

YUBA COUNTY WATER AGENCY
POWER PURCHASE CONTRACT

between

YUBA COUNTY WATER AGENCY

and

PACIFIC GAS AND ELECTRIC COMPANY

Dated May 13, 1966

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YUBA COUNTY WATER AGENCY POWER PURCHASE CONTRACT

THIS CONTRACT made this 13th day of May, 1966, by and between PACIFIC GAS AND ELECTRIC COMPANY, hereinafter referred to as "Pacific"; and YUBA COUNTY WATER AGENCY, hereinafter referred to as "Yuba",

WITNESSETH THAT:

1. This contract includes Appendix A, Definitions; Appendix B, Requirements and General Specifications for Power Production Features of Yuba River Development; Appendix C, Operation and Maintenance Requirements; Appendix D, Storage Criteria; and Appendix E, Exhibits. For clearness, words or phrases defined in Appendix A, other than proper names, are italicized in the text.

2. Yuba shall construct at its own risk and expense, and shall be the sole owner (under Federal Power Commission License) of, the *project*. Yuba shall design, construct, purchase and install all structures, equipment and facilities to meet the requirements and specifications of Appendix B. The *project* shall be substantially equal in quality and design of materials, and in equipment and facilities provided, to those which Pacific has installed in its hydroelectric projects during the past 10 years on the Feather, Stanislaus, Kings, McCloud and Pit rivers. Pacific shall make available to Yuba for inspection, at Pacific's San Francisco office, plans and specifications of said plants of Pacific, and Yuba may inspect any of such plants.

Yuba shall submit to Pacific from time to time, and as soon as possible, the plans and specifications of all portions of the *project*. Pacific shall have the right to inspect all work performed by or for Yuba in constructing elements of the *project*. Neither approval of, nor failure by Pacific to approve, any plans or specifications, or inspection of any work hereunder, shall relieve Yuba of the responsibility of meeting the requirements and general specifications set forth herein and in Appendix B, nor shall Pacific be responsible for strength, details of design, adequacy or capability of any structure, facility or work.

Yuba desires to purchase Pacific's Bullards Bar Project and Colgate Power Project. In order that Yuba may proceed with the construction of the *project*, Yuba and Pacific shall diligently prosecute an application with the Public Utilities Commission of the State of California for authorization for Pacific to sell, convey and assign to Yuba, under terms and conditions to be agreed upon in a separate contract, Bullards Bar Project, portions of Colgate Power Project, and all necessary water rights relating thereto. Thereafter, Yuba shall, prior to *full operation date*, as specified in said separate contract, cease operating, and Pacific shall disconnect electrically, Colgate Power Project.

3. Yuba shall acquire and, to the extent that it can do so with money available from payments made by Pacific pursuant to paragraph 9(b) and from money available in the funds as provided in Part V of Appendix C, maintain ownership of all lands, easements, flowage rights, water rights, Federal and State licenses and permits, and all other rights and privileges necessary for the foregoing purposes and for the operation and maintenance of Yuba's *project* works and facilities in accordance with Appendix C.

4. (a) On and after the *full operation date*, Yuba, to the extent it can do so with money available from payments made by Pacific pursuant to paragraph 9(b) and from money available in the funds provided in Part V of Appendix C, (1) shall operate and maintain the *project*, (2) shall carry third-party bodily injury and property damage liability insurance, and property insurance, on the *project* substantially in accordance with the practice followed by Pacific with respect to its hydroelectric projects under Federal Power Commission License, (3) if required by Pacific, shall carry on the *project* use and occupancy insurance and mechanical breakdown insurance, (4) shall replace structures, facilities and equipment of the *project* whenever they are not capable of reliably or economically performing the service for which they were designed, and (5) shall operate Colgate 60 KV Switchyard and such switching and control facilities as Pacific or its contractors may install from time to time at the power plants of the *project*.

(b) Prior to the *full operation date*, Yuba, in the same manner as provided in paragraph 4(a) and to the extent it can do so with money available in the Early Operation Fund as provided in Appendix C-V, shall operate, maintain, carry insurance on, and make replacements to, the accepted operable portions of the *project*, and, while owned and operated by Yuba, Colgate Power Plant.

5. Pacific shall construct, own, operate and maintain at its own risk and expense transmission lines required to receive the power generated by each power plant of the *project* into Pacific's transmission network. Pacific shall acquire all lands, easements, Federal and State permits and all other rights and privileges necessary to carry out its obligations under this paragraph.

6. Yuba shall schedule the date of first delivery of power from each power plant of the *project* and notify Pacific thereof in writing 24 months in advance of the scheduled date for each such plant, and promptly shall inform Pacific of any changes in such dates. Pacific shall complete transmission lines to and be ready to receive power from each power plant when it is ready

to generate power, or the scheduled date as designated in said notice, whichever date is later.

7. (a) Yuba shall sell and deliver to Pacific during the term of this contract all the electric capacity of and energy generated by the power plants of the *project*, except that required for *project power plant use* and that energy delivered pursuant to Appendix C-2B. In addition, Yuba shall sell and deliver to Pacific all of the electric energy, not required for power plant use, generated by Colgate Power Project, while said project is owned and operated by Yuba. Such energy from Colgate Power Project shall be generated in accordance with schedules to be agreed upon by Yuba and Pacific.

(b) Delivery of power and energy to Pacific shall be at the bus bar of Yuba's power plants, except for such power and energy as Pacific may hereafter request to be delivered to it at generator voltage, in which case the necessary facilities shall be provided by Yuba at Pacific's expense. The term "bus bar" shall for the purpose of this contract be defined as the high tension disconnect switches of each such plant.

(c) Energy deliveries to Pacific under (a) above shall be metered at the low voltage side of the transformers and the meter readings shall be adjusted for losses to the high voltage side of the transformers.

8. Prior to the *full operation date*, Pacific shall pay Yuba each month \$0.0027 per kilowatt-hour for energy delivered during the preceding month to Pacific from Colgate Power Project while said project is owned and operated by Yuba, and from *project power plants*, in excess of energy delivered pursuant to Appendix C-2B.

9. Following the *full operation date* and until termination of this contract, Pacific shall pay Yuba for all power and energy delivered hereunder, (a) at the semiannual rate of \$3,850,000, and, in addition, (b) at the monthly rate of \$25,000.

10. Payments under paragraph 9(a) shall be due and payable each July 15 and January 15 for the semiannual periods ending on the last day of the next succeeding August and February, respectively. The first and last payments shall be prorated according to the ratio of the number of days for which payment is to be made to the number of days in the semiannual period for which payment otherwise would be due. In the event the *full operation date* occurs after July 15 but before September 1, or after January 15 but before March 1, of any year, the payment for the semiannual period in which said date occurs shall be made promptly after confirmation of the *full operation date*. Payments under paragraph 9(b) for each month shall be due and payable on the fifteenth day of the following month. Payments under paragraph 8 shall be due and payable each month within 15 days after receipt of an invoice therefor.

11. (a) Subject to the provisions of paragraphs 16 and 17, Pacific's obligation under paragraph 9 shall not be dependent upon all or any part of the *project* continuing to be capable of operation, nor shall its obligation under paragraph 9 be dependent upon the ability of Pacific to take energy produced by or made available from

the *project*; provided, Yuba shall be responsible for any loss of generation to the extent Yuba is insured under a use and occupancy form of policy and Pacific may reduce its payments under paragraph 9(b) to the extent proceeds from such use and occupancy insurance are deposited into the Operation and Maintenance Fund pursuant to Appendix C-9D(f). This paragraph, however, shall not be deemed to relieve Yuba of any of its obligations under this contract.

(b) Pacific may offset against any amounts due from it to Yuba under this contract any amounts due to Pacific from Yuba by reason of this contract or any breach thereof, except that no offset shall be applied by Pacific against the payments due from it to Yuba under the provisions of paragraph 9(a).

12. Yuba shall defend its lands, easements, and water rights necessary or useful to the operation of the *project*, and shall not voluntarily convey, transfer or in any manner encumber or diminish any of such rights or any Federal and State licenses and permits, or any other rights and privileges necessary or useful to the operation of the *project*, without the written consent of Pacific.

13. (a) Consistent with Yuba's use for *project* purposes, Yuba shall permit all roads, lands, rights of way and road structures owned or controlled by it for *project* purposes to be used by Pacific, without additional cost or expense, for construction, installation, operation and maintenance of any works or facilities of Pacific now in existence or hereafter constructed or installed.

(b) Consistent with Pacific's use for its own purposes, Pacific shall permit use by Yuba of Pacific's roads, road structures, and rights of way without cost or expense for the purpose of constructing, maintaining and operating facilities of the *project*.

(c) Yuba hereby grants Pacific a license to construct, install, operate, maintain, replace and repair, upon properties of the *project*, facilities of Pacific, including but not limited to facilities for transmission, transformation and distribution of electric power and for switching and control, as are necessary and desirable for the purpose of this contract. Said license shall remain in effect during the term of this contract and shall expire coincidentally therewith. Any facilities so installed by Pacific pursuant hereto shall be and remain the property of Pacific, notwithstanding that the same may have been affixed to the premises, and Pacific shall have a reasonable time after it ceases to purchase power from the *project* in which to remove its facilities so installed. In addition, at any time prior to termination of this contract, at Pacific's request Yuba shall grant Pacific, without any additional payment to Yuba, a permanent easement or right of way for constructing, installing, operating, maintaining, replacing and repairing any facilities so constructed or installed or to be constructed or installed.

14. Yuba shall indemnify Pacific, its officers, agents and employees against all loss, damage, expense and liability to third persons for injury to or death of person or injury to property, proximately caused by Yuba's construction, ownership, operation or maintenance of, or by failure of, any of Yuba's works or facilities used in con-

Amended 9/30/69
See "Early Completion" Agreement

nection with the *project*. Yuba shall, on Pacific's request, defend any suit asserting a claim covered by this indemnity. Yuba shall pay any costs that may be incurred by Pacific in enforcing this indemnity.

Pacific shall indemnify Yuba, its officers, agents and employees against all loss, damage, expense and liability to third persons for injury to or death of person or injury to property, proximately caused by Pacific's construction, ownership, operation or maintenance of, or by failure of, any of Pacific's works or facilities used in connection with the *project* or installed pursuant to this contract. Pacific shall, on Yuba's request, defend any suit asserting a claim covered by this indemnity. Pacific shall pay any costs that may be incurred by Yuba in enforcing this indemnity.

15. This contract shall be effective upon due execution by the parties hereto.

16. Yuba intends to finance construction of the *project* by moneys received from the issue and sale of *project bonds* and by use of moneys from Federal and State grants and loans, and Yuba shall proceed diligently with all necessary action to complete such financing; **provided**, that Yuba shall not be required to accept or agree to any conditions or obligations in connection with any such financing which it deems unreasonably burdensome. If Yuba shall not have completed such financing on terms satisfactory to it and awarded *project* construction contracts prior to June 30, 1966, this contract shall thereupon terminate and neither party shall have any further obligation to the other hereunder or be liable to the other by reason of any expenses incurred or obligations undertaken for the performance by it of this contract or for any damages suffered as a result of the termination of this contract.

Upon issuance and sale of the initial issue of *project bonds* (Series A Bonds) and execution of contracts for construction of the *project*, Yuba shall furnish Pacific with a certificate to that effect. Such certificate shall be binding and conclusive upon Yuba and thereafter there shall be no termination of Yuba's obligations under this contract by reason of any provisions of this paragraph.

17. Except as provided in paragraph 16, this contract shall remain in effect so long as Yuba holds a license under the Federal Power Act and other necessary rights for the *project* permitting full performance by it of this contract, but not beyond April 30, 2016. Termination of this contract as a result of the loss by Yuba of such rights necessary for the full performance of this contract with respect to the *project* shall not affect obligations of either party accrued hereunder prior to such termination, but no further obligation shall accrue subsequent to the date of such termination and final payments as of the date of termination shall be prorated as may be appropriate.

18. No voluntary assignment of this contract, except for security purposes in connection with Yuba's financing of the *project*, shall be effective without the written consent of Pacific.

19. Any dispute that may arise hereunder between Yuba and Pacific shall, upon the written request of either party to the other, be submitted to and decided by arbitra-

tion. Each of the parties shall, within 30 days after giving or receiving such written notice, appoint one arbitrator. If either party fails to appoint an arbitrator within such time, he shall be appointed by a Superior Court of the State of California in accordance with the California Code of Civil Procedure. At any time that either arbitrator concludes they cannot agree, the two arbitrators shall appoint a third arbitrator or, if they cannot agree upon a third arbitrator, he shall be appointed by said Superior Court in accordance with said Code. A decision by two of the arbitrators shall be binding on the parties. If a decision has not been reached within 90 days after appointment of the third arbitrator, on written notice by either party to the other, the arbitrators' authority shall terminate and either party may submit the matter to an appropriate court for decision.

Each party shall bear the expenses and fees of the arbitrator appointed by it and its own expenses involved in the arbitration. The expenses and fees of the third arbitrator and all other expenses of arbitration shall be borne equally by Pacific and Yuba.

20. Pacific shall cooperate with Yuba in the operation of Narrows 1 Power Plant, and in the operation of Colgate Power Project and Bullards Bar Project while Pacific owns said projects, in order to accommodate the construction and completion of the *project*. Yuba shall provide adequate access to Pacific for maintenance and operation of Pacific's facilities. Yuba shall notify Pacific in writing at least 90 days in advance of the date or dates when Yuba believes operation of said power plants will be affected by such construction. Yuba shall compensate Pacific for interference with Pacific's power plants as provided in Appendix C-2B.

21. After *full operation date* Yuba shall not voluntarily exercise its *project* water rights in any way, form or manner which would interfere with the flow available for use under Pacific's water rights associated with its Narrows 1 Power Plant. Prior to *full operation date* the flow available for use through Narrows 1 Power Plant shall be decreased only to the extent necessary for the construction of the intake for Narrows 2 Power Plant and for initial filling of the new Bullards Bar Reservoir, unless otherwise agreed, and Yuba shall compensate Pacific therefor as provided in Appendix C-2B. It is expressly understood this paragraph is not intended to nor shall it create a new or additional water right for the existing Narrows 1 Power Plant, it being the sole purpose of this paragraph to acknowledge and protect Pacific's present water rights associated with the existing Narrows 1 Power Plant.

