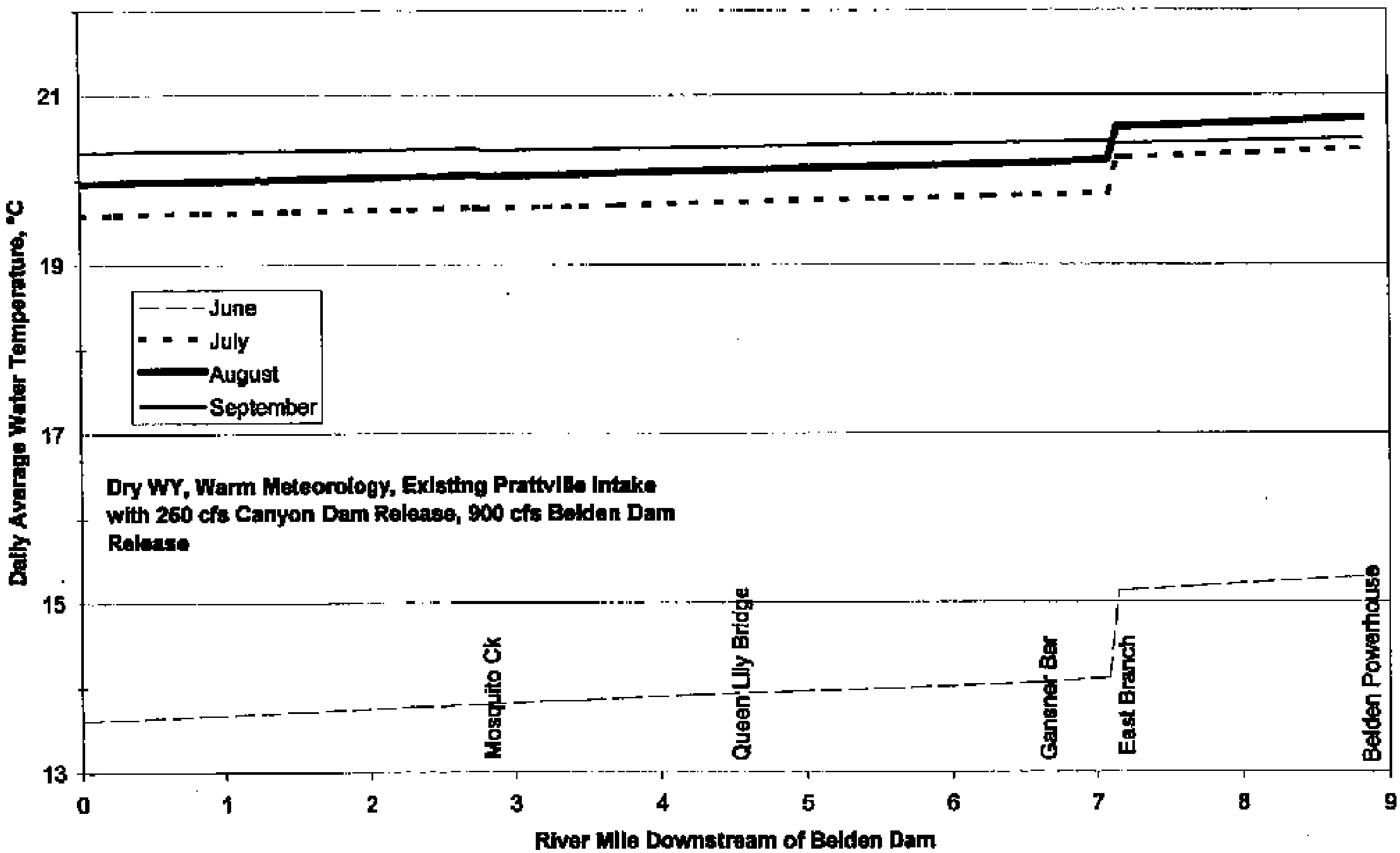
DWEH21A

North Fork Feather River Project, FERC 2105
Belden Reach

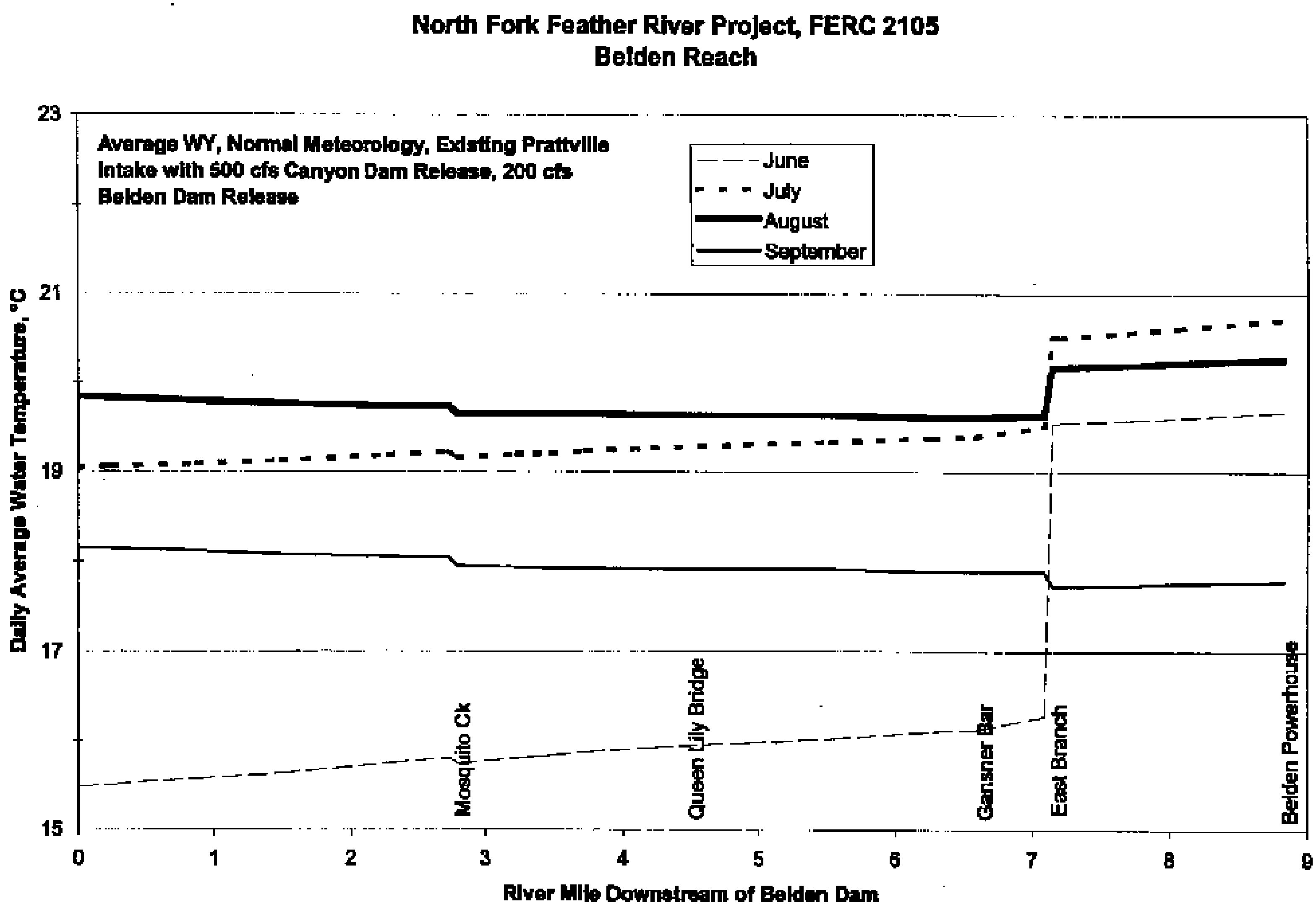


DWEH21C

North Fork Feather River Project, FERC 2105
Belden Reach



DWEH21E


North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Normal Meteorology, Existing Prattville Intake with 500 cfs Canyon Dam Release, 200 cfs Belden Dam Release
June
July
August
September
Daily Average Water Temperature, °C
23
21
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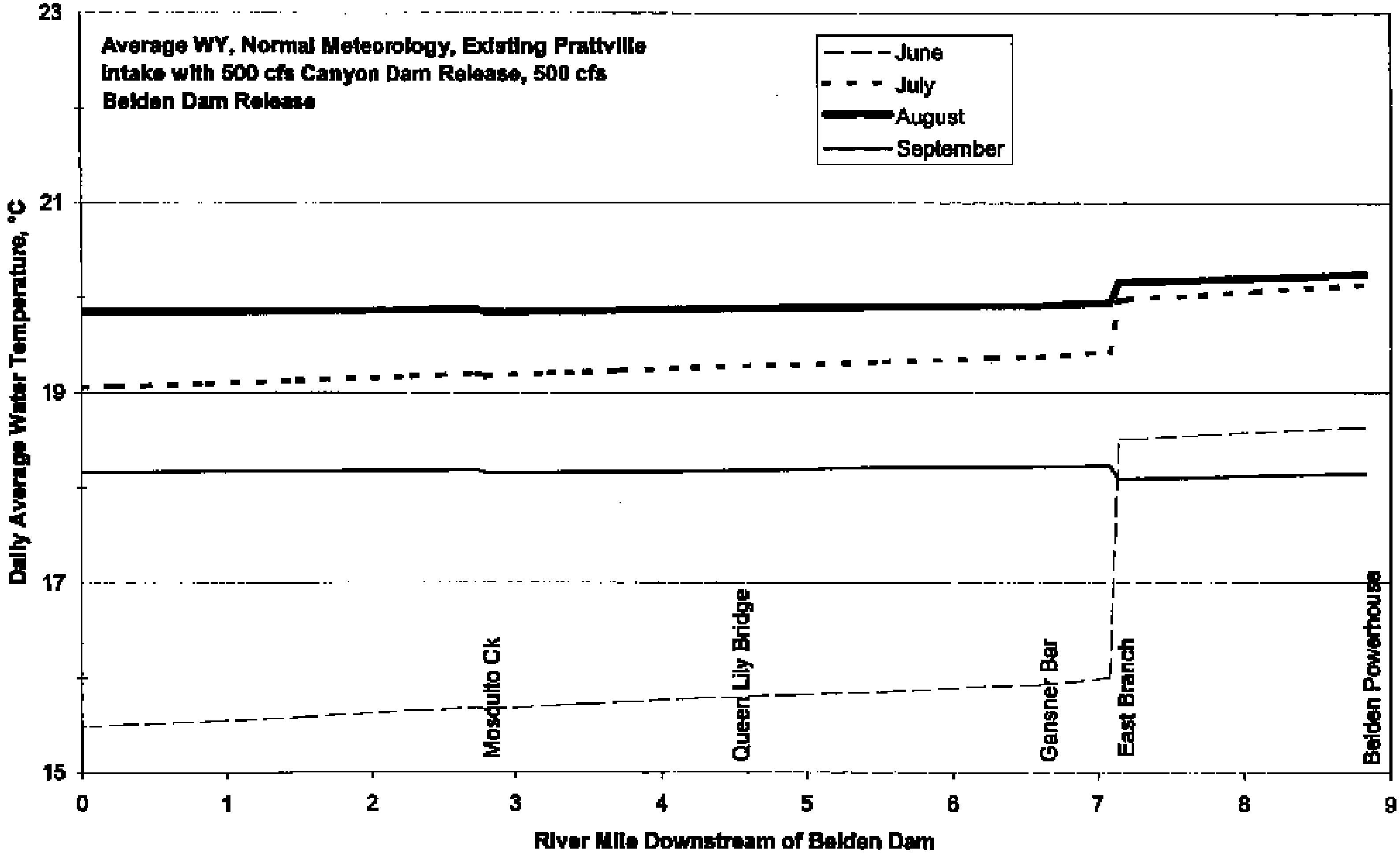
River Mile Downstream of Belden Dam
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

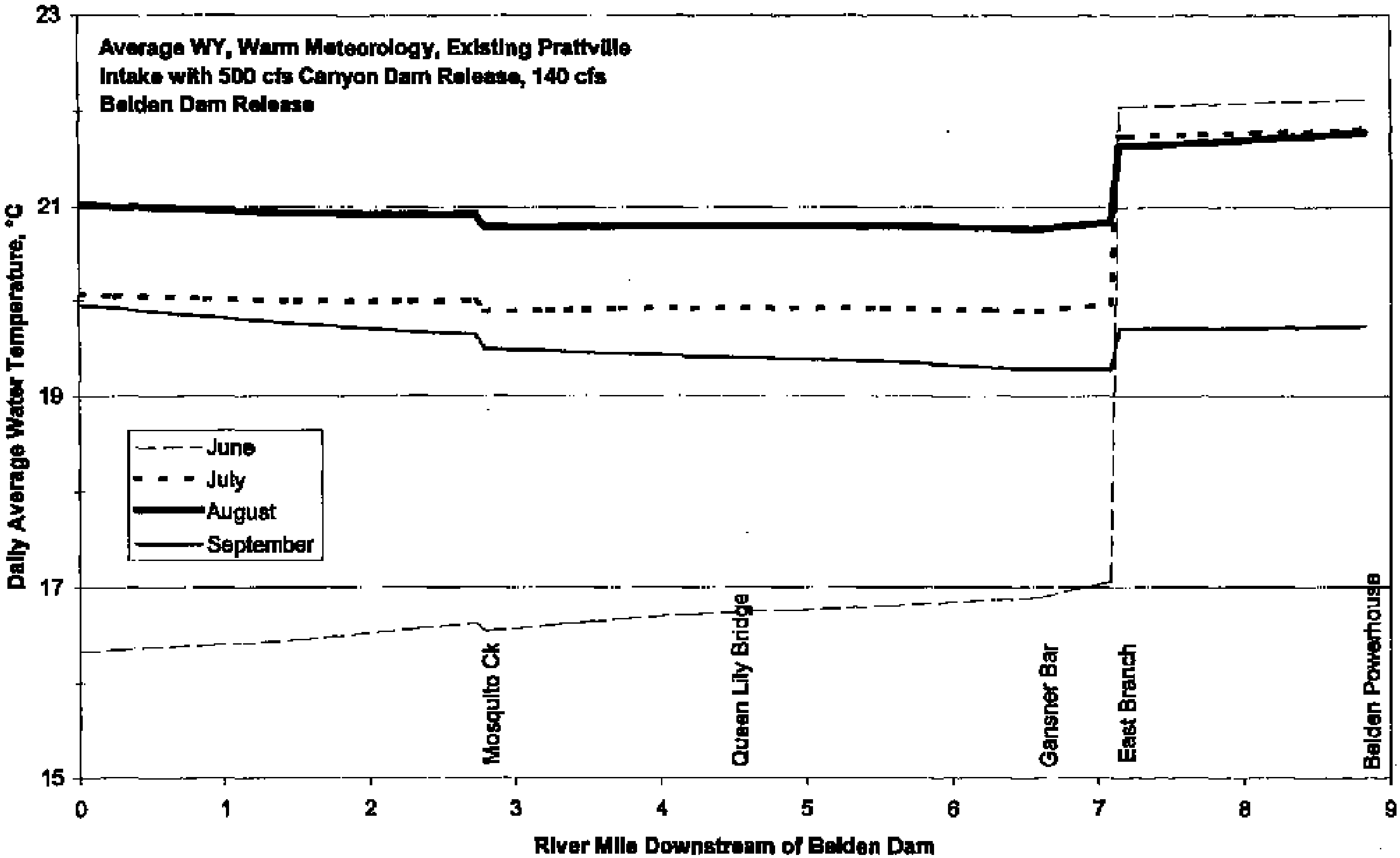
ANEI21B

North Fork Feather River Project, FERC 2105
Belden Reach



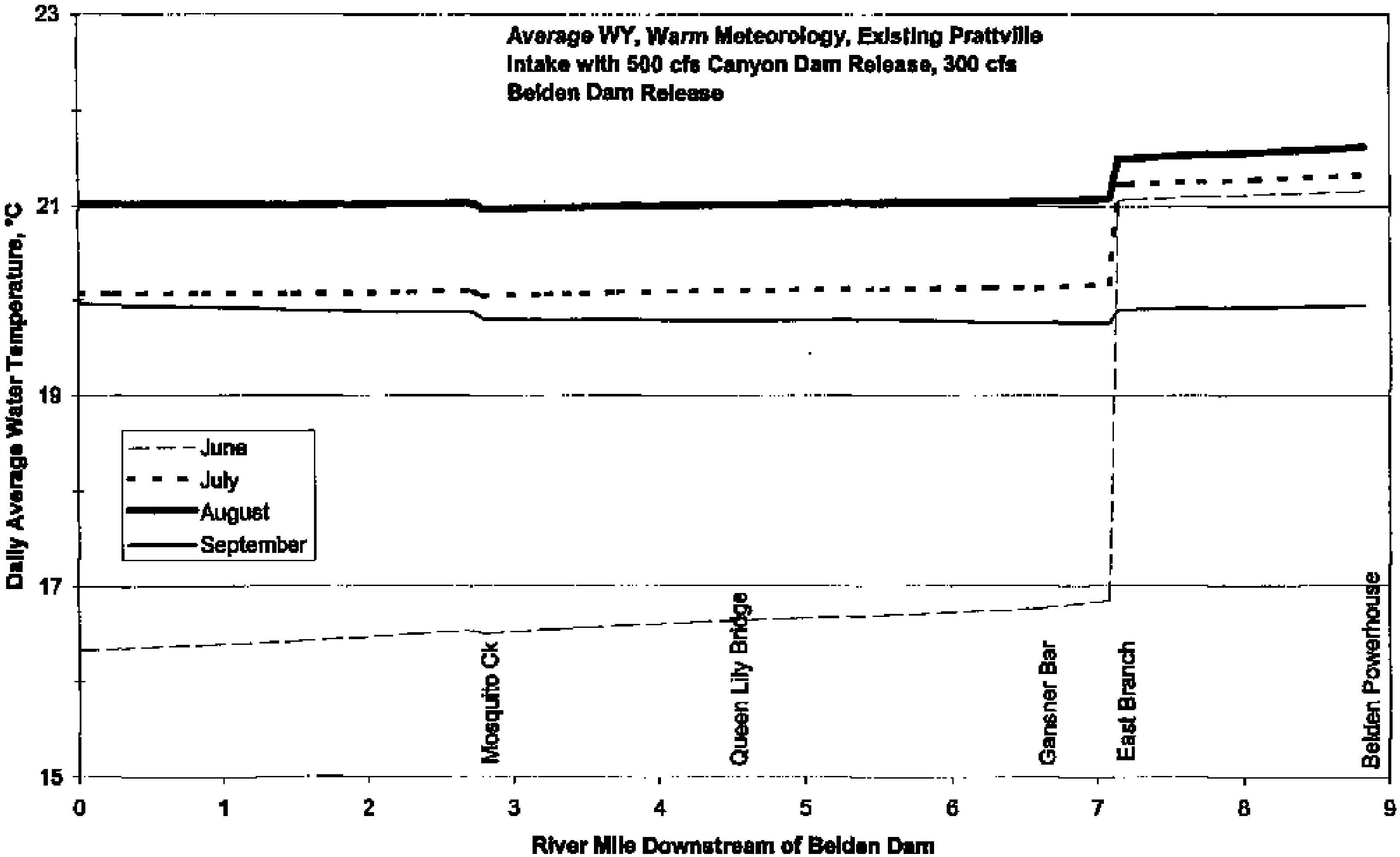
ANEI21D

North Fork Feather River Project, FERC 2105
Belden Reach



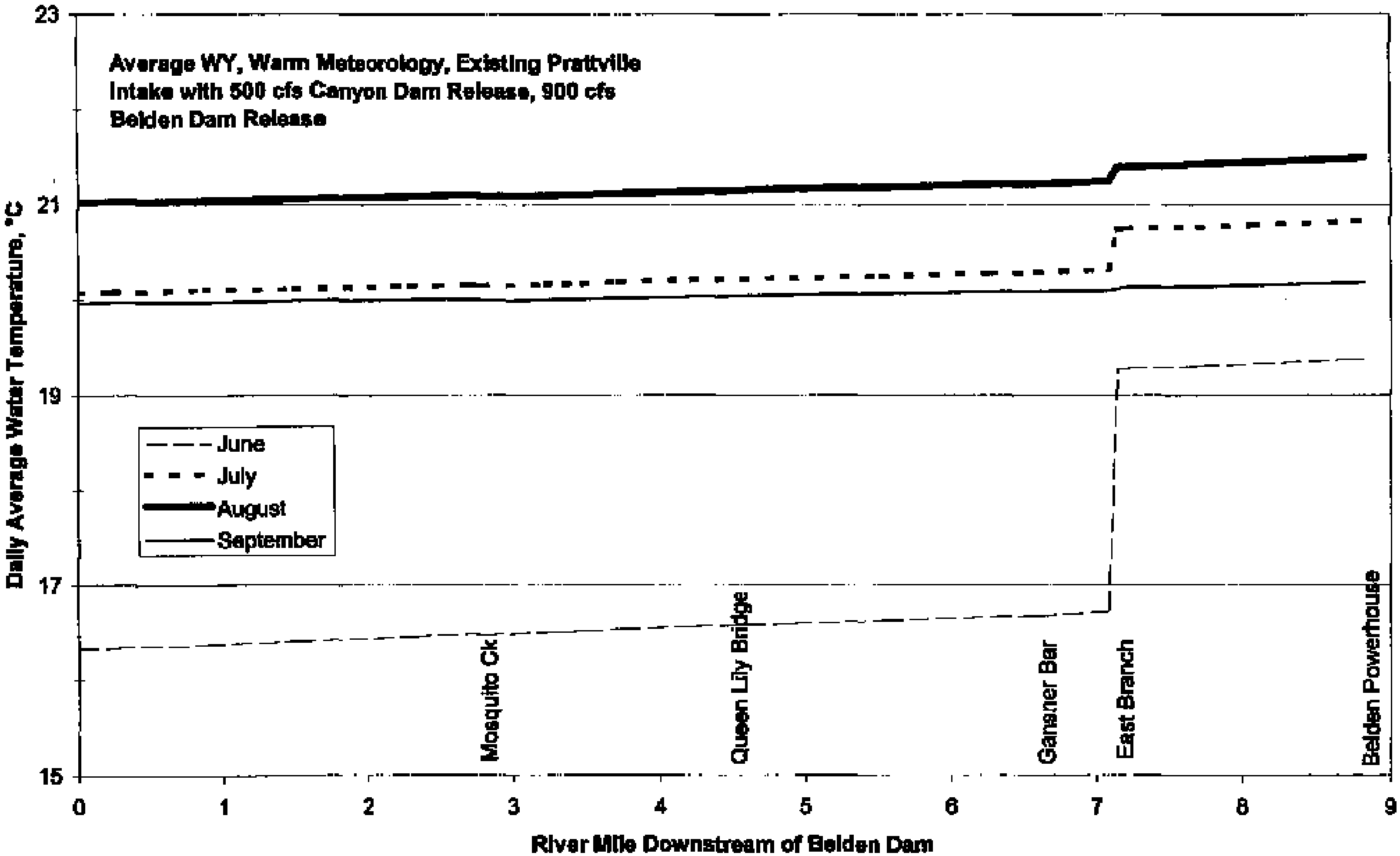
AWEI21A

North Fork Feather River Project, FERC 2105
Belden Reach



AWEI21C

North Fork Feather River Project, FERC 2105
Belden Reach



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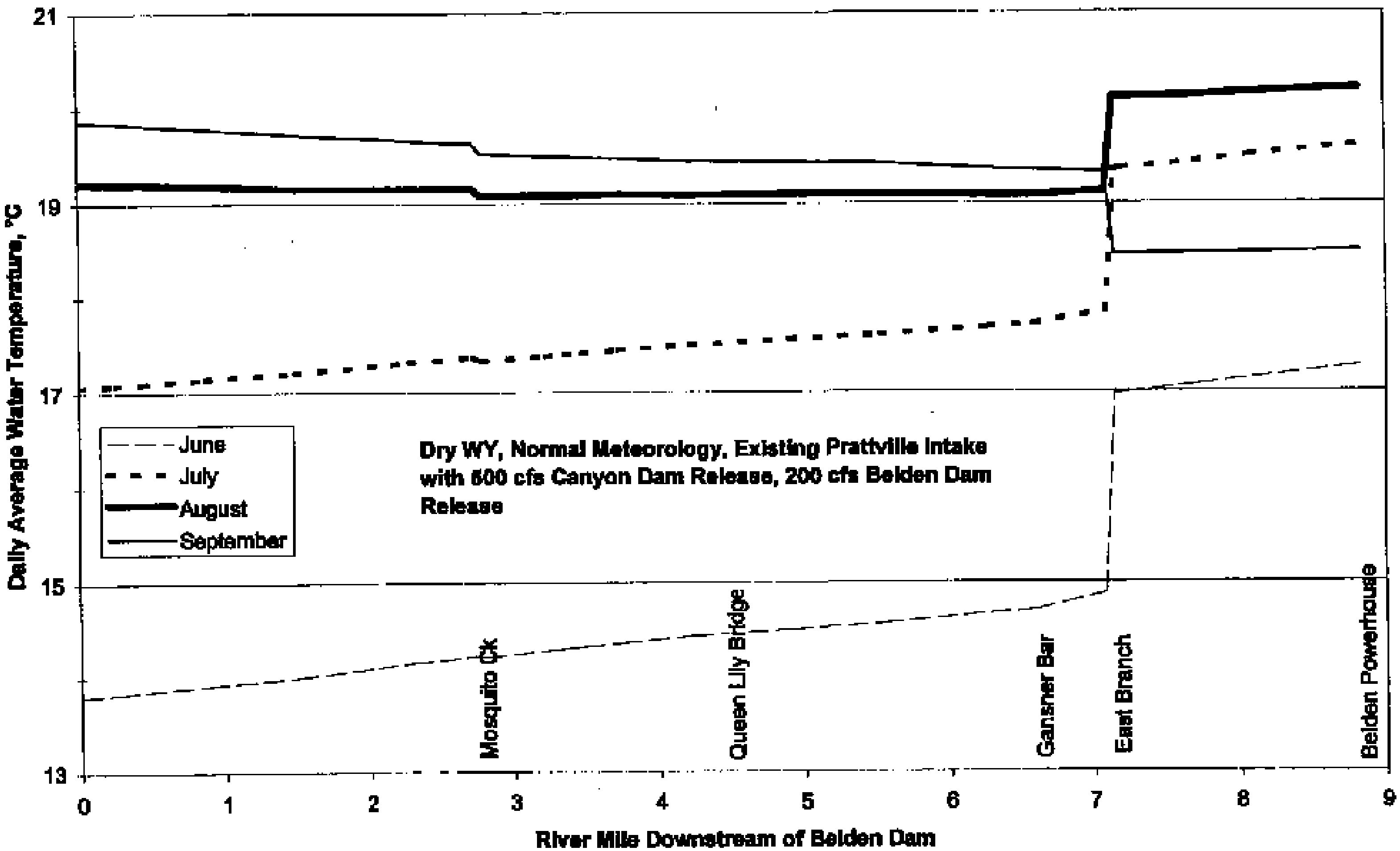
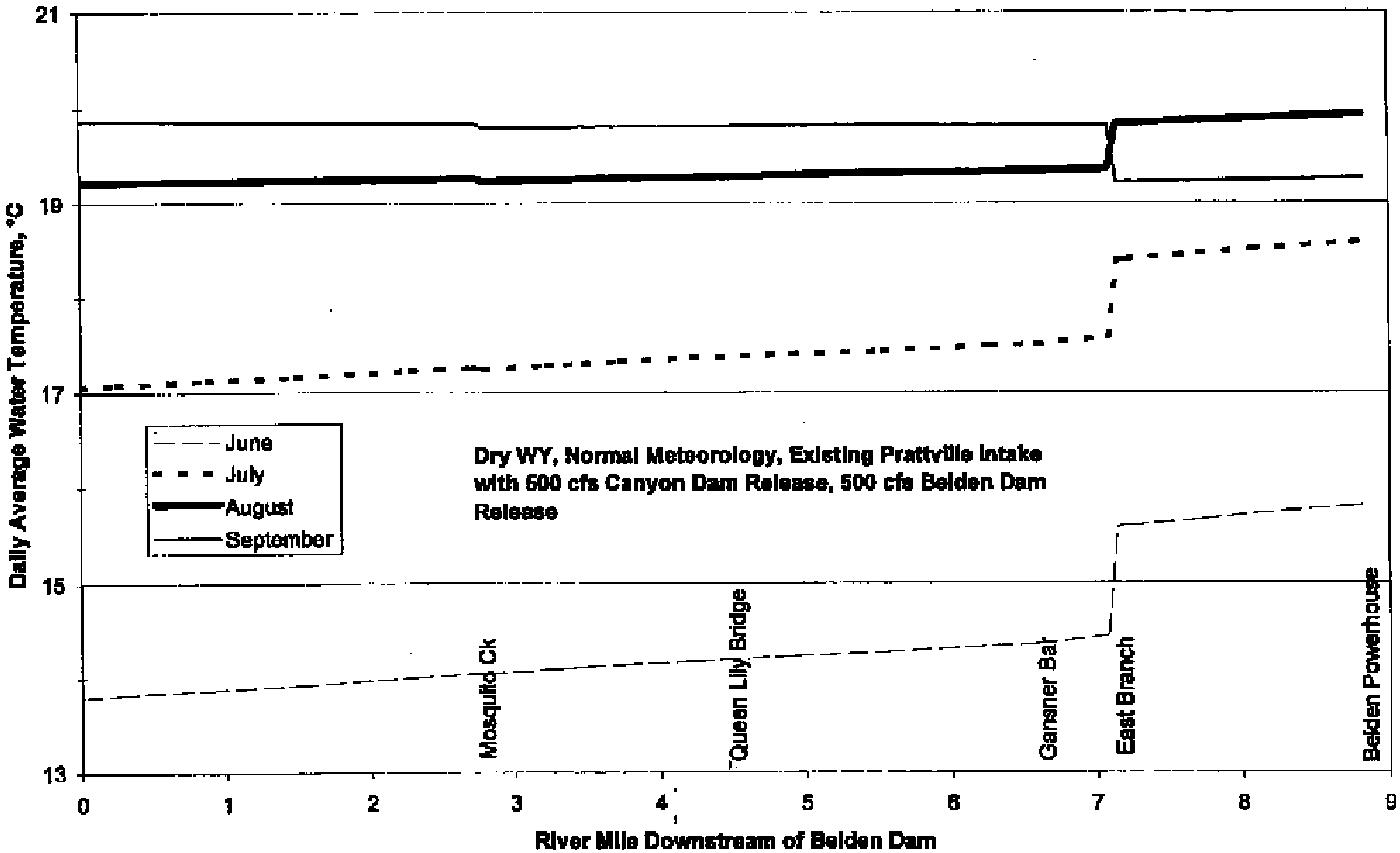
North Fork Feather River Project, FERC 2105
Belden Reach



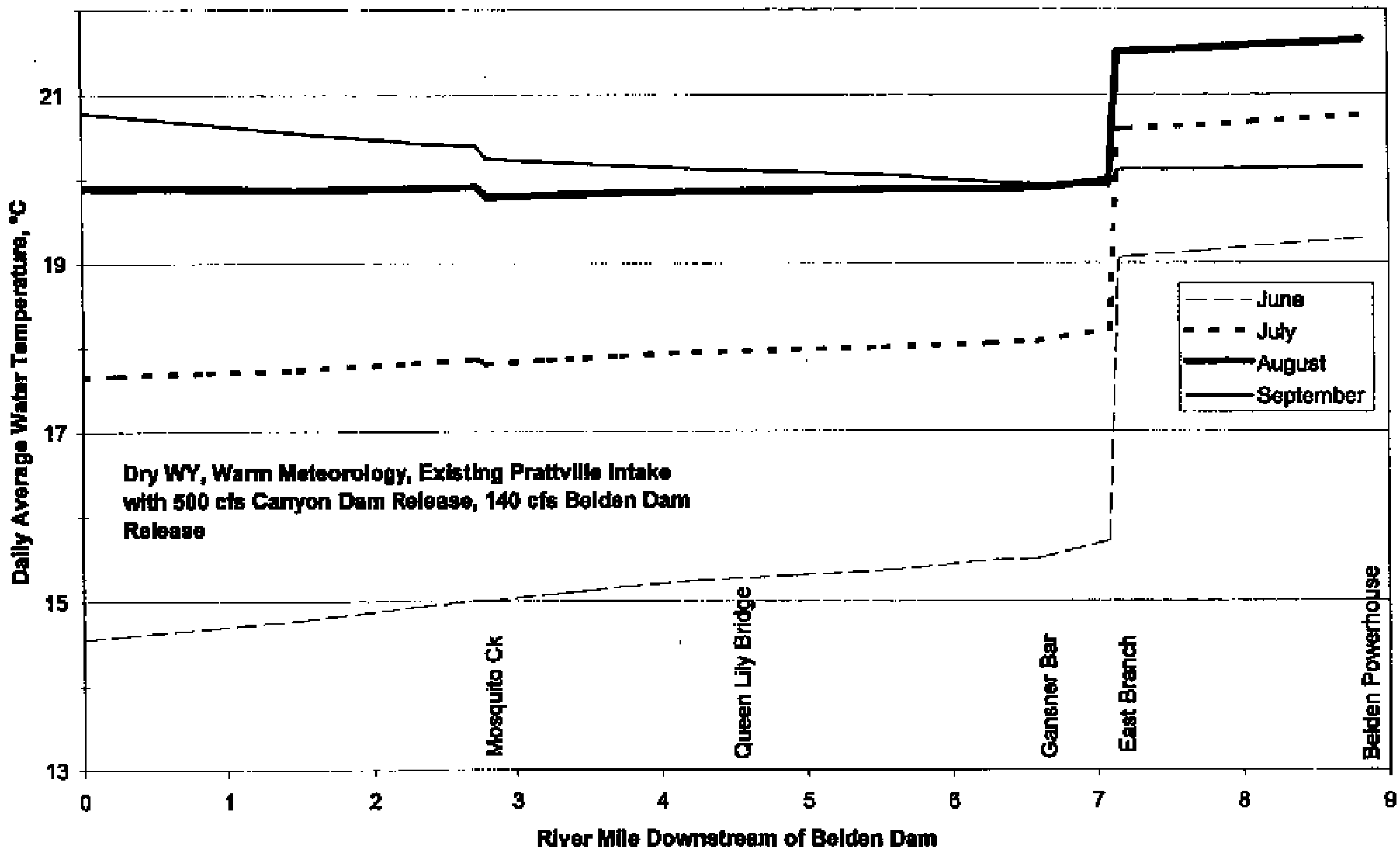
DNEI21B

North Fork Feather River Project, FERC 2105
Belden Reach



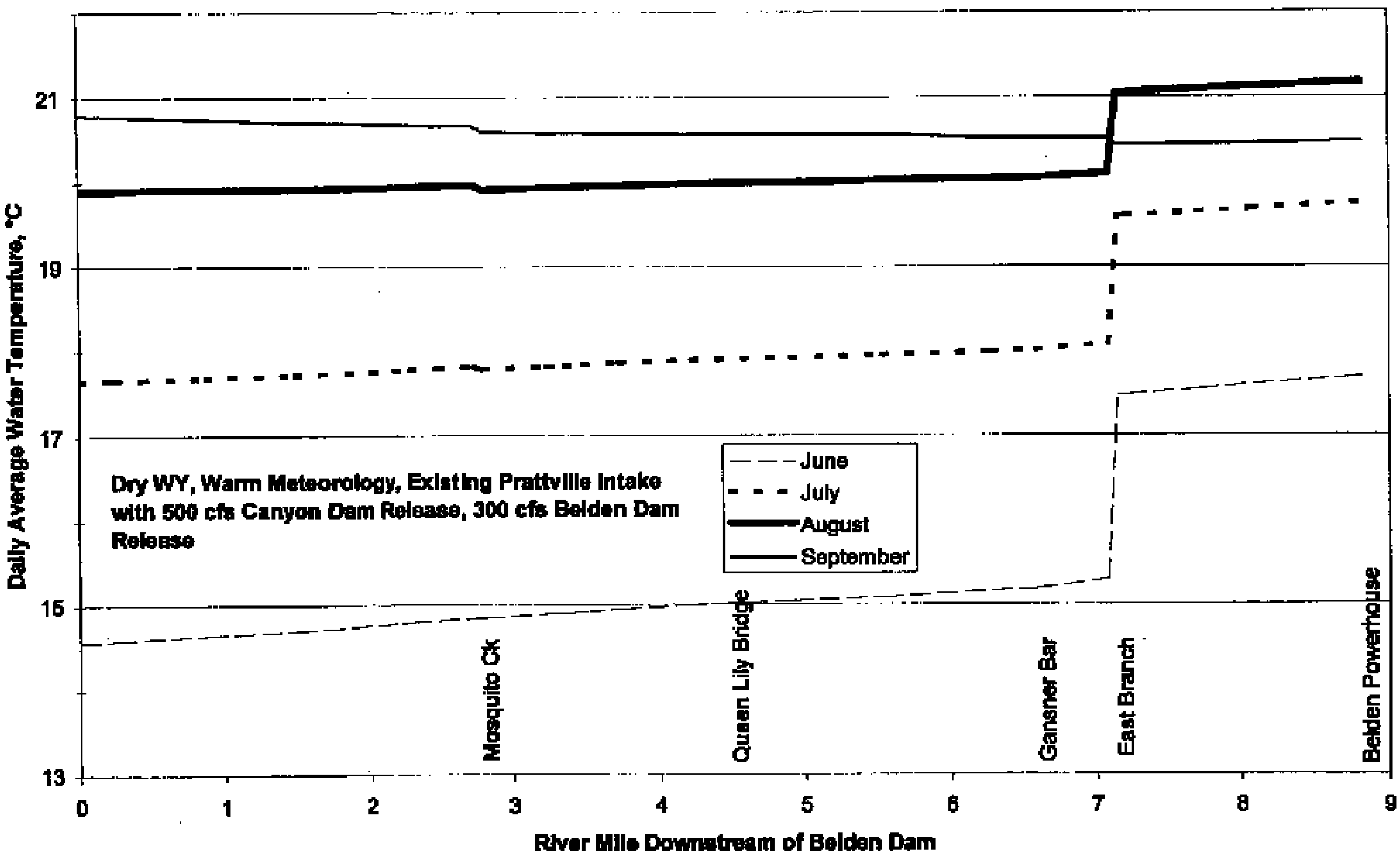
DNEI21D

North Fork Feather River Project, FERC 2105
Belden Reach



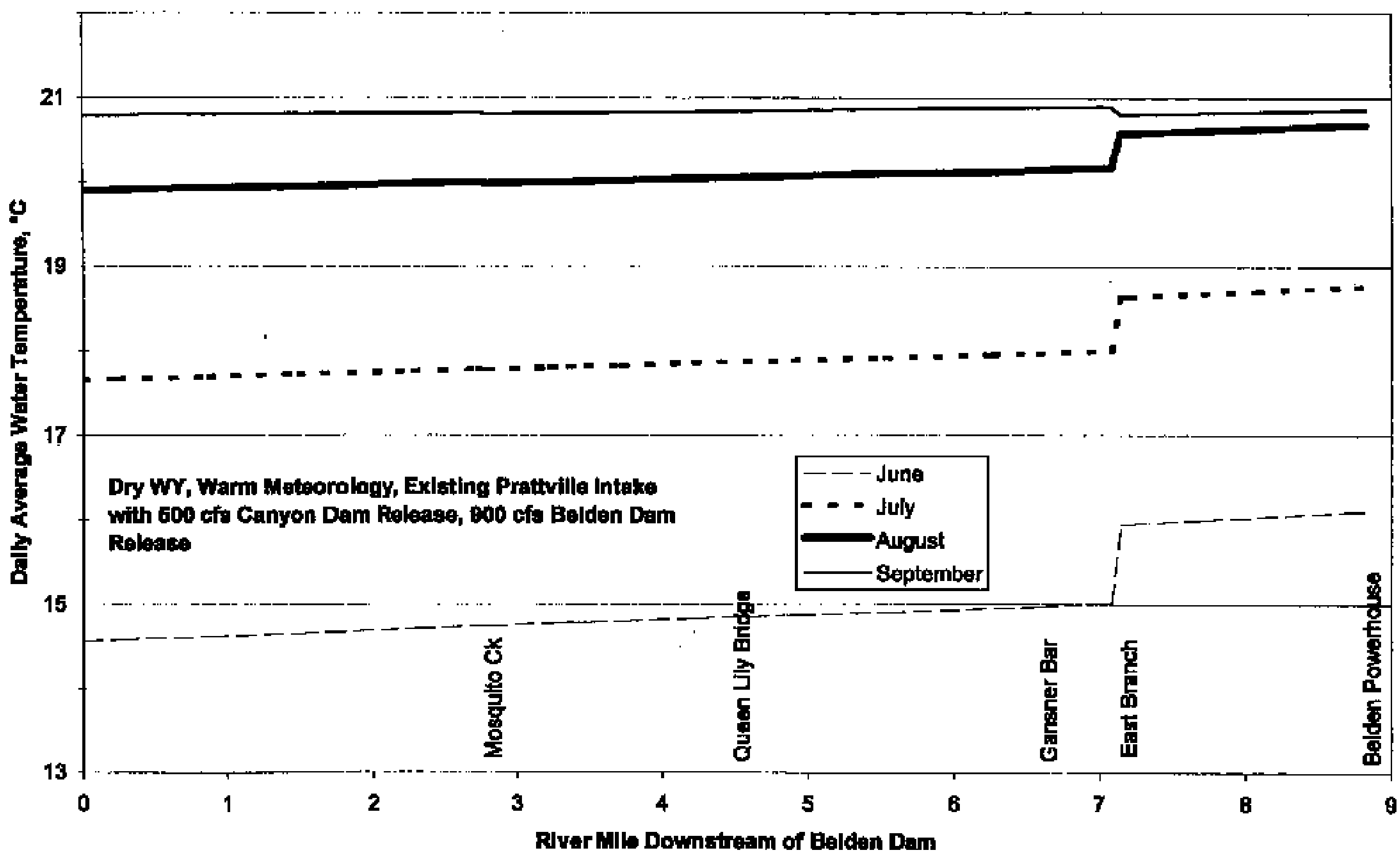
DWEI21A

North Fork Feather River Project, FERC 2105
Belden Reach



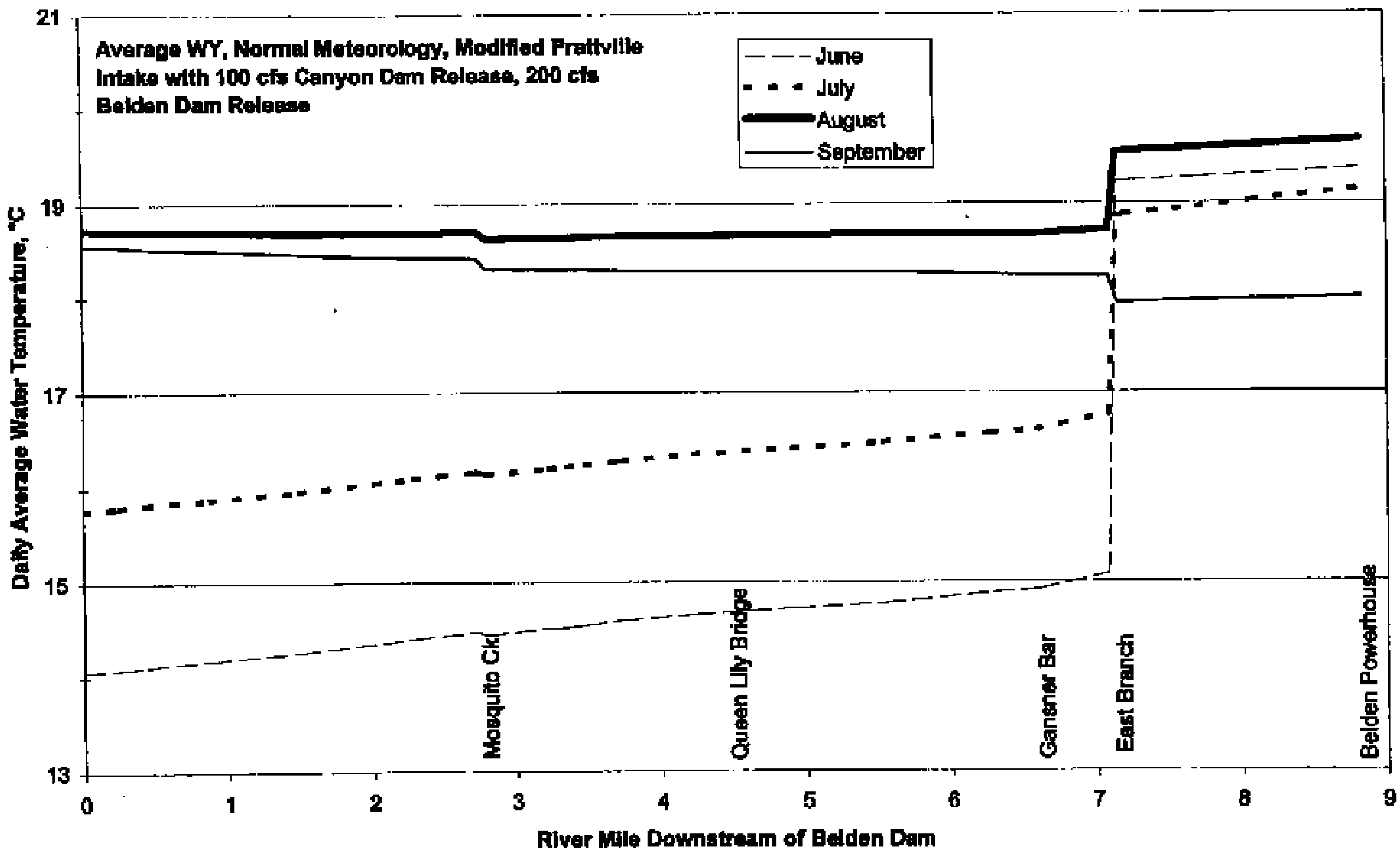
DWEI21C

North Fork Feather River Project, FERC 2105
Belden Reach

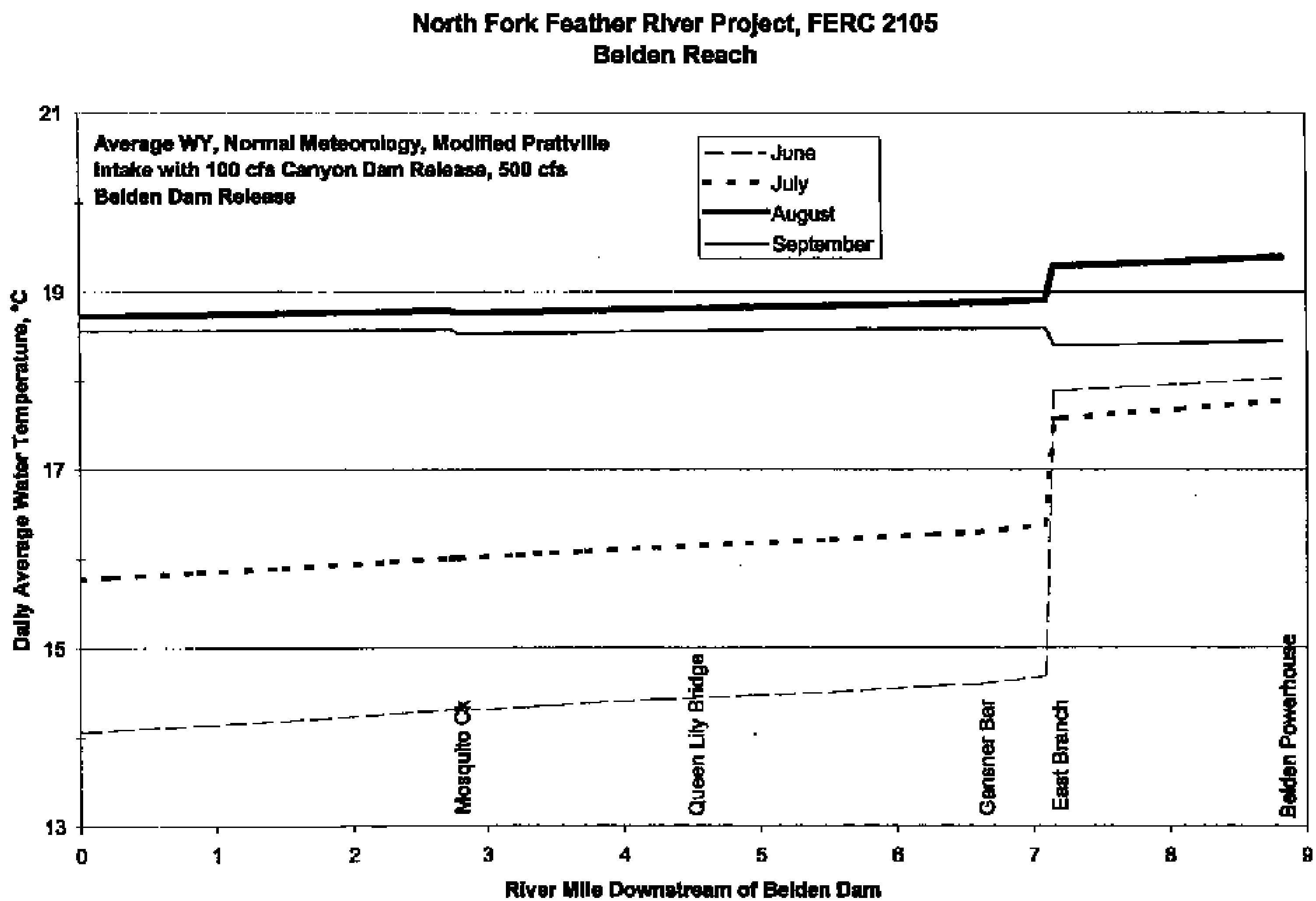


DWEI21E

North Fork Feather River Project, FERC 2105
Belden Reach



ANMF21B



North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Normal Meteorology, Modified Prattville Intake with 100 cfs Canyon Dam Release, 500 cfs Belden Dam Release
June
July
August
September
Daily Average Water Temperature, °C
21
19
17
15
13
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
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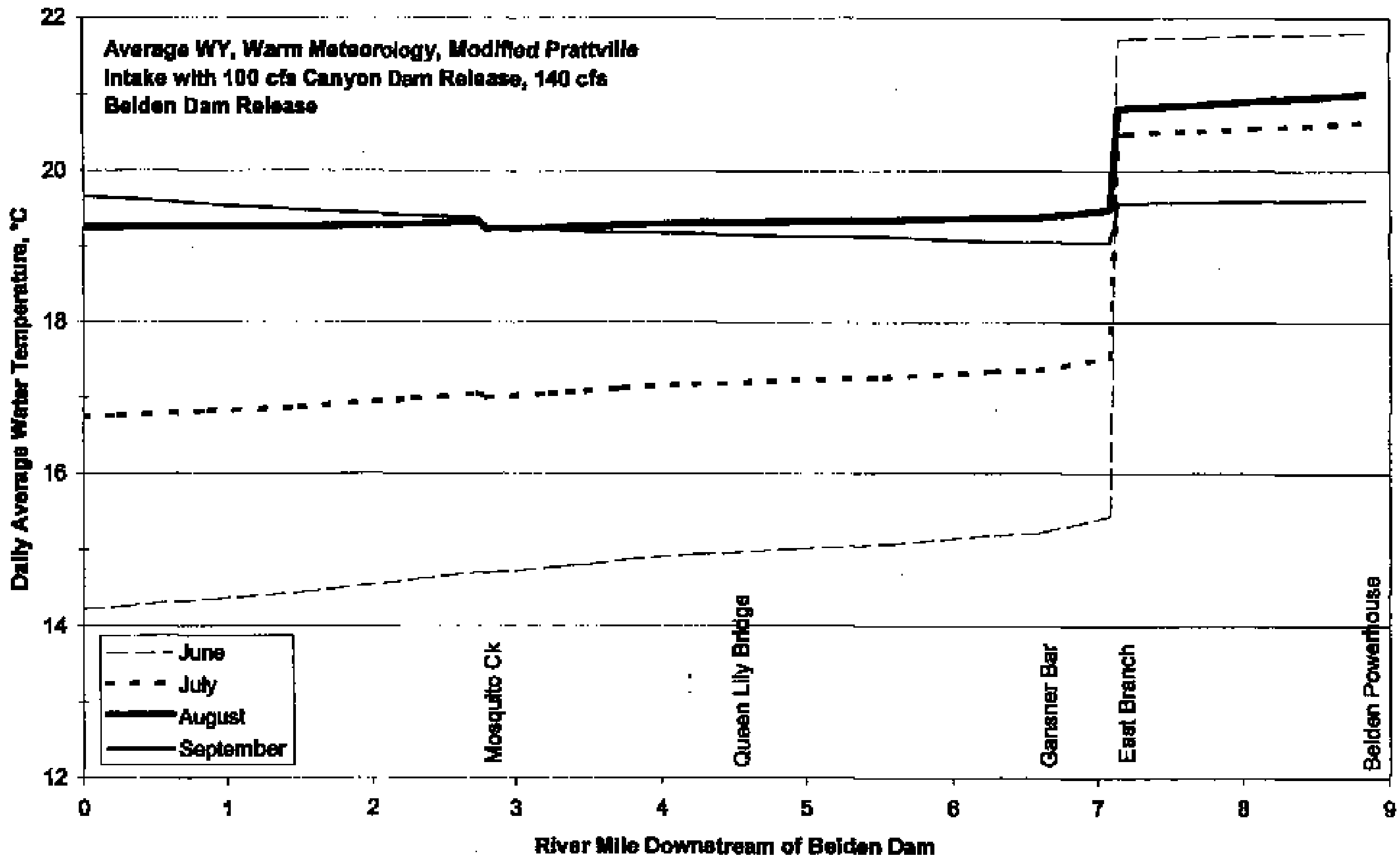
River Mile Downstream of Belden Dam

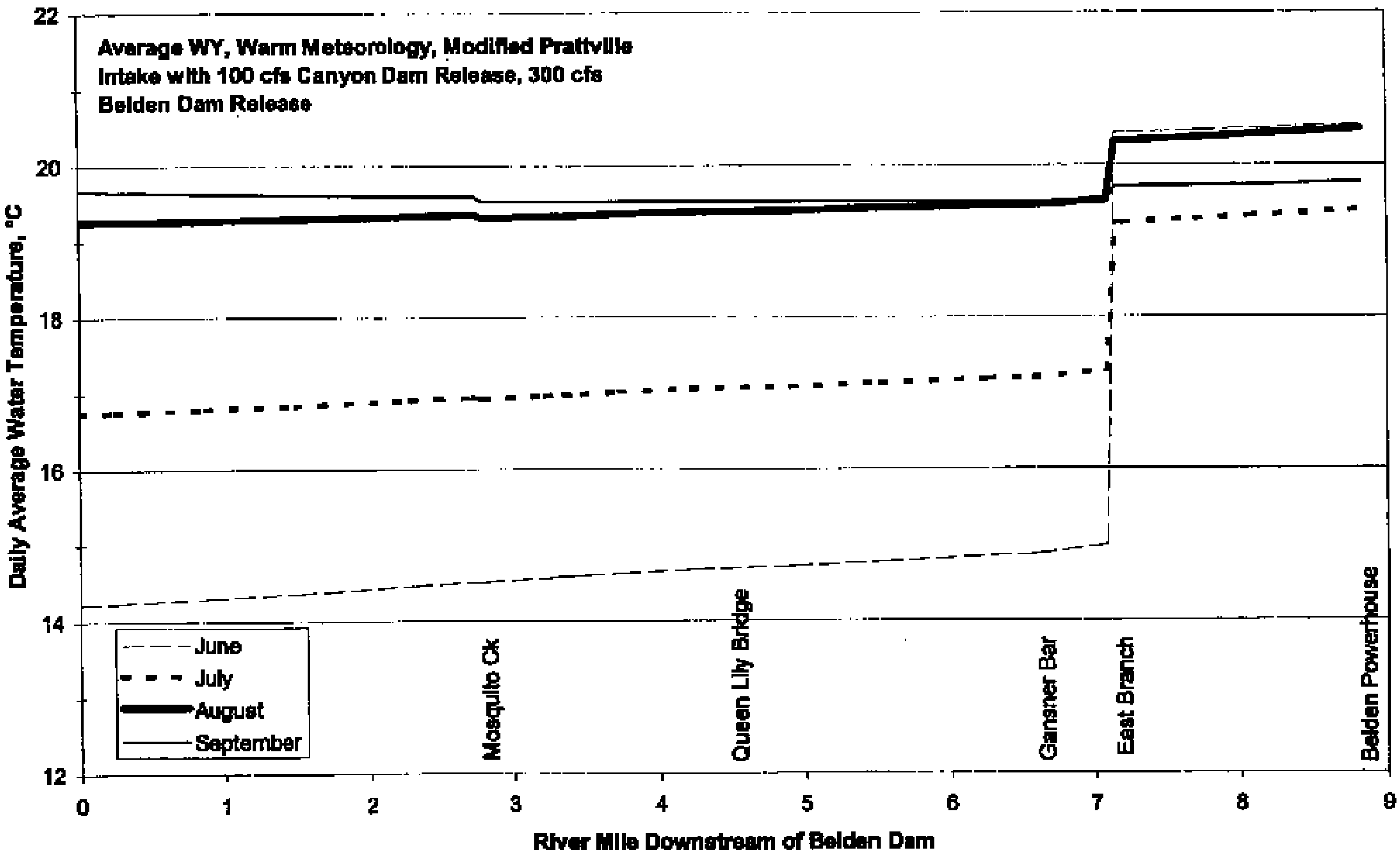
ANMF21D

North Fork Feather River Project, FERC 2105
Belden Reach

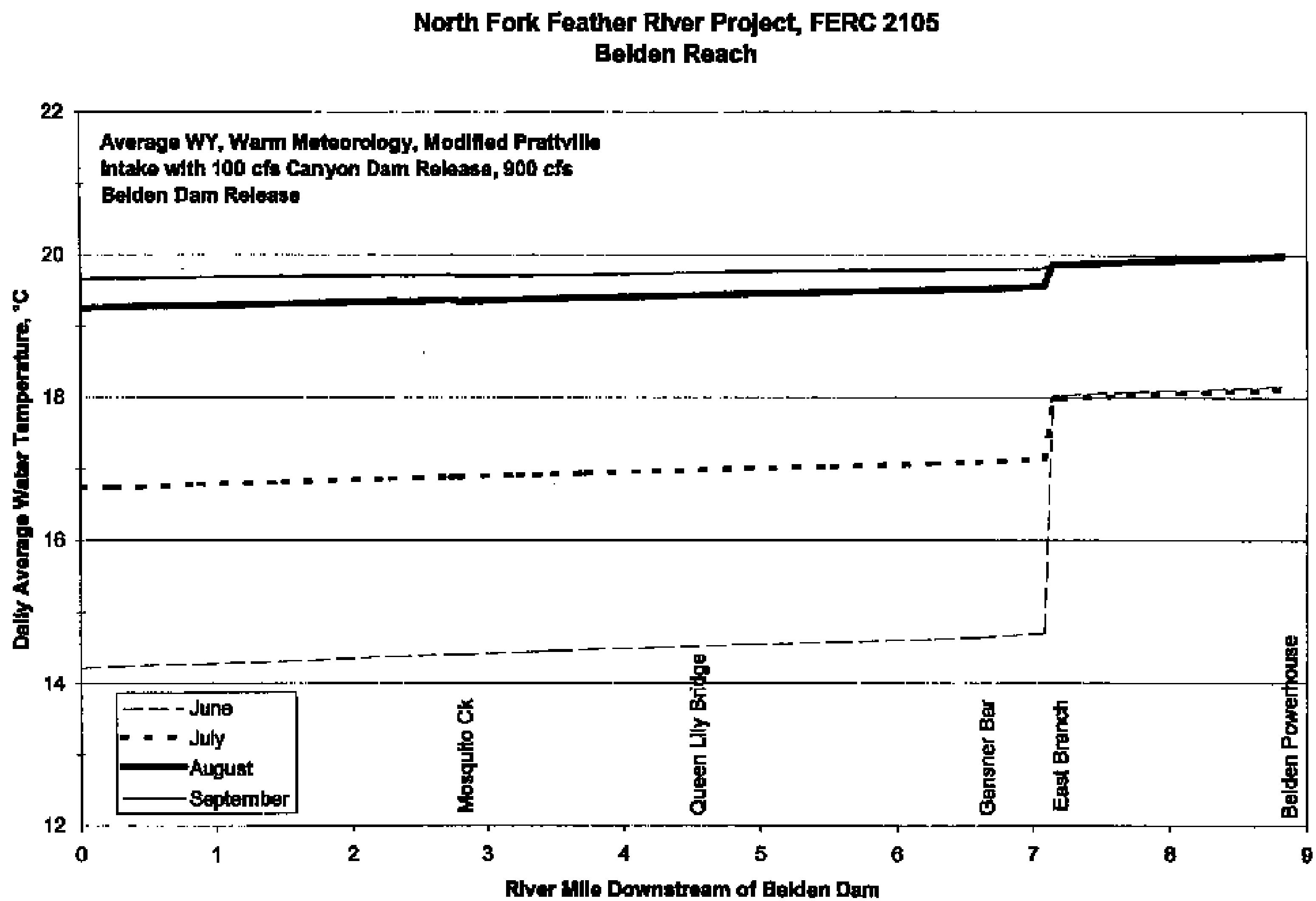


AWMF21A

North Fork Feather River Project, FERC 2105
Belden Reach



AWMF21C


North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Warm Meteorology, Modified Prattville Intake with 100 cfs Canyon Dam Release, 900 cfs Belden Dam Release
Daily Average Water Temperature, °C
River Mile Downstream of Belden Dam
22
20
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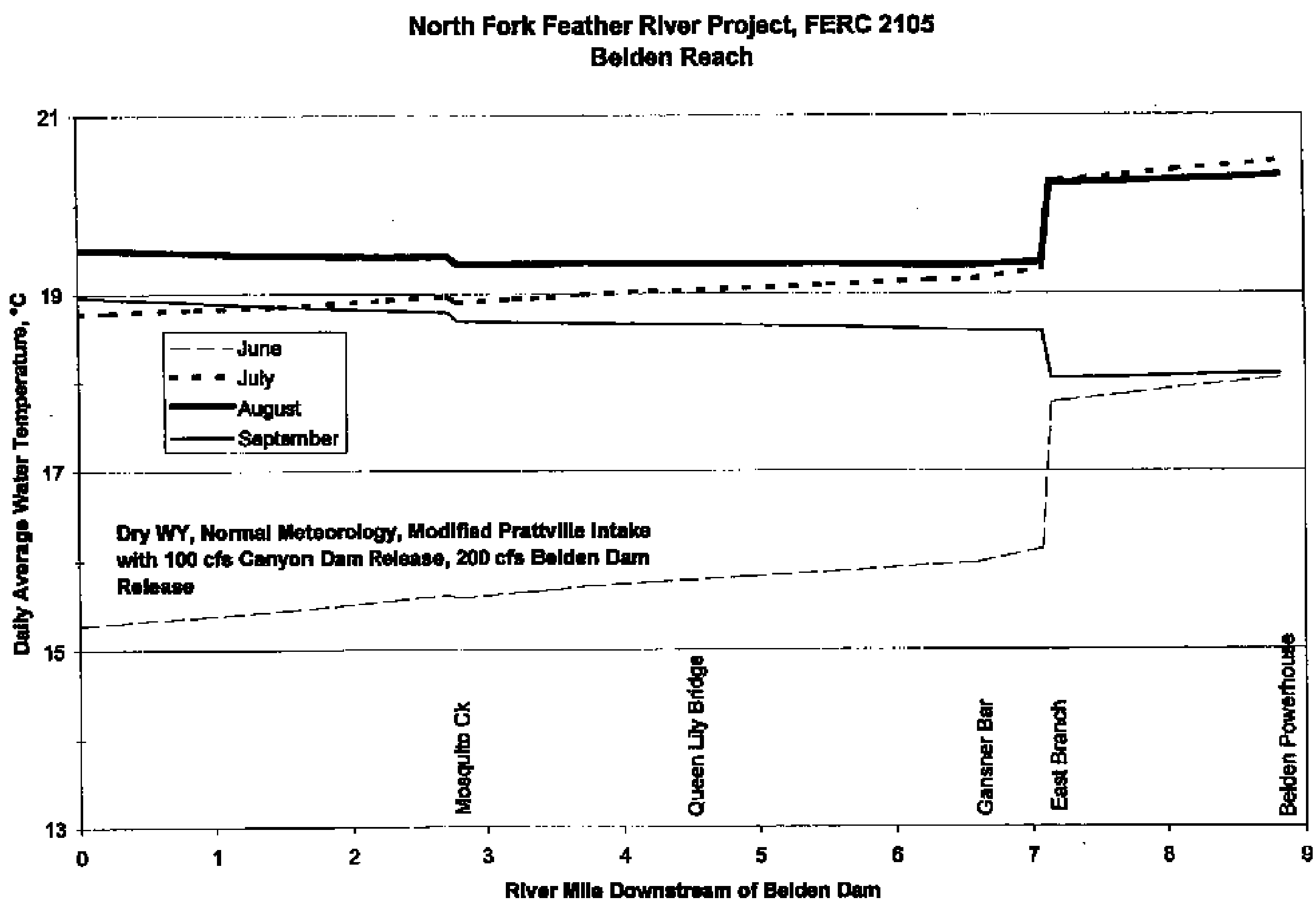
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

