<u>Application for New License</u> <u>Major Project – Existing Dam</u>

Exhibit G Project Maps

Security Level: Public

Camp Far West Hydroelectric Project FERC Project No. 2997



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EXHIBIT G PROJECT MAPS

1.0 <u>Introduction</u>

The South Sutter Water District (SSWD or Licensee) has prepared this Exhibit G, Project Maps, as part of its Application for a New License Major Project – Existing Dam – (Application) from the Federal Energy Regulatory Commission (FERC or Commission) for the Camp Far West Hydroelectric Project, FERC Project Number (No.) 2997 (Project). This exhibit is prepared in conformance with Title 18 of the Code of Federal Regulations (C.F.R.), Subchapter B (Regulations under the Federal Power Act), Part 4 (Traditional Licensing Process). In particular, this exhibit conforms to the regulations in 18 C.F.R. Sections 4.41(h) and 4.39. Section 4.41(h) pertains to Project maps and Section 4.39 provides specifications for maps and drawings. As a reference, these two sections state:

<u>18 C.F.R. § 4.41(h)</u>: Exhibit G is a map of the project that must conform to the specifications of § 4.39. In addition, to the other components of Exhibit G, the applicant must provide the project boundary data in a geo-referenced electronic format - such as ArcView shape files, GeoMedia files, MapInfo files, or any similar format. The electronic boundary data must be positionally accurate to \pm 40 feet, in order to comply with the National Map Accuracy Standards for maps at a 1:24,000 scale (the scale of USGS quadrangle maps). The electronic Exhibit G data must include a text file describing the map projection used (*i.e.*, UTM, State Plane, Decimal Degrees, etc.), the map datum (*i.e.*, feet, meters, miles, etc.). Three sets of the maps must be submitted on compact disk or other appropriate electronic media. If more than one sheet is used for the paper maps, the sheets must be numbered consecutively, and each sheet must bear a small insert sketch showing the entire project and indicate that portion of the project depicted on that sheet. Each sheet must contain a minimum of three known reference points. The latitude and longitude coordinates, or state plane coordinates, of each reference point must be shown. If at any time after the application is filed there is any change in the project boundary, the applicant must submit, within 90 days following the completion of project construction, a final exhibit G showing the extent of such changes. The map must show:

- (1) *Location of the project and principal features.* The map must show the location of the project as a whole with reference to the affected stream or other body of water and, if possible, to a nearby town or any other permanent monuments or objects, such as roads, transmission lines or other structures, that can be noted on the map and recognized in the field. The map must also show the relative locations and physical interrelationships of the principal project works and other features described under paragraph (b) of this section (Exhibit A).
- (2) Project boundary. The map must show a project boundary enclosing all project works and other features described under paragraph (b) of this section (Exhibit A) that are to be licensed. If accurate survey information is not available at the time the application is filed, the applicant must so state, and a tentative boundary may be submitted. The boundary must enclose only those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources (*see* paragraph (f) of this section (Exhibit E)). Existing residential, commercial, or other structures may be included within the boundary only to the extent that underlying lands are needed for project purposes (e.g., for flowage, public recreation, shoreline control, or protection of environmental resources). If the boundary is on land covered by a public survey, ties must be shown on the map at sufficient points to permit accurate platting of the position of the boundary relative to the lines of the public land survey. If the lands are not covered by a public land survey, the best available legal description of the position of the boundary must be described as follows:

(i) Impoundments.