22. The parties specifically understand and agree that in their negotiations they have taken into full account the provisions of Section 10(f) of the Federal Power Act relating to upstream benefits. They agree that such benefits are of the essence of this agreement and that the considerations forming a part of this agreement take into full account and include those benefits provided by Pacific to Yuba and those benefits provided by Yuba to Pacific, by reason of their respective facilities now existing or to be built pursuant to this contract, or by replacement, im-

provement or enlargement of Pacific's Narrows 1 Power Plant, and that neither party during the term of this contract is entitled to any further consideration with respect to such benefits. In the event that, by reason of any requirement of the Federal Power Commission or other governmental authority having jurisdiction so to do, either party is required to pay the other for benefits provided by reason of such facilities, the amounts to be paid by Pacific to Yuba under this contract shall be increased by the amount of any such benefit payment Pacific receives from Yuba or decreased by the amount of any such benefit payment Yuba receives from Pacific.

23. No replacement, improvement or enlargement of Pacific's Narrows 1 Power Plant shall result in any increase in Pacific's payments under this contract.

24. Except as otherwise provided herein, the payments to be made under this contract do not cover or take into account benefits that may be received by either party hereto as a result of the development of an undeveloped head, or the development of additional storage or water supply, and compensation for any such benefits shall be subject to agreement of the parties.

25. In the event that Marysville Reservoir is constructed, Yuba shall, at its own cost and expense and without using moneys available to it from payments made by Pacific under this contract or from funds established pursuant to Appendix C-V, (1) protect Narrows 2 Power Plant from damage or interference when the water surface in said reservoir exceeds *elevation* 345 measured at Marysville Dam, and (2) compensate Pacific for any loss of capacity or energy resulting at Narrows 2 Power Plant when the normal water surface in said reservoir exceeds *elevation* 340.

IN WITNESS WHEREOF, on the date first above written the parties hereto have subscribed this agreement by their officers thereunto duly authorized.

YUBA COUNTY WATER AGENCY

By KARL A. COZAD
Chairman of the Board of Directors

and

(Seal) By BEN ROSE
Secretary of the Board of Directors

PACIFIC GAS AND ELECTRIC COMPANY

By S. L. SIBLEY
President

and

(Seal) By E. E. MANHARD
Secretary

Appendix A

DEFINITIONS

When used in this contract the following terms shall have the meanings hereinafter set forth:

Facilities to Be Constructed, Provided, and Owned and Operated by Yuba

A-1 PROJECT

A development using the waters of Yuba River and its tributaries, including the new Bullards Bar Reservoir and Dam, Hour House Diversion, Log Cabin Diversion, the new Colgate Power Plant, Narrows 2 Power Plant, Lohman Ridge Tunnel, Camptonville Tunnel, the new Colgate Tunnel, Narrows 2 Tunnel, *project communication facilities*, *project headquarters* and *project roads*, a lake tender's cottage located at the new Bullards Bar Dam, tools, operation and maintenance equipment, including motor vehicles, and all necessary appurtenances for each of the foregoing. Recreational lands or facilities are not parts of the *project*.

A-2 NEW BULLARDS BAR RESERVOIR

The new Bullards Bar Reservoir will be a reservoir resulting from the construction of a concrete arch dam on the North Yuba River located in Section 25, Township 18 North, Range 7 East, M.D.B.&M., and appurtenant facilities.

A-3 HOUR HOUSE DIVERSION

The diversion dam and reservoir to be constructed on the Middle Yuba River, and appurtenant facilities.

A-4 LOG CABIN DIVERSION

The diversion dam and reservoir to be constructed on Oregon Creek, a tributary of the Middle Yuba River, and appurtenant facilities.

A-5 NEW COLGATE POWER PLANT

The new Colgate Power Plant will be a hydroelectric generating facility to be constructed on the North Yuba and the Yuba rivers, and shall include the new Colgate Tunnel, a penstock, a powerhouse and appurtenant facilities. The powerhouse shall be situated in Section 16, Township 17 North, Range 7 East, M.D.B.&M.

A-6 NARROWS 2 POWER PLANT

The Narrows 2 Power Plant, sometimes called "New Narrows Power Plant" by Yuba, will be a hydroelectric generating facility to be constructed on the Yuba River downstream of Englebright Dam, and shall include Narrows 2 Tunnel, a powerhouse and appurtenant facilities. The powerhouse shall be situated in Section 14, Township 16 North, Range 6 East, M.D.B.&M.

A-7 LOHMAN RIDGE TUNNEL

A diversion tunnel to be constructed extending from Hour House Diversion to Log Cabin Diversion, and appurtenant facilities.

A-8 CAMPTONVILLE TUNNEL

A diversion tunnel to be constructed extending from Log Cabin Diversion to the new Bullards Bar Reservoir, and appurtenant facilities.

A-9 NEW COLGATE TUNNEL

A power tunnel to be constructed for conveying water from the new Bullards Bar Reservoir to the penstock of the new Colgate Powerhouse.

A-10 NARROWS 2 TUNNEL

A power tunnel, sometimes called "New Narrows Tunnel" by Yuba, to be constructed for conveying water from Englebright Reservoir to Narrows 2 Powerhouse.

A-11 PROJECT COMMUNICATION FACILITIES

Facilities fully adaptable for application of metering and control channels required for communication among the units of the *project* and for compatible interconnection with Pacific's communication system, including Oregon Peak Repeater Station.

A-12 PROJECT HEADQUARTERS

The office, shop, warehouse and other facilities necessary for personnel and equipment required for the operation and maintenance of the *project*, located at or near the new Colgate Powerhouse.

A-13 PROJECT ROADS

Such roads as are needed to make the units of the *project* readily accessible for proper operation and maintenance.

Other Terms Used

A-14 COLGATE DIVERSION

An existing diversion dam and reservoir, constituting the forebay of Colgate Power Project, situated on the North Yuba River in Section 25, Township 18 North, Range 7 East, M.D.B.&M., and appurtenant facilities.

A-15 COLGATE POWER PROJECT

An existing power project, owned by Pacific on the date of this contract, which includes, with the lands on which they are situated, the following features:

- (a) Colgate Diversion.
- (b) Colgate Tunnel, approximately 28,000 feet long,

which diverts water from the North Yuba River at the Colgate Diversion to the head of Colgate Penstock.

(c) Colgate Penstock, approximately 1,650 feet long, which diverts water from the downstream portal of Colgate Tunnel to the Colgate Powerhouse.

(d) Colgate Powerhouse and camp situated on the Yuba River in Sections 9 and 16, Township 17 North, Range 7 East, M.D.B.&M.

(e) Lake Francis situated on Dobbins Creek in Sections 4 and 5, Township 17 North, Range 7 East, M.D. B.&M.

(f) Browns Valley Ditch, approximately 1.65 miles long, which diverts water from the head of Colgate Penstock to Browns Valley Irrigation District Canal.

(g) Water rights appurtenant to the Colgate Power Project.

A-16 COLGATE 60 KV SWITCHYARD

An existing switchyard of Pacific consisting of a 60 kv double bus structure, oil circuit breakers, air switches and auxiliary equipment, and land upon which it is situated, located adjacent to the powerhouse of Colgate Power Project.

A-17 NARROWS 1 POWER PLANT

An existing power plant of Pacific, constructed, and presently owned and operated under Federal Power Commission License No. 1403.

A-18 BULLARDS BAR PROJECT

An existing dam, reservoir and power plant of Pacific, constructed, and presently owned and operated, under Federal Power Commission License No. 187.

A-19 TABLE MOUNTAIN SUBSTATION

The substation constructed by Pacific in Section 28, Township 20 North, Range 3 East, M.D.B.&M.

A-20 ENGLEBRIGHT RESERVOIR

An existing reservoir north and northeast of Smartville, resulting from a dam on the Yuba River owned by the United States.

A-21 MARYSVILLE RESERVOIR

A proposed reservoir with a normal maximum water surface at *elevation* 340 which would result from construction of a dam on the Yuba River approximately 10 miles downstream of Englebright Reservoir.

A-22 BULLARDS BAR RECREATIONAL FACILITY

Those recreational facilities which will be developed in conjunction with the new Bullards Bar Reservoir, as described in Schedule K of Yuba's construction contract documents numbered 65-674, dated September, 1965.

A-23 YUBA RIVER DEVELOPMENT

That comprehensive development proposed by Yuba, including the *project*, more fully described in Resolution No. 65-27 adopted by Yuba's Board of Directors on November 23, 1965, a copy of which is attached hereto as Exhibit 1 of Appendix E.

A-24 STORAGE

The amount of water held in the new Bullards Bar Reservoir.

A-25 OPERABLE

(a) With respect to a power plant: Having all features and equipment operating simultaneously in such condition and adjustment that the plant is capable of continuous delivery into Pacific's transmission lines at its full capacity for the then existing head of water. The date on which a plant becomes *operable* shall occur only after satisfactory completion of start-up tests. This date must be confirmed by satisfactory completion of efficiency and performance tests, which shall be conducted as soon as possible and shall commence not later than 30 days after the first delivery of power from the plant provided that a suitable head of water exists for such tests, or as soon thereafter as a suitable head of water exists. For the purpose of this paragraph, one of the performance tests, which shall follow the start-up tests, shall include the satisfactory operation of each plant under the conditions of Appendix C-1 for a period of at least 30 days.

(b) With respect to dams and other elements of the *project*, including power plants: Being completed in all features and being capable of maintaining simultaneously such continuity of performance as is necessary for the reliable operation of the *project*; **provided**, if Yuba accepts Narrows 2 Power Plant from the *project* construction contractor after the plant becomes *operable* but prior to *full operation date*, and Pacific concurs in such acceptance, Narrows 2 Power Plant shall at all times thereafter be deemed *operable* for purposes of determining the occurrence of *full operation date*.

A-26 FULL OPERATION DATE

Whichever of the following dates is first to occur after March 31, 1970, when all elements of the *project* are *operable*:

(a) The first date the aggregate *storage* is equal to or greater than the storage specified in Appendix D for the new Bullards Bar Reservoir, or the pro rata *storage* for days other than the end of month as determined by straight-line interpolation; or

(b) June 1, 1971.

A-27 ELEVATION

Height in feet above United States Geological Survey datum.

A-28 PROJECT POWER PLANT USE

Use of electric power supplied solely from the powerhouse main station service transformer bank and solely for operating and maintaining the powerhouses of the *project*, the gates and valves of the *project*, and not for *project headquarters* or for any other purposes.

A-29 PROJECT BONDS

The Series A and Series B revenue bonds issued or proposed to be issued by Yuba to meet its obligations to construct the *project* under this contract, as specified in paragraph 16, and, in addition, any bonds issued in order to refinance the said bonds.

A-30 PROJECT CONSTRUCTION COSTS

Project costs of construction prior to *full operation date*, including cost of acquisition of sites and easements, acquisition of Colgate Power Project and Bullards Bar Project and removal of said facilities and equipment as required by regulatory bodies or by the contract for the purchase of said projects, compensating Pacific for interference with Pacific's power plants as provided in Ap-

pendix C-2B, clearing, engineering, legal and financial services, funded bond interest, application, permit and license fees and costs, inspection, insurance premiums, bond trustees' or fiscal agents' fees, bond paying agent fees, and all other costs incident to planning, investigation, authorization, financing, construction of and equipping the facilities; and, prior to a *project* power plant becoming *operable*, salaries of the *project* manager and *project* operation personnel and other costs of staffing, supplying, operating and maintaining the *project*.

A-31 BROWNS VALLEY IRRIGATION DISTRICT CONTRACTS

Two contracts between Pacific and Browns Valley Irrigation District which are described as follows:

(a) That certain contract dated October 17, 1940, whereby, among other things, Pacific acquired certain District properties and altered its obligations to deliver water to District.

(b) That certain contract dated August 18, 1960, providing for the use of a part of District's water for the production of electric power.

Appendix B

REQUIREMENTS AND GENERAL SPECIFICATIONS FOR POWER PRODUCTION FEATURES OF YUBA RIVER DEVELOPMENT

The following requirements and specifications cover the general conditions for major structures, equipment and facilities for the *project*. In addition to those herein described, the *project* shall contain all structures and facilities needed for the development of water and power and for the operation and maintenance of the *project*. Requirements and specifications herein contained may be changed by mutual consent of the parties.

It is essential to the economic feasibility of the *project* and of this contract that there be a minimum of lost generation caused by breakdowns of equipment and unnecessary delays in accomplishing repairs and replacements. Both in equipment design and in the time necessary in order to obtain delivery of replacements and replacement parts, all equipment must be such that it can be repaired, and that replacements thereto may be made, within a period of time substantially similar to that required for repairs and replacements of similar equipment which Pacific has installed in its hydroelectric projects during the past 10 years on the Feather, Stanislaus, Kings, McCloud and Pit rivers.

All suppliers of equipment (a) shall be experienced in the manufacture of the class, size and rating of the various components specified herein, and (b) shall agree and give written assurances acceptable to Yuba and approved by Pacific, prior to execution of the construction contracts, that they will have available and maintain within the continental United States for the duration of this contract a factory trained engineering service organization, satisfactory to Yuba and Pacific, capable of providing prompt and competent technical assistance in making necessary replacements of, repairs to, or alterations of said equipment. All equipment supplied shall be substantially equal in quality and design of materials to such similar equipment which Pacific has installed in its above-mentioned hydroelectric projects. Yuba shall arrange for inspection, satisfactory to Yuba and Pacific, of all major components of equipment during manufacture, which inspection shall be conducted by personnel fully experienced and qualified in the performance of such inspections, and promptly shall furnish copies of all inspection reports to Pacific.

Suppliers of equipment under this Appendix shall, if requested either by Yuba or by Pacific, prior to execution of the construction contract, agree (1) to furnish and deliver to Yuba, without charge, all parts required to replace defective parts until three years after the *full operation date*, but this requirement shall not enlarge in any other manner the seller's obligations under the usual required equipment warranties, (2) to maintain during the term of this contract within California an adequate supply of spare parts for parts normally requiring replacement, in addition to those required by subsequent paragraphs of this Appendix, (3) to consign such additional spare parts to

Yuba, and (4) to make available to Yuba, at agreed prices, parts so consigned.