AWMF21E


North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
21
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June
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August
September
Dry WY, Normal Meteorology, Modified Prattville Intake with 100 cfs Canyon Dam Release, 200 cfs Belden Dam Release
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
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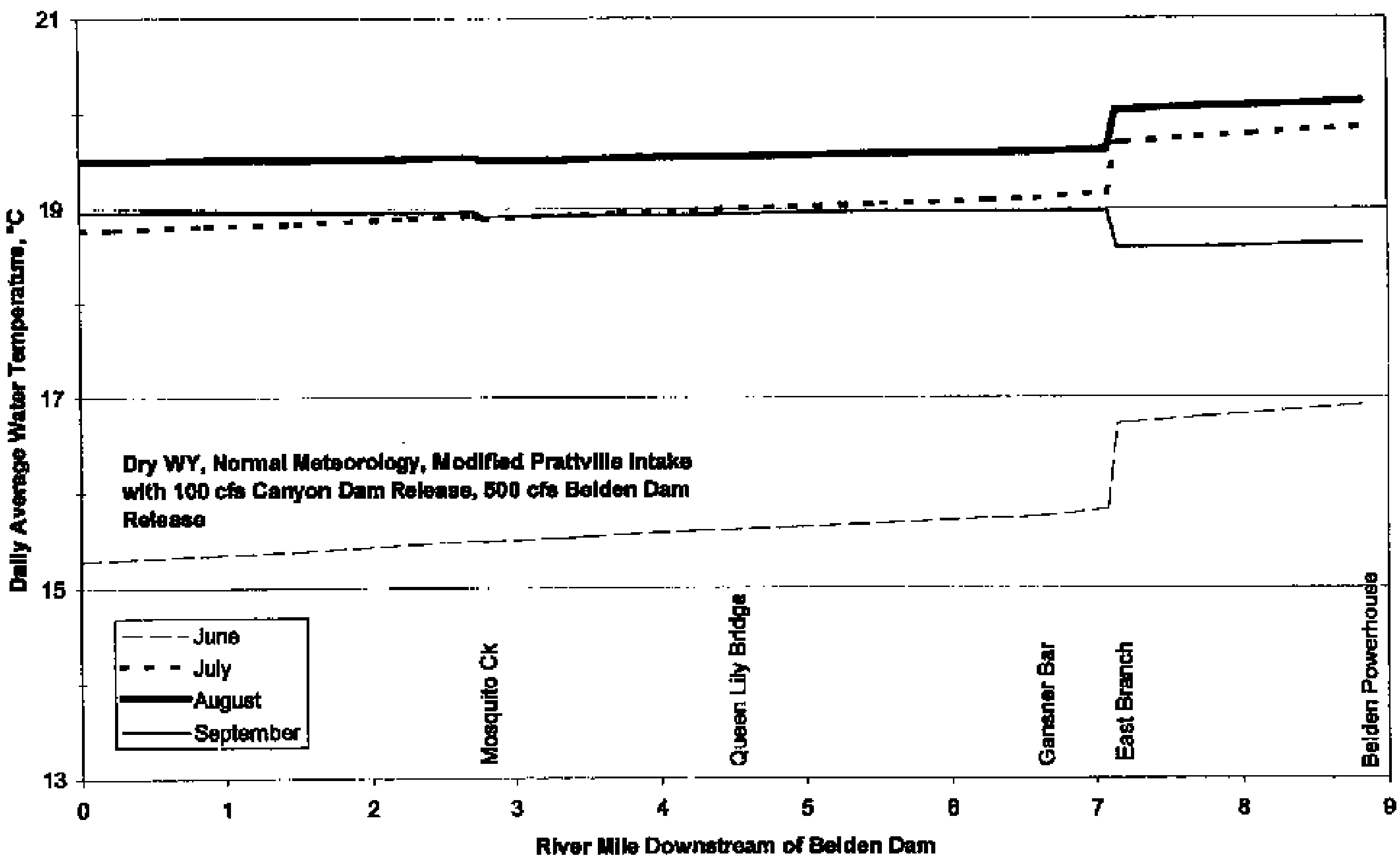
River Mile Downstream of Belden Dam

DNMF21B

North Fork Feather River Project, FERC 2105
Belden Reach



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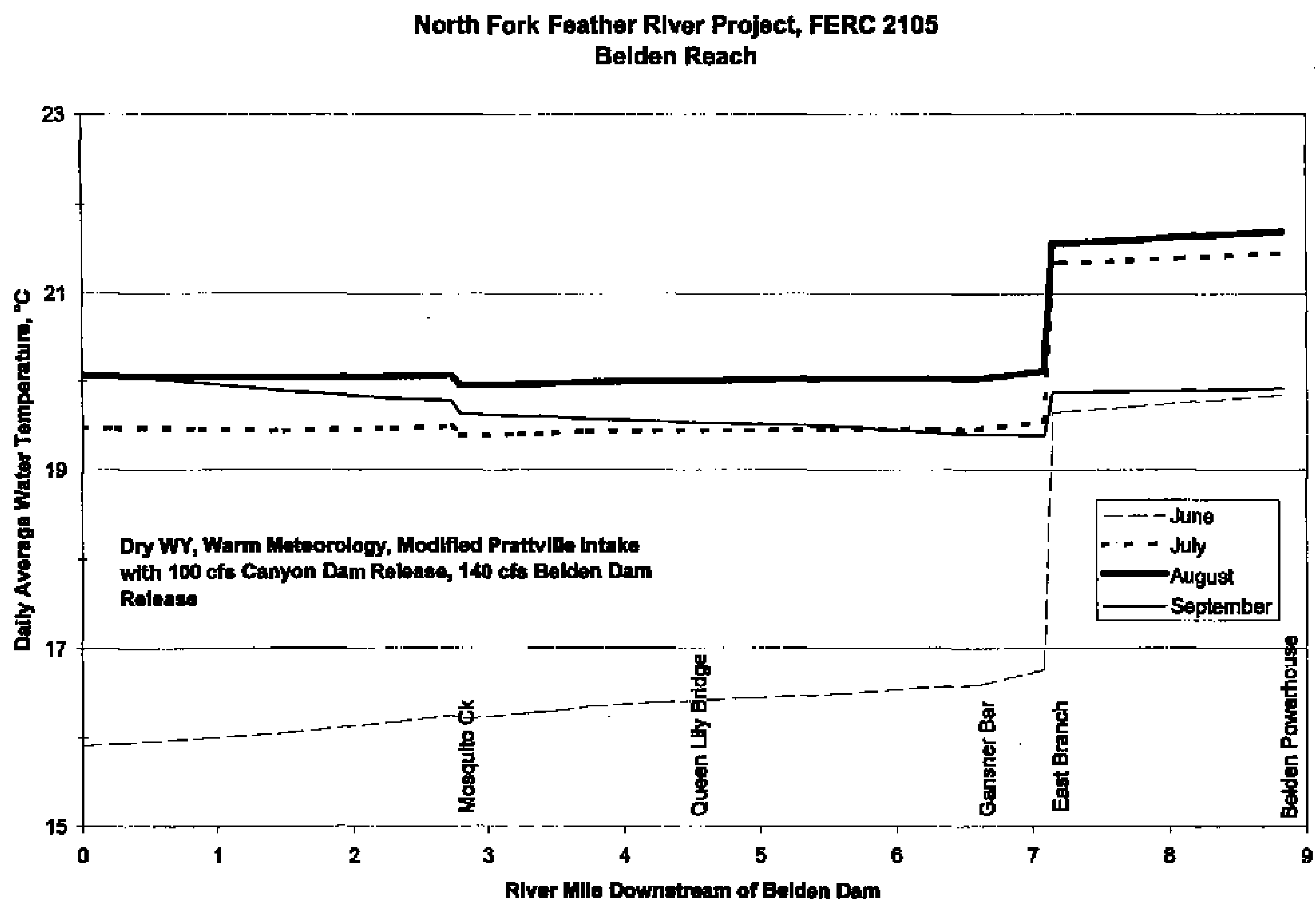

North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
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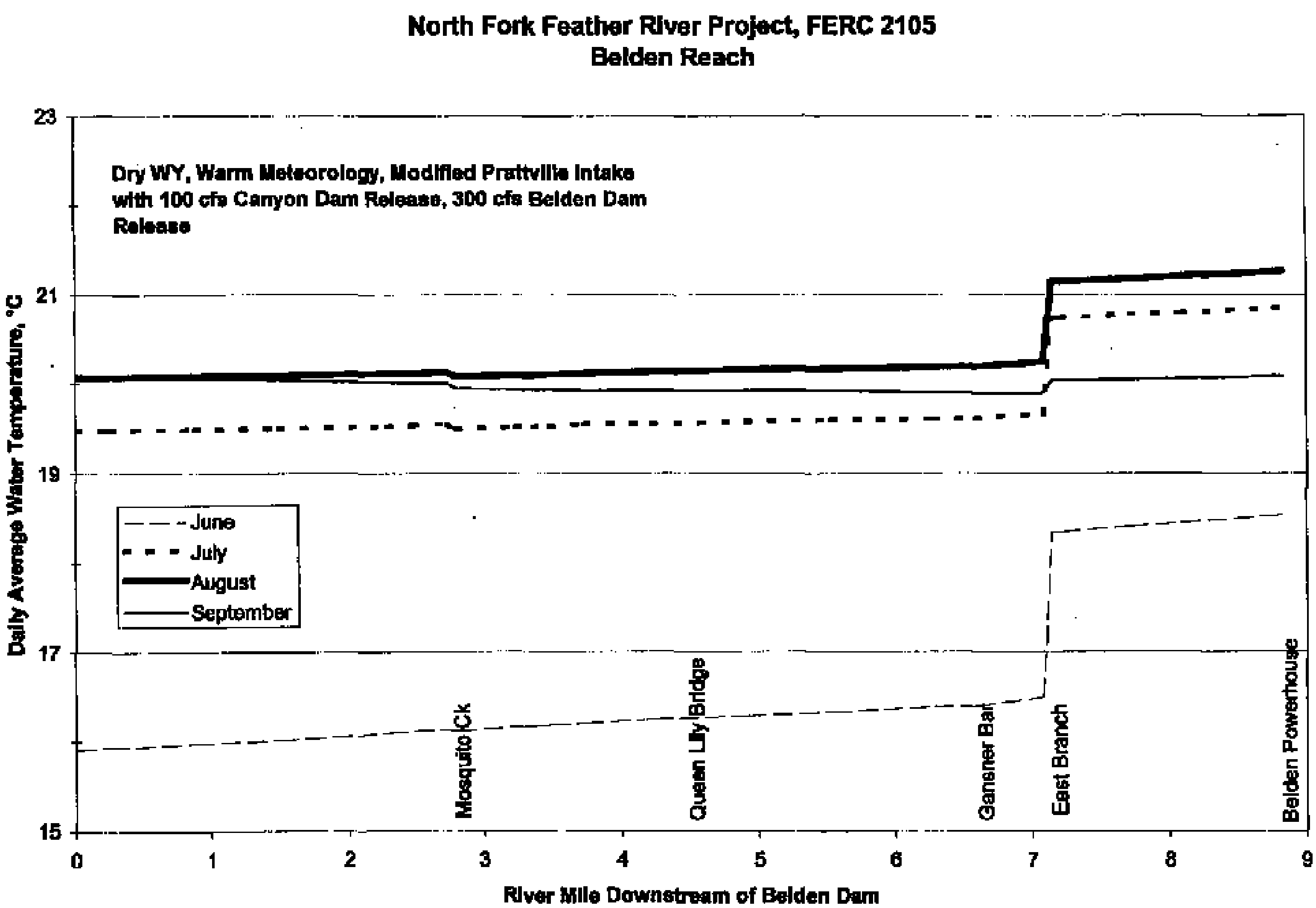
River Mile Downstream of Belden Dam
Dry WY, Warm Meteorology, Modified Prattville Intake with 100 cfs Canyon Dam Release, 140 cfs Belden Dam Release
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

DWMF21A


North Fork Feather River Project, FERC 2105
Belden Reach
Dry WY, Warm Meteorology, Modified Prattville Intake
with 100 cfs Canyon Dam Release, 300 cfs Belden Dam
Release
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
Daily Average Water Temperature, °C
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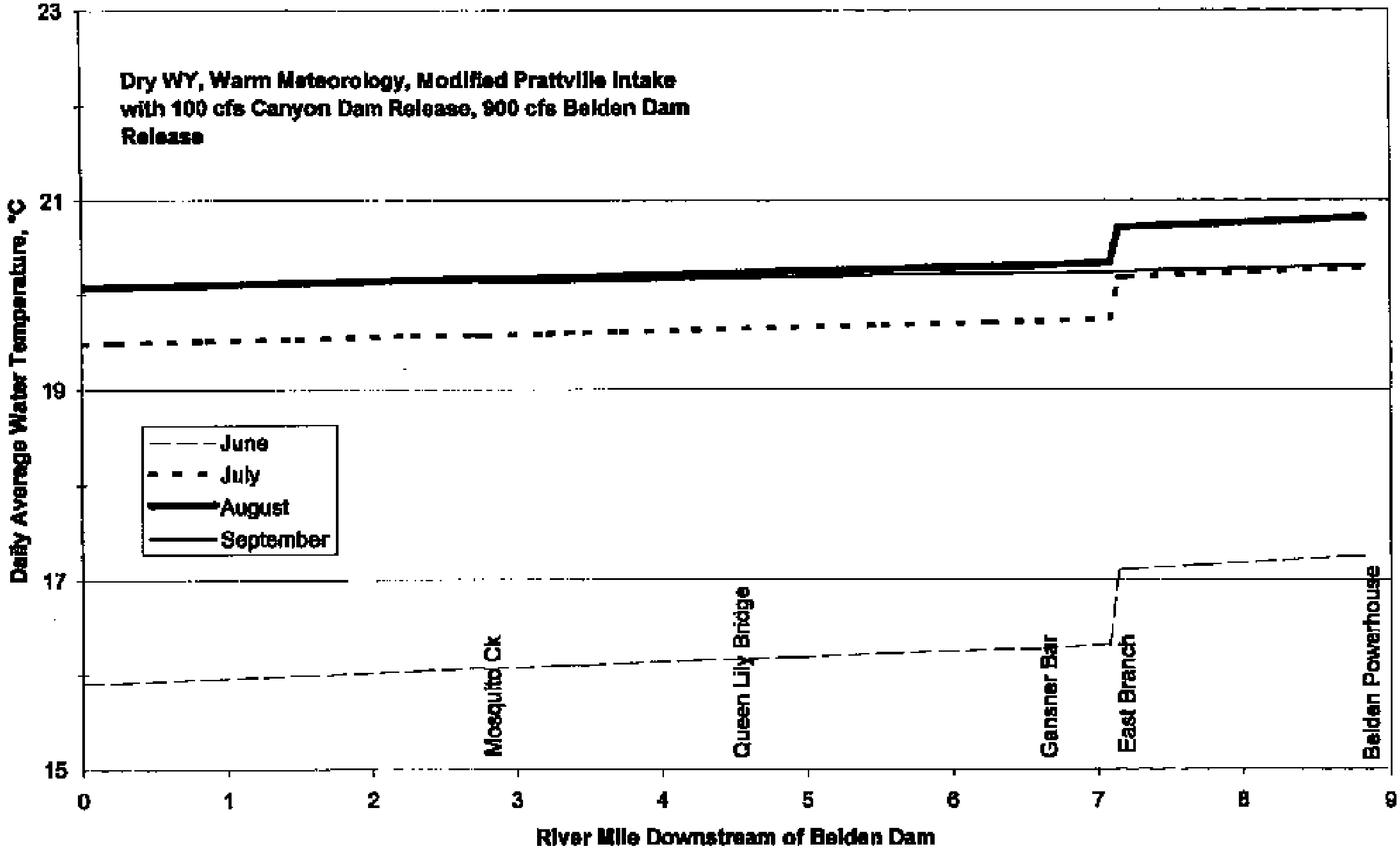
8
9
River Mile Downstream of Belden Dam

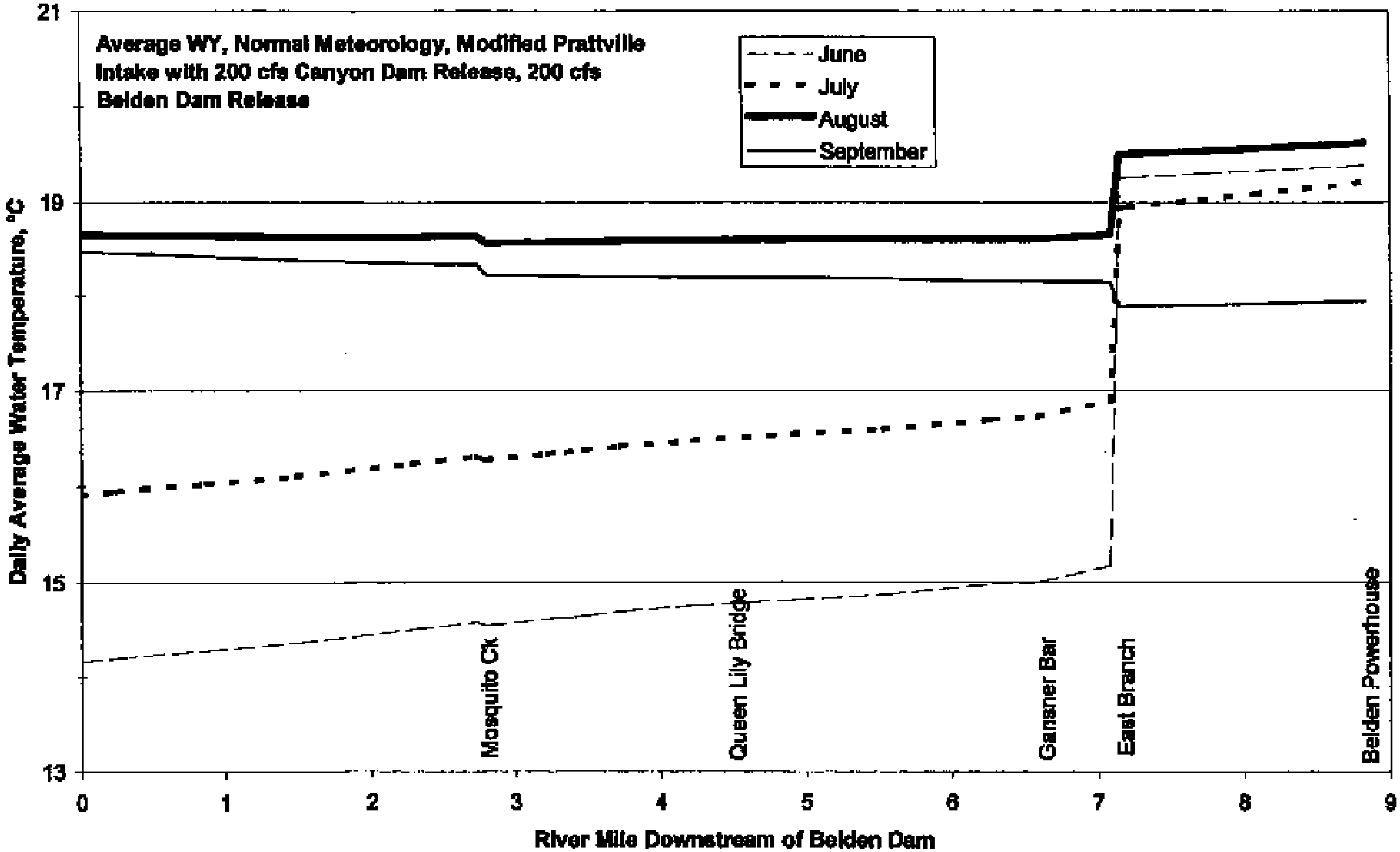
DWMF21C

North Fork Feather River Project, FERC 2105
Belden Reach



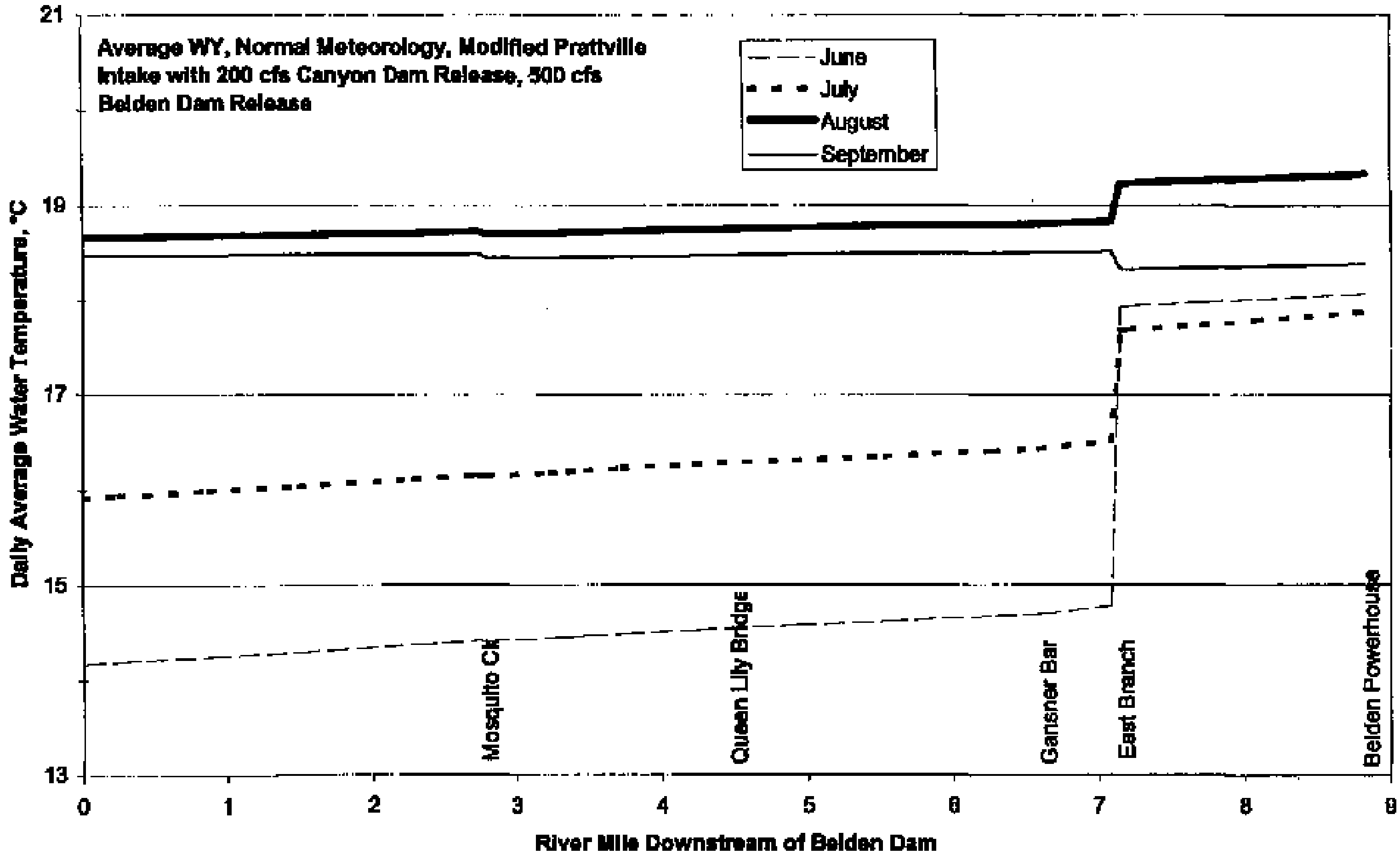
DWMF21E

North Fork Feather River Project, FERC 2105
Belden Reach



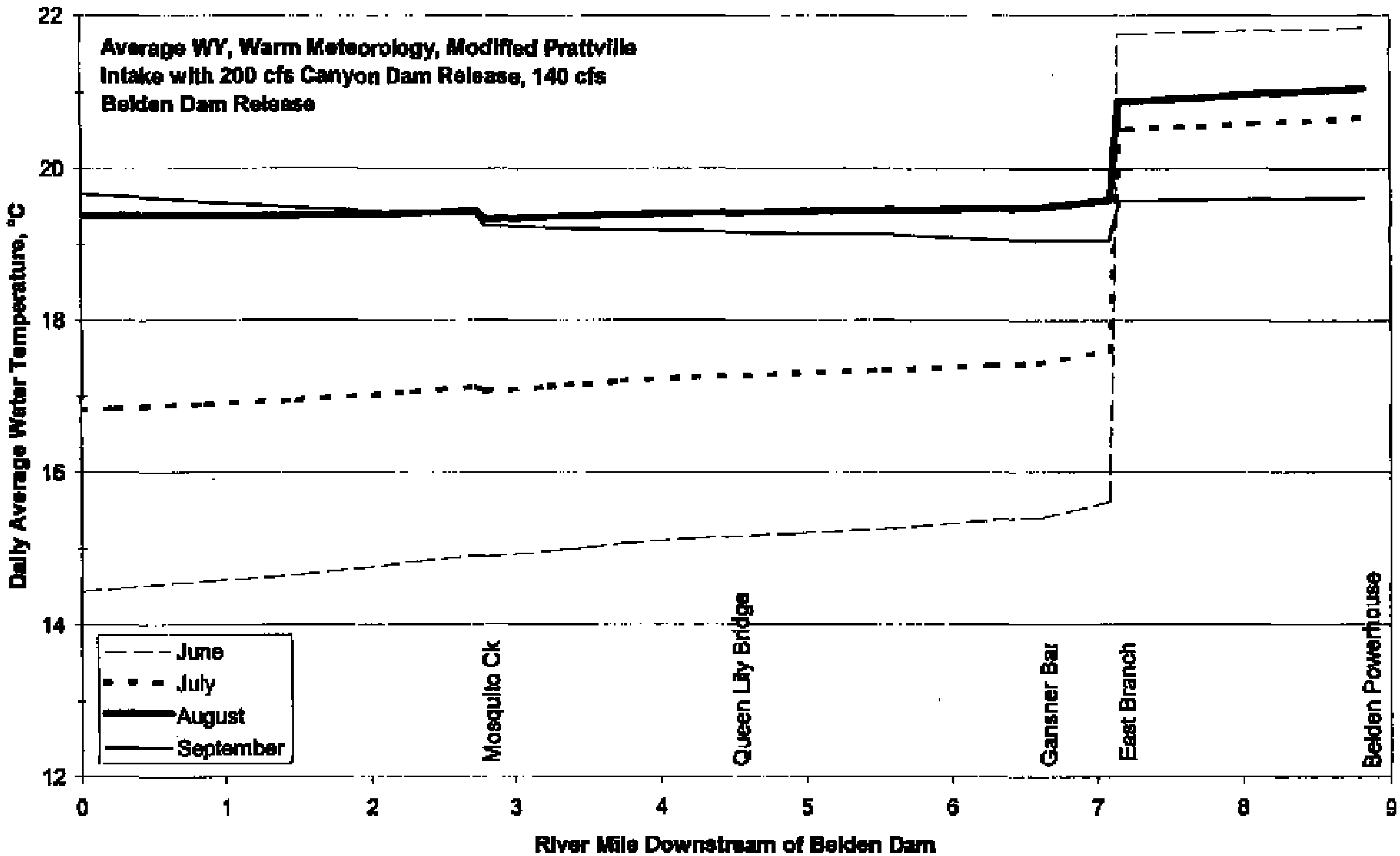
ANMG21B

North Fork Feather River Project, FERC 2105
Belden Reach



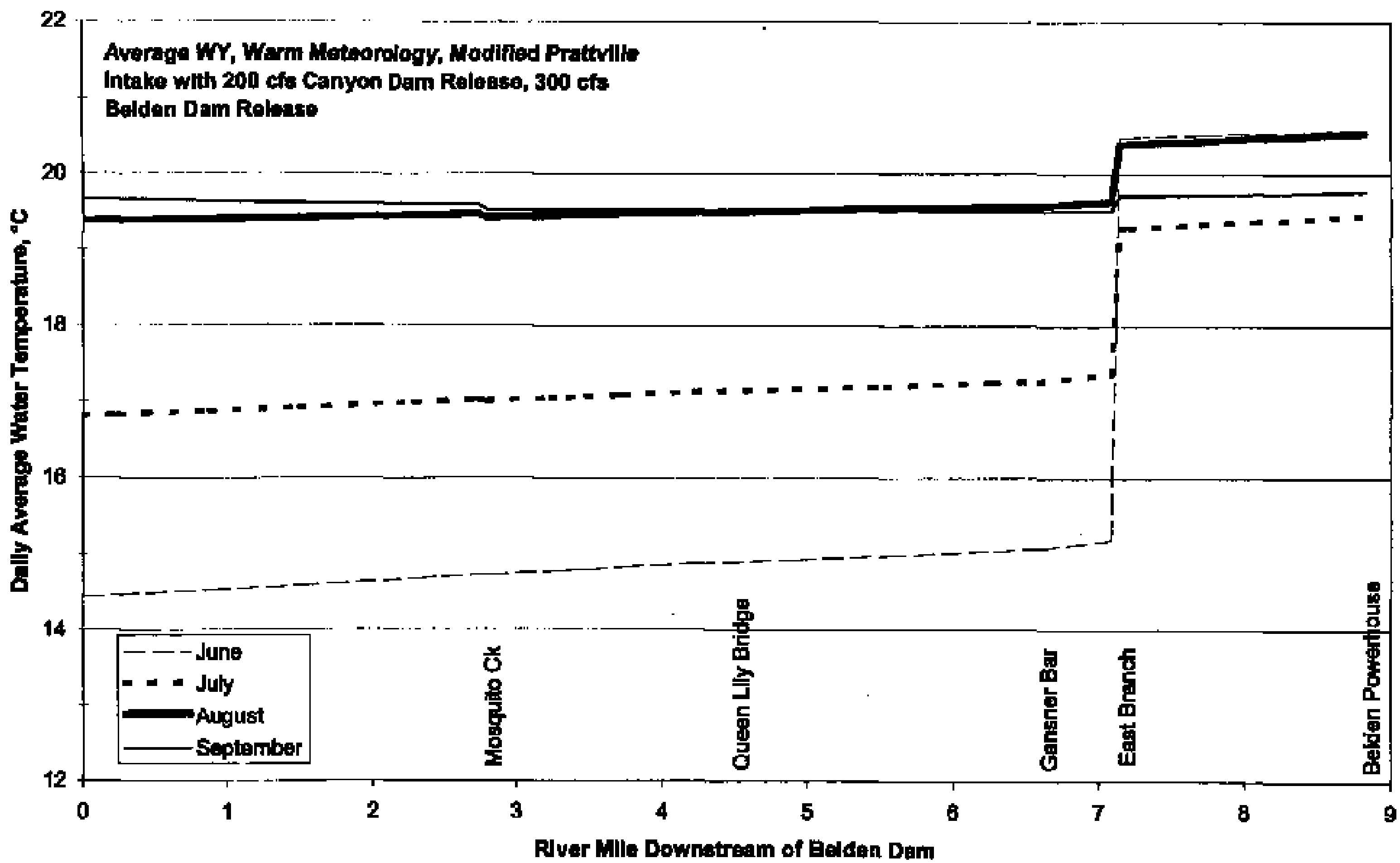
ANMG21D

North Fork Feather River Project, FERC 2105
Belden Reach



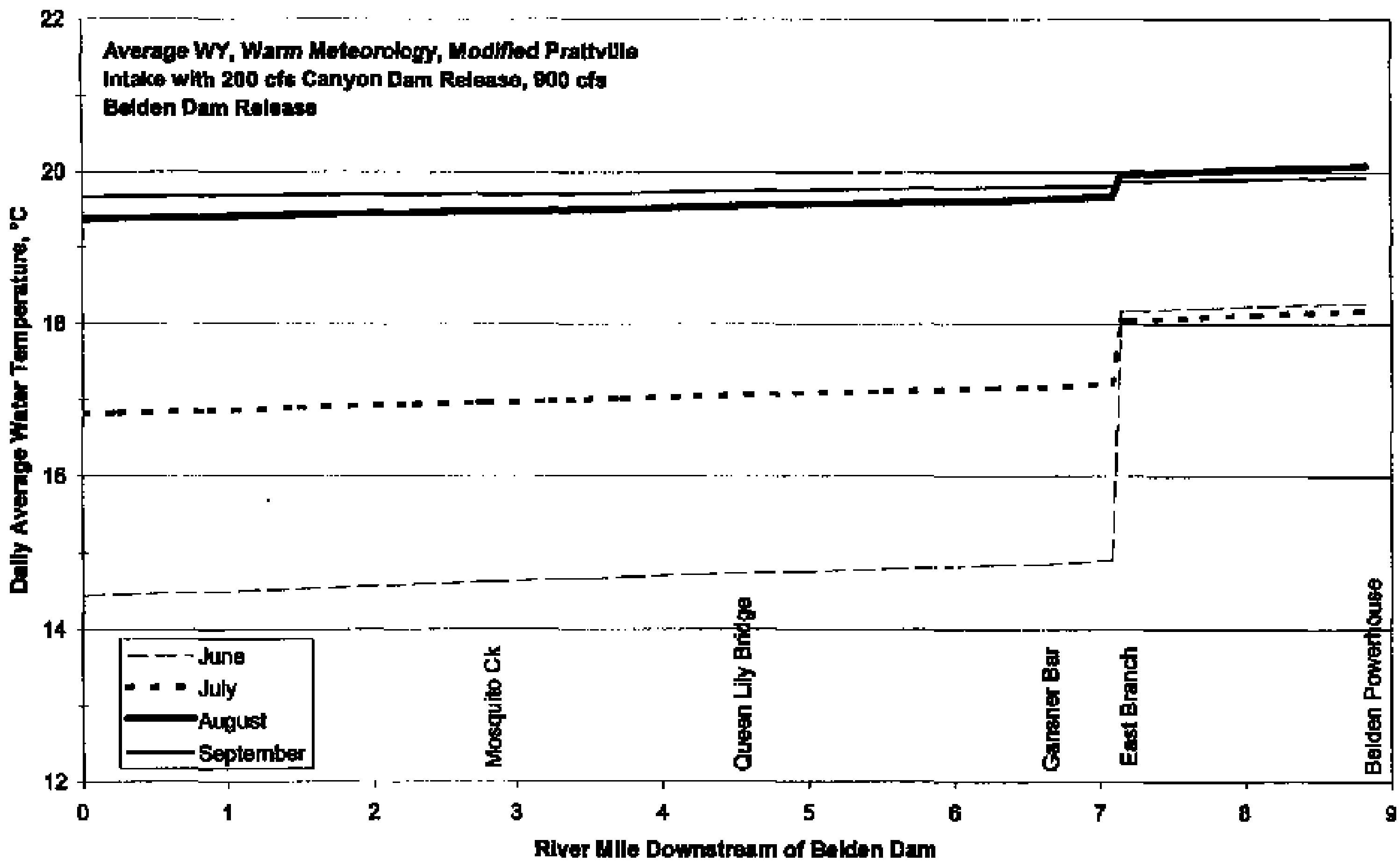
AWMG21A

North Fork Feather River Project, FERC 2105
Belden Reach



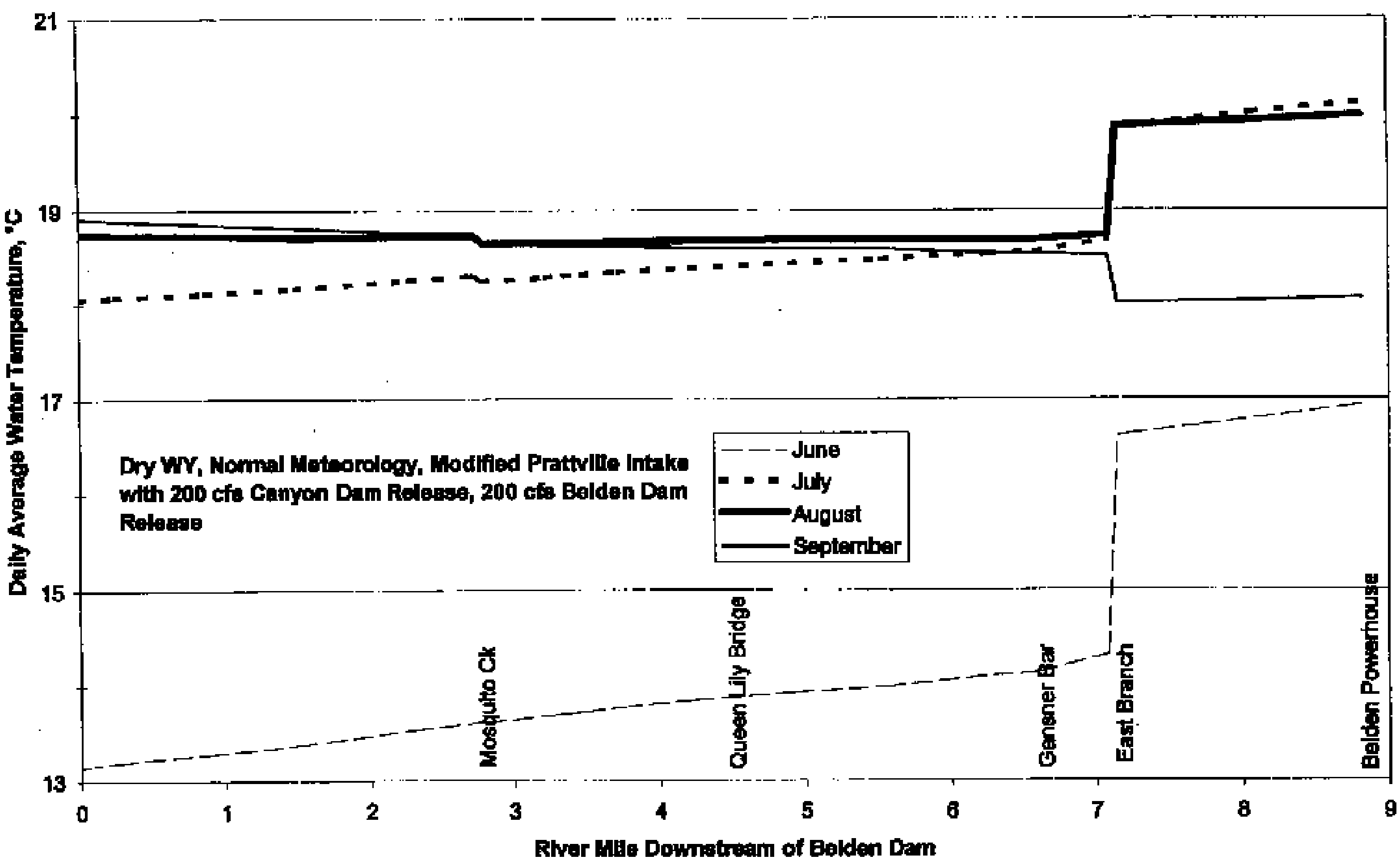
AWMG21C

North Fork Feather River Project, FERC 2105
Belden Reach



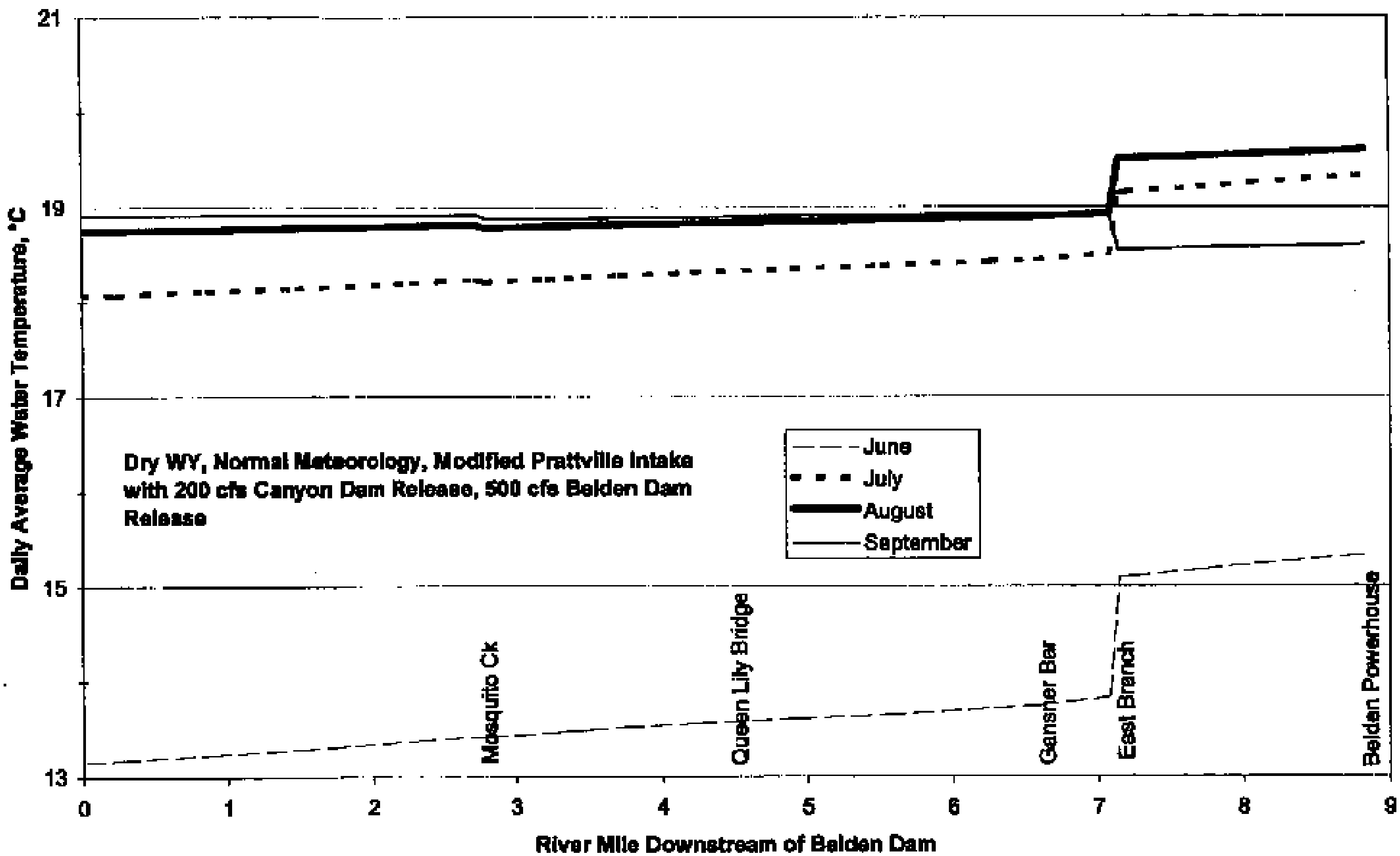
AWMG21E

North Fork Feather River Project, FERC 2105
Belden Reach

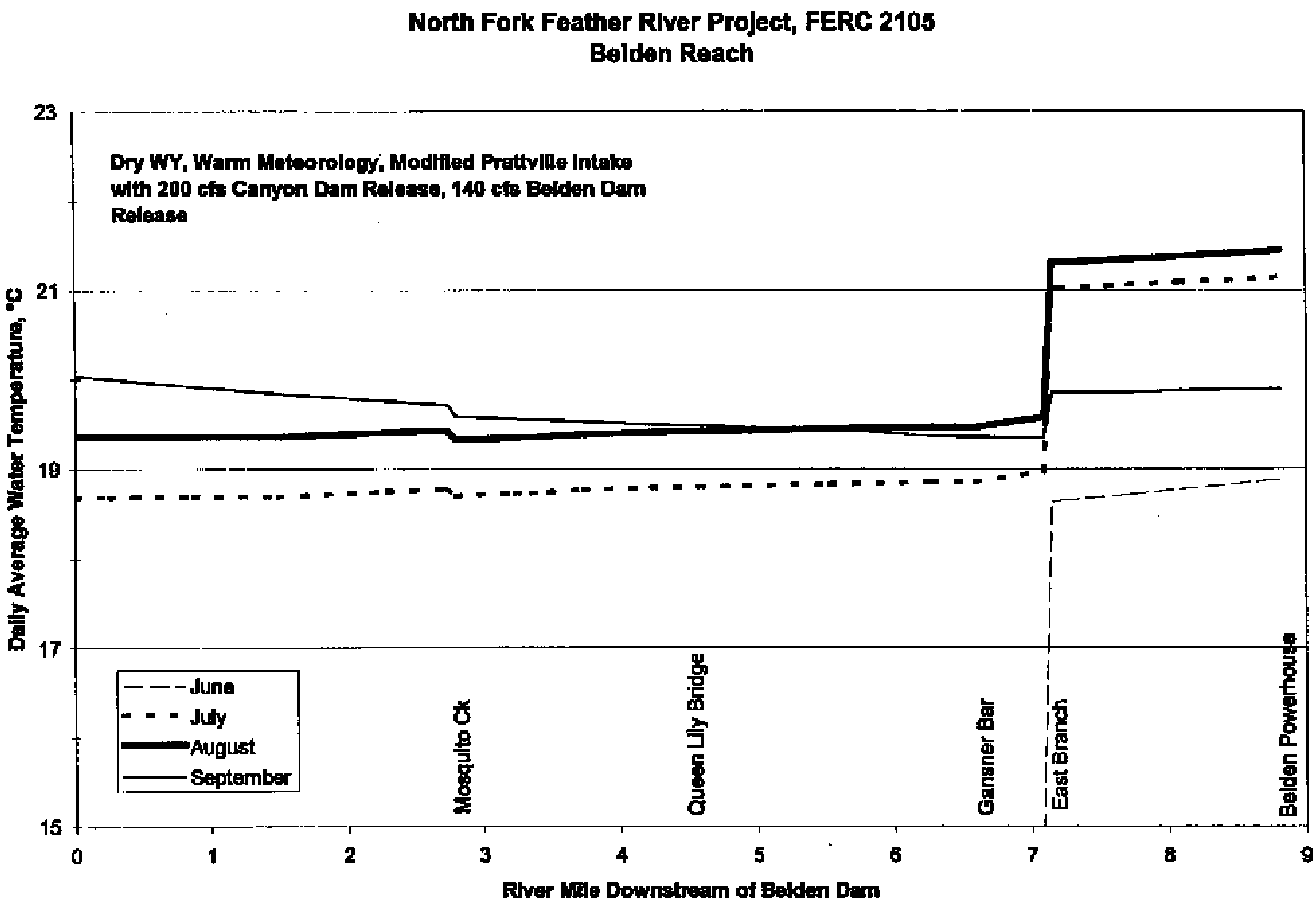


DNMG21B

North Fork Feather River Project, FERC 2105
Belden Reach



DNMG21D


North Fork Feather River Project, FERC 2105
Belden Reach
Dry WY, Warm Meteorology, Modified Prattville Intake
with 200 cfs Canyon Dam Release, 140 cfs Belden Dam
Release
Daily Average Water Temperature, °C
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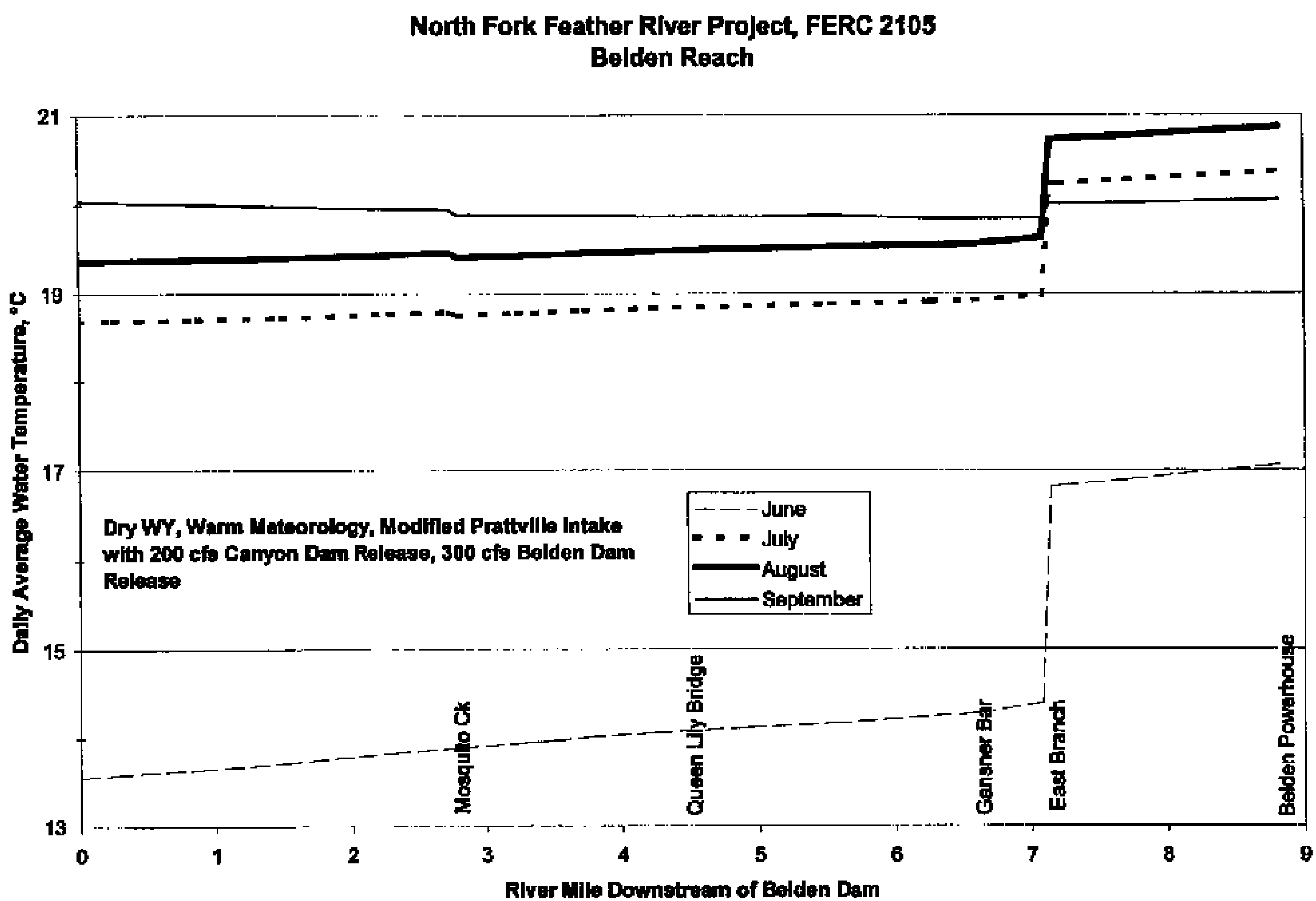
River Mile Downstream of Belden Dam
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

DWMG21A


North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
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Dry WY, Warm Meteorology, Modified Prattville Intake with 200 cfs Canyon Dam Release, 300 cfs Belden Dam Release
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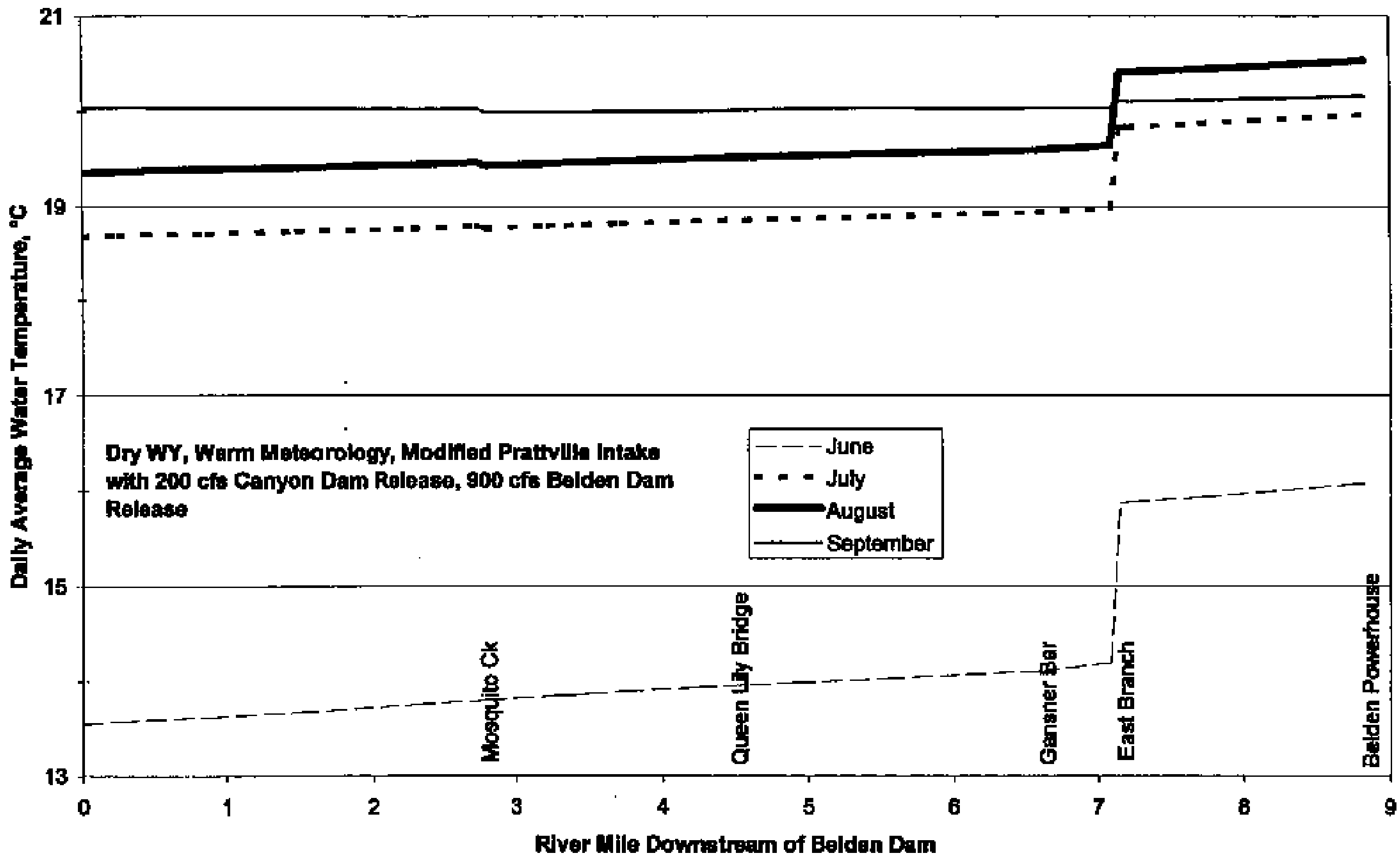
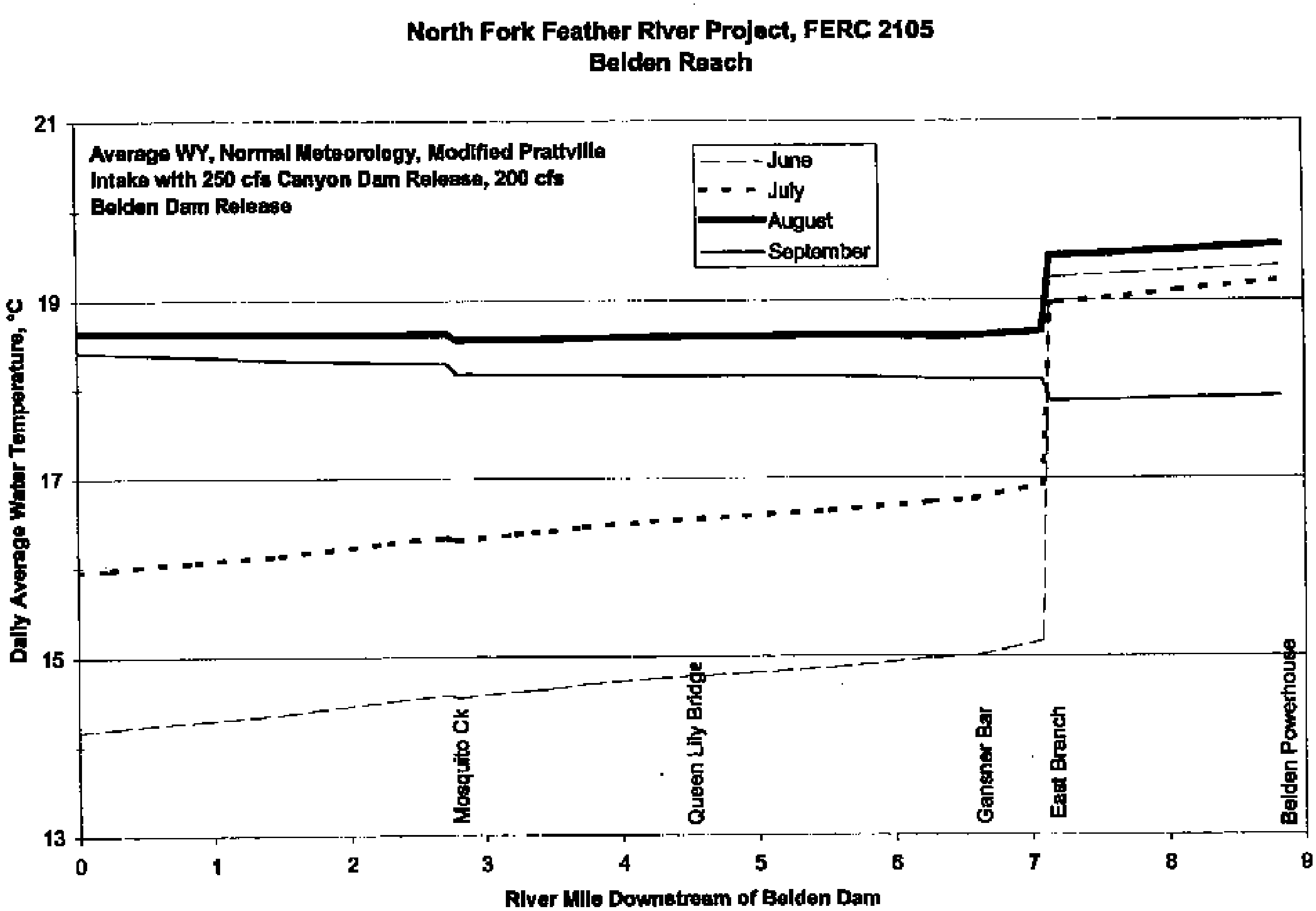
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