- (A) The boundary around a project impoundment must be described by one of the following:
 - (1) Contour lines, including the contour elevation (preferred method);
 - (2) Specified courses and distances (metes and bounds);
 - (3) If the project lands are covered by a public land survey, lines upon or parallel to the lines of the survey; or
 - (4) Any combination of the above methods.
- (B) The boundary must be located no more than 200 feet (horizontal measurement) from the exterior margin of the reservoir, defined by the normal maximum surface elevation, except where deviations may be necessary in describing the boundary according to the above methods or where additional lands are necessary for project purposes, such as public recreation, shoreline control, or protection of environmental resources.
- (ii) Continuous features. The boundary around linear ("continuous") project features such as access roads, transmission lines, and conduits may be described by specified distances from center lines or offset lines of survey. The width of such corridors must not exceed 200 feet unless good cause is shown for a greater width. Several sections of a continuous feature may be shown on a single sheet with information showing the sequence of contiguous sections.
- (iii) Noncontinuous features.
 - (A) The boundary around noncontinuous project works such as dams, spillways, and powerhouses must be described by one of the following:
 - (1) Contour lines;
 - (2) Specified courses and distances;
 - (3) If the project lands are covered by a public land survey, lines upon or parallel to the lines of the survey; or
 - (4) Any combination of the above methods.
 - (B) The boundary must enclose only those lands that are necessary for safe and efficient operation and maintenance of the project or for other specified project purposes, such as public recreation or protection of environmental resources.
- (3) Federal lands. Any public lands and reservations of the United States ("Federal lands") [see 16 U.S.C. 795(1) and (2)] that are within the project boundary, such as lands administered by the U.S. Forest Service, Bureau of Land Management, or National Park Service, or Indian tribal lands, and the boundaries of those Federal lands, must be identified as such on the map by:
 - (i) Legal subdivisions of a public land survey of the affected area (a protraction of identified township and section lines is sufficient for this purpose); and
 - (ii) The Federal agency, identified by symbol or legend, that maintains or manages each identified subdivision of the public land survey within the project boundary; or
 - (iii) In the absence of a public land survey, the location of the Federal lands according to the distances and directions from fixed monuments or physical features. When a Federal survey monument or a Federal bench mark will be destroyed or rendered unusable by the construction of project works, at least two permanent, marked witness monuments or bench marks must be established at accessible points. The maps show the location (and elevation, for bench marks) of the survey monument or bench mark which will be destroyed or rendered unusable, as well as of the witness monuments or bench marks. Connecting courses and distances from the witness monuments or bench marks to the original must also be shown.
 - (iv) The project location must include the most current information pertaining to affected Federal lands as described under §4.81(b)(5).
- (4) *Non-Federal lands.* For those lands within the project boundary not identified under paragraph (h)(3) of this section, the map must identify by legal subdivision:

- (i) Lands owned in fee by the applicant and lands that the applicant plans to acquire in fee; and
- (ii) Lands over which the applicant has acquired or plans to acquire rights to occupancy and use other than fee title, including rights acquired or to be acquired by easement or lease.

<u>18 C.F.R. §4.39:</u> Specifications for maps and drawings. All required maps and drawings must conform to the following specifications, except as otherwise prescribed in this chapter:

- (a) Each original map or drawing must consist of a print on silver or gelatin 35mm microfilm mounted on Type D (3 1/4" by 7 3/8") aperture cards. Full-sized prints of maps and drawings must be on sheets no smaller than 24 by 36 inches and no larger than 28 by 40 inches. A space five inches high by seven inches wide must be provided in the lower right hand corner of each sheet. The upper half of this space must bear the title, numerical and graphical scale, and other pertinent information concerning the map or drawing. The lower half of the space must be left clear. Exhibit G drawings must be stamped by a Registered Land Surveyor. If the drawing size specified in this paragraph limits the scale of structural drawings (exhibit F drawings) described in paragraph (c) of this Section, a smaller scale may be used for those drawings. Potential applicants or licensees may be required to file maps or drawings in electronic format as directed by the Commission.
- (b) Each map must have a scale in full-sized prints no smaller than one inch equals 0.5 miles for transmission lines, roads, and similar linear features and no smaller than one inch equals 1,000 feet for other project features, including the project boundary. Where maps at this scale do not show sufficient detail, large scale maps may be required. Each map must show:
 - (1) True and magnetic meridians;
 - (2) State, county, and town lines; and
 - (3) Boundaries of public lands and reservations of the United States [see <u>16 U.S.C. 796</u>(1) and (2)], if any. If a public land survey is available, the maps must show all lines of that survey crossing the project area and all official subdivisions of sections for the public lands and reservations, including lots and irregular tracts, as designated on the official plats of survey that may be obtained from the Bureau of Land Management, Washington, D.C., or examined in the local land survey office; to the extent that a public land survey is not available for public lands and reservations of the United States, the maps must show the protractions of townships and section lines, which, if possible, must be those recognized by the Federal agency administering those lands.
- (c) Drawings depicting details of project structures must have a scale in full-sized prints no smaller than:
 - (1) One inch equals 50 feet for plans, elevations, and profiles; and
 - (2) One inch equals 10 feet for sections.
- (d) Each map or drawing must be drawn and lettered to be legible when it is reduced to a print that is 11 inches on its shorter side. Following notification to the applicant that the application has been accepted for filing [see §4.31(c)], prints reduced to that size must be bound in each copy of the application which is required to be submitted to the Commission or provided to any person, agency, or other entity.
- (e) The maps and drawings showing project location information and details of project structures must be filed in accordance with the Commission's instructions on submission of Critical Energy Infrastructure Information in §§388.112 and 388.113 of subchapter X of this chapter.