The suppliers promptly shall furnish to Yuba, if requested either by Yuba or by Pacific, complete design and shop detail drawings for all equipment and complete equipment warranty data, in four copies, with all notes, titles and instructions in form acceptable to Yuba and Pacific.

All equipment and parts used and all measurements or dimensions shown on the drawings shall conform to standards commonly in use in the United States and acceptable to Yuba and Pacific.

B-1 DAMS AND RESERVOIRS

(a) *General for All Dams and Reservoirs.* All dams and appurtenances shall be designed and constructed according to accepted engineering principles and shall be approved by the appropriate State and Federal agencies. Dams shall include appropriate cutoffs and grout curtains and all features of dams shall be so constructed as to minimize leakage. Crest gates shall provide a minimum of one foot of freeboard above maximum operating level and shall be provided with water seals to prevent leakage. All dams not having crest gates shall have the permanent spillway crest set not less than one foot above the operating water surface. All crest gates shall be power operated.

All gates and valves for discharge of water or for sluicing from reservoirs or diversion ponds shall be power operated unless otherwise provided in this Appendix B. All gates and valves shall be capable of continuous operation and, wherever practicable, shall be equipped for hand as well as power operation. All sluiceways shall be steel lined. In addition to the facilities specifically required by this Appendix, all dams shall be provided with adequate facilities to permit bypass of water for purposes of fish and stream maintenance as prescribed by the Federal Power Commission License for the *project*. Each outlet from a reservoir or diversion pond shall be provided with a trashrack with facilities for its cleaning where applicable.

(b) *New Bullards Bar Dam.* The new Bullards Bar Dam shall be a concrete arch dam situated in Section 25, Township 18 North, Range 7 East, M.D.B.&M. The reservoir shall have an active capacity of not less than 679,000 acre-feet of storage between elevation 1,955 and elevation 1,732, at which latter elevation the storage shall be not less than 251,000 acre-feet. Not more than the top 53 feet of storage shall be subject to spillway gate control.

The spillway crest gates shall be provided with local control and shall be capable of discharging, when all crest gates are open, a flow of not less than 160,000 cubic feet per second with maximum water level at elevation 1,963.8. The top of the crest gates shall be at elevation

1,957. Both normal and emergency power supplies shall be provided for operation of the spillway crest gates.

The upstream invert of the sluiceway outlet structure shall be set at a level which will permit unwatering the reservoir for maintenance. A 72 inch hollowjet free discharge valve and an 84 inch butterfly guard valve shall be provided. The guard and free discharge valves shall be designed for local control. A fish release valve not less than six inches in diameter shall be provided. Said valve shall be equipped with a guard valve and shall be so located that the controls are readily accessible for operation at all times. The guard, free discharge and fish release valves and structures shall be suitable for continuous discharge at full range of head and openings. The fish release facilities shall be designed for manual operation.

(c) *Hour House Diversion Dam.* Hour House Diversion Dam shall be situated in Section 20, Township 18 North, Range 9 East, M.D.B.&M. It shall have an ungated overpour spill crest set at an elevation one foot above the water level required to deliver 700 cubic feet per second through Lohman Ridge Tunnel into Log Cabin Diversion Reservoir when the water surface in the latter reservoir is at elevation 1,969. A sluice not less than five feet in diameter shall be provided, the invert of which shall not be more than 10 feet above original stream bed. A fish release valve of not less than 24 inches in diameter shall be provided. Said valve shall be equipped with a guard valve or stop-log gate, shall be protected from direct overpour, and shall be so located that the controls are readily accessible for operation at all times. The fish release facilities shall be designed for manual operation.

(d) *Log Cabin Diversion Dam.* Log Cabin Diversion Dam shall be situated in Section 11, Township 18 North, Range 8 East, M.D.B.&M. It shall have an ungated overpour spill crest set at an elevation one foot above the water level required to deliver 900 cubic feet per second through Camptonville Tunnel into the new Bullards Bar Reservoir when the water surface in the latter reservoir is at elevation 1,955. A sluice not less than five feet in diameter shall be provided, the invert of which shall not be more than 10 feet above original stream bed. A fish release valve of not less than 18 inches in diameter shall be provided. Said valve shall be equipped with a guard valve or stop-log gate, shall be protected from direct overpour, and shall be so located that the controls are readily accessible for operation at all times. The fish release facilities shall be designed for manual operation.

B-2 FLOW TUNNELS AND FLOW TUNNEL INTAKES

(a) *General for Diversion Tunnel Intakes.* Intakes at the diversion dams shall be located near the dams and shall be provided with a trashrack and a power operated tunnel intake gate. Provision shall be made for efficient and convenient cleaning of each trashrack. A log boom or floating platform shall be provided. The trashrack shall be designed to permit future installation of an automatic trashrake. A minimum of 40 feet of concrete lined tunnel shall extend downstream from the intake.

(b) *General for all Flow Tunnels.* The grade and capacity of the flow tunnels shall be based on an unlined

tunnel with the value of Manning's "n" assumed at not less than 0.030 for the design area and on the basis of the tunnel flowing full. Concrete lined sections shall be proportioned to give less head loss than unlined sections with the value of Manning's "n" assumed at not less than 0.015 for the lined sections. Lining shall be required where (1) permanent supports are used, (2) cracks or seams that may cause rock falls exist, or (3) rock conditions are not suitable for a permanently unlined tunnel section. Vehicle access into the tunnels at one end and personnel and supply access at both ends shall be provided to permit inspection and maintenance.

(c) *Lohman Ridge Tunnel.* The capacity of this diversion tunnel shall not be less than 700 cubic feet per second when the water level at Hour House Diversion Dam is at elevation 2,029 and the water level in Log Cabin Diversion Dam is at elevation 1,969.

(d) *Camptonville Tunnel.* The capacity of this diversion tunnel shall not be less than 900 cubic feet per second when the water level at Log Cabin Diversion Dam is at elevation 1,969 and the water level in new Bullards Bar Reservoir is at elevation 1,955.

B-3 POWER INTAKES, CONDUITS AND TUNNELS

(a) *General for all Power Intakes.* Intakes with power operated gates or valves and with trashracks of suitable area and bar spacing shall be provided for all power intakes. Provision shall be made for a bulkhead or stop-log gate upstream of each intake gate or valve. The bulkhead gates for the new Bullards Bar Dam shall be capable of emergency closing under maximum unbalanced pressure. Provision shall be made for convenient and efficient cleaning of trashracks. The trashracks shall be designed to permit future installation of automatic trashrakes. The main gates or valves at the new Bullards Bar Dam shall open or close under maximum unbalanced pressure, and at Narrows 2 Power Plant shall open under balanced pressure. The main intake valve at the new Bullards Bar Dam must close automatically, without external power, both when the flow exceeds 110 percent to 120 percent of the maximum demand flow in the tunnels, and when activated by remote control from the New Colgate Powerhouse. The Narrows 2 Power Plant intake gate shall close automatically, without external power supply, when activated by remote control from Narrows 2 Powerhouse.

(b) *General for all Power Tunnels.* Power tunnels shall be designed to withstand the full head which will be imposed on them and shall be lined (1) in all locations where permanent supports are used, (2) in locations where cracks or seams might permit leakage or cause rock falls, and (3) where rock conditions are not suitable for a permanently unlined pressure tunnel section. Adits, if used, shall have a fully grouted plug, and tunnel lining shall be provided adjacent to the adit and in the adit as necessary to minimize leakage, prevent blowouts, and assure structural integrity. Adit plugs shall be provided with an access door not less than seven feet by seven feet in dimension. Personnel and supply access shall be provided at both ends of the tunnels in order to permit inspection and

maintenance. Vehicle access into the new Colgate Tunnel shall be provided at the downstream portal and at all adits. The physical tunnel grade shall be established so that the hydraulic grade line will be at a safe level above the tunnel and penstock assuming a fully unlined tunnel of roughness corresponding to a value of Manning's "n" of not less than 0.035 for the design section and assuming the flow exceeds 110 percent maximum demand flow.

The tunnel sizes specified in subsequent paragraphs are the minimum design sizes and are for unlined sections of horseshoe shape having horizontal inverts and vertical walls to the spring line. Head loss for the unlined sections shall be based on a value of Manning's "n" of 0.030 on the design area. Lined sections shall be of a dimension and shape having less head loss than the unlined section with a roughness of the lined section assumed equal to a value of Manning's "n" of 0.015 for concrete and 0.011 for steel. Transition from lined to unlined sections shall be gradual in order to minimize transition losses. Unlined tunnel sections having equivalent or better hydraulic properties may be used in place of those specified. At the penstock portals, linings designed for the pressures imposed on them shall extend at least to the point where the depth of ground cover equals the static head. Other steel or reinforced concrete lining shall be used as necessary.

(c) *New Colgate Tunnel.* The unlined section shall be not smaller than a 26 foot by 26 foot horseshoe. The design capacity shall be 3,220 cubic feet per second. Water velocity in the unlined section of the tunnel shall not exceed 5.5 feet per second with a flow of 3,220 cubic feet per second. Steel or reinforced concrete tunnel liner shall be installed wherever cover is less than static head. The tunnel liner shall be designed for full pressure to a point where cover is at least 0.4 static head; with greater cover, the quality of the rock shall be considered in the design of the liner. The tunnel shall be lined from the surge chamber to the downstream tunnel portal. A rock and sand storage trap of adequate size and type shall be installed at the lower end of the tunnel in order to prevent rock and sand from reaching the penstock. No unlined tunnel or unlined surge tank shall be used between the storage trap and the penstock.

The exposed steel conduit between the upstream tunnel portal and new Bullards Bar Dam, and the steel conduit embedded in the new Bullards Bar Dam, shall be designed in accordance with penstock criteria. The steel lined tunnel adjacent to the upstream tunnel portal shall be designed in accordance with liner criteria. The said penstock and liner design criteria are more fully specified in Appendix B-5(a) below.

(d) *Narrows 2 Tunnel.* The tunnel shall be fully lined and the invert at the intake shall not be higher than elevation 439 feet. Water velocity in the tunnel shall not exceed 12.2 feet per second in concrete lined sections, or 19.1 feet per second in steel lined sections. Steel or reinforced concrete tunnel liner shall be installed from the downstream portal to a point where the ground cover equals the static head. The tunnel liner shall be designed for full pressure to a point where cover is at least 0.4 static head; with greater cover, the quality of the rock shall be considered in the design of the liner. The conduit

shall be so proportioned that the head loss in the conduit shall not exceed four feet when delivering 2,940 cubic feet per second to the Narrows 2 Turbine. A bypass consisting of a 36 inch Howell-Bunger valve shall be provided near the downstream end of the steel liner. Said valve shall be suitable for continuous discharge at full range of head and openings and shall be capable of local and remote control.

B-4 NEW COLGATE SURGE TANK

A surge tank shall be located at or near the upper end of the new Colgate Penstock. It shall be of non-spilling design and of sufficient diameter to stabilize the water surface in the tank during plant operation. It shall permit acceleration from zero flow to 110 percent of power plant design flows, and shall permit deceleration of flows from 110 percent of power plant design flows to zero flow. The tank shall be adequate for the foregoing flow acceleration in one minute and the foregoing flow deceleration in three minutes. In all cases, both for acceleration and deceleration of water, the surge tank shall be adequate to care for flow changes occurring within the time specified or for any longer period of time. Valves located downstream from the tanks shall be adjusted to closing times which will not create surges in the tank greater than those caused by the foregoing flow changes. For the specified flow and acceleration conditions, the tank shall be suitable for conditions of minimum operating water surface at new Bullards Bar Reservoir assuming high friction values. For deceleration conditions, the tank shall be suitable for conditions of maximum operating water surface at the reservoir assuming low friction values. Conservatively long lengths of lined tunnel shall be assumed for the design of the tank.

B-5 PENSTOCKS AND STEEL TUNNEL LINERS

(a) *General for all Penstocks and Steel Liners.* The design and fabrication of penstocks and steel tunnel liners shall conform to "The American Society of Mechanical Engineers Rules for Construction of Unfired Pressure Vessels", 1962 edition, as amended to date, except where it may differ from the following requirements and limitations. Pressures for the design of penstocks and steel tunnel liners shall include proper allowance for surge and water hammer. In any event, the allowance for water hammer shall be not less than the percentage specified under Appendix B-7 of the maximum static pressure at the turbine diminishing linearly in proportion to the developed length of the water column to zero at the maximum static water level in the surge tank or reservoir. All longitudinal and circumferential welded penstock joints shall be double butt-welded and tested. Tests shall be made either by radiographing, or by sonic testing with radiographing of suspect welds. Procedures for radiographing and sonic testing shall be in accordance with latest ASME practice. The fully fabricated units containing welding shall be stress relieved. Field welding on penstocks or tunnel steel liners shall be in accordance with latest ASME practice and be limited to girth welds. The very best welding practice and field control shall be utilized in all field

welding operations. Steel stress shall not exceed 27 percent of the ultimate strength with welds assumed to be 100 percent efficient. The interior of all penstocks and steel tunnel liners shall be shop coated with hot coal tar enamel and application on all straight sections shall be by the spinning process. In establishing the head losses in subparagraphs (b) and (c) following, the interior roughness of coal tar lining shall be assumed to correspond to a value of Manning's "n" of 0.011. Penstock piers and anchors shall rest in firm material. Where anchors or piers are located adjacent to material subject to erosion, the penstock trench shall be gunited or concreted to preclude any possibility of undermining the piers or anchors and a drainage system shall be provided, designed so as not to wash into the powerhouse yard or any switching facilities.