DWMG21C

North Fork Feather River Project, FERC 2105
Belden Reach



DWMG21E


North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Normal Meteorology, Modified Prattville
Intake with 250 cfs Canyon Dam Release, 200 cfs
Belden Dam Release
June
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August
September
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Daily Average Water Temperature, °C
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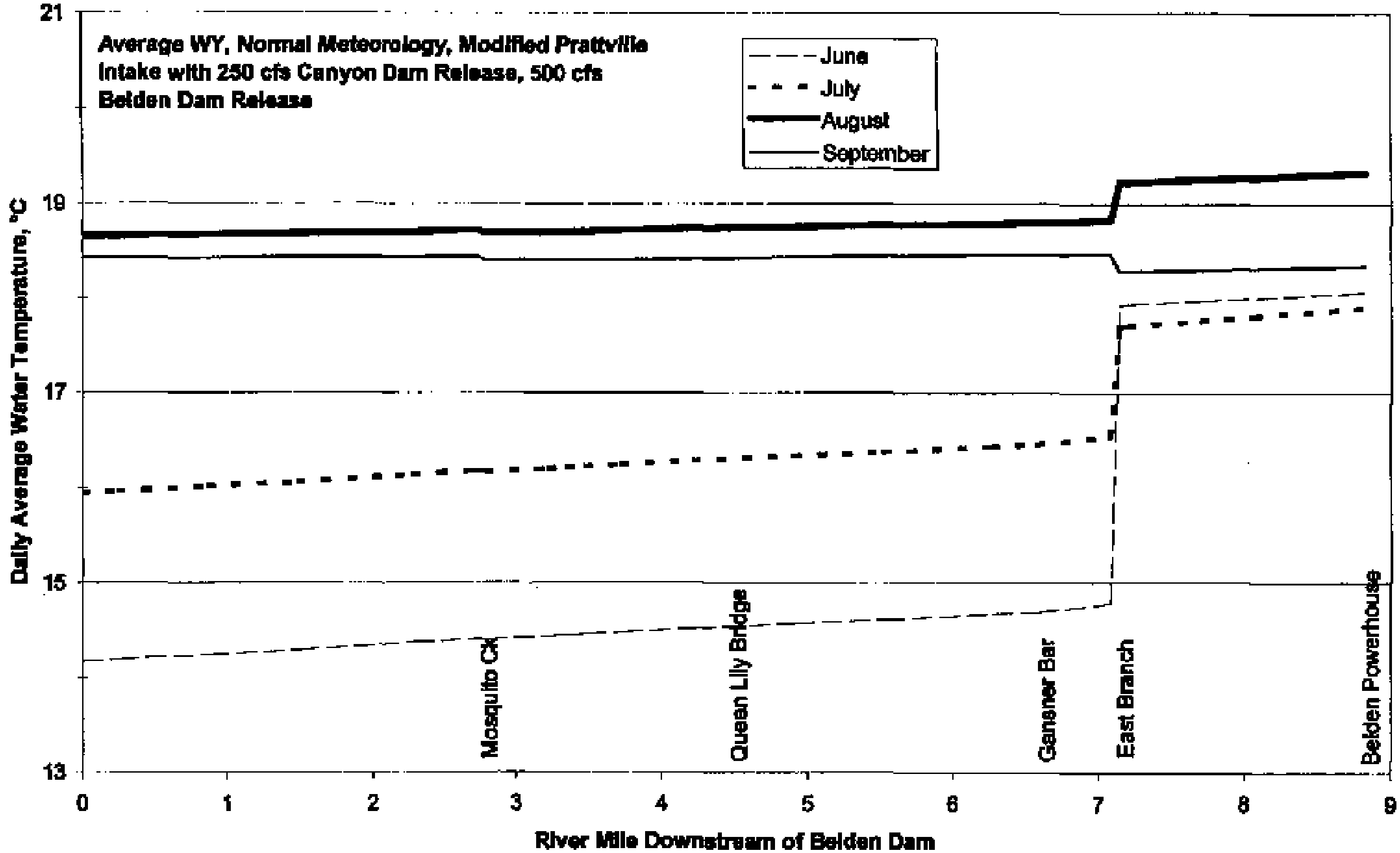
River Mile Downstream of Belden Dam
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

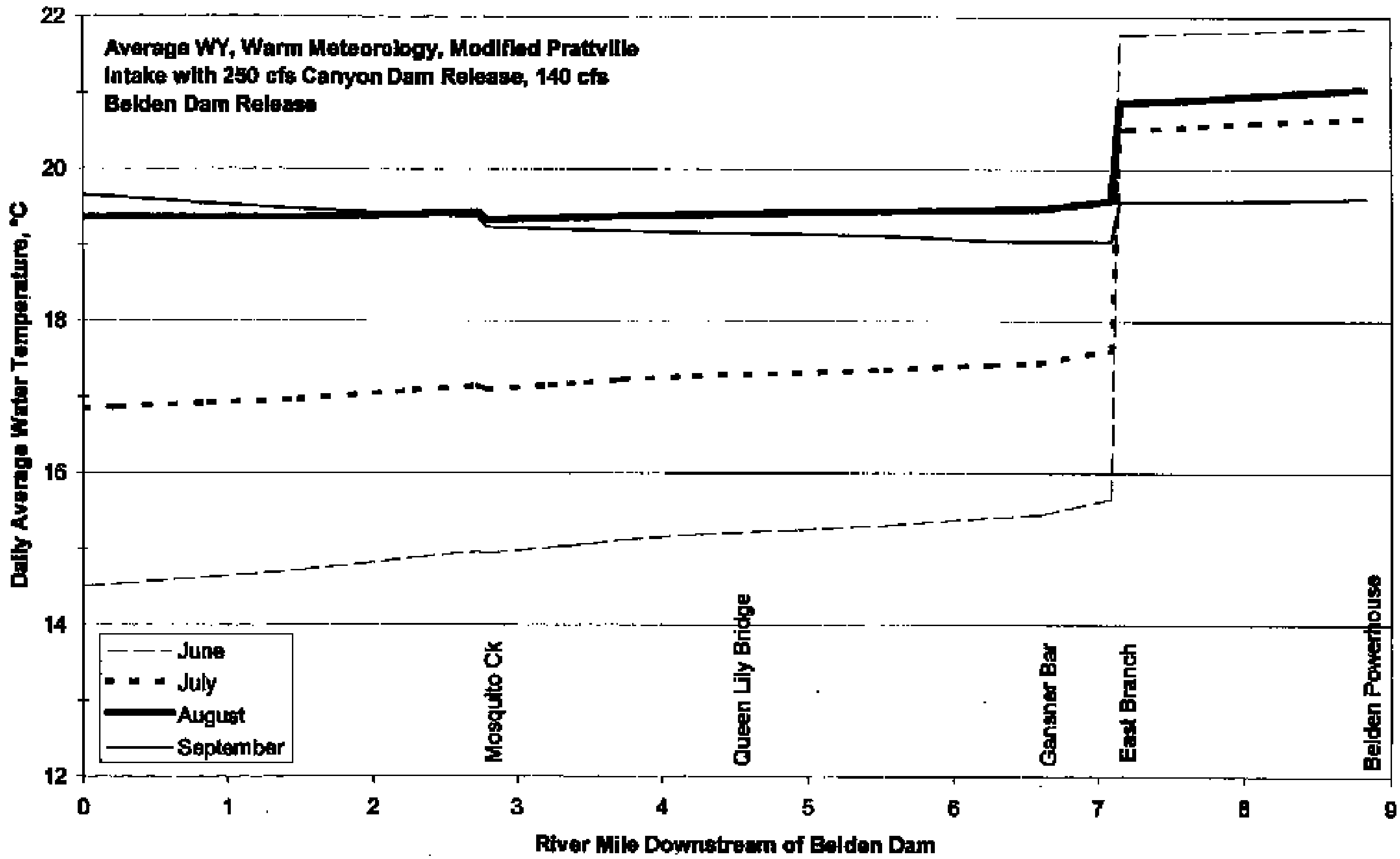
ANMH21B

North Fork Feather River Project, FERC 2105
Belden Reach



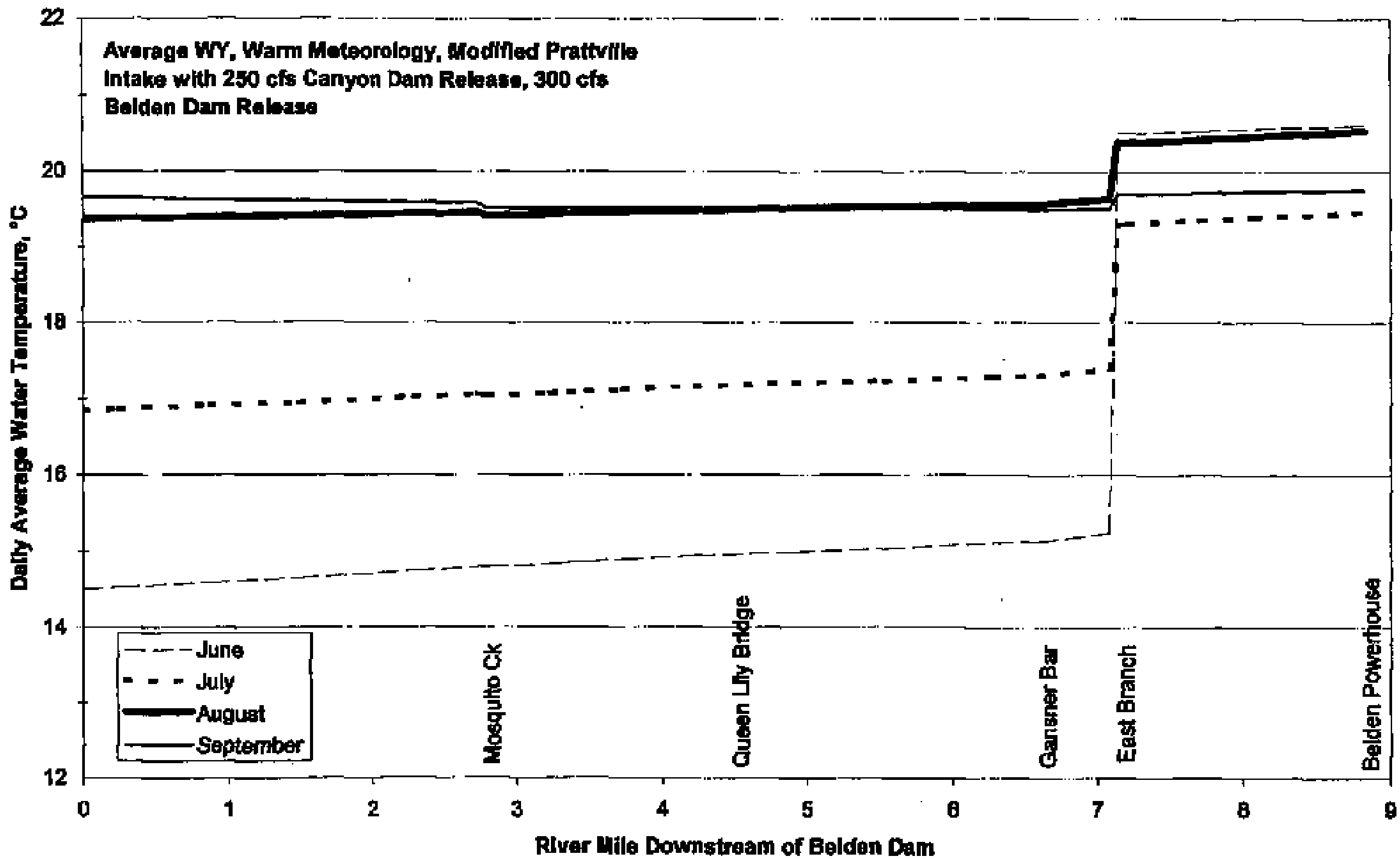
ANMH21D

North Fork Feather River Project, FERC 2105
Belden Reach



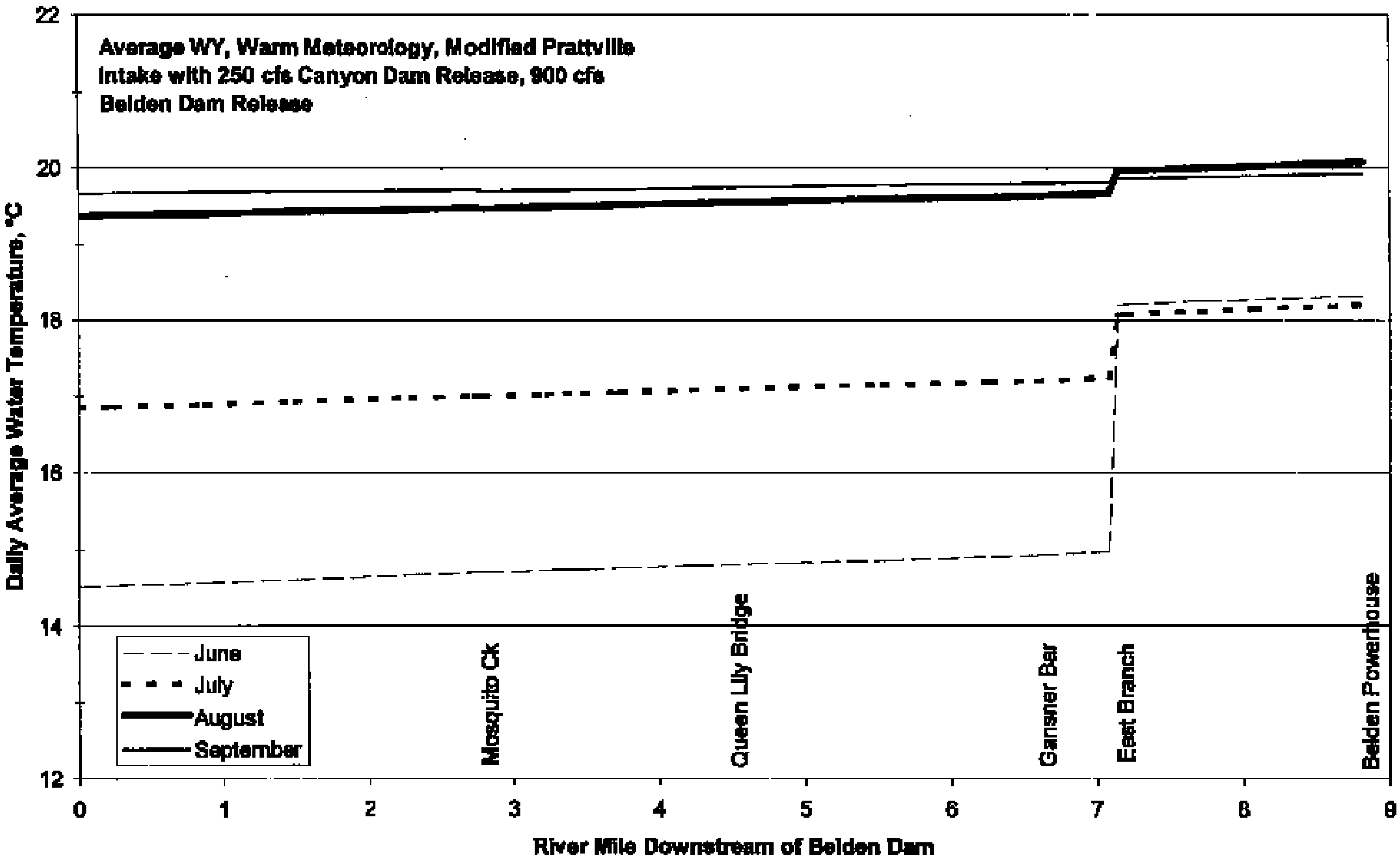
AWMH21A

North Fork Feather River Project, FERC 2105
Belden Reach



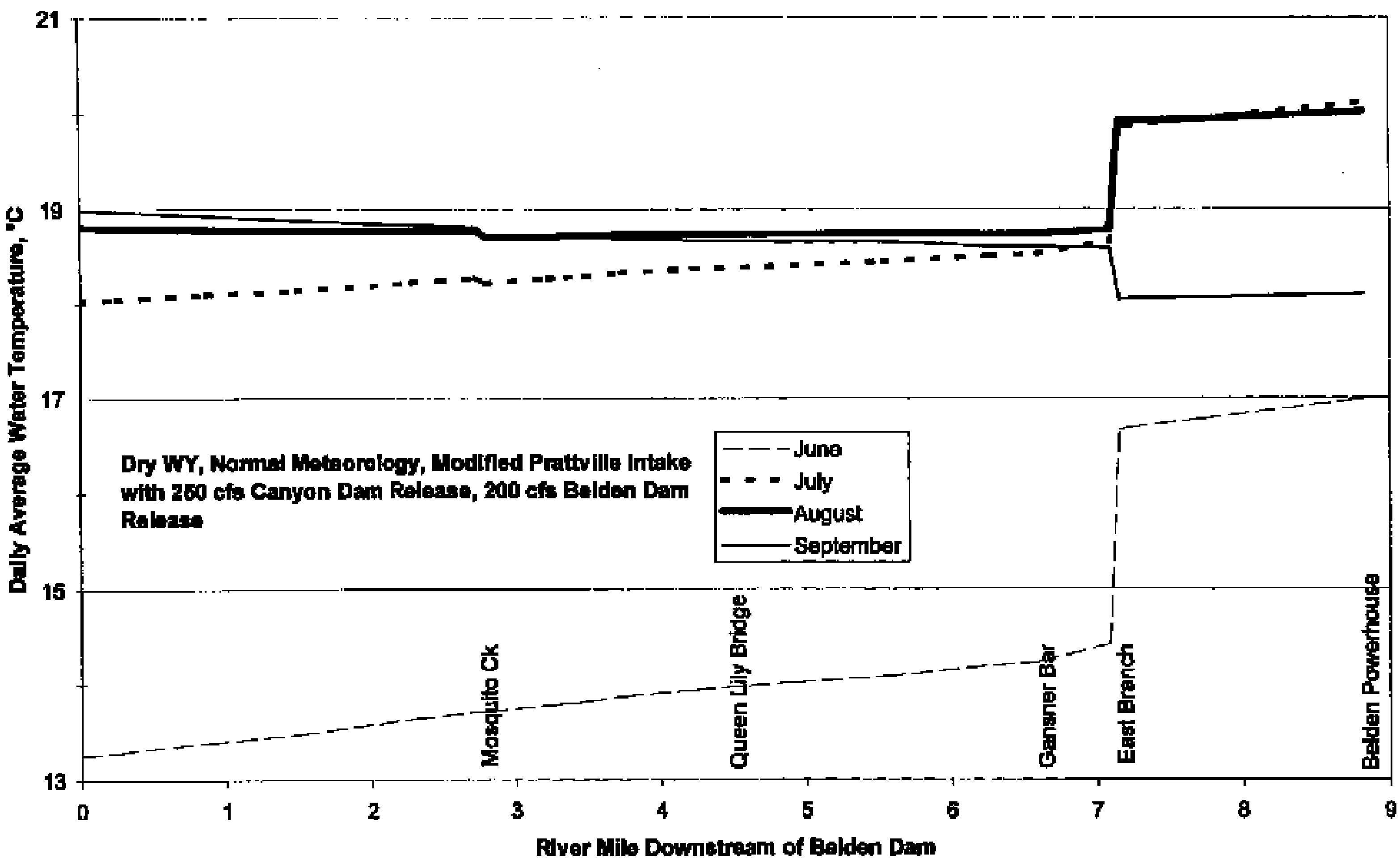
AWMH21C

North Fork Feather River Project, FERC 2105
Belden Reach



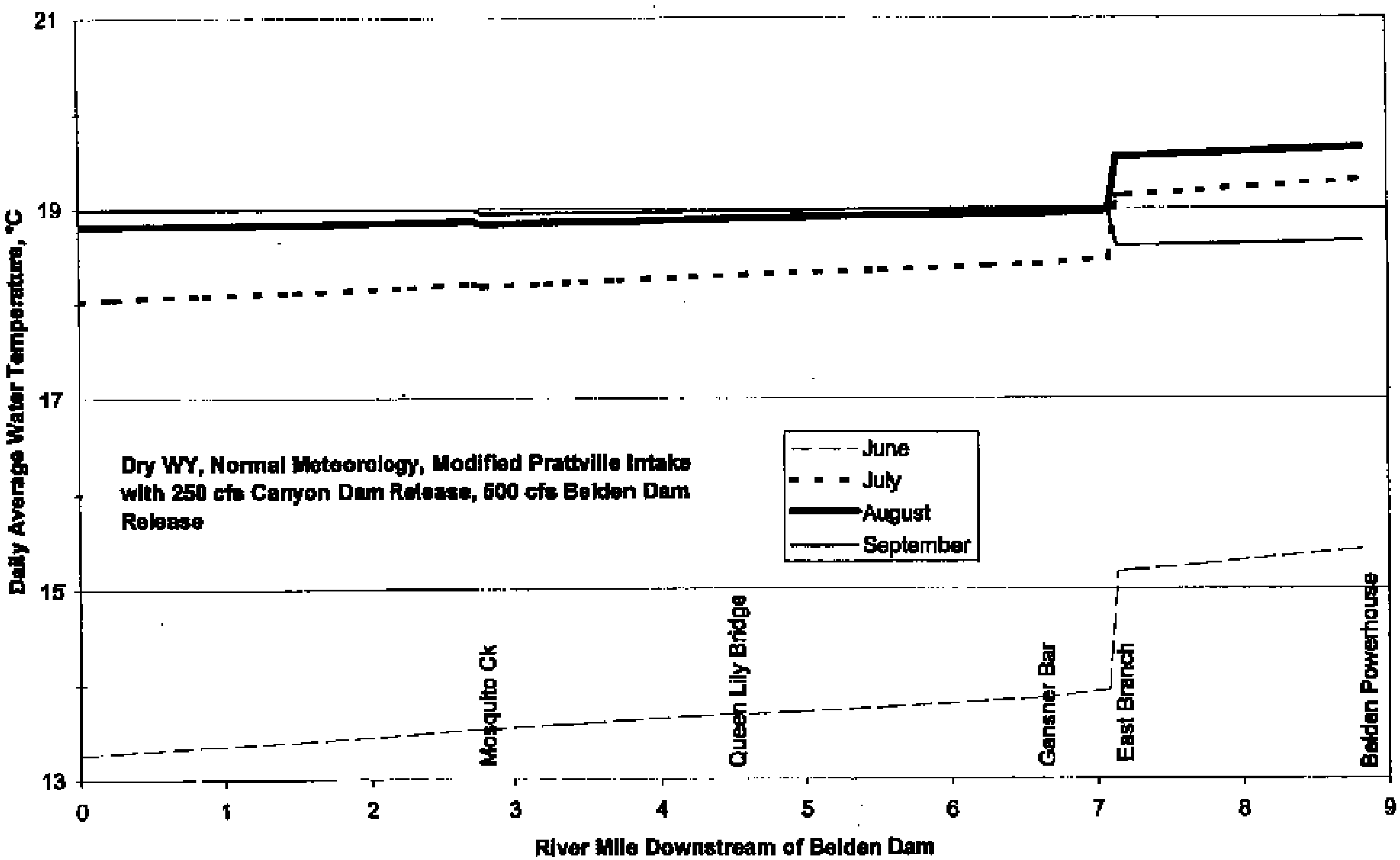
AWMH21E

North Fork Feather River Project, FERC 2105
Belden Reach

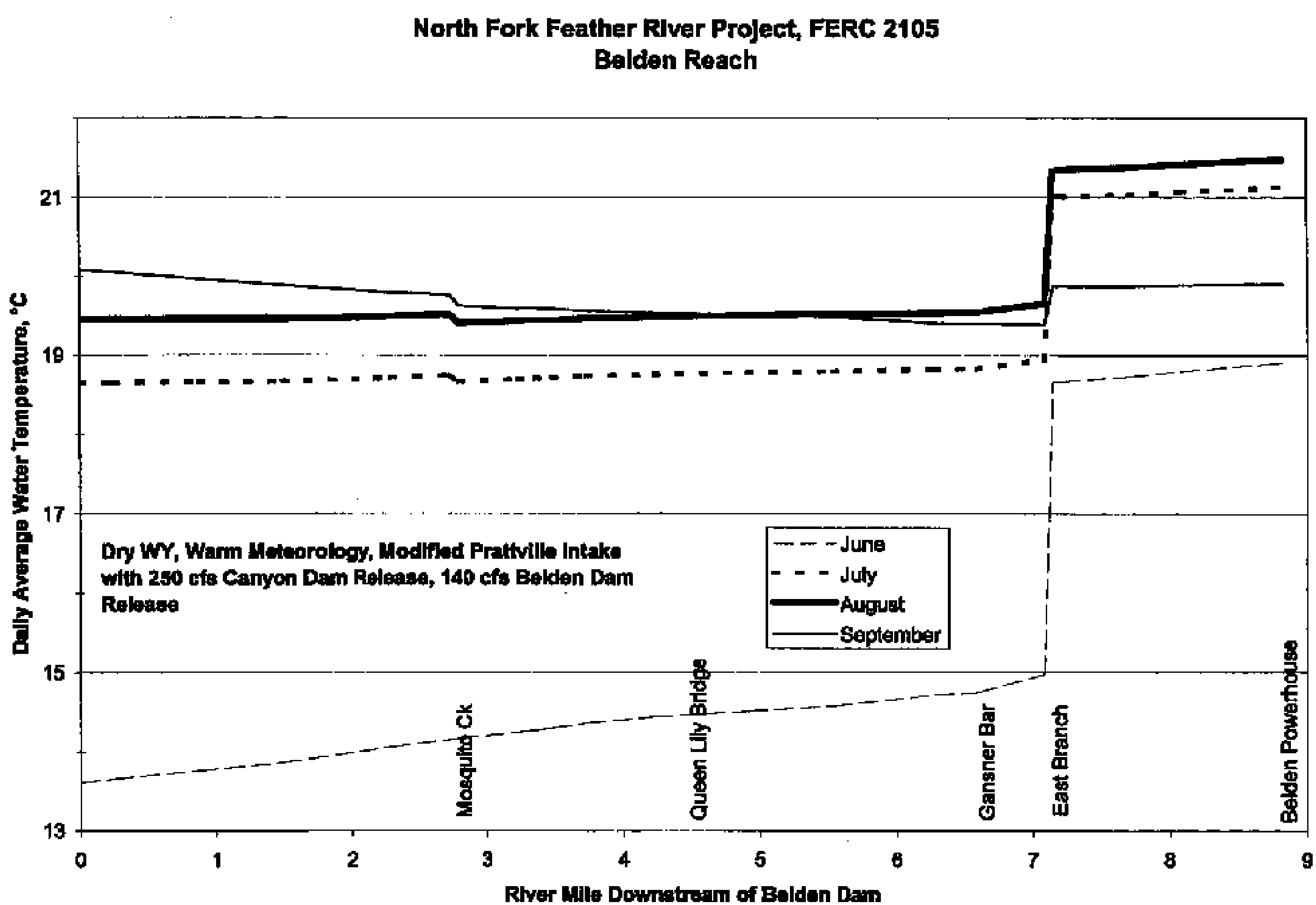


DNMH21B

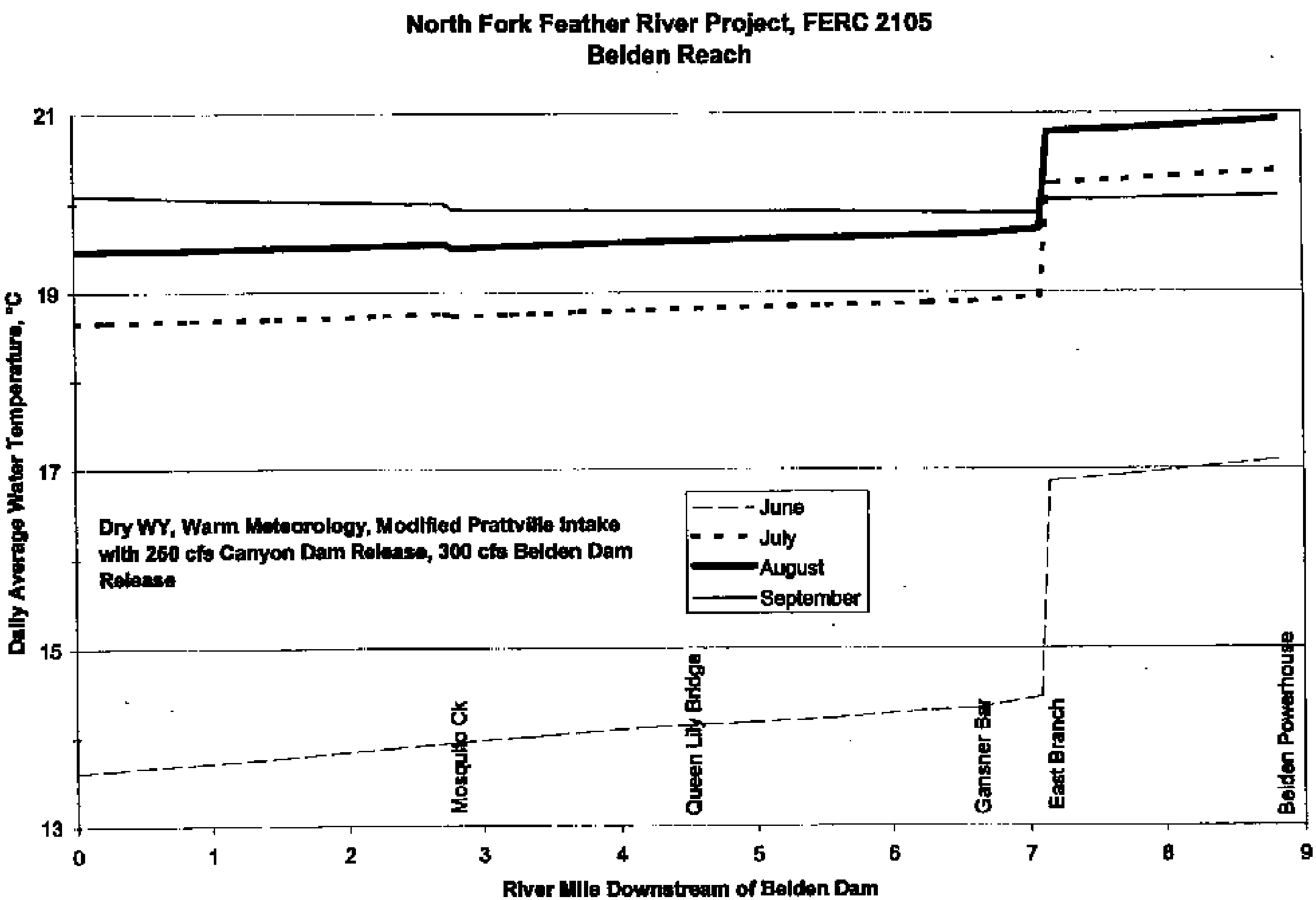
North Fork Feather River Project, FERC 2105
Belden Reach



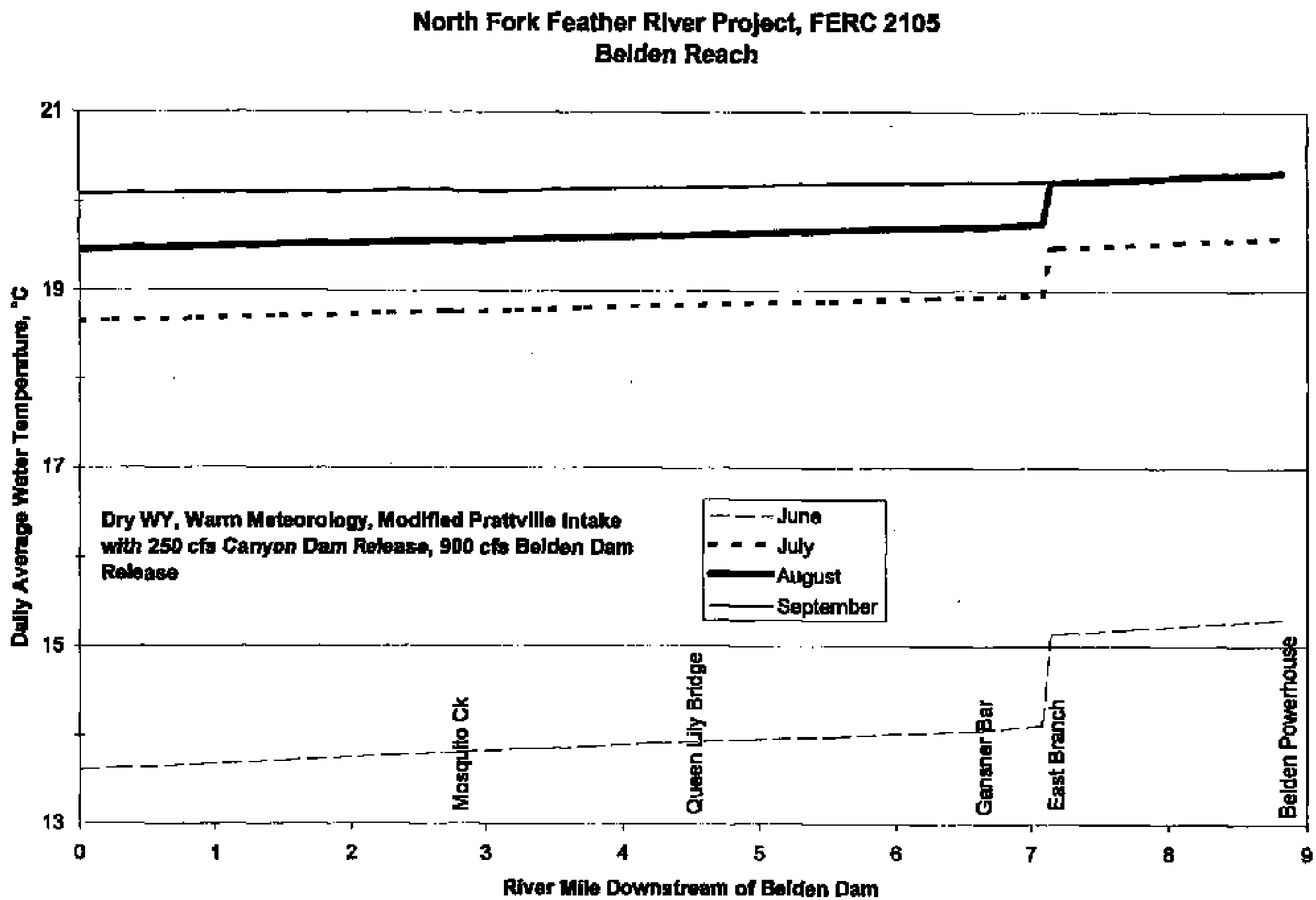
DNMH21D


North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
21
19
17
15
13
Dry WY, Warm Meteorology, Modified Prattville Intake with 250 cfs Canyon Dam Release, 140 cfs Belden Dam Release
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam

DWMH21A


North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
21
19
17
15
13
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam
Dry WY, Warm Meteorology, Modified Prattville Intake with 250 cfs Canyon Dam Release, 300 cfs Belden Dam Release
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse

DWMH21C


North Fork Feather River Project, FERC 2105
Belden Reach
Dry WY, Warm Meteorology, Modified Prattville Intake with 250 cfs Canyon Dam Release, 900 cfs Belden Dam Release
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
Daily Average Water Temperature, °C
River Mile Downstream of Belden Dam
21
19
17
15
13
0
1
2
3
4
5
6
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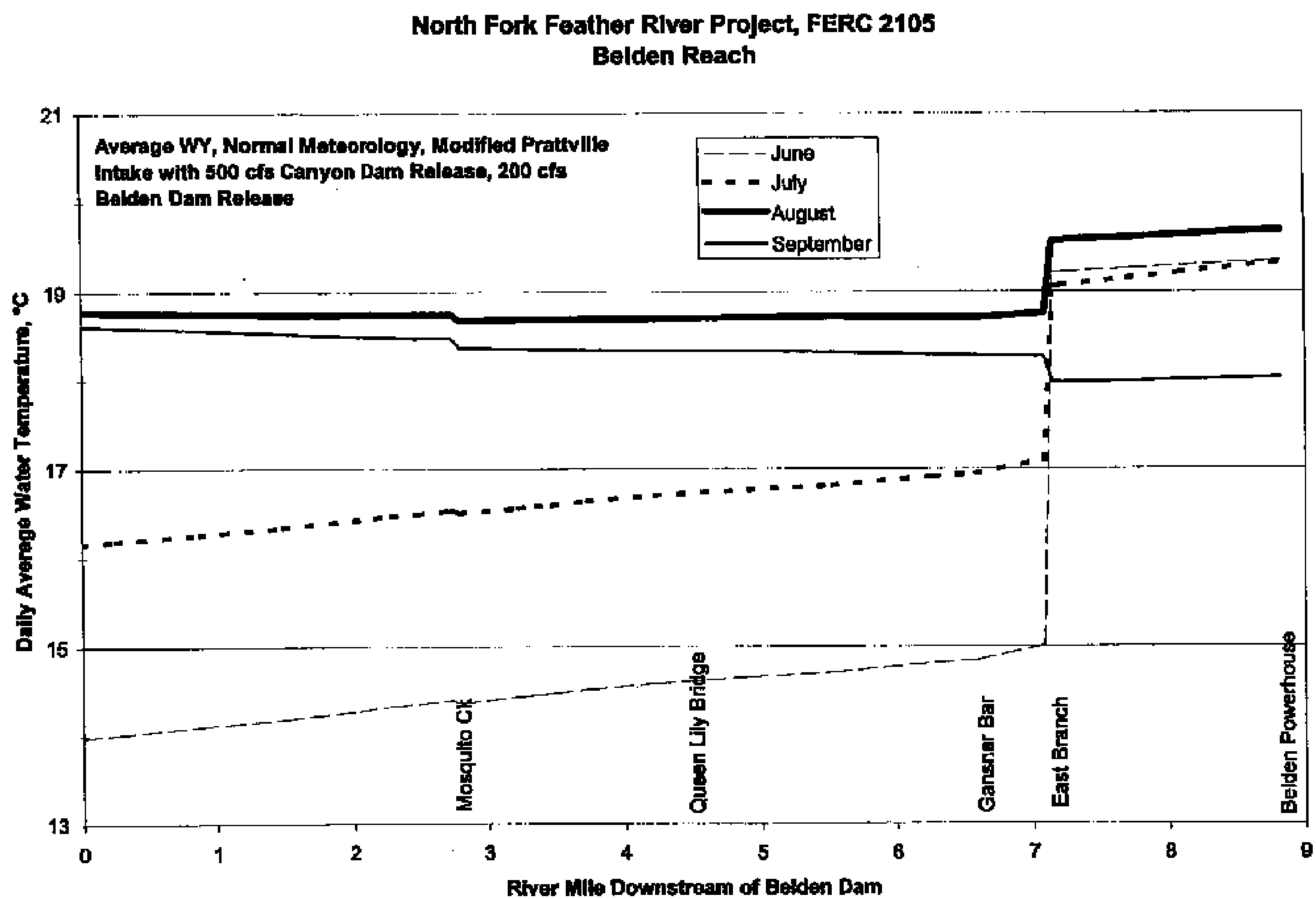
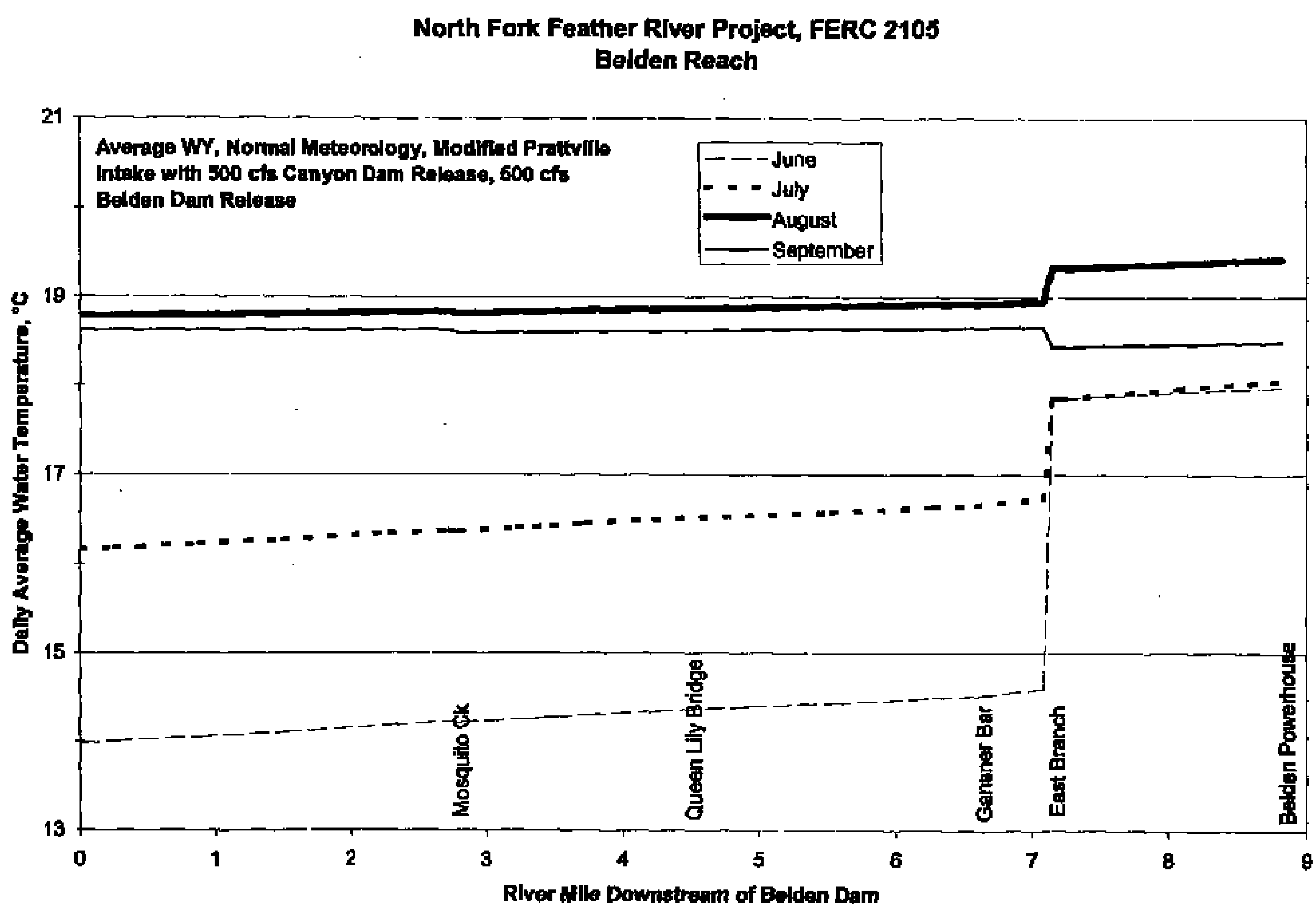
8
9

DWMH21E

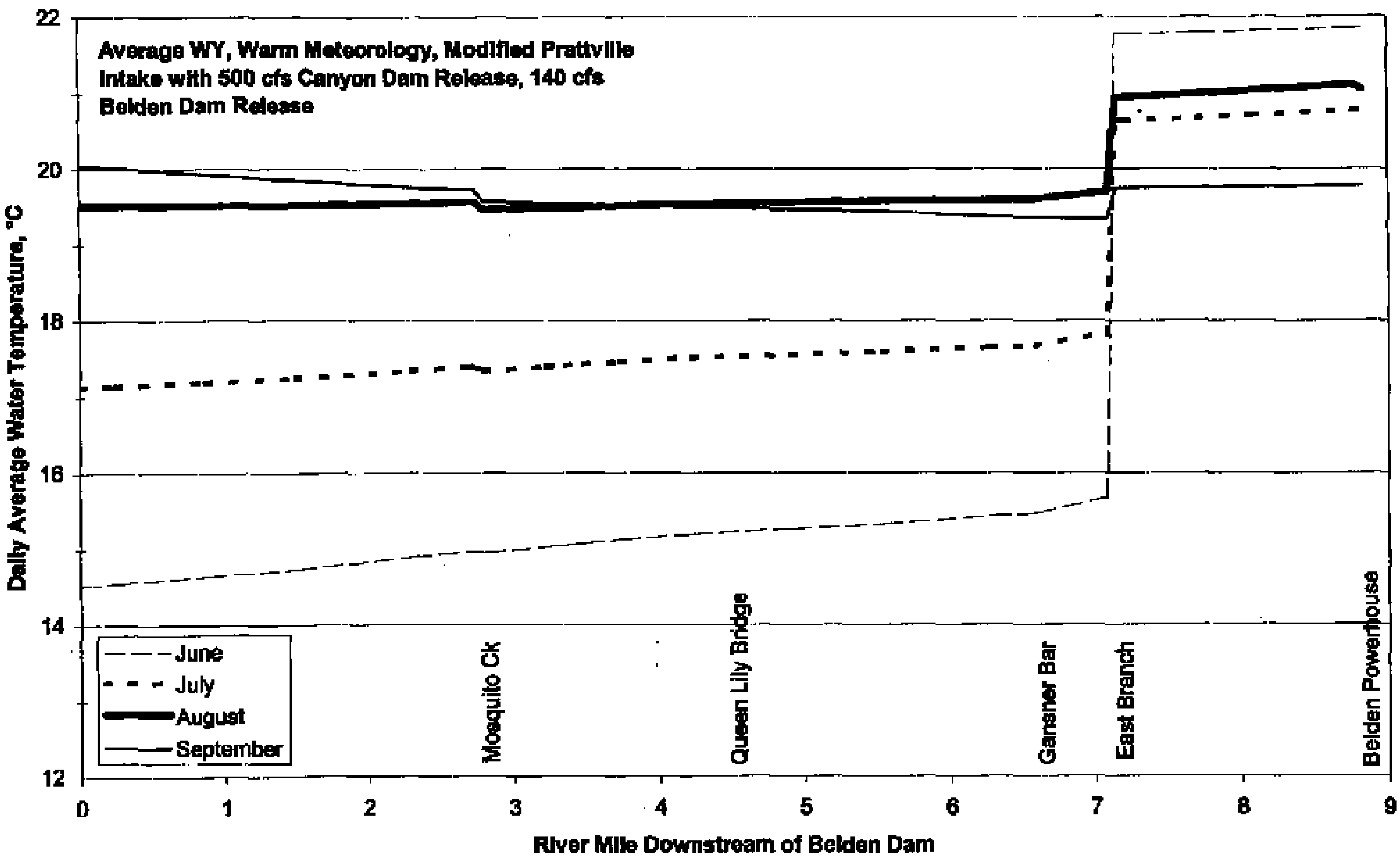

North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Normal Meteorology, Modified Prattville
Intake with 500 cfs Canyon Dam Release, 200 cfs
Belden Dam Release
June
July
August
September
Daily Average Water Temperature, °C
21
19
17
15
13
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam

ANMI21B


North Fork Feather River Project, FERC 2105
Belden Reach
Average WY, Normal Meteorology, Modified Prattville Intake with 500 cfs Canyon Dam Release, 500 cfs Belden Dam Release
June
July
August
September
Daily Average Water Temperature, °C
21
19
17
15
13
0
1
2
3
4
5
6
7
8
9
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
River Mile Downstream of Belden Dam

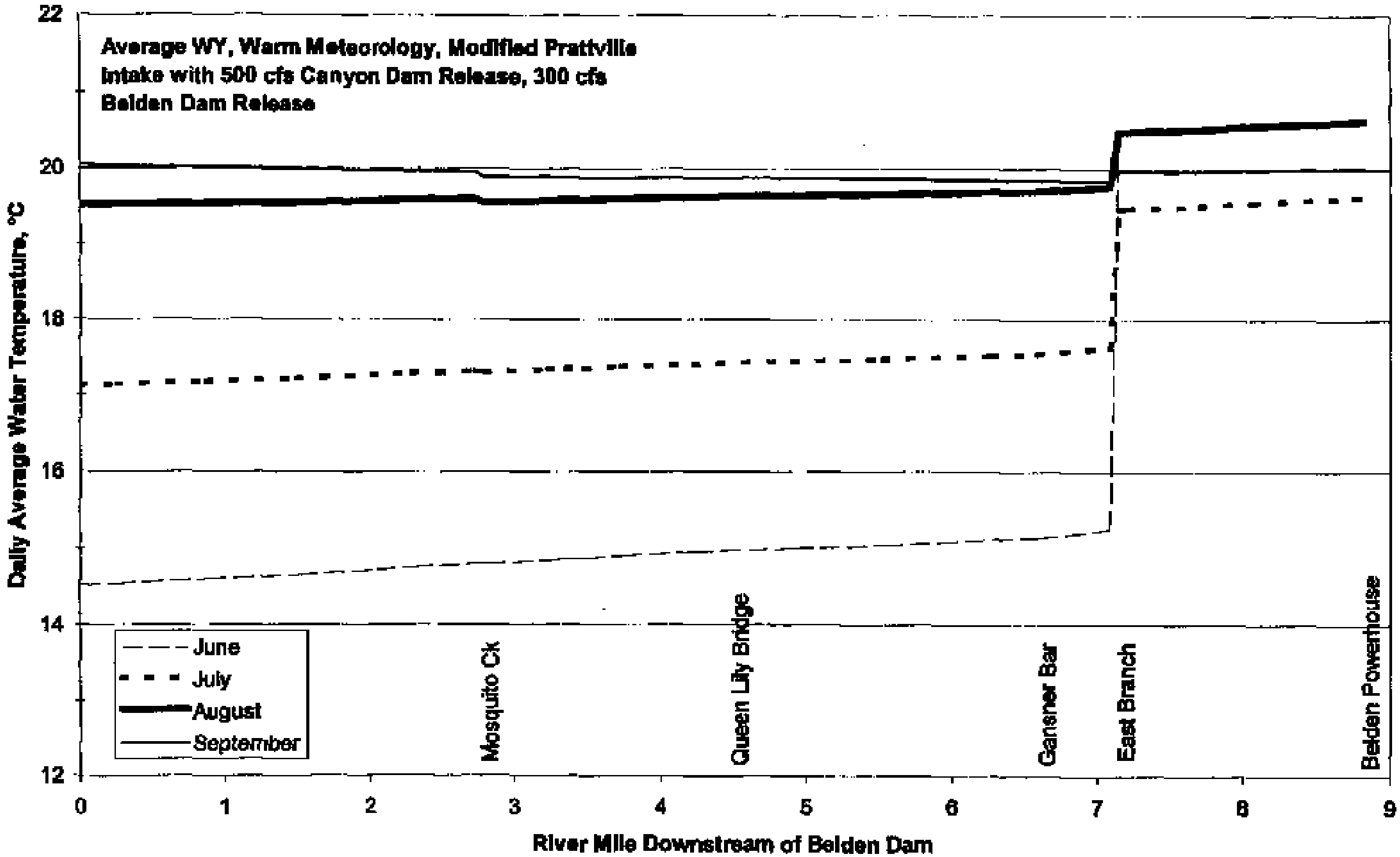
ANMI21D

North Fork Feather River Project, FERC 2105
Belden Reach



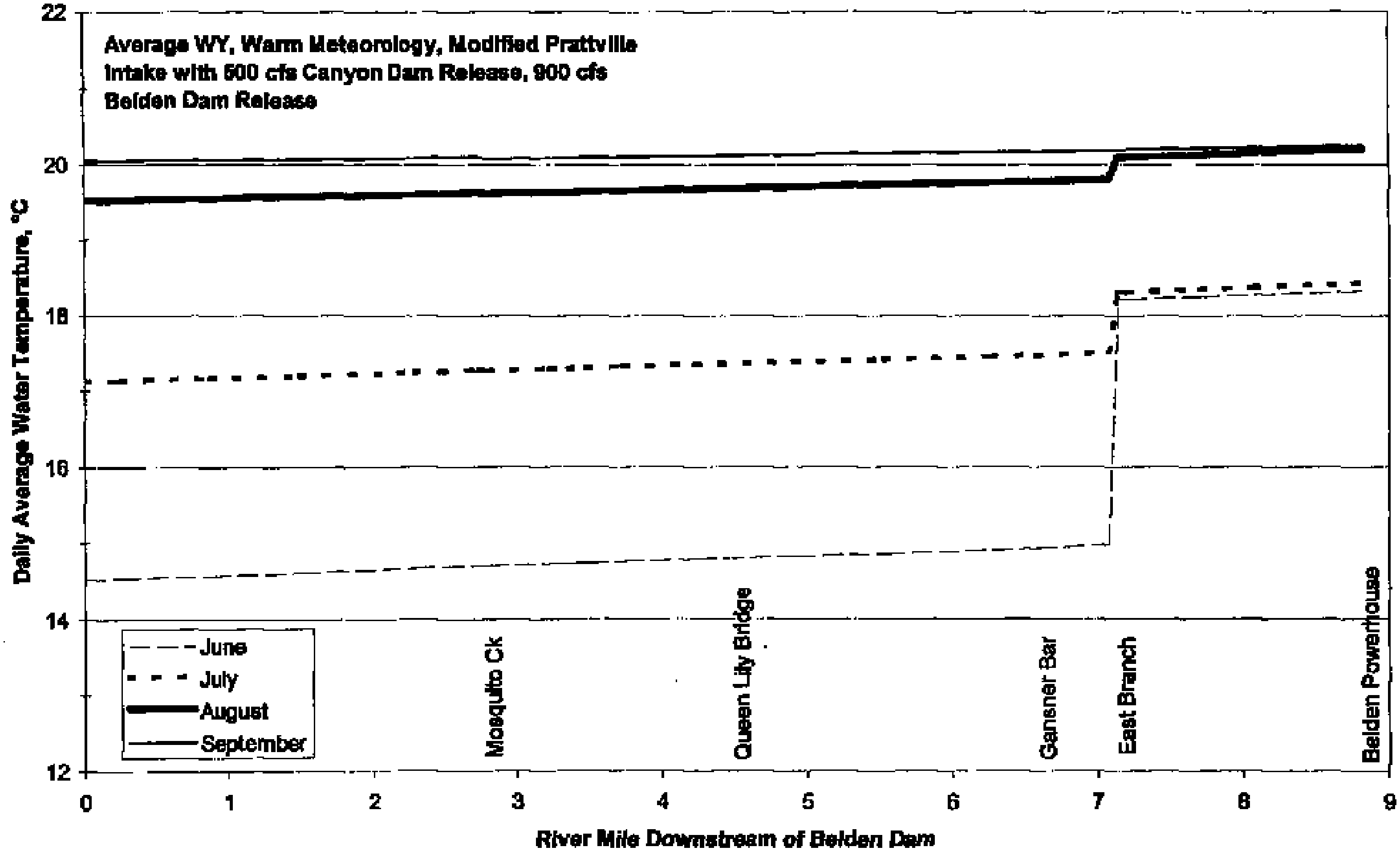
AWMI21A

North Fork Feather River Project, FERC 2105
Belden Reach

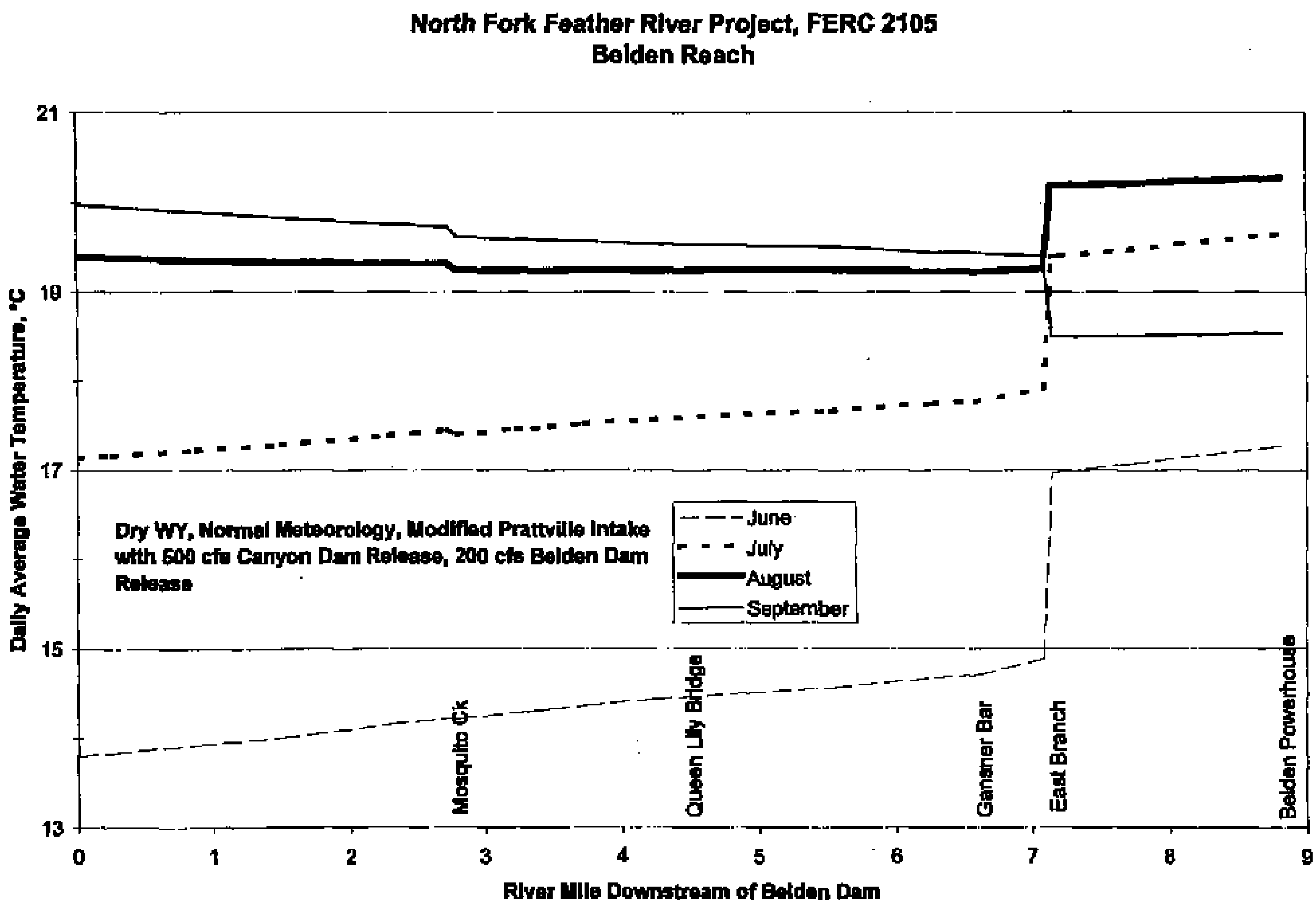


AWMI21C

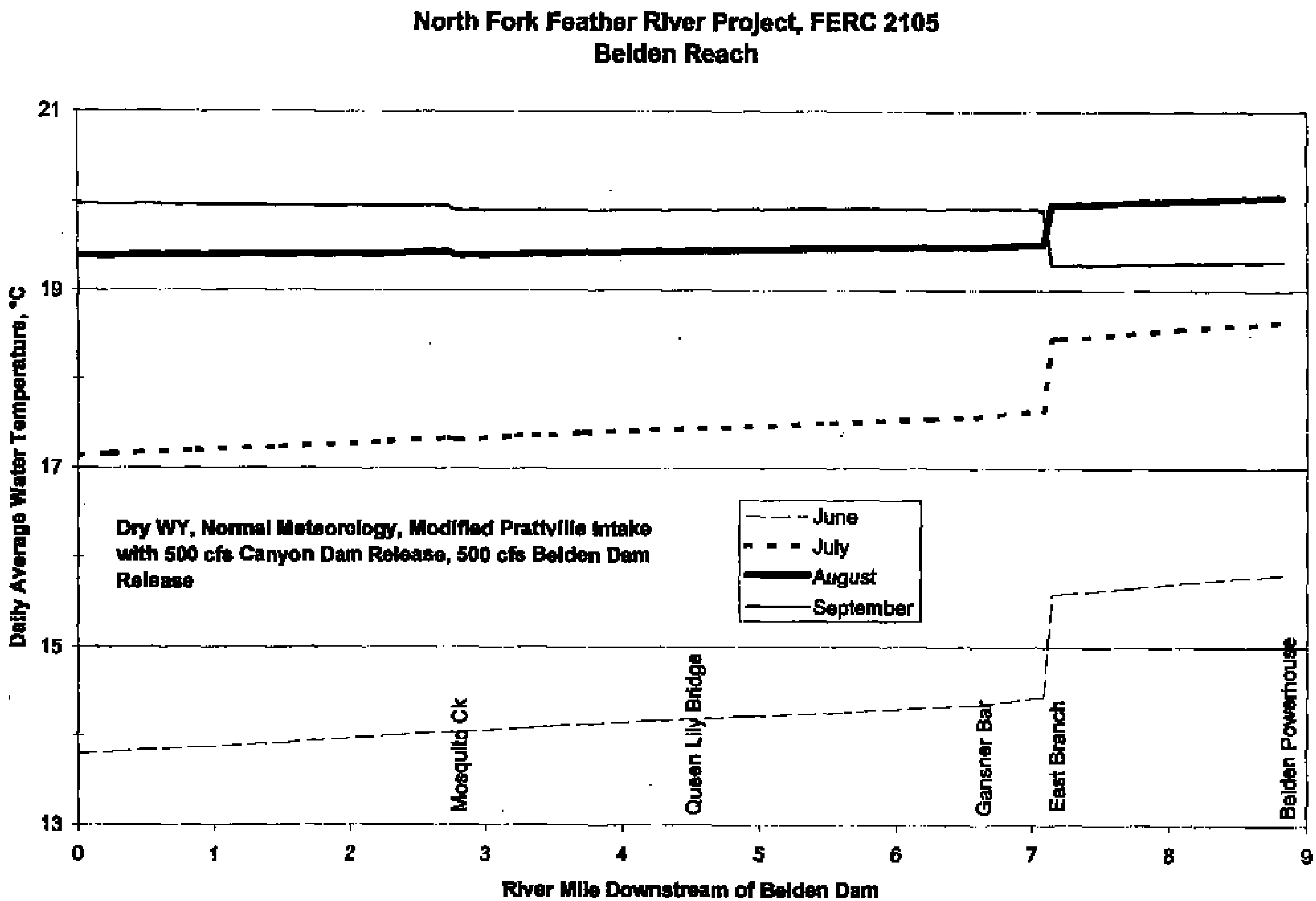
North Fork Feather River Project, FERC 2105
Belden Reach