Besides this introductory material, this Exhibit G includes four sections. Section 2.0 provides a description of how SSWD prepared the Project maps. Section 3.0 provides a list of all Project maps proposed for inclusion in the new license. The maps are included in Attachment G-1 to this exhibit. Sections 4.0 provides a list of references.

See Exhibit A for a description of Project facilities and features, Exhibit B for a description of Project operations, Exhibit C for a construction history and a construction schedule, Exhibit D for costs and financing information, and Exhibit E for a discussion of potential environmental effects and SSWD's proposed resource management measures. Design drawings are included in Exhibit F. Exhibit H contains a detailed description of the need for the electricity provided by the Project, the availability of electrical energy alternatives, and other miscellaneous information.

All elevation data in this exhibit are in National Vertical Datum of 1988 (NAVD88) unless otherwise specified.

2.0 <u>Description of Data Presented in Project Maps</u>

In an attempt to use the best data available to prepare the Project maps, multiple data sources were queried. Data sources and the process used by SSWD to develop the Exhibit G Project Boundary maps provided in this exhibit are discussed below.

Project maps were developed using Geographic Information Systems (GIS).

The existing FERC Project Boundary did not previously exist in a digital or geo-referenced format. The existing FERC Project Boundary was depicted on 1 hardcopy Exhibit G map, which is part of the existing FERC license. On that map, the boundary is described by surveyed coordinates, offsets and angles referenced to Public Land Survey System coordinates.

SSWD GIS technicians developed the boundary both by entering the boundary's coordinate geometry (COGO) in AutoCAD, by referencing Yuba, Nevada, and Placer County parcel mapping information. COGO was obtained from bearings and distances described by the original survey as recorded according to all the available recorded documents, Records of Surveys, public land surveys, and hardcopy Exhibit G map survey descriptions.

Additionally, land ownership parcels within the existing FERC Project Boundary and adjoining areas were reviewed and updated as necessary such that all the relevant parcel boundaries were correctly depicted. The Project Boundary and parcels were developed within a projected coordinate system and, as such, were geo-referenced and attributed for display on the map figures attached to this exhibit. All available recorded documents, Record of Survey data from multiple counties and other ownership data provided by SSWD for use on these maps, were used to update and validate the parcel base. It was then joined with the County Assessors data for ownership verification.

Once the existing Project Boundary and the ownership parcel base were defined digitally, properly referenced and verified, updates and changes to the existing FERC Project Boundary that are proposed in Exhibit A, Section 5.3 of this Application for New License were integrated into the boundary to develop the proposed FERC Project Boundary. Reasons for the proposed changes fall into the following categories:

- <u>Changes Related to Project Operation and Maintenance (O&M)</u>. Proposed addition of lands to the Project Boundary that are currently utilized with a preponderance of use related to the Project O&M, and proposed removal of lands from the Project Boundary that do not have Project facilities and are not used or necessary for Project O&M. These proposed changes are essentially making corrections to the Project Boundary.
- <u>Changes Related to Reservoir/Impoundment Contour.</u> Proposed changes to the FERC Project Boundary around the Project reservoir and impoundments from surveyed coordinates to a contour located above the normal maximum water surface elevation (NMWSE). These changes are proposed according to the preferred method of defining new project boundaries as outlined in the FERC Drawing Guide (FERC 2014) and as it is a better representation of lands required for Project O&M around the Project reservoir.

The proposed specific changes are listed in Table 2.0-1.