(b) *New Colgate Penstock.* The new Colgate Penstock shall be so proportioned that the head loss in the penstock shall not exceed 25.4 feet when delivering 3,220 cubic feet per second to the turbines. The bifurcation, whether shop or field fabricated, shall be stress relieved in accordance with "The American Society of Mechanical Engineers Rules for Construction of Unfired Pressure Vessels", 1962 edition, as amended to date. An outlet from the penstock, at approximately elevation 1,255, shall be provided to supply water to the Browns Valley Ditch. This outlet shall be equipped with a manually operated guard valve and with a regulating valve capable of releases adjustable from zero to not less than 15 cubic feet per second over the full range of penstock pressure. The regulating valve shall be provided with local manual control and with automatic float control from the ditch.

B-6 POWER PLANT INSTALLATION

(a) *General for all Power Plants.* Each plant shall be capable of starting and operating, for the purpose of testing transmission lines, without being connected to or dependent upon the transmission system constructed by Pacific pursuant to this contract, and when detached from the transmission system at the powerhouse or at a remote point, shall be capable of maintaining close frequency regulation on the load supplied, and shall comply with the performance requirements of the AIEE "Recommended Specification for Speed Governors of Hydraulic Turbines", No. 605, or the latest revision thereof.

(b) *New Colgate Power Plant.* The plant shall have an installed capacity that will generate and have an input to the transmission lines of not less than 240,000 kilowatts with an effective head of 1,124 feet and water use of not more than 3,000 cubic feet per second.

(c) *Narrows 2 Power Plant.* The plant shall have an installed capacity that will generate and have an input to the transmission lines of not less than 33,200 kilowatts with an effective head of 185 feet and water use of not more than 2,619 cubic feet per second. A suitable tailrace channel shall be provided so that the tailrace water level at Pacific's Narrows 1 Powerhouse will not exceed elevation 287 feet when there is full flow through Narrows 1 Powerhouse and the design flow of 2,940 cubic feet per second through Narrows 2 Powerhouse and

when the water elevation in the proposed Marysville Reservoir is below elevation 287 feet.

B-7 TURBINES AND RELATED EQUIPMENT

(a) *General for all Turbines and Related Equipment.* All turbines and related equipment, including but not limited to turbine shutoff valves (if used), pressure regulators (if used) and governors, shall be equal in completeness of features and quality of design and materials in all respects to those which Pacific has installed in its hydroelectric projects during the past 10 years on the Feather, Stanislaus, Kings, McCloud and Pit rivers. Spare parts for turbines and related equipment shall be provided as may be required by the general requirements of this Appendix B, but to no less an extent than at Pacific's said installations.

(b) *New Colgate Turbines.* The power plant shall have two turbines which shall be of the six nozzle vertical Pelton type. Each turbine shall be rated not less than 212,000 hp at the rated rpm for the type of runner used, at an effective head of 1,306 feet when passing not more than 1,610 cubic feet per second. The turbines shall be designed for "best gate" efficiency at or above 90 percent of rated capacity. The turbines shall operate successfully over a variable static head of 1,388 feet to 1,165 feet. Each turbine shall develop not less than 168,500 hp at 1,124 feet net effective head when passing not more than 1,500 cubic feet per second.

Each turbine shall be provided with a shutoff valve, either a 180 rpm integrally cast runner or a 163.6 rpm bolted type runner, and deflectors capable of continuously deflecting the maximum possible discharge.

Following load rejection of maximum turbine output the maximum pressure rise in the turbine distributor casing shall be limited to 10 percent and the overspeed of the unit shall be limited to 30 percent.

(c) *Narrows 2 Turbine.* The power plant shall have one turbine which shall be of the vertical Francis type. The turbine shall be rated not less than 70,000 hp, 163.6 rpm, at an effective head of 236 feet when passing not more than 2,940 cubic feet per second, shall operate successfully over a variable static head of from 188 feet to 240 feet when the tailrace water elevation is at 287, and shall be designed to operate successfully at any elevation up to the normal water surface of elevation 340 in the proposed Marysville Reservoir measured at Marysville Dam. The turbine shall be designed for "best gate" efficiency at or above 90 percent of rated capacity. It shall develop not less than 46,700 hp at 185 feet net effective head when passing not more than 2,619 cubic feet per second. The turbine shall be designed to operate without a pressure regulator. Following load rejection of maximum turbine output, the maximum pressure rise in the scroll case shall be limited to 30 percent and the overspeed of the unit shall be limited to 40 percent.

B-8 GENERATORS AND RELATED EQUIPMENT

(a) *General for All Generators and Related Equipment.* All generators and related equipment, including but not limited to exciters, storage batteries and voltage

regulators, shall be equal in completeness of features and quality of design and materials in all respects to similar equipment which Pacific has installed in its hydroelectric projects during the past 10 years on the Feather, Stanislaus, Kings, McCloud and Pit rivers. Spare parts for generators and related equipment shall be provided as may be required by the general requirements of this Appendix B, but to no less an extent than in Pacific's said installations. All generators shall be designed to withstand, without damage or distortion, the forces resulting from overspeed of not less than 10 percent in excess of the maximum turbine runaway speed. All generator ratings shall be on the basis of 60° C rise.

(b) *New Colgate Generators.* The rating of each generator shall be 13,800 volts, 0.90 power factor lagging, 1.1 short circuit ratio, 60 cycles, 3 phase, 163.6 or 180 rpm to match turbine speed, Class B insulation, and not less than 158,000 kva.

(c) *Narrows 2 Generator.* The rating of the generator shall be 13,800 volts, 0.85 power factor lagging, 1.05 short circuit ratio, 60 cycles, 3 phase, 163.6 rpm, Class B insulation, and not less than 55,000 kva.

B-9 MAIN POWER TRANSFORMERS

(a) *General for all Main Power Transformers.* All main power transformers shall be 60 cycles, oil-insulated, air cooled, equal in completeness of features and in quality of design and materials in all respects to similar equipment which Pacific has installed in its hydroelectric projects during the past 10 years on the Feather, Stanislaus, Kings, McCloud and Pit rivers. Transformers shall be provided with lightning arresters adjacent to the high voltage terminals. All transformer ratings shall be on the basis of 55° C rise. As used herein, "BIL" refers to the basic impulse level of the voltage which the insulation can withstand.

(b) *New Colgate Transformers.* Each unit shall be provided with a transformer rated 230 kv with not less than 825 kv BIL and with a 3 phase bank rating of not less than 158,000 kva. The high voltage winding shall be grounded wye with the following full capacity taps:

240,000 Y/138,500
 235,000 Y/135,500
 230,000 Y/132,800
 225,000 Y/129,900
 220,000 Y/127,000

The low voltage winding shall be 13,800 volts, delta connected. The impedance at rated kva and voltage, and within standard tolerances, shall be not more than 12.5 percent.

A third transformer bank shall be provided for connection to Pacific's 60 kv line. The transformer shall be rated at 230 kv with not less than 825 kv BIL and with full 69 kv insulation on the 63 kv auto tap. The 3 phase bank rating shall be not less than 75,000 kva.

The 230 kv winding shall be grounded wye with the following full capacity taps:

240,000 Y/138,500
 235,000 Y/135,500
 230,000 Y/132,800
 225,000 Y/129,900
 220,000 Y/127,000

and the following full capacity auto taps:

63,000 Y/36,370
 61,500 Y/35,510

A tertiary delta connected winding shall be provided for stabilizing purposes. The impedance at rated kva and voltage, and within standard tolerances shall be 11 percent.

(c) *Narrows 2 Transformer.* The transformer shall be rated 60 kv with not less than 350 kv BIL and with a 3 phase bank rating of not less than 55,000 kva. The high voltage winding shall be grounded wye with the following full capacity taps:

66,000 Y/38,100
 64,500 Y/37,200
 63,000 Y/36,370
 61,500 Y/35,510
 60,000 Y/34,640

The low voltage winding shall be 13,800 volts, delta connected. The impedance at rated kva and voltage, and within standard tolerances, shall be not more than 10.4 percent.

B-10 STATION POWER FACILITIES AND OTHER EQUIPMENT

Station power equipment and all other auxiliary equipment for all power plants shall be equal in completeness of features and in quality of design and materials in all respects to similar equipment which Pacific has installed in its hydroelectric projects during the past 10 years on the Feather, Stanislaus, Kings, McCloud and Pit rivers.

The normal source of station power for each plant shall be from the generator bus. Each plant shall be provided with an emergency power supply consisting of a transformer bank connecting to a reliable distribution circuit.

Power line extensions from Pacific's existing distribution system for supply of electrical energy to the powerhouse emergency supplies, and to dams, diversions and recreational facilities, are not features of the project.

Overhead structures and required line circuit breakers, disconnect and ground switches shall be provided, to which Pacific's transmission lines will be connected.

Adequate facilities shall be installed for modern relay protection of transmission lines constructed by Pacific pursuant to this contract.

B-11 PROJECT COMMUNICATION FACILITIES

Adequate communication facilities shall be provided to insure reliable and efficient operation and maintenance

of the *project*. All *project communication facilities* shall be equal in completeness of features and in quality of design and materials in all respects to similar equipment which Pacific has installed in its hydroelectric projects during the past 10 years on the Feather, Stanislaus, Kings, McCloud and Pit rivers. The basic communication system requirements are specified herein.

Communications between *project* powerhouses shall be by a microwave radio system utilizing an active microwave repeater station to be constructed by Yuba at Oregon Peak, herein called "Oregon Peak Repeater Station". A VHF radio system with a base station at Oregon Peak Repeater Station shall be provided for communication to *project* vehicles at any *project* location or any access road thereto. *Project* vehicles shall be equipped with mobile radio units as necessary for *project* operation. A VHF radio system shall also be provided as required for collection of hydrological data from remote *project* locations. Communications shall be extended from the various powerhouse communication terminals to all essential operating points of the *project* not covered by the microwave radio or VHF radio systems.

Interconnection between Yuba's communication system and Pacific's communication system shall be (1) by aerial cable to Pacific's Narrows 1 Powerhouse, (2) by microwave radio to Pacific's integrated communication system, and (3) with the present carrier system now terminated at the powerhouse of Colgate Power Project.

All components of Yuba's communication system which are interconnected with Pacific's communication system shall be compatible with the equipment owned by Pacific.

To insure compatibility, Yuba shall submit a communication plan to Pacific for review before specifications are issued and any final engineering design is begun.

All communication equipment shall be solid state and DC battery operated. All microwave radio stations shall be provided with 100 percent RF standby equipment. All standby equipment shall be connected for automatic transfer operation. Engine driven standby facilities shall be provided for AC power requirements of the communication facilities at Oregon Peak Repeater Station.

All communication equipment shall be covered by separate specifications and shall be furnished with the manufacturer's recommended test equipment. Spare parts for routine maintenance shall be provided. Wherever possible, integral systems shall be from the same manufacturer; however, responsibility for correct operation shall be assigned to all manufacturers supplying equipment for integral systems. Specifications shall include requirements for field acceptance tests.

Provision shall be made to connect the new Colgate Powerhouse, *project headquarters* and the lake tender's cottage into the nearest commercial telephone service.

B-12 AUTOMATIC POWER PLANT FACILITIES

(a) *General for all Project Power Plants.* The control, metering, protective and alarm systems for all *project* power plants shall be equal in completeness of features and quality of design and materials in all re-

spects to similar equipment which Pacific has installed in its hydroelectric projects during the past 10 years on the Feather, Stanislaus, Kings, McCloud and Pit rivers.

The new Colgate Powerhouse shall be designed as the master station for control of all other operating facilities of the *project*. Normal operation shall be with Narrows 2 Powerhouse and Narrows 1 Powerhouse under remote dispatch from the new Colgate Powerhouse. In addition, new Colgate Powerhouse and Narrows 2 Powerhouse shall be designed for remote dispatch from Table Mountain Substation.

Facilities at all locations within the *project* and at Oregon Peak necessary for communications, remote dispatch, indication, telemetering, automatic load dispatch system, and alarms, as required for safe and reliable operation of all power plants, dams and appurtenances within the *project*, shall be provided by Yuba. All equipment required at Table Mountain Substation shall be provided by Pacific.

(b) *The new Colgate Power Plant.* The new Colgate Power Plant shall be designed for manual control, local automatic control and remote dispatch with a transfer means to select the method of operation. The unit load control shall be designed for the following:

- (1) manual control,
- (2) automatic load dispatch from Pacific's System Dispatch Office, and
- (3) automatic load dispatch from Table Mountain Substation.

A load control transfer means to select either manual control or automatic load dispatch shall be provided both at the new Colgate Powerhouse (when the powerhouse is on manual control or local automatic control) and at Table Mountain Substation (when the plant is on remote dispatch).

The load control shall not interfere with the full and free operation of the governor so that the unit when detached from the system at the powerhouse or at a remote point may maintain close frequency regulation on the load being supplied. Separate alarm indications shall be transmitted to Table Mountain Substation for, but not limited to, the following:

- (1) unit shutdown,
- (2) unit separation, and
- (3) miscellaneous station alarms.

The new Colgate Powerhouse remote dispatch equipment shall be provided with sufficient spare points to permit the remote dispatch to be extended to include control of the Colgate 60 KV Switchyard.

(c) *Narrows 2 Power Plant.* Narrows 2 Power Plant shall be designed for manual control, local automatic control and remote dispatch with a transfer means to select the method of operation. The load control shall not interfere with the full and free operation of the governor so that the unit when detached from the system at the powerhouse or at a remote point, may maintain close frequency regulation on the load being supplied.

Separate alarm indications shall be transmitted for, but not limited to, the following:

- (1) unit shutdown,
- (2) unit separation, and
- (3) miscellaneous station alarms.

The Narrows 2 Powerhouse remote dispatch equipment shall be provided with sufficient spare points to permit the remote dispatch to be extended to include control of Narrows 1 Powerhouse.

B-13 GAGES AND METERS

(a) *General for all Reservoirs—Water Levels.*

- (1) Staff gages shall be provided, and water level recorders with telemetering equipment shall be installed, at the new Bullards Bar Reservoir and Englebright Reservoir.
- (2) *New Bullards Bar Reservoir.* The new Bullards Bar Reservoir water level shall be telemetered to the new Colgate Powerhouse and Table Mountain Substation and the telemetering equipment shall have digital type readout.
- (3) *Englebright Reservoir.* The Englebright Reservoir water level shall be telemetered to Narrows 2 Powerhouse, the new Colgate Powerhouse, and Table Mountain Substation. The telemetering equipment shall have digital type readout.