AWMI21E

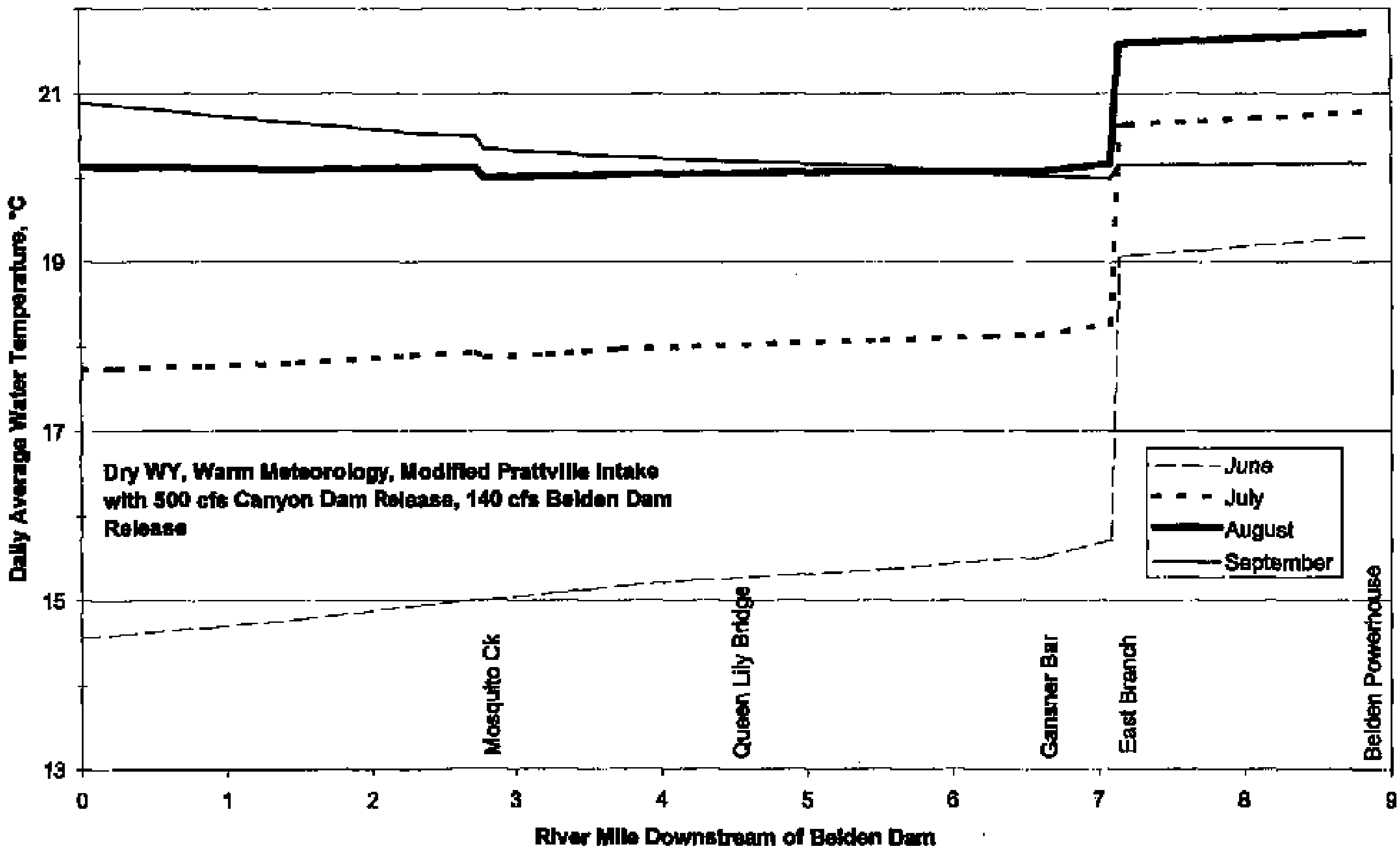

North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
21
19
17
15
13
Dry WY, Normal Meteorology, Modified Prattville Intake with 500 cfs Canyon Dam Release, 200 cfs Belden Dam Release
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam

DNMI21B

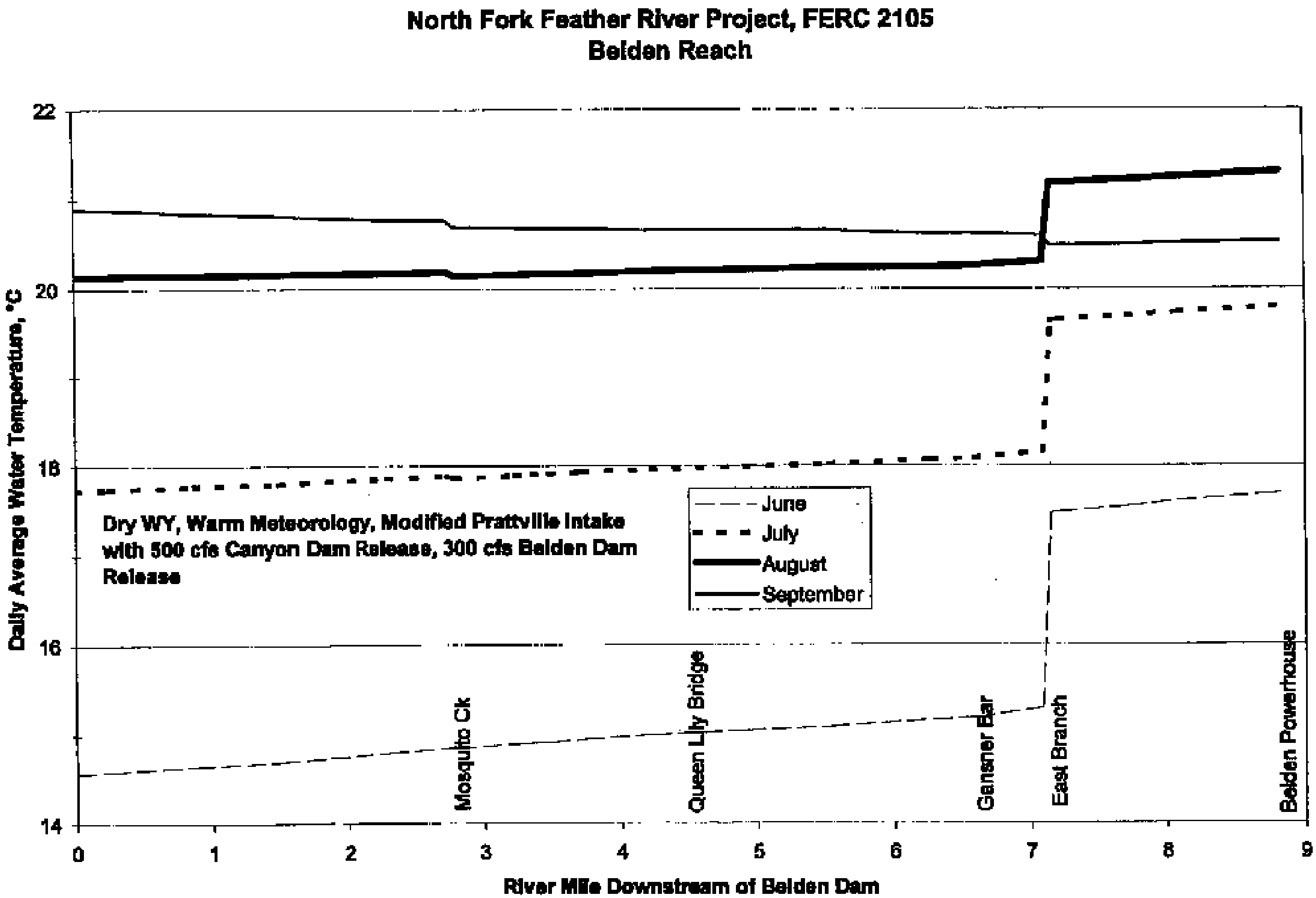

North Fork Feather River Project, FERC 2105
Belden Reach
Daily Average Water Temperature, °C
21
19
17
15
13
Dry WY, Normal Meteorology, Modified Prattville intake with 500 cfs Canyon Dam Release, 500 cfs Belden Dam Release
June
July
August
September
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam

DNMI21D

North Fork Feather River Project, FERC 2105
Belden Reach

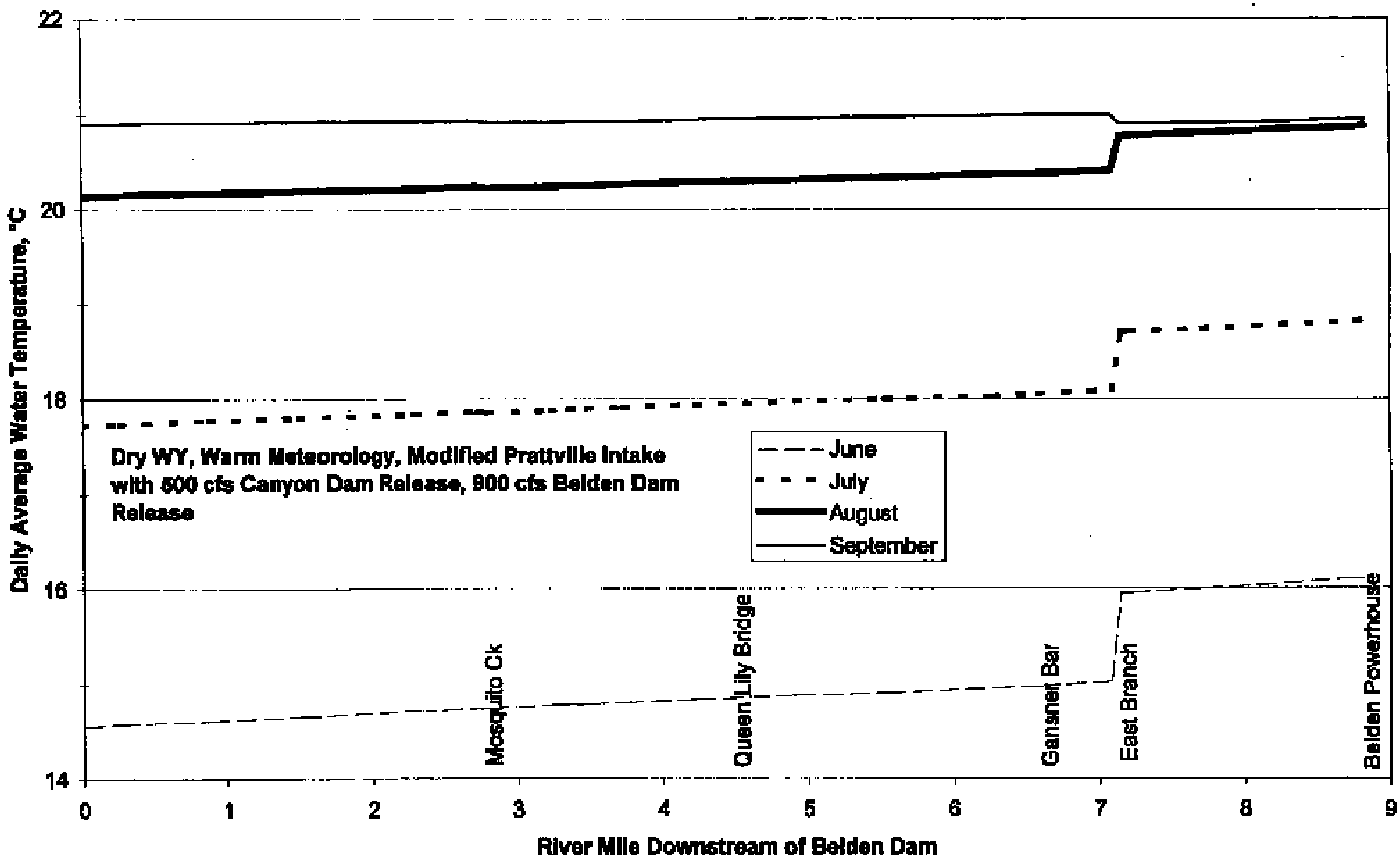


DWMI21A


North Fork Feather River Project, FERC 2105
Belden Reach
Dry WY, Warm Meteorology, Modified Prattville Intake with 500 cfs Canyon Dam Release, 300 cfs Belden Dam Release
June
July
August
September
Daily Average Water Temperature, °C
22
20
18
16
14
Mosquito Ck
Queen Lily Bridge
Gansner Bar
East Branch
Belden Powerhouse
0
1
2
3
4
5
6
7
8
9
River Mile Downstream of Belden Dam

DWMI21C

North Fork Feather River Project, FERC 2105
Belden Reach



DWMI21E

UPPER NORTH FORK FEATHER RIVER PROJECT

FERC 2105

Appendix E2-K (REVISED)

Miscellaneous Temperature Summary Tables

Summary of Temperatures in Belden Reach under Average WY and Normal Meteorology

NFFR above the Confluence with East Branch of NFFR

Belden Release	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	17.7	20.3	20.4	18.1	17.6	20.5	20.2	18.1	17.8	20.4	20.1	18.0	17.6	20.3	20.0	17.9	17.6	20.3	20.0	17.8	17.3	20.1	19.9	17.7	17.1	20.0	19.8	17.7	16.5	19.6	19.4	17.7	16.1	19.3	19.4	17.8
200	17.7	20.3	20.7	18.3	17.5	20.5	20.4	18.3	17.7	20.5	20.4	18.2	17.5	20.3	20.3	18.1	17.5	20.3	20.2	18.0	17.2	20.1	20.1	18.0	17.0	19.9	20.0	18.0	16.3	19.5	19.6	17.9	15.9	19.3	19.5	18.0
300	17.6	20.4	20.9	18.5	17.5	20.5	20.6	18.5	17.6	20.5	20.6	18.4	17.4	20.3	20.5	18.3	17.5	20.3	20.4	18.2	17.1	20.1	20.3	18.2	16.9	19.9	20.2	18.1	16.1	19.5	19.8	18.1	15.7	19.2	19.7	18.2
500	17.5	20.4	21.1	18.7	17.4	20.5	20.8	18.7	17.6	20.5	20.8	18.6	17.4	20.3	20.6	18.5	17.4	20.3	20.6	18.3	17.1	20.1	20.5	18.3	16.8	19.9	20.3	18.3	16.0	19.4	19.9	18.2	15.5	19.2	19.8	18.3
900	17.5	20.4	21.2	18.8	17.4	20.5	21.0	18.9	17.5	20.5	20.9	18.7	17.3	20.3	20.8	18.6	17.4	20.3	20.7	18.4	17.0	20.1	20.6	18.4	16.7	19.9	20.4	18.4	15.9	19.4	20.0	18.3	15.4	19.1	19.9	18.4
Modified Prattville Intake																																				
140	15.2	16.8	18.5	18.0	15.2	16.9	18.5	18.0	15.4	17.0	18.6	18.0	15.3	17.0	18.5	17.9	15.4	17.2	18.6	17.9	15.4	17.2	18.5	17.9	15.4	17.2	18.6	17.9	15.3	17.3	18.6	18.0	15.2	17.4	18.7	18.2
200	14.9	16.5	18.7	18.3	14.9	16.7	18.6	18.3	15.1	16.8	18.7	18.2	15.0	16.8	18.6	18.2	15.2	16.9	18.7	18.2	15.2	16.9	18.7	18.1	15.2	17.0	18.7	18.2	15.0	17.1	18.8	18.3	14.9	17.1	18.9	18.5
300	14.7	16.3	18.7	18.5	14.7	16.4	18.7	18.5	14.9	16.6	18.8	18.4	14.8	16.6	18.7	18.4	15.0	16.7	18.8	18.4	15.0	16.7	18.8	18.3	15.0	16.8	18.9	18.4	14.8	16.9	18.9	18.5	14.7	16.9	19.0	18.7
500	14.5	16.1	18.8	18.6	14.5	16.3	18.8	18.6	14.7	16.4	18.9	18.6	14.6	16.4	18.8	18.5	14.8	16.5	18.8	18.5	14.8	16.6	18.8	18.5	14.8	16.6	18.9	18.6	14.6	16.7	19.0	18.7	14.5	16.8	19.1	18.9
900	14.3	16.0	18.9	18.8	14.4	16.1	18.9	18.8	14.6	16.3	19.0	18.7	14.5	16.3	18.8	18.6	14.7	16.4	18.9	18.6	14.7	16.4	18.9	18.6	14.7	16.5	19.0	18.7	14.5	16.6	19.0	18.8	14.4	16.7	19.1	19.0

NFFR above Belden Powerhouse

Belden Release	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	20.2	21.4	20.8	17.8	20.2	21.4	20.7	17.9	20.2	21.4	20.7	17.8	20.2	21.3	20.6	17.8	20.2	21.3	20.6	17.7	20.2	21.2	20.5	17.7	20.1	21.2	20.5	17.7	20.0	21.0	20.3	17.6	19.9	20.9	20.2	17.7
200	20.0	21.2	21.0	18.1	20.0	21.3	20.8	18.1	20.0	21.3	20.8	18.0	20.0	21.2	20.7	17.9	20.0	21.2	20.7	17.8	19.9	21.1	20.6	17.8	19.9	21.0	20.5	17.8	19.7	20.7	20.3	17.8	19.6	20.6	20.2	17.8
300	19.8	21.0	21.1	18.3	19.7	21.1	20.9	18.3	19.8	21.1	20.9	18.2	19.7	21.0	20.7	18.2	19.7	21.0	20.7	18.0	19.6	20.9	20.6	18.0	19.5	20.7	20.5	18.0	19.3	20.4	20.3	18.0	19.1	20.3	20.2	18.0
500	19.3	20.9	21.2	18.5	19.3	21.0	21.0	18.6	19.4	21.0	21.0	18.5	19.3	20.8	20.8	18.4	19.3	20.8	20.8	18.2	19.1	20.6	20.7	18.2	19.0	20.5	20.6	18.2	18.6	20.1	20.2	18.2	18.4	19.9	20.2	18.2
900	18.9	20.7	21.3	18.8	18.8	20.9	21.1	18.8	18.9	20.8	21.0	18.7	18.8	20.7	20.9	18.6	18.8	20.6	20.9	18.4	18.6	20.5	20.7	18.4	18.4	20.3	20.6	18.4	17.9	19.9	20.2	18.3	17.6	19.6	20.1	18.4
Modified Prattville Intake																																				
140	19.7	19.6	19.8	17.8	19.7	19.7	19.8	17.8	19.8	19.7	19.8	17.8	19.8	19.7	19.7	17.8	19.8	19.8	19.8	17.8	19.8	19.8	19.8	17.7	19.8	19.8	19.8	17.8	19.8	19.9	19.8	17.8	19.7	19.9	19.9	17.9
200	19.3	19.0	19.6	18.0	19.3	19.1	19.6	18.0	19.4	19.1	19.7	18.0	19.4	19.1	19.6	18.0	19.4	19.2	19.6	18.0	19.4	19.2	19.6	17.9	19.4	19.3	19.7	18.0	19.4	19.3	19.7	18.0	19.3	19.3	19.8	18.2
300	18.8	18.3	19.5	18.2	18.8	18.4	19.5	18.2	18.8	18.5	19.5	18.2	18.8	18.5	19.4	18.2	18.9	18.6	19.5	18.2	18.9	18.6	19.5	18.1	18.9	18.6	19.6	18.2	18.8	18.7	19.6	18.3	18.8	18.7	19.6	18.4
500	17.9	17.6	19.3	18.5	17.9	17.7	19.3	18.5	18.0	17.8	19.4	18.5	18.0	17.8	19.3	18.4	18.1	17.9	19.3	18.4	18.1	17.9	19.3	18.4	18.1	18.0	19.4	18.4	18.0	18.1	19.4	18.5	17.9	18.1	19.5	18.7
900	16.9	16.9	19.2	18.7	17.0	17.1	19.2	18.7	17.1	17.2	19.3	18.7	17.0	17.2	19.2	18.6	17.1	17.3	19.2	18.6	17.1	17.3	19.2	18.5	17.1	17.4	19.3	18.6	17.0	17.5	19.3	18.7	17.0	17.5	19.4	18.9

Summary of Temperature Reductions Relative To Existing Condition in Belden Reach under Average WY and Normal Meteorology

	NFFR above the Confluence with East Branch of NFFR																																			
	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
BELDEN RELEASE	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
	Existing Prattville Intake																																			
140	0.0	0.0	0.0	0.0	0.1	-0.1	0.2	0.0	0.0	-0.1	0.3	0.1	0.1	0.0	0.4	0.2	0.1	0.1	0.4	0.3	0.4	0.2	0.5	0.3	0.6	0.4	0.6	0.3	1.3	0.8	0.9	0.4	1.7	1.0	1.0	0.3
200	0.1	0.0	-0.3	-0.3	0.2	-0.2	0.0	-0.3	0.1	-0.1	0.0	-0.2	0.2	0.0	0.1	-0.1	0.2	0.1	0.2	0.1	0.5	0.2	0.3	0.1	0.8	0.4	0.4	0.1	1.5	0.8	0.8	0.2	1.9	1.1	0.9	0.1
300	0.1	0.0	-0.5	-0.5	0.3	-0.2	-0.3	-0.5	0.1	-0.2	-0.2	-0.4	0.3	0.0	-0.1	-0.3	0.3	0.1	-0.1	-0.1	0.6	0.2	0.1	-0.1	0.9	0.4	0.2	-0.1	1.6	0.9	0.6	0.0	2.1	1.1	0.7	-0.1
500	0.2	0.0	-0.7	-0.6	0.3	-0.2	-0.4	-0.6	0.2	-0.2	-0.4	-0.5	0.4	0.0	-0.2	-0.4	0.3	0.1	-0.2	-0.3	0.7	0.3	-0.1	-0.2	0.9	0.4	0.1	-0.2	1.7	0.9	0.4	-0.2	2.2	1.2	0.6	-0.3
900	0.2	0.0	-0.8	-0.8	0.4	-0.2	-0.6	-0.8	0.2	-0.2	-0.5	-0.7	0.4	0.0	-0.4	-0.6	0.4	0.1	-0.3	-0.4	0.7	0.3	-0.2	-0.4	1.0	0.4	-0.1	-0.4	1.8	0.9	0.4	-0.3	2.3	1.2	0.5	-0.4
	Modified Prattville Intake																																			
140	2.6	3.5	1.9	0.1	2.5	3.4	1.9	0.1	2.4	3.3	1.8	0.1	2.4	3.3	1.9	0.2	2.3	3.2	1.8	0.2	2.3	3.2	1.9	0.2	2.3	3.1	1.8	0.1	2.5	3.0	1.8	0.0	2.5	3.0	1.7	-0.1
200	2.8	3.8	1.7	-0.2	2.8	3.7	1.8	-0.2	2.7	3.6	1.7	-0.1	2.7	3.6	1.8	-0.1	2.6	3.4	1.7	-0.1	2.6	3.4	1.7	0.0	2.6	3.4	1.7	-0.1	2.7	3.2	1.6	-0.2	2.8	3.2	1.5	-0.4
300	3.1	4.0	1.7	-0.4	3.0	3.9	1.7	-0.4	2.9	3.8	1.6	-0.4	2.9	3.8	1.7	-0.3	2.8	3.6	1.6	-0.3	2.8	3.6	1.6	-0.2	2.8	3.6	1.5	-0.3	2.9	3.4	1.5	-0.4	3.0	3.4	1.4	-0.6
500	3.3	4.2	1.6	-0.6	3.2	4.1	1.6	-0.6	3.1	4.0	1.5	-0.5	3.1	3.9	1.6	-0.4	3.0	3.8	1.6	-0.4	3.0	3.8	1.6	-0.4	2.9	3.7	1.5	-0.5	3.1	3.6	1.4	-0.6	3.2	3.6	1.3	-0.8
900	3.4	4.4	1.5	-0.7	3.4	4.2	1.5	-0.7	3.2	4.1	1.4	-0.6	3.3	4.1	1.6	-0.6	3.1	3.9	1.5	-0.6	3.1	3.9	1.5	-0.5	3.1	3.9	1.4	-0.6	3.3	3.7	1.4	-0.7	3.4	3.7	1.3	-0.9

	NFFR above Belden Powerhouse																																			
	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
BELDEN RELEASE	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
	Existing Prattville Intake																																			
140	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.2	0.2	0.1	0.1	0.3	0.2	0.1	0.2	0.4	0.2	0.3	0.4	0.5	0.2	0.3	0.5	0.6	0.2
200	0.2	0.2	-0.1	-0.2	0.2	0.1	0.1	-0.2	0.2	0.1	0.1	-0.2	0.2	0.2	0.2	-0.1	0.2	0.2	0.2	0.0	0.3	0.3	0.3	0.0	0.4	0.4	0.3	0.0	0.6	0.6	0.6	0.1	0.7	0.8	0.6	0.0
300	0.5	0.3	-0.2	-0.4	0.5	0.2	0.0	-0.5	0.5	0.2	0.0	-0.4	0.5	0.3	0.1	-0.3	0.5	0.4	0.1	-0.2	0.6	0.5	0.2	-0.2	0.7	0.6	0.3	-0.2	1.0	0.9	0.6	-0.1	1.1	1.1	0.7	-0.2
500	0.9	0.5	-0.4	-0.7	0.9	0.4	-0.1	-0.7	0.9	0.4	-0.1	-0.6	1.0	0.5	0.0	-0.5	0.9	0.6	0.0	-0.4	1.1	0.7	0.2	-0.4	1.2	0.9	0.3	-0.4	1.6	1.2	0.6	-0.3	1.8	1.4	0.7	-0.4
900	1.4	0.7	-0.5	-0.9	1.5	0.5	-0.2	-0.9	1.4	0.5	-0.2	-0.8	1.5	0.7	0.0	-0.7	1.5	0.7	0.0	-0.6	1.7	0.9	0.1	-0.6	1.8	1.1	0.2	-0.5	2.3	1.5	0.6	-0.5	2.6	1.7	0.7	-0.6
	Modified Prattville Intake																																			
140	0.5	1.7	1.1	0.0	0.5	1.7	1.1	0.0	0.5	1.6	1.0	0.1	0.5	1.6	1.1	0.1	0.4	1.6	1.1	0.1	0.4	1.5	1.1	0.1	0.4	1.5	1.0	0.1	0.5	1.5	1.0	0.0	0.5	1.5	1.0	-0.1
200	0.9	2.4	1.2	-0.2	0.9	2.3	1.2	-0.2	0.9	2.2	1.2	-0.2	0.9	2.2	1.3	-0.1	0.8	2.1	1.2	-0.1	0.8	2.1	1.2	-0.1	0.8	2.1	1.2	-0.1	0.9	2.0	1.2	-0.2	0.9	2.0	1.1	-0.3
300	1.5	3.0	1.4	-0.4	1.5	3.0	1.4	-0.4	1.4	2.9	1.3	-0.4	1.4	2.9	1.4	-0.3	1.4	2.8	1.4	-0.3	1.4	2.8	1.4	-0.3	1.4	2.7	1.3	-0.3	1.4	2.6	1.3	-0.4	1.5	2.6	1.2	-0.6
500	2.3	3.8	1.5	-0.6	2.3	3.7	1.5	-0.6	2.2	3.6	1.5	-0.6	2.2	3.6	1.6	-0.5	2.2	3.5	1.5	-0.5	2.2	3.5	1.5	-0.5	2.2	3.4	1.4	-0.6	2.2	3.3	1.4	-0.7	2.3	3.3	1.3	-0.8
900	3.3	4.4	1.6	-0.8	3.3	4.3	1.7	-0.8	3.2	4.2	1.6	-0.8	3.2	4.2	1.7	-0.7	3.1	4.1	1.6	-0.7	3.1	4.0	1.6	-0.7	3.1	4.0	1.5	-0.8	3.2	3.9	1.5	-0.9	3.3	3.8	1.4	-1.1

Summary of Temperatures in Belden Reach under Average WY and Warm Meteorology

BELDEN RELEASE	NFFR above the Confluence with East Branch of NFFR																																			
	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
	Existing Prattville Intake																																			
140	18.3	20.7	21.6	19.8	18.1	20.8	21.6	19.8	18.4	20.8	21.6	19.7	18.3	20.6	21.5	19.6	18.2	20.6	21.4	19.5	18.0	20.5	21.3	19.5	17.7	20.4	21.2	19.4	17.1	20.0	20.8	19.3	16.6	19.8	20.7	19.3
200	18.3	20.9	21.8	20.1	18.1	21.0	21.8	20.1	18.4	21.0	21.8	20.0	18.3	20.8	21.7	19.9	18.1	20.8	21.6	19.8	18.0	20.6	21.5	19.8	17.7	20.5	21.3	19.7	16.9	20.1	21.0	19.5	16.4	19.9	20.9	19.6
300	18.3	21.1	21.9	20.4	18.1	21.2	22.0	20.4	18.4	21.1	22.0	20.3	18.3	21.0	21.9	20.2	18.1	20.9	21.8	20.1	17.9	20.8	21.6	20.0	17.6	20.6	21.5	19.9	16.9	20.2	21.1	19.8	16.3	19.9	21.0	19.8
500	18.3	21.2	22.1	20.6	18.1	21.3	22.2	20.6	18.4	21.3	22.1	20.5	18.3	21.1	22.0	20.4	18.1	21.0	21.9	20.3	17.9	20.9	21.7	20.2	17.6	20.7	21.6	20.1	16.8	20.3	21.2	20.0	16.2	20.0	21.1	20.0
900	18.2	21.3	22.2	20.8	18.1	21.4	22.3	20.8	18.4	21.4	22.2	20.6	18.2	21.2	22.1	20.6	18.1	21.1	22.0	20.5	17.9	21.0	21.8	20.4	17.6	20.8	21.7	20.3	16.7	20.3	21.3	20.1	16.1	20.1	21.1	20.2
	Modified Prattville Intake																																			
140	15.1	17.3	19.5	19.0	15.2	17.5	19.5	19.0	15.4	17.5	19.5	19.1	15.5	17.5	19.4	19.0	15.6	17.6	19.6	19.1	15.7	17.6	19.6	19.1	15.7	17.6	19.6	19.0	15.7	17.8	19.7	19.3	15.6	17.9	19.7	19.5
200	14.9	17.2	19.5	19.2	15.0	17.5	19.5	19.3	15.2	17.4	19.5	19.3	15.2	17.4	19.4	19.2	15.4	17.5	19.6	19.3	15.4	17.5	19.6	19.3	15.4	17.4	19.6	19.3	15.4	17.7	19.7	19.6	15.4	17.8	19.8	19.8
300	14.6	17.1	19.5	19.4	14.8	17.2	19.5	19.5	15.0	17.3	19.5	19.5	15.0	17.3	19.4	19.4	15.2	17.4	19.6	19.5	15.2	17.4	19.6	19.5	15.2	17.3	19.6	19.5	15.3	17.6	19.8	19.9	15.2	17.7	19.8	20.1
500	14.5	16.9	19.5	19.6	14.6	17.1	19.5	19.7	14.8	17.2	19.6	19.7	14.9	17.2	19.4	19.6	15.0	17.3	19.7	19.7	15.2	17.4	19.6	19.5	15.1	17.2	19.6	19.7	15.1	17.6	19.8	20.1	15.0	17.6	19.8	20.3
900	14.3	16.9	19.5	19.7	14.5	17.0	19.5	19.8	14.7	17.1	19.6	19.8	14.7	17.1	19.4	19.7	14.9	17.2	19.7	19.8	15.0	17.3	19.7	19.8	15.0	17.2	19.6	19.8	15.0	17.5	19.8	20.2	14.9	17.6	19.9	20.4

BELDEN RELEASE	NFFR above Belden Powerhouse																																			
	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
	Existing Prattville Intake																																			
140	22.4	22.2	22.2	20.0	22.3	22.2	22.2	20.0	22.4	22.2	22.2	20.0	22.4	22.1	22.2	19.9	22.3	22.1	22.1	19.9	22.3	22.1	22.0	19.9	22.3	22.0	22.0	19.8	22.1	21.8	21.8	19.7	22.0	21.7	21.7	19.8
200	22.1	22.0	22.2	20.2	22.0	22.1	22.3	20.2	22.1	22.1	22.3	20.1	22.1	22.0	22.2	20.1	22.0	22.0	22.1	20.0	22.0	21.9	22.0	20.0	21.9	21.8	21.9	19.9	21.7	21.6	21.7	19.8	21.6	21.5	21.6	19.9
300	21.6	21.9	22.3	20.4	21.6	22.0	22.3	20.4	21.7	22.0	22.3	20.3	21.6	21.9	22.2	20.3	21.6	21.8	22.1	20.2	21.5	21.7	22.0	20.1	21.4	21.6	21.9	20.1	21.2	21.3	21.6	20.0	21.0	21.2	21.5	20.0
500	21.0	21.8	22.3	20.6	21.0	21.9	22.4	20.6	21.1	21.8	22.3	20.5	21.0	21.7	22.2	20.4	21.0	21.7	22.2	20.4	20.9	21.5	22.0	20.3	20.7	21.4	21.9	20.2	20.4	21.1	21.6	20.1	20.1	20.9	21.4	20.1
900	20.3	21.7	22.3	20.8	20.2	21.8	22.4	20.8	20.4	21.7	22.4	20.7	20.3	21.6	22.3	20.6	20.2	21.5	22.2	20.5	20.1	21.4	22.0	20.4	19.9	21.3	21.9	20.3	19.4	20.8	21.5	20.2	19.0	20.6	21.4	20.2
	Modified Prattville Intake																																			
140	21.7	20.5	21.0	19.6	21.8	20.6	21.0	19.6	21.8	20.6	21.0	19.6	21.8	20.6	20.9	19.6	21.8	20.7	21.1	19.6	21.9	20.7	21.1	19.6	21.9	20.7	21.0	19.6	21.9	20.8	21.1	19.8	21.8	20.8	21.1	19.9
200	21.2	19.9	20.7	19.6	21.2	20.0	20.7	19.7	21.3	20.1	20.7	19.7	21.3	20.0	20.7	19.6	21.3	20.1	20.8	19.7	21.3	20.1	20.8	19.7	21.3	20.1	20.8	19.7	21.3	20.2	20.9	19.9	21.3	20.3	20.9	20.0
300	20.4	19.2	20.4	19.7	20.4	19.3	20.4	19.7	20.5	19.4	20.5	19.8	20.5	19.4	20.4	19.7	20.6	19.5	20.6	19.8	20.6	19.5	20.5	19.8	20.6	19.4	20.5	19.8	20.6	19.6	20.6	20.0	20.6	19.7	20.7	20.2
500	19.3	18.5	20.2	19.8	19.3	18.6	20.2	19.8	19.4	18.7	20.2	19.9	19.5	18.7	20.1	19.8	19.5	18.8	20.3	19.9	20.6	19.5	20.5	19.8	19.6	18.7	20.3	19.9	19.6	19.0	20.4	20.1	19.5	19.0	20.4	20.3
900	17.9	17.9	20.0	19.8	18.0	18.0	19.9	19.9	18.2	18.1	20.0	19.9	18.2	18.1	19.8	19.8	18.3	18.2	20.1	19.9	18.3	18.2	20.1	19.9	18.3	18.2	20.1	19.9	18.3	18.4	20.2	20.3	18.3	18.5	20.3	20.5

Summary of Temperature Reductions Relative To Existing Condition in Belden Reach under Average WY and Warm Meteorology

NFFR above the Confluence with East Branch of NFFR

BELDEN RELEASE	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake												
140	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	0.0	-0.2	-0.1	-0.1	0.1
200	0.0	-0.2	-0.2	-0.3	0.2	-0.3	-0.3	-0.3	-0.2	-0.3	-0.3	-0.2
300	0.0	-0.3	-0.4	-0.6	0.2	-0.4	-0.4	-0.6	-0.2	-0.4	-0.4	-0.5
500	0.0	-0.5	-0.5	-0.8	0.2	-0.6	-0.6	-0.8	-0.2	-0.6	-0.6	-0.7
900	0.0	-0.6	-0.6	-1.0	0.2	-0.7	-0.7	-1.0	-0.2	-0.7	-0.7	-0.8
Modified Prattville Intake												
140	3.1	3.4	2.1	0.8	3.0	3.3	2.1	0.8	2.8	3.2	2.1	0.7
200	3.4	3.5	2.1	0.6	3.3	3.4	2.1	0.5	3.1	3.3	2.1	0.5
300	3.6	3.7	2.1	0.4	3.5	3.5	2.1	0.3	3.3	3.4	2.0	0.3
500	3.8	3.8	2.1	0.2	3.7	3.6	2.1	0.2	3.4	3.5	2.0	0.1
900	3.9	3.8	2.0	0.1	3.8	3.7	2.1	0.0	3.6	3.6	2.0	0.0

BELDEN RELEASE	150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake												
140	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.3	0.2	0.3	0.3
200	0.0	-0.1	-0.1	-0.1	0.1	0.0	-0.1	0.0	0.3	0.1	0.1	0.0
300	0.0	-0.3	-0.3	-0.4	0.1	-0.2	-0.2	-0.3	0.3	-0.1	-0.1	-0.2
500	0.0	-0.4	-0.4	-0.6	0.1	-0.3	-0.4	-0.5	0.3	-0.2	-0.2	-0.4
900	0.0	-0.5	-0.5	-0.8	0.2	-0.4	-0.4	-0.6	0.4	-0.3	-0.3	-0.6
Modified Prattville Intake												
140	2.8	3.2	2.2	0.8	2.7	3.1	2.0	0.7	2.6	3.1	2.0	0.8
200	3.0	3.4	2.2	0.6	2.9	3.2	2.0	0.5	2.8	3.2	2.0	0.5
300	3.2	3.5	2.2	0.4	3.1	3.3	1.9	0.3	3.0	3.3	1.9	0.3
500	3.4	3.6	2.2	0.2	3.2	3.4	1.9	0.1	3.0	3.3	1.9	0.3
900	3.5	3.6	2.2	0.1	3.4	3.5	1.9	0.0	3.3	3.5	1.9	0.0

BELDEN RELEASE	300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake												
140	0.5	0.4	0.4	0.4	1.2	0.7	0.7	0.5	1.7	0.9	0.8	0.5
200	0.6	0.2	0.2	0.1	1.3	0.6	0.6	0.3	1.8	0.9	0.7	0.2
300	0.6	0.1	0.1	-0.1	1.4	0.5	0.5	0.0	2.0	0.8	0.6	0.0
500	0.7	0.0	0.0	-0.3	1.5	0.4	0.4	-0.2	2.1	0.7	0.5	-0.2
900	0.7	-0.1	-0.1	-0.5	1.5	0.4	0.3	-0.3	2.1	0.7	0.4	-0.4
Modified Prattville Intake												
140	2.6	3.1	2.0	0.8	2.6	2.9	1.9	0.5	2.7	2.9	1.8	0.3
200	2.8	3.3	2.0	0.5	2.8	3.0	1.8	0.2	2.9	3.0	1.8	0.0
300	3.0	3.4	2.0	0.3	3.0	3.1	1.8	-0.1	3.1	3.0	1.8	-0.3
500	3.2	3.5	1.9	0.1	3.2	3.1	1.8	-0.3	3.2	3.1	1.7	-0.5
900	3.3	3.5	1.9	0.0	3.3	3.2	1.8	-0.4	3.4	3.2	1.7	-0.6

NFFR above Belden Powerhouse

BELDEN RELEASE	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake												
140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
200	0.3	0.1	0.0	-0.2	0.3	0.1	-0.1	-0.2	0.3	0.1	-0.1	-0.1
300	0.7	0.3	-0.1	-0.4	0.8	0.2	-0.1	-0.4	0.7	0.2	-0.1	-0.3
500	1.3	0.4	-0.1	-0.6	1.4	0.3	-0.2	-0.6	1.2	0.3	-0.1	-0.5
900	2.1	0.5	-0.1	-0.8	2.2	0.4	-0.2	-0.8	1.9	0.4	-0.2	-0.6
Modified Prattville Intake												
140	0.6	1.6	1.2	0.5	0.6	1.6	1.2	0.4	0.6	1.5	1.2	0.4
200	1.2	2.3	1.5	0.4	1.2	2.2	1.5	0.4	1.1	2.1	1.5	0.3
300	2.0	2.9	1.8	0.3	1.9	2.8	1.8	0.3	1.8	2.8	1.7	0.3
500	3.1	3.7	2.0	0.3	3.0	3.5	2.0	0.2	2.9	3.5	2.0	0.2
900	4.4	4.3	2.3	0.2	4.4	4.2	2.3	0.1	4.2	4.1	2.2	0.1

BELDEN RELEASE	150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake												
140	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
200	0.3	0.2	0.0	0.0	0.3	0.2	0.1	0.0	0.4	0.3	0.2	0.1
300	0.7	0.3	0.0	-0.2	0.8	0.4	0.1	-0.1	0.8	0.5	0.2	-0.1
500	1.3	0.5	0.0	-0.4	1.4	0.5	0.0	-0.3	1.5	0.6	0.2	-0.2
900	2.1	0.6	-0.1	-0.5	2.1	0.7	0.0	-0.5	2.3	0.8	0.2	-0.4
Modified Prattville Intake												
140	0.6	1.6	1.3	0.5	0.5	1.5	1.1	0.4	0.5	1.5	1.2	0.4
200	1.1	2.2	1.6	0.4	1.1	2.1	1.4	0.3	1.0	2.1	1.4	0.3
300	1.8	2.8	1.8	0.3	1.8	2.7	1.7	0.3	1.8	2.7	1.7	0.3
500	2.9	3.5	2.1	0.3	2.8	3.4	1.9	0.2	1.8	2.7	1.7	0.3
900	4.2	4.1	2.4	0.2	4.1	4.0	2.1	0.1	4.0	4.0	2.1	0.1

BELDEN RELEASE	300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake												
140	0.1	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.3	0.5	0.5	0.3
200	0.5	0.4	0.3	0.1	0.6	0.6	0.5	0.2	0.8	0.7	0.6	0.2
300	0.9	0.5	0.3	0.0	1.2	0.8	0.6	0.1	1.4	1.0	0.7	0.0
500	1.6	0.7	0.3	-0.2	2.0	1.1	0.6	0.0	2.3	1.3	0.8	-0.1
900	2.5	0.9	0.3	-0.3	3.0	1.3	0.7	-0.2	3.3	1.6	0.8	-0.2
Modified Prattville Intake												
140	0.5	1.5	1.2	0.4	0.5	1.4	1.2	0.3	0.5	1.4	1.1	0.2
200	1.0	2.1	1.4	0.4	1.0	1.9	1.3	0.1	1.1	1.9	1.3	0.0
300	1.8	2.7	1.7	0.3	1.8	2.5	1.6	0.0	1.8	2.5	1.5	-0.1
500	2.8	3.4	1.9	0.2	2.8	3.2	1.8	-0.1	2.8	3.2	1.8	-0.3
900	4.0	4.0	2.2	0.1	4.0	3.7	2.0	-0.2	4.1	3.7	2.0	-0.4

Summary of Temperatures in Belden Reach under Dry WY and Normal Meteorology

NFFR above the Confluence with East Branch of NFFR

		35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
		June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
		Existing Prattville Intake																																			
BELDEN	140	17.8	21.5	20.7	18.7	16.9	21.0	20.1	18.5	16.6	20.6	19.8	18.4	15.7	19.9	19.2	18.4	14.7	19.6	18.9	18.3	14.7	19.4	18.9	18.3	14.8	19.0	18.9	18.4	15.2	18.0	19.0	19.0	15.4	18.7	19.9	19.3
	200	17.7	21.6	21.0	19.0	16.8	21.0	20.4	18.8	16.4	20.6	20.0	18.7	15.5	19.9	19.3	18.6	14.3	19.5	19.1	18.6	14.4	19.3	19.1	18.6	14.5	18.9	19.0	18.6	14.9	17.9	19.1	19.3	15.1	18.6	20.1	19.7
	300	17.6	21.7	21.2	19.2	16.7	21.1	20.6	19.0	16.3	20.7	20.2	18.9	15.3	19.9	19.5	18.9	14.1	19.5	19.2	18.8	14.2	19.3	19.2	18.8	14.2	18.8	19.2	18.9	14.6	17.7	19.3	19.6	14.9	18.3	20.3	20.0
	500	17.6	21.8	21.5	19.4	16.6	21.1	20.8	19.2	16.2	20.7	20.4	19.1	15.1	19.9	19.6	19.1	13.8	19.4	19.3	19.0	13.9	19.2	19.3	19.0	14.0	18.7	19.3	19.1	14.4	17.6	19.4	19.8	14.7	18.4	20.5	20.2
	900	17.5	21.8	21.6	19.6	16.5	21.2	20.9	19.4	16.1	20.7	20.5	19.2	15.0	19.9	19.7	19.2	13.7	19.4	19.4	19.1	13.8	19.2	19.4	19.1	13.8	18.7	19.3	19.2	14.3	17.5	19.4	20.0	14.6	18.3	20.6	20.4
		Modified Prattville Intake																																			
RELEASE	140	17.3	19.8	19.8	18.6	16.6	19.5	19.5	18.4	16.3	19.4	19.2	18.3	15.6	19.0	18.7	18.3	14.7	18.8	18.6	18.3	14.7	18.8	18.7	18.3	14.8	18.5	18.7	18.5	15.2	18.1	19.1	19.1	15.4	18.7	20.0	19.3
	200	17.2	19.7	20.0	18.8	16.5	19.4	19.6	18.7	16.1	19.3	19.4	18.6	15.3	18.9	18.8	18.5	14.3	18.7	18.7	18.5	14.4	18.7	18.8	18.6	14.5	18.3	18.9	18.7	14.9	17.9	19.3	19.4	15.1	18.6	20.3	19.7
	300	17.1	19.7	20.2	19.1	16.3	19.4	19.8	18.9	16.0	19.2	19.5	18.8	15.1	18.8	18.9	18.8	14.1	18.6	18.8	18.7	14.2	18.6	18.9	18.8	14.2	18.2	19.0	19.0	14.6	17.8	19.4	19.7	14.9	18.5	20.5	20.0
	500	17.0	19.7	20.4	19.3	16.2	19.3	19.9	19.1	15.8	19.2	19.6	19.0	14.9	18.7	19.0	19.0	13.8	18.5	18.9	18.9	13.9	18.5	19.0	19.0	14.0	18.1	19.1	19.2	14.4	17.7	19.5	19.9	14.7	18.4	20.6	20.2
	900	17.0	19.7	20.5	19.4	16.1	19.3	20.0	19.2	15.7	19.1	19.7	19.1	14.8	18.7	19.1	19.1	13.7	18.5	19.0	19.1	13.8	18.4	19.1	19.1	13.8	18.1	19.1	19.3	14.3	17.6	19.6	20.1	14.6	18.3	20.8	20.4

NFFR above Belden Powerhouse

		35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
		June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
		Existing Prattville Intake																																			
BELDEN	140	19.3	21.9	21.1	18.0	18.9	21.6	20.9	18.0	18.7	21.4	20.7	17.9	18.2	21.1	20.4	17.9	17.7	20.9	20.3	17.9	17.7	20.8	20.3	17.9	17.7	20.6	20.3	17.9	17.9	20.1	20.3	18.2	18.1	20.4	20.7	18.3
	200	19.0	21.9	21.2	18.3	18.5	21.6	20.9	18.2	18.2	21.3	20.7	18.2	17.6	20.9	20.3	18.1	16.9	20.6	20.2	18.1	17.0	20.5	20.2	18.1	17.0	20.2	20.2	18.1	17.3	19.6	20.2	18.5	17.4	20.0	20.7	18.7
	300	18.7	21.9	21.3	18.6	18.0	21.5	20.9	18.5	17.7	21.2	20.7	18.4	17.0	20.7	20.2	18.4	16.2	20.4	20.0	18.4	16.2	20.2	20.0	18.4	16.2	19.9	20.0	18.4	16.6	19.1	20.1	18.9	16.8	19.6	20.7	19.1
	500	18.3	21.9	21.5	19.0	17.5	21.4	21.0	18.8	17.2	21.1	20.7	18.7	16.3	20.4	20.1	18.7	15.3	20.1	19.9	18.7	15.4	19.9	19.9	18.6	15.4	19.5	19.9	18.7	15.8	18.6	19.9	19.3	16.0	19.2	20.8	19.6
	900	18.0	22.0	21.6	19.3	17.1	21.4	21.1	19.1	16.7	21.0	20.7	19.0	15.8	20.3	20.0	19.0	14.6	19.8	19.8	18.9	14.7	19.7	19.7	18.9	14.8	19.2	19.7	19.0	15.2	18.2	19.8	19.6	15.4	18.9	20.8	20.0
		Modified Prattville Intake																																			
RELEASE	140	19.1	21.0	20.7	18.0	18.7	20.9	20.5	17.9	18.6	20.8	20.4	17.9	18.2	20.6	20.2	17.9	17.7	20.5	20.2	17.9	17.7	20.5	20.2	17.9	17.7	20.3	20.2	17.9	17.9	20.1	20.4	18.2	18.1	20.4	20.8	18.3
	200	18.7	20.8	20.7	18.2	18.2	20.6	20.5	18.1	18.0	20.3	20.3	18.1	17.5	20.2	20.0	18.1	16.9	20.1	20.0	18.1	17.0	20.1	20.0	18.1	17.0	19.9	20.1	18.2	17.3	19.7	20.3	18.5	17.4	20.0	20.8	18.7
	300	18.3	20.5	20.7	18.5	17.7	20.3	20.4	18.4	17.5	20.2	20.2	18.4	16.9	19.9	19.9	18.3	16.2	19.7	19.8	18.3	16.2	19.7	19.8	18.4	16.2	19.5	19.9	18.5	16.6	19.2	20.2	18.9	16.8	19.6	20.9	19.1
	500	17.9	20.3	20.7	18.9	17.2	20.0	20.4	18.7	16.9	19.9	20.1	18.6	16.2	19.5	19.7	18.6	15.3	19.3	19.6	18.6	15.4	19.3	19.7	18.7	15.4	19.0	19.7	18.8	15.8	18.7	20.1	19.3	16.0	19.2	20.9	19.6
	900	17.5	20.1	20.7	19.2	16.8	19.8	20.3	19.0	16.4	19.6	20.0	18.9	15.6	19.2	19.5	18.9	14.6	19.0	19.4	18.9	14.7	19.0	19.5	18.9	14.8	18.6	19.6	19.1	15.2	18.2	20.0	19.7	15.4	18.9	20.9	20.0

Summary of Temperature Reductions Relative To Existing Condition in Belden Reach under Dry WY and Normal Meteorology

NFFR above the Confluence with East Branch of NFFR

BELDEN RELEASE	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
	Existing Prattville Intake																																			
140	0.0	0.0	0.0	0.0	0.8	0.5	0.6	0.2	1.2	0.9	0.9	0.3	2.1	1.5	1.5	0.3	3.1	1.9	1.7	0.4	3.1	2.1	1.8	0.4	3.0	2.5	1.8	0.3	2.6	3.4	1.7	-0.3	2.4	2.8	0.8	-0.7
200	0.1	-0.1	-0.3	-0.3	1.0	0.4	0.3	-0.1	1.4	0.8	0.6	0.0	2.3	1.6	1.4	0.0	3.5	2.0	1.6	0.1	3.4	2.1	1.6	0.1	3.3	2.6	1.7	0.0	2.9	3.6	1.6	-0.6	2.7	2.9	0.6	-1.0
300	0.2	-0.2	-0.6	-0.6	1.1	0.4	0.1	-0.4	1.5	0.8	0.5	-0.2	2.5	1.6	1.2	-0.2	3.7	2.0	1.5	-0.1	3.6	2.2	1.5	-0.1	3.6	2.7	1.5	-0.2	3.2	3.8	1.4	-0.9	2.9	3.0	0.4	-1.3
500	0.2	-0.3	-0.8	-0.8	1.2	0.3	-0.1	-0.6	1.6	0.8	0.3	-0.4	2.7	1.6	1.1	-0.4	4.0	2.0	1.4	-0.3	3.9	2.2	1.4	-0.3	3.8	2.8	1.4	-0.4	3.4	3.9	1.3	-1.1	3.1	3.1	0.2	-1.6
900	0.3	-0.4	-0.9	-0.9	1.3	0.3	-0.2	-0.7	1.7	0.8	0.2	-0.5	2.8	1.6	1.0	-0.5	4.1	2.1	1.3	-0.4	4.0	2.3	1.3	-0.4	4.0	2.8	1.4	-0.5	3.5	4.0	1.2	-1.3	3.2	3.2	0.1	-1.7
	Modified Prattville Intake																																			
140	0.4	1.7	0.9	0.1	1.2	2.0	1.2	0.3	1.5	2.1	1.5	0.4	2.2	2.5	2.0	0.4	3.1	2.7	2.1	0.4	3.1	2.7	2.0	0.4	3.0	3.0	1.9	0.2	2.6	3.4	1.6	-0.4	2.4	2.8	0.7	-0.7
200	0.6	1.7	0.7	-0.1	1.3	2.0	1.0	0.0	1.7	2.2	1.3	0.1	2.5	2.6	1.9	0.1	3.5	2.8	1.9	0.2	3.4	2.8	1.9	0.1	3.3	3.1	1.8	-0.1	2.9	3.6	1.4	-0.7	2.7	2.9	0.4	-1.0
300	0.7	1.8	0.5	-0.4	1.5	2.1	0.9	-0.2	1.8	2.3	1.2	-0.1	2.7	2.7	1.7	-0.1	3.7	2.9	1.8	-0.1	3.6	2.9	1.8	-0.1	3.6	3.3	1.7	-0.3	3.2	3.7	1.3	-1.0	2.9	3.0	0.2	-1.3
500	0.8	1.8	0.3	-0.6	1.6	2.1	0.7	-0.4	2.0	2.3	1.1	-0.3	2.9	2.8	1.7	-0.3	4.0	3.0	1.8	-0.3	3.9	3.0	1.7	-0.3	3.8	3.4	1.6	-0.5	3.4	3.8	1.2	-1.2	3.1	3.1	0.0	-1.6
900	0.8	1.8	0.2	-0.7	1.7	2.2	0.6	-0.5	2.1	2.3	1.0	-0.4	3.0	2.8	1.6	-0.4	4.1	3.0	1.7	-0.4	4.0	3.1	1.6	-0.5	4.0	3.4	1.5	-0.6	3.5	3.9	1.1	-1.4	3.2	3.2	-0.1	-1.7