Table 2.0-1.	Summary of	proposed change	s to the existing	g FERC Project Boundary.	
	Summary or	proposed endinge	s to the chisting		

Proposed Change	Figure 2.0-1, Sheet #
PROJECT O&M	
Removal of the area that is west of the spillway and south of Blackford Road. Note that the area of	
the new Spillway Modification to the Bear River is retained in the proposed Project Boundary with	Sheet 1
a 15 ft buffer.	
Addition of the area on private land (APN: 018020015000) 70 ft from centerline of powerhouse	Sheet 1
access road.	Sileet 1
Removal of area owned by SSWD north of the entrance station and north of Camp Far West Road.	Sheet 2
Removal area owned by SSWD adjacent to the North Shore Recreation Area (NSRA), extending south around the sewage pond and water treatment facility which is not used by SSWD for recreation.	Sheets 2,3 & 4
Addition of the area between the existing FERC boundary and Camp Far West Road that is being used as part of the NSRA.	Sheet 3
RESERVOIR CONTOUR	
Removal of area owned by SSWD and more than 200 ft away from the Project reservoir along Camp Far West Road.	Sheet 2
Removal of the areas north along three unnamed tributaries which are more than 200 ft from the Project reservoir.	Sheet 3
Removal of the area along Rock Creek on private land (APN: 5402028000) which is more than 200 ft from the Project reservoir.	Sheet 5
Removal of the area owned by SSWD south of McCourtney Road along an unnamed tributary which is more than 200 ft from the Project reservoir.	Sheet 5
Addition of the area on private lands (APNs: 015390007000 and 5403009000) north of the current FERC boundary up to the 320 ft contour.	Sheet 6
Addition of the area on private lands (APNs: 5403010000 and 5403015000) north of the current FERC boundary up to the 320 ft contour.	Sheets 7 & 8
Addition of areas owned by SSWD south of the current FERC boundary up to the 320 ft contour.	Sheet 7
Removal of the areas owned by SSWD east and west of Valley Road along unnamed tributaries which are more than 200 ft from the Project reservoir.	Sheet 7 & 9
Addition of the area on private land (APN: 5403013000) north of the current FERC boundary up to the 320 ft contour.	Sheet 8
Addition of the areas owned by SSWD along the current FERC boundary up to the 320 ft contour.	Sheet 8
Addition of the area on private land (APN: 026010003000) south of the current FERC boundary up to the 320 ft contour.	Sheet 8
Addition of the area owned by SSWD bounded by the 320 ft contour and extending 200 ft along the Bear River upstream of the Project reservoir.	Sheet 8
Removal of the areas owned by SSWD north of North Forbes Road along unnamed tributaries which are more than 200 ft from the Project reservoir.	Sheet 9

Changes to the existing FERC Project Boundary are illustrated and described in detail and by area in Figure 2.0-1 (10 sheets). Proposed boundary additions are shaded in dark green and proposed subtractions are indicated with red hatching. Where proposed additions occur on private lands, they are indicated with grey cross hatching and the APN number is provided. Callout boxes in Figure 2.0-1 clearly identify where "Proposed Additions" to the existing FERC Project Boundary are located: the legend entry "Proposed Additions" clearly indicates if the features are present in the specific map sheet, and callouts on the map identify their exact locations.



Figure 2.0-1. Sheet 1. Project Boundary Change Map.



Figure 2.0-1. Sheet 2. Project Boundary Change Map.



Figure 2.0-1. Sheet 3. Project Boundary Change Map.



Figure 2.0-1. Sheet 4. Project Boundary Change Map.



Figure 2.0-1. Sheet 5. Project Boundary Change Map.



Figure 2.0-1. Sheet 6. Project Boundary Change Map.



Figure 2.0-1. Sheet 7. Project Boundary Change Map.



Figure 2.0-1. Sheet 8. Project Boundary Change Map.



Figure 2.0-1. Sheet 9. Project Boundary Change Map.



Figure 2.0-1. Sheet 10. Project Boundary Change Map.

Topographic contours representing elevations above NMWSE are derived from the United States Geologic Survey (USGS) National Elevation Dataset (NED) 1/3 arc second Digital Elevation Model (DEM), accessed from the USGS web server in August 2017.