(b) *Stream Flow.* Stations and recorders shall be provided at the following locations to measure stream flow:

- (1) On the Middle Yuba River, both upstream and downstream of Hour House Diversion Dam.
- (2) On Oregon Creek, both upstream and downstream of Log Cabin Diversion Dam.
- (3) On the North Yuba River, below the new Bullards Bar Dam but upstream of the confluence of the North and Middle Yuba rivers.

Additional recorders shall also be provided as required by the Federal Power Commission.

All stream flow recorders shall be located at sites which will provide consistent and accurate measurements over the full range of expected flows. Staff gages shall be installed where applicable to permit supplementary methods of determining flows.

(c) *Conduit Flow.* Recorders shall be installed to provide a continuous record of flow and temperature in the new Colgate Tunnel and in Narrows 2 Tunnel. Recorded flow and temperature at said points may be determined at the powerhouses with suitable recording devices by adjusting for any diversions from penstocks.

Staff gages shall be provided where applicable to permit supplementary methods of determining flows.

(d) *Canal Diversion.* A recorder shall be installed to provide a continuous record of flow in the Browns Valley Ditch at the existing recording gage known as

NY10, located in the Southeast Quarter of Section 8, Township 17 North, Range 7 East, M.D.B.&M. A suitable staff gage shall be installed in the Browns Valley Ditch as close as practicable to the outlet to the Ditch from the new Colgate Penstock.

(e) *Radio Reporting Precipitation Stations.* If required by the United States Corps of Engineers, a maximum of five radio reporting precipitation stations associated with the new Bullards Bar Reservoir shall be installed.

(f) *Precipitation and Temperature Stations.* Commencing on date of transfer of Colgate Power Project from Pacific to Yuba, Pacific shall be relieved of all responsibility for precipitation and temperature stations connected with Bullards Bar Project and Colgate Power Project and Yuba shall assume responsibility for operating these stations.

(g) *Power Plant Meters.* In addition to the normal installation of transmission and generator meters, the following installations shall be provided at each *project* power plant:

- (1) For registration of delivery of power from the *project* to Pacific, a watt-hour meter with demand register and with provision for adjustment to equivalent values at the high tension delivery point, and a recording watt-meter.
- (2) For registration of delivery of power from Pacific to the *project*, a watt-hour meter with demand register and with provision for adjustment to equivalent values at the high tension delivery point.
- (3) For registration of delivery of power for *project power plant use*, a watt-hour meter with demand register.
- (4) For registration of delivery of power for emergency station power, a watt-hour meter with demand register.
- (5) For registration of *project* power plant voltage, a recording voltmeter.

Meters specified above for items (1), (2) and (5) are to be connected to the low tension side of the main transformer bank. The meters specified above for items (3) and (4) are to be connected to the load side of the station service and emergency station power transformer banks.

Not later than the date when the meters referred to in items (2) and (4) above first register power delivered by Pacific, Yuba shall convey said meters to Pacific without charge and shall furnish Pacific bills of sale therefor.

B-14 START-UP, EFFICIENCY AND PERFORMANCE TESTS

(a) A complete testing and checking program conforming to Pacific's normal practice shall be submitted by Yuba to Pacific not less than 30 days in advance of the first delivery of power. The program shall include checks on equipment guarantees and general checking

of all components of plants and facilities and the inter-related functions of the various facilities. The generating units shall be tested insofar as practical to their full capability and the settings of the protective devices shall be coordinated with the practical limits of the unit. All checks and tests shall be thoroughly documented and included in a comprehensive test report so that the proper functioning of all facilities and equipment under all normal and emergency operating conditions shall be known and so that the necessary information shall be available for the proper operation of the *project*.

(b) Performance and efficiency tests for the *project* turbine and generator units shall be made by Yuba in the presence of Pacific's representatives as soon as possible and shall commence not later than 30 days after first delivery of power at each of the power plants. Measurement of water shall be by either the Gibson method or Allen Salt Velocity method. The efficiency tests shall be thoroughly documented and included in a comprehensive efficiency test report.

(c) All records obtained in all tests and checks shall be made available to Pacific. Yuba shall provide Pacific with four copies of all test reports.

B-15 PERMANENT ROADS AND HELIPORTS

The following permanent roads are required and shall be constructed for satisfactory operation and maintenance of the *project*:

(a) to all dams and tunnel intake structures and spillways,

(b) to all powerhouses,

(c) to the new Colgate Surge Tank, and

(d) to Oregon Peak Repeater Station.

All *project roads* shall be drained, graded and gravel surfaced, to maintain rapid and convenient access to all plants and dams during normal year-round operations and, except for the road to Oregon Peak Repeater Station, shall be suitable for a mobile crane of 50 ton rated capacity and for moving transformers into and out of powerhouses.

(e) Heliports shall be established at or near Oregon Peak Repeater Station, new Bullards Bar Dam and new Colgate Power Plant.

B-16 HOUSING AND BUILDINGS

The yard level at each powerhouse shall be at least three feet above the maximum designed flood stage as mutually agreed between the parties.

Each powerhouse main deck shall be designed for the following non-concurrent loading conditions:

- (1) a gantry crane suitable for assembly and disassembly of powerhouse equipment designated by Yuba and Pacific;
- (2) a mobile crane of 50 ton rated capacity; or
- (3) uniform live loading of 1,000 pounds per square foot.

The deck and yard design shall provide ready access for the mobile crane to positions required when making critical lifts.

Project headquarters shall be located outside of, but near, the new Colgate Powerhouse, and shall provide approximately 2,000 square feet of floor space for:

(a) office space furnished and equipped for at least three men;

(b) a ready room suitable for at least five men;

(c) a small shop and welding area;

(d) garage space;

(e) storage, toolroom and washroom facilities; and

(f) a suitable fireproof vault for storage of permanent *project* records and drawings.

B-17 OPERATION AND MAINTENANCE TOOLS AND EQUIPMENT

On the *full operation date*, the *project* shall be equipped with necessary machine and hand tools, new unused vehicles and road maintenance equipment, and other equipment and supplies purchased by Yuba and required for operation and maintenance of the *project*.

B-18 DRAWINGS, SPECIFICATIONS AND OTHER INFORMATION

Yuba shall submit to Pacific from time to time, and as soon as possible, three copies of all *project* contracts, specifications and drawings, including manufacturers' design drawings, for Pacific's review and comments. Sufficient time shall be allowed before the drawings are approved by Yuba for construction or manufacture of any *project* equipment to incorporate design revisions arising from Pacific's review. Pacific shall have the right to inspect all work performed by or for Yuba in constructing the *project*.

Within six months following the *full operation date*, Yuba shall provide Pacific: Two 11 inch by 17 inch reduced size copies and one full size copy of all drawings, all of which shall have been brought up to date; not less than three copies of all manufacturers' drawings and instruction books; and copies, or originals, of all pertinent correspondence and data. All manufacturers' drawings and instruction books and all other drawings for the *project* shall be numbered and indexed by Yuba.

Unless otherwise agreed, Yuba shall store reproducible copies of all drawings and copies of all contracts, specifications, instruction books and other pertinent data and correspondence for the *project* in the vault at *project headquarters*. Yuba's *project* manager shall conform such drawings and instruction books to reflect changes in facilities and equipment as such may occur from time to time, and when any such changes are conformed, shall furnish Pacific with copies thereof.

Appendix C

OPERATION AND MAINTENANCE REQUIREMENTS

The following provisions shall govern the operation and maintenance of the *project*, except as may otherwise be agreed upon from time to time by the parties.

I. OPERATION

C-1 GENERAL

Yuba shall operate the *project* in accordance with schedules, which shall be furnished from time to time by Pacific, for impounding, release and use of water through power plants of the *project* up to their full generating capabilities; **provided**, that such schedules shall not be inconsistent with Appendix C-2A or with agreements heretofore executed between Yuba and Federal, State and local agencies. Yuba shall, consistent with the requirements of paragraph 4 of this contract, from time to time make such changes in *project* facilities as are reasonably required to improve economy of operation and shall employ only such personnel as are reasonably necessary to operate and maintain the *project* in an economic manner. Pacific and Yuba shall exchange information necessary for effective and economic operation and maintenance of the *project*.

Consistent with other requirements, operation shall be such that spilling at each dam shall be kept to a minimum.

An operator shall be stationed at the new Colgate Power Plant for 24 hour operation of the *project* plants on a seven day per week basis, unless otherwise agreed. Operating and maintenance personnel, together with radio equipped vehicles, shall be provided for daily routine operation and maintenance.

The *project* shall be staffed a minimum of 30 days prior to the date of first delivery of power by a *project* power plant with competent and trained operating personnel, or such personnel at that time shall be in training under a qualified person. Such personnel shall include any physical or technical personnel considered essential to the minimum organization to be mutually agreed upon. Yuba shall appoint and at all times have in charge of *project* operations and maintenance a *project* manager technically qualified, trained and thoroughly experienced in the operation and maintenance of hydro-electric works, who shall have full authority to act for Yuba in matters relating to the *project*. His duties shall include obtaining and passing on the qualifications of other *project* personnel. The first *project* manager shall be appointed and shall be available for inspection of the *project* and for special training at a date mutually agreed upon by the parties, which shall be approximately six months prior to the estimated date for first delivery of power by a *project* power plant.

C-2 WATER RELEASE REQUIREMENTS

A. On and after the *full operation date*, Yuba shall control its diversions and releases of water as provided in the following subparagraphs:

(a) *Water for the Support of Fish and Wild Life.*

Yuba shall, in complying with the terms and conditions of its agreement, dated September 2, 1965, with the State of California, acting through the California Department of Fish and Game, so operate the *project* and limit water releases as not unnecessarily to reduce the power output of the *project*. This said agreement is attached hereto as Exhibit 2 to Appendix E.

(b) *Water for Power and Irrigation.*

(1) When it appears that *storage* by the end of any month will exceed the critical amount for such month listed in Appendix D, *project* power plants shall be operated, unless otherwise agreed, to reduce the *storage* on hand by the end of such month to the amount specified in Appendix D but at rates not to exceed the amount required for full capability operation except when greater releases are needed by reason of flood control requirements, if any, in which event the releases shall not exceed those necessary to attain the estimated minimum required flood control storage space as given in Chart 7 of the Review Survey Report, dated October 31, 1963, by the Corps of Engineers, of flood control requirements for the new Bullards Bar Project, North Yuba River.

(2) When drafts of *storage* will result in the *storage* on hand at the end of any month being equal to or less than the critical amount for such month listed in Appendix D, then, unless otherwise requested by Pacific, Yuba shall release during that month only a sufficient amount of water, in accordance with schedules furnished from time to time by Pacific, to generate the following specified amounts of energy at the new Colgate Power Plant:

Month	Kilowatt-Hours
January	81,700,000
February	81,700,000
March	81,500,000
April	81,700,000
May	82,000,000
June	82,100,000
July	37,700,000
August	38,200,000
September	38,900,000
October	39,300,000
November	39,500,000
December	37,800,000

Narrows 2 Power Plant shall be operated in a manner consistent with the foregoing water release requirements and in accordance with schedules furnished from time to time by Pacific.

(3) Lake Francis shall not be used as a source of water for anyone other than Browns Valley Irrigation District without Pacific's consent.

(4) Yuba shall use the waters under Application Nos. 5631, 15205 and 15563, and any permits or licenses issued under said applications, for power generation under this contract before such waters are

used for other purposes, after which said water will be returned to the stream for use by Yuba under Application Nos. 5632, 15204 and 15574, and any permits or licenses issued under said applications, and Yuba shall not change the points of redirection of water stored pursuant to Application Nos. 5632, 15204 and 15563, and any permits or licenses issued under said applications, to any point in the stream or stream system above the points of diversion to Narrows 2 Power Plant. The following conditions and schedules shall govern Yuba's diversions of water from the *project* for Browns Valley Irrigation District during the period 1970 until the August 18, 1960, *Browns Valley Irrigation District Contract* terminates. Thereafter, the October 17, 1940, *Browns Valley Irrigation District Contract* shall govern the releases.

- (i) No water shall be diverted from the *project* until all available water has been released from Lake Francis.
- (ii) No water shall be diverted from the *project* during the months of January, February, March, November and December.
- (iii) The total amount of water made available by Yuba to Browns Valley Irrigation District shall not exceed:
 - (v) for the period 1970 through 1975, 3,167 acre feet during dry water years, and 3,500 acre feet during all other years;
 - (w) for the period 1976 through 1980, 3,500 acre feet during dry water years, and 4,000 acre feet during all other years;
 - (x) for the period 1981 through 1985, 4,168 acre feet during dry water years, and 5,000 acre feet during all other years; and,

(y) for the period 1986 through 2014, 4,500 acre feet during dry water years, and 5,500 acre feet during all other years.

(z) Yuba prudently shall schedule operation and maintenance at Lake Francis and diversions to Browns Valley Ditch so as to maximize the amount of water diverted to Browns Valley Irrigation District from Lake Francis.

(iv) Monthly diversions or releases for Browns Valley Irrigation District shall not exceed the amounts specified in Table A below, nor shall diversions from the new Colgate Penstock be at a rate greater than 15 cubic feet per second for the designated periods after the *full operation date*; **provided**, that if full specified monthly releases are being made from Lake Francis, specific monthly amounts may be increased or decreased, but the annual amount diverted cannot exceed the annual amount specified in the table; **provided further**, that in the event water ceases to be available for Browns Valley Irrigation District from Lake Francis, or in the event Yuba is unable to obtain from said District a novation whereby Pacific is forever released from liability under the *Browns Valley Irrigation District Contracts*, releases from the new Colgate Penstock for said District shall not exceed those provided in the *Browns Valley Irrigation District Contracts*.