NFFR above Belden Powerhouse

BELDEN RELEASE	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
	Existing Prattville Intake																																			
140	0.0	0.0	0.0	0.0	0.4	0.3	0.3	0.1	0.6	0.5	0.4	0.1	1.1	0.8	0.7	0.1	1.7	1.0	0.8	0.2	1.6	1.1	0.8	0.2	1.6	1.3	0.8	0.1	1.4	1.8	0.8	-0.1	1.3	1.5	0.4	-0.3
200	0.3	0.0	-0.1	-0.3	0.9	0.3	0.2	-0.2	1.1	0.6	0.4	-0.1	1.7	1.0	0.8	-0.1	2.4	1.3	0.9	-0.1	2.4	1.4	0.9	-0.1	2.3	1.7	1.0	-0.1	2.1	2.3	0.9	-0.4	1.9	1.9	0.4	-0.7
300	0.7	0.0	-0.2	-0.6	1.4	0.4	0.2	-0.5	1.6	0.7	0.4	-0.4	2.3	1.2	0.9	-0.4	3.2	1.5	1.1	-0.3	3.1	1.7	1.1	-0.3	3.1	2.0	1.1	-0.4	2.8	2.8	1.0	-0.8	2.6	2.3	0.4	-1.1
500	1.0	0.0	-0.4	-0.9	1.8	0.5	0.1	-0.8	2.2	0.8	0.4	-0.7	3.0	1.5	1.0	-0.7	4.0	1.8	1.2	-0.6	3.9	2.0	1.2	-0.6	3.9	2.4	1.3	-0.7	3.5	3.3	1.2	-1.2	3.3	2.7	0.4	-1.5
900	1.3	-0.1	-0.5	-1.3	2.2	0.5	0.1	-1.1	2.6	0.9	0.4	-1.0	3.6	1.7	1.1	-0.9	4.7	2.1	1.3	-0.9	4.6	2.2	1.4	-0.9	4.6	2.7	1.4	-0.9	4.2	3.8	1.3	-1.6	3.9	3.0	0.3	-2.0
	Modified Prattville Intake																																			
140	0.2	0.9	0.4	0.1	0.6	1.1	0.6	0.1	0.8	1.1	0.7	0.2	1.2	1.3	0.9	0.2	1.7	1.4	0.9	0.2	1.6	1.4	0.9	0.2	1.6	1.6	0.9	0.1	1.4	1.8	0.7	-0.2	1.3	1.5	0.3	-0.3
200	0.6	1.1	0.4	-0.2	1.1	1.3	0.6	-0.1	1.3	1.4	0.8	-0.1	1.8	1.7	1.1	0.0	2.4	1.8	1.1	0.0	2.4	1.8	1.1	-0.1	2.3	2.0	1.1	-0.1	2.1	2.3	0.8	-0.5	1.9	1.9	0.3	-0.7
300	1.0	1.4	0.4	-0.5	1.6	1.6	0.7	-0.4	1.8	1.7	0.9	-0.3	2.5	2.0	1.2	-0.3	3.2	2.2	1.3	-0.3	3.1	2.2	1.3	-0.3	3.1	2.4	1.2	-0.4	2.8	2.7	0.9	-0.9	2.6	2.3	0.3	-1.1
500	1.5	1.6	0.4	-0.8	2.1	1.9	0.7	-0.7	2.4	2.0	1.0	-0.6	3.2	2.4	1.4	-0.6	4.0	2.6	1.5	-0.6	3.9	2.6	1.5	-0.6	3.9	2.9	1.4	-0.7	3.5	3.3	1.1	-1.3	3.3	2.7	0.2	-1.5
900	1.8	1.9	0.4	-1.1	2.6	2.2	0.8	-0.9	2.9	2.3	1.1	-0.9	3.7	2.7	1.6	-0.8	4.7	2.9	1.7	-0.8	4.6	2.9	1.6	-0.9	4.6	3.3	1.6	-1.0	4.2	3.7	1.2	-1.7	3.9	3.0	0.2	-2.0

Summary of Temperatures in Belden Reach under Dry WY and Warm Meteorology

NFFR above the Confluence with East Branch of NFFR

Belden Release	35-cfs Canyon Dam June	July	Aug	Sep	75-cfs Canyon Dam June	July	Aug	Sep	100-cfs Canyon Dam June	July	Aug	Sep	150-cfs Canyon Dam June	July	Aug	Sep	200-cfs Canyon Dam June	July	Aug	Sep	250-cfs Canyon Dam June	July	Aug	Sep	300-cfs Canyon Dam June	July	Aug	Sep	500-cfs Canyon Dam June	July	Aug	Sep	600-cfs Canyon Dam June	July	Aug	Sep
Existing Prattville Intake																																				
140	18.5	21.8	22.2	19.8	17.5	21.3	21.6	20.0	17.1	20.9	21.2	19.9	16.1	20.2	20.4	19.8	14.9	19.8	20.1	19.6	15.0	19.6	20.0	19.6	15.1	19.2	20.1	19.6	15.7	18.2	20.0	19.9	16.1	19.0	21.0	20.4
200	18.5	22.1	22.4	20.1	17.4	21.6	21.8	20.4	17.0	21.2	21.3	20.2	15.9	20.3	20.5	20.1	14.6	19.9	20.2	19.9	14.7	19.7	20.1	19.9	14.8	19.2	20.1	19.9	15.5	18.1	20.1	20.2	15.9	19.0	21.1	20.7
300	18.5	22.3	22.6	20.4	17.3	21.8	22.0	20.7	16.9	21.3	21.5	20.5	15.8	20.4	20.6	20.3	14.4	20.0	20.2	20.2	14.5	19.8	20.2	20.1	14.6	19.2	20.2	20.1	15.3	18.1	20.1	20.5	15.8	19.0	21.2	21.0
500	18.5	22.5	22.8	20.6	17.3	22.0	22.1	20.9	16.8	21.5	21.6	20.7	15.6	20.5	20.7	20.6	14.2	20.1	20.3	20.4	14.3	19.8	20.2	20.3	14.4	19.2	20.2	20.3	15.1	18.0	20.2	20.7	15.6	19.0	21.4	21.3
900	18.5	22.7	22.9	20.7	17.2	22.1	22.2	21.1	16.8	21.6	21.7	20.8	15.6	20.6	20.7	20.7	14.1	20.1	20.3	20.5	14.1	19.9	20.2	20.5	14.3	19.3	20.3	20.5	15.0	18.0	20.2	20.9	15.5	19.0	21.4	21.5
Modified Prattville Intake																																				
140	17.8	20.0	20.6	19.6	17.1	19.7	20.4	19.4	16.8	19.6	20.1	19.4	15.9	19.1	19.7	19.5	14.9	19.0	19.6	19.4	15.0	19.0	19.7	19.4	15.1	18.7	19.8	19.5	15.7	18.3	20.2	20.0	16.2	19.1	21.2	20.5
200	17.8	20.1	20.8	19.9	16.9	19.8	20.4	19.7	16.6	19.6	20.2	19.7	15.7	19.2	19.7	19.6	14.6	19.0	19.6	19.6	14.7	19.0	19.7	19.7	14.8	18.7	19.8	19.7	15.5	18.2	20.3	20.3	16.0	19.1	21.4	20.8
300	17.7	20.2	20.9	20.1	16.8	19.8	20.5	20.0	16.5	19.7	20.3	19.9	15.5	19.2	19.7	19.8	14.4	19.0	19.6	19.9	14.5	19.0	19.7	19.9	14.6	18.7	19.8	20.0	15.3	18.2	20.3	20.6	15.9	19.1	21.5	21.1
500	17.7	20.3	20.9	20.3	16.7	19.9	20.6	20.2	16.4	19.7	20.3	20.1	15.4	19.2	19.7	20.0	14.2	19.0	19.7	20.0	14.3	19.0	19.7	20.1	14.4	18.7	19.9	20.2	15.1	18.1	20.4	20.8	15.7	19.1	21.6	21.4
900	17.7	20.4	21.0	20.5	16.7	19.9	20.6	20.3	16.3	19.8	20.3	20.2	15.3	19.2	19.8	20.1	14.2	19.0	19.7	20.0	14.1	19.0	19.8	20.2	14.3	18.7	19.9	20.3	15.0	18.1	20.4	21.0	15.6	19.1	21.7	21.6

NFFR above Belden Powerhouse

Belden Release	35-cfs Canyon Dam June	July	Aug	Sep	75-cfs Canyon Dam June	July	Aug	Sep	100-cfs Canyon Dam June	July	Aug	Sep	150-cfs Canyon Dam June	July	Aug	Sep	200-cfs Canyon Dam June	July	Aug	Sep	250-cfs Canyon Dam June	July	Aug	Sep	300-cfs Canyon Dam June	July	Aug	Sep	500-cfs Canyon Dam June	July	Aug	Sep	600-cfs Canyon Dam June	July	Aug	Sep
Existing Prattville Intake																																				
140	20.8	22.6	22.6	20.1	20.2	22.4	22.4	20.2	20.1	22.2	22.2	20.1	19.5	21.8	21.8	20.1	18.9	21.6	21.7	20.0	18.9	21.5	21.7	20.0	19.0	21.3	21.7	20.0	19.3	20.8	21.6	20.2	19.5	21.2	22.1	20.3
200	20.3	22.6	22.7	20.2	19.7	22.3	22.4	20.4	19.5	22.1	22.1	20.3	18.8	21.6	21.7	20.2	18.0	21.3	21.5	20.1	18.0	21.2	21.4	20.1	18.1	20.9	21.5	20.1	18.5	20.3	21.4	20.3	18.8	20.8	22.0	20.6
300	19.9	22.7	22.8	20.4	19.1	22.3	22.4	20.6	18.8	22.0	22.1	20.4	18.0	21.4	21.5	20.4	17.1	21.1	21.3	20.3	17.1	20.9	21.2	20.2	17.2	20.5	21.2	20.2	17.7	19.8	21.2	20.5	18.0	20.4	21.9	20.8
500	19.5	22.8	22.9	20.6	18.5	22.3	22.4	20.8	18.2	21.9	22.0	20.6	17.2	21.2	21.3	20.5	16.1	20.8	21.0	20.4	16.1	20.6	21.0	20.4	16.3	20.2	21.0	20.4	16.8	19.2	20.9	20.7	17.2	20.0	21.8	21.1
900	19.1	22.9	23.0	20.7	18.0	22.3	22.4	21.0	17.7	21.9	21.9	20.8	16.6	21.0	21.1	20.7	15.3	20.6	20.8	20.6	15.3	20.4	20.7	20.5	15.5	19.9	20.8	20.5	16.1	18.8	20.7	20.9	16.6	19.6	21.7	21.3
Modified Prattville Intake																																				
140	20.4	21.7	21.9	20.0	20.0	21.5	21.8	19.9	19.9	21.5	21.7	19.9	19.4	21.2	21.5	19.9	18.9	21.2	21.5	19.9	18.9	21.1	21.5	19.9	19.0	21.0	21.5	19.9	19.3	20.8	21.7	20.2	19.6	21.2	22.2	20.4
200	19.9	21.5	21.8	20.1	19.4	21.3	21.6	20.0	19.2	21.2	21.5	20.0	18.7	20.9	21.2	20.0	18.0	20.8	21.2	20.0	18.0	20.8	21.2	20.0	18.1	20.6	21.3	20.0	18.5	20.3	21.5	20.3	18.9	20.8	22.1	20.6
300	19.4	21.3	21.7	20.2	18.8	21.0	21.4	20.1	18.5	20.9	21.3	20.1	17.9	20.5	20.9	20.0	17.1	20.4	20.9	20.1	17.1	20.4	20.9	20.1	17.2	20.2	21.0	20.1	17.7	19.8	21.3	20.5	18.1	20.5	22.1	20.9
500	18.9	21.0	21.5	20.4	18.1	20.7	21.2	20.2	17.8	20.6	21.0	20.2	17.0	20.1	20.6	20.1	16.1	20.0	20.5	20.2	16.1	19.9	20.6	20.2	16.3	19.7	20.7	20.3	16.8	19.3	21.1	20.8	17.3	20.1	22.0	21.2
900	18.4	20.8	21.4	20.5	17.6	20.5	21.1	20.4	17.2	20.3	20.8	20.3	16.3	19.8	20.3	20.2	16.1	20.0	20.5	20.2	15.3	19.6	20.3	20.3	15.5	19.3	20.4	20.4	16.1	18.8	20.9	21.0	16.6	19.7	22.0	21.4

Summary of Temperature Reductions Relative To Existing Condition in Belden Reach under Dry WY and Warm Meteorology

NFFR above the Confluence with East Branch of NFFR

Belden Release	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	0.0	0.0	0.0	0.0	1.0	0.5	0.6	-0.3	1.3	0.8	1.0	-0.1	2.3	1.6	1.7	0.0	3.5	1.9	2.1	0.2	3.5	2.1	2.1	0.2	3.3	2.6	2.1	0.2	2.8	3.6	2.2	-0.1	2.3	2.8	1.2	-0.6
200	0.0	-0.3	-0.3	-0.3	1.1	0.2	0.4	-0.6	1.5	0.6	0.8	-0.4	2.5	1.4	1.6	-0.3	3.8	1.9	2.0	-0.1	3.8	2.1	2.1	-0.1	3.6	2.6	2.0	-0.1	3.0	3.6	2.1	-0.5	2.5	2.8	1.0	-0.9
300	0.0	-0.5	-0.5	-0.6	1.1	0.0	0.2	-0.9	1.5	0.4	0.7	-0.7	2.7	1.3	1.6	-0.6	4.1	1.8	1.9	-0.4	4.0	2.0	2.0	-0.3	3.8	2.6	2.0	-0.3	3.2	3.7	2.1	-0.7	2.7	2.8	0.9	-1.2
500	0.0	-0.8	-0.7	-0.8	1.2	-0.2	0.0	-1.1	1.6	0.3	0.6	-0.9	2.8	1.2	1.5	-0.8	4.3	1.7	1.9	-0.6	4.2	2.0	2.0	-0.5	4.0	2.5	1.9	-0.5	3.3	3.7	2.0	-1.0	2.8	2.8	0.8	-1.5
900	0.0	-0.9	-0.8	-0.9	1.2	-0.3	-0.1	-1.3	1.7	0.2	0.5	-1.1	2.9	1.2	1.5	-0.9	4.4	1.7	1.8	-0.8	4.4	1.9	1.9	-0.7	4.2	2.5	1.9	-0.7	3.4	3.8	2.0	-1.1	2.9	2.8	0.7	-1.7
Modified Prattville Intake																																				
140	0.6	1.7	1.5	0.2	1.4	2.1	1.8	0.4	1.7	2.2	2.0	0.4	2.5	2.6	2.5	0.5	3.5	2.8	2.6	0.4	3.5	2.8	2.5	0.4	3.3	3.1	2.4	0.3	2.8	3.5	2.0	-0.2	2.3	2.7	0.9	-0.7
200	0.7	1.6	1.4	-0.1	1.5	2.0	1.7	0.1	1.9	2.2	2.0	0.1	2.7	2.6	2.5	0.2	3.8	2.8	2.6	0.2	3.8	2.8	2.5	0.1	3.6	3.1	2.4	0.1	3.0	3.6	1.9	-0.5	2.4	2.7	0.8	-1.1
300	0.7	1.5	1.3	-0.3	1.6	1.9	1.6	-0.2	2.0	2.1	1.9	-0.1	2.9	2.6	2.4	0.0	4.1	2.8	2.5	-0.1	4.0	2.8	2.4	-0.1	3.8	3.1	2.3	-0.2	3.2	3.6	1.8	-0.4	2.6	2.7	0.6	-1.4
500	0.8	1.4	1.2	-0.5	1.7	1.9	1.6	-0.4	2.1	2.0	1.9	-0.3	3.1	2.6	2.4	-0.2	4.3	2.8	2.5	-0.3	4.2	2.8	2.4	-0.3	4.0	3.1	2.3	-0.4	3.3	3.6	1.8	-1.1	2.7	2.7	0.5	-1.6
900	0.8	1.4	1.2	-0.7	1.8	1.8	1.5	-0.5	2.1	2.0	1.8	-0.5	3.2	2.6	2.4	-0.4	4.3	2.8	2.5	-0.3	4.4	2.8	2.4	-0.4	4.2	3.1	2.3	-0.5	3.4	3.7	1.7	-1.2	2.8	2.7	0.4	-1.8

NFFR above Belden Powerhouse

Belden Release	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	0.0	0.0	0.0	0.0	0.5	0.2	0.3	-0.1	0.7	0.4	0.4	0.0	1.2	0.8	0.8	0.0	1.9	1.0	0.9	0.1	1.8	1.1	1.0	0.1	1.8	1.4	0.9	0.1	1.5	1.9	1.0	-0.1	1.2	1.5	0.5	-0.3
200	0.4	0.0	-0.1	-0.1	1.1	0.3	0.3	-0.3	1.3	0.5	0.5	-0.2	2.0	1.0	0.9	-0.1	2.8	1.3	1.1	0.0	2.7	1.4	1.2	0.0	2.6	1.7	1.2	0.0	2.2	2.3	1.2	-0.2	2.0	1.8	0.6	-0.5
300	0.8	-0.1	-0.2	-0.3	1.6	0.3	0.3	-0.5	1.9	0.6	0.6	-0.3	2.7	1.2	1.1	-0.3	3.7	1.5	1.4	-0.2	3.7	1.7	1.4	-0.1	3.5	2.1	1.4	-0.1	3.1	2.9	1.5	-0.4	2.7	2.2	0.7	-0.7
500	1.3	-0.2	-0.3	-0.5	2.2	0.3	0.2	-0.7	2.6	0.7	0.6	-0.5	3.5	1.4	1.3	-0.4	4.7	1.8	1.6	-0.3	4.6	2.0	1.7	-0.3	4.5	2.4	1.7	-0.3	3.9	3.4	1.7	-0.6	3.5	2.6	0.8	-1.0
900	1.6	-0.3	-0.4	-0.6	2.7	0.3	0.2	-0.9	3.1	0.7	0.7	-0.7	4.2	1.6	1.5	-0.6	5.5	2.0	1.8	-0.5	5.5	2.2	1.9	-0.4	5.3	2.8	1.9	-0.4	4.7	3.8	1.9	-0.8	4.2	3.0	0.9	-1.2
Modified Prattville Intake																																				
140	0.3	0.9	0.7	0.1	0.7	1.1	0.8	0.2	0.9	1.2	0.9	0.2	1.3	1.4	1.1	0.2	1.9	1.5	1.2	0.2	1.8	1.5	1.1	0.2	1.8	1.6	1.1	0.1	1.5	1.8	0.9	-0.1	1.2	1.4	0.4	-0.3
200	0.8	1.1	0.8	0.0	1.3	1.3	1.0	0.1	1.5	1.4	1.1	0.1	2.1	1.7	1.4	0.1	2.8	1.8	1.5	0.1	2.7	1.8	1.4	0.1	2.6	2.0	1.4	0.1	2.2	2.3	1.1	-0.3	1.9	1.8	0.5	-0.5
300	1.3	1.4	1.0	-0.1	2.0	1.6	1.2	0.0	2.2	1.7	1.4	0.0	2.9	2.1	1.7	0.1	3.7	2.2	1.8	0.0	3.7	2.2	1.7	0.0	3.5	2.4	1.6	0.0	3.1	2.8	1.3	-0.4	2.7	2.2	0.6	-0.8
500	1.9	1.6	1.1	-0.3	2.6	1.9	1.4	-0.1	2.9	2.1	1.6	-0.1	3.7	2.5	2.0	0.0	4.7	2.6	2.1	-0.1	4.6	2.7	2.0	-0.1	4.5	2.9	1.9	-0.2	3.9	3.3	1.5	-0.7	3.5	2.6	0.6	-1.1
900	2.3	1.8	1.2	-0.4	3.2	2.2	1.6	-0.3	3.5	2.3	1.8	-0.2	4.4	2.8	2.3	-0.1	4.7	2.6	2.1	-0.1	5.5	3.0	2.3	-0.2	5.3	3.3	2.2	-0.3	4.7	3.8	1.7	-0.9	4.1	2.9	0.7	-1.4

UPPER NORTH FORK FEATHER RIVER PROJECT

FERC No. 2105

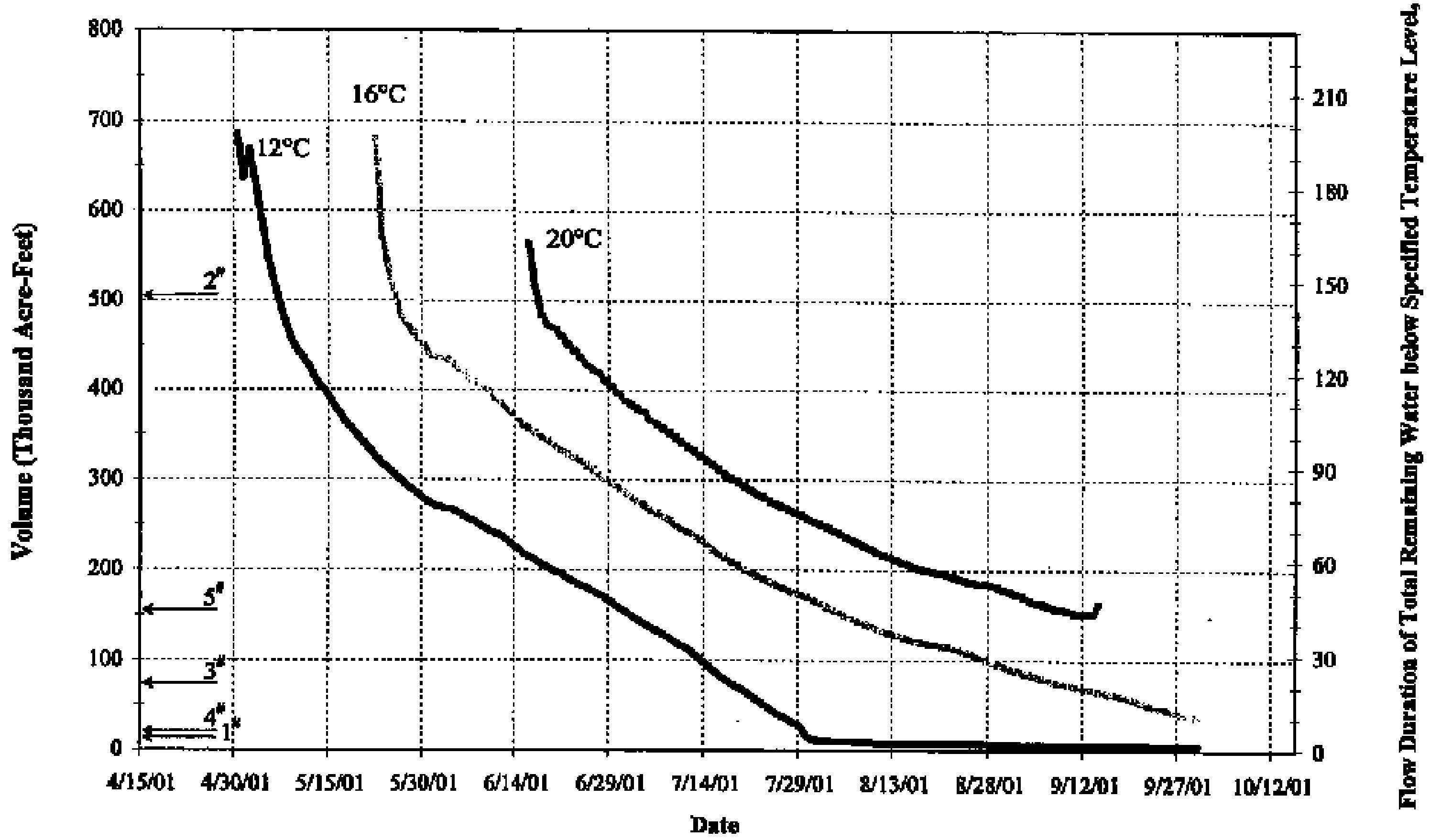
Appendix E2-N

Additional Model Scenario Runs

Water Quality Figures WQ-FS-117 through WQ-FS-148

Figure WQ-FS-118

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (ANEG Scenario)

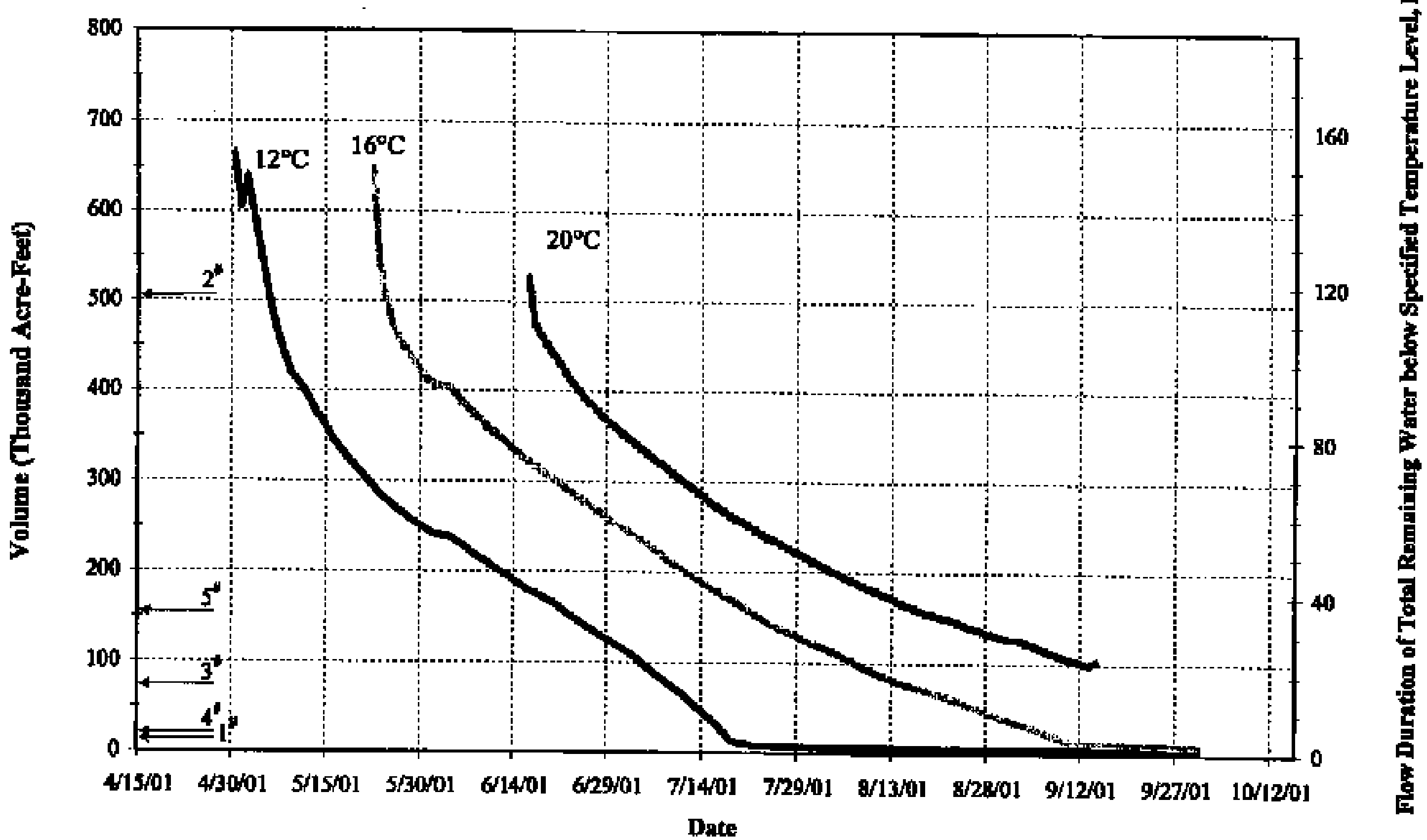


* Assume 1,600 cfs for Prattville Intake withdrawal and 150 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-120

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (ANEI Scenario)

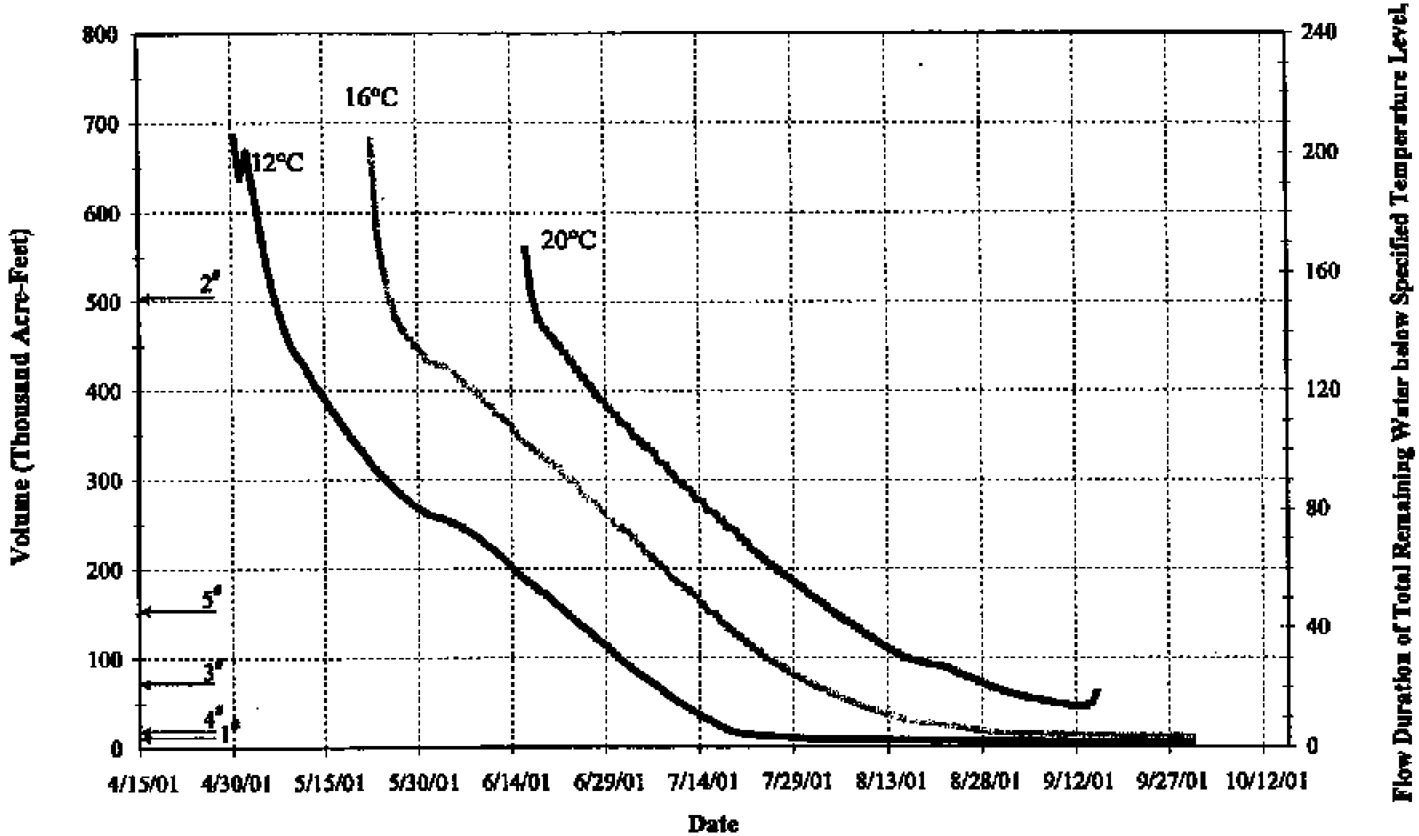


* Assume 1,600 cfs for Prattville Intake withdrawal and 600 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-122

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (ANMG Scenario)

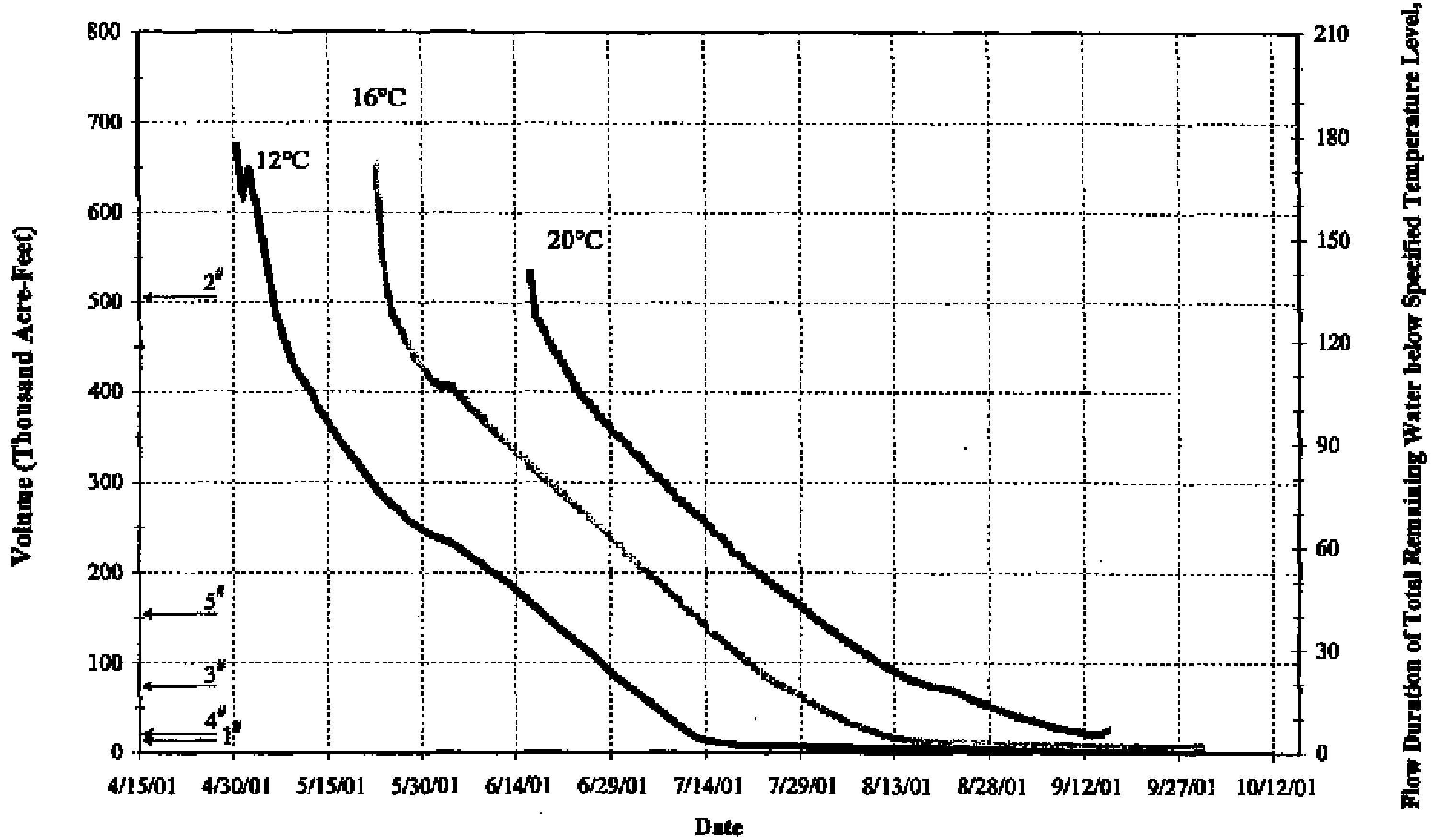


* Assume 1,600 cfs for Prattville Intake withdrawal and 75 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-124

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (ANMI Scenario)

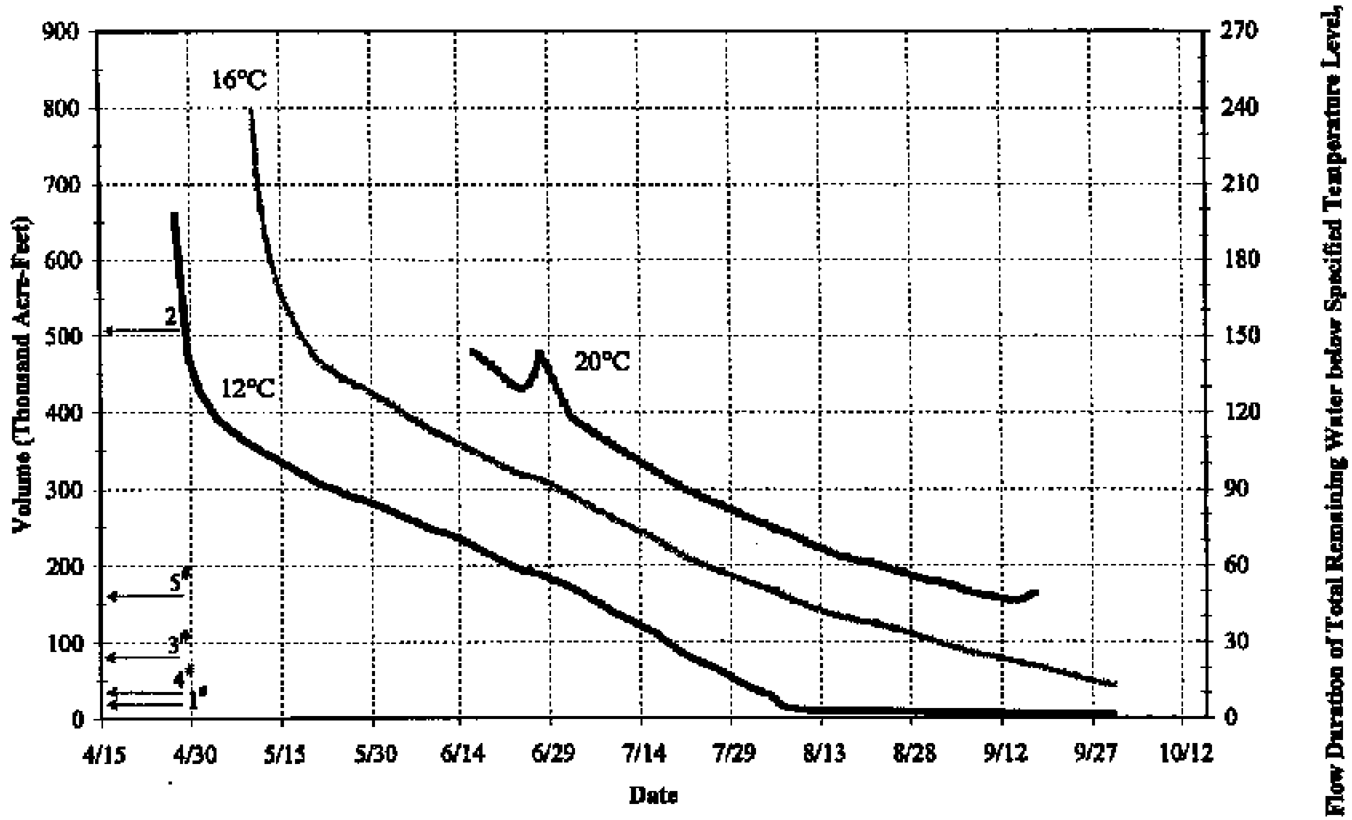


* Assume 1,600 cfs for Prattville Intake withdrawal and 300 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-126

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (AWEG Scenario)

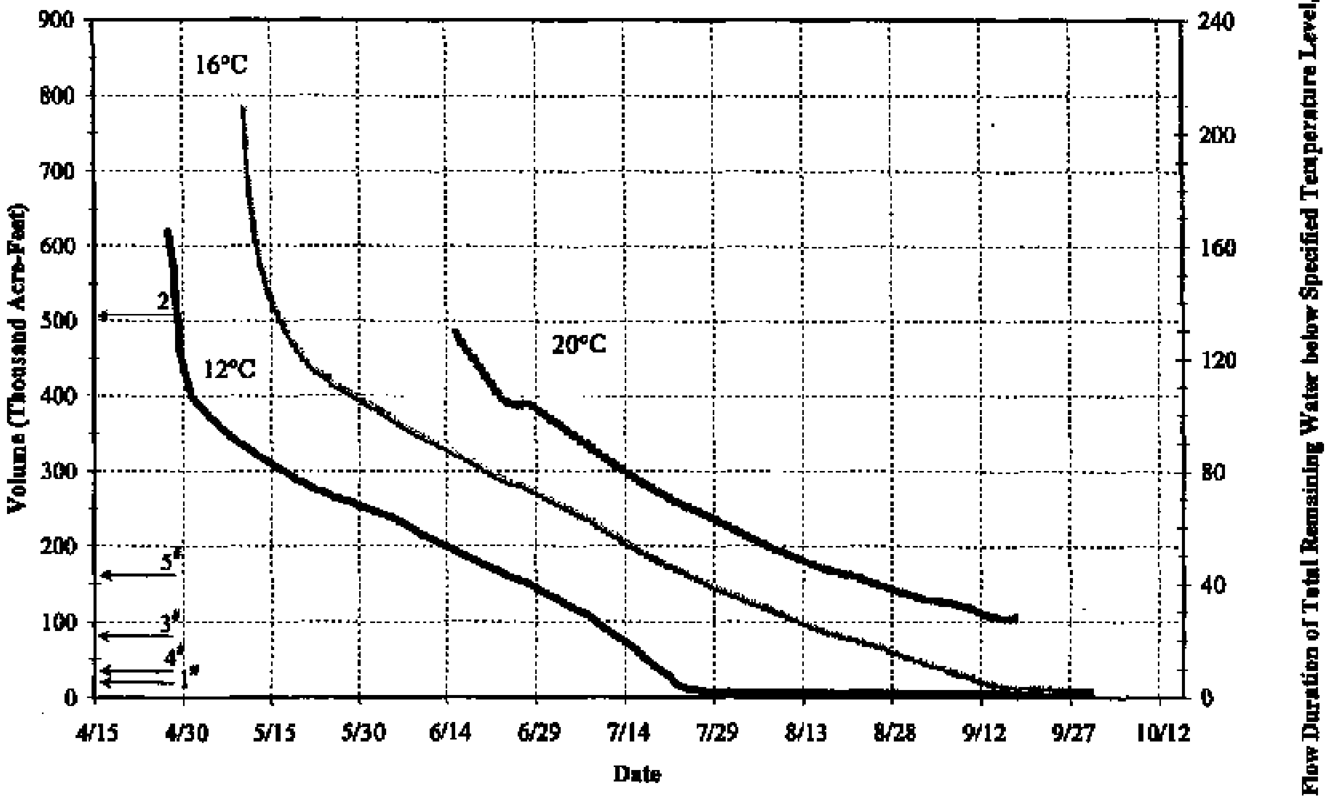


* Assume 1,600 cfs for Prattville Intake withdrawal and 75 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-128

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (AWEI Scenario)

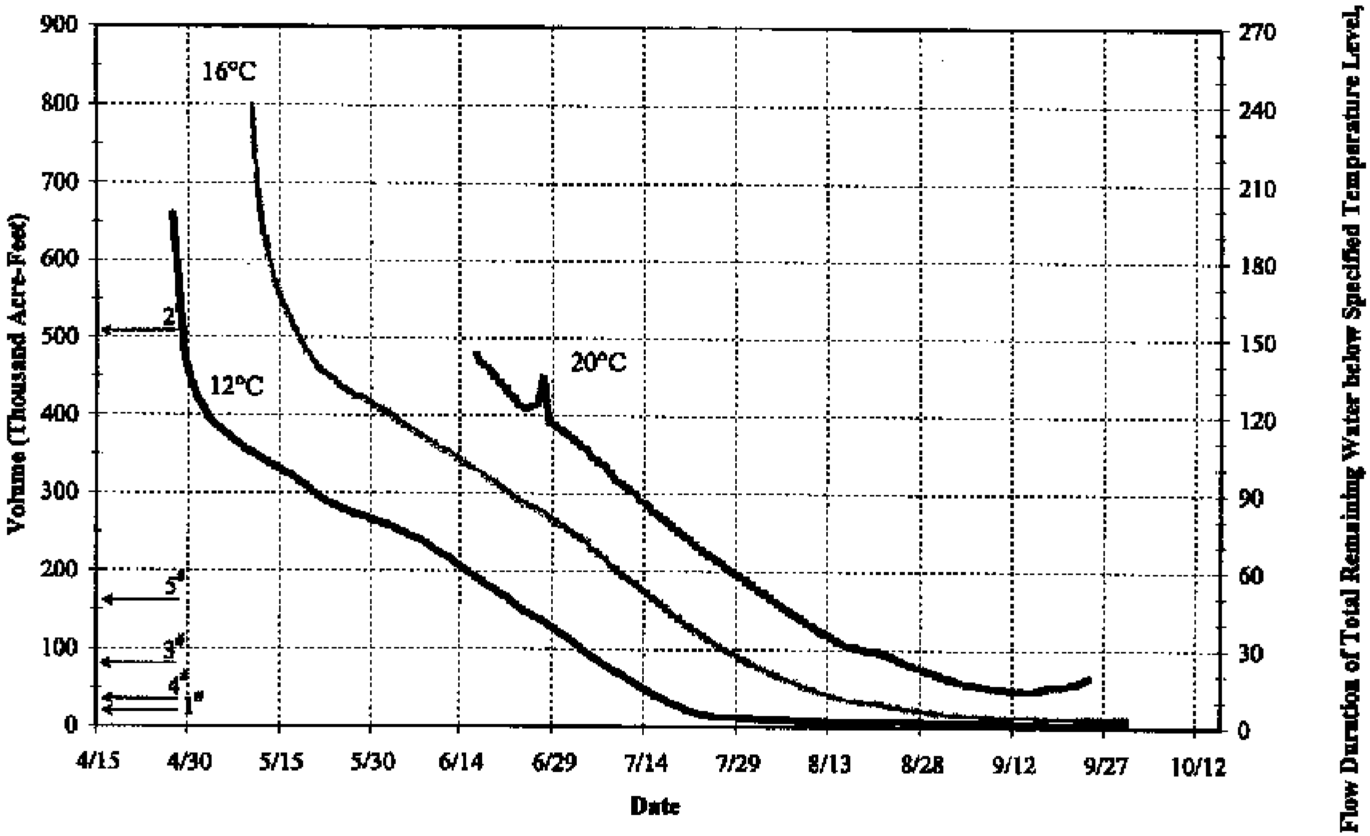


* Assume 1,600 cfs for Prattville Intake withdrawal and 300 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-130

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (AWMG Scenario)

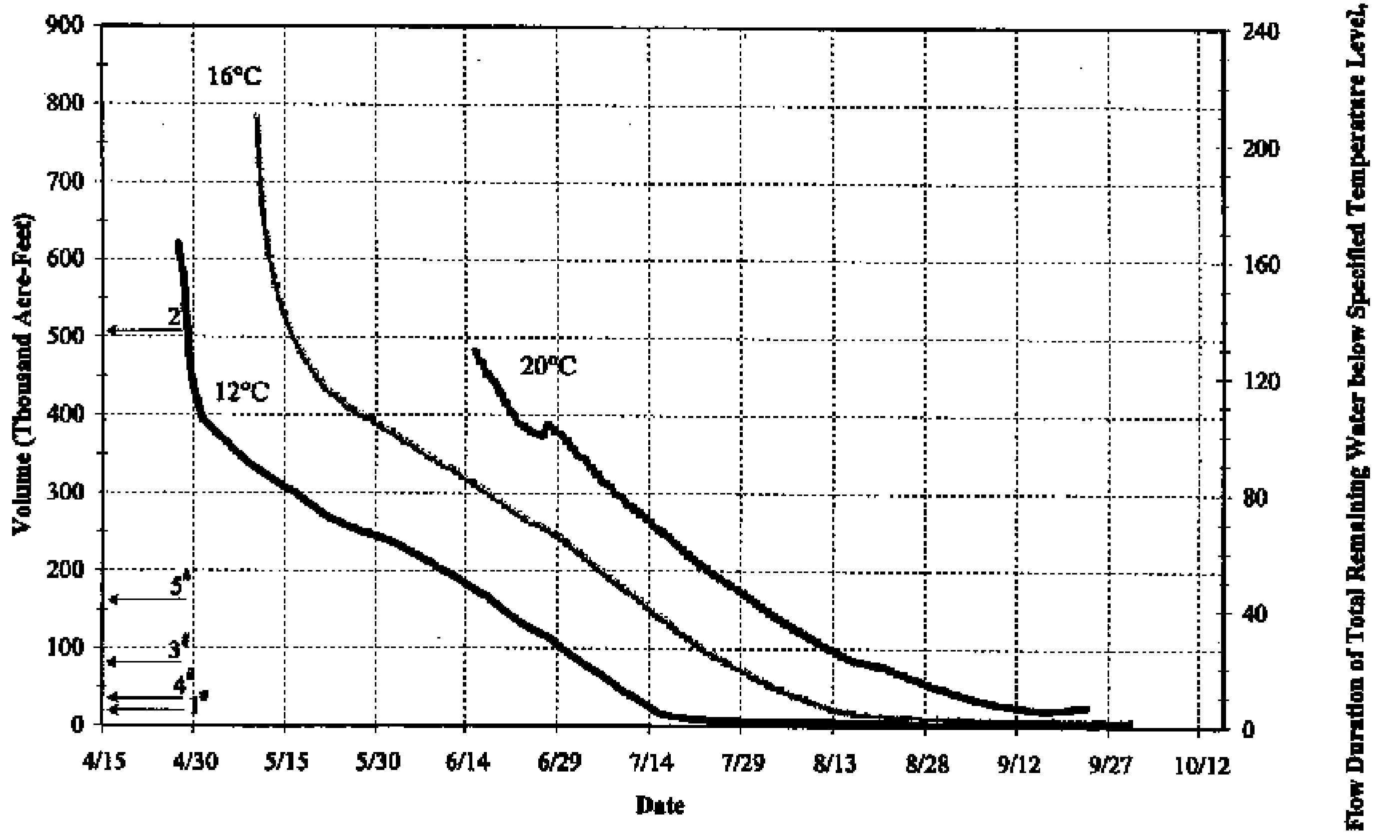


* Assume 1,600 cfs for Prattville Intake withdrawal and 75 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-132

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (AWMI Scenario)

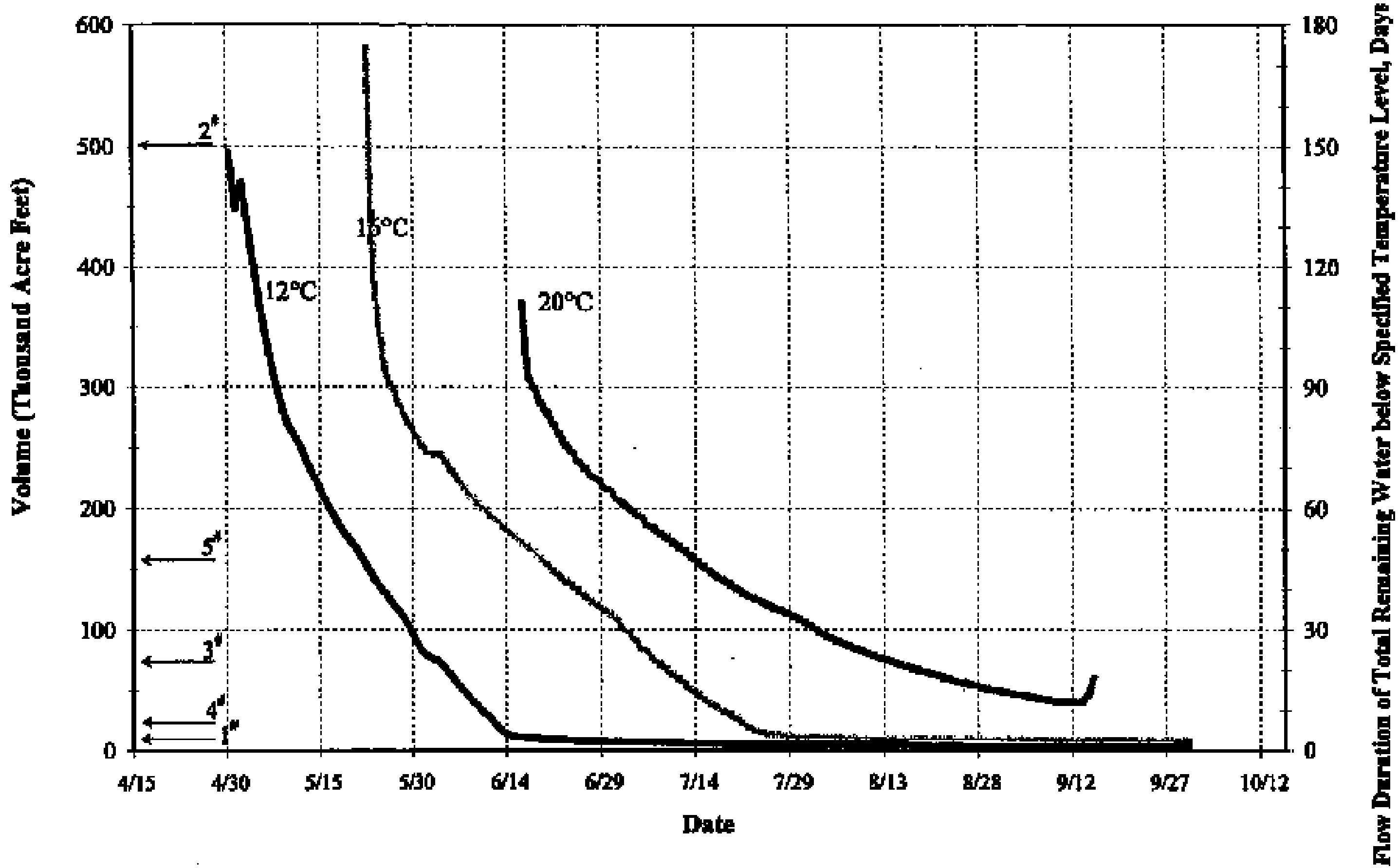


* Assume 1,600 cfs for Prattville Intake withdrawal and 300 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-134

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (DNEG Scenario)

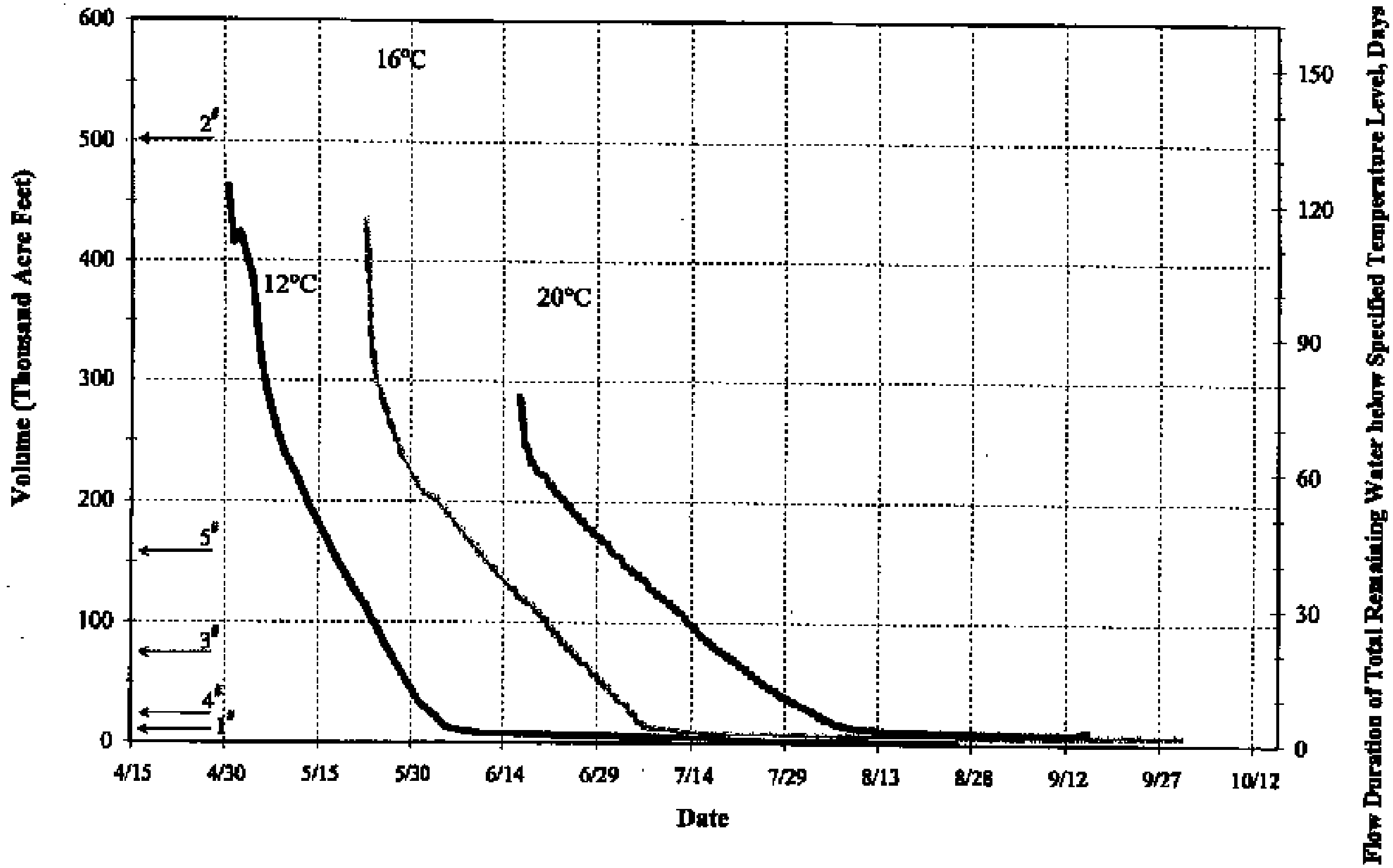


* Assume 1,600 cfs for Prattville Intake withdrawal and 75 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-136

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (DNEI Scenario)

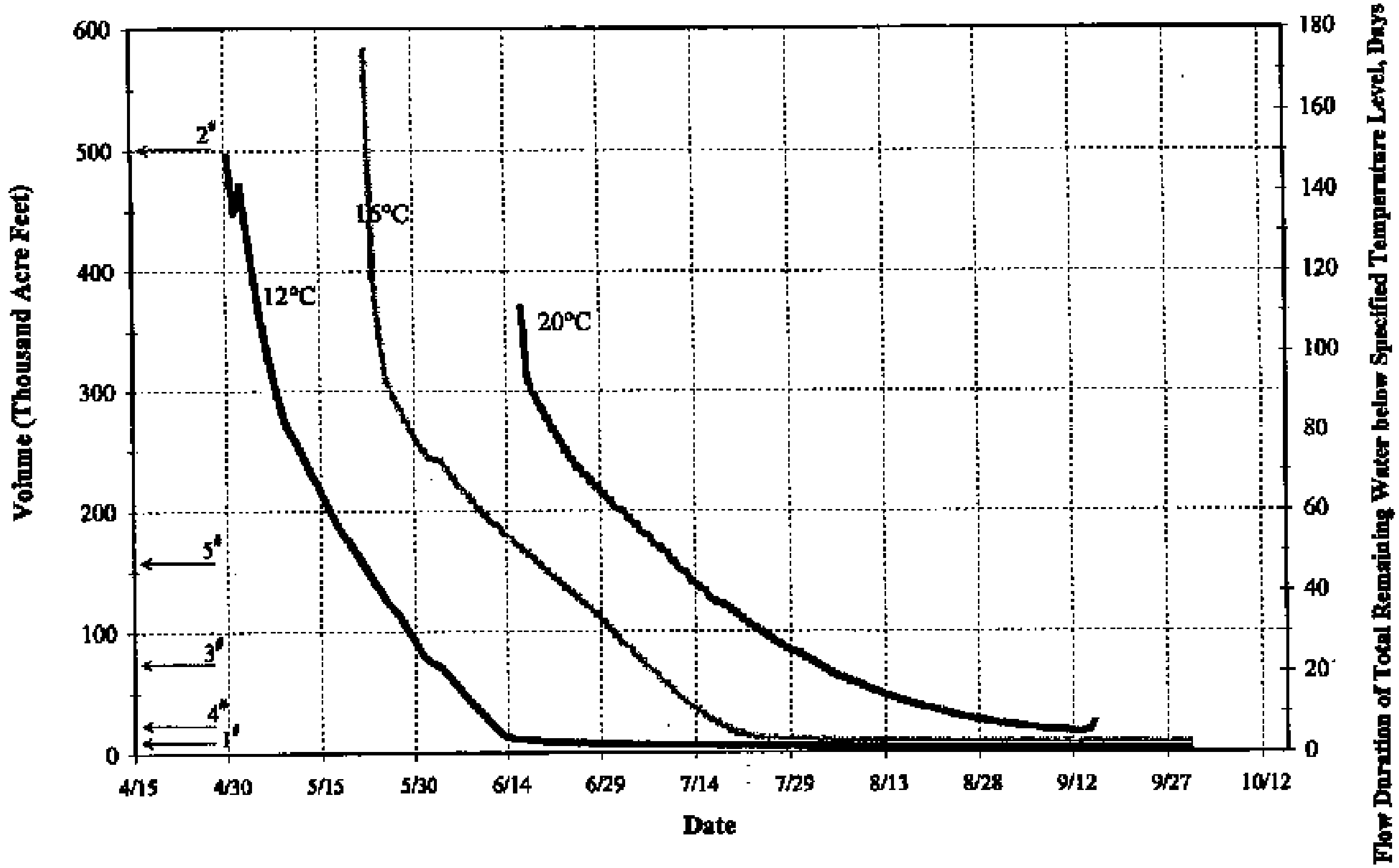


* Assume 1,600 cfs for Prattville Intake withdrawal and 300 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-138