Using the current elevation standard, NAVD88, contours were generated. The contour 20 ft above the Project reservoir defines the proposed FERC Project Boundary. This boundary best meets the operational needs of SSWD, within guidelines established by FERC regarding use of the contour data. In areas that are fewer than 20 ft above the NMWSE, the boundary is placed at 200 ft from the reservoir shore.

Land ownership in the areas proposed for removal and addition to the FERC boundary vary, and consist of SSWD and private lands. A summary of proposed changes by land ownership is provided in Table 2.0-2.

Owner and Action	Added to Include Primary Project Roads (ac)	Beyond 200 ft from NMWSE (ac)	Correction to 320 ft contour (ac)	Not Used for Project O&M (ac)	Added to include recreation area (ac)	Total (ac)
		EXISTING F	ERC PROJECT B	OUNDARY		
Private Lands						139.6
SSWD Lands						2,724.1
Total						2,863.7
	PROPOS	SED CHANGES TO) EXISTING FERG	PROJECT BOUN	DARY	
Changes to Priva	ate Lands					
addition	+0.7		+7.2			+7.9
subtraction		-0.4	-0.4			-0.8
Subtotal	+0.7	-0.4	+6.8	0.0		+7.1
addition	0		+7.7		+6.7	+14.4
subtraction		-87.6	-2.0	-121.6		-211.2
Subtotal	0	-87.6	+5.7	-121.6	+6.7	-196.8
Total	+0.7	-88.0	+12.5	-121.6	+6.7	-189.7
PROPOSED FERC PROJECT BOUNDARY						
Private Lands						146.7
SSWD Lands						2,527.3
Total						2,674.0

SSWD either owns in fee simple or possesses adequate land rights over all lands shown that are inside the existing FERC Project Boundary and will acquire the rights to all lands not currently in the existing Project Boundary. Assessor parcel numbers (APNs) for private lands in areas that are proposed to be added to the Project Boundary are shown as grey cross hatching in Figure 2.0-1.

All private landowners impacted by SSWD's proposed additions to the FERC Project Boundary are listed with the associated APNs in Section 10.0 of Exhibit H of this Application for New License, and the land owners have been notified of the proposed additions to the FERC Project Boundary, as described in Section 10 of Exhibit H.

3.0 <u>Project Maps</u>

General maps for SSWD's proposed FERC Project Boundary as described in Exhibit A of this Application for New License are provided in the single exhibit drawing listed in Table 3.0-1. This map depicts the proposed FERC Project Boundary in conformance with 18 C.F.R. Sections 4.39 and 4.41(h) that encompasses only those lands needed and necessary for Project operation and maintenance.

Table 3.0-1. Lists of Exhibit G	Project maps for the (Camp Far West Project.

Exhibit G Map Number in Existing License	Date of FERC Order Approving Exhibit G Map	FERC-Assigned Drawing Number	SSWD's Proposed Exhibit G Drawing Number in New License	Map Name
G-1	2/23/2004	-16	G-1	Project Boundary Map

4.0 List of Attachments

Attachment G-1 Proposed FERC Project Boundary Map

Attachment G-2GIS Shapefiles of Proposed Project Boundary, Private Lands within
Proposed Project Boundary, and Exhibit G Map Reference Points

5.0 <u>Reference Cited</u>

Federal Energy Regulatory Commission (FERC). 2014. Managing Hydropower Project Exhibits: Guidance Document. Office of Energy Projects, Division of Hydropower Administration and Compliance. August 2014. Attachment G-1

Proposed FERC Project Boundary Map (PDF)



Attachment G-2

GIS Shapefiles of Proposed Project Boundary, Federal Lands within Proposed Project Boundary, and Exhibit G Map Reference Points (CD)

Attachment G-2 of Exhibit G – Project Maps consists of one CD containing GIS shapefiles of the proposed Project Boundary, Federal Lands within the proposed Project Boundary, and Exhibit G Map Reference Points. Due to the file type, the files on the CD cannot be uploaded to FERC's e-Library system. SSWD will file a copy of the CD with FERC.

A copy of the CD can be obtained by contacting:

Brad Arnold General Manager South Sutter Water District Office 530-656-2242 <u>sswd@hughes.net</u> www.southsutterwd.com/