As used in Table A, a "dry water year" is defined as any 12 month period in which stream flow in the Yuba River at Smartville from October 1 to the following September 30, as it would be if unaltered

TABLE A

Schedules Of Maximum Total Water To Be Made Available To Browns Valley Irrigation District

Period, Years:	1970-1975		1976-1980		1981-1985		1986-2014	
Month	Dry Water Years	All Other Years	Dry Water Years	All Other Years	Dry Water Years	All Other Years	Dry Water Years	All Other Years
Maximum Acre Feet To Be Released								
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	190	210	210	240	250	300	270	330
May	475	525	525	600	625	750	675	825
June	602	665	665	760	792	950	855	1,045
July	729	805	805	920	959	1,150	1,035	1,265
August	633	700	700	800	834	1,000	900	1,100
September	443	490	490	560	583	700	630	770
October	95	105	105	120	125	150	135	165
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Total	3,167	3,500	3,500	4,000	4,168	5,000	4,500	5,500

by upstream development, as estimated by the California Department of Water Resources on or about the April 1 within said period, will be 50 percent or less of the normal flow for the 50 year period currently being used by said Department for estimating purposes.

(5) Storage shall not be drawn below *elevation* 1,732 except as necessary to maintain the new Bullards Bar Dam in good condition. Yuba shall not reduce *storage* below such *elevation* until such drawdown can be scheduled in a manner to cause least damage to power values or until the State Division of Safety of Dams orders repairs to be made.

B. In constructing the *project* Yuba shall make every effort to minimize interference with the operation of Narrows 1 Power Plant and, while they are owned by Pacific, with the operation of Colgate Power Project and Bullards Bar Project. Yuba shall, to the extent interference occurs and energy generation at Pacific's said power plants is reduced, whether caused by construction of the *project* or by initial filling of the new Bullards Bar Reservoir, compensate Pacific for such energy loss as follows:

(1) First, by delivering to Pacific without charge from Colgate Power Project while it is owned and operated by Yuba, and from *project* power plants, an amount of energy equal to the amount of energy generation lost. To the extent that Yuba can, such energy shall be delivered prior to the end of the month which follows the month in which the interference occurs.

(2) Then, to the extent that energy furnished under paragraph (1) above has been insufficient to compensate for said energy loss within the time specified, Yuba shall credit to Pacific's account the amount of energy needed to make up the deficiency, and, prior to *full operation date*, shall deliver to Pacific the amount of energy so credited. The balance in the said account on the first day of any month shall be increased by the balance in the said account times 0.5. Yuba may elect to compensate Pacific for such energy at the rate of \$0.003 per kilowatt-hour for all energy in Pacific's account.

Pacific shall keep Yuba informed of amounts of energy lost and of the amount of compensation due each month, and shall render itemized statements of the amount of energy lost and compensation due as soon as practicable after the close of each month. If Yuba elects to pay Pacific \$0.003 per kilowatt-hour for all or part of the energy in the said account, payment shall be made within 15 days after receipt of the invoice.

Pacific may offset amounts due Pacific against amounts due Yuba pursuant to paragraph 8 of this contract.

C. Yuba agrees that the diversions and releases specified in this Appendix C are such as will satisfy its water requirements from the *project*.

II. MAINTENANCE

C-3 SCHEDULING

Yuba shall notify Pacific of contemplated maintenance

work which would affect operation of the *project*, and shall cooperate with Pacific in scheduling the work by advancing or postponing the time of performance so as not unnecessarily to cause power loss or inconvenience to Pacific. Such maintenance work shall be completed in the shortest possible time and, if requested by Pacific, shall be performed on a 24 hour per day basis, including Saturdays, Sundays and holidays.

C-4 INSPECTION

Yuba shall make such inspections, investigations and tests, both routine and extraordinary, as are called for by the best engineering and operating practice and shall afford Pacific full opportunity to inform itself as to the condition of the *project* and the elements thereof by giving Pacific notice and opportunity to join with Yuba in inspections, investigations and tests, by submission to Pacific of copies of reports as to the results thereof and by giving Pacific access to Yuba's properties for the purpose of any inspections, investigations and tests which Pacific may desire to perform independently of Yuba. Pacific shall be given full opportunity to inspect the performance of any maintenance work on the *project* by Yuba, its employees, agents and contractors.

III. PERFORMANCE BY YUBA

C-5 FINANCIAL OBLIGATIONS OF YUBA

Except as provided in paragraph 25 of this contract, Yuba shall, regardless of any other provisions of this contract, have no obligation to perform under this Appendix C or to operate or maintain the *project* pursuant to paragraphs 3 and 4, or to repay any sums paid by Pacific or interest thereon, other than to the extent that Yuba can do so with money received from payments made by Pacific pursuant to paragraph 9(b) of this contract and the money available in the funds as provided in Part V of this Appendix C.

IV. PERFORMANCE BY PACIFIC

C-6 OPERATION AND MAINTENANCE

If at any time after *full operation date* moneys received by Yuba pursuant to paragraph 9(b) of this contract are not sufficient to pay the operation and maintenance cost of the *project* and to permit withdrawals by Pacific under Appendix C-12, Pacific shall pay Yuba each month such additional sums as reasonably and necessarily may be required to pay such costs; **provided**, that in lieu of making such additional payments, or in the event Yuba fails or is unable to operate or maintain the *project* or any of the units thereof in accordance with this contract, Pacific may upon reasonable notice to Yuba, which may be 24 hours or less in case of urgency, enter upon, operate and maintain the *project* or such unit thereof as may be necessary, for and on behalf of Yuba, but at Pacific's own cost and expense subject to reimbursement only as provided in Appendix C-12. In such event, Yuba hereby employs Pacific to act as such operator and hereby consents and

agrees that Pacific may enter upon the *project* and act as such operator until Yuba is able to perform satisfactory operation and maintenance of the *project*. Pacific's determination as to the necessity for, and manner of, operation and maintenance, and as to the amount of expenses incurred hereunder, in the event Pacific performs such operation and maintenance for Yuba, as provided above, shall be conclusive in the absence of bad faith.

V. FUNDS, DEPOSITS AND WITHDRAWALS

C-7 ESTABLISHMENT OF FUNDS

To assure construction of the *project* and its proper operation and maintenance, including performance of the obligations provided in this Appendix and in paragraphs 3 and 4 of this contract, Yuba shall establish with a trustee chosen by mutual agreement of the parties hereto, a Construction Fund, an Early Operation Fund, and an Operation and Maintenance Fund.

C-8 TRUSTEE

The trustee shall be a bank or trust company authorized to do and doing business in the State of California and having capital and surplus and undivided profits of at least \$50,000,000.

C-9 DEPOSITS

A. Construction Fund

Yuba shall deposit in the Construction Fund upon receipt (a) all moneys received from the proceeds of the initial issue of *project bonds* (Series A Bonds), except the amount required to be set aside for funded bond interest and the deposits required pursuant to Appendix C-9C(a) and C-9D(a); (b) all moneys received from the proceeds of the issue of subordinate Series B *project bonds* which Yuba proposes to issue on or about *full operation date*; (c) all moneys granted or loaned to Yuba by the State and Federal governments, except funds received pursuant to the State of California Davis-Grunsky Act and Federal flood control contributions received after June 30, 1970, as aid to or reimbursement for, or as a result of, the acquisition, construction, operation or maintenance of the *project* or of any features thereof, or to enable Yuba to acquire properties or construct facilities to be used in connection with the *project*, to the extent any such moneys are not pledged to the payment of interest on and the principal of *project bonds*; (d) all moneys earned on investments of moneys in said Construction Fund or received from the sale of such investments; (e) all moneys from *project* water insurance or from contractors' performance bonds which are not required for payment of principal and interest on *project bonds*; (f) all moneys received from contractors prior to *full operation date* for any required inspection fees; (g) all moneys earned from investment of funded interest on *project bonds*; (h) on or after confirmation of *full operation date*, money withdrawn or transferred from the Early Operation Fund for deposit in the Construction Fund pursuant to Appendix C-13A; and (i) the proceeds

obtained from sale and disposition of materials and equipment salvaged by Yuba from Bullards Bar Project and Colgate Power Project, from sales of timber and other materials cleared from *project* sites and from the sites of Bullards Bar Recreational Facility, and from sales of surplus lands, other than at Lake Francis, which had originally been acquired by use of money from the Construction Fund.

B. Davis-Grunsky Grant Moneys

The money which is disbursed to the Agency under the contract between Yuba and the State of California for grants to Yuba under the Davis-Grunsky Act (Chapter 5, commencing with Section 12880 of Part 6, Division 6, of the California Water Code) shall be deposited in the funds and accounts specified in said contract and the use of such money for the project (as the project is defined in said contract) shall be governed by said contract.

C. Early Operation Fund

Yuba promptly shall deposit in the Early Operation Fund (a) upon receipt of the proceeds of the initial issue of *project bonds* (Series A Bonds), \$100,000; (b) upon receipt, money received under paragraph 8 hereof; (c) sums of money withdrawn or transferred from the Construction Fund pursuant to Appendix C-11A; (d) upon receipt, all moneys received by Yuba from property and mechanical breakdown and use and occupancy insurance relating to injury or damage to Colgate Power Project or to Narrows 2 Power Plant occurring prior to *full operation date*; and (e) prior to *full operation date*, all moneys received by Yuba from the sale of water withdrawn from Lake Francis and any other revenue received by Yuba which results from the ownership of Lake Francis.

D. Operation and Maintenance Fund

Yuba promptly shall deposit in the Operation and Maintenance Fund (a) one-third of that portion of the proceeds received from the Series A issue of *project bonds* which are in excess of \$159,245,000; (b) on receipt, moneys received under paragraph 9(b) and under Appendix C-6; (c) all moneys received by Yuba under paragraph 9(a) after all *project bonds* have been retired; (d) all moneys which Yuba is entitled to receive from the bond trustee after all *project bonds* have been retired; (e) after confirmation of *full operation date* money transferred from the Early Operation Fund for deposit in the Operation and Maintenance Fund pursuant to Appendix C-13A; (f) upon receipt on and after *full operation date*, all moneys received from *project* property and mechanical breakdown and use and occupancy insurance which are not required to be deposited in the Early Operation Fund pursuant to Appendix C-9C; (g) proceeds from refinancing as provided in Appendix C-18; (h) upon receipt after *full operation date* amounts received from others for injury or damage to features of the *project* to the extent such amounts are not owed to insurance carriers by way of

subrogation; (i) after *full operation date*, all moneys received by Yuba from the sale of water diverted from the new Colgate Penstock and from the sale of water withdrawn from Lake Francis; and (j) all moneys received by Yuba from any sales of properties at Lake Francis and, after *full operation date*, any other net revenues received by Yuba which result from the ownership of Lake Francis.

C-10 WITHDRAWALS

Withdrawals may be made from said funds only as provided in the following paragraphs.

C-11 WITHDRAWALS BY YUBA

A. Construction Fund

Yuba shall be entitled to withdraw money from the Construction Fund (a) to pay *project construction costs*, except interest on *project bonds* which was funded from the proceeds thereof; (b) as necessary, to pay construction costs of Bullards Bar Recreational Facility; (c) prior to *full operation date*, sums required to enable withdrawals to be made from the Early Operation Fund pursuant to Appendices C-11B and C-12A when said Fund is otherwise depleted; (d) after *full operation date*, to the extent that the said Fund contains money in excess of that necessary to pay *project construction costs*, Yuba may use any or all such money for any legal purpose relating to completion of the Yuba River Development; and (e) after *full operation date* any expenditures, not specified above, to which Yuba and Pacific shall have agreed in writing.

B. Early Operation Fund

Prior to *full operation date*, Yuba shall be entitled to withdraw money from the Early Operation Fund (a) to pay debts incurred pursuant to paragraph 4(b) of this contract, (b) to pay Browns Valley Irrigation District sums required under the *Browns Valley Irrigation District Contracts* after said contracts are assigned to Yuba as provided in the separate contract referred to in paragraph 2; and (c) to pay costs of operating and maintaining Lake Francis and the Browns Valley Ditch as such properties are described in Appendix A-15. Said withdrawals may be for any of the purposes for which withdrawals may properly be made after *full operation date* as specified in Appendix C-11C(1), and shall be subject to all of the limitations specified in Appendix C-11C(2); **provided**, that proceeds in said Fund from property and mechanical breakdown insurance for injury or damage to Narrows 2 Power Plant shall be expended only for repairs to or replacements of the damaged features at said plant. For purposes of determining the payments due under (b) above, it shall be deemed that the annual amount due is for the calendar year in which the payment is due and that 1/365th of the total amount due annually accrues and becomes due each day. Amounts so withdrawn shall be transferred as provided in Appendix C-17.

C. Operation and Maintenance Fund

(1) From and after the *full operation date*, Yuba shall be entitled to withdraw money from the Operation and Maintenance Fund (a) to pay debts incurred pursuant to paragraphs 3 and 4(a) and C-1 of this Appendix, including taxes, if any, imposed on Yuba with respect to the *project*, and including premiums for insurance required by paragraph 4(a) containing such deductible provisions as are agreed upon by the parties, (b) to pay any charges included from time to time within the Federal Power Commission Uniform System of Accounts prescribed for Public Utilities and Licensees, (c) to pay to Browns Valley Irrigation District sums required under the *Browns Valley Irrigation District Contracts* which accrue following the *full operation date*; and (d) to pay costs of operating and maintaining Lake Francis and the Browns Valley Ditch as such properties are described in Appendix A-15. For purposes of determining the payments due under (c) above, it shall be deemed that the annual amount due is for the calendar year in which the payment is due and that 1/365th of the total amount due annually accrues and becomes due each day. Amounts so withdrawn shall be transferred as provided in Appendix C-17.

(2) Yuba shall not be entitled to withdraw money from said Fund or to use money so withdrawn to pay (a) compensation and expenses of Yuba's directors, general manager or general executive or administrative officers, or non-*project* personnel, or costs of general overhead in any year exceeding a total of \$8,000; (b) compensation of *project* operating personnel in excess of that paid by Pacific for similar services; (c) any costs properly allocable to irrigation, industrial and domestic water purposes, except as expressly provided in (1)(d) above; (d) any costs of installing, operating, maintaining, policing or controlling recreation facilities or activities; and (e) any costs incurred pursuant to paragraphs 14 and 19 of this contract.