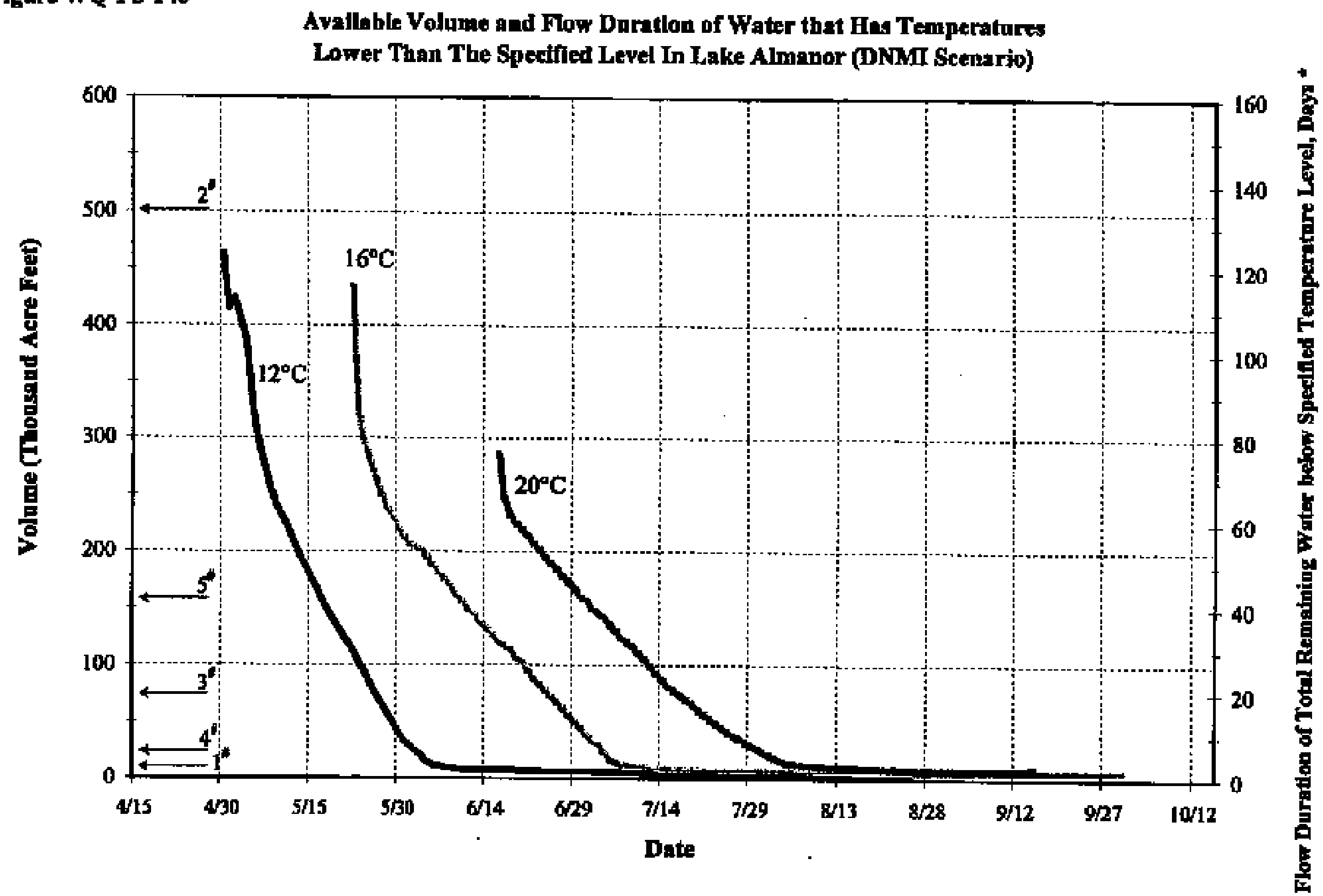
Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (DNMG Scenario)



* Assume 1,600 cfs for Prattville Intake withdrawal and 75 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-140

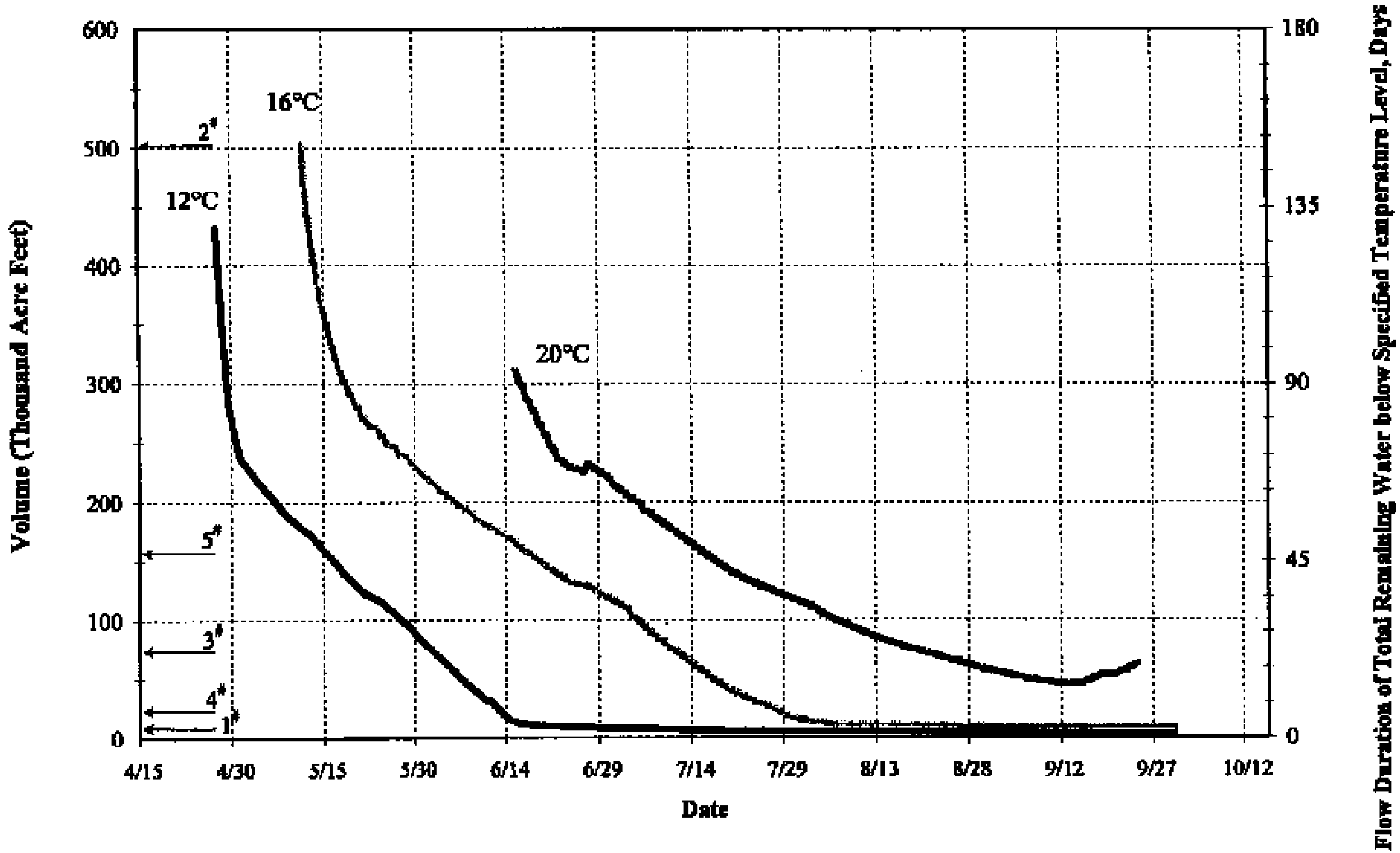


* Assume 1,600 cfs for Prattville Intake withdrawal and 300 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-142

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (DWEG Scenario)

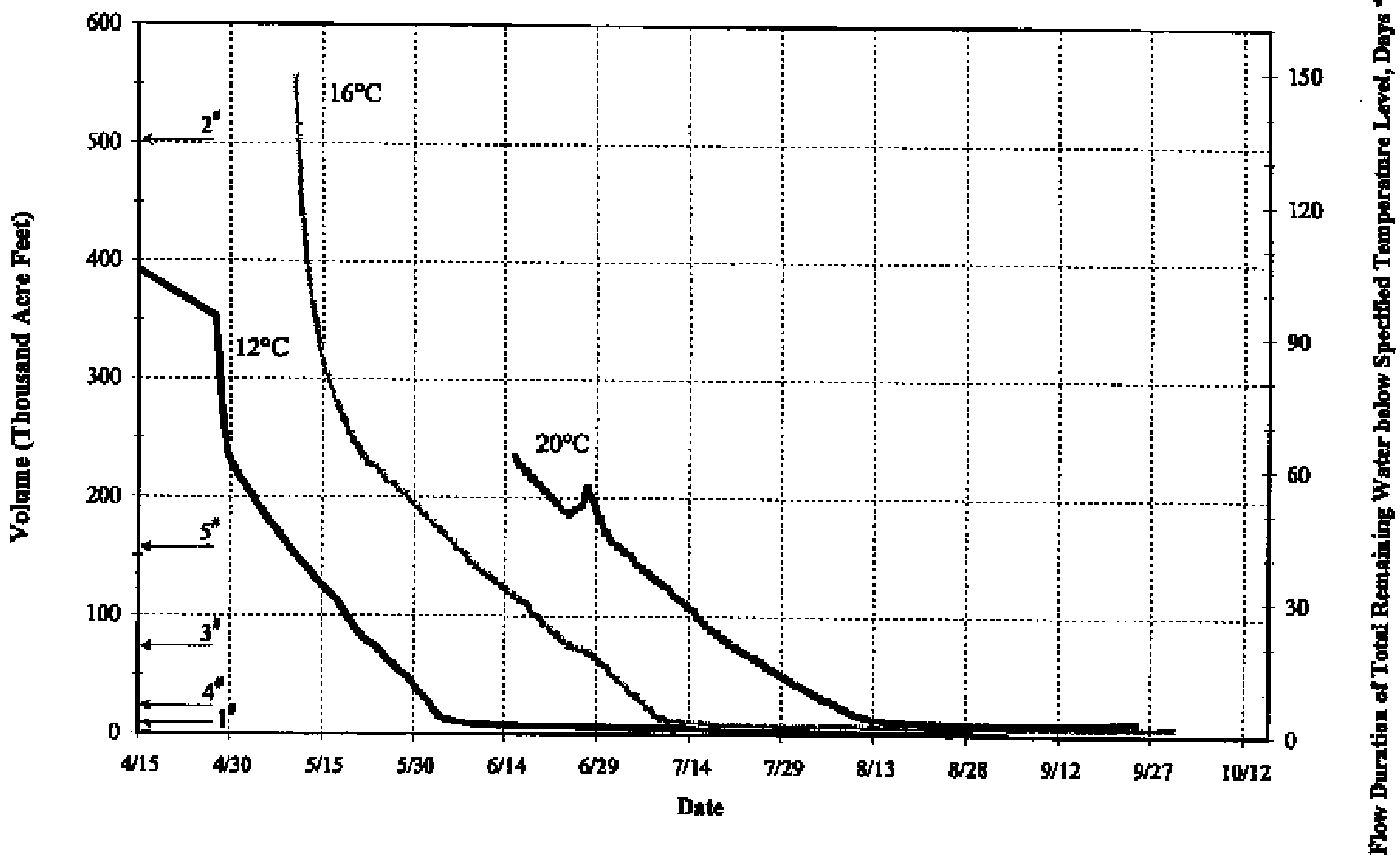


* Assume 1,600 cfs for Prattville Intake withdrawal and 75 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-144

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (DWEI Scenario)

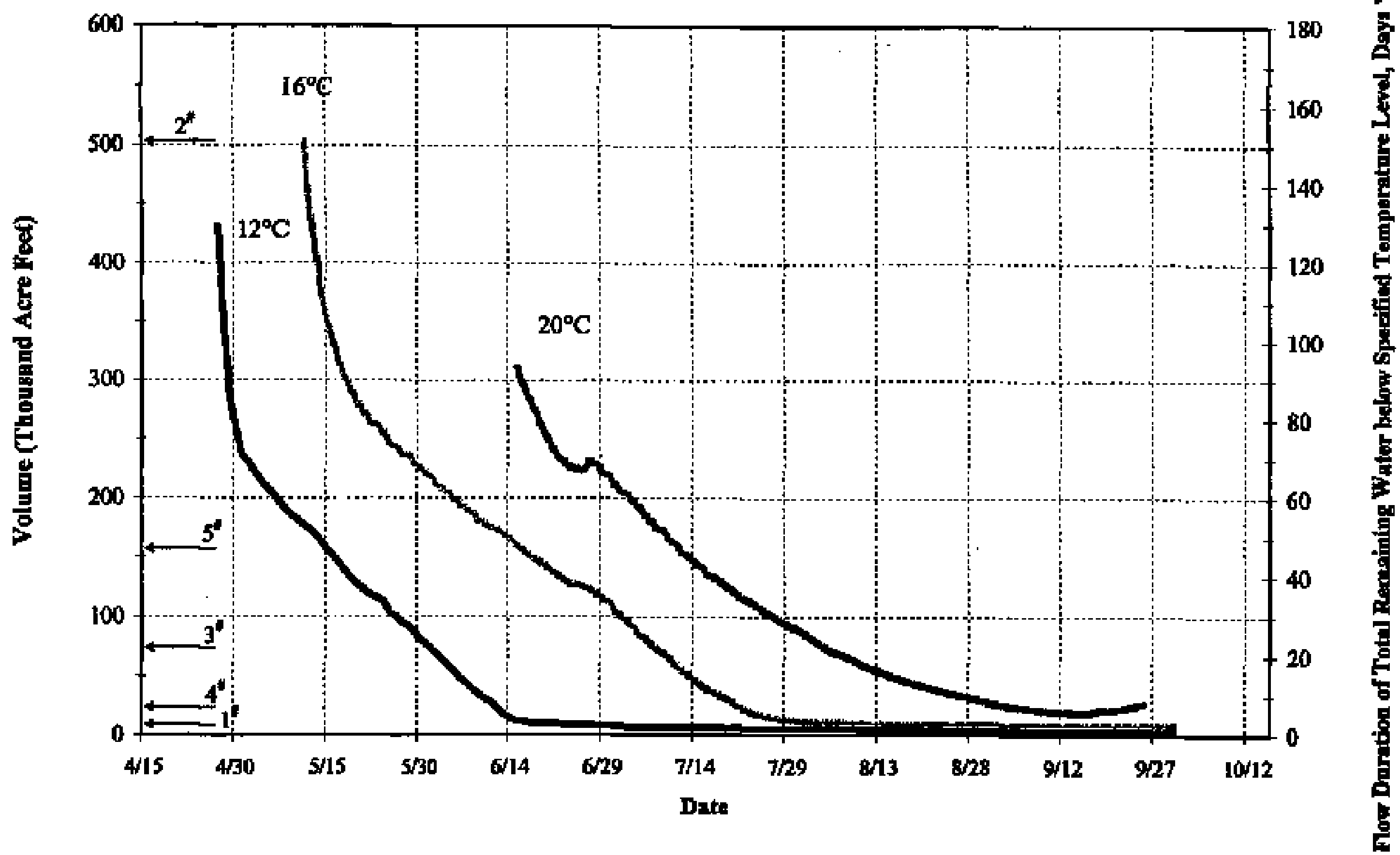


* Assume 1,600 cfs for Prattville Intake withdrawal and 300 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-146

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (DWMG Scenario)

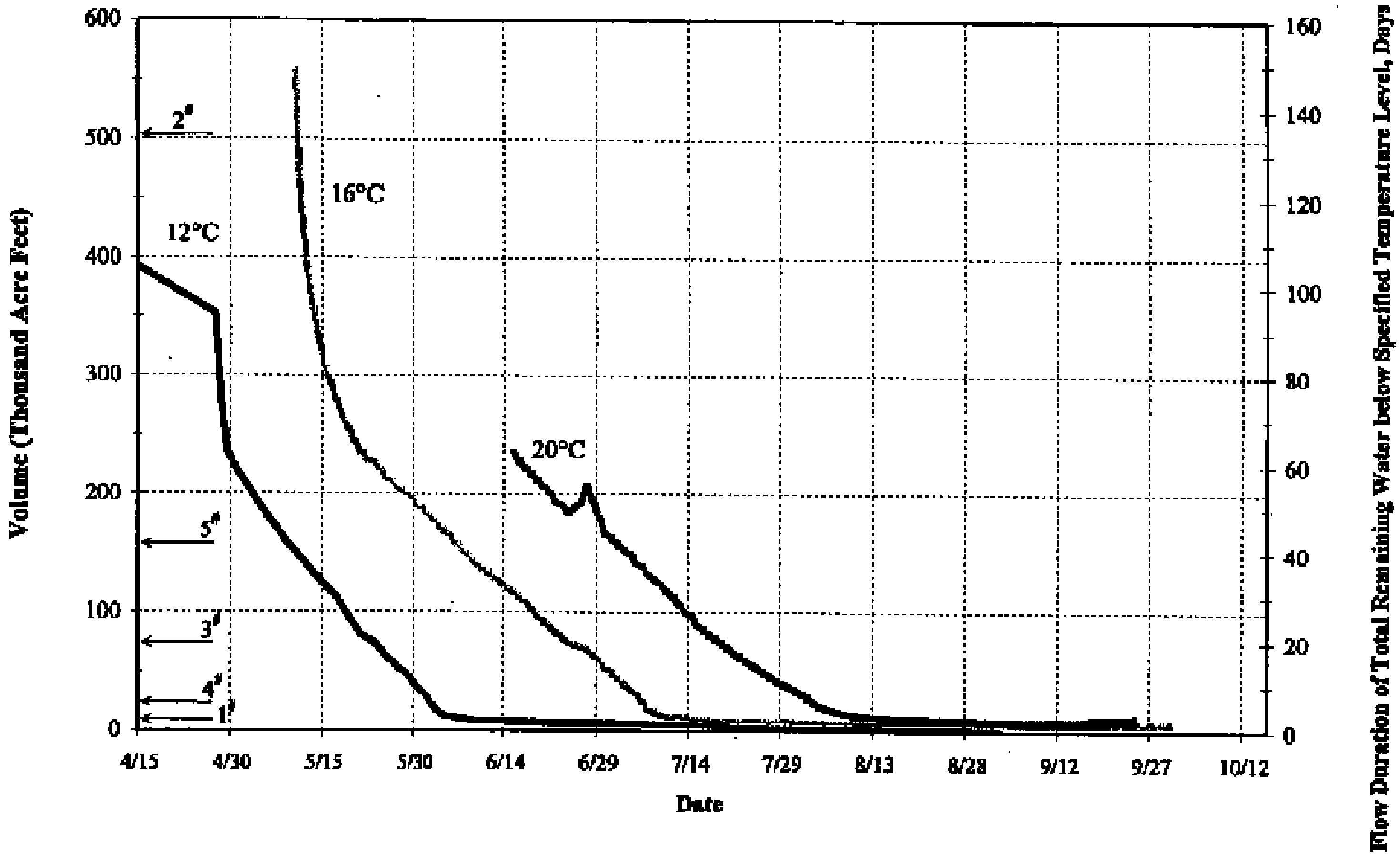


* Assume 1,600 cfs for Prattville Intake withdrawal and 75 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

Figure WQ-FS-148

Available Volume and Flow Duration of Water that Has Temperatures Lower Than The Specified Level In Lake Almanor (DWMI Scenario)



* Assume 1,600 cfs for Prattville Intake withdrawal and 300 cfs for Canyon Dam release.

\# Withdrawal Accessibility by Various Outlets: 1. Low-level outlet at Canyon Dam (at 4,422 feet), 2. Upper-level outlet at Canyon Dam (at 4,467 feet), 3. Existing Prattville Intake (at 4,437 feet), 4-5. Hypothetically assumed modified Prattville Intake (at 4,430-4,445 feet).

REVISED

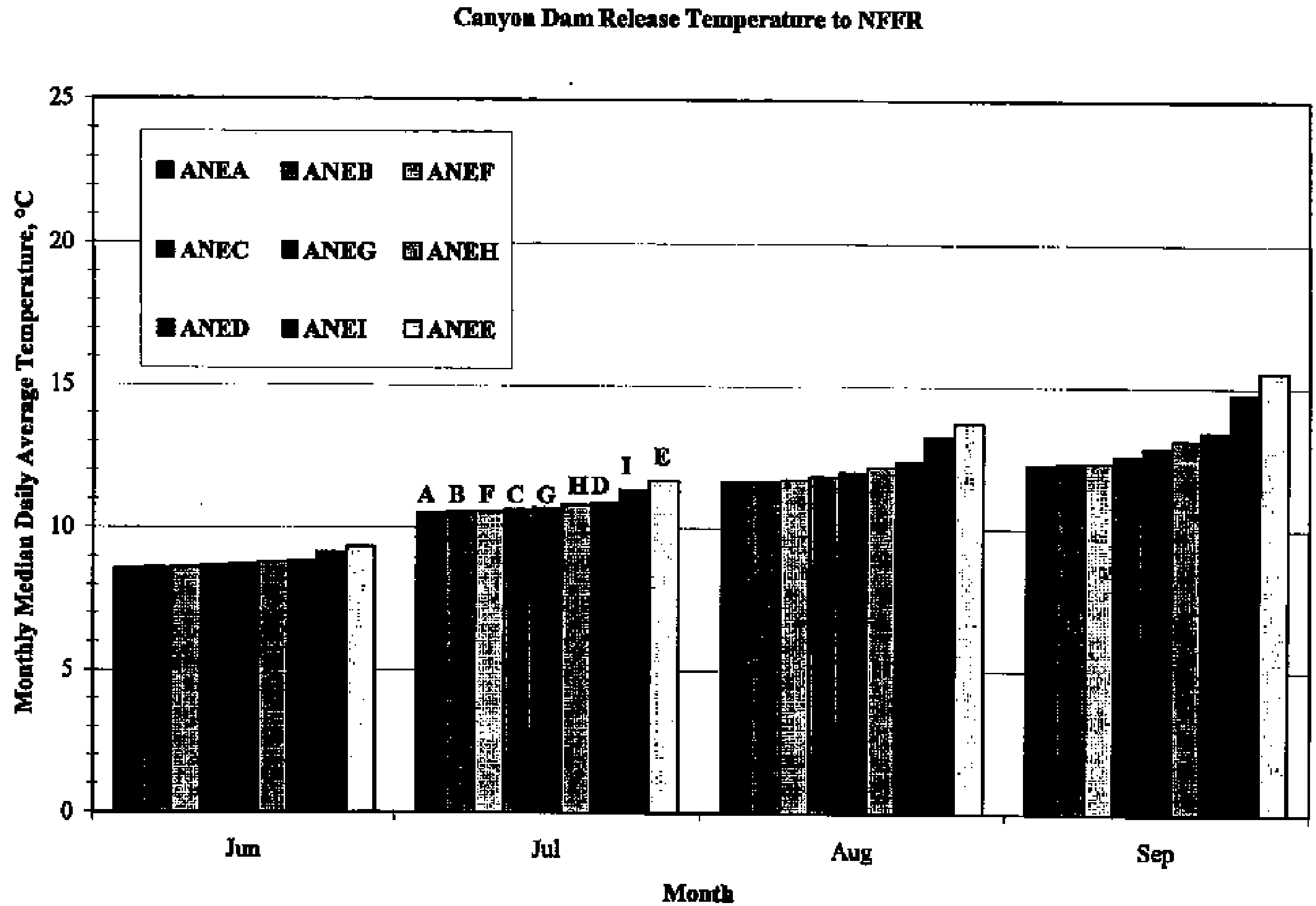
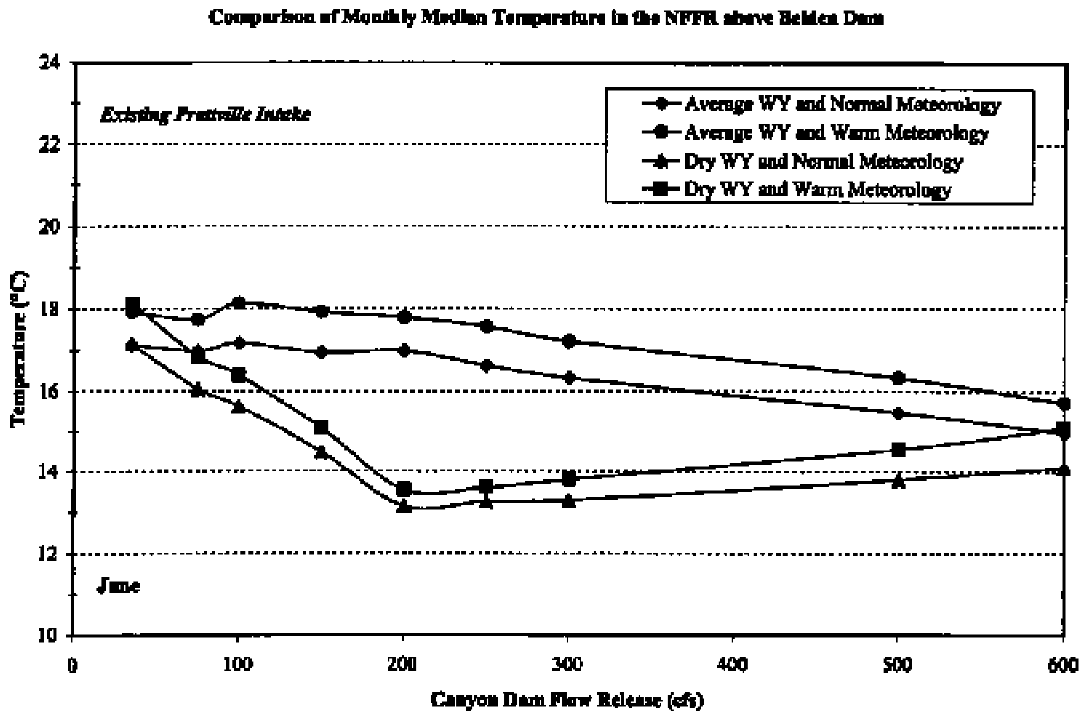


Figure E2.6-10. Comparison of Simulated Release Temperatures in the NFFR below Canyon Dam with Increasing Canyon Dam Releases (ANE_ Scenarios).

REVISED



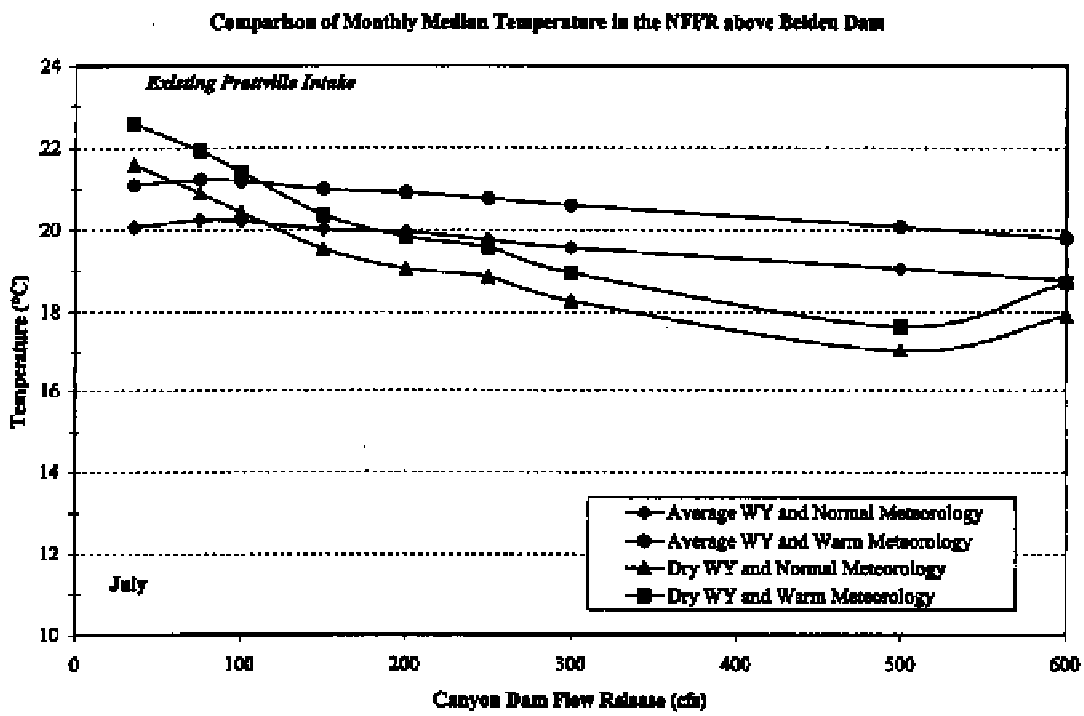
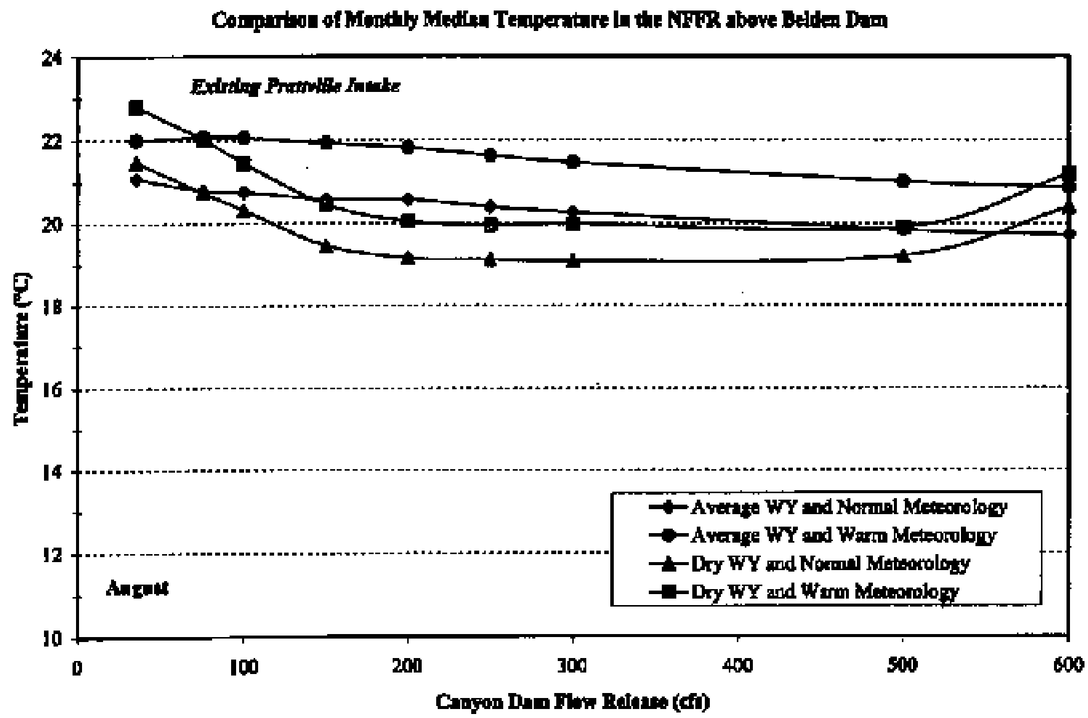


Figure E2.6-29. Effect of Environmental Condition on the Relationship between Monthly Median Temperature in the NFFR below Belden Dam and Increasing Releases from Belden Dam (Existing Prattville Intake Configuration); June – July.



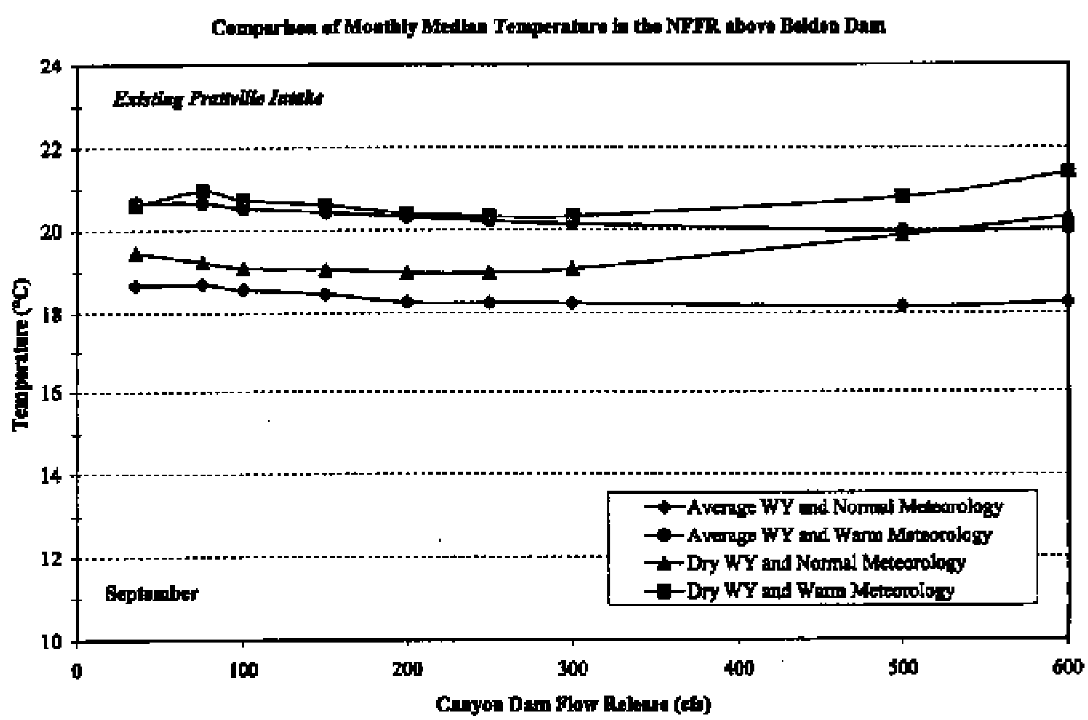
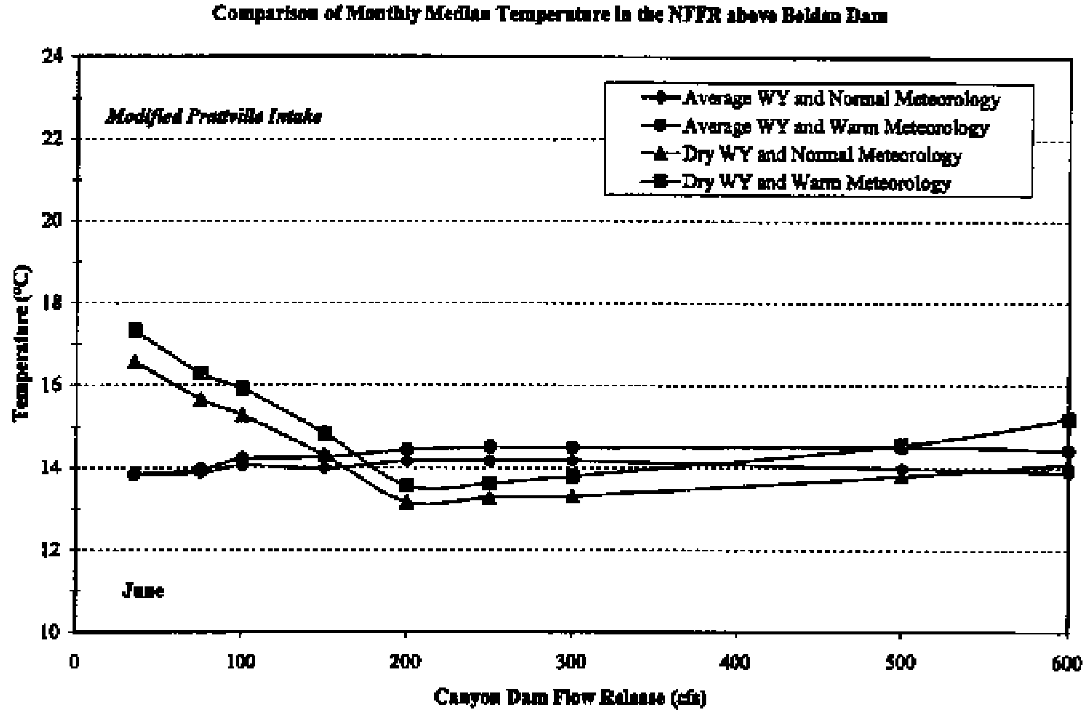


Figure E2.6-29. (Continued); August – September



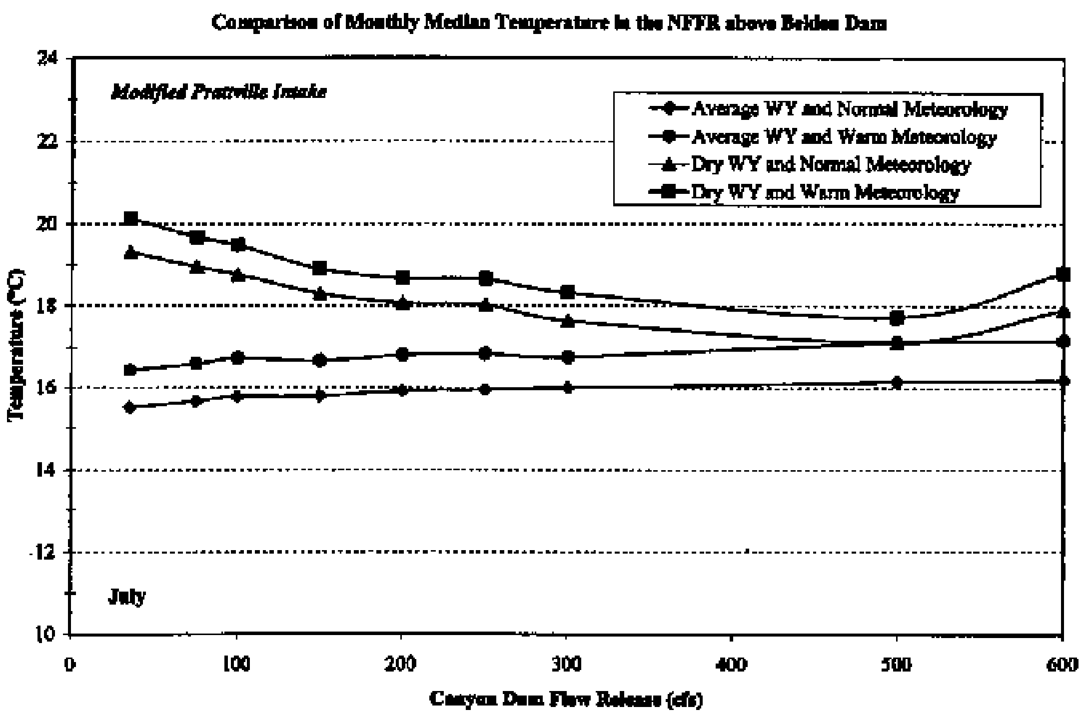
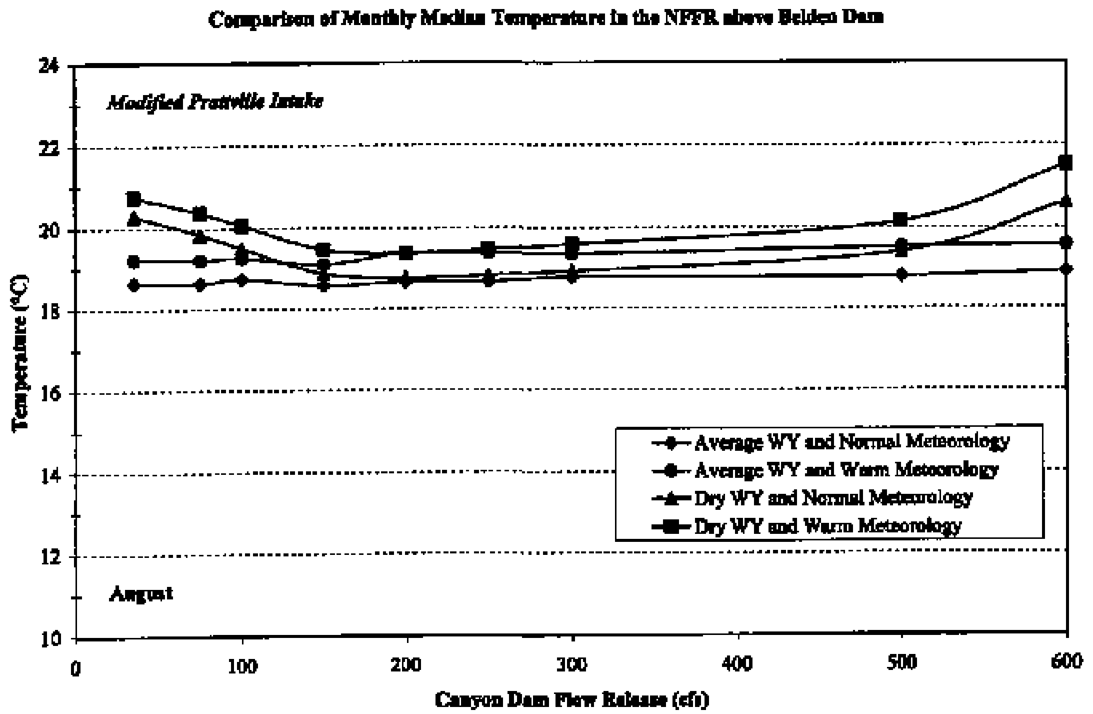


Figure E2.6-30. Effect of Environmental Condition on the Relationship between Monthly Median Temperature in the NFFR below Belden Dam and Increasing Releases from Belden Dam (Modified Prattville Intake Configuration); June – July.



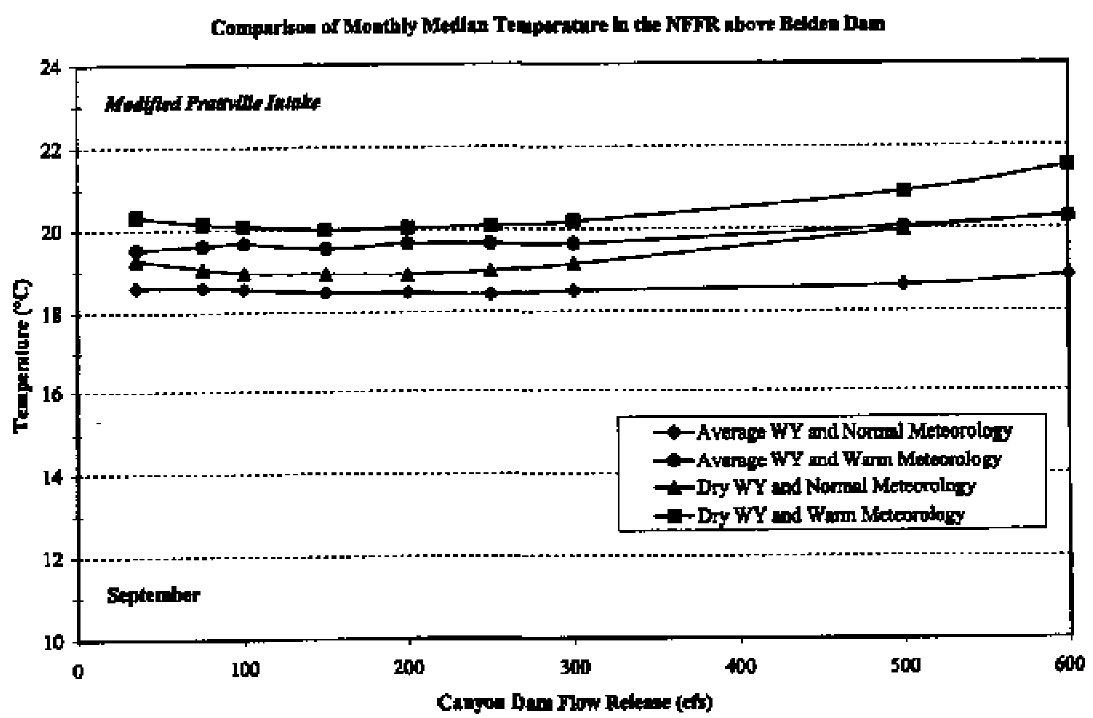


Figure E2.6-30 (Continued); August – September

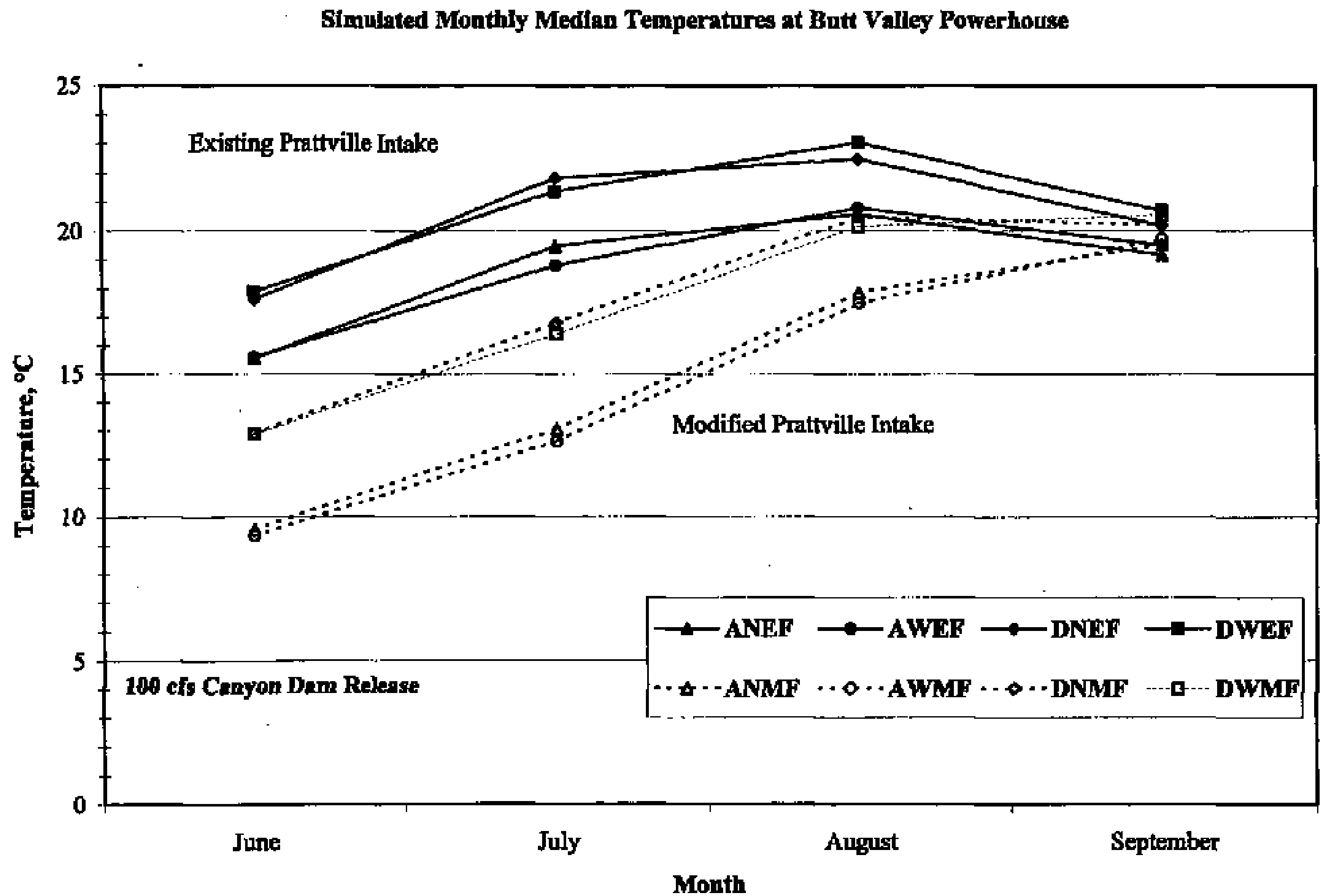


Figure E2.6-37. Comparison of Simulated Monthly Median Temperatures at Butt Valley Powerhouse between the Existing and Modified Prattville Intake Configuration – 100 cfs Canyon Dam Release. (Should be presented with Figures E2.6-18 through E2.6-20).

REVISED

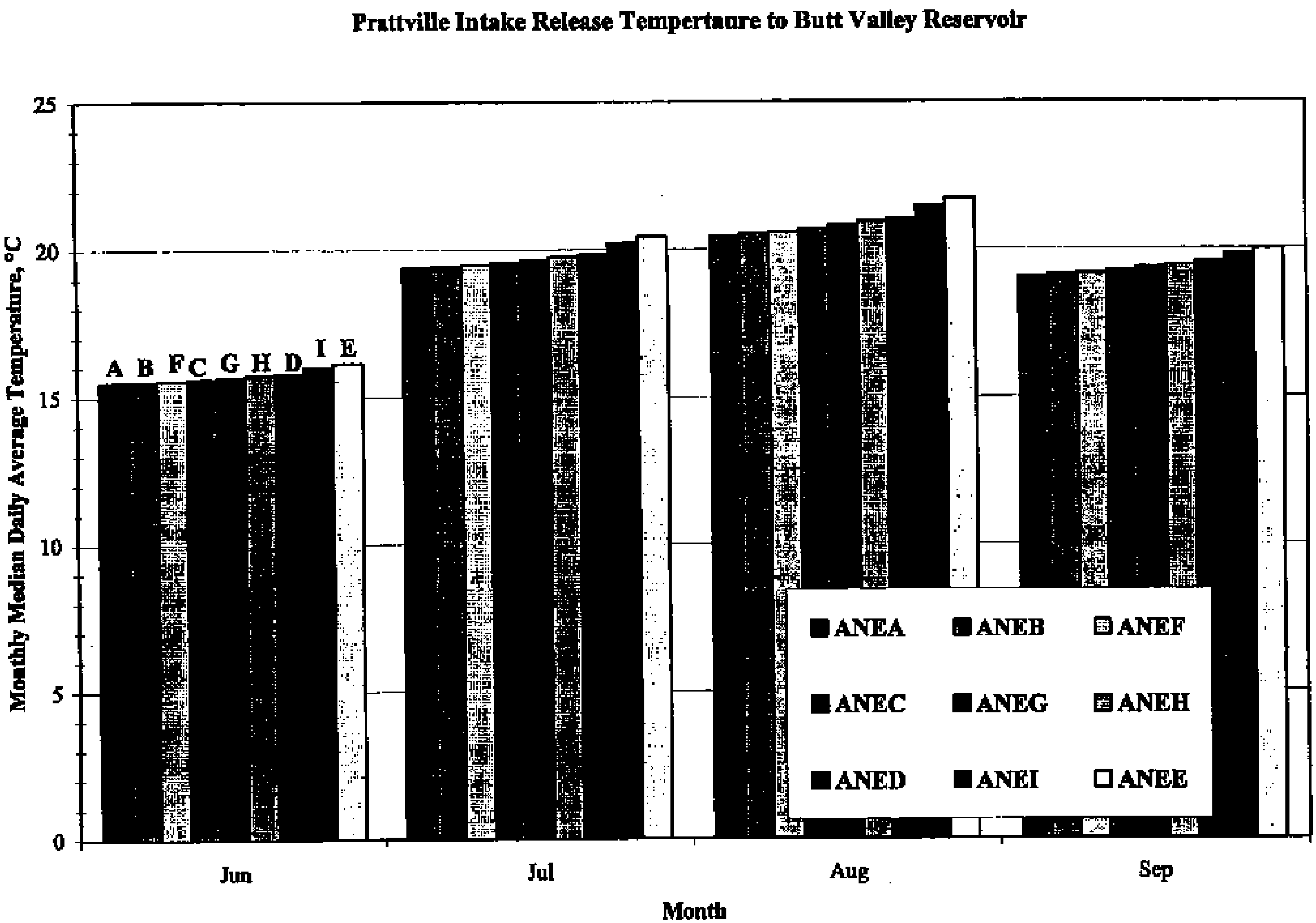


Figure E2.6-9. Comparison of Simulated Release Temperatures at Butt Valley Powerhouse (from Existing Prattviolle Intake) with Increasing Canyon Dam Releases (ANE_ Scenarios).

REVISED

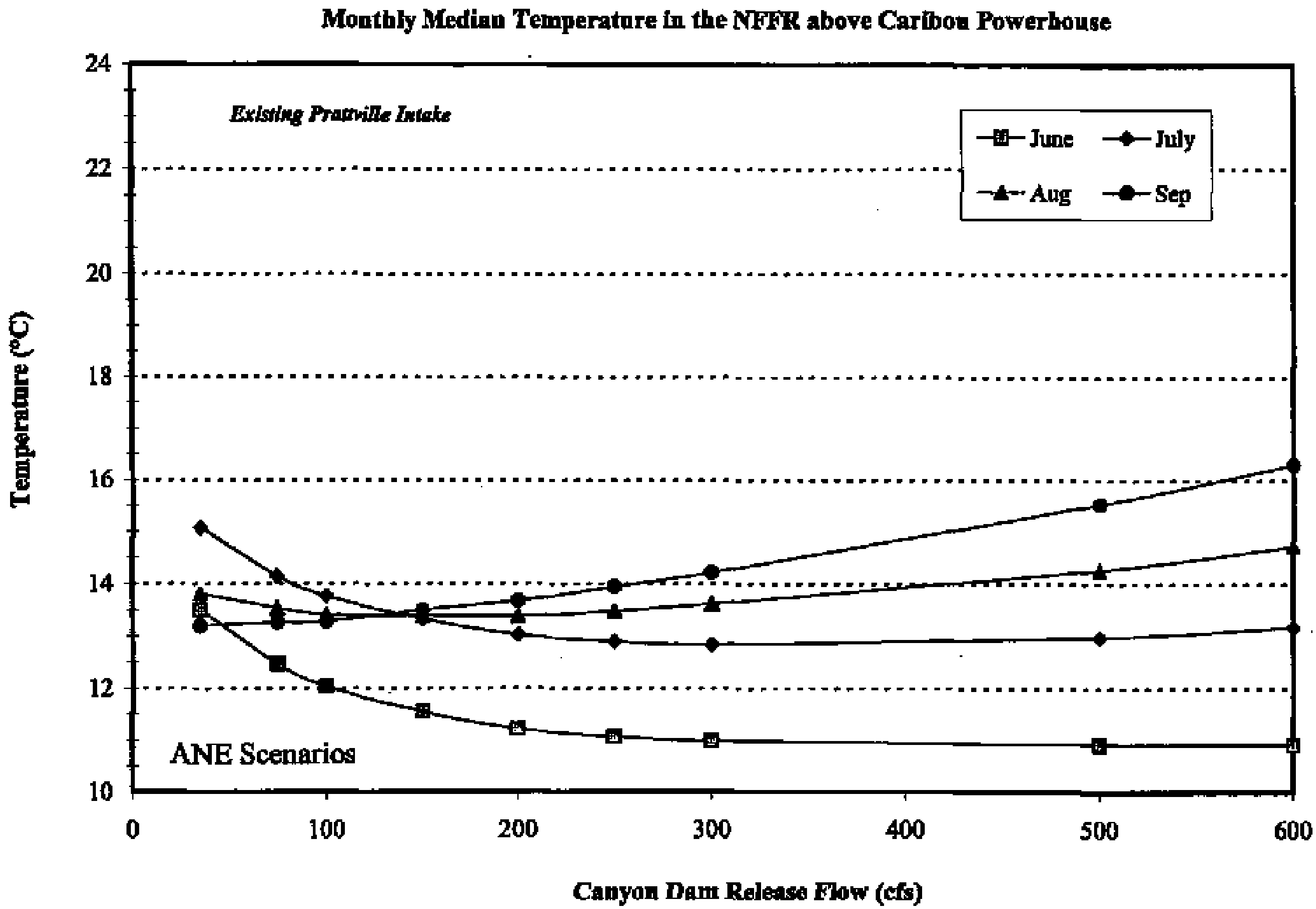
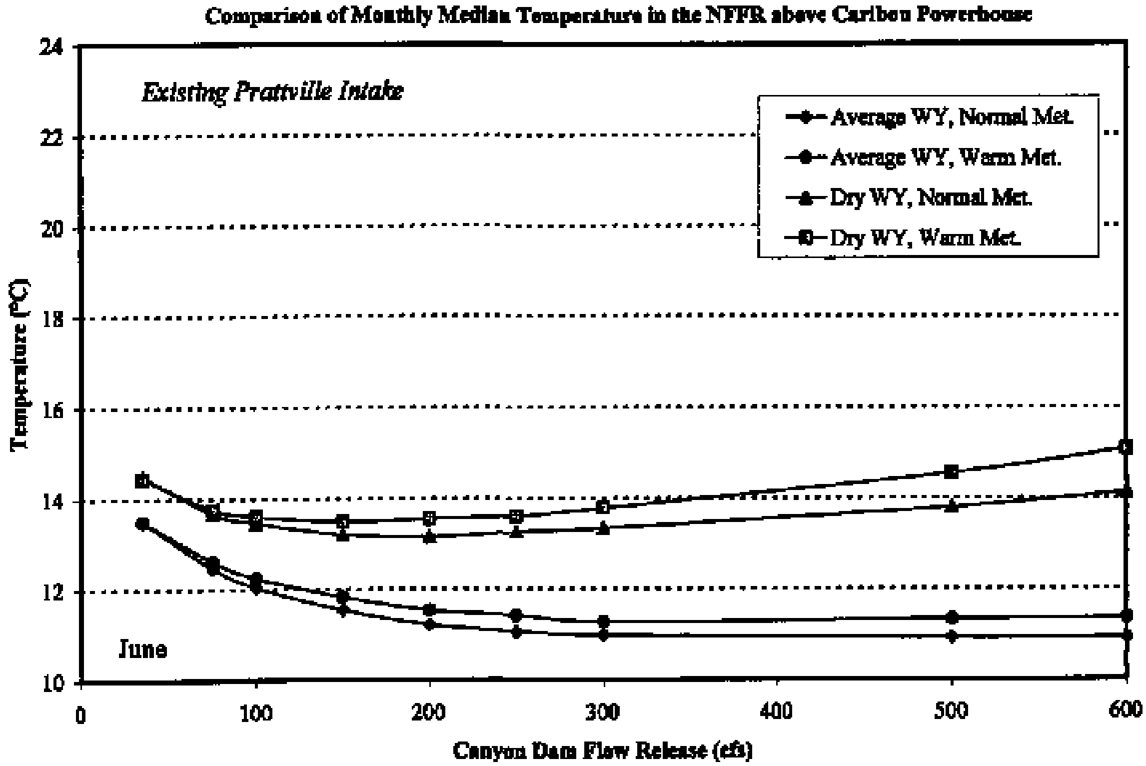


Figure E2.6-25. Relationship of Monthly Median Temperature in the NFFR above Caribou Powerhouse with Increasing Canyon Dam Releases (ANE Scenarios).

REVISED



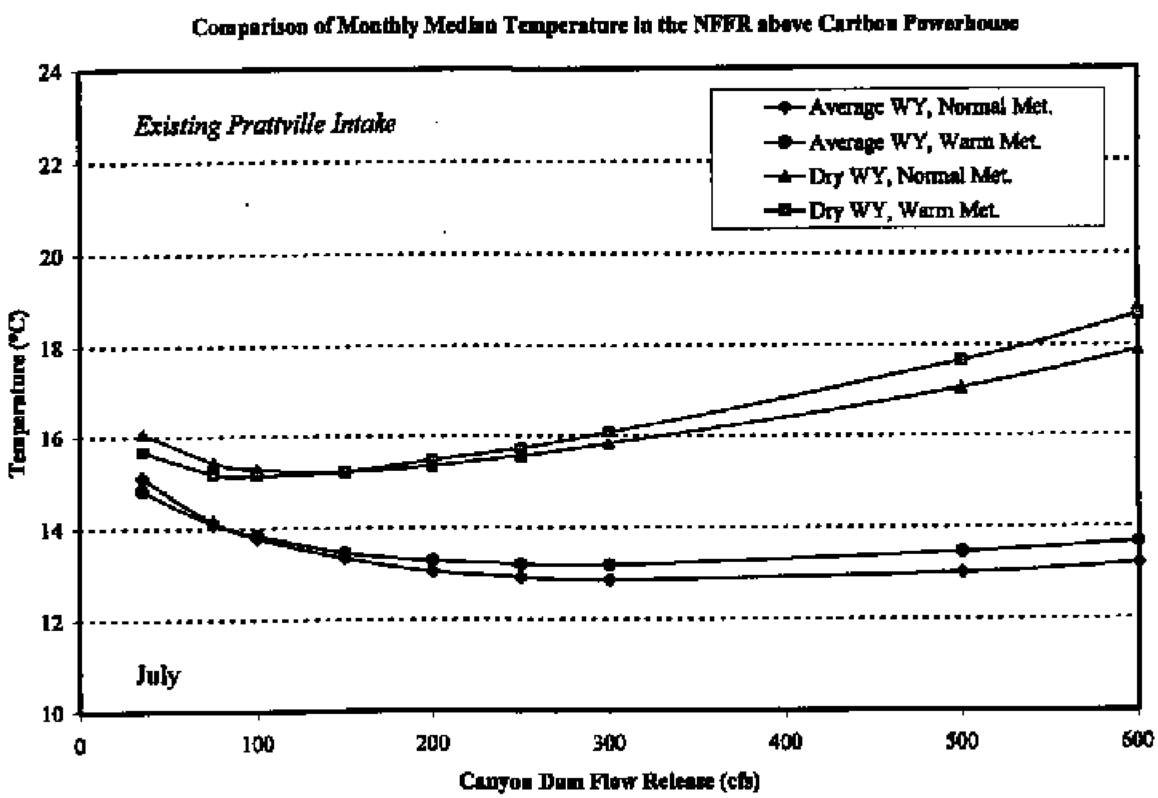
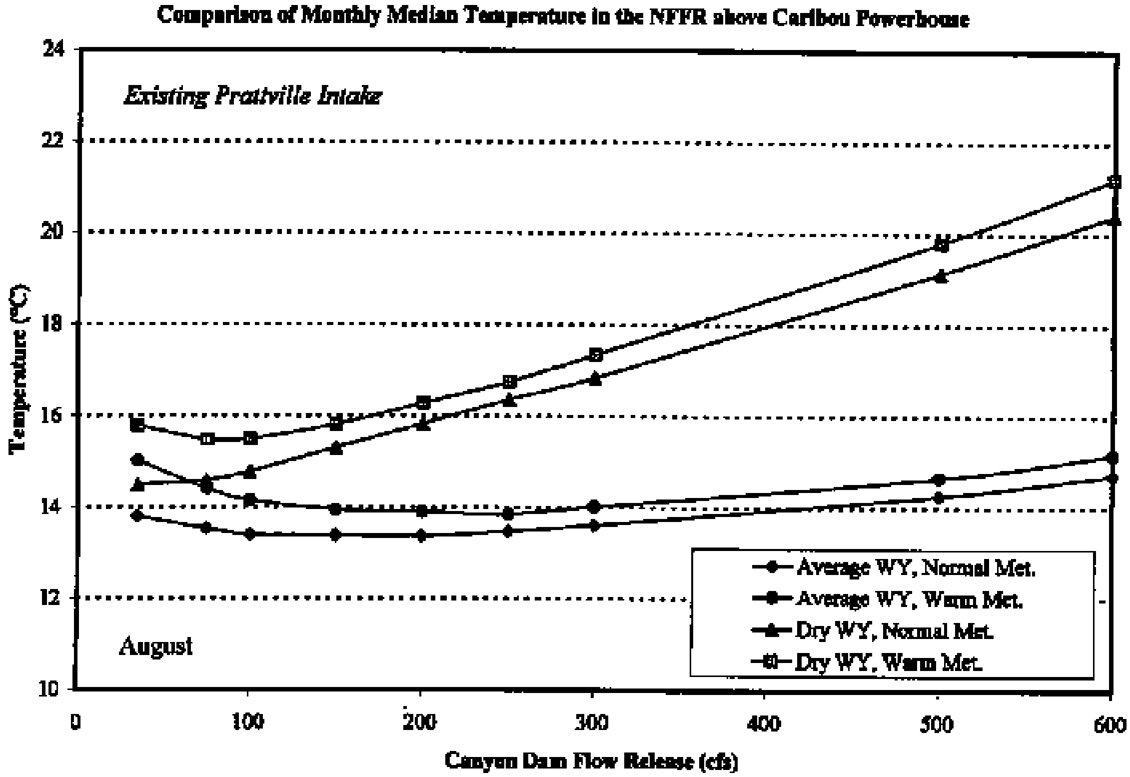


Figure E2.6-26. Effect of Environmental Condition on the Relationship between Monthly Median Temperature in the NFFR above Caribou Powerhouse and Increasing Releases from Canyon Dam (Existing Prattville Intake Configuration); June – July.

REVISED



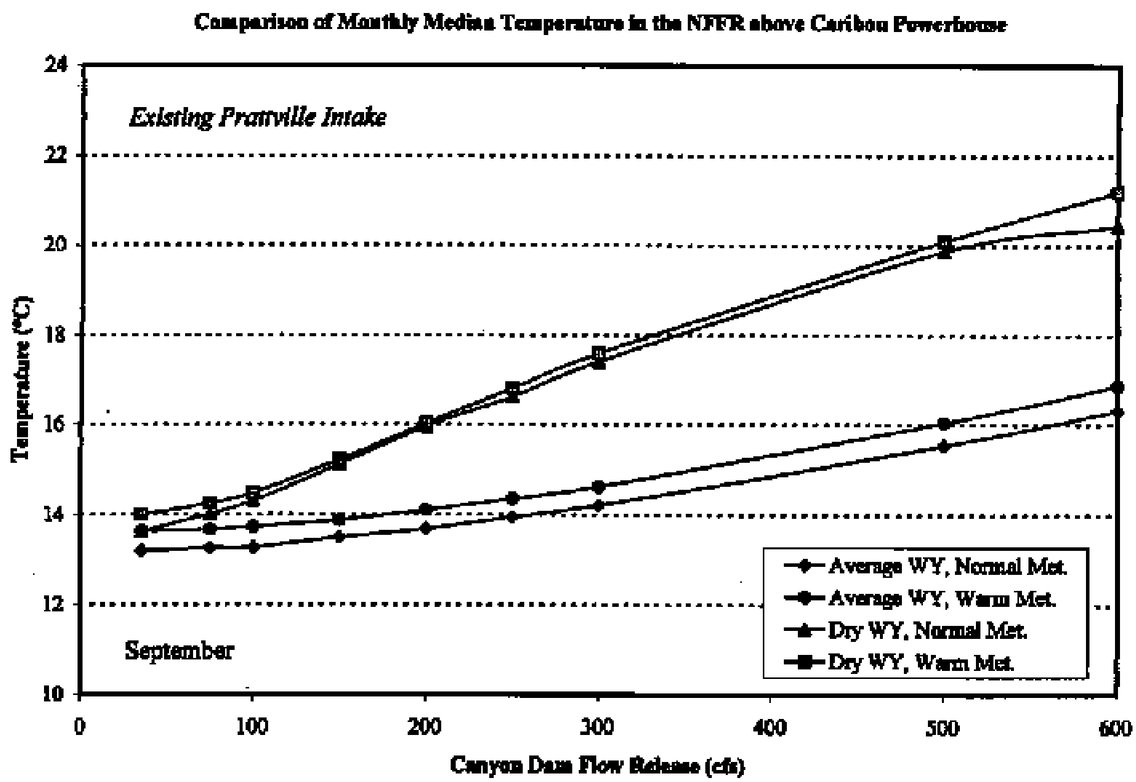


Figure E2.6-26 (Continued); August – September

REVISED

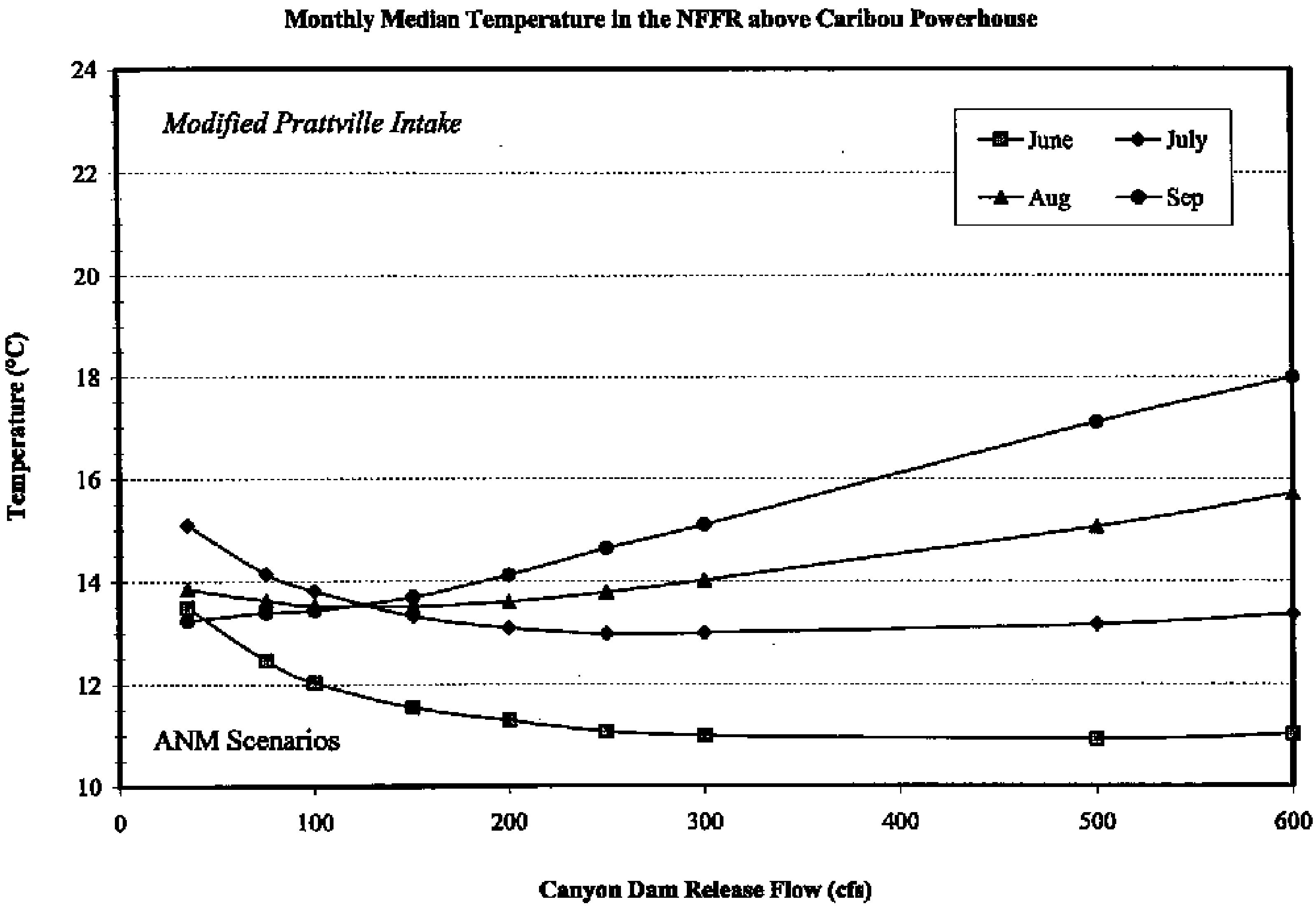
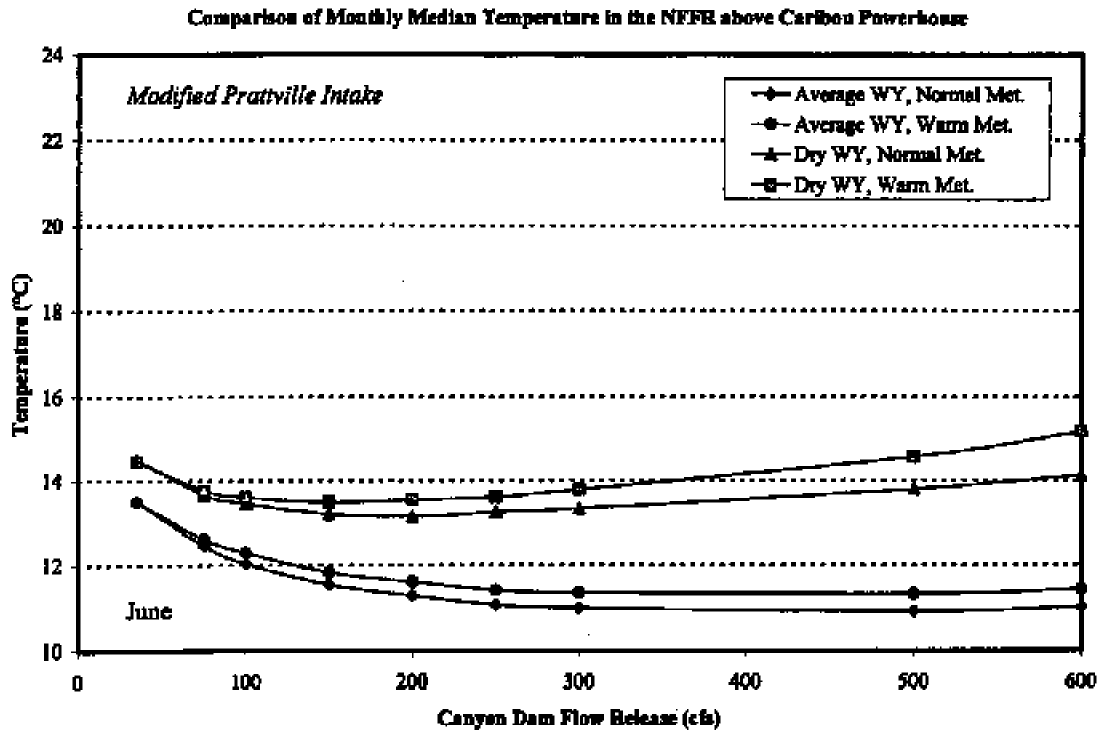


Figure E2.6-27. Relationship of Monthly Median Temperature in the NFFR above Caribou Powerhouse with Increasing Canyon Dam Releases (ANM Scenarios).

REVISED



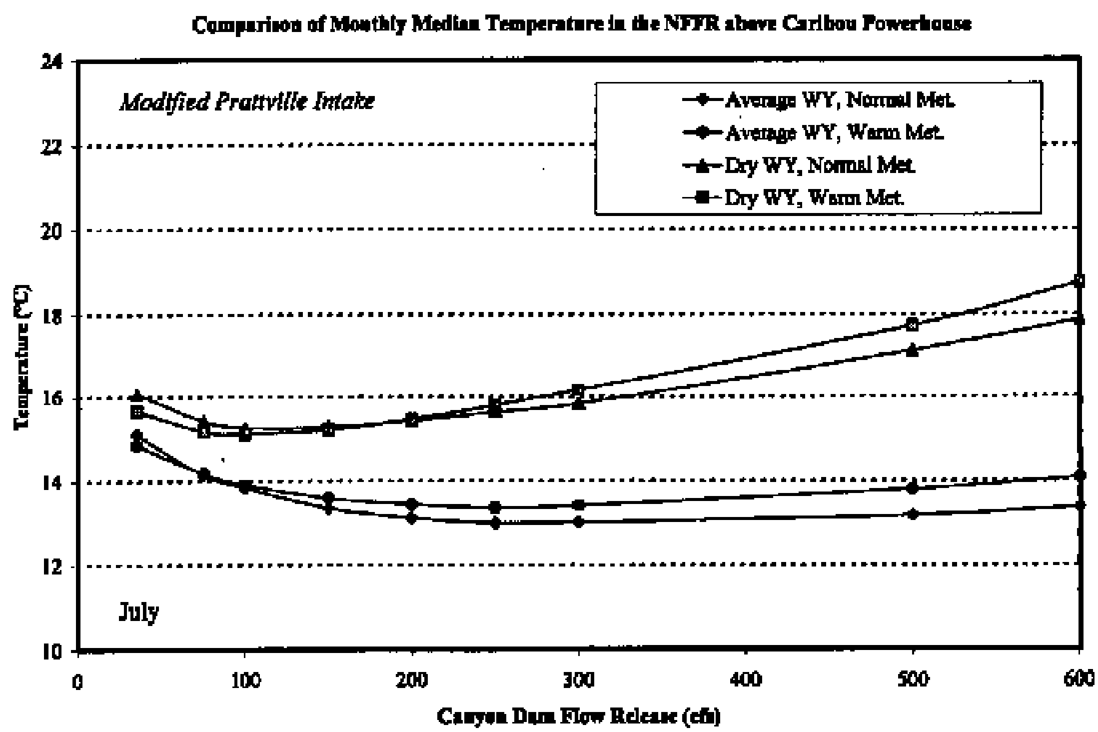
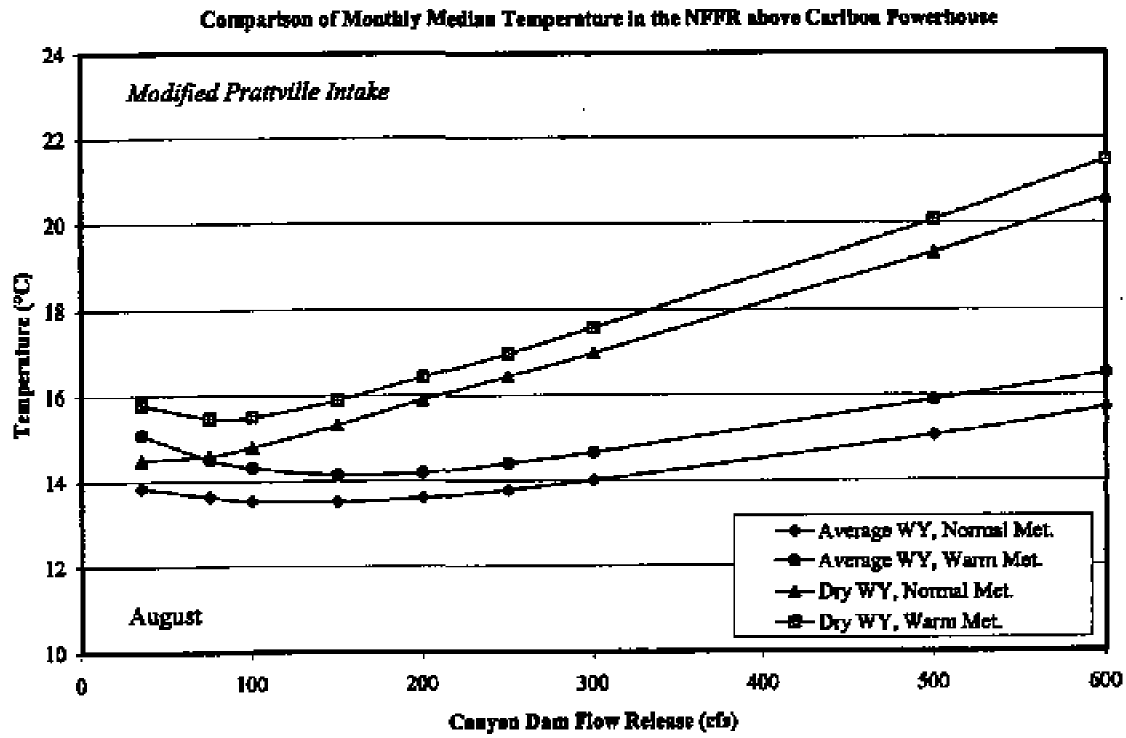


Figure E2.6-28. Effect of Environmental Condition on the Relationship between Monthly Median Temperature in the NFFR above Caribou Powerhouse and Increasing Releases from Canyon Dam (Modified Prattville Intake Configuration); June – July.



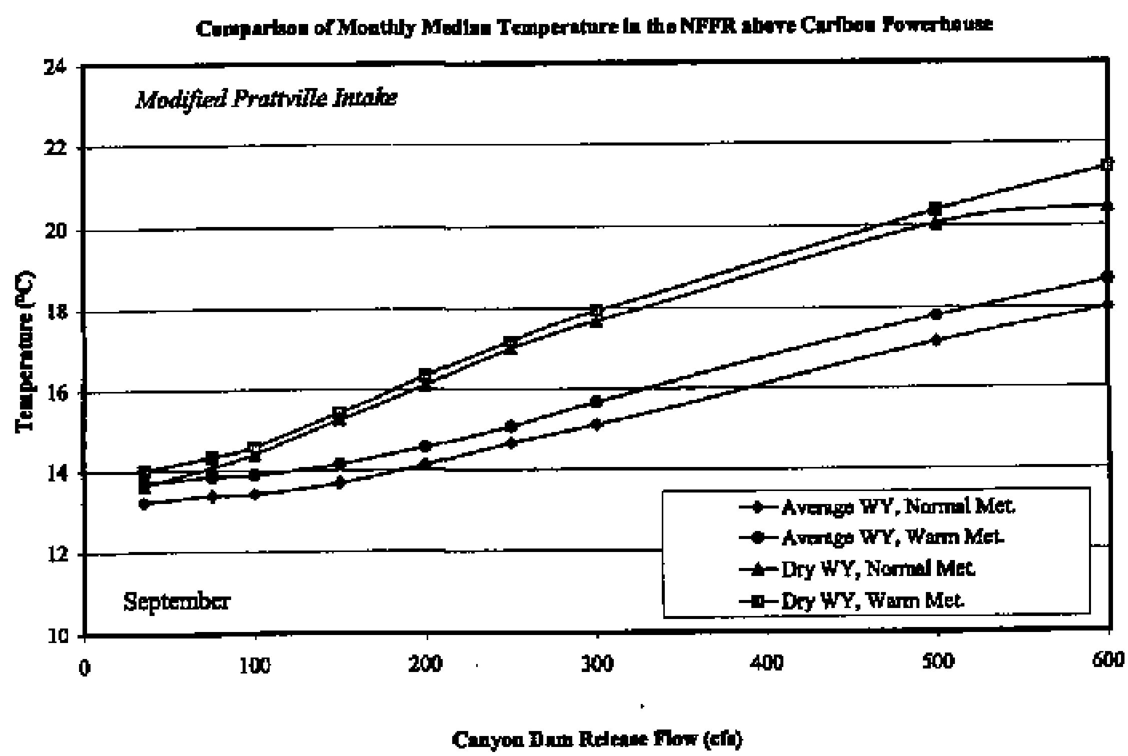


Figure E2.6-28. (Continued); August – September

Table E2.6-14 (REVISED)
Belden Dam Monthly Median Release Temperatures Under Various Environmental Scenarios

Belden Dam Release Temperatures Under Various Environmental Scenarios (°C)																		
	Existing Prattville									Modified Prattville								
Canyon Dam Release	35	75	100	150	200	250	300	500	600	35	75	100	150	200	250	300	500	600
	Average WY and Normal Meteorology																	
June	17.1	17.0	17.2	17.0	17.0	16.6	16.3	15.5	15.0	13.8	13.9	14.1	14.0	14.2	14.2	14.2	14.0	13.9
July	20.1	20.2	20.2	20.0	20.0	19.8	19.6	19.0	18.8	15.5	15.6	15.8	15.8	15.9	16.0	16.0	16.2	16.2
August	21.1	20.8	20.8	20.6	20.6	20.4	20.3	19.8	19.7	18.6	18.6	18.7	18.6	18.7	18.6	18.8	18.8	18.9
September	18.7	18.7	18.6	18.5	18.3	18.2	18.2	18.2	18.3	18.6	18.6	18.6	18.5	18.5	18.4	18.5	18.6	18.9
	Average WY and Warm Meteorology																	
June	17.9	17.7	18.1	17.9	17.8	17.6	17.2	16.3	15.7	13.8	14.0	14.2	14.3	14.4	14.5	14.5	14.5	14.4
July	21.1	21.2	21.2	21.0	20.9	20.8	20.6	20.1	19.8	16.5	16.6	16.7	16.7	16.8	16.9	16.8	17.1	17.2
Aug	22.0	22.1	22.1	21.9	21.8	21.6	21.5	21.0	20.9	19.2	19.2	19.3	19.1	19.4	19.4	19.3	19.5	19.6
Sep	20.7	20.7	20.5	20.4	20.3	20.2	20.1	20.0	20.0	19.5	19.6	19.7	19.5	19.7	19.7	19.6	20.1	20.3
	Dry WY and Normal Meteorology																	
June	17.2	16.1	15.6	14.5	13.2	13.3	13.3	13.8	14.1	16.6	15.7	15.3	14.3	13.2	13.3	13.3	13.8	14.1
July	21.6	20.9	20.4	19.5	19.1	18.9	18.3	17.1	17.9	19.3	19.0	18.8	18.3	18.1	18.0	17.6	17.1	17.9
Aug	21.5	20.7	20.3	19.5	19.2	19.1	19.1	19.2	20.4	20.3	19.8	19.5	18.9	18.7	18.8	18.9	19.4	20.6
Sep	19.5	19.2	19.1	19.1	19.0	19.0	19.0	19.9	20.3	19.3	19.1	19.0	18.9	18.9	19.0	19.2	20.0	20.3
	Dry WY and Warm Meteorology																	
June	18.1	16.9	16.4	15.1	13.6	13.6	13.8	14.6	15.1	17.3	16.3	15.9	14.8	13.6	13.6	13.8	14.6	15.2
July	22.6	21.9	21.4	20.4	19.8	19.6	18.9	17.7	18.7	20.1	19.7	19.5	18.9	18.7	18.6	18.3	17.7	18.8
Aug	22.8	22.0	21.5	20.5	20.1	20.0	20.0	19.9	21.2	20.8	20.4	20.1	19.5	19.4	19.5	19.6	20.1	21.5
Sep	20.6	20.9	20.7	20.6	20.4	20.3	20.3	20.8	21.4	20.3	20.2	20.1	20.0	20.0	20.1	20.2	20.9	21.5

Table E2.6-15 (REVISED)
Belden dam Monthly Median Release Temperature Change Relative to the Current Scenario

Comparison of Belden Dam Release Temperatures Relative To the Current Scenario, (°C)																		
	Existing Prattville									Modified Prattville								
Canyon Dam Release	35	75	100	150	200	250	300	500	600	35	75	100	150	200	250	300	500	600
Average WY and Normal Meteorology																		
June	0.0	0.1	0.0	0.2	0.1	0.5	0.8	1.6	2.2	3.3	3.3	3.1	3.1	3.0	3.0	2.9	3.1	3.2
July	0.0	-0.2	-0.1	0.0	0.1	0.3	0.5	1.0	1.3	4.6	4.4	4.3	4.3	4.1	4.1	4.1	3.9	3.9
August	0.0	0.3	0.3	0.5	0.5	0.7	0.8	1.2	1.4	2.4	2.5	2.4	2.5	2.4	2.4	2.3	2.3	2.2
September	0.0	0.0	0.1	0.2	0.4	0.4	0.4	0.5	0.4	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.1	-0.2
Average WY and Warm Meteorology																		
June	0.0	0.2	-0.2	0.0	0.1	0.4	0.7	1.6	2.2	4.1	4.0	3.7	3.7	3.5	3.4	3.4	3.4	3.5
July	0.0	-0.1	-0.1	0.1	0.2	0.3	0.5	1.0	1.3	4.6	4.5	4.3	4.4	4.3	4.2	4.3	4.0	3.9
August	0.0	-0.1	-0.1	0.1	0.2	0.4	0.5	1.0	1.1	2.8	2.8	2.7	2.9	2.6	2.6	2.7	2.5	2.4
September	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.7	0.6	1.1	1.0	1.0	1.1	1.0	1.0	1.0	0.6	0.4
Dry WY and Normal Meteorology																		
June	0.0	1.1	1.5	2.7	4.0	3.9	3.9	3.3	3.1	0.6	1.5	1.9	2.9	4.0	3.9	3.9	3.4	3.1
July	0.0	0.7	1.2	2.0	2.5	2.7	3.3	4.5	3.7	2.3	2.6	2.8	3.3	3.5	3.6	3.9	4.4	3.7
August	0.0	0.7	1.2	2.0	2.3	2.4	2.4	2.3	1.1	1.2	1.6	2.0	2.6	2.7	2.7	2.6	2.1	0.9
September	0.0	0.2	0.4	0.4	0.5	0.5	0.4	-0.4	-0.9	0.2	0.4	0.5	0.5	0.6	0.5	0.3	-0.5	-0.9
Dry WY and Warm Meteorology																		
June	0.0	1.3	1.7	3.0	4.6	4.5	4.3	3.6	3.0	0.8	1.8	2.2	3.3	4.6	4.5	4.3	3.6	2.9
July	0.0	0.6	1.2	2.2	2.7	3.0	3.6	4.9	3.9	2.4	2.9	3.1	3.7	3.9	3.9	4.3	4.8	3.8
August	0.0	0.8	1.3	2.3	2.7	2.8	2.8	2.9	1.6	2.0	2.4	2.7	3.3	3.4	3.3	3.2	2.6	1.3
September	0.0	-0.3	-0.1	0.0	0.2	0.3	0.3	-0.2	-0.8	0.3	0.5	0.5	0.6	0.6	0.5	0.4	-0.3	-0.9

Table E2.6-4 (REVISED)

Naming Convention Matrix For Modeled Scenarios

Lake Almanor Modeling Scenarios				
Water Year	Meteorology	Prattville Intake	Canyon Dam Release	Run ID
Average	Normal	Existing	A (35 cfs)	ANEA
			B (75 cfs)	ANEB
			F (100 cfs)	ANEF
			C (150 cfs)	ANEC
			G (200 cfs)	ANEG
			H (250 cfs)	ANEH
			D (300 cfs)	ANED
			I (500 cfs)	ANEI
			E (600 cfs)	ANEE
		Modified	A (35 cfs)	ANMA
			B (75 cfs)	ANMB
			F (100 cfs)	ANMF
			C (150 cfs)	ANMC
			G (200 cfs)	ANMG
			H (250 cfs)	ANMH
			D (300 cfs)	ANMD
			I (500 cfs)	ANMI
			E (600 cfs)	ANME
	Warm	Existing	A (35 cfs)	AWEA
			B (75 cfs)	AWEB
			F (100 cfs)	AWEF
			C (150 cfs)	AWEC
			G (200 cfs)	AWEG
			H (250 cfs)	AWEH
			D (300 cfs)	AWED
			I (500 cfs)	AWEI
			E (600 cfs)	AWEE
		Modified	A (35 cfs)	AWMA
			B (75 cfs)	AWMB
			F (100 cfs)	AWMF
			C (150 cfs)	AWMC
			G (200 cfs)	AWMG
			H (250 cfs)	AWMH
			D (300 cfs)	AWMD
			I (500 cfs)	AWMI
			E (600 cfs)	AWME

Table E2.6-4 (REVISED)

Lake Almanor Modeling Scenarios				
Water Year	Meteorology	Prattville Intake	Canyon Dam Release	Run ID
Dry	Normal	Existing	A (35 cfs)	DNEA
			B (75 cfs)	DNEB
			F (100 cfs)	DNEF
			C (150 cfs)	DNEC
			G (200 cfs)	DNEG
			H (250 cfs)	DNEH
			D (300 cfs)	DNED
			I (500 cfs)	DNEI
			E (600 cfs)	DNEE
		Modified	A (35 cfs)	DNMA
			B (75 cfs)	DNMB
			F (100 cfs)	DNMF
			C (150 cfs)	DNMC
			G (200 cfs)	DNMG
			H (250 cfs)	DNMH
			D (300 cfs)	DNMD
			I (500 cfs)	DNMI
			E (600 cfs)	DNME
	Warm	Existing	A (35 cfs)	DWEA
			B (75 cfs)	DWEB
			F (100 cfs)	DWEF
			C (150 cfs)	DWEC
			G (200 cfs)	DWEG
			H (250 cfs)	DWEH
			D (300 cfs)	DWED
			I (500 cfs)	DWEI
			E (600 cfs)	DWEE
		Modified	A (35 cfs)	DWMA
			B (75 cfs)	DWMB
			F (100 cfs)	DWMF
			C (150 cfs)	DWMC
			G (200 cfs)	DWMG
			H (250 cfs)	DWMH
			D (300 cfs)	DWMD
			I (500 cfs)	DWMI
			E (600 cfs)	DWME

Table E2.6-4 (REVISED)

Butt Valley Modeling Scenario			
Operational Scenario	**Description of Nomenclature Convention**		**Scenario ID**
Preferential Operation of Caribou No. 2 over Caribou No. 1	XXXX denotes the same RUN ID from Lake Almanor, followed by two numbers		XXXX21
Preferential Operation of Caribou No. 1 over Caribou No. 2	XXXX denotes the same RUN ID from Lake Almanor, followed by two numbers		XXXX12
Belden Reach Modeling Scenario			
Flow Release below Belden Dam	XXXX## denotes the same Run ID from Butt Valley Scenario	A (140 cfs)	XXXX##A
		B (200 cfs)	XXXX##B
		C (300 cfs)	XXXX##C
		D (500 cfs)	XXXX##D
		E (900 cfs)	XXXX##E

Table E2.6-5 (REVISED)

Monthly Median Release Temperatures Under Existing Prattville Intake Scenarios

	Predicted Temperatures (°C) Under Existing Prattville Intake Condition																	
	Butt Valley Powerhouse (monthly median)									Canyon Dam (monthly median)								
Canyon Dam release	35	75	100	150	200	250	500	300	600	35	75	100	150	200	250	500	300	600
	Average WY, Normal Met. Existing Prattville																	
Scenario ID	ANEA	ANEB	ANEF	ANEC	ANEG	ANEH	ANED	ANEI	ANEE	ANEA	ANEB	ANEF	ANEC	ANEG	ANEH	ANED	ANEI	ANEE
June	15.5	15.5	15.6	15.6	15.7	15.7	15.8	16.0	16.2	8.6	8.6	8.3	8.7	8.7	8.8	8.9	9.2	9.3
July	19.4	19.4	19.5	19.6	19.7	19.7	19.8	20.2	20.4	10.5	10.6	10.0	10.7	10.7	10.8	10.9	11.4	11.7
August	20.5	20.5	20.6	20.7	20.8	20.9	21.0	21.5	21.7	11.6	11.7	11.6	11.9	12.0	12.2	12.4	13.2	13.7
September	19.1	19.1	19.2	19.3	19.4	19.5	19.5	19.8	20.0	12.3	12.3	12.1	12.6	12.8	13.1	13.4	14.8	15.6
	Average WY, Warm Met. Existing Prattville																	
Scenario ID	AWEA	AWEB	AWEF	AWEC	AWEG	AWEH	AWED	AWEI	AWEE	AWEA	AWEB	AWEF	AWEC	AWEG	AWEH	AWED	AWEI	AWEE
June	15.5	15.6	15.6	15.7	15.7	15.8	15.9	16.1	16.3	8.5	8.5	8.2	8.6	8.6	8.7	8.8	9.0	9.2
July	18.7	18.8	18.8	18.9	19.0	19.1	19.2	19.6	19.8	10.3	10.3	9.8	10.4	10.4	10.5	10.6	11.0	11.3
August	20.7	20.8	20.8	20.9	21.0	21.2	21.3	21.8	22.0	11.5	11.5	11.4	11.7	11.8	11.9	12.1	12.9	13.4
September	19.4	19.5	19.5	19.6	19.7	19.8	19.9	20.3	20.4	12.2	12.2	12.0	12.5	12.7	13.0	13.3	14.6	15.3
	Dry WY, Normal Met. Existing Prattville																	
Scenario ID	DNEA	DNEB	DNEF	DNEC	DNEG	DNEH	DNED	DNEI	DNEE	DNEA	DNEB	DNEF	DNEC	DNEG	DNEH	DNED	DNEI	DNEE
June	17.5	17.6	17.6	17.7	17.8	17.9	17.9	18.3	18.5	10.6	10.7	10.3	11.1	11.3	11.6	11.8	12.5	12.9
July	21.7	21.8	21.8	21.9	22.1	22.2	22.3	22.9	23.1	12.5	12.7	12.4	13.3	13.7	14.1	14.5	16.0	16.9
August	22.3	22.4	22.5	22.6	22.8	22.9	23.0	23.3	23.3	13.4	13.6	13.8	14.6	15.2	15.8	16.3	18.7	20.0
September	20.1	20.1	20.2	20.3	20.3	20.3	20.3	20.3	20.4	13.5	13.7	14.0	14.9	15.8	16.5	17.3	19.7	20.2
	Dry WY, Warm Met. Existing Prattville																	
Scenario ID	DWEA	DWEB	DWEF	DWEC	DWEG	DWEH	DWED	DWEI	DWEE	DWEA	DWEB	DWEF	DWEC	DWEG	DWEH	DWED	DWEI	DWEE
June	17.8	17.8	17.9	18.0	18.1	18.1	18.2	18.7	18.8	10.5	10.6	10.2	11.0	11.2	11.5	11.7	12.5	12.9
July	21.2	21.3	21.4	21.5	21.6	21.7	21.8	22.4	22.7	12.2	12.3	12.0	12.9	13.3	13.7	14.1	15.6	16.5
August	22.9	23.0	23.1	23.2	23.4	23.5	23.7	24.3	24.4	13.1	13.3	13.4	14.2	14.8	15.4	16.0	18.3	19.7
September	20.5	20.6	20.7	20.8	20.9	20.9	20.9	20.9	21.0	13.3	13.5	13.9	14.7	15.5	16.3	17.1	19.6	20.3

Table E2.6-6 (REVISED)

Monthly Median Release Temperatures Under Hypothetically Modified Prattville Intake Scenarios

Canyon Dam release	Predicted Temperatures (°C) Under Hypothetically Modified Prattville Intake Scenario																	
	Butt Valley Powerhouse (monthly median)									Canyon Dam (monthly median)								
	35	75	100	150	200	250	500	300	600	35	75	100	150	200	250	500	300	600
Average WY, Normal Met., and Modified Prattville Intake																		
Scenario ID	ANMA	ANMB	ANMF	ANMC	ANMG	ANMH	ANMD	ANMI	ANME	ANMA	ANMB	ANMF	ANMC	ANMG	ANMH	ANMD	ANMI	ANME
June	9.5	9.5	9.6	9.6	9.7	9.7	9.8	10.1	10.3	8.6	8.6	8.3	8.7	8.8	8.8	8.9	9.2	9.4
July	13.0	13.0	13.1	13.2	13.3	13.4	13.5	14.0	14.3	10.6	10.6	10.1	10.7	10.8	10.9	11.1	11.6	11.9
August	17.7	17.8	17.9	18.0	18.2	18.4	18.5	19.3	19.6	11.8	11.9	11.8	12.1	12.3	12.6	12.9	14.1	14.8
September	19.3	19.5	19.5	19.7	19.8	20.0	20.1	20.3	20.3	12.5	12.6	12.4	12.9	13.4	14.0	14.5	16.6	17.5
Average WY, Warm Met., and Modified Prattville Intake																		
Scenario ID	AWMA	AWMB	AWMF	AWMC	AWMG	AWMH	AWMD	AWMI	AWME	AWMA	AWMB	AWMF	AWMC	AWMG	AWMH	AWMD	AWMI	AWME
June	9.3	9.3	9.4	9.4	9.5	9.5	9.6	9.9	10.1	8.6	8.6	8.2	8.6	8.7	8.8	8.8	9.1	9.2
July	12.6	12.6	12.7	12.7	12.8	12.9	13.1	13.6	13.8	10.4	10.4	9.9	10.5	10.6	10.7	10.8	11.3	11.6
August	17.3	17.4	17.5	17.7	17.8	18.0	18.2	18.9	19.3	11.7	11.7	11.6	11.9	12.1	12.4	12.6	13.8	14.4
September	19.5	19.7	19.7	19.9	20.1	20.2	20.3	20.8	20.9	12.5	12.5	12.3	12.8	13.3	13.9	14.4	16.5	17.4
Dry WY, Normal Met., and Modified Prattville Intake																		
Scenario ID	DNMA	DNMB	DNMF	DNMC	DNMG	DNMH	DNMD	DNMI	DNME	DNMA	DNMB	DNMF	DNMC	DNMG	DNMH	DNMD	DNMI	DNME
June	12.7	12.8	12.9	13.1	13.2	13.4	13.6	14.4	14.9	10.6	10.7	10.3	11.1	11.3	11.6	11.8	12.5	12.9
July	16.4	16.7	16.8	17.1	17.4	17.7	18.0	19.4	20.3	12.5	12.7	12.4	13.4	13.8	14.2	14.5	16.1	16.9
August	20.0	20.3	20.5	20.8	21.2	21.5	21.8	22.8	23.1	13.4	13.6	13.8	14.6	15.3	15.9	16.5	18.9	20.2
September	19.9	20.1	20.2	20.4	20.4	20.4	20.4	20.3	20.4	13.6	13.8	14.1	15.1	16.0	16.9	17.6	19.9	20.2
Dry WY, Warm Met., and Modified Prattville Intake																		
Scenario ID	DWMA	DWMB	DWMF	DWMC	DWMG	DWMH	DWMD	DWMI	DWME	DWMA	DWMB	DWMF	DWMC	DWMG	DWMH	DWMD	DWMI	DWME
June	12.7	12.8	12.9	13.1	13.3	13.5	13.7	14.6	15.1	10.5	10.6	10.2	11.0	11.2	11.5	11.7	12.5	12.9
July	16.0	16.3	16.4	16.7	17.0	17.3	17.6	19.1	20.0	12.2	12.3	12.0	12.9	13.4	13.7	14.1	15.7	16.5
August	19.6	20.0	20.2	20.6	20.9	21.3	21.7	23.0	23.5	13.1	13.3	13.4	14.3	14.9	15.6	16.2	18.6	19.9
September	20.2	20.4	20.6	20.8	20.9	21.0	21.0	20.9	21.0	13.4	13.6	13.9	14.9	15.8	16.7	17.5	19.9	20.3

Table E2.6-7 (REVISED)

Monthly Median Temperature Reduction (ΔT) Between Existing and Hypothetically Modified Prattville Intake Scenario

	Temperature Reduction, in Celsius, relative to Existing Prattville Intake Condition																
	Butt Valley Powerhouse (monthly median)									Canyon Dam (monthly median)							
Canyon Dam release	35	75	100	150	200	250	500	300	600	35	75	100	150	200	250	500	300
Average WY, Normal Met.																	
Scenario ID	ANEA ANMA	ANEB ANMB	ANEF ANMF	ANEC ANMC	ANEG ANMG	ANEH ANMH	ANED ANMD	ANEI ANMI	ANEE ANME	ANEA ANMA	ANEB ANMB	ANEF ANMF	ANEC ANMC	ANEG ANMG	ANEH - ANMH	ANED ANMD	ANEI - ANMI
June	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.9	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
July	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.2	6.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2
August	2.8	2.8	2.7	2.7	2.6	2.6	2.5	2.2	2.1	-0.2	-0.2	-0.2	-0.2	-0.3	-0.4	-0.5	-0.9
September	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5	-0.5	-0.5	-0.4	-0.3	-0.3	-0.3	-0.3	-0.5	-0.8	-1.1	-1.8
Average WY, Warm Met.																	
Scenario ID	AWEA - AWMA	AWEB AWMB	AWEF - AWMF	AWEC - AWMC	AWEG AWMG	AWEH - AWMH	AWED - AWMD	AWEI AWMI	AWEE AWME	AWEA - AWMA	AWEB AWMB	AWEF AWMF	AWEC - AWMC	AWEG AWMG	AWEH - AWMH	AWED - AWMD	AWEI - AWMI
June	6.2	6.2	6.3	6.3	6.3	6.3	6.3	6.2	6.2	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1
July	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.0	5.9	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2
August	3.4	3.3	3.3	3.3	3.2	3.2	3.1	2.9	2.7	-0.2	-0.2	-0.2	-0.2	-0.3	-0.4	-0.6	-0.9
September	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.4	-0.3	-0.3	-0.3	-0.4	-0.6	-0.9	-1.1	-1.9
Dry WY, Normal Met.																	
Scenario ID	DNEA DNMA	DNEB DNMB	DNEF DNMF	DNEC DNMC	DNEG DNMG	DNEH DNMH	DNED DNMD	DNEI - DNMI	DNEE - DNME	DNEA DNMA	DNEB DNMB	DNEF DNMF	DNEC DNMC	DNEG - DNMG	DNEH - DNMH	DNED DNMD	DNEI - DNMI
June	4.8	4.8	4.7	4.6	4.5	4.4	4.3	3.9	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	5.3	5.1	5.0	4.9	4.7	4.5	4.3	3.4	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	2.4	2.1	2.0	1.8	1.6	1.4	1.2	0.6	0.2	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.2
September	0.2	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.3	-0.4	-0.3	-0.1
Dry WY, Warm Met.																	
Scenario ID	DWEA - DWMA	DWEB DWMB	DWEF - DWMF	DWEC - DWMC	DWEG DWMG	DWEH - DWMH	DWED - DWMD	DWEI - DWMI	DWEE DWME	DWEA - DWMA	DWEB DWMB	DWEF - DWMF	DWEC - DWMC	DWEG DWMG	DWEH - DWMH	DWED - DWMD	DWEI - DWMI
June	5.1	5.0	5.0	4.9	4.8	4.7	4.6	4.1	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	5.2	5.1	5.0	4.8	4.6	4.4	4.2	3.4	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	3.3	3.0	2.9	2.7	2.4	2.2	2.0	1.2	0.9	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.2	-0.2
September	0.3	0.2	0.1	0.1	0.0	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.3	-0.4	-0.5	-0.3

Table E2.6-8 (REVISED)
Release Temperatures from Caribou No. 1 and No. 2 Powerhouses Under Existing Prattville Intake Configuration and Existing Caribou Operations

Predicted Monthly Median Temperatures (°C)

Canyon Dam release	Caribou 1									Caribou 2								
	35	75	100	150	200	250	300	500	600	35	75	100	150	200	250	300	500	600
Average WY and Normal Meteorology																		
Run ID	ANEA21	ANEB21	ANEF21	ANEC21	ANEG21	ANEH21	ANED21	ANEI21	ANEE21	ANEA21	ANEB21	ANEC21	ANEC21	ANEG21	ANEH21	ANED21	ANEI21	ANEE21
Jun	16.3	16.5	16.7	16.7	17.1	17.0	17.0	17.4	17.5	17.6	17.6	18.0	18.0	18.4	18.2	18.2	18.6	18.8
Jul	19.7	20.1	20.2	20.2	20.4	20.4	20.4	20.7	20.8	20.5	20.8	20.9	20.9	21.1	21.1	21.1	21.4	21.5
Aug	21.0	21.0	21.0	21.1	21.3	21.3	21.4	21.8	22.0	21.5	21.3	21.4	21.4	21.6	21.6	21.7	22.0	22.2
Sep	18.6	18.9	18.9	19.0	18.9	19.0	19.1	19.2	19.3	19.0	19.1	19.1	19.1	19.1	19.2	19.3	19.4	19.5
Average WY and Warm Meteorology																		
	AWEA21	AWEB21	AWEF21	AWEC21	AWEG21	AWEH21	AWED21	AWEI21	AWEE21	AWEA21	AWEB21	AWEF21	AWEC21	AWEG21	AWEH21	AWED21	AWEI21	AWEE21
Jun	16.4	16.6	16.7	16.8	17.0	17.0	17.1	17.4	17.5	17.6	17.5	17.7	17.8	17.9	18.0	18.1	18.3	18.4
Jul	19.2	19.3	19.4	19.4	19.6	19.7	19.7	20.1	20.2	20.2	20.4	20.6	20.5	20.7	20.8	20.8	21.2	21.3
Aug	21.5	21.6	21.7	21.7	21.9	22.0	22.0	22.4	22.4	22.0	22.0	22.1	22.2	22.3	22.4	22.4	22.7	22.9
Sep	19.2	19.4	19.4	19.4	19.5	19.6	19.7	19.7	19.8	19.4	19.6	19.6	19.6	19.7	19.8	19.9	19.9	20.1
Dry WY and Normal Meteorology																		
	DNEA21	DNEB21	DNEF21	DNEC21	DNEG21	DNEH21	DNED21	DNEI21	DNEE21	DNEA21	DNEB21	DNEF21	DNEC21	DNEG21	DNEH21	DNED21	DNEI21	DNEE21
Jun	17.2	17.2	17.2	17.2	17.3	17.3	17.4	17.6	17.6	19.1	19.1	19.2	19.2	19.3	19.3	19.4	19.6	19.6
Jul	21.0	21.1	21.1	21.1	21.2	21.4	21.4	21.8	21.8	22.4	22.5	22.5	22.6	22.7	22.9	22.9	23.1	23.2
Aug	22.4	22.4	22.4	22.5	22.5	22.5	22.5	22.7	22.7	22.8	22.8	22.9	22.9	23.0	23.0	23.0	23.2	23.2
Sep	19.9	19.9	19.9	20.0	20.0	20.0	20.0	19.9	19.9	19.9	19.9	19.9	20.0	20.0	20.0	20.0	19.9	19.9
Dry WY and Warm Meteorology																		
	DWEA21	DWEB21	DWEF21	DWEC21	DWEG21	DWEH21	DWED21	DWEI21	DWEE21	DWEA21	DWEB21	DWEF21	DWEC21	DWEG21	DWEH21	DWED21	DWEI21	DWEE21
Jun	17.6	17.7	17.7	17.7	17.8	17.8	17.8	17.9	17.9	19.3	19.4	19.4	19.4	19.5	19.6	19.6	19.8	19.8
Jul	20.7	20.9	21.0	21.0	21.1	21.2	21.3	21.7	21.7	22.1	22.4	22.5	22.5	22.7	22.8	22.9	23.3	23.4
Aug	22.4	22.7	22.7	22.8	22.8	23.0	23.1	23.3	23.4	23.3	23.8	23.9	24.0	24.1	24.1	24.2	24.3	24.4
Sep	20.2	20.4	20.4	20.5	20.5	20.5	20.5	20.4	20.5	20.3	20.5	20.5	20.6	20.6	20.6	20.6	20.5	20.5

Table E2.6-9 (REVISED)
Flow-weighted Caribou Outflow Monthly Median Temperatures Under Existing Caribou Operations

	Predicted Mixed Temperatures (°C) from Caribou 1&2 Powershouses																	
	Existing Prattville and Existing Caribou Operation									Modified Prattville and Existing Caribou Operation								
Canyon Dam release	35	75	100	150	200	250	300	500	600	35	75	100	150	200	250	300	500	600
	Average WY and Normal Meteorology																	
Scenario ID	ANEA21	ANEB21	ANEF21	ANEC21	ANEG21	ANEH21	ANED21	ANEI21	ANEE21	ANMA21	ANMB21	ANMF21	ANMC21	ANMG21	ANMH21	ANMD21	ANMI21	ANME21
June	17.2	17.4	17.8	17.8	18.2	18.2	18.2	18.6	18.8	13.9	14.0	14.3	14.4	14.7	15.0	15.2	16.1	16.6
July	20.3	20.6	20.7	20.8	20.9	20.9	21.0	21.4	21.5	15.6	15.8	16.0	16.1	16.3	16.5	16.6	17.3	17.6
August	21.3	21.2	21.3	21.3	21.5	21.6	21.6	22.0	22.1	18.8	18.8	19.1	19.1	19.3	19.5	19.8	20.2	20.4
September	18.9	19.1	19.1	19.1	19.1	19.2	19.3	19.4	19.5	18.8	19.0	19.0	19.0	19.2	19.2	19.3	19.4	19.4
	Average WY and Warm Meteorology																	
Scenario ID	AWEA21	AWEB21	AWEF21	AWEC21	AWEG21	AWEH21	AWED21	AWEI21	AWEE21	AWMA21	AWMB21	AWMF21	AWMC21	AWMG21	AWMH21	AWMD21	AWMI21	AWME21
June	17.3	17.3	17.5	17.7	17.8	18.0	18.0	18.3	18.4	13.3	13.5	13.8	14.0	14.2	14.5	14.7	15.8	16.2
July	19.9	20.2	20.3	20.3	20.5	20.6	20.6	21.2	21.3	15.0	15.3	15.5	15.6	15.8	16.0	16.0	16.9	17.1
August	21.8	21.8	21.9	22.0	22.1	22.2	22.2	22.7	22.8	18.6	18.6	18.9	18.8	19.3	19.4	19.5	20.2	20.3
September	19.4	19.6	19.5	19.6	19.7	19.8	19.9	19.9	20.1	19.1	19.3	19.3	19.4	19.6	19.7	19.7	19.9	20.0
	Dry WY and Normal Meteorology																	
Scenario ID	DNEA21	DNEB21	DNEF21	DNEC21	DNEG21	DNEH21	DNED21	DNEI21	DNEE21	DNMA21	DNMB21	DNMF21	DNMC21	DNMG21	DNMH21	DNMD21	DNMI21	DNME21
June	19.1	19.1	19.1	19.2	19.2	19.1	19.2	19.4	19.6	18.1	18.1	18.2	18.3	18.5	18.4	18.5	19.0	19.3
July	22.4	22.4	22.5	22.6	22.5	22.6	22.7	23.0	23.1	19.8	20.0	20.2	20.4	20.6	20.9	21.1	22.2	22.6
August	22.7	22.8	22.9	22.9	23.0	23.0	23.0	23.2	23.2	21.2	21.3	21.5	21.6	22.0	22.1	22.3	22.8	22.9
September	19.9	19.9	19.9	20.0	20.0	20.0	20.0	19.9	19.9	19.6	19.7	19.7	19.8	19.8	19.9	19.9	19.9	19.9
	Dry WY and Warm Meteorology																	
Scenario ID	DWEA21	DWEB21	DWEF21	DWEC21	DWEG21	DWEH21	DWED21	DWEI21	DWEE21	DWMA21	DWMB21	DWMF21	DWMC21	DWMG21	DWMH21	DWMD21	DWMI21	DWME21
June	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.5	19.7	17.9	18.0	18.1	18.2	18.4	18.4	18.6	19.0	19.2
July	22.1	22.4	22.5	22.5	22.7	22.8	22.8	23.3	23.3	19.4	19.6	19.8	20.0	20.4	20.7	20.9	22.2	22.6
August	23.1	23.4	23.5	23.6	23.7	23.8	23.9	24.2	24.3	21.2	21.4	21.5	21.7	22.0	22.2	22.5	23.4	23.7
September	20.3	20.5	20.5	20.6	20.6	20.6	20.6	20.5	20.5	20.1	20.2	20.2	20.3	20.4	20.5	20.5	20.5	20.5

Table E2.6-16 (REVISED)
Monthly Median Temperatures in NFFR, above the Confluence with East Branch and above Belden Powerhouse, under Various Flow Management and Prattville Intake Scenarios

Summary of Temperatures in Belden Reach under Average WY and Normal Meteorology

NFFR above the Confluence with East Branch of NFFR (NF7)

Belden Release	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	17.7	20.3	20.4	18.1	17.6	20.5	20.2	18.1	17.8	20.4	20.1	18.0	17.6	20.3	20.0	17.9	17.6	20.3	20.0	17.8	17.3	20.1	19.9	17.7	17.1	20.0	19.8	17.7	16.5	19.6	19.4	17.7	16.1	19.3	19.4	17.8
200	17.7	20.3	20.7	18.3	17.5	20.5	20.4	18.3	17.7	20.5	20.4	18.2	17.5	20.3	20.3	18.1	17.5	20.3	20.2	18.0	17.2	20.1	20.1	18.0	17.0	19.9	20.0	18.0	16.3	19.5	19.6	17.9	15.9	19.3	19.5	18.0
300	17.6	20.4	20.9	18.5	17.5	20.5	20.6	18.5	17.6	20.5	20.6	18.4	17.4	20.3	20.5	18.3	17.5	20.3	20.4	18.2	17.1	20.1	20.3	18.2	16.9	19.9	20.2	18.1	16.1	19.5	19.8	18.1	15.7	19.2	19.7	18.2
500	17.5	20.4	21.1	18.7	17.4	20.5	20.8	18.7	17.6	20.5	20.8	18.6	17.4	20.3	20.6	18.5	17.4	20.3	20.6	18.3	17.1	20.1	20.5	18.3	16.8	19.9	20.3	18.3	16.0	19.4	19.9	18.2	15.5	19.2	19.8	18.3
900	17.5	20.4	21.2	18.8	17.4	20.5	21.0	18.9	17.5	20.5	20.9	18.7	17.3	20.3	20.8	18.6	17.4	20.3	20.7	18.4	17.0	20.1	20.6	18.4	16.7	19.9	20.4	18.4	15.9	19.4	20.0	18.3	15.4	19.1	19.9	18.4
Modified Prattville Intake																																				
140	15.2	16.8	18.5	18.0	15.2	16.9	18.5	18.0	15.4	17.0	18.6	18.0	15.3	17.0	18.5	17.9	15.4	17.2	18.6	17.9	15.4	17.2	18.5	17.9	15.4	17.2	18.6	17.9	15.3	17.3	18.6	18.0	15.2	17.4	18.7	18.2
200	14.9	16.5	18.7	18.3	14.9	16.7	18.6	18.3	15.1	16.8	18.7	18.2	15.0	16.8	18.6	18.2	15.2	16.9	18.7	18.2	15.2	16.9	18.7	18.1	15.2	17.0	18.7	18.2	15.0	17.1	18.8	18.3	14.9	17.1	18.9	18.5
300	14.7	16.3	18.7	18.5	14.7	16.4	18.7	18.5	14.9	16.6	18.8	18.4	14.8	16.6	18.7	18.4	15.0	16.7	18.8	18.4	15.0	16.7	18.8	18.3	15.0	16.8	18.9	18.4	14.8	16.9	18.9	18.5	14.7	16.9	19.0	18.7
500	14.5	16.1	18.8	18.6	14.5	16.3	18.8	18.6	14.7	16.4	18.9	18.6	14.6	16.4	18.8	18.5	14.8	16.5	18.8	18.5	14.8	16.6	18.8	18.5	14.8	16.6	18.9	18.6	14.6	16.7	19.0	18.7	14.5	16.8	19.1	18.9
900	14.3	16.0	18.9	18.8	14.4	16.1	18.9	18.8	14.6	16.3	19.0	18.7	14.5	16.3	18.8	18.6	14.7	16.4	18.9	18.6	14.7	16.4	18.9	18.6	14.7	16.5	19.0	18.7	14.5	16.6	19.0	18.8	14.4	16.7	19.1	19.0

NFFR above Belden Powerhouse (NF8)

Belden Release	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	20.2	21.4	20.8	17.8	20.2	21.4	20.7	17.9	20.2	21.4	20.7	17.8	20.2	21.3	20.6	17.8	20.2	21.3	20.6	17.7	20.2	21.2	20.5	17.7	20.1	21.2	20.5	17.7	20.0	21.0	20.3	17.6	19.9	20.9	20.2	17.7
200	20.0	21.2	21.0	18.1	20.0	21.3	20.8	18.1	20.0	21.3	20.8	18.0	20.0	21.2	20.7	17.9	20.0	21.2	20.7	17.8	19.9	21.1	20.6	17.8	19.9	21.0	20.5	17.8	19.7	20.7	20.3	17.8	19.6	20.6	20.2	17.8
300	19.8	21.0	21.1	18.3	19.7	21.1	20.9	18.3	19.8	21.1	20.9	18.2	19.7	21.0	20.7	18.2	19.7	21.0	20.7	18.0	19.6	20.9	20.6	18.0	19.5	20.7	20.5	18.0	19.3	20.4	20.3	18.0	19.1	20.3	20.2	18.0
500	19.3	20.9	21.2	18.5	19.3	21.0	21.0	18.6	19.4	21.0	21.0	18.5	19.3	20.8	20.8	18.4	19.3	20.8	20.8	18.2	19.1	20.6	20.7	18.2	19.0	20.5	20.6	18.2	18.6	20.1	20.2	18.2	18.4	19.9	20.2	18.2
900	18.9	20.7	21.5	18.6	18.8	20.9	21.1	18.8	18.9	20.8	21.0	18.7	18.8	20.7	20.9	18.6	18.8	20.6	20.9	18.4	18.6	20.5	20.7	18.4	18.4	20.3	20.6	18.4	17.9	19.9	20.2	18.3	17.6	19.6	20.1	18.4
Modified Prattville Intake																																				
140	19.7	19.6	19.8	17.8	19.7	19.7	19.8	17.8	19.8	19.7	19.8	17.8	19.8	19.7	19.7	17.8	19.8	19.8	19.8	17.8	19.8	19.8	19.8	17.7	19.8	19.8	19.8	17.8	19.8	19.9	19.8	17.8	19.7	19.9	19.9	17.9
200	19.3	19.0	19.6	18.0	19.3	19.1	19.6	18.0	19.4	19.1	19.7	18.0	19.4	19.1	19.6	18.0	19.4	19.2	19.6	18.0	19.4	19.2	19.6	17.9	19.4	19.3	19.7	18.0	19.4	19.3	19.7	18.0	19.3	19.3	19.8	18.2
300	18.8	18.3	19.5	18.2	18.8	18.4	19.5	18.2	18.8	18.5	19.5	18.2	18.8	18.5	19.4	18.2	18.9	18.6	19.5	18.2	18.9	18.6	19.5	18.1	18.9	18.6	19.6	18.2	18.8	18.7	19.6	18.3	18.8	18.7	19.6	18.4
500	17.9	17.6	19.3	18.5	17.9	17.7	19.3	18.5	18.0	17.8	19.4	18.5	18.0	17.8	19.3	18.4	18.1	17.9	19.3	18.4	18.1	17.9	19.3	18.4	18.1	18.0	19.4	18.4	18.0	18.1	19.4	18.5	17.9	18.1	19.5	18.7
900	16.9	16.9	19.2	18.7	17.0	17.1	19.2	18.7	17.1	17.2	19.3	18.7	17.0	17.2	19.2	18.6	17.1	17.3	19.2	18.6	17.1	17.3	19.2	18.5	17.1	17.4	19.3	18.6	17.0	17.5	19.3	18.7	17.0	17.5	19.4	18.9