D. Withdrawal Procedure

For each authorized withdrawal from the Construction Fund, other than withdrawals for payment of *project construction costs* under Appendix C-11A(a) and withdrawals for construction costs of Bullards Bar Recreational Facility under Appendix C-11A(b), Yuba shall, by written certificate signed by its Chairman or other authorized representative, certify to the trustee the amount actually expended or owing and Pacific shall, by written certificate signed by its President or other authorized representative, certify to said trustee that such payment is a proper charge under this contract. Upon receipt of such certificates, such trustee shall thereupon be empowered to pay said amounts. Pacific shall either submit its own certificate or its written objection to the requested payment within 15 business days after receipt of a copy of any such certificate of Yuba.

Withdrawals by Yuba from the Early Operation Fund and the Operation and Maintenance Fund shall be made as specified in Appendix C-17.

C-12 WITHDRAWALS BY PACIFIC

A. *Early Operation Fund*

Prior to *full operation date*, Pacific shall be entitled to withdraw money from the Early Operation Fund to pay amounts due Pacific as specified in Appendix C-12B (b) and (c).

B. *Operation and Maintenance Fund*

Pacific shall be entitled to withdraw money from the Operation and Maintenance Fund to pay (a) its additional payments made, and its costs of operation and maintenance incurred, at any time pursuant to Appendix C-6, calculated in accordance with Pacific's Comptroller's Department Standard Practice No. 117.1-1, or as such may hereafter be amended or superseded, (b) taxes, if any, imposed on any interest in Yuba's *project* which Pacific may be found to have under this contract or imposed on Pacific because of the purchase by or delivery to it of capacity, energy or falling water under this contract, and (c) interest, at a rate equal to the most recent rate of return found to be reasonable by the Public Utilities Commission of the State of California on Pacific's Electric Department rate base, on any amount owed to Pacific by said Fund to reimburse Pacific for said costs or taxes, such interest to accrue until the time when moneys are available in said Fund to pay said debt. In addition, Pacific shall be entitled to withdraw money from said Fund from time to time in an amount equal to proceeds of use and occupancy insurance deposited in said Fund pursuant to Appendix C-9D(f) if it has not elected to reduce its monthly payments as provided in paragraph 11(a). For each such withdrawal Pacific shall, by written certificate signed by its President or its authorized representative, certify to the trustee of said Fund the amount for which it is entitled to payment and Yuba shall, by written certificate signed by its Chairman or its authorized representative, certify to said trustee that such payment is a proper charge under this contract. Upon receipt of such certificates said trustee shall thereupon be empowered to pay said amounts. Yuba shall either submit its own certificate or its written objection to the requested payment within 15 business days after receipt of a copy of any such certificate of Pacific.

C-13 TERMINATION

A. On confirmation of the *full operation date* or as soon thereafter as practicable, any moneys remaining in the Early Operation Fund shall be distributed to the extent money is available by withdrawals in the following order: (a) For payment of bills, amounts required to pay any remaining debts incurred prior to *full operation date* for which withdrawals pursuant to Appendix C-11C and C-12A would have been proper; (b) for deposit in the Operation and Maintenance Fund, an amount equal to that part of the proceeds from *project bonds* which was deposited in the Early Operation Fund pursuant to Appendix C-9C(a); (c) for deposit in the Construction Fund, to the extent not provided in (f) and (h) below, an amount equal to the total of all with-

drawals from the Construction Fund pursuant to Appendix C-11A(c); (d) for deposit in the Construction Fund, an amount equal to one-half of the amount by which the Early Operation Fund on *full operation date* exceeds the sum of (a), (b) and (c) above less the amount of insurance proceeds to be distributed as provided in (f), (g) and (h) below; and (e) for deposit in the Operation and Maintenance Fund, an amount equal to that specified in (d) above; **provided**, that proceeds from property, mechanical breakdown, or use and occupancy insurance, respectively, which have been deposited in the Early Operation Fund, shall be distributed as follows: (f) to the extent related repairs or replacements were made from money advanced from the Construction Fund, to said Fund; (g) to the extent related repairs or replacements will be made after *full operation date*, to the Operation and Maintenance Fund; and (h) to the extent loss of generation causes Yuba to compensate Pacific in money rather than in energy as provided in Appendix C-2B, for which loss the use and occupancy proceeds were received, to the Construction Fund.

B. Upon the termination of this contract, all amounts remaining in the Construction Fund and the Operation and Maintenance Fund shall be paid to Yuba, except that any amount that Pacific may be entitled to by reason of Appendix C-12 shall be withheld from either or both funds upon Pacific's certificate alone and retained until the respective rights of Yuba and Pacific shall be finally ascertained.

C-14 RELIANCE BY TRUSTEE

Said trustee, in all matters relating to the operation of and withdrawals from Funds established pursuant to this Part V of this Appendix C shall be entitled to rely upon the certificates of Yuba and Pacific provided for in Appendix C-11D and Appendix C-17, or upon such other forms of withdrawal approval as they may agree upon, and shall not be obligated to make an independent determination of the facts certified.

C-15 INVESTMENT

Any portion of the Early Operation Fund and the Operation and Maintenance Fund may be invested in United States Government securities at the direction of Yuba or in such other securities as may be agreed upon by Yuba and Pacific; all interest and other income received from such investments of moneys in the Early Operation Fund and the Operation and Maintenance Fund shall be deposited in and become a part of each said respective Fund.

C-16 EXPENSES OF TRUSTEE

Prior to *full operation date* the expenses and fees of the bond trustee or fiscal agent and bond paying agents and the expenses and fees of the trustee in connection with each Fund established pursuant to Appendix C-7 shall be paid from the Construction Fund. After *full operation date* said expenses and fees, except those for the Construction Fund, shall be paid from the Operation and Maintenance Fund.

C-17 ACCOUNTING PROCEDURES AND FINANCIAL STATEMENTS

In order to simplify banking procedures, all payments made by Pacific to Yuba under this contract shall be made directly to the trustee for disbursement as provided in Yuba's bond resolution for *project bonds* and as provided in this contract. From the Early Operation Fund and the Operation and Maintenance Fund, a Revolving Fund shall be established in a Federally insured bank having its office or a branch in Marysville. Disbursement from the Revolving Fund shall be made by Yuba to cover authorized costs of operating and maintaining the *project* and, while it is owned and operated by Yuba, Colgate Power Project. The Revolving Fund shall be reimbursed monthly, or as otherwise required, from said Funds.

Withdrawal requests, numbered consecutively, shall be prepared by Yuba, certified by its Chairman or its authorized representative, and forwarded to Pacific for approval by its President, or its authorized representative. Withdrawal requests shall then be forwarded by Pacific to the trustee for issuance of a reimbursement check replenishing Yuba's Revolving Fund. Withdrawal requests transmitted to Pacific shall be supported by copies of checks issued by Yuba. Yuba and Pacific may change the above procedures by mutual agreement.

The trustee monthly shall submit to Yuba and Pacific itemized statements showing the current status of said three funds and all disbursements made therefrom during the preceding month. Yuba shall submit to Pacific item-

ized statements showing all disbursements made from the Revolving Fund, the Early Operation Fund, and the Operation and Maintenance Fund during the preceding month and shall make its books and records available for monthly audit by Pacific.

C-18 REFINANCING

Changed circumstances may in the future make it desirable for Yuba to refinance the *project* from time to time. In the event of such refinancings Yuba shall, unless Yuba and Pacific otherwise agree, contribute to *project* operation and maintenance costs one-half of the net financial benefits and advantages gained through the refinancing, by deposit into the Operation and Maintenance Fund. In the determination of the said contribution to the *project* operation and maintenance costs, there shall be taken into consideration, among other things, interest earnings, interest savings, premiums, proceeds of the refinancing transaction which are not required to provide payment in full of all *project bonds* of any series then outstanding, and the time and amounts of payment of said benefits to each party. In the event all or any part of the said benefits and advantages accrue after termination of this contract, and all Series B *project bonds* have been retired, one-half thereof shall be applied to reimburse Pacific for amounts which Pacific was entitled to withdraw from the Operation and Maintenance Fund at the termination thereof but was unable to do so because of insufficient money in said Fund.

Appendix D

STORAGE CRITERIA

Critical storage at end of month in Yuba's new Bullards Bar Reservoir:

Month	Storage, in Thousand Acre Feet
January	600
February	600
March	685
April	825
May	930
June	890
July	830
August	755
September	705
October	660
November	645
December	645

The following storage capacity tables shall be used in the determination of gross storage capacity of the reservoir listed. Interpolation between tabulated elevations shall be on a straight-line basis.

NEW BULLARDS BAR RESERVOIR

Elevation in feet	Storage, in Thousand Acre feet	Elevation in feet	Storage, in Thousand Acre feet
1965	990	1934	833
64	984	33	829
63	978	32	825
62	972	31	820
61	966	1930	816
1960	960	29	812
59	954	28	807
58	948	27	803
57	942	26	799
56	936	25	794
55	930	24	790
54	925	23	786
53	920	22	782
52	915	21	777
51	910	1920	773
1950	905	19	769
49	900	18	764
48	896	17	760
47	891	16	756
46	887	15	752
45	882	14	747
44	877	13	743
43	873	12	739
42	868	11	734
41	864	1910	730
1940	859	09	726
39	855	08	722
38	850	07	718
37	846	06	714
36	842	05	710
1935	838	1904	706

Elevation in feet	Storage, in Thousand Acre feet	Elevation in feet	Storage, in Thousand Acre feet
1903	702	1845	512
02	698	44	509
01	694	43	507
1900	690	42	504
99	686	41	502
98	683	1840	499
97	680	39	496
96	676	38	494
95	672	37	491
94	669	36	489
93	666	35	486
92	662	34	483
91	658	33	481
1890	655	32	478
89	652	31	476
88	648	1830	473
87	644	29	470
86	641	28	468
85	638	27	465
84	634	26	463
83	630	25	460
82	627	24	457
81	624	23	455
1880	620	22	452
79	616	21	450
78	613	1820	447
77	610	19	444
76	606	18	442
75	602	17	440
74	599	16	437
73	596	15	434
72	592	14	432
71	588	13	430
1870	585	12	427
69	582	11	424
68	579	1810	422
67	576	09	420
66	573	08	417
65	570	07	415
64	566	06	412
63	563	05	410
62	560	04	408
61	557	03	405
1860	554	02	403
59	551	01	400
58	548	1800	398
57	545	99	396
56	542	98	393
55	540	97	391
54	537	96	388
53	534	95	386
52	531	94	384
51	528	93	381
1850	525	92	379
49	522	91	376
48	520	1790	374
47	517	89	372
1846	515	1788	369

Elevation in feet	Storage, in Thousand Acre feet	Elevation in feet	Storage, in Thousand Acre feet	Elevation in feet	Storage, in Thousand Acre feet	Elevation in feet	Storage, in Thousand Acre feet
1787	367	1765	317	1743	272	1721	231
86	364	64	314	42	270	20	229
85	362	63	313	41	268	19	227
84	360	62	310	1740	266	18	225
83	357	61	308	39	264	17	224
82	355	1760	306	38	262	16	222
81	352	59	304	37	260	15	220
1780	350	58	302	36	258	14	218
79	348	57	300	35	256	13	216
78	346	56	298	34	255	12	215
77	343	55	296	33	253	11	213
76	341	54	293	32	251	1710	211
75	339	53	291	31	249	09	209
74	337	52	289	1730	247	08	208
73	335	51	287	29	245	07	206
72	332	1750	285	28	243	06	204
71	330	49	283	27	242	05	202
1770	328	48	281	26	240	04	201
69	326	47	279	25	238	03	199
68	324	46	277	24	236	02	197
67	321	45	276	23	234	01	196
1766	319	1744	274	1722	233	1700	194

Appendix E

EXHIBITS

EXHIBIT 1

RESOLUTION NO. 65-27

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE YUBA COUNTY WATER AGENCY DEFINING THE COMPREHENSIVE YUBA RIVER DEVELOPMENT.

WHEREAS, the YUBA COUNTY WATER AGENCY, created by special act of the Legislature approved June 3, 1959, is authorized to develop and promote the beneficial use and regulation of the water resources of Yuba County; and

WHEREAS, on December 30, 1959, the YUBA COUNTY WATER AGENCY and INTERNATIONAL ENGINEERING COMPANY, INC., entered into a contract to obtain for the AGENCY a feasibility report containing a project plan to permit the most economical development and maximum utilization of the water resources of the Yuba River Basin, California; and

WHEREAS, INTERNATIONAL ENGINEERING COMPANY, INC., has submitted to the AGENCY a feasibility report and a supplement thereto on the development of the water resources of the Yuba River Basin, California, setting forth a comprehensive plan for a multipurpose project which would conserve water for irrigation, domestic, and industrial use, generate electric power, control floods, contribute to recreation and the maintenance and enhancement of fish and wildlife resources; and

WHEREAS, the AGENCY, for the purpose of inviting bids for the construction of the comprehensive plan of development has variously defined the said development in resolutions adopted on the 10th day of April, 1961, the 8th day of October, 1962, and on the 9th day of November, 1964; and

WHEREAS, on October 14, 1965, the AGENCY adopted a resolution approving the specifications, schedules, plans, and conditions, covering the work for the construction of the Yuba River Development designated in said specifications, schedules, plans, and conditions; and authorizing the Secretary of the AGENCY to advertise for bids for the construction of the Yuba River Development as designated in said specifications, schedules, plans, and conditions; and

WHEREAS, the comprehensive plan for the Yuba River Development includes facilities and works in addition to the work designated in the specifications, schedules, plans, and conditions, for which bids have been invited; and

WHEREAS, it is the intention of the AGENCY to construct the entire Yuba River Development as defined in this Resolution and to use its best efforts including all appropriate methods of financing to accomplish this objective; and

WHEREAS, it is understood that the construction of the

total Yuba River Development must be programmed in stages.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the YUBA COUNTY WATER AGENCY that the comprehensive plan of development of the water resources of the Yuba River Basin is hereby declared to be a single object and the units thereof hereinafter described collectively constitute and it is hereby declared that they collectively constitute the Yuba River Development. Said Yuba River Development shall consist of the following units:

- (1) Hour House Dam and Lohman Ridge Tunnel;
- (2) Log Cabin Dam and Camptonville Tunnel;
- (3) New Bullards Bar Project;
- (4) New Colgate Project;
- (5) New Narrows Project;
- (6) Irrigation Diversion Works;
- (7) Recreation Facilities at New Bullards Bar Reservoir;

together with necessary appurtenant works for such units, as identified on Schedules A, B, C, D, E, F and K, respectively, in the Contract Documents issued by the AGENCY on October 16, 1965, for which the AGENCY has invited bids for construction, said seven units and appurtenant works being hereby collectively designated as the Yuba River Construction Project;

- (8) North Yuba Canal, about 10 miles long, ranging in capacity from 250 cubic feet per second to 165 cubic feet per second, to convey water from the North Yuba Pumping Plant to the irrigation service area north of the Yuba River.
- (9) South Yuba Canal System; including the Dantoni Canal, District 784 Canal, the South Wheatland Canal, the Olivehurst Drain improvements and associated facilities, said canals varying in capacity from 750 cubic feet per second to 75 cubic feet per second, to convey water from the South Yuba Intake and pipeline to the irrigation service area south of the Yuba River.
- (10) New York Flat Project, consisting of a 90-foot high dam, 10,000 acre-foot reservoir and associated facilities located in Sections 22, 23, 24, 25 and 26, Township 19 N, Range 6 E., M. D. B. & M.,

together with necessary appurtenant works as may be required for the economical and advantageous construction and operation and maintenance of said units, said ten units and appurtenant works being hereby collectively designated as the Yuba River Development.