Table E2.6-17 (REVISED)
Temperature Reductions above the Confluence with the East Branch and above Belden Powerhouse, Relative to the Current Condition, Under Various Flow Management and Prattville Intake Scenarios

Temperature Reduction Relative To Existing Condition in Belden Reach under Average WY and Normal Meteorology

NFFR above the Confluence with East Branch of NFFR (NF7)

BELDEN RELEASE	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	0.0	0.0	0.0	0.0	0.1	-0.1	0.2	0.0	0.0	-0.1	0.3	0.1	0.1	0.0	0.4	0.2	0.1	0.1	0.4	0.3	0.4	0.2	0.5	0.3	0.6	0.4	0.6	0.3	1.3	0.8	0.9	0.4	1.7	1.0	1.0	0.3
200	0.1	0.0	-0.3	-0.3	0.2	-0.2	0.0	-0.3	0.1	-0.1	0.0	-0.2	0.2	0.0	0.1	-0.1	0.2	0.1	0.2	0.1	0.5	0.2	0.3	0.1	0.8	0.4	0.4	0.1	1.5	0.8	0.8	0.2	1.9	1.1	0.9	0.1
300	0.1	0.0	-0.5	-0.5	0.3	-0.2	-0.3	-0.5	0.1	-0.2	-0.2	-0.4	0.3	0.0	-0.1	-0.3	0.3	0.1	-0.1	-0.1	0.6	0.2	0.1	-0.1	0.9	0.4	0.2	-0.1	1.6	0.9	0.6	0.0	2.1	1.1	0.7	-0.1
500	0.2	0.0	-0.7	-0.6	0.3	-0.2	-0.4	-0.6	0.2	-0.2	-0.4	-0.5	0.4	0.0	-0.2	-0.4	0.3	0.1	-0.2	-0.3	0.7	0.3	-0.1	-0.2	0.9	0.4	0.1	-0.2	1.7	0.9	0.4	-0.2	2.2	1.2	0.6	-0.3
900	0.2	0.0	-0.8	-0.8	0.4	-0.2	-0.6	-0.8	0.2	-0.2	-0.5	-0.7	0.4	0.0	-0.4	-0.6	0.4	0.1	-0.3	-0.4	0.7	0.3	-0.2	-0.4	1.0	0.4	-0.1	-0.4	1.8	0.9	0.4	-0.3	2.3	1.2	0.5	-0.4
Modified Prattville Intake																																				
140	2.6	3.5	1.9	0.1	2.5	3.4	1.9	0.1	2.4	3.3	1.8	0.1	2.4	3.3	1.9	0.2	2.3	3.2	1.8	0.2	2.3	3.2	1.9	0.2	2.3	3.1	1.8	0.1	2.5	3.0	1.8	0.0	2.5	3.0	1.7	-0.1
200	2.8	3.8	1.7	-0.2	2.8	3.7	1.8	-0.2	2.7	3.6	1.7	-0.1	2.7	3.6	1.8	-0.1	2.6	3.4	1.7	-0.1	2.6	3.4	1.7	0.0	2.6	3.4	1.7	-0.1	2.7	3.2	1.6	-0.2	2.8	3.2	1.5	-0.4
300	3.1	4.0	1.7	-0.4	3.0	3.9	1.7	-0.4	2.9	3.8	1.6	-0.4	2.9	3.8	1.7	-0.3	2.8	3.6	1.6	-0.3	2.8	3.6	1.6	-0.2	2.8	3.6	1.5	-0.3	2.9	3.4	1.5	-0.4	3.0	3.4	1.4	-0.6
500	3.3	4.2	1.6	-0.6	3.2	4.1	1.6	-0.6	3.1	4.0	1.5	-0.5	3.1	3.9	1.6	-0.4	3.0	3.8	1.6	-0.4	3.0	3.8	1.6	-0.4	2.9	3.7	1.5	-0.5	3.1	3.6	1.4	-0.6	3.2	3.6	1.3	-0.8
900	3.4	4.4	1.5	-0.7	3.4	4.2	1.5	-0.7	3.2	4.1	1.4	-0.6	3.3	4.1	1.6	-0.6	3.1	3.9	1.5	-0.6	3.1	3.9	1.5	-0.5	3.1	3.9	1.4	-0.6	3.3	3.7	1.4	-0.7	3.4	3.7	1.3	-0.9

NFFR above Belden Powrhouse (NF8)

BELDEN RELEASE	35-cfs Canyon Dam				75-cfs Canyon Dam				100-cfs Canyon Dam				150-cfs Canyon Dam				200-cfs Canyon Dam				250-cfs Canyon Dam				300-cfs Canyon Dam				500-cfs Canyon Dam				600-cfs Canyon Dam			
	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep	June	July	Aug	Sep
Existing Prattville Intake																																				
140	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.2	0.2	0.1	0.1	0.3	0.2	0.1	0.2	0.4	0.2	0.3	0.4	0.5	0.2	0.3	0.5	0.6	0.2
200	0.2	0.2	-0.1	-0.2	0.2	0.1	0.1	-0.2	0.2	0.1	0.1	-0.2	0.2	0.2	0.2	-0.1	0.2	0.2	0.2	0.0	0.3	0.3	0.3	0.0	0.4	0.4	0.3	0.0	0.6	0.6	0.6	0.1	0.7	0.8	0.6	0.0
300	0.5	0.3	-0.2	-0.4	0.5	0.2	0.0	-0.5	0.5	0.2	0.0	-0.4	0.5	0.3	0.1	-0.3	0.5	0.4	0.1	-0.2	0.6	0.5	0.2	-0.2	0.7	0.6	0.3	-0.2	1.0	0.9	0.6	-0.1	1.1	1.1	0.7	-0.2
500	0.9	0.5	-0.4	-0.7	0.9	0.4	-0.1	-0.7	0.9	0.4	-0.1	-0.6	1.0	0.5	0.0	-0.5	0.9	0.6	0.0	-0.4	1.1	0.7	0.2	-0.4	1.2	0.9	0.3	-0.4	1.6	1.2	0.6	-0.3	1.8	1.4	0.7	-0.4
900	1.4	0.7	-0.5	-0.9	1.5	0.5	-0.2	-0.9	1.4	0.5	-0.2	-0.8	1.5	0.7	0.0	-0.7	1.5	0.7	0.0	-0.6	1.7	0.9	0.1	-0.6	1.8	1.1	0.2	-0.5	2.3	1.5	0.6	-0.5	2.6	1.7	0.7	-0.6
Modified Prattville Intake																																				
140	0.5	1.7	1.1	0.0	0.5	1.7	1.1	0.0	0.5	1.6	1.0	0.1	0.5	1.6	1.1	0.1	0.4	1.6	1.1	0.1	0.4	1.5	1.1	0.1	0.4	1.5	1.0	0.1	0.5	1.5	1.0	0.0	0.5	1.5	1.0	-0.1
200	0.9	2.4	1.2	-0.2	0.9	2.3	1.2	-0.2	0.9	2.2	1.2	-0.2	0.9	2.2	1.3	-0.1	0.8	2.1	1.2	-0.1	0.8	2.1	1.2	-0.1	0.8	2.1	1.2	-0.1	0.9	2.0	1.2	-0.2	0.9	2.0	1.1	-0.3
300	1.5	3.0	1.4	-0.4	1.5	3.0	1.4	-0.4	1.4	2.9	1.3	-0.4	1.4	2.9	1.4	-0.3	1.4	2.8	1.4	-0.3	1.4	2.8	1.4	-0.3	1.4	2.7	1.3	-0.3	1.4	2.6	1.3	-0.4	1.5	2.6	1.2	-0.6
500	2.3	3.8	1.5	-0.6	2.3	3.7	1.5	-0.6	2.2	3.6	1.5	-0.6	2.2	3.6	1.6	-0.5	2.2	3.5	1.5	-0.5	2.2	3.5	1.5	-0.5	2.2	3.4	1.4	-0.6	2.2	3.3	1.4	-0.7	2.3	3.3	1.3	-0.8
900	3.3	4.4	1.6	-0.8	3.3	4.3	1.7	-0.8	3.2	4.2	1.6	-0.8	3.2	4.2	1.7	-0.7	3.1	4.1	1.6	-0.7	3.1	4.0	1.6	-0.7	3.1	4.0	1.5	-0.8	3.2	3.9	1.5	-0.9	3.3	3.8	1.4	-1.1

PG&E Butt Valley

Reservoir Study

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2003

1.0 Summary and Conclusion

We investigated the possibility of cold water releases from Lake Almanor passing through Butt Valley reservoir as a density current underflow, effectively insulated from solar radiation, and hence minimizing temperature increases. Three steps were involved:

- determining the location of the "plunge" point for the inflow
- determining the effectiveness of the existing Caribou intakes in selectively withdrawing the underflow
- determining the effectiveness of a skimmer wall in selective withdrawal if the Caribou I and II intakes are not effective

The analysis showed that the plunge point will occur in the upstream 15% of the reservoir, and that a skimmer wall could selectively withdraw the underflow for the full range of projected flows. Hence, a density current underflow is possible during normal operation,as long as the inflow mixing is controlled. The analysis also showed that Caribou II is not effective as a selective withdrawal system even for relatively low flows (800cfs), and that Caribou I may be marginal at the higher end of its flow range.

The skimmer wall structure that was analyzed is a major structure, and the feasibility and cost-effectiveness of such a structure will need to be assessed.

The range of inflow mixing is estimated to be in the 20% to 50% range.The effect of the higher end of the range (50%) on the reservoir stratification needs to be assessed.

The next steps will involve the use of MITEMP model to assess the temperature reduction for the Caribou releases during both a typical summer and a hot, low-water level (in Lake Almanor) summer.During this process the effects of inflow mixing will also be assessed.

2.0 Objective

The objective of this study is to determine if the cold water releases from Lake Almanor through Butt Valley powerhouse can pass through Butt Valley reservoir as an underflow, hence minimizing the temperature increase due to solar radiation, both through direct absorption, or through mixing with the warmer surface waters in Butt Valley reservoir.

3.0 Approach

The approach taken was as follows:

- Determine if normal cold releases from Lake Almanor could be expected to plunge near the reservoir entrance to establish the initial cold water density current
- Determine maximum flows at which the existing Caribou I and II Intakes could withdraw flow selectively from the colder layer for release from the Butt Valley Reservoir

- Evaluate the effectiveness of a skimmer wall for increasing the rate of selective withdrawal

The concept behind the approach is that if the cold water releases from Lake Almanor can "plunge" beneath the warmer surface waters near the upstream end of the reservoir, and can be selectively withdrawn at the downstream end, then the warmer surface water effectively acts as an insulating blanket, and the primary increase in temperature of the underflow will be due to the mixing at the plunge point. Entrainment of the warmer surface layers by the underflow, once the density current has been established, is known to be very low, and will not be considered further in this study.

The focus will be on theoretical behavior, and the cost and operational problems of structures such as a skimmer wall will not be discussed. In addition, it will be assumed that the Butt Valley and Caribou powerhouses could be operated so as to maintain the water level in Butt Valley Reservoir in a relatively narrow range near the normal operating level of 4132 ft (PG&E datum).

4.0 Site Description

Butt Valley Reservoir serves as an afterbay for the Butt Valley powerhouse and a forebay for the Caribou I and Caribou II powerhouses. The reservoir is relatively long (~ 5 miles) and narrow (0.3 – 0.6 miles), and has a storage of approximately 50,000 acre-ft at the normal operating level of 4132 ft (PG&E datum). Caribou I withdraws up to 1070 cfs through an intake tower located in the deepest section of the reservoir in front of the dam. The intake tower has an invert level of ~4067 ft (PG&E datum) and the opening extends from the intake to the surface. Caribou II withdraws up to 1494 cfs, and the intake is located in a shallow cove near the west side of the dam. The intake invert is at 4093 ft, but the channel connecting the intake with the reservoir controls the flow, and establishes an effective invert level of 4101 ft (PG&E datum). The typical residence time is only 14 days. Thermal stratification is observed throughout the summer, ranging from relatively strong (8-10° C) in early summer, to 2-4° C in August and virtually zero in September.

The shape of the reservoir at the upstream end, in terms of the divergence angle of the channel sides, and the slope of the channel bottom, is critical in determining the behavior of the inflow, and specifically the location of the "plunge point", where the cold inflow submerges and becomes an underflow. Figure 1 shows the bathymetry of the upstream section of the reservoir. For the first half mile the channel is narrow (200 – 500 ft. wide) and expands slowly, with a divergence half-angle of about 3°, and a mild bottom slope of about 0.003. At this point the channel expands rapidly, reaching a width of approximately 3000' in a distance of about 1500'. The reservoir width is relatively constant over the next 4 miles to the dam, varying between 2000 and 4000 ft. The depth continues to increase slowly, reaching a maximum depth of approximately 55 – 60 ft in front of the dam.

In this study, the water level was assumed to remain constant at the normal operating level of 4132 ft. (PG&E datum). In fact, in the years 2000/2001 it varied between 4124 and 4132.5ft.

Figure 1 shows the bathymetry for the upstream third of the reservoir.

5.0 Location of the "Plunge" Point

Several researchers have studied the phenomenon of plunging density currents at reservoir entrances and have developed methods for predicting the onset of underflow (Hebbert, et.al., 1979; Akiyama and Stefan, 1984; Akiyama and Stefan, 1987, Stefan and Johnson, 1989) These researchers noted that the location of the plunge point is dependent on the density difference between inflow and ambient water, inflow velocity, reservoir bottom slope, and divergence angle of reservoir walls. Methods were developed for predicting plunge locations for some simplified scenarios.

Fleenor (2002) developed an algorithm to calculate the plunge location combining the efforts of the previously cited researchers and several others to incorporate the effects of irregular channels, including steep and mild bottom slopes, and severe and mild sidewall divergence. Fleenor's algorithm was used to determine the predicte plunge locations for the work reported herein. Details of Fleenor's algorithm are given in Attachment #1, in the section "Plunge Location".

The location is determined as a function of the densitmetric Froude No. F_o, the divergence half-angle, and the bottom slope. The Froude No., F_o is defined as

$$F_o = \frac{Q_0}{\sqrt{g'b^2h^3}}$$

where

$$g' = \left(\frac{\rho_i - \rho_a}{\rho_a}\right) \cdot g$$

and Q_0 = inflow (ft^3/s)

□$_a$ = density of ambient receiving water

□$_i$ = density of colder inflow

g = gravitational constant (ft/s^2)

b = channel width (ft)

h = channel depth (ft)

A key parameter in estimating the plunge point is the mixing of the inflow with the receiving water in the reservoir. Fleenor gives this dilution parameter as a function of the densimetric Froude Number, the divergence half-angle (□) and the bottom Slope S. For small □□□°and a mild slope (less than 0.0067), dilution is relatively small. As noted in section 4.0, the upstream half-mile of the reservoir fits this description with a □ of 3° and a bottom slope of 0.0030. Hence low mixing is expected for a plunge point in this region. Below this region, i.e. cross-section 5A in Figure 1, the divergence angle (and the dilution) increase rapidly.

Fleenor's algorithm calculates the depth at the plunge point for both mild and steep bottom slopes (see Attachment #1). He divides the channel into a series of segments (see Figure 1) and proceeds from upstream to downstream calculating the plunge depth for each segment. If the calculated depth at the plunge point is less thar the depth at the downstream end of the segment, the plunge point location occurs in the segment, and the specific location is determined by interpolation. If the plunge depth is greater than the downstream depth the algorithm moves to the next location downstream. More detail is given in Attachment #1.

Plunge point locations were calculated for the three flows at which the Butt Valley Powerhouse typically operate (800, 1600 and 2400 cfs). Temperature differences between the inflow and receiving water of 0.1°to 14°C were considered, plus a range of receiving water temperatures of 16° to 22 °C, which are typical of Butt Valley reservoir for late spring through late summer. Figure 2 shows the results for a flow of 1600 cfs and shows that the plunge point occurs in a very narrow range near cross-section # 6 (about 0.6 miles from the inflow point) unti temperature differences are less than 1-2°C. Similar figures for 800 and 2400 cfs are given in Attachment #1. Fleenor's approach shows that even for a flow of 2400 cfs, and low temperature differences (< 1° C) the plunge point occurs in the first 6000 ft.

A second approach (Stefan and Johnson, 1989) for diverging channels was used to check Fleenor. This approach gave similar results at temperature differences of 2° C, and smaller distances (i.e. plunge point locations further upstream) for ΔT>2° C (i.e. Fleenor's approach is conservative). However, for small ΔT (< 1° C) Stefan and

Johnson indicate larger distances than Fleenor, and for Q > 1600 cfs and $\Delta T < 0.5°$ C, there is no plunge point. Fortunately, these cases (high flow, low ΔT) are of little interest, since even if there is extensive mixing, the increase in temperature of the flow through the reservoir will be small.

The bottom line is that for temperature differences above 1° C, flows as high as 2400 cfs will plunge in the upstream 10-15% of the reservoir, and hence there is no upstream barrier to the development of a bottom current in the range of flows of interest.

As noted above ,the calculation of inflow mixing (dilution) is an intermediate step in estimating the plunge location.Typical values were in the 20% to 50% range.Surprisingly there was not a strong correlation with flow rate or density difference,which implies that Fleenor's algorithm,based on dividing the reservoir into discrete segments, is still a rather crude tool,and that further refinement is necessary.

6.0 Underflow Behavior

There is a lot of field data that indicate that once a density flow is established on a mild slope, it can travel for large distances (tens of miles) with virtually no entrainment. Since the distance through the reservoir is relatively short (about 4 miles from the plunge point to the dam), the bottom slope remains mild throughout (<0.005) and there are no abrupt changes in cross-section, it is reasonable to assume that the entrainment between the "plunge" point and the Caribou I and II intakes is negligible.

7.0 Selective Withdrawal

7.1 Existing Intakes

When the cold bottom current arrive at the dam, the major issue is the ability of the Caribou I and I intakes to selectively withdraw the flow without entrainment the warmer upper waters. There has been a lot of work done since the late 50's on selective withdrawal, but even so the range of parameters is so large, e.g. shape of density profile, and size, location an configuration of the intake, that obtaining an accurate estimate of the critical flow for a specific intake based on published results is very difficult. The critical flow is defined here as the maximum flow which can be withdrawn without inducing flow in the upper warm water layer.

The approach taken here is to use the relatively recent work of Goldring (1989) to obtain an estimate of the critical flow for a simple case, withdrawal through an outlet in the bottom of the reservoir in the presence of a two layer flow with a relatively sharp interface. The approach has the advantage of not requiring the dimensions of the intake, but simply the height above the intake of the interface between the layers. The expression developed by Goldring is very similar to equations given in Streeter (1961) for similar configurations. Figure 3 shows the thickness of the cold layer required for a range of withdrawal rates, for temperature differences of 0.5 – 4.0°C, and an ambient temperature of 18°C. Details of the approach and results for other ambient temperatures are given in Attachment #1.

For a ΔT of 4.0°C, the bottom layer thickness would need to be approximately 20ft. for a flow of 800cfs, and greater than 26ft. for 1600cfs. For 2400cfs, the thickness would be about 30ft. These values need to be interpreted in terms of the temperature profile in Figure 4. The profile shown is for a relatively strong stratification case typical of the early summer, and is a reasonable approximation of a two-layer system.

For Caribou I (with the top of the tunnel opening at ~4077ft), selective withdrawal at 800cfs is possible, but marginal, with the top of the withdrawal layer reaching ~4097ft. However, at 1600cfs, withdrawal from above El 4103ft. is likely and warmer water will probably be withdrawn. For 2400cfs, the warm surface waters will clearly be withdrawn. Laboratory data (Jirka 1979) clearly show that the change from selective withdrawal to uniform withdrawal occurs very quickly as soon as the critical flow value is exceeded.

For Caribou II, with the invert of the approach channel at 4101ft, the picture is much bleaker, and even an 800cfs withdrawal (top of layer at about 4120ft.) will result in uniform (non-selective) withdrawal.

The above analysis shows that even for favorable conditions, the existing Caribou I intake will selectively withdraw only to about 800cfs (at best), while the Caribou II intake will withdraw uniformly (non-selectively) virtually all the time.

7.2 Skimmer Wall Intake

A skimmer wall is effectively a long slot close to the reservoir bottom which maximizes selective withdrawal by keeping velocities through the slot as low as possible (typically 0.1 – 0.25fps). These type of "walls" have been used since the 50's to increase the efficiency of power plants by reducing intake water temperatures. The relationship between the thickness of the cold layer and the critical flow is well known (see Attachment #1). A typical rule-of-thumb is to keep the skimmer wall opening height to no more than two-thirds the thickness of the cold layer. Figure 5 shows a potential location for a skimmer wall, approximately 1000ft. upstream from the dam, and upstream from both the Caribou I and II intakes. The minimum bed elevation in this area is approximately 4075ft. (PG&E datum). The effective length of the skimmer wall beneath which flow would pass was adjusted to reflect the available width allowed by reservoir bathymetry, assuming that the skimmer wall was placed so that the height of the opening was two thirds of the cold layer depth. The values for skimmer wall length versus assumed cold layer depth are shown in the following table.

Table 1 – Skimmer Wall Dimensions

Assumed Cold Layer Depth (ft)	Skimmer Wall Underflow Depth (ft)	Available Flow Length (ft)
6	4	400
9	6	600
12	8	800
15	10	880
18	12	1000

Figure 6 shows the relationship between cold layer depth and maximum flow at 16°C ambient temperature and temperature differentials of 6°, 4°, 2° and 1°C. The actual temperature differences used to determine g' was reduced by 20 percent to reflect the approximate level of mixing predicted by Fleenor's algorithm.

For a ΔT of 2°C and 4°C respectively, the cold layer thickness for 1600cfs is 12ft and 11ft respectively and for 2400cfs it is 15ft and 13ft respectively. The most extreme case 2400cfs, $\Delta T = 2$°C would selectively withdraw as long as the interface was above El 4090ft (PG&E datum). The temperature profile in Figure 4, and other profiles in Ref. 8, show that when significant temperature stratification exists in Butt Valley Reservoir, selective withdrawal using a skimmer wall should be possible, although it will require a major structure creating a slot approximately 900ft. long and 10ft. high in front of the existing intakes.

8.0 Discussions of Reservoir Analysis

The above analysis has been based on a number of assumptions that could affect its validity.

8.1 Water Level Control

It has been assumed that the water level will be maintained close to the El. 4132ft normal operating level by coordinating the Prattville and Caribou I and II flows. If the water level in the reservoir were to drop significantly it will have several effects. Firstly, the cold Lake Almanor releases will move further downstream into Butt Valley Reservoir, becoming exposed to more solar radiation, and potentially to higher mixing. Secondly, the interface near the Caribou intakes will drop, possibly causing uniform withdrawal, and both increasing the Caribou release temperature, and depleting the warm water layer. In the worst case situation, the warm water layer would disappear, and could take considerable time to re-establish.

8.2 Steady-State vs Transient Operation

The above analyses assume steady state operation, and the transient conditions occurring during normal plant cycling could disrupt the stratification, particularly downstream from the Butt Valley Powerhouse. This may require Butt Valley Powerhouse to be ramped up more slowly than normal. I am unaware of any data showing this effect, and it may not be a significant problem. However, it would need to be studied.

8.3 Density Profile

The selective withdrawal analysis was based on observed profiles in early summer, when the stratification is stronger than later in the summer. The assumption here is that careful management of Butt Valley Reservoir will strengthen the stratification, and that a pronounced level of stratification can be maintained throughout the summer.

8.4 Skimmer Wall

The skimmer wall as shown in Figure 5 is a major structure, and this option was examined because of the simplicity of the analysis. Other configurations, such a floating curtains, will require careful consideration.

8.5 Inflow Mixing

Inflow mixing was calculated for a range of inflow rates, temperature differences and ambient temperatures, as part of the determination of "plunge" location. Typical values are in the 20% -50% range, based on Fleenor's algorithm. Even the low value of 20% results in an almost 1°C increase for an inflow temperature difference of 4°C (ambient temperature minus inflow temperature). The impact of inflow mixing on the stratification in the reservoir,and the stability of the warm water wedge,could be significant, and has been assessed in two ways. First,the "depletion time " of the warm water wedge was estimated,based on a constant inflow of 1600cfs,and found to be 16 days for 50% mixing and about 40 days for 20% mixing.A second approach examined the drop in the temperature of the surface layer necessary for surface heat transfer to replace the heat removed by inflow mixing.For typical summer conditions at Butt Valley,the surface temperature will need to drop about 0.8 degrees C for 20% mixing and 2 degrees C for 50% mixing.Based on the above it appears that 20% mixing will not destabilize the reservoir,but that 50% mixing will be marginal.An examination of the change in stratification in Butt Valley in June/July ,2001 indicates that the above approaches are reasonable,and that the present reservoir configuration (both inflow and withdrawal) is subject to destratification by Butt Valley powerhouse inflows and Caribou I and II withdrawals during the summer.

It may be possible to reduce the 50% mixing value by using dikes to reduce the divergence angle at the head of the reservoir, and the cost effectiveness of such a system may need to be investigated later.

9.0 Next Step

At this point we have merely shown that a cold underflow through Butt Valley Reservoir is possible. The reduction in the temperature increase through Butt Valley in mid-to-late summer must still be assessed. A modified form of the MITEMP model can be used to perform this assessment. The modification will include using Freenor's approach to assess the inflow mixing, plus adding a skimmer wall selective withdrawal algorithm to the model. The model would then be run for Butt Valley for the existing Caribou I and II intakes, and for a selective withdrawal intake, for both normal and dry years Lake Almanor releases and meteorology. The effectiveness of the cold underflow strategy could be assessed by comparing the mid-to-late summer Caribou release temperatures for the existing and selective withdrawal conditions. The impact of inflow mixing will also need to be assessed, and the possibility of modifying the inflow divergence angle ,and hence reducing the mixing , may need to be addressed.

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7. Streeter, V.L 1961 "Handbook of Fluid Mechanics, Ch26, McGraw Hill 1961

8. Bechtel Corporation 2002. MITEMP3 Model Calibration and Validation in 2000-2001 for Lake Almanor and Butt Valley Reservoir, Ca, Prepared for PG&E Corporation, March 2002

Figure 1
Plunge Point Calculation
Cross-section Definition

Approximately 1000'

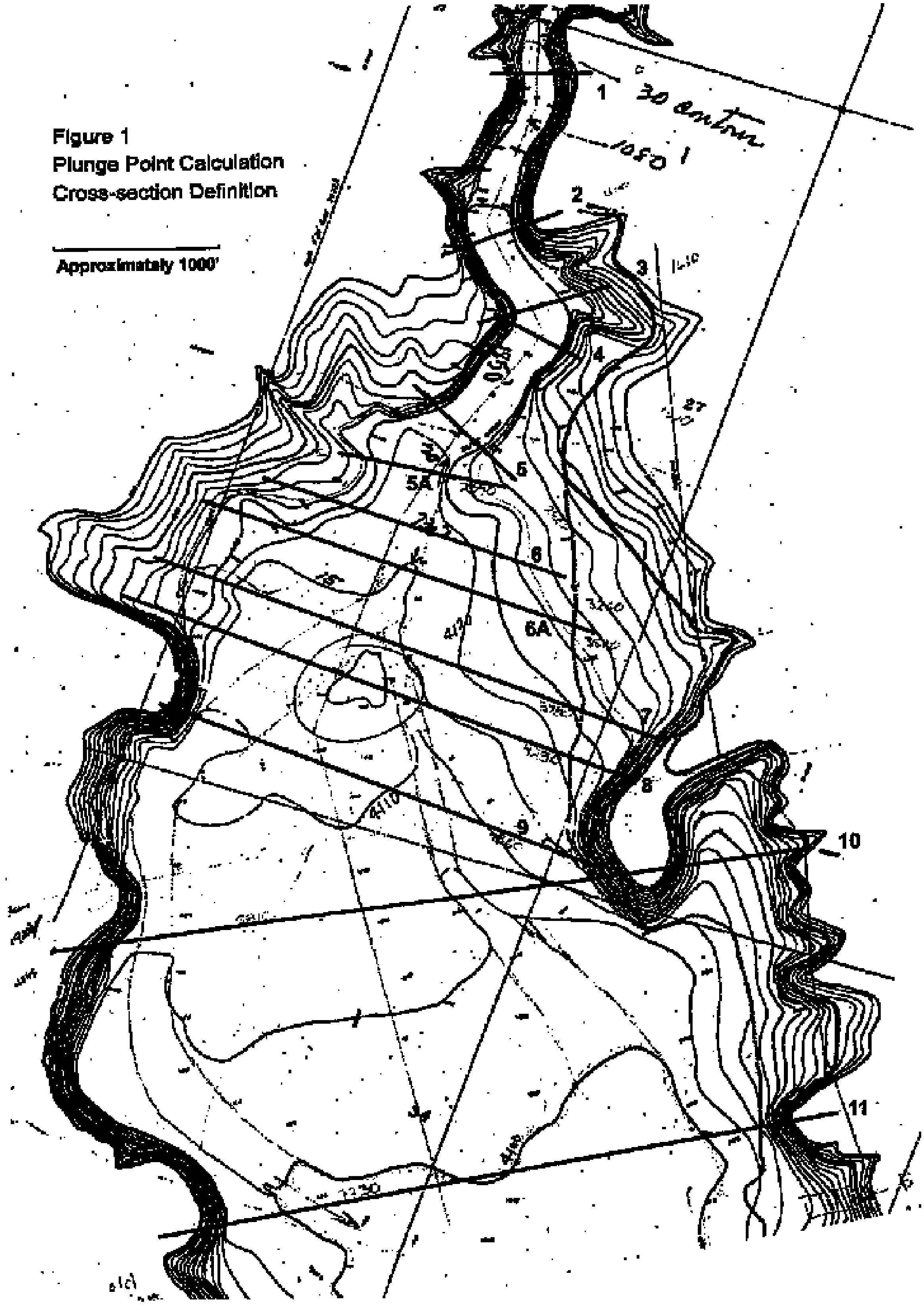


Figure 2
Calculated Plunge Distance
vs Temperature Difference
for Q = 1,600 cfs

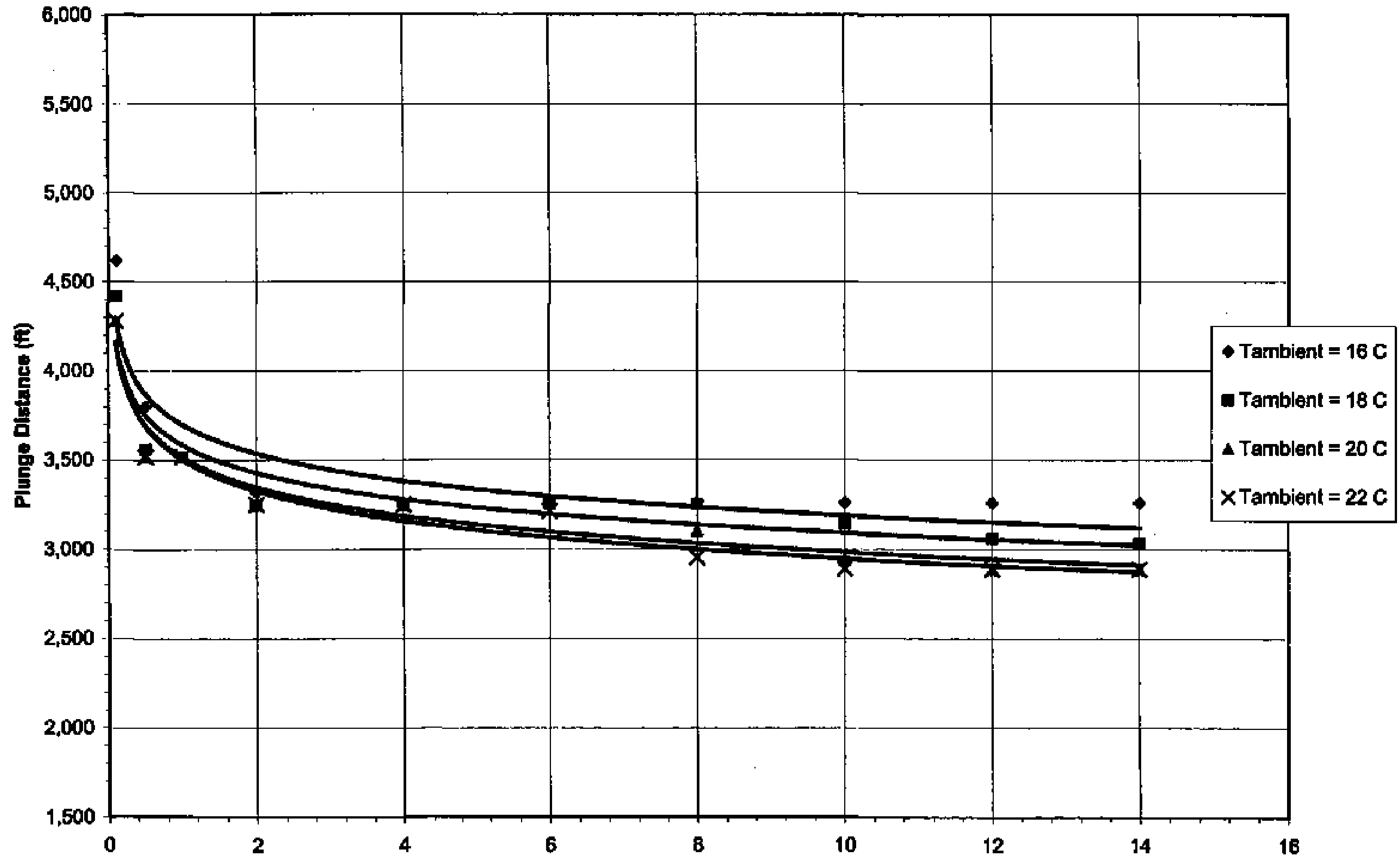


Figure 3
Cold Layer Depth vs
Critical Withdrawal Rate
$T_{ambient}$ = 18 C

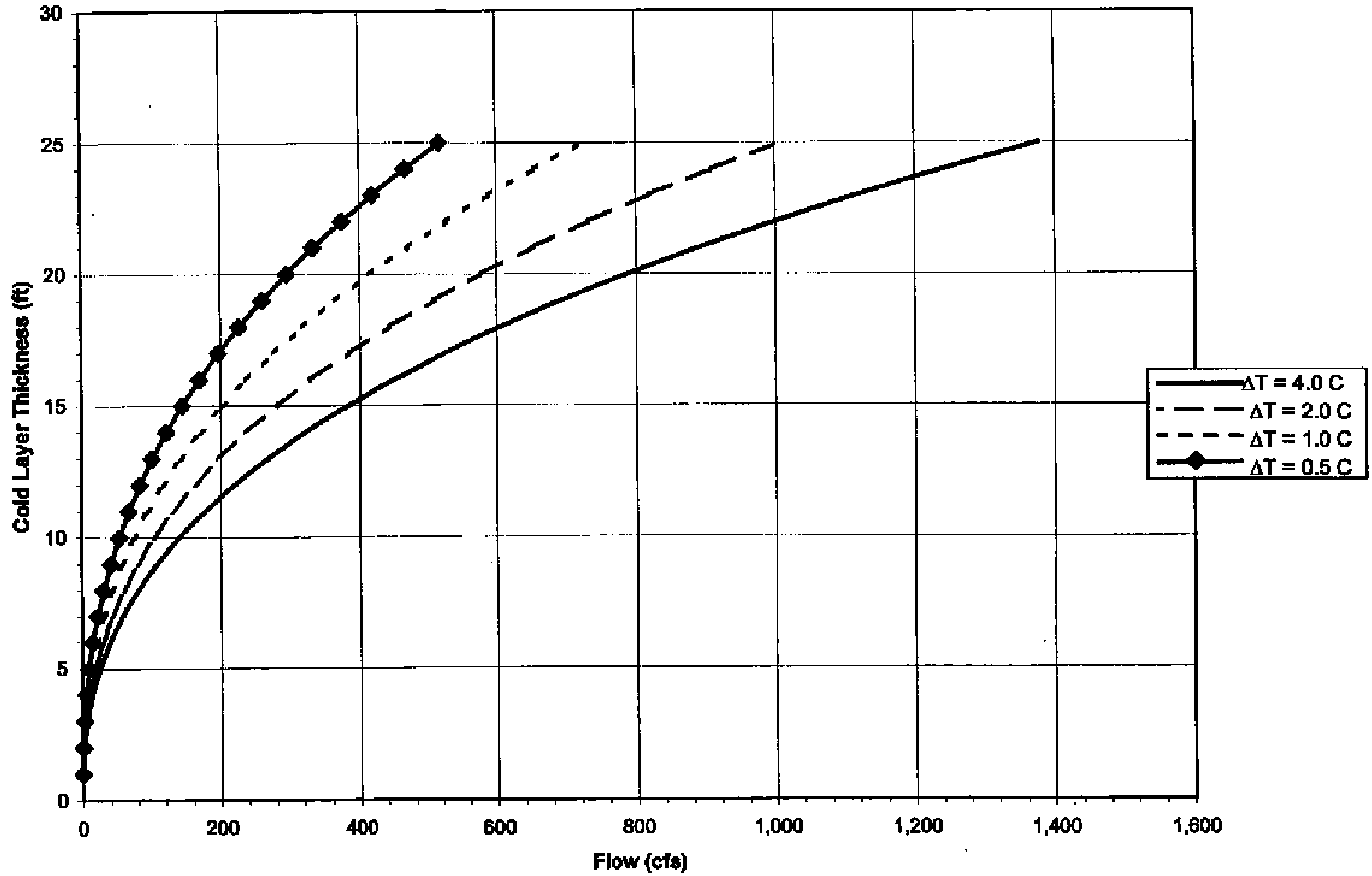
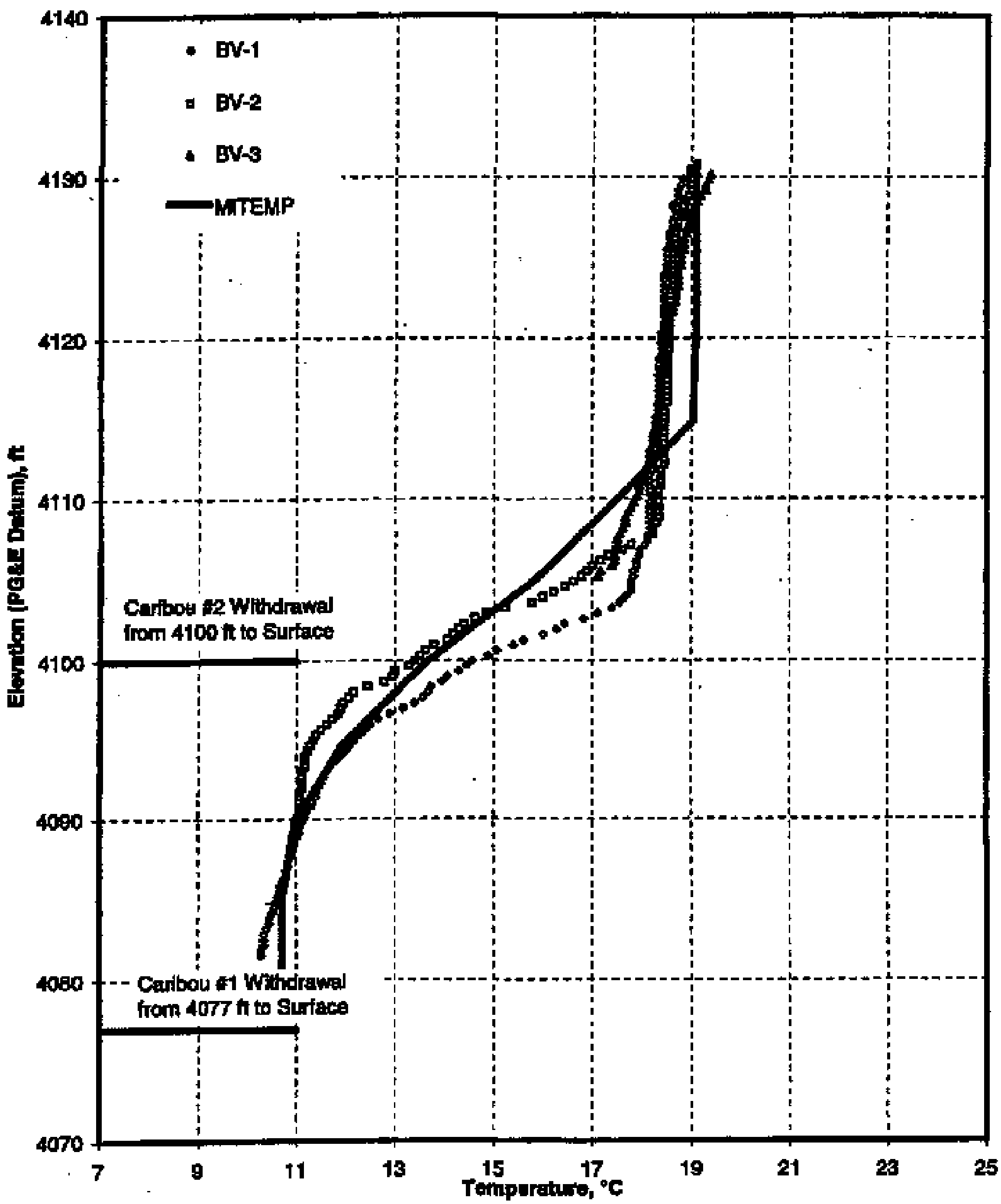


Figure 4 Butt Valley Reservoir Temperature Profiles June 6, 2001



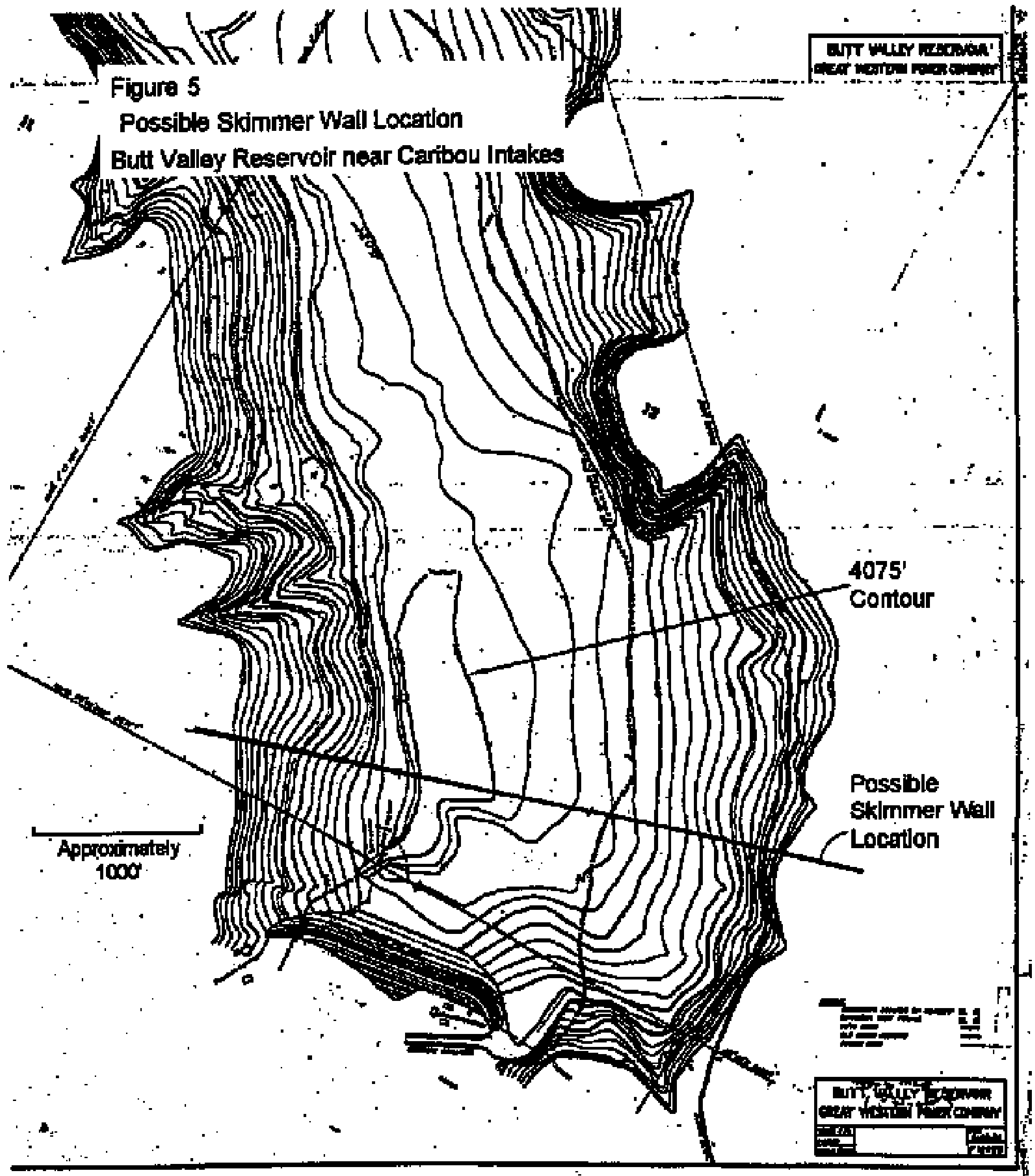
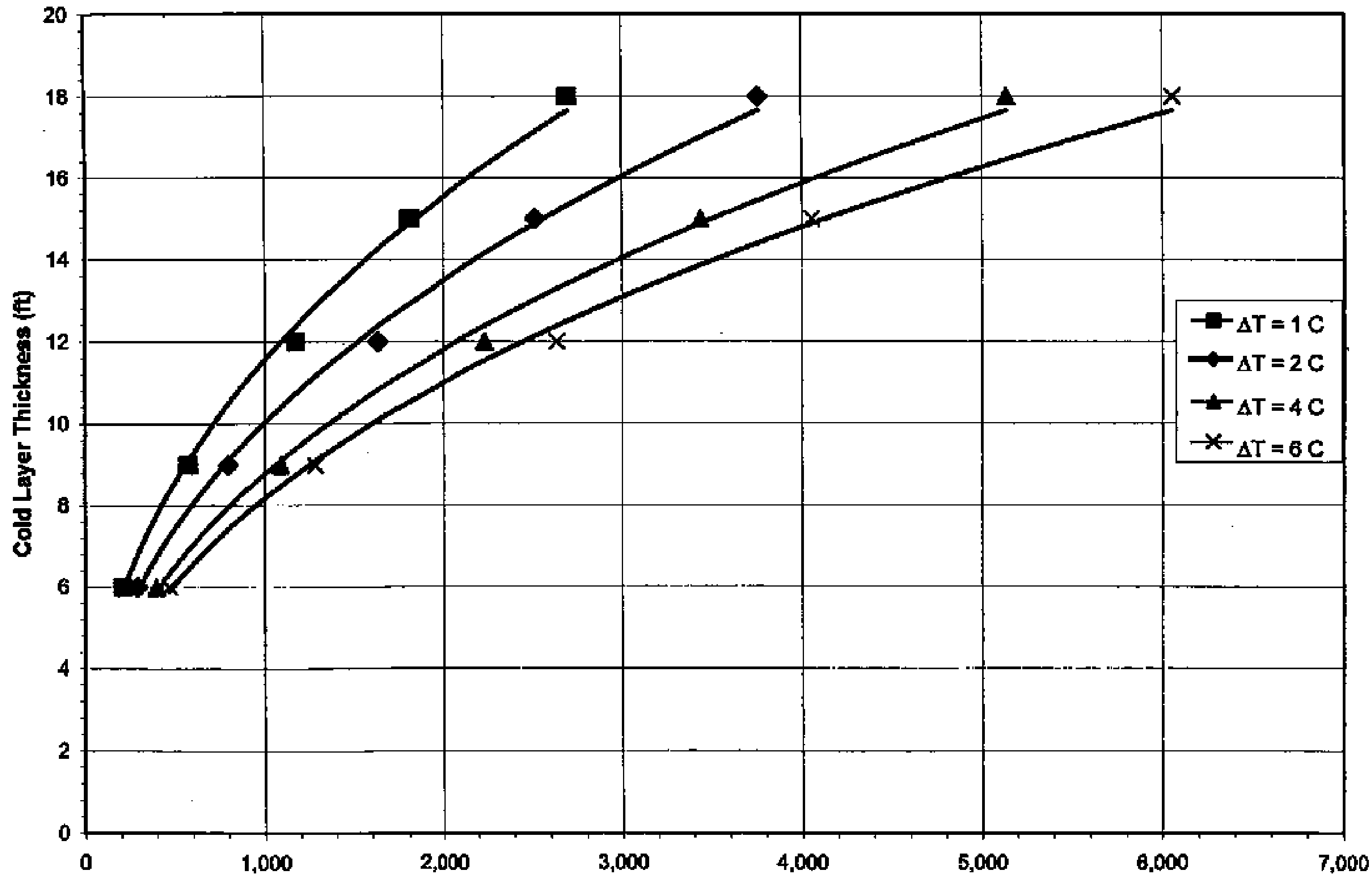


Figure 5
Possible Skimmer Wall Location
Butt Valley Reservoir near Caribou Intakes
4075'
Contour
Possible
Skimmer Wall
Location
Approximately
1000'

Figure 6
Cold Layer Depth vs
Critical Flow Through Skimmer Wall
for Selective Withdrawal at 16 C Ambient Temperature



Interoffice Memorandum

ATTACHMENT 1

To	Pat Ryan	*File No.*	BC-3405
Subject	Butt Valley Reservoir Density Current Evaluation	*Date*	July 26, 2002
		From	Peter Garvin
		Of	Geotechnical & Hydraulic Engineering Services
Copies to	Jack O'Sullivan	*At*	Houston *Ext.* 713-235-4188

This memorandum summarizes a review of the seasonally stratified flow conditions in the Butt Valley Reservoir, which is located near Chester, California. The purpose of the review was to determine if it is conceptually feasible to operate the reservoir in conjunction with releases from the Lake Almanor reservoir in such a manner that stratified flow conditions could be established and maintained, and cold water could be selectively withdrawn from the cold layer when generating power during the summer months. The objectives of this analysis were to:

- Determine if normal inflows, which are released from Lake Almanor, could be expected to plunge near the reservoir entrance to establish the initial density current
- Determine maximum flows at which the existing Caribou Intake Tunnels could operate to withdraw flow selectively from the colder layer for release from the Butt Valley Reservoir
- Evaluate the effectiveness of a skimmer wall for increasing the rate of selective withdrawal

Plunge Location

Methods

Several researchers have studied the phenomenon of plunging density currents at reservoir entrances and have developed methods for predicting the onset of underflow (Hebbert, et. al., 1979; Akiyama and Stefan, 1984; Akiyama and Stefan, 1987; Stefan and Johnson, 1989). These researchers noted that the location of the plunge point is dependent on the density difference between inflow and ambient water, inflow velocity, reservoir bottom slope, and divergence angle of reservoir walls. Methods were developed for predicting plunge locations for some simplified scenarios.

Fleenor (2002) developed an algorithm to calculate the plunge location combining the efforts of the previously cited researchers and several others to incorporate the effects of irregular channels, including steep and mild bottom slopes and severe and mild sidewall divergence. Fleenor's algorithm was used to determine the predicted plunge locations for the work reported herein.

In executing the algorithm, densimetric Froude number, horizontal and vertical interfacial mixing, and other hydrodynamic parameters such as friction and density profile shape are considered. The densimetric Froude number at the plunge point is:

$$F_0 = \frac{Q_0}{\sqrt{g' b^2 h^3}}$$

where

$$g' = \left(\frac{\rho_i - \rho_a}{\rho_a} \right) \cdot g$$

and

	Q_0	=	inflow (ft^3/s)
	ρ_a	=	density of ambient water
	ρ_i	=	density of colder inflow
	g	=	gravitational constant (ft/s^2)
	b	=	channel width (ft)
	h	=	channel depth (ft)

The total dilution due to inflow mixing is:

$$\Gamma = \frac{Q_0 + \Delta Q}{Q_0}$$

The inflow due to mixing is dependent on the angle of divergence of the inflow channel sidewalls. If the walls diverge at less than seven degrees, then horizontal mixing is minimized and the dilution is primarily due to vertical mixing at the plunge. The relationship for dilution when divergence half-angles are less than seven degrees is:

$$\Gamma = 0.456 \cdot F_0 + 0.020 \cdot \delta - 0.012 \cdot \Theta + 1$$

where

	δ	=	divergence half-angle (°)
	Θ	=	channel bottom slope (°)

When divergence half-angles are greater than seven degrees, inflow due to mixing is determined by the relationship:

$$\Gamma = 0.223 \cdot F_0 + 0.008 \cdot \delta + 1$$

Fleenor's algorithm also considers whether the channel bottom slope is steep or mild, with a steep slope being defined as greater than 0.0067. If the slope is mild, then the plunge is located where the channel depth is described by:

$$h_{ms} = K_m \cdot \left(\frac{f_t}{S_2 \cdot S}\right)^{1/3} \cdot \left(\frac{q^2}{g'}\right)^{1/3} \cdot \Gamma$$

where

$$K_m = \frac{1}{2\Gamma} \cdot \left[\frac{1+\Gamma}{2} + \frac{S_2 \cdot S}{f_t} + \sqrt{\left(\frac{1+\Gamma}{2} + \frac{S_2 \cdot S}{f_t}\right)^2 - \frac{4}{\Gamma} \cdot \frac{S_2 \cdot S}{f_t}}\right]$$

and

	q	=	flow per unit channel width (ft^2/s)
	S_2	=	a number describing the shape of the density profile, usually 0.75
	S	=	bed slope (V:H)
	f_t	=	total of bed and inter-layer friction, usually 0.020

If the slope is steep, then the plunge is located where the channel depth is described by:

$$h_{ps} = K_s \cdot \left(\frac{1}{S_1}\right)^{1/3} \cdot \left(\frac{q^2}{g'}\right)^{1/3} \cdot \Gamma$$

where

$$K_s = \frac{1}{2 \cdot \Gamma}\left[\frac{1+\Gamma}{2} + S_1 + \sqrt{\left(\frac{1+\Gamma}{2} + S_1\right)^2 - \frac{4 \cdot S_1}{\Gamma}}\right]$$

and S_1 = a number describing the shape of the density profile, usually 0.25

The algorithm is applied to the discrete channel segments defined by the user, assuming linear expansion of segments between their upstream and downstream cross-section. Beginning with the upstream-most segment, the procedure uses the following steps:

1. Determine the densimetric Froude number, segment divergence, and segment bottom slope
2. Depending on whether the divergence is greater than or less than seven degrees, select the appropriate relationship to determine the mixing ratio
3. Depending on whether the channel bottom slope is steep or mild, select the appropriate relationships to determine plunge depth
4. If calculated plunge depth is less than the depth at the segment's downstream cross-section, plunging is considered to have occurred within the segment at a location estimated by linear interpolation. If calculated plunge depth is greater than the depth at the segment's downstream cross-section, advance downstream to the next segment and repeat steps 1 through 3, using the upstream cross-section of the new segment to determine the densimetric Froude number. For each new segment, the Froude number and h_{su} are determined using the initial inflow, not the diluted inflow that was calculated for the previous segment.

Analysis and Results

The attached Figure 1 shows the cross-section locations that were used to define the inflow channel segments for the Butt Valley Reservoir. The channel slope is generally mild. Divergence is less then seven degrees for segments upstream from Cross-section 5.

The plunge distances were calculated for the three flows at which the Butt Valley power house typically operates, which are 800, 1600, and 2400 ft^3/s. Ambient temperatures between 16 and 22 C, and inflow temperature differences of 0.1 to 14 C were considered. Results are shown on Figures 2 through 4.

In several instances during the execution of the calculation procedure, it was found that the algorithm results indicated that the plunge point was downstream from the current section, but when moving downstream to the next section to apply the algorithm, it was found that calculation results indicated that the plunge point was upstream from the previous section. In this case, the location of the cross-section between the two sections was taken as the plunge point.

In general, when inflows are 1,600 or 2,400 ft^3/s, the cold water current extends past the defined influent channel into the reservoir before plunging. Once the cold water reaches the wider reservoir, at a distance of about 2,560 feet, the calculated plunge point occurs fairly quickly for temperature differentials in excess of two degrees. At temperature differentials less than two degrees, the calculated plunge point moves downstream rapidly.

When the inflow is 800 ft^3/s, results show that for higher temperature differentials, the cold water may even plunge in the narrow channel before it reaches the wider reservoir.

In reviewing the algorithm procedure, it was noted that the mixing in upstream sections was ignored if the flow did not plunge in that section, and the original inflow was applied to the next section downstream. It was also noted that the densimetric Froude number was determined by averaging the inflow velocity over the entire cross-section area. In actuality, it would be expected that when flows separate from a boundary as occurs when the boundary diverges at greater than seven degrees, the flow would be expected to be concentrated in a smaller area of higher velocity.

Stefan and Johnson (1989) present a relationship for determining plunge location with strongly diverging boundaries of the form:

$$\frac{x_p}{B_0} = 0.52F_0^{\ 4}$$

where x_P = downstream distance to plunge point

B_0 = channel width at upstream boundary

F_0 = densimetric Froude number at upstream boundary

Comparing results from Stefan and Johnson (1989) with Fleenor's algorithm shows some disagreement between the two methods, with results being comparable at temperature differentials of two degrees. At larger differentials, Fleenor's method indicates that the plunge occurs further downstream, which is conservative for the purposes of this analysis. At smaller differentials, less than one degree, Fleenor's method shows that the plunge occurs much earlier than Stefan and Johnson. Stefan and Johnson indicate that at temperature differentials less than 0.5 degrees and flows greater than 1,600 ft3/s the inflow will not plunge at all, where Fleenor's method suggests that it will plunge after approximately 5,000 to 6,000 feet.

Selective Withdrawal at Reservoir Outflow

Goldring (1989) provides a review of hydraulic performance of capped intakes in the presence of cross flow. In developing the theory for that discussion, he presents the relationship for predicting the critical depth for selective withdrawal from the cold layer through a simple vertical uncapped intake located at the bed level. Goldring's equation for relating depth to rate of withdrawal is:

$$y = K_1\left(\frac{Q}{\sqrt{g'}}\right)^{2/5}$$

where y = depth of cold water layer above the bed

Q = maximum discharge for selective withdraw

K_1 = a constant, shown to be 0.64

Figures 5 through 7 show the relationship between depth and critical withdrawal rate for ambient temperature values of 16, 18, and 20 C, and for temperature differentials of 4, 2, 1, and 0.5 C. These figures show that the critical flow for selective withdrawal is generally below the desired range of operation for the Caribou powerhouse.

Skimmer Wall Performance

An equation used to describe the relationship between cold layer depth and critical flow for a skimmer wall located in a narrow prismatic channel is:

$$q_c = \sqrt{g'\left(\frac{2}{3}y\right)^3}$$

where q_c = maximum flow per unit width for selective withdrawal from the cold layer

Figure 8 shows the skimmer wall location considered for the assessment. The minimum bed elevation at this location is approximately 4075 ft (PG&E Datum). The effective length of the skimmer wall beneath which flow would pass was adjusted to reflect the available width allowed by reservoir bathymetry assuming that the skimmer wall was placed so that the height of the opening was two thirds of the cold layer depth. The values for skimmer wall length versus assumed cold layer depth are shown in the following table.

Assumed Cold Layer Depth (ft)	Skimmer Wall Underflow Depth (ft)	Available Flow Length (ft)
6	4	400
9	6	600
12	8	800
15	10	880
18	12	1000

Figure 9 shows the relationship between cold layer depth and maximum flow at 16 C ambient temperature and temperature differentials of 4, 2, 1, and 0.5 C. The actual temperature difference used to determine *g'* was reduced by 20 percent to reflect the approximate level of mixing predicted by Fleenor's algorithm.

The results show that under certain conditions a skimmer wall could prove an effective measure to achieve selective withdrawal for total outflow rates in excess of 2,000 ft^3/s.

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Enclosures Figures 1 through 9