BE IT FURTHER RESOLVED that the foregoing enumeration of the units shall not be considered exclusive and that the AGENCY may add from time to time such other units as may be consistent with, and which may be constructed, maintained and operated as a part of, the comprehensive plan for the development and maximum utilization of the water resources of Yuba County.

PASSED AND ADOPTED this 23rd day of November, 1965, by the following vote:

AYES: Directors Charles E. Coupe, Charles Dean, Charles F. Harvey, Karl A. Cozad, Ben Rose.

NOES: None.

ABSENT: None.

KARL A. COZAD

CHAIRMAN

ATTEST:

BEN ROSE

SECRETARY

EXHIBIT 2

STREAM FLOW RELEASE AGREEMENT WITH CALIFORNIA DEPARTMENT OF FISH AND GAME AND YUBA COUNTY WATER AGENCY

THIS AGREEMENT, made this 2nd day of September, 1965, between the YUBA COUNTY WATER AGENCY, hereinafter called "Agency" and the STATE OF CALIFORNIA, represented by the CALIFORNIA DEPARTMENT OF FISH AND GAME, hereinafter called "State", supersedes and replaces the preliminary agreement dated December 28, 1961, and the agreement dated November 28, 1962, between the parties hereto.

WITNESSETH:

WHEREAS, the Yuba River and its tributaries comprise a natural river system frequented by king salmon, steelhead trout, brown trout, rainbow trout, shad, and other fish; and

WHEREAS, the Water Rights Board of the State of California has issued its decision No. D1159 adopted December 19, 1963, and amended February 17, 1964, wherein Application Nos. 5631, 5632, 15204, 15205, 15563, and 15574 of the AGENCY were approved under the terms and conditions of said decision, and permits were ordered to be issued to the AGENCY for the diversion and use of certain quantities of water from the Yuba River System for irrigation and municipal purposes and for the generation of electrical power; and

WHEREAS, the AGENCY has obtained a license from the FEDERAL POWER COMMISSION for the construction

of the Yuba River Development designated in the Federal Power Commission proceedings as Project No. 2246; and

WHEREAS, since the issuance of said Decision No. D1159 and said Federal Power Commission license, the AGENCY has revised the Yuba River Development and intends to construct Hour House Diversion Dam on the Middle Yuba River, Log Cabin Diversion Dam on Oregon Creek, New Bullards Bar Dam and Reservoir and New Colgate Tunnel intake on the North Yuba River, New Narrows Power Plant, and Irrigation Diversion Works on the mainstream of the Yuba River in order to divert and store the water and apply the same to beneficial uses under permits to be issued to the AGENCY and under license from the Federal Power Commission; and

WHEREAS, the construction of the New Narrows Power Plant and Irrigation Diversion Works may affect the spawning area presently utilized by king salmon and steelhead trout runs of the Yuba River and will require the release of water from Englebright Reservoir and Hour House Dam, Log Cabin Dam, and the existing Colgate Dam for the preservation and enhancement of the fisheries of said river system below said dams;

NOW, THEREFORE, in consideration of the mutual covenants herein contained, IT IS AGREED between the parties hereto as follows:

Section 1.1—The following minimum flows shall be released into the Middle Yuba River immediately below Hour House Diversion Dam for the maintenance of fish-life:

50 cubic feet per second or the natural flow, whichever is less, from April 15 through June 15

30 cubic feet per second or the natural flow, whichever is less, from June 16 through April 14

The above releases shall be measured at a stream gaging station located approximately 500 feet downstream of said dam.

Section 1.2—The following minimum flows shall be released into Oregon Creek from Log Cabin Diversion Dam for the maintenance of fishlife:

12 cubic feet per second or the natural flow, whichever is less, from April 15 through June 15

8 cubic feet per second or the natural flow, whichever is less, from June 16 through April 14

The above releases shall be measured at a stream gaging station located approximately 500 feet downstream of said dam.

Section 1.3—The flows stipulated above in Sections 1.1 and 1.2 shall not fluctuate more than plus or minus 10 percent from the respective mean flows in any 24-hour period. The term "natural flow" in Sections 1.1 and 1.2 means the inflow to the respective reservoirs.

Section 1.4—The following minimum flow shall be released for maintenance of fishlife from the existing Colgate Dam on the North Yuba River:

5 cubic feet per second year around

The flow shall be measured at a stream gaging station located approximately 500 feet downstream of said dam.

Section 1.5—The AGENCY shall make releases of water from Englebright Reservoir to maintain in the Yuba River immediately below Daguerre Point Dam the following minimum flows for the maintenance of fishlife:

January 1-June 30 245 cubic feet per second
 July 1-September 30 70 cubic feet per second
 October 1-December 31 400 cubic feet per second

These flow releases shall be in addition to releases made to satisfy existing downstream water rights and shall be measured over the crest of Daguerre Point Dam and through the fishways at that dam.

Section 1.6—Water releases for fishlife shall be subject to reduction in critical dry years.

A critical dry year, as used herein, is defined as a water year for which the April 1 forecast of the California Department of Water Resources predicts that streamflow in the Yuba River at Smartville will be 50 percent or less than 50 percent of normal. The critical dry year provisions herein shall be effective from the time the aforesaid forecast is available until the April 1 forecast of the following year.

The water release curtailment schedule for critical dry years will be as follows:

Yuba River at Smartville Streamflow Forecast Per- cent of Normal	Reduction in Water Releases for Fishlife, Percent
50	15
45	20
40 or less	30

However, in no event shall water releases for fishlife below Daguerre Point Dam be reduced to less than 70 cubic feet per second.

Section 1.7—A minimum pool shall be maintained in New Bullards Bar Reservoir at elevation 1730 feet.

Section 1.8—The AGENCY shall clear vegetation in New Bullards Bar Reservoir from 1700 foot elevation to the 1955 foot elevation.

Where borrow areas are proposed, the top soil shall be stripped first and stockpiled. When borrow operations are completed, the area shall be graded as practicable, and the top soil shall be replaced where the topography permits. Borrow areas on U. S. Government land shall be revegetated with browse species. This stipulation does not apply to those areas which will be inundated by the reservoirs.

Section 1.9—AGENCY shall mitigate damages to wildlife resulting from project activities in accordance with recommendations of the Department of Fish and Game. The extent of AGENCY'S obligation under this Section will be determined through further investigation and negotiations.

Section 2.1—During the period January 16 through October 15, flows released by the AGENCY from the Englebright Reservoir for start-up, shutdown and operation of New Narrows power plant shall not fluctuate at an hourly rate of more than 500 cubic feet per second and releases shall be changed as gradually as possible within this hourly period.

Section 2.2—Except for flood flows, and uncontrolled flows of tributary streams (Deer Creek and French Dry Creek) the releases from Englebright Dam during the period October 16-January 15 shall be continuous and uniform, but the scheduled release for the specified period shall be within the limits prescribed below and these releases shall be measured at the same gaging station as described in Section 2.4:

PERIOD	RELEASES—C.F.S.
October 16-October 31	600-1,050
November	600- 700
December	600-1,400
January 1-January 15	1,000-1,850

The release during the specified period shall not vary more than 15 percent from the scheduled uniform release and this variance shall be further minimized whenever possible.

Except in case of emergencies, during years other than critical dry years as defined in Section 1.6, minimum continuous release by the AGENCY from Englebright Reservoir during the period January 16 through March 31, shall be 600 cubic feet per second, subject to the above 15 percent variance.

Section 2.3—The allowable reduction in the average continuous flow during the operational period of October 15-31 shall be minimized and limited to not more than 35 percent of the average flow during the preceding seven day period. The reduction in the average continuous flow during November 1-30 shall be minimized and limited to not more than 15 percent of the average continuous flow during the preceding fifteen day period. The STATE shall be furnished with the proposed operation schedule five days before the scheduled release period with further notification of any subsequent change at or before the time it is made.

When the storage and runoff may allow a higher scheduled uniform flow during October and November without a reduction in flow in December, the uniform scheduled release in October and November may be increased.

Section 2.4—Fluctuations in the streamflow are to be measured at the new Yuba River gaging station below Englebright Dam which will be constructed for the AGENCY by the U. S. Geological Survey at a location below the discharges of the two powerhouses.

Section 2.5—The requirements of Sections 2.1 through 2.4 shall be subject to re-evaluation and revision at such time as Marysville or other downstream storage reservoir is constructed on the Yuba River.

Section 3.1—In instances where the AGENCY or its contractors propose to remove vegetation from a reservoir site, strip earth from the abutments, remove sand or gravel from a stream, wash gravel near a stream or carry on any activity in or along a stream which might result in muddying, silting or allowing to enter the stream any substance, which might injure fish life or fish habitate, the AGENCY shall be responsible for providing and maintaining in effective condition check dams, settling ponds, and such other features as may be required to

maintain the fishery values of the streams below such operations.

The AGENCY shall be responsible for its contractor's compliance with Sections 5650, 5948, 12015, 1601, and 1602 of the California Fish and Game Code and other applicable statutes relating to pollution prevention or abatement.

Section 3.2—Free public access shall be allowed within the proposed project boundary, except in areas where public safety, security of AGENCY'S property, or interference with project operations are the controlling factors.

Section 3.3—It is recognized by the AGENCY and the STATE that the temperature of water released from the New Bullards Bar Reservoir during the spawning seasons of king salmon in the fall and shad in the spring can have an effect upon mitigation and enhancement of the salmon and shad runs in the Yuba River. The AGENCY shall so locate and operate the power intake and outlet works at New Bullards Bar Dam so as to provide water temperatures of the releases from New Bullards Bar Dam comparable to or better than present values with regard to the fishery resources.

Section 3.4—AGENCY shall bear the cost of constructing, operating and maintaining fish screening facilities at the Irrigation Diversion Works.

Section 3.5—Design of facilities referred to in Section 3.4 above will be in accord with the criteria described in Exhibit "A", dated August 9, 1965, attached hereto, and which is made a part of this agreement. If said criteria are revised, whereby the cost of fish facilities is increased, such increase shall not be the responsibility of the AGENCY.

Section 4.1—The AGENCY will file a copy of this agreement with the State Water Rights Board and with the Federal Power Commission and will request amendment of Decision D1159 and F.P.C. License for Project #2246 consistent with the provisions of this agreement. By the execution of this agreement, the STATE hereby consents to the amendment of Decision D1159 and F.P.C. License for Project #2246 consistent with the provisions of this agreement.

CALIFORNIA DEPARTMENT OF FISH AND GAME

By W. T. SHANNON
DIRECTOR

YUBA COUNTY WATER AGENCY

By BEN ROSE
BEN ROSE, *Chairman*

By JOHN S. SANBROOK
JOHN S. SANBROOK, *Secretary*

YUBA COUNTY WATER AGENCY

EXHIBIT A

Design Criteria for Fish Facilities August 9, 1965

Fish Screens

1. A vertical louver type screen shall be provided at the headworks of the South Yuba Canal and a cylindrical, rotating, perforated plate screen shall be provided at the headworks of the North Yuba Canal to divert the fingerling fish from the canals and headworks back into the Yuba River. The fish diversion basins and facilities may be located on the canals a suitable distance downstream of the canal intakes. Each canal or approach channel shall be widened into a basin with a rectangular cross section in which the screen shall be located. The design of the transitions to these basins shall be such as to assure a uniform velocity of approach to the screens. Trash racks capable of removing debris that may clog the screens shall be installed upstream of each screen.
2. The louver screen and structure shall be designed according to the following criteria:
 - Normal velocity of approach—3.5 feet per second
 - Minimum velocity of approach—1.0 feet per second
 - Angle of line of louvers to direction of flow—16°
 - Angle of louver slats to direction of flow—90°
 - Louver slats—2.5 inches wide
 - Adequate flow straightness shall be provided
 - Clear spacing between louver slats—1.5 inches to 2.0 inches
 - Velocity at bypass entrance—1 to 1.4 times the approach velocity
 - Width of bypass opening, minimum—8 inches
 - Minimum diameter of bypass pipe—12 inches
 - The bypass structure shall be of a design which assures a uniform velocity distribution from top to bottom as well as a transition of uniform flow into bypass pipe.
 - Provisions shall be made for cleaning the louver screens under operating conditions.
3. The cylindrical, rotating screen shall be designed according to the following criteria:
 - 3 square feet of perforated plate shall be necessary for each cubic foot per second of diversion.
 - The perforated plate shall have 5/32 inch holes at 7/32 inch centers, staggered.
 - The operating peripheral speed of the screen may range from 10 f.p.m. to 30 f.p.m.
 - Width of bypass opening, minimum—8 inches
 - Diameter of bypass pipe, minimum—12 inches
 - Velocity at bypass entrance—1 to 1.4 times the approach velocity
 - Provisions shall be made for removing, maintaining and adjusting the cylindrical screen in a de-watered condition.